Massachusetts ADU Design Challenge | Project Cover Sheet

1. Design Team

Lead Applicant: J.R. Coffin
Additional Applicants: Chris Brooks, Charles Mesias
Design Firm Name (If Applicable): Studio Den Den
Contact Info: hello@studiodenden.com

2. Design Information

EntryID (randomly assigned by HLC for tracking purposes): 3518
Design Name: The 20-Foot House
ADU Gross Floor Area (square footage): 495
Unit Layout: One-Bedroom
ADU Height (feet): 20
Window/Wall Ratio: 13.6%
Foundation Type: Concrete Frost Wall

3. Project Narrative

The 20-Foot House is a 495-square-foot, one-bedroom ADU designed to make housing possible in more Massachusetts backyards. Capped under 20 feet in height, it expands feasibility across municipalities with stricter zoning while preserving neighborhood scale. The compact 22' x 24' footprint supports advanced framing and adaptable siting. A carefully proportioned 6'-11" loft provides flexible storage or guest space without increasing regulated habitable area, maximizing utility within the Compact ADU category. The layout includes zero-step entry, accessible circulation, and adaptable openings that respond to each family's needs. Built around IRC prescriptive framing, a standard slab-on-grade foundation, and manufacturer-engineered trusses, the design streamlines the construction and permitting process while maintaining compliance with 780 CMR. Compact, durable, and repeatable, it is a small home designed to quietly support life’s transitions — again and agai

THE 20 FOOT HOUSE

A small home designed for a big housing challenge.

PROJECT NARRATIVE

The 20-Foot House is a 495-square-foot, one-bedroom ADU designed to make housing possible in more Massachusetts backyards. Capped under 20 feet in height, it expands feasibility across municipalities with stricter zoning while preserving neighborhood scale. The compact 24' x 22' footprint supports advanced framing and adaptable siting. A carefully proportioned 6'-11" loft provides flexible storage or guest space without increasing regulated habitable area, maximizing utility within the Compact ADU category. The layout includes zero-step entry, accessible circulation, and adaptable openings that respond to changing family needs. Built around IRC prescriptive framing, a standard slab-on-grade foundation, and manufacturer-engineered trusses, it streamlines the permitting process for homeowners while maintaining compliance with 780 CMR
.

Compact, durable, and repeatable, it is a small home designed to quietly support life’s transitions — again and again.

THE 20 FOOT HOUSE

Comfort and Light Within 20 feet

Harnessing Light and Air for Well-being

MULTIFUNCTIONAL SPACE

ENHANCED DAYLIGHTING

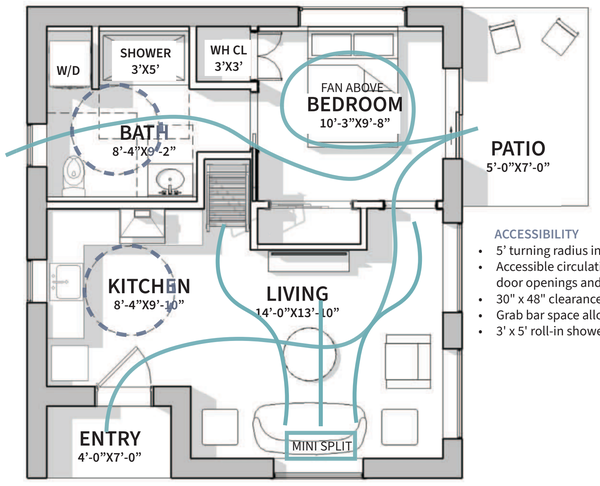
OPTIMIZED VENTILATION

FULLY ACCESSIBLE BATHROOM

ADAPTABLE STORAGE LOFT

Comfort in Every Detail

GROUND LEVEL | ¼"=1'



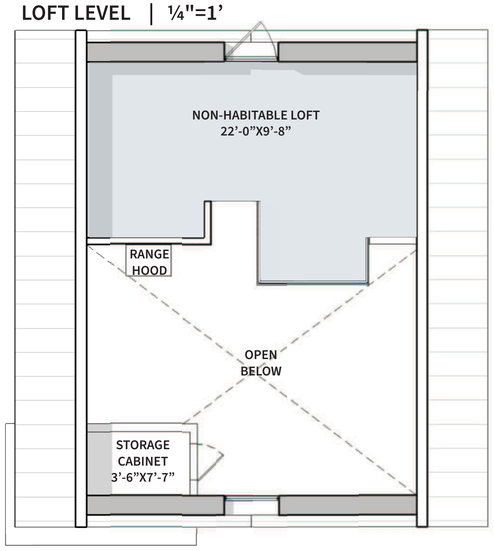
ACCESSIBILITY

- 5' turning radius in kitchen and bathroom.
- Accessible circulation throughout with 32" clear door openings and compliant push/pull clearances.
- 30" x 48" clearance in front of bath sink.
- Grab bar space allocated at the toilet.
- 3' x 5' roll-in shower with transfer area

AIRFLOW

Open living spaces and framed door opentings allow a single mini-split to condition the home efficiently, supported by a bedroom ceiling fan and operable doors at both ends for natural cross-ventilation.

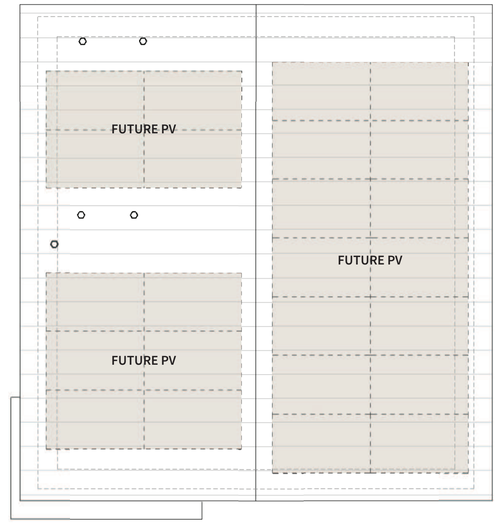
LOFT LEVEL | ¼"=1'



FLEX SPACE

A non-habitable loft, excluded from the 495 SF accessible floor area, provides flexible storage without increasing building size. All primary living functions remain fully accessible at grade.

ROOF | ¼"=1'



PV READY

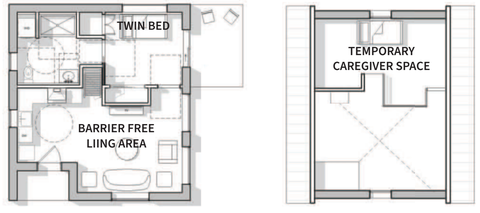
An 8:12 vented roo t 1 over ang supports long-term durability. Corrugated metal cladding is detailed for future photovoltaic installation without compromising the air or water barrier. The roof is sized to accommodate a minimum 5 kW array—sufficient to offset projected annual energy use and support net-zero readiness.

ZERO STEP ENTRY BARRIER FREE KITCHEN FLEXIBLE LIVING AREA FULLY ACCESSIBLE BATHROOM

Evolving Spaces for Everyday Life

YOUNG COUPLE

FAMILY VISITING



AGINING IN PLACE

WORK FROM HOME

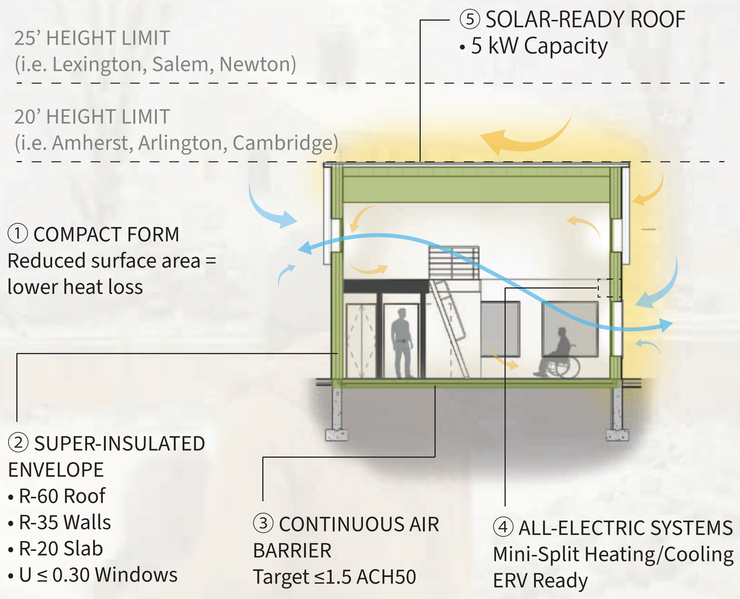
THE 20 FOOT HOUSE

Nor’easter Proof. Neighborhood Ready.

