

**NOT FOR
 CONSTRUCTION**

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

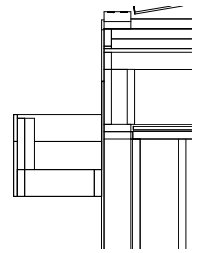
ISSUES & REVISIONS

#	DATE	DESCRIPTION
3	9/29/2022	MARKUPS

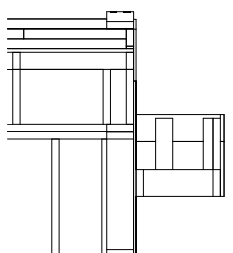
DRAWN BY: Author
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SHEET TITLE
 SECTIONS AND CONNECTIONS

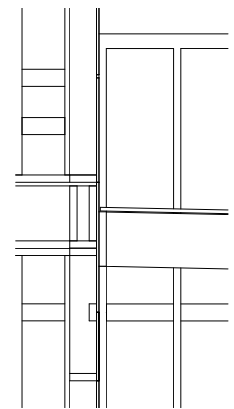
SHEET NUMBER
 S12



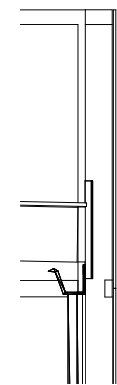
3 PARAPET LEFT
 SCALE: 1" = 1'-0"



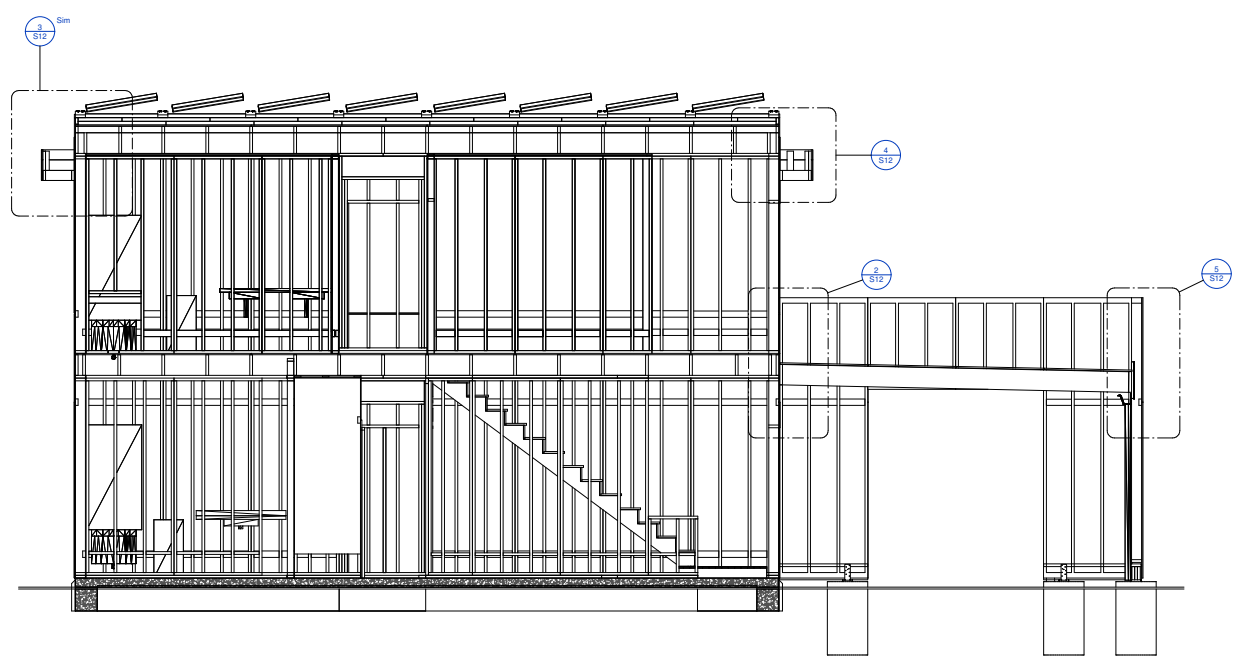
4 PARAPET RIGHT
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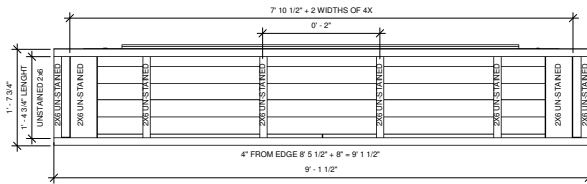
2 BALCONY FLOOR JOISTS
 SCALE: 1" = 1'-0"



