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BUILDING AND SAFETY  
201 NORTH FIGUEROA STREET  
LOS ANGELES, CA 90012

FRANK BUSH  
INTERIM GENERAL MANAGER

3A Composites USA Inc.  
721 Jetton Street, Suite 325  
Davidson, NC 28036

Attn: Christina Saunders  
(704) 907-5535

RESEARCH REPORT: RR 25896  
(CSI 07 42 43)

BASED UPON ICC EVALUATION  
SERVICE REPORT NO. ESR-1114

REEVALUATION DUE  
DATE: June 1, 2018  
Issued Date: August 1, 2016  
Code: 2014 LABC

**GENERAL APPROVAL** – Reevaluation and Clerical Modification- Alucobond® 4 mm (0.157 inch) Exterior and Interior Wall Panels

**DETAILS**

The above products/assemblies are approved when in compliance with the use, description, design, installation, conditions of use, and identification of Report No. ESR-1114 reissued September 1, 2015, of the ICC Evaluation Service, LLC. The Report, in its entirety, is attached and made part of this general approval.

The parts of Report No. 1114 marked by the asterisks have been removed or added by the Los Angeles Building Department from this approval.

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

1. The design of the Alucobond® Wall Panel system framing members, connectors, connections, and curtain wall framing members must be submitted to and approved by the structural plan check engineer. Calculations and detail drawings shall be designed by a California registered civil or structural engineer or architect.
2. The Alucobond® Wall Panels shall not be installed where the exterior wall is required to have a fire resistive rating.
3. A water-resistive barrier shall be provided in accordance with Section 1404.2 of the Los Angeles City Building Code prior to the installation of the exterior wall panels.

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Alcan Composites USA, Inc.

Re: Alucobond® Exterior and Interior Wall Panels

4. Weather protection shall be provided for joints and panel edges with a sealant which is approved for exterior weather protection by a current Los Angeles City Research Report or ICC-ES Evaluation Report.
5. When installed in accordance with 1407.11.2 of the Los Angeles Building Code, sections of the Alucobond® Wall Panels shall not exceed 300 square feet in area and shall be separated by a minimum of 4-ft. vertically.
6. Structural silicone sealant used between the panel and the aluminum extrusion must be approved by a current Los Angeles City Research Report.
7. Panels shall be fabricated in the shop of a licensed fabricator approved by the Los Angeles City Building Department.

## DISCUSSION

The clerical modification is to change the address and phone number.

The report is in compliance with the 2014 City of Los Angeles Building Code.

The approval is based on Section 4.1.5 of the ICC ES Acceptance Criteria- AC25 and ASTM E84. The approval is based on ICC-ES Acceptance Criteria- AC25, ASTM E84 and ASTM D 1929.

This general approval will remain effective provided the Evaluation Report is maintained valid and unrevised with the issuing organization. Any revisions to the report must be submitted to this Department, with appropriate fee, for review in order to continue the approval of the revised report


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.

Alcan Composites USA, Inc.  
Re: Alucobond® Exterior and Interior Wall Panels

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.

*Eugen Barbeau for:*

QUAN NGHIEM, Chief  
Engineering Research Section  
201 N. Figueroa St., Room 880  
Los Angeles, CA 90012  
Phone- 213-202-9814  
Fax- 213-202-9943

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Attachment: ICC ES Report No. ESR-1114 (6 Pages)

# ICC-ES Evaluation Report

**ESR-1114**

Reissued September 2015

This report is subject to renewal September 2017.

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**DIVISION: 07 00 00—THERMAL AND MOISTURE  
PROTECTION**
**Section: 07 42 43—Composite Wall Panels**
**REPORT HOLDER:**

**3A COMPOSITES USA INC.**  
 POST OFFICE BOX 507  
 208 WEST 5<sup>TH</sup> STREET  
 BENTON, KENTUCKY 42025  
 (800) 626-3365  
[www.3ACompositesUSA.com](http://www.3ACompositesUSA.com)  
[info.usa@3acomposites.com](mailto:info.usa@3acomposites.com)

**EVALUATION SUBJECT:**
**ALUCOBOND® EXTERIOR AND INTERIOR WALL  
PANELS**
**1.0 EVALUATION SCOPE**
**Compliance with the following code:**

- 2012 *International Building Code*® (2012 IBC)
- 2009 *International Building Code*® (2009 IBC)
- 2006 *International Building Code*® (2006 IBC)

**Properties evaluated:**

- Structural
- Interior Finish Classification

**2.0 USES**

Alucobond® wall panels are to be used as exterior wall cladding or interior wall finish in accordance with the code specifically listed in Section 1.0 of this report and the conditions of use noted in Section 5.0.

