



## *Massachusetts ADU Design Challenge | Project Cover Sheet*

### **1. Design Team**

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Lead Applicant: Megan Downing

Additional Applicants:

Design Firm Name (If Applicable): Emerald Design Build

Contact Info: [megan@emeralddesignbuild.com](mailto:megan@emeralddesignbuild.com)

### **2. Design Information**

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EntryID (randomly assigned by HLC for tracking purposes): 3523

Design Name: Contemporary Cottage

ADU Gross Floor Area (square footage): 812

Unit Layout: One-Bedroom

ADU Height (feet): 15

Window/Wall Ratio: 11.3%

Foundation Type: Concrete Frost Wall

### **3. Project Narrative**

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The Contemporary Cottage is an 812-SF detached accessory dwelling unit designed as a feasible, livable, accessible, replicable, and resilient small home for multigenerational living while preserving independence and privacy. The 1-bedroom + flex layout "base prototype" centers on a bright living space, with a secondary room adaptable as an office, guest room, or caregiver space. The design maintains a modest 15-foot height and 11.3% window-to-wall ratio to balance daylight, neighborhood compatibility, and energy performance. It is supported by a conditioned crawl space with 10-inch cast-in-place concrete foundation walls. The high-performance envelope meets Massachusetts amended energy code requirements. With a familiar gable form and durable envelope suited to New England's climate, it can be built affordably across Massachusetts while remaining adaptable — allowing owners to elevate the design, connect to the outdoors, and personalize the home to reflect their way of living.

