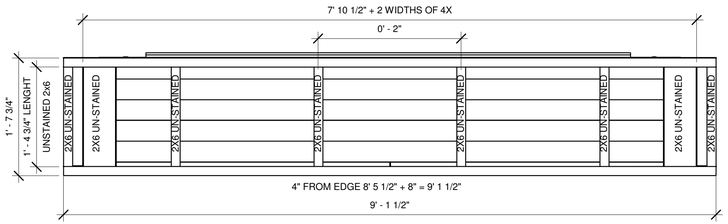
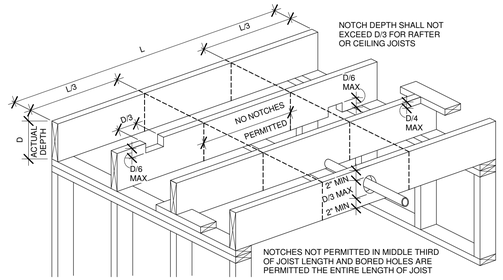
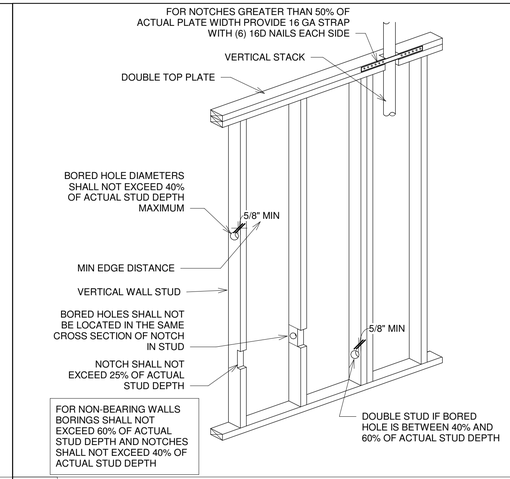


9 CANOPY FRAMING
SCALE:

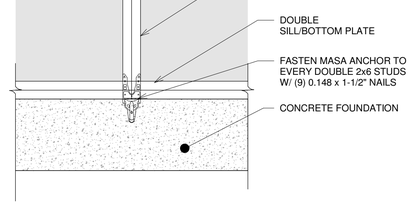


5 NOTCHING AND BORING CLG OR FLR JOISTS
SCALE: 1/2" = 1'-0"



1 NOTCHING AND BORING WALLS
SCALE: 1/2" = 1'-0"

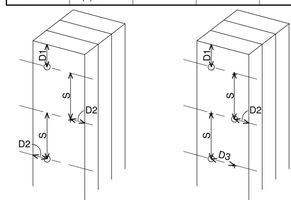
NOTE:
SEE SHEET S10 FOR WSP NAILING REQUIREMENTS



8 EXTERIOR WALL PANELS DETAILS
SCALE: 1" = 1'-0"

BUILT UP COLUMN NAILING SCHEDULE

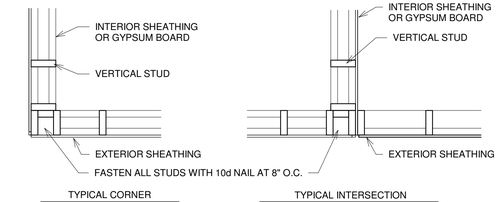
BUILT UP COLUMN	BUILT UP SECTION	PATTERN	END DISTANCE	EDGE DISTANCE	ROW SPACING	NAIL SPACING	NAIL SIZE
			D1	D2	D3	S	
BC1	(2) 2x6	2	2 1/2"	1 1/2"	2 1/2"	8"	10d
BC2	(3) 2x6	2	3 1/2"	1 1/2"	2 1/2"	8"	30d
BC3	(4) 2x6	2	4"	1 1/2"	2 1/2"	8"	50d
BC4	(2) 2x4	1	2 1/2"	1"	---	6"	10d
BC5	(3) 2x4	1	3 1/2"	1 1/2"	---	8"	30d

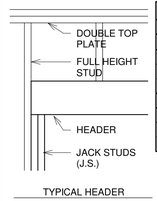


1. ADJACENT NAILS ARE DRIVEN FROM OPPOSITE SIDES OF THE COLUMN.
2. CONTRACTOR MAY SUBSTITUTE 1/2"Ø BOLTS W/ METAL PLATE OR WASHERS IN PLACE OF 30d & 50d NAILS.
3. CONTRACTOR SHALL PRE-DRILL STUDS W/ 1/8" DRILL BIT WHEN USING 30d & 50d NAILS TO PREVENT SPLITTING.
4. ALL BUILT UP COLUMNS SHALL EXTEND TO THE ROOF TRUSSES.

