Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

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RhinoBoard CI™ and Structural Sheathing Wall Panels

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CSI Designations:

DIVISION: 05 00 00 - METALS

Section: 05 41 00 - Structural Metal Stud Framing

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

Section: 06 12 00 - Structural Panels

Section: 06 12 19 - Shear Wall Panels

Section: 06 16 00 - Sheathing

1 Innovative Product Evaluated[1]

1.1 RhinoBoard CI and Structural Sheathing Wall Panel

2 Product Description and Materials

2.1 The innovative product evaluated in this report is shown in **Figure 1**.



Figure 1. RhinoBoard CI and Structural Sheathing Wall Panel

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2.2 RhinoBoard CI and Structural Sheathing Wall Panels are factory-produced Cold-Formed Steel (CFS) framed walls with structural foam sheathing on the exterior side. Half inch (1/2") thick Gypsum Wallboard (GWB) is installed on the interior side either in the factory or in the field. The wall panels may also include Spray Polyurethane Foam (SPF) in the wall cavities for additional thermal resistance and structural performance.

2.3 *Wall Panel Availability*

2.3.1 RhinoBoard CI and Structural Sheathing Wall Panels are manufactured on a per project basis in accordance with the project plans and specifications, the locally enforced building code, and this report.

2.4 *Wall Panel Components Listed From the Interior Side to the Exterior Side of the Wall*

2.4.1 *Gypsum Wallboard:*

2.4.1.1 1/2" thickness

2.4.2 *CSF Framing:*

2.4.2.1 Minimum 1 5/8" x 3 1/2" steel studs (41 x 89 mm); industry designation of 350S162-43-50K

2.4.2.2 Minimum 18-gauge – 0.0438" (1.11 mm)

2.4.2.3 Minimum Yield Strength, F_y: 50 ksi

2.4.3 *SPF:*

2.4.3.1 Closed-cell SPF with a nominal density of 2.0 lb/ft^3

2.4.3.2 Average thickness: dependent on desired effects

2.4.3.2.1 Minimum thickness of 1 1/2" for additional performance in accordance with the tables shown in **Section 6**.

2.4.3.2.2 Thickness may vary for the desired additional R-value.

2.4.4 *RhinoBoard CI and Structural Sheathing:*

2.4.4.1 RhinoBoard CI and Structural Sheathing Wall Panels are a proprietary foam plastic insulating sheathing product comprised of a closed-cell polyisocyanurate foam core with coated glass-mat facers on both sides (see **Figure 2**).

2.4.4.1.1 RhinoBoard CI Insulated Sheathing complies with IBC Section 2603 for use in Type V construction, IRC Section R316, and conforms to ASTM C1289 Type II, Class 2.



Figure 2. RhinoBoard CI and Structural Sheathing Wall Panels

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2.4.4.2 *Thickness:*

2.4.4.2.1 1.0" (25.4 mm)

2.4.4.2.2 1.3" (33 mm)

2.4.4.2.3 1.5" (38.1 mm)

2.4.5 Proprietary Adhesives of Rhino Building Materials

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

3 Definitions

3.1 New Materials[2] 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.[3] The design strengths and permissible stresses shall be established by tests[4] and/or engineering analysis.[5]

3.2 Duly authenticated reports[6] and research reports[7] are test reports and related engineering evaluations, which are written by an approved agency[8] and/or an approved source.[9]

3.2.1 These reports contain intellectual property and/or trade secrets, which are protected by the Defend Trade Secrets Act (DTSA).[10]

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

3.4 An approved source is *"approved"* when a professional engineer (i.e., Registered Design Professional) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.[11]

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 Registered Design Professional (RDP).

3.5.1 The Center for Building Innovation (CBI) is ANAB[12] ISO/IEC 17025 and ISO/IEC 17020 accredited.

3.6 The regulatory authority shall enforce[13] 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[14] 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.[15]

3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory where recognition of certificates, validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope, shall be approved.[16] Therefore, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent.[17]

3.9 Approval equity is a fundamental commercial and legal principle.[18]

4 Applicable Standards for the Listing; Regulations for the Regulatory Evaluation[19]

4.1 *Standards*

4.1.1 *ABTG ANSI/FS 100: Standard Requirements for Wind Pressure Resistance of Foam Plastic Insulating Sheathing Used in Exterior Wall Covering Assemblies*

4.1.2 *AISI S100: North American Specification for the Design of Cold-formed Steel Structural Members*

4.1.3 *AISI S230: Standard for Cold-formed Steel Framing — Prescriptive Method for One- and Two-family Dwellings*

4.1.4 *AISI S240: North American Standard for Cold-Formed Steel Structural Framing*

4.1.5 *AISI S400: North American Standard for Seismic Design of Cold-formed Steel Structural Systems*

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4.1.6 *ASCE/SEI 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures*

4.1.7 *ASTM D7989: Standard Practice for Demonstrating Equivalent In-Plane Lateral Seismic Performance to Wood-Frame Shear Walls Sheathed with Wood Structural Panels*

4.1.8 *ASTM E72: Standard Test Methods of Conducting Strength Tests of Panels for Building Construction*

4.1.9 *ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

4.1.10 *ASTM E564: Standard Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings*

4.1.11 *ASTM E2126: Standard Test Methods for Cyclic (Reversed) Load Test for Shear Resistance of Vertical Elements of the Lateral Force Resisting Systems for Buildings*

4.2 Structural performance for shear wall assemblies used as lateral force resisting systems in in Seismic Design Categories A through F, have been tested and evaluated in accordance with the following standards:

4.2.1 *ASCE/SEI 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures*

4.2.2 *ASTM D7989: Standard Practice for Demonstrating Equivalent In-Plane Lateral Seismic Performance to Wood-Frame Shear Walls Sheathed with Wood Structural Panels*

4.2.2.1 ASTM D7989 is accepted engineering practice used to establish Seismic Design Coefficients (SDC).

4.2.2.2 Tested data generated by ISO/IEC 17025 approved agencies and/or professional engineers, which use ASTM D7989 as their basis, are defined as intellectual property and/or trade secrets.

4.2.2.3 All professional engineering evaluations are defined as an independent design review (i.e., Listings, certified reports, duly authenticated reports from approved agencies, and/or research reports are independently prepared by approved agencies and/or approved sources) when signed and sealed by a licensed professional engineer pursuant to registration law.

