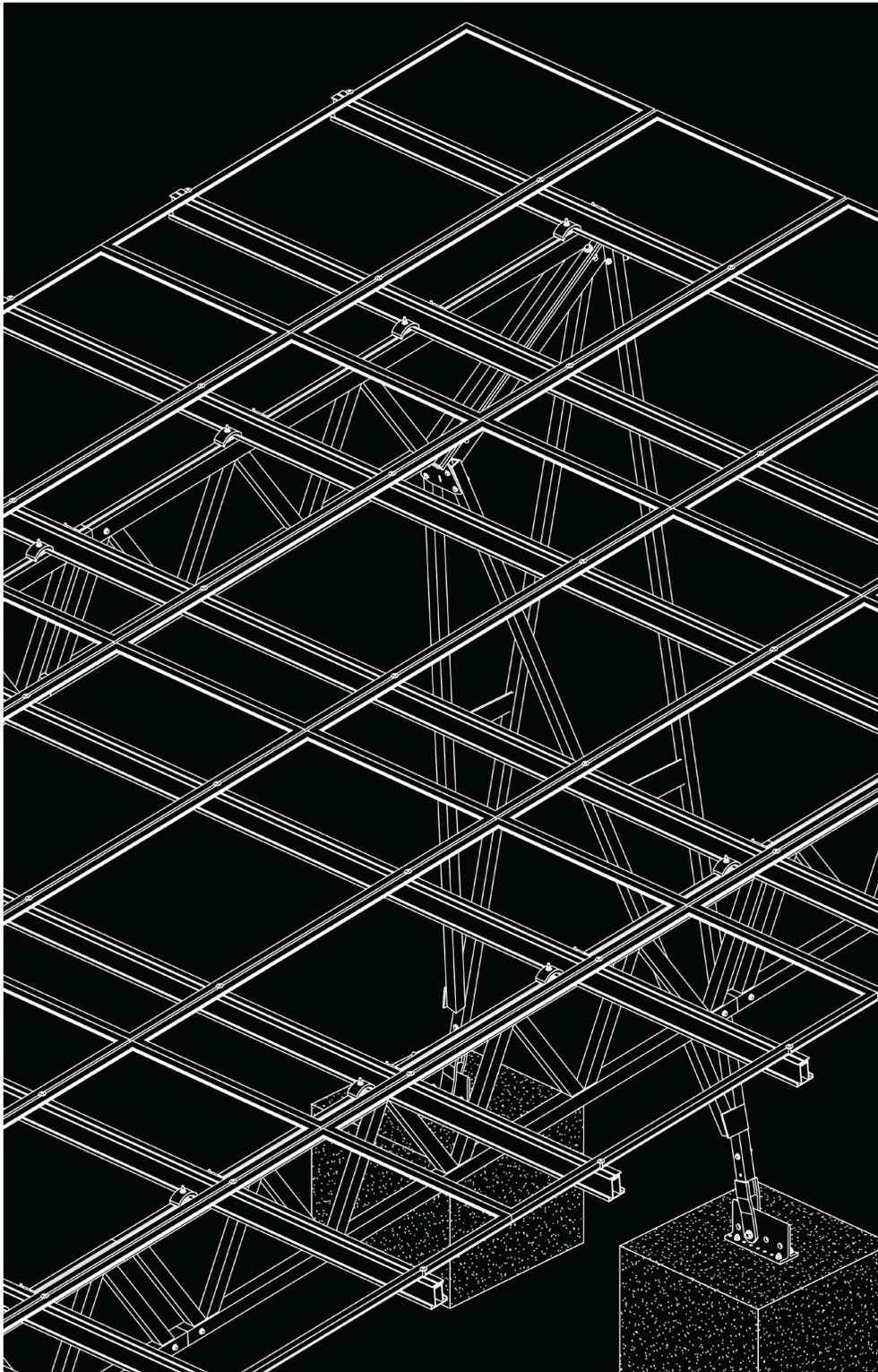




BROOKLYN SOLAR CANOPY CO.



**THE A-FRAME CANOPY
INSTALLATION MANUAL**



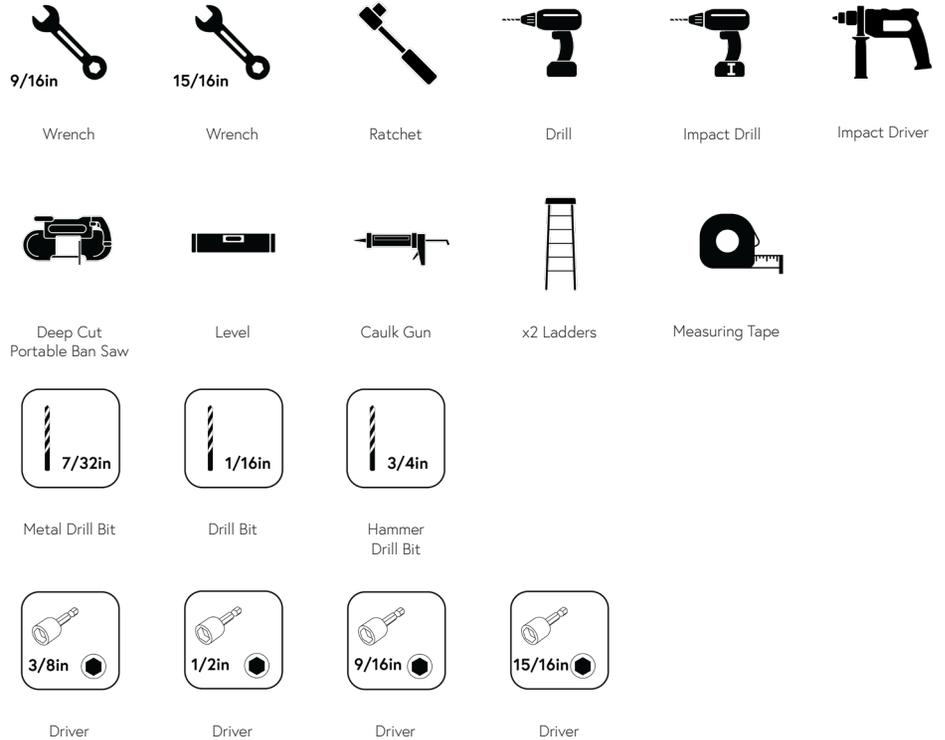
MATERIALS + TOOLS

PROVIDED BY BSCC

COMPONENTS				
TYPE NUMBER	COMPONENT NAME	COUNT	MATERIAL	NOTES
A-1	T-Track (Short)	(Per Project)	Aluminum	
A-2	T-Track (Long)	(Per Project)	Aluminum	
B-1	Column Legs	(Per Project)	Aluminum	
B-2	Column to Truss Socket	(Per Project)	Aluminum	
C-1	Angled Truss	(Per Project)	Aluminum	
C-2	Middle Truss	(Per Project)	Aluminum	
C-3	BSCC Custom Rail	(Per Project)	Aluminum	
C-3	Rail Splice Bar	(Per Project)	Aluminum	
BOLTS + SCREWS				
Y-1	Fully Threaded Bolt (1/2" Dia., 3-1/4" L.)	(Per Project)	Stainless Steel	
Z-1	Clamp + Fully Threaded Carriage Bolt (5/16" Dia.)	(Per Project)	Stainless Steel + Aluminum	

NOT PROVIDED BY BSCC

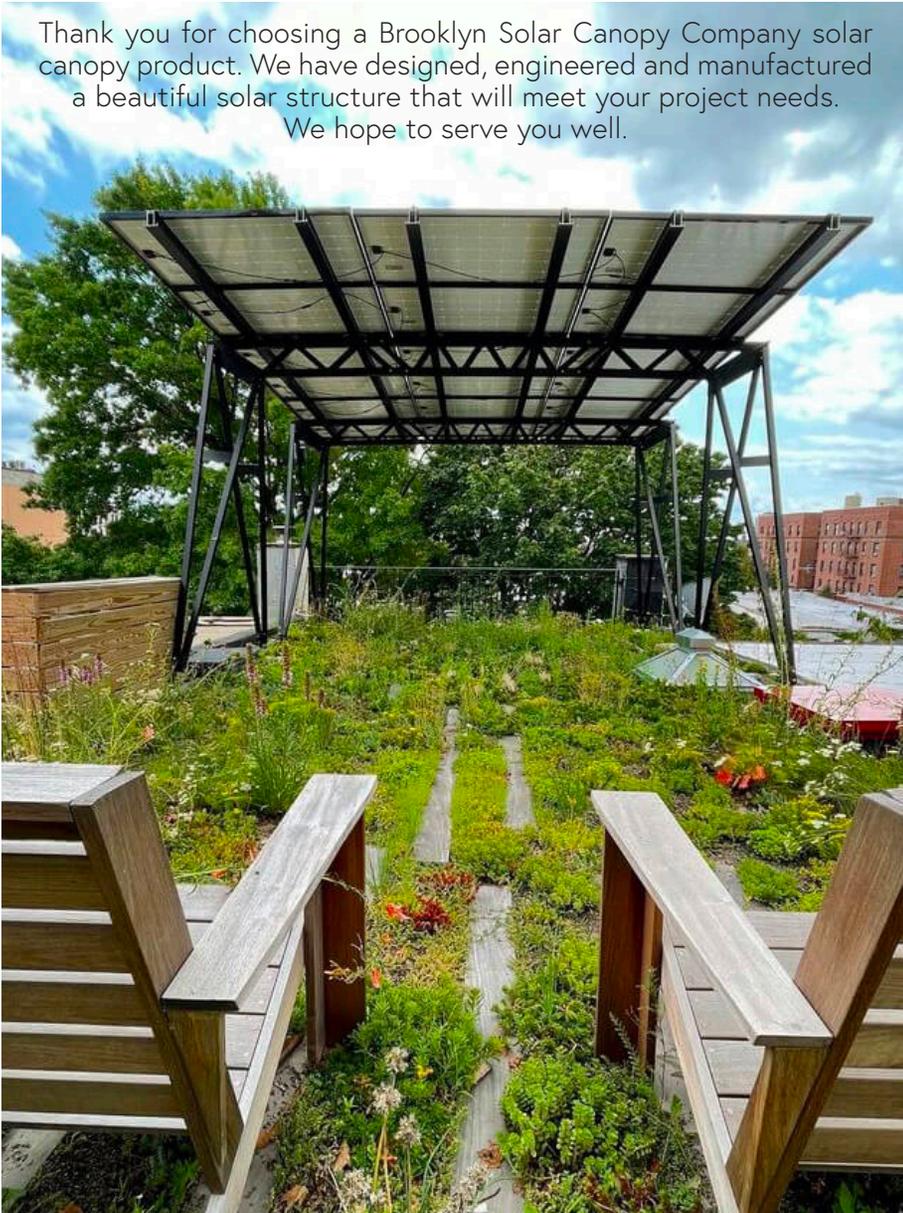
BOLTS + SCREWS				
X-1	Spax-6 Power Lag Bolt (3/8" Dia., 6" L.)	6 per t-track	Stainless Steel	(For rooftop attachment)
X-2	HLTI HIT-Z Anchor Bolt (5/8" Dia.)	4 per t-track	Stainless Steel	(For at grade/foundation attachment)
Z-2	Tek Screws	4 per splice bar	Stainless Steel	
Z-3	IronRidge UFO Bolt	4 ea. panel	Stainless Steel	
ACCESSORIES				
Q-1	Rail End Caps	1 at ea. rail end	Plastic	
Q-2	IronRidge UFO Bolt Stopper Sleeve	1 at ea. rail end	Plastic	
Q-3	IronRidge Grounding Lug	1	Tin	
PARTS				
01 (General)	Solar Panel Modules			
02 (Rooftop Install)	Flashing Cement			
02 (Rooftop Install)	Caulking			
03 (At Grade Install)	Non-Shrink Grout			
03 (At Grade Install)	HLTI HIT HY Hybrid Mortar			



ALL REQUIRED TOOLS & MATERIALS ARE NOT PROVIDED BY BROOKLYN SOLAR CANOPY CO.

THANK YOU

Thank you for choosing a Brooklyn Solar Canopy Company solar canopy product. We have designed, engineered and manufactured a beautiful solar structure that will meet your project needs. We hope to serve you well.



ABOUT US

The A-Frame Solar Canopy redefines the residential solar experience in three dimensions, unleashing new and creative options for the contemporary homeowner. Create sheltered space for backyard amenities, or vehicle parking and charging. Elevate over physical barriers and common shade factors to make solar possible in challenging locations. Whatever your need the canopy delivers bold possibilities with ease, elegance and versatility.

The A-Frame Solar Canopy originated in Brooklyn, NY in 2015, the result of a one year collaboration between Brooklyn Solar-Works, a leading local installation company, and Situ Studio, an award-winning design and architecture practice. The canopy concept arose out of a practical local necessity – overcoming space constraints on crowded urban rooftops – but quickly evolved into an adaptable solution for diverse ground applications. After hundreds of NYC installations, multiple prestigious design honors, and a flood of interest from solar installers and their clients across North America, the Brooklyn Solar Canopy Co. was formed in 2018.

Today, this Made in New York innovation is available to solar installers everywhere.

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1



PRODUCT INFORMATION

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1.1 PRODUCT INFORMATION

Brooklyn Solar Canopy Company's (BSCC) patented A-Frame canopy design is adaptable to multiple flat roof types, carport or pergola applications. All BSCC canopies are custom fabricated in the United States using 6061 grade aluminum or equivalent strength aluminum and have been certified by a structural engineer to meet the wind, snow and seismic loads in North America.

Remember that it is the responsibility of the installer to assess and have structurally certified the underlying building structure and foundations upon which the canopy is being built.

