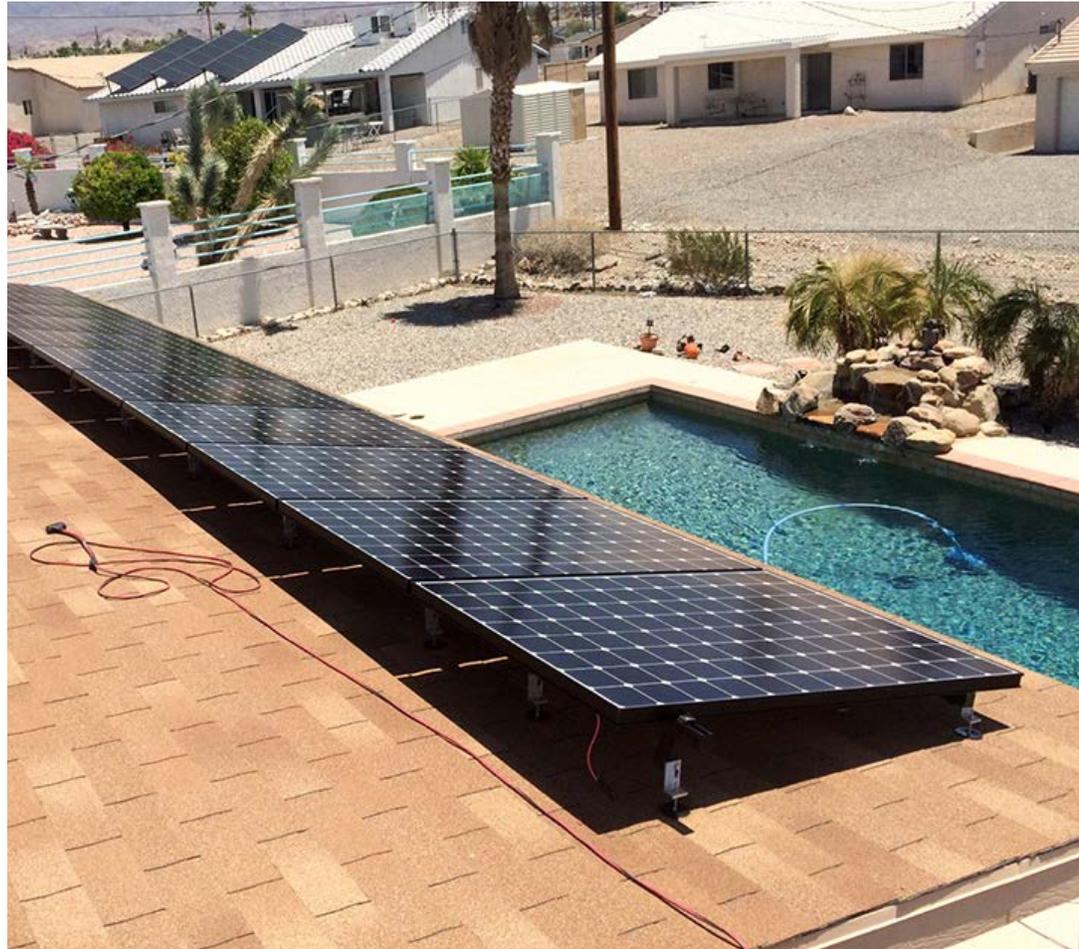


17717SS

FLASHED SPLIT TOP L-FOOT
FOR ASPHALT SHINGLE ROOFS



A DIVISION OF QUICKSCREWS INTERNATIONAL CORP

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UPLIFT & LATERAL LOAD TEST

SPEC SHEET

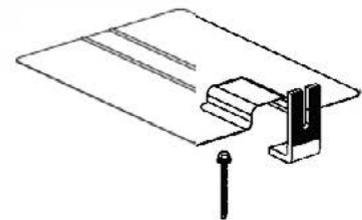
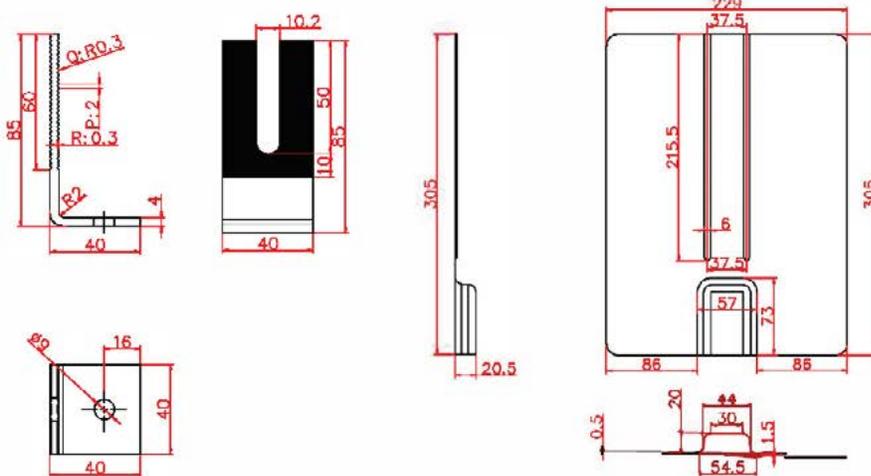
Part #	Box Quantity	Size
17717SS	Flashing + L-Foot + Dacro Screws with Sealing Washer (20ea.)	1/4" X 3"



17717SS
Kit Includes
15993, 17596SS, 17759



Customer	QuickBOLT
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Flashing must be flat.

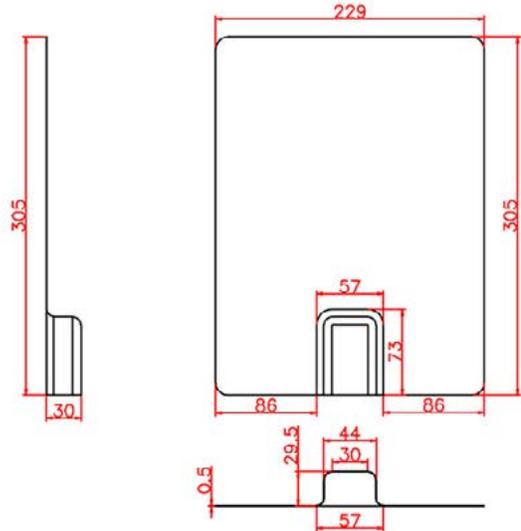
