



# Square house

Garage DADU

## PROJECT DESCRIPTION

“Square house” responds to the two uses of a typical garage. One where the need is for parking a vehicle, and one where the need is for an independent space that can accommodate a home office, a fitness area, or an art studio/workshop.

The square plan, the location of the service and circulation cores on two opposite ends, and the open floor plan provide a wide variety of possibilities for car access and window placement.

Inspired by Pacific Northwest fire lookouts and by the atmosphere of a tree house, the second story living areas open to a panoramic view of the surroundings and to the lush tree tops of Seattle, without jeopardizing privacy.

As a garage house, the upper floor is used as a studio unit.

As a live/work house, the ground floor is shared between a flexible work space and a bedroom suite, freeing up the upper level for social space.

## NARRATIVE

“Square house” fulfills the design criteria in the following ways:

### LOW COST AND CONSTRUCTABILITY

- A basic building shape, an open floor plan, a small span width, and grouped plumbing elements reduce cost.
- Materials are chosen considering their first-cost as well as their durability, to minimize maintenance and repair costs. Two finish package options are provided for different budgets.
- A simple form and construction methods encourage homeowners to complete the construction themselves, and choose glazing area according to their budget.
- For a garage option, the insulation may be only applied to the envelope of the upper area, minimizing energy costs and allowing for the purchase of a non isolated garage door. The garage may be left unfinished, and the ground floor bathroom built later if the owner chooses to change to a live/work scenario.

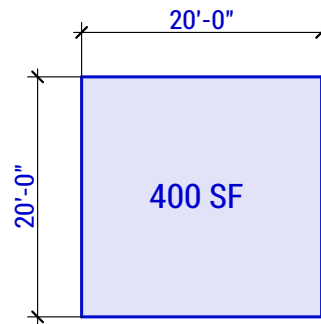
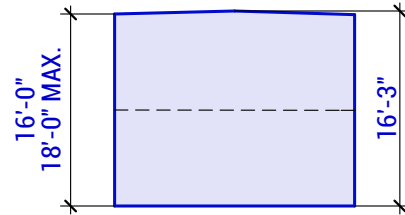
### GREEN BUILDING AND DESIGN

- Wherever possible, proposed building materials promote indoor air quality, environmental sustainability, and incorporate recycled content.
- Symmetric and Flexible plan configuration to allow for favorable solar orientation, cross ventilation and maximize passive heat control.
- Rainwater harvesting, efficient mechanical systems, and optional green roof (for larger lots that allow for a taller structure).
- We offer the possibility (with corresponding cost estimate increase) of building a passive house design.

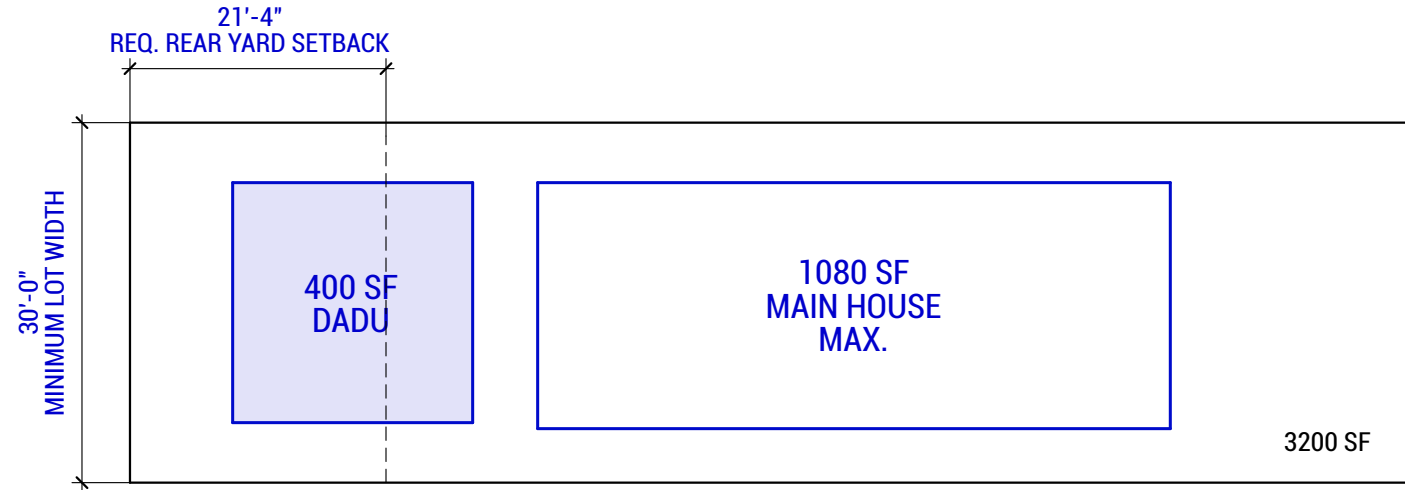
### PRIVACY, CONTEXT AND CULTURALLY RESPONSIVE DESIGN

- The complete symmetry of an open square plan permits the owner to easily respond to any privacy requirements that derive from the lot configuration, and also to use, furnish and divide space according to their preferences.
- The garage door may be located adjacent to the house entrance, or the opposite facade, depending on access paths.
- The simple but iconic shape of the house, its compactness, and the proposed natural wood envelope are a response to the context of a Seattle backyard.

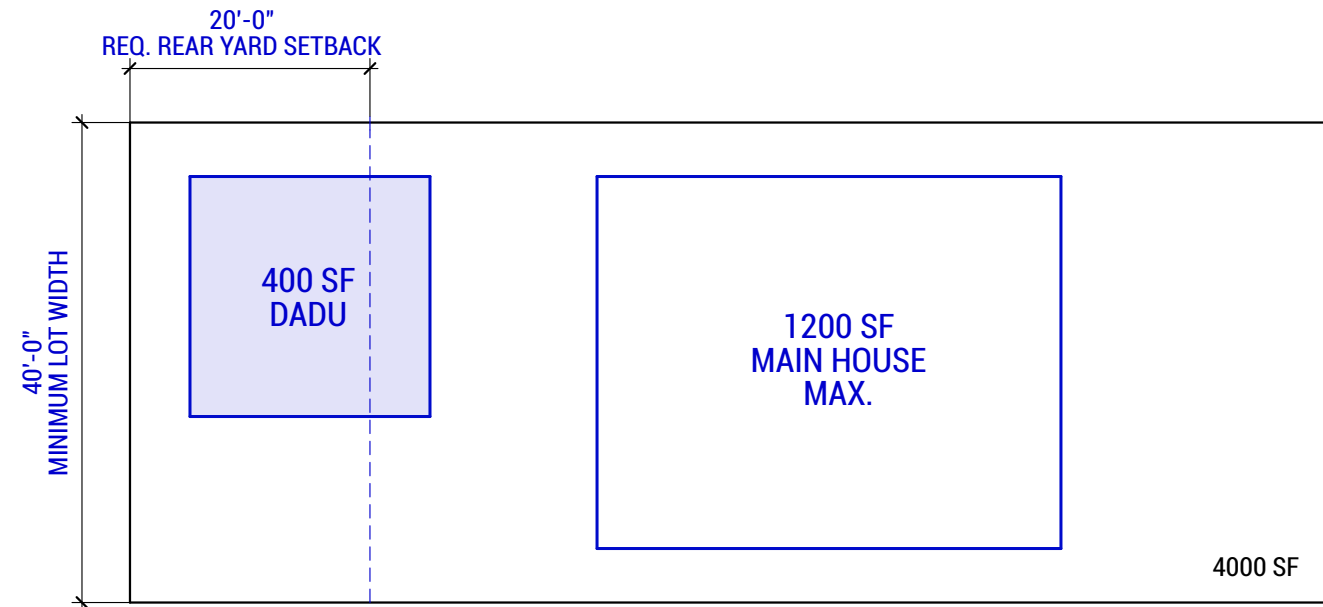
PITCH - 16'-3"  
BASE - 16'-0"



**3200 SF LOT**  
≥ 30' WIDE  
MAX. LOT COVERAGE = 1480 SF



**4000 SF LOT**  
≥ 40' WIDE  
MAX. LOT COVERAGE = 1600 SF



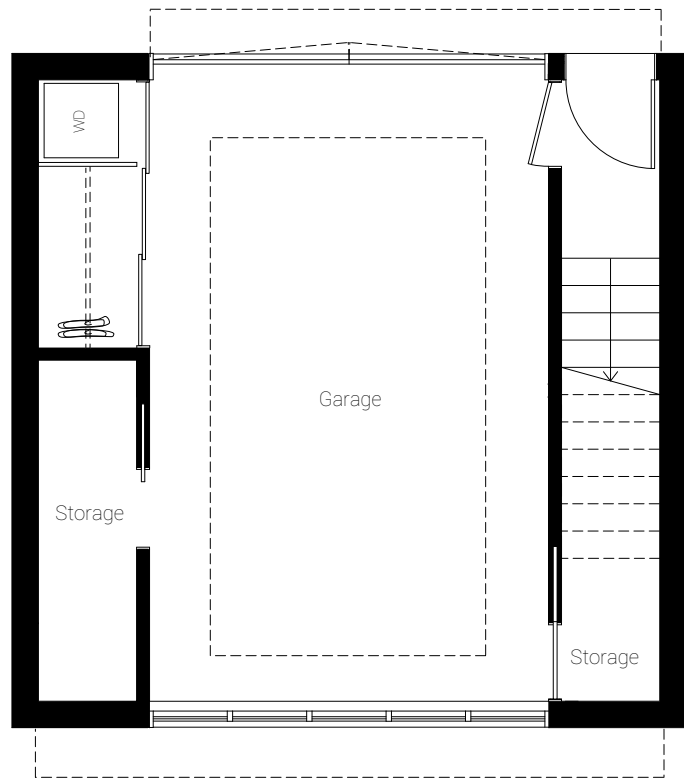
*Considering a maximum of 40% rear yard coverage, minimum 5'-0" side yard setback, 20'-0" front yard set back, and 5'-0" principal structure separation.*

**DADU DIMENSIONS**

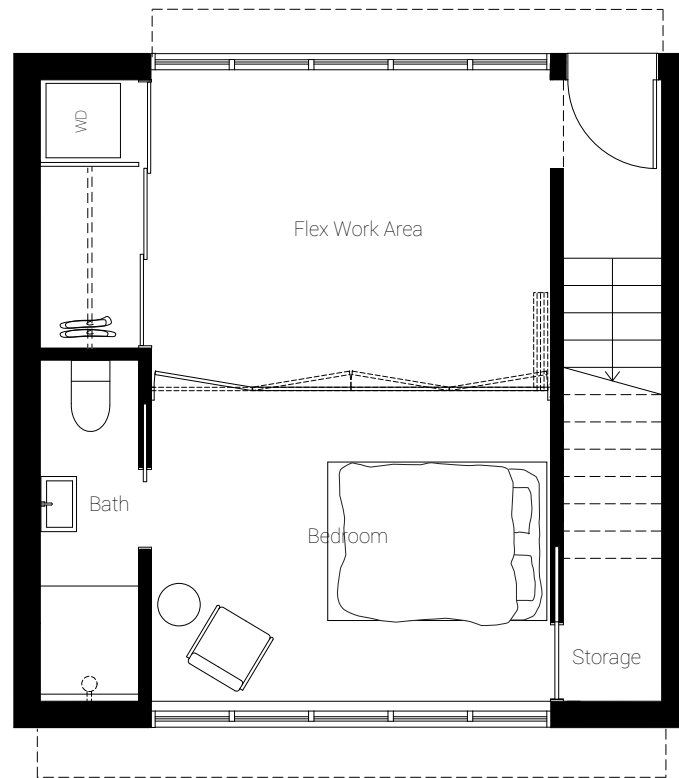
- Plan Dimensions: 16'-0" x 16'-0"
- Base height: 16'
- Pitch height: 16'-3"
- Coverage area: 400 SF
- Gross Area : 720 SF

**LOT CONFIGURATION**

This 2-story cottage, with a base height of 16'-0", may be built on lots starting at 30'-0" wide. We propose an optional base height of 18'-0" for lots wider than 50'-0".