4.2.3 *ASTM E564: Standard Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings*

4.2.4 *ASTM E2126: Standard Test Methods for Cyclic (Reversed) Load Test for Shear Resistance of Vertical Elements of the Lateral Force Resisting Systems for Buildings*

4.3 *Regulations*

4.3.1 *IBC – 15, 18, 21: International Building Code®*

4.3.2 *IRC – 15, 18, 21: International Residential Code®*

4.3.3 *IECC – 15, 18, 21; International Energy Conservation Code®*

5 Listed[20]

5.1 Equipment, materials, products, or services included in a List published by a nationally recognized testing laboratory (i.e., CBI), approved agency (i.e., CBI and DrJ), and/or approved source (i.e., DrJ), or other organization 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 RhinoBoard CI and Structural Sheathing Wall Panel are used in accordance with the IBC and the IRC to provide:

6.1.1 Lateral load resistance for wind and seismic

6.1.2 Transverse load resistance

6.1.3 Axial load resistance

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6.2 *Structural Applications*

6.2.1 *General Structural Provisions:*

6.2.1.1 Except as otherwise described in this report, RhinoBoard CI and Structural Sheathing Wall Panels shall be installed in accordance with the applicable building codes listed in **Section 4** using the provisions set forth herein for the design and installation of cold-formed steel.

6.2.1.2 RhinoBoard CI and Structural Sheathing Wall Panels are permitted to be designed in accordance with AISI S240 and AISI S400 per IBC Section 2211.1, AISI S230 per IBC Section 2211.1.2 for the design of shear walls using the methods and boundary conditions set forth therein, except as specifically allowed in this report.

6.2.1.3 Anchorage for in-plane shear shall be provided to transfer the induced shear force into and out of each shear wall.

6.2.1.3.1 For wind design, anchor bolt spacing shall be in accordance with the provisions set forth in AISI S240, AISI S400, AISI S230, or IRC Section R603.3.1, where applicable.

6.2.1.3.1.1 ***Note:*** For conditions exceeding the limits in IRC Table R603.3.1, an engineered design is required per IRC Section R301.1.3.

6.2.1.3.2 For seismic design, anchor bolt spacing shall be in accordance with the provisions set forth in AISI S240, AISI S400, or AISI S230, where applicable.

6.2.1.4 Fastener type and spacing for the sheathing materials shall be per the applicable table of this report and **Section 9**. Fasteners shall be installed with the head in contact with the face of the sheathing.

6.2.2 *Performance-Based Construction:*

6.2.2.1 RhinoBoard CI and Structural Sheathing Wall Panels designed as shear walls are permitted to be designed in accordance with the methodology used in AISI S240, AISI S400, or AISI S230, where applicable, using the capacities shown in **Table 1** and **Table 2**.

6.2.2.2 RhinoBoard CI and Structural Sheathing Wall Panels are permitted to resist lateral wind load forces using the allowable shear loads (in pounds per linear foot) set forth in **Table 1**.

Table 1. Allowable Unit Shear Capacity - Wind

Product	Stud Type	Maximum Stud Spacing (in)	Joint Condition	GWB Thickness (in)[3]	SPF	Fastener Spacing (edge:field) (in)	Minimum Fastener Type and Size	Allowable Unit Shear Capacity (plf)
RhinoBoard CI and Structural Sheathing Wall Panel	Steel[1]	24" o.c.	Butted	1/2"	No	12:12	#10 x 1 5/8" self-drilling, wafer-head screw	290
					Yes[4]			355

SI: 1 in = 25.4 mm, 1 lb/ft = 0.0146 kN/m

1. Minimum 18-gauge (43 mil), 3 1/2" x 1 5/8", 50 ksi steel studs.
2. Fasteners shall be installed with the head in contact with the face of the board. Fastener edge distance shall be a minimum of 3/8" on all sides of the board. Screws shall penetrate a minimum of three thread lengths beyond the stud. In addition to the fasteners listed, RhinoBoard CI and Structural Sheathing Wall Panel is also adhered to the metal studs with PPG Liquid Nail, LN-602 Subfloor adhesive. Minimum bead size shall be 1/4" and shall be applied continuously along all framing members in contact with the board.
3. Gypsum wallboard shall be attached with minimum #6 x 1 1/4" Type S screws. Fasteners shall maintain a minimum edge distance of 3/8" and spaced at 6" on center along the edges and 12" on center in the field.
4. Average thickness of SPF is 1 1/2".

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6.2.3 *Seismic Design:*

6.2.3.1 RhinoBoard CI and Structural Sheathing shear walls are permitted to resist seismic load forces using the seismic allowable unit shear capacities set forth in **Table 2** when seismic design is required in accordance with IBC Section 1613 and IRC Section R301.2.2.

6.2.3.1.1 The response modification coefficient, R; system overstrength factor, Ω_0; and deflection amplification factor, C_d, indicated in **Table 2**, shall be used to determine the base shear, element design forces, and design story drift in accordance with ASCE 7 Chapter 12 and Section 14.5.

Table 2. Allowable Unit Shear Capacity and Design Coefficients – Seismic[1,2]

Seismic Force Resisting System	Stud Type	Max. Stud Spacing (in)	GWB Thickness (in)[4]	SPF	Seismic Allowable Unit Shear Capacity[6] (plf)	Apparent Shear Stiffness, G_a (kips/in)	Response Modification Factor,[5] R	System Over-strength Factor[6], Ω_0	Deflection Amplification Coefficient[7], C_d	Structural System Limitations and Building Height Limit[8,9] (ft)				
										SDC				
										B	C	D	E	F
RhinoBoard CI and Structural Sheathing Wall Panel	Steel[3]	24" o.c	1/2"	No	235	9.3	2	2.5	2	NL	NL	35	NP	NP
				Yes[10]	285	8.4	2	2.5	2	NL	NL	35	NP	NP

SI: 1 in = 25.4 mm, 1 lb/ft = 0.0146 kN/m

1. RhinoBoard CI Insulating Sheathing is attached with #10 x 1 5/8" self-drilling, wafer-head screw. Screws shall penetrate a minimum of three thread lengths beyond the stud. Fasteners are to be installed spaced a maximum of 12" o.c. at the panel edges and 12" o.c. in the field. Fastener edge distance shall be a minimum of 3/8". Fastener head shall be in contact with the panel surface. In addition to the specified fastener, RhinoBoard CI Insulating Sheathing is also adhered to the metal studs with PPG Liquid Nail, LN-602 Subfloor adhesive. Minimum bead size shall be 1/4" and shall be applied continuously along all framing members in contact with the board.
2. All seismic design parameters follow the equivalency as defined in **Section 4** and **Section 8** of this report.
3. Minimum 18-gauge (43 mil), 3 1/2" x 1 5/8", 50 ksi steel studs.
4. Walls are installed with a minimum 1/2" gypsum wallboard. GWB shall be attached with minimum #6 x 1 1/4" Type S screws. Fasteners shall maintain a minimum edge distance of 3/8" and spaced at 6" on center along the edges and 12" on center in the field.
5. Response modification coefficient, R, for use throughout ASCE 7. Note: R reduces forces to a strength level, not an allowable stress level.
6. The tabulated value of the overstrength factor, Ω_0, is permitted to be reduced by subtracting one-half (0.5) for structures with flexible diaphragms.
7. Deflection amplification factor, C_d, for use with ASCE 7 Sections 12.8.6, 12.8.7, and 12.9.1.2.
8. Heights are measured from the base of the structure as defined in ASCE 7 Section 11.2.
9. NL = Not Limited; NP = Not Permitted
10. Average thickness of SPF is 1 1/2"