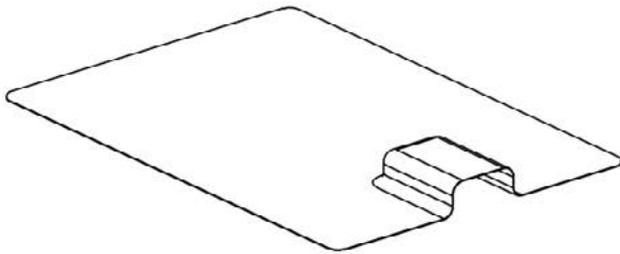
Technical requirement : The dimensions of the hooks are in accordance with the drawings.
Surface smooth, without burr.

Baiting tolerance	± 2 mm	Material:	Galva + SS304 + Dacrodized	Mapper:	
Hole tolerance	± 0.5 mm				
Hole distance tolerance	± 0.5 mm	Date:	2018. 07. 17	Auditor:	
Form tolerance	± 2 mm				
Thickness tolerance	± 0.1 mm	Galvalume = Aluminized Steel = 45% Zinc 55% Aluminum alloy coated			
Angle tolerance	± 1° mm				

Part# 15993

Included in Kit 17713SS

Customer



**Technical requirement : The dimensions of the hooks are in accordance with the drawings.
Surface smooth, without burr.**

