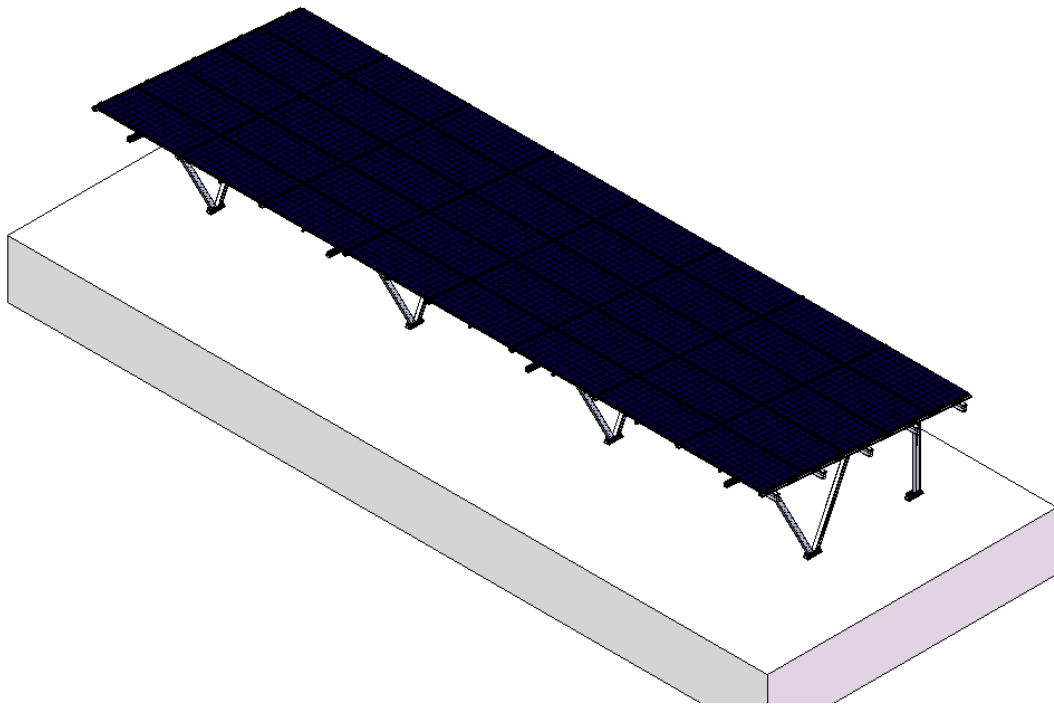




INSTALLATION INSTRUCTION



N-Shape Waterproof Carport
Landscape
Concrete Foundation



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I. Safety Precautions

Thanks for using Antai solar carpark mounting structure, please check the manual carefully before installation and maintenance.

- General notice

- Installation should be proceeded by professional workers, who will follow the installation manual.
- Please follow the local building standards and environmental protection regulations.
- Please follow the labor safety regulations.
- Please wear the safety gears. (especially helmet, boot, glove)
- Please make sure at least 2 installation workers on site in case of emergency.
- Please bring at least 1 set installation manual to the site.

■When installing at height, please set up scaffolds to eliminate the risk of falling before proceeding. Please also use the gloves and safety belts.

■Do not modify Antai's products without permission to prevent accidents and malfunctions.

■Please pay attention to the sharp points of aluminum structures and be careful not to be injured.

■Please tighten all required bolts and screws.

■The wire might be damaged when it touches the profile section during electrical wiring work.

■Please do not use the broken, faulty or deformed products in case of danger.

Requirements








- Please use Antai designated mounting accessories for installation, and do not modify Antai's products in any cases.
- Please do not make strong impact on the profile, while aluminum profile is easy to be deformed and scratched.
- Please note this manual is only for the mounting structures.

II. Product Introduction

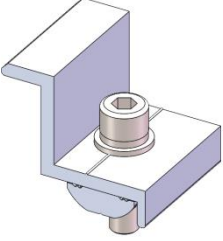
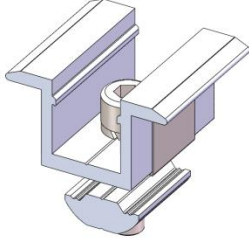
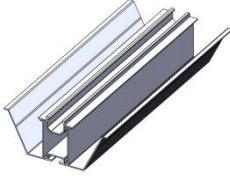
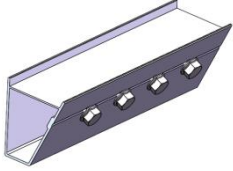
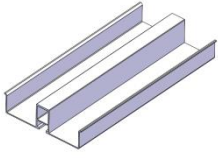
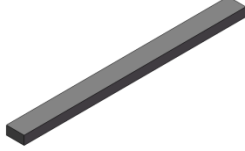
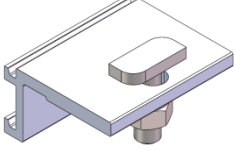
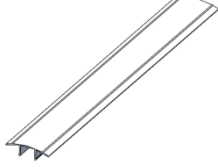
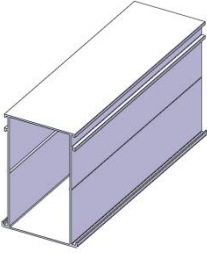
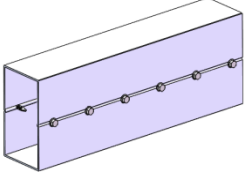
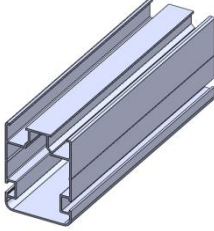
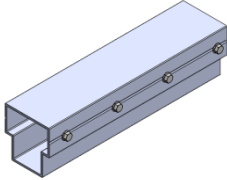
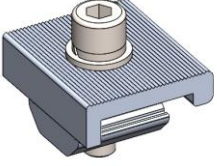
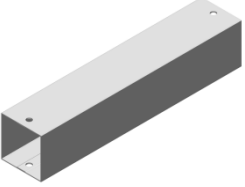
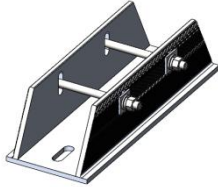
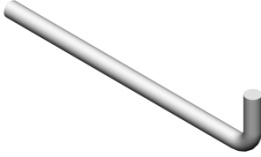
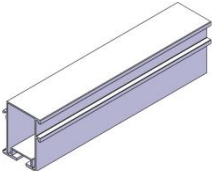
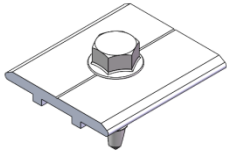
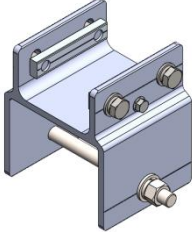
Antai solar carport system is a new and special ground mounting PV system. The high quality, small quantity and highly pre-assembled components greatly save installation time and cost, especially for a large-scale project.

Please read this manual carefully before installation.

III. Installation Tools & Equipment

			
6mm Inner Hexagon Spanner	Electric Drill	Measure tape	Marker
			
Torque Spanner	String	Adjustable spanner	Level
			
Box spanner (M12/M16)			

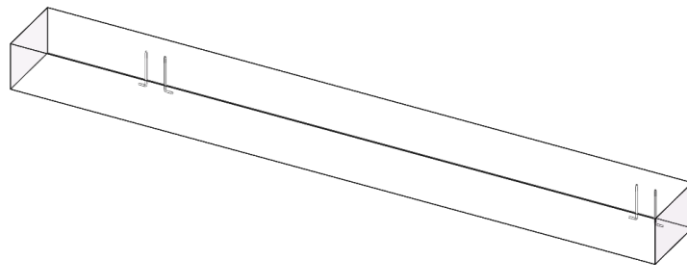
IV. Components

Mian Products			
			
End Clamp	Mid Clamp	Water Guide W Rail	Water Guide W Rail Splice
			
Water Guide U Rail	EPDM	Bottom Rail Clamp	Top Cover
			
Rail	Rail Splice	Beam	Beam Connector
			
Rail Clamp	Pole	Base	L Shape Anchor Bolt
			
Middle Support Rail	Support Mid Clamp	Beam Joints	

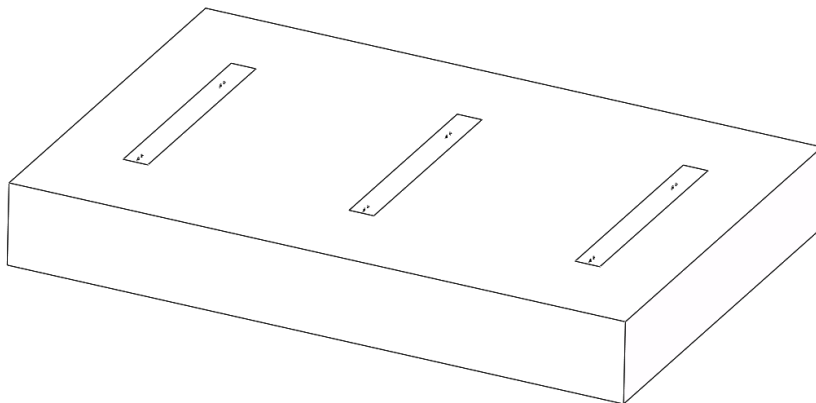
V. Installation Instruction

1. Installation of Concrete Foundation

1.1 The L-shaped anchor bolts are pre-embedded in the concrete, and the spacing between the L-shaped anchor bolts should be based on the spacing between the two holes at the bottom of the base.