○ ---INDICATES NAILS DRIVEN FROM NEAR FACE
+ ---INDICATES NAILS DRIVEN FROM FAR FACE

2 BUILT UP COLUMN SCHEDULE
SCALE: 3/4" = 1'-0"





BEARING WALL HEADERS (CENTER BEARING FLOOR)					
INTERIOR WALL (1 FLOOR)[3]			EXTERIOR WALL (ROOF ONLY)		
SPAN	SIZE	NO. J.S.	SPAN	SIZE	NO. J.S.
0'-0" - 4'-5"	(2) 2x8	2	0'-0" - 5'-4"	(2) 2x8	2
4'-6" - 5'-5"	(2) 2x10	2	5'-5" - 6'-6"	(2) 2x10	2
5'-6" - 6'-3"	(2) 2x12	2	6'-7" - 7'-6"	(2) 2x12	2
INTERIOR WALL (2 FLOORS)[3]			EXTERIOR WALL (ROOF + FLOOR)		
0'-0" - 3'-2"	(2) 2x8	2	0'-0" - 4'-6"	(2) 2x8	2
3'-3" - 3'-10"	(2) 2x10	3	4'-7" - 5'-6"	(2) 2x10	2
3'-11" - 4'-5"	(2) 2x12	3	5'-7" - 6'-5"	(2) 2x12	2
			EXTERIOR WALL (ROOF + 2 FLOORS)		
			0'-0" - 3'-9"	(2) 2x8	2
			3'-10" - 4'-7"	(2) 2x10	2
			4'-8" - 5'-3"	(2) 2x12	2

NOTE:
1. NOT FOR OPEN WEB TRUSS SYSTEMS
2. MAXIMUM JOIST SPAN OF 18FT
3. HEADERS SUPPORT FLOOR LOADS ONLY, NO ROOF LOADS

3 TYP WALL FRAMING DETAILS
SCALE: 3/4" = 1'-0"

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N&S JOB NUMBER: 2022-1691

STATE OF MISSOURI
SAMIR B. AWAD
NUMBER PE-2019025208
11/10/2022
PROFESSIONAL ENGINEER

PROJECT INFORMATION
NEW HOUSE PROJECT FOR OPEN SOURCE ECOLOGY
MULTIPLE LOCATIONS
KANSAS CITY AND ST. JOSEPH AREA
MARCIN JAKUBOWSKI

ISSUES & REVISIONS

#	DATE	DESCRIPTION
1	9/1/2022	STRUCTURAL REVIEW
2	9/21/2022	MARKUPS
3	9/29/2022	MARKUPS
4	10/21/2022	MARKUPS

DRAWN BY: MLR
CHECKED BY: SBA
ISSUED FOR:

SHEET TITLE
STANDARD DETAILS

SHEET NUMBER
S41

FASTENING SCHEDULE

IRC 2018 TABLE R602.3(1)

