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Joint Evaluation Report

ESR-1262

Reissued January 2022

This report is subject to renewal January 2024.

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 17 33—Wood I-joists

REPORT HOLDER:

EACOM TIMBER CORPORATION

ADDITIONAL LISTEE:

BLUELINX CORPORATION

EVALUATION SUBJECT:

P3 JOIST PJI-40, PJI-60, PJI-65, PJI-80 AND PJI-90 I-JOISTS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012 and 2009 *International Building Code®* (IBC)
- 2021, 2018, 2015, 2012 and 2009 *International Residential Code®* (IRC)

Properties evaluated:

- Structural
- Fire resistance

2.0 USES

P3 JOIST by EACOM Timber Corporation I-joists are used as joists, roof rafters, rim joists and blocking panels in floor/ceiling and roof assemblies for single and multiple-span conditions in buildings of Type V construction.

3.0 DESCRIPTION

3.1 General:

P3 JOIST I-joists are structural elements manufactured using finger-jointed, solid-sawn wood flanges and wood structural panel webs bonded together with an exterior-grade adhesive forming an "I" cross-sectional shape. The P3 JOIST I-joists are manufactured to meet the performance standard entitled "PRI-400 Performance Standard for APA EWS I-joists," recognized in ESR-1405, and the EACOM Timber Corporation quality control manual. The company names and associated product trade names for the P3 JOIST and private-label I-joists are as follows:

COMPANY OR LISTEE	PRODUCT TRADE NAME AND SERIES
EACOM Timber Corporation	PJI 40, 60, 65, 80 and 90
BlueLinx Corporation	BLI 40, 60, 65, 80 and 90

All PJI I-joists, regardless of the private-label mark, are identified as described in Section 7.0 of this report.

3.2 Material Specifications:

3.2.1 Flanges: P3 JOIST I-joists are fabricated from solid-sawn SPF, Grade 1650 MSR for PJI-40 and PJI-65, Grade 2100 MSR for PJI-60 and PJI-80 flanges, and Grade 2400 MSR for PJI-90 flanges [nominal size of 2 inches by 3 inches (51 by 76 mm) for PJI-40 and PJI-60, and 2 inches by 4 inches (51 by 102 mm) for PJI-65, PJI-80 and PJI-90].

The P3 JOIST I-joists are produced with constant depths as noted in the table in Figure 1 and lengths from 12 to 64 feet (3.6 to 19.5 m).

3.2.2 Web: Webs consist of $^{3}/_{8}$-inch-thick or $^{7}/_{16}$-inch-thick (9.5 mm or 11.1 mm), oriented strand board (OSB), which meets the requirements of the United States Department of Commerce Product Standard PS 2 for Structural 1, Exposure 1, rated panels.

3.2.3 Adhesive: Adhesives are exterior type complying with ASTM D2559 and as specified in the quality control manual that contains P3 JOIST manufacturing standards. The adhesives have also been tested in accordance with ASTM D7247.

4.0 DESIGN AND INSTALLATION

4.1 General:

Installation of P3 JOIST I-joists must comply with this report and the manufacturer's published installation instructions. The manufacturer's published installation instructions must be available at the jobsite at all times during installation.

4.2 Design Values:

Design values listed in this report for P3 JOIST I-joists are limited to I-joists installed in covered, dry conditions of use. Dry conditions of use are environmental conditions represented by sawn lumber in which the equilibrium moisture content is less than 16 percent.

See Tables 1A, 1B, and 2 of this report for allowable design values and span/load values of P3 JOIST I-joists. See Figure 1 of this report for a typical cross section of a P3 JOIST I-joist, showing flange and web dimensions. See Table 3 of this report for allowable web hole sizes and locations.

With the exception of reference design reactions, reference design values for P3 JOIST I-joists must be adjusted using the appropriate adjustment factors as specified in the American Wood Council *National Design Specification® for Wood Construction* (NDS) with the Supplement *Design Values for Wood Construction*. Reference design reactions, corresponding to various load duration factors, are given in Table 1B.

4.3 Deflection:

Maximum allowable deflection of P3 JOIST I-joists under design loads must not exceed the maximum allowable deflections specified in Section 1604.3 of the IBC, and Section R301.7 of the IRC. The method to calculate the deflection is as follows:

Calculated deflection of the joists under design load, utilizing the deflection formulas listed below:

$\Delta = 5w\ell^4/(384\ EI) + w\ell^2/K$ for uniformly distributed loads

$\Delta = P\ell^3/(48\ EI) + 2P\ell\ /K$ for simple span with a concentrated load at mid-span

where:

P = Concentrated load (lbf)

w = Uniform loads (lbf/in.)

EI = Bending stiffness (in.^{2} - lbf)

ℓ = Span (inches) between centers of supports.

K = Coefficient of shear deflection (lbf) (see Table 1A of this report)

Δ = Calculated deflection (in.)

4.4 Shear Load:

Vertical shear load calculations must include all loads resisted by the P3 JOIST I-joists between the faces of the supports.

4.5 Lateral Support:

The compression flange of P3 JOIST I-joists must be provided with continuous lateral support. Sheathing fastened in accordance with the applicable code may be used to provide this lateral support at the top flange. Continuous bracing must also be provided to support the bottom flange in areas of negative moment over interior supports and at cantilevers. Additionally, the ends of P3 JOIST I-joists must be provided with lateral support to resist rollover at bearing locations. This lateral support may be provided by either end blocking, rim joist, or cross bridging and must be installed consistent with the lateral stability presumed in the design calculations.

4.6 Bottom Flange Loads:

Concentrated loads imposed on the bottom flange of the joists have not been evaluated and are outside the scope of this report.

4.7 End Bearing:

End bearing length must be a minimum 1 3/4 inches (44 mm) for simple spans; for multiple span joists, intermediate bearing length must be a minimum 3 1/2 inches (89 mm). P3 JOIST I-joist bearing lengths must be in accordance with Table 1B of this report.

4.8 Repetitive-member Use:

The repetitive-member use factors applicable to the moment capacities listed in Table 1A of this report are limited to 1.0.

4.9 Holes in I-joist Web:

Table 3 of this report specifies allowable sizes and locations of round holes in the I-joist webs.

4.10 Member Spans:

I-joist spans may be determined in accordance with Table 2 of this report.

4.11 Fasteners:

Fastener design values must be in accordance with the applicable code. Fastener spacings must comply with the minimum spacing requirements prescribed by the code for nails installed in sawn lumber having a minimum specific gravity of 0.42 such as for spruce-pine-fir. Fastening must be accomplished in a manner that will not cause splitting in the I-joist flanges. When P3 JOIST I-joists are used as wood diaphragm framing, refer to Table 4 for minimum nail spacing in I-joist flanges.

4.12 Web Stiffeners:

Web stiffener requirements for reactions and concentrated loads are as shown in Table 1B and Figure 3 of this report.

4.13 Horizontal Diaphragms: P3 JOIST I-joists used in the construction of horizontal wood diaphragms are subject to the allowable load values and requirements of Table 4.

4.14 Blocking Panels and Rim Boards:

Bearing walls perpendicular to and supported by I-joists require full-depth blocking or rim joists at supports. I-joists used as blocking panels must be installed between I-joists and have the maximum applicable vertical load capacities shown in Table 1A. When used as rim boards, P3 JOIST I-joists must be designed in accordance with the uniform vertical load transfer capacities shown in Tables 1A and the lateral load transfer capacities equal to the allowable shear values shown in Table 4.

4.15 Fire-resistance-rated Construction:

The P3 JOIST I-joists described in this report may be used as described in Section 4.2.2 of ESR-1405. Evaluation of the use of P3 JOIST I-joists as a component of other fire-resistance-rated roof or floor assemblies is outside the scope of this report.

5.0 CONDITIONS OF USE

The P3 JOIST I-joists described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Installation must comply with this report, the manufacturer's published installation instructions and the applicable code. If there is a conflict between the installation instructions and this report, this report governs.

5.2 Design calculations and details for specific applications demonstrating that P3 JOIST I-joists comply with this report must be submitted to the code official. The design calculations and details for specific applications must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

Calculations must indicate the following:

- Load duration factor used in accordance with AWC NDS.
- Required design capacities of the I-joists under design loads.
- Allowable design capacities of the P3 JOIST I-joists.
- Allowable deflection of the P3 JOIST I-joists consistent with this report.

5.3 Cutting and notching of P3 JOIST I-joist flanges is not permitted, except for cutting to proper length for installation.

5.4 The use of pressure-treated P3 JOIST I-joists, or portions thereof, is outside the scope of this report.

5.5 Evaluation of the use of P3 JOIST I-joists as a component of fire-resistance-rated construction is

as noted in Section 4.13 of this report.

5.6 Web opening sizes and locations within P3 JOIST I-joists must be limited to the criteria in Table 3 of this report. Web opening conditions not covered in Table 3 of this report have not been evaluated and are outside the scope of this report.

5.7 P3 JOIST I-joists are produced in Sault St. Marie, Ontario, Canada, under a quality control program with inspections by ICC Evaluation Service, LLC and APA – The Engineered Wood Association.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Prefabricated Wood I-joists (AC14), dated June 2019 (Editorially revised February 2021).

Data in accordance with the ICC-ES Acceptance Criteria for Rim Board Products (AC124), dated June 2019 (editorially revised February 2021).

7.0 IDENTIFICATION

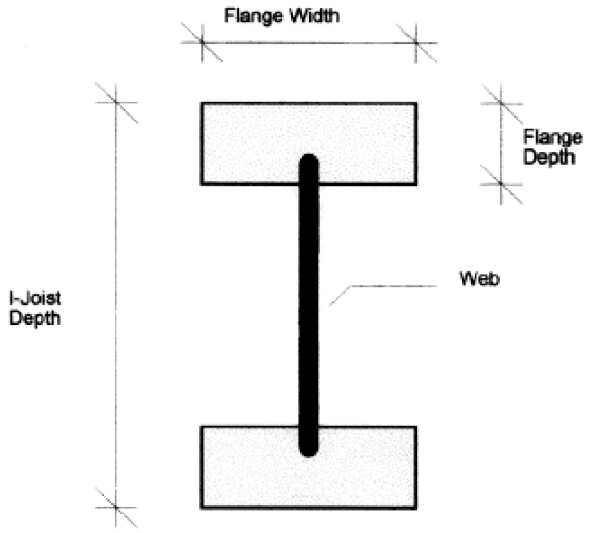
7.1 Each I-Joist must be marked with the product trade name; the joist series; the production date; the evaluation report number (ESR-1262); and the name or trademark of the inspection agency (APA – The Engineered Wood Association).

7.2 The report holder's contact information is the following:

EACOM TIMBER CORPORATION
1195 PEOPLES ROAD
SAULT STE. MARIE, ONTARIO P6C 3W7
CANADA
(705) 254-7597
www.eacom.ca

7.3 The additional listee's contact information is the following:

BLUELINX CORPORATION
1950 SPECTRUM CIRCLE
MARIETTA, GEORGIA 30067
(770) 953-7000



I-Joist Series	Flange Grade	Flange Size (depth x width) (inches)	Flange Specific Gravity	Web Thickness (inches)	Range of I-Joist Depths (inches)
PJI-40	1.5E Proprietary	1.5 × 2.5	0.42	$^{3}/_{8}$	$9^{1}/_{4}$ to 16
PJI-60	1.8E	1.5 × 2.5	0.46	$^{3}/_{8}$	$9^{1}/_{2}$ to 16
PJI-65	1.5E Proprietary	1.5 × 3.5	0.42	$^{3}/_{8}$	$11^{7}/_{8}$ to 16
PJI-80	1.8E	1.5 × 3.5	0.46	$^{7}/_{16}$	$9^{1}/_{2}$ to 24
PJI-90	2.0E	1.5 x 3.5	0.50	$^{7}/_{16}$	$11^{7}/_{8}$ to 24

For **SI:** 1 inch = 25.4 mm.