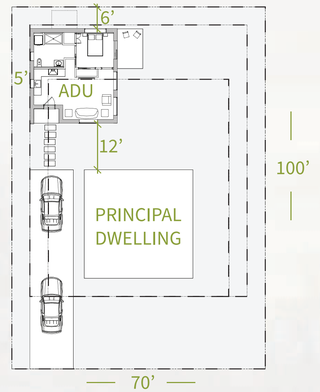
Passive-First Performance, Simplified for Code Clarity

The 20-Foot House combines passive-first building science with straightforward construction logic to create a high-performance ADU that is easy to permit and build across Massachusetts. The compact 20-foot form allows the design to be widely applied in local neighborhoods while remaining within common IRC prescriptive framing limits.

This simple geometry supports a super-insulated, airtight envelope that significantly reduces energy demand. By relying on familiar construction methods and readily available materials rather than specialized systems, the design demonstrates how climate-ready housing can be both highly efficient and easily replicable.



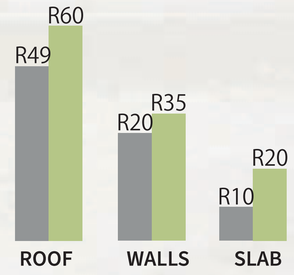
ADAPTABLE FOR COMPACT SITES



HIGH PERFORMANCE

- LOW ENERGY DEMAND
- LOW OPERATING COST
- NET ZERO READY
- LOW EMBODIED CARBON

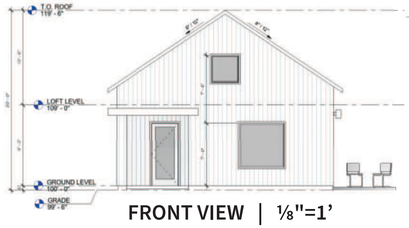
EXCEEDS MA STRETCH CODE



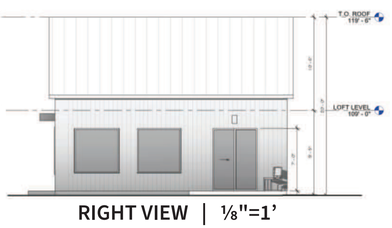
IRC PERSCRIPTIVE | **STRETCH CODE** | **FEWER SPECIALIZED TRADES** | **LOCAL MATERIALS**

A compact home Massachusetts can build again and again.

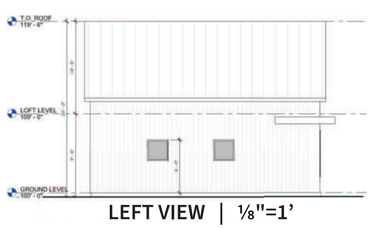
The design uses pre-engineered headers and consistent window and door sizes, allowing doors and windows to be swapped without re-engineering. This built-in flexibility makes the ADU easy to adapt to different sites and homeowner needs.



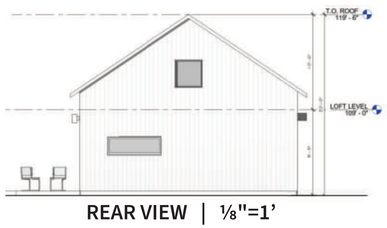
FRONT VIEW | ⅛"=1’



RIGHT VIEW | ⅛"=1’



LEFT VIEW | ⅛"=1’

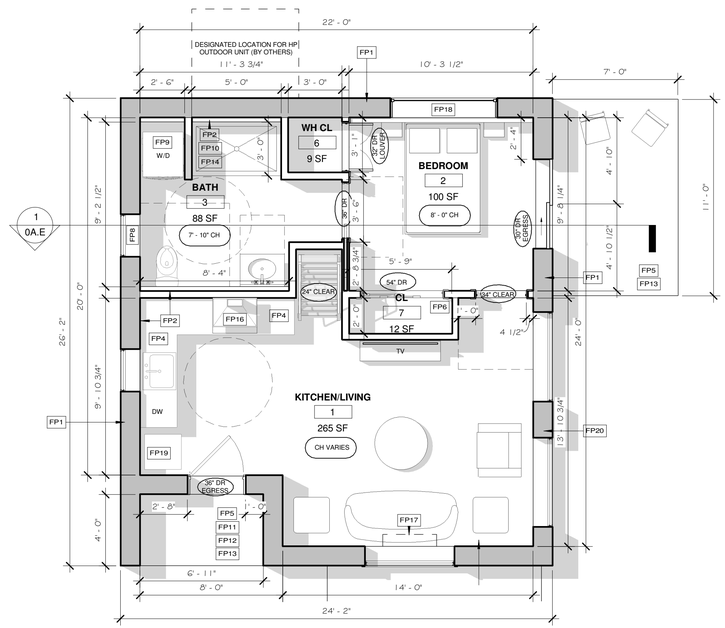


REAR VIEW | ⅛"=1’

DESCRIPTION: The ground level of the 20-Foot House organizes all primary living functions within a compact, accessible layout. Entry occurs through a covered porch that transitions directly into an open living area. The living room connects seamlessly to the kitchen and dining space, creating a flexible central area that supports everyday living while allowing a single mini-split system to efficiently condition the home. Large windows provide natural daylight and views to the surrounding landscape, while operable openings at opposite sides of the house enable cross-ventilation.

The kitchen is arranged along the interior wall to maintain clear circulation and accommodate accessible clearances, including a five-foot turning radius. Adjacent to the kitchen, the bathroom includes a curbless shower, stacked washer-dryer, and space for future grab bars. The bedroom is located toward the rear of the plan to provide privacy and includes direct access to daylight and ventilation.

All primary living spaces—including the kitchen, bathroom, bedroom, and living area—are located on the ground level to support barrier-free access and aging in place. Circulation paths maintain clear widths for mobility, while storage and mechanical components are efficiently integrated to preserve usable space. Above the entry and kitchen zone, a non-habitable loft provides additional flexible storage without increasing the regulated habitable floor area.



1 / 0A.C0 GROUND LEVEL FLOOR PLAN

1/4" = 1'-0"

