



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

### **1. Design Team**

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Lead Applicant: Douglas Jack

Additional Applicants: Victoria Capaldo, Aslyn Padre, Nate Cole, Andrew Steingiser, John Mann, Milo Stella, Achan Sookying

Design Firm Name (If Applicable): Nidify Studio

Contact Info: doug@nidifystudio.com

### **2. Design Information**

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EntryID (randomly assigned by HLC for tracking purposes): 3546

Design Name: Good Fences, Good Neighbors: A Symbiotic Approach to Unlocking ADU Development in MA

ADU Gross Floor Area (square footage): 500

Unit Layout: Studio

ADU Height (feet): 16

Window/Wall Ratio: 13%

Foundation Type: Frost Proof Slab Foundation

### **3. Project Narrative**

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This design overcomes a fundamental impediment to the proliferation of ADUs in MA: for the average homeowner, the sacrifice of privacy, green space, and expense to add an ADU in their backyard is too great to offset the benefits. This proposal uses three strategies to create a symbiotic, mutually beneficial relationship between residents of a main house and ADU: 1) Privacy control: Use a fence-like privacy screen to calibrate the relationship between the main house and ADU, giving residents control of their level of connection or separation. 2) Dedicated green spaces: Create discrete outdoor spaces for both residences, then use indoor-outdoor connections to make a compact home feel larger and to promote connection with nature. 3) Affordability: Minimize upfront costs as well as long-term life cycle costs. Create a net positive ADU that not only minimizes utility bills but generates surplus energy for the main house.

***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.***

# GOOD FENCES, GOOD NEIGHBORS

## A Symbiotic Approach to Unlocking ADU Development in MA

In Robert Frost's poem "Mending Wall," the narrator muses over the meaning of a wall as he and his longtime neighbor perform their annual springtime rite of reassembling the stones that have fallen over the course of the past year. On the one hand, the narrator contends that:

*Something there is that doesn't love a wall,  
That sends the frozen-ground-swell under it,  
And spills the upper boulders in the sun;*

The neighbor, on the other hand, insists on following his father's adage that "Good fences make good neighbors." The beauty of the poem is that it doesn't cast a final judgement on the meaning of a wall but rather reflects on its role in the making of interpersonal relationships. It is a device for property definition and separation, but also a way

of mediating human connections and creating intentional bonding.

Our ADU design—Good Fences, Good Neighbors—overcomes a fundamental impediment to the proliferation of ADUs in MA: for the average homeowner, the sacrifice of privacy, green space, and expense to add an ADU in their backyard is too great to offset the benefits.

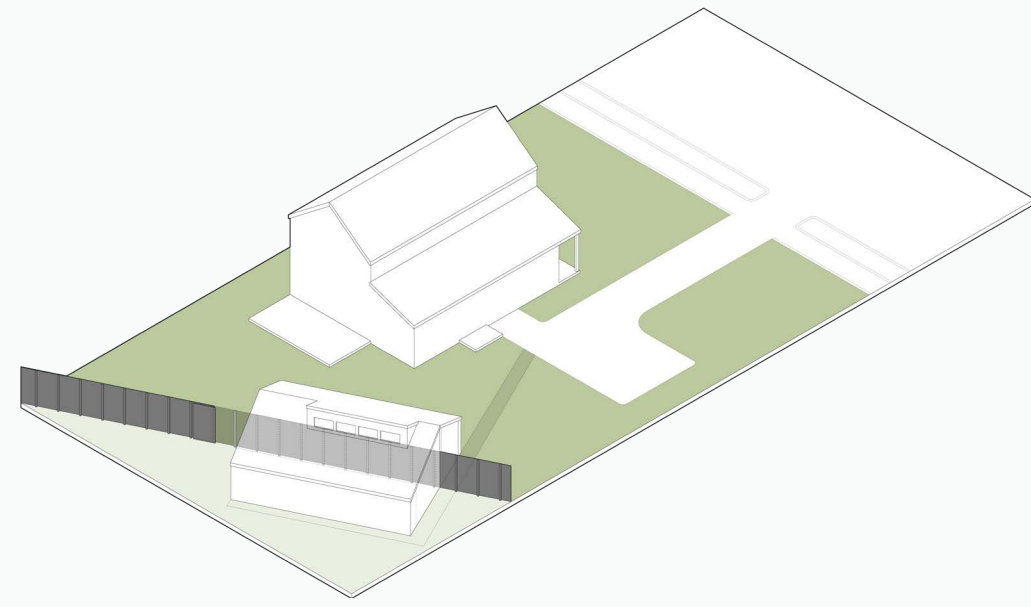
This proposal uses three strategies to create a symbiotic, mutually beneficial relationship between residents of a main house and ADU to overcome these hurdles:

**1) Privacy control:** Use a fence-like privacy screen to calibrate the relationship between the main house and ADU, giving residents control of their level of connection or separation.

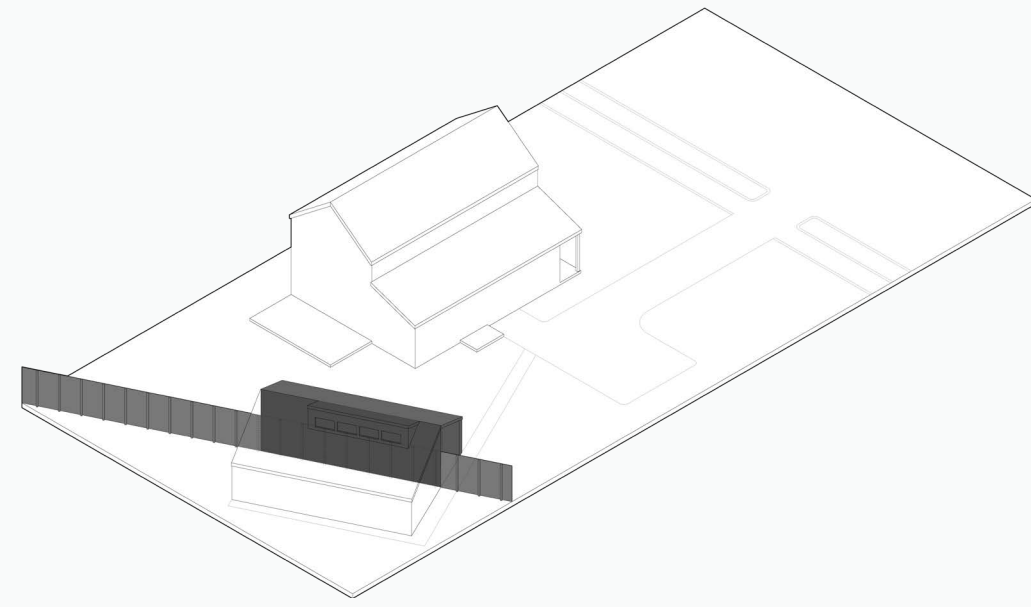
**2) Dedicated green spaces:** Create discrete outdoor spaces for both the main house and ADU, then use indoor-outdoor connections to make a compact home feel larger and to promote connection with nature, supporting mental health.

**3) Affordability:** Minimize upfront costs as well as long-term life cycle costs. Create a net positive ADU that not only minimizes utility bills but generates surplus energy for the main house.

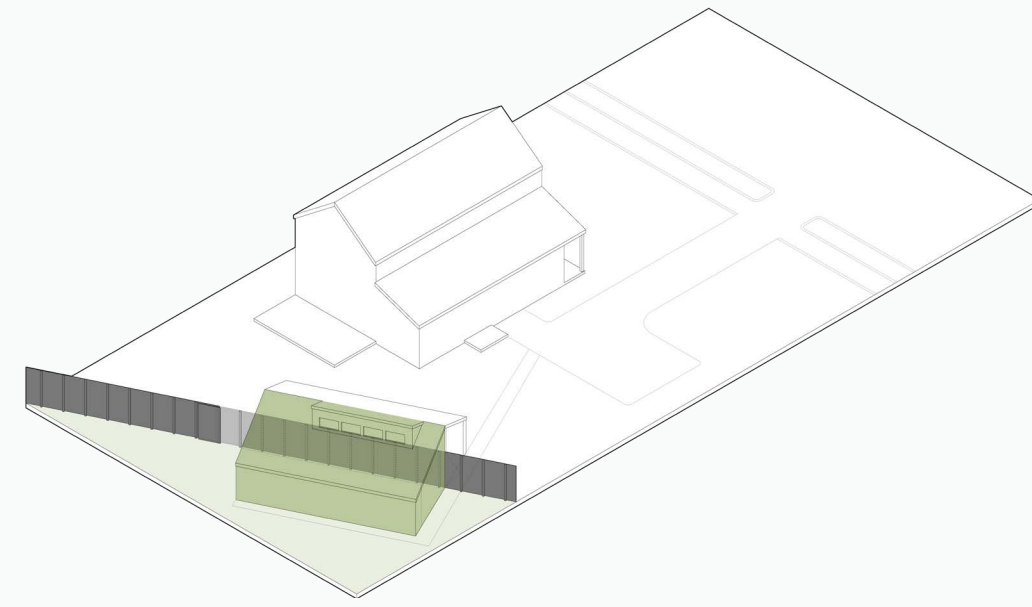
By allowing average MA residents to add an affordable, compact ADU while maintaining their own privacy and green space, this design unlocks the potential for widespread ADU development in MA.



This design is grounded on the site by a fence-like privacy screen that divides the lot into discrete outdoor spaces for the main house and ADU. Large sliding gates in this screen allow residents to connect their private yards, giving them control over their level of separation.



This privacy screen passes through the ADU and subdivides the interior spaces into darker, smaller spaces facing the main house where privacy is a concern and a large living space with expansive windows on the other side where privacy is not a concern.



The living space opens onto private gardens at both ends of the home and is washed with natural light from above, connecting residents with the outdoors. Natural wood interior finishes and exposed structural framing bring nature indoors and further promote mental health.

For this prototypical ADU design to be truly ready for a statewide, rapid rollout, it must be prepared to elegantly respond to an array of unique site conditions.

Our ADU design is organized around a linear privacy screen that extends through the living space and into the surrounding landscape to subdivide the lot into a space for the ADU and a space for the main house. This site organizing privacy screen works at an array of angles and configurations so that it and the ADU can be placed optimally relative to a variety of site factors including:

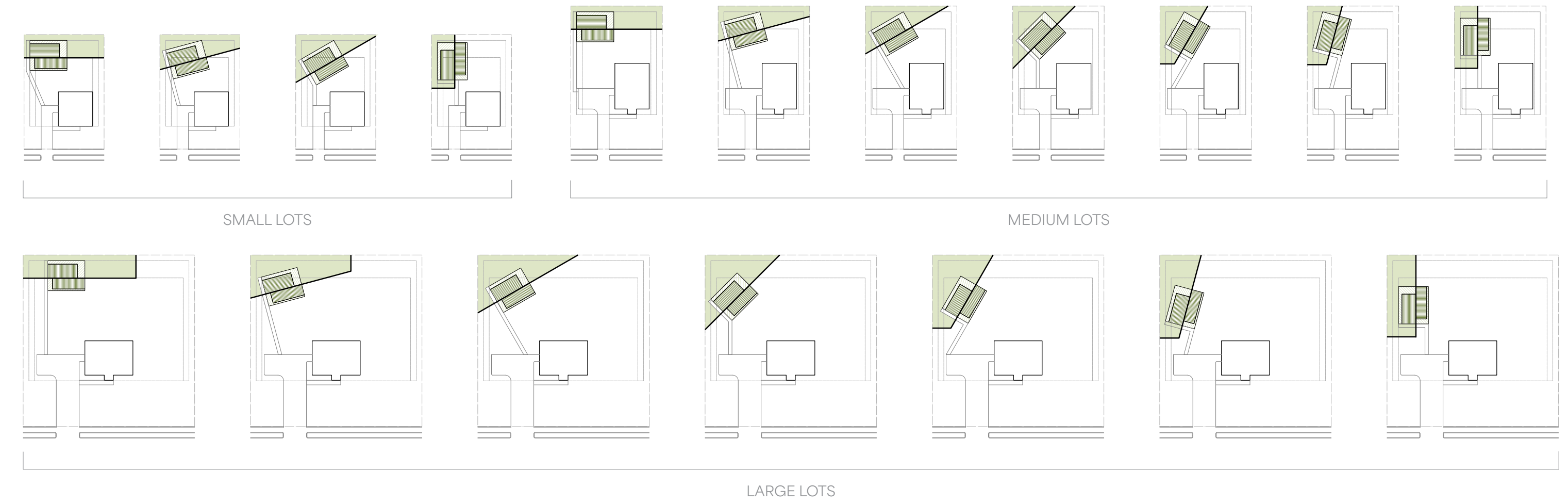
1) The main house: the ADU can be set closer or further away depending on the owner's desired degree of connection or separation.

