CCMC CANADIAN CODE COMPLIANCE EVALUATION

CCMC EVALUATION

CCMC 13053-R

CCMC Canadian code compliance evaluation

CCMC number:	13053-R
Status:	Active
Issue date:	2002-03-06
Modified date:	2026-01-05
Evaluation holder:	**Interfor** MetroTower II, 1600-4720 Kingsway Burnaby BC V5H 4N2 Canada Website: www.interfor.com Telephone: 604-240-4966 Email: info@interfor.com
Product names:	• P3 Joist® PJI-40 I-Joists • P3 Joist® PJI-60 I-Joists • P3 Joist® PJI-65 I-Joists • P3 Joist® PJI-80 I-Joists • P3 Joist® PJI-90 I-Joists
Compliance:	NBC 2015, NBC 2020
Criteria:	CCMC-TG-061733.01-15, "CCMC Technical Guide for Prefabricated Wood I-Joists" CCMC-TG-061733.01-20, "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 products, when used as joists in floor and roof applications in accordance with the conditions and limitations stated in this evaluation, comply with the following codes:

National Building Code of Canada 2015

Code provision	Solution type
4.3.1.1.(1) Buildings and their structural members m ...	Acceptable
9.4.1. Structural Design Requirements and Application Limitations	Acceptable
9.10.8.10. Application to Houses	Alternative
9.23.4.2.(2) Spans for floor joists that are not sele ...	Alternative

National Building Code of Canada 2020

Code provision	Solution type
4.3.1.1.(1) Buildings and their structural members m ...	Acceptable
9.4.1. Structural Design Requirements and Application Limitations	Acceptable
9.10.8.10. Application to Houses	Alternative
9.23.4.2.(2) Spans for floor joists that are not sele ...	Alternative

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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 names

- P3 Joist® PJI-40 I-Joists
- P3 Joist® PJI-60 I-Joists
- P3 Joist® PJI-65 I-Joists
- P3 Joist® PJI-80 I-Joists
- P3 Joist® PJI-90 I-Joists

Product description

The products are families of prefabricated wood I-joists consisting of two continuous proprietary grade Spruce-Pine-Fir (S-P-F) flanges glued to a 9.5-mm- or 11.1-mm-thick oriented strandboard (OSB) web, which is manufactured in conformance with CSA O325-16, "Construction sheathing." The flange sizes and grades are listed in Table 1. The evaluation covers all the I-joist series products described in this evaluation that are manufactured at the Sault Ste. Marie, Ontario, plant.

The web-flange connection is made by inserting the profiled OSB web into a tapered groove in the centre of the wide face of the flange at various depths. The OSB web material is end-jointed by gluing a full thickness V-joint. The flange finger joints are bonded with a polyurethane adhesive (see CCMC 13512-L, CCMC 13513-L or CCMC 14103-L) or a phenol-resorcinol adhesive (CCMC 13213-L). The web-to-web joints are bonded with a phenol-resorcinol waterproof adhesive (see CCMC 13054-L) or a polyurethane adhesive (CCMC 13512-L). The web-to-flange joints are bonded with a phenol-resorcinol waterproof adhesive (see CCMC 13054-L) or a polymer isocyanate adhesive (CCMC 13591-L).

APA − The Engineered Wood Association (APA EWS trademark) conducts regular audits of the manufacturing plant and the quality assurance program as part of the product certification.

Table 1. Product Description

Product	Depth (mm)	Web thickness (mm)	Flange size (mm)	Grade
P3 Joist® PJI-40 I-Joists	241 to 406	9.5	38.0 × 63.5	Enhanced 1650f-1.5E
P3 Joist® PJI-60 I-Joists	241 to 406	9.5	38.0 × 63.5	2100f-1.8E
P3 Joist® PJI-65 I-Joists	302 to 406	9.5	38.0 × 89.0	Enhanced 1650f-1.5E
P3 Joist® PJI-80 I-Joists	241 to 610	11.1	38.0 × 89.0	2100f-1.8E
P3 Joist® PJI-90 I-Joists	302 to 610	11.1	38.0 × 89.0	2400f-2.0E

