



KING'S BLOCK HISTORIC RETROFIT

LEVERAGING PASSIVE HOUSE ON A 200-YEAR-OLD BUILDING:
RESILIENT AND NET-ZERO READY

10.15.2021

INTRODUCTION: PROJECT GOALS

CHALLENGES OF HISTORIC STRUCTURES: REGULATORY PERSPECTIVE

MAKING HISTORIC BUILDINGS RESILIENT:
FLOOD ZONES & OTHER CHALLENGES

STRATEGIES FOR ZERO ENERGY READY: ENVELOPE, BUILDING SYSTEMS
& ON-SITE ENERGY GENERATION



PROJECT GOALS

PASSIVE HOUSE PRINCIPALS

THERMAL ENVELOPE

CONTINUOUS AIR BARRIER

RESTRICT TOTAL ENERGY USE

RESILIENCY

DISCONNECTING A HUMID BASEMENT
FROM THE ENVELOPE (FLOOD PLAIN)

NET-ZERO OR NET-ZERO READY?

MEET HISTORIC DISTRICT REQUIREMENTS

ALL EXTERIOR ELEMENTS ARE SUBJECT
TO REVIEW

PROJECT GOALS



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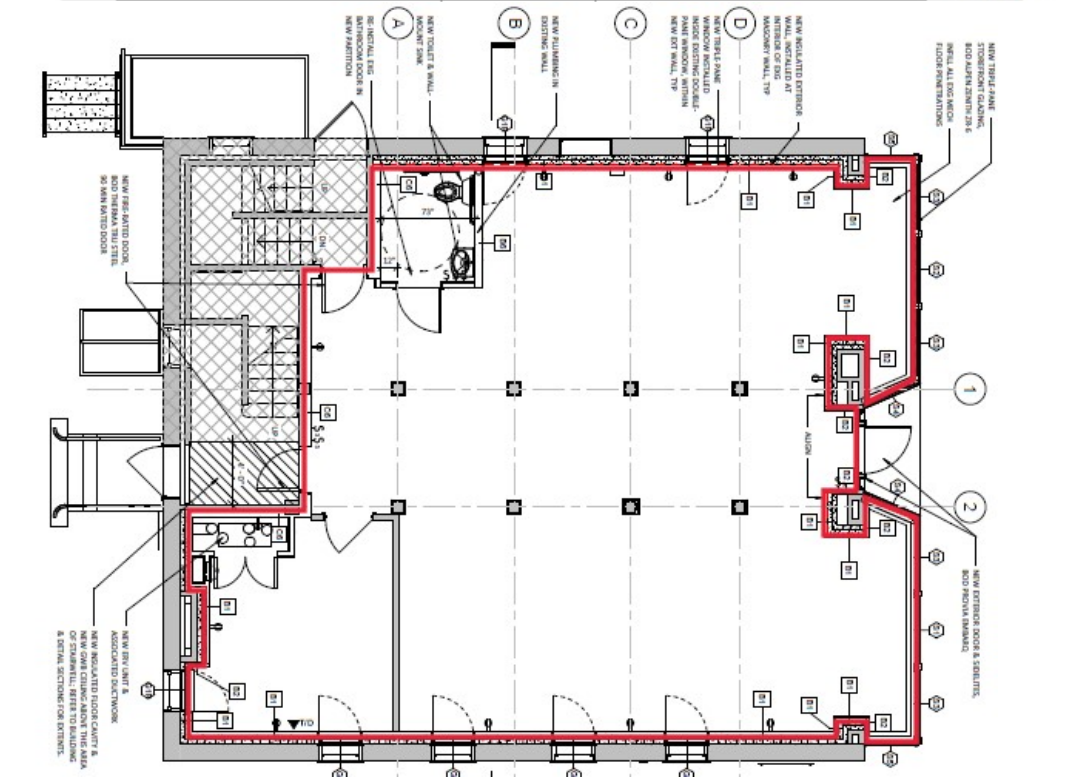
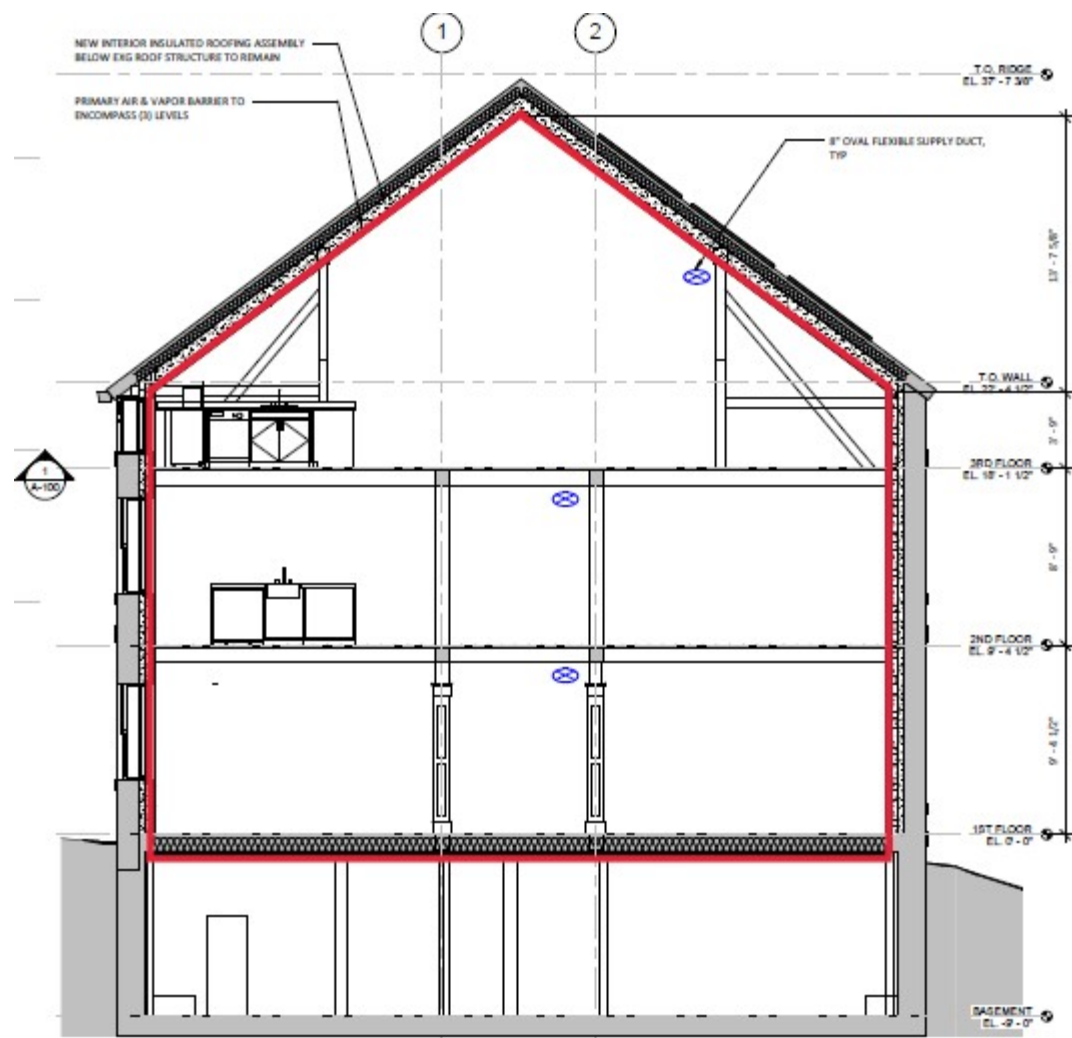
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HISTORIC DISTRICT COMMISSION

MISSION

“the commission works to promote the educational, cultural, economic and general welfare of the public through the preservation and protection of the distinctive characteristics of buildings and places associated with the history of or indicative of a period or style of architecture of the municipality, of the state or of the nation”

SCOPE

“such portion of the exterior of a structure or building as is open to view from a public street, way or place”

OUR BUILDING

“oldest free-standing commercial building in New Haven”