2) Solar orientation: the angle of the ADU can be adjusted to help optimize solar exposure, maximizing solar energy production with an array on one or both sides of the roof.

3) Surrounding features: the ADU can be shifted to avoid undesirable relationships with neighboring structures, natural features such as rocks or trees, particular sight lines, etc.



A fence-like privacy screen passes through the ADU and creates a large, open living space that opens onto private gardens on either end.



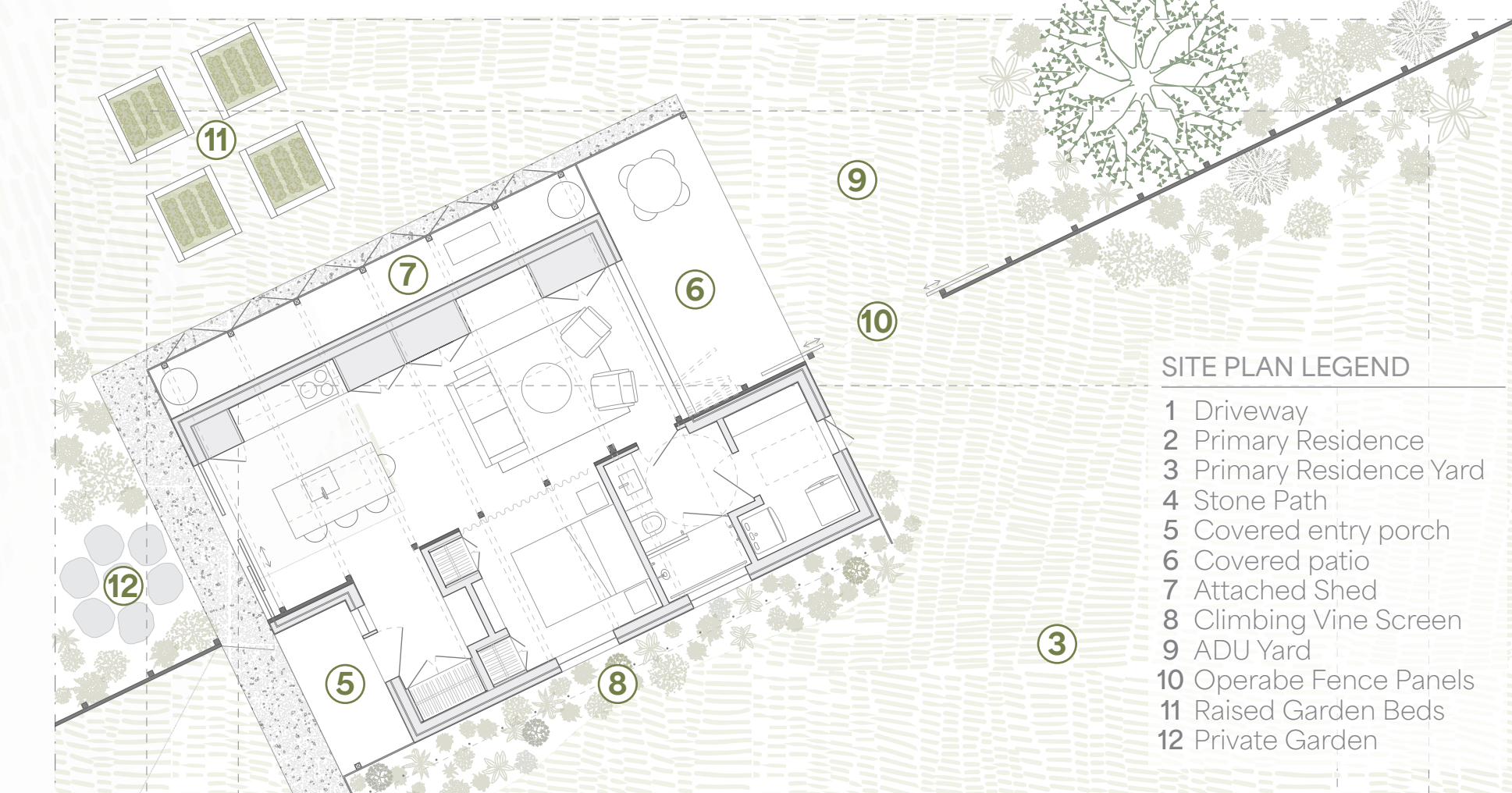
A climbing vine screen on the ADU provides a muted yet beautiful façade interface between the two residences and partially obscures the high awning windows for privacy. A private entry to the ADU is tucked under a roof overhang and accessed by an accessible, high-traction hardscaped path.

A fence-like privacy screen subdivides the lot into private outdoor spaces for the main house and ADU. This screen passes through the ADU itself, separating it into smaller, more private zones facing the main house and a large open living space opening onto private gardens.



- PLAN LEGEND**
- 1 Stone path
  - 2 Covered entry porch
  - 3 Mudroom
  - 4 Kitchen
  - 5 Living Area
  - 6 Bedroom
  - 7 Bathroom
  - 8 Laundry / Mechanical
  - 9 Covered patio
  - 10 Climbing Vine Screen
  - 11 Attached Shed
  - 12 Raised Garden Beds

SCALE: 1/4"=1'-0"



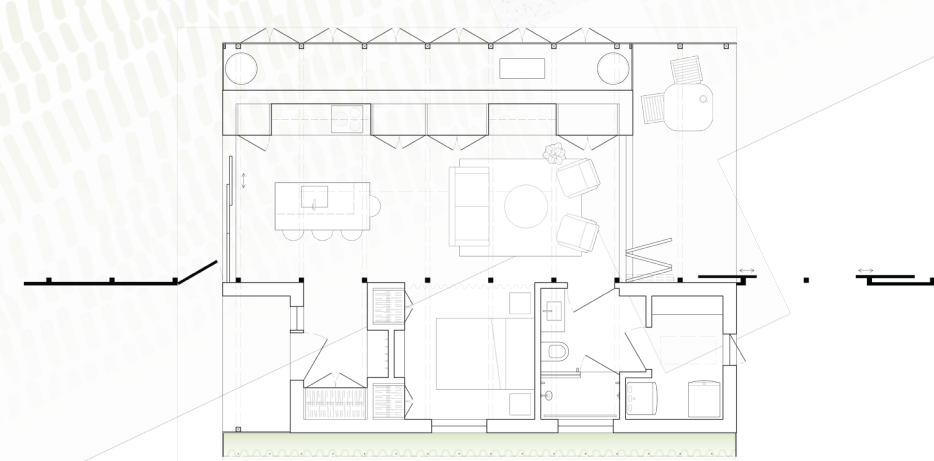
- SITE PLAN LEGEND**
- 1 Driveway
  - 2 Primary Residence
  - 3 Primary Residence Yard
  - 4 Stone Path
  - 5 Covered entry porch
  - 6 Covered patio
  - 7 Attached Shed
  - 8 Climbing Vine Screen
  - 9 ADU Yard
  - 10 Operable Fence Panels
  - 11 Raised Garden Beds
  - 12 Private Garden

**FLOOR PLAN DESIGN**

Private, darker spaces including the mudroom, bedroom, bathroom and laundry/utility room face the main house and have minimal windows to maintain privacy. A large, open living space opens onto the adjacent, private gardens and is bordered by a dense storage wall to keep it uncluttered for accessible circulation and flexible use. An outdoor storage strip on the rear of the ADU provides space for the heat pump, rain barrels, bicycles, yard tools, and other outdoor equipment so that the compact yard can be kept free of clutter and maximally useful.

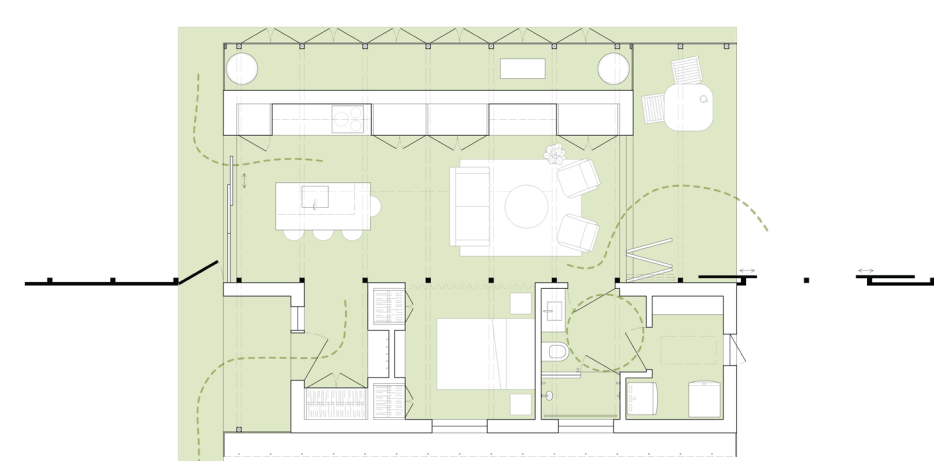
**SITE PLAN DESIGN**

This design is grounded on the site by a fence-like privacy screen that divides the lot into discrete and sizeable outdoor spaces for the main house and ADU. Large sliding gates in this screen allow residents to connect their private yards, giving them control over their level of separation. A high-traction, hardscape path connects the parking area with the ADU which is flush with the surrounding grade for Universal access throughout.



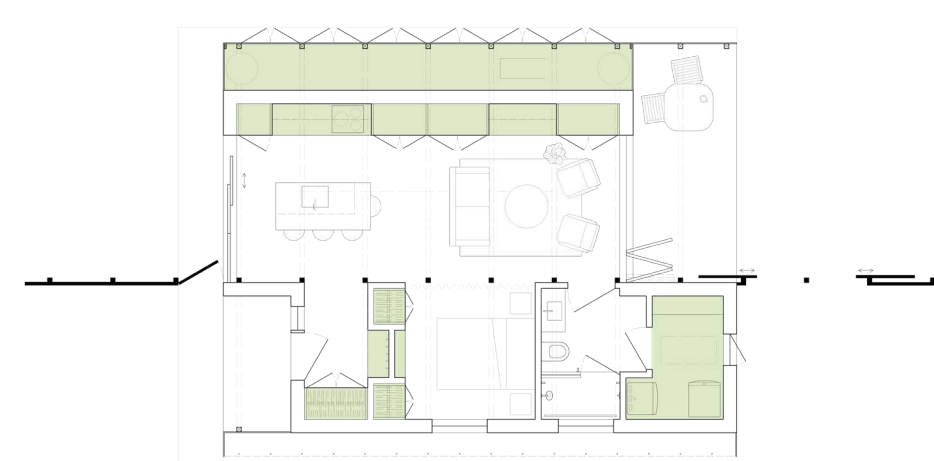
**VINE SCREEN**

A climbing vine screen provides a muted yet beautiful façade interface between the two residences and partially obscures the high awning windows for privacy.



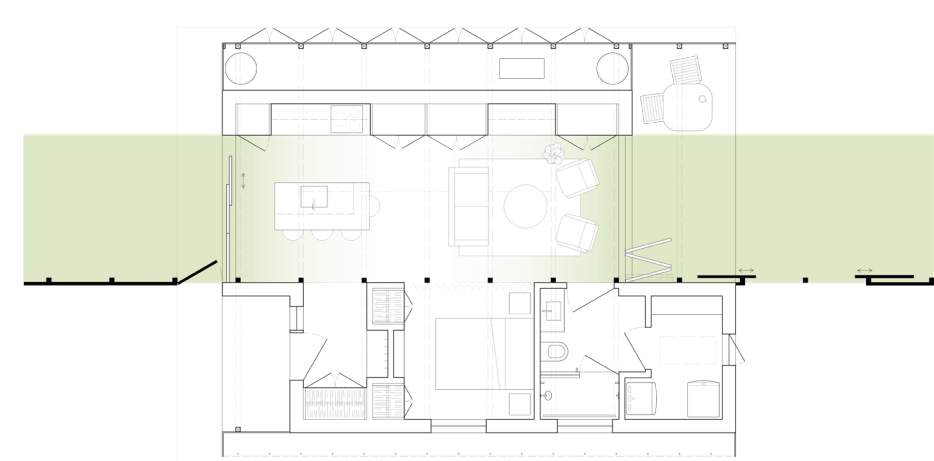
**ACCESSIBILITY**

The ADU floor is flush with the surrounding grade and connected to the parking area with a hardscaped, high-traction path, maximizing Universal mobility throughout the site.