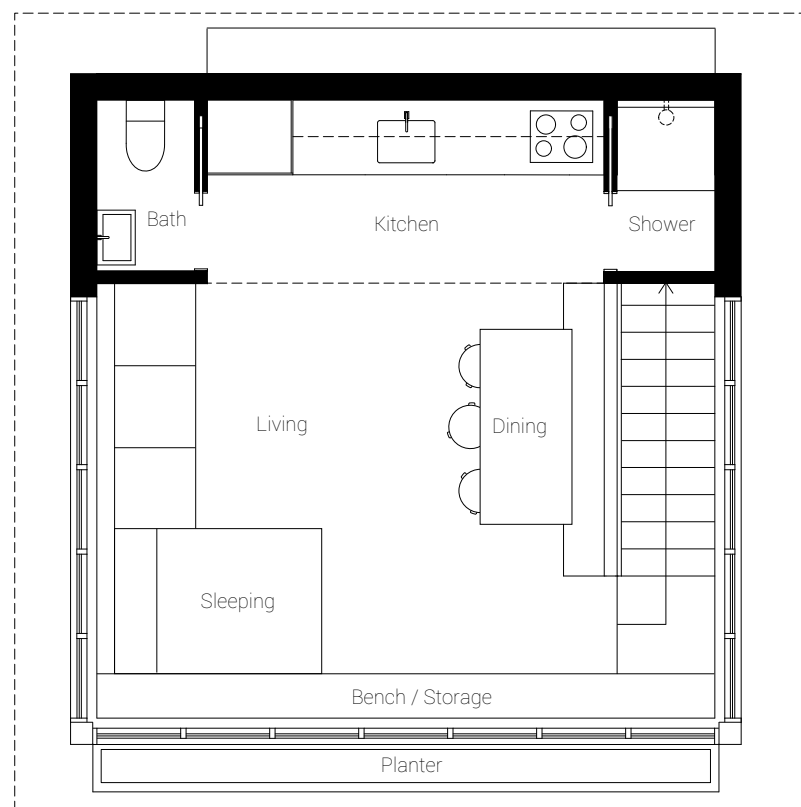
LEVEL 1



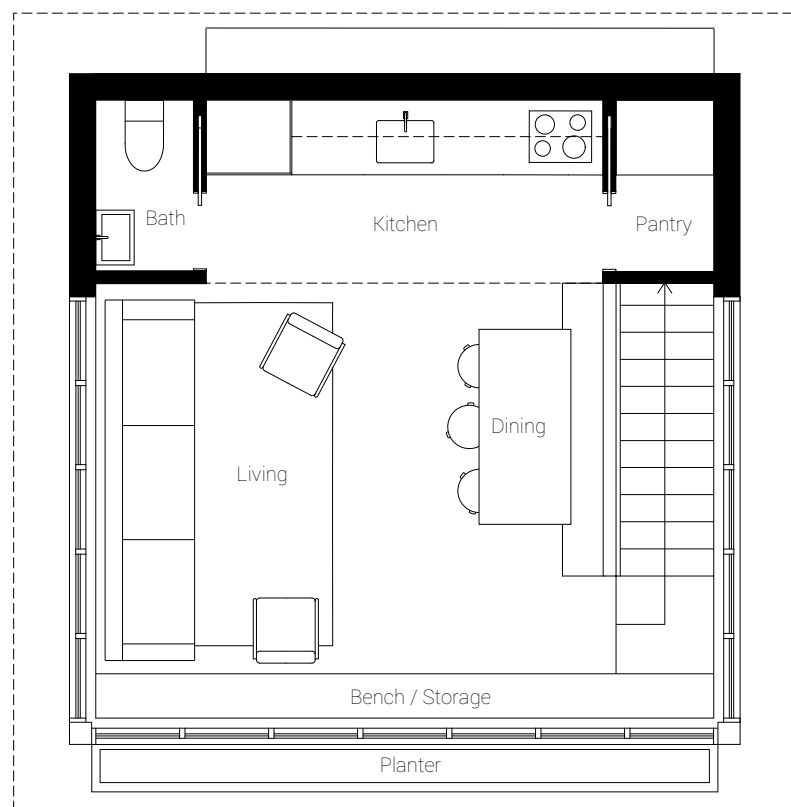
LEVEL 1



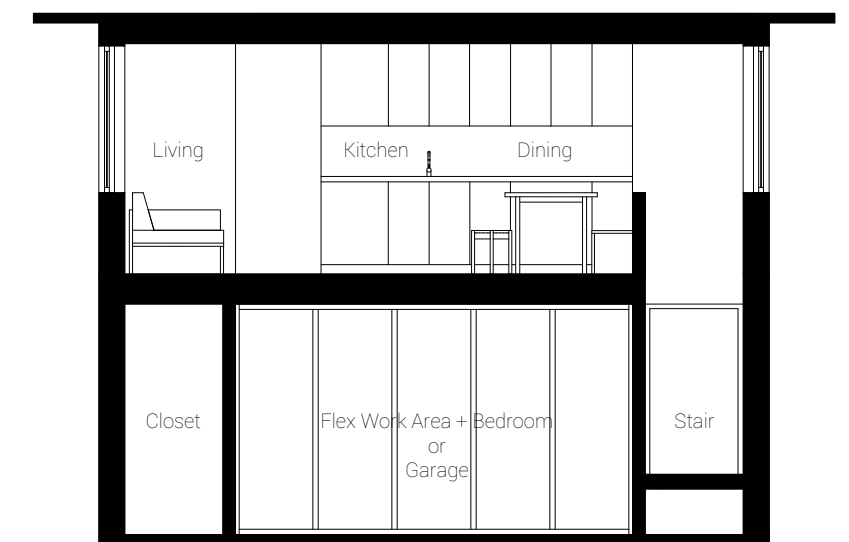
SECTION THROUGH THE STAIRS



LEVEL 2



LEVEL 2



CROSS SECTION

**OPTION 1 - GARAGE + STUDIO UNIT**

LEVEL 1: GARAGE-229 SF; STORAGE-32 SF; CLOSET-23 SF; STORAGE-18 SF.

LEVEL 2: SLEEPING/LIVING/DINING-211 SF; KITCHEN-70 SF; TOILET- 16 SF; SHOWER-16 SF.

**OPTION 2 - LIVE/WORK (1 BEDROOM UNIT)**

LEVEL 1: FLEX WORK AREA-115 SF; BEDROOM-115 SF ; BATHROOM-32 SF; CLOSET-23 SF; STORAGE-18 SF.

LEVEL 2: LIVING/DINING-211 SF; KITCHEN-70 SF; TOILET-16 SF; PANTRY-16 SF.



## ENTRANCE AND SIDE FACADES

Showcasing option 2 - Flex work area at Level 1.



### LIVING/DINING/SLEEPING AREA

Showcasing living/dining area (with possible hidden pull out bed)  
Easy to build built-in storage for maximum room flexibility.

## MATERIALS PALETTE #1 LOWER GRADE

### EXTERIOR FINISHES

ROOFING: Standing seam metal roofing.

CANOPY: Metal flashing, to match roofing colour.

EXTERIOR SIDING: Wood siding reverse board and batten (3 1/2" wide boards, with 2" recess).

BASE METAL FLASHING: Prefinished aluminum.

WINDOWS: Vinyl, light gray.

WINDOW FLASHING: Prefinished aluminum.

EXTERIOR DOORS: Vinyl, light gray, stainless steel threshold.

GARAGE DOOR: Solid panel wood door.

### INTERIOR FINISHES

FLOOR - FIRST FLOOR: Cast in place concrete, smooth trowel and penetrating sealer, matte finish.

FLOOR - SECOND FLOOR: Linoleum floor.

FLOOR - ALL BATHROOMS: Colored microcement, wear resistant and waterproof.

STAIR TREAD AND RISER: Yellow Pine or Poplar Tread with linoleum finish.

WALL FINISH: Painted GWB, level 5 finish.

WALL FINISH ALL BATHROOMS:: Painted GWB and Colored plaster, wear resistant and waterproof.

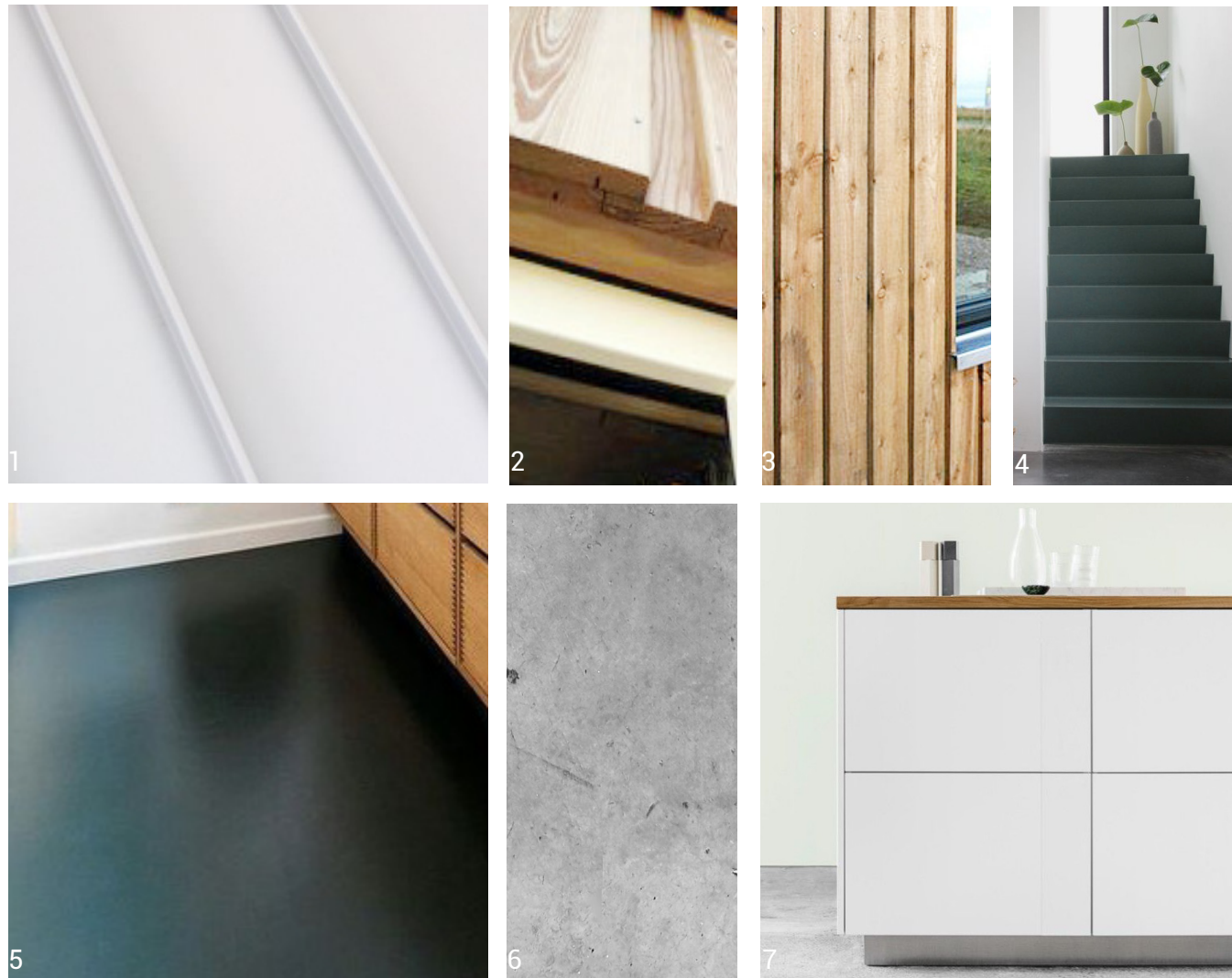
CEILING FINISH: Painted GWB, level 5 finish.

