Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

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Performance Characteristics of Owens Corning® Lumber Structural Framing - USA

Trade Secret Report Holder:

Owens Corning

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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 Structural Framing

2 Product Description and Materials

2.1 The innovative product evaluated in this report is shown in **Figure 1**. Available colors are given in **Figure 2**, and Owens Corning Lumber Structural Framing is specified in **Table 1**.



Figure 1. Owens Corning Lumber Structural Framing

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Figure 2. Owens Corning Lumber Structural Framing Available Colors

Table 1. Description of Owens Corning Lumber Structural Framing

Owens Corning Lumber Structural Framing	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 (Owens Corning Lumber Structural Framing)	Reinforced polymeric lumber for joist applications (edgewise orientation) available in the following sizes: *Nominal:* 2 x 4, 2 x 6, 2 x 8, 2 x 10, and 2 x 12 *Actual:* 1.5" x 3.5", 1.5" x 5.5", 1.5" x 7.5", 1.5" x 9.25" and 1.5" x 11.25"
Decking(1) (Owens Corning Lumber Marine Grade Decking®)	Reinforced polymeric lumber for decking applications (flatwise orientation) available in the following sizes: *Nominal:* 1 x 6, 1 x 8, and 2 x 6 *Actual:* 1.02" x 5.5", 1.02" x 7.5", and 1.35" x 5.5"
Posts(2) (Owens Corning® Lumber Structural 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**.

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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 This report utilizes intellectual property and/or trade secrets to create public domain material properties for commercial end-use.

3.2.1.1 This report protects confidential Intellectual Property and trade secrets 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 Local, State, and Federal Approvals; Standards; Regulations[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, St. Louis County, 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]

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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 *Regulations*

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

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

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

4.2.3.1 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.

4.2.4 *FBC-B – 23: Florida Building Code – Building*

4.2.5 *FBC-R – 23: Florida Building Code – Residential*

4.2.6 Other State and Local Regulations:

4.2.6.1 *Chicago Building Code – 19, with 22 Supplement*

4.2.6.2 *New York City – 22*

4.2.6.3 *Texas Department of Insurance*

4.3 *Standards*

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

4.3.2 *ASTM D143: Standard Test Methods for Small Clear Specimens of Timber*

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

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

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

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

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

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

4.3.9 *ASTM D6112: Standard Test Methods for Compressive and Flexural Creep and Creep-Rupture of Plastic Lumber and Shapes*

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

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

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

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5 Listed[25]

5.1 Equipment, materials, products, or services included in a List published by a nationally recognized testing laboratory (e.g., CBI), an approved agency (e.g., CBI and DrJ), and/or an approved source (e.g., DrJ), or other organization(s) concerned with product evaluation (e.g., DrJ), that maintains periodic inspection (e.g., 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 Owens Corning Lumber Structural Framing was tested and/or evaluated for:

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

6.1.2 Fastener and hanger connection capacities; and

6.1.3 Flame spread.

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

6.2.1 The 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: 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: 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: 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: 10-psf DL and 100-psf L

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 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, use **Table 2**.

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.

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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' 9½" (span plus the ledger thickness) from the face of the building to which the deck will be attached.

Table 2. Joist Spans Using Owens Corning Lumber Structural Framing at Various Deflection Limits – 50-psf Total Load[4,5]

Owens Corning Lumber Structural Framing Profile	Joist Spacing (in. o.c.)	Deflection Limits									
		L/360[1]		L/240[1]		L/180[2]		L/150[2]		L/120[2]	
		Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever
2 x 6	12	6' 5"	0' 6"	6' 10"	0' 9"	7' 1"	0' 11"	7' 6"	1' 0"	8' 1"	1' 2"
	16	5' 10"	0' 7"	6' 2"	0' 9"	6' 5"	1' 0"	6' 10"	1' 1"	7' 4"	1' 3"
	24	5' 1"	0' 7"	5' 5"	0' 10"	5' 7"	1' 1"	6' 0"	1' 3"	6' 5"	1' 5"
2 x 8	12	8' 9"	0' 11"	9' 4"	1' 4"	9' 8"	1' 8"	10' 3"	1' 10"	11' 1"	2' 0"
	16	8' 0"	1' 0"	8' 6"	1' 5"	8' 9"	1' 9"	9' 4"	2' 0"	10' 1"	2' 0"
	24	6' 11"	1' 2"	7' 5"	1' 7"	7' 8"	1' 11"	8' 2"	2' 0"	8' 9"	2' 0"
2 x 10	12	10' 10"	1' 5"	11' 6"	2' 0"	11' 11"	2' 0"	12' 8"	2' 0"	13' 8"	2' 0"
	16	9' 10"	1' 7"	10' 5"	2' 0"	10' 10"	2' 0"	11' 6"	2' 0"	12' 5"	2' 0"
	24	8' 7"	1' 9"	9' 1"	2' 0"	9' 5"	2' 0"	10' 0"	2' 0"	10' 10"	2' 0"
2 x 12	12	12' 10"	2' 0"	13' 8"	2' 0"	14' 2"	2' 0"	15' 0"	2' 0"	16' 2"	2' 0"
	16	11' 8"	2' 0"	12' 5"	2' 0"	12' 10"	2' 0"	13' 8"	2' 0"	14' 9"	2' 0"
	24	10' 2"	2' 0"	10' 10"	2' 0"	11' 3"	2' 0"	11' 11"	2' 0"	12' 10"	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 only. Dead-load deflection is not included in this criterion.
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.
4. Joist spans are based on a factor of 1.0 for temperature, freeze-thaw cycles, and UV exposure.
5. Loading conditions exceeding the stated design basis shall be designed in accordance with **Section 6.10.1**.

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Table 3. Joist Spans Using Owens Corning Lumber Structural Framing at Various Deflection Limits – 70-psf Total Load[4,5]

Owens Corning Lumber Structural Framing Profile	Joist Spacing (in. o.c.)	Deflection Limits									
		L/360[1]		L/240[1]		L/180[2]		L/150[2]		L/120[2]	
		Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever
2 x 6	12	5' 7"	0' 7"	6' 1"	0' 9"	6' 5"	1' 0"	6' 10"	1' 1"	7' 4"	1' 3"
	16	5' 1"	0' 7"	5' 6"	0' 10"	5' 10"	1' 1"	6' 2"	1' 2"	6' 8"	1' 4"
	24	4' 5"	0' 8"	4' 10"	0' 11"	5' 1"	1' 2"	5' 5"	1' 4"	5' 10"	1' 5"
2 x 8	12	7' 8"	1' 1"	8' 4"	1' 5"	8' 9"	1' 9"	9' 4"	2' 0"	10' 1"	2' 0"
	16	6' 11"	1' 2"	7' 7"	1' 7"	8' 0"	1' 11"	8' 6"	2' 0"	9' 2"	2' 0"
	24	6' 1"	1' 3"	6' 7"	1' 7"	6' 11"	1' 8"	7' 5"	1' 10"	8' 0"	2' 0"
2 x 10	12	9' 5"	1' 7"	10' 3"	2' 0"	10' 10"	2' 0"	11' 6"	2' 0"	12' 5"	2' 0"
	16	8' 7"	1' 9"	9' 4"	2' 0"	9' 10"	2' 0"	10' 5"	2' 0"	11' 3"	2' 0"
	24	7' 6"	1' 10"	8' 2"	2' 0"	8' 7"	2' 0"	9' 1"	2' 0"	9' 10"	2' 0"
2 x 12	12	11' 3"	2' 0"	12' 2"	2' 0"	12' 10"	2' 0"	13' 8"	2' 0"	14' 9"	2' 0"
	16	10' 2"	2' 0"	11' 1"	2' 0"	11' 8"	2' 0"	12' 5"	2' 0"	13' 4"	2' 0"
	24	8' 11"	2' 0"	9' 8"	2' 0"	10' 2"	2' 0"	10' 10"	2' 0"	11' 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 60-psf only. Dead-load deflection is not included in this criterion.
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.
4. Joist spans are based on a factor of 1.0 for temperature, freeze-thaw cycles, and UV exposure.
5. Loading conditions exceeding the stated design basis shall be designed in accordance with **Section 6.10.1**.

