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by **ACE**
CLAMP[®]
Innovative Roofing Solutions[™]

REQUIRED COMPONENTS

Solar Snap® L-Foot w/Base Support

(fully assembled and ready to install)



Solar Snap® Rail

(Available in 14' lengths)



Solar Snap® Mid Clamp

(sized for your specific PV panel thickness)



Solar Snap® End Support

(sized for your specific PV panel thickness)



Burndy Ground Lug



BASE SUPPORTS

ISR (Concrete Coated Board)



Asphalt



Membrane



Standing Seam



REQUIRED TOOLS



Caulk Gun



Chalk Line



Torque Wrench

1/2" Wrench



Tape Measure

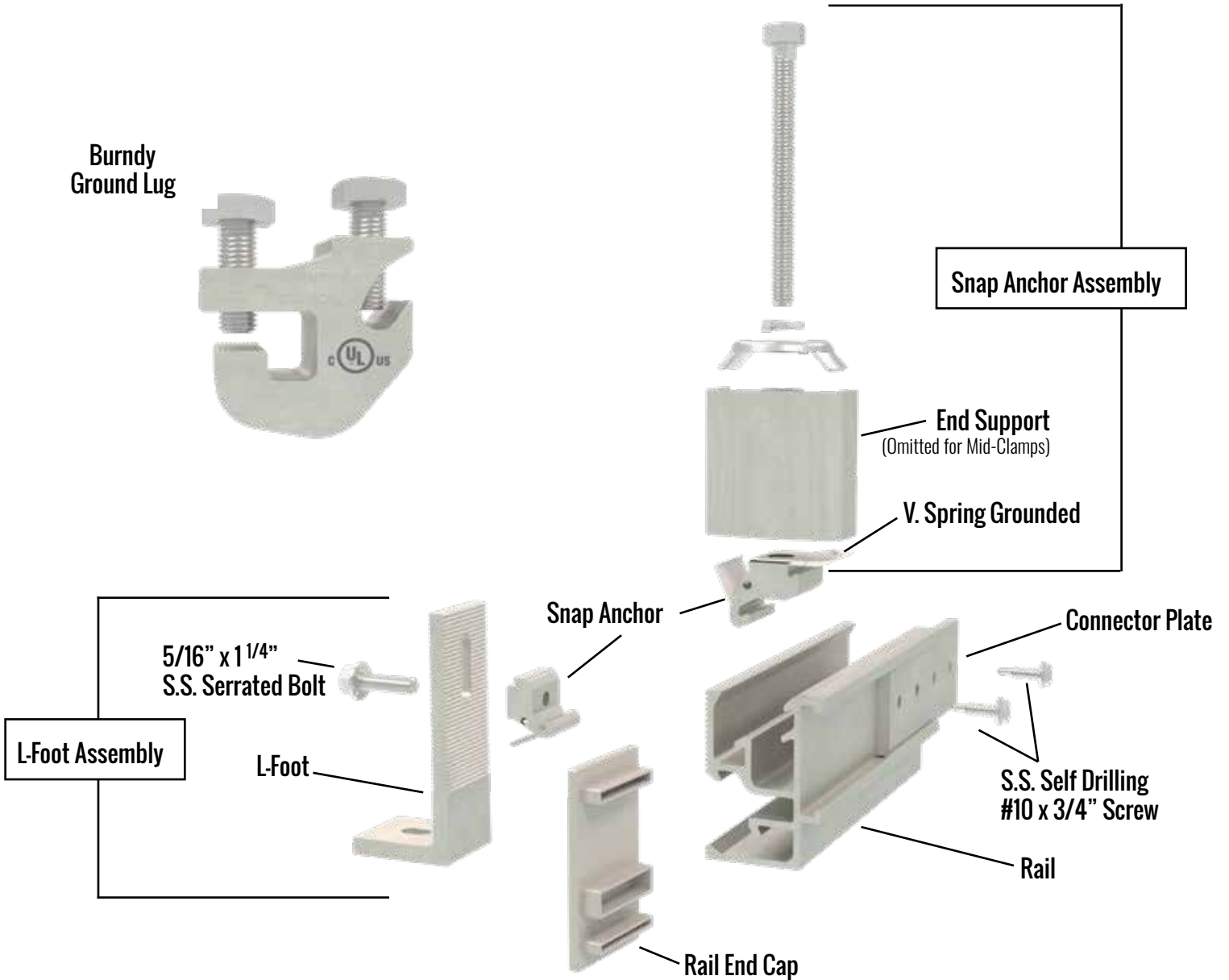


Saw

Power Drill & 1/2" & 5/16" sockets

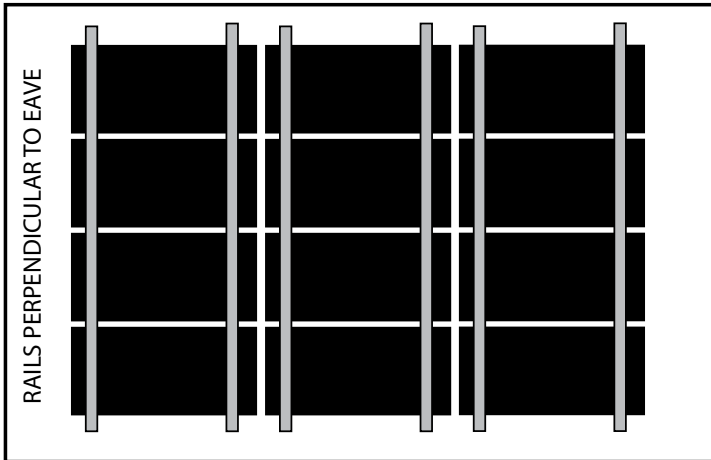


PARTS IDENTIFICATION

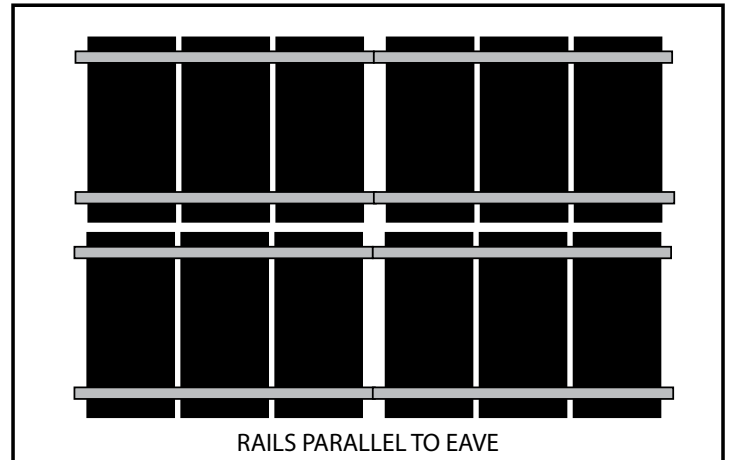


*Product shown may vary from actual. Not shown to scale.

