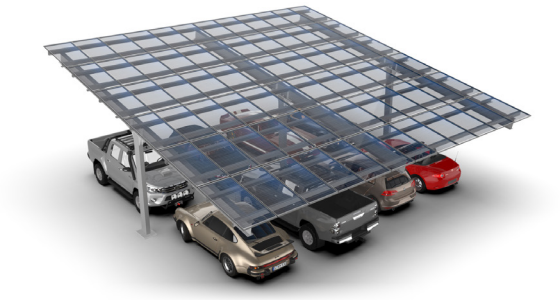
SOLAR CARPORT
DOUBLE ROW
INSTALLATION INSTRUCTIONS

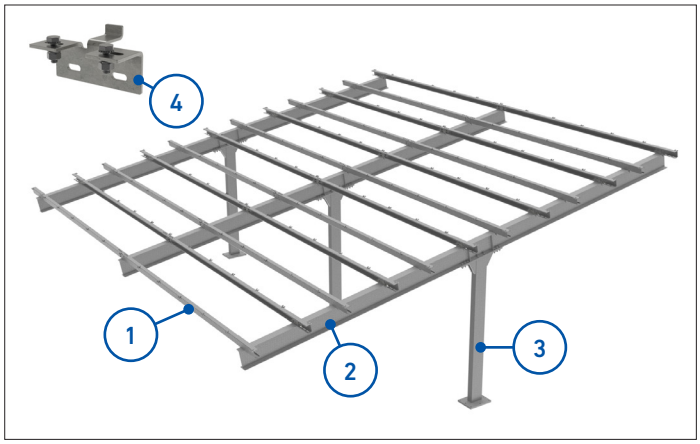


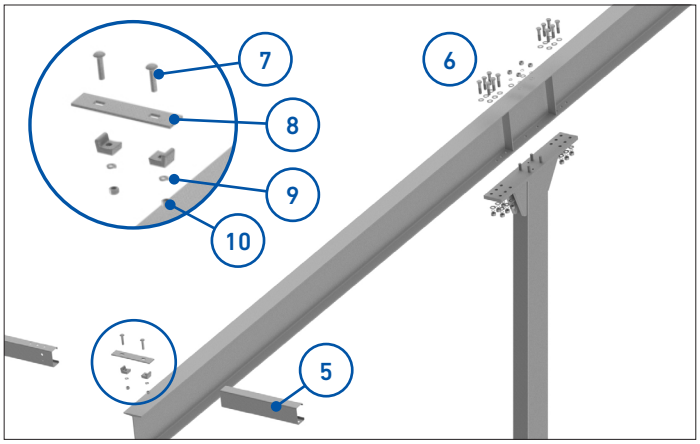
⚠ IMPORTANT SAFETY INFORMATION

READ AND COMPLETELY UNDERSTAND ALL INSTRUCTIONS BEFORE INSTALLING PRODUCT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.

This product is intended for use by trained technicians only. This product should not be used by anyone who is not familiar with and not trained to use it. When working in the area of energized lines, extra care should be taken to prevent accidental electrical contact. Be sure to wear proper safety equipment per your company protocol. These instructions are not intended to supersede any company construction or safety standards. These instructions are offered only to illustrate safe installation for the individual. PLP products are intended for the specified application only. Do not modify this product under any circumstances. Do not reuse or reinstall any PLP product unless that capability is expressly indicated in the product's Installation Instructions. For proper performance and personal safety, be sure to select the proper PLP product before installation. PLP products are precision devices. To ensure proper performance, they should be stored in cartons under cover and handled carefully.

PACKAGE COMPONENTS





1. C-Purlin
2. I-Beam Strongback
3. HSS Column
4. Shared Module Clamp
5. C-Purlin Cantilever, Galvanized
6. 1"-8 x 4-1/2" Bolts, Galvanized
7. 3/4"-10 x 3-1/2" CAR Bolt, Galvanized
8. Purlin Splice
9. 1" Lock Washer, Galvanized*
10. 1"-8, Oversized Nut, Galvanized*

Tools Required:

- 7/16" Wrench or Socket for 1/4" Module Hardware
- 1-5/8" Socket for 1" Hardware
- Tape Measure
- Several 2 x 4's and a Hand Saw to create a Spacing Jig
- Pneumatic Impact Drill
- Torque Wrench
- Socket for 1-13/16" OS Nut

* Also used at Strongback Column connection

INSTALLATION

1 Using an augured foundation, set the HSS Column per the project specifications and drawings while keeping the relative height tolerance to each adjacent column at +/-1". (Reference project drawings for foundation design and depth.)