***Please note that the information contained in this file was submitted to the Executive Office of Housing and Livable Communities (HLC) by ADU Design Challenge participants and has not been independently verified by HLC or the Commonwealth of Massachusetts. Please direct questions to the designers.***

# CONTEMPORARY cottage

## Accessory Dwelling Unit

### project description

The Contemporary Cottage is an 812-SF detached accessory dwelling unit designed as a **feasible, livable, accessible, replicable, and resilient** small home for multigenerational living while preserving independence and privacy. The 1-bedroom + flex layout "base prototype" centers on a bright living space, with a secondary room adaptable as an office, guest room, or caregiver space. The design maintains a modest 15-foot height and 11.3% window-to-wall ratio to balance daylight, neighborhood compatibility, and energy performance. It is supported by a conditioned crawl space with 10-inch cast-in-place concrete foundation walls. The high-performance envelope meets Massachusetts amended energy code requirements. With a familiar gable form and durable envelope suited to New England's climate, it can be built affordably across Massachusetts while remaining adaptable — allowing owners to elevate the design, connect to the outdoors, and personalize the home to reflect their way of living.

### cost estimate

**\$255,000**

### feasible

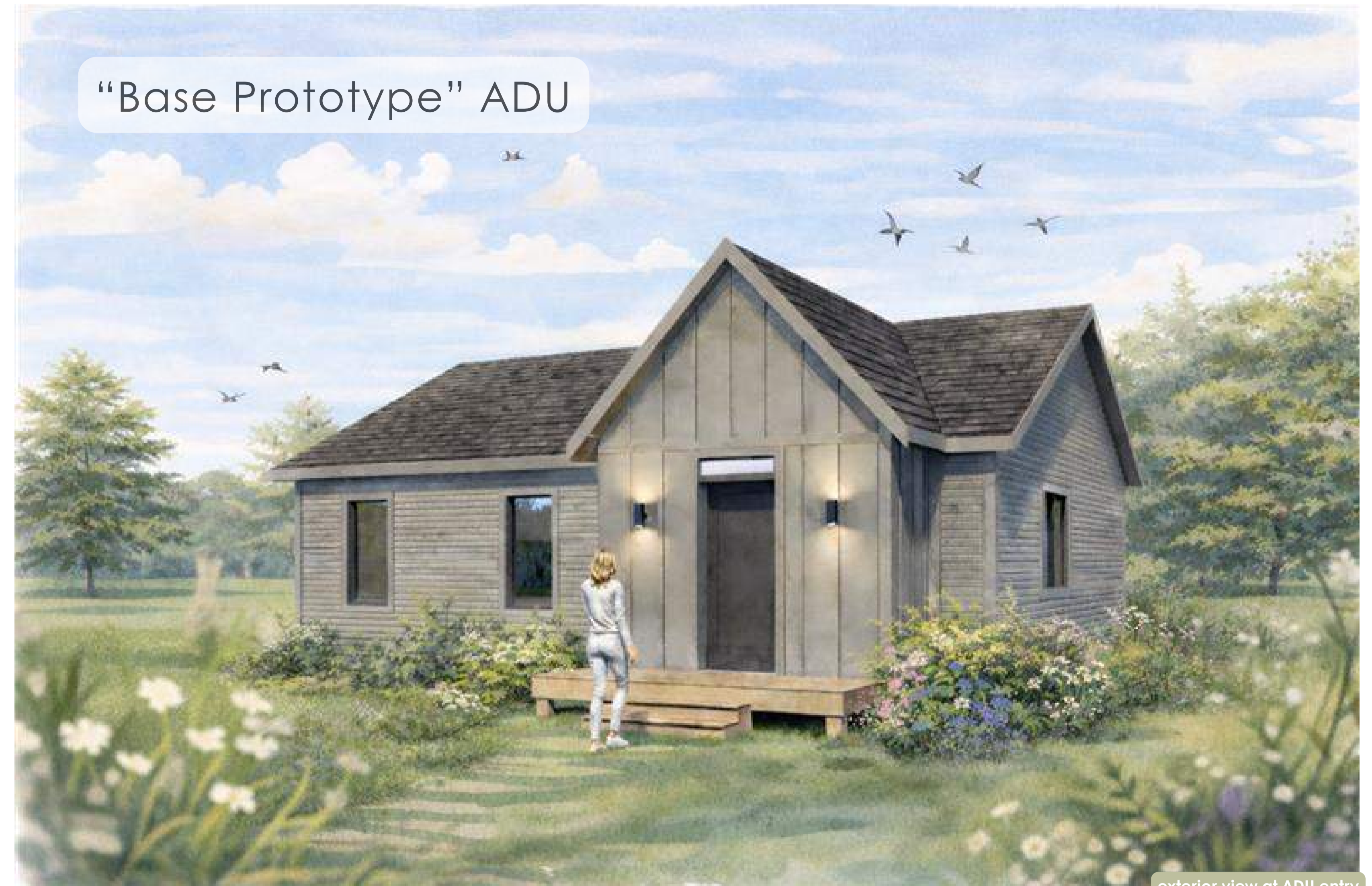
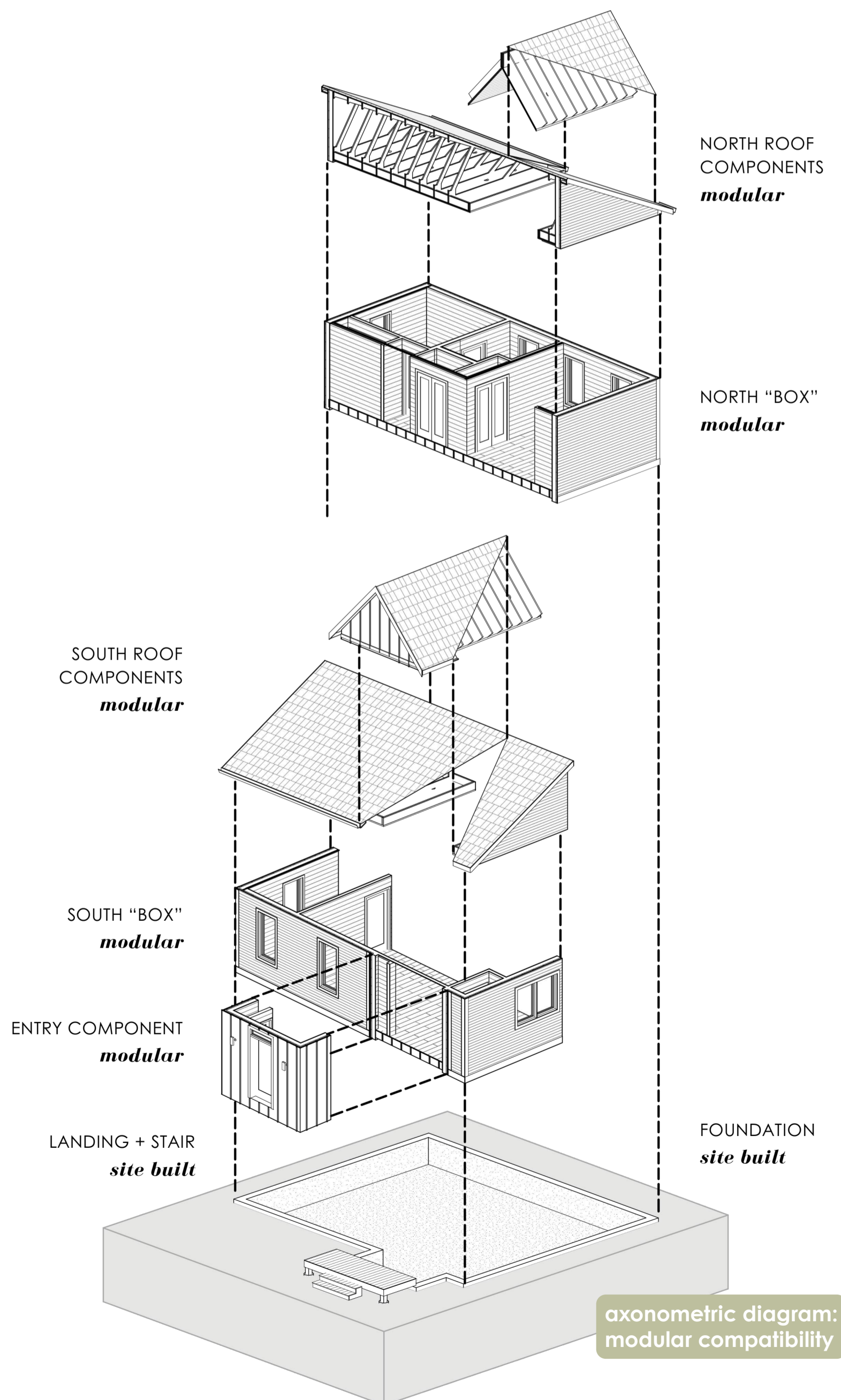
DESIGNED FOR REAL-WORLD CONSTRUCTION

