



PREFORMED
LINE PRODUCTS

Carport Sales— Winning with Benefits + Features



PREFORMED LINE PRODUCTS

The connection you can count on.



About PLP

- Founded in **1947** by J Peterson
(Engineer and inventor)
- **TODAY**
- Headquartered in Cleveland, Ohio
- Two domestic manufacturing plants -
 - Albermarle, NC / Rogers, AR
- 23 Global Facilities
- 3,000 employees
- Customers in 140 Countries
- Annual Sales – 2020 - \$466M



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GLOBAL OPERATIONS



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FOCUS:



- Why PLP Carports?
- Potential Options
- Customer Options
- PLP CERTIFIED INSTALLER PROGRAM
 - How do you build more business
- All Things Technical
- Product Benefits
- Design Configurator



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Why PLP Carports?

- Strong PLP distributor support
 - PLP competitors sell direct to system owners
- Access to niche market carport
 - Support for systems as small as 24 modules
- Rapid Stamps (PE Stamps in two days)
- Pre-Engineered / Simplified design
- Complete package provided
- Design Tools for your Quoting Team
- Sales Tool for your Sales Team
- Installers in your area that need support



Key Benefits

- Modular Design – Common Components
- Adjustable to Any Width PV Module
- No Field Welding or Drilling
- Bottom Clamps Eliminate Working Above Modules
- Shared Module Clamp – Fewer Parts
- Gasket Provides Water Resistant Seal



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Standard Features for distributors and Installers

- Easy Quoting Tools
 - Distributor
 - Installer
- Certified Installer Incentives
- Modular design – common components
- Purlin Extensions adjust to any width PV Module

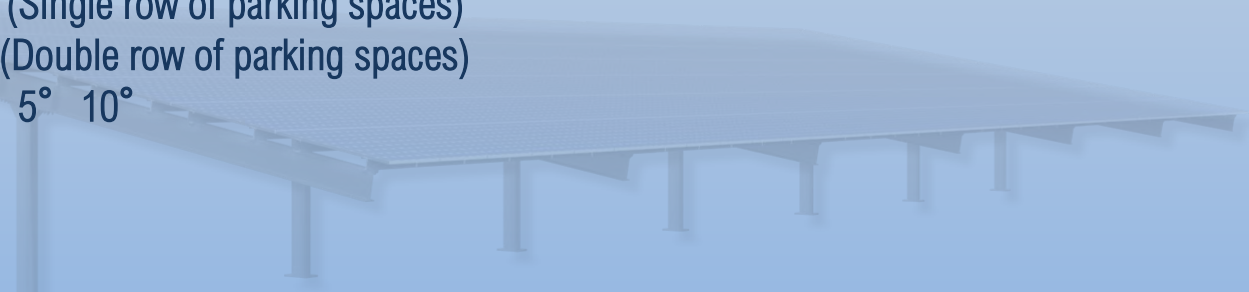


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Carports Simplified

- Standard Design
 - 19' spacing between Vertical Posts (Two Parking spaces)
 - Modular design = same components for any system
 - Same design for most 60 or 72-cell modules
- Exterior Carport (Single row of parking spaces)
- Interior Carport (Double row of parking spaces)
- Tilt Angles – 0° 5° 10°
- Positive Tilt
- Negative Tilt
- Heights 8'-15'
- Water resistant gasket to seal modules



Design Benefits

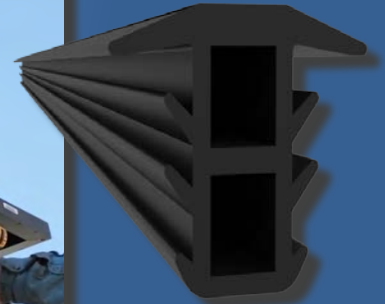
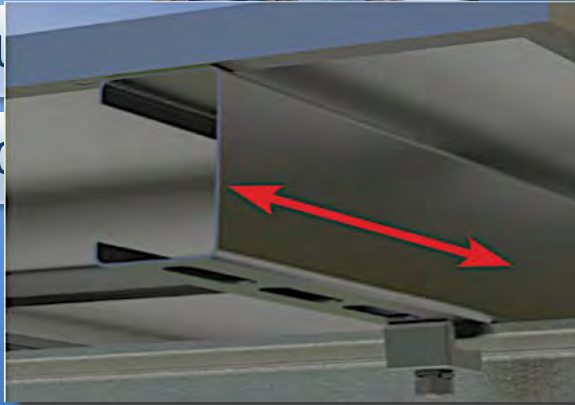
❑ Vertical Columns - Heavy Gauge Steel Hot Dip Galvanized

