

Seismic Upgrade Per 2022 CEBC Chapter A3.

Sill plate anchorage:

$\frac{1}{2}$ " bolts or equivalent (SIMPSON URFP) 6' o.c. per 2022 CEBC w/3" x 3" x 0.229 plate washer see TABLE A303.3.1 (See Sheet S1). "Anchors shall be placed within 12 inches, but not less than 9 inches from the ends of sill plates" per Section A304.3.2 (See Sheet S4)

Framing Clips (Simpson L90) w/ 925# Capacity

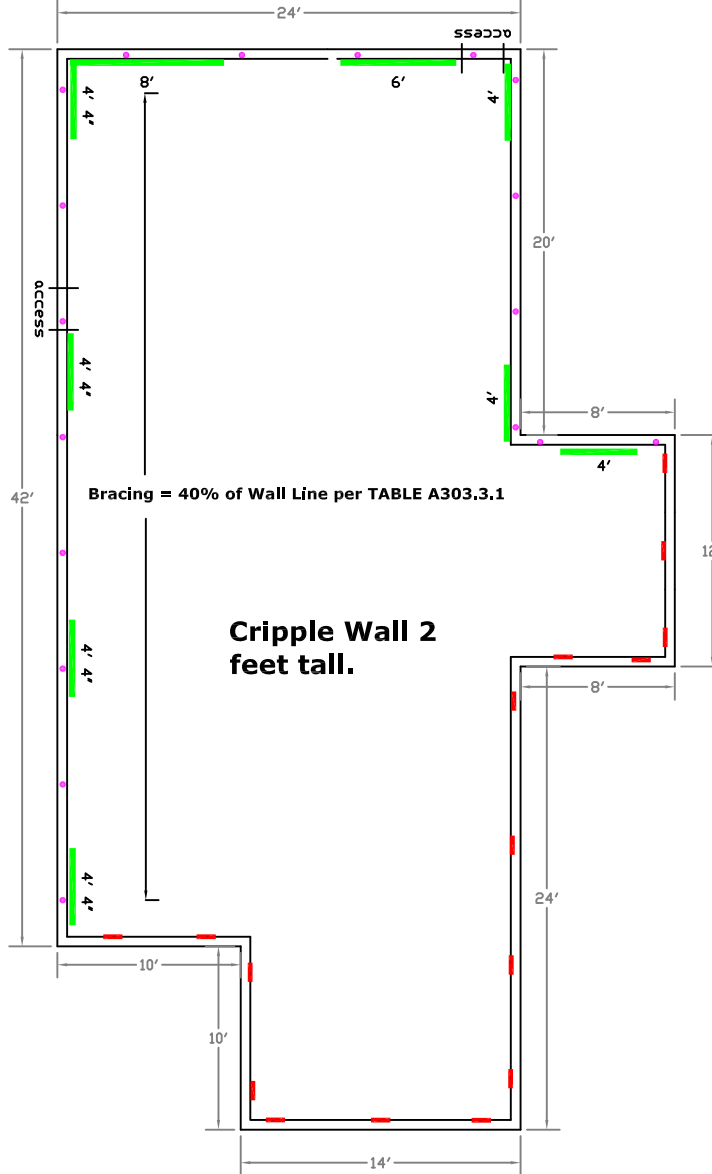
Floor Joists Parallel and Not Parallel To Foundation.

See FIGURES A304.1.3 and A304.1.4 See Sheet S3 and Sheet 3.1

Cripple wall bracing

Cripple walls are less than 4' tall

40% of wall length per 2022 CEBC Appendix Chapter A3 TABLE A303.3.1 req'd for 1- story houses with stucco siding and light roofs. (See Sheet S1)



Bracing:

"See Table A304.3.1 (See Sheet 1) and Figure A304.4.2 (See Sheet S-6) for the distribution and amount of bracing required for each wall line. Each braced panel length must be not less than two times the height of the cripple stud."

Mudsill blocking (if required)

(4) 10d commons in each 2" x 4" block at plywood locations see Figure A304.4.1 (2) (Sheet S2)

Plywood

15/32" structural 1 plywood nailed with 2 1/2" 8d commons 4" o.c. on edges and 12" o.c. in field. See FIGURE A304.4.1 (3) (Sheet S5).

Legend

- Simpson URFP.
- Bolt - $\frac{1}{2}$ " x 7" Hilti T22 with Simpson 3' x 3' x 0.229 bearing plate washer or equivalent.
- $\frac{5}{8}$ " structural 1 plywood nailed with 8d commons 4" o.c. on edges and 12" o.c. in field.

Site plan showing the building footprint with location of prop. lines set backs, and other structures is not necessary, because all work will be in the crawl space.

