

# ARCH 2331

## BUILDING TECHNOLOGY II

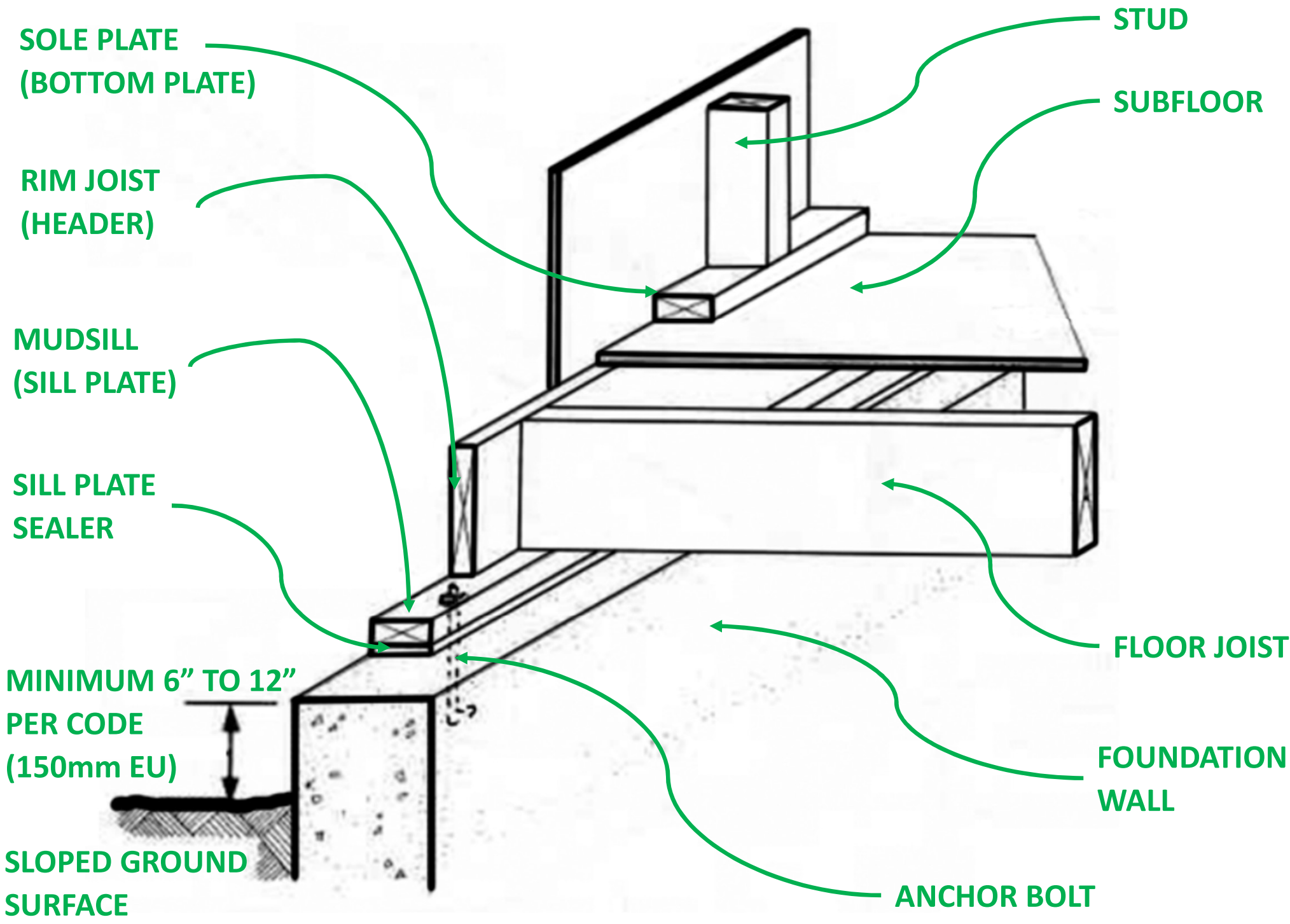




# RH House







SOLE PLATE  
(BOTTOM PLATE)

RIM JOIST  
(HEADER)

MUDSILL  
(SILL PLATE)

SILL PLATE  
SEALER

MINIMUM 6" TO 12"  
PER CODE  
(150mm EU)

SLOPED GROUND  
SURFACE

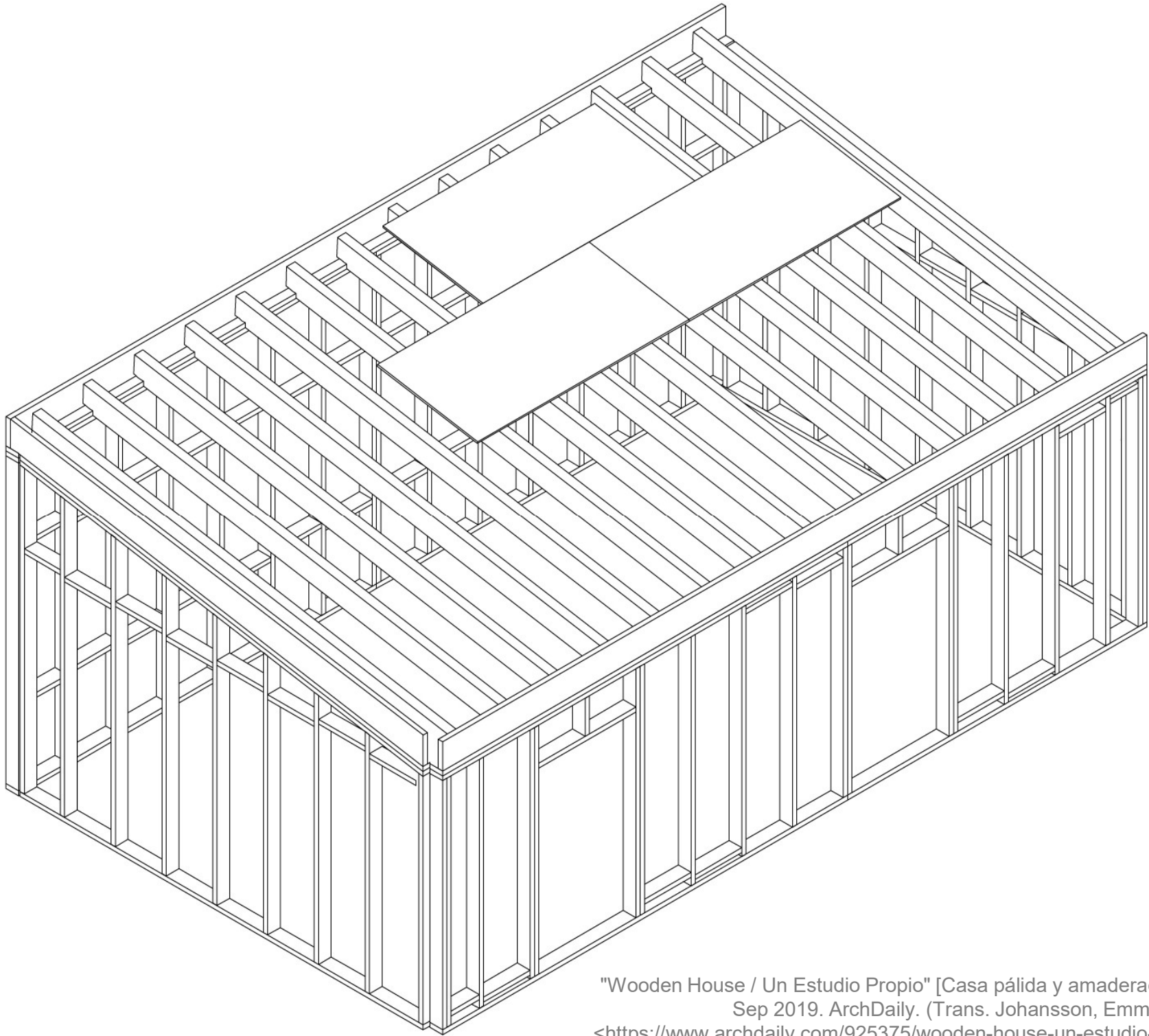
STUD

SUBFLOOR

FLOOR JOIST

FOUNDATION  
WALL

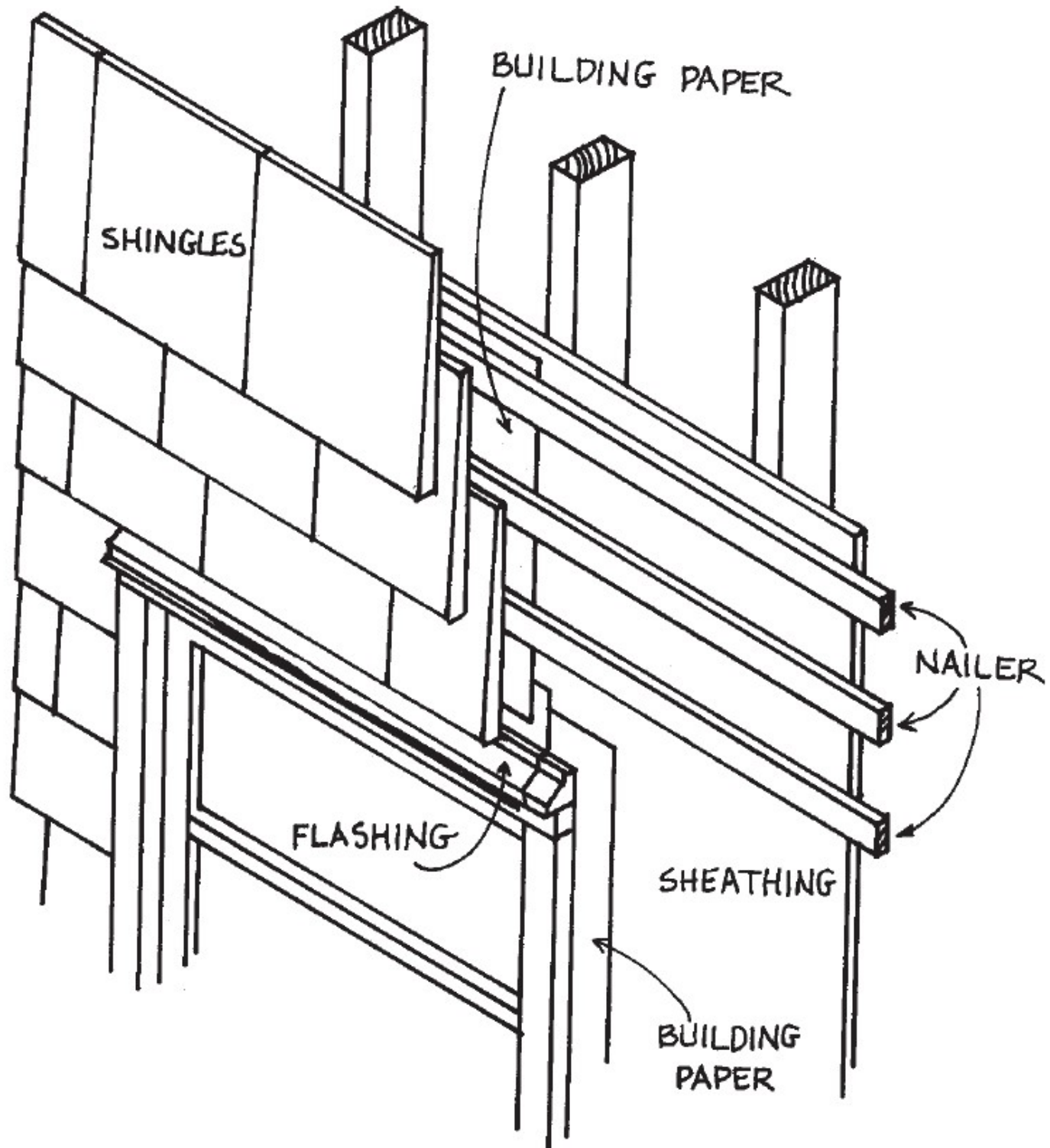
ANCHOR BOLT



"Wooden House / Un Estudio Propio" [Casa pálida y amaderada / Un Estudio Propio] 25  
Sep 2019. ArchDaily. (Trans. Johansson, Emma) Accessed 16 Oct 2019.  
<<https://www.archdaily.com/925375/wooden-house-un-estudio-propio/>> ISSN 0719-8884

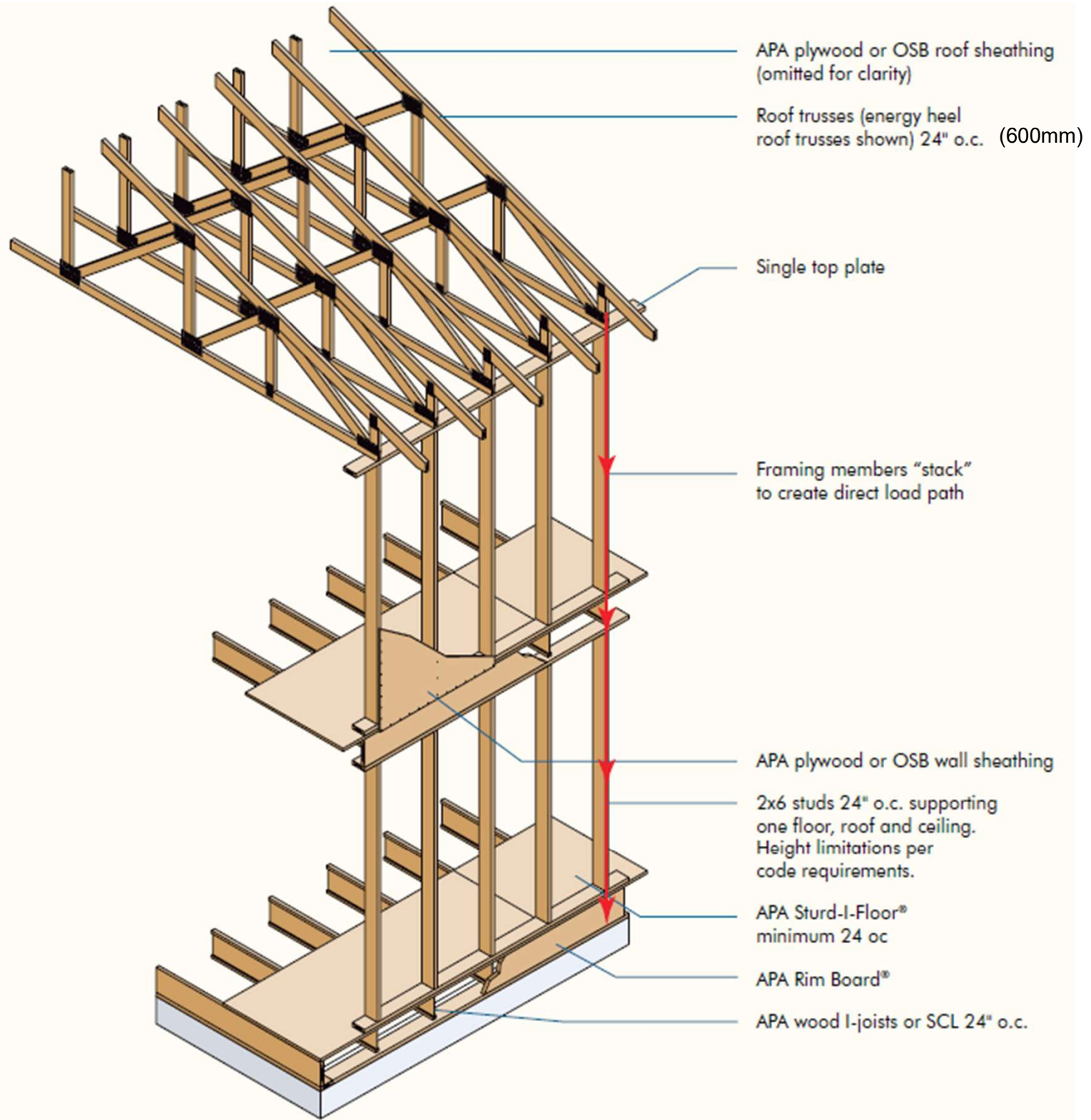






Details For Conventional Wood Frame Construction -- American forestry and paper Association

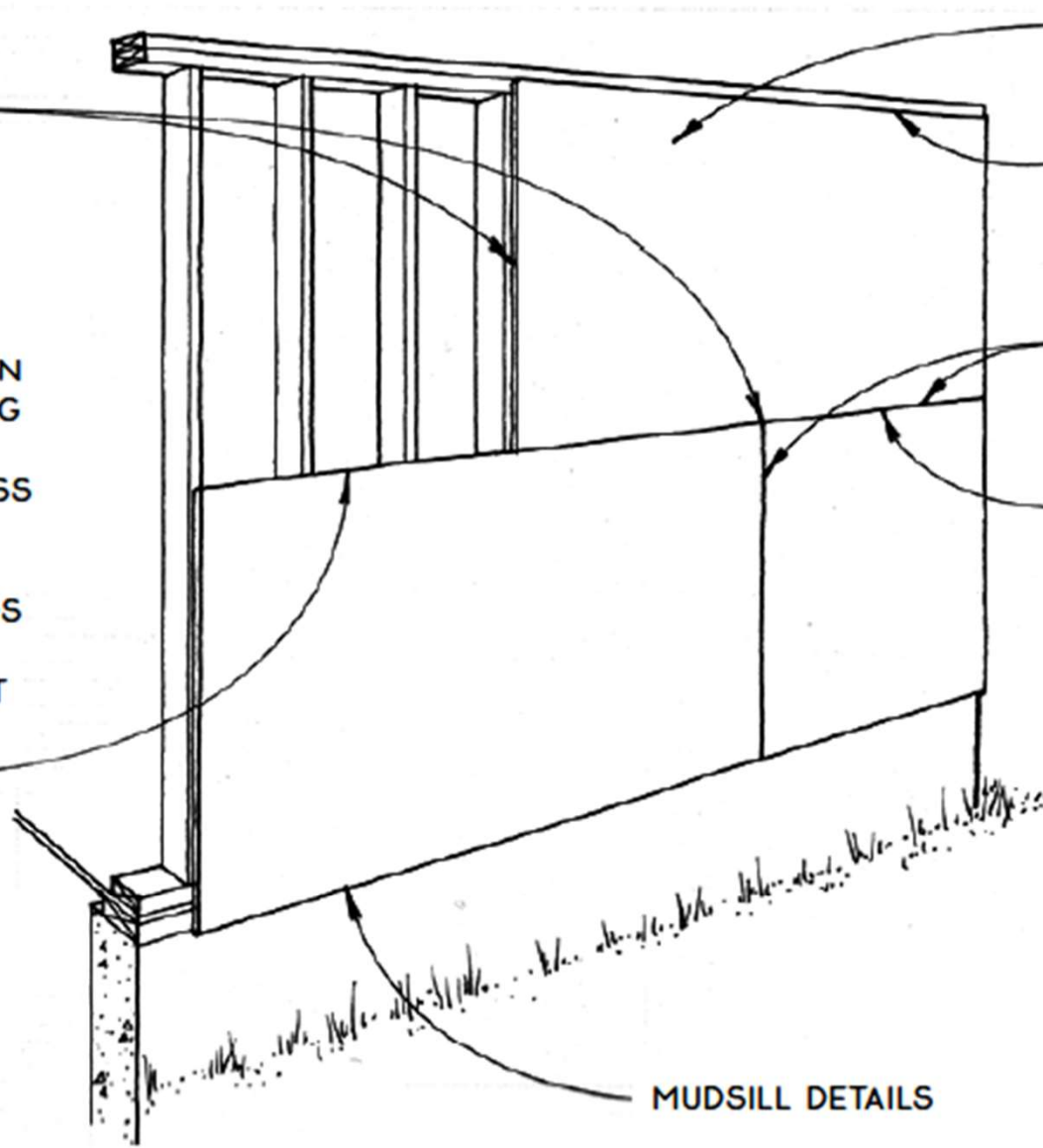




STAGGER VERTICAL JOINTS BETWEEN STRUCTURAL PANELS.

