



SAFE LOAD/SPAN TABLES

The safe load/span table below shows maximum un-factored superimposed live loads (kPa) for different topping thicknesses (generally based on a topping concrete strength of 25MPa at 28 days). Increased live loads and/or spans may be possible by specific design, please check with TiltUp. The engineer will specify the topping reinforcements.

Design Span (m)	3.5	4.0	4.5	5	5.5	6	6.5	7	7.5	8	8.5
with 65mm topping	17.0	13.0	9	6.5	4.8	4.2					
with 75mm topping		15.0	11.0	8.0	5.5	5.0	4.75				
with 90mm topping		19.0	14.0	10.0	7.5	6.0	5.0	4.0			
with 110mm topping					10.5	8.5	8.5	7.0	5.5	4.25	
with 125mm topping						9.0	8.0	6.0	4.0	3.5	2.3

DURABILITY

The load/span table is based on the durability requirements specified in NZS 3101:2006 for an A1 internal environment exposure classification. Where a more severe exposure classification is required, live loads may need downgrading.

SOUND TRANSMISSION CLASS (STC)

A concrete floor such as Unispan is ideal for residential dwellings because its mass prevents sound transmission. Unispan with 65mm topping has an STC rating of 55dB. If a 9.5mm thick suspended ceiling is placed to the underside, a STC rating of 58dB is achievable

TOPPING CONCRETE

The topping concrete strength should be specified at a minimum of 25MPa as per cl 5.2.1 NZS 3101 - Part1:2006. Floor reinforcement and saddle bars should be designed and shown on the Consulting Engineers drawings. Steps in the topping can be formed using suitable density polystyrene, however the extra topping thickness, as well as the benefit of added stiffness, needs to be accounted for as a gravity load and allowed for in the design

TEMPORARY PROPPING DURING CONSTRUCTION

Specific propping requirements for given loads and spans will be detailed on the shop drawings and are usually in the order of:

- One row of props for spans up to and including 6 metres.
- Two rows are required for spans greater than 6 metres.

A suitably qualified engineer will need to be consulted for the design of the propping system. Pre-cambers to set the level of the props will be shown on the shop drawings. Propping is required to be in place prior to placing the Unispan on-site. For multiple story buildings back propping should be in place for a minimum of two levels below the level being constructed, or to solid ground. Load on the back-props from the finished floors should be relieved, remaining snug, prior to the props supporting the level being constructed to take the wet concrete topping load. The propping can be removed when the topping concrete strength has reached 15MPa

END SEATING

Unispan requires a minimum of 50mm or span/180, whichever is greater, seating on concrete walls or beams. If concrete supports are armoured or on steelwork the end seating can be reduced by 15mm as per cl 18.7.4 NZS 3101 - Part1:2006. A construction tolerance of 10mm needs to be added to these figures. TiltUp recommends a minimum of 75mm end seating on masonry block work and, where possible, the 15mm reduction does not apply when seating on steel. We also recommend the use of low friction bearing strips under the bearings of the Unispan.

HANDLING AND STORAGE

TiltUp Unispan is designed to be lifted using hooks and chains to strand lifting eyes located at ends or length divided by five from each end. Unispan is to be dunnaged as close as possible to the lifting location and with blocks in line with the block below, on solid and even ground. Ensure lifting equipment is regularly checked.

PENETRATIONS

Unispan Flooring allows flexibility for accommodating penetrations in specific locations avoiding the strands. If a strand is cut on-site, place a prop either side and contact TiltUp's technical department for a design review.

DESIGN NOTES

1. The maximum safe loads shown are based on simply supported spans for both serviceability limit states (SLS) and ultimate limit states (ULS). Design for longer spans may be possible where structural continuity is available. The section properties are based on transformed sections for maximum spans.
2. The load/span tables assume loads are uniformly distributed. Consideration is required for shear actions induced from point loads. Contact TiltUp's technical team for advice
3. The load/span tables are based on simply supported spans up to a floor thickness of span/44. Spans with floor thickness less than span/44 will require continuity.
4. Consideration needs to be given to long term creep effects due to higher superimposed dead loads. Contact TiltUp's technical team for guidance.
5. Calculated deflection due to live load has been limited to span/500. If design is required for sustained super dead and/or live loads, then long term creep deflection must be checked. This may result in a requirement for a more robust unit.
6. Camber over temporary props is approximately 5mm per metre of span over 4 metres and will be shown on shop drawings.

SECTION PROPERTIES

These are based on a 2.400mm wide section acting compositely with a specified depth of concrete topping.

Concrete density assumed at 24 kN/cu.m

	O/A depth (mm)	Area Ac 10-2 (m ²)	I 10-4 (m ⁴)	Yb (mm)	Zb 10-3 (m ²)	Zt 10-3 (m ²)	Floor Mass (kg/m)	Floor Weight (kPa)
Bare unit	75	18.0	0.8438	37.5	2.250	2.250	441	1.80
75 with 65mm topping	140	33.6	4.473	62.8	7.127	5.791	822	3.36
75 with 75mm topping	150	36.0	5.499	67.1	8.196	6.634	881	3.60
75 with 90mm topping	165	39.6	7.321	73.7	9.930	8.022	969	3.96
75 with 110mm topping	185	44.4	10.320	82.8	12.470	10.09	1087	4.44
75 with 125mm topping	200	48.0	13.81	93.0	14.85	12.91	1176	4.80

DESIGN

TiltUp can supply a Producer Statement for the design of the Unispan floor as well as the manufacture of the Unispan units.

SITE ERECTION

TiltUp can undertake the erection of the Unispan slabs – please request an “in-place” quotation.

QUOTATIONS AND PRELIMINARY DESIGN

TiltUp has a free quotation and preliminary design service. The preliminary design, which is based on spans and loadings provided by the customer, will indicate the topping thickness, propping and topping concrete strength required.

TiltUp has a free quotation and preliminary design service. The preliminary design, which is based on spans and loadings provided by the customer, will indicate the topping thickness, propping and topping concrete strength required.



FURTHER TECHNICAL INFORMATION

TiltUp has qualified, experienced staff available to discuss design details with you.

Paul Brewer | General Manager

PH: 07 925 0383 | M: 021 403 497 | E: paul@tiltup.co.nz

POSTAL ADDRESS: PO Box 174, Tauranga

SITE ADDRESS: 38 Poturi Street, Tauranga

Thomas Razak | Engineering Manager/ Estimator

PH: 07 925 0383 | M: 021 403 417 | E: thomas@tiltup.co.nz

POSTAL ADDRESS: PO Box 174, Tauranga

SITE ADDRESS: 38 Poturi Street, Tauranga

Reviewed 17 February 2017