Baiting tolerance	± 2 mm	Material:	Galvalume with Black Powder Coating	Mapper:	
Hole tolerance	± 0.5 mm				
Hole distance tolerance	± 0.5 mm	Date:	10/10/18	Auditor:	
Form tolerance	± 2 mm				
Thickness tolerance	± 0.1 mm				
Angle tolerance	± 1° mm				

CERTIFICATE OF COMPLIANCE

Certificate Number E493748
Report Reference E493748-20170817
Date 2023-April-07

Issued to: QuickBOLT a Division of Quickscrews International Corp
5830 Las Positas Rd
Livermore CA, 94551 US

This is to certify that representative samples of MOUNTING SYSTEMS, MOUNTING DEVICES, CLAMPING DEVICES AND GROUND LUGS FOR USE WITH PHOTOVOLTAIC MODULES AND PANELS - COMPONENT
See Addendum Page for Product Designation(s).

Have been evaluated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.

Standard(s) for Safety: UL 2703, Mounting systems, mounting devices, clamping/retention devices, and ground lugs for use with flat-plate photovoltaic modules and panels-.

Additional Information: See the UL Online Certifications Directory at <https://iq.ulprospector.com> for additional information

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Recognized Component Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.

Deborah Jennings-Conner

Deborah Jennings-Conner, VP Regulatory Services

UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at <http://ul.com/aboutul/locations/>



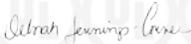
CERTIFICATE OF COMPLIANCE

Certificate Number E493748
Report Reference E493748-20170817
Date 2023-April-07

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

Models:

USR – Component, Roof Mounting Hook Units, Models 15891 15893 15987 16000 16317 16318 16319 16320 16988 16990 16991 16993 17508 17509 17510 17511 17512 17513 17514 17515 17516 17517 17518 17519 17520 17521 17522 17523 17524 17525 17526 17527 17536 17537 17538 17539 17540 17541 17542 17543 17544 17545 17546 17547 17548 17549 17550 17551 17552 17553 17554 17555 17556 17558 17559 17560 17566 17567 17568 17569 17570 17571 17572 17573 17574 17575 17576 17577 17578 17579 17580 17585 17586 17587 17588 17589 17592 17596 17597 17598 17599 17600 17601 17606 17607 17608 17609 17610 17611 17612 17613 17614 17615 17616 17617 17618 17620 17621 17622 17623 17624 17625 17626 17627 17628 17629 17630 17631 17632 17633 17636 17637 17638 17639 17640 17641 17642 17643 17646 17647 17648 17649 17650 17651 17652 17653 17654 17659 17664 17667 17669 17670 17671 17672 17673 17678 17679 17680 17681 17686 17687 17688 17689 17700 17701 17702 17703 17704 17705 17706 17707 17708 17709 17710 17711 17712 17717 17718 17750 17751 17752 17753 17759 15891-10 15891BLK-10 15987A 15987B 17667SS 17672SS 17680SS 17688SS 17713SS 17720 17721SS 17723 17724SS 17726 17727SS 17729 17730SS 15894SS 15891SS 15987BSS 17660 17661 17662 17663 17747 17748



Deborah Jennings-Conner, VP Regulatory Services

UL LLC

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INSTALL INSTRUCTIONS



RECOMMENDED MATERIALS

- Rafter locator
- Chalk or a crayon
- Drill with a 1/4" drill bit
- MFG approved sealant
- 1/2" Nut Setter
- Bar

INSTALLATION INSTRUCTIONS

1. Locate the and mark the rafter
2. Pre-drill the hole
3. Fill the predrilled hole with MFG approved sealant
4. Drive the Screw until the L-Foot is secure
5. Lift the shingles and place selaant around the L-Foot
6. Insert the Flashing underneath the shingles



BUILDING CODE LETTER



March 22nd, 2023

To whom this may concern,

QuickBOLT is committed to excellence. The parts tested are durable goods, meaning the material composition and detailed specifications of the parts do not change. Therefore, all stamps are current. Any part tested will have the same results no matter what year the tests are performed. All testing and reports are current and valid with 2022 CBC standards.