NORTH



EAST



SOUTH



WEST

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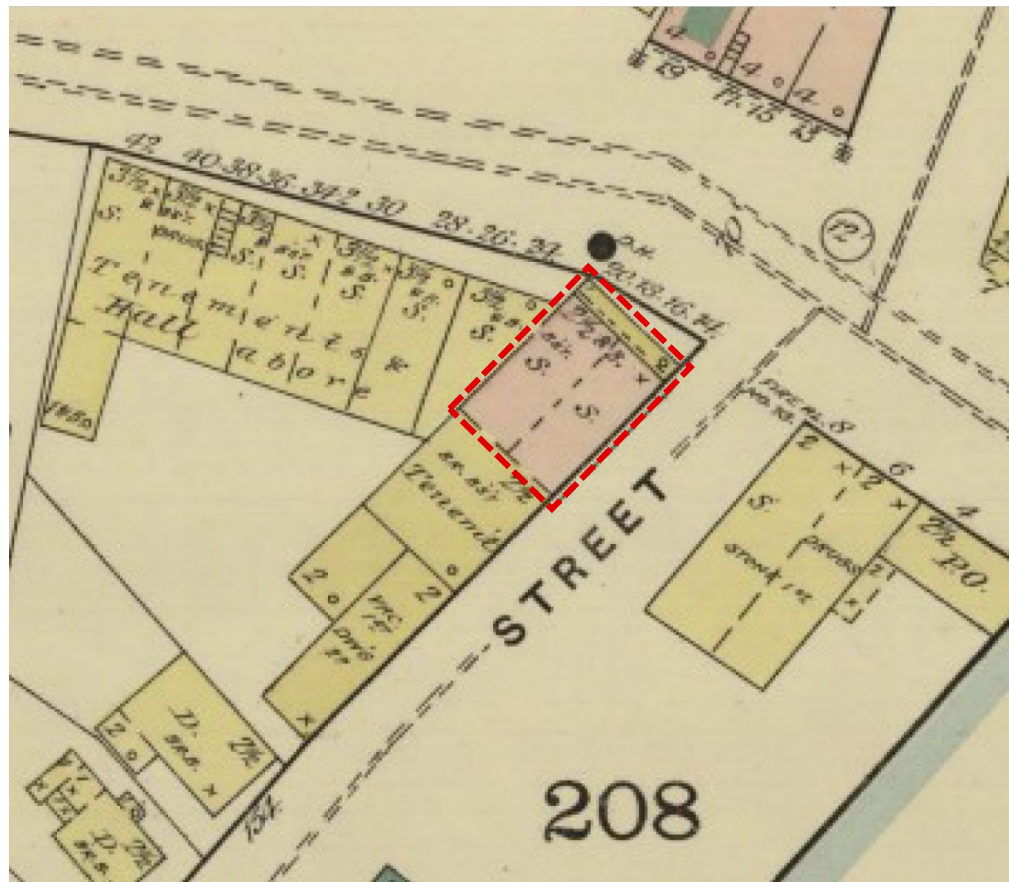
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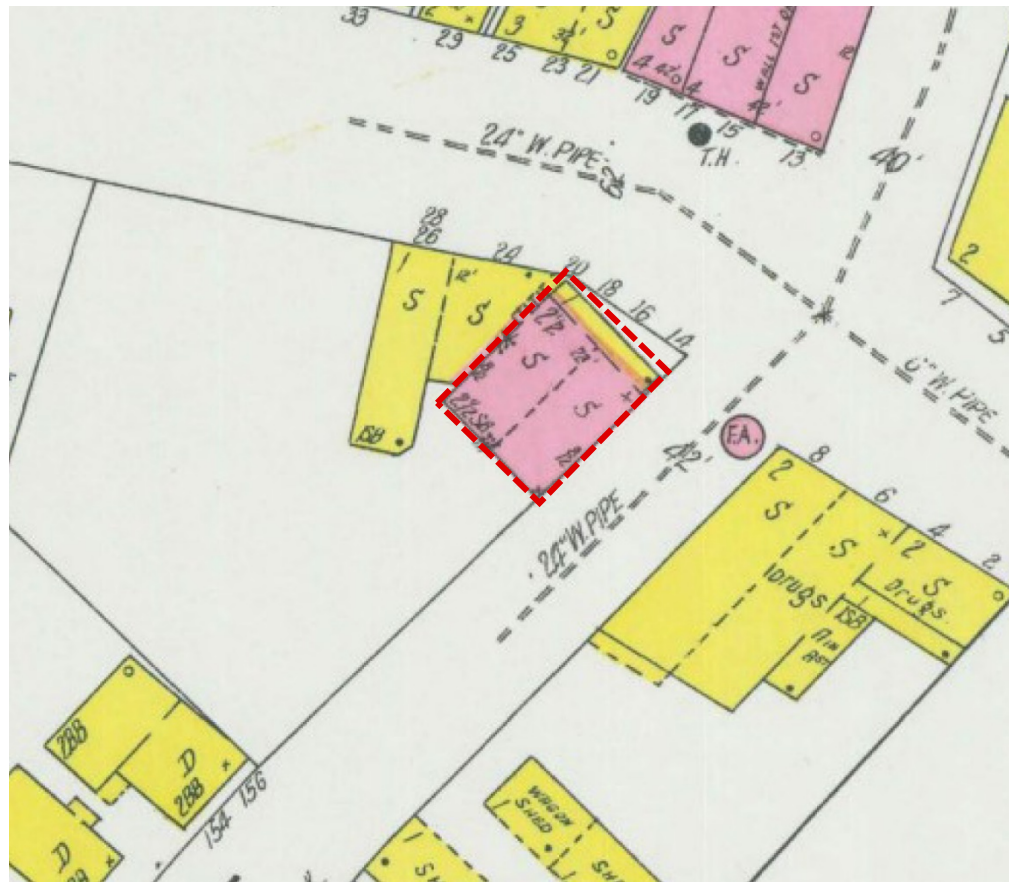
1886



1901



1924



1973





KING'S BLOCK PASSIVE HOUSE RETROFIT

Patriquin Architects is pursuing a Passive House retrofit of our historic masonry office building.

Passive House is a rigorous design standard for energy efficient new or retrofitted buildings.

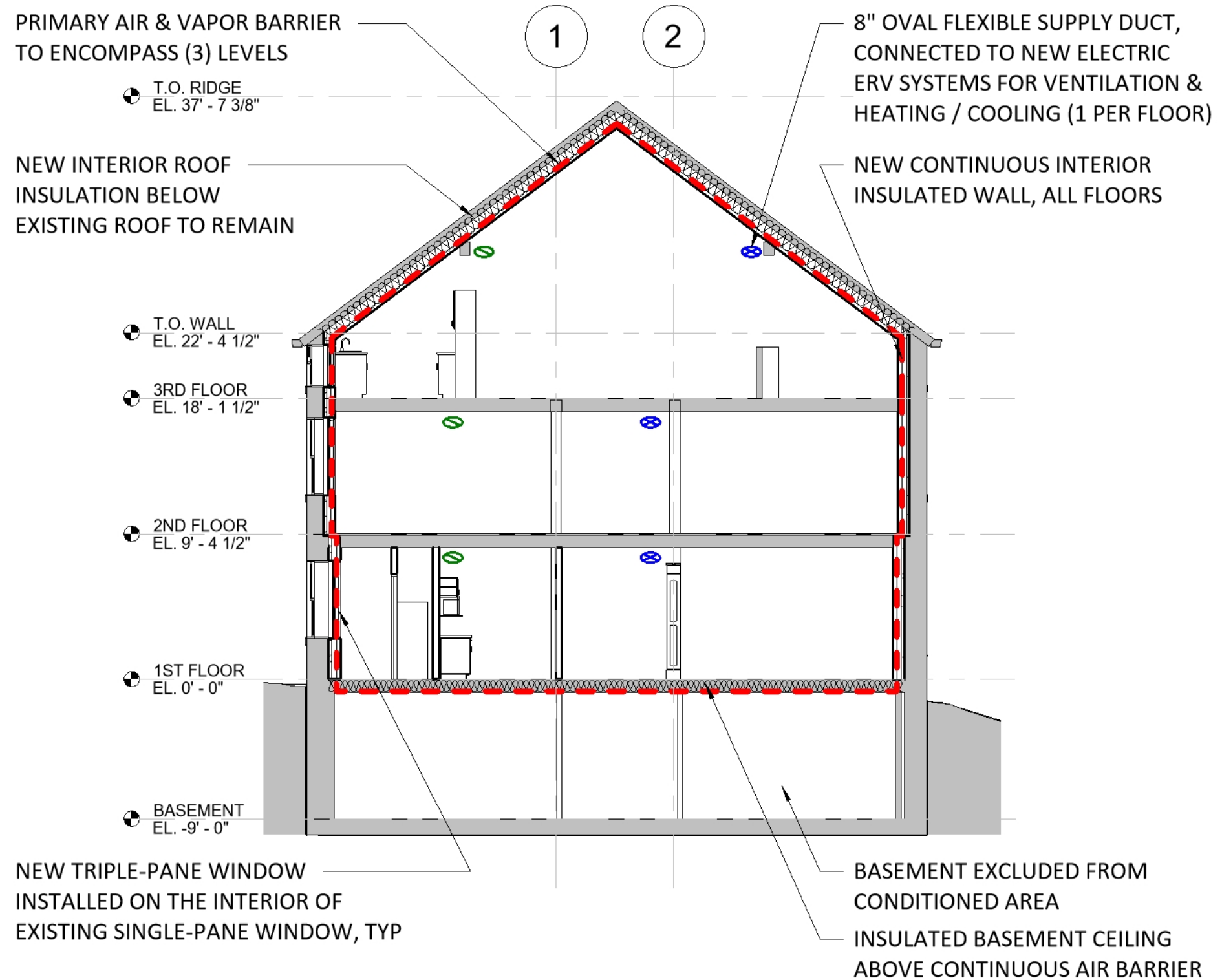
Our retrofit primarily includes the following:

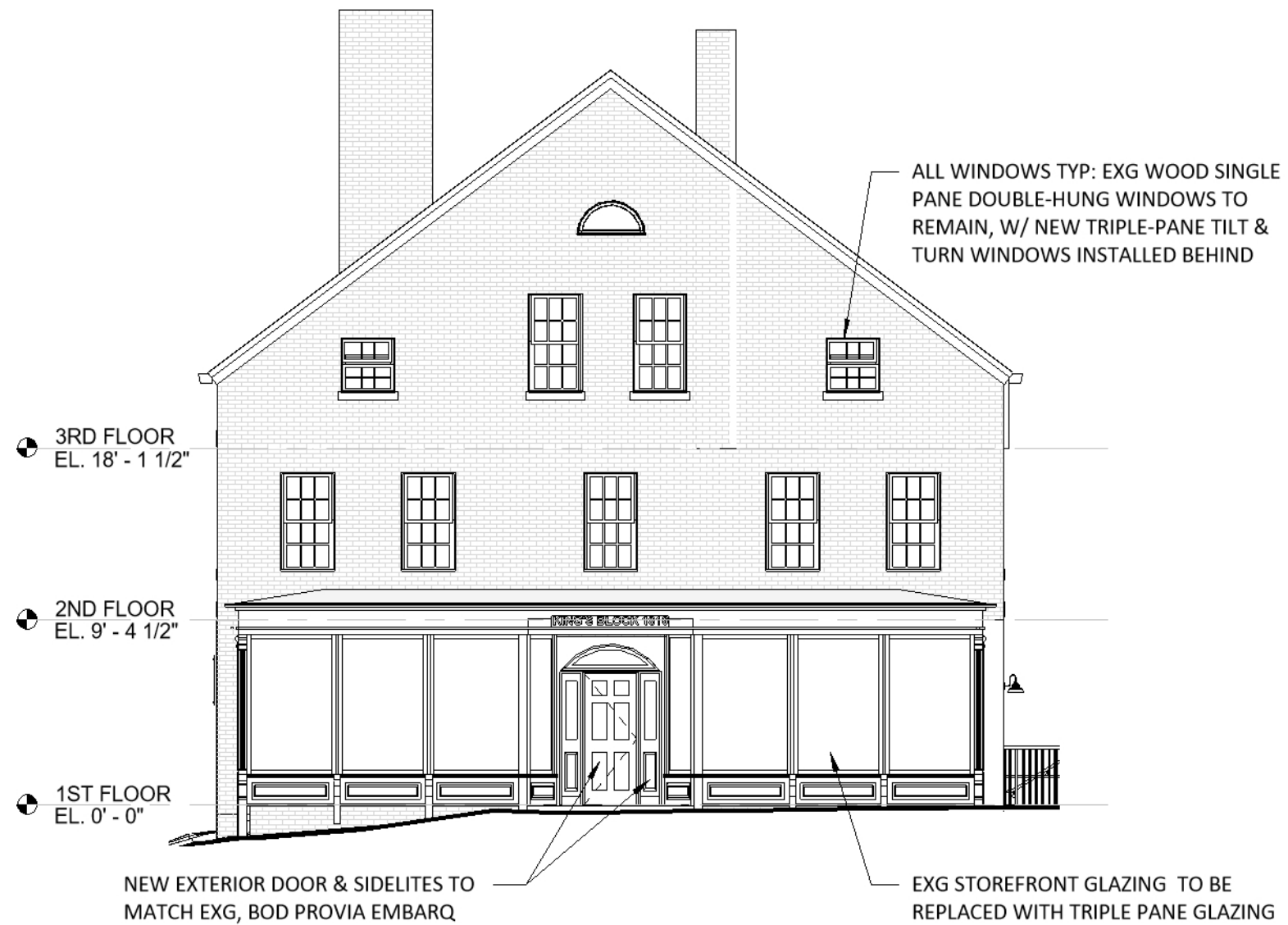
1. Improved envelope
2. Improved interior windows
3. New mechanical systems, separate for each floor

