

Products: Power Beam[®] and Power Rated Glulam (PRG[®])
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1. Basis of the product report:
 - 2021, 2018, 2015, and 2012 International Building Code (IBC): Section 2303.1.3 Structural glued laminated timber
 - 2021, 2018, and 2015 International Residential Code (IRC): Sections R502.1.3, R602.1.3, and R802.1.2 Structural glued laminated timber
 - 2012 IRC: Sections R502.1.5, R602.1.2, and R802.1.4 Structural glued laminated timber
 - ANSI 117-2020 and ANSI 117-2015 recognized in the 2021 IBC and IRC, and 2018 IBC and IRC, respectively
 - ANSI A190.1-2017, ANSI A190.1-2012, and ANSI/AITC A190.1-2007 recognized in the 2021 and 2018 IBC and IRC, 2015 IBC and IRC, and 2012 IBC and IRC, respectively
 - ASTM D3737-18e1, D3737-12, and D3737-08 recognized in the 2021 IBC and IRC, 2018 and 2015 IBC and IRC, and 2012 IBC and IRC, respectively
 - APA Report T2019P-67 and other qualification data
2. Product description:

Power Beam[®] and Power Rated Glulam (PRG[®]) are southern pine structural glued laminated timber manufactured in accordance with ANSI A190.1 using 28F-E1, 28F-E2, 30F-E1, 30F-E1M6, 30F-E2, and 30F-E2M6 for the Power Beam layup combinations, and 24F-V5M1/SP for the PRG layup combination recognized in the National Design Specification (NDS) Supplement, ANSI 117 (www.apawood.org/resource-library), or ICC-ES Evaluation Report ESR-1940. Power Beam and PRG are used as beams, headers, rafters, or purlins. 24F and 28F Power Beam products are manufactured in nominal widths of 3, 4, 6, and 8 inches, depths ranging from 5-1/2 to 28-7/8 inches, and lengths up to 60 feet. 30F-E1, 30F-E1M6, 30F-E2, and 30F-E2M6 Power Beam products are manufactured in nominal widths up to 6 inches, depths ranging from 5-1/2 to 28-7/8 inches, and lengths up to 60 feet with the exception that 30F-E1M6 and 30F-E2M6 Power Beam products are permitted to be manufactured with net widths up to 7-1/4 inches provided that the products are manufactured at the Washington, GA facility (Mill Number 1080) and the depths are limited to 5-1/2 to 18 inches. PRG products are manufactured in nominal widths of 3-1/2 and 5-1/2 inches, depths ranging from 9-1/4 to 18 inches, and lengths up to 60 feet.
3. Design properties:

Table 1 lists the allowable design properties for Power Beam and PRG. The allowable spans for Power Beam and PRG shall be in accordance with the recommendations provided by the manufacturer (www.anthonyforest.com/assets/pdf/power-beam-brochure.pdf and www.anthonyforest.com/assets/pdf/prg-brochure.pdf) and APA Data File: *Glued Laminated Beam Design Tables*, Form S475 (see link above), as applicable.
4. Product installation:

Power Beam and PRG shall be installed in accordance with the recommendations provided by the manufacturer and APA Construction Guide: *Glulam Connection Details*, Form T300 (see link above). Permissible field notching and drilling shall be in accordance with the recommendations provided by the manufacturer, and APA Technical Notes: *Field Notching and Drilling of Glued Laminated Timber Beams*, Form S560, and *Effect of Large Diameter*

Horizontal Holes on the Bending and Shear Properties of Structural Glued Laminated Timber, Form V700 (see link above).

5. Fire-rated assemblies:
Design of fire-resistant exposed wood members in accordance with Chapter 16 of the NDS, Section 722.1 of the 2021, 2018, and 2015 IBC, or Section 722.6.3 of the 2012 IBC shall be applicable to Power Beam and PRG. Fire-rated assemblies shall be constructed in accordance with the recommendations provided by the manufacturer and APA Design/Construction Guide: *Fire-Rated Systems*, Form W305 (see link above).
6. Limitations:
 - a) Power Beam and PRG shall be designed in accordance with the code using the design properties specified in this report.
 - b) Power Beam and PRG shall have a minimum depth of 5-1/2 inches and 9-1/4 inches, respectively.
 - c) Power Beam and PRG are produced at Anthony Forest Products Company, LLC, El Dorado, AR and Washington, GA facilities under a quality assurance program audited by APA.
 - d) This report is subject to re-examination in one year.
7. Identification:
Power Beam and PRG described in this report are identified by a label bearing the manufacturer's name (Anthony Forest Products Company, LLC) and/or trademark, the APA assigned plant number (1079 for El Dorado, AR or 1080 for Washington, GA), the product standard (ANSI A190.1), the APA logo, the layup combination symbol, the report number PR-L263, and a means of identifying the date of manufacture.

