

PROJECT DATA

Project address: _____

Owner's name: _____

Contact phone number: _____

Contact E-mail: _____

Zoning district: _____

Lot area: _____ Sq. Ft.

Floor area of (E) building: _____ Sq. Ft.

Floor area of (E) accessory buildings: _____ Sq. Ft.

Floor area of addition to (E) building: _____ Sq. Ft.

Floor area of all buildings: _____ Sq. Ft.

Floor area ratio: _____ %

Number of bedrooms: _____

Number of bathrooms: _____

FLOOD ZONE: Y OR N (circle one)

If applicable, please specify: _____

Flood Zone: _____

Base Flood Elevation: _____ ft. per 1988 NAVD

SCOPE OF WORKGround floor addition/alteration to existing
single family dwelling of Type V-B construction**CODE REFERENCE****All work shall conform to the 2019 edition
of the following codes and regulations, as applicable:**

1. California Administrative Code;
2. California Building Code;
3. California Residential Code;
4. California Electrical Code;
5. California Mechanical Code;
6. California Plumbing Code;
7. California Energy Code;
8. California Historical Building Code;
9. California Fire Code;
10. California Existing Building Code;
11. California Green Building Standards Code;
12. City of San Mateo Municipal Code; and
13. All other state and local laws, ordinances, & regulations.

APPLICANT INSTRUCTIONS:

1. Provide a Plot Plan in the spaced provided, which includes the lot and building dimensions, setbacks, and eave extensions, etc.
2. Provide project information above.
3. Provide a north arrow in the space provided.

Structural Design Criteria:

Roof: 20 psf

Floor: 40 psf

Deck & Balcony: 60 psf

Basic wind speed (3-second gust): 110 mph

Wind exposure: B or C (circle one)

Seismic:

Site class: **D** (if soil report is not provided)

Seismic design category:

E (for $S_1 \geq 0.75g$); or

D2 per CRC Section R301.2.2.1.2, Exception 2.

SITE PLAN

Scale: N.T.S.

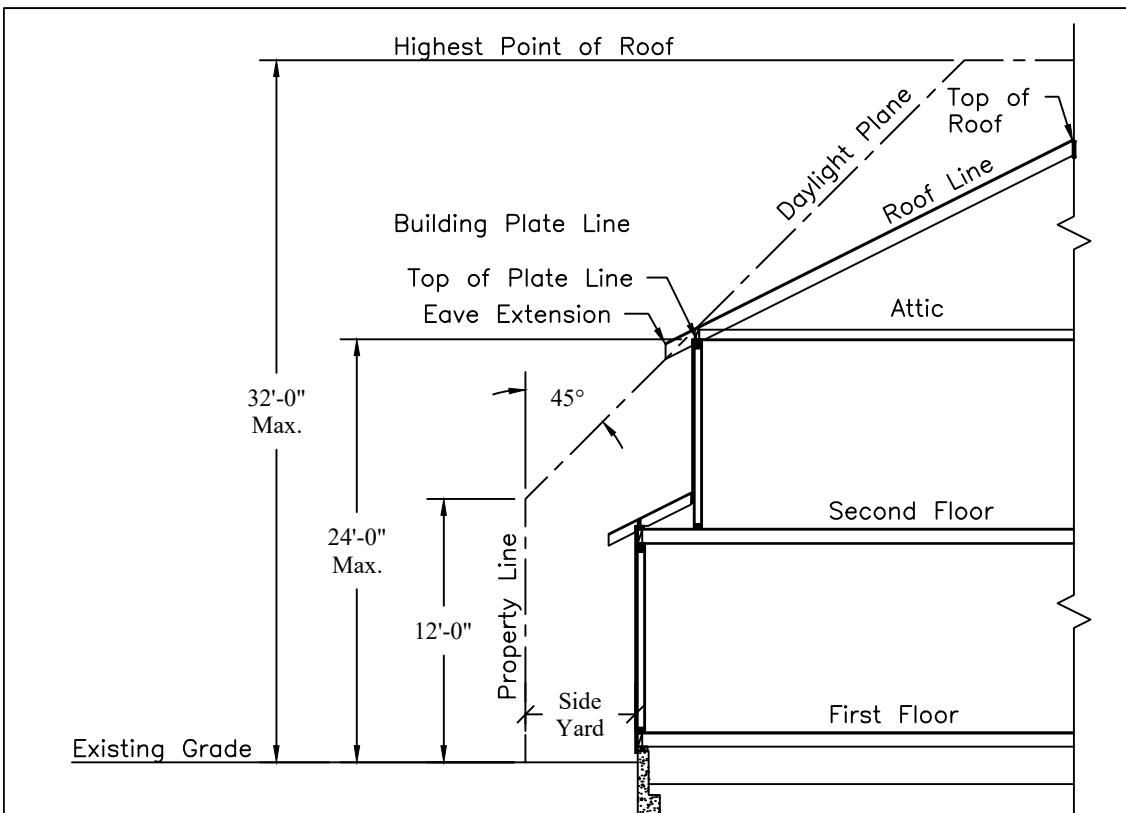
North Arrow

T-1

ROOF PLAN AND NOTES

CRC SECTION R905.2 & TABLE R905.1.1(2): ASPHALT SHINGLES																																				
Not permitted below 2 units vertical in 12 units horizontal																																				
1. Decking Sect. R905.2.1	Asphalt shingles shall be fastened to solidly sheathed decks.																																			
2. Fasteners Sect. R905.2.5	Fasteners for asphalt shingles shall be galvanized, stainless steel, aluminum or copper roofing nails, minimum 12 gage shank with a minimum 0.375 inch-diameter head, of a length to penetrate through the roofing materials and a minimum of 0.75 inch into the roof sheathing. Where the roof sheathing is less than 0.75 inch thick, the nails shall penetrate through the sheathing. Fasteners shall comply with ASTM F 1667.																																			
3. Attachment Sect. R905.2.6	Asphalt shingles shall have the minimum number of fasteners required by the manufacturer and CBC Section 1504.1. Asphalt shingles shall be secured to the roof with not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 20 units vertical in 12 units horizontal, asphalt shingles shall be installed in accordance with the manufacturer's printed installation instructions for steep-slope roof applications.																																			
4. Underlayment Sect. R905.2.3	Slope: 2 Units to less than 4 units vertical in 12 units horizontal Slope: 4 Units and over vertical in 12 units horizontal Two layers of underlayment applied in the following manner: apply a 19-inch strip of underlayment felt parallel with and starting at the eaves. Starting at the eave, apply 36-inch-wide sheets of underlayment overlapping successive sheets 19 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet.	Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches, fastened sufficiently to hold in place. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet.																																		
5. Flashings Sect. R905.2.8	Flashing for asphalt shingles shall comply with this section and the asphalt shingle manufacturer's approved installation instructions.																																			
	Base and cap flashing: Sect. R905.2.8.1: Base and cap flashing shall be installed in accordance with the manufacturer's instructions. Base flashing shall be of either corrosion-resistant metal of minimum nominal 0.019-inch thickness or mineral-surfaced roll roofing weighing a minimum of 77 pounds per 100 square feet. Cap flashing shall be corrosion-resistant metal of minimum nominal 0.019-inch thickness. Valleys - Sect. R905.2.8.2: Valleys linings shall be installed in accordance with the manufacturer's instructions before applying shingles. Valley linings of the following types shall be permitted: <ol style="list-style-type: none"> 1. For open valleys lined with metal, the valley lining shall not be than 24 inches wide and of any of the orrosion-resistant metals in CRC Table R905.2.8.2. 2. For open valleys, valley lining of two plies of mineral-surfaced roll roofing complying with ASTM D 3909 or ASTM D 6380 Class M, shall be permitted. The bottom layer shall be 18 inches and the top layer not less than 36 inches wide. 3. For closed valleys, valley lining of one ply of smooth roll roofing complying with ASTM D 6380 and not less than 36 inches wide or valley lining as described in Item 1 or 2 shall be permitted. Self-adhering polymer-modified bitumen underlayment complying with ASTM D1970 shall be permitted in lieu of the lining material. 																																			
6. Drip edge Sect. R905.2.8.5	A drip edge shall be provided at eaves and rake edges of shingle roofs. Adjacent segments of drip edge shall be overlapped not less than 2 inches. Drip edges shall extend not less than $\frac{1}{4}$ inch below the roof sheathing and extend up back onto the roof deck not less than 2 inches. Drip edges shall be mechanically fastened to the roof deck at not more than 12 inches o.c. with fasteners as specified in Section R905.2.5. Underlayment shall be installed over the drip edge along eaves and under the drip edge along rake edges.																																			
7. Crickets and saddles Sect. R903.2.2	A cricket or saddle shall be installed on the ridge side of any chimney or penetration greater than 30 inches wide as measured perpendicular to the slope. Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.																																			
Applicant instructions:																																				
1. Provide a proposed roof plan in the spaced provided.																																				
2. For other roofing materials, please specify the roofing manufacturer and installation instructions on the plans for review.																																				
		PROPOSED ROOF PLAN																																		
		Scale: _____																																		

BUILDING ELEVATIONS AND NOTES



Sample Partial Building Section

At Grade Less Than 15%

Applicant instructions:

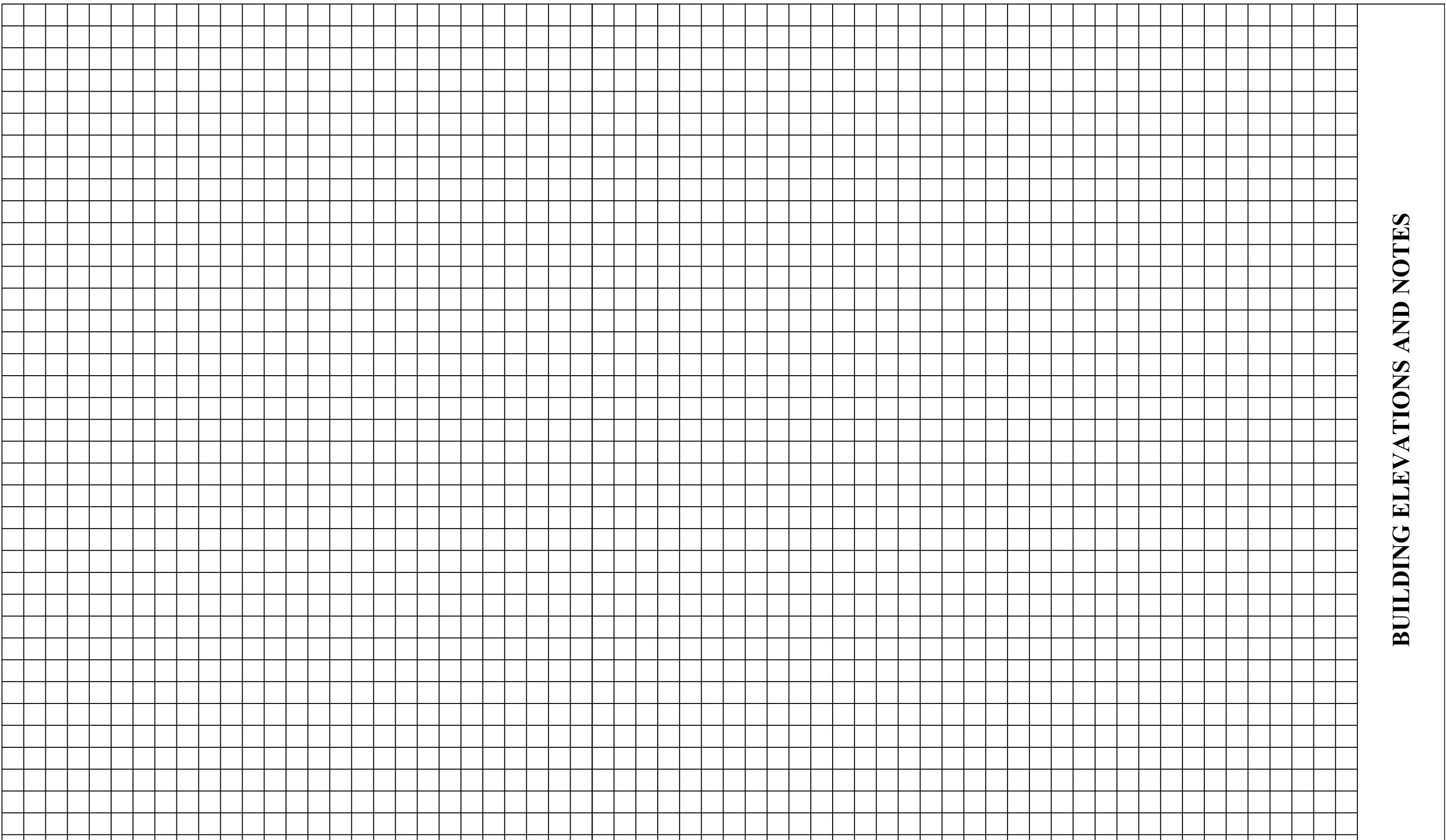
1. Provide a building section or elevation in the spaced provided.
2. The building section or elevation must conform to the requirements of SMMC Section 27.18.050.
3. The Planning staff should be consulted for additional zoning requirements.

PROPOSED FRONT ELEVATION

Scale: _____

A-3

BUILDING ELEVATIONS AND NOTES



Applicant instructions:

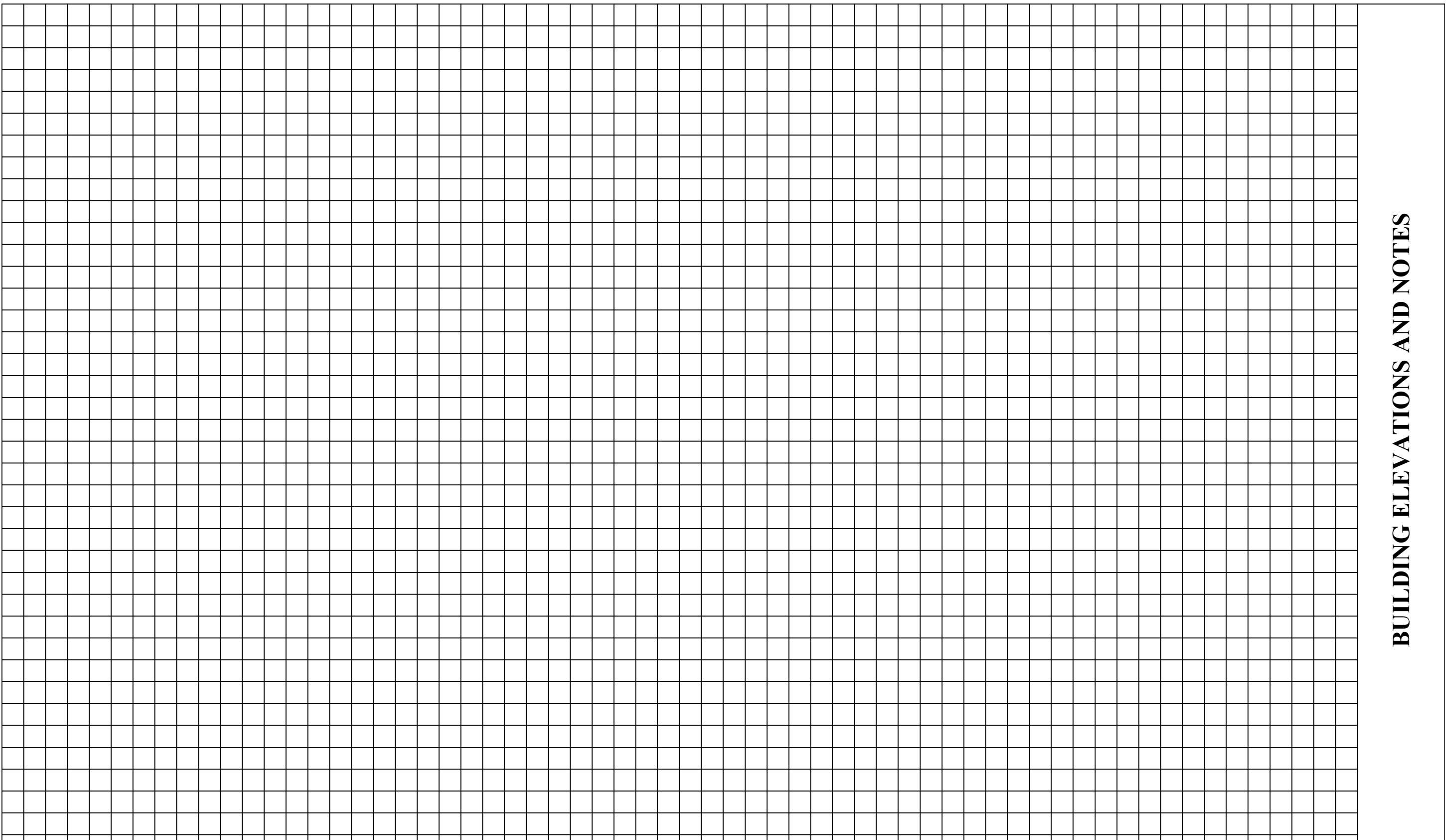
1. Provide a building section or elevation in the spaced provided.
2. The building section or elevation must conform to the requirements of SMMC Section 27.18.050.
3. The Planning staff should be consulted for additional zoning requirements.