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Table 4. Joist Spans Using Owens Corning Lumber Structural Framing at Various Deflection Limits – 90-psf Total Load[4,5]

Owens Corning Lumber Structural Framing Profile	Joist Spacing (in. o.c.)	Deflection Limits									
		L/360[1]		L/240[1]		L/180[2]		L/150[2]		L/120[2]	
		Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever
2 x 6	12	5' 1"	0' 7"	5' 7"	0' 10"	6' 0"	1' 1"	6' 4"	1' 2"	6' 10"	1' 4"
	16	4' 7"	0' 8"	5' 1"	0' 11"	5' 5"	1' 1"	5' 9"	1' 3"	6' 2"	1' 5"
	24	4' 0"	0' 9"	4' 5"	1' 0"	4' 9"	1' 2"	5' 0"	1' 3"	5' 5"	1' 4"
2 x 8	12	6' 11"	1' 2"	7' 8"	1' 6"	8' 2"	1' 11"	8' 8"	2' 0"	9' 4"	2' 0"
	16	6' 4"	1' 3"	6' 11"	1' 8"	7' 5"	1' 10"	7' 10"	1' 11"	8' 6"	2' 0"
	24	5' 6"	1' 4"	6' 1"	1' 6"	6' 5"	1' 7"	6' 10"	1' 8"	7' 5"	1' 10"
2 x 10	12	8' 7"	1' 9"	9' 5"	2' 0"	10' 0"	2' 0"	10' 8"	2' 0"	11' 6"	2' 0"
	16	7' 9"	1' 10"	8' 7"	2' 0"	9' 1"	2' 0"	9' 8"	2' 0"	10' 5"	2' 0"
	24	6' 10"	1' 8"	7' 6"	1' 10"	8' 0"	2' 0"	8' 6"	2' 0"	9' 1"	2' 0"
2 x 12	12	10' 2"	2' 0"	11' 3"	2' 0"	11' 11"	2' 0"	12' 8"	2' 0"	13' 8"	2' 0"
	16	9' 3"	2' 0"	10' 2"	2' 0"	10' 10"	2' 0"	11' 6"	2' 0"	12' 5"	2' 0"
	24	8' 1"	2' 0"	8' 11"	2' 0"	9' 5"	2' 0"	10' 1"	2' 0"	10' 10"	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 only. Dead-load deflection is not included in this criterion.
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.
4. Joist spans are based on a factor of 1.0 for temperature, freeze-thaw cycles, and UV exposure.
5. Loading conditions exceeding the stated design basis shall be designed in accordance with **Section 6.10.1**.

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Table 5. Joist Spans Using Owens Corning Lumber Structural Framing at Various Deflection Limits – 110-psf Total Load[4,5]

Owens Corning Lumber Structural Framing Profile	Joist Spacing (in. o.c.)	Deflection Limits									
		L/360[1]		L/240[1]		L/180[2]		L/150[2]		L/120[2]	
		Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever	Joist Span	Maximum[3] Cantilever
2 x 6	12	4' 9"	0' 8"	5' 3"	0' 11"	5' 7"	1' 1"	6' 0"	1' 3"	6' 5"	1' 5"
	16	4' 3"	0' 9"	4' 9"	0' 11"	5' 1"	1' 2"	5' 5"	1' 4"	5' 10"	1' 5"
	24	3' 9"	0' 9"	4' 2"	1' 0"	4' 5"	1' 1"	4' 9"	1' 2"	5' 1"	1' 3"
2 x 8	12	6' 5"	1' 3"	7' 2"	1' 7"	7' 8"	1' 11"	8' 2"	2' 0"	8' 9"	2' 0"
	16	5' 10"	1' 4"	6' 6"	1' 7"	6' 11"	1' 8"	7' 5"	1' 10"	8' 0"	2' 0"
	24	5' 1"	1' 3"	5' 8"	1' 5"	6' 1"	1' 6"	6' 5"	1' 7"	6' 11"	1' 8"
2 x 10	12	8' 0"	1' 10"	8' 10"	2' 0"	9' 5"	2' 0"	10' 0"	2' 0"	10' 10"	2' 0"
	16	7' 3"	1' 9"	8' 0"	2' 0"	8' 7"	2' 0"	9' 1"	2' 0"	9' 10"	2' 0"
	24	6' 4"	1' 7"	7' 0"	1' 9"	7' 6"	1' 10"	8' 0"	2' 0"	8' 7"	2' 0"
2 x 12	12	9' 5"	2' 0"	10' 6"	2' 0"	11' 3"	2' 0"	11' 11"	2' 0"	12' 10"	2' 0"
	16	8' 7"	2' 0"	9' 6"	2' 0"	10' 2"	2' 0"	10' 10"	2' 0"	11' 8"	2' 0"
	24	7' 6"	1' 10"	8' 4"	2' 0"	8' 11"	2' 0"	9' 5"	2' 0"	10' 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 100-psf only. Dead-load deflection is not included in this criterion.
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.
4. Joist spans are based on a factor of 1.0 for temperature, freeze-thaw cycles, and UV exposure.
5. Loading conditions exceeding the stated design basis shall be designed in accordance with **Section 6.10.1**.

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

6.4.9 An example of Owens Corning Lumber Structural Framing joist installation is shown in **Figure 3**.

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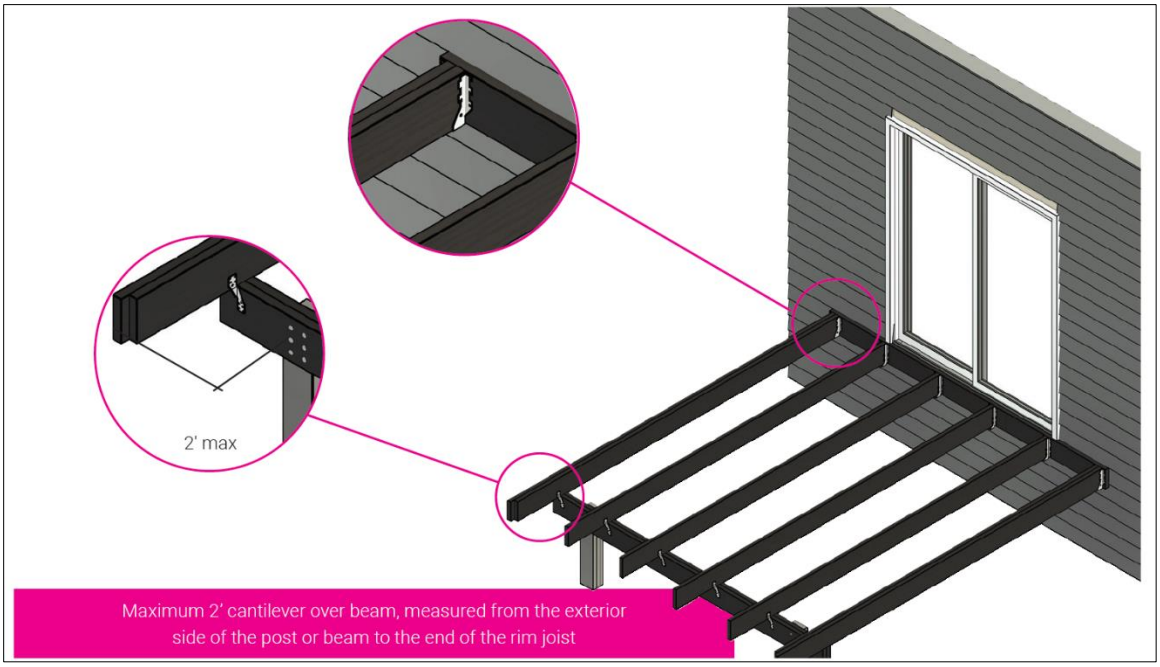


Figure 3. Owens Corning Lumber Structural Framing Joist Installation

6.5 The maximum post spacing recommended for support of deck beams with two supports is 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.

