Section R614 Add new section to read as shown: (RB34-06/07)

SECTION R614
STRUCTURAL INSULATED PANEL WALL CONSTRUCTION

R614.1 General. Structural insulated panel (SIP) walls shall be designed in accordance with the provisions of this section. When the provisions of this section are used to design structural insulated panel walls, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for design, unless otherwise required by the state law of the jurisdiction having authority.

R614.2 Applicability limits. The provisions of this section shall control the construction of exterior structural insulated panel walls and interior load-bearing structural insulated panel walls for buildings not greater than 60 feet (18 288 mm) in length perpendicular to the joist or truss span, not greater than 40 feet (10 973 mm) in width parallel to the joist span or truss and not greater than two stories in height with each story not greater than 10 feet (3048 mm) high. All exterior walls installed in accordance with the provisions of this section shall be considered as load-bearing walls. Structural insulated panel walls constructed in accordance with the provisions of this section shall be limited to sites subjected to a maximum design wind speed of 130 miles per hour, Exposure A, B or C, and a maximum ground snow load of 70 pounds per foot (3.35 kN/m^2), and Seismic Zones A, B, and C.

R614.3 Materials. Structural insulated panels (SIP) shall comply with the following criteria:

R614.3.1 Core. The core material of structural insulated panels (SIP) shall be composed of foam plastic insulation meeting the requirements of ASTM C 578, and shall have a minimum density of 0.90 lb/cu ft or an approved alternative. All cores shall meet the requirements of Section R314. Structural insulated panels (SIP) core insulation shall bear a label with the manufacturer identification, product standard and type, flame spread/smoke-developed index and the name of quality assurance agency.

R614.3.2 Facing. Facing materials for structural insulated panels shall be wood structural panels conforming to DOC PS 1 or DOC PS 2, each having a minimum nominal thickness of 7/16 inches (11 mm). Facing shall be identified by a grade mark or certificate of inspection issued by an approved agency. The facing materials shall meet the minimum qualification test values specified in Table R614.3.2.

TABLE R614.3.2
MINIMUM PROPERTIES FOR ORIENTED STRAND BOARD FACING MATERIAL IN SIP WALLS

Thickness (in.)	Product	Flatwise Stiffness[a] (lbf-in^2/ft)		Flatwise Strength[b] (lbf-in/ft)		Tension[b] (lbf/ft)		Density [a,c] (pcf)
		Along	Across	Along	Across	Along	Across	
7/16	Sheathing	54,700	27,100	950	870	6,800	6,500	35

For SI: 1 inch = 25.4 mm. 1 lbf-in^2/ft = 9.415 x 10^{-6} kiloNewton meter^2/meter, 1 lbf-in/ft = 3.707 x 10^{-4} kiloNewton meter/meter, 1 lbf/ft = 0.0146 Newton/millimeter, 1 pcf = 16.018 kilogram/meter^3.

a. Mean test value shall be in accordance with Section 7.6 of DOC PS2.
b. Characteristic test value (5th percent with 75% confidence).
c. Density shall be based on oven-dry weight and oven-dry volume.

R614.3.3 Adhesive. Adhesives used to structurally laminate the foam plastic insulation core material to the structural wood facers shall conform to ASTM D 2559 or approved alternative specifically intended for use as an adhesive used in the lamination of structural insulated panels. Each container of adhesive shall bear a label with the adhesive manufacturer name, adhesive name and type and the name of the quality assurance agency.

R614.3.4 Lumber. The minimum lumber framing materials used for SIPs prescribed in this document is NLGA graded No. 2 Spruce-pine-fir. Other wood species/grades that meet or exceed the mechanical properties and specific gravity of No. 2 Spruce-pine-fir shall be permitted for substitution.

R614.3.5 SIP screws. Screws used for the erection of SIPs as specified in Section R614.5 shall be provided by the SIPs manufacturer and shall be sized to fully penetrate the main member – the wood member to which the assembly is being attached.

R614.4 SIP wall panels. SIPs for wall systems shall comply with Figure R614.4 and shall have minimum panel thickness in accordance with Tables R614.5(1) and R614.5(2) for above-grade walls. All SIPs shall be identified by grade mark or certificate of inspection issued by an approved agency.

