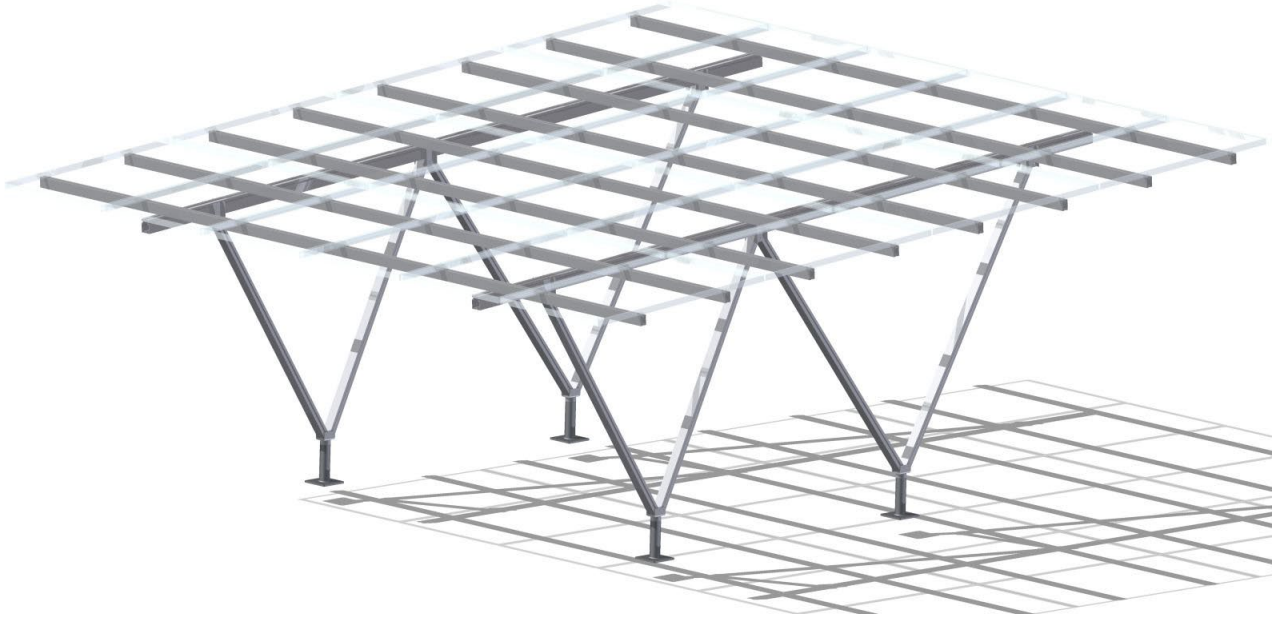
Assembly and Installation Instructions

For

WSS Elevated Racking System

for

UL 2703 Code Compliant System



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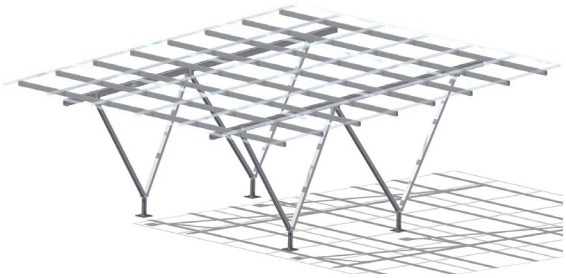


Safety Notifications

Below are the installation instructions for the WSS Elevated Racking System. Please read these safety notifications prior to beginning installation.

Personnel

Observe all safety precautions relating to solar installations on a rooftop. Only appropriately skilled workers familiar with rooftop construction should be used for the installation. The installer should have sufficient electrical knowledge to prevent accidental shock or electrical injury from inappropriate contact with the photovoltaic devices that are to be installed.

Roof Load Capacity

The WSS Trellis Main Beams must be mounted to the building's main roof beams in order to withstand the maximum wind loads. Prior to installation the load capacity of the roof beams should be verified to make sure that the applied loads are within the allowable level for these beams.

Roof Anchors

All roof anchors that are to be used for mounting the WSS System must be verified to meet the calculated loads expected on the roof structure. Recommended capacities for these anchors are included in Section 1. Verification testing of anchors, if required, must be in accordance to local building construction codes and ordinances.

Roof Seals

Any sealing of WSS mounting posts must be made in accordance with good roof construction practices and should be performed by or with the approval of the roofing contractor responsible for the roof warranty.

WSS System Ratings

Note:
The following ratings are based the following conditions: wind load of 120 mph and elevation of 30 feet. Maximum module size is 83”x42”. For other conditions consult the factory. Not Fire Rated.

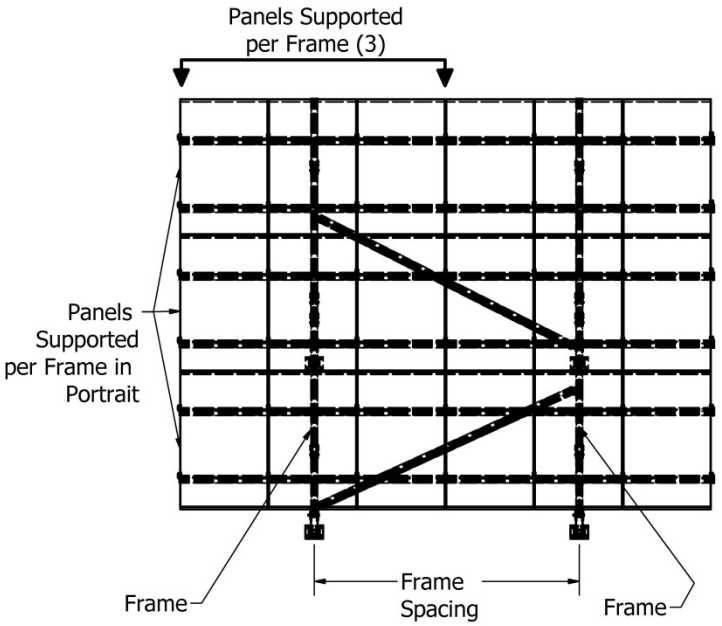
The WSS System has the following load carrying capacities:
Maximum module dimensions: 83” x 42”
For larger modules consult factory for capacities

WSS-3:
Modules: Supports 3 modules in portrait or 6 modules in landscape
Frame Spacing: 12 feet maximum with standard ISA 3x2 module rails
Posts per Frame: 2 Posts minimum

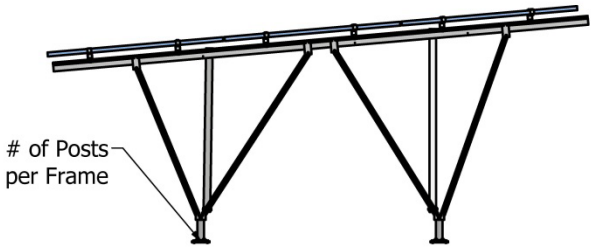
WSS-4:
Modules: Supports 4 modules in portrait or 8 modules in landscape
Frame Spacing: 12 feet maximum with standard ISA 3x2 module rails
Posts per Frame: 2 Posts minimum

WSS-5:
Modules: Supports 5 modules in portrait or 10 modules in landscape
Frame Spacing: 12 feet maximum with standard ISA 3x2 module rails
Posts per Frame: 3 Posts minimum

WSS-6:
Modules: Supports 6 modules in portrait or 12 modules in landscape
Frame Spacing: 12 feet maximum with standard ISA 3x2 module rails
Posts per Frame: 3 Posts minimum



Frame - Side View



For other configurations consult factory

WSS Elevated Racking System

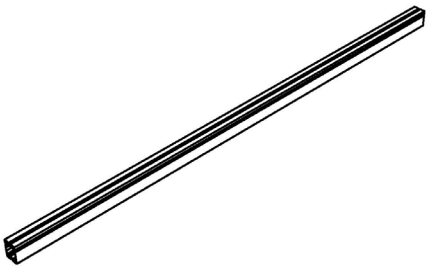
Installation Tools

The following tools are required for installation:

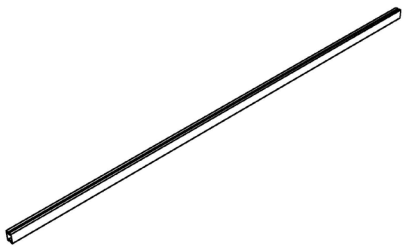
- Torque wrench - 30 ft-lb (360 in-lb) capacity
- Drill motor with impact drive
- Drive sockets, 1/2”, 9/16" and 3/4"
- 40 mm Lobe (Torx) Drive
- Open end Wrench – 1/2’’ 3/4"
- Tape Measure
- Angle measurement tool
- Stepladder

Component Parts

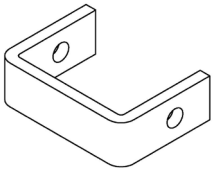
The following is a list of parts for the installation of a standard WSS Assembly. Both the wood mounted and concrete roof mounted posts are shown to accommodate both types of roof. Wood mounted and Concrete mounted Posts do not show commercial fasteners here but are discussed below for each roof application.



4x3 Strut – 6000 Series Aluminum. Main support rail for WSS Systems Used to support the module rails and also as a higher capacity module rail.

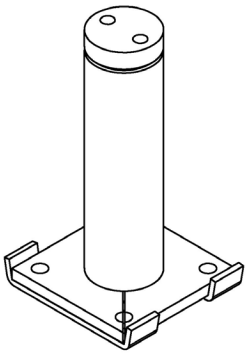


3x2 Strut – 6000 Series Aluminum. Panel support rail for WSS Systems. Typically spans 8-12 feet. Also used for W Frame members and as Diagonal Braces

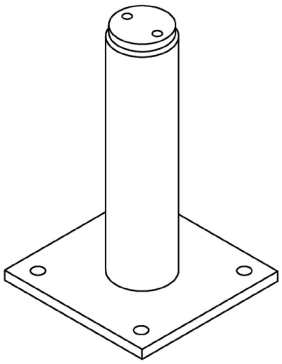


BI, Bracket, Inner – Inserts into Rails to provide connection points between W Frame members and main support rail

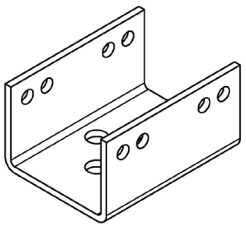
WSS Elevated Racking System



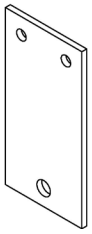
P12 - Post – Assembled Base - High capacity support post 12" tall standard height to allow flashing on insulated roofs. Load capacities of up to 6000 pounds vertical and 2000 pounds horizontal.



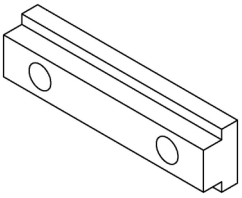
P12C – **Post - Welded Base** Welded – With Same Load Capacity



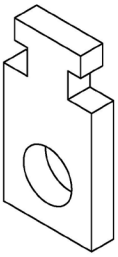
BL – Lower Bracket – to mount to top of cap style Post



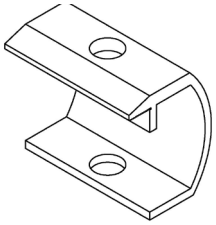
BU – Upper Bracket – Connects W Stut to 4x3 Main Support



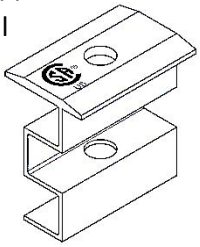
NB31 – Nut Bar, 5/16 - Connects Upper Bracket to Main Support Rail



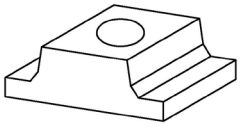
RT - Strut Retainer Connects Module Rail to Main Support



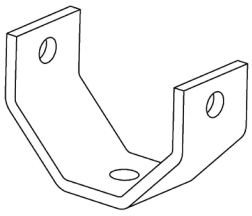
CC Series – C-Clip - clamps outer module to rail.



