

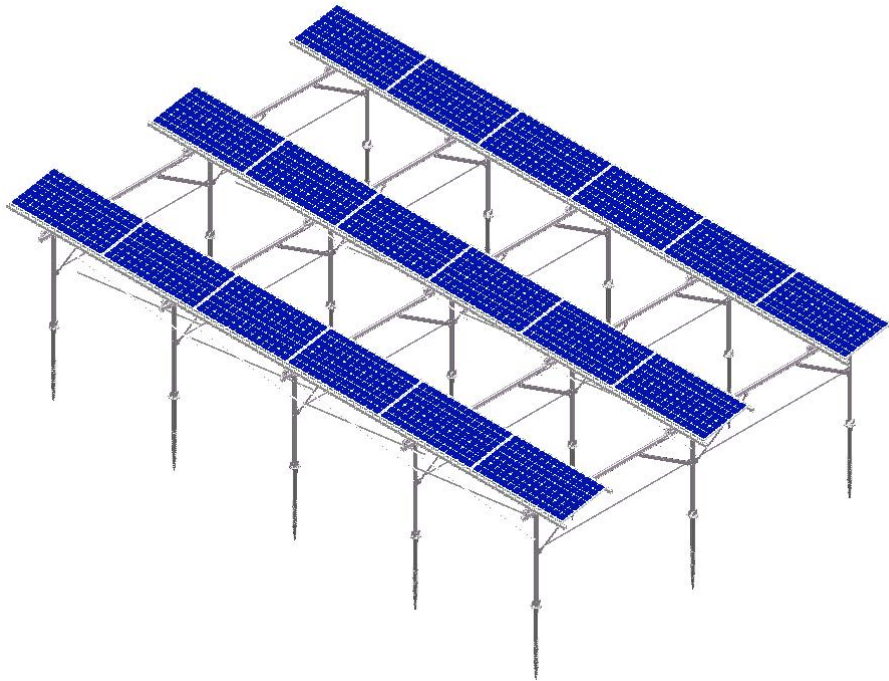
INSTALLATION INSTRUCTION



Agricultural Solar System



ANTAI
Aluminum & AI Tech for Solar



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I. Safety Precautions

Thank you for purchasing Antai mounting structure. Please check the manual carefully before installation, operation and maintenance.

● General Notes

- The installation is limited to those who have professional experience and can carry out construction according to the specified items.
- Please abide by the local national or local building regulations and environmental protection regulations.
- Please comply with the regulations on the prevention of industrial accidents and the relevant regulations of the insurance union.
- Please wear safety clothes. (Especially protective helmets, work boots and gloves)
- There must be at least 2 operators during installation to prevent accidents.
- Please always prepare at least one installation instruction when installing.

- When working at heights, please set up scaffolds and carry out construction after eliminating the danger of falling. Please use gloves and safety belts.
- To avoid accidents or malfunctions, please do not arbitrarily change the product style.
- Please pay attention to the profile section and sharp parts, and avoid collision and injury during construction.
- Please pay attention to tightening the bolts, nuts, self-tapping screws, etc. of each part, and pay great attention to whether they are locked.
- When working on electrical wiring works, please pay attention not to touch the profile section, which may damage the wiring.
- Please do not use damaged, faulty, or deformed products in case injury or accident happens.









- Please use the accessories designated by our company for construction parts, and do not arbitrarily transform or change the products.
- Please avoid hitting strongly on the profile as aluminum profile is easy to deform or scratch.
- This information is related to the installation of the system. Please consider the characteristics of the structure during the construction of the foundation, modules, inverters, and electrical wiring.

II. Product Introduction

Antai agricultural mounting system is a highly pre-assembled PV solar system. The preassembly of main support beam is more convenient for the installation. The highly pre-assembled feature, high quality, and few quantities of components, saving user's installation time and cost a lot, is a high-efficiency solar mounting system solution on both level land and small mountain.

Please read the manual carefully before installation!

III. Installation Tools & Equipment

			
6mm Allen Key	Electric Drill	Tape Measure	Markers
			
Torque Spanner	String	Adjustable Wrench	Pile Driver
			
Level	Socket Spanner (M10/M14)		

IV. Components

Components			
			
End Clamp	Angle Alu	Rail	Rail Splice
			
Triangular Rack	Rail Clamp	Beam	Beam Splice
			
U Base (Beam)	U Base (Pole)	Pole - Leg	Pole - Bracing
			
Base	Earthing Clip	Grounding Lug	
			
Ground Screw			

V. Installation Instruction

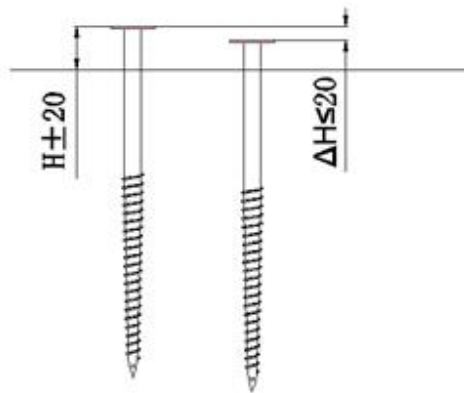
1. Driving of Piles

Please prepare all necessary tools and products, then mark the positions of ground screw according to the shop drawing.

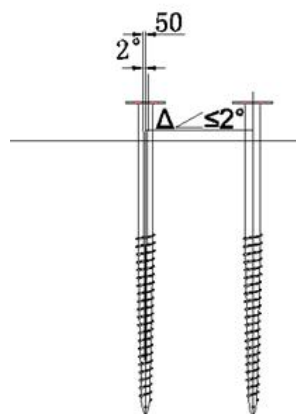
1.1 Tolerance of screw driving

1.1.1 Tolerance for Vertical Direction

a. Tolerance of screw height: $\Delta H \leq 20\text{mm}$



b. Tolerance of screw tilting: tilt angle $\leq 2^\circ$ and horizontal deviation $\leq 50\text{mm}$



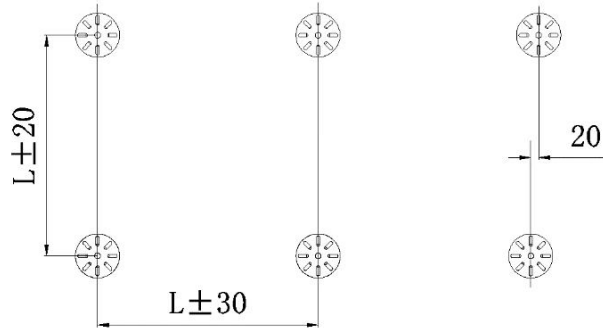
1.1.2 Tolerance for Horizontal Direction

When E-W direction is flat ground:

tolerance in east and west direction $\leq 30\text{mm}$.

tolerance in north and south direction $\leq 20\text{mm}$.

The horizontal tolerance of the adjacent piles in the north-south direction is $\leq 20\text{mm}$. (see the figure below)



[Summary of tolerance]

Please adjust the ground screw position according to the tolerance below:

East-West direction: within $\pm 30\text{mm}$

North-South direction: within $\pm 20\text{mm}$

Height tolerance for adjacent piles in north-south direction: within $\pm 20\text{mm}$

Tolerance for vertical deviation: deflection angle within $\pm 2^\circ$ & deflection within 50mm

[Notes]:

- © During express transportation and on-site moving, please be careful to avoid the damage of galvanized layer caused by collision.
- © During installation, if the components knock against heavy objects and the galvanized layer is damaged, they should be immediately painted with zinc-rich epoxy primer to make sure the zinc coated layer is thick enough.

1.2 Equipment for ground screw driving (for reference)

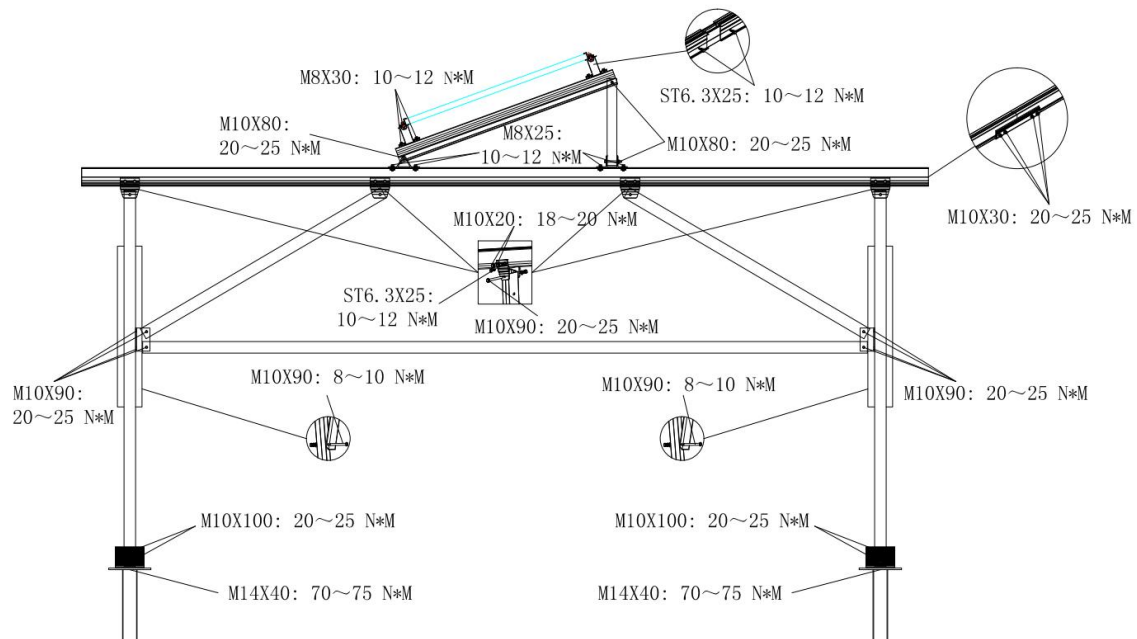


1.3 Please install the ground screws according to the prepared shop drawing.



Drawing of ground screws installed (on flat ground)

2. Torque Value of Stainless-steel Bolt



As shown in the image above, the recommended torque values of bolt at each point are listed below. And it is recommended that the testing torque value is 0.7 times of the installation torque.

