

1. Legal Ad

Documents: [1-27-16 LEGAL AD.PDF](#)

2. Agenda

Documents: [1-27-16 AGENDA.PDF](#)

3. 105 India Street

Documents: [HP MEMO - 105 INDIA ST.PDF](#)

4. 415 Congress Street

Documents: [HP MEMO - 415 CONGRESS ST.PDF](#)

5. 142 Federal Street

Documents: [HP MEMO - 142 FEDERAL ST.PDF](#)

6. 19 Commercial Street

Documents: [HP MEMO - 19 COMMERCIAL ST.PDF](#)

**LEGAL ADVERTISEMENT
HISTORIC PRESERVATION BOARD
CITY OF PORTLAND
Public comments are taken at all meetings.**

On **Wednesday, January 27, 2016** at **5:00** p.m., Room 209, 2nd Floor, City Hall, the Portland Historic Preservation Board will meet in Room 209, City Hall, to review the following items. (Public comments will be taken at this meeting):

1. WORKSHOP

- i. Preliminary Review of Comprehensive Exterior Rehabilitation; 105-107 INDIA STREET; Paul Driscoll for All Aces, LLC., Applicant.

Break for Dinner; Meeting Resumes at 6:30

WORKSHOP, continued

- i. Preliminary Review of Proposed Approach to Masonry Repairs; MASONIC HALL, 315 CONGRESS STREET (rear section); Masonic Trustees of Portland, Applicant.
- ii. Preliminary Review of Proposed Window Replacement; CUMBERLAND COUNTY COURTHOUSE, 205 NEWBURY/142 FEDERAL STREET; County of Cumberland, Applicant.

2. PUBLIC HEARING

- i. Certificate of Appropriateness for Sign Installation; 19 COMMERCIAL STREET; Maine Home Connection, Applicant.

CITY OF PORTLAND, MAINE
HISTORIC PRESERVATION BOARD

Scott Benson, Chair
Bruce Wood, Vice Chair
Glenn Harmon
Ted Oldham
Penny Pollard
Julia Sheridan
John Turk

HISTORIC PRESERVATION BOARD AGENDA
January 27, 2016, 5:00 p.m.
Room 209, 2nd Floor, City Hall
Public comment is taken at all meetings

- 1. ROLL CALL AND DECLARATION OF QUORUM**
- 2. COMMUNICATIONS AND REPORTS**
- 3. REPORT OF DECISIONS OF JANUARY 13, 2016:**

- i. Certificate of Appropriateness for Rear Deck Addition and Fence Replacement; 9 DANA STREET; Bruce Mills, Applicant. *The Board voted 6-0 (Wood absent) to approve the application subject to conditions.*

4. WORKSHOP

- i. Preliminary Review of Comprehensive Exterior Rehabilitation; 105-107 INDIA STREET; Paul Driscoll for All Aces, LLC., Applicant.

Break for Dinner; Meeting Resumes at 6:30 p.m.

5. WORKSHOP, continued

- i. Preliminary Review of Proposed Approach to Masonry Repairs; MASONIC HALL, 315 CONGRESS STREET (rear section); Masonic Trustees of Portland, Applicant.
- ii. Preliminary Review of Proposed Window Replacement; CUMBERLAND COUNTY COURTHOUSE, 205 NEWBURY/142 FEDERAL STREET; County of Cumberland, Applicant.

6. PUBLIC HEARING

- i. Certificate of Appropriateness for Sign Installation; 19 COMMERCIAL STREET; Maine Home Connection, Applicant.

7. CONSENT AGENDA

Contact the Department of Planning and Urban Development, Planning Division, 874-8726 for further information. To access agenda materials on-line, please visit the following web address on or after the Friday preceding the meeting date: <http://www.portlandmaine.gov/historic.htm>

**HISTORIC PRESERVATION BOARD
CITY OF PORTLAND, MAINE**

**WORKSHOP
105 INDIA STREET**

TO: Chair Benson and Members of the Historic Preservation Board

FROM: Deborah Andrews, Historic Preservation Program Manager

DATE: January 21, 2016

RE: January 27, 2016 **Workshop** – Preliminary Review of Proposed Exterior Alterations

Address: 105 India Street
(application identifies the building as 107 India; building listed as 105 India in Assessor's records)

Applicant: All Aces, LLC.

Project Architect: Ryan Senatore

Introduction

Architect Ryan Senatore has submitted plans for the exterior rehabilitation of 105 India Street, a three story, Italianate brick residential structure located at the upper end of India Street. Mr. Senatore is representing the new owners of the building, All Aces, LLC, who plan to convert the building into three residential condominium units.

Enclosed is a written project description, together with plans, elevations, details and material specifications.

Note that staff advertised this item as a workshop session, given the comprehensive nature of the project. If the Board is supportive of the exterior alterations as proposed, the applicant requests that staff be authorized to sign off on the project with any conditions specified by the Board.

Subject Structure

The Patrick Feeney House at 105 India Street is a three-story brick residential structure built circa 1874. Stylistically, the building is consistent with many of the Italianate and Second Empire buildings that characterize the India Street neighborhood. In form, however, it is distinct from many of its neighbors, as it is a long and narrow building oriented with its gable end to the street. The front façade features a two-story bay at the first and second floor levels.

Previous renovations have robbed the building of removed or obscured a number of key architectural details. The building's original 2/2 windows have been replaced with 1/1 vinyl windows; the bay windows have been covered in metal and vinyl cladding, eliminating brackets and recessed panels under the windows; doors and entrance porches on the south elevation have been replaced with inferior installations; the original balustrade over the front entrance has been removed and the front entry stairs altered. At the roofline, the original brackets have been retained, but gutters have been removed and the cornice and soffit have been replaced with vinyl.

Proposed Scope of Work, Staff Comments

The proposed rehabilitation project aims to restore much of the building's original architectural character, within limits established by the applicant's project budget. Following is a list of proposed alterations. Staff notes appear *italics*.

- Existing vinyl 1/1 windows to be replaced with Marvin Ultimate aluminum-clad 2/2 full unit replacements. Windows to have black finish. *Staff understands that the replacement calls for full tear-out of existing units, avoiding any reduction in daylight opening. Consideration should be given to the profile of the brickmould and sill.*
- Vinyl and metal cladding over front bays to be removed. Renovated bays to feature recessed panels below the windows and a traditional cornice treatment. Roofs of bays to be copper. Trim to be PVC, painted. *Staff has asked for an enlarged elevation of the bays with dimensions of framing indicated. Staff notes that the framing around the recessed panels appears narrower than what would have been there historically and has suggested that the dimensions of the frames and panels be adjusted.*
- Roofing to be replaced with architectural shingles. Velux skylights to be added to south- and north-facing roof slopes. Curbing of skylights to be dark gray. *Note that spacing of skylights is not consistent on south-facing slope.*
- Awnings over front and side entrances to be removed. New door hoods, patterned after bracketed door hoods typical of the building's architectural style, to be installed over entry.
- On south elevation, side entry door to be replaced with Therma Tru fiberglass door, painted black. Existing pre-fab steps to remain, but railings to be replaced. *Staff has asked Mr. Senatore to provide an enlarged elevation of the proposed railing. Based on the drawings provided, staff questions whether the railing design is compatible with the historic building and has suggested that the City's porch guidelines for historic structures be consulted.*
- Also on the south elevation, the existing entrance at the rear corner of the building is to be modified. The stairs are to be removed and the door brought down to grade, with a tall transom window above. Replacement door to be consistent with other entrance door on this elevation.

- Small window openings on north elevation to be infilled with brick. *Given the difficulty in achieving a close match in the brick, perhaps the infill area should be recessed slightly from the surrounding wall plane. Otherwise, the new brick should be toothed in.*
- Wall vents to be installed in locations noted on plans. Vents to be painted to match brick. Existing conduit and meter box on front facade to be relocated to side elevation.
- Downlights to be installed on south and rear elevations, first floor level. Recessed light to be installed at front entrance.
- Railings at rear balconies to be replaced. (Not visible from the street; not subject to review.)
- All trim to be painted tan, appropriate for an Italianate style building.
- Existing vinyl cornice and soffit to remain. Cornice and soffit to be painted to match other trim. *Although staff appreciates budget considerations, it is unfortunate that this prominent architectural feature will not be addressed as part of the project.*
- No site alterations are proposed as part of the project.

Although staff has highlighted several specific aspects of the project that might warrant further consideration, on the whole the proposed rehabilitation represents a significant and welcome improvement to a prominent historic structure on India Street.

Applicable Review Standards

The applicable ordinance review standard is as follows:

- (2) *The distinguishing original qualities or character of a structure, object or site and its environment shall not be destroyed. The removal or alteration of any historic material or distinctive architectural features should be avoided when possible.*
- (5) *Distinctive features, finishes, and construction techniques or examples of skilled craftsmanship which characterize a structure, object or site shall be treated with sensitivity.*
- (6) *Deteriorated historic features shall be repaired rather than replaced wherever feasible. Where the severity of deterioration requires replacement of a distinctive feature, the new feature should match the feature being replaced in composition, design, texture and other visual qualities and, where possible, materials. Repair or replacement of missing historic features should be based on accurate duplications of features, substantiated by documentary, physical or pictorial evidence rather than on conjectural designs or the availability of different architectural elements from other structures or objects.*

Attachments

1. Written project description
2. Applicant submission, including current and 1924 photos, plans, elevations, details and specifications.

EXHIBIT A

RYAN SENATORE **ARCHITECTURE**

December 20, 2015

Deb Andrews
Historic Preservation Program Manager
City of Portland Maine
389 Congress Street
Portland, Maine 04101
874-8726

Re: 107 India Street

Deb,

Please see the attached submission of proposed modifications to 107 India Street here in Portland. The existing structure is a 3 story brick building with a basement and attic. We are proposing to renovate the interior of the building to create three residential condominium units. The first floor will be a two bedroom unit, the second floor will be a two bedroom unit and the third floor will be a two bedroom unit with loft spaces in the attic.

The exterior modifications include removal of the existing vinyl windows and installation of Aluminum clad windows with simulated divided lights in a 2 over 2 pattern in keeping with the 1924 tax photo windows. We are proposing to remove the existing fabric awnings and pressure treated deck and porch railings and replacing them with permanent fixed entry canopies, and wood railings with painted finishes. The front two story bay on India Street current has metal and vinyl cladding, we are proposing to replace it with a PVC trim package with a painted finish. The existing eave and rake overhangs are metal and vinyl clad, we are proposing to paint the existing materials to match the new typical exterior trim color. We are proposing to replace the existing roofing with an Architectural asphalt shingle roof, as well as install skylights in within the roof.

207-850-6414

senatorearchitecture.com

ryan@senatorearchitecture.com



RYAN SENATORE **ARCHITECTURE**

We are proposing to relocate the existing electrical meters on the India Street facade onto the side elevation of the building. The exterior light fixtures are a minimalist design black in color intended to be recessive elements on the brick facades. The through wall fireplace sidewall vents on the driveway facing facade will be powder-coated in the factory to match the brick color, again to be recessive elements.

We are proud to be able to improve the existing conditions of the wonderful building that exists at 107 India Street and look forward to meeting with the Historic Preservation Board to discuss the project.

Sincerely,



Ryan Senatore, AIA LEED AP

Principal

207-650-6414

senatorearchitecture.com

ryan@senatorearchitecture.com

CONTACT INFORMATION:

APPLICANT

Name: Paul F. Driscoll
Address: PO Box 4600
Portland, ME
Zip Code: 04112-4600
Work #: 207-553-4608
Cell #: _____
Fax #: 207-775-0806
Home: _____
E-mail: pdriscoll@nhdlaw.com

BILLING ADDRESS

Name: Paul F. Driscoll
Address: PO Box 4600
Portland, ME
Zip: 04101
Work #: 207-553-4608
Cell #: _____
Fax #: 207-775-0806
Home: _____
E-mail: pdriscoll@nhdlaw.com

CONTRACTOR

Name: _____
Address: _____

Zip Code: _____
Work #: _____
Cell #: _____
Fax #: _____
Home: _____
E-mail: _____

Applicant's Signature

*As Attorney for
All Aces, LLC*

PROPERTY OWNER

Name: All Aces, LLC
Address: 105-107 India Street
Portland, ME
Zip Code: 04103
Work #: _____
Cell #: _____
Fax #: _____
Home: _____
E-mail: peter@bouchard.us

ARCHITECT

Name: Ryan Senatore Architecture
Address: 565 Congress St
Suite 304, Portland, ME
Zip: 04101
Work #: 207-650-6414
Cell #: _____
Fax #: _____
Home: _____
E-mail: ryan@senatorearchitecture.com

ALL ACES, LLC
By: *Paul F. Driscoll*

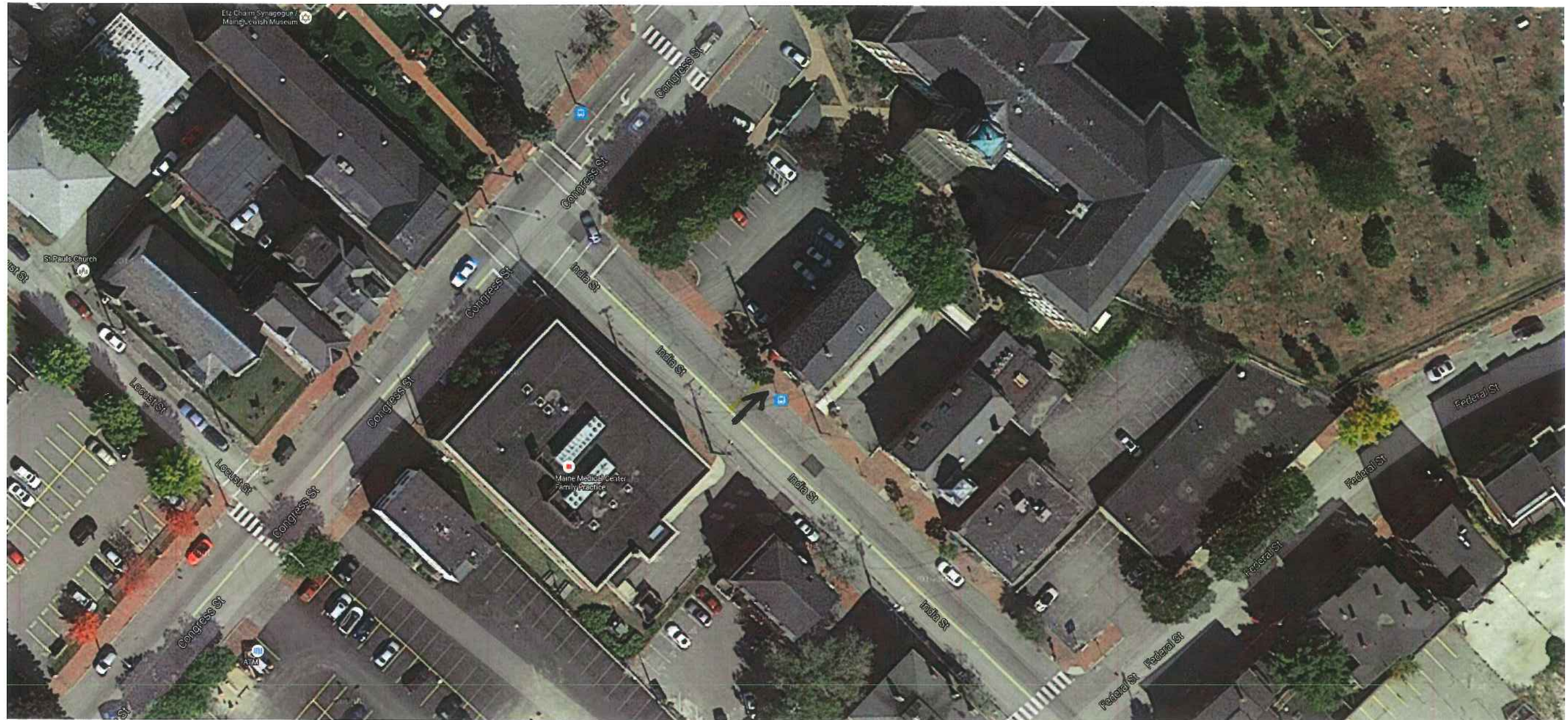
Owner's Signature (if different)

*Paul F. Driscoll
Registered Agent
and Attorney*

107 INDIA STREET

PORTLAND, MAINE

DECEMBER 16, 2015



AERIAL IMAGE

SCALE: NTS

PROGRESS PRINT ONLY
Not for Construction

RYAN SENATORE **ARCHITECTURE**

107 INDIA STREET

PORTLAND, MAINE

DECEMBER 16, 2015



107 INDIA STREET

PORTLAND, MAINE

DECEMBER 16, 2015



EXISTING IMAGE

SCALE: NTS

PROGRESS PRINT ONLY
Not for Construction

RYAN SENATORE **ARCHITECTURE**

107 INDIA STREET

PORTLAND, MAINE

DECEMBER 16, 2015



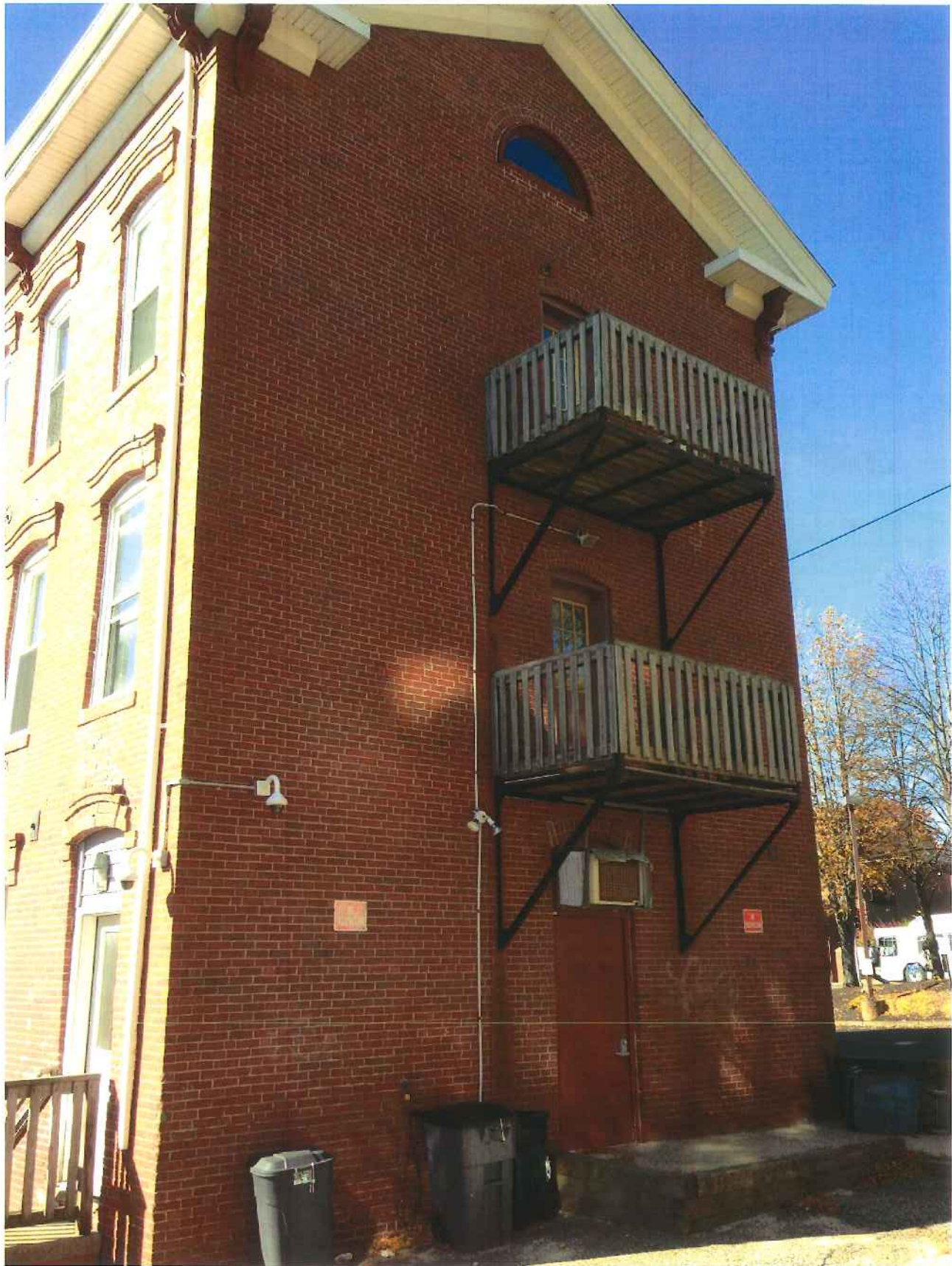
EXISTING IMAGE

SCALE: NTS

PROGRESS PRINT ONLY
Not for Construction

107 INDIA STREET
PORTLAND, MAINE

DECEMBER 16, 2015



EXISTING IMAGE
SCALE: NTS

PROGRESS PRINT ONLY
Not for Construction

107 INDIA STREET

PORTLAND, MAINE

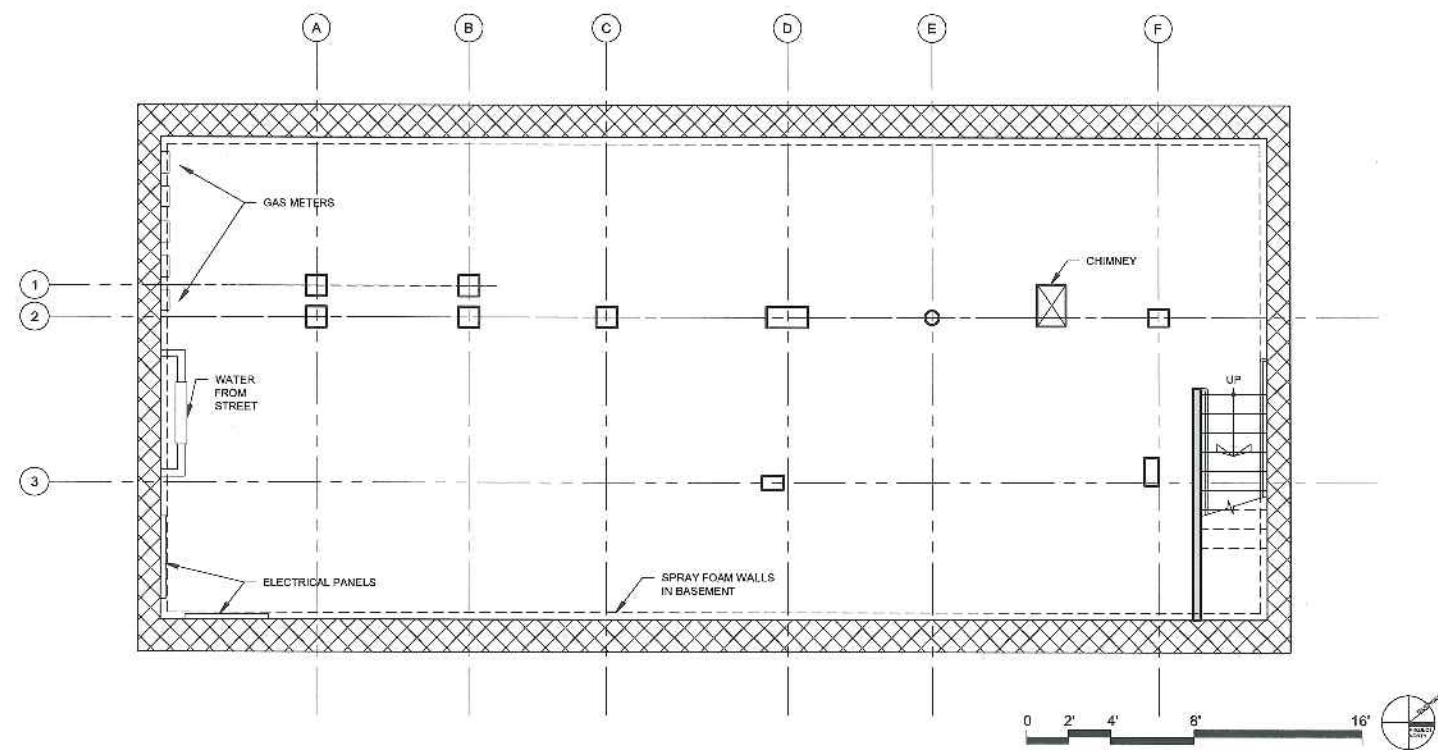
DECEMBER 16, 2015



EXISTING IMAGE
SCALE: NTS

PROGRESS PRINT ONLY
Not for Construction

WALL LEGEND	
WALL TO BE REMOVED	
EXISTING WALL	
NEW WALL	



1 BASEMENT FLOOR PLAN
1/4" = 1'-0"

© 2015 RYAN SENATORE ARCHITECTURE

RESIDENCES
107 INDIA STREET
PORTLAND, MAINE

RSA
RYAN SENATORE
ARCHITECTURE
545 CONGRESS STREET
PORTLAND, MAINE 04101
207-747-5159
www.rsasearchitecture.com

CONSULTANTS:
STRUCTURAL:
2001 Main Street
Portland, ME 04101
207-774-4914

REVISIONS:

DATE:

PROJECT No.

DRAWN BY: RRT

CHECKED BY: RJS

SCALE: AS NOTED

SHEET TITLE:
BASEMENT
PLAN

A1-1

PROGRESS PRINT ONLY
Not for Construction
DECEMBER 2, 2015



REVISIONS:

DATE: _____

PROJECT No. _____

DRAWN BY:

CHECKED BY:

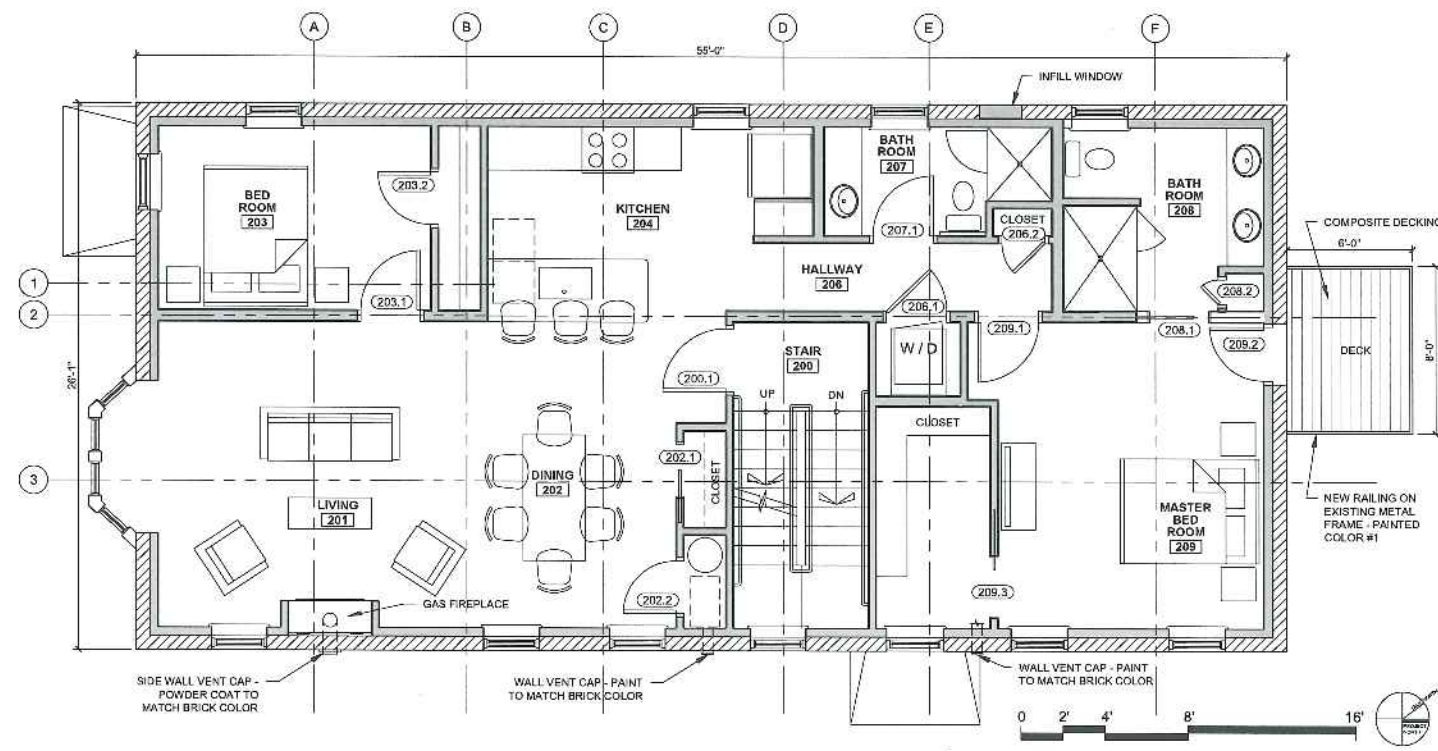
SCALE: AS

SHEET TITLE:

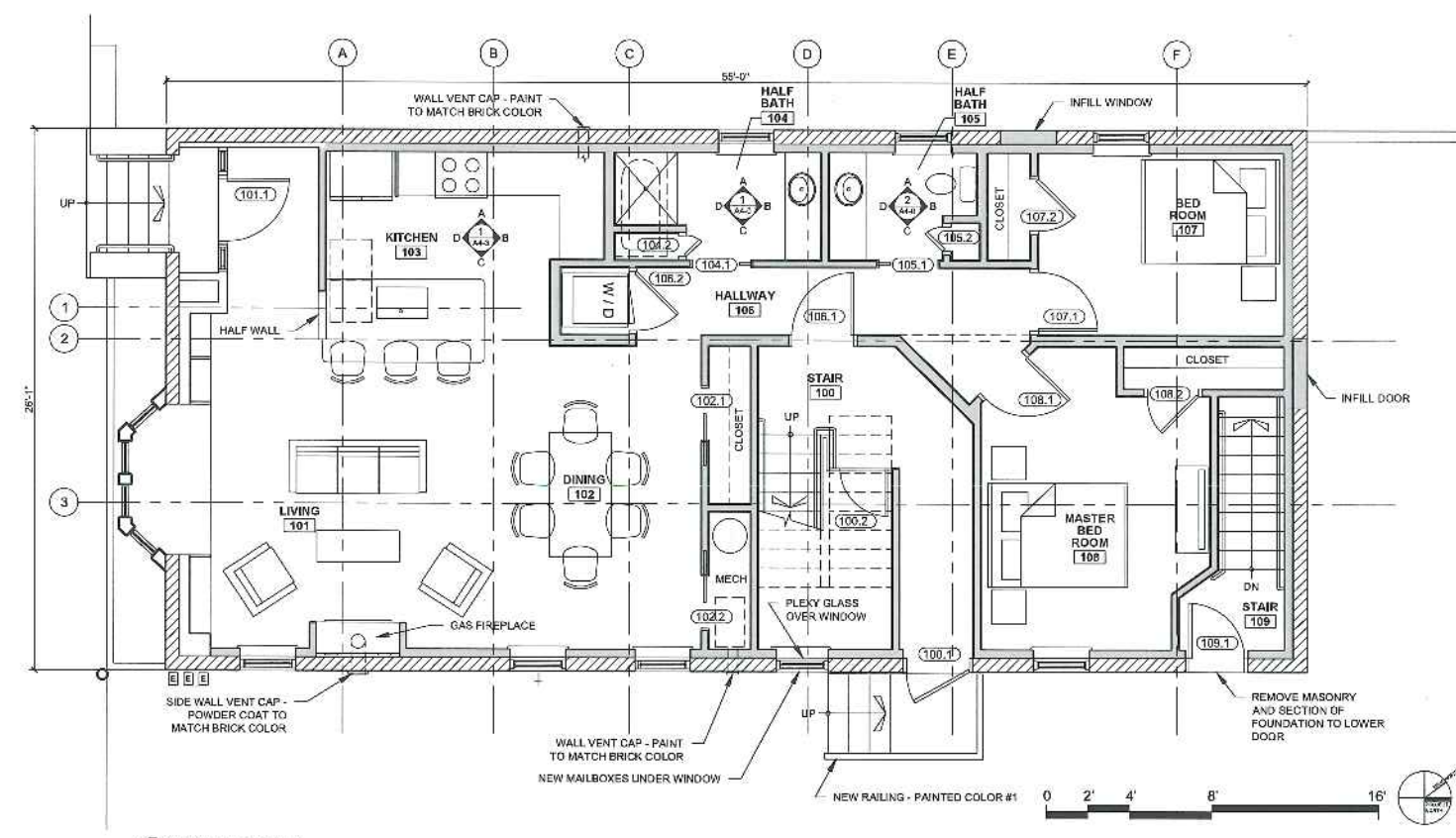
SOUTH
ELEVATION

A2-0





2 SECOND FLOOR PLAN
1/4" = 1'-0"



1 FIRST FLOOR PLAN
1/4" = 1'-0"

WALL LEGEND

WALL TO BE REMOVED	
EXISTING WALL	
NEW WALL	

© 2015 RYAN SENATORE ARCHITECTURE

RESIDENCES
107 INDIA STREET
PORTLAND, MAINE

RSA
RYAN SENATORE
ARCHITECTURE
555 CONGRESS STREET
PORTLAND, MAINE 04101
207-743-5155
rsaseno@comcast.net

CONSULTANTS:
STRUCTURAL:
SPECIALTIES BY
77 Oak Street
Portland, ME 04101
207-764-4815

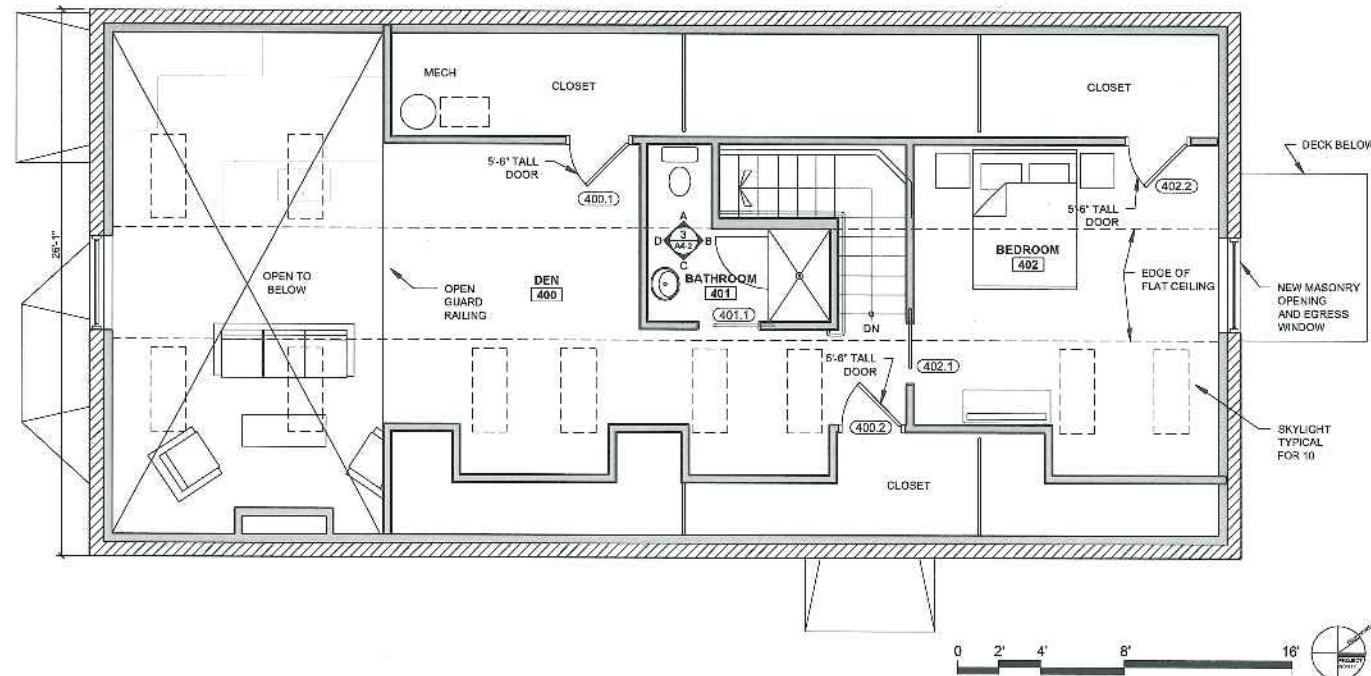
REVISIONS:

DATE:
PROJECT No.:
DRAWN BY: RRT
CHECKED BY: RJS
SCALE: AS NOTED

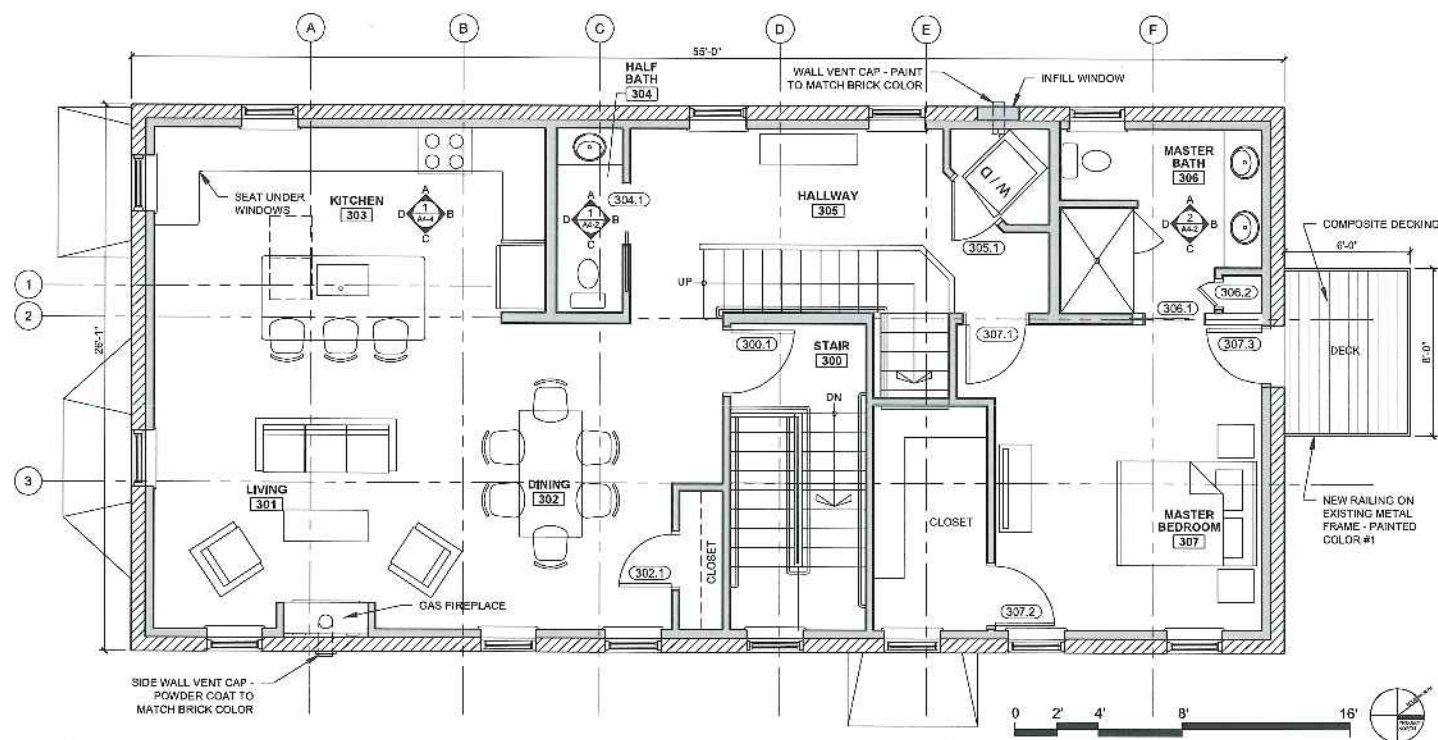
SHEET TITLE:
FIRST AND
SECOND
FLOOR PLAN

PROGRESS PRINT ONLY
Not for Construction
DECEMBER 2, 2015

A1-2



2 FOURTH FLOOR PLAN
1/4" = 1'-0"



1 THIRD FLOOR PLAN
1/4" = 1'-0"

PROGRESS PRINT ONLY
Not for Construction
DECEMBER 2, 2015

© 2015 RYAN SENATORE
ARCHITECTURE

RESIDENCES
107 INDIA STREET
PORTLAND, MAINE

RSA
RYAN SENATORE
ARCHITECTURE
565 CONGRESS STREET
PORTLAND, MAINE 04101
207-211-6158
www.senatorearchitecture.com

CONSULTANTS:
STRUCTURAL:
300 Main Street
Portland, ME 04101
207-774-4014

REVISIONS:

DATE:
PROJECT No:
DRAWN BY: RRT
CHECKED BY: RJS
SCALE: AS NOTED

SHEET TITLE:
THIRD AND
FOURTH
FLOOR PLAN

A1-3

RESIDENCES
107 INDIA STREET
PORTLAND, MAINE



RYAN SENATORE
ARCHITECTURE
555 CONGRESS STREET
PORTLAND, MAINE 04101
207-741-6108
rsasenate@icloud.com

CONSULTANTS:
STRUCTURAL
Structural Integrity
77 Oak Street
Portland, ME 04101
207-754-4514

REVISIONS:

DATE:

PROJECT No.

