
CONTENTS

CHAPTER 1

SLABS

SOLID SLABS

- One-way
 - Simply supported
 - Continuous
- Cantilever
- Two-way
 - All edges discontinuous (Simply Supported)
 - All edges continuous
 - One short edge discontinuous
 - One long edge discontinuous
 - Two long edges discontinuous
 - Two short edges discontinuous
 - Two adjacent edges discontinuous
 - One long edge continuous
 - One short edge continuous

Flat Slabs

Circular Slabs

Ground Slabs

VOIDED OR RIBBED SLABS

One way

Two way

Cantilever

WAFFLE SLABS

SANDWICHED SLABS

(Corrugated Steel Channel filler sandwiched slab)

STEEL DECK SLABS

SIMPLY SUPPORTED ONE-WAY SOLID SLABS

1

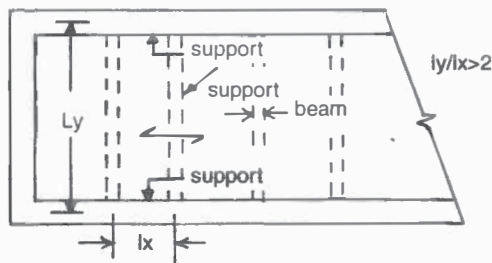
SPAN = 1.5 m		Steel grade		$f_y = 250 \text{ N/mm}^2$			
Concrete grade $f_{ck} \text{ (N/mm}^2\text{)}$	LL kN/m^2	Depth of Slab		Main steel		Secondary steel	
		D mm	d mm	Dia mm	Spacing mm	Dia mm	Spacing mm
15	2	100	75	8	200	8	300
20	2	100	75	8	200	8	300
25	2	100	75	8	200	8	300
15	4	100	75	8	160	8	300
20	4	100	75	8	160	8	300
25	4	100	75	8	160	8	300
SPAN = 1.5 m		Steel grade		$f_y = 415 \text{ N/mm}^2$			
15	2	100	75	8	225	8	300
20	2	100	75	8	225	8	300
25	2	100	75	8	225	8	300
15	4	100	75	8	225	8	300
20	4	100	75	8	225	8	300
25	4	100	75	8	225	8	300
SPAN = 2 m		Steel grade		$f_y = 250 \text{ N/mm}^2$			
15	2	100	75	10	190	8	300
20	2	100	75	10	190	8	300
25	2	100	75	10	190	8	300
15	4	100	75	10	150	8	300
20	4	100	75	10	150	8	300
25	4	100	75	10	150	8	300
SPAN = 2 m		Steel grade		$f_y = 415 \text{ N/mm}^2$			
15	2	100	75	8	200	8	300
20	2	100	75	8	200	8	300
25	2	100	75	8	200	8	300
15	4	110	85	8	180	8	300
20	4	110	85	8	180	8	300
25	4	110	85	8	180	8	300

CONTINUOUS ONE-WAY SOLID SLABS

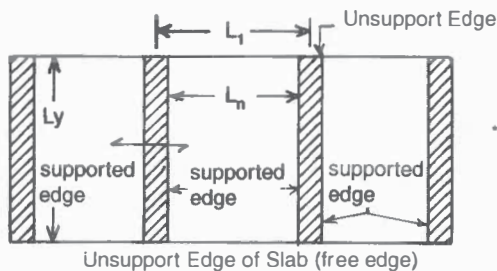
DEFINITION

A concrete solid slab supported on more than two supports is said to be a continuous slab and it is considered to be spanning in one direction, when

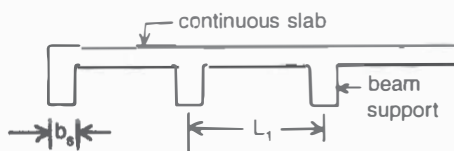
- (i) the edges of the slab perpendicular to the supports are not supported
- (ii) all the edges of the slab are supported and the ratio of width to span is greater than 2.



case (i)



case (ii)



- L_n = Clear span
 L_1 = c/c of supports
 b_s = breadth of support
 d = effective depth of slab

EFFECTIVE SPAN

- (1) For case when breadth or width of support

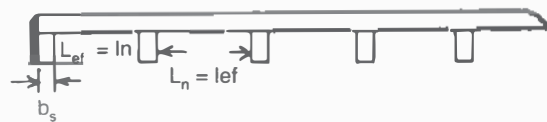
$$b_s < \text{Clear span} \left(\frac{L_n}{12} \right)$$

- L_{ef} = (i) c/c of supports or
 (ii) $(L_n + d)$ whichever is smaller
 (2) for cases when breadth or width of support

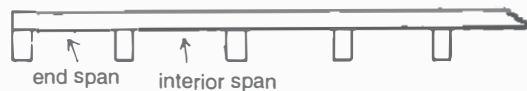
$$b_s > \frac{L_n}{12} \text{ or } 600 \text{ mm, whichever is less}$$

$$L_{ef} = L_n \text{ (end fixed)}$$

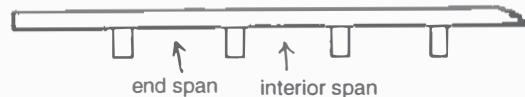
End fixed



Simple support



Free end



- (ii) End simply supported and free end support

- (a) For end span

- (i) $L_{ef} = L_n + d/2$ or
- (ii) $L_{ef} = L_n + b_s/2$ whichever is smaller

- (b) For interior spans

$$L_{ef} = L_n$$

Basic value of span to effective depth ratio = 26.

Recommended Trial Depths for Design

Depth	Grade of Steel	
	Fe-250	Fe-415
D	$\frac{L_{ef}}{25} \text{ to } \frac{L_{ef}}{35}$	$\frac{L_{ef}}{20} \text{ to } \frac{L_{ef}}{30}$

BENDING MOMENT COEFFICIENTS

For equal spans and spans different within 15 % with respect to largest span, and when symmetrically loaded, the following bending moment coefficients may be

CANTILEVER SOLID SLABS

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SPAN = 1.5 m		Steel grade		$f_y = 250 \text{ N/mm}^2$			
Concrete grade $f_{ck} \text{ (N/mm}^2\text{)}$	LL kN/m^2	Depth of Slab		Main steel		Secondary steel	
		D mm	d mm	Dia mm	Spacing mm	Dia mm	Spacing mm
15	2	170	140	12	180	10	200
20	2	170	140	12	180	10	200
25	2	170	140	12	180	10	200
15	4	170	140	12	150	10	200
20	4	170	140	12	150	10	200
25	4	170	140	12	150	10	200
SPAN = 1.5 m		Steel grade		$f_y = 415 \text{ N/mm}^2$			
15	2	180	150	10	200	8	180
20	2	180	150	10	200	8	180
25	2	180	150	10	200	8	180
15	4	180	150	10	180	8	180
20	4	180	150	10	180	8	180
25	4	180	150	10	180	8	180
SPAN = 2 m		Steel grade		$f_y = 250 \text{ N/mm}^2$			
15	2	210	180	16	200	10	250
20	2	210	180	16	200	10	250
25	2	210	180	16	200	10	250
15	4	210	180	16	170	10	250
20	4	210	180	16	170	10	250
25	4	210	180	16	170	10	250
SPAN = 2 m		Steel grade		$f_y = 415 \text{ N/mm}^2$			
15	2	230	200	10	160	8	150
20	2	230	200	10	160	8	150
25	2	230	200	10	160	8	150
15	4	230	200	12	180	8	150
20	4	230	200	12	180	8	150
25	4	230	200	12	180	8	150