



ICC Evaluation Service, Inc.
www.icc-es.org

Business/Regional Office # 5360 Workman Mill Road, Whittier, California 90601 # (562) 699-0543
Regional Office # 900 Montclair Road, Suite A, Birmingham, Alabama 35213 # (205) 599-9800
Regional Office # 4051 West Flossmoor Road, Country Club Hills, Illinois 60478 # (708) 799-2305

\* Legacy report on the 1997 Uniform Building Code™, the 2000 International Building Code®, and the 2000 International Residential Code® (IRC)

DIVISION: 09—FINISHES
Section: 09260—Gypsum Board Assemblies

SURE-BOARD SERIES 200 STRUCTURAL PANELS

INTERMAT
2045 PLACENTIA AVENUE
COSTA MESA, CALIFORNIA 92627

1.0 SUBJECT

Sure-Board Series 200 Structural Panels.

2.0 DESCRIPTION

2.1 General:

Sure-Board Series 200 Structural Panels are panels attached to light-gage steel framing for shear wall applications. The panels are limited to applications where there is no direct exposure to the weather or damp environments.

The shear walls are an alternative to steel stud shear wall systems described in Division VIII, Chapter 22, of the 1997 Uniform Building Code™ (UBC), or cold formed steel light framed shear walls described in Section 2211 of the 2000 International Building Code® (IBC). The shear walls may also be used where an engineered design is submitted in accordance with Section R301.1.2 of the 2000 International Residential Code® (IRC)

2.2 Materials:

2.2.1 Sure-Board Series 200 Structural Panels: Sure-Board Series 200 Structural Panels consist of 1/2- or 5/8-inch-thick (12.7 or 15.9 mm), tapered-edged, Type X gypsum wallboard complying with ASTM C 36-97, or water-resistant core gypsum sheathing complying with ASTM C 79-97, laminated with a water-soluble adhesive to sheet steel. The sheet steel is No. 22 gage [0.027 inch (0.686 mm) base-metal thickness] complying with ASTM A 653 SS, Grade 33, and is provided with a G40 hot-dipped galvanized coating conforming to ASTM A 924. Available dimensions include widths of 48 inches (1219 mm) and lengths of 8, 9 and 10 feet (2438, 2743 and 3048 mm).

2.2.2 Fasteners: The fasteners used for attaching the Sure-Board Series 200 Structural Panels to steel framing are self-drilling/self-tapping bugle head screws, No. 6 minimum diameter [0.138 inch (3.5 mm)], with a minimum 0.3145-inch (8.0 mm) head diameter and 1.25 inches (31.7 mm) long, complying with SAE J78 and ASTM C 954.

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

- 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 must be C-shaped, with a minimum depth of 3 1/2 inches (89 mm) and a minimum flange width of 1 5/8 inches (41 mm), with a 3/8-inch (9.5 mm) return lip. Tracks shall be a minimum of 3 1/2 inches (89 mm) wide, with minimum 1 1/4-inch (31.7 mm) flanges. No. 16 gage steel members must comply with ASTM A 653 SS 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 SS Grade 33, with minimum yield and tensile strengths of 33 ksi (230 MPa) and 45 ksi (310 MPa), respectively. Structural properties shall be determined in accordance with Chapter 22, Division VII, of the UBC or Section 2205 of the IBC.

2.3 Shear Wall Design:

Shown in Table 1 are nominal shear values for wind or earthquake forces, and approximate deflections at the nominal and design loads for shear walls using the Sure-Board Series 200 Structural Panels attached to light-gage steel studs. Nominal shear values shall be multiplied by the appropriate strength reduction factor to determine design strength, or divided by the appropriate safety factor to determine allowable shear values in accordance with footnote 4 to Table 1, as set forth in Section 2219.3 of the UBC and Section 2211.6 of the IBC. The maximum shear-wall height-to-width ratio is 2 1/4:1. Panels must be fastened in accordance with Table 1.

Design of shear wall connections, such as uplift holdowns, shear to base anchorage, and shear transfer from horizontal elements, are beyond the scope of this report. The connection design shall comply with the UBC or IBC and be sized to exceed the loads resisted by the shear wall.

Steel framing design for out-of-plane and axial loads shall comply with the UBC or IBC. For installations in Seismic Zones 3 and 4, additional requirements in Section 2220.1 of the UBC apply. For installation in Seismic Design Category D, E, or F, additional requirements in Section 2211.7 of the IBC apply.

ICC-ES legacy reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, Inc., express or implied, as to any finding or other matter in this report, or as to any product covered by the report.



