



# Installation Manual-Residential Carport (2024)

V1 8-August-2024

## Preface

Before installation, please read this manual and take into account the actual policy requirements of the project site and the actual situation of the project, and do personnel training on the relevant installation steps and safety precautions, and take safety measures and supervision.

This manual is only applicable to the installation of carport mounting system for nanoracking project. Unless agreed by nanoracking.

This manual contains installation steps, operation tips, installation accuracy requirements (minimum accuracy requirements), safety reminders, etc. A full understanding of this manual is the basis for a safe and efficient installation of the system, and we are not responsible for system failure or degradation of performance due to failure to follow the installation manual, incorrect installation, or installation of components from other sources. The Company reserves the right to seek recourse if the project is at risk due to installation operations and construction practices that do not comply with the provisions of this manual.

For the installation steps and operation tips in the manual, under the premise of ensuring the installation accuracy requirements, if there is a better installation operation on site, it can be adjusted appropriately after reporting to Fujian Antai New Energy Technology Co. If there is no better solution, please follow the manual to carry out the construction work.

Be sure to familiarize yourself with the safety reminders and standardized operation, otherwise property damage, bodily injury or even death may occur. The company is not responsible for any personal injuries caused by operations and behaviour that are contrary to this manual.

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# 1 Safety Precautions

## 1.1 Safety Precautions

Thanks for using nanoracking solar mounting structure, please follow the installation manual during installation and maintenance.

### ● General Notice

- Installation should be proceeded by qualified and adequately trained installers.
- Please follow the national and local building regulations and environmental protection requirements.
- Please follow the labor health and safety regulations, accident prevention guidelines during installation.
- Please wear the protective safety gears. (including helmet, boot, glove, etc.)
- 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 heights, please set up scaffolds to eliminate the risk of falling before proceeding. Please also use the gloves and safety belts.
- Please pay attention to the sharp points of aluminum structures and be careful not to be injured.
- Please tighten all required bolts and screws after the installation.
- Please do not use the broken, faulty or deformed products in case of danger.
- Please use nanoracking designated mounting accessories for installation, and do not modify nanoracking products in any cases

## 1.2 Safety signs and symbols

The following "tips", "warning" will be throughout the manual, for standardized and efficient installation with important notices.

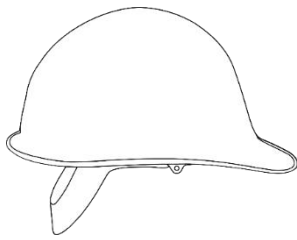


**Tips:** Follow the operating instructions to optimize the installation process for a high quality and efficient installation.

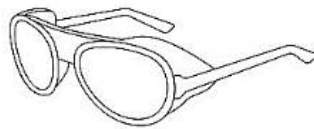


**Warning:** This tip box contains critical installation information. During installation, please follow this tip strictly, otherwise there may be significant safety and structural risks.

### 1.3 Safety Gears



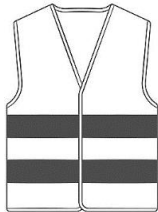
Safety Helmet



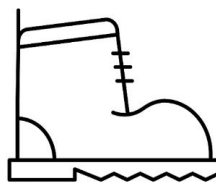
Protective Glass



Gloves



Safety Vest



Protective boots

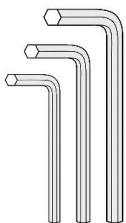


Protective lifeline

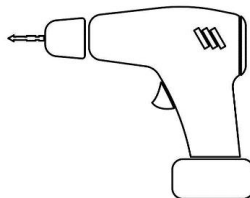
 **Tips:** In order to ensure the safety of construction personnel on site, please prepare extra safety gears.

## 2 System Overview

### 2.1 Tools



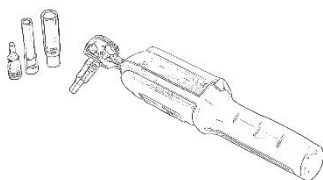
Socket Spanner



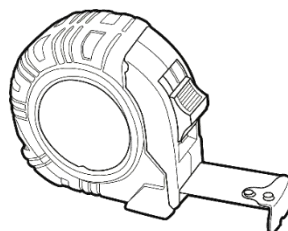
Electric Drill and Bits



Marker



Torque Spanner



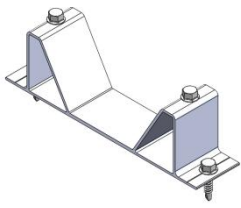
Tape Measure



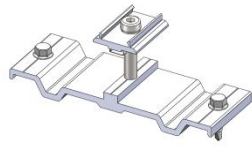
String

 **Tips:** In order to improve the efficiency of on-site construction, the actual construction tools used in the construction process are not limited to the advised tools.

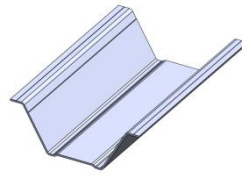
## 2.2 Components



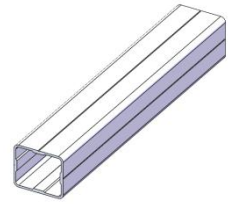
Supporting Base For V  
water guiding rail



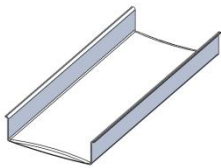
Mid Clamp Set



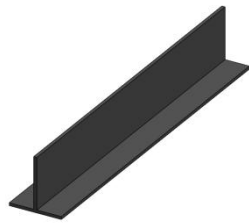
V-Drainage Rail



Square tube



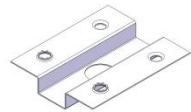
Transverse U-shaped  
Water Chute



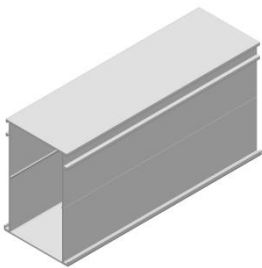
Rubber String



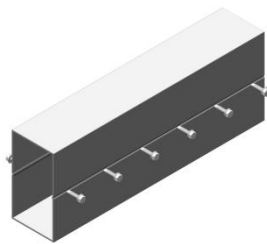
Top Cover



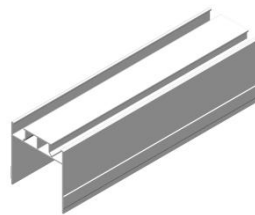
Earthing Clip



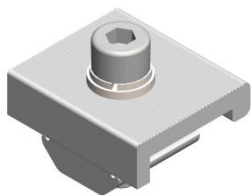
Rail



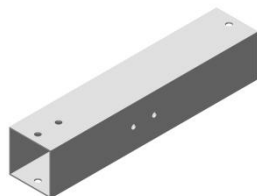
Rail Splice



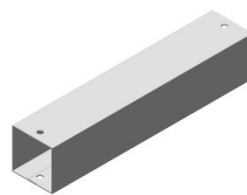
Beam



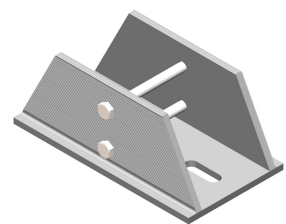
Rail Clamp



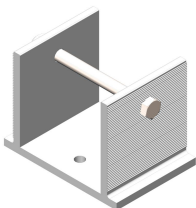
Pole-Upright(leg)



