

# INNOVATIVE Engineering Solutions

Hollow Core Slabs





## Samcrete Building Systems Hollow Core Slabs

Hollow Core Slabs are prestressed concrete elements that are casted with advanced extrusion technique to be used as floor and roof decking system, as well as boundary wall panels.

Samcrete Hollow Core Slabs have beaten the challenge that faces the construction industry in delivering a complete high quality building on time with the least possible cost.

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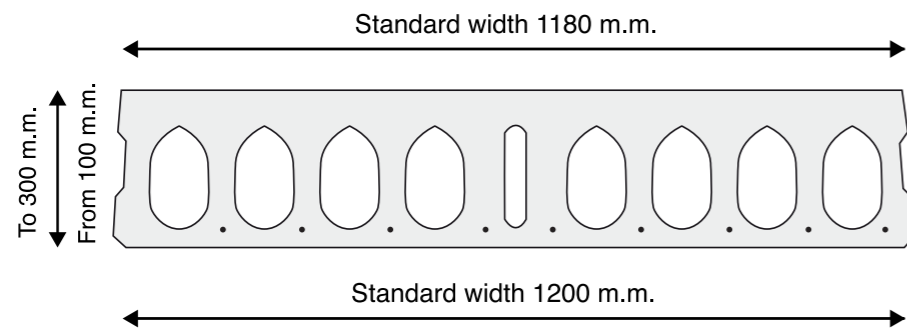


## Advantages

### Why Hollow Core Slabs ( H.C.S.)?

- The cores running through the slabs continuously are to reduce the weight and improve the structural performance resulting in saving construction cost.
- Presence of the cores saves up to 45% of concrete and 30% of steel than traditional cast in situ reinforced slabs.
- These cores are also used as service ducts for concealed services ex: electrical.
- Using the high tensile steel wire strands provides high load capacity.
- H.C.S has the ability to cover long spans which saves the intermediate columns and beams.
- Fast, safe erection with minimal crews allows construction acceleration.
- Reduce the use of formwork and shuttering.
- Excellent insulators for sound and heat.
- Can resist fire up to 3 hours.

**SAMCRETE (H.S.C) = SAVING IN TOTAL COST**



## Properties of Samcrete Hollow Core Slabs (H.S.C)

Slab Type	No Topping					50MM. Topping				
	100	150	200	200-ul	300	100	150	200	200-ul	300
(Height in mm.)	100	150	200	200-ul	300	100	150	200	200-ul	300
Weight - ungrouted (Kg/m <sup>2</sup> )	158	217	307	280	414	158	217	307	280	414
Weight - grouted (Kg/m <sup>2</sup> )	161	222	313	286	423	272	333	424	397	539
Net cross section area (Cm <sup>2</sup> )	854.4	1176.9	1660.7	1515	2242	1454.4	1776.9	2260.7	2115	2842
Key joint area - Grout (Cm <sup>2</sup> )	16.9	26.9	31.9	31.9	46.2	16.9	26.9	31.9	31.9	46.2
Moment of inertia (Cm <sup>4</sup> )	9257	29636	70759	68739	227400	30403	71835	142986	134149	360656
Centroid from bottom (Cm)	4.987	7.349	9.812	10.282	15.8	8.086	10.776	13.177	13.747	19.325
Top flange width (Cm)	118	118	118	118	118	120	120	120	120	120
Average flange thick. (Cm)	2.6	3.1	3.9	4.6	6.5	7.6	8.1	8.9	9.6	11.5
Net web width (Cm)	45.4	45.9	47.15	35.4	37	45.4	45.9	47.15	35.4	37

## Materials

### Concrete

Unit Weight:	2200 kg/m <sup>3</sup>
Characteristic Compressive Strength:	350 kg/cm <sup>2</sup>
Release Strength (at 3 days):	≥ 220 kg/cm <sup>2</sup>
Modulus of Elasticity (initial):	220 kg/cm <sup>2</sup>
Modulus of Elasticity (final):	290 kg/cm <sup>2</sup>
Ambient Relative humidity:	50 %

### Prestressing Strands

Ultimate Strength:	17570 kg/cm <sup>2</sup>
Initial Prestress:	0.7 Times Ult.
Cover to Center of Strand:	2.5 cm

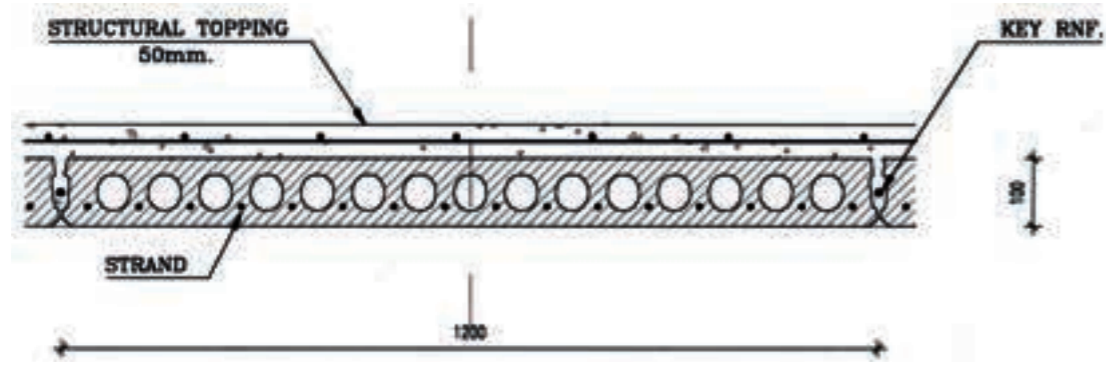
### Properties of Prestressing Strands

Diameter (inch)	1 / 4"	5 / 16"	3 / 8"	7 / 16"	1 / 2"
Diameter (mm.)	6.35	7.94	9.5	11.1	12.7
Area in (mm <sup>2</sup> )	23.2	37.4	51.6	69.7	93

## General Notes for Span / Load Tables

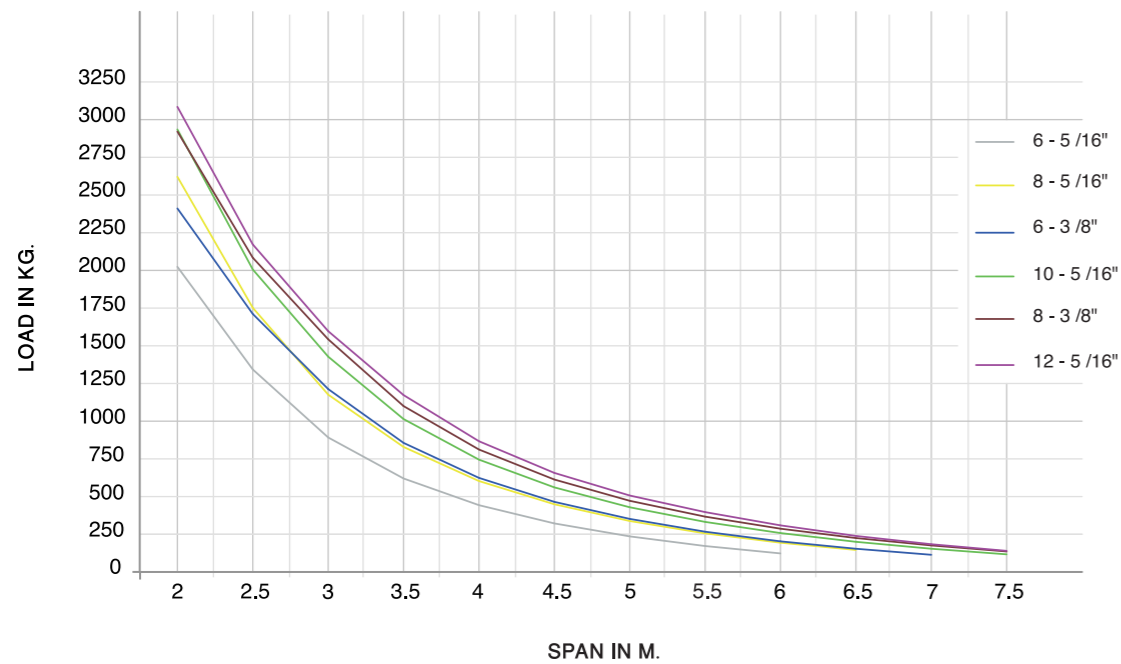
- Loads in tables are working superimposed load (kg/m<sup>2</sup>)
- Superimposed load includes live load, flooring, roof covering layers and partition walls (if any).
- Ultimate moment is the absolute maximum value with the specified reinforcement (strand), in kg.m.
- Upper shaded zone in case of design governed by ultimate shear.
- Lower shaded zone in case of design governed by tension or compression (service – load fiber stresses).