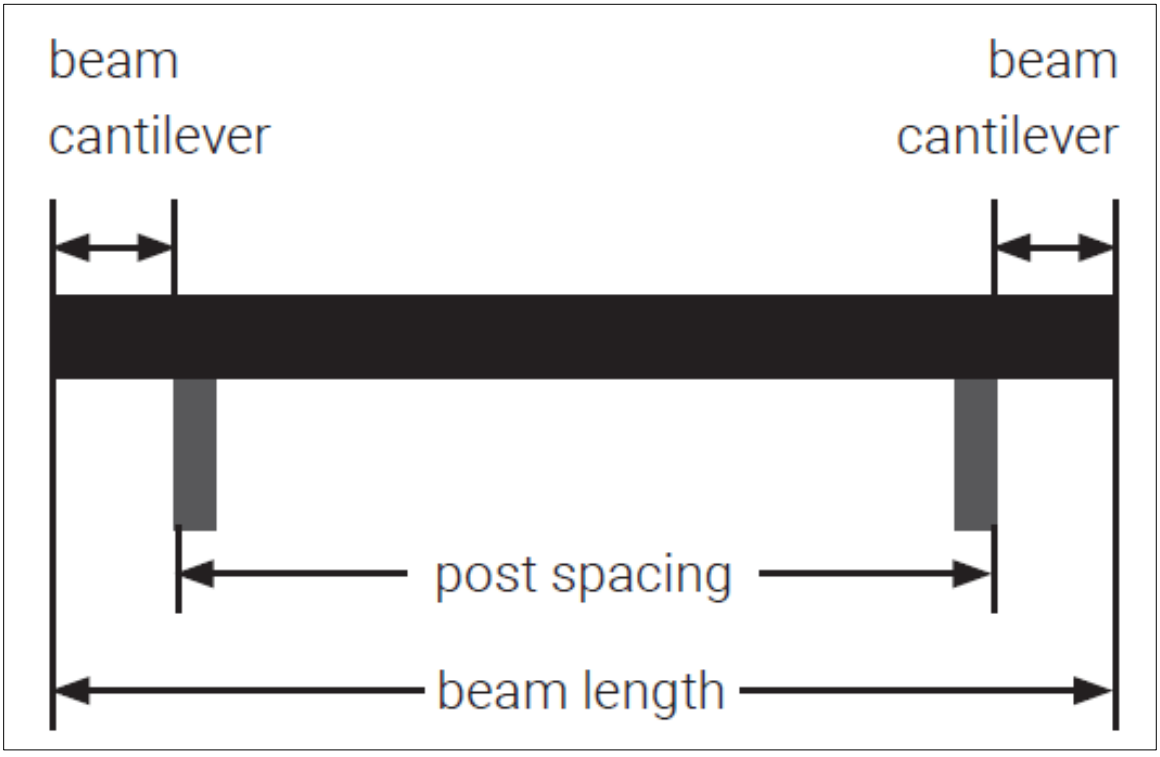


Figure 4. Post Spacing for Support of Beams at Two (2) Locations

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Table 6. Maximum Post Spacing (Beam Span) and Cantilever Lengths for Support of Beams at Two Locations[1,2,3,4,6] – 40-psf Live Load

Owens Corning Lumber Structural Framing Profile	Number of Plies	Length of Owens Corning Joist (ft)[5]									
		4		5		6		7		8	
		Beam Span	Maximum Cantilever	Beam Span	Maximum Cantilever	Beam Span	Maximum Cantilever	Beam Span	Maximum Cantilever	Beam Span	Maximum 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"
		9		10		11		12		13	
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"
		14		15		16					
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. Maximum post spacing (beam span) and cantilever lengths are based on a deck design live load of 40-psf, a total load of 50 psf (10 psf dead load, 40 psf live-load) with a temperature factor of 1.0.
2. Beam spans were evaluated using a live-load deflection limit of L/360 and a total-load deflection limit of L/240. Beam overhangs (cantilevers) were evaluated using a deflection limit of L/180.
3. Owens Corning decks use proprietary materials and conditions not prescribed in IRC Section R507.1.
4. Owens Corning decks use design requirements that 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.
5. 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. Loading conditions exceeding the stated design basis shall be designed in accordance with **Section 6.10.1**.

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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 (e.g., 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 is given 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.

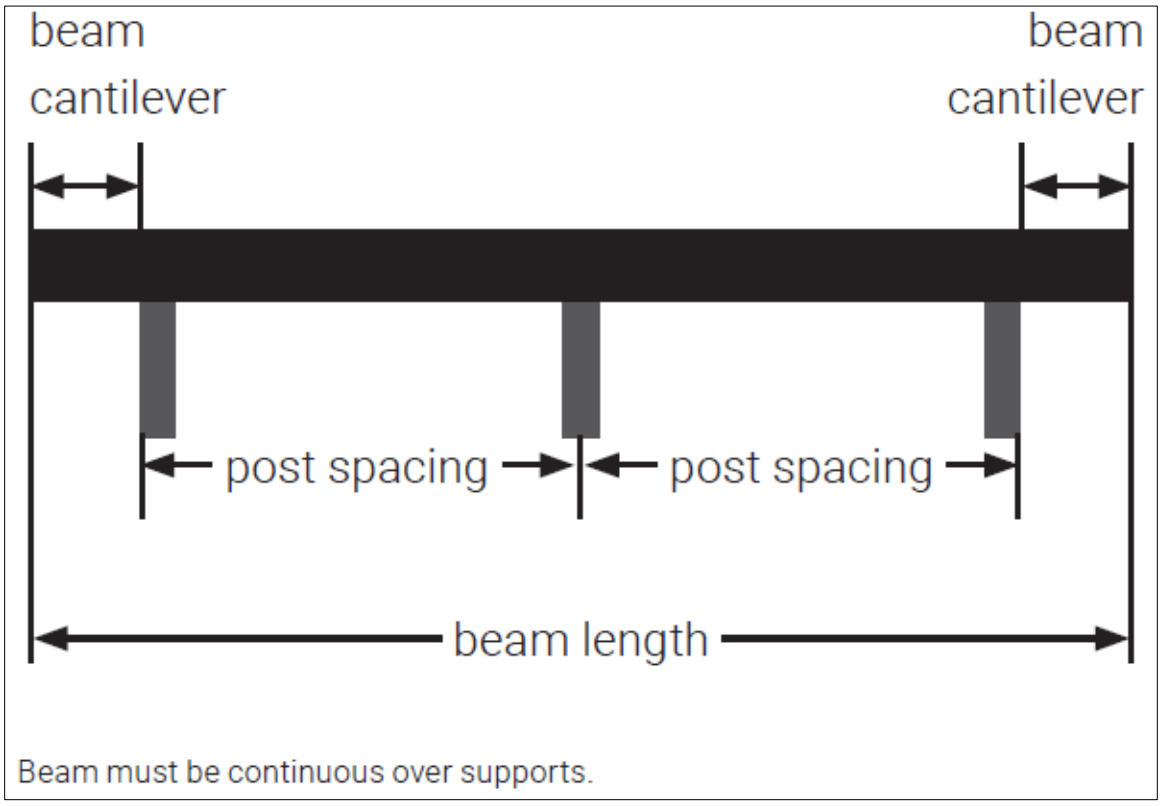


Figure 5. Post Spacing for Support of Beams at Three or More Locations

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Table 7. Maximum Post Spacing (Beam Span) and Cantilever Lengths for Support of Beams at Three or More Locations[1,2,3,4,6] – 40-psf Live Load

