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ESR-1185

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This report is subject to renewal 02/2018.

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

EVALUATION SUBJECT:

ALUCOBOND® PLUS WALL PANELS



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ICC-ES Evaluation Report**ESR-1185**

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

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EVALUATION SUBJECT:**ALUCOBOND® PLUS WALL PANELS****1.0 EVALUATION SCOPE****1.1 Compliance with the following codes:**

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

Properties evaluated:

- Fire performance
- Structural
- Interior Finish Classification

1.2 Evaluation to the following green code:

- 2013 California Green Building Standards Code (CALGreen), Title 24, Part 11
- 2012 and 2008 ICC 700 *National Green Building Standard*™ (ICC 700-2012 and ICC 700-2008)

Attributes verified:

- See Section 2.0

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.

The attributes of the Alucobond® Plus wall panels have been verified as conforming to the provisions of (i)

CALGreen Sections A4.405.1.3 (prefinished materials) and A5.406.1.2 (reduced maintenance); (ii) ICC 700-2012 Sections 601.7, 11.601.7, and 12.1(A).601.7 (site-applied finishing materials); and (iii) ICC 700-2008 Section 601.7 (site-applied finishing materials). Note that decisions on compliance for those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. The code may provide supplemental information as guidance.

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 E84, and have a Class A interior finish classification.

3.2 Framing: Installation of the Alucobond® Plus 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 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).
- 1¹/₂-inch-by-1¹/₂-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 C1184, 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 C1184) 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 C1184) 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 C1184) 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 **Type I, II, III or IV** (non-combustible) construction, the interior of the building must be separated from Alucobond® Plus wall panels by one layer of ⁷/₈-inch-thick (15.87 mm), Type X gypsum wallboard and 3¹/₂-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.
- 5.2 The design of the structural support system (building framing, attachment accessories, silicone sealants/adhesives 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.
- 5.3 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.
- 5.4 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 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 1704.2.5.2 or 2009 and 2006 IBC Section 1704.2.2, as such operations are outside the scope of this report.
- 5.5 Allowable transverse loads are set forth in Section 4.2 of this report.
- 5.6 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.
- 5.7 Where a fire-resistance-rated exterior wall is required by the 2012 and 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.
- 5.8 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.
- 5.9 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.
- 5.10 Alucobond® Plus wall panels may be used as components of kiosks where 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.
- 5.11 Alucobond® Plus wall panels may be used as components of children's playground structures where installed under the limitations of Section 402.6.3 of the 2012 IBC, Section 402.12 of the 2009 IBC or Section 402.11 of the 2006.
- 5.12 Alucobond® Plus wall panels may be used as plastic panels and signs where installed under the limitations specified in Section 402.6.4 of the 2012 IBC, Section 402.16 of the 2009 IBC or Section 402.15 of the 2006 IBC.
- 5.13 The Alucobond® Plus 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 (MCM) (AC25), dated October 2010 (editorially revised August 2014).

7.0 IDENTIFICATION

The panels are identified by a label noting the name and address of 3A Composites USA, Inc., the product name, the thickness, the flame-spread index, and the evaluation report number (ESR-1185).