❑ I-BEAM/ST

❑ MODULE I

❑ U

❑ C

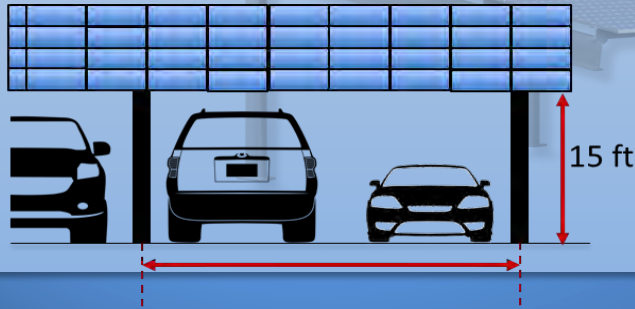


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Layout Options

- 19 ft or 27* ft Column Spacing
- Fits (2 or 3) 9.5 ft Parking Spaces Between
- 1 or 2 Vehicles Deep – “Exterior” or “Interior”
- Scales From 4 or 7 Modules High (Portrait)
- Up to 15 feet of clearance
- 0, 5, or 10 deg. Tilt - Positive or Negative



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Carports Sales are looking UP!

- Power Utility Offices
- Golf Courses
- Agriculture
- Breweries / Wineries
- Hotels / Restaurants
- Local Government - Police and Fire Stations, Municipal Bldgs
- Auto Dealerships
- Car Washes / Gas Stations / Malls
- Factories, Industrial Complexes
- Schools
- Medical Offices & Hospitals
- Residential



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Component Features

Vertical Column

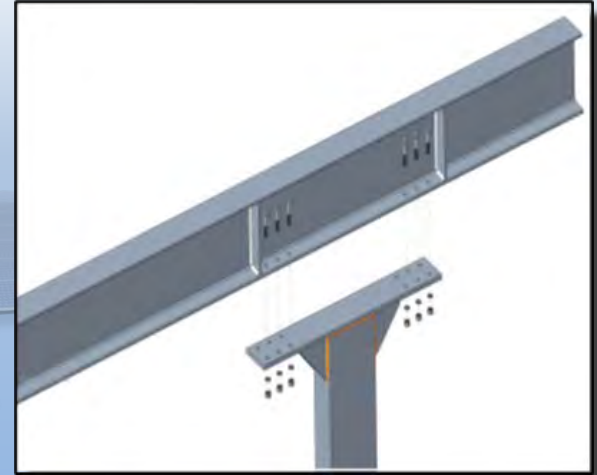
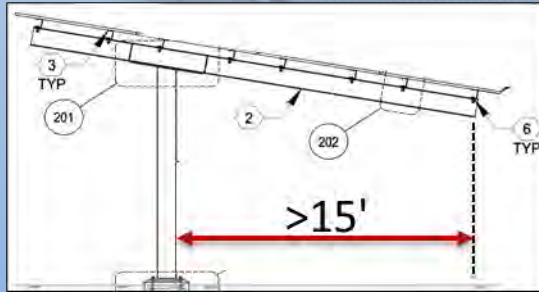
- Heavy Duty 1/2 Inch Steel Walled Tube
- Flange Base Attachment
- Ready to install: Pre-drilled, factory welded, and galvanized
- Conceals wire and cable routings



Component Features

I-Beam Strongback

- ❑ High-strength W12x35 galvanized steel
- ❑ Bolt-together assembly
- ❑ Long Cantilever Prevents Vehicle Column Impacts



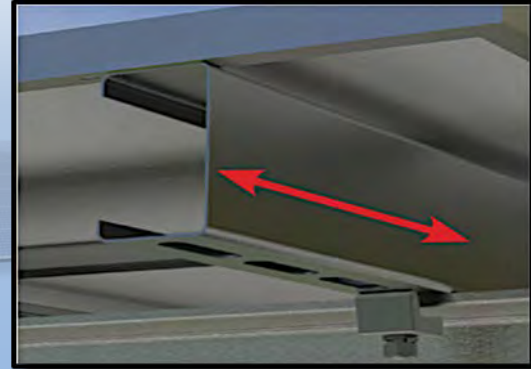
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Field Adjustability