SolarRoofHook is the previous name of QuickBOLT. Any test result referencing SolarRoofHook is referring to a QuickBOLT product.

All our parts were tested by a third-party test facility, in possession of a current engineering license for the state where the tests were performed for the following.

1. Uplift test
2. Downward load test
3. Lateral Test – Asphalt Mounts, and Metal Mounts only
4. ASTM E2440 and ASTM E330 Waterproof Tests - QuickBOLT only

The following is an excerpt from:

CALIFORNIA BOARD FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS
guide to Engineering & Land Surveying for City and County Officials
Page 12, Line 27

27. If the license has expired between the time the engineering documents were prepared and the time when the local agency's review is performed, do the documents need to be re-sealed by a licensee with a current license? (B&P Code §§ 6733, 6735, 6735.3, 6735.4)

As long as the license was current at the time the engineering documents were prepared, the documents do not need to be re-sealed prior to review by the local agency. However, any changes (updates or modifications) to the documents that are made following the review by the local agency would have to be prepared by a licensed engineer with a current license and those changes would have to be signed and sealed.

We trust the information provided will resolve any request for the test reports submitted to have a stamp from the current year.

Regards,

Rick Gentry
Executive Vice President

ENGINEERING REPORT



APPLIED MATERIALS & ENGINEERING, INC.

980 41st Street
Oakland, CA 94608

Tel: (510) 420-8190
FAX: (510) 420-8186
e-mail: info@appmateng.com

March 22, 2021

Mr. Rick Gentry

Project No.: 1210153C

Quickscrews International
5830 Las Posita Road
Livermore, CA 94551

Email: RGentry@quickscrews.com

Subject: PV Mount L- Foot (Part #17717SS) Laboratory Load Testing

Dear Mr. Gentry:

As requested, Applied Materials & Engineering, Inc. (AME) has completed load-testing the PV Mount L- Foot; details are shown in Appendix A, Figure 1. The purpose of our testing was to evaluate the tensile (uplift) and shear load capacity of the PV Mount L-Foot attached to 1/2" OSB.

SAMPLE DESCRIPTION

Mockup samples were delivered to our laboratory on March 1, 2021. Mockup configuration consisted of three 12" long rafters at 6" o.c., screwed to 1/2" OSB. The L-Foot is attached through the plywood into the rafter with one #14x3" lag screw. The L-Foot configuration is shown in Figure 1 of Appendix A.

TEST PROCEDURES & RESULTS

1. Tensile (Uplift) Load Test

A total of three tests were conducted for tensile (uplift) load capacity on March 9, 2021 using a United Universal testing machine. Samples were rigidly attached to the testing machine and an uplift (tensile) load was applied to the mount. The samples were loaded in tension at a constant rate of axial deformation of 0.035 in. /min. without shock until failure occurred; displacement at maximum load was recorded.

Based on the above testing, the average maximum uplift load of the L- Foot attached to 1/2" OSB was determined to be 1383 lbf. Detailed results are provided in Table I. Test setup and mode of failure are provided in Appendix B, Figure 2.

The specific gravity and moisture content of the rafters were tested in accordance with ASTM D2395, Method A (oven-dry). The average specific gravity and average moisture content of the three samples were determined to be 0.484 and 0.6%, respectively.

Mr. Rick Gentry
Quickscrews International
PV Mount L- Foot Laboratory Load Testing
March 22, 2021

2. Shear (Lateral) Load Test Parallel to Rafter

A total of three tests were conducted for shear load capacity on March 9, 2021 using a United Universal testing machine. Samples were rigidly attached to the testing machine and a shear load (parallel to the rafter) was applied to the hook. The samples were loaded in compression at a constant rate of axial deformation of 0.035 in. /min. without shock until failure occurred; displacement at maximum load was recorded.

