

ICC-ES Evaluation Report

ESR-1185

Reissued February 1, 2011

This report is subject to re-examination in two years.
www.icc-es.org | (800) 423-6587 | (562) 699-0543

A Subsidiary of the International Code Council®

**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 5TH STREET
 BENTON, KENTUCKY 42025-0507
 (800) 626-3365
www.3ACompositesUSA.com
info.usa@3acomposites.com

EVALUATION SUBJECT:
ALUCOBOND® PLUS WALL PANELS
1.0 EVALUATION SCOPE
Compliance with the following codes:

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

Properties evaluated:

- Fire performance
- Structural

2.0 USES

Alucobond® Plus wall panels are metal composite panels complying with IBC Section 1407 for metal composite materials (MCMs), and are used as nonload-bearing, exterior wall panels in accordance with Chapter 14 of the IBC; interior wall finish in accordance with Chapter 8 of the IBC; and in various interior applications in covered mall buildings in accordance with Chapter 4 of the IBC as denoted in Sections 5.8 through 5.10 of this report.

3.0 DESCRIPTION
3.1 Panel:

Alucobond® Plus wall panels are aluminum composite wall panels consisting of two nominally 0.020-inch-thick (0.51 mm) aluminum skins, bonded to both surfaces of a nominally 0.12-inch-thick (3.05 mm), extruded polyethylene copolymer (with inorganic fillers), noninsulating core having a nominal density of 112 pcf (1795 kg/m³). The aluminum finish may be painted or anodized. The polyethylene core is extruded continuously and is bonded to the aluminum faces in a continuous process in which the interlock between the aluminum and the polyethylene is achieved by means of a chemical bond.

Alucobond® Plus wall panels are manufactured in a nominal thickness of 0.16 inch (4 mm) and are available in widths up to 62 inches (1575 mm). Lengths are available up to 25 feet (7620 mm).

Alucobond® Plus wall 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 E 84, and have a Class A interior finish classification.

3.2 Framing:

3.2.1 Rout and Return with Clips: The following materials are used in a rout and return panel installation method (see Figure 2):

- 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 to attach the panel to the building structure or framing (see Figure 5).
- I-shaped extruded aluminum reinforcement stiffener (see Figure 2).

3.2.2 Continuous Rout and Return Extrusions: The following materials are used in a continuous rout and return panel installation method (see Figures 3 and 4):

- Continuous rout and return extrusions (see Figures 3 and 4).
- I-shaped extruded aluminum reinforcement (see Figure 3).
- 1 1/2-inch-by-1 1/2-inch-by-1/8-inch thick (38.1 mm by 38.1 mm by 3.2 mm) extruded aluminum clips to attach the "I" shaped extruded aluminum reinforcement to the return edge of the panel (see Figure 3).

3.2.3 Continuous Edge Grip: The following materials are used in a continuous edge grip panel installation method (see Figure 1):

- Continuous grip extrusions.
- I-shaped extruded aluminum reinforcement.

4.0 DESIGN AND INSTALLATION
4.1 General:

If there are any conflicts between this report and the manufacturer's installation instructions, this report shall govern. 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 at all times on the jobsite 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® Plus panels: the “continuous edge grip” and the “rout-and-return” methods of attachment, as described in Sections 4.3.1, 4.3.2 and 4.3.3.

4.2 Design:

The maximum allowable design wind load pressure for the Alucobond® Plus panels installed in accordance with this report is 25 psf (1.2 kPa), positive or negative. The maximum allowable transverse load for an interior finish is 16 psf. 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, 4.3.2 and 4.3.3.