FIGURE 1—P3 JOIST I-JOIST DIMENSIONS

TABLE 1A—REFERENCE DESIGN VALUES[1,2,3]

JOIST SERIES	DEPTH (in.)	BENDING STIFFNESS, EI (lb-in.^{2}) x 10^6	BENDING MOMENT, M (ft-lbf)	SHEAR, V (lbf)	VERTICAL LOAD CAPACITY, VLC[4,5] (lbf/ft)	SHEAR DEFL. COEFFICIENT, K (x10^6 lbf)
PJI-40	9 1/4	181	2,690	1,080	2,000	4.81
	9 1/2	193	2,735	1,400	2,000	4.94
	11 1/4	289	3,380	1,345	2,000	5.85
	11 7/8	330	3,545	1,620	2,000	6.18
	14	482	4,270	1,815	2,000	7.28
	16	657	4,950	2,000	2,000	8.32
PJI-60	9 1/2	231	3,780	1,400	2,000	4.94
	11 7/8	396	4,900	1,620	2,000	6.18
	14	584	5,895	1,815	2,000	7.28
	16	799	6,835	2,000	2,000	8.32
PJI-65	11 7/8	454	5,085	1,620	2,000	6.18
	14	664	6,125	1,815	2,000	7.28
	16	901	7,105	2,000	2,000	8.32
PJI-80	9 1/2	321	5,375	1,405	2,000	4.94
	11 7/8	547	6,970	1,650	2,000	6.18
	14	802	8,390	1,865	2,000	7.28
	16	1,092	9,730	2,070	2,000	8.32
	18	1,413	11,000	2,450	2,000	9.36
	20	1,790	12,180	2,550	1,720	10.40
	22	2,214	13,340	2,650	1,440	11.44
	24	2,687	14,490	2,750	1,390	12.48
PJI-90	11 7/8	601	8,515	1,650	2,000	6.18
	14	877	10,255	1,865	2,000	7.28
	16	1,187	11,895	2,070	2,000	8.32
	18	1,546	13,445	2,450	2,000	9.36
	20	1,957	14,885	2,550	1,720	10.40
	22	2,419	16,305	2,650	1,440	11.44
	24	2,934	17,710	2,750	1,390	12.48

For **SI:** 1 inch = 25.4 mm; 1 lbf = 4.45 N; 1 lbf-ft = 1.356 N-m; 1lbf-in^2 = 0.00287 N-m^2.

[1]Values are reference design values for normal duration of loads. All values except EI and K may be adjusted for other load durations as permitted by the applicable code for solid-sawn lumber.
[2]Reference design moment capacity (M) of I-joists must not be increased by any repetitive member use factor.
[3]For calculating uniform load and center-point load deflections of the P3 JOIST in a simple-span application:

For uniform loads: $\Delta = \frac{5 w \ell^4}{384 EI} + \frac{w \ell^2}{K}$

For center-point load: $\Delta = \frac{P \ell^3}{48 EI} + \frac{2 P \ell}{K}$

Where:

Δ = Deflection (in.)
w = Uniform load (lbf/in.)
ℓ = Span length (in.)
P = Concentrated load (lbf)
EI = Bending stiffness of the I-joist (lbf-in.^{2})
K = Coefficient of shear deflection (lbf)

[4]Allowable vertical-load capacity for I-joists used as blocking panels or rim boards.
[5]Use of I-joists with allowable vertical-load capacities less than 2000 lbf/ft is limited to engineered construction.

TABLE 1B—REFERENCE DESIGN REACTIONS AND FLANGE BEARING CAPACITIES[1,2,3]

JOIST SERIES	DEPTH (in.)	END REACTION (lbf)				INTERIOR REACTION (lbf)				FLANGE BEARING CAPACITY (per in. of brg. length) (lbf/in.)
		1.75" Bearing		4" Bearing		3.5" Bearing		5.5" Bearing		
		Web Stiffeners		Web Stiffeners		Web Stiffeners		Web Stiffeners		
		No	Yes	No	Yes	No	Yes	No	Yes	
PJI-40	9 1/4	1,080	1,080	1,080	1,080	2,700	2,880	2,795	3,230	955
	9 1/2	1,195	1,275	1,260	1,400	2,755	2,900	3,245	3,245	
	11 1/4	1,200	1,310	1,345	1,345	2,755	3,010	3,245	3,340	
	11 7/8	1,200	1,460	1,430	1,620	2,755	3,045	3,245	3,375	
	14	1,200	1,620	1,580	1,815	2,755	3,175	3,245	3,485	
	16	1,200	1,750	1,720	2,000	2,755	3,300	3,245	3,595	
PJI-60	9 1/2	1,195	1,275	1,260	1,400	2,755	2,900	3,245	3,245	1,180
	11 7/8	1,200	1,460	1,430	1,620	2,755	3,045	3,245	3,375	
	14	1,200	1,620	1,580	1,815	2,755	3,175	3,245	3,485	
	16	1,200	1,750	1,720	2,000	2,755	3,300	3,245	3,595	
PJI-65	11 7/8	1,200	1,460	1,430	1,620	2,810	3,300	3,255	3,585	1,380
	14	1,200	1,620	1,580	1,815	3,020	3,455	3,435	3,745	
	16	1,200	1,750	1,720	2,000	3,265	3,600	3,600	3,900	
PJI-80	9 1/2	1,305	1,405	1,405	1,405	2,760	3,125	3,245	3,400	1,705
	11 7/8	1,315	1,590	1,590	1,650	2,810	3,300	3,255	3,585	
	14	1,325	1,760	1,615	1,865	3,020	3,455	3,435	3,745	
	16	1,330	1,915	1,630	2,070	3,265	3,600	3,600	3,900	
	18	1,340	1,925	1,650	2,450	3,200	3,950	3,650	4,350	
	20	1,350	2,170	1,665	2,550	3,200	3,950	3,650	4,350	
	22	1,355	2,415	1,685	2,650	3,200	3,950	3,650	4,350	
	24	1,365	2,660	1,700	2,750	3,200	3,950	3,650	4,350	
PJI-90	11 7/8	1,315	1,590	1,590	1,650	2,810	3,300	3,255	3,585	2,000
	14	1,325	1,760	1,615	1,865	3,020	3,455	3,435	3,745	
	16	1,330	1,915	1,630	2,070	3,265	3,600	3,600	3,900	
	18	1,340	1,925	1,650	2,450	3,200	3,950	3,650	4,350	
	20	1,350	2,170	1,665	2,550	3,200	3,950	3,650	4,350	
	22	1,355	2,415	1,685	2,650	3,200	3,950	3,650	4,350	
	24	1,365	2,660	1,700	2,750	3,200	3,950	3,650	4,350	

For **SI:** 1 inch = 25.4 mm; 1 lbf = 4.45 N; 1 lbf/in. = 0.175 N/mm.

[1]The tabulated reference design reaction values are for normal duration of load and are permitted to be adjusted for other load durations in accordance with the applicable code, provided the flange bearing capacity is not exceeded. Values limited by flange bearing capacity may not be further increased for duration of load. The flange bearing capacity, per inch of bearing length, is based on reference design compression perpendicular-to-grain of the I-joist flange, accounting for eased edges, and may be further limited by the bearing strength of the support material.

[2]Linear interpolation of the reaction capacity between the minimum and maximum bearing length is permitted. Bearing lengths longer than the maximum do not further increase reaction capacity.

[3]See Figure 3 for required web stiffener details.

TABLE 2—ALLOWABLE SPAN LENGTHS (ft-in.)

JOIST DEPTH (in.)	JOIST DESIGN	ON-CENTER SPACING (in.)			
		12	16	19.2	24
SIMPLE SPANS					
9 1/4	PJI-40	17'-7"	16'-1"	15'-3"	14'-3"
9 1/2	PJI-40	18'-0"	16'-5"	15'-7"	14'-6"
	PJI-60	18'-11"	17'-3"	16'-3"	15'-2"
	PJI-80	20'-9"	18'-11"	17'-9"	16'-6"
11 1/4	PJI-40	20'-6"	18'-9"	17'-9"	16'-3"
11 7/8	PJI-40	21'-5"	19'-7"	18'-6"	16'-8"
	PJI-60	22'-7"	20'-7"	19'-5"	18'-1"
	PJI-65	23'-6"	21'-5"	20'-2"	18'-9"
	PJI-80	24'-9"	22'-6"	21'-3"	19'-9"
	PJI-90	25'-6"	23'-2"	21'-9"	20'-3"
14	PJI-40	24'-4"	22'-2"	20'-6"	18'-4"
	PJI -60	25'-8"	23'-5"	22'-1"	20'-7"
	PJI-65	26'-8"	24'-3"	22'-10"	21'-3"
	PJI-80	28'-2"	25'-7"	24'-1"	22'-5"
	PJI-90	28'-11"	26'-3"	24'-9"	22'-11"
16	PJI-40	26'-11"	24'-2"	22'-1"	19'-9"
	PJI-60	28'-6"	25'-11"	24'-6"	22'-9"
	PJI-65	29'-6"	26'-10"	25'-4"	23'-6"
	PJI-80	31'-2"	28'-4"	26'-8"	24'-10"
	PJI-90	32'-0"	29'-1"	27'-4"	25'-4"
18	PJI-80	34'-0"	30'-11"	29'-1"	27'-0"
	PJI-90	34'-11"	31'-9"	29'-10"	27'-9"
20	PJI-80	36'-10"	33'-6"	31'-6"	29'-3"
	PJI-90	37'-10"	34'-4"	32'-4"	30'-0"
22	PJI-80	39'-6"	35'-11"	33'-10"	31'-5"
	PJI-90	40'-7"	36'-11"	34'-8"	32'-2"
24	PJI-80	42'-2"	38'-4"	36'-1"	33'-6"
	PJI-90	43'-3"	39'-4"	37'-0"	34'-4"
MULTIPLE SPANS					
9 1/4	PJI-40	19'-1"	17'-6"	16'-1"	14'-4"
9 1/2	PJI-40	19'-6"	17'-9"	16'-2"	14'-6"
	PJI-60	20'-6"	18'-8"	17'-8"	16'-5"
	PJI-80	22'-7"	20'-6"	19'-3"	17'-11"
11 1/4	PJI-40	22'-4"	19'-10"	18'-1"	16'-1"
11 7/8	PJI-40	23'-4"	20'-4"	18'-6"	16'-6"
	PJI-60	24'-6"	22'-4"	21'-1"	19'-6"
	PJI-65	25'-6"	23'-2"	21'-10"	19'-10"
	PJI-80	26'-11"	24'-6"	23'-0"	21'-4"
	PJI-90	27'-8"	25'-2"	23'-7"	21'-11"
14	PJI-40	25'-10"	22'-4"	20'-4"	18'-2"
	PJI-60	27'-11"	25'-5"	23'-11"	21'-5"
	PJI-65	28'-11"	26'-4"	24'-5"	21'-10"
	PJI-80	30'-7"	27'-10"	26'-2"	23'-10"
	PJI-90	31'-5"	28'-6"	26'-10"	23'-10"
16	PJI-40	27'-10"	24'-0"	21'-11"	19'-7"
	PJI-60	31'-0"	28'-2"	25'-10"	21'-8"
	PJI-65	32'-1"	28'-10"	26'-4"	23'-6"
	PJI-80	33'-11"	30'-10"	29'-0"	25'-9"
	PJI-90	34'-9"	31'-7"	29'-8"	25'-9"
18	PJI-80	37'-0"	33'-7"	31'-8"	29'-4"
	PJI-90	38'-0"	34'-6"	32'-5"	30'-1"
20	PJI-80	40'-1"	36'-5"	34'-3"	30'-11"
	PJI-90	41'-2"	37'-4"	35'-2"	31'-3"

TABLE 2—ALLOWABLE SPAN LENGTHS (ft-in.) (CONTINUED)

JOIST DEPTH (in.)	JOIST DESIGN	ON-CENTER SPACING (in.)			
		12	16	19.2	24
MULTIPLE SPANS					
22	PJI-80	43'-0"	39'-1"	36'-2"	31'-3"
	PJI-90	44'-2"	40'-2"	37'-9"	31'-3"
24	PJI-80	45'-11"	41'-4"	37'-9"	31'-3"
	PJI-90	47'-2"	42'-10"	39'-2"	31'-3"

For **SI:** 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 psf = 47.88 Pa.

[1]Allowable clear span applicable to simple-span or multiple-span residential floor construction with a design dead load of 10 psf and a live load of 40 psf. The live load deflection is limited to L/480 (L = span length in inches). This span chart is based on uniform loads. For applications other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties in Tables 1A and 1B.

[2]Spans are based on a composite floor with glue-nailed sheathing meeting the requirements for APA Rated Sheathing STURD-I-FLOOR, conforming to PS 2, with a minimum thickness of $^{19}/_{32}$ inch (40/20 or 20o.c.) for a joist spacing of 19.2 inches or less, or $^{23}/_{32}$ inch (48/24 or 24 o.c.) for a joist spacing of 24 inches. Adhesive must meet APA Specification AFG-01 or ASTM D3498. Spans must be reduced when floor sheathing is nailed only; consult EACOM.

[3]Minimum bearing length must be $1^3/_4$ inches for the end bearings and $3^1/_2$ inches for the intermediate bearings.

