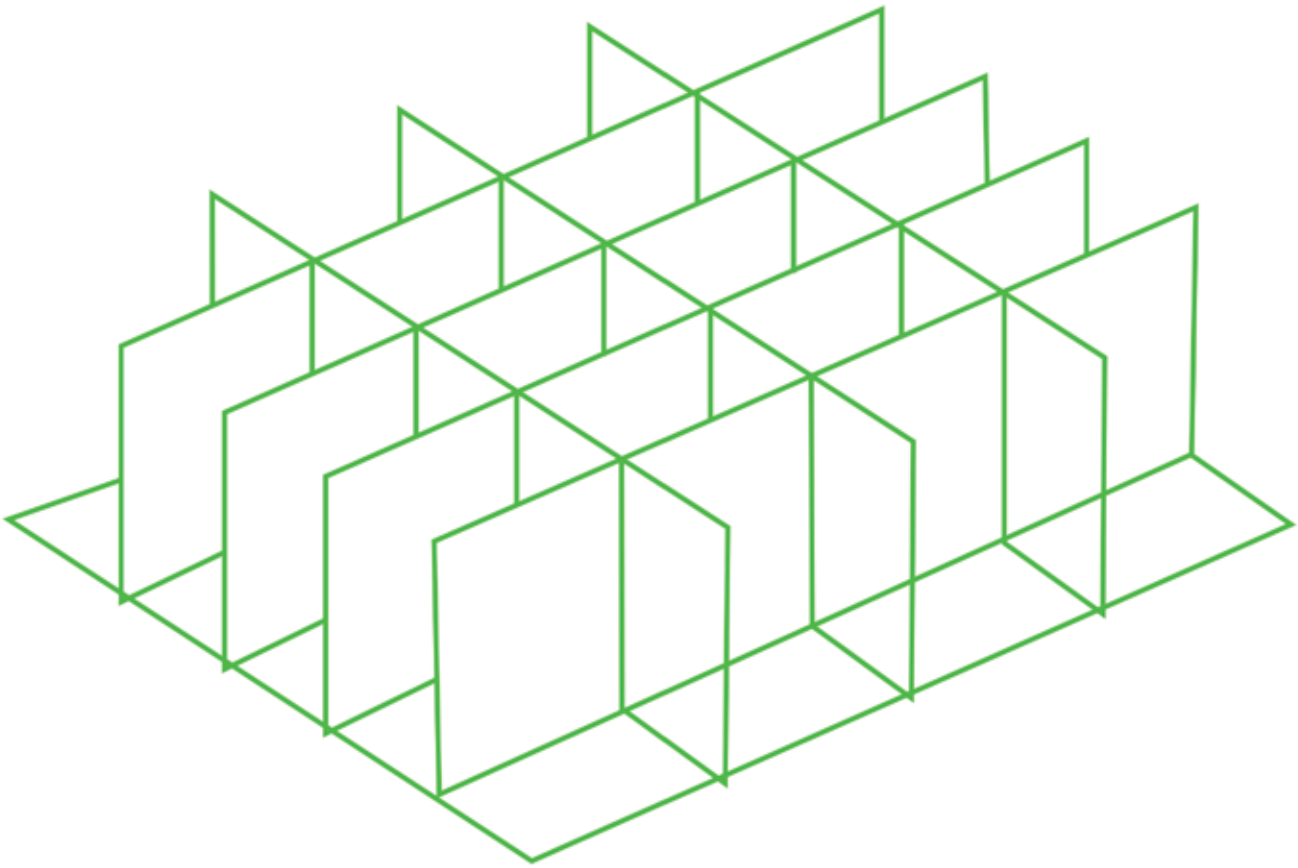
EPS SOLUTIONS
PAKISTAN (PVT) LTD.

# SMART PANEL INSTALLATION GUIDE



BUILDING THE FUTURE


BUILDING THE FUTURE

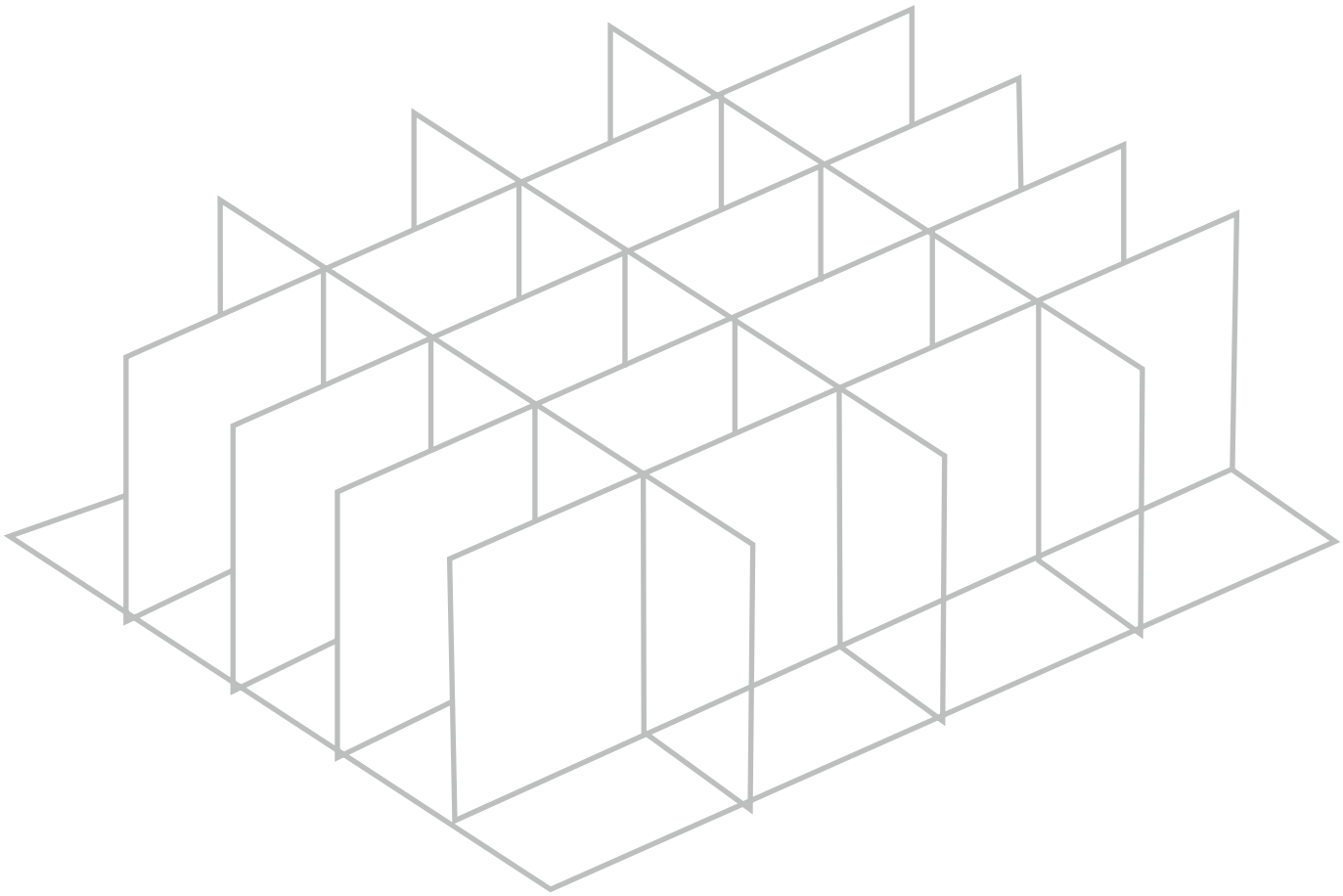
# Introduction

EPS Solutions Pakistan (Pvt) Ltd. stands as a pioneer for being the first entity to locally manufacture and introduce Smart Panel Technology to Pakistan's construction sector. The company has been established in the "Special Economic Zone" becoming a part of a new wave of projects coming into Pakistan. The project aims to revolutionize the construction industry of Pakistan and is paving the way for introduction of newer construction materials while deploying the latest construction technologies to improve both the quality and efficiency of the construction sector in line with those being followed internationally.

# What Is EPS Smart Panel?

EPS (Expanded Polystyrene) Smart Panel is composed of an exterior surface and interior core filling, to form a non-load- bearing light-weight composite wall panel. The exterior surface on both sides are calcium silicate boards / cement boards and the middle core is filled with EPS beads & cement, flyash etc. Smart Panel is a versatile durable material that offers excellent insulation properties.