Please read the installation manual fully before installing and follow all design parameters, guidelines, and requirements.

CERTIFICATIONS



CSA GROUP
US CSA Product Certified, 271251



UL Certified
UL Product Certified



PZSE Structural Engineering
Engineering and stamped by PZSE structural engineers.



Made in United States of America
Designed in Brooklyn, New York and manufactured in Providence, Rhode Island.

AWARDS



Interior Design
Best of Year Green Design, 2016



The Architect's Newspaper
Best of Design Awards Smart Home Systems, 2018



NYCxDesign
Best of NYC Product Category, 2018



Architizer
Architizer A+ Award Winner for Popular Choice Roof Category, 2018.

1.2 PRODUCT REQUIREMENTS

TABLE 1 – FASTENER TORQUE VALUES

FASTENER LOCATION	SECTION + PAGE NUMBER	TORQUE (LB-IN ²)
Leg to Truss Plate Assembly	Assembly 5.1, pg 22	240
Truss (Plate) Assembly	Assembly 5.2, pg 23	1,200
Leg Attachment (to T-Track)	Construction 6.2, pg 28	1,200
Truss Placement (to Column-Legs)	Construction 6.3, pg 29	1,200
Rail Installation	Construction 6.4, pg 30	240
Panel Installation	Construction 6.5, pg 31	80
Ground Lug to Rail	Electrical 7.2, pg 34	80

TABLE 2 – CSA APPROVED PANELS

PANEL MAKE	MODEL	WATTAGE (W)
Axitec	AXIpremium XXL HC 530-555	530-555
Canadian Solar	HIDM5 (All-Black) 390-405	390-405
Jinko Solar	Tiger Mono-facial All Black	370-390
Panasonic	EVERVOLT BLACK SERIES 400-410	400-410
Q-Cell	Q.PEAK DUO BLK ML G10+ SERIES	385-410
Q-Cell	Q.PEAK DUO L G6.2 405-425	405-425
Q-Cell	Q.PEAK DUO XL G10.3 / BFG 470-485	470-485
REC Group	Alpha Pure Black REC405AA	405
REC Group	Alpha Pure Black REC410AA	410
SunPower	M Series 420-440W Residential AC Module	420-440

Assembly + Maintenance Requirements:

- a.) All metal to metal components and fasteners shall be tightened to a torque value of shown in 'TABLE 1.'
- b.) Any loose components or fasteners shall be re-tightened in accordance with the torque values in 'TABLE 1.'
- c.) Any components showing signs of damage that compromise safety shall be replaced immediately.
- d.) See 'Components, 3.0' for Bonding Device requirements.



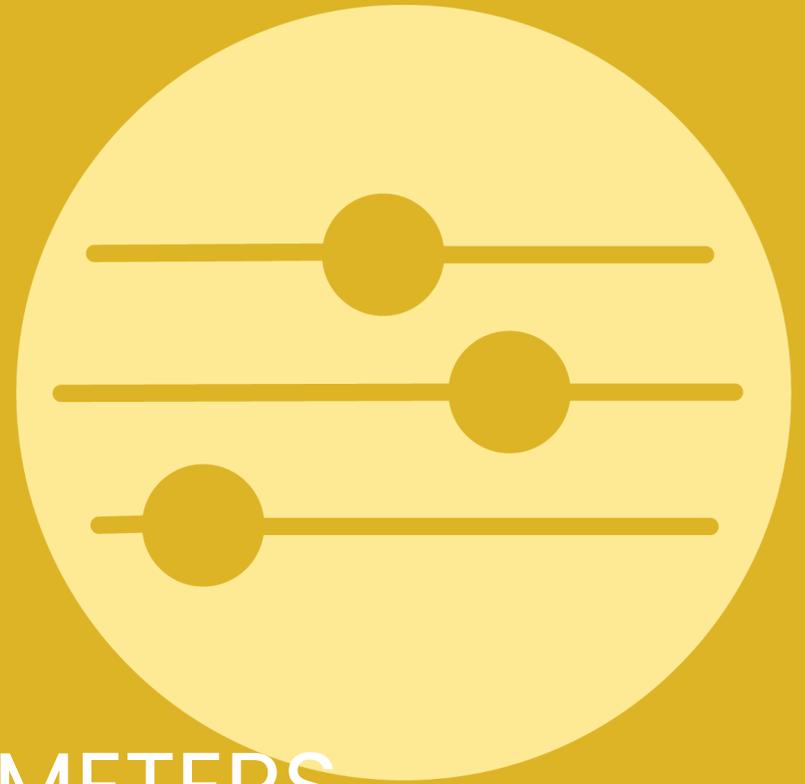
The BSCC A-Frame Canopy is 'Not Fire Rated'

Place the provided 'Not Fire Rated' sticker on the solar canopy once installation is completed.

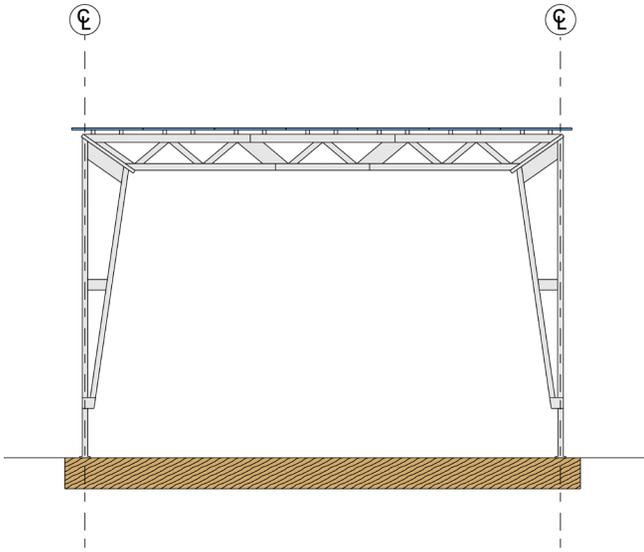
2

DESIGN PARAMETERS

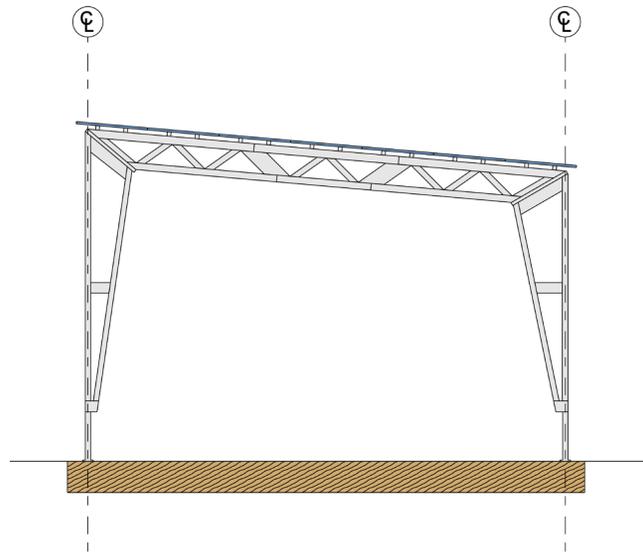
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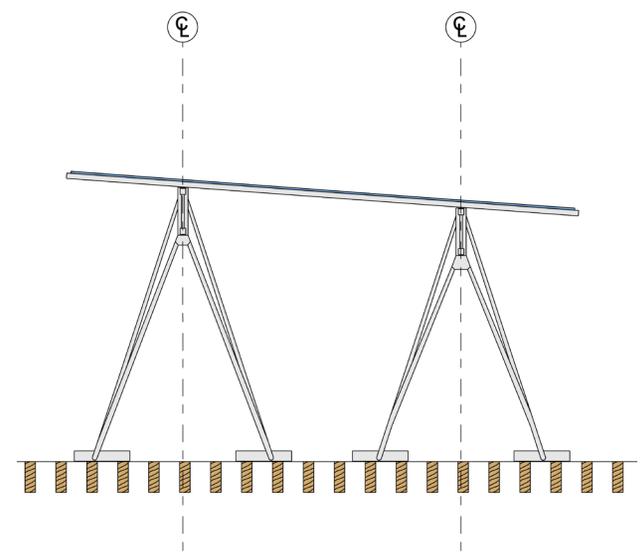
2.1 TRUSS CONFIGURATIONS



CONFIGURATION 1
0 Degree Tilt



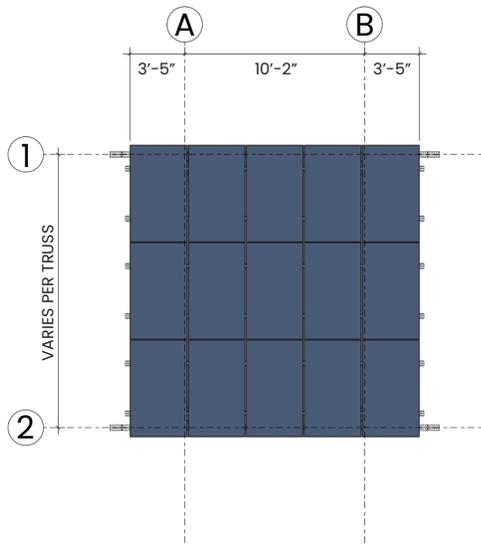
CONFIGURATION 2
5 Degree Tilt - Truss



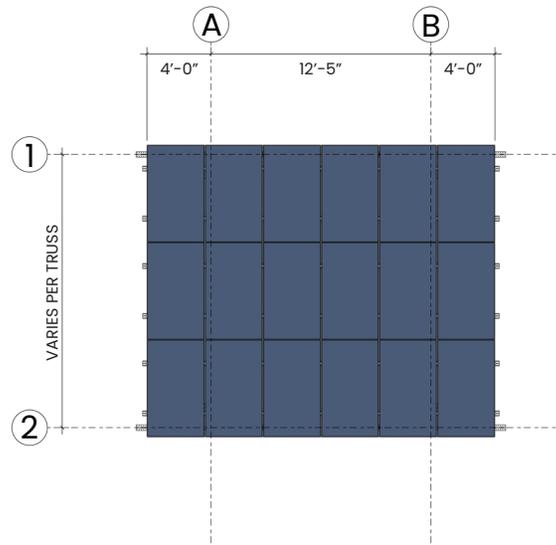
CONFIGURATION 3
5 Degree Tilt - Rail

BSCC CANOPIES ARE CUSTOM FABRICATED AND CAN BE ADJUSTED IN WIDTH AND HEIGHT UNDER CERTAIN CONDITIONS. LARGE CANOPY CONFIGURATIONS WILL HAVE HIGHER LOADING, WHICH MAY PRECLUDE THEM FROM BEING INSTALLED ON UNREINFORCED STRUCTURES.

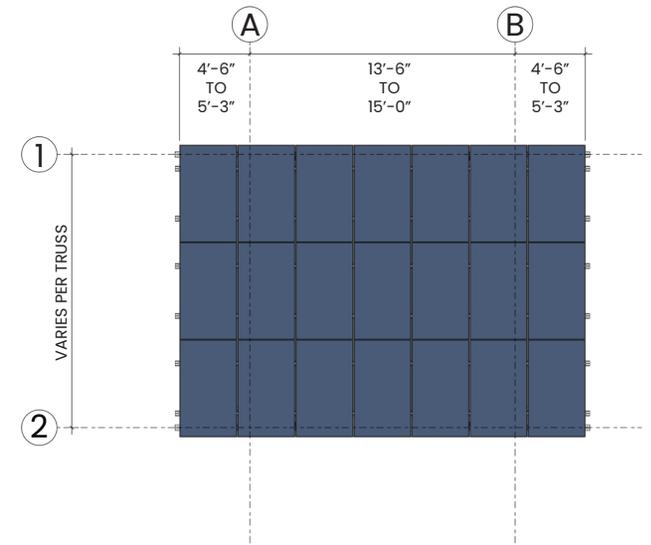
2.2 PANEL CONFIGURATIONS



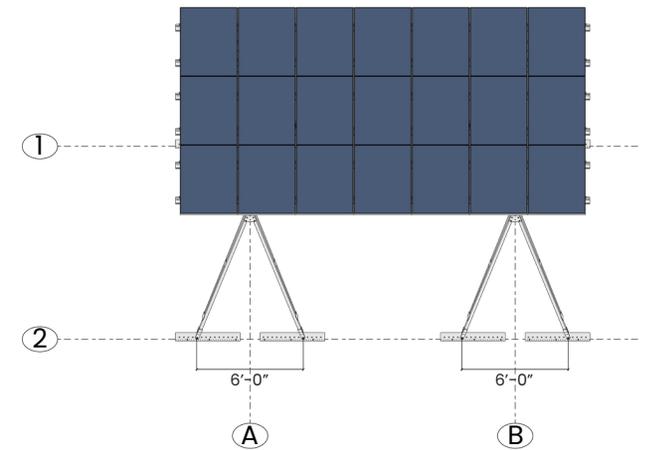
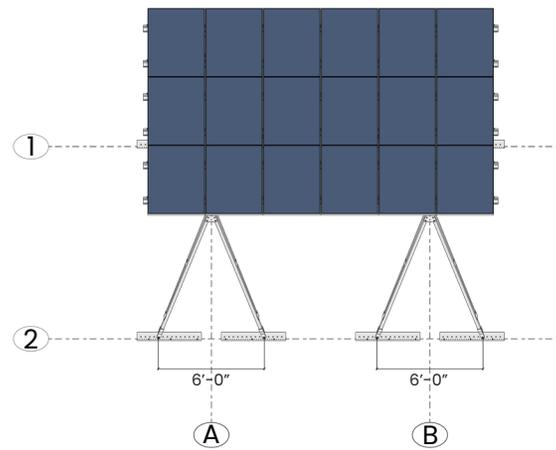
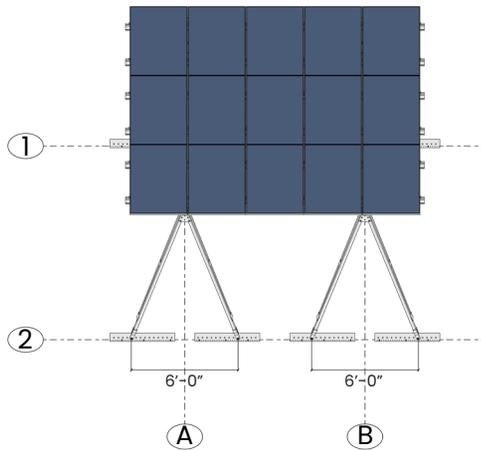
5 PANEL LANDSCAPE CONFIGURATION