Bolt size	Recommended Torque Value for Installation (N·m)	Recommended Torque Value for Inspection (0.7times) (N·m)
M8(Clamp)	10~12	7
M10(Beam and rail splice)	20~25	14
M10(U base)	20~25	14
M10(Nut)	18~20	12.5
M10(Base)	8~10	5.5
M10(Base)	20~25	14
M14	70~75	49
St6.3*25 Tapping screw	10~12	7

Notes:

1. The torque values above are recommended by Antai. Meanwhile, please also pay attention to the followings:

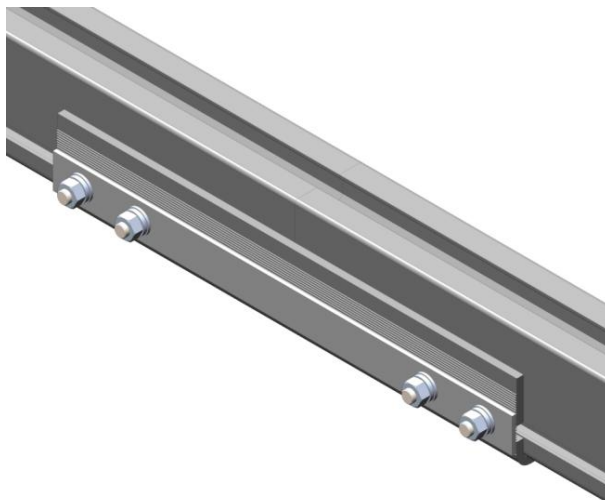
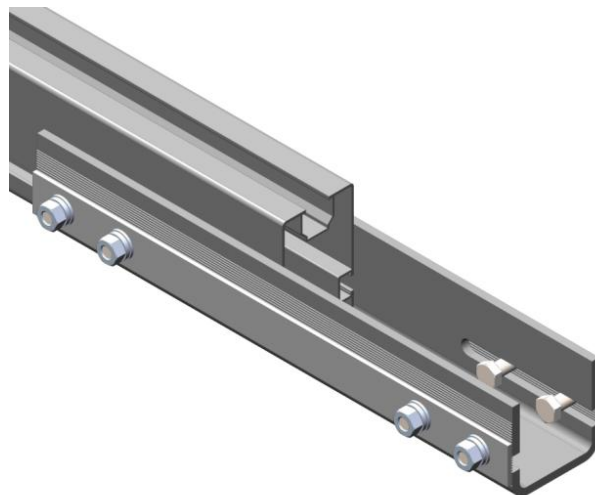
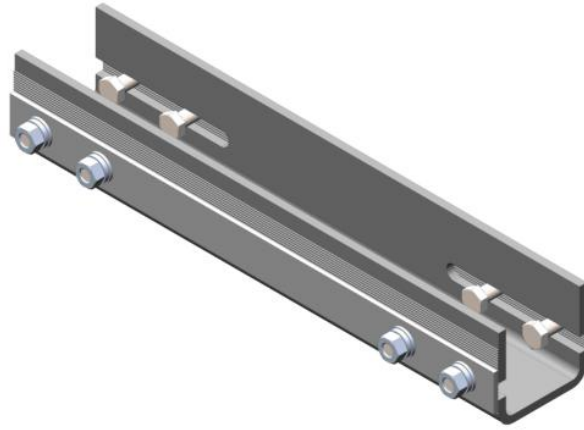
- During installation, lock the bolts until the spring washer becomes flat.
- During installation, the self-tapping screw should be locked until there is no gap between the transparent plastic washer and the tapping screw head, and also no gap between the tapping screw head and the profile.

2. The inspection can be carried out according to the torque value recommended by our company (0.7 times of the installation torque value).