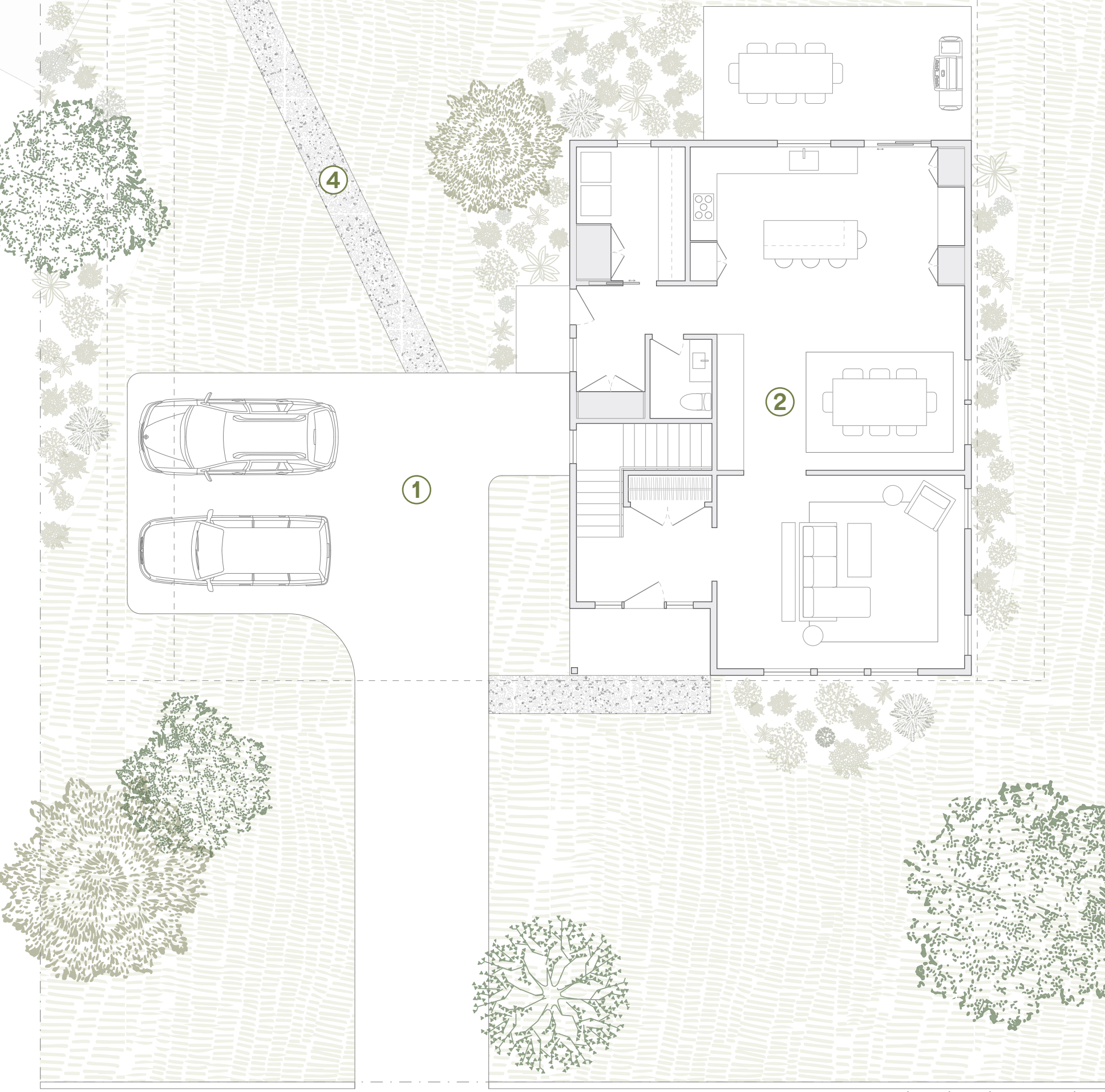
**INTEGRATED STORAGE**

An abundance of storage space allows the living spaces to remain uncluttered and flexible in use. The living space is lined with full height storage cabinets while an outdoor storage zone provides space for equipment.



**INDOOR / OUTDOOR CONTINUITY**

The primary living space has expansive windows at either end to make a compact space feel spacious and connect the residents with their surroundings.



SCALE: 3/32"=1'-0"



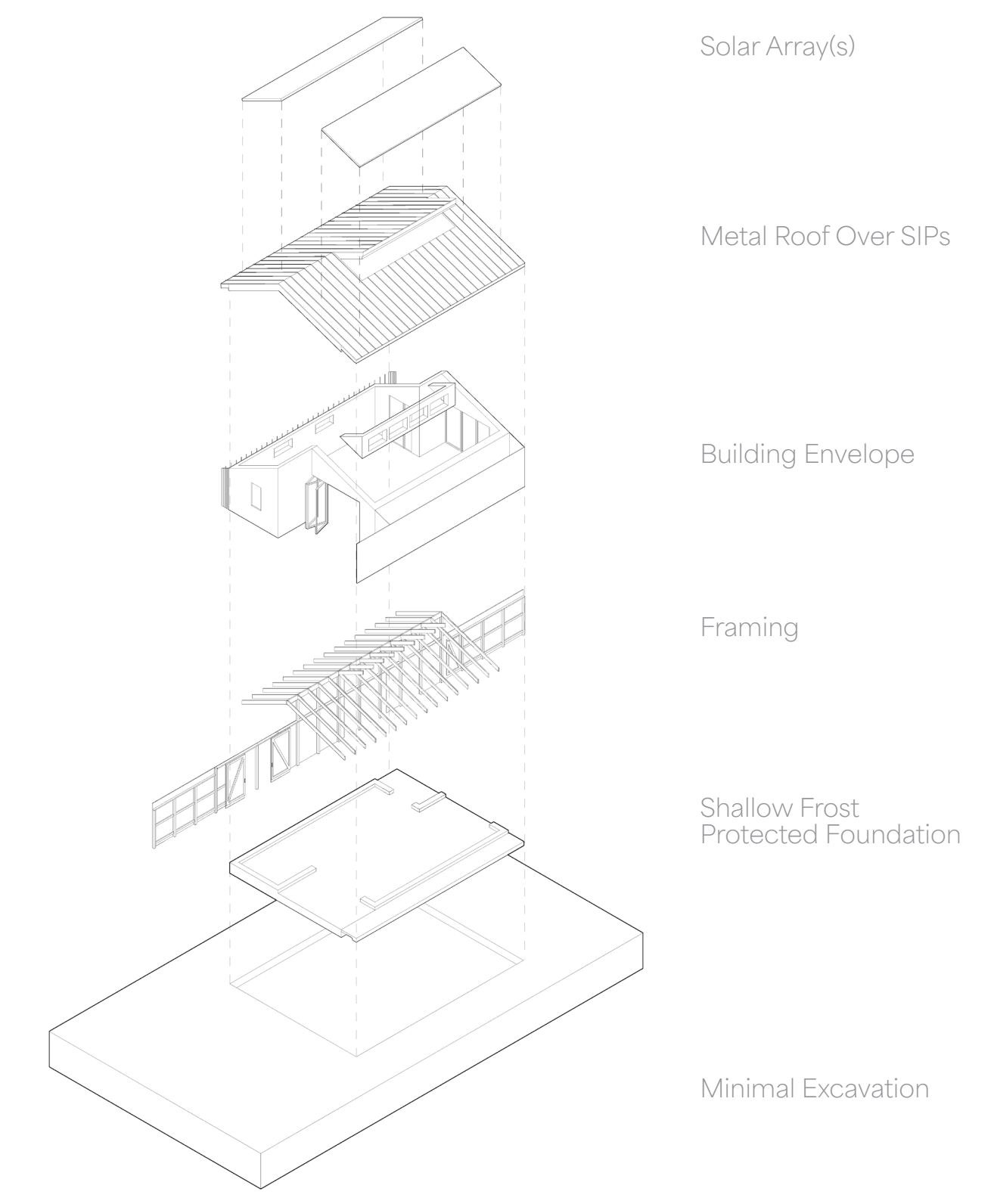
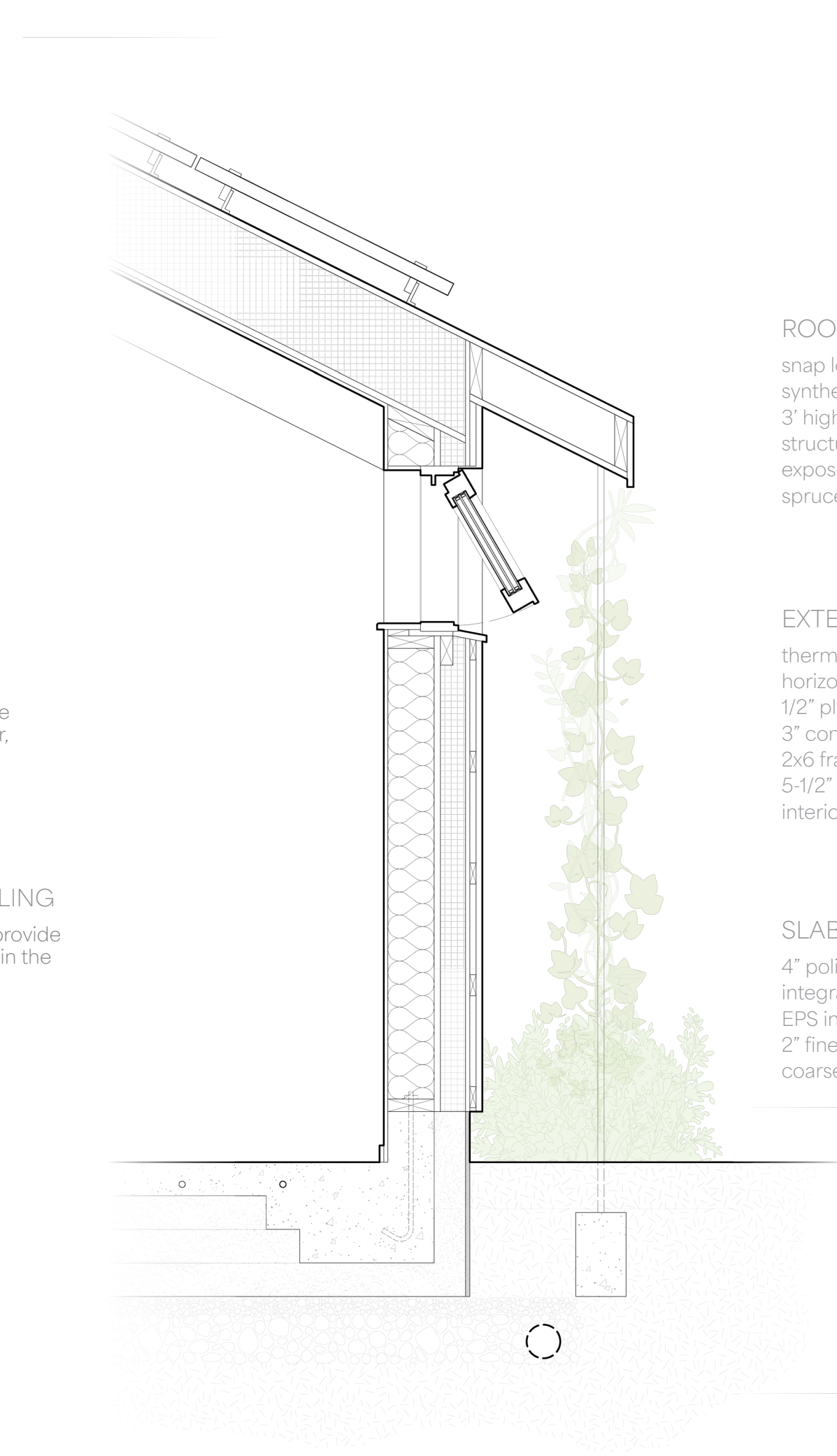
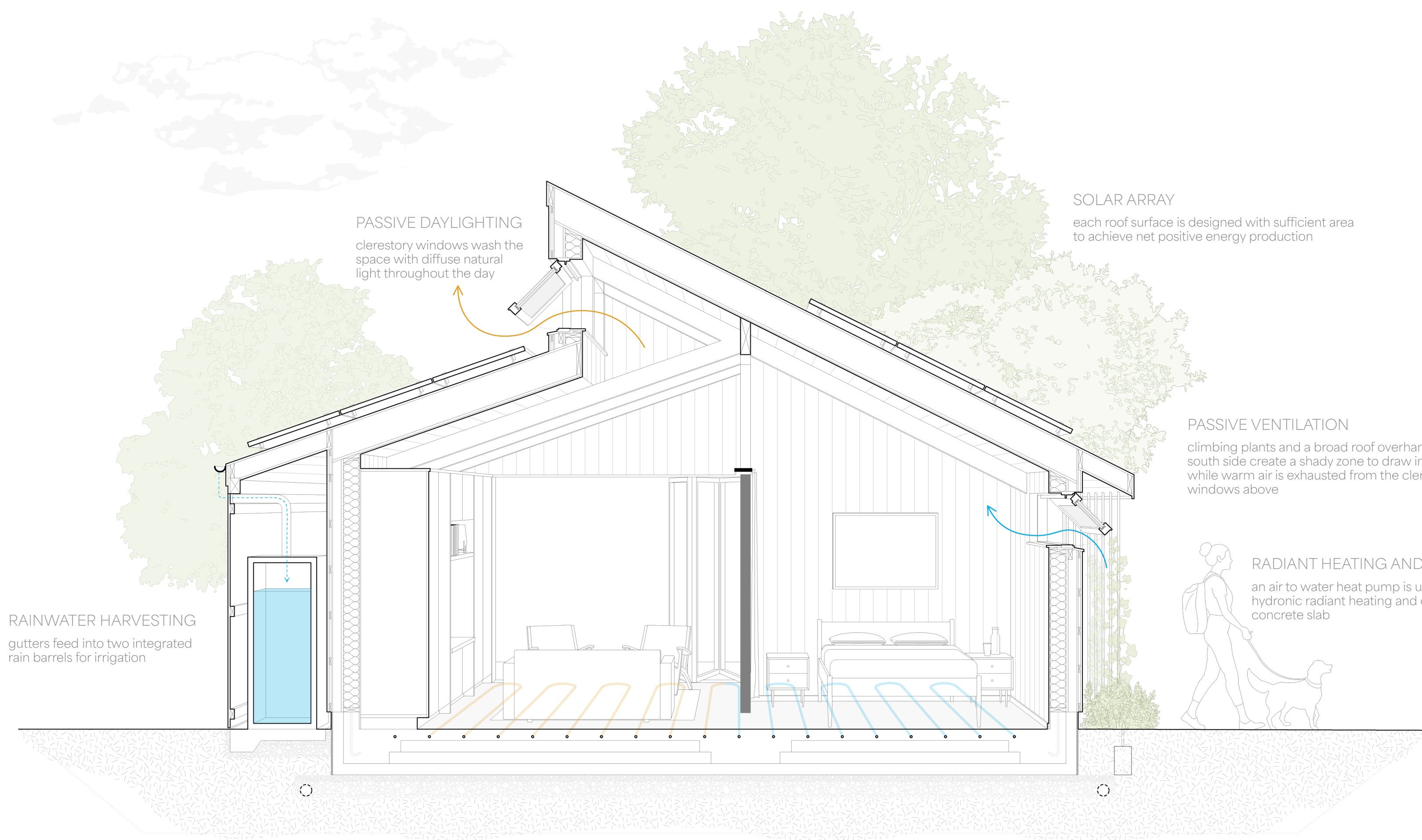
The ADU is situated in the corner of the lot to preserve a sizable outdoor space for the main house. A fence-like privacy screen provides discrete outdoor spaces for the main house and ADU residents while large sliding panels allow the yards to be connected when desired.



