



Evaluation Report CCMC 13300-R

BCI® Joists

MasterFormat:	06 17 33.01
Evaluation issued:	2008-01-08
Re-evaluated:	2017-12-11
Revised:	2020-04-09

1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “BCI® Joists”, when used as joists in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the National Building Code (NBC) of Canada 2015:

- Clause 1.2.1.1.(1)(a) of Division A, using the following acceptable solutions from Division B:
 - Sentence 4.3.1.1.(1), Design Basis for Wood (CSA O86-14 for I-joist qualification)
- Clause 1.2.1.1.(1)(b) of 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:
 - Article 9.10.8.10., Application to Houses (Fire rating is not required for single-family houses constructed as per Part 9 of the NBC, conventional wood-frame construction)⁽¹⁾;
 - Sentence 9.23.4.2.(2), Spans for Joists, Rafters and Beams (Structural)

This opinion is based on CCMC's evaluation of the technical evidence in Section 4 provided by the Report Holder.

- (1) Sections 4.2 and 4.3 of this Report provide a “fire-protection option” for this proprietary floor joist system as an alternative solution to the acceptable solution in Part 9 for conventional wood-frame floor construction. The proposed joists’ fire protection option, referenced in Sections 4.2 and 4.3 and listed in Appendix B, is provided to the authority having jurisdiction (AHJ) for information purposes. The fire-protection option, proposed and explained in Sections 4.2 and 4.3, is provided by the joist manufacturer, and the fire performance has been reviewed by CCMC as performing “as well as” the inherent fire resistance of exposed lumber floors.

Ruling No. 09-03-201 (13300-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 2009-03-04 (revised on 2015-09-28) 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

The product is a prefabricated wood I-joist available in 12 series. Five of the 12 series are manufactured with western species wood, while the remaining seven are manufactured with southern species wood. The I-joist is made from laminated veneer lumber (LVL) flanges with an oriented strand board (OSB) web. The flanges are made from laminating veneers of Douglas Fir, Southern Yellow Pine, Western Hemlock and eucalyptus (see CCMC 12472-R.) The top and bottom flanges are available in depths ranging from 29 mm to 38 mm and widths ranging from 51 mm to 89 mm. The web consists of 9.5-mm or 11.1-mm thick OSB in 1 219-mm segments. The flange width, depth and grade are listed in Table 2.1.

The web-flange connection is made by inserting the profiled OSB web into a profiled groove in the centre of the wide face of the flange (both top and bottom flanges). The web-to-web joints are bonded with a polyurethane emulsion polymer (PEP) adhesive and the web-to-flange

joints are bonded with an emulsion polymer isocyanate (EPI) adhesive.

The products listed in Table 2.1 are the products that have been tested and are currently being manufactured by Boise Cascade Company. Appendix B lists the products, with their calculated properties, that can be manufactured.

Table 2.1 “BCI® Joists” Series

I-Joist Series ⁽¹⁾	Material ⁽²⁾	Flange		
		Depth × Width (mm)	Web Material	Joist Depth Range (mm)
BCI 5000 1.7	1.7E VERSA-LAM® LVL	29 × 51	9.5-mm-thick OSB	241 to 406
BCI 6000 1.8	1.8E VERSA-LAM® LVL	29 × 59	9.5-mm-thick OSB	241 to 508
BCI 6500 1.8	1.8E VERSA-LAM® LVL	29 × 65	9.5-mm-thick OSB	241 to 508
BCI 60 2.0	2.0E VERSA-LAM® LVL	38 × 59	9.5-mm-thick OSB	241 to 508
BCI 90 2.0	2.0E VERSA-LAM® LVL	38 × 89	9.5-mm-thick OSB	241 to 508
BCI 4500s 1.8	1.8E VERSA-LAM® LVL	29 × 44.5	9.5-mm-thick OSB	241 to 406
BCI 5000s 1.8	1.8E VERSA-LAM® LVL	29 × 51	9.5-mm-thick OSB	241 to 406
BCI 6000s 1.8	1.8E VERSA-LAM® LVL	29 × 59	9.5-mm-thick OSB	241 to 508
BCI 6500s 1.8	1.8E VERSA-LAM® LVL	29 × 65	9.5-mm-thick OSB	241 to 508
BCI 60s 2.0	2.0E VERSA-LAM® LVL	38 × 59	9.5-mm-thick OSB	241 to 508
BCI 90s 2.0	2.0E VERSA-LAM® LVL	38 × 89	9.5-mm-thick OSB	241 to 508
BCI 90e 2.0	2.0E VERSA-LAM® LVL	38 × 89	11.1-mm-thick OSB	241 to 610

Notes to Table 2.1:

- (1) The lowercase “s” in the series name denotes southern species wood. The absence of the lowercase “s” denotes western species wood. The lowercase “e” in the series name denotes southern species wood where the final I-joist assembly is completed in St. Jacques, New Brunswick.
- (2) The LVL flanges are proprietary graded (see CCMC 12472-R).

3. Conditions and Limitations

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

- The product is intended for structural applications such as floor joists and is intended for dry use in-service applications only.⁽¹⁾
- The following pre-engineering information has been provided to CCMC by the manufacturer to demonstrate compliance with Part 9, Housing and Small Buildings, of the NBC 2015 for acceptance by the local authority having jurisdiction (AHJ).

(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.

i. Pre-engineered Floor Span Charts

When the product is 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 documents entitled:

- BCI® Specifier Guide Eastern Canada, April 2017; and
- BCI® Specifier Guide Western Canada, April 2017.

They must be installed in accordance with the manufacturer'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.

ii. Pre-engineered Installation Details

The manufacturer's pre-engineered details within the documents listed in 3(i) are limited in scope to building designs where the following details are not exceeded (page references are the same in both documents):

- rim board maximum vertical load (page 21);
- squash blocks maximum vertical load (page 9);
- blocking panel maximum vertical load (page 9);
- web stiffener requirements (page 10);
- loadbearing cantilever tables (page 12);
- cantilever balcony (page 11);
- web hole tables (page 13); and
- roof joist details (pages 14 to 20).

iii. Engineering Requirements

For structural applications beyond the scope and limitations of the above-referenced documents or when required by the AHJ, the drawings or related documents must 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 and limitations of 3(i) and 3(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;
- high wind and seismic areas;
- stair openings;
- design of supporting wall studs/beams when the total load exceeds the NBC 2015 pre-engineered floor/roof joist tables; and
- design of supporting foundation footings when the total load exceeds the NBC 2015 pre-engineered floor/roof joist tables.

The engineer shall design in accordance with CSA O86-14, "Engineering Design in Wood," and may use as a guide the *Engineering Guide for Wood-Frame Construction* published by the Canadian Wood Council.

iv. Engineering Support Provided by Manufacturer

Boise Cascade Company provides engineering support for their product and may be consulted at ewp_canada@bc.com or by telephone at 1-800-232-0788.

- This product must be identified with the phrase "CCMC 13300-R" along the side of the web or flange of the product. The CCMC number is only valid when it appears in conjunction with the certification mark of APA – The Engineered Wood Association.
- Damaged or defective joists must not be used, unless repaired in accordance with written instructions from the manufacturer.

(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. The manufacturer should therefore be consulted for span adjustments, if necessary, in these types of installations.

4. Technical Evidence

The Report 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.

4.1 Performance Requirements

4.1.1 NBC 2015 Compliance Data for “BCI® Joists” Series on which CCMC Based Its Opinion in Section 1

Table 4.1.1.1 Engineering Properties of “BCI® Joists” Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽³⁾	
						No ⁽⁴⁾	Yes ⁽⁵⁾	No ⁽⁴⁾	Yes ⁽⁵⁾
BCI 5000 1.7	241	5 600	455	23.1	10 360	6 670	7 900	14 740	16 500
	302	7 190	765	28.7	11 410	6 670	10 010	15 800	20 010
	356	8 520	1 120	33.7	12 810	6 670	10 710	16 500	21 410
BCI 6000 1.8	241	7 200	550	23.3	11 060	8 250	9 650	16 850	18 610
	302	9 240	920	28.9	11 760	8 250	10 010	17 550	20 010
	356	10 960	1 340	34.0	13 520	8 250	10 710	18 260	22 120
	406	12 510	1 820	38.7	15 270	8 250	11 410	18 610	23 520
BCI 6500 1.8	241	7 980	605	23.4	11 060	8 250	9 650	16 850	18 610
	302	10 240	1 010	29.0	11 760	8 250	10 010	17 550	20 010
	356	12 140	1 470	34.1	13 520	8 250	10 710	18 260	22 120
	406	13 860	1 990	38.9	15 270	8 250	11 410	18 610	23 520
BCI 60 2.0	302	14 060	1 235	29.2	11 760	8 250	10 010	17 550	20 010
	356	16 770	1 810	34.2	13 520	8 250	10 710	18 260	22 120
	406	19 210	2 460	38.9	15 270	8 250	11 410	18 610	23 520
BCI 90 2.0	302	21 530	1 850	29.8	15 100	8 780	12 990	21 240	25 980
	356	25 690	2 700	34.9	16 500	8 780	13 690	21 420	27 030
	406	29 430	3 650	39.7	17 900	9 130	15 100	21 770	28 090
	457	33 130	4 760	44.5	19 310	n/a	16 150	n/a	29 140
	508	36 790	6 025	49.3	20 010	n/a	17 550	n/a	30 190
BCI 4500s 1.8	241	5 400	440	22.9	10 360	6 670	7 900	14 740	16 500
	302	6 920	740	28.4	11 410	6 670	10 010	15 800	20 010
	356	8 200	1 085	33.4	12 810	6 670	10 710	16 500	21 410
	406	9 360	1 480	38.1	13 870	6 670	11 410	16 850	22 470

Table 4.1.1.1 Engineering Properties of “BCI® Joists” Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽³⁾	
						No ⁽⁴⁾	Yes ⁽⁵⁾	No ⁽⁴⁾	Yes ⁽⁵⁾
BCI 5000s 1.8	241	6 200	500	23.1	10 360	6 670	7 900	14 740	16 500
	302	7 950	840	28.7	11 410	6 670	10 010	15 800	20 010
	356	9 430	1 225	33.7	12 810	6 670	10 710	16 500	21 410
BCI 6000s 1.8	241	7 200	575	23.3	11 060	8 250	9 650	16 850	18 610
	302	9 240	960	28.9	11 760	8 250	10 010	17 550	20 010
	356	10 960	1 395	34.0	13 520	8 250	10 710	18 260	22 120
	406	12 510	1 895	38.7	15 270	8 250	11 410	18 610	23 520
BCI 6500s 1.8	241	7 980	630	23.4	11 060	8 250	9 650	16 850	18 610
	302	10 240	1 050	29.0	11 760	8 250	10 010	17 550	20 010
	356	12 140	1 530	34.1	13 520	8 250	10 710	18 260	22 120
	406	13 860	2 065	38.9	15 270	8 250	11 410	18 610	23 520
BCI 60s 2.0	302	14 060	1 290	29.2	11 760	8 250	10 010	17 550	20 010
	356	16 770	1 890	34.2	13 520	8 250	10 710	18 260	22 120
	406	19 210	2 565	38.9	15 270	8 250	11 410	18 610	23 520
BCI 90s 2.0	302	21 530	1 930	29.8	15 100	8 780	12 990	21 240	25 980
	356	25 690	2 815	34.9	16 500	8 780	13 690	21 420	27 030
	406	29 430	3 810	39.7	17 900	9 130	15 100	21 770	28 090
BCI 90e 2.0	241	16 420	1 055	28.9	11 760	8 530	10 010	19 480	22 110
	302	21 280	1 795	35.7	15 270	8 530	13 160	20 050	26 290
	356	25 630	2 630	41.8	16 500	8 530	13 690	20 570	27 030
	406	29 710	3 550	47.4	17 900	8 530	15 100	21 030	28 080
	457	33 810	4 645	53.2	19 310	n/a	15 730	n/a	29 140
	508	37 890	5 900	59.1	20 010	n/a	17 550	n/a	30 190
	559	41 970	7 320	64.9	22 710	n/a	18 520	n/a	36 720
	610	46 060	8 910	70.7	24 150	n/a	18 520	n/a	37 530

Notes to Table 4.1.1.1:

- (1) M_R – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_R – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required at end support. BCI 90e 2.0 requires a minimum bearing length of 44 mm at end support.
 - (3) Minimum bearing length required at intermediate support.
 - (4) No web stiffener required.
 - (5) Web stiffener required.
 - (6) “n/a” means not applicable. Web stiffener is required for joists deeper than 406 mm (16 in.).
-

4.2 Additional Performance Data Submitted by the Report Holder

This section is beyond the scope of CCMC’s opinion in Section 1 related to the evaluation of structural performance in Section 4.1. The performance of the fire-protection options has been reviewed by CCMC and is presented as additional information for AHJs.

4.2.1 Background

The following information is intended to be used by the AHJ when the fire performance of the alternative solution is deemed to perform “as well as” that of the Code-specified exposed lumber joists. The engineered joist manufacturer (Report Holder) has submitted to CCMC the fire-protection option for its proprietary joist system when used in single-family houses (unsprinklered). The submission was in response to the decision by the Canadian Commission on Construction Materials Evaluations (CCCME), as outlined in Section 4.3 of this Report.

4.2.2 Proposed Fire-Protection Options

The manufacturer’s solutions for proposed fire protection of their proprietary joists are presented in Appendix B. CCMC has reviewed the fire testing and analysis of the fire-protection options in comparison to the fire performance of unprotected exposed 38 mm × 235 mm (2 × 10) floor joist system⁽¹⁾. The fire testing demonstrated that the proposed fire-protection options perform “as well as” exposed 38 mm × 235 mm (2 × 10) lumber joists. It should be noted that the NBC 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 proposed fire-protection options for proprietary alternative floor joists are not to be considered in sprinklered single-family houses or where fire-resistance-rated assemblies are required.

-
- (1) Structural composite lumber, as defined in CSA O86 and evaluated by CCMC, is considered to have equivalent fire performance to lumber for joists of the same size.
-

4.3 Additional Health and Safety Data Identified by Third Parties

This section is beyond the scope of CCMC’s opinion in Section 1 related to the evaluation of structural performance in Section 4.1. The performance of the fire protection options has been reviewed by CCMC and is presented as additional information for AHJs.

4.3.1 Canadian Commission on Construction Materials Evaluations (CCCME) – Fire Safety

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. The NRC fire tests⁽¹⁾ conducted between 2002 and 2008 demonstrated that 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 (which is considered the benchmark or acceptable solution). At the May 2018 and October 2019 meetings of the CCCME, the Commission directed CCMC to provide 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. Testing has been carried out that follows the principles expressed in Appendix D of Division B of the NBC. Following the direction of the CCCME, this CCMC Evaluation Report has been modified to provide this manufacturer’s information.

The CCCME asked CCMC to review and validate the fire-test data from manufacturer and publish the fire performance to assist the AHJ’s decision regarding fire protection for alternative solutions to exposed lumber floor joists of conventional wood-frame construction. CCMC has

agreed to review the proposed fire-protection alternatives and provide the AHJ with valid fire-protection options. It is confirmed that the I-joist fire-protection solutions submitted by this manufacturer have been reviewed by CCMC and are outlined in Appendix B. These joist fire-protection options, tested by following the principles of the CAN/ULC-S101 floor test⁽²⁾, are considered by CCMC as having performed as well as exposed 38 mm × 235 mm (2 × 10) lumber joists.

-
- (1) Fire Performance of Houses. Phase I. Study of Unprotected Floor Assemblies in Basement Fire Scenarios, RR-252, 2008-12-15.
 - (2) Essentially following the ULC S101 time-temperature curve, the floor joists loaded to in-service loads and structural joist failure as the criterion.
-

Report Holder

Boise Cascade Company
70, rue Industrielle
St. Jacques, NB E7B 1T1

Telephone: 506-735-3561
Fax: 506-736-0929
Email: DomLavoie@BC.com
Web site: <http://www.bc.com>

Plant(s)

Lena, LA, USA
Saint-Jacques, NB
White City, OR, USA

Disclaimer

This Report is issued by the Canadian Construction Materials Centre, a program of the Construction Research Centre at the National Research Council of Canada. The Report must be read in the context of the entire CCMC Registry of Product Evaluations, including, without limitation, the introduction therein which sets out important information concerning the interpretation and use of CCMC Evaluation Reports.

Readers must confirm that the Report is current and has not been withdrawn or superseded by a later issue. Please refer to http://www.nrc-cnrc.gc.ca/eng/solutions/advisory/ccmc_index.html, or contact the Canadian Construction Materials Centre, Construction Research Centre, National Research Council of Canada, 1200 Montreal Road, Ottawa, Ontario, K1A 0R6. Telephone 613-993-6189. Fax 613-952-0268.