**3.0 DESCRIPTION**
**3.1 General:**

Alucobond® wall panels are metal composite material (MCM) wall panels consisting of two nominally 0.020-inch-thick (0.51 mm) aluminum skins, bonded to both surfaces of a black extruded polyethylene plastic core having a nominal density of 65 pounds per cubic foot (1041 kg/m<sup>3</sup>) and a nominal thickness of 0.079 to 0.197 inch (2 to 5 mm), depending on the finished panel thickness. The aluminum skins may have a painted or anodized finish. The polyethylene core is extruded continuously and is bonded to the aluminum skins in a continuous process.

Alucobond® wall panels are manufactured in a variety of sizes and the overall panel thicknesses are 0.118, 0.157 and 0.236 inch (3, 4 and 6 mm). The panels have a

flame-spread index of less than 25 and a smoke-developed index of less than 450 when tested in accordance with ASTM E84.

**3.2 Framing:** Installation of the Alucobond® wall panels requires the following materials that are supplied by the MCM system fabricator for the Rout and Return with Clips, Continuous Rout and Return Extrusions and Continuous Edge Grip installation methods:

**3.2.1 Rout and Return with Clips:** The following materials must be used in a rout and return panel installation method (see Figure 1):

- Attachment clips equivalent to the 1-inch-by-1-inch-by-1/8-inch-thick-by-2-inch-long (25.4 mm by 25.4 mm by 3.2 mm by 50.8 mm) extruded aluminum angles shown in Figure 1 to attach the panel to the building structure or framing.
- I-shaped extruded aluminum (6063-T5 aluminum alloy) reinforcement intermediate stiffener equivalent to that shown in Figure 1.

**3.2.2 Continuous Rout and Return Extrusions:** The following materials must be used in a continuous rout and return panel installation method (see Figure 2):

- Continuous rout and return extrusions.
- I-shaped extruded aluminum (6063-T5 aluminum alloy) intermediate stiffener reinforcement equivalent to that shown in Figure 2.
- Attachment clips equivalent to the 1 1/2-inch-by-1/2-inch-by-1/8-inch-thick (38.1 mm by 38.1 mm by 3.2 mm) extruded aluminum clips shown in Figure 2 to attach the I-shaped extruded aluminum reinforcement to the return edge of the panel.

**3.2.3 Continuous Edge Grip:** The following materials must be used in a continuous edge grip panel installation method (see Figure 3):

- Continuous grip extrusions similar to those shown in Figure 3.
- I-shaped extruded aluminum (6063-T5 aluminum alloy) intermediate stiffener reinforcement equivalent to that shown in Figure 1.

**3.2.4 Attachment Accessories:** Extrusions, angles, corner brackets, and stiffeners are manufactured from 6063-T5 aluminum alloy.

**4.0 DESIGN AND INSTALLATION**
**4.1 General:**

If there are any conflicts between this report and the manufacturer's installation instructions, this report governs. The manufacturer's published installation instructions and

this report must be strictly adhered to, and a copy of the manufacturer's instructions must be available on the jobsite at all times during installation.

The panels are attached to the exterior building walls by use of attachment accessories installed on the panels by the MCM systems fabricator at the time of panel fabrication. There are two basic types of attachment accessories that can be used with the Alucobond® panels: the "continuous edge grip" or the "rout-and-return" methods of attachment as described in Sections 4.3.1 and 4.3.2.

#### 4.2 Design:

The maximum allowable design transverse wind load pressure for the Alucobond® panels, both 4 millimeters and \* 6 millimeters, installed using the rout-and-return method with clips in accordance with this report, is 25 psf (1.2 kPa), positive or negative. The maximum allowable design wind load pressure for the Alucobond® panels, 4 millimeters and 6 millimeters, installed using the rout-and-return method with aluminum extrusion frames or installed with the continuous edge grip method in accordance with this report, is 20 psf (0.96 kPa), positive or negative. Support framing, such as wall studs, must be designed in accordance with the applicable code to be adequate for these loadings.