WHEN NOT ENGINEERED AS BRACING, SHEATHING PANELS MAY PAN BETWEEN STUDS WITHOUT BLOCKING DEPENDING ON STUD SPACING, PANEL THICKNESS & SIDING MATERIAL.  $\frac{3}{8}$ -IN. SHEATHING IS RECOMMENDED FOR STUDS AT 16 IN. O.C. &  $\frac{1}{2}$ -IN. SHEATHING FOR STUDS AT 24 IN. O.C. VERIFY SPAN RATING ON PANELS.

NOTE  
HORIZONTAL PANELS SHOWN IN THIS DETAIL MAY BE REPLACED WITH VERTICAL PANELS.



PANEL NAILING SCHEDULE

UPPER EDGE OF PANEL ALIGNS WITH LOWER TOP PLATE.

LEAVE  $\frac{1}{8}$ -IN. SPACE AT ALL PANEL EDGES.

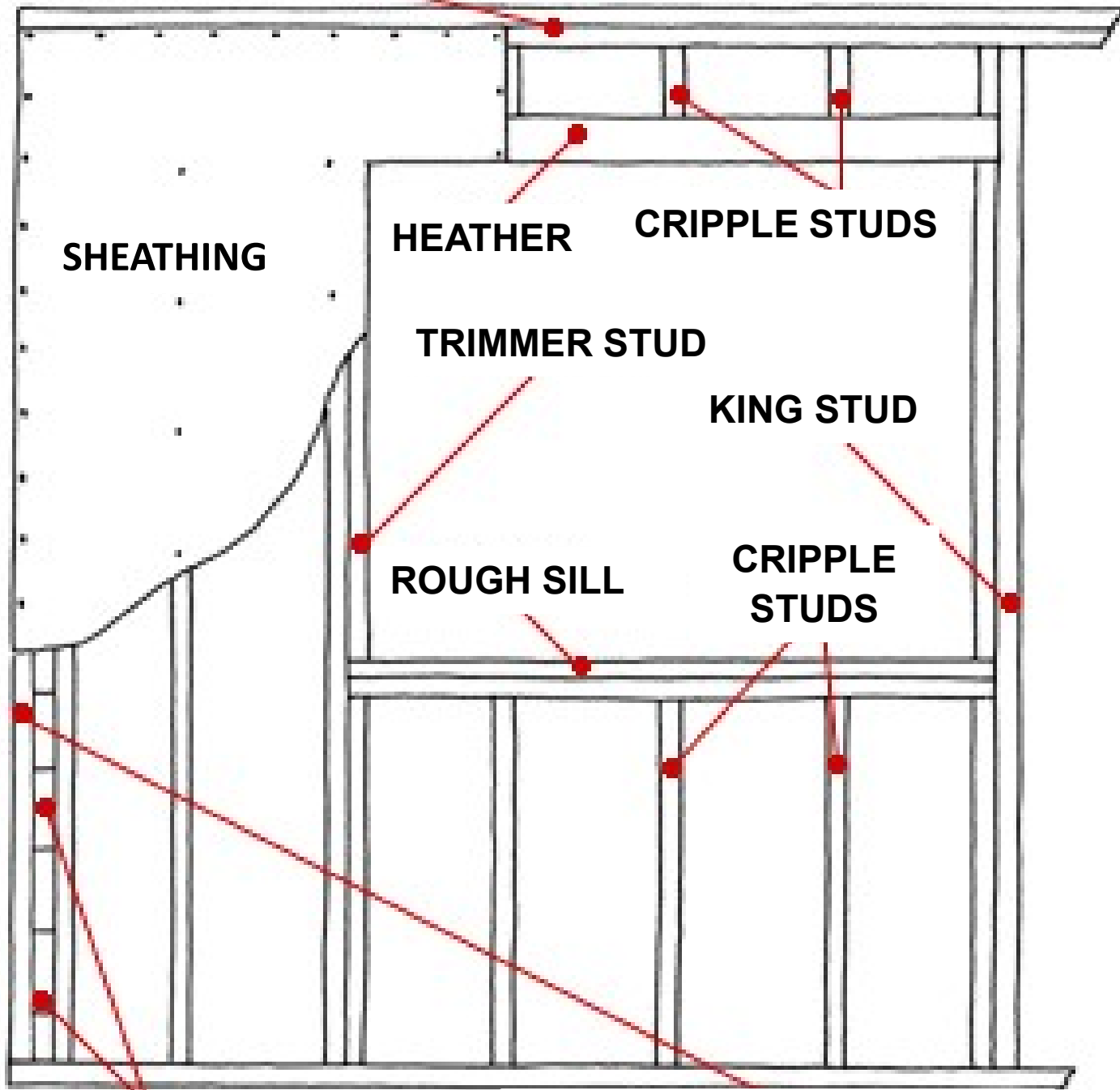
BLOCKING BEHIND PANEL JOINTS IS REQUIRED WHEN HORIZONTAL PANELS ARE ENGINEERED FOR LATERAL BRACING.

MUDSILL DETAILS

NOTE.  
THIS DETAIL IS APPROPRIATE ONLY IF STUDS ARE PRECUT AT  $90\frac{3}{4}$  IN. OR LESS & THE SUBFLOOR SITS DIRECTLY ON THE MUDSILL, SEE 33C & D, OR IF A SLAB FOUNDATION IS USED.



**DOUBLE TOP PLATE**



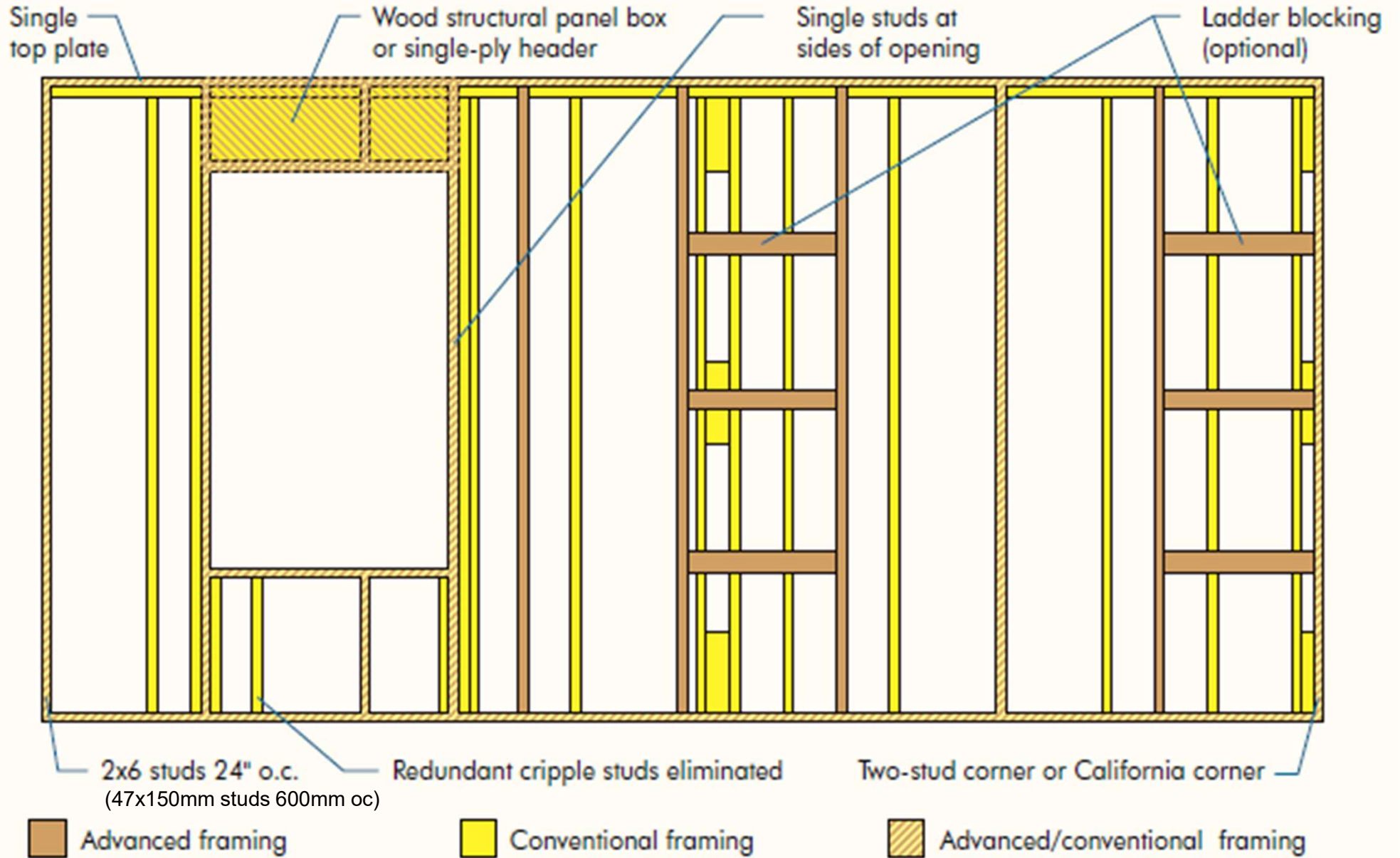
**SPACER BLOCKS**

**DOUBLE STUD CORNER POST**

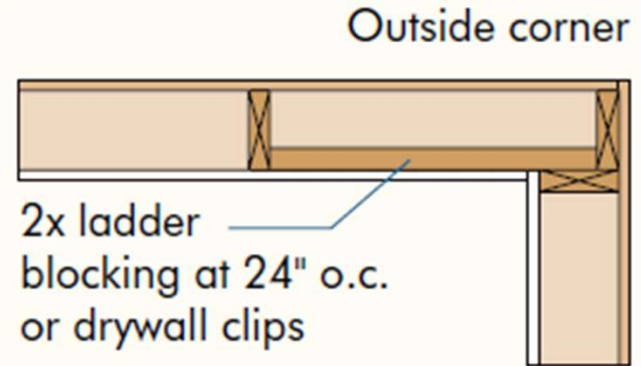
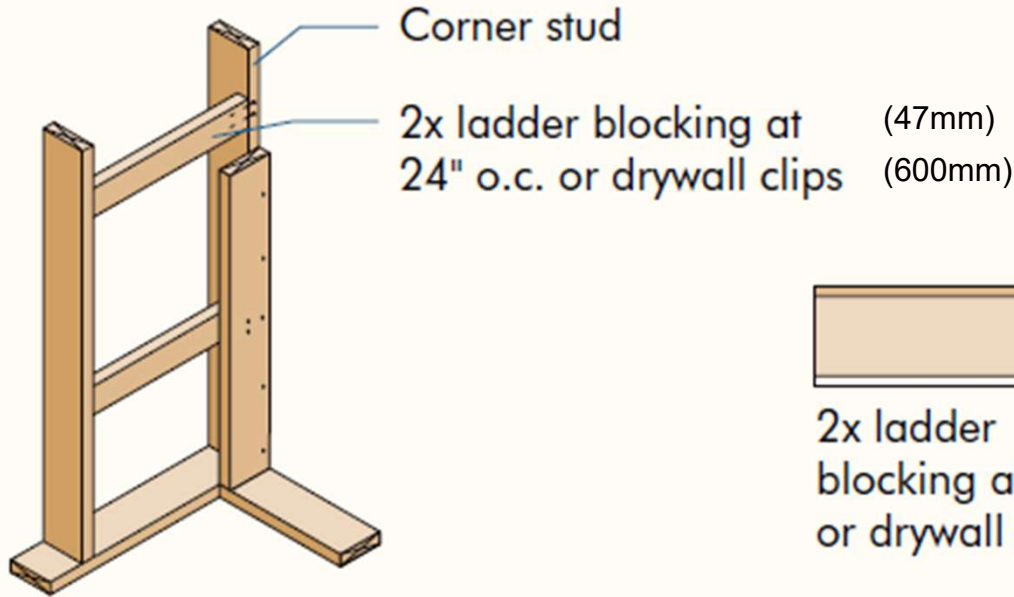




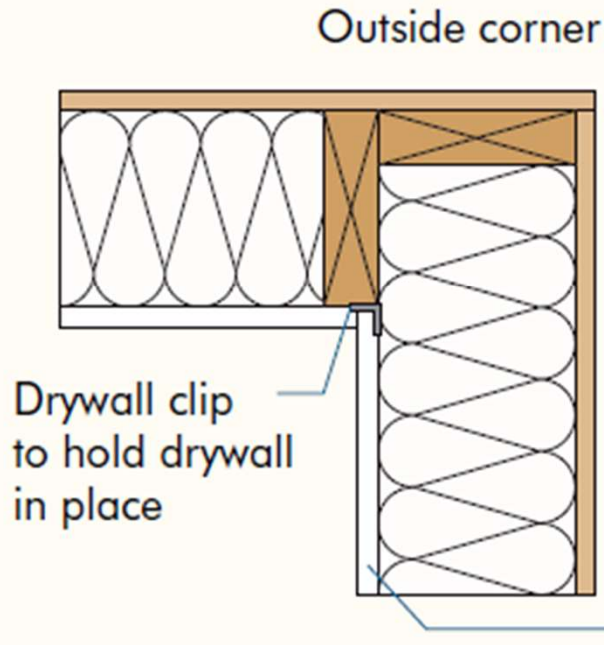
# WALL FRAME COMPARISON



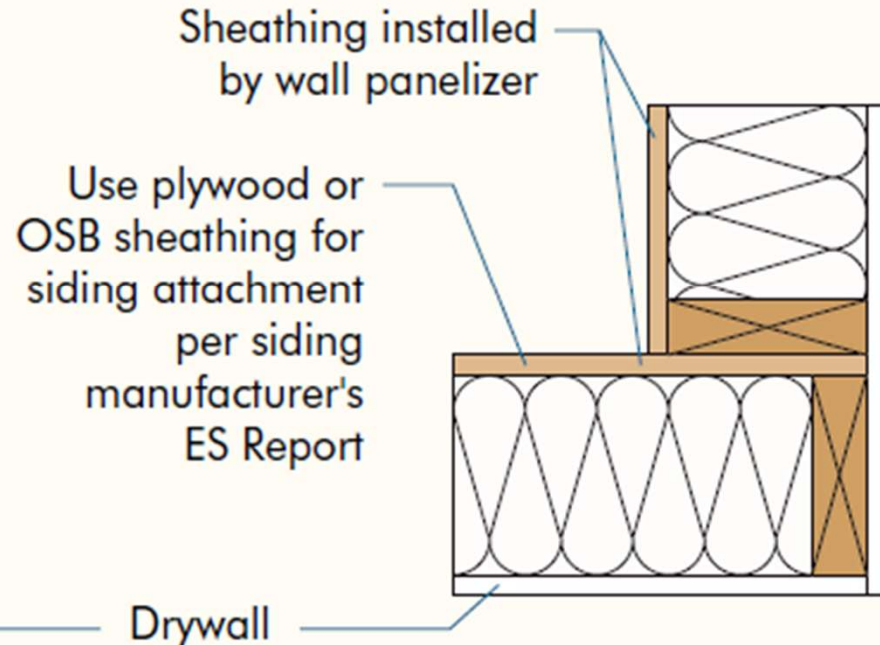
# TWO-STUD CORNERS



## TWO-STUD CORNER (WITH DRYWALL CLIPS)



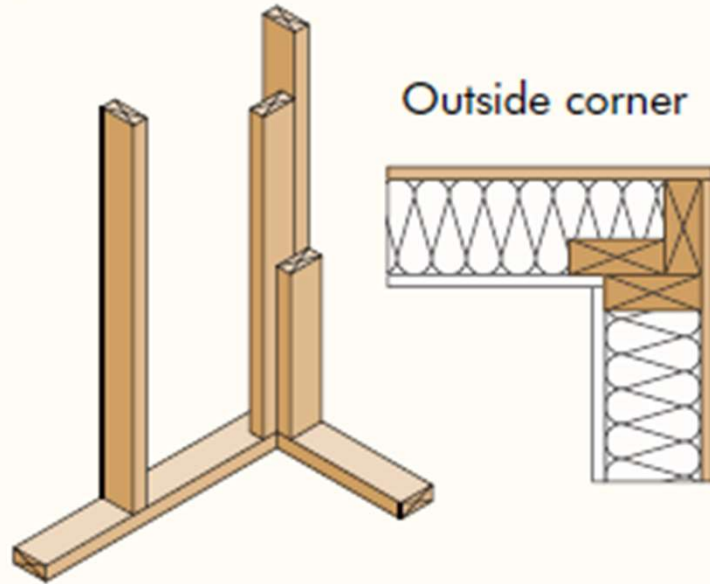
## TWO-STUD INSIDE CORNER (FOR WALL PANELIZATION)