The "base prototype" ADU is intentionally conceived as a buildable prototype rather than a speculative concept. The approximate project cost of \$255,000 reflects everything from excavation, utilities, structure, envelope elements, through interior fixtures and finishes, while customization options and unforeseen existing conditions are excluded. Its compact 32' x 26' footprint, simple rectangular form, and conventional gable roof allow construction using standard wood framing, prefabricated trusses, and widely available materials. While compatible with modular or panelized fabrication, the design can be readily understood and executed by typical builders without specialized equipment or labor, while still achieving a high-quality result. Clear organization of spaces and systems supports straightforward installation, inspection, and long-term maintenance. Exterior finishes — fiber cement siding, asphalt shingles, and composite decking — are durable, familiar to contractors, and cost predictable. By avoiding unconventional geometries or proprietary systems, the design reduces permitting uncertainty, construction time, and financial risk, enabling delivery across Massachusetts using existing workforce skills.

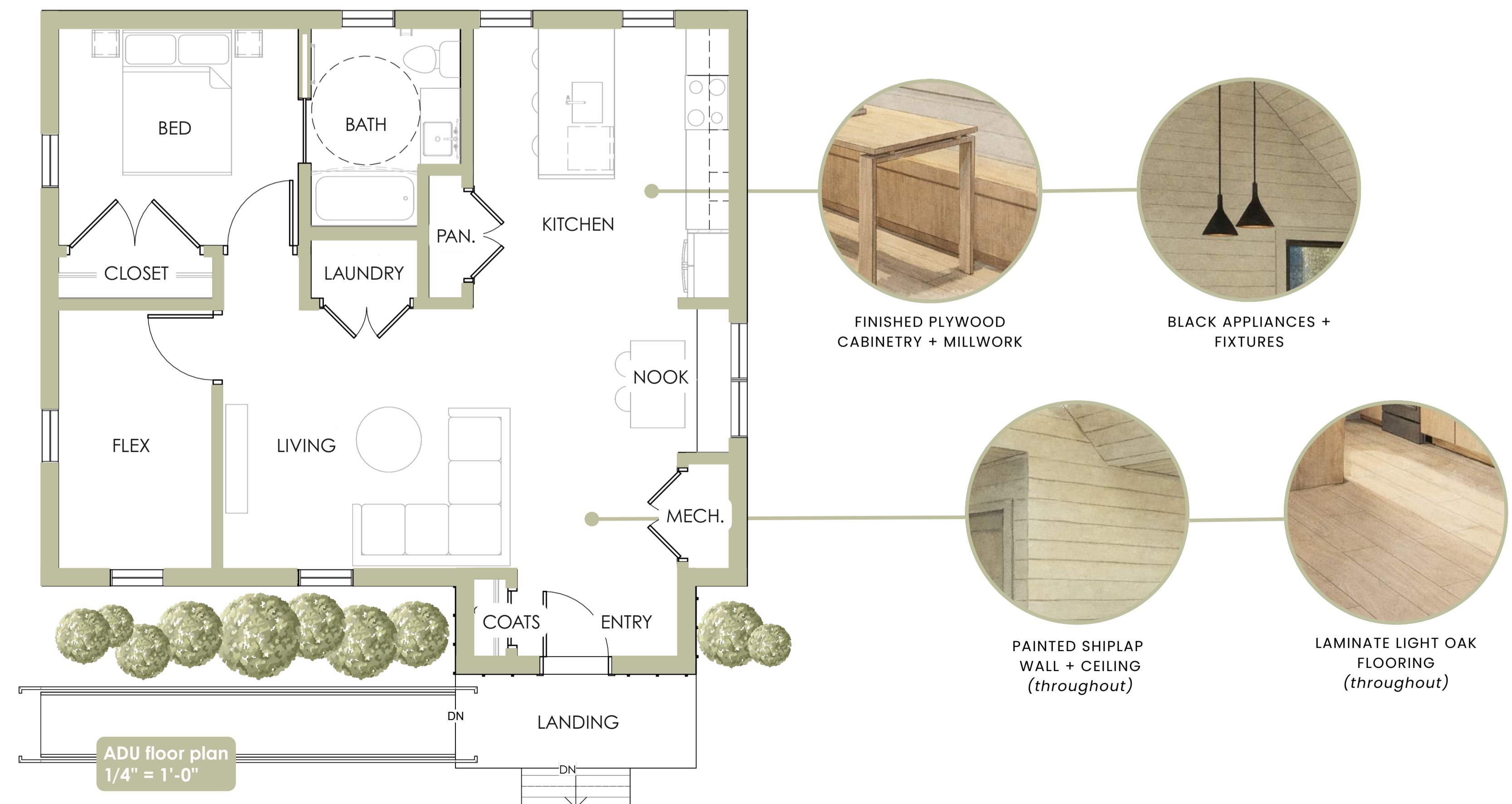
### replicable

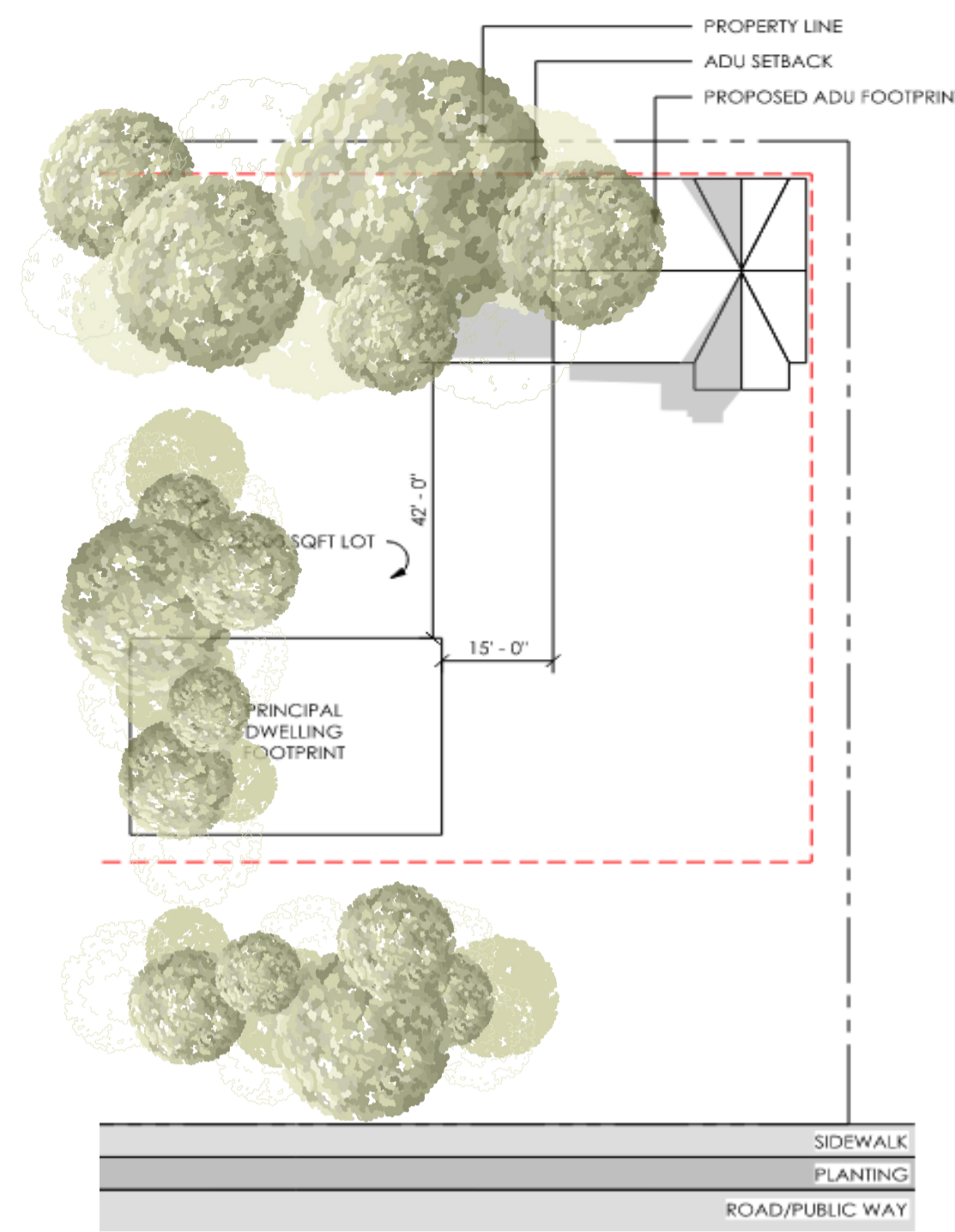
MODULARITY + PANELIZATION

The home is designed for efficient repetition using modular production methods, with a simple form and coordinated mate lines that allow fabrication as transportable modules within standard shipping limits. This geometric clarity supports scalable manufacturing while providing a flexible framework that does not constrain architectural expression or design impact. Its compact footprint reduces site impacts and simplifies installation, making it suitable for a wide range of residential lots. Where modular construction is not available, the design can also be delivered through panelized systems, ensuring broad accessibility for builders across the Commonwealth. By pairing simplicity with adaptability, the design enables large-scale production without sacrificing character, livability, or opportunities for customization.