#### 4.3 Installation:

The MCM system must be fabricated in a shop by an MCM systems fabricator. Such fabrication involves cutting and forming the panels as well as installing panel stiffeners and other attachment accessories as needed to attach the panels to the exterior of the building in the field. The two basic types of attachment are the rout-and-return and the continuous edge grip (CEG) method of support described in Sections 4.3.1 and 4.3.2.

**4.3.1 Alucobond® Rout-and-Return:** The rout-and-return assembly consists of flat panels formed into shallow "pans" by means of routing a groove in the back face of the panel, along each panel edge, and mechanically folding all four edges. Panel stiffeners must be installed at spacing up to 24 inches (610 mm) on center on the backside of the panels with silicone sealant. The minimum folded edge width shall be of sufficient depth so that the fasteners will not be closer to the edge of the panel than 2.5 times the fastener diameter. The panels are attached to the building frame in one of two methods.

In one method of attachment, the panels shall be attached to the building frame with aluminum clip angles that are attached to the folded edges of the panel by the MCM systems fabricator by two pop rivets for each clip angle. The clip angles must be fastened to the building frame with a mechanical fastener such as a No. 12, self-drilling, corrosion-resistant metal screw. Other fasteners are permitted for use when the performance is demonstrated to be equivalent by engineering calculations. See Figure 1 of this report for an example of this installation. The pop rivets are  $\frac{3}{16}$ -inch-diameter (4.8 mm), 5052 Alloy aluminum rivets with 7178 Alloy mandrels. Clip angles must be fabricated from 6063 Alloy-T5 Temper aluminum of the size noted in Figure 1 of this report. The clip angles must be attached to each panel edge at 4 inches (102 mm) from each corner and 24 inches (610 mm) on center. The maximum panel size is 60 inches wide by 144 inches long (1524 mm by 3658 mm).

In the other method of attachment, a 0.06-inch-thick aluminum extrusion of 6063 Alloy-T6 Temper must be cut to size, mitered and attached by the MCM systems

fabricator using structural silicone sealant between the panel back and folded edge and the extrusion. The extrusion must be hooked into an aluminum clip that is attached to the building frame with two No. 12, self-drilling, corrosion-resistant screws along the length of the extrusion. See Figure 2 of this report for an example of this installation.

**4.3.2 Continuous Edge Grip Method:** A 0.06-inch-wide-by-0.30-inch-deep (1.5 mm by 8 mm) groove must be routed into the edge of the core material by the MCM systems fabricator. An extruded aluminum frame must be cut to size, mitered and attached with structural silicone sealant between the panel back and the extrusion. Panel stiffeners must be installed at spacing up to 24 inches (610 mm) on center on the backside of the panels with silicone sealant. Panels must be attached to structural framing in the field using No. 12-24, self-drilling fasteners along the perimeter. Minimum screw penetration beyond the structural support shall be twice the shank diameter. See Figure 3 of this report for an example of this installation.

**4.3.3 Buildings of Type I, II, III or IV Construction:** Where exterior walls are required to be noncombustible construction, installation is limited to the following heights:

- A maximum of 40 feet in height above the grade plane, under the limitations specified in Section 1407.11.1 of the 2012, 2009 and 2006 IBC.
- A maximum of 50 feet in height above the grade plane, under the limitations specified in Section 1407.11.2 of the 2012, 2009 and 2006 IBC.
- A maximum of 75 feet in height above grade plane, under the limitations specified in Section 1407.11.3 of the 2012 IBC.

Where interior walls are required to be noncombustible construction, the Alucobond® panels which have a Class A interior finish classification must be installed in accordance with Section 803.11 of the 2012 and 2009 IBC or Section 803.4 of the 2006 IBC.

#### 4.4 Interior Wall Covering:

Alucobond® panels may be used as an interior wall finish in compliance with IBC Chapter 8. The panels must be installed on the interior side of the wall in accordance with Section 4.3 above. The panels have a Class A interior finish classification.

