

**LP<sup>®</sup> SolidStart<sup>®</sup> I-Joists**  
**Louisiana-Pacific Corporation**

**PR-L238C**

Revised September 29, 2021

Products: LP<sup>®</sup> SolidStart<sup>®</sup> I-Joists

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1. Basis of the product report:
  - 2015 National Building Code of Canada (NBCC): Clause 1.2.1.1 of Division A and Clauses 4.1, 4.3.1.1, and 9.23.4.2 of Division B
  - CSA O86-14 (Reprinted May 2016) Engineering Design in Wood
  - ASTM D5055-13e1 recognized by CSA O86-14
  - APA PRI-400 Performance Standard for APA EWS I-Joists (Limit States Design)
  - Intertek LPI 20, LPI 20X1.7 and LPI 32 Test Report, Intertek LPI 20X1.5 Test Report, PFS LPI 23 (a.k.a. LPI 32) Test Report, APA Reports T2005M-21, T2005M-52, T2006M-03, T2006M-07, T2008P-45, T2008P-69, T2008P-97, T2008P-111, T2009P-47, T2009P-82, T2010P-39, T2010P-52B, T2010P-58, T2010P-59, T2011P-08, T2013P-30, T2013P-38, T2014P-03, T2014P-18, T2014P-29, and T2017P-32, and other qualification data
2. Product description:

LP<sup>®</sup> SolidStart<sup>®</sup> I-joists are described in Table 1 in accordance with the in-plant manufacturing standard approved by APA.
3. Design properties:

Tables 2 and 3 list the factored resistances for the LP SolidStart I-joists covered by this report. The maximum spans for LP SolidStart I-joists shall be in accordance with the recommendations provided by the manufacturer [contact the manufacturer for information or refer to the *Residential Construction Technical Guide*, Lit. Item LPEW0326 or *Light-Frame Commercial, Midrise, and Multifamily Construction Technical Guide*, Lit. Item LPEW0327 ([www.lpcorp.com/resources/literature](http://www.lpcorp.com/resources/literature)) and with APA PRI-400, *Performance Standard for APA EWS I-Joists (Limit States Design)*, Form E720CA ([www.apawood.org/resource-library](http://www.apawood.org/resource-library)), for depths contained in the PRI Series.
4. Product installation:

LP SolidStart I-joists covered by this report shall be installed in accordance with the recommendations provided by the manufacturer (see link above) or the APA *I-Joist Construction Details – Canadian Limit States Design – Performance Rated I-Joists in Floor and Roof Framing*, Form E715CA (see link above). Permissible web holes and cantilever reinforcements shall be in accordance with the recommendations provided by the manufacturer or with APA E715CA for products contained in the PRI Series.
5. Fire-rated assemblies:

Fire-rated assemblies shall be constructed in accordance with the recommendations provided by the manufacturer (see link above), APA Product Report PR-S238, or Table 9.10.3.1.-B of the NBC.
6. Limitations:
  - a) LP SolidStart I-joists shall be designed in accordance with the code using the design properties specified in this report.

- b) LP SolidStart I-joists are limited to dry service conditions as defined in CSA O86, at which the average equilibrium moisture content of solid-sawn lumber over a year is 15 percent or less and does not exceed 19 percent.
- c) LP SolidStart I-joists are produced at Red Bluff, California, Larouche, Quebec, and St. Prime, Quebec under a quality assurance program audited by APA. A list of I-joists manufactured at different LP facilities is documented and audited by APA.
- d) This report is subject to re-examination in one year.

7. Identification:

LP SolidStart I-joists described in this report are identified by a label bearing the manufacturer's name (Louisiana-Pacific Corporation, Resolute – LP Larouche, or Resolute – LP St Prime) and/or trademark, the APA assigned plant number (1069 for the Red Bluff plant, 1068 for the Larouche plant, and 1077 for the St. Prime plant), the I-joist series designation and depth, the APA logo, the report number PR-L238, and a means of identifying the date of manufacture.

Table 1. Description of LP SolidStart I-Joists<sup>(a)</sup>

Joist Series	Joist Depths, mm (in.)	Flanges			Web	
		Material	Dimension		Material	Thickness <sup>(b)</sup> , mm (in.)
			Depth, mm (in.)	Width, mm (in.)		
LPI 18	200 – 406 (7-7/8 – 16)	Proprietary SPF	38 (1-1/2)	64 (2-1/2)	OSB	9.5 (3/8)
LPI 20Plus	200 – 406 (7-7/8 – 16)	Proprietary SPF	38 (1-1/2)	64 (2-1/2)	OSB	9.5 (3/8)
LPI 20x4	200 – 406 (9-1/2 – 16)	MSR SPF	38 (1-1/2)	89 (3-1/2)	OSB	9.5 (3/8)
LPI 32Plus	200 – 406 (7-7/8 – 16)	MSR SPF	38 (1-1/2)	64 (2-1/2)	OSB	9.5 (3/8)
LPI 42Plus	200 – 610 (7-7/8 – 24)	Proprietary SPF	38 (1-1/2)	89 (3-1/2)	OSB	9.5 <sup>(c)</sup> (3/8)
LPI 52Plus	235 – 610 (9-1/4 – 24)	MSR SPF	38 (1-1/2)	89 (3-1/2)	OSB	11 (7/16)
LPI 36	302 – 610 (11-7/8 – 24)	LVL	38 (1-1/2)	57 (2-1/4)	OSB	9.5 (3/8)
LPI 56	302 – 610 (11-7/8 – 24)	LVL	38 (1-1/2)	89 (3-1/2)	OSB	11 (7/16)
LPI 450	241 – 406 (9-1/2 – 16)	LVL	33 (1-5/16)	45 (1-3/4)	OSB	9.5 (3/8)
LPI 530	241 – 406 (9-1/2 – 16)	LVL	33 (1-5/16)	53 (2-1/16)	OSB	9.5 (3/8)

<sup>(a)</sup> Referenced dimensions are nominal. Tolerances are as specified in the in-plant quality manual.

