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ICC-ES Evaluation Report

ESR-2835

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23—Wood, Plastic, and Composite Fastenings

REPORT HOLDER:

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EVALUATION SUBJECT:

QUICK MOUNT PV ROOF MOUNTS

1.0 EVALUATION SCOPE

Compliance with the following code:

2006 *International Building Code*® (IBC)

Properties evaluated:

- Structural
- Water penetration

2.0 USES

The Quick Mount PV Roof Mount is a mounting bracket used to attach solar panel mounting systems to the wood framing of roofs with asphalt shingle or wood shake roof coverings.

3.0 DESCRIPTION

The Quick Mount PV Roof Mount has three main components: a hanger bolt, an aluminum spacer block and a flashing plate. The hanger bolt is a $^{5}/_{16}$-inch-diameter-by-6-inch-long (152 mm) fastener with lag-screw threads on one end and UNC threads on the opposite end. The hanger bolts are fabricated from stainless steel as described in the approved quality documentation. The flashing plate can be either 12 inches (305 mm) square or 18 inches (457 mm) square and is formed from 0.05-inch-thick (1.3 mm) aluminum conforming to ASTM B 209. The 12-inch square flashing plate is used for installation with asphalt shingles roofs and the 18-inch square flashing plate is used for installation with wood shake roofs. The aluminum spacer block measures 2.25 inches (57 mm) deep by 1.25 inches (32 mm) long. See Figure 1 for an illustration of the Quick Mount Roof Mount.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The tabulated allowable strengths shown in this report are based on allowable stress design (ASD) and include the load duration factor, C_D, corresponding with the applicable loads in accordance with the National Design Specification for Wood Construction (NDS).

Where the roof mounts are exposed to in-service temperatures exceeding 100°F (37.8°C), uplift allowable loads shown in Table 1 must be adjusted by the temperature factor, C_t, in accordance with Section 10.3.4 of the NDS. When products are attached to wood framing having an in-service moisture content greater than 19 percent (16 percent for engineered wood products), or where wet service is expected, the allowable loads must be adjusted by the wet service factor, C_M, specified in Section 10.3.3 of the NDS. Connected wood members must be analyzed for load-carrying capacity at the connection in accordance with the NDS.

4.2 Installation:

The flashing plate must be placed underneath the shingle or shake in a weather-lap fashion. Prior to the hanger bolt's being placed through the spacer block hole, the hole must be filled with a sealant approved for roofing applications. The lag-screw end of the hanger bolt is screwed into the rafter through the spacer block and flashing plate. The sealing washer and nut are fastened through the threaded rod portion of the hanger bolt. The black gasket is then placed over the nut and through the threaded rod to seal the hole of the spacer block. Then a $^{5}/_{16}$-inch (7.9 mm) stainless steel nut is placed to secure the connection of a mounting bracket, which is supplied by others, onto the UNC threaded end of the hanger bolt. Installation of the Quick Mount Roof Mount is limited to roofs having minimum slopes of 2:12 (18 percent) and maximum slopes of 24:12 (200 percent). The minimum specific gravity of the wood member is as noted in Table 1.

5.0 CONDITIONS OF USE

The Quick Mount Roof Mount described in this report complies with, or is a suitable alternative to what is specified in, the code indicated in Section 1.0 of this report, subject to the following conditions:

The Quick Mount PV Roof Mount must be installed in accordance with this report and the manufacturer's published installation instructions. In the event of a conflict between this report and the manufacturer's published installation instructions, this report governs.

Calculations showing compliance with this report must be submitted to the code official. The calculations must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

6.0 EVIDENCE SUBMITTED

6.1 Load test data in accordance with the ICC-ES Acceptance Criteria for Joist Hangers and Similar Devices (AC13), dated October 2006.

6.2 Rain test data in accordance with the ICC-ES Acceptance Criteria for Roof Flashing for Pipe Penetrations (AC286), dated February 2008.

6.3 Quality documentation and installation instructions.

7.0 IDENTIFICATION

The Quick Mount PV Roof Mount is identified with a label bearing the report holder's name (Quick Mount PV), the product name or designation, and the evaluation report number (ESR-2835).

TABLE 1—QUICK MOUNT ROOF MOUNT ALLOWABLE UPLIFT AND LATERAL LOADS[1,2,3]

LOAD DIRECTON[4]	SPECIFIC GRAVITY OF LUMBER RAFTER	ALLOWABLE LOAD (lbf)
Uplift	0.50 (Douglas fir–larch)	811
	0.36 (Western cedars)	436
Lateral	0.50 (Douglas fir–larch)	671
	0.36 (Western cedars)	634

For **SI:** 1 lbf = 4.48 N.

[1]The lag screw portion of the $^{5}/_{16}$-inch-diameter (7.9 mm) hanger bolt must be installed into the rafter with a minimum penetration of 2.875 inches (73 mm) and must satisfy edge distance specified by NDS.
[2]Design forces must be determined in accordance with the applicable code and must not exceed the tabulated values. No increases for load duration are permitted.
[3]Where the temperatures in the vicinity of the roof framing exceed 100°F (37.8°C), the tabulated uplift allowable loads must be multiplied by the temperature factor, C_t, set forth in Section 10.3.4 of the NDS.
[4]Uplift load direction is perpendicular to the plane of the roof. Lateral load direction is parallel to the rafter. Lateral load perpendicular to the rafter is outside the scope of this report. See figures below for a description of the load direction.