#### 5.0 CONDITIONS OF USE

The Alucobond® panels described in this report comply with, or are suitable alternatives to what is specified in, those codes specifically listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation must comply with this report, the manufacturer's published instructions, the applicable code and the approved plans.
- 5.2 The design of the structural support system (building framing, attachment accessories, silicone sealant and panel connections provided by the MCM systems fabricator) and fasteners used to attach the panels to the supports must be submitted to and approved by the code official for each project.
- 5.3 The MCM systems fabricator must provide a certificate of compliance to the code official attesting that the MCM systems' fabrication includes the use of adhesives approved for use; that the adhesive application complies with the adhesive manufacturer's installation guidelines; and that the MCM systems'

fabrication complies with approved construction documents. Additionally, when the attachment methods employ adhesives other than to adhere stiffeners to the back of the panel, special inspections are required in accordance with 2012 IBC Section 1704.2.5 or 2009 and 2006 IBC Section 1704.2, or the fabricator must be approved by the code official in accordance with 2012 IBC Section 1704.2.5.2 or 2009 and 2006 IBC Section 1704.2.2, as such operations are outside the scope of this report.

- 5.4 Alucobond® panels may be used as an interior finish where Class A, B and C materials are permitted under Chapter 8 of the IBC.
- 5.5 Evidence of weather tightness of the wall cladding system in accordance with Section 1407.6 of the IBC shall be to the satisfaction of the code official.
- \* ~~5.6 Alucobond® wall panels may be used as plastic panels and signs under the limitations specified in Section 402.6.4 of the 2012 IBC, Section 402.16 of the 2009 IBC or Section 402.16 of the 2006 IBC.~~
- 5.7 Where Alucobond® wall panels are installed on exterior walls on buildings of Type I, II, III or IV construction, the walls must be installed in accordance with the provisions in Section 4.3.3.

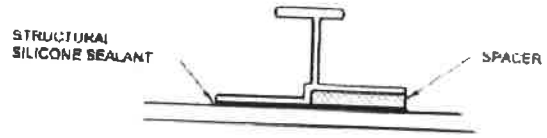
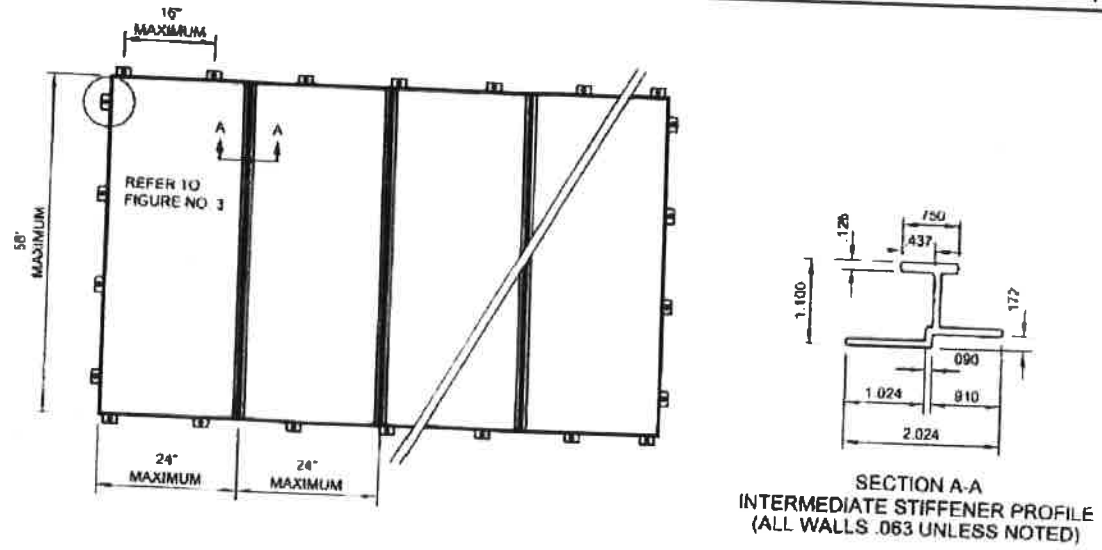
- 5.8 Alucobond® 3-millimeter-thick wall panels are limited to interior use.
- 5.9 Alucobond® panels used as components of kiosks must be installed under the limitations specified in Section 402.6.2 of the 2012 IBC, Section 402.11 of the 2009 IBC or Section 402.10 of the 2006 IBC.
- 5.10 The Alucobond® wall panels are produced in Benton, Kentucky, under a quality control program with inspections by ICC-ES.