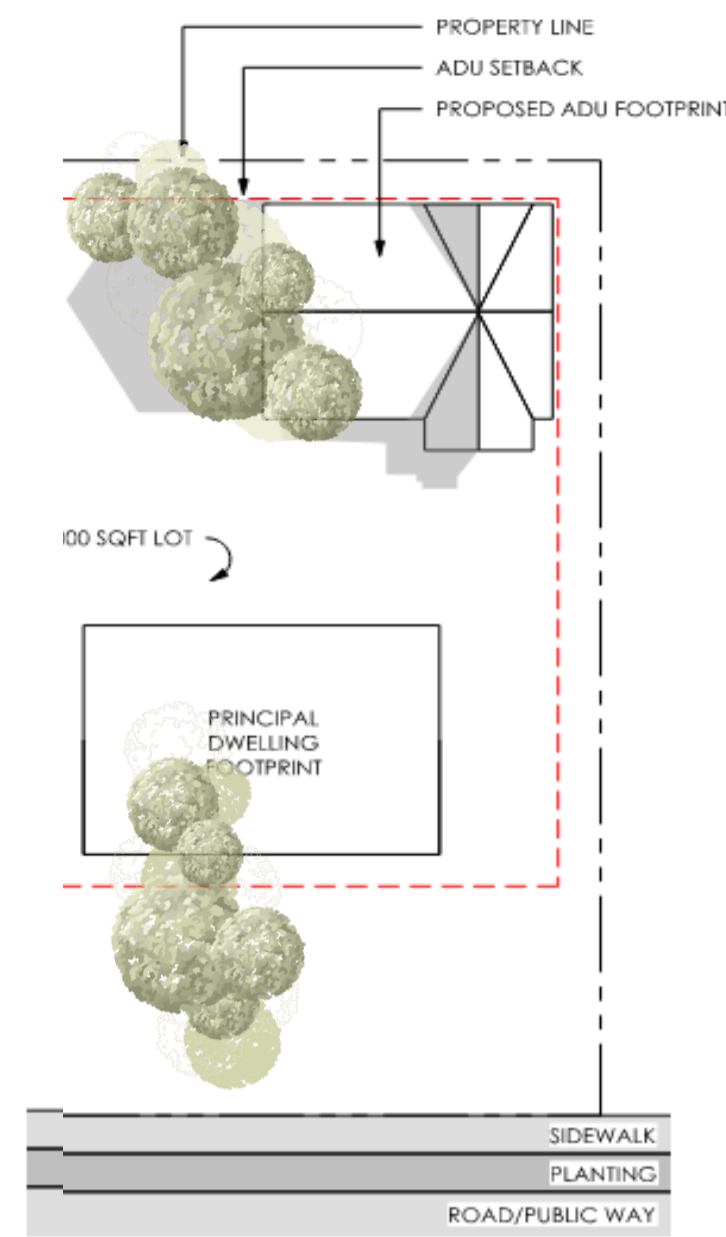


exterior view at ADU entry

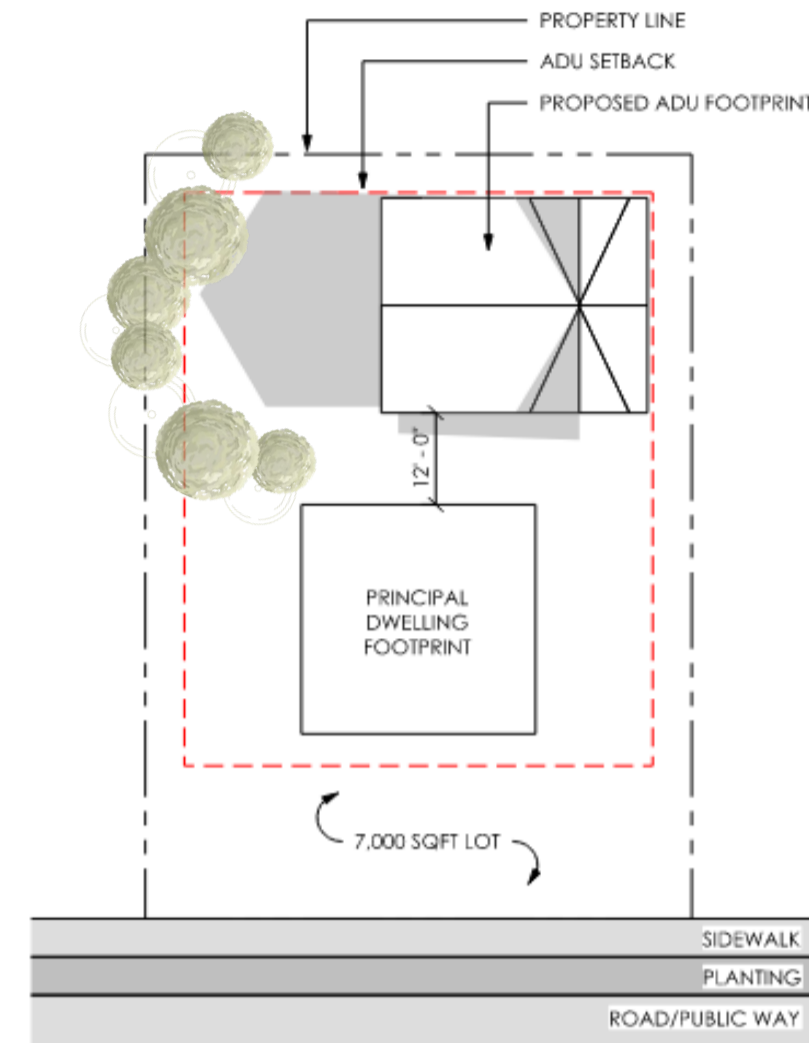




site plan: 25,500 sf parcel



site plan: 10,000 sf parcel



site plan: 7,000 sf parcel

### site adaptability

The detached, compact footprint allows the home to fit within common residential setback conditions on a wide range of parcel sizes. Its simple geometry and modest height make it compatible with suburban neighborhoods while minimizing visual impact on adjacent properties. Because the design does not rely on unique site conditions or complex infrastructure, it can be oriented to respond to sunlight, privacy, or existing structures without altering the core layout. Standard construction systems and modular dimensions further support repetition at scale, enabling municipalities, developers, or homeowners to deploy the design broadly as a reliable accessory housing solution.

### context sensitivity

Recognizing that municipalities across New England have diverse architectural expectations — including communities that prioritize historic character — the exterior design is intentionally modest, familiar, and adaptable, allowing it to meet local aesthetic standards and approval processes while remaining appropriate in a wide variety of neighborhood contexts.

### accessible

SUPPORTS AGING IN PLACE + AND DIVERSE NEEDS

The single-level layout eliminates interior stairs and provides direct, intuitive circulation between all major spaces. An optional exterior ramp allows a zero-step entry, ensuring accessibility for residents with mobility limitations or temporary injuries. Door widths and room proportions accommodate maneuverability. The bathroom is sized to allow for a full 5' diameter wheelchair turning circle, as well as future installation of accessible fixtures such as a curbless shower, grab bars, and open vanity. The flexible room can function as a caregiver space, enabling residents to remain in their community as their needs change. By incorporating inclusive design principles from the outset, the home promotes independence and long-term housing stability.

### livable

COMPACT HOME THAT SUPPORTS DAILY LIFE

Despite its modest size of 812 square feet, the home is organized around a generous open living area that combines kitchen, dining, and lounge functions, creating a bright and social core. A private bedroom provides separation for rest, while a flexible room can serve as an office, guest room, nursery, or second sleeping space as needs evolve. Storage is carefully integrated through closets, bench seating, a pantry, and dedicated coat and mechanical spaces, reducing clutter and improving long-term usability. Window placement on multiple sides of the living space brings in daylight while maintaining privacy from neighboring properties. The result is a small dwelling that functions as a complete home rather than a temporary accommodation.



interior view in bathroom



interior view at living area



interior view at gathering-cooking zone



ASPHALT SHINGLES

south building elevation  
3/16" = 1'-0"



CASEMENT WINDOWS

west building elevation  
3/16" = 1'-0"



FC LAP SIDING

north building elevation  
3/16" = 1'-0"



FC BOARD & BATTEN SIDING

east building elevation  
3/16" = 1'-0"