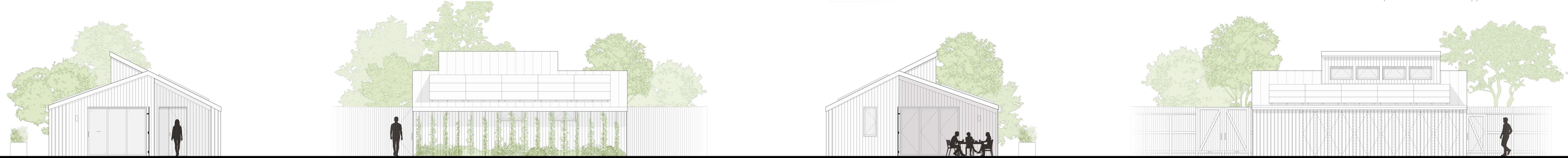
The ADU interior has a natural, wood palette with exposed framing and clear wood finishes. Green cabinetry melds with the outdoor gardens to accentuate the continuity of interior and exterior space, connecting residents with their natural surroundings and promoting mental health. Clerestory windows above wash the space with natural light and allow stack effect passive cooling in warm weather.



The pine-tar treated spruce privacy screen continues from the exterior through the ADU to separate the smaller, darker spaces from the well-lit, open main living space. A curtain separates the bedroom/office from the main, open living space to allow a flexible relationship and minimize pinch points for accessible circulation.



**CONSTRUCTION**  
This design proposes a hybrid of off-site prefabrication and on-site construction to minimize costs and expedite sitework while keeping the methods accessible to average builders.  
A shallow, frost-protected slab foundation is made with prefabricated formwork to minimize excavation and work on tight sites, which is especially important on tight sites with nearby impediments.  
Walls are framed using conventional 2x6 framing so that an average builder can perform the work and integrate building systems working closely with local subcontractors and inspectors. This low-tech approach to the walls also allows them to be modified over time if needed. A post and beam system to support the roof has posts spaced at 4' to minimize the size of framing members and avoid the need for heavy machinery for installation.  
The roof is made of prefabricated Structural Insulated Panels (SIPs) that are readily available from regional manufacturers. This is an ideal component to be standardized off-site because of its simple shape, lack of integrated building systems, and the improved thermal performance of no thermal bridging on the most important component of the thermal envelope.



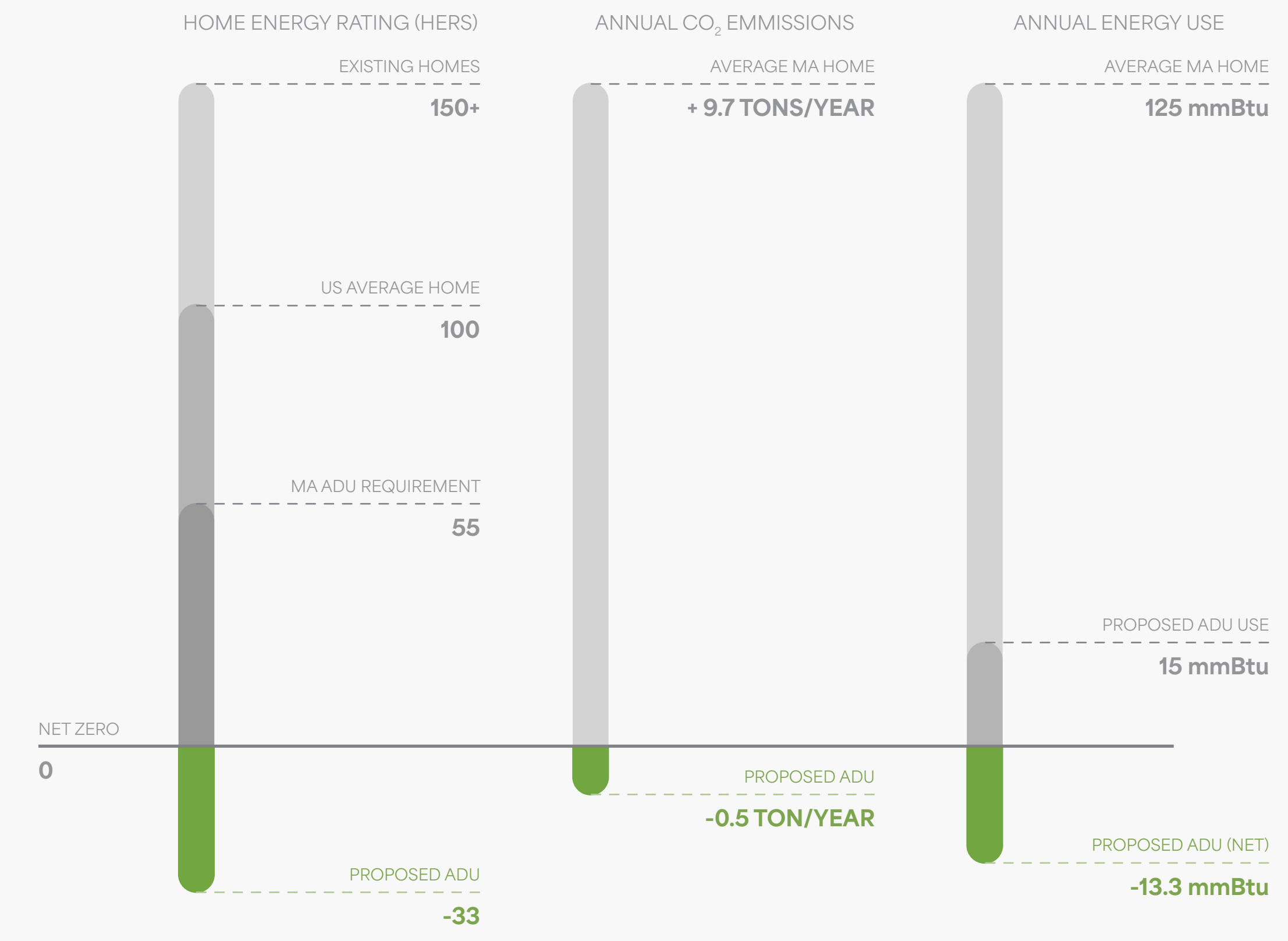
**SUSTAINABLE DESIGN STRATEGIES**

Sustainability was a central focus in the design of this ADU. At the highest level, keeping the unit size at 500 sf reduces the energy and resources required to build it, operate it and maintain it over time. Beyond that, this ADU model employs three design strategies that promote sustainability.

- 1) Net positive energy:** This ADU is designed to not only be all electric and reduce ongoing energy use demands but produce a surplus that can be used by the main house on the same lot. The building envelope is high performance with a SIP roof to reduce thermal bridging, continuous rigid insulation walls, a super insulated slab-on-grade, and triple pane doors and windows. The building systems are powered by a newly available air-to-water source electric heat pump, consolidating radiant floor heating/cooling and domestic hot water into a single unit. Passive cooling can be used in warmer months with low, shaded windows bringing in cool outside air and high clerestory windows allowing warm air to escape through a stack effect. A fresh air Energy Recovery Ventilator (ERV) system resides above the laundry and bathroom ceilings to efficiently circulate air to all spaces while using a minimum of space and keeping the primary spaces vaulted. The roof is designed to accommodate a sizeable, uninterrupted solar array on one side or both sides, and our site strategy allows the ADU to be angled ideally relative to solar exposure. This design was fully energy modeled and even a single solar array can produce nearly double the annual energy consumption of the ADU, with the surplus available for use by the main house.
- 2) Wellness:** This design aims to create a sense of spaciousness and peace in a compact space. The solution begins with placing the more private programmatic spaces of the ADU—the mudroom, bedroom, bathroom and laundry/utility room—towards the main house so that smaller, high windows can be used for light and air without creating privacy issues. This allows the bulk of the ADU interior to be a large, open space with glass doors at either end that open onto private gardens, providing strong connections with nature and the ability to expand one's living space substantially in the warmer months with outdoor living. Natural light washes this space from above through clerestory windows, minimizing the need for artificial lighting and keeping one in tune with nature and circadian rhythms. Lastly, a privacy screen separates the ADU's outdoor spaces from those of the main house but can be opened to connect the two and facilitate socializing when desired.
- 3) Sensible Materials:** This design prioritizes materials that are locally produced, have low carbon footprints, have a long lifespan and are cost-competitive with conventional residential construction techniques. The interior framing is character grade Hemlock and the privacy screen and siding are Spruce—both regionally available species. The privacy screen is treated with pine tar, a natural wood preservative made from pine resin with added pigment for UV protection, giving it a dark appearance. The siding is thermally modified Spruce, which is heat treated to create a durable, sustainable alternative to popular tropical hardwoods for exterior applications like Ipe and Teak. The floor in the entire ADU is a single concrete slab with integral radiant heating and cooling, a low-maintenance system that eliminates the need for additional floor finishes, adhesives and ductwork. A snap-lock standing seam metal roof is long-lasting, affordable, suitable for solar installation, and easily prevents the ice dams of conventional asphalt roofing. Regionally produced wood fiber insulation is used in the walls—a vapor open, safe-to-handle product that installs easily with standard carpentry tools.