1 Story, Stucco Siding, Light Roof.

APPENDIX A—GUIDELINES FOR THE SEISMIC RETROFIT OF EXISTING BUILDINGS

[BS] TABLE A304.2.3(2)
NEW MASONRY CONCRETE FOUNDATION

MINIMUM FOUNDATION DIMENSIONS						MINIMUM FOUNDATION REINFORCING	
NUMBER OF STORIES	W	F	D ^{a, b, c}	T	H	VERTICAL REINFORCING	HORIZONTAL REINFORCING
1	12 inches	6 inches	12 inches	6 inches	≤ 24 inches	#4 @ 24 inches on center	#4 continuous at top of stem wall
2	15 inches	7 inches	18 inches	8 inches	≥ 24 inches	#4 @ 24 inches on center	#4 @ 16 inches on center
3	18 inches	8 inches	24 inches	10 inches	≥ 36 inches	#4 @ 24 inches on center	#4 @ 16 inches on center

For SI: 1 inch = 25.4 mm.

- Where frost conditions occur, the minimum depth shall extend below the frost line.
- The ground surface along the interior side of the foundation may be excavated to the elevation of the top of the footing.
- Where the soil is designated as expansive, the foundation depth and reinforcement shall be approved by the code official.

[BS] A304.3 Foundation sill plate anchorage.

[BS] A304.3.1 Existing perimeter foundations. Where the building has an existing continuous perimeter foundation, all perimeter wall sill plates shall be anchored to the foundation with adhesive anchors or expansion anchors in accordance with Table A304.3.1.

Anchors shall be installed in accordance with Figure A304.3.1(1), with the plate washer installed between the nut and the sill plate. The nut shall be tightened to a snug-tight condition after curing is complete for adhesive anchors and after expansion wedge engagement for expansion anchors. Anchors shall be installed in accordance with manufacturer's recommendations. Expansion anchors shall not be used where the installation causes surface cracking of the foundation wall at the locations of the anchor.

Where existing conditions prevent anchor installations through the top of the sill plate, this connection shall be made in accordance with Figure A304.3.1(2), A304.3.1(3) or A304.3.1(4). Alternative anchorage methods having a

minimum shear capacity of 900 pounds (4003 N) per connection parallel to the wall shall be permitted. The spacing of these alternative connections shall comply with the maximum spacing requirements of Table A304.3.1 for 1/2-inch (12.7 mm) bolts.

[BS] A304.3.2 Placement of anchors. Anchors shall be placed within 12 inches (305 mm), but not less than 9 inches (229 mm), from the ends of sill plates and shall be placed in the center of the stud space closest to the required spacing. New sill plates may be installed in pieces where necessary because of existing conditions. For lengths of sill plates 12 feet (3658 mm) or greater, anchors shall be spaced along the sill plate as specified in Table A304.3.1. For other lengths of sill plate, anchor placement shall be in accordance with Table A304.3.2.

Exception: Where physical obstructions such as fireplaces, plumbing or heating ducts interfere with the placement of an anchor, the anchor shall be placed as close to the obstruction as possible, but not less than 9

[BS] TABLE A304.3.1
SILL PLATE ANCHORAGE AND CRIPPLE WALL BRACING

NUMBER OF STORIES ABOVE CRIPPLE WALLS	MINIMUM SILL PLATE CONNECTION AND MAXIMUM SPACING ^{a, b, c}	AMOUNT OF BRACING FOR EACH WALL LINE ^{d, e, f}	
		A Combination of Exterior Walls Finished with Portland Cement Plaster and Roofing Using Clay Tile or Concrete Tile Weighing More than 6 psf (287 N/m ²)	All Other Conditions
One story	1/2 inch spaced 6 feet, 0 inch center-to-center with washer plate	Each end and not less than 50 percent of the wall length	Each end and not less than 40 percent of the wall length
Two stories	1/2 inch spaced 4 feet, 0 inch center-to-center with washer plate; or 5/8 inch spaced 6 feet, 0 inch center-to-center with washer plate	Each end and not less than 70 percent of the wall length	Each end and not less than 50 percent of the wall length
Three stories	5/8 inch spaced 4 feet, 0 inch center-to-center with washer plate	100 percent of the wall length ^g	Each end and not less than 80 percent of the wall length ^g

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 47.88 N/m².

- Sill plate anchors shall be adhesive anchors or expansion anchors in accordance with Section A304.3.1.
- All washer plates shall be 3 inches by 3 inches by 0.229 inch minimum. The hole in the plate washer is permitted to be diagonally slotted with a width of up to 3/16 inch larger than the bolt diameter and a slot length not to exceed 1 3/4 inches, provided that a standard cut washer is placed between the plate washer and the nut.
- This table shall also be permitted for the spacing of the alternative connections specified in Section A304.3.1.
- See Figure A304.4.2 for braced panel layout.
- Braced panels at ends of walls shall be located as near to the end as possible.
- All panels along a wall shall be nearly equal in length and shall be nearly equal in spacing along the length of the wall.
- The minimum required underfloor ventilation openings are permitted in accordance with Section A304.4.4.