Manufacturing plant

This evaluation is valid only for products produced at the following plant:

Product names	Manufacturing plant
	Sault Ste. Marie, ON, CA
P3 Joist® PJI-40 I-Joists	✓
P3 Joist® PJI-60 I-Joists	✓
P3 Joist® PJI-65 I-Joists	✓
P3 Joist® PJI-80 I-Joists	✓
P3 Joist® PJI-90 I-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 structural applications, such as floor joists, and are intended for dry service use [(1)] applications only. The following pre-engineering information has been provided to the CCMC by the manufacturer to demonstrate compliance with Part 9, Housing and Small Buildings, of the NBC 2015 and 2020, for acceptance by the local authority having jurisdiction (AHJ).

Manufacturer's pre-engineered design table

When the products are used as floor joists in simple (single) span or continuous (multiple) span applications supporting uniform loads only, the installation must be in accordance with the span tables (including vibration criteria [(2)]) found in the "P3 Joist User Guide Canada," 04/2025 (April 2025).

The products must be installed in accordance with EACOM Interfor's "P3 Joist Installation Guide Canada," 02/2025 (February 2025) installation guidelines for those applications falling within the scope of the document. Applications outside the scope of these installation guidelines require engineering on a case-by-case basis.

Manufacturer's pre-engineered installation details

The product is to be installed in accordance with the manufacturer's pre-engineered details outlined in the user guide specified above, where the following requirements are met and limits are not exceeded:

- blocking panel and rim board, maximum factored uniform vertical load (page 12);
- squash blocks, maximum factored vertical load per pair (page 13);
- stair opening header (page 15);
- web stiffener requirements (page 16);
- cantilever balcony (pages 17 to 18);
- cantilever details for vertical building offset (page 19);
- cantilever reinforcement methods and load table (page 19);
- web hole rules and specifications and location of circular holes table (pages 20 and 21);
- joist roof framing and construction details (pages 22 to 27);
- roof span and uniform load tables (pages 28 to 37);
- joist design properties and reaction capacities (page 38); and
- joist framing connectors (pages 39 and 40).

Engineering required

For applications beyond the scope/limitations of the above-referenced publications or when required by the AHJ, the drawings or related documents must bear the seal of a professional engineer.

Installations beyond the scope/limitations of the user guide and installation guide specified above include, 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 values in the pre-engineered lumber floor/roof joist tables in the NBC referenced in this evaluation; and
- design of supporting foundation footings when the total load exceeds the values in the pre-engineered lumber floor/roof joist tables in the NBC referenced in this evaluation.

The engineer must design in accordance with the CSA O86, "Engineering design in wood," edition referenced in the most recent NBC and may use as a guide the "Engineering Guide for Wood Frame Construction" published by the Canadian Wood Council.

Engineering support provided by the manufacturer

APA EWS provides engineering support in conjunction with Interfor Inc. product support. Interfor Inc. and APA EWS offer the following support contact numbers/details:

- APA EWS help desk: 253-620-7400
- APA EWS email: help@apawood.org

This product must be identified with the phrase "CCMC 13053-R" along the side of the flange. This CCMC number is only valid when it appears in conjunction with the APA EWS certification mark.

Damaged or defective joists must not be used, unless repaired in accordance with written instructions from the manufacturer.

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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 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 and NBC 2020.

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

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
CCMC-TG-061733.01-20	CCMC Technical Guide for Prefabricated Wood I-Joists

General

The evaluation holder has submitted technical documentation for the CCMC's evaluation. Testing was conducted at laboratories recognized by the 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 the Conditions and limitations section.