Owens Corning Lumber Structural Framing Profile	Number of Plies	Length of Owens Corning Joist (ft)[5]									
		4		5		6		7		8	
		Beam Span	Maximum Cantilever	Beam Span	Maximum Cantilever	Beam Span	Maximum Cantilever	Beam Span	Maximum Cantilever	Beam Span	Maximum 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"
		9		10		11		12		13	
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"
		14		15		16					
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. Maximum post spacing (beam span) and cantilever lengths are based on a deck design live load of 40-psf, a total load of 50 psf (10 psf dead load, 40 psf live-load) with a temperature factor of 1.0.
2. Beam spans were evaluated using a live-load deflection limit of L/360 and a total-load deflection limit of L/240. Beam overhangs (cantilevers) were evaluated using a deflection limit of L/180.
3. Owens Corning decks use proprietary materials and conditions not prescribed in IRC Section R507.1.
4. Owens Corning decks use design requirements that 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.
5. 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. Loading conditions exceeding the stated design basis shall be designed in accordance with **Section 6.10.1**

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

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

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

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

6.6.5.3 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).

6.6.5.4 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 Owens Corning Lumber Structural Framing posts that is used to support 2-ply and 3-ply Owens Corning Lumber Structural Framing beams is provided in **Table 8**.

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

6.7.2 For hollow Owens Corning Lumber Structural Posts, see Report Number 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 the 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.

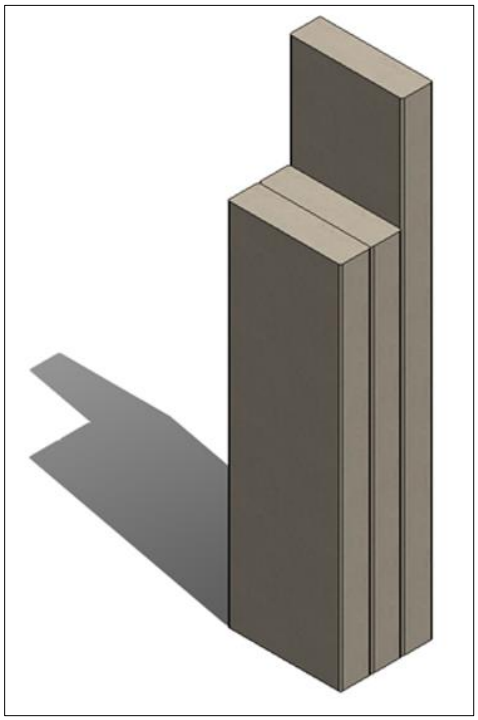


Figure 6. Owens Corning Lumber Structural Framing Post Supporting a 2-Ply Beam

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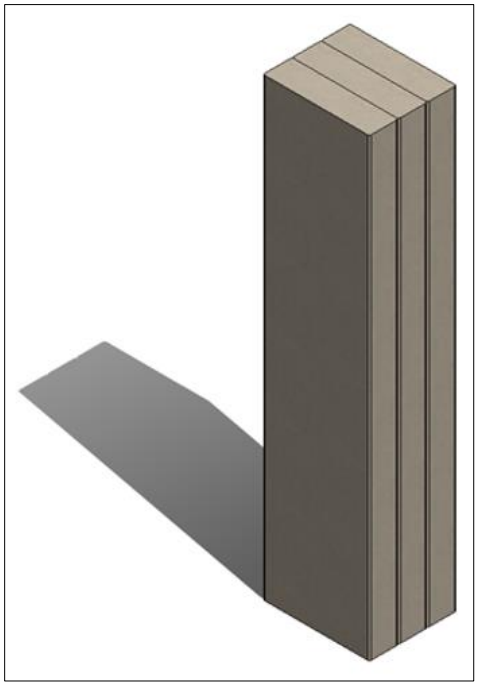


Figure 7. Owens Corning Lumber Structural Framing Post Supporting a 3-Ply Beam

Table 8. Maximum Bearing Capacity of Owens Corning Lumber Structural Framing 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 Owens Corning Lumber Structural Framing 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 the NDS:*

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

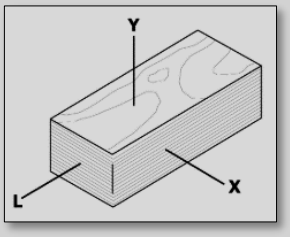
6.8.2.2 The equivalent specific gravity values in **Table 9** apply to all Owens Corning Lumber Structural Framing profiles based on consistent glass fiber reinforced HDPE material composition across all profiles.

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

Product	Fastener	Fastener Axis Orientation[1]	Load Direction	Equivalent Specific Gravity for Design Purposes
Owens Corning Lumber Structural Framing	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 Owens Corning Lumber Structural Framing:



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 Owens Corning Lumber Structural Framing 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)

Owens Corning Lumber Structural Framing 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
1" x 6" or 1" x 8"	260	300
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 Owens Corning Lumber Structural Framing profiles shall be 1 1/2".

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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 Lumber Marine Grade Decking is as follows:

6.9.1 *Minimum Screw Lengths:*

6.9.1.1 $2^1/_2$" screws for 1" x 8" Owens Corning Lumber Marine Grade Decking

6.9.1.2 $1^1/_2$" screws for $^1/_2$" x 6" and $^1/_2$" x 10" Owens Corning Lumber Marine Grade Decking

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 Lumber Marine Grade Decking, please see the manufacturer installation guide or contact Owens Corning technical support.

6.10 Engineering properties for various Owens Corning Lumber Structural Framing member sizes are provided in **Table 12**.

Table 12. Owens Corning Lumber Structural Framing Allowable Stress Design (ASD) Values[1,2,3]

Owens Corning Lumber Structural Framing Profile	F_b (psi)	EI (lb·in²)	MOE (psi)	Bearing Strength (psi)		Section Properties (Edgewise)	
				Edgewise	Flatwise	I_x (in⁴)	S_x (in³)
2 x 4	945	830,000	155,000	270	300	5.4	3.1
2 x 6	1,305	7,300,000	350,000			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-in² = 0.00287 N·m², 1 in⁴ = 41.62 cm⁴, 1 in³ = 16.39 cm³

1. Listed F_b, EI, MOE, and bearing strengths are based on a temperature factor, C_t, of 1.0.
2. Listed F_b, EI, and MOE values are the effective flexural strength and stiffness of the evaluated composite product in the edgewise orientation.
3. Section properties are determined using the actual width and depth of the composite product identified in **Table 1** in the edgewise orientation.

6.10.1 Applications of Owens Corning Lumber Structural Framing 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**, stringer conditions outside of **Table 15**, or where the sill plate application is outside the scope of **Table 16**.

6.10.1.1 For example, a deck design that requires higher applied loads, longer spans, multiple joist spans, a cantilever exceeding the tabulated limits, a concentrated load, multiple applied loads, and so forth, will require an engineered design.