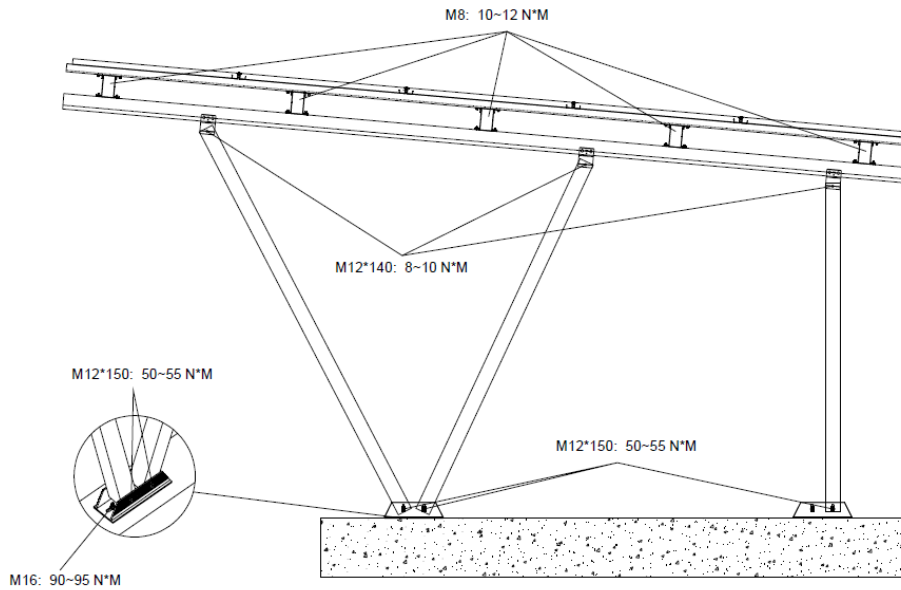


1.2 Before installation, please prepare the required installation tools and corresponding products, and mark the location of each concrete according to the planning of the construction drawings.



Completion diagram of L-shaped anchor bolt placement (when flat)

2. Torque Value of Bolts



The recommended torque value of the bolts at each joint is organized into the following table, and the torque value of the bolts used for spot inspection is recommended to be 0.7 times the installation torque value.

Bolt Type	Recommended Torque Value of Installation(N·m)	Torque Value of Inspection (0.7times) (N·m)
M8(clamps)	10~12	7
M10(U base)	12~15	8
M12(beam)	8~10	5.5
M12(U base)	50~55	35
M12(bottom base)	50~55	35
M14	70~75	49
M16	90~95	63
St6.3*25 self-tapping screw	10~12	7

【Notes】

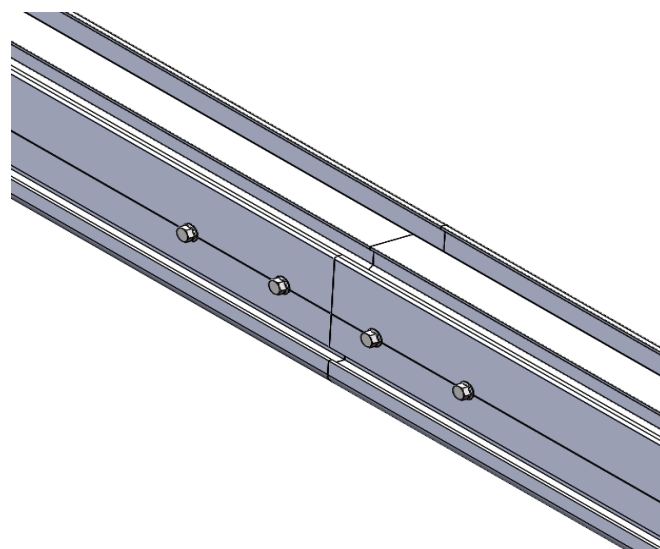
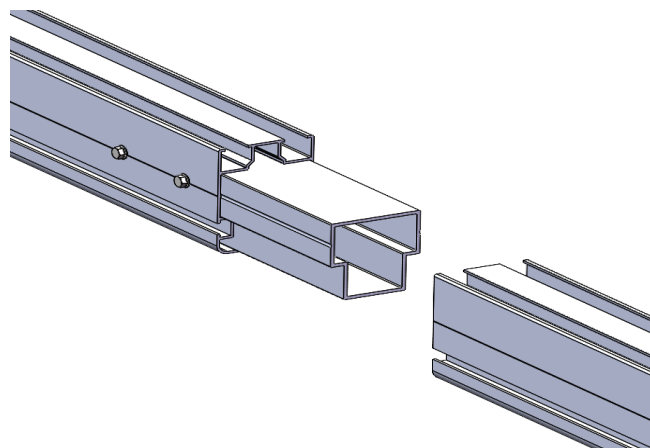
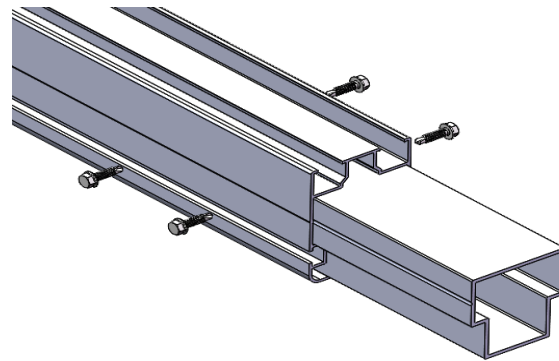
1. During installation, visually lock the bolts until the spring washer becomes flat.
2. During installation, the self-tapping screw should be locked until there is no gap between the transparent plastic washer and the tapping screw head, and also no gap between the tapping screw head and the profile.

3. Installation of Primary Beam

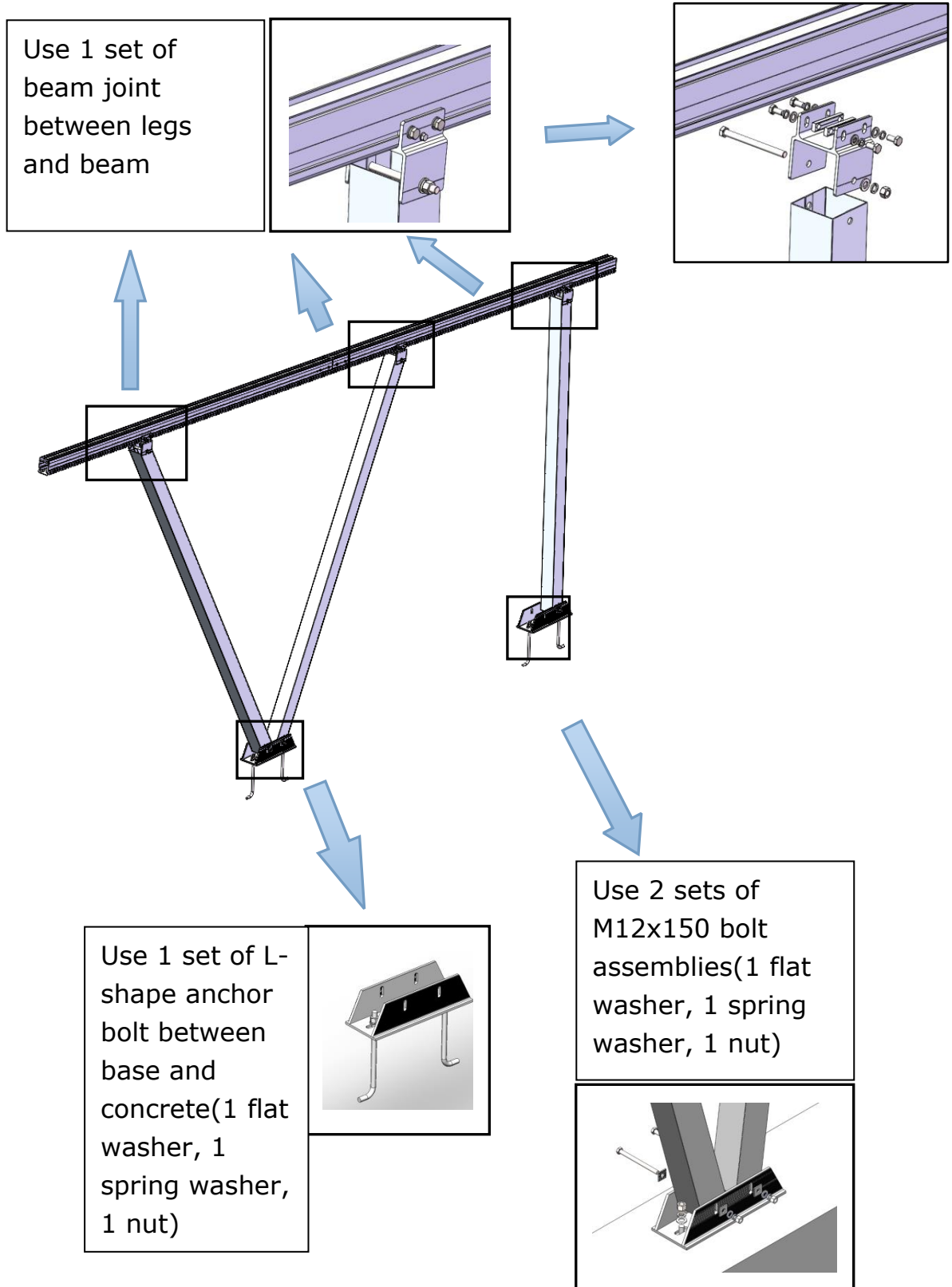
3.1. Connecting 2pcs beams

(Skip this step if the beam is long enough)

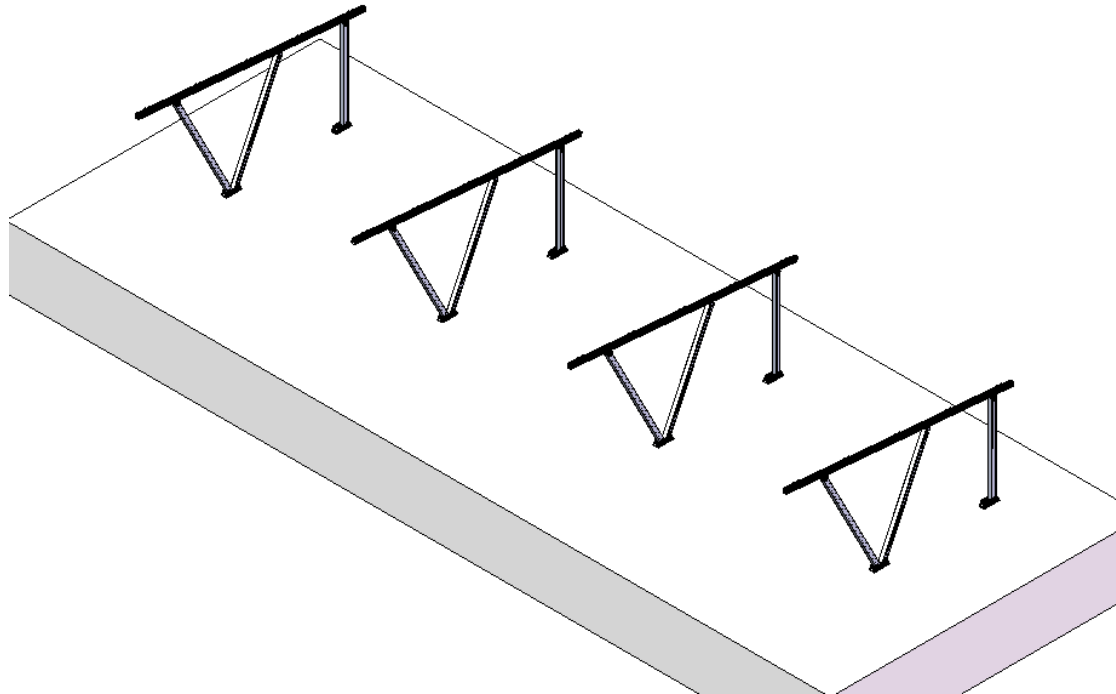
Insert the half beam connector to the first beam and tighten the 2pcs bolts, then insert the other side of connector to the second beam and tighten the rest 2pcs bolts.



