FIELDERS FACT FILE

COSTING CASE STUDY – FIELDERS SLIMFLOR® VS POST TENSIONED SLABS

This fact file provides a costing case study comparing Fielders SlimFlor® and ply formed post tensioned slabs in Multi Story Construction.

ADVANTAGES OF FIELDERS SLIMFLOR®

- Reduced construction time (saving in labour, early tenancy and associated works, approximately 20% quicker floor-to-floor construction time).
- Minimal temporary propping allows for fit out of lower floors while upper floors are being constructed.
- Shallow floor depths, reduced overall building height offers savings in façade costs and building height restrictions.
- Reduced trades onsite (OH&S savings).
- Light weight structure, reducing sizes of substructure and footings.
- Ease of service integration, with potential to accommodate the services within the slab depth.
- Inherent fire resistance. A fire resistance of 60 minutes can be achieved without fire protection. Subject to fire design assessment by others.

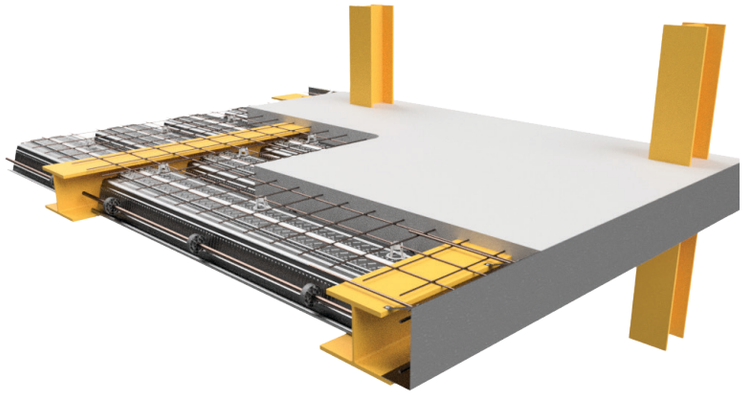

Figure F.7.5.1 Fielders SlimFlor®

FIELDERS SLIMDEK 210™

SlimFlor® utilises Fielders SlimDek 210™ flooring profile in conjunction with Asymmetric Steel Beam Sections (ASB) to provide a floor system with a reduced construction zone. It does this by combining the floor slab and supporting structure in the same plane, providing a lightweight, versatile, long spanning floor system.

DESIGN

The project used in this cost comparison is a 30 story 'as built' apartment building. The floor footprint is approximately 564m^2. The following design criteria has been used for the purpose of the comparison;

- Live load 2.0kPa (residential loading)
- Super imposed dead load 1.5kPa
- FRL 90/90/90

Two (2) floor designs have been considered.

A. Design A - Fielders SlimDek 210™ with a custom manufactured ASB.
B. Design B - a traditional post tensioned slab poured on traditional formwork.

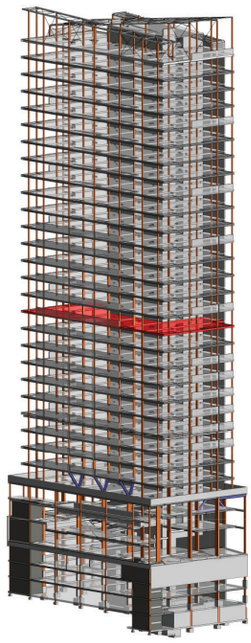

Figure F.7.5.2 Apartment Building

DESIGN A: FIELDERS SLIMDEK 210™ WITH ASB'S

Design A consists of a SlimFlor® slab design utilising Fielders SlimDek 210™ profile with ASB beams (Figure F.7.5.3).
The slab is 290mm thick, which uses an equivalent volume of concrete as 120mm solid thick concrete slab.
The design allows for 12 kg/m² of conventional reinforcement.
The floor span is 7.5m.

