

Bank Lofts

Passive House Retrofit of a Historic Rural Landmark

October 10th, 2026



The Building

Project Context · Team · Existing Conditions

The Vision

Project Goals · Program · Adaptive Reuse

The Strategy

Envelope · Systems · Energy Modeling

The Lessons

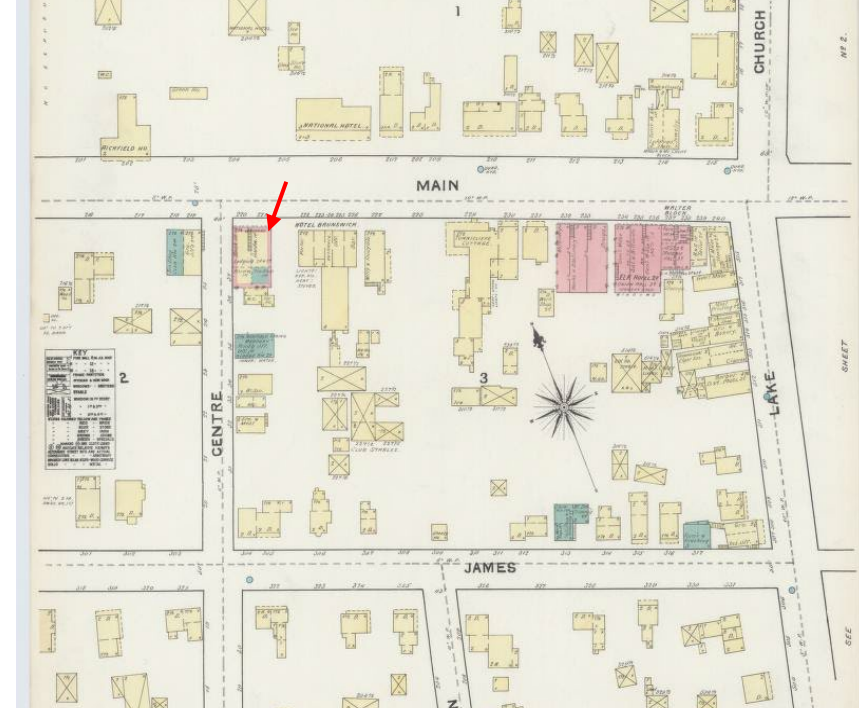
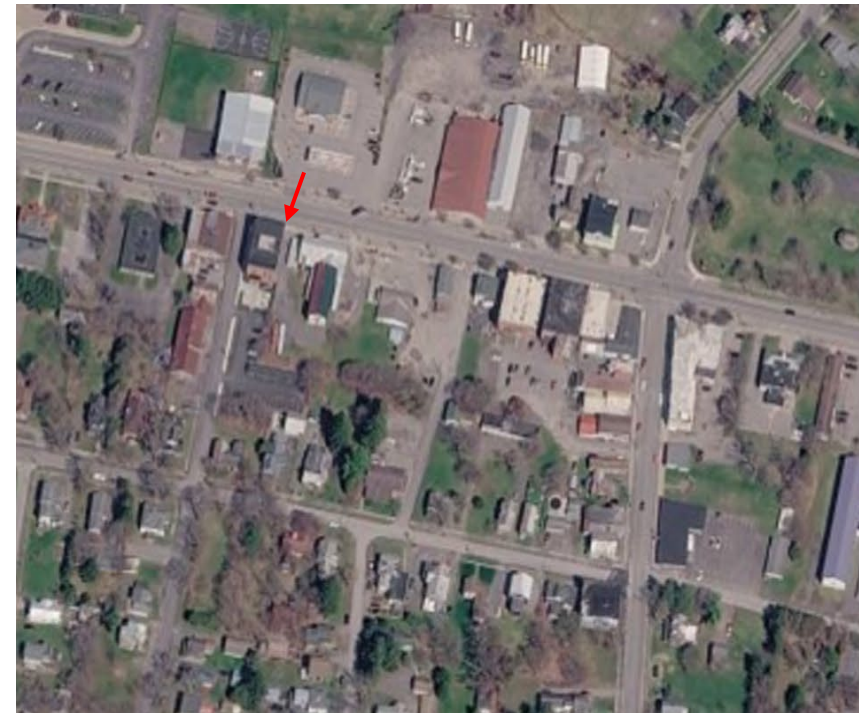
Challenges · Discoveries · Replicability



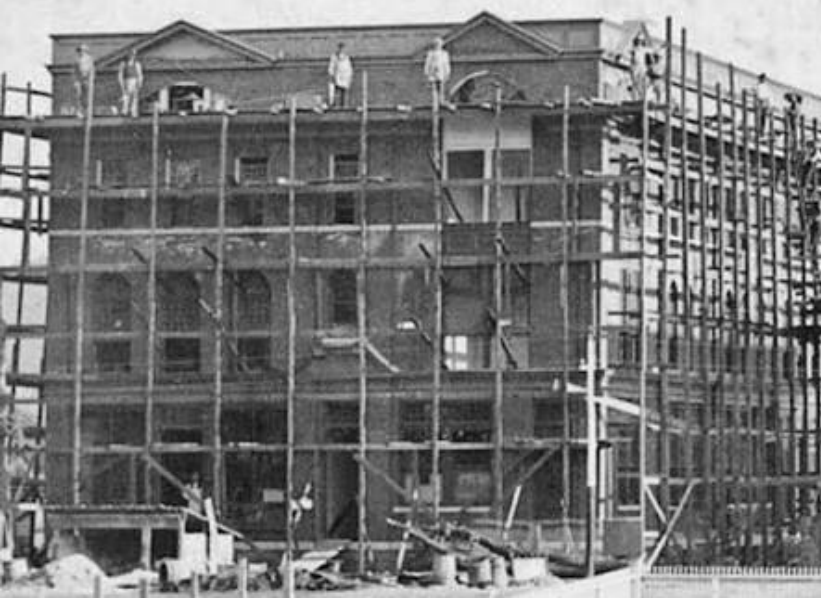
Project Context

A landmark at the center of a changing rural village Richfield Springs, NY

- Historic Main Street community shaped by its 19th-century resort and spa economy
- Prominent corner building at Main and Center Streets, embedded in village life since the 1880s
- Decades of economic change left the former bank vacant and deteriorating
- Adaptive reuse brings housing, civic/commercial activity, and new investment back to the village center
- Preservation and Passive Building performance demonstrate a viable future for historic buildings in rural communities



Project History



1882–1884 | First National Bank of Richfield Springs is chartered and its three-story brick and timber-frame building constructed at Main and Center Streets, on the former site of a saloon.

1884 | Building opens with the bank and a hardware/plumbing business at street level and lodging above.

1914 | Major bank renovation adds a new 12-ton steel vault, advertised as “burglar proof.”

1882–1935 | First National Bank issues more than \$1.38 million in national currency from Richfield Springs.

1956 | First National Bank merges with the State Bank of Albany; the historic building continues operating as its Richfield Springs branch.

1965 | State Bank of Albany announces plans for a new, modern bank nearby, marking the end of the historic building's primary role as a bank.

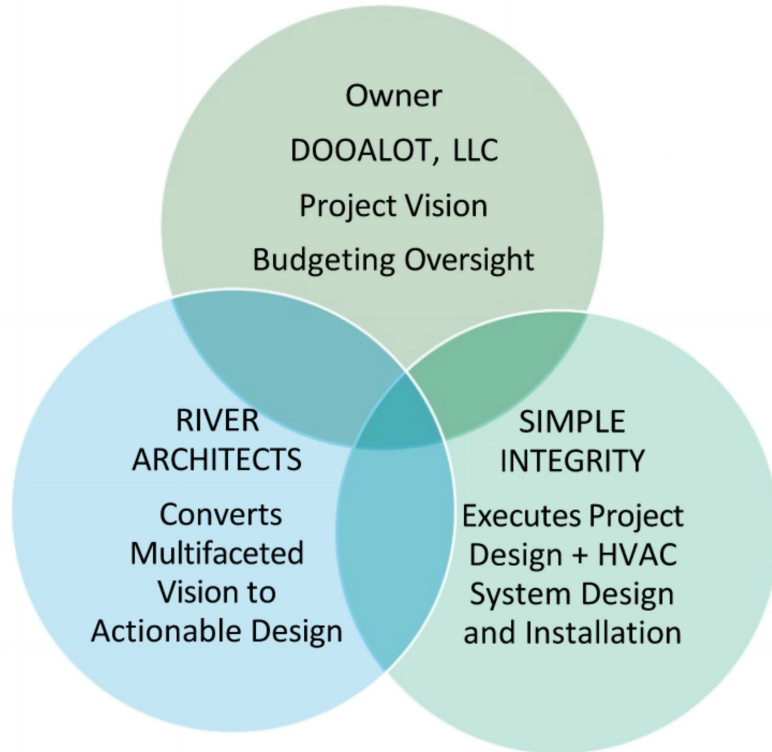
Later 20th century | As Richfield Springs' resort economy and Main Street commercial activity decline, the former bank accommodates other uses, including a pizza shop, before eventually becoming vacant.

