



Report Number: 0126
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DIVISION: 05-METALS
Section: 05160-Metal Framing Systems

REPORT HOLDER:
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EVALUATION SUBJECT:

Sure-Board® Series 200 and 200W Structural Panels Installed on Cold-Formed Steel or Wood Framed Shear Walls

1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2006 *International Building Code® (IBC)*
- 2006 *International Residential Code® (IRC)*
- 2007 *California Building Code® (CBC)*

1.2 Evaluated in accordance with:

- EC 003-2009 dated August 11, 2009

Properties evaluated:

- Structural

2.0 DESCRIPTION

2.1 General:

Sure-Board® Series 200 and 200W Structural Panels are panels attached to Cold-Formed Steel or Wood framing for shear wall applications. The panels are directly applied to the studs at 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 not to exceed gypsum manufacturer recommendations or must 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 non-combustible and combustible assemblies as permitted by the model codes in all Seismic Design Categories.

The structural panels are an alternative to Cold-Formed Steel or Wood stud/shear wall systems described in Section 2210.5 of the 2006 International Building Code (IBC) / Chapter 23 for Wood of the 2006 International Building Code (IBC), Section 2210 of the 2007 California Building Code (CBC), and the ASCE/SEI 7-05. The structural panels may also be used where an engineered design is submitted in accordance with Section R301.1.2 of the 2006 International Residential Code (IRC).

2.2 Materials:

2.2.1 Sure-Board® Series 200 and 200W Structural Panels:

Sure-Board® Series 200 Structural Panels consist of 1/2 to 3/4-inch thick (12.7 to 19.0 mm), tapered or square-edged, non-rated or Type "X" fire rated gypsum wallboard complying with ASTM C 1396, C1278 and C1177 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 A 653 CS, Grade 33 minimum, and is provided with a G40 hot-dipped galvanized coating conforming to ASTM A 924. Available in widths of 48 inches (1219 mm) and standard lengths of 8, 9, 10 and 12 feet (2438, 2743, 3048 and 3658 mm).

Sure-Board® Series 200W Structural Panels consist of 1/8" (3.2mm) thick Medium Density Fiberboard (MDF) panels or equal non-combustible square edged sheet complying with ANSI A208.2, 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 A 653 CS, Grade 33 minimum, and is provided with a G40 hot-dipped galvanized coating conforming to ASTM A 924. 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.



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2.2.2 Fasteners:

a.) The fasteners used for attaching the Sure-Board® Series 200 Structural Panels to steel framing are self-drilling/self tapping/#2 pilot point bugle head screws. No. 8 minimum diameter 0.138 inch (3.5mm), with a minimum 0.3145 inch (8.0 mm) head diameter and 1.25 inch (31.7 mm) minimum length, complying with SAE J78 and ASTM C 954.

b.) The fasteners used for attaching the Sure-Board® Series 200W Structural Panels to steel framing are No.10 minimum diameter 0.19 inch (4.83mm), with a minimum 0.3145 inch (8.0 mm) diameter pan head and 0.75 inch (19.0mm) minimum length screw, complying with SAE J78 and ASTM C954.

c.) The fasteners used for attaching Sure-Board® Series 200/200W Structural Panels to steel framing can also include pneumatic pins per cyclic test data for specific assemblies listed in Table 6 and 6A of this report. Manufacturers of pneumatic pins shall maintain approvals for tested products to qualify for tested assemblies in this report. Those manufacturers are Aero Smith Inc. and ITW at this time.

d.) The fasteners used for attaching the Sure-Board® Series 200W Structural Panels to wood framing are smooth shank 10d plywood nail (2.25 inch X 0.148 minimum)

e.) Sure-Board® Series 200 Structural Panels are attached to wood framing with #8 X 2 inch minimum drywall wood screws.

2.2.3 Steel Framing:

In this report, for steel framing members refer to the following gage reference numbers, minimum design base-metal thicknesses:

No. 14 gage : 0.071 inch (1.81mm)

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)

Steel studs for shear walls are C-shaped, with a minimum depth of 3 ½ inches (89mm) and a minimum flange width of 1 5/8 inches (41mm) , with a 3/8-inch (9.5 mm) return lip for C-shaped stud. Tracks shall be a minimum of 3 ½ inches (89mm) wide, with minimum 1¼-inch (31.7 mm) flanges.