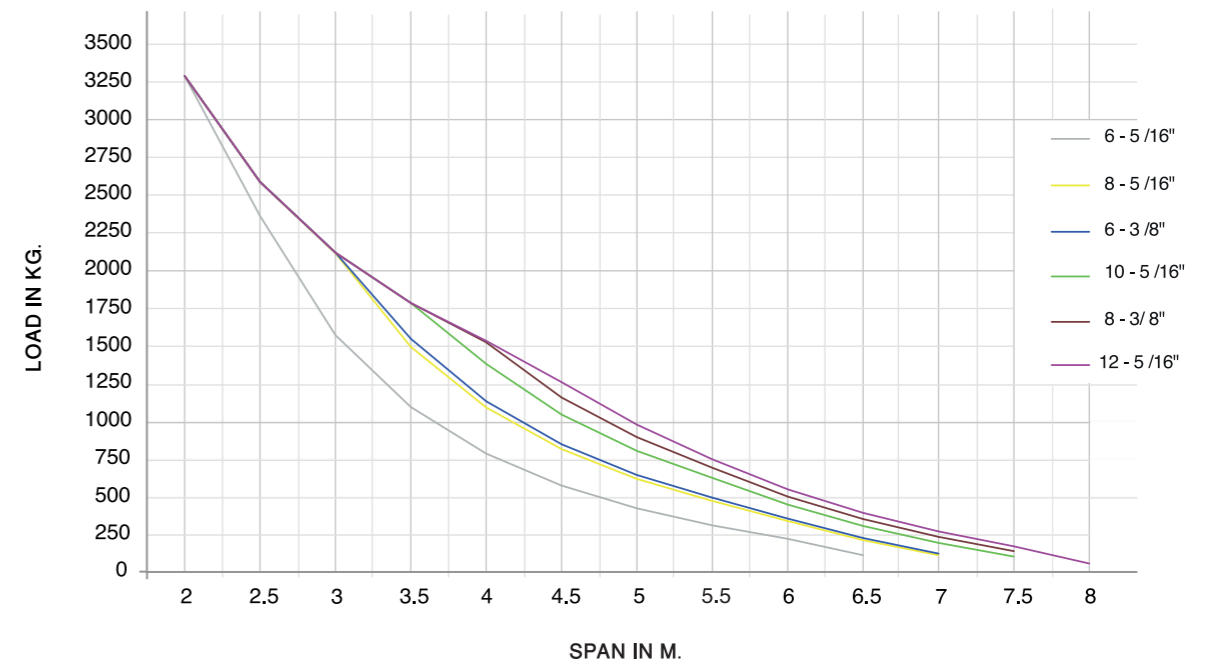


Stand	6 - 5 / 16"	8 - 5 / 16"	6 - 3 / 8"	10 - 5 / 16"	8 - 3 / 8"	12 - 5 / 16"
Span	Load in Kg/M <sup>2</sup>					
2	2024	2621	2411	2935	2921	3085
2.5	1343	1752	1711	2006	2084	2172
3	892	1176	1213	1428	1543	1597
3.5	620	829	856	1014	1100	1173
4	443	603	624	745	812	867
4.5	322	449	465	561	613	657
5	236	338	352	429	472	507
5.5	172	256	267	332	367	397
6	123	194	203	258	287	309
6.5		146	154	200	225	239
Ult. Moment	1960	2504	2574	2985	3208	3401

Stand	6 - 5 / 16"	8 - 5 / 16"	6 - 3 / 8"	10 - 5 / 16"	8 - 3 / 8"	12 - 5 / 16"
Span	Load in Kg/M <sup>2</sup>					
2	3290	3290	3290	3290	3290	3290
2.5	2361	2587	2587	2587	2587	2587
3	1571	2114	2118	2118	2118	2118
3.5	1094	1493	1547	1784	1784	1784
4	785	1091	1132	1380	1523	1533
4.5	573	815	847	1044	1157	1259
5	422	617	643	803	894	997
5.5	309	471	493	624	691	747
6	222	338	354	447	500	548
6.5	111	211	225	305	351	392
Ult. Moment	3433	4472	4610	5455	5942	6383

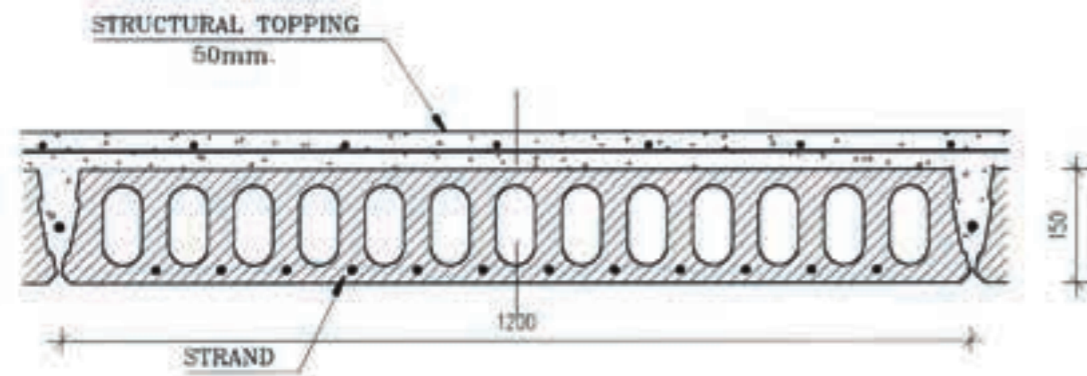


**SPAN/LOAD CURVES**



**SPAN/LOAD CURVES**

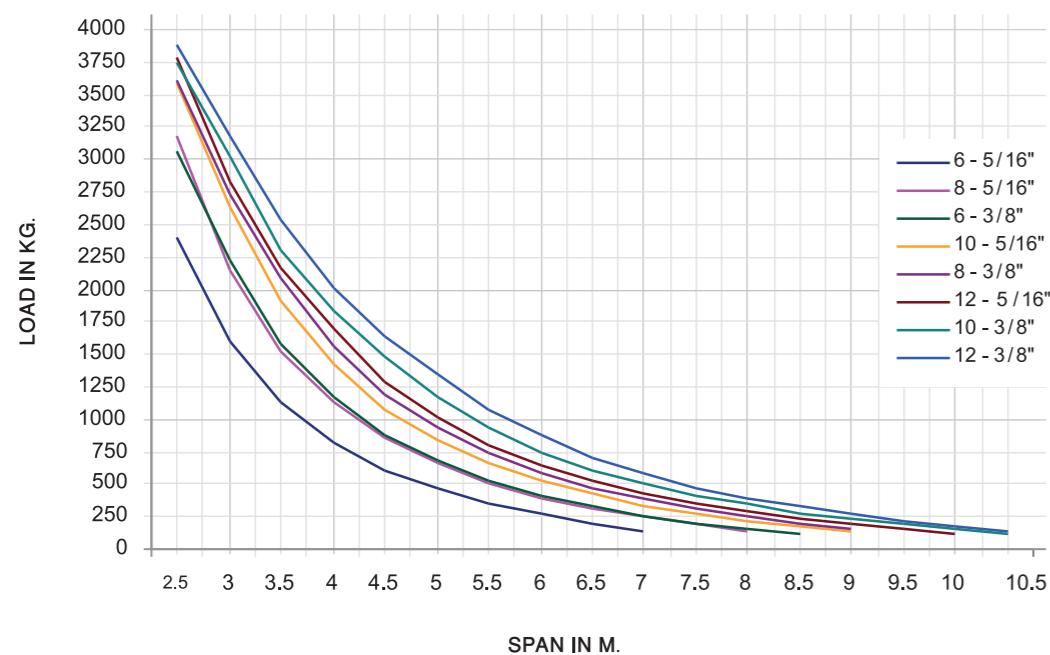




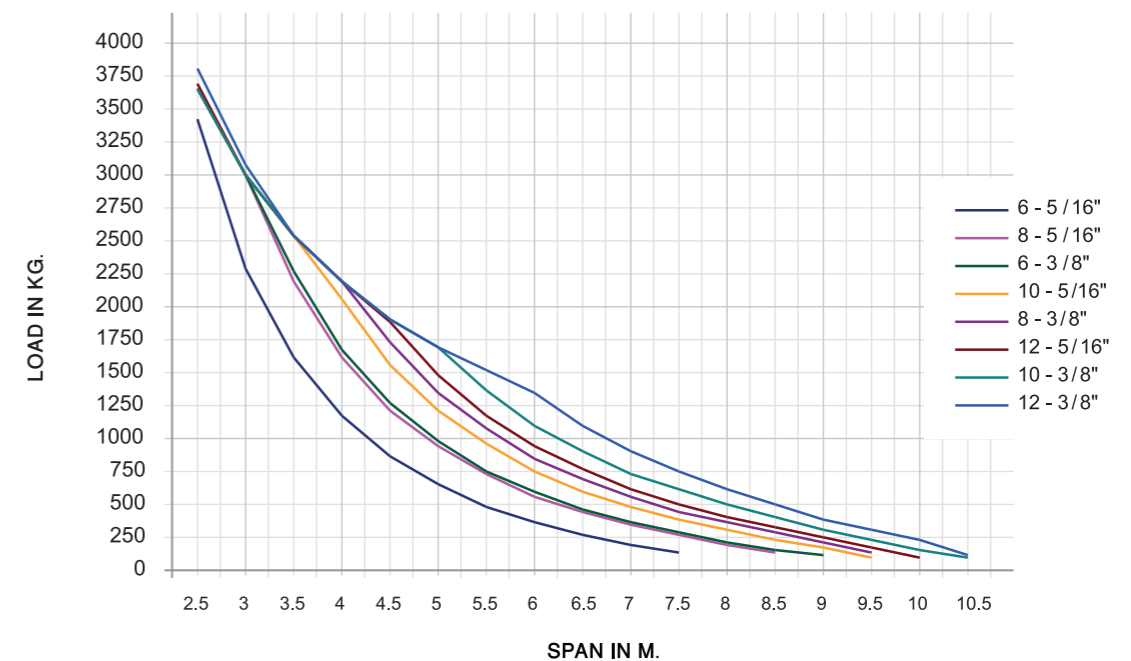
Toyota Fences

Stand	6 - 5/16"	8 - 5/16"	6 - 3/8"	10 - 5/16"	8 - 3/8"	12 - 5/16"	10 - 3/8"	12 - 3/8"
Span	Load in Kg/M <sup>2</sup>							
2.5	2398	3178	3069	3581	3608	3781	3743	3891
3	1609	2151	2223	2631	2731	2821	3022	3176
3.5	1133	1531	1584	1908	2094	2167	2307	2544
4	825	1129	1170	1418	1560	1689	1835	2012
4.5	613	854	886	1081	1194	1296	1476	1644
5	462	657	683	841	932	1015	1161	1351
5.5	350	511	532	663	739	807	927	1077
6	264	400	418	528	591	649	750	870
6.5	198	313	329	423	477	526	612	708
7	145	245	258	339	386	428	502	580
7.5		190	201	272	312	349	414	476
8		144	155	217	252	285	342	392
8.5			116	171	202	231	282	323
9				133	161	186	232	264
Ult. Moment	3429	4464	4603	5444	5928	6366	7143	8187