2023 | After years of vacancy, Dooalot, LLC begins an extensive **carbon-neutral adaptive reuse**, transforming the historic bank into The Bank Lofts.



Project Team

Integrated Project Delivery



Francesca Zambello
Dooalot, LLC



Juhee Lee-Hartford
River Architects, PLLC



Josh Edmonds
Simple Integrity, LLC



Faith E. Gay
Dooalot, LLC

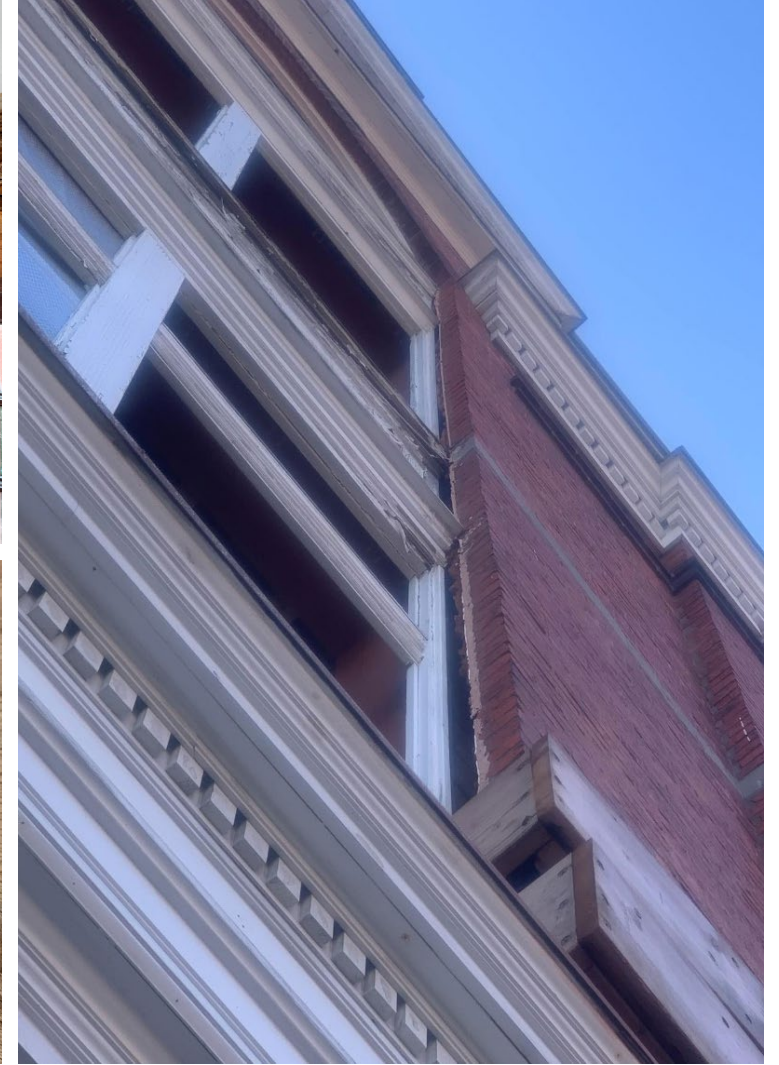


Di W. George
River Architects, PLLC



Robert Murray
Murray Engineering PC

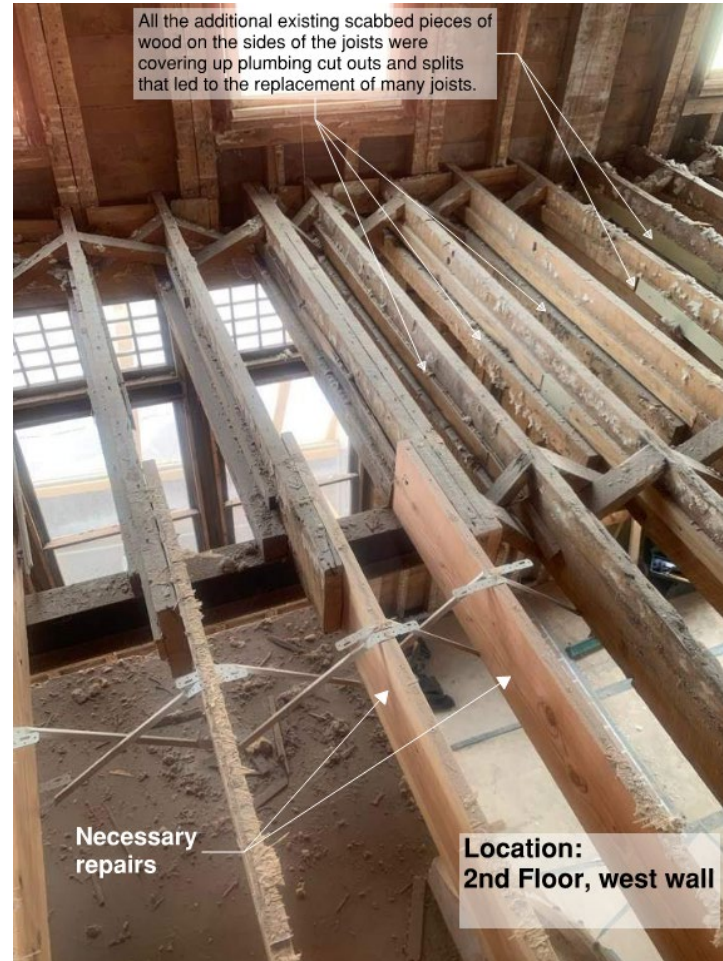
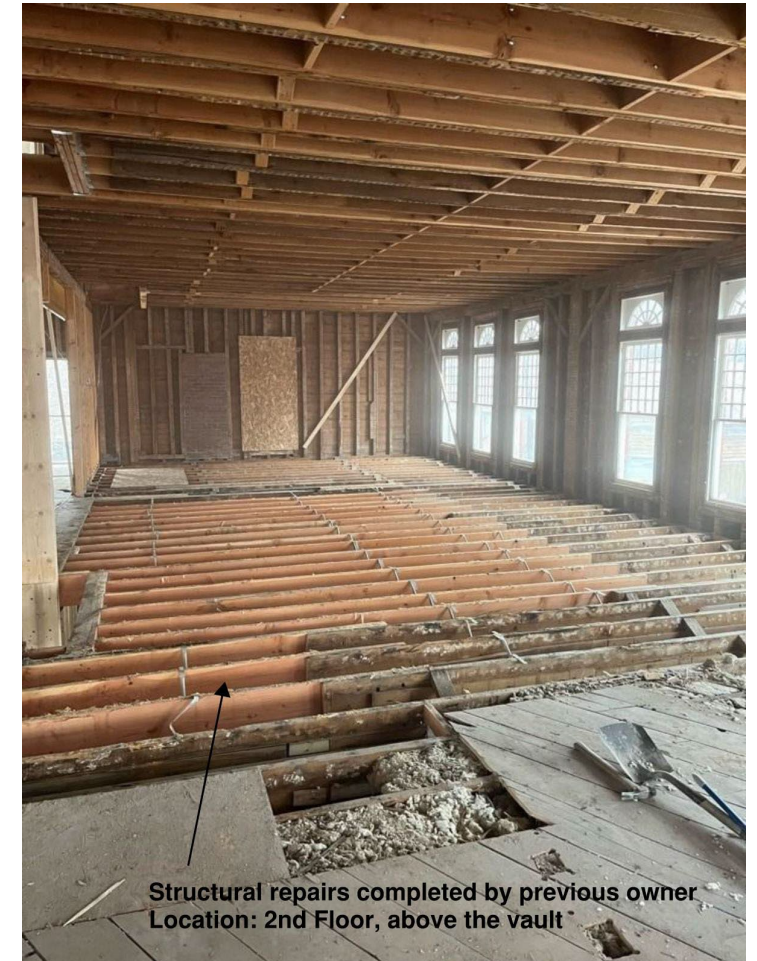
Existing Conditions - Facade



Existing Conditions - Basement



Existing Conditions – Upper Levels



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Project Goals



CORE REVIVE 2021

- Continuous insulation
- Airtight construction
- High performance glazing
- Thermal bridge free detailing
- Balanced ventilation with heat & moisture recovery
- Indoor air quality

Phius goal:

Transform a vacant historic masonry building into a Phius CORE REVIVE 2021 project by substantially improving enclosure and energy performance while addressing thermal bridging, comfort, indoor air quality, resiliency, and passive survivability.