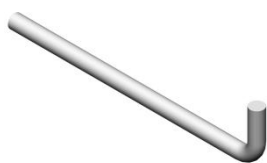
Pole-Diagonal Strut  
(bracing)



Bottom Base



U Base



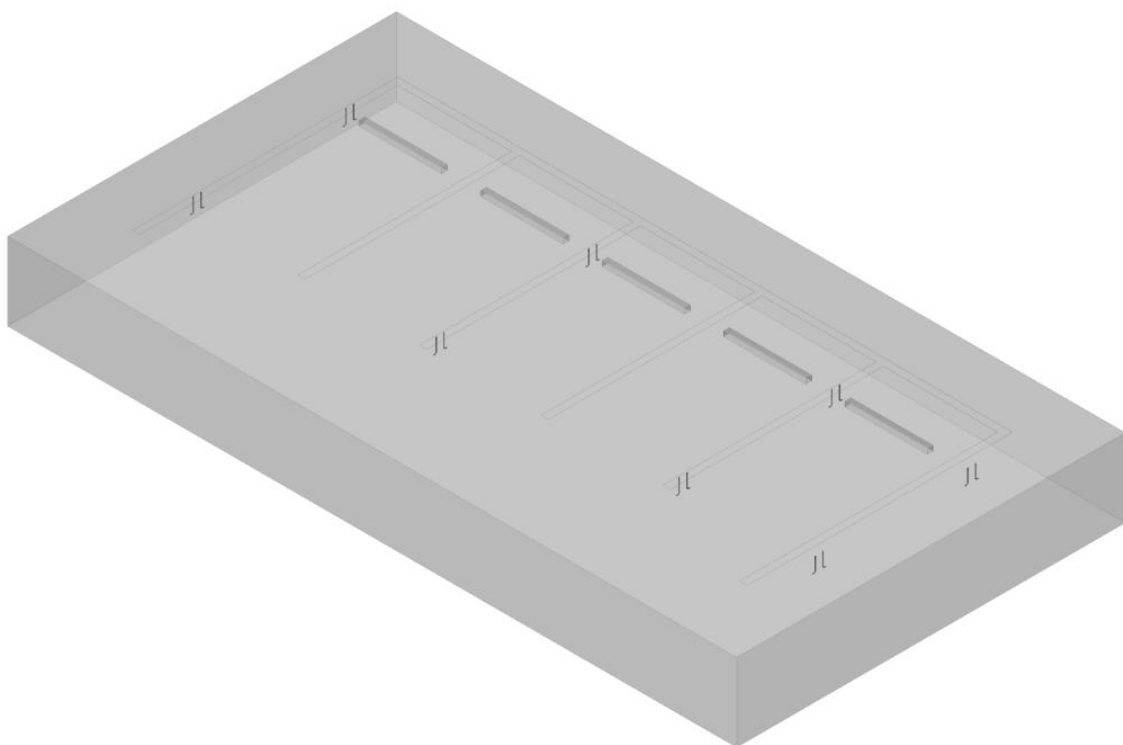
Anchor Bolt

## 3 Installation of Mounting Structure

### 3.1 Preparation for Concrete Foundation

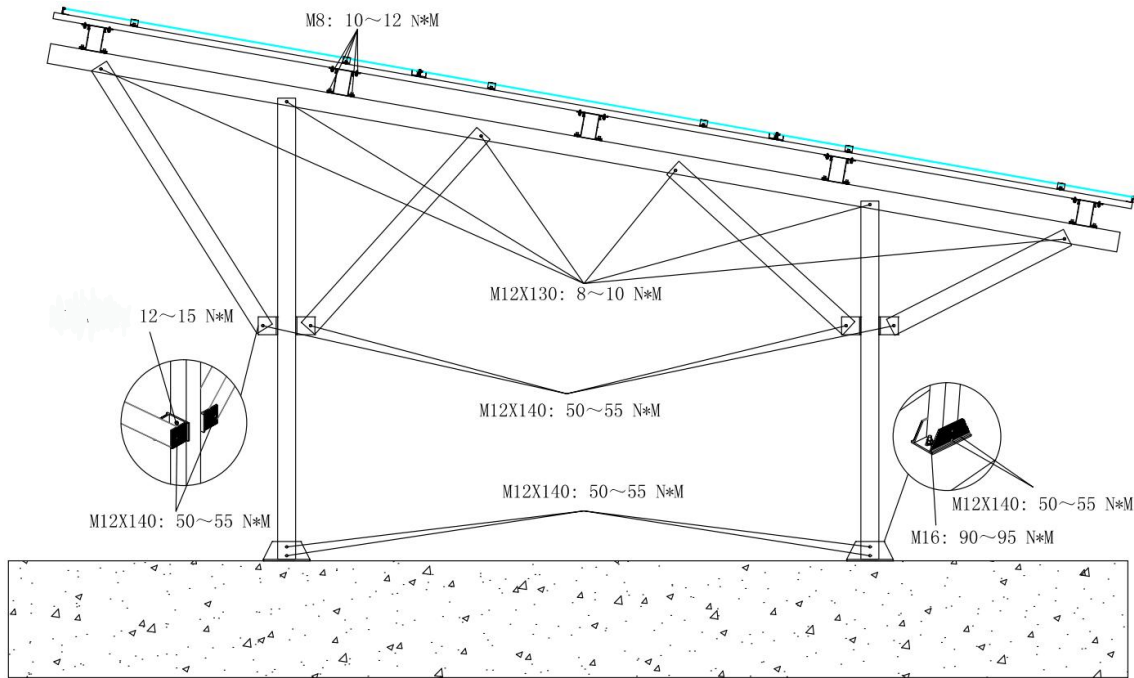
Please prepare all necessary tools and products before installation. Firstly, mark the corresponding positions of concrete blocks according to the shop drawing, and bury the anchor bolts in the concrete blocks. The spacing of anchor bolts should follow the hole positions of aluminum base.

Please follow the shop drawing to bury the anchor bolts inside the concrete blocks. (Prepare the layout of concrete foundations beforehand)



Layout of Anchor Bolts (Flat Ground)

### 3.2 Torque Value of Bolts

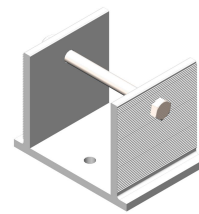
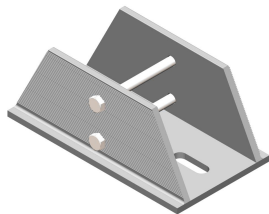


**Notes:**

- The pre-assembled bolts of the mounting structure are not fully locked, which is convenient for adjustment during field installation. Please make sure all bolts are locked after installation.
- During installation, visually 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.

