



Make a better building

## Common Roof sandwich panels installation manual

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The structural treatment of the color steel products enclosing structure is an important part of the building function and architectural image of the color steel enclosing structure. The structural drawings should be carefully studied and detailed, and each part has rules to follow when installation, in order to avoid the arbitrariness of construction installation.

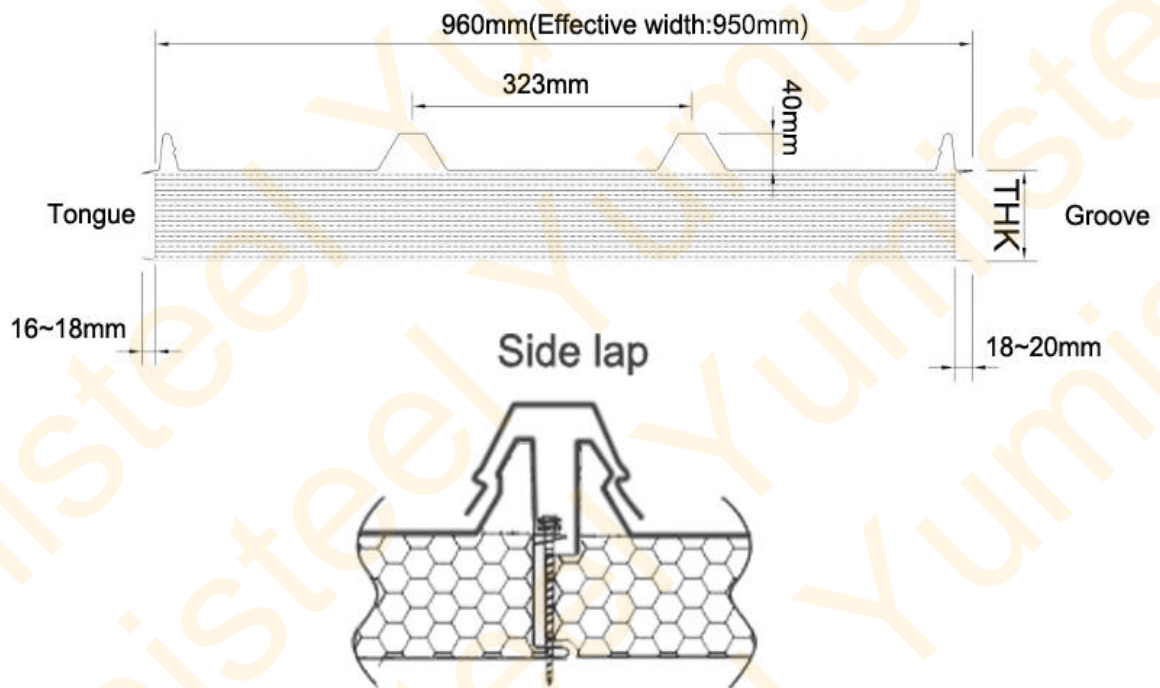
## **1,Direction:**

- 1) This manual is suitable for site handling and installation of Yumi wall sandwich panels, and its basic installation guidance manual;
- 2) Before installing Yumi wall sandwich panels and related flashings, please read this installation guidance manual and your project construction drawings carefully, in order to make sure smooth installation;
- 3) The safety shown in this manual is basic information and does not include the suitability of the user and the safe size of each project. The contractor must verify that all safety devices and their load parameters have been verified by architects and engineers and are in compliance with the Code and the environment;
- 4) Proper construction procedures and safety measures, in conjunction with this manual and construction drawings, ensure that the project is installed at the lowest cost and fastest speed and

with high quality;

5) Any amendments and improvements to this manual will be explained in a later reprint and will be updated in a timely manner.

## 2, Roof panel type introduction:



<b>Product name</b>	<b>Rock wool/Glass wool sandwich panels</b>
<b>Effective width</b>	950 mm
<b>Panel thickness</b>	50/75/100/150 mm
<b>Surface sheets</b>	PPGI/ PPGL/ Aluminum sheets/ Al-Mg-Mn alloy metal sheets/ Stainless steel/ PVC sheet
<b>Steel thickness</b>	0.40 - 0.70 mm
<b>Aluminum sheets/ Al-Mg-Mn alloy metal sheets</b>	0.70 - 1.20 mm

<b>Stainless steel</b>	0.40 - 0.60 mm
<b>Core material density</b>	Rock wool: 80 - 150 KG/M <sup>3</sup> Glass wool: 48 - 68 KG/M <sup>3</sup>
<b>Regular panel color</b>	White grey, Sea blue, Sliver grey, Dk grey, Iron grey
<b>Other panel color</b>	Customized
<b>Coating type choice</b>	PE/ PVDF/ HDP/ SMP, etc.
<b>Available length</b>	20FT container: ≤ 5.95m 40FT container: ≤ 11.95m

### **3, Panel site handling & storage manual:**

Panels' packages handling (unloading and movement) and storage at project site is a delicate phase during which panels might get damaged. For this reason, the following instructions should be thoroughly observed:

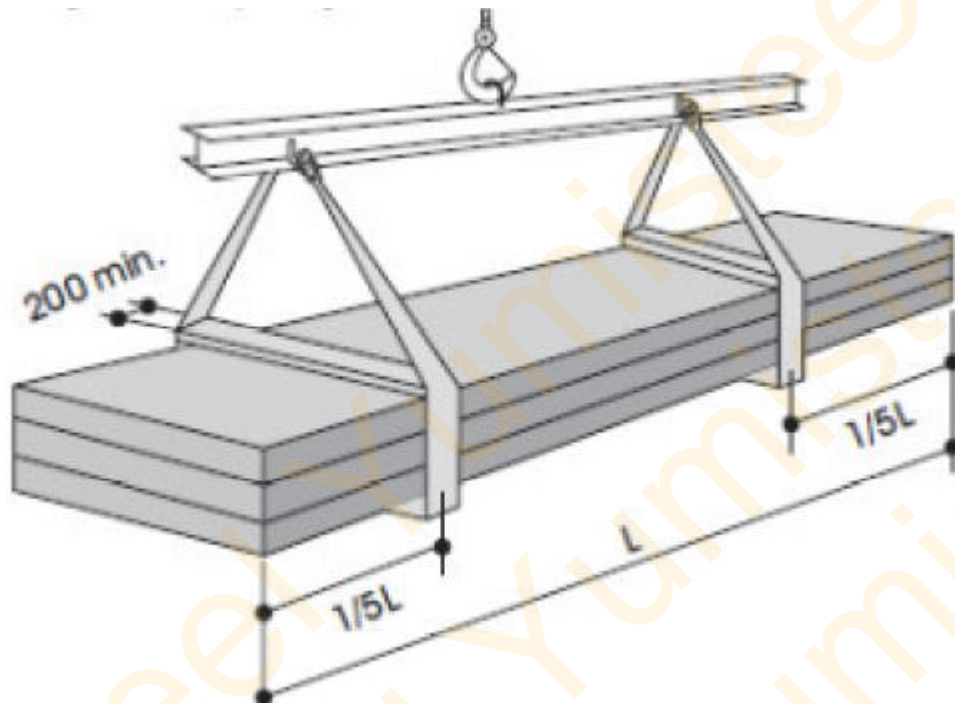
#### **1) Unloading with forklift**

- Recommended only for short (<6.00m) and light packages, and only in case of leveled and smooth terrain.
- Forks should be longer than packages width.
- Forks should be spread apart as much as possible.
- Forks' upper surface should be clean and smooth, in order to avoid damages on panels' surface.
- Never unload more than one package at a time.

