

CCMC 13132-R

CCMC Canadian code compliance evaluation

CCMC number:	13132-R
Status:	Active
Issue date:	2003-11-14
Modified date:	2023-11-27
Evaluation holder:	<p>Weyerhaeuser 32901 Weyerhaeuser Way South - Suite 102 Federal Way WA 98001 United States Website: www.weyerhaeuser.com Telephone: 888-453-8358</p>
Product name:	TJI® SERIES JOISTS
Compliance:	NBC 2015, OBC
Criteria:	CCMC-TG-061733.01-15 "CCMC Technical Guide for Prefabricated Wood I-Joists"

In most jurisdictions this document is sufficient evidence for approval by Canadian authorities.

[Learn more about CCMC recognition](#) [Look for the trusted CCMC mark on products to verify compliance.](#)

Compliance opinion

It is the opinion of the Canadian Construction Materials Centre that the evaluated product, when used as joists in floor and roof applications in accordance with the conditions and limitations stated in this evaluation, complies with the following code:

National Building Code of Canada 2015

Code provision	Solution type
4.3.1.1.(1) Buildings and their structural members m ...	<u>Acceptable</u>
9.10.8.10. Application to Houses	<u>Alternative</u>
9.23.4.2.(2) Spans for floor joists that are not sele ...	<u>Alternative</u>

Ontario Building Code

Ruling No. 05-05-130 (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 2017-03-22) 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.

The above opinion(s) is/are based on the evaluation by the CCMC of technical evidence provided by the evaluation holder, and is bound by the stated conditions and limitations. For the benefit of the user, a summary of the technical information that forms the basis of this evaluation has been included.

Product information

Product name

TJI® SERIES JOISTS

Product description

This product's family of joists consists of prefabricated wood I-joists consisting of two continuous Microllam® LVL (refer to CCMC 08675-R), TimberStrand® LSL (refer to CCMC 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 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 V-joint. The flange fingerjoints are bonded with a polyurethane adhesive (refer to CCMC 13512-L) and the web-to-web and web-to-flange joints are bonded with a phenolresorcinol waterproof adhesive (refer to CCMC 13054-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 13054-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 (o.c.) near one flange. The vented joist is used in roof deck or roof joist applications only.

Table 1. Product dimensions

Product ⁽¹⁾	Flange size (width × thickness) (mm)	Web thickness (mm)	Range of joist depths (mm)
TJI® 110	Min. 44.5 × 31.8	9.5	241 to 356
TJI® 210	Min. 52.8 × 31.8	9.5	241 to 406
TJI® 230	Min. 58.5 × 31.8	9.5	241 to 406
TJI® 360	Min. 58.5 × 35	9.5	241 to 508
TJI® 560	Min. 89 × 35	11.0	241 to 508
TJI® 560D	89 × 38	11.0	241 to 762
TJI® s31	63.5 × 38	9.5	241 to 406
TJI® s33	63.5 × 38	9.5	241 to 406
TJI® s47	89 × 38	11.0	302 to 508
TJI® L65	63.5 × 38	11.0	241 to 762

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Product ⁽¹⁾	Flange size (width × thickness) (mm)	Web thickness (mm)	Range of joist depths (mm)
TJI® L90	89 × 38	11.0	241 to 762
TJI® H90	89 × 44.5	11.0	241 to 762

Note:

- 1 The manufacturer must provide to the designer the factored compression perpendicular to the grain of the flange for bearing design.

Manufacturing plants

This evaluation is limited to products produced at the following plants:

Product name	Manufacturing plants			
	Castleberry, AL, US	Eugene, OR, US	Natchitoches, LA, US	Stayton, OR, US
TJI® SERIES JOISTS	☑	☑	☑	☑

☑ Indicates that the product from this manufacturing facility has been evaluated by the CCMC

Conditions and limitations

The CCMC's compliance opinion is bound by this product 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.
- The following pre-engineering has been provided to the CCMC by Weyerhaeuser to demonstrate compliance with Part 9, Housing and Small Buildings, of the NBC 2015 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. "TJI[®] 110, 210, 230, 360, 560 Joists," (#TJ-4500) (Limit States Design for Western Canada), dated July 2019; and
2. "TJI[®] s31, s33, s47 Joists," (#TJ-4510) (Limit States Design for Eastern Canada), dated July 2019.

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 require engineering on a case-by-case basis.

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 27 of (1) and page 12 of (2));
- rim board resistance (page 27 of (1) and page 12 of (2));
- web stiffener requirements (pages 25–26 of (1) and pages 10–11 of (2));
- floor span tables (pages 7–9 and 17–18 of (1) and pages 6–8 of (2));
- load-bearing cantilever tables (pages 10–11 and 20–21 of (1) and pages 14–15 of (2));
- web hole tables (pages 16 and 24 of (1) and page 13 of (2));
- roof span tables (pages 12 and 19 of (1), page 16 of (2));
- roof uniform load tables (pages 13 and 19 of (1) and page 17 of (2)); and
- specified hanger factored resistance (pages 14–15 and 22–23 of (1), pages 22–23 of (2)).