HOW TO PLAN YOUR LAYOUT



PANELS IN LANDSCAPE



PANELS IN PORTRAIT

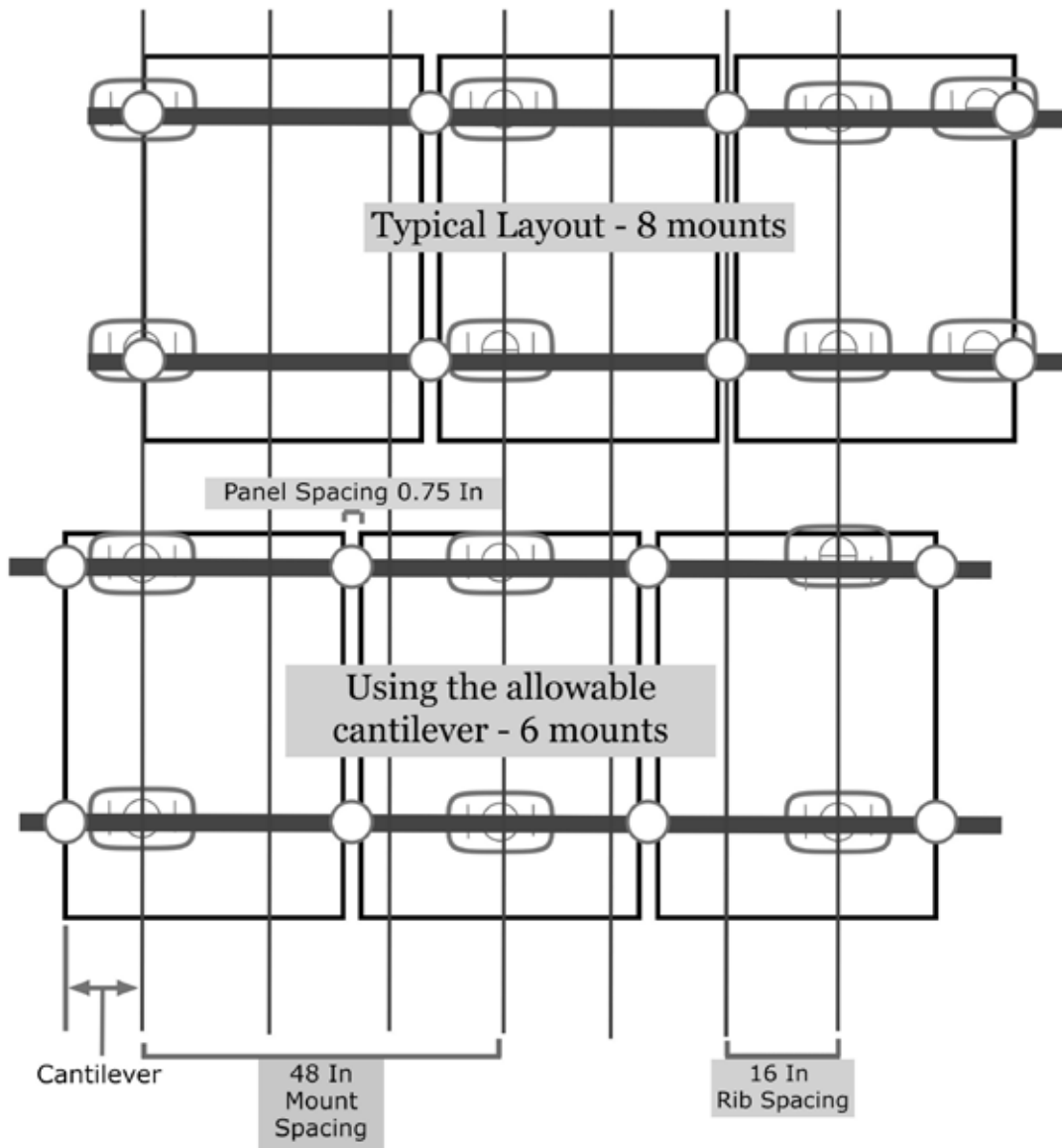
HELPFUL TIPS

- With an appropriate mounting layout (portrait or landscape) from the design engineer, start the process of laying out your array. Refer to SEIA's guidelines for distances from obstructions, edges, and eaves before marking roof structures.
- Allow for walkways if local building codes or fire department guidelines are required.
- Ensure roof structure is sound and has a minimum of 1/2" CDX Plywood when required by local building codes.
- All ISR base supports are supplied with an approved EPDM membrane seal. (Other base mounts may vary)
- Indicate the PV panel thickness, and we will ship End Supports made to fit.

Cantilever vs. Standard Layout

STANDARD

CANTILEVER