No.14 and No.16 gage steel members must comply with ASTM A 653 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 must comply with ASTM A 653 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 of record in accordance with Section 2210.5 of the 2006 IBC, Section 2210 of the 2007 CBC, Section R301.1.2 of the 2006 IRC, 2004 AISI and ASCE/SEI 7-05. Collector post at each end of shear wall to be minimum double stud and same gage as framing material (unless required by this report to be heavier gage as tested.) Actual collectors may be increased to larger or heavier gage element. This is to be determined by the licensed design professional of record.

Wood Framing:

Minimum framing members are to be stud and construction grade Douglas Fir (D.F.) or equal with a Specific Gravity (S.G.) of 0.49, conforming to Chapter 23 of the 2006 IBC, Section 2210 of the 2007 CBC and the 2006 IRC. Minimum framing members for shear walls shall be nominal 2X4 stud grade D.F. or equal.

End Posts for shear walls shall be minimum 4X4 #1 grade (D.F.) or equal. Sill Plates for shear walls shall be minimum 2X4 Stand/Btr (D.F.) or equal.

Sill Plates for 2 sided shear walls shall be minimum 2X4 Timberstrand®, 3X4 pressure treated D.F., or equal.

Fire Treated framing material has been tested with Sure-Board® panels. All stated load capacities in Tables 4 and 5 will remain as stated in report.

2.3 Shear Wall Design:

Permitted nominal shear values for wind and earthquake forces are shown in tables 1, 1A, 2, 3, 4, 5, 6 and 6A with associated deflections for shear walls using Sure-Board® Series 200 and 200W 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, 6 and 6A as



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set forth in Section 2210.5 or Chapter 23 of the IBC, Section 2210 of the 2007 CBC and R301.1.2 of the 2006 IRC.

The maximum shear-wall height-to-width ratio is 2 ¼: 1. Panels must be fastened in accordance with footnote 2 of tables 1, 1A, 2, 3, 4, 5, 6 and 6A.

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 licensed design professional of record must provide appropriate design and detailing to the building official. The collector design shall comply with the 2006 IBC, 2007 CBC or 2006 IRC and to be sized to exceed the loads resisted by the shear wall.

Cold-Formed Steel or Wood framing design for out-of-plane and axial loads shall comply with the 2006 IBC, 2007 CBC or 2006 IRC. For installation in Seismic Design Category C, D, E and F, additional requirements in Section 2210.5 and Chapter 23 of the 2006 IBC, Section 2210 of the 2007 CBC, or 2006 IRC, and 2004 AISI and ASCE/SEI 7-05 apply.

2.4 Installation:

2.4.1 Steel Framing:

Installation must be in accordance with this report and the manufacturer's published **Installation and Cutting Sure-Board® Series 200** instructions. Field repair of Sure-Board® Series 200 panels with surface damaged gypsum wallboard may be accomplished following Section 3 of **Installation and Cutting Sure-Board® Series 200**, available from the manufacturer upon request or online at www.sureboard.com.

Sure-Board® Series 200 and 200W Structural Panels are placed with the long dimension parallel or perpendicular to stud framing. The steel face must be in contact with the framing. All panel edges, top and bottom must be fully blocked by framing studs, track, blocking, or flat strap of the same gage as the framing material and include an end collector element to be determined by the Design Professional and the Engineer of Record using the current version of the 2006 IBC, 2007 CBC, 2006 IRC, 2004 AISI

and the ASCE/SEI 7-05 seismic provisions. Minimum required collector elements are defined in Section 2.2.3/Steel Framing, 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 are installed in one operation through the panels into the framing. Screws or pneumatic pin heads are required to be located 3/8 inch minimum from panel edges. Screw heads will be driven flush with surface. Screws must penetrate at least three exposed threads into framing members.

A minimum panel size of 24 inch by 96 inch is acceptable, provided all perimeter edges are fastened to framing members at the required spacing. All panels may be fastened at panel joint stud without staggering the fasteners at each panel. No panels may be lapped over another at these lap joint studs. Joint spacing between panels can be 0 inch to 1/8 inch. Top and Bottom track gap to floor or ceiling is not limited except that panels must have at least 1 inch minimum track leg height behind panel edge, without adding additional backing for fasteners. The designed fastener spacing is to apply to each panel edge. No panel edges can be lapped and attached with a single row of fasteners.

Holes cut in Sure-Board® panels must follow the recommended literature supplied by manufacturer and recommendations of the Design Professional and the Engineer of Record.

