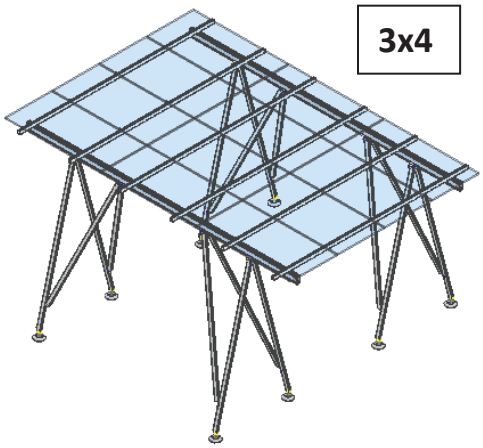
A-Frame Installation - Post

Below are the available standard A-Frame model sizes.

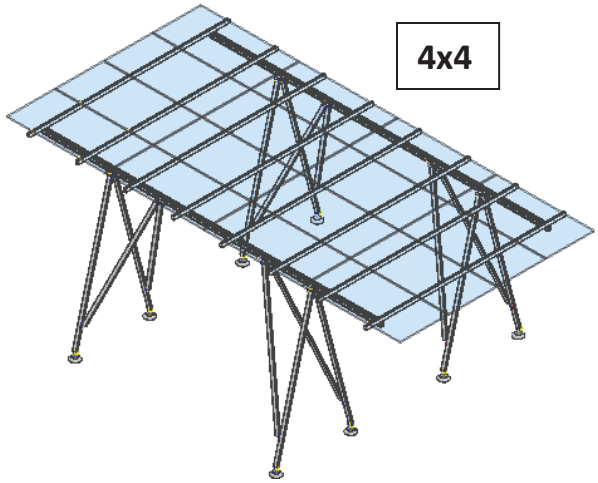
Detailed Drawings and BOM's for each model are shown in the Appendix.

A-Frame Model Sizes

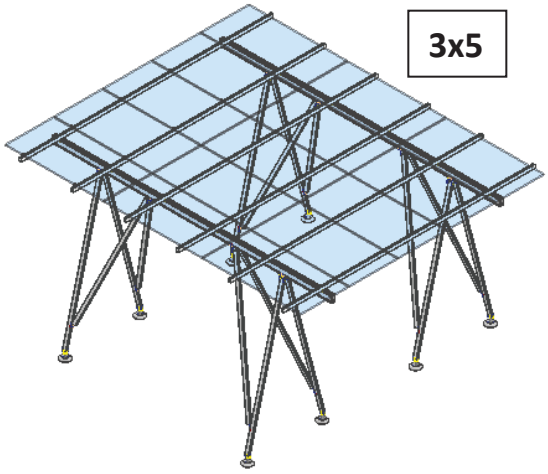
3x4



4x4



3x5



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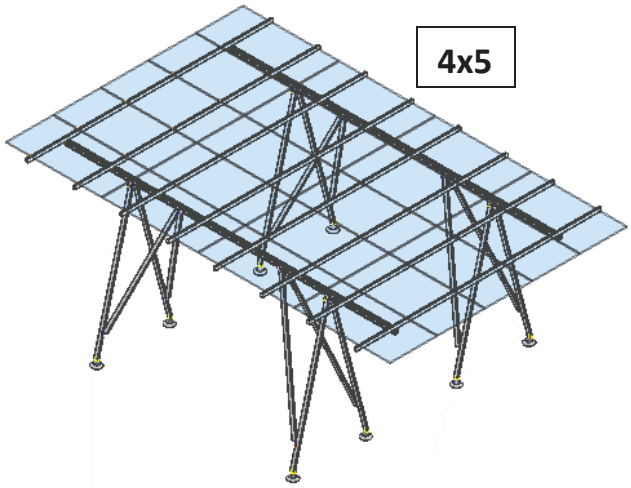
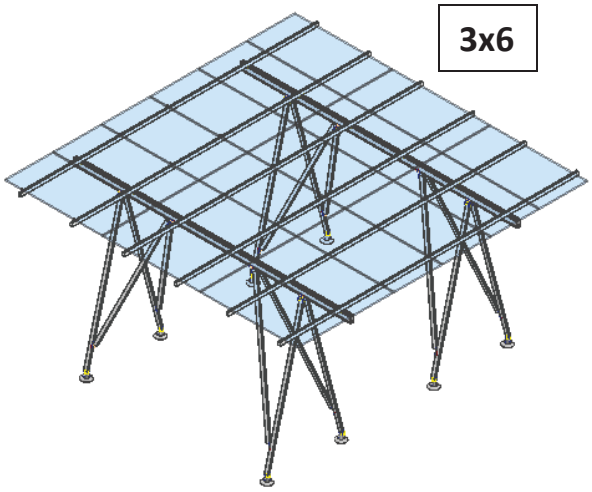


3x6



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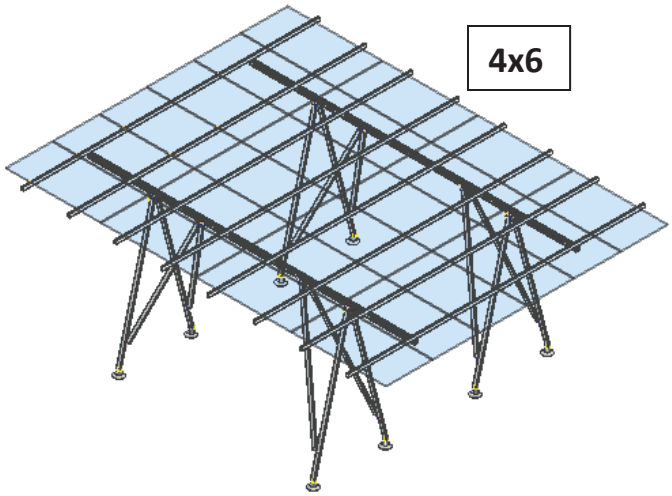

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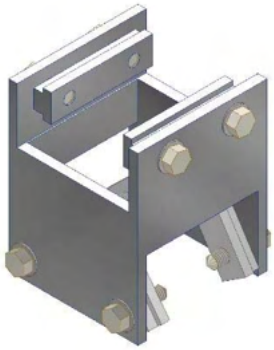
A-Frame Installation - Post

Installation Procedure

Tools

- Torque wrench - 30 ft-lb (360 in-lb) capacity
- Impact drive
- Drive sockets, 1/2”
- 40 mm Lobe (Torx) Drive
- Tape Measure
- Angle measurement tool
- 8-10’ Stepladder (2)