Stand	6 - 5/16"	8 - 5/16"	6 - 3/8"	10 - 5/16"	8 - 3/8"	12 - 5/16"	10 - 3/8"	12 - 3/8"
Span	Load in Kg/M <sup>2</sup>							
2.5	3415	3661	3661	3661	3661	3692	3661	3800
3	2288	3005	3005	3005	3005	3005	3005	3085
3.5	1608	2195	2274	2536	2536	2536	2536	2536
4	1166	1616	1677	2050	2185	2185	2185	2185
4.5	864	1219	1267	1562	1734	1893	1912	1912
5	647	935	974	1213	1353	1481	1693	1693
5.5	487	725	757	955	1070	1176	1367	1514
6	365	565	592	758	855	944	1105	1340
6.5	271	441	464	605	688	764	901	1101
7	195	342	362	484	555	621	739	912
7.5	135	263	280	386	448	505	608	759
8		197	213	306	361	411	501	622
8.5		143	157	240	288	332	401	496
9			107	172	210	244	305	391
Ult. Moment	4901	6430	6637	7906	8647	9327	10555	12360

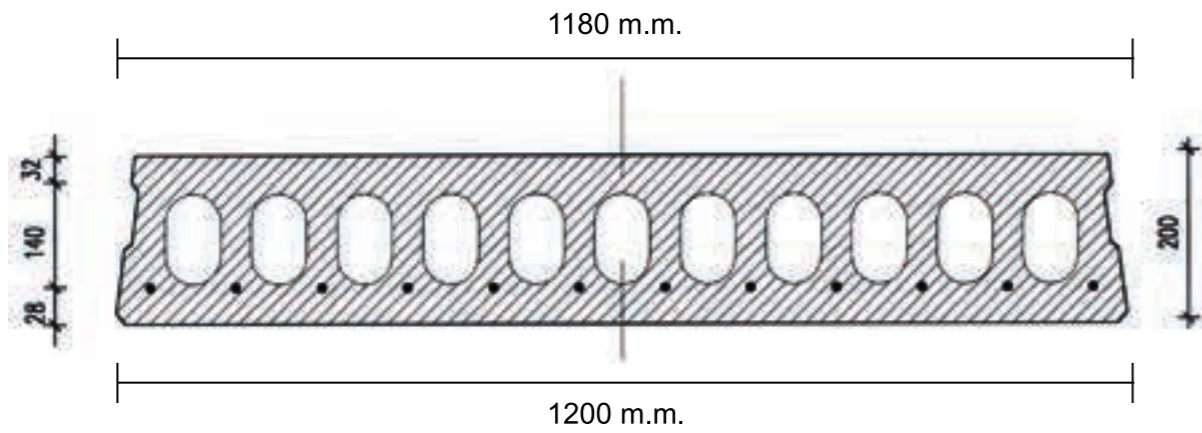


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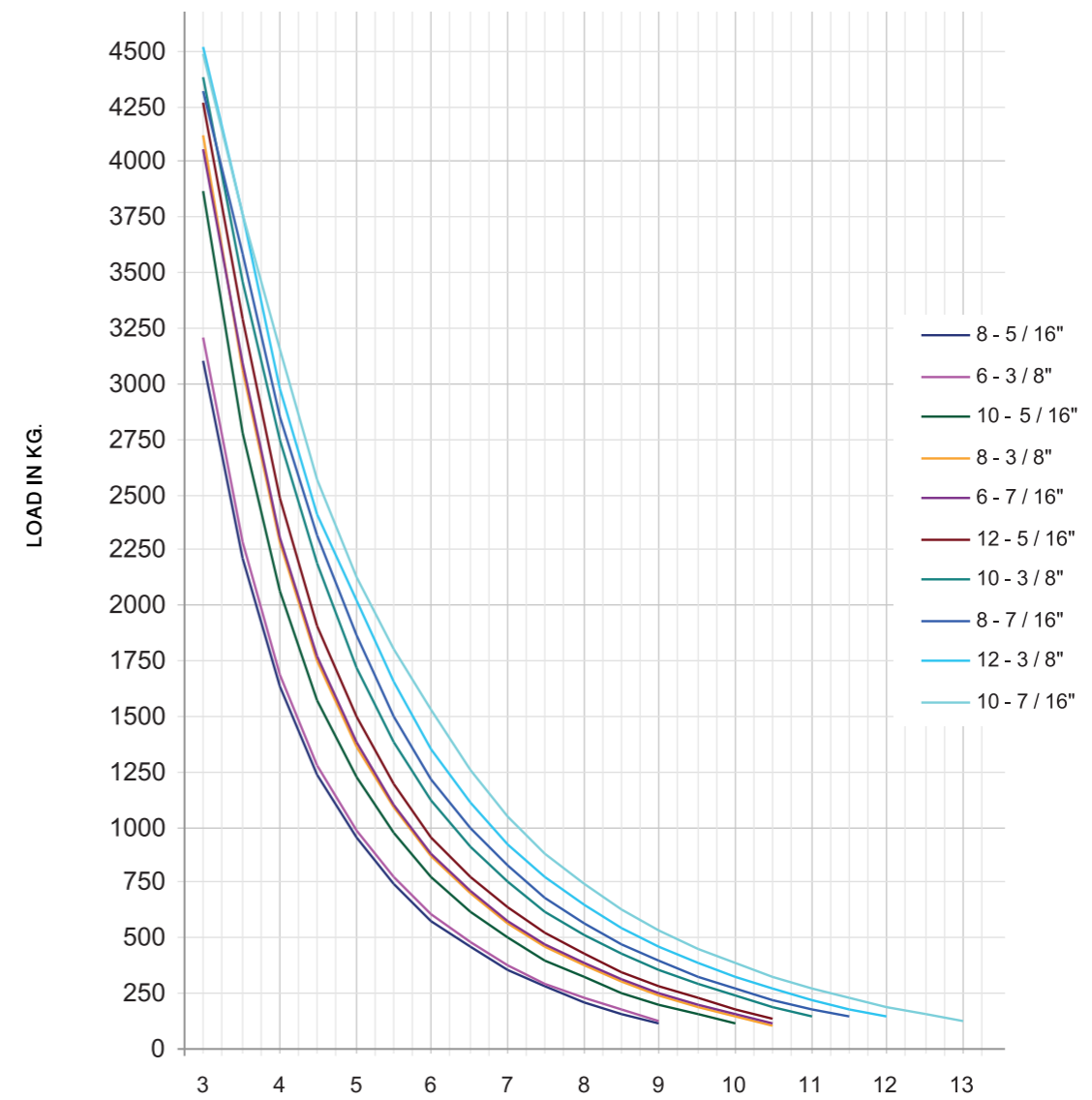
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# SAMCRETE (H.C.S) 200 STD - NO TOPPING



Steigenberger Al Dau Club-Hurghada

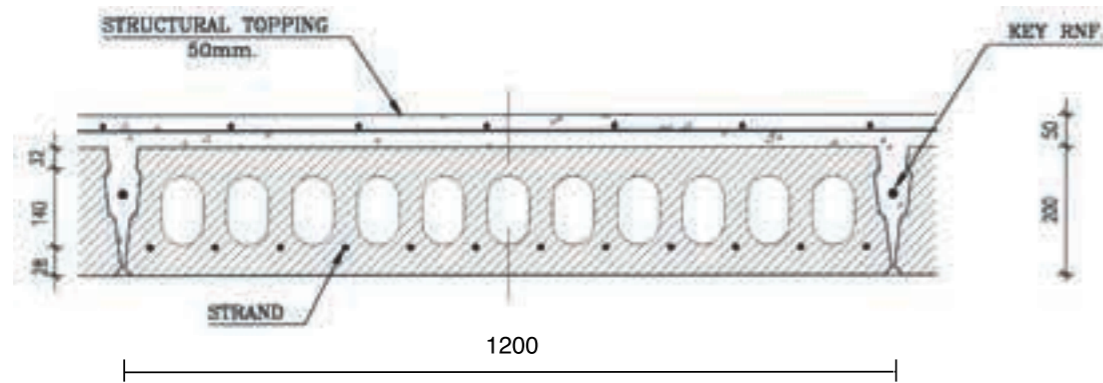
Stand	8-5/16"	6-3/8"	10-5/16"	8-3/8"	6-7/16"	12-5/16"	10-3/8"	8-7/16"	12-3/8"	10-7/16"
Span	Load in Kg/M <sup>2</sup>									
3	3100	3208	3869	4124	4057	4264	4382	4316	4515	4483
3.5	2209	2288	2774	3058	3096	3289	3456	3581	3761	3765
4	1631	1691	2063	2281	2310	2480	2747	2846	2975	3155
4.5	1234	1282	1576	1748	1771	1905	2189	2314	2409	2564
5	951	989	1228	1367	1385	1494	1724	1861	2022	2130
5.5	741	773	970	1085	1100	1190	1380	1494	1658	1805
6	581	608	774	870	883	959	1118	1214	1352	1527
6.5	457	480	621	703	714	779	915	996	1114	1263
7	358	378	500	571	580	636	753	823	925	1053
7.5	279	296	402	464	472	521	623	684	773	884
8	214	229	322	376	384	426	516	570	648	746
8.5	160	173	256	304	310	348	428	475	545	631
9	115	127	200	243	249	283	354	396	458	535
9.5			153	192	197	227	291	329	385	454
10			113	148	153	180	237	272	322	385
10.5				110	114	139	191	223	268	325
11							151	180	221	273
11.5							117	143	181	228
12									145	188
Ult. Moment	6423	6628	7984	8633	8731	9310	10530	11260	12320	13565



