



Evaluation Report CCMC 13132-R

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TJI[®] Series Joists

1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “TJI[®] Series Joists” when used as joists in floor and roof applications in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the National Building Code 2005:

- Clause 1.2.1.1.(1)(a), Division A, using the following acceptable solutions from Division B:
 - Sentence 4.3.1.1.(1) Design Basis for Wood (CAN/CSA-O86-01 for I-joist qualification)
- Clause 1.2.1.1.(1)(b), Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solutions:
 - Sentence 9.23.4.2.(2) Spans for Joists, Rafters and Beams

This opinion is based on CCMC's evaluation of the technical evidence in Section 4.1 provided by the Report Holder.

Ruling No. 05-06-130 (13132-R) authorizing the use of this product in Ontario, subject to the terms and conditions contained in the Ruling, was made by the Minister of Municipal Affairs and Housing on 2005-05-15 (revised on 2009-03-05) pursuant to s.29 of the Building Code Act, 1992 (see Ruling for terms and conditions). This Ruling is subject to periodic revisions and updates.

2. Description

This product's family of joists consists of prefabricated wood I-joists consisting of two continuous “Microllam[®] LVL,” (refer to CCMC Report 08675-R), “TimberStrand[®] LSL” (refer to CCMC Report 12627-R), or sawn lumber flanges glued to one of the two thicknesses of oriented strandboard (OSB) web (9.5 mm or 11.0 mm). The dimensions of the different products in this series are listed in Table 2.1.

For TJI[®] s31, s33 and s47 Series Joists, the web-flange connection is made by inserting the profiled OSB web into a tapered groove in the centre of the flange. The web material is manufactured in 2 743-mm lengths and end-jointed by gluing a full thickness vee-joint. The flange finger-joints are bonded with a polyurethane adhesive (refer to CCMC Listing 13267-R) and the web-to-web and web-to-flange joints are bonded with a phenol-resorcinol waterproof adhesive (refer CCMC Listings 13054-L and 13213-L).

For the other joists in this series, the web-flange connection is made by inserting the profiled OSB web into a machined, tapered groove in the centre of the flange. The web segments are installed into the flanges in 1 220-mm or 1 372-mm lengths. The web segments are serrated and all the joints are bonded with a phenol-resorcinol waterproof adhesive (refer to CCMC Listings 12917-L, 13054-L and 13057-L).

All vented joists are 406 mm deep and are manufactured with 64-mm-diameter holes cut through the web at 305 mm on centre near one flange. The vented joist is used in roof deck or roof joist applications only.

Table 2.1 Product dimensions

Product⁽¹⁾	Flange Size (width x thickness) (mm)	Web Thickness (mm)	Range of Joist Depths (mm)
TJI [®] 100C	63.5 x 38	9.5	241 to 406
TJI [®] 300C	63.5 x 38	9.5	241 to 508
TJI [®] 400C	89 x 38	11.0	241 to 508
TJI [®] 110	44.5 x 31.8 to 35	9.5	241 to 356
TJI [®] 210	52.8 x 31.8 to 35	9.5	241 to 406
TJI [®] 230	58.5 x 31.8 to 35	9.5	241 to 406
TJI [®] 360	58.5 x 35	9.5	241 to 508
TJI [®] 560	89 x 35	11.0	241 to 508
TJI [®] s31	63.5 x 38	9.5	241 to 406
TJI [®] s33	63.5 x 38	9.5	241 to 406
TJI [®] s47	89 x 38	11.0	302 to 508
TJI [®] L65	63.5 x 38	11.0	241 to 762
TJI [®] L90	89 x 38	11.0	241 to 762
TJI [®] H90	89 x 44.5	11.0	241 to 762

Notes to Table 2.1:

(1) The manufacturer shall provide to the designer the factored compression perpendicular to the grain of the flange for bearing design.

3. Conditions and Limitations

CCMC's compliance opinion in Section 1 is bound by the “TJI[®] Series Joists” being used in accordance with the conditions and limitations set out below.

- The products are intended for use in structural applications such as floor, ceiling or roof joists, and are intended for dry service use⁽¹⁾ applications only.