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 must bear the authorized seal of a professional engineer or other certified authority approved by the AHJ who is skilled in wood design and licensed to practise under the appropriate provincial or territorial legislation.

Installations beyond the scope and 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 2015 pre-engineered floor/roof joist tables;
- design of supporting foundation footings when the total load exceeds the NBC 2015 pre-engineered floor/roof joist tables; and
- fire resistance (see applicable fire-resistance assembly listings for special joist and adhesives used).

The engineer, or AHJ-approved certified authority, must design in accordance with CSA O86-14, "Engineering Design in Wood," and may use the "Engineering Guide for Wood Frame Construction" published by the Canadian Wood Council as a guide.

The factored resistance and engineering properties for the products must not exceed the values set forth in the tables in the Design requirements section.

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 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: 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.

Notes:

- 1 All lumber, wood-based panels and proprietary engineered wood products are intended for dry service conditions. "Dry service condition" is defined as the in-service environment in which the average 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 2015.
 - 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.
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Technical information

This evaluation is based on demonstrated conformance with the following criteria:

Criteria number	Criteria name
CCMC-TG-061733.01-15	CCMC Technical Guide for Prefabricated Wood I-Joists

General

The evaluation holder has submitted technical documentation for CCMC's evaluation. Testing was conducted at laboratories recognized by CCMC. The corresponding technical evidence for this product is summarized below. Additional engineering data and load/span tables are available from the manufacturer as outlined in [Conditions and limitations](#).

Design requirements

Table 2. Basic engineering properties of TJI® Series Joists

Basic properties – limit states design						
Product	Joist depth (mm)	Joist weight (N/m)	Factored resistance		EI × 10 ⁶ (kN·mm ²)	K × 10 ⁴ (kN/m)
			Moment ⁽¹⁾ (N·m)	Vertical shear (N)		
TJI® 110	241	33	5 635	8 565	451	7.9
	302	37	7 125	10 945	766	7.9
	356	41	8 435	13 055	1 125	7.9
TJI® 210	241	37	6 765	9 340	534	7.9
	302	41	8 560	11 610	904	7.9
	356	45	10 125	13 655	1 326	7.9
	406	48	11 590	15 370	1 805	7.9
TJI® 230	241	40	7 510	9 340	591	7.9
	302	44	9 505	11 610	996	7.9
	356	48	11 250	13 655	1 461	7.9
	406	51	12 875	15 370	1 983	7.9
	406V	51	12 875	12 500	1 983	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

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Basic properties – limit states design

Product	Joist depth (mm)	Joist weight (N/m)	Factored resistance		EI × 10 ⁶ (kN·mm ²)	K × 10 ⁴ (kN/m)
			Moment ⁽¹⁾ (N·m)	Vertical shear (N)		
TJI® 560	508	58	23 705	18 680	3 949	7.9
	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
TJI® 560D	241	56	16 720	11 720	1 093	9.2
	302	61	21 660	14 390	1 845	9.2
	356	65	25 775	16 770	2 698	9.2
	406	69	29 575	19 040	3 653	9.2
	457	73	33 340	21 285	4 767	9.2
	508	77	37 060	23 485	6 041	9.2
	559	81	40 760	25 310	7 479	9.2
	610	85	44 425	22 465	9 083	9.2
	660	89	48 065	22 465	10 857	9.2
	711	93	51 675	22 465	12 808	9.2
	762	97	55 270	22 465	14 937	9.2
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

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Basic properties – limit states design						
Product	Joist depth (mm)	Joist weight (N/m)	Factored resistance		EI × 10 ⁶ (kN·mm ²)	K × 10 ⁴ (kN/m)
			Moment ⁽¹⁾ (N·m)	Vertical shear (N)		
	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

Note:

¹ The factored moment resistance values listed in this table must not be increased by any Code-allowed repetitive member system factor.