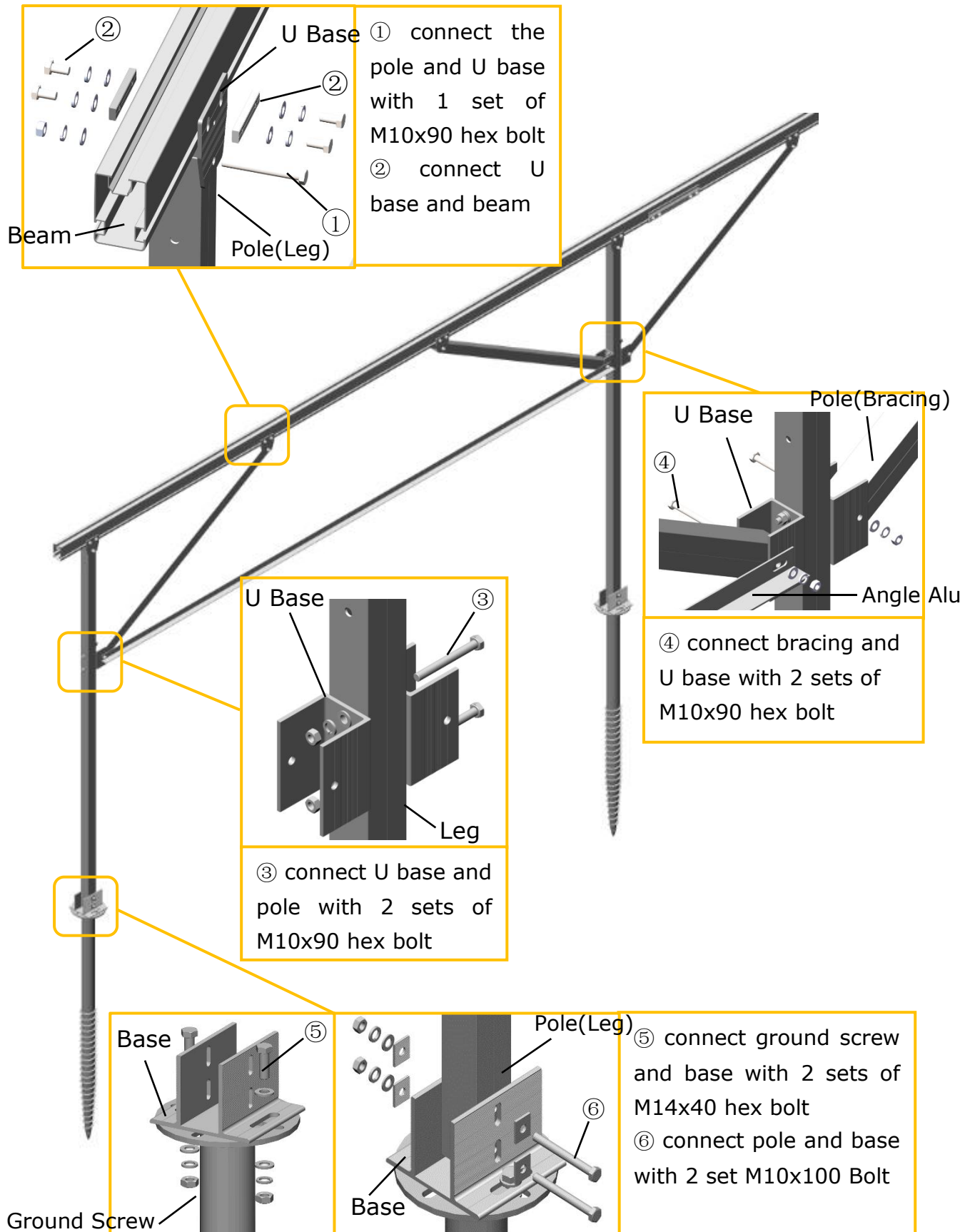
3. Installation of Beam

3.1 Installation of beam splice

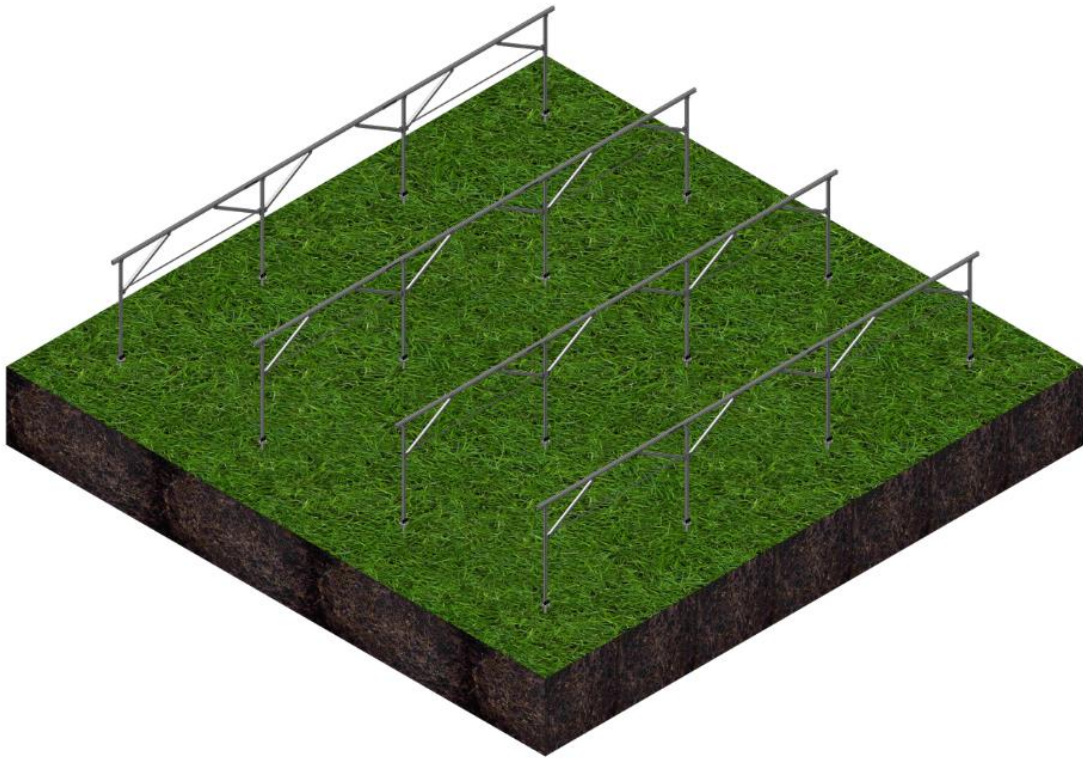
Insert 1pc beam into the middle of the beam splice and tighten the 2pcs bolts on both sides where the beam inserted. Then insert the another 1pc beam into the splice, align 2pcs beams, and tighten the rest 2pcs bolts.



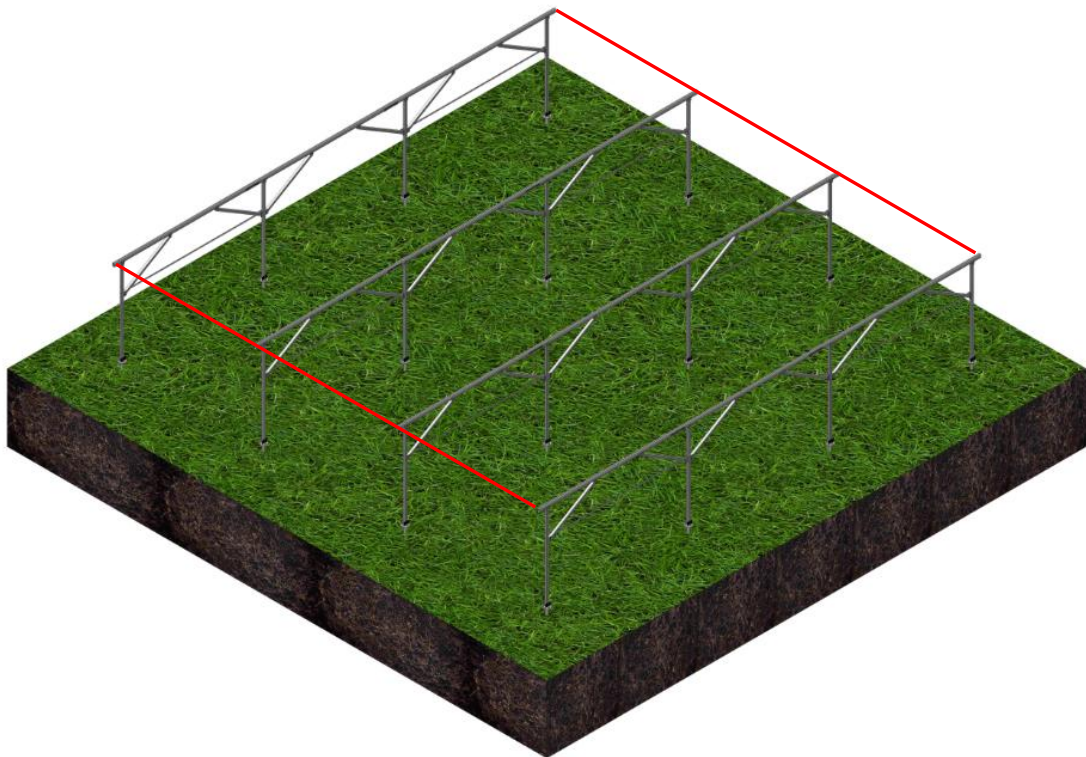
3.2 As shown in the picture below, connect and fix each part through the corresponding accessory combination.



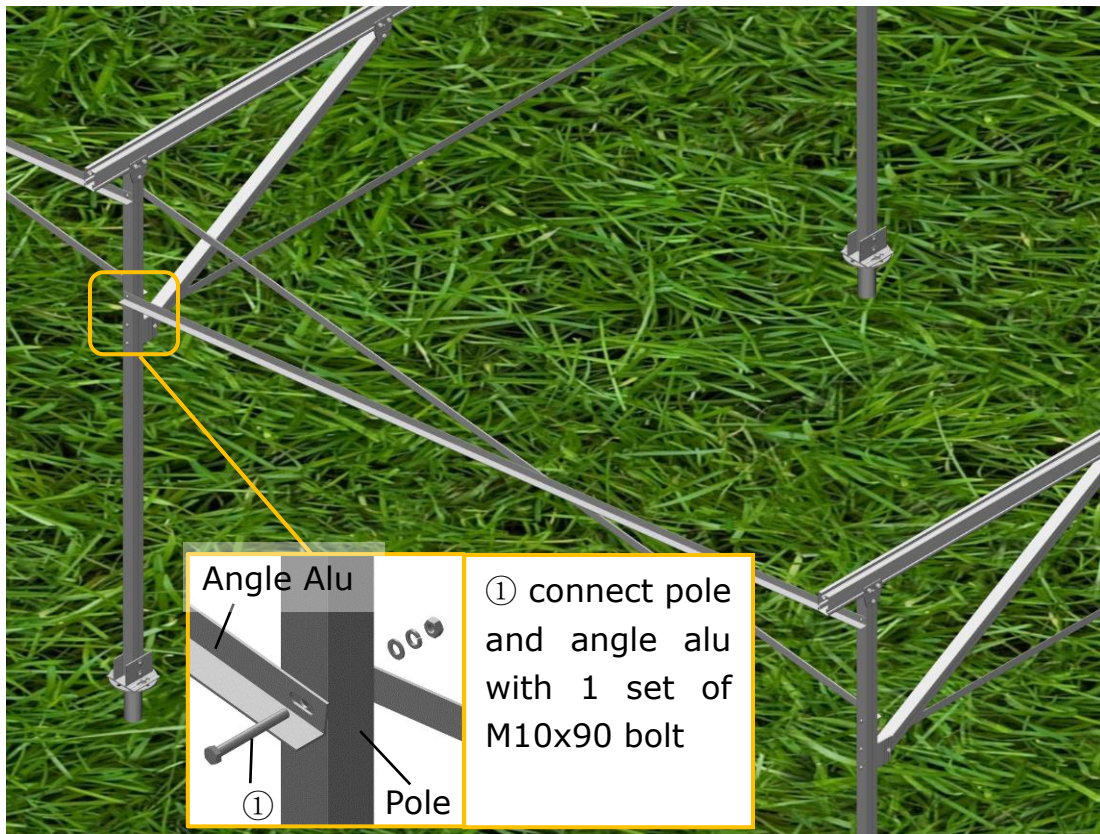
3.3 Repeat above steps to install the structures on the ground screw.



