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SURE-BOARD® SERIES 200, 200W, AND 200B STRUCTURAL PANELS INSTALLED ON COLD-FORMED STEEL OR WOOD-FRAMED SHEAR WALLS

CSI Sections:

05 40 00 Cold-Formed Metal Framing
06 12 00 Structural Panels
06 16 00 Sheathing

1.0 RECOGNITION

Intermat's Sure-Board® Series 200, 200W, and 200B Structural Panels recognized in this report have been evaluated for use as shear panels for wood or steel light-frame walls. The structural performance properties of the Sure-Board® Series 200, 200W, and 200B Structural Panels comply with the intent of the provisions of the following codes and regulations:

- 2021, 2018, 2015, 2012, and 2009 International Building Code® (IBC)
- 2021, 2018, 2015, 2012, and 2009 International Residential Code® (IRC)
- 2022 California Building Code® (CBC) -- Attached Supplement
- 2023 Los Angeles Building Code® (LABC) -- Attached Supplement

2.0 LIMITATIONS

Use of the Sure-Board® Series 200, 200W, and 200B Structural Panels recognized in this report is subject to the following limitations:

2.1 Panels are manufactured, identified, and installed in accordance with this report.

2.2 The Nominal (V_n) and Allowable Stress Design (V_{asd}) shear values for shear walls are limited to the values noted in Tables 1, 1A, 2, 3, 4, 5, and 6 of this report. To determine the design strength values, the appropriate strength reduction factor, in accordance with 2021 and 2018 IBC Section 2211.1; 2015 and 2012 IBC Section 2211.6; 2009 IBC Section 2210.6; Chapter 23 of the IBC, or Section R301.1.3 of the IRC shall be applied.

2.3 Plans and calculations demonstrating compliance with codes listed in Section 1.0 of this report and this report shall be submitted to the building official for approval. The documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

2.4 Applied loads shall be adjusted in accordance with Section 1605 of the IBC. Calculations shall demonstrate, in addition to other requirements as stipulated by the building official, that the applied loads are less than the design loads described in the IBC or IRC, and this report.

2.5 All nominal and allowable load capacities provided in this report do not include a 1.33 stress increase. The 1.33 increase for transient loads shall not be applied to allowable shear loads for these products.

2.6 The panels are produced at CEMCO, MARINO WARE, and INTERMAT facilities.

3.0 PRODUCT USE

3.1 General: Sure-Board® Series 200, 200W, and 200B Structural Panels are panels attached to cold-formed steel (CFS) or wood framing for shear wall applications within a Seismic Force-Resisting System conforming to items A.13 in Table 12.2-1 of ASCE/SEI 7-05, and A.15 and A.16 in Table 12.2-1 of ASCE/SEI 7-10 or ASCE/SEI 7-16; or a Wind Force Resisting System.

The structural panels are alternatives to cold-formed steel or wood stud light-frame shear wall systems described in Section 2211.1 of the 2021 and 2018 International Building Code (IBC), Section 2211.6 of the 2015 and 2012 International Building Code (IBC), Section 2210.6 of the 2009 International Building Code (IBC), Section 2305 of the International Building Code (IBC), Section 12.2 of ASCE/SEI 7, and Sections R602 and R603 of the IRC. The structural panels may also be used where an engineered design is submitted in accordance with Section R301.1.3 of the International Residential Code (IRC).

3.2 Design:

3.2.1 Shear Wall Design

3.2.1.1 Seismic loadings shall be determined in accordance with IBC Section 1613 and ASCE/SEI 7 subject to limitations set forth for Seismic Force-Resisting Systems conforming to items A.13 in Table 12.2-1 of ASCE/SEI 7-05, and A.15 and A.16 in Table 12.2-1 of ASCE/SEI 7-10 or ASCE/SEI 7-16. The shear walls shall be limited to height limits and seismic

categories listed in ASCE/SEI 7, Table 12.2-1, for the respective light-frame shear wall, bearing wall system.

Wind loadings shall be determined in accordance with IBC Section 1609 and ASCE/SEI 7.

3.2.1.2 The Nominal (V_n) and Allowable Stress Design (V_{asd}) shear values for wind and earthquake forces are shown in Tables 1, 1A, 2, 3, 4, 5, and 6 of this report with associated deflections for shear walls using Sure-Board® Series 200, 200W, and 200B Structural Panels attached to Cold-Formed Steel or Wood studs. Nominal shear values shall be multiplied by the appropriate strength reduction factor to determine LRFD design strength in accordance with footnote 4 of Tables 1, 1A, 2, 3, 4, 5, and 6 of this report as set forth in 2021 and 2018 Section 2211.1, 2015 and 2012 IBC Section 2211.6, 2009 IBC Section 2210.6, Chapter 23 of the IBC, and R301.1.3 of the IRC.

3.2.1.3 Design Deflection:

3.2.1.3.1 Steel Stud Framing: The deflection of a Sure-Board® Series 200, 200W, or 200B shear wall sheathed on one side and fastened throughout on steel stud framing shall be permitted to be calculated in accordance with Eq. 3.2.1.3.1a. Eq. 3.2.1.3.1a may be used to estimate deflection for shear strengths up to the tabulated nominal unit shear values in this report:

$$\Delta = \frac{2vh^3}{3E_s A_c b} + \omega_1\omega_2\left(\frac{vh}{\rho G t_{s\_SB}}\right) + (\omega_1)^{1.25}\omega_2\omega_3\omega_4\left(\frac{v}{\beta}\right)^{\alpha} + \left(\frac{h}{b}\right)\delta_{anchorage} \qquad (Eq.\ 3.2.1.3.1a)$$

Where:

A_c = Gross cross-sectional area of chord/boundary studs, in^2 (mm^2)
b = Width of the shear wall, in. (mm)
E_s = Modulus of elasticity of steel, 29,500,000 psi (203,000 MPa)
F_y = minimum specified yield strength of steel sheet in the Sure-Board sheathing, psi (MPa)
G = Shear modulus of steel in the Sure-Board sheathing, 11,300,000 psi (78,000 MPa)
h = Wall height, in. (mm)
s = Fastener spacing at panel edges, in. (mm)
t_{s_SB} = Sure-Board sheathing steel design thickness, in. (mm)
t_{s_F} = design thickness of cold-formed steel framing (if different framing thicknesses are present in the same wall, the least thickness shall be used), in. (mm)
v = Unit shear demand (V/b), lb/in (N/mm)
V = Total lateral load applied to the shear wall, lb (N)
Δ = Calculated deflection, in. (mm)
$\delta_{anchorage}$ = Total vertical elongation of wall anchorage components (fastener slip, device elongation, rod elongation) at induced unit shear in the wall, in. (mm)
ρ = 1.0
β = product-specific inelastic stiffness factor, lb/in/in 1/α, in Table 3.2.1.3 of this report.
α = product-specific inelastic stiffness multiplier, in Table 3.2.1.3 of this report.
ω_1 = s/(6 in.) {s/152.4 mm}
ω_2 = (0.0346 in.)/ts_F {(0.8788 mm)/ts_F}
ω3 = [(h/b)/2]0.5
ω4 = [(33,000 psi)/F_y]$^{0.5}$ {[(228 MPa)/F_y]$^{0.5}$}

TABLE 3.2.1.3 – Sure-Board Shear Wall Deflection Parameters (for use in Eq. 3.2.1.3.1a and Eq. 3.2.1.3.2a)

Parameter	Sure-Board Series 200/200B[1]	Sure-Board Series 200W
α	2.566	2.359
β [(lb./in.)/(in.$^{1/\alpha}$)]	126.16	107.73
β [(N/mm)/(mm$^{1/\alpha}$)]	6.263	4.788

1. Values may be used to estimate the deflection of Series 200B sheathed shear walls. Estimates are higher than expected deflections.