Sheet S1

**[BS] TABLE A304.3.2
SILL PLATE ANCHORAGE FOR VARIOUS LENGTHS OF SILL PLATE^{a, b}**

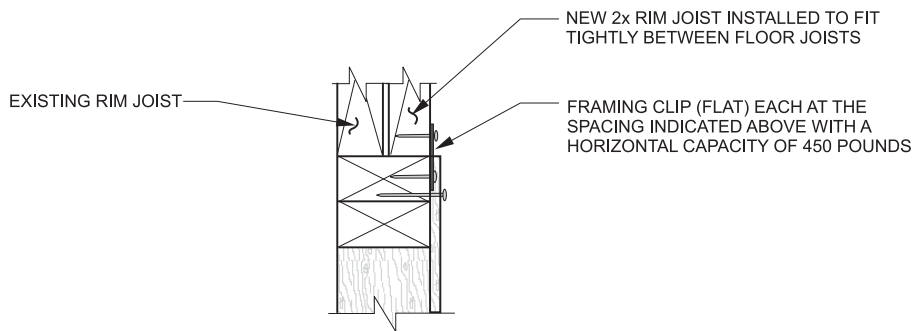
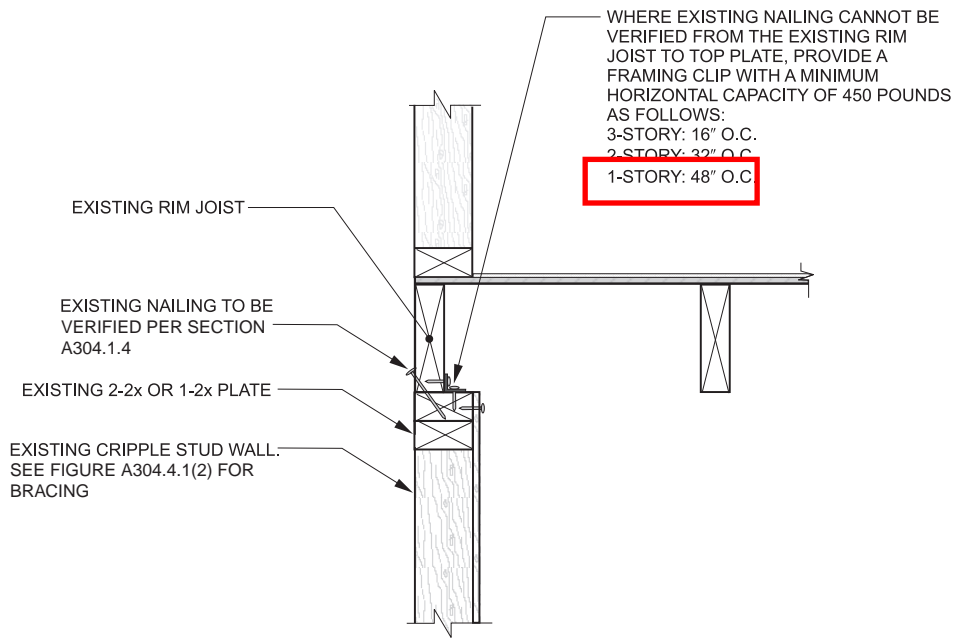
NUMBER OF STORIES	LENGTHS OF SILL PLATE		
	Less than 12 feet to 6 feet	Less than 6 feet to 30 inches	Less than 30 inches ^c
One story	Three connections	Two connections	One connection
Two stories	Four connections for $\frac{1}{2}$ -inch anchors or bolts or three connections for $\frac{5}{8}$ -inch anchors or bolts	Two connections	One connection
Three stories	Four connections	Two connections	One connection

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

- Connections shall be either adhesive anchors or expansion anchors.
- See Section A304.3.2 for minimum end distances.
- Connections shall be placed as near to the center of the length of plate as possible.