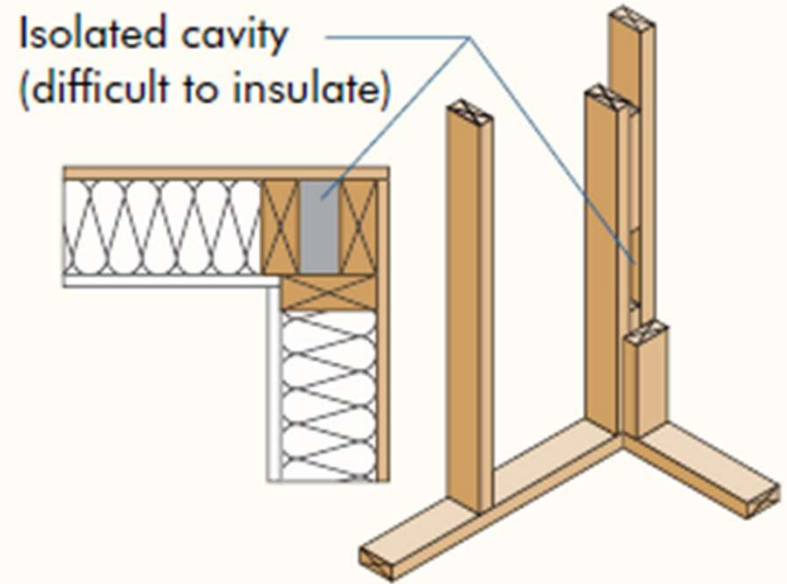


## THREE-STUD CORNERS

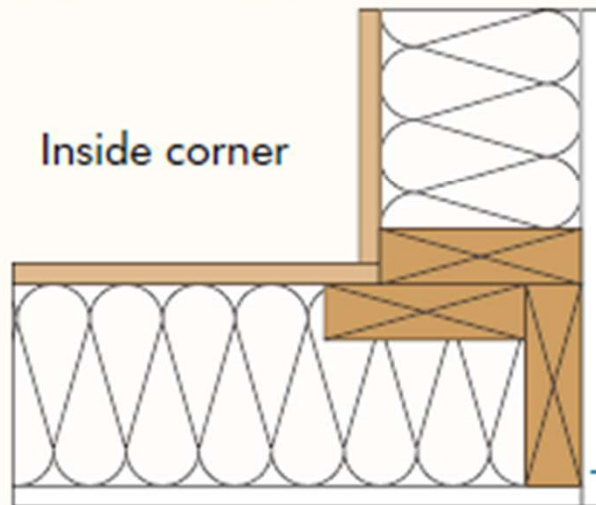
### INSULATED THREE-STUD CORNER (CALIFORNIA CORNER)



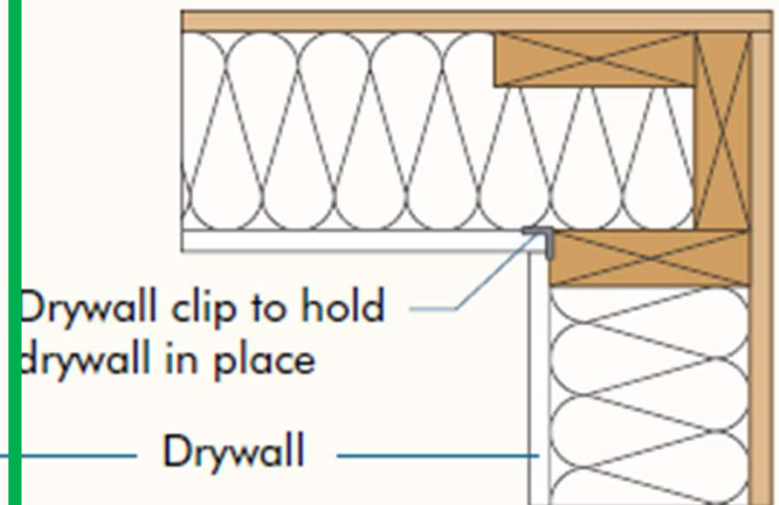
### CONVENTIONAL CORNER



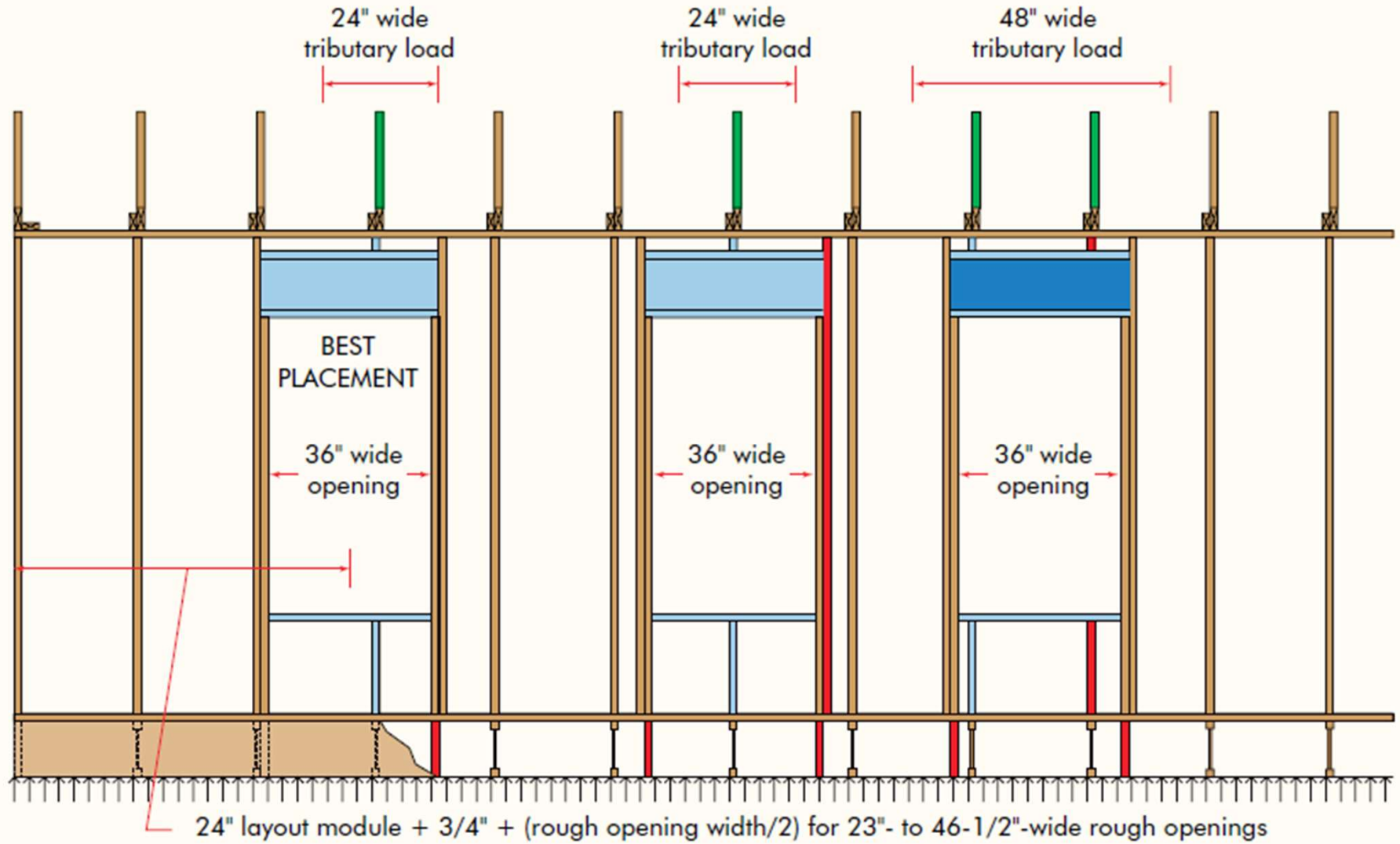
### INSULATED THREE-STUD CORNER (INSIDE CORNER)



### ALTERNATE INSULATED THREE-STUD CORNER (WITH DRYWALL CLIPS)



The placement of openings in load-bearing walls and the layout of framing members above openings have significant impact on header sizing for advanced framing.

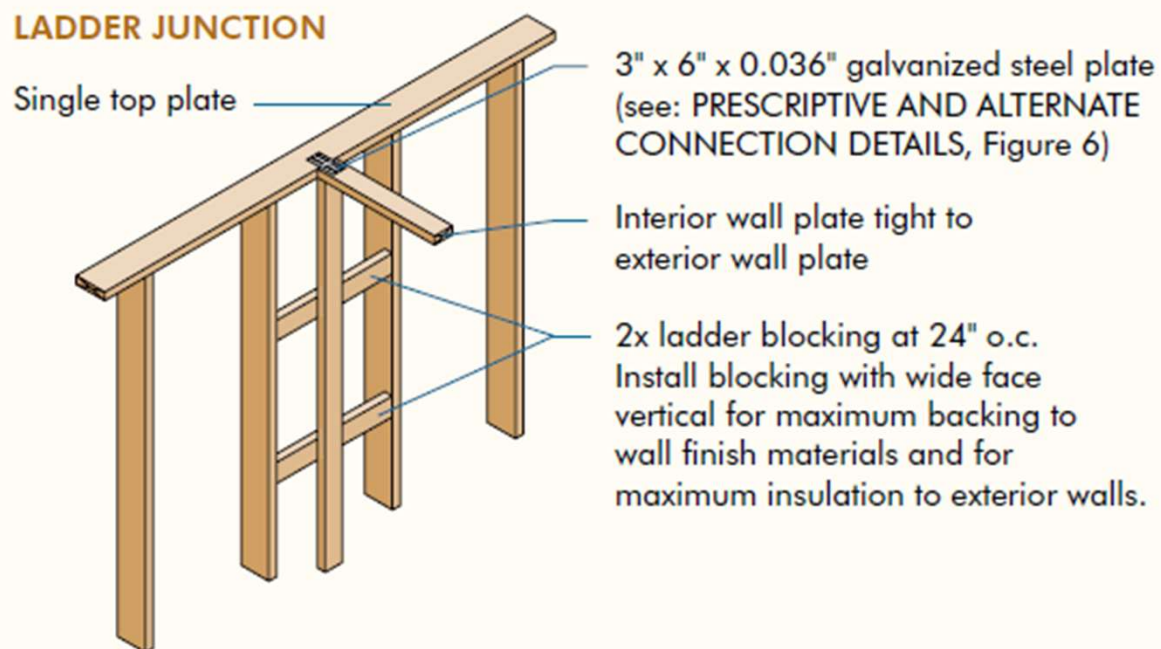


Continuous bearing as provided by load-bearing sill beam or foundation wall.

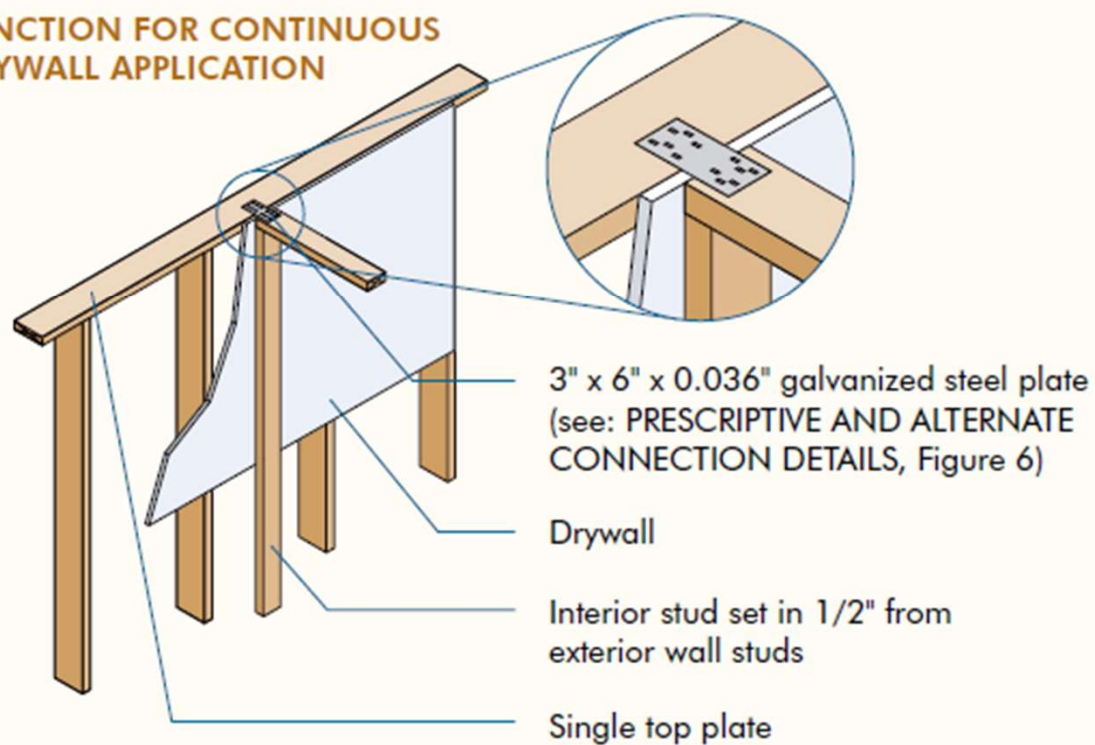
- Minimum required materials to frame rough opening
- Structure above imposing tributary loads on header
- Potential increased header size — increased load from structure above
- Excess materials due to inefficient opening placement

## INTERIOR WALL INTERSECTION OPTIONS

### LADDER JUNCTION



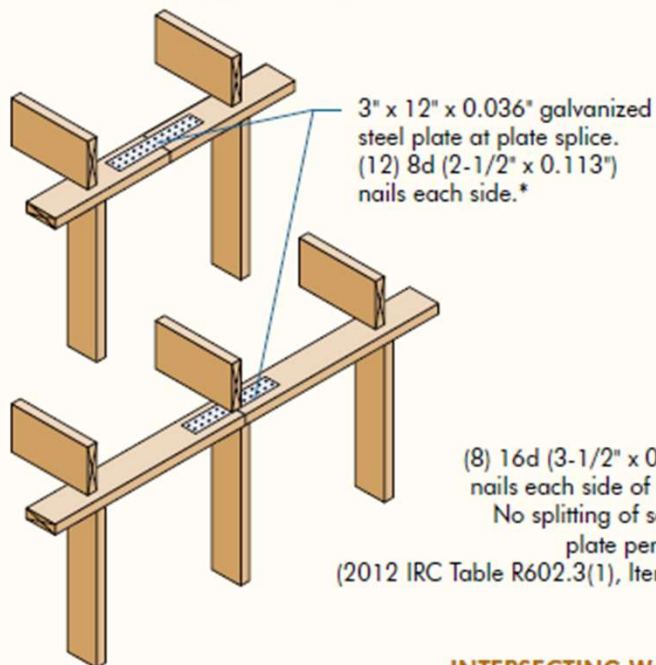
### JUNCTION FOR CONTINUOUS DRYWALL APPLICATION



Detail courtesy of NAHB Research Center.



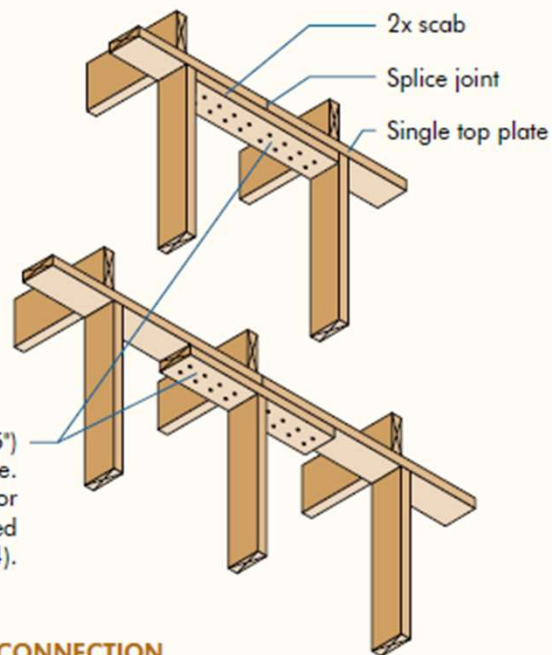
### PRESCRIPTIVE CONNECTION



3" x 12" x 0.036" galvanized steel plate at plate splice. (12) 8d (2-1/2" x 0.113") nails each side.\*

(8) 16d (3-1/2" x 0.135") nails each side of splice. No splitting of scab or plate permitted (2012 IRC Table R602.3(1), Item 14).

### ALTERNATE CONNECTION: SPLICE AT STUD



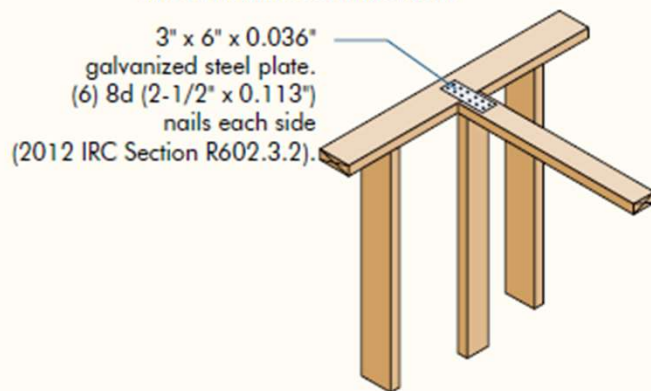
2x scab

Splice joint

Single top plate

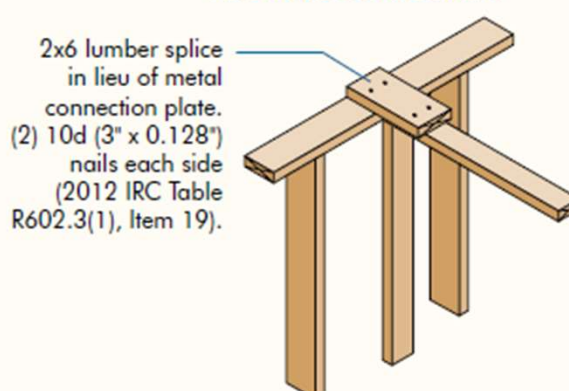
### INTERSECTING WALL CONNECTION

#### PRESCRIPTIVE CONNECTION

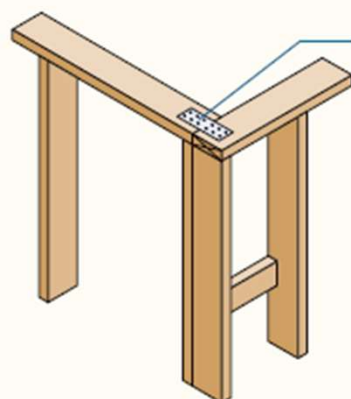


3" x 6" x 0.036" galvanized steel plate. (6) 8d (2-1/2" x 0.113") nails each side (2012 IRC Section R602.3.2).