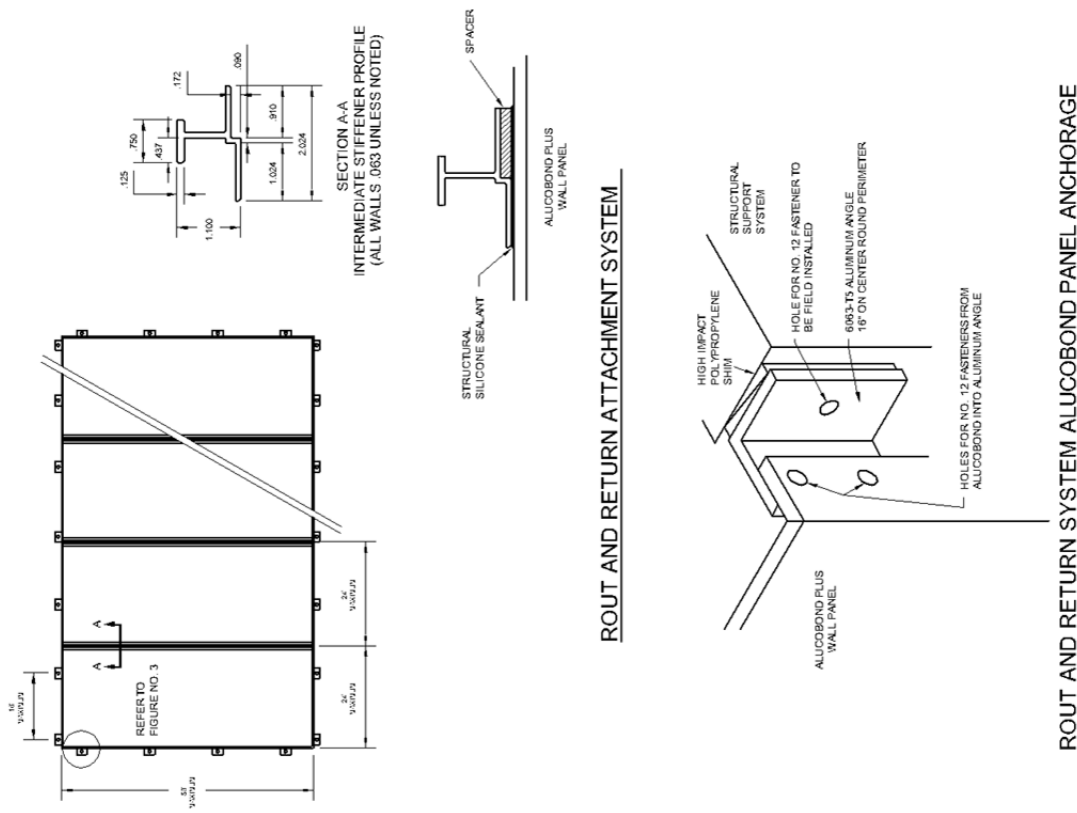
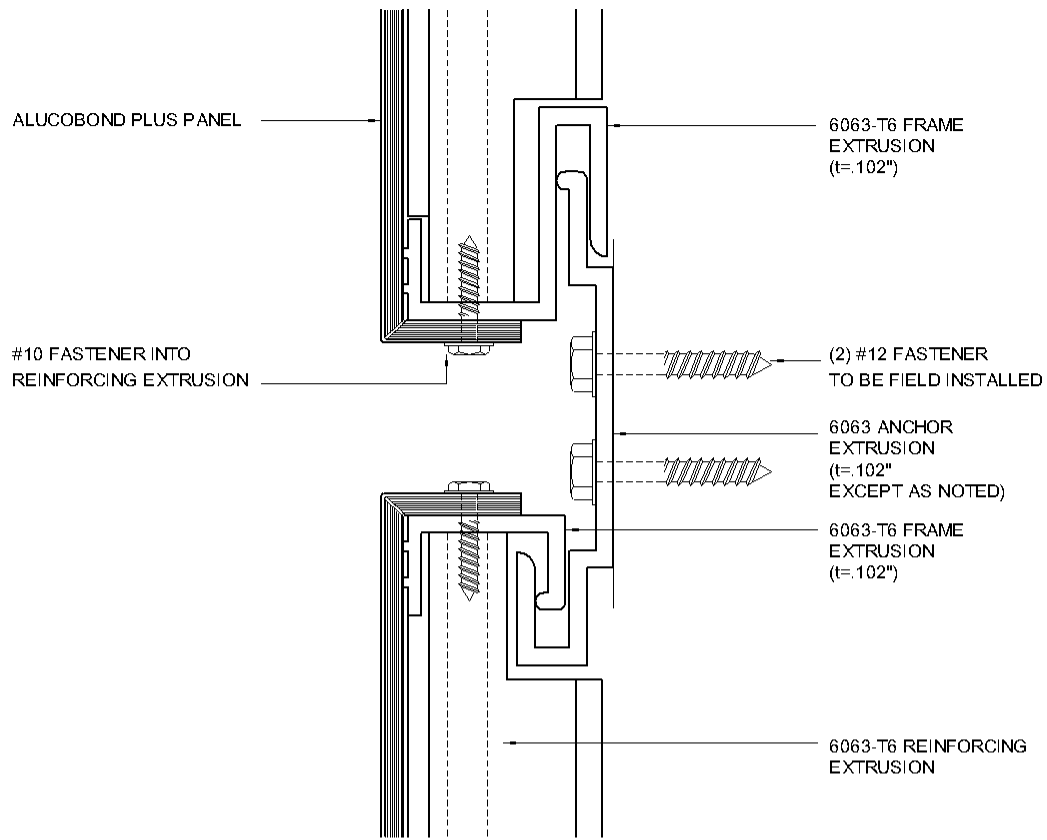