BASEBOARD & DOOR TRIM: Painted Poplar to match wall color, semi-gloss finish.

WINDOW & DOOR RETURN: Painted GWB. Hardwood Sill.

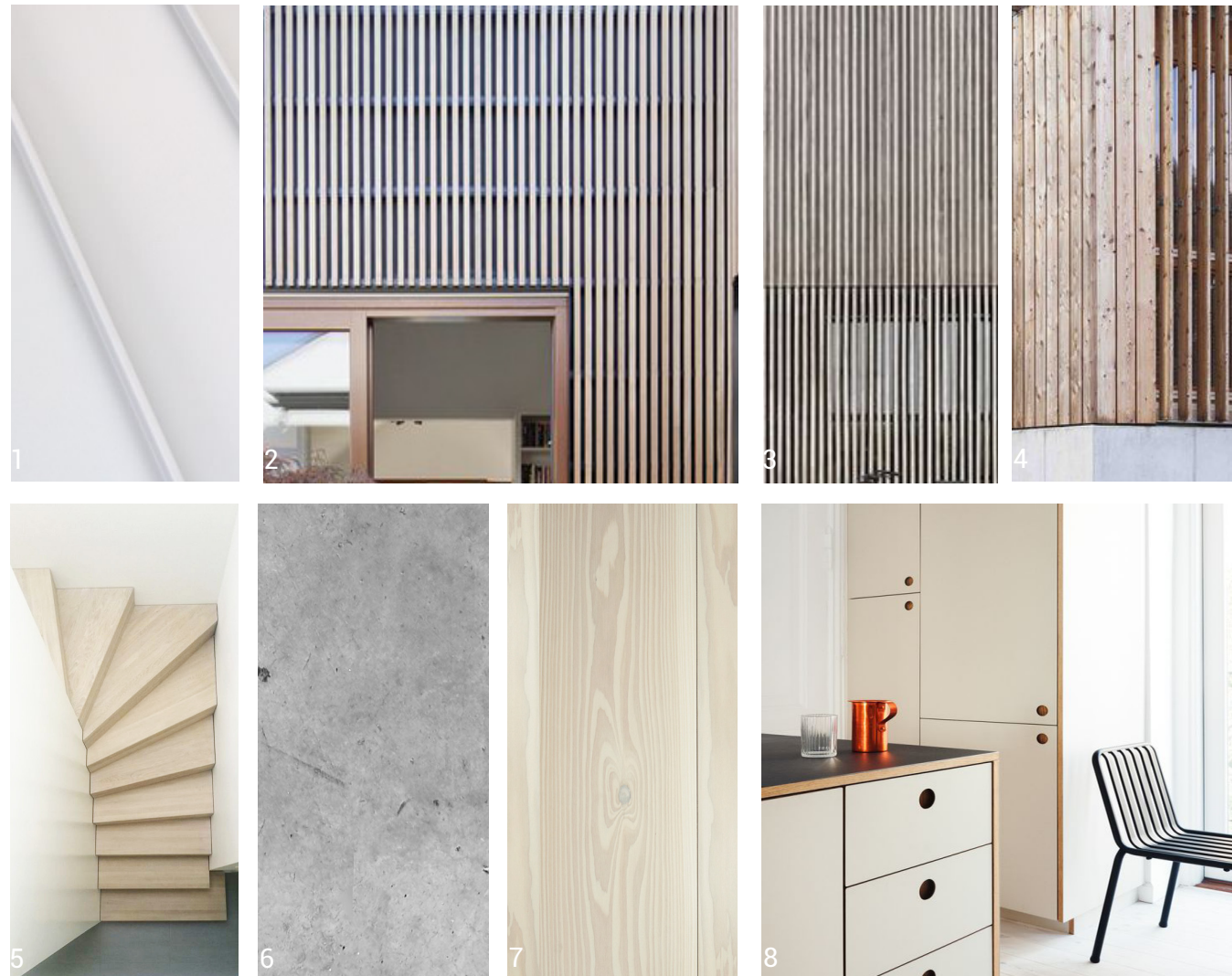
INTERIOR DOOR: Flush Panel, painted to match wall color.

KITCHEN: IKEA Metod System Cabinets (or equivalent fiberboard) with painted fronts and wood countertop.



MATERIALS: 1. Standing Seam Metal Roofing. 2./3. Cedar Vertical Siding and Vinyl Windows. 4. Stair with Linoleum finish 5. Linoleum flooring 6. Concrete, matte. 7. Painted kitchen fronts and wood countertop

## MATERIALS PALETTE #2 HIGHER GRADE



*MATERIALS: 1. Standing Seam Metal Roofing. 2. Woods boards natural colour and wood windows. 3/4. Wood boards extended over fixed window (optinal, for privacy). 5. Pine tread and rise, soap finish. 6. Concrete, matte. 7. Heart Pine floor, soap treated. 8. Plywood cabinets with linoleum face finish.*

### EXTERIOR FINISHES

ROOFING: Standing seam metal roofing.

EXTERIOR SIDING: Wood boards (3 1/2" wide boards, with 2" gap), over fiber cement.

BASE METAL FLASHING: Prefinished aluminum.

WINDOWS: Wood.

WINDOW FLASHING: Prefinished aluminum.

EXTERIOR DOORS: Aluminum-clad wood, stainless steel threshold.

GARAGE DOOR: Solid panel wood door.

### INTERIOR FINISHES

FLOOR - FIRST FLOOR: Cast in place concrete, smooth trowel and penetrating sealer, matte finish.

FLOOR - SECOND FLOOR: 1"x 4" Pine hardwood Floor, with soap finish.

FLOOR - ALL BATHROOMS: Colored microcement, wear resistant and waterproof.

STAIR TREAD AND RISER: Pine tread and riser, soap treated.

WALL FINISH: Painted GWB, level 5 finish.

WALL FINISH ALL BATHROOMS: Painted GWB and Colored plaster, wear resistant and waterproof.

CEILING FINISH: Painted GWB, level 5 finish.

BASEBOARD & DOOR TRIM: Painted Poplar to match wall color, semi-gloss finish.

WINDOW & DOOR RETURN: Painted GWB. Hardwood Sill.

INTERIOR DOOR: Flush Panel, painted to match wall color.

KITCHEN: Plywood cabinets with linoleum face finish, and paperstone countertop.

## **PROPOSED MECHANICAL SYSTEMS**

### WATER HEATER

40 gallon electric water heater. Rheem 4500 Watts. 240 Volts. Wall mounted. 23" diameter. 50" height.

Efficiency 0.93 Uniform Energy Factor (UEF).

### HEATING AND COOLING

Mini split heat pump. 18000 btu. HSPF 10.

Mitsubishi MZ-HM18NA 18,000 BTU 18 SEER Ductless Mini Split Heat.

Table 406.2 Energy credits: 3B - Air source heat pump with min. HSPF of 9.0 - 1.0 point. (2015 WREC)

## **PROPOSED GREEN BUILDING FEATURES**

### STORMWATER MANAGEMENT

500 gallon (64" diameter) rainwater harvesting tank.

### SUSTAINABLE BUILDING MATERIALS

Zero VOC paint.

High density cellulose cavity insulation.

Paperstone (recycled paper and non petroleum resin) or wood countertops.

Wood or Linoleum flooring.

Low flow fixtures.

Induction cooktop.

EnergyStar appliances.

## OPTIONAL GREEN BUILDING FEATURES FOR HIGHER ENERGY PERFORMANCE

### ADDED FEATURES

Targeting 0.6 ACH Airtight envelope.

INTUS/ZOLA high performance windows and doors.

Mineral wool exterior insulation (min. R29 walls).

### ALTERNATIVE WATER HEATER

40 gallon heat pump water heater. Reference brand: Hubbell. 28" diameter. 49" height.

EF 2.33 at ambient air temperature of 77 F. (Uses 3x less electricity than traditional water heaters).

Table 406.2 Energy credits: 5C - Efficient Water Heater - 1.5 points. (2015 Residential Energy Code).

### HRV (HEAT RECOVERY VENTILATOR)

20 to 90 CFM Zehnder ComfoAir 160

The CA160 is equipped with two class G4 filters (MERV 7/8). An optional class F7 pollen filter (MERV 13) is available for fresh air intake.

Height: 34". Width: 26.4". Depth: 10.6".

### REMOVED HEATING AND COOLING

Given the volume of this Passive House and HRV system, the heating loads will be very small and a mini split heat pump is not required for thermal comfort.

**PROJECT FEE:** Please inquire with us directly about services we can provide, including: custom design, permit drawings, site-specific permitting assistance, construction documents and standardized materials package and interior design.



