Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

Report No: 2302-42

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Performance Characteristics of Owens Corning® (OC™) Lumber - USA

Trade Secret Report Holder:

Owens Corning® (OC™)

Phone: 1-800-GET-PINK Website: www.owenscorning.com Email: oclumber@owenscorning.com

CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

Section: 06 05 23 - Wood, Plastic, and Composite Fastenings

Section: 06 10 00 - Rough Carpentry

Section: 06 15 00 - Wood Decking

Section: 06 17 00 - Shop-Fabricated Structural Wood

1 Innovative Product Evaluated[1]

1.1 Owens Corning Lumber (OC Lumber)

2 Product Description and Materials

2.1 The innovative product evaluated in this report is shown in **Figure 1**. Available colors are shown in **Figure 2**, and OC Lumber is described in **Table 1**.

Figure 1. OC Lumber

Figure 2. OC Lumber – Available Colors

Table 1. Description of OC Lumber Structural Composite Lumber

OC Lumber	Description
Product Type	Continuous Glass fiber reinforced High Density Polyethylene (HDPE) with less than twenty-five percent (25%) calcium carbonate in base HDPE resin. ≥ 5% of overall total weight is fibrous glass < 2.5% by weight of organic surface binder
Application	Reinforced and semi-reinforced extruded products for use in non-structural and structural applications.
Joists (OC Lumber)	Reinforced polymeric lumber for joist applications (edgewise orientation) available in the following sizes: Nominal: 2x6, 2x8, 2x10, and 2x12 Actual: 1.5" x 5.5", 1.5" x 7.5", 1.5" x 9.25" and 1.5" x 11.25"
Decking[1] (OC Lumber WEARDECK™ Decking	Reinforced polymeric lumber for decking applications (flatwise orientation) available in the following sizes: Nominal: 5/4 x 6, 5/4 x 8, and Scant 2x6 Actual: 1.02" x 5.5", 1.02" x 7.5", and 1.35" x 5.5"
Posts[2] (OC Lumber Structural Composite Posts)	Chopped fiberglass reinforced PVC extrusion with an acrylic surface coating: ≥ 15% of overall total weight is fibrous glass < 2.5% by weight of organic surface binder
SI: 1 in = 25.4 mm 1. See Report Number 2311-03 for material properties. 2. See Report Number 2307-07 for material properties	

2.2 As needed, review material properties for design in **Section 6** and the regulatory evaluation in **Section 8**.

3 Definitions[2]

3.1 New Materials[3] are defined as building materials, equipment, appliances, systems, or methods of construction, not provided for by prescriptive and/or legislatively adopted regulations, known as alternative materials.[4] The design strength and permissible stresses shall be established by tests[5] and/or engineering analysis.[6]

3.2 Duly authenticated reports[7] and research reports[8] are test reports and related engineering evaluations that are written by an approved agency[9] and/or an approved source.[10]

3.2.1 These reports utilize intellectual property and/or trade secrets to create public domain material properties for commercial end-use. This report protects confidential Intellectual Property and trade secretes under the regulation, 18.US.Code.90, also known as Defend Trade Secrets Act of 2016 (DTSA).[11]

3.3 An approved agency is *"approved"* when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is accredited and listed in the ANAB directory.

3.4 An approved source is *"approved"* when a professional engineer (i.e., Registered Design Professional, hereinafter RDP) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.[12]

3.5 Testing and/or inspections conducted for this duly authenticated report were performed by an ISO/IEC 17025 accredited testing laboratory, an ISO/IEC 17020 accredited inspection body, and/or a licensed RDP.

3.5.1 The Center for Building Innovation (CBI) is ANAB[13] ISO/IEC 17025 and ISO/IEC 17020 accredited.

3.6 The regulatory authority shall enforce[14] the specific provisions of each legislatively adopted regulation. If there is a non-conformance, the specific regulatory section and language of the non-conformance shall be provided in writing[15] stating the nonconformance and the path to its cure.

3.7 The regulatory authority shall accept duly authenticated reports from an approved agency and/or an approved source with respect to the quality and manner of use of new materials or assemblies as provided for in regulations regarding the use of alternative materials, designs, or methods of construction.[16]

3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory. Therefore, recognition of certificates and validation statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope shall be approved.[17] Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent,[18] and can be used in any country that is an MLA signatory found at this link: https://iaf.nu/en/recognised-abs/

3.9 Approval equity is a fundamental commercial and legal principle.[19]

4 Applicable Standards for the Listing; Regulations for the Regulatory Evaluation[20]

4.1 *Local, State, and Federal*

4.1.1 Approved in all local jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured local jurisdictions: Austin, Baltimore, Broward County, Chicago, Clark County, Dade County, Dallas, Detroit, Denver, DuPage County, Fort Worth, Houston, Kansas City, King County, Knoxville, Las Vegas, Los Angeles City, Los Angeles County, Miami, Nashville, New York City, Omaha, Philadelphia, Phoenix, Portland, San Antonio, San Diego, San Jose, San Francisco, Seattle, Sioux Falls, South Holland, Texas Department of Insurance, and Wichita.[21]

4.1.2 Approved in all state jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured states: California, Florida, New Jersey, Oregon, New York, Texas, Washington, and Wisconsin.[22]

4.1.3 Approved by the Code of Federal Regulations Manufactured Home Construction: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14[23] and Part 3280[24] pursuant to the use of ISO/IEC 17065 duly authenticated reports.

4.1.4 Approved means complying with the requirements of local, state, or federal legislation.

4.2 *Standards*

4.2.1 *ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction—with 2024 NDS Supplement*

4.2.2 *ASTM D198: Standard Test Methods of Static Tests of Lumber in Structural Sizes*

4.2.3 *ASTM D1037: Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials*

4.2.4 *ASTM D1761: Standard Test Methods for Mechanical Fasteners in Wood and Wood-Based Materials*

4.2.5 *ASTM D5456: Standard Specification for Evaluation of Structural Composite Lumber Products*

4.2.6 *ASTM D5764: Standard Test Method for Evaluating Dowel-Bearing Strength of Wood and Wood-Based Products*

4.2.7 *ASTM D6109: Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastic Lumber and Related Products*

4.2.8 *ASTM D7147: Standard Specification for Testing and Establishing Allowable Loads of Joist Hangers*

4.2.9 *ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials*

4.2.10 *UL 723: Test for Surface Burning Characteristics of Building Materials*

4.3 *Regulations Evaluated and Regulatory Compliance*

4.3.1 *IBC – 18, 21, 24: International Building Code®*

4.3.2 *IRC – 18, 21, 24: International Residential Code®*

4.3.3 *California Building Code (CBC) and California Residential Code (CRC) – 22*

4.3.3.1 Base code and as amended by state agency authorities including but not limited to, the Building Standards Commission, BCS; State Fire Marshall, SFM; Division of the State Architect, DSA; Department of Housing and Community Development, HCD; and the Office of Statewide Health Planning and Development, OSHPD as applicable. Also includes amendments as adopted by Los Angeles County, the City of Los Angeles, San Diego, San Jose and San Francisco as applicable.

4.3.4 *Florida Building Code (FBC) and Florida Residential Code (FRC) – 23*

4.3.5 *Other State and Local Regulations:*

4.3.5.1 *Chicago Building Code – 19 with 22 Supplement*

4.3.5.2 *New York City – 22*

4.3.5.3 *Texas Department of Insurance*

5 Listed[25]

5.1 Equipment, materials, products, or services included in a List published by a nationally recognized testing laboratory (i.e., CBI), an approved agency (i.e., CBI and DrJ), and/or and approved source (i.e., DrJ), or other organization(s) concerned with product evaluation (i.e., DrJ), that maintains periodic inspection (i.e., CBI) of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner.

6 Tabulated Properties Generated from Nationally Recognized Standards

6.1 OC Lumber was tested and/or evaluated for:

6.1.1 Structural capacities for gravity loads when used as deck posts, joists, beams, headers, and stair stringers

6.1.2 Fastener and hanger connection capacities

6.1.3 Flame spread

6.2 Decks shall be supported on footings designed in accordance with IRC Section R507.3.

6.2.1 Bottom of posts shall be restrained to prevent lateral displacement as specified in IRC Section R407.3, and shall be designed in accordance with IRC Section R507.4.1.

6.3 Maximum allowable joist spans are provided in **Table 2** through **Table 5**.

6.3.1 **Table 2** provides the maximum allowable joist spans based on a Total Load (TL) of 50 psf.

6.3.1.1 10 psf Dead Load (DL) and 40 psf Live Load (LL)

6.3.2 **Table 3** provides the maximum allowable joist spans based on a TL of 70 psf.

6.3.2.1 10 psf DL and 60 psf LL

6.3.3 **Table 4** provides the maximum allowable joist spans based on a TL of 90 psf.

6.3.3.1 10 psf DL and 80 psf LL

6.3.4 **Table 5** provides the maximum allowable joist spans based on a TL of 110 psf.

6.3.4.1 10 psf DL and 100 psf LL

6.4 The procedure for using **Table 2** through **Table 5** is as follows:

6.4.1 Determine the desired deck length.

6.4.2 Find a combination of joist span and cantilever length to achieve the desired length taking into account of the expected load on the deck.

6.4.3 The length of the joist span in **Table 2** through **Table 5** is defined in IRC Figure R507.6.

6.4.4 The cantilever length is defined, in **Section 6.4.7**, as the distance from the exterior side of the post or beam to the end of the rim joist.

6.4.5 *Examples:*

6.4.5.1 For this example, assume Live Load of 40 psf and Dead Load of 10 psf, therefore **Table 2** shall be used.

6.4.5.2 For a 14' deck length, and assuming a 2-ply beam:

6.4.5.2.1 Add the joist span, the 3" width from the supports, and the cantilever length.

6.4.5.2.2 For this example, refer to the row for 2" x 12" lumber. According to **Table 2**, a 2" x 12" joist at 16" spacing can span up to 12' 5" under an L/240 deflection limit, which is suitable for most projects. Add in the 3" of span for the ledger and half of the support beam, and add a 1' 4" cantilever to achieve a total length of 14' 0" (**Table 2** lists a maximum allowable cantilever length of 2' 0").