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER (a)(b)(c)	SPACING AND LOCATION
	Roof		
1	Blocking between ceiling joists or rafters to top plate	4-8d box (2-1/2" × 0.113") or 3-8d common (2-1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Toe nail
2	Ceiling joists to top plate	4-8d box (2-1/2" × 0.113"); or 3-8d common (2-1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Per joist, toe nail
3	Ceiling joist not attached to parallel rafter, laps over partitions (see Section R802.5.2 and Table R802.5.2)	4-10d box (3" × 0.128"); or 3-16d common (3-1/2" × 0.162"); or 4-3" × 0.131" nails	Face nail
4	Ceiling joist attached to parallel rafter (heel joint) (see Section R802.5.2 and Table R802.5.2)	Table R802.5.2	Face nail
5	Collar tie to rafter, face nail or 11/4" × 20 ga. ridge strap to rafter	4-10d box (3" × 0.128"); or 3-10d common (3" × 0.148"); or 4-3" × 0.131" nails	Face nail each rafter
6	Rafter or roof truss to plate	3-16d box nails (3-1/2" × 0.135"); or 3-10d common nails (3" × 0.148"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails	2 toe nails on one side and 1 toe nail on opposite side of each rafter or truss(i)
7	Roof rafters to ridge, valley or hip rafters or roof rafter to minimum 2" ridge beam	4-16d (3-1/2" × 0.135"); or 3-10d common (3" × 0.148"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails	Toe nail
		3-16d box (3-1/2" × 0.135"); or 2-16d common (3-1/2" × 0.162"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	End nail
	Wall		
8	Stud to stud (not at braced wall panels)	16d common (3-1/2" × 0.162")	24" o.c. face nail
		10d box (3" × 0.128"); or 3" × 0.131" nails	16" o.c. face nail
9	Stud to stud and abutting studs at intersecting wall corners (at braced wall panels)	16d box (3-1/2" × 0.135"); or 3" × 0.131" nails	12" o.c. face nail
		16d common (3-1/2" × 0.162")	16" o.c. face nail
10	Built-up header (2" to 2" header with 1/2" spacer)	16d common (3-1/2" × 0.162")	16" o.c. each edge face nail
		16d box (3-1/2" × 0.135")	12" o.c. each edge face nail
11	Continuous header to stud	5-8d box (2-1/2" × 0.113"); or 4-8d common (2-1/2" × 0.131"); or 4-10d box (3" × 0.128")	Toe nail
12	Top plate to top plate	16d common (3-1/2" × 0.162")	16" o.c. face nail
		10d box (3" × 0.128"); or 3" × 0.131" nails	12" o.c. face nail
13	Double top plate splice	8-16d common (3-1/2" × 0.162"); or 12-16d box (3-1/2" × 0.135"); or 12-10d box (3" × 0.128"); or 12-3" × 0.131" nails	Face nail on each side of end joint (minimum 24" lap splice length each side of end joint)
14	Bottom plate to joist, rim joist, band joist or blocking (not at braced wall panels)	16d common (3-1/2" × 0.162")	16" o.c. face nail
		16d box (3-1/2" × 0.135"); or 3" × 0.131" nails	12" o.c. face nail
15	Bottom plate to joist, rim joist, band joist or blocking (at braced wall panel)	3-16d box (3-1/2" × 0.135"); or 2-16d common (3-1/2" × 0.162"); or 4-3" × 0.131" nails	3 each 16" o.c. face nail 2 each 16" o.c. face nail 4 each 16" o.c. face nail
16	Top or bottom plate to stud	4-8d box (2-1/2" × 0.113"); or 3-16d box (3-1/2" × 0.135"); or 4-8d common (2-1/2" × 0.131"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails	Toe nail
		3-16d box (3-1/2" × 0.135"); or 2-16d common (3-1/2" × 0.162"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	End nail
17	Top plates, laps at corners and intersections	3-10d box (3" × 0.128"); or 2-16d common (3-1/2" × 0.162"); or 3-3" × 0.131" nails	Face nail
18	1" brace to each stud and plate	3-8d box (2-1/2" × 0.113"); or 2-8d common (2-1/2" × 0.131"); or 2-10d box (3" × 0.128"); or 2 staples 1-3/4"	Face nail
19	1" × 6" sheathing to each bearing	3-8d box (2-1/2" × 0.113"); or 2-8d common (2-1/2" × 0.131"); or 2-10d box (3" × 0.128"); or 2 staples, 1" crown, 16 ga., 1-3/4" long	Face nail
20	1" × 8" and wider sheathing to each bearing	3-8d box (2-1/2" × 0.113"); or 3-8d common (2-1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3 staples, 1" crown, 16 ga., 1-3/4" long	Face nail
		Wider than 1" × 8" 4-8d box (2-1/2" × 0.113"); or 3-8d common (2-1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 4 staples, 1" crown, 16 ga., 1-3/4" long	