(1) All lumber, wood-based panels and proprietary engineered wood products are intended for dry service conditions. “Dry service” is defined as the in-service environment under which the equilibrium moisture content (MC) of lumber is 15% or less over a year and does not exceed 19% at any time. Wood contained within the interior of dry, heated or unheated buildings has generally been found to have a MC between 6% and 14% according to season and location. During construction, all wood-based products should be protected from the weather to ensure that the 19% MC is not exceeded in accordance with Article 9.3.2.5., Moisture Content, of Division B of the NBC 2005.

- The following pre-engineering has been provided to CCMC by Weyerhaeuser to demonstrate compliance to Part 9 buildings for acceptance by the local authority having jurisdiction (AHJ):

i) Weyerhaeuser Pre-engineered Floor Span Charts

When the products are used to support uniform loads only, the installation must be in accordance with the span tables (including vibration criteria⁽²⁾) found in the specifier's guides, in limit states design for Canada entitled:

1. "Trus Joist[®] TJI[®] 110, 210, 230, 360, 560 Joists," (#TJ-4500) (Limit States Design for Canada), dated January 2009;
2. "TJI[®] 100C, 300C and 400C," (#2506) (Limit States Design for Canada), dated September 2003;
3. "18" and 20" TJI[®]/Pro[™] 300C and 400C Joists," (#2562) dated February 2002; and
4. "Trus Joist[®] TJI[®] s31, s33, s47 Joists," (#TJ-4510) (Limit States Design for Canada), dated October 2009;

The products must be installed in accordance with Weyerhaeuser's installation guidelines noted in these documents for those applications falling within the scope of the documents. Applications outside the scope of these installation guidelines shall require engineering on a case-by-case basis.

(2) In cases where concrete topping is applied or bridging/blocking is used and joists are installed at the maximum spans, the current vibration criteria may not address all occupant performance expectations. Weyerhaeuser should therefore be consulted for span adjustments, if necessary, in these types of installations.

ii) Weyerhaeuser Pre-engineered Installation Details

Weyerhaeuser's pre-engineered details within the documents outlined in (i) above are limited in scope to building designs where the anticipated loads on the following structural details are not exceeded:

- rim joist and blocking resistance (page 10 of (1 and 4), page 8 of (2) and page 7 of (3));
- rim board resistance (page 10 of (1 and 4) and page 8 of (2) and page 7 of (3));
- web stiffener requirements (pages 8-9 of (1, 2 and 4) and pages 7-8 of (3));
- floor span tables (pages 4-6 of (1 and 4), pages 6-7 of (2) and page 3 of (3));
- load-bearing cantilever tables (pages 12-13 of (1 and 4), pages 10-13 of (2) and pages 8-9 of (3));
- web hole tables (page 11 of (1 and 4), page 27 of (2) and page 12 of (3));
- roof span tables (page 16 of (1 and 4), page 19 of (2));
- roof uniform load tables (page 21 of (1 and 4) and pages 22-23 of (2)); and
- specified hanger factored resistance (pages 22-23 of (1 and 4), pages 24-25 of (2) and page 6 of (3)).

iii) Engineering Required

For structural applications beyond the scope/limitations of the above-referenced Weyerhaeuser publications or when required by the AHJ, the drawings or related documents shall bear the authorized seal of a professional engineer skilled in wood design and licensed to practice under the appropriate provincial or territorial legislation.

Installations beyond the scope/limitations of (i) and (ii) imply, but are not limited to, the following:

- higher loads/longer spans than the manufacturer's pre-engineered details;
- concentrated loads;
- offset bearing walls;
- areas of high wind or high seismicity;
- stair openings;
- design of supporting wall studs/beams when the total load exceeds the NBC 2005 pre-engineered floor/roof joist tables;
- design of supporting foundation footings when the total load exceeds the NBC 2005 pre-engineered floor/roof joist tables; and
- fire resistance (see applicable fire-resistance assembly listings for special joist and adhesives used).

The engineer must design in accordance with CAN/CSA-O86, and may use as a guide, the "Engineering Guide for Wood Frame Construction," published by the Canadian Wood Council.

The factored resistance and engineering properties for the products must not exceed the values set forth in Tables 4.1.1.1. and 4.1.1.2.