A-Frame Kits



USB – Upper Support

USB-A Upper Support Angled

LSB-A - Lower Support - Angled

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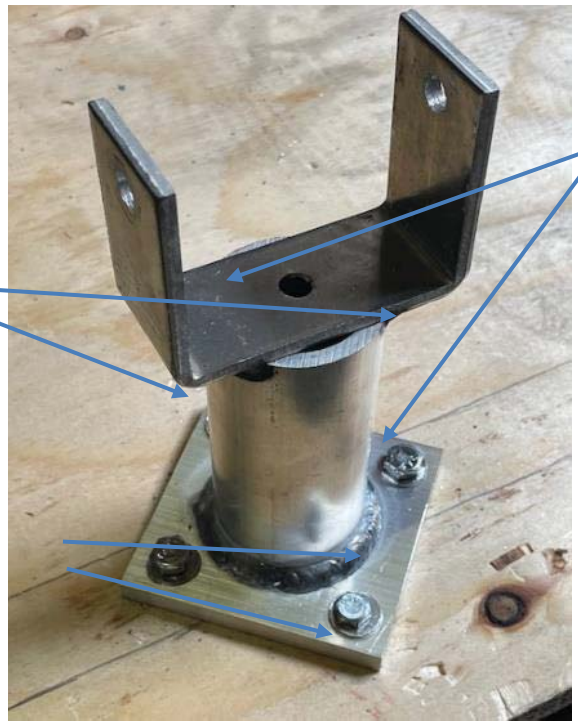
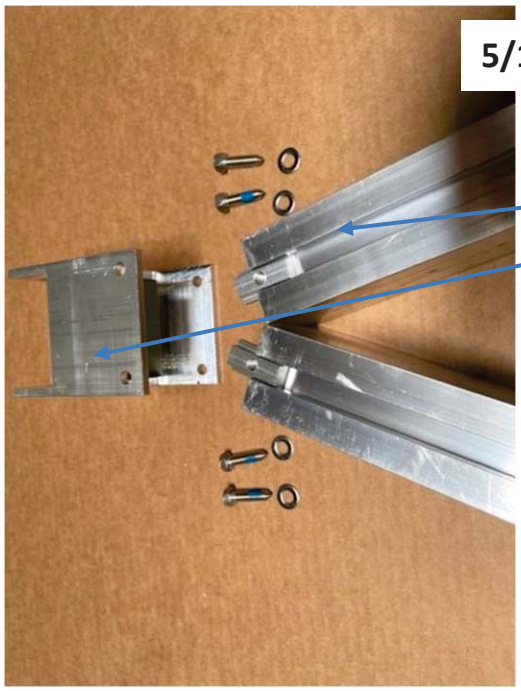
5

A-Frame Installation

Step 1 - Post Installation



Step 2 – Upper Bracket - Installation



5/16x3/4 Hex Bolt (2)

USB Bracket

Nut Bar, One Hole

5/16x1-1/4 Piercing Bolt

Torque:
100-150 in-lbs.
After Piering

A-Frame Installation - Post

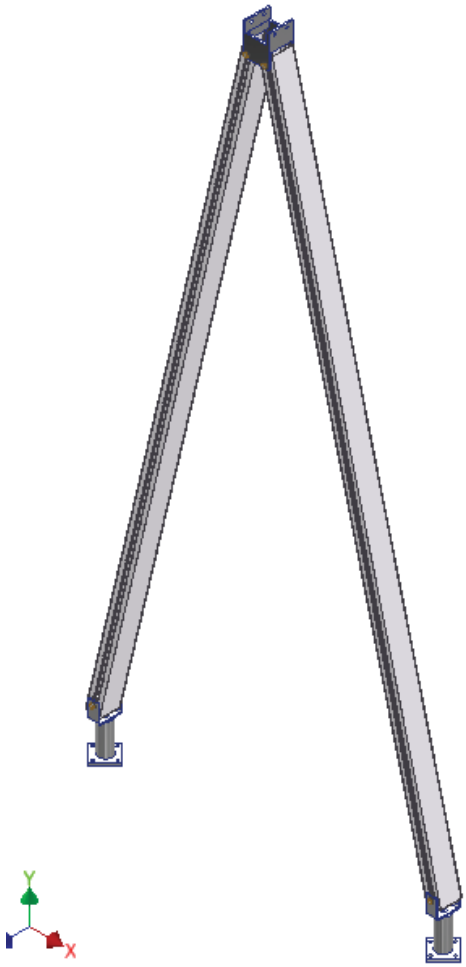
Step 3 – Main Support Erection

Nut Bar, One Hole (2)

5/16x1-1/4 Piercing Bolt (2)

NB31-1 Nut Bar, One Hole

Torque: 100-150 in-lbs. After Piercing



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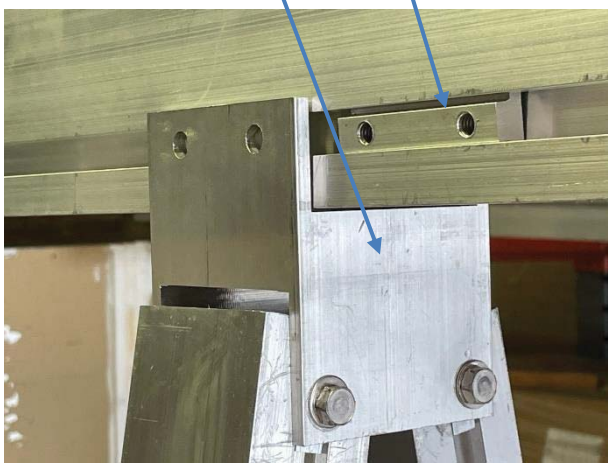
Step 4 – Main 4x3 Rail Mount

NB31-2 Nut Bar (2 per end)

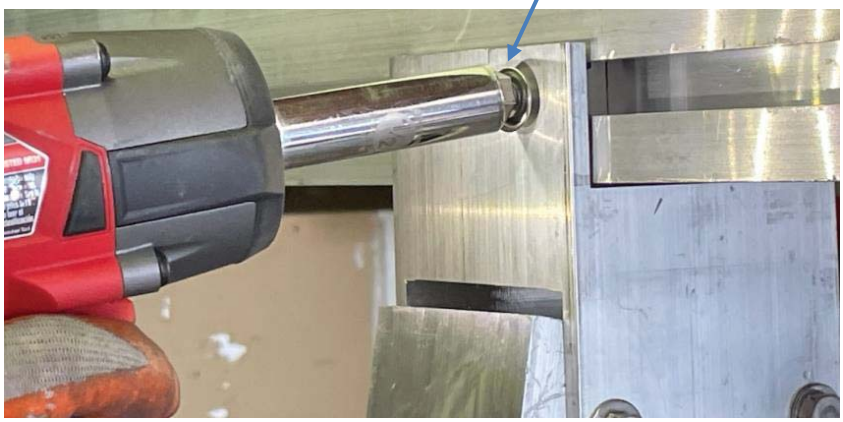
USB Bracket



Torque:
100-150 in-lbs.

