

**Filing Category: ROOF, WALL AND FLOOR PANELS—Sandwich Panels**

## ELITE COMPOSITE STRUCTURAL PANELS

**ELITE ALUMINUM CORPORATION**  
**1801 N.W. 64<sup>TH</sup> STREET**  
**FT. LAUDERDALE, FLORIDA 33309**

### 1.0 SUBJECT

Elite Composite Structural Panels.

### 2.0 DESCRIPTION

#### 2.1 General:

Elite Composite Structural Panels are sandwich panels comprised of painted aluminum facings with expanded polystyrene foam plastic cores. The panels are intended for bearing wall applications and roof panels. Panels are 3, 4 or 6 inches (76, 102 or 152 mm) thick, 48 inches (1219 mm) wide and up to 40 feet (12 192 mm) long.

#### 2.2 Materials:

**2.2.1 Aluminum Facings:** Facings are 0.024 inch (0.610 mm) thick and comply with ASTM B 209 requirements for Alloy 3105-H15 or 3003-H16, with 10-mil-thick (0.25 mm) polyester dry film base coat and a surface coating of baked acrylic enamel. The finish has a flame-spread index of 25 or less and a smoke-developed index of 450 or less, when tested in accordance with UBC Standard 8-1 (ASTM E 84).

**2.2.2 Foam Plastic:** The foam plastic is an expanded polystyrene with a nominal density of 2 pounds per cubic foot (32 kg/m<sup>3</sup>), and is produced by Imperial Foam. The foam plastic insulation has a flame-spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with UBC Standard 8-1 (ASTM E 84).

**2.2.3 Adhesive:** The adhesive is ISOGRIP SP 2020D produced by Ashland Chemical Company Division of Ashland Inc., and recognized in ICBO ES evaluation report ER-5715.

**2.2.4 Extrusions:** Aluminum extrusions used to support panels are formed from 6063 alloy aluminum complying with ASTM B 221, in various thicknesses and including H elements, bases, channels, caps, clips and fascias. When limited to use in patio covers not supporting snow loads under Chapter 31, Division III, of the UBC (1997 *Uniform Building Code*™) Appendix, the aluminum extrusions may include a thermal break. Details, structural calculations and other substantiating information on the extrusions must be submitted to the building official for approval.

#### 2.3 Allowable Loads:

Allowable transverse loads are noted in Table 1. The panels shall be selected based on a minimum allowable transverse load of 20 psf (957.6 Pa), except 10 psf is permitted when

the panels are used in patio covers under Chapter 31, Division III, of the UBC Appendix. Allowable axial loads for wall panels measuring at least 3 inches (76 mm) thick and up to 8 feet (2438 mm) high is 1,120 pounds per lineal foot (16 345 N/m). The interaction between axial and transverse loads must satisfy the following equation:

$$\frac{W_{ap}}{W} + \frac{P_{ap}}{1120 \text{ lbs}} \leq 1$$

where:

$W_{ap}$  = Applied transverse load, psf.

$W$  = Allowable transverse load from Table 1, psf.

$P_{ap}$  = Applied axial load, pounds.

The allowable wind uplift resistance of an overhanging roof-to-wall connection is 150 pounds per lineal foot (2189 N/m) when construction is according to Figure 1 using minimum 3-inch-thick (76 mm) panels. Use of wall and roof panels as bracing against lateral wind or earthquake forces is beyond the scope of this evaluation report.

#### 2.4 Installation:

Installation is according to the Elite Assembly Instructions dated January 14, 1993. Base channels are attached to structural supports using fasteners recognized for use with the receiving material.

Calculations demonstrating the fastener capacity for the allowable loads in question must be furnished to the building official for approval. The fastener spacing for the channel-to-panel connection is 6 inches (152 mm) on center. The anchorage-to-concrete spacing is 12 inches (305 mm) on center. Wall panels are supported by foundations designed and constructed according to the UBC.

The wall and roof panels are interlocked as shown in Figure 2. Openings in walls must be framed with channels and mullions designed for all imposed loads. A thermal barrier consisting of gypsum wallboard complying with ASTM C 36-92 is then attached to the wall and roof panels using 1/4-inch (6.4 mm) beads of Liquid Nails by Maco Adhesives. The adhesive is applied to the gypsum board in a zigzag pattern in rows 24 inches (610 mm) on center and 1 inch (25.4 mm) from edges. The gypsum board is then fastened onto the aluminum facing with No. 6 by 1-inch-long (25.4 mm) screws spaced 12 inches (305 mm) on center along the perimeter of each gypsum wallboard panel.

The 3-inch-thick (72 mm) panels can be installed on ceilings or roofs without a thermal barrier, based on successful completion of tests in accordance with UBC Standard 26-3 (UL 1715). Minimum 3-inch-thick (72 mm) panels have a Class B roofing classification.