4.3.1 Continuous Edge Grip Installation: The continuous edge grip method of attachment is based on routing all panel edges with a 0.063-inch-wide (1.60 mm), 0.290-inch-deep (7.37 mm) groove. The extruded aluminum edge grip frame (6063-T6) is cut to size, mitered and attached with a one-component structural silicone sealant/adhesive, complying with ASTM C 1184, applied between the panel back and the extrusion. The extruded edge grip frame is applied to the panel with an edge grip frame fitted into the routed groove of the panel. The Alucobond® Plus panels with continuous edge grip framing may be installed in sections not greater than 5 feet (1.5 m) wide when using an I-shaped aluminum stiffener member as shown Figure 1 at spacings up to 24 inches (609.6 mm) on center, along the panel length. The stiffeners are attached with one No. 8 by 1/2-inch self-tapping hex head screw at each end of the member to the continuous edge grip extrusion bar and with an approved structural silicone sealant/adhesive (ASTM C 1184) between the stiffener and the panel. The panels must be attached to the structural frame by No. 12, self-drilling, tapping screws, or another fastener that is demonstrated to be equivalent by engineering analysis. The fasteners must be spaced a maximum of 16 inches (406 mm) on center around the perimeter of the panel and must be protected against corrosion. See Figure 1 for typical details of the continuous edge grip method of attachment.

4.3.2 Rout and Return Installation: The rout and return method of attachment is based on routing the panels around their entire perimeter with a V-groove router, leaving only the face sheet uncut at the base of the groove along all edges. The panels are then folded at a right angle to create a return leg at each panel edge, using the facer sheet as a hinge. A 6063-T5 aluminum angle must be attached to the return leg using two No. 12-14 by 3/4-inch-long (19.05 mm), self-drilling, tapping screws. The adjoining angle leg must be attached to the structural wall framing with approved fasteners spaced a maximum of 24 inches (609.6 mm) on center. The Alucobond® Plus panels may be installed in sections not greater than 5 feet (1.5 m) wide when using an I-shaped aluminum stiffener member, as shown in Figure 2, at spacing up to 24 inches (609.6 mm) on center, along the panel length. The stiffeners are attached with two 5000 series aluminum pop rivets, complying with Industrial Fasteners Institute (IFI)

Standard 114, at each end of the member to the angle that is attached to the rout and return, and with an approved structural silicone sealant/adhesive (ASTM C 1184) between the stiffener and the panel. See Figures 2 and 3 for typical details of the rout and return method of attachment.

4.3.3 Continuous Rout and Return Extrusion Installation:

The continuous rout and return method of attachment is based on routing the panels around their entire perimeter with a V-groove router, leaving only the face sheet uncut at the base of the groove along all edges. The panels are then folded at a right angle to create a return leg at each panel edge, using the facer sheet as a hinge. A continuous rout and return extrusion bar is attached to the return leg. The continuous rout and return extrusion bar must be attached to the structural wall framing on 24-inch (609.6 mm) spacing. The Alucobond® Plus panels may be installed in sections not greater than 5 feet (1.5 m) wide when using an I-shaped aluminum stiffener member, as shown in Figure 3, at spacing up to 24 inches (609.6 mm) on center, along the panel length. The stiffeners are attached with one No. 8 by 1/2-inch, self-tapping hex head screw at each end of the member to the continuous rout and return extrusion bar, and with an approved structural silicone sealant/adhesive (ASTM C 1184) between the stiffener and the panel. See Figure 4 for typical details of the continuous rout and return extrusion bar method of attachment.

4.3.4 Exterior Walls of Buildings of Type I, II, III or IV Construction:

Where exterior walls are required to be noncombustible construction, the interior of the building must be separated from Alucobond® Plus wall panels by one layer of 5/8-inch-thick (15.87 mm), Type X gypsum wallboard and 3 1/2-inch-thick (88.9 mm), R-13, foil-faced fiberglass insulation, as indicated in Figure 4. Also, the floor level cavity at the intersection of the floor slab and the exterior wall framing system must be completely filled with an approved material or system meeting the criteria specified in IBC Section 713.4.