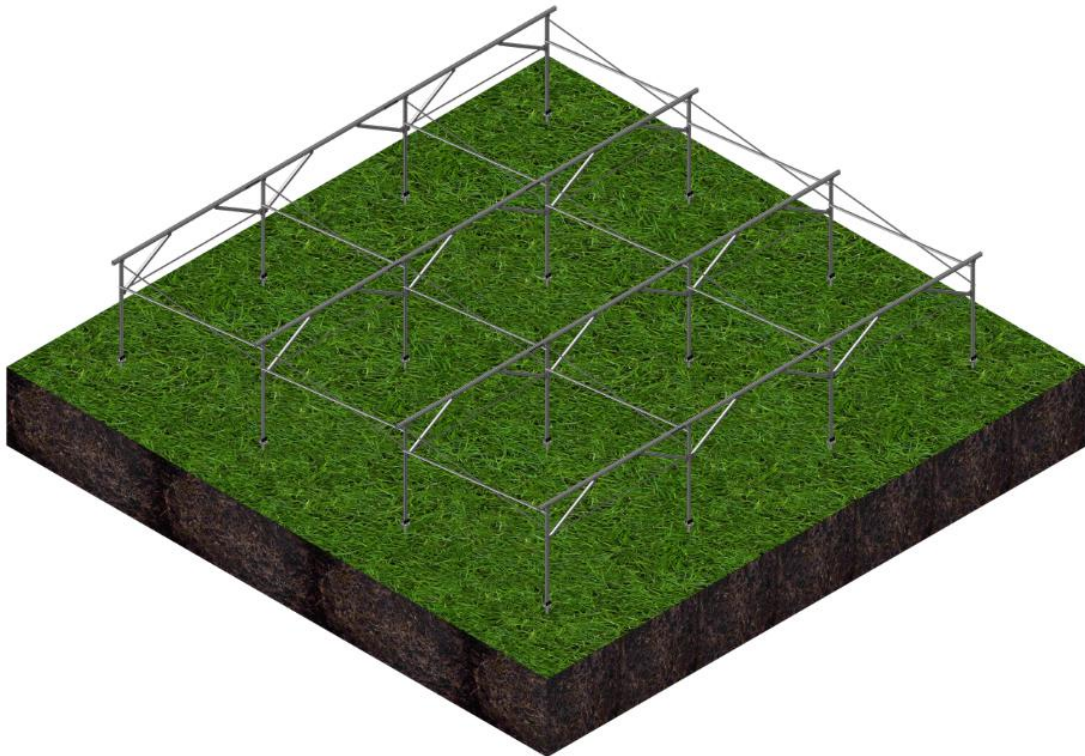
3.4 Please make sure all the support structures on the same plane.



4. Installation of Angle Alu



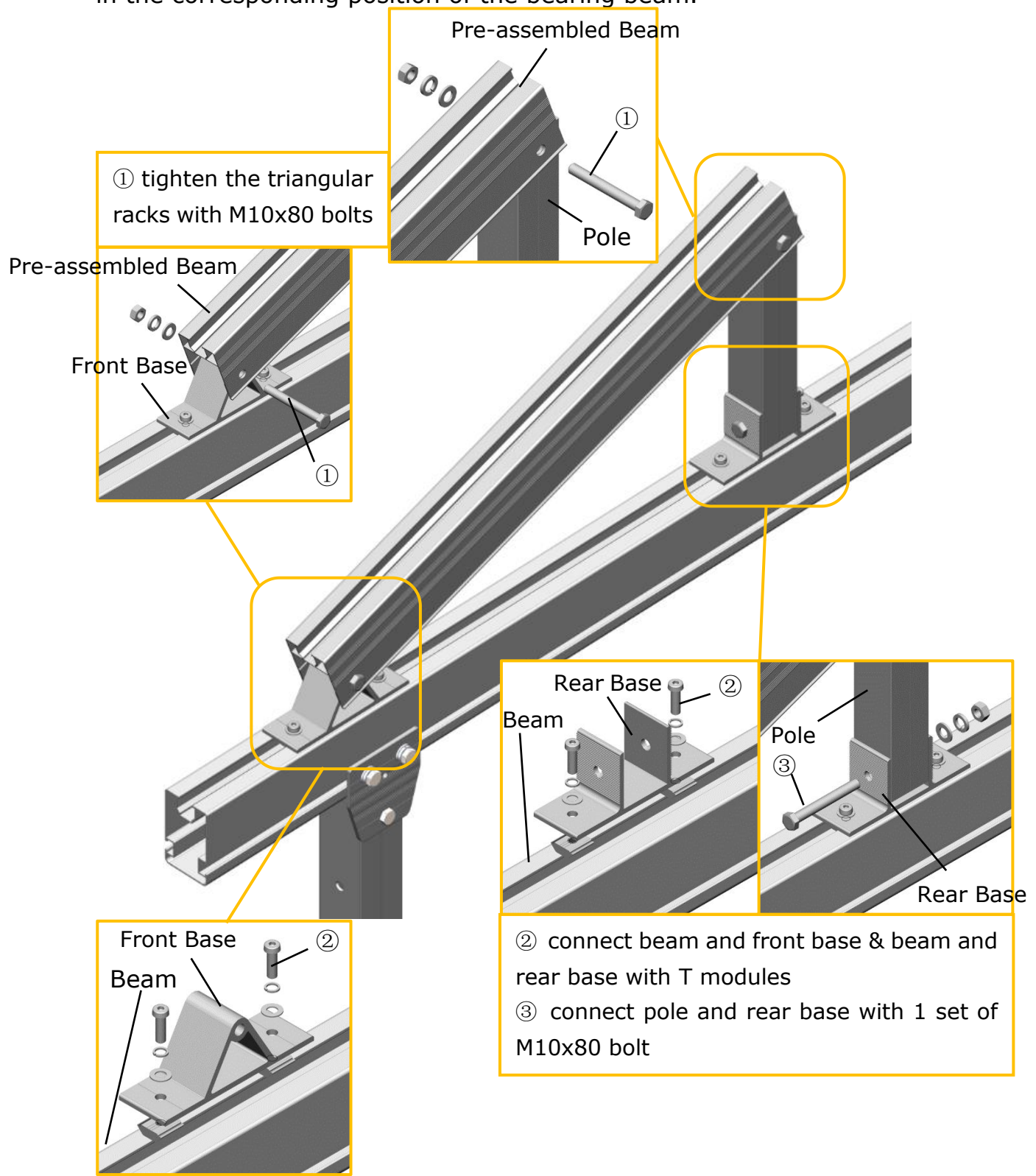
Repeat above steps to install the Angle Alu.



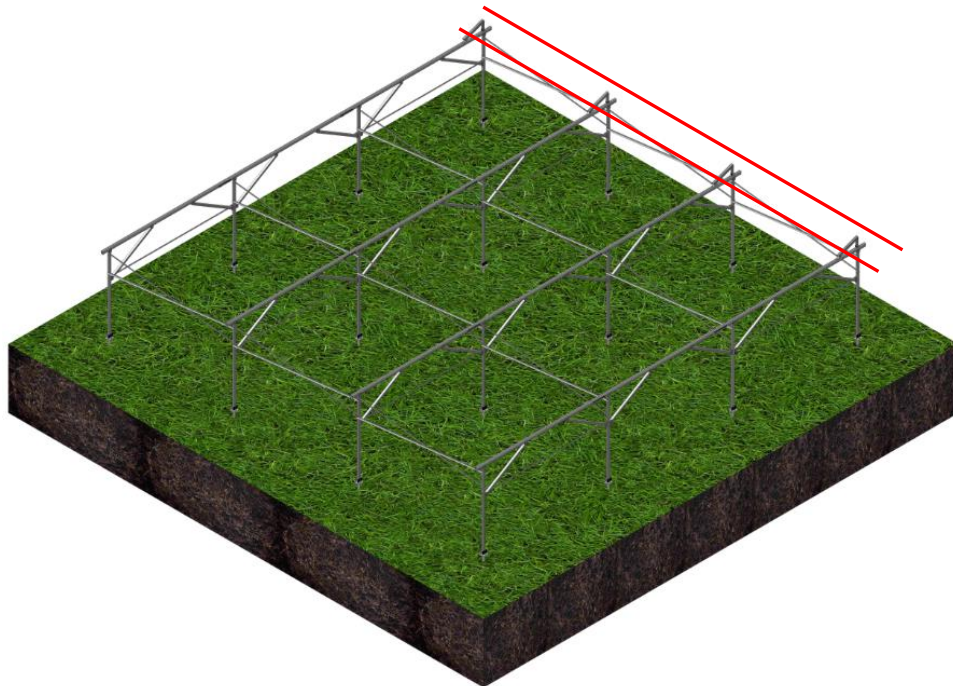
Drawing of all Angle Alu installed

5. Installation of Triangular Rack

5.1 Unfold the triangular rack, each component is connected and fixed by the corresponding accessory combination, and the tripod is installed in the corresponding position of the bearing beam.