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6.2.4 *Transverse Wind Loading:*

6.2.4.1 RhinoBoard CI and Structural Sheathing Wall Panels are permitted to resist transverse wind load forces using the allowable transverse loads (in pounds per square foot) set forth in **Table 3**.

6.2.4.1.1 Required component and cladding loads to be resisted are found in IBC Section 1609.1.1, IRC Table R301.2.1(1),[21] and IRC Table R301.2.1(2).[22] Allowable component and cladding wind speeds for RhinoBoard CI and Structural Sheathing are set forth in **Table 3**.

Table 3. Transverse (Out-of-Plane) Wind Load Resistance

Product	Stud Type	Maximum Stud Spacing (in)	Fastener Spacing (edge:field) (in)	Fastener Type[4,5]	SPF	Allowable Design Value (psf)	Allowable Components & Cladding Basic Wind Speed[1,2] (mph)	
							V_{ult}	V_{asd}
RhinoBoard CI and Structural Sheathing Wall Panel	Steel[3]	24 o.c.	12:12	#10 x 1 5/8" self-drilling, wafer-head screw	No	50	185	143
					Yes[6]	95	200	155

SI: 1 in = 25.4 mm, 1 psf = 0.0479 kN/m², 1 mph = 1.61 km/h

1. Design wind load capacity shall be in accordance with IBC Section 1609.1.1.
2. Allowable wind speeds are based on the following: Mean roof height 30', Exposure B, Zone 5, 10 sq. ft. effective wind area. See the applicable building code for any adjustment need for specific building location and configuration.
   Allowable stress design wind speed, V_{asd}, shall be determined in accordance with IBC Section 1609.3.1: $V_{asd} = V_{ult}\sqrt{0.6}$
3. Minimum 18-gauge (43 mil) 3 1/2" x 1 5/8" 50 ksi steel studs.
4. Fasteners shall be installed with the head in contact with the face of the board. Fastener edge distance shall be a minimum of 3/8" on all sides of the board.
5. In addition to the fasteners listed, RhinoBoard CI Insulating Sheathing is also adhered to the metal studs with PPG Liquid Nail, LN-602 Subfloor adhesive. Minimum bead size shall be 1/4" and shall be applied continuously along all framing members in contact with the board.
6. Average thickness of SPF is 1 1/2"

6.2.5 *Uplift Resistance:*

6.2.5.1 RhinoBoard CI and Structural Sheathing Wall Panels are permitted to resist uplift forces using the allowable uplift loads (in pounds per linear foot) set forth in **Table 4**.

Table 4. Uplift Performance

Product	Stud Type	Maximum Stud Spacing (in)	Fastener Spacing (edge:field) (in)	Fastener Type[3,4]	SPF	Allowable Uplift Capacity[1] (plf)
RhinoBoard CI and Structural Sheathing Wall Panel	Steel[2]	24 o.c.	12:12	#10 x 1 5/8" self-drilling, wafer-head screw	No	530
					Yes[5]	530

SI: 1 in = 25.4 mm, 1 lb/ft = 0.0146 kN/m

1. The capacities shown are for the purpose of providing information on the hold-down capacity of the sheathing to the bottom plate connection independent of lateral loading. Where combined shear and uplift loading is needed, consult a professional engineer.
2. Minimum 18-gauge (43 mil) 3 1/2" x 1 5/8" 50 ksi steel studs.
3. Fasteners shall be installed with the head in contact with the face of the board. Fastener edge distance shall be a minimum of 3/8" on all sides of the board.
4. In addition to the fasteners listed, RhinoBoard CI Insulating Sheathing is also adhered to the metal studs with PPG Liquid Nail, LN-602 Subfloor adhesive. Minimum bead size shall be 1/4" and shall be applied continuously along all framing members in contact with the board.
5. Average thickness of SPF is 1 1/2"

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6.2.6 *Compression Resistance:*

6.2.6.1 RhinoBoard CI and Structural Sheathing is permitted to resist gravity forces using the allowable compressive loads (in pounds per linear foot) set forth in **Table 5**.

Table 5. Compression Performance

Product	Stud Type	Maximum Stud Spacing (in)	Fastener Spacing (edge:field) (in)	Fastener Type[3,4]	SPF	Allowable Compressive Capacity[1] (plf)
RhinoBoard CI and Structural Sheathing Wall Panel	Steel[2]	24 o.c.	12:12	#10 x 1 5/8" self-drilling, wafer-head screw	No	3,625
					Yes[5]	3,625

SI: 1 in = 25.4 mm, 1 lb/ft = 0.0146 kN/m

1. Where combined shear and gravity loading is needed, consult a professional engineer.
2. Minimum 18-gauge (43 mil) 3 1/2" x 1 5/8" 50 ksi steel studs.
3. Fasteners shall be installed with the head in contact with the face of the board. Fastener edge distance shall be a minimum of 3/8" on all sides of the board.
4. In addition to the fasteners listed, RhinoBoard CI Insulating Sheathing is also adhered to the metal studs with PPG Liquid Nail, LN-602 Subfloor adhesive. Minimum bead size shall be 1/4" and shall be applied continuously along all framing members in contact with the board.
5. Average thickness of SPF is 1 1/2"

6.3 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[23]

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.[24]

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.[25]

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8 Regulatory Evaluation and Accepted Engineering Practice

8.1 RhinoBoard CI and Structural Sheathing Wall Panels comply with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:

8.1.1 Structural performance under lateral load conditions for wind and seismic loading for use with the IBC performance-based provisions, IBC Section 2211.1 for light-frame steel wall assemblies.

8.1.1.1 **Table 2** provides Seismic Design Coefficients (SDC) that conform to the requirements in ASCE 7 Section 12.2.1.1 and Table 12.2-1 for design of wall assemblies in buildings that require seismic design in accordance with ASCE 7 (i.e., all seismic design categories).

