
APPENDIX

ELECTRICAL LOAD ESTIMATING WORKSHEET

This worksheet can be used to determine the required size of the main electrical panel. This worksheet is designed for existing dwelling with 120/240 or 120/208 volt, three wire, single phase services.

1. ____ Square footage of existing living area¹ x 3 watts/sq. ft. = _____ watts
2. ____ 20 amp small appliance circuits @ 1500 watts each = _____ watts
3. ____ Laundry circuits @ 1500 watts each = _____ watts
4. Electrical appliances at nameplate value²
 - a. Range = _____ watts
 - b. Oven = _____ watts
 - c. Garbage Disposal = _____ watts
 - d. Clothes Dryer³ = _____ watts
 - e. Dishwasher = _____ watts
 - f. Other: _____ = _____ watts
 - g. Other: _____ = _____ watts
 - h. Other: _____ = _____ watts

Sub-Total (Lines 1-4)= _____ watts

5. First 8,000 watts @ 100% = _____ watts
6. Balance (sub-total - 8,000) @ 40% = _____ watts
- 7.⁴ Air conditioning @ 100% = _____ watts
 Central space heating @ 100% = _____ watts
 <4 Space heaters @ 100% = _____ watts
 >4 Space heaters @ 100% = _____ watts
 = _____ watts

Total (Lines 5-7) = _____ watts

Convert to amps by dividing by 240 volts (A = watts/volts) = _____ amps

¹ Use outside dimensions

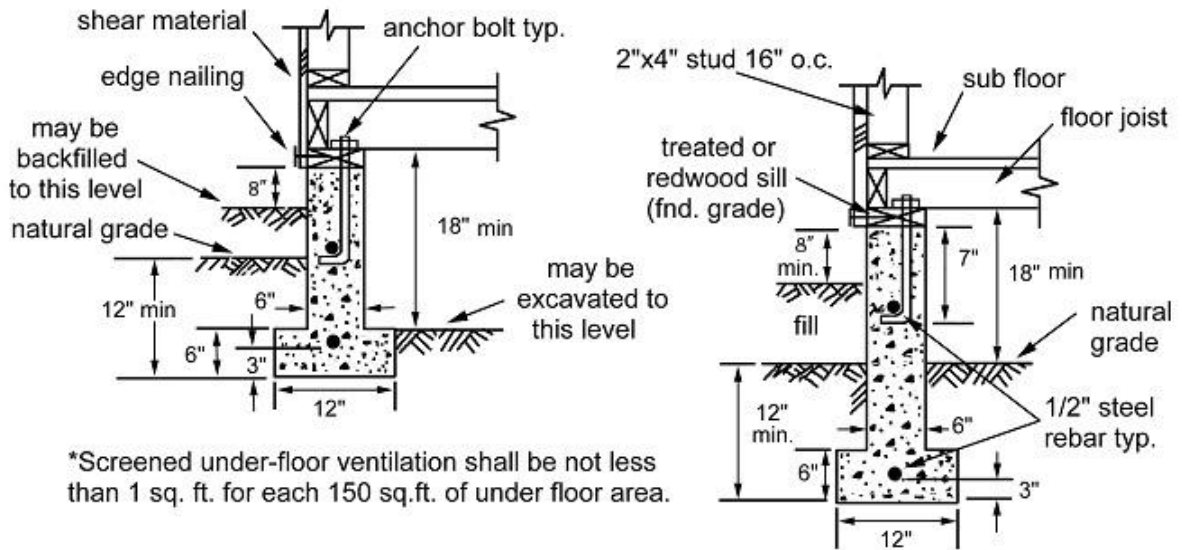
² If values are given in amps, multiply by volts to obtain watts (watts = amps x volts)

³ Minimum 5000 watts

⁴ Use larger connected load of A/C and space heating, not both. Heat pumps are calculated at 100% or 65% if the heat pump is supplementary.

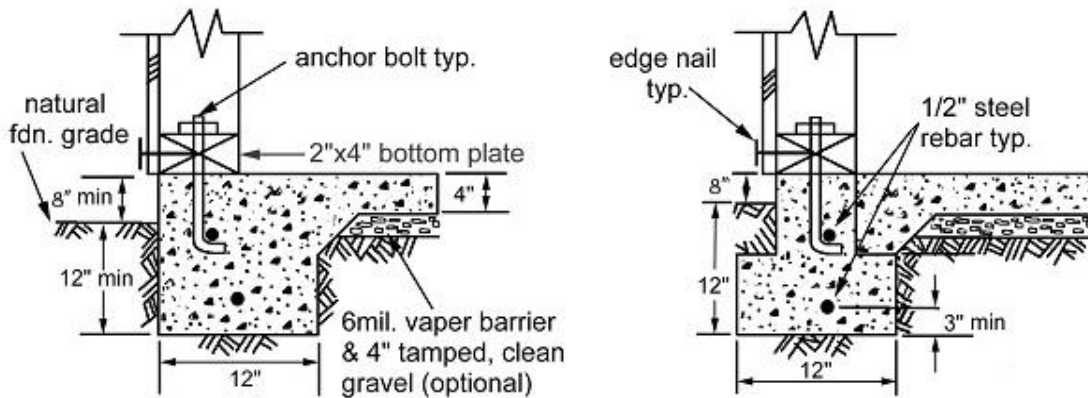
TYPICAL SINGLE STORY FOUNDATION DETAILS

FOUNDATIONS WITH UNDER FLOOR EXCAVATION



** This distance may be less than 8" if all wood framing members, including wood sheathing, located 8" to exposed earth are either pressure-treated or redwood.

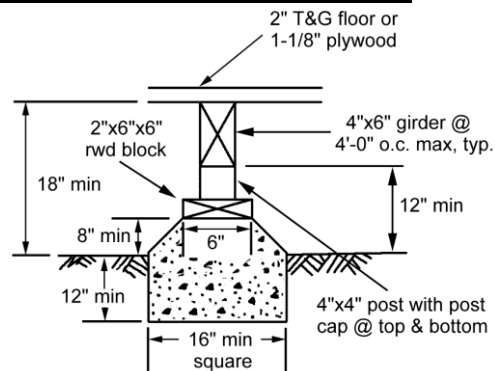
CONCRETE SLAB FLOOR FOUNDATIONS



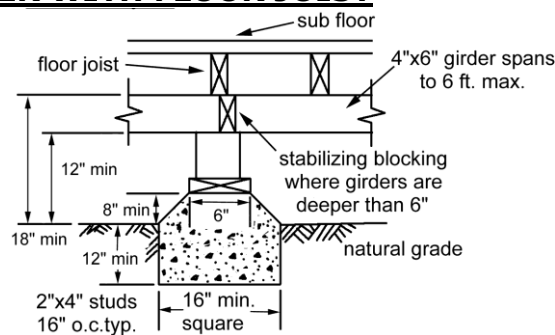
** Foundation anchor bolts shall be a minimum 5/8" x 10" steel bolts at six feet on center maximum, 4" minimum and 12" maximum from corners with 3" x 3" x 1/4" washers. Two anchor bolts per sill minimum.

TYPICAL PIER AND INTERIOR FOOTING DETAILS

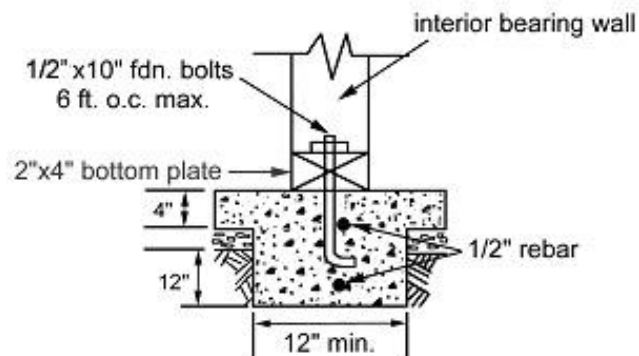
UNDER FLOOR PIER WITHOUT FLOOR JOIST



UNDER FLOOR PIER WITH FLOOR JOIST



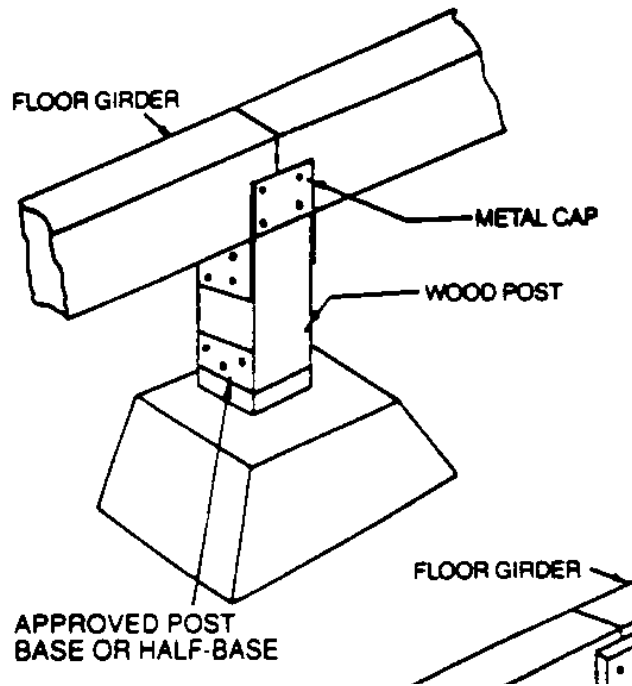
UNDER SLAB PIER



** Foundation anchor bolts shall be a minimum 1/2" x 10" steel bolts at 6 feet on center maximum, seven bolt diameters minimum and 12" maximum from corners with 3" x 3" x 1/4" washers. Two anchor bolts per sill minimum. Bolts shall be embedded at least 7 inches into concrete.