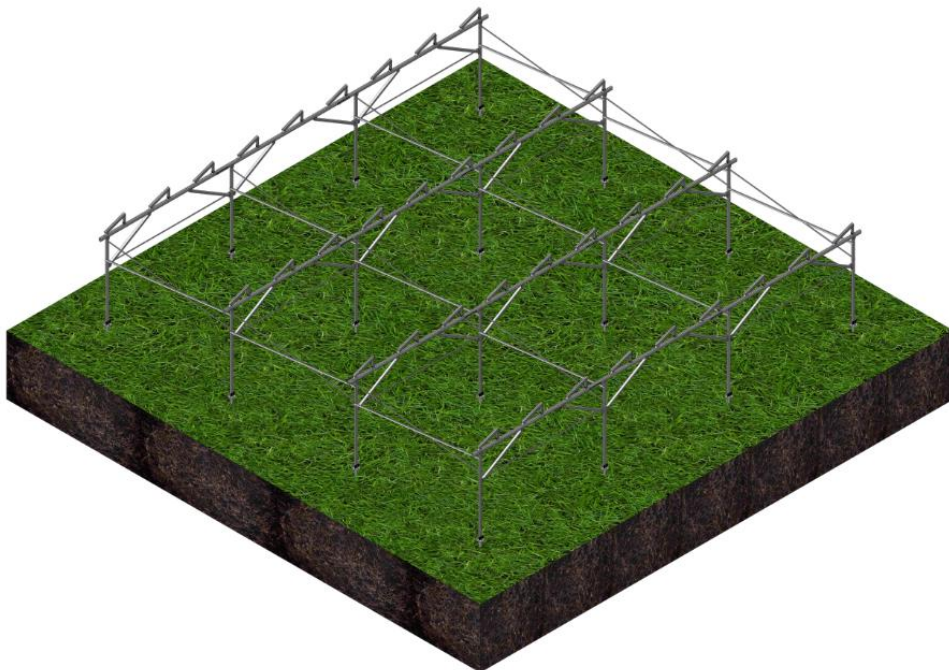


Repeat above steps to install the triangular rack. Please make sure all the support structures on the same plane and ensure that all bolts are tightened.



Drawing of installing one row of triangular racks

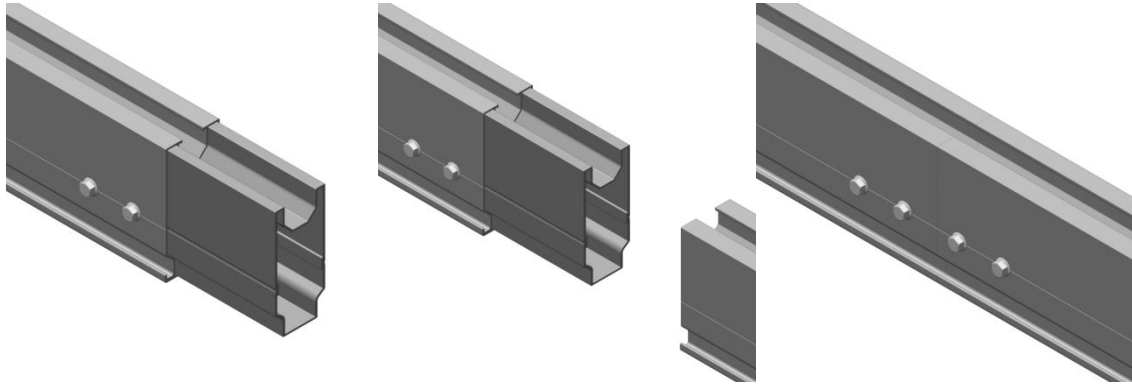
Repeat above steps to install all rows the triangular racks.



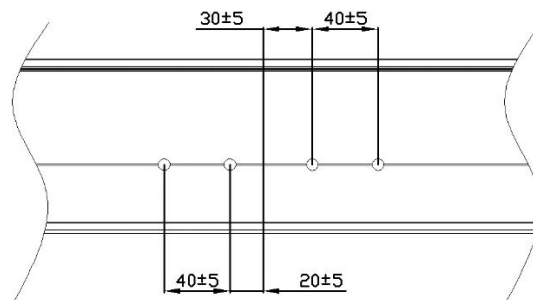
Drawing of installing all triangular racks

5.2 Installation of rail splice

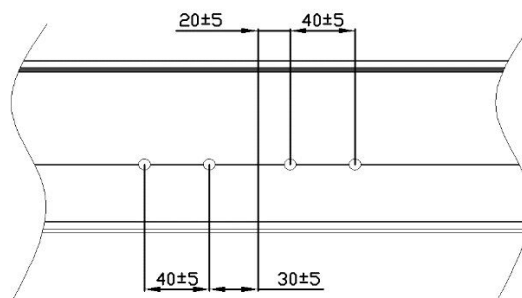
Insert the half of rail splice to the 1pc rail and fix with 4pcs screws (2pcs each side). And insert another 1pc rail and align the 2pcs rails, then fix the other 4pcs screws.



Position of screws:



(Front view)

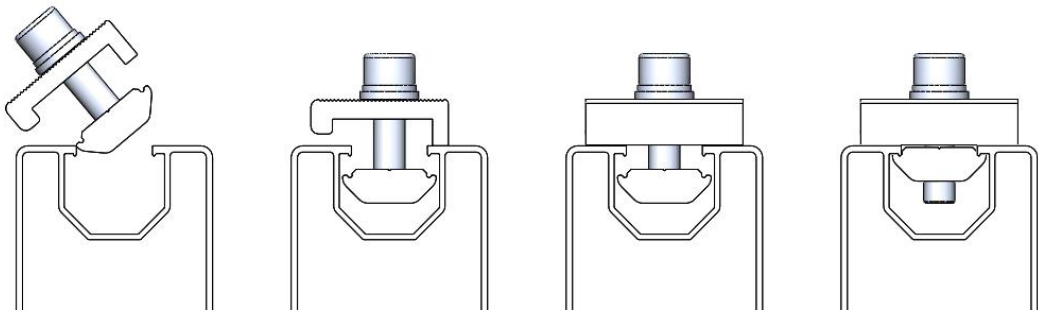
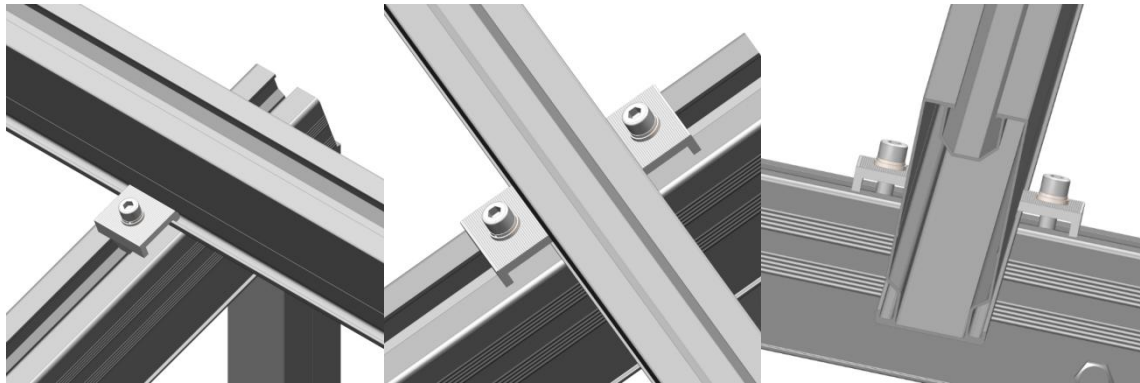


(Rear view)

Note:

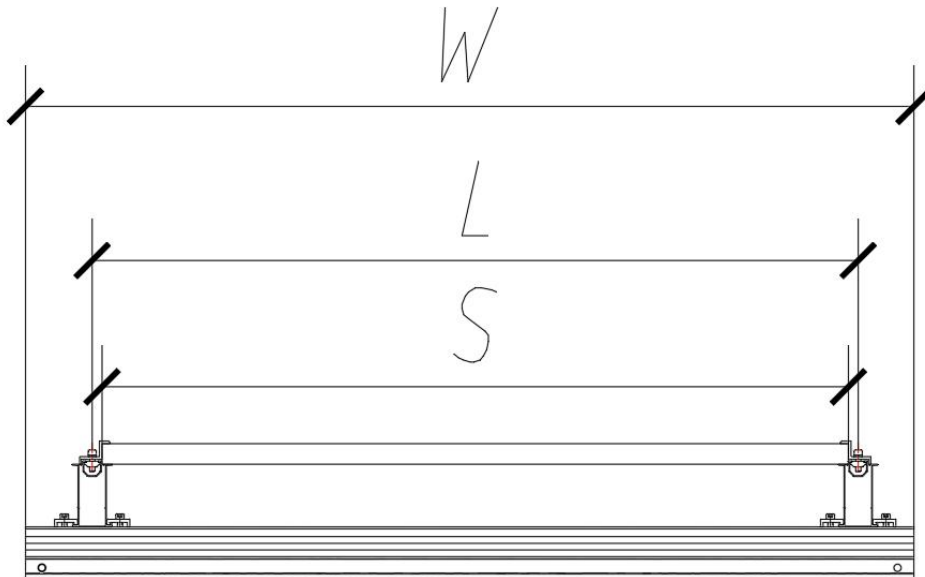
Please stagger the screws of 2 sides in case of interference.

