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RESEARCH REPORT : RR 25563  
CSI # 06050

Expires: February 1, 2010

Attn: Carleton Elliot  
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**GENERAL APPROVAL** - Renewal - Sureboard Series 200W Structural Panels used for light gauge Steel Shear Walls and Fire Rated Roof, Ceiling and Wall Assemblies.

### DETAILS

A Sureboard Series 200W Structural Panel composes of a 1/8- inch thick medium-density fiberboard (MDF) square-edged panel, laminated with water soluble adhesive to a sheet steel. The sheet steel is No. 22 gauge complying with ASTM A 653 SS Grade 33, with a minimum G40 hot dipped galvanized coating conforming to ASTM 924. The panel sizes vary, with a maximum aspect ratio of 2.25 to 1 (the panel width is 4'-0").

### Light Gauge Steel Shear Wall Assembly:

A Light Gauge Steel Shear Wall is made of 14-gauge steel frame sheathed on one and both sides with 4' x 9' Sureboard Series 200W Structural Panels. The steel frame is constructed with Cemco 1-5/8" x 3-5/8" 14-gauge, 16-gauge and 18-gauge C shaped studs at 16" oc.; end posts are back to back C shape Cemco studs; bottom and top tracks are Cemco 14- gauge, 16-gauge and 18-gauge members. Cemco 14- gauge, 16-gauge and 18-gauge posts, studs and tracks are light gauge steel complying with ASTM A 653 Grade 50.

The Series 200W sheathing is attached to the framing members with No. 10 self drilling screws. Screw spacing is 2-in. on center at the perimeter and 6-in. on center in the field. Hold down connectors are Simpson S/HD15, installed at the inside face of both end posts with No. 10 self drilling screws. The allowable shear capacity to the wall are as follows:

<u>Stud Size</u>	<u>Sheathing</u>	<u>Location</u>	<u>Shear</u>
14-gauge	double sided	upper floor	1,687 lbs./ft.
14-gauge	double sided	first floor	2,040 lbs./ft.
		concrete foundation	
14-gauge	single sided	first floor	1,100 lbs./ft.
		concrete foundation	
16-gauge	single sided	first floor	1,012 lbs./ft.
18-gauge	single sided	concrete foundation	708 lbs./ft.

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**Fire Rated Assemblies are as follows;**

**1- Hour Interior Wall Assembly**

- Steel Studs and Track -20 gauge 1-5/8in. by 3-1/2 in. Studs, spaced 24 in. on centers
- Horizontal Bracing: -Installed in stud holes, 3/8 in. by 1-5/8 in. by 16 gauge, cold rolled channel fastened with steel angles at each stud intersection
- Sure Board 200W: -Applied steel side against studs on either sides or both sides, oriented vertically with edge joints centered on studs.
- Gypsum Wallboard: -USG "Sheetrock" 5/8" in. Type X gypsum wallboard, 1-5/8 in. long No. 6 bugle head screws, 6 in. on centers at board perimeter, and 12 in. on centers in middle studs. Gypsum board assembly fastened to each side of wall assembly. Screws for gypsum may be screwed into Sureboard instead of studs for attachment for fire rating.

**2- Hour Interior Wall Assembly**

- Steel Studs and Track -20 gauge 1-5/8 in. by 3-1/2 in. Studs, spaced 24 in. on centers
- Horizontal Bracing: -Installed in stud holes, 3/8 in. by 1-1/2 in. by 16 gauge, fastened with steel angles at each stud intersection
- Sure Board 200W: -Applied steel side against studs on either or both sides, oriented vertically with edge joints centered on studs.
- Gypsum Wallboard: -USG "Sheetrock" 5/8" in. Type X gypsum wallboard, 3 in. long No. 8 bugle head screws, 6 in. on centers at board perimeter, and 12 in. on centers in middle studs. 2- layers of gypsum board fastened to each side of wall assembly. Screws for gypsum may be screwed into Sureboard instead of studs for attachment for fire rating.

