



Insulcon Panels

Installation Manual



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Introduction

Insulcon Panels are a styrene panel that comes pre coated with a first coat of Rainbow Render™. They are a strong, lightweight building material designed for exterior walls of buildings. Being pre finished, they can deliver significant cost and timesavings on the job. Once installed they are jointed together and then have a coat of render which is applied on the job. Additional advantages of being pre finished are that all panels are manufactured to controlled standards.

Technical Specification

Table 1.

<i>Size</i>	<i>Weight</i>
2400 x 1200 x 40mm	13kg
2400 x 1200 x 75mm	13.5kg
2700 x 1200 x 40mm	14.5kg
2700 x 1200 x 75mm	15kg
Other sizes are available on request	

Composition: The panels are made from expanded polystyrene with an alkaline resistant fibreglass mesh embedded in a coating of Rainbow Render™.

Fire Properties: As with all organic materials, Insulcon panels must be considered as a combustible material however the panels have a fire retardant additive and do not represent an undue fire hazard compared to other building materials if installed correctly. They have a similar ignitability index to hardwood timber as well as the spread of flame index. See table 2. The panels will

not sustain a flame on their own unlike timber and particleboard, and will extinguish themselves when the flame source is removed.

Table 2.

Material	Ignitability Index (0-20)	Spread of Flame Index (0-20)	Heat Evolved Index (0-10)	Smoke developed Index (0-10)
EPS (polystyrene)	12	0	3	5
Aust. Softboard	16	9	7	3
Oregon	13	6	5	3
Bluegum	11	0	3	2

Source: EBS Notes on the science of building NSB66 as reprinted in Australian Urethane and Styrene Technical data sheet

Insulation: Insulcon Panels have exceptional insulation properties that are derived from the trapped air within the cell structure of the polystyrene. For design purposes the thermal conductivity “K” as expressed in W/mK is 0.0352 for winter (22 degrees inside and 2 degrees outside) and 0.0374 for summer (22 degrees inside and 38 degrees outside).

Strength data: Insulcon Panels have a high compressive strength and meet Australian Standard 1366. 3 – 1992, additionally the impact resistance is dramatically improved by the render coating. Please refer to the Australian Standard for specific design values.

Australian Std. Insulcon Panels comply with Australian standards 1366.3 – 1992.

Surface finish: Insulcon Panels are provided with an alkali resistant mesh impregnated first coat finish that is designed to accept a variety of Rainbow Render™ coatings. For this purpose the supplied finish is a left off the trowel finish.

Storage and Handling

Insulcon Panels have the great advantage of being relatively light and in most situations are able to be handled by one person (see table 1). There are however some cautions that are similar to those when handling roof sheets. Being a large flat panel, under windy conditions the panel can be caught by the wind whilst being carried and be pulled out of the person’s hands potentially causing imbalance and falling. The falling panel could cause serious damage to people below. It is strongly recommended that Insulcon panels not be fitted under windy conditions where there is potential for this hazard. As with all construction, a risk assessment should be carried out prior to installation.

For storage and transport purposes, the panels should be stacked flat and in the case of transport, suitable restrained to stop wind getting under the sheets causing them to fly off the pack. Crushing of the edge of the sheet with ropes can be avoided by the use of heavy folded cardboard made into an angle.

Exposed polystyrene will deteriorate if left exposed to UV rays. Ensure that the exposed styrene is protected at all times.

General Design Requirements

General design requirements that should be incorporated at the design stage of the building:

Concrete slab design:

Concrete slabs should be finished with a straight and smooth edge where the panel is expected to overlap. A rebated slab edge as is normally used for brickwork is not required however will not stop Insulcon Panels being used. In this case the builder will need to provide a smooth and straight rebate for panel installation and consider external doorways.

Stud wall design

As the Insulcon panels are screwed directly onto the timber or metal studs, spacing of the wall studs needs to be considered in relation to expected wind loads. In normal situations stud spacing is up to a maximum of 600mm. In high wind areas this can be reduced to 400mm spacings. Builders should check with local building regulations to determine appropriate wind considerations. Wall bracing if required, should be considered in the building design of wall thicknesses. As Insulcon Panels are 1200mm wide, stud spacing should be exact division of 1200mm (i.e. 400mm or 600mm) so that each panel can finish on a wall stud and intermediate false studs do not need to be installed during the Insulcon Panel installation. This does not apply for horizontally mounted panels (75mm thick or more).