It is our hope that this retrofit will result in the following:

1. Respond to climate change through greatly improved energy efficiency
2. Improved interior conditions and occupant health
3. Resiliency: Extend the building's lifespan and preserve a key part of New Haven architectural history

We have designed our retrofit to minimally impact the exterior of the building & maintain its historic character.





PROPOSED NORTH ELEVATION
1/8" = 1'-0"



EXISTING NORTH ELEVATION
Not to Scale



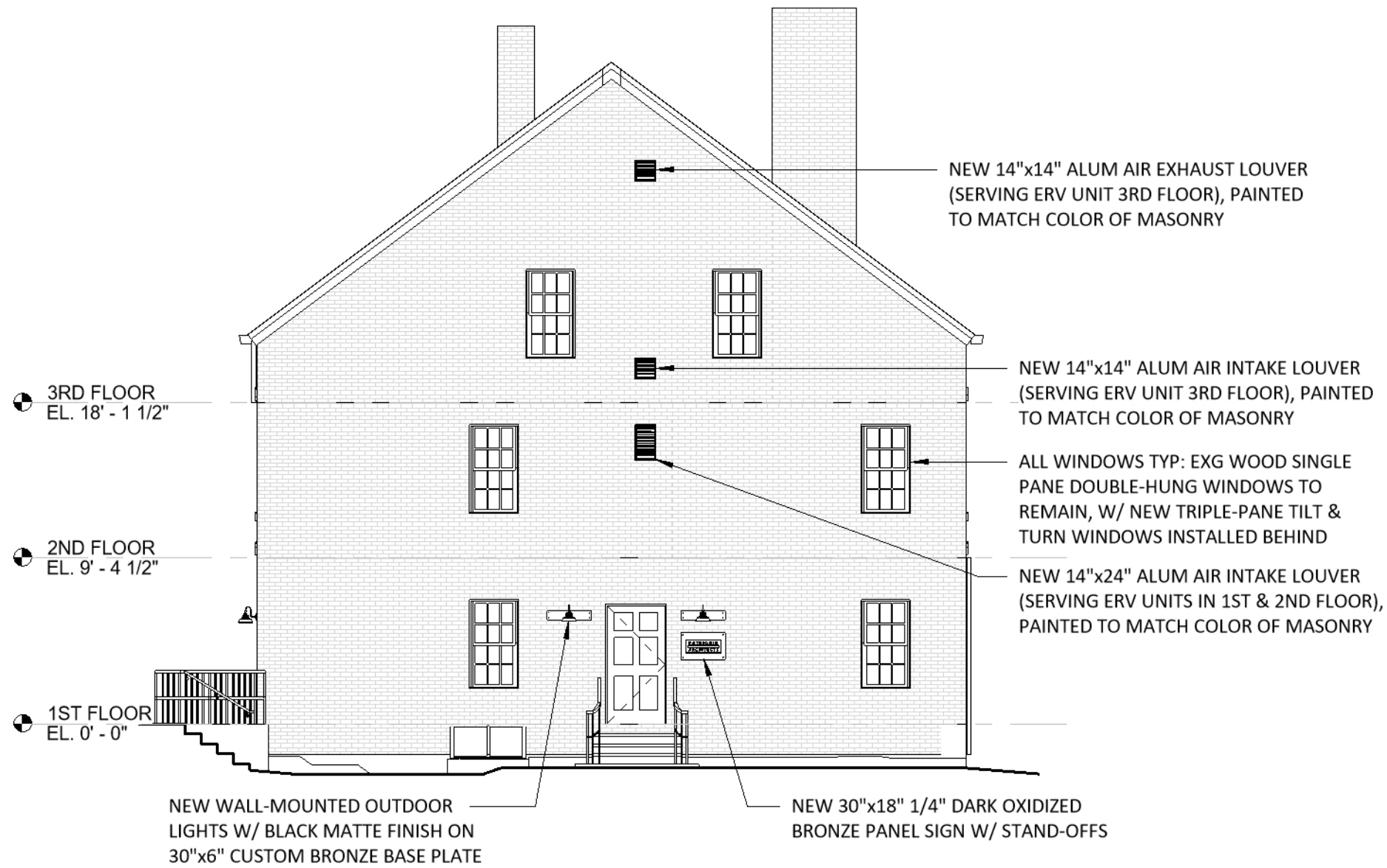
NEW 42"x30" 1/4" DARK OXIDIZED BRONZE PANEL SIGN W/ STAND-OFFS

ALL WINDOWS TYP: EXG WOOD SINGLE PANE DOUBLE-HUNG WINDOWS TO REMAIN, W/ NEW TRIPLE-PANE TILT & TURN WINDOWS INSTALLED BEHIND

PROPOSED WEST ELEVATION
1/8" = 1'-0"

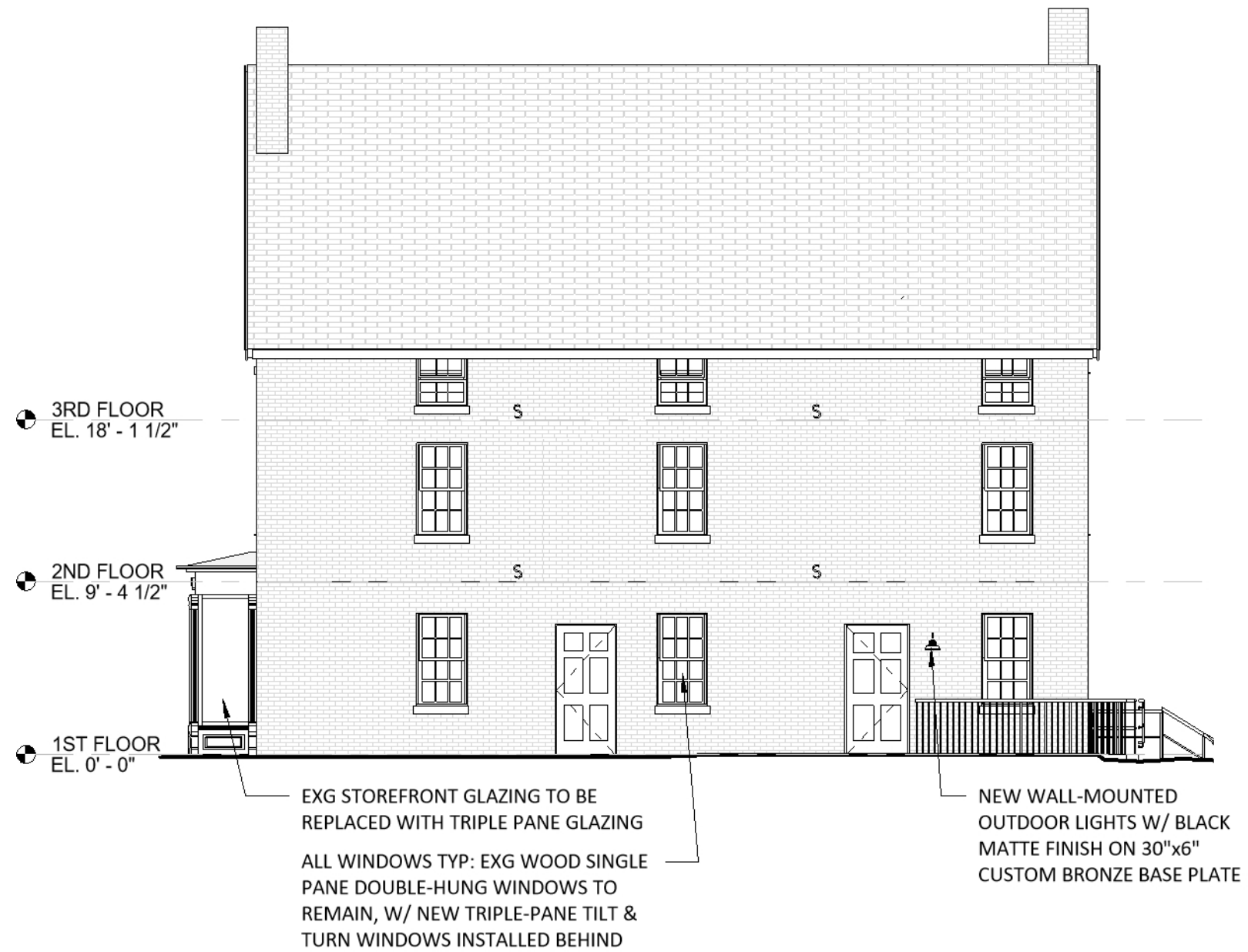


EXISTING WEST ELEVATION
Not to Scale



PROPOSED SOUTH ELEVATION
1/8" = 1'-0"

EXISTING SOUTH ELEVATION
Not to Scale



PROPOSED EAST ELEVATION
1/8" = 1'-0"