# SMART PANEL
# INSTALLATION GUIDE



## 1. Marking lines for Smart Panel Installation

Mark lines for Smart Panel wall installation, windows and door openings.

## 2. Making a cut to Smart Panel

The standard size of a Smart Panel is 2440mm x 610mm x 100/150mm when wall height or width is smaller than a Smart Panel's standard size, then cut the panel to the appropriate size.

## 3. Applying cement mortar or sealant on the panel grooves

Clean the dust on the tongue and groove of the ready to install panel before applying cement mortar or sealant on the panel grooves and installed edges.

## 4. Install panel and Check panel flatness and straightness.

Install the panel applied with cement mortar or sealant, use a crowbar to pry the panel up and down from the bottom, making the cement mortar or sealant tightly connect to the next panel, then use 2M level to check the panel flatness and straightness.

## 5. Fixing Smart Panels

When Smart Panels are connected to the top or bottom of the floor slab, or the left panel is connected to the right panel, or the upper panel is connected to the lower, besides using cement mortar or sealant. ¢ 6 or ¢ 8 reinforcing bars are required for proper fixation of panels. For panels 125mm thick or above, two reinforcing bars are required.

## 6. Services Embedded

Smart Panels must be fixed for 03 days before services are embedded. According to design, the positions for services to be embeded need to be marked by lines. When both sides of the panel have the same position to groove, the grooves need to be digged staggered over 10mm so that the wall acoustic performance is not affected. When panels are grooved, the groove depth should not exceed 2/3 of panel thickness, and groove width must be less than 400mm. The horizontal grooves should not exceed 350mm of the panel width. After services are embedded, the grooves will be filled in by cement mortar or sealant.

## 7. Doorframes and door jambs installation

## 8. Joint Handling

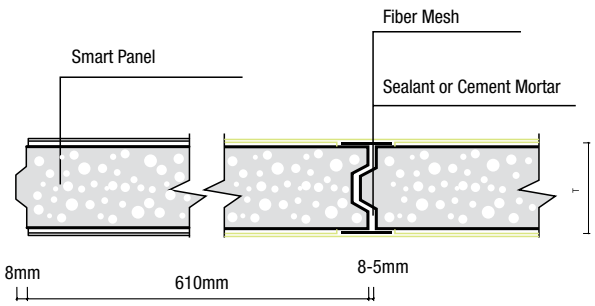
Panel joints cannot be handled until the doorframes and window frames have been installed and the services have been embedded for at least 07 days. Fiber meshes are used to avoid joint cracks. The installation steps are as below:

1. Clean the dust in the joints before the fiber meshes are paved.
2. Firstly, the 50mm width fiber mesh will be fixed to the joints by white latex adhesive, then use a spatula to press the mesh tightly and remove the excess white latex adhesive and air bubbles.
3. When 50mm width fiber meshes are dry, pave the 100mm width fiber mesh to the joints and use a spatula to press the mesh tightly. Finally, remove the excess white latex adhesive and air bubbles.
4. When fiber meshes are dried, the panel surface can then be decorated.

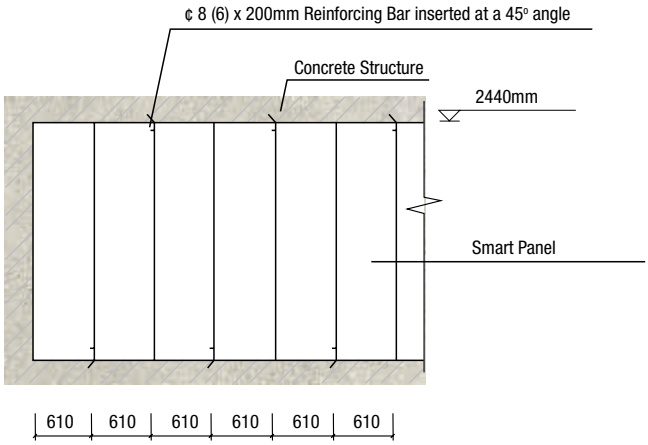
## 9. Decorative Finishing

1. Tiles can be fixed directly to the panel surface with tile adhesive.
2. Paint; acrylic and epoxy paint are recommended. Plastering is not required, direct paint application.
3. Wall papers and wall cloth, both can be fixed on the panel by white latex adhesive or polythene.
4. Veneers; including aluminum-plastic panels, fire boards and PVC boards, can be fixed with white latex adhesive, all-purpose adhesive, silicon sealant, structural adhesive or marble glue.
5. Marble can be fixed on Smart Panels by marble glue, silicon sealant or dry-hang system.