2.4.2 Wood Framing:

Installation must be in accordance with this report and the manufacturer's published installation instructions. Field repair of Sure-Board® Series 200 panels with surface damaged gypsum wallboard may be accomplished following Section 3 of **Installation and Cutting Sure-Board® Series 200**, available from the manufacturer upon request or online at www.sureboard.com.

Sure-Board® Series 200W and 200 Structural Panels are placed with the long dimension parallel or perpendicular to stud framing. The steel face must be in contact with the framing. All panel edges must be fully blocked by framing studs, blocking or plates. Maximum stud spacing as tested shall not exceed

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16"o.c. Nail and screw heads are required to be located 3/8 inch minimum from panel edges. Nail and screw heads will be installed flush with surface of MDF, non-combustible sheathing or gypsum wallboard to accommodate application of finish material where required.

A minimum panel size of 24 inch by 96 inch is acceptable provided all perimeter edges are fastened to framing members at the required spacing. All panels may be fastened at panel joint stud without staggering the fasteners at each panel. No panels may be lapped over another at these lap joint studs. Joint spacing between panels can be 0 inch to 1/8 inch. Top and Bottom plate gap to floor or ceiling is not limited except that panels must have at least 1 inch minimum plate thickness behind panel edge, without adding additional blocking for fasteners. The designed fastener spacing is to apply to each panel edge. No panel edges can be lapped and attached with a single row of fasteners.

Holes in Sure-Board® panels must follow the recommended literature supplied by manufacturer and recommendations of the licensed design professional of record.

2.5 Identification:

The Sure-Board® Series 200 and 200W Structural Panels are identified by a label located on the top right and bottom left hand corners of the metal facing. The label notes the Intermat company name, product name and the evaluation report number (IAPMO ES ER-0126).

3.0 Findings:

The Sure-Board® Series 200 and 200W Structural Panels, described in this report, comply with the codes listed in Section 1.0 of this report, subject to the following conditions:

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

3.2 Nominal shear values for shear walls are limited to the values noted in Table 1, 1A, 2, 3, 4, 5, 6 and 6A. To determine the allowable shear values or design strength values, the appropriate safety factor or strength reduction factor, in accordance with Section 2210.5 or Chapter 23 of the IBC, Section 2210 of the 2007 CBC or Section R301.1.2 of the 2006 IRC must be applied.

3.3 Plans and calculations demonstrating compliance with codes listed in Section 1.0 and this report are submitted to the building official for approval.

3.4 Applied loads are adjusted in accordance with 2210.5 of the 2006 IBC, 2007 CBC, or R301.1.2 of the 2006 IRC. 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 2006 IBC, 2007 CBC, or 2006 IRC and this report.

3.5 All allowable load capacities attached to this report do not include 1.33 stress increase. The 1.33 increase for transient loads shall not be applied to allowable shear loads for these products.

3.6 The panels are produced at CEMCO, WARE INDUSTRIES, WELLBILT and INTERMAT facilities.

4.0 Evidence Submitted:

Data in accordance with the IAPMO ES Evaluation Criteria for the Testing and Analysis of Steel Sheet Sheathing for Wood and Cold Formed Steel Light Framed Structure Shear Walls (EC 003-2009) and an IAPMO approved quality control manual.



IAPMO #0126

A handwritten signature in black ink, appearing to read 'Amir' followed by a flourish.

Director of Evaluation Services

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TABLE 1 - NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DISPLACEMENT (inches) FOR SHEAR WALLS WITH SURE-BOARD® SERIES 200 STRUCTURAL PANELS ATTACHED TO LIGHT GAGE STEEL C-STUDS AT 24" O.C. WITH SCREWS (pounds per foot) ¹

STEEL FRAMING	FASTENER SPACING AT PANEL EDGES INCHES ON CENTER ⁶											
	6			4			3			2		
	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)
20 (0.033 inch)	1,085	434	0.21	1,545	618	0.21	1,730	692	0.24	1,915	766	0.26
18 (0.043 inch)	1,405	562	0.24	1,925	770	0.23	2,821 ₁₀	1,126	0.25	2,989 ₁₀	1,196	0.21
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
14 (0.071 inch)	-----	-----	-----	-----	-----	-----	-----	-----	-----	3,292	1,257	0.24
14 (0.071 inch) 2-Sided *Fasteners 6" O.C. into intermediate framing	-----	-----	-----	-----	-----	-----	-----	-----	-----	4,635	1,700	0.22

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

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

² The screws are described in Section 2.2.2 and are installed in accordance with Section 2.4 of IAPMO ES ER-0126.