Bank Lofts goal:

Revitalize a vacant historic Main Street landmark through adaptive reuse, creating high-quality housing and workspace while preserving the building's architectural character and demonstrating that historic preservation, Passive Building performance, and community economic development can work together.

NYSERDA goal:

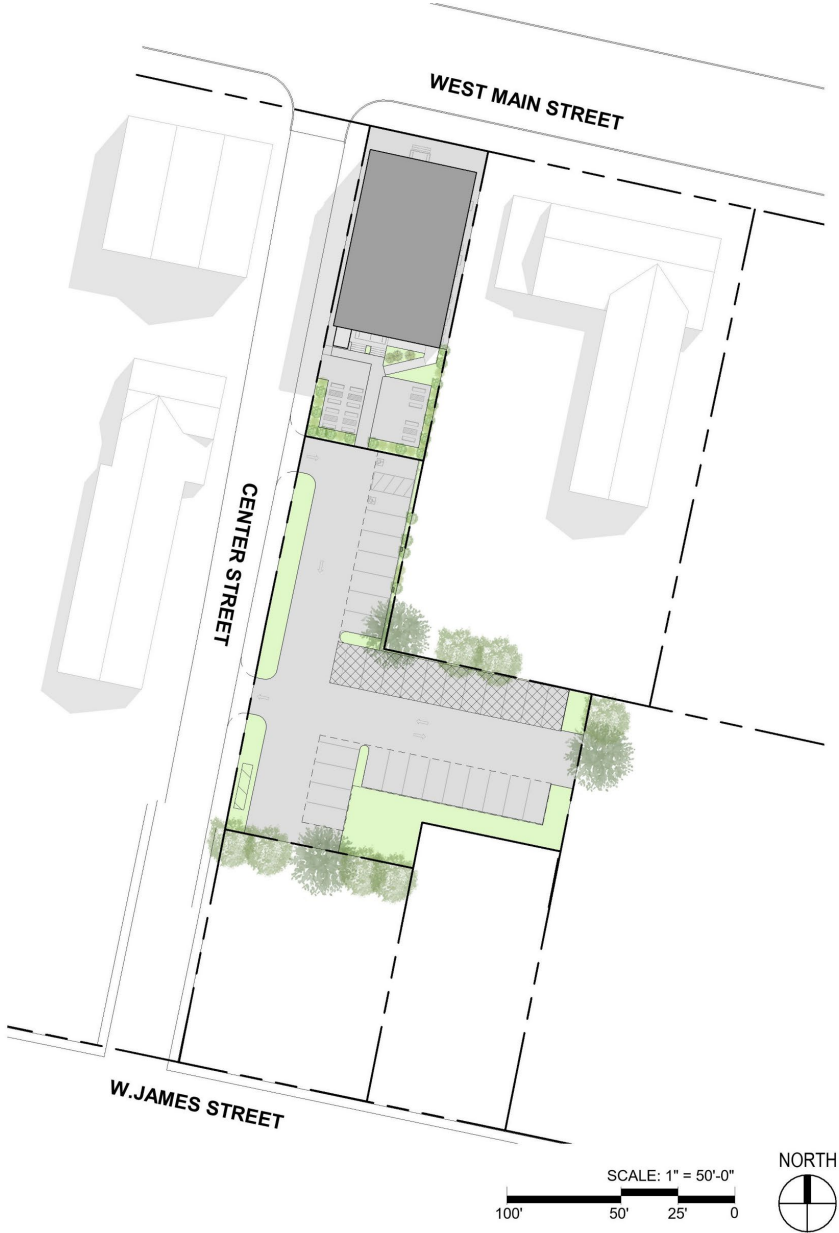
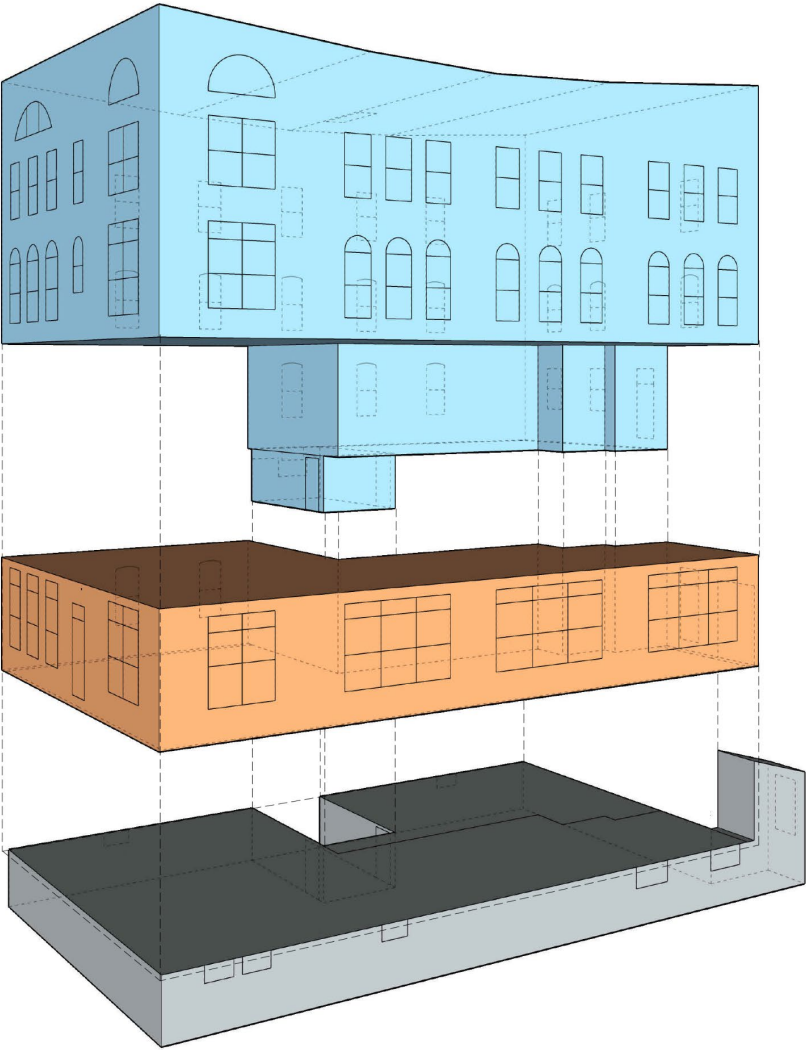
Use Bank Lofts as a demonstration of how early design support, technical analysis, and knowledge sharing can help make high-performance retrofits of older buildings feasible, replicable, and beneficial to their communities.



Buildings of Excellence
Early Design Support (BOE EDS)

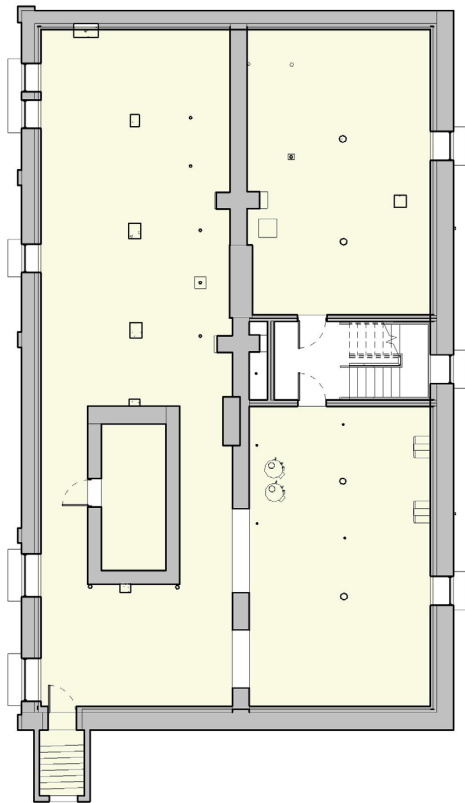
Carbon Neutral Community
Economic Development (CNCED) /
Building Cleaner Community
Competition (BCCC)