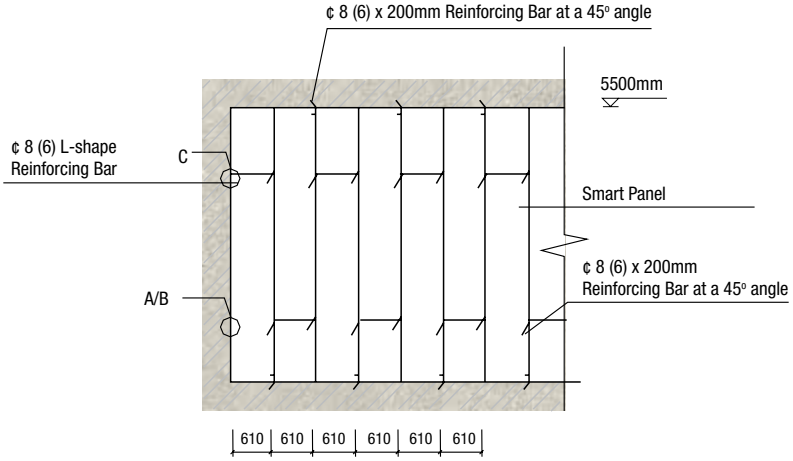
## Panel to Panel Connection



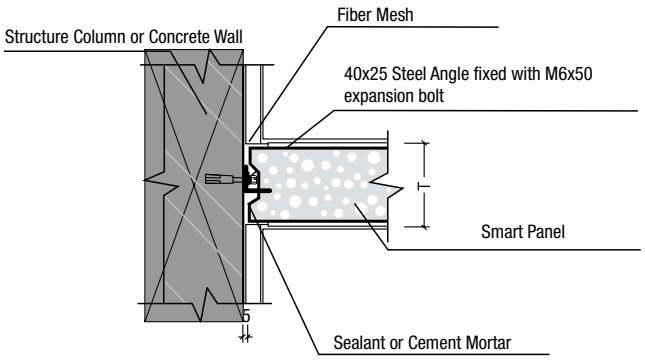

## Panel Arrangement



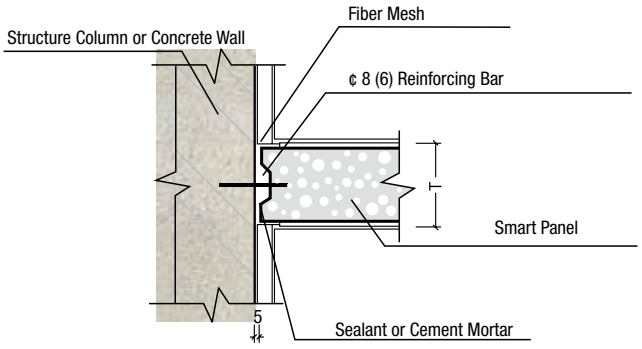

## Panels Connected



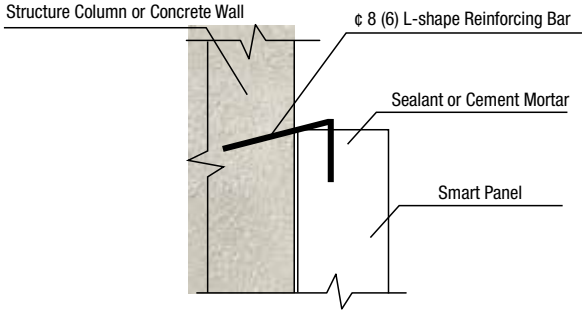

## Smart Panel Fixed to the Structure




Type A

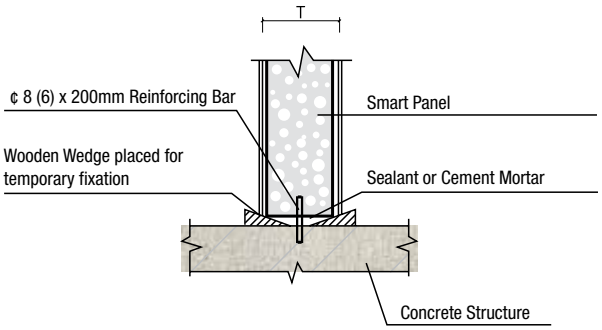


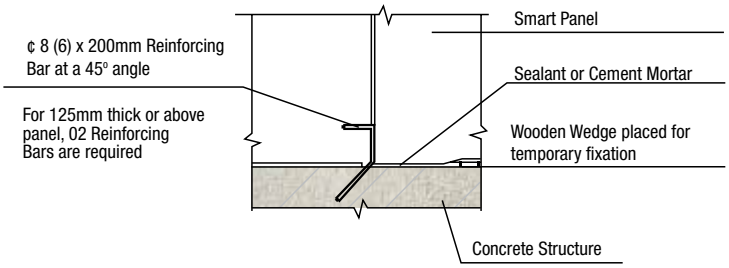

Type B



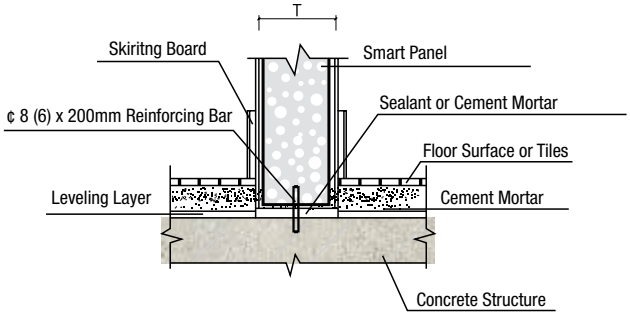

Type C

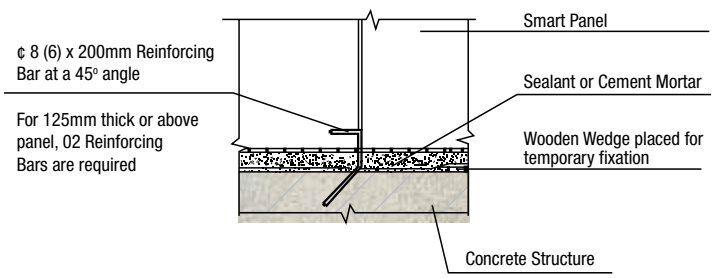
## Ground Fixing Method



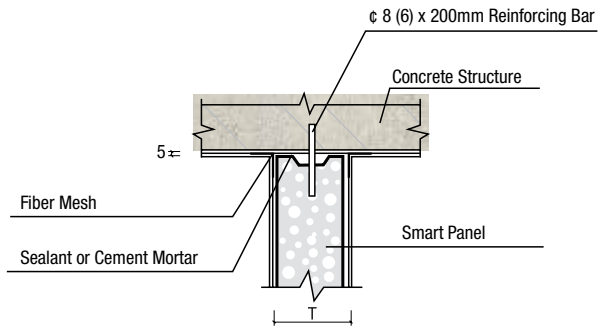



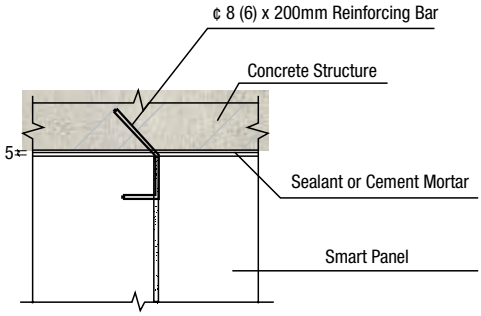

## Floor Fixing Method



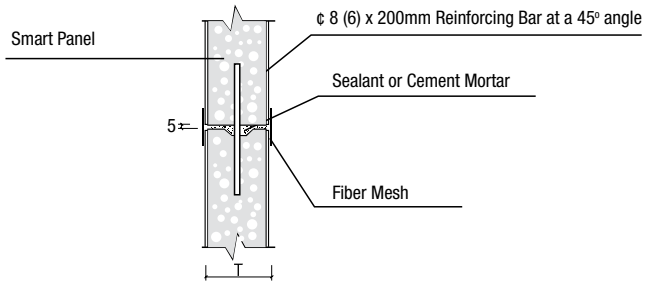




## Smart Panel Structural Fitting

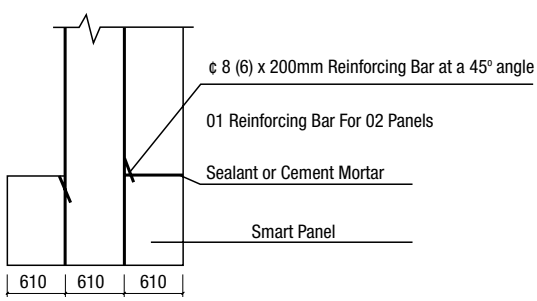


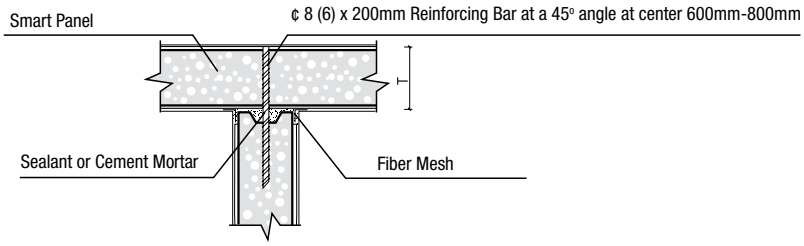

## Upper and Lower Panel Fixing Method

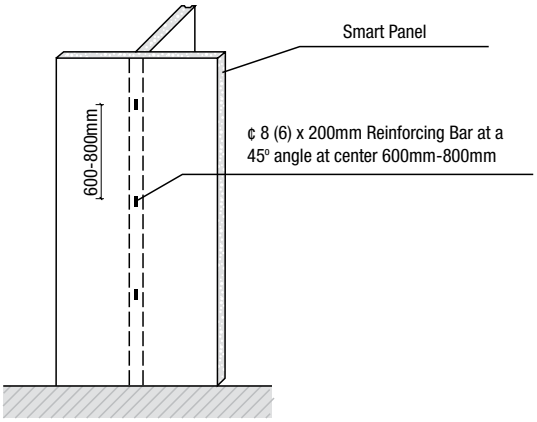



## Left and Right Panel Fixing Method

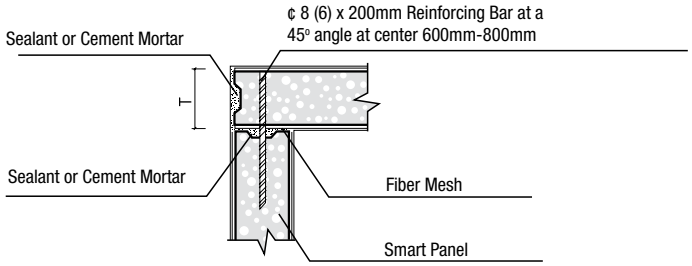


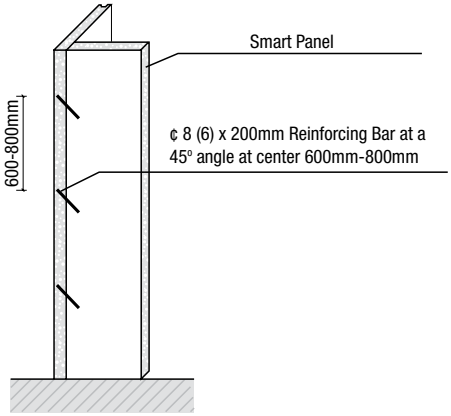

## T-Wall Joint



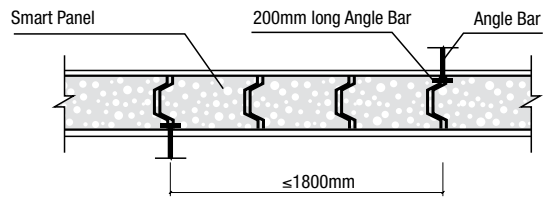



