

## Technical Tip

### 7/16" ZIP System Sheathing VS. 15/32" Plywood or OSB Sheathing

Allowable design shear values are based on panel thickness, panel grade and fastener type, size and spacing. Therefore, typical plywood, OSB and ZIP System® sheathing, assuming they are the same thickness and panel grade, resist the same amount of allowable shear in accordance with Section 4.3 of the 2008 Special Design Provisions for Wind and Seismic (SDPWS) and Ch. 23 of the International Building Code (IBC).

#### Sheathing Panel Grades

- Sheathing Span –
  - Can be used as structural sheathing material for roofs, subfloors, and walls. (OSB, Plywood)
- Structural 1 –
  - Meets additional requirements for cross-panel strength and stiffness, as well as requirements for racking shear. (OSB, Plywood)
  - Beneficial for Panelized Roofs, Diaphragms and Shear Wall applications and vertical orientation of wall sheathing.

Table 1: Allowable Shear (plf) for Wood Structural Panel Shear Walls for Wind or Seismic Loading<sup>a</sup>

Panel Grade	Panel Thickness (inch)	O.C. Fastener Spacing at Panel Edges (inches) <sup>c</sup>			
		6	4	3	2 <sup>d</sup>
Structural 1 Sheathing	7/16 <sup>b</sup>	255 <sup>b</sup>	395 <sup>b</sup>	505 <sup>b</sup>	670 <sup>b</sup>
	15/32	280	430	550	730
Sheathing	7/16 <sup>b</sup>	240 <sup>b</sup>	350 <sup>b</sup>	450 <sup>b</sup>	585 <sup>b</sup>
	15/32	260	380	490	640

- a. See Table 2306.3 (with addendum) in Chapter 23 of the 2009 International Building Code for a full list of shear capacities.
- b. Allowable shear values are permitted to be increased to values shown for 15/32-inch sheathing with same nailing provided (a) studs are spaced a maximum of 16 inches on center, or (b) panels are applied with long dimension across studs.
- c. Fasteners are 8d common and are spaced a maximum of 12" o.c. in-field of panel.
- d. Framing at adjoining panel edges shall be 3 inches nominal or wider, and nails at all panel edges shall be staggered where panel edge nailing is specified at 2 inches on center or less.

#### Shear Value Comparison - Panel Grade

Example: 7/16" Sheathing vs. 7/16" Structural 1 (Fastened at 6" o.c. edge / 12" o.c. field)

Table 2: Allowable Shear (plf) Capacities – Panel Grade Comparison

Panel Grade	Panel Thickness	6" o.c. Fastener Spacing
Sheathing	7/16"	240 plf
Structural 1 Sheathing	7/16"	255 plf

Panel grade comparison: Structural 1 provides a 15 plf shear capacity increase.

**Note:** 7/16" thick, long-length (4'x9', 4'x10') ZIP System sheathing panels are stamped with a Structural 1 panel grade. 7/16" (4'x8') ZIP System sheathing panels may be available as Structural 1 by special order.

**Shear Value Comparison – Panel Thickness**

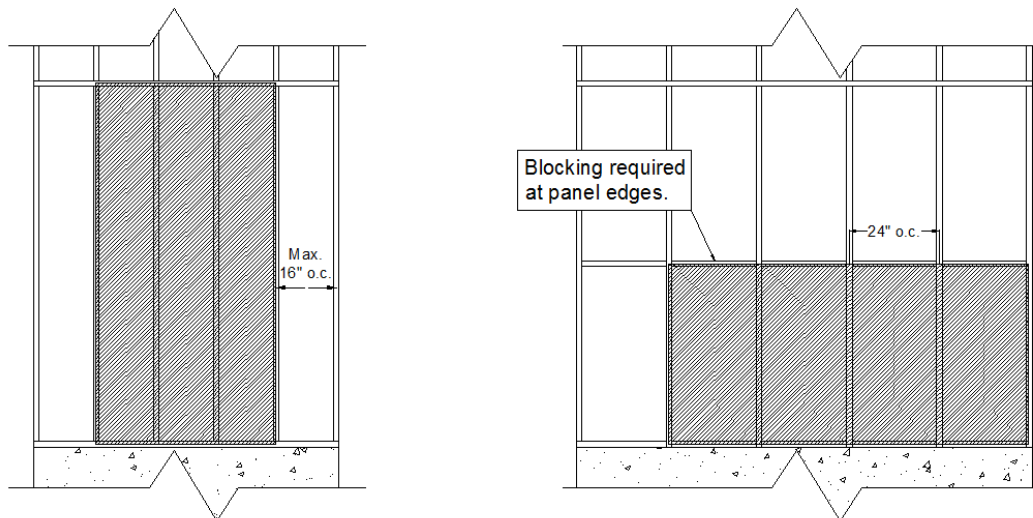
Example: 15/32" Sheathing vs. 7/16" Sheathing (Fastened at 6" o.c. edge / 12" o.c. field)

Table 3: Allowable Shear (plf) Capacities – Panel Thickness Comparison

Panel Grade	Panel Thickness	6" o.c. Fastener Spacing
Sheathing	7/16"	240 plf
	15/32"	260 plf

Thickness comparison: 15/32" panels provide a 20 plf shear capacity increase over 7/16" panels. However, if 7/16" sheathing panels are installed at a maximum 16" o.c. or installed with the long dimension across studs, the shear values can be increased to 15/32" values (*Table 2306.3- 2009 IBC, subnote d./Table 4.3A- 2008 SDPWS, subnote 2.*).

**Allowable shear values for 7/16" sheathing are permitted to be increased to values shown for 15/32" sheathing provided:**



Studs are spaced a maximum 16" on-center **OR** Panels are installed with long dimension (8' edge) across studs.

**Note:** 7/16" Structural 1 rated sheathing shear values ≈ 15/32" sheathing values.



Shear is nominally increased by increasing panel thickness but greatly increased by decreasing the fastener spacing on the panel edges.

Table 4: Allowable Shear (plf) Capacities – Fastener Spacing Comparison

Panel Grade	Panel Thickness	O.C. Fastener Spacing at Panel Edges (inches)		
		6	4	3
Sheathing	7/16"	240 plf	350 plf	450 plf

Tightening the panel fastening schedule from 6" o.c. → 3" o.c. provides a **210 plf** shear capacity increase.

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