PRODUCTS:
HOLLOW CORE SLABS

We build the future.

1.0 GENERAL

Prestressed precast hollow core slabs are the most widely used type of precast flooring. The system offers numerous benefits to engineers and architects because it gives maximum strength with minimum weight, versatility in span / depth ratio, smooth soffit and speed of erection which leads to an economical way to construct floors.

1.1 STANDARD SECTIONS

The nominal width of hollow core slabs is 1200mm, inclusive of the longitudinal joint. The common standard cross sections are shown in Figure 1 and the technical details / load-bearing capacities are given on page 12 to 18. Special hollow core slabs for specific usage e.g. heavy loads, 4-hours fire resistance, etc are also available and more detailed information can be provided upon request from the sales department of Dubai Precast.

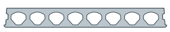
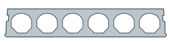
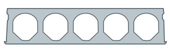
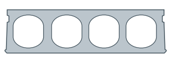
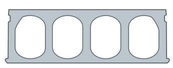
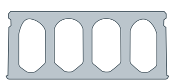
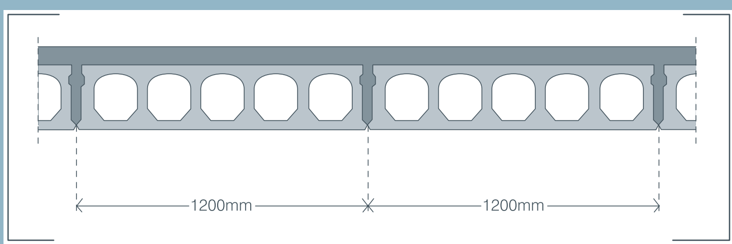
DEPTH (MM)	SECTION	TYPE	SELF WEIGHT (KN/M²)	JOINTED WEIGHT (KN/M²)
150		DP8 - 150	2.25	2.36
200		DP6 - 200	2.60	2.76
265		DP5 - 265	3.25	3.45
320		DP4 - 320	4.00	4.22
400		DP4 - 400	4.35	4.60
500		DP4 - 500	6.40	6.82

Figure I: Standard DP precast hollow core slabs (Standard width is 1,200mm)

Hollow Core Slabs in stockyard



Typical longitudinal joint pro file for arrangement of adjacent hollow core slabs

1.2 MANUFACTURING

Hollow core slabs are manufactured on long-line prestressing beds using a state-of-the-art automated production process. Maturity of the concrete can be accelerated by heat curing which provides shorter cycle time to provide speedy delivery.

Cured hollow core slabs are then cut to the desired length using diamond-tipped automatic saw once the concrete has attained sufficient strength.

Long-line prestressing beds

1.3 MATERIALS

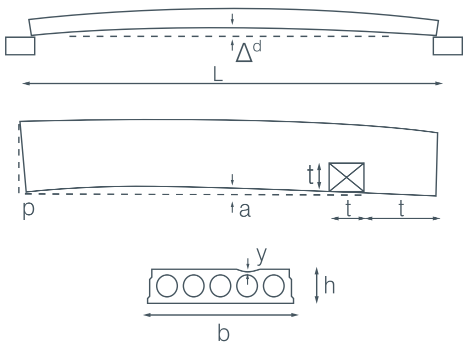
Hollow core slabs are made from zero-slump concrete with C60 compressive strength.
The prestressing tendons are indented 7 - wire low relaxation strands to BS 5896-1980 or ASTM A416-94 GRADE 270 with a strength of 1860 N/mm2.
Tendon size is normally of 9.3- 9.6mm and 12.5-12.9mm in diameter

Extruder machine for production of hollow core slabs

1.4 PRODUCTION TOLERANCES

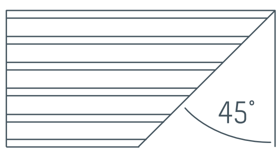
1. Length (L):	± 15 mm or L/1000 [1]
2. Thickness (h):	± 5 mm or h/40[1]
3. Width (b) : whole slab narrow slab:	+ 0 - 6 mm ± 15 mm
4. Orthogonality end face (p):	± 10 mm
5. Camber before erection (Δ^d)[2]:	± 6 mm or L/1000[1]
6. Warping (a):	±10 mm or L/1000
7. Flatness (y):	10 mm under a lath of 500 mm
8. Holes and recesses (t) cut in fresh concrete: cut in hardened concrete:	 ± 50 mm ± 20 mm

[1] Whichever is the larger
[2] Deviated from the calculated precamber



1.5 ANGLE ENDED SLABS

Hollow core slabs can be cut to an angle of 0˚- 45˚.
Two-way angles are also possible.



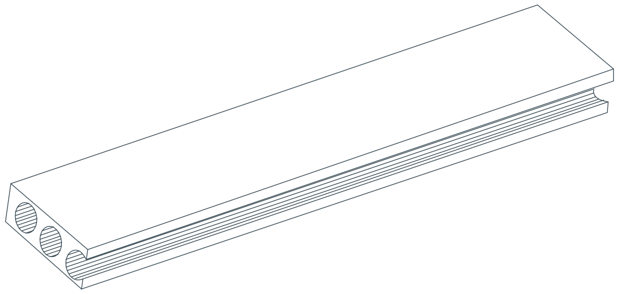
1.6 NARROW SLABS

Standard hollow core slab width is 1,200mm and the columns/walls centers should preferably be of modular coordinated dimension of 12M (where 1 M = 100mm). Otherwise, floor slabs generally should be arranged in a way to minimize cast in situ strips and to maximize the usage of full 1,200mm wide slabs. However hollow core slabs can be cut to narrower widths should the need arises.

Minimum widths of narrow slabs

SLAB THICKNESS (MM)	MIN. WIDTH (MM)
150	350
200	450
265	540
320	690
400	690
500	690

All slabs can be produced with reduced widths. The narrow slabs are produced by cutting the standard width slabs after the extrusion.
The location of the longitudinal cut should correspond to the location of a longitudinal void, at a distance of 35mm-70mm from the prestressed strands, for 150mm - 265mm thickness and 50mm -100mm for 320mm-500mm thickness. It is recommended that the cut edge is placed over a wall or beam as the cut edge will be straight without chamfer as for full width slabs.



1.7 DESIGN

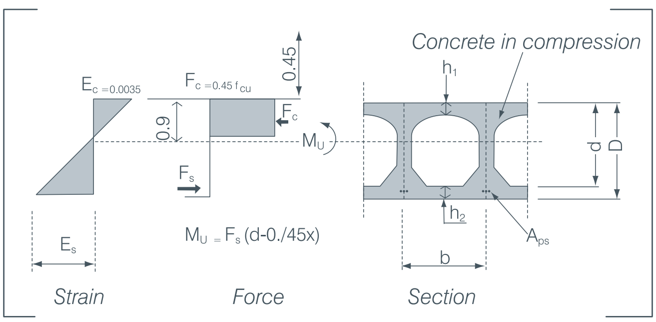
The design is generally based on the following Standards and Technical Guide:
British Standard BS 8110:1997 - Structural use of concrete
BS-EN 13369 - Common rules for concrete products
BS-EN 1168 - Hollow Core Slabs
FIP Recommendations - Precast Prestressed Hollow Core Floors
PCI-Handbook

Hollow core slabs can be regarded as the best section for a structural flexural member. The design of the cross-section allows the concrete to be used optimally both in the compression and tension zones.

Theoretically, the concrete below the compression zone which is redundant is omitted by longitudinal voids, thus reducing the weight of slab. By appling prestressing force with tendons at the bottom of slab, this will increase the tensile capacity of the slab.

This gives hollow core slabs the distinct advantage for higher load carring capacity and achieving long span capability.

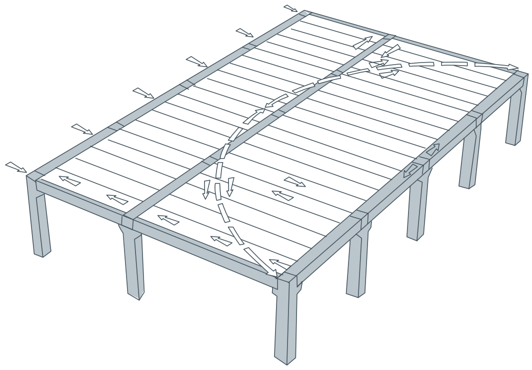
A floor consisting of jointed hollow core slabs provides a monolithic slab structure. In order to achive this, the joint between adjacent hollow core slabs must be properly grouted. The jointed hollow core slabs are capable of distributing vertical loads within the slab 'field' and provide a rigid diaphragm to transmit lateral loads to the stabilizing structure.