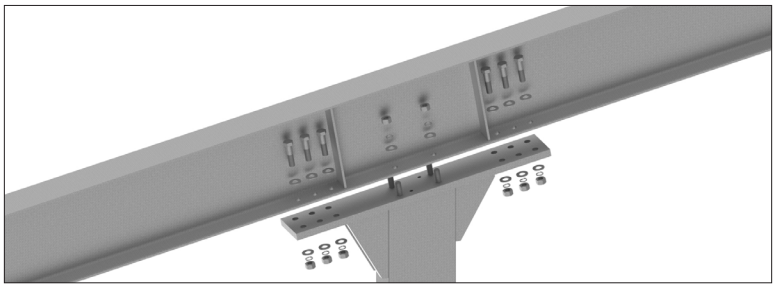
NOTE: To help keep things squared, level the nuts that sit on the column, keeping the tops level.

2 Install the bolts from the top down. The lock washer should be used between the nut and the flat. Fully torque bolts to 425 - 508 ft-lb.

Verify that front edges of Strongbacks are spaced 19 ft on center. If they are not, use a ratchet strap or come along to bring the Strongbacks to 19 ft on center and then install the first row of purlins to hold the Strongbacks in place.

NOTE: Strongbacks must be consistently installed facing the same direction (i.e., long cantilever out towards parking spot).

NOTE: If the site conditions permit 27 ft spans as specified by PLP Solar Engineering, verify the front edges of the strongbacks are spaced 27 ft from center.

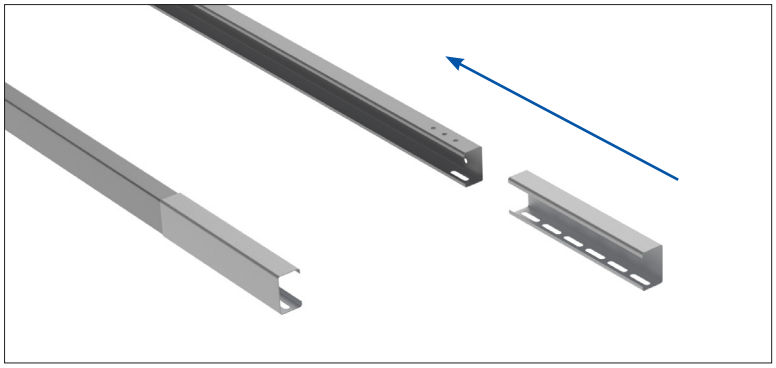


3 The C-Purlin Cantilever is to be installed to accommodate module overhang. Check the plan drawings to determine how far to extend cantilevers.

The C-Purlin Cantilever will slide over the ends of the purlins at the end of each subarray.

This should be done on the ground for the outside bays. It is easier than sliding them on in the air. Each one can then be adjusted while resting on a Strongback.

NOTE: C-Purlin Cantilever is oversized, so it easily slides over the C-Purlin.