#### 6.0 EVIDENCE SUBMITTED

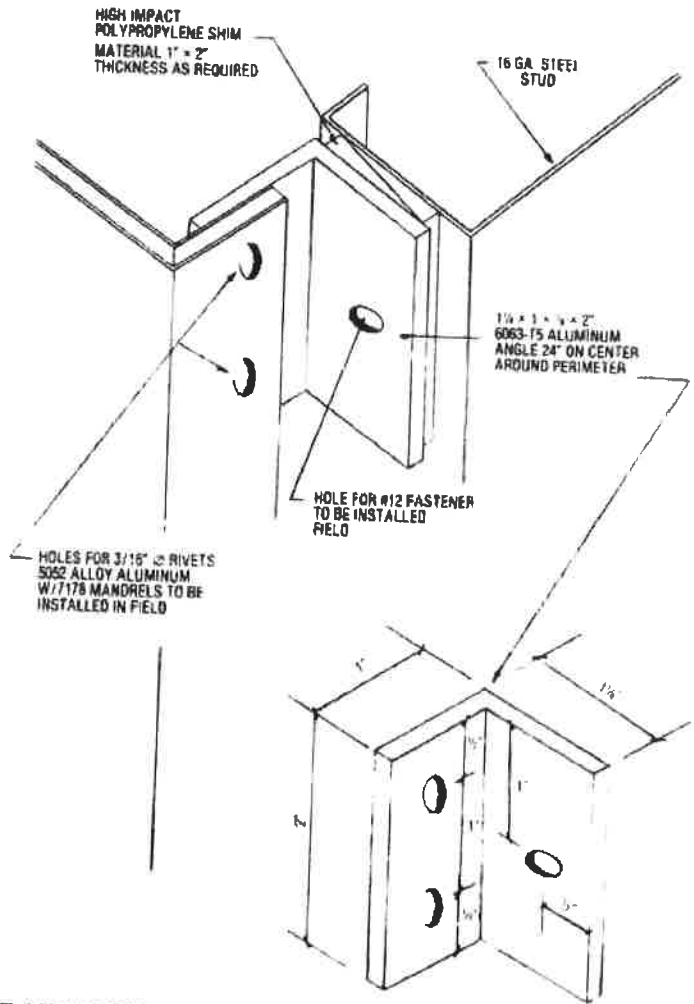
Data in accordance with the ICC-ES Acceptance Criteria for Metal- Composite Material (AC25), dated October 2010 (editorially revised August 2014).