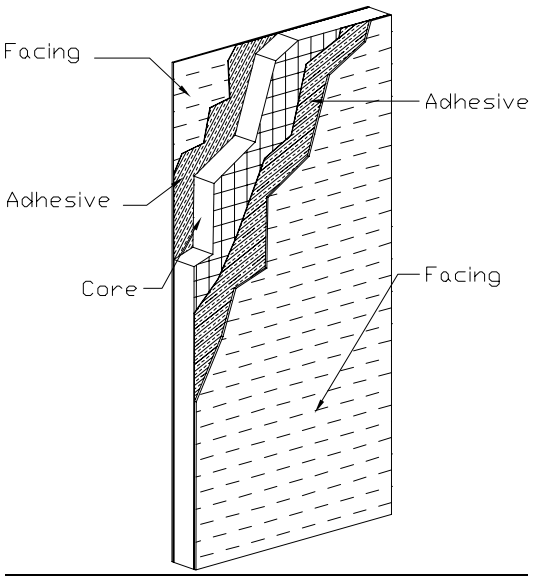


FIGURE R614.4
SIPS WALL PANEL

R614.4.1 Labeling. All panels shall be identified by grade mark or certificate of inspection issued by an approved agency. Each structural insulated panel shall bear a stamp or label with the following minimum information:

- Manufacturer name/logo.
- Identification of the assembly.
- Quality assurance agency.

R614.5 Wall construction. Exterior walls of structural insulated panel construction shall be designed and constructed in accordance with the provisions of this section and Tables R614.5(1) and R614.5(2) and Figures R614.5(1) and R614.5(2). Structural insulated panel walls shall be fastened through both facing surfaces to other wood building components in accordance with Tables R602.3(1) through R602.3(4).

Framing shall be attached in accordance with Section R602.3(1) unless otherwise provided for in Section R614.

TABLE R614.5(1)
MINIMUM THICKNESS FOR SIP WALL SUPPORTING
SIP OR LIGHT-FRAME ROOF ONLY (inches)

Wind Speed (3-sec. gust)		Snow	Building Width (ft)														
			24			28			32			36			40		
Exp. A/B	Exp. C	Load (psf)	Wall Height (ft)			Wall Height (ft)			Wall Height (ft)			Wall Height (ft)			Wall Height (ft)		
			8	9	10	8	9	10	8	9	10	8	9	10	8	9	10
85		20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		30	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		50	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		70	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
100	85	20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		30	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		50	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		70	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
110	100	20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		30	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		50	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		70	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
120	110	20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		30	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		50	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		70	4	4	4	4	4	4	4	4	4	4	4	6	4	4	6
130	120	20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		30	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		50	4	4	4	4	4	4	4	4	6	4	4	6	4	4	6
		70	4	4	4	4	4	6	4	4	6	4	6	N/A	4	6	N/A
	130	20	4	4	6	4	4	N/A	4	4	N/A	4	4	N/A	4	6	N/A
		30	4	4	N/A	4	4	N/A	4	4	N/A	4	6	N/A	4	6	N/A
		50	4	6	N/A	4	6	N/A	4	N/A	N/A	6	N/A	N/A	6	N/A	N/A
		70	4	N/A	N/A	6	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kN/m^2
Deflection criteria: L/240.
Roof load: 7 psf.
Ceiling load: 5 psf.
Wind loads based on Table R301.2(2).
N/A indicates not applicable.

TABLE R614.5(2)
MINIMUM THICKNESS FOR SIP WALLS SUPPORTING
SIP OR LIGHT-FRAME ONE STORY AND ROOF (inches)