Make sure that there is adequate framing around windows and doors to perimeter fix the panels. An extra stud is required on internal corners so that both sheets can be fixed.

Electrical penetrations

Electrical power points, flood lights, security monitors etc. need to have a fixing plate installed to the wall frame prior to sheet installation.

Other Fixtures

Light weight fixtures can be attached to the finished wall using toggle bolts however it is essential that additional wall framing be installed to support heavier attachments such as washing lines.

Preparation prior to installation

The following items should be installed prior to commencing installation of Insulcon Panels:

- Windows
- Door frames
- Eave linings
- Flashings
- Fixing Plates for electrical items
- Fixing plated for non-light weight wall attachments such as washing lines
- Fixing plates for down pipes
- Internal wall linings may be fitted post render stage however if fitted latter then screws should be used on external walls. **DO NOT NAIL IF FITTING AFTER RENDER STAGE AS IT WILL CAUSE CRACKING!**

Installation

Fixing

The panels are designed to be fixed directly over the wall studs by galvanized self-drilling screws with fixing washers. The screws used should be 10g x 100mm Class 3 countersunk for 75mm panels and 8g x 75mm Class 3 countersunk for 40 mm panels. Insulcon Pty. Ltd. supplies approved washers. It is important to note that non-approved fasteners or washers may compromise the wall integrity.

Insulcon Panels are held in place and then fastened at centres of 300mm running down the stud and at each stud centre horizontally (600mm centres) under normal conditions except edges and external corners where spacing is at 200mm. In high wind areas where stud spacing has been set at 400mm, then each stud gets one screw and washer in the horizontal and as per normal conditions in the vertical. When two panels meet on a stud, both edges need to be fixed to the stud. A false stud nailed to the existing stud to increase its width is the easiest way to allow enough room to fix both panels.

The fasteners should be driven home until the head of the washer and fastener is slightly recessed into the panel. Do not crush the panel or split the washers by overdriving the fastener. Glue on the back is not required under normal installations but can be useful for panel positioning.

Before the adjoining panel is put in place, apply a run of low solvent adhesive such as “Zero Nails” down the edge to be joined to and then butt panels up to each other so that the two panels bond. Do not use “Liquid Nails”.

Panel Layout

Panels may be hung either horizontally or vertically, however panels that are less than 75mm thick should only be used vertically and always finish on a stud. Butt joints must be tight and securely fastened as above. Panels can be easily cut using either a hand saw or power saw fitted with a masonry blade. When cutting sheets ensure that all edges are square so as to ensure there are no gaps when sheets are fitted up next to each other. Expansion joints should utilise a false stud within the wall to ensure that both sides of the expansion joint are securely fastened. Frequency of expansion joints should be as specified by the building designer but in general, not less than every 6 meters along a straight wall. Do not overhang sheets by more than 50mm as this may cause warping as the render coat cures.

The location of joints around windows and door opening should be considered. Avoid joints that coincide with the edge of the window or door to minimise risk of cracking due to movement of the door or window frame.

Windowsills should be cut with a minimum 10-degree slope to ensure water runs away from the window and to the outside. Ensure a minimum gap of 3mm is left around all penetrations to allow sealant to be applied.

Corner Beads and Bottom edges

All corners **MUST** be protected with an angle bead. Plastic, galvanized steel or stainless steel angles are recommended. The bead is fixed to the corner using a non-solvent based adhesive such as “Zero Nails”. Do not use “Liquid Nails”. Plastic angles must be primed

using plastic primer such as Insul Prime™ prior to render application, as render will not adhere to un-primed plastic. Check beads are level and straight adjusting before the adhesive sets. Where reveals or sills are less than 30mm, a 1.5mm plastic angle shall be fitted between the window frame and the styrene. Do not bevel sheets onto lead flashings. Sheets should be set square and have a plastic angle fitted to the bottom edge.