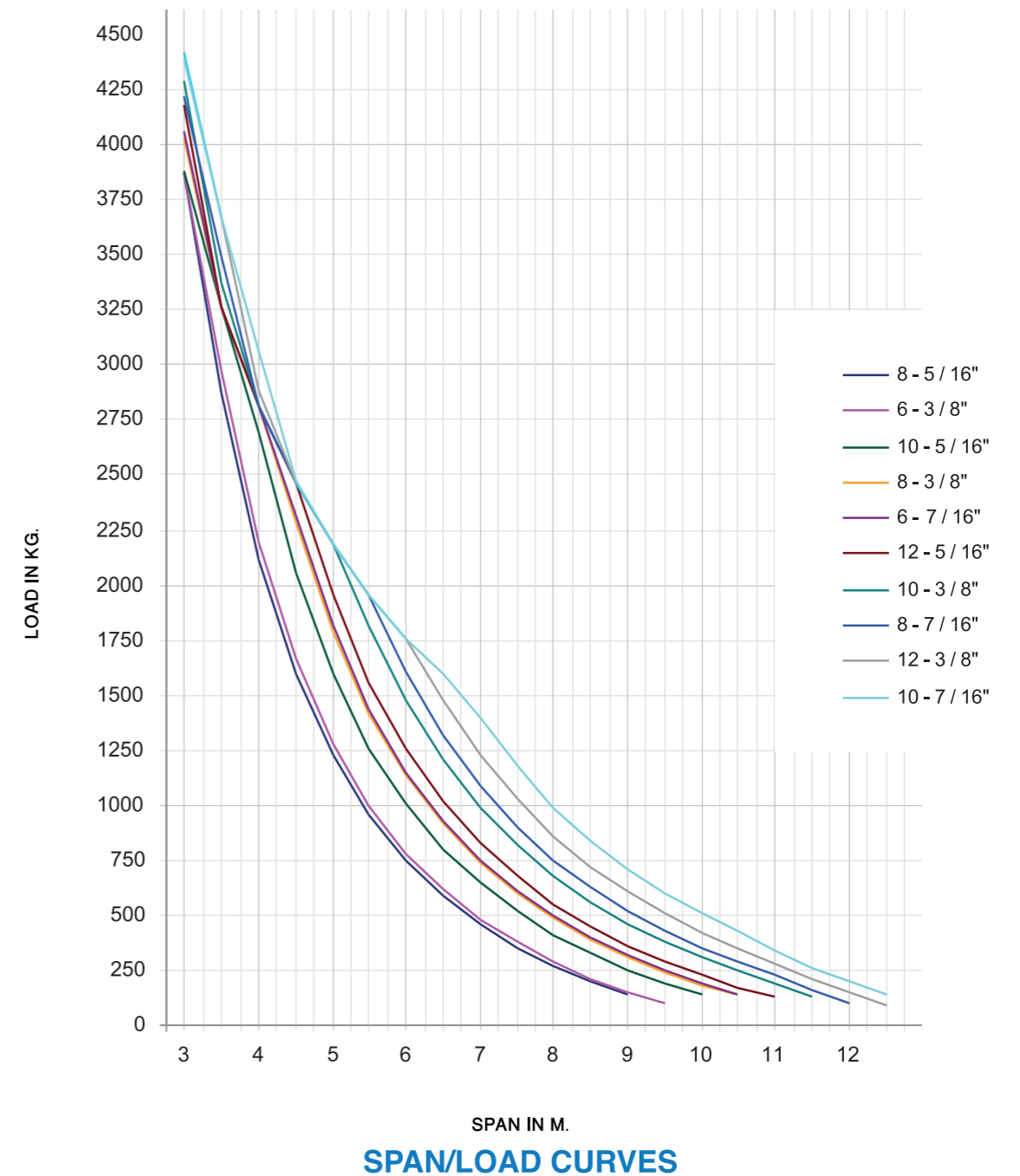
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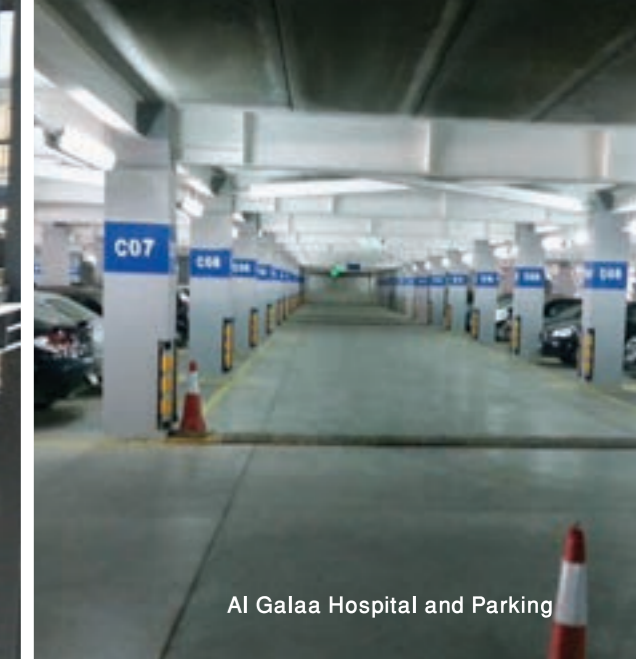
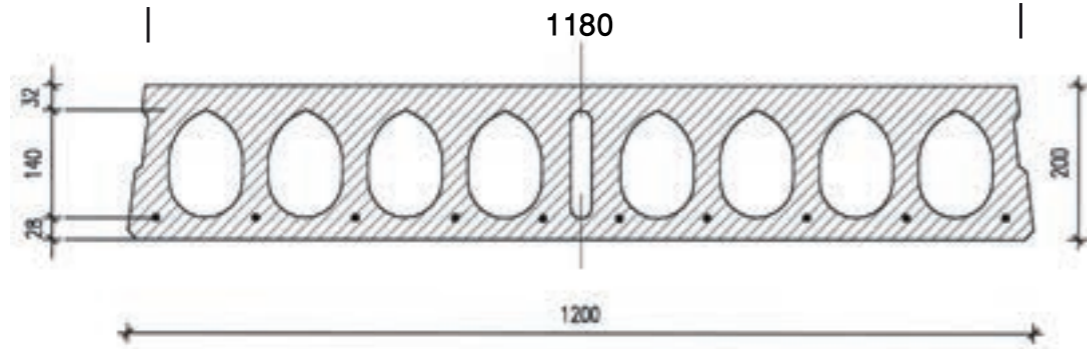