Wind Speed (3-sec. gust)		Snow	Building Width (ft)														
			24			28			32			36			40		
Exp. A/B	Exp. C	Load (psf)	Wall Height (ft)			Wall Height (ft)			Wall Height (ft)			Wall Height (ft)			Wall Height (ft)		
			8	9	10	8	9	10	8	9	10	8	9	10	8	9	10
85		20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		30	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		50	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		70	4	4	4	4	4	4	4	4	4	4	4	6	6	6	6
100	85	20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		30	4	4	4	4	4	4	4	4	4	4	4	4	4	4	6
		50	4	4	4	4	4	4	4	4	4	4	4	6	4	6	6
		70	4	4	4	4	4	4	4	4	6	6	6	6	6	N/A	N/A
110	100	20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	6
		30	4	4	4	4	4	4	4	4	4	4	4	6	4	6	6
		50	4	4	4	4	4	4	4	4	6	4	6	6	6	6	N/A
		70	4	4	4	4	4	6	6	6	N/A	6	N/A	N/A	N/A	N/A	N/A
120	110	20	4	4	4	4	4	4	4	4	6	4	4	6	4	6	N/A
		30	4	4	4	4	4	6	4	4	6	4	6	N/A	6	6	N/A
		50	4	4	6	4	4	6	4	6	N/A	6	N/A	N/A	N/A	N/A	N/A
		70	4	4	6	4	6	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
130	120	20	4	4	6	4	4	6	4	6	N/A	4	6	N/A	6	N/A	N/A
		30	4	4	6	4	4	N/A	4	6	N/A	6	N/A	N/A	6	N/A	N/A
		50	4	6	N/A	4	6	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		70	4	6	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	130	20	6	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		30	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.
Deflection criteria: L/240.
Roof load: 7 psf.
Ceiling load: 5 psf.
Second floor live load: 30 psf.
Second floor dead load: 10 psf.
Second floor dead load from walls: 10 psf.
Wind loads based on Table R301.2(2).
N/A indicates not applicable.