## resilient

BUILT FOR NEW ENGLAND, GUIDED BY HIGH PERFORMANCE BUILDING PRINCIPLES

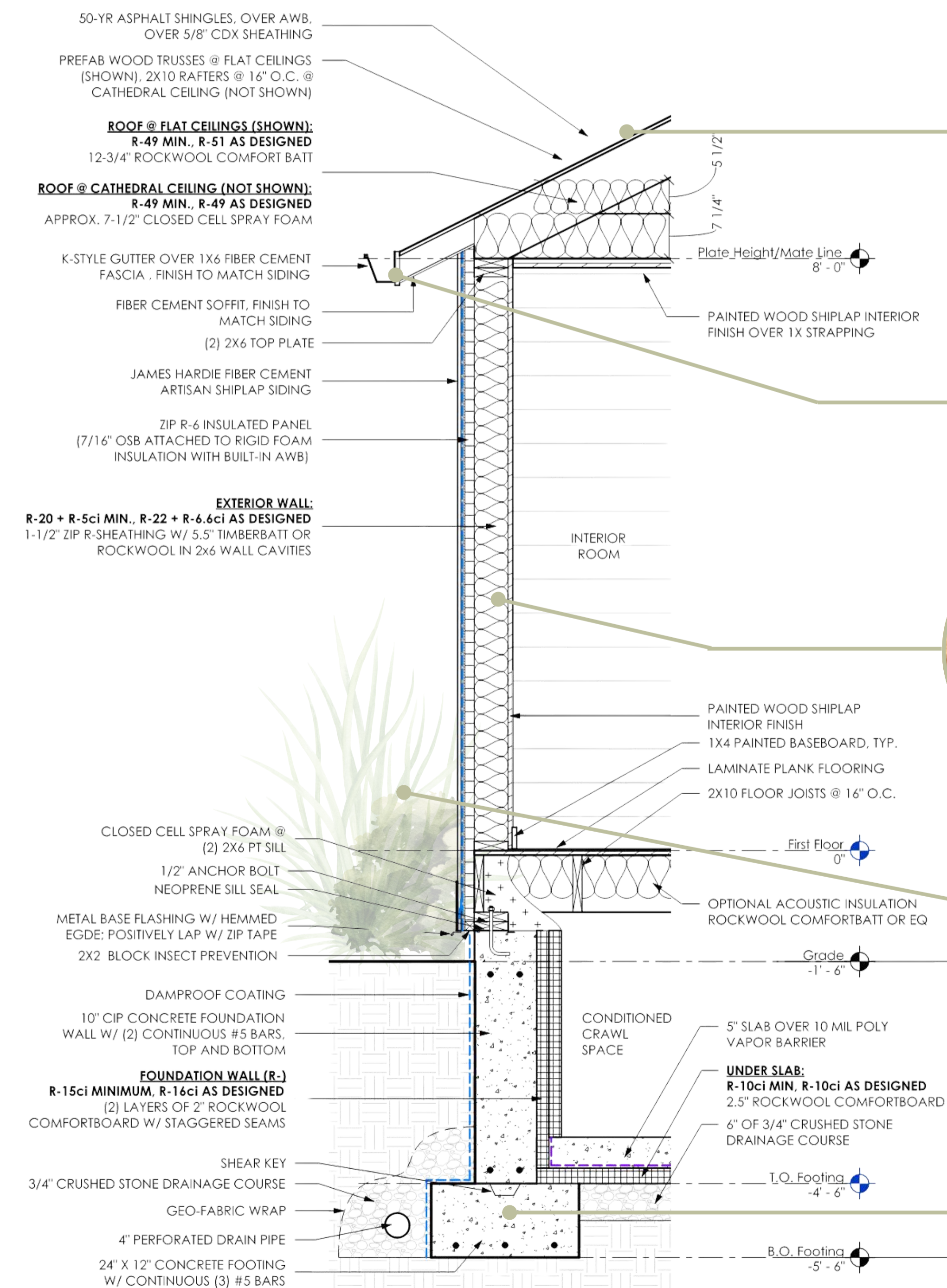
The design is guided by Passive House (PHIUS) principles, prioritizing a highly efficient, airtight building envelope that delivers exceptional durability, comfort, and moisture control suited to Massachusetts' cold, wet climate.

Continuous insulation, minimized thermal bridging, and high-performance windows dramatically reduce heating and cooling demand while maintaining stable interior conditions year-round. An economical, but efficient, air barrier system works in tandem with balanced mechanical ventilation with heat recovery, ensuring consistent fresh air, healthy indoor air quality, and controlled humidity regardless of outdoor conditions. Because PHIUS buildings require very little energy to operate, the home can maintain safe interior temperatures for extended periods during power outages or fuel disruptions, enhancing occupant safety during extreme weather events.

The foundation and crawlspace are fully insulated and conditioned, protecting the structure and its below-floor piping from ground moisture, freeze-thaw cycles, and long-term durability risks. Carefully detailed water management layers and drainage strategies further safeguard the building envelope from bulk water intrusion. Beyond environmental performance, the flexible layout supports multigenerational living, caregiving, or rental use, allowing the home to adapt to changing household needs while strengthening both individual and community resilience.

## add-ons

While the core high-performance strategies are fully integrated into the building's architecture, the design also accommodates a range of optional sustainability upgrades that can be implemented over time without requiring significant upfront investment. Provisions for future solar photovoltaic installation, rainwater collection and reuse, battery storage, and electric vehicle charging are incorporated into the planning and infrastructure, allowing these systems to be added easily as budgets, incentives, or owner priorities evolve. By anticipating future needs through thoughtful pre-wiring, structural allowances, and equipment space, the home avoids costly retrofits while enabling a gradual path toward net-zero energy and resource efficiency. This phased approach makes advanced sustainability more accessible, supporting long-term environmental performance without creating barriers to initial construction.