5.3 Fix the rail to pre-assembled beam by rail clamp (1pc each side).



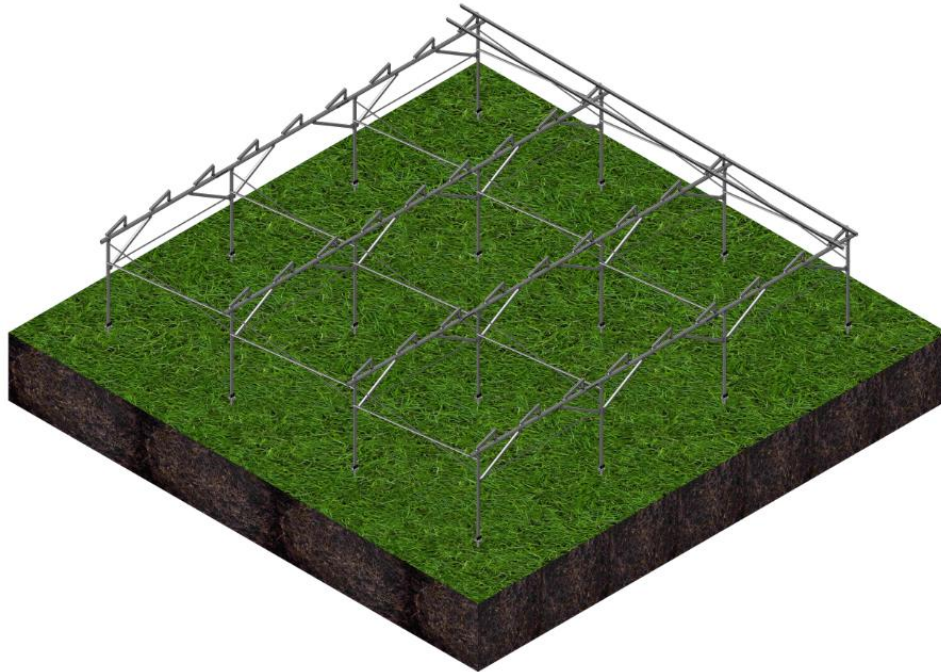
*Installation Diagram of Rail Clamp
(pay attention to the orientation of T module)*

5.4 Install the rest rails according to above steps and drawings. Please make sure all bolts are well tightened.



*Distance of 2 adjacent rails
(W=length of beam, S=length of module, L=rail spacing)*

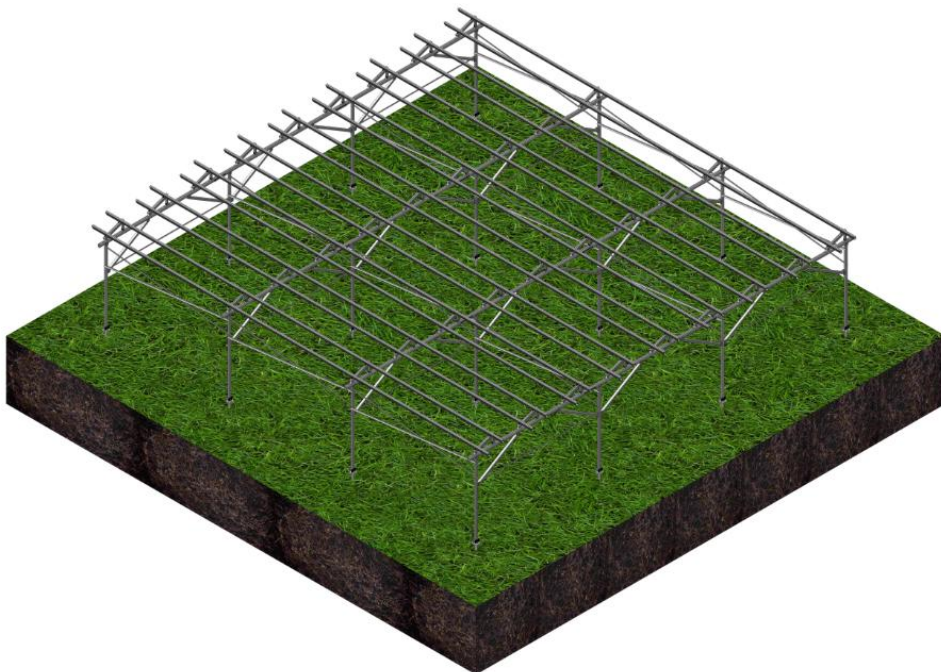
Repeat above steps to install the rest of rails, and make sure all bolts are well tightened.



Drawing of installing one array of rails

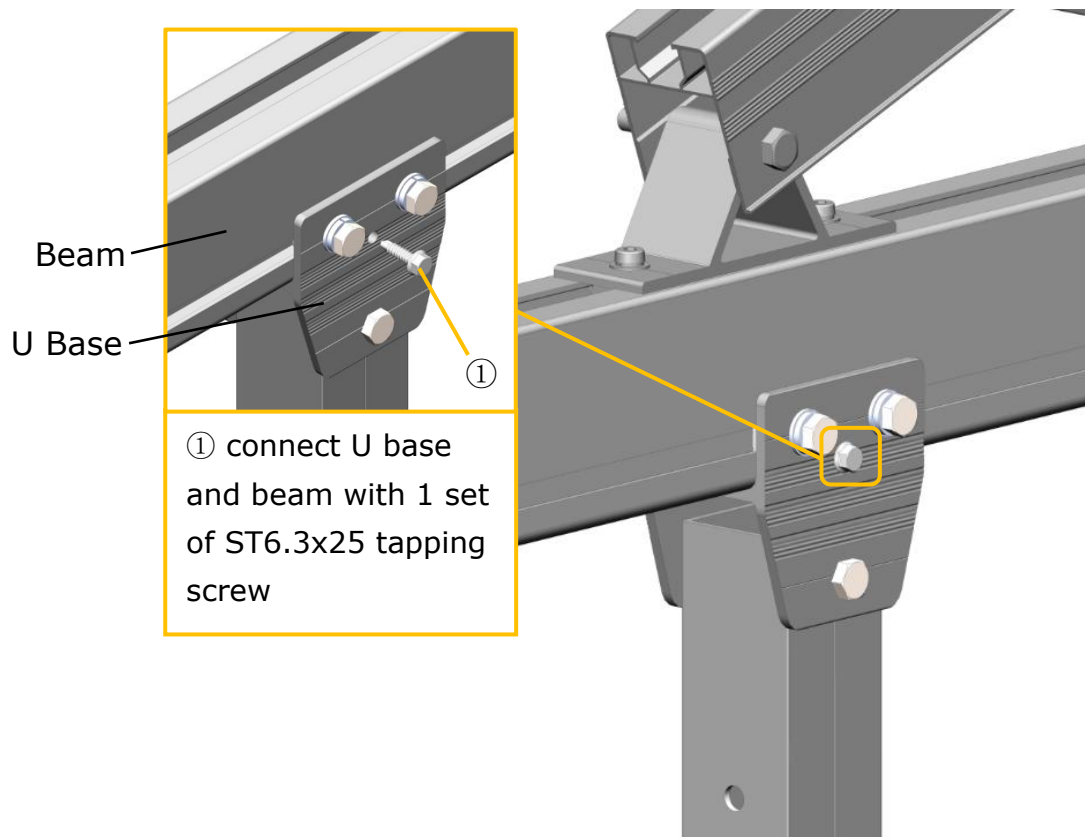
5.5 Repeat above steps to install all rails and triangular racks, and make sure all bolts are well tightened.

(All detailed spacing, please refer to the design drawing provided by Antai)

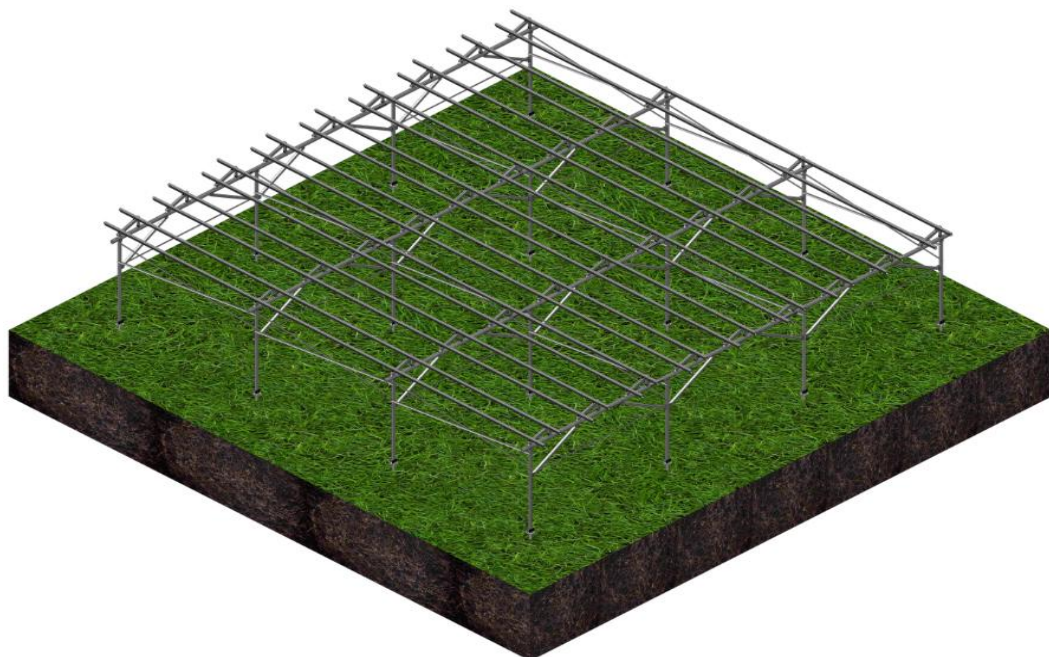


Drawing of installing all rails and triangular racks

5.6 After installing all rails and triangular racks and double checking everything, fix the tapping screw on the hole of the U base.



