MASS TIMBER BEAMS

Operating Between The Improbable & The Impossible

CURVED GLULAM BEAMS DATA SHEET

zip-laminators

CURVED BEAMS

Manufactured in Eugene, Oregon, with quality Douglas fir and Alaskan Yellow Cedar

The Details

Zip-O-Laminators glulam products are manufactured in accordance with ANSI A190.1 using layup combinations recognized in ANSI 117. Zip-O-Laminators glulam products are used as beams, headers, rafters, purlins, columns, and decking, and are manufactured in nominal widths up to 28 inches, depths up to 111 inches (74 laminations), and lengths up to 115 feet. Our curved glulam beams can have a minimum curve of 4 feet. Douglas fir-Larch glulam products are permitted to be manufactured by edge block-gluing multiple glulam components in accordance with ANSI A190.1 and approved in-plant quality manual to nominal widths up to 33-3/4 inches.

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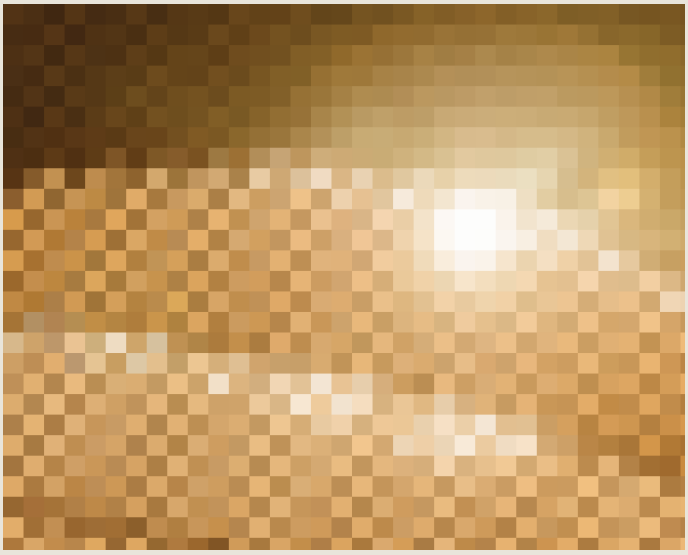

Fire Rating

Design of fire-resistant exposed wood members in accordance with Chapter 16 of the National Design Specification for Wood Construction (NDS), or Section 722.1 of the 2024, 2021, 2018, and 2015 IBC shall be applicable to Zip-O-Laminators glulam beams and columns. Fire-rated assemblies shall be constructed in accordance with the recommendations provided by the manufacturer and APA Design and Construction Guide: Fire-Rated Systems, Form W305 (see link above).

In-House Fabrication

At our facility, we offer in-house fabrication capabilities that add precision and efficiency to every project. Our team is experienced in producing notches, daps, thru holes, countersinks, kerf cuts, tapers, and bevels, giving builders exactly what they need to streamline installation on the job site.

These services allow us to supply material that is ready to be assembled & installed the moment it arrives, minimizing delays and reducing the need for additional field adjustments.

On-Time Delivery

Our commitment is to producing your glulams with on-time delivery every time. From administration to sales, to production, and to shipping, our goal remains unified: to produce high quality glulams partnered with exceptional service.

We own and operate our own kilns to control the quality and moisture content of our stock. We can ship as individual, bundle or load wrap, and sticker every layer in the unit with lath or kiln stickers upon request, and all our trucks place corner protectors on their loads as added protection for your beams.

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GLULAM BEAM SPECS

Allowable Design Values for Zip-O-Laminators Glulam Beams for Normal Duration of Load[1,2,3]

Symbol	Bending About X-X Axis (Loaded Perpendicular to Wide Faces of Laminations)								
	Species Outer/ Core[4] (Bal or Unbal[5])	Extreme Fiber in Bending[6]		Compression Perpendicular to Grain		Shear Parallel To Grain[7]	Modulus of Elasticity[8]		
		Bottom of Beam Stressed in Tension (Positive Bending)	Top of Beam Stressed in Tension (Negative Bending)	Ten. Face	Comp. Face		True	Apparent	Beam Stability
		F_{bx}^{+} (psi)	F_{bx}^{-} (psi)	$F_{c\perp x}$ (psi)		F_{vx} (psi)	E_{xTRUE} (10^6 psi)	E_{xAPP} (10^6 psi)	E_{xMIN} (10^6 psi)
16F-V3	DF/DF (U)	1,600	1,250	560	560	265	1.6	1.5	0.79
16F-V6	DF/DF (B)	1,600	1,600	560	560	265	1.7	1.6	0.85
20F-V12	AC/AC (U)	2,000	1,400	560	560	265	1.6	1.5	0.79
20F-V13	AC/AC (B)	2,000	2,000	560	560	265	1.6	1.5	0.79
24F-V4	DF/DF (U)	2,400	1,850	650	650	265	1.9	1.8	0.95
24F-V8	DF/DF (B)	2,400	2,400	650	650	265	1.9	1.8	0.95
Wet-use factor		0.8		0.53		0.875	0.833		