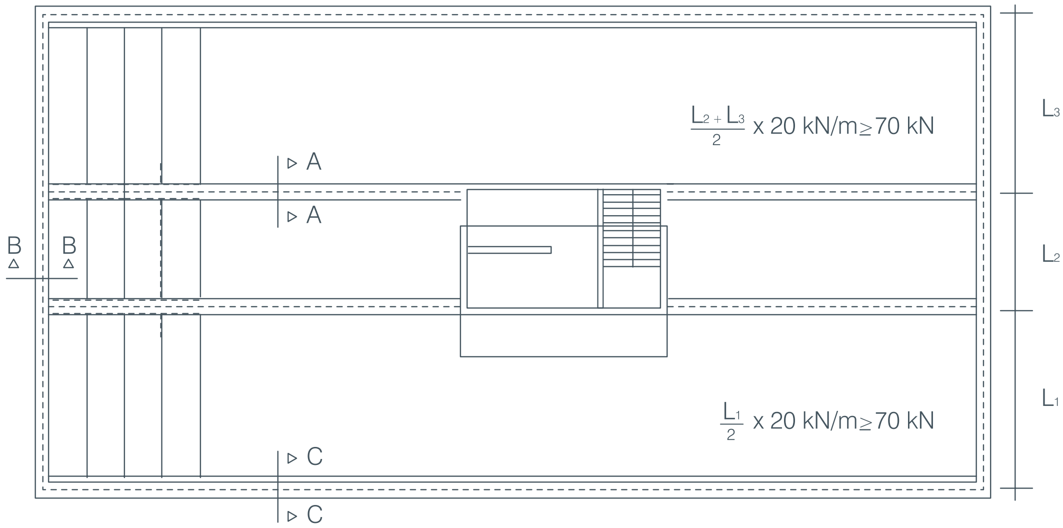
Strain and force distribution in hollowcore slab

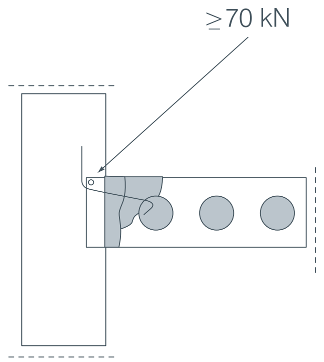
2.1 DIAPHRAGM ACTION

The diaphragm action of hollow core floors is realized through a good joint design. The peripheral reinforcement plays a determinant role, not only to cope with the tensile forces of the diaphragm action but also to prevent the horizontal displacement of the hollow core units, so that the longitudinal joints can take up shear forces. The positioning and minimum proportioning of ties, required by Eurocode 2, is shown in the figure below.

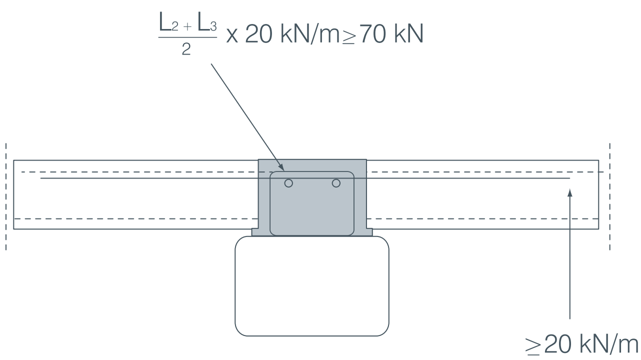


Hollow core slab floor diaphragm action

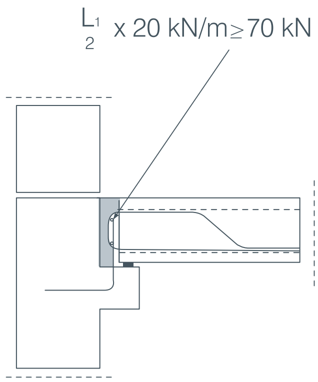




Section B-B



Section A-A



Section C-C

2.2 CONCRETE TOPPING

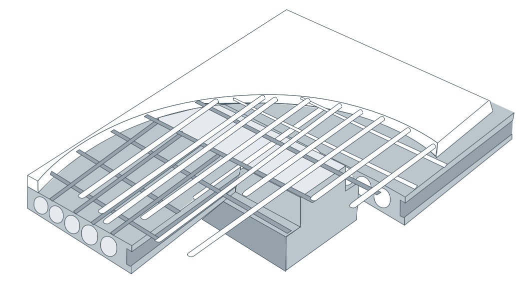
Hollow core slabs can be used for floors without structural topping. However it is recommended that a layer of concrete topping is provided in order for easy leveling of the top of the slabs. In addition, hairline cracks can be minimized on floors and this topping can also serve as a barrier to prevent water leakage through the joints of hollow core slabs, as well as embedment of electrical conduits.

Generally, the thicknesses of topping shall be specified to be between 50mm to 85mm with C30 - C40 concrete.

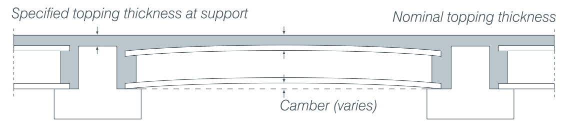
In case of Seismic action, frequent changes of loads, important point load or requirement for increased load bearing capacity a structural topping can be provided.

The structural topping is normally designed to prevent crack at serviceability limit state and should normally be reinforced with a layer of wire mesh and negative reinforcement. Stability tie reinforcement may also be provided wholly within the concrete topping.

Hollow core slabs with topping is designed as a composite structure, hence increasing the load-bearing capacity of the slab.



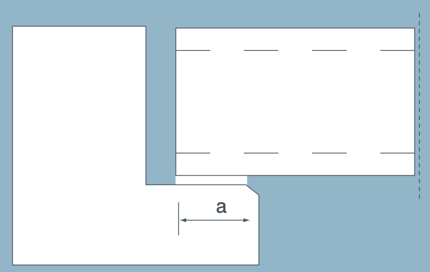
Concrete topping with a layer of wire mesh and bars for hogging moment over beam support.



Camber in hollow core slab floor

2.3 BEARING LENGTH

The nominal bearing length of simply supported hollow core floor units is given in the table. Erection on plywood spacers and tamping with concrete mortar ensure a uniform bearing.



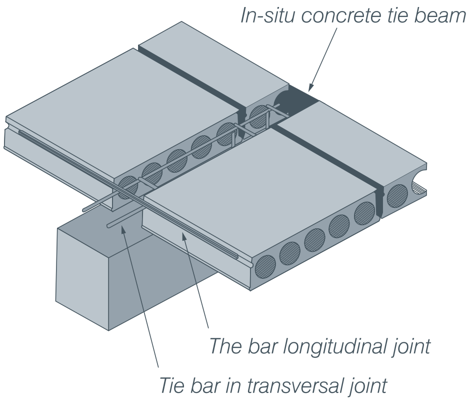
Supporting Material	Slab thickness	Support length a	
		Normal length	Minimum effective length
Concrete or steel	≤ 265 mm	80 mm	60 mm
	≥ 320 mm	100 mm	80 mm
Block work	≤ 265 mm	100 mm	80 mm
	≤ 320 mm	120 mm	100 mm

3.0 ADAPTABILITY TO SUPPORTING STRUCTURES

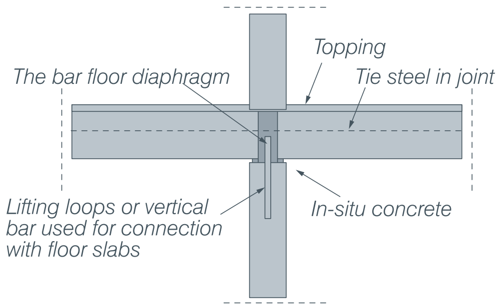
Hollow core slabs can be supported on virtually all types of structural materials. Slabs can be supported by cast in situ or precast beams, steel beams or by precast load-bearing walls and masonry walls.

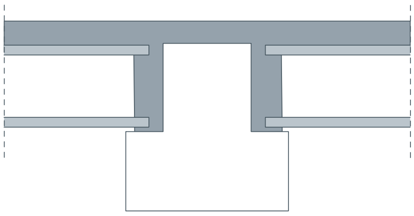
For erection on steel structures, precast beams and walls, the slabs can be placed directly on the support structure or on a bearing strip.

On in-situ concrete structures the Hollow core slabs are placed on plywood spacers for leveling purpose, and tamped with concrete mortar to ensure continuous support of the full width of the slab.

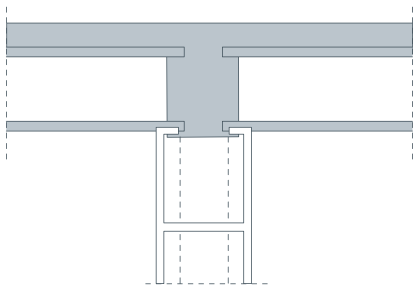


Support connections with the reinforcement shown

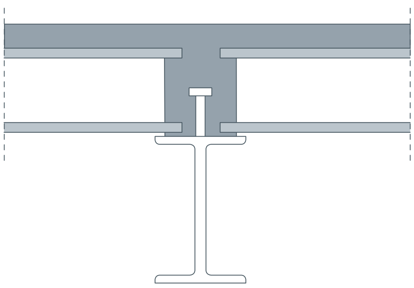




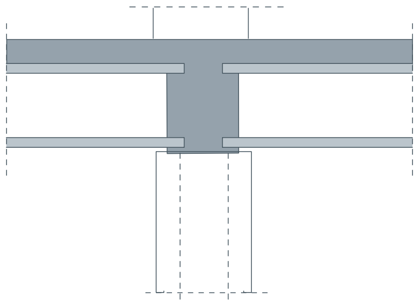
Concrete beam (precast or cast in situ)



Load-bearing block work wall.