Repeat above steps to install the tapping screws, and make sure all bolts are well tightened.



6. Installation of Module

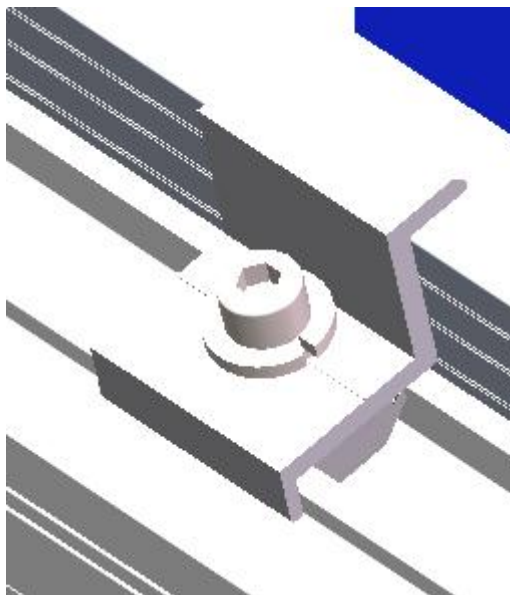
6.1 Place the module on rails as shown in the figure below. It is recommended to install from bottom to top and from left to right. And leave 50mm space at the edge of rails to install end clamp and grounding lugs.

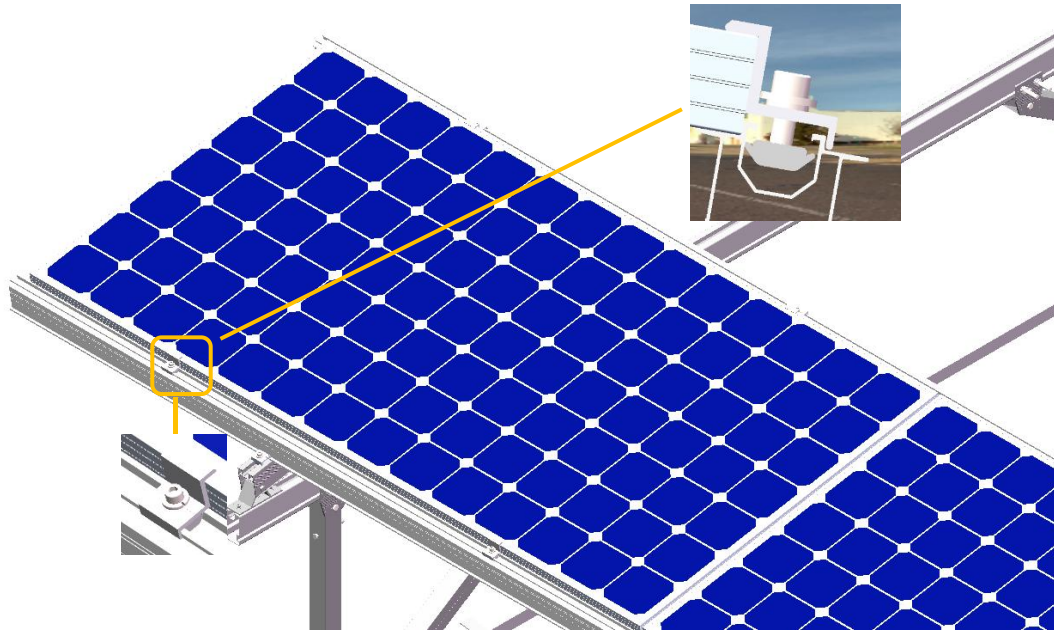


6.2 Fix the modules to rails by module clamps.

a. Installation of End Clamp

Screw the T-module to the end of the bolt, and then put the T-module into the rail slot sideways.

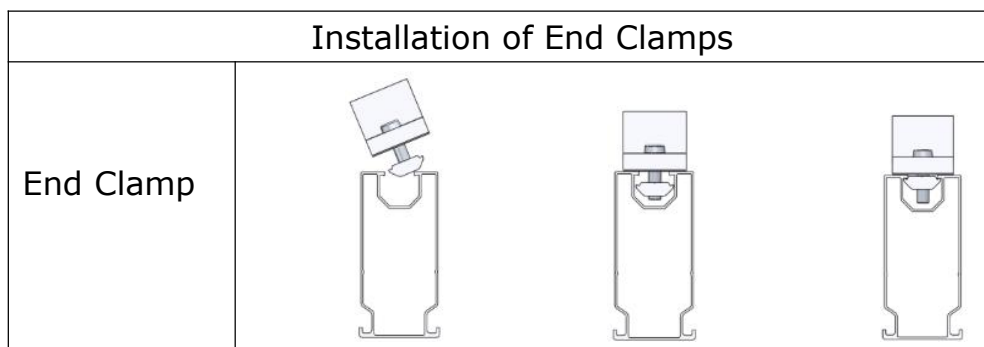




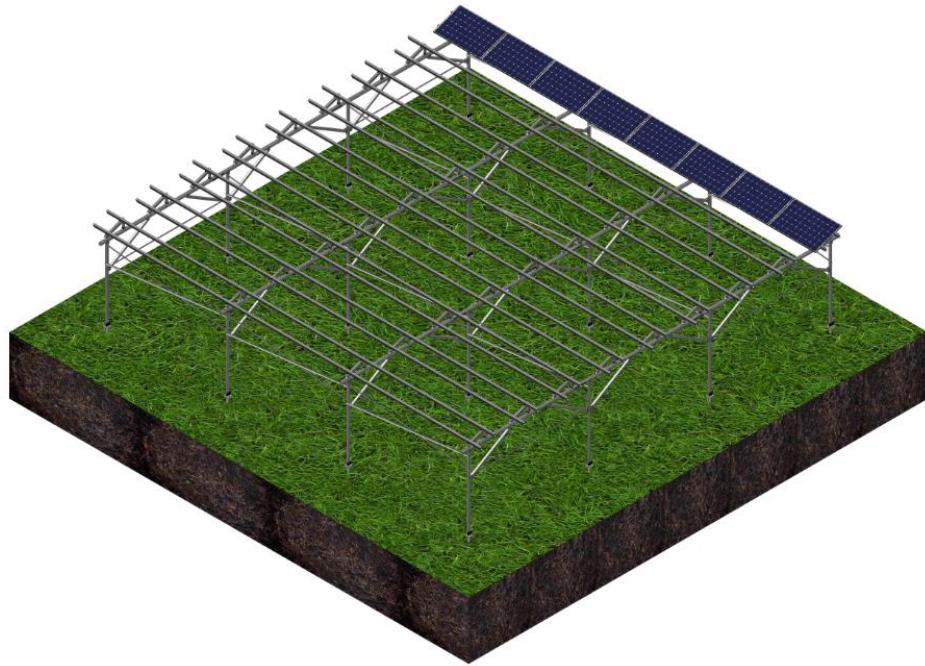
Move the end clamp to the fixed position for pre-tightening.

b. Lay the whole row of modules and tighten all the bolts of module clamps after properly adjusting the position.

© Make sure the space between module and rail will be within 3mm.
(Allowable Space \cong 3mm)

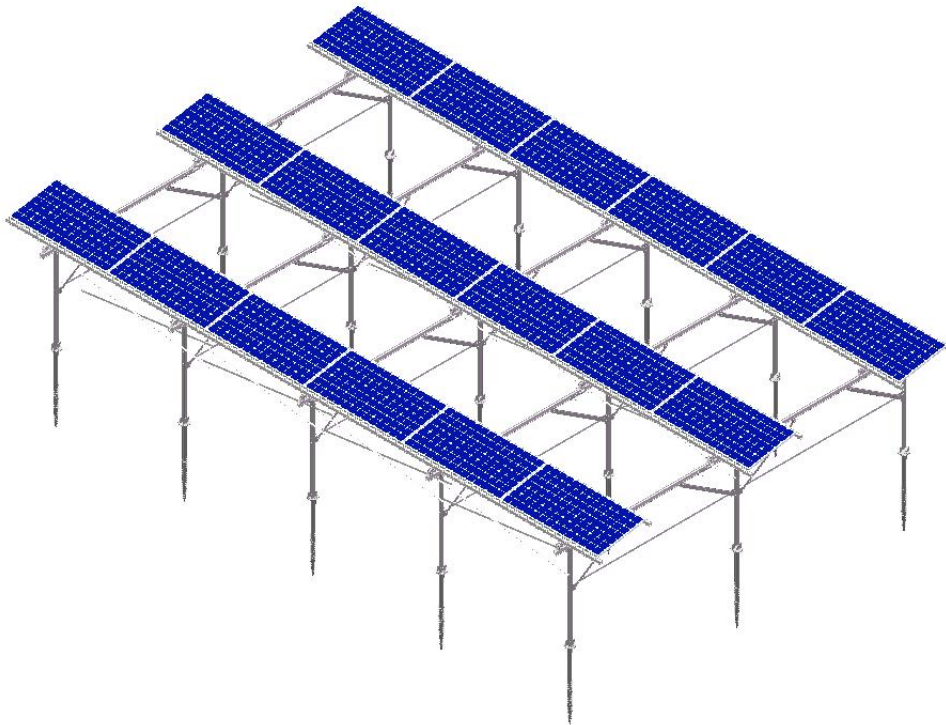


Repeat the above steps and assemble the clamps according to the drawing.