- The Solar Snap® racking was tested at UL with a 48 inch span between mounts. The Cantilever was tested at 40% of the maximum span or 19.2 inches.
- The illustration shows the rib spacing on a standing seam roof at 16 inches (for convenience) the distance between the mounts securing the racking to the roof ribs is 48 inches. The Cantilever is the length that the edge of the PV panel mounted on the rail is allowed to extend beyond the first set of mounts.
- The top illustration shows that eight mounts are required if the cantilever is not incorporated. By shifting the array to incorporate the maximum cantilever only six mounts are needed.
- Fewer mounts show a direct hardware savings plus the fewer mounts result in labor \$\$\$ saved, especially in larger solar arrays.
- Contact the AceClamp engineers for help in optimizing your array.

PRECAUTIONS

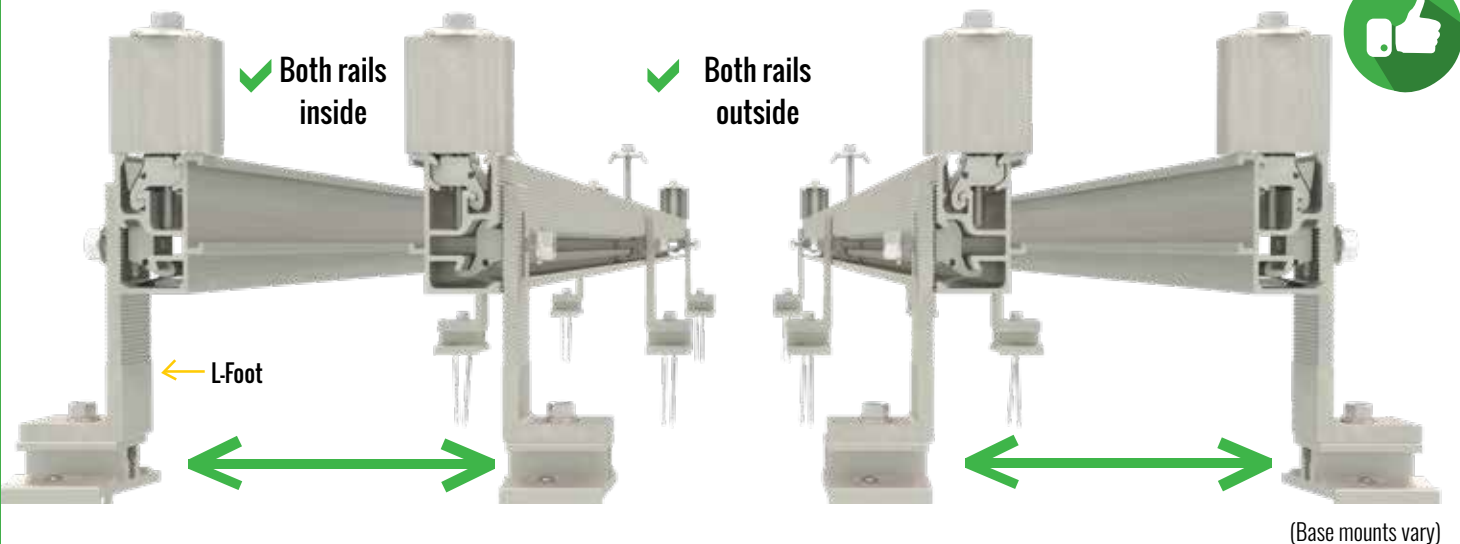
IMPORTANT FOR STABILITY!