Sheet S2

APPENDIX A—GUIDELINES FOR THE SEISMIC RETROFIT OF EXISTING BUILDINGS



ALTERNATE CONNECTION FOR FLUSH CONNECTION

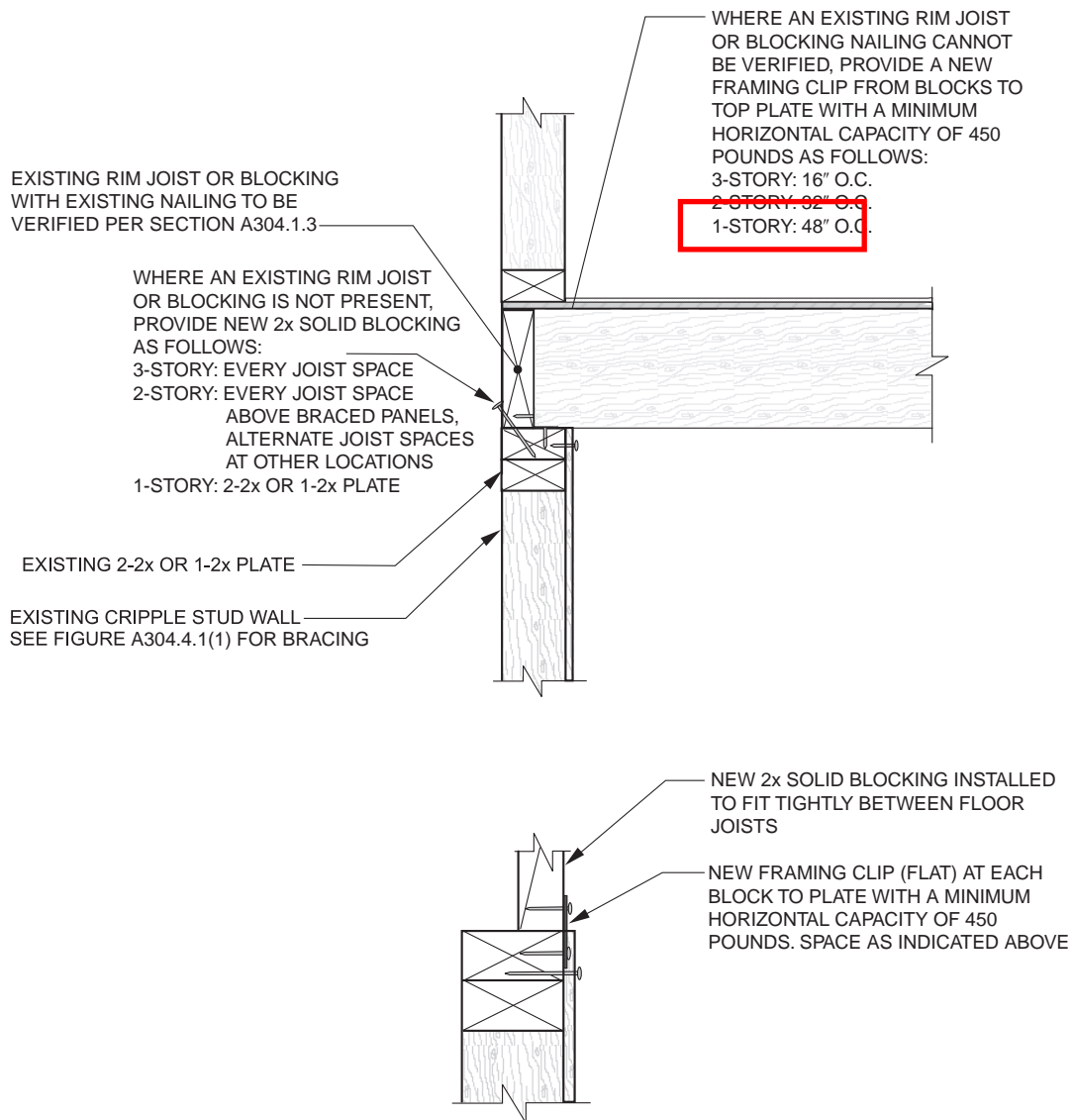
For SI: 1 inch = 25.4 mm, 1 pound = 4.4 N.

NOTE: See manufacturing instructions for nail sizes associated with metal framing clips.

[BS] FIGURE A304.1.4(1)
TYPICAL FLOOR TO CRIPPLE WALL CONNECTION (FLOOR JOISTS PARALLEL TO FOUNDATIONS)