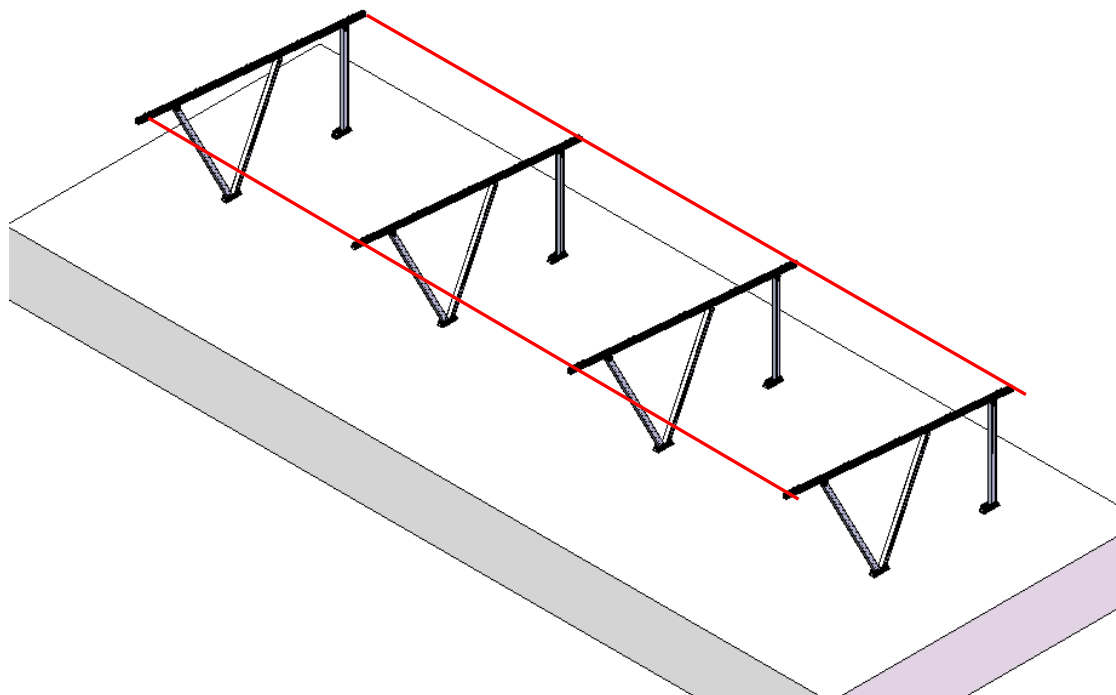
3.2. Connecting poles and beam by the beam joint, the pole is connected with the base through bolts and corrugated gaskets, and the base is fixed with concrete through the L-shaped anchor bolts.



3.3. According to the above instructions, install the leg group to the concrete.



3.4 Also, pay attention to adjusting the size to make the upper surface of the beam on the same level, so as to ensure the smooth installation of the follow-up rails.

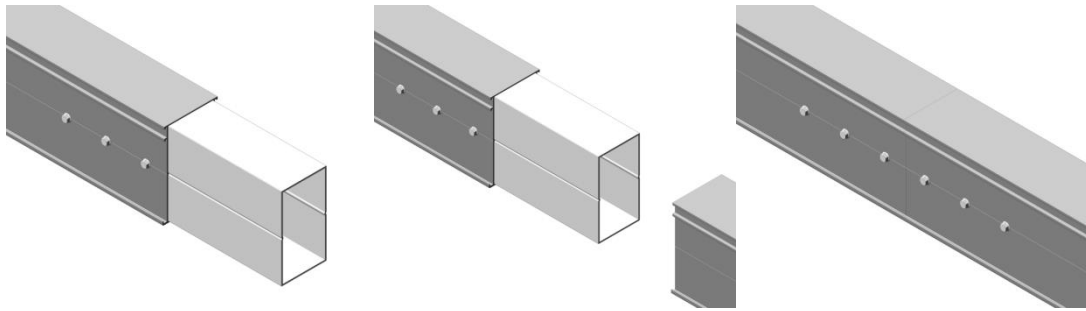


4. Installation of Rail

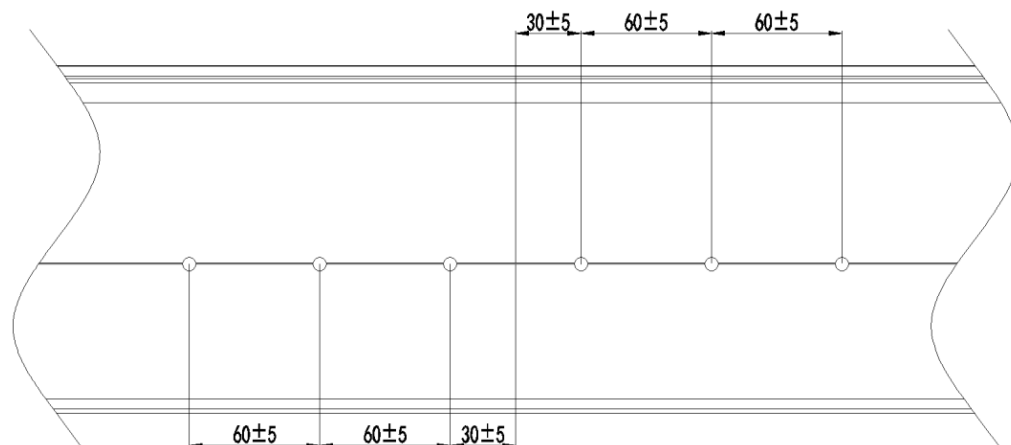
4.1. Connecting 2pcs rails

(Skip this step if the rail is long enough)

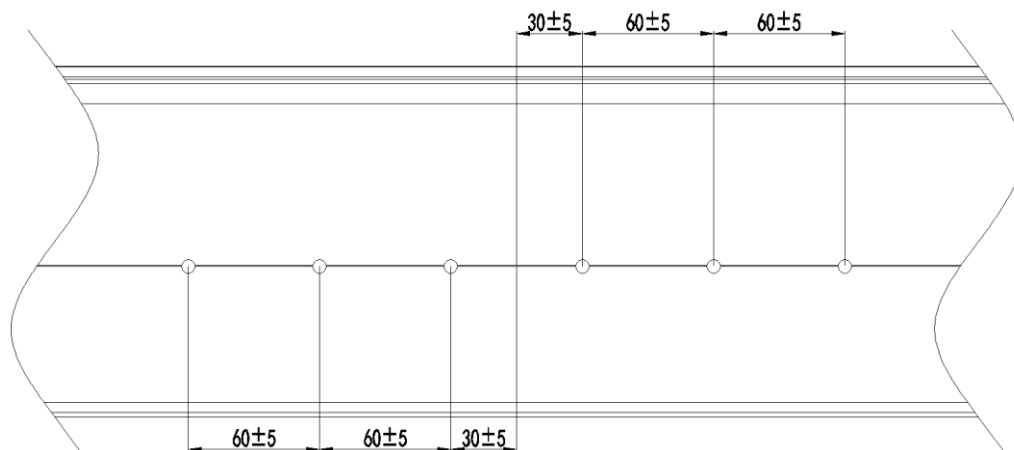
Insert half rail splice to the first rail and fix with 6pcs screws (3pcs each side), then insert rail splice to the second rail and make sure 2pcs rails are tightly close and flat, lastly fixing the 6pcs screws.