PROPOSED REAR ELEVATION

Scale: _____

A-4

BUILDING ELEVATIONS AND NOTES



Applicant instructions:

1. Provide a building section or elevation in the spaced provided.
2. The building section or elevation must conform to the requirements of SMMC Section 27.18.050.
3. The Planning staff should be consulted for additional zoning requirements.

PROPOSED LEFT ELEVATION

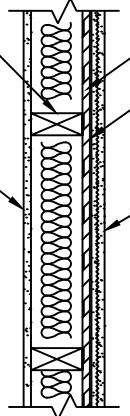
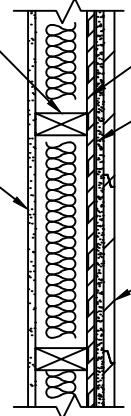
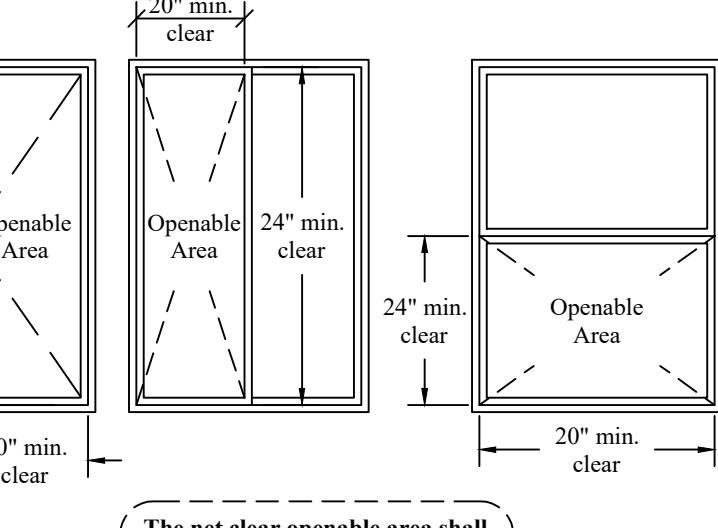
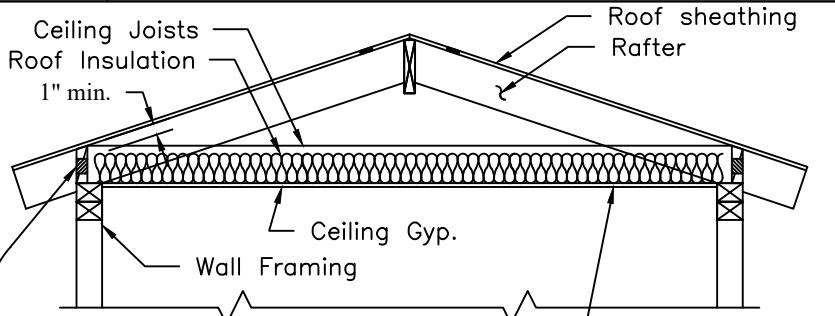
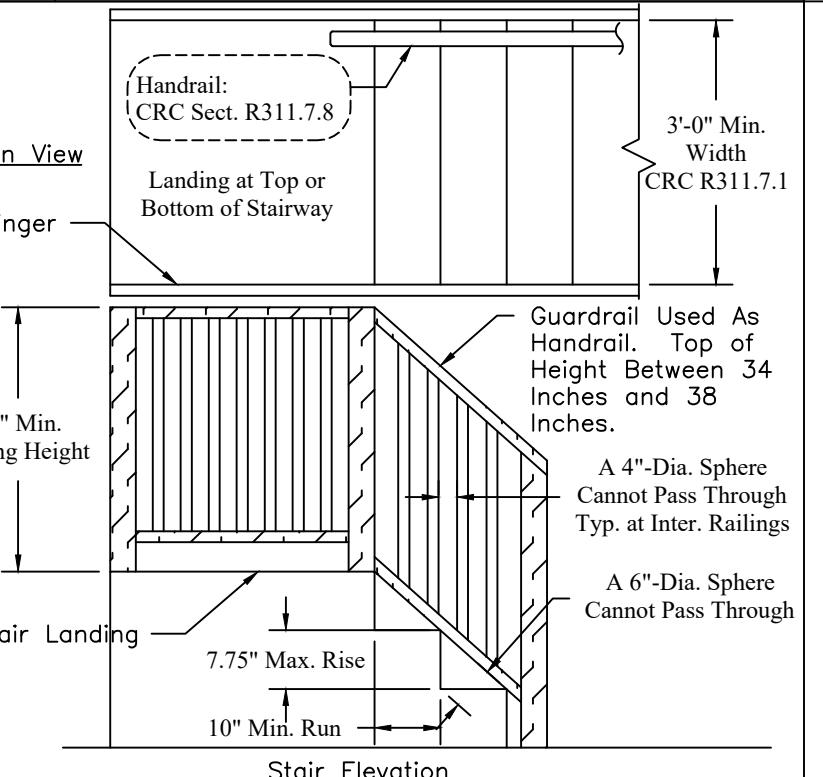
Scale: _____

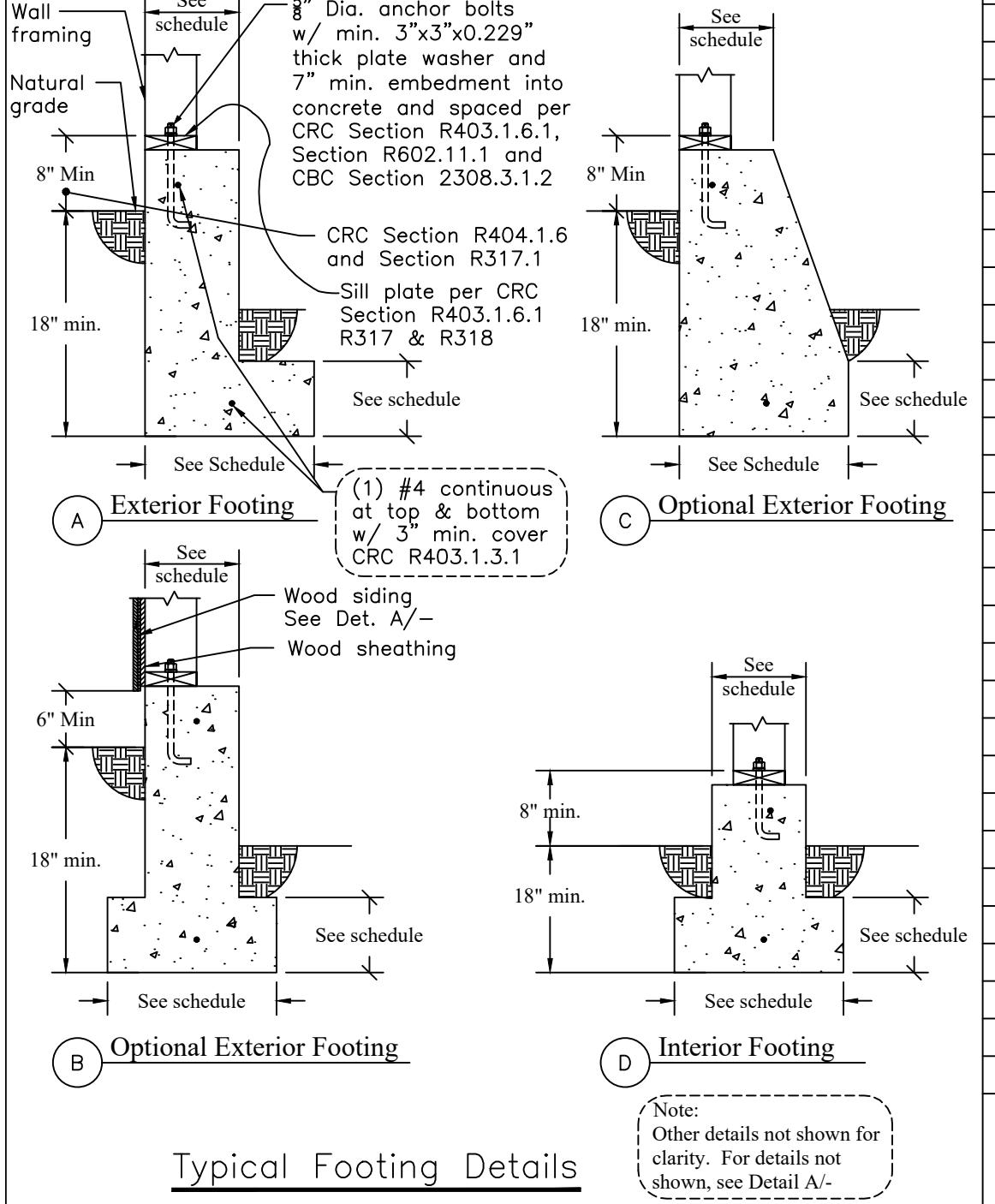
A-5

BUILDING ELEVATIONS AND NOTES

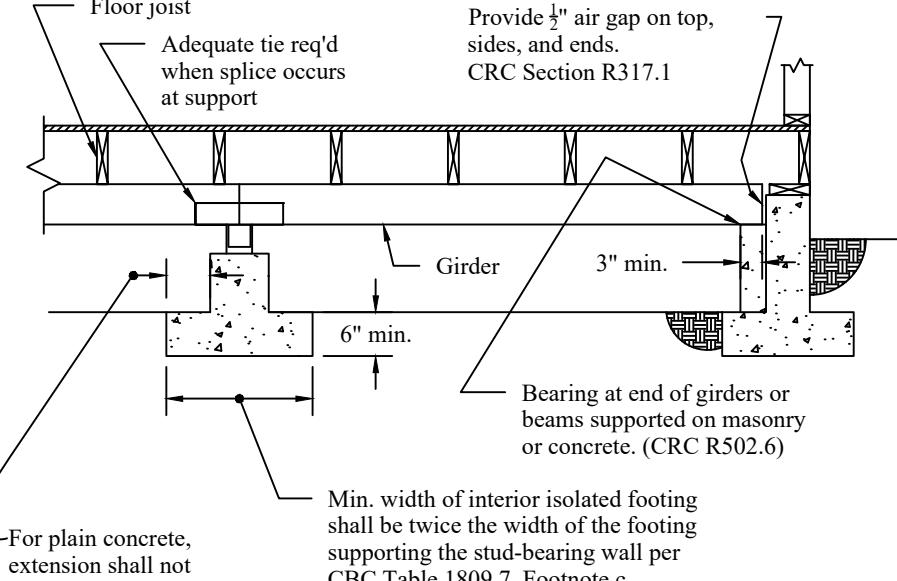
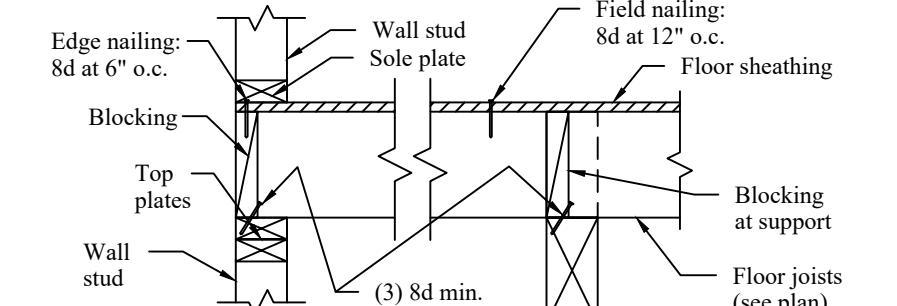
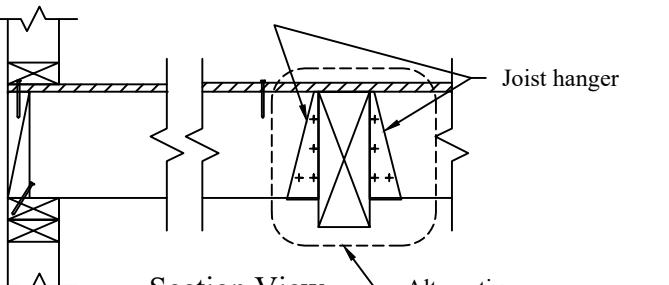
Applicant instructions: 1. Provide a building section or elevation in the spaced provided. 2. The building section or elevation must conform to the requirements of SMMC Section 27.18.050. 3. The Planning staff should be consulted for additional zoning requirements.	PROPOSED RIGHT ELEVATION Scale: _____	A-6