**AHOUSE STUDIO**

Emily Aune, Camilla Dahl and Raquel Dias Ferreira

Alec Gardner, CPHC

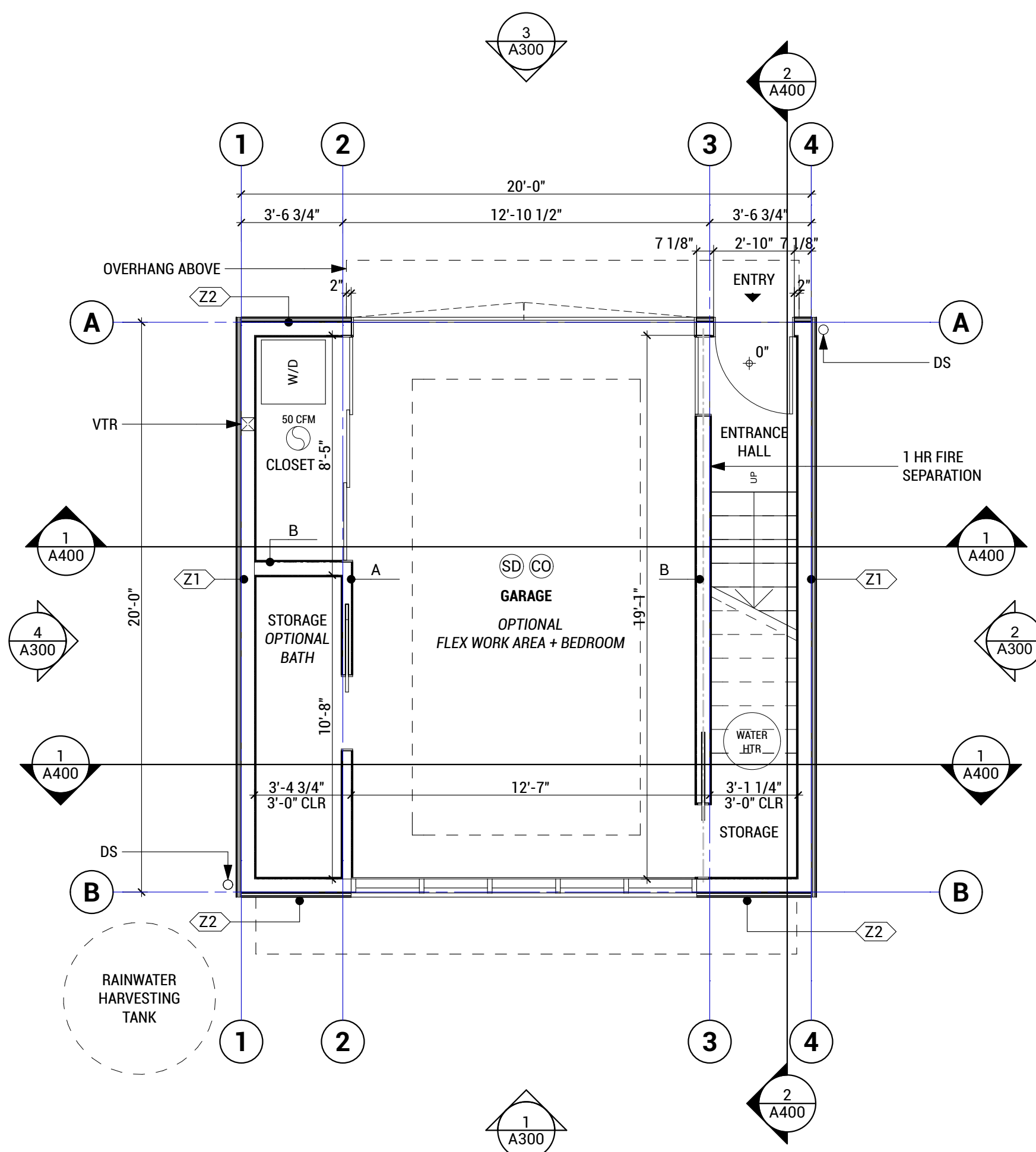
[www.ahouse.studio](http://www.ahouse.studio) . [hello@ahouse.studio](mailto:hello@ahouse.studio) . t: (206) 486-0055

**KEY**

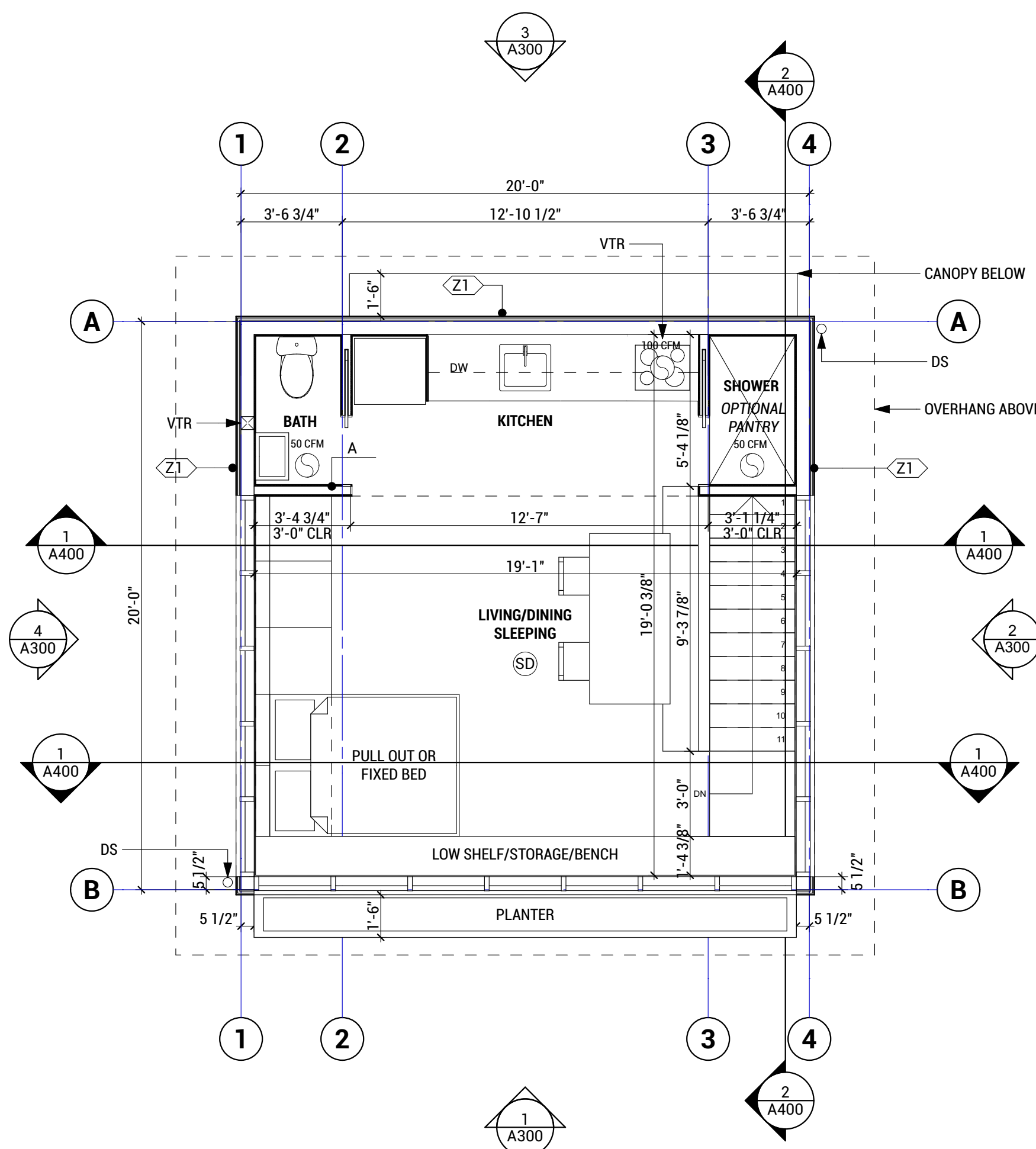
- XX **DRAWING INDICATOR**
- A300 DRAWING NUMBER
- A400 SHEET NUMBER
  
- WALL TYPE INDICATOR**
- SEE SCHEDULE
- FOR EXPLANATION
  
- S **EXHAUST FAN**
  
- SD **SMOKE DETECTOR**
  
- CO **CARBON MONOXIDE DETECTOR**
  
- 1 HR FIRE SEPARATION**

**ABBREVIATIONS**

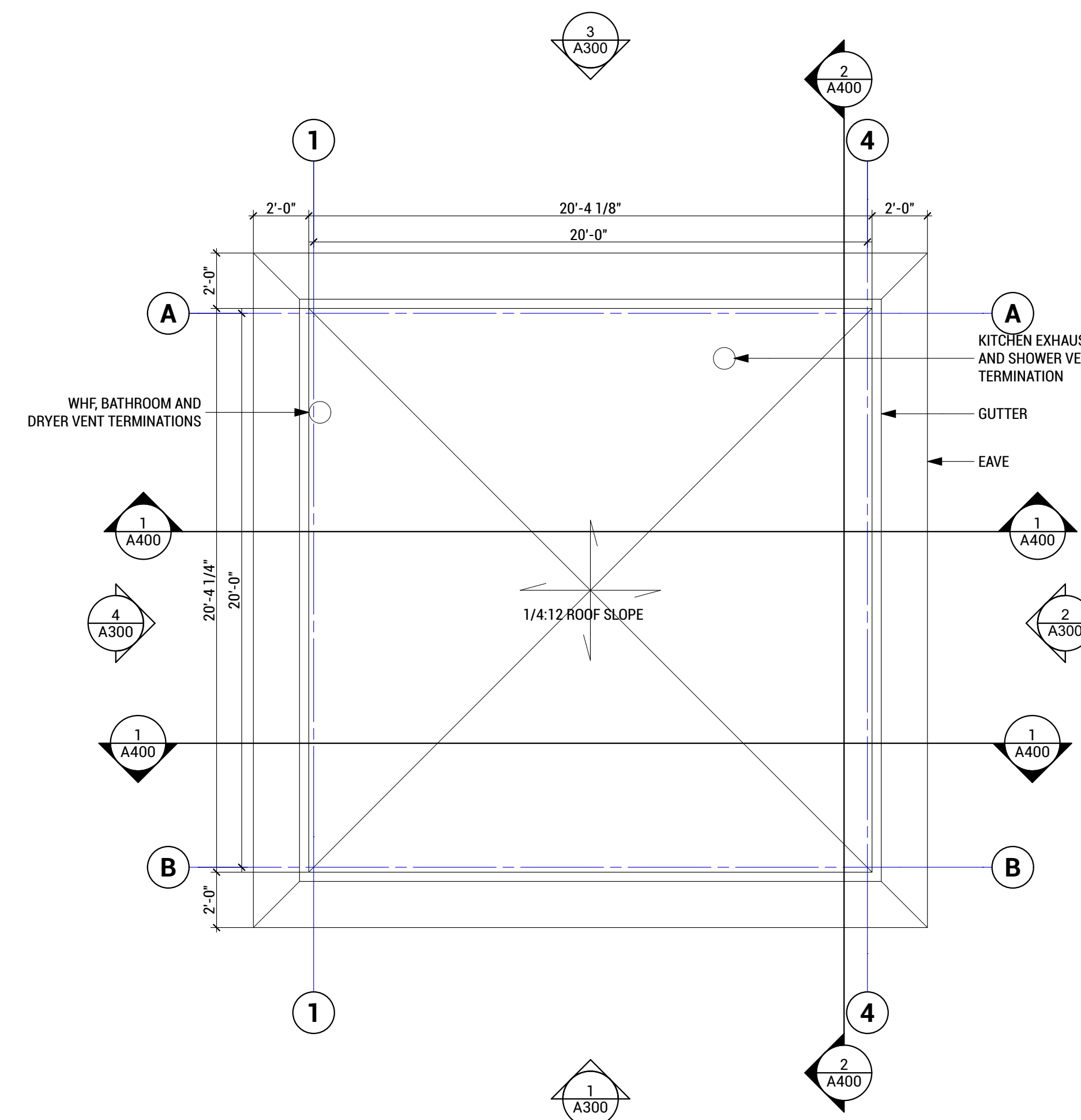
CLG	CEILING	TYP	TYPICAL
DADU	DETACHED ACCESSORY DWELLING UNIT	VTR	VENT THROUGH ROOF
DN	DOWN	W/D	WASHER AND DRYER
DS	DOWNSPOUT (EXTERIOR)	WD	WOOD
DW	DISHWASHER	WDW	WINDOW
EQ	EQUAL	W/	WITH
GWB	GYP SUM WALL BOARD	WSEC	WASHINGTON STATE ENERGY CODE
GYP	GYP SUM	WP	WATERPROOF(ING) MEMBRANE
HT	HEIGHT	WRB	WEATHER RESISTANT BARRIER
INSUL	INSULATION		
LE	LAUNDRY FAN EXHAUST		
MIN	MINIMUM		
MET/MTL	METAL		
OC	ON CENTER		
PLY	PLYWOOD		
PLYWD	PLYWOOD		
SF	SQUARE FEET		
SHTG	SHEATHING		
SL	SLOPE		
STUCT	STRUCTURAL		