DRAWN BY: RRT

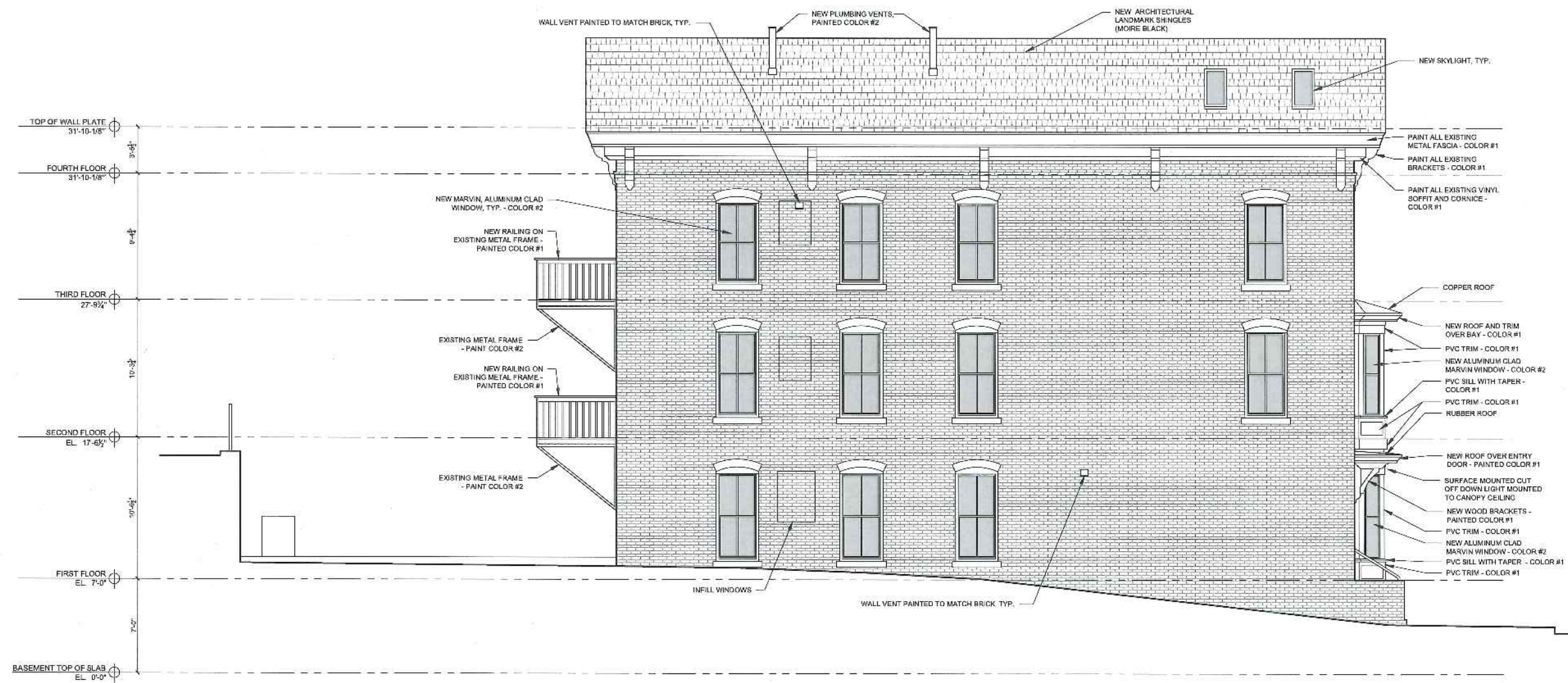
CHECKED BY: RJS

SCALE: AS NOTED

SHEET TITLE:

NORTH
ELEVATION

A2-1

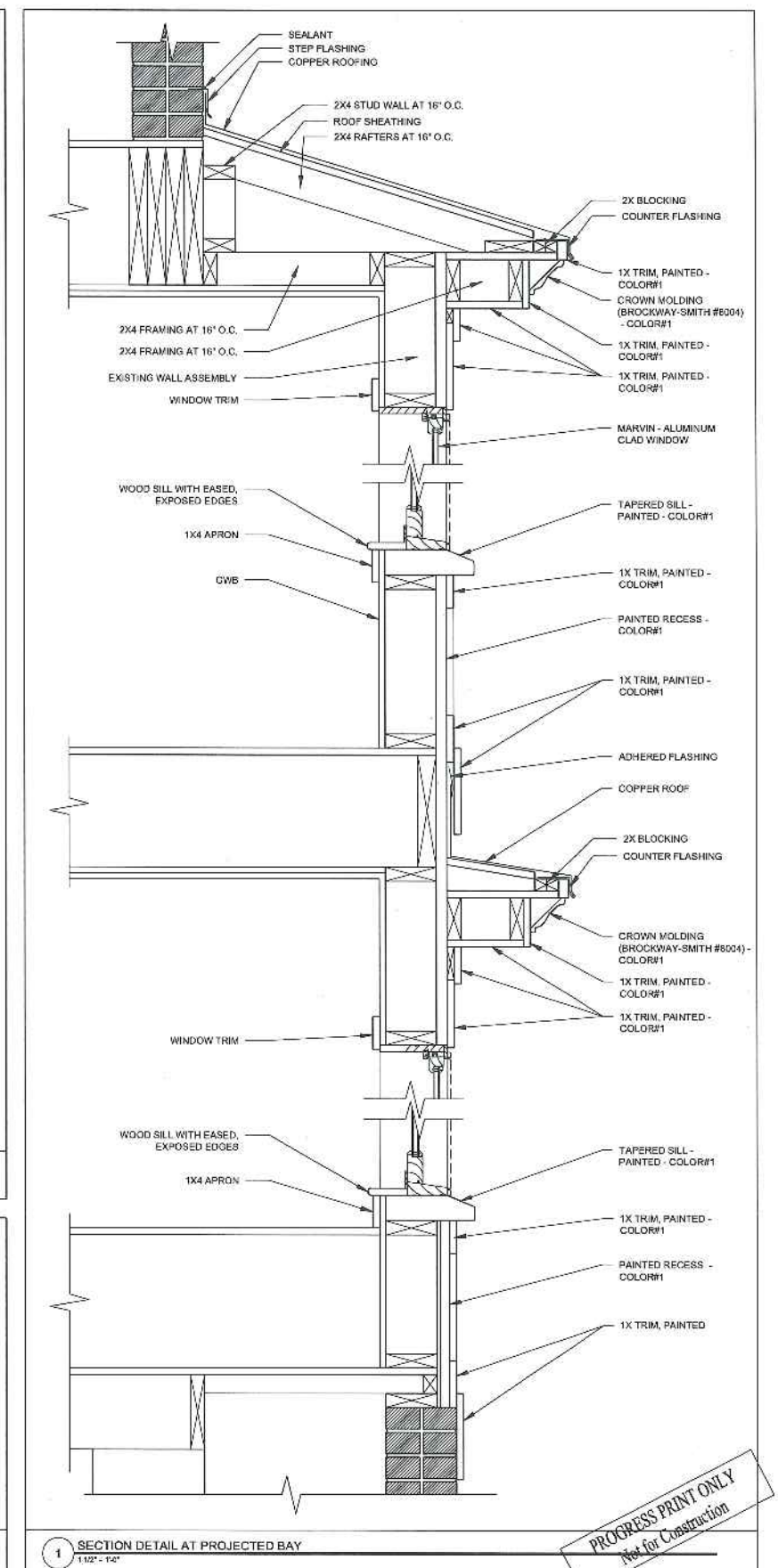
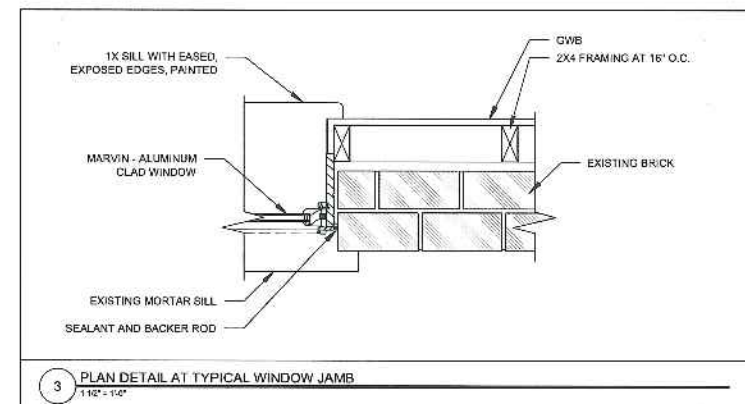
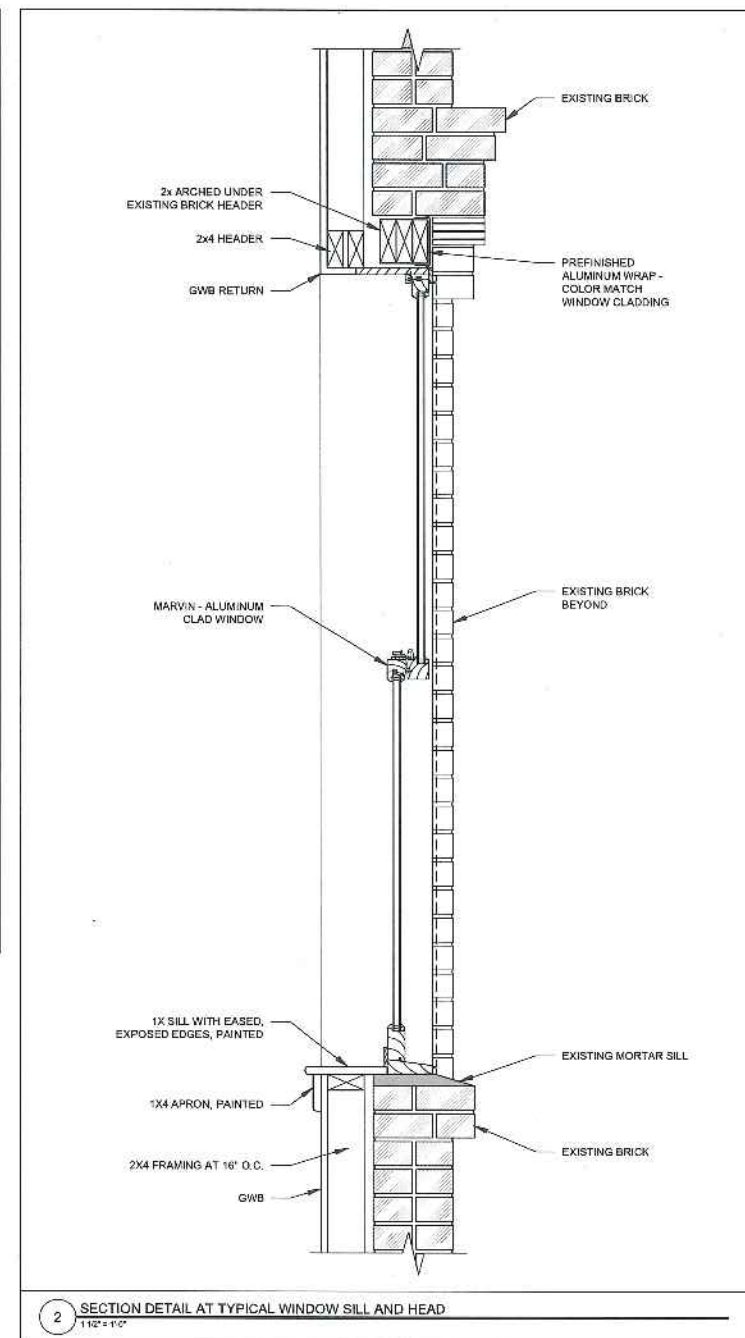
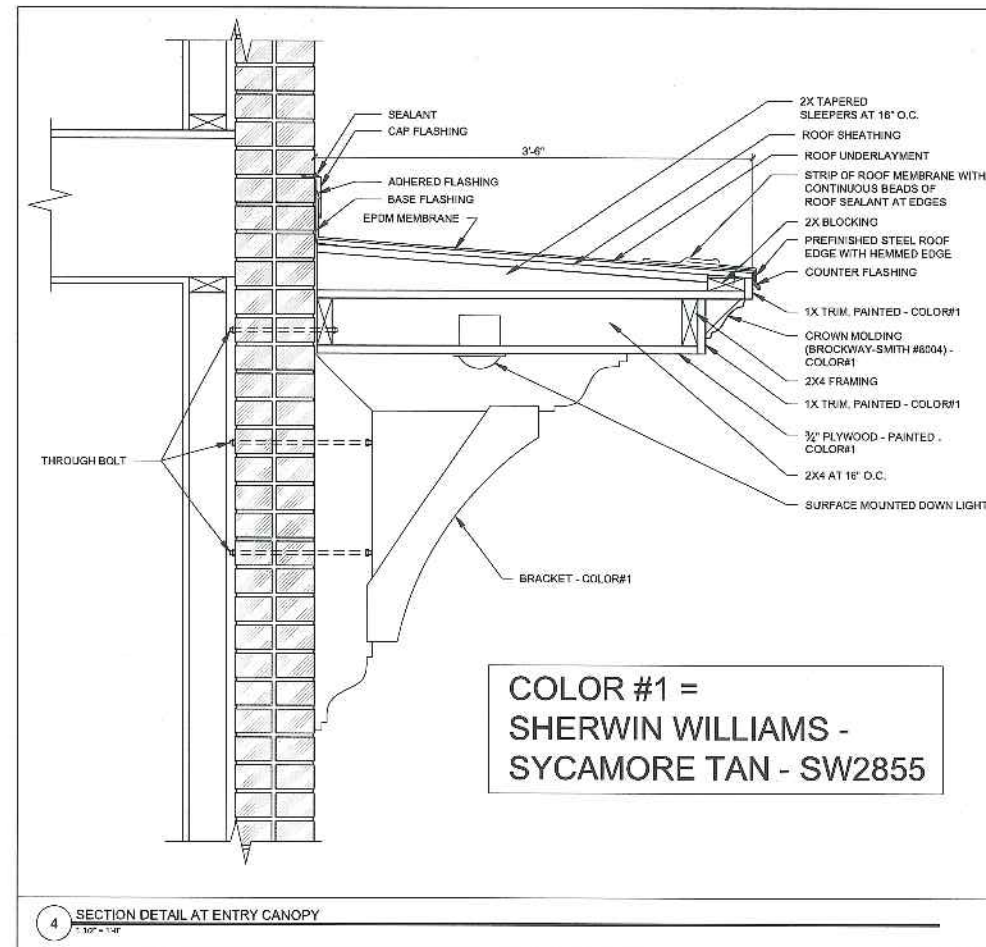


PROGRESS PRINT ONLY
Not for Construction
DECEMBER 2, 2015

107 INDIA STREET

PORTLAND, MAINE

DECEMBER 16, 2015



PROGRESS PRINT ONLY
Not for Construction

RYAN SENATORE ARCHITECTURE

RESIDENCES
107 INDIA STREET
PORTLAND, MAINE



RYAN SENATORE
ARCHITECTURE
335 CONGRESS STREET
PORTLAND, MAINE 04101
207-447-5158
senatorearchitecture.com

CONSULTANTS:
STRUCTURAL:
335 CONGRESS STREET
PORTLAND, MAINE 04101
207-447-5158

REVISIONS:

DATE:

PROJECT No.

DRAWN BY: RRT

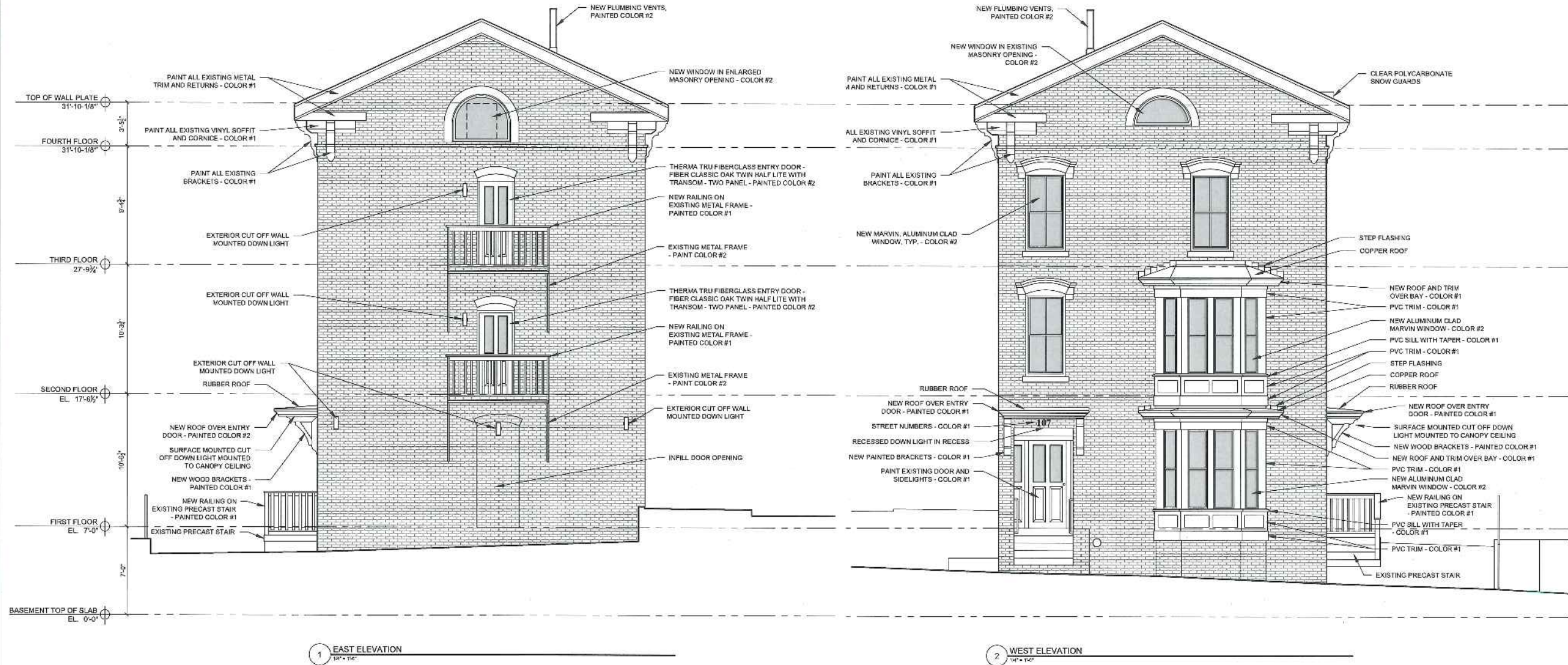
CHECKED BY: RJS

SCALE: AS NOTED

SHEET TITLE:
EAST AND WEST
ELEVATION

A2-2

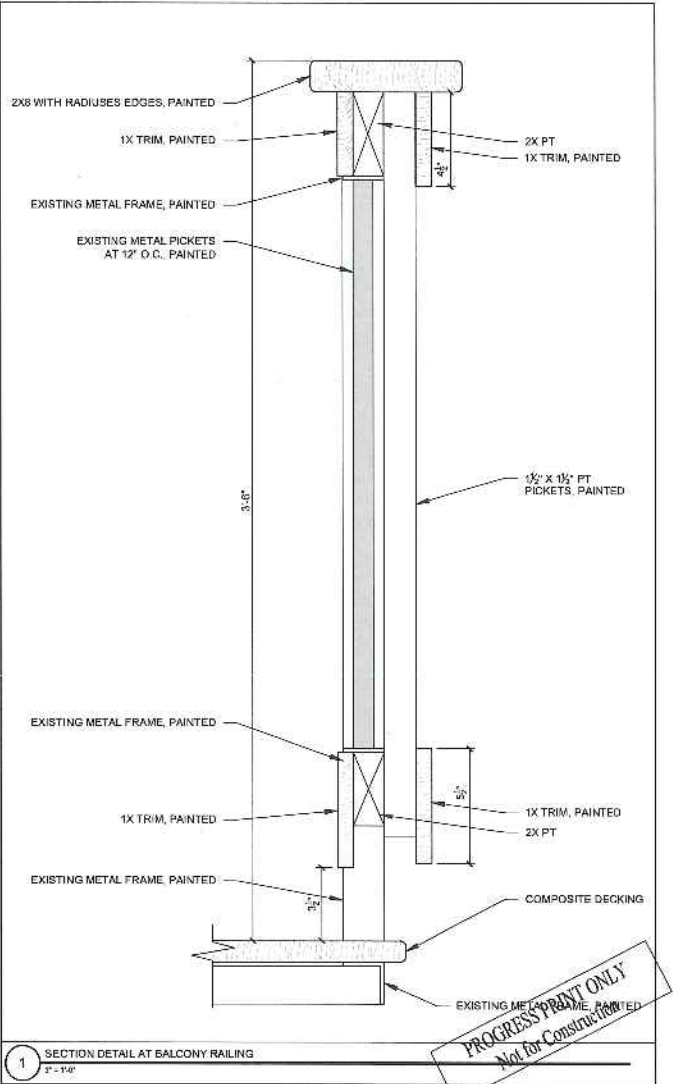
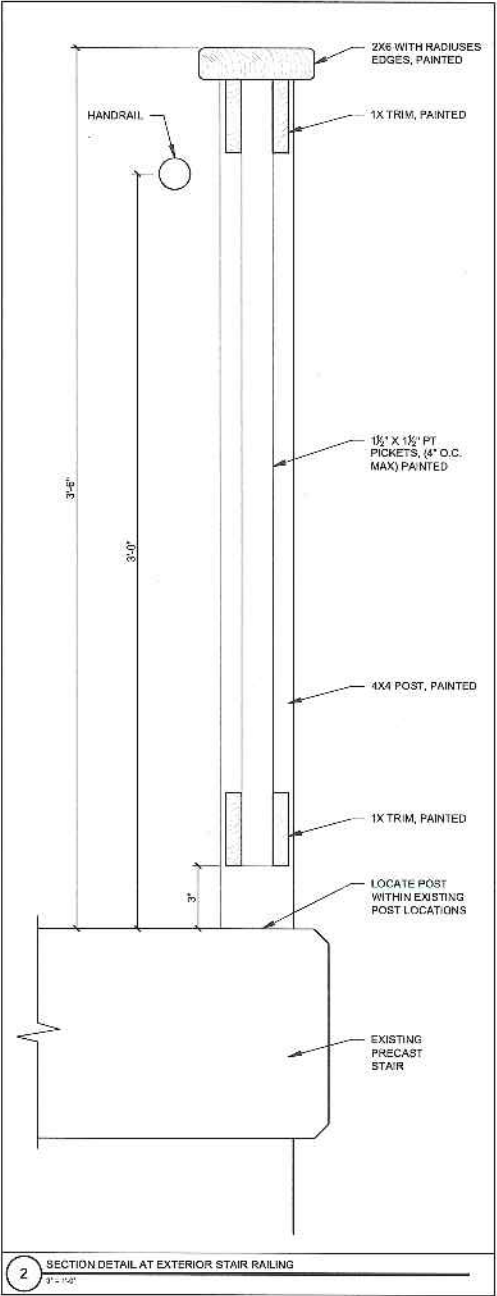
PROGRESS PRINT ONLY
Not for Construction
DECEMBER 2, 2015



107 INDIA STREET

PORTLAND, MAINE

DECEMBER 16, 2015

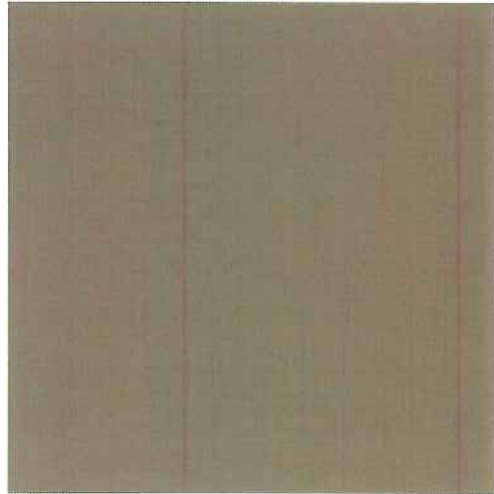


107 INDIA STREET

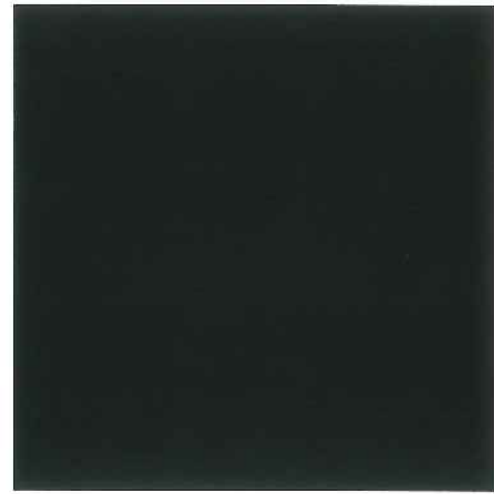
PORTLAND, MAINE

DECEMBER 16, 2015

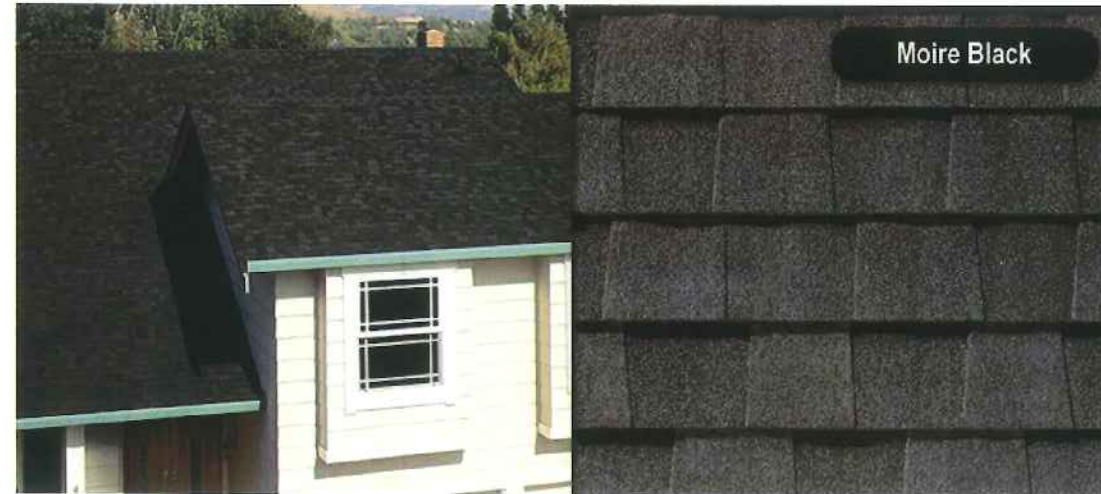
PAINT COLOR #1 -
SYCAMORE TAN (SW2855)



WINDOW AND PAINT
COLOR #2 = EBONY



CERTAINTeed - LANDMARK -
ARCHITECTURAL SHINGLE -
MOIRE BLACK



THERMA TRU
FIBERGLASS DOOR
(PAINTED EBONY)



MARVIN ULTIMATE DOUBLE HUNG -
ALUMINUM CLAD (EBONY)



VELUX SKYLIGHT (GRAY)



EXTERIOR SURFACE
MOUNT DOWN LIGHT



EXTERIOR WALL
MOUNT DOWN LIGHT





CANOPY OVER ENTRY
PAINTED SYCAMORE TAN

PROGRESS PRINT ONLY
Not for Construction

107 INDIA STREET
PORTLAND, MAINE

DECEMBER 16, 2015



VIEW FROM SOUTH



VIEW FROM EAST

PROGRESS PRINT ONLY
Not for Construction

107 INDIA STREET

PORTLAND, MAINE

DECEMBER 16, 2015



VIEW FROM NORTH



VIEW FROM WEST

PROGRESS PRINT ONLY
Not for Construction

**HISTORIC PRESERVATION BOARD
CITY OF PORTLAND, MAINE**

**WORKSHOP
415 CONGRESS**

TO: Chair Benson and Members of the Historic Preservation Board

FROM: Deborah Andrews, Historic Preservation Program Manager

DATE: January 20, 2016

RE: January 27, 2016 **Preliminary Workshop** – Discussion regarding
Masonry Repairs, Material Options under Consideration

Addresses: 415 Congress Street
Masonic Temple

Applicant: The Masonic Trustees of Portland
Represented by Robert Kahn, Chairman

Consultant: Scott Whitaker, Building Envelope Specialists

Introduction

Bob Kahn, Chairman of the Masonic Trustees of Portland (MTP), has requested a workshop session to update the Board on the condition of the Masonic Temple's exterior masonry, specifically its terra-cotta decorative elements which have shown signs of significant deterioration in recent years necessitating the installation of protective netting. The Masonic Temple, built in 1911 and designed by noted Portland architect Frederick Thompson in the Beaux Arts style, is classified as a Landmark structure within the Congress Street Historic District. From the time of its construction, the building has featured offices in the front portion facing Congress Street and the Masonic Temple at the rear. The building is especially significant for the numerous large, highly decorated interior spaces within the Masonic Temple portion, which remain in remarkably original condition.

The workshop session is intended to inform the Board of the organization's efforts to develop a plan for masonry repairs and solicit comments from the Board regarding repair/replacement options under consideration. Scott Whitaker of Building Envelope Specialists, who was hired by MTP to assess the condition of the masonry and develop the repair/replacement plan, will review his recommendations and present various options currently under consideration. Mr. Whitaker and the Masonic Trustees are particularly interested to know whether the Historic

Preservation Board would be receptive to the use of a substitute material for sections of the terra-cotta that are beyond repair, as there would be a significant cost savings with that approach.

As Mr. Kahn notes in his letter of introduction (ATTACHMENT 1), the plan addresses only the rear portion of the Masonic Temple building, as the Masons no longer own the portion facing Congress Street. As Board members are aware, the terra-cotta on the front portion of the building is also in poor condition—see following section of this report. Ideally, any program of repairs would address the entire building at the same time.

Mr. Kahn also notes that the organization is not in a position to move forward with the recommended repairs at this time; fundraising will be required in order to pursue to work.

No drawings or specifications have been provided in advance of the workshop. Mr. Whitaker plans to make a Powerpoint presentation at Wednesday's meeting. With respect to the question of the use of a substitute material for the original terra-cotta, staff has enclosed two NPS technical briefs on the topic: *Preservation Brief #7: The Preservation of Historic Glazed Architectural Terra-Cotta* and *Preservation Brief # 16: The Use of Substitute Materials on Historic Building Exteriors*. (See ATTACHMENTS 3 and 4.)

Background

In 2010, the Board approved a masonry stabilization program for the terra cotta on the front portion of the building. Then-owner Kevin Mattson retained the firm of Sutherland Conservation & Consulting to develop plans and specifications for the stabilization measures. The Board approved the temporary removal and storage of existing terra-cotta elements (if necessary) and the installation of stainless steel mesh screening. The Board approved the work as a temporary measure only, with the condition that the affected masonry be restored, rehabilitated and/or replicated no later than December 30, 2013--see ATTACHMENT 2 for Board decision letter. The work was not undertaken by the deadline and the building was sold in 2014. The current owner, Sheldon Ashby, was informed of the outstanding condition prior to his purchase of the front portion of the building.

Applicable Review Standards:

The applicable ordinance review standard is as follows:

- (6) *Deteriorated historic features shall be repaired rather than replaced wherever feasible. Where the severity of deterioration requires replacement of a distinctive feature, the new feature should match the feature being replaced in composition, design, texture and other visual qualities and, where possible, materials. Repair or replacement of missing historic features should be based on accurate duplications of features, substantiated by documentary, physical or pictorial evidence rather than on conjectural designs or the availability of different architectural elements from other structures or objects.*

Attachments

1. Letter from Robert Kahn, Chairman, Masonic Trustees of Portland
2. March 2015 photos
3. 2010 HP Board approval letter
4. Preservation Brief # 7
5. Preservation Brief #16



To: Historic Preservation Board

Subject: Masonic Temple, 415 Congress St.

Date: 27 January 2016

The Masonic Temple is one of Portland's, if not Maine's, most significant buildings and is located adjacent to Portland City Hall. It is on the National Register of Historic Places and was opened in 1911. The building was once owned in total by a non-profit, The Masonic Trustees of Portland (MTP), but currently is in dual ownership with the front section owned by a for-profit entity. About six years ago the MTP had their building section listed on the real estate market, but was removed due to the recession. Shortly afterward, new members of the MTP began a campaign to see if the decision to sell could be reversed. We have been working with the City and Greater Portland Landmarks toward this end. Currently, the MTP is in process of developing a business plan and strategy for fundraising. The business plan states our intention to correct the problems with the exterior masonry (especially the terracotta) which now presents a public safety hazard. This is a formidable financial endeavor with an uncertain prospect.

Last winter a piece of the terra cotta cornice fell through netting that was installed about two years earlier. Building Envelope Specialists was called in to inspect our section of the building exterior and develop restoration documents. During their inspection the area of damaged netting was repaired and no other obvious safety issues needing immediate attention were observed. BES notified city agencies of the potential falling masonry hazard. Tonight BES will review with the Board potential materials for a future restoration project, once funding has been raised.

It is important to know that as a non-profit the MTP cannot use historic preservation tax credits. We have been advised that it may be possible to transfer our credits to the front section owner, if they would partner with the MTP on a restoration project. The MTP do not have the resources to begin this project without raising funds from the general public, grants and other sources.

Robert Kahn

Chairman, Masonic Trustees of Portland

MARCH 2015 PHOTOS









CITY OF PORTLAND, MAINE

HISTORIC PRESERVATION BOARD

Rick Romano, Chair
Martha Burke, Vice-Chair
Otis Baron
Scott Benson
Michael Hammen
Ted Oldham
John Turk

January 7, 2010

Kevin Mattson
415 Congress, LP
134 Main Street
Suite 2A
Winthrop, Maine 04364

Re: Masonry Stabilization, including temporary removal of architectural detailing;
415 Congress Street (front half)

Dear Mr. Mattson:

On January 6, 2010, the City of Portland's Historic Preservation Board voted unanimously to approve your application for a Certificate of Appropriateness for a comprehensive program of terra cotta stabilization work at 415 Congress Street which may include the temporary removal of architectural detailing. Approval is based on specifications and plans submitted on your behalf by Sutherland Conservation & Consulting and is subject to the following conditions:

- * Any architectural details that have been or will be removed as part of the stabilization program shall be fully documented and stored until such time they can be reinstalled or replicated as appropriate.
- * The proposed stabilization measures are approved with the expectation that they are strictly temporary in nature and that the affected masonry will be restored, rehabilitated and/or replicated no later than December 30, 2013.
- * The applicant and/or his agent will provide an update on the stabilization efforts no later than six months following the Board's decision. The update shall include a current conditions report and an outline and time frame for restoration of the masonry.

While not a condition of approval, the Historic Preservation Board strongly recommends that the owner of the rear portion of the building participate in this stabilization effort. At a minimum, the applicant and abutting property owner should maintain regular communication as to the building's condition and their respective intent/plans for stabilization and restoration of the masonry.

All improvements shall be carried out as shown on the plans and specifications submitted for the 1/06/2010 public hearing and/or as described above. Changes to the approved plans and specifications and any additional work that may be undertaken must be reviewed and approved by this office prior to

construction, alteration, or demolition. If, during the course of completing the approved work, conditions are encountered which prevent completing the approved work, or which require additional or alternative work, you must apply for and receive a Certificate of Appropriateness or Non-Applicability PRIOR to undertaking additional or alternative work.

This Certificate is granted upon condition that the work authorized herein is commenced within twelve (12) months after the date of issuance. If the work authorized by this Certificate is not commenced within twelve (12) months after the date of issuance or if such work is suspended in significant part for a period of one year after the time the work is commenced, such Certificate shall expire and be of no further effect; provided that, for cause, one or more extensions of time for periods not exceeding ninety (90) days each may be allowed in writing by the Department.

Note: Your project may also require a building permit. Please contact Building Inspections (874-8703) to make this determination.

Sincerely,

Deborah Andrews
Historic Preservation Program Manager

cc: Amy Cole-Ives, Sutherland Conservation & Consulting

7 PRESERVATION BRIEFS

The Preservation of Historic Glazed Architectural Terra-Cotta

de Teel Patterson Tiller

U.S. Department of the Interior National Park Service
Preservation Assistance Division Technical Preservation Services



Glazed architectural terra-cotta was significant in the development of important architectural idioms in this country—specifically, the “Chicago School,” the High Rise and the Historic or Beaux Arts styles. In fact, glazed architectural terra-cotta is one of the most prevalent masonry building materials found in the urban environment today (Fig. 1). Popular between the late 19th century and the 1930s, glazed architectural terra-cotta offered a modular, varied and relatively inexpensive approach to wall and floor construction. It was particularly adaptable to vigorous and rich ornamental detailing. However, with changing vogues in materials and architectural styles and rising production costs, glazed architectural terra-cotta fell into disfavor and disuse by the mid-20th century.

Today, information on the maintenance, rehabilitation and replacement of glazed architectural terra-cotta is limited, as are sources of new glazed architectural terra-cotta. This report, then, will discuss some of the major deterioration problems that commonly occur in historic glazed architectural terra-cotta, methods of determining the extent of that deterioration and recommendations for the maintenance, repair and replacement of the deteriorated historic material.

What is Terra-Cotta?

Generically, the broadest definition of terra-cotta refers to a high grade of weathered or aged clay which, when mixed with sand or with pulverized fired clay, can be molded and fired at high temperatures to a hardness and compactness not obtainable with brick. Simply put, terra-cotta is an enriched molded clay brick or block. The word *terra-cotta* is derived from the Latin word *terra-cocta*—literally, “cooked earth.” Terra-cotta clays vary widely in color according to geography and types, ranging from red and brown to white.

Terra-cotta was usually hollow cast in blocks which were open to the back, like boxes, with internal compartment-like stiffeners called webbing (Fig. 2). Webbing substantially strengthened the load-bearing capacity of the hollow terra-cotta block without greatly increasing its weight.

Terra-cotta blocks were often finished with a glaze; that is, a slip glaze (clay wash) or an aqueous solution of metal salts was brushed or sprayed on the air-dried block before firing. Glazing changed the color, imitated different finishes, and produced a relatively impervious surface on the weather face of the final product. The glaze on the terra-cotta unit possessed excellent weathering properties when properly maintained. It had rich color and provided a hard surface that was not easily chipped off. Glazing offered unlimited and fade-resistant colors to the designer. Even today, few building

materials can match the glazes on terra-cotta for the range and, most importantly, the durability of colors.

Types of Terra-Cotta

Historically there are four types or categories of terra-cotta which have enjoyed wide use in the history of the American building arts: 1) brownstone, 2) fireproof construction, 3) ceramic veneer, and 4) glazed architectural.

Brownstone terra-cotta is the variety of this masonry material used earliest in American buildings (mid- to late 19th century). The brownstone type is a dark red or brown block either glazed (usually a slip glaze) or unglazed. It was hollow cast and was generally used in conjunction with other masonry in imitation of sandstone, brick or real brownstone. It is often found in the architecture of Richard Upjohn, James Renwick, H. H. Richardson and is associated with the Gothic and Romanesque Revival movements through such ornamental detailing as moldings, finials and capitals.

Fireproof construction terra-cotta was extensively developed as a direct result of the growth of the High Rise building in America. Inexpensive, lightweight and fireproof, these rough-finished hollow building blocks were ideally suited to span the I-beam members in floor, wall and ceiling construction (Fig. 3). Certain varieties are still in production today, although fireproof construction terra-cotta is no longer widely employed in the building industry.

Ceramic veneer was developed during the 1930s and is still used extensively in building construction today. Unlike traditional architectural terra-cotta, ceramic veneer is not hollow cast, but is as its name implies: a veneer of glazed ceramic tile which is ribbed on the back in much the same fashion as bathroom tile. Ceramic veneer is frequently attached to a grid of metal ties which has been anchored to the building.

Glazed architectural terra-cotta was the most complex development of terra-cotta as a masonry building material in this country. The hollow units were hand cast in molds or carved in clay and heavily glazed (often in imitation of stone) and fired. Sometimes called “architectural ceramics,” glazed architectural terra-cotta was developed and refined throughout the first third of the 20th century and has been closely associated with the architecture of Cass Gilbert, Louis Sullivan, and Daniel H. Burnham, among others. Significant examples in this country include the Woolworth Building (1913) in New York City and the Wrigley Building (1921) in Chicago.

Late 19th and early 20th century advertising promoted the durable, impervious and adaptable nature of glazed archi-

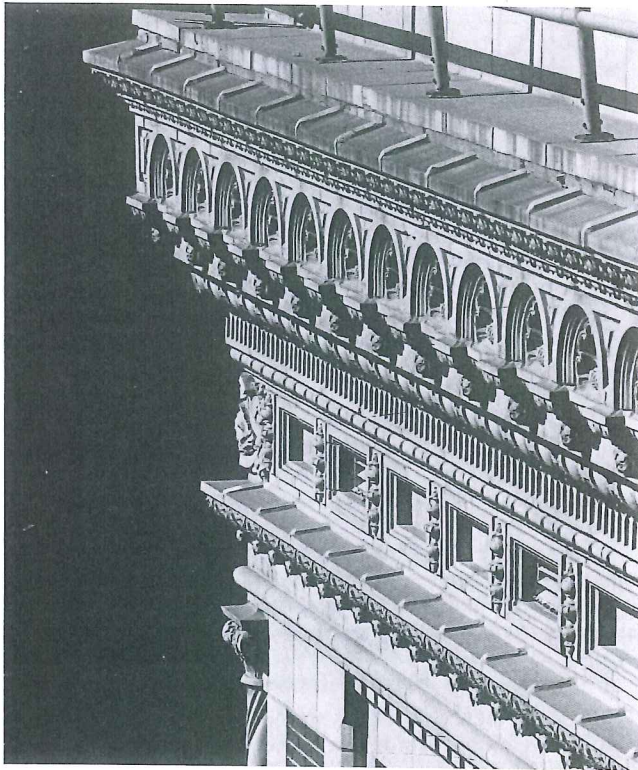


Figure 1. Terra-Cotta Detailing. Adaptable to every nuance of color, texture, and modeling, glazed architectural terra-cotta was ideally suited to satisfy the tastes of an eclectic age. Its popularity was, however, short lived; it endured only 30 or 40 years after its introduction as a building material late in the 19th century. (Larry Payne, Houston, Texas)

tectural terra-cotta. It provided for crisp, vigorous modeling of architectural details as the molds were cast directly from clay prototypes without loss of refinement. Glazed architectural terra-cotta could accommodate subtle nuances of modeling, texture and color. Compared to stone, it was easier to handle, quickly set and more affordable to use. Thought to be fireproof and waterproof, it was readily adaptable to structures of almost any height. The cost of molding the clay, glazing and firing the blocks, when compared to carving

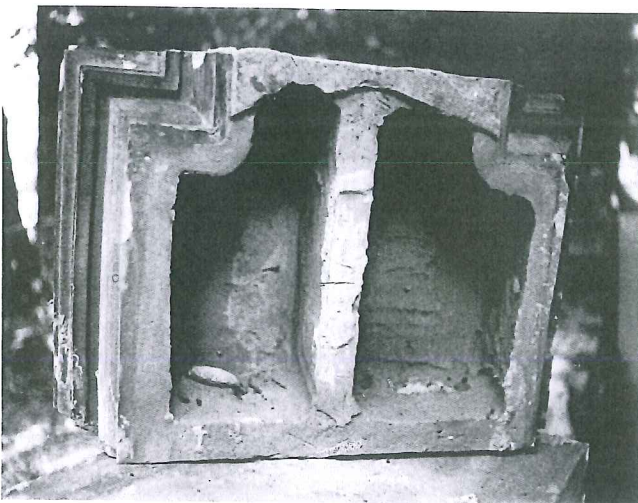


Figure 2. Webbing. Webbing, or the hollow internal compartment construction of glazed architectural terra-cotta blocks, made them inexpensive to produce, easy to handle and light in construction; these were significant factors in the popularity of the material in the first decades of this century.

stone, represented a considerable savings, especially when casts were used in a modular fashion—that is, repeated over and over again. Maintenance of the fired and glazed surface was easy; it never needed paint and periodic washings restored its original appearance.