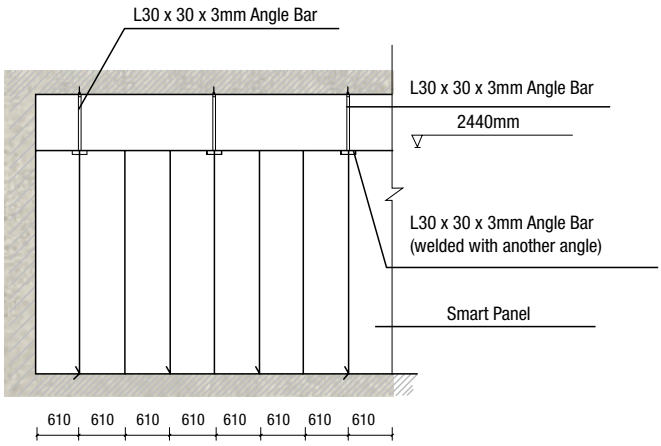

## L-Wall Joint

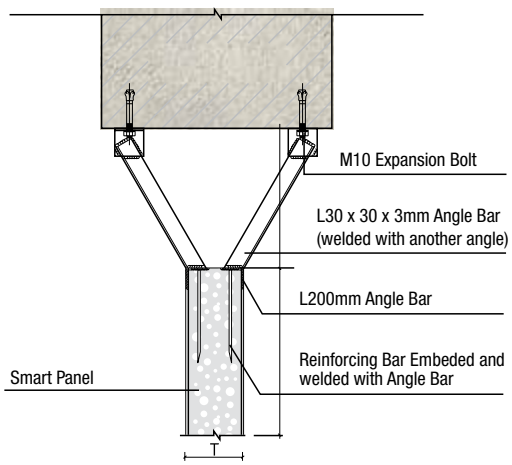


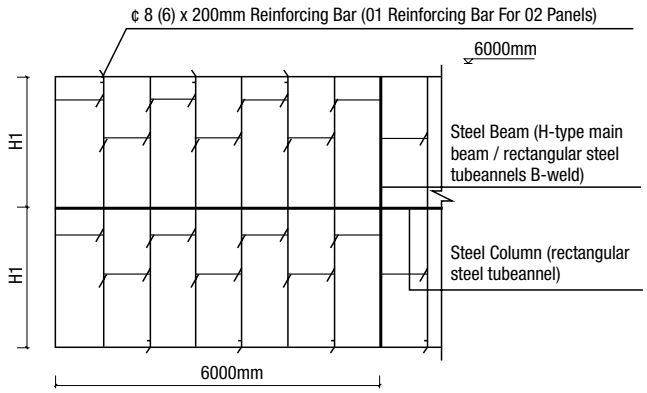

## Head Beyond Reach Fixing Method



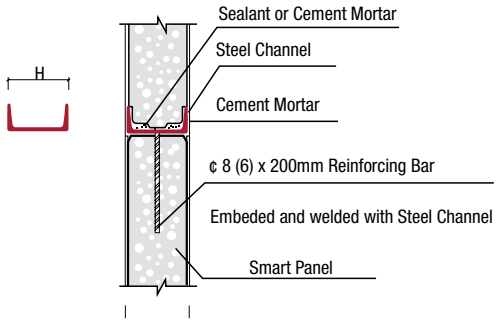




## Ultra High and Large Span Wall Installation Method

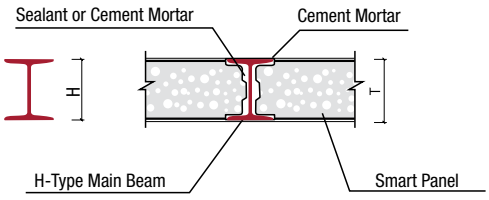


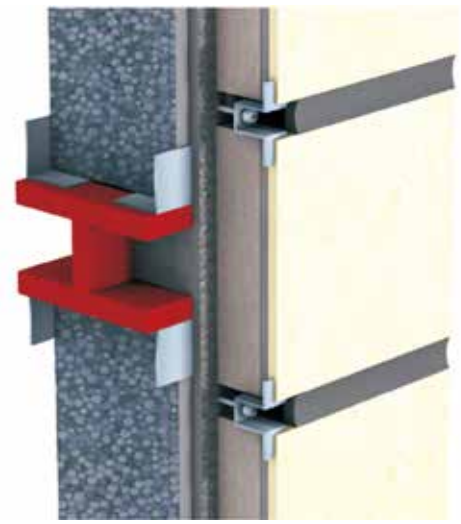

Note: H1 divide the wall into equal heights

## Panel Fixed with U-Steel Beam

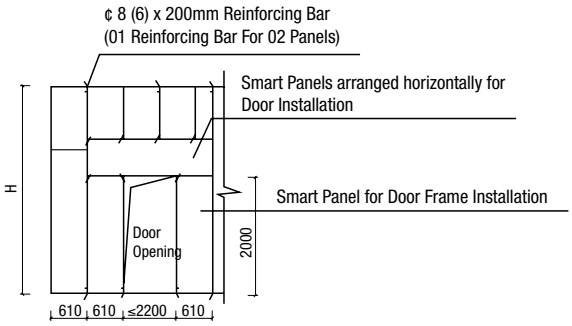



## Panel Fixed with H-Steel Column

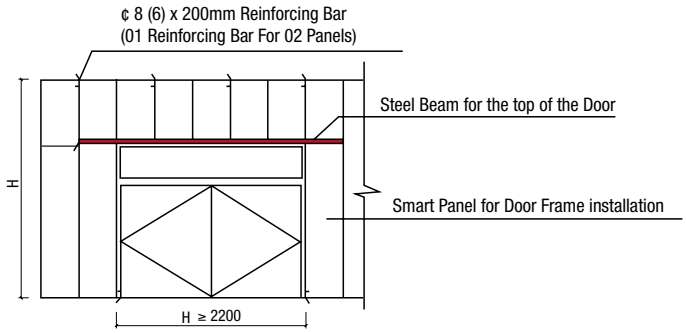


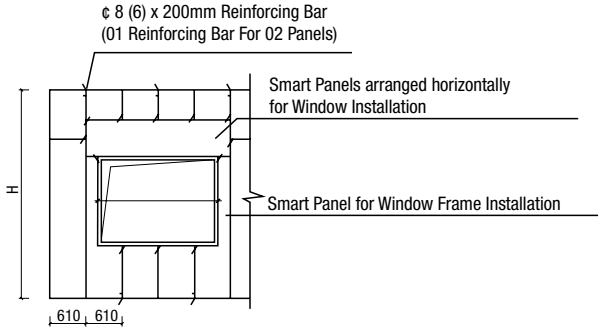
## Door and Window Installation Method



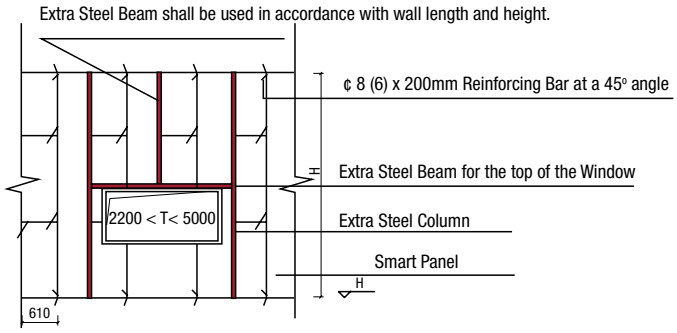

Door Opening Profile



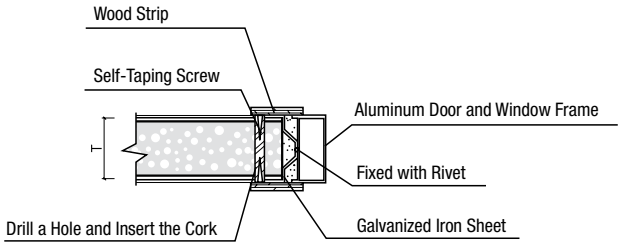

Door Opening over 2200mm Profile



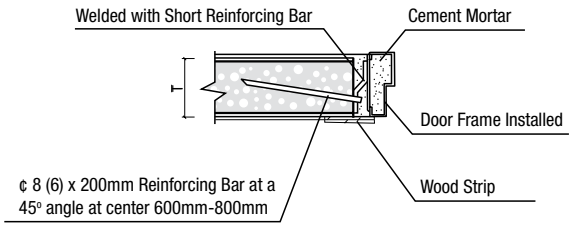

Window Opening Profile



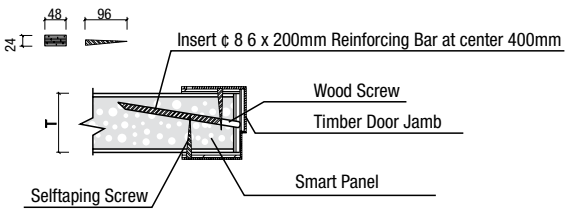

Window Opening over 2200mm Profile




Door and Window Frames Fixed on Smart Panels