8.1.1.2 The basis for equivalency testing is outlined in ASCE 7 Section 12.2.1.1:[26]

> **Alternative Structural Systems.** Use of seismic force-resisting systems not contained in Table 12.2-1 shall be permitted contingent on submittal to and approval by the Authority Having Jurisdiction and independent structural design review of an accompanying set of design criteria and substantiating analytical and test data. The design criteria shall specify any limitations on system use, including Seismic Design Category and height; required procedures for designing the system's components and connections; required detailing; and the values of the response modification coefficient, R; overstrength factor, Ω_0; and deflection amplification factor, C_d.

8.1.1.3 The basis of the seismic evaluation performed as part of this report is based on ASTM D7989 and testing per ASTM E2126 to establish SDCs that conform to the requirements of ASCE 7 Section 12.2.1.1.

8.1.2 Resistance to transverse loads for wall assemblies used in light-frame steel construction in accordance with IBC Section 1609.1.1 and IRC Section R301.2.1.

8.1.3 Resistance to uplift loads for wall assemblies used in light-frame steel construction in accordance with IBC Section 1609 and IRC Section R301.2.1.

8.1.4 Resistance to gravity loads for wall assemblies used light-frame steel construction in accordance with IBC Section 1604 and IRC Section R301.1.

8.2 Provisions for water resistive barriers, air barriers, and fire safety are outside the scope of this report.

8.3 Any code compliance issues not specifically addressed in this section are outside the scope of this report.

8.4 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 Engineering, LLC (DrJ), an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP/approved sources. DrJ is qualified[27] to practice product and regulatory compliance services within its scope of accreditation and engineering expertise, respectively.

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

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

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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, the more restrictive shall govern.

9.3 *Installation Procedure*

9.3.1 *Orientation:*

9.3.1.1 RhinoBoard CI and Structural Sheathing Wall Panels must be installed vertically with the length dimension of the panels parallel to the framing behind and all panel edges supported by framing or blocking.

9.3.1.2 RhinoBoard CI and Structural Sheathing Wall Panels must be installed over 18-gauge, 50 ksi (minimum) steel studs with a nominal thickness of not less than 1 5/8" (41 mm) and spaced a maximum of 24" (610 mm) o.c.

9.3.2 *Fastener Type:*

9.3.2.1 CFS framing members are fastened with two #10 x 1" self-drilling, wafer-head screws per stud.

9.3.2.2 RhinoBoard CI and Structural Sheathing Wall Panels are attached with a combination of construction adhesive and screws.

9.3.2.2.1 A minimum bead size of 1/4" of PPG Liquid Nail, LN-602 shall be applied onto the CFS framing members where RhinoBoard CI and Structural Sheathing Wall Panels are being installed.

9.3.2.2.1.1 The time between the application of PPG Liquid Nail, LN-602 and the placement of the RhinoBoard CI and Structural Sheathing Wall Panels shall not exceed 30 minutes.

9.3.2.2.1.2 If the adhesive bead is exposed for more than 30 minutes, the skinned over bead shall be removed and a new bead shall be applied.

9.3.2.2.2 After the placement of the RhinoBoard CI and Structural Sheathing Wall Panel(s) onto the CFS framing members, install panels with #10 self-drilling, wafer-head screws spaced 12" o.c. at panel edges and 12" o.c. in the field. Screws shall be of sufficient length to penetrate a minimum of three thread lengths beyond the stud. Fastener edge distance shall be a minimum of 3/4". Fastener head shall be in contact with the panel surface.

9.3.2.2.2.1 Fastener head shall not be overdriven relative to the coated glass facer to protect the WRB performance of the facer material. See **Figure 3**.

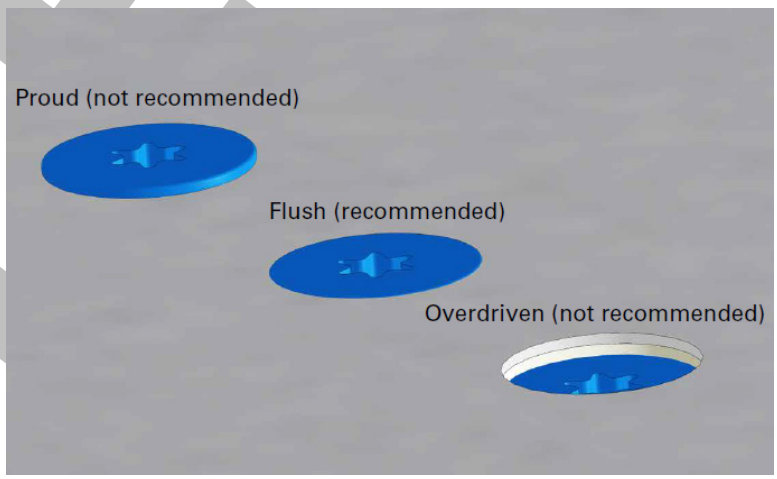


Figure 3. Fastener Installation Details

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9.3.2.2.2.2 Fasteners installed onto butted RhinoBoard CI and Structural Sheathing Wall Panels sharing the same framing member shall be staggered 1¼". See **Figure 4**.