Table 3. Reaction engineering properties of TJI® Series Joists ⁽¹⁾

Reaction properties – limit states design											
Product	Joist depth (mm)	Factored end reaction (N)					Factored intermediate reaction (N)				
		45-mm bearing length		89-mm bearing length		Web stiffener nails ⁽²⁾	89-mm bearing length		133-mm bearing length		Web stiffener nails ⁽²⁾
		Web stiffeners		Web stiffeners			Web stiffeners		Web stiffeners		
		No	Yes	No	Yes		No	Yes	No	Yes	
TJI® 110	241	6 385	N/A	8 565	N/A	N/A	13 590	N/A	16 480	N/A	N/A
	302	6 385	8 385	9 655	10 945	3-63.5	13 590	15 900	16 480	18 795	3-63.5
	356	6 385	8 385	9 655	11 965	3-63.5	13 590	15 900	16 480	18 795	3-63.5
TJI® 210	241	7 050	N/A	9 340	N/A	N/A	15 055	N/A	18 015	N/A	N/A
	302	7 050	9 365	10 255	11 610	3-63.5	15 055	17 370	18 015	20 330	3-63.5
	356	7 050	9 365	10 255	12 545	3-63.5	15 055	17 370	18 015	20 330	3-63.5
	406	7 050	9 365	10 255	12 454	3-63.5	15 055	17 370	18 015	20 330	3-63.5
TJI® 230	241	7 450	N/A	9 340	N/A	N/A	16 905	N/A	19 615	N/A	N/A
	302	7 450	9 740	10 430	11 610	3-63.5	16 905	19 215	19 615	21 905	3-63.5
	356	7 450	9 740	10 430	12 720	3-63.5	16 905	19 215	19 615	21 905	3-63.5
	406	7 450	9 740	10 430	12 720	3-63.5	16 905	19 215	19 615	21 905	3-63.5
	406V	7 450	9 740	10 430	12 720	3-63.5	16 905	19 215	19 615	21 905	3-63.5
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

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Reaction properties – limit states design

Product	Joist depth (mm)	Factored end reaction (N)					Factored intermediate reaction (N)				
		45-mm bearing length		89-mm bearing length		Web stiffener nails ⁽²⁾	89-mm bearing length		133-mm bearing length		Web stiffener nails ⁽²⁾
		Web stiffeners		Web stiffeners			Web stiffeners		Web stiffeners		
		No	Yes	No	Yes		No	Yes	No	Yes	
	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® 560D	241	8 875	N/A	11 720	N/A	N/A	21 060	N/A	24 265	N/A	N/A
	302	8 875	11 945	12 120	14 390	3-89	21 060	24 130	24 265	27 310	3-89
	356	8 875	11 945	12 120	15 170	3-89	21 060	24 130	24 265	27 310	3-89
	406	8 875	12 965	12 120	16 190	4-89	21 060	25 130	24 265	28 335	4-89
	457	8 875	12 965	12 120	16 190	4-89	21 060	25 130	24 265	28 335	4-89
	508	8 875	13 965	12 120	17 215	5-89	21 060	26 115	24 265	29 360	5-89
	559	N/A	14 990	N/A	18 215	6-89	N/A	32 270	N/A	35 475	11-89
	610	N/A	14 990	N/A	18 215	6-89	N/A	34 320	N/A	37 505	13-89
	660	N/A	16 015	N/A	19 240	7-89	N/A	35 340	N/A	38 520	14-89
	711	N/A	16 750	N/A	20 260	8-89	N/A	36 340	N/A	39 545	15-89
762	N/A	16 750	N/A	20 260	8-89	N/A	37 100	N/A	41 590	17-89	
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

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Reaction properties – limit states design											
Product	Joist depth (mm)	Factored end reaction (N)					Factored intermediate reaction (N)				
		45-mm bearing length		89-mm bearing length		Web stiffener nails ⁽²⁾	89-mm bearing length		133-mm bearing length		Web stiffener nails ⁽²⁾
		Web stiffeners		Web stiffeners			Web stiffeners		Web stiffeners		
		No	Yes	No	Yes		No	Yes	No	Yes	
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:

1 "N/A" means not applicable.

2 All nails are box nails, A = 63.5 mm, B = 89 mm.

Table 4. Basic engineering properties of TJI® Series Joists – custom applications

Basic properties – limit states design						
Product	Joist depth (mm)	Weight (N/m)	Factored resistance		EI × 10 ⁶ (kN·mm ²)	K × 10 ⁴ (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

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Basic properties – limit states design

Product	Joist depth (mm)	Weight (N/m)	Factored resistance		EI × 10 ⁶ (kN·mm ²)	K × 10 ⁴ (kN/m)
			Moment ⁽¹⁾ (N·m)	Vertical shear (N)		
	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
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

Note:

¹ The factored moment resistances listed in this table must not be increased by any Code-allowed repetitive member system factor.

Table 5. Reaction engineering properties of TJI® Series Joists – custom applications ⁽¹⁾

Reaction properties											
Product	Joist depth (mm)	Factored end reaction (N)					Factored intermediate reaction (N)				
		45-mm bearing length		89-mm bearing length		Web stiffener nails ⁽²⁾	89-mm bearing length		133-mm bearing length		Web stiffener nails ⁽²⁾
		Web stiffeners		Web stiffeners			133-mm bearing length ⁽³⁾		178-mm bearing length ⁽⁴⁾		
		No	Yes	No	Yes		Web stiffeners		Web stiffeners		
No	Yes	No	Yes	No	Yes	No	Yes				
TJI® L65	241	9 075	N/A	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	
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	

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Reaction properties

Product	Joist depth (mm)	Factored end reaction (N)					Factored intermediate reaction (N)				
		45-mm bearing length		89-mm bearing length		Web stiffener nails ⁽²⁾	89-mm bearing length		133-mm bearing length		Web stiffener nails ⁽²⁾
		Web stiffeners		Web stiffeners			133-mm bearing length ⁽³⁾		178-mm bearing length ⁽⁴⁾		
		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:

- 1 "N/A" means not applicable.
- 2 All nails are box nails, A = 63.5 mm, B = 89 mm.
- 3 Shaded cells indicate results determined using 133-mm bearing lengths.
- 4 Shaded cells indicate results determined using 178-mm bearing lengths.