Steel beam



Load bearing concrete wall

4.0 CANTILEVER SLABS

Hollow core slabs can be cantilevered by 1m to 2m depending on the slab thickness by providing top strands. The cantilevered slabs can be used for making balconies, bay windows, extensions and other decorative structures.

Shorter extensions may be realized on site using additional reinforcement embedded in slab joints or in the concrete topping.

5.0 OPENINGS IN HOLLOW CORE SLABS

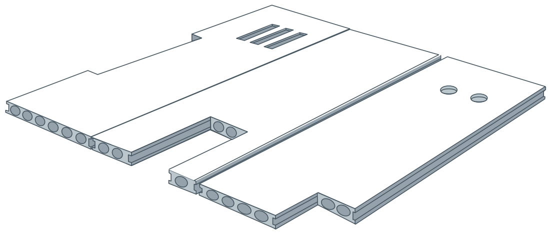
Different sizes of openings can be made into hollow core slabs:

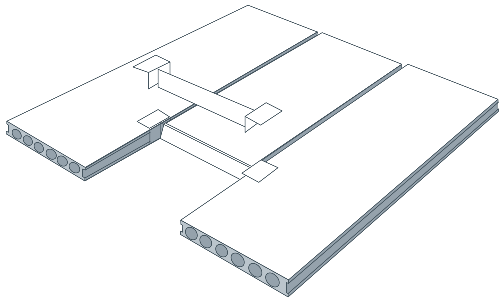
Very large opening where one or more slabs are totally cut: The load from the slab(s) with no support will be transferred to the adjacent slabs mainly through the shear keys and through a 'hidden" steel or cast in situ concrete spreader beam. Medium size openings in hollow core slabs are usually made at the factory. The reduced cross section has to be designed to withstand the design loads.

Small openings and recesses can be made at site by diamond tipped coring.

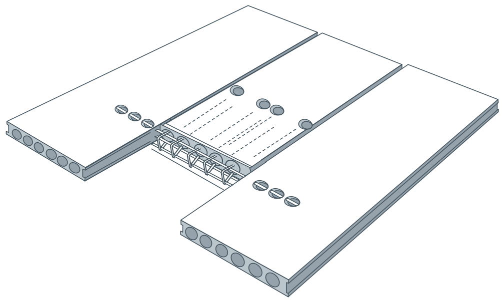
Holes may be circular or rectangular, and up to three are normally permitted in the same cross-section. Holes are considered to be in the same cross-section if they are less than 750mm apart in the longitudinal slab direction.

When making holes, great care must be taken not to damage the slab. It is particularly important that the prestressing stands are not cut without the permission of Dubai Precast's designer.





Steel spreader beam

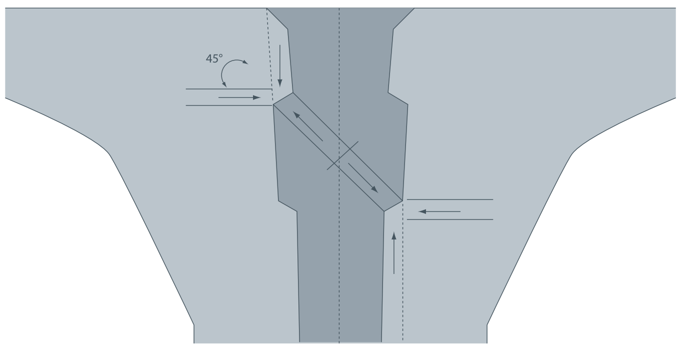


Cast in situ concrete spreader beam

6.0 CONCENTRATED LOADING

Floors composed of prestressed hollow core elements behave almost as monolithic floors for transverse distribution of line or point loads. The loads are transmitted through the profiled longitudinal joints. Extra care shall be taken to check the overall moment and shear capacity of the hollow core slabs.

As per BS 8110, part I, clause.5.2.2.2 line loads can be distributed over the lesser of the width of three hollow core slabs plus the width of the loaded area or the quarter of the span on either side of the loaded area.



Distribution of point load from one slab to the next through grounted shear key

6.1 SUSPENSIONS

Light Weight Suspensions

Lightweight suspensions can be fixed by drilling the fixing to the lower surface of the slab at a hollow core. Here are some examples of permissible suspension loads:

Anchor	Drill depth (mm)	Maximum Suspension (kN)
Spring bolt plug M4	Up to hollow core	0.3
Spring bolt M6	Up to hollow core	1.0
Expansion bolt M6	30	1.5
Expansion bolt M8	30	2.3
Expansion bolt M10	40	3.5

Heavy Suspensions

It is advisable to fix any heavy suspensions to slab interfaces or with a through slab suspension bolt. For Fe 370 MN/m2 suspension bolts, permissible loads are as follows:

Bolt size (mm)	Maximum load (kN)
Ø 6	5.5
Ø 8	10
Ø 10	15
Ø 12	20

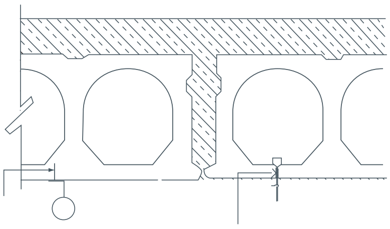
Maximum Point Loads (Kn)

(Slab's load-bearing capacity may not be exceeded)

Slab type	Diameter surface subject to load		
	Ø 75	Ø 150	Ø 200
DP 8 - 150	20	30	
DP 6 - 200	20	30	
DP 5 - 265	25	35	
DP 4 - 320 - 500		45	65

Light duty Fastening

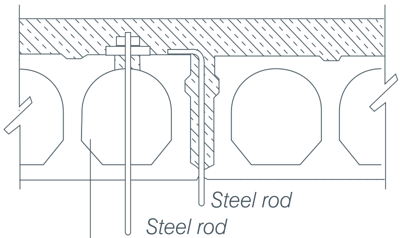
Usage
- Electrical conduits and ceiling
- Light duty services e.g. signage,etc.



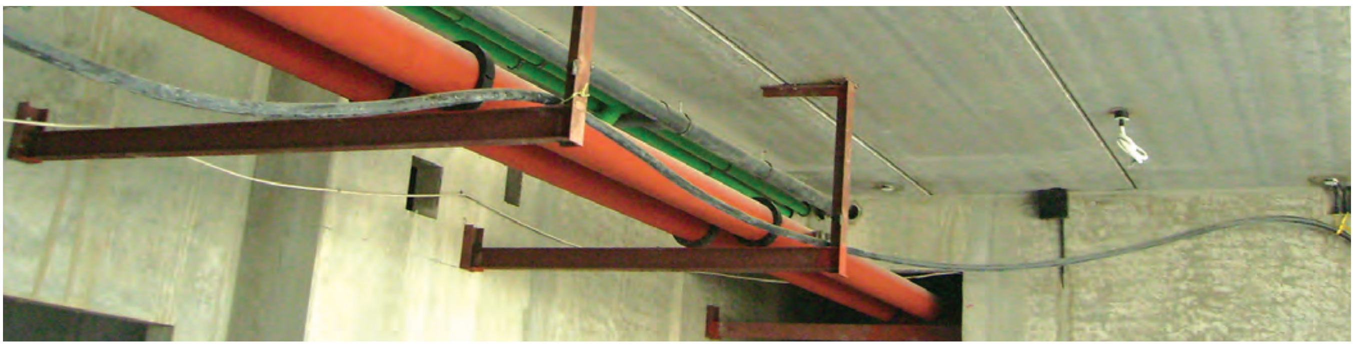
Light hangers using drill in anchor bolt.

Heavy duty fastening

Usage
- Heavy /large equipments (subject to loading by respective nominated sub-contractor for approval).
- Motors (e.g.for smoke-spilled,etc.)



Heavy duty hangers are fixed through the slab and supported from the top of the slab



7.0 M&E INSTALATIONS

Concealed electrical conduit and telephone trunking can be laid on top of hollow core slabs before topping is cast which is illustrated in the photograph shown.

Conduits are normally run in the screed and holes are drilled on site through the slab for installation of the electrical boxes.

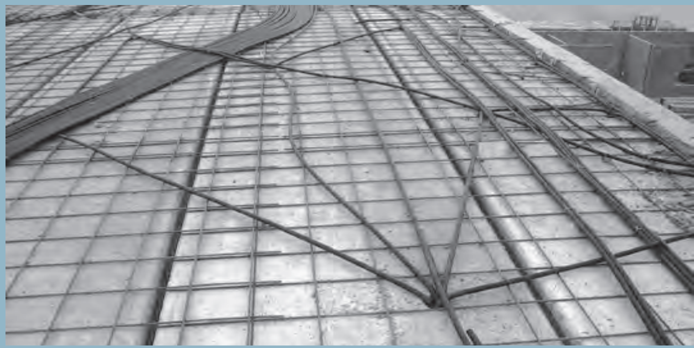
If a false ceiling is provided, it is most common that the conduit is placed between the soffit of the slabs and the false ceiling.