(continued)

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER (a)(b)(c)	SPACING AND LOCATION
	Floor		
21	Joist to sill, top plate or girder	4-8d box (2-1/2" × 0.113"); or 3-8d common (2-1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Toe nail
22	Rim joist, band joist or blocking to sill or top plate (roof applications also)	8d box (2-1/2" × 0.113")	4" o.c. toe nail
		8d common (2-1/2" × 0.131"); or 10d box (3" × 0.128"); or 3" × 0.131" nails	6" o.c. toe nail
23	1" × 6" subfloor or less to each joist	3-8d box (2-1/2" × 0.113"); or 2-8d common (2-1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 2 staples, 1" crown, 16 ga., 1-3/4" long	Face nail
24	2" subfloor to joist or girder	3-16d box (3-1/2" × 0.135"); or 2-16d common (3-1/2" × 0.162")	Blind and face nail
25	2" planks (plank & beam—floor & roof)	3-16d box (3-1/2" × 0.135"); or 2-16d common (3-1/2" × 0.162")	At each bearing, face nail
26	Band or rim joist to joist	3-16d common (3-1/2" × 0.162") 4-10 box (3" × 0.128"), or 4-3" × 0.131" nails; or 4-3" × 14 ga. staples, 7/16" crown	End nail
27	Built-up girders and beams, 2-inch lumber layers	20d common (4" × 0.192"); or	Nail each layer as follows: 32" o.c. at top and bottom and staggered.
		10d box (3" × 0.128"); or 3" × 0.131" nails	24" o.c. face nail at top and bottom staggered on opposite sides
		And: 2-20d common (4" × 0.192"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Face nail at ends and at each splice
28	Ledger strip supporting joists or rafters	4-16d box (3-1/2" × 0.135"); or 3-16d common (3-1/2" × 0.162"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails	At each joist or rafter, face nail
29	Bridging or blocking to joist	2-10d box (3" × 0.128"), or 2-8d common (2-1/2" × 0.131"); or 2-3" × 0.131") nails	Each end, toe nail

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER (a)(b) (c)	SPACING OF FASTENERS	
			Edges (inches)(h)	Intermediate supports(c)(e) (inches)
	Wood structural panels, subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing [see Table R602.3(3) for wood structural panel exterior wall sheathing to wall framing]			
30	3/8" – 1/2"	6d common (2" × 0.113") nail (subfloor, wall)(i) 8d common (2-1/2" × 0.131") nail (roof); or RSRS-01 (2-3/8" × 0.113") nail (roof)(j)	6	12(f)
31	19/32" – 1"	8d common nail (21/2" × 0.131"); or RSRS-01; (2-3/8" × 0.113") nail (roof)(j)	6	12(f)
32	1-1/8" – 1-1/4"	10d common (3" × 0.148") nail; or 8d (21/2" × 0.131") deformed nail	6	12
	Other wall sheathing(g)			
33	1/2" structural cellulosic fiberboard sheathing	1-1/2" galvanized roofing nail, 7/16" head diameter, or 1-1/4" long 16 ga. staple with 7/16" or 1" crown	3	6
34	25/32" structural cellulosic fiberboard sheathing	1-3/4" galvanized roofing nail, 7/16" head diameter, or 1-1/2" long 16 ga. staple with 7/16" or 1" crown	3	6
35	1/2" gypsum sheathing(d)	1-1/2" galvanized roofing nail; staple galvanized, 1-1/2" long; 1-1/4" screws, Type W or S	7	7
36	5/8" gypsum sheathing(d)	1-3/4" galvanized roofing nail; staple galvanized, 1-5/8" long; 1-5/8" screws, Type W or S	7	7
	Wood structural panels, combination subfloor underlayment to framing			
37	3/4" and less	6d deformed (2" × 0.120") nail; or 8d common (2-1/2" × 0.131") nail	6	12
38	7/8" – 1"	8d common (2-1/2" × 0.131") nail; or 8d deformed (2-1/2" × 0.120") nail	6	12
39	1-1/8" – 1-1/4"	10d common (3" × 0.148") nail; or 8d deformed (2-1/2" × 0.120") nail	6	12