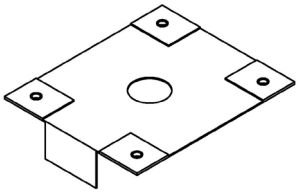
CW Series – Waffle Clip – Inner clamp securing adjacent modules.



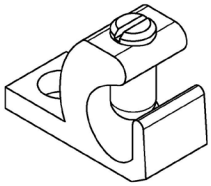
AN31 - Angle Nut, 5/16" – Inserts into 3x2 Strut slots with CC and CW Clamps to hold Modules in



DBO - Bracket, Diagonal Outer – Ties diagonal braces between Rack Frames



WEEB-WMC – Grounding device to ground modules IAW UL 2703



ILSCO GBL 1/0 – Ground Lug – to ground modules IAW UL 2703

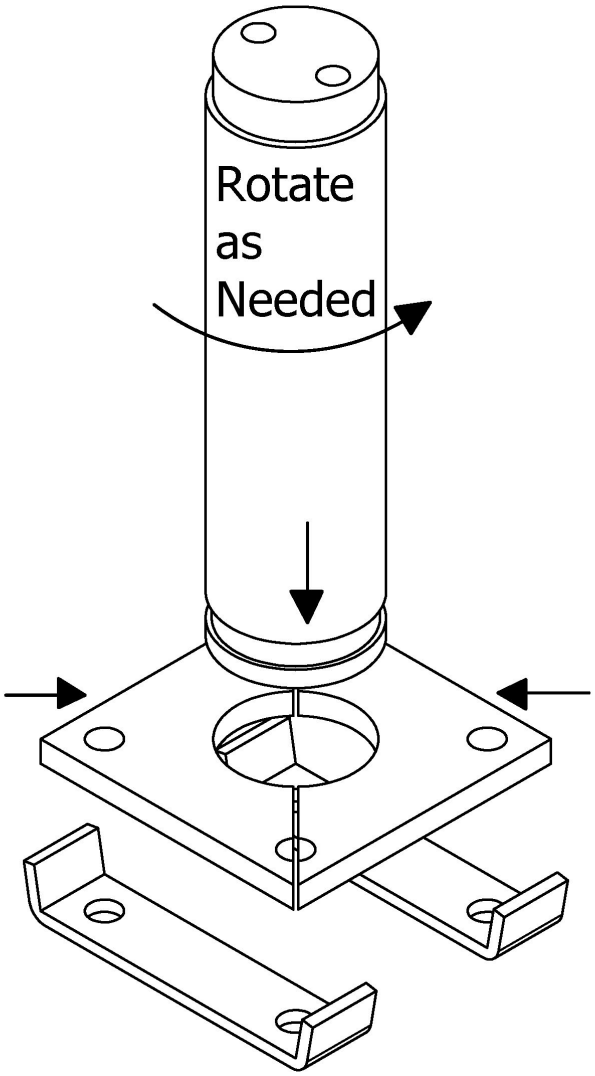
Commercial Fasteners

HH50125 - Hex Bolt, 1/2-13 x 1-1/4" Long, Stainless Steel
HH31075 – Hex Bolt, 5/16-18 x 3/4" long, Stainless Steel
HH31125 – Hex Bolt, 5/16-18 x 1-1/4" long, Piercing, Stainless Steel
HH31175-31225 – Hex Bolt, 5/16 x 1-3/4",2", or 2-1/4"long, Stainless Steel
LW31, LW50 – Lock washers, 5/16" and 1/2", Stainless Steel
FW31, FW50 –Flat washers, 5/16" and 1/2" Stainless Steel
OR 2-138 – O- Ring, .103W x 2.125 ID, Buna N

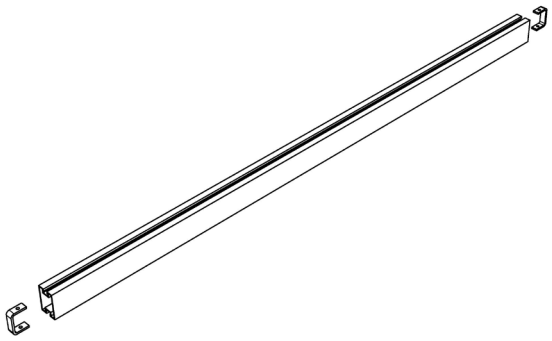
Pre-assemblies

In order to efficiently install the racking system it is best to pre-assemble as many components as possible prior to field installation. It is recommended that the following should be pre-assembled as shown below.

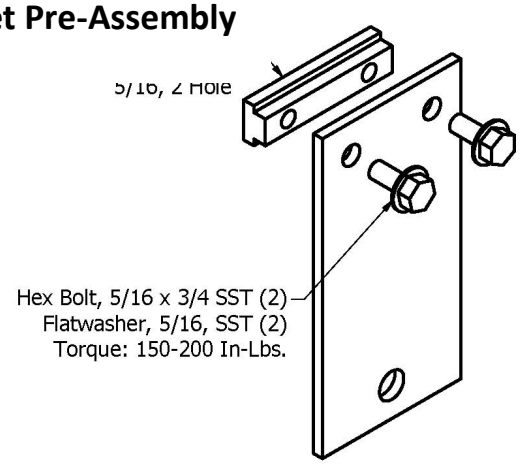
Post Pre-assembly



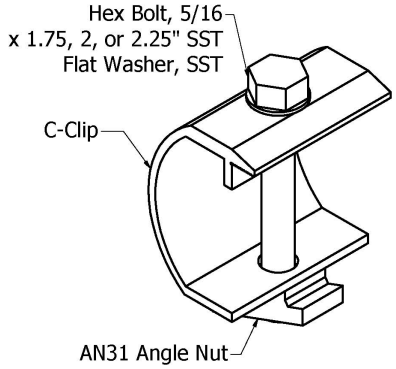
W Strut Pre-Assembly



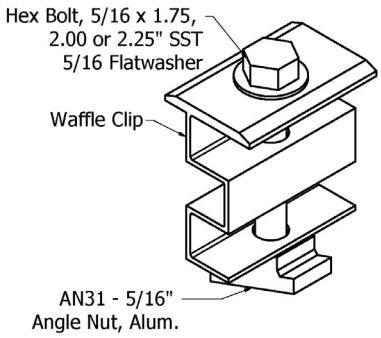
Upper Bracket Pre-Assembly



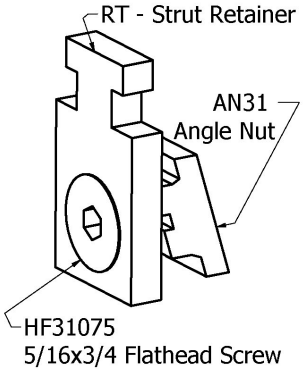
C (End) Clip Pre-Assembly



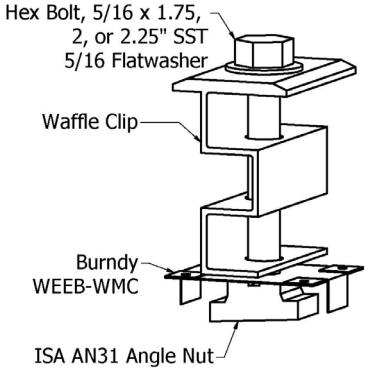
Waffle (Inner) Clamp Pre-Assembly



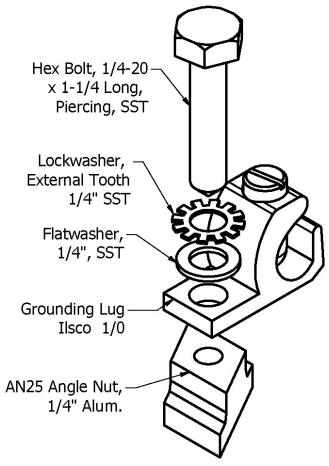
Module Rail Retainer Pre-Assembly



Waffle (Inner) Clamp With Grounding WEEB Pre-Assembly



Grounding Lug Pre-Assembly



Post Installation

Important Notes:

1. This installation procedure is based on the standard model of 3 modules in portrait, 7 feet module height at the low end and a 5 degree tilt. This can be varied somewhat to match roof variations by adjusting the positions of the posts and "W" frame members.

Roof Type

Determine the type of roof structure that you are attaching to and apply the appropriate installation procedure as shown below.

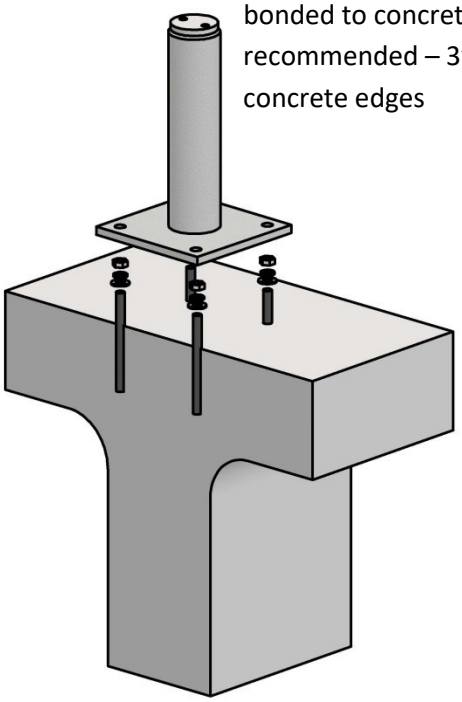
1. Concrete Roofs: Stay clear of rebar, post tension cables and encased electrical or plumbing lines. All roofing material must be removed directly under post base.
2. Wood Roofs: Bolts in structural members must be at spaced in accordance with least 2 diameters from edges. Posts must be solidly connected to the roof framing with only the roof sheathing allowed in between.
3. All Roofs: Verify that the positioning of the posts is in conformance with applicable structural analysis by a licensed engineer.

Begin the installation by placement and secure anchoring of the pre-assembled front and back posts (See pre-assembly instructions for the posts above). Securely anchor the posts to the roof structure in accordance with the building requirements.

Post Installation to Concrete:

1. Remove roofing and insulation from concrete slab to assure secure attachment.
2. Insert 4 ea. threaded rod anchors in a 6" square pattern – per anchor manufacturer
3. Mount Pre-assembled Post – tighten nuts to 40 Ft-Lbs. minimum.
4. Flash post in accordance with roofing requirements.