For cold-formed steel frame shear walls sheathed with Sure-Board® Series 200, 200B, or 200W structural panels, the elastic shall wall deflection, Δ_e, may be estimated using Eq. 3.2.1.3.1b. Eq. 3.2.1.3.1b is an alternative linearized form of Eq. 3.2.1.3.1a and is applicable up to the tabulated LRFD unit shear strength values in this report.

$$\Delta_e = \frac{2vh^3}{3E_s A_c b} + (\omega_1)^{1.25}\omega_2\left(\frac{vh}{G_{a'}}\right) + \left(\frac{h}{b}\right)\delta_{anchorage} \qquad (Eq.\ 3.2.1.3.1b)$$

Where:

A_c = Gross cross-sectional area of chord/boundary studs, in^2 (mm^2)
b = Width of the shear wall, in. (mm)
Es = Modulus of elasticity of steel, 29,500,000 psi (203,000 MPa)
Ga′ = apparent shear wall stiffness from panel shear and connection deformation (from Table 8 of this report)
h = Wall height, in. (mm)
s = Fastener spacing at panel edges, in. (mm)
ts_F = design thickness of cold-formed steel framing (if different framing thicknesses are present in the same wall, the smaller thickness shall be used)
v = Unit shear demand (V/b), lb/in (N/mm)
V = Total lateral load applied to the shear wall, lb (N)

Δ_e = maximum shear wall deflection determined by elastic analysis, in. (mm)
$\delta_{anchorage}$ = Total vertical elongation of wall anchorage components (fastener slip, device elongation, rod elongation) at induced unit shear in the wall, in. (mm)
ω_1 = s/(6 in.) {s/152.4 mm}
ω_2 = (0.0346 in.)/t_{s_F} {(0.8788 mm)/t_{s_F}}

3.2.1.3.2 Wood Stud Framing: The deflection of a Sure-Board® Series 200, 200W, or 200B shear wall sheathed on one side and fastened throughout on wood stud framing shall be permitted to be calculated in accordance with Eq. 3.2.1.3.2a. Eq. 3.2.1.3.2a may be used to estimate deflection for shear strengths up to the tabulated nominal unit shear strength values in this report:

$$\Delta = \frac{2vh^3}{3EA_c b} + \omega_1\omega_2\left(\frac{vh}{\rho G t_{s\_SB}}\right) + (\omega_1)^{1.25}\omega_2\omega_3\omega_4\left(\frac{v}{0.8\beta}\right)^{\alpha} + \left(\frac{h}{b}\right)\delta_{anchorage} \qquad (Eq.\ 3.2.1.3.2a)$$

Where:

A_c = Gross cross-sectional area of chord/boundary studs, in2 (mm2)
b = Width of the shear wall, in. (mm)
E = modulus of elasticity of wood chord/boundary studs (psi)
Fy = minimum specified yield strength of steel sheet in the Sure-Board sheathing, psi (MPa)
G = Shear modulus of steel in the Sure-Board sheathing, 11,300,000 psi (78,000 MPa)
h = Wall height, in. (mm)
s = Fastener spacing at panel edges, in. (mm)
ts_SB= Sure-Board® sheathing steel sheet design thickness, in. (mm)
v = Unit shear demand (V/b), lb/in (N/mm)
V = Total lateral load applied to the shear wall, lb (N)
Δ = Calculated deflection, in. (mm)
δanchorage = Total vertical elongation of wall anchorage components (fastener slip, device elongation, rod elongation) at induced unit shear in the wall, in. (mm)
ρ = 1.0
β = product-specific inelastic stiffness factor for nails (lb/in/in1/α)
α = product-specific inelastic stiffness multiplier
$\omega 1$ = s/(6 in.) {s/152.4 mm}
$\omega 2$ = 1.0
$\omega 3$ = ((*h*/*b*)/2)0.5
$\omega 4$ = (33,000 psi/*Fy*)0.5

Eq. 3.2.1.3.2a applies to applications where the Sure-Board® sheathing is nailed to the wall. Eq. 3.2.1.3.2a shall be modified for screw fasteners and framing specific gravity as follows:

a. When No. 8 screws are used instead of nails, β in Eq. 3.2.1.3.2a shall be multiplied by 1.2.
b. When the specific gravity G of wood framing members is less than 0.5, the connection deformation term in Eq. 3.2.1.3.2a,

$$(\omega_1)^{1.25}\omega_2\omega_3\omega_4\left(\frac{v}{0.8\beta}\right)^{\alpha}$$

Shall be multiplied by the specific gravity factor:

$$\eta = \frac{1}{1-(0.5-G)}$$

For wood framed shear walls sheathed with Sure-Board® Series 200, 200B, or 200W structural panels, the elastic shear wall deflection Δ_e may be estimated using Eq. 3.2.1.3.2b. Eq. 3.2.1.3.2b is an alternative linearized form of Eq. 3.2.1.3.2a, and is applicable up to the tabulated LRFD unit shear strength of a wall:

$$\Delta_e = \frac{2vh^3}{3EA_c b} + (\omega_1)^{1.25}\omega_2\left(\frac{vh}{G_{a'}}\right) + \left(\frac{h}{b}\right)\delta_{anchorage} \qquad (Eq.\ 3.2.1.3.2b)$$

Where:

A_c = Gross cross-sectional area of chord/boundary studs, in^2 (mm^2)
b = Width of the shear wall, in. (mm)
E = modulus of elasticity of wood chord/boundary studs (psi)
Ga′ = apparent shear wall stiffness from panel shear and connection deformation (from Table 9 or 10 of this report)
h = Wall height, in. (mm)
s = Fastener spacing at panel edges, in. (mm)
v = Unit shear demand (V/b), lb/in (N/mm)
V = Total lateral load applied to the shear wall, lb (N)
Δe = maximum shear wall deflection determined by elastic analysis, in. (mm)
δanchorage = Total vertical elongation of wall anchorage components (fastener slip, device elongation, rod elongation) at induced unit shear in the wall, in. (mm)
$\omega 1$ = s/(6 in.) {s/152.4 mm}
$\omega 2$ = 1.0

3.2.1.4 The Nominal (V_n) and Allowable Stress Design (V_{asd}) shear values in Tables 1, 1A, 2, and 3 of this report apply to shear walls on steel framing with a maximum height-to-width ratio (h:b) of 2¼:1. For height-to-length ratios (h:b) greater than 2¼:1, but not exceeding 4:1, V_n or V_{asd} shall be determined in accordance with the Eqs. 3.2.1.4-1 or 3.2.1.4-2:

$V_n = V_{nt}\ (2.25b/h)$ (Eq. 3.2.1.4-1)

$V_{asd} = V_{asdt}\ (2.25b/h)$ (Eq. 3.2.1.4-2)

Where:

V_{nt} = nominal shear value from the applicable table, lb/ft (N/mm)
Vasdt = allowable stress design shear value from the table, lb/ft (N/mm)

In no case shall the height-to-length ratio (h:b) for shear walls on wood framing exceed 4:1.

The maximum shear-wall height-to-width ratio (h/b) for shear walls on wood framing is 2¼:1.

3.2.1.5 Panels shall be fastened in accordance with footnote 2 of Tables 1, 1A, 2, 3, 4, 5, and 6 of this report, as applicable.

3.2.1.6 Design of shear wall connections, such as uplift hold-downs, shear to base anchorage, and shear transfer from horizontal elements are beyond the scope of this report and the registered design professional shall provide appropriate design and detailing information to the building official. The collector shall be designed in accordance with and comply with the IBC or the IRC and be sized to exceed the loads resisted by the shear wall.

3.2.2 Load Bearing and Non-Load Bearing Wall Design

3.2.2.1 General: Cold-Formed Steel or Wood framing design for out-of-plane and axial loads shall comply with the IBC or IRC, as applicable. For installation in Seismic Design Categories C, D, E, and F, additional requirements in 2021 and 2018 Sections 2211.1.1, 2015 and 2012 IBC Section 2211.6, 2009 IBC Section 2210.6, Chapter 23 of the IBC, or IRC, AISI S100, and ASCE/SEI 7 apply.