DETAILS

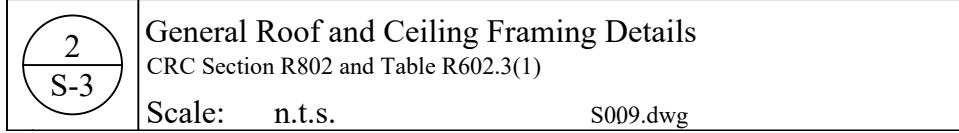
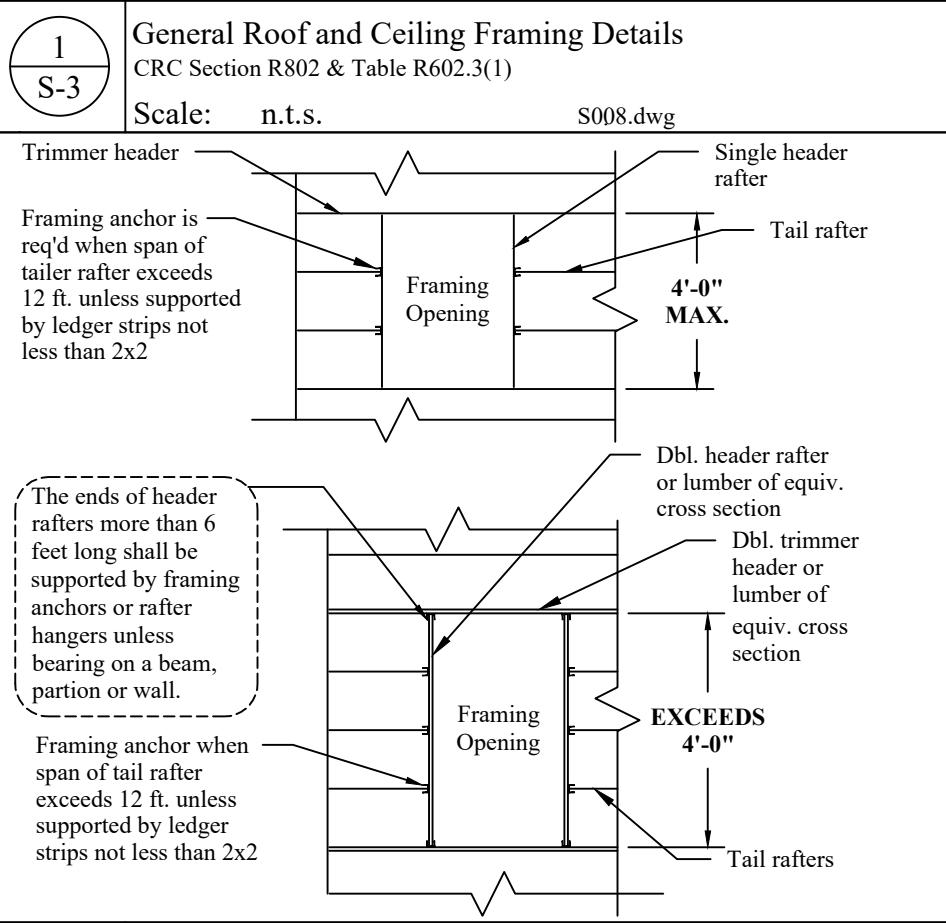
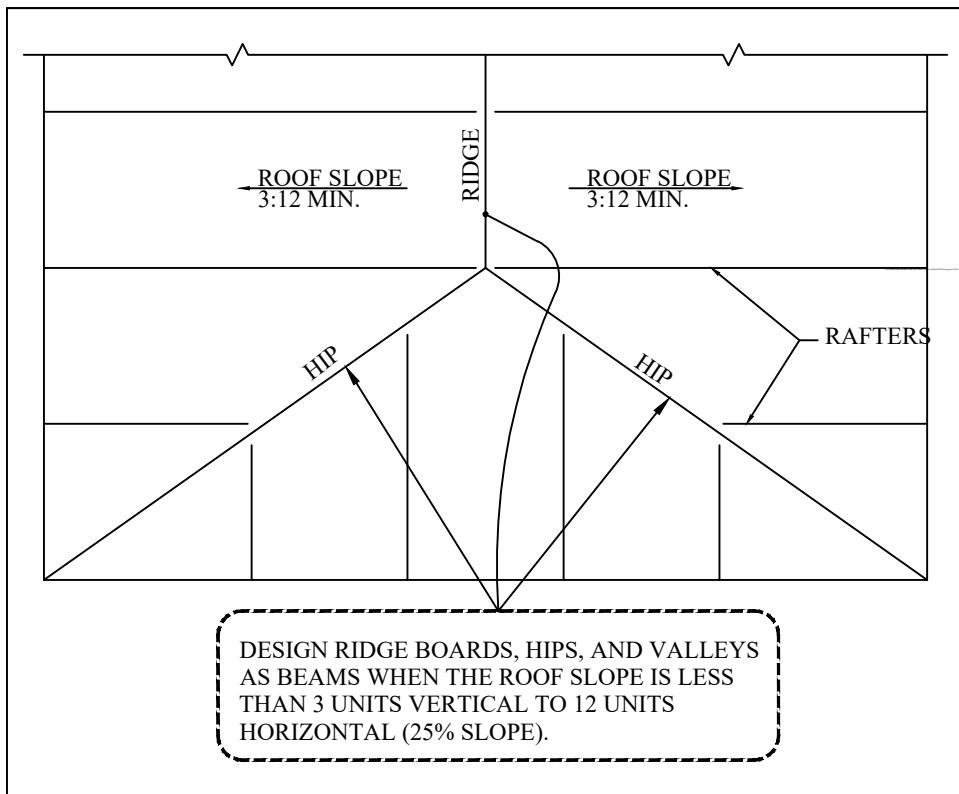
 <p>2x Wall stud at 16" o.c. max.</p> <p>5/8" Type X Gyp. Brd applied vertically or horizontally nailed w/ 6d cooler or wallboard nails at 7" on center w/ end joints on nailing members. Stagger joints each side</p> <p>Wall Sheathing</p> <p>(2) Layers of Grade D paper over wood sheathing</p> <p>7/8" Cement plaster Plaster mix - 1:4 for scratch coat and 1:5 for brown coat, by volume, cement to sand.</p> <p><u>Wall Section Plan View</u></p>	 <p>2x Wall stud at 16" o.c. max.</p> <p>5/8" Type X Gyp. Brd applied vertically or horizontally nailed w/ 6d cooler or wallboard nails at 7" on center w/ end joints on nailing members. Stagger joints each side</p> <p>Wall sheathing</p> <p>1/2" gyp. sheathing w/ 1 3/4" by No. 11 gage by 7/16" head galvanized nails at 8" o.c.</p> <p>3/4" drop siding w/ 7d galvanized smooth box nails.</p> <p><u>Wall Section Plan View</u></p>	 <p>20" min. clear</p> <p>24" min. clear Typ.</p> <p>Openable Area</p> <p>24" min. clear</p> <p>Openable Area</p> <p>24" min. clear</p> <p>Openable Area</p> <p>20" min. clear</p> <p>44" max. sill height Typ.</p> <p>Floor</p> <p>The net clear openable area shall not be less than 5.7 square feet, except the net clear openable area may be 5.0 square feet for grade-floor openings.</p>	
<p>1 A7</p> <p>One-Hour Exterior Wall CBC Table 721.1(2) & CRC R703.7</p> <p>SCALE: N.T.S.</p>  <p>Ceiling Joists</p> <p>Roof Insulation 1" min.</p> <p>Rafter</p> <p>Ceiling Gyp.</p> <p>Wall Framing</p> <p>The minimum net free ventilating area shall be $\frac{1}{150}$ of the area of the vented space.</p> <p>Exception: The minimum net free ventilation area shall be $\frac{1}{300}$ of the vented space provided that not less than 40% and not more than 50% of the required ventilating area is provided by ventilators located in the upper portion of the attic or rafter space. Upper ventilators shall be located not more than 3 feet below the ridge or highest point of the space, measured vertically. The balance of the required ventilation provided shall be located in the bottom $\frac{1}{3}$ of the attic space.</p> <p>Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof framing members shall have cross ventilation for each separate space by ventilating openings protected against the entrance of rain and snow.</p>	<p>2 A7</p> <p>One-Hour Exterior Wall CBC Table 721.1(2) & CRC R703.5</p> <p>SCALE: N.T.S.</p>  <p>Plan View</p> <p>Stringer</p> <p>Handrail: CRC Sect. R311.7.8</p> <p>Landing at Top or Bottom of Stairway</p> <p>3'-0" Min. Width CRC R311.7.1</p> <p>Guardrail Used As Handrail. Top of Height Between 34 Inches and 38 Inches.</p> <p>42" Min. Railing Height</p> <p>Stair Landing</p> <p>7.75" Max. Rise</p> <p>10" Min. Run</p> <p>A 4"-Dia. Sphere Cannot Pass Through Typ. at Inter. Railings</p> <p>A 6"-Dia. Sphere Cannot Pass Through</p> <p><u>Stair Elevation</u></p>	<p>3 A7</p> <p>Means of Egress Window CRC Section R310.2</p> <p>SCALE: n.t.s.</p>	
<p>4 A7</p> <p>Attic Ventilation & Access CRC Section 806.2 and 807.1</p> <p>SCALE: N.T.S.</p>	<p>5 A7</p> <p>Required Stairway CRC Section R311.7</p> <p>SCALE: N.T.S.</p>		<p>A-7</p>

<p>General Notes</p> <ol style="list-style-type: none"> New concrete shall minimum compressive strength of 2,500 psi unless noted otherwise. Reinforcing steel shall have a minimum yield strength of 40,000 psi unless noted otherwise. <p>CBC Table 1809.7 & Footnotes:</p> <ol style="list-style-type: none"> The ground under the floor shall be permitted to be excavated to the elevation of the top of the footing. Interior-stud-bearing walls are permitted to be supported by isolated footings. The footing width and length shall be twice the width shown in CBC Table 1809.7, and footings shall be spaced not more than 6 feet on center. 	<p>CRC Table R403.1 Footing Supporting Walls of Light-Frame Construction</p> <table border="1"> <thead> <tr> <th>Number of Floors Supported by the Footing</th><th>Minimum Width of Footing</th><th>Minimum Thickness of Footing</th></tr> </thead> <tbody> <tr> <td>1</td><td>12</td><td>6</td></tr> <tr> <td>2</td><td>16</td><td>6</td></tr> <tr> <td>3</td><td>19</td><td>6</td></tr> </tbody> </table>	Number of Floors Supported by the Footing	Minimum Width of Footing	Minimum Thickness of Footing	1	12	6	2	16	6	3	19	6	<p>a. The minimum footing width and thickness is based the Roof Live Load of 20 psf.</p> <p>b. See CRC Table R403.1(1) thru Table R403.1(3) for concrete footing with other foundation walls.</p> <p>c. The minimum depth of footing shall be 18 in. below grade.</p>
Number of Floors Supported by the Footing	Minimum Width of Footing	Minimum Thickness of Footing												
1	12	6												
2	16	6												
3	19	6												
 <p>Typical Footing Details</p> <p>Detail A: Exterior Footing Wall framing, Natural grade, 8" Min, 18" min, 5" Dia. anchor bolts w/ min. 3"x3"x0.229" thick plate washer and 7" min. embedment into concrete and spaced per CRC Section R403.1.6.1, Section R602.11.1 and CBC Section 2308.3.1.2. CRC Section R404.1.6 and Section R317.1. Sill plate per CRC Section R403.1.6.1 R317 & R318. See schedule.</p> <p>Detail B: Optional Exterior Footing Wood siding, See Det. A/-, Wood sheathing, 6" Min, 18" min. See schedule.</p> <p>Detail C: Optional Exterior Footing See schedule.</p> <p>Detail D: Interior Footing See schedule.</p> <p>Note: Other details not shown for clarity. For details not shown, see Detail A/-</p>														

FLOOR FRAMING PLAN, DETAILS, AND NOTES

 <p>Section View</p> <p>Note: See span table for length of girder between supports. Other information not shown for clarity</p>	
<p>1 S-2</p> <p>Typical Girder Connection Detail CRC Section R317.1 & R502</p> <p>Scale: n.t.s.</p>	
 <p>Section View</p> <p>Note: See detail above for information not shown</p>  <p>Section View</p> <p>Alternative framing connection</p>	
<p>2 S-2</p> <p>Typical Floor Framing Details CRC Section R502, Table R602.3(1)</p> <p>Scale: n.t.s.</p>	<p>Note:</p> <ol style="list-style-type: none"> 1. See span table for sizing floor joists and girders <p>GROUND FLOOR FRAMING PLAN</p> <p>S-2</p>

ROOF/CEILING FRAMING PLAN, DETAILS, AND NOTES

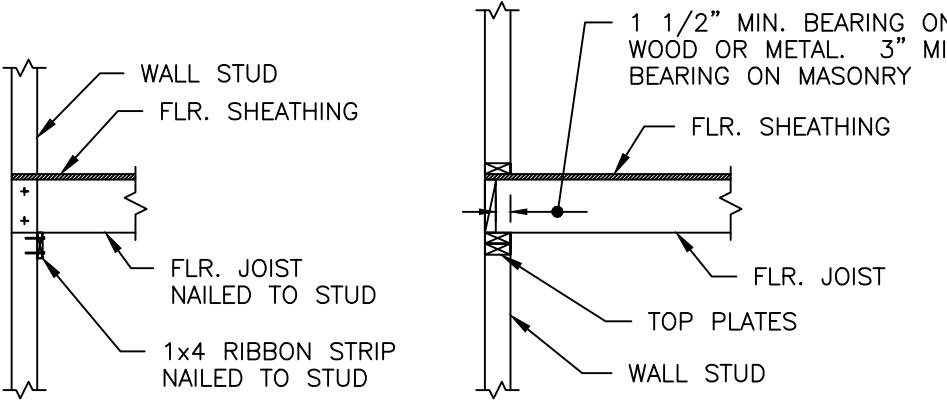
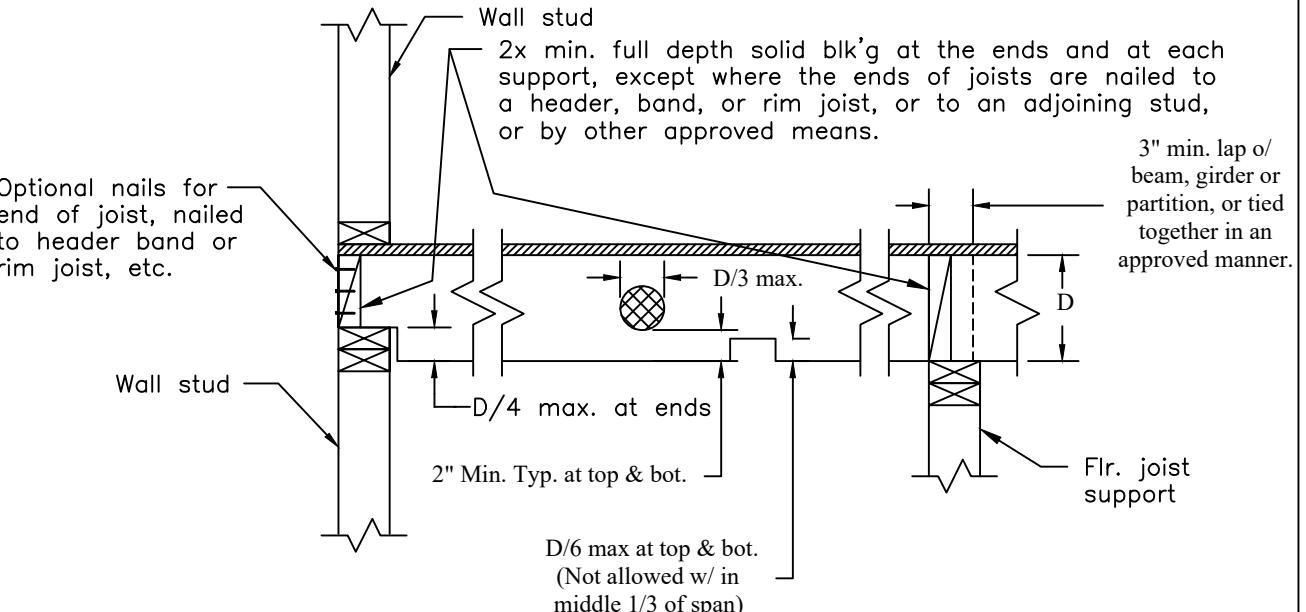
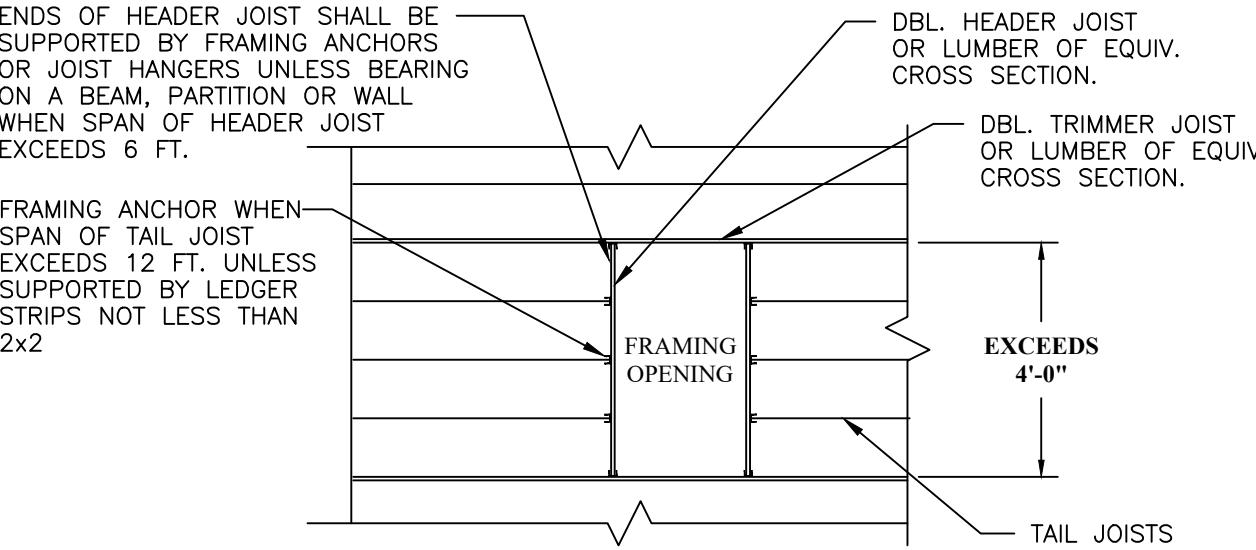
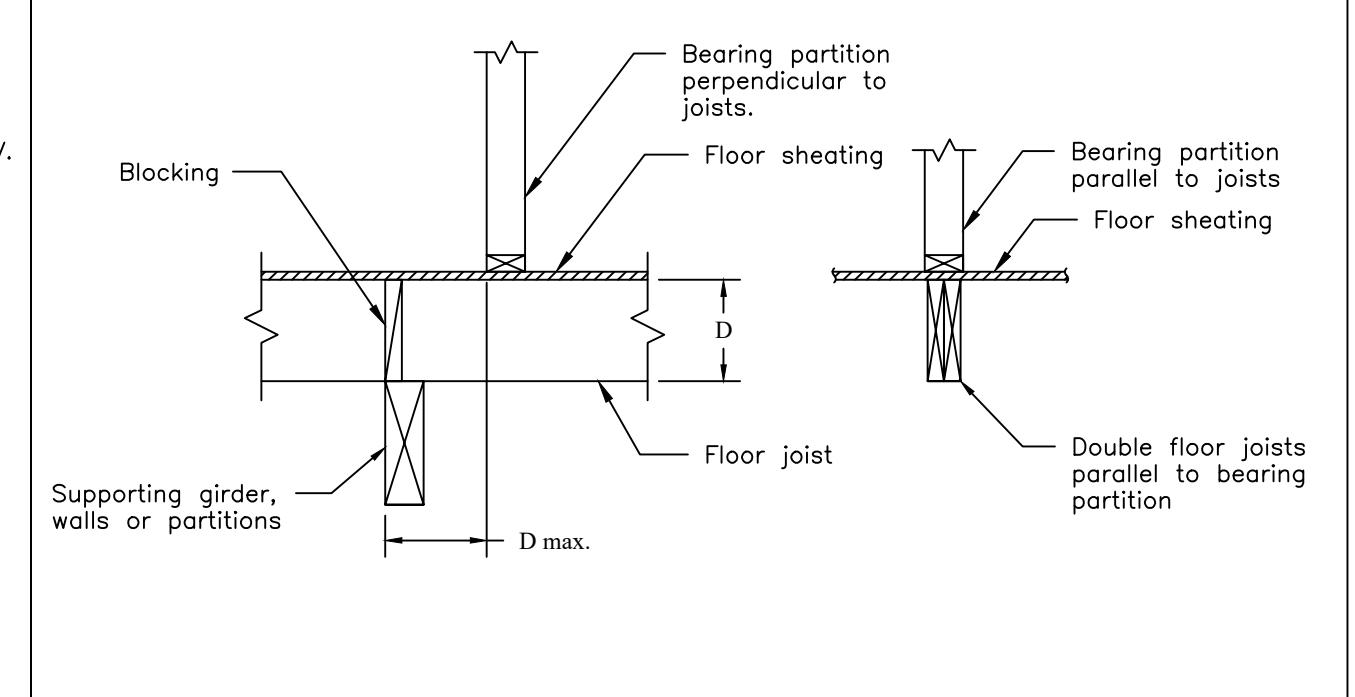


Note:
1. See span table for sizing rafters and ceiling joists.