Jointing and Sealing

Sealing is the most critical part of the installation process. The proper sealing of all penetrations including windows, doors, water pipes and fixing plates is imperative to ensure that water cannot reach the finished wall cavity causing rotting of the timber frames and other dampness problems. Insulcon Pty Ltd recommends Sikaflex 1A be used. Sealant bead size should be no less than 8mm. Check all sealing before commencing the render application, making sure that all sealing is complete at least 24 hours before to ensure that the sealant has cured. Once the panels are in place, all joints, including corners must have a jointing mesh (200mm wide strips) applied and then coated with Rainbow Patch™, which is allowed to cure. Where running mesh up to corner beads, apply the mesh to overlay the edge of the bead but not onto the bead corner.

Masking

Rainbow Render™ coatings have extremely good bonding properties so the best way to not have them on other surfaces is through proper masking. All windows, doors, roofs, floors, bargeboards etc should be masked as well as smaller items. Use a vinyl tape and keep the masking 5 –7mm away from the panels so that you do not render in your masking. If you do accidentally get any Rainbow Render™ coatings onto other surfaces, clean up clean water immediately and rinse well.

Base Coat Render

Before beginning to apply any coatings, ensure that all surfaces are clean and free from contaminants. Exposed styrene edges that have been exposed to the weather for some time can develop a yellow film; this film must be removed prior to rendering. These exposed areas should then be coated with Rainbow Patch™ or Rainbow Render™ with Rainbow Bond™ added to it. Use of standard render over raw styrene will result in delamination of the render.