FLOOR PLAN KEYNOTES

- FP1 DOUBLE STUD WALL, FRAMED PER STRUCTURAL DESIGN
- FP2 2X6 STUD WALL OR FURRING AS NEEDED FOR MECHANICAL / PLUMBING / VENTING. INSIDE CONDITIONED SPACE AND OUTSIDE OF THE AIR/VAPOR BARRIER.
- FP3 LINE OF OVERHANG ABOVE
- FP4 36" HIGH COUNTER
- FP5 SLOPE SURFACE AWAY FROM BUILDING
- FP6 CLOSET SHELF AND POLE
- FP7 EMERGENCY EGRESS WINDOW
- FP8 WINDOW MUST HAVE A FRAME AND SASH COMPRISED OF WELDED CORNERS, METAL REINFORCEMENT IN THE INTERLOCK AREA, AND CONSTRUCTED OF MULTIPANE TEMPERED GLAZING WHERE INDICATED TYPICAL ALL WINDOWS
- FP9 VENT DRYER THROUGH WALL. SEE MECHANICAL / PLUMBING PLANS FOR FURTHER INFORMATION
- FP10 WALL COVERING SHALL BE TILE OR APPROVED EQUAL TO 72" ABOVE DRAIN AT SHOWERS OR TUB WITH SHOWERS. MATERIALS OTHER THAN STRUCTURAL ELEMENTS ARE TO BE MOISTURE RESISTANT.
- FP11 DOOR BELL BUTTON TO BE NO MORE THEN 48" ABOVE EXTERIOR FLOOR OR LANDING
- FP12 MIN. 1 HINGED ENTRY DOOR FOR EGRESS COMPLIANCE REQUIRED - THE EGRESS DOOR SHALL BE SIDE-HINGED AND SHALL PROVIDE A CLEAR WIDTH OF NOT LESS THAN 32 INCHES WHERE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP, WITH THE DOOR OPEN 90°. THE CLEAR HEIGHT OF THE DOOR OPENING SHALL BE NOT LESS THAN 78 INCHES IN HEIGHT MEASURED FROM THE TOP OF THE THRESHOLD TO THE BOTTOM OF THE STOP
- FP13 LANDING OR FLOOR REQUIRED AT EACH SIDE OF EXTERIOR DOOR. WIDTH TO BE NOT LESS THAN THE DOOR SERVED AND HAVE A MIN 36 INCH DEPTH MEASURED IN THE DIRECTION OF TRAVEL. EXTERIOR LANDINGS SHALL BE PERMITTED TO HAVE A SLOPE NOT TO EXCEED 2%. LANDINGS OR FINISHED FLOORS AT EGRESS DOOR SHALL NOT BE MORE THAN 1.5" LOWER THAN THE TOP OF THE THRESHOLD FOR OUTWARD SWINGING DOORS OR 7.75" FOR DOORS THAT DO NOT SWING OUTWARD.
- FP14 WATER CLOSET AND SHOWER TO HAVE REINFORCEMENT IN WALLS 2X8 NOMINAL AT 32" TO 39.5" ABOVE FINISH FLOOR. SEE FLOOR PLAN GENERAL NOTE #31 ON SHEET G0.2 FOR FURTHER INFORMATION
- FP15 DOOR TO HAVE A NET CLEAR OPENING OF 32"
- FP16 FURRING AS NEEDED FOR STANDARD TUB AND SHOWER LENGTH
- FP17 RANGE HOOD EXHAUST VENTED VERTICALLY THROUGH ROOF
- FP18 SUGGESTED HEAT PUMP LOCATION (BASIS OF DESIGN: MITSUBISHI HEAT PUMP 18000).
- FP19 OPTIONAL ADDITIONAL HEAT PUMP LOCATION (BASIS OF DESIGN: MITSUBISHI HEAT PUMP 18000). ADU IS DESIGNED TO BE CONDITIONED BY A SINGLE MINI-SPLIT HEAT PUMP SYSTEM. BEDROOM IS OPEN TO MAIN LIVING SPACE (NO DOOR), ALLOWING ADEQUATE AIR MIXING FOR HEATING AND COOLING. SYSTEM SIZING BASED ON WHOLE-UNIT LOAD CALCULATIONS.
- FP20 SUGGESTED LOCATION IN SOFFIT FOR CONTINUOUSLY OPERATED EXHAUST FAN WITH AIR RETURN. PROVIDE MIN. 3'-0" CLEAR SEPARATION FROM KITCHEN RANGE HOOD TO AVOID AIRFLOW SHORT-CIRCUITING. DESIGN INTENT BASED ON ASHRAE 62.2 CONTINUOUS VENTILATION GUIDELINES. (BASIS OF DESIGN: PANASONIC WHISPERGREEN® EXHAUST FAN)

ROOF KEYNOTES

- RP1 LINE OF ROOF OVERHANG
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- RP3 SUPPORT POST BELOW
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- RP6 DESIGNATED SOLAR PANEL AREA. PLEASE SEE SOLAR READY NOTES ON THIS SHEET
- RP7 CORRUGATED METAL ROOFING FASTENED AT HIGH RIBS WITH STAINLESS OR LONG-LIFE COATED STRUCTURAL SCREWS WITH FACTORY-BONDED EPDM WASHERS. ROOF FRAMING DESIGNED TO ACCOMMODATE FUTURE PHOTOVOLTAIC SYSTEM LOAD (MIN. 5 PSF ADDITIONAL DEAD LOAD). PROVIDE CLEAR SOUTH-FACING ROOF PLANE AND CONDUIT PATH FOR FUTURE PV INSTALLATION
- RP8 PROVIDE VENTED ROOF ASSEMBLY WITH CONTINUOUS SOFFIT-TO-RIDGE VENTILATION. INSTALL VENTILATION BAFFLES TO MAINTAIN MINIMUM 1" AIR SPACE ABOVE INSULATION. INSULATE CEILING PLANE WITH DENSE-PACK CELLULOSE TO MEET OR EXCEED R-60. INSTALL INTERIOR SMART VAPOR RETARDER, FULLY TAPED AND SEALED AS INTERIOR AIR CONTROL LAYER.

SOLAR READY NOTES

SOLAR READY ROOF AREA:
MIN DIMENSION > 5FT. MIN. SF. > 80SF.

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PROVIDE L-FOOT PV ATTACHMENT BRACKETS AT HIGH RIBS OF CORRUGATED METAL ROOFING. FASTEN THROUGH PANEL INTO STRUCTURAL FRAMING BELOW. SEAL ALL PENETRATIONS WITH EPDM-GASKETED FASTENERS. PV RAILS TO ATTACH TO BRACKETS PER MANUFACTURER'S INSTALLATION REQUIREMENTS.

LEGEND

- SECTION CUT
- ELEVATION CALLOUT
- DETAIL DRAWING REF.
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- ROOFING
- X — KEYNOTE
- X — DOOR SYMBOL
- X — WINDOW SYMBOL
- X' - X" — CEILING HEIGHTS
- VARIES — VAULTED CEILING
- ROOF SLOPE

Scaled Floor Plan

0A.C0

Scale 1/4" = 1'-0"

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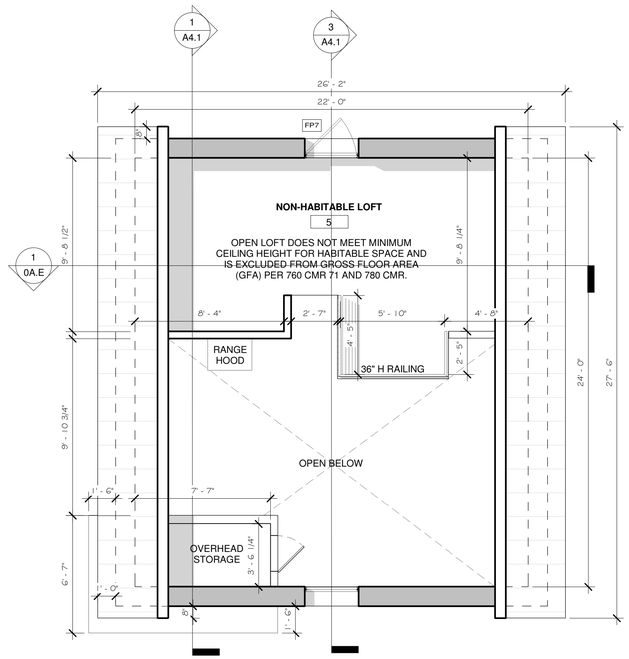
DESCRIPTION: The loft level provides flexible supplemental space without increasing the regulated habitable floor area. Positioned above the kitchen and entry zone, the loft takes advantage of the simple gable roof to create usable storage and occasional sleeping space while maintaining the compact footprint of the home. Because the loft is classified as non-habitable, all primary living functions remain fully accessible on the ground floor. This strategy preserves barrier-free living while still offering additional space for storage, guests, or temporary caregiver use. The loft overlooks the living area below, allowing daylight from the main windows to reach the upper level and reinforcing the spatial openness of the compact interior.