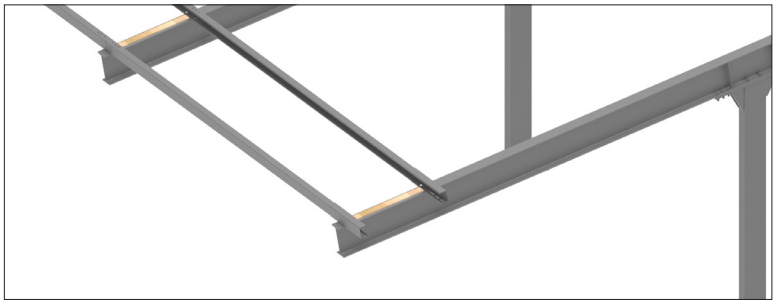


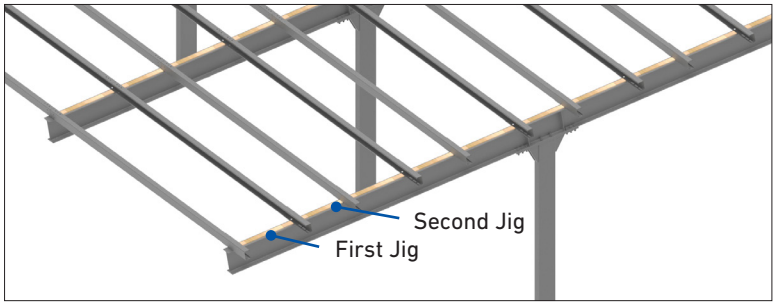
4 Place the first rail X (where X = amount of inches) from the end of the Strongback. Refer to the construction drawing provided. Measure from the outside flat web of the C-Purlin (use tape measure). The end of each rail should rest on the centerline of the Strongback. Be sure to alternate C-Purlin orientation along the Strongback.

From there, a jig should be used to set the spacing between purlins. Two different sized jigs will be needed and can be as simple as a 2 x 4 that is cut to length.

Place first jig between each upturned flange of facing C-Purlins. Second jig should be placed from the outside flat web to outside flat web. Continue by alternating jigs until all purlins are placed. Have enough jigs for several bays.

NOTE: Two jigs should be used for the two different C-Purlin spacing. Jigs should be measured to within 1/16" of dimension on drawing. Check plan drawings for dimensions.





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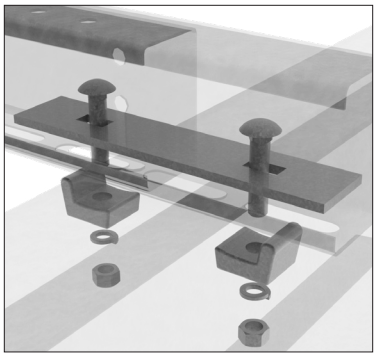
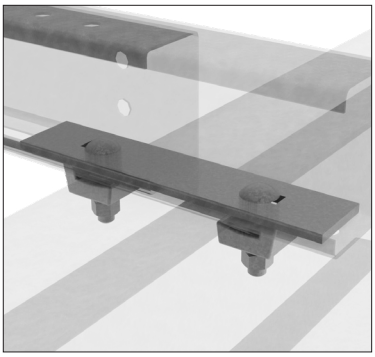
The Purlin Splice is placed in the channel of the C-Purlin with holes lining up over the slots on the purlins. Hand-tighten and make sure the attachment is square. Adjust slightly as needed.

The C-Purlin Splice is installed in the same way, the C-Purlin Cantilevers extend out past the Strongbacks. The hardware is installed with bolt, clamp, lock washer, and nut. No flat washer is required.

NOTE: Make sure that the C-Purlin Splice is hand-tightened to prevent movement when working across the bays.





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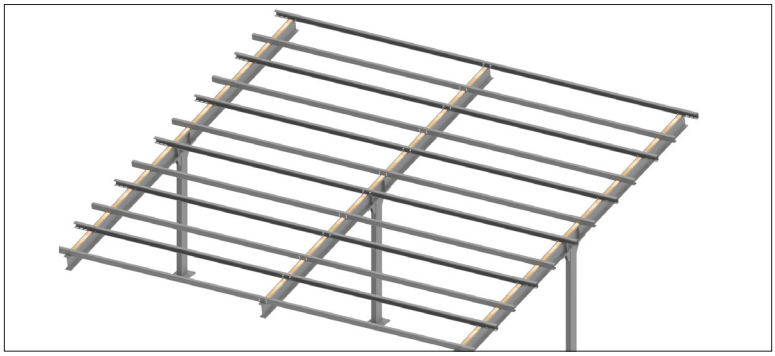
Make sure that the C-Purlins are square across each bay before installing the modules and tightening hardware. With the C-Purlin Splice being hand-tightened, the C-Purlins can be adjusted to ensure that the table is square. Continue using jigs to make sure each new bay is squared. **C-Purlin Splice hardware needs to be tightened to 210 ft-lb.**

NOTE: It is beneficial to have several spacing jigs to help speed up installation. Use spacing jigs to hold purlins in place while torquing down splice hardware. The jigs can be removed after tightening.