5.0 CONDITIONS OF USE

The Alucobond® Plus Wall Panels described in this report comply with, or are suitable alternatives to what is specified in, the code indicated 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. The design of the structural support system (building framing, attachment accessories 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.
- 5.2** Where exterior walls are required to be noncombustible on buildings of Types I, II, III or IV construction, Alucobond® Plus wall panels may be installed as specified in Section 4.3.4 of this report. Where the panels are elements of a balcony or similar projection, such as architectural trim or embellishments, the panels are not required to be installed as specified in Section 4.3.4 of this report.
- 5.3** The MCM system fabricator must provide a certificate of compliance to the code official attesting that the MCM system 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 system

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 IBC Section 1704.2, or the fabricator must be approved by the code official in accordance with IBC Section 1704.2.2, as such operations are outside the scope of this report.

- 5.4 Allowable transverse loads are set forth in Section 4.2 of this report.
- 5.5 Where a fire-resistance-rated exterior wall is required by the 2006 IBC, Alucobond® Plus wall panels may be installed as a veneer over the face of the fire-resistance-rated exterior wall construction, but must be more than 5 feet (1524 mm) from an interior lot line or 10 feet (3048 mm) from buildings on the same lot. Where a fire-resistance-rated exterior wall is required by the 2009 IBC, Alucobond Plus wall panels may be installed as a veneer over the face of the fire-resistance-rated exterior wall construction, provided the MCM system is installed on the outer surface of the exterior wall in a manner such that the attachments do not penetrate through the entire exterior wall assembly.
- 5.6 Evidence must be submitted to the code official of weather tightness of the wall cladding system in accordance with Section 1407.6 of the IBC.
- 5.7 Alucobond Plus wall panels may be used as interior finish where Class A, B, and C materials are required under Chapter 8 of the IBC.

5.8 Alucobond Plus wall panels may be used as components of kiosks where installed under the limitations specified in Section 402.10 of the 2006 IBC or Section 402.11 of the 2009 IBC.

5.9 Alucobond Plus wall panels may be used as components of children's playground structures where installed under the limitations of Section 402.11 of the 2006 IBC or Section 402.12 of the 2009 IBC.

5.10 Alucobond Plus wall panels may be used as plastic panels and signs where installed under the limitations specified in Section 402.15 of the 2006 IBC or Section 402.16 of the 2009 IBC.

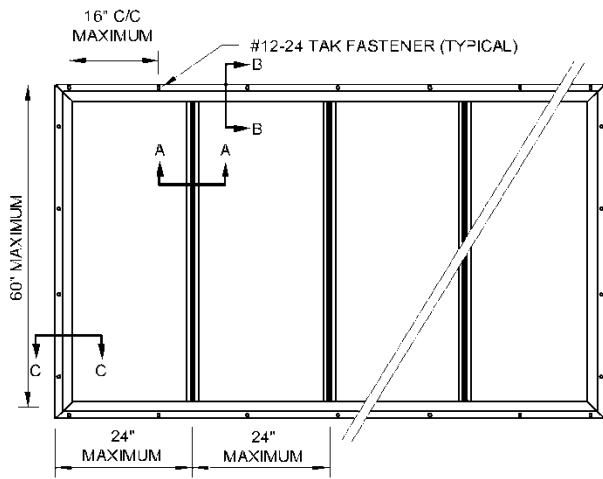
5.11 The Alucobond® Plus wall panels are produced in Benton, Kentucky, under a quality control program with inspections by Southwest Research Institute (AA-665).

6.0 EVIDENCE SUBMITTED

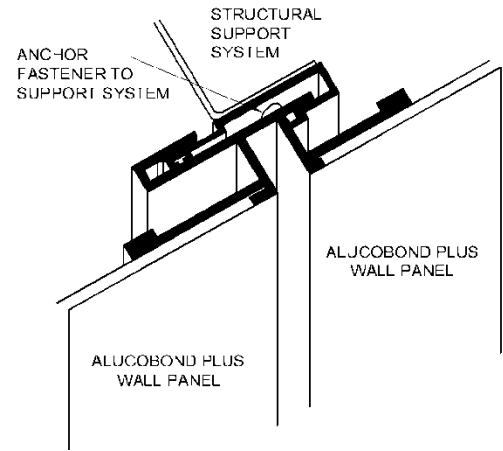
Data in accordance with the ICC-ES Acceptance Criteria for Metal Composite Material (MCM) (AC25), dated October 2010.

