# Listing and Technical Evaluation Report™

**A Duly Authenticated Report from an Approved Agency**

**Report No: 0804-01**

Issue Date: April 26, 2008

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Subject to Renewal: April 1, 2026

## OX-IS®, OX-IS® HS and SI-Strong Structural Insulation

### Trade Secret Report Holder:

OX Engineered Products, LLC

Phone: 800-345-8881 Website: www.oxengineeredproducts.com

### CSI Designations:

**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

**DIVISION**: 07 00 00 - THERMAL AND MOISTURE PROTECTION

Section: 07 21 00 - Thermal Insulation

Section: 07 25 00 - Water-Resistive Barriers/Weather Barriers

Section: 07 27 00 - Air Barriers

## 1 Innovative Products Evaluated[1]

1.1 OX-IS Structural Insulation

1.2 OX-IS HS (High Shear) Structural Insulation

1.3 SI-Strong Structural Insulation

## 2 Product Description and Materials

2.1 The innovative products evaluated in this report are shown in **Figure 1**, **Figure 2** and **Figure 3**.

OX-IS®

structural insulation by OX®

**Figure 1**. OX-IS Logo

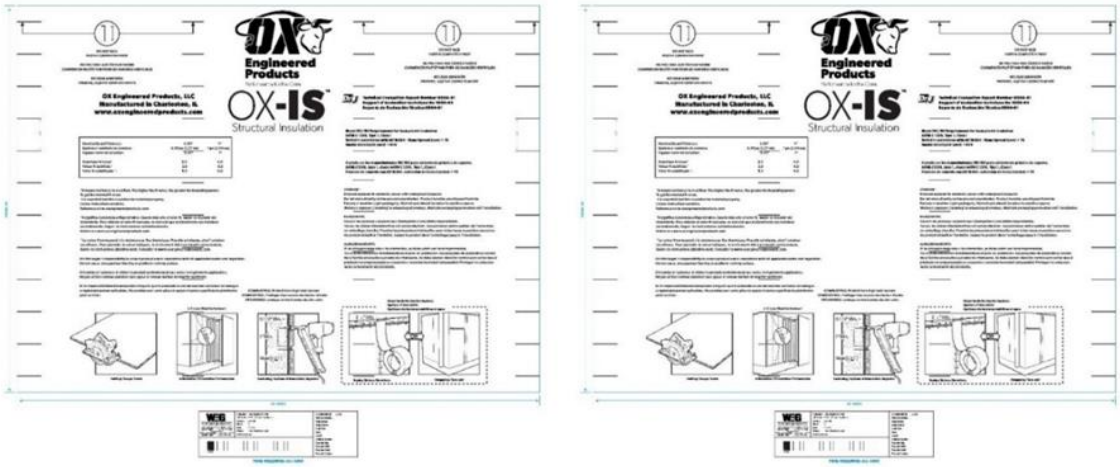


**Figure 2**. OX-IS and OX-IS HS Structural Insulation Product Labels


**Figure 3**. SI-Strong Structural Insulation Product Label

2.2 OX-IS and SI-Strong are structural, rigid insulating sheathing products consisting of a proprietary fibrous sheathing board laminated to one side of a proprietary rigid foam plastic insulation sheathing.

2.2.1 The proprietary fibrous sheathing is made of specially treated plies that are pressure-laminated with a water resistant adhesive. The surface finish consists of a facer on one or both sides, using either a 0.113" (2.9 mm) nominal thickness fibrous sheathing board attached to 0.50" foam (12.7 mm) or a 0.135" (3.4 mm) nominal thickness fibrous sheathing board attached to 1.0" (25.4 mm) or greater foam.

2.2.2 The rigid foam plastic insulation sheathing is a proprietary Polyisocyanurate (polyiso) insulation sheathing, which may have facings on one or both sides.

2.3 OX-IS HS is a structural, rigid insulating sheathing product consisting of a proprietary fibrous sheathing board laminated to one side of a proprietary rigid foam plastic insulation.

2.3.1 The proprietary fibrous sheathing is made of specially treated plies that are pressure-laminated with a water resistant adhesive. The surface finish consists of a facer on one or both sides, using a 0.135" (3.4 mm) nominal thickness fibrous sheathing board attached to 0.50" (12.7 mm) foam.

2.3.2 The rigid foam plastic insulation sheathing is a proprietary polyiso insulation sheathing, which may have facings on one or both sides.

2.4 *Material Availability*

2.4.1 *Thickness:*

2.4.1.1 0.50" (12.7 mm) to 1.7" (43 mm)

2.4.2 *Standard Product Width:*

2.4.2.1 48" (1,219 mm)

2.4.3 *Standard Lengths:*

2.4.3.1 96" (2,438 mm)

2.4.3.2 108" (2,743 mm)

2.4.3.3 120" (3,048 mm)

2.5 As needed, review material properties for design in **Section 6** and to 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 *ANSI/AWC SDPWS: Special Design Provisions for Wind and Seismic*

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

4.1.3 *ASTM C518: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus*

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

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

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

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

4.1.8 *ASTM E331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*

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

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

4.1.11 *ASTM E2178: Standard Test Method for Air Permeance of Building Materials*

4.1.12 *NFPA 286: Standard Methods of Fire Test for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth*

4.2 Structural performance for shear wall assemblies used as lateral force resisting systems 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 (SDCs).

4.2.2.2 Test data generated by ISO/IEC 17025 approved agencies and/or professional engineers.

4.2.2.3 All associated professional engineering evaluations that use ASTM D7989 as their basis, are defined as intellectual property and/or trade secrets and are also defined as an Independent Design Review (i.e., Listings, certified reports, Duly Authenticated Reports from approved agencies and/or research reports prepared by approved agencies and/or approved sources).

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

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

4.2.5 *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®*

4.3.4 *CBC—19, 22: California Building Code*

4.3.5 *FBC-B—20, 23: Florida Building Code – Building[20] (FL 16410)*

4.3.6 *FBC-R—20, 23: Florida Building Code – Residential[20] (FL 16410)*

## 5 Listed[21]

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 *General*

6.1.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation are structural insulated sheathing panels for use in the following applications as:

6.1.1.1 Wall sheathing in buildings constructed in accordance with the IBC and IRC for light-frame wood and steel construction.

6.1.1.2 Structural wall sheathing to provide lateral load resistance (wind and seismic) for braced wall panels used in light-frame construction.

6.1.1.3 Structural wall sheathing to provide resistance to transverse loads for wall assemblies used in wood construction.

6.1.1.4 Insulating sheathing applied as in-fill to portions of walls that are not designed as braced wall panels or shear walls.

6.1.1.5 Insulated sheathing in accordance with the IRC Section N1102, IECC Section R402 and IECC Section C402.

6.1.1.6 An approved Water-Resistive Barrier (WRB) in accordance with IBC Section 1403.2[22] and IRC Section R703.2 when installed with approved Construction Tape on all sheathing seams, see **Section 6.3.3**. See the manufacturer product information for further details.

6.1.1.6.1 Where the joints are not taped, a separate WRB shall be installed in accordance with the WRB manufacturer installation instructions.

6.1.1.7 An air barrier material as part of an air barrier assembly in accordance with IRC Section N1102.4 and IECC Section C402 in accordance with the manufacturer installation instructions and this report.

6.1.1.8 An approved draftstop material when installed in accordance with **Section 6.6** and **Section 9**.

6.1.2 OX-IS, OX-IS HS, and SI-Strong Structural Insulation contain foam plastics complying with IBC Section 2603 and IRC Section R316.

6.2 *Structural Applications*

6.2.1 *General Provisions:*

6.2.1.1 Except as otherwise described in this report, OX-IS, OX-IS HS, and SI-Strong Structural Insulation 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 WSP.

6.2.1.2 OX-IS, OX-IS HS, and SI-Strong Structural Insulation shall be permitted to be designed in accordance with SDPWS for the design of shear walls using the methods set forth therein, including the perforated shear wall methodology, and subject to the SDPWS boundary conditions, 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 not exceed 6' o.c.

6.2.1.3.2 For seismic design, anchor bolt spacing shall not exceed 4' o.c.

6.2.1.4 The maximum aspect ratio for OX-IS, OX-IS HS, and SI-Strong Structural Insulation shall be 4:1.

6.2.1.5 The minimum full height panel width shall be 24".

6.2.1.6 All panel edges shall be blocked with a minimum 2" nominal lumber.

6.2.1.7 Fasteners may be countersunk beneath the outer surface of the foam plastic sheathing layer.

6.2.1.8 Installation is permitted for single top plate (advanced framing method) or double top plate applications.

6.2.2 *Simplified IRC Bracing Provisions:*

6.2.2.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation are permitted to be used in accordance with the IRC simplified bracing method of IRC Section R602.12 as modified by **Table 1**, **Table 2**, **Table 3** and **Table 4**.

6.2.2.2 All other provisions of the IRC simplified bracing method shall be met.

**Table 1**. Simplified Bracing for 0.50" OX-IS, OX-IS HS, and SI-Strong (Studs 16" o.c.)[1,2,3,4,5,6,7,8,9]

| Ultimate Design Wind Speed (mph) | Story Level | Eave to Ridge Height (ft) | Minimum Number of Bracing Units Required (Long Side) | | | | | | Minimum Number of Bracing Units Required (Short Side) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length of Short Side (ft) | | | | | | Length of Long Side (ft) | | | | | |
| | | | 10 | 20 | 30 | 40 | 50 | 60 | 10 | 20 | 30 | 40 | 50 | 60 |
| 115 | One Story or Top of Two or Three Story | 10 | 1 | 1 | 2 | 2 | 3 | 3 | 1 | 1 | 2 | 2 | 3 | 3 |
| | First of Two Story or Second of Three Story | | 1 | 2 | 3 | 4 | 5 | 5 | 1 | 2 | 3 | 4 | 5 | 5 |
| | First of Three Story | | 2 | 3 | 4 | 5 | 7 | 8 | 2 | 3 | 4 | 5 | 7 | 8 |
| | One Story or Top of Two or Three Story | 15 | 1 | 1 | 3 | 3 | 4 | 4 | 1 | 1 | 3 | 3 | 4 | 4 |
| | First of Two Story or Second of Three Story | | 1 | 2 | 3 | 5 | 6 | 6 | 1 | 2 | 3 | 5 | 6 | 6 |
| | First of Three Story | | 2 | 3 | 4 | 6 | 8 | 9 | 2 | 3 | 4 | 6 | 8 | 9 |
| 130 | One Story or Top of Two or Three Story | 10 | 1 | 2 | 2 | 3 | 3 | 4 | 1 | 2 | 2 | 3 | 3 | 4 |
| | First of Two Story or Second of Three Story | | 2 | 3 | 4 | 5 | 6 | 7 | 2 | 3 | 4 | 5 | 6 | 7 |
| | First of Three Story | | 2 | 4 | 5 | 7 | 8 | 10 | 2 | 4 | 5 | 7 | 8 | 10 |
| | One Story or Top of Two or Three Story | 15 | 1 | 3 | 3 | 4 | 4 | 5 | 1 | 3 | 3 | 4 | 4 | 5 |
| | First of Two Story or Second of Three Story | | 2 | 3 | 5 | 6 | 7 | 8 | 2 | 3 | 5 | 6 | 7 | 8 |
| | First of Three Story | | 2 | 4 | 6 | 8 | 9 | 11 | 2 | 4 | 6 | 8 | 9 | 11 |

SI: 1 in = 25.4 mm, 1 mph = 1.61 km/h

1. This simplified bracing table is based on the provisions of IRC Section R602.12. All provisions therein shall be observed, except that this table shall replace IRC Table R602.12.4, and 0.50" OX-IS, 0.50" OX-IS HS, or 0.50" SI-Strong shall replace the sheathing material.
2. Interpolation shall not be permitted.
3. Cripple walls or wood-framed basement walls in a walk-out condition shall be designated as the first story and the stories above shall be re-designated as the second and third stories, respectively, and shall be prohibited in a three-story structure.
4. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.
5. For Exposure Category C, multiply bracing units by a factor of 1.20 for a one-story building, 1.30 for a two-story building, and 1.40 for a three-story building.
6. 6. Maximum stud spacing is 16" o.c.
7. 0.50" OX-IS, 0.50" OX-IS HS and 0.50" SI-Strong attached with minimum 16-gauge, $^{7}/_{16}$" crown staples fastened 3":6" (edge:field) and penetrate a minimum of 1.0" into the stud. Fasteners are to be installed with the crown parallel to the framing. Fastener edge distance shall be a minimum of $^{3}/_{8}$". Fastener head shall be in contact with the panel surface. Minimum $^{1}/_{2}$" GWB fastened 16":16" attached to the interior side of the wall in accordance with IRC Section R702.3.5 and IRC Table R702.3.5.
8. As an alternate to table footnote 7 above, 0.50" OX-IS, 0.50" OX-IS HS and 0.50" SI-Strong may be attached with minimum 0.113" diameter ($^{3}/_{8}$" head or 2" cap) nails fastened 3":6" (edge:field). Minimum $^{1}/_{2}$" GWB fastened 8":8" attached to the interior side of the wall in accordance with IRC Section R702.3.5 and IRC Table R702.3.5.
9. Where GWB is not applied to the interior side of the wall assembly, bracing lengths in IRC Table R602.10.3(1) and IRC Table R602.10.3(3) as modified by all applicable factors in IRC Table R602.10.3(2) and IRC Table R602.10.3(4) shall be used, except the factor for omitting the GWB shall be 1.5.

