INTERNAL LOAD BEARING
ON CONCRETE FLOOR SLABS

- Covers floor thickening and supporting stud requirements
- Covers floor slabs on buildings complying with NZS 3604:2011
- All concrete slabs to be constructed as per NZS 3604:2011
- Thickening requirements apply to reinforced floor slabs
- Provides solutions for stud requirements where point loads exceed 10kN
- All slabs assumed to be supported on soils that have Ultimate Bearing Capacity of 300kPa ($Ø_b$=0.50)

ESTABLISHING THICKENING & STUD REQUIREMENTS

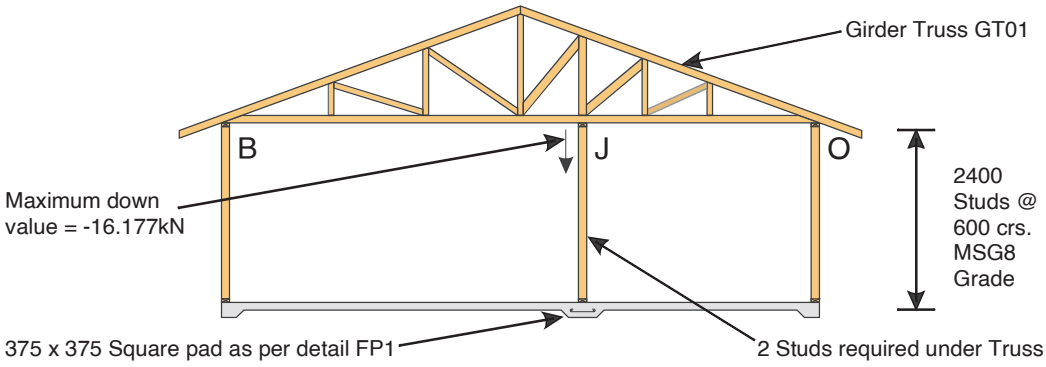
1. Establish the type of load applied to the floor as being either a UDL (uniformly distributed load) or a concentrated load. Girder trusses will always give concentrated loads and a run of two or more trusses with the same loads will give a UDL.
2. Establish the maximum load value via the MiTek 20/20® Truss Design Software by using the Truss Bearings Exceeding 10kN Report (see example below). Choose the maximum DOWN value in kN.
3. Go to the Slab Thickening & Stud Requirement Table on the next page and choose from the appropriate section; either no change for up to 10kN, FP1 and FS1 for up to 20kN, or FP2 and FS2 for up to 30kN.
4. Choose from the selection of stud options (height, centres and grade).
5. Apply the relevant slab and stud requirements as specified and detailed on the next page.
6. Where the maximum positive bearing reaction exceeds 10kN (uplift), refer to MiTek for Special Design.

MITEK 20/20® EXAMPLE SELECTION

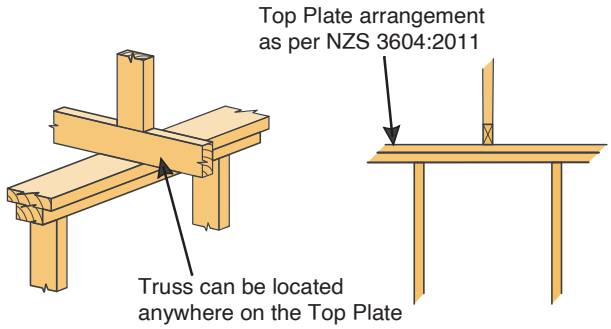
TRUSS BEARINGS EXCEEDING 10kN REPORT

Truss List
Legend: ? = input only, ~~Txx~~ = failed design, Unmarked trusses = designed successfully

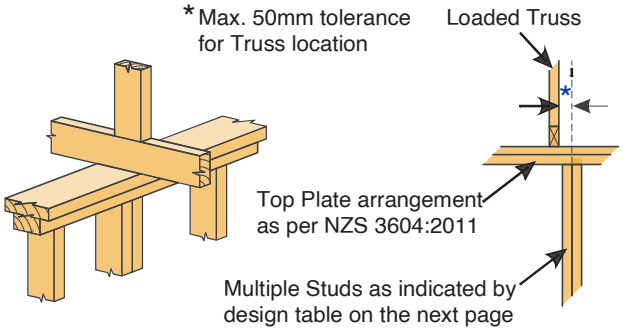
Critical Trusses	Qty	Span (mm)	Joint	Bearing Reactions (kN) Down	Uplift
GT01	1	8000	J	16.177	7.292



SINGLE STUD OPTION



MULTIPLE STUD OPTION



SLAB THICKENING & STUD REQUIREMENT TABLE

CONSTRUCTION SPECIFICATIONS

Max. truss crs. @ 1200mm, Min. truss crs. @ 600mm.
Assume walls are fully lined on at least one face.
Assume full bearing on top plate (i.e. no eccentric loading).