The ends of all “TJI® Series Joists” members used as joists, rafters and beams must be restrained to prevent rollover. This is normally achieved by attaching a diaphragm sheathing to the top or to the compression edge, and to an end wall or shear transfer panel capable of transferring a minimum unfactored uniform load of 730 N/m or the required shear forces due to wind or seismic conditions. Blocking or cross-bracing with equivalent strength may be used.

The compression edges of all “TJI® Series Joists” members used as joists and rafters must be laterally supported at least every 610 mm, except where design is done in accordance with CAN/CSA-O86.

Nailing of the products must be in accordance with Weyerhaeuser's engineered details provided on a case-by-case basis.

iv) Engineering Support Provided by Manufacturer

Weyerhaeuser may provide engineering services in conjunction with Weyerhaeuser product specification and offers the following support contact number for their Canadian offices: 1 888 453 8358.

- This product must be identified with the phrase “CCMC 13132-R” along the side of the product. This CCMC number is only valid when it appears in conjunction with the WHI certification mark of Intertek Testing Services and/or the mark of PFS Corporation, and/or in conjunction with the certification mark of APA-EWS for the TJI® s31, TJI® s33, and TJI® s47 joists.

4. Technical Evidence

CCMC's Technical Guide for “TJI® Series Joists” sets out the nature of the technical evidence required by CCMC to enable it to evaluate a product as an acceptable or alternative solution in compliance with the NBC 2005. The Report Holder has submitted documentation for CCMC's evaluation. Testing was conducted at independent laboratories recognized by CCMC. The corresponding test results for “TJI® Series Joists” are summarized below.

4.1 NBC 2005 Compliance Data for “TJI® Series Joists” on which CCMC Based its Opinion in Section 1

4.1.1 Design Requirements

Table 4.1.1.1 Engineering properties of “TJI® Series Joists”

Basic Properties – Limit States Design						
Product	Joist Depth(mm)	Joist Weight(N/m)	Factored Resistance		EI x 10 ⁶ (kN·mm ²)	K x 10 ⁴ (kN/m)
			Moment ⁽¹⁾ (N·m)	Vertical Shear(N)		
TJI® 100C	241	36	5 140	7 875	528	7.9
	302	40	6 615	9 965	901	7.9
	356	43	7 735	12 010	1 323	7.9
	406	47	8 750	13 835	1 802	7.9
	406V	47	8 750	12 500	1 802	7.9

Table 4.1.1.1 Engineering properties of “TJI® Series Joists” (cont'd)

Basic Properties – Limit States Design						
Product	Joist Depth(mm)	Joist Weight(N/m)	Factored Resistance		EI x 10⁶(kN·mm²)	K x 10⁴(kN/m)
			Moment⁽¹⁾(N·m)	Vertical Shear(N)		
TJI® 300C	241	36	7 245	7 875	628	7.9
	302	40	9 390	9 965	1 068	7.9
	356	43	11 245	12 010	1 564	7.9
	406	47	12 780	13 835	2 129	7.9
	406V	47	12 780	12 500	2 129	7.9
	457	50	14 285	15 125	2 787	7.9
	508	54	15 760	15 190	3 541	7.9
TJI® 400C	241	47	11 435	11 765	881	9.2
	302	52	14 810	13 525	1 489	9.2
	356	56	17 835	14 925	2 178	9.2
	406	60	20 675	16 370	2 956	9.2
	457	64	23 205	17 795	3 863	9.2
	508	68	25 670	19 240	4 902	9.2
TJI® 110	241	33	5 375	8 565	402	7.9
	302	37	6 795	10 945	683	7.9
	356	41	8 040	13 055	1 007	7.9
TJI® 210	241	37	6 445	9 340	479	7.9
	302	41	8 160	11 610	812	7.9
	356	45	9 645	13 655	1 191	7.9
	406	48	11 035	15 370	1 624	7.9
TJI® 230	241	40	7 160	9 340	525	7.9
	302	44	9 055	11 610	890	7.9
	356	48	10 725	13 655	1 303	7.9
	406	51	12 270	15 370	1 774	7.9
	406V	51	12 270	12 500	1 774	7.9
TJI® 360	241	40	10 800	10 010	715	7.9
	302	44	13 940	11 965	1 202	7.9
	356	48	16 540	13 725	1 756	7.9
	406	51	18 955	15 370	2 382	7.9
	457	54	21 345	17 035	3 114	7.9
	508	58	23 705	18 680	3 949	7.9
TJI® 560	241	53	16 590	11 720	1 085	9.2
	302	58	21 415	14 390	1 825	9.2
	356	62	25 430	16 770	2 657	9.2
	406	66	29 145	19 040	3 593	9.2
	457	70	32 815	21 285	4 681	9.2
	508	74	36 455	23 485	5 923	9.2