[4]Bearing stiffeners are not required when I-joists are used with the spans and spacings given in the above table, except on 18-, 20-, 22- and 24-inch PJI-80 and PJI-90 joists, and as required for use with hangers.

TABLE 3—LOCATION OF CIRCULAR HOLES IN PJI JOIST WEBS, SIMPLE OR MULTIPLE SPAN FOR DEAD LOADS UP TO 10 psf AND LIVE LOADS UP TO 40 psf[1,2,3,4,5]

JOIST DEPTH (in.)	JOIST SERIES	SAF[6]	MINIMUM DISTANCE FROM INSIDE FACE OF ANY SUPPORT TO CENTER OF HOLE (ft-in.)														
			Round Hole Diameter (in.)														
			2	3	4	5	6	$6^1/_4$	7	8	$8^5/_8$	9	10	$10^3/_4$	11	12	$12^3/_4$
$9^1/_4$	PJI-40	14'-3"	0'-9"	2'-0"	3'-3"	4'-7"	6'-1"										
$9^1/_2$	PJI -40	14'-6"	0'-7"	0'-8"	1'-2"	2'-9"	4'-5"	4'-11"									
	PJI -60	15'-2"	0'-7"	1'-1"	2'-7"	4'-3"	6'-0"	6'-6"									
	PJI-80	16'-6"	0'-7"	2'-0"	3'-7"	5'-3"	7'-1"	7'-7"									
$11^1/_4$	PJI-40	16'-1"	0'-7"	0'-8"	1'-8"	2'-11"	4'-4"	4'-8"	5'-9"	7'-4"							
$11^7/_8$	PJI -40	16'-6"	0'-7"	0'-8"	0'-8"	1'-2"	2'-8"	3'-0"	4'-2"	5'-9"	6'-11"						
	PJI -60	18'-1"	0'-7"	0'-8"	1'-8"	3'-1"	4'-8"	5'-0"	6'-3"	8'-0"	9'-2"						
	PJI-65	18'-9"	0'-7"	0'-8"	1'-11"	3'-4"	4'-10"	5'-3"	6'-6"	8'-3"	9'-5"						
	PJI -80	19'-8"	0'-7"	1'-4"	2'-10"	4'-4"	5'-11"	6'-4"	7'-7"	9'-5"	10'-8"						
	PJI -90	20'-1"	0'-7"	1'-9"	3'-3"	4'-9"	6'-4"	6'-9"	8'-0"	9'-10"	11'-1"						
14	PJI -40	18'-2"	0'-7"	0'-8"	0'-8"	0'-9"	1'-2"	1'-6"	2'-7"	4'-0"	4'-11"	5'-6"	7'-1"	8'-5"			
	PJI -60	20'-6"	0'-7"	0'-8"	0'-8"	1'-11"	3'-4"	3'-8"	4'-9"	6'-3"	7'-3"	7'-10"	9'-7"				
	PJI-65	21'-3"	0'-7"	0'-8"	0'-11"	2'-3"	3'-7"	3'-11"	5'-1"	6'-7"	7'-7"	8'-2"	9'-11"				
	PJI -80	22'-4"	0'-7"	0'-8"	1'-10"	3'-2"	4'-8"	5'-0"	6'-2"	7'-9"	8'-9"	9'-5"	11'-3"				
	PJI -90	22'-11"	0'-7"	0'-8"	1'-10"	3'-2"	4'-8"	5'-0"	6'-2"	7'-9"	8'-9"	9'-5"	11'-3"				
16	PJI -40	19'-7"	0'-7"	0'-8"	0'-8"	0'-9"	0'-9"	0'-10"	1'-2"	2'-6"	3'-4"	3'-10"	5'-3"	6'-5"	6'-9"	8'-5"	9'-9"
	PJI -60	21'-9"	0'-7"	0'-8"	0'-8"	0'-9"	1'-4"	1'-8"	2'-7"	3'-11"	4'-10"	5'-4"	6'-10"	8'-0"	8'-5"	10'-1"	
	PJI-65	23'-6"	0'-7"	0'-8"	0'-8"	1'-2"	2'-6"	2'-10"	3'-10"	5'-2"	6'-1"	6'-8"	8'-2"	9'-4"	9'-9"	11'-6"	
	PJI -80	24'-9"	0'-7"	0'-8"	0'-10"	2'-2"	3'-6"	3'-10"	4'-11"	6'-4"	7'-4"	7'-11"	9'-6"	10'-9"	11'-2"	13'-0"	
	PJI -90	25'-4"	0'-7"	0'-8"	0'-10"	2'-2"	3'-6"	3'-10"	4'-11"	6'-4"	7'-4"	7'-11"	9'-6"	10'-9"	11'-2"	13'-0"	
18	PJI -80	27'-0"	0'-7"	0'-8"	0'-8"	0'-10"	2'-3"	2'-7"	3'-8"	5'-1"	6'-1"	6'-8"	8'-2"	9'-5"	9'-10"	11'-7"	12'-11"
	PJI -90	27'-8"	0'-7"	0'-8"	0'-8"	1'-6"	2'-11"	3'-3"	4'-4"	5'-10"	6'-10"	7'-5"	9'-0"	10'-3"	10'-8"	12'-5"	13'-9"
20	PJI -80	29'-3"	0'-7"	0'-8"	0'-8"	0'-9"	1'-8"	2'-0"	3'-0"	4'-4"	5'-3"	5'-9"	7'-2"	8'-3"	8'-8"	10'-2"	11'-4"
	PJI -90	30'-0"	0'-7"	0'-8"	0'-8"	0'-9"	1'-11"	2'-3"	3'-3"	4'-8"	5'-6"	6'-0"	7'-5"	8'-7"	8'-11"	10'-6"	11'-8"
22	PJI -80	31'-3"	0'-7"	0'-8"	0'-8"	0'-9"	0'-9"	0'-10"	1'-9"	3'-0"	3'-9"	4'-3"	5'-7"	6'-7"	6'-11"	8'-3"	9'-4"
	PJI -90	31'-3"	0'-7"	0'-8"	0'-8"	0'-9"	0'-9"	0'-10"	1'-9"	3'-0"	3'-9"	4'-3"	5'-7"	6'-7"	6'-11"	8'-3"	9'-4"
24	PJI -80	31'-3"	0'-7"	0'-8"	0'-8"	0'-9"	0'-9"	0'-10"	0'-10"	1'-6"	2'-2"	2'-8"	3'-10"	4'-9"	5'-1"	6'-4"	7'-4"
	PJI -90	31'-3"	0'-7"	0'-8"	0'-8"	0'-9"	0'-9"	0'-10"	0'-10"	1'-6"	2'-2"	2'-8"	3'-10"	4'-9"	5'-1"	6'-4"	7'-4"

For **SI:** 1 inch = 25.4 mm, 1 foot = 304.8 mm.

[1]Above tables may be used for I-joist spacing of 24 inches on center or less.

[2]Hole location distance is measured from inside face of supports to center of hole.

[3]Distances in this chart are based on a uniformly distributed design dead load of 10 psf (479 Pa), plus a uniformly distributed design live load of 40 psf (1915 Pa).

[4]For continuous joists with more than one span, use the longest span to determine hole location in either span.

[5]Joists with web hole sizes and/or locations that fall outside of the scope of this table must be analyzed based on the actual hole size, joist spacing, span, and loading conditions. The I-joist shear capacity at the location of a circular web hole is calculated using the following equation: V_{rh} = Published Shear Value x [(Joist Depth - Hole Diameter) / Joist Depth].

[6]SAF = Span Adjustment Factor, used as defined below.

OPTIONAL (next page):

Table 3 is based on the I-joists being used at their maximum span. If the I-joists are placed at less than their full allowable span, the maximum distance from the centerline of the hole to the face of any support (*D*) as given above may be reduced as follows:

$$D_{reduced} = \frac{L_{actual}}{SAF} \times D$$

Where:

$D_{reduced}$ = Distance from the inside face of any support to center of hole, reduced for less-than-maximum span applications (ft). The reduced distance must not be less than 6 inches from the face of the support to edge of the hole.

L_{actual} = The actual measured span distance between the inside faces of supports (ft).

SAF = Span Adjustment Factor given in Table 3.

D = The minimum distance from the inside face of any support to center of hole from Table 3 above.

If $\frac{L_{actual}}{SAF}$ is greater than 1.0, use 1.0 in the above calculation for $\frac{L_{actual}}{SAF}$.

Rules for cutting holes in PJI joists:

1. The distance between the inside edge of the support and the centerline of any hole must be in compliance with the requirements of Table 3.
2. I-joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
3. Whenever possible, field-cut holes should be centered on the middle of the web.
4. The maximum size hole that can be cut into an I-joist web must equal the clear distance between the flanges of the I-joist minus $^1/_4$ inch. A minimum of $^1/_8$ inch should always be maintained between the top or bottom of the hole and the adjacent I-joist flange.
5. The sides of square holes or longest sides of rectangular holes must not exceed three fourths of the diameter of the maximum round hole permitted at that location.
6. Where more than one hole is necessary, the distance between adjacent hole edges must exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole) and each hole must be sized and located in compliance with the requirements of Table 3.
7. $1^1/_2$-inch holes are permitted anywhere in a cantilevered section of an PJI Joist. Holes of greater size may be permitted subject to verification.
8. A $1^1/_2$-inch hole can be placed anywhere in the web provided that it meets the requirements of 6 above.
9. For joists with more than one span, use the longest span to determine hole location in either span.
10. All holes must be cut in a workmanlike manner in accordance with the restrictions listed above and as illustrated in Figure 2.
11. Limit three maximum size holes per span.
12. A group of round holes at approximately the same location is permitted if they meet the requirements for a single round hole circumscribed around them.

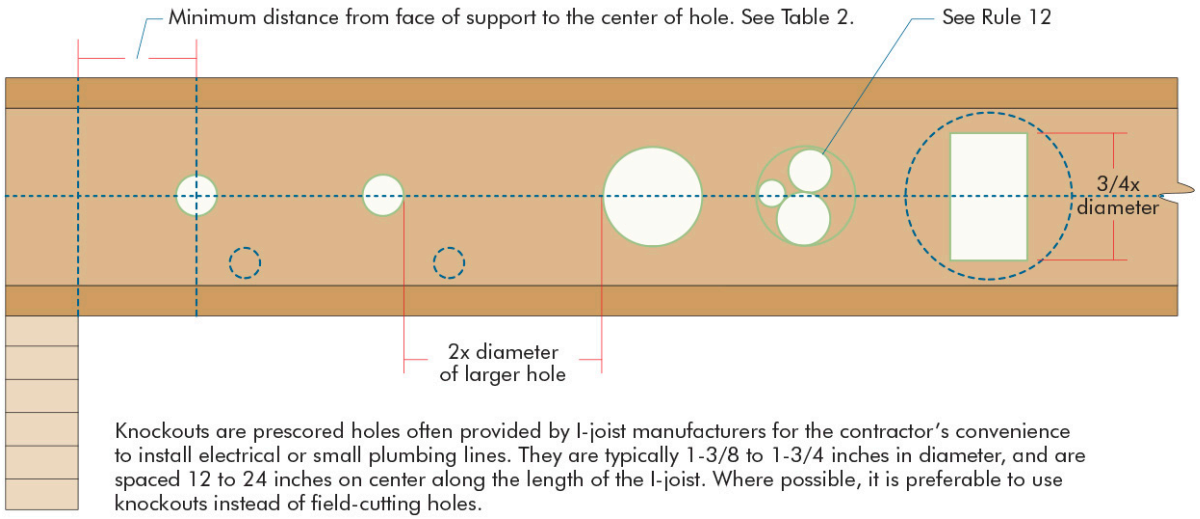


FIGURE 2—TYPICAL HOLES IN THE WEB

Requirements for Web Stiffeners:

1. Wood structural panel web stiffeners must be placed on each side of the I-joist web at:
   (a) Hangers with side nailing.
   (b) Hangers which do not laterally support the top flange of the I-joist.
   (c) Locations where concentrated loads in excess of 1580 pounds are applied to the top flange of the I-joist between supports or, in the case of cantilever, anywhere between the cantilever tip and the support.
   (d) At exterior supports in engineered applications where concentrated loads cause exterior reaction loads to exceed 1580 pounds.
   (e) At reactions exceeding the tabulated values corresponding to installations without web stiffeners, as shown in Table 1B.
   (f) At all end reactions on 18-, 20-, 22- and 24-inch PJI-80 and PJI-90 joists.
2. Web stiffeners must be made of Utility grade SPF (south) or better for lumber and/or sheathing grade or better for wood structural panels. When wood structural panels are used as web stiffeners, the strong axis of the panel must be oriented vertically (perpendicular to the long axis of the I-joist).