Design requirements

Table 2. Factored resistances for the products

Basic properties – limit states design [1]					
Product	Joist depth (mm)	Factored resistance		EI × 10^6 (kN·mm^2)	K × 10^6 (N)
		Moment [2] (N·m)	Vertical shear (N)		
P3 Joist® PJI-40 I-Joists	241	6 167	9 830	554	21.97
	302	7 994	11 380	947	27.49
	356	9 629	12 750	1 383	32.38
	406	11 162	14 040	1 885	37.01
P3 Joist® PJI-60 I-Joists	241	8 523	9 860	663	21.97
	302	11 049	11 380	1 136	27.49
	356	13 293	12 750	1 676	32.38
	406	15 412	14 040	2 293	37.01
P3 Joist® PJI-65 I-Joists	302	11 205	11 380	1 303	27.49
	356	13 495	12 750	1 905	32.38
	406	15 655	14 040	2 586	37.01
P3 Joist® PJI-80 I-Joists	241	12 120	9 870	921	21.97
	302	15 717	11 590	1 570	27.49
	356	18 918	13 100	2 301	32.38
	406	21 940	14 540	3 134	37.01

Basic properties – limit states design [1]					
Product	Joist depth (mm)	Factored resistance		EI × 10^6 (kN·mm^2)	K × 10^6 (N)
		Moment [2] (N·m)	Vertical shear (N)		
	457	24 804	17 200	4 055	41.63
	508	27 464	17 910	5 137	46.26
	559	30 080	18 610	6 353	50.89
	610	32 673	19 310	7 711	55.51
P3 Joist® PJI-90 I-Joists	302	19 200	11 590	1 725	27.49
	356	23 125	13 100	2 517	32.38
	406	26 820	14 540	3 406	37.01
	457	30 315	17 200	4 437	41.63
	508	33 565	17 910	5 616	46.26
	559	36 765	18 610	6 942	50.89
	610	39 935	19 310	8 420	55.51

Notes

1 Design values were developed in accordance with CSA O86 for a standard term load duration (K_D = 1). All values, except EI and K, are permitted to be adjusted for other load durations as permitted by CSA O86.

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

Table 3. Product engineering properties [1]

Reaction properties – limit states design									
Product	Joist depth (mm)	Factored end reaction (N)				Factored intermediate reaction (N)			
		44-mm bearing length		102-mm bearing length		89-mm bearing length		140-mm bearing length	
		Web stiffeners		Web stiffeners		Web stiffeners		Web stiffeners	
		No	Yes	No	Yes	No	Yes	No	Yes
P3 Joist® PJI-40 I-Joists	241	8 390	8 950	8 850	9 830	19 340	20 360	22 790	22 790
	302	8 430	10 250	10 040	11 380	19 340	21 380	22 790	23 700
	356	8 430	11 380	11 100	12 750	19 340	22 290	22 790	24 470
	406	8 430	12 290	12 080	14 040	19 340	23 170	22 790	25 240

Reaction properties – limit states design									
Product	Joist depth (mm)	Factored end reaction (N)				Factored intermediate reaction (N)			
		44-mm bearing length		102-mm bearing length		89-mm bearing length		140-mm bearing length	
		Web stiffeners		Web stiffeners		Web stiffeners		Web stiffeners	
		No	Yes	No	Yes	No	Yes	No	Yes
P3 Joist® PJI-60 I-Joists	241	8 390	8 950	8 850	9 830	19 340	20 360	22 790	22 790
	302	8 430	10 250	10 040	11 380	19 340	21 380	22 790	23 700
	356	8 430	11 380	11 100	12 750	19 340	22 290	22 790	24 470
	406	8 430	12 290	12 080	14 040	19 340	23 170	22 790	25 240
P3 Joist® PJI-65 I-Joists	302	8 430	10 250	10 040	11 380	19 730	23 170	22 860	25 170
	356	8 430	11 380	11 100	12 750	21 210	24 260	24 120	26 300
	406	8 430	12 290	12 080	14 040	22 930	25 280	25 280	27 380
P3 Joist® PJI-80 I-Joists	241	9 160	9 870	9 870	9 870	19 380	21 910	22 790	23 870
	302	9 230	11 170	11 170	11 590	19 730	23 1670	22 860	25 170
	356	9 310	12 360	11 340	13 100	21 210	24 260	24 120	26 300
	406	9 340	13 450	11 450	14 540	22 470	25 280	25 280	27 380
	457	9 410	13 520	11 590	17 200	22 470	27 730	25 630	30 540
	508	9 480	15 240	11 690	17 910	22 470	27 730	25 630	30 540
	559	9 520	16 960	11 830	18 610	22 470	27 730	25 630	30 540
	610	9 590	18 680	11 940	19 310	22 470	27 730	25 630	30 540
P3 Joist® PJI-90 I-Joists	302	9 230	11 170	11 170	11 590	19 730	23 170	22 860	25 170
	356	9 310	12 360	11 340	13 100	21 210	24 260	24 210	26 300
	406	9 340	13 450	11 450	14 540	22 930	25 280	25 280	27 380
	457	9 410	13 520	11 590	17 200	22 470	27 730	25 630	30 540
	508	9 480	15 240	11 690	17 910	22 470	27 730	25 630	30 540
	559	9 520	16 960	11 830	18 610	22 470	27 730	25 630	30 540
	610	9 590	18 680	11 940	19 310	22 470	27 730	25 630	30 540