Site & Building zones

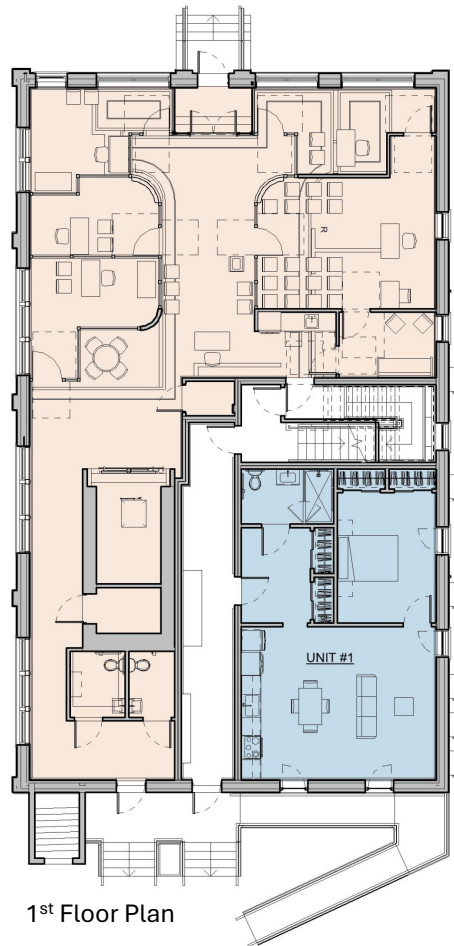


- RESIDENTIAL ZONE
- COMMERCIAL ZONE
- BASEMENT

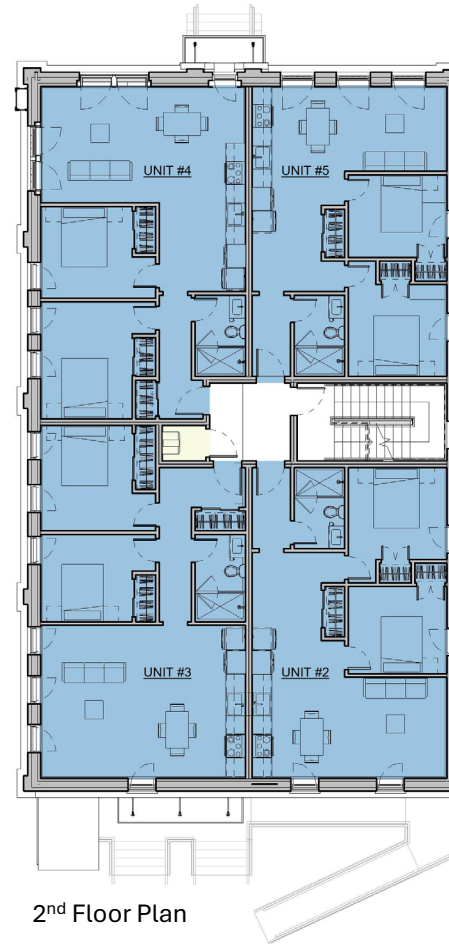
Program



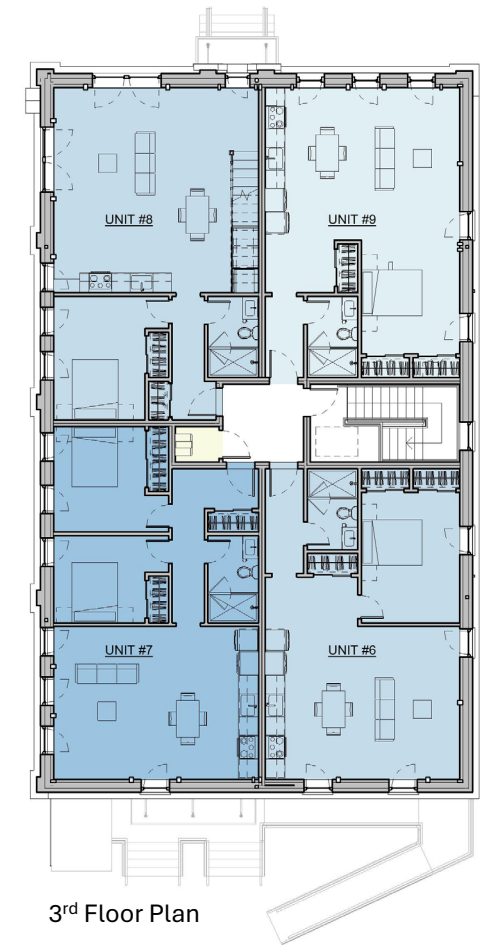
Basement Plan



1st Floor Plan



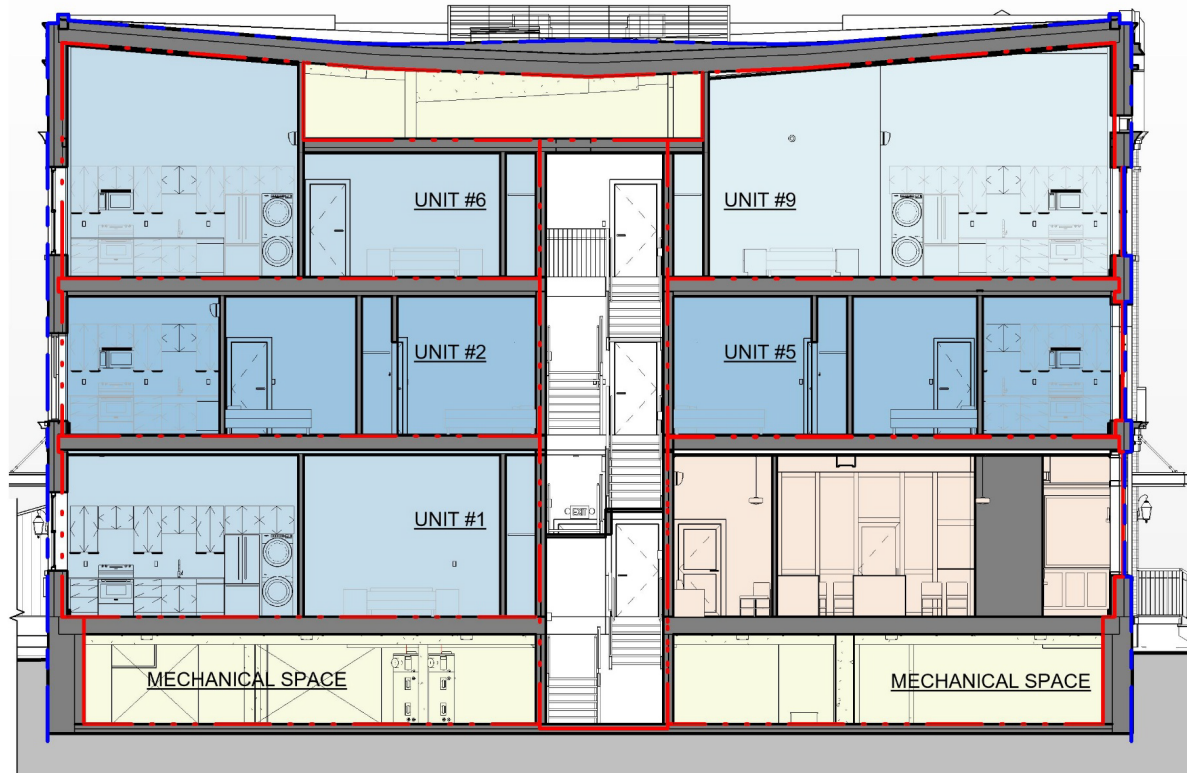
2nd Floor Plan



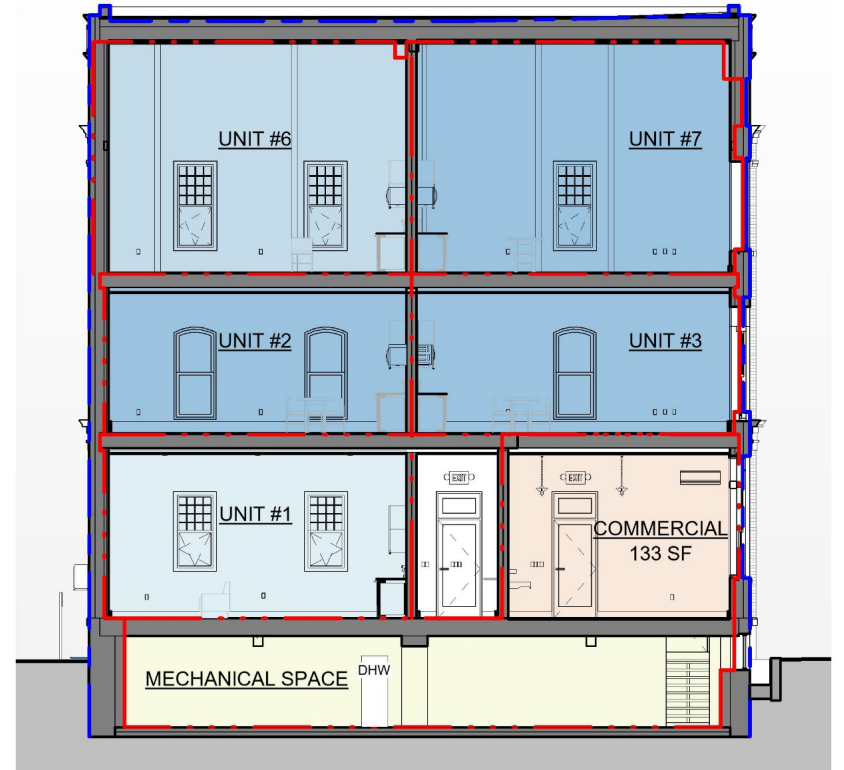
3rd Floor Plan

- COMMERCIAL SPACE
- HVAC & STORAGE
- RESIDENTIAL - CIRCULATION
- RESIDENTIAL - STUDIO UNIT
- RESIDENTIAL - 1 BEDROOM UNIT
- RESIDENTIAL - 2 BEDROOM UNIT