6 PANEL LANDSCAPE CONFIGURATION

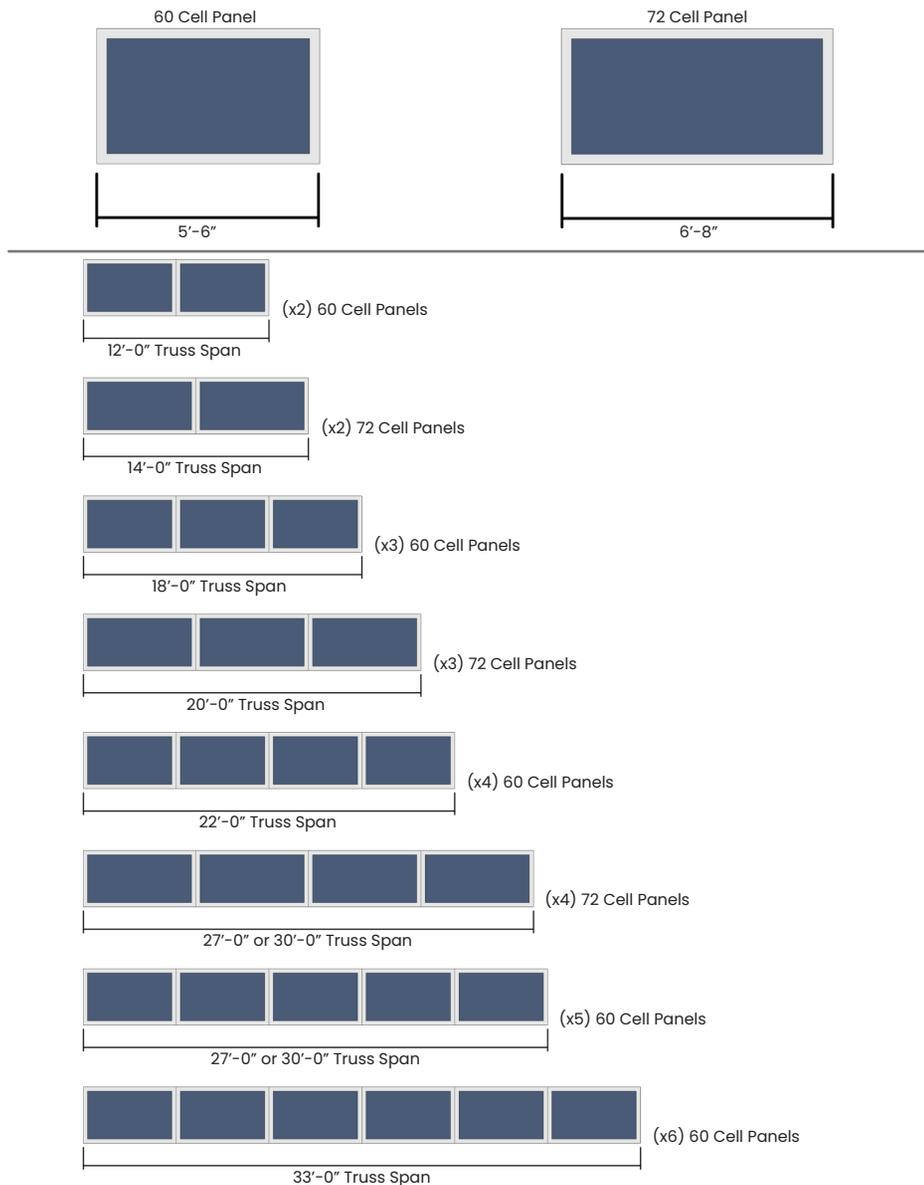


7 PANEL LANDSCAPE CONFIGURATION



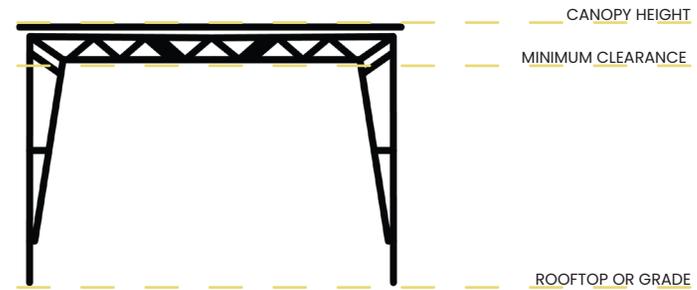
2.3 CANOPY DESIGNS

TRUSS WIDTH (PANEL SUGGESTIONS)

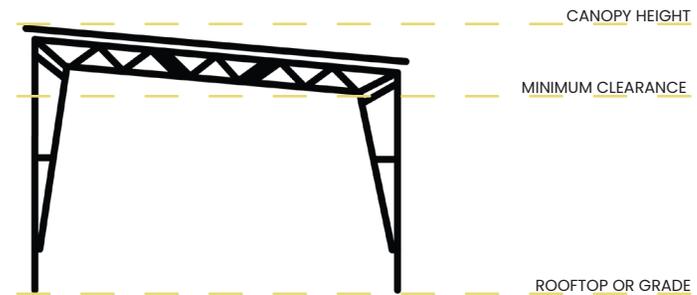


SECTION DIAGRAMS

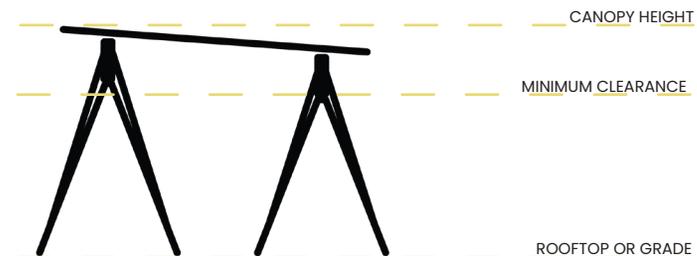
FLAT



LATERAL



FRONT



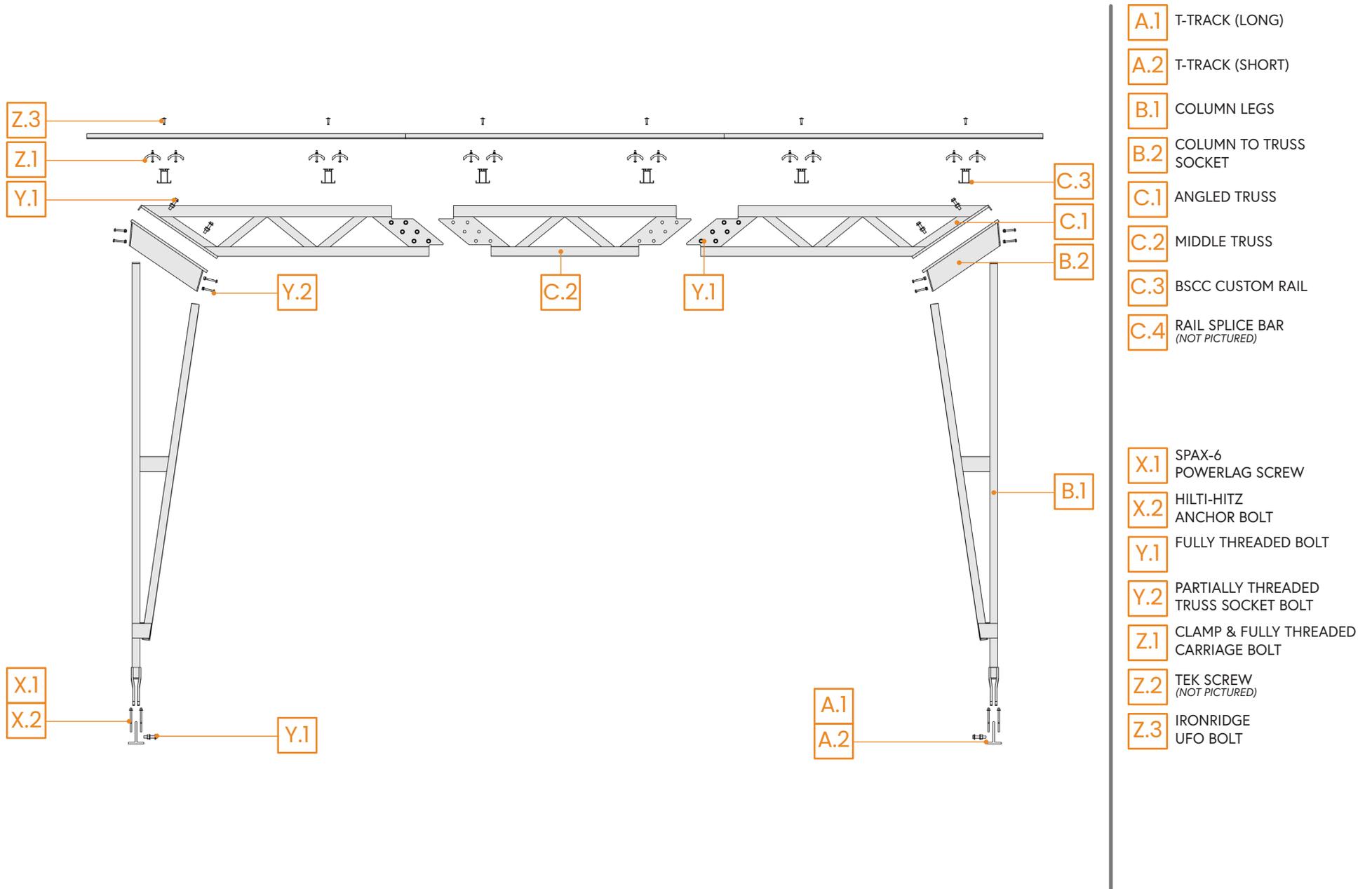


3

COMPONENTS

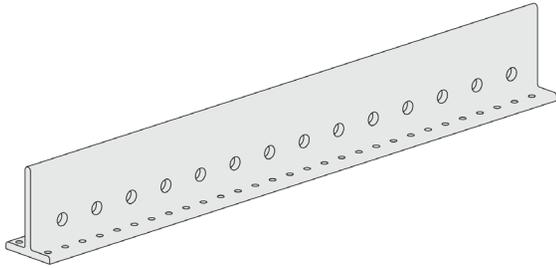
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3.2 BASE ATTACHMENT COMPONENTS.....	13
3.3 STRUCTURAL COMPONENTS.....	14
3.4 FASTENERS & ADDITIONAL COMPONENTS.....	16

3.1 COMPONENTS EXPLODED VIEW



- A.1** T-TRACK (LONG)
- A.2** T-TRACK (SHORT)
- B.1** COLUMN LEGS
- B.2** COLUMN TO TRUSS SOCKET
- C.1** ANGLED TRUSS
- C.2** MIDDLE TRUSS
- C.3** BSCC CUSTOM RAIL
- C.4** RAIL SPLICE BAR (NOT PICTURED)
- X.1** SPAX-6 POWERLAG SCREW
- X.2** HILTI-HITZ ANCHOR BOLT
- Y.1** FULLY THREADED BOLT
- Y.2** PARTIALLY THREADED TRUSS SOCKET BOLT
- Z.1** CLAMP & FULLY THREADED CARRIAGE BOLT
- Z.2** TEK SCREW (NOT PICTURED)
- Z.3** IRONRIDGE UFO BOLT

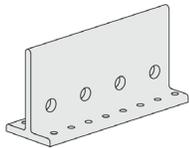
3.2 BASE ATTACHMENT COMPONENTS



A.1 T-TRACK
(LONG) ROOFTOP



X.1 FOR SINGLE USE ONLY
SPAX-6 POWERLAG SCREW
3/8" DIA. X 6" L. 

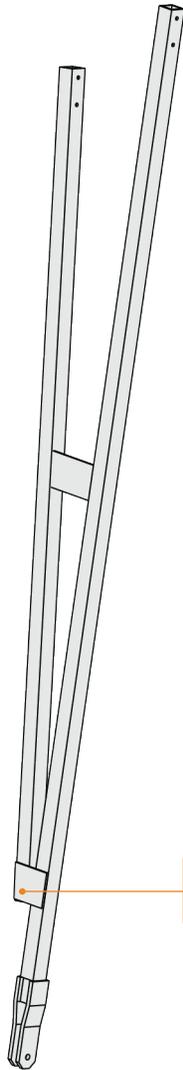


A.2 T-TRACK
(SHORT) AT GRADE



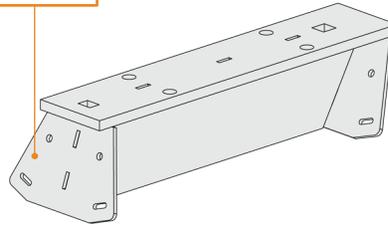
X.2 FOR SINGLE USE ONLY
HILTI HIT-Z ANCHOR BOLT
5/8" DIA. 