Stiffener Size and Nailing Requirement

Joist Depth	2-1/2″ Wide Flange 8d (2-1/2″) nails	3-1/2″ Wide Flange 10d (3″) nails
9 1/2″	4	-
11 7/8″	4	4
14″	4	4
16″	4	4
18″	-	6
20″	-	6
22″	-	8
24″	-	8
Minimum Stiffener Size	1″x2-5/16″ (width)	1-1/2″x2-5/16″ (width)

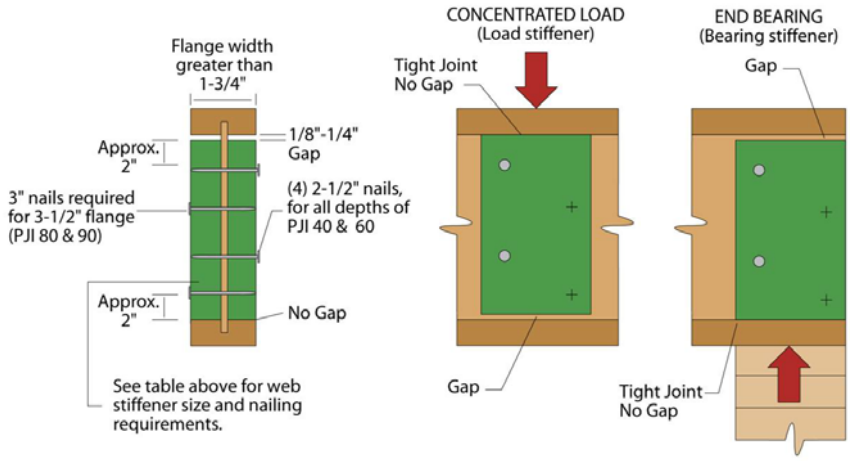


FIGURE 3—WEB STIFFENER REQUIREMENTS

TABLE 4—ALLOWABLE SHEAR (PLF) FOR HORIZONTAL WOOD STRUCTURAL PANEL DIAPHRAGMS FRAMED WITH P3 JOIST I-JOISTS FOR WIND[1] OR SEISMIC LOADING[2,3,9]

Sheathing Grade	Common Nail Size	Minimum Nominal Panel Thickness (in.)	Minimum Nominal Width of Framing Members at Adjoining Edges and Boundaries (in.)[4]	Blocked Diaphragms			Unblocked Diaphragms	
				Nail Spacing (in.) at Diaphragm Boundaries (All Cases), at Continuous Panel Edges Parallel to Load (Cases 3 & 4), and at All Panel Edges (Cases 5 & 6)[5,6]			Nails Spaced 6 in. Max at Supported Edges[5]	
				6	4	2-1/2[7]	Case 1 (No Unblocked Edges or Continuous Joints Parallel to Load)	All Other Configurations (Cases 2, 3 4, 5 & 6)
				Nail Spacing (in.) at Other Panel Edges (Cases 1, 2, 3 & 4)[5]				
				6	6	4		
Structural I	6d[8]	5/16	3	210	280	420	185	140
	8d	3/8	3	300	400	600	265	200
	10d	15/32	3	360	480	720	320	240
Sheathing and Single Floor	6d[8]	5/16	3	190	250	380	170	125
		3/8	3	210	280	420	185	140
	8d	3/8	3	270	360	540	240	180
		7/16	3	285	380	570	255	190
		15/32	3	300	400	600	265	200
	10d	15/32	3	325	430	650	290	215
		19/32	3	360	480	720	320	240

For **SI**: 1 inch = 25.4 mm; 1 plf = 14.59 N/m.

[1]For wind load applications, the values in the table above shall be permitted to be multiplied by 1.4.
[2]For shear loads of normal or permanent load duration as defined in the NDS, the values in the table above shall be multiplied by 0.63 or 0.56, respectively.
[3]The tabulated allowable shear capacities are for I-joist series with flanges having a specific gravity (G) of 0.50 or higher (see Figure 1). For G < 0.50 the allowable shear capacities shall be reduced by multiplying the allowable shear capacities by the Specific Gravity Adjustment Factor = [1-(0.5-G)]. The Specific Gravity Adjustment Factor shall not be greater than 1.
[4]Minimum flange widths of P3 JOIST I-joist framing members are 2-1/2 inches (3 inches nominal).
[5]Space nails maximum 12 inches o.c. along intermediate framing members (6 inches o.c. when supports are spaced 48 inches o.c. or greater). Fasteners shall be located 3/8 inch minimum from panel edges.
[6]When nail spacing is 4 inches on center at diaphragm boundaries, adjacent nails within a row must be offset (staggered) 1/2 inch.
[7]When nail spacing is 2-½ inches on center at adjoining panel edges, adjacent nails within a row must be offset (staggered) 1/2 inch.
[8]8d common nails minimum are recommended for roof panel attachments.
[9]See Table 4.2A of SDPWS for diaphragm configurations and minimum fastener penetration.

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 17 33—Wood I-joists

REPORT HOLDER:

EACOM TIMBER CORPORATION

ADDITIONAL LISTEE:

BLUELINX CORPORATION

EVALUATION SUBJECT:

P3 JOIST PJI-40, PJI-60, PJI-65, PJI-80 AND PJI-90 I-JOISTS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that P3 JOIST I-joists, described in ICC-ES evaluation report ESR-1262, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2020 *Florida Building Code—Building*
- 2020 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The P3 JOIST I-joists described in Sections 2.0 through 7.0 of the evaluation report ESR-1262, comply with the *Florida Building Code—Building* and the *Florida Building Code—Residential*, provided the design requirements are determined in accordance with the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable. The installation requirements noted in the evaluation report ESR-1262 for the 2018 *International Building Code®* (IBC) meet the requirements of the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable.

Use of the P3 JOIST I-joists for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* and the *Florida Building Code—Residential* has not been evaluated and is outside the scope of this evaluation report.

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official, when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report ESR-1262, reissued January 2022.

Code Compliance Research Report
CCRR-0322

Issue Date: 01-06-2016
Revision Date: 02-01-2022
Renewal Date: 01-31-2023

DIVISION: 06 17 00 – WOOD, PLASTICS & COMPOSITES
Section: 06 17 33 – Wood I-Joists

REPORT HOLDER:
IB EWP Inc.
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(418) 893-1515
www.ibewp.com

REPORT SUBJECT:
IB Series I-Joists IB400, IB600, IB650, IB700, IB800, IB900x

ADDITIONAL LISTEE:
BlueLinx Corporation
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Marietta, GA 30067
(770) 953-7000
www.bluelinxco.com

ADDITIONAL LISTEE SUBJECT:
BLI I-Joists BLI 40, BLI 60, BLI 80

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2021, 2018, and 2015 *International Building Code®* (IBC)
- 2021 2018, and 2015 *International Residential Code®* (IRC)
- 2020 *Florida Building Code* (FBC) (-Building and -Residential) including High Velocity Hurricane Zones) (See Section 9.0)

NOTE: This report references the most recent editions of the referenced codes. Section numbers from earlier editions may differ.

1.2 The IB and BLI I-Joists have been evaluated for the following properties:

- Structural Performance

1.3 The IB and BLI I-Joists have been evaluated for the following uses:

- I-Joists are prefabricated structural framing, load carrying members used in lieu of sawn lumber joists and rafters for commercial and residential construction in place of conventional sawn lumber using traditional framing tools and fasteners
- I-Joists described in this report comply with IBC Section 2303.1.2 and IRC Section R502.1.2 for allowable stress design

2.0 STATEMENT OF COMPLIANCE

I-Joists comply with the Codes listed in Section 1.1, for the properties stated in Section 1.2, and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.0.

3.0 DESCRIPTION

3.1 The I-Joists are made with sawn lumber flanges and OSB webs in depths from 7-7/8 inches to 24 inches and lengths up to 52 feet. See Table 2 and Figure 1 for dimensional descriptions of the I-Joists. References to IB400, IB600, IB650, IB700 and IB800 joists may be extended to BLI 40, BLI 60, and BLI 80 joists, respectively.

3.2 Flanges are formed from proprietary re-graded spruce-pine-fir (SPF) materials. The grading rules for the re-graded flange materials are detailed in the manufacturer's in-plant Manufacturing Standard.

3.3 Web material is oriented strand board (OSB) material classified for Exposure 1 per APA PRP-108 Quality Assurance Policies for Structural-Use Panels. The web material is of 24/0 OSB, in thicknesses of 7/16 inch for the IB900x I-Joists and 3/8 inch for all other I-Joists.

3.4 Adhesives used for flange-to-flange, flange-to-web, and web-to-web joints meet the heat durability performance requirements of ICC-ES AC14 and comply with ASTM D2559 and ASTM D5055.

4.0 PERFORMANCE CHARACTERISTICS

4.1 Reference Design Values for Bending Stiffness, Allowable Moments, Shear (with and without bearing stiffeners), Shear Deflection Factor, and Vertical Load Capacity are shown in Table 3. See Tables 4 and 5 for End Reaction and Interior Reaction Capacities. These values must be adjusted, as applicable, in accordance with American Wood Council, National Design Specification (NDS) for Wood Construction. Moment capacity shall not be increased by any repetitive member use factor.

4.2 Reference IB EWP Inc. ASD tables and technical bulletins:

- Web Hole Guidelines tables (IBU-AW1 and IBU-AW2)
- Floor Span tables (IBU-MF1 thru IBU-MF6)
- Roof Span tables (IBU-MR1 and IBU-MR2)
- Web Stiffener requirements (technical bulletin TB-IJ-17)

4.3 IB EWP Inc. IB Series joists may be used in fire-resistance rated assemblies when installed as described in the Design Listings found in Intertek Listing Report "IB EWP – IB Series I-Joists," Spec ID 27316.

5.0 INSTALLATION

5.1 General:

I-Joists must be installed in accordance with the manufacturer's published installation instructions, the applicable Code, and this Research Report. A copy of the manufacturer's instructions must be available on the jobsite during installation.

5.2 Application:

5.2.1 For I-Joists installed over and beneath perpendicular load bearing walls, use full depth blocking panels, rimboard or lumber cripple members (vertical blocking), to transfer gravity loads through the floor system to the wall or foundation below. Due to shrinkage, common framing lumber may never be used as blocking or rimboards. I-Joist blocking panels or other engineered wood products, such as rimboard, must be cut to fit between the IB I-Joists and an IB I-Joist compatible depth selected.

5.2.2 Continuous lateral support of the compression flange must be provided per the manufacturer's installation instructions. Provide permanent lateral support of the bottom flange of all I-Joists at interior supports of multiple span joists. Similarly, support the bottom flange of all cantilevered I-Joists at the end support next to the cantilever extension. Restrain ends of floor joists to prevent rollover. Bridging between supports is not required for floor and roof IB I-Joist applications unless specified by the design professional.

5.2.3 Duration of Load Adjustments to Allowable Loads for loading I-Joists are to be made in accordance with Section 7.3 and 2.3.2 of American Wood Council, National Design Specification (NDS) for Wood Construction.

5.2.4 I-Joists may only be installed where the in-service moisture content of the wood does not exceed 16 percent. Never install I-Joists where they will be permanently exposed to weather, or where they will remain in direct contact with concrete or masonry.

5.2.5 The use of a Repetitive-Member Use Factor applicable to the Reference Design Allowable Moment values in Table 3 is not permitted. Therefore, this term is limited to 1.0.

5.2.6 I-Joist span must be determined in accordance with Section 3.2.1 of the NDS and the applicable Code. Shear calculations must include all loads within the design span.

5.2.7 Maximum allowable deflections under design loads shall not exceed the maximum allowable deflections specified in Section 1604.3 of the IBC or Section R301.7 of the IRC. Values calculated per the following formulae. The following formulae shall be used for the conditions specified.

Simple span deflection with point load at centerline:

$\Delta = PL^3/48EI + 2PL/K$

Simple span deflection with full uniform loading:

$\Delta = 5wL^4/384EI + wL^2/K$

Where:
Δ = calculated deflection (inches)
P = concentrated point load (lbf)
L = I-joist span (center line bearing to center line bearing) (inches)
EI = Bending Stiffness (in^2-lbf)
K = Coefficient of shear deflection (lbf)

5.2.8 Holes in webs of the I-Joists are permitted to be installed per the ASD Web Hole Charts IBU-AW1 and IBU-AW2. Conditions outside of those specified in the above documents are outside the scope of this report and must be evaluated.