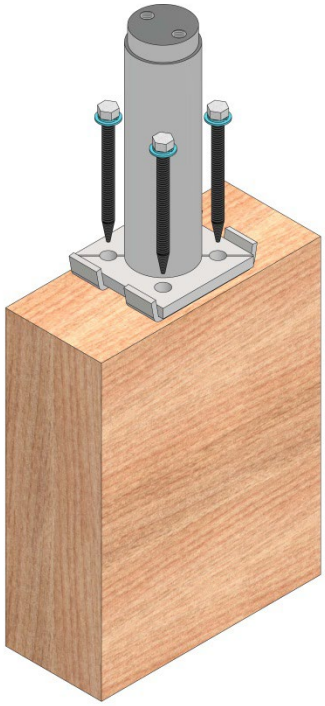
½" Threaded Rods – adhesively bonded to concrete – 3-1/2" depth recommended – 3" clearance from concrete edges



Post Installation to Glulam beam:

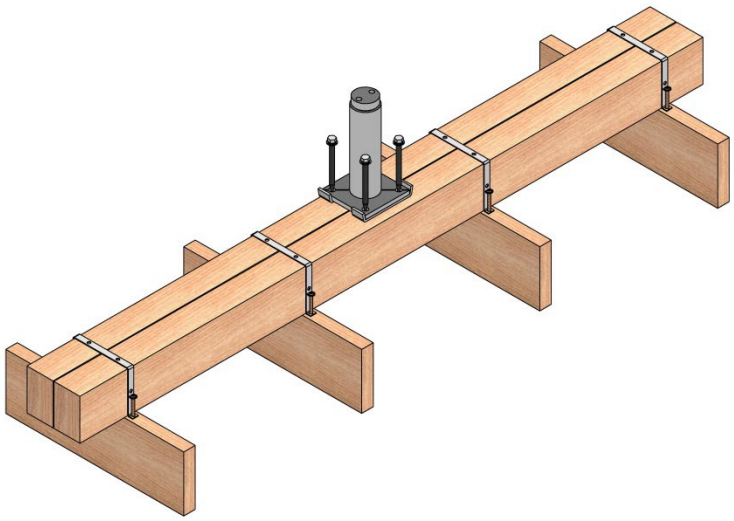
1. Remove roofing and insulation directly over Glulam roof beams and wood sheathing.
2. Predrill sheathing and Glulam beams to specified depth – 2 diameters minimum from Glulam edges.
3. Install ½”x 6” long lag bolts to depth required and torque to 40 Ft.-Lbs. minimum.
4. Flash post in accordance with roofing requirements.

Glulam Beam Installation
Sheathing not shown for clarity



Post Installation to 2x Wood Rafters:

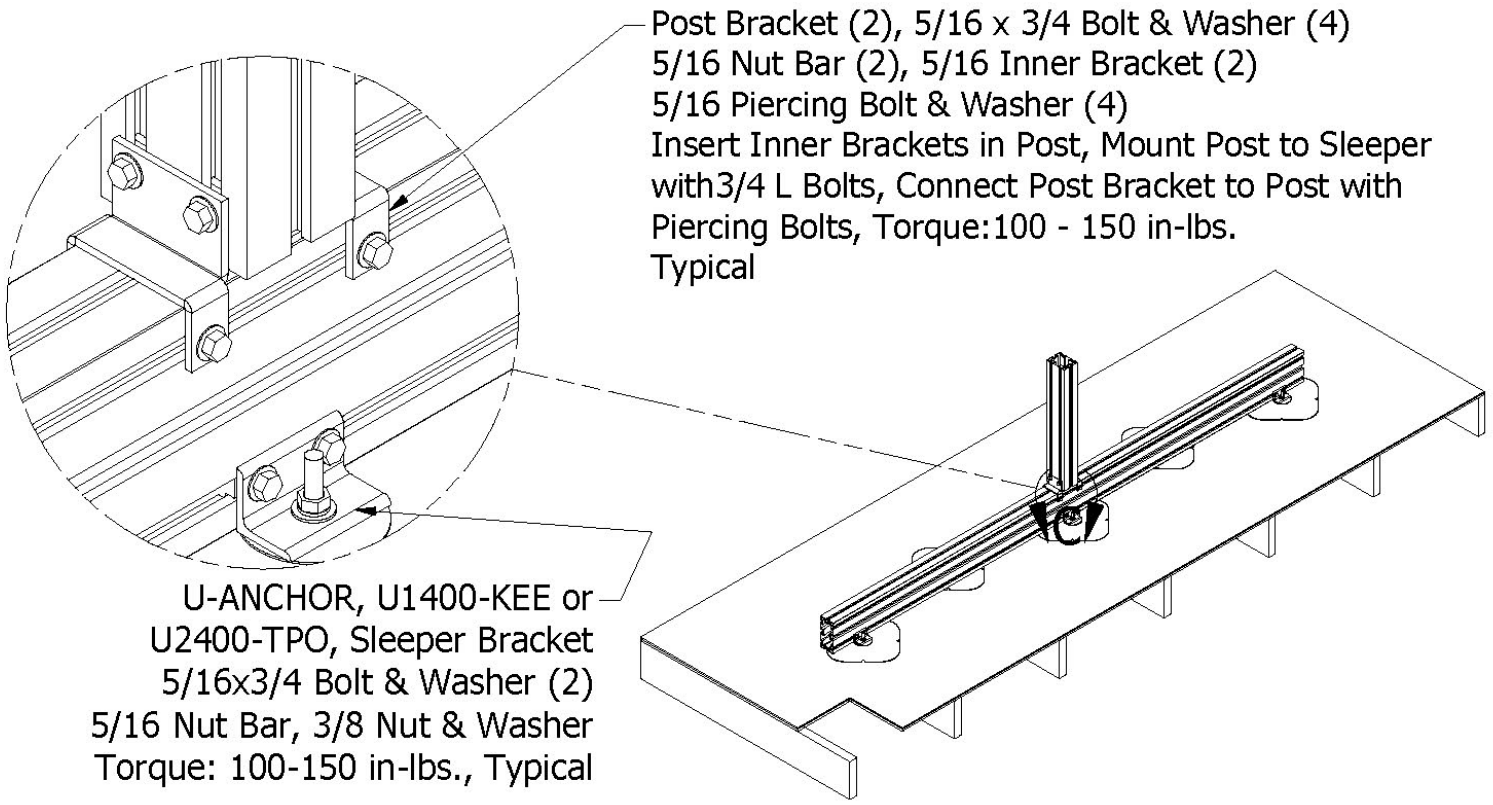
1. Remove roofing and insulation from roof top in specified locations.
2. Mount specified sleepers to 2x rafters - attach to a minimum of 4 adjacent rafters using sleeper straps and 5/16 or 3/8 x 3” long wood screws. Torque 15-20 Ft.-Lbs.
3. Mount post to center of sleeper with ½”x6” lag screws - maintaining a 2 diameter edge distance. Tighten to 40 Ft.-Lbs.
4. Seal and flash sleeper and post in accordance with roofing requirements.



Post Installation – 6x3 Strut with U-Anchors to Wood Rafters:

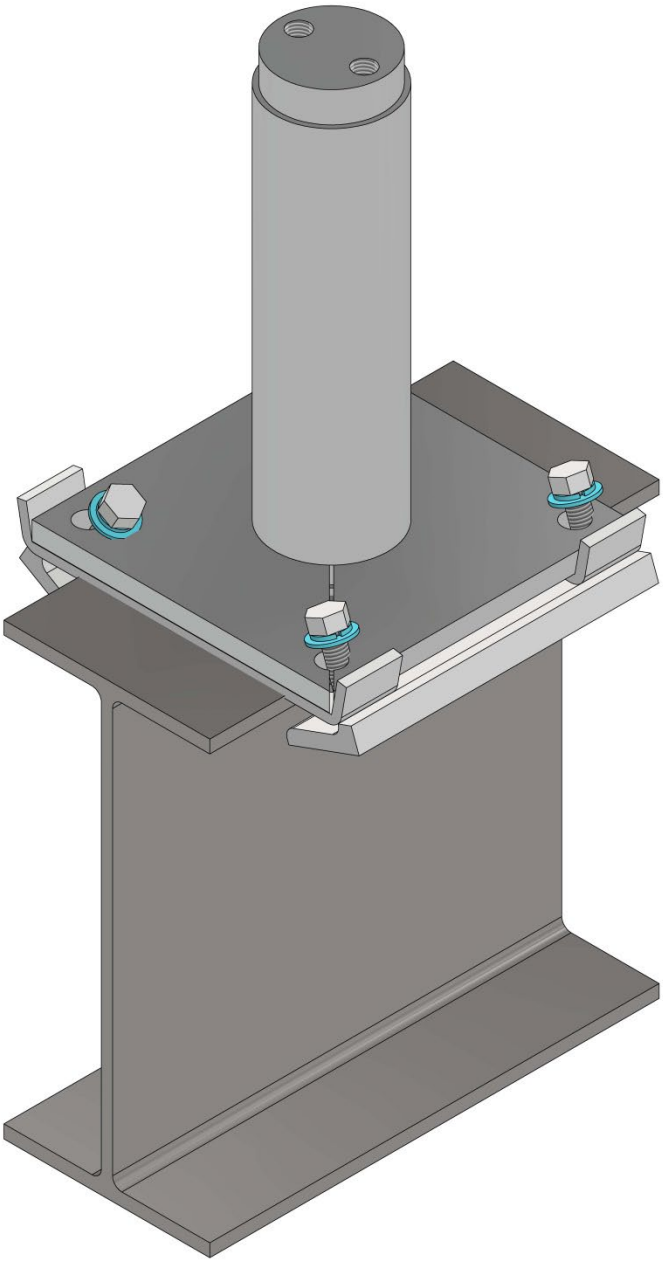
1. Install U-ANCHOR, U1400-KEE or U2400-TPO, per manufacturer's instructions.
2. Connect ISA 6x3 Sleeper to anchors - attach to a minimum of 4 adjacent rafters with ISA Sleeper Bracket.

Mount post to center of sleeper with Post



Clamp-on Post Installation to Wide Flange Beam:

1. Remove roofing and insulation directly over WF Beam.
2. Clear a space directly over WF beam including slots on each side of wide flange beam.
3. Lower Clamp-on Post onto top of beam with the clamp angles tilted out as shown.
4. Tighten the four screws to secure clamp-on post to the wide flange beam.
5. Tighten to 40 Ft.-Lbs.
6. Seal and flash post after installation.

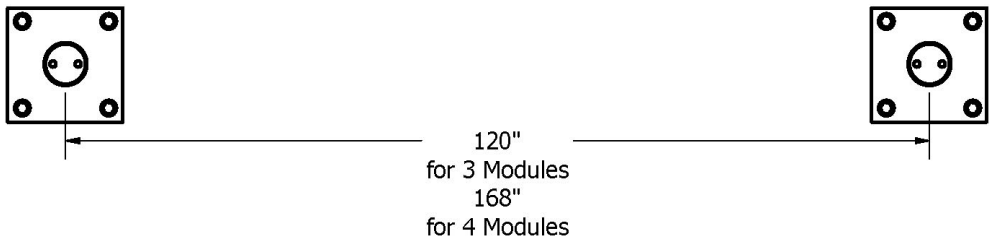


WSS Frame Installation

Refer to the above post mounting details for the methods and procedures for attachment. WSS Elevated Systems are typically used on rooftops where there are structures such as AC units where an elevated system is necessary.

