

Rosboro Structural Glued Laminated Timber PR-L251
Rosboro Revised October 20, 2011

Products: Rosboro 24F-V4/DF, 24F-V8/DF, 24F-V8M4/DF, and 30F-E2M3/SP Glulam
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1. Basis of the product report:
 - 2012 and 2009 International Building Code (IBC): Sections 104.11 Alternative Materials and 2303.1.3 Structural glued laminated timber
 - 2012 and 2009 International Residential Code (IRC): Sections R104.11 Alternative Materials, and R502.1.5, R602.1.2, and R802.1.4 Structural glued laminated timber
 - ASTM D3737-08 and D3737-07 recognized by the 2012 IBC and IRC, and 2009 IBC and IRC, respectively
 - ANSI/AITC A190.1-07 recognized by the 2012 IBC and IRC, and 2009 IBC and IRC
2. Product description:

Rosboro 24F-V4/DF, 24F-V8/DF, 24F-V8M4/DF, and 30F-E2M3/SP glulam beams are used as beams, headers, rafters, or purlins, and are manufactured with the conventional EWS 24F-V4/DF unbalanced, and 24F-V8/DF and 30F-E2M3/SP balanced layup combinations with the exception that the tension and compression laminations of 24F-V8M4/DF and 30F-E2M3/SP are substituted by laminated veneer lumber (LVL), as permitted by ANSI/AITC A190.1. The LVL laminations are supplied by manufacturers recognized by APA and identified in Rosboro's in-plant manufacturing standard approved by APA. The LVL complies with the control values listed in the manufacturing standard and is manufactured in full length and width laminations, and in thicknesses up to 2 inches from wood veneers. All veneer grain is parallel to the length of the billets. The veneers are bonded with exterior-type adhesives, which comply with ASTM D2559 and AITC 405.
3. Design properties:

Table 1 lists the design properties for Rosboro 24F-V4/DF, 24F-V8/DF, 24F-V8M4/DF, and 30F-E2M3/SP glulam beams. The allowable spans for Rosboro 24F-V4/DF, 24F-V8/DF, 24F-V8M4/DF, and 30F-E2M3/SP shall be in accordance with the recommendations provided by the manufacturer (www.rosboro.com/pdfs/TechGuide060326.pdf), and with EWS Data File: *Glued Laminated Beam Design Tables*, Form S475 (www.apawood.org/publications), as applicable.
4. Product installation:

Rosboro 24F-V4/DF, 24F-V8/DF, 24F-V8M4/DF, and 30F-E2M3/SP glulam beams shall be installed in accordance with the recommendations provided by the manufacturer and EWS Technical Note: *Glulam Connection Details*, Form T300 (www.apawood.org/publications). Permissible filed notching and drilling shall be in accordance with the recommendations provided by the manufacturer, and with EWS Technical Note: *Field Notching and Drilling of Glued Laminated Timber Beams*, Form S560 (www.apawood.org/publications).
5. Fire-rated assemblies:

Fire-rated assemblies shall be constructed in accordance with the recommendations provided by the manufacturer, and with APA Design/Construction Guide: *Fire-Rated Systems*, Form W305 (www.apawood.org/publications). For one- or two-hour rated glulam beams, the Rosboro 24F-V4/DF, 24F-V8/DF, 24F-V8M4/DF, and 30F-E2M3/SP glulam beams shall be constructed in accordance with ANSI/AITC A190.1 and designed in

accordance with the recommendations provided by the manufacturer, and with EWS Technical Note: *Calculating Fire Resistance of Glulam Beams and Columns*, Form Y245 (www.apawood.org/publications).

6. Limitations:

- a) Rosboro 24F-V4/DF, 24F-V8/DF, 24F-V8M4/DF, and 30F-E2M3/SP glulam beams shall be designed in accordance with the code using the design properties specified in this report.
- b) Rosboro 24F-V8M4/DF glulam beams shall have a minimum depth of 9-1/2 inches, and 30F-E2M3/SP glulam beams shall have a minimum depth of 7-1/4 inches and a maximum depth of 48 inches.
- c) Rosboro 24F-V4/DF, 24F-V8/DF, and 24F-V8M4/DF, and 30F-E2M3/SP glulam beams are produced at Rosboro, Springfield, OR and Veneta, OR facilities under a quality assurance program audited by APA.
- d) This report is subject to re-examination in one year.