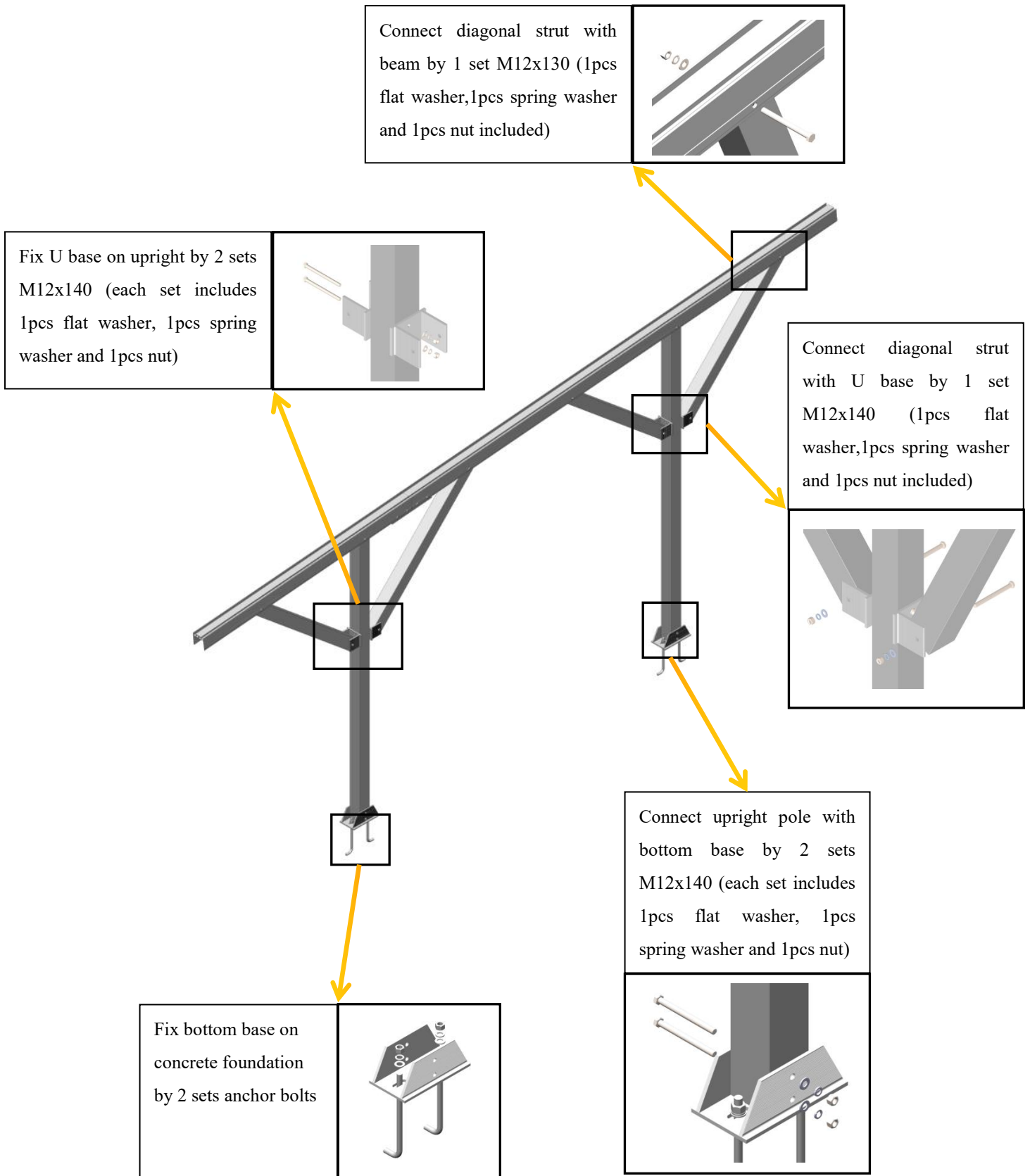
### 3.3 Installation of Beam and Pole

3.3.1 Connect poles(upright and diagonal strut) to the beam by M12x130 bolts/nuts, fix U bases on the upright poles by M12x140 bolts/nuts, and connect the diagonal struts to uprights with U bases. Bottom bases are fixed with concrete foundation by anchor bolts, and connect upright poles to bottom bases.

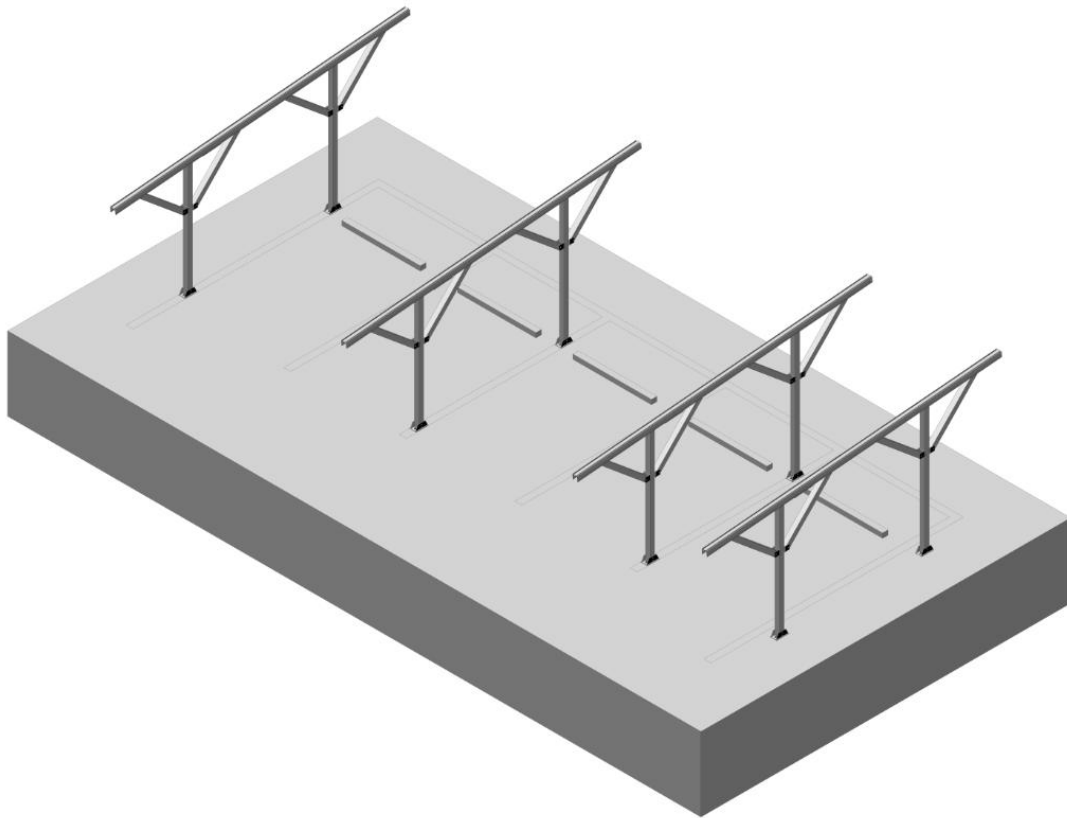


Bottom Base (2pcs M12x140 bolts pre-assembled)    U Base (1pc M12x140 bolt pre-assembled)