Post Spacing

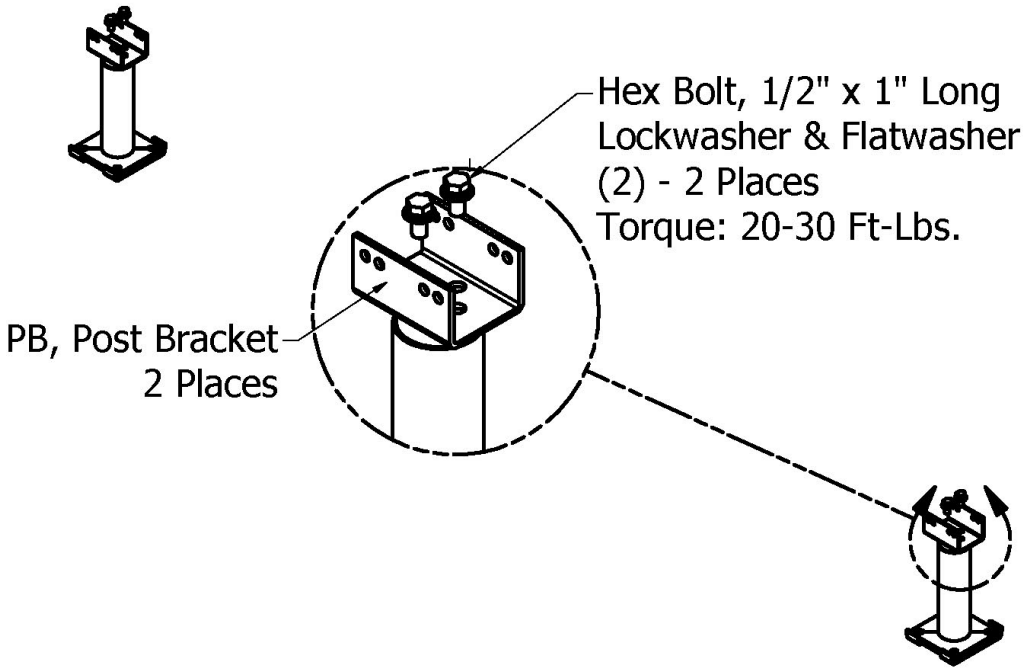
The recommended spacing of the WSS front and back posts is shown below. The spacing is shown for 3 modules in portrait and 4 modules in portrait. Other spacings are acceptable as long as they are within the allowable limits determined by structural analysis.



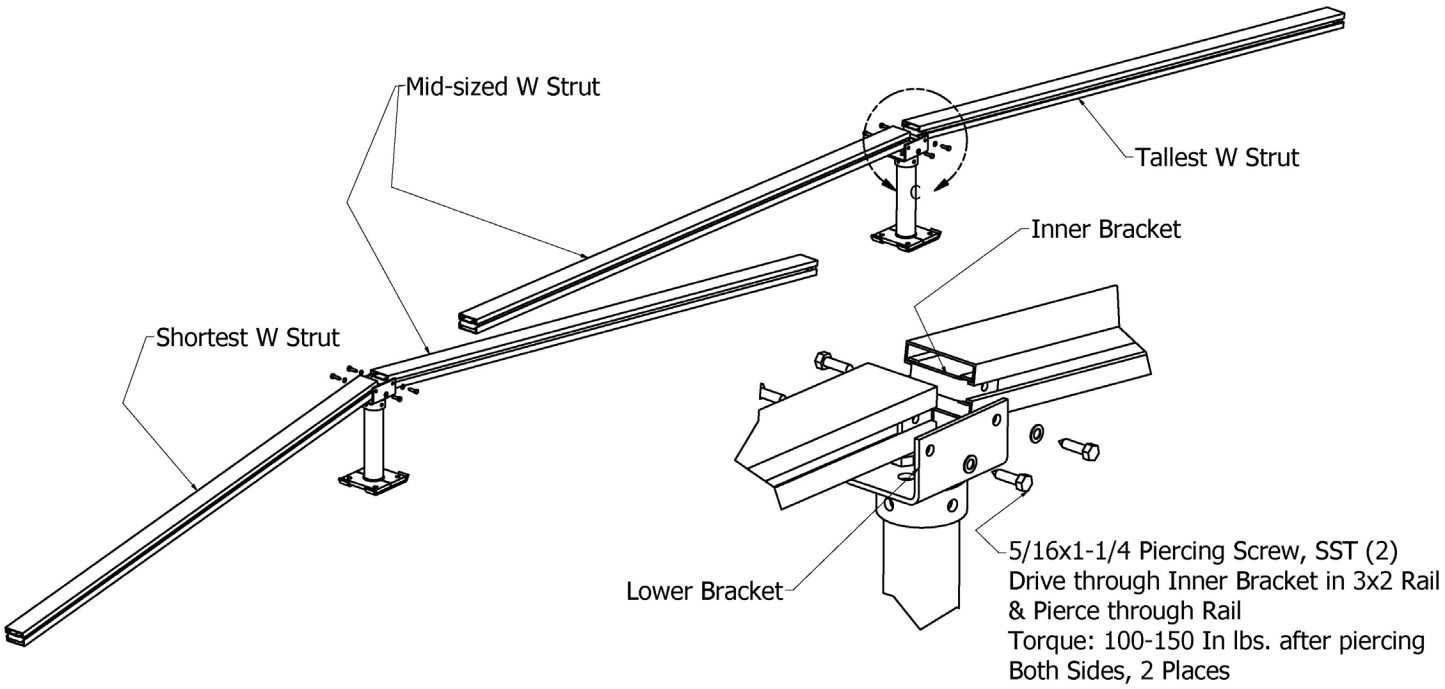
Rack Frame Assembly

Note: The following frame assembly erection details are the recommended approach with the least number of installers. Other procedures can be used if desired.

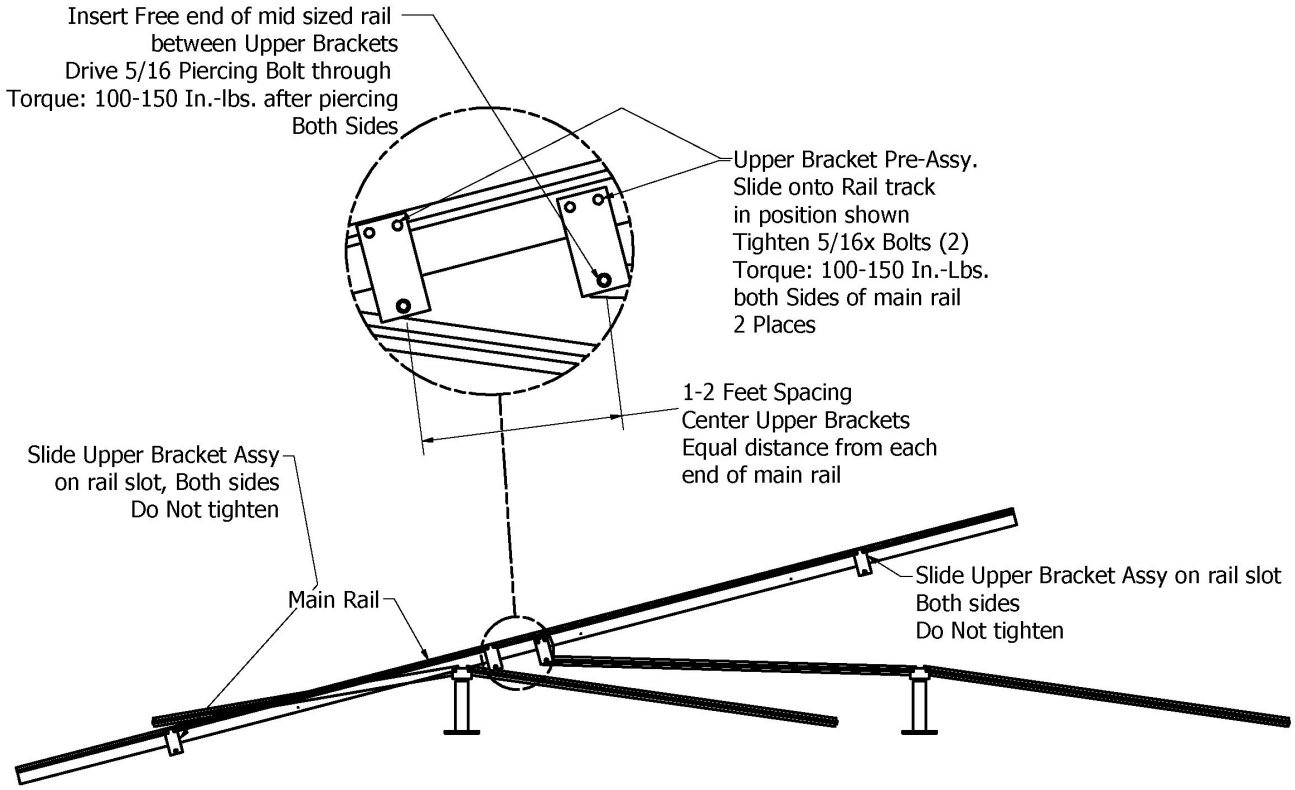
1. Install Post Brackets to the two posts.



2. Mount all four pre-assembled W- Strut members to the two post Lower Brackets. For tilted arrays, the shortest W – Strut is mounted on the lower (south) end, the two mid-sized W – Struts are mounted in the center, and the tallest is mounted on the upper (north) side.

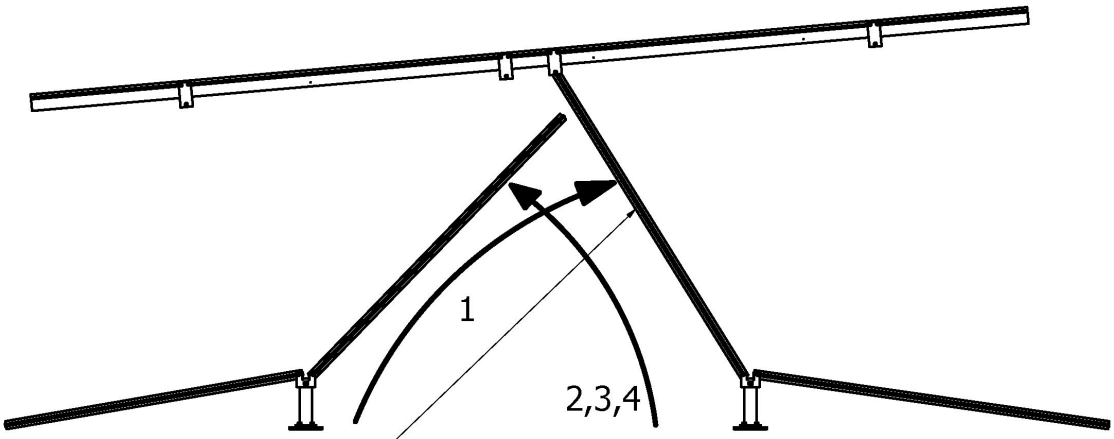


3. Slide all 8 Upper Bracket Pre-assemblies onto the main 4x3 rail. Firmly tighten the middle side by side Upper Bracket Pre-assemblies to center of main beam – each pair 1-2 feet apart. Attach the rear middle W-Strut free end to the main rail as shown.