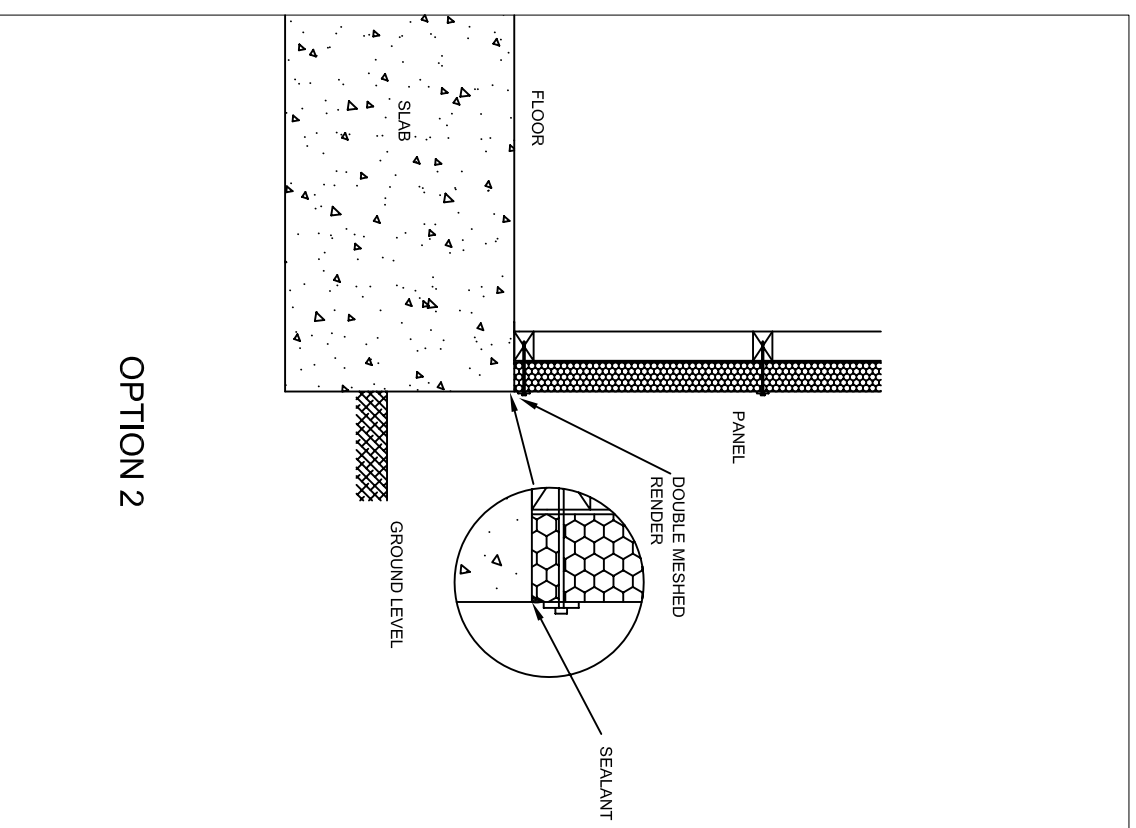
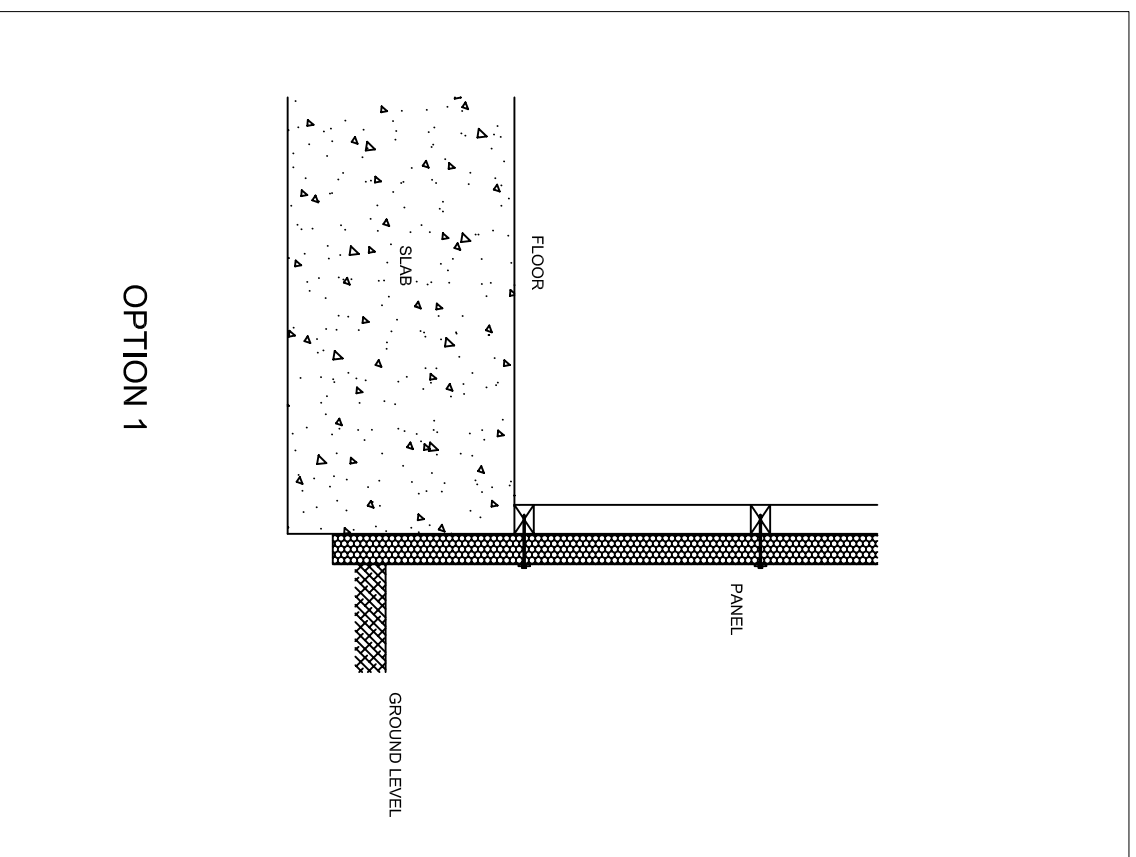
Base coat render is to be applied to a minimum thickness of 5mm depending on the finish required. Please contact Insulcon Pty. Ltd. for a full list of Rainbow Render™ coatings.

Texture Finishes

A wide range of texture finishes can be applied. Please contact Insulcon Pty. Ltd. for a full list of Rainbow Render™ coatings.