#### **2) Unloading with crane**

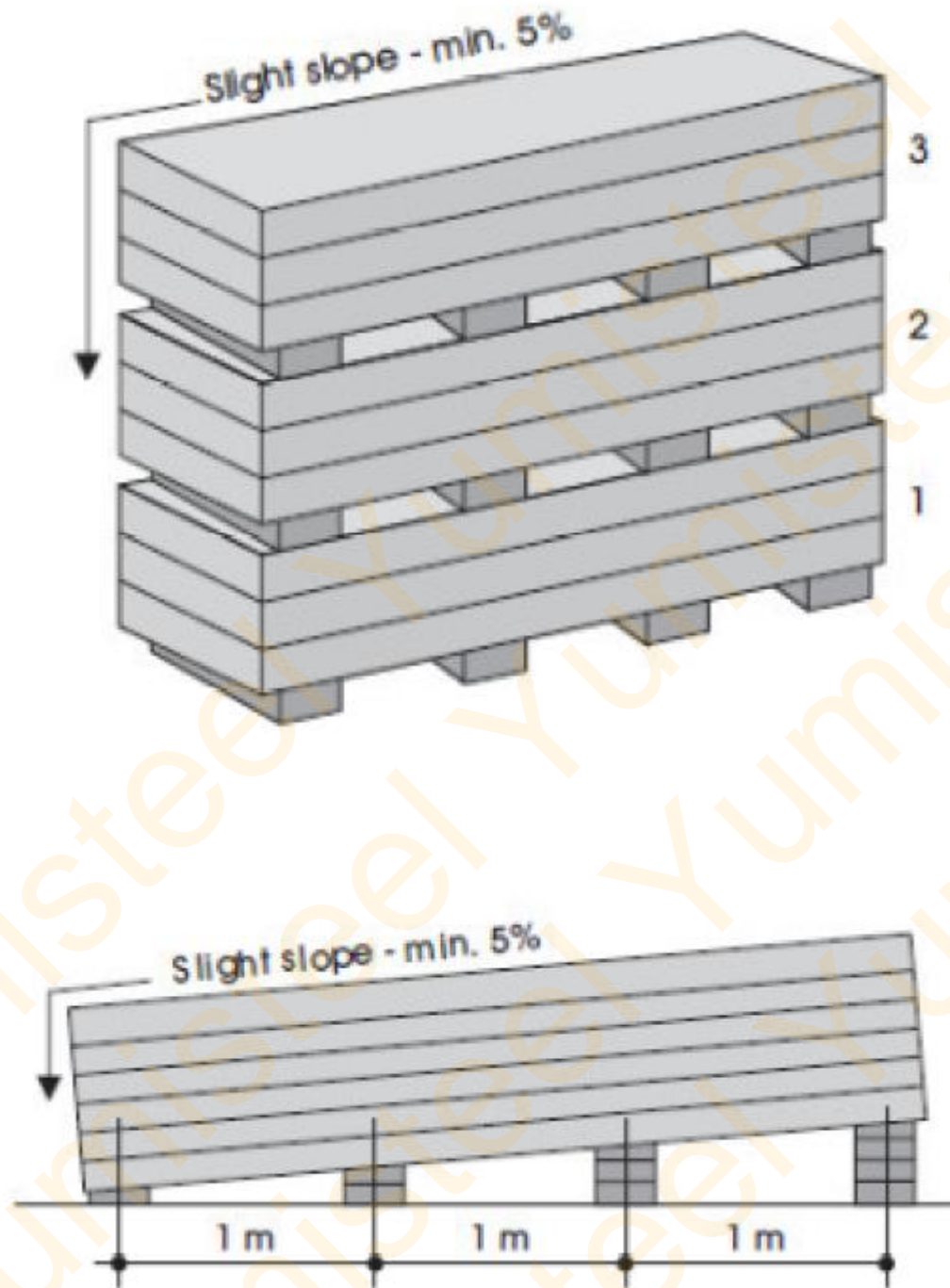
- Lift the packages with at least 2 nylon straps/belts.
- Make sure straps are not twisted.

- Make sure straps remain at their position (one apart from the other) by using a spreading truss of adequate length.



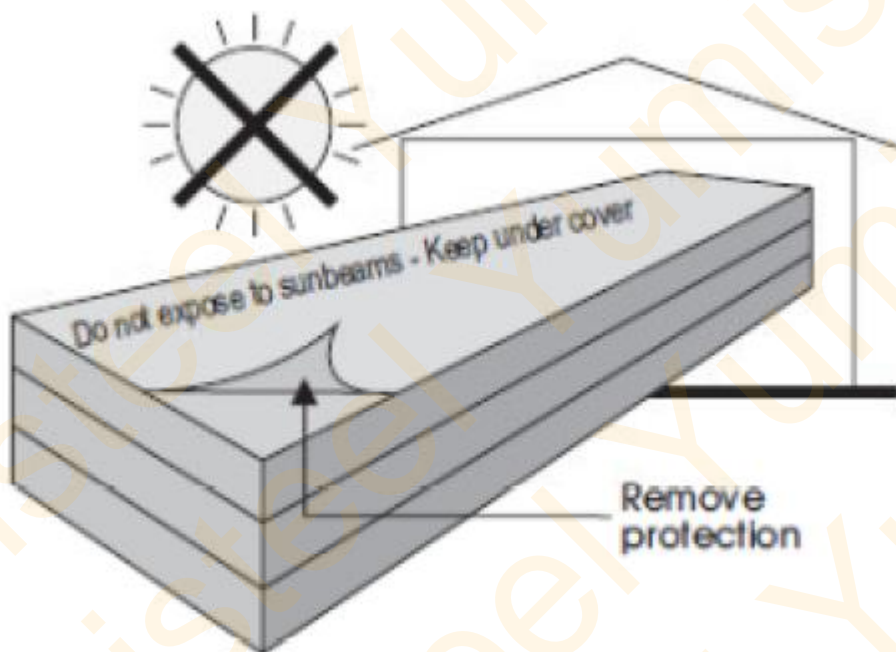
- Protect panels' edges (tongue and groove joint configuration) from getting damaged by the straps, by placing wooden planks between package and straps, both at bottom and top of the package. Wooden planks should be of adequate strength, width minimum 200mm, and longer than packages' width by approx. 2cm.
- Never unload more than one package at a time.