# SAMCRETE (H.C.S) 200 STD - 5cm TOPPING



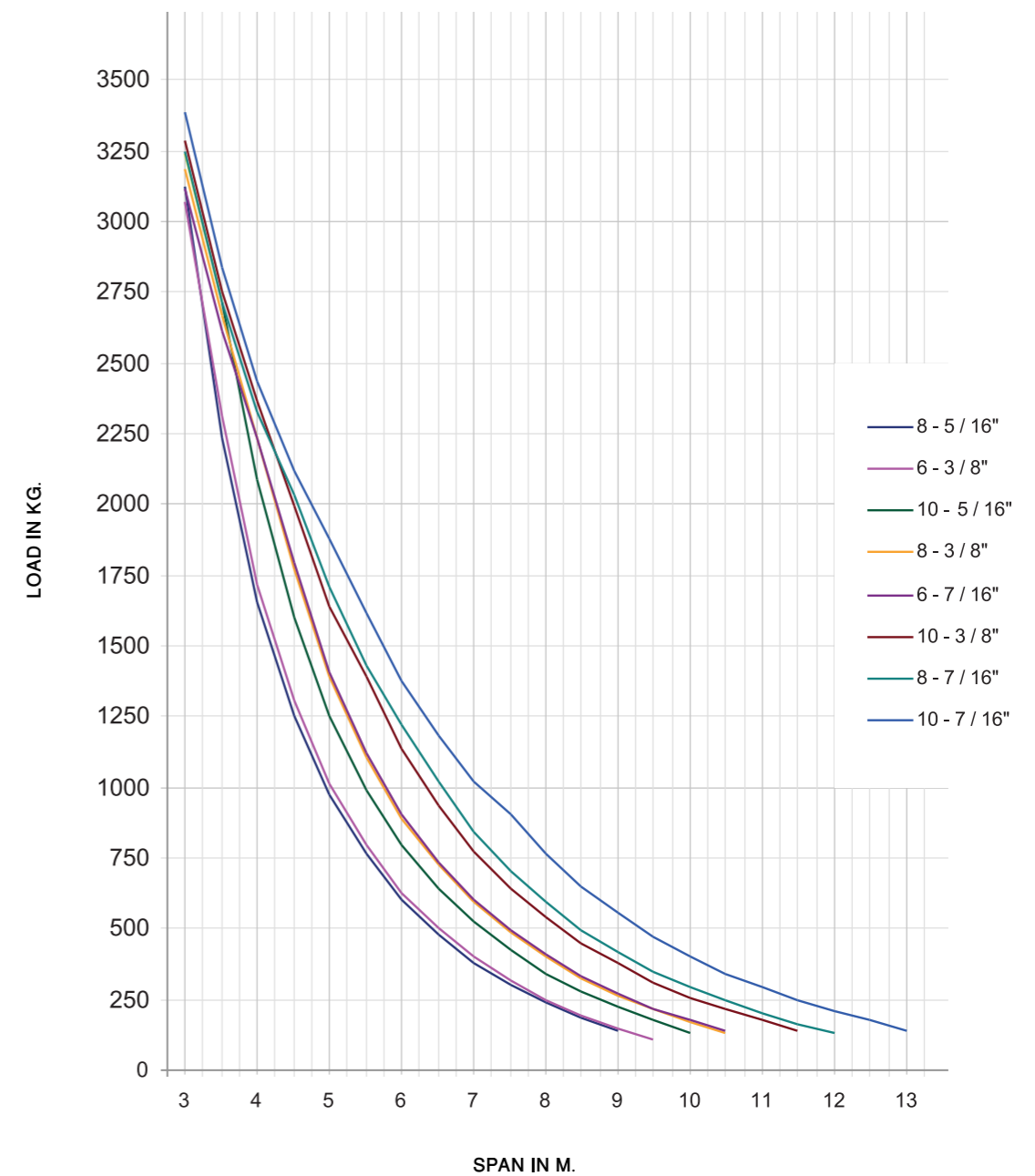
Stand	8-5/16"	6-3/8"	10-5/16"	8-3/8"	6-7/16"	12-5/16"	10-3/8"	8-7/16"	12-3/8"	10-7/16"
<b>Span</b>	<b>Load in Kg/M<sup>2</sup></b>									
3	3868	3868	3883	4036	4060	4177	4292	4226	4424	4392
3.5	2873	2978	3265	3265	3265	3265	3369	3495	3669	3673
4	2117	2198	2696	2813	2813	2813	2813	2813	2884	3063
4.5	1600	1663	2056	2288	2319	2462	2462	2462	2462	2472
5	1229	1281	1599	1787	1812	1959	2181	2181	2181	2181
5.5	955	998	1261	1416	1437	1559	1818	1951	1951	1951
6	747	782	1004	1134	1151	1254	1472	1604	1759	1759
6.5	584	615	803	914	929	1017	1203	1315	1479	1597
7	456	482	645	740	753	828	989	1086	1227	1400
7.5	352	375	516	600	611	677	816	901	1024	1174
8	267	287	412	485	495	552	675	749	858	990
8.5	196	214	325	389	398	449	558	624	720	837
9	137	153	252	310	317	363	460	519	605	709
9.5		102	190	242	249	290	377	430	507	601
10			137	184	191	228	306	354	423	508
10.5				135	140	174	245	288	351	425
11						127	192	230	280	339
11.5							131	162	209	263
12								103	146	197
<b>Ult. Moment</b>	<b>8388</b>	<b>8662</b>	<b>10354</b>	<b>11349</b>	<b>11482</b>	<b>12267</b>	<b>13935</b>	<b>14942</b>	<b>16419</b>	<b>18216</b>





Al Galaa Hospital and Parking

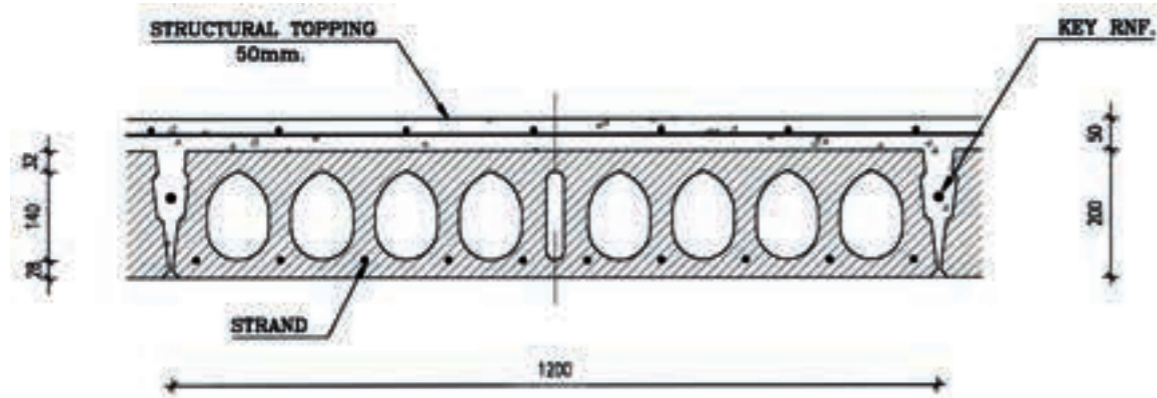
Stand	8-5/16"	6-3/8"	10-5/16"	8-3/8"	6-7/16"	10-3/8"	8-7/16"	10-7/16"
<b>Span</b>	<b>Load in Kg/M<sup>2</sup></b>							
3	3122	3072	3237	3185	3117	3289	3244	3386
3.5	2231	2310	2712	2668	2610	2756	2717	2837
4	1653	1713	2085	2232	2237	2364	2328	2433
4.5	1256	1304	1598	1770	1793	1992	2030	2122
5	973	1011	1250	1389	1407	1642	1706	1877
5.5	763	795	992	1107	1122	1393	1431	1613
6	603	630	796	892	905	1140	1220	1375
6.5	479	502	643	725	736	937	1018	1180
7	381	400	522	593	602	775	845	1024
7.5	301	318	424	486	494	645	706	901
8	236	251	344	399	406	538	592	763
8.5	182	195	278	326	332	450	497	649
9	137	149	222	265	271	376	418	553
9.5		109	175	214	219	313	351	473
10			135	170	175	259	294	404
10.5				132	136	213	245	344
11						174	202	293
11.5						139	165	248
12							132	208
<b>Ult. Moment</b>	<b>6422</b>	<b>6628</b>	<b>7893</b>	<b>8632</b>	<b>8730</b>	<b>10528</b>	<b>11259</b>	<b>13592</b>