TYPICAL GIRDER DETAIL

POST-GIRDER CONNECTION



GENERAL FRAMING DETAILS

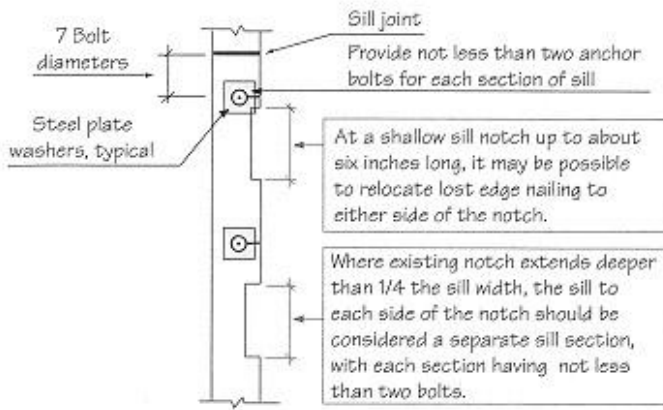


FIG. 1 ~ FOUNDATION SILL PENETRATIONS

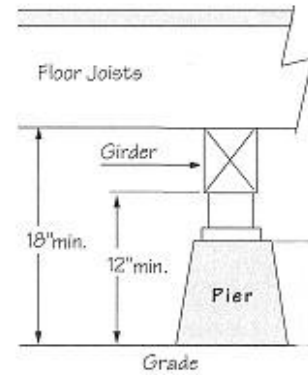


FIG. 2 ~ UNDER FLOOR CLEARANCES

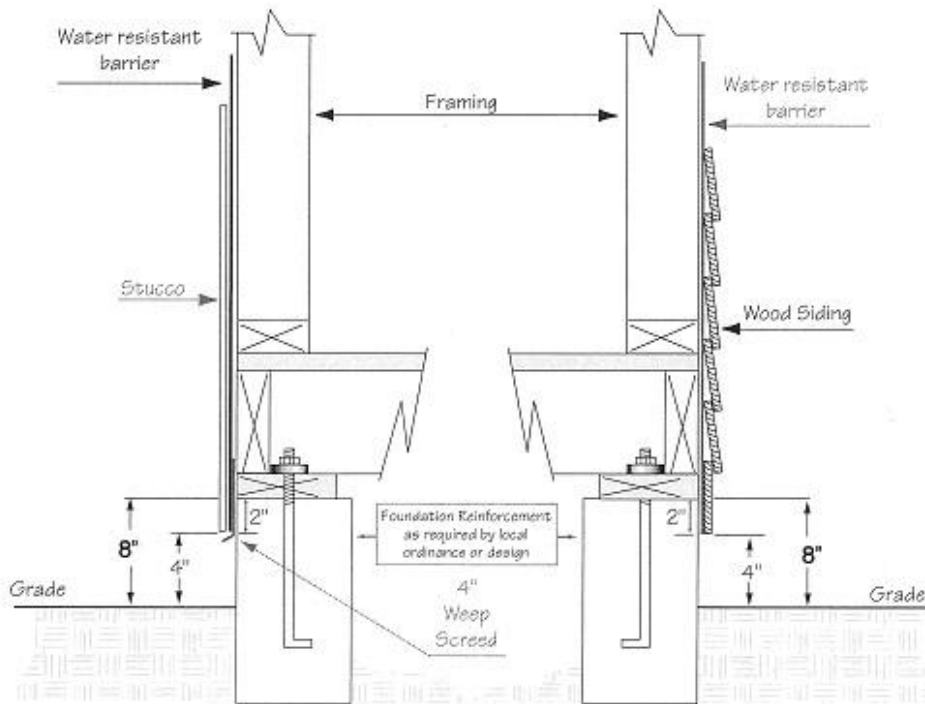
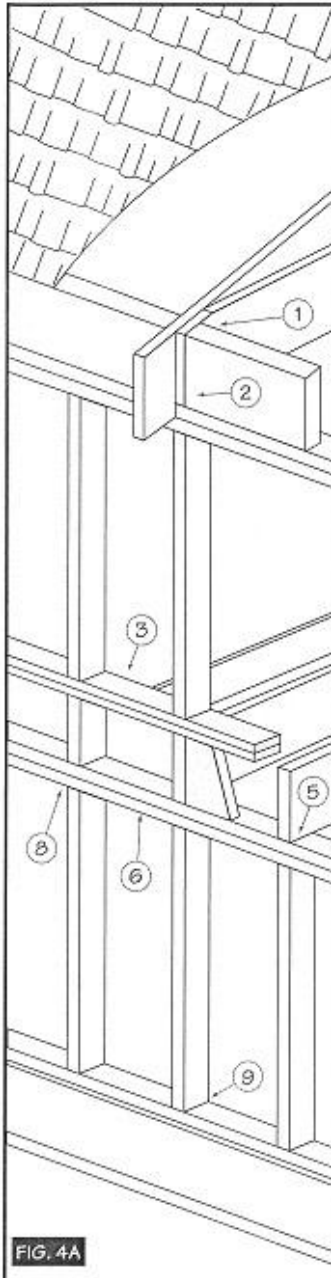
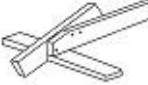
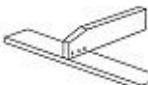

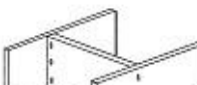
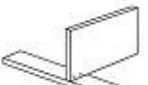


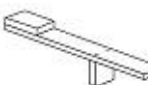
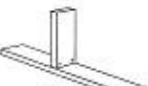


FIG. 3 ~ WEEP SCREED CLEARANCES

GENERAL FRAMING DETAILS (CONTINUED)

GENERAL FRAMING NAILING REQUIREMENTS



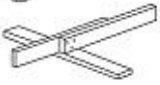
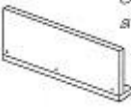





- ①  Ceiling joist to parallel rafters:
Varies based on roof span and roof slope
- ②  Ceiling joist to plate toenail:
3-8d common or box nails.
- ③  Sole (bottom) plate to joist or blocking:
16d common at 16' O.C.
- ④  Blocking to joist:
3-8d common or box nails, toenail or
2-16d common or box nails, face nailing.
- ⑤  Joist to mud sill or upper top plate:
3-8d common, box nails or toenails.
- ⑥  Top plates typical stitching:
16d common or box nails at 24" O.C.
- ⑦  Top plates lap at intersection, face nail:
2-16d common or box nails. 4 is recommended.
- ⑧  Lower top plate to stud:
2-16d common or box nails.
- ⑨  Stud to sole bottom plate:
2-16d common or box nails.

See the fastener schedule for additional nailing requirements.

GENERAL FRAMING DETAILS (CONTINUED)

GENERAL FRAMING NAILING REQUIREMENTS (CONTINUED)

- 10 Rafter to Plate, toenail:
2-16d common box nails.
- 
- 11 Upper top plates at laps:
8-16d common or box nails.
- 
- 12 Ceiling joist, lap over walls and partition:
3-16d
NOT SHOWN IN DIAGRAM
- 
- 13 Rim joist to upper top plate or mud sill:
8d common, box nails or 16d toenails
at 6" O.C.
- 
- 14 Three piece built up girder and beam:
20d @ 32" O.C. @ top, bottom and staggered.
2-20d @ ends and each splice.
NOT SHOWN IN DIAGRAM
- 
- 15 Double studs, or built-up studs typical stitching:
16d common or box nails at 24" on center.
- 
- 16 Built up corner studs:
16d box nails at 24" O.C.
- 

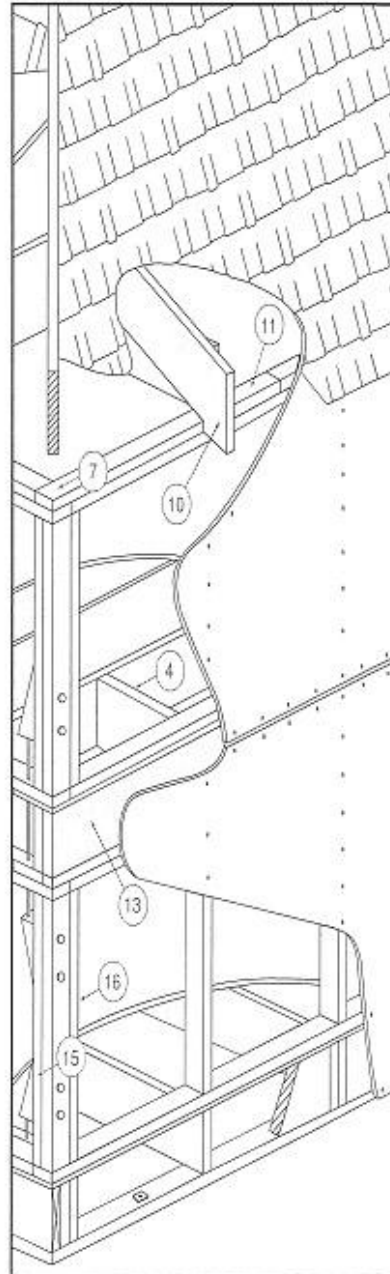


FIG. 4B

See the fastener schedule for additional nailing requirements.

GENERAL FRAMING DETAILS (CONTINUED)

Nails shall be considered overdriven when the top of the head of the nail is more than $1/32$ " below the face of sheathing.

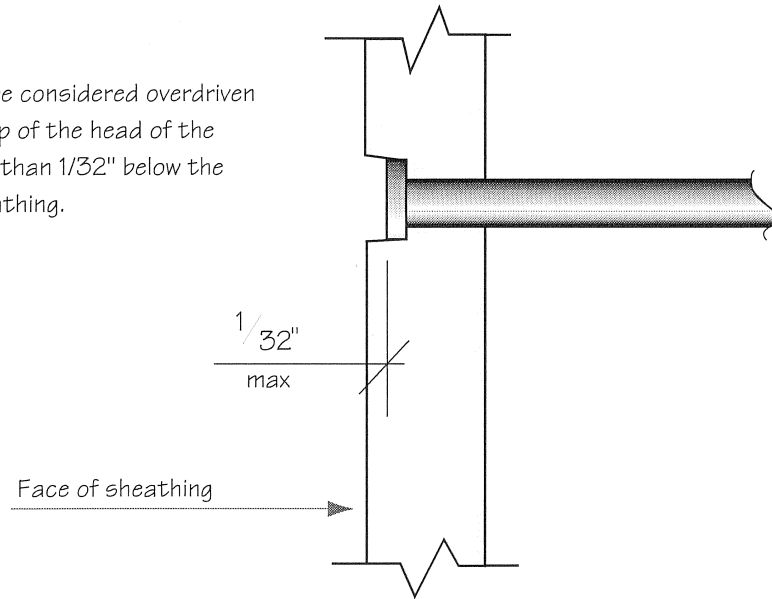
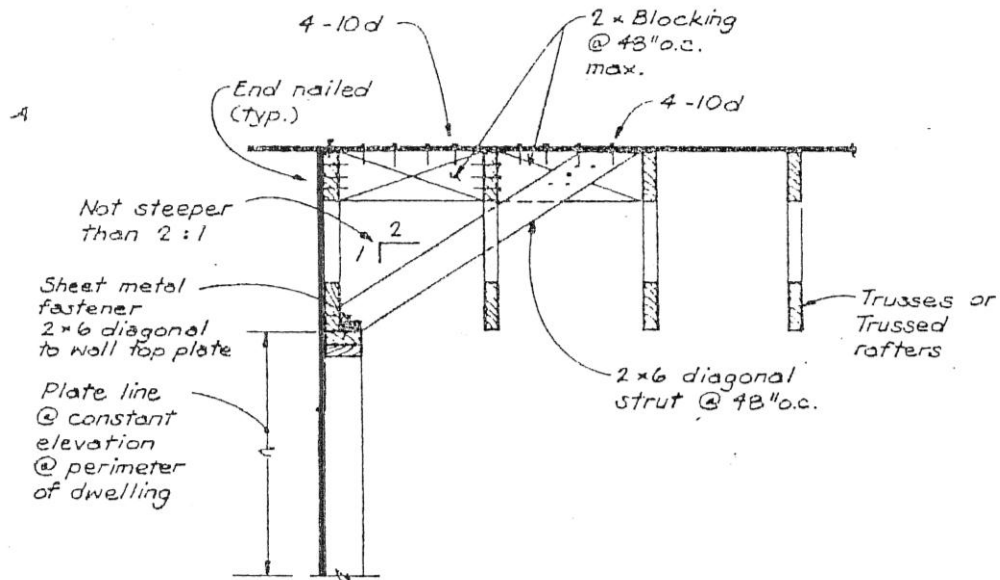