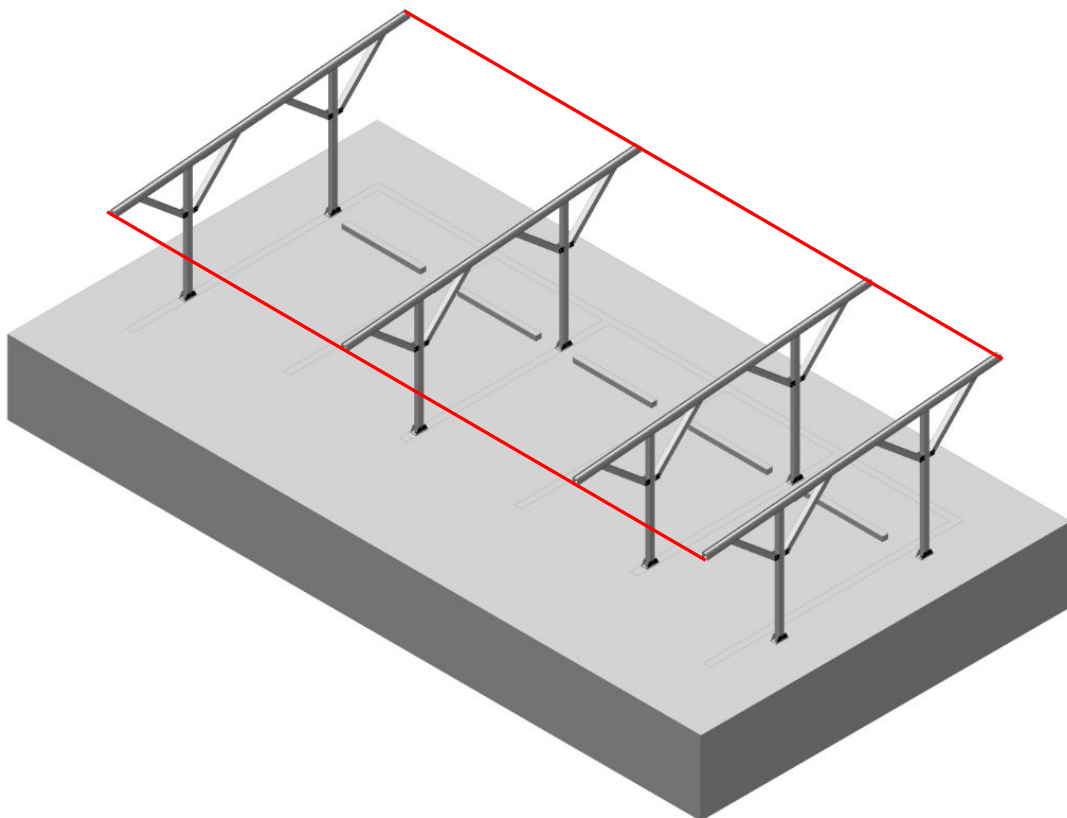




3.3.2 Repeat above steps to install the poles on the concrete blocks.



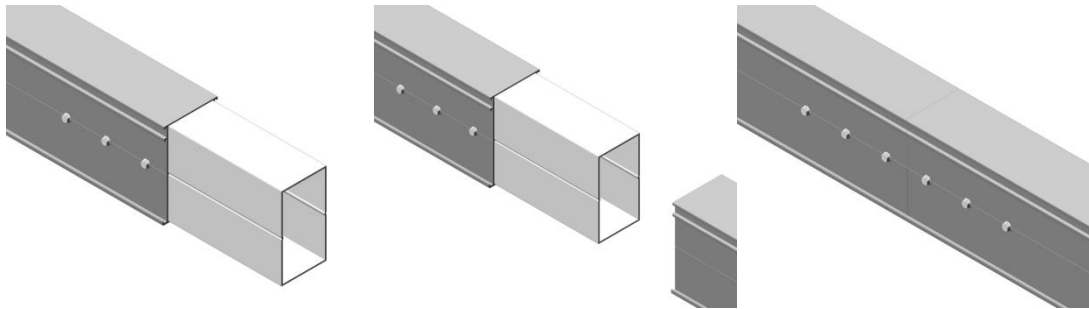
3.3.3 Make sure all beams are on the same plane, so that the rails can be installed properly.



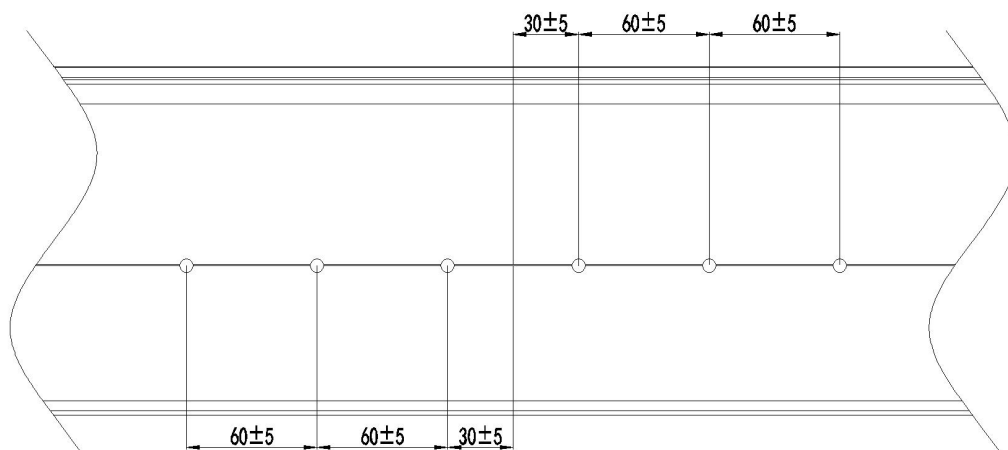
### 3.4 Installation of Rail

#### 3.4.1 Connecting 2pcs rails (You can skip this step if the rail is long enough)

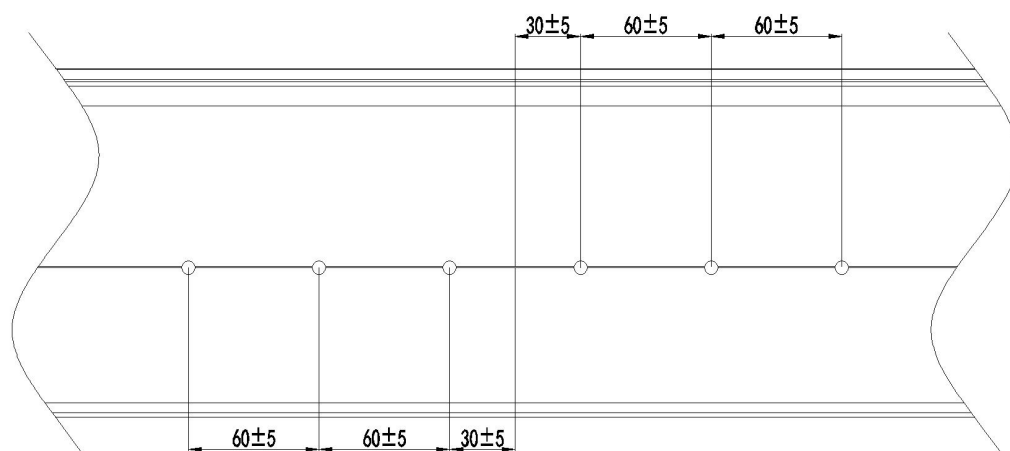
Insert half of rail splice to one rail and fix with 6pcs self-tapping screws (3pcs each side), then insert another half of rail splice to the another rail and make sure 2pcs rails are tightly close and flat, and fix with 6pcs self-tapping screws (3pcs each side).