Purlin Extensions

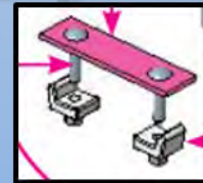
- ❑ One Universal Component - accommodates different width PV modules (22" of adjustability)
- ❑ Pre-punched – Bolt together construction
- ❑ G90 Galvanized, 12 GA Steel



Field Adjustability

Beam Clamp/Splice

- ❑ Bolt-together Construction
- ❑ 2-in-1: Serves as Purlin Attachment & Splice - Reduces Part Count
- ❑ Cast Galvanized Steel



Purlin Attachment Flexibility

Mounting Rails (Purlins)

- Pre-punched Cee Profile – No on-site drilling
- G90 Galvanized, 10 GA Steel
- Built-in wiring channels



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Module Mounting Simplicity

Shared Module Clamp

- Universal – 60 or 72 cell PV modules
- Shared Module Design – 50% fewer clamps
- Integrated Grounding
- Automatic 3/4" Module Spacing
- Bottom Attachment – Eliminates working above modules
- G90 Galvanized, 12 GA Steel



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Module Clamping

- ❑ Shared module design – 50% fewer clamps
- ❑ Integrated Grounding and 3/4" module spacing
- ❑ Bottom access – Eliminates working above PV modules
- ❑ G90 galvanized, 12 GA steel construction
- ❑ Designed to 30 PSF Snow/120 MPH Wind (ASCE 7-10)



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Wire Management

Ratchet P Clamp

- Install with Tek Screw Into Purlin
- Durable & Adjustable
- 1.42" Bundle Diameter



Water Resistance

Gasket

- EPDM Triple Rib Design w/UV Inhibitor
- Cut into 16 strips of 10-foot pieces per box
- Works with 3/4" Gap Spacing
- No Tools Required - Press Fit



Site Design Parameters

| ASCE CODE | Wind Speeds with a maximum 30 PSF Snow Load | | | | | | |
|-----------|---|----|-----|-----|-----|-----|-----|
| | 90 | 95 | 100 | 105 | 110 | 115 | 120 |
| ASCE 7-05 | ✓ | ✓ | ✓ | ✓ | | | |
| ASCE 7-10 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ASCE 7-16 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Maximum 30 psf Snow Load



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Design Configurator

- Simple project inputs
- Sattelite imagery
- Single Row (External)
- Double Row (Internal)
- Automatically updates module count based on modular carport design
- Bill Of Materials



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Certified Installer Program

BENEFITS

- Lead Generation
- Company Listing on PLP's Website
- NABCEP Credit Training
- Promotional Materials
- Branded Merchandise
- PR Announcements