With the passage of time, many of the phenomenal claims of the early proponents of glazed architectural terra-cotta have proven true. There are many examples throughout this country that attest to the durability and permanence of this material. Yet present-day deterioration of other significant glazed architectural terra-cotta resources ultimately belie those claims. Why? Historically, the lack of foresight or understanding about the nature and limitations of the material has, in many instances, allowed serious deterioration problems to occur that are only now becoming apparent.

Characteristics of Glazed Architectural Terra-Cotta as a Building Material

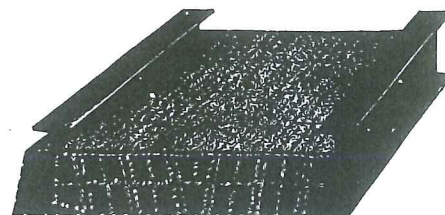
Glazed architectural terra-cotta has many material properties similar to brick or stone. It also has many material properties radically different from those traditional masonry materials. It is those differences which must be considered for a better understanding of some of the material characteristics of glazed architectural terra-cotta when it is used as a building material.

Difficult to identify: Glazed architectural terra-cotta probably comprises one of the largest if not the largest constituent material in some of our urban environments today. However, the infinite varieties of glazing have hidden this fact from the casual observer. One of the attractive features of glazed architectural terra-cotta in its time was that it could be finished (glazed) in exact imitation of stone. In fact, many building owners and architects alike are often surprised to discover that what they presumed to be a granite or limestone building is glazed architectural terra-cotta instead.

Two separate systems: Historically, glazed architectural terra-cotta has been used in association with two specific and very different types of building systems: as part of a traditional *load-bearing* masonry wall in buildings of modest height, and as a *cladding material* in High Rise construction. As cladding, glazed architectural terra-cotta often utilized an extensive metal anchoring system to attach it or to "hang it" onto a wall framing system or superstructure (Fig. 4). In the first instance the anchoring was limited; in the second, the anchoring was often extensive and complex. Likewise, in the first instance, deterioration has generally been limited. However, where glazed architectural terra-cotta was used as clad-



Section Through Typical Arch



Perspective of Typical Arch

Figure 3. Fireproof construction terra-cotta. Perspective and section through fireproof construction terra-cotta and I-beam detailing in industrial floor construction. (Detail, "Sweets" Industrial Catalogue of Building Construction, 1906)

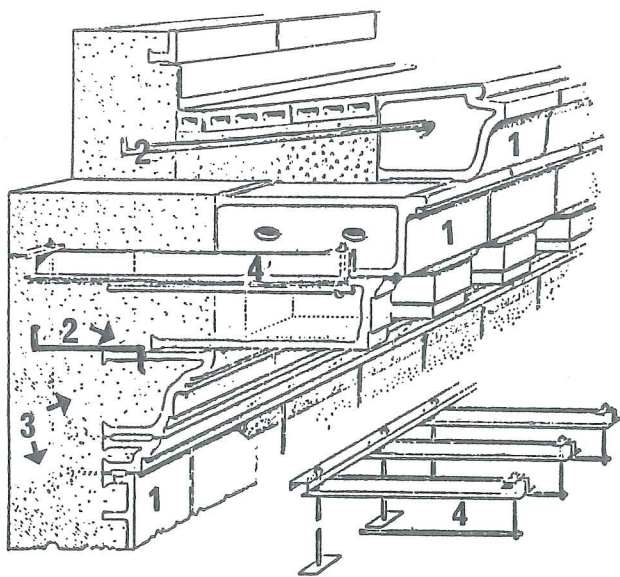


Figure 4. Typical Construction Detail of Glazed Architectural Terra-Cotta Ornament. Construction detailing was often complex. The terra-cotta units (1) which were laid in mortar were fitted with holes or slots to receive the metal anchors (2) (often called "Z" straps or "light iron") which were often fitted directly to the building frame. Masonry backfill (3) (either brick or poured cement) was laid between the terra-cotta units, with the building frame encasing the metal anchor. Overhanging or protruding elements were further secured by metal dowels or outriggers (4). (Detail, Architectural Terra Cotta, Charles E. White, Jr., 1920)

ding, particularly in high rise construction, present-day deterioration and failure are often severe.

Complexity of deterioration: Deterioration is, by nature of the design, infinitely complex—particularly when glazed architectural terra-cotta has been used as a cladding material. Deterioration creates a "domino"-like breakdown of the whole system: glazed units, mortar, metal anchors, and masonry backfill. In no other masonry system is material failure potentially so complicated.

Poor original design: The root of deterioration in glazed architectural terra-cotta systems often lies in a misapplication of the material. Historically, glazed architectural terra-cotta was viewed as a highly waterproof system needing neither flashing, weep holes nor drips. This supposition, however, has proved to be untrue, as serious water-related failure was evident early in the life of many glazed architectural terra-cotta clad or detailed buildings.

Common Deterioration Problems

No one case of deterioration in glazed architectural terra-cotta is ever identical to another owing to the infinite number of variations with the material: original manufacture, original installation inconsistencies, number of component parts, ongoing repairs or the various types and sources of deterioration. However, certain general statements may be made on the nature of glazed architectural terra-cotta deterioration.

Material failure can most commonly be attributed to water-related problems. However, less frequent though no less severe causes may include: faulty original craftsmanship, which is often cited but hard to determine; stress-related deterioration; damage caused by later alterations and additions; or inappropriate repairs.

Water-related deterioration: As with most building conservation and rehabilitation problems, water is a principal source of deterioration in glazed architectural terra-cotta. Terra-cotta systems are highly susceptible to such complex water-

related deterioration problems as glaze crazing, glaze spalling and material loss, missing masonry units and deteriorated metal anchoring, among others.

Crazing, or the formation of small random cracks in the glaze, is a common form of water-related deterioration in glazed architectural terra-cotta. When the new terra-cotta unit first comes from the kiln after firing, it has shrunk (dried) to its smallest possible size. With the passage of time, however, it expands as it absorbs moisture from the air, a process which may continue for many years. The glaze then goes into tension because it has a lesser capacity for expansion than the porous tile body; it no longer "fits" the expanding unit onto which it was originally fired. If the strength of the glaze is exceeded, it will crack (craze) (Fig. 5). Crazing is a process not unlike the random hairline cracking on the surface of an old oil painting. Both may occur as a normal process in the aging of the material. Unless the cracks visibly extend into the porous tile body beneath the glaze, crazing should not be regarded as highly serious material failure. It does, however, tend to increase the water absorption capability of the glazed architectural terra-cotta unit.

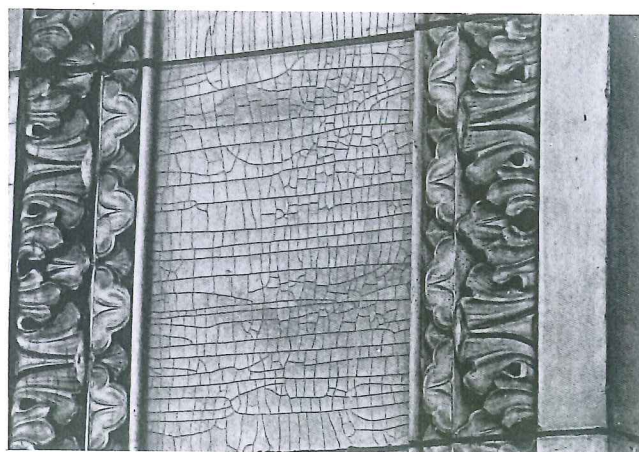


Figure 5. Crazing. Water and air-borne moisture entering the glazed architectural terra-cotta causes expansion of the porous clay body which increases its volume. This, in turn, is sufficient to upset the "fit" of the glaze and to make it shatter, commonly called crazing.

Spalling, the partial loss of the masonry material itself, is, like crazing, caused by water and is usually a result not only of air-borne water but more commonly of water trapped within the masonry system itself. Trapped water is often caused by poor water detailing in the original design, insufficient maintenance, rising damp or a leaking roof. In most cases, trapped water tends to migrate outward through masonry walls where it eventually evaporates. In glazed architectural terra-cotta, the water is impeded in its journey by the relatively impervious glaze on the surface of the unit which acts as a water barrier. The water is stopped at the glaze until it builds up sufficient pressure (particularly in the presence of widely fluctuating temperatures) to pop off sections of the glaze (glaze spalling) or to cause the wholesale destruction of portions of the glazed architectural terra-cotta unit itself (material spalling).

Glaze spalling may appear as small coin-size blisters where the glaze has ruptured and exposed the porous tile body beneath (Fig. 6). This may occur as several spots on the surface or, in more advanced cases of deterioration, it may result in the wholesale disappearance of the glaze. Spalling of the glaze may also be symptomatic of deterioration (rusting) of the internal metal anchoring system which holds the terra-cotta units together and to the larger building structure. The increase in volume of the metal created by rusting creates increased internal pressures in the terra-cotta unit which, in

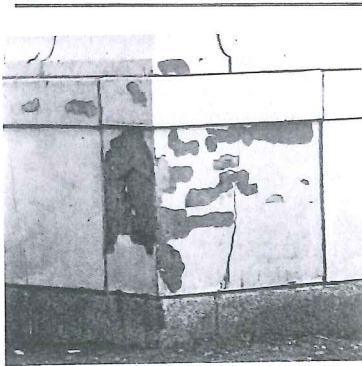


Figure 6. Glaze Spalling. Blistering of the glaze, like crazing, is the result of the increase in water in the porous clay body and the subsequent destruction of the glaze as a result of water migration and pressure. Glaze spalling may also be caused by deterioration of metal anchors behind the terra-cotta unit.

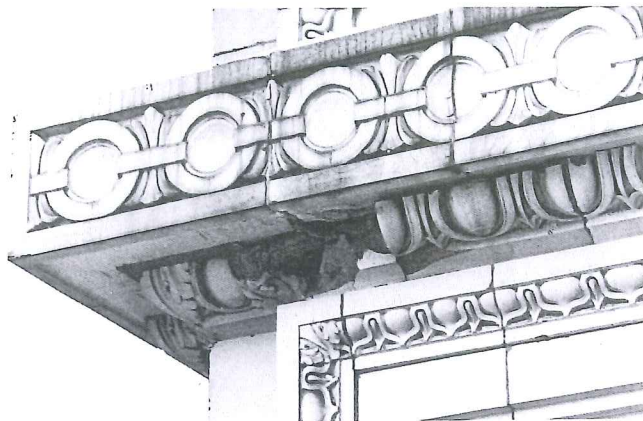


Figure 7. Material Spalling. Excessive expansion of the porous tile body caused by water and freezing temperatures produces major material spalling, a situation often difficult to repair.

turn, may spall the glaze, or in more extreme cases, cause material spalling.

Material spalling is a particularly severe situation. Not only is the visual integrity of the detailing impaired, but a large area of the porous underbody, webbing and metal anchoring is exposed to the destructive effects of further water entry and deterioration (Fig. 7). Both glaze and material spalling must be dealt with as soon as possible.



Figure 8. Deterioration of Exposed Detailing. Exposed or freestanding terra-cotta detailing (parapets, urns, balusters, etc.) have traditionally been subject to the most severe vicissitudes of deterioration as a result of freezing temperatures and water. (Colorado State Historic Preservation Office)

Missing units is a serious situation which particularly plagues architectural terra-cotta systems. Unlike brick or stone, damaged glazed architectural terra-cotta is exceedingly difficult to replace. New production is extremely limited. Missing units create gaps which increase the structural load on the remaining pieces and also permit water to enter the system. Exposed or freestanding glazed architectural terra-cotta detailing (balusters, urns, parapet walls, etc.) are particularly susceptible to extensive loss of material (Fig. 8). These elements face the most severe vicissitudes of water- and temperature-related deterioration in direct proportion to the extent of their exposure. The replacement of missing units should be a high priority work item in the rehabilitation of glazed architectural terra-cotta.

Deterioration of metal anchoring: Deteriorated anchoring systems are perhaps the most difficult form of glazed architectural terra-cotta deterioration to locate or diagnose. Often, the damage must be severe and irreparable before it is noticed on even the most intense "prima facie" examination. Water which enters the glazed architectural terra-cotta system can rust the anchoring system and substantially weaken or completely disintegrate those elements. Where water has been permitted to enter the system, some deterioration has more than likely taken place. Partial deterioration results in staining and material spalling. Total deterioration and the lack of any anchoring system may result in the loosening of the units themselves, threatening the architectural or structural integrity of the building. Recently, falling glazed architectural terra-cotta units have become a serious safety concern to many building owners and municipal governments (Fig. 9). Early detection of failing anchoring systems is exceedingly difficult.

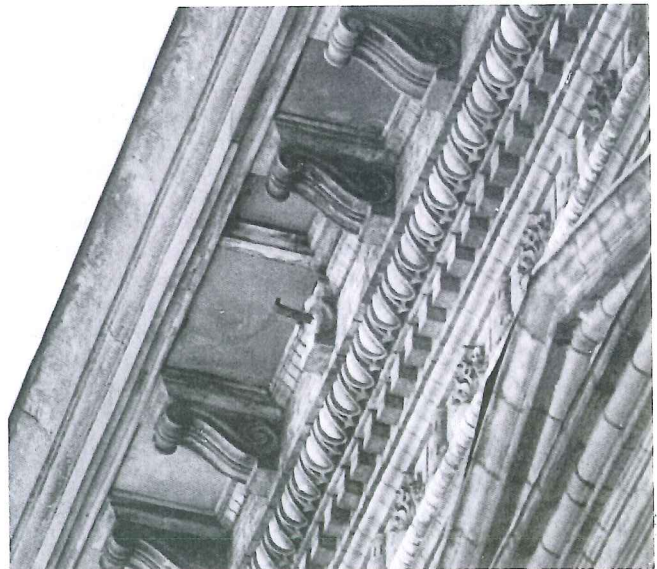


Figure 9. Deterioration of Metal Anchoring and Masonry Backfill. Trapped water may deteriorate masonry backfill or rust metal anchoring causing overhanging architectural elements to loosen and drop from the building. This is particularly true when unmaintained roof drainage systems fail and soak the masonry system. Note the exposed metal anchoring.

Deterioration of mortar and other adjacent materials: Deteriorated mortar has always been a key to the survival or failure of any masonry system. This is particularly true with glazed architectural terra-cotta. In recognition of the fragile nature of the system, the need for insuring a relatively dry internal system is important. Sound mortar is the "first line" of defense in terra-cotta systems. It is a maintenance "must." Deteriorated mortar joints are a singularly culpable source of water and, therefore, of deterioration. Mortar deterioration may result from improper original craftsmanship or air-

and water-borne pollution. More often, however, lack of ongoing maintenance is mainly responsible. Deteriorated mortar should not be overlooked as a major source of glazed architectural terra-cotta failure.

The deterioration of materials adjoining the glazed architectural terra-cotta (flashing, capping, roofing, caulking around windows and doors) bears significant responsibility in its deterioration. When these adjoining materials fail, largely as a result of lack of maintenance, water-related deterioration results. For instance, it is not uncommon to find wholesale terra-cotta spalling in close proximity to a window or doorway where the caulking has deteriorated.

Stress-related deterioration: Stress-related deterioration of glazed architectural terra-cotta frequently occurs in high rise buildings. The evolution of stress relieving details (flexible joints, shelf angles, etc.) occurred late in the development of American building construction. Consequently, most early continuously clad High Rise buildings (c.1900–1920s) had little or no provisions for normal material and building movement in their original design. The development of large stress-related cracks or wholesale material deterioration is often caused by unaccommodated building-frame shortening under load, thermal expansion and contraction of the façade and moisture expansion of the glazed architectural terra-cotta units themselves (Fig. 10). Cracks running through many units or stories or large areas of material deterioration often indicate stress-related problems. This sort of deterioration, in turn, permits significant water entry into the terra-cotta system.

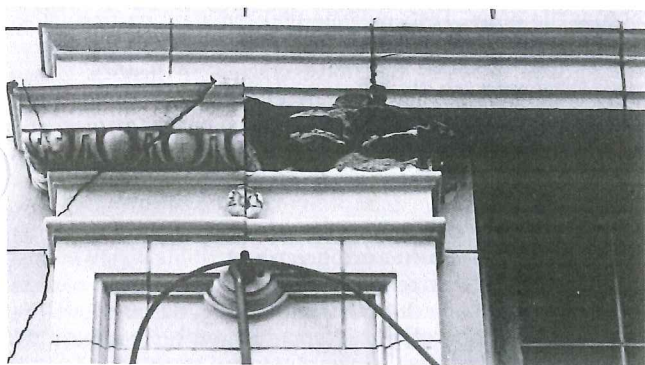


Figure 10. Structural Cracking. Structural cracking, whether static (nonmoving) or dynamic (moving or active), should be caulked to prevent water entry into the glazed architectural terra-cotta system. Note the exposed webbing.

Inappropriate repairs: Inappropriate repairs result because using new terra-cotta for replacement of deteriorated or missing glazed architectural terra-cotta has generally been impractical. Repairs, therefore, have traditionally been made in brick or cementitious build ups of numerous materials such as stucco or fiberglass. Some materials are appropriate temporary or permanent replacements, while others are not. (These issues are discussed at a later point in this report.) However, improper anchoring or bonding of the repair work or visual incompatibility of repairs have themselves, with the passage of time, become rehabilitation problems: replacement brick that is pulling free, cement stucco that is cracking and spalling, or a cement or bituminous repairs that are not visually compatible with the original material.

Alteration damage: Alteration damage has occurred as a result of the installation of such building additions as signs, screens, marquees or bird proofing. These installations often necessitated the boring of holes or cutting of the glazed architectural terra-cotta to anchor these additions to the building frame beneath. As the anchoring or caulking deteriorated, or as these elements were removed in subsequent renovation

work, these holes have become significant sources of water-related damage to the glazed architectural terra-cotta system.

Deterioration Inspection and Analysis

Certain deterioration in glazed architectural terra-cotta may be on the building surface and patently obvious to the casual observer—crazing, spalling, deterioration of mortar joints. Other deterioration may be internal or within the masonry system and hard to determine—deterioration of anchoring, deterioration behind the glaze, crumbling of internal webbing. *Prima facie*, “first inspection,” examination may indicate surface deterioration problems while not revealing others. This demonstrates one of the most frustrating aspects of dealing with deteriorated glazed architectural terra-cotta: that there are two systems or levels of deterioration, one which is visible and the other which is not.

Material failure in glazed architectural terra-cotta is necessarily complex. For this reason, it is generally advised that the examination and repair of this material should be the responsibility of an experienced professional. Few restorationists have experience in the inspection, repair and replacement of glazed architectural terra-cotta. This is certainly never the province of the amateur or the most well-intentioned but inexperienced architect or engineer. There are some methods of internal and external inspection and analysis which are relatively simple to the trained professional. Other methods, however, are expensive, time consuming, and only in the experimental stage at this writing. These all generally preclude the use of anyone but an experienced professional.

Preliminary cleaning: Before a terra-cotta building is analyzed for deterioration, it is often advisable, but not always necessary, to clean the surface of the material. This is particularly true when the material has been exposed to the vicissitudes of heavy urban pollution. While most building materials are cleaned for “cosmetic” purposes, the cleaning of glazed architectural terra-cotta for the purpose of inspection and analysis may be advised. Dirt on glazed architectural terra-cotta often hides a multitude of problems. It is only with cleaning that these problems become obvious. Recommended cleaning procedures are covered later in the report.

Methods of inspection:

Prima facie analysis is the unit by unit, first-hand, external inspection of the glazed architectural terra-cotta building surface. Special note of all visible surface deterioration (staining, crazing, spalling, cracking, etc.) should be made on elevation drawings. Binoculars are often used where cost, height, or inaccessibility prevent easy inspection. However, much deterioration may go unnoticed unless scaffolding or window-washing apparatus is used in a true “hands on” inspection of each unit of the façade.

Tapping, a somewhat inexact method of detection of internal deterioration is, nevertheless, the most reliable inspection procedure presently available. Quite simply, tapping is the striking of each unit with a wooden mallet. When struck, an undamaged glazed architectural terra-cotta unit gives a pronounced ring, indicating its sound internal condition. Conversely, deteriorated units (i.e., units which are failing internally) produce a flat, hollow sound. Metal hammers are never to be used, as they may damage the glazed surface of the unit. Extensive experience is the best teacher with this inspection method.

Infrared scanning is only in the experimental stage at this time, but its use seems to hold great promise in locating deteriorated internal material in terra-cotta. All materials emit heat—heat which can be measured in terms of infrared light. While infrared light cannot be seen by the human eye, it can be measured by infrared scanning. Infrared photography, a kind of infrared scanning, has been of particular use in detecting sources of heat loss in buildings in recent years.

Broken or loose internal terra-cotta pieces have a less firm attachment to the surrounding firm or attached pieces and, therefore, have different thermal properties, i.e., temperatures. These temperature differences become evident on the infrared scan and may serve as a fair indication of internal material deterioration in terra-cotta.

Sonic testing has been successfully used for some time to detect internal cracking of concrete members. In the hands of an experienced operator, there are conditions where it can detect internal failure in glazed architectural terra-cotta. Sonic testing registers the internal configuration of materials by penetrating the material with sound waves and reading the patterns that "bounce back" from the originating source of the sound. Readings at variance with those from undeteriorated material might indicate collapsed webbing or pools of water in the interior of the terra-cotta unit.

Metal detection is a nondestructive and generally useful way of locating the position of internal metal anchoring. Metal detectors indicate the presence of metals by electro-magnetic impulses. These impulses are transmitted onto an oscilloscope where they may be seen or they are converted to sound patterns which may be heard by the operator. Original drawings are eminently useful in predicting where internal metal anchoring should be. Metal detectors can confirm that indeed they are still there. Without original drawings, the contractor or architect can still locate the metal anchoring, however. No reading where an anchor would be expected could indicate a missing anchor or one that has seriously deteriorated. The information produced by metal detection is, at best, only rough. However, it is the most viable way of locating the internal metal anchoring without physically removing, thus irreparably damaging, the glazed architectural terra-cotta units themselves.

Laboratory analysis may be carried out on samples of removed original material to find glaze absorption, permeability or glaze adhesion, or to evaluate material for porosity. These tests are useful in determining the present material characteristics of the historic glazed architectural terra-cotta and how they may be expected to perform in the future.

Maintenance, Repair and Replacement

Deterioration in glazed architectural terra-cotta is, by definition, insidious in that the outward signs of decay do not always indicate the more serious problems within. It is, therefore, of paramount importance that the repair and replacement of deteriorated glazed architectural terra-cotta not be undertaken unless the causes of that deterioration have been determined and repaired. As mentioned before, one of the primary agents of deterioration in glazed architectural terra-cotta is water. Therefore, water-related damage can be repaired only when the sources of that water have been eliminated. Repointing, caulking and replacement of missing masonry pieces are also of primary concern. Where detailing to conduct water in the original design has been insufficient, the installation of new flashing or weep holes might be considered.

Where stress-related or structural problems have caused the deterioration of glazed architectural terra-cotta, the services of a structural engineer should be sought to mitigate these problems. This may include the installation of relieving joints, shelf angles or flexible joints. In any case, stress-related and structural deterioration, like water-related deterioration, must be stopped before effective consolidation or replacement efforts may begin.

Cleaning: The successful cleaning of glazed architectural terra-cotta removes excessive soil from the glazed surface without damaging the masonry unit itself. Of the many cleaning materials available, the most widely recommended are water, detergent, and a natural or nylon bristle brush. More

stubborn pollution or fire-related dirt or bird droppings can be cleaned with steam or weak solutions of muriatic or oxalic acid.

A note of caution: Any acids, when used in strong enough solutions, may themselves deteriorate mortar and "liberate" salts within the masonry system, producing a situation called efflorescence. For further information on this situation, refer to: "Preservation Briefs 1: The Cleaning and Waterproof Coating of Masonry Buildings," Heritage Conservation and Recreation Service, Department of the Interior, Washington, D.C.

Commercial cleaning solutions may be appropriate but probably are not necessary when water and detergent will suffice. There are, however, certain cleaning techniques for glazed architectural terra-cotta which are definitely *not* recommended and which would damage the surface of the material. These include: all abrasive cleaning measures (especially sandblasting), the use of strong acids (particularly fluoride-based acids), high-pressure water cleaning and the use of metal bristle brushes. All of these techniques will irreparably harm the glaze in one fashion or another and subsequently expose the porous tile body to the damaging effects of water.

It is important to remember that glazed architectural terra-cotta was designed to be cleaned cheaply and easily. This, in fact, was one of its major assets and was much advertised in the selling of the material early in this century.

Waterproofing: The covering of crazed glazing (see Fig. 5) with waterproof coatings is the subject of an on-going controversy today. The question involves whether or not the micro-cracks conduct substantial amounts of water into the porous tile body. Tests indicate that the glaze on new unexposed terra-cotta is itself not completely waterproof. Some testing also indicates that most crazing on historic glazed terra-cotta does not substantially increase the flow of moisture into the porous tile body when compared to new material. Excessive and serious crazing is, however, an exception and the coating of those areas on a limited scale may be wholly appropriate.

In an effort to stem water-related deterioration, architects and building owners often erroneously attribute water-related damage to glaze crazing when the source of the deterioration is, in fact, elsewhere: deteriorated caulking, flashing, etc. The waterproof coating of glazed architectural terra-cotta walls may cause problems on its own. Outward migration of water vapor normally occurs through the mortar joints in these systems. The inadvertent sealing of these joints in the wholesale coating of the wall may exacerbate an already serious situation. Spalling of the glaze, mortar, or porous body will, more than likely, result.

Repointing: Repointing of mortar which is severely deteriorated or improperly or infrequently maintained is one of the most useful preservation activities that can be performed on historic glazed architectural terra-cotta buildings. On-going and cyclical repointing guarantees the long life of this material. Repointing should always be carried out with a mortar which has a compressive strength (measured in p.s.i.) *lower* than the adjacent masonry unit. Hard (Portland cement) or coarsely screened mortars may cause point loading and/or prevent the outward migration of the water through the mortar joints, both of which ultimately damage the terra-cotta unit. Repointing with waterproof caulking compounds or similar waterproof materials should never be undertaken because, like waterproof coatings, they impede the normal outward migration of moisture through the masonry joints. Moisture then may build sufficient pressure behind the waterproof caulk and the glaze on the terra-cotta to cause damage to the unit itself.

Repair of glaze spalling: Glaze spalling is also a highly culpable source of water-related deterioration in glazed archi-

tectural terra-cotta. It is important to coat or seal these blistered areas (see Fig. 6) and to prevent further entry of water into the system by this route. All loose or friable material should be removed. This may be done easily by hand; chisels or similar small tools are most effective. The exposed material is then painted over. At this time, no permanently effective reglazing materials are available. However, there are several acrylic-based proprietary products and masonry paints which can be used effectively to protect these exposed areas, thus preventing the entry of water. These materials are effective for 5 to 7 years and can be reapplied. They also can be tinted to approximate closely the original glaze color.

Repair of minor material spalling: Minor material spalling, where visual or cosmetic considerations are negligible, should be treated in a manner similar to glaze spalling damage. That is, areas where small portions of the body and glaze have spalled and which are far removed from close scrutiny (i.e., detailing on entablatures, upper story windows, etc.) are best remedied by painting with a masonry paint or an acrylic-based proprietary product. Units on which material spalling is easily observed (on the street level, door surrounds, etc.), and on which visual integrity is a consideration, may be better replaced. Patching is not appropriate. Stucco-like or cementitious build-ups are difficult to form satisfactorily, safely and compatibly in situ to replace missing pieces of glazed architectural terra-cotta. Cementitious repairs never satisfactorily bond to the original material. The differential expansion coefficients of the two materials (the repair and the original) preclude a safe, effective and long-term attachment.

Repair of major spalling: Glazed architectural terra-cotta units, which have spalled severely thereby losing much of their material and structural integrity in the wall, should be replaced. Partial in situ repair will not be long lasting and may, in fact, cause complicated restoration problems at a later date. Appropriate methods of replacement are discussed at a later point in this report.

Temporary stabilization: Stabilization measures are necessary when deterioration is so severe as to create a situation where pieces of glazed architectural terra-cotta may fall from the building. This is a particular concern with greatly exposed detailing: cornices, balconies, balustrades, urns, columns, buttresses, etc. Restoration work on these pieces is expensive and often must be carried on over a period of time. Unstable terra-cotta pieces are often removed or destroyed in lieu of such measures. This is particularly true in areas of heavy traffic-related vibrations or in earthquake zones. There are, however, less severe measures which may be employed on a temporary basis. Substantial success has been achieved in securing unstable glazed architectural terra-cotta pieces with metal strapping and nylon net (Fig. 11). While these measures should not be seen as permanent preservation solutions, they do offer temporary alternatives to the wanton destruction of significant glazed architectural terra-cotta detailing in the name of public safety and local code compliance.

Repair of addition and structural damage: Holes, sign anchors, slots for channel steel, or structural cracking in the surface of glazed architectural terra-cotta cladding should be permanently sealed with a material that will expand with the normal dynamics of the surrounding material, yet effectively keep water out of the system. Any one of a number of commercially available waterproof caulking compounds would be appropriate for this work. Holes and static (nonmoving) cracks may be caulked with butyl sealants or acrylic latex caulks. For dynamic (moving or active) cracks, the polysulfide caulks are most often used, although others may be safely employed. It is, however, important to remember that these waterproof caulking compounds are not viable repointing materials and should not be used as such.

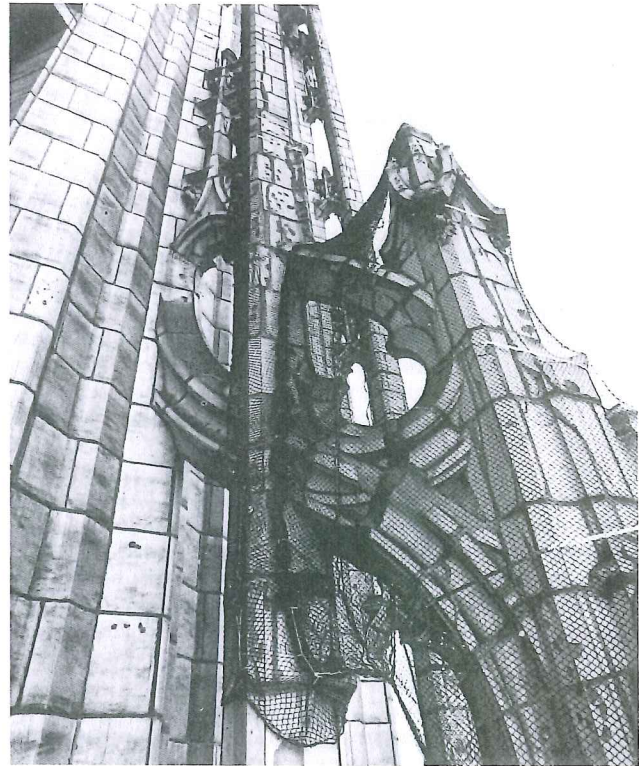


Figure 11. Temporary Stabilization Measures. Falling glazed architectural terra-cotta detailing has become a source of concern, particularly in dense urban areas and locations of high seismic activity. Nylon netting and metal strapping, while not seen as permanent preservation measures, do offer a temporary alternative to the removal of these elements.

Temporary replacement: Temporary replacement measures should be implemented when missing units are scheduled to be replaced but work cannot be undertaken immediately. Lengthy delivery time, prorating of work or seasonal considerations may postpone replacement work. Severe deterioration should at least be ameliorated until work can begin. Temporary repointing, removal and saving of undamaged units to be reset later, or the temporary installation of brick infill to retard further deterioration might be considered.

Removing earlier repairs: Removing earlier repairs may be necessary when the work has either deteriorated or has become visually incompatible. Cementitious stucco, caulking with black bituminous compounds or brick repair work may become structurally or visually unstable or incompatible and should be removed and properly rehabilitated.

Replacement of glazed architectural terra-cotta: Replacement of severely spalled, damaged, or missing glazed architectural terra-cotta elements is always difficult. Certainly, in-kind replacement is advisable, but it has a number of drawbacks. Stone, fiberglass, and precast concrete are also viable choices, but like in-kind replacement, also have their inherent problems.

Several notes on replacement: When replacing glazed architectural terra-cotta, all of the original deteriorated material should be completely removed. Half bricks or similar cosmetic replacement techniques are not advised.

—When possible and where applicable, replacement units should be anchored in a manner similar to the original. Both structural and visual compatibility are major considerations when choosing replacement materials.

—Removing and reanchoring damaged glazed architectural terra-cotta is an extremely difficult if not impossible task. The complexity of the interlocking system of masonry units, back-

fill, and metal anchoring system precludes the removal of the glazed architectural terra-cotta unit without destroying it. Reanchoring deteriorated units is likewise impossible. Therefore, if the terra-cotta in question is loose, severely deteriorated, or its structural integrity in serious question, it is best removed and replaced.

In-kind replacement is possible today, but only on a limited basis. Most new glazed architectural terra-cotta is machine made, not hand made as the original. Thus, the porous tile body of the new material tends to be more uniform but less dense and often not as durable. The glaze on the new glazed architectural terra-cotta tends to be thinner than that on the older material and subsequently more brittle. Machine processing has also produced a glaze that is uniform in color as opposed to historic glazes which were slightly mottled and, therefore, richer. Visual compatibility is an important consideration when replacing in-kind.

Only a fairly limited inventory of in-kind pieces is presently available for replacement such as plain ashlar blocks and the simpler details such as cappings and sills. When deterioration severely damages the more ornate pieces (urns, cartouche work, balusters, etc.) either expensive hand casting or alternative materials must be sought. There is a tendency today to replace damaged ornamental work with simpler, cheaper and more readily available units. This decision *cannot*, however, be supported, as the removal of this work inevitably diminishes the character and integrity of the building. Another major consideration in choosing in-kind replacement is the question of delivery time, which is often quite lengthy. If new glazed architectural terra-cotta is chosen as a replacement material, the architect or building owner should plan far in advance.

Stone may be a suitable replacement material for damaged glazed architectural terra-cotta. Its durability makes it highly appropriate, although the increase in weight over the original hollow units may be of some concern. The fact that historic glazed architectural terra-cotta was glazed in imitation of stone, however, may make the choice of stone as a replacement material a fortuitous one. Metal anchoring may be accommodated easily in the carving. Cost, however, is the major drawback in stone replacement, particularly where rich detailing must be carved to match the original.

Fiberglass replacement is a viable alternative, particularly when rich and elaborate ornamentation has to be duplicated. Casting from original intact pieces can produce numerous sharp copies of entablatures, moldings, balusters, voussoirs, etc. Anchoring is easily included in casting.

Significant drawbacks in using fiberglass replacement are color compatibility, fire code violations and poor weathering and aging properties. The appropriate coloring of fiberglass is exceedingly difficult in many instances. Painting is often unsatisfactory, as it discolors at a rate different than that of the historic glazed original. While fiberglass casting is lighter than the original units and, therefore, of great interest in the rehabilitation of buildings in areas of high seismic activity, many fire code requirements cannot be met with the use of this material.

Precast concrete units show great promise in replacing glazed architectural terra-cotta at this writing. Precast concrete units can, like fiberglass, replicate nuances of detail in a modular fashion; they can also be cast hollow, use light-weight aggregate and be made to accommodate metal anchoring when necessary. Concrete can be colored or tinted to match the original material with excellent results. It is cost effective and once production is in process, precast concrete can be produced quickly and easily.

Experience shows that it is advisable to use a clear masonry coating on the weather face of the precast concrete units to guarantee the visual compatibility of the new unit, to prevent

moisture absorption, to obtain the proper reflectivity in imitation of the original glaze and to prevent weathering of the unit itself. Precast concrete replacement units are presently enjoying great use in replicating historic glazed architectural terra-cotta and show promise for future rehabilitation programs.

Once the replacement material is selected (new glazed architectural terra-cotta, stone, precast concrete, or fiberglass), it must be reanchored into the masonry system. Original metal anchoring came in numerous designs, materials and coatings ranging from bituminous-coated iron to bronze. While most of these anchors are no longer available, they may be easily replicated in large quantities either in the original material when appropriate or out of more durable and available metals such as stainless steel.

Since the masonry backfill is already in place in the historic building, the new replacement unit with anchoring may simply be fitted into the existing backfill by boring a hole or slot for anchor and bedding the anchor and the unit itself in mortar. When replacing historic glazed architectural terra-cotta which originally employed metal anchoring, it is important to replace that anchoring when replacing the unit. Serious problems may result if anchoring is omitted in restoration when it was used originally. It is erroneous to assume that mortar alone will be sufficient to hold these replacement pieces in place.

Summary

Today, many of this country's buildings are constructed of glazed architectural terra-cotta. However, many of these are in a state of serious deterioration and decay. Glazed architectural terra-cotta was, in many ways, the "wonder" material of the American building industry in the late 19th century and during the first decades of the 20th century. New technology and methods of rehabilitation now hold promise for the restoration and rehabilitation of these invaluable and significant resources. Restoration/rehabilitation work on glazed architectural terra-cotta is demanding and will not tolerate half-way measures. Today's preservation work should equal the spirit, attention to detail, pride in workmanship and care which characterized the craftsmanship associated with this widely used, historic masonry material.

Suggested Further Readings

"Recipes for Baked Earth." *Progressive Architecture*, (November, 1977).

McIntyre, W.A. *Investigations into the Durability of Architectural Terra Cotta*. Special Report 12. London: Department of Scientific and Industrial Research, Building Research Station, 1929.

Prudon, Theodore H.M. "Architectural Terra-Cotta: Analyzing the Deterioration Problems and Restoration Approaches." *Technology and Conservation*, Vol. 3 (Fall, 1978), pp. 30-38.

Prudon, Theodore H.M. *Terra Cotta as a Building Material, A Bibliography*. Ottawa, Ontario: Association for Preservation Technology, 1976.

The illustrations for this brief not specifically credited are from the files of the Technical Preservation Services Division.

This Preservation Brief was written by de Teel Patterson Tiller, Architectural Historian, Technical Preservation Services Division. Information for this publication was based in part upon interviews and consultation with Theodore H.M. Prudon, The Ehrenkrantz Group, P.C., New York, New York. Additional comments and information were provided by Si A. Bortz, Illinois Institute of Technology Research Institute, Chicago, Illinois, and Jerry G. Stockbridge, Wiss, Janney, Elstner, and Associates, Northbrook, Illinois.

This publication was prepared pursuant to Executive Order 11593, "Protection and Enhancement of the Cultural Environment," which directs the Secretary of the Interior to "develop and make available to Federal agencies and State and local governments information concerning professional methods and techniques for preserving, improving, restoring and maintaining historic properties." The Brief has been developed under the technical editorship of Lee H. Nelson, AIA, Chief, Preservation Assistance Division, National Park Service, U.S. Department of the Interior, Washington, D.C. 20240. Comments on the usefulness of this information are welcome and can be sent to Mr. Nelson at the above address. This publication is not copyrighted and can be reproduced without penalty. Normal procedures for credit to the author and the National Park Service are appreciated. June 1979.

16 PRESERVATION BRIEFS

The Use of Substitute Materials on Historic Building Exteriors

Sharon C. Park, AIA

U.S. Department of the Interior, National Park Service
Preservation Assistance Division, Technical Preservation Services



The Secretary of the Interior's *Standards for Rehabilitation* require that "deteriorated architectural features be repaired rather than replaced, wherever possible. In the event that replacement is necessary, the new material should match the material being replaced in composition, design, color, texture, and other visual properties." Substitute materials should be used only on a limited basis and only when they will match the appearance and general properties of the historic material and will not damage the historic resource.

Introduction

When deteriorated, damaged, or lost features of a historic building need repair or replacement, it is almost always best to use historic materials. In limited circumstances substitute materials that imitate historic materials may be used if the appearance and properties of the historic materials can be matched closely and no damage to the remaining historic fabric will result.

Great care must be taken if substitute materials are used on the exteriors of historic buildings. Ultra-violet light, moisture penetration behind joints, and stresses caused by changing temperatures can greatly impair the performance of substitute materials over time. Only after consideration of all options, in consultation with qualified professionals, experienced fabricators and contractors, and development of carefully written specifications should this work be undertaken.

The practice of using substitute materials in architecture is not new, yet it continues to pose practical problems and to raise philosophical questions. On the practical level the inappropriate choice or improper installation of substitute materials can cause a radical change in a building's appearance and can cause extensive physical damage over time. On the more philosophical level, the wholesale use of substitute materials can raise questions concerning the integrity of historic buildings largely comprised of new materials. In both cases the integrity of the historic resource can be destroyed.

Some preservationists advocate that substitute materials should be avoided in all but the most limited cases. The fact is, however, that substitute materials are being used more frequently than ever in preservation projects, and in many cases with positive results. They can be cost-effective, can permit

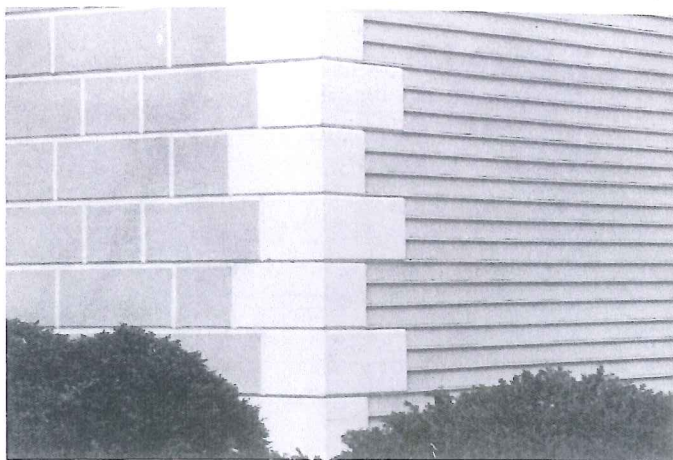
the accurate visual duplication of historic materials, and last a reasonable time. Growing evidence indicates that with proper planning, careful specifications and supervision, substitute materials can be used successfully in the process of restoring the visual appearance of historic resources.

This Brief provides general guidance on the use of substitute materials on the exteriors of historic buildings. While substitute materials are frequently used on interiors, these applications are not subject to weathering and moisture penetration, and will not be discussed in this Brief. Given the general nature of this publication, specifications for substitute materials are not provided. The guidance provided should not be used in place of consultations with qualified professionals. This Brief includes a discussion of when to use substitute materials, cautions regarding their expected performance, and descriptions of several substitute materials, their advantages and disadvantages. This review of materials is by no means comprehensive, and attitudes and findings will change as technology develops.

