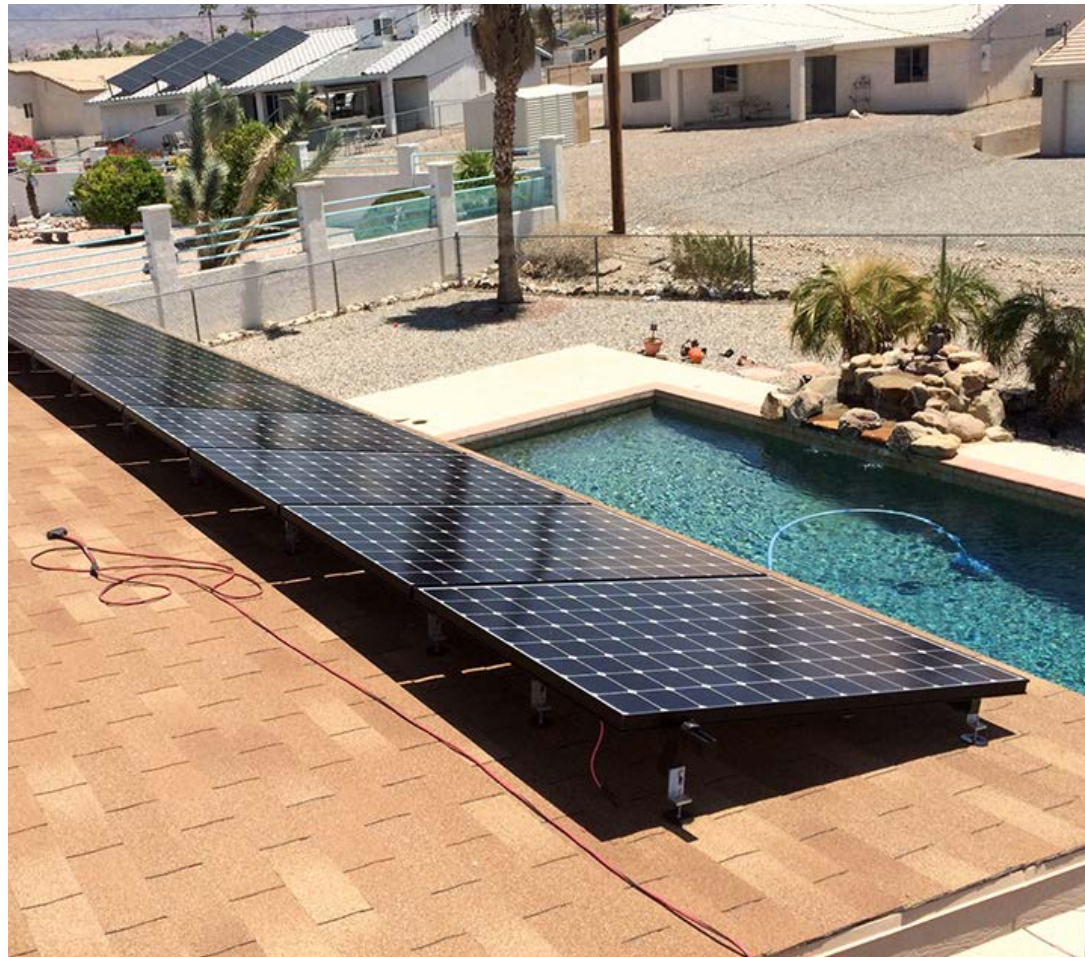


# 17667SS

17664, 17666, 17666NT

LOW PROFILE QB1 WITH 3" MICROFLASHING®  
FOR ASPHALT, EPDM, & TPO ROOFS  
PATENT # 8448407



A DIVISION OF QUICKSCREWS INTERNATIONAL CORP

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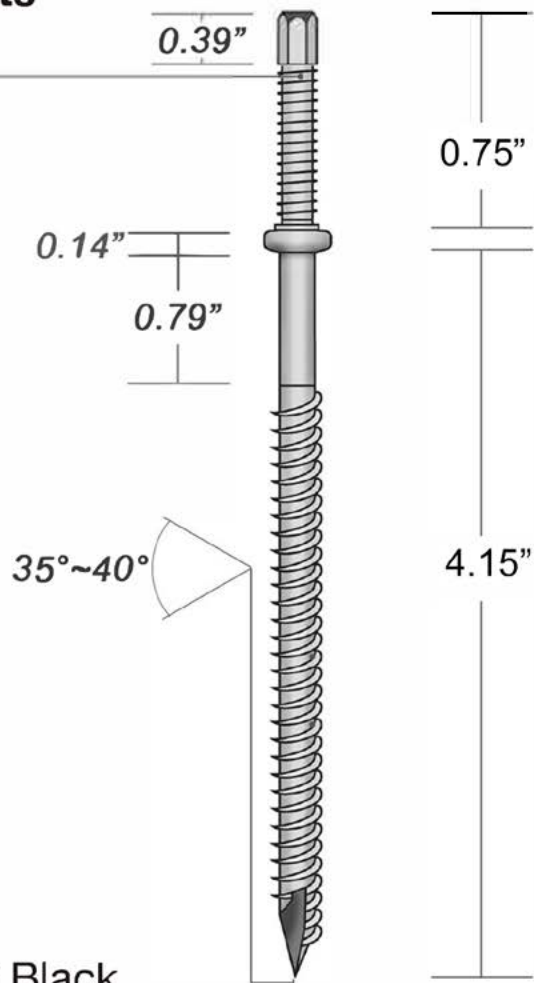
# SPEC SHEET

Part #	Box Quantity
17664	5.25" Bolts (10)
17666	3" Microflashing® (10); 5.25" Bolts (10)
17666NT	3" Microflashing® (25); 5.25" Bolts (25); 5/16" Serrated Hex Flange Nuts (25)
17667SS	3" Microflashing® (25); 5.25" Bolts (25); L-Foot (25); 5/16" Serrated Hex Flange Nuts (25)



Part # 17664

5/16-18 X 5.25"  
304 Stainless Steel  
**Removable Hanger Bolts**



Part # 17669

5/16" x 3"  
304 Stainless Steel  
**Compression Washer Black**





Natural color/Black		Customer
15894SS		
15794SS		

4mm Thick

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

Baiting tolerance	± 2 mm	Material:	304SS	Mapper:	
Hole tolerance	± 0.5 mm				
Hole distance tolerance	± 0.5 mm	Date:	2017. 11. 28	Auditor:	
Form tolerance	± 2 mm				
Thickness tolerance	± 0.1 mm				
Angle tolerance	± 1°				

# INSTALL INSTRUCTIONS



## RECOMMENDED MATERIALS

- Rafter locator
- Chalk or a crayon
- Drill with a 3/16" drill bit
- MFG approved sealant
- M6 deep socket hex driver
- 1/2" wrench

## INSTALLATION INSTRUCTIONS

1. Locate the rafter and predrill the hole