5/16x3/4 Bolt (4 per USB)

Torque: 100 – 150 in-lbs.



A-Frame Installation - Post

Step 5 – Diagonal Support Bracket Installation

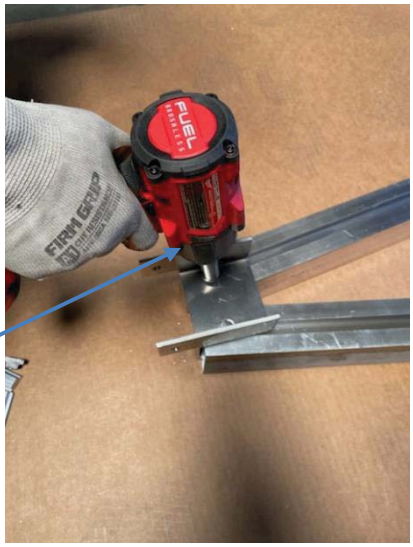
5/16”x 3/4 Bolt (2)

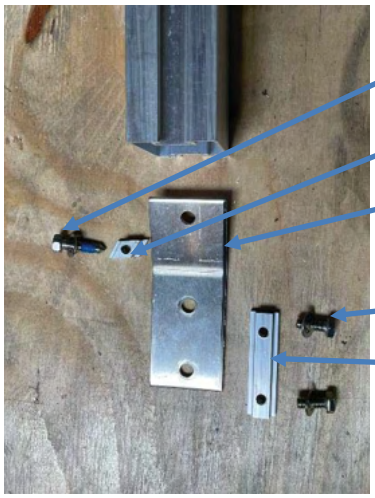
5/16 One Hole Nut Bar (4)

USB-A Upper Bracket, Diag.

5/16 x 1-1/4 Piercing Bolt (2)

Pierce & Torque:
100-150 in-lbs.





5/16 Piercing Bolt

AN31 Angle Nut

LSB-A Lower Bracket

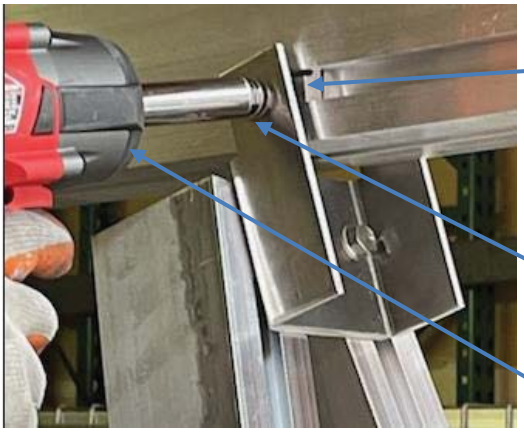
5/16x3/4 Bolt (2)

Nut Bar, 2 Hole

Pierce & Torque:
100 – 150 in-lbs.

A-Frame Installation - Post

Step 6 – Diagonal Brace Mount



Nut Bar One Hole (2) – Slide in from Rail End Both Sides

5/16x3/4 Screw (both sides)

Torque: 100 – 150 in-lbs.

Nut Bar, 2 Hole
5/16x3/4 Bolt (2)
Torque: 100-150 in-lbs.