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 EACOM Timber Corporation plant in Sault Ste. Marie, ON.

Additional test information for the products

The original design values obtained from testing to ASTM D5055-04 and -08a, "Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists," as specified in CAN/CSA-O86-01 and -09,

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“Engineering Design in Wood,” are summarized below. The manufacturer’s published pre-engineered joist spans were designed in accordance with CSA O86-14.

Table 6. Additional test information for the products

Property	Test information
Shear capacity	The shear capacity of the specimens was established by combining data in accordance with ASTM D5055-04. 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 D5055-04. Data from 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	An appropriate test program was used to confirm the stiffness capacity. The following formula was used to predict mid-span deflection: $\text{deflection} = (5wL^4)/(384EI \times 10^3) + (wL^2)/Kd$ where: w = load (kN/m), L = span (mm), d = joist depth (mm), and EI and K are taken from the Technical information section.
End joints	End joints were qualified as part of the flange tension qualification. The flanges are in-plant fingerjointed, and regular tension testing is conducted.
Creep	Specimens were tested for creep performance in accordance with ASTM D5055-04. The specimens recovered more than 90% of the basic dead load deflection.
Bearing length	The product reaction properties listed in Table 3 and Table 5 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 3 and Table 5 may be determined by linear interpolation. Extrapolation of reaction properties in Table 3 and Table 5 is not allowed.
Adhesive qualification	For the TJI® s31, s33 and s47 Series Joists, the adhesive for the flange fingerjoints is a polyurethane adhesive (see CCMC 13512-L). 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 13054-L). For the remaining products in this series the adhesive used complies with CSA O112.7-M1977, “Resorcinol and Phenol-Resorcinol Resin Adhesives for Wood (Room- and Intermediate- Temperature Curing)” (see CCMC 13054-L).
Web stock	The web stock complies with CAN/CSA-O325.0-92, “Construction Sheathing.”

Fire-protection options

The performance of the below fire-protection options are presented as additional information for authorities having jurisdiction. This section is beyond the scope of the CCMC’s [Code compliance opinion](#) related to the evaluation of structural performance.

Fire performance of innovative structural products

The [CCMC Registry of Product Assessments](#) contains opinions on the suitability-for-use of products intended as structural elements in houses. Although historically there has been no need to regulate the structural fire performance of houses, an inherent intent of the National Building Code of Canada (NBC) is that occupants have sufficient time to escape from a building in the event of a fire. There are many factors that may determine whether that intent is achieved. The fire endurance of structural elements may be one. However, its importance may be minimized by other factors such as combustible content load, early warning devices, smoke movement and toxicity, and fire department response time; all contributing to the overall system performance. Research is underway within the NRC Construction Research Centre to determine the critical factors that affect occupant escape from houses.

Some innovative structural products have been used in the marketplace for several years and have gained the confidence of design professionals, code authorities and users with respect to their performance under typical fire scenarios in today's house system. Some newer products have not been in service long enough to have gained that confidence and may present a more obvious concern.

The minimum fire performance of innovative structural materials, or alternative solutions, as compared to that of the NBC-specified conventional wood-frame construction, or acceptable solution, has been the subject of analysis and discussion for several years among fire officials, provincial and territorial regulators, and AHJs. In fire tests conducted between 2002 and 2008 at the NRC, the innovative structural joist systems tested, and currently in the marketplace (i.e., I-joists, C-channel steel joists, metal-plated wood trusses and metal-web trusses), had a time-to-collapse below the performance of exposed 38 mm × 235 mm (2 × 10) lumber joists.

The CCMC provides this floor fire performance information to the local AHJs across Canada to aid their decision-making on whether the fire performance of floors (i.e., the time to evacuate before failure occurs) for alternative joist systems performs “as well as” the inherent fire performance of exposed 38 mm × 235 mm (2 × 10) lumber joists. As is the case for all innovative products, designers and authorities should exercise judgment in considering the use of innovative structural products for houses. Unless otherwise stated, innovative structural products for houses have not been evaluated in the context of the NBC intent noted above.