2. Fill the predrilled hole with MFG approved sealant
3. Place a ring of sealant around the bottom of the Microflashing® washer
4. Place the Microflashing® and drive the bolt until it compresses
5. Insert the L-Foot
6. Insert the nut and tighten until secure

To compress Microflashing® properly with QuickBOLT use a 125 minimum torque lbs/inch



# BUILDING CODE LETTER



February 26, 2019

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.

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 41<sup>st</sup> Street  
Oakland, CA 94608

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

February 14, 2018

Mr. Rick Gentry  
**SolarRoofHook**  
a division of Quickscrews International Corp.  
5830 Las Positas Road  
Livermore, CA 94551

Project Number 1180031C

**Subject:** L-Foot 4mm w/ Low Profile 5-1/4" QuickBOLT  
Part #15894SS with Part #17664 Laboratory Load Testing

Dear Mr. Gentry:

As requested, Applied Materials & Engineering, Inc. (AME) has completed load-testing the L-Foot 4mm (Part #15894SS) with the Low Profile 5-1/4" QuickBOLT (Part #17664); see Appendix A, Figure A1 and Figure A2, respectively. The purpose of our testing was to evaluate the lateral and tensile (uplift) load capacity of the L-Foot 4mm connecting member attached to a 2"x4" Douglas Fir rafter using one Low Profile 5/16"Øx5-1/4" QuickBOLT.