### **3) Storing panels at site**



- Place packages on smooth, level and rigid terrain.
- Support packages on wooden or polystyrene spacers width 200mm, every 1.00m
- Packages should be placed slightly inclined (min. 5%), to allow for eventual infiltration/condensation water drainage.

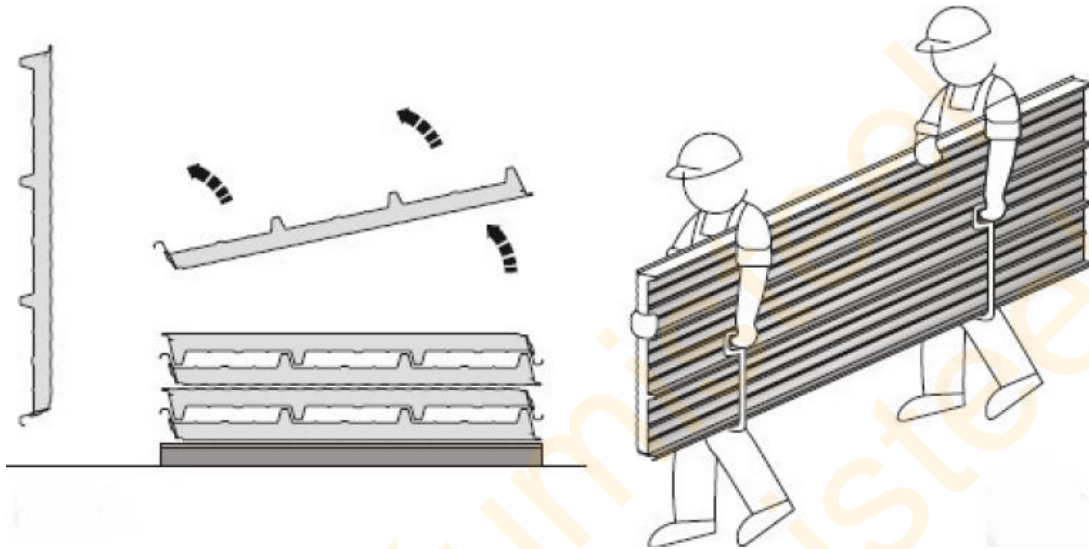
- Maximum 2 or 3 packages should be stacked in height (as transported).
- Packages should be stored at sheltered places. If not possible, they should be protected from rain and sun rays with rainproof membrane, ensuring, at the same time, adequate ventilation of the packages.



- The removable protective film of panel surface should not be exposed to sun rays for prolonged periods. In any case, it should be removed within 45 days from panels' production date.

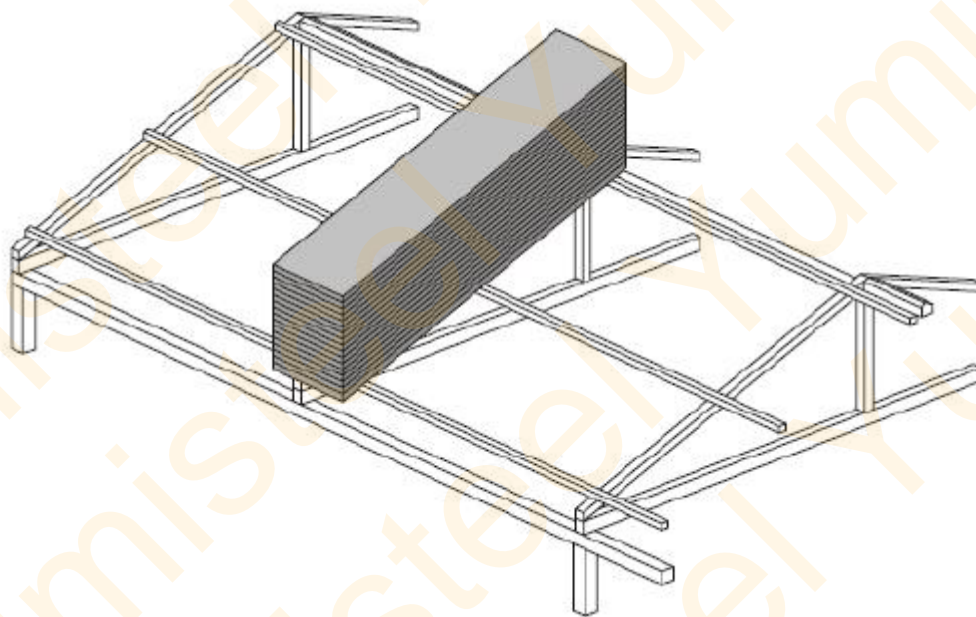
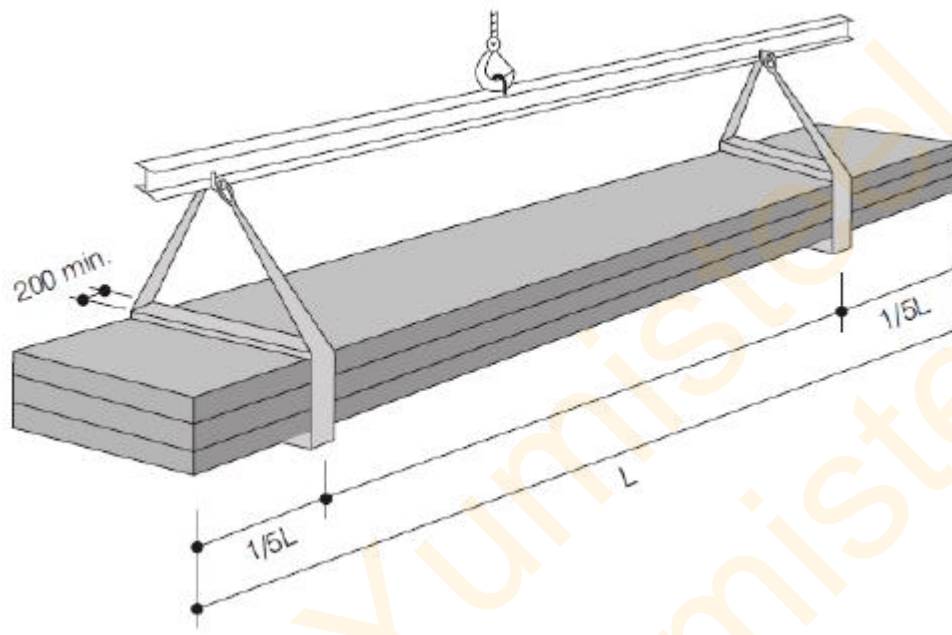
#### **4) Panel carrying:**