Table 4.1.1.1 Engineering properties of “TJI® Series Joists” (cont'd)

Basic Properties – Limit States Design						
Product	Joist Depth(mm)	Joist Weight(N/m)	Factored Resistance		EI x 10⁶(kN·mm²)	K x 10⁴ (kN/m)
			Moment⁽¹⁾ (N·m)	Vertical Shear(N)		
TJI® s31	241	38	6 765	8 450	588	7.9
	302	42	8 555	10 740	999	7.9
	356	45	10 130	12 790	1 466	7.9
	406	50	11 590	14 500	1 997	7.9
TJI® s33	241	38	8 575	8 450	694	7.9
	302	42	11 110	10 740	1 179	7.9
	356	45	13 375	12 790	1 728	7.9
	406	50	15 510	14 500	2 347	7.9
TJI® s47	302	53	15 715	13 525	1 647	9.2
	356	55	18 925	14 925	2 411	9.2
	406	58	21 950	16 370	3 272	9.2
	457	63	24 820	17 795	4 273	9.2
	508	66	27 470	19 240	5 421	9.2

Table 4.1.1.1 Engineering properties of “TJI® Series Joists” (cont’d)

Reaction Properties – Limit States Design											
Product	Joist Depth (mm)	Factored End Reaction (N)					Factored Intermediate Reaction (N)				
		45-mm Brg. Length		89-mm Brg. Length		Web Stiff. Nails⁽³⁾	89-mm Brg. Length		133-mm Brg. Length		Web Stiff. Nails⁽³⁾
		Web Stiffeners		Web Stiffeners			Web Stiffeners		Web Stiffeners		
		No	Yes	No	Yes		No	Yes	No	Yes	
TJI® 100C	241	7 785	N/A ⁽²⁾	7 875	N/A	N/A	16 080	N/A	19 705	N/A	N/A
	302	7 785	9 965	9 855	9 965	3-63.5	16 080	18 395	19 705	21 995	3-63.5
	356	7 785	10 095	9 855	12 010	3-63.5	16 080	18 395	19 705	21 995	3-63.5
	406	7 785	10 095	9 855	12 165	3-63.5	16 080	18 395	19 705	21 995	3-63.5
	406V	7 785	10 095	9 855	12 165	3-63.5	16 080	18 395	19 705	21 995	3-63.5
TJI® 300C	241	7 785	N/A	7 875	N/A	N/A	18 280	N/A	20 375	N/A	N/A
	302	7 785	9 965	9 855	9 965	3-63.5	18 280	20 575	22 375	24 690	3-63.5
	356	7 785	10 095	9 855	12 010	3-63.5	18 280	20 575	22 375	24 690	3-63.5
	406	7 785	10 095	9 855	12 165	3-63.5	18 280	20 575	22 375	24 690	3-63.5
	406V	7 785	10 095	9 855	12 165	3-63.5	18 280	20 575	22 375	24 690	3-63.5
	457	7 785	10 095	9 855	12 165	3-63.5	18 280	20 575	22 375	24 690	3-63.5
	508	7 785	10 095	9 855	12 165	3-63.5	18 280	20 575	22 375	24 690	3-63.5
TJI® 400C	241	9 075	N/A	11 765	N/A	N/A	22 710	N/A	26 645	N/A	N/A
	302	9 075	12 145	12 055	13 525	3-89	22 710	25 755	26 645	29 690	3-89
	356	9 075	12 145	12 055	14 925	3-89	22 710	25 755	26 645	29 690	3-89
	406	9 075	12 145	12 055	15 125	3-89	22 710	25 755	26 645	29 690	3-89
	457	9 075	12 145	12 055	15 125	3-89	22 710	25 755	26 645	29 690	3-89
	508	9 075	12 145	12 055	15 125	3-89	22 710	25 755	26 645	29 690	3-89
TJI® 110	241	6 205	N/A	8 565	N/A	N/A	13 590	N/A	16 480	N/A	N/A
	302	6 205	8 385	9 475	10 945	3-63.5	13 590	15 900	16 480	18 795	3-63.5
	356	6 205	8 385	9 475	11 790	3-63.5	13 590	15 900	16 480	18 795	3-63.5
TJI® 210	241	6 895	N/A	9 340	N/A	N/A	15 055	N/A	18 015	N/A	N/A
	302	6 895	9 185	10 275	11 610	3-63.5	15 055	17 370	18 015	20 330	3-63.5
	356	6 895	9 185	10 275	12 365	3-63.5	15 055	17 370	18 015	20 330	3-63.5
	406	6 895	9 185	10 275	12 365	3-63.5	15 055	17 370	18 015	20 330	3-63.5
TJI® 230	241	7 275	N/A	9 340	N/A	N/A	16 905	N/A	19 615	N/A	N/A
	302	7 275	9 565	10 225	11 610	3-63.5	16 905	19 215	19 615	21 905	3-63.5
	356	7 275	9 565	10 225	12 545	3-63.5	16 905	19 215	19 615	21 905	3-63.5
	406	7 275	9 565	10 225	12 545	3-63.5	16 905	19 215	19 615	21 905	3-63.5
	406V	7 275	9 565	10 225	12 500	3-63.5	16 905	19 215	19 615	21 905	3-63.5