**Table 2**. Simplified Bracing for 0.50" OX-IS, OX-IS HS, and SI-Strong (Studs 24" o.c.)[1,2,3,4,5,6,7,8,9]

| Ultimate Design Wind Speed (mph) | Story Level | Eave to Ridge Height (ft) | Minimum Number of Bracing Units Required (Long Side) | | | | | | Minimum Number of Bracing Units Required (Short Side) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length of Short Side (ft) | | | | | | Length of Long Side (ft) | | | | | |
| | | | 10 | 20 | 30 | 40 | 50 | 60 | 10 | 20 | 30 | 40 | 50 | 60 |
| 115 | One Story or Top of Two or Three Story | 10 | 1 | 1 | 2 | 2 | 3 | 3 | 1 | 1 | 2 | 2 | 3 | 3 |
| | First of Two Story or Second of Three Story | | 2 | 3 | 3 | 4 | 5 | 6 | 2 | 3 | 3 | 4 | 5 | 6 |
| | First of Three Story | | 2 | 4 | 5 | 6 | 7 | 8 | 2 | 4 | 5 | 6 | 7 | 8 |
| | One Story or Top of Two or Three Story | 15 | 1 | 1 | 3 | 3 | 4 | 4 | 1 | 1 | 3 | 3 | 4 | 4 |
| | First of Two Story or Second of Three Story | | 2 | 3 | 3 | 5 | 6 | 7 | 2 | 3 | 3 | 5 | 6 | 7 |
| | First of Three Story | | 2 | 4 | 6 | 7 | 8 | 9 | 2 | 4 | 6 | 7 | 8 | 9 |
| 130 | One Story or Top of Two or Three Story | 10 | 1 | 2 | 2 | 3 | 4 | 4 | 1 | 2 | 2 | 3 | 4 | 4 |
| | First of Two Story or Second of Three Story | | 2 | 3 | 4 | 5 | 6 | 7 | 2 | 3 | 4 | 5 | 6 | 7 |
| | First of Three Story | | 3 | 4 | 6 | 8 | 9 | 11 | 3 | 4 | 6 | 8 | 9 | 11 |
| | One Story or Top of Two or Three Story | 15 | 1 | 3 | 3 | 4 | 5 | 5 | 1 | 3 | 3 | 4 | 5 | 5 |
| | First of Two Story or Second of Three Story | | 2 | 3 | 5 | 6 | 7 | 8 | 2 | 3 | 5 | 6 | 7 | 8 |
| | First of Three Story | | 3 | 4 | 7 | 9 | 10 | 12 | 3 | 4 | 7 | 9 | 10 | 12 |

SI: 1 in = 25.4 mm, 1 mph = 1.61 km/h

1. This simplified bracing table is based on the provisions of IRC Section R602.12. All provisions therein shall be observed, except that this table shall replace IRC Table R602.12.4, and 0.50" OX-IS, 0.50" OX-IS HS, or 0.50" SI-Strong shall replace the sheathing material.
2. Interpolation shall not be permitted.
3. Cripple walls or wood-framed basement walls in a walk-out condition shall be designated as the first story, and the stories above shall be re-designated as the second and third stories, respectively, and shall be prohibited in a three-story structure.
4. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.
5. For Exposure Category C, multiply bracing units by a factor of 1.20 for a one-story building, 1.30 for a two-story building, and 1.40 for a three-story building.
6. Maximum stud spacing is 24" o.c.
7. 0.50" OX-IS, 0.50" OX-IS HS, and 0.50" SI-Strong attached with minimum 16-gauge, $^{7}/_{16}$" crown staples fastened 3":3" (edge:field) and penetrate a minimum of 1.0" into the stud. Fasteners are to be installed with the crown parallel to the framing. Fastener edge distance shall be a minimum of $^{3}/_{8}$". Fastener head shall be in contact with the panel surface. Minimum $^{1}/_{2}$" GWB fastened 16":16" attached to the interior side of the wall in accordance with IRC Section R702.3.5 and IRC Table R702.3.5.
8. As an alternate to footnote 7 above, 0.50" OX-IS, 0.50" OX-IS HS, and 0.50" SI-Strong may be attached with minimum 0.113" diameter ($^{3}/_{8}$" head or 2" cap) nails fastened 3":3" (edge:field). Minimum $^{1}/_{2}$" GWB fastened 8":8" attached to the interior side of the wall in accordance with IRC Section R702.3.5 and IRC Table R702.3.5.
9. Where GWB is not applied to the interior side of the wall assembly, bracing lengths IRC Table R602.10.3(1) and IRC Table R602.10.3(3) as modified by all applicable factors in IRC Table R602.10.3(2) and IRC Table R602.10.3(4) shall be used, except the factor for omitting the GWB shall be 1.5.

**Table 3**. Simplified Bracing for 0.92" OX-IS, 1.0" OX-IS and SI-Strong (Studs 16" o.c.)[1,2,3,4,5,6,7,8,9]

| Ultimate Design Wind Speed (mph) | Story Level | Eave to Ridge Height (ft) | Minimum Number of Bracing Units Required (Long Side) | | | | | | Minimum Number of Bracing Units Required (Short Side) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length of Short Side (ft) | | | | | | Length of Long Side (ft) | | | | | |
| | | | 10 | 20 | 30 | 40 | 50 | 60 | 10 | 20 | 30 | 40 | 50 | 60 |
| 115 | One Story or Top of Two or Three Story | 10 | 1 | 1 | 2 | 2 | 3 | 3 | 1 | 1 | 2 | 2 | 3 | 3 |
| | First of Two Story or Second of Three Story | | 1 | 2 | 3 | 4 | 4 | 5 | 1 | 2 | 3 | 4 | 4 | 5 |
| | First of Three Story | | 2 | 3 | 4 | 5 | 6 | 7 | 2 | 3 | 4 | 5 | 6 | 7 |
| | One Story or Top of Two or Three Story | 15 | 1 | 1 | 3 | 3 | 4 | 4 | 1 | 1 | 3 | 3 | 4 | 4 |
| | First of Two Story or Second of Three Story | | 1 | 2 | 3 | 5 | 5 | 6 | 1 | 2 | 3 | 5 | 5 | 6 |
| | First of Three Story | | 2 | 3 | 4 | 6 | 7 | 8 | 2 | 3 | 4 | 6 | 7 | 8 |
| 130 | One Story or Top of Two or Three Story | 10 | 1 | 2 | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 3 | 3 | 3 |
| | First of Two Story or Second of Three Story | | 2 | 3 | 4 | 4 | 5 | 6 | 2 | 3 | 4 | 4 | 5 | 6 |
| | First of Three Story | | 2 | 4 | 5 | 6 | 8 | 9 | 2 | 4 | 5 | 6 | 8 | 9 |
| | One Story or Top of Two or Three Story | 15 | 1 | 3 | 3 | 4 | 4 | 4 | 1 | 3 | 3 | 4 | 4 | 4 |
| | First of Two Story or Second of Three Story | | 2 | 3 | 5 | 5 | 6 | 7 | 2 | 3 | 5 | 5 | 6 | 7 |
| | First of Three Story | | 2 | 4 | 6 | 7 | 9 | 10 | 2 | 4 | 6 | 7 | 9 | 10 |

SI: 1 in = 25.4 mm, 1 mph = 1.61 km/h

1. This simplified bracing table is based on the provisions of IRC Section R602.12. All provisions therein shall be observed, except that this table shall replace IRC Table R602.12.4, and 0.92" OX-IS, 1.0" OX-IS or 1.0" SI-Strong shall replace the sheathing material.
2. Interpolation shall not be permitted.
3. Cripple walls or wood-framed basement walls in a walk-out condition shall be designated as the first story, and the stories above shall be re-designated as the second and third stories, respectively, and shall be prohibited in a three-story structure.
4. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.
5. For Exposure Category C, multiply bracing units by a factor of 1.20 for a one-story building, 1.30 for a two-story building, and 1.40 for a three-story building.
6. Maximum stud spacing is 16" o.c.
7. 0.92" OX-IS, 1.0" OX-IS, 1.0" OX-IS HS and 1.0" SI-Strong attached with minimum 16-gauge, 1" crown staples fastened at 3":3" (edge:field) and penetrate a minimum of 1.0" into the stud. Fasteners are to be installed with the crown parallel to the framing. Fastener edge distance shall be a minimum of $^3/_8$". Fastener head shall be in contact with the panel surface. Minimum $^1/_2$" GWB fastened 16":16" attached to the interior side of the wall in accordance with IRC Section R702.3.5 and IRC Table R702.3.5.
8. As an alternate to table footnote 7 above, 0.92" OX-IS, 1.0" OX-IS HS and 1.0" SI-Strong may be attached with minimum 0.113" diameter ($^3/_8$" head or 2" cap) nails fastened 3":3" (edge:field). Minimum $^1/_2$" GWB fastened 8":8" attached to the interior side of the wall in accordance with IRC Section R702.3.5 and IRC Table R702.3.5.
9. Where GWB is not applied to the interior side of the wall assembly, bracing lengths in IRC Table R602.10.3(1) and IRC Table R602.10.3(3) as modified by all applicable factors in IRC Table R602.10.3(2) and IRC Table R602.10.3(4) shall be used, except the factor for omitting the GWB shall be 1.5.

**Table 4**. Simplified Bracing for 0.92" OX-IS, 1.0" OX-IS and SI-Strong (Studs 24" o.c.)[1,2,3,4,5,6,7,8,9]

| Ultimate Design Wind Speed (mph) | Story Level | Eave to Ridge Height (ft) | Minimum Number of Bracing Units Required (Long Side) | | | | | | Minimum Number of Bracing Units Required (Short Side) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length of Short Side (ft) | | | | | | Length of Long Side (ft) | | | | | |
| | | | 10 | 20 | 30 | 40 | 50 | 60 | 10 | 20 | 30 | 40 | 50 | 60 |
| 115 | One Story or Top of Two or Three Story | 10 | 1 | 1 | 2 | 2 | 3 | 3 | 1 | 1 | 2 | 2 | 3 | 3 |
| | First of Two Story or Second of Three Story | | 1 | 2 | 3 | 4 | 5 | 5 | 1 | 2 | 3 | 4 | 5 | 5 |
| | First of Three Story | | 2 | 3 | 4 | 5 | 7 | 8 | 2 | 3 | 4 | 5 | 7 | 8 |
| | One Story or Top of Two or Three Story | 15 | 1 | 1 | 3 | 3 | 4 | 4 | 1 | 1 | 3 | 3 | 4 | 4 |
| | First of Two Story or Second of Three Story | | 1 | 2 | 3 | 5 | 6 | 6 | 1 | 2 | 3 | 5 | 6 | 6 |
| | First of Three Story | | 2 | 3 | 4 | 6 | 8 | 9 | 2 | 3 | 4 | 6 | 8 | 9 |
| 130 | One Story or Top of Two or Three Story | 10 | 1 | 2 | 2 | 3 | 3 | 4 | 1 | 2 | 2 | 3 | 3 | 4 |
| | First of Two Story or Second of Three Story | | 2 | 3 | 4 | 5 | 6 | 7 | 2 | 3 | 4 | 5 | 6 | 7 |
| | First of Three Story | | 2 | 4 | 5 | 7 | 8 | 10 | 2 | 4 | 5 | 7 | 8 | 10 |
| | One Story or Top of Two or Three Story | 15 | 1 | 3 | 3 | 4 | 4 | 5 | 1 | 3 | 3 | 4 | 4 | 5 |
| | First of Two Story or Second of Three Story | | 2 | 3 | 5 | 6 | 7 | 8 | 2 | 3 | 5 | 6 | 7 | 8 |
| | First of Three Story | | 2 | 4 | 6 | 8 | 9 | 11 | 2 | 4 | 6 | 8 | 9 | 11 |