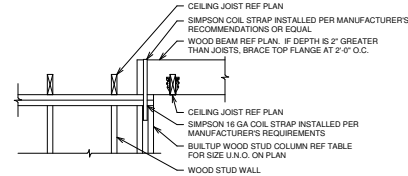
5 BALCONY FLOOR JOISTS
 SCALE: 1" = 1'-0"



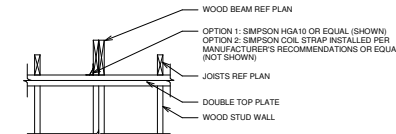
1 SECTION
 SCALE: 3/8" = 1'-0"



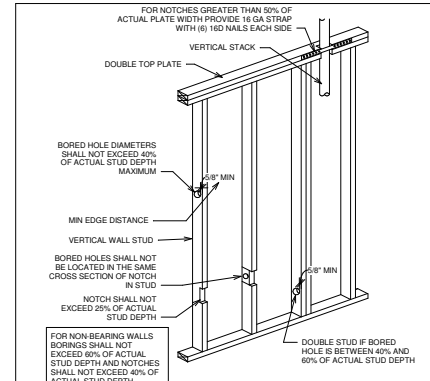
9 CANOPY FRAMING
SCALE: 3/4\"/>



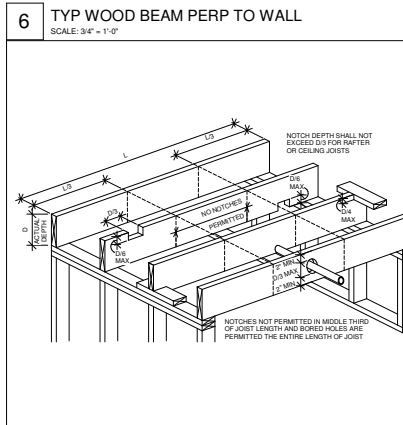
7 TYP WOOD BEAM PARALLEL TO WALL
SCALE: 3/4\"/>



6 TYP WOOD BEAM PERP TO WALL
SCALE: 3/4\"/>



1 NOTCHING AND BORING WALLS
SCALE: 1/2\"/>



5 NOTCHING AND BORING CLG OR FLR JOISTS
SCALE: 1/2\"/>

BUILT UP COLUMN NAILING SCHEDULE

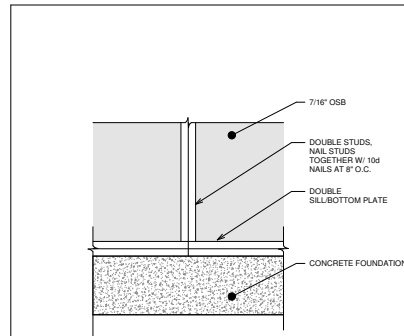
BUILT UP COLUMN	BUILT UP SECTION	PATTERN	END DISTANCE			ROW SPACING	NAIL SPACING	NAIL SIZE
			D1	D2	D3			
BC1	(2) 2x6	2	2 1/2"	1 1/2"	2 1/2"	8"	16d	
BC2	(3) 2x6	2	3 1/2"	1 1/2"	2 1/2"	8"	30d	
BC3	(4) 2x6	2	4"	1 1/2"	2 1/2"	8"	50d	
BC4	(2) 2x4	1	2 1/2"	1"	---	6"	10d	
BC5	(3) 2x4	1	3 1/2"	1 1/2"	---	8"	30d	

PATTERN 1 and **PATTERN 2** diagrams show nail placement on column sections.

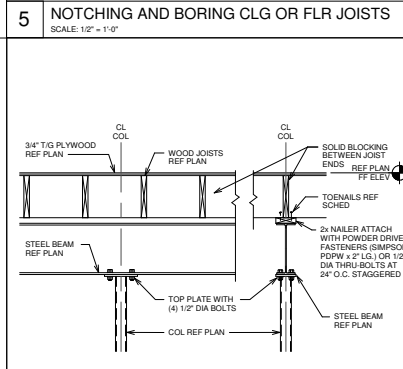
- ADJACENT NAILS ARE DRIVEN FROM OPPOSITE SIDES OF THE COLUMN.
- CONTRACTOR MAY SUBSTITUTE 1/2" BOLTS W/ METAL PLATE OR WASHERS IN PLACE OF 30d & 50d NAILS.
- CONTRACTOR SHALL PRE DRILL STUDS W/ 1/8" DRILL BIT WHEN USING 30d & 50d NAILS TO PREVENT SPLITTING.
- ALL BUILT UP COLUMNS SHALL EXTEND TO THE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