8.0 SOUND INSULATION

Hollow core slabs used as structural floor units offer excellent sound insulation properties associated with concrete and the longitudinal voids give further dampening effect. This will contribute to less sound transmission between floors.

The airborne sound reduction index Rw for hollow core slabs according to Bs 8233, 1987 are as follows:

Type	Rw (dB)
DP8-150	50
DP6-200	53
DP5-265	56
DP4-320	58
DP4-400	60
DP4-500	63
DP8-150 +60mm Topping	53
Dp6-200 +60mm Topping	56
Dp5-265 +60mm Topping	59
Dp4-320 +60mm Topping	61
Dp4-400 +60mm Topping	63
Dp4-500 +60mm Topping	65



9.0 FIRE RESISTANCE

Standard hollow core slabs are designed for 1.5 hours fire rating. Fire resistance shall be in accordance with the recommendations of BS 8110. Special slabs can be produced up to a fire rating of 4 hours, if required .

10.0 THERMAL RESISTANCE

Thermal insulation values are normally only significant at roof levels, where an insulation layer has to be placed on top of the slab to achieve good thermal resistance.

The U-value (W/m2k) for hollow core slabs are as listed below:

Type	U-value (W/m2k)
DP8-150	8.33
DP8-200	6.67
DP8-265	5.26
DP8-320	5.00
DP8-400	4.55
DP8-500	3.85

11.0 PRE-FINISHED CEILING

The Soffit of Precast hollow core slabs offers an aesthetically pleasing prefinished ceiling. It is completely set at one plane level without the necessity to introduce secondary beams. Omission of the secondary beams will give the functional advantage of greater overall headroom and better appearance of the ceiling.

Soffits of hollow core slabs are smooth and ready to paint with no requirement for additional plaster. Joints in the soffit between Precast hollow core slabs can be closed, if required for aesthetical reasons. A method statement can be provided from Dubai Precast's design department.

12.0 QUALITY ASSURANCE

Quality control will be performed according to Dubai Precast standard quality control procedures in our own laboratory.

Compressive Concrete strength is determined by standard test cubes from the wet concrete and these are tested in accordance with BS 1881:Part108:1983 and BS 1881:Part116:1983.

The concrete strength is at least 60% of the design strength before the tension in the prestressing strands is released. After the slabs have been cross-cut, strand slippage must remain within permissible limits. After production, all slabs are checked visually for cracks, broken edges and strand slippage before they are released for erection.

Dubai Precast carries out full structural tests at fixed intervals to determine the actual shear and bearing capacity of the slabs.

13.0 HANDLING AND TRANSPORT

Handling, loading and storage arragements on delivery should be such that the hollow core slabs are not subjected to forces and stresses which have not been catered for in the design. The units should have semi-soft (e.g. wood) bearers placed at the slab ends. Where they are stacked one above the other, the bearers should align over each other.

When stacking units on the ground site, the guidelines will be similar to the above. The ground should be firm and the bearers horizontal, such that no differential settlement may take place and cause spurios forces and stresses in the components. During handling, provisions shall be taken to ensure safe manipulation, for example safety chains under the slab.

14.0 ERECTION

The erection of the hollow core floor slabs should be done according to the instructions of the design engineer. Dubai Precast will supply written statements of the principles of site erection, methods of making structural joints and materials specification on request.

Hollow core slabs are designed for quick and easy installation. However, free access for the mobile crane and delivery truck to the place of erection at site must be provided. Completion of erection without interruption is crucial. Hollow core slabs are easy to install using lifting booms and clamps available from Dubai Precast.

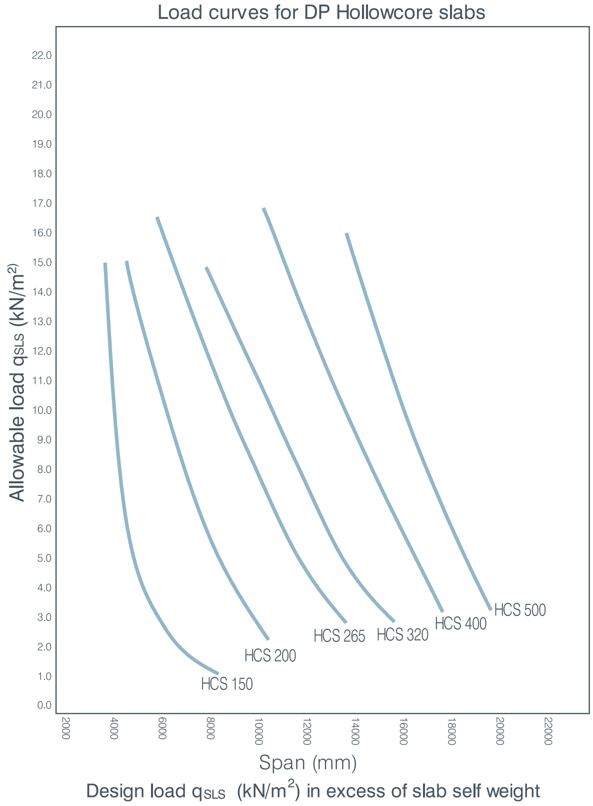
14.1 JOINT INFILL AND CONCRETE SCREEDS

The longitudinal joints between the floor units should be filled using concrete grade C25 to C35, containing a 10mm maximum size aggregate. The floor units should be moistened prior to placement of in-situ concrete. The joints should be filled carefully since they fulfill a structural function both in the transversal load distribution and the horizontal floor diaphragm action.

When a structural screed is to be used, it is advisable to fill the longitudinal joints immediately prior to the casting of the screed. The workability should ensured by using concrete with a slump between 50 and 100 mm. The wet concrete should be spread evenly over the floor area as quickly as possible. Mechanical vibrating beams are used to compact the concrete. The screed must be power floated or rough tampered in the usual manner depending on the type of floor finish. The topping screed should contain a shrinkage reinforcement mesh and extraordinary care should be taken to ensure the curing is ensured properly.

15.0 TECHNICAL DETAILS

Dubai Precast's hollow core slabs are produced and designed as previously described, and have the characteristics as shown below. The load bearing capacity of our standard slabs are shown on the graph and on the following pages. Kindly note that special slabs can be designed for project specific requirement in addition to the standards shown in this brochure.



General information about using the load tables:

Both limit states (quls and qsls) shall be controlled.

Shear capacity is based on a nominal bearing length of 80mm, allowing 20mm tolerance on site.

qsls is never given bigger than quls/1 .5
quls is never given bigger than qsls xl .6
Msls is never given bigger than Muls/1 .4

Basis for the design:

Basis for the design is BS 8110: Part1:1997, simply supported class 2 members.

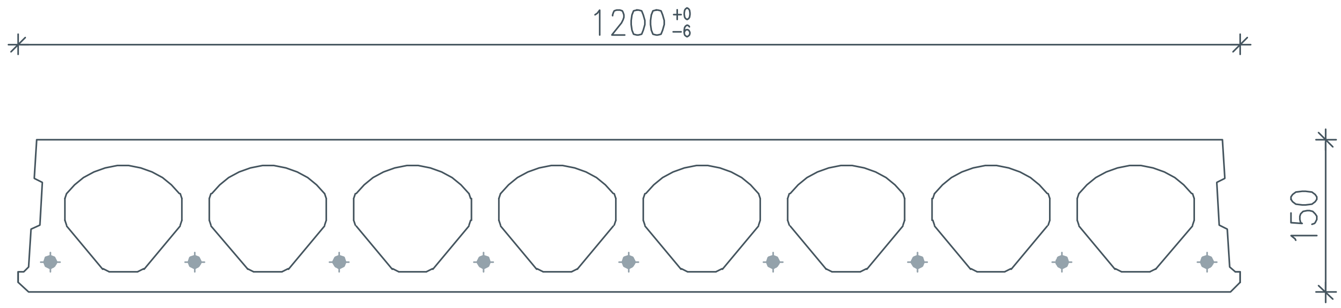
All section- and material properties which are used for the design are given on the data below.

For structural topping load tables the slab is calculated as a composite section, with a topping concrete strength of fcu = 35 MPa.

