TECO BUILDING CONFIDENCE

TECH TIP

Wood Structural Panel Edge Clips (H-clips)

A panel edge clip (often called an H-clip) is typically a small piece of galvanized metal that is placed between adjacent wood structural sheathing panels at a location between supporting joists or trusses and/or rafters to provide support to panel edges. The common thickness of the H-clip sheet metal is between 18 and 20 gauge (1.21 mm and 0.91 mm).

In general, H-clips are used to reduce the effective spacing of the framing members by improving the load distribution across the panel width (4-foot ends), increasing the stiffness of the roof and/or floor deck. In addition, H-clips provide the recommended spacing between two adjoining panel edges, allowing room for panel expansion if the panels get wet during construction (see Figure 1).

Because H-clips are not load rated, code approval is not required. Based on gravity loading requirements, building codes often require that H-clips or other means such as tongue-and-groove edges or lumber blocking be used to support panel edges. H-clips are an alternative to solid lumber blocking and tongue-and-groove panel edges.

Panel edge support requirements under uniform gravity loads are provided in TECO's *OSB and Plywood Design and Application Guides*, TECO's code evaluation reports ER-5637 and NER-133, and similar tables in the various model building codes. Table 10 of the *OSB Design and Application Guide* and Table 12 of the *Plywood Design and Application Guide* list allowable live loads for SHEATHING SPAN® and FLOOR SPAN® panels when used with the primary panel axis perpendicular to supports. This table contains columns for maximum spans with and without edge support for each span rating.

As an example, installing 7/16" OSB or plywood roof sheathing panels on top of the trusses and/or rafters spaced at 24" on center without H-clips is allowed by code and by the performance standard on the grade stamp; however, the roof sheathing may be springy or feel "soft." If we place the H-clip at the halfway point (12") between the trusses and/or rafters, the adjoining sheathing panel stiffens considerably. As a result, the fastening of the roof shingles will be easier and the roof will remain flatter and more "in plane" over time (i.e., no sags and/or bowing due to accumulated load). Please refer to the yellow shaded row in Table 1 below.

The effectiveness and load distribution attributes of the H-clip can be illustrated with an example of 32/16-span rated SHEATHING SPAN® panels that can span up to 32 inches with edge support (i.e., if panel edge clips or other edge support is used) but only 28 inches when no edge support is provided. Therefore, a 32/16-span rated SHEATHING SPAN® panel used for roof sheathing over supports spaced at 24 inches on center can support a uniform live load of 70 psf and panel clips or other edge support would not be required. Please refer to the green shaded row in Table 1 below.

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H-clips should be installed as follows:

- One H-clip shall be placed between abutting panels at a location midway between each pair of trusses, rafters, or joists. However, two (2) H-clips are required between supports when spaced 48 inches on center.
- Use the same size panel edge clip as the panel thickness. H-clips must fit snugly.
- Abutting wood structural panels shall be fitted as closely as clips permit. Occasional misfit of abutting sheets may be tolerated providing that gaps do not exceed maximum opening of 1/4" (6mm).

Mis-spaced, embedded and/or damaged H-clips may reduce their effectiveness to transfer and resist load. Panel bowing and/or buckling is often observed at locations where clips are damaged and/or where they are placed more than half-way between the trusses or rafters (see Figure 2).