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Install module clamps onto the modules before putting modules on the purlins. Make sure the flats face each other as shown in the image to the right. Install bolts top down through module frame mounting holes with star washers sandwiched between bolt head and module frame.

For each module row, start by installing 4 clamps on the outermost module. The 2 clamps on the outer module edge sit inboard while the other 2 sit outboard. For remaining modules in each row, install 2 clamps so they sit outboard of the module frame.

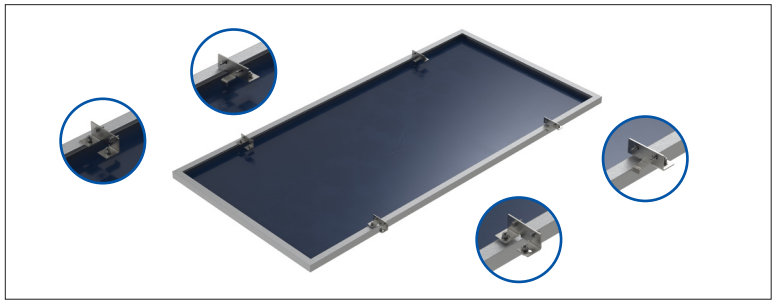
When installing modules along a row, butt the frame up to the exposed spacer tab of module clamp for correct spacing. Hardware is tightened down to 4 - 6 ft-lb or greater.

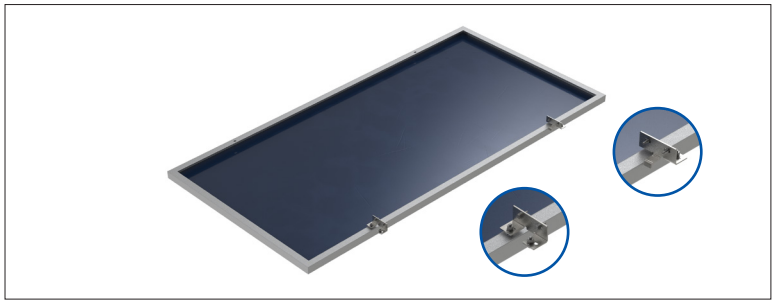
The Shared Module Clamp uses self-tapping screws to drill directly into the C-Purlin. Spacing is determined by the horizontal hole to hole dimension on the module.

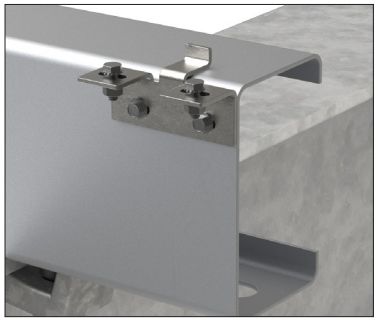
NOTE: Star washer must be installed between bolt head and module frame for proper grounding. Extra washers are provided.

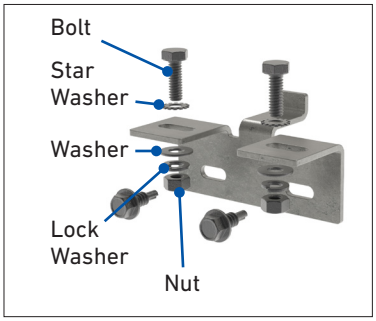
NOTE: Module Clamps on the end of each carport structure are oriented inboard as shown in the image to the right.

NOTE: Flat washer must be installed prior to the lock washer and nut.