SI: 1 in = 25.4 mm, 1 mph = 1.61 km/h

1. This simplified bracing table is based on the provisions of IRC Section R602.12. All provisions therein shall be observed, except that this table shall replace IRC Table R602.12.4, and 0.92" OX-IS, 1.0" OX-IS or 1.0" SI-Strong shall replace the sheathing material.
2. Interpolation shall not be permitted.
3. Cripple walls or wood-framed basement walls in a walk-out condition shall be designated as the first story, and the stories above shall be re-designated as the second and third stories, respectively, and shall be prohibited in a three-story structure.
4. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.
5. For Exposure Category C, multiply bracing units by a factor of 1.20 for a one-story building, 1.30 for a two-story building, and 1.40 for a three-story building.
6. Maximum stud spacing is 24" o.c.
7. 0.92" OX-IS, 1.0" OX-IS, 1.0" OX-IS HS and 1.0" SI-Strong attached with minimum 16-gauge, 1" crown staples fastened at 3":3" (edge:field) and penetrate a minimum of 1.0" into the stud. Fasteners are to be installed with the crown parallel to the framing. Fastener edge distance shall be a minimum of $^3/_8$". Fastener head shall be in contact with the panel surface. Minimum $^1/_2$" GWB fastened 16":16" attached to the interior side of the wall in accordance with IRC Section R702.3.5 and IRC Table R702.3.5.
8. As an alternate to table footnote 7 above, 0.92" OX-IS, 1.0" OX-IS HS and 1.0" SI-Strong may be attached with minimum 0.113" diameter ($^3/_8$" head or 2" cap) nails fastened 3":3" (edge:field). Minimum $^1/_2$" GWB fastened 8":8" attached to the interior side of the wall in accordance with IRC Section R702.3.5 and IRC Table R702.3.5.
9. Where GWB is not applied to the interior side of the wall assembly, bracing lengths in IRC Table R602.10.3(1) and IRC Table R602.10.3(3) as modified by all applicable factors in IRC Table R602.10.3(2) and IRC Table R602.10.3(4) shall be used, except the factor for omitting the GWB shall be 1.5.

6.2.3 *Prescriptive IRC Bracing Applications:*

6.2.3.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation may be used on braced wall lines as an equivalent alternative to the IRC Method WSP and Method CS WSP, when installed in accordance with IRC Section R602.10 and this report.

6.2.3.2 OX-IS, OX-IS HS, and SI-Strong Structural Insulation may be used to brace walls of buildings as an alternative to the IRC Method CS-PF braced wall panel provisions of IRC Section R602.10.4.

6.2.3.3 For wind design, required braced wall panel lengths for OX-IS, OX-IS HS, and SI-Strong Structural Insulation shall be as shown in **Table 5**, **Table 6**, **Table 7**, and **Table 8** and shall be used in conjunction with IRC Table R602.10.3(2), which provides the required adjustments.

**Table 5**. 0.50" OX-IS, OX-IS HS and SI-Strong Required Bracing Lengths (Studs 16" o.c.) – Wind[1,2,3,4.5,6,8]

| Condition | Braced Wall Line Spacing (ft) | Length of Wall Line to be Braced (ft.) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Intermittent Sheathing | | | | | | Continuous Sheathing | | | | | |
| | | Wind Speeds[7] (mph) | | | | | | | | | | | |
| | | < 95 | ≤ 110 | ≤ 115 | ≤ 120 | ≤ 130 | < 140 | < 95 | ≤ 110 | ≤ 115 | ≤ 120 | ≤ 130 | < 140 |
| One Story or the Top of Two or Three Stories | 10 | 1.5 | 2.0 | 2.0 | 2.5 | 2.5 | 3.0 | 1.5 | 1.5 | 2.0 | 2.0 | 2.5 | 2.5 |
| | 20 | 2.5 | 3.5 | 3.5 | 4.0 | 5.0 | 5.5 | 2.5 | 3.0 | 3.5 | 3.5 | 4.0 | 5.0 |
| | 30 | 4.0 | 5.0 | 5.5 | 6.0 | 7.0 | 8.0 | 3.5 | 4.5 | 4.5 | 5.0 | 6.0 | 7.0 |
| | 40 | 5.0 | 6.5 | 7.0 | 8.0 | 9.0 | 10.5 | 4.0 | 5.5 | 6.0 | 6.5 | 7.5 | 9.0 |
| | 50 | 6.0 | 8.0 | 9.0 | 9.5 | 11.0 | 13.0 | 5.0 | 7.0 | 7.5 | 8.0 | 9.5 | 11.0 |
| | 60 | 7.0 | 9.5 | 10.5 | 11.5 | 13.0 | 15.0 | 6.0 | 8.0 | 9.0 | 9.5 | 11.0 | 13.0 |
| First Story of Two Stories or Second Story of Three Stories | 10 | 3.0 | 3.5 | 4.0 | 4.5 | 5.0 | 6.0 | 2.5 | 3.0 | 3.5 | 3.5 | 4.5 | 5.0 |
| | 20 | 5.0 | 6.5 | 7.5 | 8.0 | 9.5 | 11.0 | 4.5 | 5.5 | 6.5 | 7.0 | 8.0 | 9.0 |
| | 30 | 7.0 | 9.5 | 10.5 | 11.5 | 13.5 | 15.5 | 6.0 | 8.0 | 9.0 | 9.5 | 11.5 | 13.0 |
| | 40 | 9.5 | 12.5 | 13.5 | 15.0 | 17.5 | 20.0 | 8.0 | 10.5 | 11.5 | 12.5 | 15.5 | 17.0 |
| | 50 | 11.5 | 15.5 | 16.5 | 18.0 | 21.5 | 24.5 | 10.0 | 13.0 | 14.0 | 15.5 | 18.0 | 21.0 |
| | 60 | 13.5 | 18.0 | 20.0 | 21.5 | 25.0 | 29.0 | 11.5 | 15.5 | 17.0 | 18.5 | 21.5 | 25.0 |
| First Story of Three Stories | 10 | 4.0 | 5.5 | 6.0 | 6.5 | 7.5 | 8.5 | 3.5 | 4.5 | 5.0 | 5.5 | 6.5 | 7.5 |
| | 20 | 7.5 | 10.0 | 11.0 | 11.5 | 13.5 | 16.0 | 6.5 | 8.5 | 9.0 | 10.0 | 11.5 | 13.5 |
| | 30 | 10.5 | 14.0 | 15.5 | 17.0 | 19.5 | 23.0 | 9.0 | 12.0 | 13.0 | 14.5 | 17.0 | 19.5 |
| | 40 | 13.5 | 18.5 | 20.0 | 22.0 | 25.5 | 29.5 | 11.5 | 15.5 | 17.0 | 18.5 | 22.0 | 25.0 |
| | 50 | 17.0 | 22.5 | 24.5 | 27.0 | 31.5 | 36.5 | 14.5 | 19.0 | 21.0 | 23.0 | 26.5 | 31.0 |
| | 60 | 20.0 | 26.5 | 29.0 | 32.0 | 37.5 | 43.0 | 17.0 | 23.0 | 25.0 | 27.0 | 31.5 | 36.5 |

SI: 1 in. = 25.4 mm, 1 mph = 1.61 km/h

1. Linear interpolation is permitted.
2. 0.50" OX-IS, 0.50" OX-IS HS and 0.50" SI-Strong attached with minimum 16-gauge, $^{7}/_{16}$" crown x $1^{1}/_{2}$" leg staples fastened 3":6" (edge:field).
3. Maximum stud spacing is 16" o.c.
4. Demonstrates equivalency to IRC Table R602.10.3(1). All adjustment factors from IRC Table R602.10.3(2) shall be applied.
5. Minimum $^{1}/_{2}$" GWB spaced 16":16" (edge:field) shall be installed as part of the wall assembly. Where GWB is not applied to the interior side of the wall assembly, bracing lengths shall be multiplied by a factor of 1.5.fastening.
6. Bracing lengths are based on an equivalency factor of 1.0. Where bracing lengths for other wall assemblies are desired, multiply the bracing lengths in this table by the appropriate equivalency factor in **Table 9**.
7. Wind speeds are $V_{ult}$ in accordance with ASCE 7-22. Convert to equivalent $V_{asd}$ wind speed per IBC Section 1609.3.1.
8. As an alternate to table footnote 2 above, 0.50" OX-IS, 0.50" OX-IS HS and 0.50" SI-Strong may be attached with minimum 0.113" diameter ($^{3}/_{8}$" head or 2" cap) nails fastened 3":6" (edge:field). Minimum $^{1}/_{2}$" GWB fastened 8":8" attached to the interior side of the wall in accordance with IRC Section R702.3.5 and IRC Table R702.3.5.

**Table 6**. 0.50" OX-IS, OX-IS HS and SI-Strong Required Bracing Lengths (Studs 24" o.c.) – Wind[1,2,3,4,5]

| Condition | Braced Wall Line Spacing (ft) | Length of Wall Line to be Braced (ft) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Intermittent Sheathing | | | | | | Continuous Sheathing | | | | | |
| | | Wind Speeds[6] (mph) | | | | | | | | | | | |
| | | < 95 | ≤ 110 | ≤ 115 | ≤ 120 | ≤ 130 | < 140 | < 95 | ≤ 110 | ≤ 115 | ≤ 120 | ≤ 130 | < 140 |
| One Story or the Top of Two or Three Stories | 10 | 1.7 | 2.2 | 2.2 | 2.8 | 2.8 | 3.3 | 1.7 | 1.7 | 2.2 | 2.2 | 2.8 | 2.8 |
| | 20 | 2.8 | 3.9 | 3.9 | 4.4 | 5.5 | 6.1 | 2.8 | 3.3 | 3.9 | 3.9 | 4.4 | 5.5 |
| | 30 | 4.4 | 5.5 | 6.1 | 6.6 | 7.7 | 8.8 | 3.9 | 5.0 | 5.0 | 5.5 | 6.6 | 7.7 |
| | 40 | 5.5 | 7.2 | 7.7 | 8.8 | 9.9 | 11.6 | 4.4 | 6.1 | 6.6 | 7.2 | 8.3 | 9.9 |
| | 50 | 6.6 | 8.8 | 9.9 | 10.5 | 12.1 | 14.3 | 5.5 | 7.7 | 8.3 | 8.8 | 10.5 | 12.1 |
| | 60 | 7.7 | 10.5 | 11.6 | 12.7 | 14.3 | 16.5 | 6.6 | 8.8 | 9.9 | 10.5 | 12.1 | 14.3 |
| First Story of Two Stories or Second Story of Three Stories | 10 | 3.3 | 3.9 | 4.4 | 5.0 | 5.5 | 6.6 | 2.8 | 3.3 | 3.9 | 3.9 | 5.0 | 5.5 |
| | 20 | 5.5 | 7.2 | 8.3 | 8.8 | 10.5 | 12.1 | 5.0 | 6.1 | 7.2 | 7.7 | 8.8 | 9.9 |
| | 30 | 7.7 | 10.5 | 11.6 | 12.7 | 14.9 | 17.1 | 6.6 | 8.8 | 9.9 | 10.5 | 12.7 | 14.3 |
| | 40 | 10.5 | 13.8 | 14.9 | 16.5 | 19.3 | 22.0 | 8.8 | 11.6 | 12.7 | 13.8 | 17.1 | 18.7 |
| | 50 | 12.7 | 17.1 | 18.2 | 19.8 | 23.7 | 27.0 | 11.0 | 14.3 | 15.4 | 17.1 | 19.8 | 23.1 |
| | 60 | 14.9 | 19.8 | 22.0 | 23.7 | 27.5 | 31.9 | 12.7 | 17.1 | 18.7 | 20.4 | 23.7 | 27.5 |
| First Story of Three Stories | 10 | 4.4 | 6.1 | 6.6 | 7.2 | 8.3 | 9.4 | 3.9 | 5.0 | 5.5 | 6.1 | 7.2 | 8.3 |
| | 20 | 8.3 | 11.0 | 12.1 | 12.7 | 14.9 | 17.6 | 7.2 | 9.4 | 9.9 | 11.0 | 12.7 | 14.9 |
| | 30 | 11.6 | 15.4 | 17.1 | 18.7 | 21.5 | 25.3 | 9.9 | 13.2 | 14.3 | 16.0 | 18.7 | 21.5 |
| | 40 | 14.9 | 20.4 | 22.0 | 24.2 | 28.1 | 32.5 | 12.7 | 17.1 | 18.7 | 20.4 | 24.2 | 27.5 |
| | 50 | 18.7 | 24.8 | 27.0 | 29.7 | 34.7 | 40.2 | 16.0 | 20.9 | 23.1 | 25.3 | 29.2 | 34.1 |
| | 60 | 22.0 | 29.2 | 31.9 | 35.2 | 41.3 | 47.3 | 18.7 | 25.3 | 27.5 | 29.7 | 34.7 | 40.2 |

SI: 1 in. = 25.4 mm, 1 mph = 1.61 km/h

1. Linear interpolation is permitted.
2. 0.50" OX-IS, 0.50" OX-IS HS and 0.50" SI-Strong attached with minimum 16-gauge, $^{7}/_{16}$" crown x $1^{1}/_{2}$" leg staples fastened 3":3" (edge:field).
3. Maximum stud spacing is 24" o.c.
4. Demonstrates equivalency to IRC Table R602.10.3(1). All adjustment factors from IRC Table R602.10.3(2) shall be applied.
5. Minimum $^{1}/_{2}$" GWB spaced 16":16" (edge:field) shall be installed as part of the wall assembly. Where GWB is not applied to the interior side of the wall assembly, bracing lengths shall be multiplied by a factor of 1.5 fastening.
6. Wind speeds are $V_{ult}$ in accordance with ASCE 7-22. Convert to equivalent $V_{asd}$ wind speed per IBC Section 1609.3.1.