SOLAR PV



RAINWATER COLLECTION



LOW CARBON INSULATION



NATIVE VEGETATION



LOW CARBON CONCRETE

# HOW TO customize the "base prototype"

## why customize?

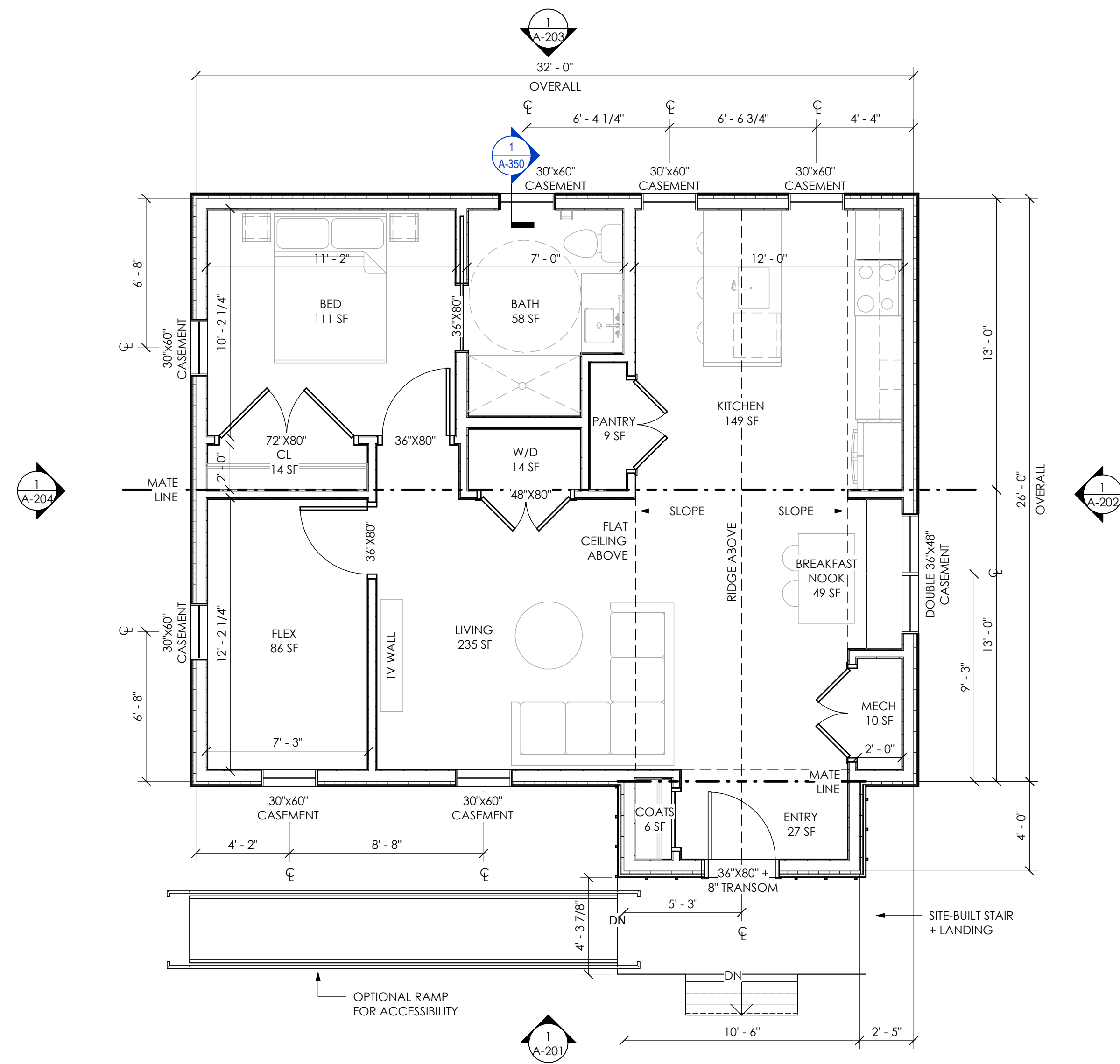
While the base prototype establishes an efficient, cost-effective, and buildable starting point, no two project sites or its users, are identical. Additionally, the replicability of the base prototype allows developers or homeowners to deploy the design broadly as a reliable accessory housing solution, which creates a need for creativity in identification. Strategic modifications enable homeowners and builders to tailor the home for performance, livability, and identity. Adjustments may include exterior materials, entry configurations, window placement, interior layouts, accessibility features, storage solutions, or future expansion options. These changes enhance comfort, durability, and long-term usability while preserving construction simplicity and affordability. Ultimately, customization transforms a standardized model into a home that reflects its occupants and surroundings — maintaining scalability while delivering personal relevance, resilience, and pride of place.

## sample ADU

The "optionally customized" sample ADU introduces a sheltered outdoor living area embraced by an architectural alcove, expanding functional space without increasing the building's allowable footprint. Large glazed doors strengthen indoor-outdoor connectivity while allowing the base prototype's flex room to be removed, creating a more generous entertaining area. Skylights are incorporated within the cathedral ceiling to enhance daylight and reinforce the sense of openness. Native vegetation illustrates how the design can adapt to secluded or landscape-driven sites while maintaining a cohesive architectural presence. This configuration demonstrates how targeted customization can transform the prototype into a retreat-like dwelling suitable for a getaway rental, guest house, or private sanctuary that prioritizes connection to nature and relaxed, year-round use.

## "Optionally Customized" ADU





First Floor Plan

1/4" = 1'-0"

1  
A-100



ELEVATION KEYNOTE LEGEND	
1.	3-1/2" EXPOSED SHIPLAP SIDING
2.	BOARD AND BATTEN COMPOSITE SIDING
3.	ASPHALT SHINGLES
4.	1X6 FASCIA
5.	1X6 BAND TRIM
6.	1X6 CORNER TRIM
7.	1X8 WATER TABLE TRIM
8.	1X4 CASING TRIM FOR WINDOWS AND DOORS
9.	GUTTERS
10.	10" FOUNDATION WALL
11.	COMPOSITE DECKING
12.	COMPOSITE STAIRS
13.	PT WOOD POSTS WITH CONCRETE PIERS
14.	EXTERIOR SCORNICES
15.	EXHAUST VENT