<sup>(b)</sup> 11-mm (7/16-inch) webs shall be permitted to substitute for 9.5-mm (3/8-inch) webs.

<sup>(c)</sup> 11-mm (7/16-inch) webs for joist depths exceeding 406 mm (16 inches).

Table 2. Factored Resistances and Stiffnesses for LP SolidStart I-Joists<sup>(a)</sup>

Joist Series Designation	Joist Depth, mm (in.)	EI, <sup>(b)</sup> 10 <sup>6</sup> kN-mm <sup>2</sup> (10 <sup>6</sup> lbf-in. <sup>2</sup> )	M <sub>r</sub> , <sup>(c)</sup> kN-mm (lbf-ft)	V <sub>r</sub> , <sup>(d)</sup> kN (lbf)	VLC <sub>r</sub> , <sup>(e)</sup> kN/m (plf)	K, <sup>(f)</sup> kN (10 <sup>6</sup> lbf)
LPI 18	200 (7-7/8)	198 (69)	4,307 (3,175)	6.60 (1,485)	40.2 (2,755)	16,120 (3.62)
	225 (8-7/8)	264 (92)	4,972 (3,665)	7.41 (1,665)	40.2 (2,755)	17,828 (4.01)
	235 (9-1/4)	327 (114)	5,220 (3,850)	7.72 (1,735)	40.2 (2,755)	18,521 (4.16)
	241 (9-1/2)	407 (142)	5,333 (3,935)	7.93 (1,785)	40.2 (2,755)	18,948 (4.26)
	286 (11-1/4)	654 (228)	6,573 (4,850)	8.99 (2,020)	37.2 (2,552)	22,098 (4.97)
	302 (11-7/8)	712 (248)	6,990 (5,155)	9.37 (2,105)	37.2 (2,552)	23,219 (5.22)
	356 (14)	1,065 (371)	8,388 (6,185)	10.60 (2,385)	33.9 (2,320)	27,115 (6.10)
	406 (16)	1,475 (514)	9,539 (7,035)	11.79 (2,650)	25.4 (1,740)	30,798 (6.92)
LPI 20Plus	200 (7-7/8)	336 (117)	5,040 (3,715)	7.34 (1,650)	40.2 (2,755)	16,280 (3.66)
	225 (8-7/8)	451 (157)	5,818 (4,290)	8.25 (1,855)	40.2 (2,755)	17,988 (4.04)
	235 (9-1/4)	496 (173)	6,111 (4,505)	8.60 (1,935)	40.2 (2,755)	18,682 (4.20)
	240	525 (183)	6,303 (4,650)	8.78 (1,975)	40.2 (2,755)	19,002 (4.27)
	241 <sup>(g)</sup> (9-1/2)	531 (185)	6,336 (4,675)	8.85 (1,990)	40.2 (2,755)	19,109 (4.30)
	286 (11-1/4)	804 (280)	7,689 (5,670)	10.00 (2,250)	37.2 (2,552)	22,258 (5.00)
	300	901 (314)	8,422 (6,210)	10.36 (2,330)	37.2 (2,552)	23,272 (5.23)
	302 <sup>(g)</sup> (11-7/8)	913 (318)	8,467 (6,245)	10.43 (2,345)	37.2 (2,552)	23,379 (5.26)
	356 <sup>(g)</sup> (14)	1,360 (474)	9,922 (7,320)	11.79 (2,650)	33.9 (2,320)	27,329 (6.14)
	360	1,400 (488)	10,057 (7,420)	11.94 (2,685)	31.7 (2,175)	27,649 (6.22)
	400	1,805 (629)	11,196 (8,260)	12.95 (2,910)	31.7 (2,175)	30,584 (6.88)
	406 <sup>(g)</sup> (16)	1,871 (652)	11,388 (8,400)	13.13 (2,950)	31.7 (2,175)	31,065 (6.98)
LPI 20x4	241 (9-1/2)	531 (185)	6,336 (4,675)	8.85 (1,990)	40.2 (2,755)	19,109 (4.30)
	302 (11-7/8)	913 (318)	8,467 (6,245)	10.43 (2,345)	37.2 (2,552)	23,379 (5.26)
	356 (14)	1,360 (474)	9,922 (7,320)	11.79 (2,650)	33.9 (2,320)	27,329 (6.14)
	406 (16)	1,871 (652)	11,388 (8,400)	13.13 (2,950)	31.7 (2,175)	31,065 (6.98)
LPI 32Plus	200 (7-7/8)	405 (141)	6,517 (4,805)	7.34 (1,650)	46.6 (3,190)	16,280 (3.66)
	225 (8-7/8)	531 (185)	7,532 (5,555)	8.25 (1,855)	46.6 (3,190)	17,988 (4.04)
	235 (9-1/4)	594 (207)	7,915 (5,840)	8.60 (1,935)	46.6 (3,190)	18,682 (4.20)
	241 <sup>(h)</sup> (9-1/2)	634 (221)	8,163 (6,020)	8.85 (1,990)	46.6 (3,190)	19,109 (4.30)
	286 (11-1/4)	950 (331)	9,944 (7,335)	10.00 (2,250)	46.6 (3,190)	22,258 (5.00)
	302 <sup>(h)</sup> (11-7/8)	1,076 (375)	10,576 (7,800)	10.43 (2,345)	46.6 (3,190)	23,379 (5.26)
	356 <sup>(h)</sup> (14)	1,575 (549)	12,729 (9,390)	11.79 (2,650)	33.9 (2,320)	27,329 (6.14)
	406 <sup>(h)</sup> (16)	2,132 (743)	14,759 (10,885)	13.13 (2,950)	31.7 (2,175)	31,065 (6.98)
LPI 42Plus	200 (7-7/8)	585 (204)	9,674 (7,135)	8.04 (1,805)	46.6 (3,190)	18,201 (4.09)
	225 (8-7/8)	781 (272)	11,173 (8,240)	8.88 (1,995)	46.6 (3,190)	20,550 (4.62)
	235 (9-1/4)	864 (301)	11,748 (8,665)	9.20 (2,070)	46.6 (3,190)	21,404 (4.81)
	240	910 (317)	12,042 (8,880)	9.37 (2,105)	46.6 (3,190)	21,884 (4.92)
	241 (9-1/2)	921 (321)	12,120 (8,940)	9.41 (2,115)	46.6 (3,190)	21,991 (4.94)
	286 (11-1/4)	1,377 (480)	14,770 (10,895)	10.88 (2,445)	46.6 (3,190)	26,047 (5.86)
	300	1,535 (535)	15,604 (11,510)	11.34 (2,550)	46.6 (3,190)	27,382 (6.16)
	302 <sup>(i)</sup> (11-7/8)	1,570 (547)	15,706 (11,585)	11.41 (2,565)	46.6 (3,190)	27,489 (6.18)
	356 <sup>(i)</sup> (14)	2,301 (802)	18,919 (13,955)	13.16 (2,960)	42.3 (2,900)	32,399 (7.28)
	360	2,368 (825)	19,178 (14,145)	13.30 (2,990)	42.3 (2,900)	32,773 (7.37)
	400	3,025 (1,054)	21,557 (15,900)	14.64 (3,290)	42.3 (2,900)	36,402 (8.18)
	406 <sup>(i)</sup> (16)	3,134 (1,092)	21,930 (16,175)	14.85 (3,340)	42.3 (2,900)	36,990 (8.32)
	457 (18)	3,825 (1,333)	24,805 (18,295)	17.94 (4,035)	36.0 (2,465)	51,241 (11.52)
	508 (20)	4,844 (1,688)	27,443 (20,240)	19.62 (4,410)	33.4 (2,291)	56,952 (12.80)
	559 (22)	5,992 (2,088)	30,070 (22,180)	21.27 (4,785)	27.5 (1,885)	62,610 (14.08)
	610 (24)	7,272 (2,534)	32,652 (24,085)	22.96 (5,160)	23.3 (1,595)	68,321 (15.36)

