



**PFS
Test
Report**



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Quality Assurance • Design Calculations • Sampling • Witnessing

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MDF panels, I-Joists, Rim-board, LVL, Trusses

WOOD-PLASTIC COMPOSITE LUMBER and GUARDRAIL SYSTEMS

Deck boards, Structural Elements, Guards, and Handrails

BUILDING STRUCTURAL COMPONENTS

Load Bearing Performance

STRUCTURAL INSULATED PANELS

Structural Performance and Adhesive Qualification

STRUCTURAL and CONSTRUCTION ADHESIVES

Exterior Wet-Use, Building Materials Product Use, Sub-floor, and General Purpose

ROOF COVERINGS and EXTERIOR SIDINGS

All types

FASTENERS and CONNECTIONS

Nails, Screws, Staples, Bolts, Connector Plates, Joist Hangers

CORPORATE HEADQUARTERS and LABORATORY

1507 Matt Pass
Cottage Grove, WI 53527
Tel: (608) 839-1013
Fax: (608) 839-1014
James Husom
jhusom@pfscorporation.com

NORTHEAST REGION

2877 Skatetown Road
Bloomsburg, PA 17815
Tel: (570) 784-8396
Fax: (570) 784-5961
Richard L. Wenner, PE
rwenner@pfscorporation.com

PRODUCTS DIVISION

1507 Matt Pass
Cottage Grove, WI 53527
Tel: (608) 839-1013
Fax: (608) 839-1014
Ronald H. Reindl, AIA
rreindl@pfscorporation.com

WESTERN REGION

3637 Motor Avenue, Suite 380
Los Angeles, CA 90034
Tel: (310) 559-7287
Fax: (310) 559-1368
J. Robert Nelson, PE
rnelson@pfscorporation.com

SOUTH CENTRAL REGION

2520 K Avenue, Suite 700-735
Plano, TX 75074
Tel: (972) 424-2740
Fax: (608) 839-3995
Jeremy Hopland
jerhopland@pfscorporation.com

SOUTHEAST REGION

2109 Rainy Lake Street
Wake Forest, NC 27587
Tel: (919) 217-7002
Fax: (919) 217-7003
Larry A. Beineke, PE, Ph.D.
lbeineke@pfscorporation.com



PFS Corporation

An Employee-Owned Company

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Headquarters

1507 Matt Pass
Cottage Grove, WI 53527

Phone: 608.839.1013
Fax: 608.839.1014

Website

www.pfscorporation.com

James J. Husom

President & CEO
jhusom@pfscorporation.com

James A. Rothman, PE

Sr. Vice President – QC
jrothman@pfscorporation.com

Regional Offices

Northeast

Bloomsburg, PA
570.784.8396

Southcentral

Plano, TX
972.424.2740

Western

Los Angeles, CA
310.559.7287

Southeast

Wake Forest, NC
919.217.7002

Products Division

Cottage Grove, WI
608.839.1013

**Manufactured Structures
Division**

Cottage Grove, WI
608.839.1013

**PFS TEST REPORT # 15-078
ICC-ES AC 286 § 4.1 RAIN TEST OF
SIMPLEGRIP FLAT ROOF MOUNT
FOR
ECOFASTEN SOLAR[®]
MORRISVILLE, VERMONT**

GENERAL

PFS Corporation, Cottage Grove, Wisconsin, was contracted by the client, EcoFasten Solar[®], Morrisville, Vermont, to evaluate the rain test performance of the SimpleGrip, a flat roof mount. The SimpleGrip mounting system was tested according to client instructions and in general accordance with AC 286 (2013) "Acceptance Criteria for Roof Flashing for Pipe Penetrations." PFS Laboratory received the roof mount system on 7/7/2015. The rain test was performed on 7/27/2015 at the PFS Testing Laboratory in Cottage Grove.