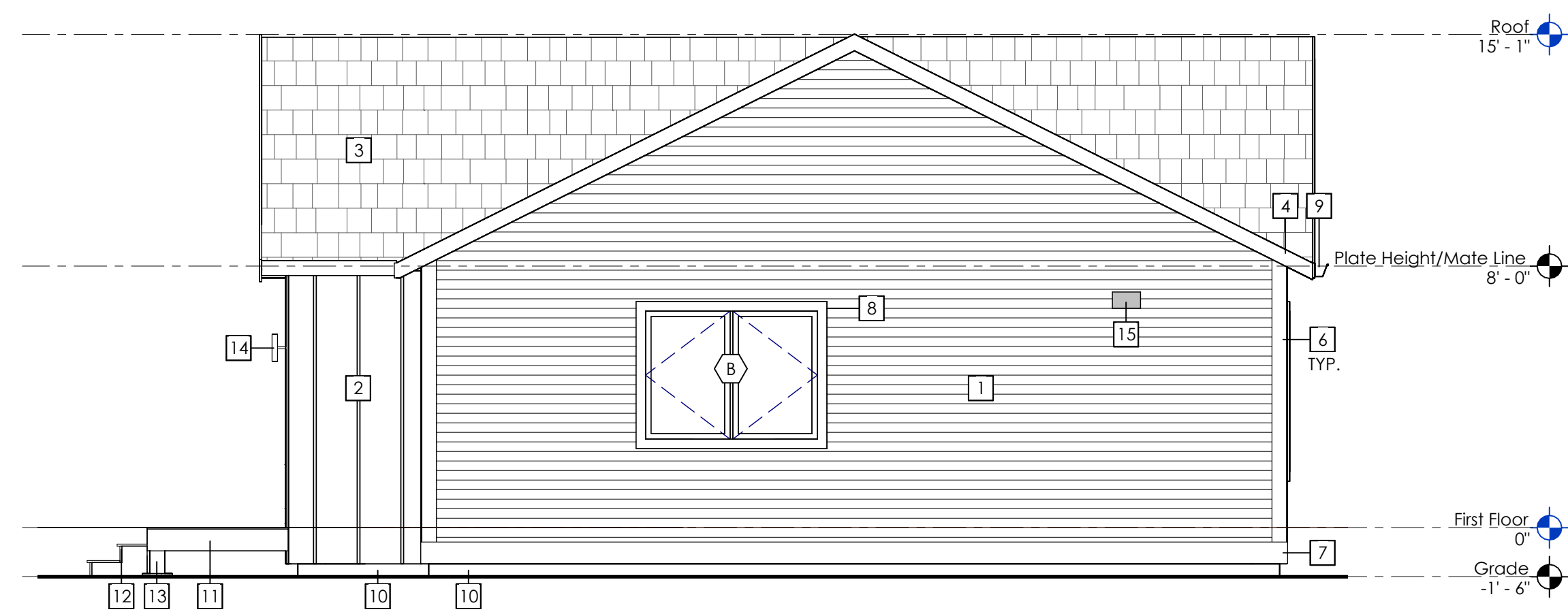
  

DOOR AND WINDOW LEGEND	
(A)	SINGLE 30" X 60" VINYL CASEMENT WINDOW
(B)	DOUBLE 36" X 48" VINYL CASEMENT WINDOW
(C)	8" X 36" VINYL TRANSOM WINDOW
(001)	SINGLE 36" X 80" SOLID PANEL HINGED DOOR

**Building Elevation - South**

1/4" = 1'-0"

1  
A-201



**ELEVATION KEYNOTE LEGEND**

- 1. 3-1/2" EXPOSED SHIPLAP SIDING
- 2. BOARD AND BATTEN COMPOSITE SIDING
- 3. ASPHALT SHINGLES
- 4. 1X6 FASCIA
- 5. 1X6 BAND TRIM
- 6. 1X6 CORNER TRIM
- 7. 1X8 WATER TABLE TRIM
- 8. 1X4 CASING TRIM FOR WINDOWS AND DOORS
- 9. GUTTERS
- 10. 10" FOUNDATION WALL
- 11. COMPOSITE DECKING
- 12. COMPOSITE STAIRS
- 13. PT WOOD POSTS WITH CONCRETE PIERS
- 14. EXTERIOR SCONCES
- 15. EXHAUST VENT

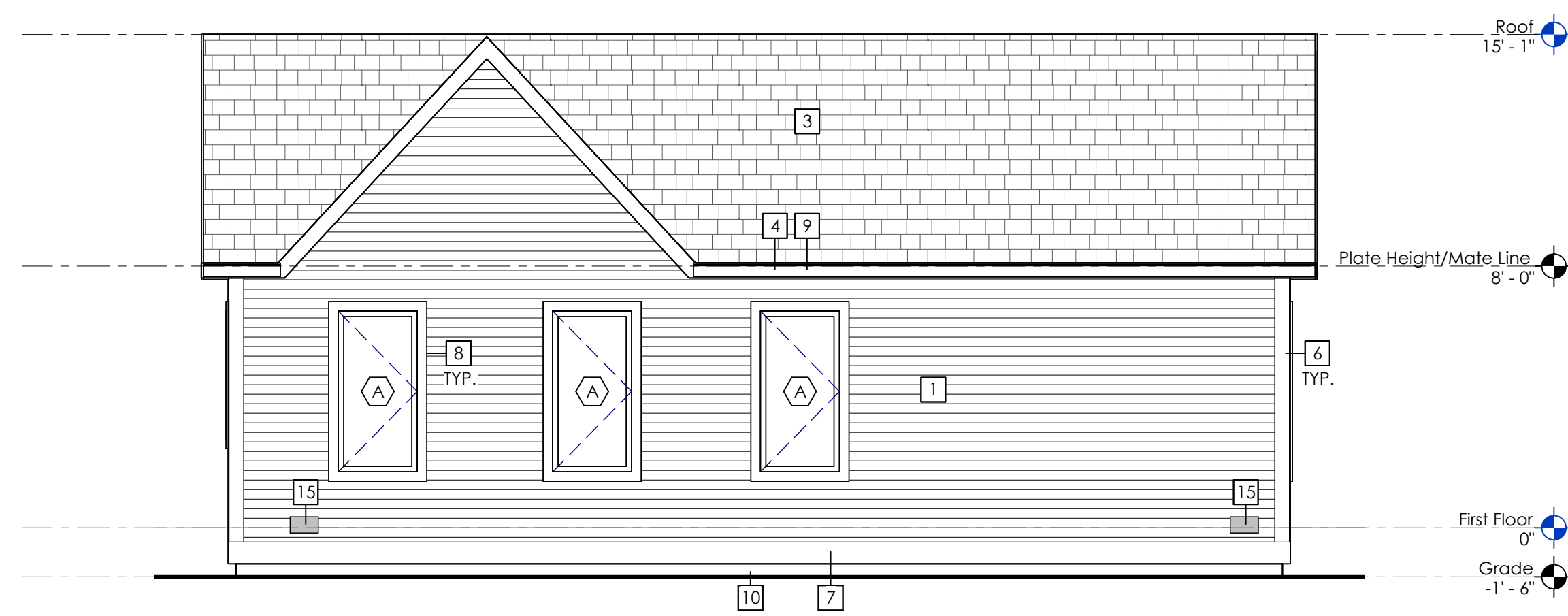
**DOOR AND WINDOW LEGEND**

- (A) SINGLE 30" X 60" VINYL CASEMENT WINDOW
- (B) DOUBLE 36" X 48" VINYL CASEMENT WINDOW
- (C) 8" X 36" VINYL TRANSOM WINDOW
- (001) SINGLE 36" X 80" SOLID PANEL HINGED DOOR

**Building Elevation - East**

1/4" = 1'-0"