5.2.9 Space fasteners installed into the top flange face in accordance with applicable Building Codes. Consult IB I-Joist Installation Guide for additional information. Engineered design for fasteners shall be based on the specific gravity of the flanges in Table 2.

6.0 CONDITIONS OF USE

6.1 Installation must comply with this Research Report, the manufacturer's published installation instructions, and the applicable Code. In the event of a conflict between the manufacturer's instructions and this report, this report governs.

6.2 Where required by the Building Code Official, design calculations and details verifying compliance with this Code Compliance Research Report must be submitted to the Code Official for approval. The design calculations and details are to be prepared by a registered Design Professional when required by the authority having jurisdiction in which the projects are to be constructed.

6.3 Spans shall be permitted in accordance with IB EWP Inc. ASD chart tables IBU-MF1 thru IBU-MF6, IBU-MR1 and IBU-MR2 dated August 2019, and design values recognized in this report. For other span conditions contact IB EWP Inc.

6.4 Except for cutting to length never cut, drill, or notch I-Joist flanges.

6.5 The I-Joists are limited to use in combustible construction.

6.6 Fire protection of floor assemblies shall be provided in accordance with IRC section R302.13.

6.7 I-Joists identified in this report are manufactured at the manufacturing facilities recognized in Table 1 in accordance with the manufacturer's approved quality control system.

7.0 SUPPORTING EVIDENCE

7.1 Manufacturer's published installation instructions.

7.2 The IB EWP Inc. I-Joist ASD Charts dated August 2019.

7.3 The I-Joists listed in this report have met the requirements of ICC-ES Acceptance Criteria AC14 for Prefabricated Wood I-Joists, revised October 2017.

7.4 The reports of testing and engineering analysis demonstrating compliance with the requirements of ASTM D5055-16, Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists, for compliance with 2021 IBC. Report also deemed to comply with ASTM D5055-13 for compliance with 2018 and 2015 IBC, respectively.

7.5 Documentation of an Intertek approved quality control system for the manufacturing of products recognized in this report, with compliance to Appendices B and C of AC14 – Acceptance Criteria for Prefabricated Wood I-Joists, revised October 2017.

8.0 IDENTIFICATION

The I-Joists described in this Research Report are identified by a stamp bearing the report holder's name (IB EWP Inc.) or the Additional Listee's name (BlueLinx Corporation), date code indicating date of production, depth and grade of I-Joist, APA marks, "Made in Canada", Intertek designation and number ("Intertek CCRR-0322").

CODE COMPLIANCE
Intertek

9.0 FLORIDA BUILDING CODE

9.1 Scope of Evaluation:

The IB and BLI I-Joists were evaluated for compliance with the 2020 *Florida Building Code.*

9.2 Conclusion:

The IB and BLI Series I-Joists described in Sections 2.0 through 7.0 of this Research Report comply with the 2020 *Florida Building Code - Building and* 2020 *Florida Building Code - Residential*, including High Velocity Hurricane Zones.

Intertek is an approved *evaluation entity* and *quality assurance entity* pursuant to Florida Statute 553.842 – Product Evaluation and Approval

10.0CODE COMPLIANCE RESEARCH REPORT USE

10.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

10.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

10.3 Reference to the https://bpdirectory.intertek.com is recommended to ascertain the current version and status of this report.

TABLE 1 – MANUFACTURING LOCATIONS

	Pohenegamook, Quebec, Canada
IB EWP Inc. Products	IB400, IB600, IB650, IB700, IB800, IB900x
BlueLinx Products	BLI 40, BLI 60, BLI 80

TABLE 2 – I-JOIST DIMENSIONAL INFORMATION[1]

Joist Series	Joist Depths (in)	Flanges				Web	
		Material	G[2]	Dimension		Material	Thickness (in)
				Depth (in)	Width (in)		
IB400	7-7/8 8-5/8 9-1/4 9-1/2 11-1/4 11-7/8 14 16	Proprietary SPF	0.42	1-1/2	2-1/2	OSB	3/8
IB600	7-7/8 8-5/8 9-1/4 9-1/2 11-1/4 11-7/8 14 16 18 20	MSR	0.46	1-1/2	2-1/2	OSB	3/8
IB650	9-1/2 11-7/8 14 16	Proprietary SPF	0.42	1 1/2	3-1/2	OSB	3/8
IB700	9-1/2 11-7/8 14 16	MSR	0.42	1-1/2	3-1/2	OSB	3/8
IB800	7-7/8 8-5/8 9-1/4 9-1/2 11-1/4 11-7/8 14 16 18 20	MSR	0.46	1-1/2	3-1/2	OSB	3/8

Joist Series	Joist Depths (in)	Flanges				Web	
		Material	G[2]	Dimension		Material	Thickness (in)
				Depth (in)	Width (in)		
IB900x	7-7/8 8-5/8 9-1/2 11-7/8 14 16 18 20 22 24	MSR	0.50	1-1/2	3-1/2	OSB	7/16

[1] Referenced dimensions are nominal.
[2] Specific gravity of flanges for fasteners based on oven-dry weight and oven-dry volume.

TABLE 3 – REFERENCE DESIGN VALUES[1]

Series	Depth (in.)	Bending Stiffness EI joist ($x10^6$ lbf-in^2)	Allowable Moment, M[2] (lbf-ft)	Shear, V[3] (lbf)	Shear Deflection Factor K ($x10^6$ lbf)	Vertical Load Capacity [5] (plf)
IB400	7-7/8	123	2,235	1,155	4.10	2,000
	8-5/8	164	2,580	1,155	4.49	
	9-1/4	185	2,715	1,155	4.81	
	9-1/2	198	2,800	1,185	4.94	
	11-1/4	296	3,410	1,405	5.85	
	11-7/8	336	3,630	1,480	6.18	
	14	494	4,370	1,750	7.28	
	16	673	5,065	2,000	8.32	
IB600	7-7/8	145	3,080	1,155	4.10	2,000
	8-5/8	194	3,560	1,155	4.49	
	9-1/4	220	3,740	1,350	4.81	
	9-1/2	235	3,860	1,370	4.94	
	11-1/4	356	4,700	1,515	5.85	
	11-7/8	399	5,000	1,570	6.18	
	14	585	6,020	1,750	7.28	
	16	799	6,980	2,000	8.32	
	18	1,046	7,895	2,250	9.36	1,750
	20	1,304	8,735	2,500	10.40	1,500
IB650	9-1/2	240	4,020	1,400	4.94	2,000
	11-7/8	407	5,210	1,620	6.18	
	14	596	6,140	1,815	7.28	
	16	809	6,980	2,000	8.32	
IB700	9-1/2	270	3,965	1,400	4.94	2,000
	11-7/8	457	5,140	1,620	6.18	
	14	668	6,190	1,815	7.28	
	16	906	7,175	2,000	8.32	
IB800	7-7/8	204	4,360	1,155	4.10	2,000
	8-5/8	272	5,040	1,155	4.49	
	9-1/4	307	5,295	1,390	4.81	
	9-1/2	326	5,465	1,405	4.94	
	11-1/4	493	6,655	1,540	5.85	
	11-7/8	552	7,080	1,590	6.18	
	14	807	8,530	1,835	7.28	
	16	1,094	9,890	2,070	8.32	
	18	1,445	11,135	2,300	9.36	1,810
	20	1,799	12,380	2,600	10.40	1,625

Series	Depth (in.)	Bending Stiffness EI joist ($x10^6$ lbf-in^2)	Allowable Moment, M[2] (lbf-ft)	Shear, V[3] (lbf)	Shear Deflection Factor K ($x10^6$ lbf)	Vertical Load Capacity [5] (plf)
IB900x	7-7/8	216	5,365	1,360	5.04	2,000
	8-5/8	270	5,990	1,465	5.52	
	9-1/2	340	6,725	1,590	6.08	
	11-7/8	573	8,715	1,925	7.60	
	14	836	10,490	2,125	8.96	
	16	1131	12,165	2,330	10.24	
	18	1473	13,755	2,510	11.52	1,810
	20	1864	15,225	2,695	12.80	1,625
	22	2304	16,680	2,875	14.08	1,250
	24	2794	18,115	3,060	15.36	1,250

For SI: 1 inch = 25.4 mm; 1 lbf. = 4.448 N; 1 psi = 2.87 kN-mm2; 1 lbf-f = 1.356 N-m

[1] Reference design values must be adjusted, as applicable, in accordance with Section 7.3 of the NDS.

[2] Moment capacity (M) shall NOT be increased by any repetitive member use factor.

[3] Shear capacity (V) of the I-Joist with a minimum end bearing of 4 inches.

[4] I-Joist deflection must be calculated in accordance with Section 5.2.7.

[5] Vertical load capacity for I-Joist used as a blocking panel.

TABLE 4 – END REACTION CAPACITIES

Series	Depth (inches)	End Reaction Capacities [1, 2] (pounds)									
		1 1/2" Bearing		1 3/4" Bearing		2 3/4" Bearing		3 1/2" Bearing		>=4" Bearing	
		A[4]	B[5]	A[4]	B[5]	A[4]	B[5]	A[4]	B[5]	A[4]	B[5]
IB400	7-7/8	955	1,055	975	1,065	1,055	1,105	1,115	1,135	1,155	1,155
	8-5/8	1,065	1,110	1,075	1,115	1,110	1,130	1,135	1,145	1,155	1,155
	9-1/4	1,110	1,155	1,115	1,155	1,155	1,155	1,155	1,155	1,155	1,155
	9-1/2	1,120	1,185	1,130	1,185	1,185	1,185	1,185	1,185	1,185	1,185
	11-1/4	1,175	1,355	1,205	1,360	1,340	1,405	1,405	1,405	1,405	1,405
	11-7/8	1,200	1,420	1,230	1,430	1,370	1,480	1,465	1,480	1,480	1,480
	14	1,260	1,630	1,295	1,645	1,455	1,750	1,550	1,750	1,550	1,750
	16	1,325	1,825	1,355	1,845	1,455	2,000	1,550	2,000	1,550	2,000
IB600	7-7/8	955	1,055	975	1,065	1,055	1,105	1,115	1,135	1,155	1,155
	8-5/8	1,065	1,110	1,075	1,115	1,110	1,130	1,135	1,145	1,155	1,155
	9-1/4	1,110	1,155	1,130	1,350	1,155	1,350	1,155	1,350	1,155	1,350
	9-1/2	1,120	1,185	1,140	1,370	1,185	1,370	1,185	1,370	1,185	1,370
	11-1/4	1,175	1,355	1,215	1,515	1,340	1,515	1,405	1,515	1,405	1,515
	11-7/8	1,200	1,420	1,240	1,570	1,370	1,570	1,465	1,570	1,480	1,570
	14	1,260	1,630	1,335	1,750	1,460	1,750	1,550	1,750	1,550	1,750
	16	1,325	1,825	1,420	1,925	1,495	1,970	1,550	2,000	1,550	2,000
	18	N/A	N/A	1,505	2,095	1,530	2,185	1,550	2,250	1,550	2,250
	20	N/A	N/A	1,550	2,260	1,550	2,395	1,550	2,500	1,550	2,500
IB650	9-1/2	1,150	1,365	1,175	1,370	1,275	1,385	1,350	1,395	1,400	1,400
	11-7/8	1,235	1,565	1,265	1,575	1,375	1,595	1,460	1,610	1,520	1,620
	14	1,315	1,745	1,345	1,755	1,460	1,785	1,560	1,805	1,625	1,815
	16	1,385	1,915	1,420	1,925	1,555	1,960	1,655	1,985	1,725	2,000
IB700	9-1/2	1,150	1,365	1,175	1,370	1,275	1,385	1,350	1,395	1,400	1,400
	11-7/8	1,235	1,565	1,265	1,575	1,375	1,595	1,460	1,610	1,520	1,620
	14	1,315	1,745	1,345	1,755	1,460	1,785	1,560	1,805	1,625	1,815
	16	1,385	1,915	1,420	1,925	1,555	1,960	1,655	1,985	1,725	2,000

