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Installation Manual
Universal Side-of-Pole Mount
UNI-SP/01XH



 **IRONRIDGE**
Solar Mounting Solutions

Introduction

The Universal Side-of-Pole Mount UNI-SP/01XH is a simple and straightforward pole mounting solution for small area solar photovoltaic (PV) needs. With its user settable angle adjustment, it can support installations in a wide range of locations.

In addition, the UNI-SP/01XH supports:

- ◆ A single PV panel up to 27 inches in width.
- ◆ Pole diameters from 2.0 inches to 4.5 inches.

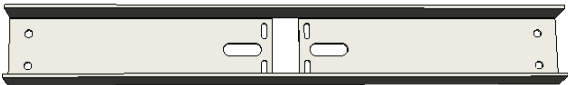
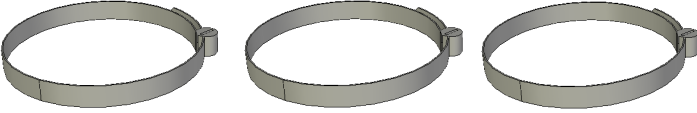

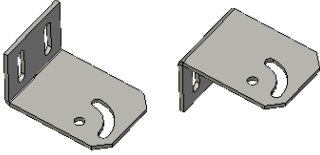
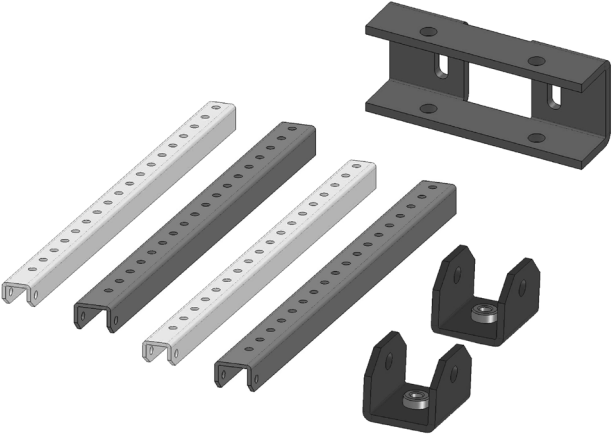
1. Installer Responsibility

The installer is solely responsible for:

- ◆ Complying with all applicable local or national building codes, including any that may supersede this manual
- ◆ Ensuring that IronRidge and other products are appropriate for the particular installation and the installation environment
- ◆ Ensuring that the selected mount can support the array under live load conditions
- ◆ Using only IronRidge parts and installer-supplied parts as specified by IronRidge. Substitution parts may void the warranty
- ◆ Ensuring safe installation of all electrical aspects of the PV array

4. Component List

The Universal Side-of-Pole Mount UNI-SP/01XH kit contains the following parts:

<p>Large Bucket (51-3517-242)</p> <p>Attaches to the pole with the hose clamps, providing the link between the pole and the module/rail assembly</p> 	<p>Hose Clamps (27-5000-010) x3</p> <p>Attach to the pole, holding the Bucket. These hose clamps are compatible with poles ranging from 2.0 inches to 4.5 inches</p> 																																				
<p>Rails (51-0527-000) x2</p> <p>Attach directly to the back of the module</p> 	<p>Clips (51-4517-243 / 51-4517-244)</p> <p>Hold the panel rails, allowing adjustment of the panel angle</p> 																																				
<p>Bucket, Lower Knee Brace (51-3517-203), Channels (Inner, 51-3517-207 and outer, 51-3517-208) x2 ea, Bracket (51-3517-204) x2</p> 	<table border="1"> <thead> <tr> <th>Part</th> <th>Qty</th> <th>Part Number</th> </tr> </thead> <tbody> <tr> <td>1/4-20 Kit</td> <td>1</td> <td>29-5000-000</td> </tr> <tr> <td>1/4-20 x 3/4" SS hex-cap bolt</td> <td>4</td> <td>23-2520-050</td> </tr> <tr> <td>1/4 flat washer, SS</td> <td>4</td> <td>25-2502-000</td> </tr> <tr> <td>1/4 split lock washer, SS</td> <td>4</td> <td>24-2501-000</td> </tr> <tr> <td>1/4 hex nut, SS</td> <td>4</td> <td>24-2520-440</td> </tr> <tr> <td>5/16-18 Kit</td> <td>1</td> <td>29-5001-000</td> </tr> <tr> <td>5/16-18 x 1" SS hex-cap bolt</td> <td>8</td> <td>23-3118-021</td> </tr> <tr> <td>5/16 flat washer, SS</td> <td>16</td> <td>25-3102-000</td> </tr> <tr> <td>5/16 split lock washer, SS</td> <td>8</td> <td>25-3101-000</td> </tr> <tr> <td>5/16 hex nut, SS</td> <td>8</td> <td>25-3118-440</td> </tr> <tr> <td>5/16 and 1/4 x 1" spare hardware kit</td> <td>1</td> <td>29-5020-001</td> </tr> </tbody> </table>	Part	Qty	Part Number	1/4-20 Kit	1	29-5000-000	1/4-20 x 3/4" SS hex-cap bolt	4	23-2520-050	1/4 flat washer, SS	4	25-2502-000	1/4 split lock washer, SS	4	24-2501-000	1/4 hex nut, SS	4	24-2520-440	5/16-18 Kit	1	29-5001-000	5/16-18 x 1" SS hex-cap bolt	8	23-3118-021	5/16 flat washer, SS	16	25-3102-000	5/16 split lock washer, SS	8	25-3101-000	5/16 hex nut, SS	8	25-3118-440	5/16 and 1/4 x 1" spare hardware kit	1	29-5020-001
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Part	Qty	Part Number
Lower SOP Channel Kit	1	29-5020-010
1/4-20 x 2" hex-cap bolt	2	23-2520-200
1/4-20 x 1 5/8" hex-cap bolt	2	23-2520-158
1/4 flat washer, SS	10	25-2502-000
1/4-20 hex flange nut, SS	8	25-2501-014
1/4-20 x 3/4" hex-cap bolt	6	23-2520-050