Based on the above testing, the average maximum shear load of the PV Mount L-Foot attached to 1/2" OSB was determined to be 797 lbf. Detailed results are provided in Table II. Test setup and mode of failure are provided in Appendix B, Figure 3.

The specific gravity and moisture content of the rafters were tested in accordance with ASTM D2395, Method A (oven-dry). The average specific gravity and average moisture content of the three samples were determined to be 0.489 and 0.9%, respectively.

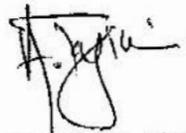
Respectfully Submitted,

APPLIED MATERIALS & ENGINEERING, INC.



Joseph Padilla
Laboratory Technician

Reviewed by:



Armen Tajirian, Ph.D., P.E.
Principal



TABLE I
TENSILE (UPLIFT) LOAD TEST RESULTS
PV MOUNT L-FOOT LABORATORY LOAD TESTING
PROJECT NO.: 1210153C

Test No.	Maximum Uplift Load (lbs)	Displacement At Maximum Load (in.)	Mode of Failure	Test Rafter Specific Gravity	Test Rafter Moisture Content (%)
5334	1318	0.29	Bolt slipping from L-foot	0.414	1.2
5335	1470	0.29	Lag bolt head failure	0.502	0.3
5336	1361	0.31	Lag bolt head failure	0.535	0.4
Average	1383	0.30	..	0.484	0.6

TABLE II
SHEAR LOAD TEST RESULTS
PV MOUNT L-FOOT LABORATORY LOAD TESTING
PROJECT NUMBER 1210153C

Test No.	Maximum Shear Load (lbs)	Displacement At Maximum Load (in.)	Mode of Failure	2x4 Wood Specific Gravity	2x4 Wood Moisture Content (%)
5338	848	0.79	Lag Screw Pull-out failure on all tests	0.480	0.9
5343	818	0.60		0.486	0.8
5345	724	0.74		0.500	0.9
Average	797	0.71		0.489	0.9

REFERENCES

AC13-2010, “*Acceptance Criteria for Joist Hangers and Similar Devices*”, ICC Evaluation Service.

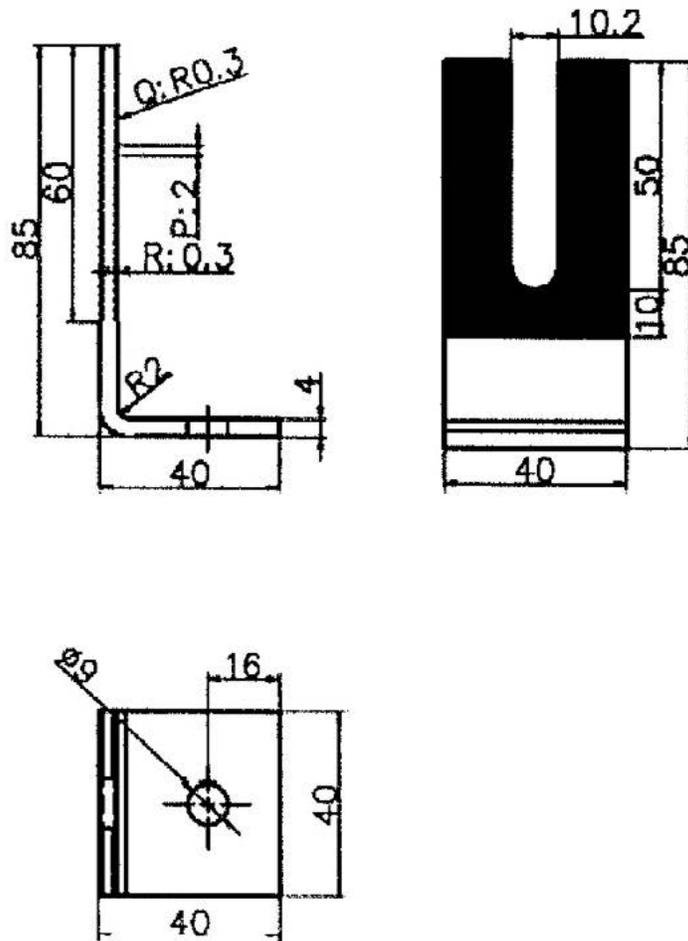
AC85-2008, “*Acceptance Criteria for Test Reports*”, ICC Evaluation Service.

