



SANDWICH PANEL'S INSTALLATION & ERECTION





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ICON

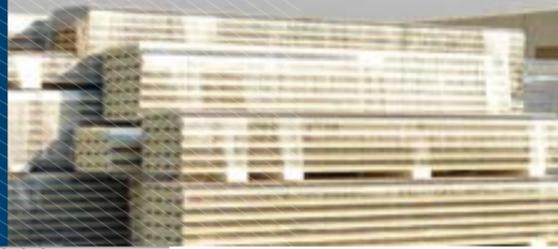
CONSTRUCTION
AND DEVELOPMENT

SANDWICH PANEL'S

INSTALLATION & ERECTION

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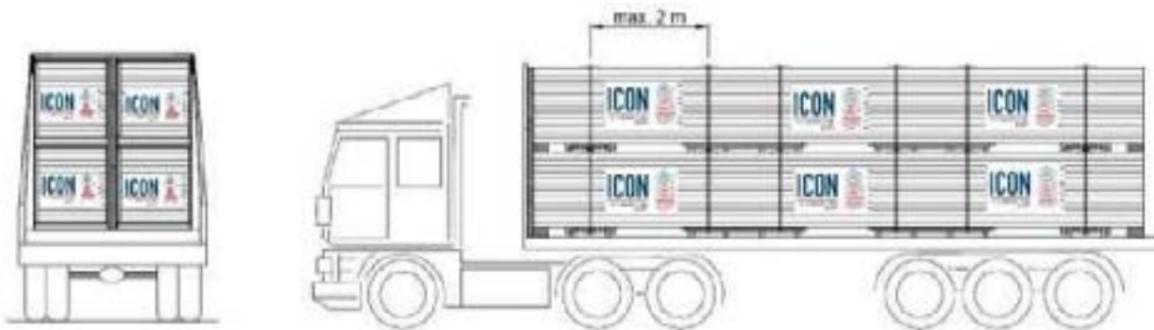
01 PACKING

Panels are delivered in packages, each of them consisting of a certain number of piled-up panels. The number of panels per package is defined taking into consideration:

- Panel's type,
- Panel's thickness,
- Panels' length,
- Type of transportation means,
- Optimization of loading plan.

Each package is supported by polystyrene spacers thickness 100mm, along package's length, every 1000/1500 mm. Packages are wrapped – together with the polystyrene spacers – with several layers of polyethylene film, and are labeled with the necessary information (package identification number, packing list, handling instructions, etc.).

02 TRANSPORTATION



- Load-carrying surfaces must be clean. No nails or other sharp objects can protrude from the truck bed
- The vehicle (truck bed) has to be long enough to ensure complete support coverage for the loaded package. The package is to protrude out of the truck 1.5 m max. for pallets with length more than 6 meters.

03 SANDWICH PANELS HANDLING & STORAGE

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:

3.1 HANDLING WITH FORK LIFT

- Recommended only for short (< 6.00 m) and light packages, and only in case of leveled and smooth terrain.
- Forks should be spread apart as much as possible.
- Forks' upper surface should be clean and smooth, in order to avoid damages on panels'



3.2 HANDLING OF SINGLE PANEL



- 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.

3.3 HANDLING OF SINGLE PANEL



- The panels must be carried edge-wise to avoid bending of the panel.
- The female part of the male-female joint should not be used as a hand-grip.

3.4 STORING OF SANDWICH PANELS



- 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 panels' 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. of the packages.

⚠ WARNING



- It is customer's responsibility to protect the panels against fire risks both during storage at site and installation stage.
- The protective film put on the panels at the factory should be removed immediately after installation and certainly not later than two weeks
- Long term storage of the panels with protective film may damage the coating.

04 SANDWICH PANELS INSTALLATION

4.1 INSTALLATION PRECAUTIONS

Before starting the installation of sandwich panels, the following items should be carefully checked by the project consultant in order to make sure that installation activities will be done correctly:

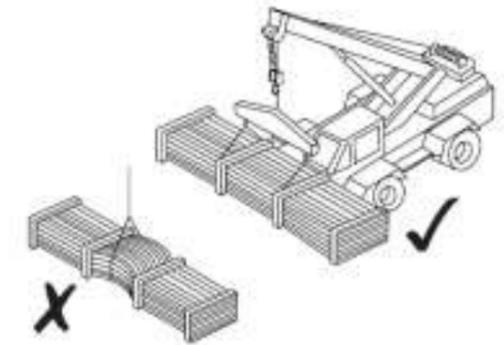


- Roof and wall bracings should be in place.
- The bracing should be tightened.
- The flange brace should be fixed on columns & rafters.
- All purlins bolts should be installed.
- All purlins and side girts should be straight and aligned.
- All main frames should be plumbed and aligned within allowable tolerances.
- The crane beams should be braced and aligned.
- All paintings and touching up works should be completed.
- All tie rods should be installed on walls and