SPAN/LOAD CURVES

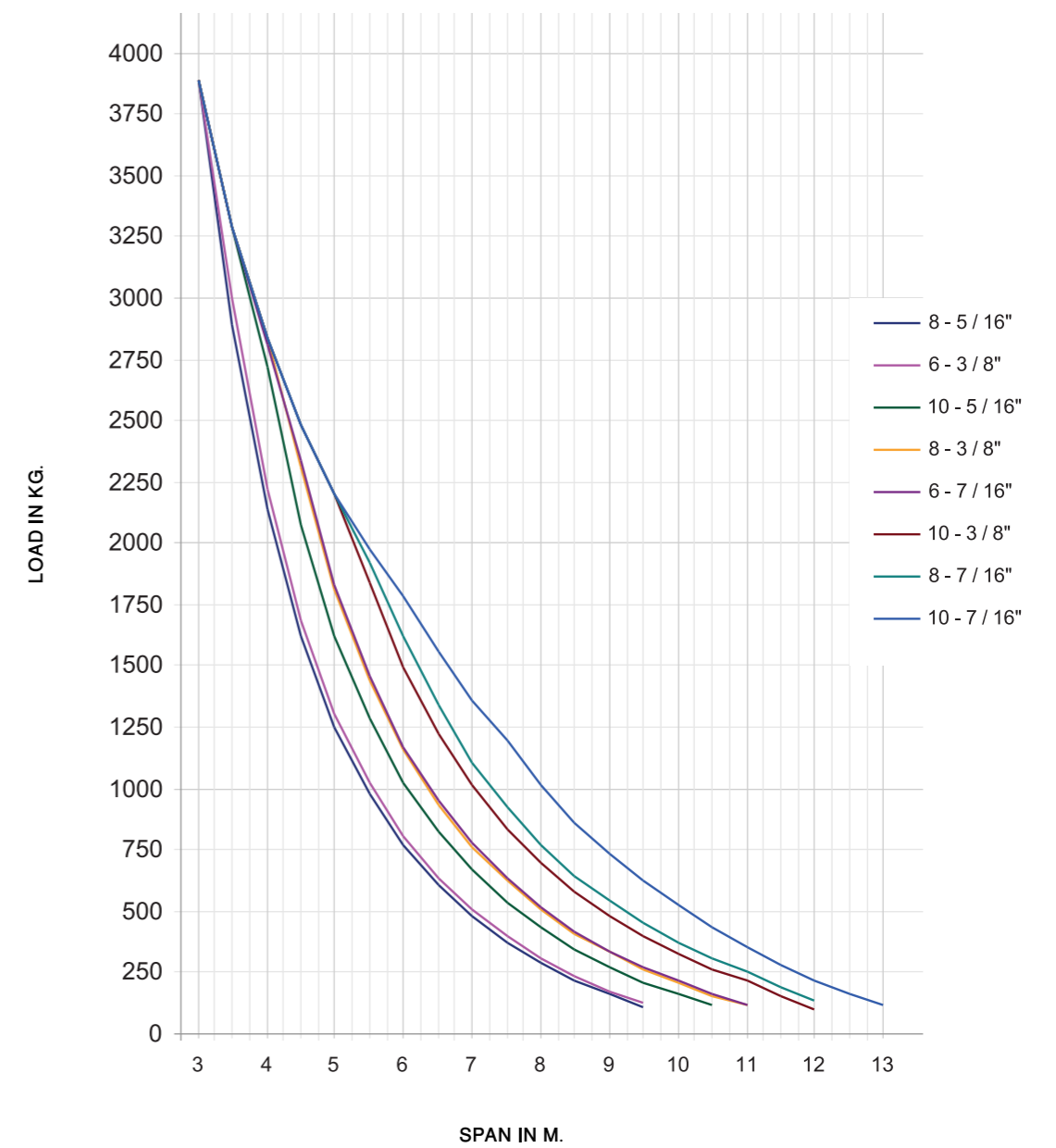


# SAMCRETE (H.C.S) 200 UL - 5cm TOPPING



Al Mosheer Mosque - Cairo

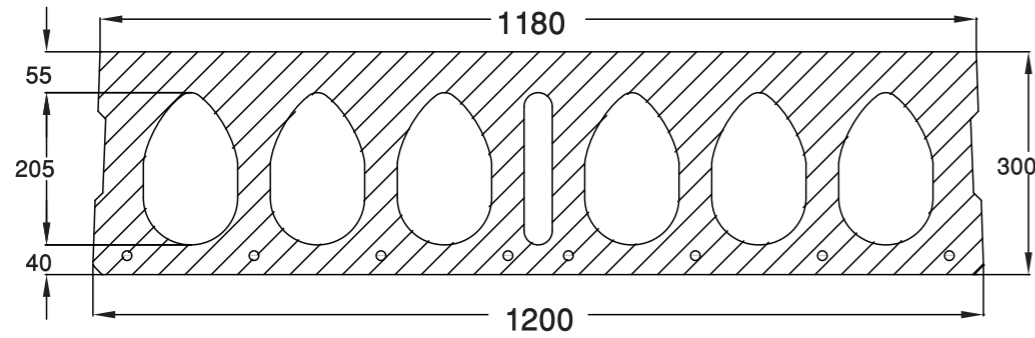
Stand	8-5/16"	6-3/8"	10-5/16"	8-3/8"	6-7/16"	10-3/8"	8-7/16"	10-7/16"
Span	Load in Kg/M <sup>2</sup>							
3	3890	3890	3890	3890	3890	3890	3890	3890
3.5	2895	3000	3287	3287	3287	3287	3287	3287
4	2139	2220	2718	2836	2808	2836	2836	2836
4.5	1622	1685	2079	2310	2341	2484	2484	2484
5	1251	1303	1621	1809	1834	2203	2203	2203
5.5	977	1020	1283	1438	1459	1840	1918	1973
6	769	805	1026	1156	1173	1494	1620	1781
6.5	607	637	826	936	951	1225	1337	1558
7	478	504	667	762	775	1011	1107	1357
7.5	374	397	539	622	663	838	923	1196
8	289	309	434	507	517	697	771	1012
8.5	219	236	347	412	420	580	646	859
9	160	176	274	332	339	482	541	731
9.5	110	124	212	264	271	399	452	622
10			160	206	213	328	376	530
10.5			114	157	162	267	310	439
11				114	119	214	253	357
11.5						158	188	285
12						103	132	222
Ult. Moment	8388	8662	10354	11349	11481	13934	14941	18216