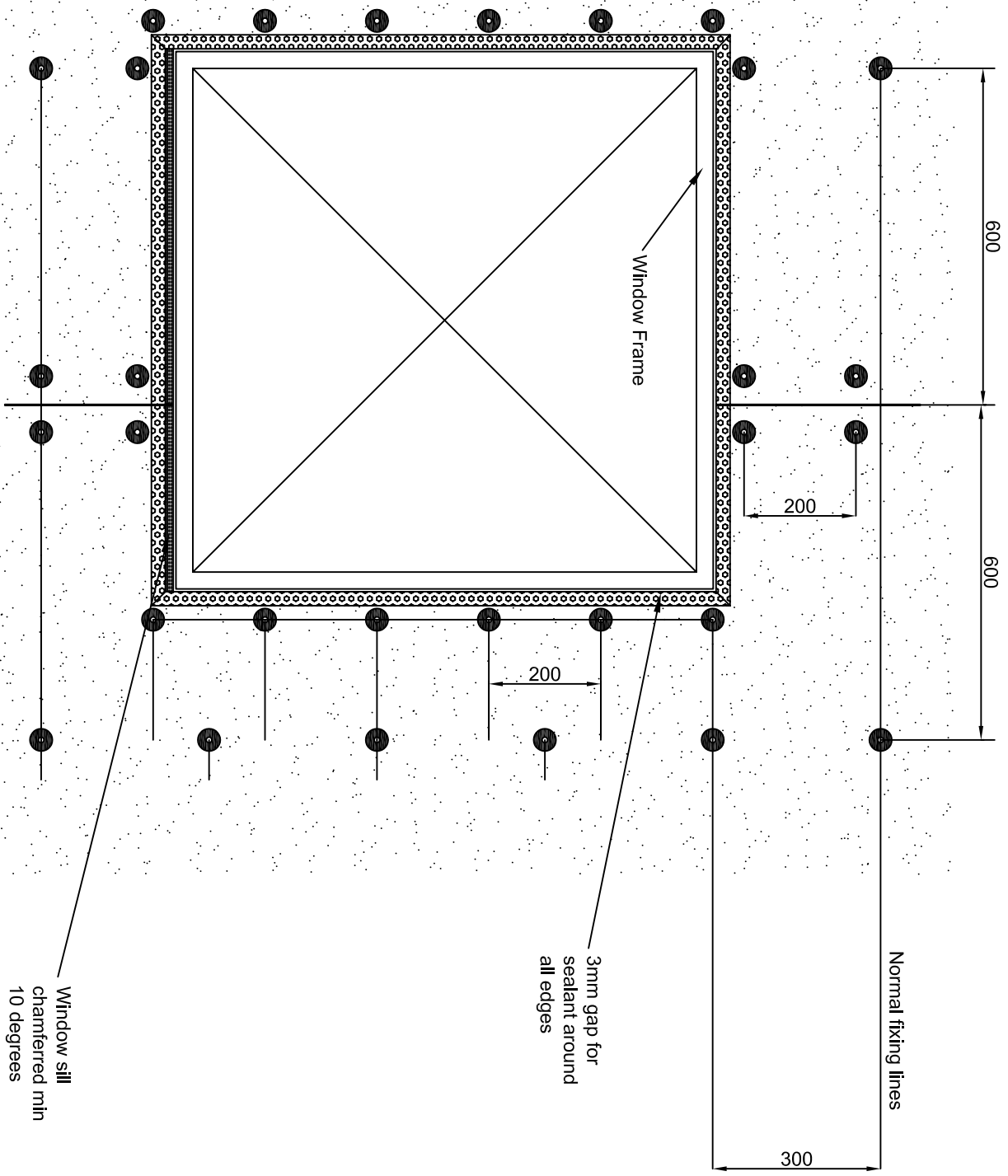
Attachments

1. Timber Floor general arrangement of wall panels
2. Concrete slab general arrangements for wall panels
3. Roof Junction details
4. Window Penetration step 1 (note applies to all penetrations)
5. Window Penetration step 2
6. Typical Butt joint with false stud