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**2.5 Identification:**

The panels are packaged with labels noting the Elite Aluminum Corporation name and address, the product name, the evaluation report number (ICBO ES ER-5658 or NER-501) and the name of the quality control agency (Professional Service Industries, Inc., Pittsburgh Testing Laboratory Division).

**3.0 EVIDENCE SUBMITTED**

Data and reports of tests in accordance with the ICBO ES Acceptance Criteria for Sandwich Panels (AC04), dated July 1996.

**4.0 FINDINGS**

That the Elite Composite Structural Panels as described in this report comply with the 1997 *Uniform Building Code*™ (UBC), subject to the following conditions:

- 4.1 The panels are fabricated and erected in accordance with this report.
- 4.2 The panels are used only in buildings where combustible construction is permitted.
- 4.3 Structural calculations demonstrating that applied loads are less than the allowable loads are furnished to the building official for approval.

4.4 Panels with field-formed openings are beyond the scope of this report.

4.5 Except for 3-inch-thick (72 mm) roof panels, the panels are separated from the building interior by a thermal barrier, such as minimum 1/2-inch-thick (12.7 mm) gypsum wallboard or other approved material installed as described in Section 2.4 of this report.

4.6 Except for use as patio covers under Chapter 31, Division III, of the UBC, details for weather resistance must be submitted to the building official for approval.

4.7 Panels are manufactured at 1801 N.W. 64<sup>th</sup> Street, Fort Lauderdale, Florida, with quality control inspections by Professional Service Industries, Inc., Pittsburgh Testing Laboratory Division (AA-660).

This report is subject to re-examination in two years.

**TABLE 1—SPAN LENGTHS OF SANDWICH PANELS IN FLATWISE BENDING<sup>1,2,3,4</sup>**

PANEL THICKNESS (inches)	APPLIED UNIFORM LOAD, $W_d$ (psf)	SPAN THICKNESS (inch)	SPAN LENGTH, L (feet-inches)											
			$\Delta = L/120$				$\Delta = L/180$				$\Delta = L/240$			
			10	20	30	40	10	20	30	40	10	20	30	40
3	1.2	0.024 0.032	18-0 —	12-9 14-5	10-9 12-4	9-3 10-7	14-9 16-0	11-4 12-4	9-7 10-4	8-6 9-2	13-3 14-6	10-0 10-11	8-6 9-7	7-8 8-0
3 1/2	1.3	0.024 0.032	— —	— —	11-16 13-4	10-0 11-6	— —	12-6 13-9	10-8 12-5	9-6 10-8	— —	11-7 12-4	9-6 10-3	9-7 9-0
4	1.4	0.024 0.032	21-4 22-0	15-1 17-4	12-4 14-3	10-8 12-3	17-10 19-6	13-10 15-0	11-9 12-10	10-6 11-3	16-0 17-4	12-4 13-4	10-4 11-3	9-6 9-11
6	1.7	0.024 0.032	24-0 25-0	18-6 21-4	14-2 17-6	13-1 15-1	23-6 24-0	18-7 20-0	15-11 17-0	14-1 15-1	21-6 22-6	16-9 18-0	14-2 15-8	12-6 13-4

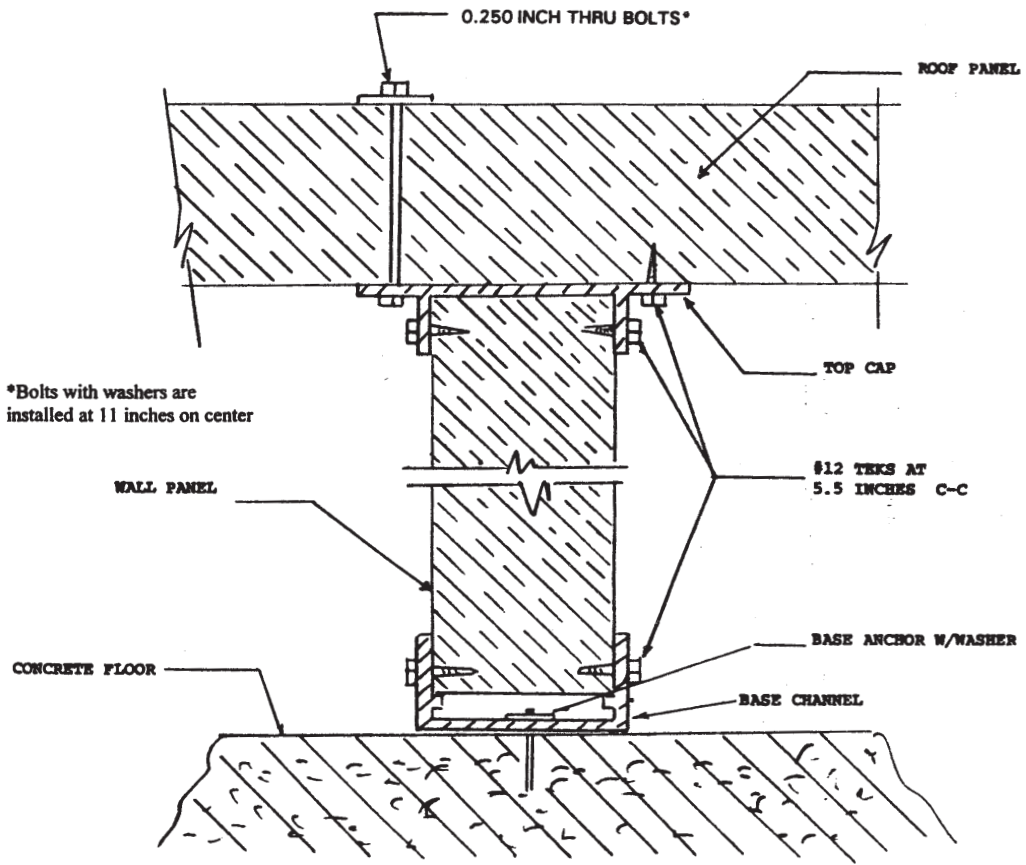
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 psf = 48 Pa.