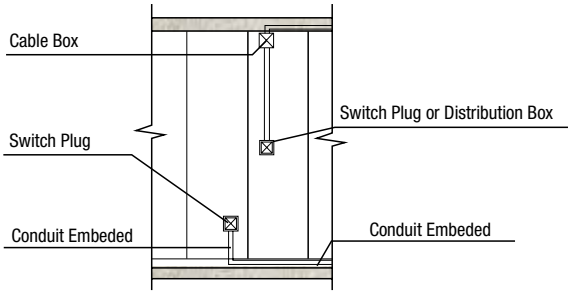


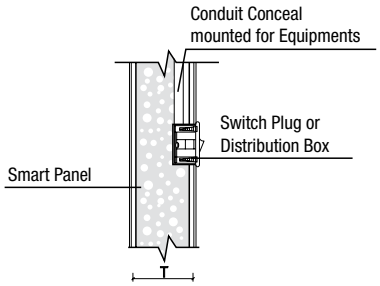

Door Frame Fixed on Smart Panel



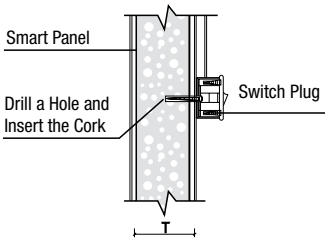

Door Jamb Fixed on Smart Panel

## Services Embedded Method

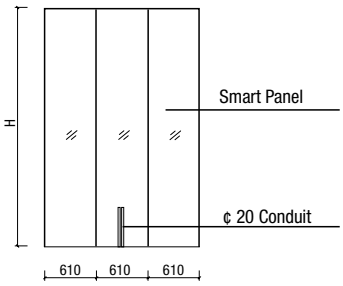


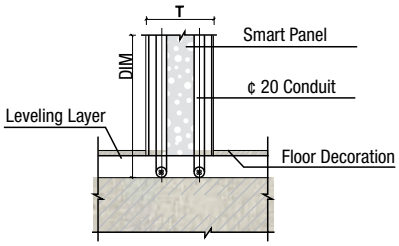

Switch Plug Conceal mounted in Smart Panel



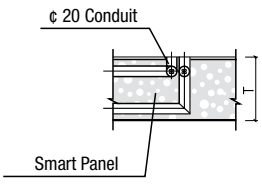

Switch Plug Surface mounted on Smart Panel



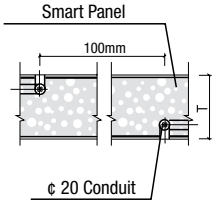

Conduit or Switch Plug pass through
Smart Panel's bottom




Conduit embeded beneath
Smart Panel's bottom

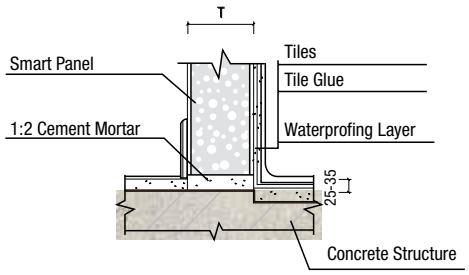



detailed

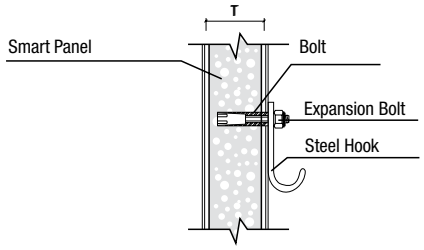



detailed

## Nails and Screws Installation Method

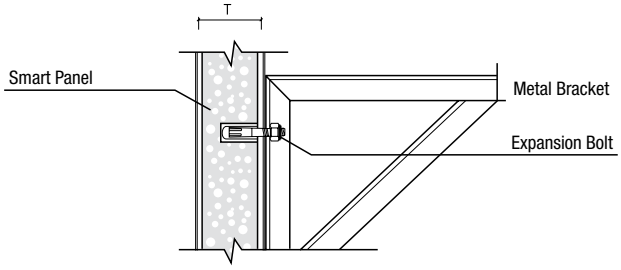



Toilet Floor Waterproofing Detail

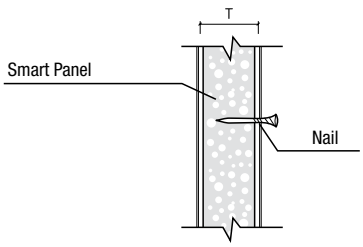



Note: Drill the hole before hammering the expansion bolt into the panel

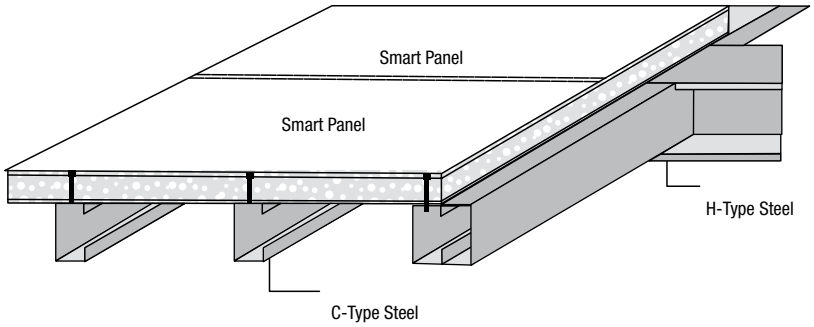
Expansion Bolt and Steel Hook Installation Detail