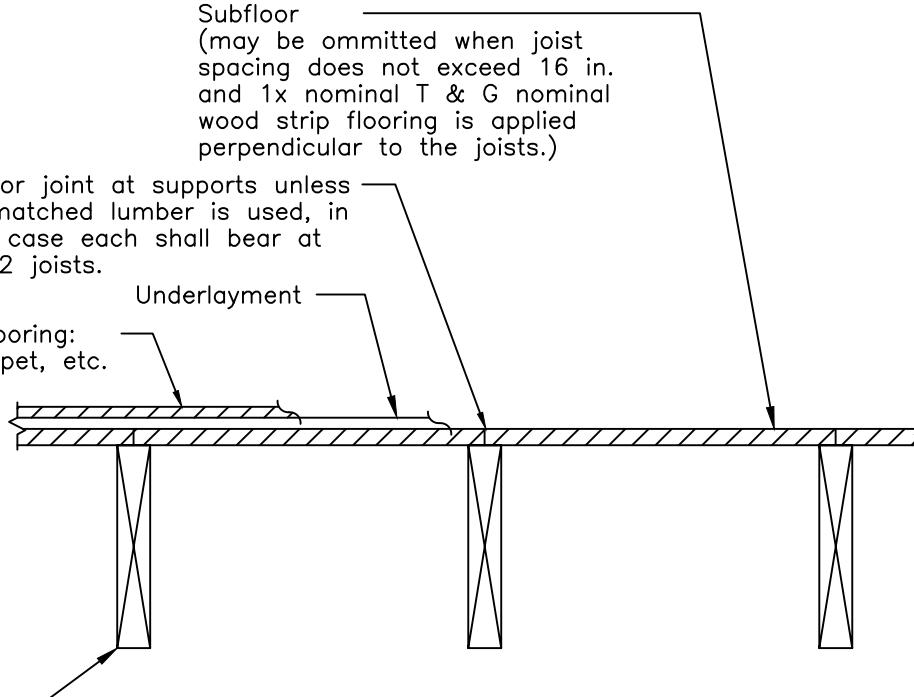
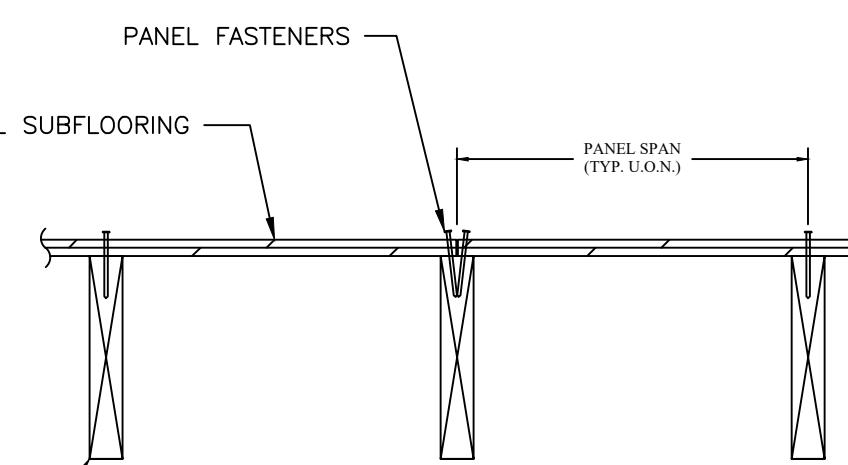
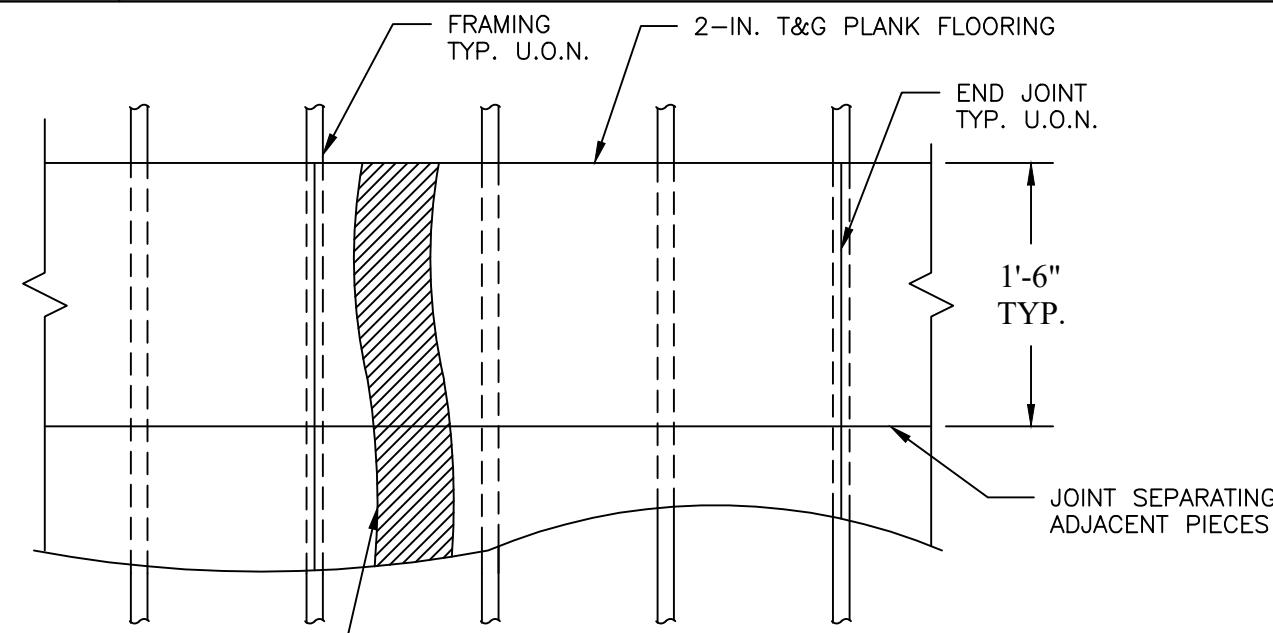
ROOF FRAMING PLAN

S-3

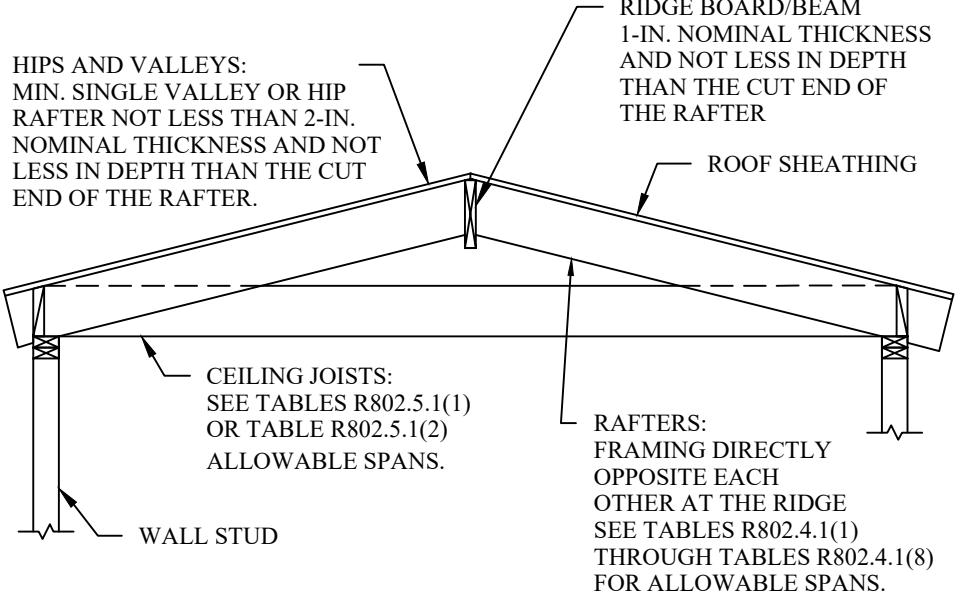
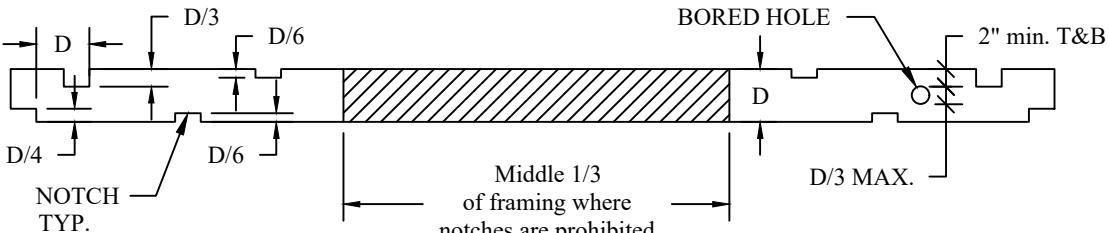
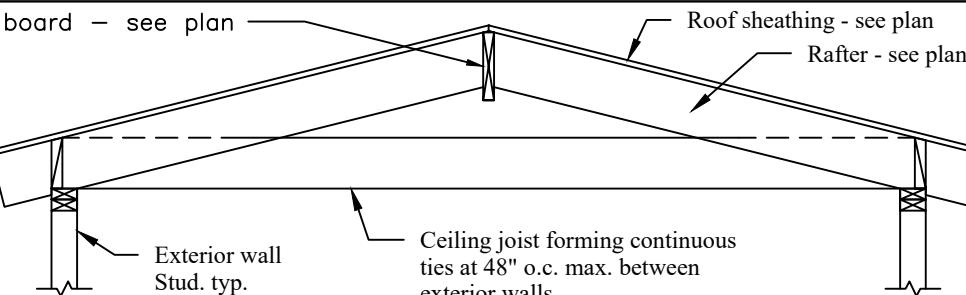
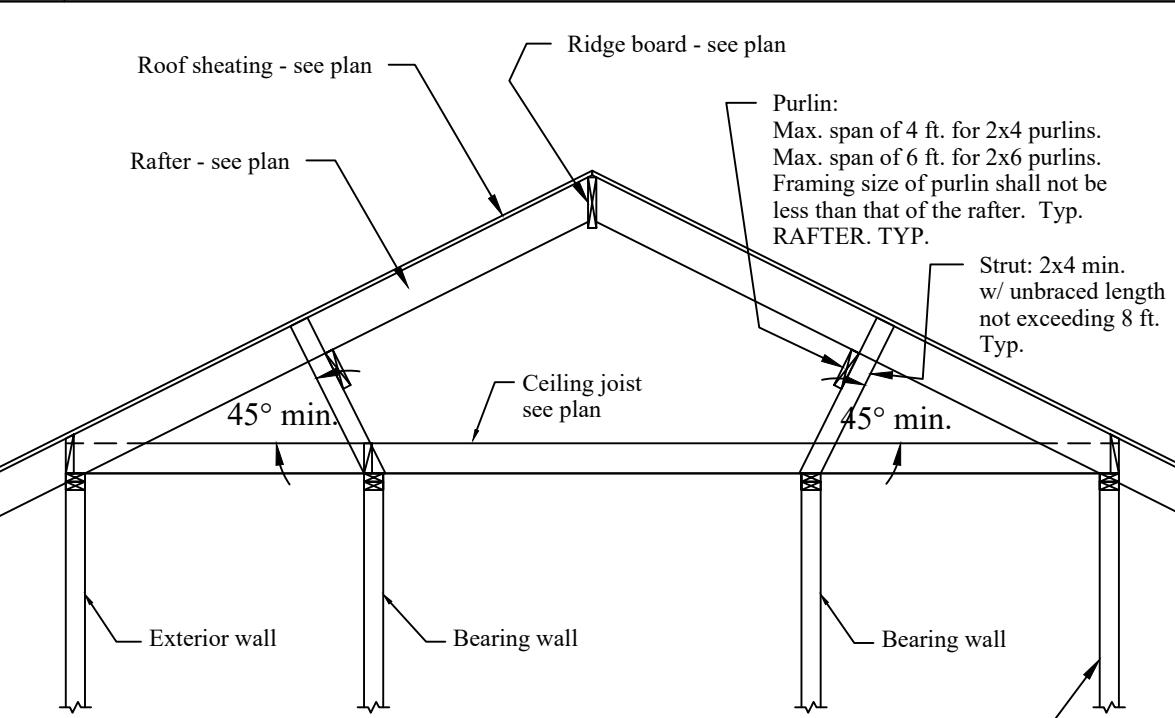
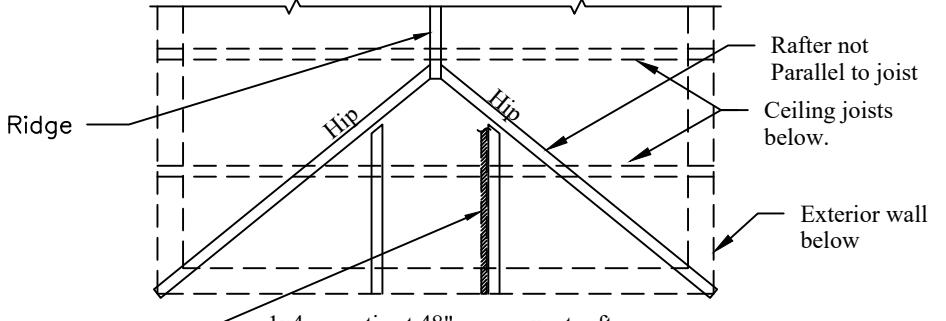
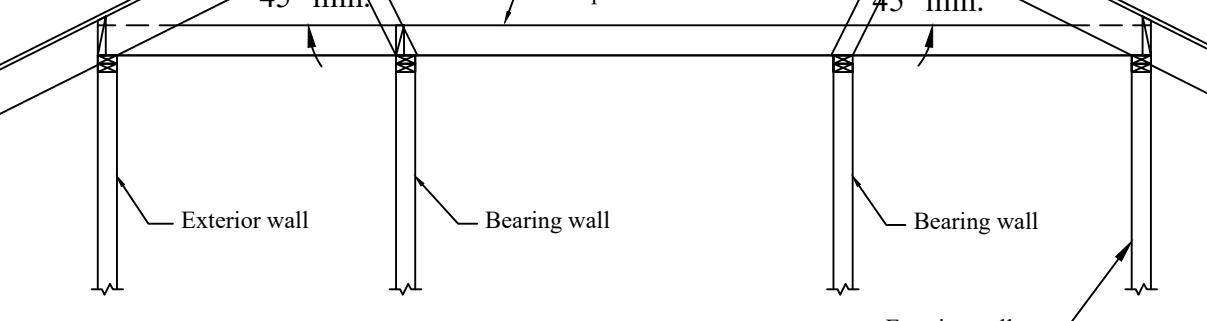
TYPICAL FLOOR FRAMING DETAILS

	 <p>WALL STUD FLR. SHEATHING FLR. JOIST NAILED TO STUD 1x4 RIBBON STRIP NAILED TO STUD</p> <p>1 1/2" MIN. BEARING ON WOOD OR METAL. 3" MIN. BEARING ON MASONRY</p> <p>FLR. SHEATHING FLR. JOIST TOP PLATES WALL STUD</p>	 <p>Wall stud 2x min. full depth solid blk'g at the ends and at each support, except where the ends of joists are nailed to a header, band, or rim joist, or to an adjoining stud, or by other approved means.</p> <p>Optional nails for end of joist, nailed to header band or rim joist, etc.</p> <p>Wall stud D/3 max. D/4 max. at ends 2" Min. Typ. at top & bot. D/6 max at top & bot. (Not allowed w/ in middle 1/3 of span)</p> <p>Flr. joist support 3" min. lap o/ beam, girder or partition, or tied together in an approved manner.</p>	
1 S-4	<p>Typical Floor Framing Detail CRC Section R502 & Table R602.3(1)</p> <p>Scale: n.t.s. S010.dwg</p>	2 S-4	<p>Typical Floor Framing Detail CRC Section R502 & Table R602.3(1)</p> <p>Scale: n.t.s. S011.dwg</p>
	 <p>ENDS OF HEADER JOIST SHALL BE SUPPORTED BY FRAMING ANCHORS OR JOIST HANGERS UNLESS BEARING ON A BEAM, PARTITION OR WALL WHEN SPAN OF HEADER JOIST EXCEEDS 6 FT.</p> <p>FRAMING ANCHOR WHEN SPAN OF TAIL JOIST EXCEEDS 12 FT. UNLESS SUPPORTED BY LEDGER STRIPS NOT LESS THAN 2x2</p> <p>DBL. HEADER JOIST OR LUMBER OF EQUIV. CROSS SECTION.</p> <p>DBL. TRIMMER JOIST OR LUMBER OF EQUIV. CROSS SECTION.</p> <p>EXCEEDS 4'-0"</p> <p>FRAMING OPENING</p> <p>TAIL JOISTS</p>	 <p>Bearing partition perpendicular to joists.</p> <p>Blocking</p> <p>Floor sheathing</p> <p>Bearing partition parallel to joists</p> <p>Floor sheathing</p> <p>Supporting girder, walls or partitions</p> <p>Floor joist</p> <p>Double floor joists parallel to bearing partition</p> <p>D max.</p>	
3 S-4	<p>Typical Floor Framing Detail CRC Section R502</p> <p>Scale: n.t.s. S012.dwg</p>	4 S-4	<p>Typical Floor Framing Detail CRC Section R502</p> <p>Scale: n.t.s. S013.dwg</p>