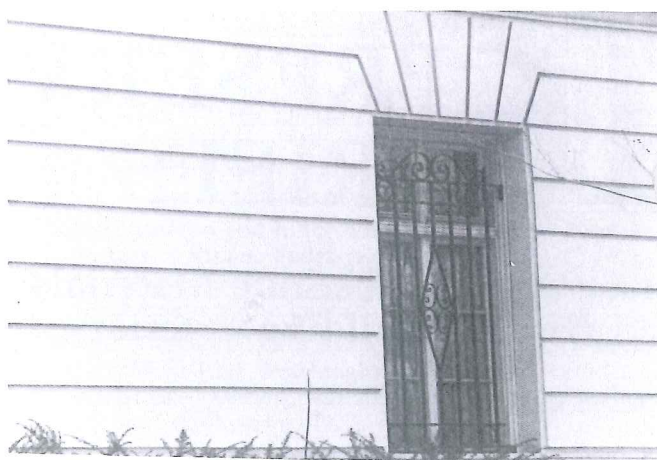
Historical Use of Substitute Materials

The tradition of using cheaper and more common materials in imitation of more expensive and less available materials is a long one. George Washington, for example, used wood painted with sand-impregnated paint at Mount Vernon to imitate cut ashlar stone. This technique along with scoring stucco into block patterns was fairly common in colonial America to imitate stone (see illus. 1, 2).

Molded or cast masonry substitutes, such as dry-tamp cast stone and poured concrete, became popular in place of quarried stone during the 19th century. These masonry units were fabricated locally, avoiding



Illus. 1. An early 18th-century technique for imitating carved or quarried stone was the use of sand-impregnated paint applied to wood. The facade stones and quoins are of wood. The Lindens (1754), Washington, D.C. Photo: Sharon C. Park, AIA.



Illus. 2. Stucco has for many centuries represented a number of building materials. Seen here is the ground floor of a Beaux Arts mansion, circa 1900, which represents a finely laid stone foundation wall executed in scored stucco. Photo: Sharon C. Park, AIA.



Illus. 3. Casting concrete to represent quarried stone was a popular late 19th-century technique seen in this circa 1910 mail-order house. While most components were delivered by rail, the foundations and exterior masonry were completed by local craftsmen. Photo: Sharon C. Park, AIA.



Illus. 4. The 19th-century also produced a variety of metal products used in imitation of other materials. In this case, the entire exterior of the Long Island Safety Deposit Company is cast-iron representing stone. Photo: Becket Logan, Friends of Cast Iron Architecture.

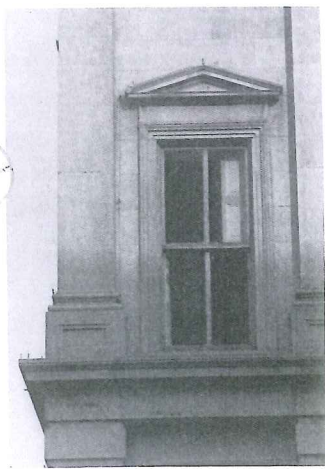
expensive quarrying and shipping costs, and were versatile in representing either ornately carved blocks, plain wall stones or rough cut textured surfaces. The end result depended on the type of patterned or textured mold used and was particularly popular in conjunction with mail order houses (see illus. 3). Later, panels of cementitious perma-stone or formstone and less expensive asphalt and sheet metal panels were used to imitate brick or stone.

Metal (cast, stamped, or brake-formed) was used for storefronts, canopies, railings, and other features, such as galvanized metal cornices substituting for wood or stone, stamped metal panels for Spanish clay roofing tiles, and cast-iron column capitals and even entire building fronts in imitation of building stone (see illus. no. 4).

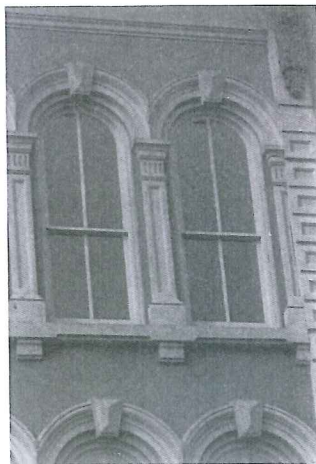
Terra cotta, a molded fired clay product, was itself a substitute material and was very popular in the late 19th and early 20th centuries. It simulated the ap-

pearance of intricately carved stonework, which was expensive and time-consuming to produce. Terra cotta could be glazed to imitate a variety of natural stones, from brownstones to limestones, or could be colored for a polychrome effect.

Nineteenth century technology made a variety of materials readily available that not only were able to imitate more expensive materials but were also cheaper to fabricate and easier to use. Throughout the century, imitative materials continued to evolve. For example, ornamental window hoods were originally made of wood or carved stone. In an effort to find a cheaper substitute for carved stone and to speed fabrication time, cast stone, an early form of concrete, or cast-iron hoods often replaced stone. Toward the end of the century, even less expensive sheet metal hoods, imitating stone, also came into widespread use. All of these materials, stone, cast stone, cast-iron, and various pressed metals were in



a



b



c



d

Illus. 5. The four historic examples of various window hoods shown are: (a) stone; (b) cast stone; (c) cast-iron; and (d) sheet metal. The criteria for selecting substitute materials today (availability, quality, delivery dates, cost) are not much different from the past. Photo: Sharon C. Park, AIA.

production at the same time and were selected on the basis of the availability of materials and local craftsmanship, as well as durability and cost (see illus. 5). The criteria for selection today are not much different.

Many of the materials used historically to imitate other materials are still available. These are often referred to as the traditional materials: wood, cast stone, concrete, terra cotta and cast metals. In the last few decades, however, and partly as a result of the historic preservation movement, new families of synthetic materials, such as fiberglass, acrylic polymers, and epoxy resins, have been developed and are being used as substitute materials in construction. In some respects these newer products (often referred to as high tech materials) show great promise; in others, they are less satisfactory, since they are often difficult to integrate physically with the porous historic materials and may be too new to have established solid performance records.

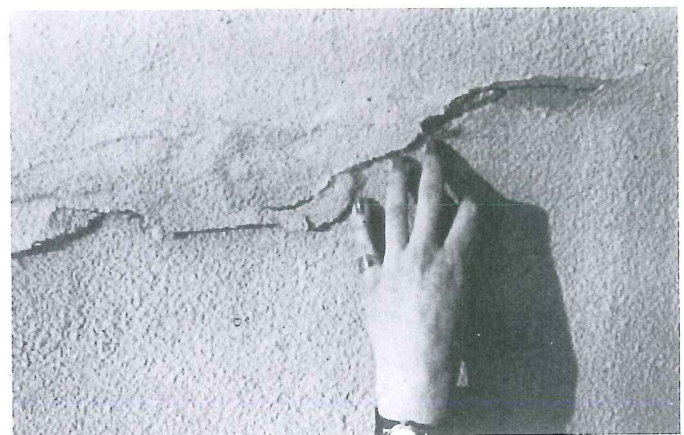
When to Consider Using Substitute Materials in Preservation Projects

Because the overzealous use of substitute materials can greatly impair the historic character of a historic structure, all preservation options should be explored thoroughly before substitute materials are used. It is important to remember that the purpose of repairing damaged features and of replacing lost and irreparably damaged ones is both to match visually what was there and to cause no further deterioration. For these reasons it is not appropriate to cover up historic materials with synthetic materials that will alter the appearance, proportions and details of a historic building and that will conceal future deterioration (see illus. 6).

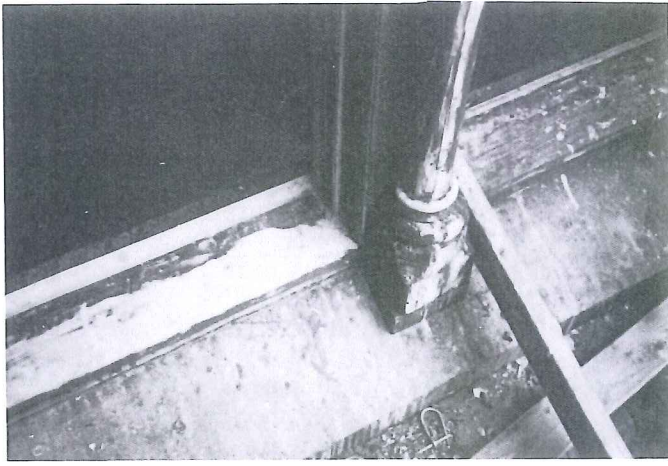
Some materials have been used successfully for the repair of damaged features such as epoxies for wood infilling, cementitious patching for sandstone repairs, or plastic stone for masonry repairs. Repairs are preferable to replacement whether or not the repairs are in kind or with a synthetic substitute material (see illus. 7).

In general, four circumstances warrant the consideration of substitute materials: 1) the unavailability of historic materials; 2) the unavailability of skilled craftsmen; 3) inherent flaws in the original materials; and 4) code-required changes (which in many cases can be extremely destructive of historic resources).

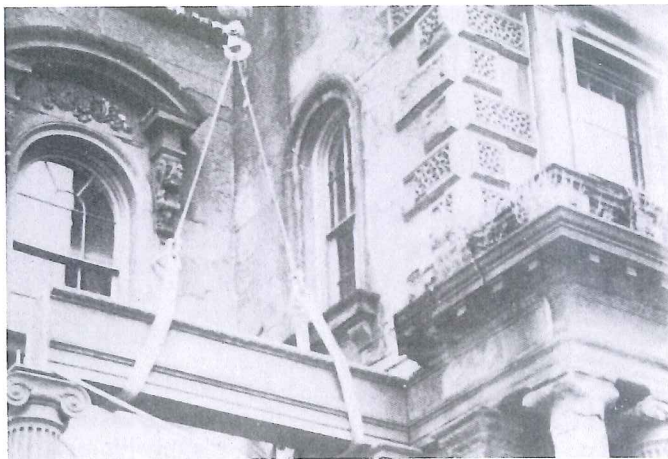
Cost may or may not be a determining factor in considering the use of substitute materials. Depending on the area of the country, the amount of material needed, and the projected life of less durable substitute materials, it may be cheaper in the long run to use the original material, even though it may be harder to find. Due to many early failures of substitute materials, some preservationists are looking abroad to find materials (especially stone) that match the historic materials in an effort to restore historic



Illus. 6. Substitute materials should never be considered as a cosmetic cover-up for they can cause great physical damage and can alter the appearance of historic buildings. For example, a fiberglass coating was used at Rancho de Taos, NM, in place of the historic adobe coating which had deteriorated. The waterproof coating sealed moisture in the walls and caused the spalling shown. It was subsequently removed and the walls were properly repaired with adobe. Photo: Lee H. Nelson, FAIA.



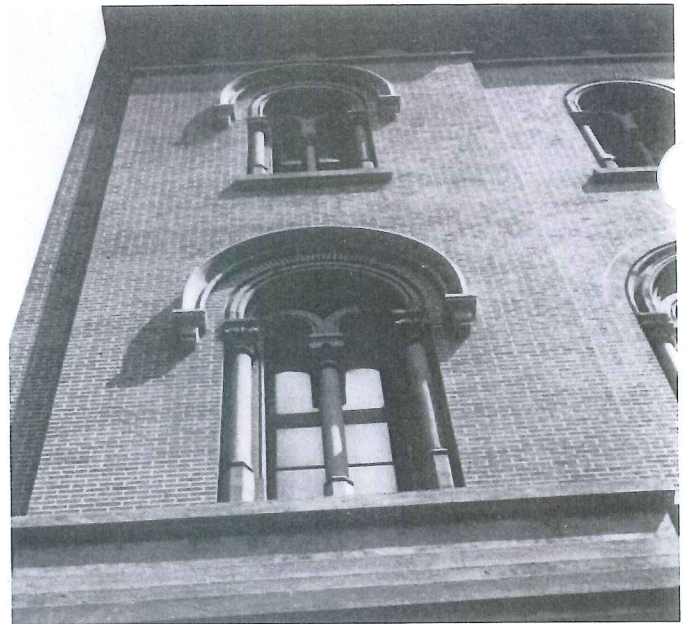
Illus. 7. Whenever possible, historic materials should be repaired rather than replaced. Epoxy, a synthetic resin, has been used to repair the wood window frame and sill at the Auditors Building (1878) Washington, DC. The cured resin is white in this photo and will be primed and painted. Photo: Lee H. Nelson, FAIA.



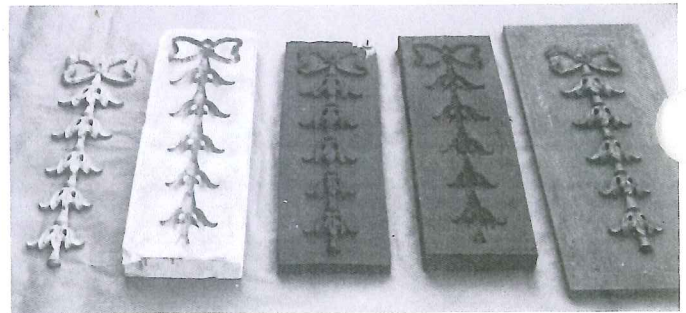
Illus. 9. Simple solutions should not be overlooked when materials are no longer available. In the case of the Morse-Libby Mansion (1859), Portland, ME, the deteriorated brownstone porch beam was replaced with a carved wooden beam painted with sand impregnated paint. Photo: Stephen Sewall.

buildings accurately and to avoid many of the uncertainties that come with the use of substitute materials.

1. The unavailability of the historic material. The most common reason for considering substitute materials is the difficulty in finding a good match for 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. For example, the local quarry that supplied the sandstone for a building may no longer be in operation. All efforts should be made to locate another quarry that could supply a satisfactory match (see illus. 8). If this approach fails, substitute materials such as dry-tamp cast stone or textured precast concrete may be a suitable substitute if care is taken to ensure that the detail, color and texture of the original stone are matched. In some cases, it may be possible to use a sand-impregnated paint on wood



Illus. 8. Even when materials are not locally available, it may be possible and cost effective to find sources elsewhere. For example, the local sandstone was no longer available for the restoration of the New York Shakespeare Festival Public Theater. The deteriorated sandstone window hoods, were replaced with stone from Germany that closely matched the color and texture of the historic sandstone. Photo: John G. Waite.



Illus. 10. The use of substitute materials is not necessarily cheaper or easier than using the original materials. The complex process of fabricating the polyester bronze reproduction pieces of the gilded wood molding for the clockcase at Independence Hall required talented artisans and substantial mold-making time. From left to right is the final molded polyester bronze detail; the plaster casting mold; the positive and negative interim neoprene rubber molds; and the expertly carved wooden master. Photo: Courtesy of Independence National Historical Park.

as a replacement section, achieved using readily available traditional materials, conventional tools and work skills. (see illus. 9). Simple solutions should not be overlooked.

2. The unavailability of historic craft techniques and lack of skilled artisans. These two reasons complicate any preservation or rehabilitation project. This is particularly true for intricate ornamental work, such as carved wood, carved stone, wrought iron, cast iron, or molded terra cotta. However, a number of stone and wood cutters now employ sophisticated carving machines, some even computerized. It is also possible to cast substitute replacement pieces using

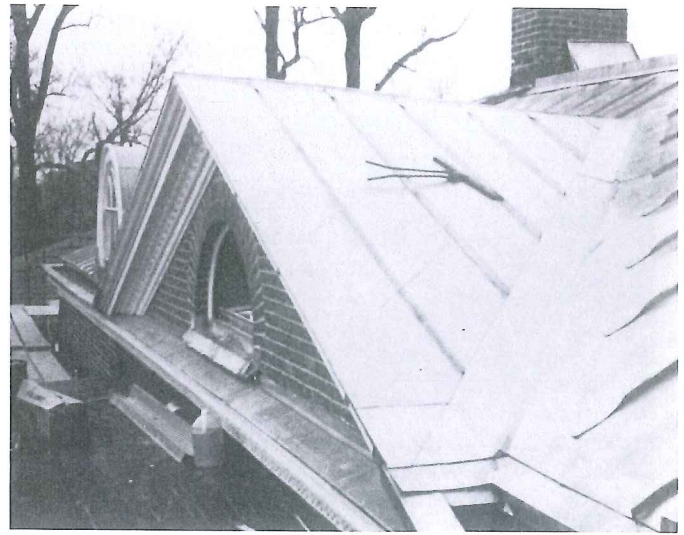


Illus. 11. The unavailability of historic craft techniques is another reason to consider substitute materials. The original first floor cast iron front of the Grand Opera House, Wilmington, DE, was missing; the expeditious reproduction in cast aluminum was possible because artisans working in this medium were available. Photo: John G. Waite.

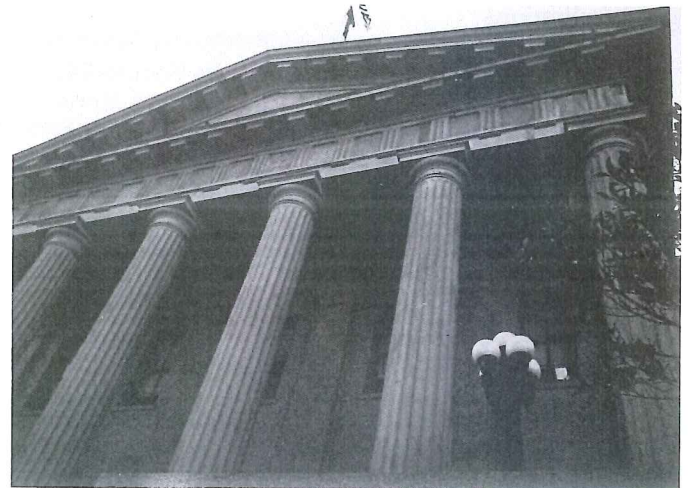
aluminum, cast stone, fiberglass, polymer concretes, glass fiber reinforced concretes and terra cotta. Mold making and casting takes skill and craftsmen who can undertake this work are available. (see illus. 10, 11). Efforts should always be made, prior to replacement, to seek out artisans who might be able to repair ornamental elements and thereby save the historic features in place.

3. Poor original building materials. Some historic building materials were of inherently poor quality or their modern counterparts are inferior. In addition, some materials were naturally incompatible with other materials on the building, causing staining or galvanic corrosion. Examples of poor quality materials were the very soft sandstones which eroded quickly. An example of poor quality modern replacement material is the tin coated steel roofing which is much less durable than the historic tin or terne iron which is no longer available. In some cases, more durable natural stones or precast concrete might be available as substitutes for the soft stones and modern terne-coated stainless steel or lead-coated copper might produce a more durable yet visually compatible replacement roofing (see illus. 12).

4. Code-related changes. Sometimes referred to as life and safety codes, building codes often require changes to historic buildings. Many cities in earthquake zones, for example, have laws requiring that overhanging masonry parapets and cornices, or freestanding urns or finials be securely reanchored to new structural frames or be removed completely. In some cases, it may be acceptable to replace these heavy historic elements with light replicas (see illus. 13). In other cases, the extent of historic fabric removed may be so great as to diminish the integrity of the resource. This could affect the significance of the structure and jeopardize National Register status. In addition, removal of repairable historic materials could result in loss of Federal tax credits for rehabilitation. Department of the Interior regulations make



Illus. 12. Substitute materials may be considered when the original materials have not performed well. For example, early sheet metals used for roofing, such as tinplate, were reasonably durable, but the modern equivalent, terne-coated steel, is subject to corrosion once the thin tin plating is damaged. Terne-coated stainless steel or lead-coated copper (shown here) are now used as substitutes. Photo: John G. Waite.



Illus. 13. Code-related changes are of concern in historic preservation projects because the integrity of the historic resource may be irretrievably affected. In the case of the Old San Francisco Mint, the fiberglass cornice was used to bring the building into seismic conformance. The original cornice was deteriorated, and the replacement (1982) was limited to the projecting pediment. The historic stone fascia was retained as were the stone columns. The limited replacement of deteriorated material did not jeopardize the integrity of the building. Photo: Walter M. Sontheimer.

clear that the Secretary of the Interior's Standards for Rehabilitation take precedence over other regulations and codes in determining whether a project is consistent with the historic character of the building undergoing rehabilitation.

Two secondary reasons for considering the use of substitute materials are their lighter weight and for some materials, a reduced need of maintenance. These reasons can become important if there is a

need to keep dead loads to a minimum or if the feature being replaced is relatively inaccessible for routine maintenance.

Cautions and Concerns

In dealing with exterior features and materials, it must be remembered that moisture penetration, ultra-violet degradation, and differing thermal expansion and contraction rates of dissimilar materials make any repair or replacement problematic. To ensure that a repair or replacement will perform well over time, it is critical to understand fully the properties of both the original and the substitute materials, to install replacement materials correctly, to assess their impact on adjacent historic materials, and to have reasonable expectations of future performance.

Many high tech materials are too new to have been tested thoroughly. The differences in vapor permeability between some synthetic materials and the historic materials have in some cases caused unexpected further deterioration. It is therefore difficult to recommend substitute materials if the historic materials are still available. As previously mentioned, consideration should always be given first to using traditional materials and methods of repair or replacement before accepting unproven techniques, materials or applications.

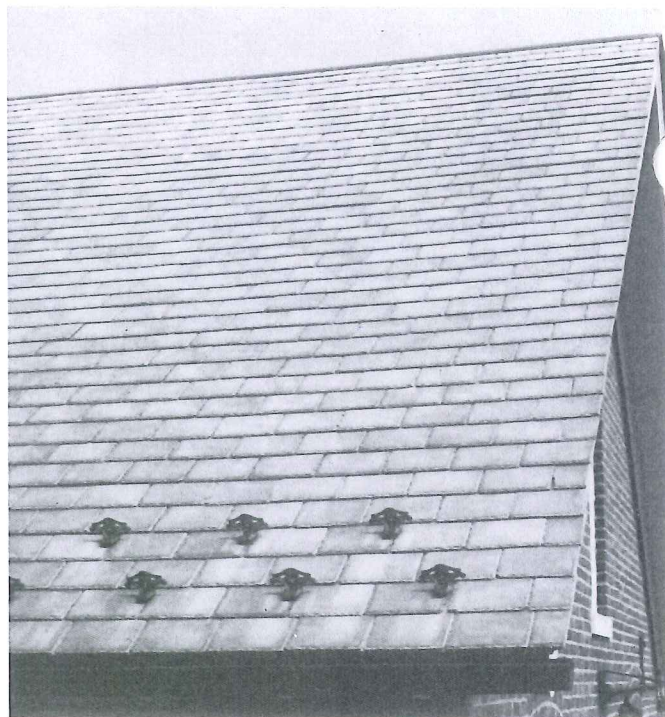
Substitute materials must meet three basic criteria before being considered: they must be compatible with the historic materials in appearance; their physical properties must be similar to those of the historic materials, or be installed in a manner that tolerates differences; and they must meet certain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

Matching the Appearance of the Historic Materials

In order to provide an appearance that is compatible with the historic material, the new material should match the details and craftsmanship of the original as well as the color, surface texture, surface reflectivity and finish of the original material (see illus. 14). The closer an element is to the viewer, the more closely the material and craftsmanship must match the original.

Matching the color and surface texture of the historic material with a substitute material is normally difficult. To enhance the chances of a good match, it is advisable to clean a portion of the building where new materials are to be used. If pigments are to be added to the substitute material, a specialist should determine the formulation of the mix, the natural aggregates and the types of pigments to be used. As all exposed material is subject to ultra-violet degradation, if possible, samples of the new materials made during the early planning phases should be tested or allowed to weather over several seasons to test for color stability.

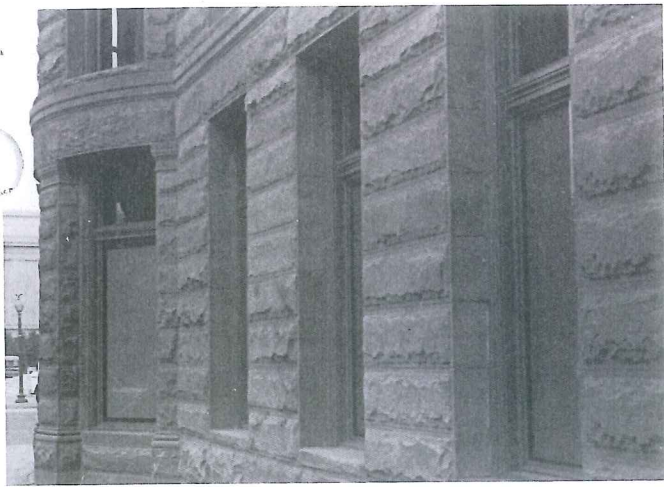
Fabricators should supply a sufficient number of samples to permit on-site comparison of color, texture, detailing, and other critical qualities (see illus. 15, 16). In situations where there are subtle variations in color and texture within the original materials, the



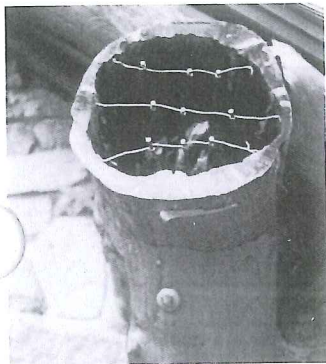
Illus. 14. The visual qualities of the historic feature must be matched when using substitute materials. In this illustration, the lighter weight mineral fiber cement shingles used to replace the deteriorated historic slate roof were detailed to match the color, size, shape and pattern of the original roofing and the historic snow birds were reattached. Photo: Sharon C. Park, AIA.



Illus. 15. Poor quality workmanship can be avoided. In this example, the crudely cast concrete entrance pier (shown) did not match the visual qualities of the remaining historic sandstone (not shown). The aggregate is too large and exposed; the casting is not crisp; the banded tooling edges are not articulated; and the color is too pale. Photo: Sharon C. Park, AIA.



Illus. 16. The good quality substitute materials shown here do match the historic sandstone in color, texture, tooling and surface details. Dry-tamp cast stone was used to match the red sandstone that was no longer available. The reconstructed first floor incorporated both historic and substitute materials. Sufficient molds were made to avoid the problem of detecting the substitutes by their uniformity. Photo: Sharon C. Park, AIA.



Illus. 17. Care must be taken to ensure that the replacement materials will work within a predesigned system. At the Norris Museum, Yellowstone National Park, the 12-inch diameter log rafters, part of an intricate truss system, had rotted at the inner core from the exposed ends back to a depth of 48 inches. The exterior wooden shells remained intact. Fiberglass rods (left photo) and specially formulated structural epoxy were used to fill the cleaned out cores and a cast epoxy wafer end with all the detail of the original wood graining was laminated onto the log end (right photo). This treatment preserved the original feature with a combination of repair and replacement using substitute materials as part of a well thought out system. Photos: Courtesy of Harrison Goodall.

substitute materials should be similarly varied so that they are not conspicuous by their uniformity.

Substitute materials, notably the masonry ones, may be more water-absorbent than the historic material. If this is visually distracting, it may be appropriate to apply a protective vapor-permeable coating on the substitute material. However, these clear coatings tend to alter the reflectivity of the material, must be reapplied periodically, and may trap salts and moisture, which can in turn produce spalling. For these reasons, they are *not* recommended for use on historic materials.



Illus. 18. Substitute materials must be properly installed to allow for expansion, contraction, and structural security. The new balustrade (a polymer concrete modified with glass fibers) at Carnegie Hall, New York City, was installed with steel structural supports to allow window-washing equipment to be suspended securely. In addition, the formulation of this predominantly epoxy material allowed for the natural expansion and contraction within the predesigned joints. Photo: Courtesy of MJM Studios.

Matching the Physical Properties

While substitute materials can closely match the appearance of historic ones, their physical properties may differ greatly. The chemical composition of the material (i.e., presence of acids, alkalines, salts, or metals) should be evaluated to ensure that the replacement materials will be compatible with the historic resource. Special care must therefore be taken to integrate and to anchor the new materials properly (see illus. 17). The thermal expansion and contraction coefficients of each adjacent material must be within tolerable limits. The function of joints must be understood and detailed either to eliminate moisture penetration or to allow vapor permeability. Materials that will cause galvanic corrosion or other chemical reactions must be isolated from one another.

To ensure proper attachment, surface preparation is critical. Deteriorated underlying material must be cleaned out. Non-corrosive anchoring devices or fasteners that are designed to carry the new material and to withstand wind, snow and other destructive elements should be used (see illus. 18). Properly chosen fasteners allow attached materials to expand and contract at their own rates. Caulking, flexible sealants or expansion joints between the historic material and the substitute material can absorb slight differences of movement. Since physical failures often result from poor anchorage or improper installation techniques, a structural engineer should be a member of any team undertaking major repairs.

Some of the new high tech materials such as epoxies and polymers are much stronger than historic materials and generally impermeable to moisture. These differences can cause serious problems unless the new materials are modified to match the expansion and contraction properties of adjacent historic materials more closely, or unless the new materials

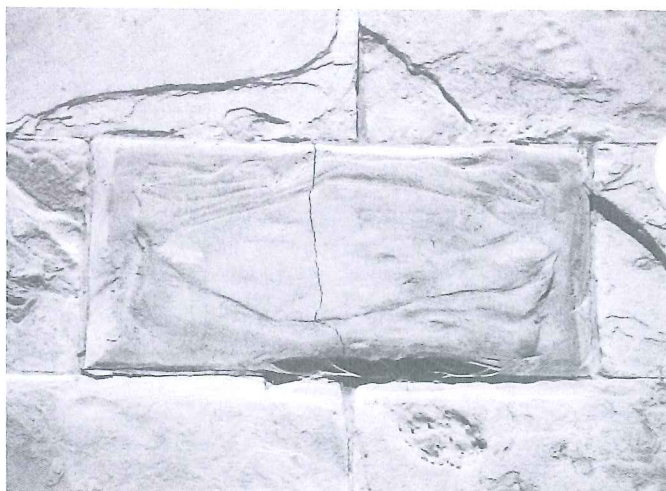
are isolated from the historic ones altogether. When stronger or vapor impermeable new materials are used alongside historic ones, stresses from trapped moisture or differing expansion and contraction rates generally hasten deterioration of the weaker historic material. For this reason, a conservative approach to repair or replacement is recommended, one that uses more pliant materials rather than high-strength ones (see illus. 19). Since it is almost impossible for substitute materials to match the properties of historic materials perfectly, the new system incorporating new and historic materials should be designed so that if material failures occur, they occur within the new material rather than the historic material.

Performance Expectations

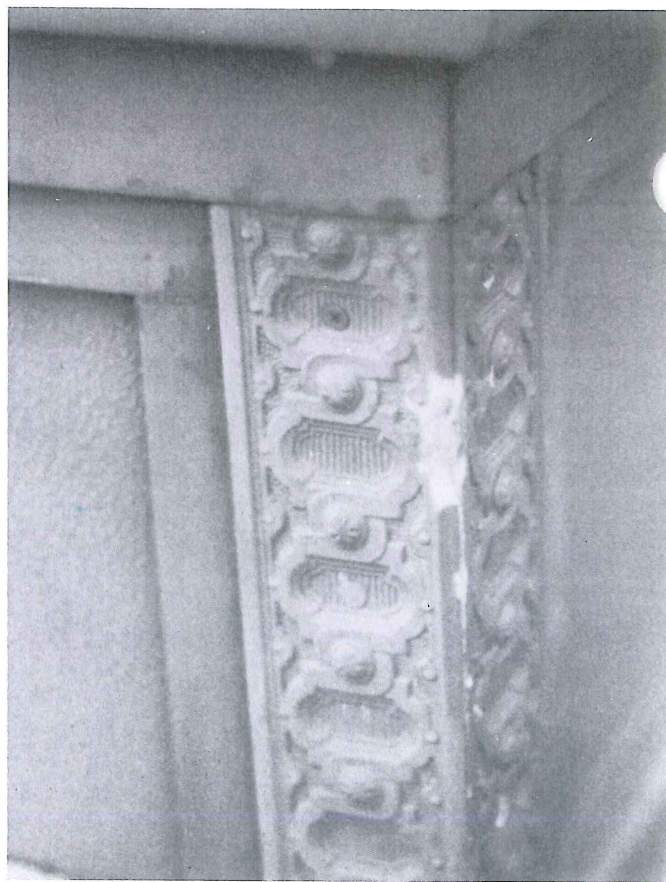
While a substitute material may appear to be acceptable at the time of installation, both its appearance and its performance may deteriorate rapidly. Some materials are so new that industry standards are not available, thus making it difficult to specify quality control in fabrication, or to predict maintenance requirements and long term performance. Where possible, projects involving substitute materials in similar circumstances should be examined. Material specifications outlining stability of color and texture; compressive or tensile strengths if appropriate; the acceptable range of thermal coefficients, and the durability of coatings and finishes should be included in the contract documents. Without these written documents, the owner may be left with little recourse if failure occurs (see illus. 20, 21).

The tight controls necessary to ensure long-term performance extend beyond having written performance standards and selecting materials that have a successful track record. It is important to select qualified fabricators and installers who know what they are doing and who can follow up if repairs are necessary. Installers and contractors unfamiliar with specific substitute materials and how they function in your local environmental conditions should be avoided.

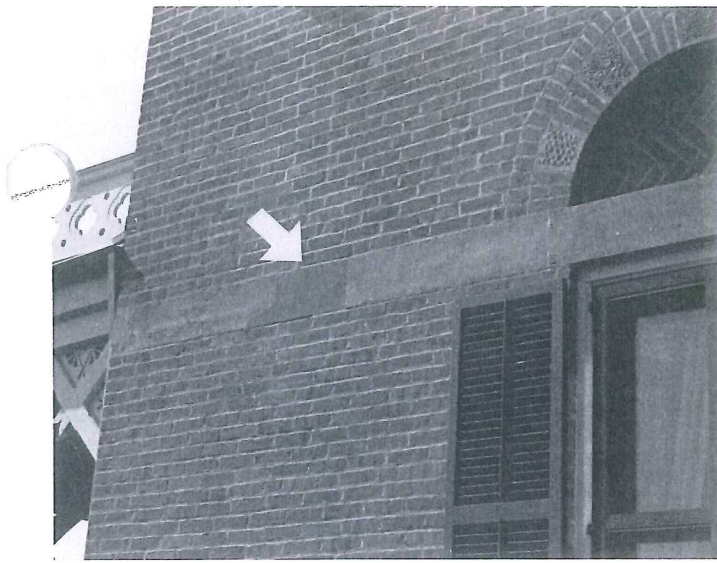
The surfaces of substitute materials may need special care once installed. For example, chemical residues or mold release agents should be removed completely prior to installation, since they attract pollutants and cause the replacement materials to appear dirtier than the adjacent historic materials. Furthermore, substitute materials may require more frequent cleaning, special cleaning products and protection from impact by hanging window-cleaning scaffolding. Finally, it is critical that the substitute materials be identified as part of the historical record of the building so that proper care and maintenance of all the building materials continue to ensure the life of the historic resource.



Illus. 19. When the physical properties are not matched, particularly thermal expansion and contraction properties, great damage can occur. In this case, an extremely rigid epoxy replacement unit was installed in a historic masonry wall. Because the epoxy was not modified with fillers, it did not expand or contract systematically with the natural stones in the wall surrounding it. Pressure built up resulting in a vertical crack at the center of the unit, and spalled edges to every historic stone that was adjacent to the rigid unit. Photo: Walter M. Sontheimer.



Illus. 20. Long-term performance can be affected by where the substitute material is located. In this case, fiberglass was used as part of a storefront at street level. Due to the brittle nature of the material and the frequency of impact likely to occur at this location, an unsightly chip has resulted. Photo: Sharon C. Park, AIA.



Illus. 21. Change of color over time is one of the greatest problems of synthetic substitute materials used outdoors. Ultra-violet light can cause materials to change color over time; some will lighten and others will darken. In this photograph, the synthetic patching material to the sandstone banding to the left of the window has aged to a darker color. Photos: Sharon C. Park, AIA.

Choosing an Appropriate Substitute Material

Once all reasonable options for repair or replacement in kind have been exhausted, the choice among a wide variety of substitute materials currently on the market must be made (see illus. 22). The charts at the end of this Brief describe a number of such materials, many of them in the family of modified concretes which are gaining greater use. The charts do not include wood, stamped metal, mineral fiber cement shingles and some other traditional imitative materials, since their properties and performance are better known. Nor do the charts include vinyls or molded urethanes which are sometimes used as cosmetic claddings or as substitutes for wooden millwork. Because millwork is still readily available, it should be replaced in kind.

The charts describe the properties and uses of several materials finding greater use in historic preservation projects, and outline advantages and disadvantages of each. It should not be read as an endorsement of any of these materials, but serves as a reminder that numerous materials must be studied carefully before selecting the appropriate treatment. Included are three predominantly masonry materials (cast stone, precast concrete, and glass fiber reinforced concrete); two predominantly resinous materials (epoxy and glass fiber reinforced polymers also known as fiberglass), and cast aluminum which has been used as a substitute for various metals and woods.



Illus. 22. A fiber reinforced polymer (fiberglass) cornice and precast concrete elements replaced deteriorated features on the 19th-century exterior. Photo: Sharon C. Park, AIA.

Summary

Substitute materials—those products used to imitate historic materials—should be used only after all other options for repair and replacement in kind have been ruled out. Because there are so many unknowns regarding the long-term performance of substitute materials, their use should not be considered without a thorough investigation into the proposed materials, the fabricator, the installer, the availability of specifications, and the use of that material in a similar situation in a similar environment.

Substitute materials are normally used when the historic materials or craftsmanship are no longer available, if the original materials are of a poor quality or are causing damage to adjacent materials, or if there are specific code requirements that preclude the use of historic materials. Use of these materials should be limited, since replacement of historic materials on a large scale may jeopardize the integrity of a historic resource. Every means of repairing deteriorating historic materials or replacing them with identical materials should be examined *before* turning to substitute materials.

The importance of matching the appearance and physical properties of historic materials and, thus, of finding a successful long-term solution cannot be overstated. The successful solutions illustrated in this Brief were from historic preservation projects involving professional teams of architects, engineers, fabricators, and other specialists. Cost was not necessarily a factor, and all agreed that whenever possible, the historic materials should be used. When substitute materials were selected, the solutions were often expensive and were reached only after careful consideration of all options, and with the assistance of expert professionals.

PROs and CONs of VARIOUS SUBSTITUTE MATERIALS

Cast Aluminum

Material: Cast aluminum is a molten aluminum alloy cast in permanent (metal) molds or one-time sand molds which must be adjusted for shrinkage during the curing process. Color is from paint applied to primed aluminum or from a factory finished coating. Small sections can be bolted together to achieve intricate or sculptural details. Unit castings are also available for items such as column plinth blocks.

Application: Cast aluminum can be a substitute for cast-iron or other decorative elements. This would include grillwork, roof crestings, cornices, ornamental spandrels, storefront elements, columns, capitals, and column bases and plinth blocks. If not self-supporting, elements are generally screwed or bolted to a structural frame. As a result of galvanic corrosion problems with dissimilar metals, joint details are very important.

Advantages:

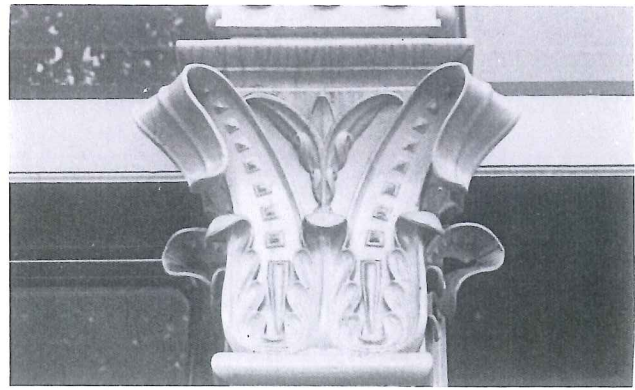
- light weight (1/2 of cast-iron)
- corrosion-resistant, non-combustible
- intricate castings possible
- easily assembled, good delivery time
- can be prepared for a variety of colors
- long life, durable, less brittle than cast iron

Disadvantages:

- lower structural strength than cast-iron
- difficult to prevent galvanic corrosion with other metals
- greater expansion and contraction than cast-iron; requires gaskets or caulked joints
- difficult to keep paint on aluminum

Checklist:

- Can existing be repaired or replaced in-kind?
- How is cast aluminum to be attached?
- Have full-size details been developed for each piece to be cast?
- How are expansion joints detailed?
- Will there be a galvanic corrosion problem?
- Have factory finishes been protected during installation?
- Are fabricators/installers experienced?



Close-up detail showing the crisp casting in aluminum of this 19th-century replica column and capital for a storefront. Photo: Sharon C. Park, AIA.



The new cast aluminum storefront replaced the lost 19th-century cast-iron original. Photo: Sharon C. Park, AIA.

PROs and CONs of VARIOUS SUBSTITUTE MATERIALS

Cast Stone (dry-tamped):

Material: Cast stone is an almost-dry cement, lime and aggregate mixture which is dry-tamped into a mold to produce a dense stone-like unit. Confusion arises in the building industry as many refer to high quality precast concrete as cast stone. In fact, while it is a form of precast concrete, the dry-tamp fabrication method produces an outer surface resembling a stone surface. The inner core can be either dry-tamped or poured full of concrete. Reinforcing bars and anchorage devices can be installed during fabrication.

Application: Cast stone is often the most visually similar material as a replacement for unveined deteriorated stone, such as brownstone or sandstone, or terra cotta in imitation of stone. It is used both for surface wall stones and for ornamental features such as window and door surrounds, voussoirs, brackets and hoods. Rubber-like molds can be taken of good stones on site or made up at the factory from shop drawings.

Advantages:

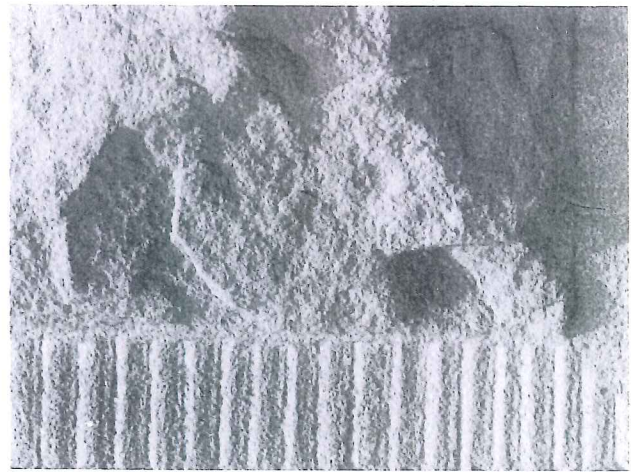
- replicates stone texture with good molds (which can come from extant stone) and fabrication
- expansion/contraction similar to stone
- minimal shrinkage of material
- anchors and reinforcing bars can be built in
- material is fire-rated
- range of color available
- vapor permeable

Disadvantages:

- heavy units may require additional anchorage
- color can fade in sunlight
- may be more absorbent than natural stone
- replacement stones are obvious if too few models and molds are made

Checklist:

- Are the original or similar materials available?
- How are units to be installed and anchored?
- Have performance standards been developed to ensure color stability?
- Have large samples been delivered to site for color, finish and absorption testing?
- Has mortar been matched to adjacent historic mortar to achieve a good color/tooling match?
- Are fabricators/installers experienced?



Dry-tamped cast stone can reproduce the sandy texture of some natural stones. Photo: Sharon C. Park, AIA.