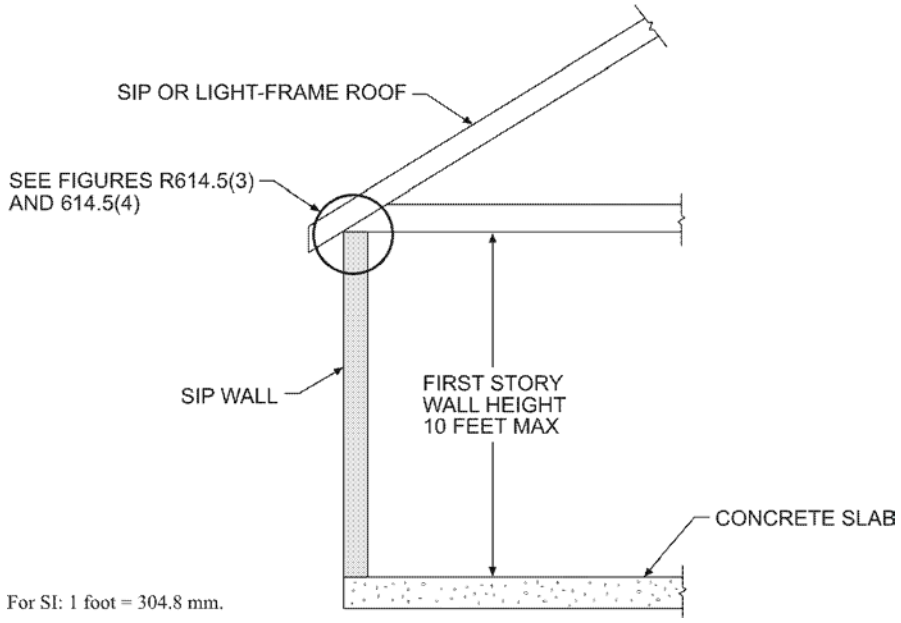


FIGURE R614.5(1)
MAXIMUM ALLOWABLE HEIGHT OF SIP WALLS