**⚠Position of self-tapping screws:**

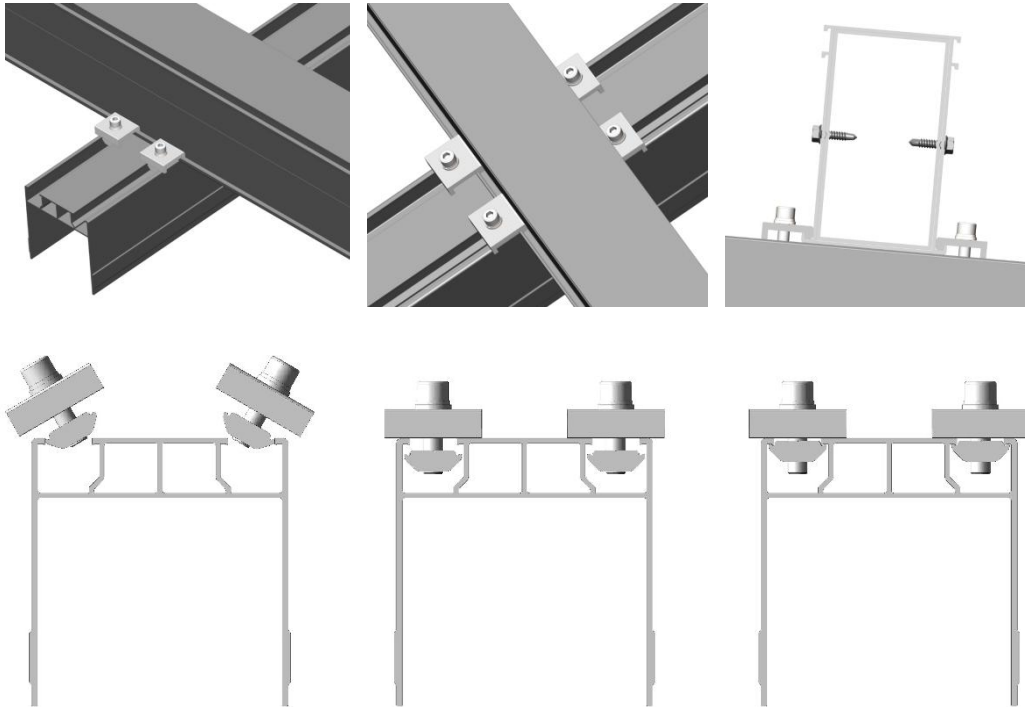


(Front View)

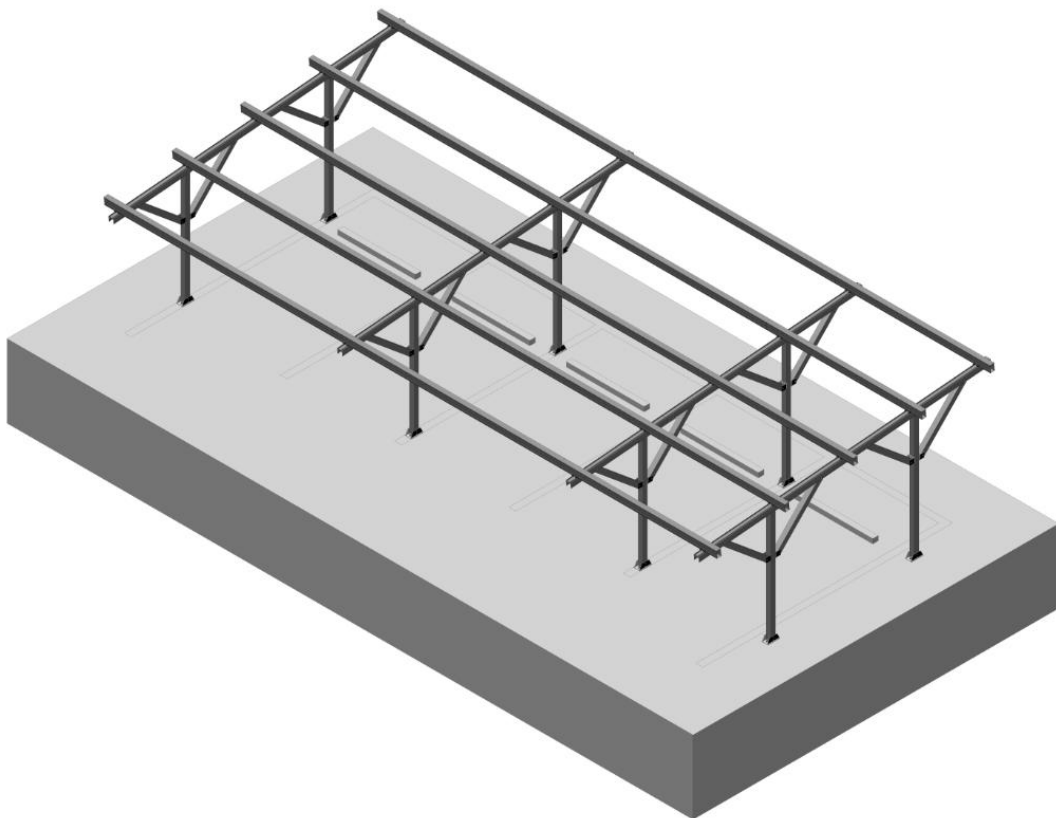


(Rear View)

### 3.4.2 Fixing the rail on the beam by 4pcs rail clamps (2pcs each side)



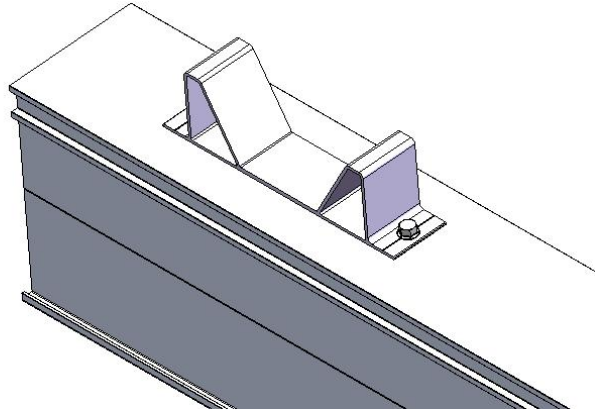
Repeat steps above to install all the rails according to the drawing, and make sure all bolts are tightened.  
(Refer to the shop drawing for the distance of rails)



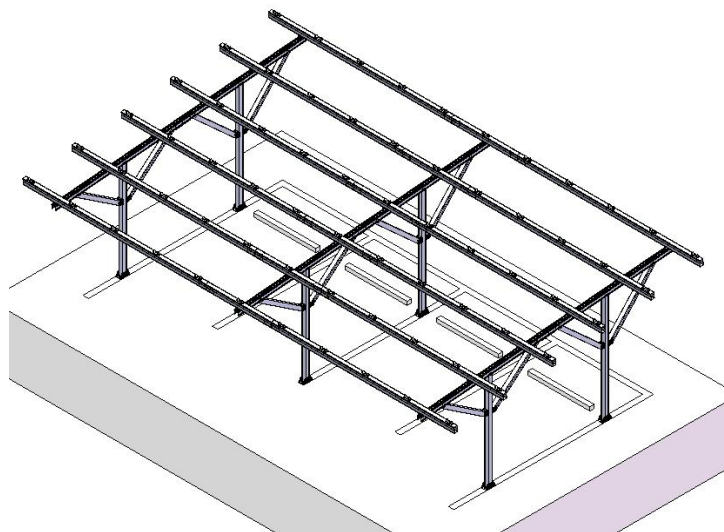
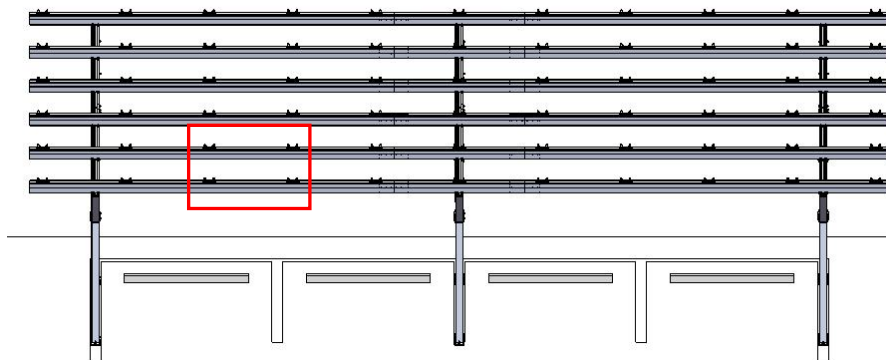
(View of rails after installation)