**Table 7**. 0.92" OX-IS, 1.0" OX-IS and SI-Strong Required Bracing Lengths (Studs 16" o.c.) – Wind[1,2,3,4,5]

| Condition | Braced Wall Line Spacing (ft.) | Length of Wall Line to be Braced (ft.) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Intermittent Sheathing | | | | | | Continuous Sheathing | | | | | |
| | | Wind Speeds[6] (mph) | | | | | | | | | | | |
| | | < 95 | ≤ 110 | ≤ 115 | ≤ 120 | ≤ 130 | < 140 | < 95 | ≤ 110 | ≤ 115 | ≤ 120 | ≤ 130 | < 140 |
| One Story or the Top of Two or Three Stories | 10 | 1.4 | 1.8 | 1.8 | 2.3 | 2.3 | 2.7 | 1.4 | 1.4 | 1.8 | 1.8 | 2.3 | 2.3 |
| | 20 | 2.3 | 3.2 | 3.2 | 3.6 | 4.6 | 5.0 | 2.3 | 2.7 | 3.2 | 3.2 | 3.6 | 4.6 |
| | 30 | 3.6 | 4.6 | 5.0 | 5.5 | 6.4 | 7.3 | 3.2 | 4.1 | 4.1 | 4.6 | 5.5 | 6.4 |
| | 40 | 4.6 | 5.9 | 6.4 | 7.3 | 8.2 | 9.6 | 3.6 | 5.0 | 5.5 | 5.9 | 6.8 | 8.2 |
| | 50 | 5.5 | 7.3 | 8.2 | 8.6 | 10.0 | 11.8 | 4.6 | 6.4 | 6.8 | 7.3 | 8.6 | 10.0 |
| | 60 | 6.4 | 8.6 | 9.6 | 10.5 | 11.8 | 13.7 | 5.5 | 7.3 | 8.2 | 8.6 | 10.0 | 11.8 |
| First Story of Two Stories or Second Story of Three Stories | 10 | 2.7 | 3.2 | 3.6 | 4.1 | 4.6 | 5.5 | 2.3 | 2.7 | 3.2 | 3.2 | 4.1 | 4.6 |
| | 20 | 4.6 | 5.9 | 6.8 | 7.3 | 8.6 | 10.0 | 4.1 | 5.0 | 5.9 | 6.4 | 7.3 | 8.2 |
| | 30 | 6.4 | 8.6 | 9.6 | 10.5 | 12.3 | 14.1 | 5.5 | 7.3 | 8.2 | 8.6 | 10.5 | 11.8 |
| | 40 | 8.6 | 11.4 | 12.3 | 13.7 | 15.9 | 18.2 | 7.3 | 9.6 | 10.5 | 11.4 | 14.1 | 15.5 |
| | 50 | 10.5 | 14.1 | 15.0 | 16.4 | 19.6 | 22.3 | 9.1 | 11.8 | 12.7 | 14.1 | 16.4 | 19.1 |
| | 60 | 12.3 | 16.4 | 18.2 | 19.6 | 22.8 | 26.4 | 10.5 | 14.1 | 15.5 | 16.8 | 19.6 | 22.8 |
| First Story of Three Stories | 10 | 3.6 | 5.0 | 5.5 | 5.9 | 6.8 | 7.7 | 3.2 | 4.1 | 4.6 | 5.0 | 5.9 | 6.8 |
| | 20 | 6.8 | 9.1 | 10.0 | 10.5 | 12.3 | 14.6 | 5.9 | 7.7 | 8.2 | 9.1 | 10.5 | 12.3 |
| | 30 | 9.6 | 12.7 | 14.1 | 15.5 | 17.7 | 20.9 | 8.2 | 10.9 | 11.8 | 13.2 | 15.5 | 17.7 |
| | 40 | 12.3 | 16.8 | 18.2 | 20.0 | 23.2 | 26.8 | 10.5 | 14.1 | 15.5 | 16.8 | 20.0 | 22.8 |
| | 50 | 15.5 | 20.5 | 22.3 | 24.6 | 28.7 | 33.2 | 13.2 | 17.3 | 19.1 | 20.9 | 24.1 | 28.2 |
| | 60 | 18.2 | 24.1 | 26.4 | 29.1 | 34.1 | 39.1 | 15.5 | 20.9 | 22.8 | 24.6 | 28.7 | 33.2 |

SI: 1 in. = 25.4 mm, 1 mph = 1.61 km/h

1. Linear interpolation is permitted.
2. 0.92" OX-IS, 1.0" OX-IS, 1.0" OX-IS HS and 1.0" SI-Strong attached with minimum 16-gauge, 1" crown x 2" leg staples fastened 3":3" (edge:field).
3. Maximum stud spacing is 16" o.c.
4. Demonstrates equivalency to IRC Table R602.10.3(1). All adjustment factors from IRC Table R602.10.3(2) shall be applied.
5. Minimum 1/2" GWB spaced 16":16" (edge:field) shall be installed as part of the wall assembly. Where GWB is not applied to the interior side of the wall assembly, bracing lengths shall be multiplied by a factor of 1.5.
6. Wind speeds are $V_{ult}$ in accordance with ASCE 7-22. Convert to equivalent $V_{asd}$ wind speed per IBC Section 1609.3.1.

**Table 8**. 0.92" OX-IS, 1.0" OX-IS and SI-Strong Required Bracing Lengths (Studs 24" o.c.) – Wind[1,2,3,4,5]

| Condition | Braced Wall Line Spacing (ft) | Length of Wall Line to be Braced (ft.) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Intermittent Sheathing | | | | | | Continuous Sheathing | | | | | |
| | | Wind Speeds[6] (mph) | | | | | | | | | | | |
| | | < 95 | ≤ 110 | ≤ 115 | ≤ 120 | ≤ 130 | < 140 | < 95 | ≤ 110 | ≤ 115 | ≤ 120 | ≤ 130 | < 140 |
| One Story or the Top of Two or Three Stories | 10 | 1.5 | 2.0 | 2.0 | 2.5 | 2.5 | 3.0 | 1.5 | 1.5 | 2.0 | 2.0 | 2.5 | 2.5 |
| | 20 | 2.5 | 3.5 | 3.5 | 4.0 | 5.0 | 5.5 | 2.5 | 3.0 | 3.5 | 3.5 | 4.0 | 5.0 |
| | 30 | 4.0 | 5.0 | 5.5 | 6.0 | 7.0 | 8.0 | 3.5 | 4.5 | 4.5 | 5.0 | 6.0 | 7.0 |
| | 40 | 5.0 | 6.5 | 7.0 | 8.0 | 9.0 | 10.5 | 4.0 | 5.5 | 6.0 | 6.5 | 7.5 | 9.0 |
| | 50 | 6.0 | 8.0 | 9.0 | 9.5 | 11.0 | 13.0 | 5.0 | 7.0 | 7.5 | 8.0 | 9.5 | 11.0 |
| | 60 | 7.0 | 9.5 | 10.5 | 11.5 | 13.0 | 15.0 | 6.0 | 8.0 | 9.0 | 9.5 | 11.0 | 13.0 |
| First Story of Two Stories or Second Story of Three Stories | 10 | 3.0 | 3.5 | 4.0 | 4.5 | 5.0 | 6.0 | 2.5 | 3.0 | 3.5 | 3.5 | 4.5 | 5.0 |
| | 20 | 5.0 | 6.5 | 7.5 | 8.0 | 9.5 | 11.0 | 4.5 | 5.5 | 6.5 | 7.0 | 8.0 | 9.0 |
| | 30 | 7.0 | 9.5 | 10.5 | 11.5 | 13.5 | 15.5 | 6.0 | 8.0 | 9.0 | 9.5 | 11.5 | 13.0 |
| | 40 | 9.5 | 12.5 | 13.5 | 15.0 | 17.5 | 20.0 | 8.0 | 10.5 | 11.5 | 12.5 | 15.5 | 17.0 |
| | 50 | 11.5 | 15.5 | 16.5 | 18.0 | 21.5 | 24.5 | 10.0 | 13.0 | 14.0 | 15.5 | 18.0 | 21.0 |
| | 60 | 13.5 | 18.0 | 20.0 | 21.5 | 25.0 | 29.0 | 11.5 | 15.5 | 17.0 | 18.5 | 21.5 | 25.0 |
| First Story of Three Stories | 10 | 4.0 | 5.5 | 6.0 | 6.5 | 7.5 | 8.5 | 3.5 | 4.5 | 5.0 | 5.5 | 6.5 | 7.5 |
| | 20 | 7.5 | 10.0 | 11.0 | 11.5 | 13.5 | 16.0 | 6.5 | 8.5 | 9.0 | 10.0 | 11.5 | 13.5 |
| | 30 | 10.5 | 14.0 | 15.5 | 17.0 | 19.5 | 23.0 | 9.0 | 12.0 | 13.0 | 14.5 | 17.0 | 19.5 |
| | 40 | 13.5 | 18.5 | 20.0 | 22.0 | 25.5 | 29.5 | 11.5 | 15.5 | 17.0 | 18.5 | 22.0 | 25.0 |
| | 50 | 17.0 | 22.5 | 24.5 | 27.0 | 31.5 | 36.5 | 14.5 | 19.0 | 21.0 | 23.0 | 26.5 | 31.0 |
| | 60 | 20.0 | 26.5 | 29.0 | 32.0 | 37.5 | 43.0 | 17.0 | 23.0 | 25.0 | 27.0 | 31.5 | 36.5 |

SI: 1 in. = 25.4 mm, 1 mph = 1.61 km/h

1. Linear interpolation is permitted.
2. 0.92" OX-IS, 1.0" OX-IS, 1.0" OX-IS HS and 1.0" SI-Strong attached with minimum 16-gauge, 1" crown x 2" leg staples fastened 3":3" (edge:field).
3. Maximum stud spacing is 24" o.c.
4. Demonstrates equivalency to IRC Table R602.10.3(1). All adjustment factors from IRC Table R602.10.3(2) shall be applied.
5. Minimum 1/2" GWB spaced 16":16" (edge:field) shall be installed as part of the wall assembly. Where GWB is not applied to the interior side of the wall assembly, bracing lengths shall be multiplied by a factor of 1.5.
6. Wind speeds are $V_{ult}$ in accordance with ASCE 7-22. Convert to equivalent $V_{asd}$ wind speed per IBC Section 1609.3.1.

6.2.3.4 Required braced wall panel lengths shall be as determined by the equivalency factor shown in **Table 9**, IRC Table R602.10.3(1) and IRC Table R602.10.3(3), including all footnotes.

