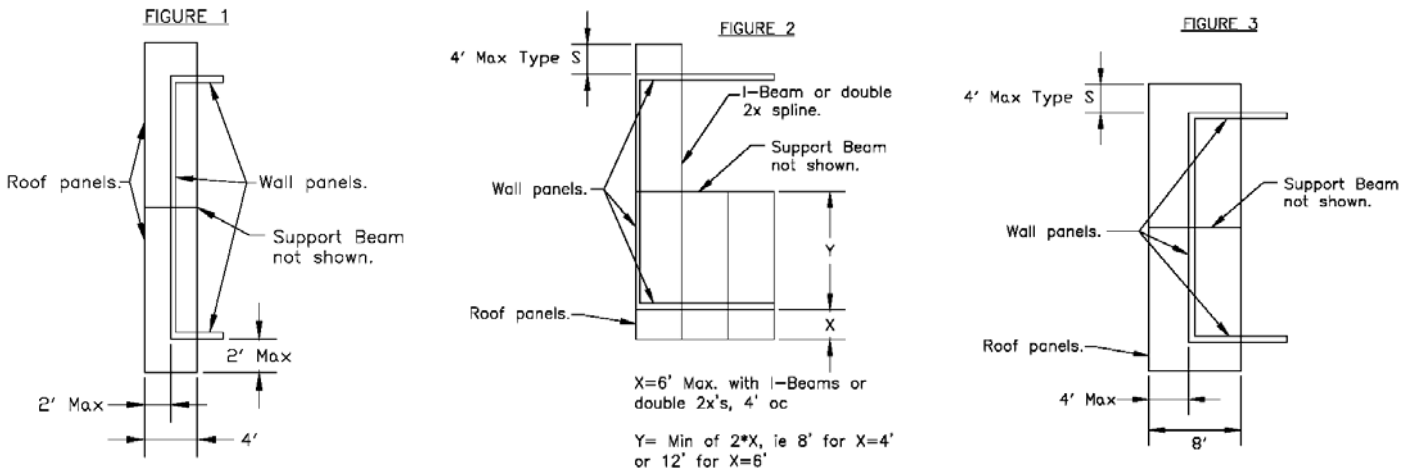


ROOF PANELS IN CANTILEVER CONDITIONS

Structural Insulated Panels produced by Premier Building Systems are used in many applications in which the panel creates the eave and gable end overhangs on a roof. This assembly is a cantilever condition, given the one end of the panel is not supported. The use of panels to create the overhangs is advantageous as it speeds the construction of the project and saves labor costs associated with hand framing. Some areas of the country use relatively small eaves while other portions of the country prefer larger overhangs. Premier Building Systems has had their structural insulated panels evaluated through a series of full scale destructive tests at an independent code recognized laboratory to determine the capabilities of Premier Panels in cantilever applications. These full scale tests followed ASTM E-72 parameters for loading and monitoring deflection of the tested panels. The following addresses the capabilities of Premier Panels when installed in a cantilever application for roof overhangs.

When evaluating overhangs or cantilevers we must consider how the panel is to be used on the roof. The two applications that are possible include having the panel parallel to the support wall (FIGURE 1 and FIGURE 3) and having the panel perpendicular to the support wall (FIGURE 2). Panels installed perpendicular to the support wall are capable of supporting greater overhangs.



Premier Panels used to create overhangs on gable end walls or on eave applications where the panel is parallel to the support wall can be used up to 2' in unsupported overhangs (FIGURE 1). Panels used parallel to the support wall can support loads indicated in the "Cantilevered Roof Panels Parallel to Support Wall – Type "S" Panel Capacity" load chart shown below.

Applications that allow for 8' panel widths may have overhangs of up to 4' when applied parallel as described above (FIGURE 3). Four-foot overhangs of this type have load capacities

BULLETIN # 3B

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equal to the loads indicated in the “Cantilevered Roof Panels Parallel to Support Wall – Type “S” Panel Capacity” load chart shown below.

Standard splined or Type S Panels (detail PBS-005) that are perpendicular to the support wall are capable of supporting 4' horizontal span overhangs provided the panel extends back onto the roof a minimum of twice the distance of the overhang span.

In situations where increased loads are required or where an overhang greater than 4' is desired, Premier Panels that utilize double 2x's or wood I-beams as the splining mechanism (PBS-006 or PBS-007) can be used. These applications are created when the panels are perpendicular to the support wall and the panels extend back on to the roof to a support, a minimum distance of twice the length of the overhang. When the double 2x or wood I-beams are used at a frequency of 4'o.c., as the attachment spline between panels, overhangs of up to 6' can be achieved.

Greater loads can be achieved if the double 2x's or wood I-beams are used at a frequency of 2'o.c. Overhangs of up to 6' feet of horizontal projection are possible. As stated earlier, the panel assembly must extend back onto the roof, to a support, at a minimum twice the intended overhang horizontal span.

Refer to the load chart “Cantilevered Roof Panels Perpendicular to Support Wall (Figure 2) Panel Capacity”, shown below, for load capacities of cantilevered roof panels in these cases.

Cantilevered Roof Panels Parallel to Support Wall - Type "S" Panel Capacity (psf)		
Panel Core Thickness	Figure 1	Figure 3
	2' Maximum Cantilever	4' Maximum Cantilever
3 ½"	81*	41*
5 ½"	114*	57*
7 ¼"	149*	75*
9 ¼"	161*	81*
11 ¼"	166*	83*

* Value is less than the ultimate load divided by a safety factor of three.

Cantilevered Roof Panels Perpendicular to Support Wall (Figure 2) Panel Capacity (psf)					
Panel Core Thickness	Type "S" Panel	Type "L" or "I" Panels with Splines 4' o.c.		Type "L" or "I" Panels with Splines 2' o.c.	
	4' cantilever with minimum 8' back span	4' cantilever with minimum 8' back span	6' cantilever with minimum 12' back span	4' cantilever with minimum 8' back span	6' cantilever with minimum 12' back span
3 ½"	41*	53*	54*	81*	53*
5 ½"	57*	87*	67*	114*	87*
7 ¼"	75*	115*	84*	149*	115*
9 ¼"	81*	125*	91*	161*	125*
11 ¼"	83*	129*	93*	166*	129*

* Value is less than the ultimate load divided by a safety factor of three.