EXISTING EAST ELEVATION
Not to Scale

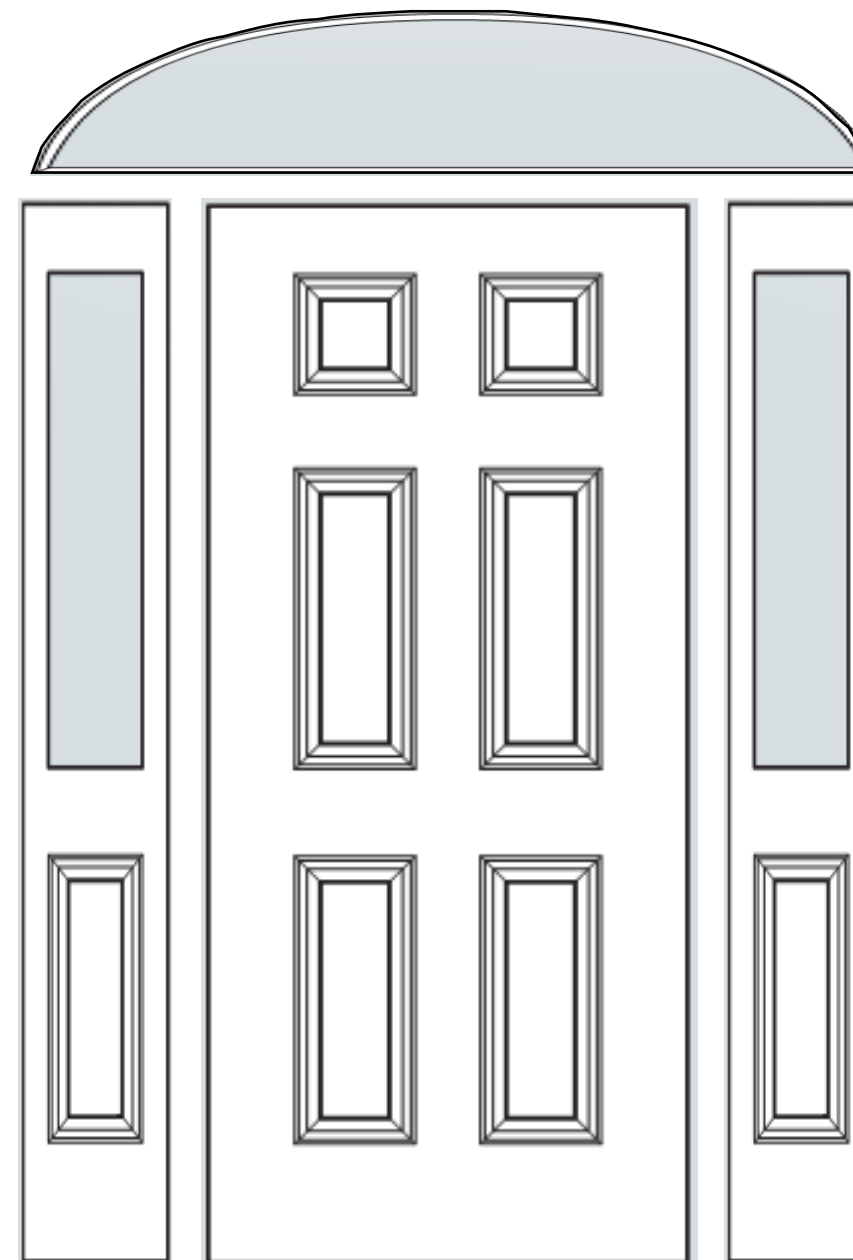
EXISTING FRONT DOOR

PAINTED WOOD, GLAZED SIDELIGHTS & TRANSOM



PROPOSED FRONT DOOR

PAINTED FIBERGLASS, OIL-RUBBED BRONZE HANDLE



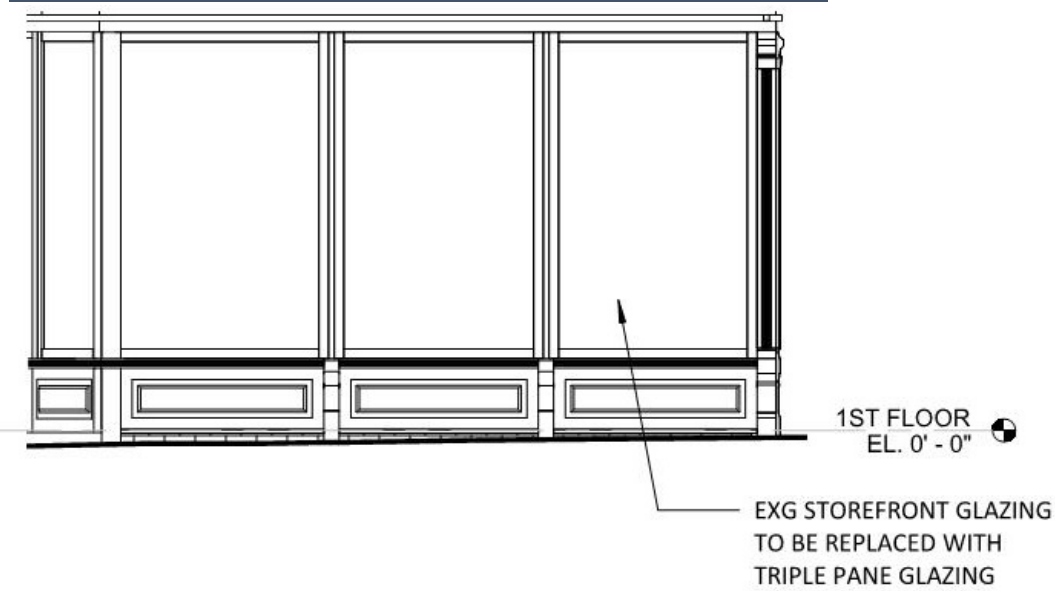
EXISTING FRONT STOREFRONT GLAZING

DOUBLE-PANE GLAZING, PAINTED WOOD MULLIONS



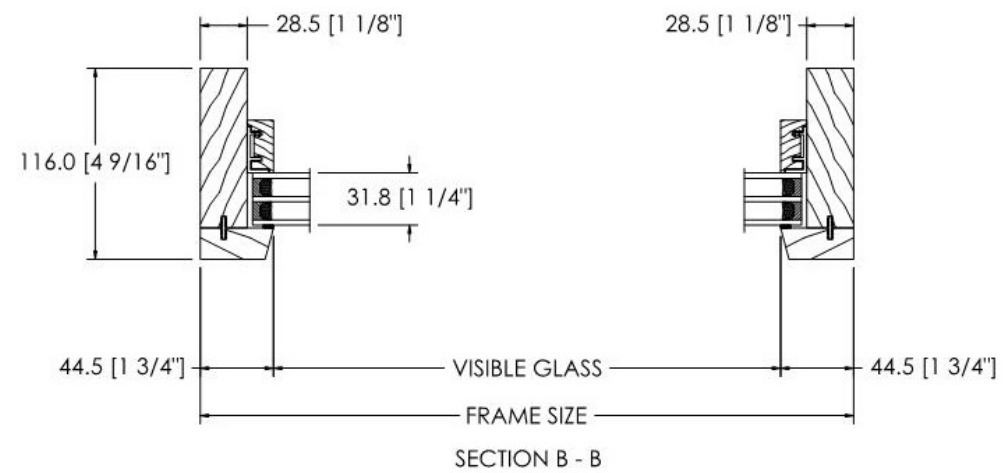
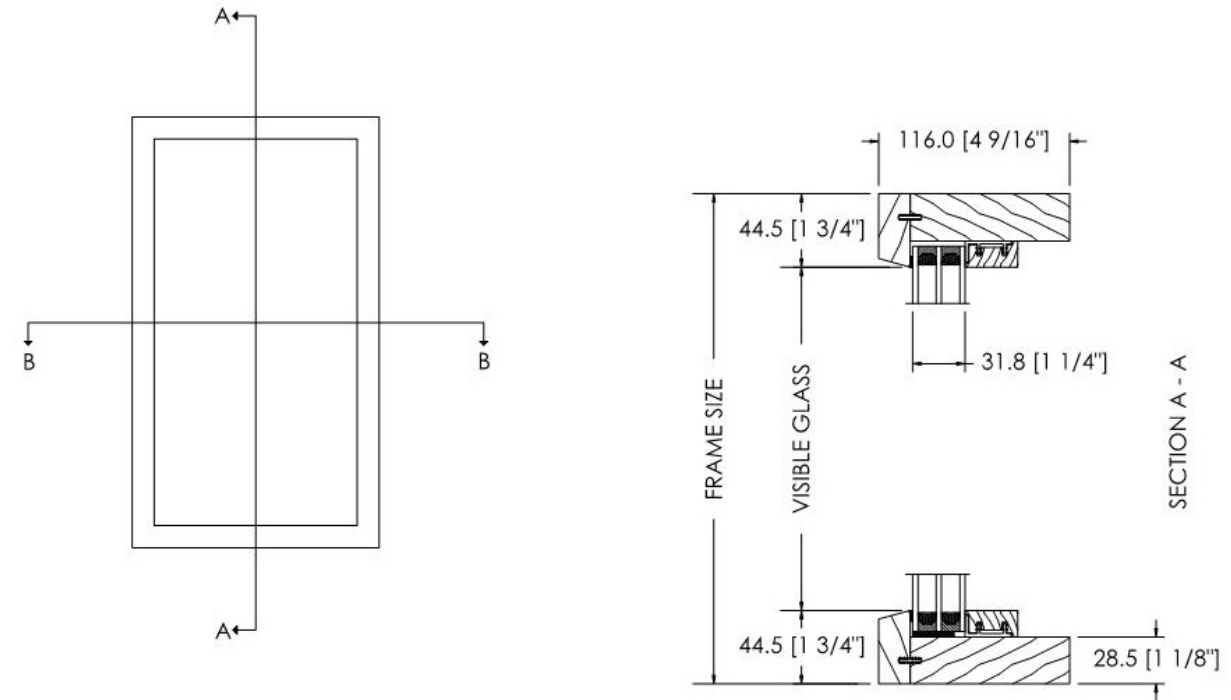
PROPOSED FRONT STOREFRONT GLAZING