Table 4.1.1.1 Engineering properties of “TJI® Series Joists” (cont’d)

Reaction Properties – Limit States Design											
Product	Joist Depth (mm)	Factored End Reaction (N)					Factored Intermediate Reaction (N)				
		45-mm Brg. Length		89-mm Brg. Length		Web Stiff. Nails⁽³⁾	89-mm Brg. Length		133-mm Brg. Length		Web Stiff. Nails⁽³⁾
		Web Stiffeners		Web Stiffeners			Web Stiffeners		Web Stiffeners		
		No	Yes	No	Yes		No	Yes	No	Yes	
TJI® 360	241	7 585	N/A	10 010	N/A	N/A	17 280	N/A	21 085	N/A	N/A
	302	7 585	9 895	10 585	11 965	3-63.5	17 280	19 570	21 085	23 375	3-63.5
	356	7 585	9 895	10 585	12 880	3-63.5	17 280	19 570	21 085	23 375	3-63.5
	406	7 585	9 895	10 585	12 880	3-63.5	17 280	19 570	21 085	23 375	3-63.5
	457	7 585	9 895	10 585	12 880	3-63.5	17 280	19 570	21 085	23 375	3-63.5
	508	7 585	9 895	10 585	12 880	3-63.5	17 280	19 570	21 085	23 375	3-63.5
TJI® 560	241	8 875	N/A	11 720	N/A	N/A	21 060	N/A	24 265	N/A	N/A
	302	8 875	11 920	12 100	14 390	3-89	21 060	24 130	24 265	27 310	3-89
	356	8 875	11 920	12 100	15 170	3-89	21 060	24 130	24 265	27 310	3-89
	406	8 875	11 920	12 100	15 170	3-89	21 060	24 130	24 265	27 310	3-89
	457	8 875	11 920	12 100	15 170	3-89	21 060	24 130	24 265	27 310	3-89
	508	8 875	11 920	12 100	15 170	3-89	21 060	24 130	24 265	27 310	3-89
TJI® s31	241	7 585	N/A	8 450	N/A	N/A	19 350	N/A	21 905	N/A	N/A
	302	8 430	10 720	10 320	10 740	3-63.5	19 350	21 640	22 350	24 665	3-63.5
	356	8 430	10 720	10 320	12 635	3-63.5	19 350	21 640	22 350	24 665	3-63.5
	406	8 430	10 720	10 320	12 635	3-63.5	19 350	21 640	22 350	24 665	3-63.5
TJI® s33	241	7 585	N/A	8 450	N/A	N/A	19 350	N/A	21 905	N/A	N/A
	302	8 430	10 720	10 320	10 740	3-63.5	19 350	21 640	22 350	24 665	3-63.5
	356	8 430	10 720	10 320	12 635	3-63.5	19 350	21 640	22 350	24 665	3-63.5
	406	8 430	10 720	10 320	12 635	3-63.5	19 350	21 640	22 350	24 665	3-63.5
TJI® s47	302	8 985	12 055	10 455	13 525	3-89	19 370	22 440	22 440	25 490	3-89
	356	8 985	12 055	10 455	13 525	3-89	21 195	24 265	23 775	26 825	3-89
	406	8 985	12 055	10 455	13 525	3-89	22 465	25 535	24 930	27 980	3-89
	457	8 985	12 055	10 455	13 525	3-89	22 465	25 535	25 245	28 290	3-89
	508	8 985	12 055	10 455	13 525	3-89	22 465	25 535	25 245	28 290	3-89