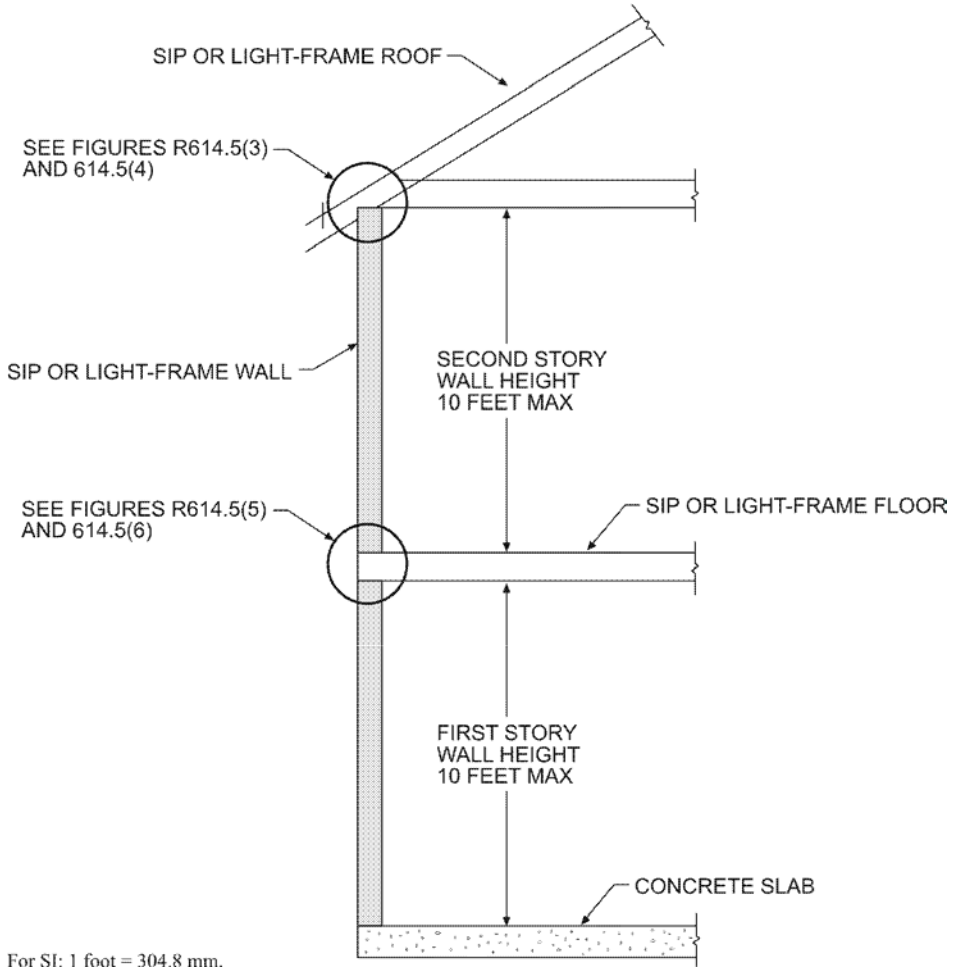
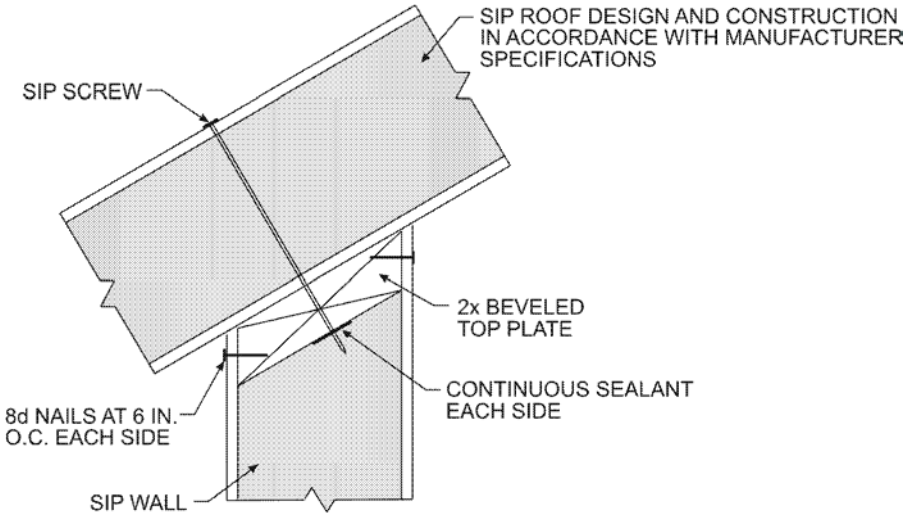
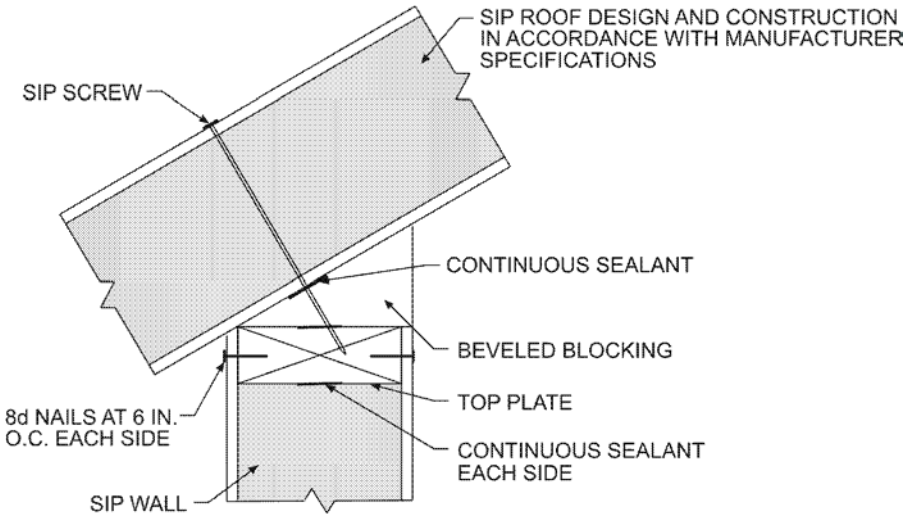