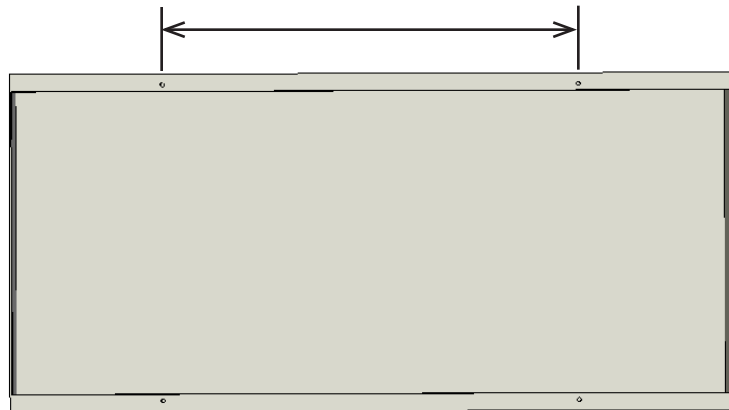
5. Assembly

Step 1 - measuring the distance between mounting holes on the PV module

Parts Required	Qty	Part Number
PV Module	1	User-supplied

1. Lay the PV Module face down on a protected flat surface.

2. Measure the distance between the inside mounting holes on the back of the PV module as shown and make a note of it.

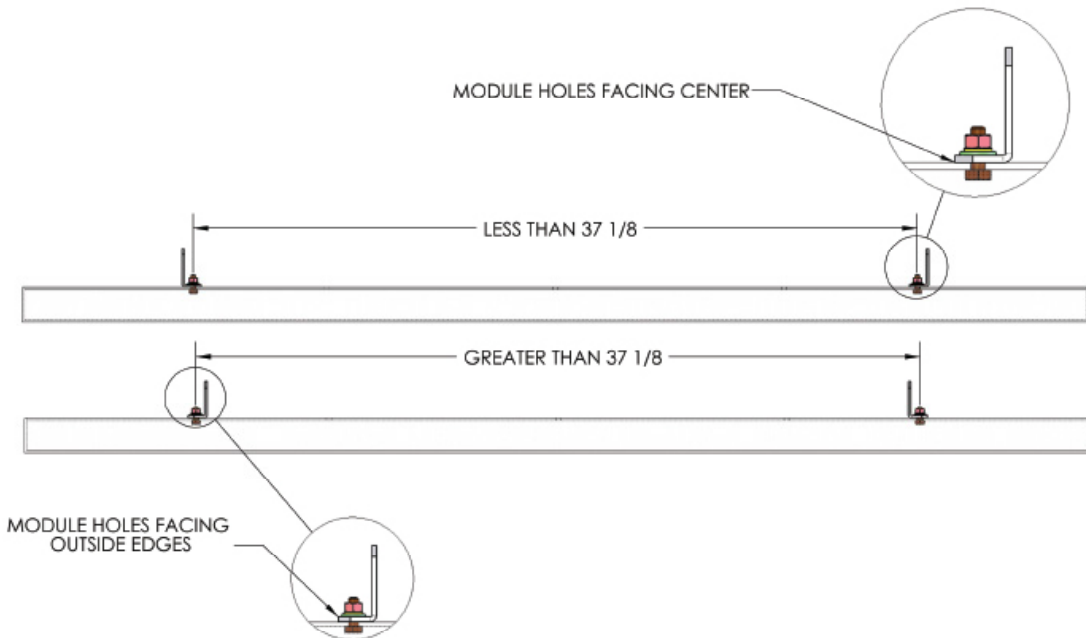
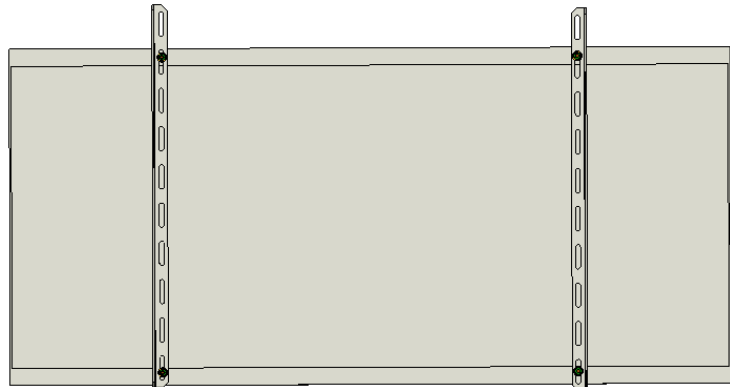