Sheet S3

APPENDIX A—GUIDELINES FOR THE SEISMIC RETROFIT OF EXISTING BUILDINGS



ALTERNATE CONNECTION FOR FLUSH CONNECTION

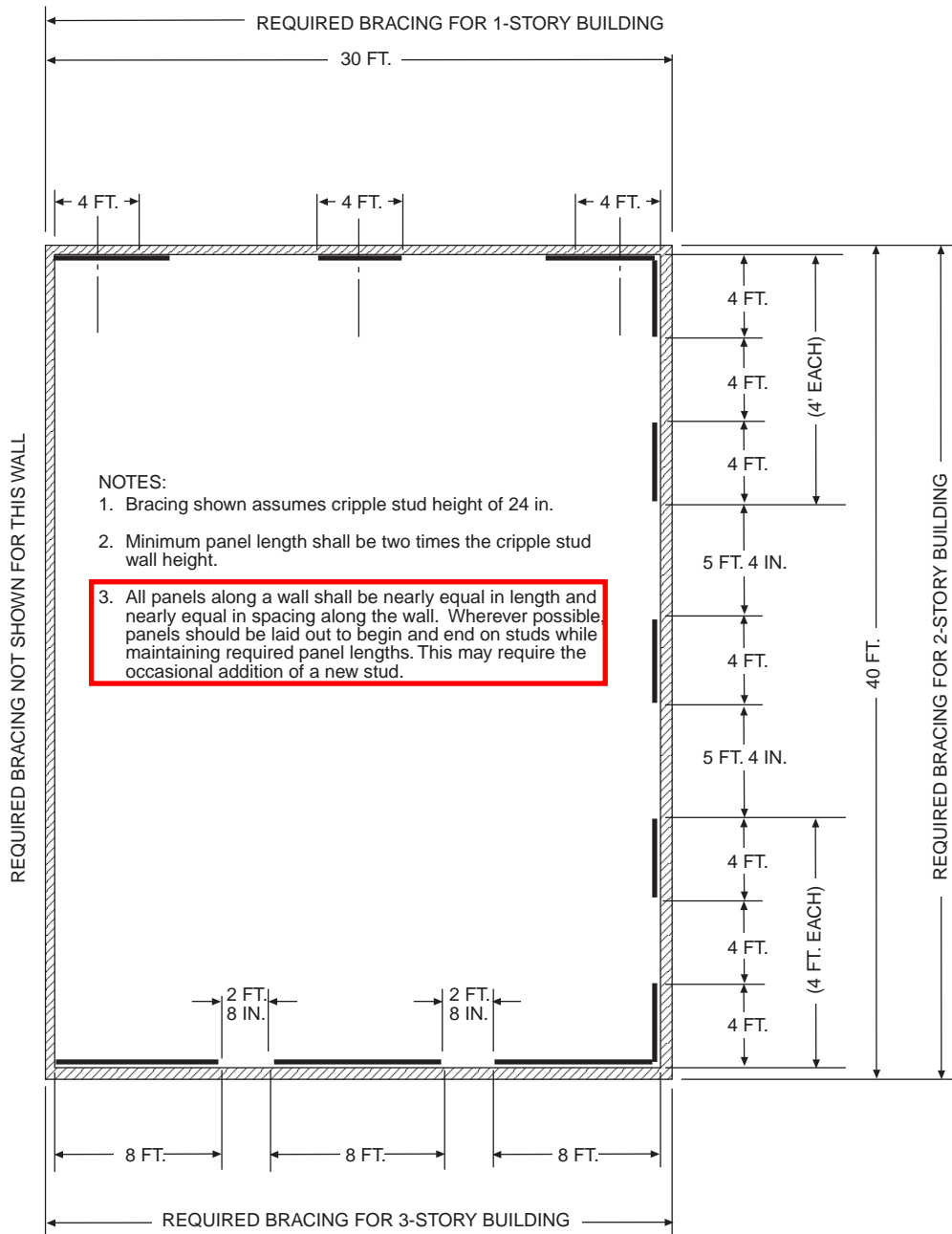
For SI: 1 inch = 25.4 mm, 1 pound = 4.4 N.

NOTE: See manufacturing instructions for nail sizes associated with metal framing clips.

[BS] FIGURE A304.1.3
TYPICAL FLOOR TO CRIPPLE WALL CONNECTION (FLOOR JOISTS NOT PARALLEL TO FOUNDATIONS)

Sheet S3.1

APPENDIX A—GUIDELINES FOR THE SEISMIC RETROFIT OF EXISTING BUILDINGS



Bracing determination:

1-story building—each end and not less than 40% of wall length.^a
 Transverse wall—30 ft. × 0.40 = 12 ft. minimum panel length = 4 ft. 0 in.

2-story building—each end and not less than 50% of wall length.^a
 Longitudinal wall—40 ft. × 0.50 = 20 ft. 0 in. minimum of bracing.

3-story building—each end and not less than 80% of wall length.^a
 Transverse wall—30 ft. × 0.80 = 24 ft. 0 in. minimum of bracing.

a. See Table 304.3.1 for buildings with both plaster walls and roofing exceeding 6 psf.

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 42.88 N/m².

Sheet S4

[BS] FIGURE A304.4.2 FLOOR PLAN-CRIPPLE WALL BRACING LAYOUT

APPENDIX A—GUIDELINES FOR THE SEISMIC RETROFIT OF EXISTING BUILDINGS

[BS] A304.5 Inspections. All work shall be subject to inspection by the code official including, but not limited to:

1. Placement and installation of new adhesive or expansion anchors installed in existing foundations. Special inspection *may be* required for adhesive anchors installed in existing foundations regulated by the prescriptive provisions of this chapter.
2. Installation and nailing of new cripple wall bracing.
3. Any work shall be subject to special inspection where required by the code official in accordance with the building code.