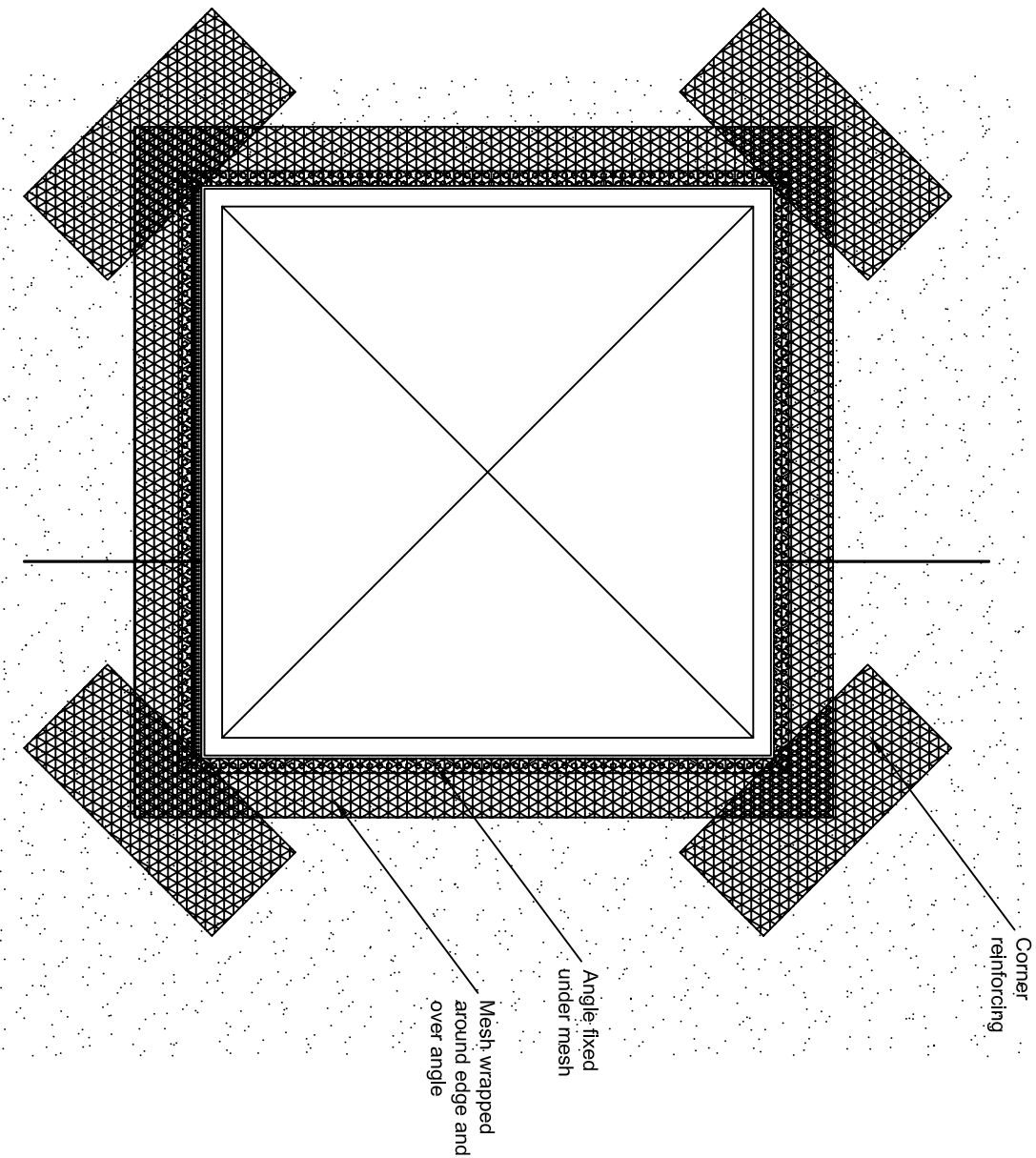
Concrete slab general arrangements

[illegible]



Window Penetrations Step 1 - Panel fitting

INSULCON PTY. LTD.									
INSULCON PANELS									
FIXING DETAILS									
SCALE NTS									
SHEET 1 OF 1									
DRAWING No.									
INS/PWL/3									