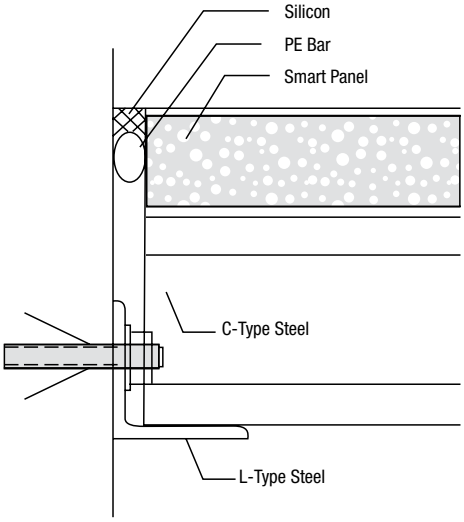

Steel Hanger Embedded Detail



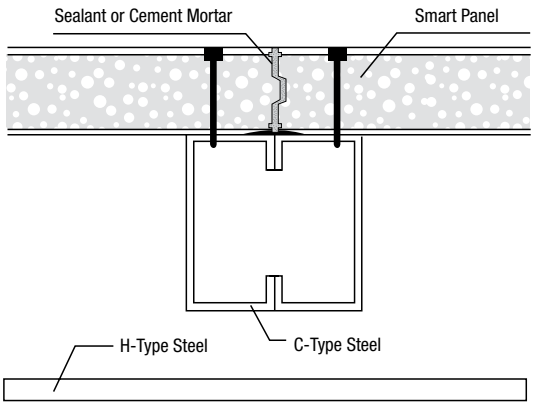

## Floor Slab Installation



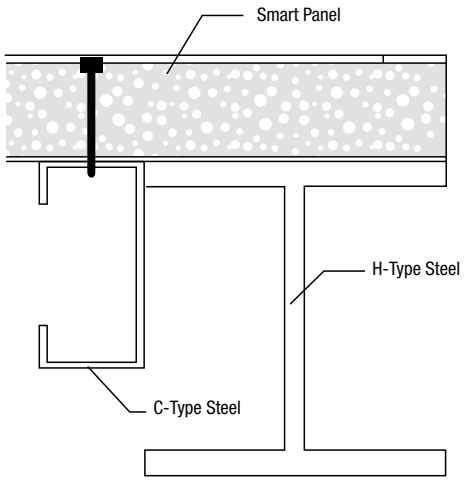

Steel Structure + Smart Panel



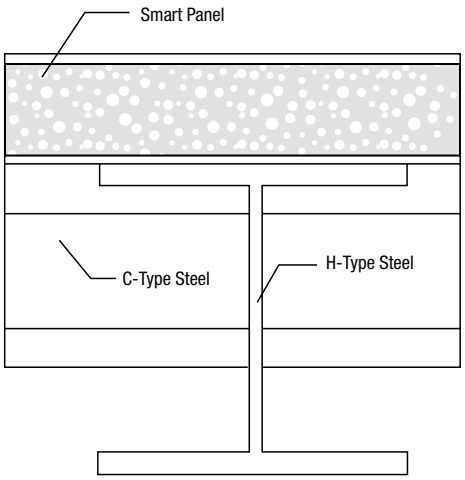

Fixed with R.C. Wall on Column



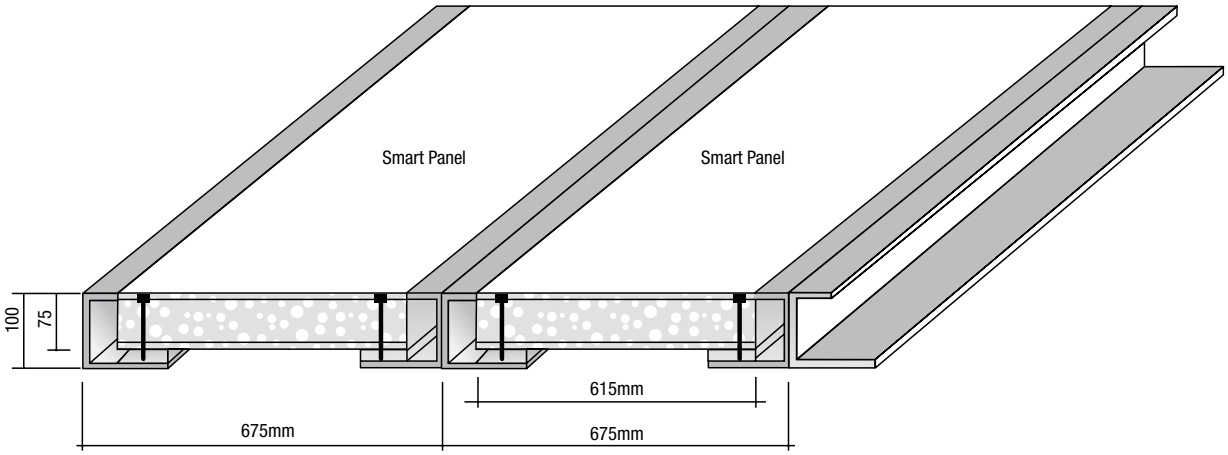

Smart Panel Fixed with C-Type Steel



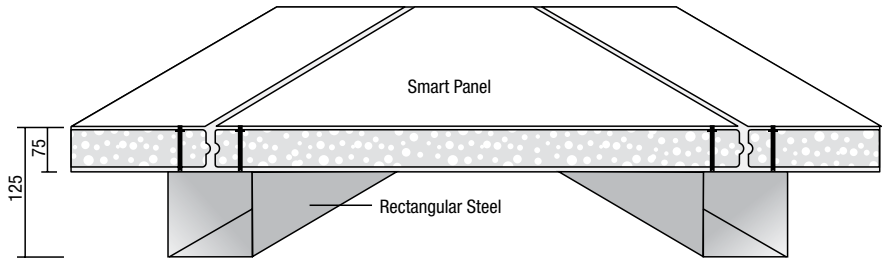

C-Type Steel Fixed with H-Type Main Beam



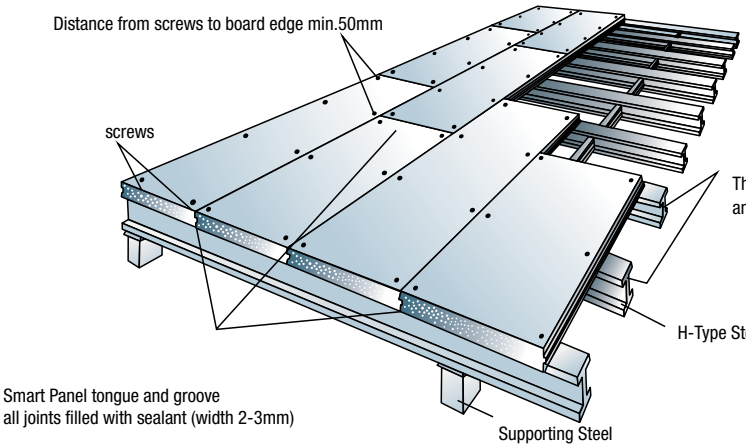

Smart Panel Fixed with Main Beam

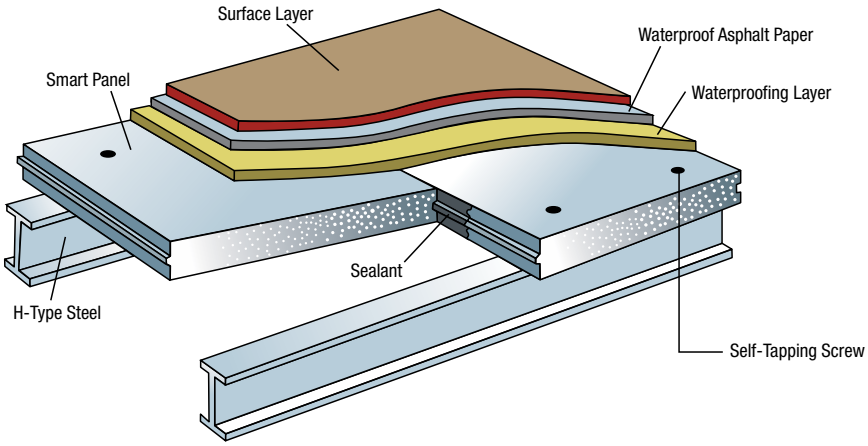


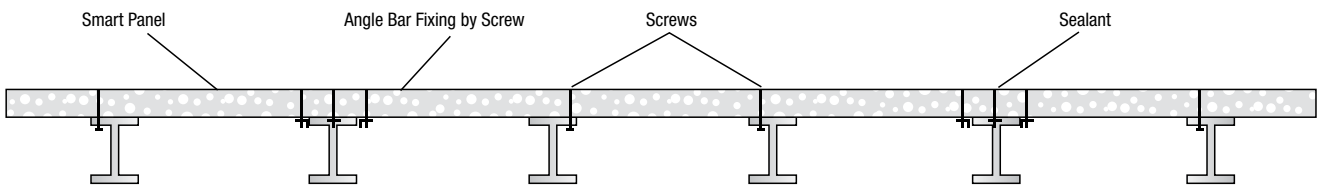

Super Thinner Steel Frame System A + Smart Panel



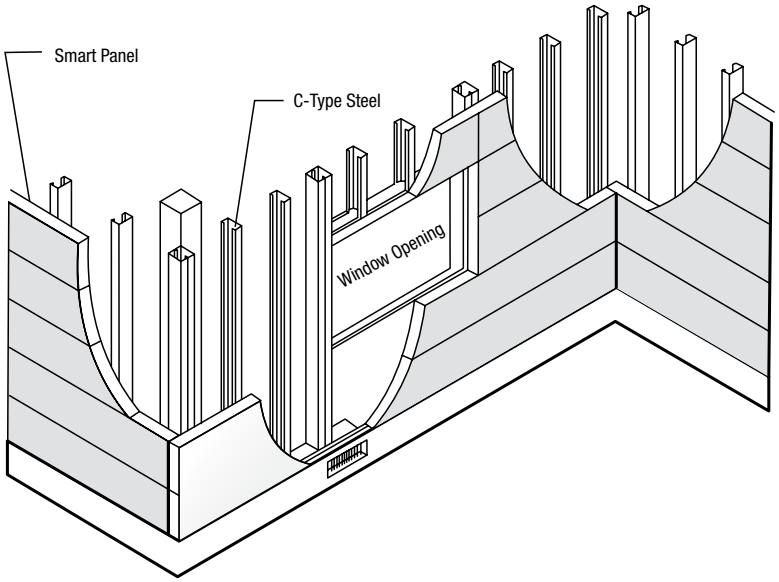

Super Thinner Steel Frame System B + Smart Panel



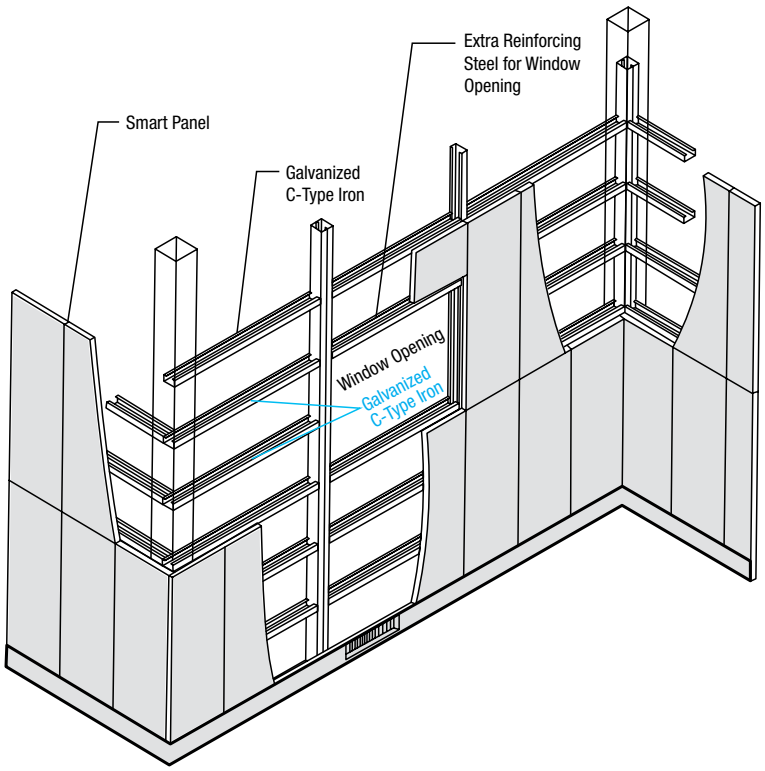



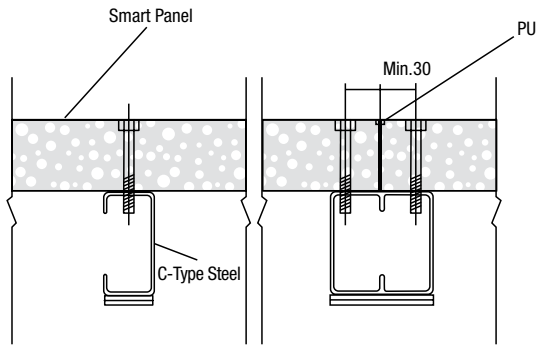