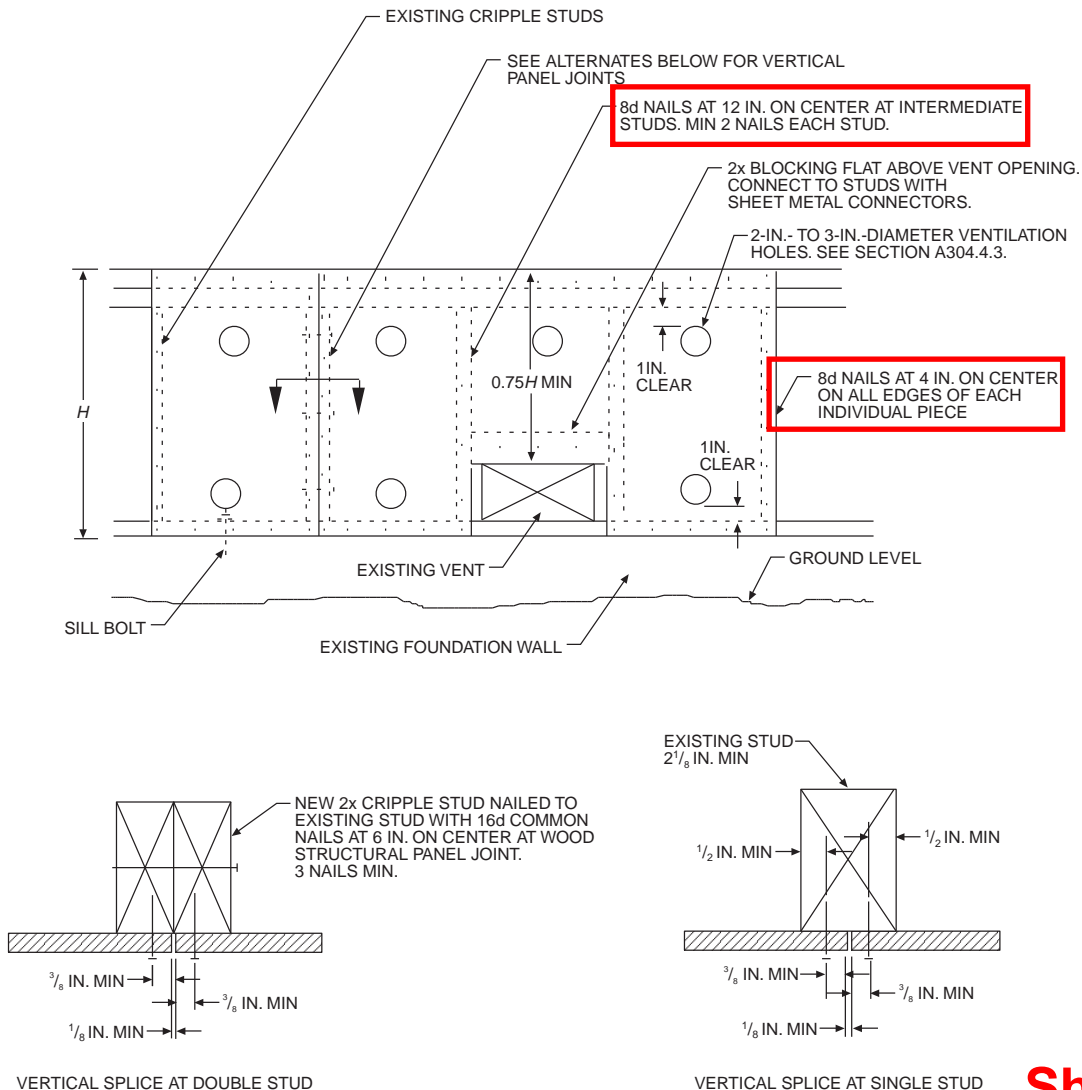
[BS] A304.5.1 Nails. All nails specified in this chapter shall be common wire nails of the following diameters and lengths:

1. 8d nails = 0.131 inch (3.3 mm) by 2½ inches (64 mm).

2. 10d nails = 0.148 inch (3.8 mm) by 3 inches (76 mm).
3. 12d nails = 0.148 inch (3.8 mm) by 3¼ inches (83 mm).
4. 16d nails = 0.162 inch (4.1 mm) by 3½ inches (89 mm).

Nails used to attach metal framing connectors directly to wood members shall be as specified by the connector manufacturer in an approved report.

A304.6 Phasing of the strengthening work. When approved by the Enforcing Agency, the strengthening work contained in this chapter may be completed in phases.



For SI: 1 inch = 25.4 mm.