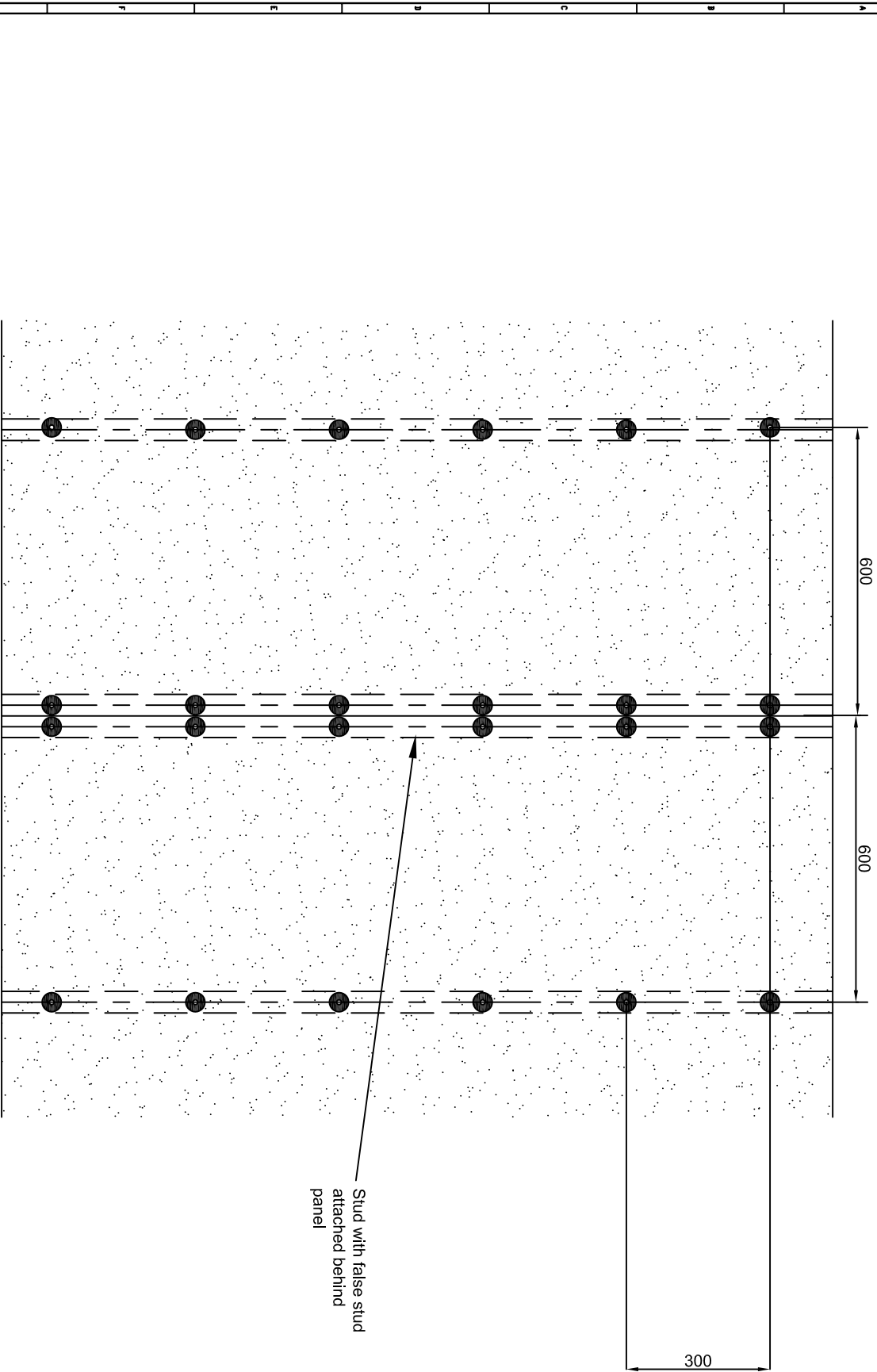
Window Penetrations Step 2 - Angles and mesh

REF.	ZONE	REVISION	DATE											DESIGNED	JOHN FORMANBY											SCALE	NTS
														CHECKED												SHEET	1 OF 1
														APPROVED												DRAWING No.	
																										INS/PML/3	

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INSULCON PANELS

FIXING DETAILS



Butt joint showing false stud at join
(screwed washers can be offset for ease of fixing or narrower studs)

DESIGNED BY		JOHN FORMBY		SCALE		NTS	
CHECKED BY				SHEET		1 OF 1	
DATE				DRAWING No.		INS/PWL/3	
REV							
ZONE							
REVISION							
DATE							
Apr 8							

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FIXING DETAILS