Position of screws:

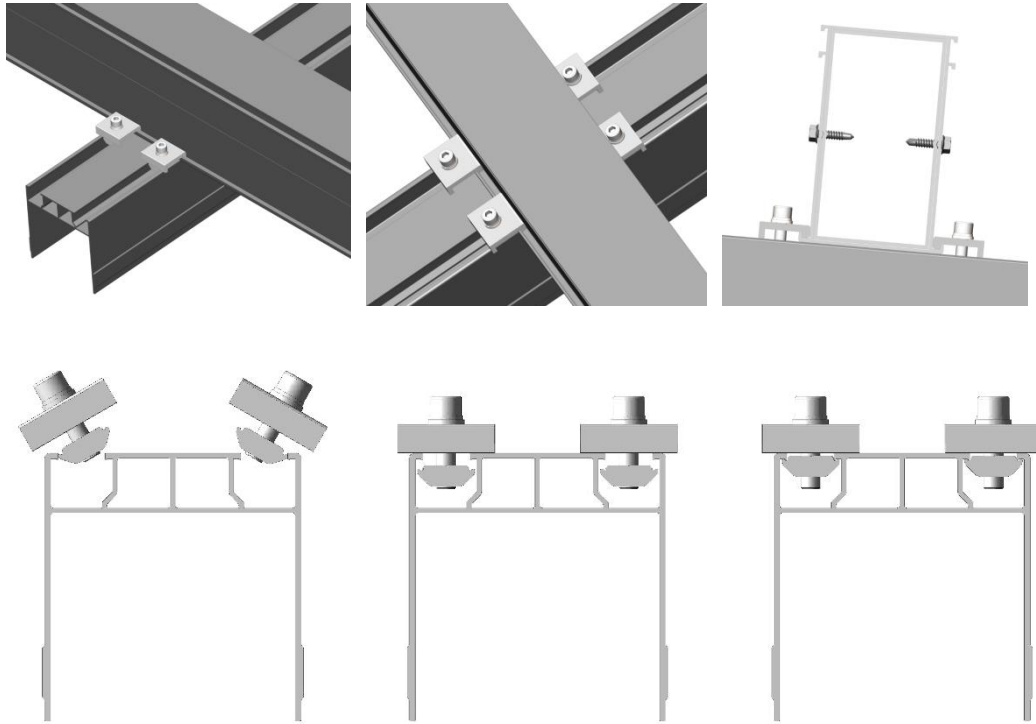


(Front View)

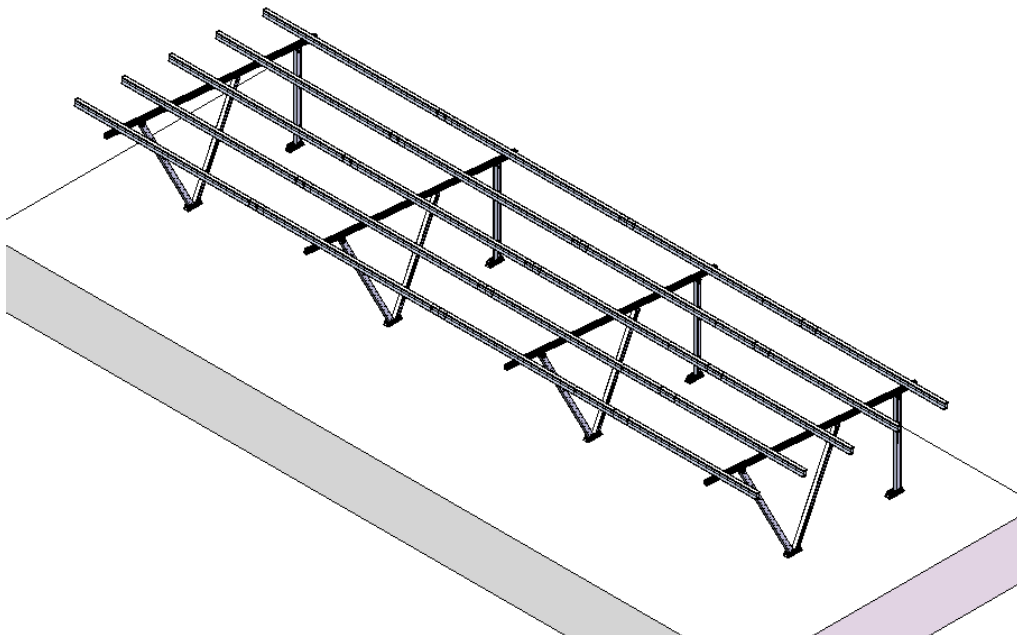


(Back View)

4.2. Fixing the rails on beams by 4pcs rail clamp (2pcs each side)



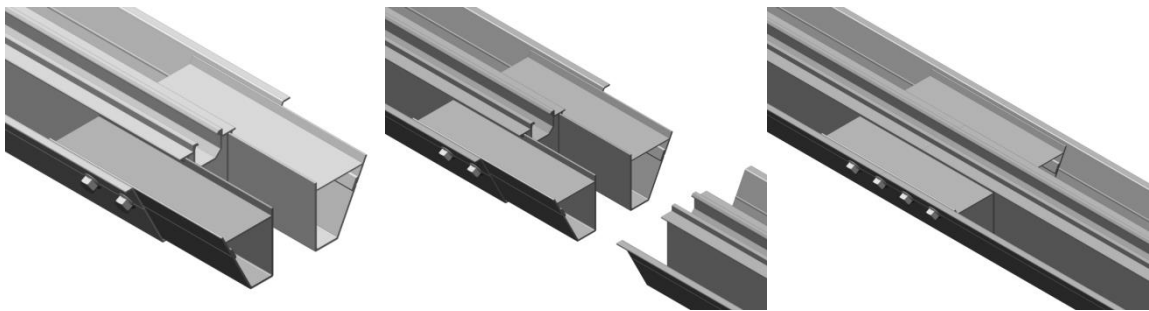
Repeat above steps to install the other rails according to the drawing, and make sure all bolts are tightened. (According to the distance of beams on the drawings).



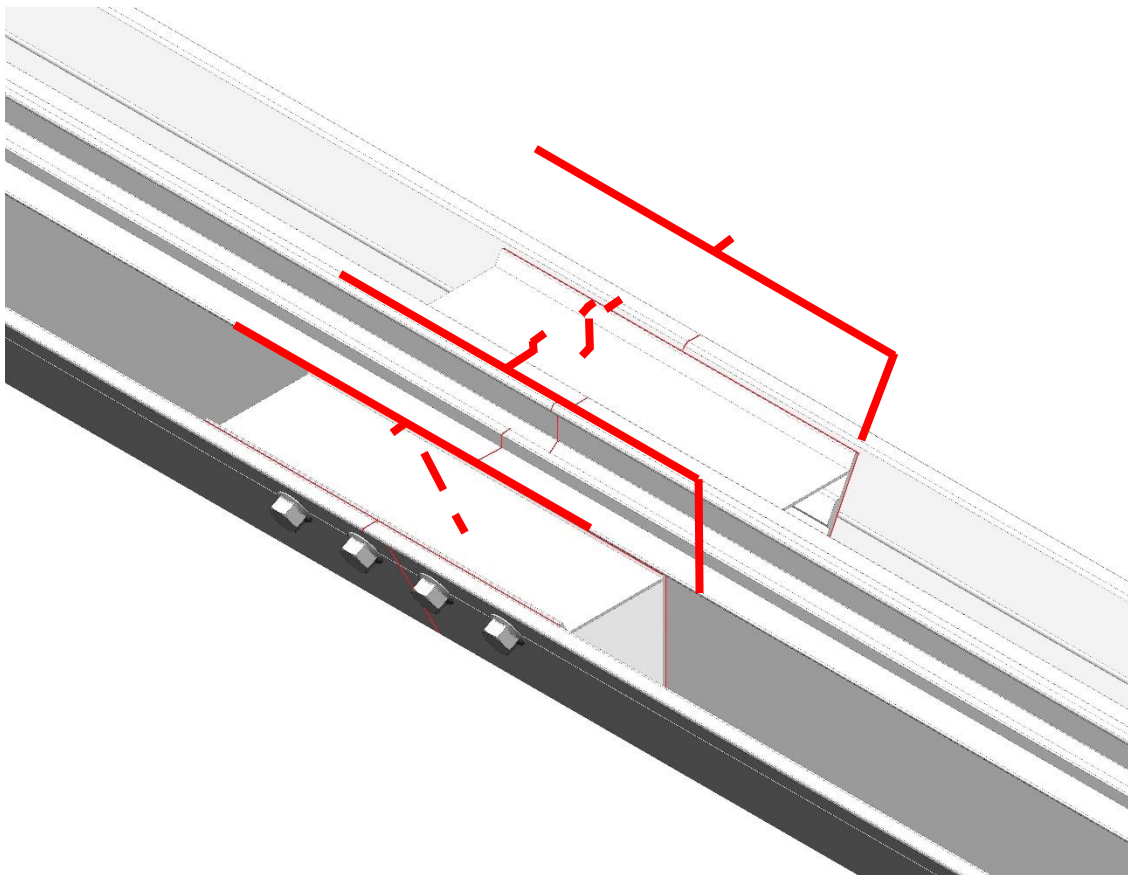
completion drawing

5. Installation of Water Guide W Rail

5.1 Connecting 2pcs rails (Skip this step if the rail is long enough)
Insert half rail splice to the first rail and fix with 4pcs screws (2pcs each side), then insert rail splice to the second rail and make sure 2pcs rails are tightly close and flat, lastly fixing the 4pcs screws. The W rail is equipped with 2 sets of rail splices (one on the left and the other on the right), please note that two sets rail splices need to be inserted at the same rail joint.

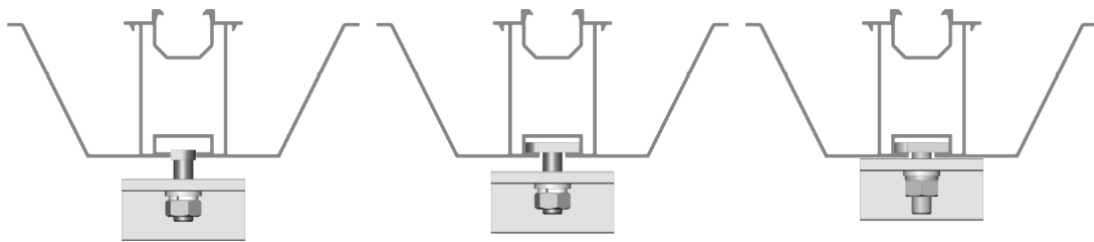
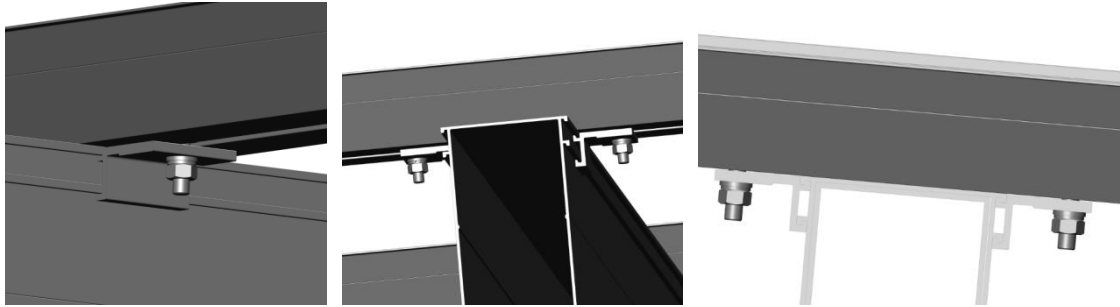