Program



Renovated Long Section



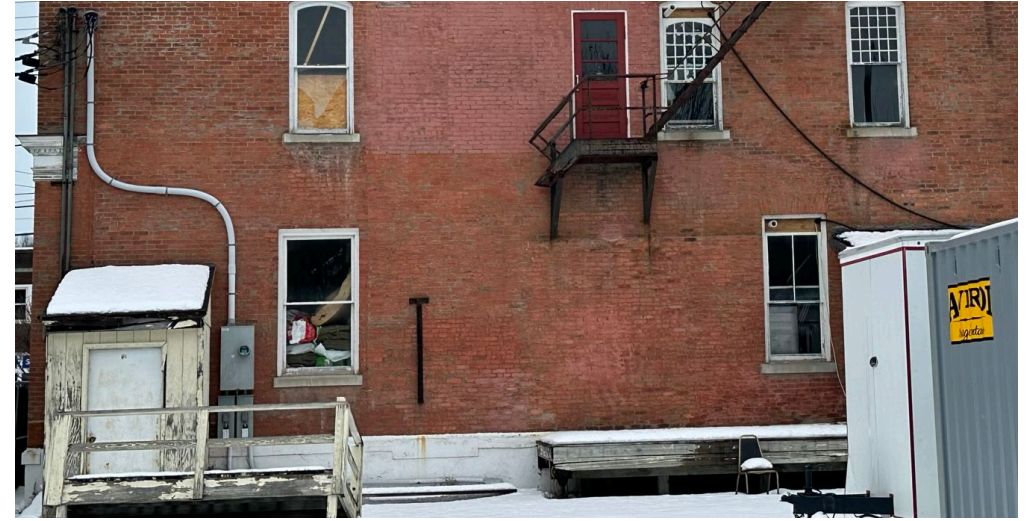
Renovated Cross Section

- · · · — AIR BARRIER
- — — WRB
- COMMERCIAL SPACE
- HVAC & STORAGE
- RESIDENTIAL - CIRCULATION
- RESIDENTIAL - STUDIO UNIT
- RESIDENTIAL - 1 BEDROOM UNIT
- RESIDENTIAL - 2 BEDROOM UNIT

Preservation & Adaptive Reuse



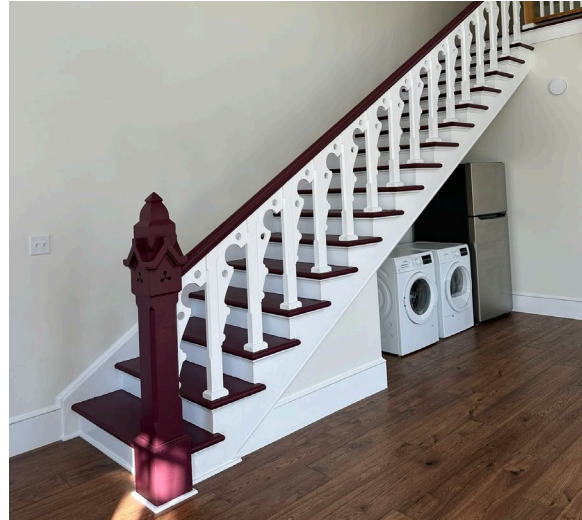
Preservation & Adaptive Reuse – Exterior



Preservation & Adaptive Reuse – Ground Floor



Preservation & Adaptive Reuse – Upper Level Apartment Units



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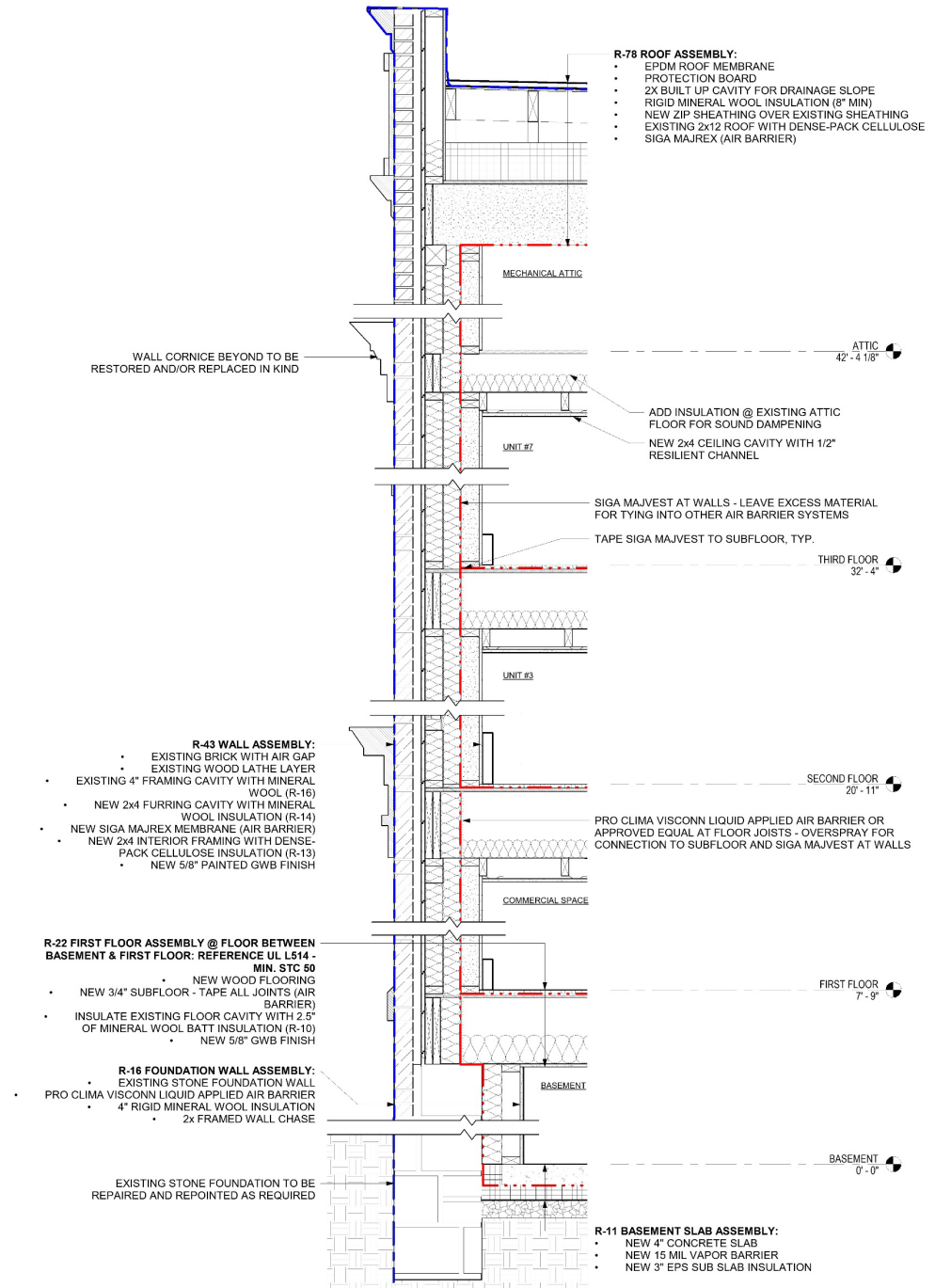
The Lessons

Challenges · Discoveries · Replicability



Building Envelope

- Optimized insulation with minimal thermal bridging
- High performance triple pane doors & windows
- Airtight construction