## 2.4 Installation:

Installation must be in accordance with this report and the manufacturer's published installation instructions. Sure-Board Series 200 Structural Panels are placed with the long dimension parallel to stud framing. The steel face must be in contact with the framing. All panel edges must be fully blocked by framing studs and are doubled (back-to-back) at shear wall ends, which must be interconnected to develop the shear values. Maximum framing spacing is 24 inches (610 mm) on center. Screws attaching panels are installed in one operation through the panels into the framing. Screw heads must be flush with the panel surface and penetrate into the cold-formed steel framing member by at least three exposed threads. Minimum edge distance for fasteners attaching panels to steel members is  $\frac{3}{8}$  inch (9.5 mm).

## 2.5 Identification:

The Sure-Board Series 200 Structural Panels are identified by a label located on the top right and bottom left hand corner of the metal facing. The label notes the Intermat company name, product name, the ASTM C 79 designation when gypsum sheathing is used, and the evaluation report number (ER-5762).

## 3.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Interim Criteria for Cyclic Racking Tests for Metal-Sheathed Shear Walls with Steel Framing (AC154), dated March 2000, and a quality control manual.

## 4.0 FINDINGS

That the Sure-Board Series 200 Structural Panels, described in this report, comply with the 1997 *Uniform Building Code*<sup>TM</sup> (UBC), ~~the 2000 *International Building Code*<sup>®</sup> (IBC) and the 2000 *International Residential Code*<sup>®</sup> (IRC)~~, subject to the following conditions:

- 4.1 Panels are manufactured, identified and installed in accordance with this report.
- 4.2 Nominal shear values for shear walls are limited to the values noted in Table 1. To determine the allowable shear values or design strength values, the appropriate safety factor or strength reduction factor, in accordance with Section 2219.3 of the UBC ~~or Section 2211.7 of the IBC~~, must be applied.
- 4.3 Plans and calculations demonstrating compliance with the code and this report are submitted to the building official for approval.
- 4.4 Applied loads are adjusted in accordance with Sections 1612.3 and either Section 2210 or 2213.5.1 of the UBC ~~or Section 1605 and 2211.7.2 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 UBC, ~~IBC or IRC~~ and this report.
- 4.5 The panels are produced at the CEMCO facilities located to 263 Covina Lane, City of Industry, California.

This report is subject to re-examination in one year.

TABLE 1—NOMINAL SHEAR RESISTANCE TO WIND OR EARTHQUAKE FORCES AND DEFLECTION (inches)  
FOR SHEAR WALLS WITH SURE-BOARD SERIES 200 STRUCTURAL PANELS  
ATTACHED TO LIGHT GAGE STEEL STUDS WITH SCREWS (pounds per foot)<sup>1,2,3,4</sup>

FRAMING Minimum Gage <sup>5</sup>	FASTENER SPACING AT PANEL EDGES (inches) <sup>6,7</sup>											
	6			4			3			2		
	Load (lb/linear foot)	$\Delta_n$ (inch)	$\Delta_s$ (inch)	Load (lb/linear foot)	$\Delta_n$ (inch)	$\Delta_s$ (inch)	Load (lb/linear foot)	$\Delta_n$ (inch)	$\Delta_s$ (inch)	Load (lb/linear foot)	$\Delta_n$ (inch)	$\Delta_s$ (inch)
20 (0.033 inch)	1,085	0.55	0.10	1,545	0.70	0.11	1,730	0.70	0.14	1,915	0.70	0.12
18 (0.043 inch)	1,405	0.82	0.11	1,925	0.97	0.13	2,145	0.97	0.16	2,360	0.83	0.13
16 (0.057 inch)	—	—	—	—	—	—	2,895	1.01	0.20	3,460	1.24	0.18

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

<sup>1</sup>These values are for short-term loads due to wind or earthquake.

<sup>2</sup>The screws are as described in Section 2.2.2, and are installed in accordance with Section 2.4.

<sup>3</sup>Tabulated values are for panels applied to one side of a wall. Values cannot be increased for panels attached to both sides of the wall.

<sup>4</sup>For allowable stress design (ASD) loads, the tabulated load values must be divided by the safety factor  $\Omega = 2.5$ . For load and resistance factor design (LRFD) loads, the tabulated load values must be multiplied by the resistance factor  $\phi = 0.55$ .

<sup>5</sup>Section 2.2.3 describes minimum base-metal thickness associated with gages.

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

<sup>7</sup> $\Delta_n$  = approximate deflection at nominal load;  $\Delta_s$  = approximate deflection at design load.

\* deleted by City of Los Angeles