**ENERGY MODELING DATA**

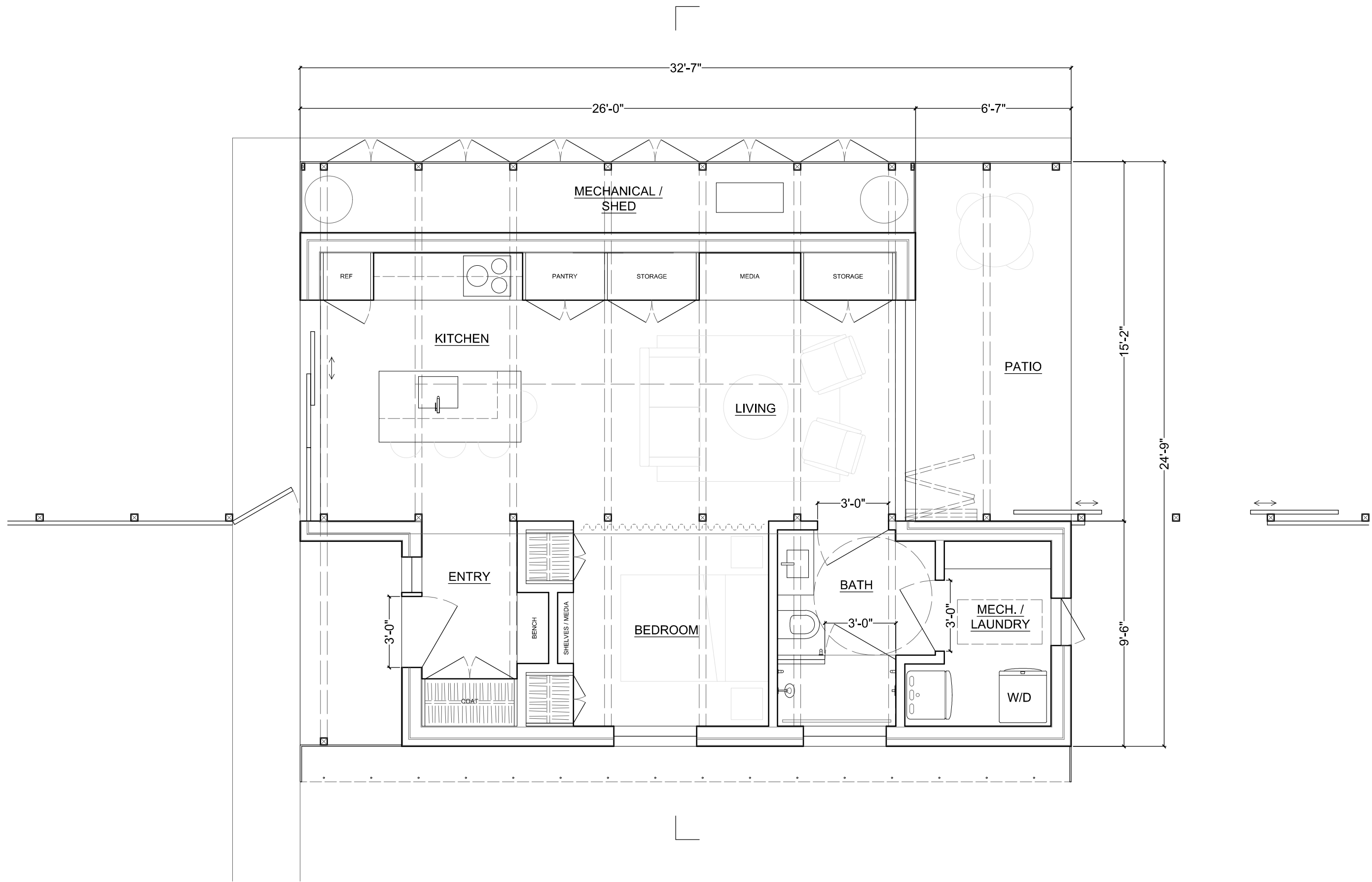


**MATERIAL SELECTIONS**

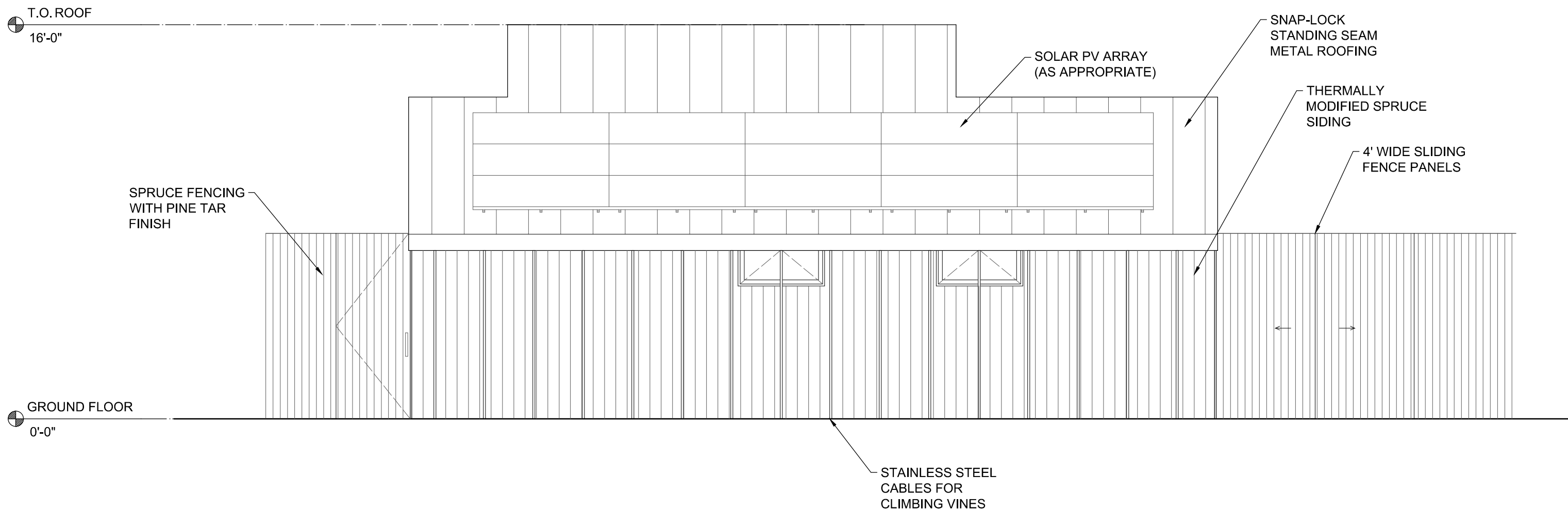
- THERMALLY MODIFIED SPRUCE**  
The siding is thermally modified Spruce, which is heat treated to create a durable, sustainable alternative to popular tropical hardwoods for exterior applications like Ipe and Teak. The heat treatment process provides the same benefits as pressure treatment but without the use of toxic preservatives, and stores 5X the carbon produced to make it.
- PINE TAR FINISH**  
The privacy screen is treated with pine tar, a natural, renewable wood preservative made from pine resin, often using waste products from timber industry to produce it. A pigment is added for additional UV protection, giving it a dark appearance.
- CLEAR FINISH SPRUCE**  
Spruce with a clear finish is used on the interior walls and ceiling. It is a locally sourced, fast-growing softwood that is native to New England. Using character grade boards helps reduce cost and lumber mill waste.
- HEMLOCK FRAMING**  
Locally-sourced Hemlock is used for the exposed interior timber frame. All members are conventional sizes and character-grade boards can be used to lower costs.
- WOOD FIBER INSULATION**  
Regionally produced wood fiber insulation is used in the walls both as batt insulation in the wall cavities and rigid exterior insulation. This is a carbon sequestering, safe-to-handle product made from residual softwood chips, a waste product of lumber production. It is also vapor open, which helps prevent mold, rot and condensation over time.

- SNAP-LOCK METAL ROOFING**  
A snap-lock standing seam metal roof is a long-lasting, affordable roofing product. It readily accepts solar installation and easily prevents the ice dams of conventional asphalt roofing.
- GREEN CONCRETE FLOORS**  
The floor in the entire ADU is a single concrete slab with integral radiant heating and cooling, a low-maintenance system that eliminates the need for additional floor finishes, adhesives and ductwork. The concrete composition uses fly ash and slag instead of cement, reducing the carbon footprint by about 90%.
- CABINETRY FINISH**  
The built-in cabinetry in the kitchen and living space is made of MDF panels and finished with a locally produced, zero Volatile Organic Compounds (VOCs), water based lacquer. This alternative to solvents is safer during applications and occupancy.
- GRANITE COUNTERS**  
The countertops in the kitchen and living space are locally sourced black granite. This is also a minimal, homeowners can likely select remnant slabs for additional cost savings.
- TRIPLE GLAZING**  
All windows and doors are made with triple pane glass to provide maximum insulation, reduce heat transfer and lower energy bills. This also reduces sound transfer and creates a more comfortable interior living environment.

*Statement on non-use of AI*  
This design proposal was created without the assistance of AI tools. It was prepared collaboratively by a team that was assembled by an Architect and includes a Designer, Landscape Architect, Energy Consultant and General Contractor. We have strong environmental, humanistic and artistic concerns with the unfettered use of AI tools at their current stage of development, therefore excluded them from being used in the preparation of this presentation. We ideated, sketched, drafted, modeled and wrote what you see here through iterative human interaction and creative enterprise, which we see as essential ingredients to a built environment that benefits the collective good.