Glass Fiber Reinforced Concretes (GFRC)

Material: Glass fiber reinforced concretes are lightweight concrete compounds modified with additives and reinforced with glass fibers. They are generally fabricated as thin shelled panels and applied to a separate structural frame or anchorage system. The GFRC is most commonly sprayed into forms although it can be poured. The glass must be alkaline resistant to avoid deteriorating effects caused by the cement mix. The color is derived from the natural aggregates and if necessary a small percentage of added pigments.

Application: Glass fiber reinforced concretes are used in place of features originally made of stone, terra cotta, metal or wood, such as cornices, projecting window and door trims, brackets, finials, or wall murals. As a molded product it can be produced in long sections of repetitive designs or as sculptural elements. Because of its low shrinkage, it can be produced from molds taken directly from the building. It is installed with a separate non-corrosive anchorage system. As a predominantly cementitious material, it is vapor permeable.

Advantages:

- lightweight, easily installed
- good molding ability, crisp detail possible
- weather resistant
- can be left uncoated or else painted
- little shrinkage during fabrication
- molds made directly from historic features
- cements generally breathable
- material is fire-rated

Disadvantages:

- non-loadbearing use only
- generally requires separate anchorage system
- large panels must be reinforced
- color additives may fade with sunlight
- joints must be properly detailed
- may have different absorption rate than adjacent historic material

Checklist:

- Are the original materials and craftsmanship still available?
- Have samples been inspected on the site to ensure detail/texture match?
- Has anchorage system been properly designed?
- Have performance standards been developed?
- Are fabricators/installers experienced?



This glass fiber reinforced concrete sculptural wall panel will replace the seriously damaged resin and plaster original. A finely textured surface was achieved by spraying the GFRC mix into molds that were created from the historic panel and resculpted based on historic photographs. Photo: Courtesy of MJM Studios.

PROs and CONs of VARIOUS SUBSTITUTE MATERIALS

Precast Concrete

Material: Precast concrete is a wet mix of cement and aggregate poured into molds to create masonry units. Molds can be made from existing good surfaces on the building. Color is generally integral to the mix as a natural coloration of the sand or aggregate, or as a small percentage of pigment. To avoid unsightly air bubbles that result from the natural curing process, great care must be taken in the initial and long-term vibration of the mix. Because of its weight it is generally used to reproduce individual units of masonry and not thin shell panels.

Application: Precast concrete is generally used in place of masonry materials such as stone or terra cotta. It is used both for flat wall surfaces and for textured or ornamental elements. This includes wall stones, window and door surrounds, stair treads, paving pieces, parapets, urns, balusters and other decorative elements. It differs from cast stone in that the surface is more dependent on the textured mold than the hand tamping method of fabrication.

Advantages:

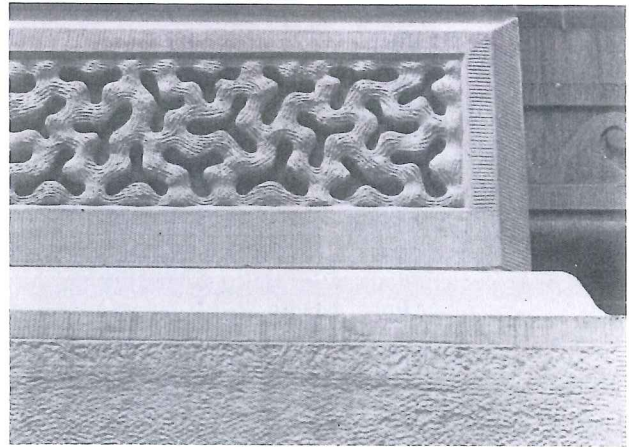
- easily fabricated, takes shape well
- rubber molds can be made from building stones
- minimal shrinkage of material
- can be load bearing or anchorage can be cast in
- expansion/contraction similar to stone
- material is fire-rated
- range of color and aggregate available
- vapor permeable

Disadvantages:

- may be more moisture absorbent than stone although coatings may be applied
- color fades in sunlight
- heavy units may require additional anchorage
- small air bubbles may disfigure units
- replacement stones are conspicuous if too few models and molds are made

Checklist:

- Is the historic material still available?
- What are the structural/anchorage requirements?
- Have samples been matched for color/texture/absorption?
- Have shop drawings been made for each shape?
- Are there performance standards?
- Has mortar been matched to adjacent historic mortar to achieve good color/tooling match?
- Are fabricators/installers experienced?



Textured molds can produce a variety of high quality carved, quarried, and tooled surfaces in concrete.

Photo: Sharon C. Park, AIA.

Fiber Reinforced Polymers—

Known as 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 gel-coat into a mold. When tack-free, layers of chopped glass or glass fabric are added along with additional resins. Reinforcing rods and struts can be added if necessary; the gel coat can be pigmented or painted.

Application: Fiberglass, a non load-bearing material attached to a separate structural frame, is frequently used as a replacement where a lightweight element is needed or an inaccessible location makes frequent maintenance of historic materials difficult. Its good molding ability and versatility to represent stone, wood, metal and terra cotta make it an alternative to ornate or carved building elements such as column capitals, bases, spandrel panels, beltcourses, balustrades, window hoods or parapets. Its ability to reproduce bright colors is a great advantage.

Advantages:

- lightweight, long spans available with a separate structural frame
- high ratio of strength to weight
- good molding ability
- integral color with exposed high quality pigmented gel-coat or takes paint well
- easily installed, can be cut, patched, sanded
- non-corrosive, rot-resistant

Disadvantages:

- requires separate anchorage system
- combustible (fire retardants can be added); fragile to impact.
- high co-efficient of expansion and contraction requires frequently placed expansion joints
- ultra-violet sensitive unless surface is coated or pigments are in gel-coat
- vapor impermeability may require ventilation detail

Checklist:

- Can original materials be saved/used?
- Have expansion joints been designed to avoid unsightly appearance?
- Are there standards for color stability/durability?
- Have shop drawings been made for each piece?
- Have samples been matched for color and texture?
- Are fabricators/installers experienced?
- Do codes restrict use of FRP?



A fiberglass cornice for the reconstruction of an 18th-century wooden clockcase is being lifted in pre-fabricated sections. The level of detail is intricate and of high quality. Photo: Courtesy of Independence National Historical Park.

PROs and CONs of VARIOUS SUBSTITUTE MATERIALS

Epoxies (*Epoxy Concretes, Polymer Concretes*):

Material: Epoxy is a resinous two-part thermo-setting material used as a consolidant, an adhesive, a patching compound, and as a molding resin. It can repair damaged material or recreate lost features. The resins which are poured into molds are usually mixed with fillers such as sand, or glass spheres, to lighten the mix and modify their expansion/contraction properties. When mixed with aggregates, such as sand or stone chips, they are often called epoxy concrete or polymer concrete, which is a misnomer as there are no cementitious materials contained within the mix. Epoxies are vapor impermeable, which makes detailing of the new elements extremely important so as to avoid trapping moisture behind the replacement material. It can be used with wood, stone, terra cotta, and various metals.

Application: Epoxy is one of the most versatile of the new materials. It can be used to bind together broken fragments of terra cotta; to build up or infill missing sections of ornamental metal; or to cast missing elements of wooden ornaments. Small cast elements can be attached to existing materials or entire new features can be cast. The resins are poured into molds and due to the rapid setting of the material and the need to avoid cracking, the molded units are generally small or hollow inside. Multiple molds can be combined for larger elements. With special rods, the epoxies can be structurally reinforced. Examples of epoxy replacement pieces include: finials, sculptural details, small column capitals, and medallions.

Advantages:

- can be used for repair/replacement
- lightweight, easily installed
- good casting ability; molds can be taken from building
- material can be sanded and carved.
- color and ultra-violet screening can be added; takes paint well
- durable, rot and fungus resistant

Disadvantages:

- materials are flammable and generate heat as they cure and may be toxic when burned
- toxic materials require special protection for operator and adequate ventilation while curing
- material may be subject to ultra-violet deterioration unless coated or filters added
- rigidity of material often must be modified with fillers to match expansion coefficients
- vapor impermeable

Checklist:

- Are historic materials available for molds, or for splicing-in as a repair option?
- Has the epoxy resin been formulated within the expansion/contraction coefficients of adjacent materials?
- Have samples been matched for color/finish?
- Are fabricators/installers experienced?
- Is there a sound sub-strate of material to avoid deterioration behind new material?
- Are there performance standards?



This replica column capital was made using epoxy resins poured into a mold taken from the building. The historic wooden column shaft was repaired during the restoration. Photo: Courtesy Dell Corporation.



Columns were repaired and a capital was replaced in epoxy on this 19th-century 2-story porch. Photo: Dell Corporation

Further Reading: Substitute Materials

Berryman, Nancy D.; Susan M. Tindal, *Terra Cotta; Preservation of an Historic Material*. Chicago: Landmarks Preservation Council of Illinois, 1984.

Brookes, A.J., *Cladding of Buildings*. New York: Longman Inc., 1983.

Fisher, Thomas, "The Sincerest Form of Flattery," *Progressive Architecture* (Nov. 1985).

Gayle Margot; David W. Look, AIA; John G. Waite, *Metals in America's Historic Buildings: Uses and Preservation Treatments*. Washington, D.C.: Preservation Assistance Division, National Park Service, U.S. Department of the Interior, 1980.

Historic Building Facades. New York: New York Landmarks Conservancy, 1986.

Hornbostel, Caleb, *Construction Materials: Types, Uses and Applications*, New York: John Wiley and Sons, Inc., 1978.

Lynch, Michael F; William J. Higgins, *The Maintenance and Repair of Architectural Sandstone*, New York Landmarks Conservancy, 1982.

National Park Service, Rocky Mountain Regional Office, *Preservation Briefs 12: The Preservation of Historic Pigmented Structural Glass*. Washington, D.C.: Preservation Assistance Division, National Park Service, U.S. Department of the Interior, 1984.

Phillips, Morgan and Judith Selwyn, *Epoxies for Wood Repairs in Historic Buildings*. Washington, D.C.: Preservation Assistance Division, National Park Service, U.S. Department of the Interior, 1978.

Phillips, Morgan W., *The Morse-Libby Mansion: A Report on Restoration Work*. Washington, D.C.: Preservation Assistance Division, National Park Service, U.S. Department of the Interior, 1977.

Tiller, deTeel Patterson, *Preservation Briefs 7: The Preservation of Historic Glazed Architectural Terra-Cotta*. Washington, D.C.: Preservation Assistance Division, National Park Service, U.S. Department of the Interior, 1979.

Acknowledgements

The author gratefully acknowledges the invaluable assistance of co-worker Michael Auer in editing this manuscript. The following individuals are to be thanked for their technical assistance: Mary Oehrlein A.I.A., Washington, D.C.; John G. Waite, Albany, NY; Hyman Myers, R.A., Philadelphia, PA; Thomas Fisher, Stamford, CT; Harrison Goodall, Kinnelon, NJ. In addition, the staff of Preservation Assistance Division, the cultural resources staff of the National Park Service Regional Offices, and Stan Graves, on behalf of the National Conference of State Historic Preservation Officers, provided useful comments that were incorporated into the manuscript.

This publication has been prepared pursuant to Section 101(h) of the National Historic Preservation Act, as amended, which directs the Secretary of the Interior to develop and make available information concerning historic properties. The guidance provided in this Brief will also assist property owners in complying with the requirements of the Internal Revenue Code of 1986.

Preservation Briefs: 16 has been developed under the technical editorship of Lee H. Nelson, FAIA, Chief, Preservation Assistance Division, National Park Service, U.S. Department of the Interior, P.O. Box 37127, Washington D.C. 20013-7127. Comments on the usefulness of this information are welcome and can be sent to Mr. Nelson at the above address.

Cover photograph: Independence Hall, Philadelphia, PA; the 1972 installation of a combination wood and fiberglass clockcase duplicating the lost 18th century original. Photo: Courtesy of Independence National Historical Park.

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

**HISTORIC PRESERVATION BOARD
CITY OF PORTLAND, MAINE**

**WORKSHOP
CUMBERLAND COUNTY COURTHOUSE
142 FEDERAL/205 NEWBURY**

TO: Chair Benson and Members of the Historic Preservation Board

FROM: Deborah Andrews, Historic Preservation Program Manager

DATE: January 21, 2016

RE: January 27, 2016 **Workshop** – Preliminary Review of Proposed Window Replacement Program

Address: Cumberland County Courthouse
142 Federal Street/205 Newbury Street

Applicant: County of Cumberland, Maine
represented by Bruce Tarbox

Consultant: Michael Hays, Grant Hays Associates

Introduction

Architect Michael Hays, representing the County of Cumberland, will be presenting plans for a comprehensive program of window replacement at the Cumberland County Courthouse. The courthouse building, located immediately across the street from Lincoln Park, has frontage on Federal, Newbury and Pearl Streets. The existing windows are clear aluminum frame replacement units installed in the 1970's. As part of the 1970's installation, the original brickmoulds were replaced as well. No effort was made at that time to match the configuration of the original units. The proposed project aims to replicate the original fenestration to the greatest extent possible, relying on a historic photograph of the building as well as one remaining original brickmould to guide the proposed details.

Enclosed is a brief written project description, a copy of the historic photo upon which individual window configurations were based, a photo of the remaining original brickmould, as well as plans and specifications. Note that photos of existing conditions are included as A-8 and A-9 at the back of the architect's submission. Although the enclosed floor plans indicate which window type will be installed in each opening, the submission does not include elevations showing the proposed new windows. (The budget did not allow for the preparation of overall building elevations.) Mr. Hays will bring to Wednesday's meeting annotated photographs of the building showing where the individual window types are to be located.

Window Replacement Proposal, Staff Comments

The application calls for the replacement of virtually every window in the building, which originally featured 22 individual window types or sizes—see Sheet A-6. Traco aluminum-frame full-unit windows with thermal break insulated glass are being specified for the project. As noted above, the design of each window type has been based on a close inspection of a historic photograph of the building. (Unfortunately, only one historic image has been found that clearly depicts the windows. Accordingly, some extrapolation has been necessary in determining appropriate windows for elevations not shown in the historic photo.) Also proposed are custom aluminum brickmoulds, the profile of which is patterned after an early (original?) brickmould remaining in one window opening.

Specifications call for Low-E glass and “obscure glass” in some openings. *The project architect should be asked to address the transparency of the Low-E glass and to describe the obscure glass.*

Note that the project calls for retaining the original sash weight boxes, interior window trim and sills. *The Board may wish to ask for clarification as to whether retaining these elements will affect the available daylight opening of the window and the width of the overall exterior window framing. If the overall framing is wider than what would be expected, the Board will need to consider whether the increased width is acceptable given the size of the window openings in this large institutional building.*

Although the review session was advertised as a workshop, the submission appears to be complete enough to have warranted advertisement as a public hearing. If the Board is supportive of the proposal, perhaps it could authorize staff to sign off on the project, with or without conditions.

Applicable Review Standards:

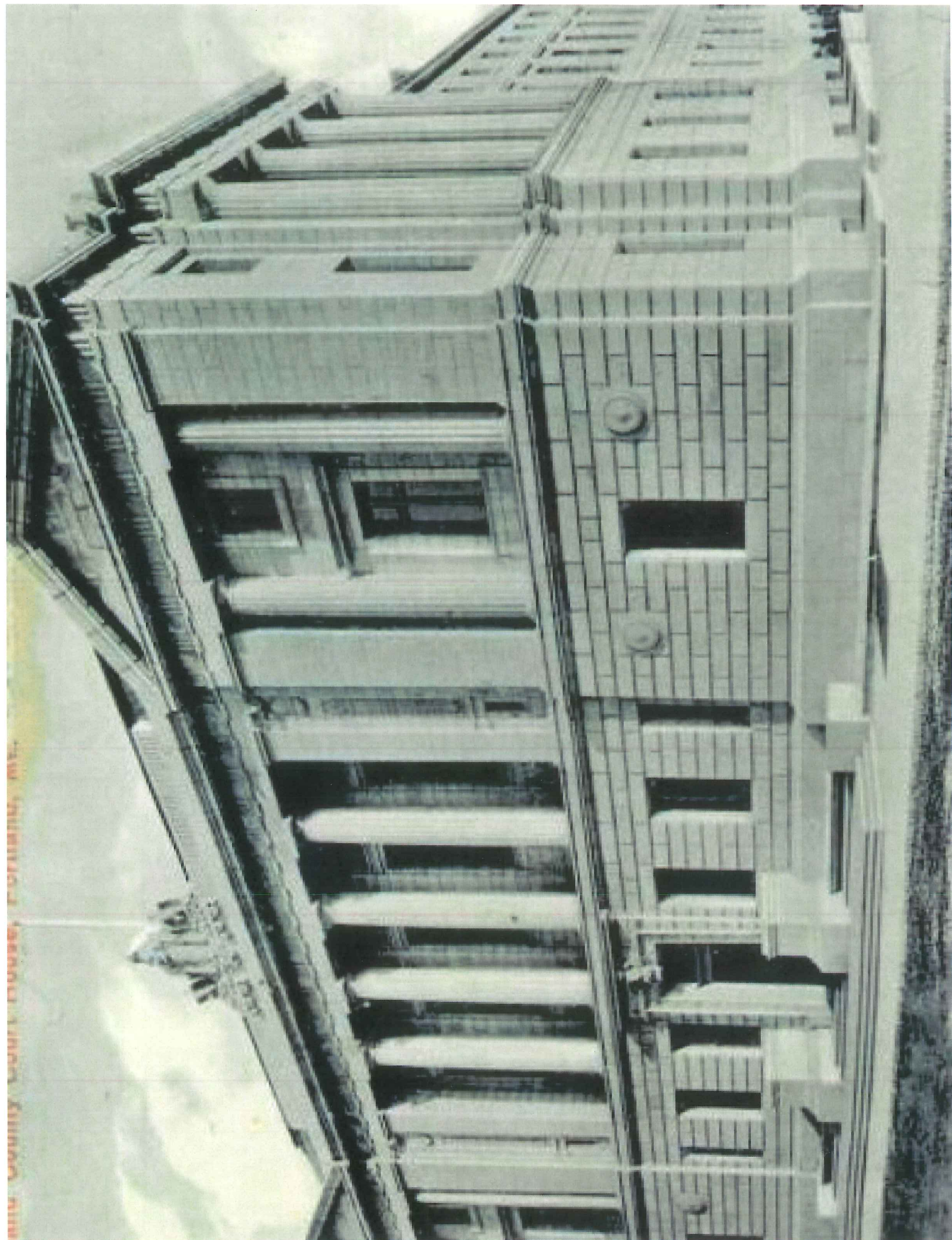
The applicable ordinance review standard is as follows:

- (6) *Repair or replacement of missing historic features should be based on accurate duplications of features, substantiated by documentary, physical or pictorial evidence rather than on conjectural designs or the availability of different architectural elements from other structures or objects.*

Attachments

1. Historic photos of building
2. Photos of remaining historic brickmould
3. Project description
4. Plans, specifications and photos of existing conditions





THE COUNTY COURT HOUSE, COVINGTON, MS.









Date: December 9, 2015

HISTORIC PRESERVATION APPLICATION FOR CERTIFICATE OF APPROPRIATENESS

Pursuant to review under the City of Portland's Historic Preservation Ordinance (Chapter 14, Article IX of the Portland City Code), application is hereby made for a Certificate of Appropriateness for the following work on the specified historic property:

PROJECT ADDRESS:

205 Newbury Street, Portland, Maine

CHART/BLOCK/LOT: _____ (for staff use only)

PROJECT DESCRIPTION: Describe below each major component of your project. Describe how the proposed work will impact existing architectural features and/or building materials. If more space is needed, continue on a separate page. Attach drawings, photographs and/or specifications as necessary to fully illustrate your project—see following page for suggested attachments.

Replacement of existing exterior aluminum windows (circa 1970's) with new thermal-break insulated glass aluminum windows (TRACO) in replicated historic configurations as can be best determined by photographic example and by installer current windows to be replaced. Replacement will include installing new painted aluminum brick mold at head and jambs of masonry openings to match original window condition. Interior oak trim, sill, and sash weight boxes shall remain per original installation. Exterior cleaning of existing stonework and mortar joint repair, if required, will be included.

GRANT HAYS ASSOCIATES

ARCHITECTURE  INTERIOR DESIGN

December 15, 2015

City of Portland
Historic Preservation Program
Department of Planning and Urban Development
Portland City Hall, 4th Floor
389 Congress Street
Portland, Maine 04101

Attn: Deborah G. Andrews
Re: Cumberland County Courthouse Window Replacement Project

Dear Deb,

As we recently discussed during the drop-off of the drawings and application for Workshop, we made a couple "discoveries", which shed a little more light on the history of the original and current windows at the Courthouse.

First, we found an example of what is believed to be the original brick mold at the third floor "T" window locations. These 5 openings in the Stack Room overlooking the roof are currently filled with glass block, but it appears this was installed from the interior up against the original brick mold. The details on the drawings reflect the original wood configuration, and the proposed matching aluminum extrusion. Since the window replacement project is anticipated to be phased over 2-4 years, we are recommending all the window opening extrusions for the entire building be purchased during the first phase. This will eliminate multiple set-up charges for the successive phases.

Second, we consulted with Dave Huntley at AD&W regarding the method in which the new proposed windows would work into the openings. He suggested we remove one of the current windows to verify what was "left in place" when the current windows were installed in the early 1970's. Come to find out, Dave was on the crew that replaced the windows on the Newbury and Pearl Street sides of the building. He stated the existing windows were predominantly double-hung wood units in pretty rough shape. Hopefully, he will be available for our Workshop meeting, as he was quite helpful with some historic insights.

Based on this, AD&W removed one of the existing windows to verify if any of the original wood window pieces were still in the masonry openings. Part of the wood original frame, albeit it in rough condition, had been left in the opening. It had been significantly altered during the prep work for the current installation. The replacement windows had been fabricated and installed to bypass this remaining component, yet maintain the interior oak trim work and sash weight boxes.

I will forward a few photos of the brick mold for inclusion in our Workshop discussions. Please let me know if you have any questions.

Sincerely,

Michael F. Hays

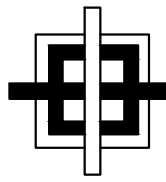
Michael F. Hays
Principal

HISTORIC EXTERIOR WINDOWS

CUMBERLAND COUNTY

COURTHOUSE

205 NEWBURY STREET



PORTLAND, MAINE 04101

ABBREVIATIONS

AFF ALUM or AL AWP	ABOVE FINISH FLOOR ALUMINUM ACOUSTICAL WALL PANEL	HC HD WD HDR	HANDICAP HARDWOOD HEADER	S SAT	SOUTH SUSPENDED ACOUSTICAL TILE CEILING
BIT BM BOT BRG BRK	BITUMINOUS BENCH MARK BOTTOM BEARING BRICK	HM HM HORIZ HT	HOLLOW METAL HORIZONTAL HEIGHT	SC SD SECT SGD SGS	SHOWER CURTAIN SOAP DISPENSER SCHEDULE SECTION SUSPENDED GYPSUM BOARD CEILING
C CAB CB CC CH	CARPET CABINET CHALK BOARD CENTER TO CENTER CONCRETE FLOOR WITH HARDENER	ID IF IN INSUL INT	INSIDE DIAMETER INSIDE FACE INCHES INSULATION INTERIOR	SHT SIM SND SPEC SQ STD STL STRUCT STV SV	SHEET SIMILAR SANITARY NAPKIN DISPOSAL SPECIFICATIONS SQUARE SYNTHETIC SPORTS SURFACE STANDARD STEEL STRUCTURAL STRAIGHT VINYL BASE SHEET VINYL
CJ CL CLG CMU CONC CONT CONST CONTR CT	CONTROL JOINT CENTER LINE CEILING CONCRETE MASONRY UNIT CONCRETE CONTINUOUS CONSTRUCTION CONTRACTOR CERAMIC TILE	JNT or JT KEC KP	JOINT KITCHEN EQUIPMENT CONSULTANT KICK PLATE	T TB TH THK TO TOB TOM TOW TP TYP	TEMPERED (GLASS) TACK BOARD THERMAL (INSULATED) THICKNESS TOP OF TOP OF BEAM TOP OF MASONRY TOILET PAPER DISPENSER TYPICAL
DBL DC DIA DIM DNA DR DTL DWG	DOUBLE DOOR CLOSER DIAMETER DIMENSION DOES NOT APPLY DOOR DETAIL DRAWING	L LAB LNTL LOC LS	LAVATORY LABEL (FIRE) LINTEL LOCATION LOCKSET	VB VCT VERT VWC	VAPOR BARRIER VINYL COMPOSITION TILE VERTICAL VINYL WALL COVERING
E EFA EFL EFLJ EFLC ELEV EMHO	EAST EACH EACH FACE EXPANSION JOINT ELEVATION ELECTRICAL ELEVATOR ELECTROMAGNETIC FIELD OPEN	M MAS MAX MB MECH MFCR MIN MISC MO MR MRGB	MARBLE MASONRY MAXIMUM MARKER BOARD MECHANICAL MANUFACTURER MINIMUM MISCELLANEOUS MASONRY OPENING MOP OPENING MOISTURE RESISTANT GYPSUM BOARD METAL	W w/ WC WD WF WG WP	WEST WITH WATER CLOSET WOOD WATER FOUNTAIN WIRE GLASS WOOD PANELING
EQ EW EWC EXIST OF (E) EXP EXT	EQUAL EACH WAY ELECTRIC WATER COOLER EXISTING EXPANSION EXTERIOR	MTL N NA NIC NO NOM NTS	METAL NORTH NOT APPLICABLE NOT IN CONTRACT NUMBER NOMINAL NOT TO SCALE	OA OC OD OF OPNG OPP	OVERALL ON CENTER OUTSIDE DIAMETER OUTSIDE FACE OPENING OPPOSITE
FCS FD FDN FFE FIN FIN FL or FF FIN GR FR FRMG FT FV FWC	FLOOR COATING SYSTEM FLOOR DRAIN FOUNDATION FIRE EXTINGUISHER FINISH FLOOR ELEVATION FINISH FINISH FLOOR FINISH GRADE FLOOR FIRE RATING FRAMING FEET (FOOT) FIELD VERIFY FABRIC WALL COVERING	P PTD PB PL PLY WD PNL PS PT PT & D PTN	PAINT PAINTED FANIC BAR PLATE PLYWOOD PANEL PASSAGE LATCH SET PRESSURE TREATED PAPER TOWEL & WASTE DISPENSER PARTITION	RD RF REF REINF REQD RM RO	ROOF DRAIN REFER REFRIGERATOR REINFORCED REQUIRED ROOM ROUGH OPENING
G GA GALV GB GC GWB	GRANITE GAUGE GALVANIZED GRAB BARS GENERAL CONTRACTOR GYPSUM WALL BOARD				

GENERAL NOTES

- ALL WORK SHALL CONFORM TO LOCAL AND STATE LAWS, ORDINANCES AND PREVAILING EDITIONS OF ADOPTED BUILDING CODES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SECURE ALL PERMITS FOR WORK.
- THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS PRIOR TO COMMENCING THE WORK AND REPORT ANY DISCREPANCIES TO THE ARCHITECT. CONTRACTOR SHALL PROCEED WITH THE WORK ONLY AFTER SUCH DISCREPANCIES HAVE BEEN RESOLVED BY THE ARCHITECT. CONTRACTOR SHALL ALLOW A 48 HOUR TIME FRAME FOR RESOLVING DISCREPANCIES ONCE THE ARCHITECT HAS ACKNOWLEDGED THE CONDITION.
- THE CONTRACTOR SHALL REVIEW AND VERIFY ALL EXISTING CONDITIONS PRIOR TO STARTING THE WORK IN ANY GIVEN AREA.
- WORK WITH GIVEN DIMENSIONS AND LARGE SCALE DETAILS. DO NOT SCALE THE DRAWINGS AS THE REPRODUCTIVE PROCESS TENDS TO DISTORT THE ACCURACY OF THE GRAPHIC SCALE INDICATED.
- ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN A NEAT, SAFE, AND CLEAN MANNER. ALL CONSTRUCTION WASTE SHALL BE REMOVED FROM THE BUILDING. SITE BURNING IS NOT ALLOWED. LEAVE WORK AREA IN A CLEAN, SAFE CONDITION AT THE END OF EACH WORK DAY.
- ALL CONSTRUCTION DEBRIS SHALL BE DISPOSED OF AT AN APPROVED OFF-SITE FACILITY IN COMPLIANCE WITH ALL REGULATIONS.
- ALL WOOD IN CONTACT WITH MASONRY OR CONCRETE SHALL BE PRESSURE TREATED.
- THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY THE PORTLAND HISTORIC COMMISSION.THERE SHALL BE NO DEVIATION FROM THE WORK INDICATED IN THESE DOCUMENTS WITHOUT WRITTEN APPROVAL BY THE ARCHITECT.

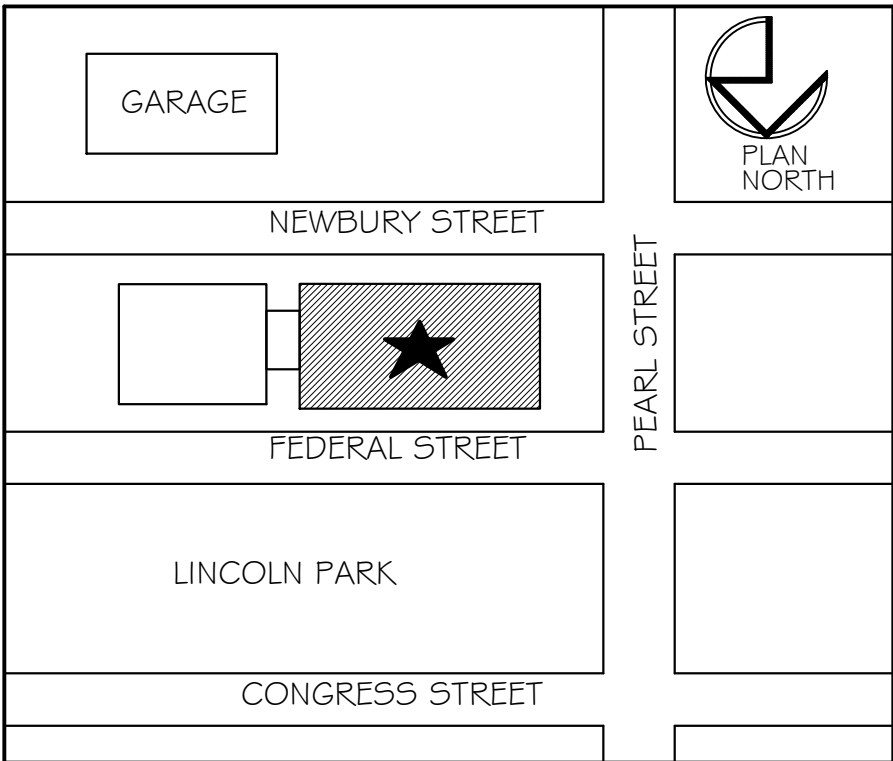
MATERIALS

	CONCRETE
	CONCRETE MASONRY UNIT
	BRICK
	GRAVEL
	SOIL
	STUD PARTITION (EXISTING)
	STEEL
	WOOD FRAMING
	WOOD BLOCKING
	PLYWOOD
	GYPSUM BOARD
	SUSPENDED ACOUSTICAL TILE
	BATT INSULATION
	RIGID INSULATION
	FINISH WOOD
	ONE HOUR RATED PARTITION
	TWO HOUR RATED PARTITION
	EXISTING PARTITION (SCREENED)
	NEW PARTITION

SYMBOLS

	ROOM NUMBER
	DOOR NUMBER
	WINDOW NUMBER
	BUILDING SECTION
	WALL SECTION
	DETAIL SECTION
	CASEWORK ELEVATION
	WINDOW TYPES & DETAILS
	EXISTING CONDITIONS PHOTOGRAPHS
	VERTICAL ELEVATION
	PARTITION TYPE
	STRUCTURAL CENTERLINE

LOCATION MAP



DRAWING INDEX

A0	COVER SHEET
A1	EXISTING BASEMENT FLOOR PLAN
A2	EXISTING FIRST FLOOR PLAN
A3	EXISTING SECOND FLOOR PLAN
A4	EXISTING THIRD FLOOR PLAN
A5	EXISTING ATTIC FLOOR PLAN
A6	WINDOW SCHEDULE & TYPES
A7	WINDOW TYPES & DETAILS
A8	EXISTING CONDITIONS PHOTOGRAPHS
A9	EXISTING CONDITIONS PHOTOGRAPHS

PORTLAND HISTORICAL
COMMISSION
PACKAGE

NEWBURY STREET

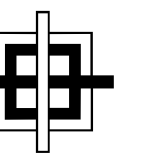
COURTHOUSE ADDITION

PEARL STREET

FEDERAL STREET

DEMOLITION NOTES

1. REMOVE EXISTING METAL WINDOWS IN OPENINGS DESIGNATED TO RECEIVE NEW UNITS. DISPOSE OF EXISTING WINDOWS IN ACCORDANCE WITH LAWS, REGULATIONS, AND ORDINANCES.
2. PREPARE THE OPENINGS TO RECEIVE NEW WINDOWS AS REQUIRED AND IN ACCORDANCE WITH THE DETAILS INDICATED. FIELD VERIFY EXISTING MASONRY OPENING AND INTERIOR FINISH OPENING PRIOR TO ORDERING AND INSTALLING WINDOWS.
3. PROTECT EXISTING EXTERIOR STONEWORK DURING DEMOLITION AND NEW WINDOW INSTALLATION.
4. PROTECT EXISTING INTERIOR WOODWORK AND WALL FINISHES DURING DEMOLITION AND NEW WINDOW INSTALLATION.
5. REPAIR ANY DAMAGE TO ANY EXISTING SURFACE TO REMAIN TO MATCH THE EXISTING ADJACENT FINISH AT NO ADDITIONAL EXPENSE TO THE OWNER.



GRANT HAY
ASSOCIATES

ARCHITECTURE & INTERIOR DESIGN
P.O. BOX 6179 FALMOUTH MAINE 04105
207.871.5900 www.granthays.com

SHEET

REV/NO/1

DRAWING NAME

HISTORIC EXTERIOR WINDOWS
CUMBERLAND COUNTY COURTHOUSE
205 NEWBURY STREET
PORTLAND, MAINE 04101

SHEET

BASEMENT
FLOOR
PLAN

DATE

7 DEC '15

SCALE

1/8"=1'-0"

DRAWN

MFH/mgk

JOB NO.

150512

SHEET

A-1

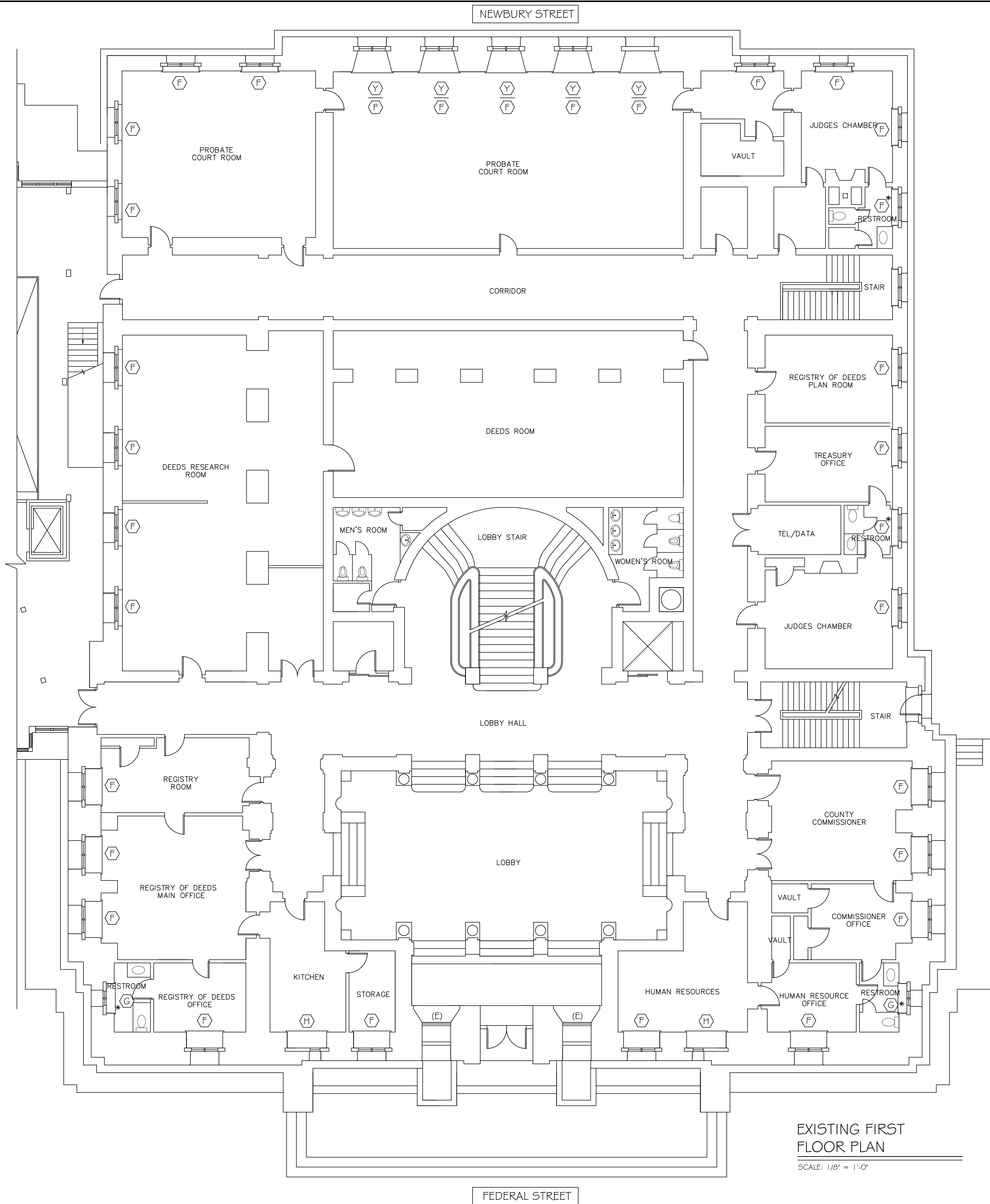
COPYRIGHT
REPRODUCTION OR REVISE OF THIS
DOCUMENT WITHOUT WRITTEN
PERMISSION FROM GRANT HAY
ASSOCIATES IS PROHIBITED.

EXISTING BASEMENT
FLOOR PLAN

SCALE: 1/8" = 1'-0"



COURTHOUSE ADDITION



EXISTING FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"



DEMOLITION NOTES

1. REMOVE EXISTING METAL WINDOWS IN OPENINGS DESIGNATED TO RECEIVE NEW UNITS. DISPOSE OF EXISTING WINDOWS IN ACCORDANCE WITH LAWS, REGULATIONS, AND ORDINANCES.
2. PREPARE THE OPENINGS TO RECEIVE NEW WINDOWS AS REQUIRED AND IN ACCORDANCE WITH THE DETAILS INDICATED. FIELD VERIFY EXISTING MASONRY OPENING AND INTERIOR FINISH OPENING PRIOR TO ORDERING AND INSTALLING WINDOWS.
3. PROTECT EXISTING EXTERIOR STONEMWORK DURING DEMOLITION AND NEW WINDOW INSTALLATION.
4. PROTECT EXISTING INTERIOR WOODWORK AND WALL FINISHES DURING DEMOLITION AND NEW WINDOW INSTALLATION.
5. REPAIR ANY DAMAGE TO ANY EXISTING SURFACE TO REMAIN TO MATCH THE EXISTING ADJACENT FINISH AT NO ADDITIONAL EXPENSE TO THE OWNER.

SHEET

REV/NO/1

DRAWING NAME

HISTORIC EXTERIOR WINDOWS
CUMBERLAND COUNTY COURTHOUSE
205 NEWBURY STREET
PORTLAND, MAINE 04101

SHEET

FIRST FLOOR PLAN

DATE
7 DEC '15

SCALE
1/8"=1'-0"

DRAWN
MFH/mgk

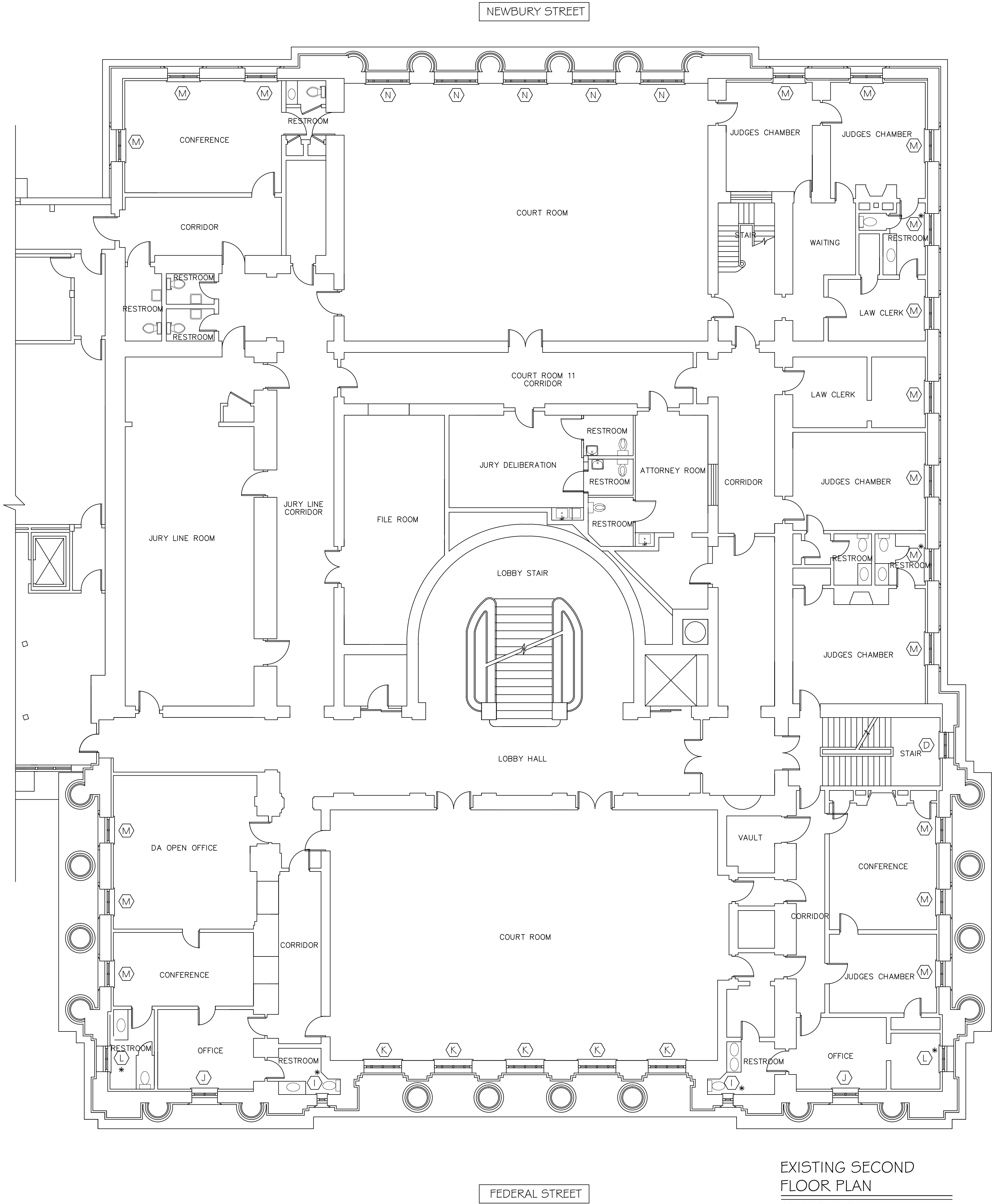
JOB NO.
150512

SHEET

A-2

COPYRIGHT
REPRODUCTION OR REUSE OF THIS
DOCUMENT WITHOUT WRITTEN
PERMISSION FROM GRANT HAYS
ASSOCIATES IS PROHIBITED.