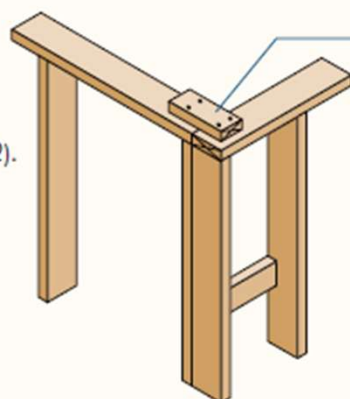
#### ALTERNATE CONNECTION



2x6 lumber splice in lieu of metal connection plate. (2) 10d (3" x 0.128") nails each side (2012 IRC Table R602.3(1), Item 19).



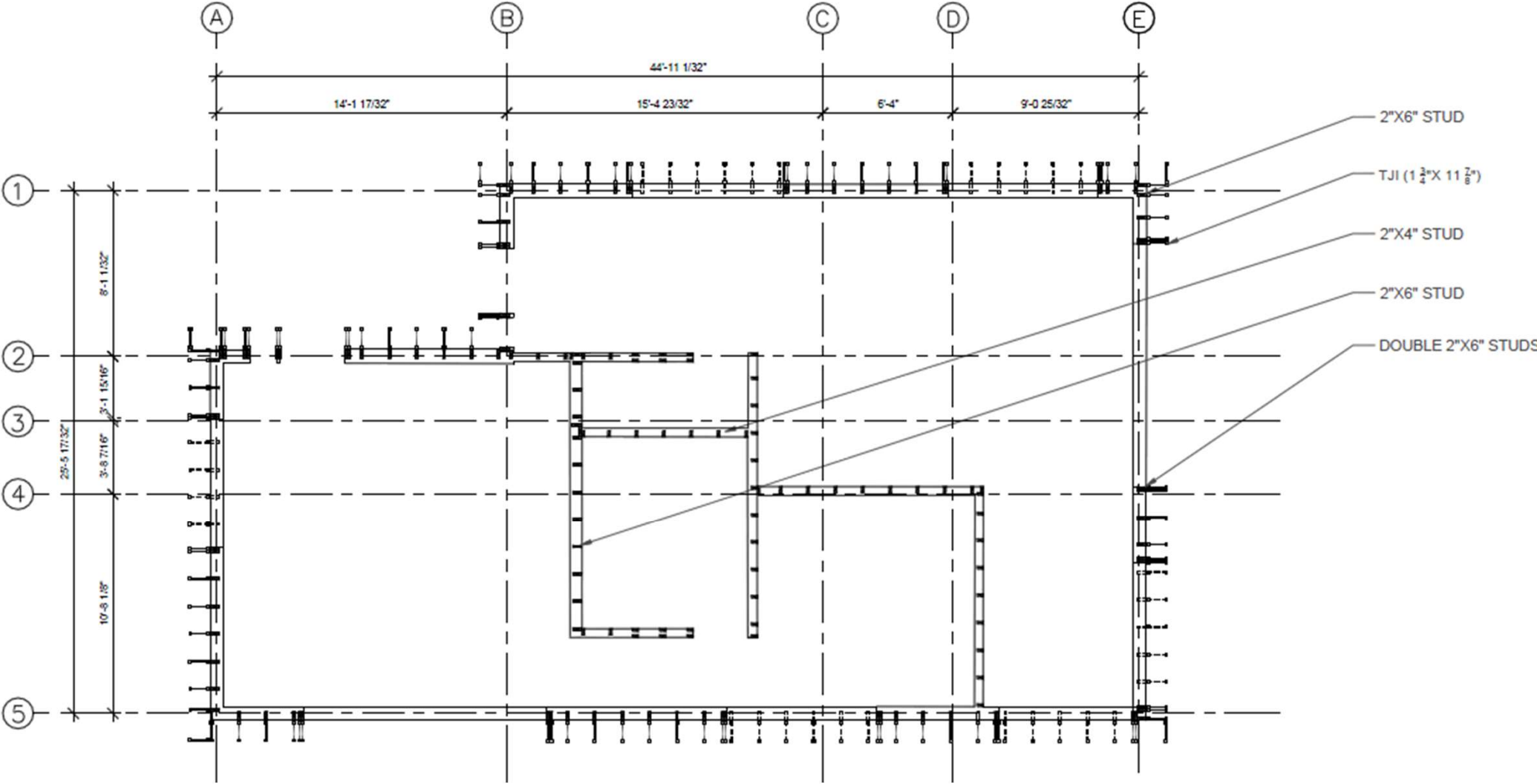
3" x 6" x 0.036" galvanized steel plate. (6) 8d (2-1/2" x 0.113") nails each side (2012 IRC Section R602.3.2).



2x4 or 2x6 lumber splice in lieu of metal connection plate. (2) 10d (3" x 0.128") nails each side (2012 IRC Table R602.3(1), Item 19).



# Stud layouts





BACK VENTED SIDING SYSTEM

EXTERIOR AIR BARRIER & WRB:  
PRO CLIMA SOLITEX MENTO PLUS OR SOLITEX MENTO 1000

I-JOIST WITH DENSE-PACK GUTEX THERMOFIBER OR CELLULOSE OR HAVELOCK WOOL LOOSE-FILL INSULATION

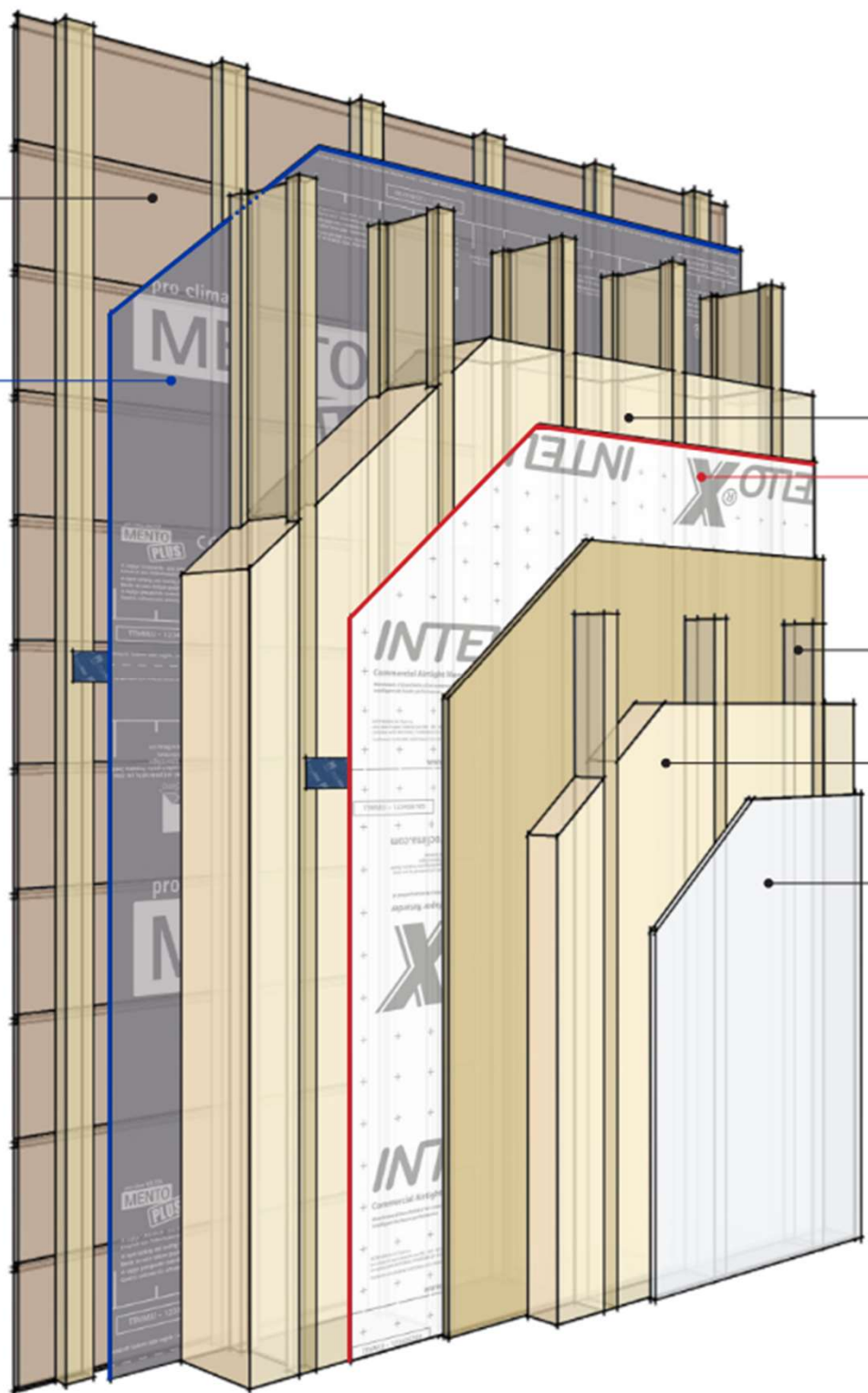
INTERIOR AIR BARRIER, SMART VAPOR RETARDER & TEMPORARY WRB:  
INTELLO X / SOLITEX MENTO 1000 / ADHERO