3.3 STRUCTURAL COMPONENTS



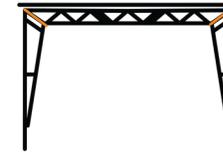
NOTE: Column Legs are marked with a number that your plan set will indicate.

NOTE: Column to Truss Socket uniquely marked for angled canopies. See table.

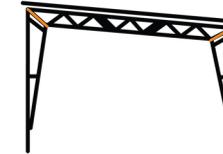


B.2 COLUMN TO TRUSS SOCKET
ALUMINUM, 6061

ANGLE CONFIGURATION TABLE



ELAT
SAME SOCKETS, HEIGHT IS THE SAME



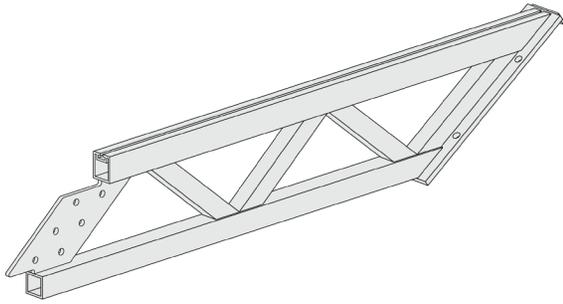
LATERAL
S5 - Short Side
L5 - Long Side



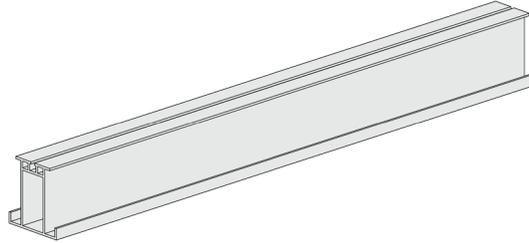
FRONT
SAME SOCKETS, HEIGHT IS DIFFERENT

B.1 COLUMN LEGS
ALUMINUM, 6061

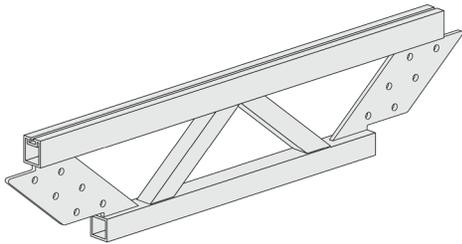
3.3 STRUCTURAL COMPONENTS



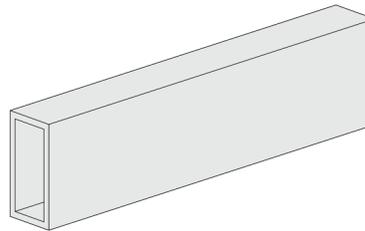
C.1 | ANGLED TRUSS
ALUMINUM, 6061



C.3 | BSCC CUSTOM RAIL
ALUMINUM, 6061

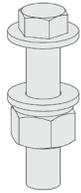


C.2 | MIDDLE TRUSS
ALUMINUM, 6061



C.4 | RAIL SPLICE BAR
ALUMINUM, 6061

3.4 FASTENERS & ADDITIONAL COMPONENTS



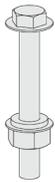
Y.1 FOR SINGLE USE ONLY
FULLY THREADED BOLT
 5/8" DIA. X 3" L., STAINLESS STEEL



Z.2 FOR SINGLE USE ONLY
TEK SCREWS
 Drill Point



Q.1 RAIL END CAPS



Y.2 FOR SINGLE USE ONLY
PARTIALLY THREADED LEG BOLT
 3/8" DIA. X 3-1/4" L., STAINLESS STEEL



Z.3 FOR SINGLE USE ONLY
IRON RIDGE UFO BOLT
 UL 2703



Q.2 IRONRIDGE UFO BOLT STOPPER SLEEVE



Z.1 FOR SINGLE USE ONLY
CLAMP & FULLY THREADED CARRIAGE BOLT
 ALUMINUM, 6061, GALVANIZED & 5/16" DIA., STAINLESS STEEL



Q.3 FOR SINGLE USE ONLY
IRONRIDGE GROUNDING LUG (GD-LUG-003)

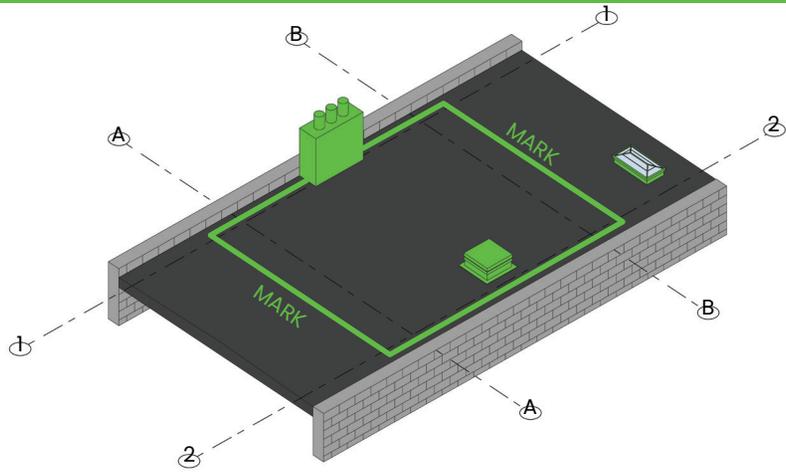


4

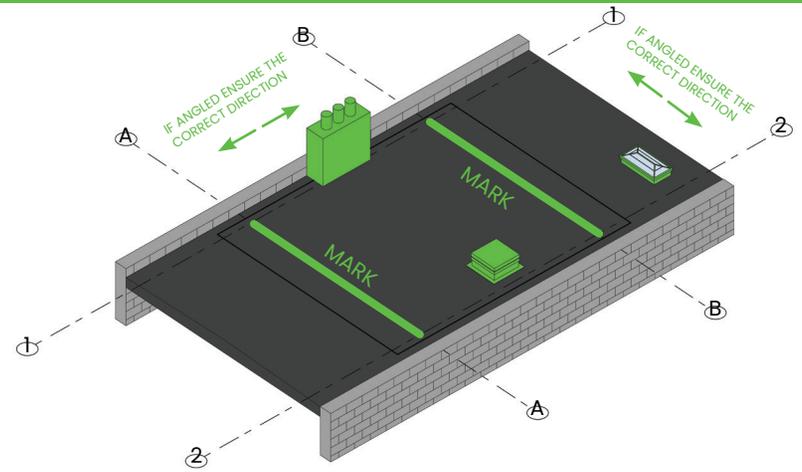
BASE ATTACHMENTS

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4.2 OPTION - FOOTINGS.....	19
4.3 OPTION - GRADE BEAMS.....	20

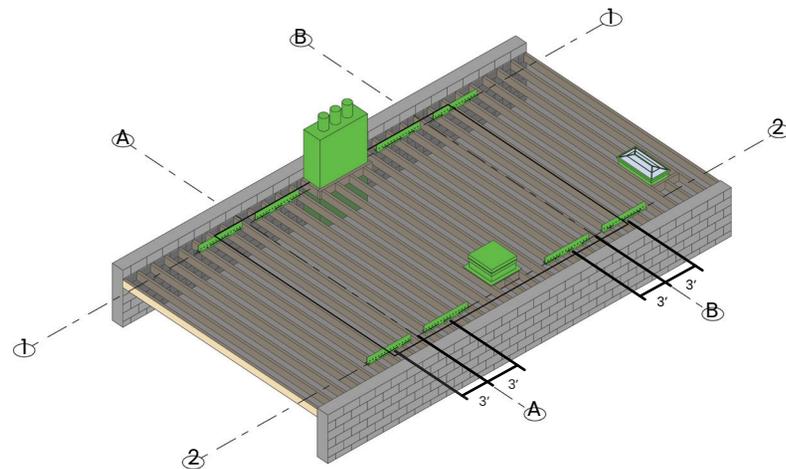
4.1 ROOFTOP – WOOD BEAMS



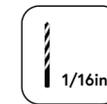
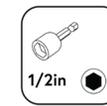
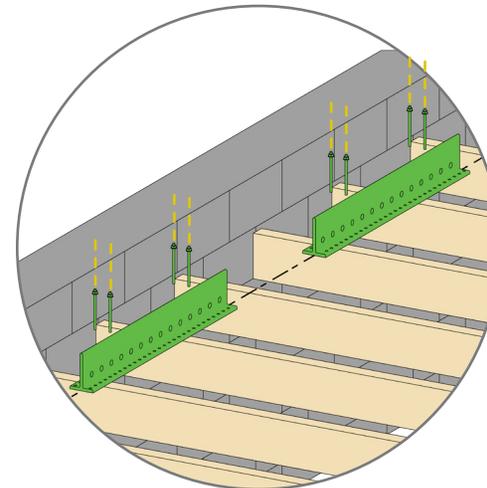
1.) Mark array length.



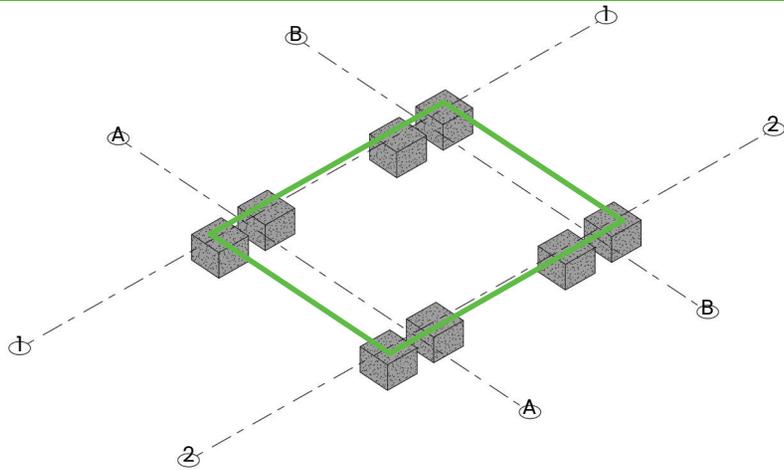
2.) Mark truss locations and connection points per plan set.
See 'Panel Configurations' for engineered distances
If angled ensure the correct direction.



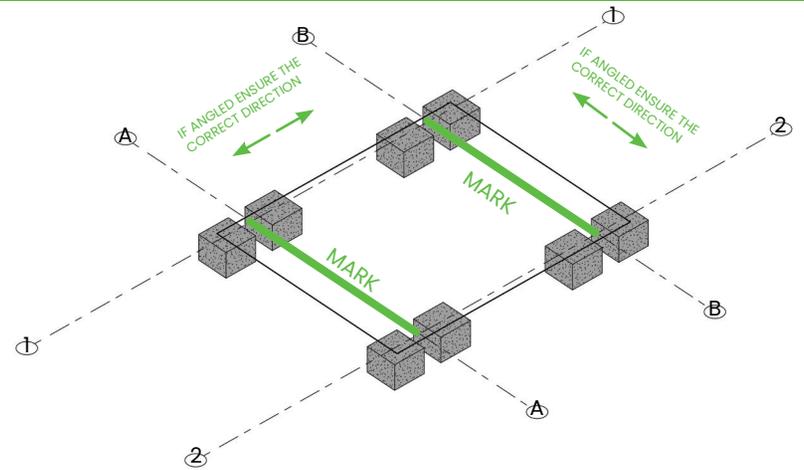
3.) Layout and trace T-track locations. Remove T-track and use 1/8" pilot bit to located and mark rafters. Apply sealant, return track to it's location and bolt to rafters.
Avoid any obstructions like chimneys, hatches and skylights



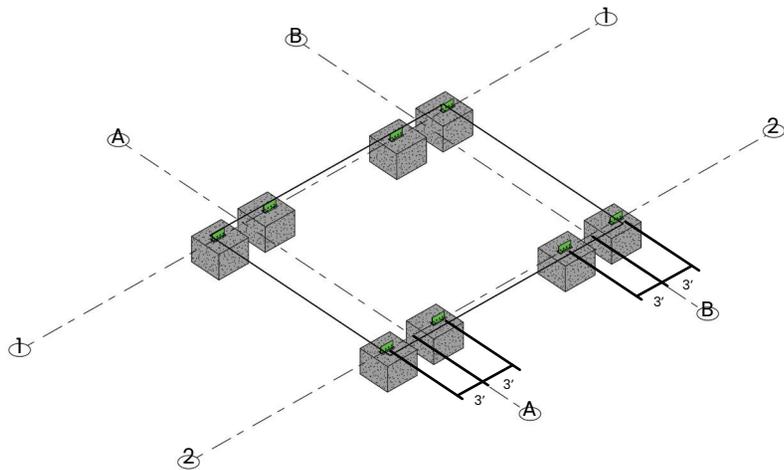
4.2 GRADE – FOOTINGS



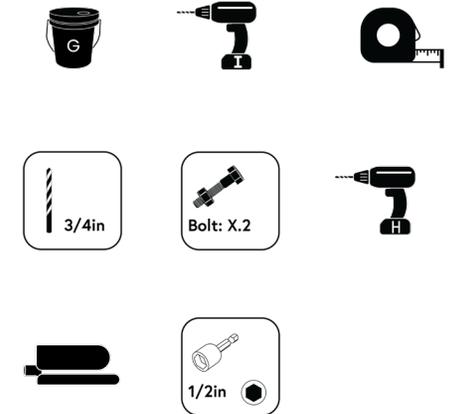
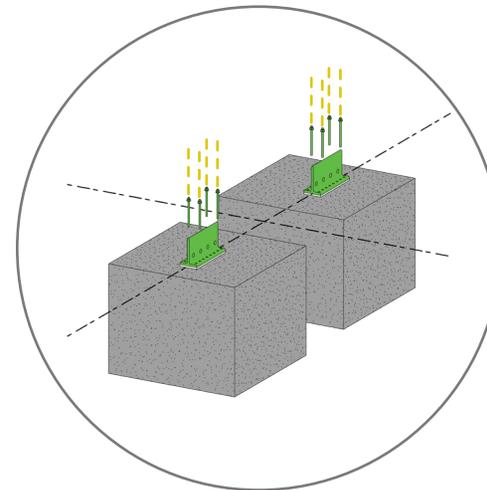
1.) Mark foundations and pour concrete per plan set, ensuring footings are level. Once concrete is cured, mark array length.