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 must be multiplied by the resistance factor $\Phi = 0.55$ for Seismic / 0.60 for Wind.

⁵ Section 2.2.3 in IAPMO ES ER-0126, describes minimum base metal thickness associated with gages.

⁶ All panel edges must be blocked. Panels can be installed vertically or horizontally. Fasteners must be spaced a maximum of 12 inches on center along intermediate framing members, except as noted in Table 1 above.

⁷ **V_n** = Nominal Strength.

⁸ **V_{asd}** = ASD Design Load.

⁹ **Δ V_{asd}** = Deflection at **V_{asd}** design Load.

¹⁰ Nominal strength is based on double c-stud collector to be designed using one gage thicker than the framing material used in shear wall.

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

STEEL FRAMING	FASTENER SPACING AT PANEL EDGES INCHES ON CENTER ⁶											
	6			4			3			2		
Minimum Gage ⁵	Vn 2,3,4,7 (plf)	Vasd 2,3,8 (plf)	ΔVasd 9 (inch)	Vn 2,3,4,7 (plf)	Vasd 2,3,8 (plf)	ΔVasd 9 (inch)	Vn 2,3,4,7 (plf)	Vasd 2,3,8 (plf)	ΔVasd 9 (inch)	Vn 2,3,4,7 (plf)	Vasd 2,3,8 (plf)	ΔVasd 9 (inch)
14 (0.071 inch) 2-Sided	-----	-----	-----	-----	-----	-----	-----	-----	-----	5,079	1,897	0.26

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

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

² The screws are described in Section 2.2.2 and are installed in accordance with Section 2.4 of IAPMO ES ER-0126

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 Vn load values must be multiplied by the resistance factor $\Phi = 0.55$ for Seismic / 0.60 for Wind.

⁵ Section 2.2.3 in IAPMO ES ER-0126, describes minimum base metal thickness associated with gages.

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

⁷ Vn = Nominal Strength.

⁸ Vasd = ASD Design Load.

⁹ Δ Vasd = Deflection at Vasd design Load.

TABLE 2 - NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DISPLACEMENT (inches) FOR SHEAR WALLS WITH SUREBOARD® SERIES 200W STRUCTURAL PANELS ATTACHED TO LIGHT GAGE STEEL C-STUDS AT 16" O.C. WITH #10 SCREWS (pounds per foot) ¹

STEEL FRAMING	#10 SCREW SPACING AT PANEL EDGES AND FIELD 2/6, INCHES ON CENTER ⁶		
Minimum Gage ⁵	Vn 2,3,4,7 (plf)	Vasd 2,3,8 (plf)	ΔVasd 9 (inch)
18-Ga. (0.043 in.)	2,168	703	0.14
16-Ga. (0.054 in.)	2,704	923	0.18
14-Ga. (0.071 in.)	2,755	934	0.15
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 2.2.2 and installed in accordance with Section 2.4 of IAPMO ES ER-0126

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 Vn load values must be multiplied by the resistance factor $\Phi = 0.55$ for Seismic / 0.60 for Wind.

⁵ Section 2.2.3 in evaluation report IAPMO ES ER-0126, describes minimum base metal thickness associated with gages.

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

⁷ Vn = Nominal Strength.

⁸ Vasd = ASD Design Load.

⁹ Δ Vasd = Deflection at Vasd design Load.

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TABLE 3 - NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DISPLACEMENT (inches) FOR SHEAR WALLS WITH SUREBOARD® SERIES 200W STRUCTURAL PANELS ATTACHED TO LIGHT GAGE STEEL C-STUDS AT 24" O.C. WITH #10 SCREWS (pounds per foot)¹

STEEL FRAMING	#10 SCREW SPACING AT PANEL EDGES AND FIELD 2/6, INCHES ON CENTER ⁶		
Minimum Gage ⁵	Vn 2,3,4,7 (plf)	Vasd 2,3,8 (plf)	Δ Vasd 9 (inch)
20-Ga. (0.033 in.)	1,518	505	0.11
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 2.2.2 and installed in accordance with Section 2.4 of IAPMO ES ER-0126.
- 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 **Vn** load values must be multiplied by the resistance factor $\Phi = 0.55$ for Seismic / 0.60 for Wind.
- ⁵ Section 2.2.3 in evaluation report IAPMO ES ER-0126, describes minimum base metal thickness associated with gages.
- ⁶ All panel edges must be blocked. Panels are installed vertically or horizontally. Fasteners must be spaced a minimum of 6 inches on center along intermediate framing members.
- ⁷ **Vn** = Nominal Strength.
- ⁸ **Vasd** = ASD Design Load.
- ⁹ ^Δ **Vasd** = Deflection at **Vasd** design Load.