NRC has evaluated the material, product, system or service described herein only for those characteristics stated herein. The information and opinions in this Report are directed to those who have the appropriate degree of experience to use and apply its contents. This Report is provided without representation, warranty, or guarantee of any kind, expressed, or implied, and the National Research Council of Canada (NRC) provides no endorsement for any evaluated material, product, system or service described herein. NRC accepts no responsibility whatsoever arising in any way from any and all use and reliance on the information contained in this Report. NRC is not undertaking to render professional or other services on behalf of any person or entity nor to perform any duty owed by any person or entity to another person or entity.

Date modified:
2020-04-10

Appendix A – Additional Test Information

The design values obtained from testing to ASTM D 5055-08a, “Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists,” and in compliance with ASTM D 5055-13^{e1}, as specified in CSA O86-14, are summarized below. The manufacturer’s published pre-engineered joist spans were then designed in accordance with CSA O86-14.

Table A1. Additional Test Information for the Products

Property	Test Information
Shear capacity	The shear capacity of the “BCI® Joists” series was established by testing in accordance with ASTM D 5055. Qualification and quality-control tests were used to establish the applicable coefficient of variation, CV_w , and the reliability normalization factor from Table 16.2.3.2 of 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 D 5055. Qualification and quality control tests were used to establish the applicable coefficient of variation, CV_w , and the reliability normalization factor from Table 16.2.3.2 of CSA O86 was used to determine the specified strength.
Stiffness	<p>A bending test program of varying depths was used to confirm the stiffness capacity. The following formula should be used to predict mid-span deflection:</p> $\Delta_{deflection} = \frac{5wL^4}{384EI_{Shear-Free} \times 10^3} + \frac{wL^2}{K}$ <p>where $EI_{Shear-Free}$ = Shear-free stiffness, taken from Table 4.1.1.1, w = uniform load (kN/m), L = span (mm), K = shear deflection coefficient taken from Table 4.1.1.1</p>
Creep	The specimens were tested for creep performance as per ASTM D 5055, which states that two specimens from each I-joist series group shall be loaded to 1.5 times the design resistive moment capacity for 1 hour and unloaded to basic dead load. The average deflection recovery must exceed 90% of the deflection between the basic dead load (20% design) and the end of the 1-h load period of 1.5 times the total load.
Bearing length	Tests were conducted to qualify a minimum bearing length of 38 mm and 44 mm at end supports, and 89 mm at intermediate supports. Qualification tests were used to establish the applicable coefficient of variation, CV_w , and the reliability normalization factor from Table 16.2.3.2 of CSA O86 was used to determine the specified end reaction capacity and intermediate reaction capacity at the minimum bearing length.
Adhesive qualification	The web-to-web joints are bonded with a polyurethane emulsion polymer (PEP) adhesive (see CCMC 13511-L and CCMC 13512-L) and the web-to-flange joints are bonded with an emulsion polymer isocyanate (EPI) adhesive (see CCMC 13591-L).

Appendix B

B-1 CCMC Important Note from the CCMC Registry of Product Evaluations

Fire Performance of Innovative Structural Products in Houses

This Registry 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.

Unless otherwise stated, innovative structural products for houses have not been evaluated in the context of the NBC intent noted above. As is the case for all innovative products, designers and authorities need to exercise judgment in considering the use of innovative structural products for houses.

B-2 BCI® Joists – Fire Protection Options

The following seven (7) options of I-joist floor fire protection alternative solutions are provided by the manufacturer⁽¹⁾. These floor assemblies have demonstrated fire performance as good as conventional wood-frame 38 mm × 235 mm (2 × 10) exposed-floor construction.

The details of the following fire protection floor assemblies are outlined in the Figures 1 to 7, below.

- 1) Fire Protection of Floors FP-01 – 12.5 mm (1/2 in.) Gypsum Board Attached to Bottom of Flange;
 - 2) Fire Protection of Floors FP-02 – 12.5 mm (1/2 in.) Gypsum Board Attached Directly to Web;
 - 3) Fire Protection of Floors FP-03 – 12.5 mm (1/2 in.) Gypsum Board Attached Directly to Sides of Flange;
 - 4) Fire Protection of Floors FP-04 – Mineral Wool Insulation⁽²⁾;
 - 5) Fire Protection of Floors FP-06 – 12.5 mm (1/2 in.) Gypsum Board Installed on Top of the Bottom Flange;
 - 6) Fire Protection of Floors FP-07 – 15.8 mm (5/8 in.) Gypsum Board Installed on Top of the Bottom Flange;
 - 7) Fire Protection of Floors FP-09 – Rockwool SAFE'n'Sound® Mineral Wool Insulation⁽²⁾.
- (1) These floor assemblies and supporting fire test data have been provided to 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.
- (2) 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, OSB or hardboard.

Table B2. Applicable BCI® Joists for Fire Protection Assemblies based on Flange Size

Product	Flange Size (thickness x width) (mm)	Fire Protection Assembly
BCI 5000 1.7	29 × 51	FP-01, FP-03, FP-04, FP-06, FP-07, FP-09
BCI 6000 1.8	29 × 59	FP-01, FP-03, FP-04, FP-06, FP-07, FP-09
BCI 6500 1.8	29 × 65	FP-01, FP-03, FP-04, FP-06, FP-07, FP-09
BCI 60 2.0	38 × 59	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09
BCI 90 2.0	38 × 89	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09
BCI 4500s 1.8	29 × 44.5	FP-03, FP-04
BCI 5000s 1.8	29 × 51	FP-01, FP-03, FP-04, FP-06, FP-07, FP-09

BCI 6000s 1.8	29 × 59	FP-01, FP-03, FP-04, FP-06, FP-07, FP-09
BCI 6500s 1.8	29 × 65	FP-01, FP-03, FP-04, FP-06, FP-07, FP-09
BCI 60s 2.0	38 × 59	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09
BCI 90s 2.0	38 × 89	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09
BCI 90e 2.0	38 × 89	FP-01, FP-02, FP-03, FP-04, FP-06, FP-07, FP-09

Figures 1 to 7 of Fire Protection Assemblies

The following floor assembly design (Figure 1) is the default alternative solution for all cases and where the manufacturer has not undertaken any specific testing to show equivalency to exposed 38 mm × 235 mm (2 × 10) lumber with proprietary joist fire protection options.

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 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 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.) on centre 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.) on centre. Gypsum board not required to be finished with tape and joint compound.

Figure 1. Fire Protection of Floors FP-01 – Fire Protection: 12.5 mm (1/2 in.) Gypsum Board Attached to Bottom of Flange

The following fire resistance designs, Figures 2 to 7, provided by the manufacturer provide fire performance as good as to 2×10 dimensional lumber exposed floor joists.

12.5 MM (1/2 IN.) GYPSUM BOARD ATTACHED TO WEB

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 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.) on centre, top and bottom. Fasteners may be staggered from top to bottom.

Figure 2. Fire Protection of Floors FP-02 – Fire Protection: 12.5 mm (1/2 in.) Gypsum Board Attached Directly to Web

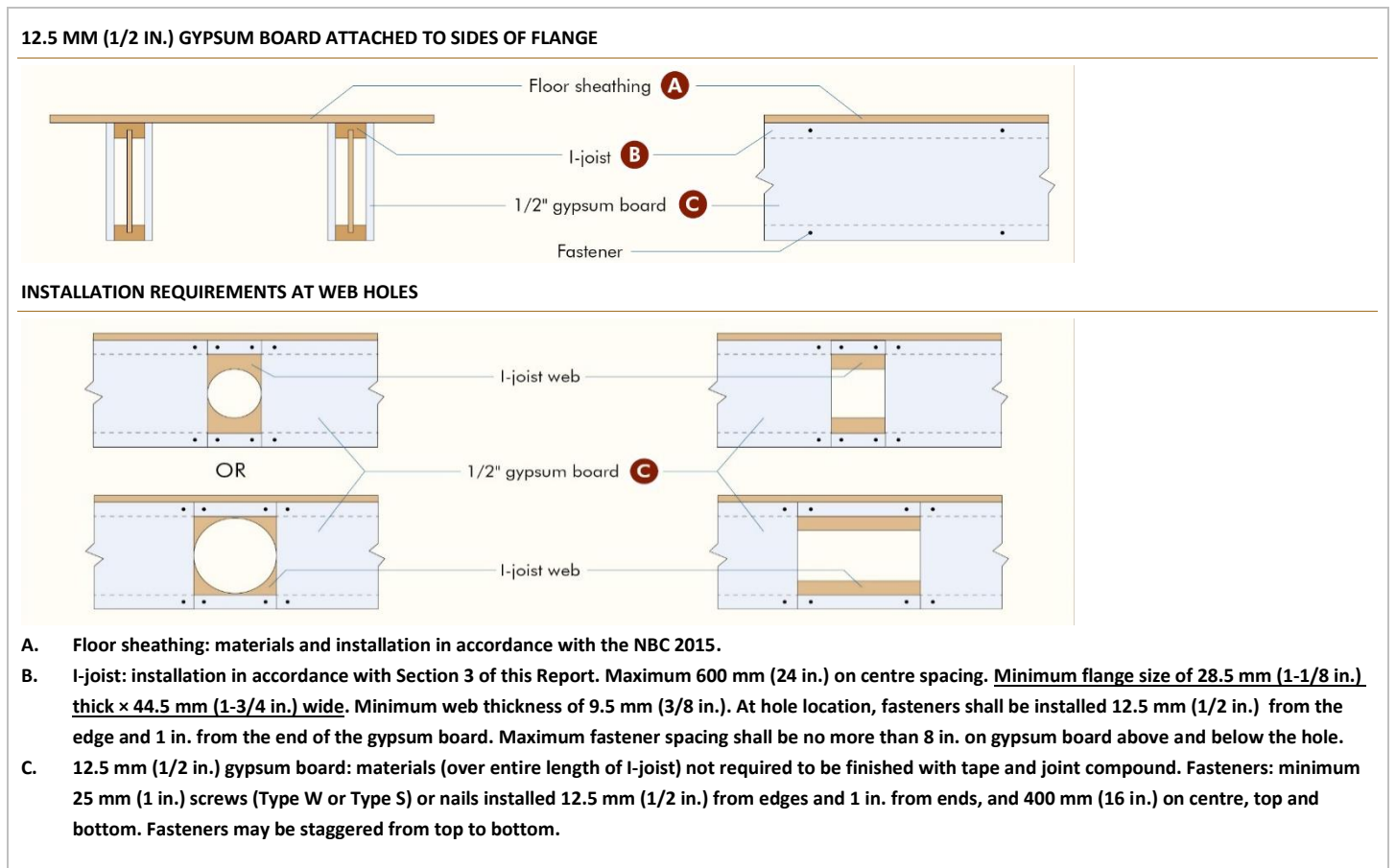
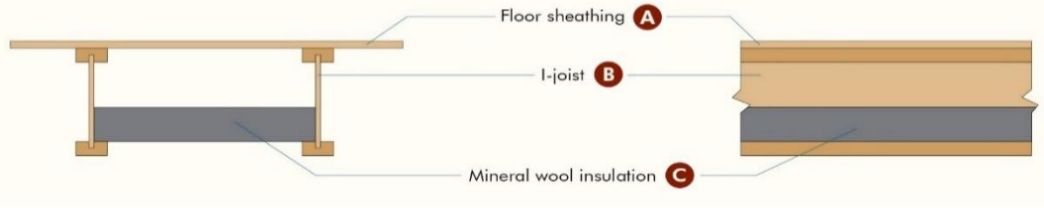


Figure 3. Fire Protection of Floors FP-03 – Fire Protection: 12.5 mm (1/2 in.) Gypsum Board Attached Directly to Sides of Flange

MINERAL WOOL INSULATION



- 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 487 mm (19.2 in.) on centre 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 ULC S702 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.) on centre. 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.) on centre, 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.

Figure 4. Fire Protection of Floors FP-04 – Fire Protection: Mineral Wool Insulation

12.5 MM (1/2 IN.) GYPSUM BOARD



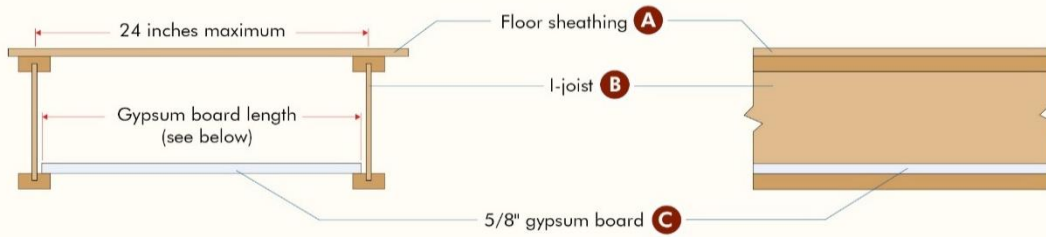
Joist spacing	Required length for gypsum boards
300 mm (12 in.)	282.5 mm (11-1/8 in.) ± 3.2 mm (1/8 in.)
400 mm (16 in.)	384.2 mm (15-1/8 in.) ± 3.2 mm (1/8 in.)
487 mm (19.2 in.)	467 mm (18-3/8 in.) ± 3.2 mm (1/8 in.)

Note:
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.

- 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.

Figure 5. Fire Protection of Floors FP-06 – Fire Protection: 12.5mm (1/2-in.) Gypsum Board Installed on Top of the Bottom Flange

15.8 MM (5/8 IN.) GYPSUM BOARD



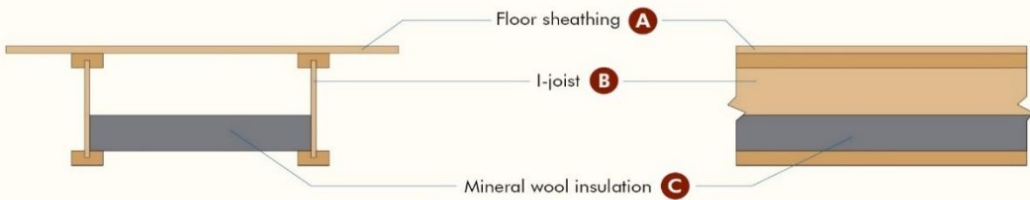
Joist spacing	Required length for gypsum boards
300 mm (12 in.)	282.5 mm (11-1/8 in.) ± 3.2 mm (1/8 in.)
400 mm (16 in.)	384.2 mm (15-1/8 in.) ± 3.2 mm (1/8 in.)
487 mm (19.2 in.)	467 mm (18-3/8 in.) ± 3.2 mm (1/8 in.)
600 mm (24 in.)	587 mm (23-1/8 in.) ± 3.2 mm (1/8 in.)

Note:
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.

- 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 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.

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

ROCKWOOL SAFE'n'SOUND® MINERAL WOOL INSULATION



- 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 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-joist spacing is 400 mm (16 in.), 487 mm (19.2 in.) and 600 mm (24 in.) on centre, 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.

Figure 7. Fire Protection of Floors FP-09 – Fire Protection: Rockwool SAFE'n'Sound® Mineral Wool Insulation

Appendix C – Offered Products with Calculated Properties

Appendix C is a list of offered products with calculated properties. Verify with Boise Cascade Company prior to ordering.