Adjacent L-Foots **MUST** be installed **opposite** the previous row, and rails must be installed with the **grooved side facing the L-Foot**.

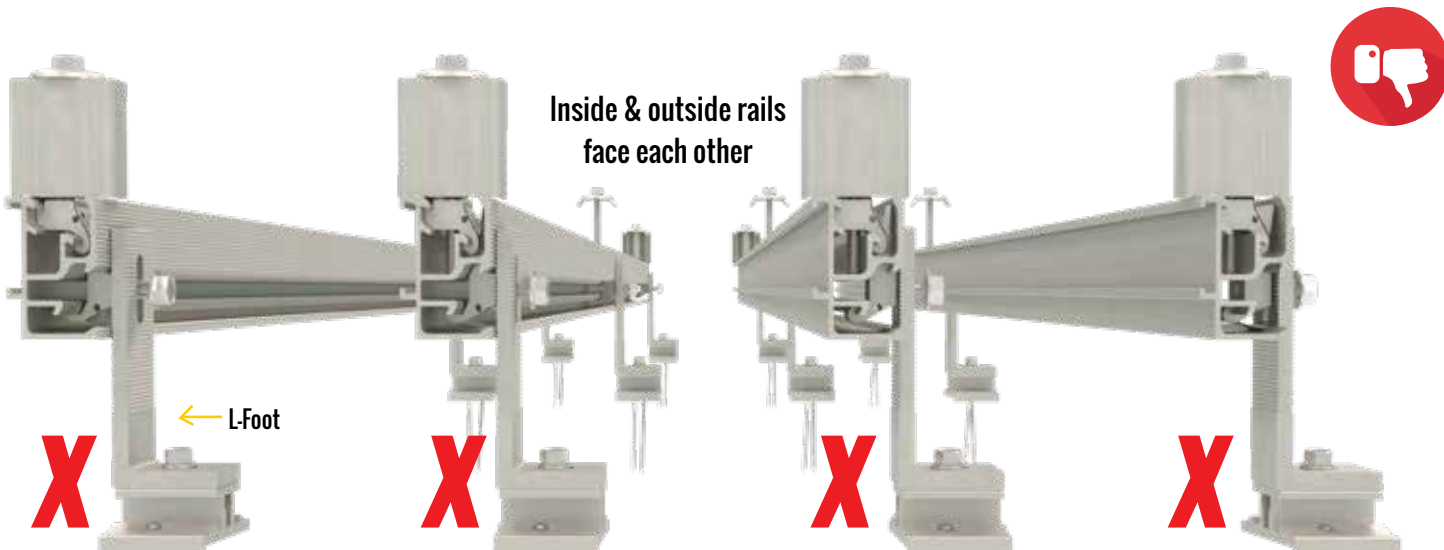
You know it's installed correctly if adjacent rails are either both inside or both outside.

L-FOOT INSTALLATION

CORRECT



INCORRECT

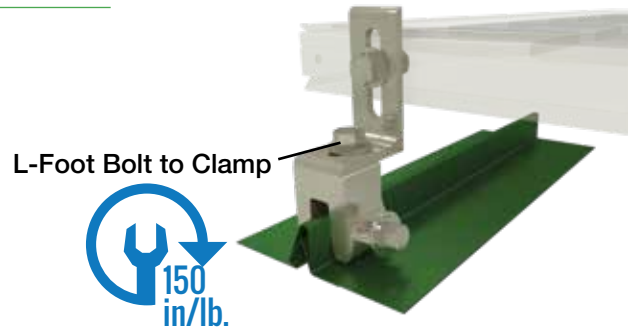


Incorrect installation (L-Foots facing the same direction) may result in failure due to instability in extreme weather conditions.

(Base mounts vary)

SSMR Installation

Please refer to the below chart for the appropriate torque specs. **Do NOT tighten with impact gun.** For other styles or materials not shown here, feel free to contact the Engineers at AceClamp for further assistance.