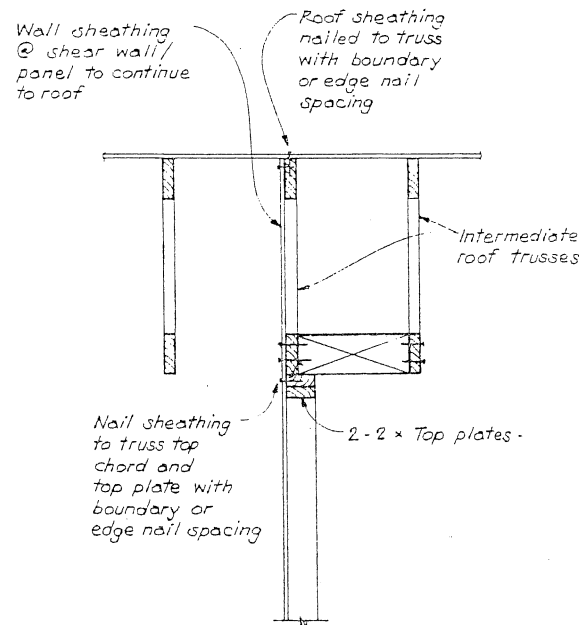
FIG. 5 ~ OVER DRIVEN NAIL

GENERAL FRAMING DETAILS (CONTINUED)

GABLE END WALL SECTION



INTERIOR SHEAR WALL DETAIL FOR ROOF TRUSS FRAMING



SHEAR AND FRAMING DETAILS

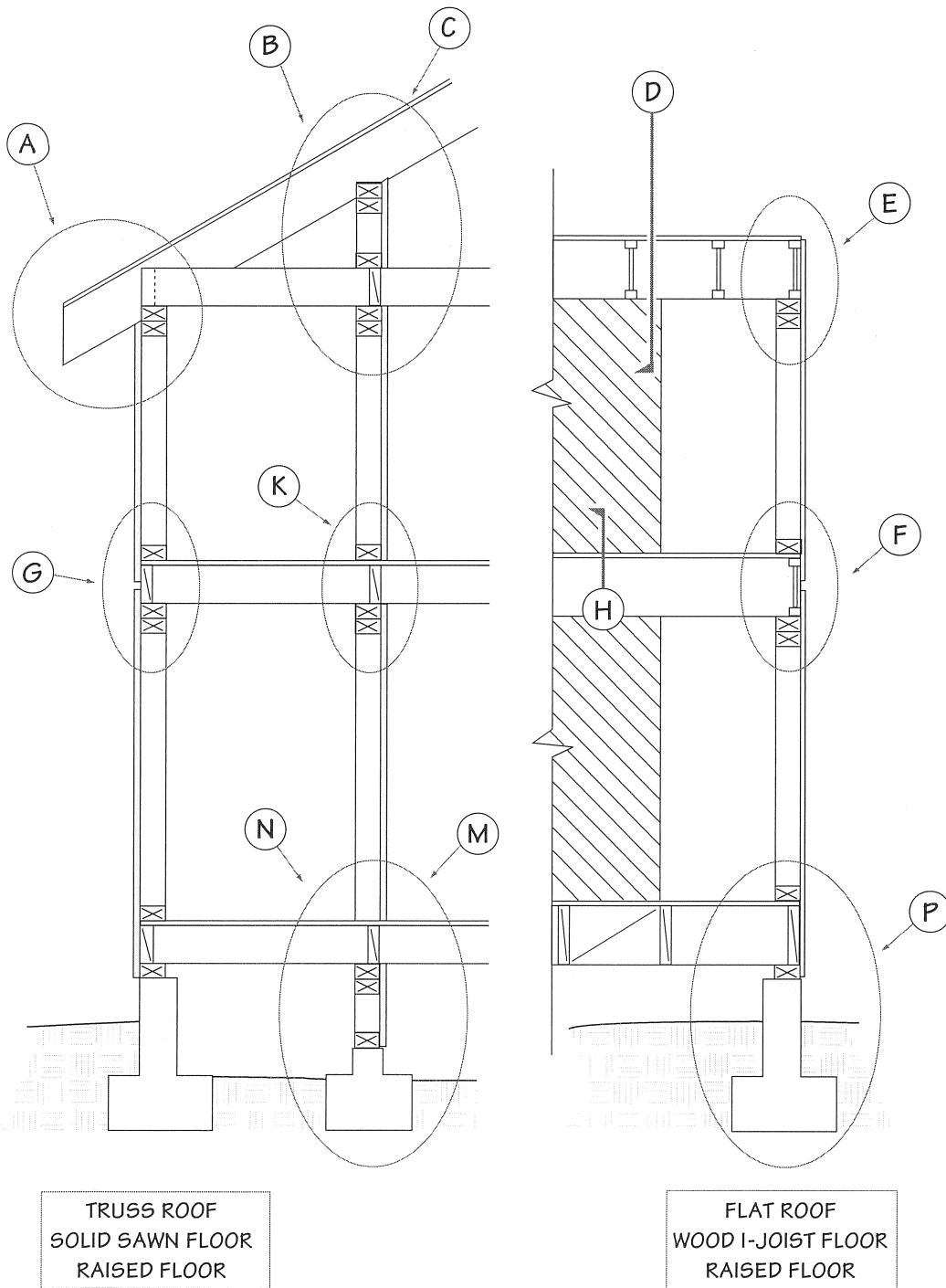
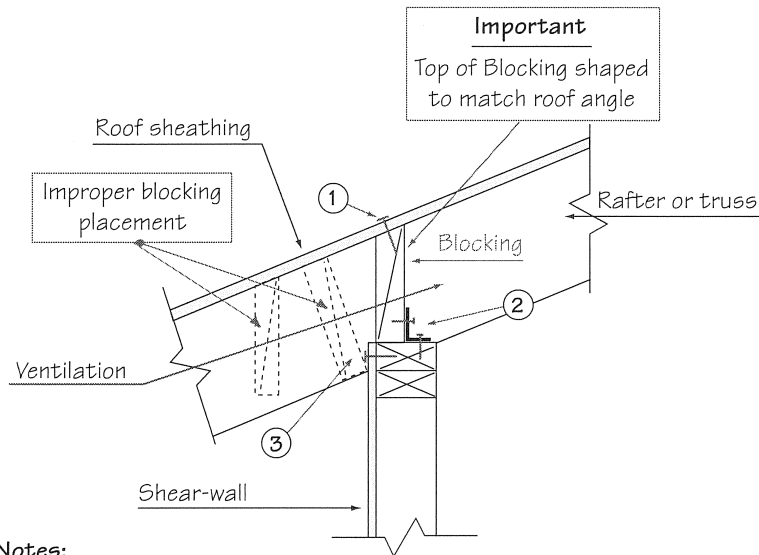


FIG. 6 ~ SHEAR & FRAMING

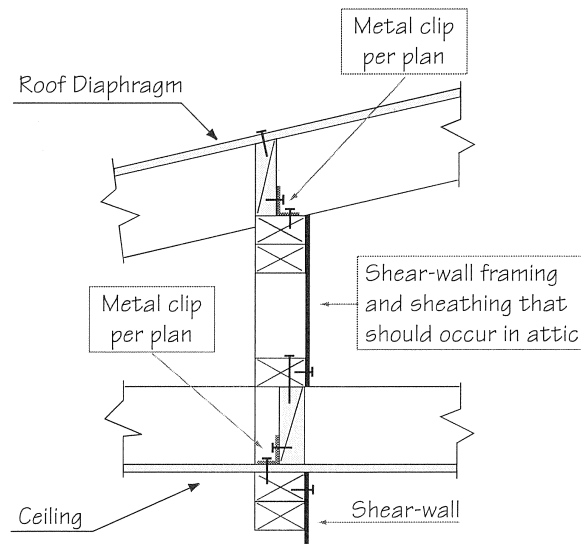
SHEAR AND FRAMING DETAILS (CONTINUED)



Notes:

1. Roof diaphragm sheathing edge or boundary fastening to blocking
2. Blocking fastening to top plates
3. Shear-wall sheathing fastening to top plates

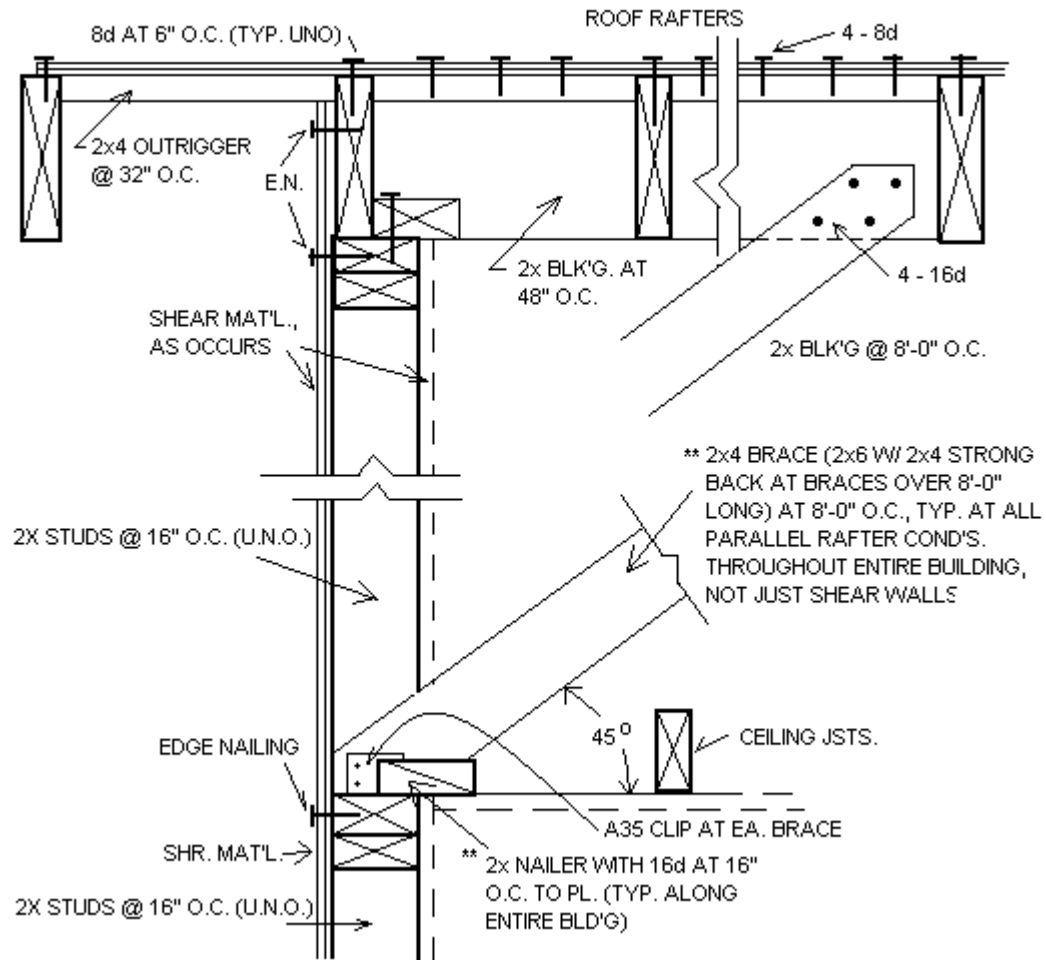
DETAIL A ~ ROOF CONNECTION TO EXTERIOR WALL AT EAVE