TRIPLE-PANE GLAZING, PAINTED WOOD MULLIONS



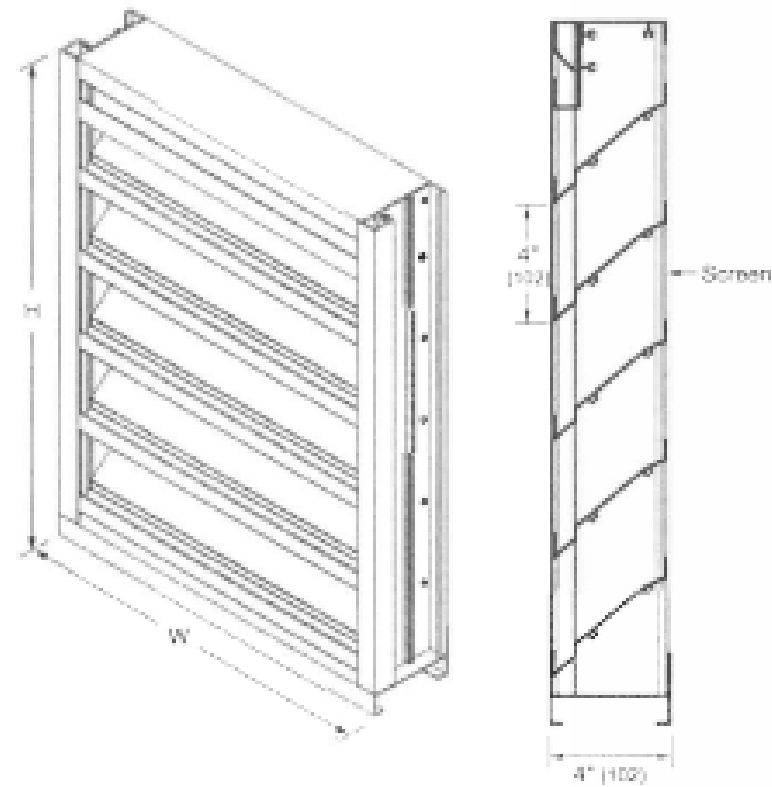
PROPOSED FRONT STOREFRONT GLAZING

TRIPLE-PANE, PAINTED WOOD WINDOWS



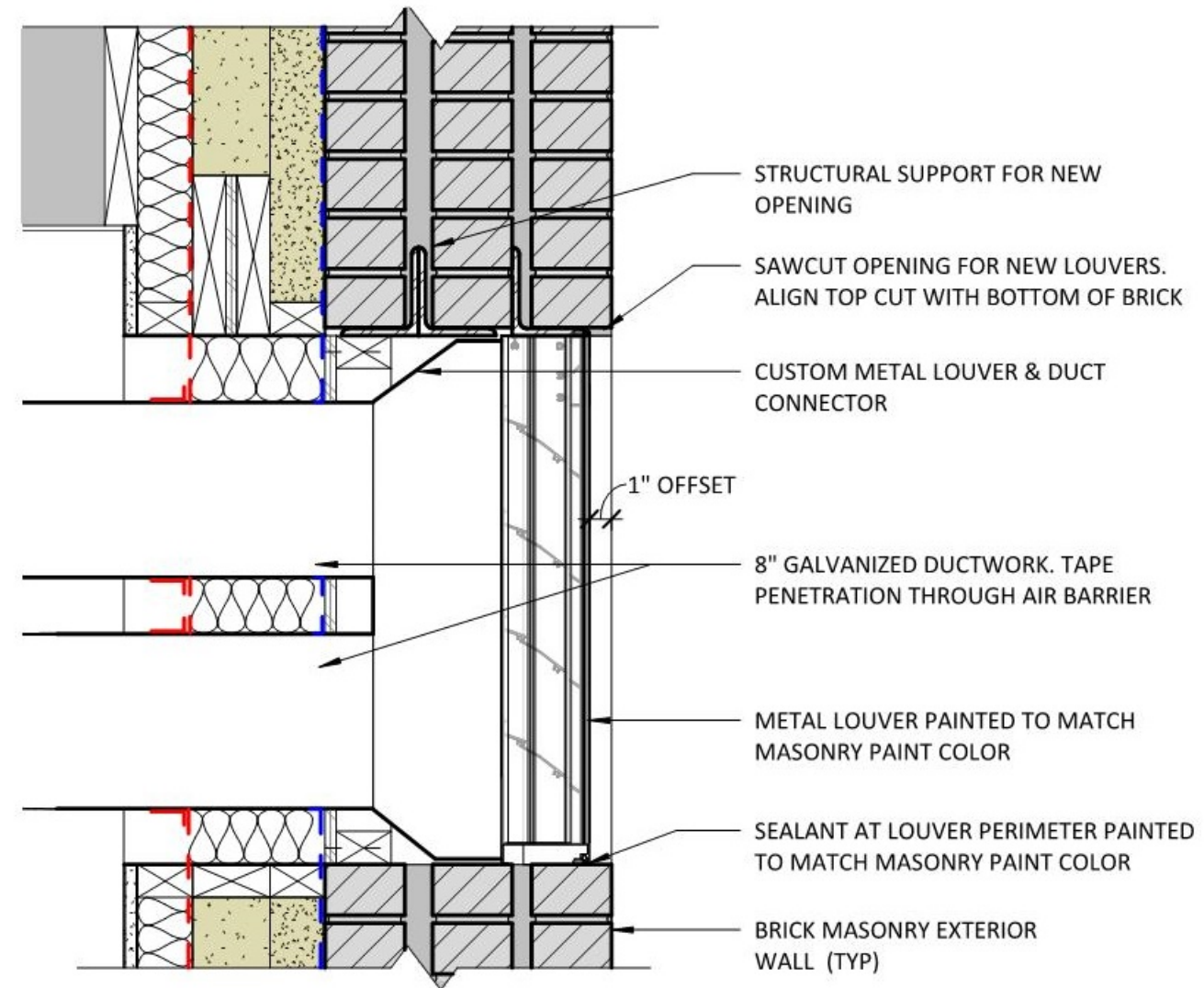
PROPOSED LOUVER

PAINTED MATTE TO MATCH EXISTING FACADE



NOTE: DIMENSIONS VARY. SEE ELEVATIONS

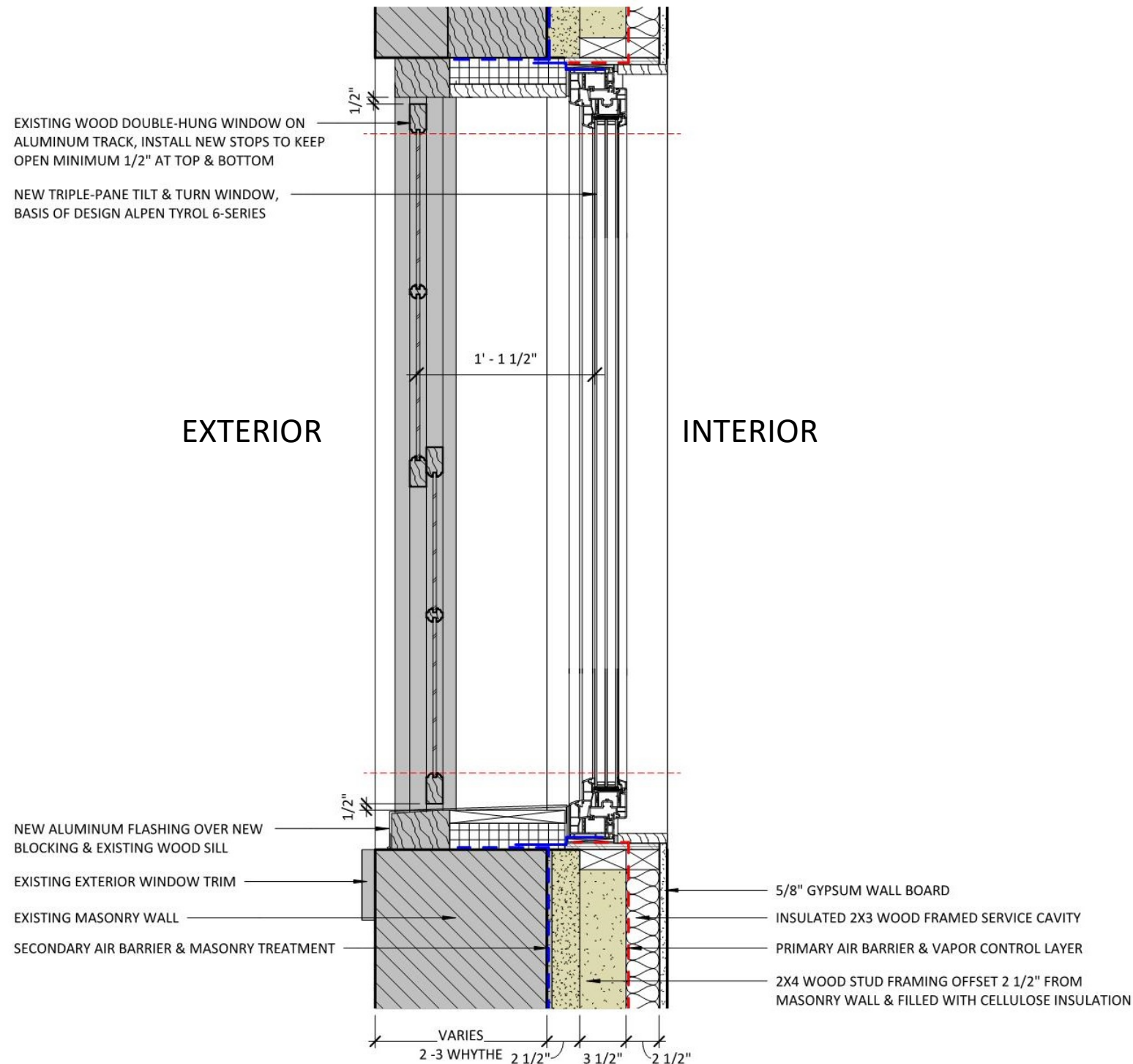
TYPICAL LOUVER SECTION



PROPOSED LOUVER SECTION
1-1/2" = 1'-0"