WOOD STRUCTURE FRAMING & SERVICE CAVITY

OPTIONAL INSULATION IN SERVICE CAVITY

INTERIOR FINISH

EXTERIOR WALL with I joist outriggers

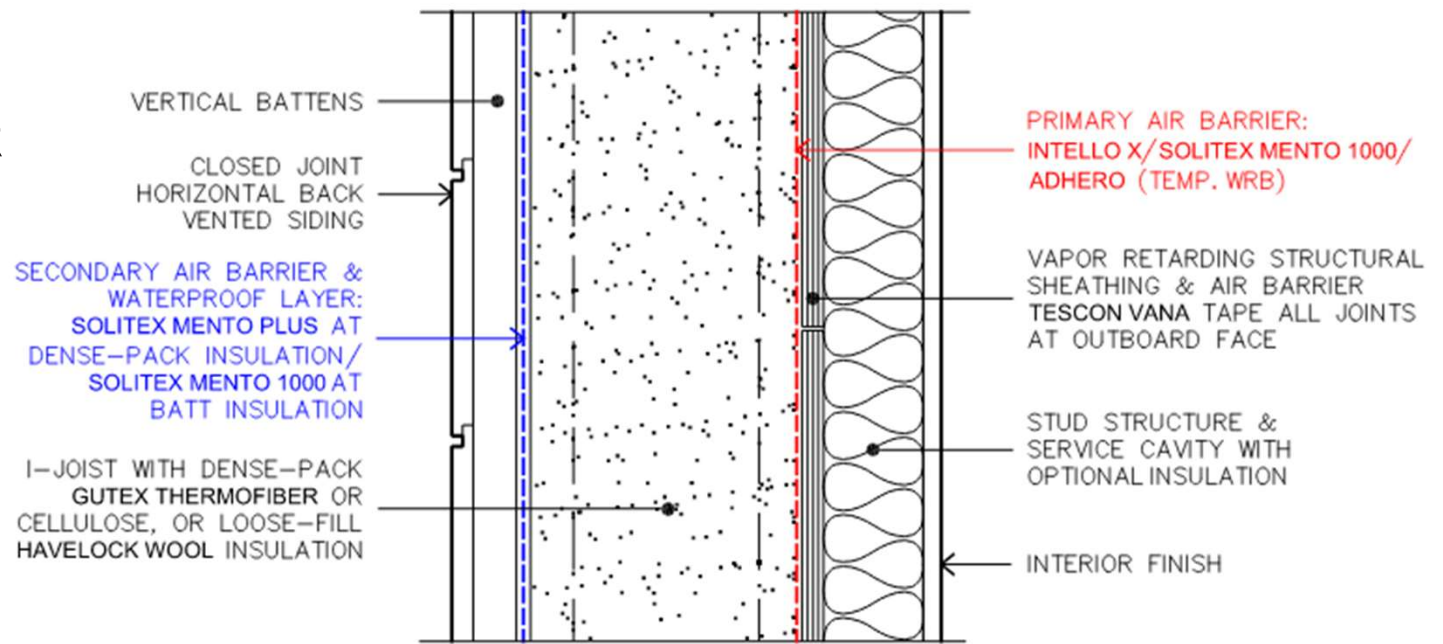




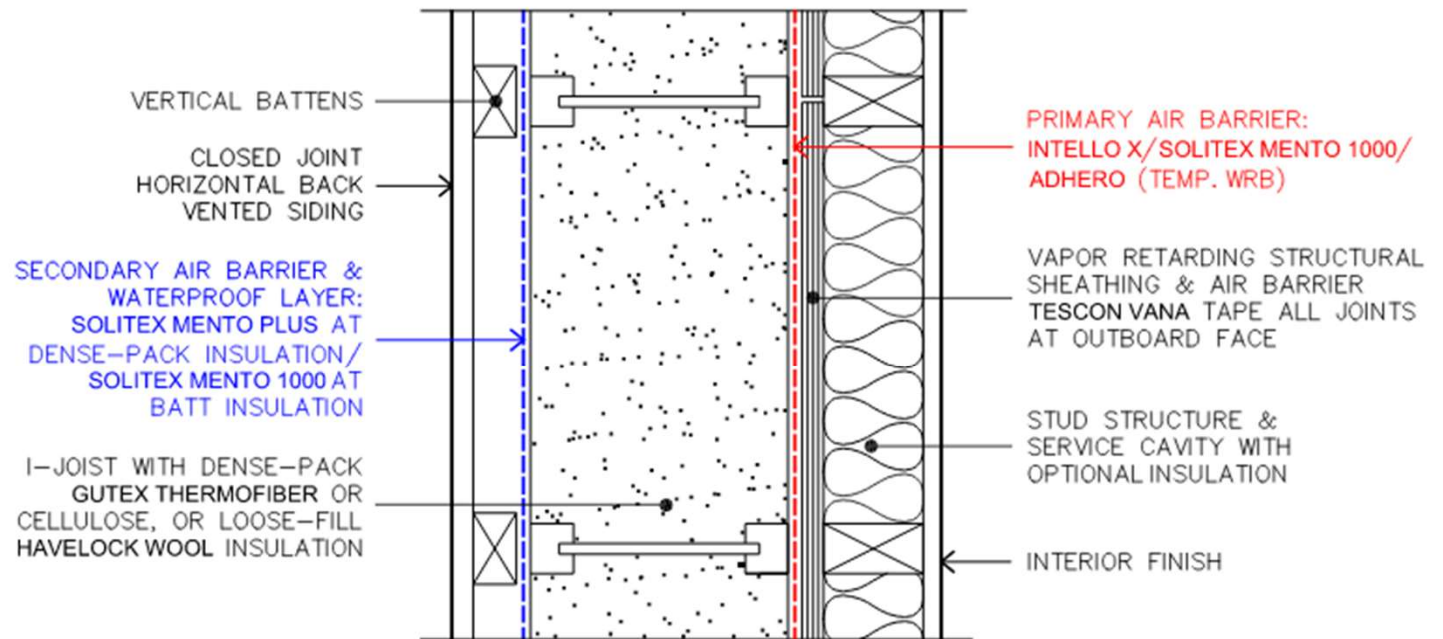




# EXTERIOR WALL I-JOIST OUTRIGGER ASSEMBLIES



SECTION



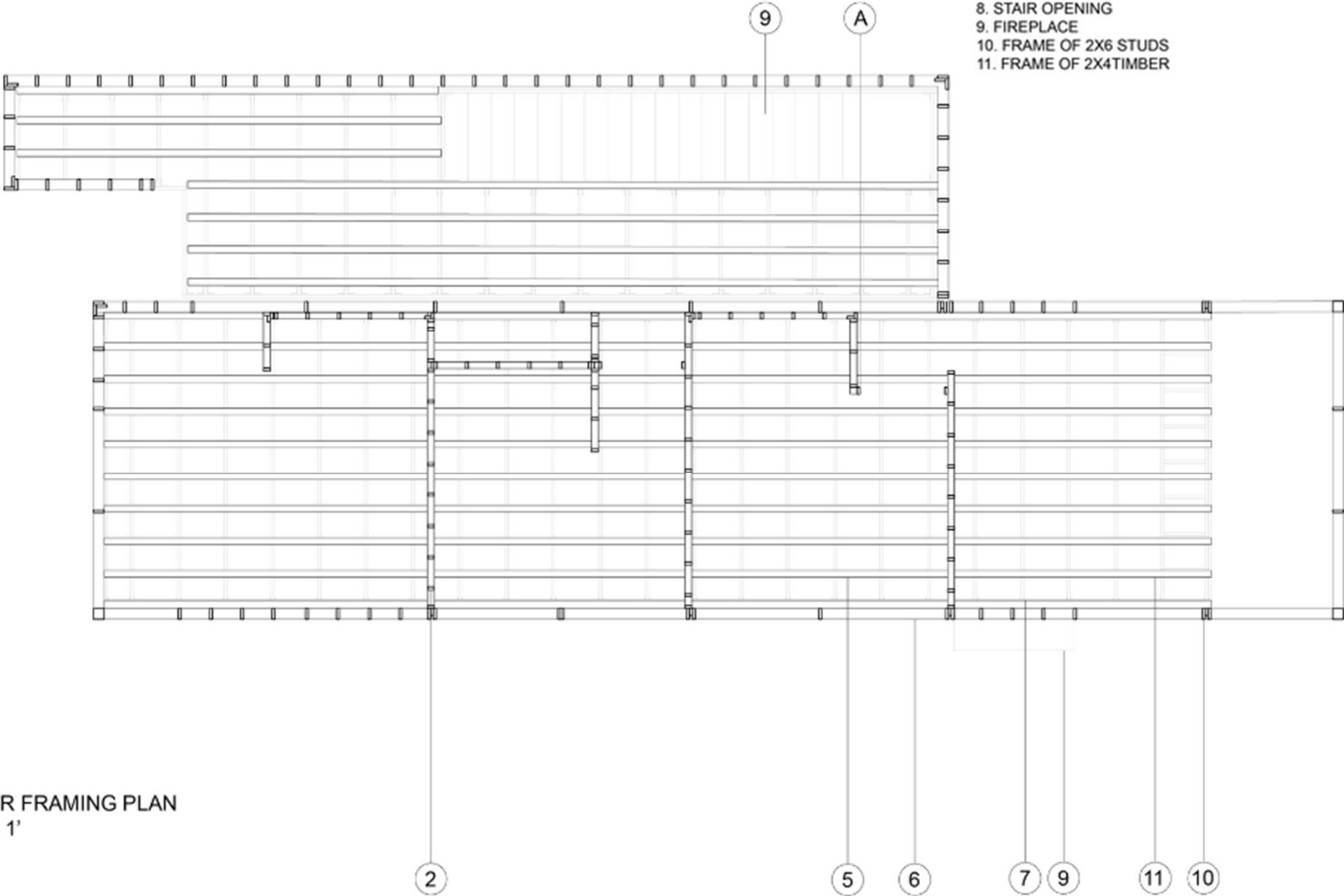
PLAN



# Stud layouts

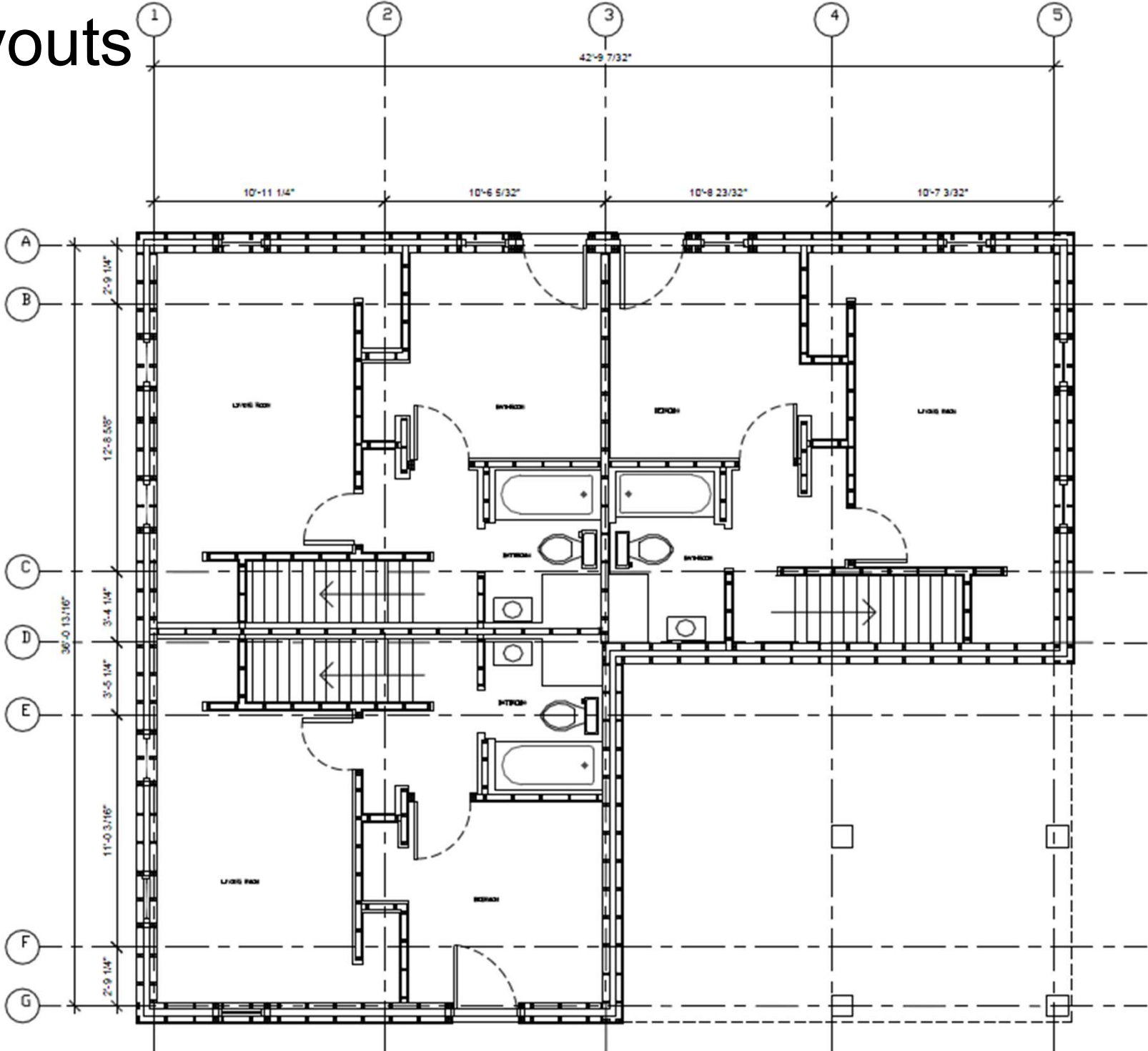
MATERIAL KEY:

- 1. FRAME OF 9 1/4" TIMBER I-JOISTS, 9 1/4" LVL
- 2. INTERIOR 2X4 STUDS
- 3. 2X6 TOP PLATE TIMBER
- 4. 2X4 FRAME
- 5. EXPOSED 2X8 (NOMINAL) TIMBER RAFTERS
- 6. 2X6 BOTTOM PLATE TIMBER
- 7. JOIST HANGERS
- 8. STAIR OPENING
- 9. FIREPLACE
- 10. FRAME OF 2X6 STUDS
- 11. FRAME OF 2X4TIMBER



SECOND FLOOR FRAMING PLAN  
SCALE: 3/16" = 1'

# Stud layouts



# Typical stud wall assembly

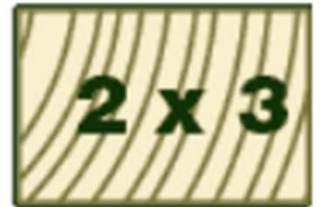




# FRAMING

## Lumber sizes and uses

- Columns (4 x 4) (4 x 6) (6 x 6)
- Beams and girders (4 x 8) (4 x 10)
- Built-up beams (3 – 2x10's to make a 6x10)
- Joists (2x6) (2x8) (2x10) (2x12)
- Studs (2x4) (2x6) (2x8)



# NOMINAL VS ACTUAL

Nominal dimensions: 2x4 2x6 2x8.....

Actual dimensions: After dressing : 1 1/2 x 3 1/2 .....

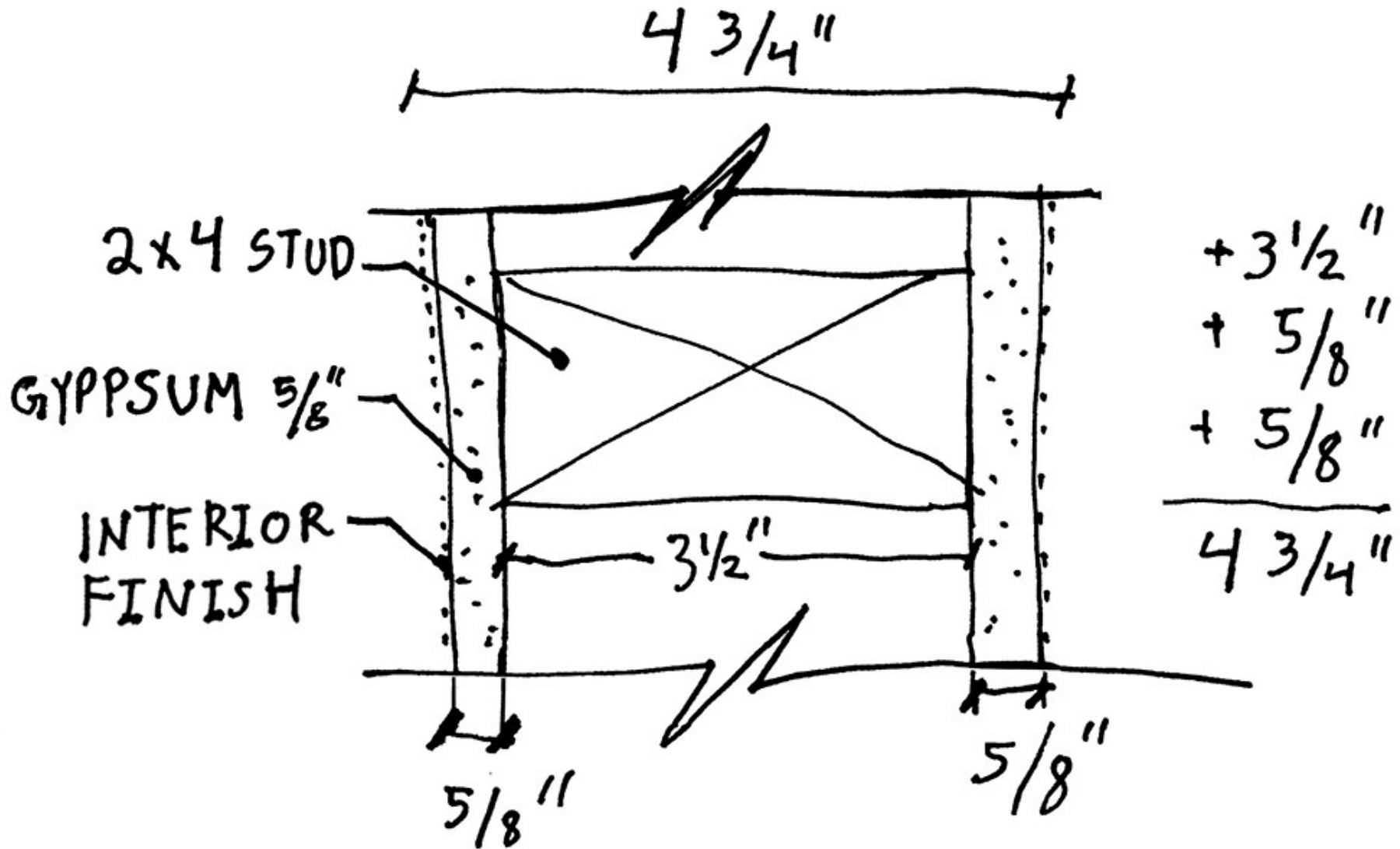
Nominal Dimension	Actual Dimension	
	imperial	metric
1	3/4"	19mm
2	1 1/2"	38mm
3	3 1/2"	64mm
4	3 1/2"	89mm
5	4 1/2"	114mm
6	5 1/2"	140mm
8	6 1/4"	184mm
10	9 1/4"	235mm
12	11 1/4"	236mm
over 12	3/4" less	19mm less

# Typical stud wall assembly



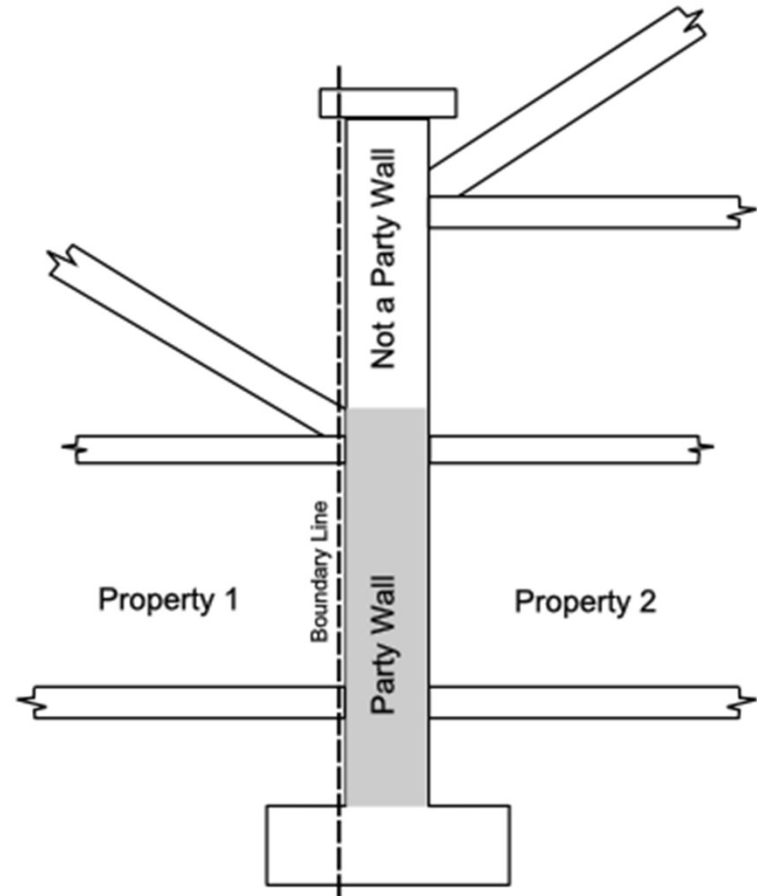
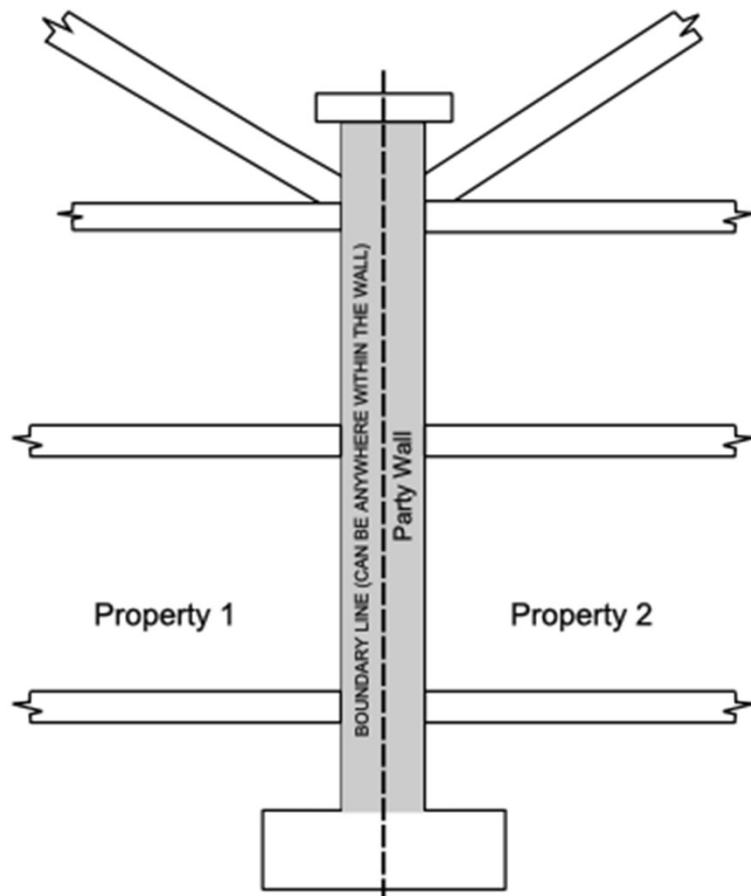


# Typical stud wall assembly



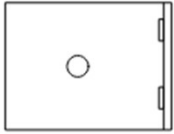


# COMMON WALL OR PARTY WALL

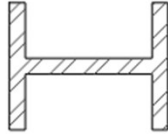




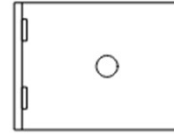
# COMMON WALL OR PARTY WALL



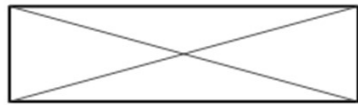
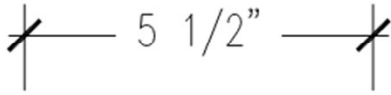
ALUMINUM  
BREAKAWAY CLIP



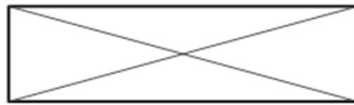
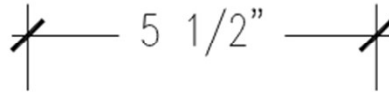
STEEL  
H-STUD