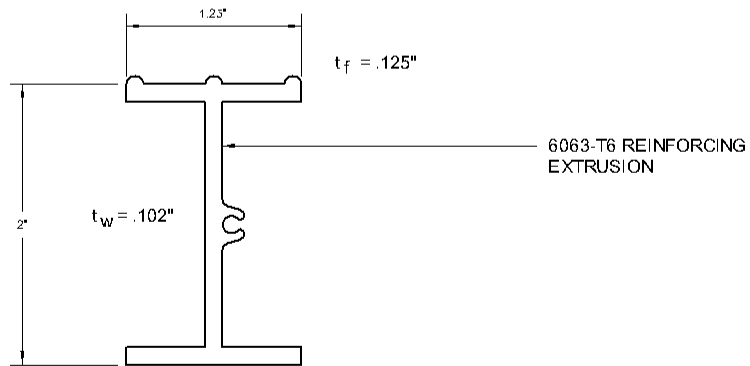
FIGURE 1

ROUT AND RETURN SYSTEM ALUCOBOND PLUS PANEL ANCHORAGE

FIGURE 2



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

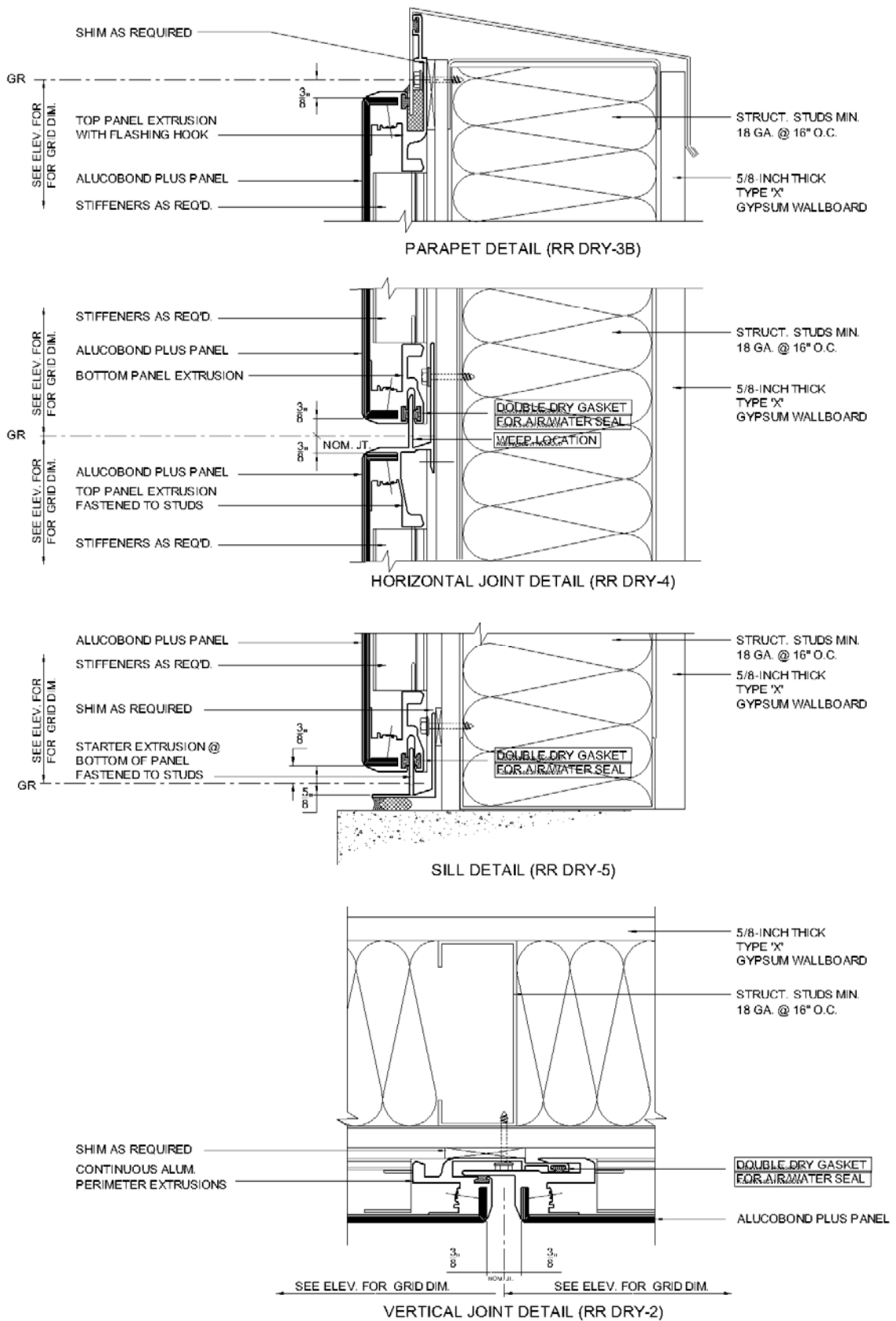