COMPONENT/CONNECTION	TORQUE (in-lbs)
Mid/End Support Assembly connects the PV Module Frame to Solar Rail	100
Ground Lug connects Solar Rails and/or 6-10 AWG Solid Copper Wire	100
Solar Rail and L-Foot connection	125
Burndy WEEB-BNDJMP6-7 connects Solar Rails and/or 6-10 AWG Solid Copper Wire	120
L-Foot to Roof Mount Hardware	150

PANEL STYLE	PANEL MATERIAL	PANEL THICKNESS	ACECLAMP	TORQUE (in-lbs)
snap-lock	steel	24 ga	A2® or A2®N	195
snap-lock	aluminum	0.040	A2® or A2®N	165
snap-lock	zinc	0.8mm	A2®	165
single-lock	steel	22 ga or 24 ga	A2®	195
single-lock	aluminum	0.032/0.040	A2®	165
double-lock	steel	22 ga or 24 ga	A2®	195
quad-lock	steel	22 ga or 24 ga	ML®	175
t-panel	steel	22 ga or 24 ga	ML®	175
bulb-style	steel	22 ga or 24 ga	ML®	175
bulb-style	aluminum	0.050	ML®	150
bulb-style	aluminum	0.032/0.040	ML®	135
nail-base 1.5"	steel	24 ga	A2®N	195
t-panel	steel	22 ga or 24 ga	A2®T	195
bulb-style	aluminum	0.050	A2®T	195
bulb-style	aluminum	24 ga	A2®T	195
bulb-style	aluminum	22 ga or 24 ga	A2®T	195
nail-base 1.0"	steel	24 ga	A2®Nw	165



Questions? 860-351-0686 | Documentation: www.AceClamp.com

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QuickBOLT Installation for Asphalt Roofs

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

Locate the rafter and predrill the hole.



Fill the predrilled hole with MFG approved sealant.



Place a ring of sealant around the bottom of the Microflashing® washer.



Place the Microflashing® and drive the bolt until it compresses.



Insert the L-Foot.



Insert the nut and tighten until secure.

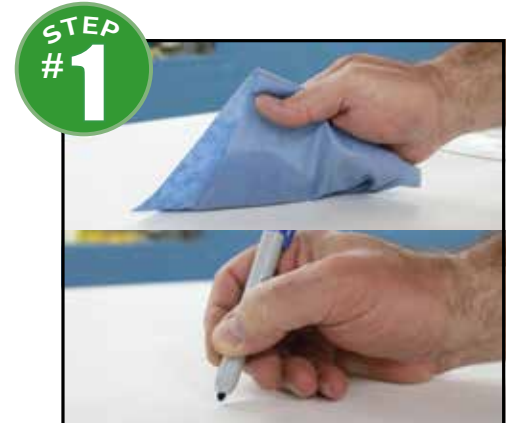


Torque as directed to compress Microflashing® properly with QuickBOLT.



Membrane Pad Installation

Mark location on roof where MCP is to be installed. Prepare membrane surface at each location in accordance with membrane manufacturer's requirements.



Lift the elastomeric flange and install eight additional fasteners* through the MCP steel plate, hitting the top flutes in the deck. *Do not fold or crease the membrane during fastener installation.*



Thermoplastic materials (TPO, PVC, etc.): Heat weld the flange of the MCP to the roof membrane in accordance with the manufacturer's specifications and seal cut edges as required.



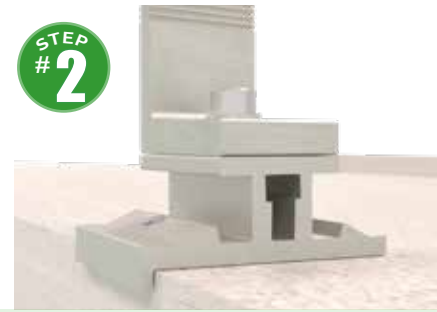
*Contact your roof contractor for correct type and length of screw to match your specific roof assembly.

ISR Base Support Installation

Determine the location for the first column (vertical distance eave to ridge) of Base Supports. Snap a level line top to bottom on the roof structure to indicate the side edge of Base Support.



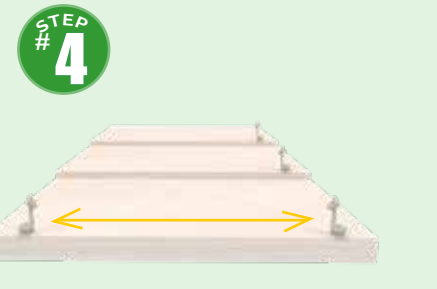
Be sure to position the bottom edge of the Base Support to the edge (lip) of the roof. Repeat Step #2 for all Base Supports. (ISR only)



Start the installation from bottom to top and use S.S. screws appropriate for the specific substrate. (ISR only)



Proceed to install the second column of Base Supports. Ensure that the distances between the Rails match the requirements of the PV Panel. (48" Max)



Repeat steps #1-3 for the second column of Base Support and L-Foots.