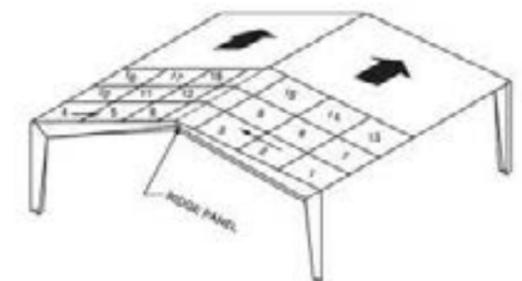
4.2 ROOF PANELS INSTALLATION

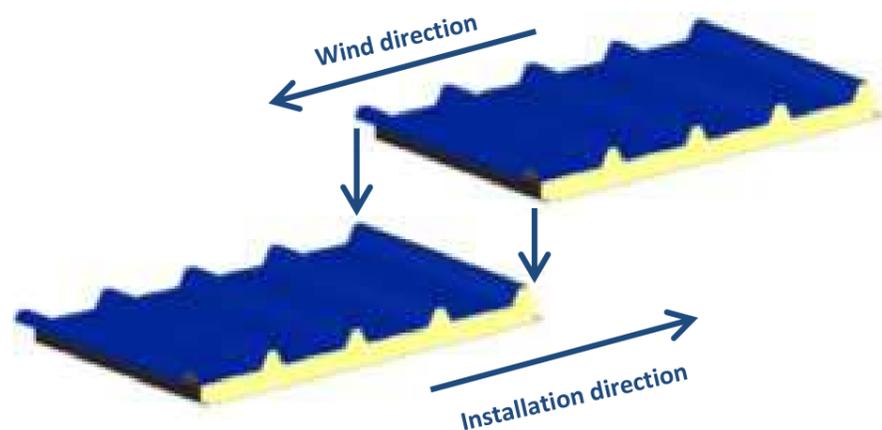
01 LIFTING

When panel packages are lifted directly on the roof structure, instructions as per unloading with crane should be followed. In addition, a guiding rope fixed on one package's end would allow for better Handling (swinging rotation) of the package. Packages should be placed on the roof purlins, close to the main trusses (load bearing structure), and distributed along roof's length, taking into consideration the installation direction. Packages should be secured on the roof structure against slipping and wind uplifting forces by tightening it with the steel structure. In case of strong wind areas, it is not recommended to keep the packages above the roof more than one day.



01 INSTALLATION





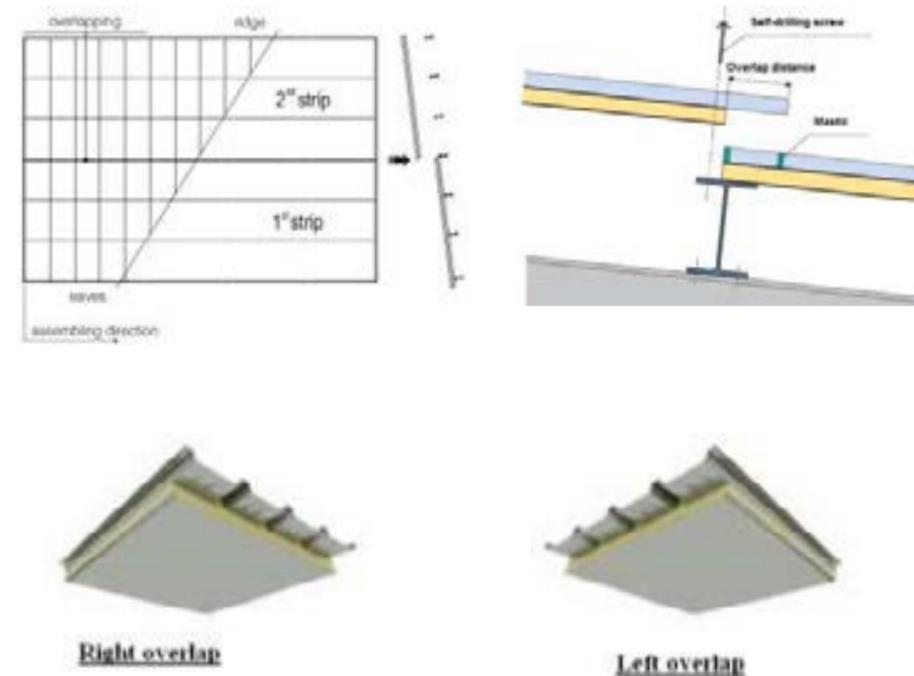
Before installing the roof panels, life line should be installed for safety reasons (Anchorage points for life line will determine suitable to site safety conditions).