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

6.10.2.1 To size Owens Corning Lumber Structural Framing structural members, use the allowable stress design values found in **Table 12**.

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

6.10.2.1.2 These design properties are based upon test data and used actual design dimensions (e.g., $1^1/_2$" x $3^1/_2$", $1^1/_2$" 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).

6.10.3 For time dependent deformations (creep), the Total Deflection, or D_T, shall be calculated as follows:

$$D_T = (K_{CR} \times D_{LT}) + D_{ST}$$

where:

K_{CR} = 2.0, time dependent deformation (creep) factor

D_{LT} = immediate deflection due to long-term component of design load (in)

D_{ST} = deflection due to short-term or normal component of design load (in)

6.10.3.1 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.

6.10.3.2 Each Owens Corning Lumber Structural Framing engineered design and associated engineered design drawing shall provide sufficient detailing for the specific floor, wall, or roof installation.

6.10.3.3 Each Owens Corning Lumber Structural Framing 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.

6.10.3.3.1 Where assistance is needed regarding Owens Corning Lumber Structural Framing specialty engineered designs, please contact Owens Corning technical support.

6.10.4 To establish a complete load path, all connections shall be designed separately to transfer load from Owens Corning Lumber Structural Framing 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 Owens Corning Lumber Structural Framing 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 Owens Corning Lumber Structural Framing.

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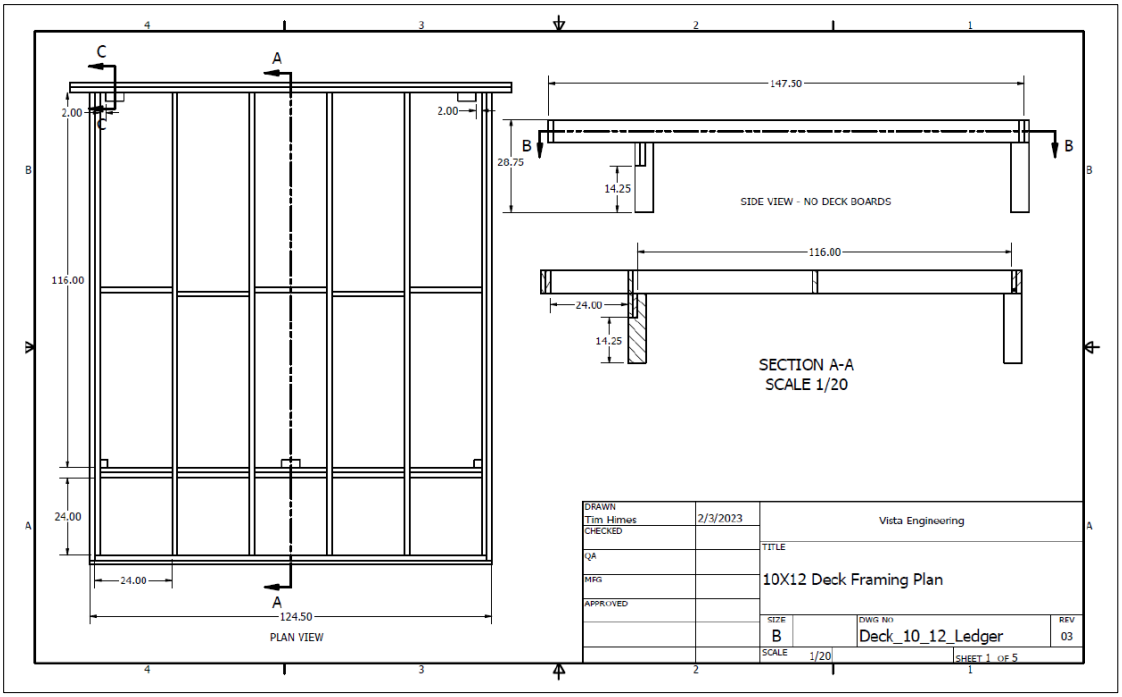


Figure 8. Tested Deck Framing Plan

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

Table 13. Allowable Composite Deck Joist Assembly Applications

Product	12-foot Long Owens Corning Lumber Structural Framing Joist with 2-foot Cantilever Spaced 24" o.c. Total Load, (psf)	12-foot Long Owens Corning Lumber Structural Framing Joist with 2-foot Cantilever Spaced 16" o.c. Total Load, (psf)	12-foot Long Owens Corning Lumber Structural Framing Joist with 2-foot Cantilever Spaced 12" o.c. Total Load, (psf)
Owens Corning Lumber Structural Framing 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 Owens Corning Lumber Structural Framing 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 Owens Corning Lumber Structural Framing 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
Owens Corning Lumber Structural Framing Joists	≤ 75
Owens Corning Lumber Structural Framing Deck Boards	≤ 75
1. Tested in accordance with ASTM E84 and meets Class B requirements for Flame Spread.	

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6.13 *Owens Corning Lumber Structural Framing Stair Tread Application*

6.13.1 Owens Corning Lumber Structural Framing 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 Owens Corning Lumber Structural Framing 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 Owens Corning Lumber Structural Framing is used for stair tread applications.

6.14 *Owens Corning Lumber Structural Framing Stair Stringer Application*

6.14.1 Owens Corning Lumber Structural Framing was evaluated for its performance as stair stringers.

6.14.1.1 Owens Corning Lumber Structural Framing 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 Owens Corning Lumber Structural Framing 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	Live Load Only		Total Load[1] (Dead Load + Live Load)	
		L/480	L/360	L/240	L/180
40	8" o.c.	6' 8"	7' 4"	7' 2"	7' 11"
	10" o.c.	6' 2"	6' 10"	6' 8"	7' 4"
	12" o.c.	5' 10"	6' 5"	6' 3"	6' 11"
	14" o.c.	5' 6"	6' 1"	5' 11"	6' 7"
50	8" o.c.	6' 2"	6' 10"	6' 10"	7' 6"
	10" o.c.	5' 9"	6' 4"	6' 4"	7' 0"
	12" o.c.	5' 5"	5' 11"	6' 0"	6' 7"
	14" o.c.	5' 2"	5' 8"	5' 8"	6' 3"
60	8" o.c.	5' 10"	6' 5"	6' 7"	7' 3"
	10" o.c.	5' 5"	5' 11"	6' 1"	6' 8"
	12" o.c.	5' 1"	5' 7"	5' 9"	6' 4"
	14" o.c.	4' 10"	5' 4"	5' 5"	6' 0"
70	8" o.c.	5' 6"	6' 1"	6' 4"	6' 11"
	10" o.c.	5' 2"	5' 8"	5' 10"	6' 5"
	12" o.c.	4' 10"	5' 4"	5' 6"	6' 1"
	14" o.c.	4' 7"	5' 1"	5' 3"	5' 9"

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

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

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. Stringer spans are based on a factor of 1.0 for temperature, freeze-thaw cycles, and UV exposure.

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 AWC DCA-6, Figure 25 and Figure 26 (see page 19 and page 20, respectively).

6.17 *Sill Plate Application*

6.17.1 Owens Corning Lumber Structural Framing is permitted for use as foundation sill plates installed over concrete or masonry foundation.

6.17.1.1 Owens Corning Lumber Structural Framing was evaluated as an alternative material to conventional wood foundation plates and wood sill plates prescribed by the applicable building code, including IBC Section 2304, IBC Section 2308, IRC Section R403, IRC Section R404, IRC Section R502, and IRC Section R602, as applicable.

6.17.1.2 Owens Corning Lumber Structural Framing contains no wood or cellulosic materials and is recognized in this report for conditions where protection against biodegradation, decay, and termite attack is required.