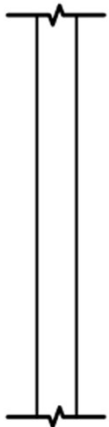
ALUMINUM  
BREAKAWAY CLIP



2X6 STUD



2X6 STUD



$\frac{5}{8}$ " GYPSUM  
BOARD



$\frac{5}{8}$ " GYPSUM  
BOARD



$\frac{5}{8}$ " GYPSUM  
BOARD



$\frac{3}{4}$ "  
AIRSPACE



$\frac{3}{4}$ "  
AIRSPACE

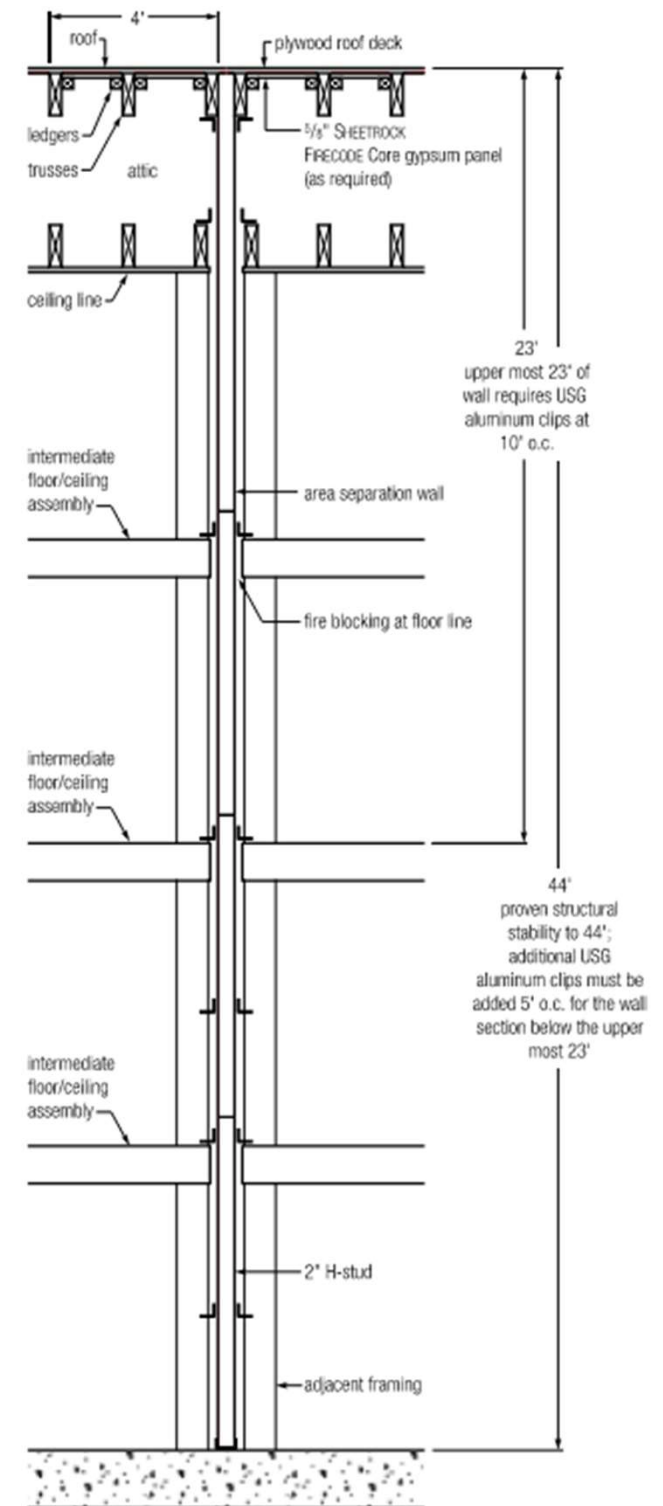
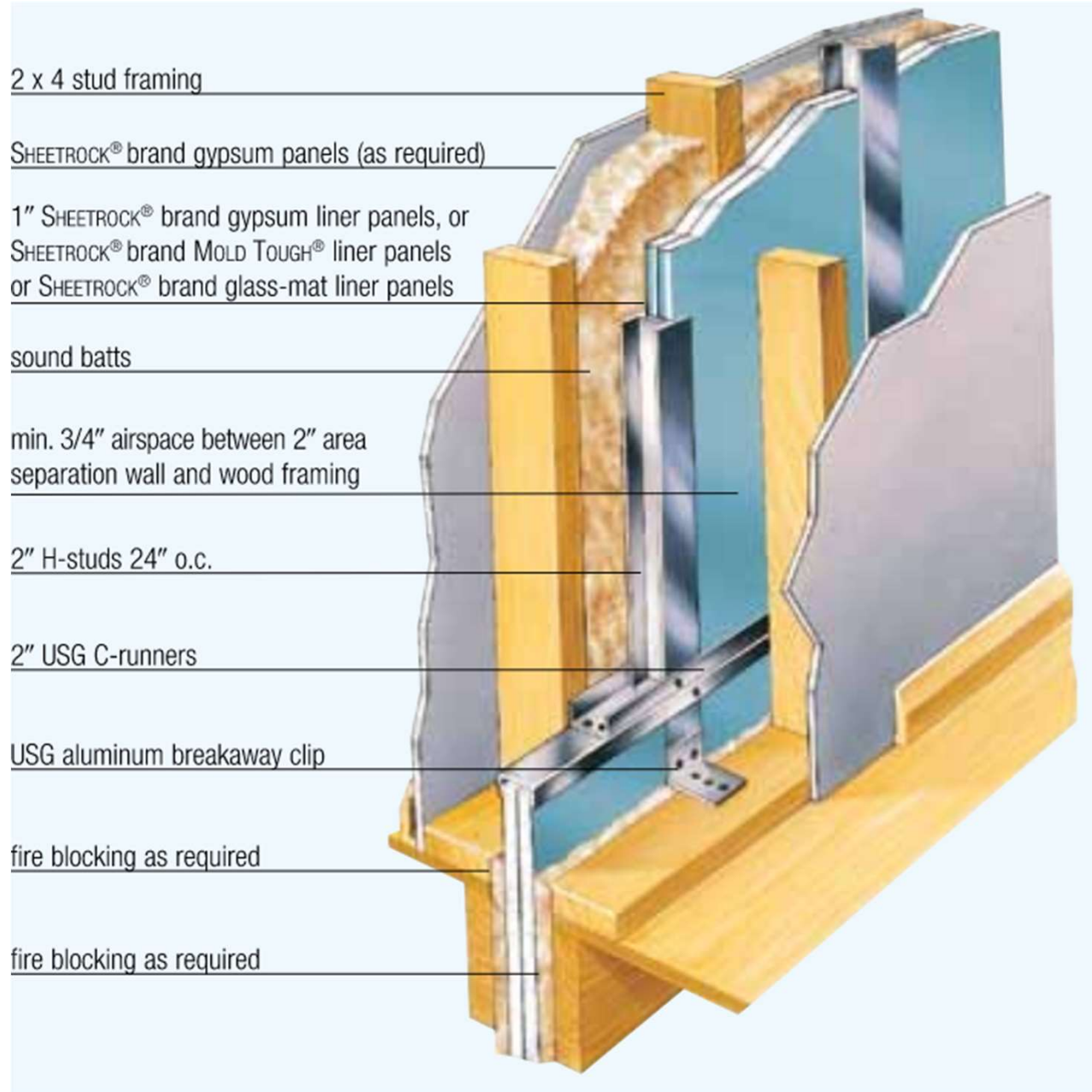


1" GYPSUM  
BOARD

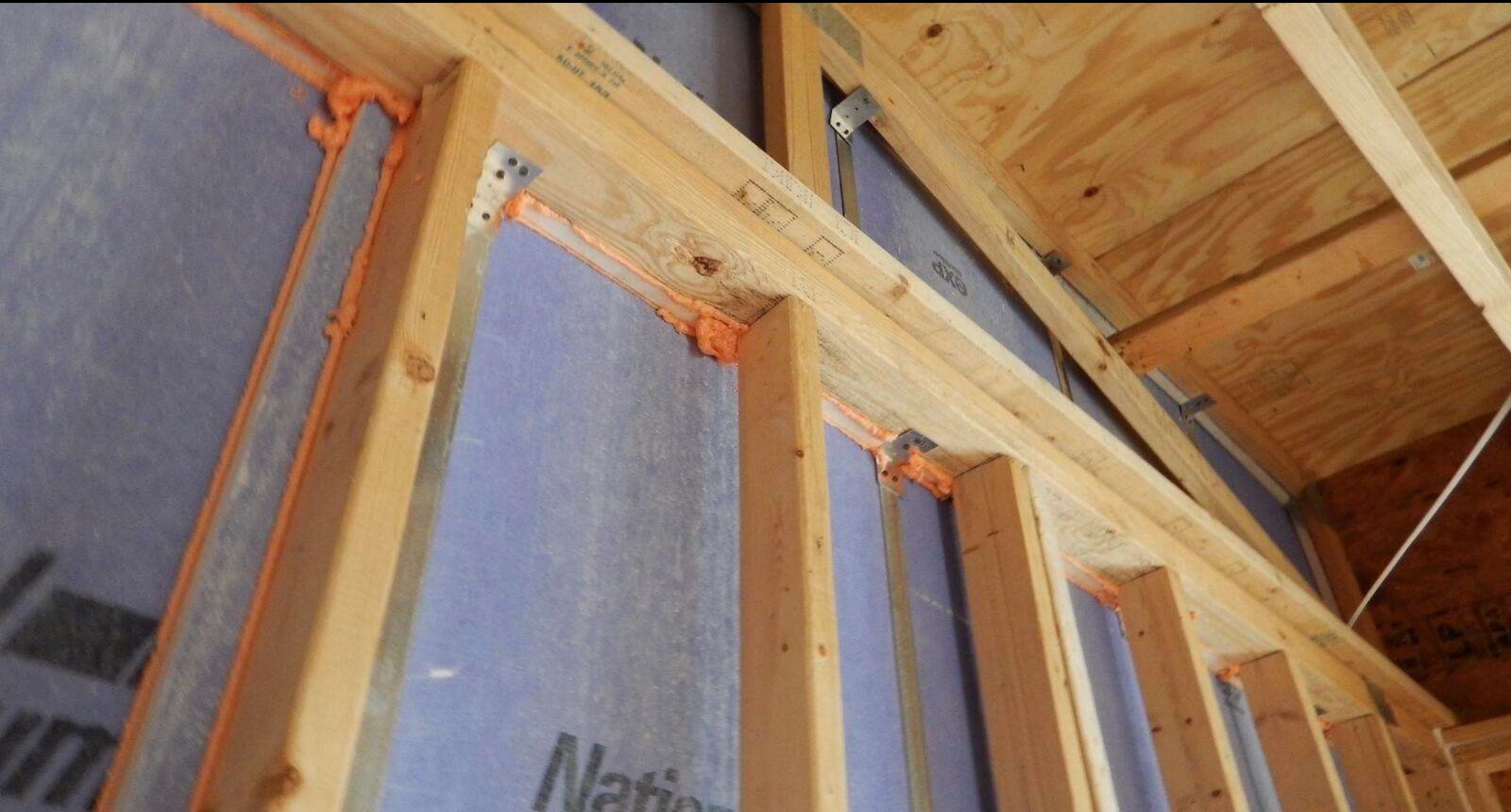


1" GYPSUM  
BOARD

# COMMON WALL OR PARTY WALL



# COMMON WALL OR PARTY WALL

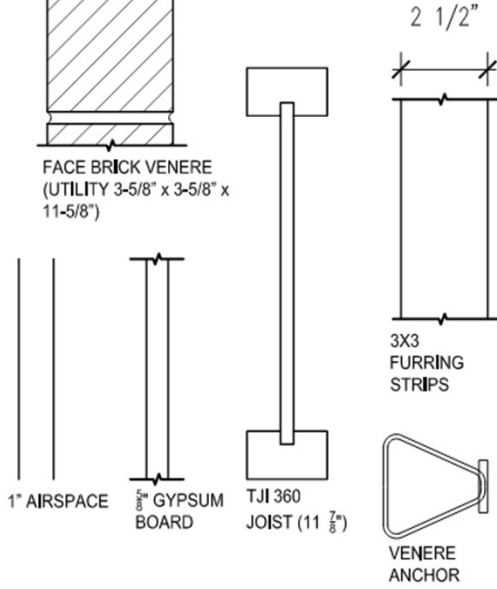
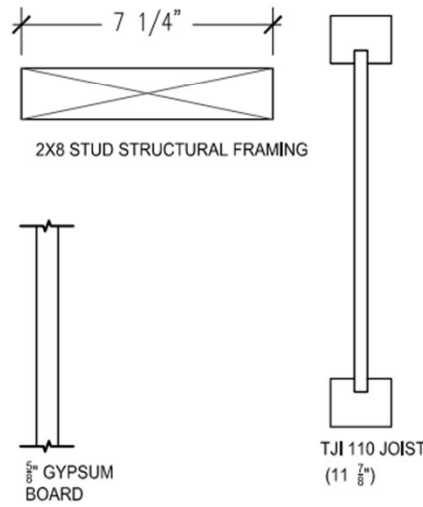
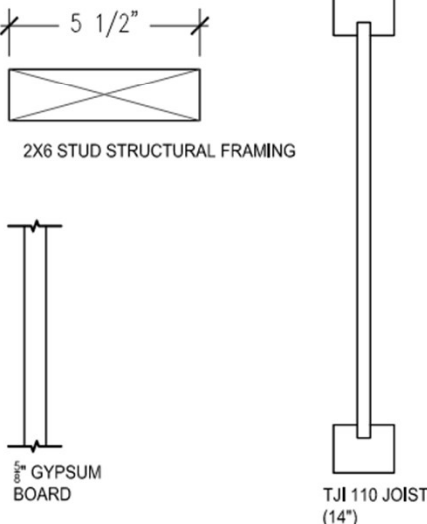
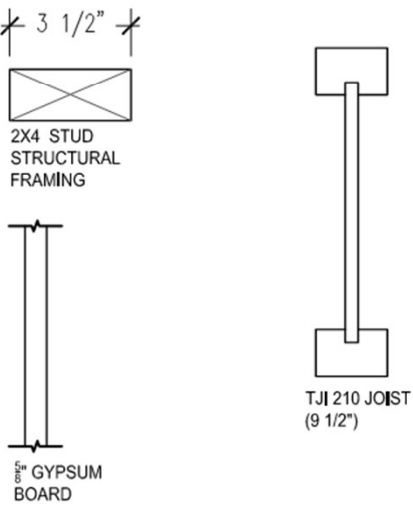
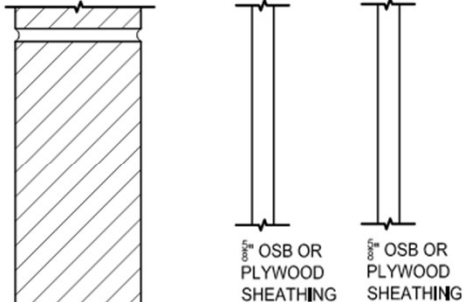
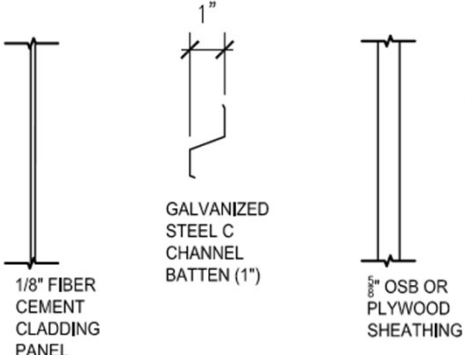
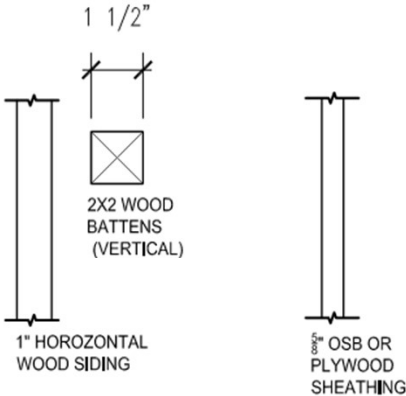
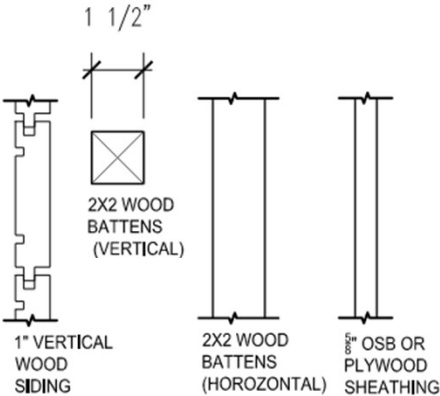




# wall assembly components, by groups

[Spring 2022]

Imperial (US)



WALL ASSEMBLY GROUP 1 (TJI 210 JOIST (9 1/2"))

WALL ASSEMBLY GROUP 2 (TJI 110 JOIST (14"))

WALL ASSEMBLY GROUP 3 (TJI 110 JOIST (11 7/8"))

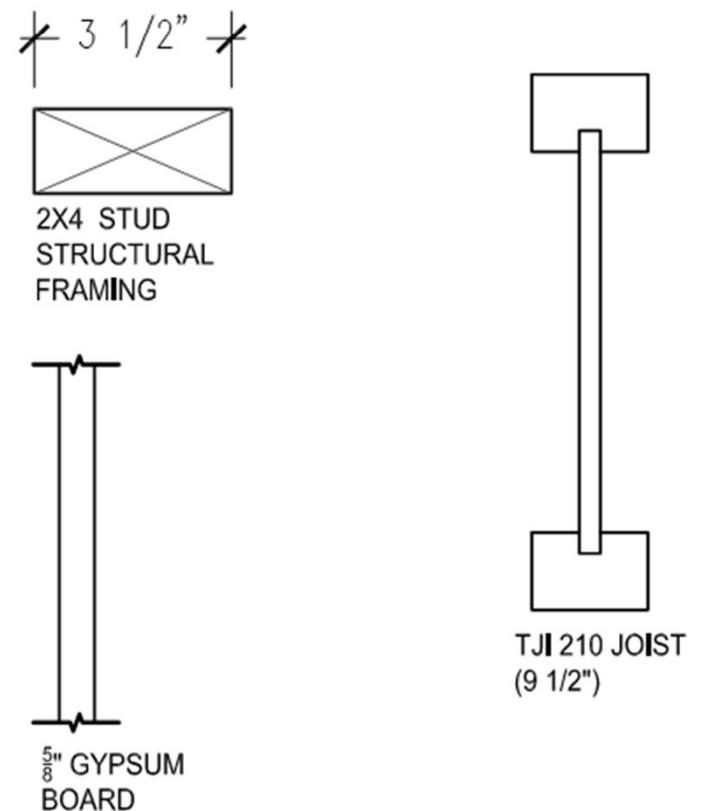
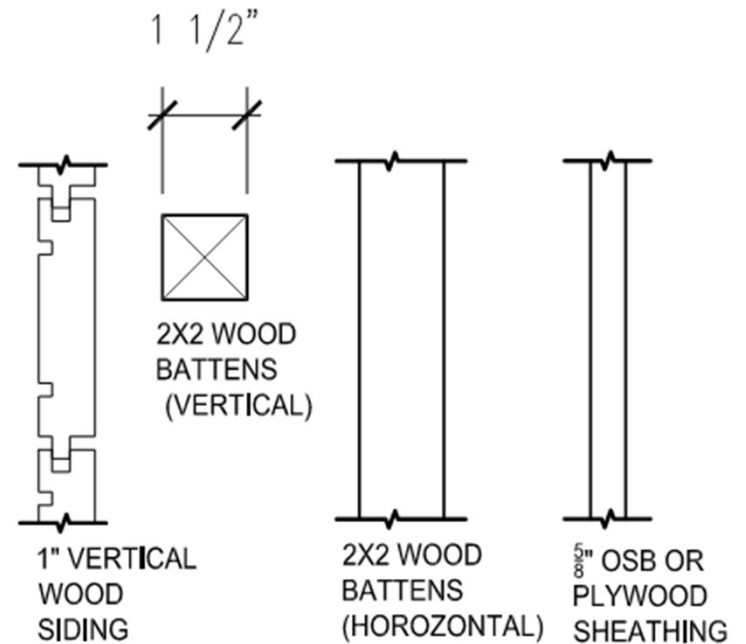
WALL ASSEMBLY GROUP 4 (TJI 360 JOIST)