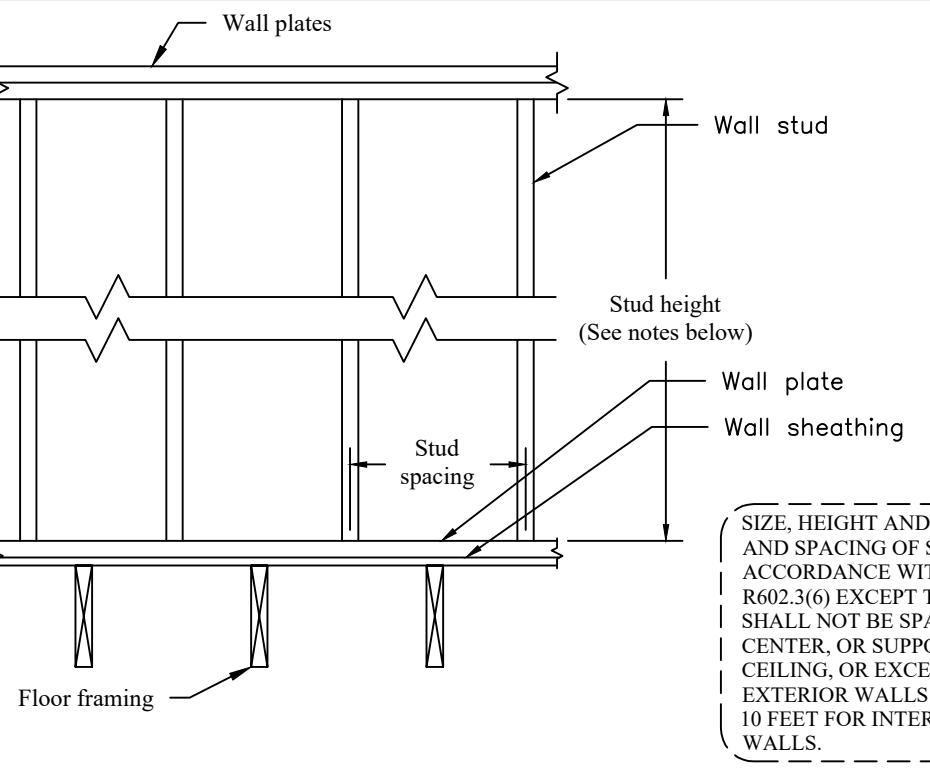
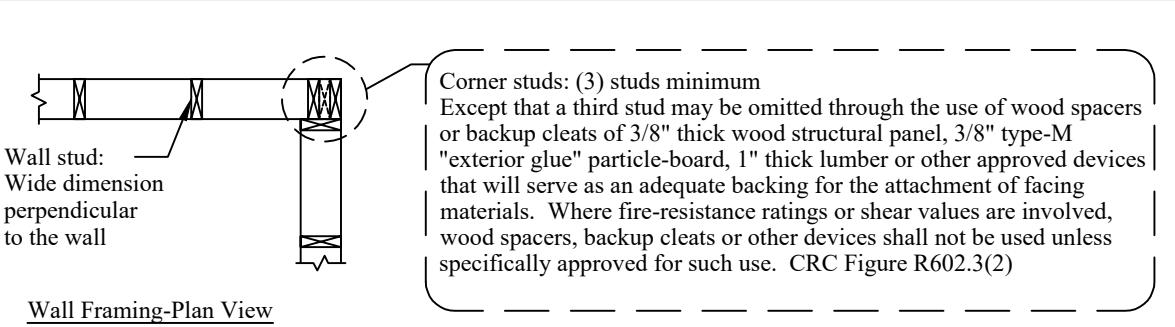
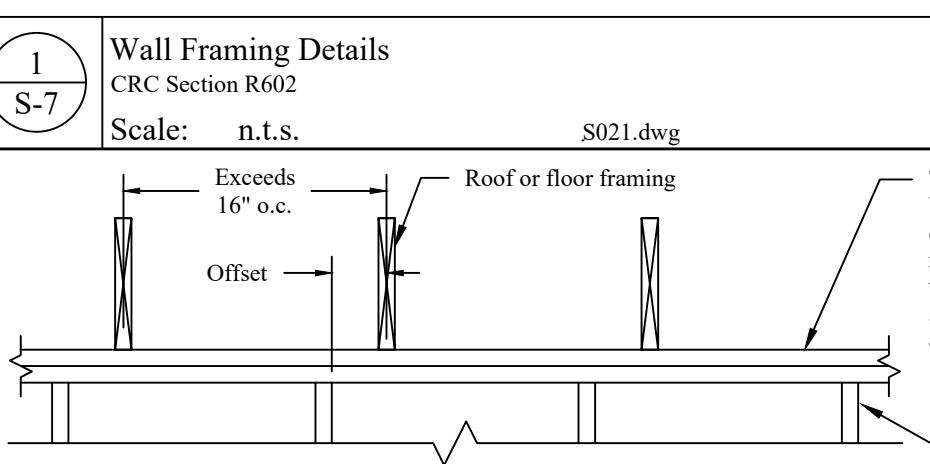
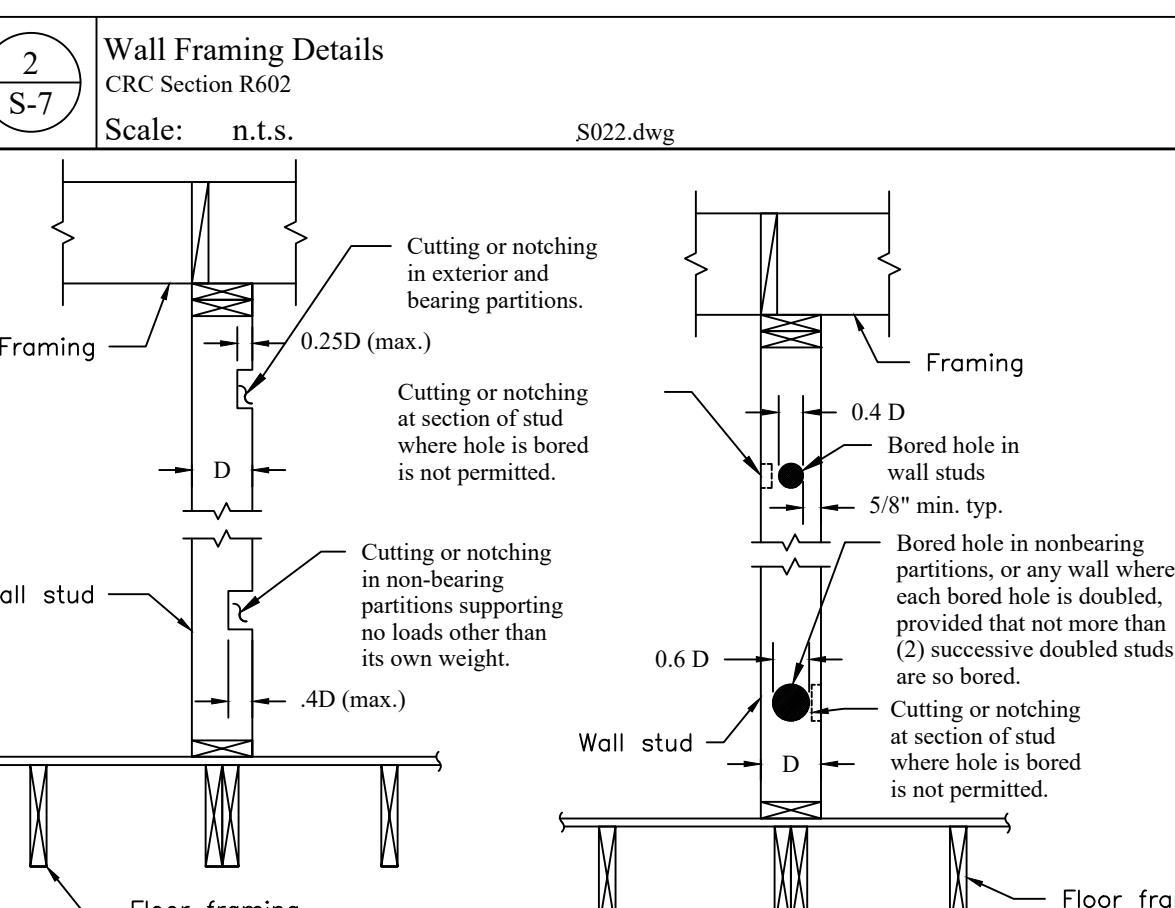
TYPICAL FLOOR FRAMING DETAILS

 <p>Subfloor (may be omitted when joist spacing does not exceed 16 in. and 1x nominal T & G nominal wood strip flooring is applied perpendicular to the joists.)</p> <p>Subfloor joint at supports unless end-matched lumber is used, in which case each shall bear at least 2 joists.</p> <p>Underlayment</p> <p>Non-structural flooring: tile, linoleum, carpet, etc.</p> <p>Floor joists</p>	 <p>PANEL FASTENERS</p> <p>WOOD STRUCTURAL SUBFLOORING</p> <p>PANEL SPAN (TYP. U.O.N.)</p> <p>FRAMING</p>	
<p>1 S-5</p> <p>Typical Floor Framing Detail – Subflooring CRC Section R502</p> <p>Scale: n.t.s.</p> <p>S014.dwg</p>	<p>2 S-5</p> <p>Typical Floor Framing Detail – Subflooring CRC Section R502 and Table R602.3(1)</p> <p>Scale: n.t.s.</p> <p>S015.dwg</p>	
 <p>FRAMING TYP. U.O.N.</p> <p>2-IN. T&G PLANK FLOORING</p> <p>END JOINT TYP. U.O.N.</p> <p>1'-6" TYP.</p> <p>JOINT SEPARATING ADJACENT PIECES</p> <p>FLOORING APPLIED OVER PLANK FLOORING AT 90-DEGREE TO SPAN OF THE PLANKS. (SEE REQUIREMENTS BELOW)</p>		
<p>3 S-5</p> <p>Typical Floor Framing Detail CRC Section R502</p> <p>Scale: n.t.s.</p>		<p>S-5</p>

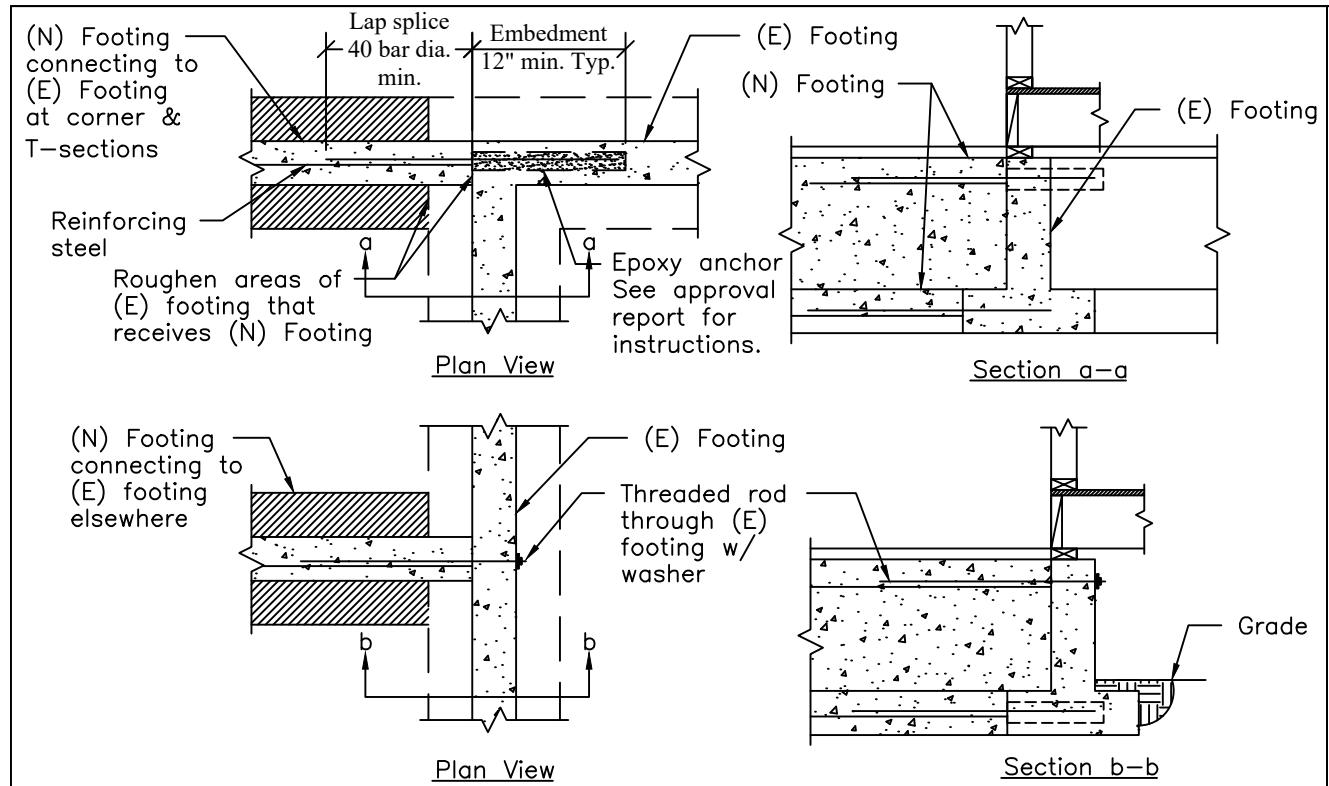
ROOF AND CEILING FRAMING DETAILS AND NOTES

 <p>FRAMING SECTION</p>	 <p>Notches and Holes at Rafters and Ceiling Joists</p>	
<p>1 S-6</p> <p>Roof and Ceiling Framing Details CRC Section R802</p> <p>Scale: n.t.s. S017.dwg</p>  <p>Ceiling Joists Parallel to Rafters</p>	<p>2 S-6</p> <p>Roof and Ceiling Framing Details CRC Section R802.7</p> <p>Scale: n.t.s.</p> 	
<p>Ceiling Joists Not Parallel to Rafters</p> 		
<p>3 S-6</p> <p>Roof and Ceiling Framing Details - Ceiling Ties CRC Section R802</p> <p>Scale: n.t.s. S019.dwg</p>	<p>4 S-6</p> <p>Roof and Ceiling Framing Details - Purlins CRC Section R802</p> <p>Scale: n.t.s. S020.dwg</p>	<p>S-6</p>