A-Frame Installation - Post

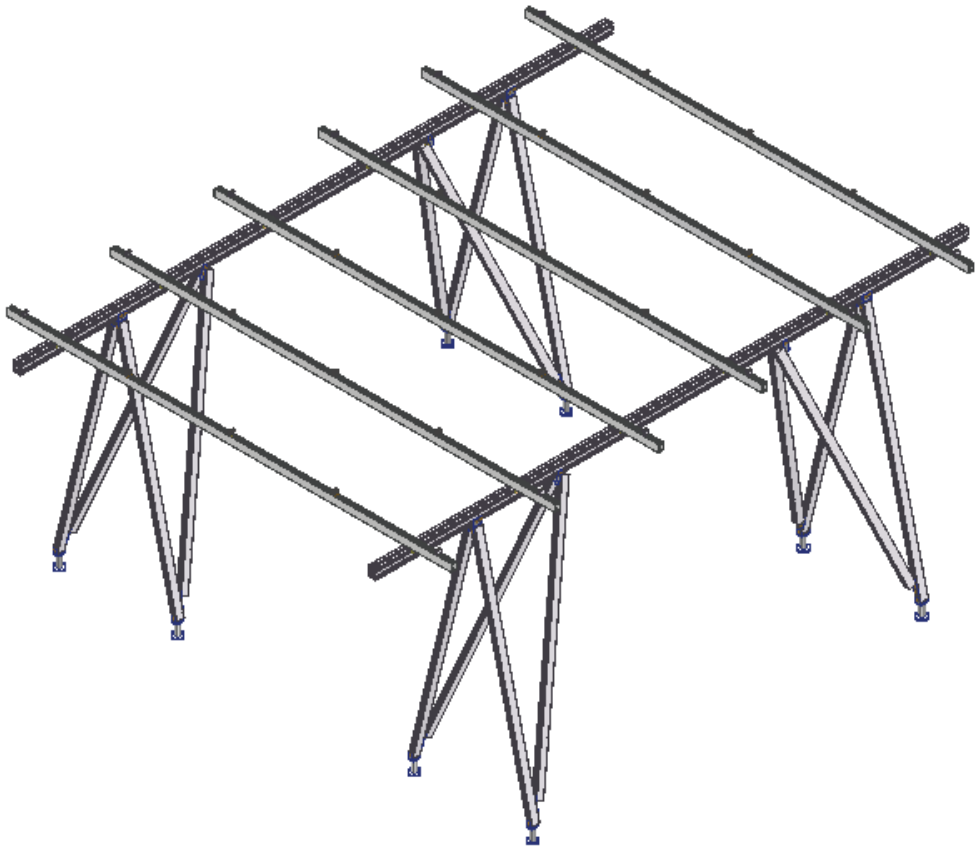
Step 7 – Module Rail Attachment

CL – Cleat

AN31 – 5/16 Angle Nut

HF31075 – 5/16x3/4 Flathead

Torque – 100 – 150 in-lbs Both Sides



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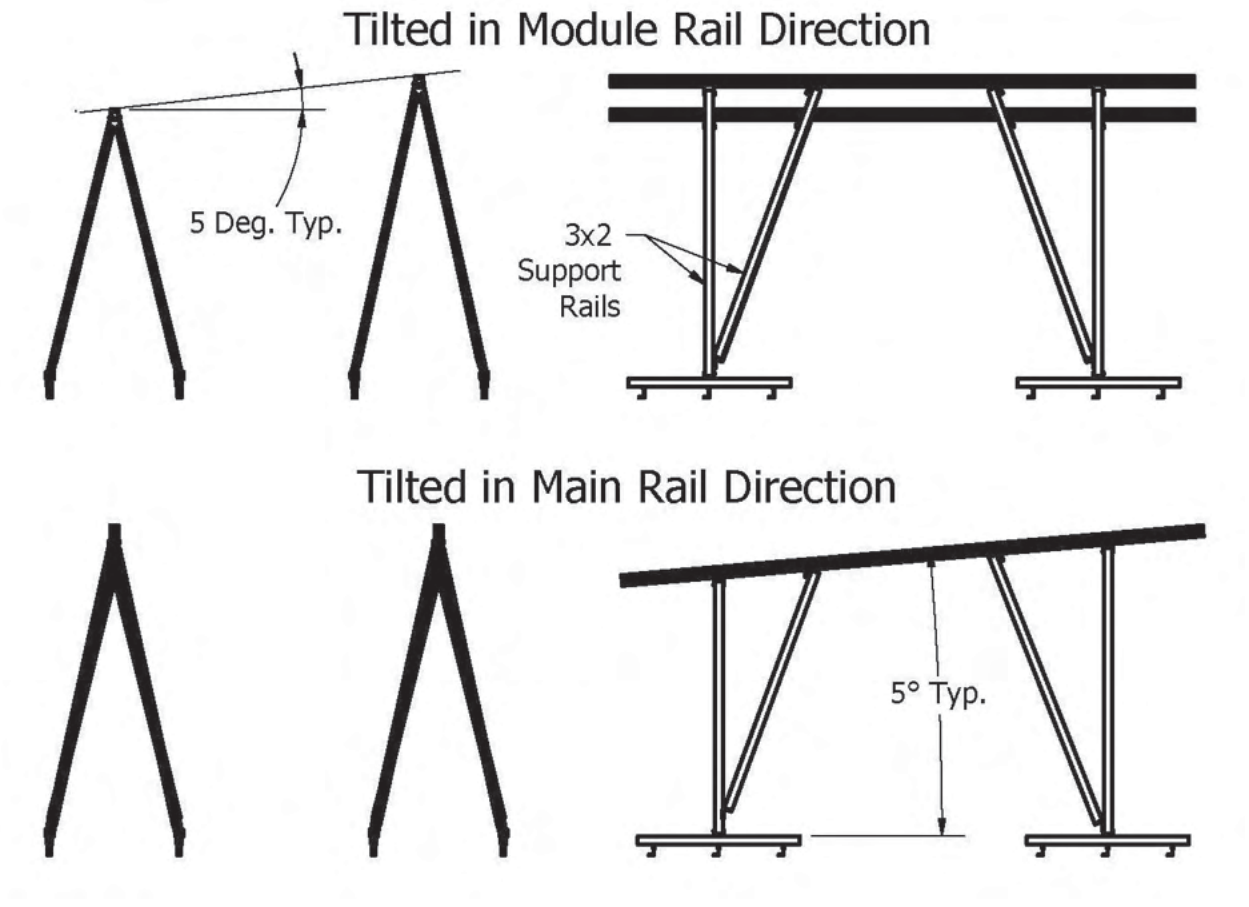
A-Frame Installation - Post

A-Frame Supports – Support Rail Length



Support Rail Length Based on A- Frame Height at Low End – With 5 Degree Tilt

9 Ft. A-Frame Height (To Bottom of Module Rails)

8 Ft. Long – 8 ea.

9 Ft. Long – 8 ea.

10 Ft. A-Frame Height (To Bottom of Module Rails)

9 Ft. Long – 8 Ea.

10 Ft. Long – 8 ea.

11 Ft. A-Frame Height (To Bottom of Module Rails)

10 Ft. Long – 8 ea.

11 Ft. Long – 8 ea.

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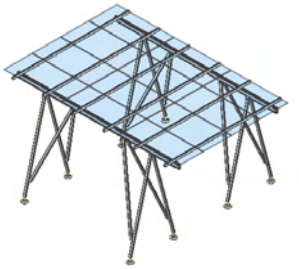
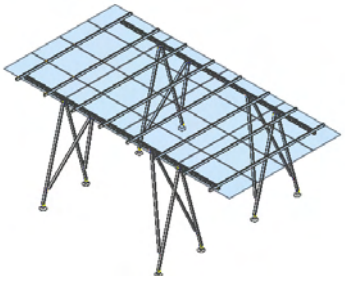
A-Frame Installation - Post

Module Rail Quantities

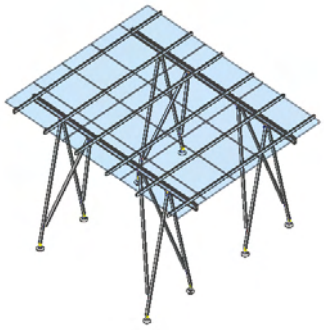
3x4
8 Ft. – 12 ea.



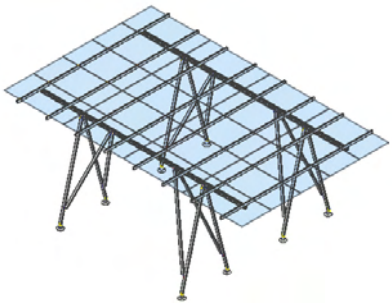
4x4
8 Ft. – 16 ea.



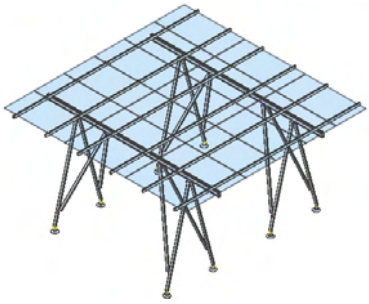
3x5
9 Ft. – 12 ea.