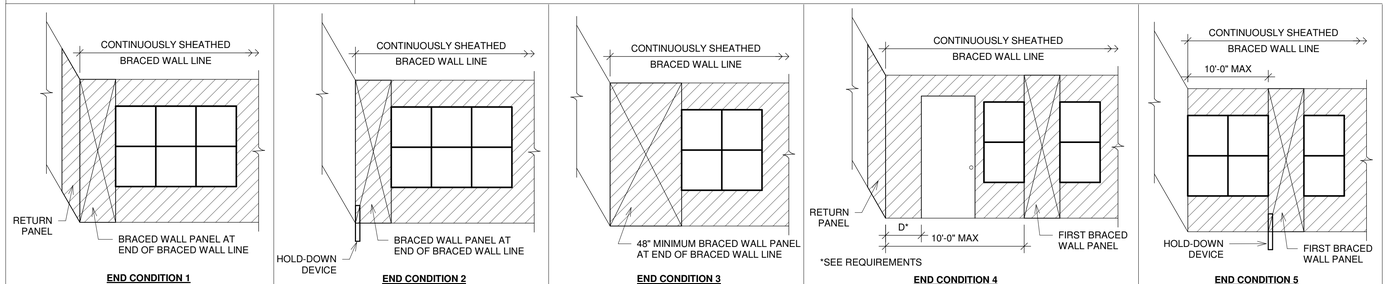
a. Nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail), 90 ksi for shank diameters larger than 0.142 inch but not larger than 0.177 inch, and 100 ksi for shank diameters of 0.142 inch or less.
b. Staples are 16 gage wire and have a minimum 7/16-inch on diameter crown width.
c. Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater.
d. Four-foot by 8-foot or 4-foot by 9-foot panels shall be applied vertically.
e. Spacing of fasteners not included in this table shall be based on Table R602.3(2).
f. For wood structural panel roof sheathing attached to gable end roof framing and to intermediate supports within 48 inches of roof edges and ridges, nails shall be spaced at 6 inches on center where the ultimate design wind speed is less than 130 mph and shall be spaced 4 inches on center where the ultimate design wind speed is 130 mph or greater but less than 140 mph.
g. Gypsum sheathing shall conform to ASTM C1396 and shall be installed in accordance with GA 253. Fiberboard sheathing shall conform to ASTM C208.
h. Spacing of fasteners on floor sheathing panel edges applies to panel edges supported by framing members and required blocking and at floor perimeters only. Spacing of fasteners on roof sheathing panel edges applies to panel edges supported by framing members and required blocking. Blocking of roof or floor sheathing panel edges perpendicular to the framing members need not be provided except as required by other provisions of this code. Floor perimeter shall be supported by framing members or solid blocking.
i. Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule, provide two toe nails on one side of the rafter and toe nails from the ceiling joist to top plate in accordance with this schedule. The toe nail on the opposite side of the rafter shall not be required.
j. RSRS-01 is a Roof Sheathing Ring Shank nail meeting the specifications in ASTM F1667.

REQUIREMENTS

RETURN PANEL:
24" FOR BRACED WALL LINES SHEATHED WITH WOOD STRUCTURAL PANELS
32" FOR BRACED WALL LINES SHEATHED WITH STRUCTURAL FIBERBOARD

DISTANCE D:
RETURN PANEL:
24" FOR BRACED WALL LINES SHEATHED WITH WOOD STRUCTURAL PANELS
32" FOR BRACED WALL LINES SHEATHED WITH STRUCTURAL FIBERBOARD

HOLD-DOWN DEVICE:
800 lbs CAPACITY FASTENED TO THE EDGE OF THE BRACED WALL PANEL CLOSEST TO THE CORNER AND TO THE FOUNDATION OR FLOOR FRAMING BELOW



1 END CONDITIONS FOR BRACED WALL LINES WITH CONTINUOUS SHEATHING R602.10.7

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

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SHEET TITLE
STANDARD DETAILS, SCHEDULES & NOTES

SHEET NUMBER
S42