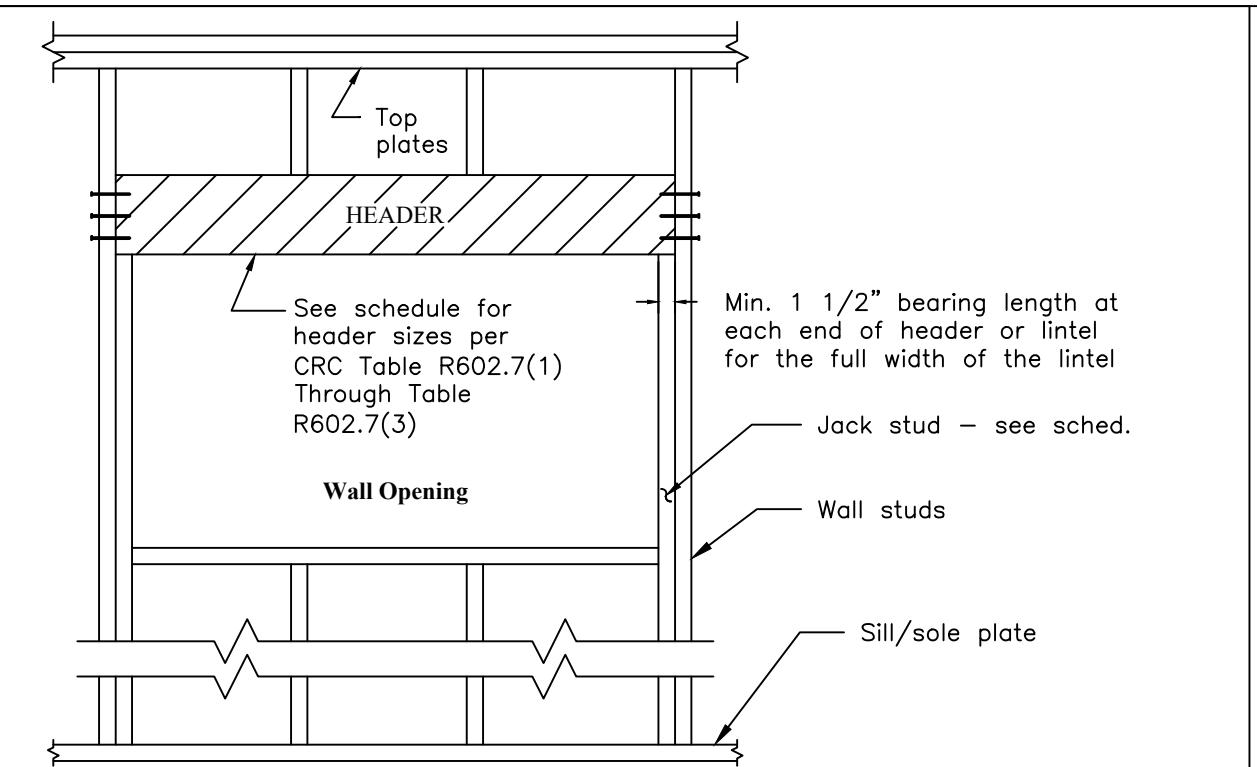
WALL FRAMING DETAILS AND NOTES

 <p>1 S-7</p> <p>Wall Framing Details CRC Section R602</p> <p>Scale: n.t.s. S021.dwg</p> <p>SIZE, HEIGHT AND SPACING: THE SIZE, HEIGHT AND SPACING OF STUDS SHALL BE IN ACCORDANCE WITH TABLE R602.3(5) OR TABLE R602.3(6) EXCEPT THAT UTILITY GRADE STUDS SHALL NOT BE SPACED MORE THAN 16 INCHES ON CENTER, OR SUPPORT MORE THAN A ROOF AND CEILING, OR EXCEED 8 FEET IN HEIGHT FOR EXTERIOR WALLS AND LOAD-BEARING WALLS OR 10 FEET FOR INTERIOR NONLOAD-BEARING WALLS.</p>	 <p>2 S-7</p> <p>Wall Framing Details CRC Section R602</p> <p>Scale: n.t.s. S022.dwg</p> <p>48" min. offset 1" max.</p> <p>Wall Framing Elevation: Double top plates at bearing & exterior wall studs w/ min. splice noted. A single top plate may be used, provided the plate is adequately tied at joints, corners and intersecting walls w/ 3"x6"x0.036" thick galv. steel nailed to each wall or segment of wall by (6) 8d nails or equiv., provided the rafters, joists or trusses are centered over the studs w/ a tolerance of 1" max.</p> <p>Wall stud at perpendicular wall</p>		
 <p>Bearing Studs - Elevation: Exceeds 16" o.c. Offset. Top plates: When less than (2) 2x6 or (2) 3x4, offset between roof/floor framing and wall studs shall be within 5 inches; otherwise, add a third plate. Bearing studs at 24" o.c. max.</p> <p>Wall Elevation: 16" long min. solid blocking equal in size to plate or 1/8"x1 1/2" metal tie w/ (2) 16d nails each side of splice. Plate splice. Single top plate. Interior non-bearing wall studs. Plate or sill w/ not less than nom. 2" in thickness and width not less than that of the wall stud. Typ. u.o.n.</p>	 <p>Framing: Cutting or notching in exterior and bearing partitions. 0.25D (max.).</p> <p>Wall stud: Cutting or notching at section of stud where hole is bored is not permitted. 0.4 D.</p> <p>Floor framing: Cutting or notching in non-bearing partitions supporting no loads other than its own weight. .4D (max.).</p> <p>Wall stud: Bored hole in wall studs. 5/8" min. typ.</p> <p>Floor framing: Bored hole in nonbearing partitions, or any wall where each bored hole is doubled, provided that not more than (2) successive doubled studs are so bored. 0.6 D.</p> <p>Wall stud: Cutting or notching at section of stud where hole is bored is not permitted. D.</p>		
<p>3 S-7</p> <p>Wall Framing Details CRC Section R602</p> <p>Scale: n.t.s. S023.dwg</p>	<p>4 S-7</p> <p>Wall Framing Details CRC Section R602.6</p> <p>Scale: n.t.s. S024.dwg</p>		<p>S-7</p>

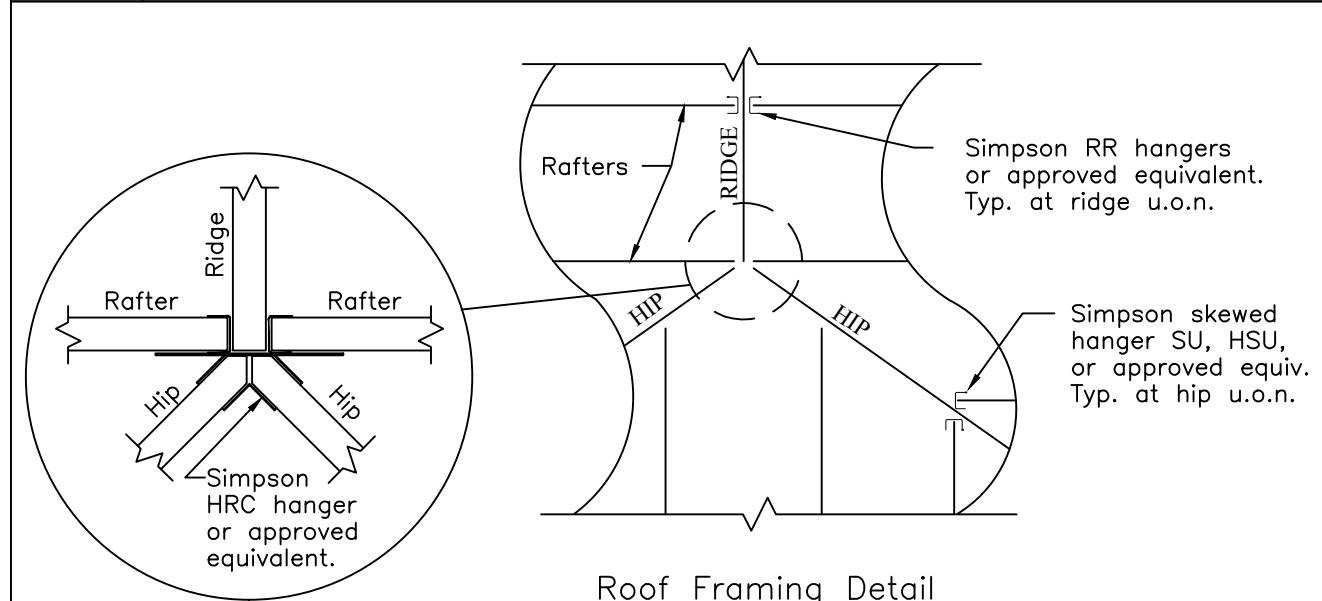
MISCELLANEOUS FRAMING DETAILS AND NOTES



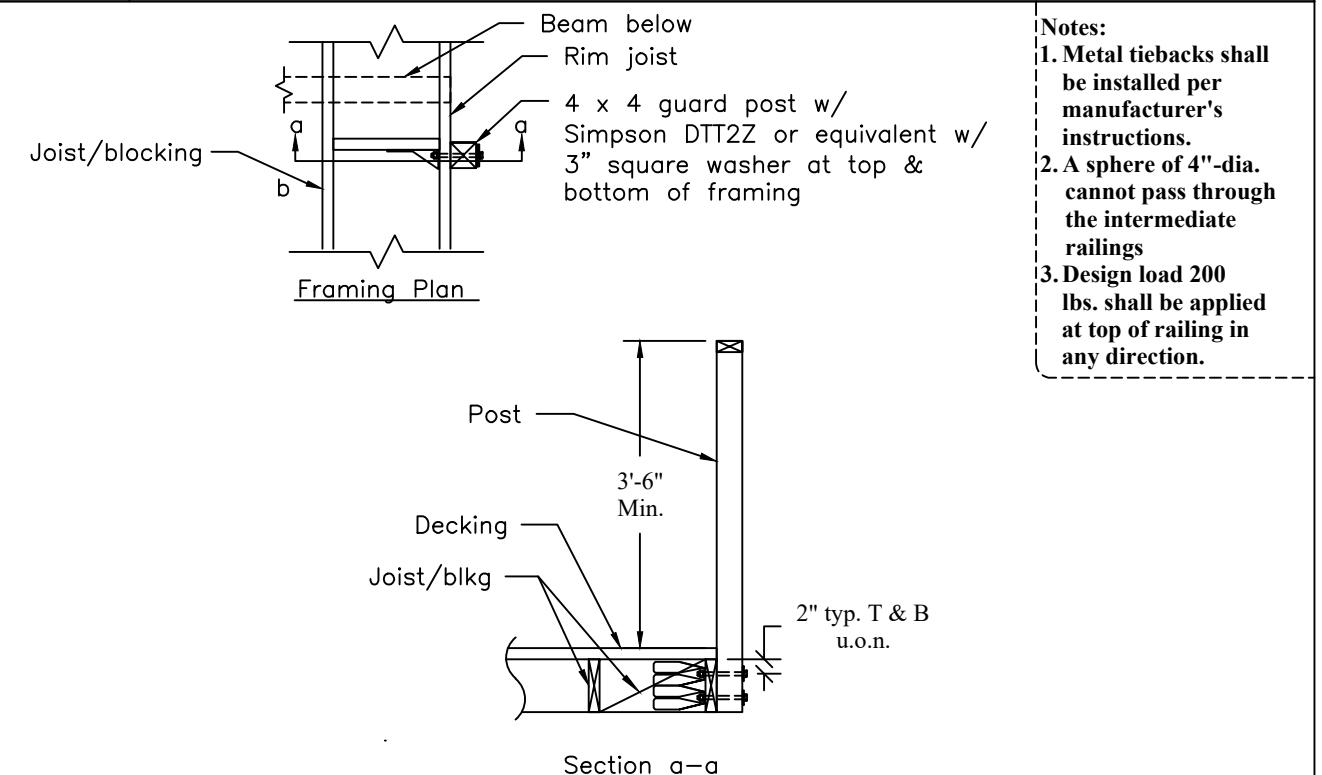
1
S-8 | Footing Detail – Connection Between New and Existing Footings
Scale: n.t.s. S025.dwg



3
S-8 | Header Detail – Elevation View
CRC Section R602.7
Scale: n.t.s. S004.dwg



3
S-8 | Roof Framing Detail
CRC Section R802
Scale: n.t.s. S027.dwg

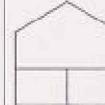


4
S-8 | Guardrail Detail
CRC Table R301.5, Section R312
Scale: n.t.s. S002.dwg

WALL CONSTRUCTION

TABLE R602.7(1)

GIRDER SPANS^a AND HEADER SPANS^a FOR EXTERIOR BEARING WALLS(Maximum spans for Douglas fir-larch, hem-fir, Southern pine and spruce-pine-fir^b and required number of jack studs)

GIRDERS AND HEADERS SUPPORTING	SIZE	GROUND SNOW LOAD (psf) ^c													
		30				50				70					
		Building width ^d (feet)													
		12	24	36	12	24	36	12	24	36	12	24	36		
Roof and ceiling 	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	
	1-2 x 6	4-0	1	3-1	2	2-7	2	3-5	1	2-8	2	2-3	2	3-0	2
	1-2 x 8	5-1	2	3-11	2	3-3	2	4-4	2	3-4	2	2-10	2	3-10	2
	1-2 x 10	6-0	2	4-8	2	3-11	2	5-2	2	4-0	2	3-4	3	4-7	2
	1-2 x 12	7-1	2	5-5	2	4-7	3	6-1	2	4-8	3	3-11	3	5-5	2
	2-2 x 4	4-0	1	3-1	1	2-7	1	3-5	1	2-7	1	2-2	1	3-0	1
	2-2 x 6	6-0	1	4-7	1	3-10	1	5-1	1	3-11	1	3-3	2	4-6	1
	2-2 x 8	7-7	1	5-9	1	4-10	2	6-5	1	5-0	2	4-2	2	5-9	1
	2-2 x 10	9-0	1	6-10	2	5-9	2	7-8	2	5-11	2	4-11	2	6-9	2
	2-2 x 12	10-7	2	8-1	2	6-10	2	9-0	2	6-11	2	5-10	2	8-0	2
	3-2 x 8	9-5	1	7-3	1	6-1	1	8-1	1	6-3	1	5-3	2	7-2	1
	3-2 x 10	11-3	1	8-7	1	7-3	2	9-7	1	7-4	2	6-2	2	8-6	1
	3-2 x 12	13-2	1	10-1	2	8-6	2	11-3	2	8-8	2	7-4	2	10-0	2
	4-2 x 8	10-11	1	8-4	1	7-0	1	9-4	1	7-2	1	6-0	1	8-3	1
	4-2 x 10	12-11	1	9-11	1	8-4	1	11-1	1	8-6	1	7-2	2	9-10	1
	4-2 x 12	15-3	1	11-8	1	9-10	2	13-0	1	10-0	2	8-5	2	11-7	1
Roof, ceiling and one center- bearing floor 	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	
	1-2 x 6	3-3	1	2-7	2	2-2	2	3-0	2	2-4	2	2-0	2	2-9	2
	1-2 x 8	4-1	2	3-3	2	2-9	2	3-9	2	3-0	2	2-6	3	3-6	2
	1-2 x 10	4-11	2	3-10	2	3-3	3	4-6	2	3-6	3	3-0	3	4-1	2
	1-2 x 12	5-9	2	4-6	3	3-10	3	5-3	2	4-2	3	3-6	3	4-10	3
	2-2 x 4	3-3	1	2-6	1	2-2	1	3-0	1	2-4	1	2-0	1	2-8	1
	2-2 x 6	4-10	1	3-9	1	3-3	2	4-5	1	3-6	2	3-0	2	4-1	1
	2-2 x 8	6-1	1	4-10	2	4-1	2	5-7	2	4-5	2	3-9	2	5-2	2
	2-2 x 10	7-3	2	5-8	2	4-10	2	6-8	2	5-3	2	4-5	2	6-1	2
	2-2 x 12	8-6	2	6-8	2	5-8	2	7-10	2	6-2	2	5-3	3	7-2	2
	3-2 x 8	7-8	1	6-0	1	5-1	2	7-0	1	5-6	2	4-8	2	6-5	1
	3-2 x 10	9-1	1	7-2	2	6-1	2	8-4	1	6-7	2	5-7	2	7-8	2
	3-2 x 12	10-8	2	8-5	2	7-2	2	9-10	2	7-8	2	6-7	2	9-0	2
	4-2 x 8	8-10	1	6-11	1	5-11	1	8-1	1	6-4	1	5-5	2	7-5	1
	4-2 x 10	10-6	1	8-3	2	7-0	2	9-8	1	7-7	2	6-5	2	8-10	1
	4-2 x 12	12-4	1	9-8	2	8-3	2	11-4	2	8-11	2	7-7	2	10-4	2
Roof, ceiling and one clear- span floor 	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	Span ^e	NJ ^f	
	1-2 x 6	2-11	2	2-3	2	1-11	2	2-9	2	2-1	2	1-9	2	2-7	2
	1-2 x 8	3-9	2	2-10	2	2-5	3	3-6	2	2-8	2	2-3	3	3-3	2
	1-2 x 10	4-5	2	3-5	3	2-10	3	4-2	2	3-2	3	2-8	3	3-11	2
	1-2 x 12	5-2	2	4-0	3	3-4	3	4-10	3	3-9	3	3-2	4	4-7	3
	2-2 x 4	2-11	1	2-3	1	1-10	1	2-9	1	2-1	1	1-9	1	2-7	1
	2-2 x 6	4-4	1	3-4	2	2-10	2	4-1	1	3-2	2	2-8	2	3-10	1
	2-2 x 8	5-6	2	4-3	2	3-7	2	5-2	2	4-0	2	3-4	2	4-10	2
	2-2 x 10	6-7	2	5-0	2	4-2	2	6-1	2	4-9	2	4-0	2	5-9	2
	2-2 x 12	7-9	2	5-11	2	4-11	3	7-2	2	5-7	2	4-8	3	6-9	2
	3-2 x 8	6-11	1	5-3	2	4-5	2	6-5	1	5-0	2	4-2	2	6-1	2
	3-2 x 10	8-3	2	6-3	2	5-3	2	7-8	2	5-11	2	5-0	2	7-3	2
	3-2 x 12	9-8	2	7-5	2	6-2	2	9-0	2	7-0	2	5-10	2	8-6	2
	4-2 x 8	8-0	1	6-1	1	5-1	2	7-5	1	5-9	2	4-10	2	7-0	1
	4-2 x 10	9-6	1	7-3	2	6-1	2	8-10	1	6-10	2	5-9	2	8-4	1
	4-2 x 12	11-2	2	8-6	2	7-2	2	10-5	2	8-0	2	6-9	2	9-10	2

(continued)

WALL CONSTRUCTION

TABLE R602.7(1)—continued

GIRDER SPANS^a AND HEADER SPANS^a FOR EXTERIOR BEARING WALLS(Maximum spans for Douglas fir-larch, hem-fir, Southern pine and spruce-pine-fir^b and required number of jack studs)
<tbl

WALL CONSTRUCTION

TABLE R602.7(2)
GIRDER SPANS^a AND HEADER SPANS^a FOR INTERIOR BEARING WALLS
(Maximum spans for Douglas fir-larch, hem-fir, southern pine and spruce-pine-fir^b and required number of jack studs)

HEADERS AND GIRDERS SUPPORTING	SIZE	BUILDING Width ^c (feet)					
		12		24		36	
		Span ^d	NJ ^e	Span ^d	NJ ^e	Span ^d	NJ ^e
One floor only	2-2 x 4	4-1	1	2-10	1	2-4	1
	2-2 x 6	6-1	1	4-4	1	3-6	1
	2-2 x 8	7-9	1	5-5	1	4-5	2
	2-2 x 10	9-2	1	6-6	2	5-3	2
	2-2 x 12	10-9	1	7-7	2	6-3	2
	3-2 x 8	9-8	1	6-10	1	5-7	1
	3-2 x 10	11-5	1	8-1	1	6-7	2
	3-2 x 12	13-6	1	9-6	2	7-9	2
	4-2 x 8	11-2	1	7-11	1	6-5	1
	4-2 x 10	13-3	1	9-4	1	7-8	1
	4-2 x 12	15-7	1	11-0	1	9-0	2
	2-2 x 4	2-7	1	1-11	1	1-7	1
Two floors	2-2 x 6	3-11	1	2-11	2	2-5	2
	2-2 x 8	5-0	1	3-8	2	3-1	2
	2-2 x 10	5-11	2	4-4	2	3-7	2
	2-2 x 12	6-11	2	5-2	2	4-3	3
	3-2 x 8	6-3	1	4-7	2	3-10	2
	3-2 x 10	7-5	1	5-6	2	4-6	2
	3-2 x 12	8-8	2	6-5	2	5-4	2
	4-2 x 8	7-2	1	5-4	1	4-5	2
	4-2 x 10	8-6	1	6-4	2	5-3	2
	4-2 x 12	10-1	1	7-5	2	6-2	2

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Spans are given in feet and inches.

b. Spans are based on minimum design properties for No. 2 grade lumber of Douglas fir-larch, hem-fir, Southern pine, and spruce-pine-fir.

c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.

d. NJ = Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

e. Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced (for example, cripple studs bearing on the header), tabulated spans for headers consisting of 2 x 8, 2 x 10, or 2 x 12 sizes shall be multiplied by 0.70 or the header or girder shall be designed.