Notes to Table 4.1.1.1:

(1) The factored moment resistances listed in Table 4.1.1.1 shall not be increased by any Code-allowed repetitive member system factor.

(2) “N/A” means not applicable.

(3) All nails are box nails, A = 63.5 mm, B = 89 mm.

Table 4.1.1.2. Engineering Properties of “TJI® Series Joists” – Custom Applications

Basic Properties – Limit States Design						
Product	Joist Depth (mm)	Weight (N/m)	Factored Resistance		EI x 10⁶(kN·mm²)	K x 10⁴ (kN/m)
			Moment⁽¹⁾(N·m)	Vertical Shear(N)		
TJI® L65	241	44	11 755	11 765	755	9.2
	302	49	15 225	13 525	1 291	9.2
	356	53	18 105	14 925	1 911	9.2
	406	57	20 770	16 370	2 620	9.2
	457	61	23 410	17 795	3 458	9.2
	508	65	26 025	19 240	4 434	9.2
	559	69	28 615	20 615	5 550	9.2
	610	73	31 185	21 485	6 813	9.2
	660	77	33 740	20 350	8 231	9.2
	711	81	36 275	20 350	9 806	9.2
	762	85	38 795	20 350	11 551	9.2
TJI® L90	241	56	16 725	11 765	1 047	9.2
	302	61	21 665	13 525	1 782	9.2
	356	65	25 775	14 925	2 620	9.2
	406	69	29 575	16 370	3 576	9.2
	457	73	33 330	17 795	4 693	9.2
	508	77	37 060	19 240	5 984	9.2
	559	81	40 755	20 615	7 452	9.2
	610	85	44 425	21 485	9 104	9.2
	660	89	48 065	20 350	10 946	9.2
	711	93	51 675	20 350	12 985	9.2
	762	97	55 275	20 350	15 227	9.2
TJI® H90	302	67	24 715	13 525	1 972	9.2
	356	71	29 525	14 925	2 914	9.2
	406	75	33 970	16 370	3 985	9.2
	457	79	38 360	17 795	5 242	9.2
	508	83	42 715	19 240	6 690	9.2
	559	87	47 035	20 615	8 335	9.2
	610	91	51 315	21 485	10 184	9.2
	660	95	55 575	20 350	12 244	9.2
	711	99	59 800	20 350	14 519	9.2
	762	103	64 000	20 350	17 018	9.2

Table 4.1.1.2 Engineering properties of “TJI® Series Joists” – Custom Applications (cont’d)

Reaction Properties											
Product	Joist Depth (mm)	Factored End Reaction (N)					Factored Intermediate Reaction (N)				
		45-mm Brg. Length		89-mm Brg. Length		Web Stiff. Nails ⁽³⁾	89 mm and 133-mm Brg. Length		133 mm and 178-mm Brg. Length		Web Stiff. Nails ⁽³⁾
		Web Stiffeners		Web Stiffeners			Web Stiffeners		Web Stiffeners		
		No	Yes	No	Yes		No	Yes	No	Yes	
TJI® L65	241	9 075	N/A ⁽²⁾	11 765	N/A	N/A	19 350	N/A	23 685	N/A	N/A
	302	9 075	11 385	12 235	13 525	3-A	19 350	21 640	23 685	26 000	3-A
	356	9 075	11 965	12 235	14 925	5-A	19 350	23 175	23 685	27 535	5-A
	406	9 075	11 965	12 235	16 370	6-A	19 350	23 955	23 685	28 290	6-A
	457	9 075	11 965	12 235	17 595	7-A	19 350	24 710	23 685	29 070	7-A
	508	N/A	11 965	N/A	18 370	8-A	N/A	25 490	N/A	29 825	8-A
	559	N/A	11 965	N/A	19 125	9-A	N/A	26 245	N/A	30 605	9-A
	610	N/A	11 965	N/A	19 905	10-A	N/A	26 510	N/A	31 360	10-A
	660	N/A	11 965	N/A	20 350	11-A	N/A	32 140	N/A	36 475	11-A
	711	N/A	11 965	N/A	20 350	12-A	N/A	32 895	N/A	37 255	12-A
762	N/A	11 965	N/A	20 350	13-A	N/A	33 675	N/A	38 030	13-A	