Table C1. Engineering Properties of “BCI® Joists” – BCI 4000 Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 4000 1.3	241	2 760	275	22.6	10 181	6 670	7 899	14 393	16 500
	302	3 540	465	28.2	11 234	6 670	8 776	15 447	20 010
	356	4 200	690	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000 1.4	241	3 140	290	22.6	10 181	6 670	7 899	14 393	16 500
	302	4 020	495	28.2	11 234	6 670	8 776	15 447	20 010
	356	4 770	735	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000 1.5	241	3 510	310	22.6	10 181	6 670	7 899	14 393	16 500
	302	4 500	525	28.2	11 234	6 670	8 776	15 447	20 010
	356	5 340	780	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000 1.6	241	3 760	330	22.6	10 181	6 670	7 899	14 393	16 500
	302	4 830	560	28.2	11 234	6 670	8 776	15 447	20 010
	356	5 720	825	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000 1.7	241	4 140	350	22.6	10 181	6 670	7 899	14 393	16 500
	302	5 310	590	28.2	11 234	6 670	8 776	15 447	20 010
	356	6 300	865	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000 1.8	241	4 580	365	22.6	10 181	6 670	7 899	14 393	16 500
	302	5 870	620	28.2	11 234	6 670	8 776	15 447	20 010
	356	6 960	910	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000 1.9	241	4 900	385	22.6	10 181	6 670	7 899	14 393	16 500
	302	6 280	650	28.2	11 234	6 670	8 776	15 447	20 010
	356	7 440	955	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000 2.0	241	5 400	405	22.6	10 181	6 670	7 899	14 393	16 500
	302	6 920	680	28.2	11 234	6 670	8 776	15 447	20 010
	356	8 210	1 000	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000 2.1	241	5 650	425	22.6	10 181	6 670	7 899	14 393	16 500
	302	7 240	715	28.2	11 234	6 670	8 776	15 447	20 010
	356	8 590	1 045	33.1	12 287	6 670	9 479	15 447	21 415

Table C1. Engineering Properties of “BCI® Joists” – BCI 4000 Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 4000 2.2	241	6 090	440	22.6	10 181	6 670	7 899	14 393	16 500
	302	7 810	745	28.2	11 234	6 670	8 776	15 447	20 010
	356	9 260	1 090	33.1	12 287	6 670	9 479	15 447	21 415

Notes to Table C1:

- (1) M_r – factored moment resistance (Ø factor applied); EI_{Shear-Free} – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (Ø factor applied); end reaction resistance and intermediate reaction resistance are un-factored (Ø factor not applied).
- (2) Minimum bearing length required
- (3) No web stiffener required
- (4) Web stiffener required

Table C2. Engineering Properties of “BCI® Joists” – BCI 4000s Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 4000s 1.3	241	2 760	285	22.6	10 181	6 670	7 899	14 393	16 500
	302	3 540	485	28.2	11 234	6 670	8 776	15 447	20 010
	356	4 200	715	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000s 1.4	241	3 140	305	22.6	10 181	6 670	7 899	14 393	16 500
	302	4 020	515	28.2	11 234	6 670	8 776	15 447	20 010
	356	4 770	760	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000s 1.5	241	3 510	325	22.6	10 181	6 670	7 899	14 393	16 500
	302	4 500	550	28.2	11 234	6 670	8 776	15 447	20 010
	356	5 340	810	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000s 1.6	241	3 760	345	22.6	10 181	6 670	7 899	14 393	16 500
	302	4 830	580	28.2	11 234	6 670	8 776	15 447	20 010
	356	5 720	855	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000s 1.7	241	4 140	365	22.6	10 181	6 670	7 899	14 393	16 500
	302	5 310	615	28.2	11 234	6 670	8 776	15 447	20 010
	356	6 300	900	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000s 1.8	241	4 580	385	22.6	10 181	6 670	7 899	14 393	16 500
	302	5 870	645	28.2	11 234	6 670	8 776	15 447	20 010
	356	6 960	950	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000s 1.9	241	4 900	400	22.6	10 181	6 670	7 899	14 393	16 500
	302	6 280	680	28.2	11 234	6 670	8 776	15 447	20 010
	356	7 440	995	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000s 2.0	241	5 400	420	22.6	10 181	6 670	7 899	14 393	16 500
	302	6 920	710	28.2	11 234	6 670	8 776	15 447	20 010
	356	8 210	1 040	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000s 2.1	241	5 650	440	22.6	10 181	6 670	7 899	14 393	16 500
	302	7 240	740	28.2	11 234	6 670	8 776	15 447	20 010
	356	8 590	1 085	33.1	12 287	6 670	9 479	15 447	21 415
BCI 4000s 2.2	241	6 090	460	22.6	10 181	6 670	7 899	14 393	16 500
	302	7 810	775	28.2	11 234	6 670	8 776	15 447	20 010
	356	9 260	1 135	33.1	12 287	6 670	9 479	15 447	21 415

Notes to Table C2:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required
 - (3) No web stiffener required
 - (4) Web stiffener required
-

Table C3. Engineering Properties of “BCI® Joists” – BCI 4500 Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 4500 1.3	241	3 250	315	22.9	10 356	6 670	7 899	14 744	16 500
	302	4 170	535	28.4	11 409	6 670	10 005	15 798	20 010
	356	4 940	785	33.4	12 814	6 670	10 707	16 500	21 415
	406	5 640	1 080	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500 1.4	241	3 690	335	22.9	10 356	6 670	7 899	14 744	16 500
	302	4 740	570	28.4	11 409	6 670	10 005	15 798	20 010
	356	5 620	840	33.4	12 814	6 670	10 707	16 500	21 415
	406	6 410	1 145	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500 1.5	241	4 140	360	22.9	10 356	6 670	7 899	14 744	16 500
	302	5 310	605	28.4	11 409	6 670	10 005	15 798	20 010
	356	6 290	890	33.4	12 814	6 670	10 707	16 500	21 415
	406	7 180	1 215	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500 1.6	241	4 430	380	22.9	10 356	6 670	7 899	14 744	16 500
	302	5 690	640	28.4	11 409	6 670	10 005	15 798	20 010
	356	6 740	940	33.4	12 814	6 670	10 707	16 500	21 415
	406	7 690	1 285	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500 1.7	241	4 880	400	22.9	10 356	6 670	7 899	14 744	16 500
	302	6 260	675	28.4	11 409	6 670	10 005	15 798	20 010
	356	7 420	990	33.4	12 814	6 670	10 707	16 500	21 415
	406	8 460	1 355	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500 1.8	241	5 400	425	22.9	10 356	6 670	7 899	14 744	16 500
	302	6 920	715	28.4	11 409	6 670	10 005	15 798	20 010
	356	8 200	1 045	33.4	12 814	6 670	10 707	16 500	21 415
	406	9 360	1 420	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500 1.9	241	5 770	445	22.9	10 356	6 670	7 899	14 744	16 500
	302	7 390	750	28.4	11 409	6 670	10 005	15 798	20 010
	356	8 770	1 095	33.4	12 814	6 670	10 707	16 500	21 415
	406	10 000	1 490	38.1	13 867	6 670	11 409	16 851	22 468

Table C3. Engineering Properties of “BCI® Joists” – BCI 4500 Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 4500 2.0	241	6 360	465	22.9	10 356	6 670	7 899	14 744	16 500
	302	8 150	785	28.4	11 409	6 670	10 005	15 798	20 010
	356	9 670	1 145	33.4	12 814	6 670	10 707	16 500	21 415
	406	11 030	1 560	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500 2.1	241	6 650	490	22.9	10 356	6 670	7 899	14 744	16 500
	302	8 530	820	28.4	11 409	6 670	10 005	15 798	20 010
	356	10 120	1 200	33.4	12 814	6 670	10 707	16 500	21 415
	406	11 540	1 630	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500 2.2	241	7 170	510	22.9	10 356	6 670	7 899	14 744	16 500
	302	9 200	855	28.4	11 409	6 670	10 005	15 798	20 010
	356	10 900	1 250	33.4	12 814	6 670	10 707	16 500	21 415
	406	12 440	1 700	38.1	13 867	6 670	11 409	16 851	22 468

Notes to Table C3:

- (1) M_R – factored moment resistance (Ø factor applied); EI_{Shear-Free} – shear-free stiffness; K – shear deflection coefficient; and V_R – factored shear resistance (Ø factor applied); end reaction resistance and intermediate reaction resistance are un-factored (Ø factor not applied).
- (2) Minimum bearing length required
- (3) No web stiffener required
- (4) Web stiffener required

Table C4. Engineering Properties of “BCI® Joists” – BCI 4500s Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 4500s 1.3	241	3 250	325	22.9	10 356	6 670	7 899	14 744	16 500
	302	4 170	555	28.4	11 409	6 670	10 005	15 798	20 010
	356	4 940	815	33.4	12 814	6 670	10 707	16 500	21 415
	406	5 640	1 120	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500s 1.4	241	3 690	350	22.9	10 356	6 670	7 899	14 744	16 500
	302	4 740	590	28.4	11 409	6 670	10 005	15 798	20 010
	356	5 620	870	33.4	12 814	6 670	10 707	16 500	21 415
	406	6 410	1 190	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500s 1.5	241	4 140	375	22.9	10 356	6 670	7 899	14 744	16 500
	302	5 310	630	28.4	11 409	6 670	10 005	15 798	20 010
	356	6 290	925	33.4	12 814	6 670	10 707	16 500	21 415
	406	7 180	1 260	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500s 1.6	241	4 430	395	22.9	10 356	6 670	7 899	14 744	16 500
	302	5 690	665	28.4	11 409	6 670	10 005	15 798	20 010
	356	6 740	980	33.4	12 814	6 670	10 707	16 500	21 415
	406	7 690	1 335	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500s 1.7	241	4 880	420	22.9	10 356	6 670	7 899	14 744	16 500
	302	6 260	705	28.4	11 409	6 670	10 005	15 798	20 010
	356	7 420	1 030	33.4	12 814	6 670	10 707	16 500	21 415
	406	8 460	1 405	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500s 1.8	241	5 400	440	22.9	10 356	6 670	7 899	14 744	16 500
	302	6 920	740	28.4	11 409	6 670	10 005	15 798	20 010
	356	8 200	1 085	33.4	12 814	6 670	10 707	16 500	21 415
	406	9 360	1 480	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500s 1.9	241	5 770	465	22.9	10 356	6 670	7 899	14 744	16 500
	302	7 390	780	28.4	11 409	6 670	10 005	15 798	20 010
	356	8 770	1 140	33.4	12 814	6 670	10 707	16 500	21 415
	406	10 000	1 550	38.1	13 867	6 670	11 409	16 851	22 468

Table B4. Engineering Properties of “BCI® Joists” – BCI 4500s Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 4500s 2.0	241	6 360	485	22.9	10 356	6 670	7 899	14 744	16 500
	302	8 150	820	28.4	11 409	6 670	10 005	15 798	20 010
	356	9 670	1 195	33.4	12 814	6 670	10 707	16 500	21 415
	406	11 030	1 620	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500s 2.1	241	6 650	510	22.9	10 356	6 670	7 899	14 744	16 500
	302	8 530	855	28.4	11 409	6 670	10 005	15 798	20 010
	356	10 120	1 250	33.4	12 814	6 670	10 707	16 500	21 415
	406	11 540	1 695	38.1	13 867	6 670	11 409	16 851	22 468
BCI 4500s 2.2	241	7 170	535	22.9	10 356	6 670	7 899	14 744	16 500
	302	9 200	895	28.4	11 409	6 670	10 005	15 798	20 010
	356	10 900	1 300	33.4	12 814	6 670	10 707	16 500	21 415
	406	12 440	1 765	38.1	13 867	6 670	11 409	16 851	22 468

Notes to Table C4:

- (1) M_r – factored moment resistance (Ø factor applied); EI_{Shear-Free} – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (Ø factor applied); end reaction resistance and intermediate reaction resistance are un-factored (Ø factor not applied).
- (2) Minimum bearing length required
- (3) No web stiffener required
- (4) Web stiffener required

Table C5. Engineering Properties of “BCI® Joists” – BCI 5000 Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 5000 1.3	241	3 730	355	23.1	10 360	6 670	7 899	14 744	16 500
	302	4 790	600	28.7	11 409	6 670	10 005	15 798	20 010
	356	5 680	880	33.7	12 814	6 670	10 707	16 500	21 415
	406	6 480	1 205	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000 1.4	241	4 240	380	23.1	10 360	6 670	7 899	14 744	16 500
	302	5 440	640	28.7	11 409	6 670	10 005	15 798	20 010
	356	6 450	940	33.7	12 814	6 670	10 707	16 500	21 415
	406	7 370	1 285	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000 1.5	241	4 750	405	23.1	10 360	6 670	7 899	14 744	16 500
	302	6 100	680	28.7	11 409	6 670	10 005	15 798	20 010
	356	7 230	1 000	33.7	12 814	6 670	10 707	16 500	21 415
	406	8 250	1 365	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000 1.6	241	5 090	430	23.1	10 360	6 670	7 899	14 744	16 500
	302	6 530	725	28.7	11 409	6 670	10 005	15 798	20 010
	356	7 750	1 060	33.7	12 814	6 670	10 707	16 500	21 415
	406	8 840	1 440	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000 1.7	241	5 600	455	23.1	10 360	6 670	7 899	14 744	16 500
	302	7 190	765	28.7	11 409	6 670	10 005	15 798	20 010
	356	8 520	1 120	33.7	12 814	6 670	10 707	16 500	21 415
	406	9 730	1 520	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000 1.8	241	6 200	480	23.1	10 360	6 670	7 899	14 744	16 500
	302	7 950	805	28.7	11 409	6 670	10 005	15 798	20 010
	356	9 430	1 175	33.7	12 814	6 670	10 707	16 500	21 415
	406	10 760	1 600	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000 1.9	241	6 620	505	23.1	10 360	6 670	7 899	14 744	16 500
	302	8 490	845	28.7	11 409	6 670	10 005	15 798	20 010
	356	10 070	1 235	33.7	12 814	6 670	10 707	16 500	21 415
	406	11 490	1 680	38.4	13 867	6 670	11 409	16 851	22 468

Table C5. Engineering Properties of “BCI® Joists” – BCI 5000 Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 5000 2.0	241	7 300	530	23.1	10 360	6 670	7 899	14 744	16 500
	302	9 370	890	28.7	11 409	6 670	10 005	15 798	20 010
	356	11 110	1 295	33.7	12 814	6 670	10 707	16 500	21 415
	406	12 670	1 755	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000 2.1	241	7 640	555	23.1	10 360	6 670	7 899	14 744	16 500
	302	9 800	930	28.7	11 409	6 670	10 005	15 798	20 010
	356	11 620	1 355	33.7	12 814	6 670	10 707	16 500	21 415
	406	13 260	1 835	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000 2.2	241	8 240	580	23.1	10 360	6 670	7 899	14 744	16 500
	302	10 560	970	28.7	11 409	6 670	10 005	15 798	20 010
	356	12 530	1 415	33.7	12 814	6 670	10 707	16 500	21 415
	406	14 300	1 915	38.4	13 867	6 670	11 409	16 851	22 468

Notes to Table C5:

- (1) M_r – factored moment resistance (Ø factor applied); EI_{Shear-Free} – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (Ø factor applied); end reaction resistance and intermediate reaction resistance are un-factored (Ø factor not applied).
- (2) Minimum bearing length required
- (3) No web stiffener required
- (4) Web stiffener required

Table C6. Engineering Properties of “BCI® Joists” – BCI 5000s Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 5000s 1.3	241	3 730	370	23.1	10 360	6 670	7 899	14 744	16 500
	302	4 790	625	28.7	11 409	6 670	10 005	15 798	20 010
	356	5 680	915	33.7	12 814	6 670	10 707	16 500	21 415
	406	6 480	1 250	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000s 1.4	241	4 240	395	23.1	10 360	6 670	7 899	14 744	16 500
	302	5 440	665	28.7	11 409	6 670	10 005	15 798	20 010
	356	6 450	980	33.7	12 814	6 670	10 707	16 500	21 415
	406	7 370	1 335	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000s 1.5	241	4 750	420	23.1	10 360	6 670	7 899	14 744	16 500
	302	6 100	710	28.7	11 409	6 670	10 005	15 798	20 010
	356	7 230	1 040	33.7	12 814	6 670	10 707	16 500	21 415
	406	8 250	1 415	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000s 1.6	241	5 090	450	23.1	10 360	6 670	7 899	14 744	16 500
	302	6 530	755	28.7	11 409	6 670	10 005	15 798	20 010
	356	7 750	1 100	33.7	12 814	6 670	10 707	16 500	21 415
	406	8 840	1 500	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000s 1.7	241	5 600	475	23.1	10 360	6 670	7 899	14 744	16 500
	302	7 190	795	28.7	11 409	6 670	10 005	15 798	20 010
	356	8 520	1 165	33.7	12 814	6 670	10 707	16 500	21 415
	406	9 730	1 580	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000s 1.8	241	6 200	500	23.1	10 360	6 670	7 899	14 744	16 500
	302	7 950	840	28.7	11 409	6 670	10 005	15 798	20 010
	356	9 430	1 225	33.7	12 814	6 670	10 707	16 500	21 415
	406	10 760	1 665	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000s 1.9	241	6 620	525	23.1	10 360	6 670	7 899	14 744	16 500
	302	8 490	880	28.7	11 409	6 670	10 005	15 798	20 010
	356	10 070	1 285	33.7	12 814	6 670	10 707	16 500	21 415
	406	11 490	1 745	38.4	13 867	6 670	11 409	16 851	22 468

Table C6. Engineering Properties of “BCI® Joists” – BCI 5000s Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 5000s 2.0	241	7 300	555	23.1	10 360	6 670	7 899	14 744	16 500
	302	9 370	925	28.7	11 409	6 670	10 005	15 798	20 010
	356	11 110	1 350	33.7	12 814	6 670	10 707	16 500	21 415
	406	12 670	1 830	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000s 2.1	241	7 640	580	23.1	10 360	6 670	7 899	14 744	16 500
	302	9 800	970	28.7	11 409	6 670	10 005	15 798	20 010
	356	11 620	1 410	33.7	12 814	6 670	10 707	16 500	21 415
	406	13 260	1 910	38.4	13 867	6 670	11 409	16 851	22 468
BCI 5000s 2.2	241	8 240	605	23.1	10 360	6 670	7 899	14 744	16 500
	302	10 560	1 010	28.7	11 409	6 670	10 005	15 798	20 010
	356	12 530	1 470	33.7	12 814	6 670	10 707	16 500	21 415
	406	14 300	1 995	38.4	13 867	6 670	11 409	16 851	22 468