3.2.2.2 Diaphragm to Wall: Table 8 of this report provides gravity load shear transfer nominal strength values for five different diaphragm-to-wall framing details/conditions—Cases 1 through 5. Cases 2 through 5 provide for a Sure-Board® Series 200-5/8 inch Type X gypsum composite panel, a Sure-Board® Series 200-5/8 inch Type X gypsum composite panel with the gypsum panel terminating below joists and the steel sheet extending along the joist, or a 54-mil steel sheet/plate to be interposed/sandwiched between the diaphragm ledger and the wall framing. The strength values in Table 8 of this report are applicable to the specific configuration described.

3.3 Installation:

3.3.1 Installation General: The panels shall be directly applied to the studs at the interior and exterior shear walls and are limited to applications where there is no continuous direct exposure to the weather or damp environments other than during construction. Construction exposure shall not exceed the board (gypsum, cement, or fiberboard) manufacturer's recommendations or shall be protected during construction from direct moisture exposure to gypsum. In areas that may be exposed to possible moisture intrusion, water-resistant sheathing is required. Sure-Board® products may be installed as specified by the registered design professional on assemblies as permitted by the IBC or IRC in all Seismic Design Categories.

3.3.2 Steel Framing

3.3.2.1 Installation shall be in accordance with the IBC or IRC, this report, and the manufacturer's published Installation and Cutting Sure-Board® Series 200, 200W, and 200B instructions. Where conflicts occur, the more restrictive shall govern. Field repair of Sure-Board® Series 200, 200W, and 200B panels with surface-damaged gypsum wallboard may be accomplished following Section 3 of *Installation and Cutting Sure-Board® Series 200, 200W, and 200B*, available from the manufacturer upon request or online at www.sureboard.com .

3.3.2.2 Sure-Board® Series 200, 200W, and 200B Structural Panels shall be placed with the long dimension parallel or perpendicular to steel stud framing. The steel face shall be in contact with the framing. All panel edges (top and bottom) shall be fully blocked by framing studs, track, blocking, or flat straps of the same gage as the framing material and include an end collector element to be determined by the Design Professional in accordance with the IBC, IRC, the AISI S100, and the ASCE/SEI 7 seismic provisions. Minimum required collector elements are defined in Section 4.3.3 of this report and are required at both shear wall ends. Maximum stud spacing shall not exceed 24 inches (610 mm) on center. Screws attaching panels shall be installed in one operation through the panels into the framing. Screws or pneumatic pin heads are required to be located ⅜ inch (9.53 mm) minimum from panel edges. Screw heads shall be driven flush with the surface. Screws shall penetrate at least three exposed threads into framing members.

3.3.2.3 A minimum panel size of 16 inches by 96 inches (406 mm by 2438 mm) is acceptable, provided all perimeter edges are fastened to framing members at the required spacing. All panels may be fastened at the panel joint stud without staggering the fasteners at each panel. No panels shall be lapped over another at these lap joint studs. Joint spacing between panels shall range from 0 inch to ⅛ inch (0 to 3.2 mm). Top and Bottom track gaps to floors or ceilings are not limited except that panels shall have at least 1-inch (25.4 mm) minimum track leg height behind panel edges, without adding additional backing for fasteners. The designed fastener spacing shall apply to each panel edge.

No panel edges shall be lapped and attached with a single row of fasteners.

3.3.2.4 Holes cut in Sure-Board® panels shall be approved by the building official based on the recommendations supplied by the manufacturer and as recommended by the Design Professional.

3.3.3 Wood Framing

3.3.3.1 Installation shall be in accordance with the IBC or IRC, this report, and the manufacturer's published installation instructions. Where conflicts occur, the more restrictive shall govern. Field repair of Sure-Board® Series 200 Structural Panels with surface-damaged gypsum wallboard may be accomplished following Section 3 of *Installation and Cutting Sure-Board® Series 200 and 200W*, available from the manufacturer upon request or online at www.sureboard.com .

3.3.3.2 Sure-Board® Series 200, 200W, and 200B Structural Panels shall be placed with the long dimension parallel or perpendicular to stud framing. The steel face shall be in contact with the framing. All panel edges shall be fully blocked by framing studs, blocking, or plates. Maximum stud spacing as tested shall not exceed 24 inches (610 mm) on center. Nail and screw heads are required to be located ⅜-inch (9.53 mm) minimum from panel edges. Nail and screw heads shall be installed flush with the surface of MDF, non-combustible sheathing, or gypsum wallboard to accommodate the application of finish material where required.

After Sure-Board® Series 200 or 200B panels have been installed and fastened completely to framing members, steel structural strapping may be installed by scoring the gypsum sheathing and removing the gypsum material as necessary from the steel sheet where the strap is placed. After the gypsum material has been removed, the steel structural strapping may be installed over Sure-Board® steel sheathing and fastened in accordance with the strap manufacturer's instructions and approved plans, into required backing or framing and inspected. After inspection, the gypsum may be patched back in and fastened to the Sure-Board® steel sheet or framing and taped and finished by gypsum board applicator to the required level of finish without causing any adverse structural effect or unwanted buildup under the steel sheet of the Sure-Board® panels.

3.3.3.3 A minimum panel size of 16 inches by 96 inches (406 mm by 2438 mm) is acceptable provided all perimeter edges are fastened to framing members at the required spacing. All panels may be fastened at the panel joint stud without staggering the fasteners at each panel. No panels shall be lapped over another at these lap joint studs. Joint spacing between panels shall range from 0 inch to ⅛ inch (0 to 3.2 mm). Top and Bottom plate gaps to floors or ceilings are not limited except that the panels shall have at least 1-inch (25.4 mm) minimum plate thickness behind the panel edge, without adding additional blocking for fasteners. The designated fastener spacing applies to each panel edge. No panel edges may be lapped and attached with a single row of fasteners.

3.3.3.4 Holes cut in Sure-Board® panels shall be approved by the building official based on the recommendations supplied by the manufacturer and as recommended by the Design Professional.

3.4 Special Inspections

When required by the building official, periodic special inspections for seismic or wind resistance shall be in accordance with the requirements of IBC Chapter 17 corresponding to the applicable type (wood or cold-formed steel) of light-framed construction.

4.0 PRODUCT DESCRIPTION

4.1 Sure-Board® Series 200, 200W, and 200B Series Structural Panels

4.1.1 Sure-Board® Series 200 Panels: Sure-Board® Series 200 Structural Panels consist of ½- to ¾-inch-thick (12.7 to 19.0 mm), tapered or square-edged, non-rated or Type-X fire-resistance-rated gypsum wallboard complying with ASTM C1396, C1278, or C1177, or cement board complying with ASTM C1325; or ¾ -inch-thick (19.0 mm) USG Ultracode Gypsum Wallboard, factory-laminated with water-soluble adhesive to sheet steel. The sheet steel is No. 22 gage (0.027 inch/0.686 mm) minimum base-metal thickness complying with ASTM A1003 Structural Grade 33 Type H. These panels are available in widths of 48 inches (1219 mm) and standard lengths of 8, 9, 10, and 12 feet (2438, 2743, 3048, and 3658 mm).

4.1.2 Sure-Board® Series 200W Panels: Sure-Board® Series 200W Structural Panels consist of minimum ⅛-inch-thick (3.2 mm), square-edge Medium Density Fiberboard (MDF) panels, or equal, complying with ANSI A208.2; or magnesium oxide panels approved by the building official, factory-laminated with a water-soluble adhesive to sheet steel. The sheet steel is No. 22 gage (0.027 inch/0.686 mm) minimum base-metal thickness complying with ASTM A1003 Structural Grade 33 Type H. These panels are available in widths of 48 inches (1219 mm) and standard lengths of 8, 9, 10, and 12 feet (2438, 2743, 3048, and 3658 mm) and the standard lengths may be pre-cut by request.

4.1.3 Sure-Board® Series 200B Panels: Sure-Board® Series 200B Structural Panels consist of ½- to ¾-inch-thick (12.7 to

19.0 mm), tapered or square-edged, non-rated or Type X fire-resistance-rated gypsum wallboard complying with ASTM C1396, C1278, or C1177, or cement board complying with ASTM C1325, factory-laminated with water-soluble adhesive to sheet steel. The sheet steel is No. 14 gage (0.071 inch/1.81 mm) minimum base-metal thickness complying with ASTM A1003 Structural Grade 50 Type H. These panels are available in widths of 48 inches (1219 mm) and standard lengths of 8, 9, 10, and 12 feet (2438, 2743, 3048, and 3658 mm).