The CCMC has reviewed the below fire-protection options in comparison to the fire performance of an unprotected exposed 38 mm × 235 mm (2 × 10) floor joist system. The presented fire-protection options performs “as well as” exposed 38 mm × 235 mm (2 × 10) lumber joists. It should be noted that the NBC 2015 exempts single-family houses constructed using conventional wood-frame construction, in accordance with Part 9, from requiring a fire-resistance rating (see Article 9.10.8.10. of Division B of the NBC 2015). The below fire-protection options for alternative floor joists are not to be considered in sprinklered single-family houses or where fire-resistance-rated assemblies are required.

The following fire protection assemblies are applicable for the evaluated products as provided in [Table 7](#).

Table 7. Applicable TJI® Series Joists for fire-protection assemblies based on flange sizes

Product	Flange size (thickness × width) (mm)	Fire protection assembly
TJI® 110	31.8 × 44.5	FP-01, FP-03, FP-04
TJI® 210	31.8 × 52.8	FP-01, FP-03, FP-04, FP-06, FP-07, FP-09
TJI® 230	31.8 × 58.5	FP-01, FP-03, FP-04, FP-06, FP-07, FP-09
TJI® 360	35 × 58.5	FP-01, FP-03, FP-04, FP-06, FP-07, FP-09

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TJI® 560	35 × 89	FP-01, FP-03, FP-04, FP-06, FP-07, FP-09
TJI® 560D	38 × 89	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09
TJI® s31	38 × 63.5	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09
TJI® s33	38 × 63.5	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09
TJI® s47	38 × 89	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09
TJI® L65	38 × 63.5	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09
TJI® L90	38 × 89	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09
TJI® H90	44.5 × 89	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09

Industry-based fire-protection options

Fire-protection options

The details of the following industry-based fire-protection floor assemblies ⁽¹⁾ are outlined in the figures below.

1. FP-01 - 12.5 mm (1/2 in.) Gypsum Board Attached to Bottom of Flange
2. FP-02 - 12.5 mm (1/2 in.) Gypsum Board Attached Directly to Web
3. FP-03 - 12.5 mm (1/2 in.) Gypsum Board Attached Directly to Sides of Flange
4. FP-04 - Mineral Wool Insulation
5. FP-06 - 12.5 mm (1/2 in.) Gypsum Board Installed on Top of the Bottom Flange
6. FP-07 - 15.8 mm (5/8 in.) Gypsum Board Installed on Top of the Bottom Flange
7. FP-09 - Rockwool SAFE'n'Sound® Mineral Wool Insulation

Note:

- ¹ These floor assemblies and supporting fire test data have been provided to the CCMC by the I-joist industry in collaboration with the APA – Engineered Wood Association. The floor assemblies contained herein reviewed by the CCMC provide equivalent fire performance to exposed 38 mm × 235 mm (2 × 10) lumber joists, and are a subset of those published in APA System Report SR-405G, dated April 2019.
-

Fire protection assembly details

The following floor assembly design (FP-01) is the default alternative solution for all cases and where the manufacturer has not undertaken any specific testing to show equivalency to exposed 38 x 235 mm (2×10) lumber with proprietary joist fire-protection options.

Fire protection of floors FP-01

Above and side projection section drawings for 1/2 inch gypsum board attached to bottom flange.

Figure 1. Fire protection of floors FP-01 - fire protection: 12.5 mm (1/2-in.) gypsum board attached to bottom of flange

- A. Floor sheathing: materials and installation in accordance with the NBC 2015.
 - B. I-joist: installation in accordance with Section 3 of this Report. Maximum 24 in. on centre (o.c.) spacing. Applicable to all flange sizes. Minimum web thickness of 9.5 mm (3/8 in.).
-

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- C. 12.5 mm (1/2 in.) gypsum board: materials and installation in accordance with the NBC 2015. 1 × 3 (nominal) wood furring strips are permitted to be installed perpendicular to the bottom flange of the I-joists at 400 mm (16 in.) o.c. provided that the gypsum boards are directly attached to the furring strips using 32 mm (1-1/4 in.) Type W drywall screws at 300 mm (12 in.) o.c. Gypsum board not required to be finished with tape and joint compound.

The remaining fire-resistance designs, FP-02 to FP-09, provide fire performance as good as to 38 mm × 235 mm (2 × 10) dimensional lumber exposed floor joists.

Fire protection of floors FP-02

Above and side projection section drawings for 1/2 inch gypsum board attached to web.