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

FRAMING	10d (2.25"min X .148) NAIL SPACING AT PANEL EDGES AND FIELD, INCHES ON CENTER ³											
	4/6			2/6			2/6 Two Sided*			3/6		
Stud: 2 x 4 stud grade DF End post: 4 x 4 No. 1 grade DF *4 x 6 No. 1 grade DF Sill and top plate: 2 x 4 standard grade DF	Vn 2,3,4,5,6 (plf)	Vasd 2,3,5,7 (plf)	ΔVasd 8 (inch)	Vn 2,3,4,5,6 (plf)	Vasd 2,3,5,7 (plf)	ΔVasd 8 (inch)	Vn 2,3,4,5,6 (plf)	Vasd 2,3,5,7 (plf)	ΔVasd 8 (inch)	Vn 2,3,4,5,6 (plf)	Vasd 2,3,5,7 (plf)	ΔVasd 8 (inch)
	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 2.2.2 and are installed in accordance with Section 2.4 in IAPMO ES ER-0126.
- ³ All panel edges must be blocked. Panels are installed vertically or horizontally. Fasteners must be spaced a minimum of 6 inches on center along field framing members.
- ⁴ For load and resistance factor design (LRFD) loads, the tabulated **Vn** load values must be multiplied by the resistance factor $\Phi = 0.55$ for Seismic / 0.60 for Wind.
- ⁵ Tabulated values listed in tables are for panels applied to one side or two sides of a wall.
- ⁶ **Vn** = Nominal Strength.
- ⁷ **Vasd** = ASD Design Load.
- ⁸ ^Δ **Vasd** = Deflection at **Vasd** design Load.

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TABLE 5 - NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DISPLACEMENT (inches) FOR SHEAR WALLS WITH SURE-BOARD® SERIES 200 STRUCTURAL PANELS ATTACHED TO DF STUDS AT 16" O.C. WITH #8 X 2" SCREWS (pounds per foot) ¹

FRAMING	#8 X 2" SCREW SPACING AT PANEL EDGES AND FIELD, INCHES ON CENTER ³											
	2/12			2/12			2/12			2/12		
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	Vn 2,3,4,5,6 (plf)	Vasd 2,3,5,7 (plf)	ΔVasd 8 (inch)	Vn 2,3,4,5,6 (plf)	Vasd 2,3,5,7 (plf)	ΔVasd 8 (inch)	Vn 2,3,4,5,6 (plf)	Vasd 2,3,5,7 (plf)	ΔVasd 8 (inch)	Vn 2,3,4,5,6 (plf)	Vasd 2,3,5,7 (plf)	ΔVasd 8 (inch)
	-----	-----	-----	2,332	847	0.20	-----	-----	-----	-----	-----	-----

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 or screws are described in Section 2.2.2 and are installed in accordance with Section 2.4 in IAPMO ES ER-0126.

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

⁴ For load and resistance factor design (LRFD) loads, the tabulated **Vn** load values must be multiplied by the resistance factor $\Phi = 0.55$ for Seismic / 0.60 for Wind.

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

⁶ **Vn** = Nominal Strength.

⁷ **Vasd** = ASD Design Load.

⁸ **ΔVasd** = Deflection at **Vasd** design Load.

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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 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

FRAMING	SCREW / SCREW / PIN SPACING AT PANEL EDGES AND FIELD INCHES ON CENTER ³											
	2/12/2 ¹⁰ 18 gage 5/8" D/G			2/12/2 ¹⁰ 16 gage 5/8" D/G			2/12/2 ¹⁰ 18 gage 1/4" M/B			2/12/2 ¹⁰ 16 gage 1/4" M/B		
18 gage ⁶ 3 5/8" C-stud @ 16" O.C.	Vn 2,3,4,5,7 (plf)	Vasd 2,3,5,8 (plf)	Δ Vasd ⁹ (inch)	Vn 2,3,4,5,7 (plf)	Vasd 2,3,5,8 (plf)	Δ Vasd ⁹ (inch)	Vn 2,3,4,5,7 (plf)	Vasd 2,3,5,8 (plf)	Δ Vasd ⁹ (inch)	Vn 2,3,4,5,7 (plf)	Vasd 2,3,5,8 (plf)	Δ Vasd ⁹ (inch)
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 2.2.2 and are installed in accordance with Section 2.4 in IAPMO ES ER-0126.