4.2 Fasteners

4.2.1 Sure-Board® Series 200 Panels Attached to Steel Framing (Tables 1 and 1A): The fasteners used for attaching the Sure-Board® Series 200 Structural Panels to steel framing are self-drilling/self-tapping No. 2 pilot point flat head, S12 drill point screws. The No. 8 screws have a minimum diameter of 0.138-inch (3.5 mm), with a minimum 0.3145-inch (8.0 mm) head diameter and 1.25 inch (31.7 mm) minimum length, and shall comply with SAE J78, ASTM C954, and C1513.

4.2.2 Sure-Board® Series 200W Panels Attached to Steel Framing (Tables 2 and 3): The fasteners used for attaching the Sure-Board® Series 200W Structural Panels to steel framing are No. 10 - 0.19-inch (4.83 mm) minimum diameter, with a minimum 0.3145-inch-diameter (8.0 mm) pan head and 0.75-inch (19.0 mm) minimum length S12 drill point screws, complying with SAE J78, ASTM C954, and C1513.

4.2.3 Sure-Board® Series 200B Panels Attached to Steel Framing (Table 1): The fasteners used for attaching the Sure-Board® Series 200B Structural Panels to steel framing are minimum No. 8 self-drilling S12 drill point screws with a minimum 0.138-inch (3.5 mm) diameter and minimum 1.25-inch (31.7 mm) length. The screw head is a No. 2 pilot point flat head having a minimum 0.3145-inch (8.0 mm) head diameter. The screws shall comply with SAE J78 and ASTM C954 and C1513. Larger screw diameters are acceptable to use and maintain the capacities listed in this report.

4.2.4 Sure-Board® Series 200 and 200W Panels Attached to Steel Framing (Table 6): Other fasteners for attaching Sure-Board® Series 200 and 200W Structural Panels to steel framing include power-driven fasteners (pneumatic pins) for specific assemblies listed in Table 6 of this report. The minimum 1¼-inch-long (31.8 mm) by 0.100-inch-diameter (2.54 mm) knurled shank pneumatic nails with a minimum $^{5}/_{16}$-inch-diameter (7.94 mm) head are produced by Aerosmith Inc. and shall comply with an evaluation report issued by an approved and accredited evaluation agency.

4.2.5 Sure-Board® Series 200W Panels Attached to Wood Framing (Table 4): The fasteners used for attaching the Sure-Board® Series 200W Structural Panels to wood framing are smooth shank 10d plywood nails measuring minimum 2.25 inches (57.2 mm) long by minimum 0.148-inch (3.8 mm) shank diameter.

4.2.6 Sure-Board® Series 200 Panels Attached to Wood Framing (Table 5): The fasteners used for attaching the Sure-Board® Series 200 Structural Panels to wood framing are No. 8 by minimum 2-inch-long (50.8 mm) drywall wood screws.

4.3 Steel Framing

4.3.1 In this report, for steel framing members, the following gage reference numbers, and corresponding minimum design base-metal thicknesses shall apply:

No. 14 gage: 0.071 inch (1.81 mm)
No. 16 gage: 0.054 inch (1.37 mm)
No. 18 gage: 0.043 inch (1.09 mm)
No. 20 gage: 0.033 inch (0.84 mm)

4.3.2 Steel studs for shear walls are C-shaped, with a minimum depth of 3½ inches (89 mm) and a minimum flange width of 1⅝ inches (41 mm), with a ⅜-inch (9.5 mm) return lip for C-shaped stud. Tracks shall be a minimum of 3½ inches (89 mm) wide, with minimum 1¼-inch-high (31.7 mm) flanges.

4.3.3 No. 14 and No. 16 gage steel members shall comply with ASTM A653 CS Grade 50, with minimum yield and tensile strengths of 50 ksi (340 MPa) and 65 ksi (450 Mpa), respectively. The No. 18 and No. 20 gage members shall comply with ASTM A653 CS Grade 33, with minimum yield and tensile strengths of 33 ksi (230 Mpa) and 45 ksi (310 Mpa), respectively. Structural design shall be performed by the design professional in accordance with Section 2211.1 of the 2021 and 2018 IBC, Section 2211.6 of the 2015 and 2012 IBC, Section 2210.6 of the 2009 IBC, or Section R301.1.3 of the IRC, as applicable, AISI S100, and ASCE/SEI 7. Collector posts at each end of the shear wall shall be minimum double stud and the same gage as framing material, except as described in Footnote 10 to Table 1 of this report. Actual collectors may be increased to larger or heavier gage elements, as determined by the design professional.

4.3.4 IRC: Walls constructed in accordance with this report may be used in lieu of provisions in IRC Section 603. Steel framing shall be designed to resist all applicable loading conditions.

4.4 Wood Framing

4.4.1 Minimum framing members are Stud or Construction grade Douglas Fir (D.F.) or equal with a minimum Specific Gravity (S.G.) of 0.49, conforming to Chapter 23 of the IBC and IRC. The minimum framing member size for shear walls

shall be nominal 2 by 4 studs. Structural design shall be performed by the design professional in accordance with Section 2306 or 2307 of the IBC, or Section R301.1.3 of the IRC, as applicable, ANSI/AWC NDS, and ASCE/SEI 7.

4.4.2 End Posts for shear walls shall be minimum 4 by 4 No. 1 grade Douglas Fir or equal. Sill plates for shear walls shall be minimum 2 by 4 Standard grade or better Douglas Fir or equal.

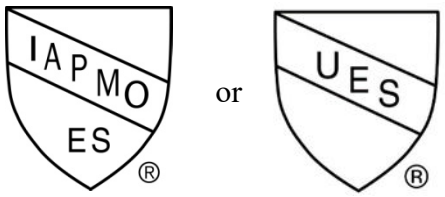
4.4.3 Sill Plates for two-sided shear walls shall be minimum 2 by 4 Timberstrand®, 3 by 4 pressure-preservative treated Douglas Fir or equal and shall be in compliance with a current evaluation report from an approved and accredited evaluation agency.

4.4.4 Fire-retardant-treated wood framing material has been tested with Sure-Board® panels. All stated load capacities in Tables 4 and 5 of this report shall remain as stated in this report.

4.4.5 IRC: Walls constructed in accordance with this report may be used in lieu of provisions in IRC Section 602. Wood framing shall be designed to resist all applicable loading conditions.

5.0 IDENTIFICATION

A label shall be affixed on at least one of the following: product, packaging, installation instructions, or descriptive literature. The label shall include the company name or trademark, model number, and the Evaluation Report Number (ER-126) to identify the products recognized in this report. A die-stamp label may also substitute for the label. Either IAPMO UES Mark of Conformity may also be used as shown below:



IAPMO UES ER-126

6.0 SUBSTANTIATING DATA

6.1 Data in accordance with the IAPMO Uniform ES Evaluation Criteria for the Testing and Analysis of Steel Sheet Sheathing for Wood and Cold-Formed Steel Light-Framed Structure Shear Walls (EC-003), adopted January 2022.

6.2 Data for Diaphragm to wall gravity load shear transfer, including load tests and analyses.

6.3 Quality control manual.

6.4 The test reports are from laboratories in compliance with ISO/IEC 17025.

7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research completed by IAPMO Uniform Evaluation Service on Intermat's Sure-Board® Series 200, 200W, and 200B Structural Panels to assess conformance to the codes shown in Section 1.0 of this report and serves as documentation of the product certification.

