APA PRODUCT REPORT®

www.apawood.org

QB Structural Glued Laminated Timber — PR-L305
QB Corporation — Revised February 10, 2018

Products: QB 30F-E3 2.1E 650$F_{c\perp}$ Glulam
QB Corporation, 1420 Highway 28, Salmon, ID 83467
(208) 756-4248
www.qbcorp.com

1. Basis of the product report:
   - 2018, 2015, and 2012 International Building Code (IBC): Sections 104.11 Alternative materials and 2303.1.3 Structural glued laminated timber
   - 2018 and 2015 International Residential Code (IRC): Sections R104.11 Alternative materials, and R502.1.3, R602.1.3, and R802.1.2 Structural glued laminated timber
   - 2012 IRC: Sections R104.11 Alternative materials, and R502.1.5, R602.1.2, and R802.1.4 Structural glued laminated timber
   - ASTM D3737-12 and D3737-08 recognized by the 2018 and 2015 IBC and IRC, and 2012 IBC and IRC, respectively
   - ANSI A190.1-2017, ANSI A190.1-2012, and ANSI/AITC A190.1-2007 recognized by the 2018 IBC and IRC, 2015 IBC and IRC, and 2012 IBC and IRC, respectively
   - APA Report T2011P-72 and other qualification data

2. Product description:
   QB 30F-E3 2.1E 650$F_{c\perp}$ glulam beams are used as beams, headers, rafters, or purlins, and are manufactured with a proprietary balanced layup combination documented in the in-plant manufacturing standard. QB 30F-E3 glulam beams use conventional laminating lumber grades of Douglas fir-Larch in the tension and compression zones, and Southern pine in the core with the exception that the outermost tension and outermost compression laminations are made of laminated veneer lumber (LVL), as permitted by ANSI A190.1. The LVL laminations are supplied by manufacturers recognized by APA and identified in QB'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 net thicknesses of 1-1/2 inches from wood veneers. All veneer grain is parallel to the length of the billets. The LVL are bonded with another LVL or lumber laminations using exterior-type adhesives in compliance with ANSI 405. QB 30F-E3 glulam beams have a minimum depth of 7-1/4 inches and a maximum depth of 48 inches.

3. Design properties:
   Table 1 lists the design properties for QB 30F-E3 glulam beams. The allowable spans for QB 30F-E3 glulam beams shall be in accordance with the recommendations provided by the manufacturer (www.qbcorp.com), and APA *Glued Laminated Beam Design Tables*, Form S475 (www.apawood.org/resource-library), as applicable.

4. Product installation:
   QB 30F-E3 glulam beams shall be installed in accordance with the recommendations provided by the manufacturer and APA *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 with APA *Field Notching and Drilling of Glued Laminated Timber Beams*, Form S560 (see link above).

5. Fire-rated assemblies:
   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). For one- or two-hour rated glulam beams, the QB 30F-E3 glulam beams shall be constructed in accordance with ANSI A190.1 and designed in accordance with the recommendations provided by the manufacturer and APA Technical Note: *Calculating Fire Resistance of Glulam Beams and Columns*, Form Y245 (see link above) or Chapter 16 of the 2018 National Design Specification (NDS), available from American Wood Council (www.awc.org/codes-standards/publications/nds-2018).

6. Limitations:
   a) QB 30F-E3 glulam beams shall be designed in accordance with the code using the design properties specified in this report.
   b) QB 30F-E3 glulam beams shall have a minimum depth of 7-1/4 inches and a maximum depth of 48 inches.
   c) QB 30F-E3 glulam beams are produced at QB's Salmon, Idaho facilities under a quality assurance program audited by APA.
   d) This report is subject to re-examination in one year.

7. Identification:
   QB 30F-E3 glulam beams described in this report are identified by a label bearing the manufacturer's name (QB) and/or trademark, the APA assigned plant number (1102), the product standard (ANSI A190.1), the APA logo, the combination symbol, the report number PR-L305, and a means of identifying the date of manufacture.

Table 1. Allowable Design Values for QB 30F-E3 Glulam Beams 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 Stabi-lity				True	App-arent	Beam Stabi-lity			Top or Bottom Face	Side Face
		F_{bx}^{+} (psi)	F_{bx}^{-} (psi)	$F_{c\perp x}$ (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)	$F_{c\perp y}$ (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	
QB 30F-E3 2.1E 650$F_{c\perp}$(9)	LVL/DF/ SP (B)	3,000	3,000	650(10)	650(10)	300	2.2	2.1	1.11	1,700	650	230	2.1	2.0	1.06	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. 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) DF = Douglas fir-Larch, SP = Southern pine, and LVL = Laminated veneer lumber in accordance with the manufacturing standard.

(4) The unbalanced (U) layup is intended primarily for simple-span applications and the balanced (B) layup 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, $C_v = (5.125/b)^{1/10}\ (12/d)^{1/10}\ (21/L)^{1/10}$, 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).

(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 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 are limited to 7-1/4 to 48 inches.

(10) The value of $F_{c\perp}$ shall be permitted to be increased to the published value of the outermost LVL in the plank orientation if provided by the manufacturer.

APA – The Engineered Wood Association is an approved national standards developer accredited by American National Standards Institute (ANSI). APA publishes ANSI standards and Voluntary Product Standards for wood structural panels and engineered wood products. APA is an accredited certification body under ISO/IEC 17065 by Standards Council of Canada (SCC), an accredited inspection agency under ISO/IEC 17020 by International Code Council (ICC) International Accreditation Service (IAS), and an accredited testing organization under ISO/IEC 17025 by IAS. APA is also an approved Product Certification Agency, Testing Laboratory, Quality Assurance Entity, and Validation Entity by the State of Florida, and an approved testing laboratory by City of Los Angeles.

APA – THE ENGINEERED WOOD ASSOCIATION
HEADQUARTERS
7011 So. 19th St. ▪ Tacoma, Washington 98466
Phone: (253) 565-6600 ▪ Fax: (253) 565-7265 ▪ Internet Address: www.apawood.org

PRODUCT SUPPORT HELP DESK
(253) 620-7400 ▪ *E-mail Address*: help@apawood.org

DISCLAIMER