6.4.5.2.3 Center the support beam for the joists 12' 6$^{1}/_{2}$" (span plus the ledger thickness) from the face of the building to which the deck will be attached.

6.4.5.3 For a 16' deck length, and assuming a 2-ply beam:

6.4.5.3.1 Add the joist span, the 3" width from the supports and the cantilever length.

6.4.5.3.2 For this example, refer to the row for 2" x 12" lumber. According to **Table 2**, a 2" x 12" joist at 12" spacing can span up to 13' 8" under an L/240 deflection limit, which is suitable for most projects. Add in the 3" of span for the ledger and half of the support beam, and add the 2' 0" cantilever to achieve a total length of 15' 11".

6.4.5.3.3 Center the support beam for the joists 13' 9$^{1}/_{2}$" (span plus the ledger thickness) from the face of the building to which the deck will be attached.

Table 2. Joist Spans Using OC Lumber at Various Deflection Limits – 50 psf TL

OC Lumber Profile	Joist Spacing (in. o.c.)	Deflection Limits									
		L/360[1]		L/240[2]		L/180[2]		L/150[2]		L/120[2]	
		Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever
2" x 6"	12	6' 5"	0' 6"	6' 10"	0' 9"	7' 6"	0' 10"	8' 0"	1' 0"	8' 7"	1' 2"
	16	5' 10"	0' 7"	6' 2"	0' 9"	6' 10"	0' 11"	7' 3"	1' 1"	7' 10"	1' 3"
	24	5' 1"	0' 7"	5' 5"	0' 10"	6' 0"	1' 1"	6' 4"	1' 2"	6' 10"	1' 4"
2" x 8"	12	8' 9"	0' 11"	9' 4"	1' 4"	10' 3"	1' 7"	10' 11"	1' 9"	11' 9"	2' 0"
	16	8' 0"	1' 0"	8' 6"	1' 5"	9' 4"	1' 9"	9' 11"	1' 11"	10' 8"	2' 0"
	24	6' 11"	1' 2"	7' 5"	1' 7"	8' 2"	1' 11"	8' 8"	2' 0"	9' 4"	2' 0"
2" x 10"	12	10' 10"	1' 5"	11' 6"	2' 0"	12' 8"	2' 0"	13' 6"	2' 0"	14' 6"	2' 0"
	16	9' 10"	1' 7"	10' 5"	2' 0"	11' 6"	2' 0"	12' 3"	2' 0"	13' 2"	2' 0"
	24	8' 7"	1' 9"	9' 1"	2' 0"	10' 0"	2' 0"	10' 8"	2' 0"	11' 6"	2' 0"
2" x 12"	12	12' 10"	2' 0"	13' 8"	2' 0"	15' 0"	2' 0"	16' 0"	2' 0"	17' 3"	2' 0"
	16	11' 8"	2' 0"	12' 5"	2' 0"	13' 8"	2' 0"	14' 6"	2' 0"	15' 8"	2' 0"
	24	10' 2"	2' 0"	10' 10"	2' 0"	11' 11"	2' 0"	12' 8"	2' 0"	13' 8"	2' 0"

SI: 1 ft = 0.305 m, 1 in = 25.4 mm

1. Joist spans based on a deck design live load of 40 psf.
2. Joist spans based on a deck design live load of 40 psf, and a dead load of 10 psf.
3. Maximum cantilever based on twice the joist span deflection limit and a 220 lb point load applied to the end.

Table 3. Joist Spans Using OC Lumber at Various Deflection Limits – 70 psf TL

OC Lumber Profile	Joist Spacing (in. o.c.)	Deflection Limits									
		L/360[1]		L/240[2]		L/180[2]		L/150[2]		L/120[2]	
		Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever
2" x 6"	12	5' 7"	0' 7"	6' 1"	0' 9"	6' 9"	0' 11"	7' 2"	1' 1"	7' 8"	1' 3"
	16	5' 1"	0' 7"	5' 6"	0' 10"	6' 1"	1' 0"	6' 6"	1' 2"	7' 0"	1' 4"
	24	4' 5"	0' 8"	4' 10"	0' 11"	5' 4"	1' 2"	5' 8"	1' 3"	6' 1"	1' 6"
2" x 8"	12	7' 8"	1' 1"	8' 4"	1' 5"	9' 2"	1' 9"	9' 9"	1' 11"	10' 6"	2' 0"
	16	6' 11"	1' 2"	7' 7"	1' 7"	8' 4"	1' 10"	8' 10"	2' 0"	9' 7"	2' 0"
	24	6' 1"	1' 3"	6' 7"	1' 7"	7' 3"	1' 9"	7' 9"	1' 11"	8' 4"	2' 0"
2" x 10"	12	9' 5"	1' 7"	10' 3"	2' 0"	11' 4"	2' 0"	12' 0"	2' 0"	12' 11"	2' 0"
	16	8' 7"	1' 9"	9' 4"	2' 0"	10' 3"	2' 0"	10' 11"	2' 0"	11' 9"	2' 0"
	24	7' 6"	1' 10"	8' 2"	2' 0"	9' 0"	2' 0"	9' 6"	2' 0"	10' 3"	2' 0"
2" x 12"	12	11' 3"	2' 0"	12' 2"	2' 0"	13' 5"	2' 0"	14' 3"	2' 0"	15' 5"	2' 0"
	16	10' 2"	2' 0"	11' 1"	2' 0"	12' 2"	2' 0"	13' 0"	2' 0"	14' 0"	2' 0"
	24	8' 11"	2' 0"	9' 8"	2' 0"	10' 8"	2' 0"	11' 4"	2' 0"	12' 2"	2' 0"

SI: 1 ft = 0.305 m, 1 in = 25.4 mm

1. Joist spans based on a deck design live load of 60 psf.
2. Joist spans based on a deck design live load of 60 psf, and a dead load of 10 psf.
3. Maximum cantilever based on twice the joist span deflection limit and a 220 lb point load applied to the end.

Table 4. Joist Spans Using OC Lumber at Various Deflection Limits – 90 psf TL

OC Lumber Profile	Joist Spacing (in. o.c.)	Deflection Limits									
		L/360[1]		L/240[2]		L/180[2]		L/150[2]		L/120[2]	
		Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever
2" x 6"	12	5' 1"	0' 7"	5' 7"	0' 10"	6' 2"	1' 0"	6' 7"	1' 2"	7' 1"	1' 4"
	16	4' 7"	0' 8"	5' 1"	0' 11"	5' 7"	1' 1"	6' 0"	1' 3"	6' 5"	1' 5"
	24	4' 0"	0' 9"	4' 5"	1' 0"	4' 11"	1' 2"	5' 2"	1' 3"	5' 7"	1' 4"
2" x 8"	12	6' 11"	1' 2"	7' 8"	1' 6"	8' 5"	1' 10"	9' 0"	2' 0"	9' 8"	2' 0"
	16	6' 4"	1' 3"	6' 11"	1' 8"	7' 8"	1' 11"	8' 2"	2' 0"	8' 9"	2' 0"
	24	5' 6"	1' 4"	6' 1"	1' 6"	6' 8"	1' 8"	7' 1"	1' 9"	7' 8"	1' 11"
2" x 10"	12	8' 7"	1' 9"	9' 5"	2' 0"	10' 5"	2' 0"	11' 1"	2' 0"	11' 11"	2' 0"
	16	7' 9"	1' 10"	8' 7"	2' 0"	9' 5"	2' 0"	10' 0"	2' 0"	10' 10"	2' 0"
	24	6' 10"	1' 8"	7' 6"	1' 10"	8' 3"	2' 0"	8' 9"	2' 0"	9' 5"	2' 0"
2" x 12"	12	10' 2"	2' 0"	11' 3"	2' 0"	12' 4"	2' 0"	13' 2"	2' 0"	14' 2"	2' 0"
	16	9' 3"	2' 0"	10' 2"	2' 0"	11' 3"	2' 0"	11' 11"	2' 0"	12' 10"	2' 0"
	24	8' 1"	2' 0"	8' 11"	2' 0"	9' 10"	2' 0"	10' 5"	2' 0"	11' 3"	2' 0"

SI: 1 ft = 0.305 m, 1 in = 25.4 mm

1. Joist spans based on a deck design live load of 80 psf.
2. Joist spans based on a deck design live load of 80 psf, and a dead load of 10 psf.
3. Maximum cantilever based on twice the joist span deflection limit and a 220 lb point load applied to the end.

Table 5. Joist Spans Using OC Lumber at Various Deflection Limits – 110 psf TL

OC Lumber Profile	Joist Spacing (in. o.c.)	Deflection Limits									
		L/360[1]		L/240[2]		L/180[2]		L/150[2]		L/120[2]	
		Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever	Joist Span	Max.[3] Cantilever
2" x 6"	12	4' 9"	0' 8"	5' 3"	0' 11"	5' 9"	1' 1"	6' 2"	1' 2"	6' 7"	1' 5"
	16	4' 3"	0' 9"	4' 9"	0' 11"	5' 3"	1' 2"	5' 7"	1' 3"	6' 0"	1' 6"
	24	3' 9"	0' 9"	4' 2"	1' 0"	4' 7"	1' 1"	4' 10"	1' 2"	5' 3"	1' 3"
2" x 8"	12	6' 5"	1' 3"	7' 2"	1' 7"	7' 11"	1' 11"	8' 5"	2' 0"	9' 0"	2' 0"
	16	5' 10"	1' 4"	6' 6"	1' 7"	7' 2"	1' 9"	7' 7"	1' 10"	8' 2"	2' 0"
	24	5' 1"	1' 3"	5' 8"	1' 5"	6' 3"	1' 6"	6' 8"	1' 8"	7' 2"	1' 9"
2" x 10"	12	8' 0"	1' 10"	8' 10"	2' 0"	9' 9"	2' 0"	10' 4"	2' 0"	11' 2"	2' 0"
	16	7' 3"	1' 9"	8' 0"	2' 0"	8' 10"	2' 0"	9' 5"	2' 0"	10' 1"	2' 0"
	24	6' 4"	1' 7"	7' 0"	1' 9"	7' 9"	1' 11"	8' 2"	2' 0"	8' 10"	2' 0"
2" x 12"	12	9' 5"	2' 0"	10' 6"	2' 0"	11' 7"	2' 0"	12' 3"	2' 0"	13' 3"	2' 0"
	16	8' 7"	2' 0"	9' 6"	2' 0"	10' 6"	2' 0"	11' 2"	2' 0"	12' 0"	2' 0"
	24	7' 6"	1' 10"	8' 4"	2' 0"	9' 2"	2' 0"	9' 9"	2' 0"	10' 6"	2' 0"

SI: 1 ft = 0.305 m, 1 in = 25.4 mm

1. Joist spans based on a deck design live load of 100 psf.
2. Joist spans based on a deck design live load of 100 psf, and a dead load of 10 psf.
3. Maximum cantilever based on twice the joist span deflection limit and a 220 lb point load applied to the end.