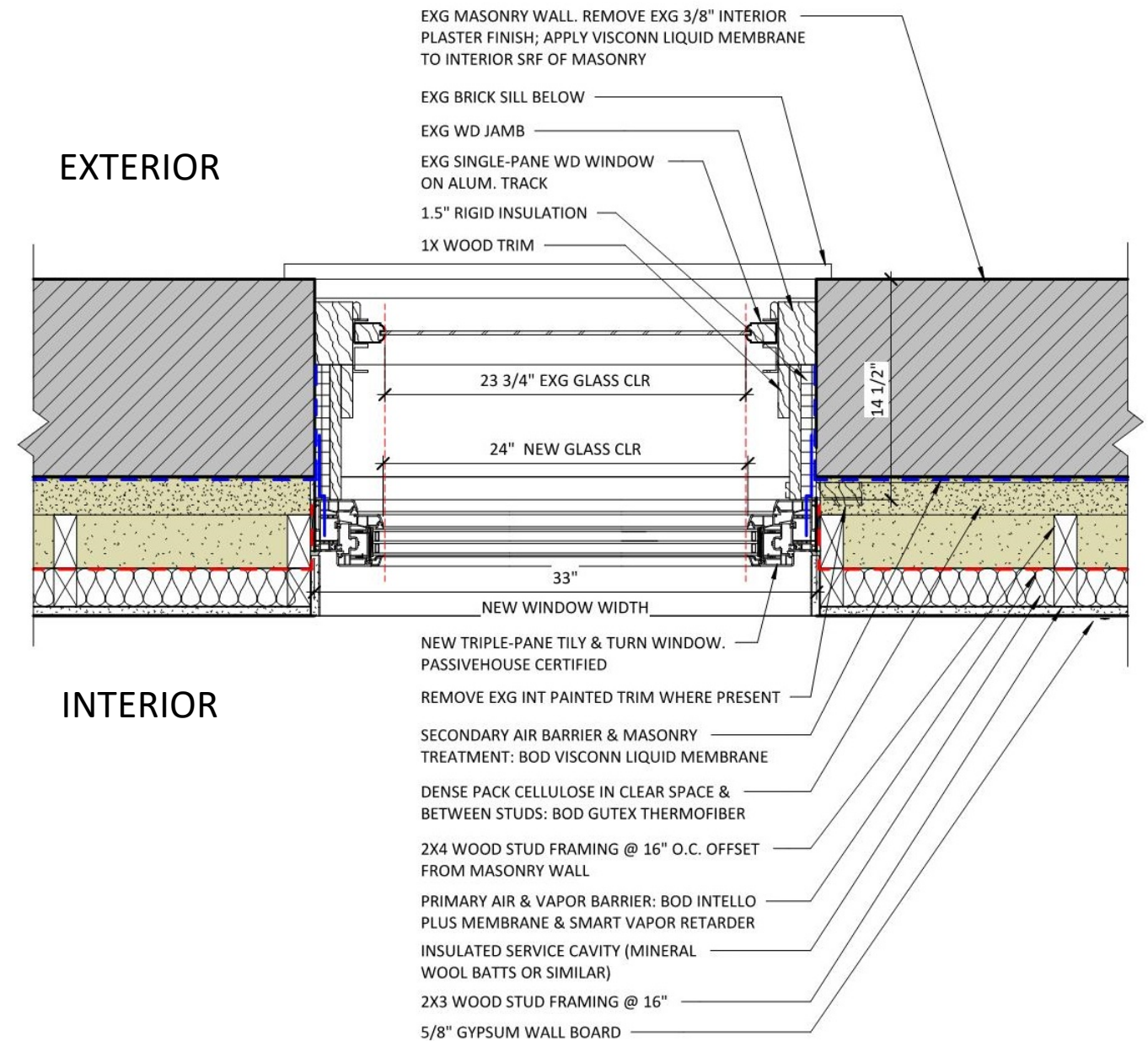
PROPOSED INTERIOR WINDOW

TYPICAL SECTION



PROPOSED WINDOW HEAD/SILL SECTION
1" = 1'-0"

TYPICAL PLAN



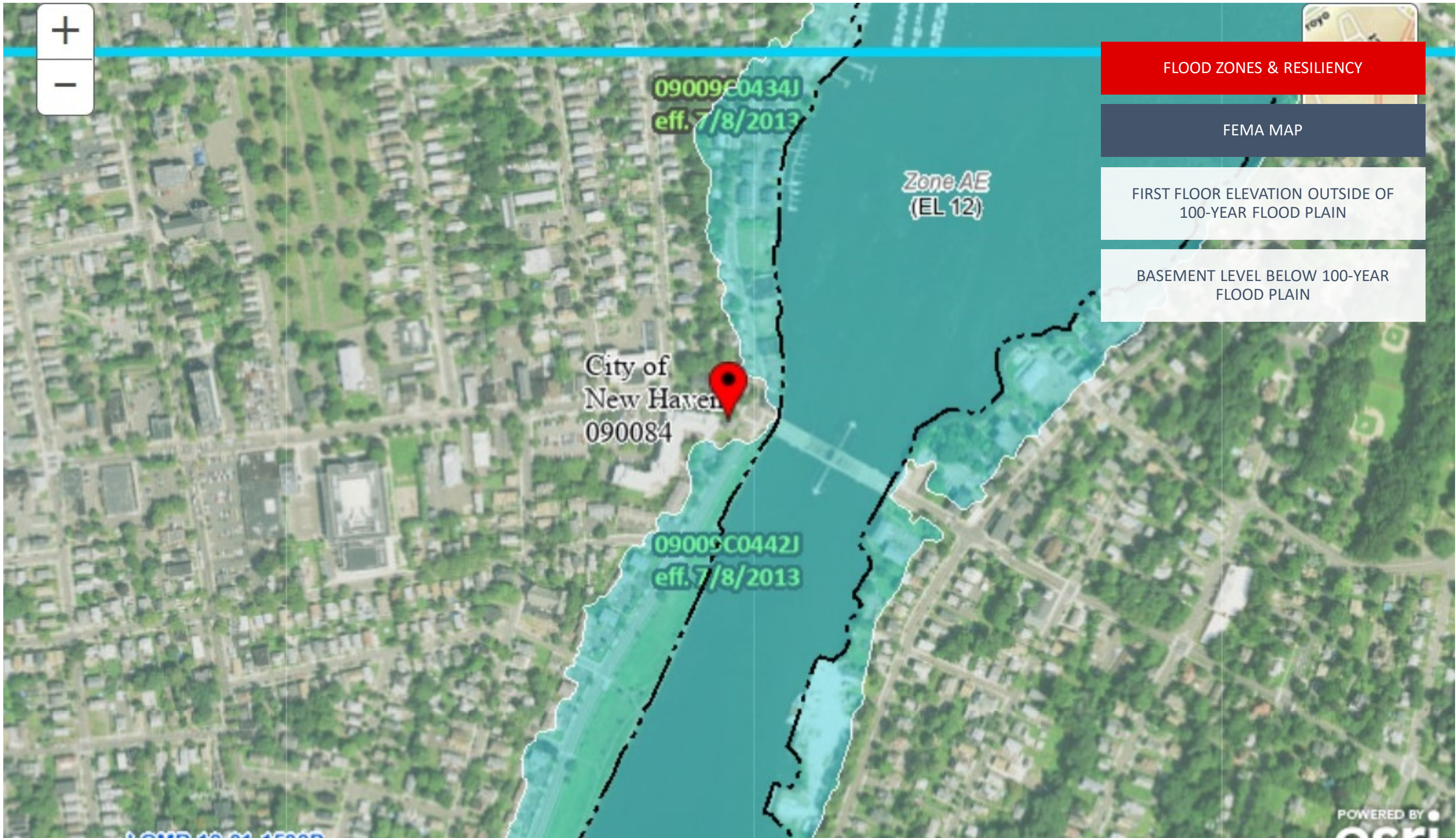
PROPOSED WINDOW JAMB SECTION
1" = 1'-0"

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**MAKING HISTORIC BUILDINGS RESILIENT: FLOOD
ZONES & OTHER CHALLENGES**