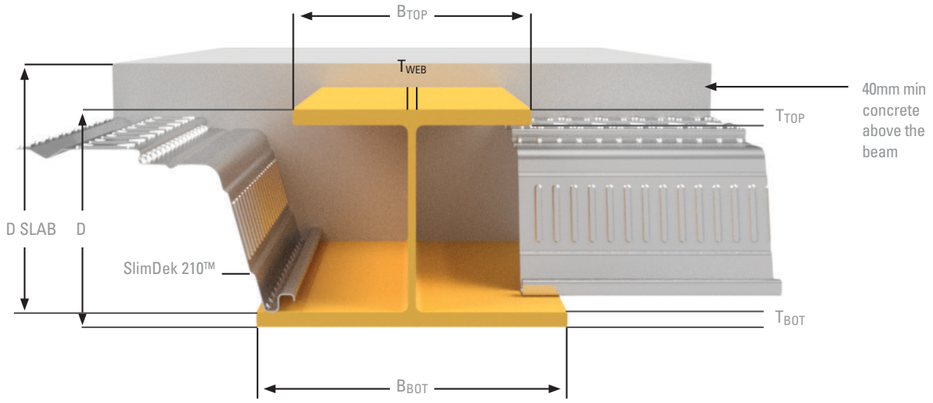

Figure F.7.5.3 Custom ASB

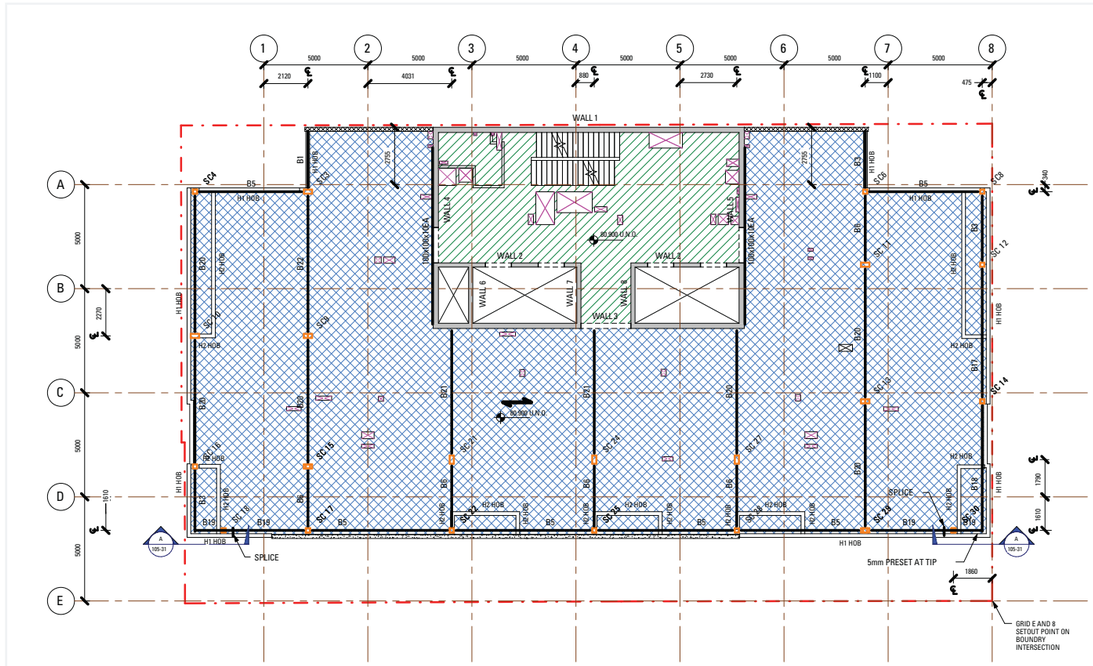

Figure F.7.5.4 SlimFlor® Floor Plan

DESIGN B: TRADITIONAL POST TENSIONED SLAB POURED ON TRADITIONAL FORMWORK

Design B consists of a traditional post tensioned slab cast on removable ply formwork.
The slab is 200mm thick.
The design allows for 5.5 kg/m² of post tensioning and 9.0 5.5 kg/m² conventional reinforcement.
The floor span is a 7.5m x 7.5m (Figure F.7.5.5).