COURTHOUSE ADDITION

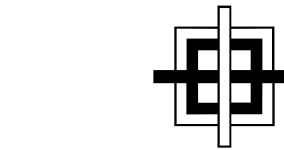


EXISTING SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"

DEMOLITION NOTES

1. REMOVE EXISTING METAL WINDOWS IN OPENINGS DESIGNATED TO RECEIVE NEW UNITS. DISPOSE OF EXISTING WINDOWS IN ACCORDANCE WITH LAWS, REGULATIONS, AND ORDINANCES.
2. PREPARE THE OPENINGS TO RECEIVE NEW WINDOWS AS REQUIRED AND IN ACCORDANCE WITH THE DETAILS INDICATED. FIELD VERIFY EXISTING MASONRY OPENING AND INTERIOR FINISH OPENING PRIOR TO ORDERING AND INSTALLING WINDOWS.
3. PROTECT EXISTING EXTERIOR STONEMWORK DURING DEMOLITION AND NEW WINDOW INSTALLATION.
4. PROTECT EXISTING INTERIOR WOODWORK AND WALL FINISHES DURING DEMOLITION AND NEW WINDOW INSTALLATION.
5. REPAIR ANY DAMAGE TO ANY EXISTING SURFACE TO REMAIN TO MATCH THE EXISTING ADJACENT FINISH AT NO ADDITIONAL EXPENSE TO THE OWNER.



GRANT HAYS
ASSOCIATES

ARCHITECTURE & INTERIOR DESIGN
P.O. BOX 6179 FALMOUTH MAINE 04105
207.871.5900 www.granthays.com

1/2" = 1' - 0"

REV 1/10/15

DRAWING NAME

HISTORIC EXTERIOR WINDOWS
CUMBERLAND COUNTY COURTHOUSE

205 NEWBURY STREET
PORTLAND, MAINE 04101

1/2" = 1' - 0"

SECOND
FLOOR
PLAN

DATE
7 DEC '15

SCALE
1/8" = 1'-0"

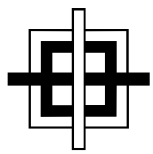
DRAWN
MFH/mgk

JOB NO.
150512

1/2" = 1' - 0"

A-3

COPYRIGHT
REPRODUCTION OR REUSE OF THIS
DOCUMENT WITHOUT WRITTEN
PERMISSION FROM GRANT HAYS
ASSOCIATES IS PROHIBITED.



GRANT HAYS

ASSOCIATES

ARCHITECTURE & INTERIOR DESIGN
P.O. BOX 6179 FALMOUTH MAINE 04105
207.871.5900 www.granthays.com

SCALE

REV/10/15

DRAWING NAME

HISTORIC EXTERIOR WINDOWS
CUMBERLAND COUNTY COURTHOUSE

205 NEWBURY STREET PORTLAND, MAINE 04101

1/2 SHEET

THIRD
FLOOR
PLAN

DATE

7 DEC '15

SCALE

1/8"=1'-0"

DRAWN

MFH/mgk

JOB NO.

150512

1/2 SHEET

A-4

COPYRIGHT
REPRODUCTION OR REUSE OF THIS
DOCUMENT WITHOUT WRITTEN
PERMISSION FROM GRANT HAYS
ASSOCIATES IS PROHIBITED.

NEWBURY STREET

COURTHOUSE ADDITION

PEARL STREET

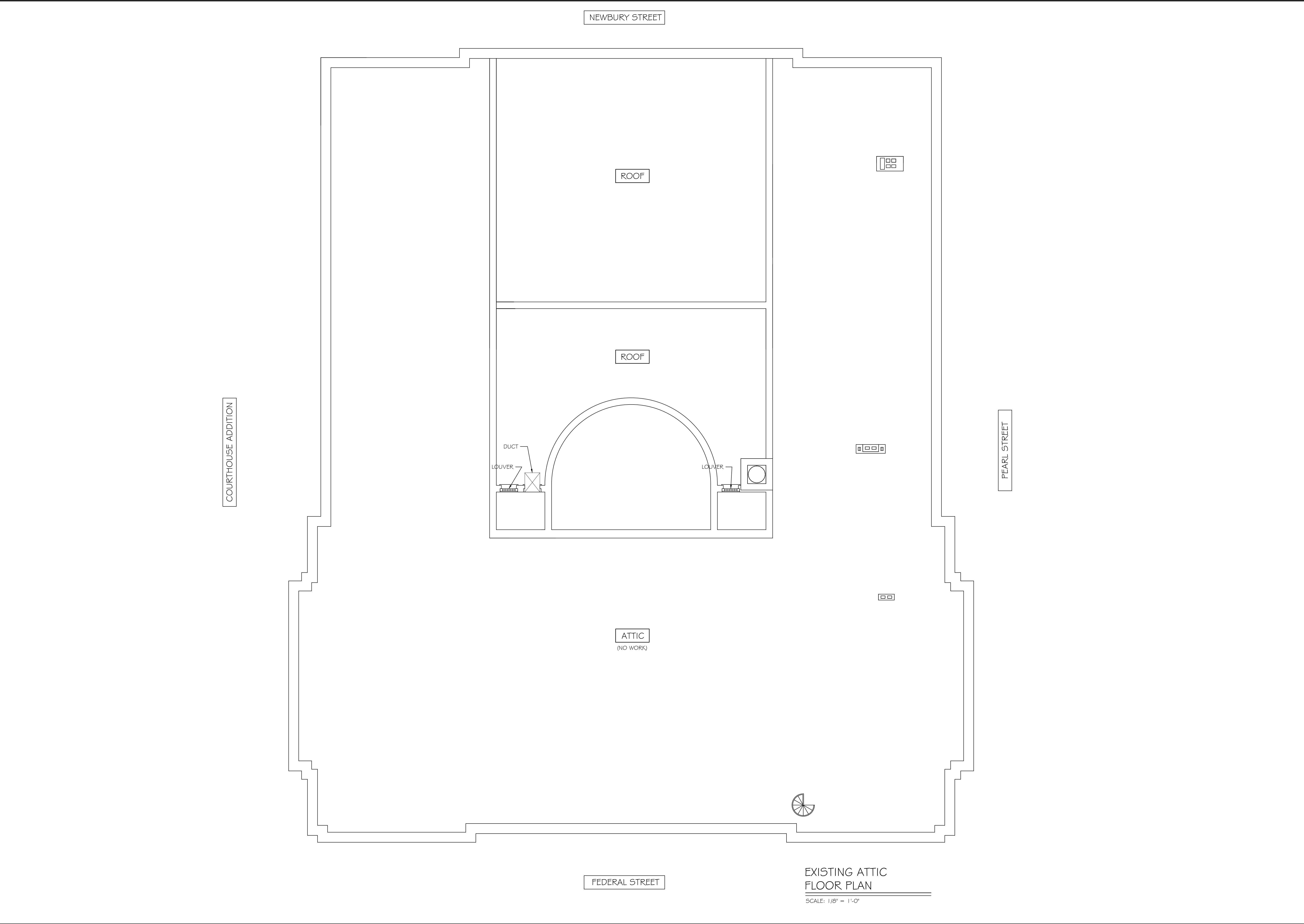
FEDERAL STREET

EXISTING THIRD
FLOOR PLAN

SCALE: 1/8" = 1'-0"

DEMOLITION NOTES

1. REMOVE EXISTING METAL WINDOWS IN OPENINGS DESIGNATED TO RECEIVE NEW UNITS. DISPOSE OF EXISTING WINDOWS IN ACCORDANCE WITH LAWS, REGULATIONS, AND ORDINANCES.
2. PREPARE THE OPENINGS TO RECEIVE NEW WINDOWS AS REQUIRED AND IN ACCORDANCE WITH THE DETAILS INDICATED. FIELD VERIFY EXISTING MASONRY OPENING AND INTERIOR FINISH OPENING PRIOR TO ORDERING AND INSTALLING WINDOWS.
3. PROTECT EXISTING EXTERIOR STONEWORK DURING DEMOLITION AND NEW WINDOW INSTALLATION.
4. PROTECT EXISTING INTERIOR WOODWORK AND WALL FINISHES DURING DEMOLITION AND NEW WINDOW INSTALLATION.
5. REPAIR ANY DAMAGE TO ANY EXISTING SURFACE TO REMAIN TO MATCH THE EXISTING ADJACENT FINISH AT NO ADDITIONAL EXPENSE TO THE OWNER.



EXISTING ATTIC
FLOOR PLAN

SCALE: 1/8" = 1'-0"

DATE

REVISIONS

DRAWING NAME

HISTORIC EXTERIOR WINDOWS
CUMBERLAND COUNTY COURTHOUSE
205 NEWBURY STREET
PORTLAND, MAINE 04101

SHEET

ATTIC
FLOOR
PLAN

DATE
7 DEC '15

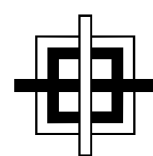
SCALE
1/8"=1'-0"

DRAWN
MFH/mgk

JOB NO.
150512

SHEET

A-5
COPYRIGHT
REPRODUCTION OR RESALE OF THIS
DOCUMENT WITHOUT WRITTEN
PERMISSION FROM GRANT HAY
ASSOCIATES IS PROHIBITED.

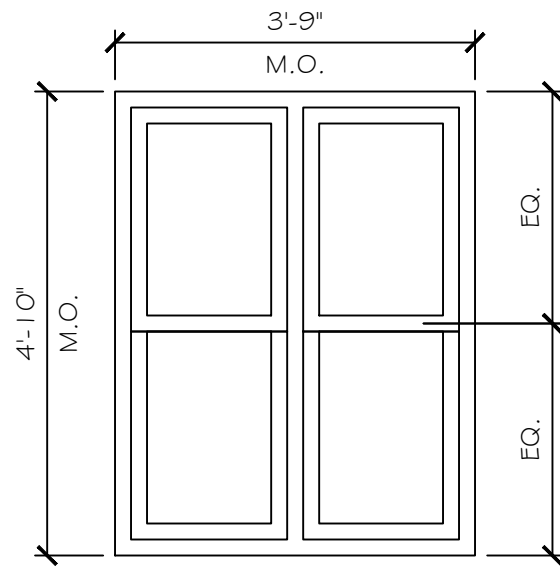


GRANT HAY
ASSOCIATES

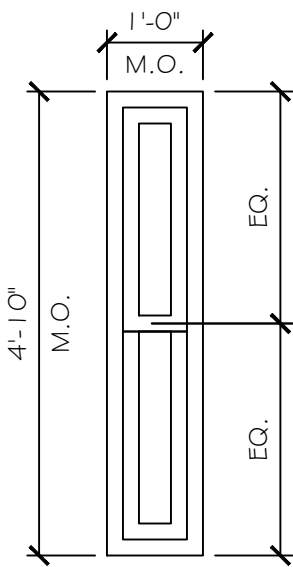
ARCHITECTURE & INTERIOR DESIGN
P.O. BOX 6179 FALMOUTH MAINE 04105
207.871.5900 www.granthays.com

SCALE

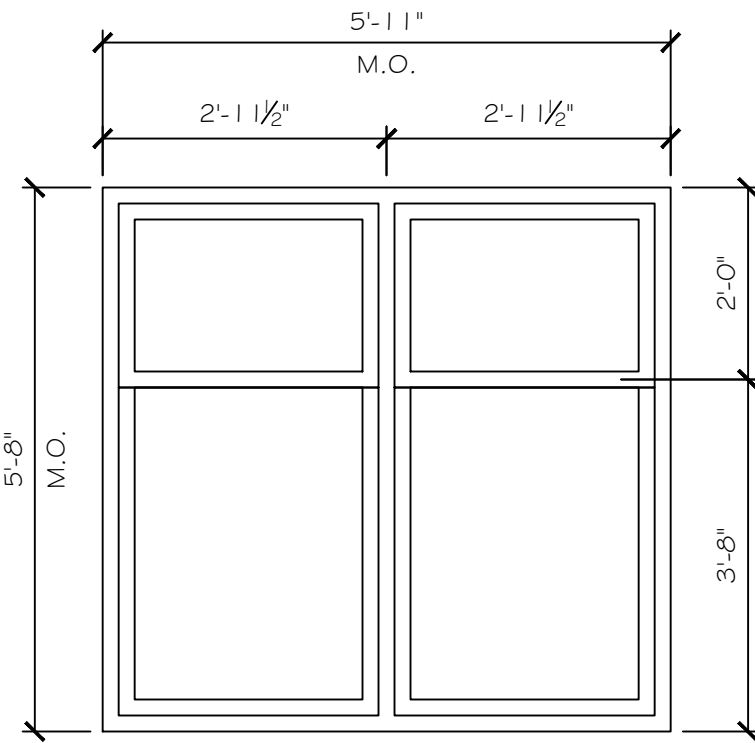
REVISIONS



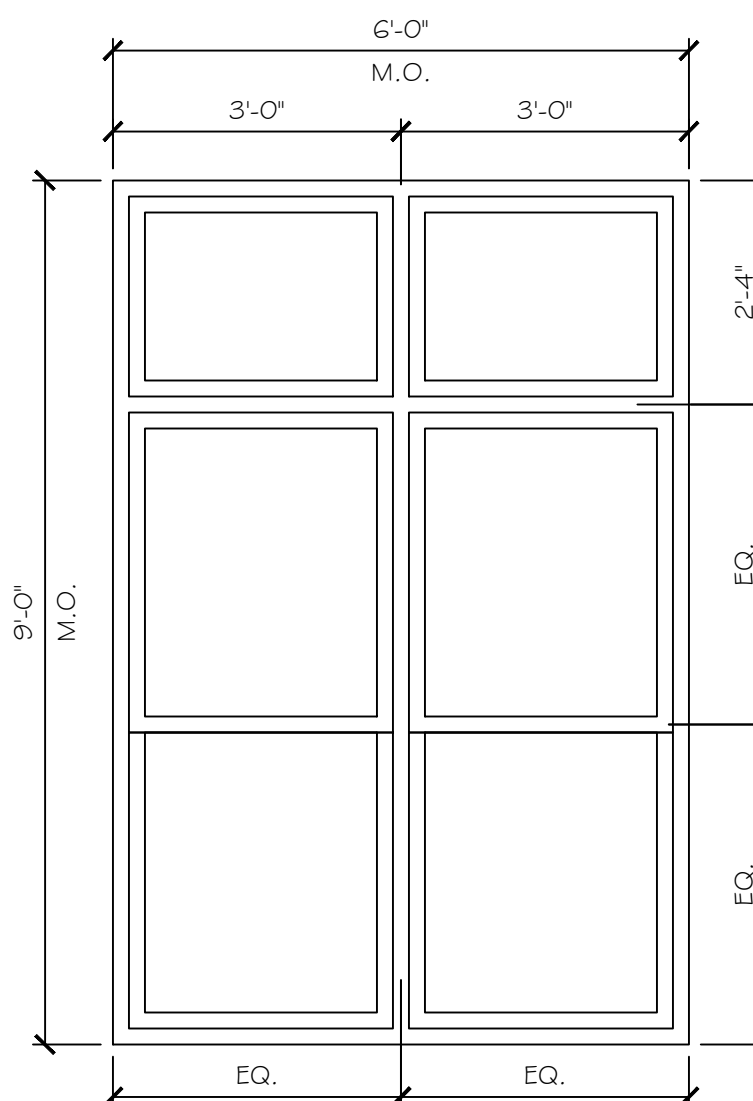
Q DOUBLE HUNG
(* LOCATIONS w/ OBSCURE I.G.)



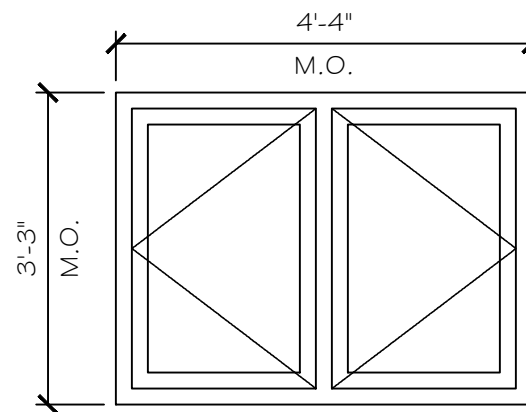
R DOUBLE HUNG
(* LOCATIONS w/ OBSCURE I.G.)



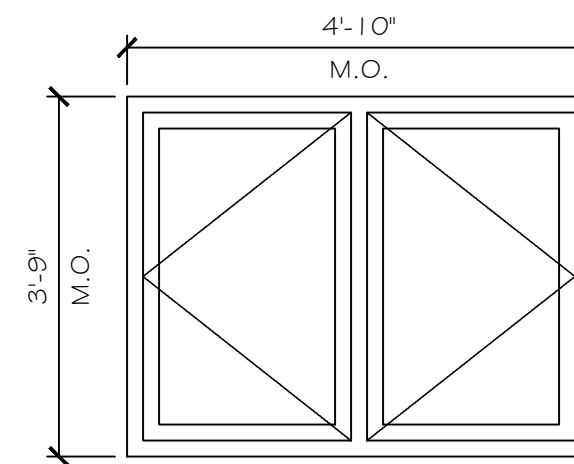
S DOUBLE HUNG
CASEMENT



T FIXED TRANSOM
DOUBLE HUNG



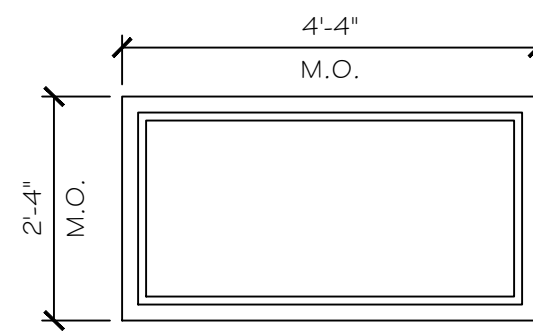
U CASEMENT



V CASEMENT

W EXISTING

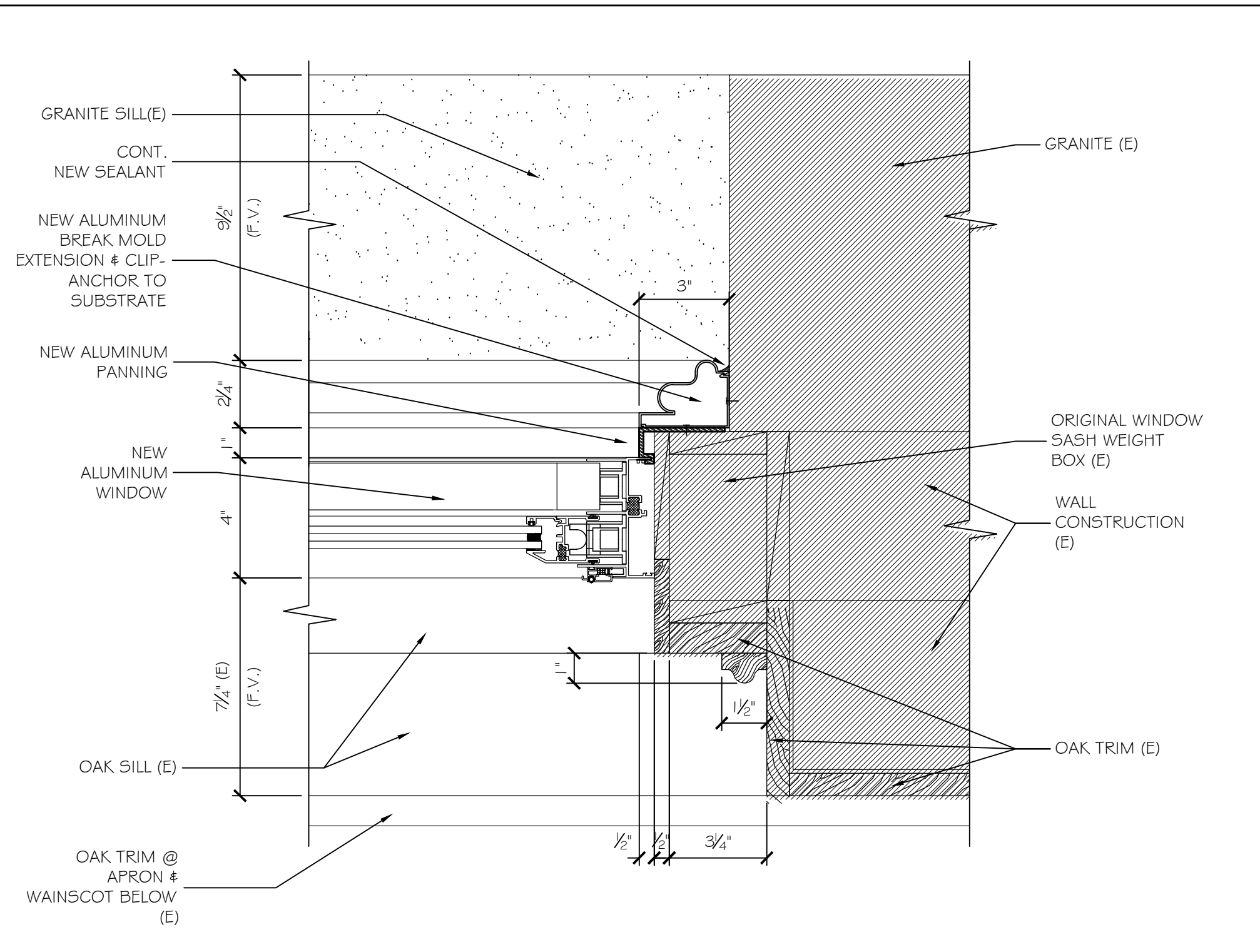
X EXISTING



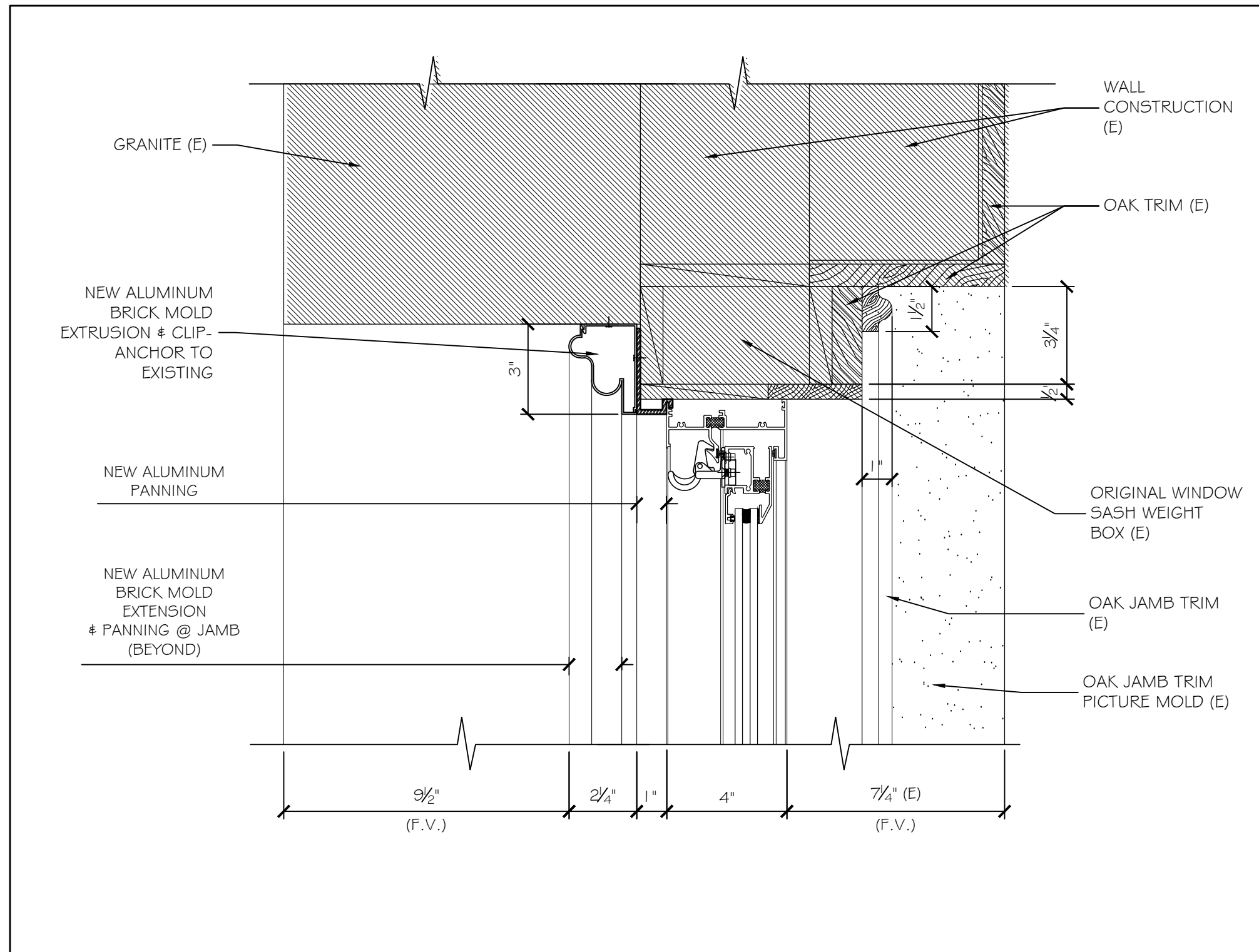
Y FIXED
OBSCURE GLASS

WINDOW TYPES

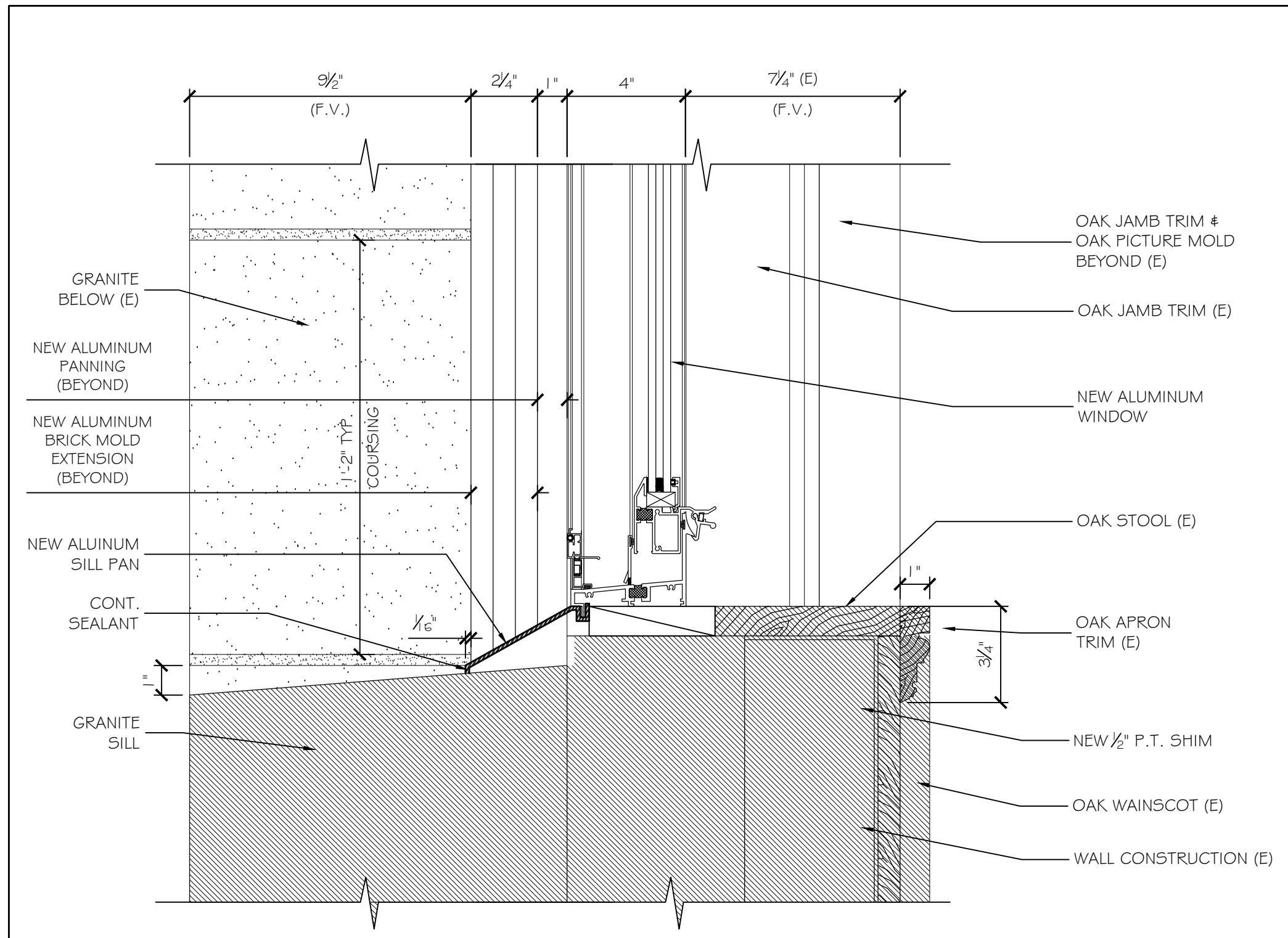
1/2" = 1'-0"



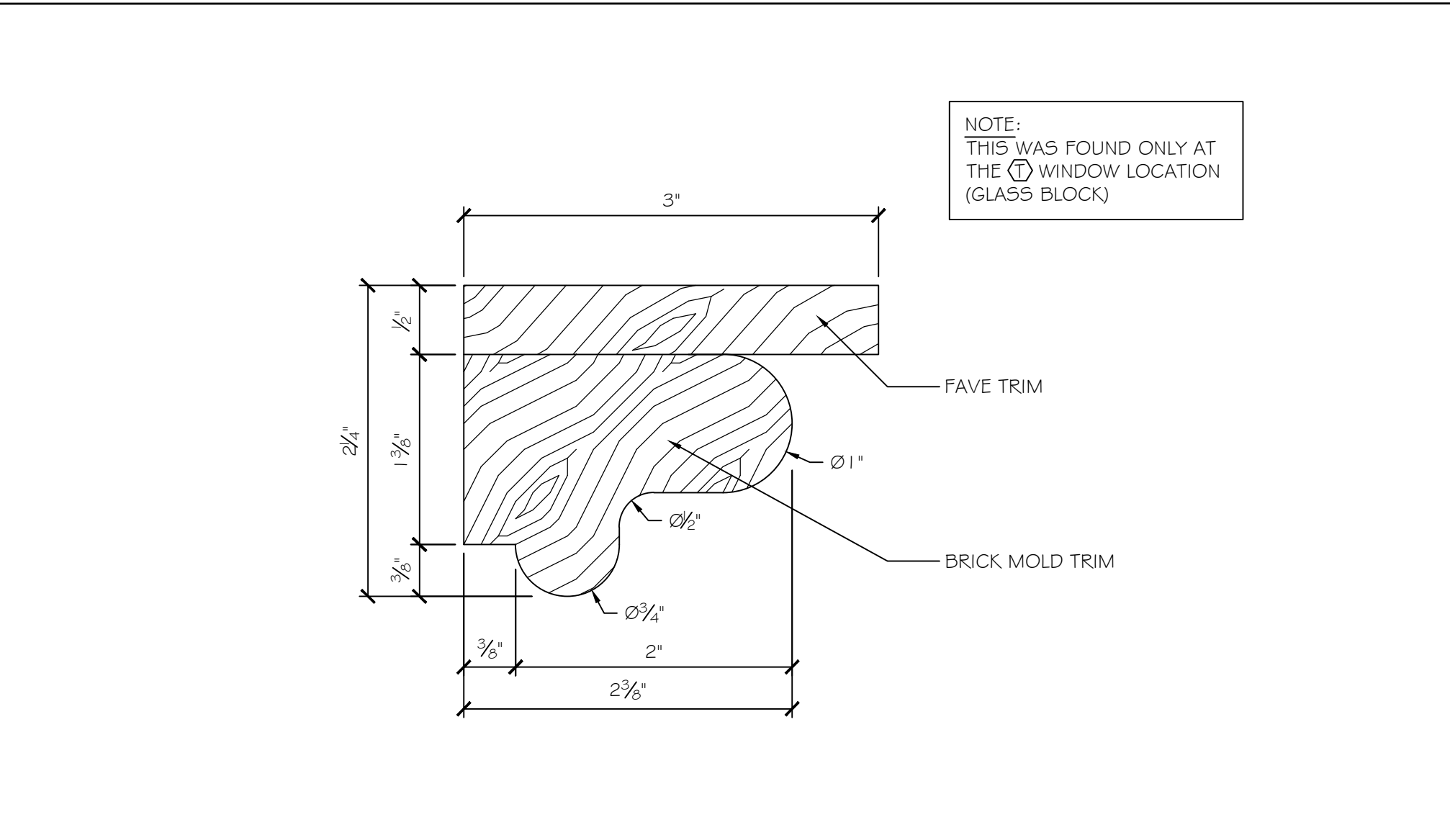
1 JAMB DETAIL 3" = 1'-0"



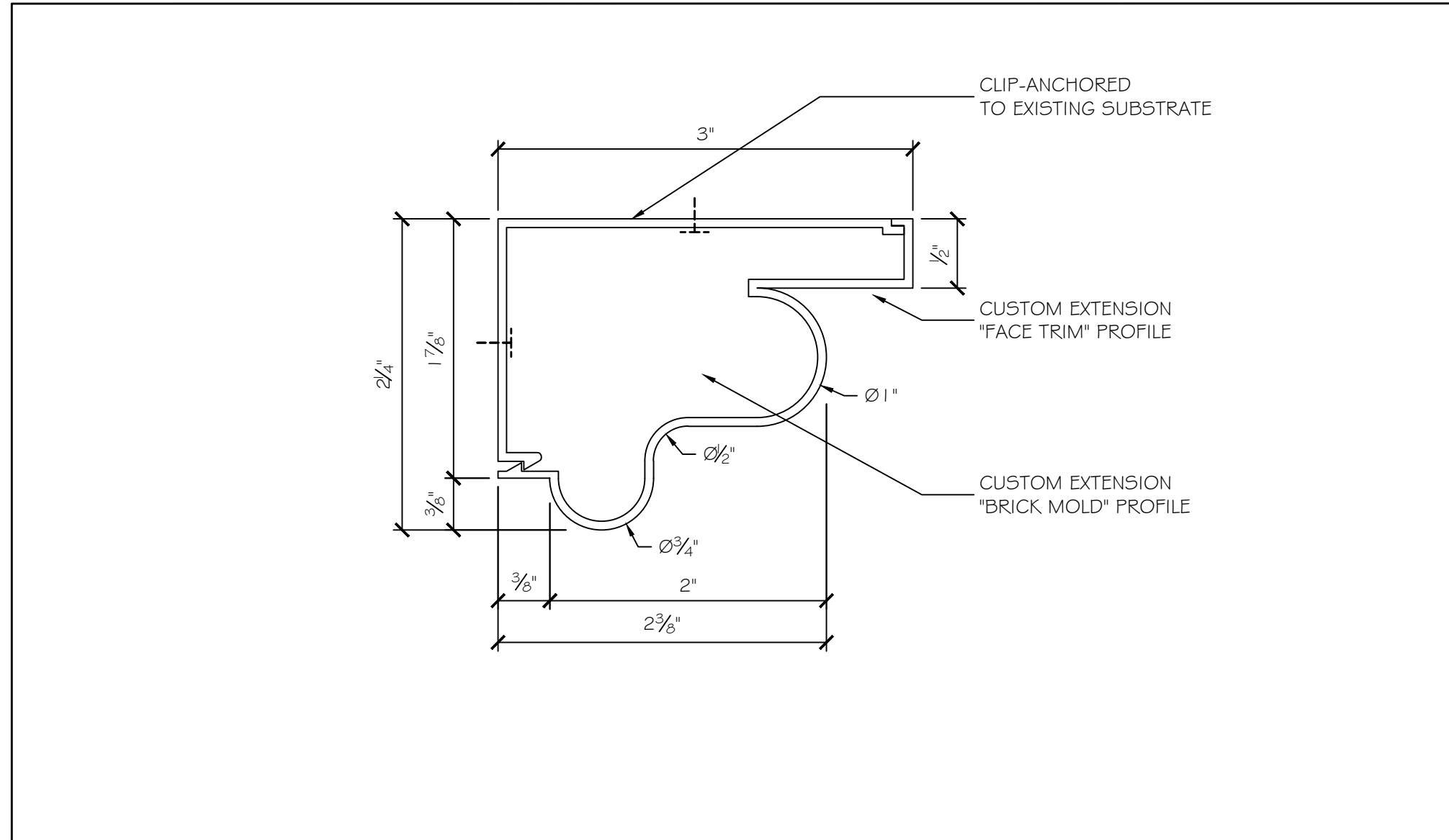
2 HEAD DETAIL 3" = 1'-0"



3 SILL DETAIL 3" = 1'-0"



4 EXISTING PTD WOOD BRICK MOLD PROFILE FULL SIZE



5 CUSTOM ALUMINUM BRICK MOLD EXTENSION FULL SIZE

DRAWING NAME

HISTORIC EXTERIOR WINDOWS
CUMBERLAND COUNTY COURTHOUSE
205 NEWBURY STREET
PORTLAND, MAINE 04101

SHEET

WINDOW
TYPES
& DETAILS

DATE

7 DEC '15

SCALE

A/ NOTED

DRAWN

MFH/mgk

JOB NO.

150512

SHEET

A-7

COPYRIGHT
REPRODUCTION OR REVUE OF THIS
DOCUMENT WITHOUT WRITTEN
PERMISSION FROM GRANT HAY
ASSOCIATES IS PROHIBITED.



FEDERAL STREET FACADE



FEDERAL STREET - MAIN ENTRY



PEARL STREET FACADE



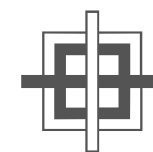
NEWBURY STREET FACADE



NEWBURY STREET - CENTER



NEWBURY STREET @ CONNECTION TO NEW ADDITION



GRANT HAYS
ASSOCIATES

ARCHITECTURE & INTERIOR DESIGN
P.O. BOX 6179 FALMOUTH MAINE 04105
207.871.5900 www.granthays.com

1/EA

REVISIONS

DRAWING NAME

HISTORIC EXTERIOR WINDOWS
CUMBERLAND COUNTY COURTHOUSE
205 NEWBURY STREET
PORTLAND, MAINE 04101

1/HEET

PHOTOGRAPHS

DATE
7 DEC '15

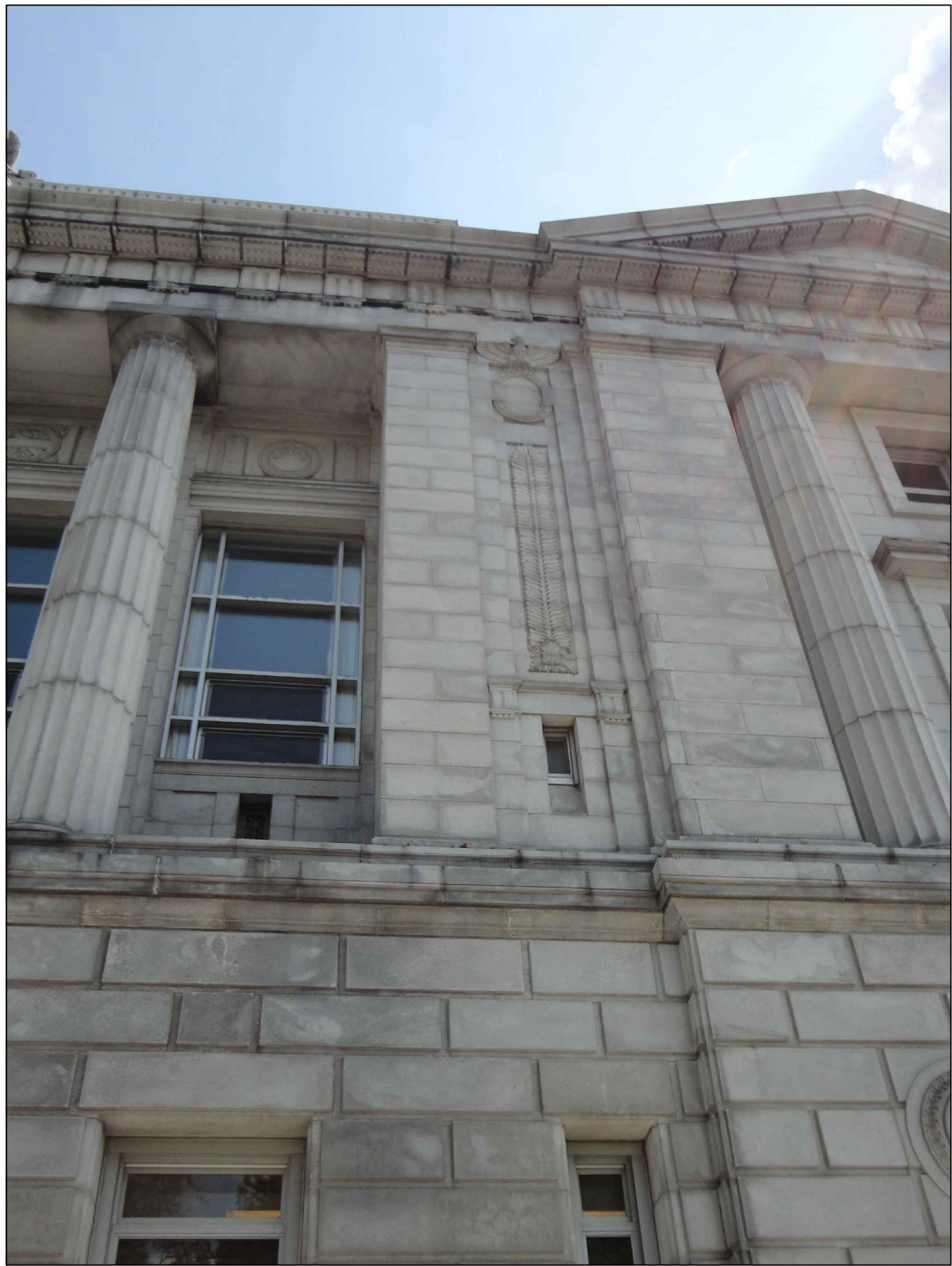
SCALE
AS NOTED

DRAWN
MFH/mgk

JOB NO.
150512

1/HEET
A-8

COPYRIGHT
REPRODUCTION OR RESALE OF THIS
DOCUMENT WITHOUT WRITTEN
PERMISSION FROM GRANT HAYS
ASSOCIATES IS PROHIBITED.