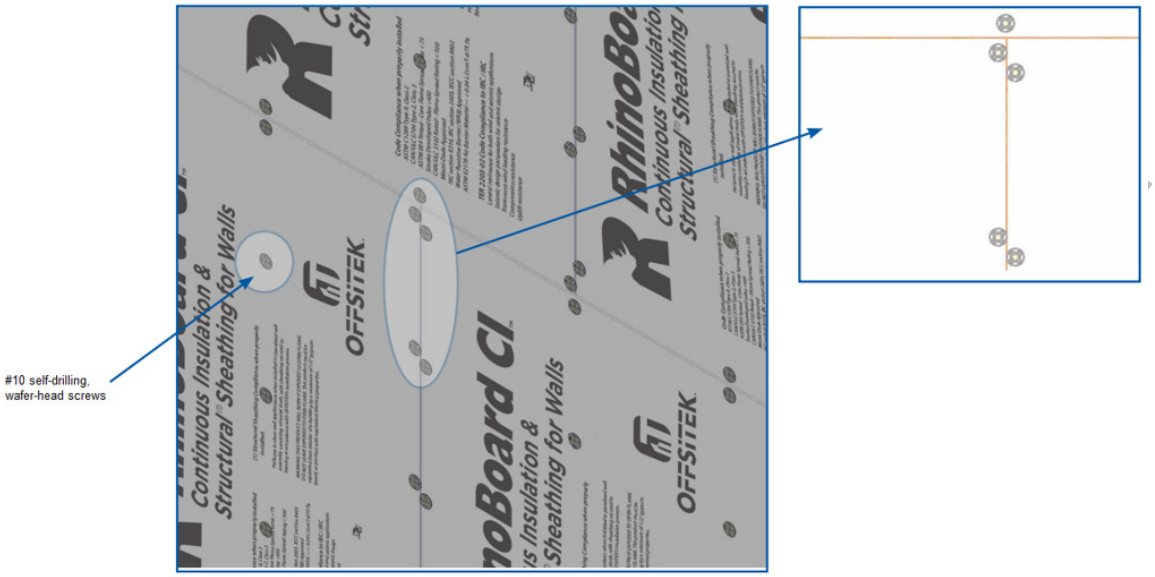


Figure 4. Fastener Installation Details

9.3.3 *Gypsum Wallboard:*

9.3.3.1 GWB shall be attached with minimum #6 x 1¼" Type S screws. Fasteners shall maintain a minimum edge distance of ⅜".

9.3.3.2 ½" GWB: Maximum of 6" o.c. (152 mm) along the edge and 12" o.c. (305 mm) in the field.

9.3.4 *SPF:*

9.3.4.1 Average thickness 1½" or greater.

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9.3.5 *Joints, Penetrations, and Fenestrations:*

9.3.5.1 Joints and penetrations shall be sealed with seam tape.

9.3.5.1.1 At intersections, tape shall overlap at least 1". See **Figure 5**.

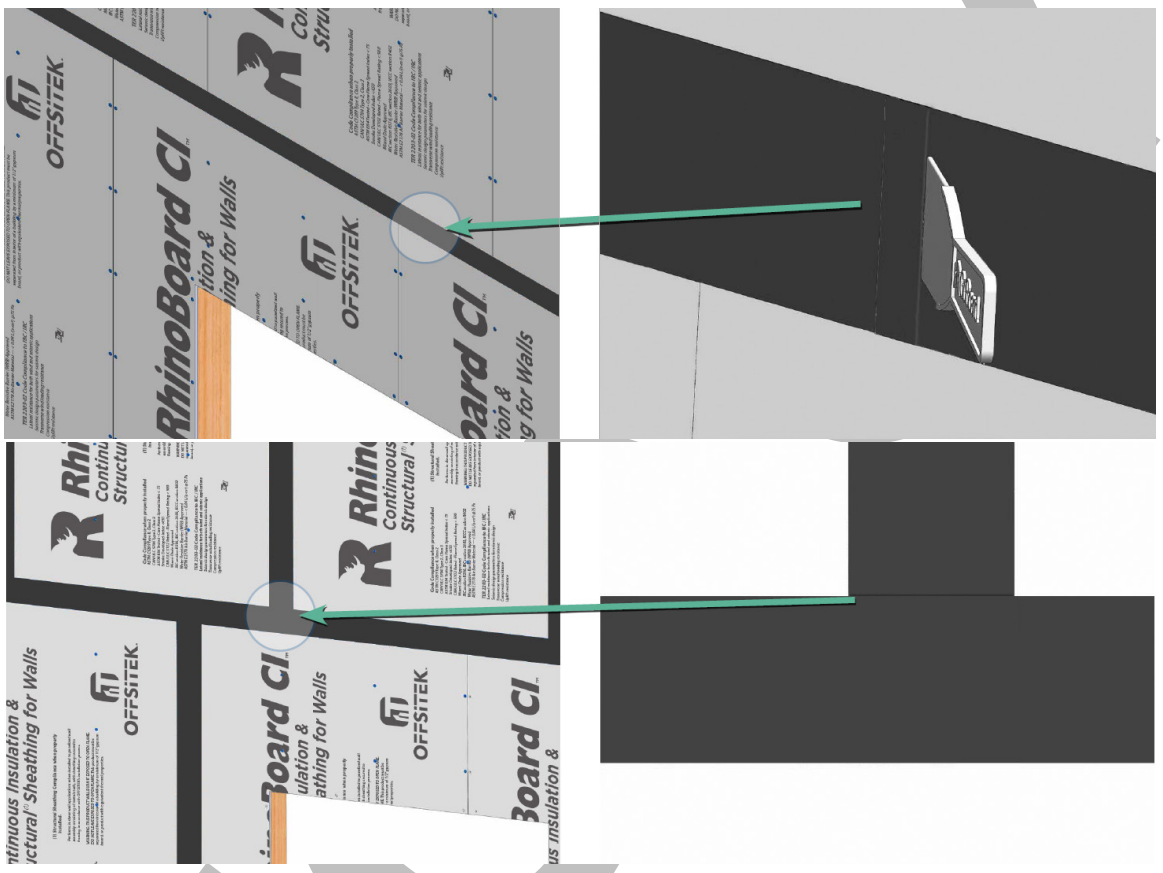


Figure 5. Seam Tape Installation Details

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9.3.5.1.2 For windows, create a pan and jamb flashing with the seam tape. Adhere seam tape to sill and apply pressure over a dull plastic squeegee or putty knife to ensure sufficient adhesion to surface. When using 4" wide seam tape, overlap two sections of tape along the length of sill, and then seal corners.

9.3.5.1.2.1 Follow the same steps for window jambs. See **Figure 6**.



Figure 6. Seam Tape Installation Details – Window Sill and Jamb

9.3.5.1.2.2 Install windows per manufacturer installation instructions. Gaps shall be filled with sealant.

9.3.5.1.2.2.1 ***Note:*** If gaps are larger than 1/4", install backer rods first.

9.3.5.1.2.3 Install seam tape on both sides of window, overhead flashing, and any board joints above window. See **Figure 7**.