STRATEGIES FOR ZERO ENERGY READY: ENVELOPE, BUILDING SYSTEMS
& ON-SITE ENERGY GENERATION





FLOOD ZONES & RESILIENCY

FEMA MAP

FIRST FLOOR ELEVATION OUTSIDE OF (above) 100-YEAR FLOOD PLAIN

BASEMENT FLOOR LEVEL BELOW 100-YEAR FLOOD PLAIN



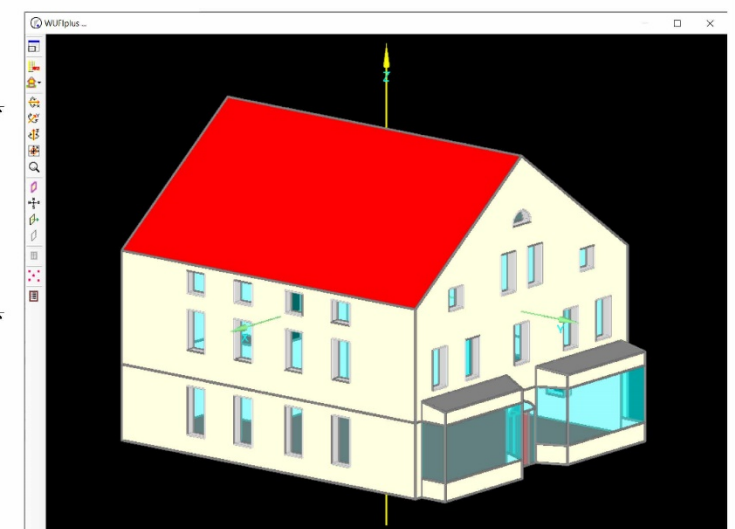
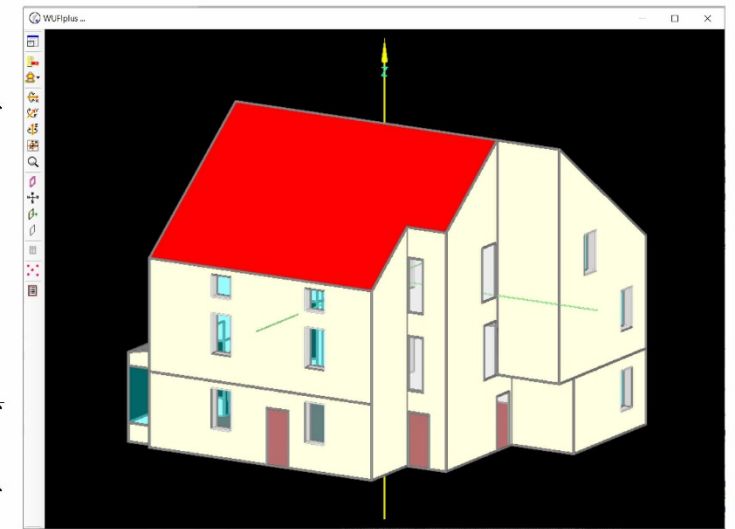
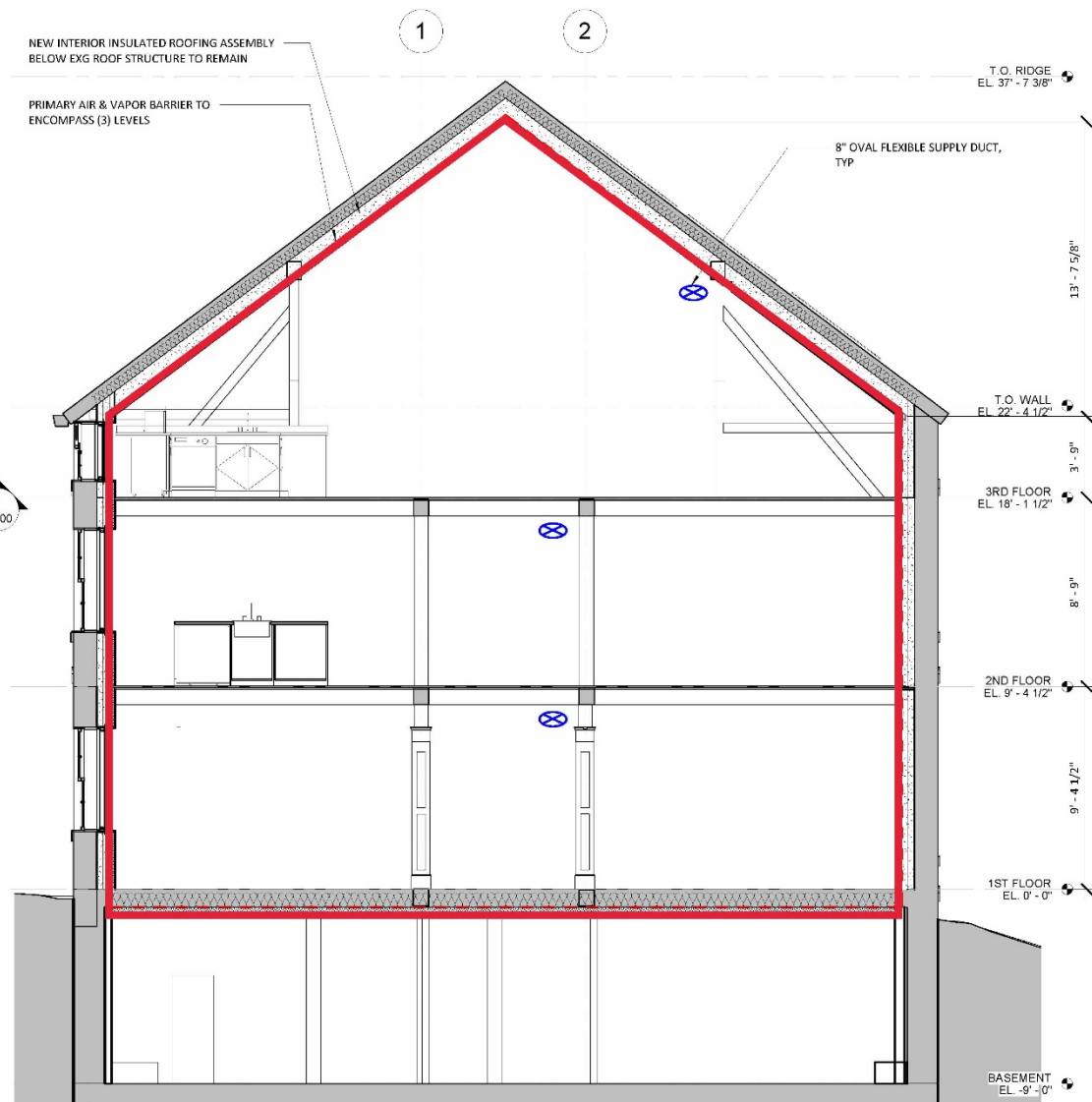
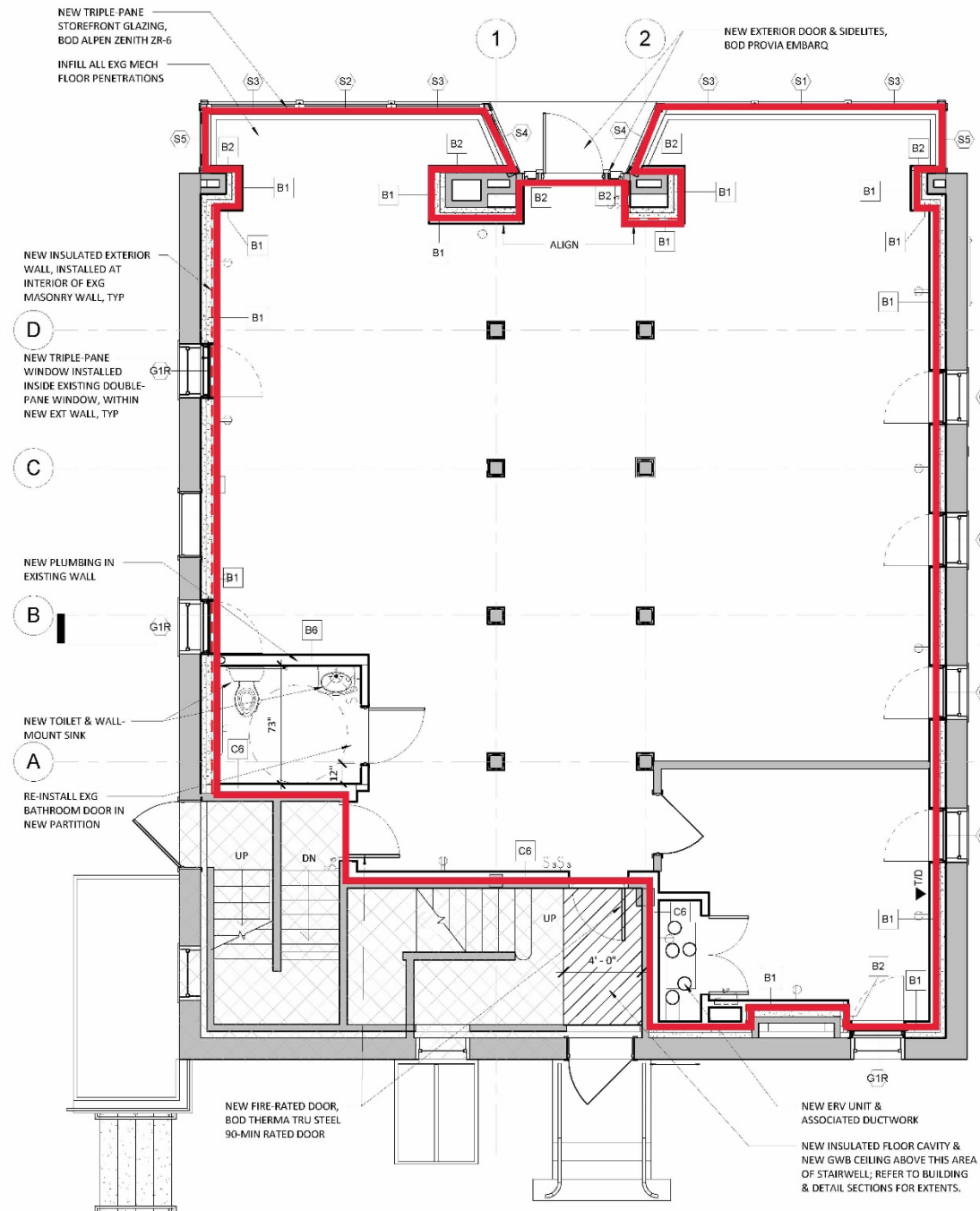
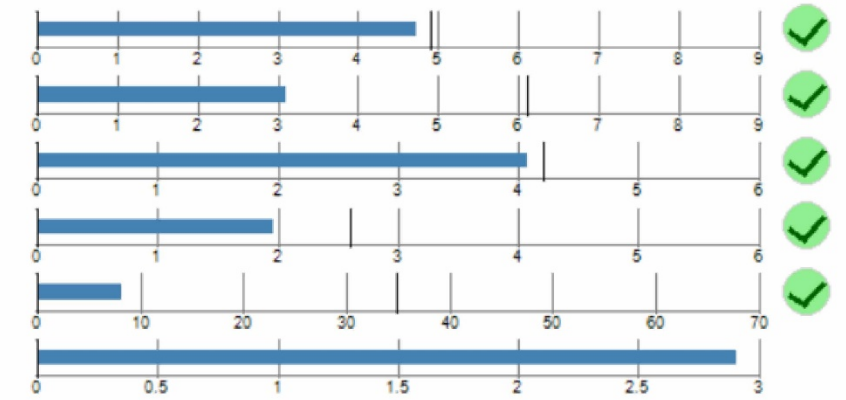
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**STRATEGIES FOR ZERO ENERGY READY: ENVELOPE,
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Heating demand: 4.73 kBtu/ft²yr
 Cooling demand: 3.09 kBtu/ft²yr
 Heating load: 4.07 Btu/hr ft²
 Cooling load: 1.96 Btu/hr ft²
 Source energy: 8.15 kBtu/ft²yr
 Site energy: 2.91 kBtu/ft²yr