(Footnotes on Page 5)

Table 2. Factored Resistances and Stiffnesses for LP SolidStart I-Joists<sup>(a)</sup> (Continued)

Joist Series Designation	Joist Depth (inches, unless otherwise noted)	EI, <sup>(b)</sup> 10 <sup>6</sup> kN-mm <sup>2</sup> (10 <sup>6</sup> lbf-in. <sup>2</sup> )	M <sub>r</sub> , <sup>(c)</sup> kN-mm (lbf-ft)	V <sub>r</sub> , <sup>(d)</sup> kN (lbf)	VLC <sub>r</sub> , <sup>(e)</sup> kN/m (plf)	K, <sup>(f)</sup> kN (10 <sup>6</sup> lbf)
LPI 52Plus	235 (9-1/4)	958 (334)	14,296 (10,545)	12.04 (2,705)	50.8 (3,480)	26,314 (5.92)
	241 (9-1/2)	1,022 (356)	14,747 (10,875)	12.25 (2,755)	50.8 (3,480)	27,062 (6.08)
	286 (11-1/4)	1,518 (529)	17,961 (13,245)	13.87 (3,115)	50.8 (3,480)	32,026 (7.20)
	302 (11-7/8)	1,722 (600)	19,111 (14,095)	14.43 (3,245)	50.8 (3,480)	33,787 (7.60)
	356 (14)	2,508 (874)	23,012 (16,975)	16.36 (3,680)	46.6 (3,190)	39,872 (8.96)
	406 (16)	3,395 (1,183)	26,688 (19,685)	18.15 (4,080)	42.3 (2,900)	45,530 (10.24)
	457 (18)	4,419 (1,540)	30,171 (22,255)	19.97 (4,490)	36.0 (2,465)	51,241 (11.52)
	508 (20)	5,590 (1,948)	33,396 (24,630)	21.80 (4,900)	33.4 (2,291)	56,952 (12.80)
	559 (22)	6,910 (2,408)	36,576 (26,975)	23.59 (5,305)	27.5 (1,885)	62,610 (14.08)
610 (24)	8,377 (2,919)	39,721 (29,295)	25.42 (5,715)	23.3 (1,595)	68,321 (15.36)	
LPI 36	302 (11-7/8)	1,231 (429)	14,533 (10,720)	11.34 (2,550)	38.1 (2,610)	24,980 (5.62)
	356 (14)	1,785 (622)	17,487 (12,900)	12.85 (2,890)	38.1 (2,610)	29,357 (6.60)
	406 (16)	2,399 (836)	20,283 (14,960)	14.18 (3,190)	38.1 (2,610)	33,360 (7.50)
	457 (18)	3,105 (1,082)	22,854 (16,855)	15.34 (3,450)	27.5 (1,885)	37,363 (8.40)
	508 (20)	3,903 (1,360)	25,413 (18,745)	16.29 (3,660)	27.5 (1,885)	41,313 (9.29)
	559 (22)	4,790 (1,669)	27,939 (20,605)	17.10 (3,845)	25.4 (1,740)	45,370 (10.20)
	610 (24)	5,768 (2,010)	30,453 (22,460)	17.73 (3,985)	23.3 (1,595)	49,213 (11.06)
LPI 56	302 (11-7/8)	1,917 (668)	22,933 (16,915)	14.43 (3,245)	50.8 (3,480)	29,303 (6.59)
	356 (14)	2,778 (968)	27,623 (20,375)	16.36 (3,680)	46.6 (3,190)	34,214 (7.69)
	406 (16)	3,733 (1,301)	32,032 (23,625)	18.15 (4,080)	40.2 (2,755)	38,911 (8.75)
	457 (18)	4,833 (1,684)	36,102 (26,630)	19.97 (4,490)	36.0 (2,465)	43,608 (9.80)
	508 (20)	6,069 (2,115)	40,138 (29,605)	21.80 (4,900)	33.4 (2,291)	48,305 (10.86)
	559 (22)	7,453 (2,597)	44,141 (32,555)	23.59 (5,305)	27.5 (1,885)	53,002 (11.92)
	610 (24)	8,974 (3,127)	48,121 (35,495)	25.42 (5,715)	23.3 (1,595)	57,699 (12.97)
LPI 450	241 (9-1/2)	488 (170)	7,554 (5,570)	8.64 (1,940)	42.3 (2,900)	25,247 (5.68)
	302 (11-7/8)	821 (286)	9,741 (7,185)	10.04 (2,255)	42.3 (2,900)	31,225 (7.02)
	356 (14)	1,202 (419)	11,545 (8,515)	11.27 (2,535)	23.3 (1,595)	36,616 (8.23)
	406 (16)	1,633 (569)	13,214 (9,745)	12.46 (2,800)	23.3 (1,595)	41,740 (9.38)
LPI 530	241 (9-1/2)	574 (200)	9,020 (6,655)	9.41 (2,115)	42.3 (2,900)	25,514 (5.74)
	302 (11-7/8)	967 (337)	11,613 (8,565)	10.99 (2,470)	42.3 (2,900)	31,545 (7.09)
	356 (14)	1,412 (492)	13,778 (10,160)	12.39 (2,785)	23.3 (1,595)	36,990 (8.32)
	406 (16)	1,911 (666)	15,762 (11,625)	13.73 (3,085)	23.3 (1,595)	42,114 (9.47)