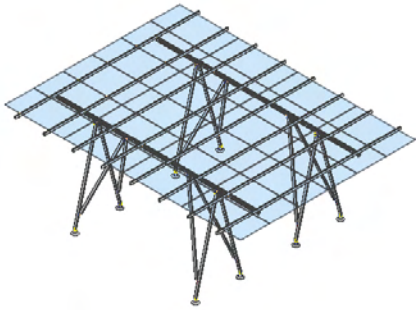
4x5
9 Ft. – 16 ea.



3x6
11 Ft. – 12 ea.



4x6
11 Ft. – 16 ea.



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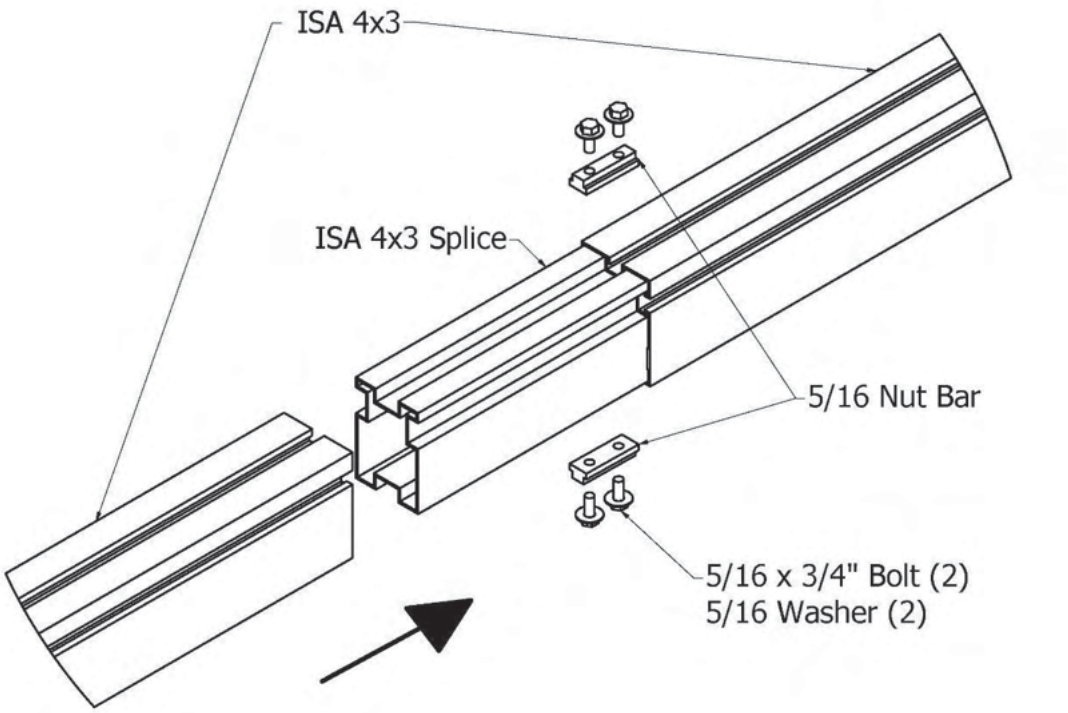
A-Frame Installation - Post

Main Beam Splice with SP4x3 Splice Kit

If it is necessary to extend the main rails or join two separate sections the rails can be spliced together as follows:

1. Insert Nut Bars into top and bottom slot of first 4x3 Rail
2. Insert 4x3" Splice between both 4x3 Rails – Insert Splice half-way in
3. Push the second main rail on until it butts up to the first main rail.
4. Slide Nut Bar an equal distance on each rail and tighten bolts - Torque 10-15 Ft-Lbs. to dent into the Splice for a secure connection.



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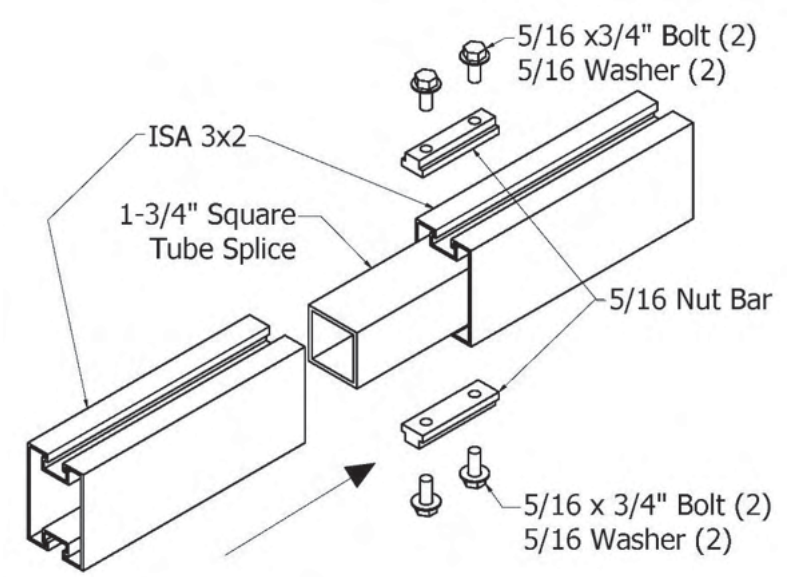
A-Frame Installation - Post

Module Rail Splice with SP3x2 Splice Kit

1. Insert Nut Bars into top and bottom slot of 3x2 of First rail
2. Insert 1-3/4” Splice Tube half-way into First rail.
3. Push the second rail until it butts up to the first module rail.
4. Slide Nut Bar an equal distance on each rail and tighten bolts - Torque 10-15 Ft-Lbs. to dent into the Splice for a secure connection.



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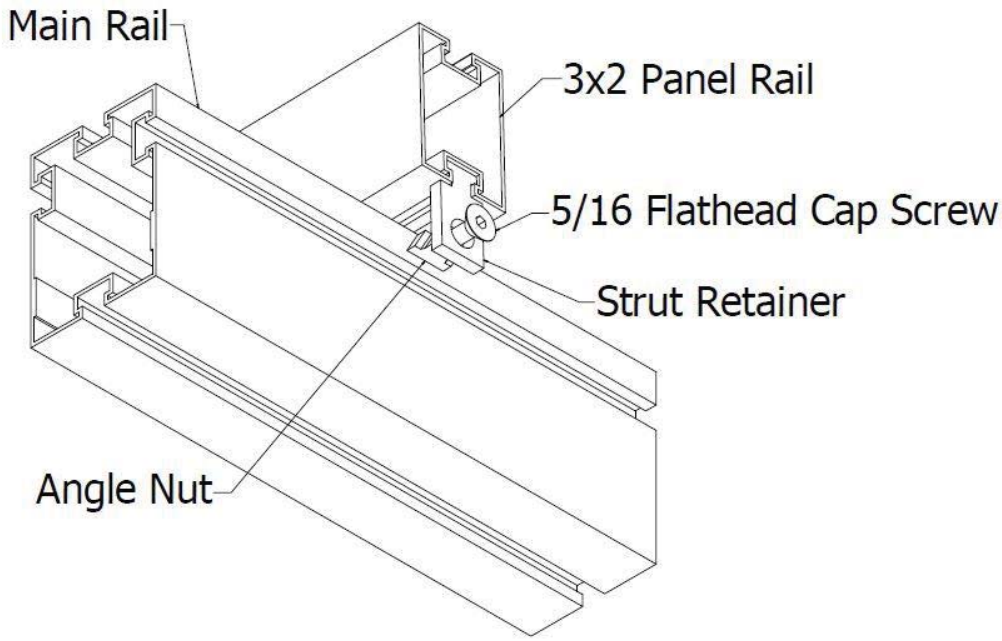
Module Rail Installation with CLA Cleat Assembly