6.4.6 In general, the maximum joist cantilever is 2' 0", twice the deflection limit used for the main span at the cantilever, or twenty-five percent (25%) of the length of the joist span, in accordance with IRC Section R507.6, whichever length is less.

6.4.7 The length of the cantilever is measured from the exterior side of the post or beam to the end of the rim joist.

6.4.8 OC Lumber joist deflection limits are based upon empirical testing of OC Lumber decks. Identical deck configurations were constructed. OC Lumber deck performance was compared directly to decks constructed of competing materials. These deflection limits are considered proprietary intellectual property and trade secrets.

6.4.9 For more information, see the manufacturer installation guide or contact Owens Corning technical support.

6.4.10 An example of OC Lumber joist installation is shown in **Figure 3**.

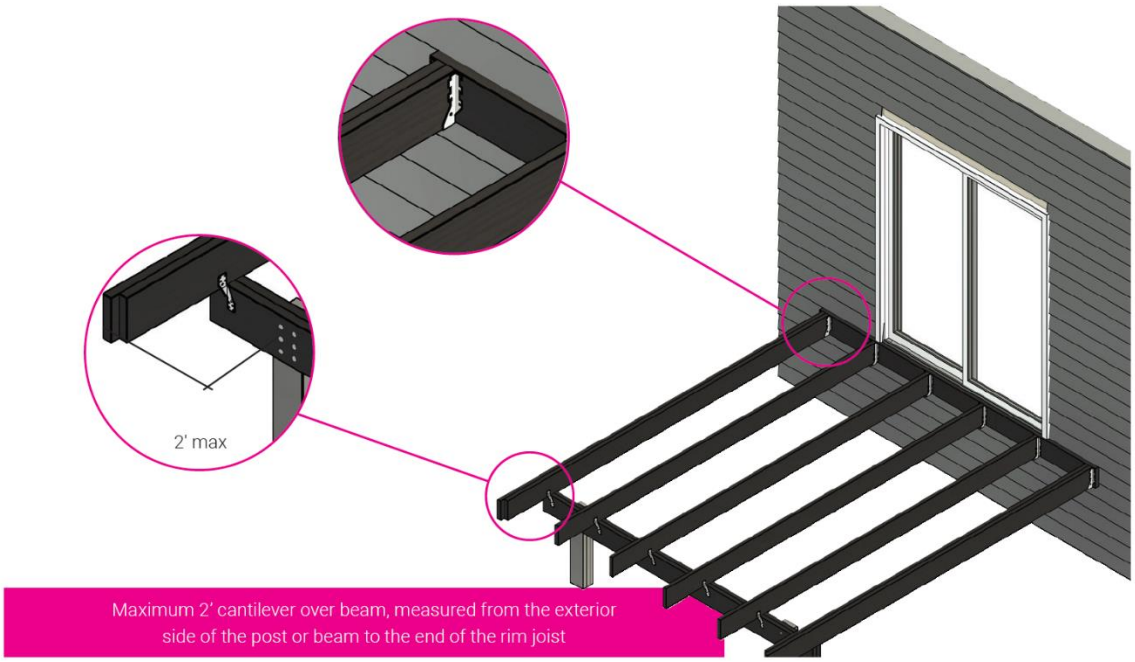


Figure 3. OC Lumber Joist Installation

6.5 The maximum post spacing recommended for support of deck beams with two supports are shown in **Figure 4** and **Table 6**.

6.5.1 The post spacing provided in **Table 6** shall be used in place of the tables specified in IRC Section R507.5.

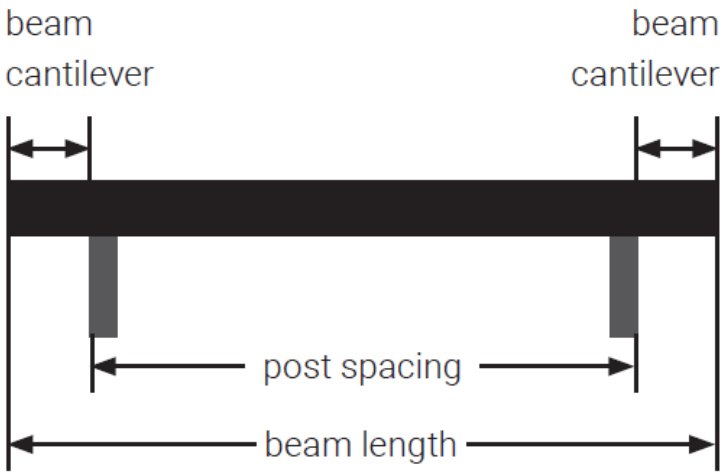


Figure 4. Post Spacing for Support of Beams at Two (2) Locations

Table 6. Maximum Post Spacing (Beam Span) and Cantilever Lengths for Support of Beams at Two Locations[1,2,3] – 40 psf LL

OC Lumber Profile	Number of Plies	Length of Owens Corning Joist (ft)[4]									
		4		5		6		7		8	
		Beam Span	Max. Cantilever	Beam Span	Max. Cantilever	Beam Span	Max. Cantilever	Beam Span	Max. Cantilever	Beam Span	Max. Cantilever
2" x 6"	2	5' 1"	1' 3"	4' 11"	1' 2"	4' 9"	1' 2"	4' 7"	1' 1"	4' 5"	1' 1"
	3	5' 10"	1' 5"	5' 7"	1' 4"	5' 5"	1' 4"	5' 3"	1' 3"	5' 1"	1' 3"
2" x 8"	2	6' 11"	1' 8"	6' 8"	1' 8"	6' 5"	1' 7"	6' 3"	1' 6"	6' 1"	1' 6"
	3	8' 0"	2' 0"	7' 8"	1' 11"	7' 5"	1' 10"	7' 2"	1' 9"	6' 11"	1' 8"
2" x 10"	2	8' 7"	2' 0"	8' 3"	2' 0"	8' 0"	2' 0"	7' 9"	1' 11"	7' 6"	1' 10"
	3	9' 10"	2' 0"	9' 5"	2' 0"	9' 1"	2' 0"	8' 10"	2' 0"	8' 7"	2' 0"
2" x 12"	2	10' 2"	2' 0"	9' 10"	2' 0"	9' 5"	2' 0"	9' 2"	2' 0"	8' 11"	2' 0"
	3	11' 8"	2' 0"	11' 3"	2' 0"	10' 10"	2' 0"	10' 6"	2' 0"	10' 2"	2' 0"
OC Lumber Profile	Number of Plies	Length of Owens Corning Joist (ft) [4]									
		9		10		11		12		13	
		Beam Span	Max. Cantilever	Beam Span	Max. Cantilever	Beam Span	Max. Cantilever	Beam Span	Max. Cantilever	Beam Span	Max. Cantilever
2" x 6"	2	4' 4"	1' 1"	4' 3"	1' 0"	4' 1"	1' 0"	4' 0"	1' 0"	3' 11"	0' 11"
	3	4' 11"	1' 2"	4' 10"	1' 2"	4' 9"	1' 2"	4' 7"	1' 1"	4' 6"	1' 1"
2" x 8"	2	5' 11"	1' 5"	5' 9"	1' 5"	5' 8"	1' 5"	5' 6"	1' 4"	5' 5"	1' 4"
	3	6' 9"	1' 8"	**6' 7"**	**1' 7"**	6' 5"	1' 7"	6' 4"	1' 7"	6' 2"	1' 6"
2" x 10"	2	7' 3"	1' 9"	7' 1"	1' 9"	6' 11"	1' 8"	6' 10"	1' 8"	6' 8"	1' 8"
	3	8' 4"	2' 0"	8' 2"	2' 0"	8' 0"	2' 0"	7' 9"	1' 11"	7' 8"	1' 11"
2" x 12"	2	8' 8"	2' 0"	8' 5"	2' 0"	8' 3"	2' 0"	8' 1"	2' 0"	7' 11"	1' 11"
	3	9' 11"	2' 0"	9' 8"	2' 0"	9' 5"	2' 0"	9' 3"	2' 0"	9' 1"	2' 0"

Table 6. Maximum Post Spacing (Beam Span) and Cantilever Lengths for Support of Beams at Two Locations[1,2,3] – 40 psf LL

OC Lumber Profile	Number of Plies	Length of Owens Corning Joist (ft) [4]					
		14		15		16	
		Beam Span	Max. Cantilever	Beam Span	Max. Cantilever	Beam Span	Max. Cantilever
2" x 6"	2	3' 10"	0' 11"	3' 10"	0' 11"	3' 9"	0' 11"
	3	4' 5"	1' 1"	4' 4"	1' 1"	4' 3"	1' 0"
2" x 8"	2	5' 4"	1' 4"	5' 2"	1' 3"	5' 1"	1' 3"
	3	6' 1"	1' 6"	6' 0"	1' 6"	5' 10"	1' 5"
2" x 10"	2	6' 6"	1' 7"	6' 5"	1' 7"	6' 4"	1' 7"
	3	7' 6"	1' 10"	7' 4"	1' 10"	7' 3"	1' 9"
2" x 12"	2	7' 9"	1' 11"	7' 8"	1' 11"	7' 6"	1' 10"
	3	8' 11"	2' 0"	8' 9"	2' 0"	8' 7"	2' 0"

SI: 1 ft = 0.305 m, 1 in = 25.4 mm

1. Post spacing (beam span) is based on a deck design live load of 40 psf.
2. Owens Corning decks use proprietary materials and conditions not prescribed in IRC Section R507.1.
3. Owens Corning decks use design requirements are considered proprietary intellectual property and trade secrets pursuant to IRC Section R301.1.3, IBC Section 1706.2, IBC Section 1707.1, and IRC Section R104.2.2.
4. Length of Owens Corning Joist refers to the joist span (deck joist back span) as shown in IRC Figure R507.6. This value is not the same as tributary span.