Then follow up with flash or caulk around the perimeter of the Base Support with an approved color matching elastomeric type sealant. (ISR only)



Torque to recommended specs.



Rail Assembly

-BEFORE YOU BEGIN-

CLAMP PREPARATION

Before assembly, be sure that the bolts in the L-Foot, Mid-Clamp and End-Clamp assemblies are backed out so that the bolt is flush with the bottom of the Snap Anchor. The bolts are installed correctly at the factory but sometimes move in or out from vibration during shipping.



Do not install with bolts pre-tightened

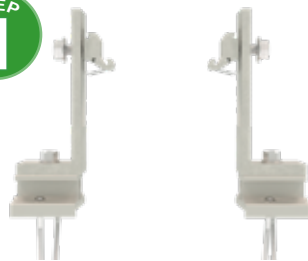


Correct: Bolt flush with Snap Anchor

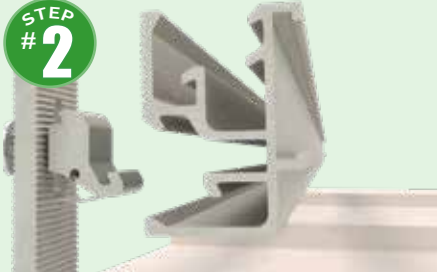


Assure bolts are flush with Snap Anchors

Assure all Base Supports installed are oriented with the Snap Anchor on the L-Foot facing inward. Adjust all L-Foot and Snap Anchors as required.



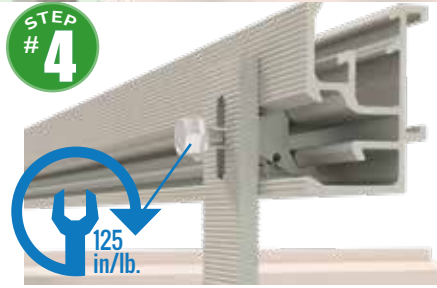
With two people holding both ends of the Rail, bring rail towards Snap Anchor and snap the rail into Snap Anchor at each end, then proceed to snap-in remainder of Snap Anchors.



Proceed to hand-tighten all L-Foots to Base Supports, then hand-tighten all Snap Anchors.



Align Rail to the desired height and tighten the first and last Snap Anchor. Continue to tighten the remainder of Snap Anchors. Repeat for the second Rail. Torque to recommended specs.



Photovoltaic Panels Assembly

With a ruler or snap line, determine the location of the first row of Photovoltaic Panels.

STEP #1



Before assembly, be sure that the screws in the Mid and End Supports are backed out so that threads are not protruding through the bottom of the Snap Anchor.

STEP #2



Insert Snap Anchor with End Support into the rail with V-Spring grounded towards the thin side of the rail until you hear an audible click.

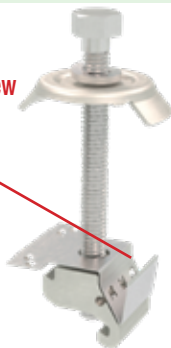
STEP #3

If the Snap Anchor's V-Spring is fully compressed, then a new Snap Anchor must be used.



Mid

End



Thread bolt loosely. Repeat this step for the second Top Snap Anchor with End Support.

STEP #4



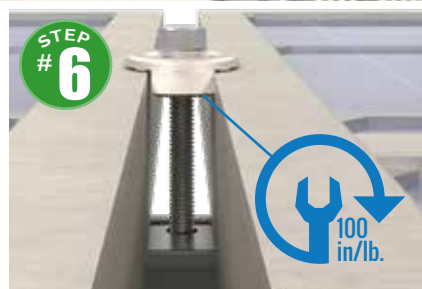
Insert bottom edge of PV Panel so it fits against the End Support. Thread bolt until snug.

STEP #5



Proceed to the top of the Photovoltaic Panel and repeat the process with (2) Mid-Clamps. Repeat for all arrays in a row finishing with the last (2) End Supports.

STEP #6



Once the first column of Photovoltaic Panels are installed, you can repeat the process for the complete array.

STEP #7



Attach End Cap to finish off the solar array.

STEP #8



Splice Bar Attachment

(only for standard rails)

Ensure L-Feet are loosely attached for the first rail section.

STEP #1



Insert Connector Plate into slot on the first rail and slide to center on the second length of the rail.