TABLE R602.7(3)
GIRDER AND HEADER SPANS^a FOR OPEN PORCHES
(Maximum span for Douglas fir-larch, hem-fir, Southern pine and spruce-pine-fir^b)

SIZE	SUPPORTING ROOF						SUPPORTING FLOOR			
	GROUND SNOW LOAD (psf)									
	30	50	70	8	14	8				
	8	14	8	14	8	14	8	14		
2-2 x 6	7-6	5-8	6-2	4-8	5-4	4-0	6-4	4-9		
2-2 x 8	10-1	7-7	8-3	6-2	7-1	5-4	8-5	6-4		
2-2 x 10	12-4	9-4	10-1	7-7	8-9	6-7	10-4	7-9		
2-2 x 12	14-4	10-10	11-8	8-10	10-1	7-8	11-11	9-0		

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

a. Spans are given in feet and inches.

b. Tabulated values assume No. 2 grade lumber, wet service and incising for refractory species. Use 30 psf ground snow load for cases in which ground snow load is less than 30 psf and the roof live load is equal to or less than 20 psf.

c. Porch depth is measured horizontally from building face to centerline of the header. For depths between those shown, spans are permitted to be interpolated.

WALL CONSTRUCTION

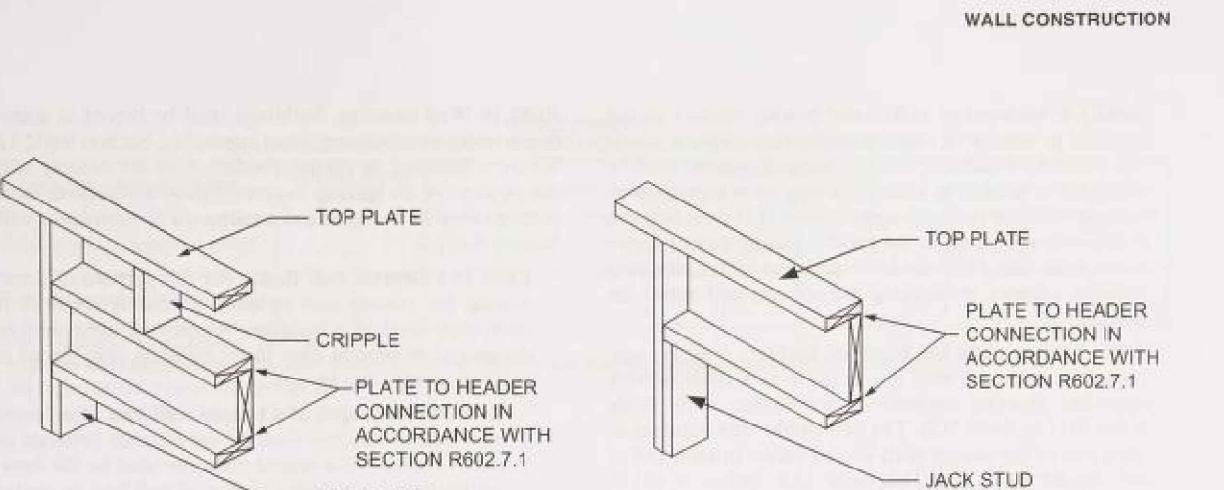


FIGURE R602.7.1(1)
SINGLE-MEMBER HEADER IN EXTERIOR BEARING WALL

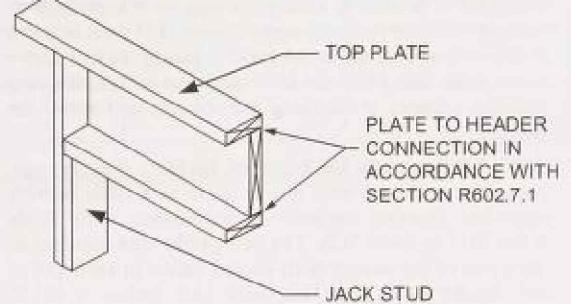
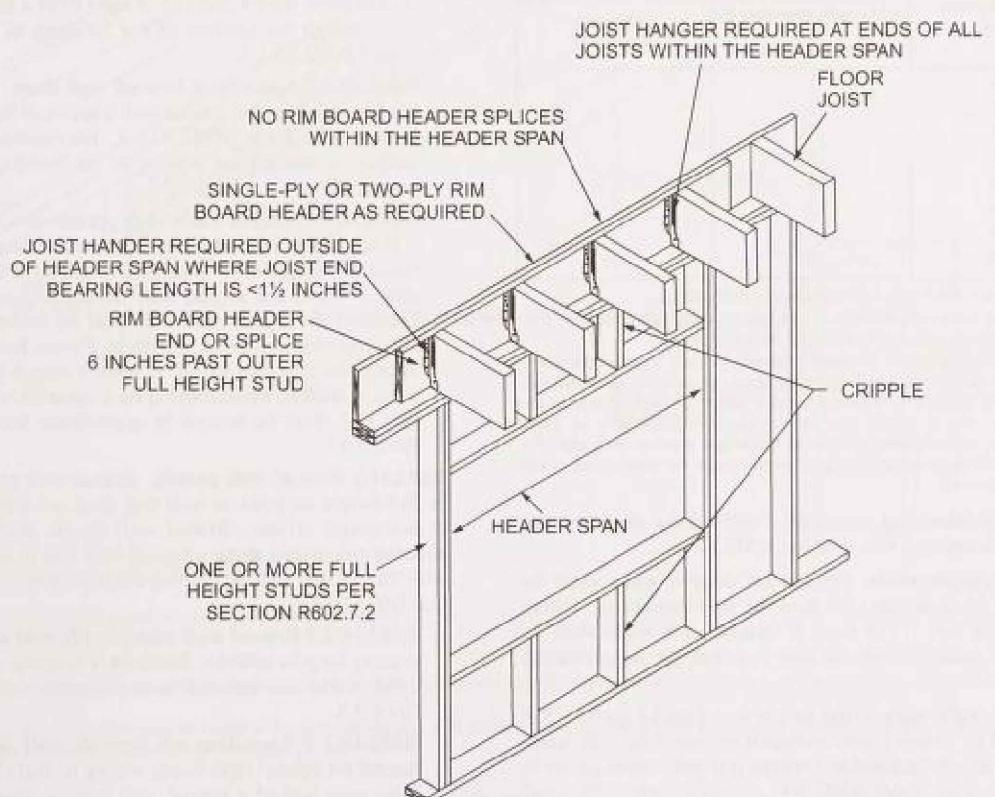


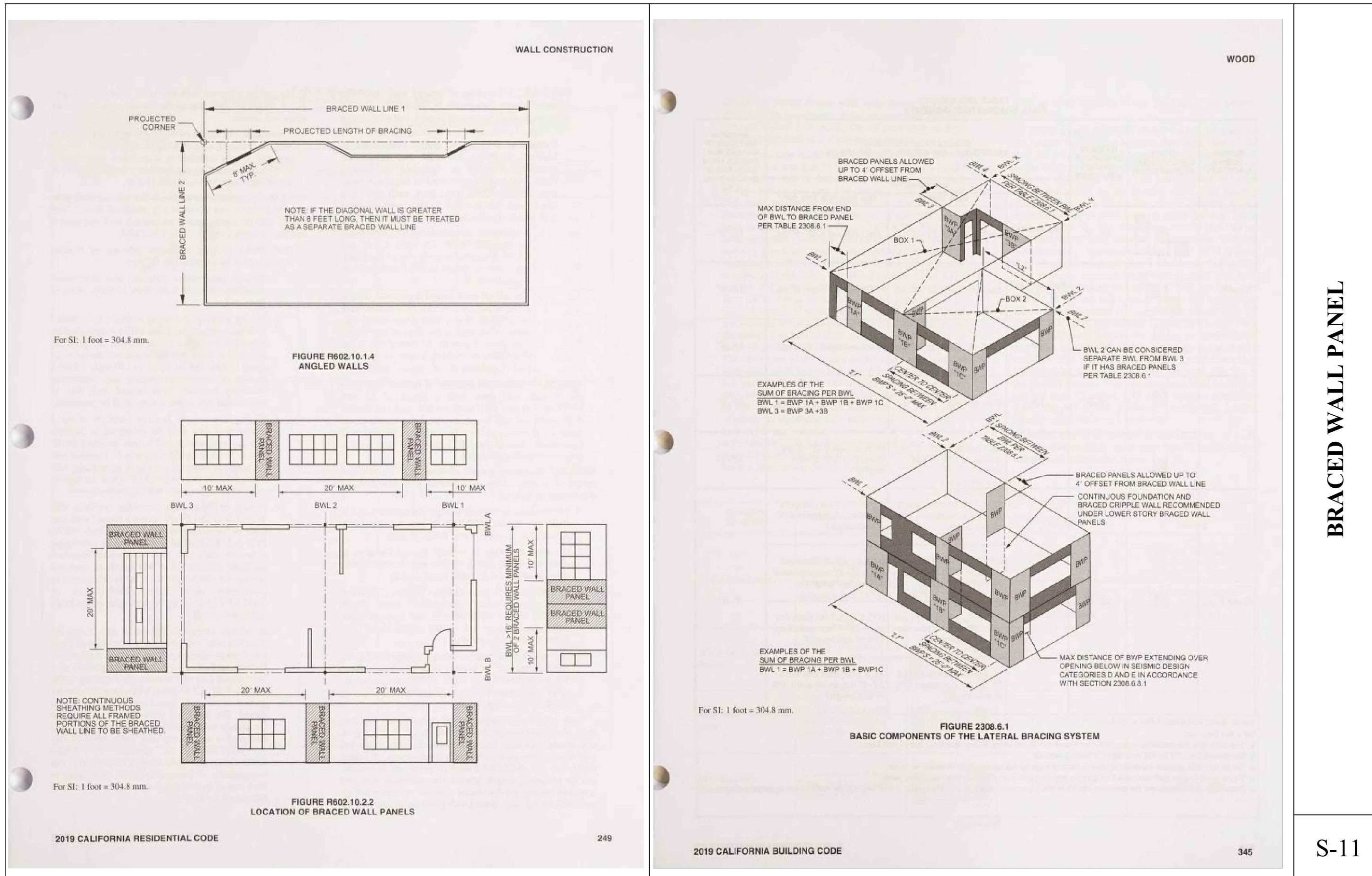
FIGURE R602.7.1(2)
ALTERNATIVE SINGLE-MEMBER HEADER WITHOUT CRIPPLE



For SI: 25.4 mm = 1 inch.

FIGURE R602.7.2
RIM BOARD HEADER CONSTRUCTION

BRACED WALL PANEL



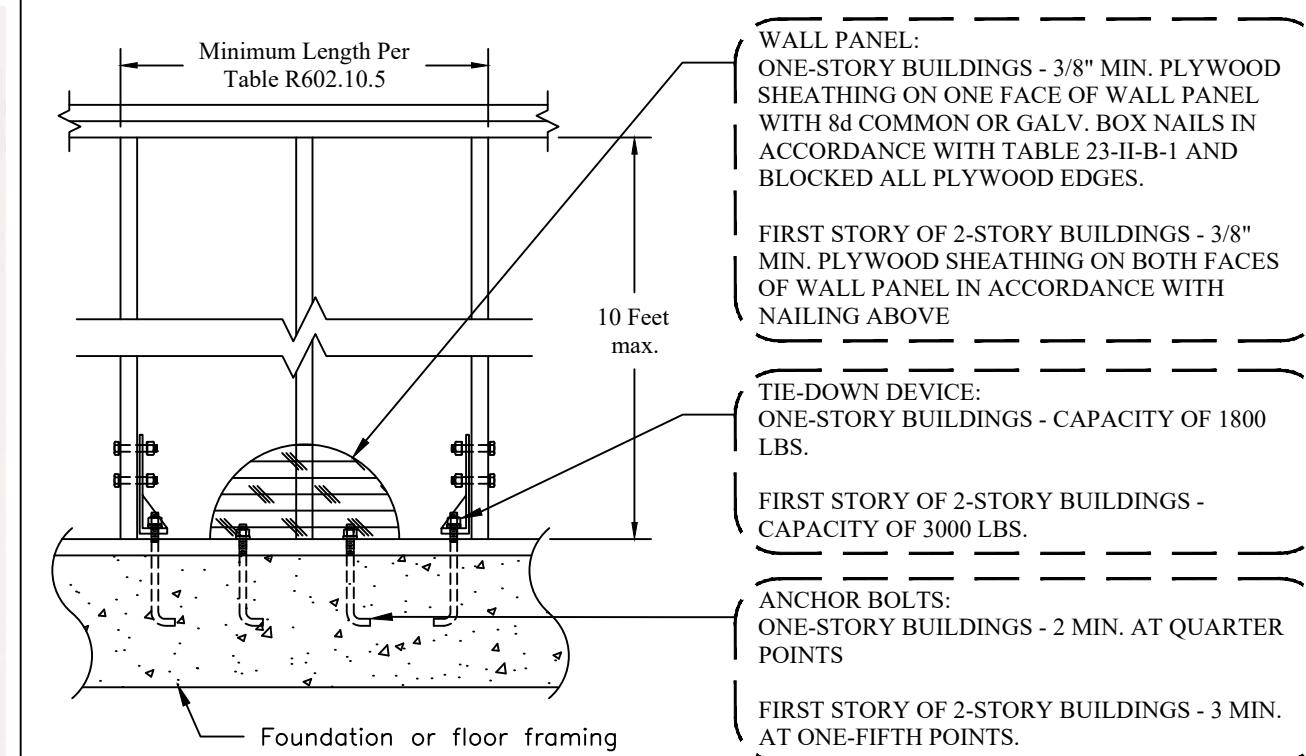
BRACED WALL PANEL

TABLE R602.3(2)
ALTERNATE ATTACHMENTS TO TABLE R602.3(1)