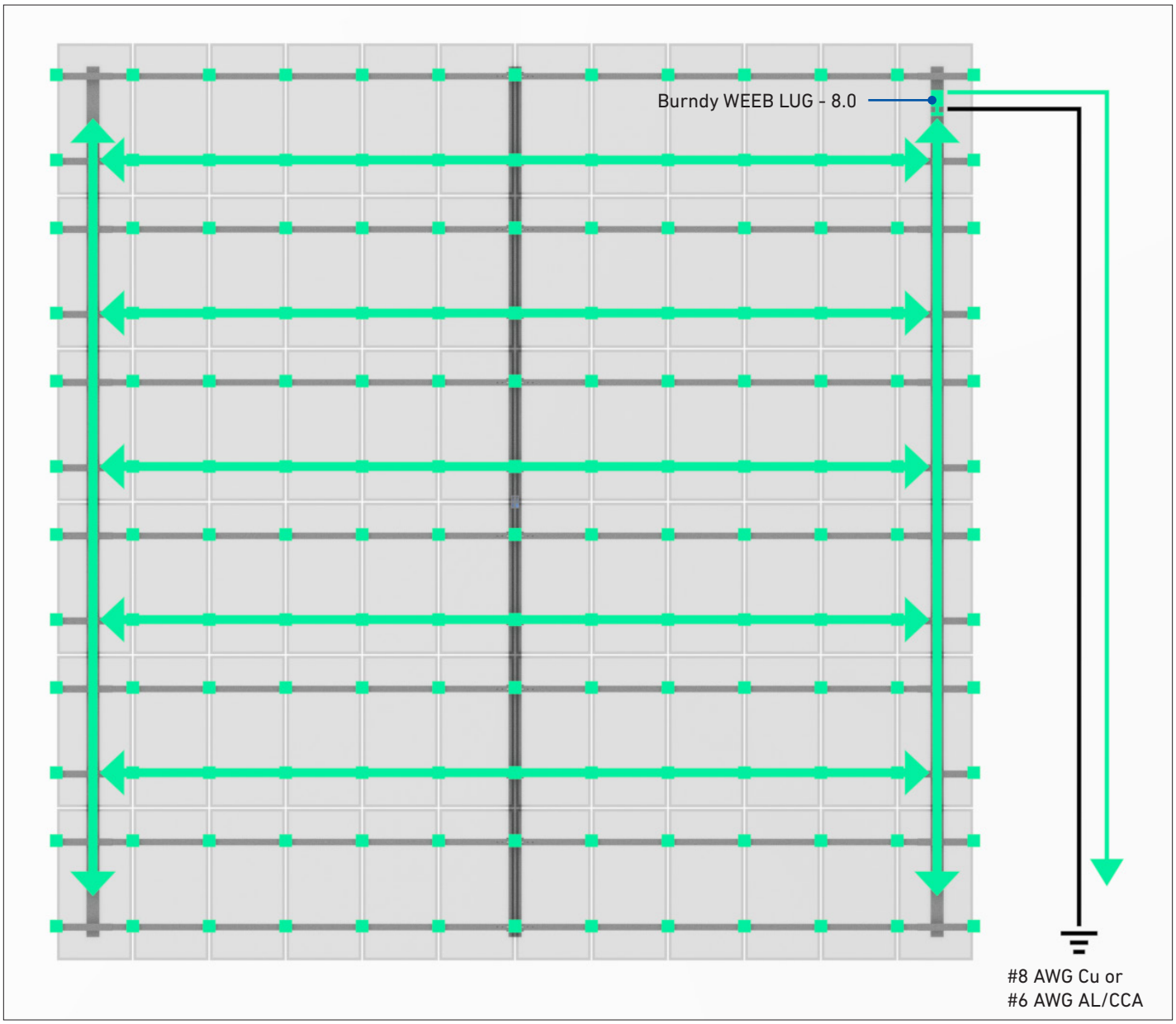








WEEB LUG AND WIRING



Burndy WEEB LUG - 8.0 Shared Module Clamp Ground Path

APPENDIX: WIRE MANAGEMENT OPTIONAL

Cable management accessories, microinverters, optimizers, signs, lighting fixtures, and other equipment may be attached directly to PLP Carports per the following guidelines:

Attachments and Cable Routing

- Drilling self-tapping screws along the C-Purlin to attach cable management accessories and equipment is acceptable.
- Holes may be drilled in the centerline of the 6" face of the C-Purlins. Maximum hole size is 1" diameter.
- Holes may not be drilled in C-Purlins within 2-1/2 ft of the I-Beam Strongback or within the middle 5 ft section of the span. Reference diagram at right.
- If multiple holes are required in a C-Purlin, the holes must be a minimum 3 ft apart with a maximum of 2 holes in the space allowed for drilling.
- Holes may be drilled near the top of the HSS Column to route cable down through the HSS tube. Maximum hole size is 1" diameter and located in the vertical centerline of the HSS Column faces.