Note

1 Design values were developed in accordance with CSA O86 for a standard term load duration (K_D = 1). The reaction resistances are permitted to be adjusted for other load durations as specified in CSA O86.

Additional test information for the products

The design values obtained from testing to the specifications in ASTM D5055, "Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists," as specified in CSA O86, are summarized below. The manufacturer's published pre-engineered joist spans were designed in accordance with CSA O86:19. The design values are also valid for CAN/CSA-O86-14.

Table 4. Additional product testing information

Property	Test information
Shear capacity	The shear capacity of the product was established by combining data in accordance with ASTM D5055. Data from quality control (QC) tests and qualification tests were used to establish the applicable coefficient of variation, CV_w, and the reliability normalization factor from CSA O86 was used to determine the specified strength.
Moment capacity	The moment capacity qualification was carried out using the analytical method in accordance with ASTM D5055. QC data and qualification tests were used to establish the applicable coefficient of variation, CV_w, and the reliability normalization factor from CSA O86 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: Deflection = $5wL^4 / 384EI + wL^2/(K \times 10^3)$ where w = uniform load (kN/mm), L = span (mm), EI and K are taken from the tables under Design requirements.
End joints	End joints were qualified as part of the flange tension qualification. The flanges are finger-jointed in plant, and regular tension testing is conducted.
Creep	Product specimens were tested for creep performance in accordance with ASTM D5055. The specimens recovered more than 90% of the basic dead load deflection.
Bearing length	End and intermediate reactions were tested in accordance with ASTM D5055 QC data and qualification tests were used to establish the applicable coefficient of variation, CV_w, and the reliability normalization factor from CSA O86 was used to determine the specified strength.
Adhesive qualification	The flange finger joints are bonded with a polyurethane adhesive (see CCMC 13512-L, CCMC13513-L or 14103-L) or a phenol-resorcinol adhesive (CCMC 13213-L) . The web-to-web are bonded with a phenol-resorcinol waterproof adhesive (see CCMC 13054-L) or a polyurethane adhesive (CCMC 13512-L). The web-to-flange joints are bonded with a phenol-resorcinol waterproof adhesive (see CCMC 13054-L) or a polymer isocyanate adhesive (CCMC 13591-L).
Web stock	The web stock complied with CSA O325, "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 house 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. 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 in. × 10 in.) floor joist system.

The presented fire-protection options performs as well as exposed 38 mm × 235 mm (2 in. × 10 in.) lumber joists. It should be noted that the NBC referenced in this evaluation 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., Application to Houses, of Division B of the NBC).

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 5.

Table 5. Applicable P3 Joist® I-joists for fire protection assemblies based on flange size

Product	Flange size (thickness × width) (mm)	Fire protection assembly
P3 Joist® PJI-40 I-Joists	38 × 63.5	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09
P3 Joist® PJI-60 I-Joists	38 × 63.5	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09

Product	Flange size (thickness × width) (mm)	Fire protection assembly
P3 Joist® PJI-65 I-Joists	38 × 89.0	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09
P3 Joist® PJI-80 I-Joists	38 × 89.0	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09
P3 Joist® PJI-90 I-Joists	38 × 89.0	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