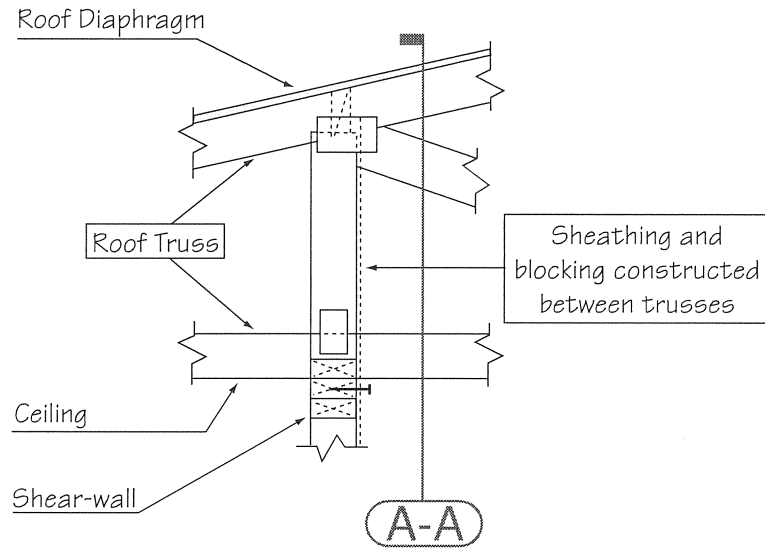
DETAIL B ~ ATTIC SHEAR-WALL EXTENSION IN CONVENTIONAL ROOF FRAMING

SHEAR AND FRAMING DETAILS (CONTINUED)

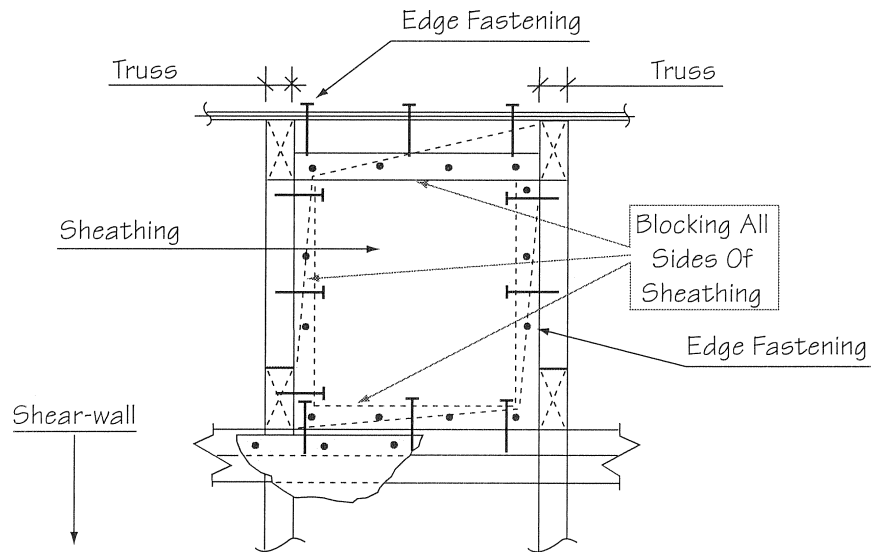
TYPICAL PARALLEL RAFTER CONDITION WITH CEILING JOIST



SHEAR AND FRAMING DETAILS (CONTINUED)

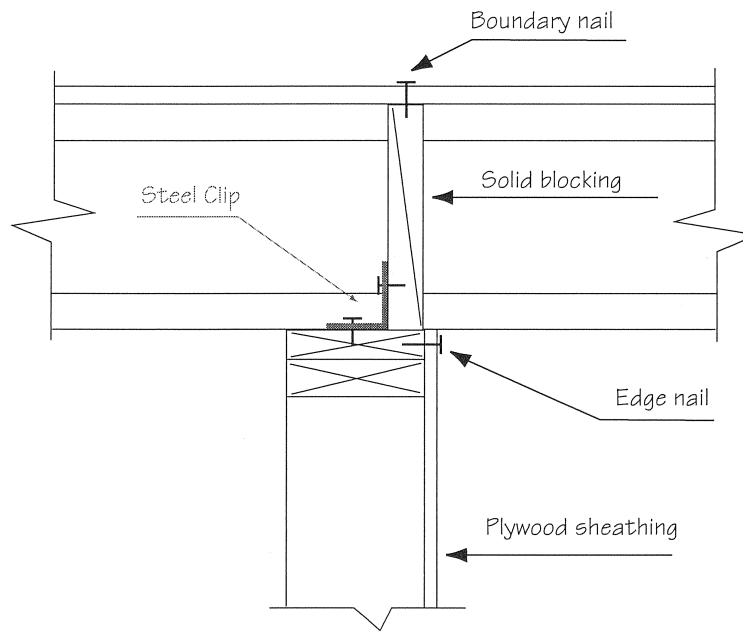


DETAIL C ~ ATTIC SHEAR-WALL BETWEEN TRUSSES

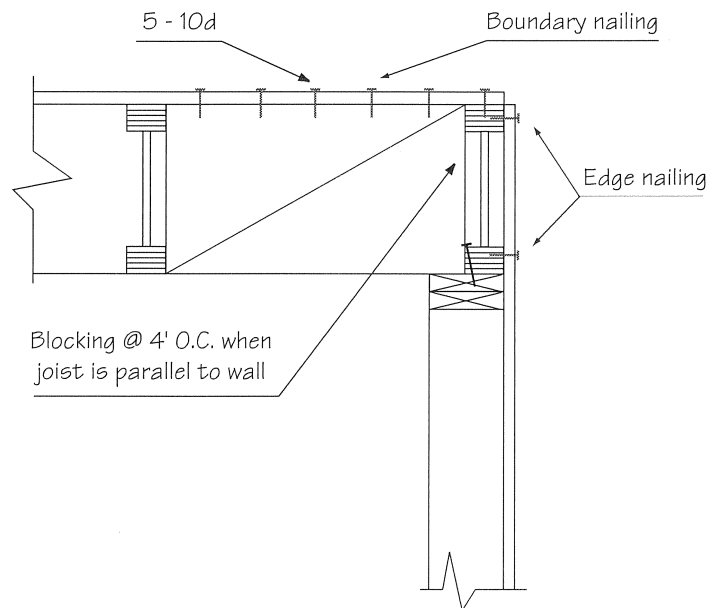


DETAIL-C -SECT. A-A ~ ATTIC SHEAR-WALL BETWEEN TRUSSES

SHEAR AND FRAMING DETAILS (CONTINUED)

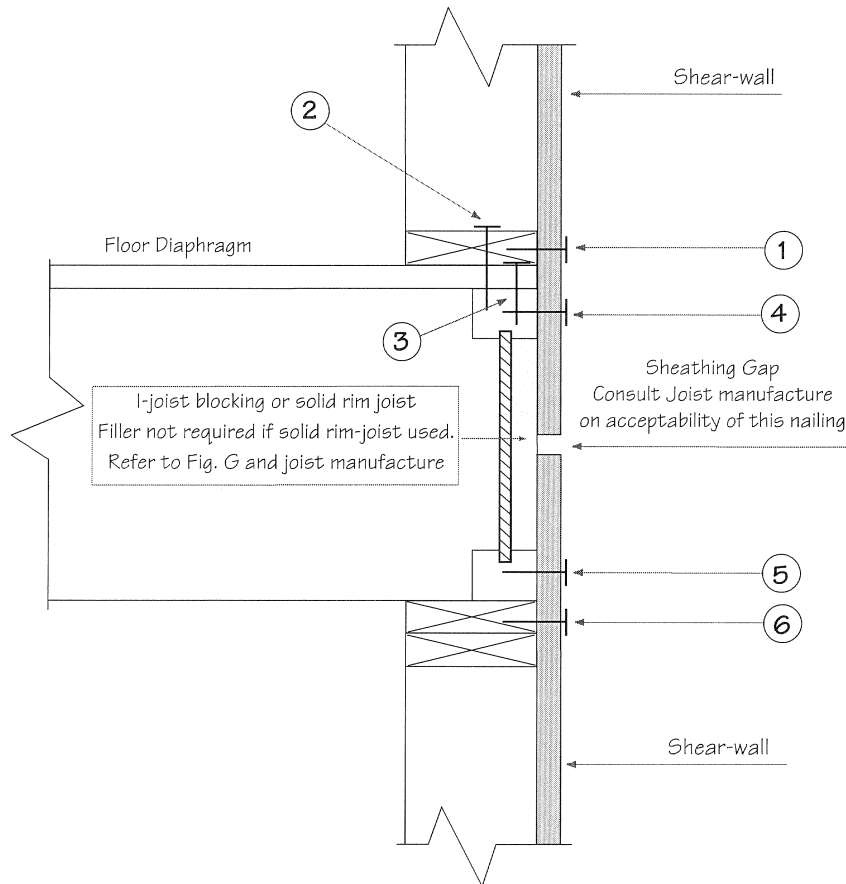


DETAIL D ~ INTERIOR SHEAR-WALL CONNECTION TO ROOF



DETAIL E ~ SHEAR-WALL CONNECTION AT FLAT ROOF

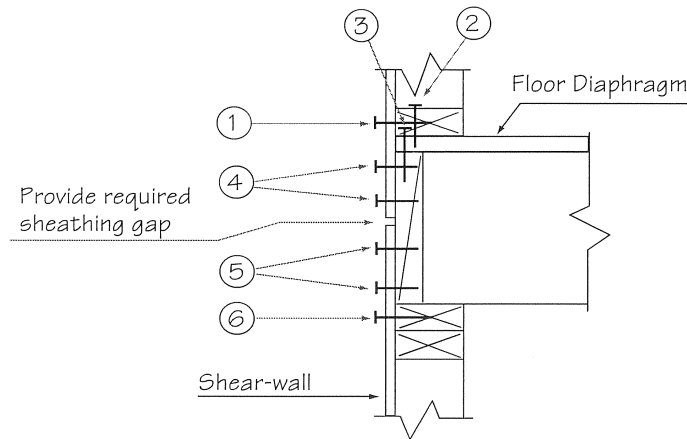
SHEAR AND FRAMING DETAILS (CONTINUED)



1. End nail from shear-wall to sole plate.
2. Sole plate nailing to top chord of I-Joist.
3. Boundary nailing floor plywood to I-Joist.
4. End nail from shear-wall to top chord.
5. End nail from lower shear-wall to bottom chord.
6. End nail from lower shear-wall to top plates.