REQUIREMENTS

QUALIFIED INSTALLERS MUST MEET THESE

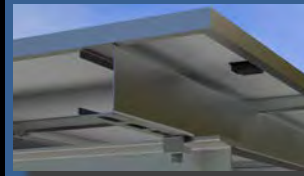
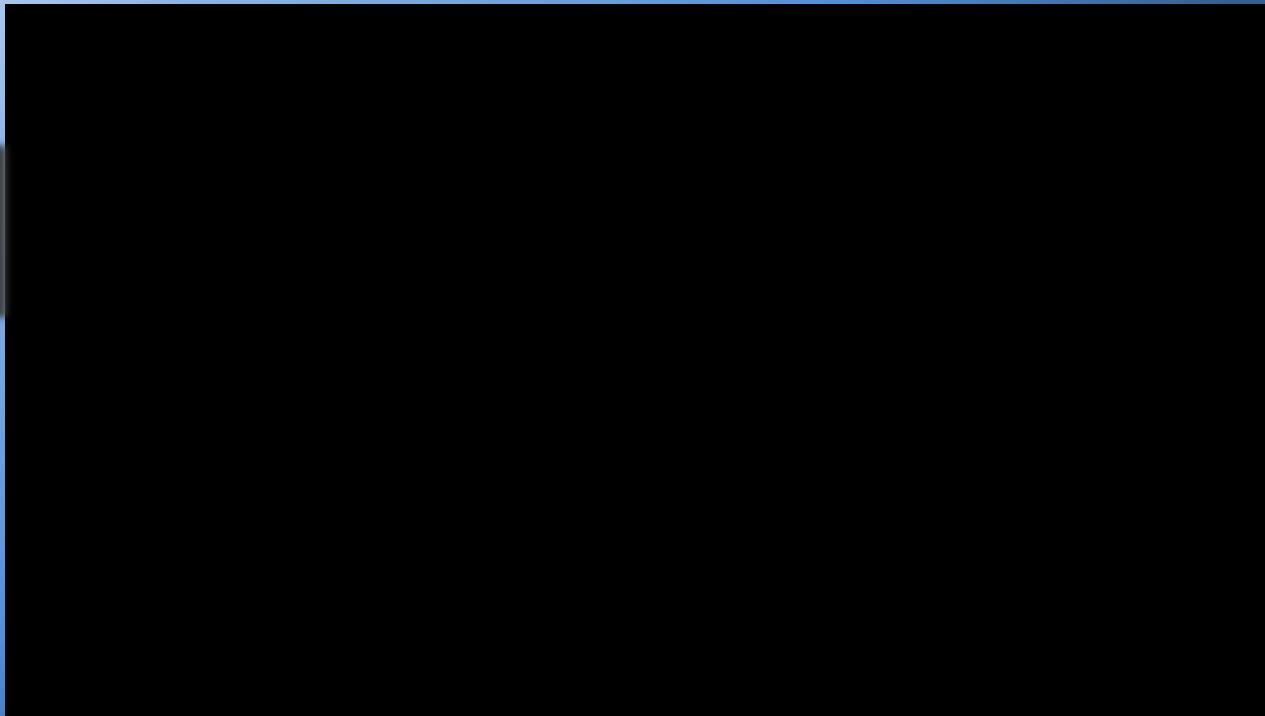
- 3+ Years in Business
- Proof of Insurance
- Advanced Solar Training
- Account in Good Standing



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Assembly



Required Tools/Equipment

- 1-¼ socket for ¾ inch hardware
- 7/16 wrench and socket for ¼" module clamp
- Hand Wrench
- Tape Measure
- Several 2x4s and saw to make spacing jig
- Impact Drill
- Torque Wrench Socket for 7/8" OS Nut

- Auger
- Crane
- Scissor / Boom Lift

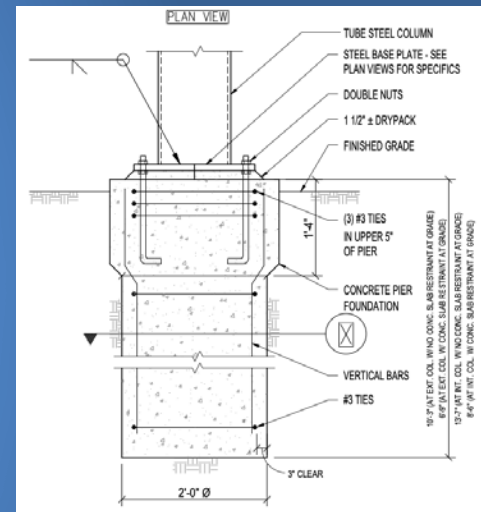
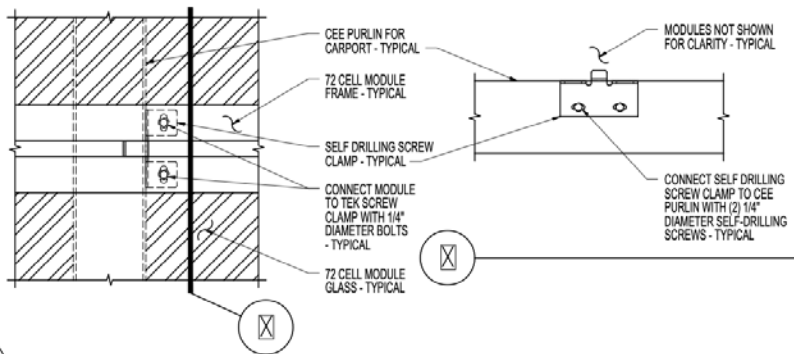


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Technical Specifications cont.