### 3.5 Installation of Supporting Base

3.5.1 Measure setting out and mark the position for supporting bases, then place bases on the rails. In order to ensure supporting bases are not deflected and are in the correct position, place V-drainage rail on the supporting base to make sure they are on the same longitudinal level and V-drainage rail is perpendicular to rail. Fix supporting base with 2pcs self-tapping screws (1pc each side).



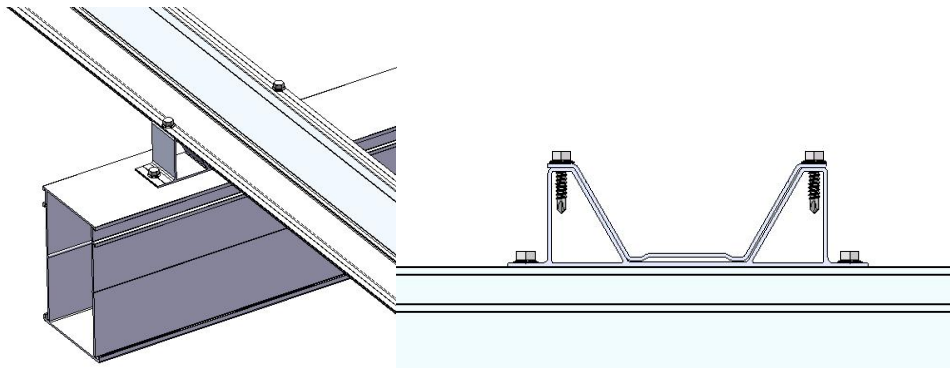
Repeat above steps to install all supporting bases. Pay attention to the distance of adjacent bases on the lateral level and shall refer to the shop drawing.



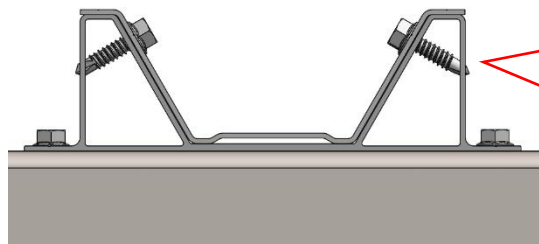
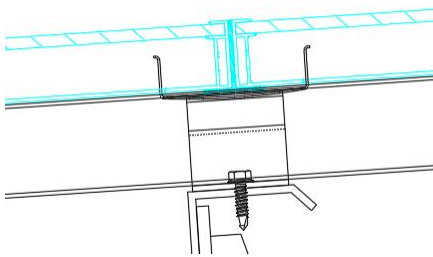
(View of supporting bases after installation)

### 3.6 Installation of V-Drainage Rail

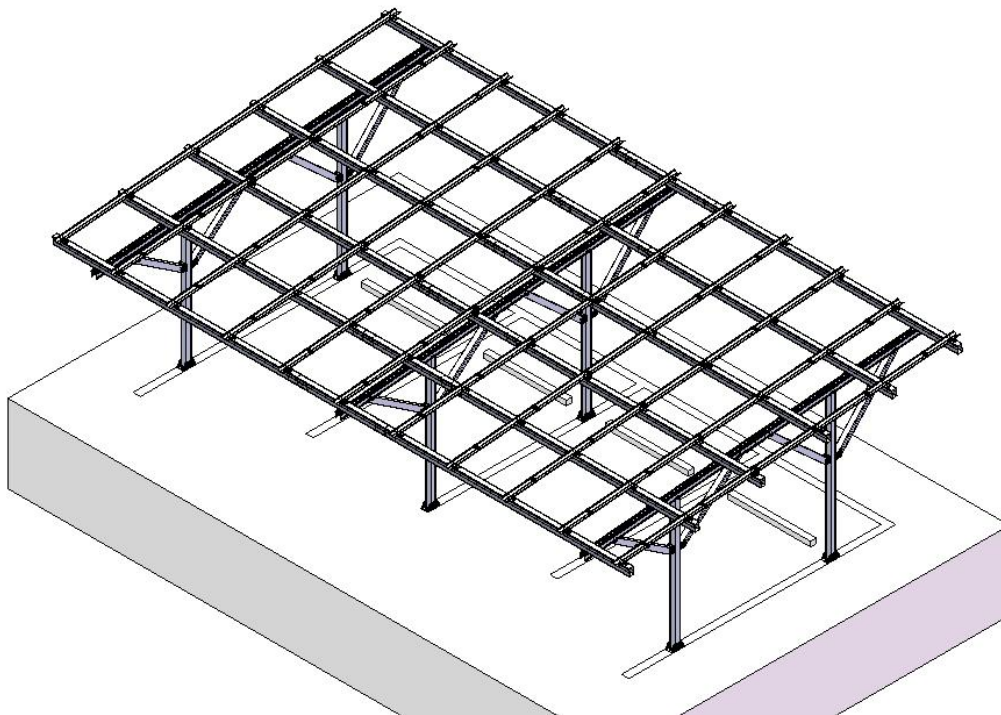
Place V-drainage rail on the supporting bases and fix with self-tapping screws (2pcs each base and 1pc each side).



🔍 Note: Please refer to the shop drawing to check whether U-shaped water chute has interference with self-tapping screws or not. If it does, fix self-tapping screws like the drawings below and apply glues around the screws.



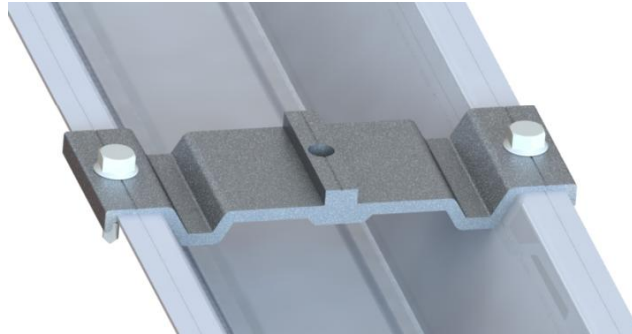
If U-shaped water chute is installed above the supporting base, fix self-tapping screws like this.