Standard Characteristics of slabs

Profile	Height	Width	Weight (joints filled)	Cross Sectional Area	Moment of Inertia	Nominal cover to Strand	Fire Resitance
	(mm)	(mm)	(kN/m2)	(m2)	(m4)	(mm)	(hours)
DP8 - 150	150	1196	2.36	0.108164	0.000287	30	1.5
DP6 - 200	200	1196	2.76	0.123886	0.000626	30	1.5
DP5 - 265	265	1196	3.45	0.156327	0.001416	30	1.5
DP4 - 320	320	1196	4.22	0.191177	0.002532	30	1.5
DP4 - 400	400	1196	4.60	0.209069	0.004386	30	1.5
DP4 - 500	500	1196	6.82	0.306585	0.009351	30	1.5

DP HOLLOW CORE SLAB
TYPE DP 8 - 150



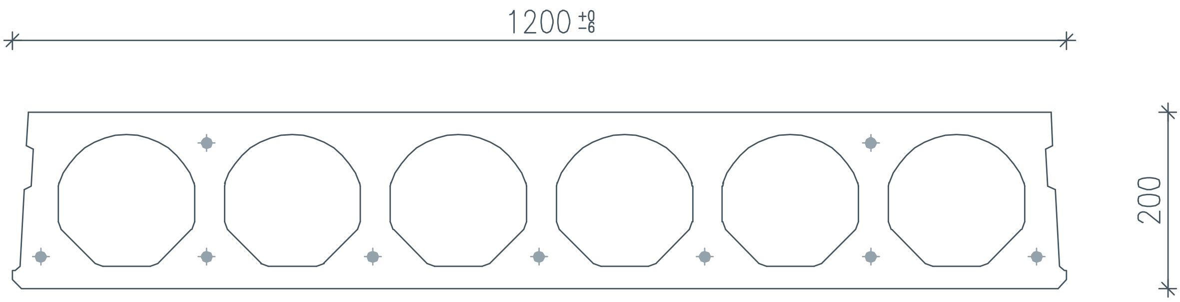
Load Table DP 8 - 150 — **NO STRUCTURAL TOPPING**

STRAND PATTERN	BEARING CAPACITY PER SLAB UNIT (1.20 M WIDTH)	SPAN (m)	3	4	5	6	7	8	9	
4 no. 9.3 mm	M_{SLS} = 25 kNm/s.u.	q_{SLS} (kN/m^2)	14.9	7.4	3.8	2.0				
	M_{ULS} = 35 kNm/s.u.	q_{ULS} (kN/m^2)	22.6	11.3	6.0	3.2				
Mcrack = 37 kNm/s.u.	V_{UD} = 54 kN/s.u.	c (mm)	-2	-3	-3	0				
5 no. 9.3 mm	M_{SLS} = 30 kNm/s.u.	q_{SLS} (kN/m^2)	18.4	9.6	5.2	2.9	1.5			
	M_{ULS} = 43 kNm/s.u.	q_{ULS} (kN/m^2)	27.8	14.6	8.1	4.6	2.5			
Mcrack = 41 kNm/s.u.	V_{UD} = 56 kN/s.u.	c (mm)	-2	-3	-4	-4	-2			
6 no. 9.3 mm	M_{SLS} = 37 kNm/s.u.	q_{SLS} (kN/m^2)	18.7	12.0	6.9	4.0	2.4			
	M_{ULS} = 52 kNm/s.u.	q_{ULS} (kN/m^2)	28.3	18.3	10.6	6.3	3.8			
Mcrack = 45 kNm/s.u.	V_{UD} = 57 kN/s.u.	c (mm)	-3	-4	-5	-4	-1	+6		
7 no. 9.3 mm	M_{SLS} = 42 kNm/s.u.	q_{SLS} (kN/m^2)		14.0	8.3	5.1	3.1	1.8		
	M_{ULS} = 60 kNm/s.u.	q_{ULS} (kN/m^2)		21.3	12.7	7.8	4.9	2.9		
Mcrack = 48 kNm/s.u.	V_{UD} = 59 kN/s.u.	c (mm)		-5	-7	-7	-4	+2		
9 no. 9.3 mm	M_{SLS} = 53 kNm/s.u.	q_{SLS} (kN/m^2)		15.1	11.0	6.9	4.4	2.8	1.7	
	M_{ULS} = 75 kNm/s.u.	q_{ULS} (kN/m^2)		22.9	16.7	10.6	6.9	4.5	2.8	
Mcrack = 56 kNm/s.u.	V_{UD} = 63 kN/s.u.	c (mm)		-8	-10	-11	-11	-7	-3	
Slab Selfweight = 2.25kN/m^2	M_{SLS} = Slab Moment Capacity (Service limit Stage)	q_{SLS} = Maximum allowed imposed dead and live load, unfactored (excluding selfweight of slab)								
Joint Filling = 0.11kN/m^2	M_{ULS} = Slab Moment Capacity (Ultimate limit Stage)	q_{ULS} = Maximum allowed imposed dead and live load, factored (excluding selfweight of slab)								
Total Selfweight = 2.36kN/m^2	V_{UD} = Slab Shear Capacity (Ultimate limit Stage)	c = Theoretical camber at time of installation (+ indicate deflection)								

Load Table DP 8 - 150 + 75 — **75 mm STRUCTURAL TOPPING**

STRAND PATTERN	BEARING CAPACITY PER SLAB UNIT (1.20 M WIDTH)	SPAN (m)	3	4	5	6	7	8	9	
7 no. 9.3 mm	M_{SLS} = 70 kNm/s.u.	q_{SLS}		15.2	11.3	7.8	4.7	2.6		
	M_{ULS} = 98 kNm/s.u.	q_{ULS}		23.2	17.4	12.2	7.4	4.3		
Mcrack = 84 kNm/s.u.	V_{UD} = 70 kN/s.u.	c_t		-5	-6	-3	+3	+14		
9 no. 9.3 mm	M_{SLS} = 88 kNm/s.u.	q_{SLS}		15.8	11.8	9.1	7.0	4.4	2.6	
	M_{ULS} = 124 kNm/s.u.	q_{ULS}		24.1	18.1	14.1	10.9	7.0	4.2	
Mcrack = 95 kNm/s.u.	V_{UD} = 72 kN/s.u.	c_t		-8	-9	-8	+4	+6	+21	
Slab Selfweight = 2.25kN/m^2	M_{SLS} = Slab Moment Capacity (Service limit Stage)	q_{SLS} = Maximum allowed imposed dead and live load, unfactored (excluding selfweight of slab + topping)								
Joint Filling = 0.11kN/m^2	M_{ULS} = Slab Moment Capacity (Ultimate limit Stage)	q_{ULS} = Maximum allowed imposed dead and live load, factored (excluding selfweight of slab+ topping)								
75mm Toppings = 1.87kN/m^2	V_{UD} = Slab Shear Capacity (Ultimate limit Stage)	c_t = Theoretical camber just after casting the topping (+ indicate deflection)								
Total Selfweight = 4.23kN/m^2										

DP HOLLOW CORE SLAB
TYPE DP 6 - 200



Load Table DP 6 - 200

NO STRUCTURAL TOPPING

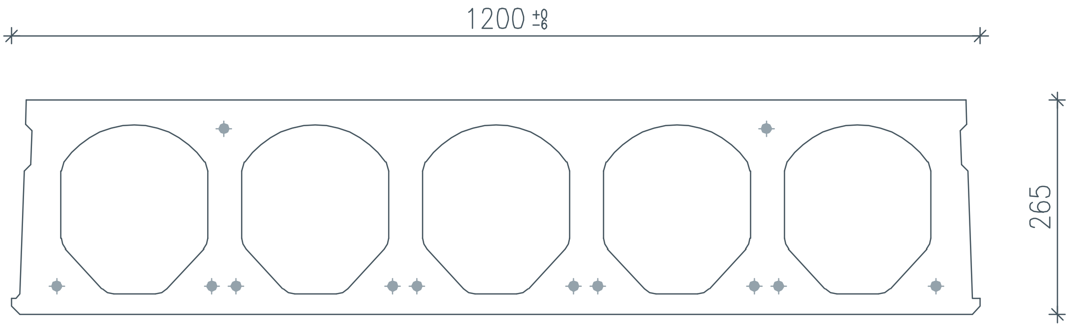
STRAND PATTERN	SLAB UNIT (1.20 M WIDTH)	SPAN (m)	4	5	6	7	8	9	10	11
4 no. 9.3 mm	M_{SLS} = 36 kNm/s.u.	q_{SLS}	11.3	6.1	3.5	1.8	0.7			
	M_{ULS} = 51 kNm/s.u.	q_{ULS}	17.3	9.7	5.5	3.0	1.4			
Mcrack = 60 kNm/s.u.	V_{UD} = 70 kN/s.u.	c	-2	-2	-2	+1	+3			
4 no. 12.5 mm	M_{SLS} = 64 kNm/s.u.	q_{SLS}	17.2	13.2	8.3	5.3	3.5	2.1		
	M_{ULS} = 90 kNm/s.u.	q_{ULS}	26.1	20.1	12.8	8.3	5.5	3.5		
Mcrack = 78 kNm/s.u.	V_{UD} = 72 kN/s.u.	c	-6	-7	-8	-8	-7	-3		
5 no. 12.5 mm	M_{SLS} = 78 kNm/s.u.	q_{SLS}	18.0	13.9	10.8	7.2	4.9	3.3		
	M_{ULS} = 110 kNm/s.u.	q_{ULS}	27.3	21.1	16.5	11.1	7.6	5.2		
Mcrack = 87 kNm/s.u.	V_{UD} = 75 kN/s.u.	c	-6	-8	-11	-13	-13	-7		
6 no. 12.5 mm	M_{SLS} = 92 kNm/s.u.	q_{SLS}		14.5	11.6	9.0	6.2	4.3	3.0	
	M_{ULS} = 130 kNm/s.u.	q_{ULS}		22.1	17.8	13.8	9.6	6.8	4.8	
Mcrack = 99 kNm/s.u.	V_{UD} = 78 kN/s.u.	c		-10	-14	-15	-16	-13	-7	
7 no. 12.5 mm	M_{SLS} = 103 kNm/s.u.	q_{SLS}		15.0	12.0	9.9	7.5	5.3	3.8	2.6
	M_{ULS} = 148 kNm/s.u.	q_{ULS}		22.8	18.4	15.2	11.5	8.3	6.0	4.2
Mcrack = 103 kNm/s.u.	V_{UD} = 80 kN/s.u.	c		-13	-17	-20	-21	-20	-15	-6
Slab Selfweight = 2.60kN/m²	M_{SLS} = Slab Moment Capacity (Service limit Stage)	q_{SLS} = Maximum allowed imposed dead and live load, unfactored (excluding selfweight of slab)								
Joint Filling = 0.16kN/m²	M_{ULS} = Slab Moment Capacity (Ultimate limit Stage)	q_{ULS} = Maximum allowed imposed dead and live load, factored (excluding selfweight of slab)								
Total Selfweight = 2.76kN/m²	V_{UD} = Slab Shear Capacity (Ultimate limit Stage)	c = Theoretical camber at time of installation (+ indicate deflection)								