DETAIL F ~ SHEAR TRANSFER AT I-JOIST FLOOR OR RIM JOIST

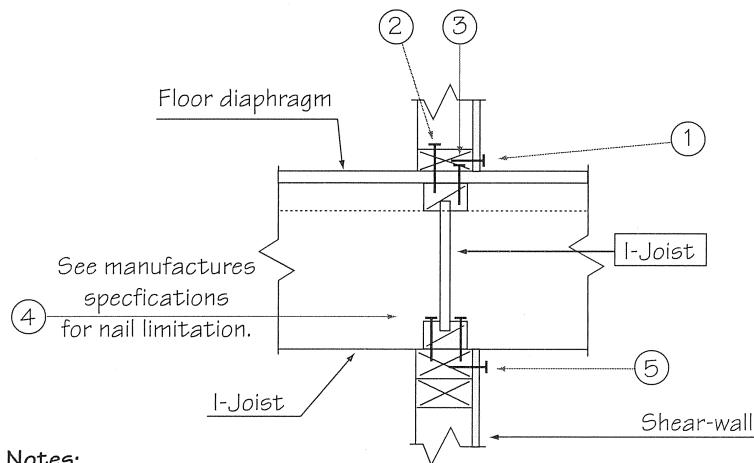
SHEAR AND FRAMING DETAILS (CONTINUED)



Notes:

1. Shear-wall sheathing edge fastening to sole (bottom) plate.
2. Sole plate fastening through floor sheathing to blocking.
3. Floor diaphragm sheathing edge / boundary fastening to blocking.
4. Upper shear-wall sheathing edge fastening to rim joist or blocking.
5. Lower shear-wall sheathing edge fastening to rim joist or blocking.
6. Shear-wall sheathing edge fastening to top plates.

FIG. G ~ EXTERIOR WALL THROUGH-FLOOR SHEAR TRANSFER WITH SHEATHING SPLICED ON BLOCK OR RIM JOIST.

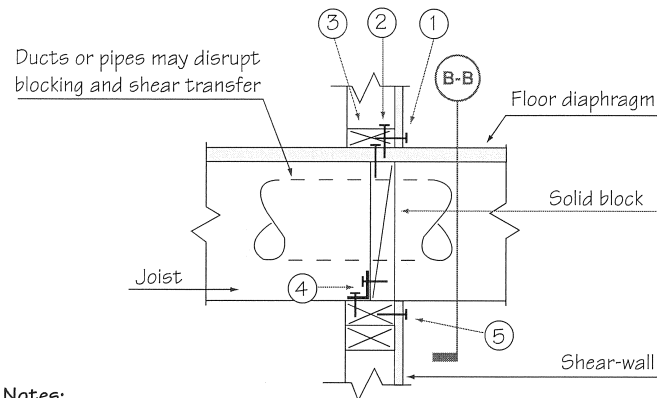


Notes:

1. Shear-wall sheathing edge fastening to sole plate
2. Sole plate fastening through floor sheathing to I-joist blocking
3. Floor diaphragm sheathing edge or boundary fastening to I-joist blocking
4. I-joist blocking bottom chord fastening to double top plates
5. Shear-wall sheathing edge fastening to top plates

DETAIL H ~ THROUGH-FLOOR SHEAR-WALL CONNECTION WITH I-JOIST FRAMING AT INTERIOR WALL LOCATION.

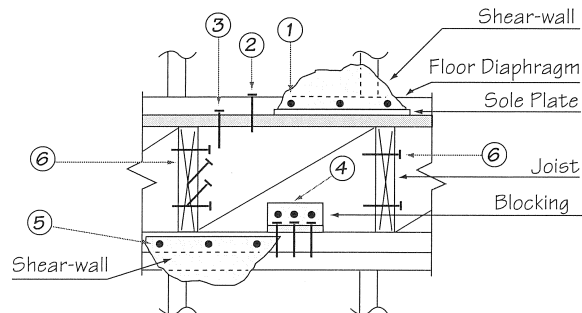
SHEAR AND FRAMING DETAILS (CONTINUED)



Notes:

1. Shear-wall sheathing edge fastening to sole plate.
2. Sole plate fastening through floor sheathing to blocking.
3. Floor diaphragm sheathing edge or boundary fastening to blocking.
4. Blocking fastening to double top plates.
5. Shear-wall sheathing edge fastening to top plates.

DETAIL K ~ THROUGH-FLOOR SHEAR-WALL CONNECTION WITH SOLID - SAWN FRAMING

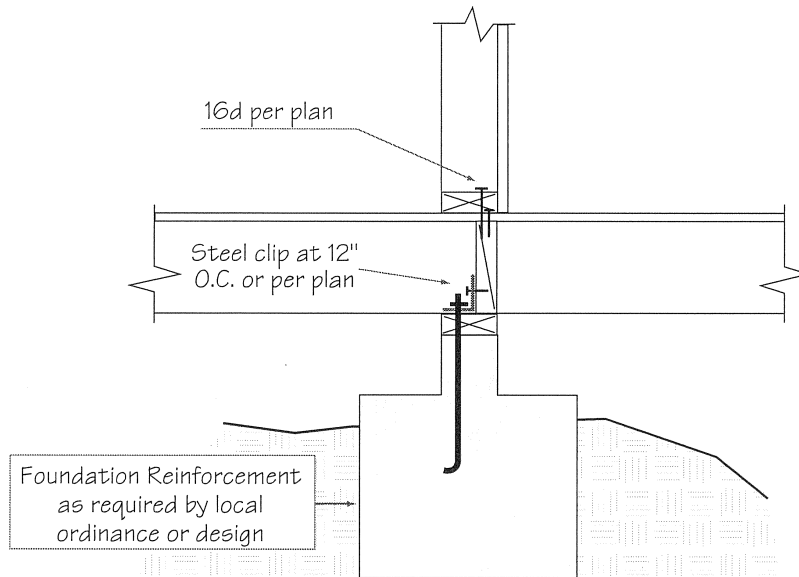


Notes:

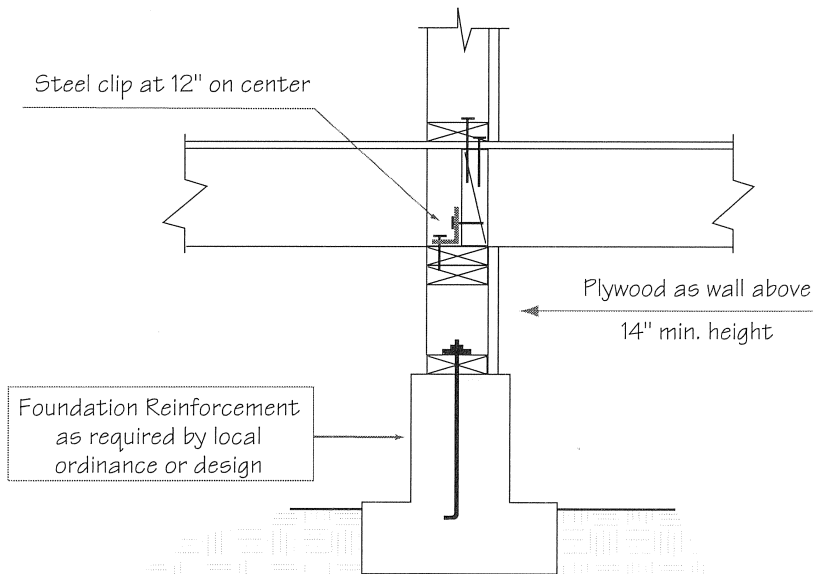
1. Shear-wall sheathing edge fastening to sole (bottom) plate.
2. Sole plate fastening through floor sheathing to blocking.
3. Floor diaphragm sheathing edge or boundary fastening to blocking.
4. Blocking angle clip fastening to top plates.
5. Shear-wall sheathing edge fastening to top plates.
6. Blocking end fastening using end nails or toenails.

DETAIL K ~ SECT. B-B ~ ELEVATION OF THROUGH-FLOOR SHEAR TRANSFER; SOLID-SAWN FRAMING

SHEAR AND FRAMING DETAILS (CONTINUED)

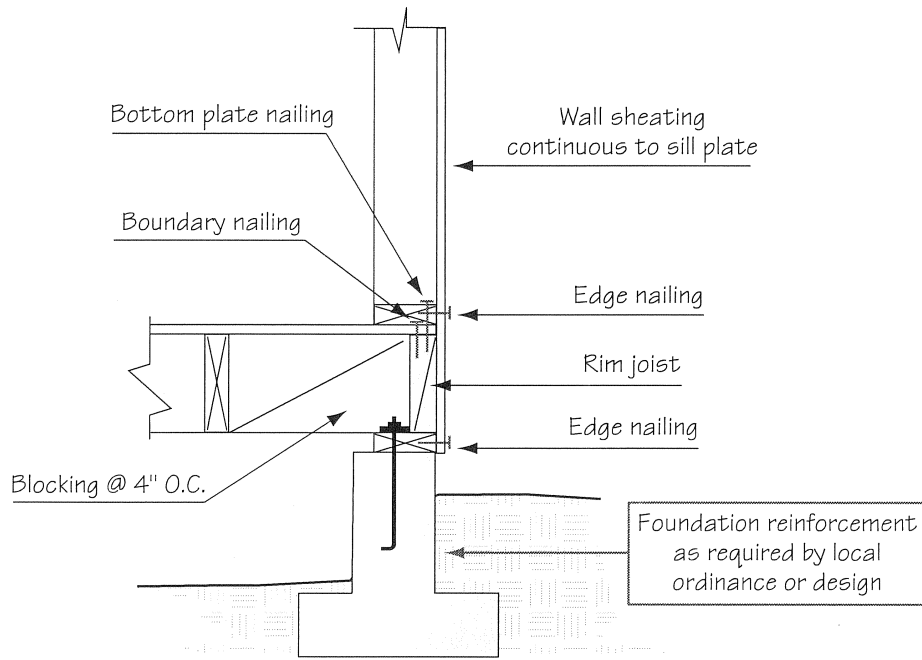


DETAIL M ~ INTERIOR WALL WITH HIGH STEM CONDITION



DETAIL N ~ INTERIOR WALL WITH CRIPPLE WALL

SHEAR AND FRAMING DETAILS (CONTINUED)