ASTM D1761-2006, “*Standard Test Methods for Mechanical Fasteners in Wood*”, ASTM International.

ASTM D2395-2007, “*Standard Test Method for Specific Gravity of Wood and Wood-Based Materials*”,
ASTM International.

APPENDIX A

FIGURE 1
PV MOUNT L-FOOT HARDWARE DETAILS
PROJECT NUMBER 1210153C



APPENDIX B

FIGURE 2

PV MOUNT L-FOOT LABORATORY LOAD TESTING

TENSILE LOAD TEST SETUP

PROJECT NUMBER 1210153C

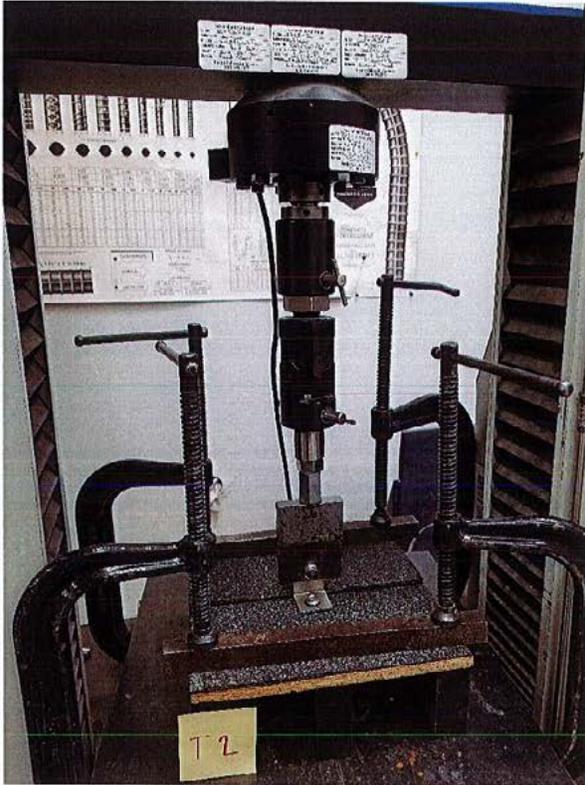


Figure 2a. Test set up.

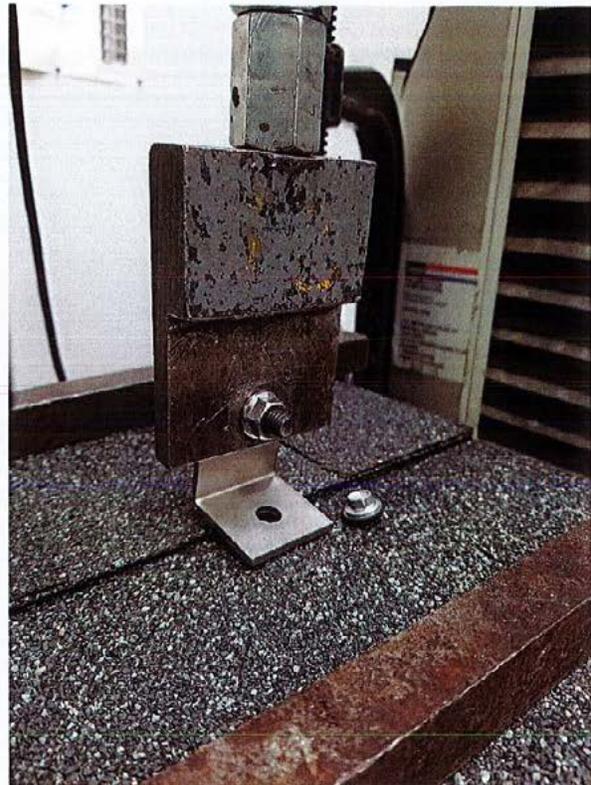


Figure 2b. Typical failure mode.