**2- Hour Exterior Wall Assembly**

- Steel Studs and Track -20 gauge 1-1/2in. by 3-1/2 in. Studs, spaced 24 in. on centers
- Horizontal Bracing: -Installed in stud holes, 3/8 in. by 1-1/2 in. by 16 gauge, fastened with steel angles at each stud intersection
- Sure Board 200W: -Applied steel side against studs on either or both sides, oriented vertically with edge joints centered on studs.
- Gypsum Wallboard: -USG "Sheetrock" 5/8" in. Type X gypsum wallboard, 3 in. long No. 8 bugle head screws, 6 in. on centers at board perimeter, and 12 in. on centers in middle studs. Gypsum board assembly fastened to interior side of wall assembly.
- Plaster: Applied to exterior side of wall assembly, over "Sureboard 200W" 7/8 in. thick conventional sand/cement plaster.

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### **1- Hour Ceiling Assembly**

- Framing** -1-1/2 in. by 12 in., CEMCO 16 gauge 'C' studs laid on their edges and used as joists. Joists were spaced 24 in. on centers and connected to corresponding tracks at each end. The joists were oriented in the 8 ft. direction, hence four joists used. A single 1/2 in. pan head screw used at the top and bottom of each joist-to-track connection.
- Sub-Flooring** -3/4 in. square-edge plywood sub-floor, fastened with 1-1/4 in. self-drilling and tapping screws, located 12 in. on centers. Plywood, oriented perpendicular to joists with a board joint in the center of the assembly.
- Gypsum Ceiling** -Two layers of 5/8 in. Type X (USG "Sheetrock"), oriented perpendicular to joists. Joints were staggered 24 in. between layers. Base layer was fastened with 1-1/4 in. Type S wallboard screws, installed in pre-drilled holes at 12 in. on centers. Face layer was fastened with 3 in. Type S wallboard screws, installed in pre-drilled holes at 12 in. on centers. Face layer taped and filled with two layers of gypsum joint compound.

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- Sub-Flooring** -5/8 in. square-edge plywood sub-floor, fastened with 1-1/4 in. self-drilling and tapping screws, located 12 in. on centers. Plywood, oriented perpendicular to joists with a board joint in the center of the assembly.
- Plaster Ceiling** -7/8 in. sand/cement plaster membrane, directly applied to steel joists. Two layers of Hal Industries 30 min. building paper installed over joists. Steel mesh, 1-5/8 in. by 1-5/8 in. plaster reinforcing wire mesh was fastened to studs with 1/2 in. pan-head screws, located 12 in on centers. Mesh overlap 4 in. and mesh oriented perpendicular to joists. 7/8 in. Conventional sand/cement plaster applied in two coats of approximately 3/8 in to 1/2 in. thick to form a final plaster thickness of 7/8 in. over plastic.

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**The approval is subjected to the following conditions:**

1. The engineer of record shall check the uplift force and hold-down anchor bolt capacity based on edge and end distances detailed on plans.
2. Fabrication of Sureboard series 200W shall be in a shop of a fabricator licensed by the City of Los Angeles Building Department, in accordance with the Manufacturing Standards submitted to the Department.
3. Design of the system shall be considered with  $R=4.5$  in the direction considered.
4. The panels shall be identified by the manufacturer's name and product designation.
5. Calculations demonstrating that applied loads comply with this report shall be prepared by a licensed engineer or architect registered in the State of California.

**DISCUSSION**

The approval is based on load tests and analyses.

The load value was obtained by taking the lesser of the average ultimate load divided by a 2.5 safety factor or the average load corresponding to  $\frac{1}{s}$ .

This general approval of an equivalent alternate to the Code is only valid where an engineer and/or inspector of this Department has determined that all conditions of this approval have been met in the project in which it is to be used.

Addressee to whom this Research Report is issued is responsible for providing copies of it, complete with any attachments indicated, to architects, engineers and builders using items approved herein in design or construction which must be approved by Department of Building and Safety Engineers and Inspectors.

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