FEDERAL STREET DETAIL



FEDERAL STREET DETAIL



PEARL STREET DETAIL



NEWBURY STREET DETAIL



NEWBURY STREET DETAIL - NEW ADDITION



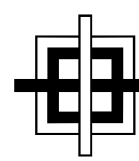
BASEMENT WINDOW



FIRST FLOOR WINDOW



FEDERAL STREET - NEW ADDITION



GRANT HAYS
ASSOCIATES

ARCHITECTURE & INTERIOR DESIGN
P.O. BOX 6179 FALMOUTH MAINE 04105
207.871.5900 www.granthays.com

1/EA

REVISIONS

DRAWING NAME

HISTORIC EXTERIOR WINDOWS
CUMBERLAND COUNTY COURTHOUSE
205 NEWBURY STREET
PORTLAND, MAINE 04101

1/HEET

PHOTOGRAPHS

DATE

7 DEC '15

1/SCALE

A/ NOTED

DRAWN

MFH/mgk

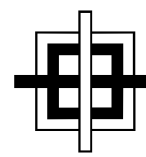
JOB NO.

150512

1/HEET

A-9

COPYRIGHT
REPRODUCTION OR RESALE OF THIS
DOCUMENT WITHOUT WRITTEN
PERMISSION FROM GRANT HAYS
ASSOCIATES IS PROHIBITED.



GRANT HAY
ASSOCIATES

ARCHITECTURE & INTERIOR DESIGN
P.O. BOX 6179 FALMOUTH MAINE 04105
207.871.5900 www.granthays.com

SCALE

REVISIONS

DRAWING NAME

HISTORIC EXTERIOR WINDOWS
CUMBERLAND COUNTY COURTHOUSE
205 NEWBURY STREET
PORTLAND, MAINE 04101

SHEET

WINDOW
SCHEDULE
& TYPES

DATE
7 DEC '15

SCALE
AS NOTED

DRAWN
MFH/mgk

JOB NO.
150512

SHEET

A-6

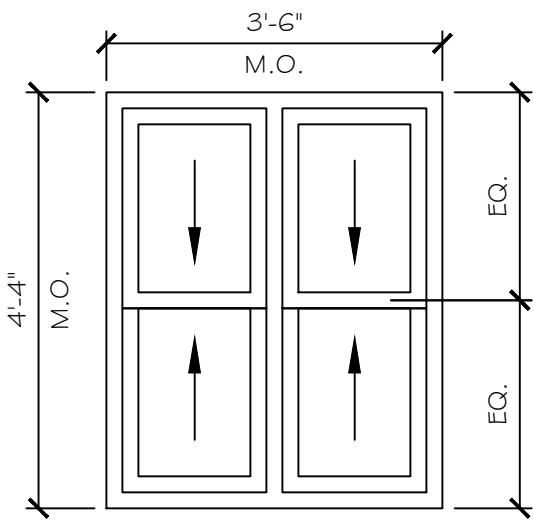
COPYRIGHT
REPRODUCTION OR REUSE OF THIS
DOCUMENT WITHOUT WRITTEN
PERMISSION FROM GRANT HAY
ASSOCIATES IS PROHIBITED.

WINDOW SCHEDULE

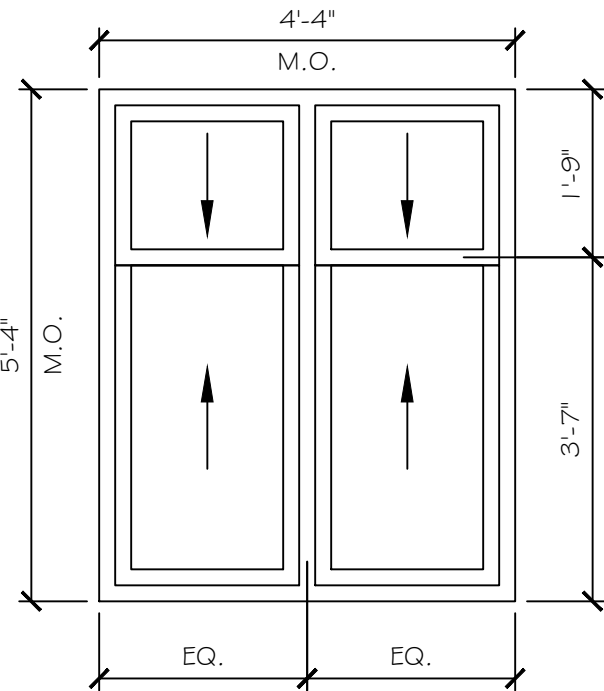
ABBREVIATIONS

AL	ALUMINUM	MTL	METAL
CMT	CASEMENT	TEMP	TEMPERED
DH	DOUBLE HUNG	V	VINYL
EQ	EXISTING	WG	WIRE GLASS
FIX	FIXED SASH	WD	WOOD
INSUL	INSULATED	W /	WITH

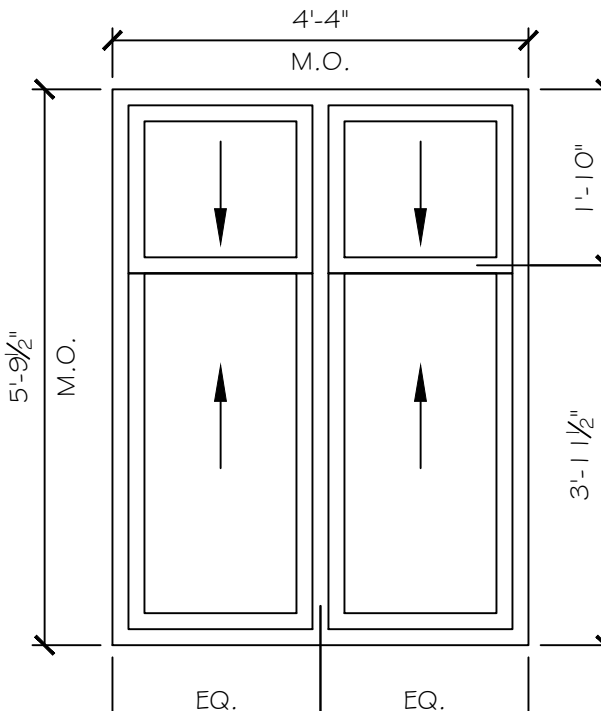
NO.	TYPE	MANUFACTURER		NOMINAL SIZE		DETAILS					REMARKS
		MFGR	MODEL	WIDTH	HEIGHT	HEAD	JAMB	SILL A	SILL B	MULL	
A	DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	3'-6"	4'-4"						* OBSCURE GLASS
B	DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	4'-4"	5'-4"						
C	DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	4'-4"	5'-9 1/2"						* OBSCURE GLASS PER PLAN
D	DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	4'-4"	6'-7 1/2"						
E	DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	4'-4"	7'-4"						
F	FIXED/DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	4'-4"	8'-6"						* OBSCURE GLASS PER PLAN
G	FIXED/DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	3'-4"	8'-6"						* OBSCURE GLASS PER PLAN
H	FIXED/DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	2'-0"	8'-6"						
I	CASEMENT	T-BREAK ALUM	I.G. LOW 'E' *	1'-0"	2'-1 1/2"						* OBSCURE GLASS PER PLAN
J	FIXED/DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	5'-11"	9'-7"						
K	FIXED/DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	6'-4"	12'-3 1/2"						
L	FIXED/DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	4'-4"	9'-7"						* OBSCURE GLASS PER PLAN
M	FIXED/DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	4'-4"	9'-6"						* OBSCURE GLASS PER PLAN
N	FIXED/DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	6'-4"	11'-0"						
O	DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	6'-4"	5'-4"						
P	DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	4'-8"	3'-8"						* OBSCURE GLASS PER PLAN
Q	DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	3'-9"	4'-10"						* OBSCURE GLASS PER PLAN
R	DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	1'-0 1/2"	4'-10"						* OBSCURE GLASS PER PLAN
S	DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	5'-11"	5'-8"						
T	FIXED/DOUBLE HUNG	T-BREAK ALUM	I.G. LOW 'E' *	6'-0"	9'-0"						
U	CASEMENT	T-BREAK ALUM	I.G. LOW 'E' *	4'-4"	3'-3"						
V	CASEMENT	T-BREAK ALUM	I.G. LOW 'E' *	4'-10"	3'-9"						
W	EXISTING	EXISTING	EXISTING	4'-4"	8'-6"						EXISTING TO REMAIN
X	EXISTING	EXISTING	EXISTING	4'-4"	5'-9 1/2"						EXISTING PANEL TO REMAIN
Y	EXISTING	T-BREAK ALUM	I.G. LOW 'E' *	4'-4"	2'-4"						* OBSCURE GLASS PER PLAN
NOTES:											
1. MASONRY OPENINGS INDICATED ABOVE SHALL BE FIELD VERIFIED PRIOR TO COMMENCEMENT OF THE WORK.											
2. INTERIOR WINDOW DIMENSIONS ARE APPROXIMATELY M.O. + 2" @ WIDTH AND M.O. - 3" AT HEIGHT.											
FIELD VERIFY ALL WINDOW DIMENSIONS PRIOR TO FABRICATION OF NEW UNITS.											



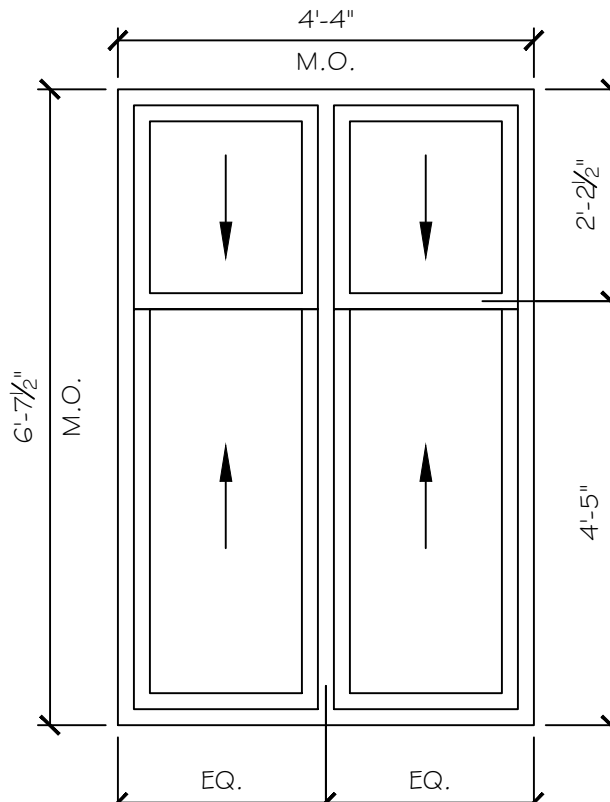
A DOUBLE HUNG
(OBSCURE I.G.)



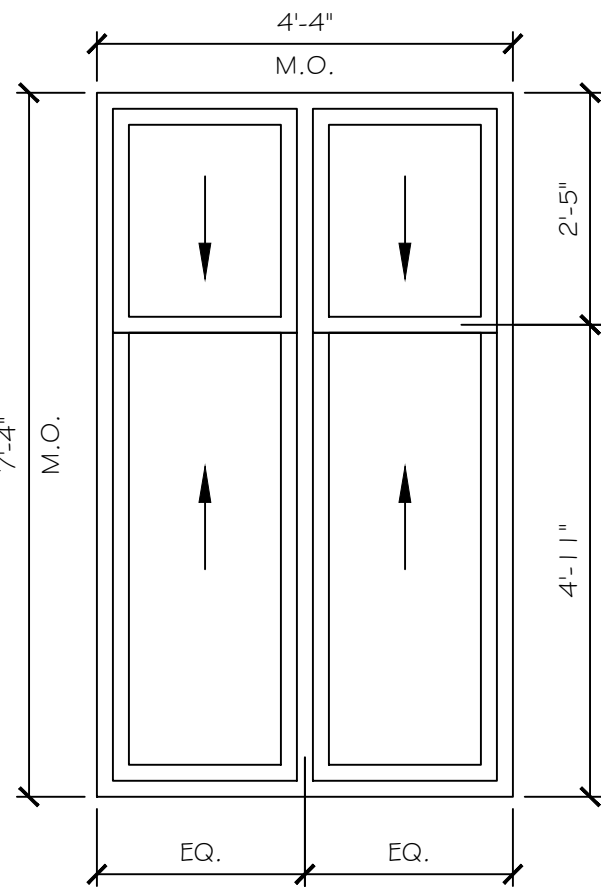
B DOUBLE HUNG



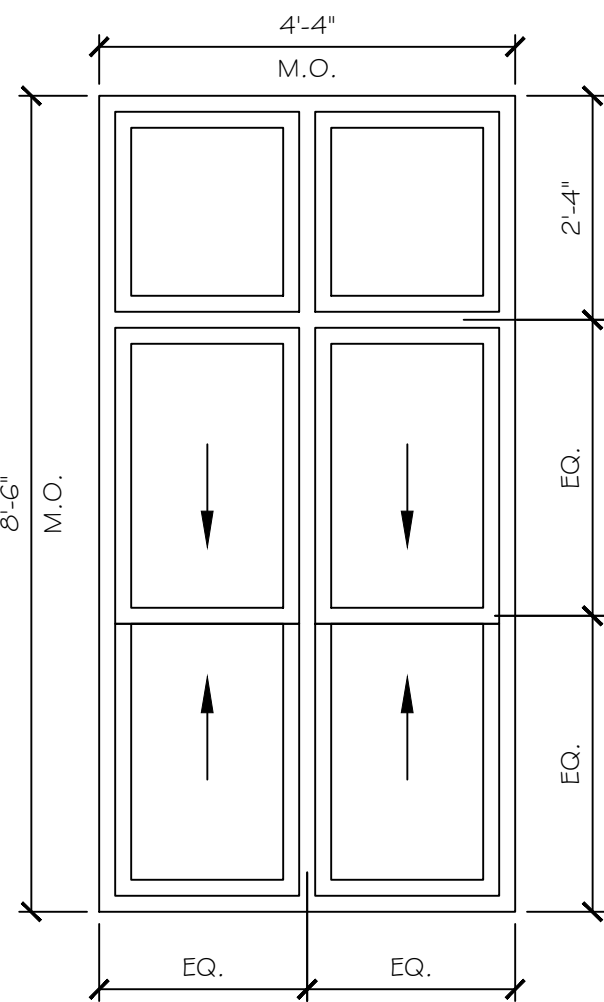
C DOUBLE HUNG
OFFSET SASHES
(* LOCATIONS w/ OBSCURE I.G.)



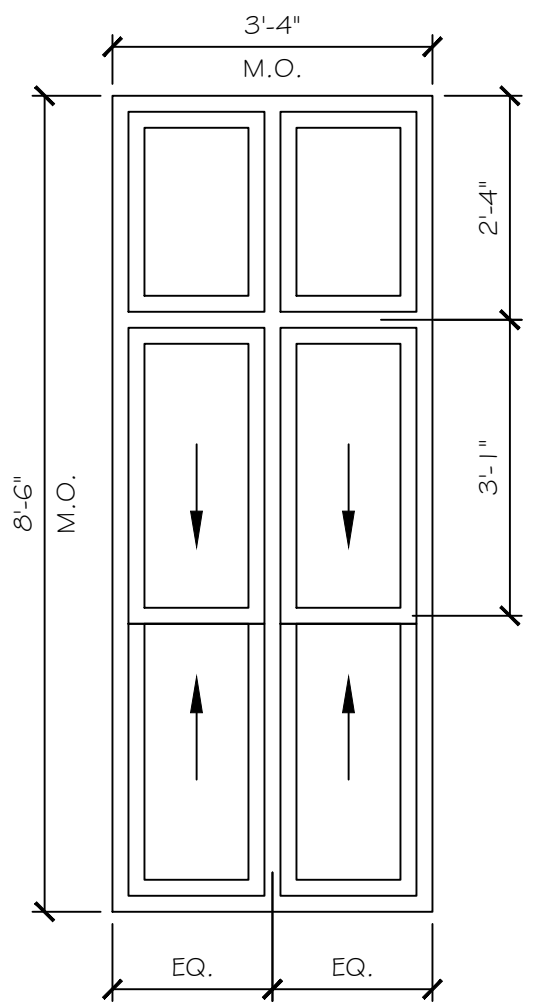
D DOUBLE HUNG
OFFSET SASHES



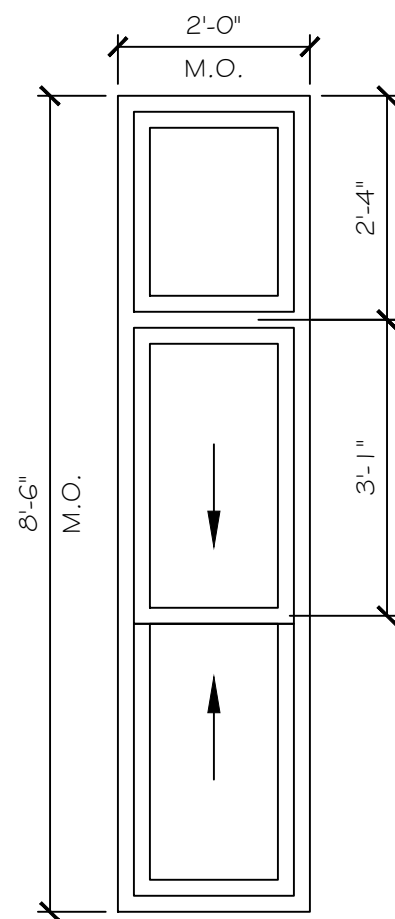
E DOUBLE HUNG
OFFSET SASHES



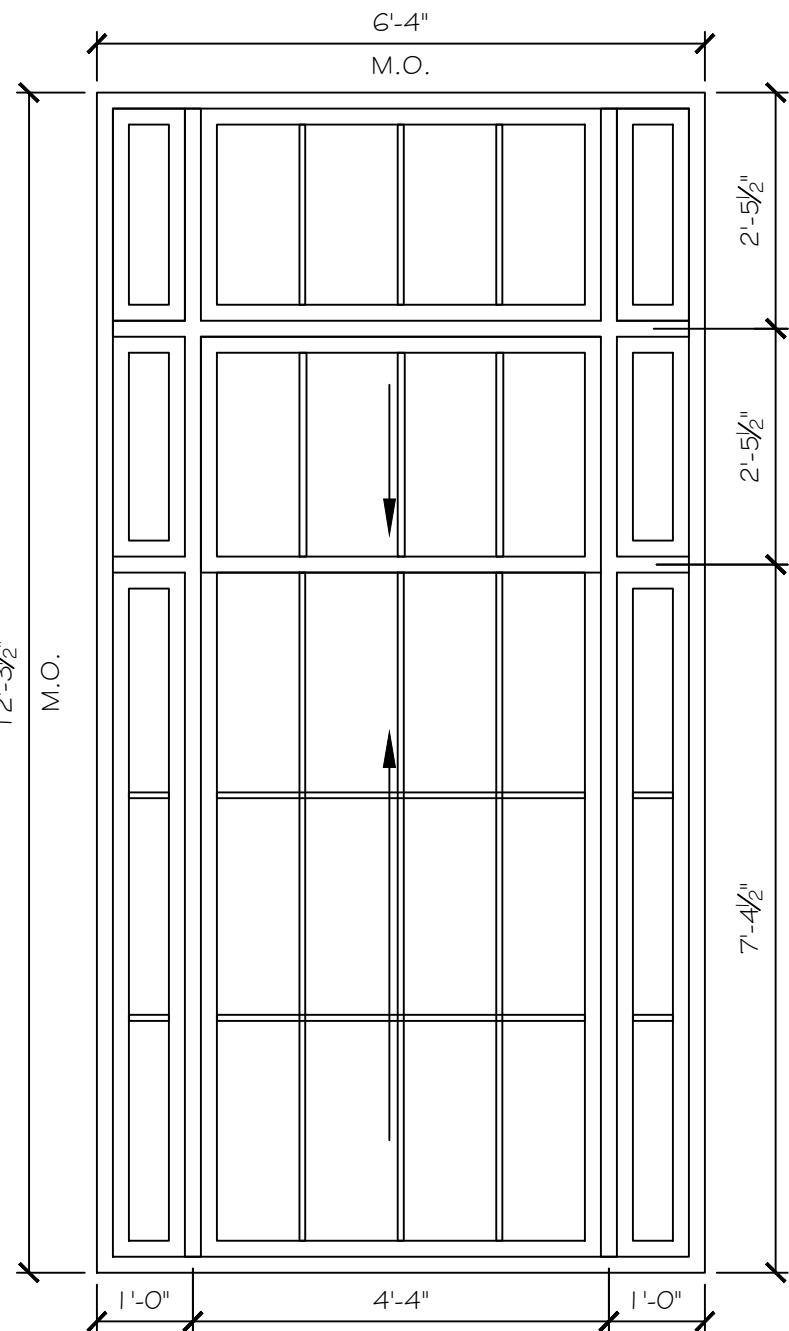
F FIXED TRANSOM
DOUBLE HUNG
(* LOCATIONS w/ OBSCURE I.G.)



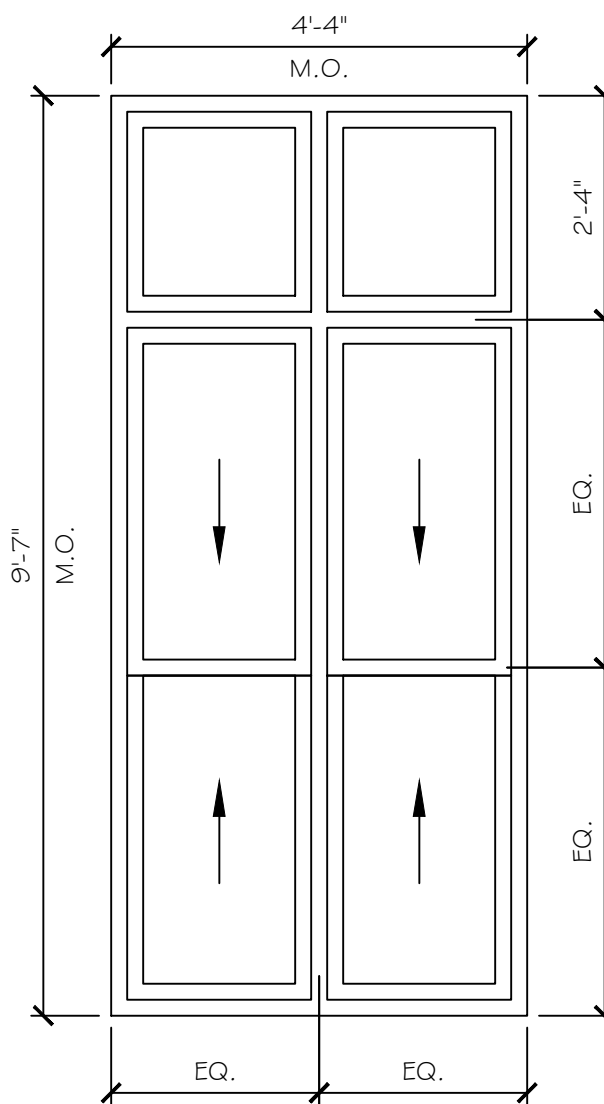
G FIXED TRANSOM
DOUBLE HUNG
(* LOCATIONS w/ OBSCURE I.G.)



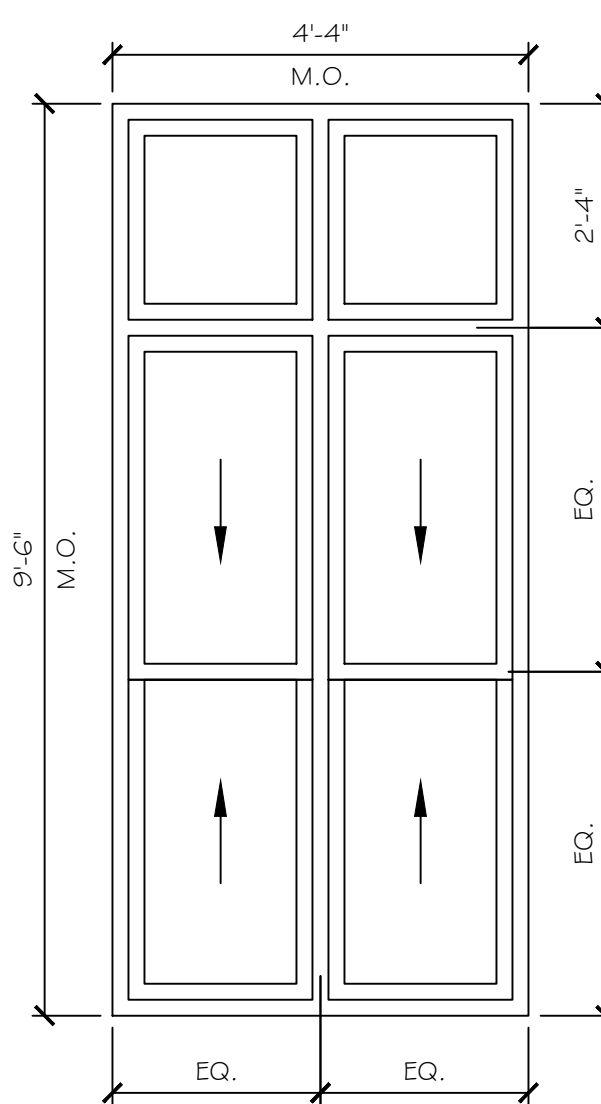
H FIXED TRANSOM
DOUBLE HUNG



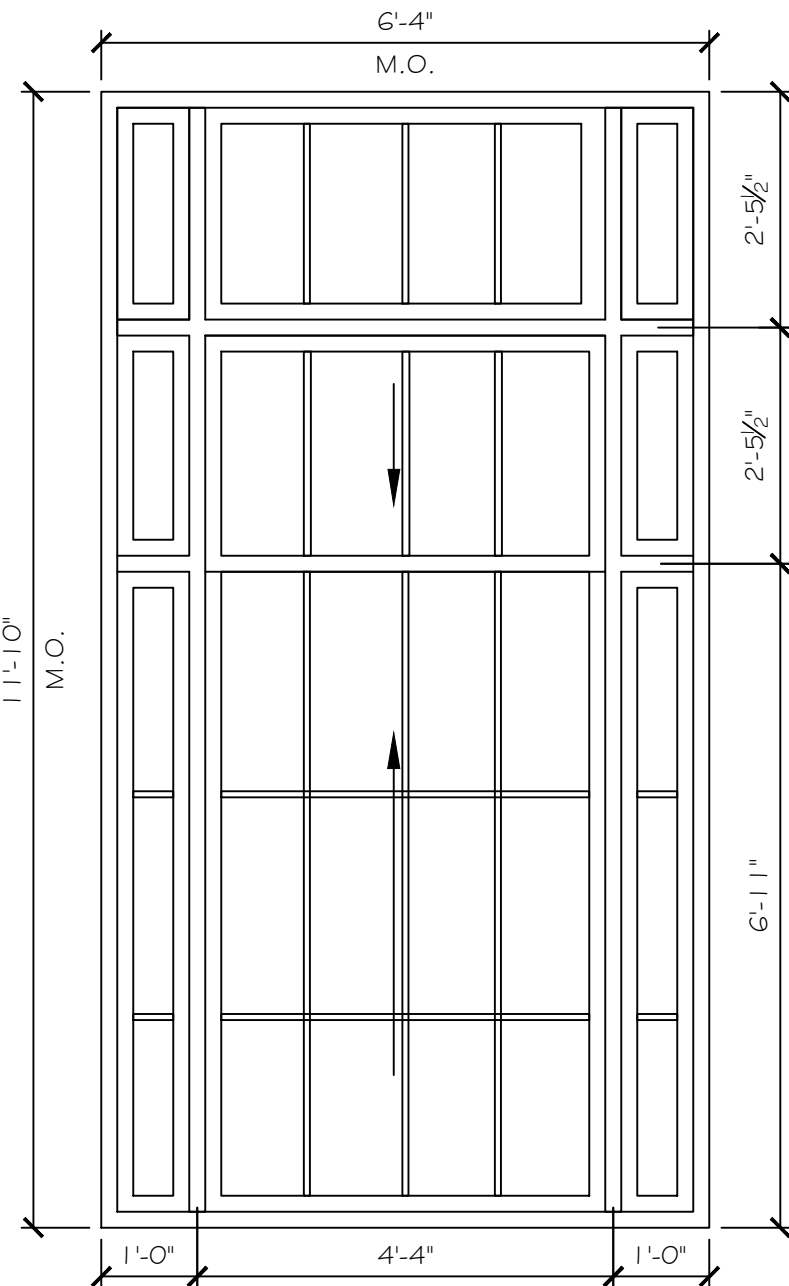
K FIXED TRANSOM
DOUBLE HUNG
w/ FIXED SIDELITES



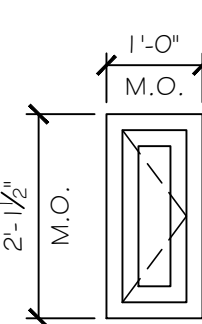
L FIXED TRANSOM
DOUBLE HUNG
(* LOCATIONS w/ OBSCURE I.G.)



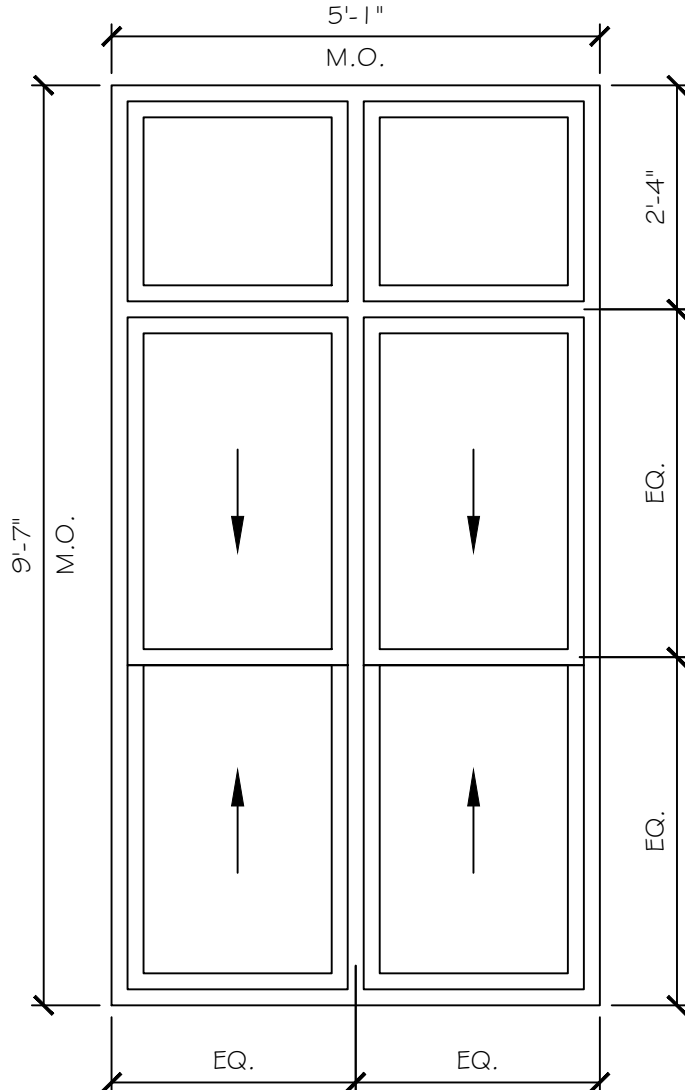
M FIXED TRANSOM
DOUBLE HUNG
(* LOCATIONS w/ OBSCURE I.G.)



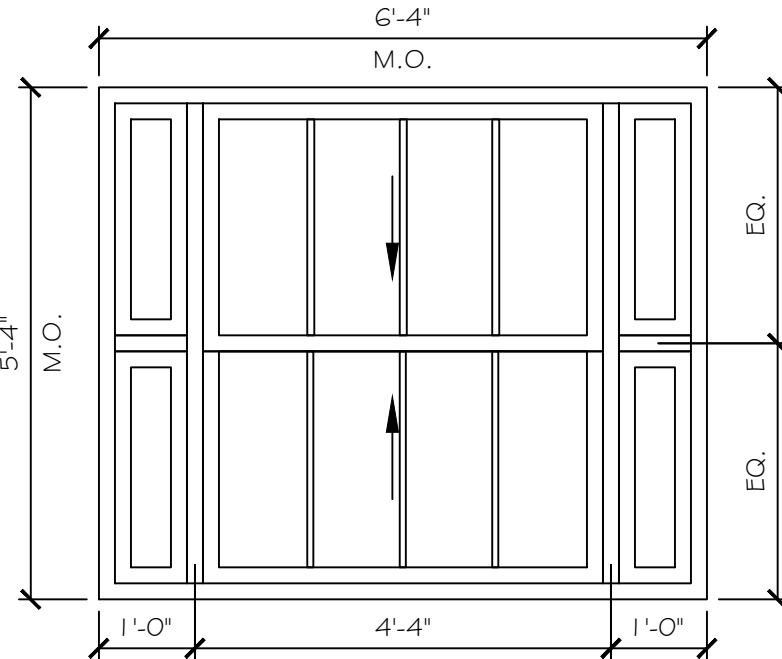
N FIXED TRANSOM
DOUBLE HUNG
w/ FIXED SIDELITES



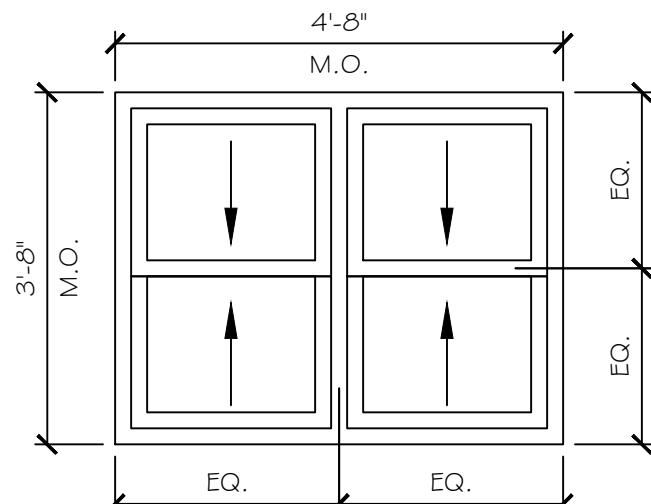
O CASEMENT
(OBSCURE I.G.)



P FIXED TRANSOM
DOUBLE HUNG



Q DOUBLE HUNG
w/ FIXED SIDELITES



R DOUBLE HUNG
(* LOCATIONS w/ OBSCURE I.G.)

**HISTORIC PRESERVATION BOARD
CITY OF PORTLAND, MAINE**

**PUBLIC HEARING
19 COMMERCIAL STREET**

TO: Chair Benson and Members of the Historic Preservation Board

FROM: Rob Wiener, Preservation Compliance Coordinator

DATE: January 21, 2016

RE: January 27, 2016 Public Hearing

Application for: Sign approval for a hanging sign – Waterfront Historic District

Address: 19 Commercial Street

Applicants: Laura and Michael Sosnowski, Maine Home Connection

Sign Contractor: Welch Sign

Introduction

Applicants Laura and Michael Sosnowski of Maine Home Connection have requested a hearing with the Board to appeal a staff level denial of the proposed sign for their realty business at 19 Commercial Street. The Sosnowskis' offices are in the Workingmen's Club, a significant, 1904 Classical Revival building with a basement level one-half floor down from the central, street level entrance, and a first floor one-half floor up from the door. The property was added to the Waterfront Historic District as a contributing structure in the 1997 expansion. With parking lots on either side of the building, it is a highly visible location facing the waterfront.

On November 25, 2015, the Sosnowskis applied for a sign permit to install a hanging sign at the west (or left, when facing the building,) corner of the front face of the building. Staff was uncomfortable approving the permit administratively for several reasons, having to do with the atypical configuration of the building – which lacks a distinct ground-floor retail storefront – and the unusual height proposed for a type of sign that is mostly found on ground floor storefronts. Portland's Historic District Sign Guidelines make clear that upper story office tenants are typically identified on a directory sign, rather than the type of hanging sign usually proposed for ground floor retail spaces. The applicants have stated that they depend on signs visible to car and foot traffic, and argue that the floor they occupy should not be considered an upper story since it is only half a level above the street, and the floor below should be considered the basement level.

Staff also considered that in February, 2008, the Historic Preservation Board held a public hearing on a sign application for a hanging sign at this address. The applicant in that instance, who ran a chiropractic office, occupied the same level as the Sosnowskis - the first level up from the main entrance. Board members were not supportive of that proposed hanging sign, and encouraged the applicant to consider alternative signs such as window graphics. The applicant withdrew the proposal.

Staff is including for the Board's consideration the sign company's depictions of the proposed blade sign and its location on the building, as well as staff photos of the property, the 1924 tax photo, renderings of previous sign proposals for the address, and Portland's Signage Design Guidelines. Ms. Sosnowski also submitted for consideration photos showing examples of other signs from the Waterfront District that advertise upper story tenants. These photos may be shown as a slideshow.

Subject Property – Existing Conditions, Context, and Previous Sign Proposals

The Workingmen's Club is a striking Classical Revival building built by the Catholic Diocese as a social hall in 1904. The front is notable for its high, smooth granite basement, and rough granite block upper walls punctuated by brick corner pilasters, a projecting middle bay, brick window surrounds with granite keystones and sills, and a brick frieze under a deep cornice. Windows have been replaced at least once (probably more,) and the front openings are currently filled with aluminum, one-over-one double-hung units. The east and west sides are all brick and much more plain, except for granite window sills. Once surrounded by other buildings and artifacts of the working waterfront, the Workingmen's Club now stands out on eastern Commercial Street. Staff notes that the commercial past of the street featured numerous wall signs, some painted. (See Attachment 3, for a photo of the signage existing at the subject property in 1924.)

The building is currently home to five commercial tenants. A branch of the BIW Five County Credit Union has long occupied the basement or lower level. In 1999 the Board approved a prominent sign of individual letters affixed to the brick on both the east and west masonry walls, between the middle and top floor windows. In October of 2000, the Board unanimously approved a walk-up ATM and canopy on the front of the west side. Lettering on the canopy says, "24 Hour ATM." One of the upper floor tenants has put a sign in the upper sash of a center window. (Note that the Credit Union's signs in the front basement windows should not completely cover the windows. Staff uses the typical guideline for the Pedestrian Activities District and discourages more than 50% of a window to be obscured by signs.)

As noted above, the previous occupant of the Sosnowskis' current offices applied for a sign permit for the east corner of the front façade in 2008. (See Attachment 4.) The proposed location of that sign was near the top of the middle floor windows on the southeast corner of the façade, though the applicant expressed a willingness to be flexible and abide by the Board's conditions. He stressed the importance of being visible from both directions. Detailed comments from that meeting are not available, but the Board's unsupportive response prompted withdrawal of the proposal. In addition to the suggestion of window graphics as an alternative sign type, later correspondence from staff mentioned the possibility of a similar, individually lettered sign above the Credit Union sign on a side wall. In 2013 the same tenant proposed such a sign for each of the side walls, but the application expired without follow-through from the tenant. (See Attachment

5.) By the end of 2013 the tenant had moved to another space elsewhere, and the Sosnowskis moved in.

Proposed Sign and Staff Response

Mr. and Ms. Sosnowski are proposing a 3' by 2' hanging sign with applied decal lettering and artwork, suspended from a black metal bracket at the southwestern front corner of the façade. (See Attachment 1.) Staff expressed the following reservations to the Sosnowskis:

- This is an unusual building, in that it does not have the typical composition of storefront base, middle section, and cornice at the top.
- The proposed sign would be hung unusually high, due to the lack of a conventional storefront. (Usually commercial buildings in the old port have a ground floor retail storefront. Hanging signs for these ground floor retail tenants are typically completely below the level of the second floor window sills.)
- Upper floor office tenants are generally listed on a directory sign near the entrance, or on wall plaques next to the entrance.
- Staff expressed doubt about the appropriateness of any hanging blade sign on the building, due to its unique character. If such a sign were to be allowed, staff suggested to the applicants and to the building owner that it should include a directory sign that allowed for possible future needs of other tenants to be included.

Alternatives discussed by staff with the applicants included:

- Window signs
- Wall signs similar to, and above the BIW Credit Union signs on the side walls
- A directory sign, either at the entrance, one of the front corners, or on a side wall near (and probably above) the Credit Union signs
- Perhaps it would be possible to allow for some individuality and logo inclusion for individual tenants in a directory sign.

Staff also discussed signage options with Steve McDuffie, one of the owners of the building. Mr. McDuffie said the building currently has five tenants, with the possibility for a sublease by the Sosnowskis on the middle floor. Although Mr. McDuffie and his wife gave their written permission for the proposed sign, his preference would be to avoid signage on the front of the building. Urged by staff to consider a master signage plan for the building, he expressed support for tasteful directory signs on the corners themselves, or on the upper side walls.

Questions the Board may consider include:

- Given the Sosnowskis' desire for visibility from two directions, staff suggests they might be best served by either a hanging sign or a wall sign on both sides of the building.
- The Board will probably have to decide whether a blade sign would be appropriate on the façade of the Workingmen's Club.
- If a blade sign could be envisioned on the front of the building, should it be a directory sign, to identify the building and possibly accommodate future additional signage needs?
- Could a directory sign be designed for the side walls to accommodate possible multiple tenants, that would be high enough and large enough to yield the desired visibility?
- Staff calls the Board's attention to illustrations of several types of directory signs, on page 14 of the Signage Design Guidelines (see Attachment 6.)