FIGURE R614.5(2)
MAXIMUM ALLOWABLE HEIGHT OF SIP WALLS



For SI: 1 inch = 25.4 mm.

FIGURE R614.5(3)
SIP WALL TO ROOF BEVELED TOP PLATE CONNECTION



For SI: 1 inch = 25.4 mm.

FIGURE R614.5(4)
SIP WALL TO ROOF BEVELED BLOCKING CONNECTION

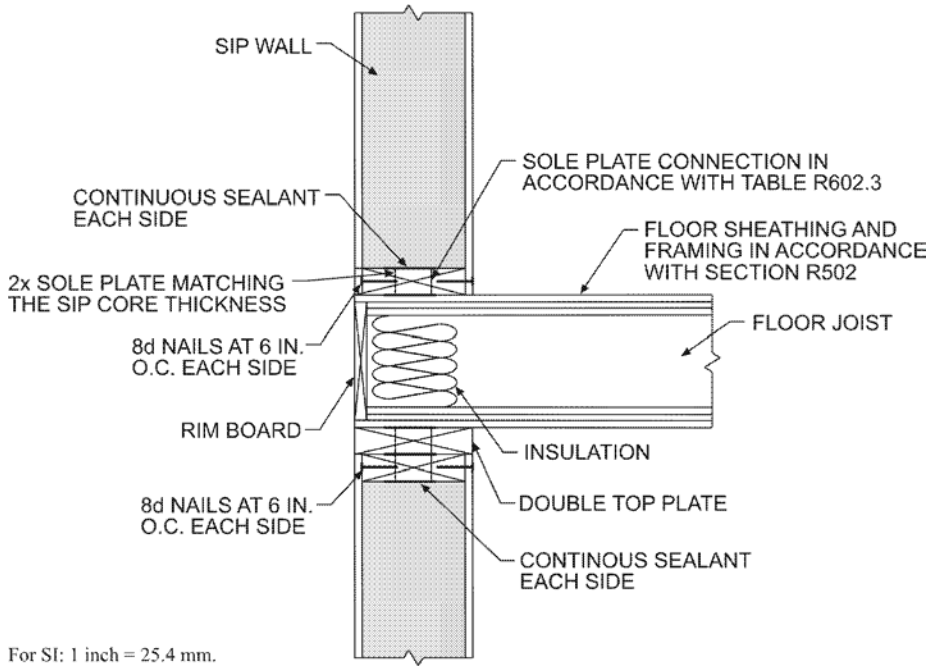


FIGURE R614.5(5)
SIP WALL TO WALL PLATFORM FRAME CONNECTION

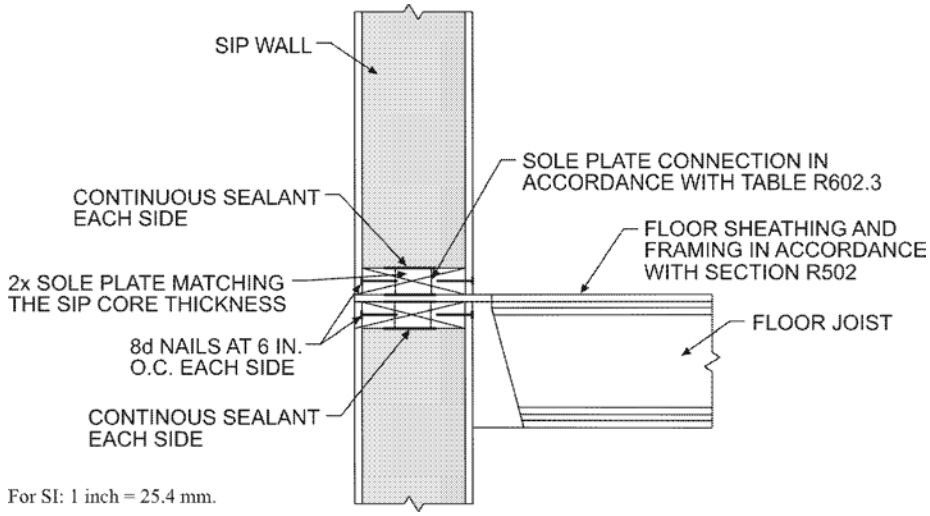
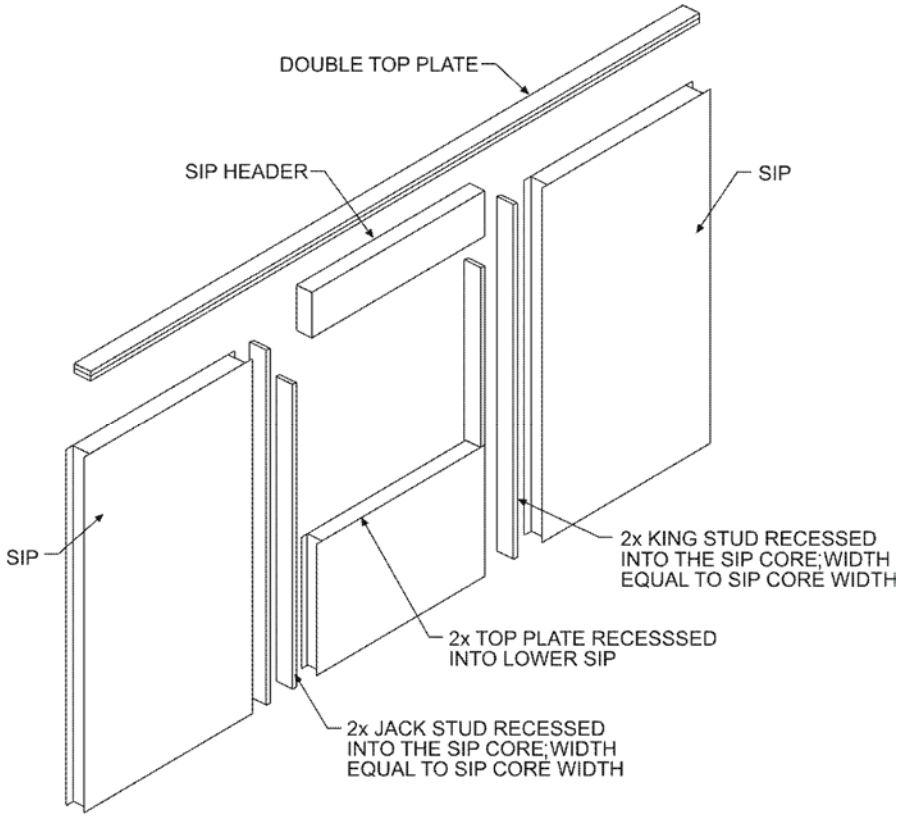


FIGURE R614.5(6)
SIP WALL TO WALL BALOON FRAME CONNECTION

R614.5.1 Top plate. Structural insulated panel walls shall be capped with a double top plate installed to provide overlapping at corner, intersections and splines in accordance with Figure R614.5.1. End joints in top plates shall be offset at least 24 inches (610 mm). Plates shall be a nominal 2 inches in depth (51 mm) and have a width equal to the width of the structural insulated panel core.