AIR SEALING



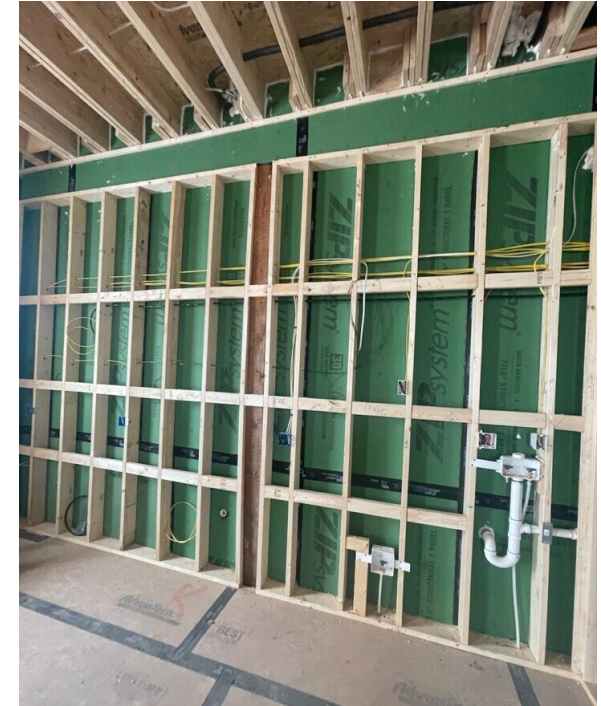
Air Sealing – Basement



Air Sealing – Ground Floor



Air Sealing – Upper Levels and Roof



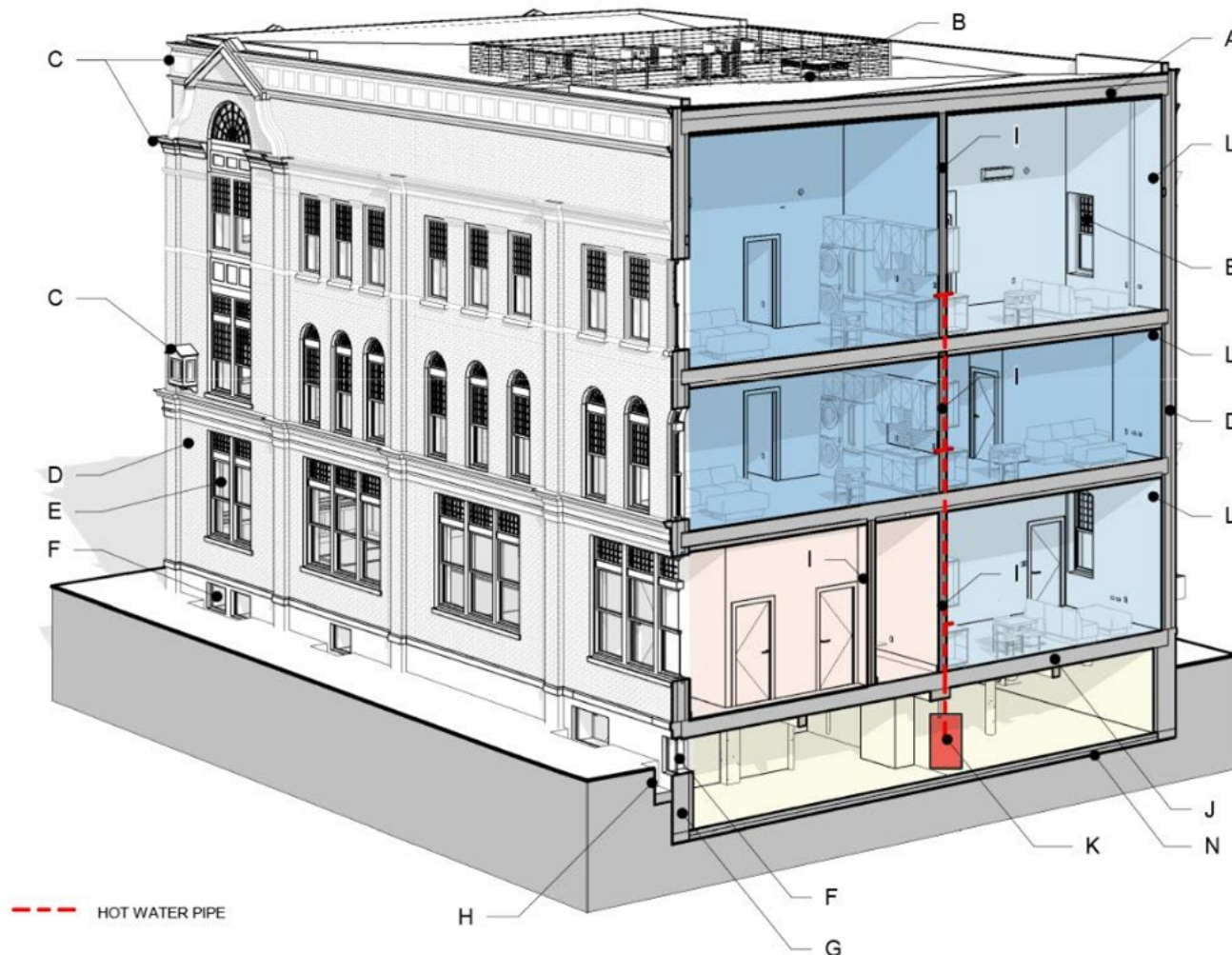
Blower Door Test Result

Whole building air leakage – **0.06 CFM50/ft²**

Apartment unit air leakage – **0.05 CFM50/ft² to 0.08 CFM50/ft**



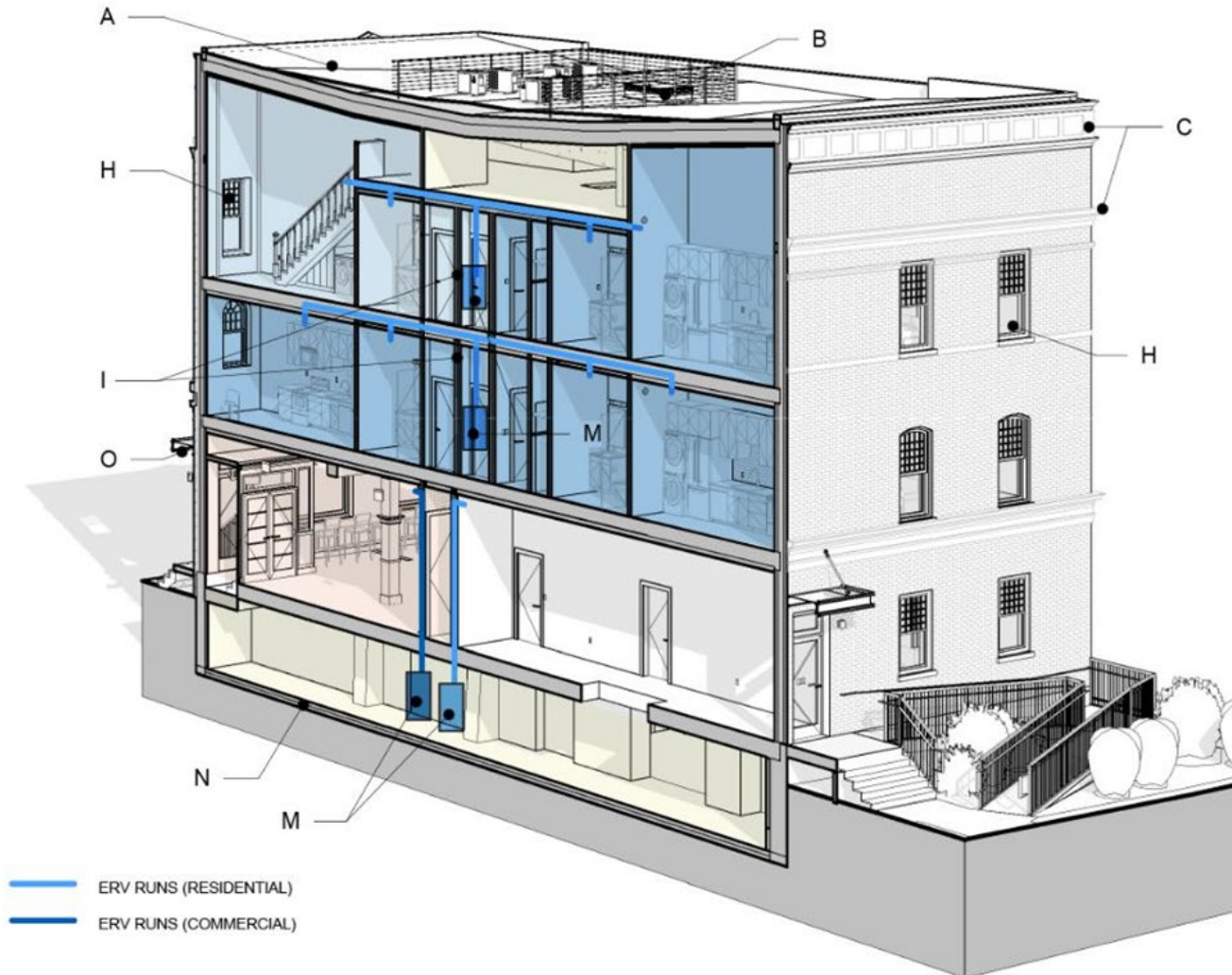
Building Systems



- COMMERCIAL SPACE
- HVAC & STORAGE
- RESIDENTIAL - CIRCULATION
- RESIDENTIAL - STUDIO UNIT
- RESIDENTIAL - 1 BEDROOM UNIT
- RESIDENTIAL - 2 BEDROOM UNIT