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

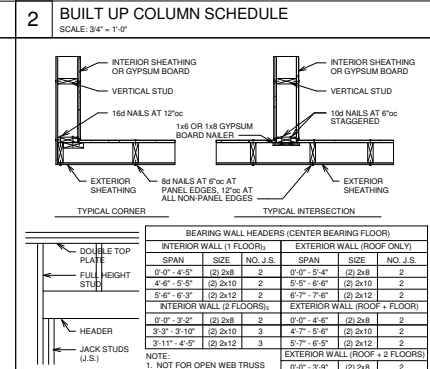
2 BUILT UP COLUMN SCHEDULE
SCALE: 3/4\"/>



8 EXTERIOR WALL PANELS DETAILS
SCALE: 1\"/>



4 TYPICAL BEAM AT COLUMN
SCALE: 3/4\"/>



3 TYP WALL FRAMING DETAILS
SCALE: 3/4\"/>

BEARING WALL HEADERS (CENTER BEARING FLOOR)

INTERIOR WALL (1 FLOOR)			EXTERIOR WALL (ROOF ONLY)		
SPAN	SIZE	NO. J.S.	SPAN	SIZE	NO. J.S.
0'-0\"/>					

BEARING WALL HEADERS (EXTERIOR WALL (ROOF + FLOOR))

INTERIOR WALL (2 FLOORS)			EXTERIOR WALL (ROOF + FLOOR)		
SPAN	SIZE	NO. J.S.	SPAN	SIZE	NO. J.S.
0'-0\"/>					

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\"/>



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#	DATE	DESCRIPTION
1	9/12/2022	STRUCTURAL REVIEW
2	9/21/2022	MARKUPS

DRAWN BY: MLR
 CHECKED BY: SBA
 ISSUED FOR:

SHEET TITLE
 STANDARD DETAILS

SHEET NUMBER
 S41

TABLE R802.5.1(9) RAFTER/CEILING JOIST HEEL JOINT CONNECTIONS (a,b,c,d,e,f,g)		GROUND SNOW LOAD (PSF)																					
RAFTER SLOPE	RAFTER SPACING	20(1)				30				50				70									
		12	20	28	36	12	20	28	36	12	20	28	36	12	20	28	36						
		ROOF SPAN (FEET)																					
		REQUIRED NUMBER OF 16d COMMON NAILS(2x) PER HEEL JOINT SPICES (d,e,f)																					
3:12	12	4	6	8	10	4	6	8	11	5	8	12	15	6	11	15	20	24	24	24	24	24	24
4:12	12	3	4	6	8	3	4	6	8	3	4	6	8	3	4	6	8	12	15	15	15	15	15
5:12	12	3	4	5	6	3	4	5	6	3	4	5	6	3	4	5	6	7	9	9	9	9	9
7:12	12	3	4	4	5	3	4	4	5	3	4	4	5	3	4	4	5	5	7	7	7	7	7
9:12	12	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4
12:12	12	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

- 4d BOX NAILS SHALL BE PERMITTED TO BE SUBSTITUTED FOR 16D COMMON NAILS.
- NAILING REQUIREMENTS SHALL BE PERMITTED TO BE REDUCED 25% IF NAILS ARE CLINCHED.
- HEEL JOINT CONNECTIONS ARE NOT REQUIRED WHEN THE RIDGE IS SUPPORTED BY A LOAD-BEARING WALL, HEADER, OR RIDGE BEAM.
- WHEN INTERMEDIATE SUPPORT OF THE RAFTER IS PROVIDED BY VERTICAL STRUTS OR PURLINS TO A LOAD-BEARING WALL, THE TABULATED HEEL JOINT CONNECTION REQUIREMENTS SHALL BE PERMITTED TO BE REDUCED PROPORTIONALLY TO THE REDUCTION IN SPAN.
- EQUIVALENT NAILING PATTERNS ARE REQUIRED FOR CEILING JOIST TO CEILING JOIST LAP SPICES.
- APPLIES TO ROOF LIVE LOAD OF 20 PSF OR LESS.
- TABULATED HEEL JOINT CONNECTION REQUIREMENTS ASSUME THAT CEILING JOISTS OR RAFTER TIES ARE LOCATED AT THE BOTTOM OF THE ATTIC SPACE. WHEN CEILING JOISTS OR RAFTER TIES ARE LOCATED HIGHER IN THE ATTIC, HEEL JOINT CONNECTION REQUIREMENTS SHALL BE INCREASED BY THE FOLLOWING FACTORS:

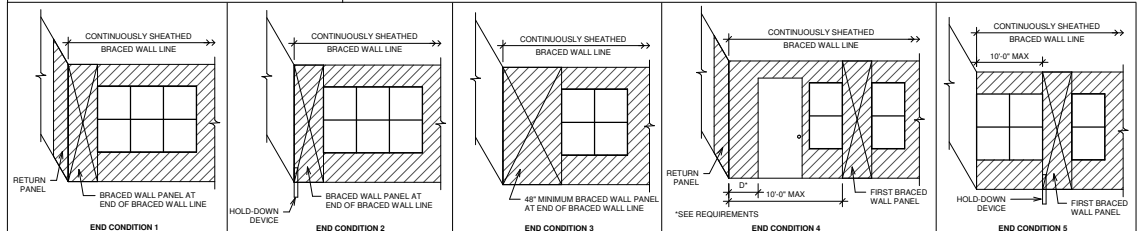
Hc/Hr	HEEL JOINT CONNECTION ADJUSTMENT FACTOR
1/3	1.5
1/4	1.33
1/5	1.25
1/6	1.12
1/10 OR LESS	1.0

WHERE:
Hc= HEIGHT OF CEILING JOISTS OR RAFTER TIES MEASURED VERTICALLY ABOVE THE TOP OF THE RAFTER SUPPORT WALLS.
Hr= HEIGHT OF ROOF RIDGE MEASURED VERTICALLY ABOVE THE TOP OF THE RAFTER SUPPORT WALLS.

FASTENING SCHEDULE IRC 2018 TABLE R602.3(1)

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

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"

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER (a)(b)(c)	SPACING AND LOCATION
21	Joist to sill, top plate or girder	4-8d box (2-1/2" x 0.113"); or 3-6d common (2-1/2" x 0.131"); or 3-1/4" box (3" x 0.128); or 3-5" x 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" x 0.131); or 8d common (2-1/2" x 0.131); or 10d box (3" x 0.128); or 3" x 0.131" nails	4" o.c. toe nail 6" o.c. toe nail
23	1" x 6" subfloor or less to each joist	3-8d box (2-1/2" x 0.113); or 2-8d common (2-1/2" x 0.131); or 3-1/4" box (3" x 0.128); or 2 staples, 1" crown, 16 ga., 1-3/4" long	Face nail
24	2" subfloor to joist or girder	3-16d common (3-1/2" x 0.162)	Blind and face nail
25	2" planks (glang & beam-floor & roof)	2-16d box (3-1/2" x 0.135); or 2-16d common (3-1/2" x 0.162)	At each bearing, face nail
26	Band or rim joist to joist	3-16d common (3-1/2" x 0.162); 4-10d box (3" x 0.128); or 4-3" x 0.131" nails; or 4-3" x 14 ga. staples, 7/16" crown	End nail
27	Build-up girders and beams, 2-inch lumber layers	20d common (4" x 0.192); or 10d box (3" x 0.128); or 3" x 0.131" nails	Nail each layer as follows: 32" o.c. all top and bottom and staggered on opposite sides 24" o.c. face nail at top and bottom and staggered on opposite sides
28	Ledger strip supporting joists or rafters	2-16d common (3-1/2" x 0.162); or 4-3" x 0.131" nails	At each joist or rafter, face nail
29	Bridging or blocking to joist	2-10d box (3" x 0.128); or 1-16d common (3-1/2" x 0.135); or 1-3" x 0.131" nails	Each end, toe nail
30	3/8" - 1/2"	6d common (2" x 0.113) nail (stud/box wall); 8d common (2-1/2" x 0.131) nail (roof); or RRS-01 (2-3/8" x 0.131) nail (roof)	6 12(1)
31	19/32" - 1"	8d common nail (21/2" x 0.131); or RRS-01 (2-3/8" x 0.131) nail	6 12(1)
32	1-1/8" - 1-1/4"	10d common (3" x 0.148) nail; or 8d (21/2" x 0.131) deformed nail	6 12
33	1/2" structural cellular 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 cellulose 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(g)	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
37	3/4" and less	6d deformed (2" x 0.120) nail; or 8d common (2-1/2" x 0.131) nail	6 12
38	7/8" - 1"	8d common (2-1/2" x 0.131) nail; or 6d deformed (2-1/2" x 0.120) nail	6 12
39	1-1/8" - 1-1/4"	10d common (3" x 0.148) nail; or 8d deformed (2-1/2" x 0.120) nail	6 12

- 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.
- Staples are 16 gauge wire and have a minimum 7/16-inch on diameter crown width.
- Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater.
- Four foot by 8 foot or 4 foot by 8 foot panels shall be applied vertically.
- Spacing of fasteners not included in this table shall be based on Table R602.3(2).
- 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.
- Gypsum sheathing shall conform to ASTM C1396 and shall be installed in accordance with GA 263. Fiberboard sheathing shall conform to ASTM C208.
- 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.
- Foot perimeter shall be supported by framing members or solid blocking.
- 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 two 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.
- RRS-01 is a Roof Sheathing Ring Shank nail meeting the specifications in ASTM F1667.

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SHEET TITLE
STANDARD DETAILS, SCHEDULES & NOTES

SHEET NUMBER
S43