FIGURE 3
PV MOUNT L-FOOT LABORATORY LOAD TESTING
SHEAR LOAD TEST SETUP
PROJECT NUMBER 1210153C

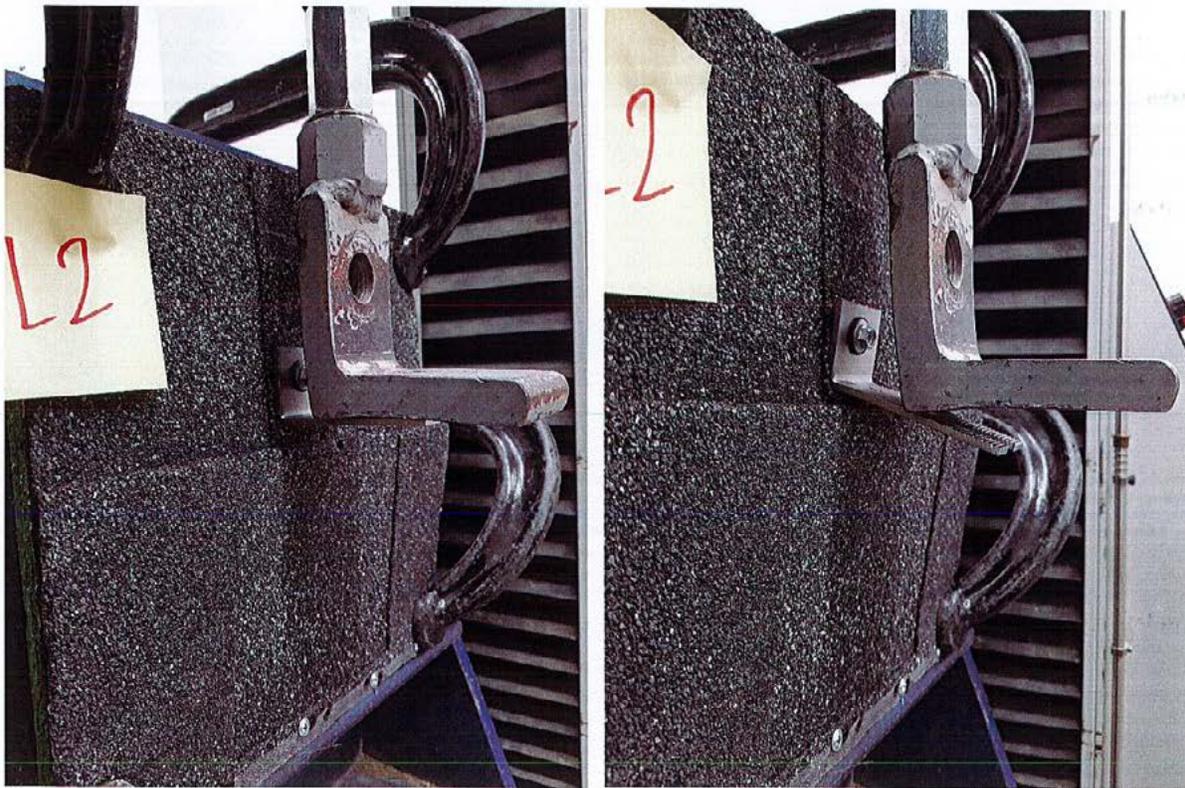


Figure 3a. Test set up.

Figure 3b. Typical failure mode.