#### 7.0 IDENTIFICATION

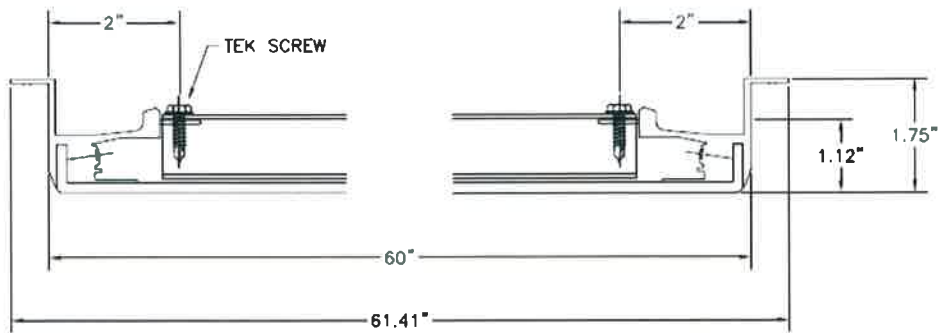
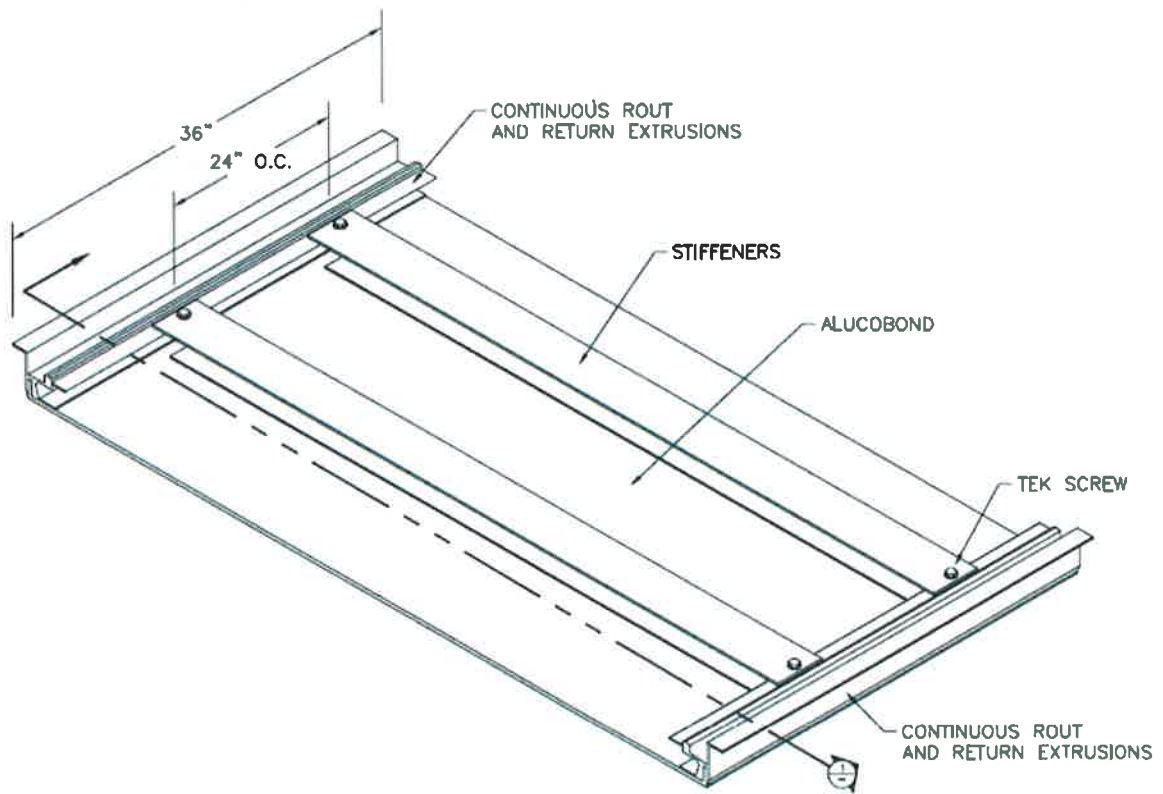
The panels are identified by a label indicating the name and address of 3A Composites USA Inc.; the product name; the panel thickness; the evaluation report number (ESR-1114); and the flame-spread and smoke-developed indices.