6.2.3.5 All other IRC prescriptive bracing minimums, spacing requirements and rules must still be met.

**Table 9**. Braced Wall Line Length Equivalency Factors[1,2,5]

| Structural Sheathing Product | Maximum Stud Spacing (in) | Fastener[6] | Maximum Fastener Spacing (edge:field) (in) | GWB Fastening Spacing[4] (blocked or unblocked) (edge:field) (in) | Equivalency Factors[3] to IRC WSP or CS-WSP |
|---|---|---|---|---|---|
| 0.50"OX-IS<br>0.50" OX-IS HS<br>0.50" SI-Strong | 16 o.c. | Minimum 16-gauge Staple, 7/16" Crown x 1 1/2" Leg | 3:6 | 16:16 | 1.00 |
| | | | 3:3 | 8:8 | 0.81 |
| | | 0.113" Dia. Nail (min. 3/8" head or 2" cap) | 3:3 | 16:16 | 1.24 |
| | 24 o.c. | Minimum 16-gauge Staple, 7/16" Crown x 1 1/2" Leg | 3:3 | 16:16 | 1.10 |
| | | | | 8:8 | 0.91 |
| | | | 3:6 | 8:8 | 0.92 |
| | | 0.113" Dia. Nail (min. 3/8" head or 2" cap) | 3:6 | 8:8 | 1.10 |
| 0.92" OX-IS,<br>1.0" OX-IS<br>1.0" SI-Strong | 16 o.c. | Minimum 16-gauge Staple, 1" Crown x 2" Leg | 3:3 | 16:16 | 0.91 |
| | | | | 8:8 | 0.75 |
| | 24 o.c. | Minimum 16-gauge Staple, 1" Crown x 2" Leg | 3:3 | 16:16 | 1.00 |
| | | | | 8:8 | 0.82 |
| | 16 o.c. | 0.113" Dia. Nail (min. 280" head or 2" cap) | 3:3 | 8:8 | 0.94 |

SI: 1 in = 25.4 mm

1. Based on equivalency testing for use with the IRC.
2. Framing shall be SPF (specific gravity 0.42), at a minimum.
3. Equivalency factors allow the user to determine the length of bracing required, by multiplying the equivalency factor above by the length of bracing shown in the WSP or CS-WSP columns in IRC Table R602.10.3(1) and IRC Table R602.10.3(3) as modified by all applicable factors in IRC Table R602.10.3(2) and IRC Table R602.10.3(4), respectively.
4. Where GWB is not applied to the interior side of the wall assembly, bracing lengths in IRC Table R602.10.3(1) and IRC Table R602.10.3(3) as modified by all applicable factors in IRC Table R602.10.3(2) and IRC Table R602.10.3(4) shall be used, except the factor for omitting the 16:16 GWB shall be 1.5 and 1.8 when omitting gypsum using the 8":8" GWB fastening.
5. Valid for single top plate (advanced framing method) wall installations or double top plate wall installations
6. Fastener penetration into the stud shall be a minimum of 1.0".

6.2.4 *OX-IS and SI-Strong CS-PF Portal Frame:*

6.2.4.1 OX-IS and SI-Strong CS-PF were tested and evaluated for equivalency to the IRC Method CS-PF in accordance with IRC Section R602.10.6.4 and IRC Table R602.10.5.

6.2.4.2 IRC Table R602.10.5 establishes the contributing length of bracing of the CS-PF for Seismic Design Categories (SDC) A, B, and C as equivalent to 1.5 times its actual length and that it contributes this length of bracing to that required by method CS-WSP. For SDC D0, D1, and D2, the contributing length of the CS-PF is equivalent to its actual length.

6.2.4.3 The capacity of the OX-IS and SI-Strong Sheathing CS-PF exceeds the capacity of the IRC Method CS-WSP and is therefore permitted to be substituted for an equivalent length of bracing.

6.2.4.4 The OX-IS and SI-Strong CS-PF is depicted in **Figure 4**.

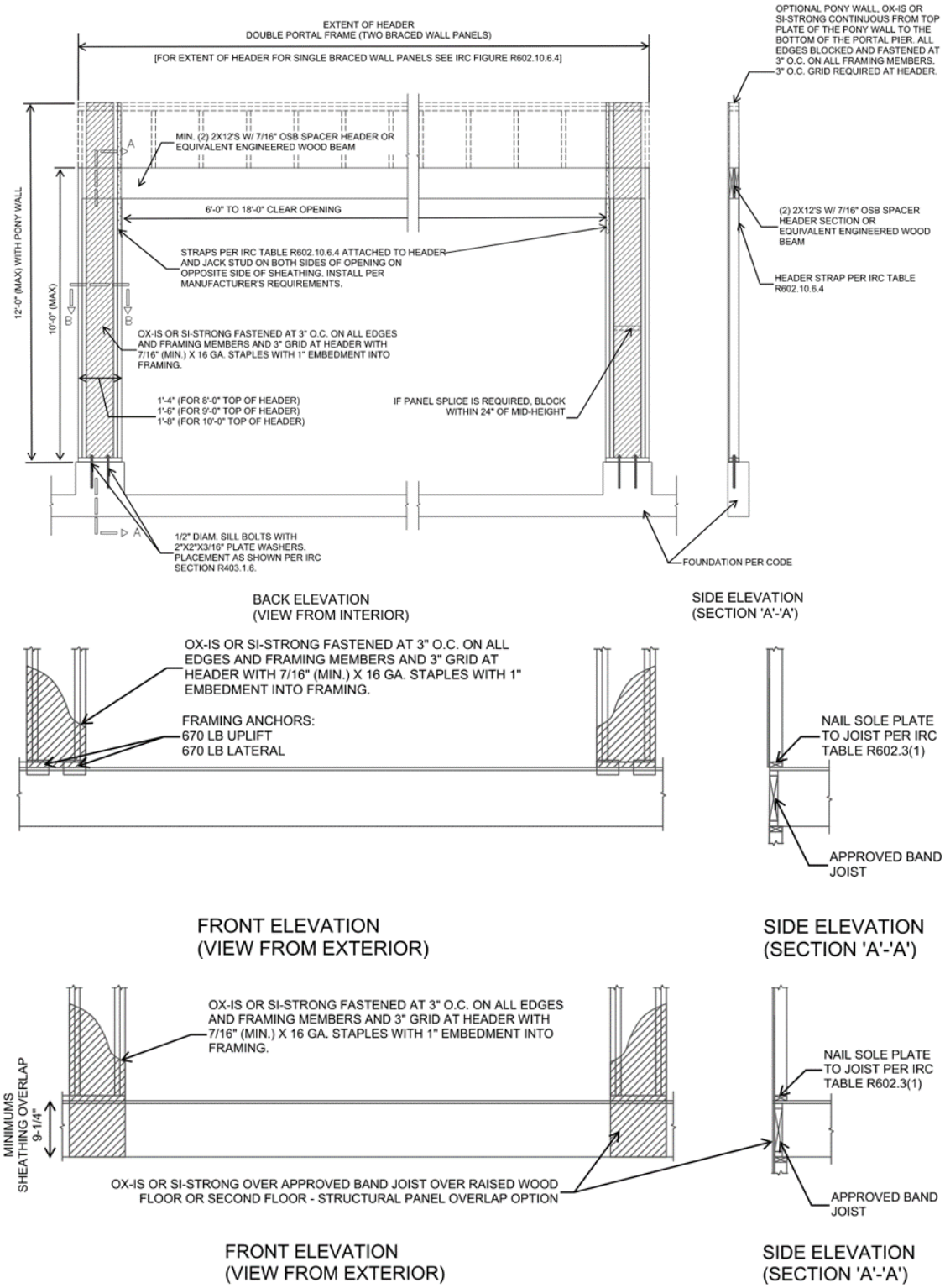


**Figure 4**. Construction Details of OX-IS or SI-Strong CS-PF

6.2.5 *Prescriptive IBC Conventional Light-Frame Wood Construction:*

6.2.5.1 OX-IS and SI-Strong may be used to brace exterior walls of buildings as an equivalent alternative to Method 3 of the IBC when installed with blocked or unblocked 0.50" GWB fastened with a minimum 5d cooler nail or #6 Type W or S screw spaced a maximum of 16" o.c. at panel edges and 16" o.c. in the field. Bracing shall be in accordance with the conventional light-frame construction method of IBC Section 2308.6 and this report.

6.2.6 *Performance-Based Wood-Framed Construction:*

6.2.6.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation panels used in wall assemblies designed as shear walls are permitted to be designed in accordance with the methodology used in SDPWS for WSP using the capacities shown in **Table 10**. Walls sheathed with OX-IS, OX-IS HS, and SI-Strong Structural Insulation panels may be designed to resist wind loads resulting from winds up to 200 mph ($V_{ult}$).

6.2.6.2 OX-IS, OX-IS HS, and SI-Strong Structural Insulation panels used in wall assemblies designed as shear walls are permitted to resist lateral wind load forces using the allowable shear loads (in pounds per linear foot) set forth in **Table 10**.

6.2.6.3 OX-IS, OX-IS HS, and SI-Strong Structural Insulation panels used in wall assemblies designed as shear walls are permitted to resist seismic load forces using the seismic allowable unit shear capacities set forth in **Table 11** when seismic design is required in accordance with IBC Section 1613.

6.2.6.3.1 The response modification coefficient, R; system overstrength factor, $\Omega_0$; and deflection amplification factor, $C_d$, indicated in **Table 11** 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 10**. Allowable Stress Design (ASD) Capacity for OX-IS, OX-IS HS and SI-Strong – Wind

| Structural Sheathing Product | Product Thickness (in) | Maximum Fastener Spacing (edge:field) (in) | Maximum Stud Spacing (in) | GWB Thickness (in) | GWB Fastener[2] Spacing (edge:field) (in) | Allowable Unit Shear Capacity (plf) |
|---|---|---|---|---|---|---|
| OX-IS and SI-Strong | 0.50 | 3:3[(1)] | 16 o.c. | 1/2 | 8:8 | 440 |
| | | | | | 16:16 | 370 |
| | | 3:6 | 16 o.c. | 1/2 | 8:8 | 425[(1)] |
| | | | | | | 350[(3)] |
| | | | | | 16:16 | 355[(1)] |
| | | 3:3[(1)] | 24 o.c. | 1/2 | 8:8 | 385 |
| | | 3:3[(1)] | 16 o.c. | - | - | 300 |
| | | | 24 o.c. | - | - | 275 |
| OX-IS HS | 0.50 | 3:3[(1)] | 24 o.c. | 1/2 | 8:8 | 420 |
| | | 6:12[(6)] | 16 o.c. | | 8:8 | 470 |
| | | | | | - | - | 310 |

**Table 10**. Allowable Stress Design (ASD) Capacity for OX-IS, OX-IS HS and SI-Strong – Wind

| Structural Sheathing Product | Product Thickness (in) | Maximum Fastener Spacing (edge:field) (in) | Maximum Stud Spacing (in) | GWB Thickness (in) | GWB Fastener[2] Spacing (edge:field) (in) | Allowable Unit Shear Capacity (plf) |
|---|---|---|---|---|---|---|
| OX-IS and SI-Strong | 0.92 and 1.0 OX-IS and 1.0 SI-Strong | 3:3[(1)] | 16 o.c. | 1/2 | 8:8 | 475 |
| | | | | | 16:16 | 400 |
| | | | 24 o.c. | 1/2 | 8:8 | 450 |
| | | | | | 16:16 | 380 |
| | | | 16 o.c. | - | - | 325 |
| | | | 24 o.c. | - | - | 295 |
| | | | | 1/2 & Thermo-Ply Red[4] | 8:8 | 550 |
| | | 3:3[(3)] | 16 o.c. | 1/2 | 8:8 | 390 |
| | | 3:6[(1)] | 16 o.c. | 1/2 | 8:8 | 415 |
| OX-IS, SI-Strong | 1.7 | 3:3[(5)] | 16 o.c. | - | - | 305 |
| | | | 24 o.c. | - | - | 275 |
| | | 3:6[(5)] | 16 o.c. | 1/2 | 8:8 | 415 |
| | | | 24 o.c. | 1/2 | 8:8 | 370 |
| | | 3:3[(5)] | 16 o.c. | 1/2 | 8:8 | 425 |
| | | | 24 o.c. | 1/2 | 8:8 | 380 |

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

1. Unless otherwise stated, OX-IS, SI-Strong and OX-IS HS attached to wood framing with a minimum 16-gauge, 7/16" crown staples shall penetrate a minimum of 1.0" into the stud. Fasteners are to be installed with the crown parallel to the framing. Fastener edge distance shall be a minimum of 3/8". Fastener head shall be in contact with the panel surface. Alternately, fastener heads are permitted to be overdriven into foam portion of the panel with no reduction in shear capacities.
2. Unless noted otherwise, GWB attached with minimum #6 type W or S screws 1 1/4" long with a minimum edge distance of 3/8".
3. OX-IS fastened with a minimum 0.113" diameter roofing nail with 0.280" minimum head size. 2" cap nails having a minimum 0.113" diameter are also permitted.
4. Install Thermo-Ply Red on opposite side of wall from the OX-IS or SI-Strong with minimum 16-gauge, 1.0" crown staples fastened 3" o.c edge / 3" o.c. field. Separately attach 1/2" GWB over Thermo-Ply Red with minimum #6 type W or S screws 1 1/4" long fastened 8" o.c edge/ 8" o.c. field.
5. OX-IS fastened with a minimum 0.113" diameter roofing nail with 0.280" minimum head size.
6. OX-IS HS fastened with a minimum #8 x 1 1/4" Wafer Head Screws driven through foam with head flush with the structural backer.