Load Table DP 6 - 200 + 75

75 mm STRUCTURAL TOPPING

STRAND PATTERN	SLAB UNIT (1.20 M WIDTH)	SPAN (m)	4	5	6	7	8	9	10	11
6 no. 12.5 mm	M_{SLS} = 133 kNm/s.u.	q_{SLS}		16.2	12.8	10.3	8.3	5.6	3.7	
	M_{ULS} = 187 kNm/s.u.	q_{ULS}		24.8	19.6	15.9	13.0	8.9	6.0	
Mcrack = 143 kNm/s.u.	V_{UD} = 94 kN/s.u.	c_t		-10	-13	-13	-11	-5	+6	
7 no. 12.5 mm	M_{SLS} = 153 kNm/s.u.	q_{SLS}		16.7	13.1	10.5	8.7	7.1	4.9	3.2
	M_{ULS} = 215 kNm/s.u.	q_{ULS}		25.5	20.1	16.3	13.5	11.2	7.8	5.3
Mcrack = 156 kNm/s.u.	V_{UD} = 96 kN/s.u.	c_t		-13	-16	-18	-17	-12	-5	+14
Slab Selfweight = 2.60kN/m² Joint Filling = 0.16kN/m²	M_{SLS} = Slab Moment Capacity (Service limit Stage)	q_{SLS} = Maximum allowed imposed dead and live load, unfactored (excluding selfweight of slab + topping)								
75mm Toppings = 1.87kN/m²	M_{ULS} = Slab Moment Capacity (Ultimate limit Stage)	q_{ULS} = Maximum allowed imposed dead and live load, factored (excluding selfweight of slab+ topping)								
Total Selfweight = 4.63kN/m²	V_{UD} = Slab Shear Capacity (Ultimate limit Stage)	c_t = Theoretical camber just after casting the topping (+ indicate deflection)								

DP HOLLOW CORE SLAB
TYPE DP 5 - 265



Load Table DP 5 - 625

NO STRUCTURAL TOPPING

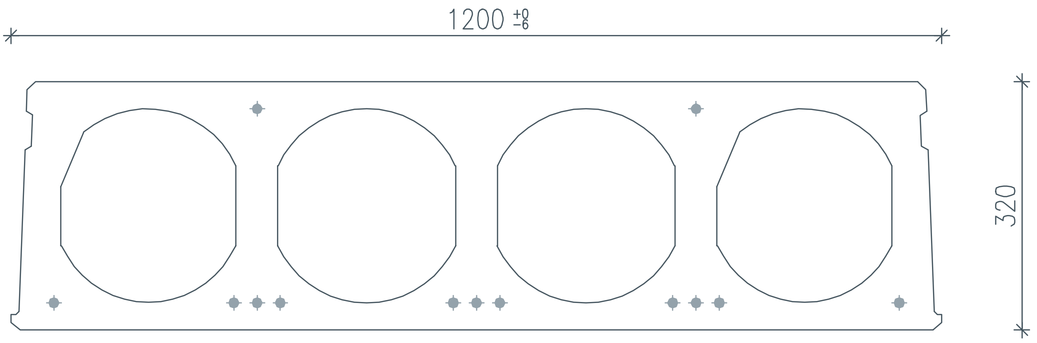
STRAND PATTERN	BEARING CAPACITY PER SLAB UNIT (1.20 M WIDTH)	SPAN (m)	4	6	8	10	11	12	13	14
6 no. 9.3 mm	M_{SLS} = 75 kNm/s.u.	q_{SLS} (kN/m^2)	24.3	9.6	3.9	1.2				
	M_{ULS} = 106 kNm/s.u.	q_{ULS} (kN/m^2)	36.8	14.8	6.2	2.2				
Mcrack = 113 kNm/s.u.	V_{UD} = 100 kN/s.u.	c (mm)	-3	-4	-3	+5				
4 no. 12.5 mm	M_{SLS} = 90 kNm/s.u.	q_{SLS} (kN/m^2)	23.4	12.1	5.3	2.1				
	M_{ULS} = 126 kNm/s.u.	q_{ULS} (kN/m^2)	35.5	18.5	8.3	3.5				
Mcrack = 120 kNm/s.u.	V_{UD} = 97 kN/s.u.	c (mm)	-3	-5	-6	+2				
6 no. 12.5 mm	M_{SLS} = 132 kNm/s.u.	q_{SLS} (kN/m^2)		15.6	9.4	4.7	3.3	2.3		
	M_{ULS} = 186 kNm/s.u.	q_{ULS} (kN/m^2)		23.7	14.5	7.5	5.4	3.8		
Mcrack = 152 kNm/s.u.	V_{UD} = 103 kN/s.u.	c (mm)		-9	-12	-9	-4	+3		
8 no. 12.5 mm	M_{SLS} = 170 kNm/s.u.	q_{SLS} (kN/m^2)		16.1	11.2	7.3	5.4	4.0	2.9	
	M_{ULS} = 242 kNm/s.u.	q_{ULS} (kN/m^2)		24.6	17.2	11.3	8.5	6.3	4.7	
Mcrack = 170 kNm/s.u.	V_{UD} = 106 kN/s.u.	c (mm)		-12	-16	-16	-13	-7	+2	
10 no. 12.5 mm	M_{SLS} = 194 kNm/s.u.	q_{SLS} (kN/m^2)		16.9	11.8	8.7	6.8	5.1	3.9	2.9
	M_{ULS} = 280 kNm/s.u.	q_{ULS} (kN/m^2)		25.7	18.1	13.5	10.6	8.1	6.2	4.7
Mcrack = 194 kNm/s.u.	V_{UD} = 110 kN /s.u.	c (mm)		-15	-23	-26	-25	-21	-14	-6
Slab Selfweight = 3.25kN/m^2	M_{SLS} = Slab Moment Capacity (Service limit Stage)	q_{SLS} = Maximum allowed imposed dead and live load, unfactored (excluding selfweight of slab)								
Joint Filling = 0.20kN/m^2	M_{ULS} = Slab Moment Capacity (Ultimate limit Stage)	q_{ULS} = Maximum allowed imposed dead and live load, factored (excluding selfweight of slab)								
Total Selfweight = 3.45kN/m^2	V_{UD} = Slab Shear Capacity (Ultimate limit Stage)	c = Theoretical camber at time of installation (+ indicate deflection)								

Load Table DP 5 - 625 + 75

75 mm STRUCTURAL TOPPING

STRAND PATTERN	BEARING CAPACITY PER SLAB UNIT (1.20 M WIDTH)	SPAN (m)	4	6	8	10	11	12	13	14
8 no. 12.5 mm	M_{SLS} = 221 kNm/s.u.	q_{SLS}		16.0	10.6	7.4	6.2	4.3	3.0	
	M_{ULS} = 316 kNm/s.u.	q_{ULS}		24.5	16.5	11.7	9.9	7.1	5.0	
Mcrack = 221 kNm/s.u.	V_{UD} = 115 kN/s.u.	c_t		-12	-15	-11	-6	+5	+20	
10 no. 12.5 mm	M_{SLS} = 50 kNm/s.u.	q_{SLS}		16.8	11.3	8.0	6.7	5.7	4.7	3.3
	M_{ULS} = 384 kNm/s.u.	q_{ULS}		25.8	17.5	12.5	10.7	9.2	7.7	5.6
Mcrack = 250 kNm/s.u.	V_{UD} = 120 kNs.u.	c_t		-15	-22	-22	-18	-10	-3	+20
Slab Selfweight = 3.25kN/m^2	M_{SLS} = Slab Moment Capacity (Service limit Stage)	q_{SLS} = Maximum allowed imposed dead and live load, unfactored (excluding selfweight of slab + topping)								
Joint Filling = 0.20kN/m^2	M_{ULS} = Slab Moment Capacity (Ultimate limit Stage)	q_{ULS} = Maximum allowed imposed dead and live load, factored (excluding selfweight of slab+ topping)								
75mm Topping = 1.87kN/m^2	V_{UD} = Slab Shear Capacity (Ultimate limit Stage)	c_t = Theoretical camber just after casting the topping (+ indicate deflection)								
Total Selfweight = 5.32kN/m^2										