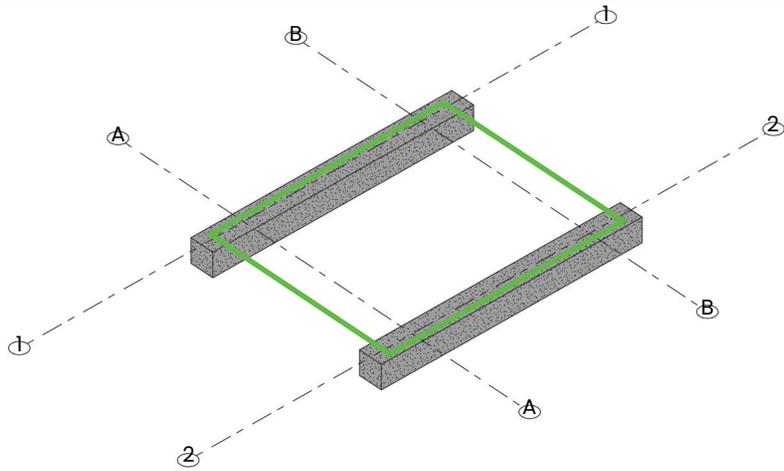
2.) Mark truss locations and ensure the proper orientation. See 'Panel Configurations' for engineered distances. If angled ensure the correct direction.



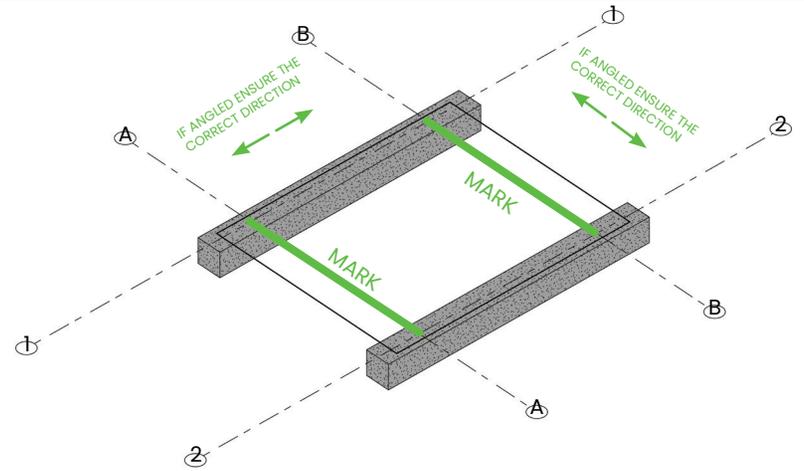
3.) Mark T-track locations, centering the on the footing, predrill holes and use hammer driver to fasten HILTI-HIT Anchor Rods and secure with HILTI-HIT Hybrid Mortar.



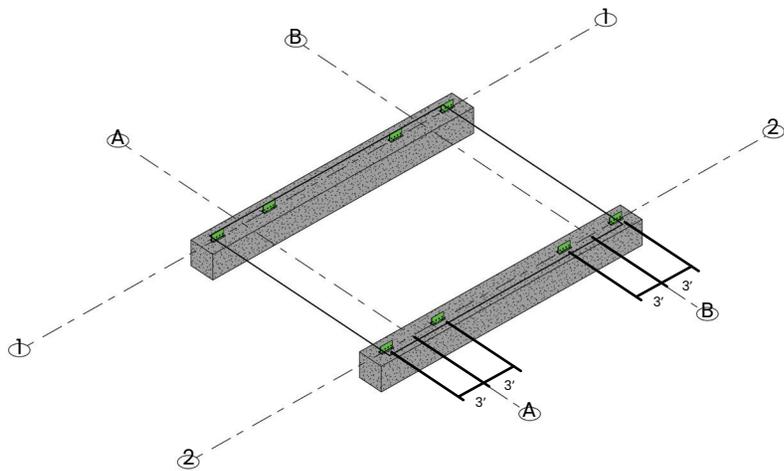
4.3 GRADE - GRADE BEAMS



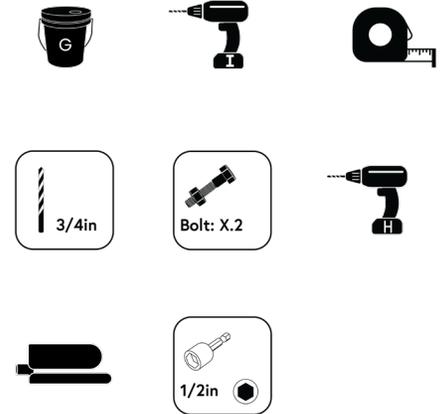
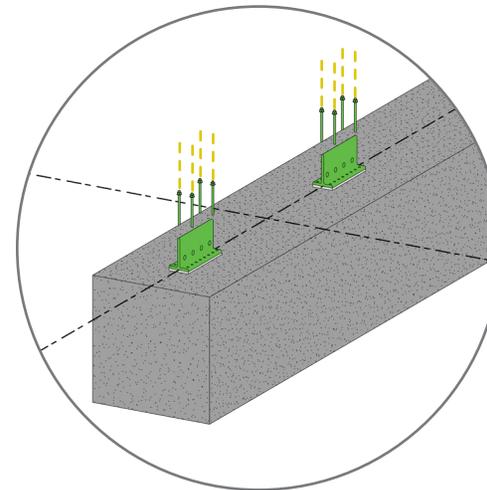
1.) Mark foundations and pour concrete per plan set, ensuring footings are level. Once concrete is cured, mark array length.



2.) Mark truss locations and ensure the proper orientation. See 'Panel Configurations' for engineered distances. If angled ensure the correct direction.



3.) Mark T-track locations, centering the on the footing, predrill holes and use hammer driver to fasten HILTI-HIT Anchor Rods and secure with HILTI-HIT Hybrid Mortar.





5

ASSEMBLY

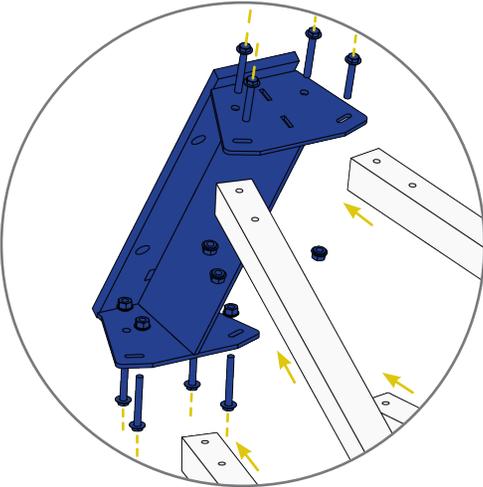
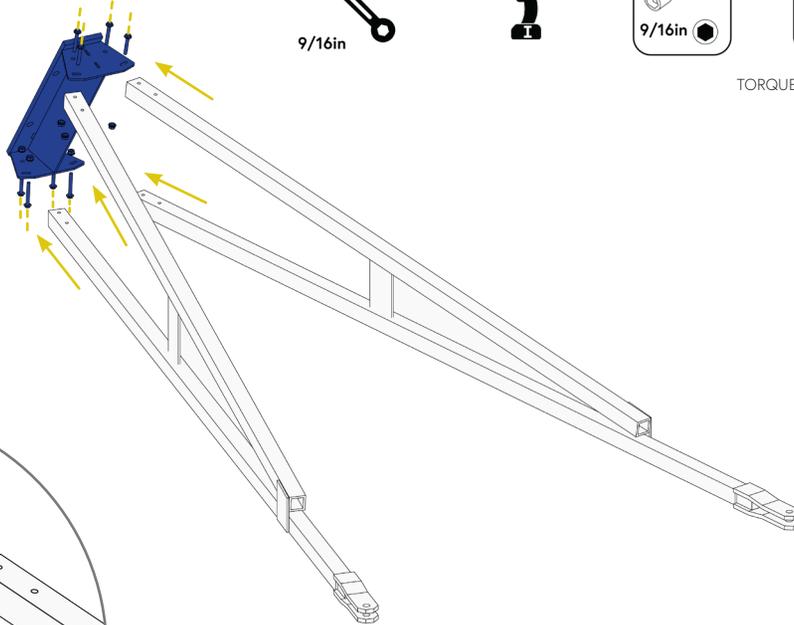
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5.1 LEGS TO TRUSS PLATE ASSEMBLY

ANGLE CONFIGURATION TABLE	
LATERAL	FRONT
S5 - Short Side	SAME SOCKETS,
L5 - Long Side	HEIGHT IS DIFFERENT
NOTE: Column Legs are marked with a number that your plan set will indicate.	



TORQUE VALUE = 240PSI

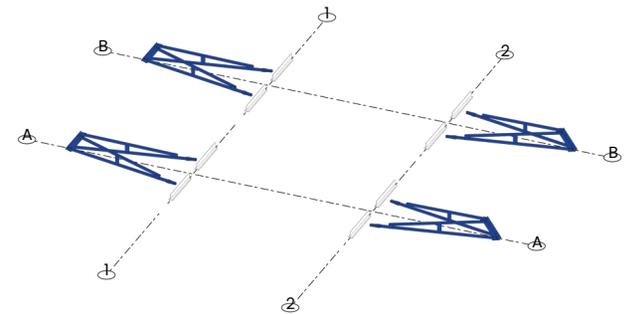


1.) Secure the Column Legs to the Truss Socket with Y.2 bolts (3/8 DIA. X 3-1/4" L.) using an impact driver.

2.) Do this for all column legs and set aside after completion.

Note: If the canopy is angled ensure that the legs are placed in the correct location.

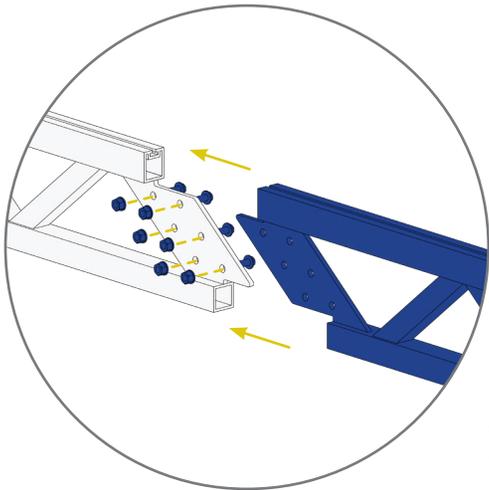
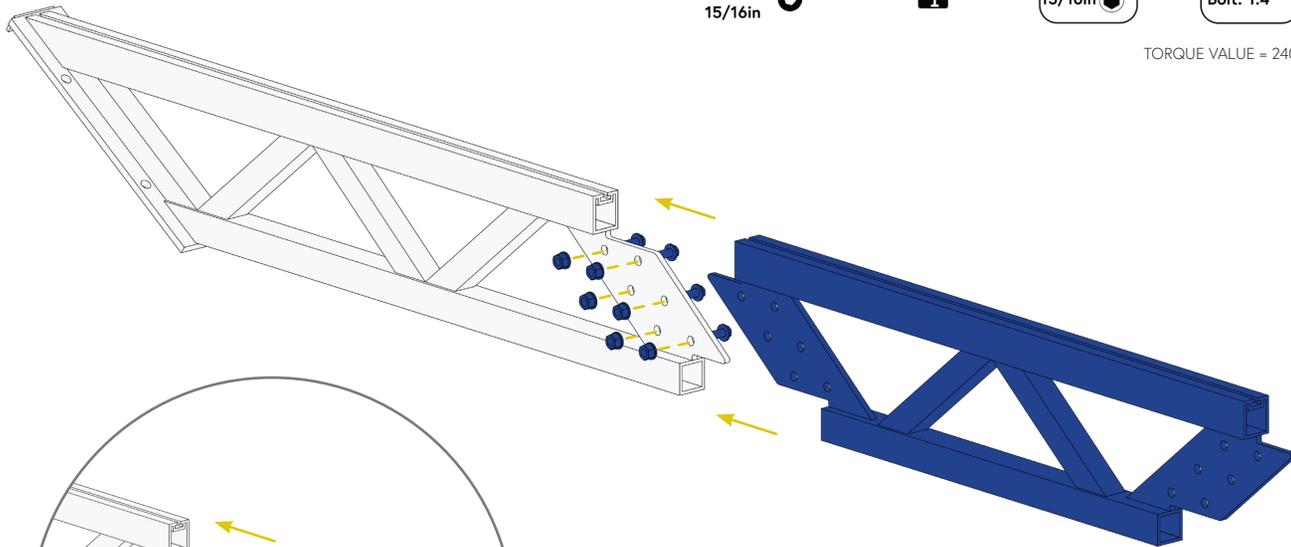
COLUMN LEG ASSEMBLY