TEST SPECIMENS

The SimpleGrip roof mount system consists of a 10 parts assembly (Roof level mastic, SimpliGrip base, 2" OMG XHD fastener, Upper level mastic, SimpleSeal bushing, Compression plate, EPDM sealing washer, Rock-it slide, EPDM bonded washer, and a Flange nut) as shown in Appendix A, *Photo 1*. The underlayment, and roof deck components were locally procured by PFS. The underlayment was #30 felt conforming to ASTM D4869. The deck sheathing was 1/2-in. CDX, 3-ply, PS1 grade mark stamped, 32/16 plywood.

A mock-up roof deck 36-in. wide by 46-in. high was fabricated with the plywood sheathing and 2x6 SPF #2 lumber rafters spaced at 16-in. on center. The felt was applied on the deck, and rolled roofing (TopSeal WeatherWood) was installed. The SimpleGrip system was installed at the center of the deck (*Photos 2*) according to the manufacturer's installation guide (*Appendix A*).

CONDITIONING

The samples were tested in the ambient laboratory atmosphere of approximately 70 - 75°F and 40 - 50% relative humidity.

TEST PROCEDURE AND RESULTS

Spray Apparatus

The rain test spray apparatus was fabricated in accordance with UL441-2010 Section 27. The UL441 spray nozzles were obtained by PFS from the Underwriter's Laboratory. The simulated



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rainfall from the spray apparatus was calibrated according to Section 27 of UL441-2010 (*Photo 3*). The rainfall was measured to be 14.9 inches per hour.

Rain Test

Rain test was conducted with the test deck assembly mounted at 2:12 pitch such that the center of the deck was at 55-in. and 45-degrees measured from the central spray head (*Photo 4*). The deck was continuously sprayed for one hour. The underside of the deck was examined for any leakage. The deck pitch was changed to 1/4:12, and the spray continued for one hour (*Photo 5*).

TEST RESULTS

After the completion of the water spray the deck surface was wiped dry. The SimpleGrip assembly system was carefully disassembled and examined for any leakage through the assembly. The system did not show leakage through the rubber seal bushing, or the base (*Photo 6-9*), and underneath the deck (*Photo 10*). The SimpleGrip flashing system installed per Installation Guide passes ICC-ES AC286 Section 4.1 Rain Test requirement.

TEST REPORT DUPLICATION

This report shall not be reproduced, except in full, without the written approval of PFS Corporation, Cottage Grove, Wisconsin.

Testing Performed by:



Patrick Kenealy
Lab Technician

Report Prepared and
Test Witnessed by:



Deepak Shrestha, PE
General Manager – PFS Lab

Appendix A: SimpleGrip Installation Instructions

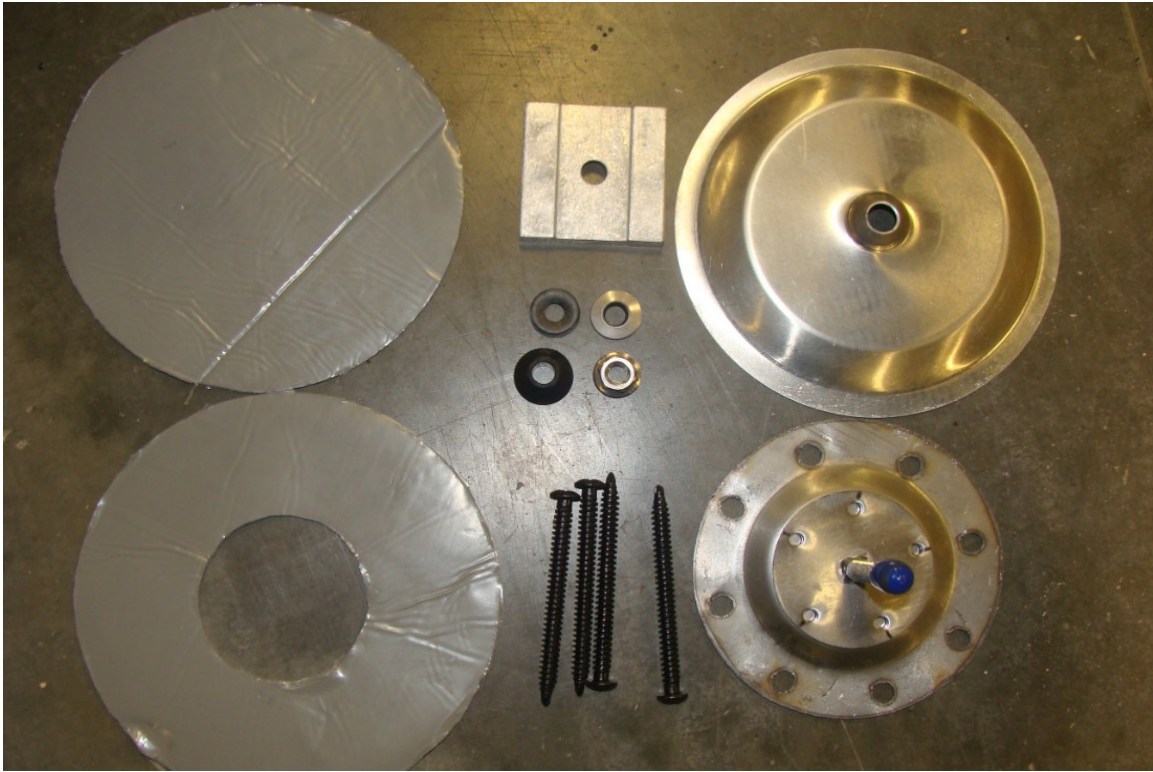


Photo 1: SimpleGrip Components



Photo 2: SimpleGrip Assembly Installed



Photo 3: Rain Test Calibration Setup



Photo 4: Test Deck Sample at 2:12 Pitch



Photo 5: Test Deck Sample at 1/4:12 Pitch



Photo 6: Disassembly of SimpleGrip After Rain Test



Photo 7: Disassembly of SimpleGrip After Rain Test

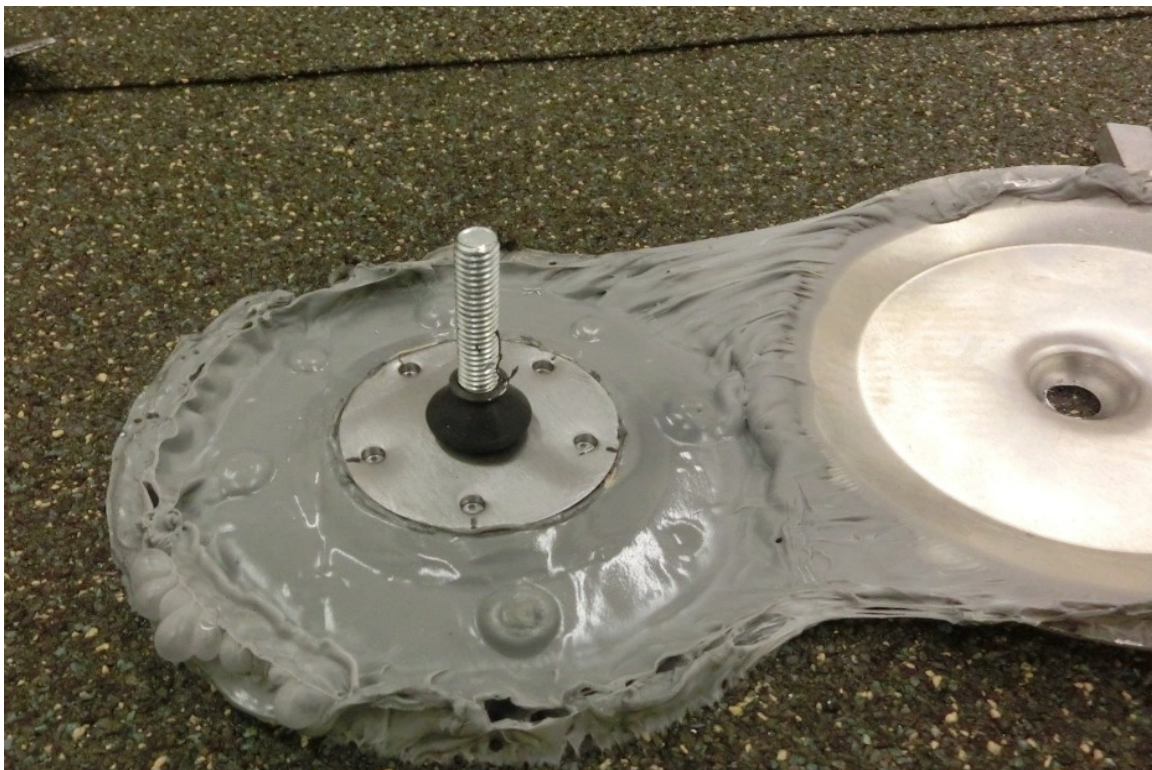


Photo 8: Top Surface of Test Deck After Rain Test, Compression Plate Removed



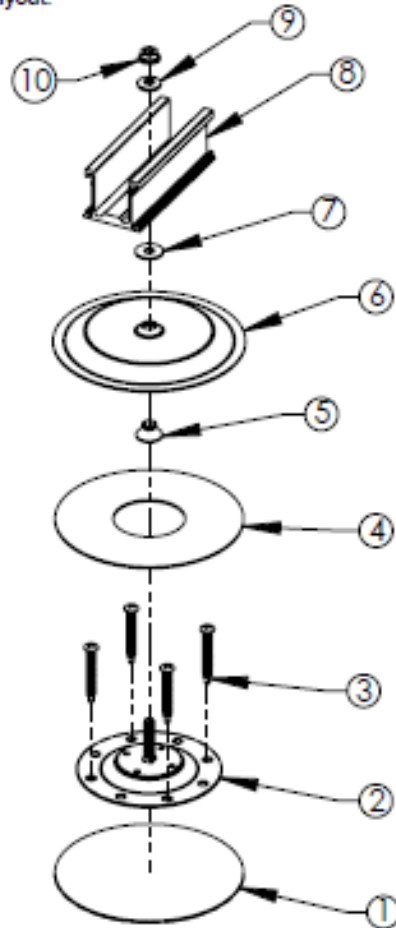
Photo 9: Top Surface of Test Deck After Rain Test, Compression Plate Removed



Photo 10: Underside of the Test Deck After Rain Test

Assembly Sheet - SimpleGrip

1. Installation to be completed in accordance with manufacturer's written specifications and installation instructions.
2. See spec sheet or contact manufacturer for detailed material, finishes, and configuration options.
3. Contact manufacturer for detailed layout.
4. Do not scale drawings.
5. Subject to change without notice.



ITEM NO.	DESCRIPTION	QTY
1	Roof Level Mastic	1
2	SimpleGrip Base	1
3	2" OMG XHD	4
4	Upper Level Mastic	1
5	Simple Seal Bushing	1
6	Compression Plate	1
7	EPDM Sealing Washer	1
8	Rock-It Slide	1
9	5/16" ID EPDM Bonded Washer 300 Series SS	1
10	5/16"-18 Flange Nut 300 Series SS	1