**Table 11**. Seismic Allowable Unit Shear Capacity & Seismic Design Coefficients for Light-Frame (Wood) Walls Sheathed with OX Products[1]

| Product | Product Thickness (in) | Max. Stud Spacing (in) | GWB Fastening Spacing[2] (edge:field) | Seismic Allowable Unit Shear Capacity[3] (plf) | Apparent Shear Stiffness, $G_a$ (kips/in) | Response Modification Factor, R[4] | System Overstrength Factor, $\Omega_0$[5] | Deflection Amplification Coefficient $C_d$[6] | Structural System Limitations and Building Height Limit[7,8] (ft) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Seismic Design Category | | | | |
| | | | | | | | | | B | C | D | E | F |
| OX-IS or SI-Strong | 0.5 | 16 o.c. | 16:16 | 295 | 23.0 | 6.5 | 3 | 4 | NL | NL | 65 | 65 | 65 |
| | | | 8:8 | 350 | 23.0 | 6.5 | 3 | 4 | NL | NL | 65 | 65 | 65 |
| | | | - | 230 | 6.4 | 6.5 | 3 | 4 | NL | NL | 65 | 65 | 65 |
| OX-IS or SI-Strong | 0.92 (OX-IS only) or 1.0 (OX-IS or SI-Strong) | 16 o.c. | 16:16 | 320 | 26.0 | 6.5 | 3 | 4 | NL | NL | 65 | 65 | 65 |
| | | | 8:8 | 380 | 26.0 | 6.5 | 3 | 4 | NL | NL | 65 | 65 | 65 |
| | | | - | 260 | 6.4 | 6.5 | 3 | 4 | NL | NL | 65 | 65 | 65 |
| | | 24 o.c. | 16:16 | 300 | 14.0 | 6.5 | 3 | 4 | NL | NL | 65 | 65 | 65 |
| | | | 8:8 | 355 | 14.0 | 6.5 | 3 | 4 | NL | NL | 65 | 65 | 65 |
| OX-IS | 1.7 | 16 o.c | 8:8 | 340(9) | 17.9 | 6.5 | 3 | 4 | NL | NL | 65 | 65 | 65 |
| OX-IS HS | 0.5 | 16 o.c. | 8:8 | 375(10) | 14.9 | 6.5 | 3 | 4 | NL | NL | 65 | 65 | 65 |
| | | | - | 250(10) | 9.8 | 6.5 | 3 | 4 | NL | NL | 65 | 65 | 65 |
| | | 24 o.c. | 8:8 | 335 | 12.5 | 6.5 | 3 | 4 | NL | NL | 65 | 65 | 65 |

SI: 1 in = 25.4 mm, 1 lb/ft = 0.0146 kN/m, 1 psi = 0.00689 MPa

1. Unless otherwise stated, OX-IS, OX-IS HS and SI-Strong attached to wood framing with a minimum 16-gauge, 7/16" crown staples shall penetrate a minimum of 1.0" into the stud. Fasteners are to be installed with the crown parallel to the framing and spaced a maximum of 3" o.c. at the panel edges and 3" 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. Alternately, fastener heads are permitted to be overdriven into foam portion of the panel, at a maximum such that they are flush with the structural backer material, with no reduction in shear capacities.
2. Walls installed with minimum 1/2" GWB attached with minimum #6 type W or S screws 1 1/4" long. Fasteners shall maintain a minimum edge distance of 3/8".
3. All seismic design parameters follow the equivalency as defined in **Section 8** of this report.
4. Response modification coefficient, R, for use throughout ASCE 7. *NOTE*: R reduces forces to a strength level, not an allowable stress level.
5. The tabulated value of the overstrength factor, $\Omega_0$, is permitted to be reduced by subtracting one-half (0.5) for structures with flexible diaphragms.
6. Deflection amplification factor, $C_d$, for use with ASCE 7 Sections 12.8.6, 12.8.7, and 12.9.1.2
7. Heights are measured from the base of the structure as defined in ASCE 7 Section 11.2.
8. NL = Not Limited
9. OX-IS fastened with 0.131" x 3" nail spaced a maximum of 3" o.c. at the panel edges, and 3" o.c. in the field. Fastener edge distance spacing shall be a minimum of 3/8".
10. OX-IS HS fastened with a minimum #8 x 1 1/4" Wafer Head Screws driven through foam with head flush with the structural backer and fastened 6" o.c. at the panel edges, and 12" o.c. in the field.

6.2.7 *Transverse Load Resistance:*

6.2.7.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation panels are permitted to resist transverse wind load forces using the allowable transverse loads (in pounds per linear foot) set forth in **Table 12** and the basic wind speeds in **Table 13**.

6.2.7.2 Required component and cladding loads to be resisted are found in IBC Section 1609.1.1, IRC Table R301.2.1(1)[23] and IRC Table R301.2.1(2).[24]

**Table 12**. Transverse (Out-of-Plane) Wind Load Resistance[1,3,4]

| Structural Sheathing Product | Maximum Stud Spacing (in) | Fastener[2] | Fastener Spacing (edge:field) (in) | Allowable Design Value (psf) |
|---|---|---|---|---|
| OX-IS, OX-IS HS and SI-Strong | 24 o.c. | $^{7}/_{16}$" crown 16-gauge galvanized staples, minimum 1.0" penetration into the stud | 3:3 | 95 |

SI: 1 in = 25.4 mm, 1 psf = 0.0479 kN/m²

1. Tested in accordance with ASTM E330.
2. Applies to both negative and positive load.
3. Attachment to wood framing having a minimum specific gravity of 0.42.
4. Staple crowns to be installed parallel to grain.

**Table 13**. Basic Wind Speed for Use in Exterior Wall Covering Assemblies[1,2,4,5,6]

| Structural Sheathing Product | Allowable Components & Cladding Basic Wind Speed (mph) | | | | | |
|---|---|---|---|---|---|---|
| | Allowable Stress Design Wind Speed[3] ($V_{asd}$) | | | Basic Design Wind Speed[2] ($V_{ult}$) | | |
| | Exposure B | Exposure C | Exposure D | Exposure B | Exposure C | Exposure D |
| OX-IS, OX-IS HS and SI-Strong | 155 | 155 | 154 | 200 | 200 | 199 |

SI: 1 mph = 1.61 km/h

1. Design wind load capacity shall be in accordance with ASCE 7-22 as specified in IBC Section 1609.1.1.
2. Allowable wind speeds are based on the following: A building height of 30-feet, $GC_p$= -1.4 for Zone 5 and an Effective Wind Area of 10 ft², Topographic Factor: $K_{zt}$=1.0, Ground Elevation Factor: $K_e$=1.0, Internal Pressure Coefficient, $GC_{pi}$=+/-0.18 for an enclosed building, $K_d$ = 0.85 for 'Component and Cladding'.
3. IBC Section 1609.3.1: $V_{asd} = V_{ult}\sqrt{0.6}$.
4. Reported $V_{asd}$ is capped at 155 mph. Reported $V_{ult}$ is capped at 200 mph.
5. Attachment to wood framing having a minimum specific gravity of 0.42.
6. 24" o.c. framing.

6.2.8 *Uplift Resistance:*

6.2.8.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation panels are permitted to resist uplift forces using the allowable uplift loads (in pounds per linear foot) set forth in **Table 14**.

**Table 14**. Uplift Performance[1,2,3,4]

| Structural Sheathing Product | Bottom Plate | Allowable Uplift Capacity (plf) | Maximum Stud Spacing (in) | Fastener Schedule |
|---|---|---|---|---|
| 0.50" OX-IS, 0.50" OX-IS HS or 0.50" SI-Strong | Single Bottom Plate | 220 | 16 o.c. | $^{7}/_{16}$" crown, $1^{1}/_{2}$" leg 16-gauge galvanized staples, or 0.120" x $1^{1}/_{4}$" roofing nails |
| 0.92" OX-IS, 1.0" OX-IS or 1.0" SI-Strong | Single Bottom Plate | 275 | | |
| | Double Bottom Plate | 540 | | |
| 1.7" OX-IS or 1.7" SI-Strong | Single Bottom Plate | 275 | | |
| | Double Bottom Plate | 540 | | |

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. Attachment to wood framing having a minimum specific gravity of 0.42
3. Fastener spacing shall be 3" o.c. at the panel edges and 3" o.c. in the field. Fastener edge distance spacing shall be a minimum of $^{3}/_{8}$".
4. Staple crowns to be installed parallel to grain of the framing members.

6.2.9 *Steel-Framed Construction:*

6.2.9.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation panels used in steel-framed construction resist lateral wind load forces using the allowable shear loads (in pounds per linear foot) set forth in **Table 15**.

6.2.9.2 OX-IS, OX-IS HS, and SI-Strong Structural Insulation panels used in steel-framed construction resist lateral seismic forces using the allowable shear loads (in pounds per linear foot) set forth in **Table 16**.

**Table 15**. Allowable Shear Values for OX-IS, OX-IS HS, and SI-Strong on 20-Gauge 50 ksi Metal Studs[1]

| Structural Sheathing Product | Maximum Fastener Spacing (edge:field) (in) | Maximum Stud Spacing (in) | GWB Thickness[2,3] (in) | GWB Fastener Spacing (edge:field) | Allowable Unit Shear Capacity (plf) | Structural Sheathing Fastener Schedule |
|---|---|---|---|---|---|---|
| 0.50" OX-IS, 0.50" OX-IS HS or 0.50" SI-Strong | 3:3 | 24 | - | - | 200 | Note 4 |
| | 3:3 | 24 | 1/2 | 8:8 | 300 | Note 4 |
| 0.92" OX-IS, 1.0" OX-IS, 1.0" SI-Strong, 1.7" OX-IS or 1.7" SI-Strong | 3:3 | 24 | - | - | 235 | Note 5 |
| | 3:3 | 24 | - | - | 140 | Note 6 |
| | 3:12 | 24 | - | - | 395 | Note 7 |
| | 6:12 | 24 | - | - | 195 | Note 7 |
| | 12:12 | 24 | - | - | 105 | Note 7 |
| | 3:3 | 24 | 1/2 | 8:8 | 280 | Note 5 |
| | 3:3 | 24 | 1/2 | 8:12 | 290 | Note 5 |
| | 3:3 | 24 | 1/2 | 6:12 | 325 | Note 5 |

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

1. Steel studs shall be minimum 20-gauge 50 ksi steel studs spaced at 24" o.c.
2. Gypsum attached with a minimum #6 type S screws 1 1/4" long with a minimum edge distance of 3/8".
3. Where GWB is not installed on the interior face of the wall, the wall shall be constructed with mid-height horizontal bracing installed every other cavity space.
4. #8 x 1" self-drilling screws with modified truss head, driven flush with exterior of foam board.
5. #8 x 2" self-drilling screws with modified truss head, driven flush with exterior of foam board.
6. 0.100" diameter x 1 1/2" long pins.
7. #8 x 2" self-drilling screws with modified truss head, driven through foam plastic to seat against the backer material.