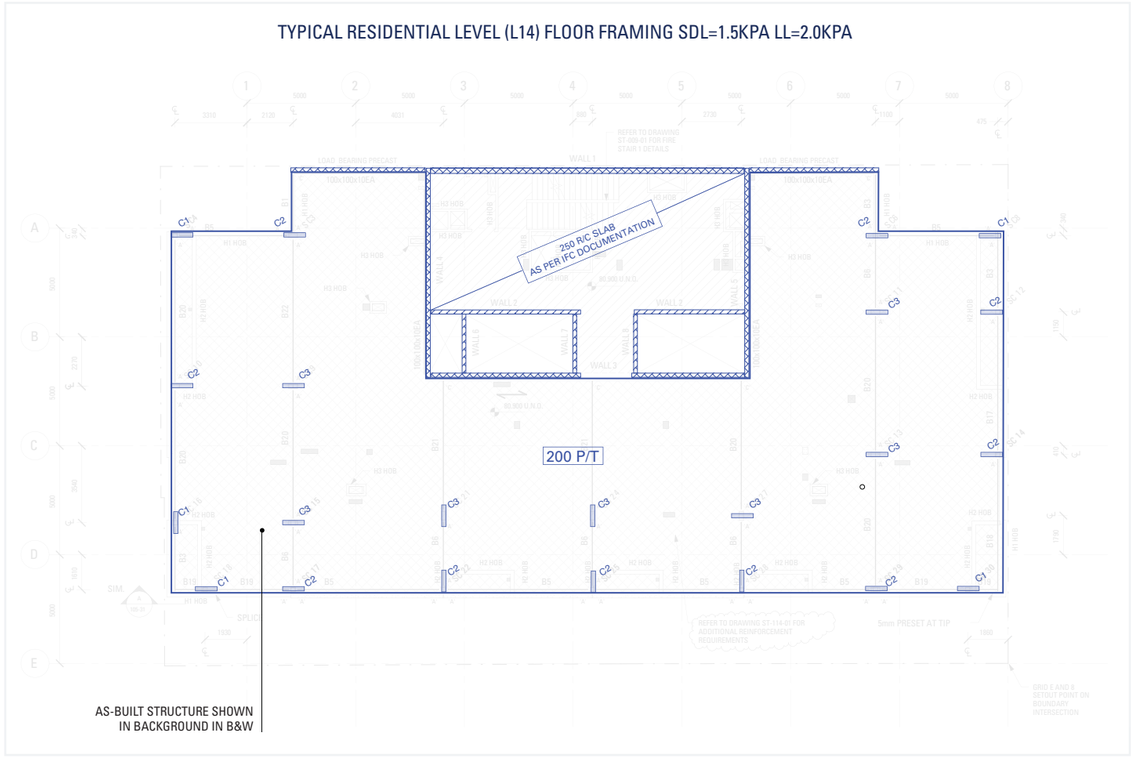

Figure F.7.5.5 Post Tensioned Floor Plan

NOTES:

Typical floorplace has been provided as an equivalent alternative to the as-built design, including strength, serviceability, fire and durability considerations.

The 250 thick R/C in-core slab is unchanged from the as-built design the column sizes and rates are indicitive of a typical level in the middle of the building (level 14).

STRUCTURAL SIZES AND RATES:

Floorplate
200 P/T SLAB
5.5 kg/m2 PT, 9.0 kg/m2 REO

Columns (f'c = 50MPa UNO):

C1: 900x225 mm BLADE COLUMN OR 550mm dia
140 kg/m3 REO

C2: 1000x250 mm BLADE COLUMN OR 550mm dia
140 kg/m3 REO

C3: 1400x350 mm BLADE COLUMN OR 700mm dia
(f'c=80MPa)
160 kg/m3 REO

COSTING SUMMARY

Design A – FIELDERS SLIMFLOR®					
Columns	Steel		$29 206		
	Fire Protection		$15 510		
Slabs	Concrete		$26 516		
	SlimDek 210™ Formwork/Propping		$69 360		
	Reinforcing		$15 640		
	Beams		$39 729		
	Fire Protection		$8 460		
Total Floor Cost				**$204 420.00**	**$362.45/m²**
Note: 1. There is approximately another $15 510 of savings if the beams and columns can be concealed within fire rated ceilings and walls.					
Total Floor Cost[1]				$188 910.00	$335.00/m²
2.*Additional 10% saving in preliminary cost.					

Design B – POST TENSIONED SLAB					
Columns	Concrete		$45 589		
	Reinforcement		$7 314		
Slabs	Concrete		$40 331		
	Formwork		$81 660		
	Reinforcing	Rebar	$11 730		
		PT	$24 645		
Total Floor Cost				**$211 269.00**	**$374.59/m²**

* The SlimFlor® SlimDek 210™ system will be quicker to construct and therefore cheaper than the Post Tensioned Slab due to reduced Preliminaries and Overheads, this is likely to offer a cost saving of 10% of the associated preliminaries costs.

PLEASE CHECK WITH FIELDERS THAT YOU HAVE THE CURRENT FIELDERS FACT FILE FOR THIS TOPIC.

As this cost estimate is specific to this project, please discuss your project with Fielders to work out a suitable solution.

Costs are accurate as of July 2016.

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REFERENCES

WT Partnership, Bluescope Works – Slab Systems Independent Costing Estimate No 2, 18 July 2016.