DETAIL P ~ SHEAR-WALL CONNECTION AT EXTERIOR WALL

SHEAR AND FRAMING DETAILS (CONTINUED)

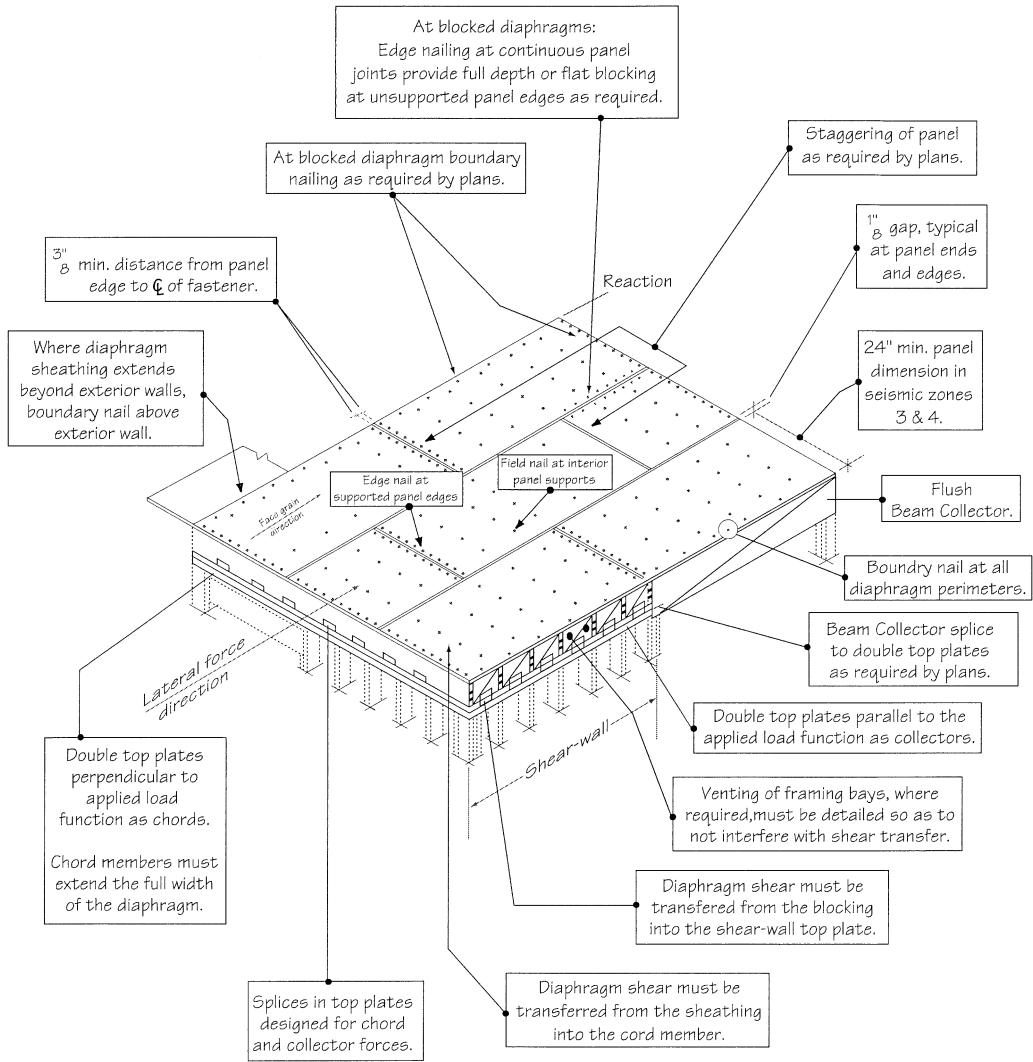
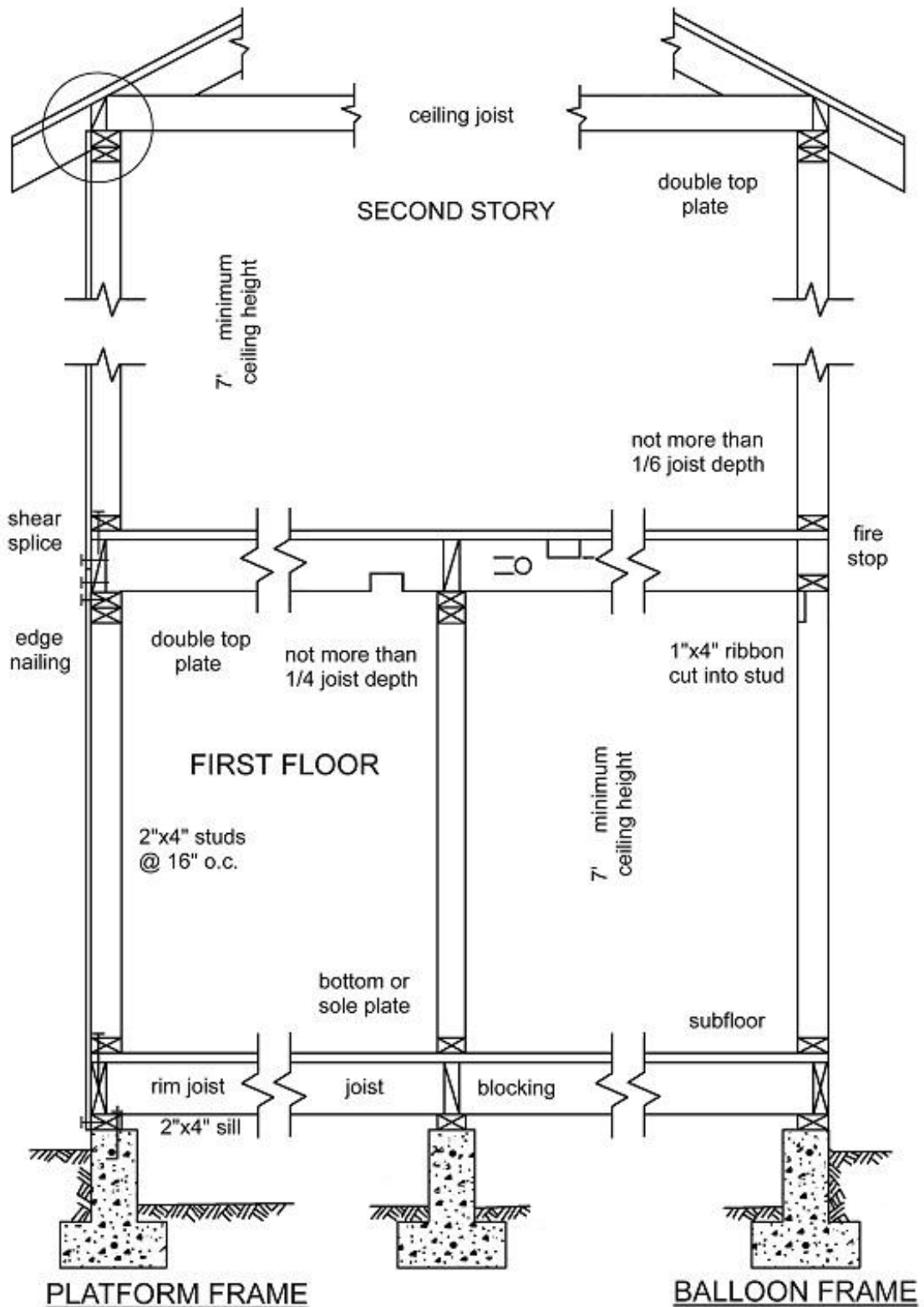
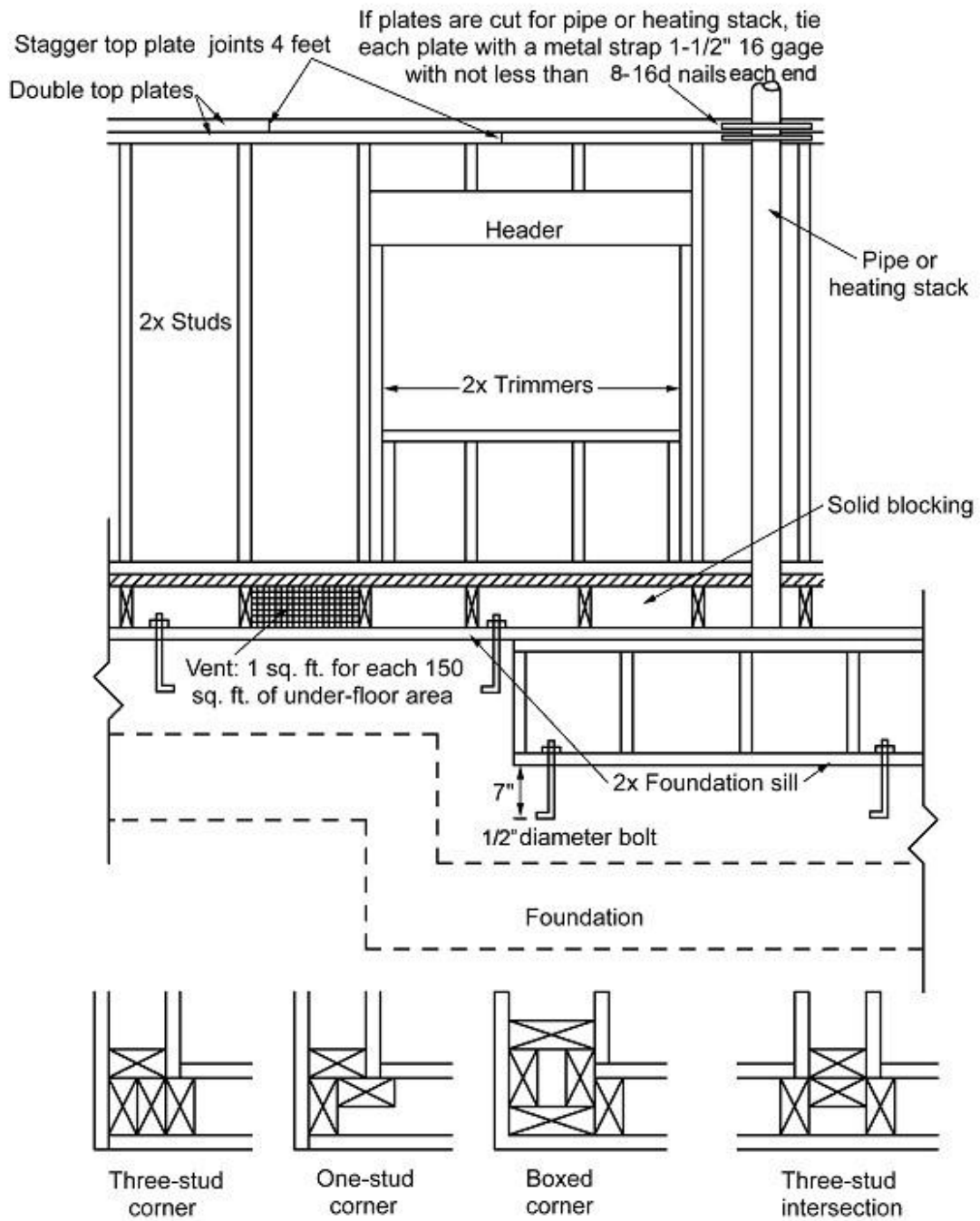