Series	Depth (inches)	End Reaction Capacities [1, 2] (pounds)									
		1 1/2" Bearing		1 3/4" Bearing		2 3/4" Bearing		3 1/2" Bearing		>=4" Bearing	
		A[4]	B[5]	A[4]	B[5]	A[4]	B[5]	A[4]	B[5]	A[4]	B[5]
IB800	7-7/8	955	1,055	975	1,065	1,055	1,105	1,115	1,135	1,155	1,155
	8-5/8	1,065	1,110	1,075	1,115	1,110	1,130	1,135	1,145	1,155	1,155
	9-1/4	1,110	1,155	1,130	1,380	1,155	1,380	1,155	1,380	1,155	1,390
	9-1/2	1,120	1,185	1,140	1,405	1,185	1,405	1,185	1,405	1,185	1,405
	11-1/4	1,175	1,355	1,215	1,540	1,340	1,540	1,405	1,540	1,405	1,540
	11-7/8	1,260	1,590	1,290	1,590	1,405	1,590	1,490	1,590	1,550	1,590
	14	1,335	1,795	1,365	1,800	1,470	1,815	1,550	1,830	1,600	1,835
	16	1,410	1,990	1,435	2,000	1,530	2,030	1,550	2,055	1,600	2,070
	18	N/A	N/A	1,505	2,270	1,530	2,285	1,550	2,300	1,600	2,300
	20	N/A	N/A	1,550	2,460	1,550	2,540	1,550	2,600	1,650	2,600
IB900x	7-7/8	1,255	1,275	1,265	1,285	1,310	1,320	1,340	1,345	1,360	1,360
	8-5/8	1,285	1,335	1,305	1,350	1,375	1,405	1,425	1,440	1,460	1,465
	9-1/2	1,320	1,405	1,345	1,425	1,450	1,500	1,525	1,555	1,575	1,590
	11-7/8	1,400	1,600	1,400	1,635	1,630	1,765	1,790	1,860	1,885	1,925
	14	1,400	1,800	1,400	1,800	1,630	1,870	1,805	1,960	1,885	2,125
	16	1,420	1,990	1,420	2,000	1,640	2,190	1,805	2,330	1,885	2,330
	18	N/A	N/A	1,505	2,270	1,600	2,405	1,675	2,510	1,885	2,510
	20	N/A	N/A	1,550	2,470	1,600	2,590	1,675	2,680	1,885	2,695
	22	N/A	N/A	1,470	2,595	1,585	2,725	1,675	2,820	1,885	2,875
	24	N/A	N/A	1,470	2,880	1,585	2,925	1,675	2,960	1,885	3,060

[1] Reference design reactions must be adjusted, as applicable, in accordance with Section 7.3 of the NDS. Adjusted reaction values must not exceed $F_{perpendicular}$ of the bearing plate X bearing length X flange width.
[2] Interpolation of the end reaction capacities between tabulated values shall be permitted.
[3] Not Used
[4] A = No Stiffeners
[5] B = Stiffeners

TABLE 5 – INTERIOR REACTION CAPACITIES

Series	Depth (inches)	Interior Reaction Capacities (pounds)			
		3 1/2" Bearing		5 1/2" Bearing	
		A[4]	B[5]	A[4]	B[5]
IB400	7-7/8	2,160	2,205	2,310	2,350
	8-5/8	2,160	2,285	2,310	2,370
	9-1/4	2,160	2,355	2,310	2,370
	9-1/2	2,160	2,370	2,370	2,370
	11-1/4	2,500	2,795	2,810	2,810
	11-7/8	2,500	2,800	2,810	2,960
	14	2,500	2,825	3,100	3,455
	16	2,500	2,850	3,100	3,650
IB600	7-7/8	2,160	2,205	2,310	2,350
	8-5/8	2,160	2,285	2,310	2,495
	9-1/4	2,160	2,700	2,310	2,700
	9-1/2	2,160	2,740	2,370	2,740
	11-1/4	2,500	3,030	2,810	3,030
	11-7/8	2,500	3,075	2,810	3,140
	14	2,500	3,215	3,100	3,455
	16	2,500	3,350	3,100	3,650
	18	2,500	3,425	3,100	3,735
	20	2,500	3,450	3,100	3,820
IB650	9-1/2	2,500	2,800	2,500	2,800
	11-7/8	2,500	3,240	2,910	3,240
	14	2,500	3,630	3,010	3,630
	16	2,500	4,000	3,100	4,000
IB700	9-1/2	2,500	2,800	2,500	2,800
	11-7/8	2,500	3,240	2,910	3,240
	14	2,500	3,630	3,010	3,630
	16	2,500	4,000	3,100	4,000

Series	Depth (inches)	Interior Reaction Capacities (pounds)			
		3 1/2" Bearing		5 1/2" Bearing	
		A[4]	B[5]	A[4]	B[5]
IB800	7-7/8	2,170	2,205	2,310	2,350
	8-5/8	2,175	2,285	2,310	2,495
	9-1/4	2,310	2,700	2,310	2,700
	9-1/2	2,470	2,740	2,470	2,740
	11-1/4	2,810	3,030	2,810	3,030
	11-7/8	2,815	3,180	3,140	3,180
	14	3,100	3,600	3,310	3,665
	16	3,100	4,000	3,340	4,100
	18	3,100	4,225	3,100	4,225
	20	3,100	4,350	3,100	4,350
IB900x	7-7/8	2,835	3,100	2,855	3,150
	8-5/8	2,935	3,150	2,950	3,190
	9-1/2	3,045	3,205	3,060	3,235
	11-7/8	3,355	3,355	3,355	3,355
	14	3,355	3,530	3,355	3,660
	16	3,355	3,920	3,355	4,090
	18	3,355	4,270	3,355	4,640
	20	3,355	4,600	3,355	5,000
	22	3,355	4,950	3,355	5,075
	24	3,355	5,150	3,355	5,150

[1] Reference design reactions must be adjusted, as applicable, in accordance with Section 7.3 of the NDS. Adjusted reaction values must not exceed $F_{perpendicular}$ of the bearing plate X bearing length X flange width.
[2] Interpolation of the end reaction capacities between tabulated values shall be permitted.
[3] Interpolation of the interior reaction capacities between tabulated values shall be permitted.
[4] A = No Stiffeners
[5] B = Stiffener

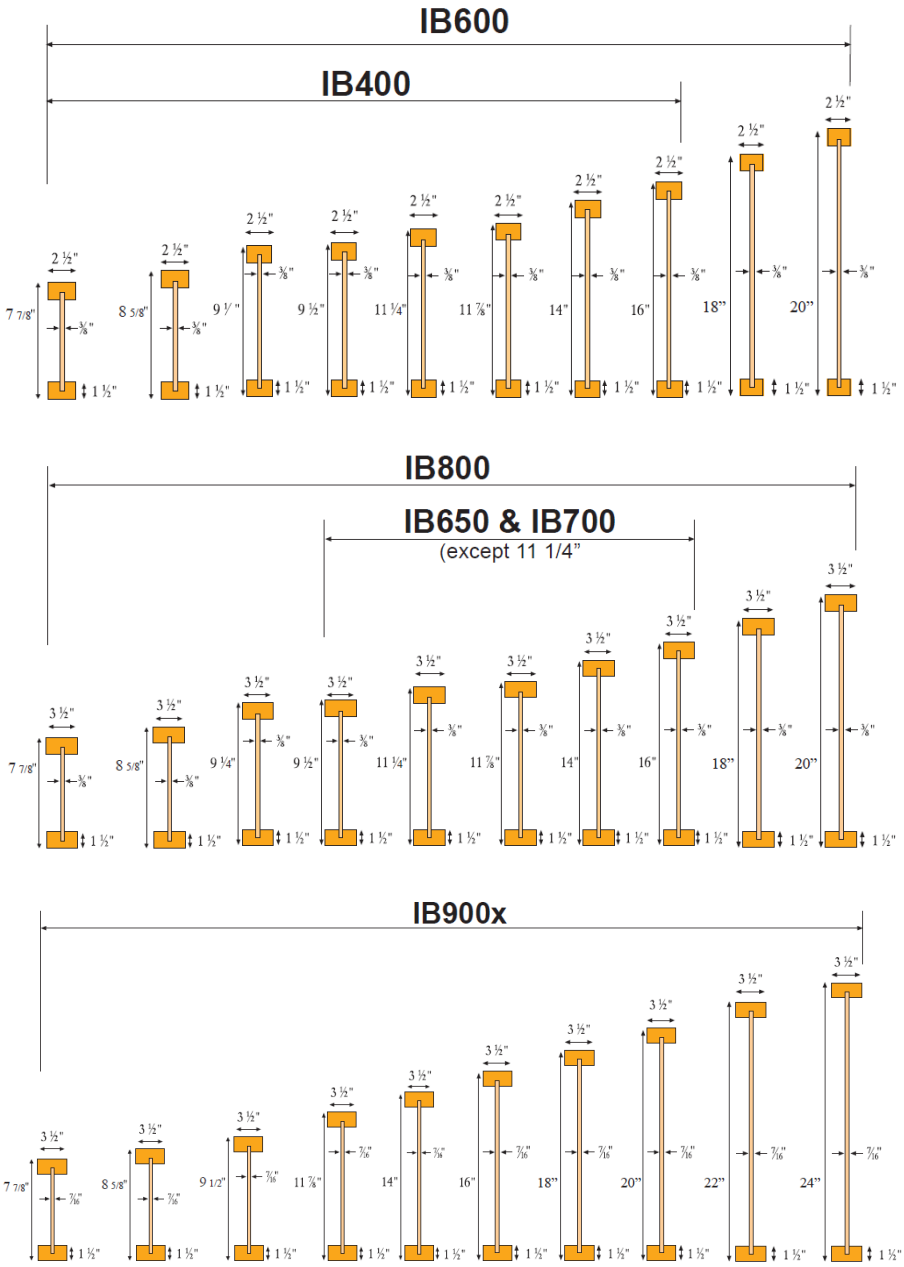

FIGURE 1 – I-JOIST ILLUSTRATIONS

APA PRODUCT REPORT®

www.apawood.org

IB Series I-Joists
IB EWP Inc.

PR-L330

Revised January 6, 2022

Products: IB EWP IB Series I-Joists
IB EWP Inc., 480 rue Jocelyn-Bastille C.P. 10, Pohénégamook, Quebec, G0L 1J0, Canada
www.ibewp.com

1. Basis of the product report:
   - 2021, 2018, 2015, and 2012 International Building Code (IBC): Sections 104.11 Alternative materials and 2303.1.2 Prefabricated wood I-joists
   - 2021, 2018, and 2015 International Residential Code (IRC): Sections R104.11 Alternative materials, and R502.1.2 and R802.1.8 (2018 IRC only) Prefabricated wood I-joists
   - 2012 IRC: Sections R104.11 Alternative materials and R502.1.4 Prefabricated wood I-joists
   - ASTM D5055-16, D5055-13e1, D5055-13, and D5055-09 recognized by the 2021 IBC and IRC, 2018 IBC and IRC, 2015 IBC and IRC, and 2012 IBC and IRC, respectively
   - Performance Standard for APA EWS I-Joists, PRI-400
   - 2021, 2015, and 2008 ANSI/AWC Special Design Provisions for Wind and Seismic (SDPWS) recognized by the 2021, 2018 and 2015, and 2012 IBC, respectively.
   - APA Reports T2000P-42A, T2001P-53, T2001P-63, T2001P-78, T2002P-65, T2003P-17, T2003P-18A, T2003P-52, T2005P-01A, T2005P-40B, T2005P-99A, T2006P-36, T2006P-43, T2006P-53, T2008P-37, T2009P-34A, T2010P-06, T2010P-49A, T2013P-31, T2014P-10, T2015L-05B, T2017P-25, T2019P-25A, T2019P-40, T2021P-34, and T2021P-52, and other qualification data

2. Product description:
   IB Series I-joists are made with lumber flanges and OSB web, as described in Table 1, and the in-plant manufacturing standard approved by APA.

3. Design properties:
   Tables 2 through 4 list the design properties for IB Series I-joists. Table 5 shows the allowable lateral shear capacities of IB Series I-Joists in diaphragm applications. The allowable spans for IB Series I-joists shall be in accordance with the recommendations provided by the manufacturer (www.ibewp.com), and with APA Design & Construction Guide, *Performance Rated I-Joists*, Form Z725 (www.apawood.org/resource-library) for products contained in the PRI Series.

4. Product installation:
   IB Series I-joists shall be installed in accordance with the recommendations provided by the manufacturer (see link above) and APA Z725 (see link above). Permissible web holes and cantilever reinforcements shall be in accordance with the recommendations provided by the manufacturer, and with APA Z725 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-S330 (see link above), or APA Design & Construction Guide, *Fire-Rated Systems,* Form W305 (see link above). I-joists listed in this report may be used in the fire-rated assemblies described in the 2021, 2018, 2015, and 2012 IBC Table 721.1(3), as applicable, provided the I-joists meet the criteria described in the respective assemblies.

6. Limitations:
   a) IB Series I-joists shall be designed in accordance with the code using the design properties specified in this report.
   b) IB Series I-joists are limited to dry service conditions where the average equilibrium moisture content of solid-sawn lumber is less than 16%.
   c) All IB Series I-joists are produced at IB EWP Inc. facility in Pohénégamook, Quebec, under a quality assurance program audited by APA.
   d) This report is subject to re-examination in one year.