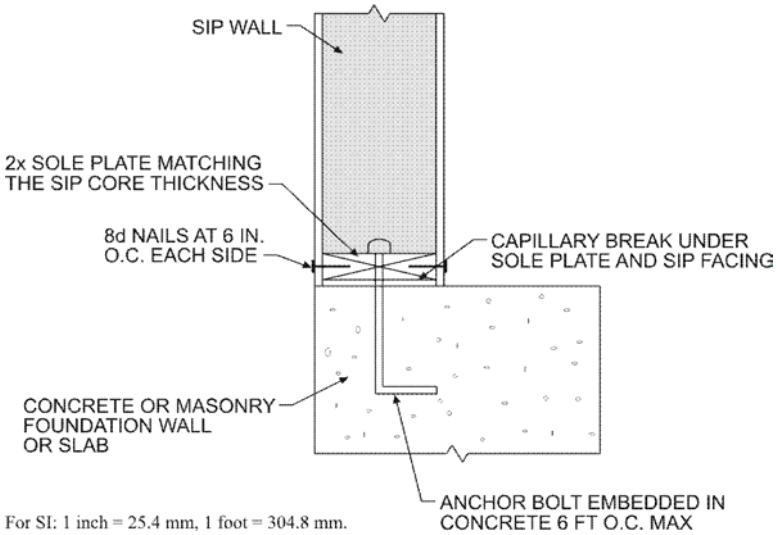


For SI: 1 inch = 25.4 mm.

Notes:
Top plates shall be continuous over header.
SIP facing surfaces shall be nailed to framing and cripples with 8d common galvanized box nails spaced 3 inches on center, staggering alternate nails ½ inch.
Galvanized nails shall be hot-dipped or tumbled. Framing shall be attached in accordance to Section R602.3(1) unless otherwise provide for in Section R614.

FIGURE R614.5.1
SIP WALL FRAMING CONFIGURATION

R614.5.2 Bottom (sole) plate. Structural insulated panel walls shall have full bearing on sole plate having a width equal to the nominal width of the foam core. When structural insulated wall panels are supported directly on continuous foundations, the wall wood sill plate shall be anchored to the foundation in accordance with Section R403.1.



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

FIGURE R614.5.2
SIP WALL TO CONCRETE SLAB OR FOUNDATION WALL ATTACHMENT

R614.5.3 Wall bracing. Structural insulated panel walls shall be braced in accordance with Section R602.10. SIP walls shall be considered continuous wood structural panel sheathing for purposes of computing required percent bracing. SIP walls shall meet the requirements of Section R602.10.5 except that SIPs corners shall be fabricated as shown in Figure R614.9.

R614.6 Interior load-bearing walls. Interior load-bearing walls shall be constructed as specified for exterior walls.

R614.7 Drilling and notching. The maximum vertical chase penetration in SIPs shall have a maximum side dimension of 2 inches (51 mm) centered in the panel core. Vertical chases shall have a minimum spacing of 24-inches (610 mm) on center. Maximum of two horizontal chases shall be permitted in each wall panel – one at 14 inches (360 mm) from the bottom of the panel and one at mid-height of the wall panel. The maximum allowable penetration size in a wall panel shall be circular or rectangular with a maximum dimension of 12 inches (300 mm). Overcutting of holes in facing panels shall not be permitted.

R614.8 Splicing. Structural insulated panels shall be spliced in accordance with Figure R614.8 or by another approved method.