- ❑ Foundation design, engineering, and layout provided
- ❑ Galvanized steel components
- ❑ Up to 15 feet of clearance



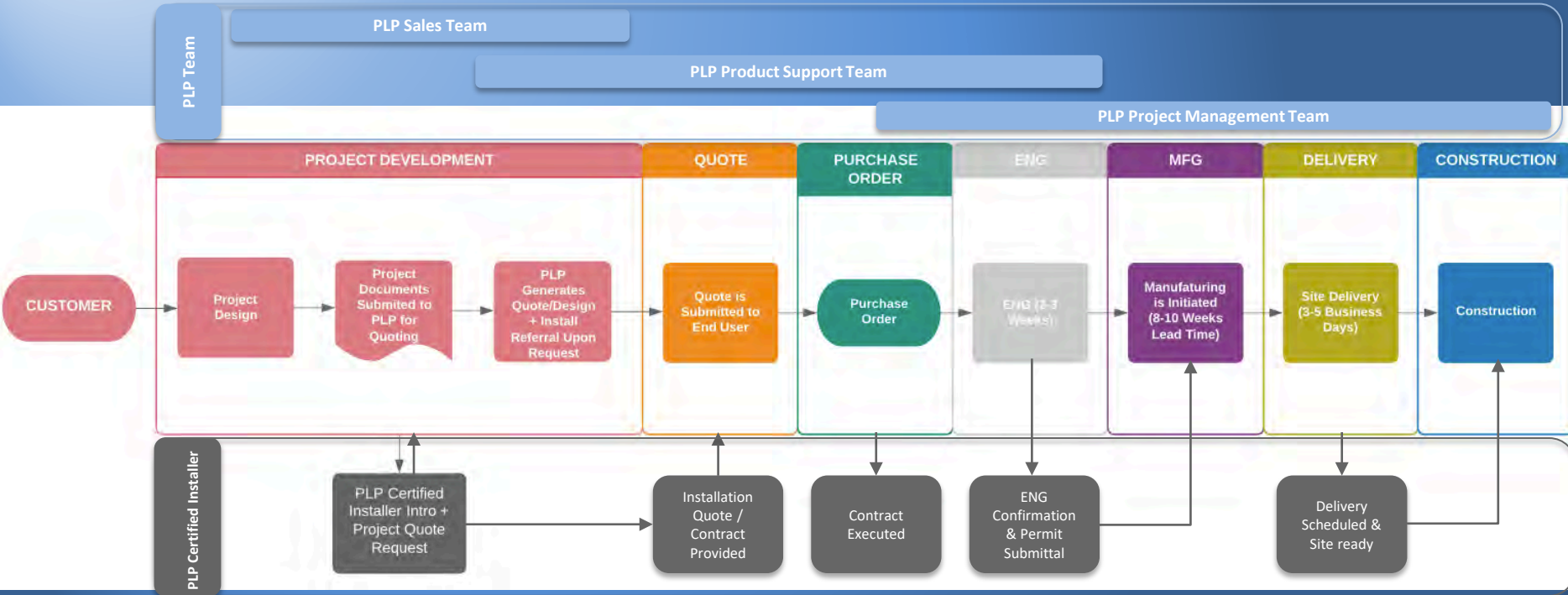
- ❑ Shared module clamps – up to 50% fewer clamps
- ❑ Designed up to 30 PSF Snow and 120 MPH Wind (ASCE 7-10)