Notes to Table C6:

- (1) M_R – factored moment resistance (Ø factor applied); EI_{Shear-Free} – shear-free stiffness; K – shear deflection coefficient; and V_R – factored shear resistance (Ø factor applied); end reaction resistance and intermediate reaction resistance are un-factored (Ø factor not applied).
- (2) Minimum bearing length required
- (3) No web stiffener required
- (4) Web stiffener required

Table C7. Engineering Properties of “BCI® Joists” – BCI 6000 Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 6000 1.3	241	4 340	405	23.3	11 058	8 250	9 654	16 851	18 606
	302	5 570	685	28.9	11 760	8 250	10 005	17 553	20 010
	356	6 600	1 000	34.0	13 516	8 250	10 707	18 255	22 117
	406	7 540	1 365	38.7	15 271	8 250	11 409	18 606	23 521
	457	8 460	1 795	43.5	16 675	n/a	12 287	n/a	24 574
	508	9 370	2 290	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000 1.4	241	4 930	435	23.3	11 058	8 250	9 654	16 851	18 606
	302	6 330	730	28.9	11 760	8 250	10 005	17 553	20 010
	356	7 500	1 070	34.0	13 516	8 250	10 707	18 255	22 117
	406	8 560	1 455	38.7	15 271	8 250	11 409	18 606	23 521
	457	9 610	1 910	43.5	16 675	n/a	12 287	n/a	24 574
	508	10 650	2 435	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000 1.5	241	5 530	465	23.3	11 058	8 250	9 654	16 851	18 606
	302	7 090	780	28.9	11 760	8 250	10 005	17 553	20 010
	356	8 400	1 135	34.0	13 516	8 250	10 707	18 255	22 117
	406	9 590	1 545	38.7	15 271	8 250	11 409	18 606	23 521
	457	10 760	2 025	43.5	16 675	n/a	12 287	n/a	24 574
	508	11 930	2 585	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000 1.6	241	5 920	490	23.3	11 058	8 250	9 654	16 851	18 606
	302	7 590	825	28.9	11 760	8 250	10 005	17 553	20 010
	356	9 010	1 205	34.0	13 516	8 250	10 707	18 255	22 117
	406	10 280	1 635	38.7	15 271	8 250	11 409	18 606	23 521
	457	11 530	2 145	43.5	16 675	n/a	12 287	n/a	24 574
	508	12 780	2 730	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000 1.7	241	6 510	520	23.3	11 058	8 250	9 654	16 851	18 606
	302	8 350	875	28.9	11 760	8 250	10 005	17 553	20 010
	356	9 910	1 275	34.0	13 516	8 250	10 707	18 255	22 117
	406	11 310	1 730	38.7	15 271	8 250	11 409	18 606	23 521
	457	12 690	2 260	43.5	16 675	n/a	12 287	n/a	24 574
	508	14 060	2 875	48.2	17 202	n/a	13 340	n/a	25 627

Table C7. Engineering Properties of “BCI® Joists” – BCI 6000 Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 6000 1.8	241	7 200	550	23.3	11 058	8 250	9 654	16 851	18 606
	302	9 240	920	28.9	11 760	8 250	10 005	17 553	20 010
	356	10 960	1 340	34.0	13 516	8 250	10 707	18 255	22 117
	406	12 510	1 820	38.7	15 271	8 250	11 409	18 606	23 521
	457	14 030	2 380	43.5	16 675	n/a	12 287	n/a	24 574
	508	15 550	3 020	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000 1.9	241	7 700	580	23.3	11 058	8 250	9 654	16 851	18 606
	302	9 870	970	28.9	11 760	8 250	10 005	17 553	20 010
	356	11 710	1 410	34.0	13 516	8 250	10 707	18 255	22 117
	406	13 360	1 910	38.7	15 271	8 250	11 409	18 606	23 521
	457	15 000	2 495	43.5	16 675	n/a	12 287	n/a	24 574
	508	16 610	3 170	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000 2.0	241	8 490	610	23.3	11 058	8 250	9 654	16 851	18 606
	302	10 890	1 015	28.9	11 760	8 250	10 005	17 553	20 010
	356	12 910	1 480	34.0	13 516	8 250	10 707	18 255	22 117
	406	14 730	2 000	38.7	15 271	8 250	11 409	18 606	23 521
	457	16 530	2 610	43.5	16 675	n/a	12 287	n/a	24 574
	508	18 320	3 315	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000 2.1	241	8 880	635	23.3	11 058	8 250	9 654	16 851	18 606
	302	11 390	1 065	28.9	11 760	8 250	10 005	17 553	20 010
	356	13 510	1 545	34.0	13 516	8 250	10 707	18 255	22 117
	406	15 420	2 090	38.7	15 271	8 250	11 409	18 606	23 521
	457	17 300	2 730	43.5	16 675	n/a	12 287	n/a	24 574
	508	19 170	3 460	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000 2.2	241	9 570	665	23.3	11 058	8 250	9 654	16 851	18 606
	302	12 280	1 110	28.9	11 760	8 250	10 005	17 553	20 010
	356	14 560	1 615	34.0	13 516	8 250	10 707	18 255	22 117
	406	16 620	2 185	38.7	15 271	8 250	11 409	18 606	23 521
	457	18 650	2 845	43.5	16 675	n/a	12 287	n/a	24 574
	508	20 660	3 610	48.2	17 202	n/a	13 340	n/a	25 627

Notes to Table C7:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required
 - (3) No web stiffener required.
 - (4) Web stiffener required
 - (5) “n/a” means not applicable. Web stiffener is required for joist deeper than 406 mm (16 in.).
-

Table C8. Engineering Properties of “BCI® Joists” – BCI 6000s Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	Mr (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 6000s 1.3	241	4 340	420	23.3	11 058	8 250	9 654	16 851	18 606
	302	5 570	710	28.9	11 760	8 250	10 005	17 553	20 010
	356	6 600	1 040	34.0	13 516	8 250	10 707	18 255	22 117
	406	7 540	1 420	38.7	15 271	8 250	11 409	18 606	23 521
	457	8 460	1 860	43.5	16 675	n/a	12 287	n/a	24 574
	508	9 370	2 375	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000s 1.4	241	4 930	450	23.3	11 058	8 250	9 654	16 851	18 606
	302	6 330	760	28.9	11 760	8 250	10 005	17 553	20 010
	356	7 500	1 110	34.0	13 516	8 250	10 707	18 255	22 117
	406	8 560	1 515	38.7	15 271	8 250	11 409	18 606	23 521
	457	9 610	1 985	43.5	16 675	n/a	12 287	n/a	24 574
	508	10 650	2 530	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000s 1.5	241	5 530	485	23.3	11 058	8 250	9 654	16 851	18 606
	302	7 090	810	28.9	11 760	8 250	10 005	17 553	20 010
	356	8 400	1 185	34.0	13 516	8 250	10 707	18 255	22 117
	406	9 590	1 610	38.7	15 271	8 250	11 409	18 606	23 521
	457	10 760	2 105	43.5	16 675	n/a	12 287	n/a	24 574
	508	11 930	2 685	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000s 1.6	241	5 920	515	23.3	11 058	8 250	9 654	16 851	18 606
	302	7 590	860	28.9	11 760	8 250	10 005	17 553	20 010
	356	9 010	1 255	34.0	13 516	8 250	10 707	18 255	22 117
	406	10 280	1 705	38.7	15 271	8 250	11 409	18 606	23 521
	457	11 530	2 230	43.5	16 675	n/a	12 287	n/a	24 574
	508	12 780	2 835	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000s 1.7	241	6 510	545	23.3	11 058	8 250	9 654	16 851	18 606
	302	8 350	910	28.9	11 760	8 250	10 005	17 553	20 010
	356	9 910	1 325	34.0	13 516	8 250	10 707	18 255	22 117
	406	11 310	1 800	38.7	15 271	8 250	11 409	18 606	23 521
	457	12 690	2 350	43.5	16 675	n/a	12 287	n/a	24 574
	508	14 060	2 990	48.2	17 202	n/a	13 340	n/a	25 627

Table C8. Engineering Properties of “BCI® Joists” – BCI 6000s Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 6000s 1.8	241	7 200	575	23.3	11 058	8 250	9 654	16 851	18 606
	302	9 240	960	28.9	11 760	8 250	10 005	17 553	20 010
	356	10 960	1 395	34.0	13 516	8 250	10 707	18 255	22 117
	406	12 510	1 895	38.7	15 271	8 250	11 409	18 606	23 521
	457	14 030	2 475	43.5	16 675	n/a	12 287	n/a	24 574
	508	15 550	3 140	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000s 1.9	241	7 700	605	23.3	11 058	8 250	9 654	16 851	18 606
	302	9 870	1 010	28.9	11 760	8 250	10 005	17 553	20 010
	356	11 710	1 470	34.0	13 516	8 250	10 707	18 255	22 117
	406	13 360	1 990	38.7	15 271	8 250	11 409	18 606	23 521
	457	15 000	2 595	43.5	16 675	n/a	12 287	n/a	24 574
	508	16 610	3 295	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000s 2.0	241	8 490	635	23.3	11 058	8 250	9 654	16 851	18 606
	302	10 890	1 060	28.9	11 760	8 250	10 005	17 553	20 010
	356	12 910	1 540	34.0	13 516	8 250	10 707	18 255	22 117
	406	14 730	2 085	38.7	15 271	8 250	11 409	18 606	23 521
	457	16 530	2 720	43.5	16 675	n/a	12 287	n/a	24 574
	508	18 320	3 450	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000s 2.1	241	8 880	665	23.3	11 058	8 250	9 654	16 851	18 606
	302	11 390	1 110	28.9	11 760	8 250	10 005	17 553	20 010
	356	13 510	1 610	34.0	13 516	8 250	10 707	18 255	22 117
	406	15 420	2 180	38.7	15 271	8 250	11 409	18 606	23 521
	457	17 300	2 840	43.5	16 675	n/a	12 287	n/a	24 574
	508	19 170	3 600	48.2	17 202	n/a	13 340	n/a	25 627
BCI 6000s 2.2	241	9 570	695	23.3	11 058	8 250	9 654	16 851	18 606
	302	12 280	1 160	28.9	11 760	8 250	10 005	17 553	20 010
	356	14 560	1 680	34.0	13 516	8 250	10 707	18 255	22 117
	406	16 620	2 275	38.7	15 271	8 250	11 409	18 606	23 521
	457	18 650	2 965	43.5	16 675	n/a	12 287	n/a	24 574
	508	20 660	3 755	48.2	17 202	n/a	13 340	n/a	25 627

Notes to Table C8:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required
 - (3) No web stiffener required.
 - (4) Web stiffener required
 - (5) “n/a” means not applicable. Web stiffener is required for joist deeper than 406 mm (16 in.).
-

Table C9. Engineering Properties of “BCI® Joists” – BCI 6500 Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 6500 1.3	241	4 810	445	23.4	11 058	8 250	9 654	16 851	18 606
	302	6 170	745	29.0	11 760	8 250	10 005	17 553	20 010
	356	7 320	1 095	34.1	13 516	8 250	10 707	18 255	22 117
	406	8 350	1 485	38.9	15 271	8 250	11 409	18 606	23 521
	457	9 370	1 950	43.7	16 675	n/a	12 287	n/a	24 574
	508	10 380	2 490	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500 1.4	241	5 460	475	23.4	11 058	8 250	9 654	16 851	18 606
	302	7 010	800	29.0	11 760	8 250	10 005	17 553	20 010
	356	8 310	1 170	34.1	13 516	8 250	10 707	18 255	22 117
	406	9 490	1 585	38.9	15 271	8 250	11 409	18 606	23 521
	457	10 650	2 080	43.7	16 675	n/a	12 287	n/a	24 574
	508	11 800	2 650	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500 1.5	241	6 120	510	23.4	11 058	8 250	9 654	16 851	18 606
	302	7 850	850	29.0	11 760	8 250	10 005	17 553	20 010
	356	9 310	1 245	34.1	13 516	8 250	10 707	18 255	22 117
	406	10 630	1 690	38.9	15 271	8 250	11 409	18 606	23 521
	457	11 930	2 210	43.7	16 675	n/a	12 287	n/a	24 574
	508	13 210	2 810	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500 1.6	241	6 560	540	23.4	11 058	8 250	9 654	16 851	18 606
	302	8 410	905	29.0	11 760	8 250	10 005	17 553	20 010
	356	9 980	1 320	34.1	13 516	8 250	10 707	18 255	22 117
	406	11 390	1 790	38.9	15 271	8 250	11 409	18 606	23 521
	457	12 780	2 340	43.7	16 675	n/a	12 287	n/a	24 574
	508	14 160	2 975	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500 1.7	241	7 210	570	23.4	11 058	8 250	9 654	16 851	18 606
	302	9 250	955	29.0	11 760	8 250	10 005	17 553	20 010
	356	10 980	1 395	34.1	13 516	8 250	10 707	18 255	22 117
	406	12 530	1 890	38.9	15 271	8 250	11 409	18 606	23 521
	457	14 060	2 470	43.7	16 675	n/a	12 287	n/a	24 574
	508	15 570	3 135	48.4	17 202	n/a	13 340	n/a	25 627

Table C9. Engineering Properties of “BCI® Joists” – BCI 6500 Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 6500 1.8	241	7 980	605	23.4	11 058	8 250	9 654	16 851	18 606
	302	10 240	1 010	29.0	11 760	8 250	10 005	17 553	20 010
	356	12 140	1 470	34.1	13 516	8 250	10 707	18 255	22 117
	406	13 860	1 990	38.9	15 271	8 250	11 409	18 606	23 521
	457	15 550	2 595	43.7	16 675	n/a	12 287	n/a	24 574
	508	17 230	3 295	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500 1.9	241	8 530	635	23.4	11 058	8 250	9 654	16 851	18 606
	302	10 940	1 060	29.0	11 760	8 250	10 005	17 553	20 010
	356	12 970	1 545	34.1	13 516	8 250	10 707	18 255	22 117
	406	14 800	2 090	38.9	15 271	8 250	11 409	18 606	23 521
	457	16 620	2 725	43.7	16 675	n/a	12 287	n/a	24 574
	508	18 410	3 455	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500 2.0	241	9 400	670	23.4	11 058	8 250	9 654	16 851	18 606
	302	12 060	1 115	29.0	11 760	8 250	10 005	17 553	20 010
	356	14 300	1 620	34.1	13 516	8 250	10 707	18 255	22 117
	406	16 320	2 190	38.9	15 271	8 250	11 409	18 606	23 521
	457	18 320	2 855	43.7	16 675	n/a	12 287	n/a	24 574
	508	20 290	3 620	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500 2.1	241	9 840	700	23.4	11 058	8 250	9 654	16 851	18 606
	302	12 620	1 165	29.0	11 760	8 250	10 005	17 553	20 010
	356	14 970	1 695	34.1	13 516	8 250	10 707	18 255	22 117
	406	17 080	2 290	38.9	15 271	8 250	11 409	18 606	23 521
	457	19 170	2 985	43.7	16 675	n/a	12 287	n/a	24 574
	508	21 240	3 780	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500 2.2	241	10 610	730	23.4	11 058	8 250	9 654	16 851	18 606
	302	13 600	1 220	29.0	11 760	8 250	10 005	17 553	20 010
	356	16 130	1 770	34.1	13 516	8 250	10 707	18 255	22 117
	406	18 410	2 390	38.9	15 271	8 250	11 409	18 606	23 521
	457	20 660	3 115	43.7	16 675	n/a	12 287	n/a	24 574
	508	22 890	3 940	48.4	17 202	n/a	13 340	n/a	25 627

Notes to Table C9:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required
 - (3) No web stiffener required
 - (4) Web stiffener required
 - (5) “n/a” means not applicable. Web stiffener is required for joist deeper than 406 mm (16 in.).
-