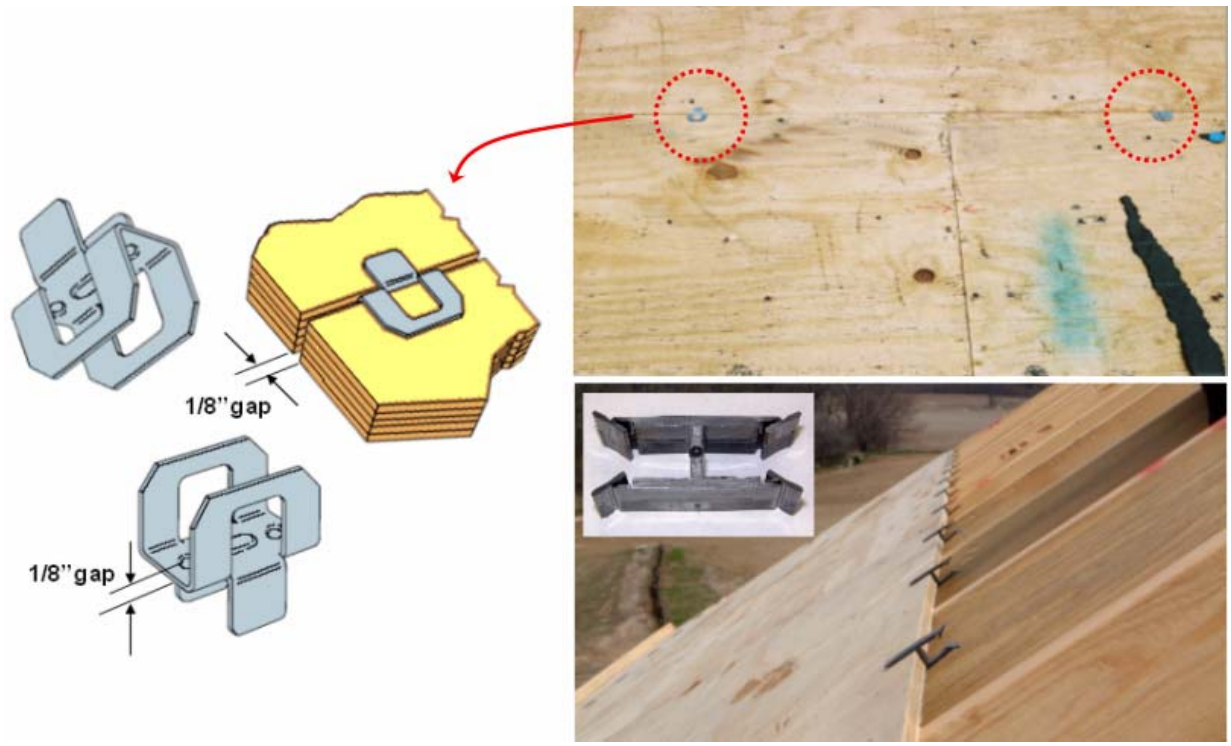

Figure 1.

Left: Galvanized steel H-clip.

Top right: H-clip installed between adjacent roof sheathing panels and in between supporting trusses.

Bottom right: Preloaded nylon (plastic) H-clip and ready for next row of plywood sheathing panels.

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Table 1.

Allowable uniform roof live loads for SHEATHING SPAN® panels (strength axis perpendicular to supports)[1]

SPAN RATING	**NOMINAL PANEL THICKNESS** (inch)	**MAXIMUM SPAN** (inches)		**ALLOWABLE LIVE LOAD**[2] (psf)								
		With edge support[3]	**Without edge support**	**Spacing of supports center-to-center** (inches)								
				12	**16**	**19.2**	**24**	**32**	**40**	**48**	**54**	**60**
20/0	5/16, 11/32	20	20	120	50	30						
24/0	3/8	24	20	190	100	60	30					
24/16	**7/16**	**24**	**24**	**190**	**100**	**65**	**40**					
32/16	**15/32, 1/2**	**32**	**28**		**180**	**120**	**70**	**30**				
40/20	19/32, 5/8	40	32			205	130	60	30			
48/24	23/32, 3/4	48	36				175	95	45	35		
54/32	7/8, 1	54	40					130	75	50	35	
60/32	7/8, 1	60	40					165	100	70	50	35
60/48	7/8, 1, 1-1/8	60	48					165	100	70	50	35

SI units: 1 inch = 25.4 mm; 1 psf = 47.9 Pa

1. Panels shall be a minimum of 24 inches wide.
2. The allowable spans were determined using a dead load of 10 psf. If the dead load exceeds 10 psf then the live load shall be reduced accordingly.
3. Tongue-and-groove edges, panel edge clips (one between each support, except two between supports 48 inches on center), lumber blocking or other. Only lumber blocking will satisfy blocked diaphragm requirements of IBC 2003 and 2006 Tables 2306.3.1 and 2306.3.2.

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Figure 2.

Top: Buckling of plywood roof sheathing due to misplaced panel H-clip.

Bottom: Buckling and/or bowing of the overlaid OSB roof sheathing due to misplaced and missing panel H-clip.