Equipment Weight Limits

- The maximum weight of all equipment attached to a C-Purlin including lighting fixtures, signs, and other accessories is 50 lb per C-Purlin.
- The maximum weight limit of all equipment attached to the HSS Column is 200 lb.

NOTE: Holes are included in the base of the HSS Column for cable routing.

APPENDIX: PAINTING OPTIONAL

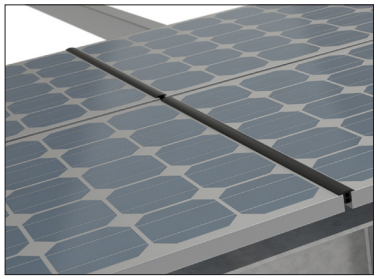
PLP Carport structures can be painted if the structure is galvanized. PLP recommends following the surface treatment specifications for painting over galvanizing noted in ASTM D6386 (ASTM D7396 for Roll Formed Purlins) and using a paint product that is designed to adhere to galvanized surfaces.

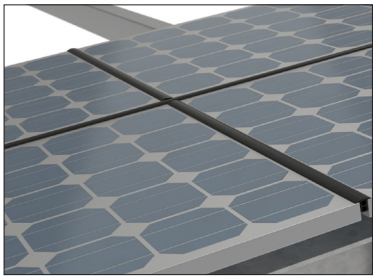
APPENDIX: GASKET OPTIONAL

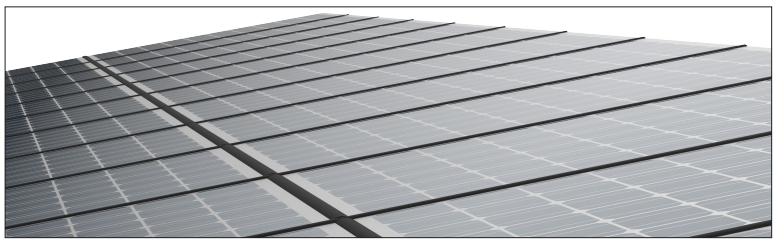
Solar Gasket is sold in boxes that contain 162 ft of material. Each box contains (16) 10.125 ft sections.

Installation

- Using a razor blade, cut shorter sections of the gasket to fit the modules' width. Use this section of gasket to help space the modules as you install your first column of modules.
- Once two columns of modules have been placed, run a long section of gasket along the long edge in between the two columns of modules.
- Repeat this process as you move down the array and install each column of modules.