Figure 2. Fire protection of floors FP-02 - fire protection: 12.5 mm (1/2 in.) gypsum board attached directly to web

1. 12.5 mm (1/2 in.) gypsum board attached to web
 2. installation requirements at web holes
- A. Floor sheathing: materials and installation in accordance with the NBC 2015.
 - B. I-joist: installation in accordance with Section 3 of this Report. Maximum 24 in. on centre (o.c.) spacing. Minimum flange size of 38 mm (1-1/2 in.) thick × 50 mm (2 in.) wide. Minimum web thickness of 9.5 mm (3/8 in.). At hole location, fasteners shall be installed 25 mm (1 in.) from the edge and end of the gypsum board.
 - C. 12.5 mm (1/2 in.) gypsum board: materials (over entire length of I-joist) not required to be finished with tape and joint compound. Fasteners: minimum 25 mm (1 in.) screws (Type W or Type S) or nails installed 25 mm (1 in.) from edges and ends and 400 mm (16 in.) o.c., top and bottom. Fasteners may be staggered from top to bottom.
 - D. Fastener
 - E. I-joist web
 - F. Or

Fire protection of floors FP-03

Above and side projection for 1/2 inch gypsum board

Figure 3. Fire protection of floors FP-03 - fire protection: 12.5 mm (1/2 in.) gypsum board attached directly to sides of flange

1. 12.5 mm (1/2 in.) gypsum board attached to sides of flange
 2. installation requirements at web holes
- A. Floor sheathing: materials and installation in accordance with the NBC 2015.
 - B. I-joist: installation in accordance with Section 3 of this Report. Maximum 600 mm (24 in.) on centre (o.c.) spacing. Minimum flange size of 28.5 mm (1-1/8 in.) thick × 44.5 mm (1-3/4 in.) wide. Minimum web thickness of 9.5 mm (3/8 in.). At hole location, fasteners shall be installed 12.5 mm (1/2 in.) from the edge and 1 in. from the end of the gypsum board. Maximum fastener spacing shall be no more than 8 in. on gypsum board above and below the hole.
 - C. 12.5 mm (1/2 in.) gypsum board: materials (over entire length of I-joist) not required to be finished with tape and joint compound. Fasteners: minimum 25 mm (1 in.) screws (Type W or Type S) or nails installed 12.5 mm (1/2 in.) from edges and 1 in. from ends, and 400 mm (16 in.) o.c., top and bottom. Fasteners may be staggered from top to bottom.
 - D. Fastener
 - E. I-Joist web
 - F. Or

Fire protection of floors FP-04

Above and side projection for mineral wood insulation

Figure 4. Fire protection of floors FP-04 - fire protection: mineral wool insulation

- A. Floor sheathing: materials and installation in accordance with the NBC 2015.
- B. I-joist: installation in accordance with the "Conditions and limitations" section of this evaluation. Maximum 487 mm (19.2 in.) on centre (o.c.) spacing. Minimum flange size of 28.5 mm (1 1/8 in.) thick × 44.5 mm (1 3/4 in.) wide. Minimum web thickness of 9.5 mm (3/8 in.).

- C. Mineral wool insulation: minimum 46.5 kg/m³ (2.9 lb/ft³) (nominal) and 50 mm (2 in.) thick mineral wool insulation made of rock slag, complying with CAN/ULC-S702 and with CCMC Listing, installed without gaps between individual batts as shown with stay wire insulation supports, spaced no more than 600 mm (24 in.) apart and no more than 100 mm (4 in.) from ends of batts. Minimum 40 kg/m³ (2.5 lb/ft³) (nominal) and 50 mm (2 in.) thick mineral wool insulation shall be permitted if the I-joists are spaced no more than 400 mm (16 in.) o.c. Use minimum 387 mm (15.25 in.) and 470 mm (18.5 in.) wide batts when I-joist spacing is 400 mm (16 in.) and 487 mm (19.2 in.) o.c., respectively.

Note: As per NBC 2015, Sentence 9.25.2.3.(7), any insulation that may be subjected to mechanical damage is to be protected by a covering such as gypsum board, plywood, particleboard, OSB or hardboard.

For assemblies where mineral-fibre insulation is installed to provide joist protection in a fire, as per NBC 2015, Sentence 9.25.2.3.(7), any insulation that may be subjected to mechanical damage is to be protected by a covering such as gypsum board, plywood, particleboard, oriented strandboard (OSB) or hardboard

Fire protection of floors FP-06

Above projection and side projection for mineral wood insulation

Figure 5. Fire protection of floors FP-06 - fire protection: 12.5 mm (1/2-in.) gypsum board installed on top of the bottom flange

- A. Floor sheathing: materials and installation in accordance with NBC 2015.
- B. I-joist: installation in accordance with Section 3 of this Report. Maximum 487 mm (19.2 in.) on centre spacing. Minimum flange size of 28.5 mm (1-1/8 in.) thick × 50 mm (2 in.) wide. Minimum web thickness of 9.5 mm (3/8 in.).
- C. One layer of 12.5 mm (1/2 in.) lightweight or normal weight (nominal 7.3 kg/m² (1.5 psf) minimum) gypsum wall board meeting ASTM C 1396, installed on the top of the bottom flange. Mechanical fastener or adhesive attachment to the top of the bottom flange is not required.
 1. 19.2 inches maximum
 2. Gypsum board length (see table below)

Table 8. Table for FP-06 ⁽³⁾

Joist spacing	Required length for gypsum boards
300 mm (12 in.)	282.5 mm (11-1/8 in.) ± 3.2 mm (1/8 in.)
400 mm (16 in.)	384.2 mm (15-1/8 in.) ± 3.2 mm (1/8 in.)
487 mm (19.2 in.)	467 mm (18-3/8 in.) ± 3.2 mm (1/8 in.)