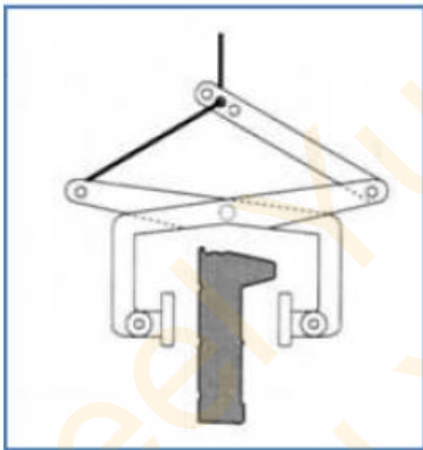
Protective gloves and goggles must be used throughout the manual handling. For the handling of a single façade, the length of the slab should be lifted by 3" '5 people, so as not to deform the siding. To prevent the interface from being damaged, the flat can not be picked up at the interface. When transporting, do not drag roof panels on the surface of the object, and do not drag roof panels to each other to avoid damage to the topcoat. Avoid bending when handling. Bending will rupture the core of the panel and permanently deform the inner and outer surfaces.

#### **5)Panel lifting:**



The bundled roof panels are lifted and cannot be directly lifted by a triangle between the hooks and roof panels. Instead, the spreaders and booms provided by the project must be used to vertically lift the slings from roof panels and the booms. Find a lifting balance point and lift it. To lift the bundle in a single bundle, handle it with care and do not drag the panel.

Moving long and heavy panels on the roof by hand, could be difficult or even dangerous. In such cases it is recommended that packages are not lifted on the roof structure, but left on the ground, and panels are lifted one by one on the structure, by means of crane and special lifting clamps (as pic below).



Lifting clamps should be applied on the full rib of the panels. Lifting clamps are connected with ropes on a spreading truss, which is lifted by crane. At least two (2) clamps should be used (as pic below). In this way, roof panels are transferred directly to their final installation position.

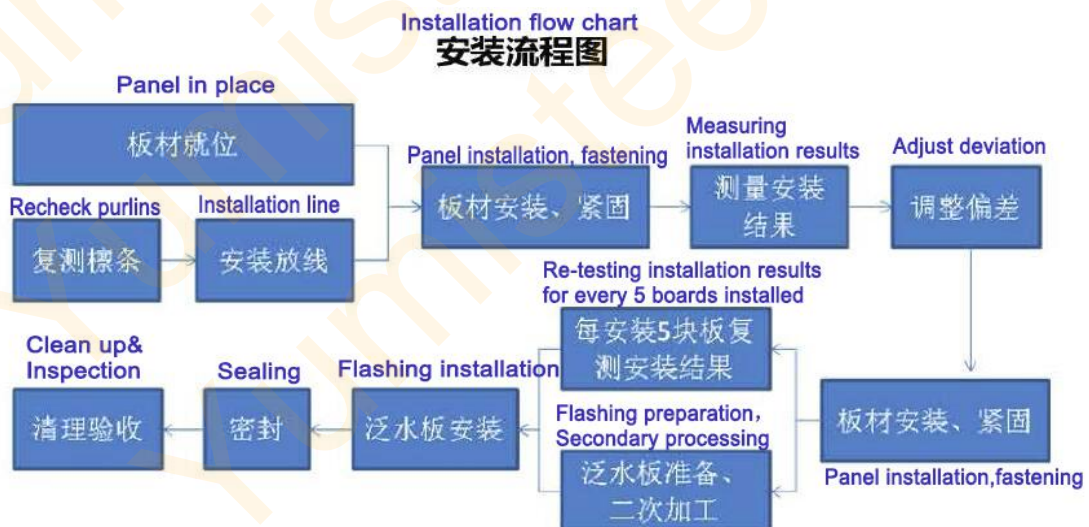


## 4, Roof sandwich panel installation:

The installation of the color steel enclosing structure is a very important part, and must be paid enough attention.

The same materials will have different results when installed by different teams.

### 1) Preparation and handover inspection:



## Handover inspection and installation preparation:

A) Handover inspection: checking if purlins' installation could meet up steel structural installation conditions, which is including the offset, perpendicularity, bending height and the construction requirements of purlin mounting line.

B) Material preparation: Detailed check of the specifications, models, quantities, connectors, and specifications of the roof panels corresponding to the layout drawings.

C) Machine Preparation: Lifting equipment, hand tools, power connections, scaffolding and other temporary small accessories.

D) Technical preparation: detailed construction drawings, layout drawings, joint construction drawings, etc.

E) Preparation of site and temporary facilities: loading and unloading conditions, equipment walking route, lifting position, horse road setting, construction road, 11 installation location.