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

⁴ For load and resistance factor design (LRFD) loads, the tabulated **Vn** load values must be multiplied by the resistance factor $\Phi = 0.55$ for Seismic / 0.60 for Wind.

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

⁶ Section 2.2.3 in evaluation report IAPMO ES ER-0126, describes minimum base metal thickness associated with gages.

⁷ **Vn** = Nominal Strength.

⁸ **Vasd** = ASD Design Load.

⁹ **Δ Vasd** = Deflection at **Vasd** design Load.

¹⁰ Fastener Schedule :

A) All top/bottom track screwed only with: #8 x 1 3/4" self tapping screws at 2" o.c. **B)** #8 x 1 3/4" self tapping screws at 12" o.c. at all vertical studs/posts **C)** 1 1/4" x 0.100-in knurled shank for **D/G** and 1 3/8" x 0.100-in for **M/B** both at 2" o.c. between screws.

(Designation for fasteners **A**) = 2" o.c. **B**) = 12" o.c. **C**) = 2" o.c.)

EVALUATION REPORT



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TABLE 6A - NOMINAL AND ALLOWABLE SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DISPLACEMENT (inches) FOR SHEAR WALLS WITH SURE-BOARD® SERIES 200 STRUCTURAL PANELS ATTACHED TO LIGHT GAGE STEEL C-STUDS AT 16" O.C. WITH COMBINED SCREWS AND PNEUMATIC PINS MANUFACTURED BY ITW (pounds per foot)¹

FRAMING	SCREW / SCREW / PIN SPACING AT PANEL EDGES AND FIELD INCHES ON CENTER ³											
	2/12/2 ¹⁰ 18 gage 5/8" D/G			2/12/2 ¹⁰ 16 gage 5/8" D/G			2/12 ¹¹ 18 gage 5/8" D/G			2/12 ¹¹ 16 gage 5/8" D/G		
18 gage ⁶ 3 5/8" C-stud @ 16" O.C.	Vn 2,3,4,5,7 (plf)	Vasd 2,3,5,8 (plf)	ΔVasd 9 (inch)	Vn 2,3,4,5,7 (plf)	Vasd 2,3,5,8 (plf)	ΔVasd 9 (inch)	Vn 2,3,4,5,7 (plf)	Vasd 2,3,5,8 (plf)	ΔVasd 9 (inch)	Vn 2,3,4,5,7 (plf)	Vasd 2,3,5,8 (plf)	ΔVasd 9 (inch)
16 gage ⁶ 3 5/8" C-stud @ 16" O.C.	2,305	877	0.20	2,546	1,018	0.21	1,977	790	0.23	2,138	855	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 pins and screws are described in Section 2.2.2 and are installed in accordance with Section 2.4 in IAPMO ES ER-0126.

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

⁴ For load and resistance factor design (LRFD) loads, the tabulated **Vn** load values must be multiplied by the resistance factor $\Phi = 0.55$ for Seismic / 0.60 for Wind.

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

⁶ Section 2.2.3 in evaluation report IAPMO ES ER-0126, describes minimum base metal thickness associated with gages.

⁷ **Vn** = Nominal Strength.

⁸ **Vasd** = ASD Design Load.

⁹ Δ **Vasd** = Deflection at **Vasd** design Load.

¹⁰ Fastener Schedule 2/12/2 Spacing:

A) All top/bottom track screwed only with: #8 x 1 3/4" self tapping screws at 2" o.c.

B) #8 x 1 3/4" self tapping screws at 12" o.c. at all vertical studs/posts

C) 1 1/4" x 0.100-in knurled shank for **D/G** at 2" o.c. between screws.

(Designation for fasteners **A**) = 2" o.c. **B**) = 12" o.c. **C**) = 2" o.c.)

¹¹ Fastener Schedule 2/12 Spacing:

A) #8 x 1 3/4" self tapping screws at 12" o.c. at end posts only

B) 1 1/2" x Gyp-Fast Coil Nail Part # 2429910 for **D/G** at 2" o.c. at edge/12" o.c. at field studs