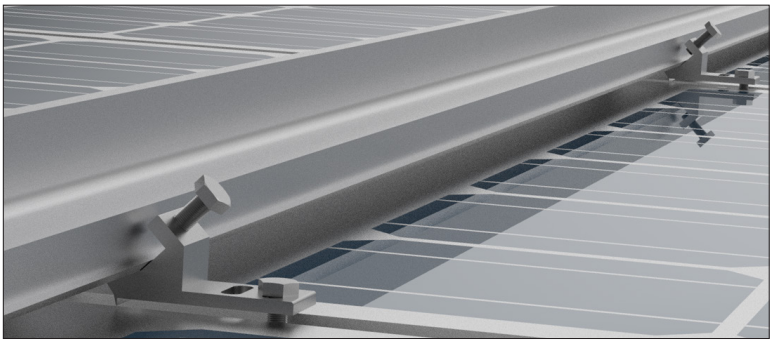


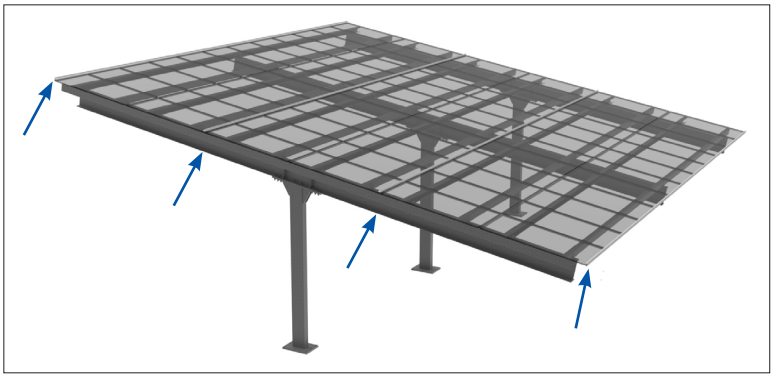




APPENDIX: SNOW GUARDS OPTIONAL

The PLP Solar Carport is compatible with snow guard systems that are currently on the market. Refer to the manufacturer's installation guidelines for proper installation.



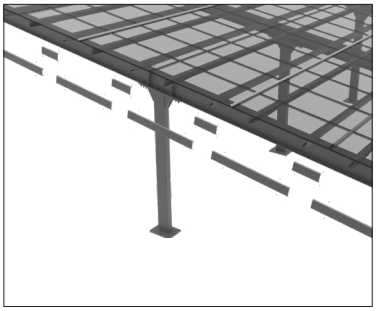


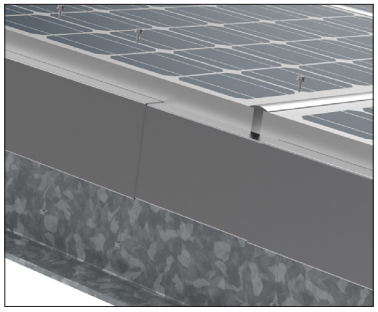
APPENDIX: FASCIA OPTIONAL

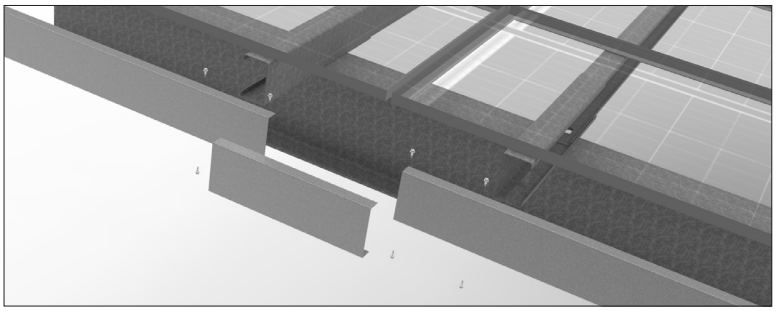
Carport Fascia is available to help hide the C-Purlins from view, giving the Carport a cleaner look. The Fascia pieces are installed using the same self-tapping screws that are used to fasten Shared Module Clamps to C-Purlins.

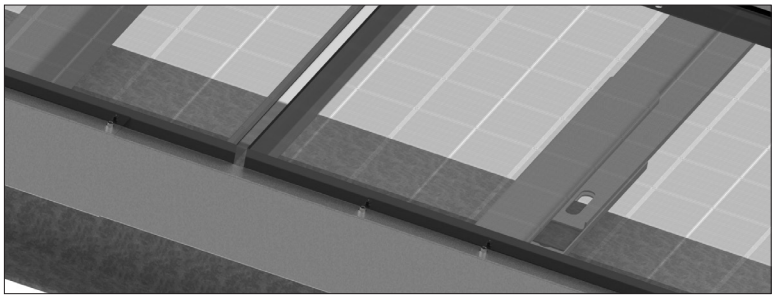
Installation

- The Carport Fascia pieces come in two lengths: short and long. To begin installation, start by mounting the long pieces to each pair of C-Purlins.
- The short sections of Fascia will be used to fill the gaps
- Hold the Fascia pieces in place while the self-tapping screws are driven through the Fascia and into the C-Purlins.
- Each long Fascia piece will have four self-tapping screws: 2 screws for mounting into the top of the C-Purlins, and 2 screws that will be driven from underneath.
- Once all of the long Fascia sections are secured, the short sections can be placed in the gaps between the installed long sections.
- Each short Fascia piece will use 4 self-tapping screws. These screws will mount into the long Fascia pieces, not the C-Purlins.
- Drive the screws into the Fascia sections by driving two screws from the top and two from the bottom.