For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org

TABLE 1 – NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR SEISMIC FORCES AND DISPLACEMENT (inches) FOR SHEAR WALLS WITH SURE-BOARD® SERIES 200 / SERIES 200B STRUCTURAL PANELS ATTACHED TO LIGHT GAGE STEEL C-STUDS AT 24'' O.C. MAXIMUM WITH SPACING SCREWS (pounds per foot) [1, 11,12]

STEEL FRAMING	FASTENER SPACING AT PANEL EDGES INCHES ON CENTER [6]											
	6			4			3			2		
Minimum Gage[5]	V_n[2,3,4,7] (plf)	V_{asd}[2,3,8] (plf)	ΔV_{asd}[9] (inch)	V_n[2,3,4,7] (plf)	V_{asd}[2,3,8] (plf)	ΔV_{asd}[9] (inch)	V_n[2,3,4,7] (plf)	V_{asd}[2,3,8] (plf)	ΔV_{asd}[9] (inch)	V_n[2,3,4,7] (plf)	V_{asd}[2,3,8] (plf)	ΔV_{asd}[9] (inch)
No. 20 (0.033 inch)	1,085	434	0.21	1,545	618	0.21	1,730	692	0.24	1,915	766	0.26
	1,543[10]	617	0.17	2,211[10]	885	0.22	2,486[10]	977	0.22	2,537[10]	906	0.16
No. 18 (0.043 inch)	1,405[10]	562	0.24	1,925[10]	770	0.23	2,821[10]	1,126	0.25	2,989[10]	1,196	0.21
No. 16 (0.054 inch)	1,697	678	0.25	2,306	922	0.25	2,957[10]	1,092	0.26	3,647[10]	1,253	0.28
No.16 (0.054 inch) 2-Sided	-------	-------	-----	-------	-------	-----	-------	------	-----	5,011[10]	1,710	0.28
No. 14 (0.071 inch)	-------	-------	-----	-------	-------	-----	-------	------	-----	3,292	1,257	0.24
No. 14 (0.071 inch) 2-Sided	-------	-------	-----	-------	-------	-----	-------	------	-----	4,635*	1,700	0.22

For **SI:** 1 inch = 25.4 mm, 1 lb/linear = 0.0146 N/mm.

*Fasteners are spaced 6 inches on center maximum into intermediate framing

[1] These values are for short-term loads due to wind or earthquakes.

[2] The screws are described in Section 4.2.1 and are installed in accordance with Section 3.3.2.2 of IAPMO ES ER-126.

[3] Tabulated values listed in tables are for panels applied to one side or two sides of a wall.

[4] For load and resistance factor design (LRFD) loads, the tabulated $\mathbf{V_n}$ load values shall be multiplied by the resistance factor 0.60 for Seismic or 0.65 for Wind.

[5] Section 4.3.1 in IAPMO ES ER-126, describes minimum base metal thickness associated with gages.

[6] All panel edges shall be blocked. Panels may be installed vertically or horizontally. Fasteners shall be spaced a maximum of 12 inches on center along intermediate framing members, except as specifically noted in Table 1 of this report.

[7] $\mathbf{V_n}$ = Nominal Strength.

[8] $\mathbf{V_{asd}}$ = ASD Design Load.

[9] Δ $\mathbf{V_{asd}}$= Deflection at $\mathbf{V_{asd}}$ Design Load.

[10] Nominal strength is based on double c-stud collectors (end posts) to be designed and installed using one gauge thicker than the framing material used in the shear wall.

[11] V_n and V_{asd} for walls with height-to-length ratios (h:b) greater than 2¼:1, but not exceeding 4:1 shall be computed in accordance with Section 3.2.1.4 of this report.

[12] Series 200B values are limited to Series 200 values.

TABLE 1A – NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DISPLACEMENT (inches) FOR SHEAR WALLS WITH SURE-BOARD® SERIES 200 / SERIES 200B STRUCTURAL PANELS ATTACHED TO LIGHT GAGE STEEL C-STUDS AT 16" O.C. WITH SCREWS (pounds per foot) [1,10,11]

STEEL FRAMING	FASTENER SPACING AT PANEL EDGES INCHES ON CENTER [6]											
	6			4			3			2		
Minimum Gage[5]	V_n[2,3,4,7] (plf)	V_{asd}[2,3,8] (plf)	ΔV_{asd}[9] (inch)	V_n[2,3,4,7] (plf)	V_{asd}[2,3,8] (plf)	ΔV_{asd}[9] (inch)	V_n[2,3,4,7] (plf)	V_{asd}[2,3,8] (plf)	ΔV_{asd}[9] (inch)	V_n[2,3,4,7] (plf)	V_{asd}[2,3,8] (plf)	ΔV_{asd}[9] (inch)
14 (0.071 inch) 2-Sided	--------	--------	--------	--------	---------	---------	----------	---------	---------	5,079	1,897	0.26

For **SI:** 1 inch = 25.4 mm, 1 lb/foot = 0.0146 N/mm.

[1] These values are for short-term loads due to wind or earthquakes.

[2] The screws are described in Section 4.2.1 and are installed in accordance with Section 3.3.2.2 of IAPMO ES ER-126.

[3] Tabulated values listed in tables are for panels applied to one side or two sides of a wall.

[4] For load and resistance factor design (LRFD) loads, the tabulated $\mathbf{V_n}$ load values shall be multiplied by the resistance factor 0.60 for Seismic or 0.65 for Wind.

[5] Section 4.3.1 in IAPMO ES ER-126, describes minimum base metal thickness associated with gages.

[6] All panel edges shall be blocked. Panels are installed vertically or horizontally. Fasteners shall be spaced a maximum of 12 inches on center along intermediate framing members.

[7] $\mathbf{V_n}$ = Nominal Strength.

[8] $\mathbf{V_{asd}}$ = ASD Design Load.

[9] Δ $\mathbf{V_{asd}}$ = Deflection at $\mathbf{V_{asd}}$ Design Load.

[10] V_n and V_{asd} for walls with height-to-length ratios (h:b) greater than 2¼:1, but not exceeding 4:1 shall be computed in accordance with Section 3.2.1.4 of this report.

[11] Series 200B values are limited to Series 200 values.

TABLE 2 – NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DISPLACEMENT (inches) FOR SHEAR WALLS WITH SUREBOARD® SERIES 200W / SERIES 200B STRUCTURAL PANELS ATTACHED TO LIGHT GAGE STEEL C-STUDS AT 16" O.C. WITH NO. 10 SCREWS (pounds per foot) [1,10,11]

STEEL FRAMING	No. 10 SCREW SPACING AT PANEL EDGES AND FIELD 2/6, INCHES ON CENTER [6]		
Minimum Gage[5]	V_n[2,3,4,7] (plf)	V_{asd}[2,3,8] (plf)	ΔV_{asd}[9] (inch)
No. 18-Ga. (0.043 in.)	2,168	703	0.14
No. 16-Ga. (0.054 in.)	2,704	923	0.18
No. 14-Ga. (0.071 in.)	2,755	934	0.15
No. 14-Ga. (0.071 in.) 2 Sided	5,091	1,922	0.29

For **SI:** 1 inch = 25.4 mm, 1 plf = 0.0146 N/mm.

[1] These values are for short-term loads due to wind or earthquake.

[2] The screws as described in Section 4.2.2 and installed in accordance with Section 3.3.2.2 of IAPMO ES ER-126.

[3] Tabulated values listed in tables are for panels applied to one side or two sides of a wall.

[4] For load and resistance factor design (LRFD) loads, the tabulated $\mathbf{V_n}$ load values shall be multiplied by the resistance factor 0.60 for Seismic or 0.65 for Wind.

[5] Section 4.3.1 in the evaluation report IAPMO ES ER-126, describes minimum base metal thickness associated with gages.

[6] All panel edges shall be blocked. Panels are installed vertically or horizontally. Fasteners shall be spaced a maximum of 6 inches on center along intermediate framing members.

[7] $\mathbf{V_n}$ = Nominal Strength.

[8] $\mathbf{V_{asd}}$ = ASD Design Load.

[9] Δ $\mathbf{V_{asd}}$ = Deflection at $\mathbf{V_{asd}}$ Design Load.

[10] V_n and V_{asd} for walls with height-to-length ratios (h:b) greater than 2¼:1, but not exceeding 4:1 shall be computed in accordance with Section 3.2.1.4 of this report.

[11] Series 200B values are limited to Series 200 values.