Step 2 - mounting the rail supports on the PV module

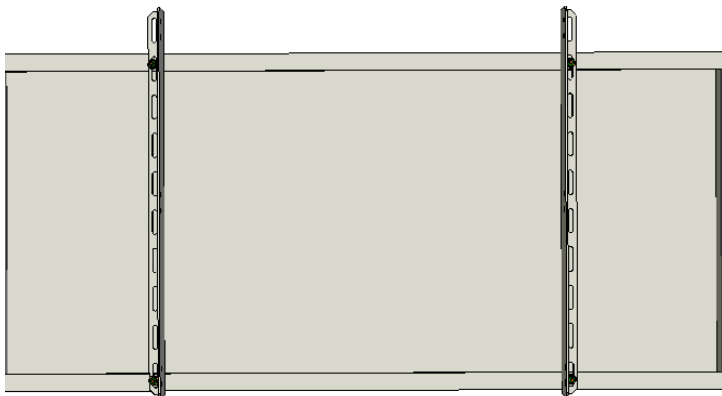
Parts Required	Qty	Part Number
PV Module	1	User-supplied
Rails	2	51-0527-000
1/4-20 x 1" SS hex-cap bolt	4	23-2520-050
1/4 flat washer, SS	4	25-2502-000
1/4 split lock washer, SS	4	24-2501-000
1/4 hex nut, SS	4	24-2520-440

1. Do one of the following:

- ◆ If the distance between the PV module mounting holes is less than 37 1/8", place the rails on the back of the panel so the lip of the rail containing the module mounting holes is facing towards the **center** of the module.



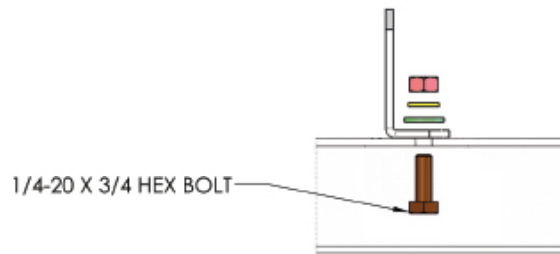
- ◆ If the distance between the PV module mounting holes is 37 1/8" or more, place the rails on the back of the panel so the lip of the rail containing the module mounting holes is facing toward the **outside edges** of the module.



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- Secure the rails with a 1/4 - 20 x 3/4" bolt, lock washer and hex nut in each of the 4 mounting holes.

Tighten the bolts to 7 ft-lbs.

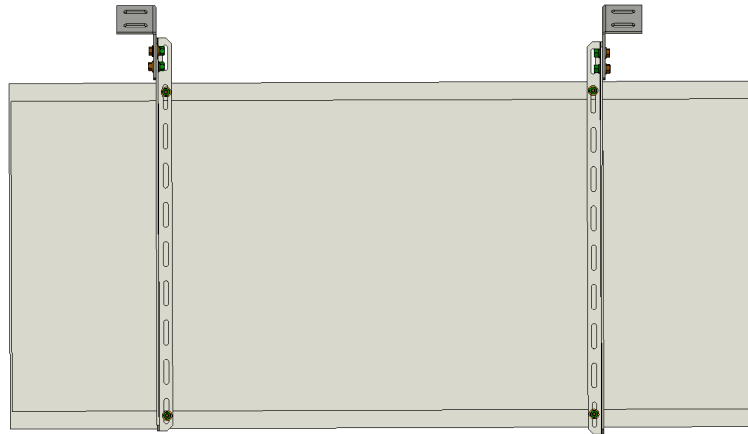


Step 3 - attaching the clips to the rails

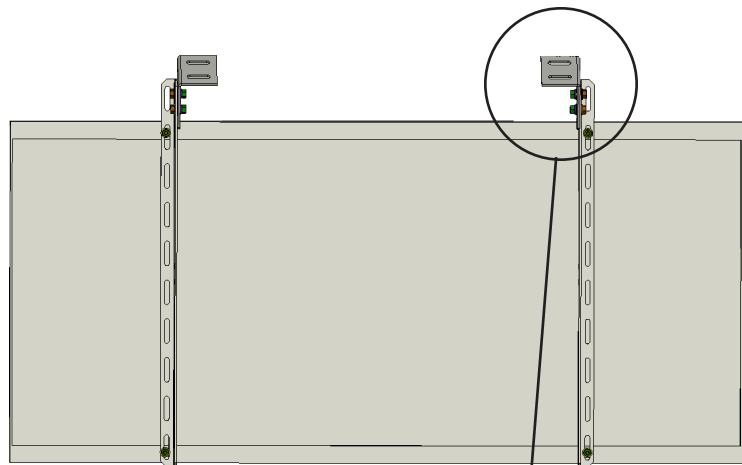
Parts Required	Qty	Part Number
Left Clip	1	51-3517-243
Right Clip	1	51-3517-244
5/16-18 x 1" SS hex-cap bolt	4	23-3118-021
5/16 flat washer, SS	8	25-3102-000
5/16 split lock washer, SS	4	25-3101-000
5/16 hex nut, SS	4	25-3118-440

1. Do one of the following:

- ◆ If the distance between the PV module mounting holes is less than 37 1/8", attach the clips to the rails so the protruding end of the clips are facing the outside **edges** of the module.