1. Torque screw to 150 to 200 In-Lbs. with a T-40 driver. Repeat this process for the other side of the main rail.

   Note:

   The Module Rail cinches down once the flathead screws are tightened on both sides.

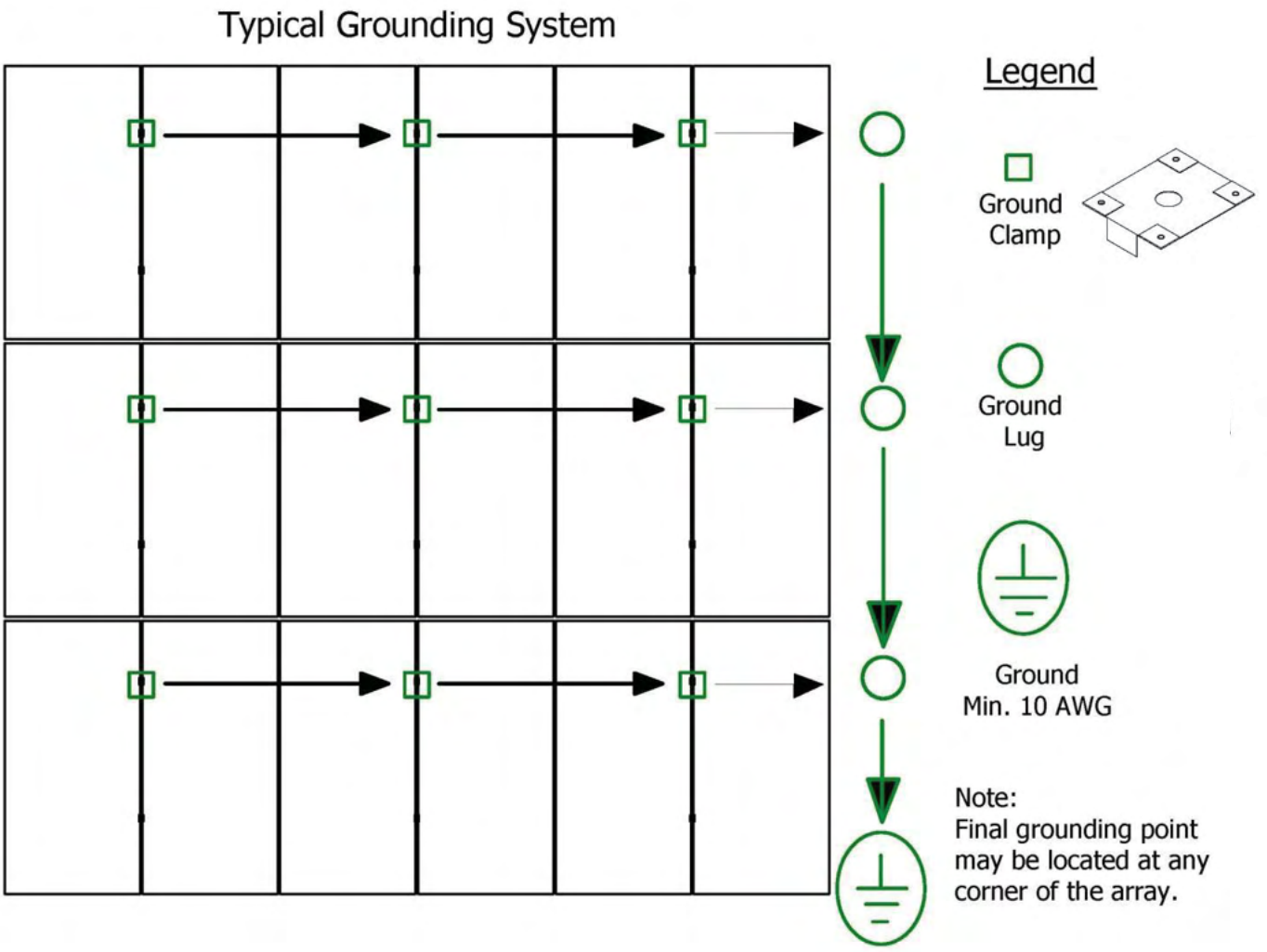
2. Install the second pair of Module Rail Retainers on the other main support rail.
3. Install the remaining Module Rails on top of the two Main Rails by repeating this procedure. Below is a typical Module Rail layout showing the rails in place.



CCA, CWA, and CWA-G System Installation

A-Frame Installation - Post

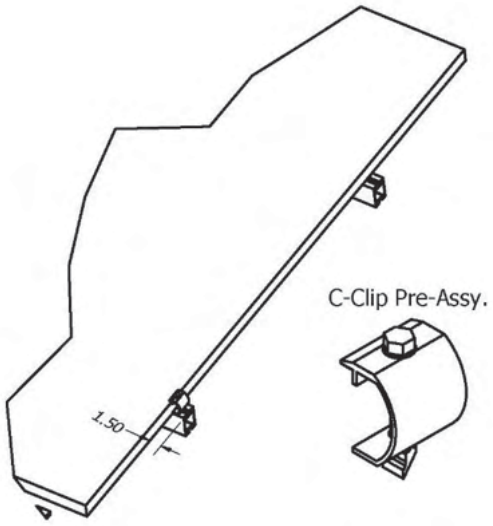
The first step is to organize the racking system module array so that the modules are properly grounded in a accordance with UL 2703 requirements. Below is a layout of a 3x6 array showing the locations of the module grounding points and a ground path to the rack framing system.