(View of V-drainage rail after installation)

### 3.7 Installation of Mid Clamp

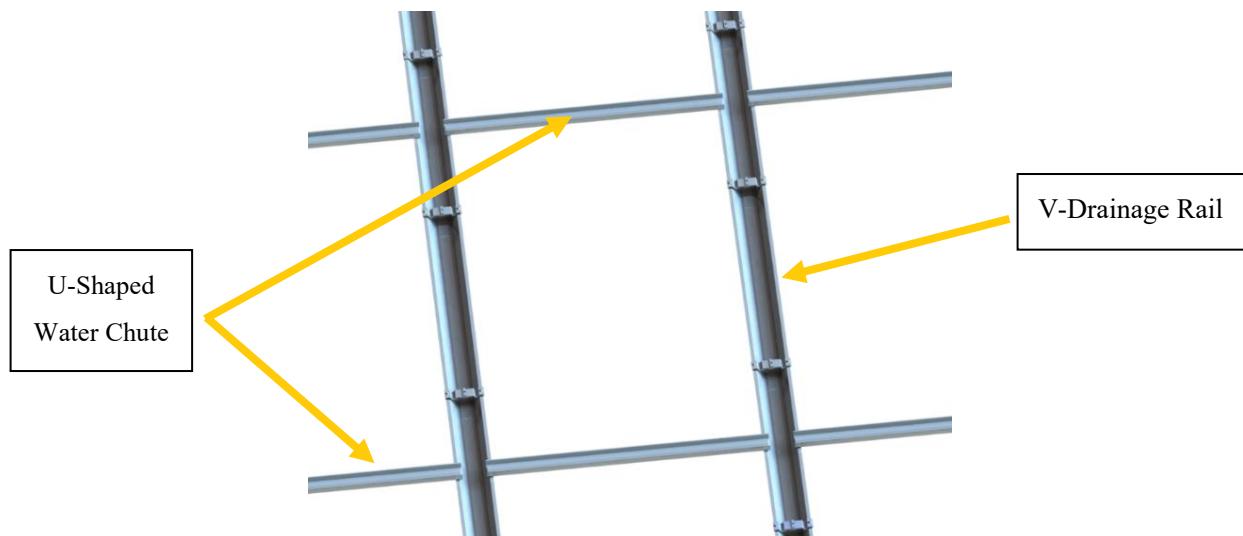
Refer to the shop drawing and place the supporting plate of mid clamp on the V-drainage rail and fix with self-tapping screws (2pcs each mid clamp and 1pc each side).



**Note:** For the spacing of mid clamp installation, please refer to the corresponding manual of solar panel.

### 3.8 Installation of U-Shaped Water Chute

Place the transverse U-shaped water chute above V-drainage rail and between two adjacent V-drainage rails, it is also the middle position between two adjacent solar panels in vertical direction.



**Note:** Pay attention to the overlap between both ends of U-shaped water chute and V-drainage rail in order to make sure rain can be guided from U-shaped water chute to V-drainage rail.

## 4 Installation of Solar Panel

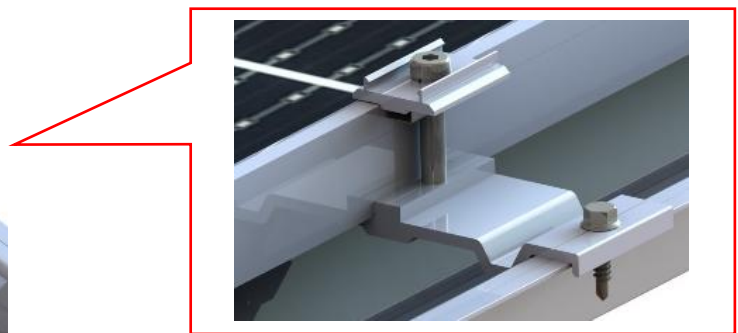
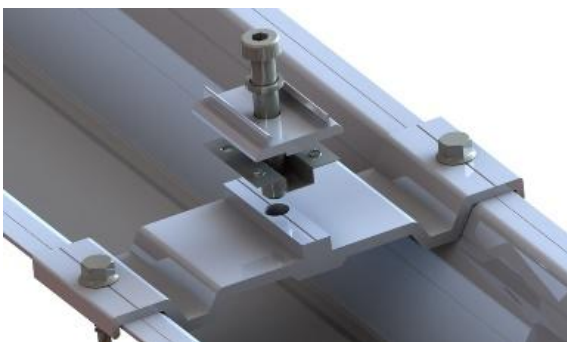
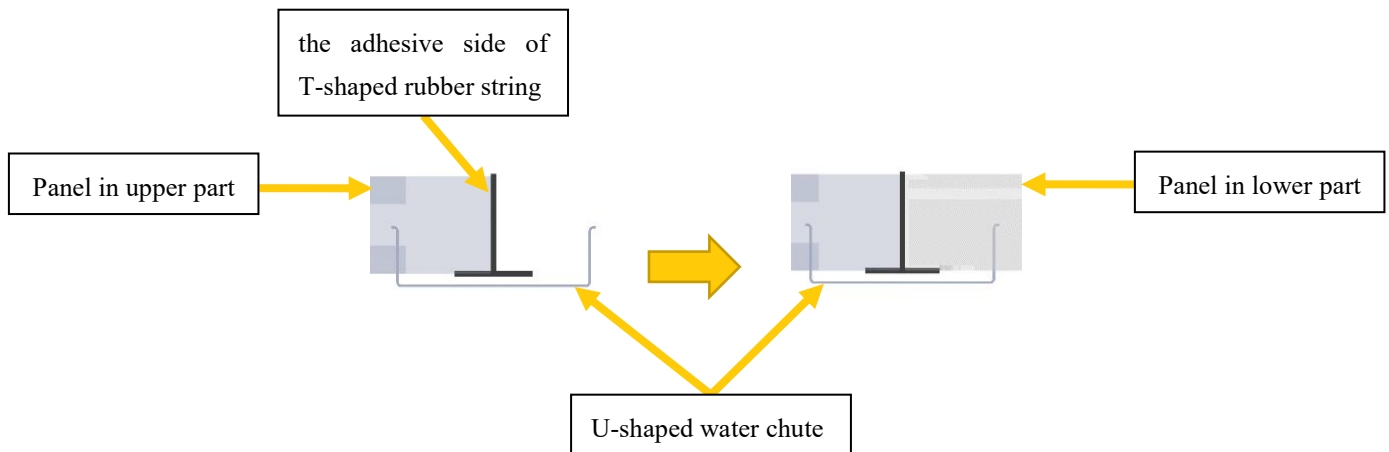
### 4.1 Installation of Solar Panel

Stick the adhesive side of T-shaped rubber string to the frame of short side of solar panel. Refer to the shop drawing, and place the solar panel on the supporting plate of mid clamp. Snap the frame in the rear side of panels into the U-shaped water chute in the adjacent position of the upper and lower panels. It is recommended to install solar panels from top to bottom and from left to right.

After placing solar panels, install mid clamp, bolt, spring washer and grounding lug, screw the bolt and fix the panels tight. When installing panels on left and right ends of the whole array, place square poles(35mmx30mm, length=5300mm) on the other side of mid clamp set and fix tight.