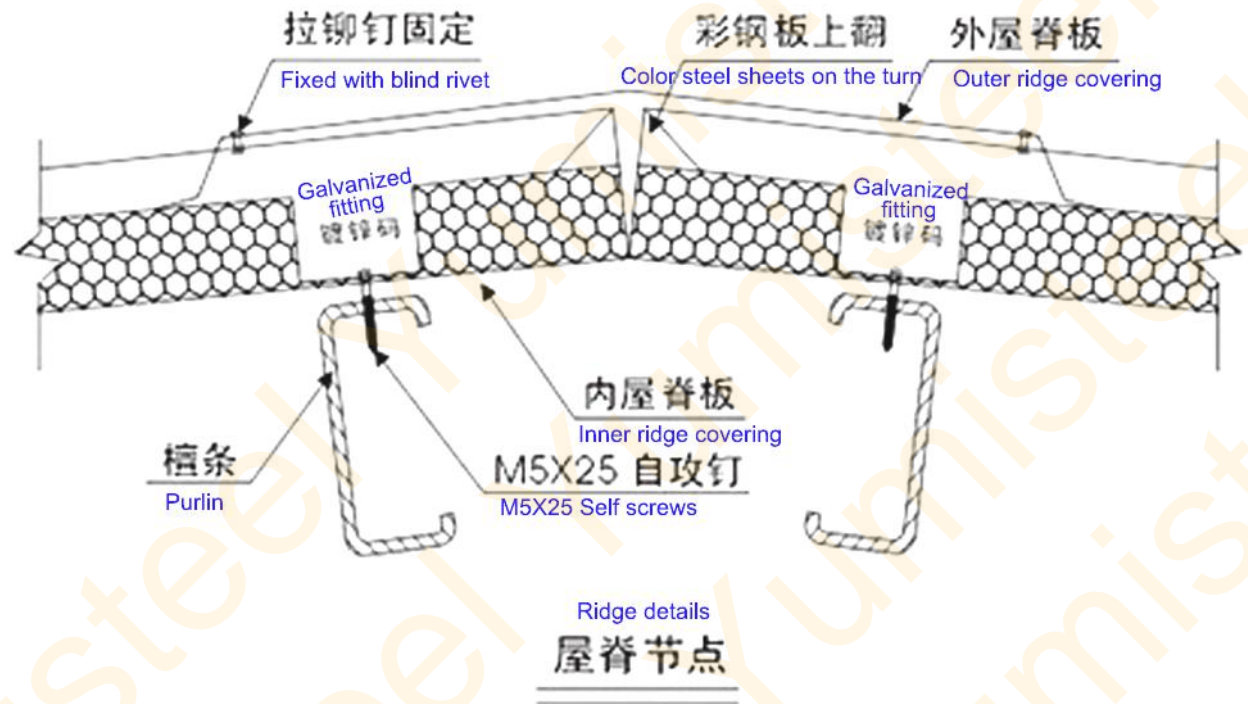
Before the construction, special project personnel should carry out the technical disclosure of the construction technicians to ensure the smooth progress of the construction and the guarantee of the project quality.

## 2) Typical Construction details:

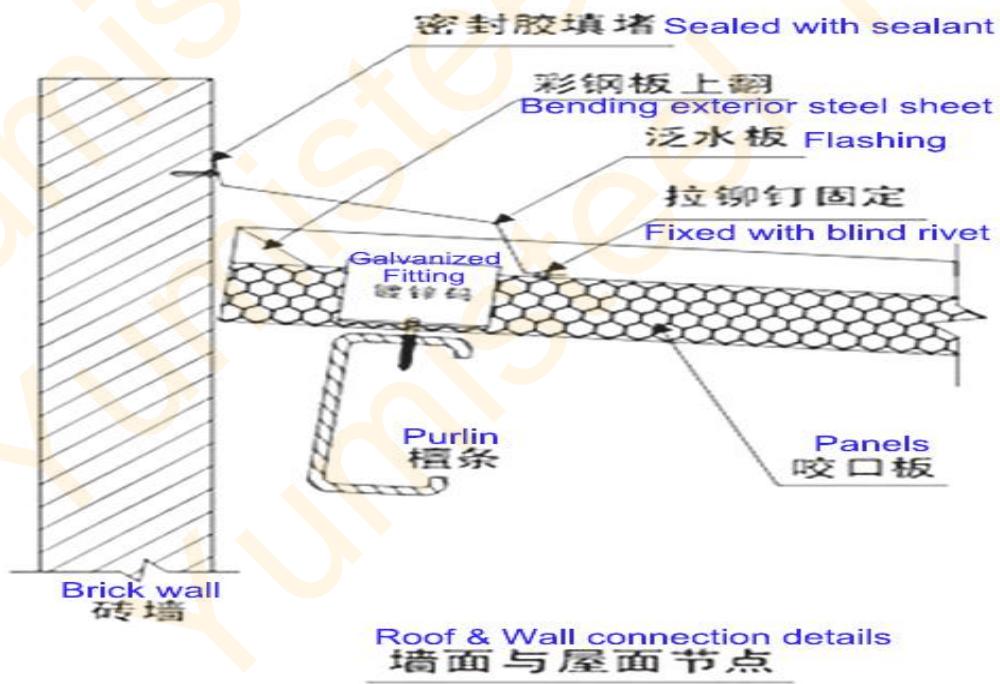
On the following pages a series of drawings are quoted, regarding typical cases of construction details. The proposed solutions are

indicative, and can be adjusted to the requirements of the case per case project.