## SAMPLE DESCRIPTION

Mockup samples were delivered to our laboratory on January 10, 2018. Mockup configuration consisted of three 12" long rafters at 6.5"o.c., screwed to 1/2" OSB. One 5/16"Øx5-1/4" QuickBOLT was screwed through the Microflashing™ (sold as Part #17669) and then through the OSB into a rafter. The L-Foot 4mm is fastened to the QuickBOLT using one 5/16" 18-8 Stainless Steel Flange Nut.

## TEST PROCEDURES & RESULTS

### **1. Lateral Load Test**

A total of three tests were conducted for lateral load capacity on January 12, 2018 using a United Universal testing machine. Samples were rigidly attached to the testing machine and a lateral load was applied to each L-foot. The samples were loaded in shear at a constant rate of axial deformation of 0.10 in. /min. without shock until failure occurred; displacement at maximum load was recorded. Based on the above testing, the average maximum lateral load of the L-Foot 4mm attached to a 2"x4" Douglas Fir rafter using one Low Profile 5/16"Øx5-1/4" QuickBOLT was determined to be 508 lbf. Detailed results are provided in Table I and Figure 1. Test setup and mode of failure are provided in Appendix B, Figure B1.

The specific gravity and moisture content of each rafter was 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 0.416 and 10.8%, respectively.



Mr. Rick Gentry  
**SolarRoofHook**  
L-Foot 4mm w/ Low Profile 5-1/4" QuickBOLT  
Part #15894SS with Part #17664 Laboratory Load Testing  
February 14, 2018

Project Number 1180031C

## 2. Tensile (Uplift) Load Test

A total of three tests were conducted for tensile (uplift) load capacity on January 16, 2018 using a United Universal testing machine. Samples were rigidly attached to the testing machine and an uplift (tensile) load was applied to each L-foot. The samples were loaded in tension at a constant rate of axial deformation of 0.10 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 4mm attached to a 2"x4" Douglas Fir rafter using one Low Profile 5/16"Øx5-1/4" QuickBOLT was determined to be 3277 lbf. Detailed results are provided in Table II and Figure 2. Test setup and mode of failure are provided in Appendix B, Figure B2.

The specific gravity and moisture content of the rafter was 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 0.402 and 11.1%, respectively.

Respectfully Submitted,

**APPLIED MATERIALS & ENGINEERING, INC.**

*Joseph Gapuz*

Joseph Gapuz  
Laboratory Manager

Reviewed by:



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

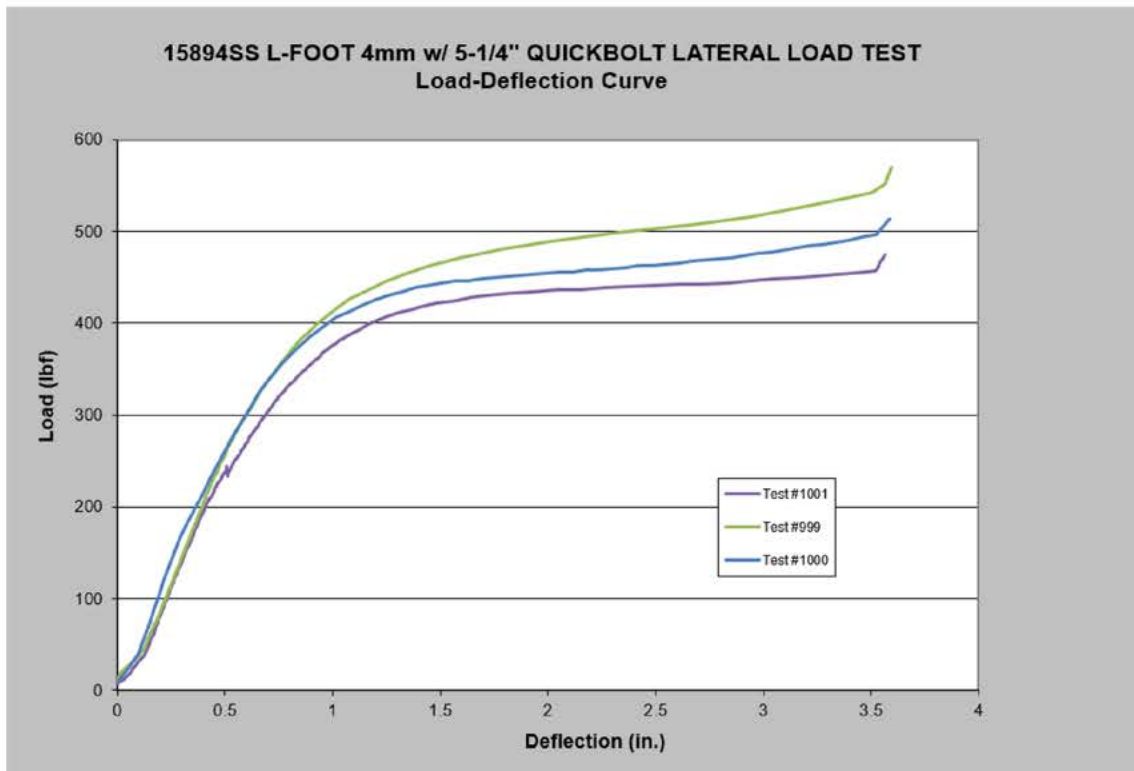
**TABLE I**  
**LATERAL LOAD TEST RESULTS**