Table C10. Engineering Properties of “BCI® Joists” – BCI 6500s Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 6500s 1.3	241	4 810	465	23.4	11 058	8 250	9 654	16 851	18 606
	302	6 170	780	29.0	11 760	8 250	10 005	17 553	20 010
	356	7 320	1 135	34.1	13 516	8 250	10 707	18 255	22 117
	406	8 350	1 545	38.9	15 271	8 250	11 409	18 606	23 521
	457	9 370	2 025	43.7	16 675	n/a	12 287	n/a	24 574
	508	10 380	2 585	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500s 1.4	241	5 460	495	23.4	11 058	8 250	9 654	16 851	18 606
	302	7 010	835	29.0	11 760	8 250	10 005	17 553	20 010
	356	8 310	1 215	34.1	13 516	8 250	10 707	18 255	22 117
	406	9 490	1 650	38.9	15 271	8 250	11 409	18 606	23 521
	457	10 650	2 160	43.7	16 675	n/a	12 287	n/a	24 574
	508	11 800	2 755	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500s 1.5	241	6 120	530	23.4	11 058	8 250	9 654	16 851	18 606
	302	7 850	890	29.0	11 760	8 250	10 005	17 553	20 010
	356	9 310	1 295	34.1	13 516	8 250	10 707	18 255	22 117
	406	10 630	1 755	38.9	15 271	8 250	11 409	18 606	23 521
	457	11 930	2 295	43.7	16 675	n/a	12 287	n/a	24 574
	508	13 210	2 920	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500s 1.6	241	6 560	565	23.4	11 058	8 250	9 654	16 851	18 606
	302	8 410	945	29.0	11 760	8 250	10 005	17 553	20 010
	356	9 980	1 375	34.1	13 516	8 250	10 707	18 255	22 117
	406	11 390	1 860	38.9	15 271	8 250	11 409	18 606	23 521
	457	12 780	2 430	43.7	16 675	n/a	12 287	n/a	24 574
	508	14 160	3 090	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500s 1.7	241	7 210	595	23.4	11 058	8 250	9 654	16 851	18 606
	302	9 250	995	29.0	11 760	8 250	10 005	17 553	20 010
	356	10 980	1 450	34.1	13 516	8 250	10 707	18 255	22 117
	406	12 530	1 965	38.9	15 271	8 250	11 409	18 606	23 521
	457	14 060	2 565	43.7	16 675	n/a	12 287	n/a	24 574
	508	15 570	3 260	48.4	17 202	n/a	13 340	n/a	25 627

Table C10. Engineering Properties of “BCI® Joists” – BCI 6500s Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 6500s 1.8	241	7 980	630	23.4	11 058	8 250	9 654	16 851	18 606
	302	10 240	1 050	29.0	11 760	8 250	10 005	17 553	20 010
	356	12 140	1 530	34.1	13 516	8 250	10 707	18 255	22 117
	406	13 860	2 065	38.9	15 271	8 250	11 409	18 606	23 521
	457	15 550	2 700	43.7	16 675	n/a	12 287	n/a	24 574
	508	17 230	3 430	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500s 1.9	241	8 530	665	23.4	11 058	8 250	9 654	16 851	18 606
	302	10 940	1 105	29.0	11 760	8 250	10 005	17 553	20 010
	356	12 970	1 610	34.1	13 516	8 250	10 707	18 255	22 117
	406	14 800	2 175	38.9	15 271	8 250	11 409	18 606	23 521
	457	16 620	2 835	43.7	16 675	n/a	12 287	n/a	24 574
	508	18 410	3 595	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500s 2.0	241	9 400	695	23.4	11 058	8 250	9 654	16 851	18 606
	302	12 060	1 160	29.0	11 760	8 250	10 005	17 553	20 010
	356	14 300	1 690	34.1	13 516	8 250	10 707	18 255	22 117
	406	16 320	2 280	38.9	15 271	8 250	11 409	18 606	23 521
	457	18 320	2 970	43.7	16 675	n/a	12 287	n/a	24 574
	508	20 290	3 765	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500s 2.1	241	9 840	730	23.4	11 058	8 250	9 654	16 851	18 606
	302	12 620	1 215	29.0	11 760	8 250	10 005	17 553	20 010
	356	14 970	1 765	34.1	13 516	8 250	10 707	18 255	22 117
	406	17 080	2 385	38.9	15 271	8 250	11 409	18 606	23 521
	457	19 170	3 105	43.7	16 675	n/a	12 287	n/a	24 574
	508	21 240	3 935	48.4	17 202	n/a	13 340	n/a	25 627
BCI 6500s 2.2	241	10 610	765	23.4	11 058	8 250	9 654	16 851	18 606
	302	13 600	1 270	29.0	11 760	8 250	10 005	17 553	20 010
	356	16 130	1 845	34.1	13 516	8 250	10 707	18 255	22 117
	406	18 410	2 490	38.9	15 271	8 250	11 409	18 606	23 521
	457	20 660	3 240	43.7	16 675	n/a	12 287	n/a	24 574
	508	22 890	4 105	48.4	17 202	n/a	13 340	n/a	25 627

Notes to Table C10:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required
 - (3) No web stiffener required.
 - (4) Web stiffener required
 - (5) “n/a” means not applicable. Web stiffener is required for joist deeper than 406 mm (16 in.).
-

Table C11. Engineering Properties of “BCI® Joists” – BCI 9000 Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 9000 1.3	241	6 660	600	23.8	11 760	8 250	10 005	21 063	22 117
	302	8 540	1 000	29.4	15 095	8 776	12 989	21 239	25 978
	356	10 130	1 455	34.6	16 500	8 776	13 691	21 415	27 031
	406	11 560	1 975	39.4	17 904	9 128	15 095	21 766	28 085
	457	12 980	2 575	44.3	19 308	n/a	16 149	n/a	29 138
	508	14 380	3 270	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000 1.4	241	7 570	645	23.8	11 760	8 250	10 005	21 063	22 117
	302	9 710	1 075	29.4	15 095	8 776	12 989	21 239	25 978
	356	11 510	1 560	34.6	16 500	8 776	13 691	21 415	27 031
	406	13 140	2 110	39.4	17 904	9 128	15 095	21 766	28 085
	457	14 750	2 755	44.3	19 308	n/a	16 149	n/a	29 138
	508	16 340	3 490	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000 1.5	241	8 470	685	23.8	11 760	8 250	10 005	21 063	22 117
	302	10 870	1 145	29.4	15 095	8 776	12 989	21 239	25 978
	356	12 900	1 665	34.6	16 500	8 776	13 691	21 415	27 031
	406	14 720	2 250	39.4	17 904	9 128	15 095	21 766	28 085
	457	16 520	2 930	44.3	19 308	n/a	16 149	n/a	29 138
	508	18 300	3 715	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000 1.6	241	9 080	730	23.8	11 760	8 250	10 005	21 063	22 117
	302	11 650	1 215	29.4	15 095	8 776	12 989	21 239	25 978
	356	13 820	1 765	34.6	16 500	8 776	13 691	21 415	27 031
	406	15 770	2 385	39.4	17 904	9 128	15 095	21 766	28 085
	457	17 700	3 110	44.3	19 308	n/a	16 149	n/a	29 138
	508	19 610	3 935	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000 1.7	241	9 990	775	23.8	11 760	8 250	10 005	21 063	22 117
	302	12 820	1 290	29.4	15 095	8 776	12 989	21 239	25 978
	356	15 200	1 870	34.6	16 500	8 776	13 691	21 415	27 031
	406	17 350	2 525	39.4	17 904	9 128	15 095	21 766	28 085
	457	19 470	3 285	44.3	19 308	n/a	16 149	n/a	29 138
	508	21 570	4 155	49.1	20 010	n/a	17 553	n/a	30 191

Table C11. Engineering Properties of “BCI® Joists” – BCI 9000 Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 9000 1.8	241	11 050	820	23.8	11 760	8 250	10 005	21 063	22 117
	302	14 180	1 360	29.4	15 095	8 776	12 989	21 239	25 978
	356	16 810	1 975	34.6	16 500	8 776	13 691	21 415	27 031
	406	19 190	2 660	39.4	17 904	9 128	15 095	21 766	28 085
	457	21 540	3 465	44.3	19 308	n/a	16 149	n/a	29 138
	508	23 860	4 380	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000 1.9	241	11 810	860	23.8	11 760	8 250	10 005	21 063	22 117
	302	15 150	1 435	29.4	15 095	8 776	12 989	21 239	25 978
	356	17 960	2 075	34.6	16 500	8 776	13 691	21 415	27 031
	406	20 500	2 800	39.4	17 904	9 128	15 095	21 766	28 085
	457	23 010	3 640	44.3	19 308	n/a	16 149	n/a	29 138
	508	25 490	4 600	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000 2.0	241	13 020	905	23.8	11 760	8 250	10 005	21 063	22 117
	302	16 700	1 505	29.4	15 095	8 776	12 989	21 239	25 978
	356	19 810	2 180	34.6	16 500	8 776	13 691	21 415	27 031
	406	22 610	2 940	39.4	17 904	9 128	15 095	21 766	28 085
	457	25 370	3 815	44.3	19 308	n/a	16 149	n/a	29 138
	508	28 110	4 820	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000 2.1	241	13 620	950	23.8	11 760	8 250	10 005	21 063	22 117
	302	17 480	1 580	29.4	15 095	8 776	12 989	21 239	25 978
	356	20 730	2 285	34.6	16 500	8 776	13 691	21 415	27 031
	406	23 660	3 075	39.4	17 904	9 128	15 095	21 766	28 085
	457	26 550	3 995	44.3	19 308	n/a	16 149	n/a	29 138
	508	29 420	5 045	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000 2.2	241	14 680	995	23.8	11 760	8 250	10 005	21 063	22 117
	302	18 840	1 650	29.4	15 095	8 776	12 989	21 239	25 978
	356	22 340	2 385	34.6	16 500	8 776	13 691	21 415	27 031
	406	25 500	3 215	39.4	17 904	9 128	15 095	21 766	28 085
	457	28 620	4 170	44.3	19 308	n/a	16 149	n/a	29 138
	508	31 710	5 265	49.1	20 010	n/a	17 553	n/a	30 191

Notes to Table C11:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required
 - (3) No web stiffener required.
 - (4) Web stiffener required
 - (5) “n/a” means not applicable. Web stiffener is required for joist deeper than 406 mm (16 in.).
-

Table C12. Engineering Properties of “BCI® Joists” – BCI 9000s Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	Mr (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 9000s 1.3	241	6 660	625	23.8	11 760	8 250	10 005	21 063	22 117
	302	8 540	1 045	29.4	15 095	8 776	12 989	21 239	25 978
	356	10 130	1 520	34.6	16 500	8 776	13 691	21 415	27 031
	406	11 560	2 055	39.4	17 904	9 128	15 095	21 766	28 085
	457	12 980	2 680	44.3	19 308	n/a	16 149	n/a	29 138
	508	14 380	3 400	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000s 1.4	241	7 570	670	23.8	11 760	8 250	10 005	21 063	22 117
	302	9 710	1 120	29.4	15 095	8 776	12 989	21 239	25 978
	356	11 510	1 625	34.6	16 500	8 776	13 691	21 415	27 031
	406	13 140	2 200	39.4	17 904	9 128	15 095	21 766	28 085
	457	14 750	2 865	44.3	19 308	n/a	16 149	n/a	29 138
	508	16 340	3 635	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000s 1.5	241	8 470	715	23.8	11 760	8 250	10 005	21 063	22 117
	302	10 870	1 195	29.4	15 095	8 776	12 989	21 239	25 978
	356	12 900	1 735	34.6	16 500	8 776	13 691	21 415	27 031
	406	14 720	2 345	39.4	17 904	9 128	15 095	21 766	28 085
	457	16 520	3 050	44.3	19 308	n/a	16 149	n/a	29 138
	508	18 300	3 865	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000s 1.6	241	9 080	760	23.8	11 760	8 250	10 005	21 063	22 117
	302	11 650	1 270	29.4	15 095	8 776	12 989	21 239	25 978
	356	13 820	1 840	34.6	16 500	8 776	13 691	21 415	27 031
	406	15 770	2 485	39.4	17 904	9 128	15 095	21 766	28 085
	457	17 700	3 235	44.3	19 308	n/a	16 149	n/a	29 138
	508	19 610	4 095	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000s 1.7	241	9 990	810	23.8	11 760	8 250	10 005	21 063	22 117
	302	12 820	1 345	29.4	15 095	8 776	12 989	21 239	25 978
	356	15 200	1 950	34.6	16 500	8 776	13 691	21 415	27 031
	406	17 350	2 630	39.4	17 904	9 128	15 095	21 766	28 085
	457	19 470	3 420	44.3	19 308	n/a	16 149	n/a	29 138
	508	21 570	4 330	49.1	20 010	n/a	17 553	n/a	30 191

Table C12. Engineering Properties of “BCI® Joists” – BCI 9000s Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 9000s 1.8	241	11 050	855	23.8	11 760	8 250	10 005	21 063	22 117
	302	14 180	1 420	29.4	15 095	8 776	12 989	21 239	25 978
	356	16 810	2 060	34.6	16 500	8 776	13 691	21 415	27 031
	406	19 190	2 775	39.4	17 904	9 128	15 095	21 766	28 085
	457	21 540	3 610	44.3	19 308	n/a	16 149	n/a	29 138
	508	23 860	4 560	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000s 1.9	241	11 810	900	23.8	11 760	8 250	10 005	21 063	22 117
	302	15 150	1 495	29.4	15 095	8 776	12 989	21 239	25 978
	356	17 960	2 165	34.6	16 500	8 776	13 691	21 415	27 031
	406	20 500	2 920	39.4	17 904	9 128	15 095	21 766	28 085
	457	23 010	3 795	44.3	19 308	n/a	16 149	n/a	29 138
	508	25 490	4 790	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000s 2.0	241	13 020	945	23.8	11 760	8 250	10 005	21 063	22 117
	302	16 700	1 570	29.4	15 095	8 776	12 989	21 239	25 978
	356	19 810	2 275	34.6	16 500	8 776	13 691	21 415	27 031
	406	22 610	3 065	39.4	17 904	9 128	15 095	21 766	28 085
	457	25 370	3 980	44.3	19 308	n/a	16 149	n/a	29 138
	508	28 110	5 025	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000s 2.1	241	13 620	990	23.8	11 760	8 250	10 005	21 063	22 117
	302	17 480	1 645	29.4	15 095	8 776	12 989	21 239	25 978
	356	20 730	2 380	34.6	16 500	8 776	13 691	21 415	27 031
	406	23 660	3 205	39.4	17 904	9 128	15 095	21 766	28 085
	457	26 550	4 165	44.3	19 308	n/a	16 149	n/a	29 138
	508	29 420	5 255	49.1	20 010	n/a	17 553	n/a	30 191
BCI 9000s 2.2	241	14 680	1 035	23.8	11 760	8 250	10 005	21 063	22 117
	302	18 840	1 720	29.4	15 095	8 776	12 989	21 239	25 978
	356	22 340	2 490	34.6	16 500	8 776	13 691	21 415	27 031
	406	25 500	3 350	39.4	17 904	9 128	15 095	21 766	28 085
	457	28 620	4 350	44.3	19 308	n/a	16 149	n/a	29 138
	508	31 710	5 485	49.1	20 010	n/a	17 553	n/a	30 191

Notes to Table C12:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required
 - (3) No web stiffener required.
 - (4) Web stiffener required
 - (5) “n/a” means not applicable. Web stiffener is required for joist deeper than 406 mm (16 in.).
-

Table C13. Engineering Properties of “BCI® Joists” – BCI 40 Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 40 1.3	241	3 540	320	22.9	10 181	6 670	7 899	14 393	16 500
	302	4 580	550	28.3	11 234	6 670	8 776	15 447	20 010
	356	5 460	820	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40 1.4	241	4 020	345	22.9	10 181	6 670	7 899	14 393	16 500
	302	5 210	590	28.3	11 234	6 670	8 776	15 447	20 010
	356	6 210	875	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40 1.5	241	4 500	365	22.9	10 181	6 670	7 899	14 393	16 500
	302	5 830	630	28.3	11 234	6 670	8 776	15 447	20 010
	356	6 950	930	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40 1.6	241	4 830	390	22.9	10 181	6 670	7 899	14 393	16 500
	302	6 250	665	28.3	11 234	6 670	8 776	15 447	20 010
	356	7 450	985	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40 1.7	241	5 310	410	22.9	10 181	6 670	7 899	14 393	16 500
	302	6 870	705	28.3	11 234	6 670	8 776	15 447	20 010
	356	8 190	1 040	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40 1.8	241	5 870	435	22.9	10 181	6 670	7 899	14 393	16 500
	302	7 600	745	28.3	11 234	6 670	8 776	15 447	20 010
	356	9 060	1 100	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40 1.9	241	6 270	460	22.9	10 181	6 670	7 899	14 393	16 500
	302	8 120	780	28.3	11 234	6 670	8 776	15 447	20 010
	356	9 690	1 155	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40 2.0	241	6 920	480	22.9	10 181	6 670	7 899	14 393	16 500
	302	8 960	820	28.3	11 234	6 670	8 776	15 447	20 010
	356	10 680	1 210	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40 2.1	241	7 240	505	22.9	10 181	6 670	7 899	14 393	16 500
	302	9 370	860	28.3	11 234	6 670	8 776	15 447	20 010
	356	11 180	1 265	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40 2.2	241	7 800	525	22.9	10 181	6 670	7 899	14 393	16 500
	302	10 100	900	28.3	11 234	6 670	8 776	15 447	20 010
	356	12 050	1 320	33.3	12 287	6 670	9 479	15 447	21 415