TABLE 3 – NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DISPLACEMENT (inches) FOR SHEAR WALLS WITH SUREBOARD® SERIES 200W / SERIES 200B STRUCTURAL PANELS ATTACHED TO LIGHT GAGE STEEL C-STUDS AT 24" O.C. WITH NO. 10 SCREWS (pounds per foot) [1,10,11]

STEEL FRAMING	No. 10 SCREW SPACING AT PANEL EDGES AND FIELD 2/6, INCHES ON CENTER [6]		
Minimum Gage[5]	V_n[2,3,4,7] (plf)	V_{asd}[2,3,8] (plf)	ΔV_{asd}[9] (inch)
No. 20-Ga. (0.033 in.)	1,518	505	0.11
No. 18-Ga. (0.043 in.)	1,791	631	0.12

For **SI**: 1 inch = 25.4 mm, 1 plf = 0.0146 N/mm.

[1] These values are for short-term loads due to wind or earthquake.
[2] The screws as described in Section 4.2.2 and installed in accordance with Section 3.3.2.2 of IAPMO ES ER-126.
[3] Tabulated values listed in tables are for panels applied to one side or two sides of a wall.
[4] For load and resistance factor design (LRFD) loads, the tabulated V_n load values shall be multiplied by the resistance factor 0.60 for Seismic or 0.65 for Wind.
[5] Section 4.3.1 in evaluation report IAPMO ES ER-126, describes minimum base metal thickness associated with gages.
[6] All panel edges shall be blocked. Panels are installed vertically or horizontally. Fasteners shall be spaced a maximum of 6 inches on center along intermediate framing members.
[7] V_n = Nominal Strength.
[8] V_{asd} = ASD Design Load.
[9] Δ V_{asd}= Deflection at V_{asd} design Load.
[10] V_n and V_{asd} for walls with height-to-length ratios (h:b) greater than 2¼:1, but not exceeding 4:1 shall be computed in accordance with Section 3.2.1.4 of this report.
[11] Series 200B values are limited to Series 200 values.

TABLE 4 – NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DISPLACEMENT (inches) FOR SHEAR WALLS WITH SURE-BOARD® SERIES 200W / SERIES 200B STRUCTURAL PANELS ATTACHED TO DF STUDS AT 16" O.C. MAXIMUM WITH 10D NAILS (pounds per foot) [1,9]

FRAMING	10d (2.25" min X .148) NAIL SPACING AT PANEL EDGES AND FIELD, INCHES ON CENTER [3]											
Stud: 2 x 4 stud grade DF	4/6			2/6			2/6 Two Sided*			3/6		
End post: 4 x 4 No. 1 grade DF *4 x 6 No. 1 grade DF	V_n[2,3,4,5,6] (plf)	V_{asd}[2,3,5,7] (plf)	ΔV_{asd}[8] (inch)	V_n[2,3,4,5,6] (plf)	V_{asd}[2,3,5,7] (plf)	ΔV_{asd}[8] (inch)	V_n[2,3,4,5,6] (plf)	V_{asd}[2,3,5,7] (plf)	ΔV_{asd}[8] (inch)	V_n[2,3,4,5,6] (plf)	V_{asd}[2,3,5,7] (plf)	ΔV_{asd}[8] (inch)
Sill and top plate: 2 x 4 standard grade DF *Sill Plate: 2x4 TimberStrand or standard grade DF	1,453	583	0.18	2,357	950	0.23	4,884	1,827	0.24	-------	-------	-----

For **SI:** 1 inch = 25.4 mm, 1 plf = 0.0146 N/mm.

[1] These values are for short-term loads due to wind or earthquake.
[2] The nails are described in Section 4.2.5 and are installed in accordance with Section 3.3.3.2 in IAPMO ES ER-126.
[3] All panel edges shall be blocked. Panels are installed vertically or horizontally. Fasteners shall be spaced a minimum of 6 inches on center along field framing members.
[4] For load and resistance factor design (LRFD) loads, the tabulated V_n load values shall be multiplied by the resistance factor 0.60 for Seismic or 0.65 for Wind.
[5] Tabulated values listed in tables are for panels applied to one side or two sides of a wall.
[6] V_n = Nominal Strength.
[7] V_{asd} = ASD Design Load.
[8] Δ V_{asd} = Deflection at V_{asd} Design Load.
[9] Series 200B values are limited to Series 200 values.

TABLE 5 – NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DISPLACEMENT (inches) FOR SHEAR WALLS WITH SURE-BOARD® SERIES 200 / SERIES 200B STRUCTURAL PANELS ATTACHED TO DF STUDS AT 16" O.C. WITH NO. 8 X 2" SCREWS (pounds per foot) [1,9]

FRAMING	No. 8 X 2" SCREW SPACING AT PANEL EDGES AND FIELD, INCHES ON CENTER [3]					
	2/12			2/12 (2-Sided) *		
Stud: 2 x 4 stud grade DF End post: 4 x 4 No. 1 grade DF Sill and top plate: 2 x 4 Standard grade DF *Sill Plate: 2x4 TimberStrand or standard grade DF	V_n[2,3,4,5,6] (plf)	V_{asd}[2,3,5,7] (plf)	ΔV_{asd}[8] (inch)	V_n[2,3,4,6] (plf)	V_{asd}[2,3,7] (plf)	ΔV_{asd}[8] (inch)
	2,751	1,086	0.23	4,501	1,800	0.23

For **SI:** 1 inch = 25.4 mm, 1 plf = 0.0146 N/mm.

[1] These values are for short-term loads due to wind or earthquake.

[2] The screws are described in Section 4.2.6 and are installed in accordance with Section 3.3.3.2 in IAPMO ES ER-126.

[3] All panel edges shall be blocked or backed. Panels are installed vertically or horizontally. Screws shall be spaced a minimum of 12 inches on center along field framing members.

[4] For load and resistance factor design (LRFD) loads, the tabulated V_n load values shall be multiplied by the resistance factor 0.60 for Seismic or 0.65 for Wind.

[5] Tabulated values listed in tables are for panels applied to one side or two sides of a wall.

[6] V_n = Nominal Strength.

[7] V_{asd} = ASD Design Load.

[8] Δ V_{asd} = Deflection at V_{asd} Design Load.

[9] Series 200B values are limited to Series 200 values.

TABLE 6 – NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DISPLACEMENT (inches) FOR SHEAR WALLS WITH SURE-BOARD® SERIES 200 / SERIES 200W / SERIES 200B STRUCTURAL PANELS ATTACHED TO LIGHT GAGE STEEL C-STUDS AT 16" O.C. WITH COMBINED SCREWS AND PNEUMATIC PINS MANUFACTURED BY AEROSMITH INC. (pounds per foot) [1,11,12]

FRAMING	SCREW / SCREW / PIN SPACING AT PANEL EDGES AND FIELD INCHES ON CENTER [3]											
	2/12/2[10] No. 18 gage 5/8" D/G			2/12/2[10] No. 16 gage 5/8" D/G			2/12/2[10] No. 18 gage ¼" M/B			2/12/2[10] No. 16 gage ¼" M/B		
No. 18 gage [6] 3 5/8" C-stud @ 16" O.C.	V_n[2,3,4,5,7] (plf)	V_{asd}[2,3,5,8] (plf)	ΔV_{asd}[9] (inch)	V_n[2,3,4,5,7] (plf)	V_{asd}[2,3,5,8] (plf)	ΔV_{asd}[9] (inch)	V_n[2,3,4,5,7] (plf)	V_{asd}[2,3,5,8] (plf)	ΔV_{asd}[9] (inch)	V_n[2,3,4,5,7] (plf)	V_{asd}[2,3,5,8] (plf)	ΔV_{asd}[9] (inch)
No. 16 gage [6] 3 5/8" C-stud @ 16" O.C.	2,449	975	0.21	2,825	1,100	0.24	2,201	811	0.17	2,495	932	0.19

For **SI:** 1 inch = 25.4 mm, 1 plf = 0.0146 N/mm.

[1] These values are for short-term loads due to wind or earthquake.

[2] The pins and screws are described in Section 4.2.4 and are installed in accordance with Section 3.3.2.2 in IAPMO ES ER-126.

[3] All panel edges shall be blocked. Panels are installed vertically or horizontally. Fasteners shall be spaced a minimum of 12 inches on center along field framing members.