**L-FOOT 4MM**  
**PART #15894SS w/ LOW PROFILE 5/16"Øx5-1/4" QUICKBOLT (PART #17664)**

**PROJECT NUMBER 1180031C**

TEST NUMBER	MAXIMUM LATERAL LOAD (lbf)	DISPLACEMENT AT MAXIMUM LOAD (in.)	MODE OF FAILURE	RAFTER SPECIFIC GRAVITY	RAFTER MOISTURE CONTENT (%)
999	552	3.5	Test Fixture Contacted Plywood	0.398	10.9
1000	498	3.5		0.413	11.7
1001	475	3.5		0.438	9.7
<b>AVERAGE</b>	<b>508</b>	<b>3.5</b>	<b>..</b>	<b>0.416</b>	<b>10.8</b>

**FIGURE 1**



Note: Maximum load recorded at moment fixture contacts plywood; see Appendix B for image of failure mode.

**TABLE II**

**TENSILE (UPLIFT) LOAD TEST RESULTS**

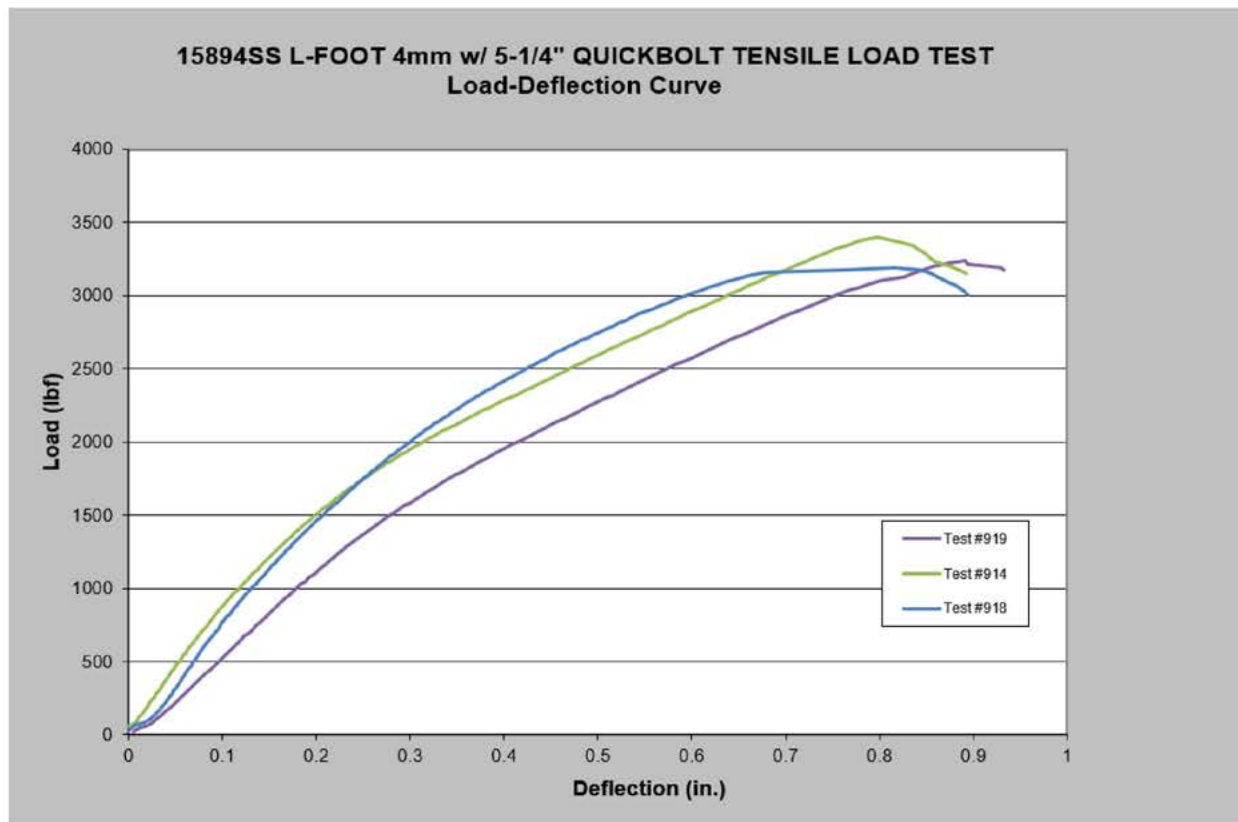
**L-FOOT 4MM**

**PART #15894SS w/ LOW PROFILE 5/16"Øx5-1/4" QUICKBOLT (PART #17664)**

**PROJECT NUMBER 1180031C**

TEST NUMBER	MAXIMUM TENSILE LOAD (lbf)	DISPLACEMENT AT MAXIMUM LOAD (in.)	MODE OF FAILURE	RAFTER SPECIFIC GRAVITY	RAFTER MOISTURE CONTENT (%)
914	3397	0.8	QuickBOLT Pull-out	0.395	10.1
918	3191	0.8		0.431	11.5
919	3242	0.8		0.381	11.9
<b>AVERAGE</b>	<b>3277</b>	<b>0.8</b>	<b>..</b>	<b>0.402</b>	<b>11.1</b>

**FIGURE 2**



## CERTIFICATE OF COMPLIANCE

**Certificate Number** 20180725-E493748  
**Report Reference** E493748-20170817  
**Issue Date** 2018-JULY-25

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

**This is to certify that  
representative samples of**


COMPONENT - MOUNTING SYSTEMS, MOUNTING DEVICES,  
CLAMPING DEVICES AND GROUND LUGS FOR USE WITH  
PHOTOVOLTAIC MODULES AND PANELS  
Refer to Addendum Page for Models/Product.

Have been investigated by UL in accordance with the  
Standard(s) indicated on this Certificate.

**Standard(s) for Safety:** UL 2703 Standard for 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  
[www.ul.com/database](http://www.ul.com/database) for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's  
Certification and Follow-Up Service.

The UL Recognized Component Mark generally consists of the manufacturer's identification and catalog  