Note:

- ³ Gypsum board lengths shown above provide at least a 6 mm (1/4 in.) bearing on the top of the bottom flange in each I-joist as installed. For other joist spacings, the required gypsum board lengths shall be adjusted so that the required gypsum board lengths are determined based on a full bearing on the flange at one end of the joist spacing, while maintaining at least a 6 mm (1/4 in.) bearing at the other end. If double joists are used, the required gypsum board lengths shall be reduced from the table above by a length equal to the flange width.

Fire protection of floors FP-07

Above projection and side projection for 5/8 inch gypsum board.

Figure 6. Fire protection of floors FP-07 - fire protection: 15.8 mm (5/8-inch) gypsum board installed on top of the bottom flange

- A. Floor sheathing: materials and installation in accordance with the NBC 2015.

- B. I-joint: installation in accordance with Section 3 of this Report. Maximum 600 mm (24 in.) on centre spacing. Minimum flange size of 28.5 mm (1-1/8 in.) thick × 50 mm (2 in.) wide. Minimum web thickness of 9.5 mm (3/8 in.).
 - C. One layer of 15.8 mm (5/8 in.) lightweight or normal weight (nominal 9.3 kg/m² (1.9 psf) minimum) gypsum wall board meeting ASTM C 1396, installed on the top of the bottom flange. Mechanical fastener or adhesive attachment to the top of the bottom flange is not required.
1. 24 inches maximum
 2. Gypsum board length (see table below)

Table 9. Gypsum board length for FP-07 ⁽⁴⁾

Joist spacing	Required length for gypsum boards
300 mm (12 in.)	282.5 mm (11-1/8 in.) ± 3.2 mm (1/8 in.)
400 mm (16 in.)	384.2 mm (15-1/8 in.) ± 3.2 mm (1/8 in.)
487 mm (19.2 in.)	467 mm (18-3/8 in.) ± 3.2 mm (1/8 in.)
600 mm (24 in.)	587 mm (23-1/8 in.) ± 3.2 mm (1/8 in.)

Note:

⁴ Gypsum board lengths shown above provide at least a 6 mm (1/4 in.) bearing on the top of the bottom flange in each I-joint as installed. For other joist spacings, the required gypsum board lengths shall be adjusted so that the required gypsum board lengths are determined based on a full bearing on the flange at one end of the joist spacing, while maintaining at least a 6 mm (1/4 in.) bearing at the other end. If double joists are used, the required gypsum board lengths shall be reduced from the table above by a length equal to the flange width.

Fire protection of floors FP-09

Above projection and side projection for Rockwool Safe'n'Sound

Figure 7. Fire protection of floors FP-09 - fire protection: Rockwool SAFE'n'Sound[®] mineral wool insulation

- A. floor sheathing: materials and installation in accordance with the NBC 2015.
- B. I-joint: installation in accordance with the "Conditions and limitations" section of this evaluation. Maximum 600 mm (24 in.) on centre (o.c.) spacing. Minimum flange size of 28.5 mm (1 1/8 in.) thick × 50 mm (2 in.) wide. Minimum web thickness of 9.5 mm (3/8 in.).
- C. mineral wool insulation: Rockwool SAFE'n'SOUND[®] minimum 40 kg/m³ (2.5 lb/ft³) (nominal) and 75 mm (3 in.) thick mineral wool batt insulation made of rock or furnace slag (ASTM C 665 Type 1-compliant) installed as shown with insulation stay wire supports, spaced no more than 600 mm (24 in.) apart and no more than 100 mm (4 in.) from ends of batts. Use minimum 387 mm (15.25 in.), 470 mm (18.5 in.) and 584 mm (23 in.) wide batts when I-joint spacing is 400 mm (16 in.), 487 mm (19.2 in.) and 600 mm (24 in.) o.c., respectively.

Note: As per NBC 2015, Sentence 9.25.2.3.(7), any insulation that may be subjected to mechanical damage is to be protected by a covering such as gypsum board, plywood, particleboard, OSB or hardboard.

For assemblies where mineral-fibre insulation is installed to provide joist protection in a fire, as per NBC 2015, Sentence 9.25.2.3.(7), any insulation that may be subjected to mechanical damage is to be protected by a covering such as gypsum board, plywood, particleboard, oriented strandboard (OSB) or hardboard

Administrative information

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CCMC recognition

The Canadian Construction Materials Centre (CCMC) assesses compliance with Canadian building, energy and safety codes. We are the only construction code compliance service supported and operated by the Government of Canada. Trusted by over 6,000 regulators across Canada.