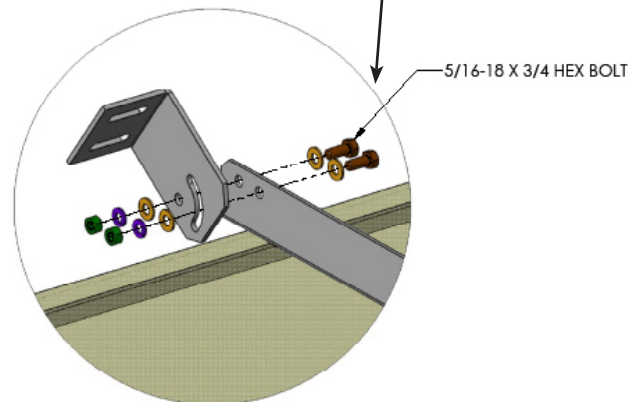


- ◆ If the distance between the PV module mounting holes is 37 1/8" or more, attach the clips to the rails so the protruding end of the clips are facing the **center** of the module.



2. Attach the clips to the rails. In each of the mounting holes, use a 5/16 - 18 x 1" bolt and flat washer on one side, and a flat washer, lock washer and nut on the other.

Tighten to hold in place.

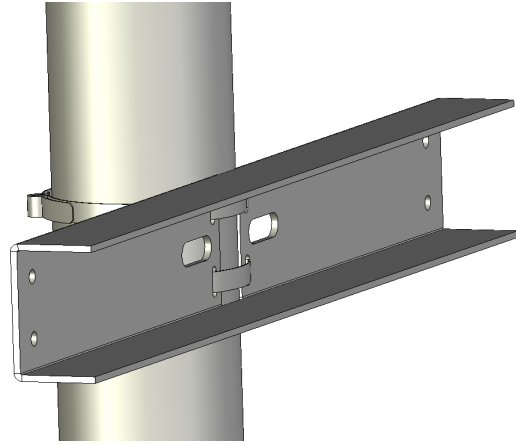


Step 4 - attaching the pole mount and bucket to pole

Parts Required	Qty	Part Number
Large Bucket	1	51-3517-242
Hose Clamp	2	27-5000-010

1. Thread each hose clamp through one of the sets of narrow center holes in the large bucket as shown and place at the desired location on the pole.

Note: This hose clamp is only compatible with poles ranging from 2.0" to 4.5" in diameter.



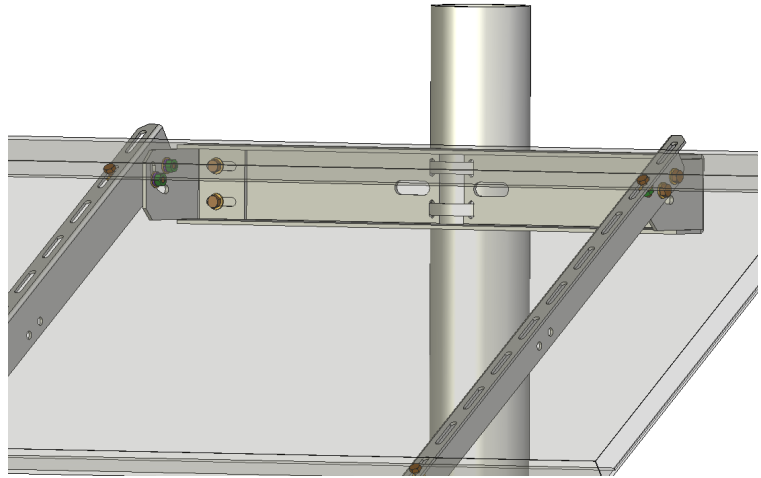
2. Tighten the hose clamp screws to 70 inch-lbs.

Step 5 - mounting the PV assembly on the pole

Parts Required	Qty	Part Number
5/16 - 18 x 3/4" SS hex-cap bolt	4	23-3118-021
5/16 - 18 flat washer, SS	8	25-3102-000
5/16 - 18 split lock washer, SS	4	25-3101-000
5/16 - 18 hex nut, SS	4	25-3118-440