## External Wall Installation Method



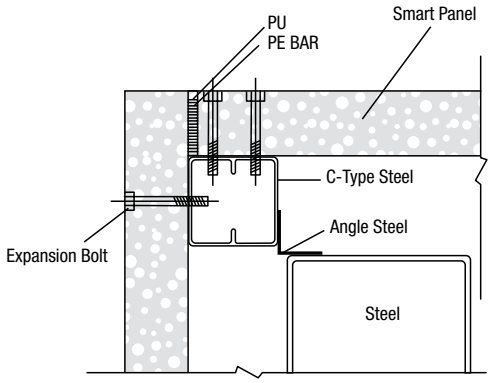

External Wall with Horizontal Panel Construction Details



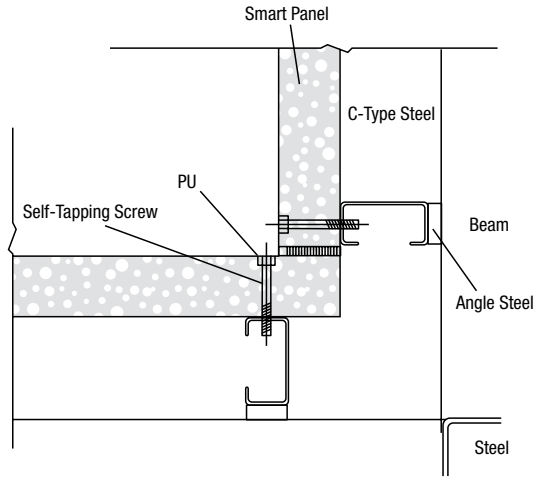

External Wall with Vertical Panel Construction Details



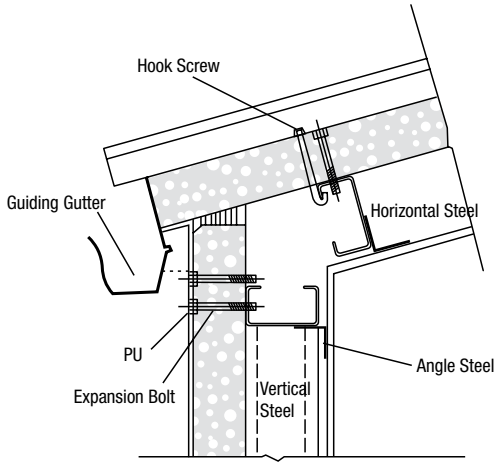

Vertical Profile



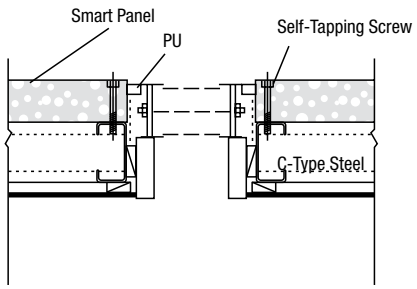

External Angle Construction Detail



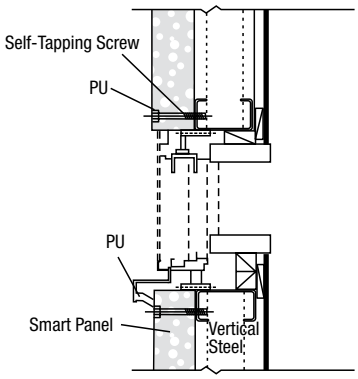

Internal Angle Construction Detail



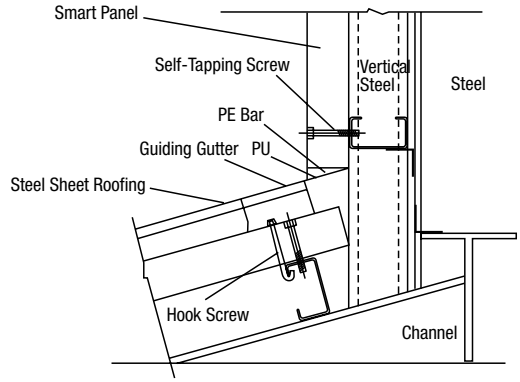

Roof Side Construction Detail



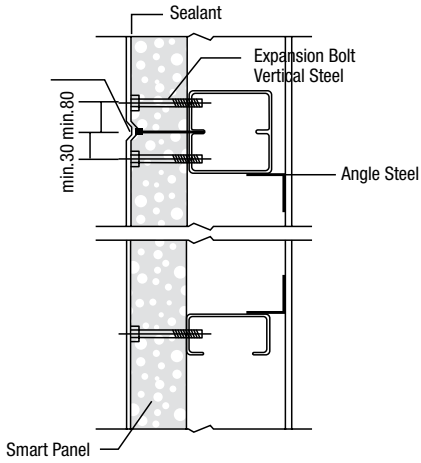

Window Opening Construction



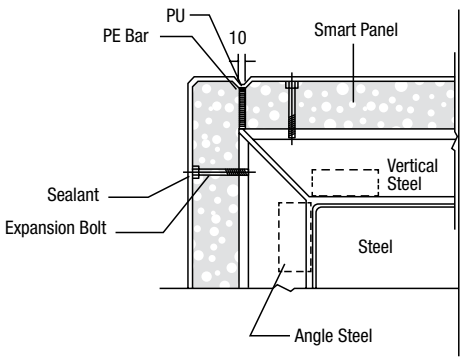

Window Opening Construction



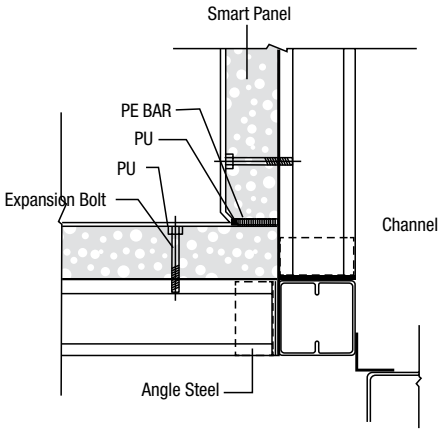

Roof and External Wall Construction



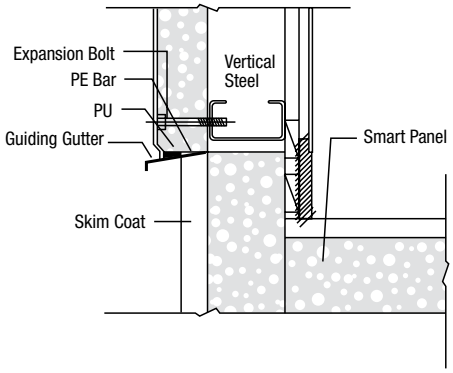

Vertical Profile



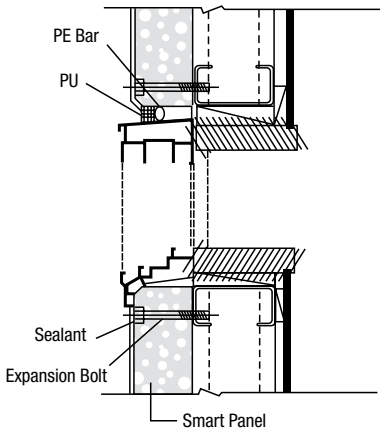

External Angle Construction Figures