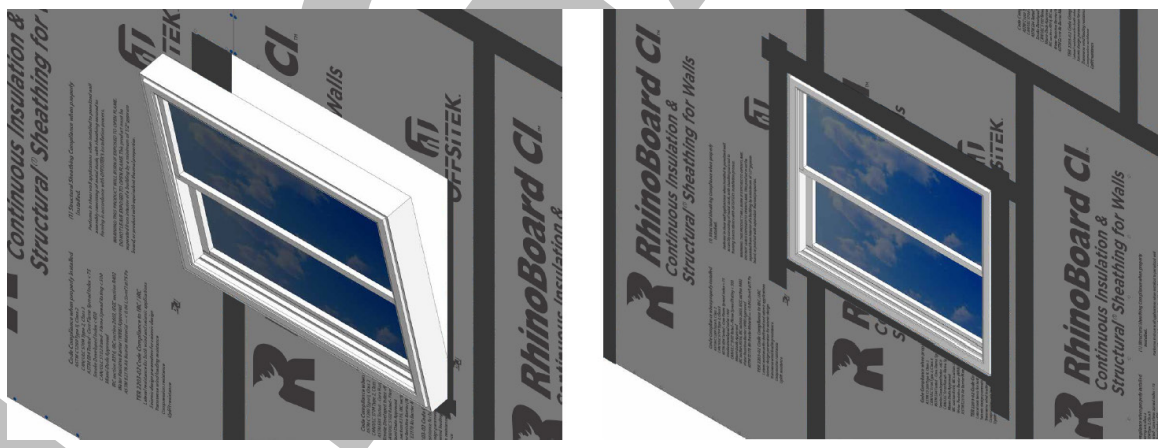


Figure 7. Seam Tape Installation Details – Windows

9.3.5.1.3 For doors, starting from the inside, adhere seam tape to both sides of the door opening followed by the top. Apply pressure over a dull plastic squeegee or putty knife to ensure sufficient adhesion to surface. Then seal corners.

9.3.5.1.3.1 Install doors in accordance with manufacturer installation instructions.

9.3.5.1.3.2 From the outside, seal gaps between the door and opening with sealant using a backer rod for gaps larger than 1/4". If door assembly includes molding, fill gaps from inside and follow manufacturer installation instructions for sealing molding. See **Figure 8**.

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Figure 8. Seam Tape Installation Details – Doors

9.3.5.1.3.3 If not included with door, install molding and apply sealant around molding door perimeter behind molding prior to fastening in place.

9.3.5.1.3.4 Install drip edge over top molding and install seam tape over drip edge.

9.3.5.1.3.5 Seal around door molding with sealant. See **Figure 9**.



Figure 9. Seam Tape Installation Details – Door Finishing Details

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 Lateral wall testing in accordance with ASTM E564 and ASTM E2126

10.1.2 Transverse load testing in accordance with ASTM E330 and ABTG ANSI/FS 100

10.1.3 Uplift capacity testing in accordance with ASTM E72

10.1.4 Compression capacity in accordance with ASTM E72

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 RDPs. Accuracy of external test data and resulting analysis is relied upon.

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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: 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.[28]

10.6 Where additional condition of use and/or regulatory compliance information is required, please search for RhinoBoard CI and Structural Sheathing Wall Panel on the DrJ Certification website.

11 Findings

11.1 As outlined in **Section 6**, RhinoBoard CI and Structural Sheathing Wall Panels have performance characteristics that were tested and/or meet applicable regulations and 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, RhinoBoard CI and Structural Sheathing Wall Panel shall be approved for the following applications:

11.2.1 Lateral load resistance for wind and seismic loading in accordance with **Table 1** and **Table 2**, respectively

11.2.2 Transverse load resistance in accordance with **Table 3**

11.2.3 Uplift resistance in accordance with **Table 4**

11.2.4 Gravity load capacities in accordance with **Table 4**

11.3 Unless exempt by state statute, when RhinoBoard CI and Structural Sheathing Wall Panels are 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.

11.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Offsitek, LLC.

11.5 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10[29] are similar) in pertinent part states:

> **104.11 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. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons the alternative was not approved.

LEGACY

11.6 **Approved**:[30] Building regulations require that the building official shall accept duly authenticated reports.[31]

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

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

11.6.3 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.

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

11.8 Through the IAF Multilateral Agreements (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.[32]

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, RhinoBoard CI and Structural Sheathing Wall Panel shall not be used:

12.3.1 As a nailbase, nor

12.3.2 To fasten cladding materials to studs.

12.4 When used in accordance with the IBC in high wind regions, special inspections shall comply with IBC Section 1705.12.

12.5 When used in accordance with the IBC in Seismic Design Categories C, D, E, or F, special inspections shall comply with IBC Section 1705.13.

12.6 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:

12.6.1 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.

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

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

12.6.4 At a minimum, this innovative product shall be installed per **Section 9** of this report.

12.6.5 The review of this report by the AHJ shall comply with IBC Section 104 and IBC Section 105.4.

12.6.6 This innovative product has an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.4, IBC Section 110.4, IBC Section 1703, IRC Section R104.4, and IRC Section R109.2.

12.6.7 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 accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new material or assemblies as provided for in Section 104.11*," all of IBC Section 104, and IBC Section 105.4.

LEGACY

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.offsitek.com.

14 Review Schedule

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

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

15 Approved for Use Pursuant to U.S. and International Legislation Defined in Appendix A

15.1 RhinoBoard CI and Structural Sheathing Wall Panels are included in this report published by an approved agency that is concerned with evaluation of products or services, maintains periodic inspection of the production of listed materials or periodic evaluation of services. This report states either that the material, product, or service meets recognized standards or has been tested and found suitable for a specified purpose. This report meets the legislative intent and definition of being acceptable to the AHJ.

LEGACY

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Appendix A

1 Legislation that Authorizes AHJ Approval

1.1 **Fair Competition**: State legislatures have adopted Federal regulations for the examination and approval of building code referenced and alternative products, materials, designs, services, assemblies, and/or methods of construction that:

1.1.1 Advance innovation.

1.1.2 Promote competition so all businesses have the opportunity to compete on price and quality in an open market on a level playing field unhampered by anticompetitive constraints.

1.1.3 Benefit consumers through lower prices, better quality, and greater choice.

1.2 **Adopted Legislation**: The following local, state and federal regulations affirmatively authorize products to be approved by AHJs, delegates of building departments, and/or delegates of an agency of the federal government:

1.2.1 Interstate commerce is governed by the Federal Department of Justice to encourage the use of innovative products, materials, designs, services, assemblies, and/or methods of construction. The goal is to "*protect economic freedom and opportunity by promoting free and fair competition in the marketplace*."

1.2.2 Title 18 US Code Section 242 affirms and regulates the right of individuals and businesses to freely and fairly have new products, materials, designs, services, assemblies, and/or methods of construction approved for use in commerce. Disapproval of alternatives shall be based upon non-conformance with respect to specific provisions of adopted legislation and shall be provided in writing stating the reasons why the alternative was not approved, with reference to the specific legislation violated.

1.2.3 The federal government and each state have a public records act. In addition, each state also has legislation that mimics the federal Defend Trade Secrets Act 2016 (DTSA),[33] where providing test reports, engineering analysis, and/or other related IP/TS is subject to prison of not more than ten years[34] and/or a $5,000,000 fine or 3 times the value of[35] the Intellectual Property (IP) and Trade Secrets (TS).

