

Insulated Concrete Floors



Introduction

Insulbrick Insulated Concrete Floors is a great alternative to conventional solid concrete floors and deck applications in homes, townhouses and apartment buildings. The Insulbrick ICF Insulated Concrete Formwork system is a lightweight, stay-in-place form made of Expanded Polystyrene (EPS) and used to construct site-cast or precast concrete floors, roofs, decks, and walls for commercial, industrial and residential applications. Insulbrick ICF provides structural strength through reinforced concrete and superior insulation through the use of EPS.

Insulbrick Insulated Concrete Floors Insulated Concrete form work **must** only be assembled and installed by a suitably qualified building contractor who has been fully trained for this task. It is the builder's responsibility that all installers are properly trained and are competent in these tasks. Serious safety hazards causing injury or death can result from incorrect assembly or installation of this building system.

All relevant government, building regulations and codes etc. must be adhered to at all times during construction. This guide covers only typical examples and does not replace any engineering or safety requirements.

Each building must be structurally designed by a suitability qualified engineer to comply with all relevant building standards

Insulbrick ICF Floors Span Tables

Spanning

SPAN	TYPE	DEPTH	REINFORCEMENT		SHEAR LIGS
			BOTTOM	TOP	
2500	SS	175	1-N12	NR	1-Y10 @ 131 crs
	CS	175	1-N12	1-N12	1-Y10 @131 crs
3000	SS	225	2-N12	NR	Y10 @ 169
	CS	175	2-N12	2-N12	Y10 @ 169
3500	SS	225	2-N12	NR	Y10 @ 169
	CS	225	2-N12	2-N12	Y10 @ 169
4000	SS	275	2-N12	NR	Y10 @ 200
	CS	275	2-N12	2-N12	Y10 @ 200
4500	SS	325	2-N12	NR	Y10 @ 244
	CS	275	2-N12	2-N12	Y10 @ 200
5000	SS	325	2-N12	NR	Y10 @ 244
	CS	325	2-N12	2-N12	Y10 @ 244
5500	SS	375	2-N12	NR	Y10 @ 281
	CS	375	2-N12	2-N12	Y10 @ 281
6000	SS	425	2-N12	NR	Y10 @ 319
	CS	375	2-N12	2-N12	Y10 @ 281
6500	SS	425	2-N16	NR	Y10 @ 319
	CS	375	2-N12	2-N12	Y10 @ 281
7000	SS	475	2-N16	2-N16	Y10 @ 356
	CS	425	2-N12	2-N12	Y10 @ 319
7500	SS	475	2-N16	2-N16	Y10 @ 356
	CS	425	2-N16	2-N12	Y10 @ 319
8000	SS	525	2-N16	2-N16	Y10 @ 393
	CS	475	2-N16	2-N16	Y10 @ 356
8500	SS	575	2-N16	2-N16	Y10 @ 431
	CS	475	2-N16	2-N16	Y10 @ 356

See next page for legend

SS – Single Span

Single span and multiple spans where adjoining spans cannot be considered as continuous. For smaller single span cases top reo is not required as there is no negative bending movement, however larger cases and multiple spans also require top reo to control cracking and deflection.

CS – Continuous Spans

Multiple spans where the adjoining span is within 20% of design span

Otherwise must use SS values but include top reo as well to control cracking over supports.

Shear

Shear Ligatures (LIGS) and their minimum centres are listed for each design case. As per concrete code AS3600, minimum shear ligs are spaced at $0.75D$. The minimum shear reinforcement is required for a distance of $\text{span} / 0.25$ at each end.

It is recommended for the middle section that ligs be provided at 900 centres to control the position of the main reinforcement (this may be modified by the design engineer).

Cold Form Sections

Cold form sections inserted into the foam blocks to support same during construction. Props and continuous propping beam must be provided at the maximum centres specified over minimum two or more spans.

For a maximum 1500 double span, with a maximum depth of 525 the recommended suitable sections are:

- Lysaght C10012 G450 Galvanised Purlin Section (Lipped)
- Lysaght Cold Formed Channel LC10330 G300 (Heavier section but no lip)

D – Overall Depth of Concrete beam

Commercial equivalent may be used provided the structural properties are equal to or greater than the above mentioned sections.

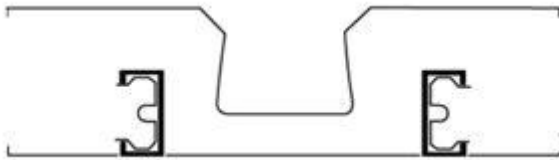
The supporting EPS block is considered to provide full lateral restraint and the blocks must be glued together prior to placing concrete.



Insulbrick ICF Flooring System Components

Insulbrick ICF comes in standard 600mm and 1200mm widths. The standard thickness is 150mm. When deeper channels or a thicker slab is required, this can be achieved by utilising the 50mm, 100mm or 150mm top hat sections. The 1200mm wide section is typically used for form lengths up to seven metres. The 600mm wide sections are typically used for form sections over seven metres, but can be used for less than also. If the sections must be trimmed or cut, this can be done with a reciprocating saw.

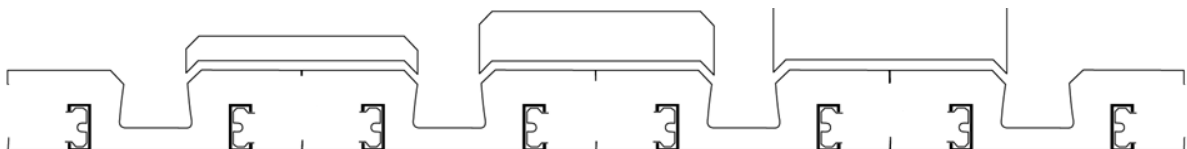
600mm Wide Base Section



1200mm Wide Base Section



Top hat sections



In addition to the Insulbrick ICF supplied components, the Insulbrick Insulated Concrete Floor system requires the use of components supplied by other manufacturers. It is recommended that installers adhere to the respective manufacturer's instructions for the correct use of their products and or systems, in conjunction with Insulbrick Insulated Concrete Floors. Although specific brands and products are mentioned throughout this installation guide, Insulbrick ICF does not endorse, favour or associate with them in any capacity.

Galvanised Purlin Section / Cold Formed Channel

Span charts based on the use of Lysaght C10012 G450 Galvanised Purlin Section or Cold Formed Channel LC10330 G300 Commercial equivalent may be sufficient.



REINFORCING RODS

Per engineering specifications – the steel rebar is placed where required in the hollow cores as per Engineering Specifications.





PLACEMENT OF CONCRETE



ESTIMATED CONCRETE CONSUMPTION

INSUL BEAM	150mm	200mm	250mm	300mm	350mm	400mm
Concrete Cover	Square meters of coverage per cubic metre of concrete					
50mm	13	12	10.9	9	8.5	8
75mm	10	9	8.5	7.5	7	6.5
100mm	8	7.5	7	6.3	6	5.5
125mm	6.5	6.3	6	5.4	5	4.9
150mm	5.4	5	4.9	4.5	4.4	4

This table is an estimate only, of the concrete consumption at various Insulbrick Insulated Concrete Floor thicknesses. Use as a guide only. For exact concrete usage consult with the project engineer