APA PRODUCT REPORT®

www.apawood.org

Broadspan® I-Joists
Georgia-Pacific Wood Products LLC

PR-L273
Revised April 26, 2011

Products: BSI 200, 400, 700 and 900 Series I-Joists
Georgia-Pacific Wood Products LLC, 1000 North Park Drive, Roxboro, North Carolina 27573
(336) 599-1000
Georgia-Pacific Wood Products South LLC, 19953 Highway 31, Thorsby, Alabama 35171
(205) 646-3346
www.broadspanewp.com

1. Basis of the product report:
   - 2009 and 2006 International Building Code (IBC): Sections 104.11 Alternative Materials and 2303.1.2 Prefabricated wood I-joists
   - 2009 and 2006 International Residential Code (IRC): Sections R104.11 Alternative Materials and R502.1.4 Prefabricated wood I-joists
   - ASTM D 5055-05 recognized by the 2009 IBC and IRC, and ASTM D 5055-04 recognized by the 2006 IBC and IRC
   - APA Reports T98Q-11, T99P-01, T99P-28, T2000P-03A, T2001M-1, T2001P-16, T2001P-19, T2001P-21, T2001P-59, T2001P-61, T2001P-62, T2001P-84, T2002P-40, T2002M-60A, T2003M-43, T2003M-44A, T2003M-55, T2003P-62, T2003P-70, T2003M-78, T2004M-44, T2005M-53, T2006M-71, T2007M-29, T2007P-54, T2007M-65, T2007P-83, T2007M-108, T2010M-05, T2011M-19, T2011M-20, and other qualification data

2. Product description:
   Broadspan I-Joist Series BSI 200, 400, 700 and 900 are made with laminated veneer lumber (LVL) flanges and OSB webs in accordance with the in-plant manufacturing standards and quality manuals approved by APA. The minimum flange thicknesses are: 1-3/8 inches for BSI 200 and 400 Series I-joists, and 1-1/2 inches for BSI 700 and 900 Series I-joists.

3. Design properties:
   Table 1 lists the design properties for BSI Series I-joists. The allowable spans for BSI Series I-joists shall be in accordance with the recommendations provided by the manufacturer (http://www.gp.com/build/product.aspx?pid=6708).

4. Product installation:
   BSI Series I-joists shall be installed in accordance with the recommendations provided by the manufacturer (see link above). Permissible web holes and cantilever reinforcements shall be in accordance with the recommendations provided by the manufacturer.

5. Fire-rated assemblies:
   Fire-rated assemblies shall be constructed in accordance with the recommendations provided by the manufacturer (see link above), and with APA Design/Construction Guide: *Fire-Rated Systems*, Form W305 (www.apawood.org/publications).

6. Limitations:
   a) BSI Series I-joists shall be designed in accordance with the code using the design properties specified in this report.
   b) BSI Series I-joists are limited to dry service conditions where the average equilibrium moisture content of solid-sawn lumber is less than 16 percent.
   c) BSI 200 Series I-joists are produced at the Georgia-Pacific Wood Products LLC facility in Roxboro, North Carolina under a quality program audited by APA.

d) BSI 400, 700, and 900 Series I-joists are produced at the Georgia-Pacific Wood Products LLC facility in Roxboro, North Carolina or Georgia-Pacific Wood Products South LLC facility in Thorsby, Alabama under a quality program audited by APA.
e) This report is subject to re-examination in one year.

7. Identification:
The BSI Series I-joists described in this report are identified by a label bearing the manufacturer's name (Georgia-Pacific Wood Products LLC or Georgia-Pacific Wood Products South LLC) and/or trademark (Broadspan®), the APA assigned plant number (1027 for the Roxboro plant and 1085 for the Thorsby plant), the I-joist depth and series, the APA logo, the report number PR-L273, and a means of identifying the date of manufacture.