(Footnotes on Page 5)

For Imperial: 1 mm = 0.0394 in., 1 N = 0.2248 lbf, 1 kN/m = 5.71 lbf/in.

- (a) All factored resistance values include the resistance factor specified in CSA-O86. The tabulated values are for the standard term of load duration ( $K_D = 1.0$ ). All values, except for  $EI$ ,  $VLC_r$ , and  $K$ , shall be adjusted for other load durations in accordance with the code.
- (b) Bending stiffness ( $EI$ ) of the I-joist
- (c) Factored moment resistance ( $M_r$ ) of the I-joist, which shall not be increased by any system factor ( $K_H = 1.0$ ).
- (d) Factored shear resistance ( $V_r$ ) of the I-joist.
- (e) Factored uniform vertical load resistance ( $VLC_r$ ) of the I-joist.
- (f) Coefficient of shear deflection ( $K$ ). For calculating uniform load and center-point load deflections of the I-joist in a simple-span application, use Equations 1 and 2.

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

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

where  $\delta$  = calculated deflection, mm (in.),  $\omega$  = uniform load, kN/mm (lbf/in.),  
 $P$  = concentrated load, kN (lbf),  $L$  = design span, mm (in.),  
 $EI$  = bending stiffness of the I-joist, kN-mm<sup>2</sup> (lbf-in.<sup>2</sup>), and  $K$  = coefficient of shear deflection, kN (lbf).

- (g) The 241, 302, 356, and 406-mm LPI 20Plus trademarked with mill number 1068 (Larouche, QC) shall be permitted to be designed as PRI-40 I-joists. The 241, 302, and 356-mm LPI 20Plus trademarked with mill number 1077 (St. Prime, QC) shall be permitted to be designed as PRI-40 I-joists.
- (h) The 241, 302, 356, and 406-mm LPI 32Plus trademarked with mill number 1068 (Larouche, QC) shall be permitted to be designed as PRI-60 I-joists. The 241, 302, and 356-mm LPI 32Plus trademarked with mill number 1077 (St. Prime, QC) shall be permitted to be designed as PRI-60 I-joists.
- (i) The 302, 356, and 406-mm LPI 42Plus I-joists trademarked with mill numbers 1068 (Larouche, QC) and 1069 (Red Bluff, CA) are recognized as PRI-80 I-joists. The 302 and 356-mm LPI 42Plus trademarked with mill number 1077 (St. Prime, QC) are recognized as PRI-80 I-joists.

Table 3. Factored Reaction Resistances for LP SolidStart I-Joists<sup>(a,b,c,d)</sup> and Specified Compressive Strength Perpendicular to Grain for Flanges