# WALL ASSEMBLY

## GROUP 1

(TJI 210 JOIST (9 1/2"))

- 1" VERTICAL WOOD SIDING
- 2X2 WOOD BATTENS (HORIZONTAL)
- 2X2 WOOD BATTENS (VERTICAL)
- TJI 210 JOIST (9 1/2")
- 5/8" OSB OR PLYWOOD SHEATHING
- 2X4 STUD STRUCTURAL FRAMING
- 5/8" GYPSUM BOARD

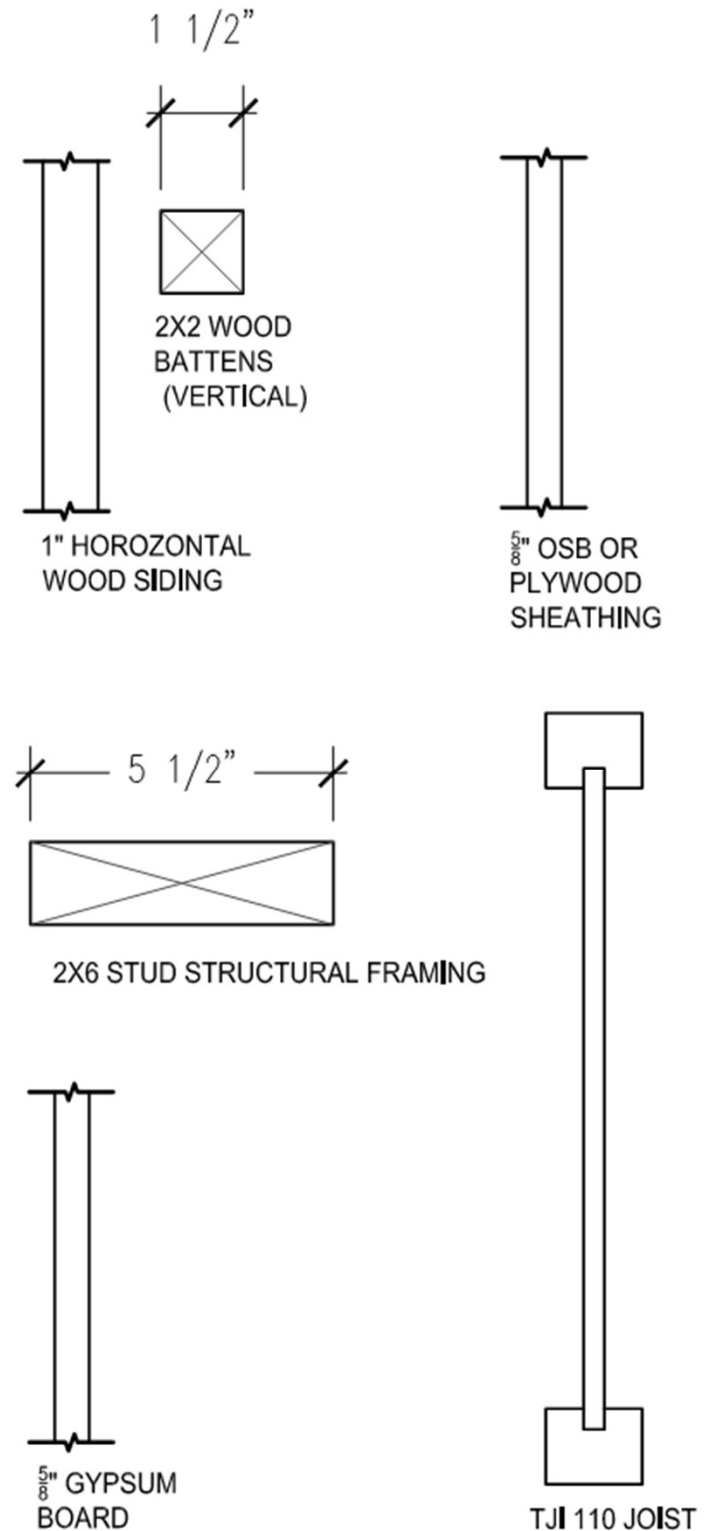


# WALL ASSEMBLY

## GROUP 2

(TJI 110 JOIST (14"))

- 1" VERTICAL WOOD SIDING
- 2X2 WOOD BATTENS (VERTICAL)
- TJI 110 JOIST 14")
- 5/8" OSB OR PLYWOOD SHEATHING
- 2X6 STUD STRUCTURAL FRAMING
- 5/8" GYPSUM BOARD



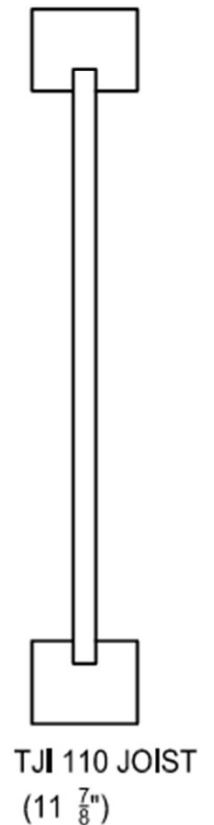
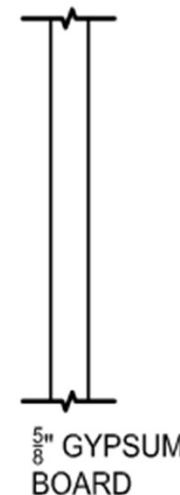
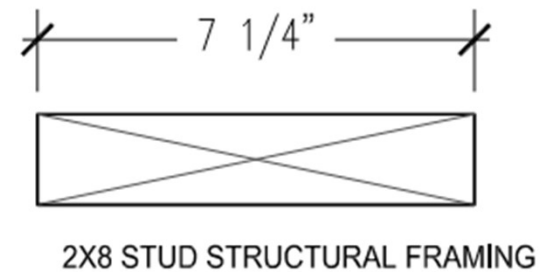
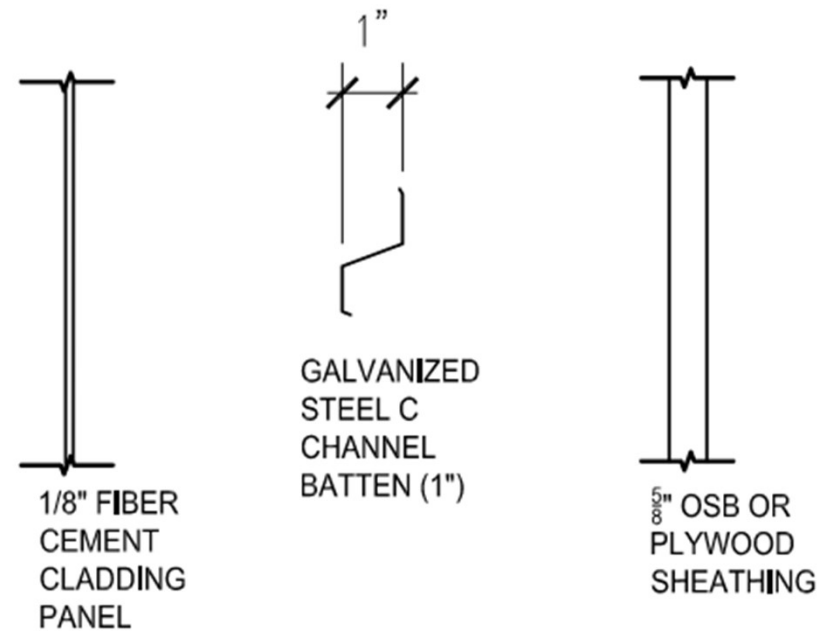


# WALL ASSEMBLY

## GROUP 3

(TJI 110 JOIST (11 7/8"))

- 1/8" FIBER CEMENT CLADDING PANEL
- GALVANIZED STEEL C CHANNEL BATTEN (1")
- TJI 110 JOIST (11 7/8")
- 5/8" OSB OR PLYWOOD SHEATHING
- 2X8 STUD STRUCTURAL FRAMING
- 5/8" GYPSUM BOARD



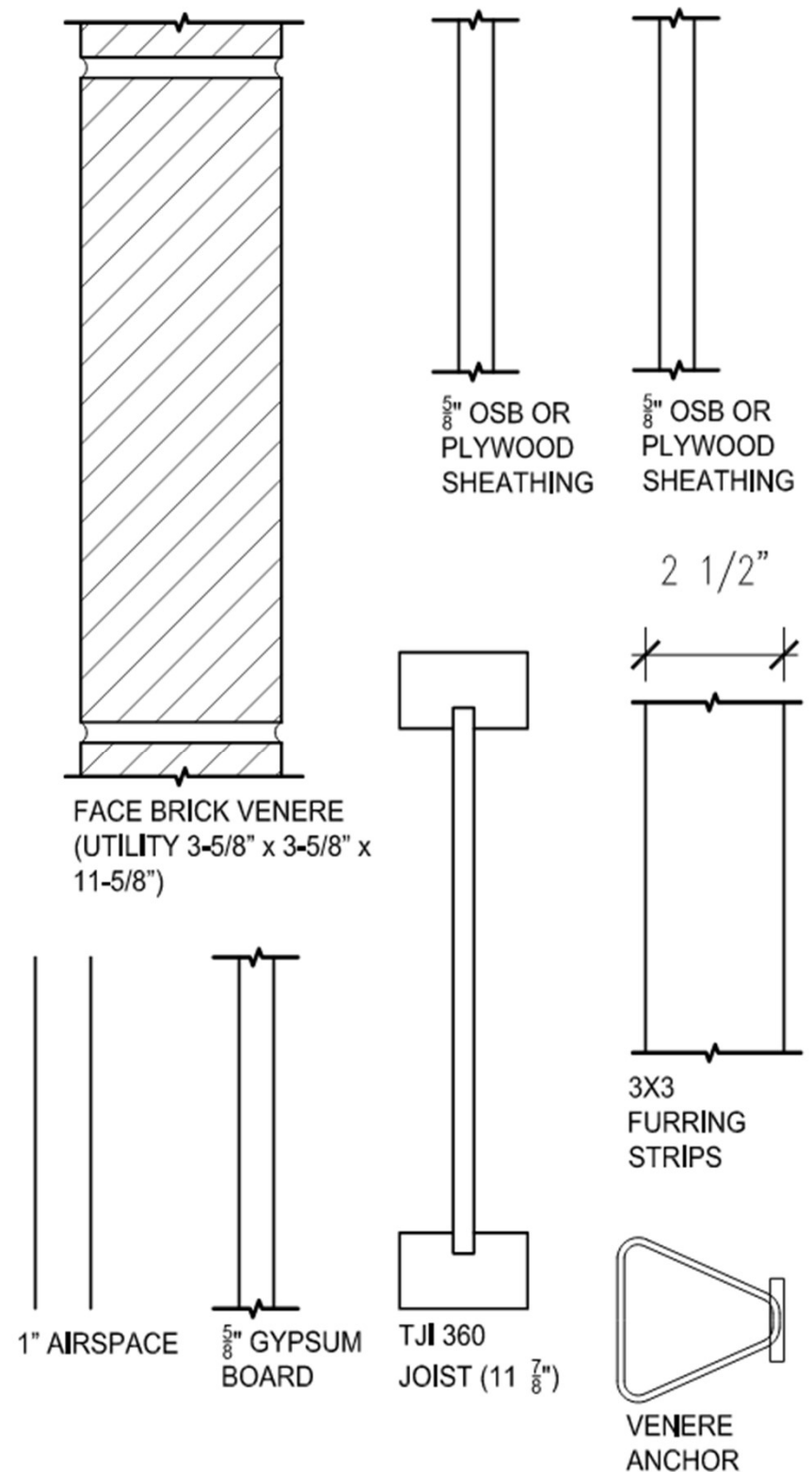
# WALL ASSEMBLY

## GROUP 4

### I STUD

(TJI 360 JOIST (11 7/8"))

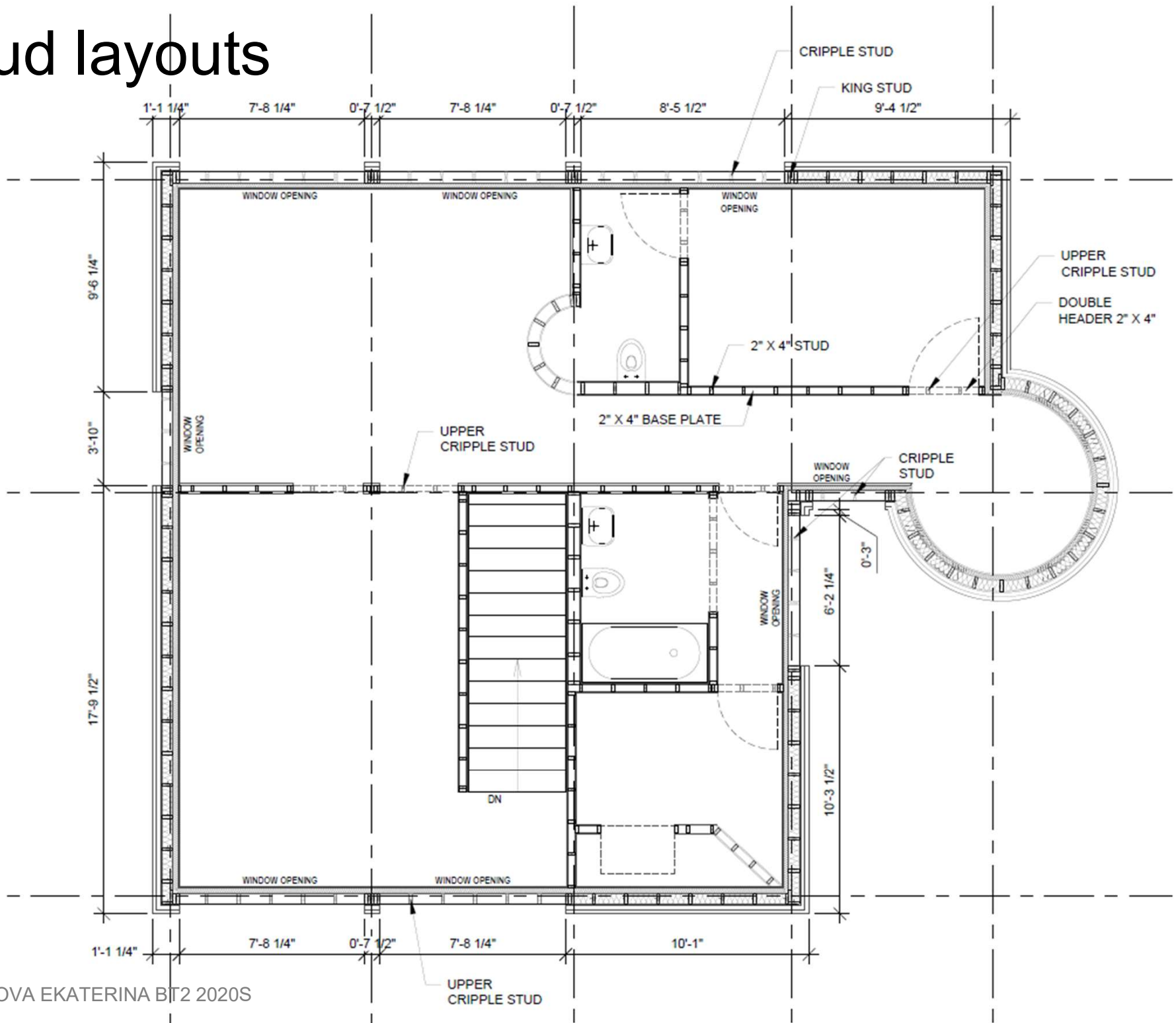
- FACE BRICK VENERE (UTILITY 3-5/8" x 3-5/8" x 11-5/8")
- 1" AIRSPACE
- 5/8" OSB OR PLYWOOD SHEATHING
- TJI 360 JOIST (11 7/8")
- 5/8" OSB OR PLYWOOD SHEATHING
- 3X3 FURRING STRIPS
- 5/8" GYPSUM BOARD