Table 4.1.1.2 Engineering properties of “TJI® Series Joists” – Custom Applications (cont’d)

Reaction Properties											
Product	Joist Depth (mm)	Factored End Reaction (N)					Factored Intermediate Reaction (N)				
		45-mm Brg. Length		89-mm Brg. Length		Web Stiff. Nails⁽³⁾	89 mm and 133-mm Brg. Length		133 mm and 178-mm Brg. Length		Web Stiff. Nails⁽³⁾
		Web Stiffeners		Web Stiffeners			Web Stiffeners		Web Stiffeners		
		No	Yes	No	Yes		No	Yes	No	Yes	
TJI® L90	241	9 075	N/A	11 765	N/A	N/A	22 710	N/A	26 645	N/A	N/A
	302	9 075	11 120	12 235	13 525	2-B	22 710	24 755	26 645	28 670	2-B
	356	9 075	12 145	12 235	14 925	3-B	22 710	25 755	26 645	29 690	3-B
	406	9 075	13 165	12 235	16 305	4-B	22 710	26 780	26 645	30 715	4-B
	457	9 075	13 165	12 235	16 305	4-B	22 710	26 780	26 645	30 715	4-B
	508	N/A	14 170	N/A	17 325	5-B	N/A	27 800	N/A	31 740	5-B
	559	N/A	15 190	N/A	18 350	6-B	N/A	33 920	N/A	37 885	11-B
	610	N/A	15 190	N/A	18 350	6-B	N/A	35 940	N/A	39 880	13-B
	660	N/A	16 215	N/A	19 350	7-B	N/A	40 700	N/A	40 700	14-B
	711	N/A	16 745	N/A	20 350	8-B	N/A	40 700	N/A	40 700	15-B
	762	N/A	16 745	N/A	20 350	8-B	N/A	40 700	N/A	40 700	17-B

Table 4.1.1.2 Engineering properties of “TJI® Series Joists” – Custom Applications (cont’d)

Reaction Properties											
Product	Joist Depth (mm)	Factored End Reaction (N)					Factored Intermediate Reaction (N)				
		45-mm Brg. Length		89-mm Brg. Length		Web Stiff. Nails ⁽³⁾	89 mm and 133-mm Brg. Length		133 mm and 178-mm Brg. Length		Web Stiff. Nails ⁽³⁾
		Web Stiffeners		Web Stiffeners			Web Stiffeners		Web Stiffeners		
		No	Yes	No	Yes		No	Yes	No	Yes	
TJI® H90	302	9 075	11 120	12 235	13 525	2-B	22 710	24 755	26 645	28 670	2-B
	356	9 075	12 145	12 235	14 925	3-B	22 710	25 755	26 645	29 690	3-B
	406	9 075	13 165	12 235	16 305	4-B	22 710	26 780	26 645	30 715	4-B
	457	9 075	13 165	12 235	16 305	4-B	22 710	26 780	26 645	30 715	4-B
	508	N/A	14 170	N/A	17 325	5-B	N/A	27 800	N/A	31 740	5-B
	559	N/A	15 190	N/A	18 350	6-B	N/A	33 920	N/A	37 855	11-B
	610	N/A	15 190	N/A	18 350	6-B	N/A	35 940	N/A	39 880	13-B
	660	N/A	16 215	N/A	19 350	7-B	N/A	40 700	N/A	40 700	14-B
	711	N/A	16 745	N/A	20 350	8-B	N/A	40 700	N/A	40 700	15-B
	762	N/A	16 745	N/A	20 350	8-B	N/A	40 700	N/A	40 700	17-B

Notes to Table 4.1.1.2:

- (1) The factored moment resistances listed in Table 4.1.1.2 shall not be increased by any Code-allowed repetitive member system factor.
- (2) “N/A” means not applicable.
- (3) All nails are box nails, A = 63.5 mm, B = 89 mm.