- A. R-80 SUPERINSULATED & AIR-TIGHT ROOF
- B. INSULATED & AIR-TIGHT ROOF ACCESS HATCH
- C. RESTORE & REPLICATE HISTORIC BUILDING ELEMENTS
- D. R-43 SUPERINSULATED & AIR-TIGHT WALLS
- E. ENERGY EFFICIENT TRIPLE PANE WINDOWS
- F. ENERGY EFFICIENT BASEMENT WINDOWS
- G. R-16 INSULATED BASEMENT WALLS
- H. WINDOW WELLS TO AVOID WATER DAMAGE TO BASEMENT WINDOWS
- I. INSULATED & AIR-TIGHT INTERIOR DOUBLE 2X4 WALLS BETWEEN ZONES & UNITS
- J. INSULATED & AIR-TIGHT INTERIOR FLOORS
- K. HEAT PUMP OR HYBRID HOT WATER HEATERS. EFFICIENT PLUMBING DESIGN WITH BACK TO BACK FIXTURE ALIGNMENT WHEN FEASIBLE.
- L. DUCTLESS MINISPLIT FOR HEATING & COOLING (1/ UNIT)
- M. ENERGY RECOVERY VENTILATION UNITS FOR CLEAN INDOOR AIR QUALITY, ERV UNITS ARE PLACED NEAR SPACES THEY SERVE FOR SHORTER DUCT RUNS.
- N. R-16 INSULATED BASEMENT SLAB
- O. ENTRY CANOPY TO REDUCE HEAT-GAIN THROUGH GLASS DOOR
- P. OUTDOOR SEATING AREA WITH GREENARY & BIKE STORAGE
- Q. ADA RAMP ACCESS FOR BOTH COMMERCIAL & RESIDENTIAL ENTRIES
- R. PARKING INCLUDING ADA SPACES AND 4 ELECTRIC CAR CHARGING STATIONS
- S. CANOPY WITH SOLAR PV TO PROVIDE ELECTRICITY FOR BUILDING, AND PROVIDE SHADE FOR PARKING SPACE

Building Systems



- A. R-80 SUPERINSULATED & AIR-TIGHT ROOF
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Heating & Cooling



Ventilation



Hot Water



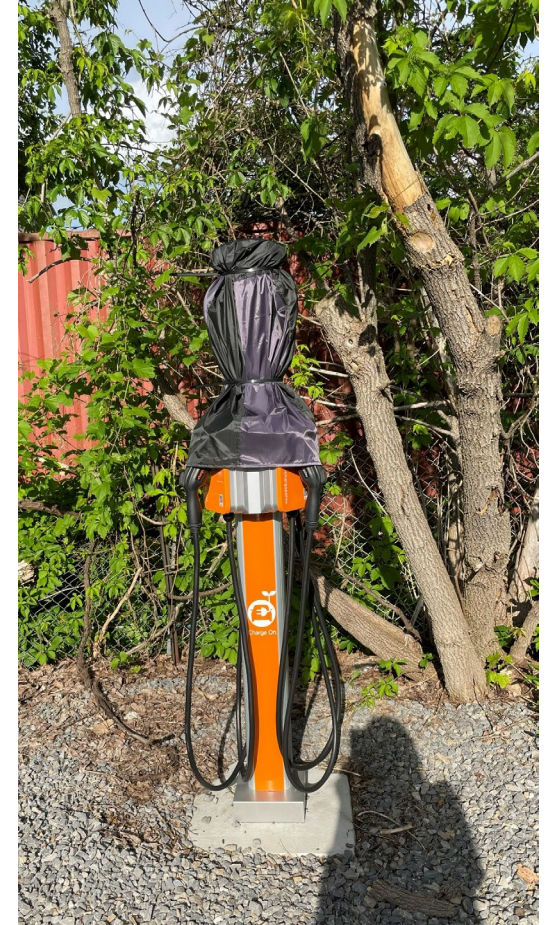
On-demand commercial bathroom water heater



Heat pump water heaters



Electrical & Solar PV



Energy Modeling

Phius 2021 VERIFICATION

1

BUILDING INFORMATION

Category: **Non-residential**
Status: **Under construction**
Building type: **Retrofit**
Year of construction: **2023**
Units: **1**
Number of occupants: **19 (Design)**
Occupant density: **113.1 ft²/Person**



Boundary conditions

Climate: **RICHFIELD SPRINGS, NY**
Internal heat gains: **1.9 Btu/hr ft²**
Interior temperature: **68 °F**
Overheat temperature: **77 °F**

Building geometry

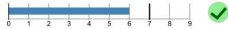
Enclosed volume: **44,556.6 ft³**
Net volume: **22,936.6 ft³**
Total area envelope: **4,483.5 ft²**
Area/Volume Ratio: **0.1 1/ft**
Floor area: **2,149 ft²**
Envelope area/CFA: **2.086**

PASSIVEHOUSE REQUIREMENTS

Certificate criteria: **Phius CORE 2021**

Heating demand

specific: **5.99 kBtu/ft²·yr**
target: **7 kBtu/ft²·yr**
total: **12,875.68 kBtu/yr**



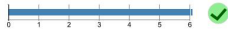
Cooling demand

sensible: **4.58 kBtu/ft²·yr**
latent: **0.3 kBtu/ft²·yr**
specific: **4.88 kBtu/ft²·yr**
target: **8.7 kBtu/ft²·yr**
total: **10,487.31 kBtu/yr**



Heating load

specific: **6.32 Btu/hr ft²**
target: **7.3 Btu/hr ft²**
total: **13,584.86 Btu/hr**



Cooling load

specific: **2.74 Btu/hr ft²**
target: **3 Btu/hr ft²**
total: **5,895.4 Btu/hr**

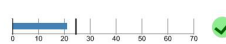


Phius 2021 VERIFICATION

2

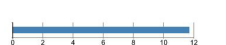
Source energy

total: **13,242.23 kWh/yr**
specific: **21.03 kBtu/ft²·yr**
target: **24.5 kBtu/ft²·yr**
total: **45,179.92 kBtu/yr**
specific: **21.03 kBtu/ft²·yr**



Site energy

total: **25,099.96 kBtu/yr**
specific: **11.68 kBtu/ft²·yr**
total: **7,356.8 kWh/yr**
specific: **3.42 kWh/ft²**



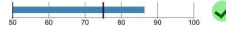
Air tightness

ACH50: **0.59 1/hr**
CFM50 per envelope area: **0.05 cfm/ft²**
target: **0.7 1/hr**
target CFM50: **0.06 cfm/ft²**



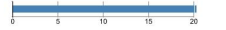
PASSIVEHOUSE RECOMMENDATIONS

Sensible recovery efficiency: **86.3 %**



Frequency of overheating: **31.7 %**

Cooling system is required
Frequency of overheating only applies if there is not a properly sized cooling system installed.