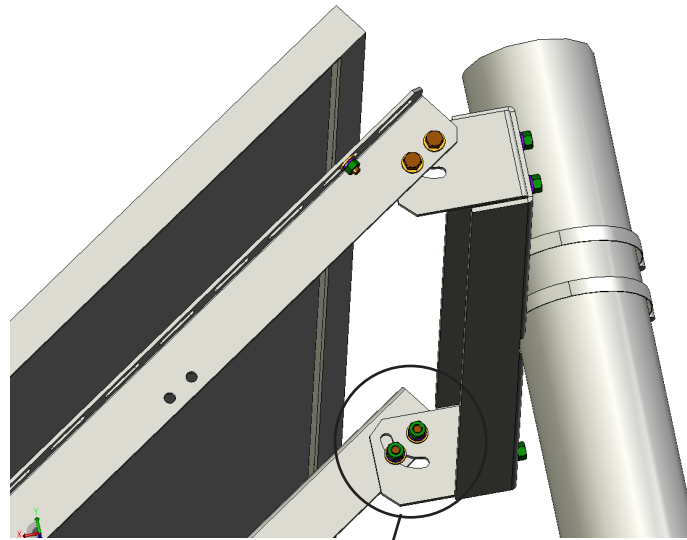
1. Place the PV module assembly so the holes on the clips line up with holes in the inside of the bucket.

Note: depending on the size of the panel you started with, your assembly may look different than this picture, with the clips and rails facing in the opposite direction.



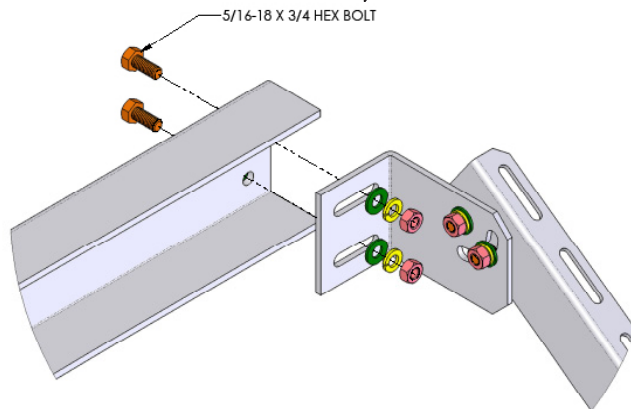
2. Attach the clips to the bucket. In each of the 4 mounting holes, use a 5/16 - 18 x 1" bolt and flat washer on one side, and a washer, lock washer and nut on the other.

Tighten the bolts to 12 ft-lbs.



3. If desired, loosen the bolts holding the rails to the clips, and adjust the tilt of the panel as required

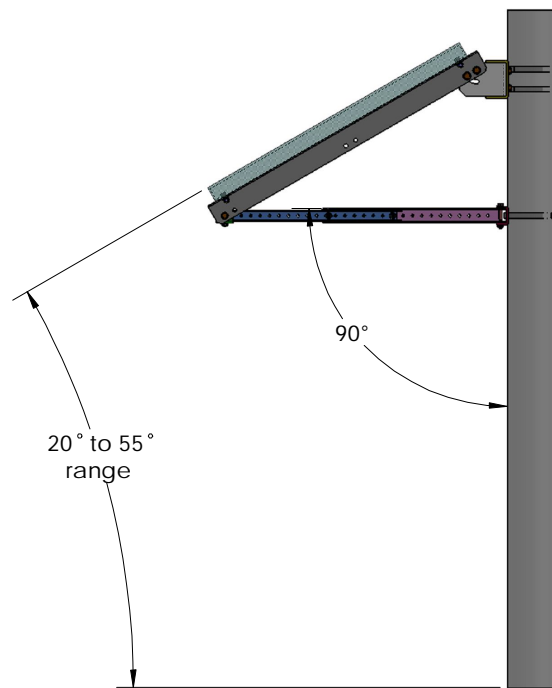
Tighten the bolts to 12 ft-lbs.



Step 6 - Attach lower pole bracket

Parts Required	Qty	Part Number
Bucket, Lower SOP Knee Brace	1	51-3517-203
Hose clamp	1	27-5000-010

1. Thread the hose clamp through the set of narrow holes in the bucket.
2. Place on the pole such that the knee braces will be level with the tips of the panel supports as shown.
3. Tighten the hose clamp screws to 70 inch-lbs.

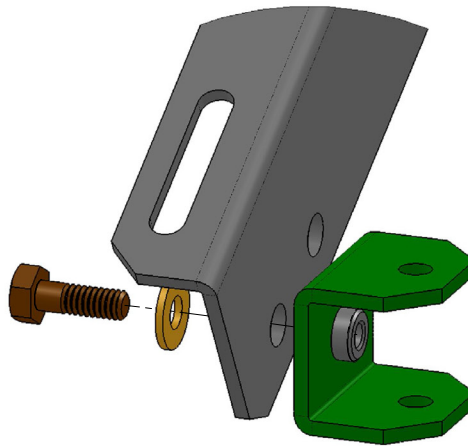


Note: This hose clamp is compatible with poles ranging from 2.0" to 4.5".