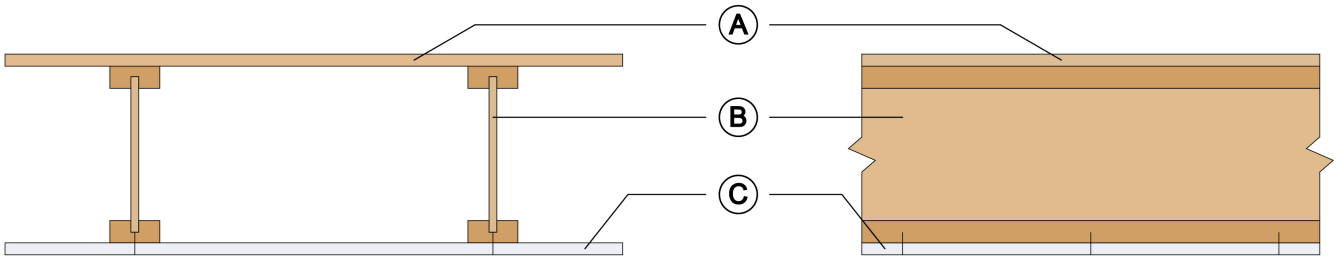

Figure 1. Fire protection of floors FP-01 - fire protection: 12.5 mm (1/2-in.) gypsum board attached to bottom of flange

A. Floor sheathing: materials and installation in accordance with the NBC referenced in this report.

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.).
C. 12.5 mm (1/2 in.) gypsum board: materials and installation in accordance with the NBC referenced in this report. 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