1 / 0A.C1 LOFT LEVEL FLOOR PLAN

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Scaled Floor Plan

0A.C1

Scale 1/4" = 1'-0"

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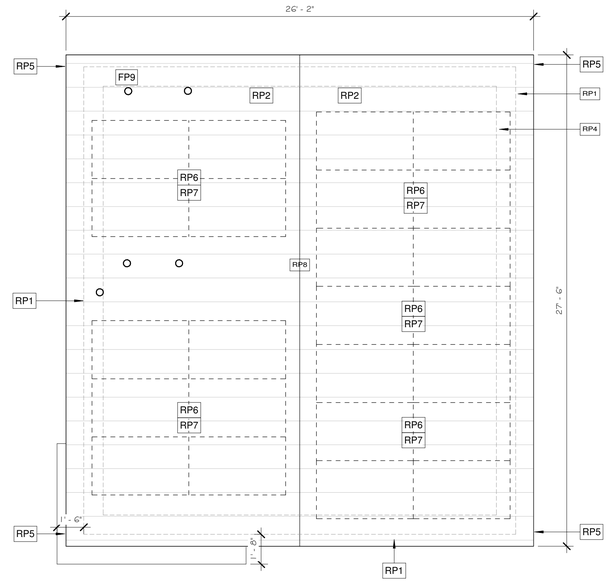
DESCRIPTION: The roof plan uses a simple gabled form designed for durability, energy performance, and ease of construction. The 8:12 roof slope supports efficient snow shedding in New England climates while allowing ample space for insulation to achieve high thermal performance. The roof structure uses manufacturer-engineered trusses that can be sourced locally and installed without complex framing. The south-facing roof surface is sized to accommodate a 5 kW photovoltaic array, supporting net-zero readiness without altering the building's geometry. Corrugated metal roofing is detailed to maintain the integrity of the air and water barrier while allowing future solar installation.



2 0A.C2 ROOF PLAN

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- FP9 VENT DRYER THROUGH WALL. SEE MECHANICAL / PLUMBING PLANS FOR FURTHER INFORMATION
- FP10 WALL COVERING SHALL BE TILE OR APPROVED EQUAL TO 72" ABOVE DRAIN AT SHOWERS OR TUB WITH SHOWERS. MATERIALS OTHER THAN STRUCTURAL ELEMENTS ARE TO BE MOISTURE RESISTANT.
- FP11 DOOR BELL BUTTON TO BE NO MORE THEN 48" ABOVE EXTERIOR FLOOR OR LANDING
- FP12 MIN. 1 HINGED ENTRY DOOR FOR EGRESS COMPLIANCE REQUIRED - THE EGRESS DOOR SHALL BE SIDE-HINGED AND SHALL PROVIDE A CLEAR WIDTH OF NOT LESS THAN 32 INCHES WHERE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP, WITH THE DOOR OPEN 90°. THE CLEAR HEIGHT OF THE DOOR OPENING SHALL BE NOT LESS THAN 78 INCHES IN HEIGHT MEASURED FROM THE TOP OF THE THRESHOLD TO THE BOTTOM OF THE STOP
- FP13 LANDING OR FLOOR REQUIRED AT EACH SIDE OF EXTERIOR DOOR. WIDTH TO BE NOT LESS THAN THE DOOR SERVED AND HAVE A MIN 36 INCH DEPTH MEASURED IN THE DIRECTION OF TRAVEL. EXTERIOR LANDINGS SHALL BE PERMITTED TO HAVE A SLOPE NOT TO EXCEED 2%. LANDINGS OR FINISHED FLOORS AT EGRESS DOOR SHALL NOT BE MORE THAN 1.5" LOWER THAN THE TOP OF THE THRESHOLD FOR OUTWARD SWINGING DOORS OR 7.75" FOR DOORS THAT DO NOT SWING OUTWARD.
- FP14 WATER CLOSET AND SHOWER TO HAVE REINFORCEMENT IN WALLS 2X8 NOMINAL AT 32" TO 35.5" ABOVE FINISH FLOOR. SEE FLOOR PLAN GENERAL NOTE #31 ON SHEET G0.2 FOR FURTHER INFORMATION
- FP15 DOOR TO HAVE A NET CLEAR OPENING OF 32"
- FP16 FURRING AS NEEDED FOR STANDARD TUB AND SHOWER LENGTH
- FP17 RANGE HOOD EXHAUST VENTED VERTICALLY THROUGH ROOF
- FP18 SUGGESTED HEAT PUMP LOCATION (BASIS OF DESIGN: MITSUBISHI HEAT PUMP 18000). ADU IS DESIGNED TO BE CONDITIONED BY A SINGLE MINI-SPLIT HEAT PUMP SYSTEM. BEDROOM IS OPEN TO MAIN LIVING SPACE (NO DOOR), ALLOWING ADEQUATE AIR MIXING FOR HEATING AND COOLING. SYSTEM SIZING BASED ON WHOLE-UNIT LOAD CALCULATIONS.
- FP19 OPTIONAL ADDITIONAL HEAT PUMP LOCATION (BASIS OF DESIGN: MITSUBISHI HEAT PUMP 18000). ADU IS DESIGNED TO BE CONDITIONED BY A SINGLE MINI-SPLIT HEAT PUMP SYSTEM. BEDROOM IS OPEN TO MAIN LIVING SPACE (NO DOOR), ALLOWING ADEQUATE AIR MIXING FOR HEATING AND COOLING. SYSTEM SIZING BASED ON WHOLE-UNIT LOAD CALCULATIONS.
- FP20 SUGGESTED DECENTRALIZED THROUGH-WALL HRV/ERV UNIT LOCATION (BASIS OF DESIGN: LUNOS ECO2 HRV)

ROOF KEYNOTES

- RP1 LINE OF ROOF OVERHANG
- RP2 CLASS A ROOFING MATERIAL INSTALLED PER IRC R902. SEE GENERAL ROOF NOTE 13 ON SHEET G0.2
- RP3 SUPPORT POST BELOW
- RP4 LINE OF WALLS BELOW
- RP5 ROOF DOWNSPOUT LOCATION TO BE DETERMINED BY SITE SPECIFIC CONDITIONS
- RP6 DESIGNATED SOLAR PANEL AREA. PLEASE SEE SOLAR READY NOTES ON THIS SHEET
- RP7 CORRUGATED METAL ROOFING FASTENED AT HIGH RIBS WITH STAINLESS OR LONG-LIFE COATED STRUCTURAL SCREWS WITH FACTORY-BONDED EPDM WASHERS. ROOF FRAMING DESIGNED TO ACCOMMODATE FUTURE PHOTOVOLTAIC SYSTEM LOAD (MIN. 5 PSF ADDITIONAL DEAD LOAD). PROVIDE CLEAR SOUTH-FACING ROOF PLANE AND CONDUIT PATH FOR FUTURE PV INSTALLATION
- RP8 PROVIDE VENTED ROOF ASSEMBLY WITH CONTINUOUS SOFFIT-TO-RIDGE VENTILATION. INSTALL VENTILATION BAFFLES TO MAINTAIN MINIMUM 1" AIR SPACE ABOVE INSULATION. INSULATE CEILING PLANE WITH DENSE-PACK CELLULOSE TO MEET OR EXCEED R-60. INSTALL INTERIOR SMART VAPOR RETARDER, FULLY TAPED AND SEALED AS INTERIOR AIR CONTROL LAYER.

SOLAR READY NOTES

SOLAR READY ROOF AREA:
MIN DIMENSION > 5FT. MIN. SF. > 80SF.

THE SOLAR ZONE SHALL COMPLY WITH ACCESS, PATHWAY, SMOKE VENTILATION, AND SPACING REQUIREMENTS AS SPECIFIED OR AS REQUIRED BY LOCAL JURISDICTION

SINGLE FAMILY RESIDENCE. THE SOLAR ZONE SHALL BE LOCATED ON THE ROOF OR OVERHANG OF THE BUILDING AND HAVE A TOTAL AREA OF NO LESS THAN 250SQFT.

FOR PHOTOVOLTAIC ARRAYS OCCUPYING NOT MORE THAN 33 PERCENT OF THE PLAN VIEW TOTAL ROOF AREA, NOT LESS THAN AN 18-INCH (457 MM) CLEAR SETBACK IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE. FOR PHOTOVOLTAIC ARRAYS OCCUPYING MORE THAN 33 PERCENT OF THE PLAN VIEW TOTAL ROOF AREA, NOT LESS THAN A 36-INCH (914 MM) CLEAR SETBACK IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE.

PROVIDE L-FOOT PV ATTACHMENT BRACKETS AT HIGH RIBS OF CORRUGATED METAL ROOFING. FASTEN THROUGH PANEL INTO STRUCTURAL FRAMING BELOW. SEAL ALL PENETRATIONS WITH EPDM-GASKETED FASTENERS. PV RAILS TO ATTACH TO BRACKETS PER MANUFACTURER'S INSTALLATION REQUIREMENTS.