**Table 16**. Seismic Allowable Unit Shear Capacity & Seismic Design Coefficients for Light-Frame (Steel) Walls Sheathed with OX-IS, OX-IS HS and SI-Strong

| Product | Product Thickness (in.) | Maximum Stud Spacing (in) | GWB Fastening Spacing[1] (edge:field) | Seismic Allowable Unit Shear Capacity[2] (plf) | Apparent Shear Stiffness, $G_a$ (kips/in) | Response Modification Factor, R[3] | System Overstrength Factor, $\Omega_0$[4] | Deflection Amplification Coefficient $C_d$[5] | Structural System Limitations and Building Height Limit[6,7] (ft) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Seismic Design Category | | | | |
| | | | | | | | | | B | C | D | E | F |
| OX-IS | 1.7 | 16 o.c | 8:8 | 245[8] | 14.9 | 6.5 | 3 | 4 | NL | NL | 65 | 65 | 65 |

SI: 1 in = 25.4 mm, 1 lb/ft = 0.0146 kN/m, 1 psi = 0.00689 MPa

1. Walls installed with minimum 1/2" GWB attached with minimum #6 type W or S screws 1 1/4" long. Fasteners shall maintain a minimum edge distance of 3/8".
2. All seismic design parameters follow the equivalency as defined in Section **8** of this report.
3. Response modification coefficient, R, for use throughout ASCE 7. Note: R reduces forces to a strength level, not an allowable stress level.
4. The tabulated value of the overstrength factor, $\Omega_0$, is permitted to be reduced by subtracting one-half (0.5) for structures with flexible diaphragms.
5. Deflection amplification factor, $C_d$, for use with ASCE 7 Sections 12.8.6, 12.8.7, and 12.9.2
6. Heights are measured from the base of the structure as defined in ASCE 7 Section 11.2.
7. NL = Not Limited
8. #8 x 1" self-drilling screws with modified truss head, driven flush with exterior of foam board, spaced a maximum of 3" o.c. at the panel edges, and 3" o.c. in the field. Fastener edge distance spacing shall be a minimum of 3/8".

6.3 *Water-Resistive Barrier (WRB)*

6.3.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation may be used as a WRB as prescribed in IBC Section 1403.2[25] and IRC Section R703.2 when installed on exterior walls as described in this section.

6.3.2 OX-IS, OX-IS HS, and SI-Strong Structural Insulation shall be installed with board joints placed directly over exterior framing spaced a maximum of 24" (610 mm) o.c. The fasteners used to attach the board shall be installed in accordance with **Table 9**, **Table 10**, **Table 11**, **Table 12**, **Table 14**, and **Section 9**, as applicable.

6.3.3 All seams and joints between boards shall be sealed with an approved construction tape in accordance with **Section 6.1.1.6**. Approved construction tape includes 2 7/8" OX Seam Tape®. Flashing tape may be required for effectively taping of inside and outside corners.

6.3.4 A separate WRB may also be provided. If a separate WRB method is used, overlapping or taping of the sheathing joints is not required.

6.3.5 Flashing of penetrations shall comply with the applicable code and must be installed at all sheathing penetrations. Use qualified flashing tape, such as Arctic Flash Synthetic Flashing, Flexible Butyl Flashing, or Home Guard RA-Plus Flashing. See **Figure 5**, **Figure 6**, and **Figure 7** for typical penetration flashing details.

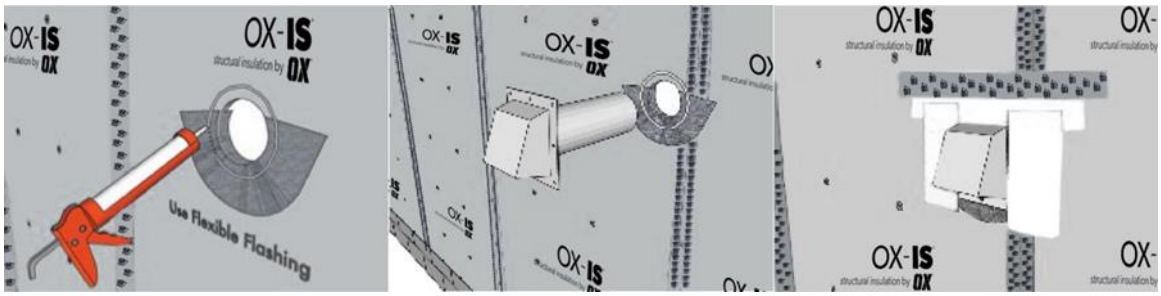


**Figure 5**. Typical Penetration Flashing Detail – Flanged

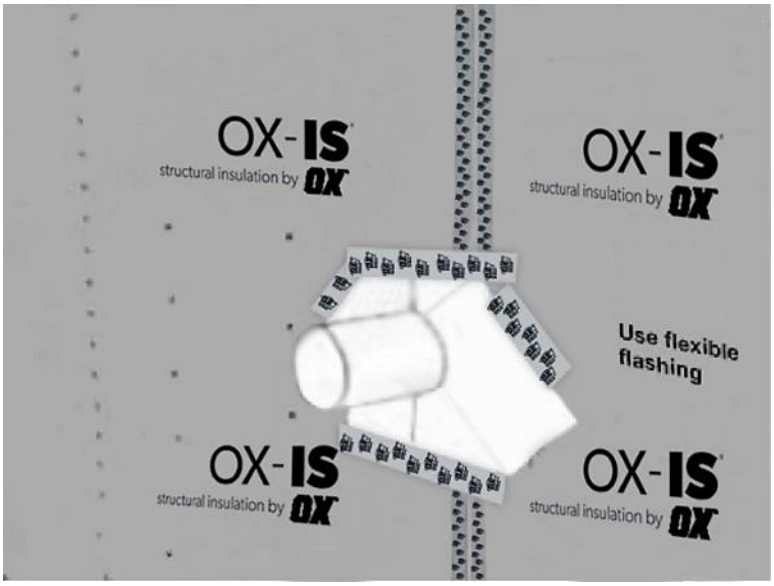


**Figure 6**. Typical Penetration Flashing Detail – Unflanged

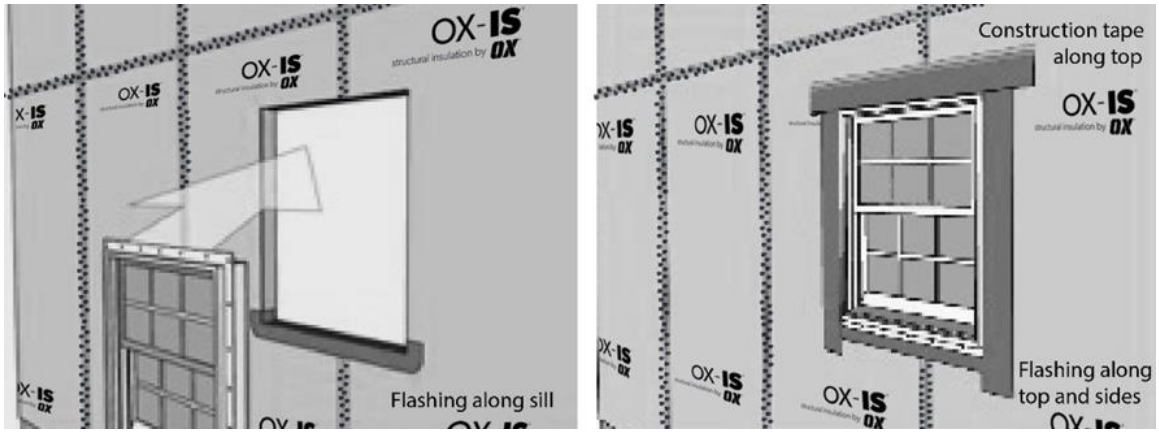


**Figure 7**. Typical Window Flashing Detail

6.4 *Thermal Resistance (R-Value)*

6.4.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation meet the continuous insulated sheathing requirements complying with the provisions of IECC Section C402.

6.4.2 OX-IS, OX-IS HS, and SI-Strong Structural Insulation have the thermal resistance shown in **Table 17**.

**Table 17**. Thermal Resistance Properties

| Structural Sheathing Product | Thickness (in) | R-Value (h·ft²·°F/Btu) |
|---|---|---|
| OX-IS, OX-IS HS or SI-Strong | 0.50 | 3.0 |
| OX-IS or SI-Strong | 0.75 | 4.0 |
| | 0.92 | 5.0 |
| | 1.0 | 6.0 |
| | 1.7 | 10.0 |
| SI: 1 in = 25.4 mm, 1 F-ft²-h/Btu = 0.1761 K-m²/W | | |

6.5 *Air Barrier*

6.5.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation meet the requirements of IECC Section C402 for use as a component of the air barrier when installed in accordance with the manufacturer installation instructions and this report, with all seams including the top and bottom edges, taped. See **Table 18**.

**Table 18**. Air Barrier Properties[1]

| Structural Sheathing Product | Air Permeance [L/(s·m²)] |
|---|---|
| OX-IS, OX-IS HS and SI-Strong | < 0.02 |
| 1. Tested in accordance with ASTM D2178 | |

6.6 *Draftstop*

6.6.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation may be used as a draftstop material in accordance with IBC Section 708.4.2, IBC Section 718.3, IBC Section 718.4 and IRC Section R302.12.

6.6.2 When installed as a draftstop, OX-IS, OX-IS HS, and SI-Strong Structural Insulation shall be installed in accordance with **Section 6.6** and **Section 9**.

6.7 *Surface Burn Characteristics*

6.7.1 The surface burn characteristics of OX-IS, OX-IS HS, and SI-Strong Structural Insulation are shown in **Table 19**.

**Table 19**. Surface Burn Characteristics[1]

| Structural Sheathing Product | Flame Spread Index | Smoke Developed Index | Classification |
|---|---|---|---|
| OX-IS, OX-IS HS and SI-Strong | ≤ 75 | ≤ 450 | Class C |
| 1. Tested in accordance with ASTM E84, with maximum foam thickness of 2.25", foam core only. | | | |

6.8 *Thermal Barrier Requirements – Attic, Crawlspace or Other Uninhabitable Space Applications*

6.8.1 Installation shall be fully protected from the interior of the building by an approved 15-minute thermal barrier or ignition barrier as required by IBC Section 2603.4 and IRC Section R316.4, except as follows:

6.8.1.1 When installed in an attic, crawlspace, or other uninhabitable spaces, OX-IS, OX-IS HS, and SI-Strong Structural Insulation, at a maximum thickness of 1.7", are approved for use without a thermal barrier or ignition barrier. This includes, but is not limited to, knee and gable end walls.

6.8.1.2 Use without an approved thermal barrier or ignition barrier is limited to areas where:

6.8.1.2.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation are installed on the walls only.

6.8.1.2.2 Access to the space is required by IRC Section R807.1 or IRC Section R408.4.

6.8.1.2.3 Entry is made only for the purposes of repairs or maintenance.

6.9 *Non-Structural Applications*

6.9.1 Where other means of wall bracing are provided or are not required, and an approved exterior wall covering capable of separately resisting loads perpendicular to the face of the walls is installed over the sheathing, OX-IS, OX-IS HS, and SI-Strong Structural Insulation may be installed in accordance with **Section 9.7**.

6.10 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[26]

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.[27]

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.[28]

## 8 Regulatory Evaluation and Accepted Engineering Practice

8.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation comply with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:

8.1.1 OX-IS and SI-Strong were evaluated to determine:

8.1.1.1 Structural performance under lateral load conditions (wind and seismic) for use as an alternative to the IRC Intermittent Wall Bracing provisions specified in IRC Section R602.10, Method WSP (Wood Structural Panel), and the IRC Continuous Wall Bracing provisions specified in IRC Section R602.10.4, Method CS WSP (Continually Sheathed Wood Structural Panel) and CS-PF (Continually Sheathed Portal Frame).

8.1.1.2 Structural performance under lateral load conditions for use as an alternative to the Conventional Wall Bracing provisions specified in IBC Section 2308.6 Method 3, for Type V construction.

8.1.2 OX-IS, OX-IS HS, and SI-Strong Structural Insulation were evaluated to determine:

8.1.2.1 Structural performance under lateral load conditions for both wind and seismic loading for use with the performance-based provisions specified in IBC Section 2306.1 and IBC Section 2306.3, for light-frame wood wall assemblies.

8.1.2.1.1 **Table 11** provides Seismic Design Coefficients (SDC) that conform to the requirements in ASCE 7 Section 12.2.1 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).

8.1.2.1.2 The basis for equivalency testing is outlined in Section 12.2.1.1[29] of ASCE 7:

> **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 medication coefficient, R; overstrength factor, $\Omega_0$; and deflection amplification factor, $C_d$.

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

8.1.2.2 Structural performance under lateral load conditions for use as an alternative to SDPWS Section 4.3 Wood Frame Shear Walls.