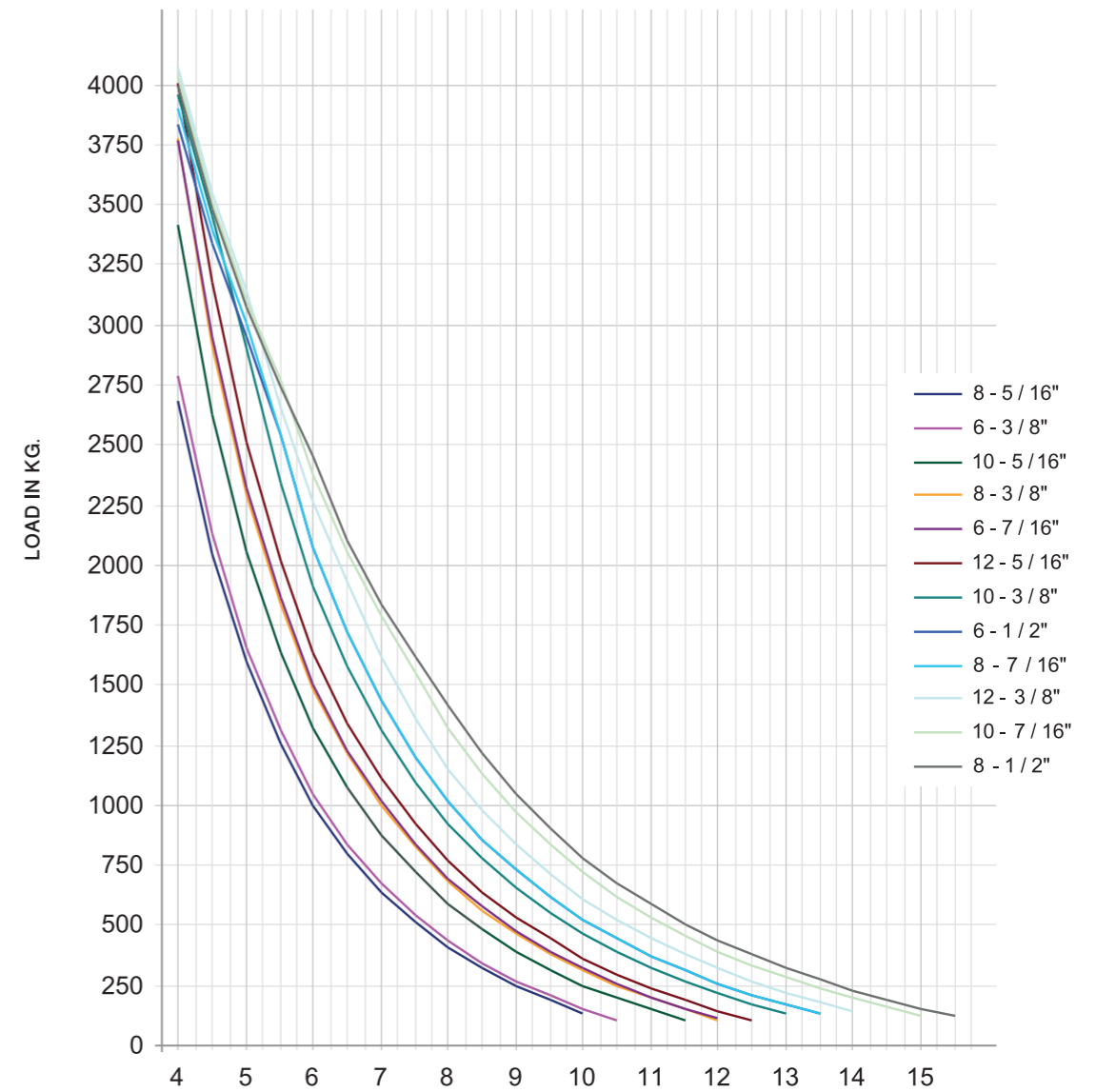
SPAN/LOAD CURVES



# SAMCRETE (H.C.S) 300 STD - NO TOPPING



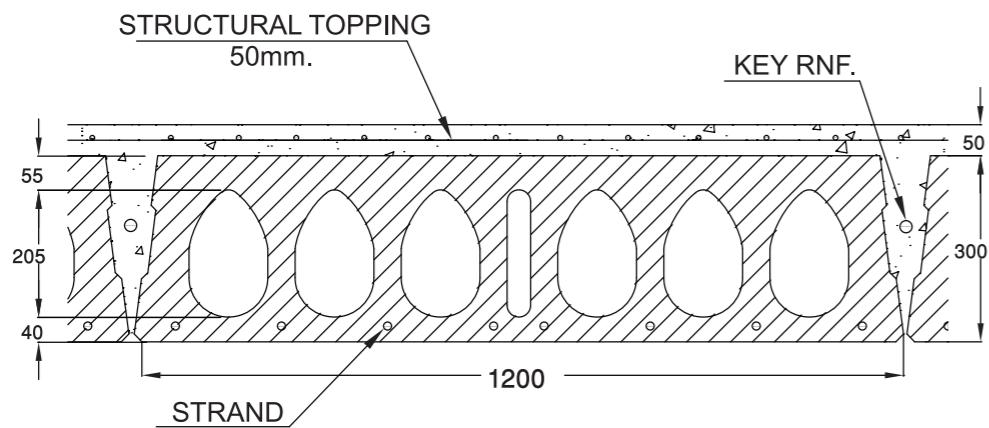
Stand	8-5/16"	6-3/8"	10-5/16"	8-3/8"	6-7/16"	12-5/16"	10-3/8"	6-1/2"	8-7/16"	12-3/8"	10-7/16"	8-1/2"
<b>Span</b>	<b>Load in Kg/M<sup>2</sup></b>											
4	2687	2787	3412	3778	3765	4006	3962	3833	3903	4075	4036	3996
4.5	2050	2129	2623	2912	2951	3180	3451	3337	3399	3551	3514	3479
5	1594	1658	2058	2292	2324	2509	2905	2946	3002	3138	3103	3072
5.5	1257	1310	1640	1834	1860	2013	2340	2538	2538	2653	2772	2743
6	1000	1045	1322	1485	1507	1636	1910	2077	2077	2261	2378	2453
6.5	801	838	1075	1214	1232	1342	1576	1718	1718	1927	2051	2106
7	642	675	879	998	1014	1109	1311	1433	1433	1613	1789	1838
7.5	514	543	721	825	839	921	1097	1203	1203	1360	1552	1614
8	410	435	591	683	695	767	922	1015	1015	1153	1322	1421
8.5	323	345	484	565	576	640	777	860	860	982	1131	1219
9	250	270	394	466	476	533	655	729	729	838	971	1049
9.5	189	207	317	382	391	443	552	619	619	716	836	906
10	136	152	252	311	319	365	464	524	524	612	720	784
10.5		106	197	250	257	299	389	443	443	523	621	678
11			148	196	203	241	323	373	373	446	535	587
11.5			106	150	156	191	266	311	311	378	460	508
12				109	115	147	216	257	257	319	394	438
12.5						108	171	210	210	266	336	376
13							132	168	168	220	284	321
13.5								130	130	179	238	273
14									142	197	229	
14.5										160	190	
15										126	155	
15.5											123	
<b>Ult.Moment</b>	<b>10323</b>	<b>10663</b>	<b>12788</b>	<b>14033</b>	<b>14200</b>	<b>15184</b>	<b>17285</b>	<b>18557</b>	<b>18559</b>	<b>20433</b>	<b>22726</b>	<b>24071</b>



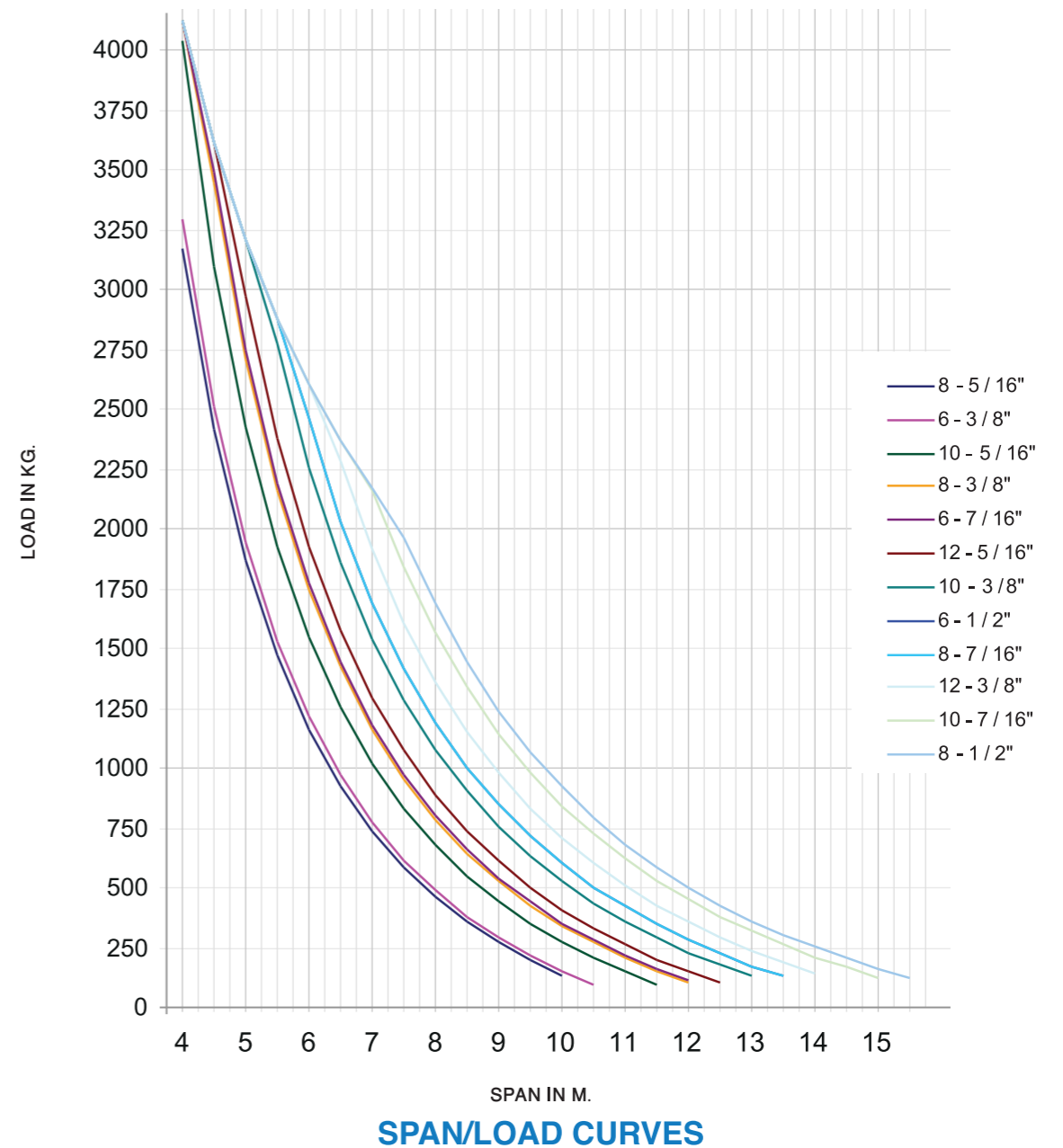
SPAN IN M.  
**SPAN/LOAD CURVES**



# SAMCRETE (H.C.S) 300 STD - 5cm TOPPING



Stand	8-5/16"	6-3/8"	10-5/16"	8-3/8"	6-7/16"	12-5/16"	10-3/8"	6-1/2"	8-7/16"	12-3/8"	10-7/16"	8-1/2"
Span	Load in Kg/M <sup>2</sup>											
4	3169	3289	4034	4124	4124	4124	4124	4124	4124	4124	4124	4124
4.5	2411	2506	3094	3448	3494	3617	3617	3617	3617	3617	3617	3617
5	1868	1945	2421	2708	2746	2970	3210	3210	3210	3210	3210	3210
5.5	1467	1530	1924	2161	2192	2377	2773	2878	2878	2878	2878	2878
6	1161	1215	1546	1745	1771	1926	2259	2462	2462	2601	2601	2601
6.5	924	969	1251	1421	1443	1576	1859	2032	2032	2287	2367	2367
7	735	774	1018	1164	1183	1297	1542	1691	1691	1911	2162	2166
7.5	583	617	829	956	973	1073	1286	1415	1416	1607	1842	1959
8	459	489	675	787	802	889	1076	1190	1190	1359	1565	1687
8.5	356	382	547	646	659	737	903	1003	1004	1153	1336	1444
9	269	293	440	528	540	609	757	847	847	980	1144	1240
9.5	196	217	349	429	439	501	634	715	715	834	981	1067
10	133	153	272	343	353	409	529	602	602	709	842	920
10.5		97	205	270	279	329	438	504	504	602	722	793
11			147	207	214	261	360	420	420	509	619	683
11.5			97	151	158	201	291	346	347	428	528	587
12				103	109	148	231	282	282	357	449	503
12.5						102	178	225	225	294	379	429
13							131	174	174	238	317	363
13.5								129	129	189	261	304
14										144	212	252
14.5											167	205
15											127	162
15.5												124
Ult. Moment	12288	12696	15226	16749	16949	18140	20686	22234	22235	24523	27336	28994





## Applications of Samcrete H.C.S.

- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li>■ <b>Commercial</b></li> <li>Shopping Malls</li> <li>Retail Showrooms</li> <li>Office Buildings</li> </ul>      | <ul style="list-style-type: none"> <li>■ <b>Institutional</b></li> <li>Schools</li> <li>Colleges</li> <li>Auditoriums</li> </ul>                                   | <ul style="list-style-type: none"> <li>■ <b>Others</b></li> <li>Hotels</li> <li>Hospitals</li> <li>Multi-level Car Parks</li> <li>Religious Facilities</li> <li>Tank Covers Slabs</li> <li>Boundary Walls</li> </ul> |
| <ul style="list-style-type: none"> <li>■ <b>Residential</b></li> <li>Multi-storey Apartments</li> <li>Villas</li> <li>Mass Housing Projects</li> </ul> | <ul style="list-style-type: none"> <li>■ <b>Industrial</b></li> <li>Manufacturing Facilities</li> <li>Power Generation Plants</li> <li>Heavy Industries</li> </ul> |  |

Samcrete H.C.S can be used and combined with any type of construction such as:

- Load bearing walls.
- Traditional cast in situ concrete structures.
- Precast concrete structures.
- Steel and composite structures.