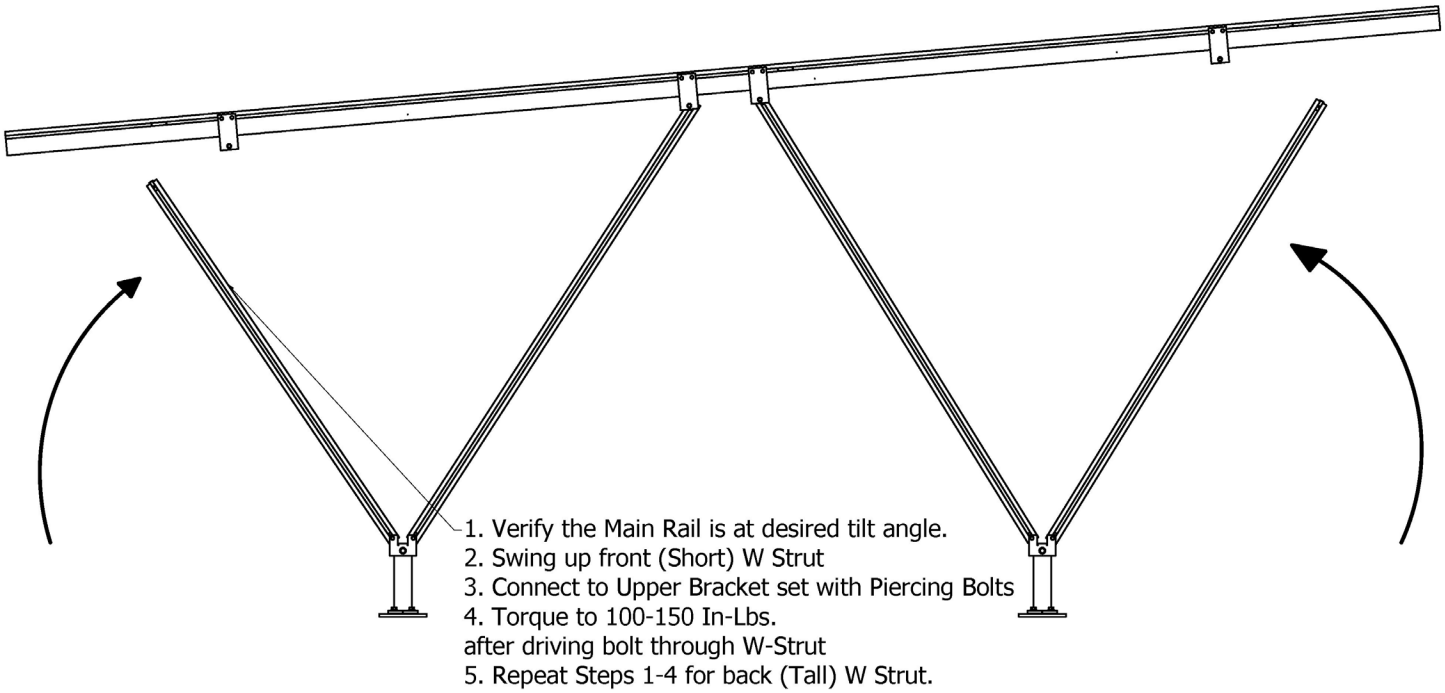
4. Push sideways against attached W-Strut to raise it to the desired level – and hold in position by pushing on the side of the W-Strut. Then swing up the second middle W-Strut and insert and connect with the two Piercing bolts on the forward pair of upper brackets.

5. Use level to adjust to the desired tilt angle.



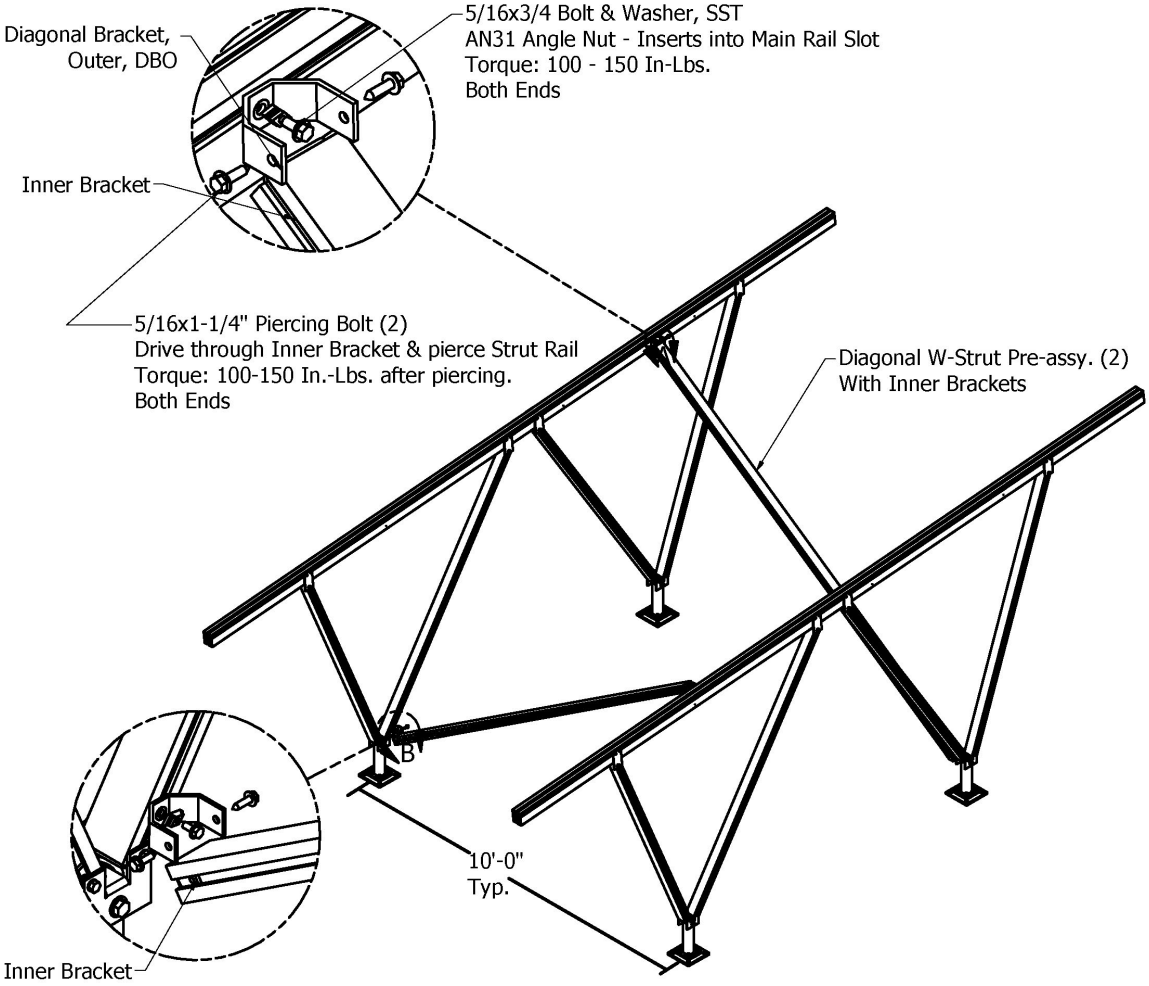
1. Swing up rear mid W Strut with Main Rail attached - Hold in place.
2. Swing up 2nd Mid W Strut.
3. Connect mid W Strut to 2nd set of Upper Brackets with piercing screws.
4. Drive through and Torque to 100-150 In-Lbs.

6. Connect the free ends of the front and rear W-strut units to the two pairs of Upper Bracket Pre-assemblies on each end and fasten with the piercing screws and final torque to 100-150 In.-Lbs. Tighten the remaining screws on the Upper Bracket Pre-assemblies to 100-150 In.-Lbs.

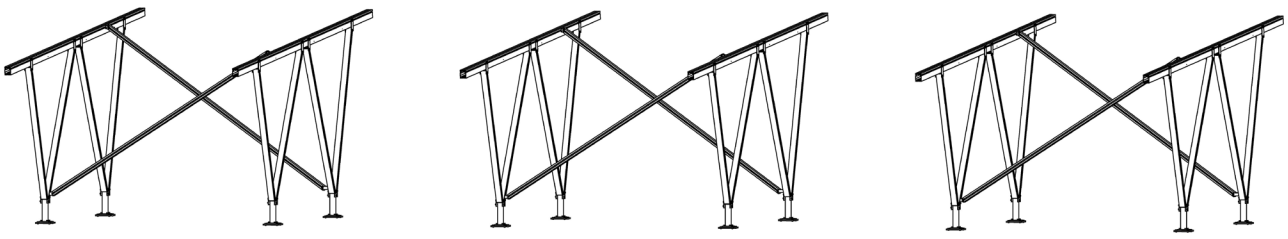


7. Repeat Steps 1-6 to install the second Main Frame Assembly – Position approximately 10 feet from the first frame.
8. Install the Diagonal W-Strut Rails as shown to cross-brace the two frames to each other. Attach the Diagonal Outer Bracket, DBO, to the lower end of the W-Strut with the AN31 Angle Nut, 5/16x3/4" Hex Bolt and washer. Attach the W-Strut cross-brace with the two 5/16 Piercing Bolts and tighten to 100-150 In.-Lbs. after piercing through the Diagonal W-Strut.

   Attach the upper end of the Diagonal W- Strut to the 4x3 Main Rail with the AN31 Angle Nut, 5/16x3/4" Hex Bolt and washer. Attach the W-Strut cross-brace with the two 5/16 Piercing Bolts and tighten to 100-150 In.-Lbs. after piercing through the Diagonal W-Strut.
   Repeat this procedure for the second Diagonal W-Strut.



Below shows 3 dual frame arrays side by side. The frames should not be greater than 10 feet apart without reviewing the structural capacity for the specific environment. The frame pairs are independently stable and do not require stabilization between frames.

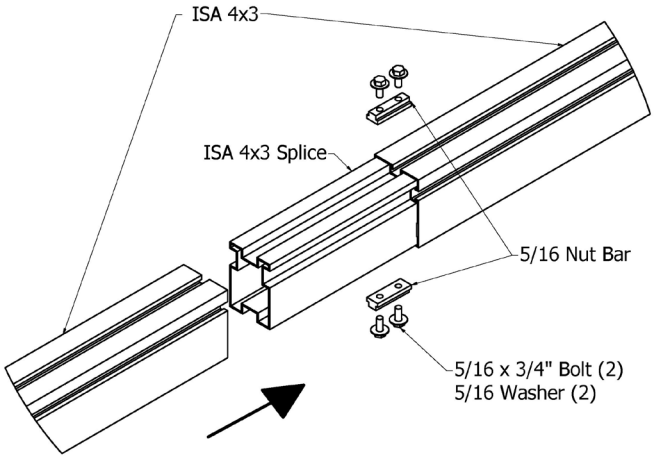


Rail Splicing

Main Beam Splice

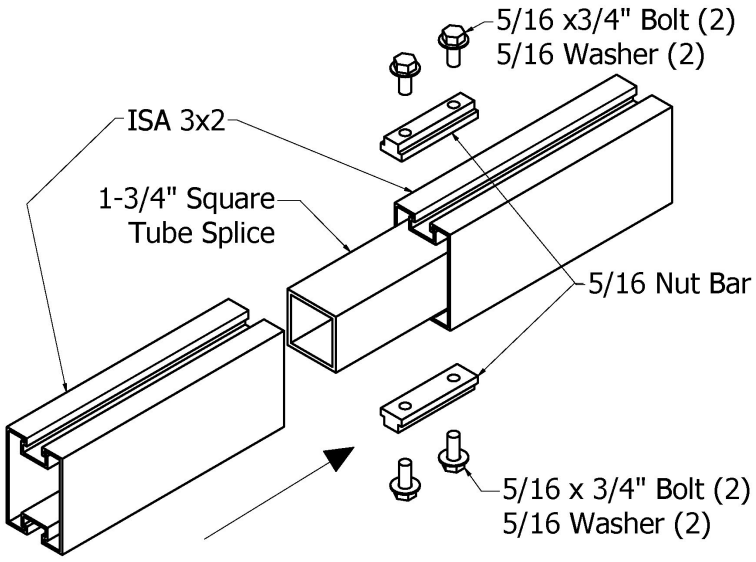
If it is necessary to extend the main rails or join two separate sections the rails can be spliced together as follows:

1. Insert Nut Bars into top and bottom slot of 4x3 Rail on one side
2. Insert 4x3" Splice between both 4x3 Rails
3. Push the second main rail all the way on until it butts up to the first main rail.
4. Position Nut Bar evenly over rails and tighten bolts - Torque to 10-15 Ft-Lbs. in order for the bolts to dent into the Splice for a secure connection.