Step 7 - Attach Swivel Bracket to Panel Support

Parts Required	Qty	Part Number
Bracket	2	51-3517-204
1/4"- 20 kit	1	29-5000-000

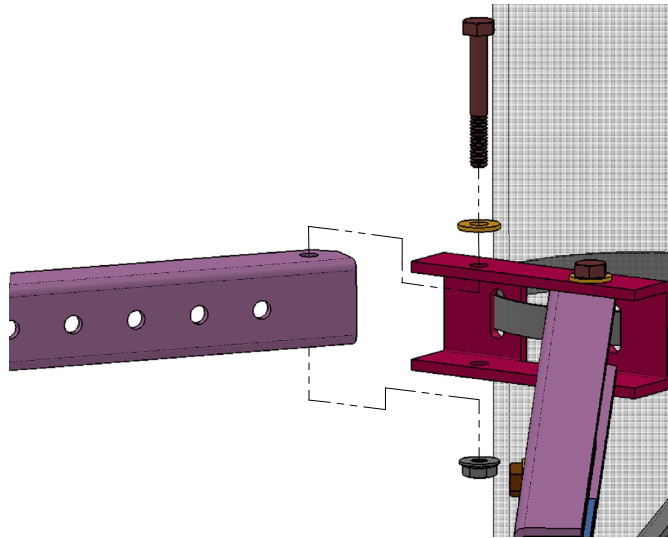
1. Using the 1/4-20 x 3/4" bolt, attach the bracket to the end of the panel support in one of the two holes as shown.
2. Repeat for both panel supports/brackets.
3. Leave brackets "finger tight" until final steps of mount assembly- when hardware will be fully tightened.



Step 8 - Attach Channels (outer) to the Lower Knee Brace Bucket

Parts Required	Qty	Part Number
Channels, (outer 19" x 1 1/4")	2	51-3517-208
Lower SOP Channel Kit	1	29-5020-010

1. Attach the outer channel to the Lower SOP Knee Brace Bucket using the 1/4"-20 x 2" bolt in the holes on the end of the channel and Lower SOP Knee Brace Bucket. The outer channel should be facing out from the pole, as shown.
2. Repeat this process for remaining channel.
3. Leave 1/4"-20 x 2" bolts "finger tight" until final steps of mount assembly.



Step 9 - Attach Channels (inner) to brackets, and connect Channels

Parts Required	Qty	Part Number
Channels, (inner 19" x 1")	2	51-3517-207
Lower SOP Channel Kit	1	29-5020-010

1. Attach the inner channel to the bracket using a 1/4-20 x 1 5/8" bolt and associated backing hardware, as shown in figure 1 below. The channel should be angled such that it is 90 degrees to the pole and parallel to the outer channel attached in the last step.
2. Overlap the inner and outer channel and utilize the closest fitting set of two holes to attach the inner and outer channels together using a pair of 1/4-20 x 1 3/4" bolts and associated backing hardware. The bolt extends all the way through both channels as shown in figure 2.
3. Repeat this process with remaining channels.
4. Leave 1/4-20 x 1 5/8" bolts "finger tight" until final steps of mount assembly.

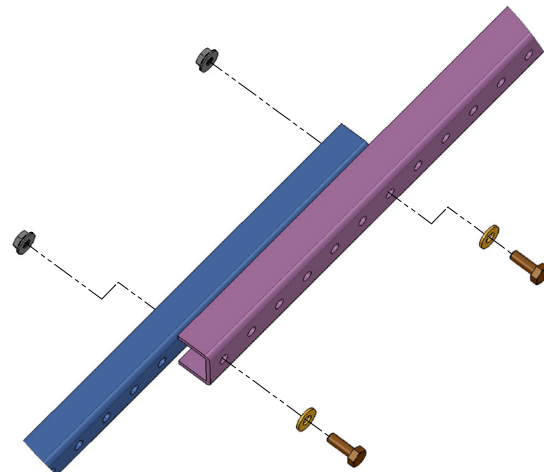
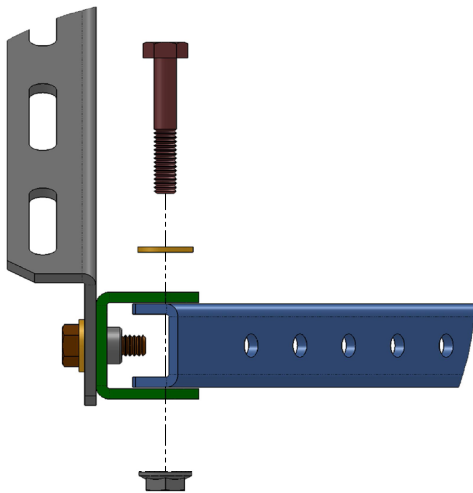