DP HOLLOW CORE SLAB
TYPE DP 4 - 320



Load Table DP 4 - 320

NO STRUCTURAL TOPPING

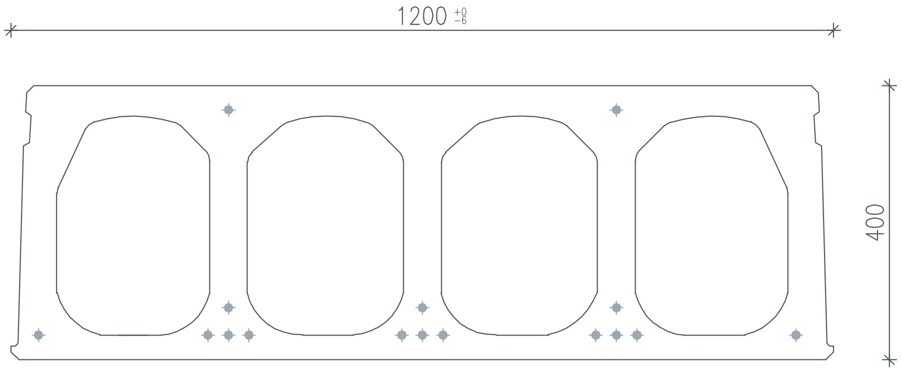
STRAND PATTERN	BEARING CAPACITY PER SLAB UNIT (1.20 M WIDTH)	SPAN (m)	8	10	11	12	13	14	15	16
5 no. 12.5 mm	M_{SLS} = 140 kNm/s.u.	q_{SLS} (kN/m^2)	9.4	4.4	3.0	1.8				
	M_{ULS} = 196 kNm/s.u.	q_{ULS} (kN/m^2)	14.5	7.1	4.9	3.1				
Mcrack = 188 kNm/s.u.	V_{UD} = 122 kN/s.u.	c (mm)	-7	-4	-2	+4				
7 no. 12.5 mm	M_{SLS} = 193 kNm/s.u.	q_{SLS} (kN/m^2)	13.8	7.8	5.6	4.1	2.8	1.9		
	M_{ULS} = 270 kNm/s.u.	q_{ULS} (kN/m^2)	21.1	12.1	8.9	6.6	4.7	3.3		
Mcrack = 224 kNm/s.u.	V_{UD} = 130 kN/s.u.	c (mm)	-12	-13	-11	-8	-4	+7		
9 no. 12.5 mm	M_{SLS} = 244 kNm/s.u.	q_{SLS} (kN/m^2)	14.4	10.6	8.3	6.3	4.8	3.5	2.5	
	M_{ULS} = 342 kNm/s.u.	q_{ULS} (kN/m^2)	22.0	16.4	12.9	9.9	7.6	5.7	4.2	
Mcrack = 260 kNm/s.u.	V_{UD} = 134 kN/s.u.	c (mm)	-17	-20	-20	-18	-14	-8	-3	
10 no. 12.5 mm	M_{SLS} = 268 kNm/s.u.	q_{SLS} (kN/m^2)	14.6	10.8	9.5	7.4	5.6	4.3	3.2	2.3
	M_{ULS} = 376 kNm/s.u.	q_{ULS} (kN/m^2)	22.4	16.7	14.7	11.5	8.9	6.9	5.2	3.9
Mcrack = 270 kNm/s.u.	V_{UD} = 136 kN/s.u.	c (mm)	-18	-23	-23	-22	-18	-12	-6	+10
11 no. 12.5 mm	M_{SLS} = 287 kNm/s.u.	q_{SLS} (kN/m^2)		11.1	9.7	8.4	6.4	5.0	3.8	2.9
	M_{ULS} = 408 kNm/s.u.	q_{ULS} (kN/m^2)		17.1	15.0	13.0	10.1	7.9	6.1	4.7
Mcrack = 287 kNm/s.u.	V_{UD} = 138 kN/s.u.	c (mm)		-27	-28	-27	-25	-19	-12	-4
Slab Selfweight = 4.00kN/m^2	M_{SLS} = Slab Moment Capacity (Service limit Stage)	q_{SLS} = Maximum allowed imposed dead and live load, unfactored (excluding selfweight of slab)								
Joint Filling = 0.22kN/m^2	M_{ULS} = Slab Moment Capacity (Ultimate limit Stage)	q_{ULS} = Maximum allowed imposed dead and live load, factored (excluding selfweight of slab)								
Total Selfweight = 4.22kN/m^2	V_{UD} = Slab Shear Capacity (Ultimate limit Stage)	c = Theoretical camber at time of installation (+ indicate deflection)								

Load Table DP 4 - 320 + 75

75 mm STRUCTURAL TOPPING

STRAND PATTERN	BEARING CAPACITY PER SLAB UNIT (1.20 M WIDTH)	SPAN (m)	8	10	11	12	13	14	15	16
10 no. 12.5 mm	M_{SLS} = 324 kNm/s.u.	q_{SLS}		10.1	8.6	7.4	6.1	4.4	3.1	1.9
	M_{ULS} = 463 kNm/s.u.	q_{ULS}		15.8	13.6	11.7	9.7	7.2	5.2	3.5
Mcrack = 324 kNm/s.u.	V_{UD} = 146 kN/s.u.	c_t		-20	-19	-16	-9	-3	+14	+32
11 no. 12.5 mm	M_{SLS} = 350 kNm/s.u.	q_{SLS}		10.3	8.8	7.6	6.6	5.3	3.8	2.6
	M_{ULS} = 504 kNm/s.u.	q_{ULS}		16.1	13.9	12.0	10.5	8.6	6.4	4.6
Mcrack = 350 kNm/s.u.	V_{UD} = 148 kNs.u.	c_t		-24	-24	-22	-16	-8	+5	+23
Slab Selfweight = 4.00kN/m^2	M_{SLS} = Slab Moment Capacity (Service limit Stage)	q_{SLS} = Maximum allowed imposed dead and live load, unfactored (excluding selfweight of slab + topping)								
Joint Filling = 0.22kN/m^2	M_{ULS} = Slab Moment Capacity (Ultimate limit Stage)	q_{ULS} = Maximum allowed imposed dead and live load, factored (excluding selfweight of slab + topping)								
75mm Topping = 1.87kN/m^2	V_{UD} = Slab Shear Capacity (Ultimate limit Stage)	C_t = Theoretical camber just after casting the topping (+ indicate deflection)								
Total Selfweight = 6.07kN/m^2										

DP HOLLOW CORE SLAB
TYPE DP 4 - 400



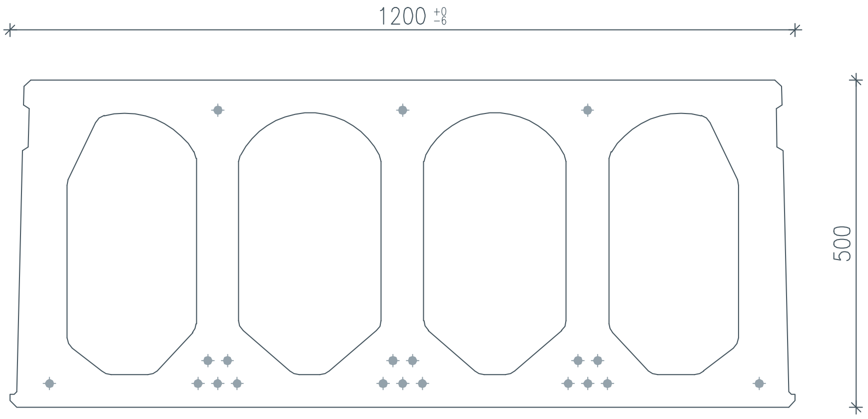
Load Table DP 4 - 400 — **NO STRUCTURAL TOPPING**