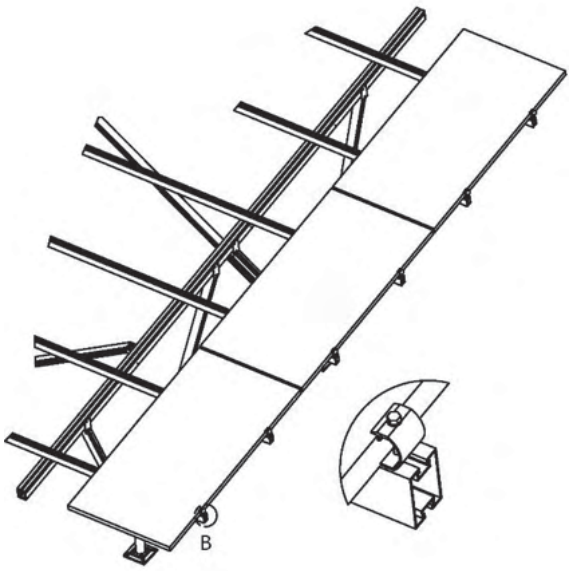


1. Begin by mounting a column of modules on one end of the array.
2. Position the first module on the lower right or left edge of the array centered over the first two module rails – position the module at least 1.5” from the rail ends.

1. Pre-assemble CCA.
2. Insert the angle nut portion into the “T” slot and slide it against the panel rail as shown.

3. Tighten the bolt to 100-150 In-Lbs. thereby clamping the CCA to the module rail. Repeat this process on the second rail. Go to the next set of rails and repeat steps 1-3 for remaining modules in the column.





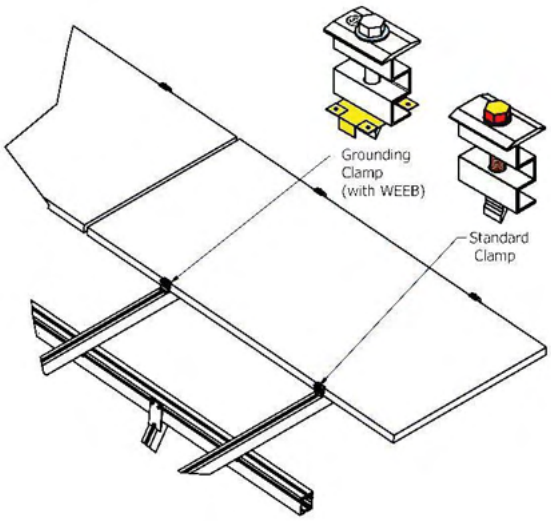
Installation of CWA and CWA-G Clamps

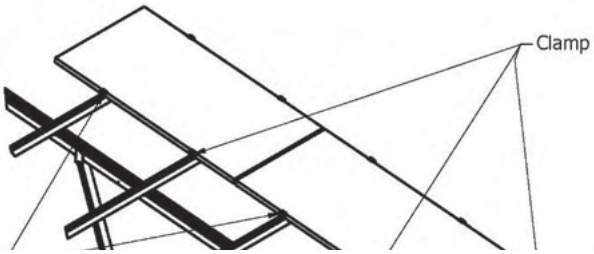
1. Pre-assemble the CWA and CWA-G as shown.

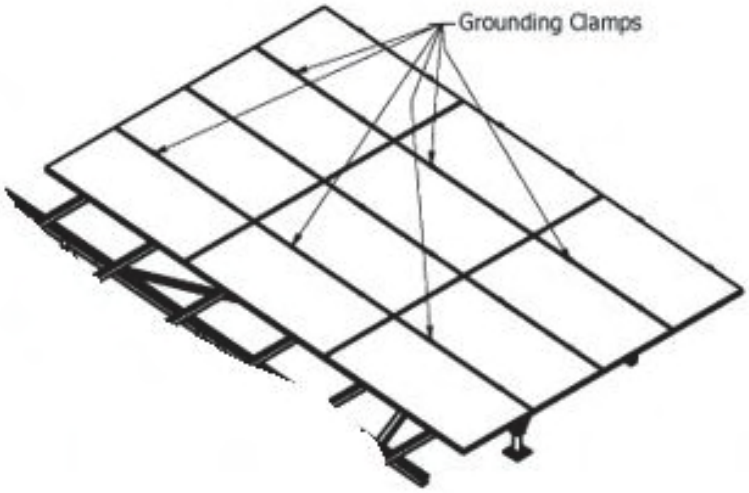
Note: CWA-G Clamp Assemblies are single-use only.

2. Identify the locations of bonding points for the array based on the above grounding layout. Grounding procedure requires a minimum of one grounding clamp for each set of two modules.
3. Install a Grounding Clamp on the first module – which for this array is shown on the upper rail of the first module. Install a standard Clamp on the lower module rail.
4. Attach the remaining grounding clamps and standard clamps on the other two modules in the column. Lightly clamp all six clamps against the 3 modules to hold them in place while setting the next column of modules in place.