number, model number or other product designation as specified under "Marking" for the particular  
Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products  
that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark:  
 may be used in conjunction with the required Recognized Marks. The Recognized Component Mark is  
required when specified in the UL Directory preceding the recognitions or under "Markings" for the individual  
recognitions.

Recognized components are incomplete in certain constructional features or restricted in performance  
capabilities and are intended for use as components of complete equipment submitted for investigation rather  
than for direct separate installation in the field. The final acceptance of the component is dependent upon its  
installation and use in complete equipment submitted to UL LLC.

Look for the UL Certification Mark on the product.



Bruce Mahrenholz, Director North American Certification Program  
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/about/locations/>



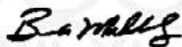
# CERTIFICATE OF COMPLIANCE

Certificate Number 20180725-E493748  
Report Reference E493748-20170817  
Issue Date 2018-JULY-25

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

## Models/Product

USR – Component, Roof Mounting Hook Units, Models 15891 15893 15987 16000 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 17568 17569 17570 17571 17572 17573 17574 17575 17576 17577 17578 17579 17580 17585  
17586 17587 17588 17589 17592 17596 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 17642 17643 17646 17647 17648 17649  
17650 17651 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 17759 15891-10 15891BLK-10 15987A 15987B 17667SS 17672SS 17680SS  
17688SS 17713SS 17720 17721SS 17723 17724SS 17726 17727SS 17729 17730SS 15894SS  
15891SS 15987BSS.



Bruce Mahrenholz, Director North American Certification Program  
UL LLC

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