Additional engineering data and load/span tables are available from the manufacturer.

Note that RedBuilt™, LLC is the owner of the Stayton, OR plant and manufactures “TJI® Series Joists” for Weyerhaeuser according to Weyerhaeuser Manufacturing Standards. The TJI® s31, s33 and s47 series are manufactured at the Anthony-Domtar Inc. plant in Sault Ste. Marie, Ontario.

Report Holder: Weyerhaeuser
P.O. Box 8449
Boise, ID 83707
U.S.A.
Tel: 888-453-8358

Plant(s): Stayton, OR, U.S.A.
Natchitoches, LA, U.S.A.
Castleberry, AL, U.S.A.
Chavies, KY, U.S.A.
Eugene, OR, U.S.A.
Valdosta, GA, U.S.A.
Claresholm, AB
Sault Ste. Marie, ON

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Appendix A

The design values obtained from testing to ASTM D 5055-04, “Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists,” as specified in CAN/CSA-O86-01, “Engineering Design in Wood,” are summarized below. The manufacturer’s published pre-engineered joist spans were designed in accordance with CAN/CSA-O86-01.

Table A1. Additional test information for “TJI® Series Joists”

Property	Test Information
Shear capacity	The shear capacity of the specimens was established by combining data in accordance with ASTM D 5055-04. Data from quality control (QC) tests have been used to establish the applicable coefficient of variation, CV_w , and the reliability normalization factor from Table 13.2.3.2 of CAN/CSA-O86-01 was used to determine the specified strength.
Moment capacity	The moment capacity qualification was carried out using the analytical method based on the characteristics of the flange material, with confirmatory testing in accordance with ASTM D 5055-04. Data from quality control (QC) tests have been used to establish the applicable coefficient of variation, CV_w , and the reliability normalization factor from Table 13.2.3.2 of CAN/CSA-O86-01 was used to determine the specified strength.
Stiffness	<p>An appropriate test program was used to confirm the stiffness capacity. The following formula was used to predict mid-span deflection:</p> $\text{deflection} = \frac{5wL^4}{384EI \times 10^3} + \frac{wL^2}{Kd}$ <p>where: w = load (kN/m), L = span (mm), EI and K from Table 4.1.1.1 and 4.1.1.2, and d = joist depth (mm).</p>
End joints	End joints were qualified as part of the flange tension qualification. The flanges are in-plant finger-jointed, and regular tension testing is conducted.
Creep	Specimens were tested for creep performance in accordance with ASTM D 5055-04. The specimens recovered more than 90% of the basic dead load deflection.
Bearing length	The product reaction properties listed in Tables 4.1.1.1 and 4.1.1.2 are specific to bearing lengths shown and are based on a rational bearing analysis methodology applicable to “TJI® Series Joists.” Data submitted confirm satisfactory performance to the rational methodology. Reaction properties for end or intermediate bearing lengths within ranges shown in Table 4.1.1.1 and 4.1.1.2 may be determined by linear interpolation. Extrapolation of reaction properties in Table 4.1.1.1 and 4.1.1.2 is not allowed.

Table A1. Additional test information for “TJI® Series Joists” (cont’d)

Property	Test Information
Adhesive qualification	For the “TJI® s31, s33, and s47 Series Joists,” the adhesive for the flange finger-joints is a polyurethane adhesive with a CCMC Report 13267-R. The other adhesives used comply with CSA O112.7-M1977, “Resorcinol and Phenol-Resorcinol Resin Adhesives for Wood (Room and Intermediate Temperature Curing).” See CCMC Listings 13054-L and 13213-L. For the remaining products in this series the adhesives used comply with CSA O112.7-M1977, “Phenol and Phenol Resorcinol, Resin Adhesives for Wood (Room and Intermediate Temperature Curing).” See CCMC Listings 12917-L, 13054-L, and 13057-L.
Web stock	The web stock complies with CAN/CSA-O325.0-92, “Construction Sheathing.”