**1 PLAN: LEVEL 1**  
SCALE: 1/4" = 1'-0"



**2 PLAN: LEVEL 2**  
SCALE: 1/4" = 1'-0"



**3 PLAN: ROOF**  
SCALE: 1/4" = 1'-0"

**DADU Square house**

OWNERS:

DPD PROJECT #

PARCEL #

PROJECT DESCRIPTION

CONSTRUCT NEW 2-STORY  
DETACHED ACCESSORY DWELLING  
UNIT IN REAR YARD OF EXISTING  
SINGLE FAMILY RESIDENCE

ADDRESS  
SEATTLE

DESIGN  
AHOUSE

**NOTES**

REVISION ID	CHANGE NAME	DATE

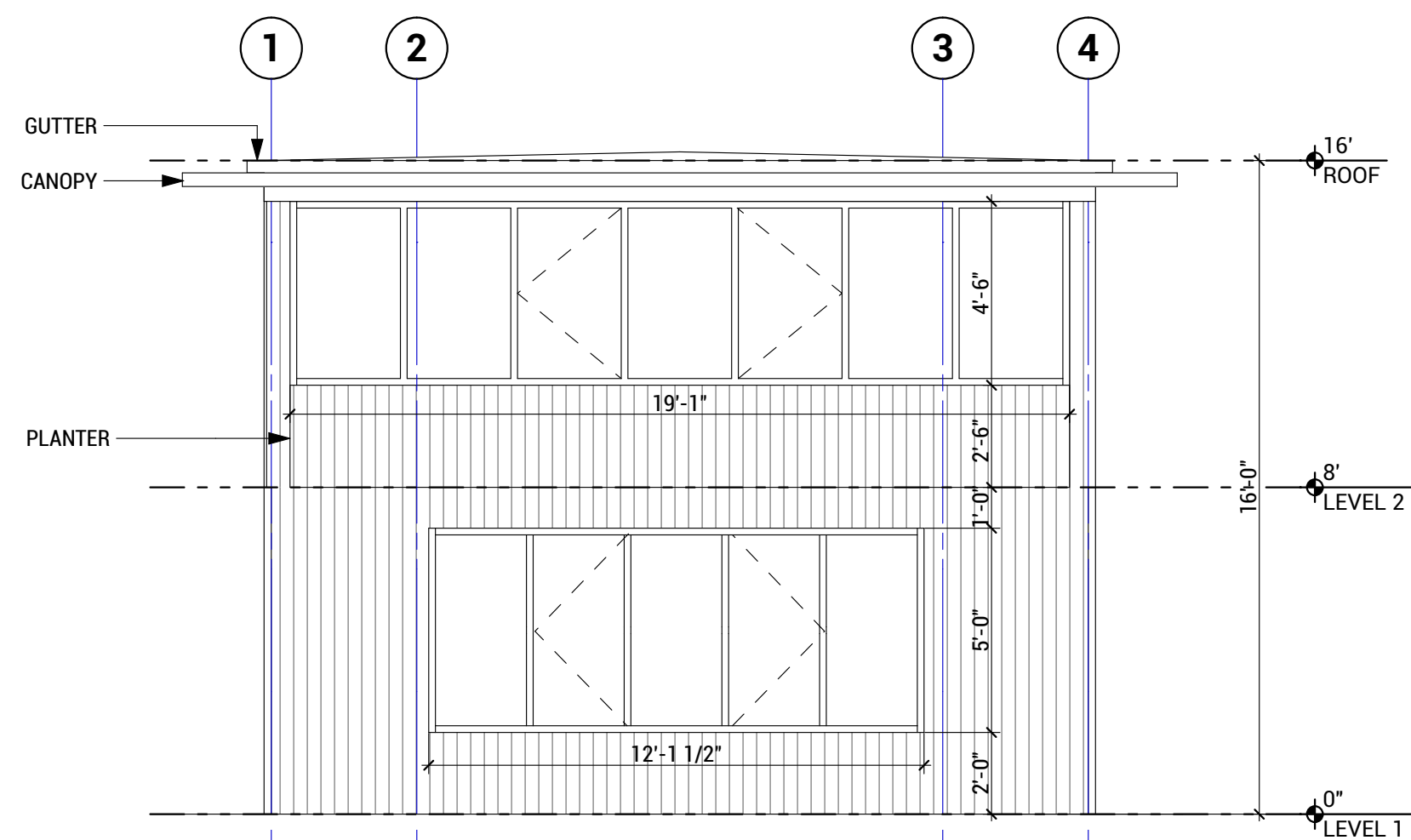
ISSUE DESIGN DEVELOPMENT  
DATE 02/17/2020  
DRAWN BY RDF