Prepare the roof panels by segregating them by their length shown on the roof sheeting plan. The sequence of roofing is from eave to ridge on both slopes finishing with the ridge panel.

Roof panels must be installed by only one way from predetermined end gable of the building according to wind direction (Installation direction should be opposite to the wind direction).

Roof panels are installed by overlapping its first (empty) rib on the last (full) rib of the first panel, and fixing them together on the roof purlins using self-drilling screws. Different categories and specifications are available for self-drilling screws; the specifications of the self-drilling screws (material, drilling capacity,..) should be determined based on the site conditions, and the purlins

Self-drilling screws are placed at the middle line of the top surface of the high rib of the roof panel. The longitudinal overlapping rib must be screwed to make sure that every two adjacent panels are well connected to each other, then leaving the next rib from each panel without fixation, and then fix the middle rib from each panel with self-drilling screws.



In case of the width of the building is covered by more than one roof panel per each slope, the panels must have longitudinal overlap and they are installed as per the following sequence:

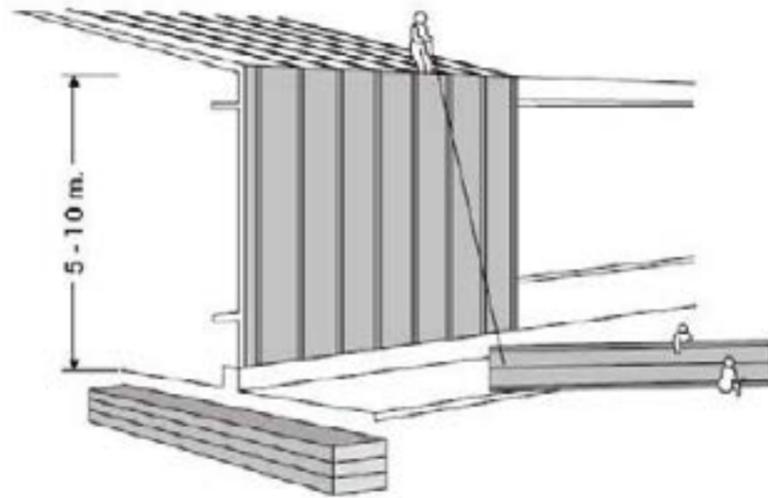
- Installing 1st strip panels: these panels have longitudinal overlapping in the eave side, this overlapping ends inside the eave gutter (in case using eave gutter).
- Installing 2nd strip panels: these panels have longitudinal overlapping to cover the edge of the 1st strip panels to prevent any water leakage from this connection; these panels should be prepared before installation by removing back the internal steel sheet and the insulation foam (for the overlapping length).

Panels with longitudinal overlapping can have two directions; either left or right overlapping (as shown in the figure); the direction of the overlapping is determined depending on the installation directions and the building slopes. The overlapping distance starts from (50 mm.) to (200 mm.); this value is determined based on the roof slope and the site weather conditions. To produce the longitudinal overlapping during panel's production, both value and direction of the overlapping must be determined.

Bead mastic is used inside the overlapping area in order to prevent any water leakage from this connection and to protect the steel from corrosion. For (200 mm.) overlap, two lines of bead mastic should be applied to cover the whole length of the overlapping area.

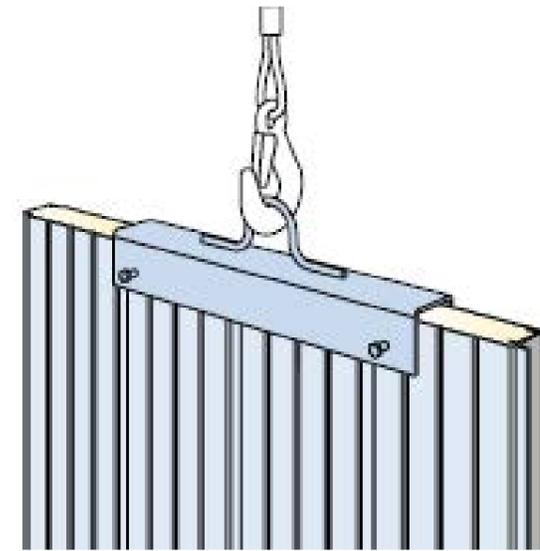
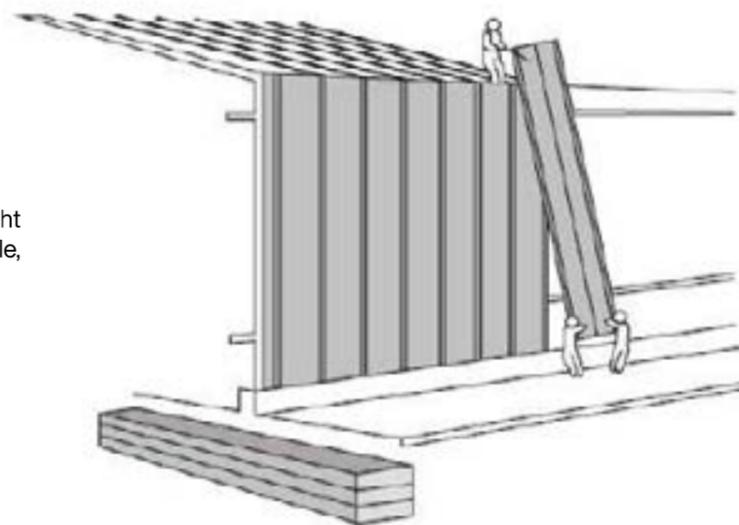
4.3 WALL PANELS INSTALLATION