6.17.2 Allowable bearing strength for Owens Corning Lumber Structural Framing foundation sill plates is provided in **Table 12**. The allowable uniform vertical bearing capacity for each profile is listed in **Table 16**.

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Table 16. Owens Corning Lumber Structural Framing Foundation Sill Plate Allowable Bearing Capacity (ASD)[1,2,3,4,5]

Owens Corning Lumber Structural Framing Profile	Nominal Flatwise Bearing Width (in)	Plate Thickness (in)	Bearing Strength (psi)	Allowable Uniform Vertical Bearing Capacity (lb/ft)
2 x 4	3.5	1 1/2	300	12,600
2 x 6	5.5			19,800
2 x 8	7.5			27,000
2 x 10	9.25			33,300
2 x 12	11.25			40,500

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

1. Allowable uniform vertical bearing capacities are ASD values.
2. Values are calculated using the flatwise-bearing strength from **Table 12** multiplied by actual plate width and 12" per linear foot.
3. Values apply only to uniform vertical bearing conditions with full bearing contact over the actual flatwise width of the Owens Corning Lumber Structural Framing foundation sill plate.
4. Concentrated bearing/localized compression, washer bearing, anchor bolt bearing, bottom member-to-Owens Corning Lumber Structural Framing fastening, lateral load-path effects, uplift, overturning, braced wall anchorage, shear wall anchorage, and concrete/masonry anchorage require project-specific engineered design.
5. Long-term creep deformation under sustained compression from building weight, anchor clamping forces, or other sustained load effects are not considered in the tabulated ASD bearing capacities.

6.17.3 The equivalent specific gravity values in **Table 9** are permitted to be used for engineered member-side fastener and anchor checks into Owens Corning Lumber Structural Framing foundation sill plates in accordance with NDS Section 12.3.

6.17.4 Reference member-side lateral design values for anchors installed through Owens Corning Lumber Structural Framing foundation sill plates are provided in **Table 17**.

Table 17. Owens Corning Lumber Structural Framing Member-Side Reference Lateral Design Values for Anchors Installed Through Foundation Sill Plates (ASD)[1,2,3,4]

Anchor Bolt[7] Diameter (in)	Member Thickness (in)	Load Direction[6]	Reference Lateral Design Value,[5] Z (lb)
1/2	1 1/2	L-Axis	325
		X-Axis	280
5/8		L-Axis	485
		X-Axis	390

SI: 1 lb = 4.45 N

1. Values in this table apply to the Owens Corning Lumber Structural Framing member-side lateral check for the listed anchors installed Owens Corning Lumber Structural Framing foundation sill plates. This check is one component of the complete foundation anchorage design.
2. The allowable lateral, uplift, or combined capacity of the foundation anchorage shall be the lowest of the following: the listed side-member bearing, washer bearing, localized compression, anchor steel strength, concrete/masonry breakout, pryout, and pullout, where applicable.
3. Concrete anchorage shall be designed in accordance with the applicable building code and ACI 318, where applicable.
4. Masonry anchorage shall be designed in accordance with the applicable building code and TMS 402, where applicable.
5. Lateral design values are determined in accordance with the yield methodology in NDS Section 12.3 for single-shear bolt connections from Owens Corning Lumber Structural Framing sill plate to concrete foundation. Concrete/masonry is assumed to be normal weight with a minimum compressive strength, f'_c, of 2,000-psi. Values address side-member bearing only.
6. See **Table 9**, Footnote 1 for axis orientation. Anchors are installed along the Y-axis.
7. Bending yield strength of anchor assumed to be 45,000-psi, and the dimensions assumed to be consistent with the listed values for bolts in NDS Appendix L.

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6.18 Alternative techniques shall be permitted in accordance with accepted engineering practice and experience. These provisions for the use of alternative materials, designs, and methods of construction are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed herein. This includes, but is not limited to, the following areas of engineering: mechanics of materials, structures, 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 Owens Corning Lumber Structural Framing complies with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:

8.1.1 Owens Corning Lumber Structural Framing 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 (e.g., 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.

9 Installation

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

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

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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 Ledger connections shall be designed to transfer the applicable deck reactions to the supporting structure.

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

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

9.3.2 Assemble 3-ply posts using 2 x 6 Owens Corning Lumber Structural Framing 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).