Table 1. Allowable Design Values for PRG and Power Beam Manufactured by Anthony Forest Products Company, LLC for Normal Duration of Load^(1,2)

Symbol	Species Outer/Core ⁽³⁾ (Bal or 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⁾	Comp. Perpen-dicular to Grain	Shear Parallel to Grain ⁽⁶⁾	Modulus of Elasticity ⁽⁷⁾			Tension Parallel to Grain	Comp. 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)	Ten. Face	Comp. Face		True	App-arent	Beam Stability				True	App-arent	Beam Stability			Top or Bottom Face	Side Face
		F _{bx} [*] (psi)	F _{bx} [*] (psi)	F _{cLx} (psi)		F _{vx} (psi)	E _{x true} (10 ⁶ psi)	E _{x app} (10 ⁶ psi)	E _{x min} (10 ⁶ psi)	F _{by} (psi)	F _{cLy} (psi)	F _{vy} (psi)	E _{y true} (10 ⁶ psi)	E _{y app} (10 ⁶ psi)	E _{y min} (10 ⁶ psi)	F _t (psi)	F _c (psi)	SG	
PRG® 24F-V5M1	SP/SP (B)	2,400	2,400	740	740	300	1.9	1.8	0.95	1,700	650	260	1.7	1.6	0.85	1,150	1,600	0.55	0.55
Power Beam® 28F-E1	SP/SP (U)	2,800	2,300	805	805	300	2.2 ⁽¹⁰⁾	2.1 ⁽¹⁰⁾	1.11 ⁽¹⁰⁾	1,600	650	260	1.8	1.7	0.90	1,300	1,850	0.55	0.55
Power Beam® 28F-E2	SP/SP (B)	2,800	2,800	805	805	300	2.2 ⁽¹⁰⁾	2.1 ⁽¹⁰⁾	1.11 ⁽¹⁰⁾	1,600	650	260	1.8	1.7	0.90	1,300	1,850	0.55	0.55
Power Beam® 30F-E1 ⁽⁹⁾	SP/SP (U)	3,000	2,400	805	805	300	2.2 ⁽¹⁰⁾	2.1 ⁽¹⁰⁾	1.11 ⁽¹⁰⁾	1,750	650	260	1.8	1.7	0.90	1,250	1,750	0.55	0.55
Power Beam® 30F-E1M6 ⁽⁹⁾	SP/SP (U)	3,000	2,400	805	805	300	2.2 ⁽¹⁰⁾	2.1 ⁽¹⁰⁾	1.11 ⁽¹⁰⁾	1,750	650	260	1.8	1.7	0.90	1,250	1,750	0.55	0.55
Power Beam® 30F-E2 ⁽⁹⁾	SP/SP (B)	3,000	3,000	805	805	300	2.2 ⁽¹⁰⁾	2.1 ⁽¹⁰⁾	1.11 ⁽¹⁰⁾	1,750	650	260	1.8	1.7	0.90	1,350	1,750	0.55	0.55
Power Beam® 30F-E2M6 ⁽⁹⁾	SP/SP (B)	3,000	3,000	805	805	300	2.2 ⁽¹⁰⁾	2.1 ⁽¹⁰⁾	1.11 ⁽¹⁰⁾	1,750	650	260	1.8	1.7	0.90	1,350	1,750	0.55	0.55
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. 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⁾ SP = Southern pine.

⁽⁴⁾ The unbalanced (U) layout is intended primarily for simple-span applications and the balanced (B) layout is intended primarily for continuous or cantilevered 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 = (5.125/b)^{1/20} (12/d)^{1/20} (21/L)^{1/20}, 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).

⁽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. 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.

⁽⁷⁾ 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_{app} values 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, E_{axial} and E_{axial min}, shall be equal to the tabulated E_{y true} and E_{y min} values.

⁽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 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.

⁽⁹⁾ This layout combination is limited to nominal 6 inches or less in width with the exception that the net width is permitted to be up to 7-1/4 inches provided that the products are manufactured at the Washington, GA facility (Mill Number 1080) and the depths are limited to 5-1/2 to 18 inches.

⁽¹⁰⁾ For members of more than 15 laminations, E_{x true} = 2.1 x 10⁶ psi, E_{x app} = 2.0 x 10⁶ psi, and E_{x min} = 1.06 x 10⁶ psi.

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