STRAND PATTERN	BEARING CAPACITY PER SLAB UNIT (1.20 M WIDTH)	SPAN (m)	8	10	12	14	15	16	17	18
7 no. 12.5 mm	M_{SLS} = 250 kNm/s.u.	q_{SLS} (kN/m²)	19.7	10.9	6.1	3.3	2.3	1.4		
	M_{ULS} = 350 kNm/s.u.	q_{ULS} (kN/m²)	30.0	16.9	9.7	5.4	3.9	2.6		
Mcrack = 298 kNm/s.u.	V_{UD} = 183 kN/s.u.	c (mm)	-11	-13	-12	-6	-3	+8		
9 no. 12.5 mm	M_{SLS} = 318 kNm/s.u.	q_{SLS} (kN/m²)	21.7	13.9	9.1	5.5	4.1	3.1	2.2	
	M_{ULS} = 445 kNm/s.u.	q_{ULS} (kN/m²)	33.1	23.2	14.1	8.7	6.7	5.1	3.8	
Mcrack = 355 kNm/s.u.	V_{UD} = 190 kN/s.u.	c (mm)	-15	-19	-21	-18	-14	-9	-4	
11 no. 12.5 mm	M_{SLS} = 384 kNm/s.u.	q_{SLS} (kN/m²)		16.8	11.9	7.5	6.0	4.7	3.7	
	M_{ULS} = 538 kNm/s.u.	q_{ULS} (kN/m²)		25.7	18.4	11.8	9.5	7.5	6.0	
Mcrack = 385 kNm/s.u.	V_{UD} = 193 kN/s.u.	c (mm)		-23	-24	-23	-21	-16	-10	-4
13 no. 12.5 mm	M_{SLS} = 410 kNm/s.u.	q_{SLS} (kN/m²)		17.3	13.7	9.3	7.5	6.0	4.8	3.8
	M_{ULS} = 614 kNm/s.u.	q_{ULS} (kN/m²)		26.5	21.0	14.4	11.7	9.5	7.7	6.2
Mcrack = 410 kNm/s.u.	V_{UD} = 198 kN/s.u.	c (mm)		-24	-28	-28	-27	-22	-16	-9
14 no. 12.5 mm	M_{SLS} = 426 kNm/s.u.	q_{SLS} (kN/m²)		17.5	13.9	10.0	8.1	6.6	5.3	4.3
	M_{ULS} = 650 kNm/s.u.	q_{ULS} (kN/m²)		26.8	21.3	15.6	12.8	10.5	8.5	6.9
Mcrack = 426 kNm/s.u.	V_{UD} = 200 kN/s.u.	c (mm)		-25	-31	-32	-31	-27	-22	-13
Slab Selfweight = 4.35kN/m²	M_{SLS} = Slab Moment Capacity (Service limit Stage)	q_{SLS} = Maximum allowed imposed dead and live load, unfactored (excluding selfweight of slab)								
Joint Filling = 0.25kN/m²	M_{ULS} = Slab Moment Capacity (Ultimate limit Stage)	q_{ULS} = Maximum allowed imposed dead and live load, factored (excluding selfweight of slab)								
Total Selfweight = 4.60kN/m²	V_{UD} = Slab Shear Capacity (Ultimate limit Stage)	c = Theoretical camber at time of installation (+ indicate deflection)								

Load Table DP 4 - 400 + 75 — **75 mm STRUCTURAL TOPPING**

STRAND PATTERN	BEARING CAPACITY PER SLAB UNIT (1.20 M WIDTH)	SPAN (m)	8	10	12	14	15	16	17	18
11 no. 12.5 mm	M_{SLS} = 450 kNm/s.u.	q_{SLS}		14.6	12.5	7.7	5.9	4.4	3.1	2.1
	M_{ULS} = 630 kNm/s.u.	q_{ULS}		25.2	19.5	12.3	9.6	7.3	5.4	3.9
Mcrack = 453 kNm/s.u.	V_{UD} = 206 kN/s.u.	c_t		-20	-21	-17	-12	-6	+7	+20
14 no. 12.5 mm	M_{SLS} = 490 kNm/s.u.	q_{SLS}		17.5	13.5	10.6	8.6	6.8	5.3	3.9
	M_{ULS} = 765 kNm/s.u.	q_{ULS}		26.9	20.9	16.6	13.6	10.9	8.6	6.6
Mcrack = 490 kNm/s.u.	V_{UD} = 216 kNs.u.	c_t		-24	-26	-26	-22	-16	-9	+6
Slab Selfweight = 4.35kN/m²	M_{SLS} = Slab Moment Capacity (Service limit Stage)	q_{SLS} = Maximum allowed imposed dead and live load, unfactored (excluding selfweight of slab + topping)								
Joint Filling = 0.25kN/m²	M_{ULS} = Slab Moment Capacity (Ultimate limit Stage)	q_{ULS} = Maximum allowed imposed dead and live load, factored (excluding selfweight of slab+ topping)								
75mm Topping = 1.87kN/m²	V_{UD} = Slab Shear Capacity (Ultimate limit Stage)	C_t = Theoretical camber just after casting the topping (+ indicate deflection)								
Total Selfweight = 6.47kN/m²										

DP HOLLOW CORE SLAB
TYPE DP 5 - 500



Load Table DP 4 - 500

NO STRUCTURAL TOPPING

STRAND PATTERN	BEARING CAPACITY PER SLAB UNIT (1.20 M WIDTH)	SPAN (m)	10	12	14	16	17	18	19	20
8 no. 12.5 mm	M_{SLS} = 365 kNm/s.u.	q_{SLS} (kN/m^2)	15.8	7.1	4.7	2.0				
	M_{ULS} = 512 kNm/s.u.	q_{ULS} (kN/m^2)	24.5	14.1	7.8	3.8				
Mcrack = 470 kNm/s.u.	V_{UD} = 302 kN/s.u.	c (mm)	-8	-7	-4	+4				
11 no. 12.5 mm	M_{SLS} = 496 kNm/s.u.	q_{SLS} (kN/m^2)	24.0	14.6	8.9	5.2	3.8			
	M_{ULS} = 695 kNm/s.u.	q_{ULS} (kN/m^2)	36.7	22.6	14.1	8.5	6.5			
Mcrack = 569 kNm/s.u.	V_{UD} = 320 kN/s.u.	c (mm)	-13	-14	-13	-8	-4			
13 no. 12.5 mm	M_{SLS} = 574 kNm/s.u.	q_{SLS} (kN/m^2)		17.9	11.4	7.1	5.5	4.2		
	M_{ULS} = 804 kNm/s.u.	q_{ULS} (kN/m^2)		27.6	17.8	11.4	9.0	7.0		
Mcrack = 606 kNm/s.u.	V_{UD} = 325 kN/s.u.	c (mm)		-16	-16	-12	-8	-4		
15 no. 12.5 mm	M_{SLS} = 649 kNm/s.u.	q_{SLS} (kN/m^2)		21.2	13.7	8.9	7.1	5.6	4.3	
	M_{ULS} = 909 kNm/s.u.	q_{ULS} (kN/m^2)		32.5	21.3	14.1	11.4	9.1	7.2	
Mcrack = 658 kNm/s.u.	V_{UD} = 334 kN/s.u.	c (mm)		-20	-21	-18	-15	-10	-5	
17 no. 12.5 mm	M_{SLS} = 690 kNm/s.u.	q_{SLS} (kN/m^2)			16.0	10.6	8.6	7.0	5.6	4.4
	M_{ULS} = 1010 kNm/s.u.	q_{ULS} (kN/m^2)			24.8	16.7	13.7	11.2	9.1	7.3
Mcrack = 690 kNm/s.u.	V_{UD} = 338 kN/s.u.	c (mm)			-24	-22	-19	-15	-9	-4
Slab Selfweight = 6.40kN/m^2 Joint Filling = 0.42kN/m^2 Total Selfweight = 6.82kN/m^2	M_{SLS} = Slab Moment Capacity (Service limit Stage) M_{ULS} = Slab Moment Capacity (Ultimate limit Stage) V_{UD} = Slab Shear Capacity (Ultimate limit Stage)	q_{SLS} = Maximum allowed imposed dead and live load, unfactored (excluding selfweight of slab) q_{ULS} = Maximum allowed imposed dead and live load, factored (excluding selfweight of slab) c = Theoretical camber at time of installation (+ indicate deflection)								

Load Table DP 4 - 500 + 75

75 mm STRUCTURAL TOPPING

STRAND PATTERN	BEARING CAPACITY PER SLAB UNIT (1.20 M WIDTH)	SPAN (m)	10	12	14	16	17	18	19	20
13 no. 12.5 mm	M_{SLS} = 649 kNm/s.u.	q_{SLS}		19.3	11.8	7.1	5.2	3.7		
	M_{ULS} = 909 kNm/s.u.	q_{ULS}		29.9	18.7	11.5	8.8	6.5		
Mcrack = 690 kNm/s.u.	V_{UD} = 342 kN/s.u.	c_t		-15	-13	-7	-3	+8		
17 no. 12.5 mm	M_{SLS} = 786 kNm/s.u.	q_{SLS}			17.1	11.1	8.8	6.9	5.3	3.9
	M_{ULS} = 1142 kNm/s.u.	q_{ULS}			26.6	17.5	14.1	11.3	8.9	6.8
Mcrack = 786 kNm/s.u.	V_{UD} = 371 kNs.u.	c_t			-21	-17	-12	-7	-3	+14
Slab Selfweight = 6.40kN/m^2 Joint Filling = 0.42kN/m^2 75mm Topping = 1.87kN/m^2 Total Selfweight = 8.69kN/m^2	M_{SLS} = Slab Moment Capacity (Service limit Stage) M_{ULS} = Slab Moment Capacity (Ultimate limit Stage) V_{UD} = Slab Shear Capacity (Ultimate limit Stage)	q_{SLS} = Maximum allowed imposed dead and live load, unfactored (excluding selfweight of slab + topping) q_{ULS} = Maximum allowed imposed dead and live load, factored (excluding selfweight of slab+ topping) C_t = Theoretical camber just after casting the topping (+ indicate deflection)								

Dubai

Jebel Ali Industrial 3, PO Box 61055, Dubai, UAE
Tel +971 (0)4 880 2671 *Fax* +971 (0)4 880 2159

Abu Dhabi

PO Box 38605, Musaffah, Abu Dhabi
Tel +971 (0)2 550 2503 *Fax* +971 (0)2 550 1330

Email info@dubaiprecast.ae *Web* www.dubaiprecast.ae