Table 1. Design Properties (Allowable Stress Design) for BSI Series I-Joists [a,b]

Joist Depth (in.)	Joist Series	EI [c] ($x10^6$ lbf-in.^{2})	M [d] (lbf-ft)	V [e] (lbf)	End Reaction [f] (lbf)				Intermediate Reaction [g] (lbf)		K [h] ($x10^6$ lbf)
					1-3/4 in. Brg. Lgth.		4 in. Brg. Lgth.		3-1/2 in. Brg. Lgth.		
					Brg. Stiffeners		Brg. Stiffeners		Brg. Stiffeners		
					No	Yes	No	Yes	No	Yes	
9-1/2	BSI 200	159	3,000	1,135	1,050	---	1,135	---	2,340	---	4.94
	BSI 400	204	3,250	1,200	1,120	---	1,200	---	2,600	---	4.94
11-7/8	BSI 200	274	3,870	1,435	1,100	---	1,435	---	2,340	---	6.18
	BSI 400	346	4,200	1,460	1,225	---	1,460	---	2,600	---	6.18
	BSI 700	435	6,825	1,600	1,275	---	1,550	1,600	3,000	---	6.18
	BSI 900	663	10,480	1,950	1,500	---	1,900	1,950	3,800	---	6.18
14	BSI 200	409	4,640	1,710	1,150	---	1,550	1,710	2,340	---	7.28
	BSI 400	505	5,050	1,715	1,250	---	1,550	1,715	2,600	---	7.28
	BSI 700	638	8,135	1,800	1,300	---	1,550	1,800	3,000	---	7.28
	BSI 900	968	12,500	2,240	1,500	---	1,900	2,240	3,800	---	7.28
16	BSI 400	694	5,850	1,990	1,235	---	1,550	1,990	2,600	---	8.32
	BSI 700	868	9,320	2,050	1,350	---	1,550	2,050	3,000	---	8.32
	BSI 900	1,317	14,325	2,330	1,650	---	1,900	2,330	3,950	---	8.32

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lbf = 4.448 N

[a] The tabulated values are design values for normal duration of load. All values, except for EI and K, shall be permitted to be adjusted for other load durations as permitted by the code.
[b] The maximum vertical load transfer of BSI Series I-joists is 2,000 plf.
[c] Bending stiffness (EI) of the I-joist.
[d] Moment capacity (M) of the I-joist, which shall not be increased by any repetitive member use factor.
[e] Shear capacity (V) of the I-joist.
[f] End reaction (ER) of the I-joist. Interpolation of the end reaction between 1-3/4 inches and 4 inches bearing, with and without bearing stiffeners, respectively, is permitted.
[g] Intermediate reaction (IR) of the I-joist with a minimum bearing length of 3-1/2 inches.
[h] Coefficient of shear deflection (K). For calculating uniform load and center-point load deflections of the I-joist in a simple-span application, use Eqs. 1 and 2.

Uniform Load: $$\delta = \frac{5\omega\ell^4}{384EI} + \frac{\omega\ell^2}{K} \quad [1]$$

Center-Point Load: $$\delta = \frac{P\ell^3}{48EI} + \frac{2P\ell}{K} \quad [2]$$

Where:
δ = calculated deflection (in.),
ω = uniform load (lbf/in.),
P = concentrated load (lbf),
ℓ = design span (in.),
EI = bending stiffness of the I-joist (lbf-in.^{2}), and
K = coefficient of shear deflection (lbf).

APA – The Engineered Wood Association is an accredited certification body under ISO 65 by Standards Council of Canada (SCC) and an accredited inspection agency by the International Code Council (ICC) International Accreditation Service (IAS) under ISO/IEC 17020. APA is also an accredited testing organization recognized by IAS and SCC under ISO/IEC 17025. APA is a recognized testing laboratory by Miami-Dade County, and a Product Testing Laboratory, Product Quality Assurance Entity, and Product Validation Entity by the Florida Department of Community Affairs (DCA).

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