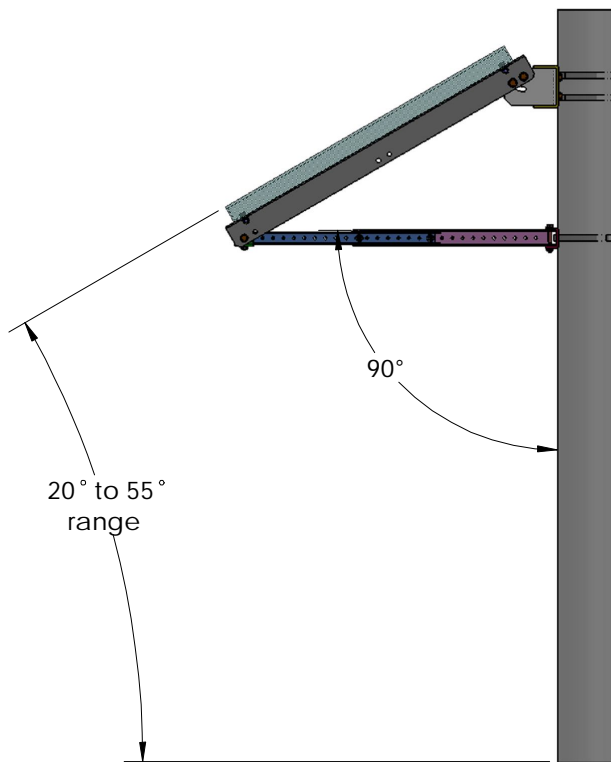
figure 2

Step 10 - Final Adjustment and Torque of Hardware

Torque Table

Hardware Size	Torque Value
5/16"	12 ft-lbs
1/4"	7 ft-lbs

1. Confirm alignment of bucket and knee brace assembly, ensuring knee brace assembly is horizontal and perpendicular to pole.
2. Tighten all hardware per specifications listed in the table above.



IronRidge 10-Year Warranty

Terms and Conditions

IronRidge warrants each Mounting Structure to be free from defects in materials and workmanship for ten (10) years from the date of first purchase ("Warranty Period"), when installed properly and used for the purpose for which it is designed, except for the finish, which shall be free from visible peeling, or cracking or chalking under normal atmospheric conditions for a period of three (3) years, from the earlier of 1) the date the installation of the Product is completed, or 2) 30 days after the purchase of the Product by the original Purchaser ("Finish Warranty"). The Finish Warranty does not apply to any foreign residue deposited on the finish. All installations in corrosive atmospheric conditions are excluded. The Finish Warranty is VOID if the practices specified by AAMA 609 & 610-02 – "Cleaning and Maintenance for Architecturally Finished Aluminum" (www.aamanet.org) are not followed by Purchaser for IronRidge's aluminum based products.

The warranty covers the replacement cost of parts to repair the product to proper working condition. Transportation and incidental costs associated with warranty items are not reimbursable. The warranty does not cover normal wear, or damage resulting from misuse, abuse, improper installation, negligence, or accident. The warranty does not cover any defect that has not been reported in writing to IronRidge within ten (10) days after discovery of such defect. Furthermore, it does not cover units that have been altered, modified or repaired without written authorization from the manufacturer or its authorized representative, or units used in a manner or for a purpose other than that specified by the manufacturer. IronRidge's entire liability and Purchaser exclusive remedy, whether in contract, tort or otherwise, for any claim related to or arising out of breach of the warranty covering the Mounting Structures shall be correction of defects by repair, replacement, or credit, at IronRidge's discretion. Refurbished Mounting Structures may be used to repair or replace the Mounting Structures.

IronRidge shall have no liability for any injuries or damages to persons or property resulting from any cause, whatsoever, or any claims or demands brought against IronRidge by Purchaser, any employee of Purchaser, client of Purchaser, end-user of the Product or other party, even if IronRidge has been advised of the possibility of such claims or demands (collectively, "Third Party Claims"). This limitation applies to all materials provided by IronRidge during and after the Warranty Period.

Daniel W. Stiles, PE

26270 Omar Drive
Fort Bragg, CA 95437
Tel: 707-472-7519

September 8, 2008

IronRidge
Attn: Craig Carni
President
900 Cherry Ave. #400
San Bruno, CA 94066

Subject: Engineering Certification for IronRidge Side of Pole Mounts

Dear Mr. Chang:

I certify that the following IronRidge Pole Mounting Structures, when constructed of materials specified and supplied by IronRidge, meet or exceed the minimum design parameters specified by the 2007 California Building Code(CBC), the 1997 Uniform Building Code, ASCE Standard 7-05, and the Steel Construction Manual, AISC, 13th Edition:

Conditions and location:

Wind: 90 mph, Exposure C
Maximum height above grade-30'

UNI-SA/14	UNI-SA/21.5	UNI-SP/01	UNI-SP/01A
UNI-SP/01X	UNI-SP/01XX	UNI-SP/02	UNI-SP/02A
UNI-SP/02X	UNI-SP/02X	UNI-SP/03	

I further certify by this letter that IronRidge Side of Pole Mounts as listed above will be structurally adequate when installed in accordance with IronRidge Installation Manuals provided with, "Universal Side of Pole Mounts", copyrighted by IronRidge, 2008. The structure or other surface to which IronRidge Mounting Systems are connected should be evaluated on a case by case basis, per Part 1 of the installation manuals to ensure the adequacy of the supporting structure to accept attachments and its ability to support all applied loadings per the CBC.

Please contact me if you have any questions or concerns.