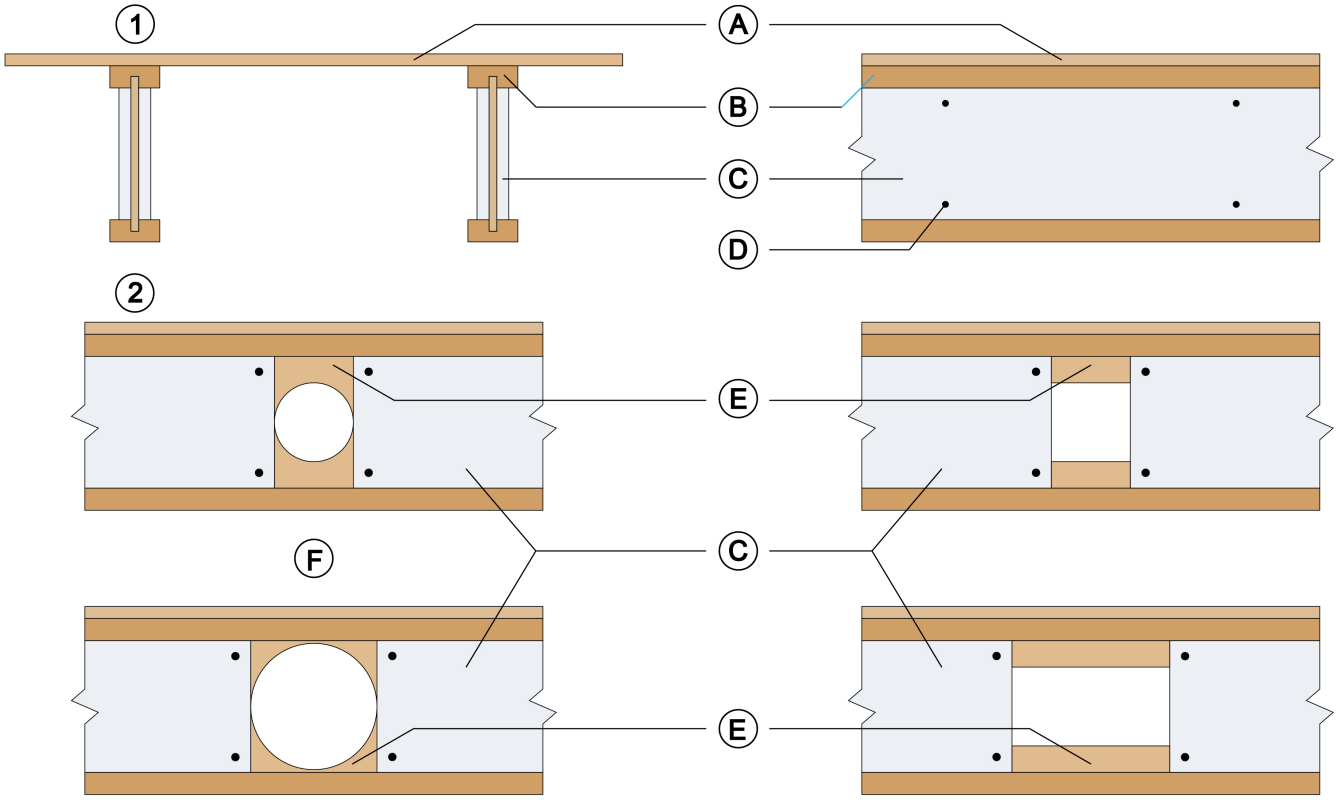

Figure 2. Fire protection of floors FP-02 - fire protection: 12.5 mm (1/2 in.) gypsum board attached directly to web

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 referenced in this report.
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

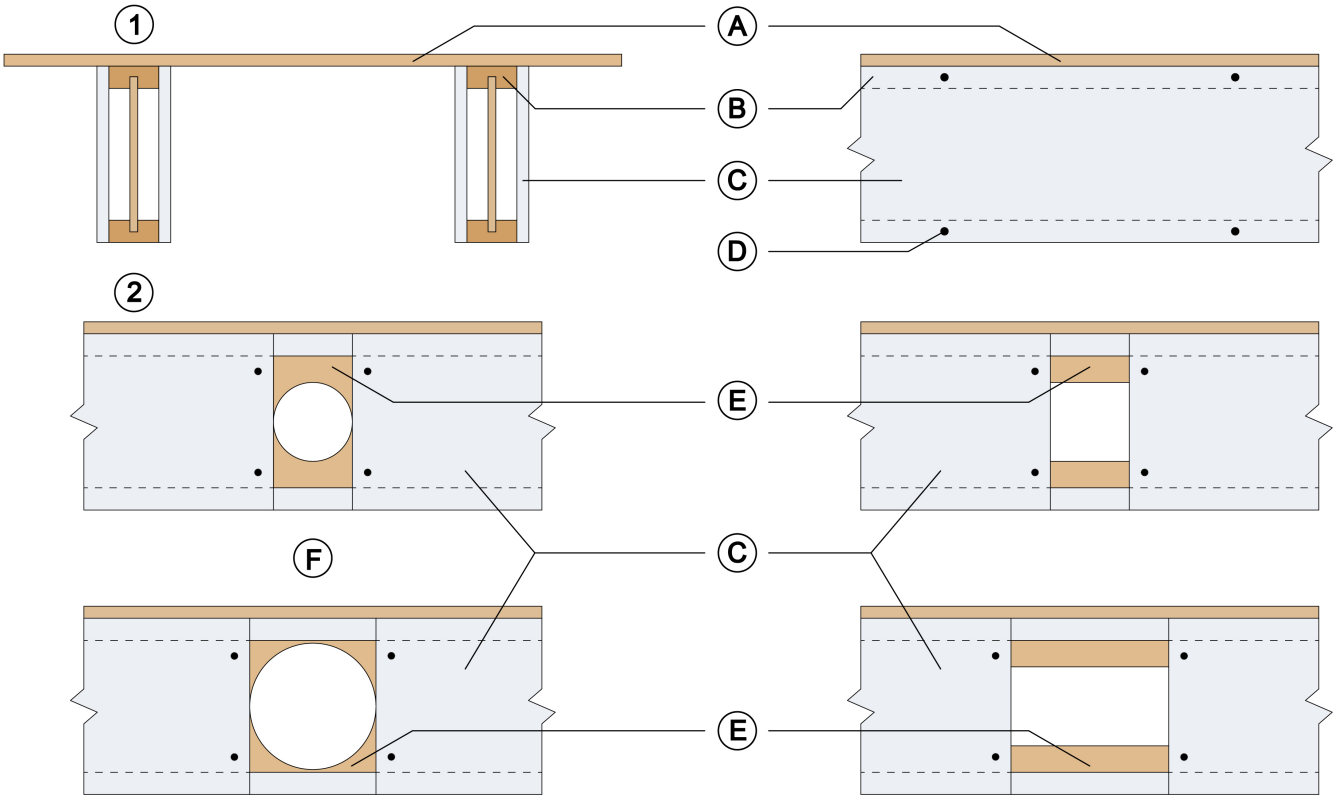

Figure 3. Fire protection of floors FP-03 - fire protection: 12.5 mm (1/2 in.) gypsum board attached directly to sides of flange