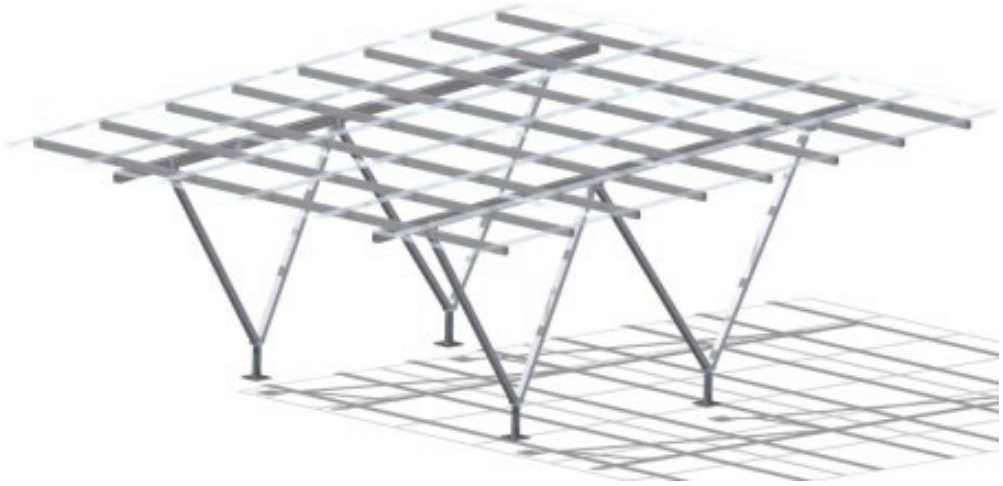


Module Rail Splice

1. Insert Nut Bars into top and bottom slot of 3x2 Rail on one side
2. Insert 1-3/4" Splice Tube between both 2x2 Rails
3. Push the second main rail all the way on until it butts up to the first module rail.
4. Position Nut Bar evenly over rails and tighten bolts - Torque to 10-15 Ft-Lbs. in order for the bolts to dent into the Splice for secure connection.



Module Installation and Grounding



Begin by insuring that the appropriate frame support has already been fully assembled to the roof or canopy and is properly anchored in accordance with the applicable manual instructions.

1. Position the first 3x2 module rail on top of the two ISA main support rails. The allowable spans and cantilevers for the ISA3x2 rails are shown in the separate Recommended Spans and Cantilever Chart. Note: Do not exceed the maximum allowable cantilevers or spans of the module rails based on the wind and snow loads for the location.

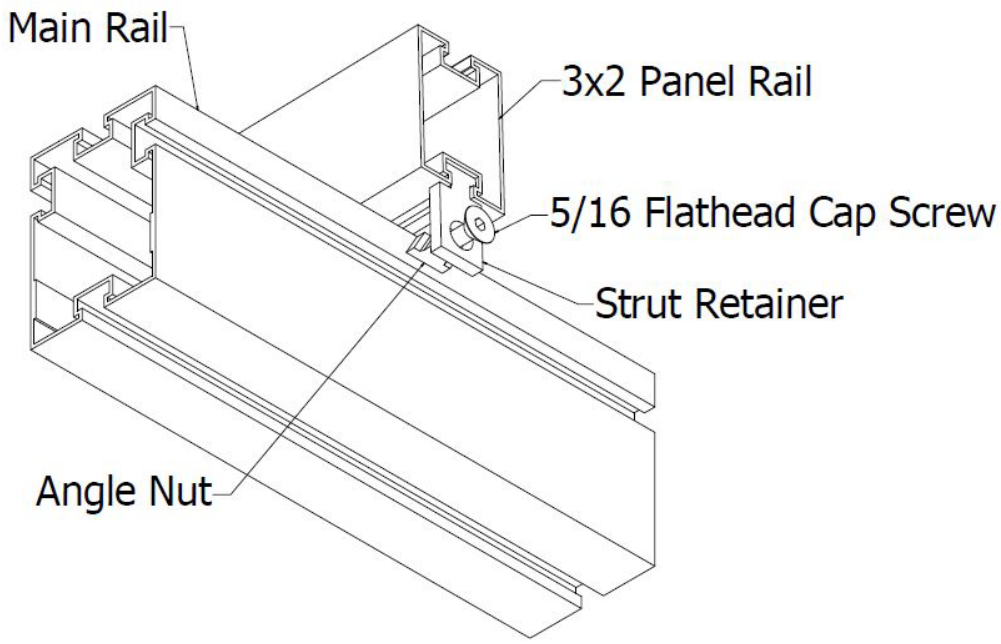
   Note:

   The module rails should be spaced in accordance with the allowable spacing for the particular module used. We recommend positioning the rails so that they support the modules 25% of the length from the end – this will allow consistent spacing of the rails for the array.
2. If not already done, pre-assemble the Strut Retainer, Flathead Screw, and Angle Nut loosely as shown in the Pre-assembly instructions.

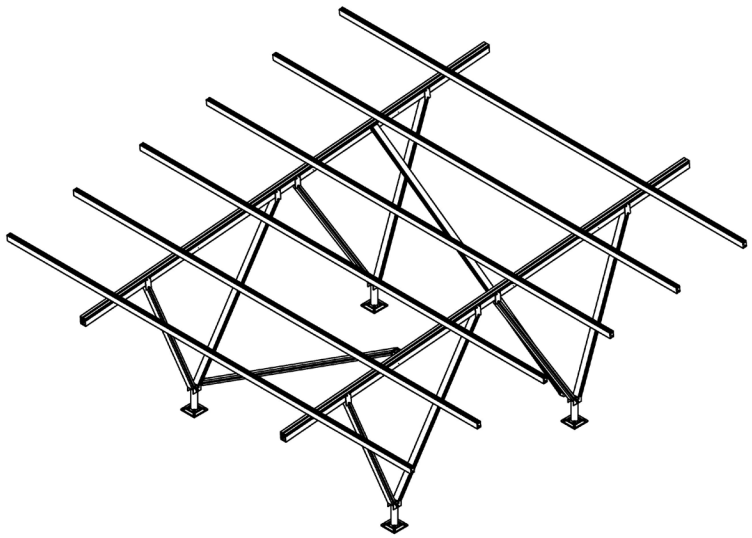
3. Insert the module rail retainer pre-assembly into Module Rail bottom "T" slot and slide the retainer towards the Main Rail to engage the angle nut in the Main Rail slot.
4. Torque to 100 to 150 In-Lbs. with a T-40 driver. Repeat this process for the other side of the main rail.

   Note:

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



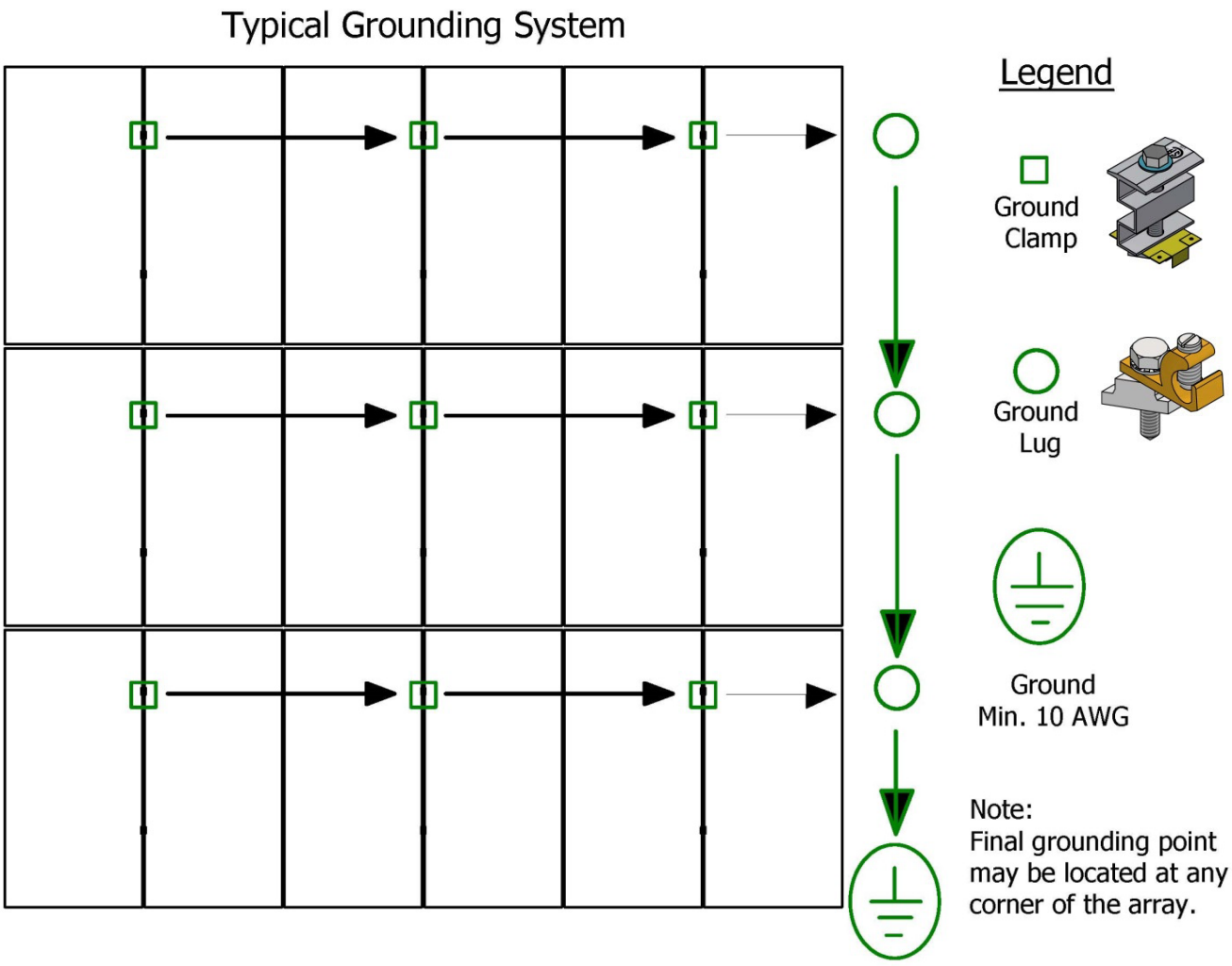
5. Install the second pair of Module Rail Retainers on the other main support rail.
6. Install the remaining Module Rails on top of the the two Main Rails by repeating this procedure. Below is a typical Module Rail layout showing the rails in place.