6.5.2 In general, the maximum beam cantilever is 2' 0", twice the deflection limit used for the main span at the cantilever, or twenty-five percent (25%) of the length of the post spacing, in accordance with IRC Section R507.5, whichever length is less.

6.5.3 The length of the cantilever is measured from the exterior side of the post to the end of the beam length.

6.5.3.1 For more information, see the manufacturer installation guide or contact Owens Corning technical support.

6.5.4 The procedure for using **Table 6** is as follows:

6.5.4.1 Determine the length of joist to be used for your deck (i.e., 10').

6.5.4.2 Find the *"Length of Owens Corning Joist"* column in **Table 6** (in this case, 10').

6.5.4.3 Using the beam size and number of plies (2 x 8 beam that is 3-ply), find the maximum Owens Corning post spacing that supports a 10' joist (this is a **6' 7"** post spacing).

6.5.4.4 If applicable, add cantilever length(s) to determine final beam length (i.e., if the 6' 7" post spacing has a beam with **1' 7"** cantilevers on each end, the maximum beam length is 9' 9").

6.6 The maximum post spacing recommended for support of deck beams with three supports are outlined in **Figure 5** and **Table 7**.

6.6.1 The post spacing provided in **Table 7** shall be used in place of the tables specified in IRC Section R507.5.

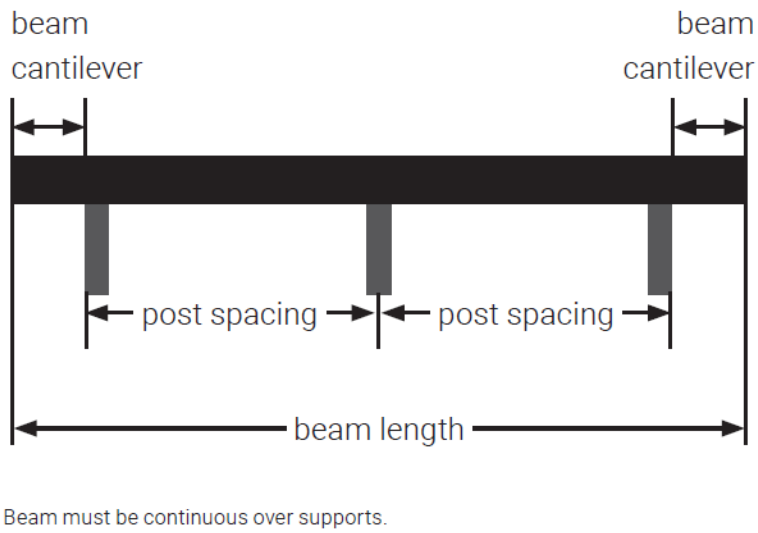


Figure 5. Post Spacing for Support of Beams at Three or More Locations

Table 7. Maximum Post Spacing (Beam Span) and Cantilever Lengths for Support of Beams at Three or More Locations[1,2,3] – 40 psf LL

OC Lumber Profile	Number of Plies	Length of Owens Corning Joist (ft) [4]									
		4		5		6		7		8	
		Beam Span	Max. Cantilever	Beam Span	Max. Cantilever	Beam Span	Max. Cantilever	Beam Span	Max. Cantilever	Beam Span	Max. Cantilever
2" x 6"	2	5' 3"	1' 3"	5' 1"	1' 3"	4' 11"	1' 2"	4' 9"	1' 2"	4' 7"	1' 1"
	3	6' 1"	1' 6"	5' 10"	1' 5"	5' 7"	1' 4"	5' 5"	1' 4"	5' 3"	1' 3"
2" x 8"	2	7' 3"	1' 9"	6' 11"	1' 8"	6' 8"	1' 8"	6' 6"	1' 7"	6' 4"	1' 7"
	3	8' 3"	2' 0"	7' 11"	1' 11"	7' 8"	1' 11"	7' 5"	1' 10"	7' 3"	1' 9"
2" x 10"	2	8' 11"	2' 0"	8' 7"	2' 0"	8' 3"	2' 0"	8' 0"	2' 0"	7' 9"	1' 11"
	3	10' 2"	2' 0"	9' 10"	2' 0"	9' 6"	2' 0"	9' 2"	2' 0"	8' 11"	2' 0"
2" x 12"	2	10' 7"	2' 0"	10' 2"	2' 0"	9' 10"	2' 0"	9' 6"	2' 0"	9' 3"	2' 0"
	3	12' 1"	2' 0"	11' 8"	2' 0"	11' 3"	2' 0"	10' 11"	2' 0"	10' 7"	2' 0"

Table 7. Maximum Post Spacing (Beam Span) and Cantilever Lengths for Support of Beams at Three or More Locations[1,2,3] – 40 psf LL

OC Lumber Profile	Number of Plies	Length of Owens Corning Joist (ft) [4]									
		9		10		11		12		13	
		Beam Span	Max. Cantilever	Beam Span	Max. Cantilever	Beam Span	Max. Cantilever	Beam Span	Max. Cantilever	Beam Span	Max. Cantilever
2" x 6"	2	4' 6"	1' 1"	4' 5"	1' 1"	4' 3"	1' 0"	4' 2"	1' 0"	4' 1"	1' 0"
	3	5' 2"	1' 3"	5' 0"	1' 3"	4' 11"	1' 2"	4' 10"	1' 2"	4' 8"	1' 2"
2" x 8"	2	6' 2"	1' 6"	6' 0"	1' 6"	5' 10"	1' 5"	5' 9"	1' 5"	5' 7"	1' 4"
	3	7' 0"	1' 9"	**6' 10"**	**1' 8"**	6' 8"	1' 8"	6' 7"	1' 7"	6' 5"	1' 7"
2" x 10"	2	7' 7"	1' 10"	7' 5"	1' 10"	7' 3"	1' 9"	7' 1"	1' 9"	6' 11"	1' 8"
	3	8' 8"	2' 0"	8' 6"	2' 0"	8' 3"	2' 0"	8' 1"	2' 0"	7' 11"	1' 11"
2" x 12"	2	9' 0"	2' 0"	8' 9"	2' 0"	8' 7"	2' 0"	8' 5"	2' 0"	8' 3"	2' 0"
	3	10' 4"	2' 0"	10' 1"	2' 0"	9' 10"	2' 0"	9' 7"	2' 0"	9' 5"	2' 0"

OC Lumber Profile	Number of Plies	Length of Owens Corning Joist (ft) [4]					
		14		15		16	
		Beam Span	Max. Cantilever	Beam Span	Max. Cantilever	Beam Span	Max. Cantilever
2" x 6"	2	4' 0"	1' 0"	3' 11"	0' 11"	3' 11"	0' 11"
	3	4' 7"	1' 1"	4' 6"	1' 1"	4' 5"	1' 1"
2" x 8"	2	5' 6"	1' 4"	5' 5"	1' 4"	5' 4"	1' 4"
	3	6' 4"	1' 7"	6' 2"	1' 6"	6' 1"	1' 6"
2" x 10"	2	6' 9"	1' 8"	6' 8"	1' 8"	6' 7"	1' 7"
	3	7' 9"	1' 11"	7' 8"	1' 11"	7' 6"	1' 10"
2" x 12"	2	8' 1"	2' 0"	7' 11"	1' 11"	7' 9"	1' 11"
	3	9' 3"	2' 0"	9' 1"	2' 0"	8' 11"	2' 0"

SI: 1 ft = 0.305 m, 1 in = 25.4 mm

1. Post spacing (beam span) is based on a deck design live load of 40 psf.
2. Owens Corning decks use proprietary materials and conditions not prescribed in IRC Section R507.1.
3. Owens Corning decks use design requirements are considered proprietary intellectual property and trade secrets pursuant to IRC Section R301.1.3, IBC Section 1706.2, IBC Section 1707.1, and IRC Section R104.2.2.
4. Length of Owens Corning Joist refers to the joist span (deck joist back span) as shown in IRC Figure R507.6. This value is not the same as tributary span.

6.6.2 In general, the maximum beam cantilever is 2' 0", twice the deflection limit used for the main span at the cantilever, or twenty-five percent (25%) of the length of the post spacing, in accordance with IRC Section R507.5, whichever length is less.

6.6.3 The length of the cantilever is measured from the exterior side of the exterior post to the end of the beam length.

6.6.4 Deflection limits used to create post spacing are based upon empirical testing of OC Lumber decks. Identical deck configurations were constructed. OC Lumber deck performance was compared directly to decks constructed of competing materials. These deflection limits are considered proprietary intellectual property and trade secrets.

6.6.5 For more information, see the manufacturer installation guide or contact Owens Corning technical support.

6.6.6 The procedure for the using **Table 7** is as follows:

6.6.6.1 Determine the length of joist to be used for your deck (i.e., 10').

6.6.6.2 Find the *"Length of Owens Corning Joist"* column in **Table 7** (10').

6.6.6.3 Using the beam size and number of plies (i.e., 2 x 8 beam that is 3-ply), find the maximum Owens Corning post spacing that supports a 10' joist (this is a **6' 10"** post spacing).

6.6.6.4 If applicable, add cantilever(s) to determine final beam length (if the 6' 10" post spacing has a beam with one cantilever on each end, the maximum beam length is 10' 2" ([6' 10" + **1' 8"** + **1' 8"**]).

6.7 The maximum bearing capacity of built-up OC Lumber posts that are used to support 2-ply and 3-ply OC Lumber beams are provided in **Table 8**.

6.7.1 See **Figure 6**, **Figure 7**, and **Section 9.3.2** for assembly details of built-up OC Lumber posts.

6.7.2 For hollow Owens Corning Lumber Structural Composite Posts, see LST-2307-07.

6.7.3 The maximum post height is 9' 0".

6.7.3.1 All posts shall be diagonally braced to prevent side-sway and/or buckling when post height exceeds 9' 0" in order to achieve the loads listed in **Table 8**.