Notes to Table C13:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required
 - (3) No web stiffener required
 - (4) Web stiffener required
-

Table C14. Engineering Properties of “BCI® Joists” – BCI 40s Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 40s 1.3	241	3 540	335	22.9	10 181	6 670	7 899	14 393	16 500
	302	4 580	575	28.3	11 234	6 670	8 776	15 447	20 010
	356	5 460	850	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40s 1.4	241	4 020	360	22.9	10 181	6 670	7 899	14 393	16 500
	302	5 210	615	28.3	11 234	6 670	8 776	15 447	20 010
	356	6 210	910	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40s 1.5	241	4 500	380	22.9	10 181	6 670	7 899	14 393	16 500
	302	5 830	655	28.3	11 234	6 670	8 776	15 447	20 010
	356	6 950	970	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40s 1.6	241	4 830	405	22.9	10 181	6 670	7 899	14 393	16 500
	302	6 250	695	28.3	11 234	6 670	8 776	15 447	20 010
	356	7 450	1 025	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40s 1.7	241	5 310	430	22.9	10 181	6 670	7 899	14 393	16 500
	302	6 870	735	28.3	11 234	6 670	8 776	15 447	20 010
	356	8 190	1 085	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40s 1.8	241	5 870	455	22.9	10 181	6 670	7 899	14 393	16 500
	302	7 600	775	28.3	11 234	6 670	8 776	15 447	20 010
	356	9 060	1 145	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40s 1.9	241	6 270	480	22.9	10 181	6 670	7 899	14 393	16 500
	302	8 120	815	28.3	11 234	6 670	8 776	15 447	20 010
	356	9 690	1 200	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40s 2.0	241	6 920	500	22.9	10 181	6 670	7 899	14 393	16 500
	302	8 960	855	28.3	11 234	6 670	8 776	15 447	20 010
	356	10 680	1 260	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40s 2.1	241	7 240	525	22.9	10 181	6 670	7 899	14 393	16 500
	302	9 370	895	28.3	11 234	6 670	8 776	15 447	20 010
	356	11 180	1 320	33.3	12 287	6 670	9 479	15 447	21 415
BCI 40s 2.2	241	7 800	550	22.9	10 181	6 670	7 899	14 393	16 500
	302	10 100	935	28.3	11 234	6 670	8 776	15 447	20 010
	356	12 050	1 375	33.3	12 287	6 670	9 479	15 447	21 415

Notes to Table C14:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required
 - (3) No web stiffener required
 - (4) Web stiffener required
-

Table C15. Engineering Properties of “BCI® Joists” – BCI 45 Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 45 1.3	241	4 160	370	23.2	10 356	6 670	7 899	14 744	16 500
	302	5 390	635	28.7	11 409	6 670	10 005	15 798	20 010
	356	6 430	940	33.6	12 814	6 670	10 707	16 500	21 415
	406	7 360	1 290	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45 1.4	241	4 730	395	23.2	10 356	6 670	7 899	14 744	16 500
	302	6 130	680	28.7	11 409	6 670	10 005	15 798	20 010
	356	7 310	1 005	33.6	12 814	6 670	10 707	16 500	21 415
	406	8 370	1 380	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45 1.5	241	5 300	425	23.2	10 356	6 670	7 899	14 744	16 500
	302	6 860	725	28.7	11 409	6 670	10 005	15 798	20 010
	356	8 180	1 070	33.6	12 814	6 670	10 707	16 500	21 415
	406	9 370	1 465	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45 1.6	241	5 680	450	23.2	10 356	6 670	7 899	14 744	16 500
	302	7 350	770	28.7	11 409	6 670	10 005	15 798	20 010
	356	8 770	1 135	33.6	12 814	6 670	10 707	16 500	21 415
	406	10 040	1 555	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45 1.7	241	6 250	480	23.2	10 356	6 670	7 899	14 744	16 500
	302	8 090	815	28.7	11 409	6 670	10 005	15 798	20 010
	356	9 650	1 200	33.6	12 814	6 670	10 707	16 500	21 415
	406	11 050	1 640	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45 1.8	241	6 910	505	23.2	10 356	6 670	7 899	14 744	16 500
	302	8 950	860	28.7	11 409	6 670	10 005	15 798	20 010
	356	10 670	1 265	33.6	12 814	6 670	10 707	16 500	21 415
	406	12 220	1 730	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45 1.9	241	7 380	530	23.2	10 356	6 670	7 899	14 744	16 500
	302	9 560	905	28.7	11 409	6 670	10 005	15 798	20 010
	356	11 400	1 330	33.6	12 814	6 670	10 707	16 500	21 415
	406	13 060	1 815	38.3	13 867	6 670	11 409	16 851	22 468

Table C15. Engineering Properties of “BCI® Joists” – BCI 45 Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _r (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 45 2.0	241	8 140	560	23.2	10 356	6 670	7 899	14 744	16 500
	302	10 540	950	28.7	11 409	6 670	10 005	15 798	20 010
	356	12 570	1 395	33.6	12 814	6 670	10 707	16 500	21 415
	406	14 400	1 905	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45 2.1	241	8 520	585	23.2	10 356	6 670	7 899	14 744	16 500
	302	11 030	995	28.7	11 409	6 670	10 005	15 798	20 010
	356	13 150	1 460	33.6	12 814	6 670	10 707	16 500	21 415
	406	15 070	1 990	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45 2.2	241	9 180	610	23.2	10 356	6 670	7 899	14 744	16 500
	302	11 890	1 040	28.7	11 409	6 670	10 005	15 798	20 010
	356	14 180	1 525	33.6	12 814	6 670	10 707	16 500	21 415
	406	16 240	2 080	38.3	13 867	6 670	11 409	16 851	22 468

Notes to Table C15:

- (1) M_r – factored moment resistance (Ø factor applied); EI_{Shear-Free} – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (Ø factor applied); end reaction resistance and intermediate reaction resistance are un-factored (Ø factor not applied).
- (2) Minimum bearing length required
- (3) No web stiffener required
- (4) Web stiffener required

Table C16. Engineering Properties of “BCI® Joists” – BCI 45s Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 45s 1.3	241	4 160	385	23.2	10 356	6 670	7 899	14 744	16 500
	302	5 390	660	28.7	11 409	6 670	10 005	15 798	20 010
	356	6 430	980	33.6	12 814	6 670	10 707	16 500	21 415
	406	7 360	1 340	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45s 1.4	241	4 730	415	23.2	10 356	6 670	7 899	14 744	16 500
	302	6 130	710	28.7	11 409	6 670	10 005	15 798	20 010
	356	7 310	1 045	33.6	12 814	6 670	10 707	16 500	21 415
	406	8 370	1 435	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45s 1.5	241	5 300	440	23.2	10 356	6 670	7 899	14 744	16 500
	302	6 860	755	28.7	11 409	6 670	10 005	15 798	20 010
	356	8 180	1 115	33.6	12 814	6 670	10 707	16 500	21 415
	406	9 370	1 525	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45s 1.6	241	5 680	470	23.2	10 356	6 670	7 899	14 744	16 500
	302	7 350	800	28.7	11 409	6 670	10 005	15 798	20 010
	356	8 770	1 185	33.6	12 814	6 670	10 707	16 500	21 415
	406	10 040	1 615	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45s 1.7	241	6 250	500	23.2	10 356	6 670	7 899	14 744	16 500
	302	8 090	850	28.7	11 409	6 670	10 005	15 798	20 010
	356	9 650	1 250	33.6	12 814	6 670	10 707	16 500	21 415
	406	11 050	1 710	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45s 1.8	241	6 910	525	23.2	10 356	6 670	7 899	14 744	16 500
	302	8 950	895	28.7	11 409	6 670	10 005	15 798	20 010
	356	10 670	1 320	33.6	12 814	6 670	10 707	16 500	21 415
	406	12 220	1 800	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45s 1.9	241	7 380	555	23.2	10 356	6 670	7 899	14 744	16 500
	302	9 560	945	28.7	11 409	6 670	10 005	15 798	20 010
	356	11 400	1 385	33.6	12 814	6 670	10 707	16 500	21 415
	406	13 060	1 890	38.3	13 867	6 670	11 409	16 851	22 468

Table C16. Engineering Properties of “BCI® Joists” – BCI 45s Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 45s 2.0	241	8 140	580	23.2	10 356	6 670	7 899	14 744	16 500
	302	10 540	990	28.7	11 409	6 670	10 005	15 798	20 010
	356	12 570	1 455	33.6	12 814	6 670	10 707	16 500	21 415
	406	14 400	1 980	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45s 2.1	241	8 520	610	23.2	10 356	6 670	7 899	14 744	16 500
	302	11 030	1 035	28.7	11 409	6 670	10 005	15 798	20 010
	356	13 150	1 525	33.6	12 814	6 670	10 707	16 500	21 415
	406	15 070	2 075	38.3	13 867	6 670	11 409	16 851	22 468
BCI 45s 2.2	241	9 180	640	23.2	10 356	6 670	7 899	14 744	16 500
	302	11 890	1 085	28.7	11 409	6 670	10 005	15 798	20 010
	356	14 180	1 590	33.6	12 814	6 670	10 707	16 500	21 415
	406	16 240	2 165	38.3	13 867	6 670	11 409	16 851	22 468

Notes to Table C16:

- (1) M_R – factored moment resistance (Ø factor applied); EI_{Shear-Free} – shear-free stiffness; K – shear deflection coefficient; and V_R – factored shear resistance (Ø factor applied); end reaction resistance and intermediate reaction resistance are un-factored (Ø factor not applied).
- (2) Minimum bearing length required
- (3) No web stiffener required
- (4) Web stiffener required

Table C17. Engineering Properties of “BCI® Joists” – BCI 50 Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 50 1.3	241	4 780	420	23.4	10 356	6 670	7 899	14 744	16 500
	302	6 190	720	28.9	11 409	6 670	10 005	15 798	20 010
	356	7 380	1 060	33.9	12 814	6 670	10 707	16 500	21 415
	406	8 460	1 455	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50 1.4	241	5 430	450	23.4	10 356	6 670	7 899	14 744	16 500
	302	7 030	770	28.9	11 409	6 670	10 005	15 798	20 010
	356	8 390	1 135	33.9	12 814	6 670	10 707	16 500	21 415
	406	9 610	1 555	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50 1.5	241	6 080	480	23.4	10 356	6 670	7 899	14 744	16 500
	302	7 880	820	28.9	11 409	6 670	10 005	15 798	20 010
	356	9 400	1 210	33.9	12 814	6 670	10 707	16 500	21 415
	406	10 760	1 655	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50 1.6	241	6 520	510	23.4	10 356	6 670	7 899	14 744	16 500
	302	8 440	870	28.9	11 409	6 670	10 005	15 798	20 010
	356	10 070	1 285	33.9	12 814	6 670	10 707	16 500	21 415
	406	11 530	1 755	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50 1.7	241	7 170	545	23.4	10 356	6 670	7 899	14 744	16 500
	302	9 290	925	28.9	11 409	6 670	10 005	15 798	20 010
	356	11 070	1 360	33.9	12 814	6 670	10 707	16 500	21 415
	406	12 690	1 855	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50 1.8	241	7 930	575	23.4	10 356	6 670	7 899	14 744	16 500
	302	10 270	975	28.9	11 409	6 670	10 005	15 798	20 010
	356	12 250	1 435	33.9	12 814	6 670	10 707	16 500	21 415
	406	14 030	1 955	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50 1.9	241	8 470	605	23.4	10 356	6 670	7 899	14 744	16 500
	302	10 970	1 025	28.9	11 409	6 670	10 005	15 798	20 010
	356	13 090	1 505	33.9	12 814	6 670	10 707	16 500	21 415
	406	14 990	2 055	38.6	13 867	6 670	11 409	16 851	22 468

Table C17. Engineering Properties of “BCI® Joists” – BCI 50 Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 50 2.0	241	9 340	635	23.4	10 356	6 670	7 899	14 744	16 500
	302	12 100	1 075	28.9	11 409	6 670	10 005	15 798	20 010
	356	14 430	1 580	33.9	12 814	6 670	10 707	16 500	21 415
	406	16 530	2 150	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50 2.1	241	9 780	665	23.4	10 356	6 670	7 899	14 744	16 500
	302	12 660	1 130	28.9	11 409	6 670	10 005	15 798	20 010
	356	15 100	1 655	33.9	12 814	6 670	10 707	16 500	21 415
	406	17 300	2 250	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50 2.2	241	10 540	695	23.4	10 356	6 670	7 899	14 744	16 500
	302	13 650	1 180	28.9	11 409	6 670	10 005	15 798	20 010
	356	16 280	1 730	33.9	12 814	6 670	10 707	16 500	21 415
	406	18 650	2 350	38.6	13 867	6 670	11 409	16 851	22 468

Notes to Table C17:

- (1) M_R – factored moment resistance (Ø factor applied); EI_{Shear-Free} – shear-free stiffness; K – shear deflection coefficient; and V_R – factored shear resistance (Ø factor applied); end reaction resistance and intermediate reaction resistance are un-factored (Ø factor not applied).
- (2) Minimum bearing length required
- (3) No web stiffener required
- (4) Web stiffener required

Table C18. Engineering Properties of “BCI® Joists” – BCI 50s Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 50s 1.3	241	4 780	440	23.4	10 356	6 670	7 899	14 744	16 500
	302	6 190	750	28.9	11 409	6 670	10 005	15 798	20 010
	356	7 380	1 105	33.9	12 814	6 670	10 707	16 500	21 415
	406	8 460	1 510	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50s 1.4	241	5 430	470	23.4	10 356	6 670	7 899	14 744	16 500
	302	7 030	800	28.9	11 409	6 670	10 005	15 798	20 010
	356	8 390	1 185	33.9	12 814	6 670	10 707	16 500	21 415
	406	9 610	1 615	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50s 1.5	241	6 080	500	23.4	10 356	6 670	7 899	14 744	16 500
	302	7 880	855	28.9	11 409	6 670	10 005	15 798	20 010
	356	9 400	1 260	33.9	12 814	6 670	10 707	16 500	21 415
	406	10 760	1 720	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50s 1.6	241	6 520	535	23.4	10 356	6 670	7 899	14 744	16 500
	302	8 440	910	28.9	11 409	6 670	10 005	15 798	20 010
	356	10 070	1 340	33.9	12 814	6 670	10 707	16 500	21 415
	406	11 530	1 825	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50s 1.7	241	7 170	565	23.4	10 356	6 670	7 899	14 744	16 500
	302	9 290	965	28.9	11 409	6 670	10 005	15 798	20 010
	356	11 070	1 415	33.9	12 814	6 670	10 707	16 500	21 415
	406	12 690	1 930	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50s 1.8	241	7 930	600	23.4	10 356	6 670	7 899	14 744	16 500
	302	10 270	1 015	28.9	11 409	6 670	10 005	15 798	20 010
	356	12 250	1 495	33.9	12 814	6 670	10 707	16 500	21 415
	406	14 030	2 035	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50s 1.9	241	8 470	630	23.4	10 356	6 670	7 899	14 744	16 500
	302	10 970	1 070	28.9	11 409	6 670	10 005	15 798	20 010
	356	13 090	1 570	33.9	12 814	6 670	10 707	16 500	21 415
	406	14 990	2 140	38.6	13 867	6 670	11 409	16 851	22 468

Table C18. Engineering Properties of “BCI® Joists” – BCI 50s Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 50s 2.0	241	9 340	665	23.4	10 356	6 670	7 899	14 744	16 500
	302	12 100	1 125	28.9	11 409	6 670	10 005	15 798	20 010
	356	14 430	1 650	33.9	12 814	6 670	10 707	16 500	21 415
	406	16 530	2 245	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50s 2.1	241	9 780	695	23.4	10 356	6 670	7 899	14 744	16 500
	302	12 660	1 180	28.9	11 409	6 670	10 005	15 798	20 010
	356	15 100	1 725	33.9	12 814	6 670	10 707	16 500	21 415
	406	17 300	2 350	38.6	13 867	6 670	11 409	16 851	22 468
BCI 50s 2.2	241	10 540	725	23.4	10 356	6 670	7 899	14 744	16 500
	302	13 650	1 230	28.9	11 409	6 670	10 005	15 798	20 010
	356	16 280	1 805	33.9	12 814	6 670	10 707	16 500	21 415
	406	18 650	2 450	38.6	13 867	6 670	11 409	16 851	22 468