1.2.3.1 Compliance with public records and trade secret legislation requires approval through the use of Listings, certified reports, Technical Evaluation Reports, duly authenticated reports, and/or research reports prepared by approved agencies and/or approved sources.

1.2.4 For new materials[36] that are not specifically provided for in any regulation, the design strengths and permissible stresses shall be established by tests, where suitable load tests simulate the actual loads and conditions of application that occur.

1.2.5 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design using accepted engineering practice.[37]

1.2.6 The commerce of approved sources (i.e., registered PEs) is regulated by professional engineering legislation. Professional engineering commerce shall always be approved by AHJs, except where there is evidence provided in writing, that specific legislation have been violated by an individual registered PE.

1.2.7 The AHJ 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 IBC Section 104.11.[38]

LEGACY

1.3 **Approved**[39] **by Los Angeles**: The Los Angeles Municipal Code (LAMC) states in pertinent part that the provisions of LAMC are not intended to prevent the use of any material, device, or method of construction not specifically prescribed by LAMC. The Department shall use Part III, Recognized Standards in addition to Part II, Uniform Building Code Standards of Division 35, Article 1, Chapter IX of the LAMC in evaluation of products for approval where such standard exists for the product or the material and may use other approved standards that apply. Whenever tests or certificates of any material or fabricated assembly are required by Chapter IX of the LAMC, such tests or certification shall be made by a testing agency approved by the Superintendent of Building to conduct such tests or provide such certifications. The testing agency shall publish the scope and limitation(s) of the listed material or fabricated assembly.[40] The Superintendent of Building Approved Testing Agency Roster is provided by the Los Angeles Department of Building and Safety (LADBS). The Center for Building Innovation (CBI) Certificate of Approval License is TA24945. Tests and certifications found in a DrJ Listing are LAMC approved. In addition, the Superintendent of Building 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 the California Building Code (CBC) Section 1707.1.[41]

1.4 **Approved by Chicago**: The Municipal Code of Chicago (MCC) states in pertinent part that an Approved Agency is a Nationally Recognized Testing Laboratory (NRTL) acting within its recognized scope and/or a certification body accredited by the American National Standards Institute (ANSI) acting within its accredited scope. Construction materials and test procedures shall conform to the applicable standards listed in the MCC. Sufficient technical data shall be submitted to the building official to substantiate the proposed use of any product, material, service, design, assembly, and/or method of construction not specifically provided for in the MCC. This technical data shall consist of research reports from approved sources (i.e., MCC defined Approved Agencies).

1.5 **Approved by New York City**: The 2022 NYC Building Code (NYCBC) states in part that an approved agency shall be deemed[42] an approved testing agency via ISO/IEC 17025 accreditation, an approved inspection agency via ISO/IEC 17020 accreditation, and an approved product evaluation agency via ISO/IEC 17065 accreditation. Accrediting agencies, other than federal agencies, must be members of an internationally recognized cooperation of laboratory and inspection accreditation bodies subject to a mutual recognition agreement[43] (i.e., ANAB, International Accreditation Forum also known as IAF, etc.).

1.6 **Approved by Florida**: Statewide approval of products, methods or systems of construction shall be approved, without further evaluation by:

1.6.1 A certification mark or listing of an approved certification agency,

1.6.2 A test report from an approved testing laboratory,

1.6.3 A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, from an approved product evaluation entity, or

1.6.4 A product evaluation report based upon testing, comparative or rational analysis, or a combination thereof, developed, signed, and sealed by a professional engineer or architect, licensed in Florida.

1.6.5 For local product approval, products or systems of construction shall demonstrate compliance with the structural wind load requirements of the Florida Building Code (FBC) through one of the following methods:

1.6.5.1 A certification mark, listing, or label from a commission-approved certification agency indicating that the product complies with the code,

1.6.5.2 A test report from a commission-approved testing laboratory indicating that the product tested complies with the code,

1.6.5.3 A product-evaluation report based upon testing, comparative or rational analysis, or a combination thereof, from a commission-approved product evaluation entity which indicates that the product evaluated complies with the code,

LEGACY

1.6.5.4 A product-evaluation report or certification based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a Florida professional engineer or Florida registered architect, which indicates that the product complies with the code, or

1.6.5.5 A statewide product approval issued by the Florida Building Commission.

1.6.6 The Florida Department of Business and Professional Regulation (DBPR) website provides a listing of companies certified as a Product Evaluation Agency (i.e., EVLMiami 13692), a Product Certification Agency (i.e., CER10642), and as a Florida Registered Engineer (i.e., ANE13741).

1.7 **Approved by Miami-Dade County (i.e., Notice of Acceptance [NOA])**: A Florida statewide approval is an NOA. An NOA is a Florida local product approval. By Florida law, Miami-Dade County shall accept the statewide and local Florida Product Approval as provided for in Florida legislation 553.842 and 553.8425.

1.8 **Approved by New Jersey**: Pursuant to the 2018 Building Code of New Jersey in IBC Section 1707.1 General,[44] it states: "*In the absence of approved rules or other approved standards, 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 the administrative provisions of the Uniform Construction Code (N.J.A.C. 5:23)*".[45] Furthermore N.J.A.C 5:23-3.7 states: "*Municipal approvals of alternative materials, equipment, or methods of construction*."

1.8.1 **Approvals**: Alternative materials, equipment, or methods of construction shall be approved by the appropriate subcode official provided the proposed design is satisfactory and that the materials, equipment, or methods of construction are suitable for the intended use and are at least the equivalent in quality, strength, effectiveness, fire resistance, durability, and safety of those conforming with the requirements of the regulations.

1.8.1.1 A field evaluation label and report or letter issued by a nationally recognized testing laboratory verifying that the specific material, equipment, or method of construction meets the identified standards or has been tested and found to be suitable for the intended use, shall be accepted by the appropriate subcode official as meeting the requirements of the above.

1.8.1.2 Reports of engineering findings issued by nationally recognized evaluation service programs such as but not limited to, the Building Officials and Code Administrators (BOCA), the International Conference of Building Officials (ICBO), the Southern Building Code Congress International (SBCCI), the International Code Council (ICC), and the National Evaluation Service, Inc., shall be accepted by the appropriate subcode official as meeting the requirements of the above.

1.8.2 The New Jersey Department of Community Affairs has confirmed that technical evaluation reports, from any accredited entity listed by ANAB, meets the requirements of item the previous paragraph, given that the listed entities are no longer in existence and/or do not provide "*reports of engineering findings*."