6.7.4 For more information regarding post and bracing installations, see the manufacturer installation guide or contact Owens Corning technical support.

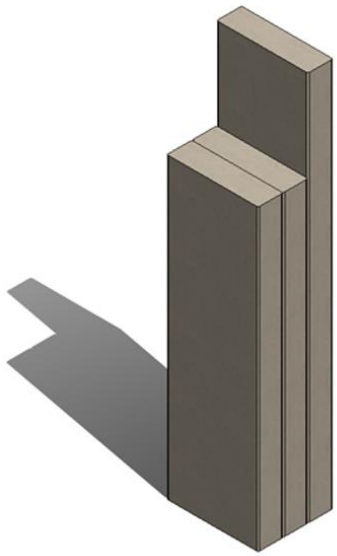


Figure 6. OC Lumber Post Supporting a 2-Ply Beam

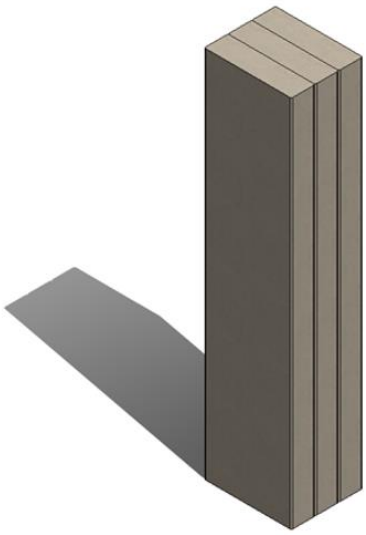


Figure 7. OC Lumber Post Supporting a 3-Ply Beam

Table 8. Maximum Bearing Capacity of Posts to Support 2-Ply and 3-Ply Beams[1]

Maximum Bearing Capacity to Support a 2-Ply Beam (See Figure 6)	Maximum Bearing Capacity to Support a 3-Ply Beam (See Figure 7)
5,500 lb	8,250 lb
SI: 1 lb = 4.45 N 1. Maximum post height is 9 ft. ***Important Note***: Post shall be diagonally braced to prevent side-sway and buckling.	

6.8 General application information regarding fasteners to be used with OC Lumber are as follows:

6.8.1 *Dowel-Type Fasteners:*

6.8.1.1 Starborn® CAP-TOR® xd 305 Stainless Steel Composite/PVC Screw, #10 x $2^{3}/_{4}$"

6.8.1.2 CAMO® Premium 316 Stainless Steel Deck Screw, #10 x $2^{1}/_{2}$"

6.8.1.3 Simpson Strong-Drive® SD Connector SS Screw, #9 x $2^{1}/_{2}$"

6.8.1.4 Simpson Strong-Drive SD Connector SS Screw, #9 x $1^{1}/_{2}$"

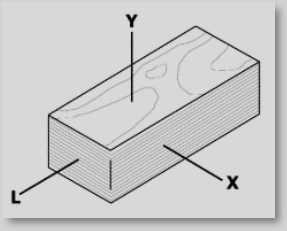
6.8.2 *Equivalent Specific Gravity for use in accordance with NDS:*

6.8.2.1 Dowel bearing strength for nails, screws, and bolts, and withdrawal loads for nails and screws installed in OC Lumber are permitted to be determined in accordance with the NDS using the equivalent specific gravity listed in **Table 9**.

Table 9. Equivalent Specific Gravities for Design of Mechanical Connections per NDS[1,2,3]

Product	Fastener	Fastener Axis Orientation[1]	Load Direction	Equivalent Specific Gravity for Design Purposes
OC Lumber	Nails	Y axis	Withdrawal	0.35
		X axis		0.34
	Screws	Y axis		0.53
		X axis		0.51
	Nails	Y axis	L axis	0.46
			X axis	0.46
	Bolts	Y axis	L axis	0.28
			X axis	0.54

1. Orientation nomenclature for OC Lumber:



2. Adjustment of the fastener values for duration of load in accordance with the NDS is not applicable.
3. Lateral resistance and withdrawal values are as provided in the NDS for sawn lumber having equivalent specific gravities as shown.

6.8.3 Head-pull through and withdrawal resistance when installed in OC Lumber were evaluated and the allowable connection design values for the specified fasteners are presented in **Table 10** and **Table 11**.

Table 10. Reference Head-Pull-Through Design Values (lb)

OC Lumber **Profile**	**CAMO Premium 316 Stainless Steel Deck Screw, #10 x 2 1/2"**	**Starborn CAP-TOR xd 305 Stainless Steel Composite/PVC Screw, #10 x 2 3/4"**
1/2" x 6" or 1/2" x 10"	250	120
5/4" x 6" or 5/4" x 8"	260	300
Scant 2" x 6"	370	370
SI: 1 in = 25.4 mm, 1 lb = 4.45 N		

Table 11. Reference Withdrawal Design Values (lb)[1]

Fastener	End Grain Installation	Narrow Edge/Wide Face Installation
CAMO Premium 316 Stainless Steel Deck Screw, #10 x 2 1/2"	300	310
Starborn CAP-TOR xd 305 Stainless Steel Composite/PVC Screw, #10 x 2 3/4"	390	410

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

1. Minimum penetration into OC Lumber profiles shall be 1 1/2".

6.8.4 *Metal Connectors:*

6.8.4.1 Beam-to-post connectors with a minimum uplift capacity of 2,000 lbs.

6.8.4.2 Hurricane ties and angle brackets with minimum uplift capacity of 500 lbs.

6.8.5 For more information, see the manufacturer installation guide or contact Owens Corning technical support.

6.9 General application information regarding Owens Corning WEARDECK is as follows:

6.9.1 *Minimum Screw Lengths:*

6.9.1.1 2 1/2" screws for 5/4" x 8" Owens Corning WEARDECK

6.9.1.2 1 1/2" screws for 1/2" x 6" and 1/2" x 10" Owens Corning WEARDECK

6.9.2 *Minimum Spacing:*

6.9.2.1 End to end: 1/16" (3/16" recommended)

6.9.2.2 Side to side: 1/16" (3/16" recommended)

6.9.3 For more information regarding Owens Corning WEARDECK, please see the manufacturer installation guide or contact Owens Corning technical support.

6.10 Engineering properties for various OC Lumber member sizes are provided in **Table 12**.

Table 12. OC Lumber Edgewise Orientation Design Values (ASD)[1,2,3]

OC Lumber Profile	F_b (psi)	EI (lb·in^2)	MOE (psi)	Bearing Strength (psi)	Nominal I_x (in^4)	Nominal S_x (in^3)
2" x 6"	1,305	7,300,000	350,000	270	20.8	7.6
2" x 8"	1,460	18,500,000	350,000		52.7	14.1
2" x 10"	1,515	34,600,000	350,000		98.9	21.4
2" x 12"	1,265	57,800,000	325,000		178.0	31.6

SI: 1 psi = 0.00689 MPa, 1 lb-in^2 = 0.00287 N-m^2, 1 in^4 = 41.62 cm^4, 1 in^3 = 16.39 cm^3

1. F_b, EI and MOE are allowable design values, and based on a temperature factor, C_t, of 1.0.
2. Listed F_b, EI, and MOE values are the effective flexural stiffness of the evaluated composite product.
3. Nominal section properties are determined using the nominal width and depth of the composite product.

6.10.1 Applications of the OC Lumber that require professional engineering are those conditions where the joist, beam, and column application is outside of the prescriptive design properties provided in **Table 2** through **Table 8**.

6.10.1.1 A deck design that requires higher applied loads, longer spans, multiple joist spans, a cantilever, a concentrated load, multiple applied loads, and so forth, will require an engineered design.

6.10.2 The engineered design drawing development process includes, but is not be limited to, the following guidelines:

6.10.2.1 To size OC Lumber structural members, use the allowable stress design values found in **Table 12**.

6.10.2.2 Analyze the resistance needed, for the pertinent member size designated in **Table 12** using the allowable stress design properties and standard engineering equations.[26]

6.10.2.2.1 These design properties are based upon test data and used actual design dimensions (i.e., $1^1/_2$" x $5^1/_2$", $1^1/_2$" x $7^1/_4$", $1^1/_2$" x $9^1/_4$", and $1^1/_2$" x $11^1/_4$" section properties).

6.10.2.3 Create an engineered design drawing for the application which includes, but is not limited to, span, depth, applied loads, support conditions, anchorage, reaction limits, component connections, deflection limits, moisture conditions, serviceability conditions, durability conditions, end connection details, boundary condition application details, and so forth.

6.10.2.4 Each OC Lumber engineered design and associated engineered design drawing shall provide sufficient detailing for the specific floor, wall, or roof installation.

6.10.2.5 Each OC Lumber structural member design is defined as an engineered design pursuant to the building code and professional engineering law, which requires the design to be performed by an RDP, where all loading and boundary conditions are provided by the owner or the Registered Design Professional in Responsible Charge of the project.

6.10.2.5.1 Where assistance is needed regarding OC Lumber specialty engineered designs, please contact Owens Corning technical support.

6.10.3 To establish a complete load path, all connections shall be designed separately to transfer load from OC Lumber to other structural members and then onto the foundation. Please refer to the manufacturer details and installation instructions or contact Owens Corning technical support.

6.11 *Owens Corning Standard Deck Tested and Analyzed – Load Resistance for a Specific Owens Corning Deck Design*

6.11.1 OC Lumber decks were constructed as detailed in **Figure 8**.

6.11.2 12' x 10' decks were constructed with joists spaced at 24" on center, 16" on center, and at 12" on center.

6.11.3 These decks were constructed with a 24" cantilever on one side of the deck and the joists were installed using 2 x 8 OC Lumber.