5.2. Apply structural waterproof sealant to the water guide W rail joints (skip this step if rail splices are not used).



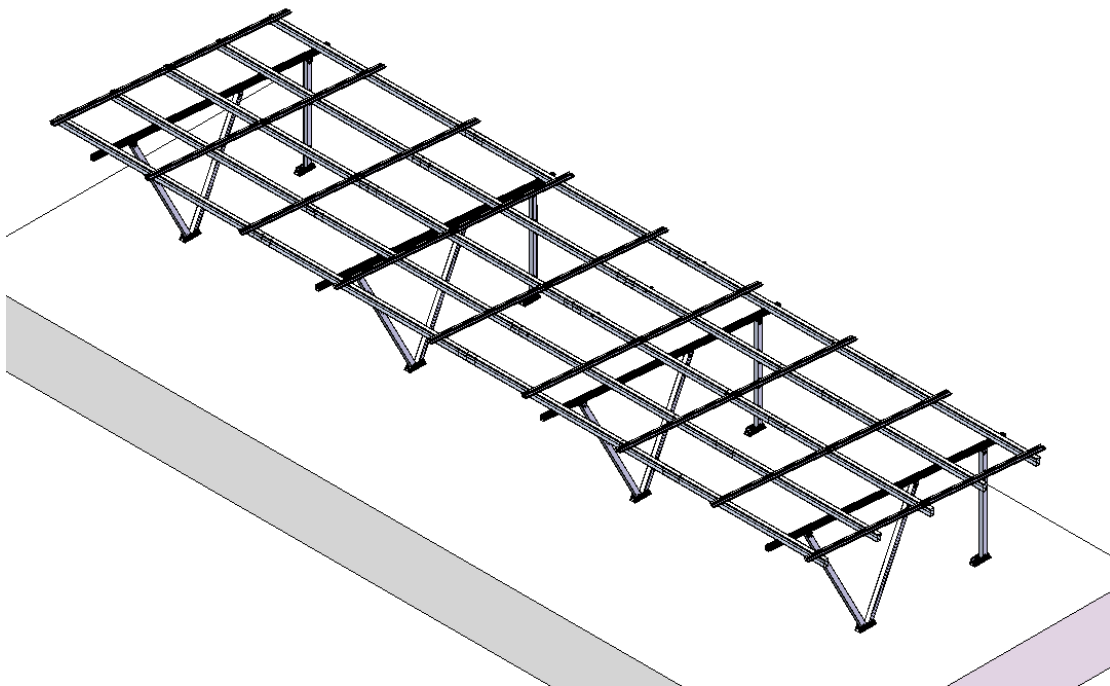
Gluing completion of the rail joint (glue in red)

5.3. Fix the water guide W rail to the rail with a bottom rail clamp (one on each side).



Installation diagram of the bottom rail clamp (note the direction of the T-bolt)

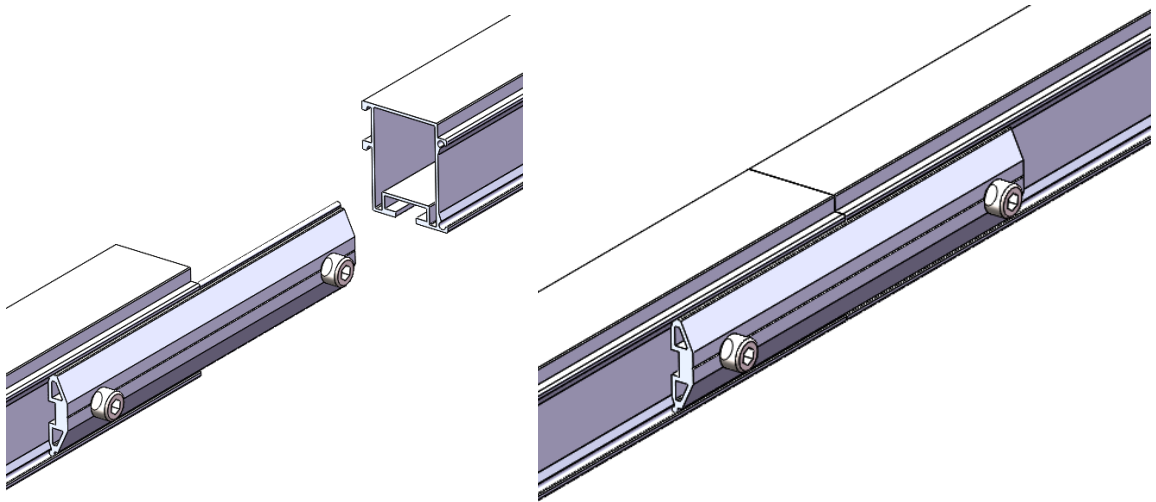
5.4 According to the above steps, please determine the installation spacing of the rails according to the drawings and install them in turns. Repeat the above steps and assemble the rails according to the drawing. Make sure the bolts are tightened.



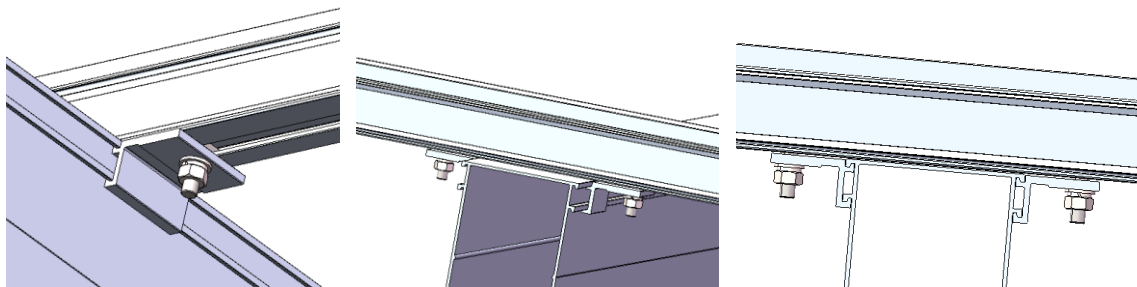
6. Installation of Middle Support Rail

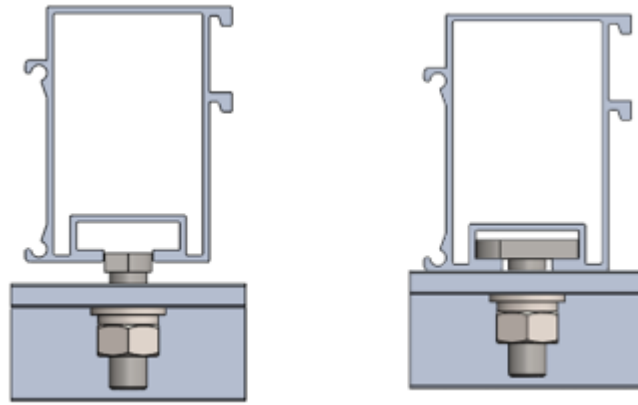
6.1. Connecting 2pcs middle support rails (Skip this step if the rail is long enough)

Insert half rail splice to the first rail and fix with 4pcs screws (2pcs each side), then insert rail splice to the second rail and make sure 2pcs rails are tightly close and flat, lastly fixing the 4pcs screws. The rail is equipped with 2 sets of rail splices (one on the left and the other on the right), please note that two sets rail splices need to be inserted at the same rail joint.



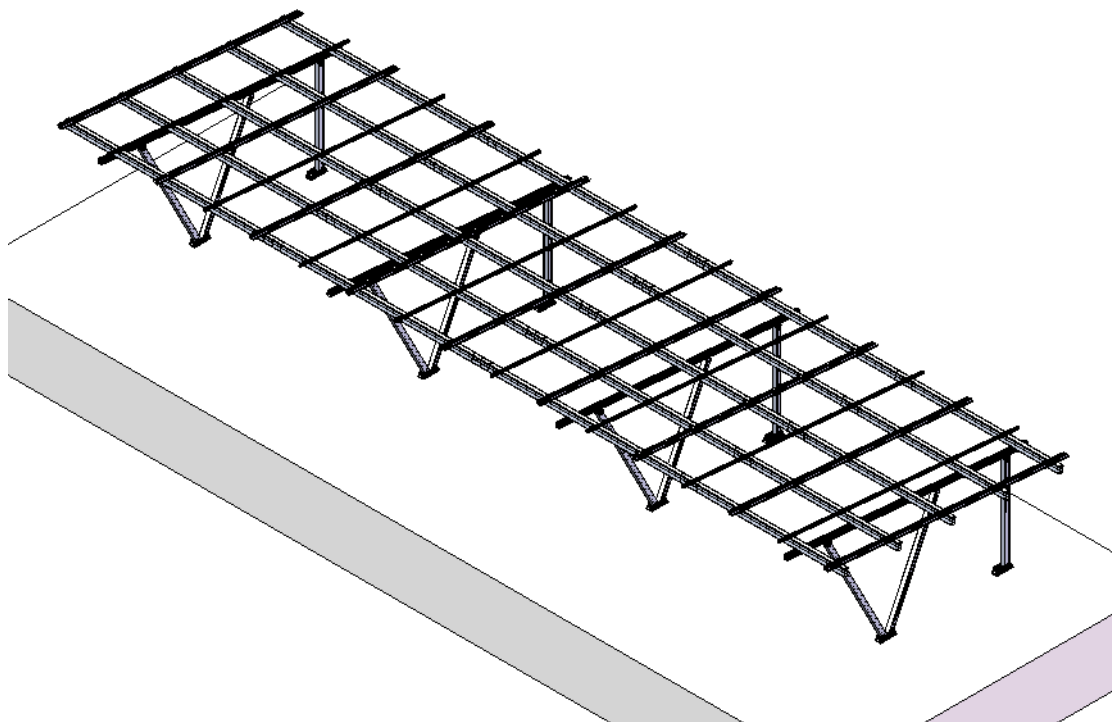
6.2. Fix the middle support rail to the rail with a bottom rail clamp (one on each side).