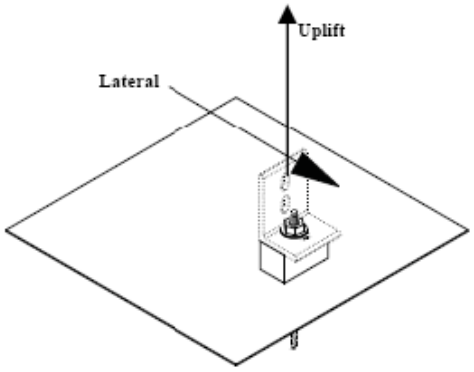

FIGURE 1

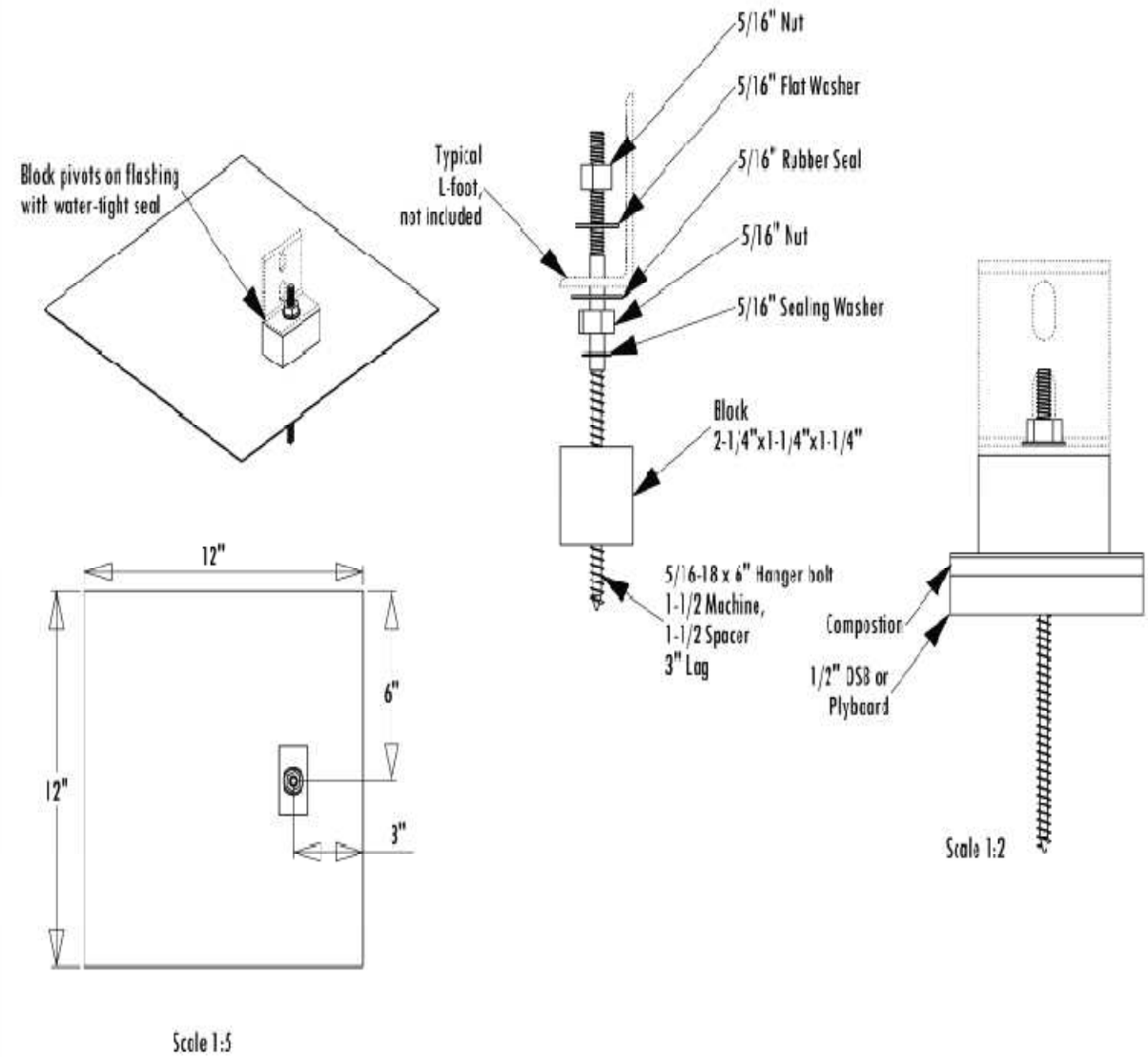
Block pivots on flashing with water-tight seal
Typical L-foot, not included
5/16" Nut
5/16" Flat Washer
5/16" Rubber Seal
5/16" Nut
5/16" Sealing Washer
Block 2-1/4"x1-1/4"x1-1/4"
5/16-18 x 6" Hanger bolt 1-1/2 Machine, 1-1/2 Spacer 3" Lag
Composition
1/2" OSB or Plywood
Scale 1:2
12"
6"
12"
3"
Scale 1:5

FIGURE 2