Phius 2021 VERIFICATION

1

BUILDING INFORMATION

Category: **Residential**
Status: **Under construction**
Building type: **Retrofit**
Year of construction: **2023**
Units: **9**
Number of occupants: **22 (Design)**
Occupant density: **363.8 ft²/Person**



Boundary conditions

Climate: **RICHFIELD SPRINGS, NY**
Internal heat gains: **1.4 Btu/hr ft²**
Interior temperature: **68 °F**
Overheat temperature: **77 °F**

Building geometry

Enclosed volume: **102,370.5 ft³**
Net volume: **85,492.1 ft³**
Total area envelope: **13,356.9 ft²**
Area/Volume Ratio: **0.1 1/ft**
Floor area: **8,003 ft²**
Envelope area/CFA: **1.669**

PASSIVEHOUSE REQUIREMENTS

Certificate criteria: **Phius CORE 2021**

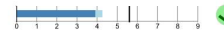
Heating demand

specific: **3.64 kBtu/ft²·yr**
target: **6.5 kBtu/ft²·yr**
total: **29,127.87 kBtu/yr**



Cooling demand

sensible: **3.94 kBtu/ft²·yr**
latent: **0.3 kBtu/ft²·yr**
specific: **4.24 kBtu/ft²·yr**
target: **5.6 kBtu/ft²·yr**
total: **33,930.2 kBtu/yr**



Heating load

specific: **1.3 Btu/hr ft²**
target: **5.3 Btu/hr ft²**
total: **10,404.72 Btu/hr**



Cooling load

specific: **1.7 Btu/hr ft²**
target: **2.1 Btu/hr ft²**
total: **13,599.02 Btu/hr**

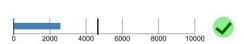


Phius 2021 VERIFICATION

2

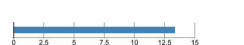
Source energy

total: **56,297.81 kWh/yr**
specific: **2,559 kWh/Person yr**
target: **4,650 kWh/Person yr**
total: **192,077.14 kBtu/yr**
specific: **24 kBtu/ft²·yr**



Site energy

total: **106,709.52 kBtu/yr**
specific: **13.34 kBtu/ft²·yr**
total: **31,276.56 kWh/yr**
specific: **3.91 kWh/ft²**



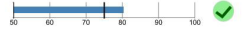
Air tightness

ACH50: **0.47 1/hr**
CFM50 per envelope area: **0.05 cfm/ft²**
target: **0.56 1/hr**
target CFM50: **0.06 cfm/ft²**



PASSIVEHOUSE RECOMMENDATIONS

Sensible recovery efficiency: **80.3 %**



Frequency of overheating: **35.9 %**

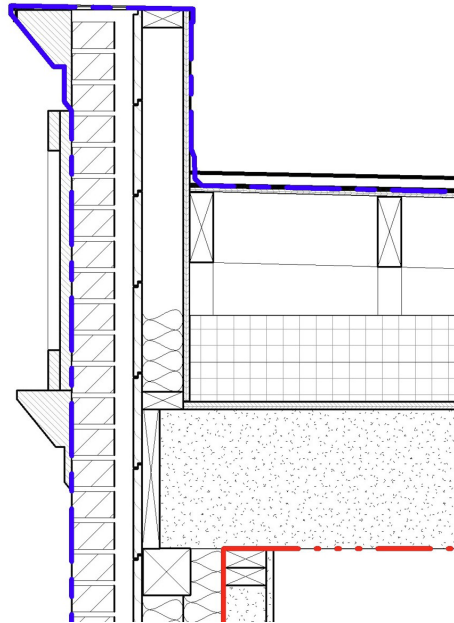
Cooling system is required
Frequency of overheating only applies if there is not a properly sized cooling system installed.



Commercial Zone

MultiFamily Zone

Hygrothermal Modeling – Roof



Project/Case: The Bank Lofts/#9

Assembly/Monitor Positions | Orientation/Inclination/Height | Surface Transfer Coeff. | Initial Conditions

Layer Name: Oriented Strand Board | Thckn. [in]: .125

Exterior (Left Side): 50.125 3.937 4 4 .125 11.25 | Interior (Right Side): 0.01180492126

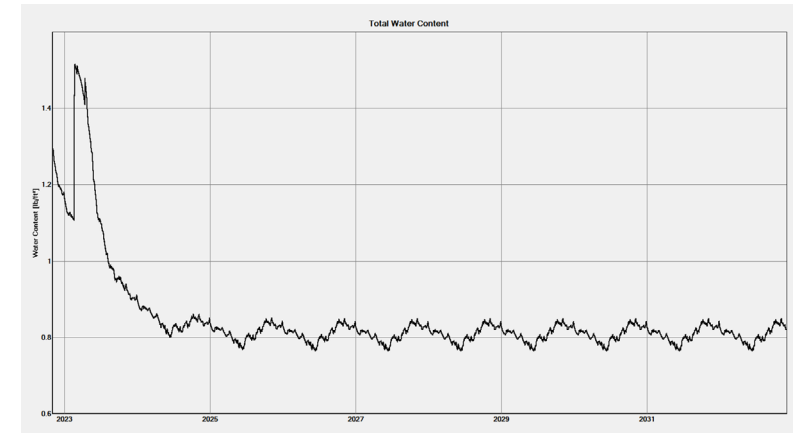
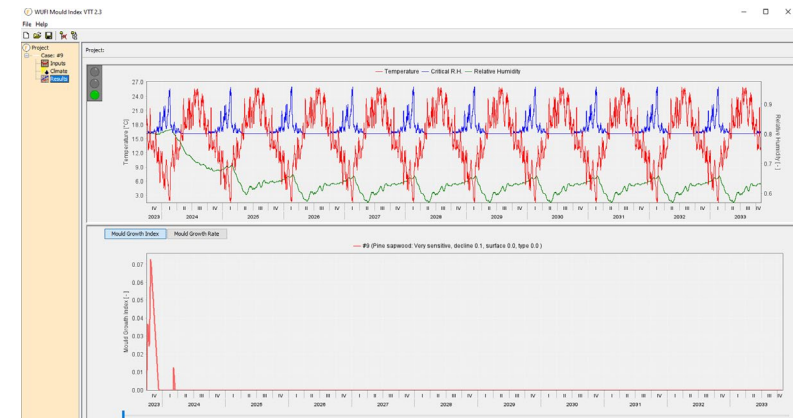
Material Data | Sources, Sinks | New Layer | Duplicate | Delete

Edit Assembly by: ☒ Graph ☐ Table

Assign from: Material Database | Example Cases

Grid: Automatic (II) | 100 | Fine | Copy Auto. Grid Def. for Manual Editing

Total Thickness: 27.001 in | Total Thermal Performance: R-Value: 75.12 h² °F/Btu | U-Value: 0.013 Btu/h ft² °F



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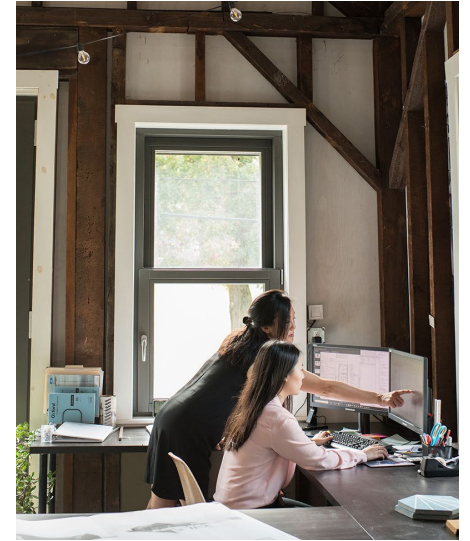
Envelope · Systems · Energy Modeling

The Lessons

Challenges · Discoveries · Replicability



Challenges



Historic Preservation

Windows, wall thickness, historic details, SHPO requirements

Moisture Management

WUFI + Hygrothermal modeling to check condensation and thermal-bridge risks

Air Barrier Continuity

Existing masonry, timber framing, floor joists, historic finishes

Cost

Preservation + deterioration + high-performance construction + added analysis

Schedule

Unforeseen conditions + modeling/design coordination + preservation/grant review

Lessons Learned

Process + Funding

Build more time into the schedule

Historic preservation review, public grant requirements, and high-performance design coordination can create overlapping approval processes.

Assume reviews will take longer than a conventional project schedule allows.

Understand funding requirements early

Grant requirements can influence documentation, design decisions, procurement, and project sequencing.

Map funding milestones and approval requirements alongside the design and construction schedule.

Plan for the cash-flow gap

Grant awards and grant reimbursements do not necessarily arrive when project expenses are incurred.

Consider bridge financing or other interim funding before construction begins.

Existing Building + Performance

Budget for existing-building unknowns

Deteriorated masonry, distorted openings, structural repairs, and other concealed conditions may only become apparent during construction.

Carry appropriate contingencies for both cost and schedule.

Invest in analysis before construction

Early energy, hygrothermal, and thermal-bridge modeling helped identify problems when they were still design problems, not construction problems.

Additional analysis up front can reduce risk later.

Replicability

Replicate the Process, Not the Details

The replicable solution is not a particular wall assembly. It is an integrated process for balancing existing conditions, preservation, building science, cost, and constructability.

ASSESS → MODEL → INTEGRATE → DETAIL → VERIFY

Existing Conditions → Building Science → Preservation + Performance → Constructability → Testing & Operations

Thank You



THE BANK LOFTS
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Dooalot, LLC