Module Installation

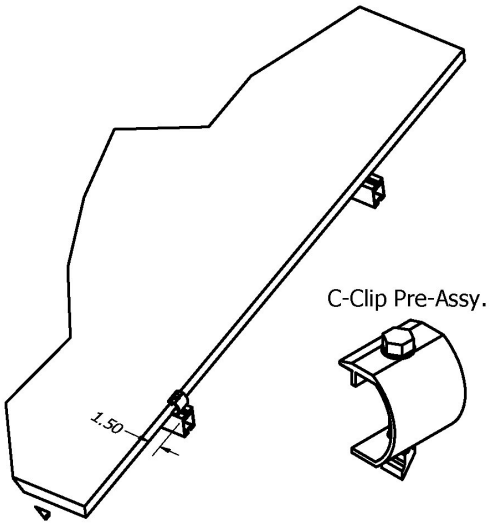
The appendix contains a partial list of the modules that are qualified for use with this WSS Racking System. This list will be updated as new modules are made available.

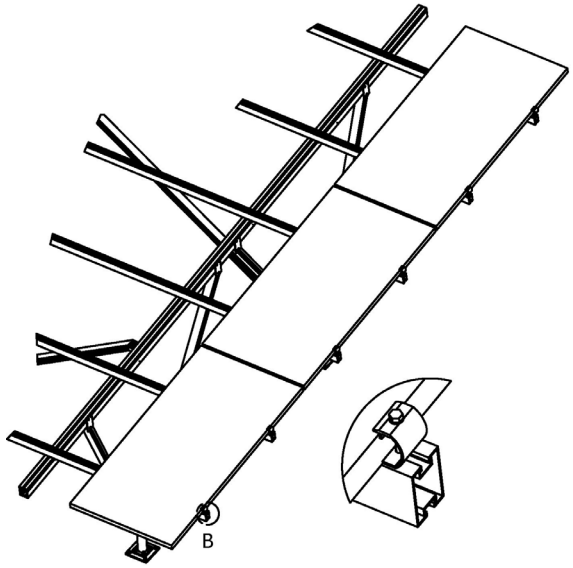
The first step is to organize the racking system module array so that the modules are properly grounded in a accordance with UL 2703 requirements. Below is a layout of an 18 module array showing the locations of the module grounding points and a ground path to the rack framing system.



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 appropriate C-Clip, angle nut, 5/16 bolt and washer as shown.
    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 C-Clip and module edge 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.





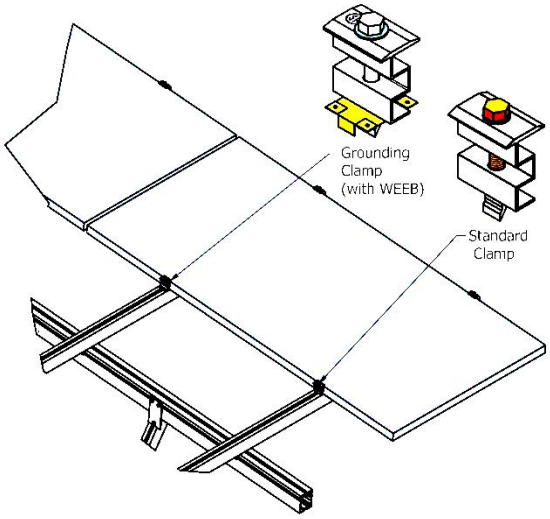
Installation of mid Clamps Including Bonding Clamps.

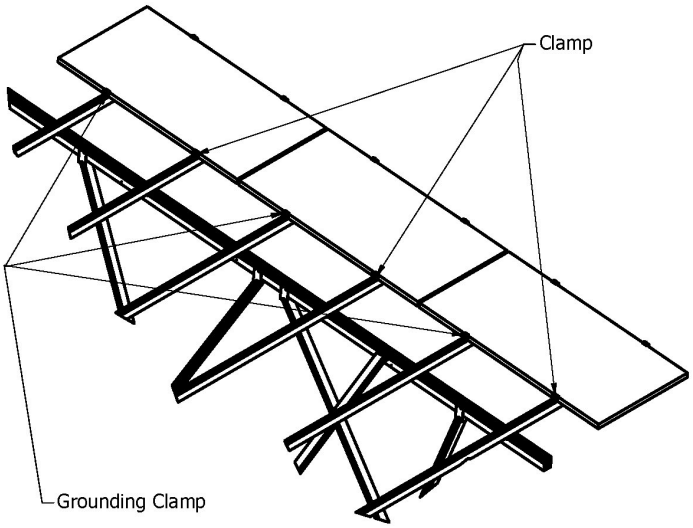
1. Pre-assemble the Waffle (mid) Clamp, angle nut, 5/16 screw and washer as shown. For bonding locations simply add the WEEB-WMC (or equivalent) between the angle nut and mid clamp as shown to easily convert any clamping unit into a bonding unit.

Note: WEEB-WMC’s are single-use only – they must be replaced in any assembly they are used in if that assembly has to be re-assembled.

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.

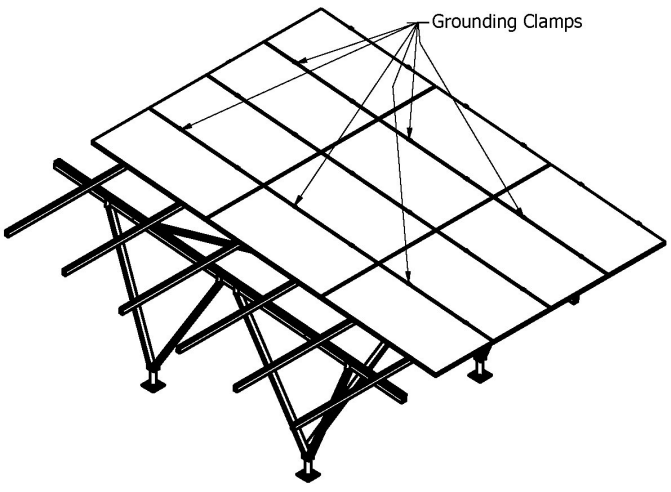
3. Install a Grounding Clamp on the first module – which for this array is shown on the upper rail of the first module. Install a standard Clamp on the lower module rail.
4. Attach the remaining grounding clamps and standard clamps on the other two modules in the column. Lightly clamp all six clamps against the 3 modules to hold them in place while setting the next column of modules in place.



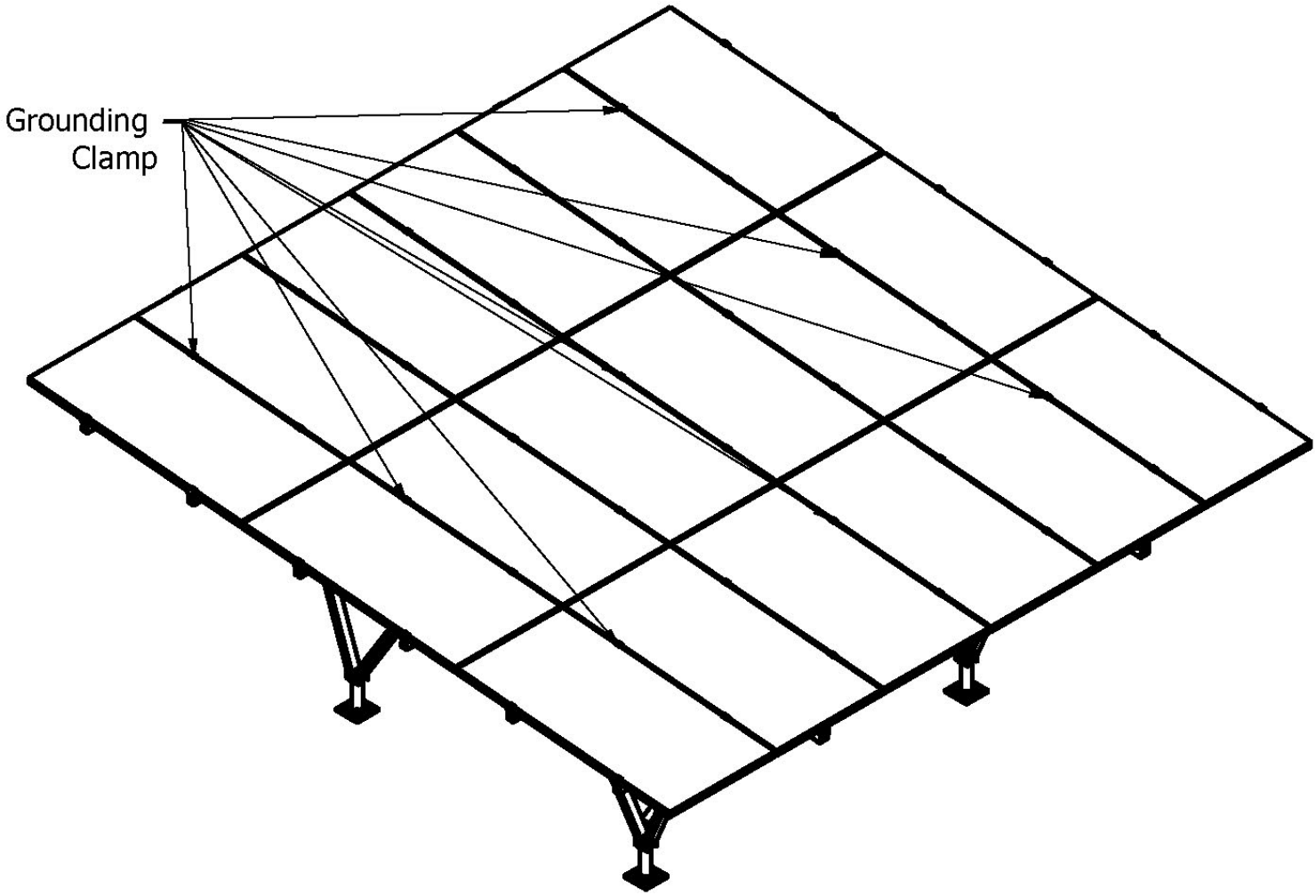


5. Add the 2nd column of modules and slide them under the existing standard and grounding mid clamps. Tighten all bonding and standard clamps to 150-200 In-Lbs. to secure in place and provide bonding for the first group of six modules.

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 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.



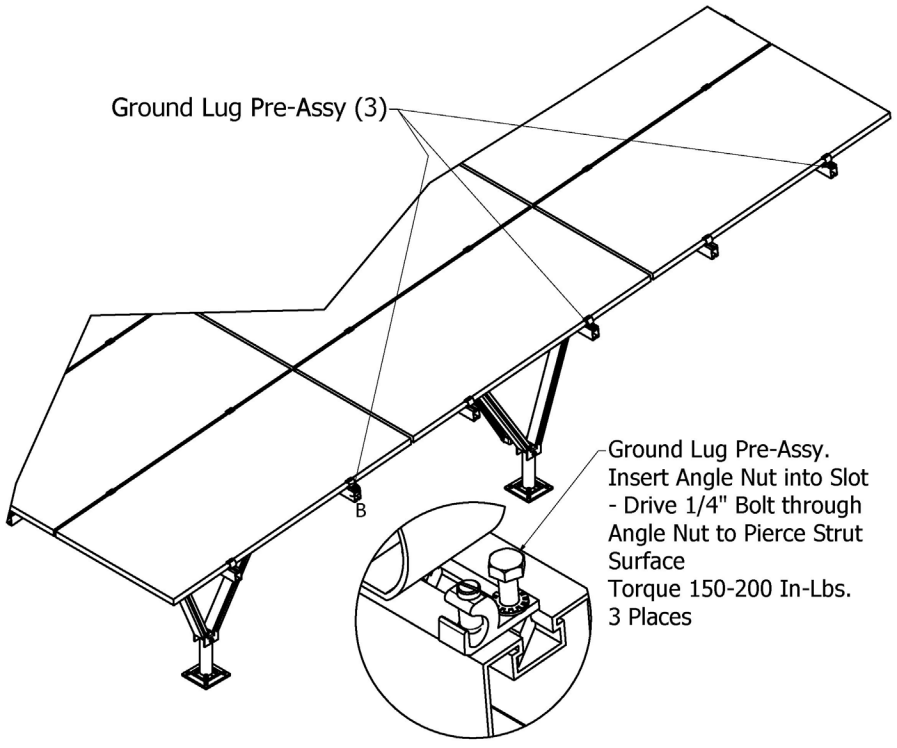
Installation of Grounding Lugs

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.