NOMINAL MATERIAL THICKNESS (inches)	DESCRIPTION ^{a,b} OF FASTENER AND LENGTH (inches)	SPACING ^c OF FASTENERS	
		Edges (inches)	Intermediate supports (inches)
Wood structural panels subfloor, roof^d and wall sheathing to framing and particleboard wall sheathing to framing^e			
Up to $\frac{1}{2}$	Staple 15 ga. $1\frac{1}{4}$	4	8
	0.097 - 0.099 Nail $2\frac{1}{4}$	3	6
	Staple 16 ga. $1\frac{1}{4}$	3	6
$\frac{9}{16}$ and $\frac{5}{8}$	0.113 Nail 2	3	6
	Staple 15 and 16 ga. 2	4	8
	0.097 - 0.099 Nail $2\frac{1}{4}$	4	8
$2\frac{1}{2}$ and $3\frac{1}{4}$	Staple 14 ga. 2	4	8
	Staple 15 ga. $1\frac{1}{4}$	3	6
	0.097 - 0.099 Nail $2\frac{1}{4}$	4	8
1	Staple 16 ga. 2	4	8
	Staple 14 ga. $2\frac{1}{4}$	4	8
	0.113 Nail $2\frac{1}{4}$	3	6
	Staple 15 ga. $2\frac{1}{4}$	4	8
	0.097 - 0.099 Nail $2\frac{1}{4}$	4	8
	SPACING^c OF FASTENERS		
Floor underlayment; plywood-hardboard-particleboard^f-fiber-cement^g	Fiber-cement	Edges (inches)	Body of panel ^h (inches)
		3	6
		3	6
		8	8
	Plywood	8 long, No. 8 x .375 head diameter, ribbed wafer-head screws (for tile finish)	8
$\frac{1}{4}$ and $\frac{5}{16}$	$1\frac{1}{4}$ ring or screw shank nail-minimum $12\frac{1}{2}$ ga. (0.099") shank diameter	3	6
		2	5
		6	8 ⁱ
$\frac{11}{32}$, $\frac{7}{8}$, $\frac{15}{32}$, and $\frac{1}{2}$	$1\frac{1}{4}$ ring or screw shank nail-minimum $12\frac{1}{2}$ ga. (0.099") shank diameter	6	8 ⁱ
		6	8
		6	8
0.200	Hardboard^f	1 $\frac{1}{2}$ long ring-grooved underlayment nail	6
			6
			6
$\frac{1}{4}$	4d ring-grooved underlayment nail	3	6
		3	6
		3	6
$\frac{5}{8}$	6d ring-grooved underlayment nail	6	10
		3	6
		6	10
$\frac{1}{2}$, $\frac{5}{8}$	6d ring-grooved underlayment nail	3	6
		3	6

(continued)

WALL CONSTRUCTION



1
S-12

Alternate Braced Wall Panel

CRC Section R602.10, Table R602.10.5 & Table R602.10.6.1

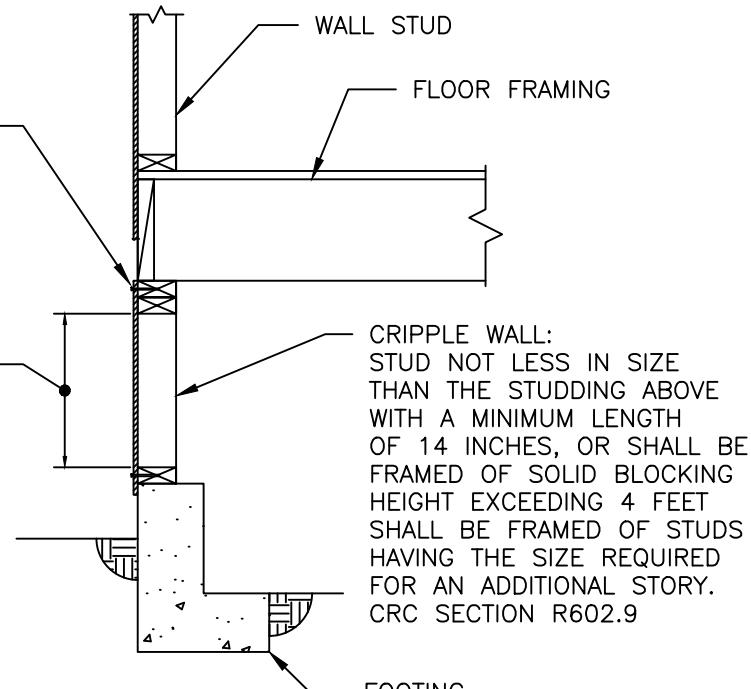
Scale: n.t.s.

S028.dwg

BOUNDARY NAILING AT 6" O.C. MAX.
AT TOP & BOTTOM PLATES. SEE
ELSEWHERE OF CODE FOR MORE
RESTRICTIVE FIELD AND BOUNDARY
NAILING SCHEDULE.

CRC TABLE R602.10.4(1) TO
CRC TABLE R602.10.4(4)

FOR THE PURPOSE OF CRC SECTION
R602.9, CRIPPLE WALLS HAVING A
STUD HEIGHT OF 14 INCHES SHALL BE
CONSIDERED A STORY AND SHALL BE
BRACED IN ACCORDANCE WITH CRC
TABLE R602.10.3(1) THROUGH TABLE
R602.10.3(4) FOR BUILDING ASSIGNED
TO SEIMIC DESIGN CATALOGUE D OR E.



2
S-12

Cripple Wall Panel

CRC Section R602.9, Section R602.10.10

Scale: n.t.s.

S026.dwg

WALL CONSTRUCTION

TABLE R602.3(1)
FASTENING SCHEDULE

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 $\frac{1}{2}$ " × 0.113"); or 3-8d common (2 $\frac{1}{2}$ " × 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 $\frac{1}{2}$ " × 0.113"); or 3-8d common (2 $\frac{1}{2}$ " × 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 $\frac{1}{2}$ " × 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 1 $\frac{1}{4}$ " × 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 $\frac{1}{2}$ " × 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 ^d
7	Roof rafters to ridge, valley or hip rafters or roof rafter to minimum 2" ridge beam	4-16d (3 $\frac{1}{2}$ " × 0.135"); or 3-10d common (3" × 0.148"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails 3-16d box (3 $\frac{1}{2}$ " × 0.135"); or 2-16d common (3 $\frac{1}{2}$ " × 0.162"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Toe nail End nail
Wall			
8	Stud to stud (not at braced wall panels)	16d common (3 $\frac{1}{2}$ " × 0.162") 10d box (3" × 0.128"); or 3" × 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)	16d box (3 $\frac{1}{2}$ " × 0.135"); or 3" × 0.131" nails 16d common (3 $\frac{1}{2}$ " × 0.162")	12" o.c. face nail 16" o.c. face nail
10	Built-up header (2" to 2" header with 1 $\frac{1}{2}$ " spacer)	16d common (3 $\frac{1}{2}$ " × 0.162") 16d box (3 $\frac{1}{2}$ " × 0.135")	16" o.c. each edge face nail 12" o.c. each edge face nail
11	Continuous header to stud	5-8d box (2 $\frac{1}{2}$ " × 0.113"); or 4-8d common (2 $\frac{1}{2}$ " × 0.131"); or 4-10d box (3" × 0.128")	Toe nail
12	Top plate to top plate	16d common (3 $\frac{1}{2}$ " × 0.162") 10d box (3" × 0.128"); or 3" × 0.131" nails	16" o.c. face nail 12" o.c. face nail
13	Double top plate splice	8-16d common (3 $\frac{1}{2}$ " × 0.162"); or 12-16d box (3 $\frac{1}{2}$ " × 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)

(continued)

WALL CONSTRUCTION

TABLE R602.3(1)—continued
FASTENING SCHEDULE

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER ^{a,b,c}	SPACING AND LOCATION
14	Bottom plate to joist, rim joist, band joist or blocking (not at braced wall panels)	16d common (3 $\frac{1}{2}$ " × 0.162") 16d box (3 $\frac{1}{2}$ " × 0.135"); or 3" × 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 $\frac{1}{2}$ " × 0.135"); or 2-16d common (3 $\frac{1}{2}$ " × 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 $\frac{1}{2}$ " × 0.113"); or 3-16d box (3 $\frac{1}{2}$ " × 0.135"); or 4-8d common (2 $\frac{1}{2}$ " × 0.131"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails	Toe nail
17	Top plates, laps at corners and intersections	3-10d box (3" × 0.128"); or 2-16d common (3 $\frac{1}{2}$ " × 0.162"); or 3-3" × 0.131" nails	Face nail
18	1" brace to each stud and plate	3-8d box (2 $\frac{1}{2}$ " × 0.113"); or 2-8d common (2 $\frac{1}{2}$ " × 0.131"); or 2-10d box (3" × 0.128"); or 2 staples 1 $\frac{1}{4}$ "	Face nail
19	1" × 6" sheathing to each bearing	3-8d box (2 $\frac{1}{2}$ " × 0.113"); or 2-8d common (2 $\frac{1}{2}$ " × 0.131"); or 2-10d box (3" × 0.128"); or 2 staples, 1" crown, 16 ga., 1 $\frac{3}{4}$ " long	Face nail
20	1" × 8" and wider sheathing to each bearing	3-8d box (2 $\frac{1}{2}$ " × 0.113"); or 3-8d common (2 $\frac{1}{2}$ " × 0.131"); or 3-10d box (3" × 0.128"); or 3 staples, 1" crown, 16 ga., 1 $\frac{3}{4}$ " long Wider than 1" × 8" 4-8d box (2 $\frac{1}{2}$ " × 0.113"); or 3-8d common (2 $\frac{1}{2}$ " × 0.131"); or 3-10d box (3" × 0.128"); or 4 staples, 1" crown, 16 ga., 1 $\frac{3}{4}$ " long	Face nail
Floor			
21	Joist to sill, top plate or girder	4-8d box (2 $\frac{1}{2}$ " × 0.113"); or 3-8d common (2 $\frac{1}{2}$ " × 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 $\frac{1}{2}$ " × 0.113") 8d common (2 $\frac{1}{2}$ " × 0.131"); or 10d box (3" × 0.128"); or 3" × 0.131" nails	4" o.c. toe nail 6" o.c. toe nail
23	1" × 6" subfloor or less to each joist	3-8d box (2 $\frac{1}{2}$ " × 0.113"); or 2-8d common (2 $\frac{1}{2}$ " × 0.131"); or 3-10d box (3" × 0.128"); or 2 staples, 1" crown, 16 ga., 1 $\frac{3}{4}$ " long	Face nail

(continued)

FASTENING SCHEDULE

TABLE R602.3(1)
FASTENING SCHEDULE—continued

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER ^{a,b,c}	SPACING AND LOCATION	
Floor				
24	2" subfloor to joist or girder	3-16d box (3 $\frac{1}{2}$ " x 0.135"); or 2-16d common (3 $\frac{1}{2}$ " x 0.162")	Blind and face nail	
25	2" planks (plank & beam—floor & roof)	3-16d box (3 $\frac{1}{2}$ " x 0.135"); or 2-16d common (3 $\frac{1}{2}$ " x 0.162")	At each bearing, face nail	
26	Band or rim joist to joist	3-16d common (3 $\frac{1}{2}$ " x 0.162") 4-10 box (3" x 0.128"); or 4-3" x 0.131" nails; or 4-3" x 14 ga. staples, $\frac{7}{16}$ " crown	End nail	
27	Built-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 And: 2-20d common (4" x 0.192"); or 3-10d box (3" x 0.128"); or 3-3" x 0.131" nails	Nail each layer as follows: 32" o.c. at top and bottom and staggered. 24" o.c. face nail at top and bottom staggered on opposite sides Face nail at ends and at each splice	
28	Ledger strip supporting joists or rafters	4-16d box (3 $\frac{1}{2}$ " x 0.135"); or 3-16d common (3 $\frac{1}{2}$ " x 0.162"); or 4-10d box (3" x 0.128"); 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 2-8d common (2 $\frac{1}{2}$ " x 0.131"; or 2-3" x 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) ^d	Intermediate supports ^{e,f} (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	$\frac{1}{8}$ " – $\frac{1}{2}$ "	6d common (2" x 0.113") nail (subfloor, wall) 8d common (2 $\frac{1}{2}$ " x 0.131") nail (roof); or RSRS-01 (2 $\frac{1}{8}$ " x 0.113") nail (roof) ^g	6	12 ^f
31	$\frac{10}{32}$ " – 1"	8d common nail (2 $\frac{1}{2}$ " x 0.131"); or RSRS-01; (2 $\frac{1}{8}$ " x 0.113") nail (roof) ^g	6	12 ^f
32	$\frac{1}{4}$ " – $\frac{1}{4}$ "	10d common (3" x 0.148") nail; or 8d (2 $\frac{1}{2}$ " x 0.131") deformed nail	6	12
Other wall sheathing ^h				
33	$\frac{1}{2}$ " structural cellulosic fiberboard sheathing	1 $\frac{1}{2}$ " galvanized roofing nail, $\frac{7}{16}$ " head diameter, or 1 $\frac{1}{4}$ " long 16 ga. staple with $\frac{7}{16}$ " or 1" crown	3	6
34	$\frac{25}{32}$ " structural cellulosic fiberboard sheathing	1 $\frac{1}{4}$ " galvanized roofing nail, $\frac{7}{16}$ " head diameter, or 1 $\frac{1}{2}$ " long 16 ga. staple with $\frac{7}{16}$ " or 1" crown	3	6
35	$\frac{1}{2}$ " gypsum sheathing ⁱ	1 $\frac{1}{2}$ " galvanized roofing nail; staple galvanized, 1 $\frac{1}{2}$ " long; 1 $\frac{1}{4}$ " screws, Type W or S	7	7
36	$\frac{5}{8}$ " gypsum sheathing ⁱ	1 $\frac{1}{4}$ " galvanized roofing nail; staple galvanized, 1 $\frac{1}{8}$ " long; 1 $\frac{1}{8}$ " screws, Type W or S	7	7
Wood structural panels, combination subfloor underlayment to framing				
37	$\frac{1}{4}$ " and less	6d deformed (2" x 0.120") nail; or 8d common (2 $\frac{1}{2}$ " x 0.131") nail	6	12
38	$\frac{7}{8}$ " – 1"	8d common (2 $\frac{1}{2}$ " x 0.131") nail; or 8d deformed (2 $\frac{1}{2}$ " x 0.120") nail	6	12
39	$\frac{1}{4}$ " – $\frac{1}{4}$ "	10d common (3" x 0.148") nail; or 8d deformed (2 $\frac{1}{2}$ " x 0.120") nail	6	12

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s; 1 ksi = 6.895 MPa.

(continued)

TABLE R602.3(1)—continued
FASTENING SCHEDULE

- 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 $\frac{7}{16}$ " 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.

R602.3 Design and construction. Exterior walls of wood-frame construction shall be designed and constructed in accordance with the provisions of this chapter and Figures R602.3(1) and R602.3(2), or in accordance with AWC NDS. Components of exterior walls shall be fastened in accordance with Tables R602.3(1) through R602.3(4). Wall sheathing shall be fastened directly to framing members and, where placed on the exterior side of an exterior wall, shall be capable of resisting the wind pressures listed in Table R301.2(2) adjusted for height and exposure using Table R301.2(3) and shall conform to the requirements of Table R602.3(3). Wall sheathing used only for exterior wall covering purposes shall comply with Section R703.

Studs shall be continuous from support at the sole plate to a support at the top plate to resist loads perpendicular to the wall. The support shall be a foundation or floor, ceiling or roof diaphragm or shall be designed in accordance with accepted engineering practice.

Exception: Jack studs, trimmer studs and cripple studs at openings in walls that comply with Tables R602.7(1) and R602.7(2).

R602.3.1 Stud size, height and spacing. The size, height and spacing of studs shall be in accordance with Table R602.3(5).

Exceptions:

1. Utility grade studs shall not be spaced more than 16 inches (406 mm) on center, shall not support more than a roof and ceiling, and shall not exceed 8 feet (2438 mm) in height for exterior walls and load-bearing walls or 10 feet (3048 mm) for interior nonload-bearing walls.
2. Where snow loads are less than or equal to 25 pounds per square foot (1.2 kPa), and the ultimate design wind speed is less than or equal to 130 mph (58.1 m/s), 2-inch by 6-inch (38 mm by 140 mm) studs supporting a roof load with not more than 6 feet (1829 mm) of tributary length shall have a maximum height of 18 feet (5486 mm) where spaced at 16 inches (406 mm) on center, or 20 feet (6096 mm) where spaced at 12 inches (305 mm) on center. Studs shall be No. 2 grade lumber or better.

3. Exterior load-bearing studs not exceeding 12 feet (3658 mm) in height provided in accordance with Table R602.3(6). The minimum number of full-height studs adjacent to openings shall be in accordance with Section R602.7.5. The building shall be located in Exposure B, the roof live load shall not exceed 20 psf (0.96 kPa), and the ground snow load shall not exceed 30 psf (1.4 kPa). Studs and plates shall be No. 2 grade lumber or better.

R602.3.2 Top plate. Wood stud walls shall be capped with a double top plate installed to provide overlapping at corners and intersections with bearing partitions. End joints in top plates shall be offset not less than 24 inches (610 mm). Joints in plates need not occur over studs. Plates shall be not less than 2-inches (51 mm) nominal thickness and have a width not less than the width of the studs.

Exception: A single top plate used as an alternative to a double top plate shall comply with the following:

1. The single top plate shall be tied at corners, intersecting walls, and at in-line splices in straight wall lines in accordance with Table R602.3.2.
2. The rafters or joists shall be centered over the studs with a tolerance of not more than 1 inch (25 mm).
3. Omission of the top plate is permitted over headers where the headers are adequately tied to adjacent wall sections in accordance with Table R602.3.2.

R602.3.3 Bearing studs. Where joists, trusses or rafters are spaced more than 16 inches (406 mm) on center and the bearing studs below are spaced 24 inches (610 mm) on center, such members shall bear within 5 inches (127 mm) of the studs beneath.

Exceptions:

1. The top plates are two 2-inch by 6-inch (38 mm by 140 mm) or two 3-inch by 4-inch (64 mm by 89 mm) members.