Notes to Table C18:

- (1) M_R – factored moment resistance (Ø factor applied); EI_{Shear-Free} – shear-free stiffness; K – shear deflection coefficient; and V_R – factored shear resistance (Ø factor applied); end reaction resistance and intermediate reaction resistance are un-factored (Ø factor not applied).
- (2) Minimum bearing length required
- (3) No web stiffener required
- (4) Web stiffener required

Table C19. Engineering Properties of “BCI® Joists” – BCI 60 Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 60 1.3	241	5 550	480	23.7	11 058	8 250	9 654	16 851	18 606
	302	7 190	820	29.2	11 760	8 250	10 005	17 553	20 010
	356	8 580	1 210	34.2	13 516	8 250	10 707	18 255	22 117
	406	9 820	1 655	38.9	15 271	8 250	11 409	18 606	23 521
	457	11 060	2 175	43.7	16 675	n/a	12 287	n/a	24 574
	508	12 280	2 780	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60 1.4	241	6 310	515	23.7	11 058	8 250	9 654	16 851	18 606
	302	8 170	880	29.2	11 760	8 250	10 005	17 553	20 010
	356	9 750	1 295	34.2	13 516	8 250	10 707	18 255	22 117
	406	11 160	1 770	38.9	15 271	8 250	11 409	18 606	23 521
	457	12 570	2 325	43.7	16 675	n/a	12 287	n/a	24 574
	508	13 950	2 970	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60 1.5	241	7 060	555	23.7	11 058	8 250	9 654	16 851	18 606
	302	9 150	940	29.2	11 760	8 250	10 005	17 553	20 010
	356	10 920	1 380	34.2	13 516	8 250	10 707	18 255	22 117
	406	12 510	1 885	38.9	15 271	8 250	11 409	18 606	23 521
	457	14 080	2 475	43.7	16 675	n/a	12 287	n/a	24 574
	508	15 630	3 155	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60 1.6	241	7 570	590	23.7	11 058	8 250	9 654	16 851	18 606
	302	9 810	1 000	29.2	11 760	8 250	10 005	17 553	20 010
	356	11 700	1 470	34.2	13 516	8 250	10 707	18 255	22 117
	406	13 400	2 000	38.9	15 271	8 250	11 409	18 606	23 521
	457	15 080	2 625	43.7	16 675	n/a	12 287	n/a	24 574
	508	16 750	3 345	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60 1.7	241	8 330	625	23.7	11 058	8 250	9 654	16 851	18 606
	302	10 790	1 060	29.2	11 760	8 250	10 005	17 553	20 010
	356	12 870	1 555	34.2	13 516	8 250	10 707	18 255	22 117
	406	14 740	2 115	38.9	15 271	8 250	11 409	18 606	23 521
	457	16 590	2 775	43.7	16 675	n/a	12 287	n/a	24 574
	508	18 420	3 530	48.5	17 202	n/a	13 340	n/a	25 627

Table C19. Engineering Properties of “BCI® Joists” – BCI 60 Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 60 1.8	241	9 210	660	23.7	11 058	8 250	9 654	16 851	18 606
	302	11 930	1 120	29.2	11 760	8 250	10 005	17 553	20 010
	356	14 230	1 640	34.2	13 516	8 250	10 707	18 255	22 117
	406	16 300	2 230	38.9	15 271	8 250	11 409	18 606	23 521
	457	18 350	2 925	43.7	16 675	n/a	12 287	n/a	24 574
	508	20 380	3 720	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60 1.9	241	9 840	695	23.7	11 058	8 250	9 654	16 851	18 606
	302	12 750	1 175	29.2	11 760	8 250	10 005	17 553	20 010
	356	15 210	1 725	34.2	13 516	8 250	10 707	18 255	22 117
	406	17 420	2 345	38.9	15 271	8 250	11 409	18 606	23 521
	457	19 610	3 070	43.7	16 675	n/a	12 287	n/a	24 574
	508	21 770	3 905	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60 2.0	241	10 850	730	23.7	11 058	8 250	9 654	16 851	18 606
	302	14 060	1 235	29.2	11 760	8 250	10 005	17 553	20 010
	356	16 770	1 810	34.2	13 516	8 250	10 707	18 255	22 117
	406	19 210	2 460	38.9	15 271	8 250	11 409	18 606	23 521
	457	21 620	3 220	43.7	16 675	n/a	12 287	n/a	24 574
	508	24 000	4 095	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60 2.1	241	11 360	765	23.7	11 058	8 250	9 654	16 851	18 606
	302	14 710	1 295	29.2	11 760	8 250	10 005	17 553	20 010
	356	17 550	1 900	34.2	13 516	8 250	10 707	18 255	22 117
	406	20 100	2 580	38.9	15 271	8 250	11 409	18 606	23 521
	457	22 620	3 370	43.7	16 675	n/a	12 287	n/a	24 574
	508	25 120	4 280	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60 2.2	241	12 240	800	23.7	11 058	8 250	9 654	16 851	18 606
	302	15 850	1 355	29.2	11 760	8 250	10 005	17 553	20 010
	356	18 910	1 985	34.2	13 516	8 250	10 707	18 255	22 117
	406	21 660	2 695	38.9	15 271	8 250	11 409	18 606	23 521
	457	24 390	3 520	43.7	16 675	n/a	12 287	n/a	24 574
	508	27 080	4 470	48.5	17 202	n/a	13 340	n/a	25 627

Notes to Table C19:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required
 - (3) No web stiffener required.
 - (4) Web stiffener required
 - (5) “n/a” means not applicable. Web stiffener is required for joist deeper than 406 mm (16 in.).
-

Table C20. Engineering Properties of “BCI® Joists” – BCI 60s Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 60s 1.3	241	5 550	505	23.7	11 058	8 250	9 654	16 851	18 606
	302	7 190	855	29.2	11 760	8 250	10 005	17 553	20 010
	356	8 580	1 260	34.2	13 516	8 250	10 707	18 255	22 117
	406	9 820	1 725	38.9	15 271	8 250	11 409	18 606	23 521
	457	11 060	2 265	43.7	16 675	n/a	12 287	n/a	24 574
	508	12 280	2 890	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60s 1.4	241	6 310	540	23.7	11 058	8 250	9 654	16 851	18 606
	302	8 170	920	29.2	11 760	8 250	10 005	17 553	20 010
	356	9 750	1 350	34.2	13 516	8 250	10 707	18 255	22 117
	406	11 160	1 845	38.9	15 271	8 250	11 409	18 606	23 521
	457	12 570	2 420	43.7	16 675	n/a	12 287	n/a	24 574
	508	13 950	3 085	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60s 1.5	241	7 060	575	23.7	11 058	8 250	9 654	16 851	18 606
	302	9 150	980	29.2	11 760	8 250	10 005	17 553	20 010
	356	10 920	1 440	34.2	13 516	8 250	10 707	18 255	22 117
	406	12 510	1 965	38.9	15 271	8 250	11 409	18 606	23 521
	457	14 080	2 575	43.7	16 675	n/a	12 287	n/a	24 574
	508	15 630	3 285	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60s 1.6	241	7 570	615	23.7	11 058	8 250	9 654	16 851	18 606
	302	9 810	1 040	29.2	11 760	8 250	10 005	17 553	20 010
	356	11 700	1 530	34.2	13 516	8 250	10 707	18 255	22 117
	406	13 400	2 085	38.9	15 271	8 250	11 409	18 606	23 521
	457	15 080	2 735	43.7	16 675	n/a	12 287	n/a	24 574
	508	16 750	3 480	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60s 1.7	241	8 330	650	23.7	11 058	8 250	9 654	16 851	18 606
	302	10 790	1 105	29.2	11 760	8 250	10 005	17 553	20 010
	356	12 870	1 620	34.2	13 516	8 250	10 707	18 255	22 117
	406	14 740	2 205	38.9	15 271	8 250	11 409	18 606	23 521
	457	16 590	2 890	43.7	16 675	n/a	12 287	n/a	24 574
	508	18 420	3 675	48.5	17 202	n/a	13 340	n/a	25 627

Table C20. Engineering Properties of “BCI® Joists” – BCI 60s Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 60s 1.8	241	9 210	690	23.7	11 058	8 250	9 654	16 851	18 606
	302	11 930	1 165	29.2	11 760	8 250	10 005	17 553	20 010
	356	14 230	1 710	34.2	13 516	8 250	10 707	18 255	22 117
	406	16 300	2 325	38.9	15 271	8 250	11 409	18 606	23 521
	457	18 350	3 045	43.7	16 675	n/a	12 287	n/a	24 574
	508	20 380	3 870	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60s 1.9	241	9 840	725	23.7	11 058	8 250	9 654	16 851	18 606
	302	12 750	1 230	29.2	11 760	8 250	10 005	17 553	20 010
	356	15 210	1 800	34.2	13 516	8 250	10 707	18 255	22 117
	406	17 420	2 445	38.9	15 271	8 250	11 409	18 606	23 521
	457	19 610	3 200	43.7	16 675	n/a	12 287	n/a	24 574
	508	21 770	4 070	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60s 2.0	241	10 850	760	23.7	11 058	8 250	9 654	16 851	18 606
	302	14 060	1 290	29.2	11 760	8 250	10 005	17 553	20 010
	356	16 770	1 890	34.2	13 516	8 250	10 707	18 255	22 117
	406	19 210	2 565	38.9	15 271	8 250	11 409	18 606	23 521
	457	21 620	3 355	43.7	16 675	n/a	12 287	n/a	24 574
	508	24 000	4 265	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60s 2.1	241	11 360	800	23.7	11 058	8 250	9 654	16 851	18 606
	302	14 710	1 350	29.2	11 760	8 250	10 005	17 553	20 010
	356	17 550	1 980	34.2	13 516	8 250	10 707	18 255	22 117
	406	20 100	2 690	38.9	15 271	8 250	11 409	18 606	23 521
	457	22 620	3 515	43.7	16 675	n/a	12 287	n/a	24 574
	508	25 120	4 460	48.5	17 202	n/a	13 340	n/a	25 627
BCI 60s 2.2	241	12 240	835	23.7	11 058	8 250	9 654	16 851	18 606
	302	15 850	1 415	29.2	11 760	8 250	10 005	17 553	20 010
	356	18 910	2 070	34.2	13 516	8 250	10 707	18 255	22 117
	406	21 660	2 810	38.9	15 271	8 250	11 409	18 606	23 521
	457	24 390	3 670	43.7	16 675	n/a	12 287	n/a	24 574
	508	27 080	4 655	48.5	17 202	n/a	13 340	n/a	25 627

Notes to Table C20:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required
 - (3) No web stiffener required.
 - (4) Web stiffener required
 - (5) “n/a” means not applicable. Web stiffener is required for joist deeper than 406 mm (16 in.).
-

Table C21. Engineering Properties of “BCI® Joists” – BCI 65 Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 65 1.3	241	6 140	530	23.8	11 058	8 250	9 654	16 851	18 606
	302	7 960	900	29.3	11 760	8 250	10 005	17 553	20 010
	356	9 500	1 325	34.4	13 516	8 250	10 707	18 255	22 117
	406	10 880	1 810	39.1	15 271	8 250	11 409	18 606	23 521
	457	12 250	2 380	43.9	16 675	n/a	12 287	n/a	24 574
	508	13 600	3 035	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65 1.4	241	6 980	570	23.8	11 058	8 250	9 654	16 851	18 606
	302	9 050	965	29.3	11 760	8 250	10 005	17 553	20 010
	356	10 790	1 420	34.4	13 516	8 250	10 707	18 255	22 117
	406	12 370	1 940	39.1	15 271	8 250	11 409	18 606	23 521
	457	13 920	2 545	43.9	16 675	n/a	12 287	n/a	24 574
	508	15 460	3 240	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65 1.5	241	7 820	610	23.8	11 058	8 250	9 654	16 851	18 606
	302	10 130	1 030	29.3	11 760	8 250	10 005	17 553	20 010
	356	12 090	1 515	34.4	13 516	8 250	10 707	18 255	22 117
	406	13 850	2 065	39.1	15 271	8 250	11 409	18 606	23 521
	457	15 590	2 710	43.9	16 675	n/a	12 287	n/a	24 574
	508	17 310	3 450	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65 1.6	241	8 380	645	23.8	11 058	8 250	9 654	16 851	18 606
	302	10 860	1 100	29.3	11 760	8 250	10 005	17 553	20 010
	356	12 950	1 610	34.4	13 516	8 250	10 707	18 255	22 117
	406	14 840	2 190	39.1	15 271	8 250	11 409	18 606	23 521
	457	16 700	2 875	43.9	16 675	n/a	12 287	n/a	24 574
	508	18 550	3 655	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65 1.7	241	9 220	685	23.8	11 058	8 250	9 654	16 851	18 606
	302	11 950	1 165	29.3	11 760	8 250	10 005	17 553	20 010
	356	14 250	1 705	34.4	13 516	8 250	10 707	18 255	22 117
	406	16 320	2 320	39.1	15 271	8 250	11 409	18 606	23 521
	457	18 380	3 040	43.9	16 675	n/a	12 287	n/a	24 574
	508	20 400	3 860	48.7	17 202	n/a	13 340	n/a	25 627

Table C21. Engineering Properties of “BCI® Joists” – BCI 65 Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 65 1.8	241	10 200	725	23.8	11 058	8 250	9 654	16 851	18 606
	302	13 210	1 230	29.3	11 760	8 250	10 005	17 553	20 010
	356	15 760	1 800	34.4	13 516	8 250	10 707	18 255	22 117
	406	18 060	2 445	39.1	15 271	8 250	11 409	18 606	23 521
	457	20 320	3 200	43.9	16 675	n/a	12 287	n/a	24 574
	508	22 570	4 070	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65 1.9	241	10 900	765	23.8	11 058	8 250	9 654	16 851	18 606
	302	14 120	1 295	29.3	11 760	8 250	10 005	17 553	20 010
	356	16 840	1 895	34.4	13 516	8 250	10 707	18 255	22 117
	406	19 290	2 575	39.1	15 271	8 250	11 409	18 606	23 521
	457	21 720	3 365	43.9	16 675	n/a	12 287	n/a	24 574
	508	24 110	4 275	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65 2.0	241	12 010	805	23.8	11 058	8 250	9 654	16 851	18 606
	302	15 570	1 360	29.3	11 760	8 250	10 005	17 553	20 010
	356	18 570	1 990	34.4	13 516	8 250	10 707	18 255	22 117
	406	21 270	2 700	39.1	15 271	8 250	11 409	18 606	23 521
	457	23 940	3 530	43.9	16 675	n/a	12 287	n/a	24 574
	508	26 590	4 485	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65 2.1	241	12 570	840	23.8	11 058	8 250	9 654	16 851	18 606
	302	16 290	1 425	29.3	11 760	8 250	10 005	17 553	20 010
	356	19 430	2 085	34.4	13 516	8 250	10 707	18 255	22 117
	406	22 260	2 830	39.1	15 271	8 250	11 409	18 606	23 521
	457	25 060	3 695	43.9	16 675	n/a	12 287	n/a	24 574
	508	27 820	4 690	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65 2.2	241	13 550	880	23.8	11 058	8 250	9 654	16 851	18 606
	302	17 560	1 490	29.3	11 760	8 250	10 005	17 553	20 010
	356	20 940	2 180	34.4	13 516	8 250	10 707	18 255	22 117
	406	23 990	2 955	39.1	15 271	8 250	11 409	18 606	23 521
	457	27 010	3 860	43.9	16 675	n/a	12 287	n/a	24 574
	508	29 990	4 900	48.7	17 202	n/a	13 340	n/a	25 627

Notes to Table C21:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required
 - (3) No web stiffener required.
 - (4) Web stiffener required
 - (5) “n/a” means not applicable. Web stiffener is required for joist deeper than 406 mm (16 in.).
-