LEGEND

- SECTION CUT
- ELEVATION CALLOUT
- DETAIL DRAWING REF.
- WALL BELOW OR ROOF ABOVE
- SOLAR ZONE. REFER TO SOLAR NOTES ON SHEET G0.2
- ROOFING
- X — KEYNOTE
- X — DOOR SYMBOL
- X — WINDOW SYMBOL
- X' - X" — CEILING HEIGHTS
- VARIES — VAULTED CEILING
- ROOF SLOPE

Scaled Floor Plan

0A.C2

Scale 1/4" = 1'-0"

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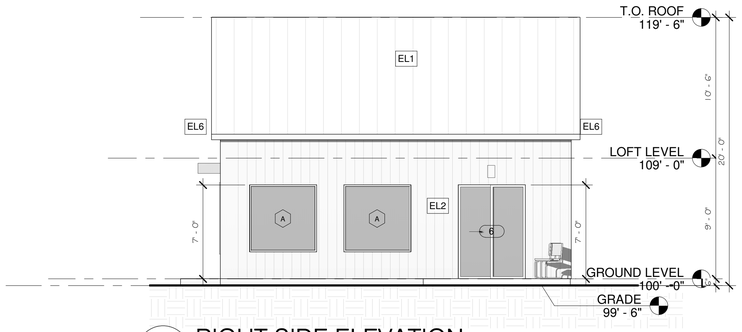
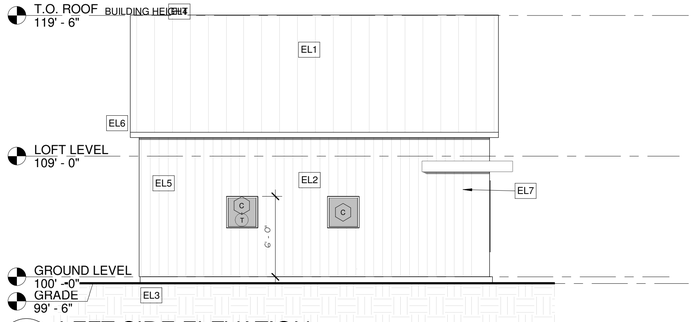
DESCRIPTION: The exterior elevations express the compact form and straightforward construction logic of the 20-Foot House. The simple gabled volume keeps the building height below the 20-foot zoning threshold, expanding feasibility across many Massachusetts municipalities while preserving neighborhood scale. Window placements are carefully proportioned to provide daylight, views, and cross-ventilation while maintaining a modest window-to-wall ratio that supports the high-performance envelope. Vertical wood siding reinforces the building's New England character while providing durable, easily sourced cladding that can be installed using standard construction practices. The elevations demonstrate how a compact form and restrained material palette can create a small home that feels both contemporary and familiar within residential neighborhoods.

1 0A.D FRONT ELEVATION
3/16" = 1'-0"



2 0A.D RIGHT SIDE ELEVATION
3/16" = 1'-0"



4 0A.D LEFT SIDE ELEVATION
3/16" = 1'-0"

3 0A.D REAR ELEVATION
3/16" = 1'-0"

ELEVATION KEYNOTES

- EL1 MINIMUM CLASS A ROOF ASSEMBLY - SEE MANUFACTURER SPECIFICATIONS
- EL2 CLADDING - SEE EXTERIOR MATERIALS NOTE
- EL3 FOUNDATION FINISH - SEE EXTERIOR MATERIALS NOTE
- EL4 HEIGHT IS MEASURED AT THE BUILDING LINE, FROM THE LOWER OF EXISTING AND PROPOSED GRADES IF LOT EXCEEDS 10% (EXCLUSIVE OF RR ZONE), THEN THE ADDITIONAL HEIGHT LIMITATION NEEDS TO BE SHOWN
- EL5 DRYER VENT TERMINATION (MINIMUM OF 3 FT FROM ANY OPENING)
- EL6 DOWNSPOUTS SHALL BE 3" ROUND METAL WITH ANGLED OFFSET ELBOWS AS NEEDED, SECURED WITH STRAPS SPACED EVERY 5'-6" VERTICALLY, AND MAY TERMINATE AT A SPLASH BLOCK, DRAIN TILE, OR RAINWATER HARVESTING BARREL; GUTTERS TO BE 6" HALF-ROUND ALUMINUM (PRIMED & PAINTED OR MILL FINISH) WITH FASCIA-MOUNTED METAL BRACKETS AT 32" O.C. AND DRIP EDGE FLASHING DIRECTED INTO GUTTER.

ELEVATION GENERAL NOTES

1. ALL DIMENSIONS ARE TO FACE OF FINISH, UNLESS OTHERWISE NOTED (U.N.O.).
2. ALL DOORS SHALL BE LOCATED 3 1/2" FROM THE NEAREST INTERSECTING WALL AT THE HINGED SIDE, U.N.O.
3. WRITTEN DIMENSIONS SHALL GOVERN OVER SCALED MEASUREMENTS. SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS ON SITE PRIOR TO CONSTRUCTION AND IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
4. REFER TO FLOOR PLANS, FRAMING PLANS, SECTIONS, AND DETAILS FOR ADDITIONAL INFORMATION AND DIMENSIONS.
5. SEE DOOR AND WINDOW SCHEDULES FOR TYPES, HEIGHTS, AND HEAD ALIGNMENTS.
6. FRAMING ELEVATIONS, INCLUDING FLOOR PLATES AND FLOOR LEVELS, ARE MEASURED FROM BUILDING FINISH FLOOR, U.N.O.
7. SEE ROOF PLAN FOR APPROXIMATE DOWNSPOUT LOCATIONS, U.N.O. COORDINATE WITH GUTTER LAYOUT AND DETAIL SHEETS.
8. CONTRACTOR SHALL VERIFY EXTERIOR COLOR SCHEME AND MATERIAL FINISHES WITH OWNER PRIOR TO INSTALLATION.
9. EXISTING AND FINISH GRADE LINES SHALL BE CLEARLY SHOWN ON ALL ELEVATIONS.
10. MAXIMUM BUILDING HEIGHT SHALL BE MEASURED FROM THE LOWER OF THE EXISTING OR FINISH GRADE ADJACENT TO THE STRUCTURE, AS DEFINED BY STATE BUILDING CODE AND LOCAL ZONING BYLAWS.
11. INDICATE THE HEIGHT LIMITATION LINE ON ALL ELEVATIONS.
13. IF THE NATURAL SLOPE OF THE LOT EXCEEDS TEN PERCENT (10%), THE HEIGHT LIMITATION SHALL BE ADJUSTED IN ACCORDANCE WITH LOCAL ZONING PROVISIONS GOVERNING MEASUREMENT ON SLOPED LOTS. PROVIDE SLOPE CALCULATIONS AND REFERENCE GRADE POINTS ON SITE PLAN AND ELEVATIONS.
14. VERIFY FINISH FLOOR ELEVATIONS AND TOP OF FOUNDATION ELEVATIONS WITH CIVIL OR SURVEY DRAWINGS PRIOR TO FRAMING.
15. PROVIDE CONTINUOUS WEATHER-RESISTIVE BARRIER AND FLASHING AT ALL PENETRATIONS, OPENINGS, AND MATERIAL TRANSITIONS PER MANUFACTURER REQUIREMENTS.
16. PROVIDE METAL DRIP EDGE AT ALL ROOF EAVES AND GABLES.
17. WINDOW AND DOOR HEADS TO ALIGN UNLESS OTHERWISE NOTED.
18. PROVIDE BACKER ROD AND SEALANT AT CONTROL JOINTS, DISSIMILAR MATERIAL TRANSITIONS, AND PENETRATIONS.
19. EXTERIOR LIGHT FIXTURES SHALL BE DARK-SKY COMPLIANT AND RATED FOR DAMP OR WET LOCATIONS AS APPLICABLE.
20. ALL EXTERIOR WALL ASSEMBLIES SHALL INCLUDE A CONTINUOUS AIR BARRIER AND INSULATION PER ENERGY CODE REQUIREMENTS.
21. COORDINATE ALL MECHANICAL, ELECTRICAL, AND PLUMBING PENETRATIONS THROUGH WALLS AND ROOF WITH ARCHITECTURAL DRAWINGS.
22. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM FOUNDATION WALLS AFTER FINAL GRADING.
23. FIELD VERIFY ALL MOUNTING HEIGHTS FOR FIXTURES, METER BOXES, AND EXTERIOR EQUIPMENT PRIOR TO INSTALLATION.