SHEET TITLE  
PLANS

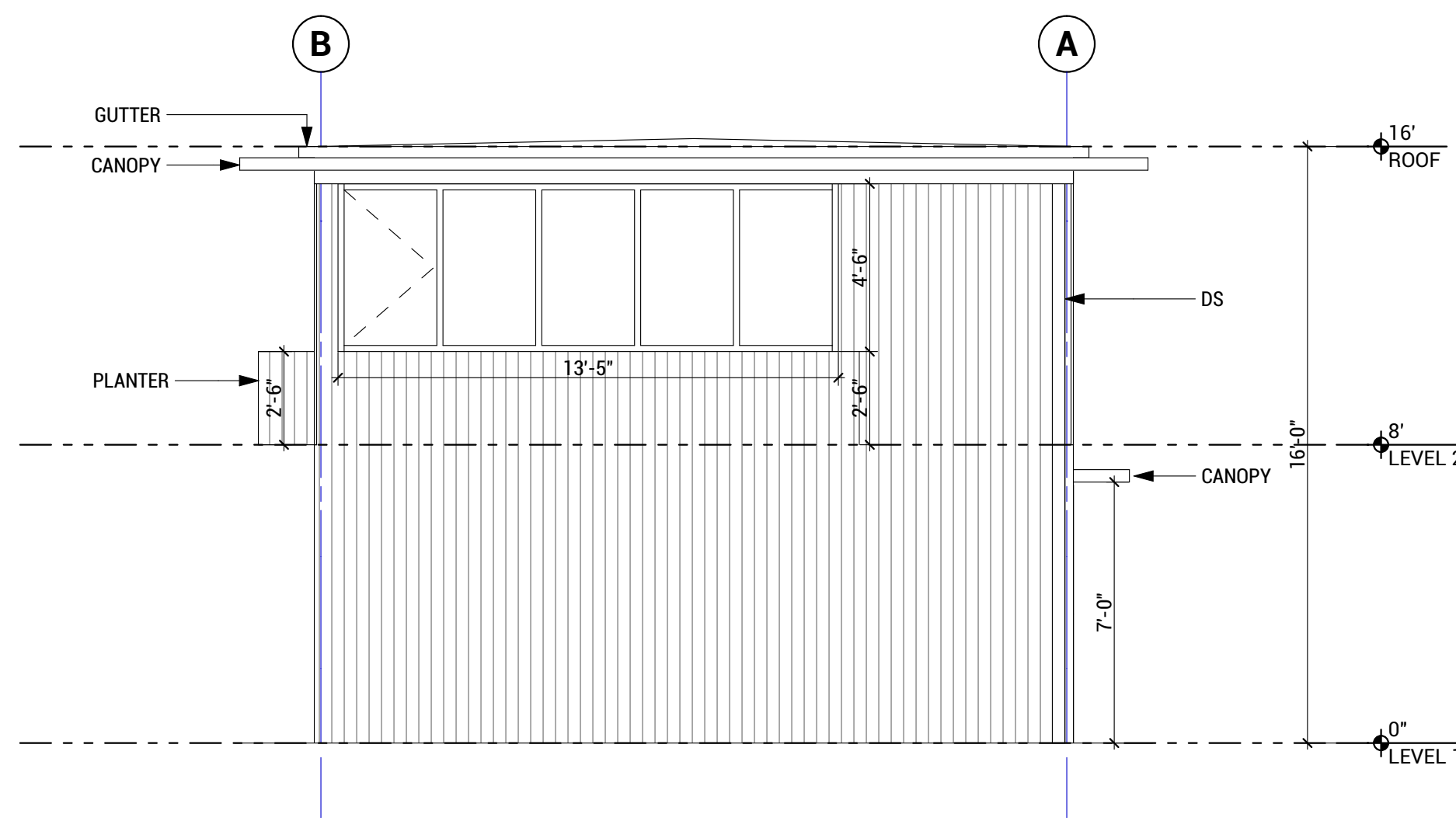
SHEET

**A100**

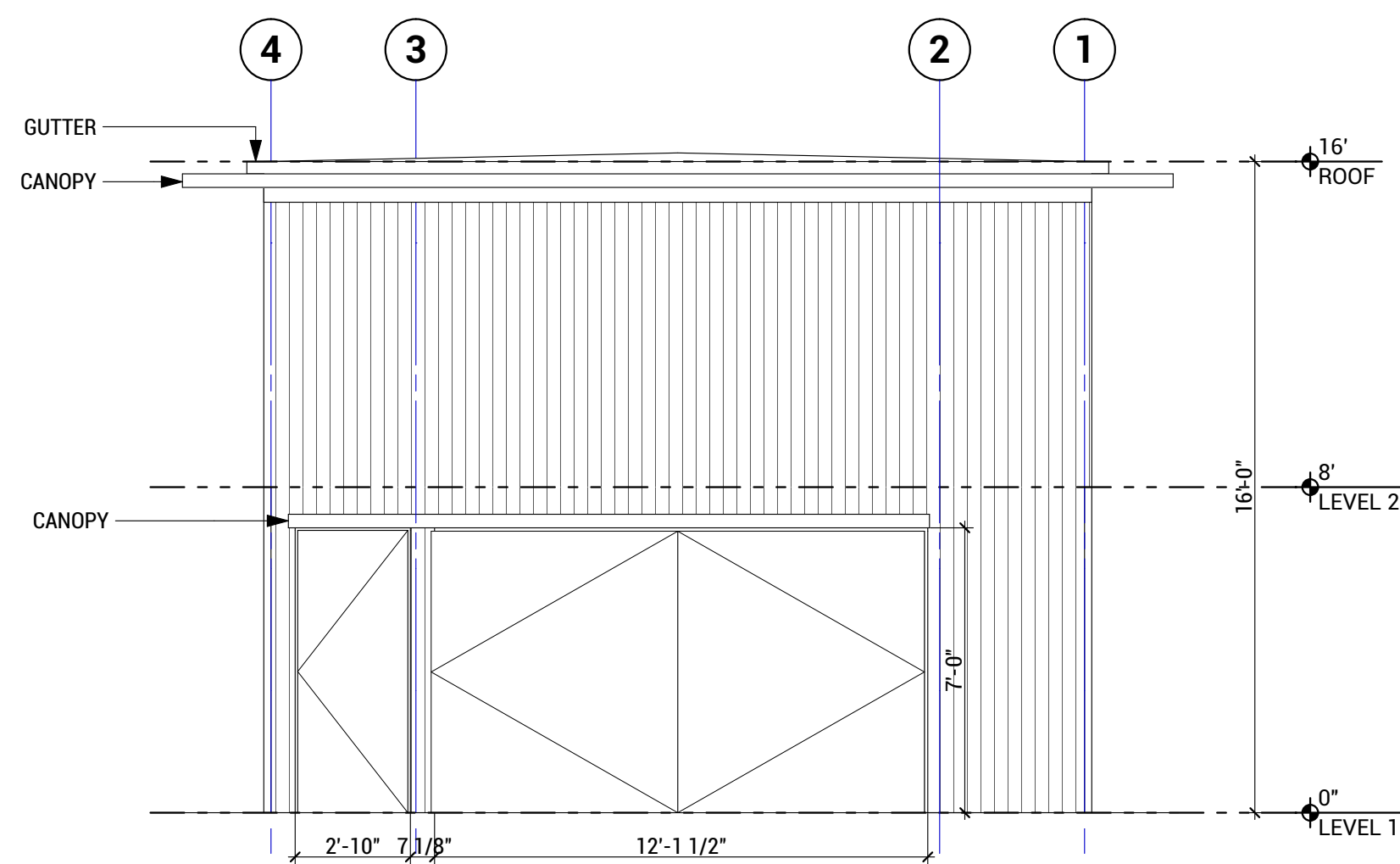
SCALE AS INDICATED



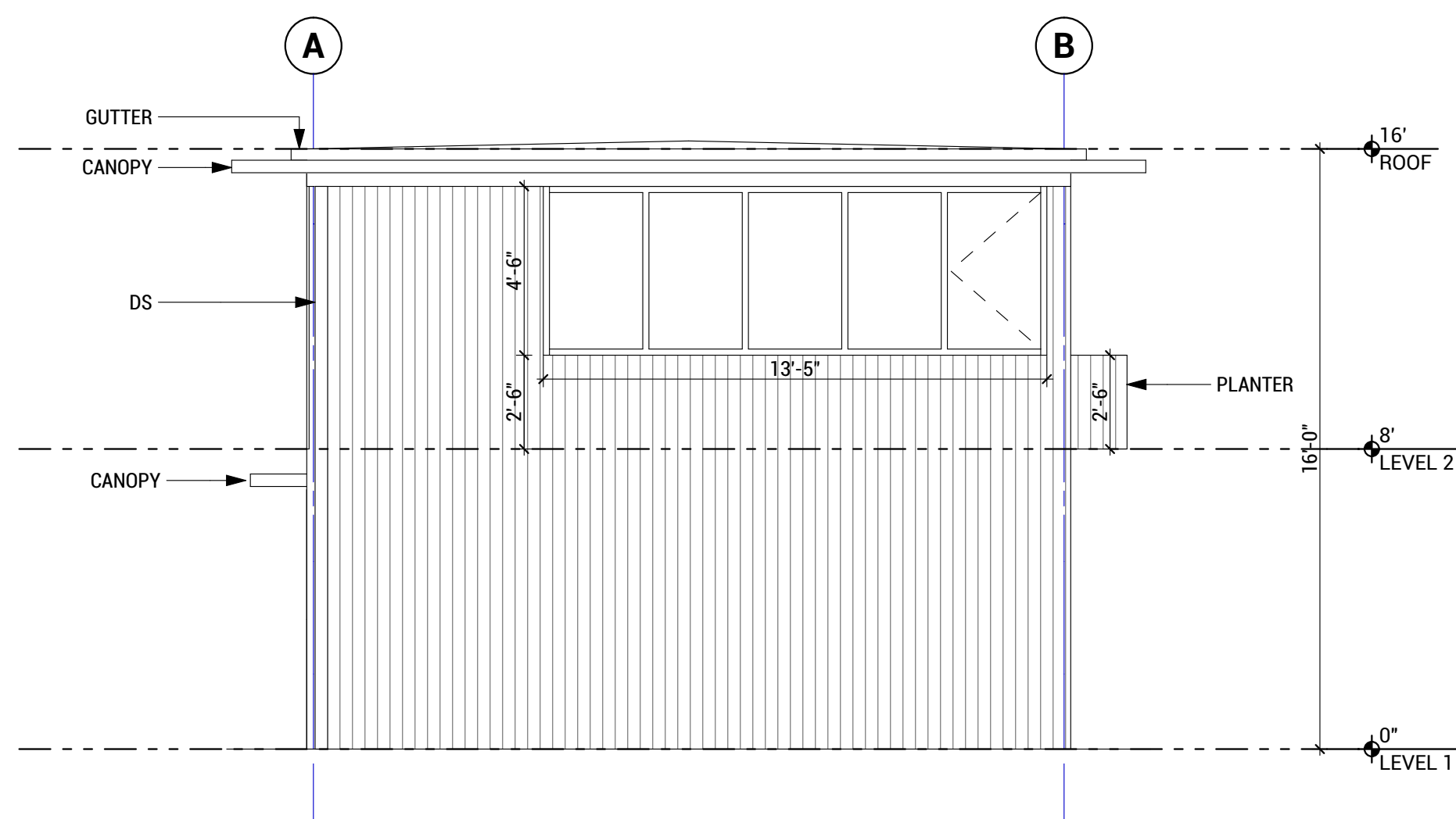
1 ELEVATION: SOUTH  
A300 SCALE: 1/4" = 1'-0"



2 ELEVATION: EAST  
A300 SCALE: 1/4" = 1'-0"



3 ELEVATION: NORTH  
A300 SCALE: 1/4" = 1'-0"



4 ELEVATION: WEST  
A300 SCALE: 1/4" = 1'-0"

## DADU Square house

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PARCEL #

PROJECT DESCRIPTION

CONSTRUCT NEW 2-STORY  
DETACHED ACCESSORY DWELLING  
UNIT IN REAR YARD OF EXISTING  
SINGLE FAMILY RESIDENCE

ADDRESS  
SEATTLE

DESIGN  
AHOUSE

NOTES

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ISSUE DESIGN DEVELOPMENT  
DATE 02/17/2020  
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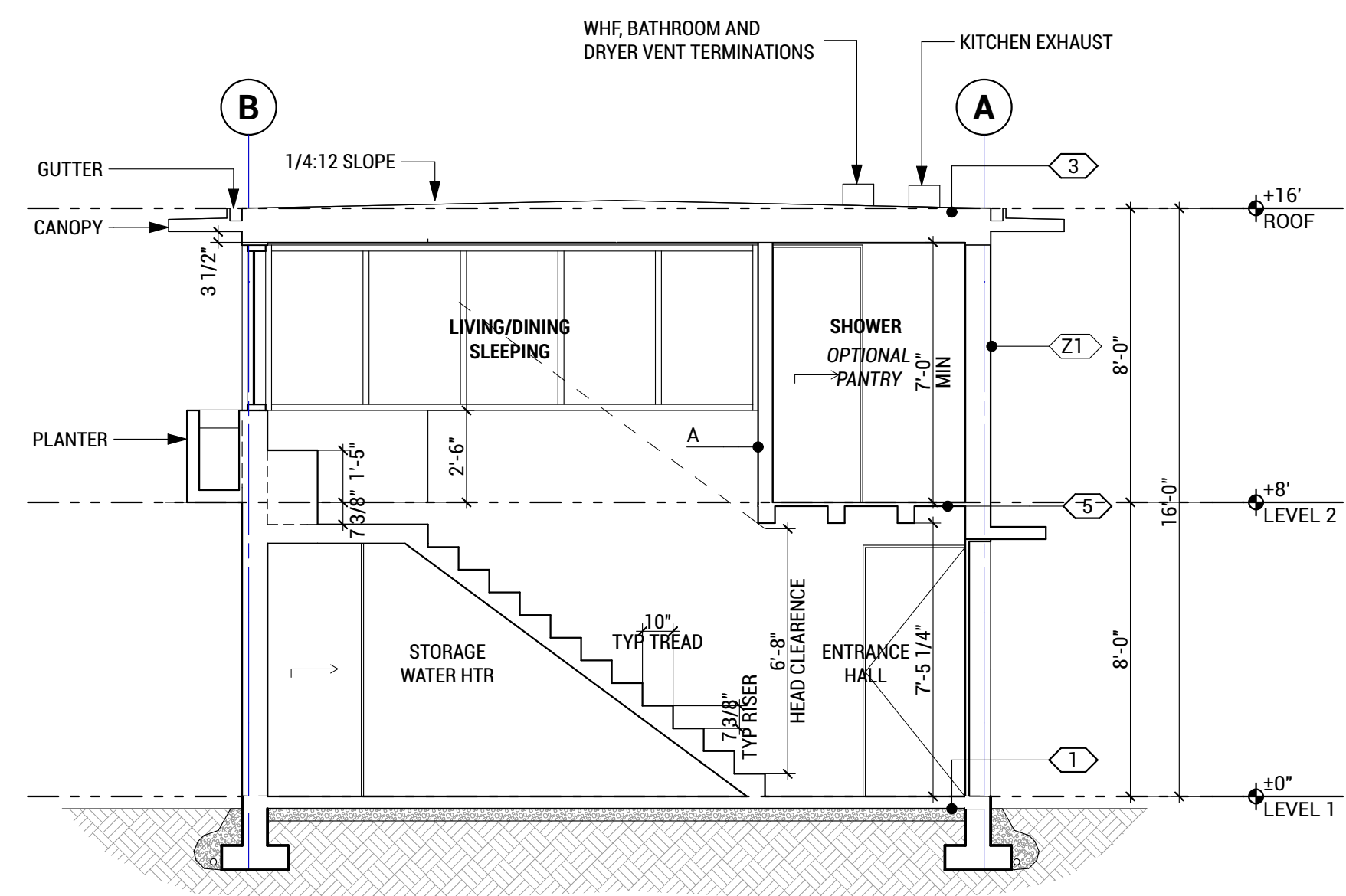
SHEET TITLE  
EXTERIOR ELEVATIONS