APPENDIX: INSTALLING HIGH LOAD CARPORT OPTIONAL

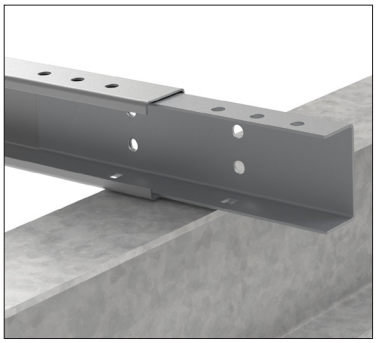
These optional heavy-duty materials are available for Carports that will be installed in areas with higher wind/ snow loads. The installation instructions are for High Load splices. All other Carport components can be installed by following the assembly manual.

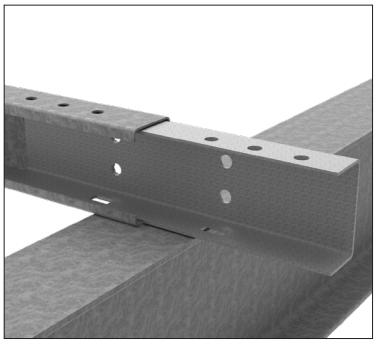
Installation

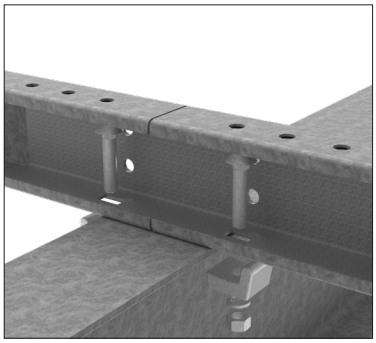
- When installing the purlins, insert the splice into the C-Purlin, followed by the next purlin that is to be installed.
- Line up the holes in the splices with the predrilled holes in the C-Purlin.
- Begin attaching the purlins and splices to the Strongback by installing the I-Beam clamps.
- Each clamp kit includes a bolt, clamp, lock washer, and nut.
- Tighten to 210 ft-lb.
- Next, install the bolts, washers, lock washers, and nuts into the holes at the top of the purlins. Only one bolt per side is required.
- Tighten each bolt set to 210 ft-lb.
- Just as the top bolts were installed, install 4 more bolt sets into the face of the C-Purlin.
- Tighten each bolt set to 210 ft-lb.

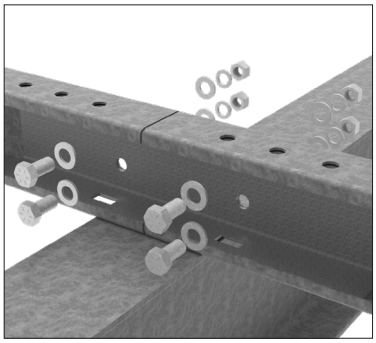
NOTE: Heavy-duty materials and splices are required for structures that will see snow loads greater than 20 psf or have 27 ft purlin spans.

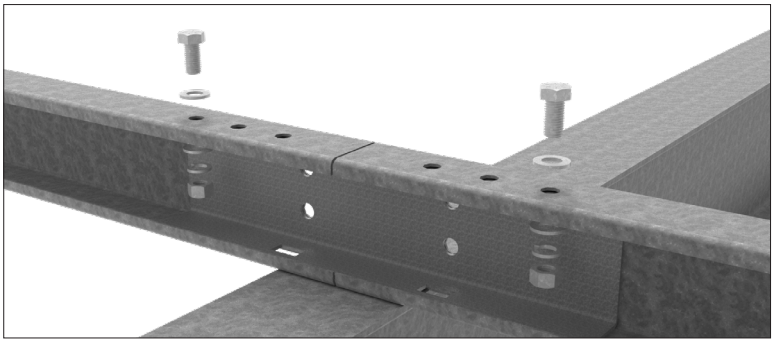
Three holes on each purlin allow flexibility when placing the bolts. The bolt heads can interfere with the module frames, so select the holes that will not interfere.











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