## Technical Advantages of Samcrete H.C.S.

- **High quality** control on the slab elements.
- **No cracks & good texture** finishes.
- **Minimize** the long - term **deflection**.
- **Accurate Dimension**

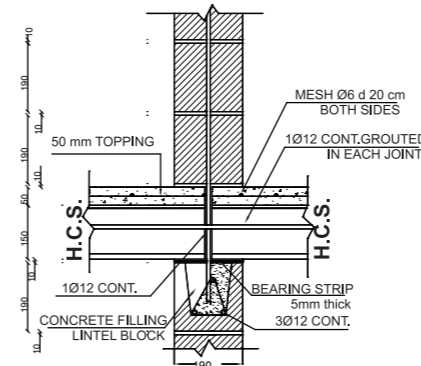
## Hollow Core Slabs (H.C.S) Openings

### Small openings

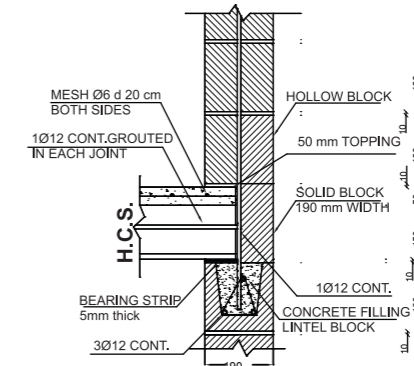
Within the core size, the openings are usually made on site up to 3 openings in the same slab cross section (max. length of the openings 750 mm. in the longitudinal direction).

### Large openings

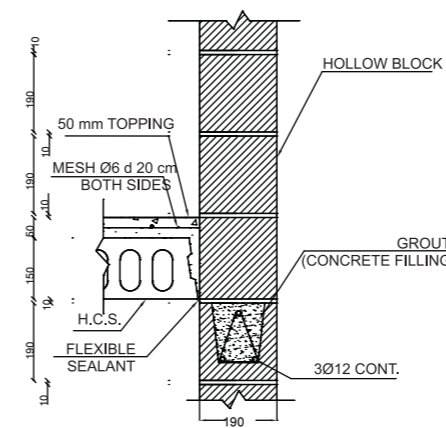
To determine the large opening size and location, please refer to Samcrete Building Systems technical office or to a consultant.



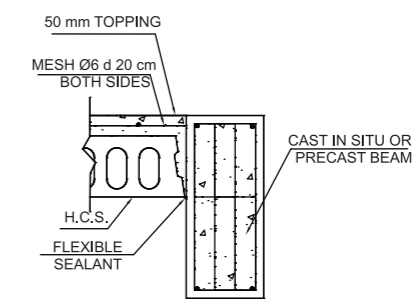
SEC. AT INTERMEDIATE LOAD BEARING WALL



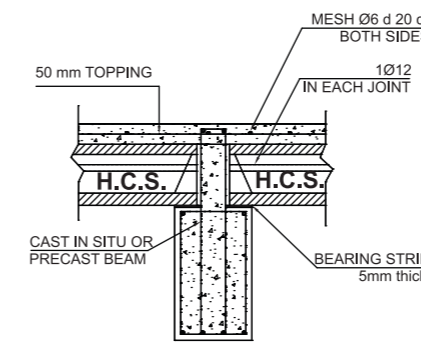
SEC. AT EDGE LOAD BEARING WALL



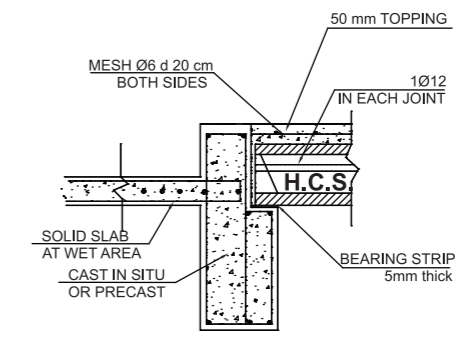
SEC. AT EDGE OF HOLLOW CORE SLAB



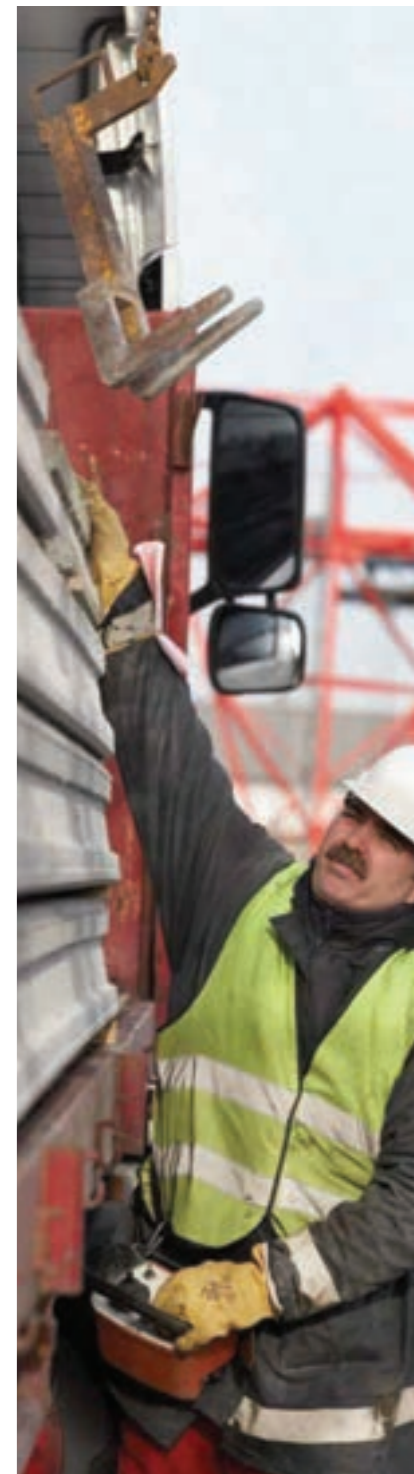
H.C.S. CONNECTION WITH END BEAM

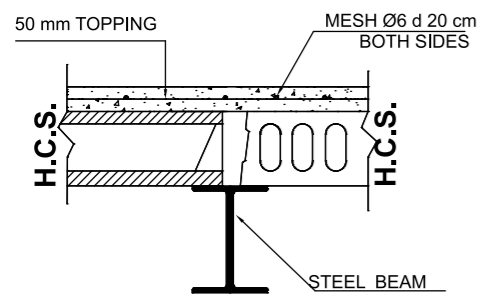


H.C.S. CONNECTION

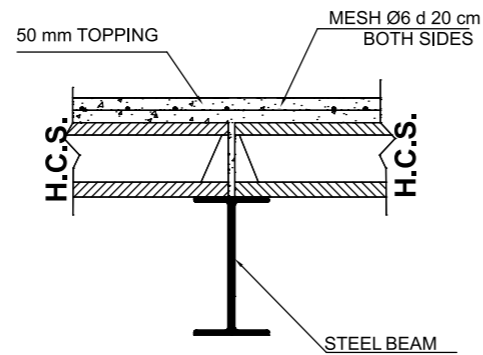


LONG. H.C.S. WITH DROPPED CAST IN SITU SLAB CONN.

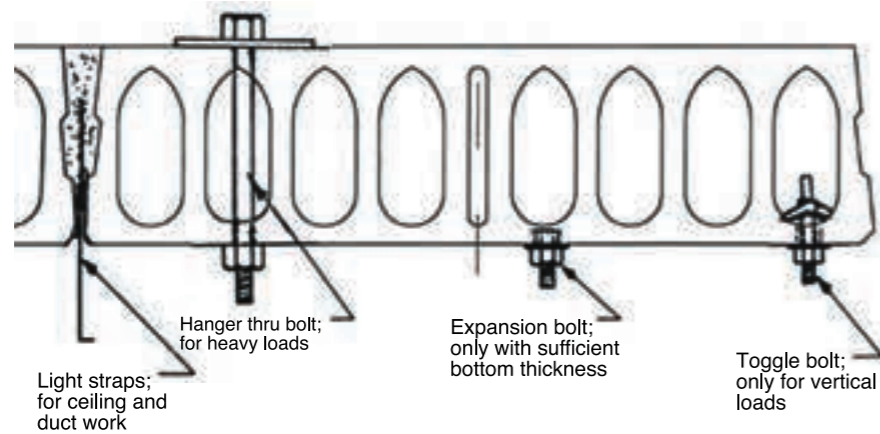




H.C.S. WITH STEEL BEAM



DIFFERENT FLOOR LEVELS



Fastenings & Suspensions



## Projects

- Pyramids Heights Office Park
- American University in New Cairo
- Carrefour Commercial Center in Maadi & Shorouk city
- Egy Food Factory
- Al Galaa Military Hospital
- Al Galaa Military Hospital Parking
- German University in Cairo (GUC) at New Cairo city
- Mall of Arabia - Commercial Center in 6<sup>th</sup> of October city
- Steigenberger Al Dau Beach Hotel, Hurghada
- Elmosheer Tantawy Mosque in the NA road
- Electrical Power Plants in Kuraymat, Sidi Kreir, Sharm Al Sheikh, Mahala & Abu Zaabal
- Hobas Pipe Factory at Kattameya
- Hurghada International Center
- Ceramic Al Gawhara in Sadat City
- Water Treatment Plants in Sinai, Hurghada, & Red Sea
- Small Industries Project at Industrial Development Group (IDG) in 6<sup>th</sup> of October City



## Contact Us

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