STEP #2



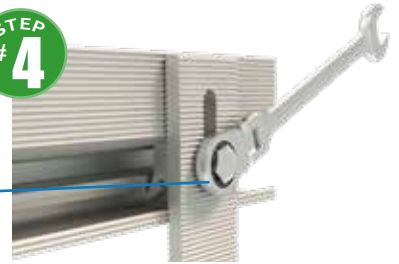
Center Connector Plate between both rails, leaving a minimum 1/8" gap and fasten with self-drilling stainless steel screws.

STEP #3



Continue to secure L Feet to the proper height to level the system.

STEP #4



⚠ Note: Splices are structural but still should be supported a minimum of 12" to 16" in from each side of the splice. No splice is allowed outside the cantilever.

BURNDY
BTCGC4SS



Ground Lug: Expansion Joint

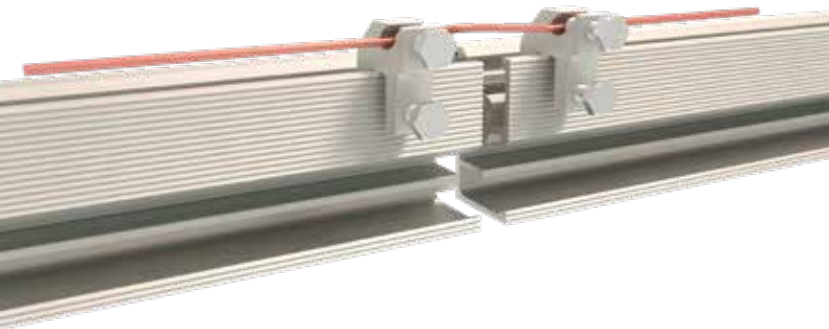
(used as a Thermal Break)

Use a Burndy Bonding Ground Connector. Firmly snap Ground Lug assembly in place.

Expansion joints:

L-FOOT SIDE

BURNDY



RAIL-CONNECTION SIDE



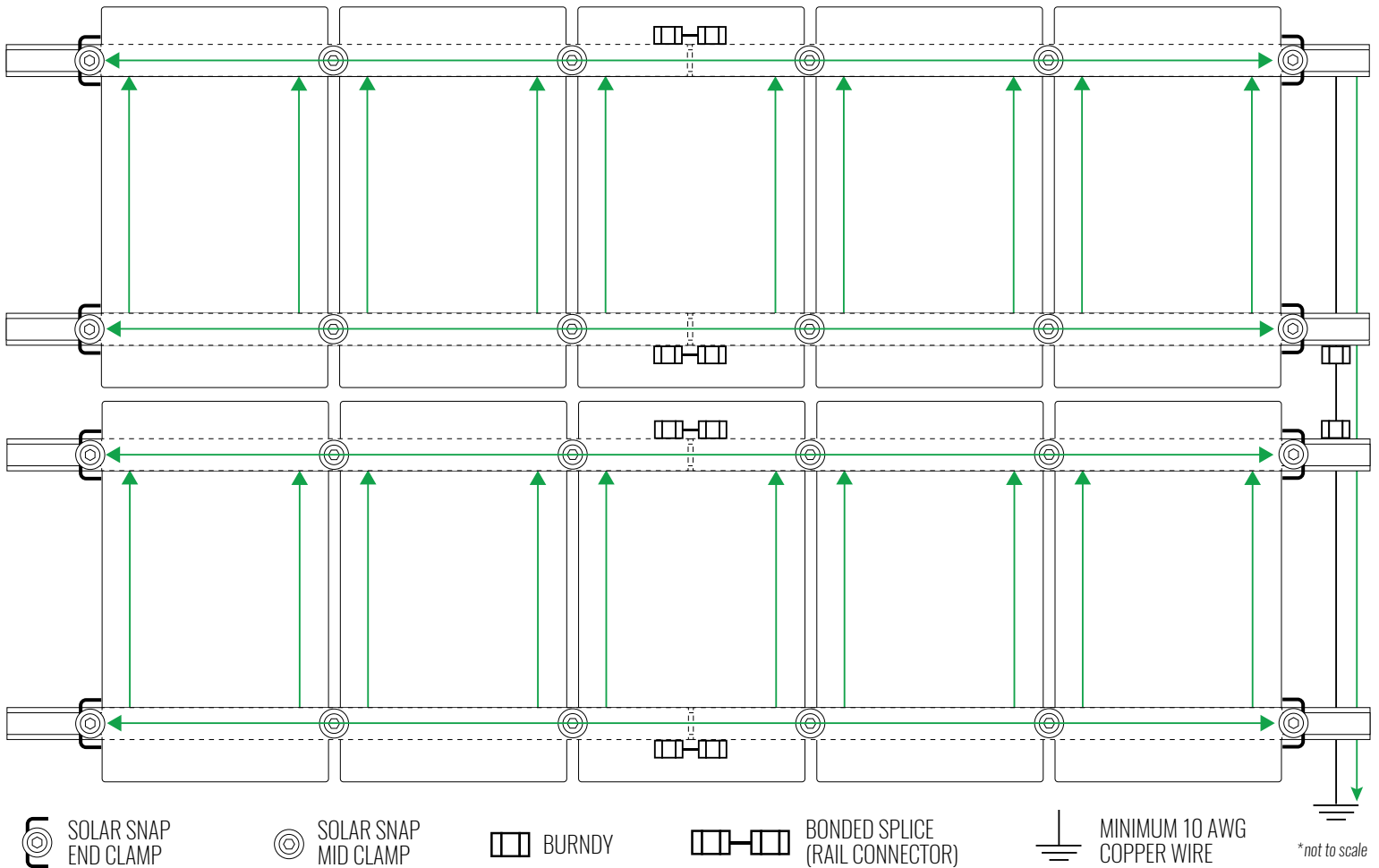
Use two screws on one side of the rail only for expansion joints.