Joist Series Designation	Joist Depth, mm (in.)	Intermediate Reaction <sup>(e)</sup> , kN (lbf)				End Reaction <sup>(f)</sup> kN (lbf)				Specified Compressive Strength Perpendicular to Grain ( $f_{cp}$ ), MPa (psi)
		89 mm (3-1/2 in.) Brg. Length		140 mm (5-1/2 in.) Brg. Length		38 mm (1-1/2 in.) Brg. Length		102 mm (4 in.) Brg. Length		
		With Brg. Stiffeners		With Brg. Stiffeners		With Brg. Stiffeners		With Brg. Stiffeners		
		No	Yes	No	Yes	No	Yes	No	Yes	
LPI 18	200 (7-7/8)	13.27 (2,985)	14.29 (3,210)	14.85 (3,340)	15.80 (3,550)	6.11 (1,375)	6.60 (1,485)	6.60 (1,485)	6.60 (1,485)	5.3 (769)
	225 (8-7/8)	13.62 (3,060)	14.71 (3,305)	15.20 (3,415)	16.29 (3,660)	6.11 (1,375)	6.95 (1,565)	6.85 (1,540)	7.41 (1,665)	
	235 (9-1/4)	13.76 (3,095)	14.85 (3,340)	15.38 (3,455)	16.50 (3,710)	6.11 (1,375)	7.09 (1,595)	6.95 (1,565)	7.72 (1,735)	
	241 (9-1/2)	13.87 (3,115)	14.99 (3,370)	15.48 (3,480)	16.64 (3,740)	6.11 (1,375)	7.20 (1,620)	6.99 (1,570)	7.93 (1,785)	
	286 (11-1/4)	14.50 (3,260)	15.69 (3,530)	16.15 (3,630)	17.55 (3,945)	6.11 (1,375)	7.79 (1,750)	7.23 (1,625)	8.99 (2,020)	
	302 (11-7/8)	14.71 (3,305)	15.94 (3,585)	16.39 (3,685)	17.87 (4,015)	6.11 (1,375)	8.04 (1,805)	7.30 (1,640)	9.37 (2,105)	
	356 (14)	15.48 (3,480)	16.81 (3,780)	17.20 (3,865)	18.96 (4,260)	6.11 (1,375)	8.81 (1,980)	7.58 (1,705)	10.60 (2,385)	
406 (16)	16.22 (3,645)	17.66 (3,970)	18.01 (4,050)	20.04 (4,505)	6.11 (1,375)	9.51 (2,140)	7.83 (1,760)	11.79 (2,650)		
LPI 20Plus	200 (7-7/8)	14.74 (3,315)	15.90 (3,575)	16.50 (3,710)	17.55 (3,945)	6.81 (1,530)	7.34 (1,650)	7.34 (1,650)	7.34 (1,650)	5.3 (769)
	225 (8-7/8)	15.16 (3,410)	16.36 (3,680)	16.92 (3,805)	18.11 (4,070)	6.81 (1,530)	7.72 (1,735)	7.62 (1,715)	8.25 (1,855)	
	235 (9-1/4)	15.31 (3,440)	16.53 (3,715)	17.10 (3,845)	18.36 (4,130)	6.81 (1,530)	7.90 (1,775)	7.72 (1,735)	8.60 (1,935)	
	240	15.38 (3,455)	16.64 (3,740)	17.17 (3,860)	18.46 (4,150)	6.81 (1,530)	7.97 (1,790)	7.76 (1,745)	8.78 (1,975)	
	241 <sup>(g)</sup> (9-1/2)	15.41 (3,465)	16.67 (3,750)	17.20 (3,865)	18.50 (4,160)	6.81 (1,530)	8.00 (1,800)	7.79 (1,750)	8.85 (1,990)	
	286 (11-1/4)	16.11 (3,620)	17.45 (3,920)	17.97 (4,040)	19.52 (4,390)	6.81 (1,530)	8.67 (1,950)	8.04 (1,805)	10.00 (2,250)	
	300	16.32 (3,670)	17.69 (3,980)	18.18 (4,090)	19.83 (4,460)	6.81 (1,530)	8.92 (2,005)	8.11 (1,825)	10.36 (2,330)	
	302 <sup>(g)</sup> (11-7/8)	16.36 (3,680)	17.73 (3,985)	18.22 (4,095)	19.87 (4,465)	6.81 (1,530)	8.95 (2,010)	8.14 (1,830)	10.43 (2,345)	
	356 <sup>(g)</sup> (14)	17.24 (3,875)	18.71 (4,205)	19.13 (4,300)	21.10 (4,745)	6.81 (1,530)	9.79 (2,200)	8.42 (1,895)	11.79 (2,650)	
	360	17.31 (3,890)	18.78 (4,220)	19.24 (4,325)	21.20 (4,765)	6.81 (1,530)	9.86 (2,220)	8.46 (1,900)	11.94 (2,685)	
400	17.94 (4,035)	19.52 (4,390)	19.90 (4,475)	22.12 (4,970)	6.81 (1,530)	10.50 (2,360)	8.67 (1,950)	12.95 (2,910)		
406 <sup>(g)</sup> (16)	18.04 (4,055)	19.62 (4,410)	20.01 (4,500)	22.29 (5,010)	6.81 (1,530)	10.60 (2,385)	8.71 (1,955)	13.13 (2,950)		
LPI 20x4	241 (9-1/2)	15.41 (3,465)	16.67 (3,750)	17.20 (3,865)	18.50 (4,160)	6.81 (1,530)	8.00 (1,800)	7.79 (1,750)	8.85 (1,990)	5.3 (769)
	302 (11-7/8)	16.36 (3,680)	17.73 (3,985)	18.22 (4,095)	19.87 (4,465)	6.81 (1,530)	8.95 (2,010)	8.14 (1,830)	10.43 (2,345)	
	356 (14)	17.24 (3,875)	18.71 (4,205)	19.13 (4,300)	21.10 (4,745)	6.81 (1,530)	9.79 (2,200)	8.42 (1,895)	11.79 (2,650)	
	406 (16)	18.04 (4,055)	19.62 (4,410)	20.01 (4,500)	22.29 (5,010)	6.81 (1,530)	10.60 (2,385)	8.71 (1,955)	13.13 (2,950)	
LPI 32Plus	200 (7-7/8)	14.74 (3,315)	15.90 (3,575)	16.50 (3,710)	17.55 (3,945)	6.81 (1,530)	7.34 (1,650)	7.34 (1,650)	7.34 (1,650)	6.5 (943)
	225 (8-7/8)	15.16 (3,410)	16.36 (3,680)	16.92 (3,805)	18.11 (4,070)	6.81 (1,530)	7.72 (1,735)	7.62 (1,715)	8.25 (1,855)	
	235 (9-1/4)	15.31 (3,440)	16.53 (3,715)	17.10 (3,845)	18.36 (4,130)	6.81 (1,530)	7.90 (1,775)	7.72 (1,735)	8.60 (1,935)	
	241 <sup>(h)</sup> (9-1/2)	15.41 (3,465)	16.67 (3,750)	17.20 (3,865)	18.50 (4,160)	6.81 (1,530)	8.00 (1,800)	7.79 (1,750)	8.85 (1,990)	
	286 (11-1/4)	16.11 (3,620)	17.45 (3,920)	17.97 (4,040)	19.52 (4,390)	6.81 (1,530)	8.67 (1,950)	8.04 (1,805)	10.00 (2,250)	
	302 <sup>(h)</sup> (11-7/8)	16.36 (3,680)	17.73 (3,985)	18.22 (4,095)	19.87 (4,465)	6.81 (1,530)	8.95 (2,010)	8.14 (1,830)	10.43 (2,345)	
	356 <sup>(h)</sup> (14)	17.24 (3,875)	18.71 (4,205)	19.13 (4,300)	21.10 (4,745)	6.81 (1,530)	9.79 (2,200)	8.42 (1,895)	11.79 (2,650)	
406 <sup>(h)</sup> (16)	18.04 (4,055)	19.62 (4,410)	20.01 (4,500)	22.29 (5,010)	6.81 (1,530)	10.60 (2,385)	8.71 (1,955)	13.13 (2,950)		