[4] For load and resistance factor design (LRFD) loads, the tabulated V_n load values shall be multiplied by the resistance factor 0.60 for Seismic / 0.65 for Wind.

[5] Tabulated values listed in tables are for panels applied to one side or two sides of a wall.

[6] Section 3.3.2.1 in the evaluation report IAPMO ES ER-126, describes minimum base metal thickness associated with gages.

[7] V_n = Nominal Strength.

[8] V_{asd} = ASD Design Load.

[9] Δ V_{asd} = Deflection at V_{asd} Design Load.

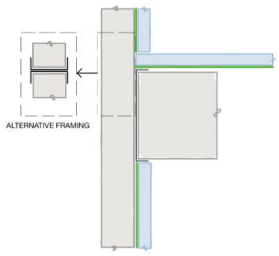
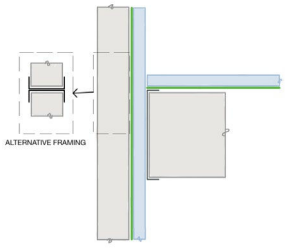
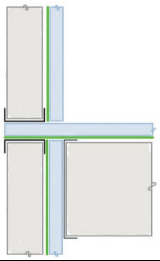
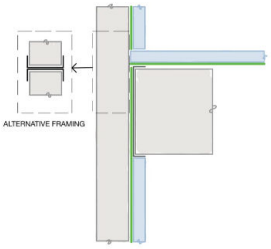
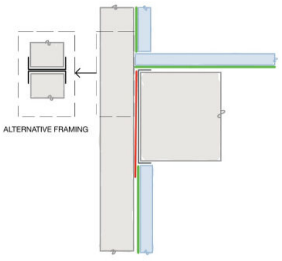
[10] Fastener Schedule:

A) All top/bottom tracks screwed only with No. 8 x 1¾ inch long self-tapping screws spaced at 2 inches on center maximum. **B)** No. 8 x 1¾ inch long self-tapping screws spaced at 12 inches on center maximum at all vertical studs/posts. **C)** 1¼ inch long x 0.100-inch diameter knurled shank for DensGlass Gold (**D/G)** and 1⅜ inch long x 0.100-inch diameter for Magnesium Oxide Board MgO (**M/B)** both spaced at 2" on center maximum. (Designation for fasteners **A)** = 2" o.c. **B)** = 12" o.c. **C)** = 2" o.c.)

[11] V_n and V_{asd} for walls with height-to-length ratios (h:b) greater than 2¼:1, but not exceeding 4:1 shall be computed in accordance with Section 3.2.1.4 of this report.

[12] Series 200B values are limited to Series 200 values.

TABLE 7 – DIAPHRAGM-TO-WALL GRAVITY LOAD SHEAR TRANSFER NOMINAL STRENGTH [1, 2, 3, 4, 5, 6]

Case	Description (*detailing for in-plane wall shear is the responsibility of the design professional of record*)	Illustrated Framing	Nominal strength, plf
1	Diaphragm ledger attached directly to wall framing.		3,021
2	Sure-Board® Series 200–5/8 in. Type X gypsum composite panel interposed/sandwiched between the ledger and wall framing.		3,144
3	Sure-Board® Series 200–5/8 in. Type X gypsum composite panel interposed/sandwiched between the ledger and wall framing ***and*** Sure-Board® Series 200S floor sheathing continuously across the ledger-to-wall interface to the top of the wall. Floor sheathing connected to the top of the wall with No. 8 screws at 6 inches on center maximum.		5,922
4	Sure-Board® Series 200–5/8 in. Type X gypsum composite panel with the gypsum panel terminating below joists and the steel sheet extending along the joist between the ledger and wall framing.		4,764
5	54 mil steel plate interposed/sandwiched between the ledger and wall framing with Sure-Board® Series 200–5/8 in. Type X gypsum composite panel attached to 54 mil plate below joists via a 2-in. panel-plate lap joint.		5545

1. Ledger attached to the wall with a minimum of two No. 12 screws at each stud.
2. Joists attached to the ledger with a 54-mil clip-angle and three No. 10 screws each leg, minimum.
3. In-line framing. Joists and wall studs are 24 inches on center maximum.
4. Case 3— Sure-Board® Series 200S floor sheathing attached to joists with No. 8 screws at 6 inches on center at sheathing perimeter maximum. Series 200S floor sheathing shall comply with ER-185.
5. Case 5—54 mil plate attached to the wall framing and wall sheathing with No. 8 screws at 6 inches on center maximum.
6. Available strength shall be determined using ϕ = 0.5 for Load and Resistance Factor Design (LRFD) and Ω = 3.0 for allowable stress design (ASD).

TABLE 8 – $G_{a'}$ FOR TABLE 1 (NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DISPLACEMENTS (inches) FOR SHEAR WALLS WITH SURE-BOARD® SERIES 200/200W/200B STRUCTURAL PANELS ATTACHED TO CFS C-STUDS AT 24" O.C. MAXIMUM WITH SCREWS)[1,2,3,4]

Framing	Fastener Spacing at Panel Edges, inches on center							
Reference Gauge No. (Minimum Thickness)	6		4		3		2	
	V_n (plf)	$G_{a'}$ (kips/in)	V_n (plf)	$G_{a'}$ (kips/in)	V_n (plf)	$G_{a'}$ (kips/in)	V_n (plf)	$G_{a'}$ (kips/in)
20 (0.0329 in.)	1,085	44.2	1,545	27.0	1,730	22.9	1,915	19.8
18 (0.0428 in.)	1,405	30.9	1,925	19.6	2,821	11.1	2,989	10.2
16 (0.0538 in.)	1,697	23.6	2,306	15.0	2,957	10.3	3,647	7.50
14 (0.0677 in)	---	---	---	---	---	---	3,292	8.70

[1] Values apply to walls where boundary/chord studs are the same gauge/thickness as the intermediate framing or one gauge/thickness greater than intermediate framing.
[2] For double-sided walls, $G_{a'}$ values shall be multiplied by 1.4 (40 percent increase).
[3] Where studs are spaced greater than 16 in. on center, $G_{a'}$values shall be multiplied by 0.85.
[4] $G_{a'}$ values are conservative for Series 200B applications.

TABLE 9 – $G_{a'}$ FOR TABLE 4 (NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DISPLACEMENTS (inches) FOR SHEAR WALLS WITH SURE-BOARD® SERIES 200W STRUCTURAL PANELS ATTACHED TO DF STUDS AT 16" O.C. MAXIMUM WITH 10d NAILS)[1]

Framing	10d (2.25" min x 0.148") NAIL SPACING AT PANEL EDGES AND FIELD, INCHES ON CENTER							
Stud: 2 by 4 stud grade DF *End post*: 4 by 4 No. 1 grade DF **End post*: 4 by 6 No. 1 grade DF *Sill/top plate*: 2 by 4 Standard grade DF **Sill plate*: 2 by 4 TimberStrand or Standard grade DF	4/6		2/6		2/6 Two-Sided*		3/6	
	V_n (plf)	$G_{a'}$ (kips/in)	V_n (plf)	$G_{a'}$ (kips/in)	V_n (plf)	$G_{a'}$ (kips/in)	V_n (plf)	$G_{a'}$ (kips/in)
	1,453	21.5	2,357	11.5	-----	-----	-----	-----

[1] Where wood framing is other than Douglas Fir or Douglas Fir-Larch, the tabulated $G_{a'}$ values shall be multiplied by a wood specific gravity (G) adjustment factor η = 1 / (1 – (0.5 – G)). G values may be taken from the ANSI/AWC National Design Specification (NDS) for Wood Construction.