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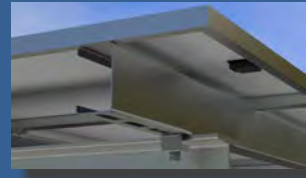
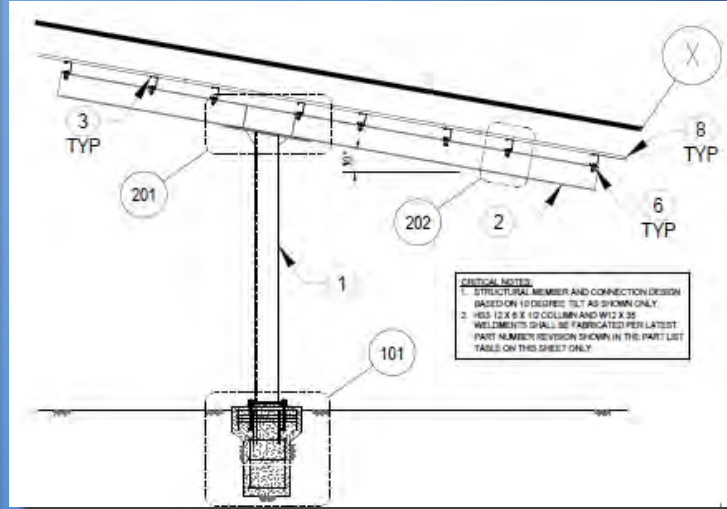
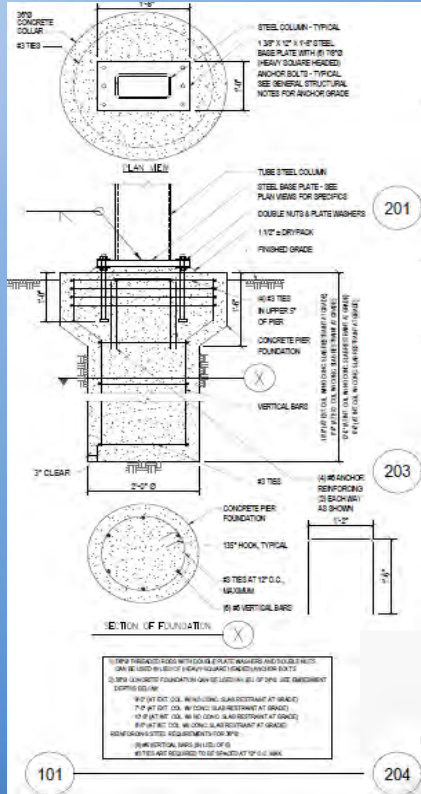
Project Lifecycle / Milestones



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Foundations



Foundations



Auger holes per spec



Install Re-Bar cage and J-Bolts

Vertical Post Erection



Lower to Anchor Bolts



Plumb EW / and NS



Torque to Specification

Set I-Beam / Strongback



- Set Strongback on Vertical Column



- Tighten all bolts per spec

C-Channel Rail Mounting



- Attach C-Channels to I-Beams with clamps – Tighten to specification



Module Mounting



- Attach clamps to modules
- Lower modules to rails



- Adjust cantilever rails

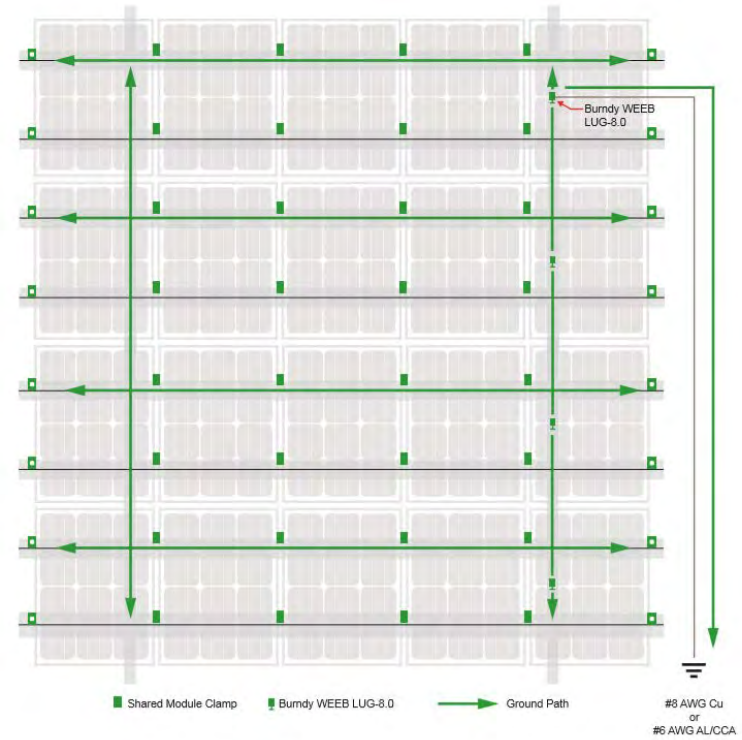


- Tighten TEK screws



Grounding / Bonding Path

- ❑ Modules clamps provide module to module bonding
- ❑ Grounding Lug attached to one module in each row using #6 to bond row to row



Completed System!



Support Contacts

Product Support

Quotes/Product & Project Design Questions

P: 800-260-3792

E: Info@plpsolar.com

Customer Service

Order Status, Expediting, Order Changes, Freight

P: 800-260-3792

E: Customerservice@plpsolar.com

Project Management

Engineering, Order Status/Changes, Freight

P: 505-933-1836

E: Dlane@preformed.com



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THANK YOU!



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