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

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

8.1.2.5 Performance for use as foam plastic insulation in accordance with the IBC Section 2603 and IRC Section R316.

8.1.2.6 Performance for use as insulated sheathing in accordance with the IECC Section C402.1.

8.1.2.7 Performance for use as an air barrier in accordance with the IECC Section C402.5.1.3.[30]

8.1.2.8 Performance for use as a WRB in accordance with the IBC Section 1403.2[31] and IRC Section R703.2.

8.1.2.9 Performance for use as a draftstop in accordance with IBC Section 708.4.2,[32] IBC Section 718.3, IBC Section 718.4 and IRC Section R302.12.

8.2 Use in an IRC Method PFH (Portal Frame with Hold-downs) braced wall panels is outside the scope of this report. For this application, see Report Number 1101-01.

8.3 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[33] to practice product and regulatory compliance services within its scope of accreditation and engineering expertise, respectively.

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

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

## 9 Installation

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

9.2 In the event of a conflict between the manufacturer installation instructions and this report, the more restrictive shall govern.

9.3 *Orientation*

9.3.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation may be installed vertically or horizontally over studs, with framing that has a nominal thickness of not less than 2" (50.8 mm) and spaced a maximum of 24" (610 mm) o.c.

9.3.2 Sheathing joints must be butted at framing members, and all panel edges shall be blocked. A single row of fasteners must be applied to each panel edge into the stud or blocking below. Do not tack product to framing, but fasten each panel completely after fastening begins.

9.4 *Attachment*

9.4.1 *General:*

9.4.1.1 Fasteners shall be installed with a nominal edge distance of $^{3}/_{8}$" (9.5 mm) for GWB.

9.4.1.2 Where used, always fasten staples parallel to the framing member.

9.4.1.3 Where hold-down straps are used, install structural sheathing first, remove foam at strap's location, then install the strap over the face of the structural sheathing backer and attach per the manufacturer installation instructions.

9.4.2 *OX-IS, OX-IS HS, and SI-Strong Structural Insulation:*

9.4.2.1 Minimum $^{7}/_{16}$" crown by $1^{1}/_{2}$" leg, 16-gauge staples with a 1.0" minimum embedment into the stud unless otherwise stated in **Section 6**.

9.4.2.2 Fastener spacing shall be a maximum of 3" o.c. (76.2 mm) along the edge and 3" o.c. in the field unless otherwise permitted in **Section 6**.

9.4.3 *GWB:*

9.4.3.1 Where required, GWB shall be a minimum $^{1}/_{2}$" thickness and shall be attached with one of the following:

9.4.3.1.1 #6 x $1^{1}/_{4}$" Type W or S screws

9.4.3.1.2 5d cooler nails

9.4.3.2 Fastener spacing shall be as shown in **Section 6**.

9.5 *Treatment of Joints*

9.5.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation sheathing joints must be butted at framing members, and a single row of fasteners must be applied to each panel edge into the stud below. Run staples parallel to framing.

9.6 *Window Treatments*

9.6.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation must be installed with appropriate flashing and counter flashing in conformance with accepted building standards and in compliance with local building codes and the flashing manufacturer installation instructions.

9.7 *Non-Structural Applications*

9.7.1 Install panels with nails that have a 0.113" (2.9 mm) minimum shank diameter, a $^{3}/_{8}$" (9.5 mm) head diameter, and a 1.0" (25.4 mm) minimum stud embedment length; or 16-gauge $^{7}/_{16}$" (11.1 mm) crown staples and a 1.0" (25.4 mm) minimum stud embedment length.

9.7.2 The fastener spacing shall be 6" o.c. along the top, bottom, and vertical panel edges and 12" o.c. in the field. Do not tack product to framing, but fasten each panel completely after fastening begins.

## 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 load testing for use as an alternative material for wind design in accordance with ASTM E72 and ASTM E564

10.1.2 Lateral load testing and data for determining comparative equivalency for use as an alternative material for seismic design in accordance with ASTM E2126 and analysis per ASTM D7989

10.1.3 Transverse load testing in accordance with ASTM E330

10.1.4 WRB material testing in accordance with ASTM E331

10.1.5 Air barrier testing in accordance with ASTM E2178

10.1.6 Surface burning characteristics testing in accordance with ASTM E84

10.1.7 Use in attics and crawlspaces without a thermal barrier or ignition barrier testing in accordance with NFPA 286

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.

10.3 Where pertinent, 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.[34]

10.6 Where additional condition of use and/or regulatory compliance information is required, please search for OX-IS, OX-IS HS, and SI-Strong Structural Insulation on the DrJ Certification website.

## 11 Findings

11.1 As outlined in **Section 6**, OX-IS, OX-IS HS, and SI-Strong Structural Insulation 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, OX-IS, OX-IS HS, and SI-Strong Structural Insulation shall be approved for the following applications:

11.2.1 Lateral load resistance due to wind and seismic loads carried by shear walls.

11.2.2 Use as an equivalent alternative to the CS-PF as described in IRC Section R602.10.5 and IRC Section R602.10.6.4.

11.2.3 Transverse load resistance due to components and cladding pressures on building surfaces.

11.2.4 Performance of the foam plastic component for conformance to IBC Section 2603 and IRC Section R316.

11.2.5 Performance for use as insulating sheathing in accordance with IRC Sections N1102.1, IRC Section N1102.2 and IECC Section C402.

11.2.6 Performance for use as a WRB in accordance with IBC Section 1403.2[35] and IRC Section R703.2.

11.2.7 Performance for use as an air barrier in accordance with IRC Section N1102.4 and IECC Section C402.

11.2.8 Performance for use as a draftstop in accordance with IBC Section 708.4.2, IBC Section 718.3, IBC Section 718.4 and IRC Section R302.12.

11.3 When used and installed in accordance with this report and the manufacturer installation instructions, OX-IS HS is approved for the following:

11.3.1 Lateral load resistance due to wind and seismic loads carried by shear walls

11.3.2 Transverse load resistance due to components and cladding pressures on building surfaces

11.3.3 Performance of the foam plastic component for conformance to IBC Section 2603 and IRC Section R316

11.3.4 Performance for use as insulating sheathing in accordance with IRC Sections N1102.1, IRC Section N1102.2 and IECC Section C402

11.3.5 Performance for use as a WRB in accordance with IBC Section 1403.2[36] and IRC Section R703.2

11.3.6 Performance for use as an air barrier in accordance with IRC Section N1102.4 and IECC Section C402

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

11.5 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10[37] 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.

11.6 **Approved**:[38] Building regulations require that the building official shall accept Duly Authenticated Reports.[39]

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.[40]

## 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, OX-IS, OX-IS HS, and SI-Strong Structural Insulation shall not be used:

12.3.1 To resist horizontal loads from concrete and masonry walls

12.3.2 As a nailing base

12.4 Except as provided in **Section 6.8**, this product shall be fully protected from the interior of the building by an approved 15-minute thermal barrier where required by the applicable code.

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

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

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

12.5.3 These innovative products have an internal quality control program and a third-party quality assurance program.

12.5.4 At a minimum, these innovative products shall be installed per **Section 9** of this report.

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

12.5.6 These innovative products have 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.

12.5.7 The application of these innovative products 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.

12.6 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.

12.7 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).

12.8 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 products listed in **Section 1.1** through **Section 1.3** are 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.oxengineeredproducts.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 OX-IS, OX-IS HS, and SI-Strong Structural Insulation 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.

# 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, and

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 these innovative 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),[41] where providing test reports, engineering analysis and/or other related IP/TS is subject to prison of not more than ten years[42] and/or a $5,000,000 fine or 3 times the value of[43] 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[44] 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.[45]

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.[46]

1.3 **Approved**[47] **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.[48] 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.[49]

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[50] 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[51] (i.e., ANAB, International Accreditation Forum [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,

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,[52] 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)*".[53] 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[54] and Part 3280,[55] 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*."

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.[56]

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.[57]

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.[58]

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.[59]

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.[60]

1.11.4 Therefore, all ANAB ISO/IEC 17065 Duly Authenticated Reports are approval equivalent.[61]

1.12 Approval equity is a fundamental commercial and legal principle.[62]

Issue Date: December 9, 2020
Subject to Renewal: April 1, 2026

# FBC Supplement to Report Number 0804-01

REPORT HOLDER: OX Engineered Products, LLC

## 1 Evaluation Subject

1.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation

## 2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this report supplement is to show the OX-IS, OX-IS HS, and SI-Strong Structural Insulation, recognized in Report Number 0804-01, have also been evaluated for compliance with the codes listed below as adopted by the Florida Building Commission.

2.2 *Applicable Code Editions*

2.2.1 *FBC-B—20, 23: Florida Building Code – Building (FL 16410)*

2.2.2 *FBC-R—20, 23: Florida Building Code – Residential (FL 16410)*

## 3 Conclusions

3.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation, described in Report Number 0804-01, comply with the FBC-B and FBC-R and are subject to the conditions of use described in this supplement.

3.2 Where there are variations between the IBC and IRC and the FBC-B and FBC-R applicable to this report, they are listed here:

3.2.1 FBC-B Section 104.4, Section 110.4, and Section 2308 are reserved.

3.2.2 FBC-R Section R104, Section R109, Section R602.10, Section R602.10.4, Section R602.10.5, Section R602.10.6.4, Section R602.12, and Section R602.12.4 are reserved.

3.2.3 FBC-B Section 718.3 replaces IBC Section 718.3.

3.2.4 FBC-B Section 718.4 replaces IBC Section 718.4.

3.2.5 FBC-B Section 1404.2 replaces IBC Section 1403.2.

3.2.6 FBC-B Section 1609.1.1 replaces IBC Section 1609.1.1.

3.2.7 FBC-B Section 1609.3.1 replaces IBC Section 1609.3.1.

3.2.8 FBC-B Section 2306.1 replaces IBC Section 2306.1.

3.2.9 FBC-R Section R301.2.1 replaces IBC Section 301.2.1.

3.2.10 FBC-R Section R702.3.5 replaces IBC Section R702.3.5.

3.2.11 FBC-R Section R703.2 replaces IBC Section R703.2.

3.2.12 FBC-R Section R807.1 replaces IBC Section 807.1.

## 4 Conditions of Use

4.1 OX-IS, OX-IS HS, and SI-Strong Structural Insulation, described in Report Number 0804-01, must comply with all of the following conditions:

4.1.1 All applicable sections in Report Number 0804-01.

4.1.2 The design, installation, and inspections are in accordance with additional requirements of FBC-B Chapter 16 and Chapter 17, as applicable.

# 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 All references to FBC-B and FBC-R are the same as the 2021 IBC and 2021 IRC unless otherwise noted in the supplement at the end of this report.

21 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

22 2015 IBC Section 1404.2

23 2018 IRC Table R301.2(2)

24 2018 IRC Table R301.2(3)

25 2015 IBC Section 1404.2

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

27 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

28 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

29 ASCE 7-5 and 7-10 Section 12.2.1

30 2018 IECC Section C402.5.1.2.1

31 2015 IBC Section 1404.2

32 2015 IBC Section 708.4

33 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.

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

35 2015 IBC Section 1404.2

36 2015 IBC Section 1404.2

37 2018 IFC Section 104.9

38 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.

39 https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1

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

41 http://www.drjengineering.org/AppendixC AND https://www.drjcertification.org/cornell-2016-protection-trade-secrets

42 https://www.law.cornell.edu/uscode/text/18/1832#:~:text=imprisoned%20not%20more%20than%2010%20years

43 https://www.law.cornell.edu/uscode/text/18/1832#:~:text=Any%20organization%20that,has%20thereby%20avoided

44 https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706.2

45 IBC 2021, Section 1706.1 Conformance to Standards

46 IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General

47 See Section 11 for the distilled building code definition of **Approved**

48 Los Angeles Municipal Code, SEC. 98.0503. TESTING AGENCIES

49 https://up.codes/viewer/california/ca-building-code-2022/chapter/17/special-inspections-and-tests#1707.1

50 New York City, The Rules of the City of New York, § 101-07 Approved Agencies

51 New York City, The Rules of the City of New York, § 101-07 Approved Agencies

52 https://up.codes/viewer/new_jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1

53 https://www.nj.gov/dca/divisions/codes/codreg/ucc.html

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

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

56 IBC 2021, Section 1706 Design Strengths of Materials, 1706.2 New Materials. Adopted law pursuant to IBC model code language 1706.2.

57 IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General. Adopted law pursuant to IBC model code language 1707.1.

58 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/

59 IBC 2021, Section 1706 Design Strengths of Materials, Section 1706.1 Conformance to Standards Adopted law pursuant to IBC model code language 1706.1.

60 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

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

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