FIG. 7 - TYPICAL FLOOR OR ROOF DIAPHRAGM

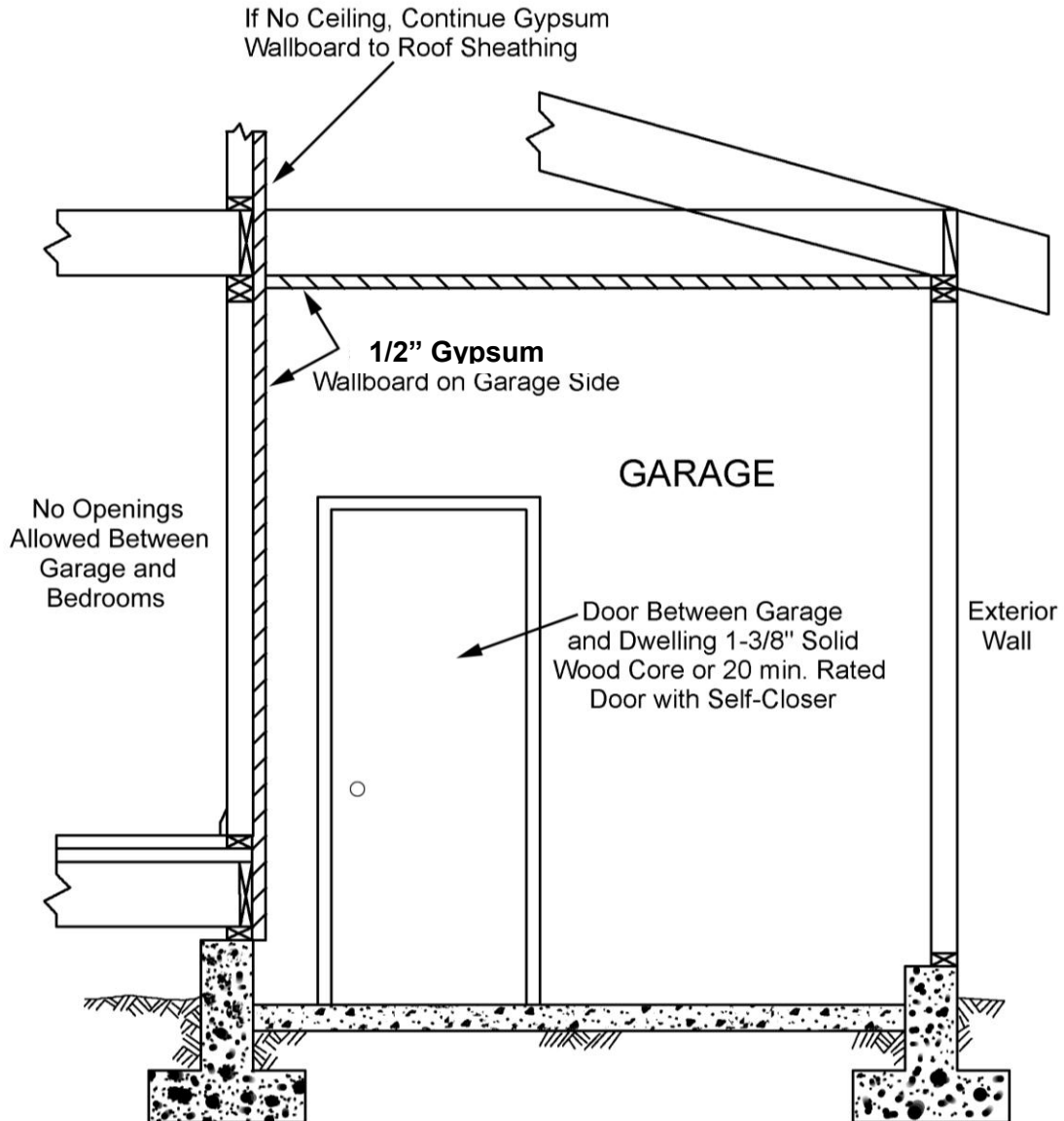
TYPICAL TWO STORY WALL FRAMING



TYPICAL WALL FRAMING



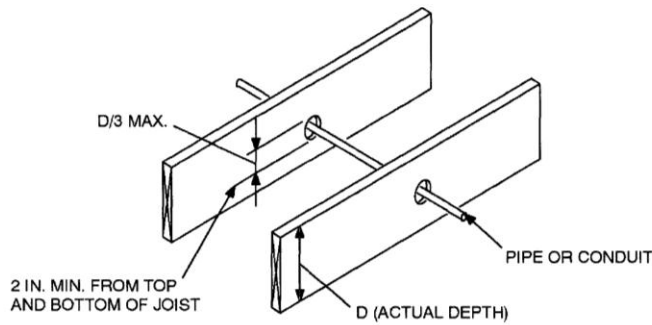
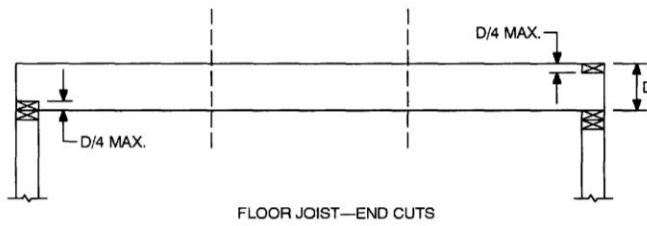
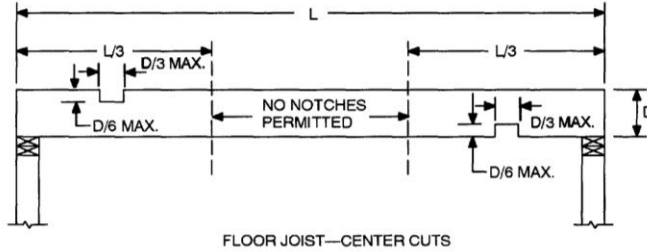
TYPICAL SECTION THROUGH GARAGE



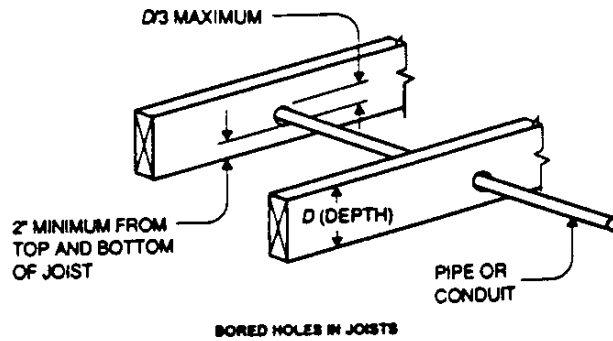
Note: Framing and shear transfer information not shown for clarity.

TYPICAL NOTCHING AND BORING DETAILS

CUTTING AND NOTCHING LIMITATIONS



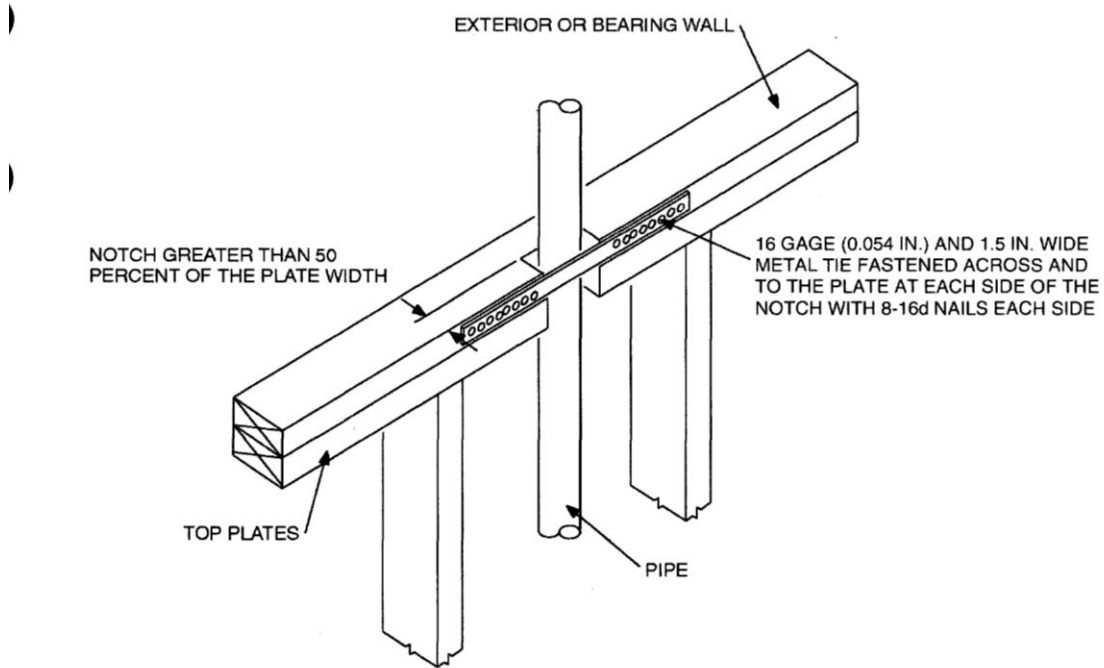
CUTTING AND NOTCHING LIMITATIONS – FLOOR JOISTS



NOTCHING AND BORING LIMITATIONS—FLOOR JOISTS

TYPICAL NOTCHING AND BORING DETAILS (CONTINUED)

PLATE FRAMING TO ACCOMMODATE PIPING



For SI: 1 inch = 25.4 mm.