Staff notes that on rare occasions, hanging signs for upper story tenants have been approved, where the proposed height and type of sign are in keeping with signs already existing on the building; where there is space to accommodate the proposed sign without overwhelming the building with cluttered signs; and where there is no alternative to make an upper story tenant visible. In such instances, staff is careful to make sure future possible signage needs are being considered by the building owners (a master signage plan should be in place,) and that the type of sign proposed is appropriate for the building. There are also several instances in the city where an unusually high sign for an upper story tenant exists from long ago – possibly dating to before there was a clearly articulated policy. Though it is understandable for applicants to question whether these examples constitute a precedent, staff reminds the Board and the applicants that exceptions that may have been considered on a case-by-case basis may or may not be appropriate to consider under the present circumstances.

Applicable Design Standards

Staff is reprinting the Signage Design Guidelines. Board members are urged to retain the Guidelines for future reference.

Motion for Consideration

On the basis of plans and specifications submitted by the applicant for the 1-27-16 Public Hearing and information included in the accompanying staff report, the Board finds that the proposed hanging sign for 19 Commercial Street **meets (fails to meet)** the historic preservation ordinance review standards, specifically Standards....., (subject to the following conditions.....)

Attachments

1. Proposed sign, prepared by Welch Sign
2. Staff photos of property
3. 1924 tax photo of property
4. 2008 Sign proposal (by previous tenant) - withdrawn
5. 2013 Sign proposal (by previous tenant) – expired
6. Signage Design Guidelines (from Historic Resources Design Manual)



NON-ADA JOB SPECIFICATIONS

Job Name: Maine Home Connection
Job #: 21054
Customer Name: Maine Home Connection
Scope: Lusterboard Sign
Sales Rep: JS
Drawn By: CRC
Revision #: 1
Sign Type: Lusterboard Sign
Date: 11.9.2015
File Location: Maine Home Connection \ 21054

SIGN PANEL

Face: 1/2" Lusterboard
Edges: Straight
West System: Yes
Corners: Square
1st Surf: Per Drawing
2nd Surf: NA
Insert: NA
Vinyl Color: White
2nd Layer: NA
1st Surf: NA
2nd Surf: NA
Sides: Double

GRAPHIC CONTENT

Process: Front Applied Controllac + P99
Height: Per Drawing
Style: Per Drawing
Color: Per Drawing

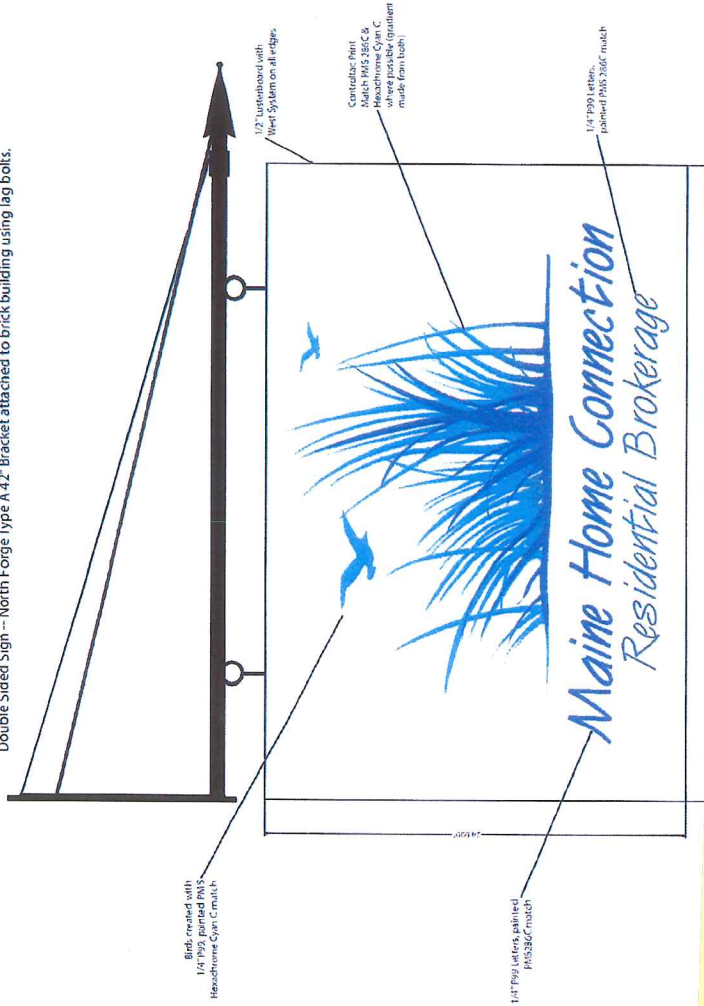
MOUNTING

Hardware: NF Type A Brackett + Lag Bolts
Holes: NA
Location: NA
Mount Location: Front of Building
Tape: NA
Wall Surface: Brick
Glass Backer mat: NA
Color: NA

FRAME

Type: NA
Size: NA
Color: NA

Double Sided Sign - North Forge Type A 42" Brackett attached to brick building using lag bolts.



ATTACHMENT 1

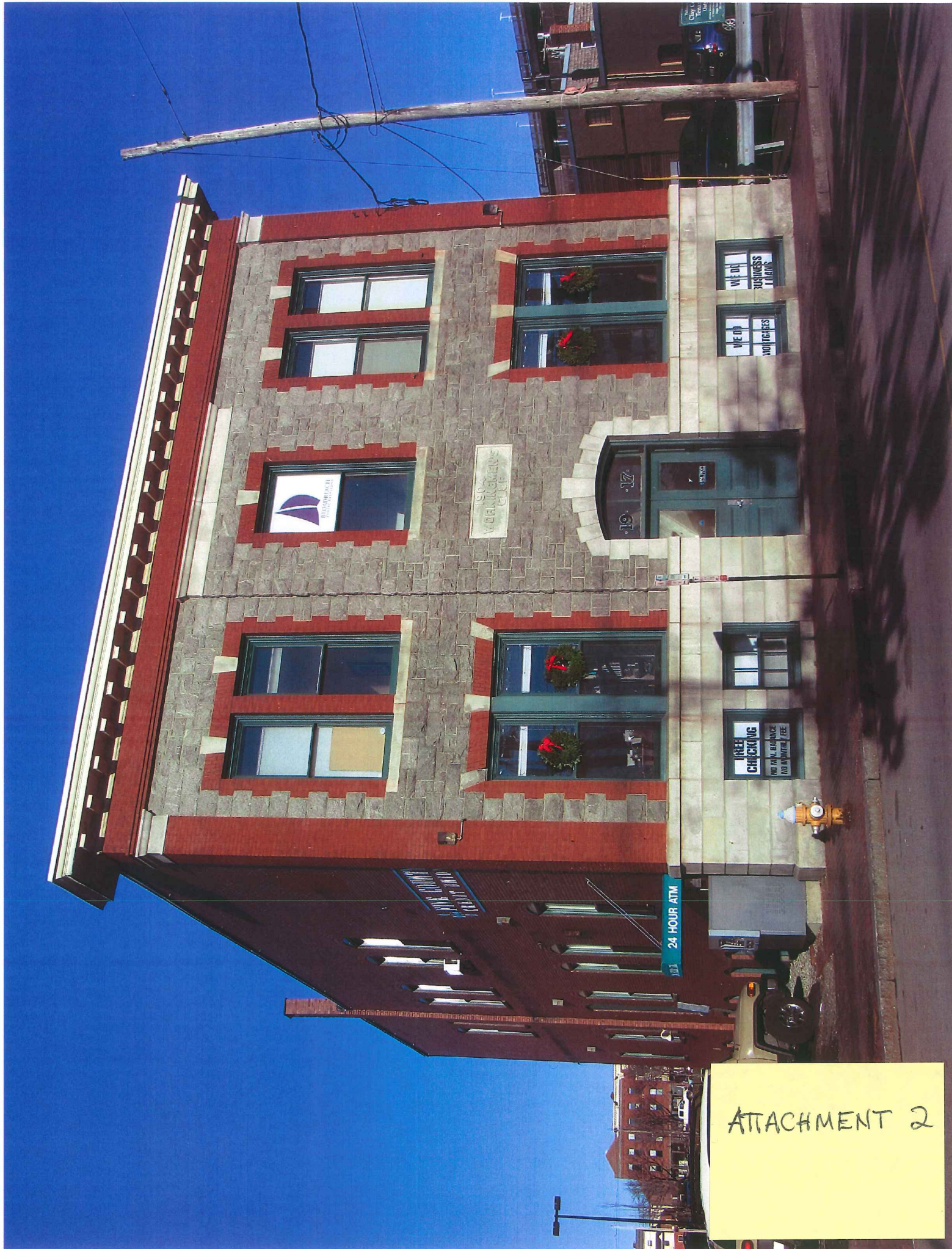
Approved by:

Date:

©2015 WelchSign, All Rights Reserved. All information contained in this drawing is confidential, do not distribute, do not reproduce without permission.

7 Lincoln Avenue • Scarborough, Maine • 04074 • (800) 635-3506 • (207) 883-6200 • welchusa.com

NADA_V1.0 08102015



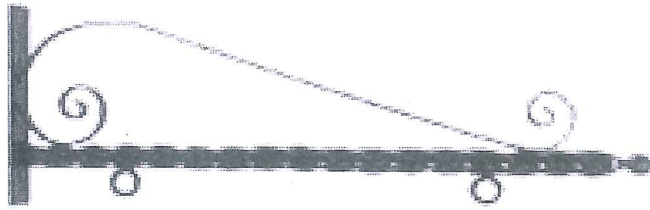
ATTACHMENT 2





29-N-32

ATTACHMENT 3



Portland Chiropractic Neurology

Dr. Aaron MacArthur, D.C., DACNB
Board Certified Chiropractic Neurologist
207-699-5600
www.portlandchiropractic.com

wellness rehabilitation nutrition

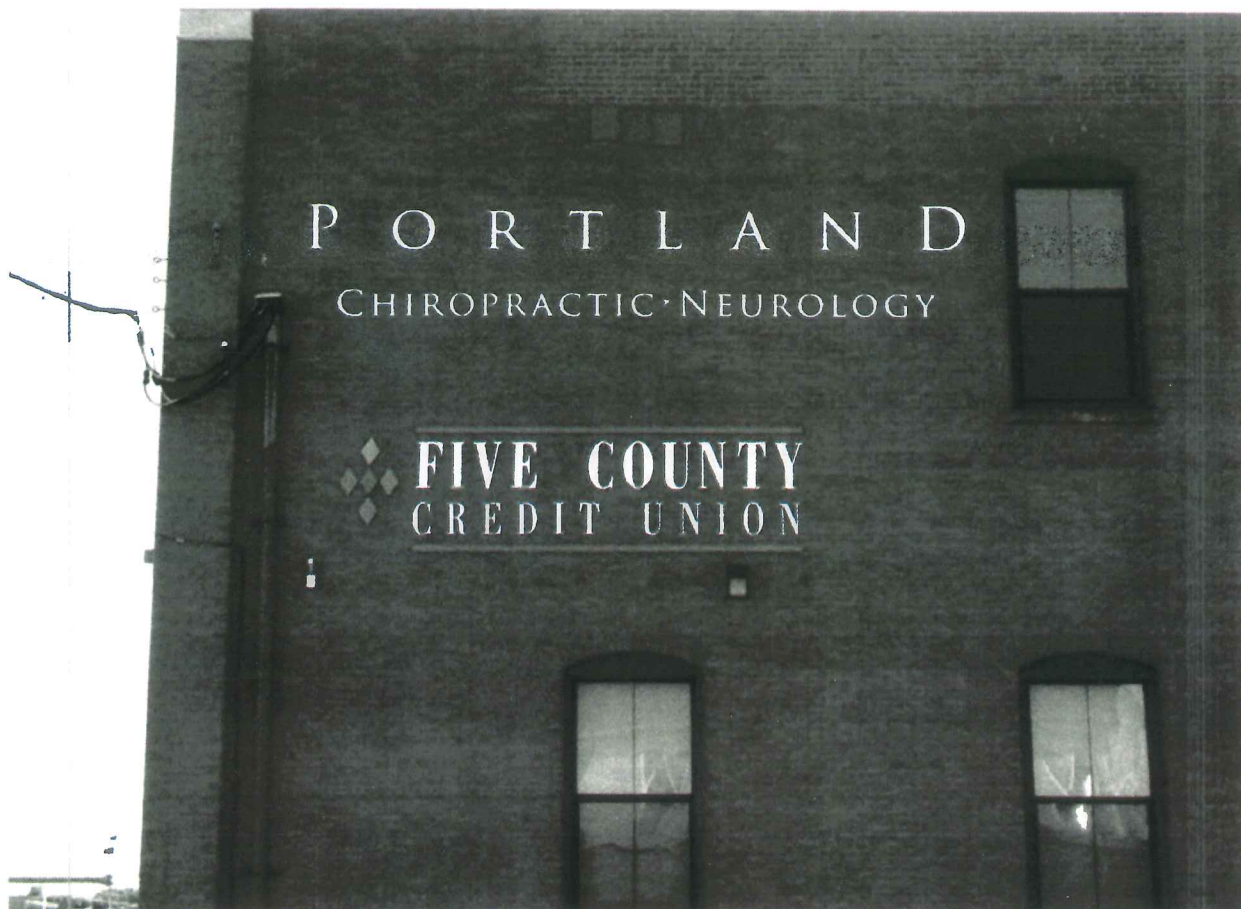
The scroll top will be mounted to the brick on the building by lags with anchor bolts and the sign will be attached to the scroll top with metal brackets. The sign will be made out of alumilite with vinyl cut letters on both sides.

ATTACHMENT 4

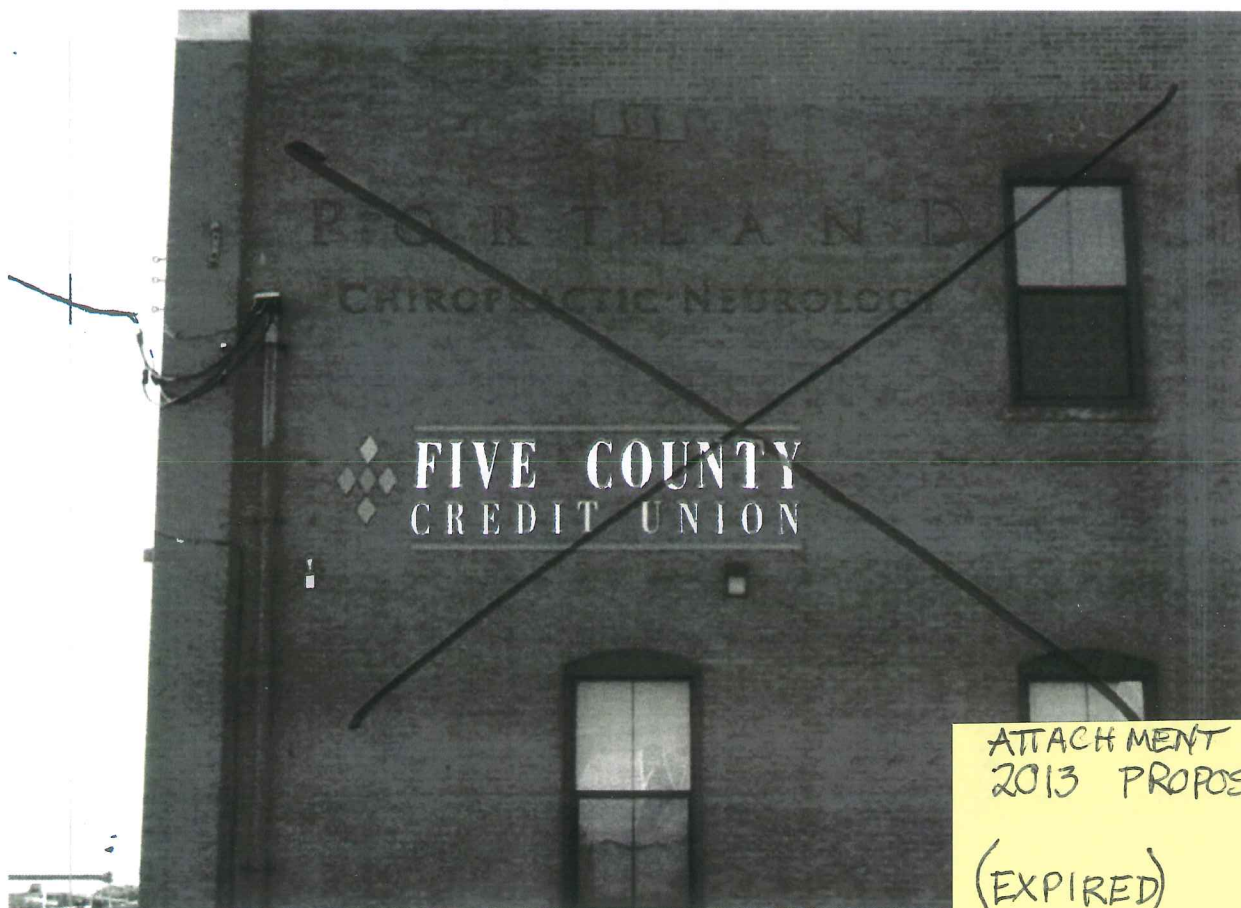
2008 PROPOSAL
(WITHDRAWN)

Proposed location of sign
Photo showing exterior of 19 Commercial Street on the building





We want to go w/ the white option.



ATTACHMENT 5
2013 PROPOSAL
(EXPIRED)

This design is the property of
Sign Design Inc.

306 Warren Ave. Portland, Maine
Tel. 207.856.2600 Fax 207.856.7600
email: signdesi@maine.rr.com

Client: Portland Chiropractic File: portland chiro Revision: Date: 1.22.13

Flat Cut, Stud Mounted Aluminum Logo And Letters
(Colors To Be Determined)

White

12 1/2 in



13 1/2 in

P O R T L A N D

63 1/2 in

8 in

CHIROPRACTIC NEUROLOGY

182 in

white Option



P O R T L A N D

CHIROPRACTIC NEUROLOGY

This job proof may reflect color shifts due to the conversion from ink to paint and/or vinyl. PMS colors will be approximated to the best of our ability. Client provided artwork will be used as is and Sign Design Inc. is not responsible for any artwork design faults nor for errors occurring due to improper review of this submitted job proof.

Design By: E.F.C. Comp. 1

- ☐ I Have Checked The Above Drawing For Layout And Spelling. I Find No Mistakes Or Errors. I Approve This Drawing For Final Completion.
- ☐ Do Not Proceed - Changes Requested

APPROVAL SIGNATURE

Sign standard included in Historic Preservation Ordinance text:

Sec.14-652.5 Standard for review of signage

In considering an application for a certificate of appropriateness involving the installation or modification of sign(s), including awning(s) which incorporate signage, the historic preservation board and planning board shall apply the following standard:

Signs shall be compatible with the subject building and its surrounding context *as detailed in the signage design guidelines included in the Historic Resources Design Manual*. If there is a conflict between this standard and the requirements of Division 22 (signs) of the Land Use Code, the stricter shall apply.

ATTACHMENT 6

Signage Design Guidelines

Introduction

Signs, awnings, canopies and other similar devices are among the most noticeable visual elements of the urban commercial environment. These devices are not only a practical business requirement for a property owner or tenant but also can significantly enhance a storefront, building façade and street environment. Signage designed, constructed, and installed throughout Portland's historic districts should be executed and placed in a manner which is respectful of the character of the building on which it will be located and the character established by surrounding buildings and environment.

Signs, as components of a building façade, are relatively temporary as businesses or tenants change with some frequency over time. The design and installation of signage should recognize this temporary nature of uses and should always be approached with an attitude of reversibility. All signs should be designed and installed in a manner that, upon their removal, the character defining features of the building remain intact and that the exterior materials of the building are not permanently or irreparably damaged.

Regulation of Signage in Historic Districts

Any new sign and any change in the appearance of an existing sign located on Landmark structures or within Historic Districts or Historic Landscape Districts shall be subject to review and approval under the provisions of the historic preservation ordinance (Article IX of the Land Use Code) and shall require a Certificate of Appropriateness.

The following guidelines provide guidance in the interpretation and application of the historic preservation ordinance review standard (Sec. 14-652.5). The guidelines are general in nature and are intended as guidance in designing appropriate signage for a wide range of building types and styles, as well as contexts. Each application will be reviewed on a case-by-case basis, with the objective of approving signage appropriate for the particular building and context.

These guidelines shall apply to all sign types, including but not limited to, projecting signs, wall signs, permanent window signs, awnings and canopies, banners, free-standing signs (where permitted), portable signs, and rooftop signs (where permitted).

If there is a conflict between these standards and guidelines and the requirements of Division 22 of the Land Use Code (sign ordinance) or other provisions of the City Code, the stricter shall apply.

Guidelines

A. General Design Concerns

- i. Signage on all buildings, historic and contemporary, should be carefully considered, taking into account the scale, character and design of the subject building and its surrounding context.
- ii. Signs should not dominate building facades or obscure their architectural features (arches, transom panels, sills, moldings, cornices, windows, etc.)
- iii. Design, selection of materials, and workmanship should be of high quality in appearance and character, complementary to the materials and character of the building, and convey a sense of permanence and durability.
- iv. In a downtown setting, the design of signage should be oriented and sized to reflect the nature of movement around the building, with an emphasis primarily on the pedestrian and slow-moving traffic.
- v. The design of signage should be respectful of the building on which it is located, carefully designed to fit a given façade, and complementing the building's architectural features. Signage of a style that predates the building, such as providing "colonialized" signs on a Victorian storefront, is not appropriate. A sign of contemporary design or materials on a historic building may be acceptable, provided it complies with the guidelines herein.
- vi. Where multiple signs occur on a single building, there should be a common pattern and character between such signs. Signs need not all be identical, but there should be a common pattern or placement, general scale and design, and type of illumination.

B. Size

- i. The size of proposed signs should be compatible with the scale of the overall building and its architectural features. Signs should be sized to fit the specific selected location.
- ii. The size of signs and individual letters should be at an appropriate scale for pedestrians and slow-moving traffic. Except in unique circumstances, projecting signs should not exceed 16 square feet, on the first floor level.
- iii. As a general rule, projecting signs should not extend more than 4 feet into any public right-of-way.
- iv. Signs on adjacent storefronts within the same building should be coordinated in size and proportion.

C. Placement and Location

- i. The placement of signage should take into account the traditional location of signage on buildings and the specific architectural features of the given façade. Features to consider include existing sign boards, lower cornices, lintels and piers.
- ii. The placement of signage should not visually obscure architecturally significant features of the building.
- iii. The use of a continuous sign band extending over adjacent shops within the same building is encouraged, as a unifying element.
- iv. Where signage is proposed on (or behind) window surfaces, such signage should not substantially obscure visibility through the window and should be incidental to the scale of the window. Larger window signs will be considered in the overall sign allowances for individual tenants.
- v. Generally, the placement of signage should occur below the sill of the second story windows. Placement elsewhere on a building may be considered under the following circumstances: a) where the design of the base portion of the building establishes some higher point as an appropriate location; b) where unusual site characteristics exist; or c) where the proposed signage exhibits exceptional design merit and is integrated into the design vocabulary of the subject building.
- vi. For historic structures, upper floor signage (including rooftop signs) is generally not allowed, except for permanent window signs or where unique circumstances warrant an exception (e.g. where a historically or architecturally significant rooftop sign is to be recreated).
- vii. Freestanding signs are generally not allowed. However, if the distance of the building or tenant's frontage from the street makes a building sign infeasible or ineffective, a freestanding sign may be considered. Integration of such signs into site features, such as planter walls, is encouraged.
- viii. In addition to placement criteria above, the minimum clearance of projecting signs, awnings, canopies and marquees from the sidewalk must conform to current building codes (generally 8' clearance).
- ix. The placement of signs must not disrupt or obstruct the vision of drivers or pedestrians so as to create a hazardous situation. No signs should be so located as to significantly obstruct pedestrian circulation.

D. Communication

- i. Signage is most effective when it is simple and limited in subject matter to the name of the business or property and the incorporation of a logo, symbol, or other graphic display which is central to the primary tenant or use of the property. General commercial advertising incidental to the principal use is discouraged.

- ii. Typefaces should be selected which are easy to read and scaled appropriately for both the sign and building. Logos or symbols are encouraged where integrated with the sign. Pictographs (such as the creation of a projecting sign in the shape of a key for a lock shop) can be an interesting and appropriate feature.
- iii. A sign should not, by virtue of its color or shape, be distracting from the design and character of the building on which it is located. Signs tend to be most effective when there is a contrast in color between the lettering/symbols and the background of the sign.
- iv. The importance of trademarked corporate identification is recognized in the review of sign applications. However, in order to preserve Portland's unique character and sense of place, standard corporate signage will, in some instances, be required to be reinterpreted to ensure compatibility with the subject building and the surrounding context. Such reinterpretation may include, but not be limited to, use of alternative materials or lighting solutions, adjustments in the scale of trademark logos or graphics, etc.

E. Illumination

- i. Illumination of signage should be compatible with the character of illumination of existing appropriate signs on the building or in the vicinity.
- ii. In residential zones, internally-illuminated signs are not appropriate.
- iii. Where ample lighting exists from street lights or building façade illumination, sign lighting may not be allowed.
- iv. Acceptable forms of internal illumination may include halo-lit signs and dye-cut metal sign panels that illuminate individual letters and symbols only. Neon signs may be acceptable as well where they are custom-designed to be compatible with the building's historic and/or architectural character. As a general rule, standard internally-illuminated box-type signs and individual letters that are internally illuminated are prohibited.
- v. Where internal illumination of a sign causes the scale of the sign to become excessive in relation to architectural features of the building, alternative lighting should be considered.
- vi. External illumination of signage should be concentrated evenly on the sign itself, with no significant glare or spillover onto adjacent buildings. The light source should be concealed from the direct view of the pedestrian and driver.
- vii. All electrical conduit, transformers, raceways and wires should be concealed within or behind the sign or face of the building, be designed as an integral element of the building façade, or be substantially disguised or hidden so as to be unobtrusive to the appearance of the building and sign. The attachment of such devices to the

structure should not permanently damage any significant architectural features or exterior building material. For projecting blade-type signs, spot lights should be incorporated into the bracket itself.

- viii. Generally, flashing or moving lights are not appropriate. Special situations, such as the design of marquees or features relating to special uses such as cultural events or public activities may be appropriate exceptions where sensitively designed and where no safety hazard is created.

F. Number of Signs

- i. The proliferation of signs within a dense urban environment can lead to visual clutter. The number of signs for each tenant or building should be kept to a minimum while recognizing the need for identification and visibility.
- ii. Ground floor tenants shall generally be limited to one wall sign and one projecting sign per tenant. Where tenants have frontage on more than one street, additional signs may be allowed.
- iii. Upper floor tenants should generally be served by a building directory sign. Directory signs should be located at or near building entrances and should be scaled so that individual names are visible to the pedestrian. Where allowed (see Section C, vi and vii), upper floor building signs will be limited to one per building façade.
- iv. Signs (and/or banners) displayed during business hours only constitute an ongoing advertising format and will be considered permanent signs rather than temporary signs, if such display continues for more than 30 calendar days.

G. Guidelines for Special Categories of Signs

In addition to the guidelines described above, certain types of signs require special guidelines which relate to their special characteristics or purpose.

- i. Awnings, Canopies and Marquees that incorporate Signage: The shape and size of these devices should correspond to the shape, character and size of the opening over which they will be installed, and should fully fill the width of the individual window or door opening. These devices should not obscure architecturally significant elements of the building. The attachment of such devices to the structure should not permanently damage any significant architectural features or exterior building material.

Where there are existing (appropriate) awnings or canopies on the building, new awnings should be designed and located to be compatible with those existing.

Signage graphics on awnings or canopies should generally be confined to the valance and side returns. Awnings or canopies with graphics may be considered as primary signage.

Fabric awnings should be of a canvas-type material and should not emit light.

- ii. **Public Information Signs:** This category of signage includes informational signage such as traffic regulations, transit information, public announcements or community activity information, and historic markers, as well as directional signage such as street/district signs and wayfinding signs to major civic, arts and cultural destinations. Wherever possible, these signs should be designed and located so that they complement and reinforce the historic character of the environment in which they are placed. Such signs may be freestanding as necessary to effectively serve their purpose and may be located off the premises to which they refer.
- iii. **Painted Wall Art and Signs:** Painted wall art such as murals and tromp l'oeil should be used only to enhance the environment or streetscape and should not be developed for advertising purposes. Such wall art should not disrupt the setting of an historic building or of an otherwise distinctive environment.

Painted walls signs such as business names may be appropriate and should be reviewed according to other applicable guidelines. Concerns about future reversibility may prohibit signs proposed for unpainted masonry surfaces.

In a few instances, historic painted walls signs of a commercial nature are still discernable on the facades of some buildings and serve as reminders of former businesses and activities found therein. Where these signs reflect a significant period of Portland's history, preservation may be required.

- iv. **Portable/Movable Signs:** Sandwich board signs commonly found are the only portable freestanding signs that are permitted (other than special temporary signs and public information signs.) All portable signs placed within the public way require special permitting through the City. In addition to requirements of that process, all such signs should be designed and located in a manner which does not detract from the character of the pedestrian environment, nor create obstacles to pedestrian circulation or visibility. Portable signs are generally not allowed in residential zones.
- v. **Temporary Signs:** Temporary signs or banners are exhibited for a limited time--generally no more than 30 days--to advertise special events or sales and should be removed immediately following the event. Temporary promotional commercial signs or banners should be used on a limited basis and are not allowed as an ongoing form of advertising.
- vi. **Real-Estate Signs:** In commercial districts, real estate signs should be displayed in windows only and removed promptly upon the sale or lease of the property.
- vii. **Non-Commercial Banners, Flags and Pennants:** The number of such elements per business or tenant, however, should be limited to avoid visual clutter. While the flag or banner may be relatively temporary in nature, the brackets or poles from which these elements hang tend to remain for extended periods. Attachment of

such support devices to buildings or other structures should not cause damage to architectural features or building materials.

- viii. On-site informational signs: On-site signs for such needs as identifying parking entrances and exits, handicapped parking spaces or handicapped access, drive-thru teller signs, and other similar directional signs should be considered as part of a signage system, coordinated in size, materials, design and character within a single property and with adjacent properties.
- ix. Signs on residential structures within residential zones: Signs on residential structures should be located and sized to be compatible with the character of the district and property. Signs on residential properties should generally be smaller than those in a commercial district and shall be limited to one.
- x. Off-premise signs: With the exception of public information or wayfinding signs, signs advertising businesses or products not found on the premises are not allowed.

H. Brackets and Installation

- i. Brackets should be in scale with the sign and building. As a general rule, brackets should be simple and incidental to the sign. They must be adequately engineered to support the intended load, and generally should conform to a 2:3 vertical-horizontal proportion.
- ii. Attachments for all signage, awnings, conduit, etc. should cause no irreversible damage to historic building materials. On masonry buildings, attachments for all signage, awnings, conduit, etc. should be installed at mortar joints or into existing holes, to avoid damaging masonry. Where possible, existing sign brackets should be reused.

I. Master Signage Plans

- i. A master signage plan will be required for all major projects (rehab and new construction) as part of the site plan and/or historic preservation review process. Signage on new buildings should be related to, and read as an integral part of, the design and material palette of the building. The master sign plan should allow adaptability for changing tenants and uses over time.

J. Maintenance

- i. All signs shall be maintained in good visual and structural condition.

K. Obsolete Signs

- i. Except where an obsolete sign is determined to have historical significance, obsolete signs for establishments no longer located at the premises should be removed.

Illustrated Examples



An example of a well-coordinated signage scheme. The awnings' traditional form (shed style with loose scalloped valance) and placement over the transom windows reinforce the historic character of the storefront.

This awning solution is a successful contemporary interpretation of the traditional shed-type awning. Instead of a loose and/or scalloped valance, the valance is taut. The graphic element on the slope of the awning, while not typically encouraged, works here because of its scale, subtlety and repetition.



This awning solution is inappropriate for its historic setting. The combination of a non-traditional shape, shiny plastic material, and poorly integrated graphics is in conflict with the historic character of the property and streetscape.



Historic signs are important reminders of Portland's commercial history and may not be removed or covered without express approval.

A sophisticated signage solution, reminiscent of historic signage and well-suited to the building's corner location.



On commercial blocks with several individual storefronts, it is advisable to develop a master plan for signage that ensures a level of consistency while showcasing the individual nature of each business. Here, the same style bracket is used across the entire ground floor frontage. The signs themselves are all wood, non-lit and similarly sized.



A classic example of traditional signage and retractable awnings still in use. The consistency shown here is particularly well-suited to large buildings with multiple storefront tenants.

Obsolete signs should be removed entirely. Even with the graphics removed, these sign panels distract from and clutter a landmark building on a prominent corner.

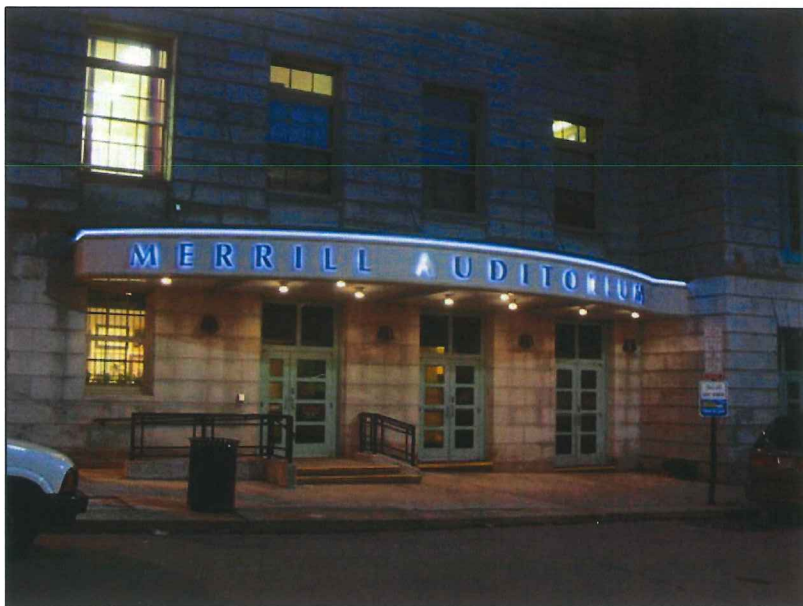


Standard internally-illuminated box-type signs are not appropriate in historic districts. This example, not in a district, illustrates the visual impact of this type of signage on its historic neighbor.



When the Eastland Park Hotel wanted to re-establish the original grandeur of its main entrance, this traditional style marquee with signage was created to evoke the era and spirit of the hotel's 1920's construction.

Located at the rear of City Hall, Merrill Auditorium long suffered from a lack of visibility and its "back door" entrance gave no clue as to the grandeur and elegance of the space within. This marquee, added in 2006, successfully improves visibility for the auditorium and enhances the sense of arrival, just as traditional marquees were designed to do. Although clearly contemporary in design and material, this installation is seamlessly integrated with its historic setting. The brushed aluminum letters project from the face of the sign band, giving depth and visual interest to the marquee.



At night, the letters are halo-lit; a subtle band of neon completes the composition.

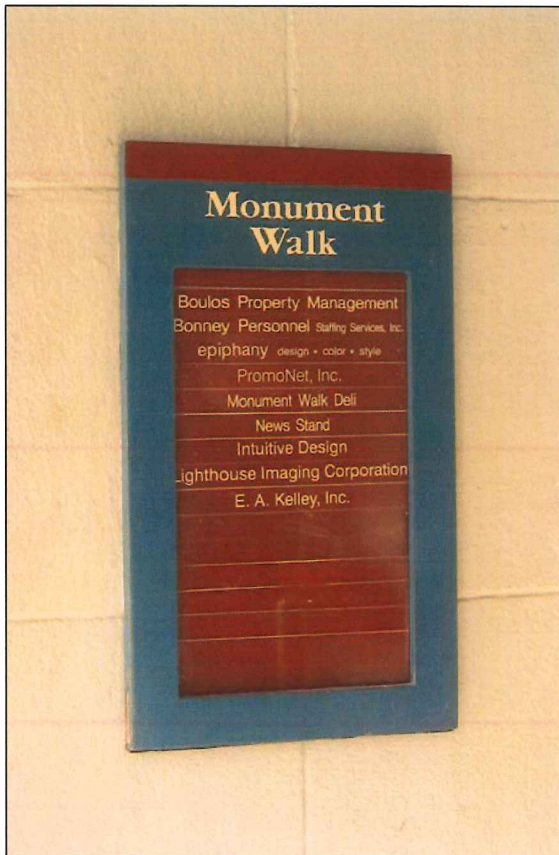


This discrete sign, incorporated within the historic granite retaining wall, serves its intended purpose without competing with the landmark building behind it. The typeface, gold-leaf lettering and slate sign panel also reinforce the dignity of its setting.

A well designed and executed sign that is both understated and highly effective for its purpose. Individual laser-cut metal letters stand atop a metal entrance canopy.



All too often, real estate signs remain in place long after the space they advertise is leased, becoming permanent fixtures that clutter the façade of a historic structure. For this reason, they should be placed in windows and removed as soon as a space is filled.



Directory signs, located near the main building entrance, are an appropriate solution for upper floor tenants. Upper floor signs for individual tenants are not encouraged.



A curved metal sign mounted at a corner is a form of signage that appears in historic photos of Portland. Here it has been used as a building directory for a historic structure.



Grouped bronze plaques can be an effective form of directory signage, and is often used for professional offices. Close coordination of the individual plaques, in terms of size, style and placement, is critical.



A good example of an architecturally integrated sign solution. This type of signage is strongly encouraged for institutional uses, where turnover in tenancy is not an issue.



A sculptural, contemporary bracket and sign well-suited to its modern storefront. Note the subtle spotlights that do not detract from the sign or storefront.

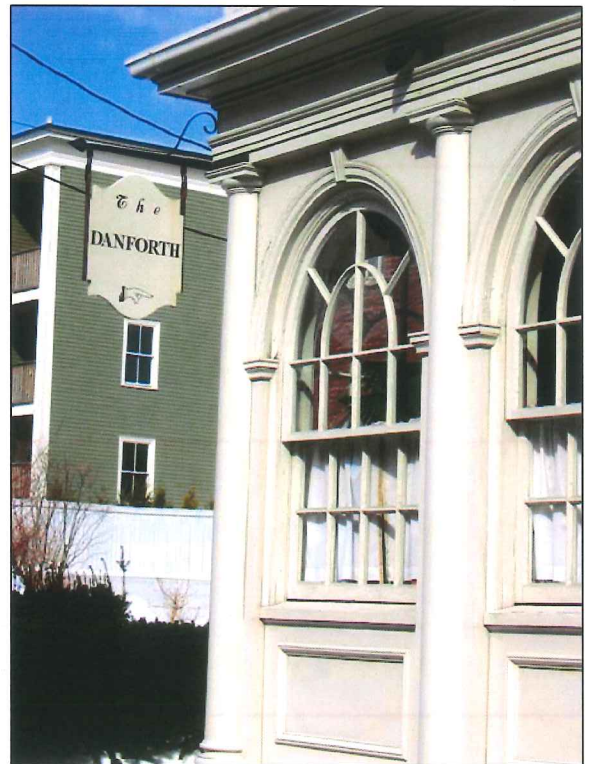


This sign, which features subtle halo backlighting, reinforces the clean, contemporary design of the building itself.



When residential buildings are converted to business use, sign solutions need to be carefully considered. In this instance, the size and placement of the sign is at odds with the residential character of the structure.

This small scale business sign, with its traditional shape and graphic style, is especially appropriate for its historic residential context.

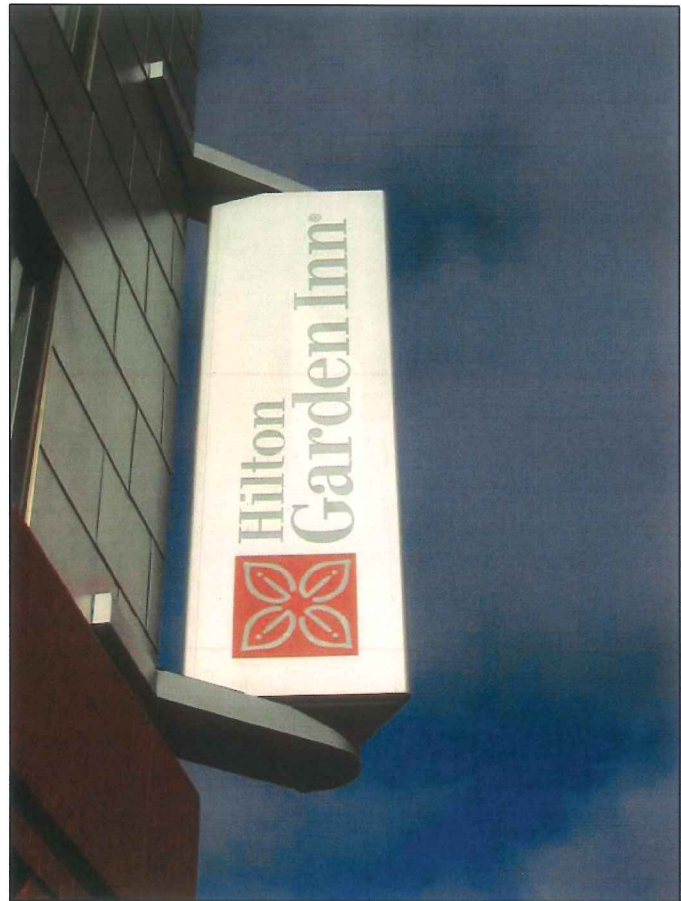


Here, the combination of exposed conduit and multiple floodlight bulbs detracts from both the sign itself and the building. In all cases, electrical conduit, transformers, raceways and wires must be concealed within or behind the sign or be hidden so as to be unobtrusive.





Laser-cut stainless steel and white Lucite are used here to create an illuminated sign that matches the quality and style of the modern building it identifies. Note the subtle inset panel in the brick pier which frames the sign.



This sign illustrates how a departure from a standard corporate sign solution can effectively relate the signage to the unique character and materials of a particular building. Such an approach can help to avoid the “Anywhere, America” homogenization that standard corporate sign solutions create.



Subtle internal halo illumination, instead of a standard internally illuminated sign box with a glowing sign face, helps relate this sign to its historic district context.



Signage should advertise the name of the business, not brand name products sold within. By avoiding generic sign solutions, the unique nature of Portland's commercial districts is preserved.

Covering windows with numerous unrelated items not only obscures visibility into the store itself, but creates a cluttered, unprofessional image for the business. For this reason, sign standards limit coverage to no more than 50% of a window.



Promotional banners, while acceptable if used occasionally, should not be used as an ongoing form of advertising and should be removed within 30 days.



Installed without approval (and subsequently removed,) this signage overwhelmed the architectural features of this dignified building.

This photo illustrates what happens over time when signs brackets are mounted directly into architectural masonry. Not only does the appearance of the building suffer, but permanent damage is done to the masonry as well. Whenever possible, existing brackets or holes should be reused. Alternatively, brackets should be mounted into the mortar joints, not the masonry itself.