7. Identification:
   The IB Series prefabricated wood I-joists described in this report are identified by a label bearing the manufacturer's name (IB EWP Inc.) and/or trademark, the APA assigned plant number (1135), the I-joist depth and series, the APA logo, the report number PR-L330, and a means of identifying the date of manufacture.

Table 1. Description of IB Series of I-Joists [a]

Joist Series	Joist Depths (in.)	Flanges				Web	
		Material	G[b]	Dimension		Material	Thickness (in.)
				Depth (in.)	Width (in.)		
IB400	7-7/8 – 16	Proprietary SPF	0.42	1-1/2	2-1/2	OSB	3/8
IB600	7-7/8 – 20	MSR	0.46	1-1/2	2-1/2	OSB	3/8
IB650	9-1/2 – 16	Proprietary SPF	0.42	1-1/2	3-1/2	OSB	3/8
IB700	9-1/2 – 16	MSR	0.42	1-1/2	3-1/2	OSB	3/8
IB800	7-7/8 – 20	MSR	0.46	1-1/2	3-1/2	OSB	3/8
IB900x	7-7/8 – 24	MSR	0.50	1-1/2	3-1/2	OSB	7/16

[a] Referenced dimensions are nominal. Tolerances are as specified in the in-plant quality manual.
[b] Specific gravity of flanges for use in diaphragm design (see Table 5) based on oven-dry weight and oven-dry volume.

Table 2. Design Properties (Allowable Stress Design) for IB Series I-Joists[a]

Joist Series	Joist Depth (in.)	Also Qualified for	EI[b] (10^6 lbf-in.^{2})	M[c] (lbf-ft)	V[d] (lbf)	VLC[e] (plf)	k[f] (10^6 lbf)
IB400	7-7/8	NA	123	2,235	1,155	2,000	4.10
	8-5/8	NA	153	2,495	1,155	2,000	4.49
	9-1/4	NA	185	2,715	1,155	2,000	4.81
	9-1/2	PRI-40	198	2,800	1,185	2,000	4.94
	11-1/4	NA	296	3,410	1,405	2,000	5.85
	11-7/8	PRI-40	336	3,630	1,480	2,000	6.18
	14	PRI-40	494	4,370	1,750	2,000	7.28
	16	PRI-40	673	5,065	2,000	2,000	8.32
IB600	7-7/8	NA	145	3,080	1,155	2,000	4.10
	8-5/8	NA	181	3,440	1,155	2,000	4.49
	9-1/4	NA	220	3,740	1,350	2,000	4.81
	9-1/2	PRI-60	235	3,860	1,370	2,000	4.94
	11-1/4	NA	356	4,700	1,515	2,000	5.85
	11-7/8	PRI-60	399	5,000	1,570	2,000	6.18
	14	PRI-60	585	6,020	1,750	2,000	7.28
	16	PRI-60	799	6,980	2,000	2,000	8.32
	18	NA	1,046	7,895	2,250	1,750	9.36
	20	NA	1,304	8,735	2,500	1,500	10.40
IB650	9-1/2	NA	240	4,020	1,400	2,000	4.94
	11-7/8	NA	407	5,210	1,620	2,000	6.18
	14	NA	596	6,140	1,815	2,000	7.28
	16	NA	809	6,980	2,000	2,000	8.32
IB700	9-1/2	NA	270	3,965	1,400	2,000	4.94
	11-7/8	NA	457	5,140	1,620	2,000	6.18
	14	NA	668	6,190	1,815	2,000	7.28
	16	NA	906	7,175	2,000	2,000	8.32
IB800	7-7/8	NA	204	4,360	1,155	2,000	4.10
	8-5/8	NA	254	4,870	1,155	2,000	4.49
	9-1/4	NA	307	5,295	1,390	2,000	4.81
	9-1/2	NA	326	5,465	1,405	2,000	4.94
	11-1/4	NA	493	6,655	1,540	2,000	5.85
	11-7/8	PRI-80	552	7,080	1,590	2,000	6.18
	14	PRI-80	807	8,530	1,835	2,000	7.28
	16	PRI-80	1,094	9,890	2,070	2,000	8.32
	18	NA	1,445	11,135	2,300	1,810	9.36
	20	NA	1,799	12,380	2,600	1,625	10.40
IB900x	7-7/8	NA	216	5,365	1,360	2,000	5.04
	8-5/8	NA	270	5,990	1,465	2,000	5.52
	9-1/2	NA	340	6,725	1,590	2,000	6.08
	11-7/8	NA	573	8,715	1,925	2,000	7.60
	14	PRI-90	836	10,490	2,125	2,000	8.96
	16	PRI-90	1,131	12,165	2,330	2,000	10.24
	18	NA	1,473	13,755	2,510	1,810	11.52
	20	NA	1,864	15,225	2,695	1,625	12.80
	22	NA	2,304	16,680	2,875	1,250	14.08
	24	NA	2,794	18,115	3,060	1,250	15.36

(footnotes on next page)

(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. Values for Limit States Design in Canada are available from the manufacturer.
(b) Bending stiffness (EI) of the I-joist.
(c) Moment capacity (M) of the I-joist.
(d) Shear capacity (V) of the I-joist.
(e) Uniform vertical (bearing) load capacity (VLC) 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 Eqs. 1 and 2.

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

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

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).

Table 3. Intermediate Reaction (Allowable Stress Design) for IB Series I-Joists[a]

Joist Series	Joist Depth (in.)	Also Qualified for	IR[b] (lbf)			
			3-1/2-in. Bearing		5-1/2-in. Bearing	
			w/o BS	w/ BS	w/o BS	w/ BS
IB400	7-7/8	NA	2,160	2,205	2,310	2,350
	8-5/8	NA	2,160	2,285	2,310	2,370
	9-1/4	NA	2,160	2,355	2,310	2,370
	9-1/2	PRI-40	2,160	2,370	2,370	2,370
	11-1/4	NA	2,500	2,795	2,810	2,810
	11-7/8	PRI-40	2,500	2,800	2,810	2,960
	14	PRI-40	2,500	2,825	3,100	3,455
	16	PRI-40	2,500	2,850	3,100	3,650
IB600	7-7/8	NA	2,160	2,205	2,310	2,350
	8-5/8	NA	2,160	2,285	2,310	2,495
	9-1/4	NA	2,160	2,700	2,310	2,700
	9-1/2	PRI-60	2,160	2,740	2,370	2,740
	11-1/4	NA	2,500	3,030	2,810	3,030
	11-7/8	PRI-60	2,500	3,075	2,810	3,140
	14	PRI-60	2,500	3,215	3,100	3,455
	16	PRI-60	2,500	3,350	3,100	3,650
	18	NA	2,500	3,425	3,100	3,735
	20	NA	2,500	3,450	3,100	3,820
IB650	9-1/2	NA	2,500	2,800	2,500	2,800
	11-7/8	NA	2,500	3,240	2,910	3,240
	14	NA	2,500	3,630	3,010	3,630
	16	NA	2,500	4,000	3,100	4,000
IB700	9-1/2	NA	2,500	2,800	2,500	2,800
	11-7/8	NA	2,500	3,240	2,910	3,240
	14	NA	2,500	3,630	3,010	3,630
	16	NA	2,500	4,000	3,100	4,000
IB800	7-7/8	NA	2,170	2,205	2,310	2,350
	8-5/8	NA	2,175	2,285	2,310	2,495
	9-1/4	NA	2,310	2,700	2,310	2,700
	9-1/2	NA	2,470	2,740	2,470	2,740
	11-1/4	NA	2,810	3,030	2,810	3,030
	11-7/8	PRI-80	2,815	3,180	3,140	3,180
	14	PRI-80	3,100	3,600	3,310	3,665
	16	PRI-80	3,100	4,000	3,340	4,100
	18	NA	3,100	4,225	3,100	4,225
	20	NA	3,100	4,350	3,100	4,350
IB900x	7-7/8	NA	2,835	3,100	2,855	3,150
	8-5/8	NA	2,935	3,150	2,950	3,190
	9-1/2	NA	3,045	3,205	3,060	3,235
	11-7/8	NA	3,355	3,355	3,355	3,355
	14	PRI-90	3,355	3,530	3,355	3,660
	16	PRI-90	3,355	3,920	3,355	4,090
	18	NA	3,355	4,270	3,355	4,640
	20	NA	3,355	4,600	3,355	5,000
	22	NA	3,355	4,950	3,355	5,075
	24	NA	3,355	5,150	3,355	5,150

(footnotes on next page)

(a) The tabulated values are design values for normal duration of load. All values shall be permitted to be adjusted for other load durations provided that the adjusted reaction design value is not greater than the value specified below. Bearing stiffeners shall be installed in accordance with the recommendations provided by the manufacturer and APA Z725.

Depth	I-Joist Series	Maximum adjusted reaction capacity[b,c] (lbf)			
		3-1/2 in. Brg. Length		5-1/2 in. Brg. Length	
		With Brg. Stiffeners		With Brg. Stiffeners	
		No	Yes	No	Yes
All	IB400	3,495		5,495	
	IB600	4,320		6,785	
	IB650	5,515		8,365	
	IB700	5,515		8,365	
	IB800	6,155		9,675	
	IB900x	7,210		11,330	

(b) Interpolation between 3-1/2- and 5-1/2-inch bearing lengths is permitted.
(c) The maximum adjusted reaction capacity shall not be adjusted for load duration.

Table 4. End Reaction Design Properties (Allowable Stress Design) for IB Series I-Joists[a]

Joist Series	Joist Depth	Also Qualified for	ER[b] (lbf)									
			1-1/2 in. Bearing		1-3/4 in. Bearing		2-3/4 in. Bearing		3-1/2 in. Bearing		4 in. Bearing	
			w/o BS	w/ BS	w/o BS	w/ BS	w/o BS	w/ BS	w/o BS	w/ BS	w/o BS	w/ BS
IB400	7-7/8	NA	955	1,055	975	1,065	1,055	1,105	1,115	1,135	1,155	1,155
	8-5/8	NA	1,065	1,110	1,075	1,115	1,110	1,130	1,135	1,145	1,155	1,155
	9-1/4"	NA	1,110	1,155	1,115	1,155	1,155	1,155	1,155	1,155	1,155	1,155
	9-1/2"	PRI-40	1,120	1,185	1,130	1,185	1,185	1,185	1,185	1,185	1,185	1,185
	11-1/4"	NA	1,175	1,355	1,205	1,360	1,340	1,405	1,405	1,405	1,405	1,405
	11-7/8"	PRI-40	1,200	1,420	1,230	1,430	1,370	1,480	1,465	1,480	1,480	1,480
	14"	PRI-40	1,260	1,630	1,295	1,645	1,455	1,750	1,550	1,750	1,550	1,750
	16"	PRI-40	1,325	1,825	1,355	1,845	1,455	2,000	1,550	2,000	1,550	2,000
IB600	7-7/8	NA	955	1,055	975	1,065	1,055	1,105	1,115	1,135	1,155	1,155
	8-5/8	NA	1,065	1,110	1,075	1,115	1,110	1,130	1,135	1,145	1,155	1,155
	9-1/4"	NA	1,110	1,155	1,130	1,350	1,155	1,350	1,155	1,350	1,155	1,350
	9-1/2"	PRI-60	1,120	1,185	1,140	1,370	1,185	1,370	1,185	1,370	1,185	1,370
	11-1/4"	NA	1,175	1,355	1,215	1,515	1,340	1,515	1,405	1,515	1,405	1,515
	11-7/8"	PRI-60	1,200	1,420	1,240	1,570	1,370	1,570	1,465	1,570	1,480	1,570
	14"	PRI-60	1,260	1,630	1,335	1,750	1,460	1,750	1,550	1,750	1,550	1,750
	16"	PRI-60	1,325	1,825	1,420	1,925	1,495	1,970	1,550	2,000	1,550	2,000
	18"	NA	NA	NA	1,505	2,095	1,530	2,185	1,550	2,250	1,550	2,250
	20"	NA	NA	NA	1,550	2,260	1,550	2,395	1,550	2,500	1,550	2,500
IB650	9-1/2	NA	1,150	1,365	1,175	1,370	1,275	1,385	1,350	1,395	1,400	1,400
	11-7/8	NA	1,235	1,565	1,265	1,575	1,375	1,595	1,460	1,610	1,520	1,620
	14	NA	1,315	1,745	1,345	1,755	1,460	1,785	1,560	1,805	1,625	1,815
	16	NA	1,385	1,915	1,420	1,925	1,555	1,960	1,655	1,985	1,725	2,000
IB700	9-1/2	NA	1,150	1,365	1,175	1,370	1,275	1,385	1,350	1,395	1,400	1,400
	11-7/8	NA	1,235	1,565	1,265	1,575	1,375	1,595	1,460	1,610	1,520	1,620
	14	NA	1,315	1,745	1,345	1,755	1,460	1,785	1,560	1,805	1,625	1,815
	16	NA	1,385	1,915	1,420	1,925	1,555	1,960	1,655	1,985	1,725	2,000
IB800	7-7/8	NA	955	1,055	975	1,065	1,055	1,105	1,115	1,135	1,155	1,155
	8-5/8	NA	1,065	1,110	1,075	1,115	1,110	1,130	1,135	1,145	1,155	1,155
	9-1/4"	NA	1,110	1,155	1,130	1,380	1,155	1,380	1,155	1,380	1,155	1,390
	9-1/2"	NA	1,120	1,185	1,140	1,405	1,185	1,405	1,185	1,405	1,185	1,405
	11-1/4"	NA	1,175	1,355	1,215	1,540	1,340	1,540	1,405	1,540	1,405	1,540
	11-7/8"	PRI-80	1,260	1,590	1,290	1,590	1,405	1,590	1,490	1,590	1,550	1,590
	14"	PRI-80	1,335	1,795	1,365	1,800	1,470	1,815	1,550	1,830	1,600	1,835
	16"	PRI-80	1,410	1,990	1,435	2,000	1,530	2,030	1,550	2,055	1,600	2,070
	18"	NA	NA	NA	1,505	2,270	1,530	2,285	1,550	2,300	1,600	2,300
	20"	NA	NA	NA	1,550	2,460	1,550	2,540	1,550	2,600	1,650	2,600
IB900x	7-7/8	NA	1,255	1,275	1,265	1,285	1,310	1,320	1,340	1,345	1,360	1,360
	8-5/8	NA	1,285	1,335	1,305	1,350	1,375	1,405	1,425	1,440	1,460	1,465
	9-1/2	NA	1,320	1,405	1,345	1,425	1,450	1,500	1,525	1,555	1,575	1,590
	11-7/8"	NA	1,400	1,600	1,400	1,635	1,630	1,765	1,790	1,860	1,885	1,925
	14"	PRI-90	1,400	1,800	1,400	1,800	1,630	1,870	1,805	1,960	1,885	2,125
	16"	PRI-90	1,420	1,990	1,420	2,000	1,640	2,190	1,805	2,330	1,885	2,330
	18"	NA	NA	NA	1,505	2,270	1,600	2,405	1,675	2,510	1,885	2,510
	20"	NA	NA	NA	1,550	2,470	1,600	2,590	1,675	2,680	1,885	2,695
	22"	NA	NA	NA	1,470	2,595	1,585	2,725	1,675	2,820	1,885	2,875
	24"	NA	NA	NA	1,470	2,880	1,585	2,925	1,675	2,960	1,885	3,060