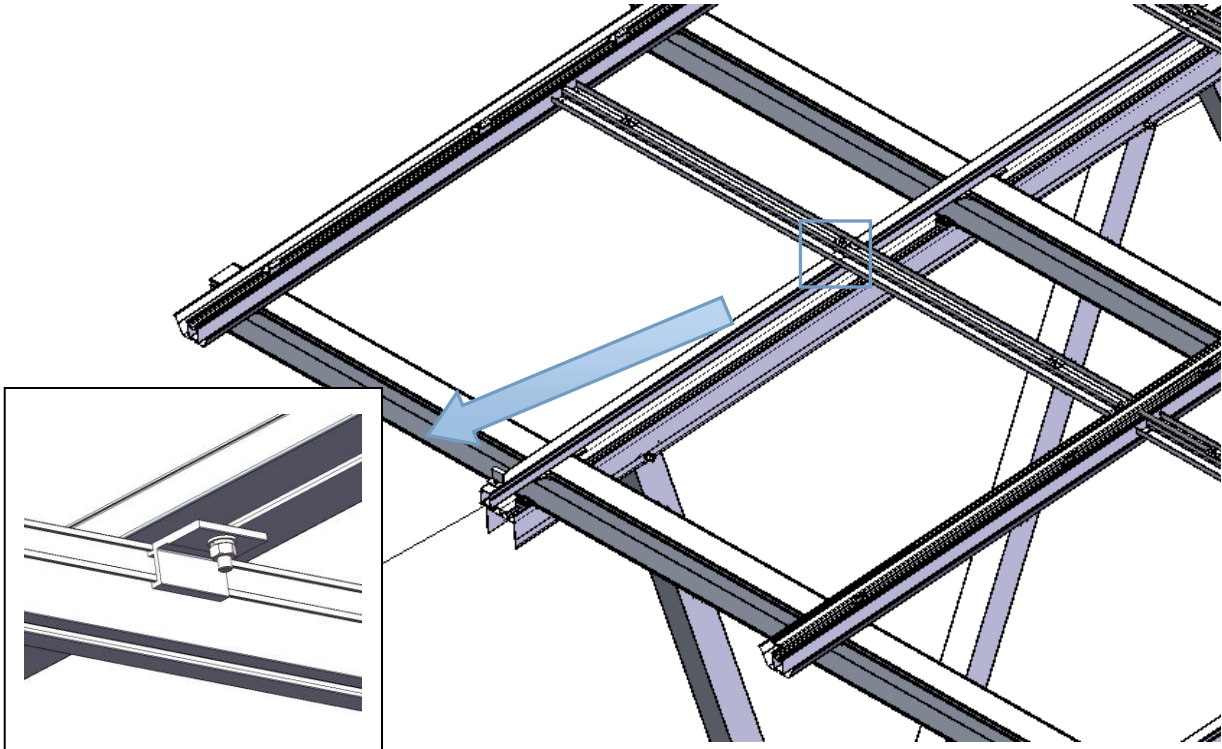
Installation diagram of the bottom rail clamp (note the direction of the T-bolt)

6.3 According to the above steps, please determine the installation spacing of the rails according to the drawings and install them in turns. Repeat the above steps and assemble the rails according to the drawing. Make sure the bolts are tightened.

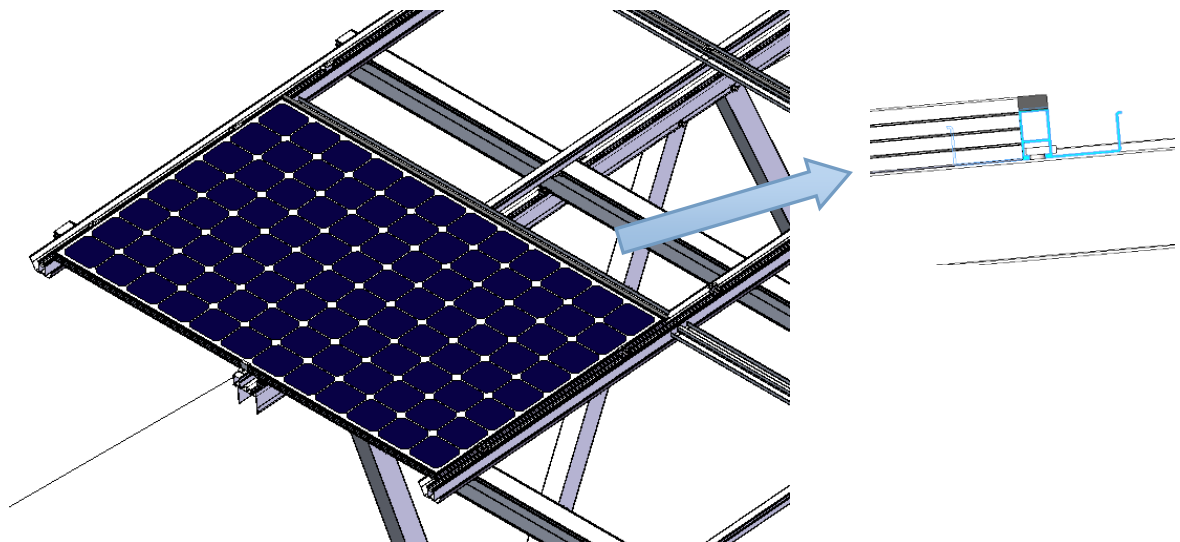


7. Installation of Panel

7.1 As shown below, place the water guide U rail on the corresponding position of the two adjacent water guide W rails, that is, the middle position of the upper and lower adjacent panels.



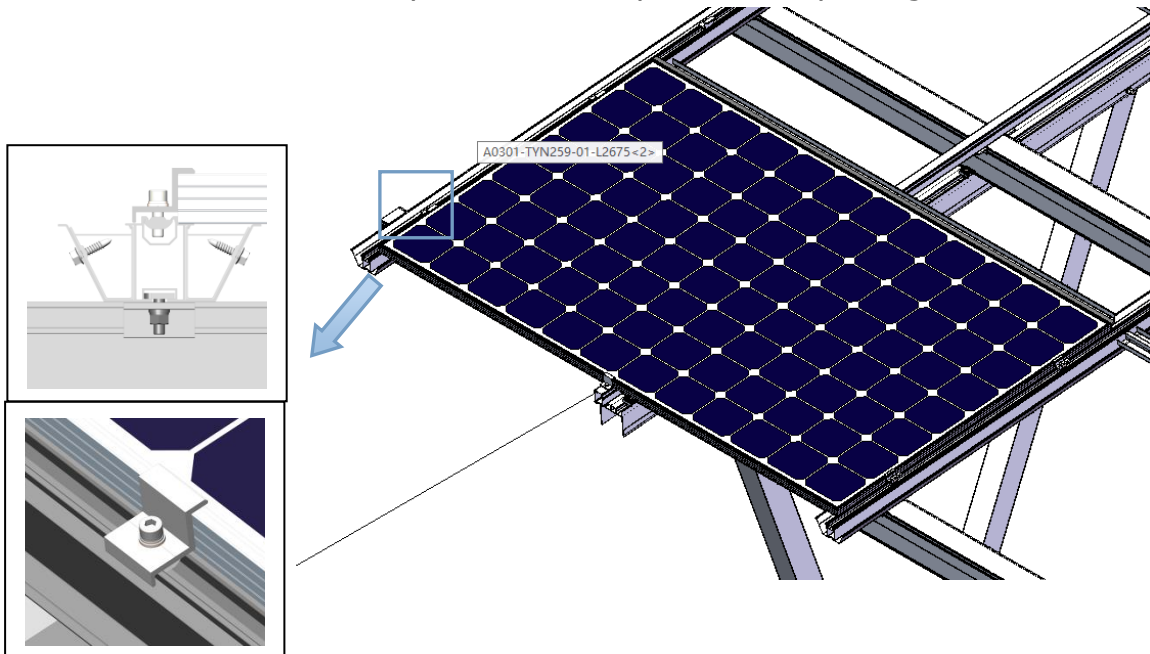
7.2 Place the panel on the rail so that the lower end is flush with the lower end of the water guide W rail. It is recommended to install it from bottom to top and from left to right. A water guide U rail should be placed at two adjacent panels. The placement is as shown below.



7.3 Use mid clamps and end clamps to fix the panels on the rails.

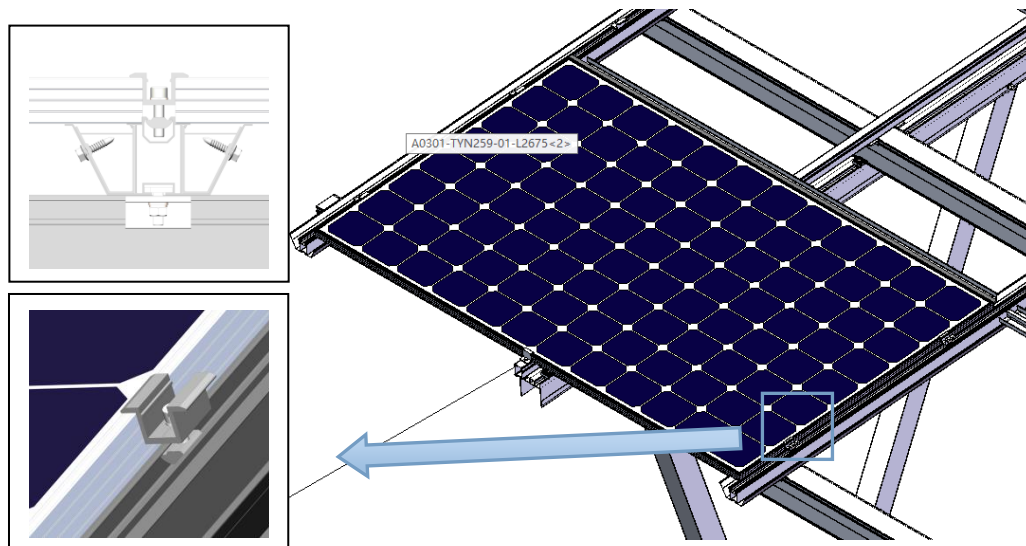
a. Installation of end clamp

Screw the T model to the end of the bolt, and slide it into the rail.
Move the end clamp to the fixed position to pre-tighten.



b. Installation of mid clamp

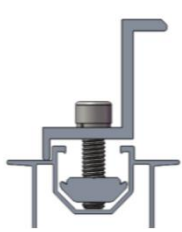

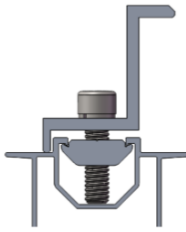
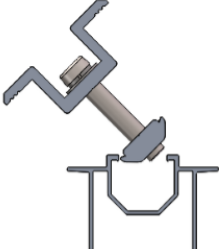
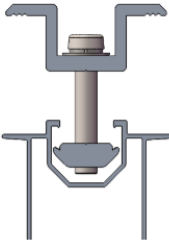
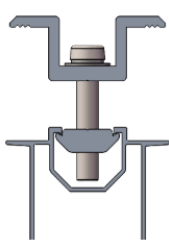
Screw the T model to the end of the bolt, and slide it into the rail.