Most Canadian authorities having jurisdiction (AHJs) consider CCMC product assessments acceptable as evidence for product approval.

CCMC assessments are recognized by construction authorities across Canada:

Alliance of Canadian Building Official Associations (ACBOA)



[\(Alliance of Canadian Building Official Associations \(ACBOA\)\)](#)

First Nations National Building Officers Association (FNNBOA)



[\(First Nations National Building Officers Association \(FNNBOA\)\)](#)

Canadian Home Builders' Association (CHBA)



[\(Canadian Home Builders' Association \(CHBA\)\)](#)

Alberta Building Officials Association (ABOA)



[\(Alberta Building Officials Associations \(ABOA\)\)](#)

Saskatchewan Building Officials Association (SBOA)



[\(Saskatchewan Building Officials Association \(SBOA\)\)](#)

Manitoba Building Officials Association (MBOA)



[\(Manitoba Building Officials Association \(MBOA\)\)](#)

Ontario Building Officials Association (OBOA)



[\(Ontario Building Officials Association \(OBOA\)\)](#)

New Brunswick Building Officials Association (NBBOA)



[\(New Brunswick Building Officials Association \(NBBOA\)\)](#)

Nova Scotia Building Officials Association (NSBOA)



[\(Nova Scotia Building Officials Association \(NSBOA\)\)](#)

The CCMC provides code compliance assessments to Canadian code requirements, consulting nationwide with construction regulators to elicit regional variations in code requirements as well as provincial and local interpretations. Users are advised to review the technical information presented in CCMC assessments when making approval decisions. [Learn more about how the CCMC provides a unique service for Canada.](#)

For more information, contact the CCMC by phone at (613) 993-6189 or by email at ccmc@nrc-cnrc.gc.ca

NOTICE

The information presented on this webpage (in HTML format) is the most up-to-date information available from the CCMC about this assessment.

By downloading this PDF you acknowledge that:

- this PDF is intended for record-keeping purposes only,
- it represents the information as it was available at the time of downloading, and
- it may not reflect the latest available information at some future date.

References to this CCMC assessment (in product literature, on websites, etc.) must be made by linking to the evaluation webpage. **This PDF must not be used as a means of distributing this assessment to an audience.**

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Code compliance as an acceptable solution

Code Compliance via Acceptable Solutions

If a building design (e.g. material, component, assembly or system) can be shown to meet all provisions of the applicable **acceptable solutions** in Division B (e.g. it complies with the applicable provisions of a referenced standard), it is deemed to have satisfied the objectives and functional statements linked to those provisions and thus to have complied with that part of the Code.

— National Building Code of Canada, Sentence A-1.2.1.1.(1)(a)

The CCMC has determined that compliance with this provision of the Code has been demonstrated as an **Acceptable Solution**. The evaluation report provides a summary of the basis of CCMC's compliance opinion.

CCMC's code compliance opinions

All CCMC evaluation reports are opinions of code compliance established in accordance with the National Building Code of Canada, Subsection 1.2.1. "Compliance with this Code," which requires compliance to be achieved by:

- complying with the applicable acceptable solutions in Division B, or
- using an alternative solution that will achieve at least the minimum level of performance required by Division B in the areas defined by the objective and functional statements attributed to the applicable acceptable solutions.

The CCMC assesses compliance with Canadian building, energy and safety codes, and is trusted by over 6,000 regulators across Canada.

Code compliance as an alternative solution

Code Compliance via Alternative Solutions

Where a design differs from the acceptable solutions in Division B, then it should be treated as an **"alternative solution."** A proponent of an alternative solution must demonstrate that the alternative solution addresses the same issues as the applicable acceptable solutions in Division B and their attributed objectives and functional statements. However, because the objectives and functional statements are entirely qualitative, demonstrating compliance with them in isolation is not possible. Therefore, Clause 1.2.1.1.(1)(b) identifies the principle that Division B establishes the quantitative performance targets that alternative solutions must meet. In many cases, these targets are not defined very precisely by the acceptable solutions [...] Nevertheless, Clause 1.2.1.1.(1)(b) makes it clear that an effort must be made to demonstrate that an alternative solution will perform as well as a design that would satisfy the applicable acceptable solutions in Division B—not “well enough” but “as well as.”

— National Building Code of Canada, Sentence A-1.2.1.1.(1)(b)

The CCMC has determined that compliance with this provision of the Code has been demonstrated as an **Alternative Solution**. The evaluation report provides a summary of the basis of CCMC's compliance opinion.

CCMC's code compliance opinions

All CCMC evaluation reports are opinions of code compliance established in accordance with the National Building Code of Canada, Subsection 1.2.1. "Compliance with this Code," which requires compliance to be achieved by:

- complying with the applicable acceptable solutions in Division B, or
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