

# GLULAM PURLINS FOR PANELIZED ROOFS

Number EWS R485C

October 2000

A purlin is a secondary roof framing member that supports other smaller members. In a panelized roof system, purlins are supported by main carrying members. The purlins, in turn, support stiffeners (sometimes called sub-purlins) which provide support framing for the structural panel deck. See Figure 1.

Panelized roof purlins are typically spaced at 8 feet center-to-center, to match the typical length of structural wood panels. Purlin spans range from 20 feet to 40 feet or more.

Table 1 presents allowable spans for 2-1/2-inch-wide glulams of various depths and design stresses for two common roof uniform loads. Although 2-1/2 inches is the most commonly used width for glulam panelized roof purlins, other widths are available and allowable loads are tabulated in *EWS Data File: Glued Laminated Beam Design Tables*, Form EWS S475.

The spans in the table are for glulam manufactured using Douglas-fir; however, glulam manufactured from other species having equivalent design properties and size may be substituted. Allowable spans are based upon bending strength, shear strength, or stiffness, whichever governs the design. The stiffness limitation is 1/180 of the span, under live load plus dead load. The listed dead load is assumed to include the dead load of the purlin reduced to a per-square-foot basis.

The table can be used to size purlins for preliminary design. Volume factor,  $C_v$ , has been included per the 1997 Edition of the American Forest & Paper Association's National Design Specification for Wood Construction (NDS)<sup>®</sup> for western species. The table also assumes continuous lateral support of the top edge. **Final design should include a complete analysis, including bearing stresses and lateral stability.**

FIGURE 1

## PANELIZED ROOF FRAMING

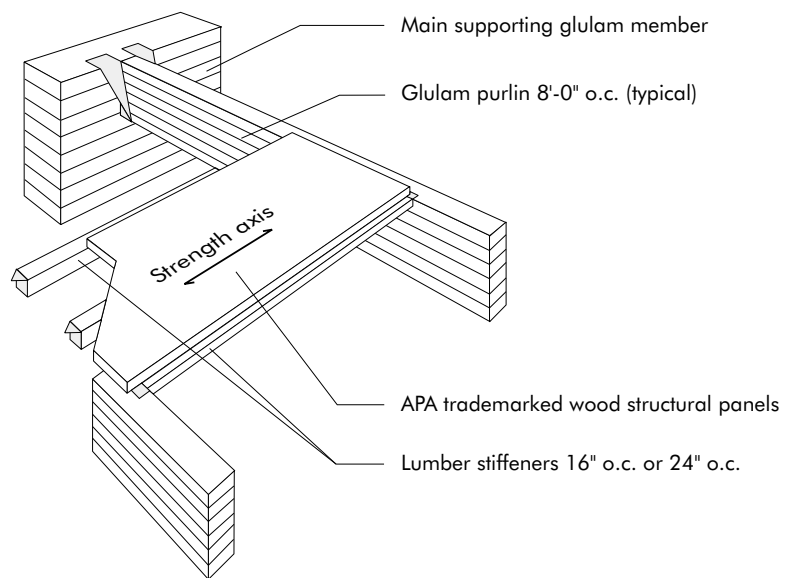


TABLE 1

**ALLOWABLE SPANS FOR 2-1/2-IN.-WIDE DOUGLAS-FIR GLULAM AT 8 FT. ON CENTER**

**Snow Load = 25 psf<sup>(b)</sup>  
Dead Load = 10 psf**

Depth (inches)	E = 1,600,000 psi F <sub>b</sub> = 2,000 psi F <sub>v</sub> = 240 psi	E = 1,800,000 psi F <sub>b</sub> = 2,400 psi F <sub>v</sub> = 240 psi
	12	18'-1"
13-1/2	20'-4"	21'-4"
15	22'-7"	23'-9"
16-1/2	24'-11"	26'-1"
18	27'-2"	28'-6"
19-1/2	29'-3"	30'-10"
21	31'-4"	33'-3"
22-1/2	33'-4"	35'-7"
24	35'-4"	38'-0"
25-1/2	37'-4"	40'-4"
27	39'-4"	42'-8"
28-1/2	41'-3"	45'-0"
30	43'-3"	47'-1"

**Non-Snow Load = 20 psf<sup>(a)(c)</sup>  
Dead Load = 10 psf**

Depth (inches)	E = 1,600,000 psi F <sub>b</sub> = 2,000 psi F <sub>v</sub> = 240 psi	E = 1,800,000 psi F <sub>b</sub> = 2,400 psi F <sub>v</sub> = 240 psi
	12	19'-2"
13-1/2	21'-7"	22'-6"
15	24'-0"	25'-0"
16-1/2	27'-8"	28'-10"
18	30'-3"	31'-5"
19-1/2	32'-9"	34'-1"
21	35'-3"	36'-8"
22-1/2	37'-9"	39'-4"
24	40'-4"	41'-11"
25-1/2	42'-10"	44'-6"
27	45'-4"	47'-2"
28-1/2	47'-10"	49'-9"
30	50'-5"	52'-5"

(a) Live load has been reduced to 16 psf when tributary area exceeds 200 square feet in accordance with model code roof load provisions.

(b) Duration of load factor for snow loads taken as 1.15 (2 months) for determination of allowable spans based on strength.

(c) Duration of load factor for non-snow loads taken as 1.25 (7 days) for determination of allowable spans based on strength.

We have field representatives in most major U.S. cities and in Canada who can help answer questions involving APA and APA EWS trademarked products. For additional assistance in specifying engineered wood products or systems, get in touch with your nearest APA regional office. Call or write:

**WESTERN REGION**

7011 So. 19th St. ■ P.O. Box 11700  
Tacoma, Washington 98411-0700  
(253) 565-6600 ■ Fax: (253) 565-7265

**EASTERN REGION**

2130 Barrett Park Drive, Suite 102  
Kennesaw, Georgia 30144-3681  
(770) 427-9371 ■ Fax: (770) 423-1703

**U.S. HEADQUARTERS AND INTERNATIONAL MARKETING DIVISION**

7011 So. 19th St. ■ P.O. Box 11700  
Tacoma, Washington 98411-0700  
(253) 565-6600 ■ Fax: (253) 565-7265



[www.apawood.org](http://www.apawood.org)

**PRODUCT SUPPORT HELP DESK**

(253) 620-7400  
E-mail Address: [help@apawood.org](mailto:help@apawood.org)

(Offices: Antwerp, Belgium; Bournemouth, United Kingdom; Hamburg, Germany; Mexico City, Mexico; Tokyo, Japan.) For Caribbean/Latin America, contact headquarters in Tacoma.

*The product use recommendations in this publication are based on the continuing programs of laboratory testing, product research, and comprehensive field experience of Engineered Wood Systems. However, because EWS has no control over quality of workmanship or the conditions under which engineered wood products are used, it cannot accept responsibility for product performance or designs as actually constructed. Because engineered wood product performance requirements vary geographically, consult your local architect, engineer or design professional to assure compliance with code, construction, and performance requirements.*

Form No. EWS R485C  
Revised October 2000/0100