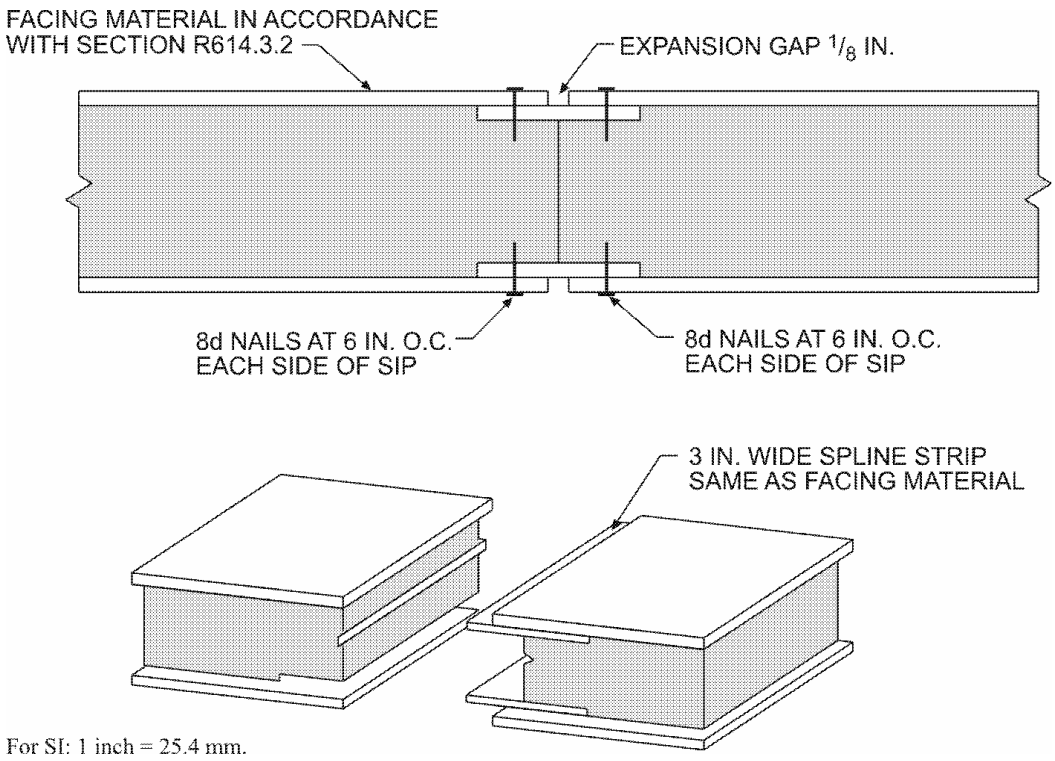


FIGURE R614.8
TYPICAL SIP SPLICING DETAILS

R614.9 Corner framing. Corner framing of structural insulated panel walls shall be constructed in accordance with Figure R614.9.

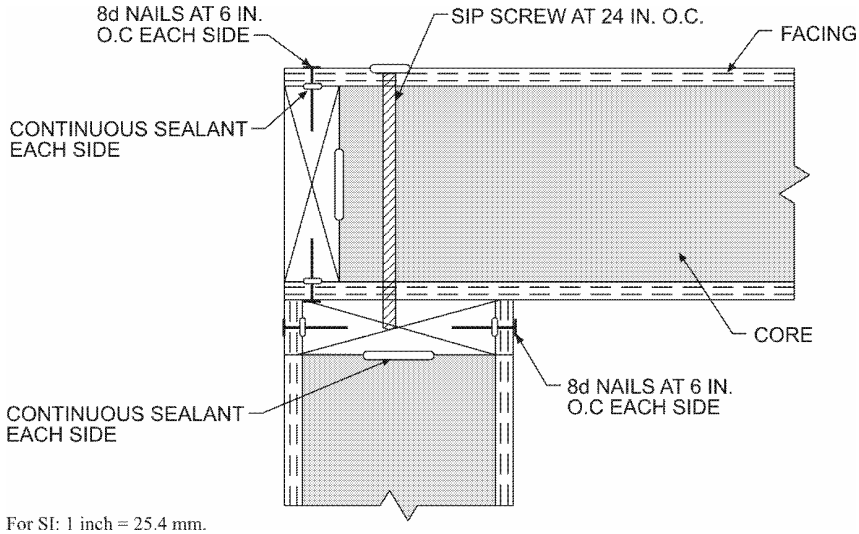


FIGURE R614.9
SIP CORNER FRAMING DETAIL

R614.10 Headers. Structural insulated panel headers shall be designed and constructed in accordance with Table R614.10 and Figure R614.5.1(1). SIPs headers shall be continuous sections without splines. Headers longer than 4 feet (1219 mm) should be constructed in accordance with Section R602.7.

TABLE R614.10
MAXIMUM SPANS FOR SIP HEADERS (feet)

Load Condition	Snow Load (psf)	Building Width (ft)				
		24	28	32	36	40
Supporting Roof Only	20	4	4	4	4	2
	30	4	4	4	2	2
	50	2	2	2	2	2
	70	2	2	2	N/A	N/A
Supporting Roof and One-Story	20	2	2	N/A	N/A	N/A
	30	2	2	N/A	N/A	N/A
	50	2	N/A	N/A	N/A	N/A
	70	N/A	N/A	N/A	N/A	N/A

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.
Deflection criteria: L/360.
Roof load: 7 psf.
Ceiling load: 5 psf.
Second floor live load: 30 psf.
Second floor dead load: 10 psf.
Second floor dead load from walls: 10 psf.
N/A indicates not applicable.

R614.10.1 Wood structural panel box headers. Wood structural panel box headers shall be allowed where structural insulated panel headers are not applicable. Wood structural panel box headers shall be constructed in accordance with Figure R602.7.2 and Table R602.7.2.