5.2 TRUSS ASSEMBLY



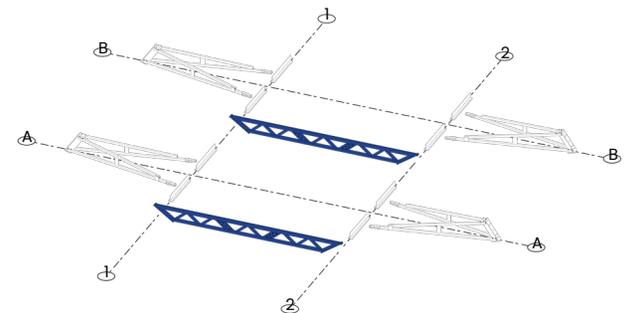
TORQUE VALUE = 240PSI



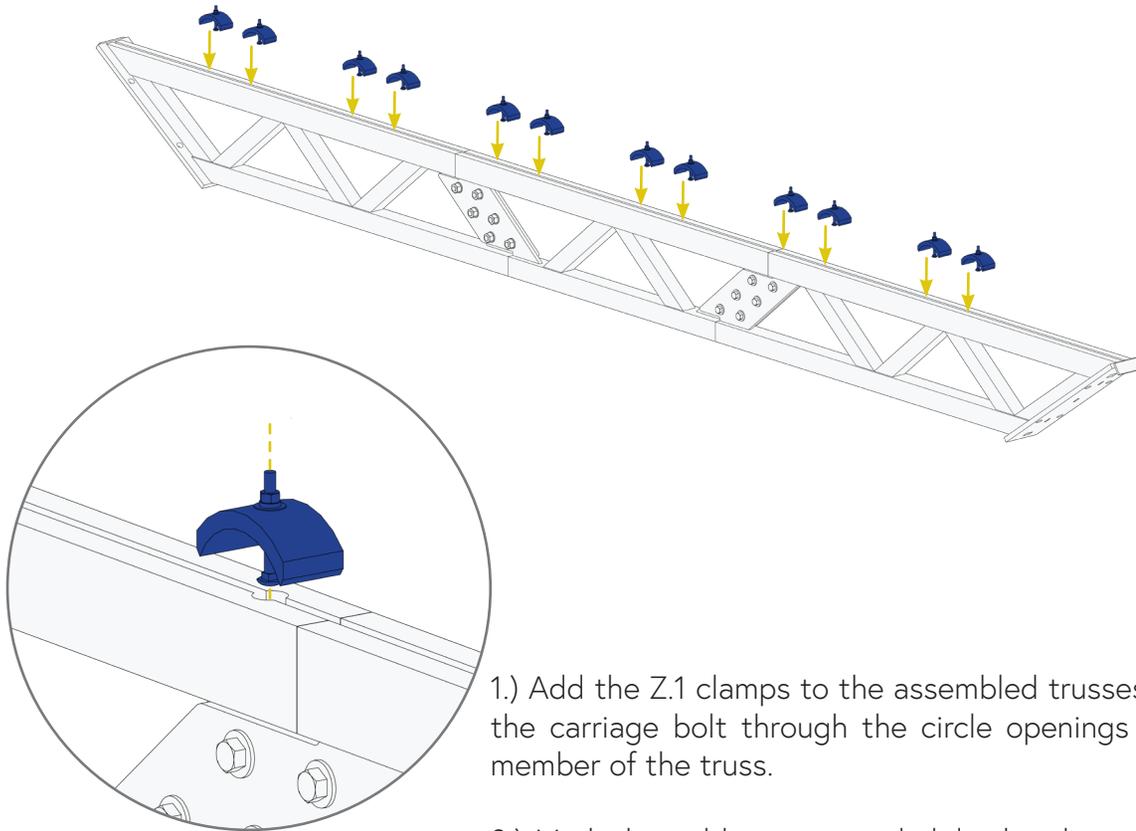
- 1.) Move all truss pieces so they are standing as shown.
- 2.) Splice trusses together by connecting end pieces with center piece. Align the truss plates and secure with Y.1 bolts (5/8" DIA. X 3"L.) using an impact driver.
- 3.) Repeat the process for the remaining trusses.

Note: If the canopy is angled ensure that the trusses are placed in the correct location.

TRUSS ASSEMBLY



5.2 TRUSS ASSEMBLY

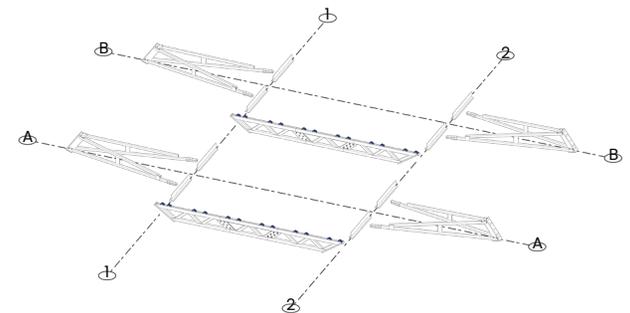
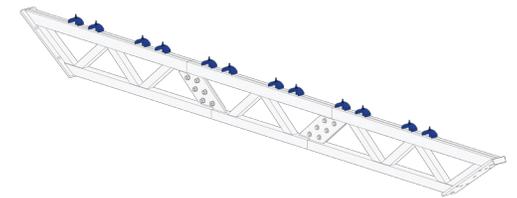


1.) Add the Z.1 clamps to the assembled trusses by placing the carriage bolt through the circle openings on the top member of the truss.

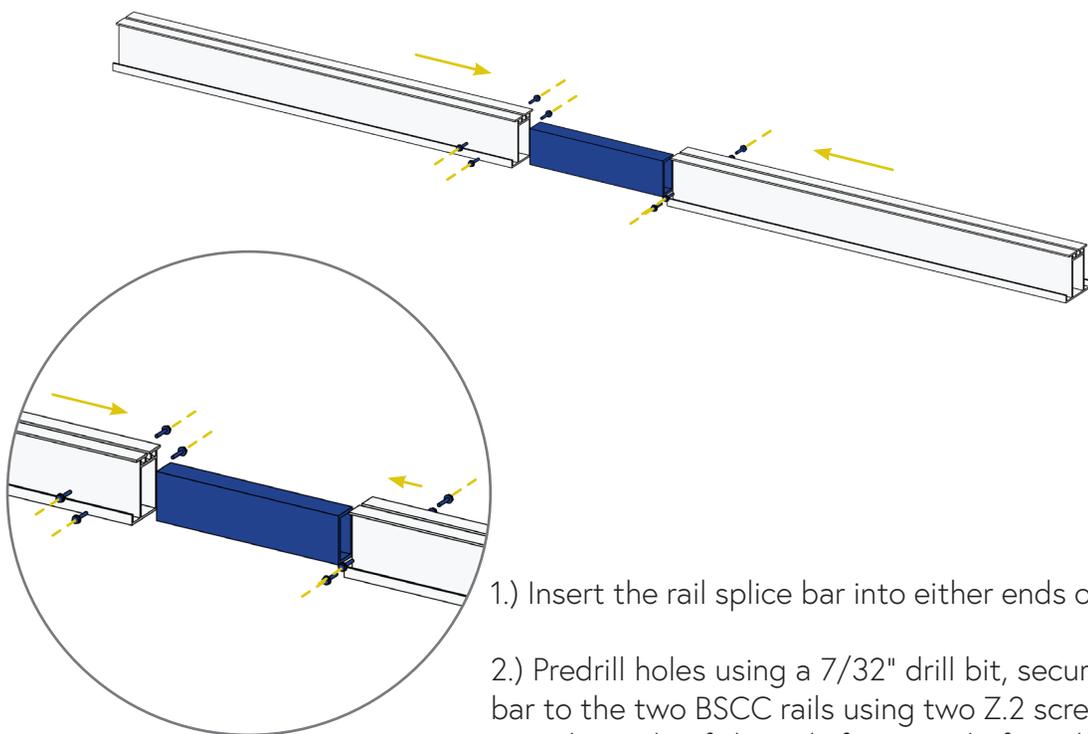
2.) Mark the rail locations and slide the clamps across the truss so that there are two clamps per rail at the mark, this will vary depending on the canopy size purchased and panels used.

3.) DO NOT secure, this will allow flexibility for the BSCC rails to slide between the clamps.

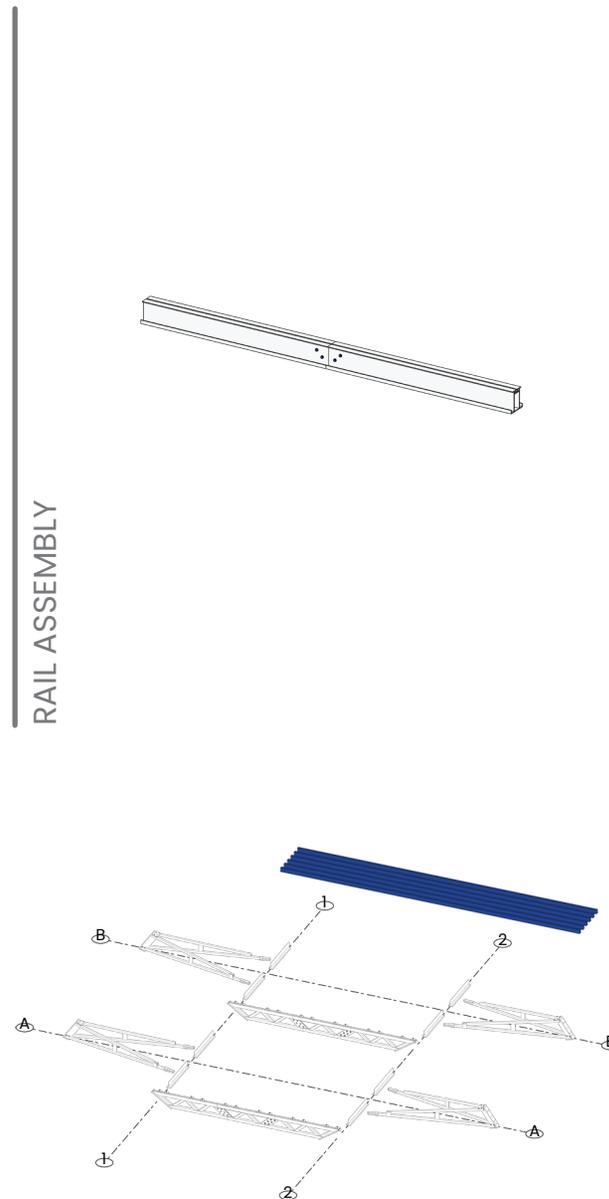
TRUSS ASSEMBLY



5.3 RAIL SPLICE ASSEMBLY

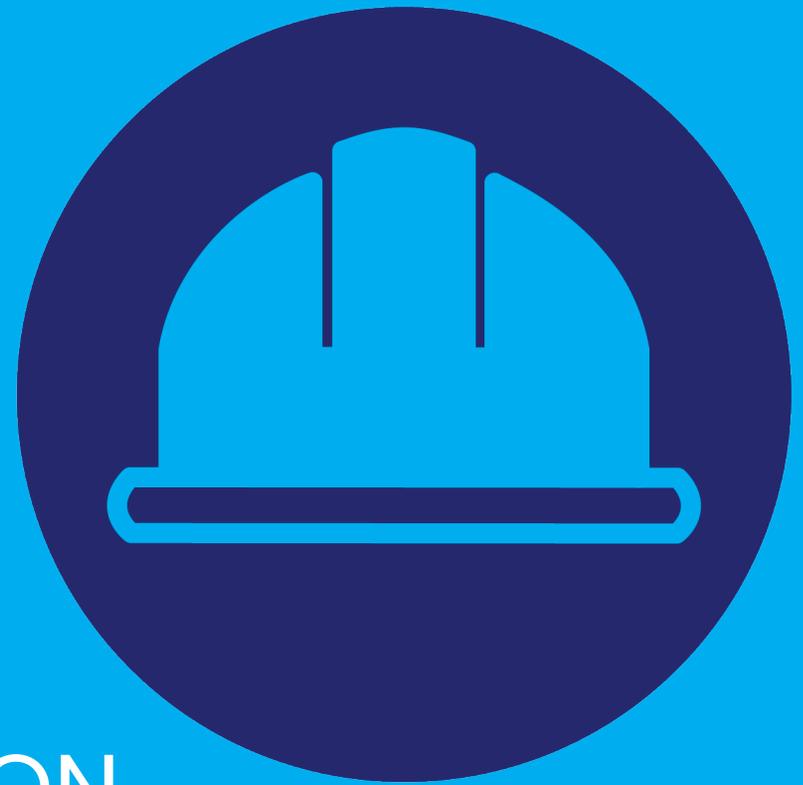


- 1.) Insert the rail splice bar into either ends of the BSCC rail.
- 2.) Pre-drill holes using a 7/32" drill bit, secure the rail splice bar to the two BSCC rails using two Z.2 screws, Tek screws, on either side of the rails for a total of 8 Tek screws.
- 3.) Do this for all rails and set aside.