7.0 IDENTIFICATION

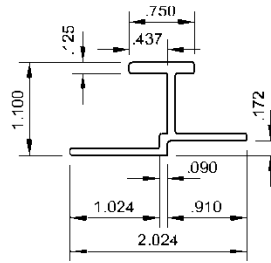
The panels are identified by a label noting the name and address of Alcan Composites USA, Inc., the product name, the thickness, the flame-spread index, the name of the inspection agency (Southwest Research Institute), and the evaluation report number (ESR-1185).



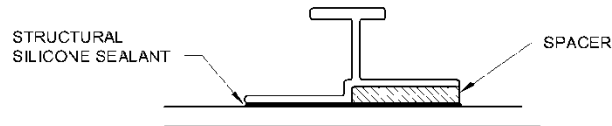
PANEL EXTRUSION LAYOUT



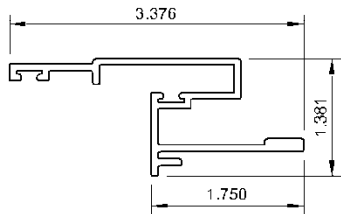
TYPICAL PANEL - PANEL JOINT PROFILE



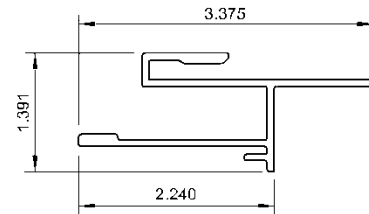
SECTION A-A
INTERMEDIATE STIFFENER PROFILE
(ALL WALLS .063 UNLESS NOTED)



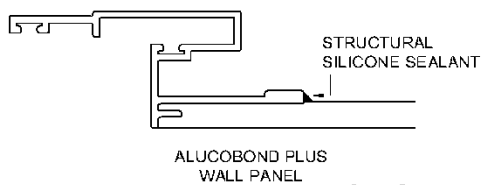
ALUCOBOND PLUS
WALL PANEL



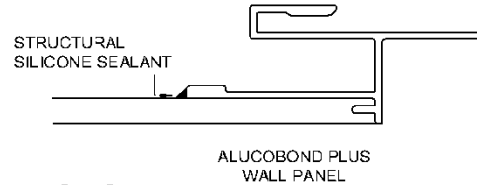
SECTION B-B
FRAME PROFILE
(ALL WALLS .063 UNLESS NOTED)



SECTION C-C
FRAME PROFILE
(ALL WALLS .063 UNLESS NOTED)