Module installation completed drawing of single row

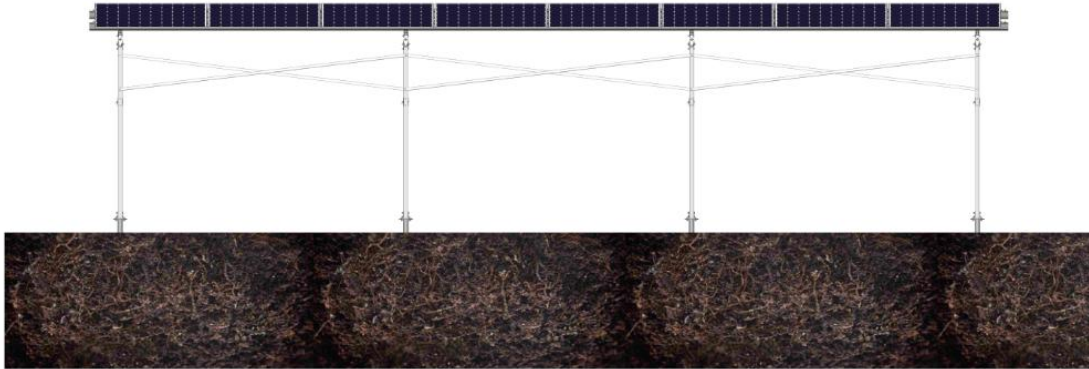
Repeat the above steps and assemble the clamps according to the drawing.



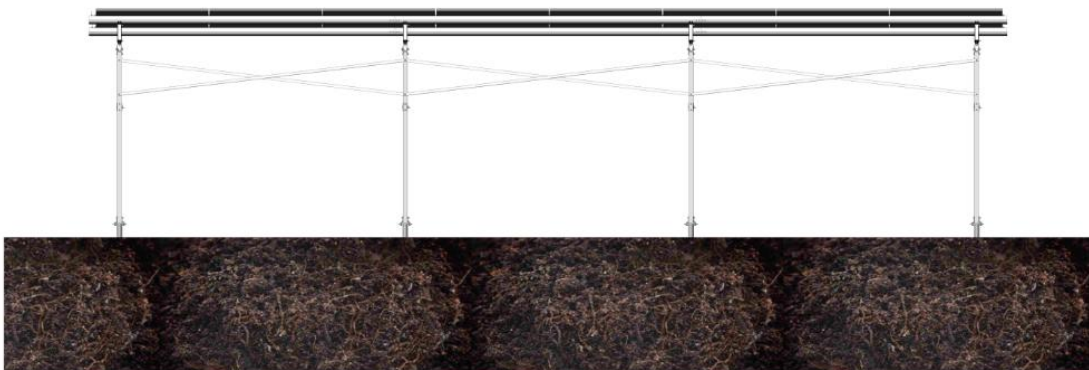
Module installation completed drawing

7. Each View of Complete Installation

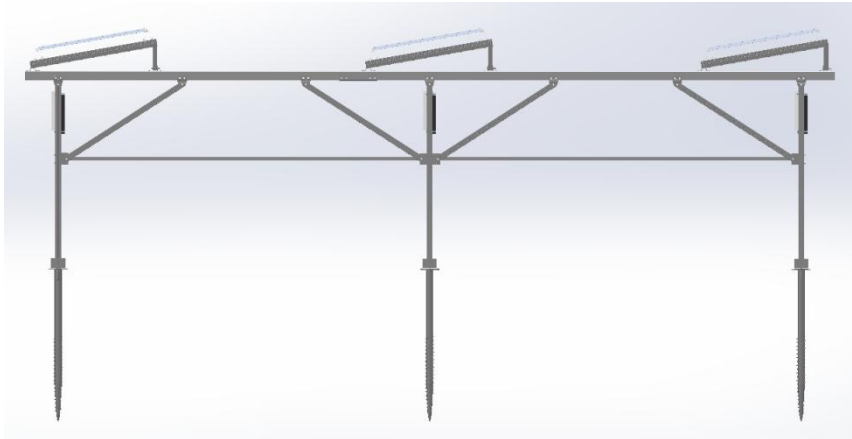
Front view



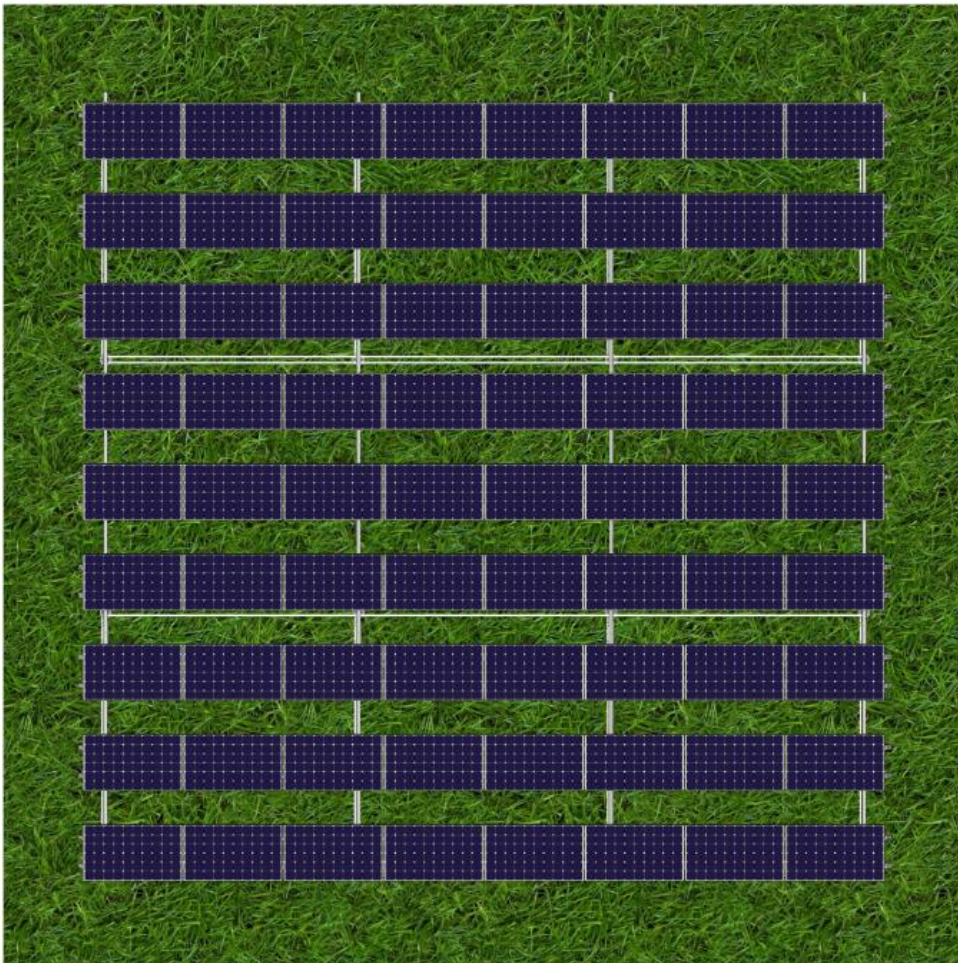
Back view



Side view



Top View



VI. Notice

1. Notes for Construction Dimension

The specific dimensions of all installations involved are subject to the construction drawings. This installation instruction is only for the description of the product installation method.

2. Notes for Stainless Steel Fasteners

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 from lock basically has the following ways:

2.1. Reduce the Friction Coefficient

- (1) Ensure that the bolt thread surface is clean and tidy (No dust, grit, etc.);
- (2) It is recommended to use yellow wax or lubricant during installation (such as lubricating grease, 40# engine oil, which are prepared by users).

2.2. Correct Operation Method

- (1) The bolt must be perpendicular to the axis of the thread, and not inclined (Do not tighten Obliquely);
- (2) In the process of tightening, the strength needs 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. Lower the rotating speed while have to use electric wrenches;
- (4) Avoid using electric wrenches etc. under high temperature conditions, do not rotate fast when using, to avoid rapid rise in temperature and cause "seizure".

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