1  
A-202



ELEVATION KEYNOTE LEGEND	
1.	3-1/2" EXPOSED SHIPLAP SIDING
2.	BOARD AND BATTEN COMPOSITE SIDING
3.	ASPHALT SHINGLES
4.	1X6 FASCIA
5.	1X6 BAND TRIM
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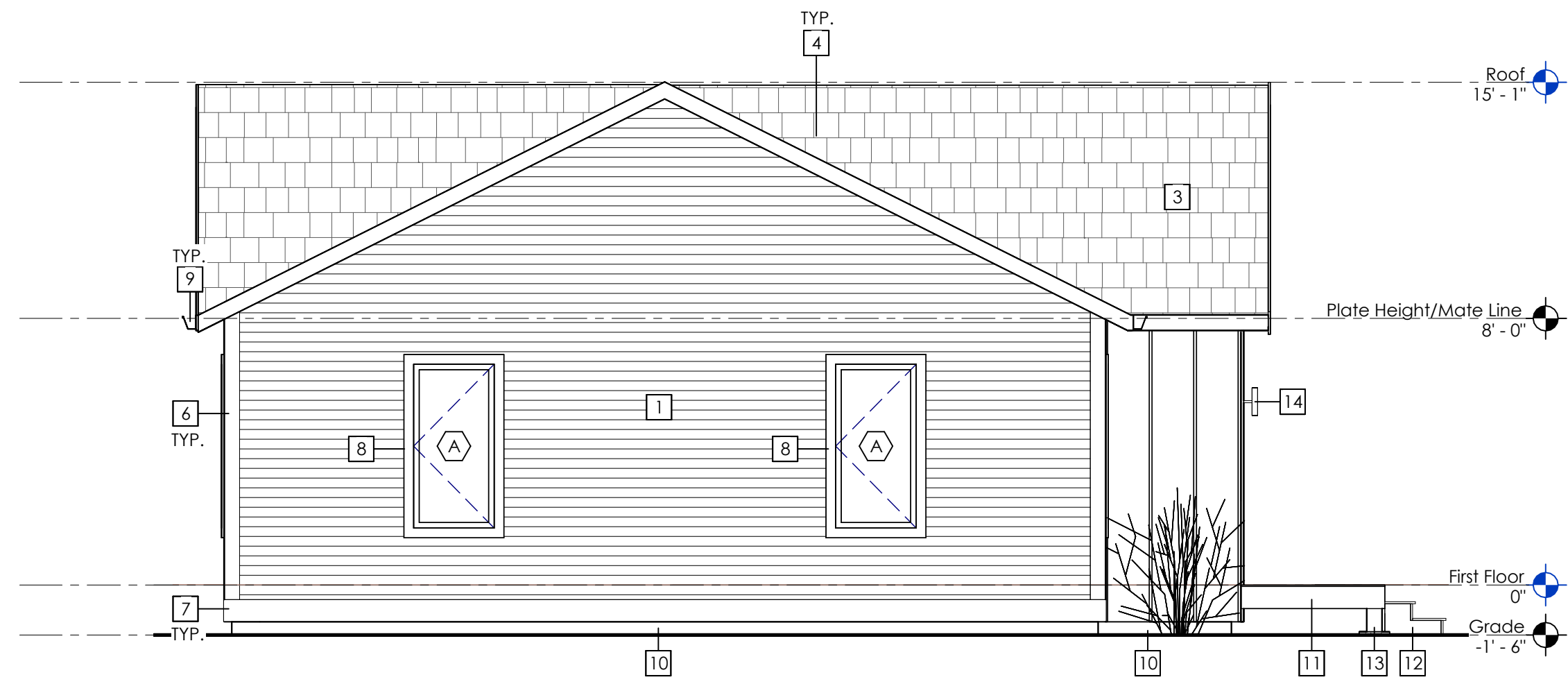
  

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(C)	8" X 36" VINYL TRANSOM WINDOW
(001)	SINGLE 36" X 80" SOLID PANEL HINGED DOOR

**Building Elevation - North**

1/4" = 1'-0"

1  
A-203



**ELEVATION KEYNOTE LEGEND**

- 1. 3-1/2" EXPOSED SHIPLAP SIDING
- 2. BOARD AND BATTEN COMPOSITE SIDING
- 3. ASPHALT SHINGLES
- 4. 1X6 FASCIA
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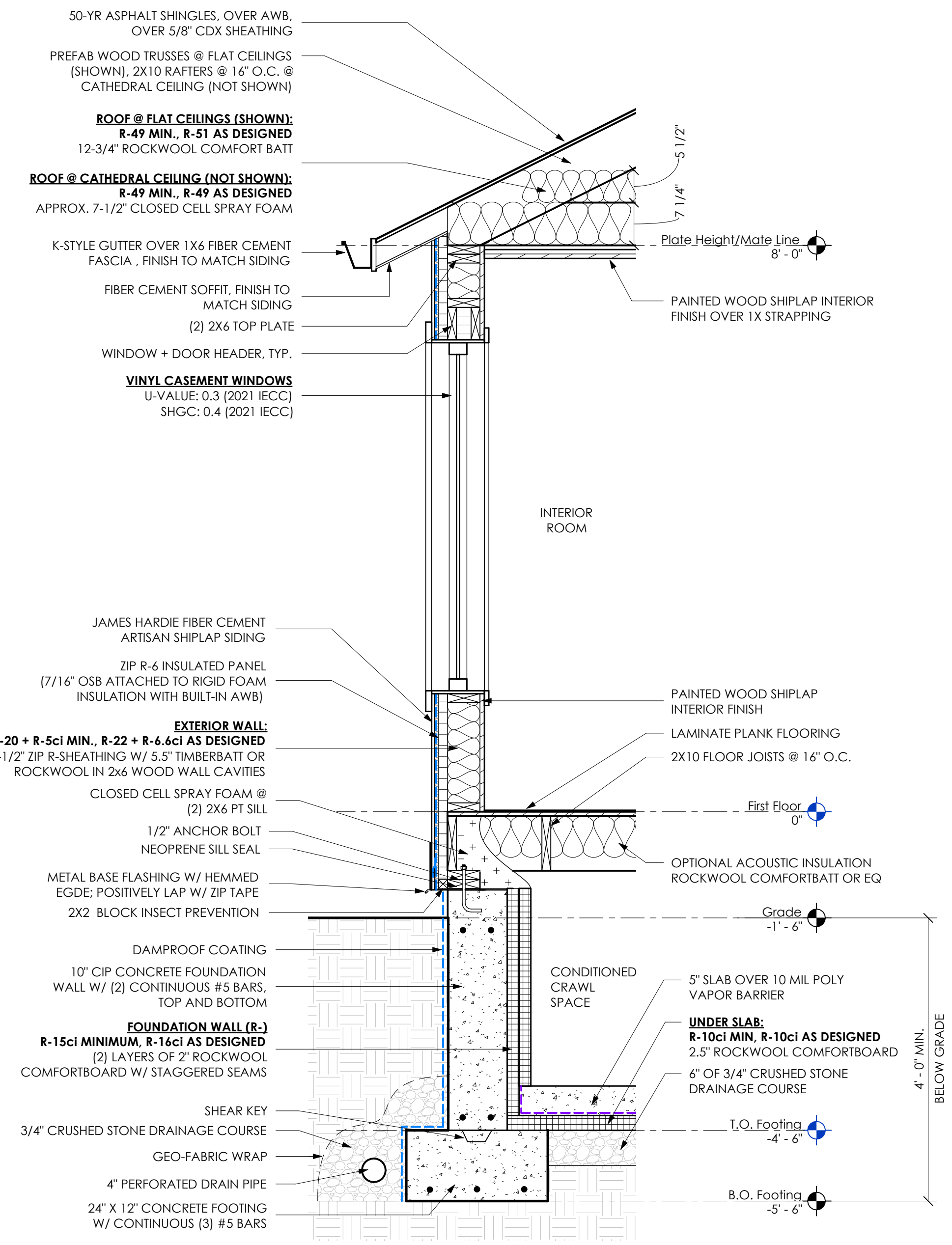
**DOOR AND WINDOW LEGEND**

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- (C) 8" X 36" VINYL TRANSOM WINDOW
- (001) SINGLE 36" X 80" SOLID PANEL HINGED DOOR

**Building Elevation - West**

1/4" = 1'-0"

1  
A-204



Wall Section -Shiplap Siding Typ. 1  
3/4" = 1'-0" A-350



Front View



Front View



Kitchen View



Back View



Back View



Living Room View



Street View



Bathroom View