ALUCOBOND PLUS
WALL PANEL



ALUCOBOND PLUS
WALL PANEL

CEG ATTACHMENT SYSTEM

FIGURE 1

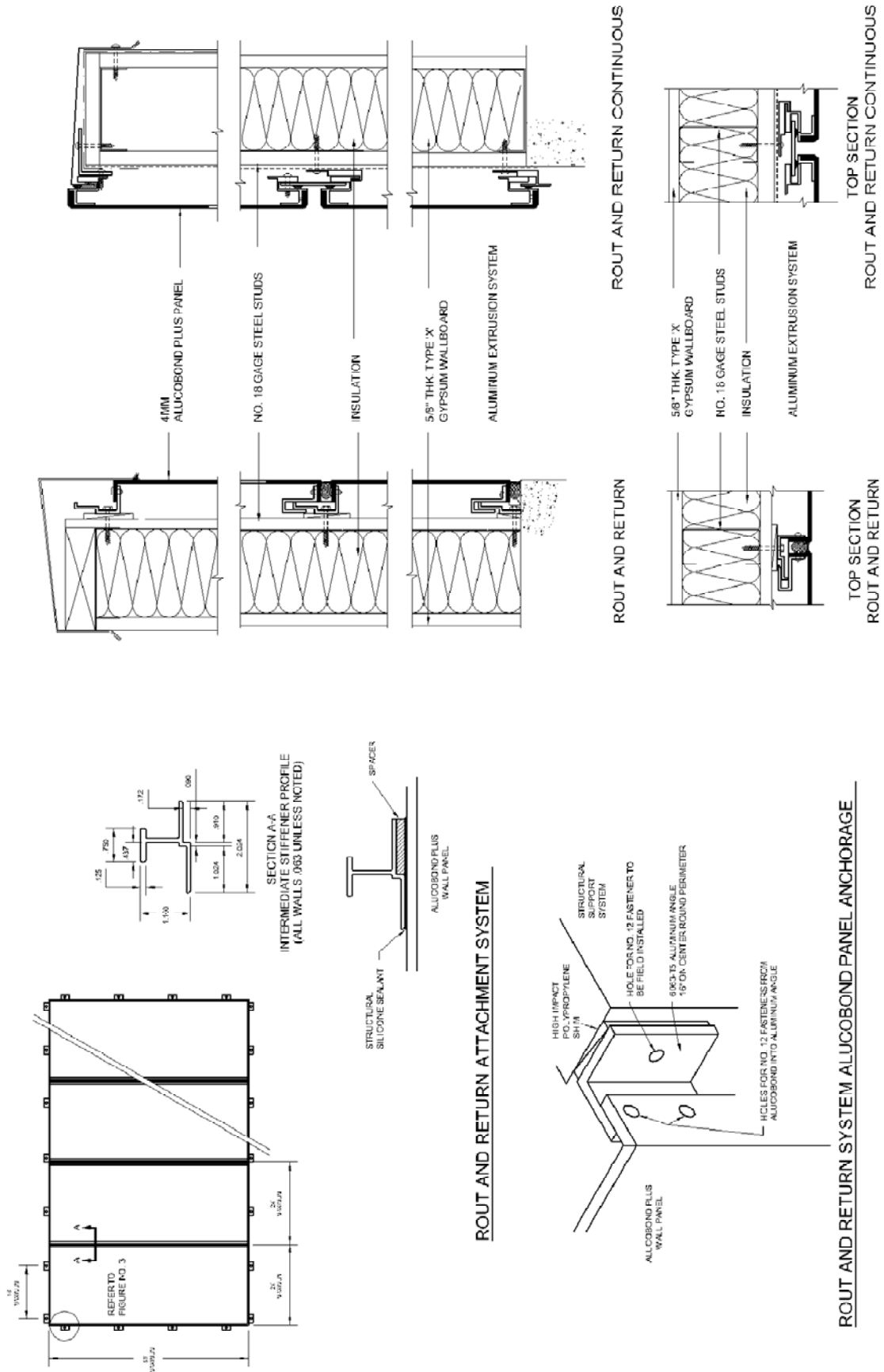
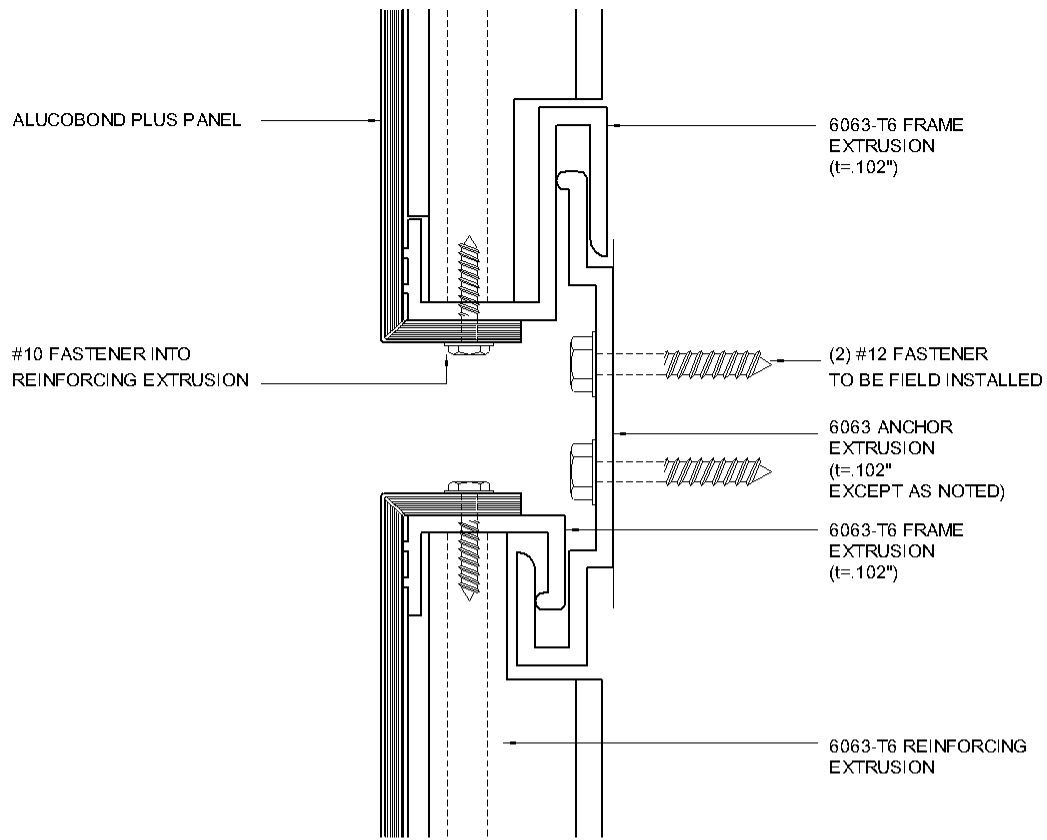
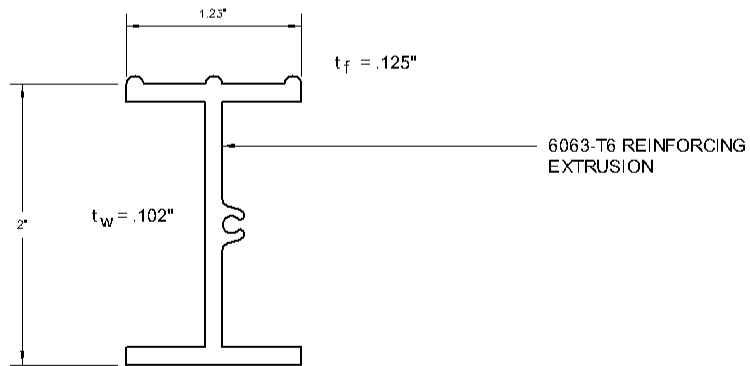