(footnotes on next page)

(a) The tabulated values are design values for normal duration of load. All values shall be permitted to be adjusted for other load durations provided that the adjusted reaction design value is not greater than the value specified below. Bearing stiffeners shall be installed in accordance with the recommendations provided by the manufacturer and APA Z725.

Depth	I-Joist Series Designation	Maximum adjusted reaction capacity[b,c] (lbf)									
		1 1/2 in. Brg. Length		1-3/4 in. Brg. Length		2-3/4 in. Brg. Length		3-1/2 in. Brg. Length		4 in. Brg. Length	
		With Brg. Stiffeners		With Brg. Stiffeners		With Brg. Stiffeners		With Brg. Stiffeners		With Brg. Stiffeners	
		No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
All	IB400	1,500		1,750		2,745		3,495		3,995	
	IB600	1,850		2,160		3,395		4,320		4,935	
	IB650	2,135		2,490		3,915		4,985		5,695	
	IB700	2,135		2,490		3,915		4,985		5,695	
	IB800	2,640		3,080		4,835		6,155		7,035	
	IB900x	3,090		3,605		5,665		7,210		8,240	

(b) Interpolation between bearing lengths is permitted.
(c) The maximum adjusted reaction capacity shall not be adjusted for load duration.

Table 5. Allowable Shear (Pounds Per Foot) for Horizontal Wood Structural Panel Diaphragms Framed with IB Series I-Joists for Wind[a] or Seismic Loading[b,c]

Panel Grade	Common Nail Size	Minimum Nominal Panel Thickness (in.)	Minimum Nominal Width of Framing Members at Adjoining Panel Edges and Boundaries[e] (in.)	Blocked Diaphragms			Unblocked Diaphragms	
				Nail spacing (in.) at diaphragm boundaries (all cases), at continuous panel edges parallel to load (Cases 3 & 4), and at all panel edges (Cases 5 & 6)[f,g]			Nails Spaced 6 in. max. at supported edges[f,g]	
				6	4[h]	2-1/2[i]	Case 1 (No unblocked edges or continuous joints parallel to load	All other configurations (Cases 2, 3, 4, 5 &6)
				Nail spacing (in.) at other panel edges (Cases 1, 2, 3, & 4)				
				6	6	4		
Structural I Grades	6d[d]	5/16	3	210	280	420	185	140
	8d	3/8		300	400	600	265	200
	10d	15/32		360	480	720	320	240
Sheathing, single floor and other grades covered in DOC PS 1 and PS 2	6d[d]	5/16		190	250	380	170	125
		3/8		210	280	420	185	140
	8d	3/8		270	360	540	240	180
		7/16		285	380	570	255	190
		15/32		300	400	600	265	200
	10d	15/32		325	430	650	290	215
		19/32		360	480	720	320	240

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lbf = 4.448 N, 1 lbf/ft = 0.0146 N/mm.

(Footnotes on next pages)

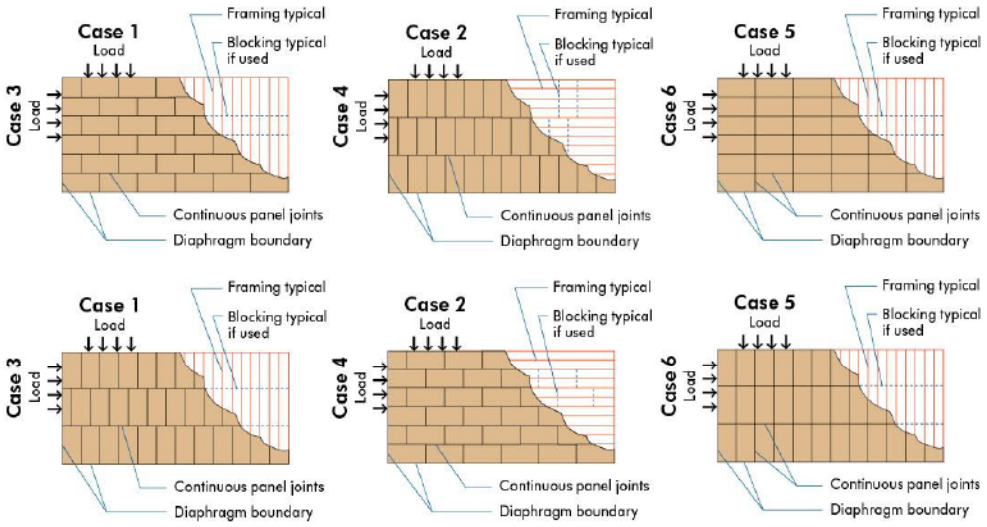

Figure 1. Diaphragm configurations

(a) For wind load applications, the values in the table above shall be permitted to be multiplied by 1.4.
(b) For shear loads of normal or permanent load duration as defined by the NDS, the values in the table above shall be multiplied by 0.63 or 0.56, respectively.
(c) The tabulated allowable shear capacities are for I-joist series with flanges having a specific gravity (G) of 0.50 or higher (see Table 1). For G < 0.50 the allowable shear capacities shall be reduced by multiplying the allowable shear capacities by the Specific Gravity Adjustment Factor = [1-(0.5-G)]. The Specific Gravity Adjustment Factor shall not be greater than 1.
(d) 8d common nails minimum are recommended for roofs due to negative pressures of high winds.
(e) The minimum nominal width of framing members not located at boundaries or adjoining panel edges shall be 2 inches.
(f) Space nails maximum 12 inches o.c. along intermediate framing members (6 inches o.c. when supports are spaced 48 inches o.c. or greater).
(g) Fasteners shall be located 3/8 inch from panel edges (see Figures 2, 3, and 4).
(h) Adjacent nails within a row must be staggered ½ inch when nail spacing is 4 inches or less (see Figure 3).
(i) Adjacent nails within a row must be staggered ½ inch at adjoining panel edges when nail spacing is 2-½ inches o.c. (see Figure 4).

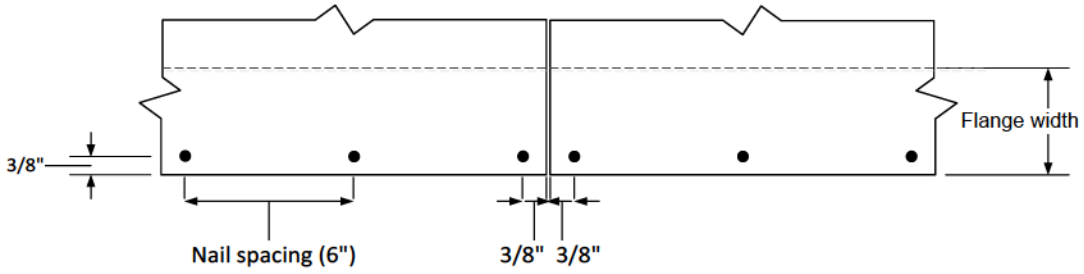

Figure 2. Non-staggered nails at diaphragm boundaries (see Footnote g), not to scale.

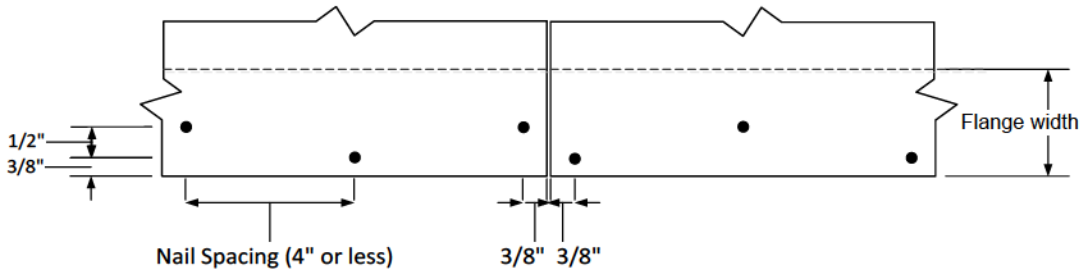

Figure 3. Staggered nails at diaphragm boundaries (see Footnote h), not to scale.

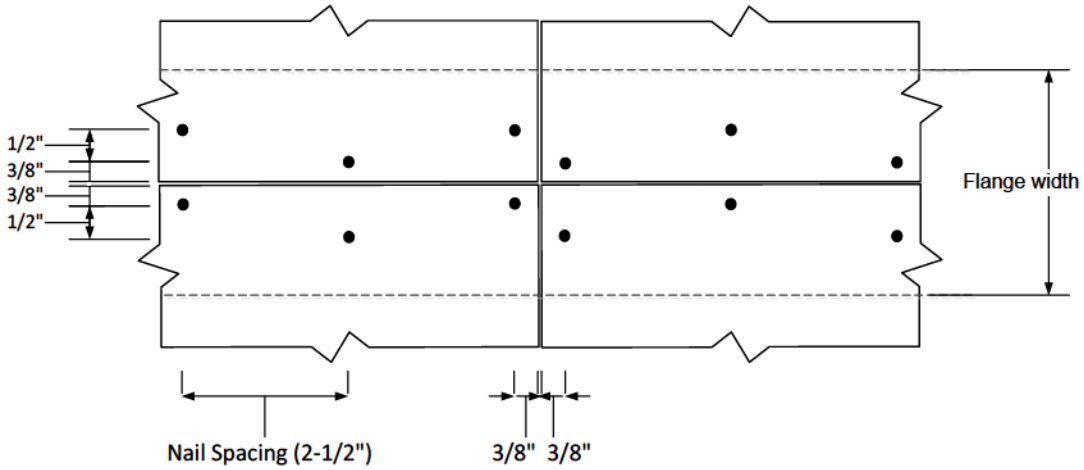

Figure 4. Staggered nails at adjoining panel edges (see Footnote i), not to scale.

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