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 referenced in this report.
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

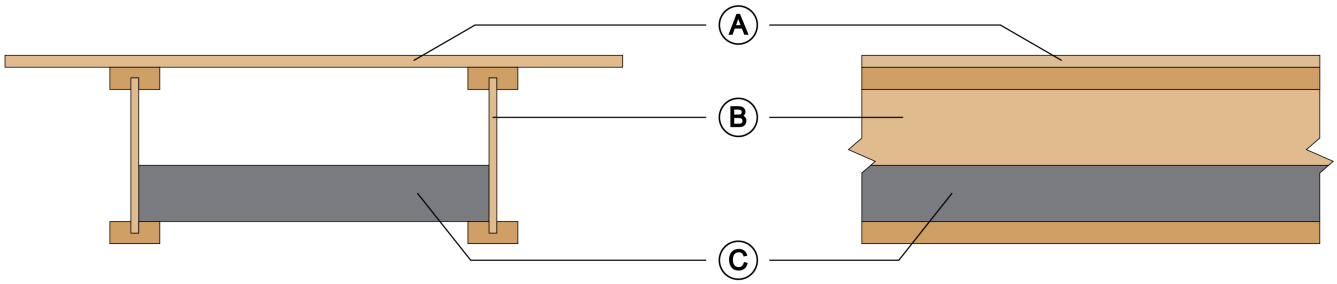

Figure 4. Fire protection of floors FP-04 - fire protection: mineral wool insulation

A. Floor sheathing: materials and installation in accordance with the NBC referenced in this report.
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/m^3 (2.9 lb/ft^3) (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/m^3 (2.5 lb/ft^3) (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 the NBC referenced in this report, 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 the NBC referenced in this report, 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

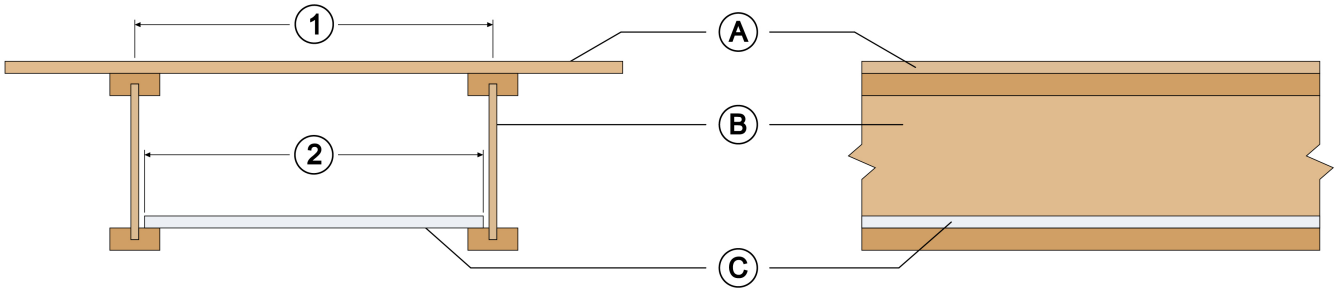

Figure 5. Fire protection of floors FP-06 - fire protection: 12.5 mm (1/2-in.) gypsum board installed on top of the bottom flange

A. Floor sheathing: materials and installation in accordance with the NBC referenced in this report.
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/m^2 (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 6. 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