**[BS] FIGURE A304.4.1(3)
PARTIAL CRIPPLE STUD WALL ELEVATION**

Sheet S5

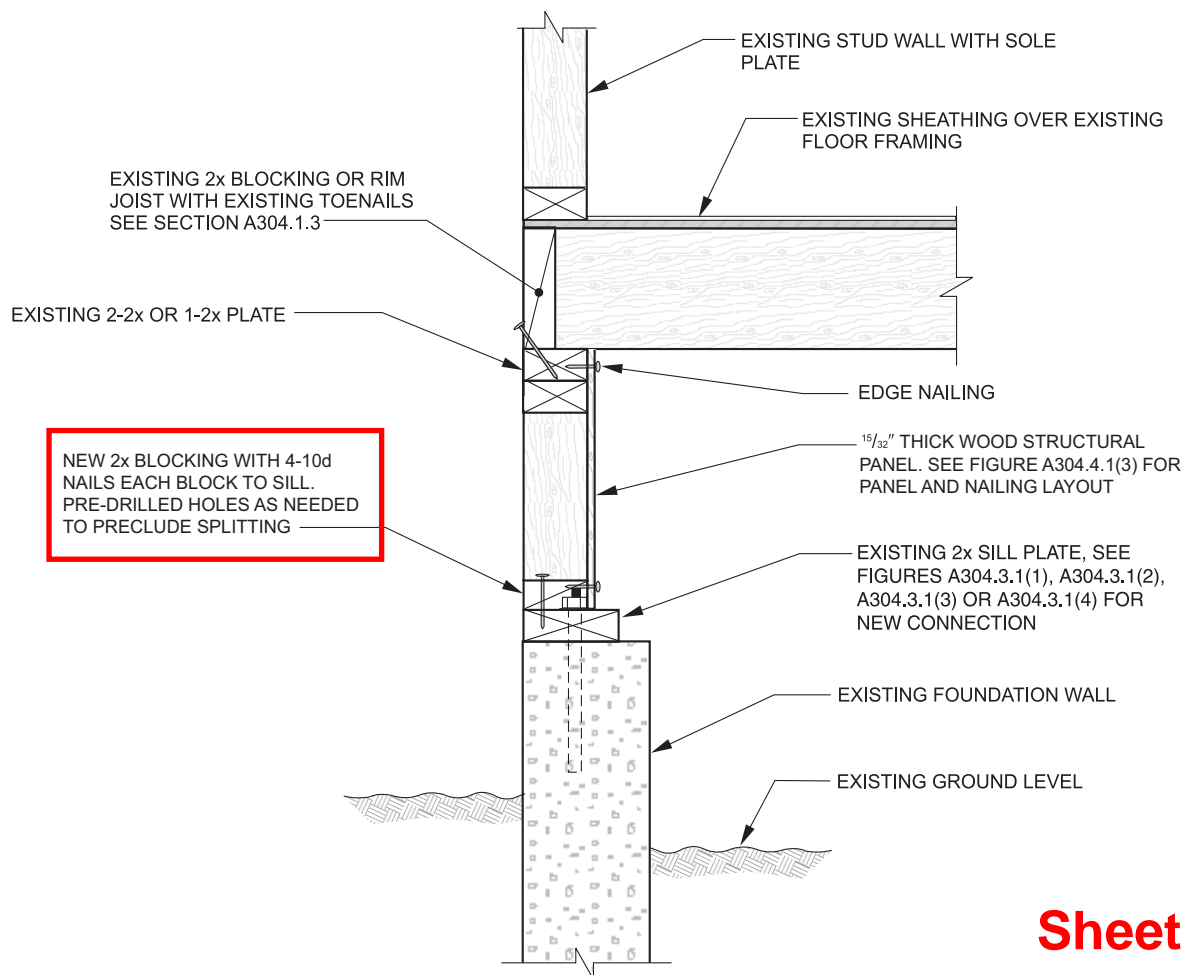
APPENDIX A—GUIDELINES FOR THE SEISMIC RETROFIT OF EXISTING BUILDINGS

[BS] A304.4.3 Stud space ventilation. Where bracing materials are installed on the interior face of studs forming an enclosed space between the new bracing and the existing exterior finish, each braced stud space must be ventilated. Adequate ventilation and access for future inspection shall be provided by drilling one 2-inch to 3-inch-diameter (51 mm to 76 mm) round hole through the sheathing, nearly centered between each stud at the top and bottom of the cripple wall. Such holes should be spaced not less than 1 inch (25 mm) clear from the sill or top plates. In stud spaces containing sill bolts, the hole shall be located on the centerline of the sill bolt but not closer than 1 inch (25 mm) from the nailing edge of the sheathing. Where existing blocking occurs within the stud space, additional ventilation holes shall be placed above and below the blocking, or the existing block shall be removed and a new nominal 2-inch by 4-inch (51 mm by 102 mm) block shall be installed with the nominal 4-inch (102 mm) dimension against the face of the plywood.

For stud heights less than 18 inches (457 mm), only one ventilation hole need be provided.

[BS] A304.4.4 Existing underfloor ventilation. Existing underfloor ventilation shall not be reduced without providing equivalent new ventilation as close to the existing ventilation as possible. Braced panels may include under-floor ventilation openings where the height of the opening, measured from the top of the foundation wall to the top of the opening, does not exceed 25 percent of the height of the cripple stud wall; however, the length of the panel shall be increased a distance equal to the length of the opening or one stud space minimum. Where an opening exceeds 25 percent of the cripple wall height, braced panels shall not be located where the opening occurs. See Figure A304.4.1(3).

Exception: For homes with a post and pier foundation system where a new continuous perimeter foundation system is being installed, new ventilation shall be provided in accordance with the building code.