Truss Bearing Reaction	Slab Thickening Detail		Stud Requirements Uniform Dist. Loads or Concentrated Loads		
	Concentrated Load	Uniform Dist. Load	Stud Height	Stud Requirements	
Bearing reaction up to & including 10kN	STANDARD reinforced slab floor as per NZS 3604:2011	STANDARD reinforced slab floor as per NZS 3604:2011	2400	Refer to NZS 3604:2011	
			2700		
			3000		
			Stud Height	No. of Stud under Truss	Min. Timber Size
Bearing reaction up to & including 20kN	TYPE FP1 375 x 375 PAD	TYPE FS1 300 STRIP THICKENING	2400	2	90 x 35
			2700	2	90 x 45
			3000	3	90 x 45
			Stud Height	No. of Stud under Truss	Min. Timber Size
Bearing reaction up to & including 30kN	TYPE FP2 450 x 450 PAD	TYPE FS2 450 STRIP THICKENING	2400	3	90 x 45
			2700	3	90 x 45
			3000	4	90 x 45

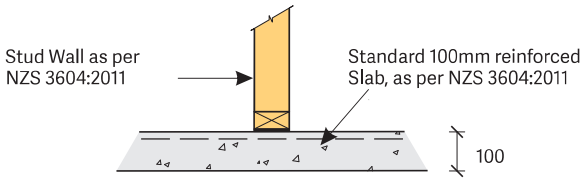
TIMBER SPECIFICATIONS

Timber properties based on NZS 3603:1993 Amendment No.4 March 2005
Minimum grade specified is SG8 unless otherwise noted
For SG6 use the studs for the next highest category
i.e. - For loads up to 10kN select studs from the 20kN table
- For loads up to 20kN select studs from the 30kN table
- For loads above 20kN Special Design is required

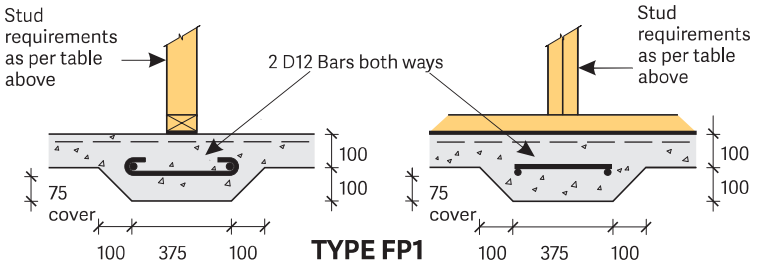
*Note: The stud requirement for 20kN & 30kN bearing reactions can be applied to external walls as well.

SLAB THICKENING DETAILS

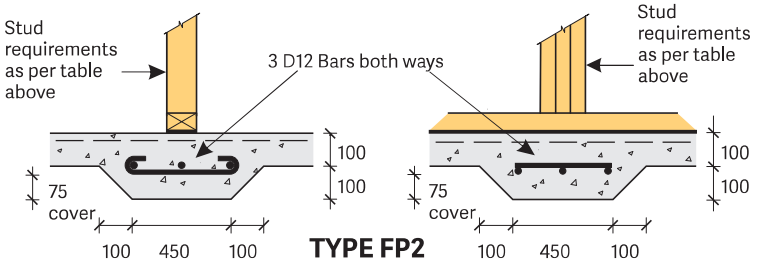
CONCRETE PAD OPTIONS
(for concentrated loads)