Note: WEEB-WMC's are single-use only – they must be replaced in any assembly they are used in if that assembly has to be re-assembled.

3. The 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.



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.

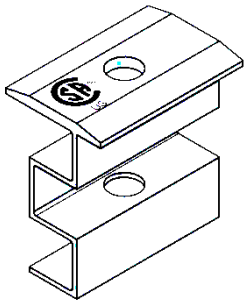
- Sample inspect bolt connections to verify they are within the minimum torque settings described in the installation procedures.
- Retighten all bolts found to be below minimum torque values.
- Double the percentage of joint inspections for any category of bolt joints that have been found to be below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

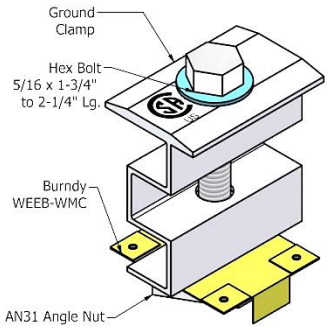
Labeling System for UL 2703 Compliance

To indicate compliance and insure consistency of the Racking System with UL 2703, the following labeling requirements must be incorporated into the System.

Note: The scope of this certification is for bonding and grounding only.

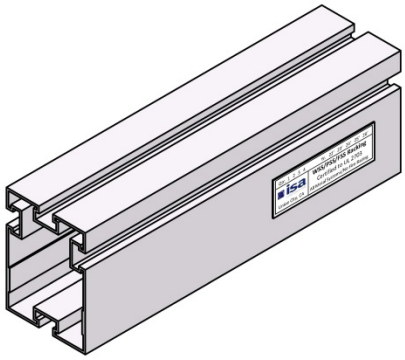
1. All grounding clamps must carry, in the form of a stamp or decal, an approved UL 2703 image as shown below.

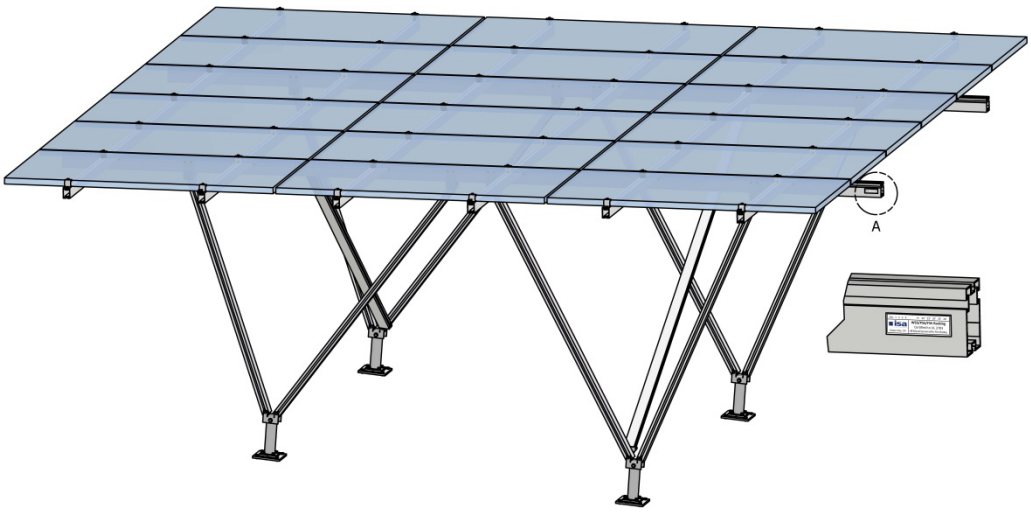




2. For any WSS/PSS/FSS System to be in conformance with UL2703 requirements it must exhibit a decal, as shown below, on at least one end of one of the two 4x3 or 9x3 main support rails of each array. The decal must contain the racking system manufacturer's name, model description, date of manufacture, and location as shown below.

Qtr. 1 2 3 4	Yr. 22' 23' 24' 25' 26'
isa CORPORATION Union City, CA	**WSS/PSS/FSS Racking** Certified to UL 2703 All Metal Systems/No Fire Rating





Listing of UL 2703 Approved Modules for WSS/FSS/PSS

Manufacturer	Model Number
Aptos Solar	DNA-120-(MF/BF)26, DNA-144-(MF/BF)26
Astronergy	CHSM6612 M, M/HV, CHSM6612P Series, CHSM6612P/HV Series, CHSM72M-HC,
Axitec	AC-xxxMH/120(S/V/SB/VB), AC-xxxMH/144(S/V/SB/VB)
Boviet	BVM6610M-XXXS-H-HC-BF, BVM6612M-XXXS-H-HC-BF-DG, BVM6612M-XXXS-H-HC-BF, BVM7612M-XXX-H-HC-BF, BVM7612M-XXX-H-HC-BF-DG, BVM6610M-XXXS-H-HC, BVM7610M-XXX-H-HC, BVM6610M-XXXS-H-HC, BVM7610M-XXX-H-HC, BVM6612M-XXXS-H-HC, BVM7612M-XXX-H-HC, BVM6612M9-XXXS-H-HC
BYD	P6K & MHK-36 Series
Canadian Solar	CS1(H/K/U/Y)-MS, CS3K-(MB/MB-AG/MS/P/P HE/PB-AG), CS3L-(MS/P), CS3U-(MB/MB, AG/MS/P/P HE/PB/PB-AG), CS3W-(MB-AG/MS/P/P-PB-AG), CS5A-M, CS6K-(M/MS/MS AllBlack/P/P HE)
CertainTeed	CT2xxMxx-01, CT2xxPxx-01, CTxxxMxx-01, CTxxxPxx-01, CTxxxMxx-02, CTxxxMxx-03, CTxxxMxx-04, CTxxxHC11-04
ET Solar	ET AC Module, ET Module
GCL	GCL-P6 & GCL-M6 Series
Hansol	TD-AN3, TD-AN4, UB-AN1, UD-AN1
Heliene	36M, 36P 60M, 60P, 72M & 72P Series
HT Solar	HT72-156(M/P), HT72-156P-C, HT72-156P(V)-C, HT72-156M(PDV)-BF, HT72-156M(PD)-BF, HT60-156M-C, HT60-156M(V)-C
Hyundai	KG, MG, RW, TG, RI, RG, TI, KI, HI Series HiA-SxxxHG, HiD-SxxxRG(BK), HiS-S400PI
Japan Solar	JPS-60 & JPS-72 Series
JA Solar	JAP6 60-xxx, JAM6(K)-60/xxx, JAP6(k)-72-xxx/4BB, JAP72SYY-xxx/ZZ, JAP6(k)-60-xxx/4BB, JAP60SYY-xxx/ZZ, JAM6(k)-72-xxx/ZZ, JAM72SYY-xxx/ZZ, JAM6(k)-60-xxx/ZZ, JAM60SYY-xxx/ZZ. i. YY: 01, 02, 03, 09, 10 ii. ZZ: SC, PR, BP, HiT, IB, MW YY = Backsheet, ZZ Cell technology
Jinko Solar	JKM & JKMS Series JKMxxxM-72HL-V
LG	LG425QAK-A6
Longi	LR4-60(HPB/HPH), LR4-72(HBD/HPH), LR6-60, LR6-60(BK/HPB/HPH/HV/PB/PE/PH), LR6-72, LR6-72(BK/HBD/HV/PB/PE/PH), RealBlack LR4-60HPB, RealBlack LR6-60HPB, LR5-72HPH
Mission Solar Energy	MSE Mono, MSE Perc
Mitsubishi	MJE & MLE Series
Neo Solar Power Co.	D6M Series
Panasonic	VBHNxxxSA06/SA06B/SA11/SA11B, VBHNxxxSA15/SA15B/SA16/SA16B, VBHNxxxKA, VBHNxxxKA03/04, VBHNxxxSA17/SA17G/SA17E/SA18/SA18E, VBHNxxxZA01/ZA02/ZA03/VBHNxxxZA04

Peimar	SGxxxM (FB/BF), SMxxxM
Phono Solar	PSxxxM1H-20/U, PSxxxM1-20UH, PSxxxM1H-20UH, PSxxxM1-20/UH, PSxxxM1H-20/UH, PSxxxM-24/T, PSxxxMH-24/T, PSxxxM-24/TH, PSxxxMH-24/TH
Q-Cells	Q.PEAK DUO-G5, Q.PEAK DUO L-G5.2, Q.PEAK DUO-G6+, Q.PEAK DUO L-G6.2, Q.PEAK DUO-G7, Q.PEAK DUO L-G7.2, Q.PEAK DUO-G8+, Q.PEAK DUO L-G8.2, Q.PEAK DUO XL-G10.2, Q.PEAK DUO XL-G10.3/BFG, Q.PEAK DUO XL-G10.c, Q.PEAK DUO XL-G11.2, Q.PEAK DUO XL-G11.3, Q.PEAK DUO XL-G11.3/BFGw
REC Solar	RECxxxAA (BLK/Pure), RECxxxNP (N-PEAK), RECxxxNP2 (Black), RECxxxPE, RECxxxPE72, RECxxxTP, RECxxxTP72, RECxxxTP2(M/BLK2), RECxxxTP2S(M)72, RECxxxTP3M (Black), RECxxxTP4 (Black)
Risen	RSM Series
Seraphim	SEG-6 & SRP-6 Series, SEG-XXX-6MA-HV, SRP-XXX-6MB-HV, SRP-XXX-BMA-HV, SRP-XXX-BMB-HV, SRP-XXX-BMC-HV, SRP-XXX-BMD-HV, SRP-XXX-BMZ-HV
Sharp	NU-SA & NU-SC Series
Silfab	SLA-M, SLA-P, SLG-M, SLG-P & BC Series SILxxx(BL/NL/NT/HL/ML/BK/NX/NU/HC)
Solartech	STU HJT, STU PERC & Quantum PERC
Suntech	STP
SunPower	AC, X-Series, E-Series & P-Series
Tesla	SC, SC B, SC B1, SC B2, TxxxS
Trina	TSM-DE15V(II), TSM-DE15M(II), TSM-DEG15VC.20(II), TSM-DEG15MC.20(II), TSM-DEG19C.20
Upsolar	UP-MxxxP, UP-MxxxM(-B)
URECO	D7Kxxx(H7A/H8A), D7Mxxx(H7A/H8A) FAKxxx(C8G/E8G), FAMxxxE7G-BB FAMxxxE8G(-BB)
Vikram	Eldora, Somera, Ultima
VSUN	VSUN315-60M-BB, VSUN390-72MH VSUN415-144BMH, VSUN450-144BMH
Winaico	WST & WSP Series
Yingli	YGE & YLM Series
ZNShine Solar	ZXM6-72 Series