FIGURE R602.6.1
TOP PLATE FRAMING TO ACCOMMODATE PIPING

TABLE R602.7.2
MAXIMUM SPANS FOR WOOD STRUCTURAL PANEL BOX HEADERS^a

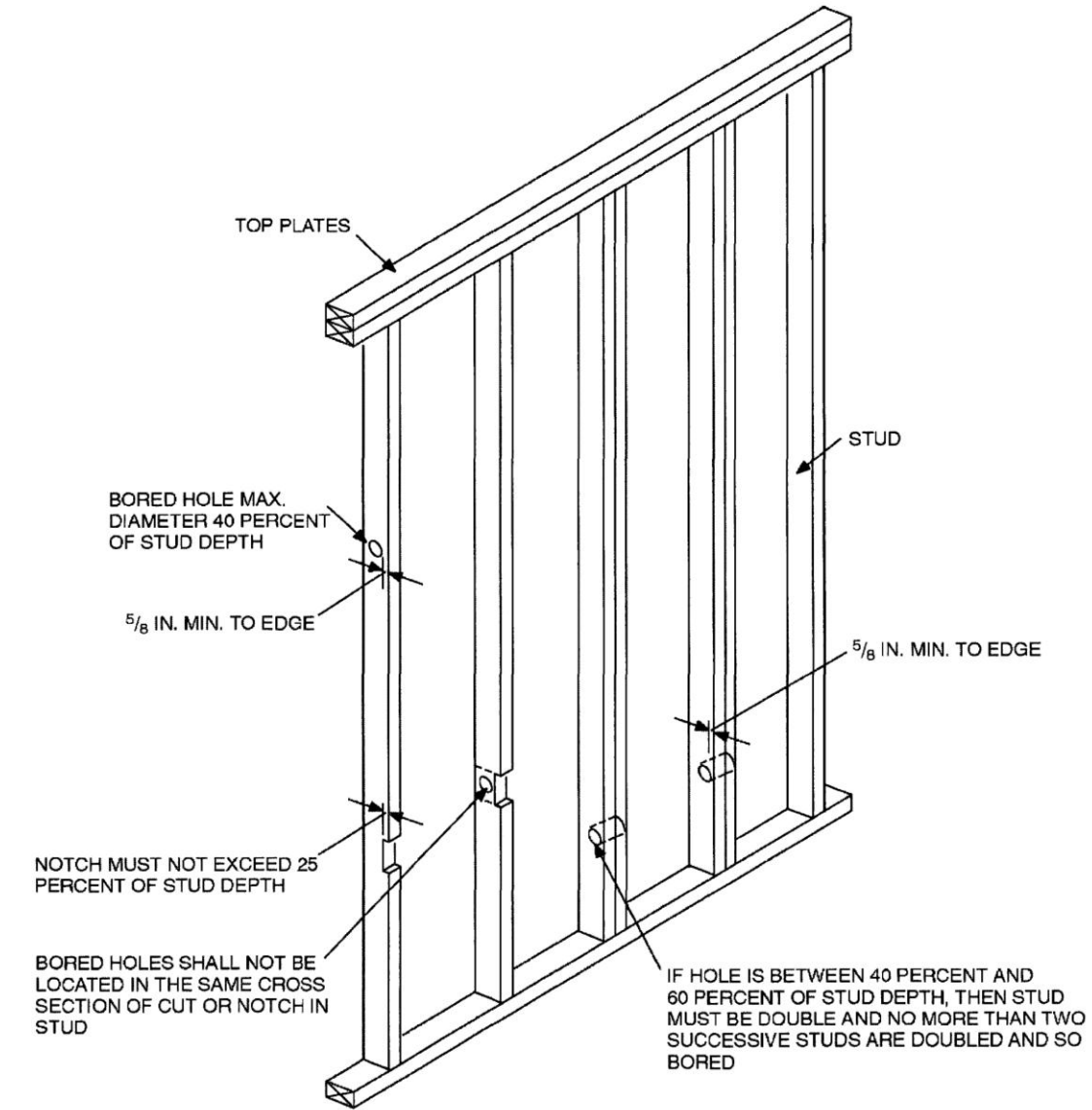
HEADER CONSTRUCTION ^b	HEADER DEPTH (inches)	HOUSE DEPTH (feet)				
		24	26	28	30	32
Wood structural panel—one side	9	4	4	3	3	—
	15	5	5	4	3	3
Wood structural panel—both sides	9	7	5	5	4	3
	15	8	8	7	7	6

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

- a. Spans are based on single story with clear-span trussed roof or two-story with floor and roof supported by interior-bearing walls.
- b. See Figure R602.7.2 for construction details.

TYPICAL NOTCHING AND BORING DETAILS (CONTINUED)

NOTCHING AND BORED HOLE LIMITATION—EXTERIOR AND BEARING WALLS



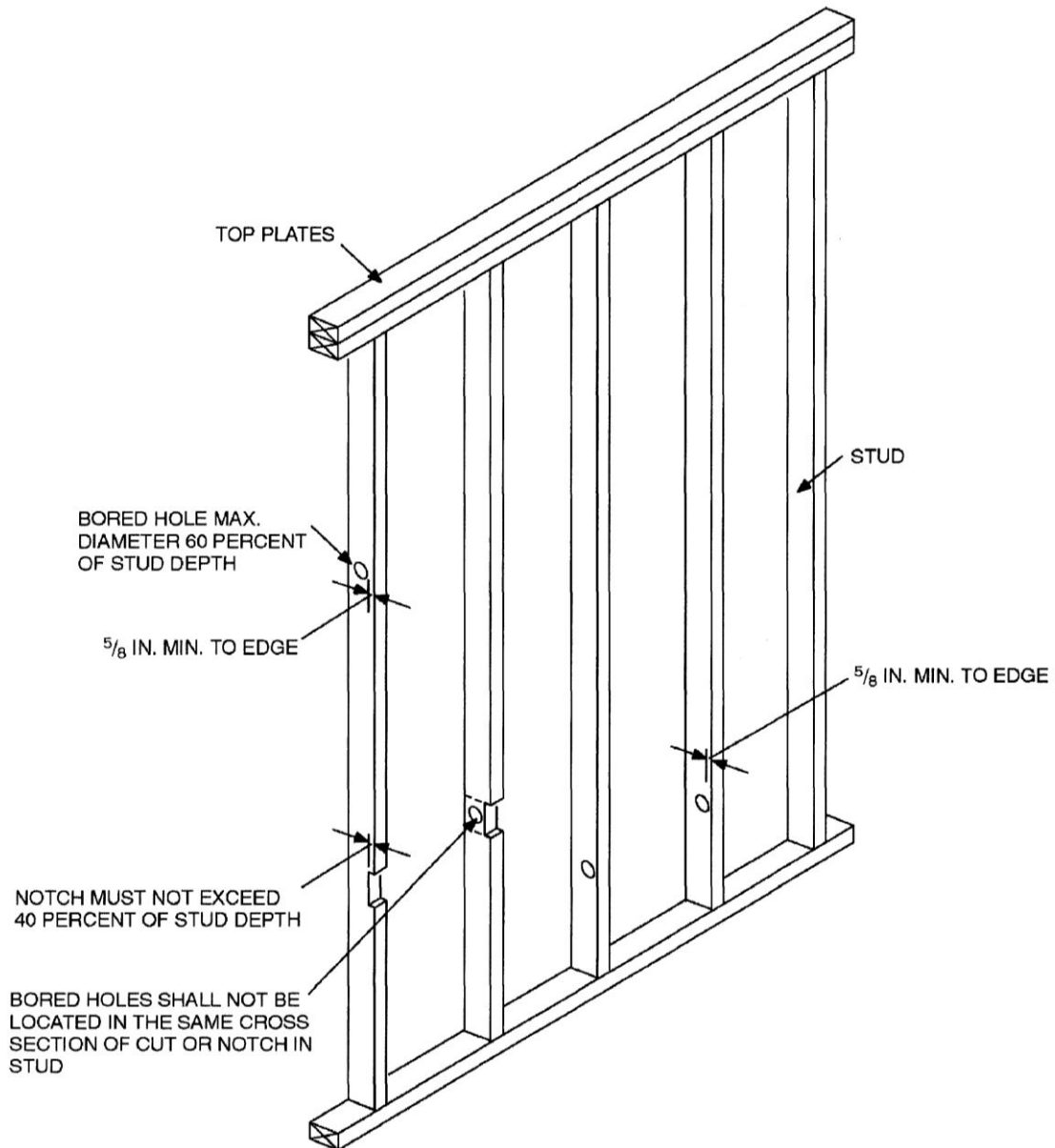
1: 1 inch = 25.4 mm.

2: Condition for exterior and bearing walls.

FIGURE R602.6(1)
NOTCHING AND BORED HOLE LIMITATIONS FOR EXTERIOR WALLS AND BEARING WALLS

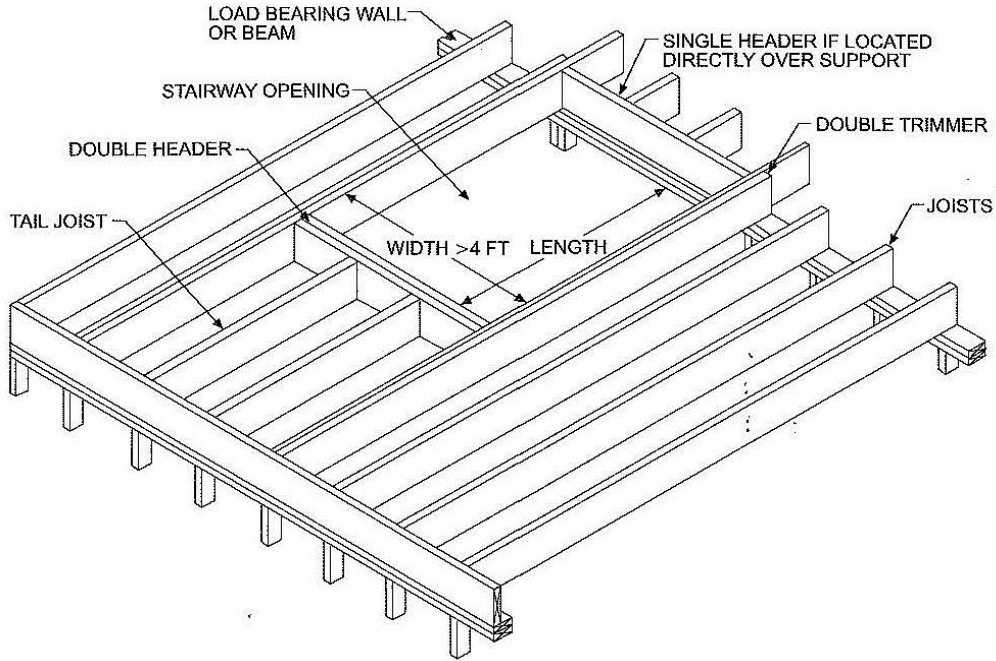
TYPICAL NOTCHING AND BORING DETAILS (CONTINUED)

NOTCHING AND BORED HOLE LIMITATION—INTERIOR NONBEARING WALLS



TYPICAL FRAMING AT OPENINGS

FRAMING AROUND OPENINGS – HEADER SPAN > FOUR FEET



FRAMING AROUND OPENINGS – HEADER SPAN FOUR FEET MAXIMUM