(Footnotes on Page 8)

Table 3. Factored Reaction Resistances for LP SolidStart I-Joists<sup>(a,b,c,d)</sup> and Specified Compressive Strength Perpendicular to Grain for Flanges  
 (Continued)

Joist Series Designation	Joist Depth, mm (in.)	Intermediate Reaction <sup>(e)</sup> , kN (lbf)				End Reaction <sup>(f)</sup> , kN (lbf)				Specified Compressive Strength Perpendicular to Grain ( $f_{cp}$ ), MPa (psi)
		89 mm (3-1/2 in.) Brg. Length		140 mm (5-1/2 in.) Brg. Length		38 mm (1-1/2 in.) Brg. Length		102 mm (4 in.) Brg. Length		
		With Brg. Stiffeners		With Brg. Stiffeners		With Brg. Stiffeners		With Brg. Stiffeners		
		No	Yes	No	Yes	No	Yes	No	Yes	
LPI 42Plus	200 (7-7/8)	19.76 (4,445)	20.50 (4,610)	19.76 (4,445)	20.85 (4,690)	8.04 (1,805)	8.04 (1,805)	8.04 (1,805)	8.04 (1,805)	6.5 (943)
	225 (8-7/8)	20.15 (4,530)	21.24 (4,775)	20.29 (4,560)	21.80 (4,900)	8.21 (1,845)	8.88 (1,995)	8.71 (1,955)	8.88 (1,995)	
	235 (9-1/4)	20.29 (4,560)	21.52 (4,840)	20.50 (4,610)	22.19 (4,990)	8.28 (1,865)	9.20 (2,070)	8.99 (2,020)	9.20 (2,070)	
	240	20.33 (4,570)	21.66 (4,870)	20.61 (4,635)	22.36 (5,025)	8.32 (1,870)	9.37 (2,105)	9.09 (2,045)	9.37 (2,105)	
	241 (9-1/2)	20.36 (4,575)	21.73 (4,885)	20.64 (4,640)	22.43 (5,045)	8.32 (1,870)	9.41 (2,115)	9.16 (2,060)	9.41 (2,115)	
	286 (11-1/4)	21.03 (4,725)	22.96 (5,160)	21.59 (4,855)	24.08 (5,415)	8.64 (1,940)	10.29 (2,310)	10.64 (2,390)	10.88 (2,445)	
	300	21.20 (4,765)	23.41 (5,265)	21.87 (4,915)	24.61 (5,530)	8.74 (1,965)	10.57 (2,375)	11.13 (2,500)	11.34 (2,550)	
	302 <sup>(g)</sup> (11-7/8)	21.24 (4,775)	23.45 (5,270)	21.90 (4,925)	24.68 (5,550)	8.74 (1,965)	10.60 (2,385)	11.20 (2,520)	11.41 (2,565)	
	356 <sup>(h)</sup> (14)	22.05 (4,955)	25.03 (5,625)	23.03 (5,175)	26.71 (6,005)	9.13 (2,050)	11.65 (2,620)	11.20 (2,520)	13.16 (2,960)	
	360	22.12 (4,970)	25.13 (5,650)	23.13 (5,200)	26.89 (6,045)	9.16 (2,060)	11.72 (2,635)	11.20 (2,520)	13.30 (2,990)	
	400	22.68 (5,100)	26.33 (5,920)	23.98 (5,390)	28.40 (6,385)	9.44 (2,125)	12.50 (2,810)	11.20 (2,520)	14.64 (3,290)	
	406 <sup>(i)</sup> (16)	22.78 (5,120)	26.50 (5,960)	24.12 (5,420)	28.64 (6,440)	9.48 (2,130)	12.64 (2,840)	11.20 (2,520)	14.85 (3,340)	
	457 (18)	24.22 (5,445)	30.08 (6,765)	27.03 (6,075)	32.47 (7,300)	10.53 <sup>(j)</sup> (2,370) <sup>(k)</sup>	16.18 <sup>(l)</sup> (3,640) <sup>(m)</sup>	11.87 (2,670)	17.94 (4,035)	
	508 (20)	24.22 (5,445)	30.96 (6,960)	27.03 (6,075)	33.95 (7,630)	10.53 <sup>(j)</sup> (2,370) <sup>(k)</sup>	17.20 <sup>(l)</sup> (3,865) <sup>(m)</sup>	11.87 (2,670)	19.62 (4,410)	
559 (22)	24.22 (5,445)	31.80 (7,150)	27.03 (6,075)	35.31 (7,940)	10.53 <sup>(j)</sup> (2,370) <sup>(k)</sup>	18.22 <sup>(l)</sup> (4,095) <sup>(m)</sup>	11.87 (2,670)	21.27 (4,785)		