A-Frame Installation - Post



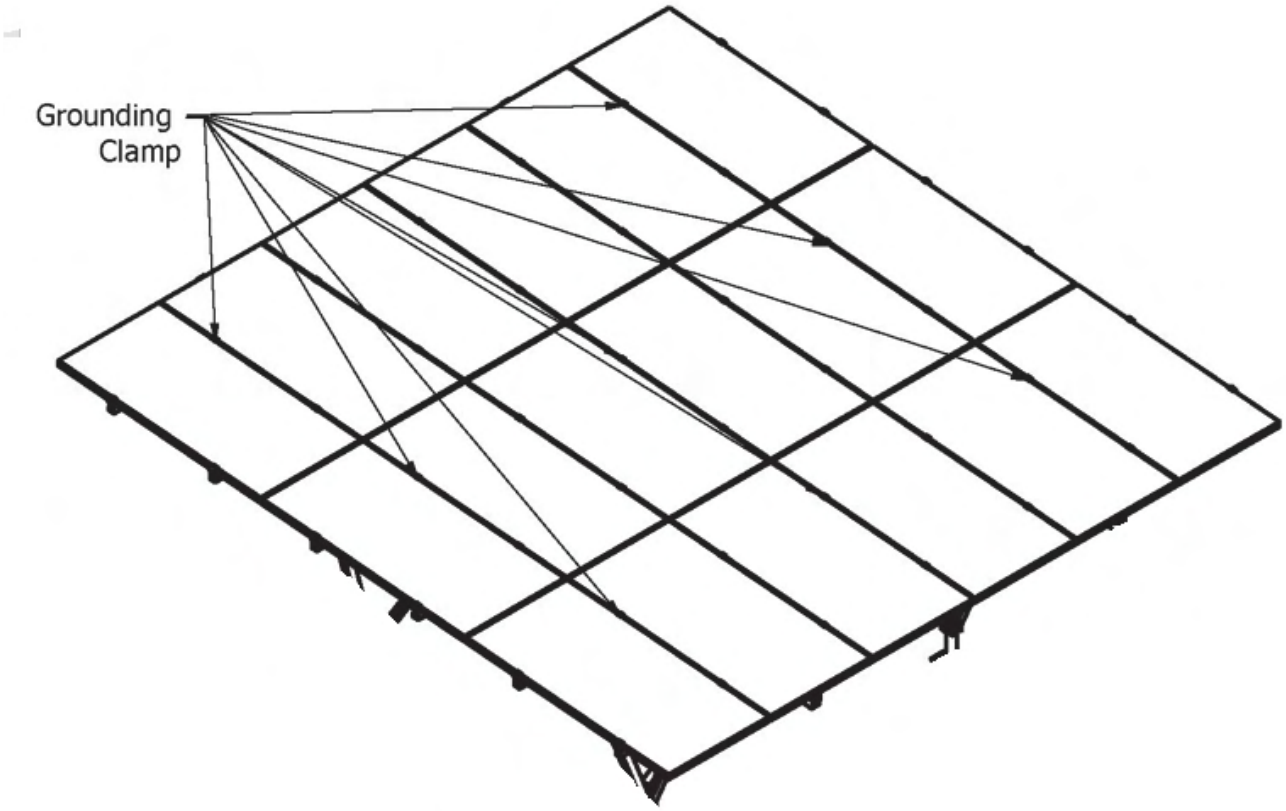




5. Add the 2nd column of modules and slide them under the existing standard and grounding mid clamps. Tighten all bonding and standard clamps to 150-200 In-Lbs. to secure in place and provide bonding for the first group of six modules.

6. Add the 3rd column of clamps that are all standard and do not need to be bonding. Lightly clamp in place against second column of modules.
7. Add a 3rd column of modules and tighten clamps between 2nd and 3rd columns to CWA-G 150-200 In-Lbs.
8. Add 3 grounding clamps and 3 standard clamps and lightly clamp the modules in place.
9. Add the 4th column of modules and clamp the modules in the 3rd and 4th columns in place to 150-200 In-Lbs.
10. Add 6 ea. standard clamps and lightly clamp to the 4th column of modules.
11. Add the 5th column of modules and tighten the module clamps between the 4th and 5th columns to 150-200 In-Lbs.
12. Add 3 more grounding clamps and 3 more standard clamps and lightly tighten the clamps to hold the 5th column of modules in position.
13. Add the final 6th column of modules and tighten the clamps between the 5th and 6th columns to 150-200 In-Lbs.
14. Add 6 C-Clamps on the ends of the panels and tighten to 150-200 In-Lbs.

A-Frame Installation - Post



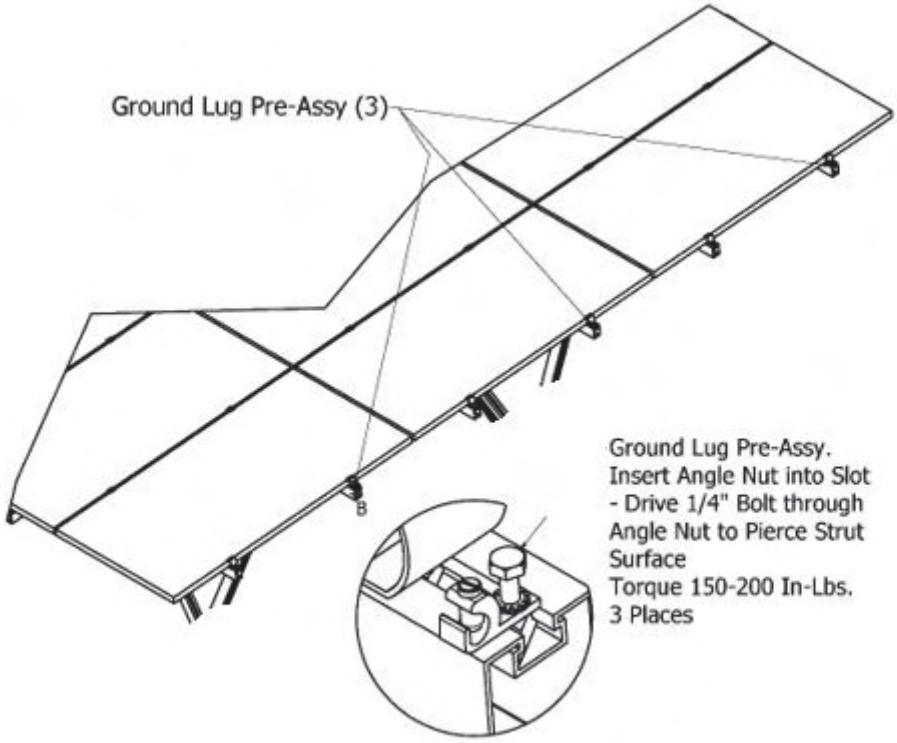
Installation of Grounding Lugs

Once the modules are installed with the bonding components in place, the rails carrying the bonding components must have grounding lugs installed to conduct the current from these rails to an established grounding point. Please see the grounding diagram above.

1. If not already done, pre-assemble the grounding lug, Ilsco GBL-1/0 or equivalent with a ¼”x1-1/4” long hex piercing bolt, external tooth lock washer, and angle nut as shown below.
2. Connect to the top or bottom slot of each bonding rail as shown below by inserting the angle nut into the slotted track. Tighten the piercing bolt until it pierces through 3x2 Strut slot wall. Continue to torque the bolt to 150-200 In-Lbs.

3. he green set screw in the grounding lug is tightened against the appropriate grounding wire to carry the ground to a central grounding point for the array. Make sure that sufficient torque is applied to the set screw in accordance with Ilsco grounding requirements.

A-Frame Installation - Post



Maintenance Procedures

Periodic maintenance of the WSS Racking System is required in order to insure safe, reliable operation of the system. The maintenance procedures noted below are recommended to be performed annually as a minimum and semi-annually in high wind areas.

- System visible inspection – verify that all components are in place with no signs of shifting or damage.

Note: Any components showing signs of damage that compromise safety shall be replaced immediately.

- Sample inspect bolt connections to verify they are within the minimum torque settings described in the installation procedures.
- Retighten all bolts found to be below minimum torque values.
- Double the percentage of joint inspections for any category of bolt joints that have been found to be below torque settings.

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Appendix

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