Move the mid clamp to the fixed position to pre-tighten.

c. Lay the entire row of panels, adjust the position, and tighten the bolts of the end clamps and mid clamps.

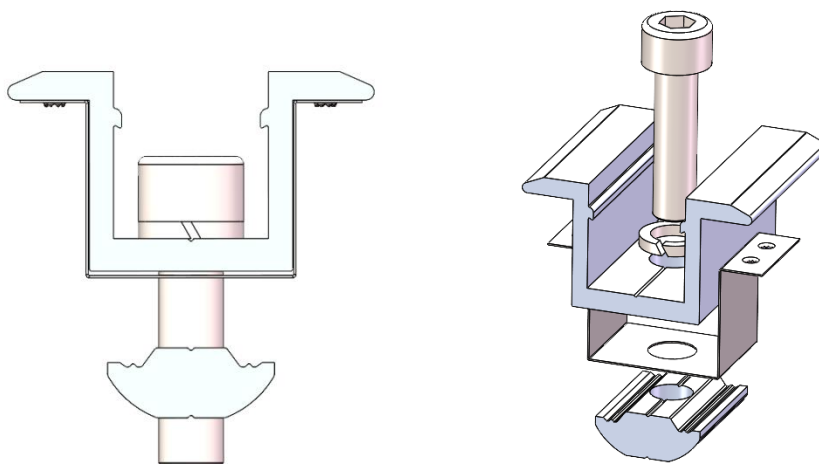
©Please pay attention not to make the gap between the panel and rail too large. (Gap allowed range $\leq 3\text{mm}$)

Clamps installation			
End clamp			
Mid clamp			

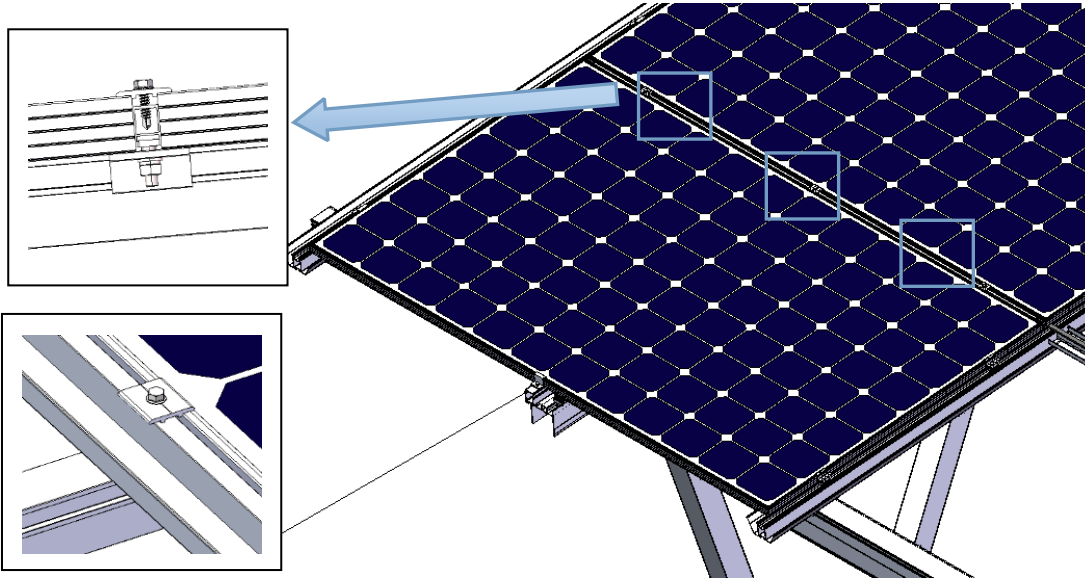
【Notice】 :
 ©The positions of clamps should refer to the requirements from panel supplier and design drawing.

d. Installation of the grounding lug

Insert the earthing clip into the mid clamp and install them together.

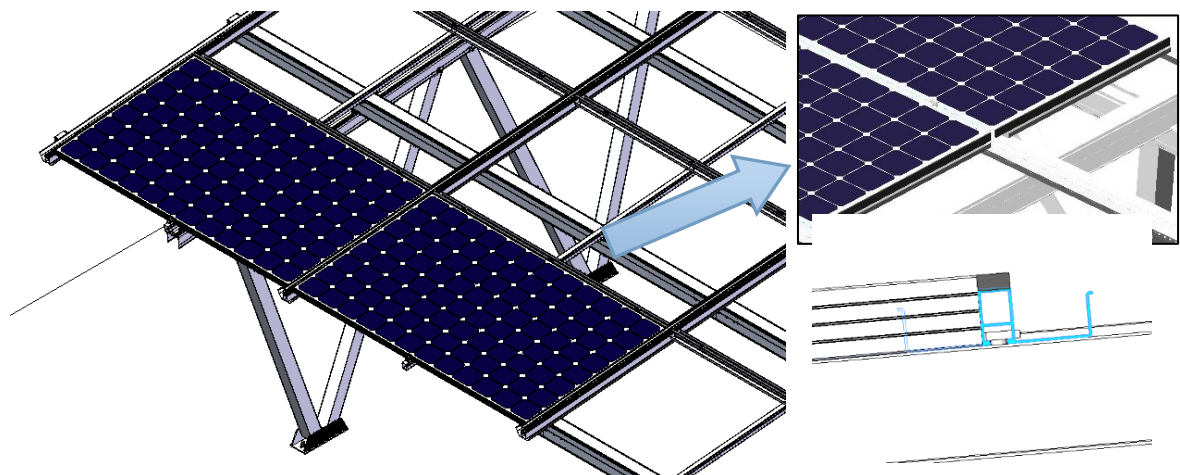


e. Installation of the support mid clamp
Drive the self-tapping screws into the middle support rail and fix the panel at three points

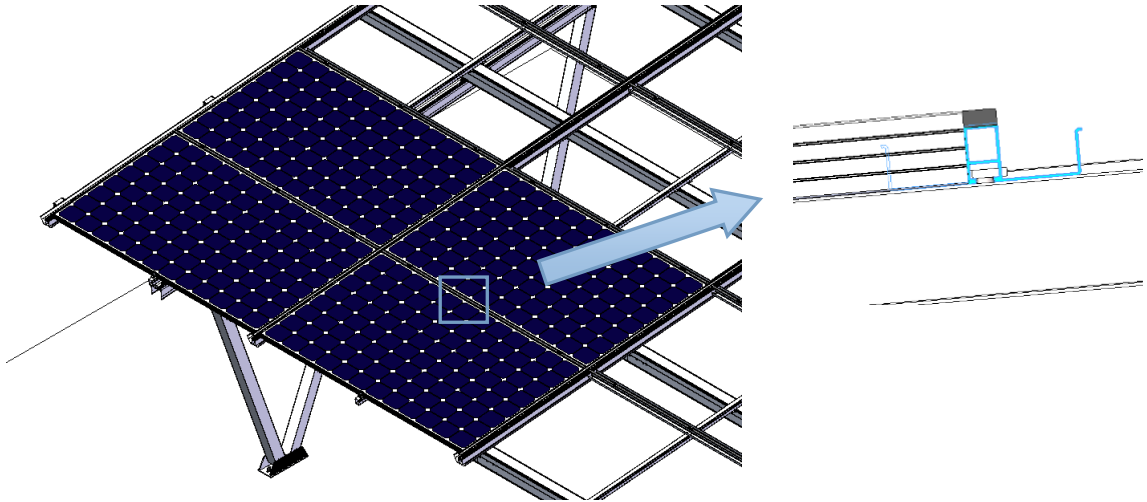


Move the mid clamp to the fixed position to tighten.