STANDARD 100mm SLAB

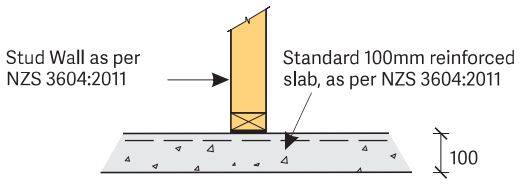


TYPE FP1

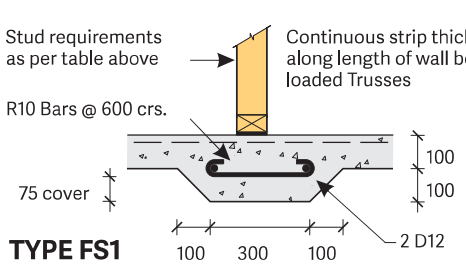


TYPE FP2

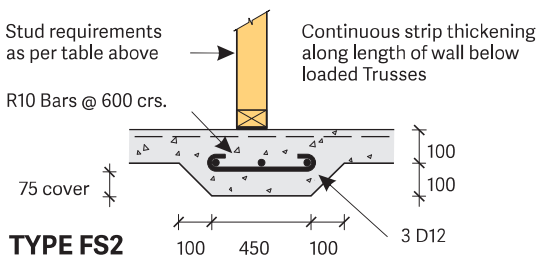
CONTINUOUS CONCRETE THICKENING OPTIONS
(for uniformly distributed loads)



STANDARD 100mm SLAB



TYPE FS1



TYPE FS2

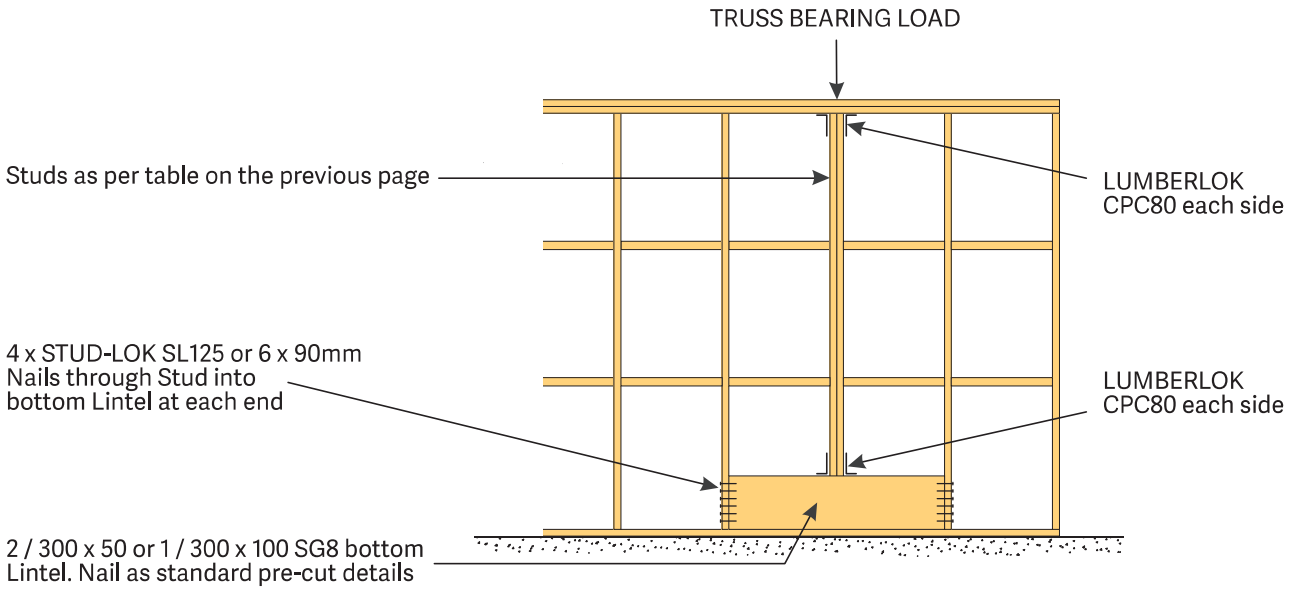
NOTE: FP = Foundation Pad FS = Foundation Strip

RETRO FITTED LOAD BEARING OPTION

Note:

- Covers slab details where no thickening has been built into the foundation
- For loads exceeding 10kN install bottom lintel (300 x 100) between two adjacent studs as detailed below. For loads 30kN or more, special design is required
- Ensure the studs comply with requirements on the previous page and are located directly under concentrated loads. This may require on-site installation of these studs

CONCENTRATED LOAD



UNIFORMLY DISTRIBUTED LOADS