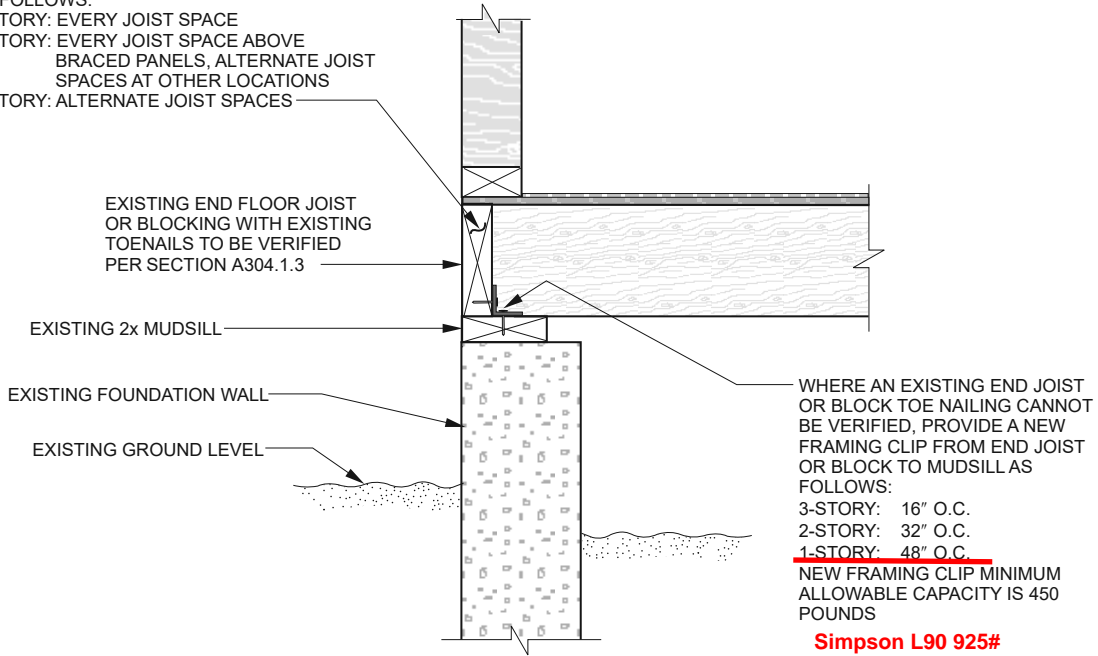
Sheet S6

For SI: 1 inch = 25.4 mm.

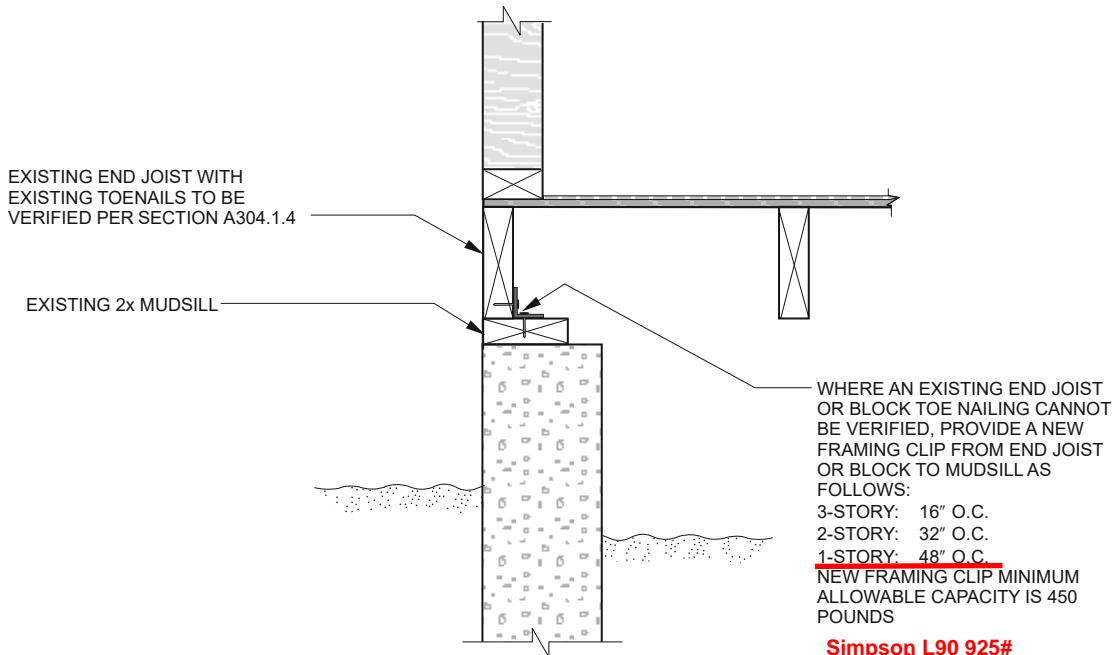
[BS] FIGURE A304.4.1(2)
CRIPPLE WALL BRACING WITH WOOD STRUCTURAL PANEL ON INTERIOR FACE OF CRIPPLE STUDS

APPENDIX A

WHERE AN EXISTING RIM JOIST OR BLOCKING IS NOT PRESENT, PROVIDE NEW 2x SOLID BLOCKING AS FOLLOWS:
 3-STORY: EVERY JOIST SPACE
 2-STORY: EVERY JOIST SPACE ABOVE BRACED PANELS, ALTERNATE JOIST SPACES AT OTHER LOCATIONS
 1-STORY: ALTERNATE JOIST SPACES



FLOOR JOISTS NOT PARALLEL TO FOUNDATIONS



FLOOR JOISTS PARALLEL TO FOUNDATIONS

For SI: 1 inch = 25.4 mm.

NOTES:

- 1. See Section A304.3 for sill plate anchorage.
- 2. See manufacturing instructions for nail sizes associated with metal framing clips.

Sheet S7

[BS] FIGURE A304.1.4(2)
TYPICAL FLOOR TO MUDSILL CONNECTIONS