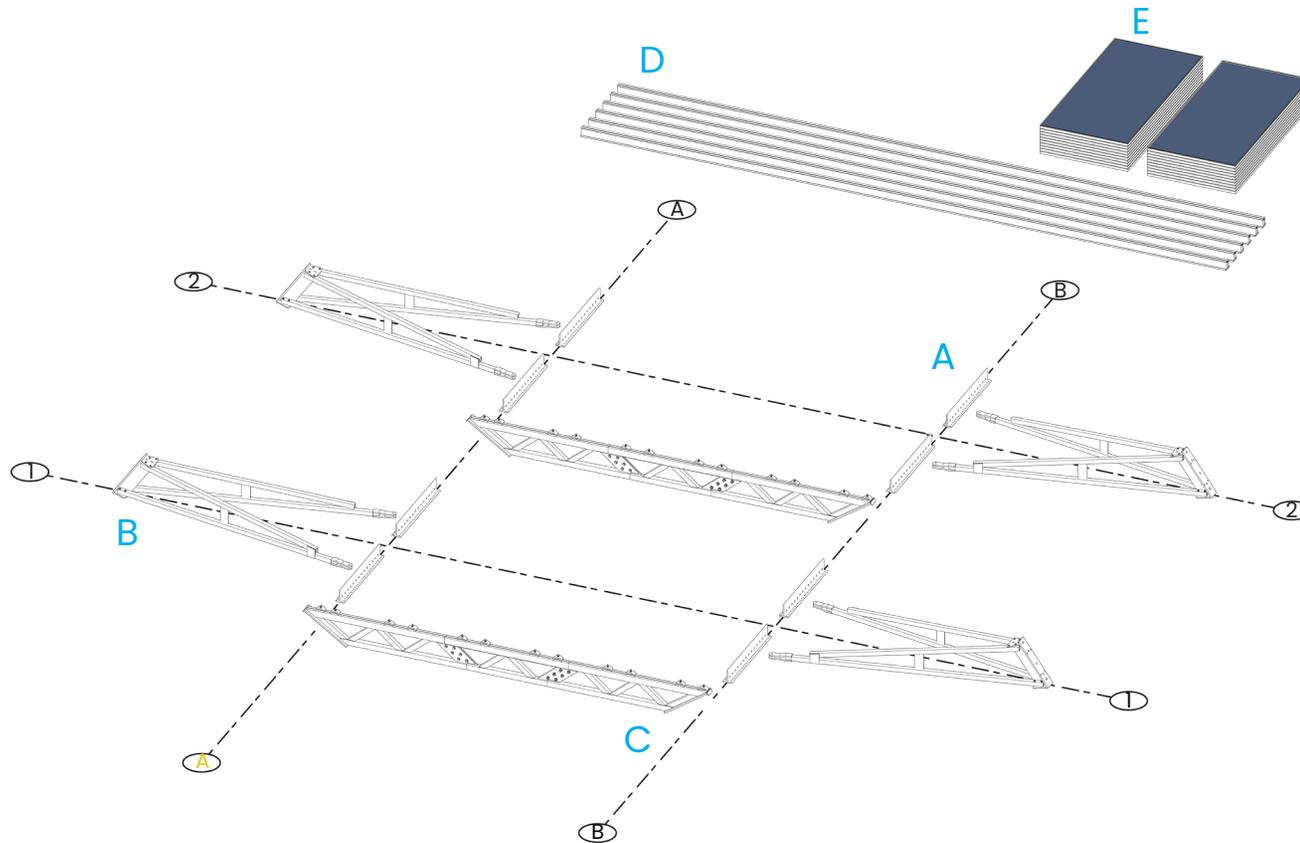
6

CONSTRUCTION



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6.1 CONSTRUCTION SITE LAYOUT



A T-Tracks (structurally anchored)

B Assembled Column Legs

C Assembled Truss

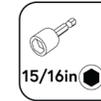
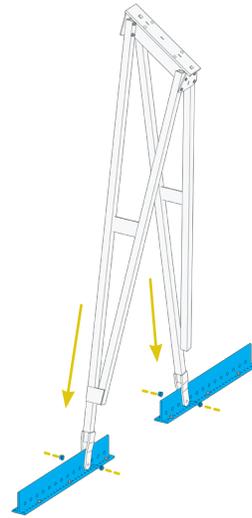
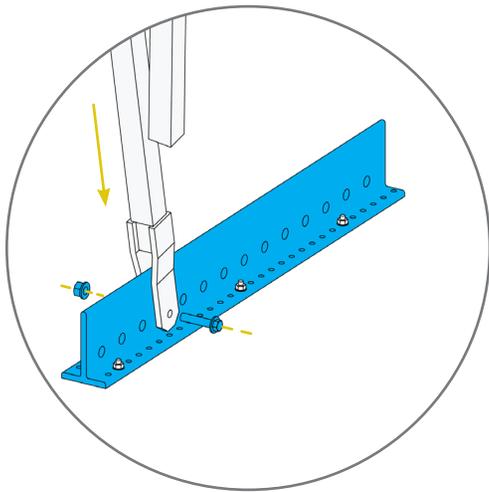
D BSCC Rail

E PV Modules (not provided)

Once all parts have been assembled arrange components prior to construction that resembles the canopy plan and the desired angle of the canopy. This step ensures that the appropriate column legs and trusses are located in the correct place and orientation to achieve the proper module angle of either 0 or 5 degrees depending on the system purchased.

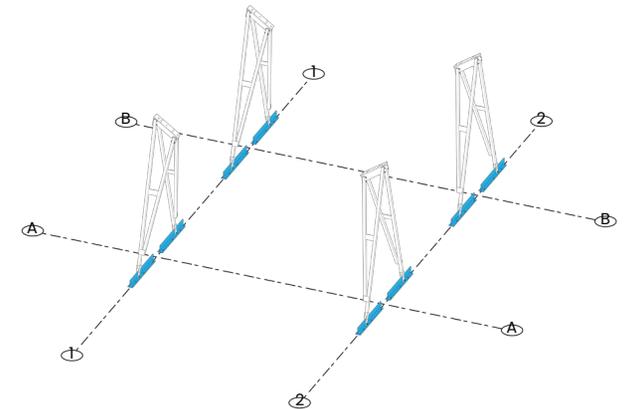
6.2 LEG ATTACHMENT

T-TRACK - COLUMN LEG ATTACHMENT



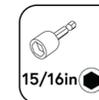
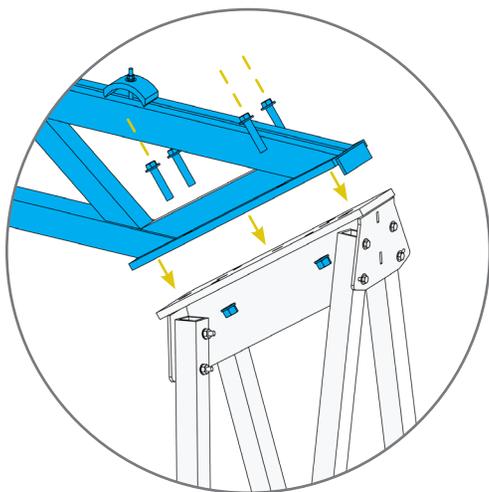
TORQUE VALUE = 280PSI

- 1.) Lift and securely place the column legs over the two T-tracks, adjust column legs as necessary.
- 2.) Once the leg footing bolt hole and the T-track bolt hole are aligned hand fasten with a Y.1 bolts (5/8" DIA. X 3" L.).
- 3.) Screw the Y.1 bolts but wait until the end of entire canopy assembly to fully secure all bolts.
- 4.) Repeat these steps until all column legs are fastened to the respective T-tracks.



6.3 TRUSS PLACEMENT & SECURE

COLUMN LEG - TRUSS ATTACHMENT

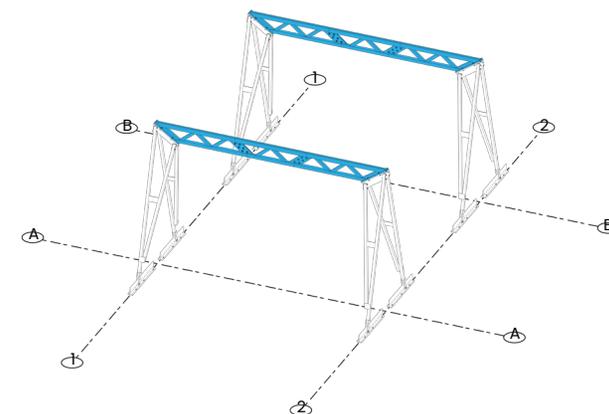


TORQUE VALUE = 240PSI

1.) After the column legs have been secured, lift the truss into place with two individuals on two different ladders at either end of the column legs. The plates on the column legs and truss will align to allow bolting.

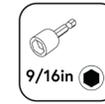
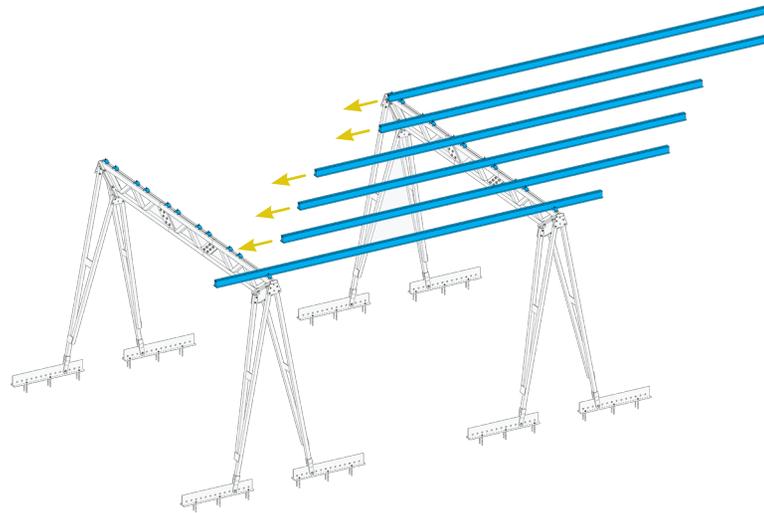
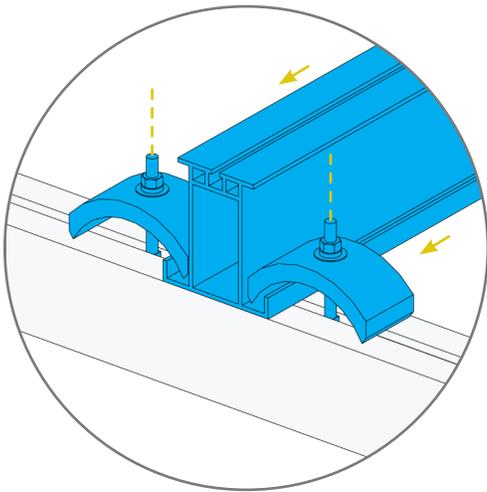
2.) Using the Y.2 bolts (5/8 DIA. X 3-1/4" L.) and an impact driver and wrench to secure bolts.

Note: If necessary use a level to ensure the truss is level at 0 or 5 degrees depending on the system purchased.



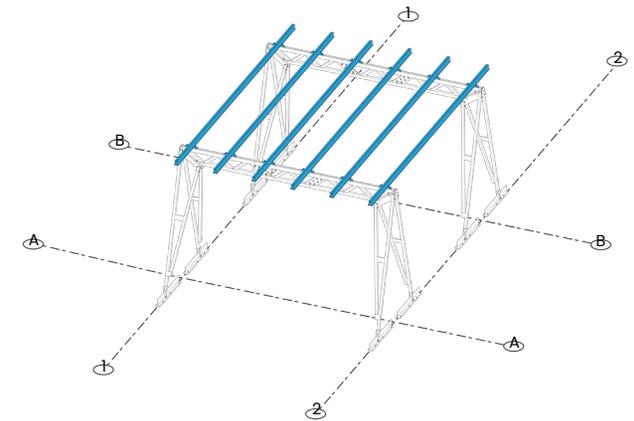
6.4 RAIL INSTALLATION

RAIL - TRUSS ATTACHMENT



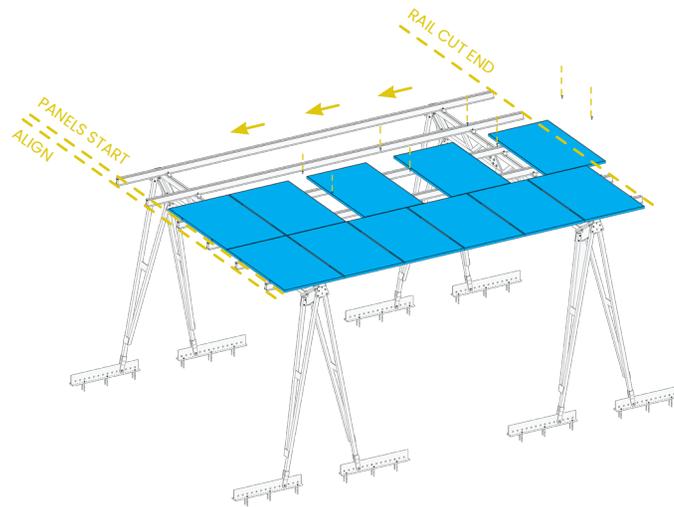
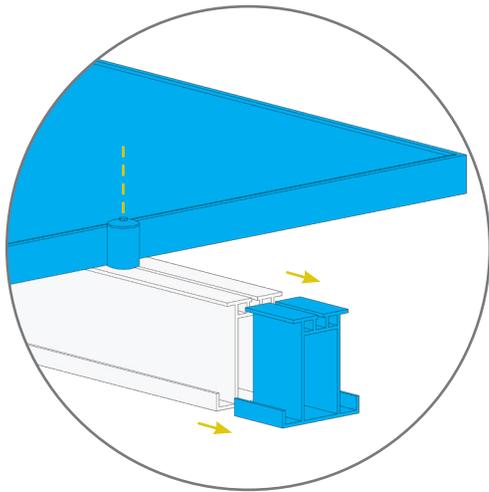
TORQUE VALUE = 120PSI

- 1.) Once the trusses have been securely fastened, slide the BSCC Rails across the top of the truss ensuring that there is a Z.1 clamp on each side of the rail at every truss location.
- 2.) Align the end of the rails at one side of the canopy, leaving roughly 2"-3" of space from the end of the rail to solar panel frame. This allows for cuts to only occur at the opposite ends of the rails. See next page.
- 3.) After all rails are in place secure the carriage bolt of each clamp using an impact driver and wrench.