FIGURE 2

ROUT AND RETURN SYSTEM ALUCOBOND PANEL ANCHORAGE



CONNECTION DETAIL



THESE DRAWINGS ARE FOR ILLUSTRATION PURPOSES ONLY. THEY ARE NOT INTENDED FOR USE AS CONSTRUCTION DOCUMENTS FOR THE PURPOSE OF DESIGN, FABRICATION OR ERECTION.

FIGURE 3—REINFORCING EXTRUSION

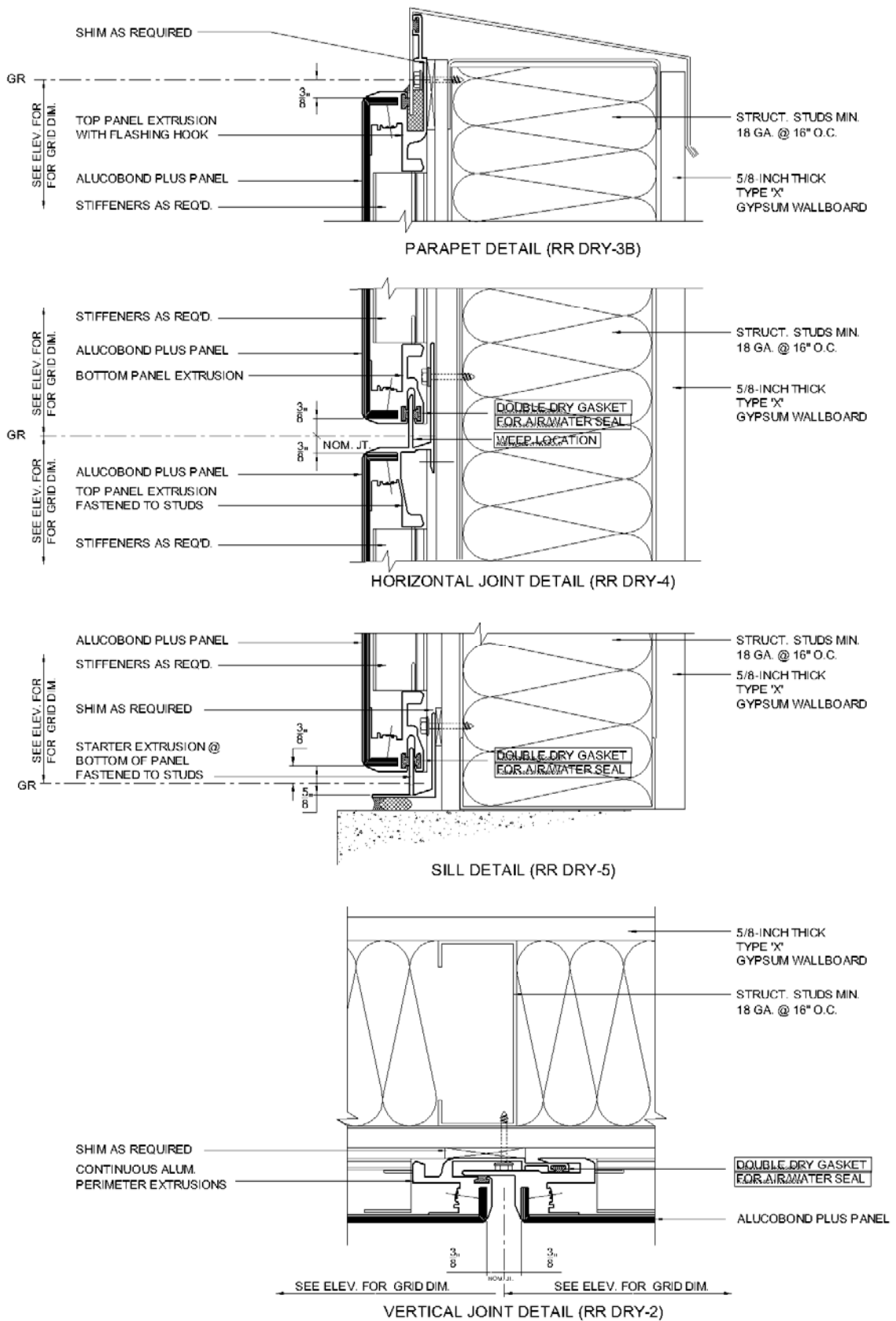


FIGURE 4—DETAILS FOR NONCOMBUSTIBLE ALTERNATIVES – ROUT AND RETURN WITH PERIMETER EXTRUSIONS

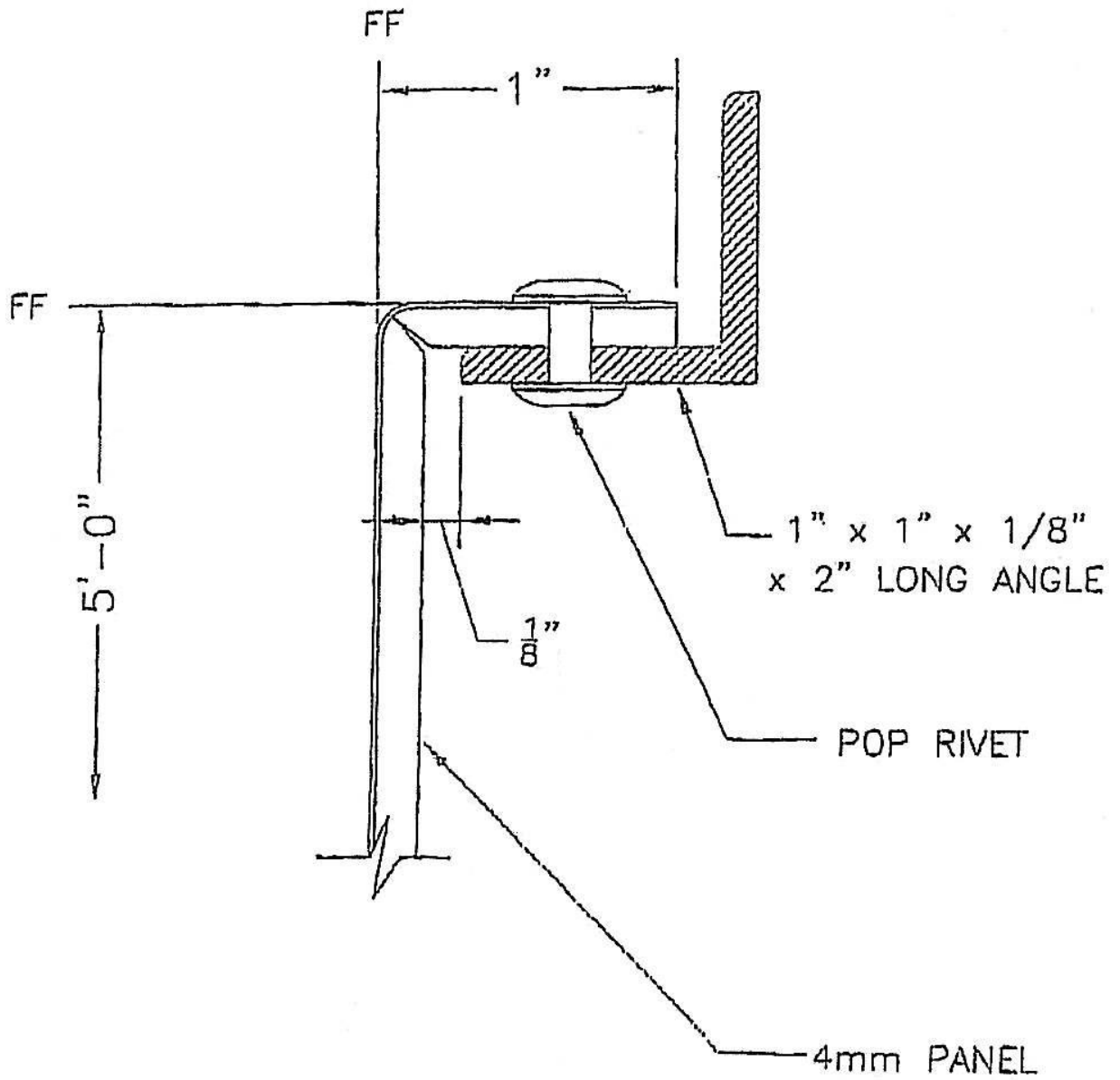


FIGURE 5—ROUT AND RETURN CLIP ATTACHMENT