1.9 **Approved by the Code of Federal Regulations Manufactured Home Construction and Safety Standards**: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14[46] and Part 3280,[47] the Department encourages innovation and the use of new technology in manufactured homes. The design and construction of a manufactured home shall conform to the provisions of Part 3282 and Part 3280 where key approval provisions in mandatory language follow:

1.9.1 *"All construction methods shall be in conformance with accepted engineering practices."*

1.9.2 *"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."*

1.9.3 *"The design stresses of all materials shall conform to accepted engineering practice."*

LEGACY

1.10 **Approval by US, Local and State Jurisdictions in General**: In all other local and state jurisdictions, the adopted building code legislation states in pertinent part that:

1.10.1 For new materials that are not specifically provided for in this code, the design strengths and permissible stresses shall be established by tests.[48]

1.10.2 For innovative alternatives and/or methods of construction, the building official shall accept duly authenticated reports from approved agencies with respect to the quality and manner of use of new materials or assemblies.[49]

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

1.10.2.2 An approved source is *"approved"* when an RDP is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.[50]

1.10.3 The design strengths and permissible stresses of any structural material…shall conform to the specifications and methods of design of accepted engineering practice performed by an approved source.[51]

1.11 **Approval by International Jurisdictions**: The USMCA and GATT agreements provide for approval of innovative materials, designs, services, and/or methods of construction through the Agreement on Technical Barriers to Trade and the IAF Multilateral Recognition Arrangement (MLA), where these agreements:

1.11.1 State that conformity assessment procedures (i.e., ISO/IEC 17020, 17025, 17065, etc.) are prepared, adopted, and applied so as to grant access for suppliers of like products originating in the territories of other Members under conditions no less favourable than those accorded to suppliers of like products of national origin or originating in any other country, in a comparable situation.

1.11.2 **Approved**: The purpose of the MLA is to ensure mutual recognition of accredited certification and validation/verification statements between signatories to the MLA and subsequently, acceptance of accredited certification and validation/verification statements in many markets based on one accreditation for the timely approval of innovative materials, designs, services, and/or methods of construction.

1.11.3 ANAB is an IAF-MLA signatory where recognition of certificates, validation, and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope, shall be approved.[52]

1.11.4 Therefore, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent.[53]

1.12 Approval equity is a fundamental commercial and legal principle.[54]

LEGACY

Notes

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

2 https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1702

3 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/colorado/ibc-2021/chapter/1/scope-and-administration#104.11

4 https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706:~:text=the%20design%20strengths%20and%20permissible%20stresses%20shall%20be%20established%20by%20tests%20as

5 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/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706:~:text=shall%20conform%20to%20the%20specifications%20and%20methods%20of%20design%20of%20accepted%20engineering%20practice

6 https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1:~:text=the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies

7 https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1703.4.2

8 https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved_agency

9 https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved_source

10 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.

11 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/

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

13 https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104:~:text=to%20enforce%20the%20provisions%20of%20this%20code

14 https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104.11:~:text=Where%20the%20alternative%20material%2C%20design%20or%20method%20of%20construction%20is%20not%20approved%2C%20the%20building%20official%20shall%20respond%20in%20writing%2C%20stating%20the%20reasons%20why%20the%20alternative%20was%20not%20approved AND https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#105.3.1:~:text=If%20the%20application%20or%20the%20construction%20documents%20do%20not%20conform%20to%20the%20requirements%20of%20pertinent%20laws%2C%20the%20building%20official%20shall%20reject%20such%20application%20in%20writing%2C%20stating%20the%20reasons%20therefore

15 https://up.codes/viewer/colorado/ibc-2021/chapter/17/special-inspections-and-tests#1707.1:~:text=the%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%20104.11

16 https://iaf.nu/en/about-iaf-mla/#:~:text=it%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

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

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

19 Unless otherwise noted, all references in this Listing are from the 2021 version of the codes and the standards referenced therein. This material, product, design, service and/or method of construction also complies with the 2000-2021 versions of the referenced codes and the standards referenced therein.

20 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#p-3280.2(Listed%20or%20certified); https://up.codes/viewer/colorado/ibc-2021/chapter/2/definitions#listed AND https://up.codes/viewer/colorado/ibc-2021/chapter/2/definitions#labeled

21 2018 IRC Table R301.2(2)

22 2018 IRC Table R301.2(3)

23 https://up.codes/viewer/colorado/ibc-2021/chapter/17/special-inspections-and-tests#1703.4

24 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

25 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

26 2010 ASCE 7 Section 12.2.1

27 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.

28 See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition.

29 2018 IFC Section 104.9

30 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 where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

LEGACY

31 https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1
32 Multilateral approval is true for all ANAB accredited product evaluation agencies and all International Trade Agreements.
33 http://www.drjengineering.org/AppendixC AND https://www.drjcertification.org/cornell-2016-protection-trade-secrets
34 https://www.law.cornell.edu/uscode/text/18/1832#:~:text=imprisoned%20not%20more%20than%2010%20years
35 https://www.law.cornell.edu/uscode/text/18/1832#:~:text=Any%20organization%20that,has%20thereby%20avoided
36 https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706.2
37 IBC 2021, Section 1706.1 Conformance to Standards
38 IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General
39 See **Section 11** for the distilled building code definition of **Approved**.
40 Los Angeles Municipal Code, SEC. 98.0503. TESTING AGENCIES
41 https://up.codes/viewer/california/ca-building-code-2022/chapter/17/special-inspections-and-tests#1707.1
42 New York City, The Rules of the City of New York, § 101-07 Approved Agencies
43 New York City, The Rules of the City of New York, § 101-07 Approved Agencies
44 https://up.codes/viewer/new_jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1
45 https://www.nj.gov/dca/divisions/codes/codreg/ucc.html
46 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282/subpart-A/section-3282.14
47 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280
48 IBC 2021, Section 1706 Design Strengths of Materials, 1706.2 New Materials. Adopted law pursuant to IBC model code language 1706.2.
49 IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General. Adopted law pursuant to IBC model code language 1707.1.
50 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/
51 IBC 2021, Section 1706 Design Strengths of Materials, Section 1706.1 Conformance to Standards Adopted law pursuant to IBC model code language 1706.1.
52 https://iaf.nu/en/about-iaf-mla/#:~:text=it%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
53 True for all ANAB accredited product evaluation agencies and all International Trade Agreements.
54 https://www.justice.gov/crt/deprivation-rights-under-color-law AND https://www.justice.gov/atr/mission

LEGACY