EXTERIOR FINISH NOTES

EXTERIOR CARPENTRY

1. WOOD FOR EXTERIOR USE SHALL HAVE A MOISTURE CONTENT BETWEEN 9 TO 15 PERCENT, WHEN DELIVERED TO THE PROJECT.
2. REFER TO OWNER'S STAIN/PAINT SCHEDULE

ROOFING, FLASHING & GUTTERS

1. ROOFING SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. STORM NAILING AT FOUR COURSES CLOSET TO RIDGE. DOUBLE LAYER STARTER COURSE.
2. FLASHING SHALL BE 8" PREFORMED DRIP EDGES AT ROOFS. PREFORMED DRIP EDGES AT WINDOW AND DOOR CASING HEADS, SIZED TO FIT.
3. SUBMIT ANY RIDGE & SHED VENTS FOR APPROVAL.
4. ROOFING FELT: 15# ASPHALT IMPREGNATED.
5. ICE & WATER SHIELD: 72" WIDE CONTINUOUS AT ROOF EDGES & 36" VALLEYS & WALLS. PROVIDE FULL ICE & WATER SHIELD LAYER AT ROOFS WITH 4:12 SLOPE OR LESS, WHERE ASPHALT ROOFING IS SPECIFIED.
6. GUTTERS: SHALL BE INSTALLED WITH ALL ACCESSORIES AND IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. SUBMIT STANDARD COLOR CHART TO ARCHITECT FOR APPROVAL.
7. DOWNSPOUTS: ROUND ALUMINUM WITH ALL ACCESSORIES AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. SUBMIT STANDARD COLOR CHART TO ARCHITECT FOR APPROVAL. VERIFY LOCATIONS & CONNECT TO UNDERGROUND DRAIN SYSTEM.
8. MEMBRANE "RUBBER" ROOFING AT LOW SLOPE ROOFS SHALL BE 60 MIL EPDM FULLY ADHERED, LAP JOINTS 6".

LEGEND

- SECTION CUT
- ELEVATION CALLOUT
- DETAIL DRAWING REF.
- X' - X" ELEVATION MARKER
- X KEYNOTE
- X DOOR SYMBOL
- X WINDOW SYMBOL
- T TEMPERED GLASS
- GLAZING
- ROOFING
- VERTICAL SIDING

DESIGN INTENT

WE HAVE DESIGNED ON A 24" GRID, PROVIDING THE OPPORTUNITY FOR A LOW-WASTE BUILD IN THE UTILIZATION OF STANDARD BUILDING MATERIALS.

WE SUGGEST 2X6 STUD FRAMING TO COORDINATE WITH WINDOW LOCATIONS. SEE STRUCTURAL SHEETS FOR SPECIFIC STRUCTURAL LOCATION REQUIREMENTS.

SOLAR READY NOTES

SOLAR READY ROOF AREA:
MIN DIMENSION > 5FT. MIN. SF. > 80SF.

THE SOLAR ZONE SHALL COMPLY WITH ACCESS, PATHWAY, SMOKE VENTILATION, AND SPACING REQUIREMENTS AS SPECIFIED OR AS REQUIRED BY LOCAL JURISDICTION

SINGLE FAMILY RESIDENCE. THE SOLAR ZONE SHALL BE LOCATED ON THE ROOF OR OVERHANG OF THE BUILDING AND HAVE A TOTAL AREA OF NO LESS THAN 250SQFT.

FOR PHOTOVOLTAIC ARRAYS OCCUPYING NOT MORE THAN 33 PERCENT OF THE PLAN VIEW TOTAL ROOF AREA, NOT LESS THAN AN 18-INCH (457 MM) CLEAR SETBACK IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE. FOR PHOTOVOLTAIC ARRAYS OCCUPYING MORE THAN 33 PERCENT OF THE PLAN VIEW TOTAL ROOF AREA, NOT LESS THAN A 36-INCH (914 MM) CLEAR SETBACK IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE.

Exterior Elevations

0A.D

Scale As indicated

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THE ROOF ASSEMBLY relies on continuous airtightness, full insulation depth at eaves, and uninterrupted ventilation from soffit to ridge.

Install intelligent vapor control membrane (Basis of Design: Pro Clima Intello or approved equal) continuously on the warm side. Fully tape and seal all seams, terminations, and penetrations. Maintain continuous air barrier alignment between wall and roof assemblies; seal membrane to top plates and framing.

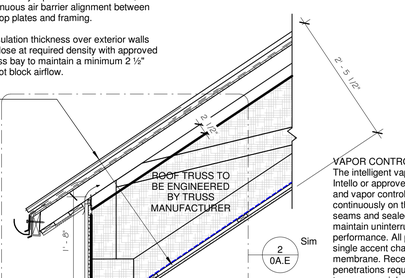
Energy heel scissor trusses shall allow full insulation thickness over exterior walls without compression. Install dense-pack cellulose at required density with approved netting. Provide ventilation baffles at each truss bay to maintain a minimum 2 ½" continuous vent cavity above insulation. Do not block airflow.

R1 ROOF ASSEMBLY

EXTERIOR AIR BARRIER / WRB NOTE:
Provide self-adhered, vapor-permeable membrane (Basis of Design: Henry Blueskin VP100 or approved equal) as primary exterior air barrier and water-resistive barrier.

Install continuously over exterior sheathing in accordance with manufacturer instructions. Fully adhere and roll membrane; shingle-lap to shed water.

Seal all seams, terminations, and penetrations with manufacturer-approved materials. Integrate continuously with window flashings, foundation waterproofing, roof underlayment, and interior air barrier to maintain airtightness.



VAPOR CONTROL NOTE:
The intelligent vapor control membrane (Basis of Design: Pro Clima Intello or approved equal) shall serve as the primary interior air barrier and vapor control layer. The membrane must be installed continuously on the warm side of the insulation, fully taped at all seams and sealed at all perimeters, transitions, and penetrations to maintain uninterrupted airtightness. Airtight installation is critical to performance. All penetrations—including electrical boxes and the single accent chandelier—shall be gasketed and sealed to the membrane. Recessed lighting is not permitted. Any additional ceiling penetrations require a dedicated service cavity below the membrane to preserve air barrier continuity.

LOFT LEVEL
109' - 0"

SINGLE RIM BOARD - REFER TO STRUCTURAL

R26

CEILING
108' - 0 3/4"

R35

W1 WALL ASSEMBLY

THE WALL ASSEMBLY requires a continuous exterior air barrier, dense-pack cellulose insulation installed at full manufacturer-specified density, and a fully vented ¾" rainscreen to promote outward drying of the sheathing.

The interior intelligent vapor control membrane (Basis of Design: Pro Clima Intello or approved equal) shall be installed continuously across the inner stud layer and sealed at all joints, plates, corners, and penetrations to provide interior vapor control and air barrier continuity.

Proper installation and commissioning of the ERV is required to maintain stable interior humidity levels and protect the high-R wall assembly for long-term durability.

PROVIDE 2" OF EPS RIGID INSULATION ON THE INTERIOR FACE OF THE RIM JOIST TO ENSURE CONTINUOUS INSULATION. SEAL ALL EDGES OF THE EPS USING LOW-EXPANSION FOAM OR APPROVED SEALANT TO MAINTAIN THE AIR BARRIER. ENSURE CONTINUITY WITH ADJACENT AIR BARRIER MATERIALS

THE FLOOR ASSEMBLY assembly depends on continuous high-compressive-strength EPS beneath the slab and EPS installed vertically between the stem wall and slab edge to minimize thermal bridging and maintain a continuous insulation layer. All foam board joints must be installed tight, sealed where required, and protected from moisture intrusion, with vapor control layers properly lapped and continuous under the entire slab. Coordination with structural drawings and site conditions is required, and the ERV must be installed and commissioned to control interior humidity, ensuring the insulated slab performs as designed over the long term.