01 LIFTING

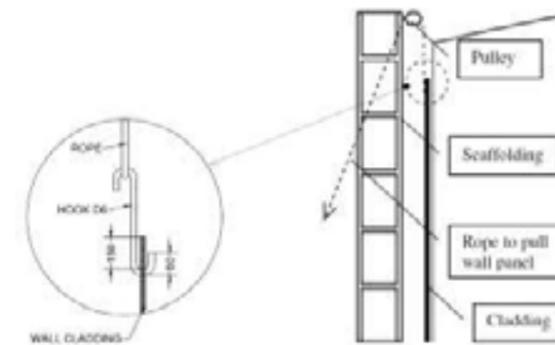


● Panel packages should be distributed along the building facades to be clad, close to their installation position, in order to optimize individual panel's handling during installation works. Short and light panels can be lifted to installation position by hand, with the eventual use of ropes.

● In case of heavier panels or when panels should be lifted up at a height where working from the ground is not possible, special lifting equipment should be used.



Lifting of panel with crane or ratchet, with the use of a "U" profile fixed at the upper end of the panel (for vertical installation of wall panels).



Recommendation:

- Minimum steel thickness of panel's faces 0.50mm.
- Maximum panel's weight 200 kg.
- Minimum distance of screws from panel's edge 100 mm.

Other lifting equipment (Man basket, Man lift and scissor lift) can be used for securely lifting the wall panels depending on the building height, maximum panel length and maximum panel weight. Workers must be secured on the equipment during installation using PPE's and safety ropes.



Man Basket



Man Lift

Scissor Lift

02 INSTALLATION



Wall panels visible fix



Wall panels hidden fix

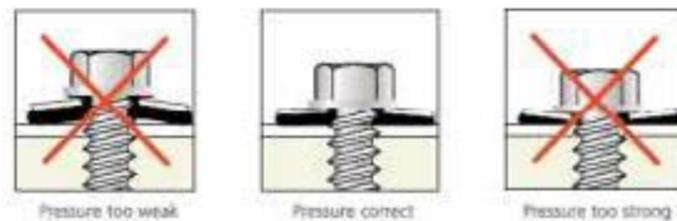
Panel packages should be distributed along the building facades to be clad, close to their installation position, in order to optimize individual panel's handling during installation works. Polyethylene protective film should be removed before installing the wall panels. Flashings and trims should be checked if it needs to be installed before installing the wall panels (drip trim, internal corners,..).

Wall panels had two main profiles which are visible and hidden fix; the joints of these two profiles are installed as per the following drawings:

06 FIXING THE PANELS

The role of panels' fixing elements is to hold panels in position and to allow for loads' transfer from panels to the supporting sub-structure. For an optimal fixing result, the following recommendations should be followed:

- For fixings at positions exposed to weather, use stainless steel screws in combination with:
 - metal washer and EPDM gasket (e.g. wall panels' surface),
 - saddle caps with gasket (e.g. trapezoidal rib of roof panels)
- Screws should be installed perpendicularly to panel's surface, in order to allow for a water tight connection.



- Use the correct pressure when tightening the self-drilling screws; too weak pressure tightening may cause water leakage and too strong pressure may cause damage of the sandwich panel's surface.



- Clean the metal chips which are resulted from fixing with self-drilling screws from the panels top surface to prevent surface damage, scratches or corrosion to the panels surface.
- The appropriate type of screws should be used, case per case, taking into consideration: Panels' thickness (screw length) Type and thickness of sub-structure (drilling capacity of the screw)
Recommended diameter of fixing screws 6.3mm or 5.5mm.

07 CUTTING PANELS

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:

- 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

NOTE

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.



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