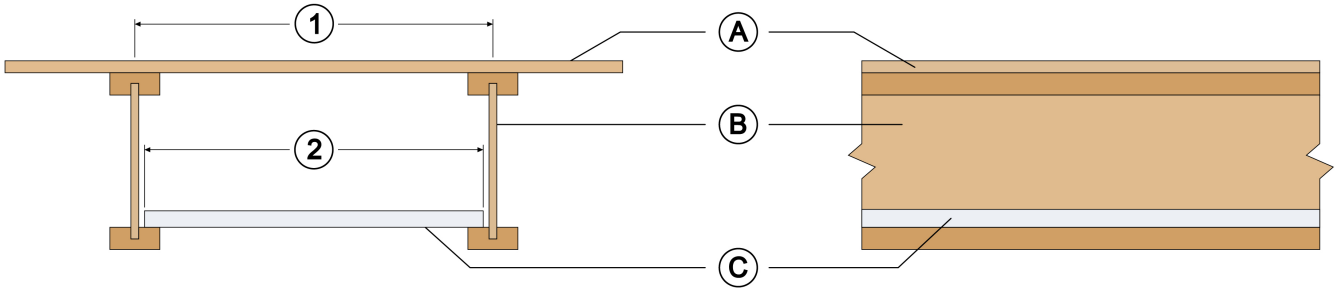

Figure 6. Fire protection of floors FP-07 - fire protection: 15.8 mm (5/8-inch) gypsum board installed on top of the bottom flange

A. Floor sheathing: materials and installation in accordance with the NBC referenced in this report.
B. I-joist: 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 7. 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-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-09

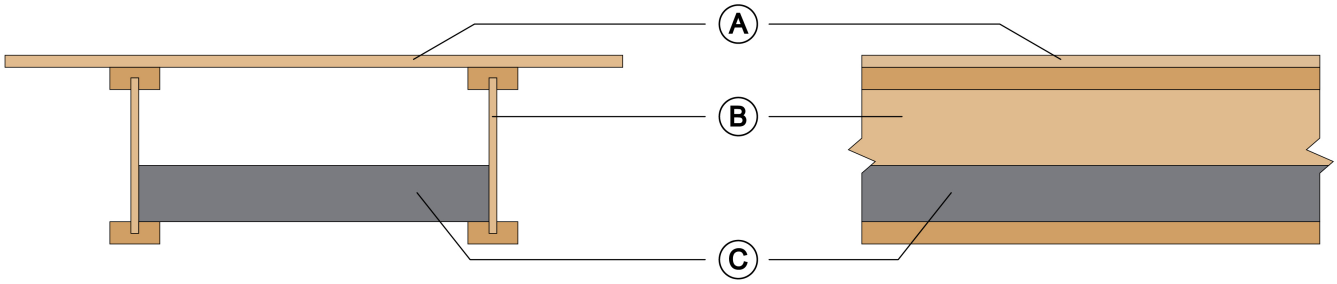

Figure 7. Fire protection of floors FP-09 - fire protection: Rockwool SAFE'n'Sound® mineral wool insulation

A. floor sheathing: materials and installation in accordance with the NBC referenced in this report.
B. I-joist: 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/m^3 (2.5 lb/ft^3) (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-joist spacing is 400 mm (16 in.), 487 mm (19.2 in.) and 600 mm (24 in.) o.c., respectively.

Note: *As per the NBC referenced in this report, 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 the NBC referenced in this report, 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

Use of Canadian Construction Materials Centre (CCMC) assessments

This assessment must be read in the context of the entire CCMC Registry of Product Assessments, any applicable building code or by-law requirements, and/or any other regulatory requirements (for example, the Canada Consumer Product Safety Act, the Canadian Environmental Protection Act, etc.).

It is the responsibility of the user to confirm that the assessment they are using is current and has not been withdrawn or superseded by a later version on the CCMC Registry of Product Assessments.

Disclaimer

The National Research Council of Canada (NRC) has evaluated only the characteristics of the specific product described herein. The information and opinions in this evaluation are directed to those who have the appropriate degree of experience to use and apply its contents (such as authorities having jurisdiction, design professionals and specifiers). This evaluation is valid when the product is used as part of permitted construction, respecting all conditions and limitations stated in the evaluation, and in accordance with applicable building codes and by-laws.

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Language

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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.

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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

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