610 (24)	24.22 (5,445)	32.58 (7,325)	27.03 (6,075)	36.58 (8,225)	10.53 <sup>(j)</sup> (2,370) <sup>(k)</sup>	18.99 <sup>(l)</sup> (4,270) <sup>(m)</sup>	11.87 (2,670)	22.96 (5,160)		
LPI 52Plus	235 (9-1/4)	23.87 (5,365)	25.84 (5,810)	24.57 (5,525)	26.68 (6,000)	9.34 (2,100)	11.44 (2,575)	11.16 (2,510)	12.04 (2,705)	6.5 (943)
	241 (9-1/2)	23.87 (5,365)	26.05 (5,855)	24.68 (5,550)	26.96 (6,060)	9.37 (2,105)	11.58 (2,605)	11.23 (2,525)	12.25 (2,755)	
	286 (11-1/4)	23.98 (5,390)	27.56 (6,195)	25.31 (5,690)	28.86 (6,485)	9.55 (2,145)	12.46 (2,800)	11.69 (2,630)	13.87 (3,115)	
	302 (11-7/8)	24.01 (5,400)	28.08 (6,315)	25.52 (5,740)	29.56 (6,645)	9.62 (2,160)	12.78 (2,875)	11.87 (2,670)	14.43 (3,245)	
	356 (14)	24.12 (5,420)	29.91 (6,725)	26.29 (5,910)	31.87 (7,165)	9.72 (2,185)	13.83 (3,110)	12.95 (2,910)	16.36 (3,680)	
	406 (16)	24.22 (5,445)	31.63 (7,110)	27.03 (6,075)	34.09 (7,665)	9.83 (2,210)	14.81 (3,330)	13.94 (3,135)	18.15 (4,080)	
	457 (18)	24.22 (5,445)	33.35 (7,495)	27.03 (6,075)	36.26 (8,155)	11.94 <sup>(j)</sup> (2,685) <sup>(k)</sup>	17.48 <sup>(l)</sup> (3,930) <sup>(m)</sup>	14.95 (3,360)	19.97 (4,490)	
	508 (20)	24.22 (5,445)	35.03 (7,875)	27.03 (6,075)	38.44 (8,640)	11.94 <sup>(j)</sup> (2,685) <sup>(k)</sup>	18.78 <sup>(l)</sup> (4,220) <sup>(m)</sup>	14.95 (3,360)	21.80 (4,900)	
559 (22)	24.22 (5,445)	36.75 (8,265)	27.03 (6,075)	40.65 (9,140)	11.94 <sup>(j)</sup> (2,685) <sup>(k)</sup>	20.11 <sup>(l)</sup> (4,520) <sup>(m)</sup>	14.95 (3,360)	23.59 (5,305)		
610 (24)	24.22 (5,445)	38.47 (8,650)	27.03 (6,075)	42.83 (9,630)	11.94 <sup>(j)</sup> (2,685) <sup>(k)</sup>	21.45 <sup>(l)</sup> (4,820) <sup>(m)</sup>	14.95 (3,360)	25.42 (5,715)		
LPI 36	302 (11-7/8)	17.55 (3,945)	21.80 (4,900)	19.90 (4,475)	24.36 (5,475)	7.20 (1,620)	10.53 (2,370)	9.06 (2,035)	11.34 (2,550)	6.90 (1,001)
	356 (14)	17.55 (3,945)	22.50 (5,060)	19.90 (4,475)	25.03 (5,625)	7.20 (1,620)	10.64 (2,390)	9.30 (2,090)	12.85 (2,890)	
	406 (16)	17.55 (3,945)	23.20 (5,215)	19.90 (4,475)	25.66 (5,770)	7.20 (1,620)	10.71 (2,405)	9.55 (2,145)	14.18 (3,190)	
	457 (18)	17.55 (3,945)	23.91 (5,375)	19.90 (4,475)	26.33 (5,920)	8.25 <sup>(j)</sup> (1,855) <sup>(k)</sup>	12.64 <sup>(l)</sup> (2,840) <sup>(m)</sup>	9.79 (2,200)	15.34 (3,450)	
	508 (20)	17.55 (3,945)	24.57 (5,525)	19.90 (4,475)	26.96 (6,060)	8.32 <sup>(j)</sup> (1,870) <sup>(k)</sup>	13.06 <sup>(l)</sup> (2,935) <sup>(m)</sup>	10.04 (2,255)	16.29 (3,660)	
	559 (22)	17.55 (3,945)	25.27 (5,680)	19.90 (4,475)	27.59 (6,205)	8.42 <sup>(j)</sup> (1,895) <sup>(k)</sup>	13.44 <sup>(l)</sup> (3,025) <sup>(m)</sup>	10.29 (2,310)	17.10 (3,845)	
610 (24)	17.55 (3,945)	25.98 (5,840)	19.90 (4,475)	28.26 (6,355)	8.53 <sup>(j)</sup> (1,920) <sup>(k)</sup>	13.76 <sup>(l)</sup> (3,095) <sup>(m)</sup>	10.53 (2,370)	17.73 (3,985)		