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Electrical Diagram



⚠️ IMPORTANT SAFETY ALERTS ⚠️

- Thermal breaks control the amount of expansion for several consecutive lengths of Solar Rail. The expansion rate will be directly related to hot and cold temperatures changes.
- Every 50' to 100' will require a ½" to 1" expansion joint. Please refer to a structural engineer to clarify proper gaps for your particular application.
- No Photovoltaic Panels should span a Thermal Break.
- The installer/end-user is responsible for assuring that all engineering studies and data are complete for the installation and that all structural and electrical code requirements have been met. DO NOT use the AceClamp as any part of your fall protection apparatus.
- To prevent risk of galvanic corrosion do not allow the bare copper grounding wire to come in contact with any aluminum components.
- Ensure that direct to earth grounding meets the latest edition of the National Electric Code: Grounding and Bonding.
- Any loose components or fasteners found during periodic maintenance shall be retightened in accordance the original instructions.
- Any components showing signs of damage or corrosion that compromise safety shall be replaced immediately.
- In the event that any racking components or PV panels must be removed for maintenance, be sure that the ground path is not interrupted by adding ground lugs and copper wires across any missing components during maintenance.

PV Specifications

The following PV panels were included in the UL 2703 test program which resulted in the following ratings:

Fire Ratings:

- Solar Snap® has achieved a Class A rating on steep roofs (>/_ 9.5o) and over any Class A rated roof system. (Note: Fire Testing exceptions for specific modules below)

Mechanical Load Testing:

- Maximum module size: 24.2 SF
- Module orientation perpendicular to racking
- Tests conducted with 48” span between mounts and 40% cantilever (19.2”)
- System Design Load Rating: 40 psf upward, 40 psf downward, 10 psf lateral
- The system’s positive and negative load rating is either 40 psf or limited to the maximum load rating of the module being installed.

REC Solar (CSA Listed):

Alpha Series 60 Cell: RECxxxAA (xxx = 340, 345, 350, 355, 360, 365, 370, 375, 380 Watts)

Alpha Series 72 Cell: RECxxxAA72 (xxx = 430, 435, 440, 445, 450 Watts) (Not tested for Fire)

Mission Solar (UL Listed. QIIA.E364743):

MSE Perc 60 Cell: MSExxxSR8T (xxx = 315, 320, 325 Watts)

MSE Perc 60 Cell: MSExxxSR8K (xxx = 320, 325, 330 Watts)

MSE Perc 72 Cell: MSExxxSR9S (xxx = 375, 380, 385, 390 Watts)

MSE Perc 72 Cell: MSExxxSX6W (xxx = 405, 410, 415, 420, 425 Watts)

MSE Perc 60 Cell: MSExxxSX5T (xxx = 330, 335, 340, 345 Watts)

MSE Perc 60 Cell: MSExxxSX5K (xxx = 335, 340, 345, 350 Watts)

Canadian Solar (CSA Listed):

CS1H 60 Cell: CS1H-xxx (xxx = 320, 325, 330, 335, 340, 345-MS Watts) (Not tested for Fire)

CS3W 60 Cell: CS3W-xxx (xxx = 395, 400, 405, 410, 415, 420-P Watts)

CS3W 72 Cell: CS3W-xxx (xxx = 425, 430, 435, 440, 445, 450-P Watts)

Jinko Solar (UL Listed):

Eagle 66 Cell HM: JKMxxxM-6RL3-B (xxx = 365, 370, 375, 380, 385, 390, 395, 400, 405 Watts)

Eagle 78 Cell HC 72M: JKMxxxM-7RL3 (xxx = 430, 435, 440, 445, 450, 455, 460, 465, 470, 475 Watts)

See individual module installation instructions for details on Solar Snap clamping locations/method.

Maximum 25A over current protection device rating (OCPD)



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