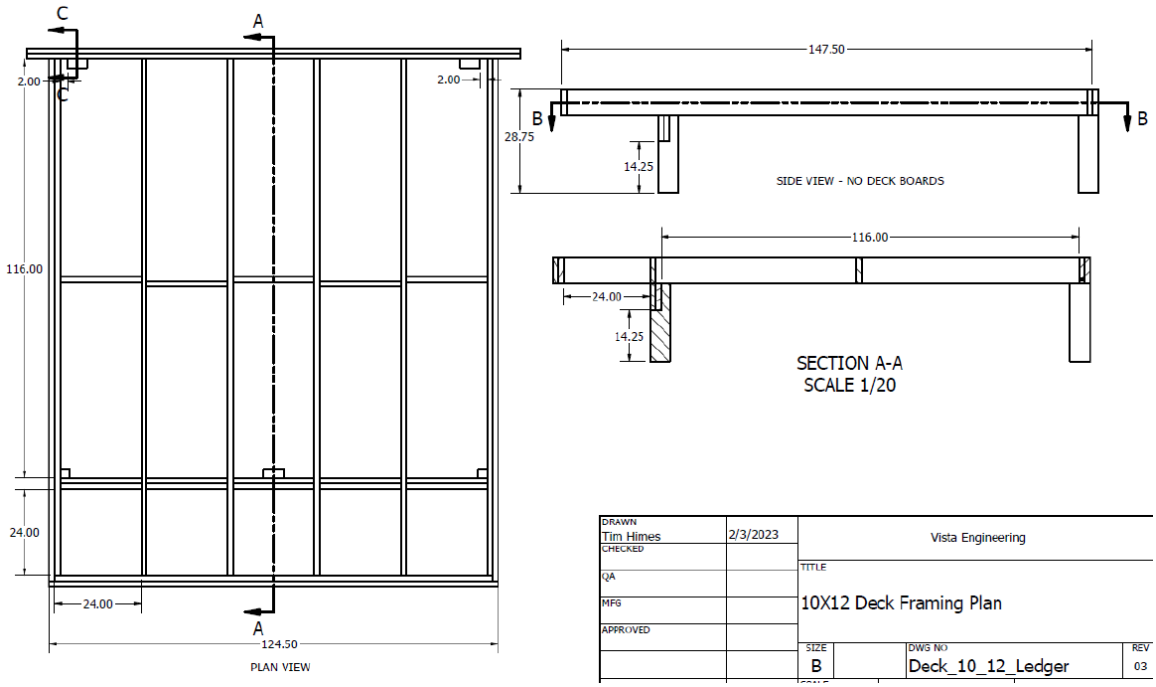


Figure 8. Tested Deck Framing Plan

6.11.4 Based upon this Owens Corning deck standard design for the specific **Figure 8** installation details, the allowable design values for OC Lumber Composite Assemblies are found in **Table 13**.

Table 13. Allowable Composite Floor Joist Assembly Applications

Product	12-foot Long OC Lumber Joist with 2-foot Cantilever Spaced 24" o.c. Total Load, (psf)	12-foot Long OC Lumber Joist with 2-foot Cantilever Spaced 16" o.c. Total Load, (psf)	12-foot Long OC Lumber Joist with 2-foot Cantilever Spaced 12" o.c. Total Load, (psf)
OC Lumber 2 x 8 Joist Assemblies	50	65	80
SI: 1 in = 25.4 mm, 1 ft = 0.305 m, 1 psf = 0.0479 kPa			

6.12 *Fire Performance*

6.12.1 OC Lumber was evaluated for surface burning characteristics (flame spread) in accordance with IBC Section 2612.3 and IRC Section R507.2.2.2.

6.12.2 OC Lumber meets the requirements for composite deck boards having the assessed flame spread indices detailed in **Table 14**.

Table 14. Surface Burning Characteristics[1]

Product Description	Flame Spread Index
OC Lumber Joists	≤75
OC Lumber Deck Boards	≤75

1. Tested in accordance with ASTM E84 and meets Class B requirements for Flame Spread.

6.13 *OC Lumber Stair Tread Application*

6.13.1 OC Lumber was evaluated for its performance for use as stair treads in accordance with IBC Section 1607.20 and IRC Section R507.2.2.

6.13.1.1 OC Lumber may be used as stair treads in one-family and two-family dwellings.

6.13.1.2 Minimum of a three span configuration shall be installed when OC Lumber is used for stair tread applications.

6.14 *OC Lumber Stair Stringer Application*

6.14.1 OC Lumber was evaluated for its performance as stair stringers.

6.14.1.1 OC Lumber may be used as stair stringers in one-family and two-family dwellings.

6.14.1.2 Minimum of a three span configuration shall be installed when OC Lumber is used for stair stringer applications.

6.14.1.2.1 Stringers shall be reinforced with blocking.

6.14.1.3 See **Table 15** for maximum stair stringer spans per loading condition and stringer spacing.

Table 15. Maximum Allowable Stair Stringer Spans Per Loading Criteria[2,3,4]

Live Load (psf)	Stringer Spacing	Total Load[1] (Dead Load + Live Load)		Live Load Only	
		L/180	L/240	L/360	L/480
40	8" o.c.	8' 6"	7' 8"	7' 4"	6' 8"
	10" o.c.	7' 10"	7' 2"	6' 10"	6' 2"
	12" o.c.	7' 5"	6' 9"	6' 5"	5' 10"
	14" o.c.	7' 0"	6' 5"	6' 1"	5' 6"
50	8" o.c.	8' 0"	7' 3"	6' 10"	6' 2"
	10" o.c.	7' 5"	6' 9"	6' 4"	5' 9"
	12" o.c.	7' 0"	6' 4"	5' 11"	5' 5"
	14" o.c.	6' 8"	6' 0"	5' 8"	5' 2"
60	8" o.c.	7' 7"	6' 11"	6' 5"	5' 10"
	10" o.c.	7' 1"	6' 5"	5' 11"	5' 5"
	12" o.c.	6' 8"	6' 0"	5' 7"	5' 1"
	14" o.c.	6' 4"	5' 9"	5' 4"	4' 10"
70	8" o.c.	7' 3"	6' 7"	6' 1"	5' 6"
	10" o.c.	6' 9"	6' 2"	5' 8"	5' 2"
	12" o.c.	6' 4"	5' 9"	5' 4"	4' 10"
	14" o.c.	6' 0"	5' 6"	5' 1"	4' 7"
80	8" o.c.	7' 0"	6' 4"	5' 10"	5' 3"
	10" o.c.	6' 6"	5' 11"	5' 5"	4' 11"
	12" o.c.	6' 1"	5' 7"	5' 1"	4' 7"
	14" o.c.	5' 10"	5' 3"	4' 10"	4' 5"

SI: 1 in = 25.4 mm

1. Total load includes a 12 psf dead load
2. Minimum throat depth of 5".
3. Minimum of three stringer stair assemblies tied together with stair treads.
4. These span calculations do not account for creep or external factors such as temperature, freeze-thaw cycles, UV exposure, etc.

6.15 Railings and rail posts are outside of the scope of this report. For more information, please contact Owens Corning technical support.

6.16 For installation details regarding guard post attachments, refer to Figure 25 and Figure 26 (page 19 and page 20, respectively) of AWC DCA-6.

6.17 Where the application falls outside of the performance evaluation, conditions of use, and/or installation requirements set forth herein, alternative techniques shall be permitted in accordance with accepted engineering practice and experience. This includes but is not limited to the following areas of engineering: mechanics or materials, structural, building science, and fire science.

7 Certified Performance[27]

7.1 All construction methods shall conform to accepted engineering practices to ensure durable, livable, and safe construction and shall demonstrate acceptable workmanship reflecting journeyman quality of work of the various trades.[28]

7.2 The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur.[29]

8 Regulatory Evaluation and Accepted Engineering Practice

8.1 OC Lumber complies with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:

8.1.1 OC Lumber was tested and/or evaluated for:

8.1.1.1 Structural capacities for gravity loads when used as deck posts, joists, beams, and headers.

8.1.1.1.1 Edgewise flexural testing was conducted in accordance with ASTM D198 and ASTM D6109 where the use is for joists, beams, and headers.

8.1.1.1.2 Axial compression testing was conducted in accordance with ASTM D198 where the use is for posts.

8.1.1.2 Determination of the equivalent specific gravities in accordance with ASTM D5456.

8.1.1.3 Connection capacities of composite deck screws were conducted in accordance with ASTM D1037.

8.1.1.4 Vertical load-bearing capacities of hanger connections were conducted in accordance with ASTM D7147 as specified in IBC Section 2304.10.4.

8.1.1.5 Surface burning characteristics testing was conducted in accordance with ASTM E84 as specified in IBC Section 2612.3 and IRC Section R507.2.2.2.

8.2 Any building code, regulation and/or accepted engineering evaluations (i.e., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ, which is an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP or approved sources. DrJ is qualified[30] to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,[31] respectively.

8.3 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise, which is also its areas of professional engineering competence.

8.4 Any regulation specific issues not addressed in this section are outside the scope of this report.

9 Installation

9.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.

9.2 In the event of a conflict between the manufacturer installation instructions and this report, contact the manufacturer for counsel on the proper installation method.

9.3 *Exterior Deck Installation Procedure*

9.3.1 Install a ledger board to the desired structure in accordance with IRC Section R507.9.

9.3.1.1 For fasteners not specified in building codes, fastener spacing provisions from other approved sources may be permitted for the installation of the ledger board.

9.3.1.2 Ledger board shall be greater than or equal to the joist size.

9.3.2 Assemble 3-ply posts using 2 x 6 OC Lumber and #10 x 4" screws as shown in **Figure 9** (notched post for a 2-ply beam) and **Figure 10** (for a 3-ply beam).