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GLULAM BEAM SPECS

Allowable Design Values for Zip-O-Laminators Glulam Beams for Normal Duration of Load[1,2,3]

Symbol	Bending About Y-Y Axis (Loaded Parallel to Wide Faces of Laminations)						
	Species Outer/ Core[4] (Bal or Unbal[5])	Extreme Fiber in Bending[9]	Comp. Perpendicular To Grain	Shear Parallel To Grain[7]	Modulus of Elasticity[8]		
					True	Apparent	Beam Stability
		Fby (psi)	Fc⊥x (psi)	Fvy (psi)	$E_{Y\,True}$ (10^6 psi)	$E_{Y\,APP}$ (10^6 psi)	$E_{Y\,MIN}$ (10^6 psi)
16F-V3	DF/DF (U)	1,450	560	230	1.6	1.5	0.79
16F-V6	DF/DF (B)	1,450	560	230	1.6	1.5	0.79
20F-V12	AC/AC (U)	1,250	470	230	1.5	1.4	0.74
20F-V13	AC/AC (B)	1,250	470	230	1.5	1.4	0.74
24F-V4	DF/DF (U)	1,450	560	230	1.7	1.7	0.85
24F-V8	DF/DF (B)	1,550	560	230	1.7	1.7	0.85
Wet-use factor		0.8	0.53	0.875	0.833		

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Allowable Design Values for Zip-O-Laminators Glulam Beams for Normal Duration of Load[1,2,3]

Symbol	Species Outer/ Core[4] (Bal or Unbal[5])	Axially Loaded		Fasteners	
		Tension Parallel to Grain	Comp. Parallel To Grain	Specific Gravity for Dowel-Type Fastener Design	
				Top or Bottom Face	Side Face
		Ft (psi)	Fc (psi)	SG	
16F-V3	DF/DF (U)	975	1,500	0.50	0.50
16F-V6	DF/DF (B)	1,000	1,600	0.50	0.50
20F-V12	AC/AC (U)	925	1,500	0.46	0.46
20F-V13	AC/AC (B)	950	1,550	0.46	0.46
24F-V4	DF/DF (U)	1,100	1,650	0.50	0.50
24F-V8	DF/DF (B)	1,100	1,650	0.50	0.50
Wet-use factor		0.8	0.73	SEE NDS	

(1) The combinations in this table are applicable to members consisting of 4 or more laminations and are intended primarily for members stressed in bending due to loads applied perpendicular to the wide faces of the laminations. Allowable design values are tabulated, however, for loading both perpendicular and parallel to the wide faces of the laminations.

(2) The tabulated allowable design values are for normal duration of loading. For other durations of loading, see the applicable building code. The tabulated allowable design values are for dry conditions of use. For wet conditions of use, multiply the tabulated values by the wet-use factors shown at the bottom of the table.

(3) Referenced design values must be adjusted, as applicable, in accordance with Section 5.3 of the NDS.

(4) DF = Douglas fir-Larch and AC = Alaska cedar.

(5) The unbalanced (U) layup is intended primarily for simple-span applications and the balanced (B) layup is intended primarily for continuous or cantilevered applications.

(6) The values of $F_{bx}$are based on members 5-1/8 inches in width by 12 inches in depth by 21 feet in length. For members with a larger volume, F_{bx}shall be multiplied by a volume factor, $C_V = (5.125/b)^{1/10}(12/d)^{1/10}(21/L)^{1/10}$, where b is the beam width (in.), d is the beam depth (in.), and L is the beam length between the points of zero moment (ft).

(7) For non-prismatic members, members subject to impact or cyclic loading, or shear design of bending members at connections (2024 NDS 3.4.4.1 or 2018 and 2015 NDS 3.4.3.3), the $F_{vx}$and F_{vy}values shall be multiplied by a factor of 0.72. The tabulated F_{vy}values are for timbers with laminations made from a single piece of lumber across the width or multiple pieces that have been edge bonded. For timber manufactured from multiple piece laminations (across width) that are not edge bonded, value shall be multiplied by 0.4 for members with 5, 7, or 9 laminations or by 0.5 for all other members.

(8) The tabulated E values include true E (also known as "shear-free E"), apparent E, and E for beam stability calculation (NDS 3.3.3.8). For calculating beam deflections, the tabulated E appvalues shall be used unless the shear deflection is determined in addition to bending deflection based on the tabulated E_{true}. The axial modulus of elasticity, Eaxial and Eaxialmin, shall be equal to the tabulated Eytrue and Eymin values.

(9) The values of $F_{by}$are based on members 12 inches in depth. For depths less than 12 inches, F_{by}shall be permitted to be increased by multiplying by the flat use factor, $(12/d)^{1/9}$, where d is the beam depth in inches. When d is less than 3 inches, use the size adjustment factor for 3 inches.

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CERTIFICATIONS

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