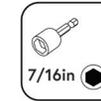


6.5 PANEL INSTALLATION

PANELS - RAIL ATTACHMENT



Bolt: Z.3

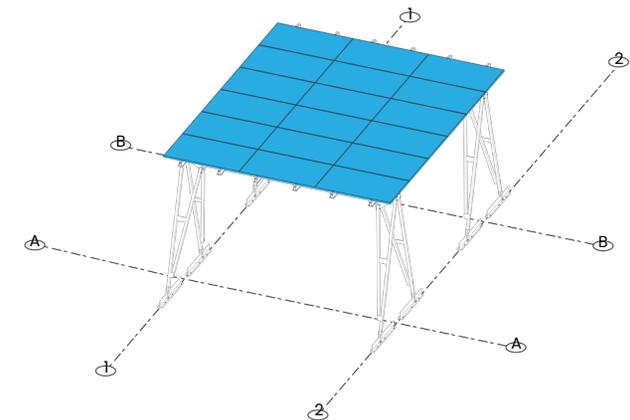


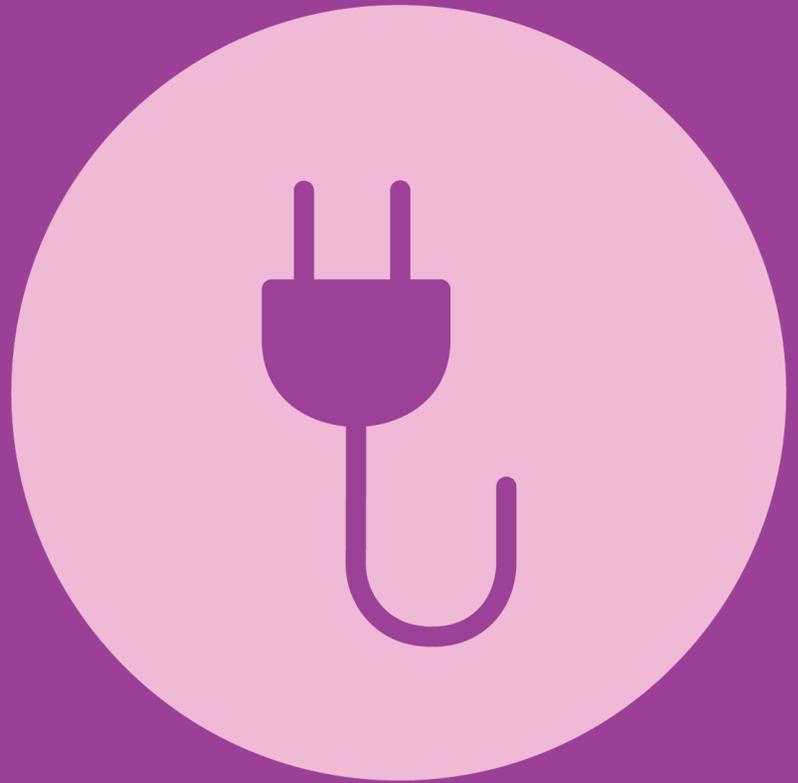
7/16in



TORQUE VALUE = 80PSI

- 1.) Place solar panels on secured rails, leaving roughly 2"-3" of space from the end of the rail to solar panel frame.
- 2.) Start with one row of panels and complete a row before starting the next. Secure the panels by sliding the end of the Z.3, UFO bolt into the top of the BSCC Rail and allowing the top of the Z.3, UFO bolt to rest on top of the solar panel frame. Secure the UFO bolts with an impact driver.
- 3.) There may be excess BSCC Rail. Measure 2"-3" of the rail from the end of the solar panel frame. Use the deep cut portable ban saw to cut the rails, if needed
- 4.) Place Q.1, End Caps on exterior rails and Q.2, Iron Ridge UFO Stoppers on exterior UFO bolts.





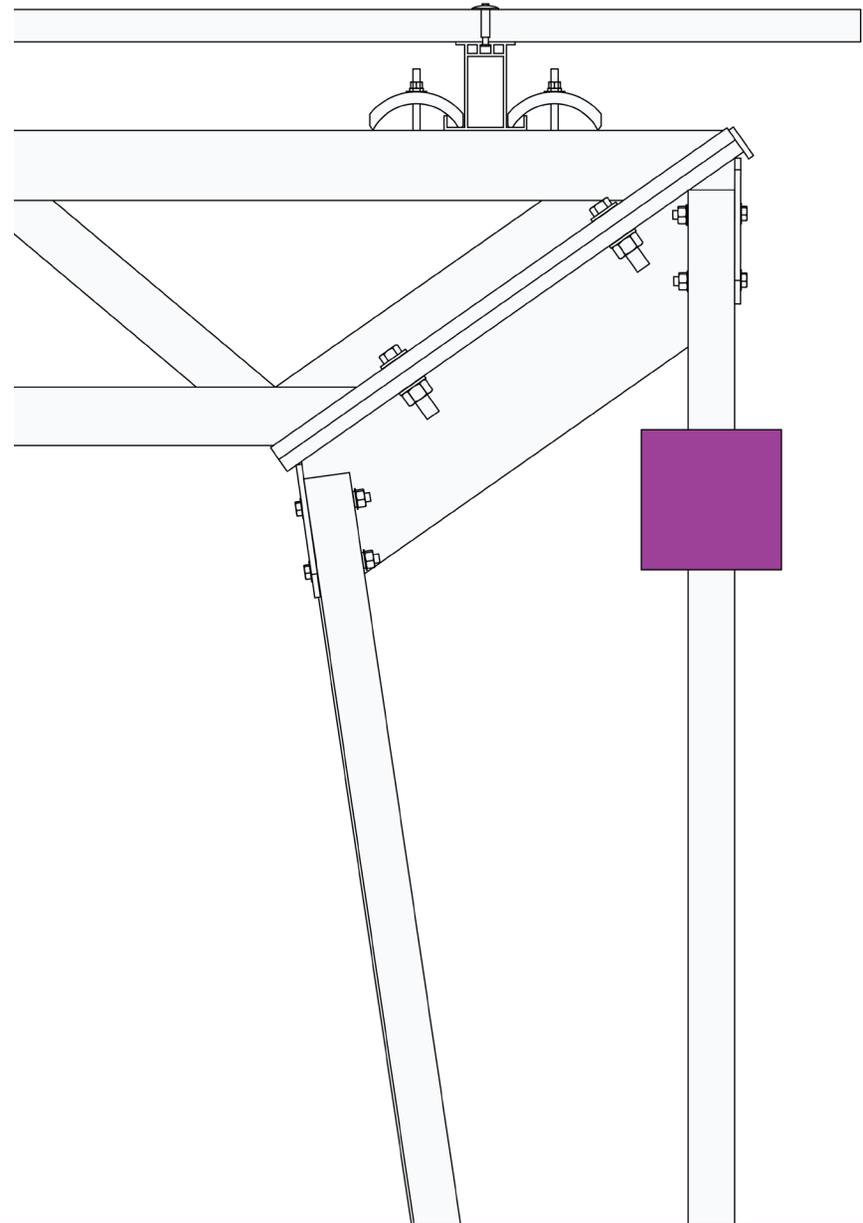
7

ELECTRICAL

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7.2 GROUNDING.....	34

7.1 MOUNTING

- 1.) Junction boxes can be mounted to any part of the canopy, this drawing illustrates a convenient place to mount a junction box.
- 2.) Conduit can be run flush with the outer member of the leg.

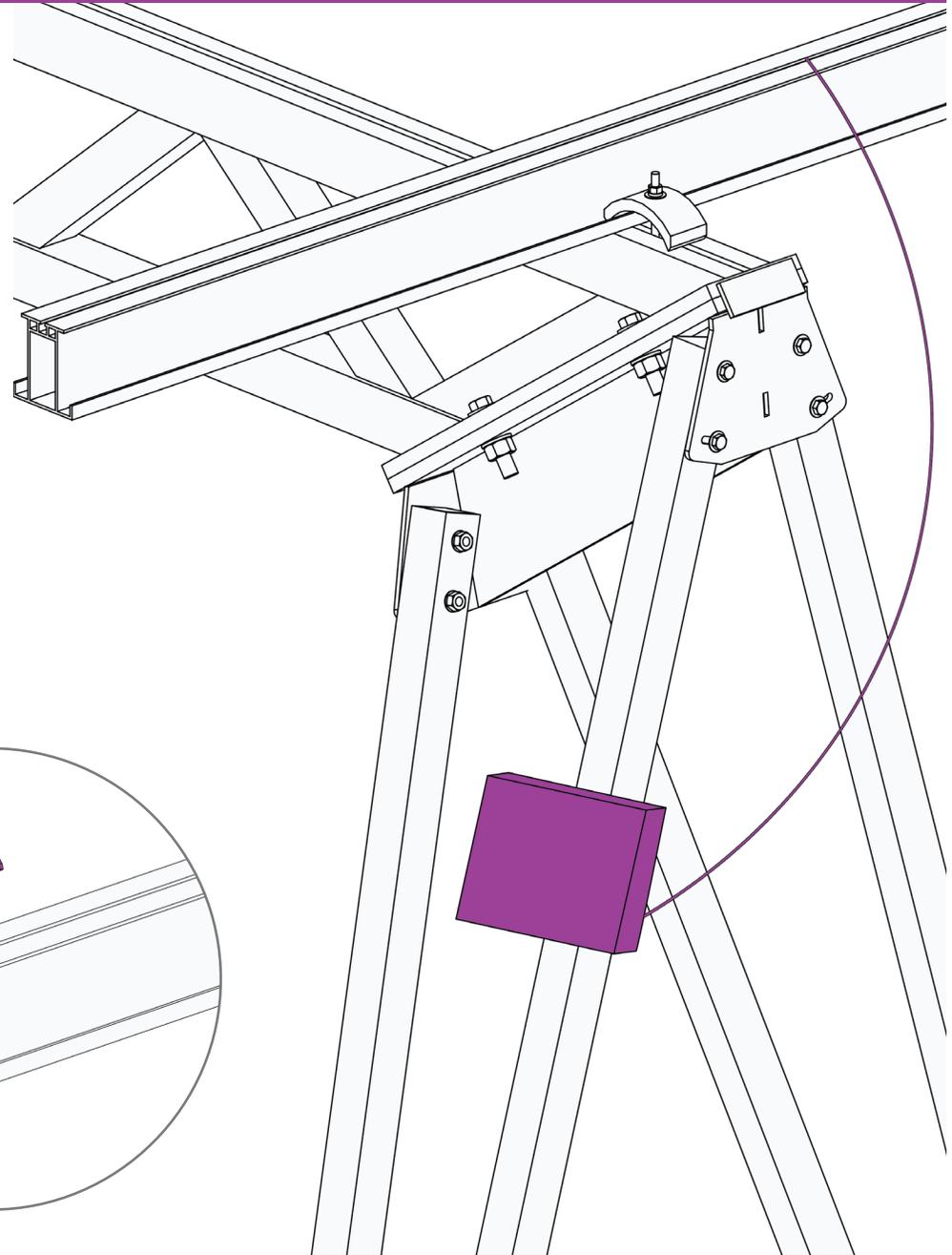
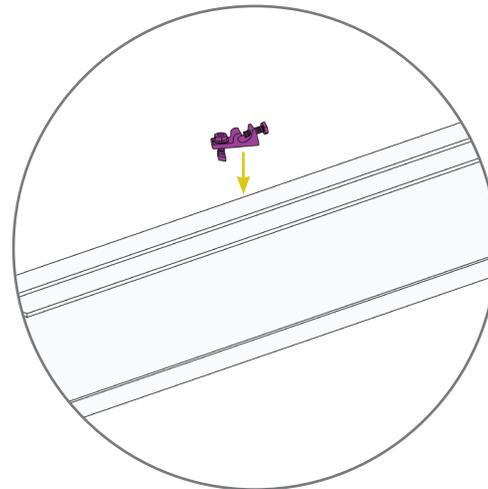


7.2 GROUNDING

1.) The BSCC A-Frame Canopy is UL certified to have one grounding connection from the rail to the junction box.

2.) Place IronRidge ground lug (GD-LUG-003) in rail nearest to junction box, fasten down using 7/16" wrench and run bare copper #6 to junction box.

TORQUE VALUE = 80PSI



8

WARRANTY

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8.1 WARRANTY

To the extent that BSCC reasonably concludes (in accordance with the timeline and process set forth in Section 1.7) that any Products have been delivered to Customer with a bona-fide, material defect or non-conformity, then BSCC will repair or replace such Products, at its own expense.

BSCC additionally warrants that the Products shall be free from Structural Defects (as defined below) for a period of thirty (30) years from the date of delivery (the "Warranty Period").

For purposes of this Agreement, "Structural Defects" means a collapse, material cracking or clear failure of a structural component that is not caused by:

- (i) user error, negligence or misconduct by Customer, its end user customer or any other party which shall include but not be limited to any usage that does not conform to the requirements of the Documentation and/or any that is caused by the Customer's breach of any of its obligations hereunder,
- (ii) unsafe conditions or negligence of any materials or components supporting or otherwise touching the Products, (i.e., such as an end user's roof or panels),
- (iii) environmental conditions or load strain or usage of the Products in excess of the maximum amounts stated in the Documentation and/or (iv) standard "force majeure" events that are outside of BSCC's control (war, earthquake, hurricane...etc.)

BSCC's liability for defective Products is limited to replacement, repair or refund, at BSCC's option and shall be conditioned upon Customer's and its end user's (if applicable) complete cooperation with any reasonable investigation by BSCC of the circumstances surrounding the problem and its efforts to schedule replacement. In all cases, if a Product is deemed to be defective, any disposal of the defective Products will be Customer's sole responsibility. For clarity, BSCC shall have no liability to Customer for Structural Defects or other Product defects caused by Customer's or its end user's (or any other party that is not BSCC) negligence, storage, handling or use.



Designed in Brooklyn, New York

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Brooklyn, NY 11215

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Manufactured in Providence, Rhode Island