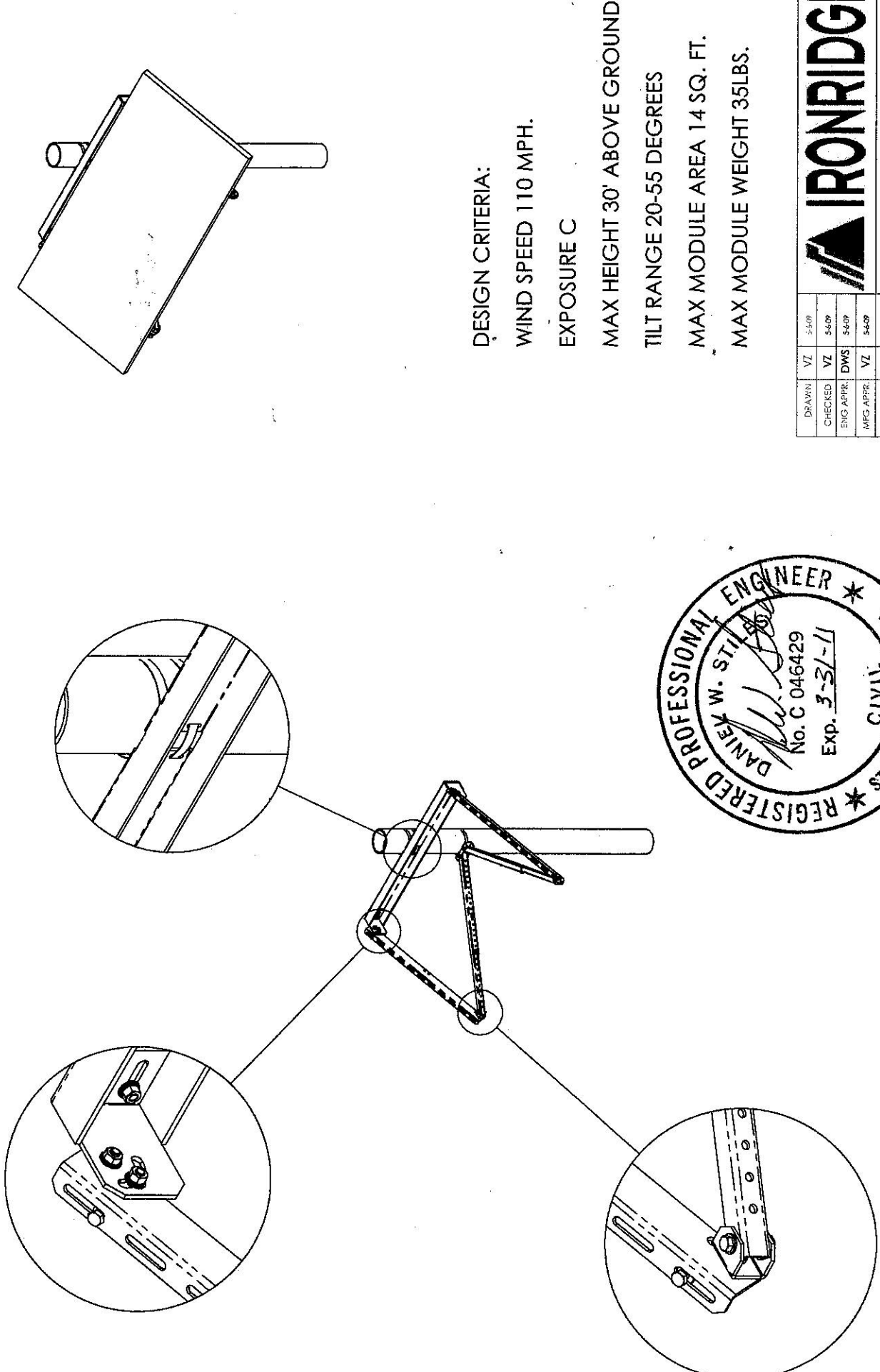
Sincerely,

Daniel W. Stiles, PE

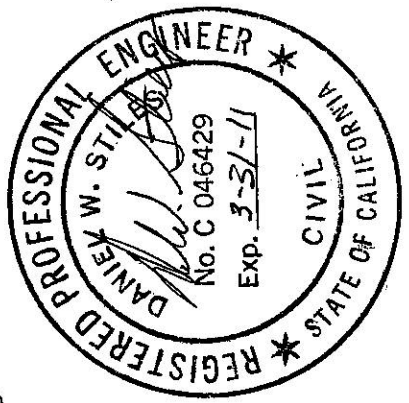
cc: DWS



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				A	PROTOTYPE	5-1-09	VZ		
				B	MODIFIED ALL COMPONENTS CHANGED BACK TO 30 BUCKET AND BE CLAMPS	5-6-09	VZ		
				C		5-11-09	VZ		



DESIGN CRITERIA:
 WIND SPEED 110 MPH.
 EXPOSURE C
 MAX HEIGHT 30' ABOVE GROUND
 TILT RANGE 20-55 DEGREES
 MAX MODULE AREA 14 SQ. FT.
 MAX MODULE WEIGHT 35LBS.



DRAWN	VZ	5-5-09
CHECKED	VZ	5-6-09
ENG APPR.	DWS	5-6-09
MFG APPR.	VZ	5-6-09
C.A.		
COMMENTS:		
DO NOT SCALE DRAWING		
SCALE: 1/4"	WEIGHT:	SHEET 1 OF 1



SIDE OF POLE MOUNT
 SINGLE PANEL DUAL SUPPORT
 DWG. NO. UNI-SP701XH
 REV. C