Note:

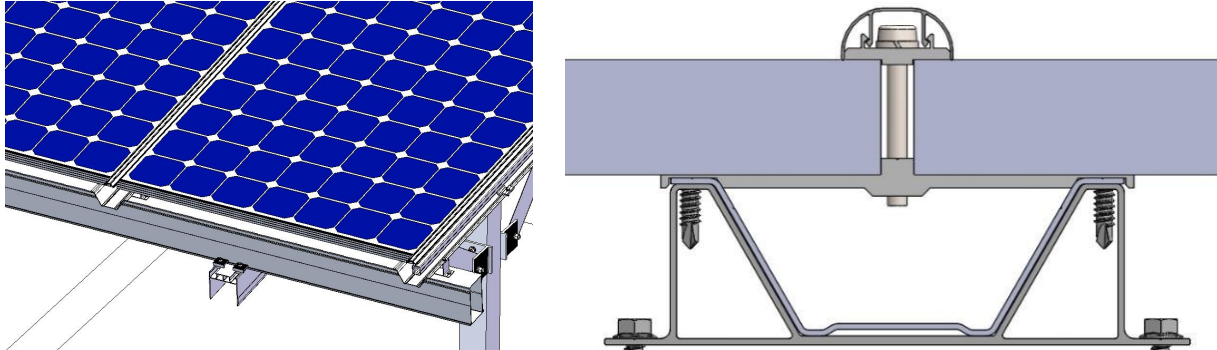
1. Push the panels up when installing lower panels to reduce the gap between panels in vertical direction.
2. Distance between panels on both sides of mid clamp should not be too large. (Refer to the installation of V-drainage rail.)



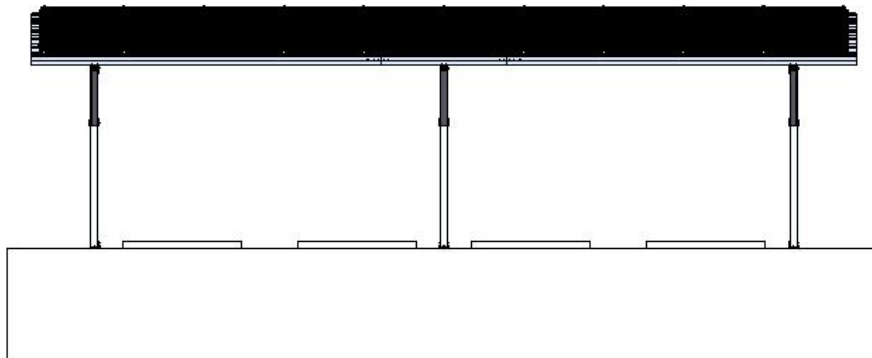


## 4.2 Installation of Top Cover

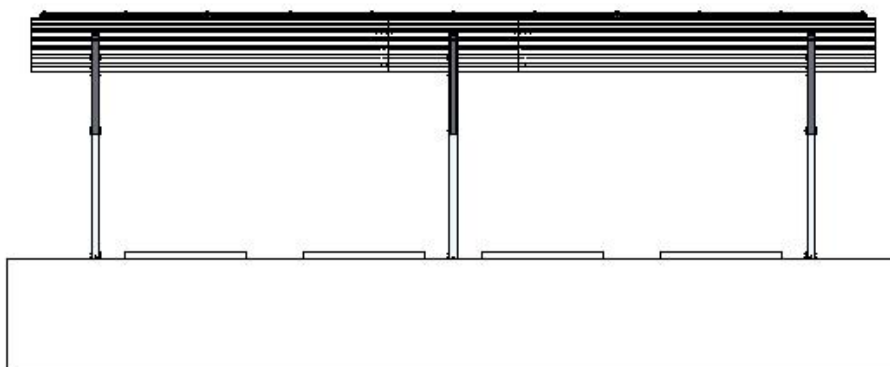
Place top cover on mid clamp and press down gently until the buckles fit together. Install two adjacent top covers tightly without any obvious gap.



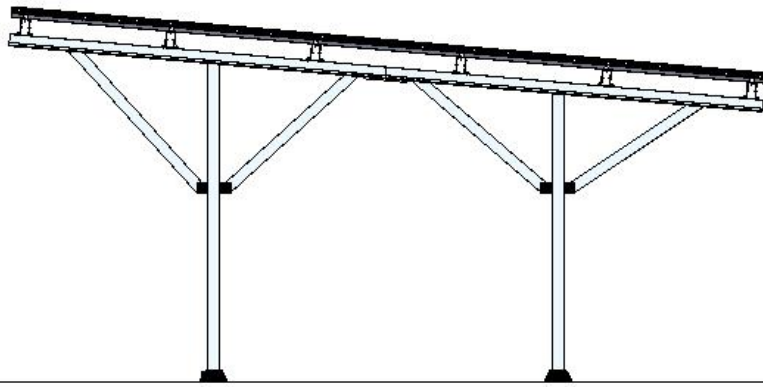
## 5 View of Installation Completed



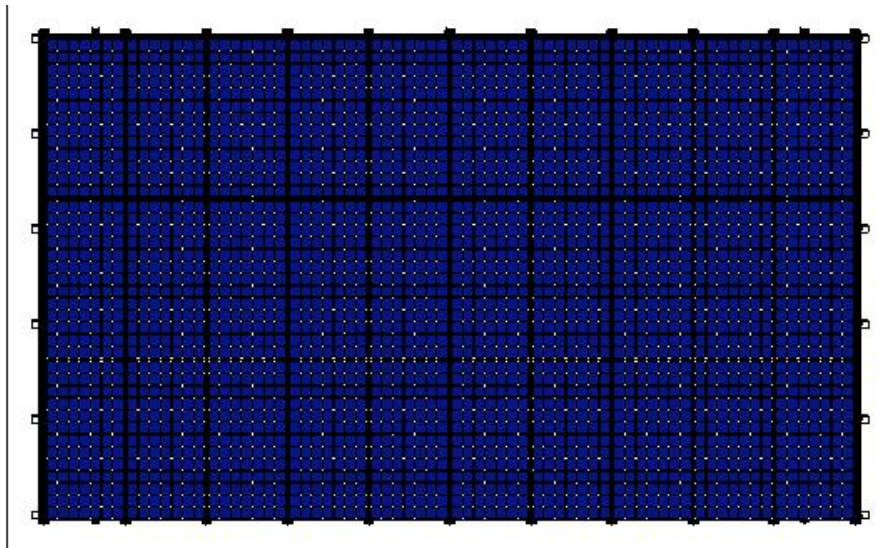
Front View



Rear View



Side View



Top View

## 6 Installation Notice

### 6.1 Notice of installation measurements

The measurements during the installation including the spacing, span, etc, shall be in accordance with the shop drawings. The manual is only for the reference of installation procedures.

### 6.2 Notice of stainless steel fasteners

Due to the ductility of stainless steel character, the improper operation will result in the blockage of threads of bolts and nuts, which commonly known as "deadlock". Please follow the following instructions to reduce the risk of deadlock:

#### A. Reduce the Friction

- (1) Ensure that the surface of bolts and nuts is clean and tidy (No dust, grit, etc.)
- (2) The use of yellow wax or lubricant during installation (grease, engine oil, etc.)

#### B. Correct Operation Method

- (1) Screwing must be done perpendicular to the axis of the thread without inclined
- (2) During the screwing process, the force applied must be even.
- (3) Using torque wrench or socket wrench, instead of adjustable wrench or electric wrench. Lower the rotating speed while using electric wrenches.
- (4) Do not turn on the electric wrenches in high speed, to avoid rapid rise in temperature while operation.