FIGURE 4—DETAILS FOR NONCOMBUSTIBLE ALTERNATIVES – ROUT AND RETURN WITH PERIMETER EXTRUSIONS

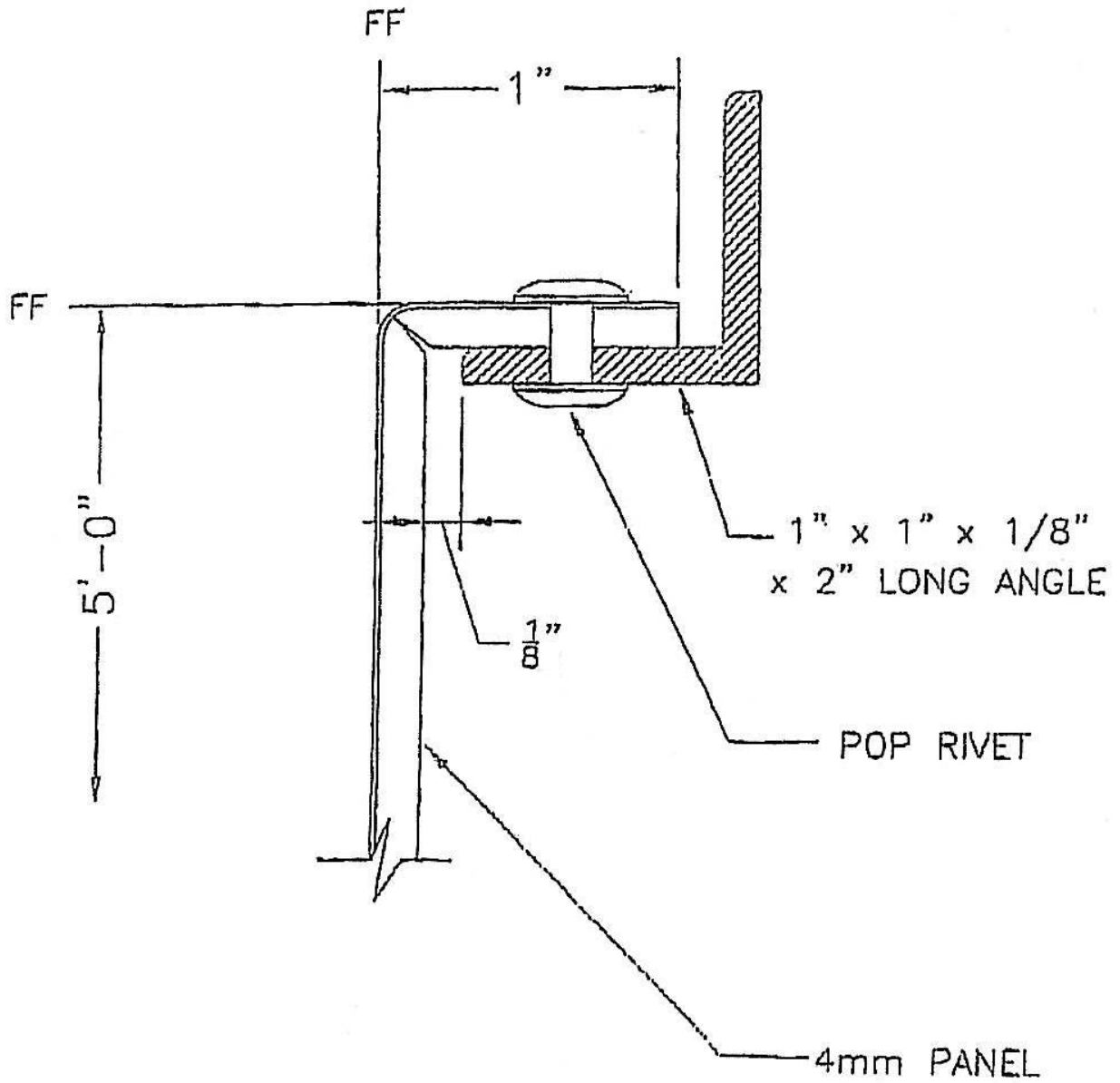


FIGURE 5—ROUT AND RETURN CLIP ATTACHMENT