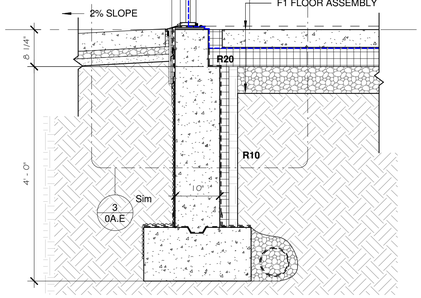
F1 FLOOR ASSEMBLY

2% SLOPE

GROUND LEVEL
100' - 0"

R20

R10



1 / 0A.E — TYPICAL WALL SECTION AT EAVE & ZERO STEP ENTRY THRESHOLD
3/4" = 1'-0"

POSITIVELY SHINGLE LAP ICE AND WATER SHIELD UNDER SYNTHETIC UNDERLAYMENT.

MAINTAIN 2.5" FROM BOTTOM SIDE OF TOP CHORD TO TOP OF INSULATION FOR ADEQUATE VENTILATION AND AIR FLOW.

48" PERIMETER SELF-ADHERED ICE AND WATER SHIELD.

VENTILATION BAFFLES AT TRUSS HEELS (TYP.)

NO METAL FLASHING OR DRIP CAP AT CLADDING VENT OPENING. MAINTAIN FULLY UNOBSTRUCTED TO ALLOW AIRFLOW THROUGH VENT SPACE.

SINGLE PRESTRIP ICE AND WATER SHIELD TO LAP DOWN HALF OF FASCIA BOARD.

PREFINISHED METAL FLASHING C/W 1/2" DRIP EDGE. COLOR TO MATCH SIDING COLOR, MATTE FINISH, TYP.

6" HALF-ROUND ALUMINUM GUTTERS. DOWNSPOUTS TIED TO INFILTRATION SYSTEM. SEE ELEVATIONS FOR DOWNSPOUT LOCATIONS.

PREFINISHED METAL FLASHING C/W 1/2" DRIP EDGE AND CLEAT. COLOR TO MATCH SIDING COLOR, MATTE FINISH, TYP.

1x EXTERIOR GRADE WOOD BLOCKING.

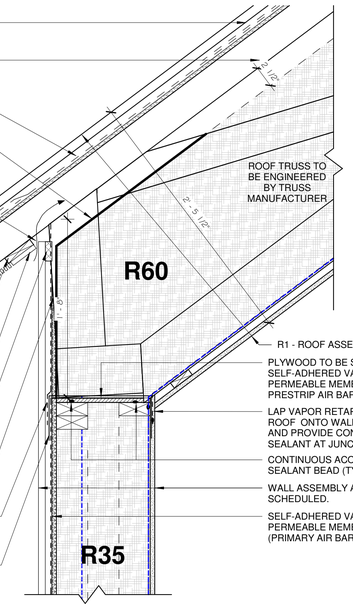
PREFINISHED ALUMINUM SOFFIT (VENTED), COMPLETE W/ J-TRIM AND ACCESSORIES.

CORRUGATED RAINSCREEN STARTER STRIP WITH INTEGRATED INSECT SCREEN (TYP.)

SINGLE SHEET OF SHEATHING TO BE INSTALLED AFTER PRESTRIP SELF-ADHERED VAPOR PERMEABLE MEMBRANE IS INSTALLED.

SELF-ADHERED VAPOR PERMEABLE MEMBRANE TO BE POSITIVELY SHINGLE LAPPED ONTO WALL SHEATHING AND ADJACENT AIR BARRIER TIE-INS BELOW.

PRESTRIP SELF-ADHERED VAPOR PERMEABLE MEMBRANE, POSITIVELY LAPPED DOWN ON FACE OF SHEATHING (PRIMARY AIR BARRIER), AND SEALED TO VAPOR RETARDER ON THE INTERIOR.



R1 - ROOF ASSEMBLY

PLYWOOD TO BE SUPPORT SELF-ADHERED VAPOR PERMEABLE MEMBRANE PRESTRIP AIR BARRIER TIE-IN.

LAP VAPOR RETARDER FROM ROOF ONTO WALL ASSEMBLY AND PROVIDE CONTINUOUS SEALANT AT JUNCTION.

CONTINUOUS ACOUSTIC SEALANT BEAD (TYP.)

WALL ASSEMBLY AS SCHEDULED.

SELF-ADHERED VAPOR PERMEABLE MEMBRANE (PRIMARY AIR BARRIER).

2 / 0A.E — ENLARGED ROOF DETAIL AT EAVE
1 1/2" = 1'-0"

DOOR INSTALLED AS PER MANUFACTURER'S GUIDELINES. SHIM AT SILL.

LOW EXPANSION, LOW PRESSURE SPRAY FOAM - HILTI CF812.

CONTINUOUS SEALANT BEAD (DO NOT BLOCK WEEPHOLES).

PROVIDE BOTH WATERSTOPS AND SEALING OF THE DOWEL/REBAR PENETRATIONS WITH LIQUID APPLIED FLASHING AT THE COLD JOINT OF THE CONCRETE CURB CONSTRUCTION. SEAL EXTERIOR EDGE OF COLD JOINT PRIOR TO CONCEALING.

PROVIDE 12 GA. PREFINISHED METAL FLASHING FOR FOOT TRAFFIC C/W 1/2" DRIP EDGE AND END DAMS. MAINTAIN MIN. 6% SLOPE.

CONTINUOUS SEALANT BEAD C/W CLOSED CELL BACKER ROD.

4" POURED CONCRETE LANDING

SINGLE PRESTRIP SELF-ADHERED BITUMINOUS MEMBRANE. PRIMED, TO LAP ONTO THE ABOVE GRADE FOUNDATION MEMBRANE AND TO EXTEND FULL LENGTH INTO THE ROUGH OPENING (60mil - PRIMARY AIR BARRIER).

PROVIDE FREE DRAINAGE MATERIAL BETWEEN THE CONCRETE LANDING AND THE EXTERIOR FINISH FACE OF THE FOUNDATION WALL.

INSULATED CONCRETE CEMENT BOARD. LEAVE CLEARANCE TO MAINTAIN AIRFLOW AND DRAINAGE

DRAINAGE MAT CAPPING PIECE AS PER MANUFACTURER'S RECOMMENDATIONS.

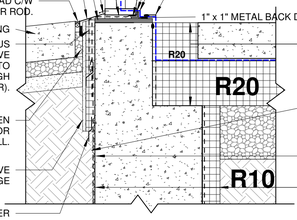
CONTINUOUS SEALANT BEAD (PRIMARY AIR BARRIER) AT METAL BACK DAM PRIOR TO SETTING DOOR, COMPATIBLE WITH THE SELF-ADHERED MEMBRANE AS PER THE MANUFACTURER'S GUIDELINES. TRIM EXCESS SEALANT PRIOR TO INSTALLING TRIM.

SILICONIZED ACRYLIC LATEX SEALANT AT ALL INTERIOR FINISH JOINTS (TYP.).

LAP BITUMINOUS MEMBRANE UP AND OVER THE METAL BACK DAM.

SINGLE PRESTRIP SMART VAPOR RETARDER (PRIMARY VAPOR CONTROL) - PRESTRIP DURING RIGID INSULATION INSTALLATION, LAP ONTO THE SELF-ADHERED MEMBRANE. SEAL ACCORDINGLY WITH COMPATIBLE SEALANT AS PER THE MANUFACTURER'S GUIDELINES.

1" x 1" METAL BACK DAM ANGLE.



SLAB-ON-GRADE AND FINISHED FLOOR AS SCHEDULED.

BELOW GRADE BITUMINOUS DAMPPROOFING CONTINUOUS TO BASE OF FOOTING AND TO EXTEND TO FULL HEIGHT OF CONCRETE FOUNDATION (PRIMARY CAPILLARY BREAK / MOISTURE BARRIER).