TABLE 10 – $G_{a'}$ FOR TABLE 5 (NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DISPLACEMENTS (inches) FOR SHEAR WALLS WITH SURE-BOARD® SERIES 200/200B STRUCTURAL PANELS ATTACHED TO DF STUDS AT 16" O.C. MAXIMUM WITH No. 8 x 2" SCREWS)[1,2]

Framing	No. 8 x 2" SCREW SPACING AT PANEL EDGES AND FIELD, INCHES ON CENTER			
Stud: 2 by 4 stud grade DF *End post*: 4 by 4 No. 1 grade DF *Sill/top plate*: 2 by 4 Standard grade DF **Sill plate*: 2 by 4 TimberStrand or Standard grade DF	2/12		2/12 Two-Sided*	
	V_n (plf)	$G_{a'}$ (kips/in)	V_n (plf)	$G_{a'}$ (kips/in)
	2,751	15.0	4,501	18.0

[1] Where wood framing is other than Douglas Fir or Douglas Fir-Larch, the tabulated $G_{a'}$ values shall be multiplied by a wood specific gravity (G) adjustment factor η = 1 / (1 – (0.5 – G)). G values may be taken from the ANSI/AWC National Design Specification (NDS) for Wood Construction.
[2] Ga' values are conservative for Series 200B applications.

CALIFORNIA SUPPLEMENT

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SURE-BOARD® SERIES 200, 200W, AND 200B STRUCTURAL PANELS INSTALLED ON COLD-FORMED STEEL OR WOOD-FRAMED SHEAR WALLS

CSI Sections:

05 40 00 Cold-Formed Metal Framing
06 12 00 Structural Panels
06 16 00 Sheathing

1.0 SCOPE OF EVALUATION

1.1 Compliance with the following codes:

- 2022 California Building Code® (CBC)

1.2 Recognition: The Sure-Board® Series 200, 200W, and 200B Structural Panels evaluated in IAPMO UES ER-126 comply with the CBC, subject to additional requirements in Sections 2.0, 3,0, 4.0, 5.0, and 6.0 of this supplement.

2.0 PRODUCT USE

The structural panels are alternatives to Cold-Formed Steel or Wood stud shear wall systems described in Sections 2211 and 2305, respectively, of the CBC.

3.0 PRODUCT DESCRIPTION

3.1 Steel Framing: Steel framing shall be in accordance with Section 2211 of the CBC.

3.2 Wood Framing: Minimum framing members shall conform to Chapter 23 of the CBC.

4.0 DESIGN AND INSTALLATION

4.1 Shear Wall Design: Design provisions in Sections 3.2 of ER-126 shall apply except where modified by Chapters 16, 22, and 23, and Chapters 16A, 22A, and 23A of the CBC as applicable and as follows. The Nominal (V_n) and Allowable Stress Design (V_{asd}) shear values for wind and earthquake forces are shown in Tables 1, 1A, 2, 3, 4, 5, and 6 of ER-126 with associated deflections for shear walls using Sure-Board® Series 200, 200W, and 200B Structural Panels attached to Cold-Formed Steel or Wood studs. Nominal shear values shall be multiplied by the appropriate strength reduction factor to determine LRFD design strength in accordance with footnote 4 of Tables 1, 1A, 2, 3, 4, 5, and 6 of ER-126 as set forth in Section 2211.1 of the IBC.

The collector design shall comply with the CBC and be sized to exceed the loads resisted by the shear wall. Wall anchorage shall comply with CBC Sections 2212.5.2 or 2211A.4, as applicable. Cold-Formed Steel or Wood framing design for out-of-plane and axial loads shall comply with the CBC. For installation in Seismic Design Category C, D, E, and F, additional requirements for steel framing in Section 2211 of the CBC shall be observed.

For uses regulated by the California Department of Health Care Access and Information (HCAI), (formerly OSHPD), structures not assigned to Seismic Design Category E or F shall be assigned to Seismic Design Category D.

4.2 Installation

4.2.1 Steel/Wood Framing: Installation provisions in Section 3.3 of ER-126 shall apply to the CBC except where modified as follows. Sure-Board® Series 200, 200W, and 200B Structural Panels are placed with the long dimension parallel or perpendicular to stud framing. The steel face shall be in contact with the framing. All panel edges, top, and bottom shall be fully blocked by framing studs, track, blocking, or flat straps of the same gage as the framing material and include an end collector element to be determined by the registered design professional using the CBC.

4.3 Special Inspections

When required by the building official, periodic special inspections for seismic or wind resistance shall be in accordance with the requirements of CBC Chapter 17 or Chapter 17A, as applicable, corresponding to the applicable type (wood or cold-formed steel) of light-framed construction.

5.0 LIMITATIONS

The Sure-Board® Series 200, 200W, and 200B Structural Panels, described in ER-126 and this report supplement, comply with the codes listed in Section 1.1 of this supplement, subject to the conditions in ER-126, except where modified as follows:

5.1 The Sure-Board® Series 200, 200W, and 200B Structural Panels shall comply with the provisions in IAPMO UES ER-126 applicable to the 2021 IBC for use under the 2022 CBC.

5.2 The Nominal (V_n) and Allowable Stress Design (V_{asd}) shear values for wind and earthquake forces are shown in

Tables 1, 1A, 2, 3, 4, 5, and 6 of ER-126. To determine the LRFD design values, the appropriate strength reduction factor, in accordance with Sections 2211 or 2305 of the CBC shall be applied.

5.3 Applied loads shall be adjusted in accordance with Section 1605 or 1605A of the CBC, as applicable. Calculations shall demonstrate in addition to other requirements as stipulated by the building official, that the applied loads are less than the design loads described in CBC and this report. Building design calculations and details shall be prepared, stamped, and signed by a California registered design professional.

5.4 This supplement expires concurrently with ER-126.

6.0 SUBSTANTIATING DATA

6.1 Data in accordance with the IAPMO Uniform ES Evaluation Criteria for the Testing and Analysis of Steel Sheet Sheathing for Wood and Cold-Formed Steel Light-Framed Structure Shear Walls (EC-003), adopted January 2022.

6.2 Data for Diaphragm to wall gravity load shear transfer, including load tests and analyses.

6.3 Quality control manual.

6.4 The test reports are from laboratories in compliance with ISO/IEC 17025.

LOS ANGELES SUPPLEMENT

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CSI Sections:

05 40 00 Cold-Formed Metal Framing
06 12 00 Structural Panels
06 16 00 Sheathing

1.0 RECOGNITION

The Sure-Board® Series 200, 200W, and 200B Structural Panels as evaluated and represented in IAPMO UES Evaluation Report ER-126 and with changes as noted in this supplement are a satisfactory alternative for use in buildings built under the following codes:

- 2023 Los Angeles Building Code (LABC)

2.0 LIMITATIONS

Use of the Sure-Board® Series 200, 200W, and 200B Structural Panels recognized in this report is subject to the following limitations:

2.1 The Sure-Board® Series 200, 200W, and 200B Structural Panels shall comply with the provisions in the California Supplement of IAPMO UES ER-126 applicable to the 2022 CBC for use under the 2023 LABC.

2.2 Building design calculations and details shall be prepared, stamped, and signed by a California registered design professional.

2.3 Design, installation, and inspection shall be in accordance with Chapters 16 and 17 of the LABC, as applicable, due to local amendments to these chapters.

2.4 All shear walls shall be provided with holdowns.

2.5 When designing with Sure-Board® Series 200 and 200W, the engineer of the record shall check:

- All beams under the Sure-Board® Series 200 and 200W for uplift and overturning.
- Foundation design for overturning, compression, and tension.
- The allowable vertical load on header.
- The hold-down bolt capacity based on reduced edge and end distances detailed on plans.
- The drag force at top plates from lateral force distribution in the same shear wall line.
- Bearing pressure to the sill plate when there are additional vertical loads on top of the Sure-Board® Series 200 and 200W.

2.6 All nominal and allowable capacities provided in the attached report, ER-126 shall not be increased for short-term (transient) loading.

2.7 Panels located in exterior walls shall be covered with an approved weather-resistant exterior wall envelope complying with Section 1402 of the 2023 LABC.

2.8 Panels shall be installed with the published installation instructions by the manufacturer.

2.9 Fabrication of Sure-Board® Series 200, 200W, and 200B shall be in the shop of a fabricator licensed by the City of Los Angeles Department of Building and Safety, in accordance with the Manufacturing Standards submitted to the Department.

2.10 This supplement expires concurrently with ER-126.