**ROUT-AND-RETURN ATTACHMENT SYSTEM**

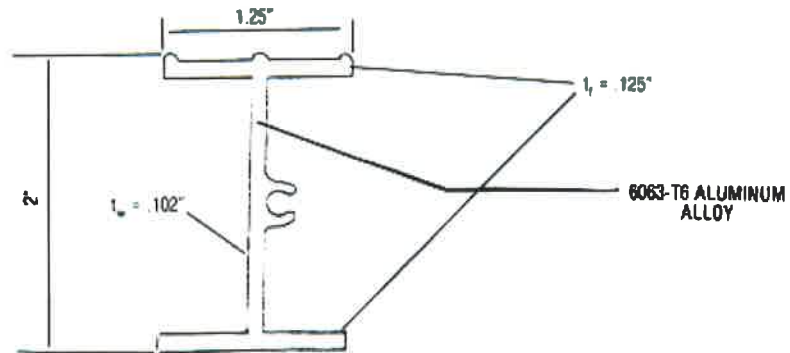


**ROUT-AND-RETURN SYSTEM ALUCOBOND PANEL ANCHORAGE**  
FIGURE 1



1 SECTION

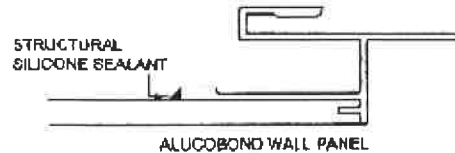
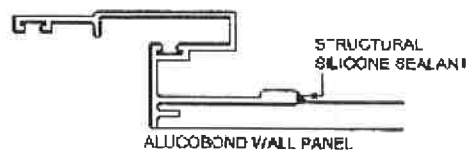
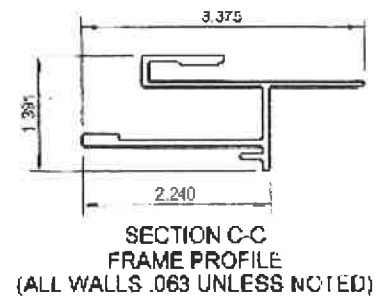
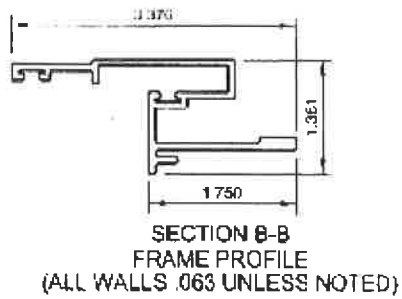
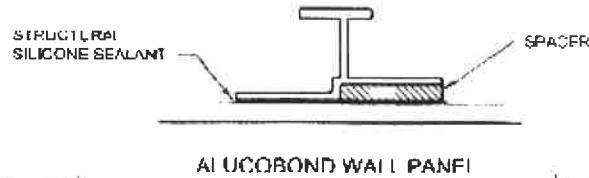
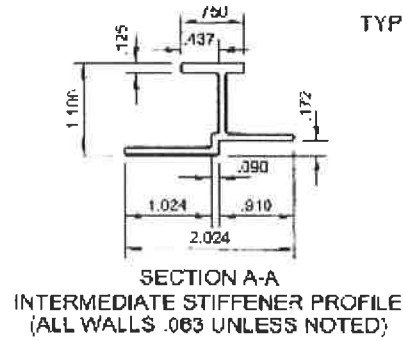
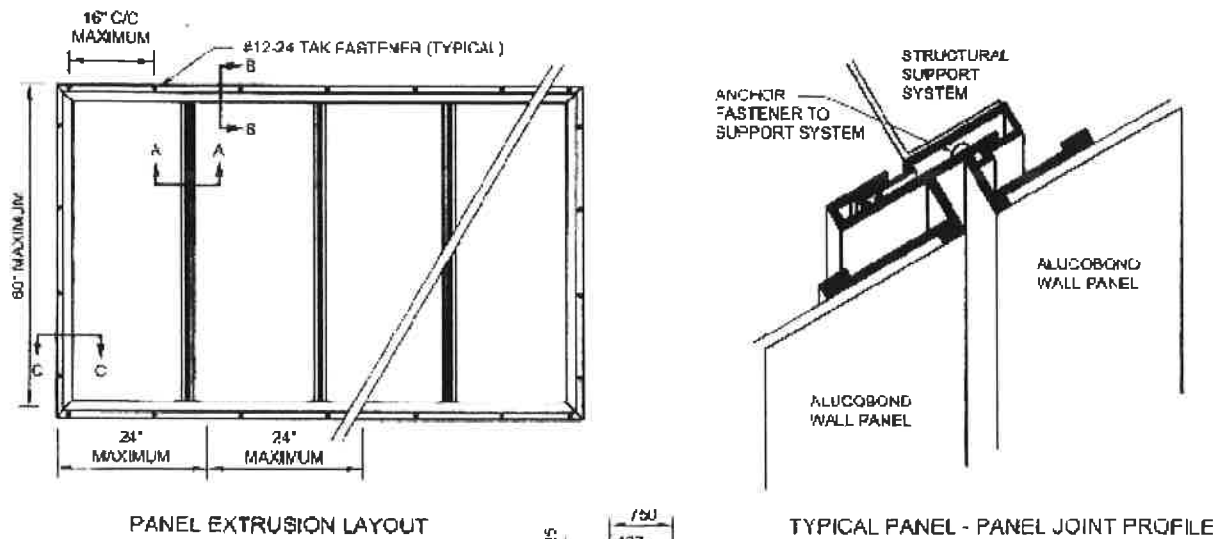
**CONNECTION DETAIL**



**INTERMEDIATE STIFFENER REINFORCING EXTRUSION**

FIGURE 2—CONTINUOUS ROUT AND RETURN





**CEG ATTACHMENT SYSTEM**

FIGURE 3