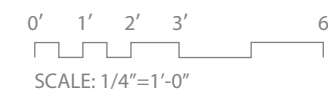
FLOOR PLAN

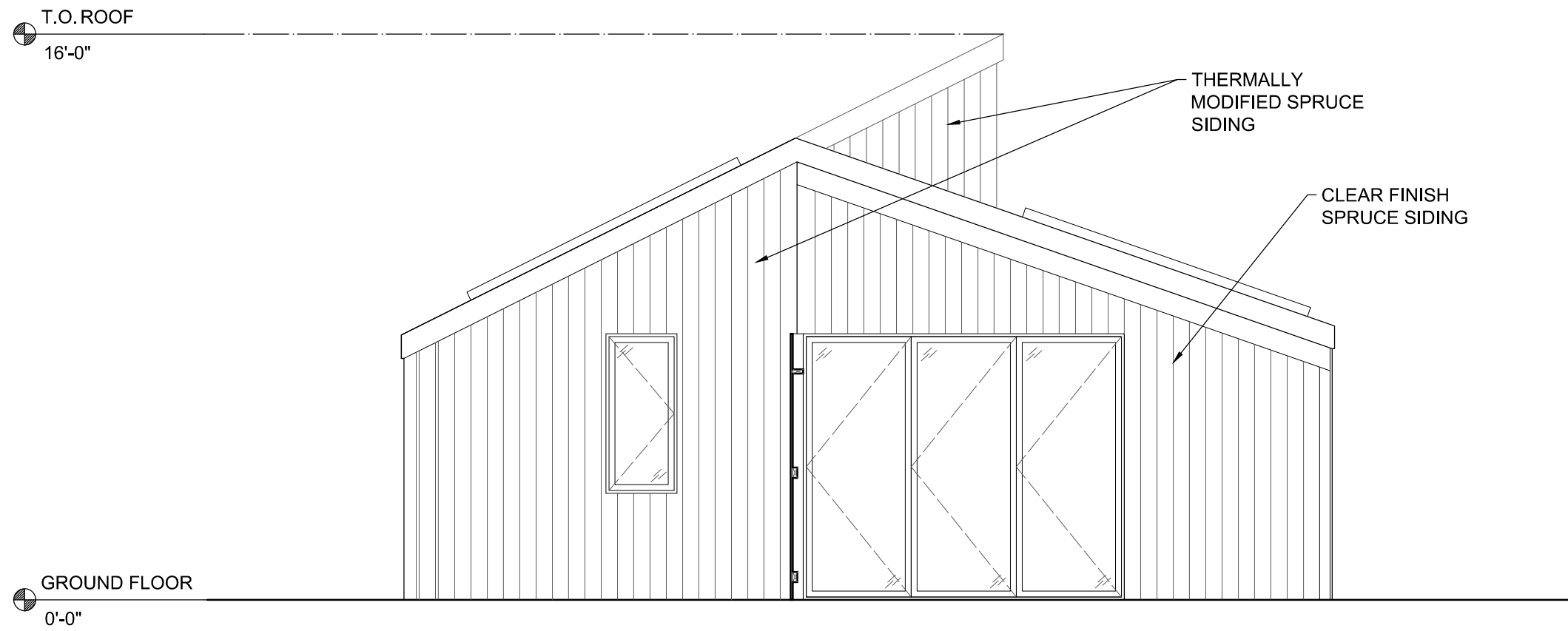


EXTERIOR ELEVATION - FRONT

GOOD FENCES, GOOD NEIGHBORS

A Symbiotic Approach to Unlocking ADU Development in MA

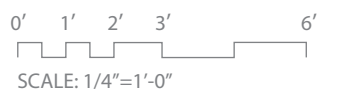


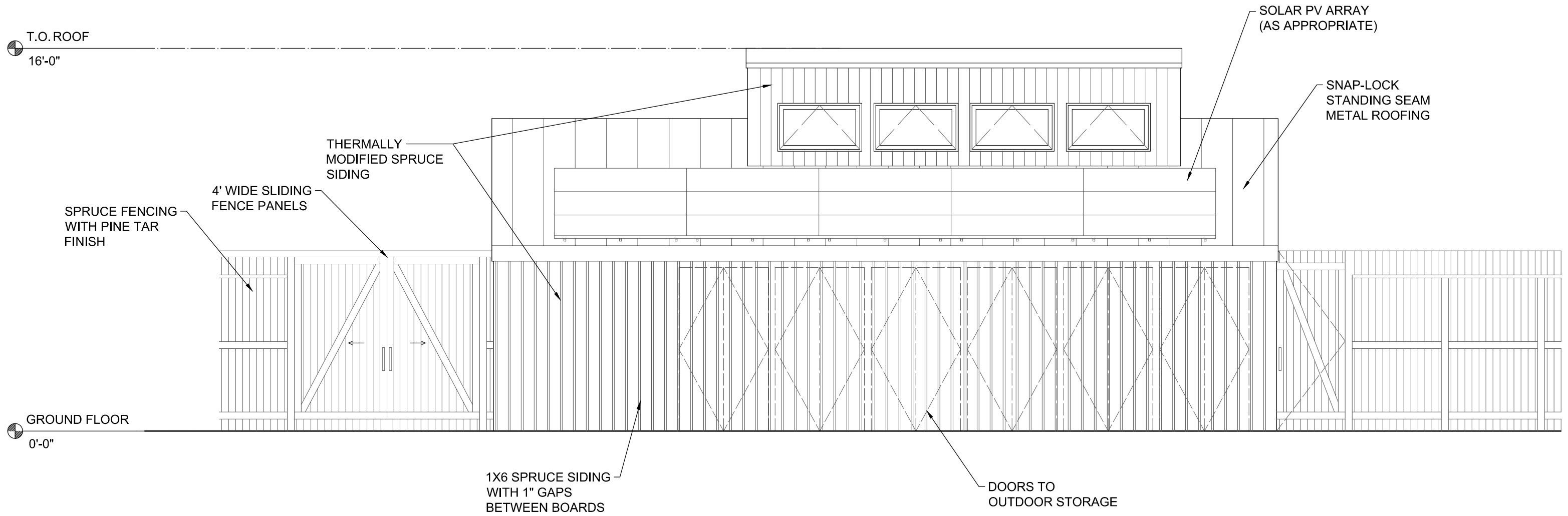


EXTERIOR ELEVATION - RIGHT

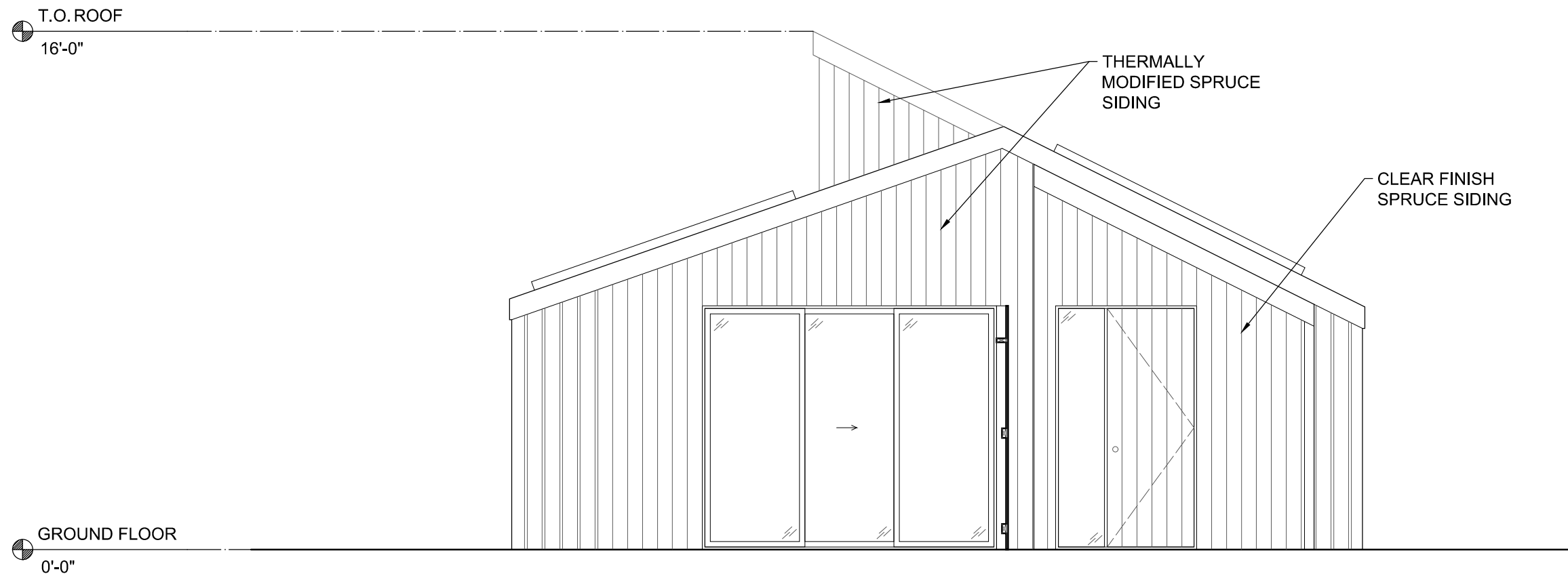
GOOD FENCES, GOOD NEIGHBORS

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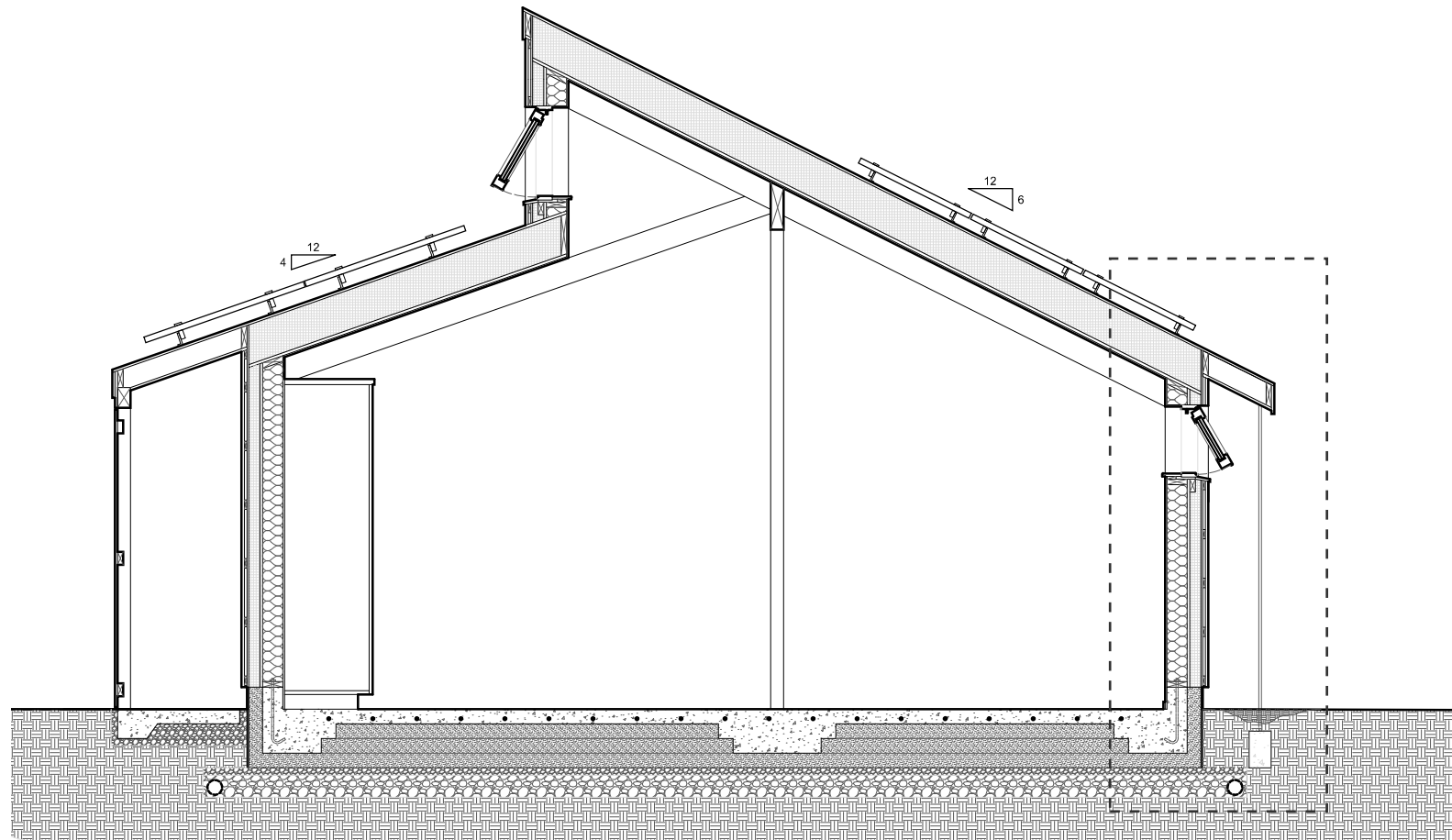




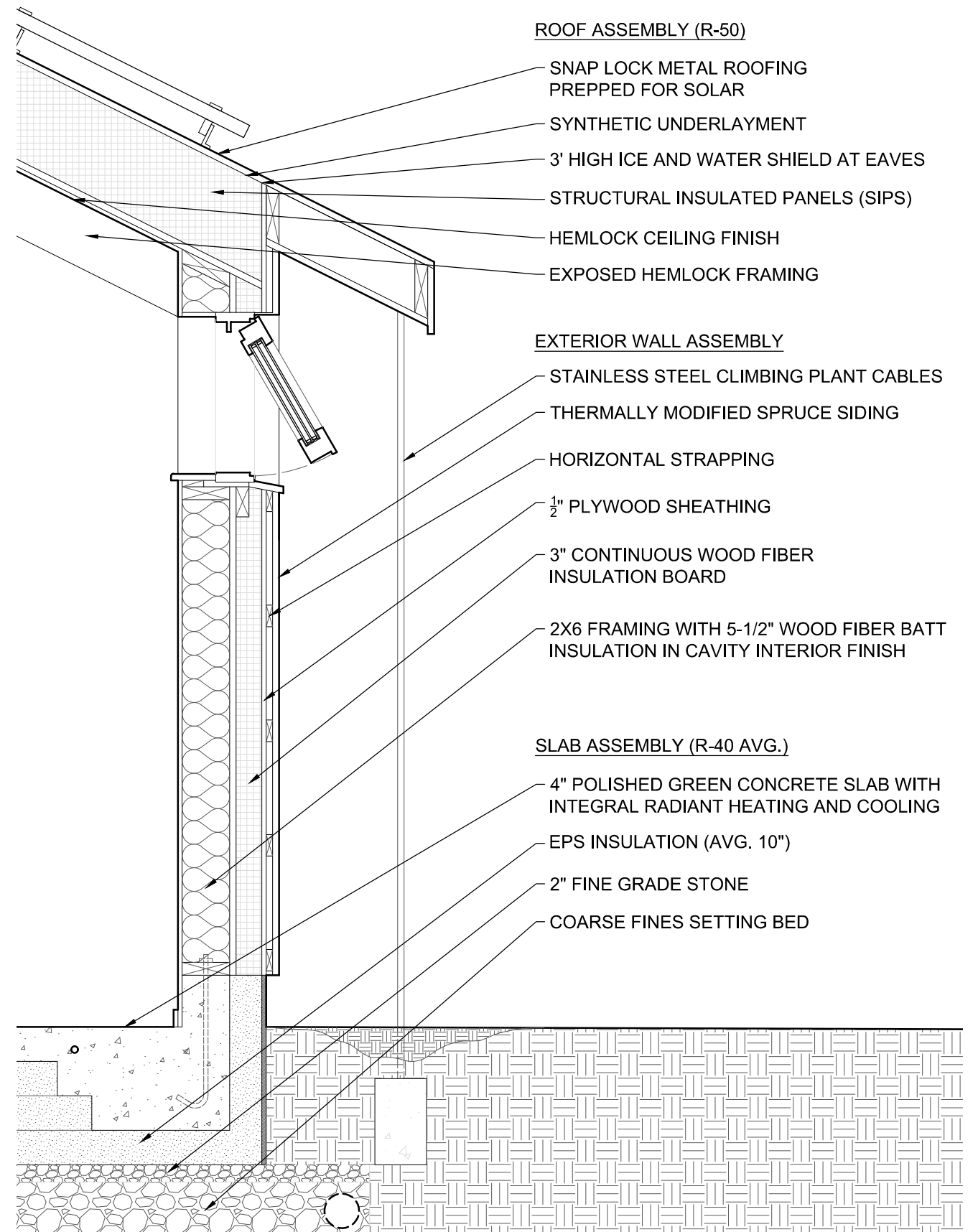
EXTERIOR ELEVATION - BACK



EXTERIOR ELEVATION - LEFT



0' 1' 2' 3' 6'  
SCALE: 1/4"=1'-0"