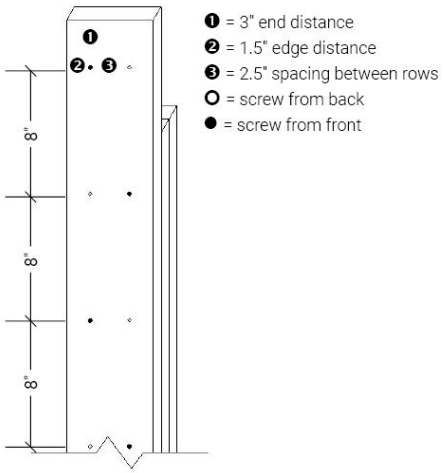


Figure 9. Post Supporting a 2-Ply Beam

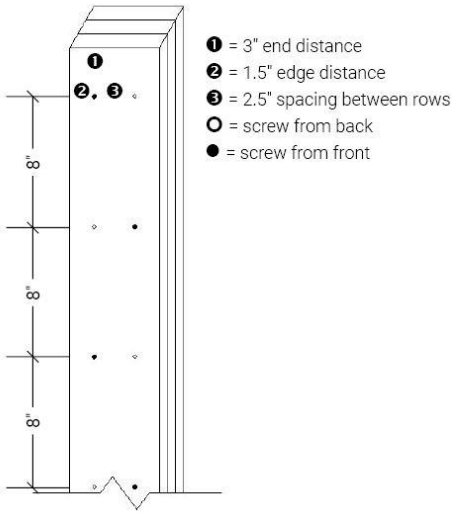


Figure 10. Post Supporting a 3-Ply Beam

9.3.2.1 Screws securing the OC Lumber plies for use as posts shall be staggered and placed 8" o.c.

9.3.2.2 A 2-ply beam shall be fastened to each notched 3-ply OC Lumber post with two rows of #10 x 3" screws. Minimum edge distance shall be $1^1/_2$".

9.3.2.2.1 2 x 6 beams require two (2) screws per row at each notched post.

9.3.2.2.2 2 x 8 beams require three (3) screws per row at each notched post.

9.3.2.2.3 2 x 10 beams require four (4) screws per row at each notched post.

9.3.2.3 A 3-ply beam shall be secured to the 3-ply OC Lumber post with a code-compliant post cap connector with a minimum uplift capacity of 2,000 lb.

9.3.2.4 Posts shall be anchored to footings in compliance with the applicable building codes.

9.3.3 Assemble 2-ply or 3-ply beams 2x OC Lumber.

9.3.3.1 Beams shall be secured using #10 x 3" screws staggered in two rows as shown in **Figure 11**.

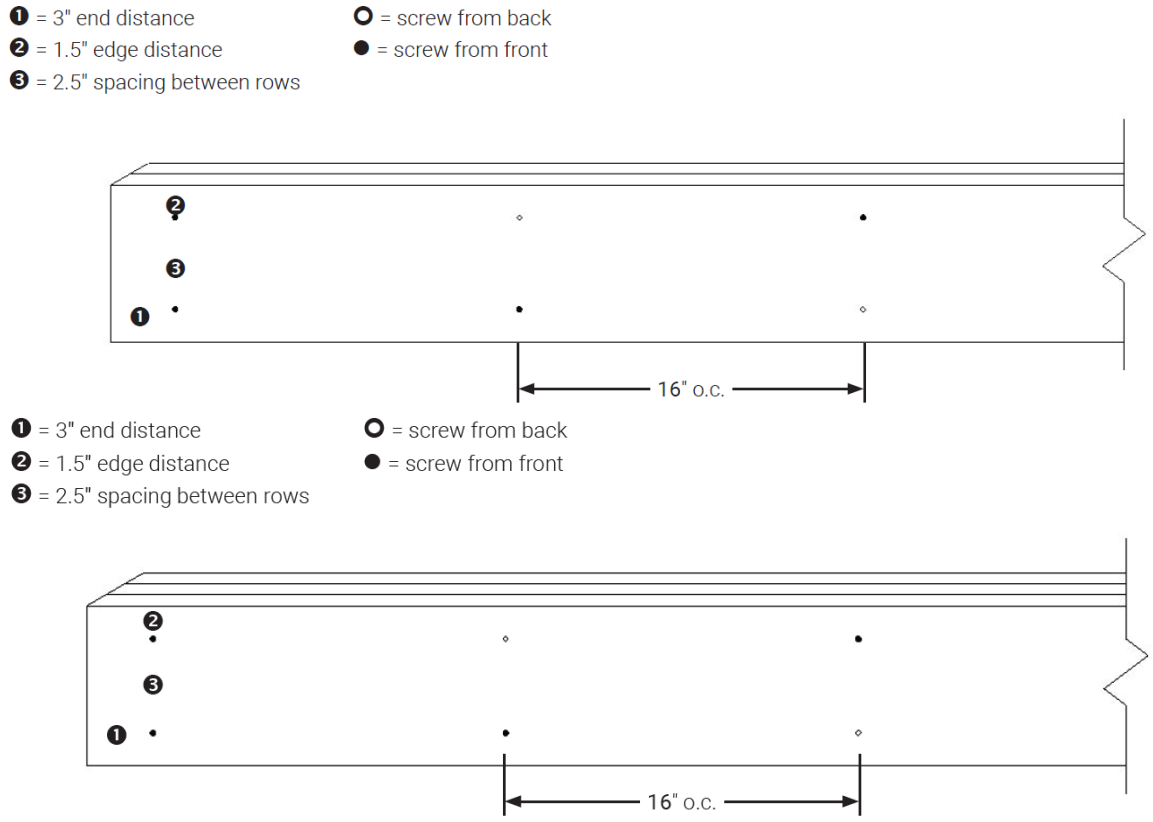


Figure 11. OC Lumber Beams – 2-Ply (Top) and 3-Ply (Bottom)

9.3.4 OC Lumber beams shall be installed onto OC Lumber posts in accordance with **Section 9.3.2**.

9.3.4.1 Overhangs up to 2' over the sides of the posts may be permitted.

9.3.4.1.1 Overhangs are limited to the lesser of 2', 25% of the length of the beam span between posts, or the cantilever lengths in **Table 6** and **Table 7**.

9.3.5 A 2-ply OC Lumber beam shall be used as the band joist and assembled as demonstrated in **Figure 11**. However, spacing of rows of fasteners shall be 12" o.c. instead of 16" o.c.

9.3.5.1 The outer ply shall overhang the inner ply by $1^1/_2$" at the free end of the band joist.

9.3.5.1.1 For ease, the lengths of inner ply of the band joist and the deck joists are equivalent.

9.3.5.2 Joist hangers shall be sized appropriately and in accordance with **Table 16**.

Table 16. Minimum Design Values for Hangers Attached to OC Lumber[1]

Hanger Type	Minimum Gravity Allowable Load (lb)	Minimum Uplift Allowable Load (lb)
Single 2 x 6 Joist Hanger	345	500
Single 2 x 8 Joist Hanger	490	500
Single 2 x 10 Joist Hanger	545	500
Double 2 x 6 Joist Hanger	685	500
Double 2 x 8 Joist Hanger	980	500
Double 2 x 10 Joist Hanger	1,170	500

SI: 1 lb = 4.45 N

1. Tested in accordance with ASTM D7147.

9.3.5.3 Hurricane ties shall be used to secure deck joists deck beam for dropped beam installation.

9.3.6 Install blocking between each joist every 4' to 5' using #10 x 3" composite deck screws.

9.3.6.1 Blocking shall be staggered.

9.3.6.2 Installation of blocking over the drop beam is recommended.

9.3.6.3 Screws shall be installed along the centerline of each blocking with a minimum edge distance of $1^1/_2$".

9.3.7 Install first rim joist, a single ply OC Lumber beam, using #10 x 3" composite deck screws through the side of the rim joist into each deck joist.

9.3.7.1 2 x 6 beams require two (2) screws along the centerline of each blocking with a minimum edge distance of $1^1/_2$".

9.3.7.2 2 x 8 beams require three (3) screws along the centerline of each blocking with a minimum edge distance of $1^1/_2$".

9.3.7.3 2 x 10 beams require four (4) screws along the centerline of each blocking with a minimum edge distance of $1^1/_2$".

9.3.8 Install the second rim joist in front of the first rim joist using two rows of #10 x 3" screws staggered 12" o.c. with a minimum edge distance of $1^1/_2$".

9.3.8.1 Secure the corners of the second rim joist to the outer ply of the band joist using the same provisions as in **Section 9.3.7**.

9.4 *Stair Stringer Application*

9.4.1 When OC Lumber is used as stair stringers, fabrication of the stringers shall comply with the applicable provisions in IBC Section 1011 and IRC Section R318.7.

9.4.2 Choose an appropriate size OC Lumber that will satisfy a minimum throat depth of 5" for project-specific stair riser and tread depth parameters.

10 Substantiating Data

10.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:

10.1.1 Flexural testing in accordance with ASTM D198

10.1.2 Flexural test data in accordance with ASTM D6109 from approved sources

10.1.3 Vista Engineering Full Deck Assembly Report

10.1.4 Compression testing (short and long specimens) in accordance with ASTM D198

10.1.5 Dowel bearing strength testing in accordance with ASTM D5764

10.1.6 Withdrawal resistance testing of nails and screws in accordance with ASTM D1761

10.1.7 Fastener head-pull through and withdrawal data in accordance with ASTM D1037 from approved sources

10.1.8 Joist hanger assembly testing in accordance with ASTM D7147

10.1.9 Span and post spacing calculations from approved sources

10.1.10 Surface burning characteristics in accordance with ASTM E84

10.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies, approved sources, and/or an RDP. Accuracy of external test data and resulting analysis is relied upon.

10.3 Where applicable, testing and/or engineering analysis are based upon provisions that have been codified into law through state or local adoption of regulations and standards. The developers of these regulations and standards are responsible for the reliability of published content. DrJ's engineering practice may use a regulation-adopted provision as the control. A regulation-endorsed control versus a simulation of the conditions of application to occur establishes a new material as being equivalent to the regulatory provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.

10.4 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, or duly authenticated reports from approved agencies and/or approved sources provided by the supplier. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this duly authenticated report, may be dependent upon published design properties by others.

10.5 *Testing and Engineering Analysis*

10.5.1 The strength, rigidity, and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.[32]

10.6 Where additional condition of use and/or regulatory compliance information is required, please search for OC Lumber on the DrJ Certification website.

11 Findings

11.1 As outlined in **Section 6**, OC Lumber has performance characteristics that were tested and/or meet applicable regulations. In addition, they are suitable for use pursuant to its specified purpose.