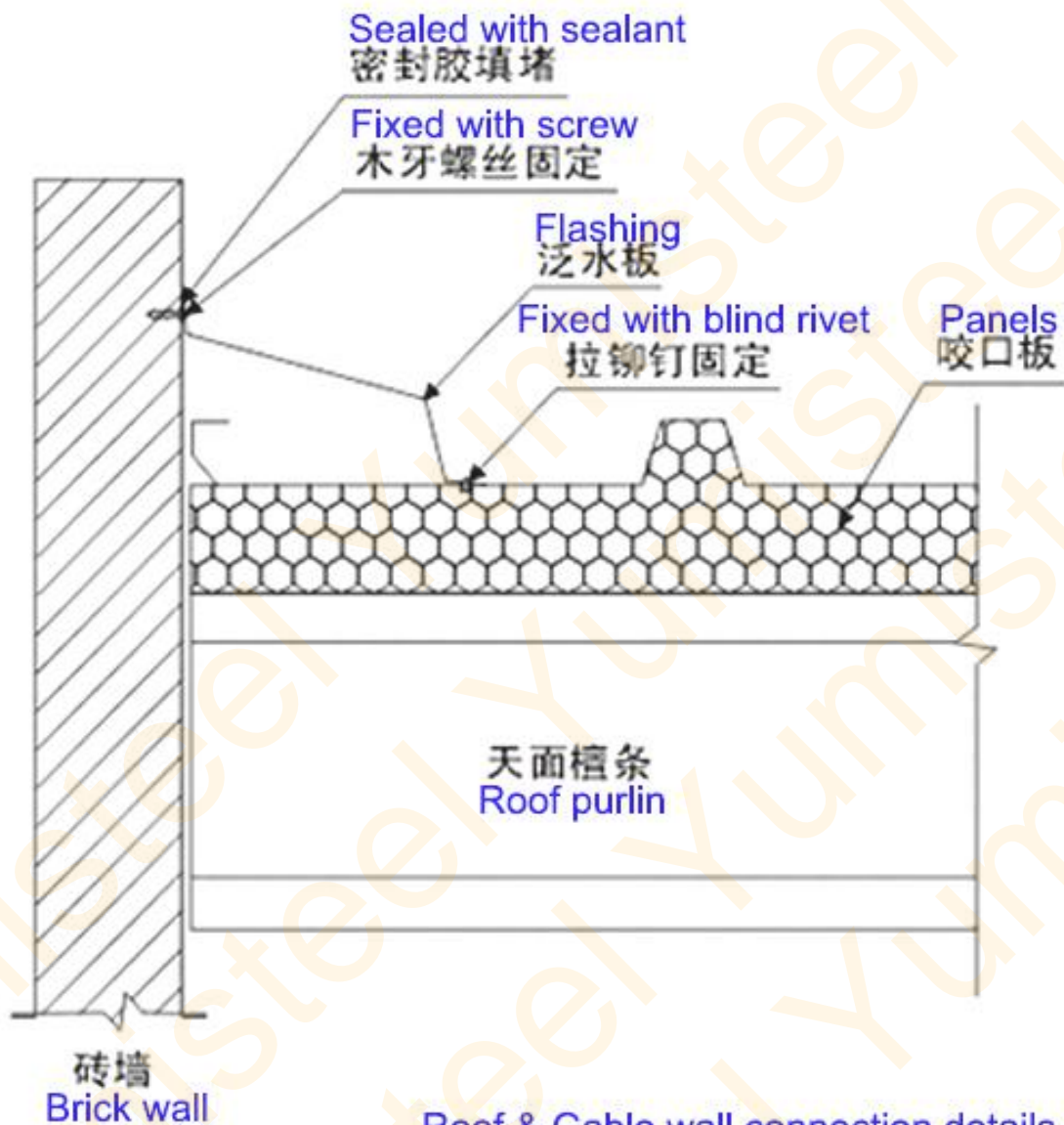
**A,Ridge details:**



**B,Roof & Wall connection details:**

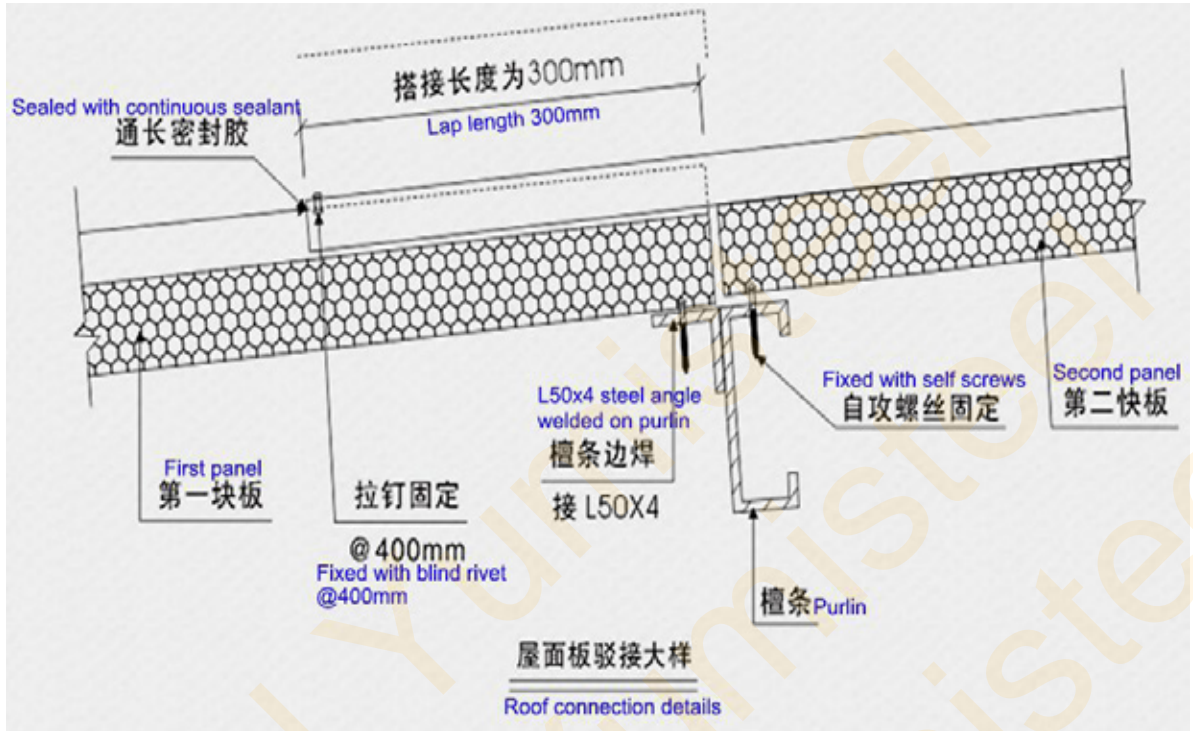


**C, Roof & Gable wall connection details:**