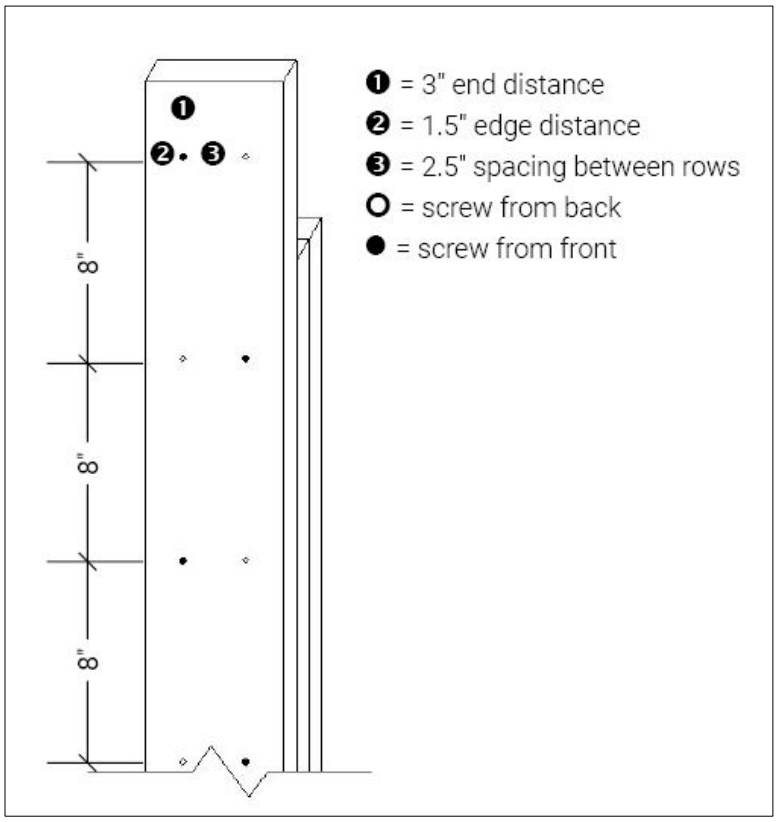


Figure 9. Post Supporting a 2-Ply Beam

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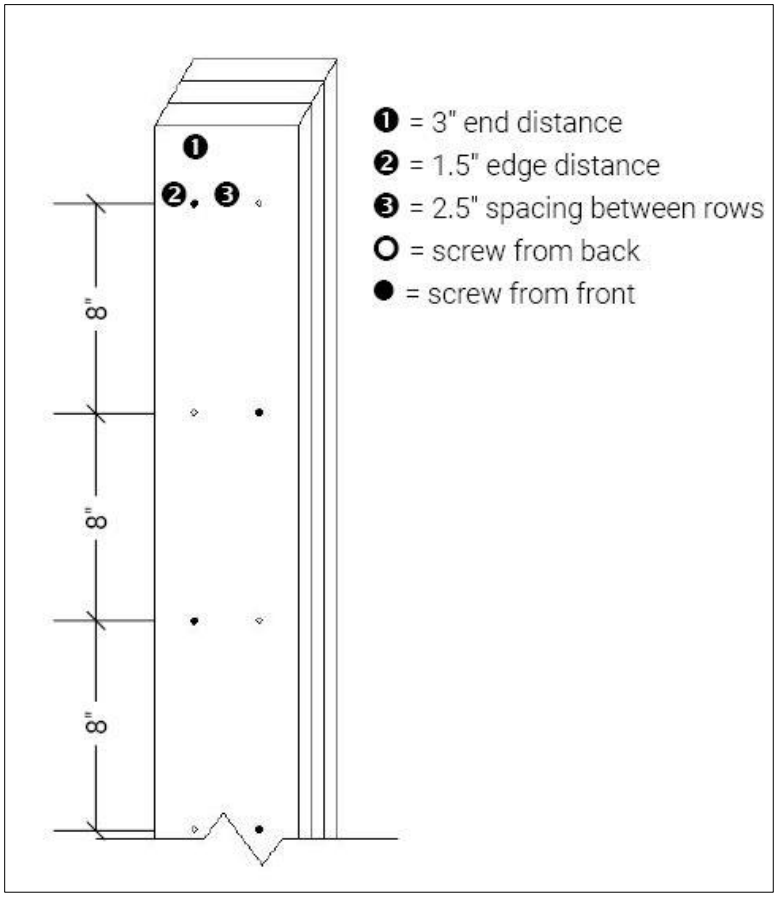


Figure 10. Post Supporting a 3-Ply Beam

9.3.2.1 Screws securing the Owens Corning Lumber Structural Framing 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 Owens Corning Lumber Structural Framing post with two rows of #10 x 3" screws as shown in **Figure 11**. 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.

9.3.2.2.4 2 x 12 beams require four (4) screws per row at each notched post.

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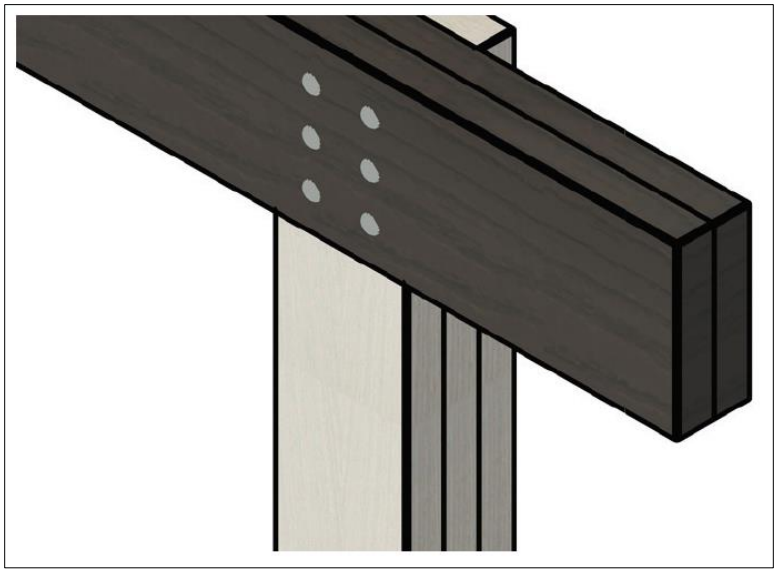


Figure 11. 2-ply Beam with Notched Post (2-ply 2 x 8 Beam Shown)

9.3.2.3 A 3-ply beam shall be secured to the 3-ply Owens Corning Lumber Structural Framing post with a code-compliant post cap connector with a minimum uplift capacity of 2,000 lb as shown in **Figure 12**.

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

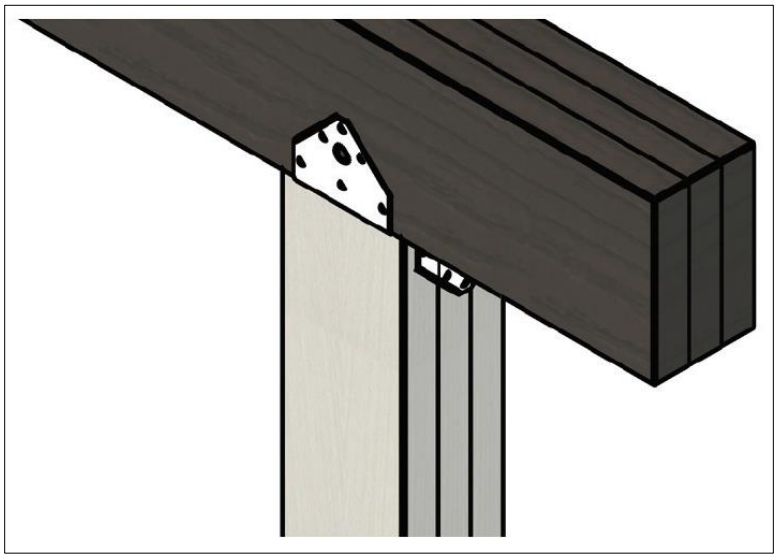


Figure 12. 3-ply Beam with Notched Post (3-ply 2 x 8 Beam Shown)

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9.3.3 Assemble 2-ply or 3-ply beams 2x Owens Corning Lumber Structural Framing.

9.3.3.1 Beams shall be secured using #10 x 3" screws staggered in two rows as shown in **Figure 13**.

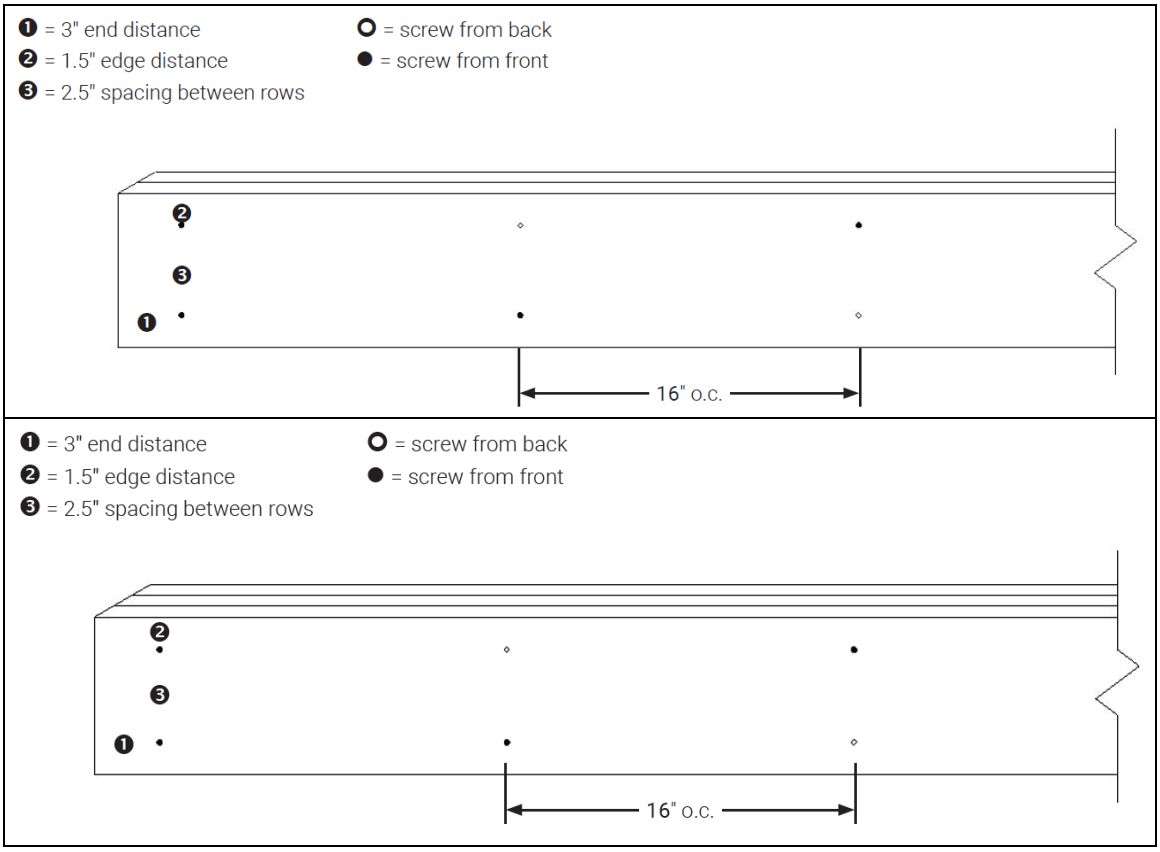


Figure 13. Owens Corning Lumber Structural Framing Beams – 2-Ply (Top) and 3-Ply (Bottom)

9.3.4 Owens Corning Lumber Structural Framing beams shall be installed onto Owens Corning Lumber Structural Framing 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', twenty-five percent (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 Owens Corning Lumber Structural Framing beam shall be used as the band joist and assembled as shown in **Figure 13**. 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. 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 18**.