**ROOF ASSEMBLY (R-50)**

- SNAP LOCK METAL ROOFING PREPPED FOR SOLAR
- SYNTHETIC UNDERLAYMENT
- 3' HIGH ICE AND WATER SHIELD AT EAVES
- STRUCTURAL INSULATED PANELS (SIPS)
- HEMLOCK CEILING FINISH
- EXPOSED HEMLOCK FRAMING

**EXTERIOR WALL ASSEMBLY**

- STAINLESS STEEL CLIMBING PLANT CABLES
- THERMALLY MODIFIED SPRUCE SIDING
- HORIZONTAL STRAPPING
- 1/2" PLYWOOD SHEATHING
- 3" CONTINUOUS WOOD FIBER INSULATION BOARD
- 2X6 FRAMING WITH 5-1/2" WOOD FIBER BATT INSULATION IN CAVITY INTERIOR FINISH

**SLAB ASSEMBLY (R-40 AVG.)**

- 4" POLISHED GREEN CONCRETE SLAB WITH INTEGRAL RADIANT HEATING AND COOLING
- EPS INSULATION (AVG. 10")
- 2" FINE GRADE STONE
- COARSE FINES SETTING BED

0" 6" 12" 24"  
SCALE: 3/4"=1'-0"

SECTION

GOOD FENCES, GOOD NEIGHBORS

A Symbiotic Approach to Unlocking ADU Development in MA



## FRONT EXTERIOR

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### GOOD FENCES, GOOD NEIGHBORS

A Symbiotic Approach to Unlocking ADU Development in MA



## REAR EXTERIOR

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### GOOD FENCES, GOOD NEIGHBORS

A Symbiotic Approach to Unlocking ADU Development in MA



FRONT EXTERIOR

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GOOD FENCES, GOOD NEIGHBORS  
A Symbiotic Approach to Unlocking ADU Development in MA



## LEFT EXTERIOR

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### GOOD FENCES, GOOD NEIGHBORS

A Symbiotic Approach to Unlocking ADU Development in MA



## INTERIOR

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GOOD FENCES, GOOD NEIGHBORS  
A Symbiotic Approach to Unlocking ADU Development in MA

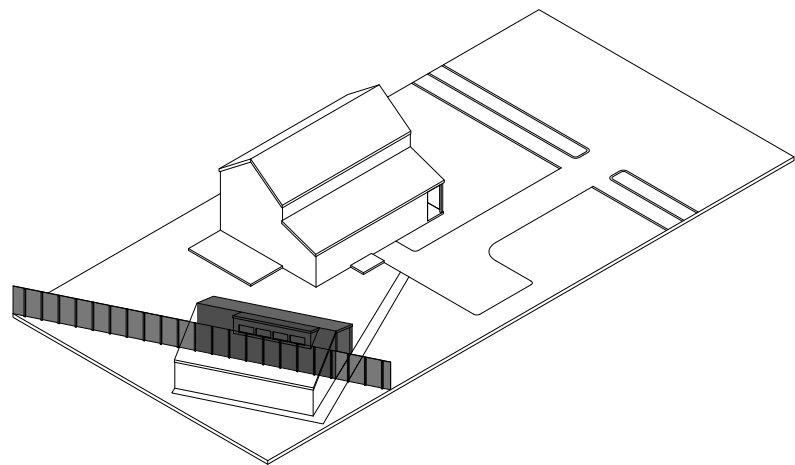


## INTERIOR

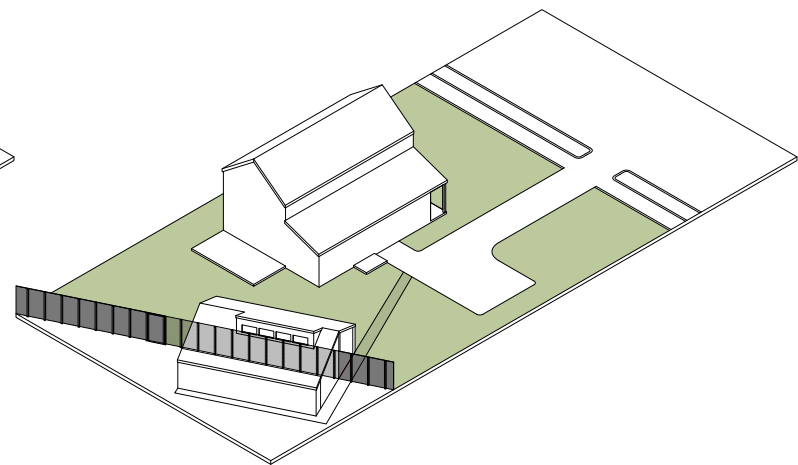
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### GOOD FENCES, GOOD NEIGHBORS

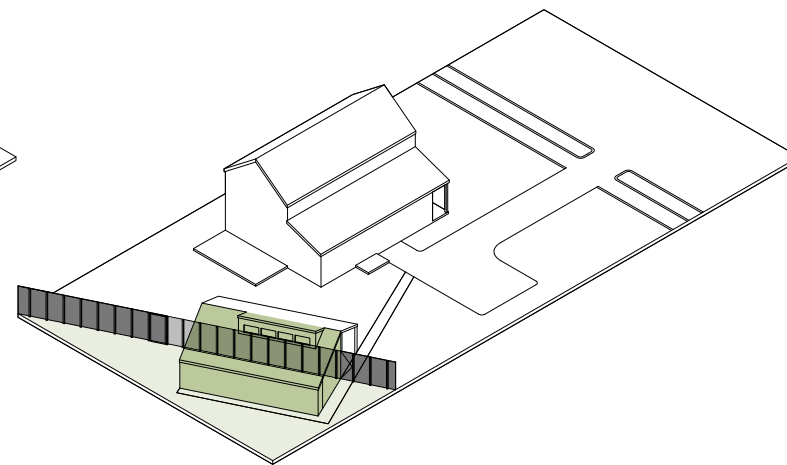
A Symbiotic Approach to Unlocking ADU Development in MA