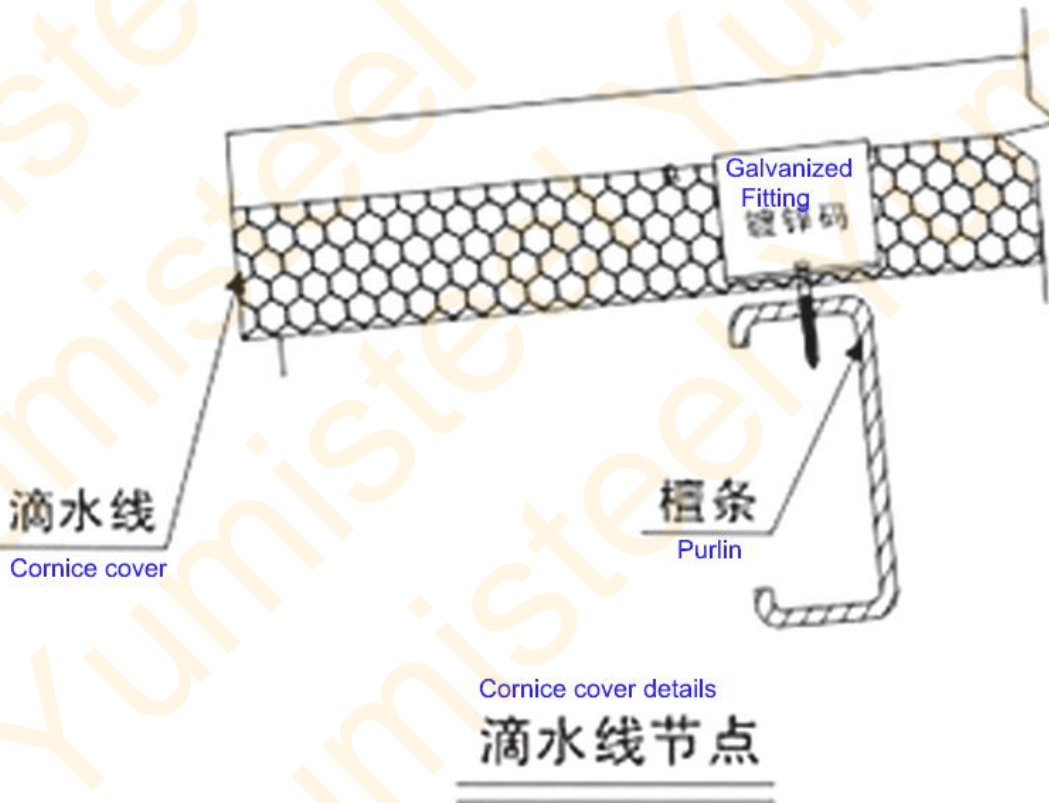


**Roof & Gable wall connection details**  
**山墙与屋面节点**

**D, Roof connection details:**

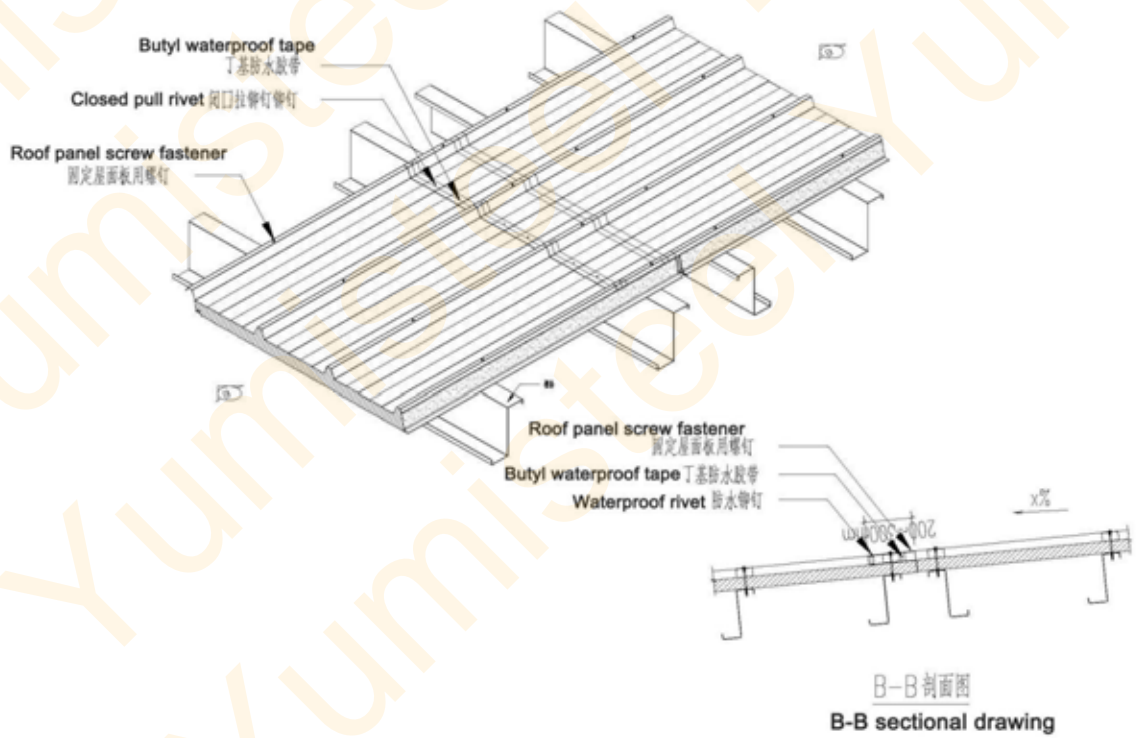
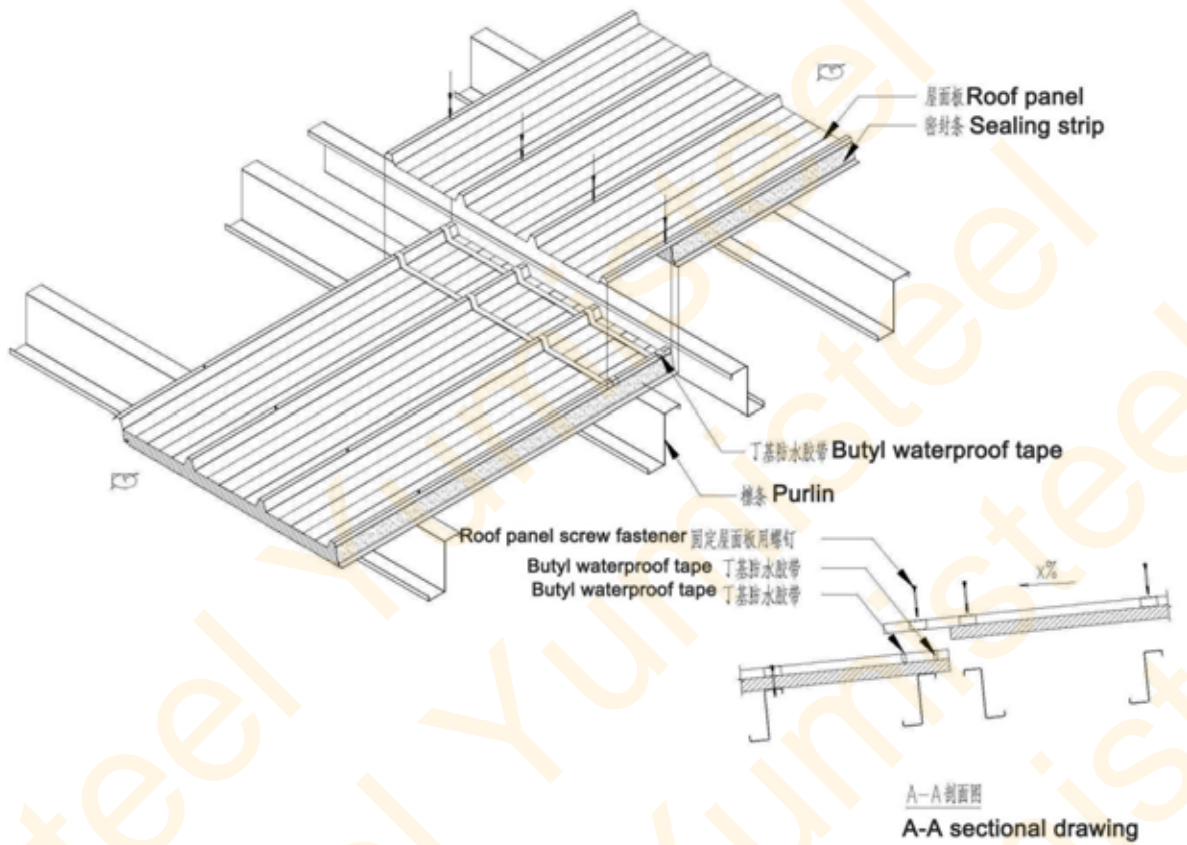