PATRIQUIN
ARCHITECTS

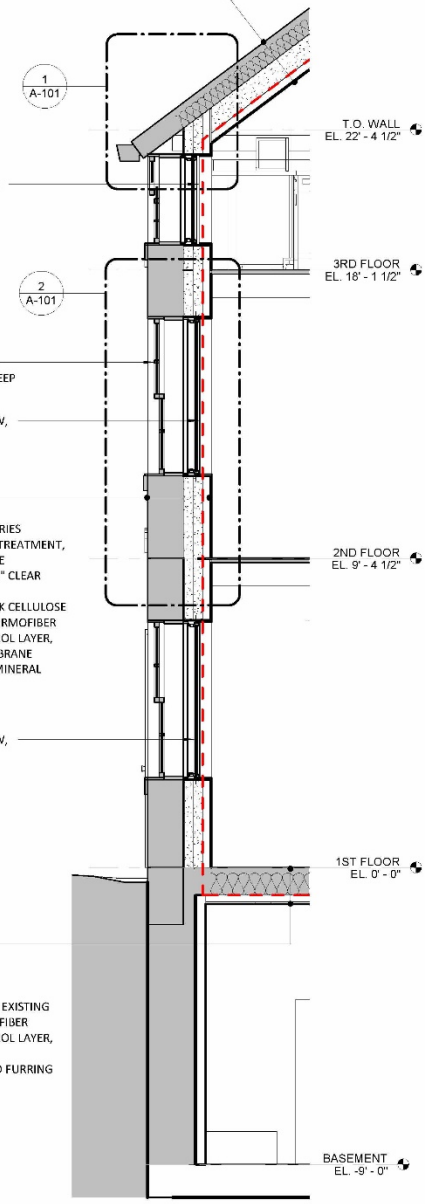
20 GRAND AVENUE
NEW HAVEN, CT 06513

KING'S BLOCK PASSIVE HOUSE RETROFIT

BUILDING CONCEPTS

TYP GABLE ROOF ASSEMBLY:

- NEW SHINGLE ROOFING & UNDERLAYMENT
- EXG WOOD SHEATHING, TAPE SEAMS W/ VAPOR PERMEABLE TAPE, BOD SIGA
- 3.5" CCSF ON UNDERSIDE OF ROOF DECK
- 9.5" DENSE-PACK CELLULOSE INSUL BETWEEN EXG 5.5" WOOD RAFTERS & NEW 2X8 FRAMING BELOW, BOD GUTEX THERMOFIBER
- PRIMARY AIR BARRIER & VAPOR CONTROL LAYER, BOD SIGA MAJREX SHEET-APPLIED MEMBRANE
- 2X3 WD-FRAMED SERVICE CAVITY W/ MINERAL WOOL INSUL
- 5/8" GYPSUM WALL BOARD, PNT

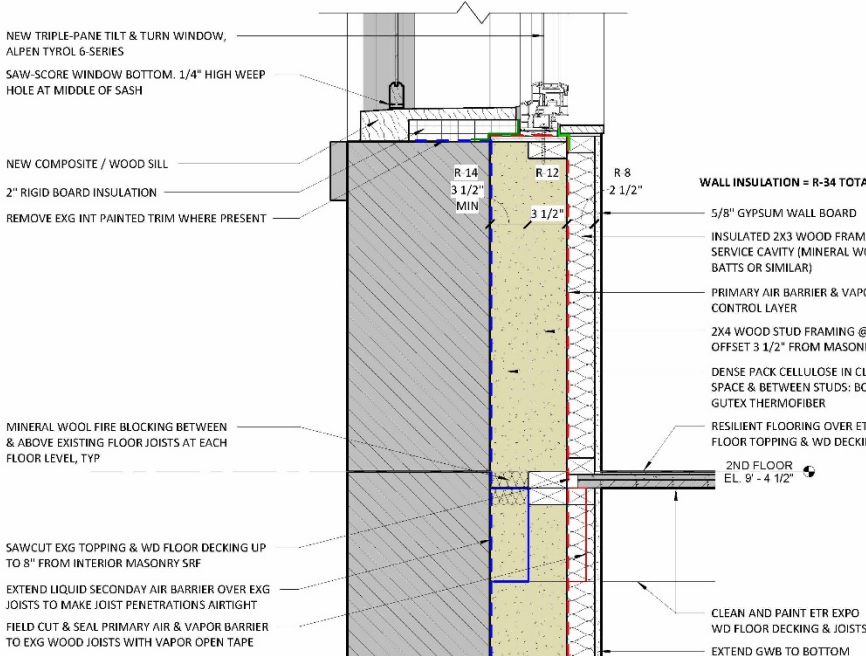
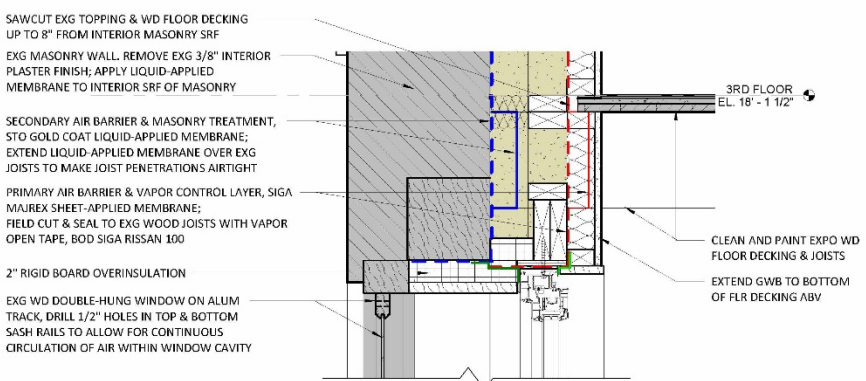
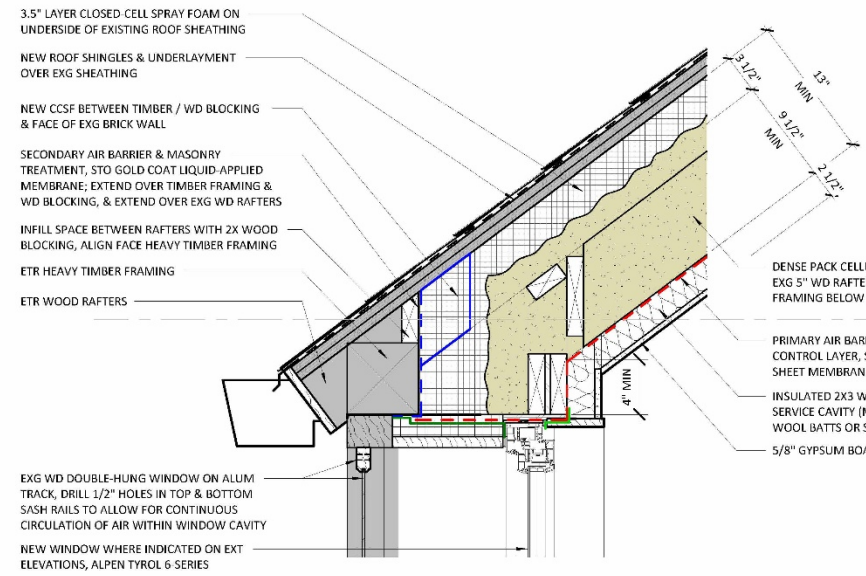


TYP EXT WALL ASSEMBLY:

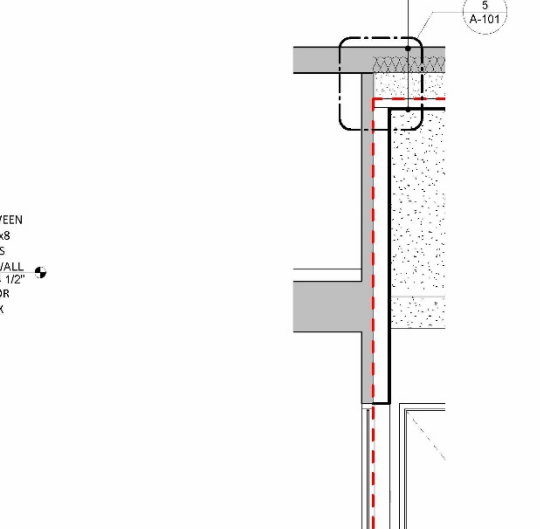
- EXG BRICK MASONRY WALL, WIDTH VARIES
- SECONDARY AIR BARRIER & MASONRY TREATMENT, BOD STO GOLD COAT LIQUID MEMBRANE
- DENSE-PACK CELLULOSE INSUL IN 3 1/2" CLEAR SPACE, BOD GUTEX THERMOFIBER
- 2X4 WD FRAMED WALL W/ DENSE-PACK CELLULOSE INSUL BETWEEN STUDS, BOD GUTEX THERMOFIBER
- PRIMARY AIR BARRIER & VAPOR CONTROL LAYER, BOD SIGA MAJREX SHEET-APPLIED MEMBRANE
- 2X3 WD-FRAMED SERVICE CAVITY W/ MINERAL WOOL INSUL
- 5/8" GYPSUM WALL BOARD, PNT

TYP BASEMENT CEILING ASSEMBLY:

- EXG CORK FINISH FLOORING
- EXG GYPCRETE & WD SUBFLOOR
- 8.5" DENSE PACK CELLULOSE BETWEEN EXISTING WD FLOOR JOISTS, BOD GUTEX THERMOFIBER
- PRIMARY AIR BARRIER & VAPOR CONTROL LAYER, BOD SIGA MAJVEST
- 2.5" MINERAL WOOL BETWEEN 2X3 WD FURRING
- 5/8" GWB, FIRE-TAPED



TYP GABLE ROOF ASSEMBLY:



TYP STAIRWELL WALL ASSEMBLY:

- EXG GYPSUM WALL BOARD
- NEW DENSE-PACK CELLULOSE INSUL IN EXG 2X4 WALL FRAMING, BOD GUTEX THERMOFIBER
- PRIMARY AIR BARRIER & VAPOR CONTROL LAYER, BOD SIGA MAJREX SHEET-APPLIED MEMBRANE
- NEW 2X6 WD-FRAMED SERVICE CAVITY W/ MINERAL WOOL INSUL
- 5/8" GYPSUM WALL BOARD, PNT

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