Toll Free Phone 1.888.766.4273
 Toll Free Fax 1.888.766.9994

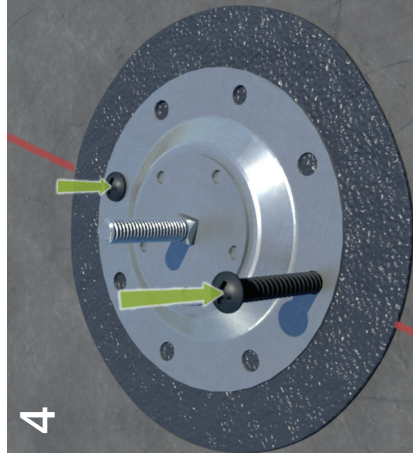
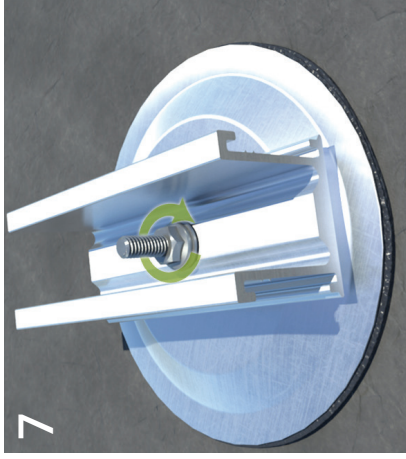
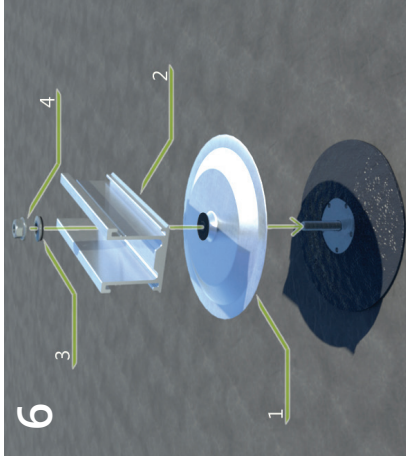
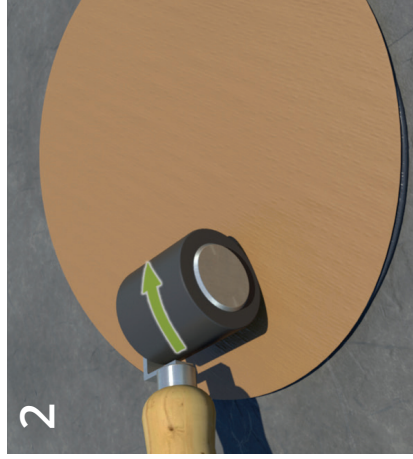
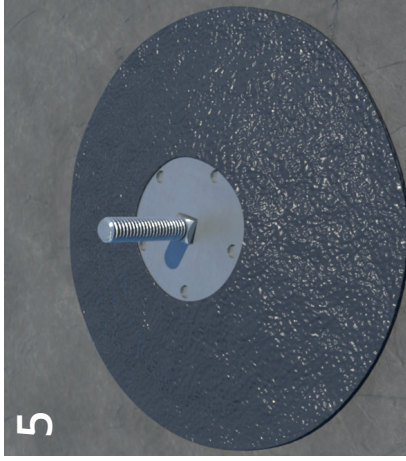
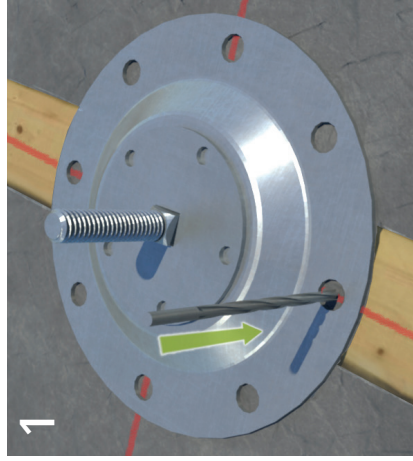


Toll Free Phone 1.877.859.3947
 Toll Free Fax 1.888.766.9994

289 Hamel Street
 Morrisville, VT 05661

Material: See Spec Sheet

Scale: 1:5 7/8/2015 ASG: - EFS: X



SimpleGrip

1. Locate the rafters and mark the installation position for each mount. Predrill a single 1/8" hole into roof to confirm rafter location.
Surface Prep: Surface must be dry and clear of all debris. Use a dry brush or compressed air to clear area.
2. Remove release paper from one side of Roof Level Mastic. Place and roll onto roofs surface.
3. Remove second side of release paper and place SimpleGrip base onto center of Roof Level Mastic.
4. Install fasteners. A minimum 2 fasteners into rafter at opposite sides of base plate.
5. Place Upper Level Mastic over perimeter of SimpleGrip Base.
6. Complete the assembly by placing (1) Compression Plate fitted with GreenFasten EPDM bushing, (2) EcoFasten bracket or Rock-It Slide, (3) EPDM bonded washer and (4) Flange nut on SimpleGrip Base Stud.
7. Torque Flange Nut to 100-140 inch-pounds.