**E, Cornice cover details:**



**F, Sectional node details:**





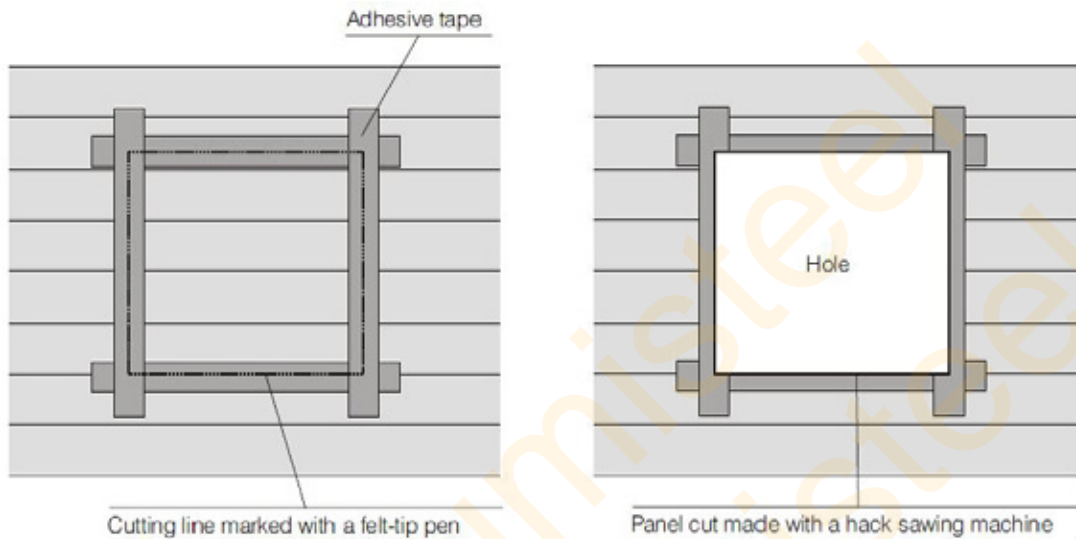
## 5, Panel cutting:

Even though panels are delivered already cut at the desirable lengths, it is often required that panels are also cut at project site, in order either to adjust their shape to façade or roof outline (e.g. wall connection with roof gable-edge), or to create openings on panels surface (e.g. windows).

Any cutting operations on panels should be performed with a circular saw or a jigsaw; the use of angle grinder is not acceptable.

Proceed as follows, when cutting of panels is required (**as pic below**):

- Protect the surface to be cut with adhesive tape
- Draw the outline of the cut to be made on the tape with a felt-tip pen
- Cut with the use of suitable cutting tools
- Clean panel's surface from shavings and chippings formed during cutting
- Remove the remaining adhesive tape



When cutting operations on panels are performed, make sure that cutting sparkles cannot reach flammable materials, such as packing materials (paper, carton, plastic films, etc.), solvents, oils, glues, etc.

## 6, Other notes:

1. After the materials arrive at site, please check the quantity of each item carefully and see if any transport damage happened, according to the delivery list. If you found out any missing or panel damage, please check if it is indicated on the invoice or not, also immediately notify the relevant service department of Yumi steel.
2. The small piece of material, for example fasteners, connecting pieces and sealants should be placed in safe place, it's better to be locked, in case of theft.

3. Please don't use the dirty gloves to handle and install wall panels and edge trims(flashings),especially galvalume material and edge trims,in order to avoid the dirty appeared on wall panels and edge trims surface,and it's hard to clear and will have effects on aesthetic.

4. All the parts that need sealants should wipe the attachment surface clean,to make sure there is good adhesion on color steel.The glue joint should be full and dense to avoid water leakage.

5. During the installation process, wall panel maybe damaged by collision and friction with the scaffold, column, brick wall,etc.So please be careful about this point.

6. During the on-site cutting process of wall panel, the bottom surface of the cutting machine should not be in direct contact with the color steel surface.It's best padded with thin plywood on the panel,then cut.The burrs on the cutting end need to be removed and installed in time.

7. Iron scraps are generated after cutting and drilling holes,and these iron filings on panel surface need to be cleaned.These iron scraps must be cleaned up in time and must not be left overnight.Iron filings can rust in a humid environment. The rust spots are verified to be removed after the surface of the board is

formed, and the paint surface or even the substrate may be damaged for a long time. Similarly, other cut-off color steel heads, iron bars pulled by aluminum alloy steel nails, etc. should be cleaned up in time.

8. After the daily installation work is completed, all the debris left on the site must be cleaned up.

## **7, Panel maintenance:**

Sandwich panels are cladding elements that are designed to have an excellent performance in time, requiring low maintenance operations.

Panels' maintenance regards two phases:

### **First phase: panels' installation period**

Panels should be handled and installed as per instructions described in chapters 3, 4, 5 & 6 by professional and skilled personnel. Special attention should be paid on the following topics.

- Metal chippings deriving from drilling or cutting operations should be immediately removed from panels' surface.
- Roof surfaces should be cleaned – on daily basis – from any foreign metal objects, such as screws, rivets, nails, washers, saddle caps, etc.
- Upon completion of installation works roof surfaces and gutters

should be thoroughly cleaned.

- Panels' surfaces should be inspected for eventual damages (scratches, abrasions, etc.) as a result of installation operations; if found, immediate action should be taken (e.g. cleaning and touch-up painting).

### **Second phase: building's useful life period**

It is recommended that building user schedules a maintenance plan:

Roof should be inspected at least once every six months:

- Deposits of aggressive substances should be removed by jets of water, when rainfalls cannot sufficiently clean the roof surface. If necessary, mild non-abrasive detergents (e.g. soap-water solution) should be used. Extra attention should be paid at areas close to chimneys, due to eventual deposits of combustion products.
- Check fixing elements, overlapping joints, ridge and panels' end in the gutter for early signs of eventual corrosion in progress.
- Gutters are often filled with foreign objects, such as sand, dirt, trash, plants, etc. They should be thoroughly cleaned in order to make sure that the metal water-flow surface is not damaged, and rain water drainage is not obstructed.
- Fixing screws should be checked, and if necessary they should be re-tightened. Walls should be similarly inspected. Extra attention

should be paid at flashing elements in horizontal position, for eventual dirt and moisture accumulation, in order to prevent start-up of corrosion process.

## **8, Contact details:**

We constantly devote ourselves to the super value service and supply of steel structure products. Continuously scale new heights, endeavor to surpass the limit of ourselves. Make a better world with our diligence and wisdom.

### **Xiamen Yumi Imp.&Exp. Co., Ltd.**

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