<sup>1</sup>Panels are simply supported.

<sup>2</sup>Span length values to the right of the bold vertical line are governed by deflection L/180 or L/240. Values to the left of the bold line are limited by allowable bending stress  $F_b = 6,000$  psi. The values governed by deflection and clear span lengths are based on the applied live load listed as  $W_l$ , psf. Add approximately 2 inches to these values to obtain span lengths center-to-center bearings.

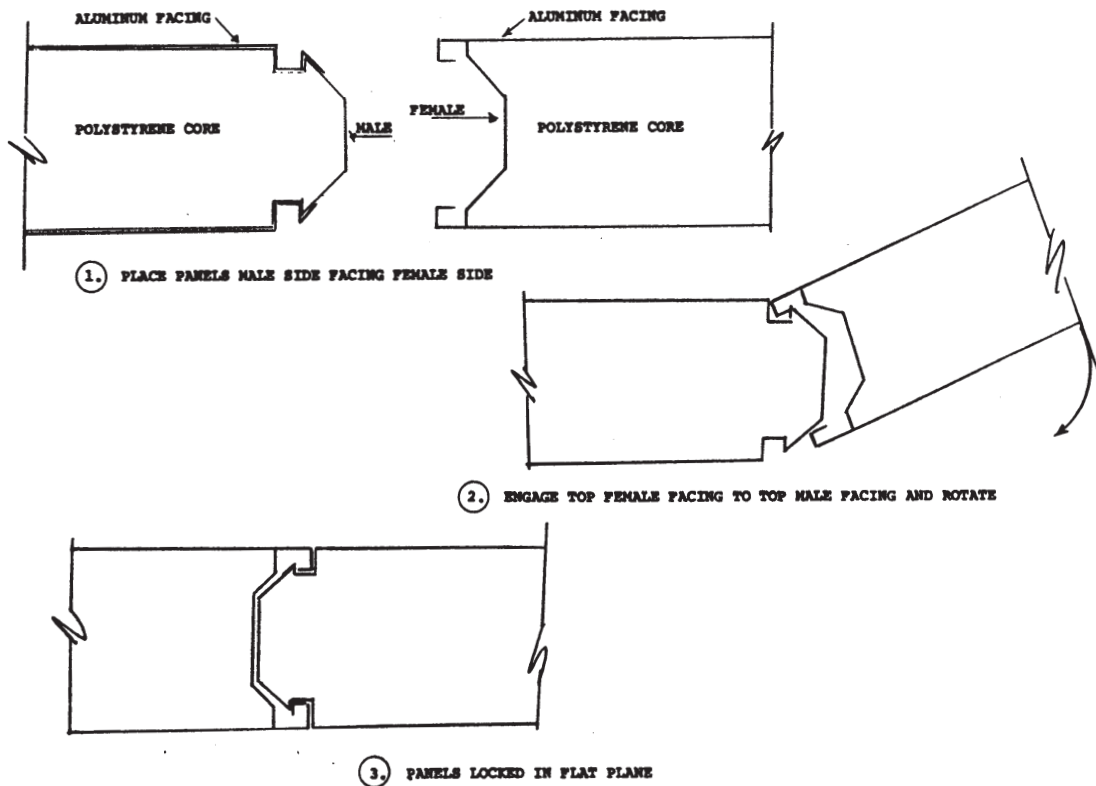
<sup>3</sup>The values limited by stress (listed under column L/120) are span lengths center-to-center of bearings. They are based on the sum of live load  $W_l$  and panel weight  $W_d$ , listed as  $W$  ( $W = W_l + W_d$ ). Subtract  $W_d$  from  $W$  to obtain the design live load  $W_l$ .

<sup>4</sup>Span lengths for  $W$  or  $W_l$  loadings other than listed above may be obtained by straight-line interpolation.



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 psf = 48 Pa.

FIGURE 1



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 psf = 48 Pa.

FIGURE 2