Table C22. Engineering Properties of “BCI® Joists” – BCI 65s Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 65s 1.3	241	6 140	555	23.8	11 058	8 250	9 654	16 851	18 606
	302	7 960	940	29.3	11 760	8 250	10 005	17 553	20 010
	356	9 500	1 385	34.4	13 516	8 250	10 707	18 255	22 117
	406	10 880	1 885	39.1	15 271	8 250	11 409	18 606	23 521
	457	12 250	2 475	43.9	16 675	n/a	12 287	n/a	24 574
	508	13 600	3 155	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65s 1.4	241	6 980	595	23.8	11 058	8 250	9 654	16 851	18 606
	302	9 050	1 010	29.3	11 760	8 250	10 005	17 553	20 010
	356	10 790	1 480	34.4	13 516	8 250	10 707	18 255	22 117
	406	12 370	2 020	39.1	15 271	8 250	11 409	18 606	23 521
	457	13 920	2 650	43.9	16 675	n/a	12 287	n/a	24 574
	508	15 460	3 375	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65s 1.5	241	7 820	635	23.8	11 058	8 250	9 654	16 851	18 606
	302	10 130	1 075	29.3	11 760	8 250	10 005	17 553	20 010
	356	12 090	1 580	34.4	13 516	8 250	10 707	18 255	22 117
	406	13 850	2 150	39.1	15 271	8 250	11 409	18 606	23 521
	457	15 590	2 820	43.9	16 675	n/a	12 287	n/a	24 574
	508	17 310	3 590	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65s 1.6	241	8 380	675	23.8	11 058	8 250	9 654	16 851	18 606
	302	10 860	1 145	29.3	11 760	8 250	10 005	17 553	20 010
	356	12 950	1 680	34.4	13 516	8 250	10 707	18 255	22 117
	406	14 840	2 285	39.1	15 271	8 250	11 409	18 606	23 521
	457	16 700	2 995	43.9	16 675	n/a	12 287	n/a	24 574
	508	18 550	3 805	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65s 1.7	241	9 220	715	23.8	11 058	8 250	9 654	16 851	18 606
	302	11 950	1 215	29.3	11 760	8 250	10 005	17 553	20 010
	356	14 250	1 780	34.4	13 516	8 250	10 707	18 255	22 117
	406	16 320	2 420	39.1	15 271	8 250	11 409	18 606	23 521
	457	18 380	3 165	43.9	16 675	n/a	12 287	n/a	24 574
	508	20 400	4 020	48.7	17 202	n/a	13 340	n/a	25 627

Table C22. Engineering Properties of “BCI® Joists” – BCI 65s Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 65s 1.8	241	10 200	755	23.8	11 058	8 250	9 654	16 851	18 606
	302	13 210	1 280	29.3	11 760	8 250	10 005	17 553	20 010
	356	15 760	1 880	34.4	13 516	8 250	10 707	18 255	22 117
	406	18 060	2 550	39.1	15 271	8 250	11 409	18 606	23 521
	457	20 320	3 335	43.9	16 675	n/a	12 287	n/a	24 574
	508	22 570	4 240	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65s 1.9	241	10 900	800	23.8	11 058	8 250	9 654	16 851	18 606
	302	14 120	1 350	29.3	11 760	8 250	10 005	17 553	20 010
	356	16 840	1 975	34.4	13 516	8 250	10 707	18 255	22 117
	406	19 290	2 685	39.1	15 271	8 250	11 409	18 606	23 521
	457	21 720	3 510	43.9	16 675	n/a	12 287	n/a	24 574
	508	24 110	4 455	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65s 2.0	241	12 010	840	23.8	11 058	8 250	9 654	16 851	18 606
	302	15 570	1 420	29.3	11 760	8 250	10 005	17 553	20 010
	356	18 570	2 075	34.4	13 516	8 250	10 707	18 255	22 117
	406	21 270	2 820	39.1	15 271	8 250	11 409	18 606	23 521
	457	23 940	3 680	43.9	16 675	n/a	12 287	n/a	24 574
	508	26 590	4 670	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65s 2.1	241	12 570	880	23.8	11 058	8 250	9 654	16 851	18 606
	302	16 290	1 485	29.3	11 760	8 250	10 005	17 553	20 010
	356	19 430	2 175	34.4	13 516	8 250	10 707	18 255	22 117
	406	22 260	2 950	39.1	15 271	8 250	11 409	18 606	23 521
	457	25 060	3 855	43.9	16 675	n/a	12 287	n/a	24 574
	508	27 820	4 890	48.7	17 202	n/a	13 340	n/a	25 627
BCI 65s 2.2	241	13 550	920	23.8	11 058	8 250	9 654	16 851	18 606
	302	17 560	1 555	29.3	11 760	8 250	10 005	17 553	20 010
	356	20 940	2 275	34.4	13 516	8 250	10 707	18 255	22 117
	406	23 990	3 085	39.1	15 271	8 250	11 409	18 606	23 521
	457	27 010	4 025	43.9	16 675	n/a	12 287	n/a	24 574
	508	29 990	5 105	48.7	17 202	n/a	13 340	n/a	25 627

Notes to Table C22:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required
 - (3) No web stiffener required
 - (4) Web stiffener required
 - (5) “n/a” means not applicable. Web stiffener is required for joist deeper than 406 mm (16 in.).
-

Table C23. Engineering Properties of “BCI® Joists” – BCI 90 Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 90 1.3	241	8 500	720	24.2	11 760	8 250	10 005	21 063	22 117
	302	11 010	1 220	29.8	15 095	8 776	12 989	21 239	25 978
	356	13 140	1 785	34.9	16 500	8 776	13 691	21 415	27 031
	406	15 060	2 425	39.7	17 904	9 128	15 095	21 766	28 085
	457	16 950	3 175	44.5	19 308	n/a	16 149	n/a	29 138
	508	18 820	4 035	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90 1.4	241	9 660	775	24.2	11 760	8 250	10 005	21 063	22 117
	302	12 520	1 310	29.8	15 095	8 776	12 989	21 239	25 978
	356	14 930	1 915	34.9	16 500	8 776	13 691	21 415	27 031
	406	17 110	2 600	39.7	17 904	9 128	15 095	21 766	28 085
	457	19 260	3 405	44.5	19 308	n/a	16 149	n/a	29 138
	508	21 390	4 320	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90 1.5	241	10 820	825	24.2	11 760	8 250	10 005	21 063	22 117
	302	14 020	1 400	29.8	15 095	8 776	12 989	21 239	25 978
	356	16 720	2 045	34.9	16 500	8 776	13 691	21 415	27 031
	406	19 160	2 775	39.7	17 904	9 128	15 095	21 766	28 085
	457	21 570	3 630	44.5	19 308	n/a	16 149	n/a	29 138
	508	23 960	4 605	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90 1.6	241	11 590	880	24.2	11 760	8 250	10 005	21 063	22 117
	302	15 020	1 490	29.8	15 095	8 776	12 989	21 239	25 978
	356	17 920	2 175	34.9	16 500	8 776	13 691	21 415	27 031
	406	20 530	2 950	39.7	17 904	9 128	15 095	21 766	28 085
	457	23 110	3 855	44.5	19 308	n/a	16 149	n/a	29 138
	508	25 670	4 890	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90 1.7	241	12 750	935	24.2	11 760	8 250	10 005	21 063	22 117
	302	16 520	1 580	29.8	15 095	8 776	12 989	21 239	25 978
	356	19 710	2 305	34.9	16 500	8 776	13 691	21 415	27 031
	406	22 590	3 125	39.7	17 904	9 128	15 095	21 766	28 085
	457	25 430	4 080	44.5	19 308	n/a	16 149	n/a	29 138
	508	28 230	5 175	49.3	20 010	n/a	17 553	n/a	30 191

Table C23. Engineering Properties of “BCI® Joists” – BCI 90 Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 90 1.8	241	14 100	985	24.2	11 760	8 250	10 005	21 063	22 117
	302	18 280	1 670	29.8	15 095	8 776	12 989	21 239	25 978
	356	21 800	2 435	34.9	16 500	8 776	13 691	21 415	27 031
	406	24 980	3 300	39.7	17 904	9 128	15 095	21 766	28 085
	457	28 120	4 310	44.5	19 308	n/a	16 149	n/a	29 138
	508	31 230	5 460	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90 1.9	241	15 070	1 040	24.2	11 760	8 250	10 005	21 063	22 117
	302	19 530	1 755	29.8	15 095	8 776	12 989	21 239	25 978
	356	23 300	2 565	34.9	16 500	8 776	13 691	21 415	27 031
	406	26 690	3 475	39.7	17 904	9 128	15 095	21 766	28 085
	457	30 050	4 535	44.5	19 308	n/a	16 149	n/a	29 138
	508	33 370	5 740	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90 2.0	241	16 610	1 095	24.2	11 760	8 250	10 005	21 063	22 117
	302	21 530	1 850	29.8	15 095	8 776	12 989	21 239	25 978
	356	25 690	2 700	34.9	16 500	8 776	13 691	21 415	27 031
	406	29 430	3 650	39.7	17 904	9 128	15 095	21 766	28 085
	457	33 130	4 760	44.5	19 308	n/a	16 149	n/a	29 138
	508	36 790	6 025	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90 2.1	241	17 390	1 150	24.2	11 760	8 250	10 005	21 063	22 117
	302	22 530	1 935	29.8	15 095	8 776	12 989	21 239	25 978
	356	26 880	2 825	34.9	16 500	8 776	13 691	21 415	27 031
	406	30 800	3 825	39.7	17 904	9 128	15 095	21 766	28 085
	457	34 670	4 985	44.5	19 308	n/a	16 149	n/a	29 138
	508	38 500	6 310	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90 2.2	241	18 740	1 200	24.2	11 760	8 250	10 005	21 063	22 117
	302	24 290	2 025	29.8	15 095	8 776	12 989	21 239	25 978
	356	28 970	2 955	34.9	16 500	8 776	13 691	21 415	27 031
	406	33 200	4 000	39.7	17 904	9 128	15 095	21 766	28 085
	457	37 370	5 215	44.5	19 308	n/a	16 149	n/a	29 138
	508	41 500	6 595	49.3	20 010	n/a	17 553	n/a	30 191

Notes to Table C23:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
 - (2) Minimum bearing length required
 - (3) No web stiffener required
 - (4) Web stiffener required
 - (5) “n/a” means not applicable. Web stiffener is required for joist deeper than 406 mm (16 in.).
-

Table C24. Engineering Properties of “BCI® Joists” – BCI 90s Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 90s 1.3	241	8 500	750	24.2	11 760	8 250	10 005	21 063	22 117
	302	11 010	1 270	29.8	15 095	8 776	12 989	21 239	25 978
	356	13 140	1 865	34.9	16 500	8 776	13 691	21 415	27 031
	406	15 060	2 530	39.7	17 904	9 128	15 095	21 766	28 085
	457	16 950	3 310	44.5	19 308	n/a	16 149	n/a	29 138
	508	18 820	4 205	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90s 1.4	241	9 660	805	24.2	11 760	8 250	10 005	21 063	22 117
	302	12 520	1 365	29.8	15 095	8 776	12 989	21 239	25 978
	356	14 930	2 000	34.9	16 500	8 776	13 691	21 415	27 031
	406	17 110	2 715	39.7	17 904	9 128	15 095	21 766	28 085
	457	19 260	3 545	44.5	19 308	n/a	16 149	n/a	29 138
	508	21 390	4 500	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90s 1.5	241	10 820	865	24.2	11 760	8 250	10 005	21 063	22 117
	302	14 020	1 460	29.8	15 095	8 776	12 989	21 239	25 978
	356	16 720	2 135	34.9	16 500	8 776	13 691	21 415	27 031
	406	19 160	2 895	39.7	17 904	9 128	15 095	21 766	28 085
	457	21 570	3 785	44.5	19 308	n/a	16 149	n/a	29 138
	508	23 960	4 800	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90s 1.6	241	11 590	920	24.2	11 760	8 250	10 005	21 063	22 117
	302	15 020	1 555	29.8	15 095	8 776	12 989	21 239	25 978
	356	17 920	2 270	34.9	16 500	8 776	13 691	21 415	27 031
	406	20 530	3 080	39.7	17 904	9 128	15 095	21 766	28 085
	457	23 110	4 020	44.5	19 308	n/a	16 149	n/a	29 138
	508	25 670	5 095	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90s 1.7	241	12 750	975	24.2	11 760	8 250	10 005	21 063	22 117
	302	16 520	1 645	29.8	15 095	8 776	12 989	21 239	25 978
	356	19 710	2 405	34.9	16 500	8 776	13 691	21 415	27 031
	406	22 590	3 260	39.7	17 904	9 128	15 095	21 766	28 085
	457	25 430	4 255	44.5	19 308	n/a	16 149	n/a	29 138
	508	28 230	5 395	49.3	20 010	n/a	17 553	n/a	30 191

Table C24. Engineering Properties of “BCI® Joists” – BCI 90s Series⁽¹⁾ (cont.)

I-Joist Series	Joist Depth (mm)	M _R (N·m)	EI _{Shear-Free} (× 10 ⁶ kN·mm ²)	K (× 10 ⁶ N)	V _R (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 90s 1.8	241	14 100	1 030	24.2	11 760	8 250	10 005	21 063	22 117
	302	18 280	1 740	29.8	15 095	8 776	12 989	21 239	25 978
	356	21 800	2 545	34.9	16 500	8 776	13 691	21 415	27 031
	406	24 980	3 445	39.7	17 904	9 128	15 095	21 766	28 085
	457	28 120	4 495	44.5	19 308	n/a	16 149	n/a	29 138
	508	31 230	5 690	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90s 1.9	241	15 070	1 085	24.2	11 760	8 250	10 005	21 063	22 117
	302	19 530	1 835	29.8	15 095	8 776	12 989	21 239	25 978
	356	23 300	2 680	34.9	16 500	8 776	13 691	21 415	27 031
	406	26 690	3 625	39.7	17 904	9 128	15 095	21 766	28 085
	457	30 050	4 730	44.5	19 308	n/a	16 149	n/a	29 138
	508	33 370	5 990	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90s 2.0	241	16 610	1 145	24.2	11 760	8 250	10 005	21 063	22 117
	302	21 530	1 930	29.8	15 095	8 776	12 989	21 239	25 978
	356	25 690	2 815	34.9	16 500	8 776	13 691	21 415	27 031
	406	29 430	3 810	39.7	17 904	9 128	15 095	21 766	28 085
	457	33 130	4 965	44.5	19 308	n/a	16 149	n/a	29 138
	508	36 790	6 285	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90s 2.1	241	17 390	1 200	24.2	11 760	8 250	10 005	21 063	22 117
	302	22 530	2 025	29.8	15 095	8 776	12 989	21 239	25 978
	356	26 880	2 950	34.9	16 500	8 776	13 691	21 415	27 031
	406	30 800	3 995	39.7	17 904	9 128	15 095	21 766	28 085
	457	34 670	5 200	44.5	19 308	n/a	16 149	n/a	29 138
	508	38 500	6 580	49.3	20 010	n/a	17 553	n/a	30 191
BCI 90s 2.2	241	18 740	1 255	24.2	11 760	8 250	10 005	21 063	22 117
	302	24 290	2 115	29.8	15 095	8 776	12 989	21 239	25 978
	356	28 970	3 085	34.9	16 500	8 776	13 691	21 415	27 031
	406	33 200	4 175	39.7	17 904	9 128	15 095	21 766	28 085
	457	37 370	5 440	44.5	19 308	n/a	16 149	n/a	29 138
	508	41 500	6 880	49.3	20 010	n/a	17 553	n/a	30 191

Notes to Table C24:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
- (2) Minimum bearing length required
- (3) No web stiffener required
- (4) Web stiffener required
- (5) “n/a” means not applicable. Web stiffener is required for joist deeper than 406 mm (16 in.).

Table C25. Engineering Properties of “BCI® Joists” – BCI 90e Series⁽¹⁾

I-Joist Series	Joist Depth (mm)	M_r (N·m)	$EI_{\text{Shear-Free}}$ ($\times 10^6$ kN·mm ²)	K ($\times 10^6$ N)	V_r (N)	End Reaction Resistance (N)		Intermediate Reaction Resistance (N)	
						38 mm ⁽²⁾		89 mm ⁽²⁾	
						No ⁽³⁾	Yes ⁽⁴⁾	No ⁽³⁾	Yes ⁽⁴⁾
BCI 90e 2.0	241	16 400	1 055	28.9	13 812	8 540	10 010	19 480	22 110
	302	21 310	1 795	35.7	15 502	8 540	13 170	20 060	26 290
	356	25 650	2 630	41.8	17 026	8 540	13 700	20 550	27 050
	406	29 680	3 550	47.4	18 452	8 540	15 080	21 040	28 070
	457	33 780	4 645	53.2	19 884	n/a	15 750	n/a	29 140
	508	37 880	5 900	59.1	21 309	n/a	17 570	n/a	30 200
	559	41 980	7 320	64.9	22 742	n/a	20 600	n/a	36 740
	610	46 090	8 910	70.7	24 167	n/a	21 840	n/a	37 540

Notes to Table C25:

- (1) M_r – factored moment resistance (ϕ factor applied); $EI_{\text{Shear-Free}}$ – shear-free stiffness; K – shear deflection coefficient; and V_r – factored shear resistance (ϕ factor applied); end reaction resistance and intermediate reaction resistance are un-factored (ϕ factor not applied).
- (2) Minimum bearing length required
- (3) No web stiffener required
- (4) Web stiffener required
- (5) “n/a” means not applicable. Web stiffener is required for joist deeper than 406 mm (16 in.).