SHEET

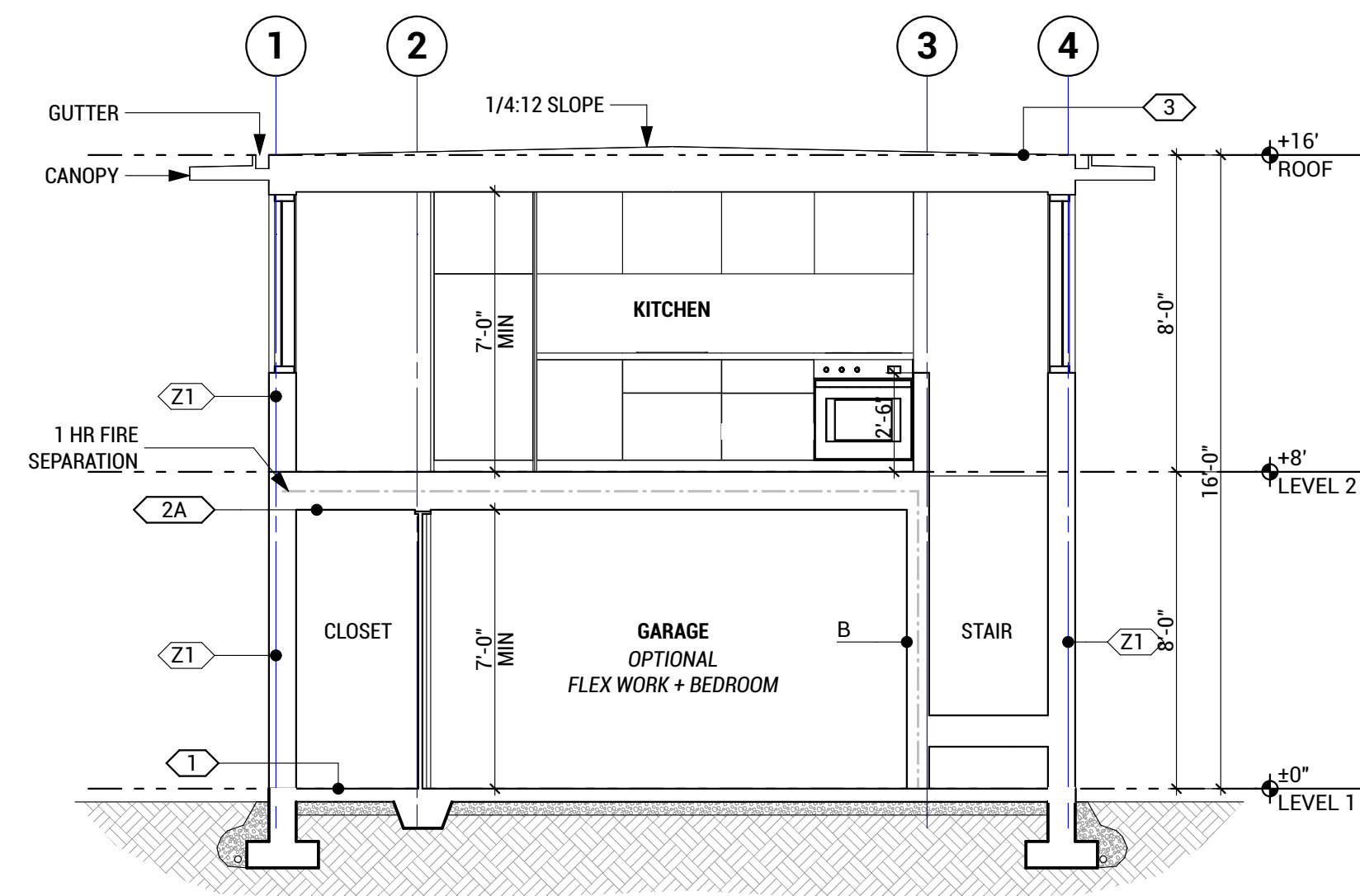
A300

SCALE

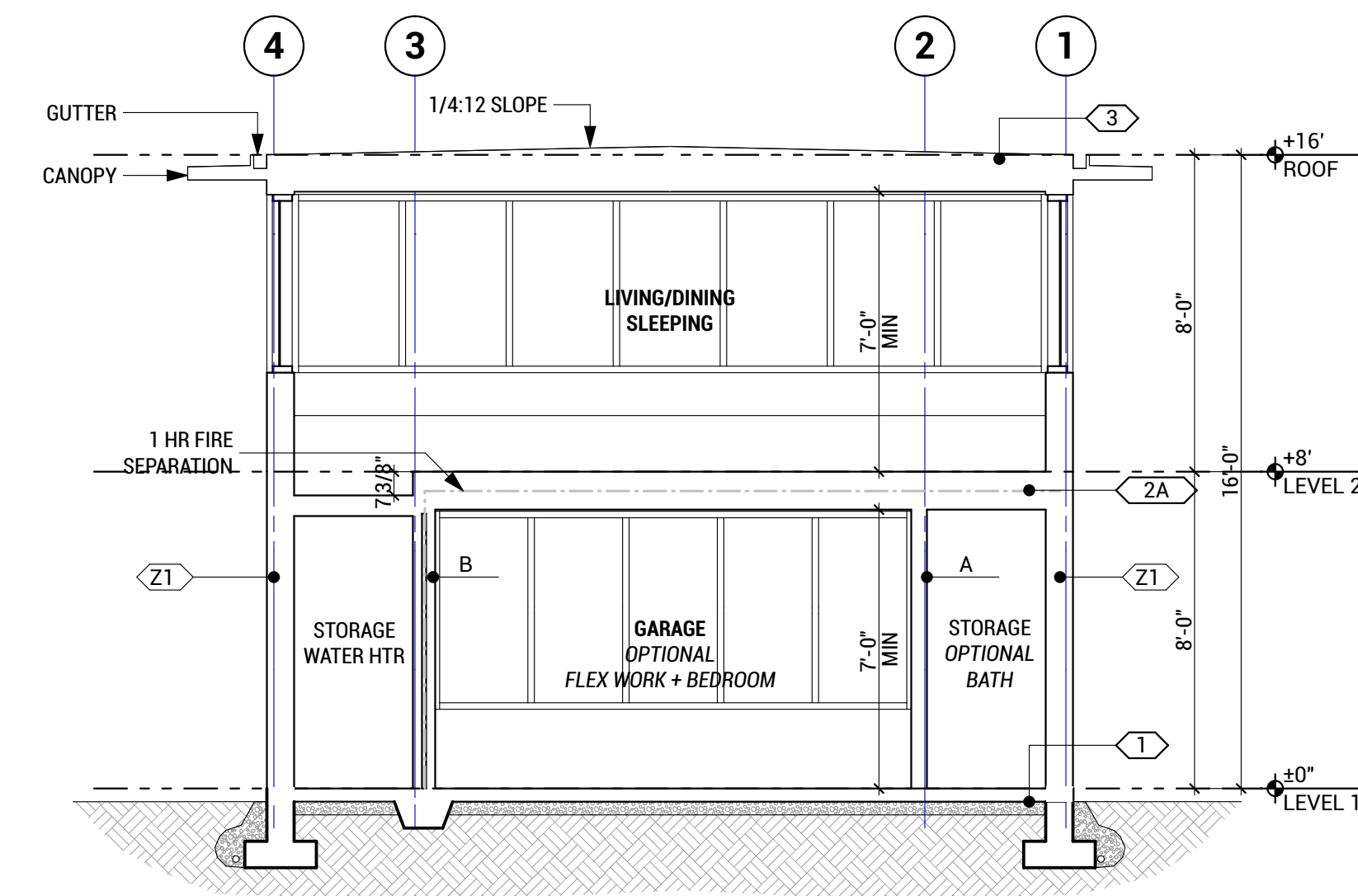
AS INDICATED



1 SECTION - STAIR  
A400 SCALE: 1/4" = 1'-0"



2 SECTION - CENTER TO KITCHEN  
A400 SCALE: 1/4" = 1'-0"



3 SECTION - CENTER TO LIVING  
A400 SCALE: 1/4" = 1'-0"

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AHOUSE

NOTES

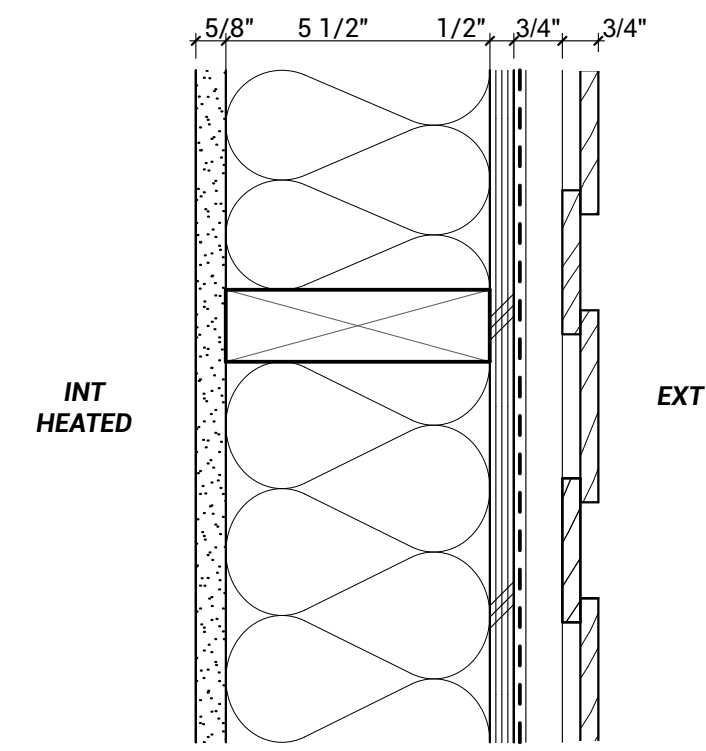
REVISION ID	CHANGE NAME	DATE

ISSUE DESIGN DEVELOPMENT  
DATE 02/17/2020  
DRAWN BY RDF

SHEET TITLE  
BUILDING SECTIONS

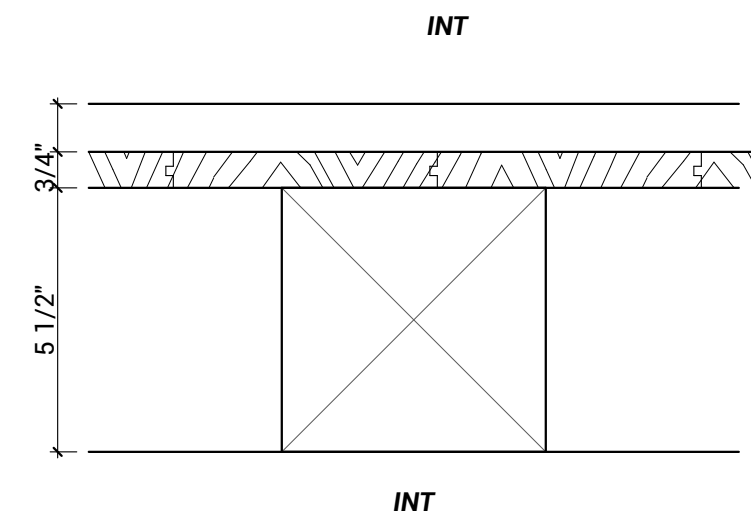
SHEET SCALE AS INDICATED

# A400



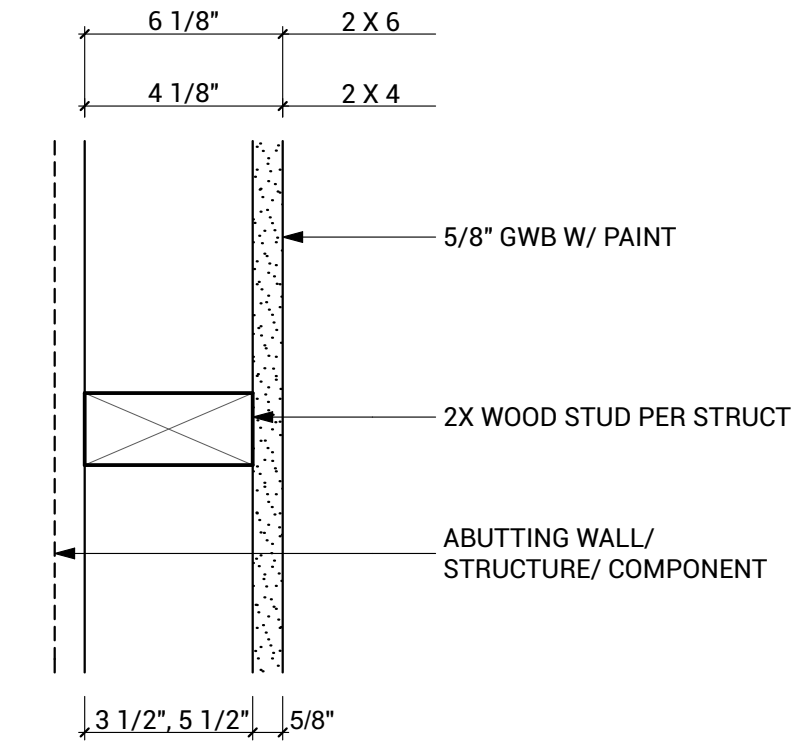
**Z1 WOOD STUD WALL W/ WOOD CLADDING - R-21 MIN**