PLASTIC DRAIN MAT WITH INTEGRATED FILTER FABRIC AS CAPILLARY BREAK.

FOUNDATION WALL AS SCHEDULED.

3 / 0A.E — ENLARGED ZERO STEP THRESHOLD DETAIL
1 1/2" = 1'-0"

CONSTRUCTION ASSEMBLIES

W1 - DOUBLE STUD WALL ASSEMBLY:
- FSC PINE BOARD & BATTEN SIDING (PAINTED, LOW VOC EXT. GRADE PAINT), ORIENTED VERTICALLY
- 3/4" P.T. WOOD STRAPPING, ORIENTED DIAGONALLY
- SELF-ADHERED VAPOR PERMEABLE MEMBRANE (PRIMARY AIR BARRIER).
- 1/2" EXTERIOR GRADE PLYWOOD SHEATHING
- R38 DENSE PACK CELLULOSE
- 2x4" WOOD STUDS @ 12" O.C.
- 3.5" SPACE BETWEEN FRAMING (FILLED WITH INSULATION)
- 2x4" WOOD STUDS @ 12" O.C.
- INTELLIGENT AIR BARRIER AND VAPOR CONTROL LAYER (BASIS OF DESIGN: PRO CLIMA INTELLO)
- 1/2" BLUEBOARD AND PAINTED PLASTER

R1 - ROOF ASSEMBLY:
- CORRUGATED METAL ROOFING
- SYNTHETIC ROOF UNDERLAYMENT (VAPOR PERMEABLE)
- 5/8" PLYWOOD ROOF SHEATHING
- ROOF TRUSS - REFER TO STRUCTURAL
- 2" AIR GAP OR BAFFLES
- 11.25" DENSE BLOWN CELLULOSE, R-40
- INTELLIGENT AIR BARRIER AND VAPOR CONTROL LAYER (BASIS OF DESIGN: PRO CLIMA INTELLO)
- 3/4" WOOD STRAPPING @ 16" O.C.
- 1/2" BLUEBOARD AND PAINTED PLASTER

F1 - FLOOR ASSEMBLY:
- FINISH FLOOR AS SCHEDULED
- 4" REINFORCED CONCRETE SLAB-ON-GRADE (PER STRUCTURAL)
- CONTINUOUS VAPOR BARRIER BELOW SLAB, MINIMUM 10 MIL, SEALED AT SEAMS AND PENETRATIONS
- CONTINUOUS RIGID INSULATION BELOW SLAB AND VERTICALLY AT SLAB EDGE (EPS OR APPROVED EQUAL), THICKNESS PER ENERGY COMPLIANCE DOCUMENTATION
- COMPACTED GRANULAR BASE AS REQUIRED
- FOUNDATION WALL AND FOOTING PER STRUCTURAL DRAWINGS

SECTION GENERAL NOTES

1. MAINTAIN CONTINUOUS ALIGNMENT OF AIR, WATER, AND THERMAL CONTROL LAYERS ACROSS WALL, ROOF, AND SLAB TRANSITIONS.
2. COORDINATE ENVELOPE ASSEMBLIES WITH STRUCTURAL FRAMING TO PRESERVE FULL-DEPTH INSULATION AND VENTILATION CLEARANCES.
3. MINIMIZE PENETRATIONS THROUGH THE THERMAL ENVELOPE. SEAL ALL PENETRATIONS IN ALIGNMENT WITH THE DESIGNATED AIR BARRIER PLANE.
4. PROVIDE POSITIVE DRAINAGE AND SHINGLE-LAP SEQUENCING AT ALL EXTERIOR ASSEMBLIES TO PREVENT WATER INTRUSION.
5. INSTALL FIRE BLOCKING IN CONCEALED VERTICAL AND HORIZONTAL CAVITIES IN ACCORDANCE WITH 780 CMR SECTION R302.11.
6. FIELD VERIFY DIMENSIONS AND COORDINATE DOOR THRESHOLD ELEVATIONS TO MAINTAIN ZERO-STEP ACCESSIBILITY AND REQUIRED EXTERIOR SLOPE.

Wall Section

0A.E

Scale As indicated

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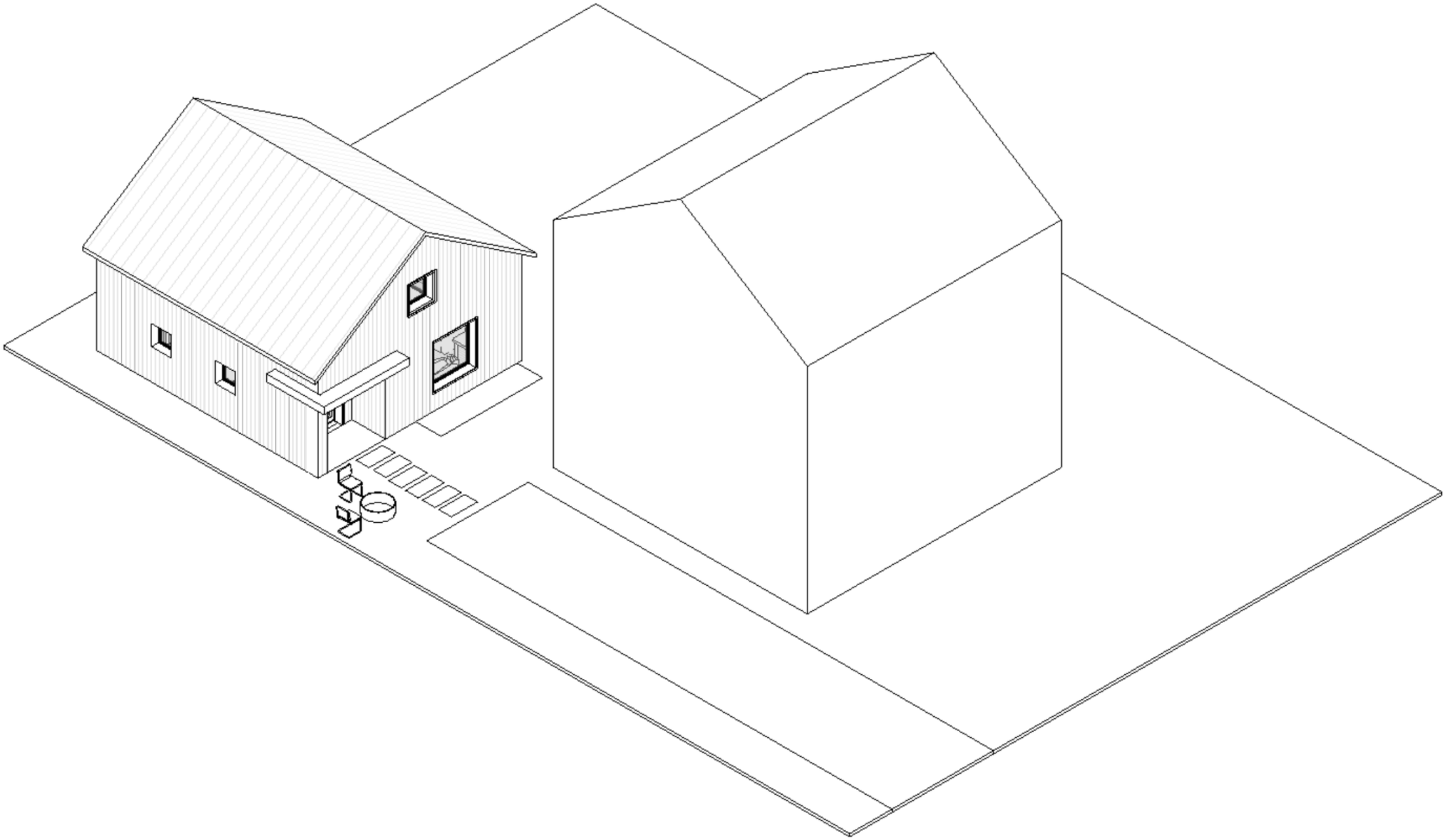


KUMA


LG
Direct Drive 10.5 kg
LG
Direct Drive 10.5 kg


HENTY
DAN JONES
STEPHEN GREENBLATT
PRETTYGOODHOUSE
noguchi