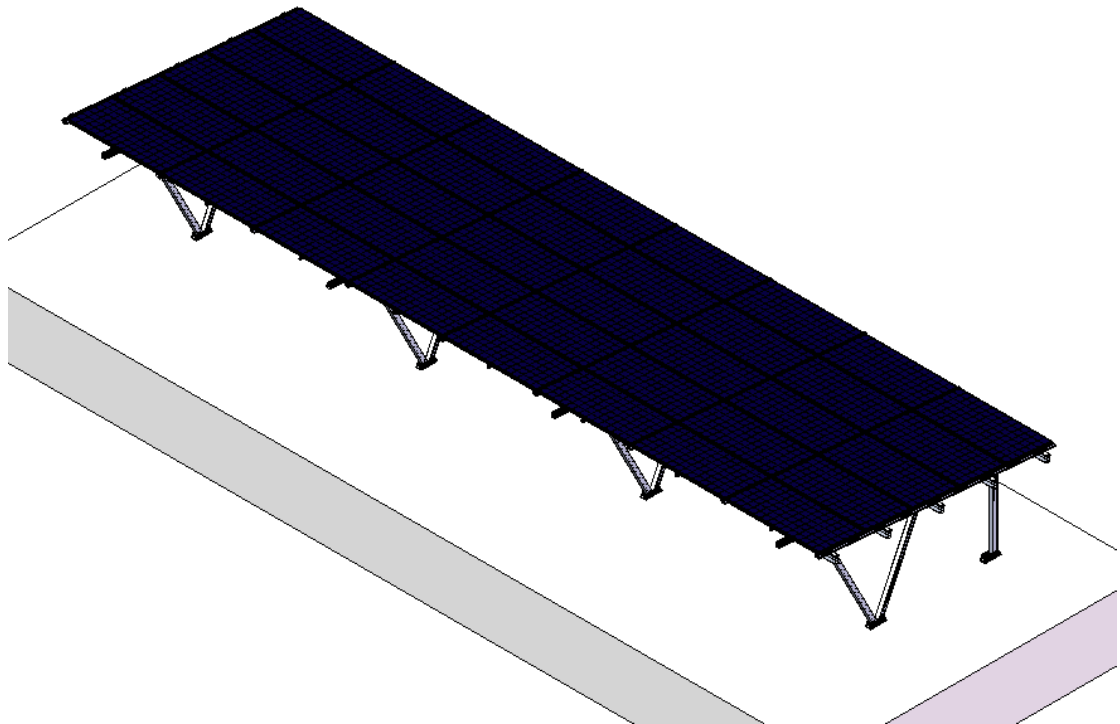
7.4 Attach EPDM to the long sides of adjacent panels, as shown below;



7.5 Put in the next panel. Insert the frame of the first panel into the horizontal water guide U rail and push it slightly to increase the EPDM sealing performance, as shown in below;



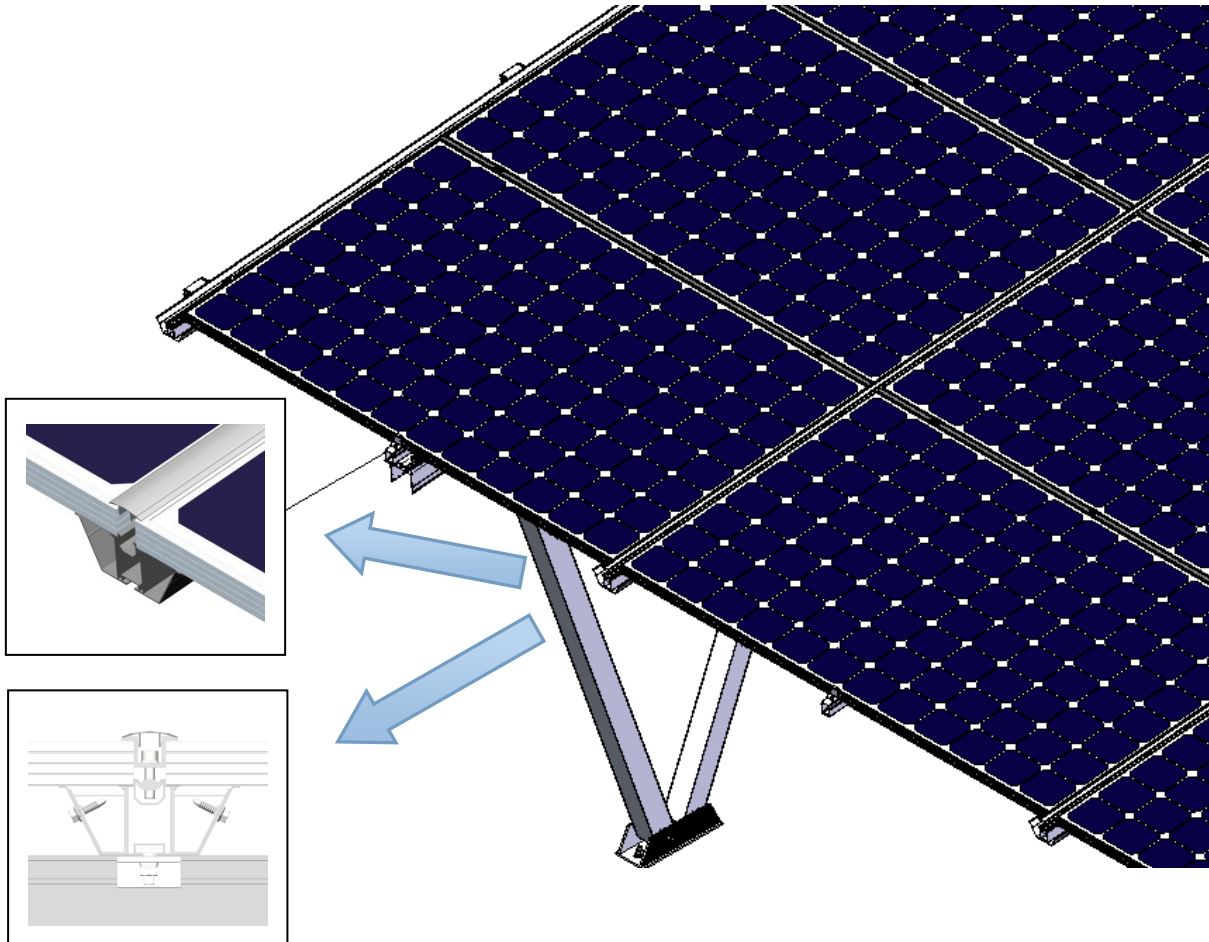
7.6 Repeat the above steps and install the panel according to the drawing. Note that the horizontal water guide U rail and EPDM need to be installed when there are adjacent panels in the upper and lower directions.



Panel installation completed picture

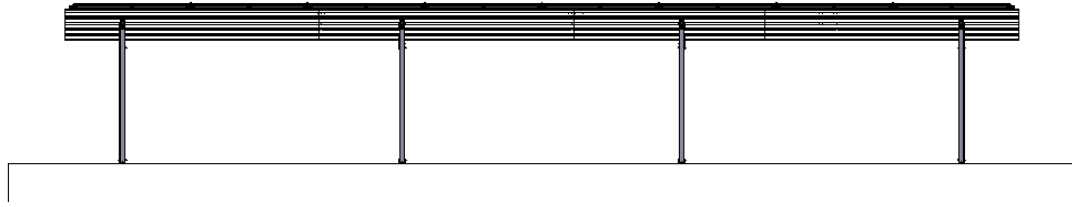
8. Installation of Top Cover

8.1 Place the top cover on the corresponding mid clamp and press it into the corresponding position. There is no need to use connectors to connect two adjacent top covers.

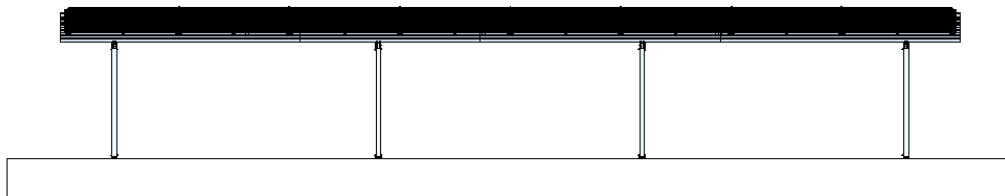


Repeat the above steps to install all top covers.

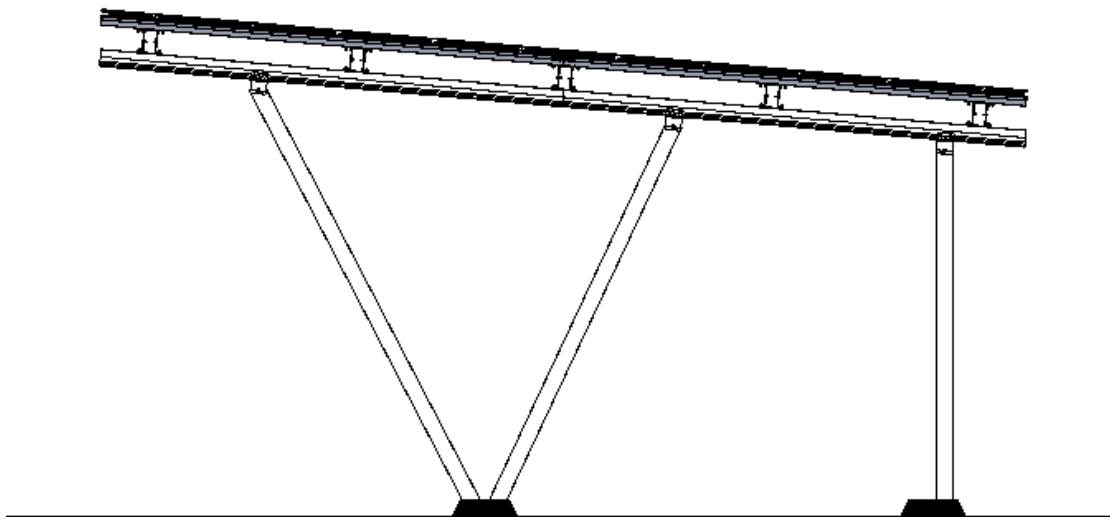
9. Finish installation



Front View



Rear View



Side View

VI. Notice

6.1. Size attention for engineering installation

All the dimensions involved in engineering installation should be in line with the construction drawing. The installation instructions shall be only used for explaining the products installation method.

6.2. Attention for stainless steel fasteners installation

Because of the good ductility for stainless steel, the fasteners have big difference with carbon steel one in nature. If use in improper way, it will result in bolt and nut being "locked" which commonly known as "seizure". Prevention of lock basically has the following the basic prevention ways from locked.

6.2.1. Reducing the friction coefficient:

- (1) Ensure that the screw thread surface is clean (no contrast, clutter);
- (2) Recommend that installation surface use water wax or add lubricant on surface during installation. (Such as butter, 40 # engine oil);

6.2.2. The correct method of operation:

- (1) Must be perpendicular to the axis of the screw thread when screwing, can never be tilt.
- (2) In the process of tightening, the strength need to be balanced, tightening torque shall not exceed the prescribed safety torque value;
- (3) Choose torque wrench or socket wrench as far as possible, avoid using adjustable wrench or electric wrench.
- (4) Do not use it when the temperature is high; do not use it with high speed spin; avoid to be locked by rapid rise of temperature. (Such as electric wrench, etc.

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