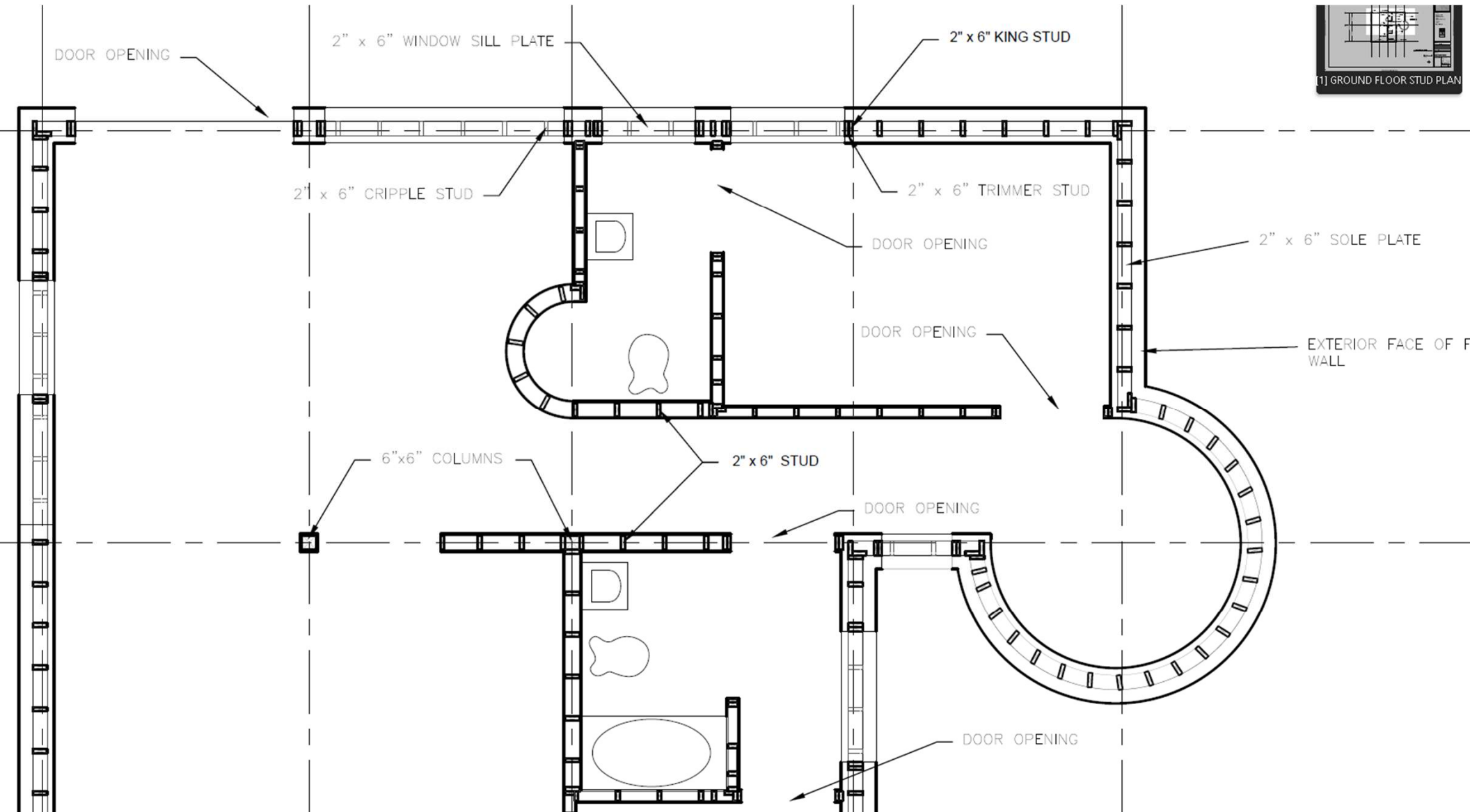




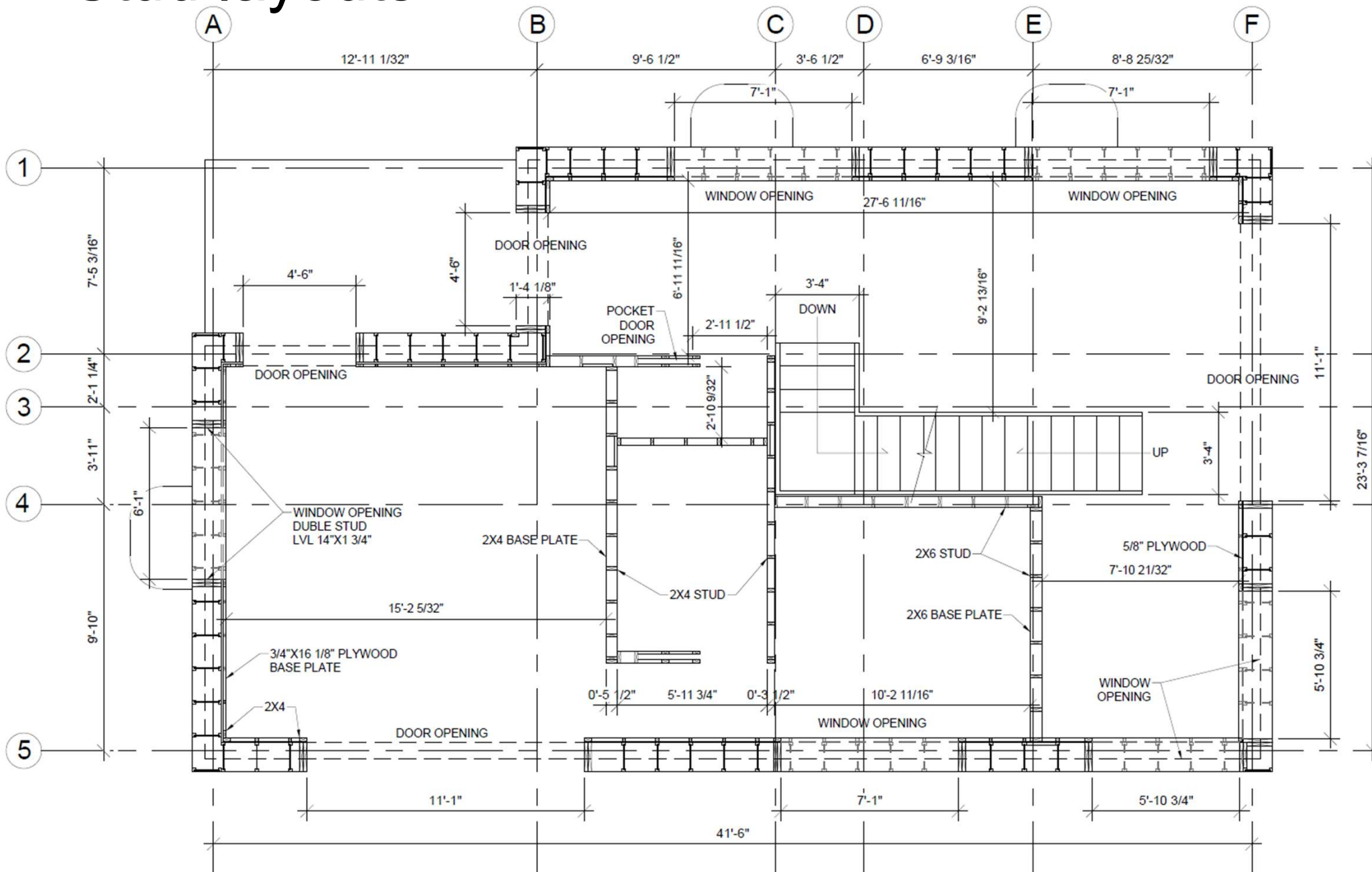
# Stud layouts



# Stud layouts

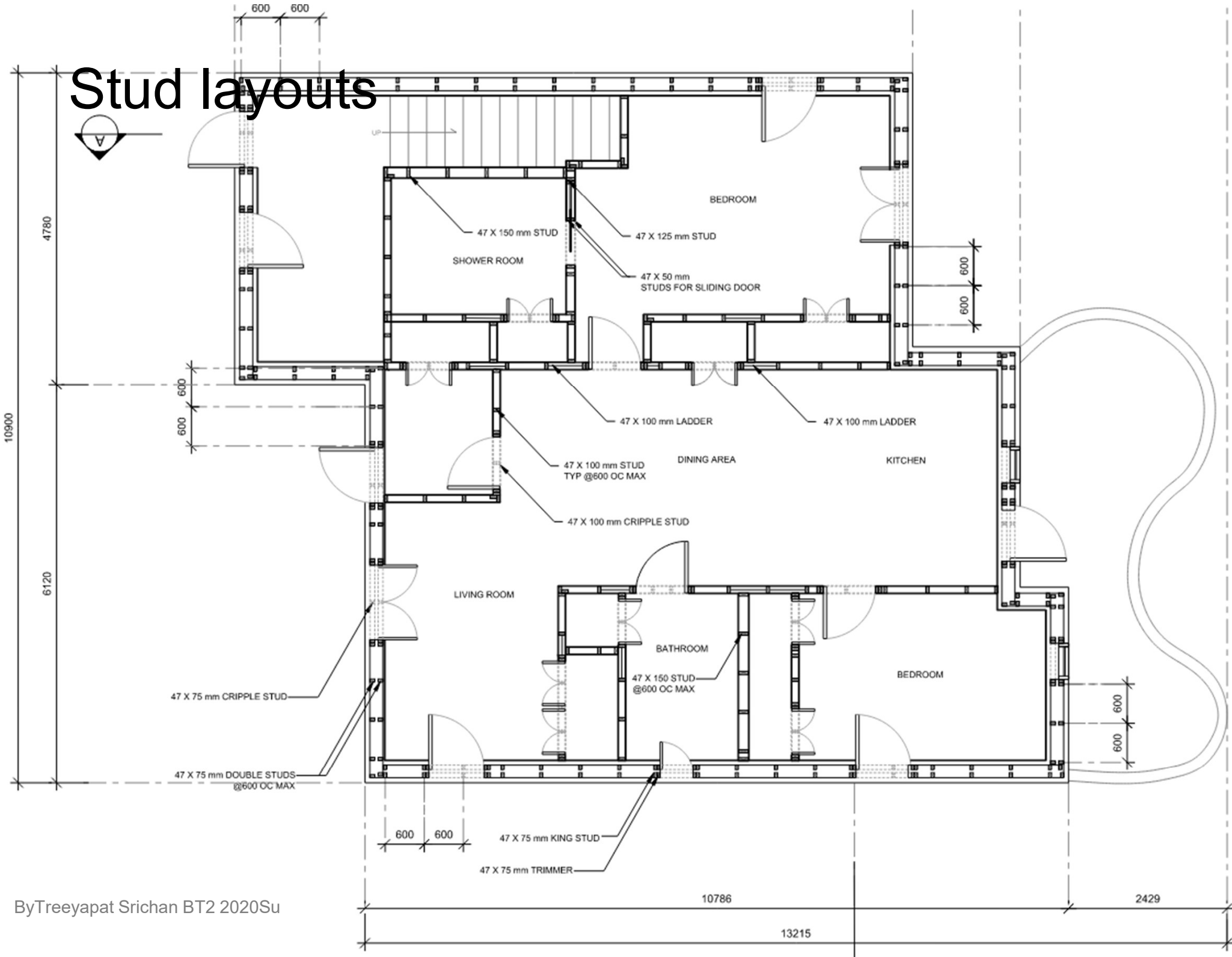


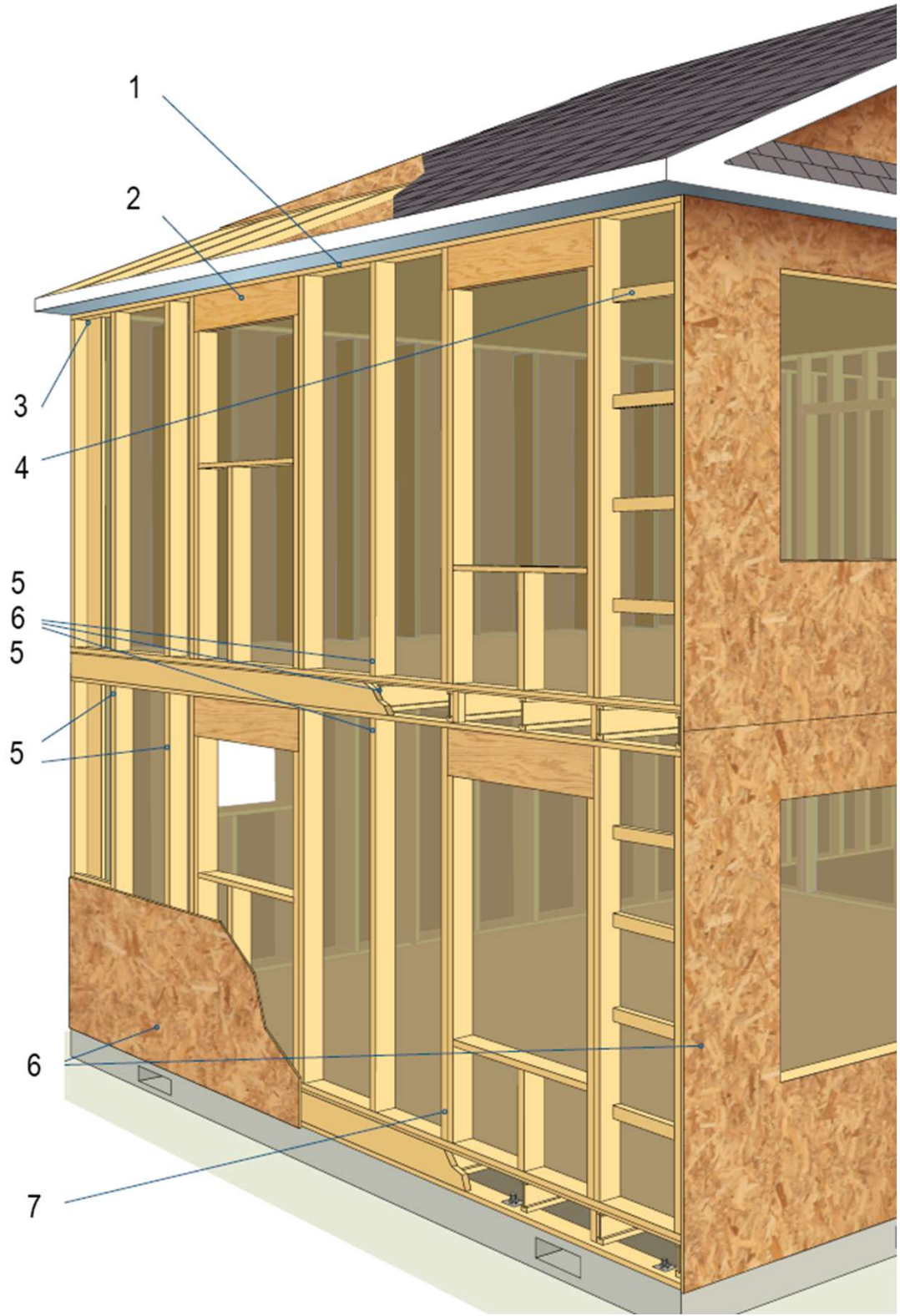
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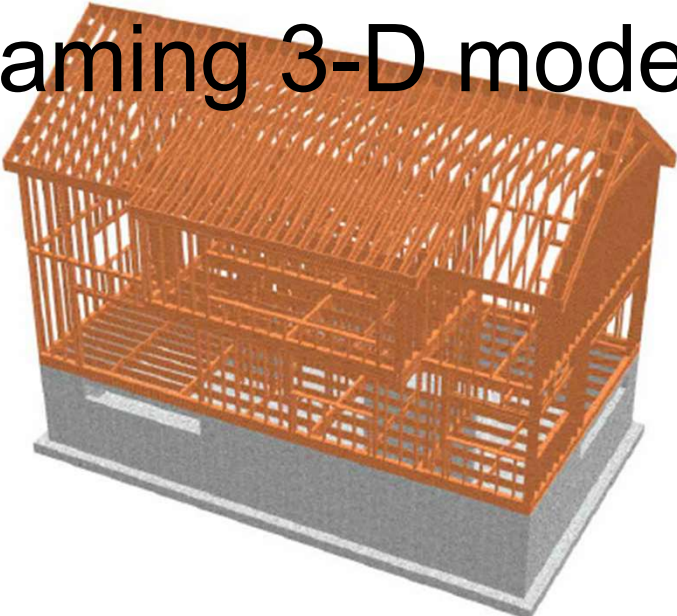


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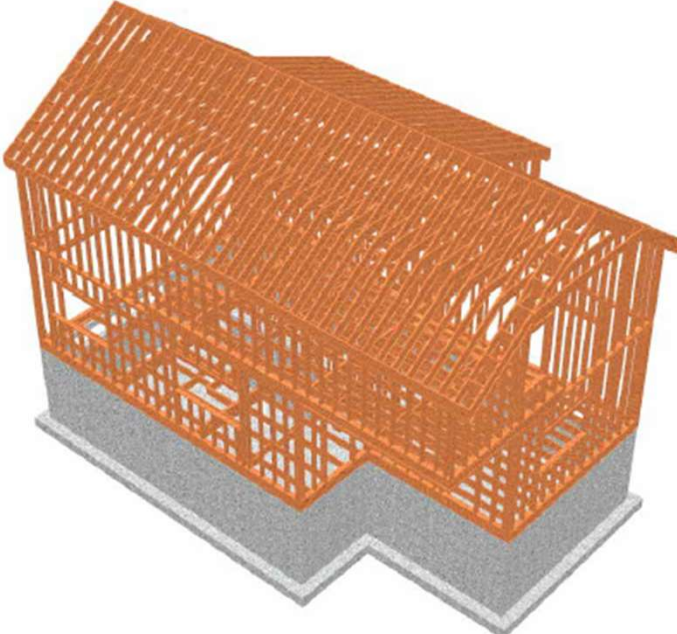




# Framing 3-D model



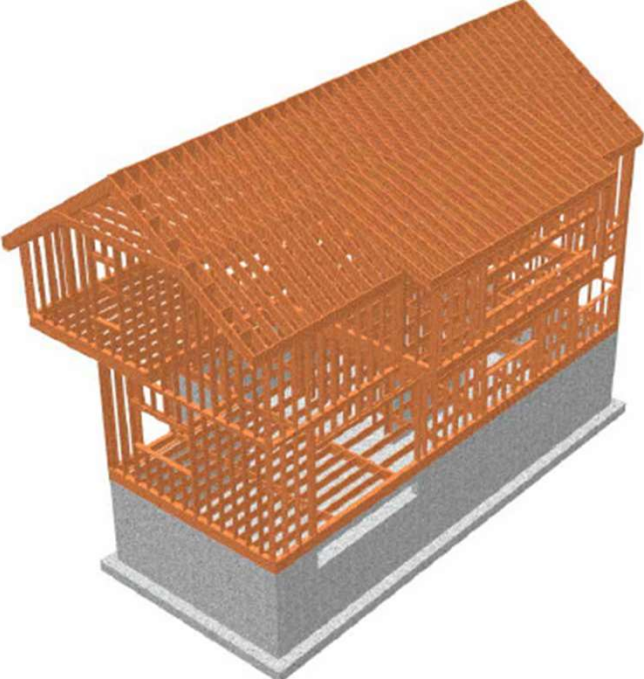
1 EAST SIDE VIEW  
G-100



2 SOUTH-WEST SIDE VIEW  
G-100



3 NORTH SIDE VIEW  
G-100



4 SOUTH-EAST SIDE VIEW  
G-100