- 3/4" WOOD CLADDING REVERSE BOARD AND BATTEN
- 3/4" WD FURRING, SLOPED TOP, TREATED W/ SBX AFTER RIPPING TO SIZE
- WRB - (AIR BARRIER)
- 1/2" PLYWD
- 2X6 WD STUDS @ 16" OC
- BATT INSULATION OR HIGH DENSITY BLOWN IN CELLULOSE - R-21 MIN
- 5/8" GWB W/ VAPOR RETARDER PAINT



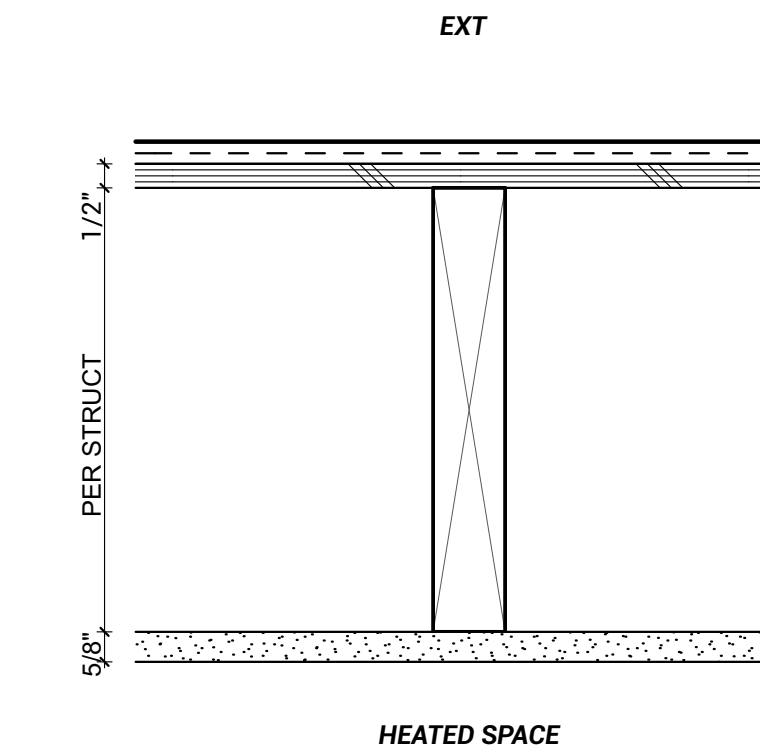
**5 INTERIOR T&G WOOD DECKING**

- FINISH PER SCHEDULE
- 3/4" WOOD T&G
- 6X6 WOOD BEAMS (PER STRUCT)



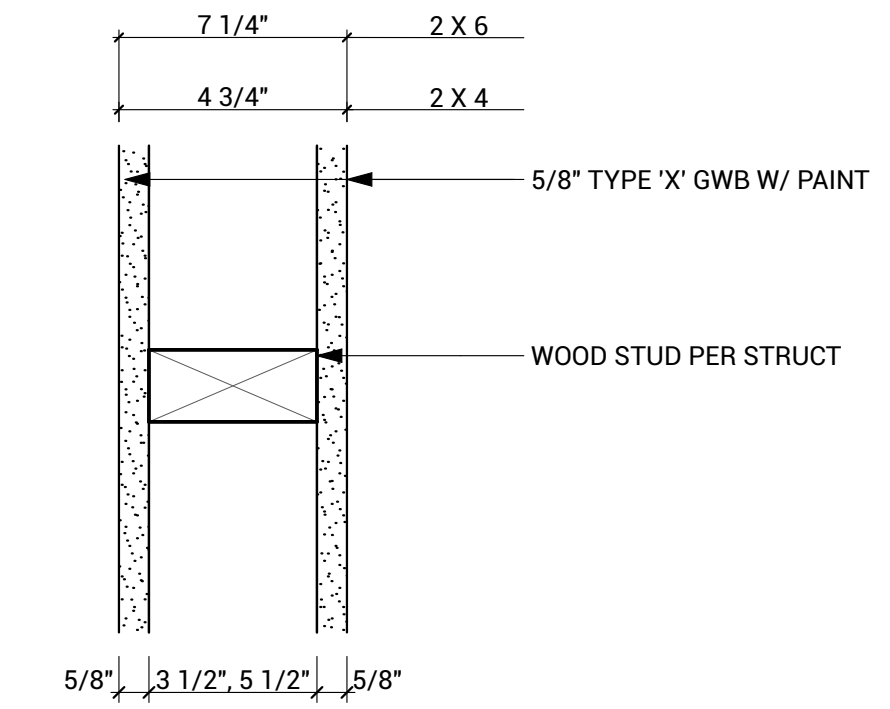
**E WOOD STUD FURRING WALL - 2 x 6 STUD**

**D WOOD STUD FURRING WALL - 2 x 4 STUD**



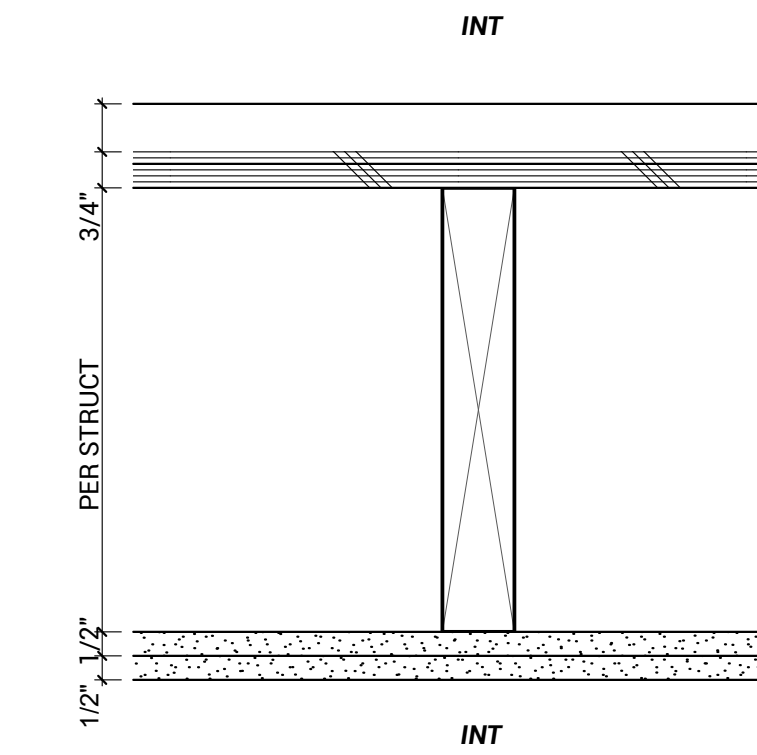
**3 ROOF ASSEMBLY - R-49 MIN**

- SHEET METAL ROOFING
- 1/2" WATERPROOFING MEMBRANE
- PLYWD SHTG (PER STRUCT)
- HIGH DENSITY BLOWN IN CELLULOSE
- MAINTAIN 1" AIR SPACE ABOVE FOR VENTILATION
- SLOPE PER PLAN
- 2X WOOD JOISTS (PER STRUCT)
- 5/8" GWB



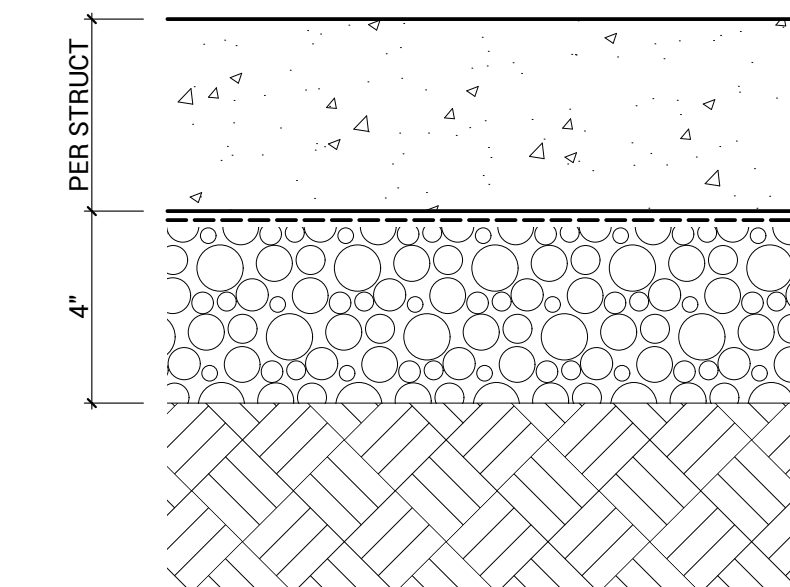
**B TYP. INTERIOR WOOD STUD WALL - 2 x 6 STUD**

**A TYP. INTERIOR WOOD STUD WALL - 2 x 4 STUD**



**2A TYP. INTERIOR WD FRAMED FLOOR (1 HR)**

- FINISH PER SCHEDULE
- 3/4" PLYWD
- 2X WOOD JOISTS (PER STRUCT)
- 1/2" TYPE C GWB
- 1/2" TYPE C GWB



**1 TYP. SLAB ON GRADE**

- CONCRETE SLAB PER STRUCT
- VAPOR BARRIER
- 4" MIN GRAVEL STRUCTURAL FILL

PROVIDE R-10 RIGID INSUL 24" WIDE @ PERIMETER OF SLAB BELOW HEATED SPACE, AND EXTENDED DOWN TO TOP OF FOOTING, TYP

**GENERAL NOTES**

1. GYP BD IS 5/8" U.N.O.
2. CEMENTITIOUS BACKER IS 5/8"
3. STUD SIZES ARE PER PARTITION TYPE
4. WHERE ENDS OF PARTITION ABUT OTHER CONSTRUCTION PROVIDE RELIEF JOINT
5. SHEAR WALLS PER STRUCTURAL SCHEDULE
6. ALL EXPOSED GYP BOARD TO BE LEVEL 4 FINISH U.N.O.

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CONSTRUCT NEW 2-STORY DETACHED ACCESSORY DWELLING UNIT IN REAR YARD OF EXISTING SINGLE FAMILY RESIDENCE

ADDRESS SEATTLE

DESIGN AHOUSE

**NOTES**

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SHEET TITLE ASSEMBLIES

SHEET

**A800**

SCALE

AS INDICATED