7. Identification:

Rosboro 24F-V4/DF, 24F-V8/DF, and 24F-V8M4/DF, and 30F-E2M3/SP glulam beams described in this report are identified by a label bearing the manufacturer's name (Rosboro) and/or trademark, the APA assigned plant number (1001 for Springfield or 1078 for Veneta), the product standard (ANSI/AITC A190.1), the APA logo, the combination symbol, the report number PR-L251, and a means of identifying the date of manufacture.

Table 1. Design Values for Rosboro Glulam Beams for Normal Duration of Load ^(1,2)

Symbol	Species ⁽³⁾ Outer/ Core	Bal / Unbal ⁽⁴⁾	Bending About X-X Axis (Loaded Perpendicular to Wide Faces of Laminations)							Bending About Y-Y Axis (Loaded Parallel to Wide Faces of Laminations)					Axially Loaded		Fasteners	
			Extreme Fiber in Bending ⁽⁵⁾		Compression Perpendicular to Grain		Shear Parallel to Grain ⁽⁶⁾	Modulus of Elasticity ⁽⁷⁾		Extreme Fiber in Bending ⁽⁸⁾	Compr. Perpen- dicular to Grain	Shear Parallel to Grain ⁽⁶⁾	Modulus of Elasticity ⁽⁷⁾		Tension Parallel to Grain	Compr. Parallel to Grain	Specific Gravity for Dowel-Type Fastener Design	
			Bottom of Beam Stressed in Tension (Positive Bending)	Top of Beam Stressed in Tension (Negative Bending)	Tension Face	Compr. Face											Top or Bottom Face	Side Face
			F_{bx}^+ (psi)	F_{bx}^- (psi)	F_{cLx} (psi)		F_{vx} (psi)	E_x^c (10^6 psi)	E_x^{min} (10^6 psi)	F_{by} (psi)	F_{cLy} (psi)	F_{vy} (psi)	E_y^c (10^6 psi)	E_y^{min} (10^6 psi)	F_t (psi)	F_c (psi)	SG	
Rosboro 24F- V4/DF ⁽⁹⁾	DF/DF	U	2,400	1,850	650	650	265	1.8	0.95	1,450	560	230	1.6	0.84	1,100	1,650	0.50	0.50
Rosboro 24F- V8/DF ⁽⁹⁾	DF/DF	B	2,400	2,400	650	650	265	1.8	0.95	1,450	560	230	1.6	0.84	1,100	1,650	0.50	0.50
Rosboro 24F- V8M4/DF ⁽⁹⁾	LVL/DF	B	2,400	2,400	510 ⁽¹⁰⁾	510 ⁽¹⁰⁾	265	1.8	0.95	1,450	560	230	1.6	0.84	1,100	1,650	0.50	0.50
Rosboro 30F- E2M3/SP ⁽⁹⁾	LVL/SP	B	3,000	3,000	650 ⁽¹⁰⁾	650 ⁽¹⁰⁾	300	2.1	1.11	1,750	650	265	1.7	0.90	1,350	1,750	0.50	0.50
Wet-use factor			0.8		0.53		0.875	0.833		0.8	0.53	0.875	0.833		0.8	0.73	see NDS	

- (1) The combinations in this table are intended primarily for members stressed in bending due to loads applied perpendicular to the wide faces of the laminations. Design values are tabulated, however, for loading both perpendicular and parallel to the wide faces of the laminations.
- (2) The tabulated design values are for normal duration of loading. For other durations of loading, see the applicable building code. The tabulated 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) DF = Douglas fir-Larch, SP = Southern pine, and LVL = Laminated veneer lumber in accordance with the manufacturing standard.
- (4) The unbalanced (U) layouts are intended primarily for simple-span applications and the balanced (B) layouts are intended primarily for multiple-span or cantilevered beam applications.
- (5) 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 , determined in accordance with applicable building code using 1/10 as the exponent.
- (6) For non-prismatic members, members subject to impact or cyclic loading, or shear design of bending members at connections (NDS 3.4.3.3), the F_{vx} and F_{vy} values shall be multiplied by a factor of 0.72.
- (7) The tabulated E values already include a 5% shear deflection (also known as "apparent E"). The axial modulus of elasticity, E_{axial} and $E_{axial min}$, shall be calculated by multiplying the tabulated E_y and E_{ymin} by 1.05.
- (8) 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 size 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.
- (9) The beam depths for 24F-V4/DF and 24F-V8/DF are limited to 4 or more laminations. The beam depths for 24F-V8M4/DF are limited to 9-1/2 inches minimum, and 30F-E2M3/SP are limited to 7-1/4 to 48 inches.
- (10) The value of F_{cL} shall be permitted to be increased to the published value of the outermost LVL in the plank orientation.

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