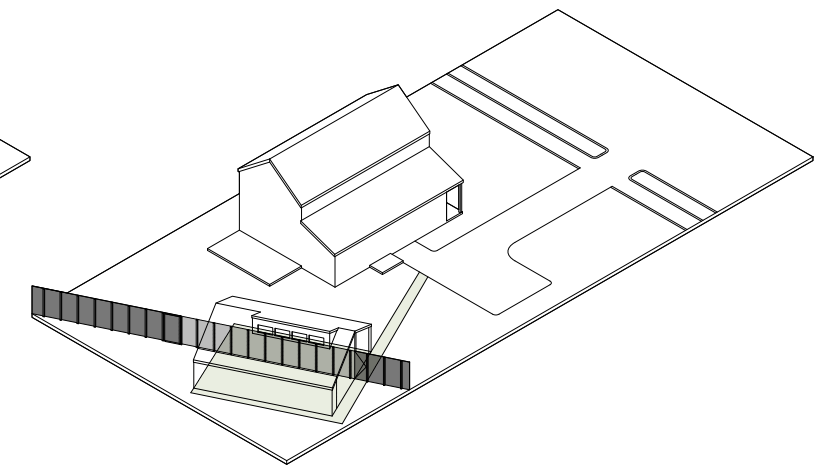
SCREEN



MAIN YARD

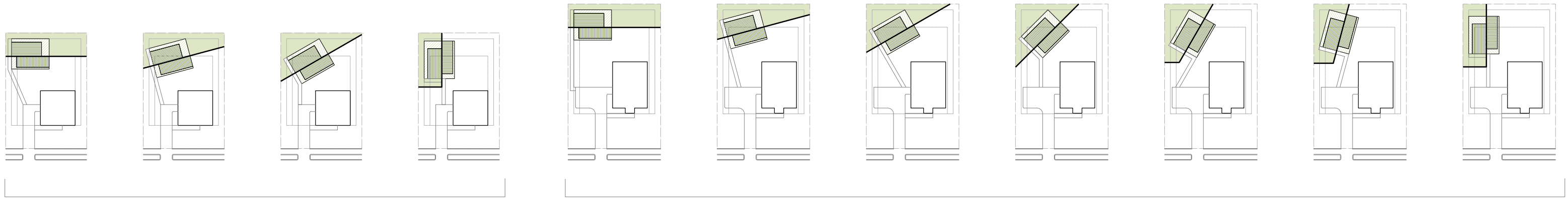


ADU



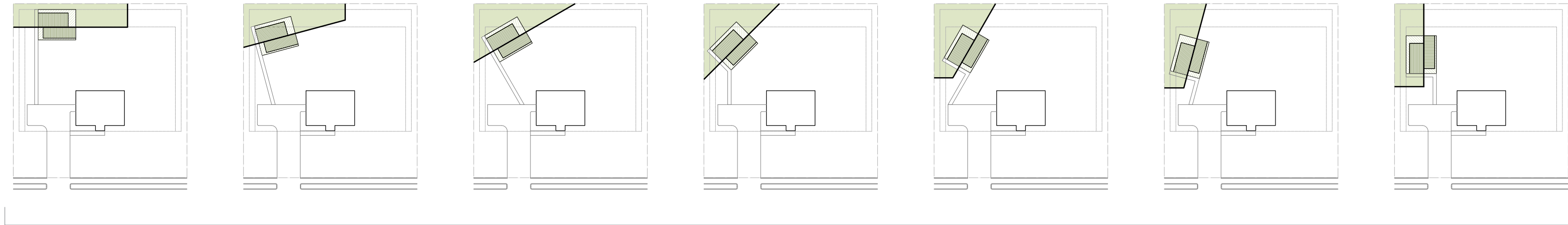
ACCESS

## SITE SYSTEM DIAGRAM



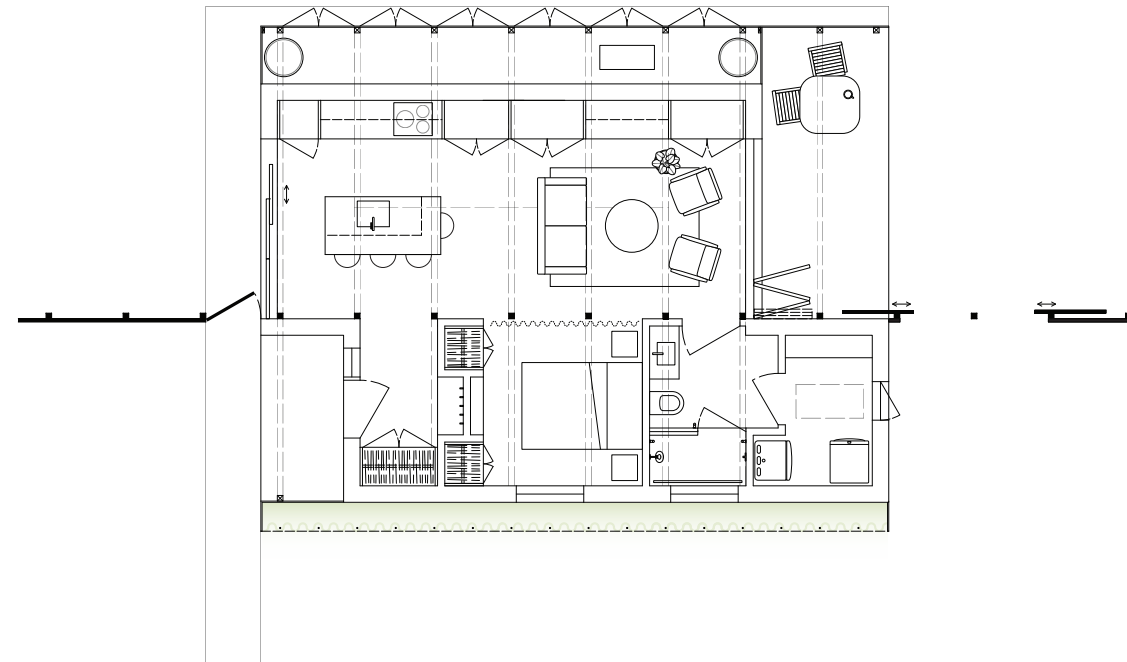
SMALL LOTS

MEDIUM LOTS

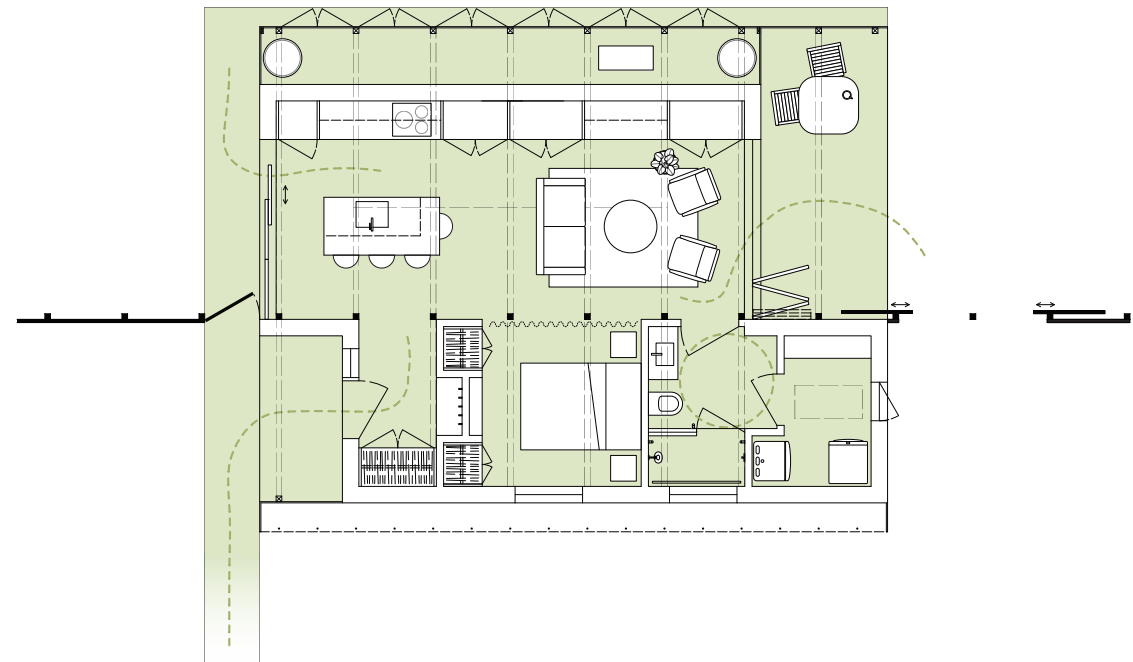


LARGE LOTS

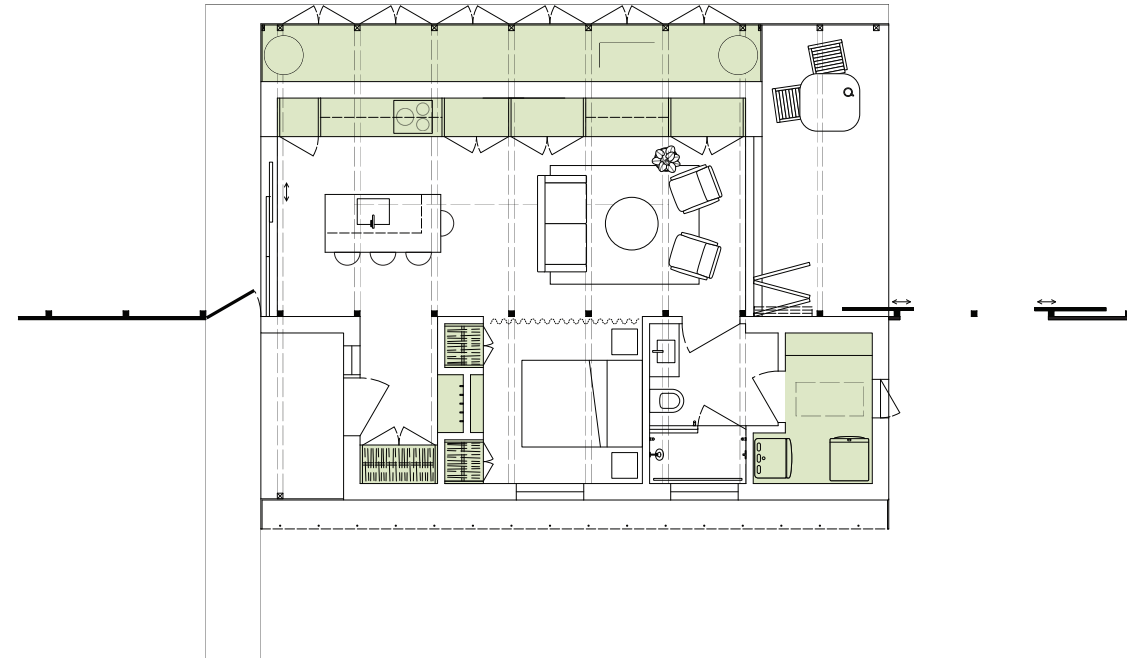
SITE APPLICATION DIAGRAM



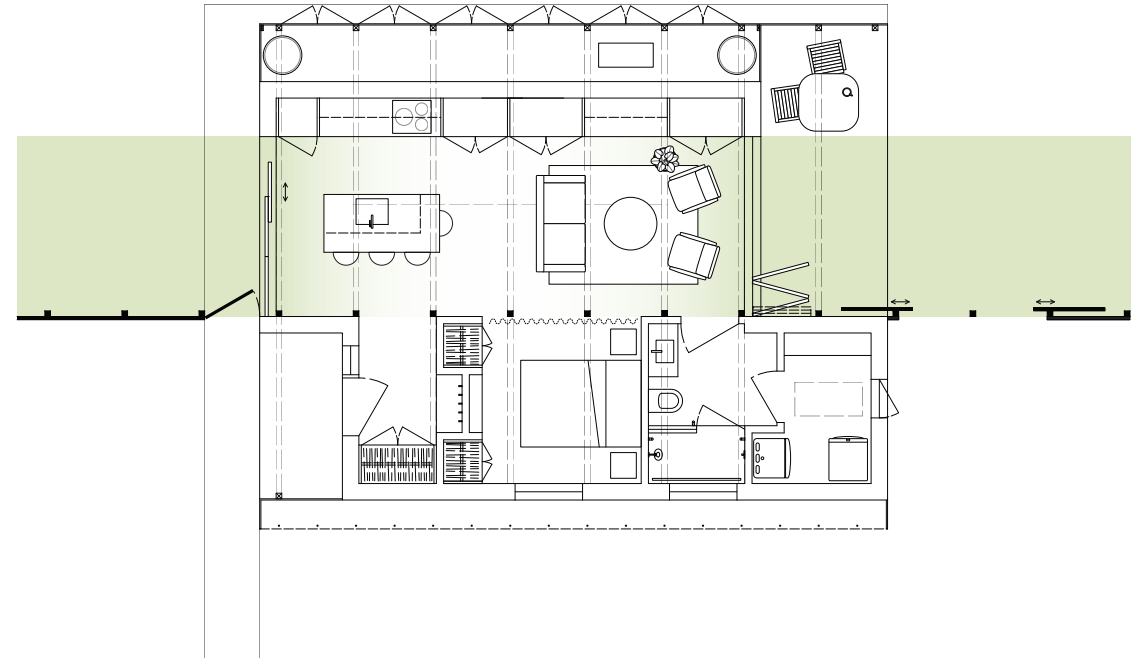
VINE SCREEN



ACCESSIBILITY

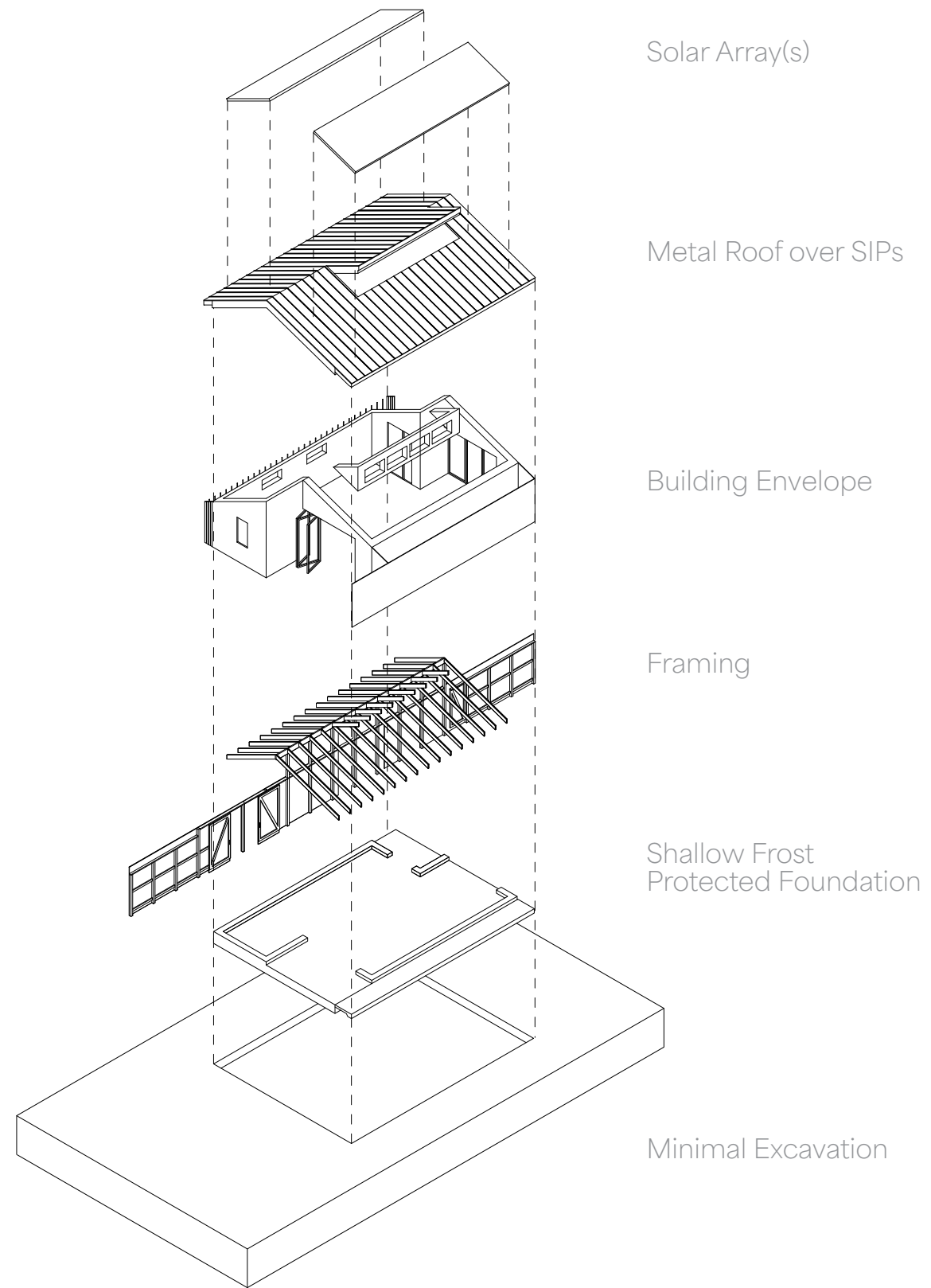


INTEGRATED STORAGE



INDOOR / OUTDOOR CONTINUITY

DESIGN STRATEGIES DIAGRAM



## CONSTRUCTION SYSTEMS DIAGRAM

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