(Footnotes on Page 8)

Table 3. Factored Reaction Resistances for LP SolidStart I-Joists<sup>(a,b,c,d)</sup> and Specified Compressive Strength Perpendicular to Grain for Flanges  
 (Continued)

Joist Series Designation	Joist Depth, mm (in.)	Intermediate Reaction <sup>(e)</sup> , kN (lbf)				End Reaction <sup>(f)</sup> , kN (lbf)				Specified Compressive Strength Perpendicular to Grain ( $f_{cp}$ ), MPa (psi)
		89 mm (3-1/2 in.) Brg. Length		140 mm (5-1/2 in.) Brg. Length		38 mm (1-1/2 in.) Brg. Length		102 mm (4 in.) Brg. Length		
		With Brg. Stiffeners		With Brg. Stiffeners		With Brg. Stiffeners		With Brg. Stiffeners		
		No	Yes	No	Yes	No	Yes	No	Yes	
LPI 56	302 (11-7/8)	21.98 (4,940)	27.10 (6,095)	25.77 (5,795)	28.50 (6,410)	8.04 (1,805)	11.65 (2,620)	10.64 (2,390)	14.43 (3,245)	6.90 (1,001)
	356 (14)	21.98 (4,940)	28.47 (6,400)	25.77 (5,795)	30.19 (6,785)	8.04 (1,805)	12.32 (2,770)	10.78 (2,425)	16.36 (3,680)	
	406 (16)	21.98 (4,940)	29.80 (6,700)	25.77 (5,795)	31.77 (7,140)	8.04 (1,805)	12.95 (2,910)	10.92 (2,455)	18.15 (4,080)	
	457 (18)	21.98 (4,940)	31.14 (7,000)	25.77 (5,795)	33.35 (7,495)	9.23 <sup>(g)</sup> (2,075) <sup>(h)</sup>	16.15 <sup>(i)</sup> (3,630) <sup>(h)</sup>	11.06 (2,485)	19.97 (4,490)	
	508 (20)	21.98 (4,940)	32.44 (7,290)	25.77 (5,795)	34.93 (7,855)	9.30 <sup>(i)</sup> (2,090) <sup>(h)</sup>	17.24 <sup>(i)</sup> (3,875) <sup>(h)</sup>	11.20 (2,520)	21.80 (4,900)	
	559 (22)	21.98 (4,940)	33.77 (7,590)	25.77 (5,795)	36.51 (8,210)	9.37 <sup>(i)</sup> (2,105) <sup>(h)</sup>	18.32 <sup>(i)</sup> (4,120) <sup>(h)</sup>	11.34 (2,550)	23.59 (5,305)	
	610 (24)	21.98 (4,940)	35.10 (7,890)	25.77 (5,795)	38.12 (8,570)	9.41 <sup>(i)</sup> (2,115) <sup>(h)</sup>	19.45 <sup>(i)</sup> (4,370) <sup>(h)</sup>	11.48 (2,580)	25.42 (5,715)	
LPI 450	241 (9-1/2)	13.02 (2,930)	14.64 (3,290)	15.41 (3,465)	16.96 (3,810)	5.90 (1,325)	7.72 (1,735)	7.30 (1,640)	8.64 (1,940)	6.90 (1,001)
	302 (11-7/8)	13.48 (3,030)	15.66 (3,520)	15.83 (3,560)	17.62 (3,960)	5.90 (1,325)	8.50 (1,910)	7.51 (1,690)	10.04 (2,255)	
	356 (14)	13.94 (3,135)	16.57 (3,725)	16.18 (3,640)	18.22 (4,095)	5.90 (1,325)	9.16 (2,060)	7.72 (1,735)	11.27 (2,535)	
	406 (16)	14.36 (3,230)	17.45 (3,920)	16.57 (3,725)	18.82 (4,230)	5.90 (1,325)	9.79 (2,200)	7.90 (1,775)	12.46 (2,800)	
LPI 530	241 (9-1/2)	14.50 (3,260)	16.15 (3,630)	15.90 (3,575)	17.55 (3,945)	6.18 (1,390)	7.90 (1,775)	7.69 (1,730)	9.41 (2,115)	6.90 (1,001)
	302 (11-7/8)	14.88 (3,345)	17.45 (3,920)	16.85 (3,790)	19.20 (4,315)	6.18 (1,390)	8.74 (1,965)	7.86 (1,770)	10.99 (2,470)	
	356 (14)	15.20 (3,415)	18.64 (4,190)	17.73 (3,985)	20.68 (4,650)	6.18 (1,390)	9.48 (2,130)	8.04 (1,805)	12.39 (2,785)	
	406 (16)	15.52 (3,490)	19.73 (4,435)	18.53 (4,165)	22.05 (4,955)	6.18 (1,390)	10.18 (2,290)	8.18 (1,840)	13.73 (3,085)	

For Imperial: 1 mm = 0.0394 in., 1 N = 0.2248 lbf, 1 MPa = 145.04 psi

- (a) Reaction capacity shall be limited by the tabulated I-joist reaction capacity, flange bearing capacity or the bearing capacity of the support material, whichever is less. The flange bearing capacity is based on the specified compressive strength perpendicular to grain of the I-joist flange, the net flange width and the bearing length, and may be further limited by the bearing capacity of the support material. To calculate the net flange width, subtract 6.4 mm (0.25 inch) from the flange width (see Table 1) of the LPI 18, LPI 20Plus, LPI 32Plus, LPI 42Plus, and LPI 52Plus series I-joists, or subtract 2.5 mm (0.10 inch) from the flange width (see Table 1) of the LPI 36, LPI 56, LPI 450, and LPI 530 series I-joists.
- (b) The tabulated values are for the standard term of load duration ( $K_D = 1.0$ ).
- (c) Interpolation between bearing lengths is permitted.
- (d) Bearing stiffeners shall be installed in accordance with the recommendations provided by the manufacturer.
- (e) For all depths of 241 mm (9-1/2 inches) and greater, the intermediate reaction with a minimum bearing length of 76 mm (3 inches) shall be permitted to be determined based on the intermediate reaction values with a bearing length of 89 mm (3-1/2 inches) and 140 mm (5-1/2 inches).
- (f) The minimum bearing length for end reactions is 38 mm (1-1/2 inches), unless otherwise noted.
- (g) The 241, 302, 356, and 406-mm LPI 20Plus trademarked with mill number 1068 (Larouche, QC) shall be permitted to be designed as PRI-40 I-joists. The 241, 302, and 356-mm LPI 20Plus trademarked with mill number 1077 (St. Prime, QC) shall be permitted to be designed as PRI-40 I-joists.
- (h) The 241, 302, 356, and 406-mm LPI 32Plus trademarked with mill number 1068 (Larouche, QC) shall be permitted to be designed as PRI-60 I-joists. The 241, 302, and 356-mm LPI 32Plus trademarked with mill number 1077 (St. Prime, QC) shall be permitted to be designed as PRI-60 I-joists.
- (i) The 302, 356, and 406-mm LPI 42Plus I-joists trademarked with mill numbers 1068 (Larouche, QC) and 1069 (Red Bluff, CA) are recognized as PRI-80 I-joists. The 302 and 356-mm LPI 42Plus trademarked with mill number 1077 (St. Prime, QC) are recognized as PRI-80 I-joists.
- (j) Minimum bearing length is 64 mm (2-1/2 inches).



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