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Table 18. Minimum Design Values for Hangers Attached to Owens Corning Lumber Structural Framing[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 to 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 Owens Corning Lumber Structural Framing 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 $1^1/_2$".

9.3.7.4 2 x 12 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 described in **Section 9.3.7**.

9.4 *Stair Stringer Application*

9.4.1 When Owens Corning Lumber Structural Framing is used as stair stringers, fabrication of the stringers shall comply with the applicable provisions in IBC Section 1011 and IRC Section R318.7.[32]

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

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9.5 *Sill Plate Application*

9.5.1 When Owens Corning Lumber Structural Framing is used as sill plates, installation shall conform to all of the following:

9.5.1.1 Owens Corning Lumber Structural Framing foundation sill plates shall be selected from the Owens Corning Lumber Structural Framing profiles listed in **Table 12**.

9.5.1.1.1 The selected profile shall provide a nominal 2" thickness and a width compatible with the supported wall bottom plate, sole plate, cold-formed steel track, or other approved wall-framing bottom member.

9.5.1.2 Foundation anchors installed through Owens Corning Lumber Structural Framing foundation sill plates shall comply with the applicable building code and approved construction documents.

9.5.1.2.1 For IBC conventional light-frame applications, anchorage of Owens Corning Lumber Structural Framing foundation plates or sills shall comply with IBC Section 2308.7.1. Where prescriptive foundation anchorage provisions are used, foundation plates or sills shall comply with IRC Section R403.1.6.

9.5.1.2.1.1 Anchor bolts shall be not less than $^1/_2$" (12.7 mm) in diameter and shall be embedded not less than 7" (178 mm) into concrete or grouted masonry.

9.5.1.2.1.2 Anchor bolts shall be located within the middle third of the width of the plate.

9.5.1.2.1.3 Anchor spacing shall be spaced a maximum of 6' (1,829 mm) on center. A minimum of two anchor bolts shall be provided for each plate section with anchor bolt end distances complying with the applicable provisions.

9.5.1.2.1.3.1 Bolts in sill plates of braced wall lines in structures over two stories above grade shall be spaced 4' (1,219 mm) on center, maximum.

9.5.1.2.1.3.2 Where braced wall line sill plate anchorage or seismic plate washer requirements apply, the anchorage and plate washer installation shall comply with the applicable building codes, including IRC Section R403.1.6.1 and, IBC Sections 2308.7.1.1 or IBC Section 2308.7.1.2, as applicable, to the adopted code edition, seismic design category, building height, and approved construction documents.

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 Bearing capacity testing in accordance with ASTM D143

10.1.6 Dowel bearing strength testing in accordance with ASTM D5764

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

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

10.1.9 Joist hanger assembly testing in accordance with ASTM D7147

10.1.10 Span and post spacing calculations from approved sources

10.1.11 Surface burning characteristics in accordance with ASTM E84

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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.[33]

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

11 Findings

11.1 As outlined in **Section 6**, Owens Corning Lumber Structural Framing 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 guide, Owens Corning Lumber Structural Framing shall be approved for the following applications:

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

11.2.2 Deck beams 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 the 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 Surface burning characteristics meeting Class B for flame spread index shown in **Table 14**.

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

11.2.9 Sill plates as permitted in **Section 6.17**.

11.3 Evaluated fastener properties used with Owens Corning Lumber Structural Framing are provided in **Table 10** and **Table 11**.

11.4 Owens Corning Lumber Structural Framing contains no wood or cellulosic materials and meets the requirements of IBC Section 2612.4 and IRC Section R304,[34] where protection against biodegradation and decay is required.

11.5 Owens Corning Lumber Structural Framing contains no wood or cellulosic materials and meets the requirements of IBC Section 2612.4 and IRC Section R305,[35] where protection against termite attack is required.

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11.6 Unless exempt by state statute, when Owens Corning Lumber Structural Framing 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[36] (IRC Section R104.2.2[37] and IFC Section 104.2.3[38] 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:**[39] Building regulations require that the building official shall accept duly authenticated reports.[40]

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.[41]

12 Conditions of Use

12.1 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.

12.2 As listed herein, Owens Corning Lumber Structural Framing shall be used:

12.2.1 For outdoor deck framing and decking applications within the limits of **Section 6**.

12.2.2 For stair tread and stair stringer applications within the limits of **Section 6.13** and **Section 6.14**.

12.2.3 For foundation sill plate applications within the limits of **Section 6.17**.

12.2.4 For applications using the design properties in **Section 6** when designed in accordance with this report by an RDP.

12.2.4.1 Assistance is also available from Owens Corning technical support.

12.3 When used as stair stringers, Owens Corning Lumber Structural Framing shall only be used in buildings that are one or two-family dwellings in accordance with IBC Table 1607.1.

12.4 Where termite protection is required by the applicable building code, the required termite control measures shall be provided for the building and foundation system.

12.5 Owens Corning Lumber Structural Framing foundation sill plates shall bear uniformly on the supporting concrete or masonry foundation surface. Local gaps, high spots, or irregular bearing conditions shall be corrected before installation of the wall framing bottom member.

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12.6 Allowable uniform vertical bearing capacities for Owens Corning Lumber Structural Framing foundation sill plates are provided in **Table 16**, which applies only to uniform vertical bearing conditions with full bearing contact over the actual flatwise width of the Owens Corning Lumber Structural Framing foundation sill plate.

12.6.1 Concentrated bearing, washer bearing, anchor bolt bearing, localized compression, bottom member to Owens Corning Lumber Structural Framing fastening, lateral load-path effects, uplift, overturning, braced wall anchorage, shear wall anchorage, and concrete or masonry anchorage shall be designed and verified by an RDP.

12.6.2 Fasteners, anchors, washers, straps, and connectors used with Owens Corning Lumber Structural Framing foundation sill plates shall be corrosion-resistant or otherwise suitable for the exposure condition, adjacent materials, and project specific environment.

12.6.3 Long-term deformation under sustained loads is outside the scope of this report and shall be verified by a RDP.

12.7 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:

12.7.1 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.

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

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

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

12.7.5 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.

12.7.6 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.

12.8 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.

12.9 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).

12.10 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 Owens Corning Lumber Structural Framing, as 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/lumber/products/structural-framing-and-posts.

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.

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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

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[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] 2021 IRC Section R311.7

[33] 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

[34] 2021 IRC Section R317

[35] 2021 IRC Section R318

[36] 2021 IBC Section 104.11

[37] 2021 IRC Section R104.11

[38] 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

[39] 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.

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

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

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