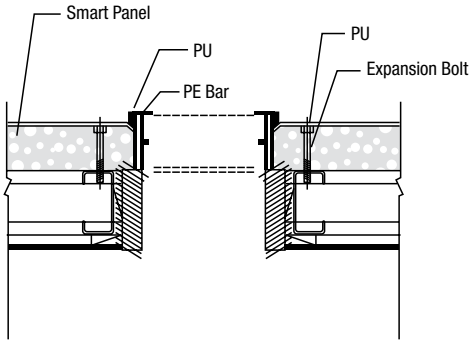

Internal Angle Construction Figures



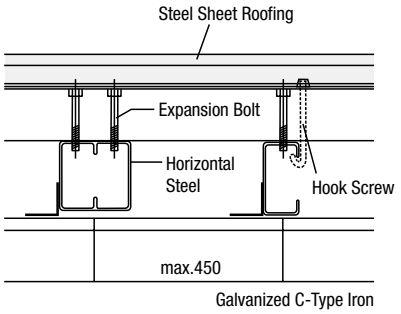

Bottom Fixed Detail



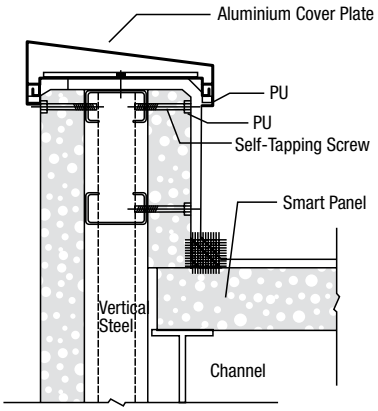

Window Opening Construction Vertical



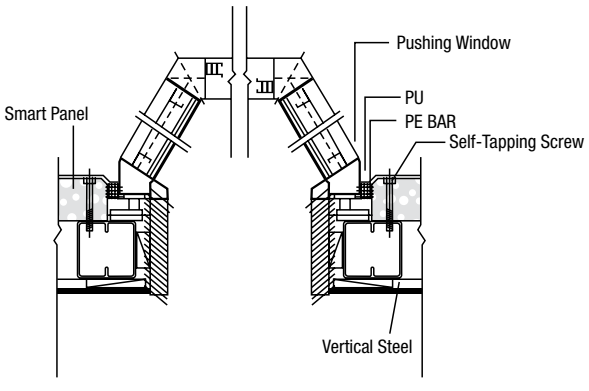

Window Opening Construction




Roof Construction Detail

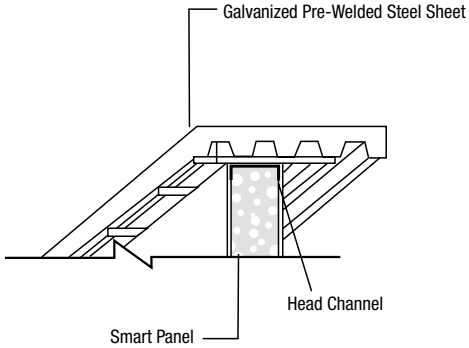



Parapet Wall Construction Figure

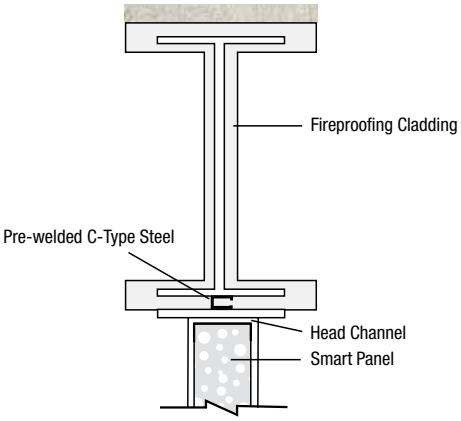



Pushing Window Construction

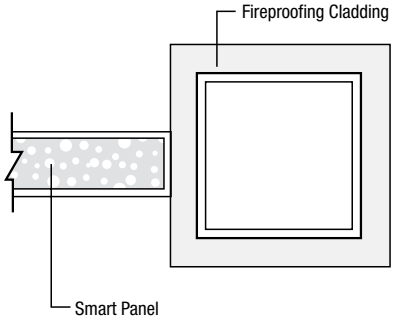
## Steel Structure Construction-Standard Diagram




Floor Joints

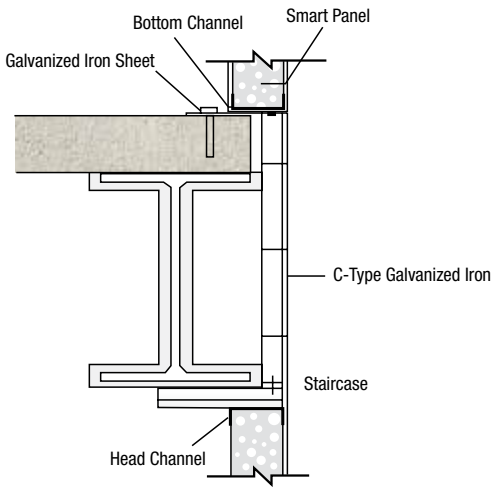


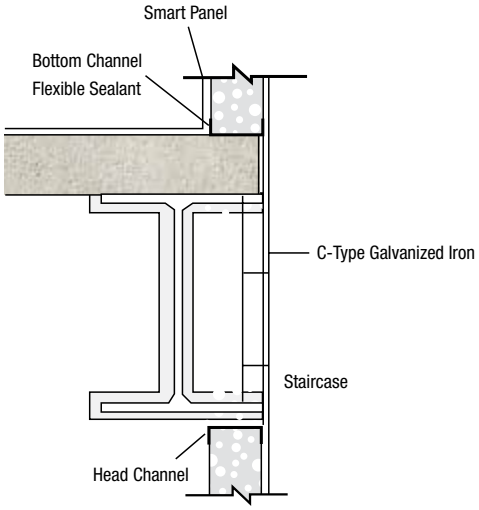

Steel Beam Joints

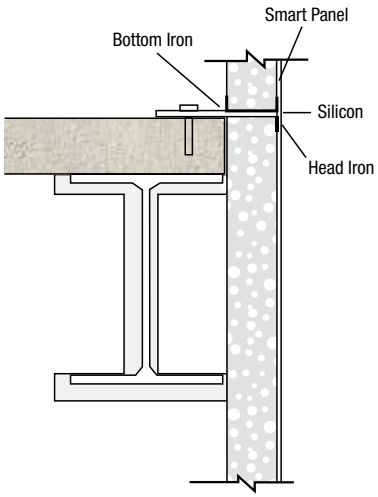


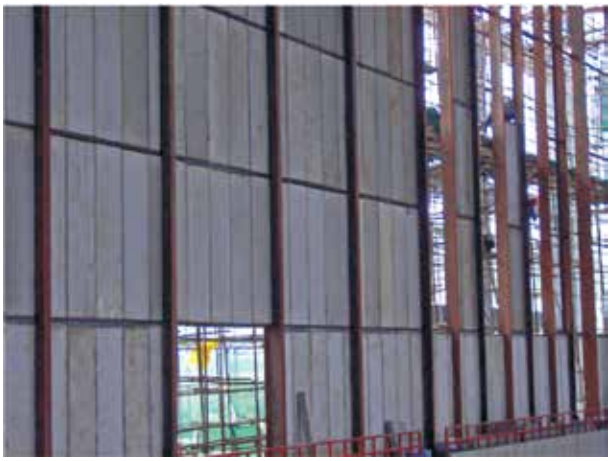

Pre-Welding Steel Column

## Floor Vertical Contact with Steel Column



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