11.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, OC Lumber shall be approved for the following applications:

11.2.1 Joists as permitted in **Table 2** through **Table 5**.

11.2.2 Posts as permitted in **Table 6** and **Table 7**.

11.2.3 Built-up Posts as permitted in **Table 8**.

11.2.4 Equivalent specific gravities for use in accordance with NDS per **Table 9**.

11.2.5 Ledgers as permitted in **Table 12**.

11.2.6 Headers and beams as permitted in **Table 12**.

11.2.7 Fire-rated as Class B per flame spread index shown in **Table 14**.

11.2.8 Stair stringers as permitted in **Table 15**.

11.3 Evaluated fastener properties used with OC Lumber are provided in **Table 10** and **Table 11**.

11.4 OC Lumber contains no wood or cellulosic materials and meets the requirements of IBC Section 2612.4 and IRC Section R304, where protection against biodegradation and decay is required.

11.5 OC Lumber contains no wood or cellulosic materials and meets the requirements of IBC Section 2612.4 and IRC Section R305, where protection against termite attack is required.

11.6 Unless exempt by state statute, when OC Lumber is to be used as a structural and/or building envelope component in the design of a specific building, the design shall be performed by an RDP.

11.7 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Owens Corning.

11.8 IBC Section 104.2.3 (IRC Section R104.2.2 and IFC Section 104.2.3[33] are similar) in pertinent part state:

> **104.2.3 Alternative Materials, Design and Methods of Construction and Equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative is not specifically prohibited by this code and has been approved.

11.9 **Approved:**[34] Building regulations require that the building official shall accept duly authenticated reports.[35]

11.9.1 An approved agency is *"approved"* when it is ANAB ISO/IEC 17065 accredited.

11.9.2 An approved source is *"approved"* when an RDP is properly licensed to transact engineering commerce.

11.9.3 Federal law, Title 18 US Code Section 242, requires that, where the alternative product, material, service, design, assembly, and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved. Denial without written reason deprives a protected right to free and fair competition in the marketplace.

11.10 DrJ is a licensed engineering company, employs licensed RDPs and is an ANAB Accredited Product Certification Body – Accreditation #1131.

11.11 Through the IAF Multilateral Arrangement (MLA), this duly authenticated report can be used to obtain product approval in any jurisdiction or country because all ANAB ISO/IEC 17065 duly authenticated reports are equivalent.[36]

12 Conditions of Use

12.1 Material properties shall not fall outside the boundaries defined in **Section 6**.

12.2 As defined in **Section 6**, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.

12.3 As listed herein, OC Lumber shall be used:

12.3.1 Primarily for outdoor decks

12.3.2 For all other applications, assistance is available from Owens Corning technical support

12.4 When used as stair stringers, OC Lumber shall only be used in buildings that are one or two-family dwellings in accordance with IBC Table 1607.1.

12.5 When required by adopted legislation and enforced by the building official, also known as the Authority Having Jurisdiction (AHJ) in which the project is to be constructed:

12.5.1 Building regulations require that the building official shall accept Duly Authenticated Reports.[37]

12.5.2 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an approved source, shall be approved when signed and sealed.

12.5.3 This report and the installation instructions shall be submitted at the time of permit application.

12.5.4 This innovative product has an internal quality control program and a third-party quality assurance program.

12.5.5 At a minimum, this innovative product shall be installed per **Section 9**.

12.5.6 The review of this report by the AHJ shall comply with IBC Section 104.2.3.2 and IBC Section 105.3.1.

12.5.7 This innovative product has an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.7.2, IBC Section 110.4, IBC Section 1703, IRC Section R104.7.2, and IRC Section R109.2.

12.6 The application of this innovative product in the context of this report is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspection as required by IBC Section 110.3, IRC Section R109.2, and any other regulatory requirements that may apply.

12.7 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, *"the building official shall make, or cause to be made, the necessary tests and investigations; or the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in Section 104.2.3"*, all of IBC Section 104, and IBC Section 105.3.

12.8 Design loads shall be determined in accordance with the regulations adopted by the jurisdiction in which the project is to be constructed and/or by the building designer (i.e., owner or RDP).

12.9 The actual design, suitability, and use of this report for any particular building, is the responsibility of the owner or the authorized agent of the owner.

13 Identification

13.1 The innovative product listed in **Section 1.1** is identified by a label on the board or packaging material bearing the manufacturer name, product name, this report number, and other information to confirm code compliance.

13.2 Additional technical information can be found at www.owenscorning.com/en-us.

14 Review Schedule

14.1 This report is subject to periodic review and revision. For the latest version, visit www.drjcertification.org.

14.2 For information on the status of this report, please contact DrJ Certification.

Notes

1 For more information, visit drjcertification.org or call us at 608-310-6748.

2 Capitalized terms and responsibilities are defined pursuant to the applicable building code, applicable reference standards, the latest edition of TPI 1, the NDS, AISI S202, US professional engineering law, Canadian building code, Canada professional engineering law, Qualtim External Appendix A: Definitions/Commentary, Qualtim External Appendix B: Project/Deliverables, Qualtim External Appendix C: Intellectual Property and Trade Secrets, definitions created within Design Drawings and/or definitions within Reference Sheets. Beyond this, terms not defined shall have ordinarily accepted meanings as the context implies. Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

3 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1702

4 Alternative Materials, Design and Methods of Construction and Equipment: The provisions of any regulation code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by a regulation. Please review https://www.justice.gov/atr/mission and https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3

5 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.2:~:text=the%20design%20strengths%20and%20permissible%20stresses%20shall%20be%20established%20by%20tests

6 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design of accepted engineering practice. https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.1:~:text=Conformance%20to%20Standards-,The%20design%20strengths%20and%20permissible%20stresses,-of%20any%20structural

7 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1:~:text=the%20building%20official%20shall%20make%2C%20or%20cause%20to%20be%20made%2C%20the%20necessary%20tests%20and%20investigations%3B%20or%20the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies%20in%20respect%20to%20the%20quality%20and%20manner%20of%20use%20of%20new%20materials%20or%20assemblies%20as%20provided%20for%20in%20Section%20104.2.3.

8 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4.2

9 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_agency

10 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_source

11 https://www.law.cornell.edu/uscode/text/18/1832 (b) Any organization that commits any offense described in subsection (a) shall be fined not more than the greater of $5,000,000 or 3 times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided. The federal government and each state have a public records act. To follow DTSA and comply state public records and trade secret legislation requires approval through ANAB ISO/IEC 17065 accredited certification bodies or approved sources. For more information, please review this website: Intellectual Property and Trade Secrets.

12 https://www.nspe.org/resources/issues-and-advocacy/professional-policies-and-position-statements/regulation-professional AND https://apassociation.org/list-of-engineering-boards-in-each-state-archive/

13 https://www.cbitest.com/accreditation/

14 https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.1:~:text=directed%20to%20enforce%20the%20provisions%20of%20this%20code

15 https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3 AND https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#105.3.1

16 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1

17 https://iaf.nu/en/about-iaf-mla/#:~:text=Once%20an%20accreditation%20body%20is%20a%20signatory%20of%20the%20IAF%20MLA%2C%20it%20is%20required%20to%20recognise%20certificates%20and%20validation%20and%20verification%20statements%20issued%20by%20conformity%20assessment%20bodies%20accredited%20by%20all%20other%20signatories%20of%20the%20IAF%20MLA%2C%20with%20the%20appropriate%20scope.

18 True for all ANAB accredited product evaluation agencies and all International Trade Agreements.

19 https://www.justice.gov/crt/deprivation-rights-under-color-law AND https://www.justice.gov/atr/mission

20 Unless otherwise noted, the links referenced herein use un-amended versions of the 2024 International Code Council (ICC) 2024 International Code Council (ICC) model codes as foundation references. Mississippi versions of the IBC 2024 and the IRC 2024 are un-amended. This material, product, design, service and/or method of construction also complies with the 2000-2012 versions of the referenced codes and the standards referenced therein. As pertinent to this technical and code compliance evaluation, CBI and/or DrJ staff have reviewed any state or local regulatory amendments to assure this report is in compliance.

21 See Adoptions by Publisher for the latest adoption of a non-amended or amended model code by the local jurisdiction. https://up.codes/codes/general

22 See Adoptions by Publisher for the latest adoption of a non-amended or amended model code by state. https://up.codes/codes/general

23 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282/subpart-A/section-3282.14

24 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280

25 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#p-3280.2(Listed%20or%20certified); https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#listed AND https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#labeled

26 https://ctscivil.com/wp-content/uploads/2019/08/V-M-D-Diagrams.pdf AND https://engineering.purdue.edu/~ce474/Docs/DA6-BeamFormulas.pdf. For assistance with beam or post specialty engineered design, please contact Owens Corning via email at oclumber@owenscorning.com.

27 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4

28 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#:~:text=All%20construction%20methods%20shall%20be%20in%20conformance%20with%20accepted%20engineering%20practices%20to%20insure%20durable%2C%20livable%2C%20and%20safe%20housing%20and%20shall%20demonstrate%20acceptable%20workmanship%20reflecting%20journeyman%20quality%20of%20work%20of%20the%20various%20trades

[29] https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#:~:text=The%20strength%20and%20rigidity%20of%20the%20component%20parts%20and/or%20the%20integrated%20structure%20shall%20be%20determined%20by%20engineering%20analysis%20or%20by%20suitable%20load%20tests%20to%20simulate%20the%20actual%20loads%20and%20conditions%20of%20application%20that%20occur.

[30] Qualification is performed by a legislatively defined Accreditation Body. ANSI National Accreditation Board (ANAB) is the largest independent accreditation body in North America and provides services in more than 75 countries. DrJ is an ANAB accredited product certification body.

[31] https://anabpd.ansi.org/Accreditation/product-certification/AllDirectoryDetails?prgID=1&orgID=2125&statusID=4#:~:text=Bill%20Payment%20Date-,Accredited%20Scopes,-13%20ENVIRONMENT.%20HEALTH

[32] See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition: https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280

[33] 2018: https://up.codes/viewer/wyoming/ifc-2018/chapter/1/scope-and-administration#104.9 AND 2021: https://up.codes/viewer/wyoming/ibc-2021/chapter/1/scope-and-administration#104.11

[34] Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC Section 201.4 (https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#201.4) where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

[35] https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1

[36] Multilateral approval is true for all ANAB accredited product evaluation agencies and all International Trade Agreements.

[37] https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1