

Bearing Piles

Bearing Piles

GENERAL

The section sizes of bearing piles are given in the tables on the following pages. Bearing piles are different from universal beams and columns because the flange and the web thickness are approximately equal and the height and the width are almost the same.

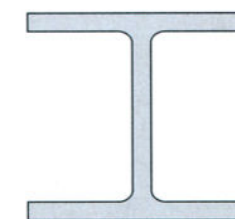
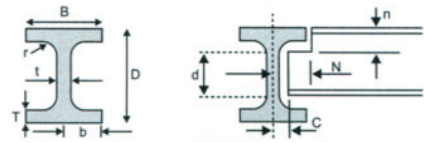


Figure 6 - Bearing Piles: Section Shape

The standard specifications used for production of bearing piles in this region are listed in this table.

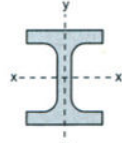
Material	Yield Strength N/mm ²			Tensile Strength N/mm ²	Min. Elongation L ₀ =5.65 √ S ₀	Min. Charpy V-notch. Temp. 20°C	Dimensions & Tolerances
AS 3679.1 (1996)	≤12mm	12-40	≥40mm				
Grade 250	260	250	230	min. 410	22 %	27J	AS 3679.1 (1996)
Grade 300	300	300	300	min. 430	22 %	27J	
Grade 350	360	340	330	min. 480	20 %	27J	
ASTM A36 (2001)	min. 250			400-550	20-21 %	-	ASTM A6 (1997)
ASTM A572 (2001)							
Grade 42	min. 290			min. 415	20-24 %	-	
Grade 50	min. 345			min. 450	18-21 %	-	
Grade 60	min. 415			min. 520	16-18 %	-	
Grade 65	min. 450			min. 550	15-17 %	-	
ASTM A913 (2001)							
Grade 50	min. 345			min. 450	18-21 %	-	
Grade 65	min. 450			min. 550	15-17 %	-	
BS 4360 (1986)(superseded)							BS 4 Part 1 (1993) (superseded)
Grade 43A	min. 275			430-580	22 %	-	
Grade 50B	min. 355			490-640	20 %	27J	
EN 10025 (2004)	≤16mm	16-40	≥40mm	3-100mm		10 < t ≤ 150mm	EN 10034 (1993)
S275JR	275	265	255	410-560	17-22 %	27J	
S355JR	355	345	335	490-630	17-22 %	27J	
S420N	420	400	390	500-660	19 %	27J	
S460N	460	440	430	530-720	17 %	27J	
JIS 3101 (1995)	≤16mm	16-40	≥40mm	t100mm			JIS 3192 (1994)
SS400	245	235	215	400-510	17-24 %	-	
SS490	285	275	255	490-610	15-21 %	-	
SS540	400	390	-	min 540	13-17 %	-	
JIS 3106 (1995)	≤16mm	16-40	≥40mm	t100mm			
SM400A, B	245	235	215	400-510	18-24 %	-	
SM490A, B	325	315	295	490-610	17-23 %	-	
SM490YA, YB	365	355	335	490-610	15-21 %	-	
SM520B	365	355	335	520-640	15-21 %	-	

Table 12 - Bearing Piles: Standard Specifications



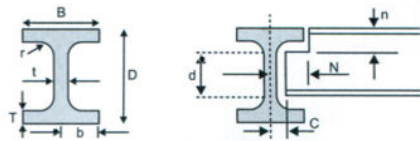
BEARING PILES

Designation Size	Mass Per Metre	Depth Of Section	Width Of Section	Thickness		Root Radius	Depth Between Fillet	Area Of Section	Ratios For Local Buckling		Dimensions For Detailing		
				Flange T	Web t				Flange b/T	Web d/t	End Clearance C	N	Notch n
DxD		D	B	mm	mm	r	d	A			mm	mm	mm
mm	kg/m	mm	mm	mm	mm	mm	mm	cm ²			mm	mm	mm
200x200	56.2	200	204	12	12	13	150	71.5	8.50	12.5	8	106	25
250x250	63.8	244	252	11	11	12	196	81.3	11.5	17.8	8	131	24
	64.4	244	252	11	11	16	190	82.1	11.5	17.3	8	131	27
	82.2	250	255	14	14	16	190	105	9.11	13.6	9	131	30
300x300	83.4	294	302	12	12	13	244	106	12.6	20.3	8	155	25
	84.5	294	302	12	12	18	234	108	12.6	19.5	8	155	30
	106	300	305	15	15	18	234	135	10.2	15.6	10	155	33
	142	310	310	20	20	18	234	181	7.75	11.7	12	155	38
350x350	105	338	351	13	13	13	286	133	13.5	22.0	9	179	26
	106	338	351	13	13	20	272	135	13.5	20.9	9	179	33
	129	344	354	16	16	13	286	165	11.1	17.9	10	179	29
	131	344	354	16	16	20	272	167	11.1	17.0	10	179	36
	154	350	357	19	19	13	286	196	9.39	15.1	12	179	32
	156	350	357	19	19	20	272	198	9.39	14.3	12	179	39
400x400	140	388	402	15	15	22	314	178	13.4	20.9	10	204	37
	168	384	405	18	18	22	314	214	11.3	17.4	11	204	40
	197	400	408	21	21	22	314	251	9.71	15.0	13	204	43
	235	408	412	25	25	22	314	300	8.24	12.6	15	204	47



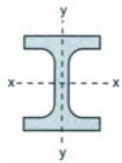
BEARING PILES

Designation Size	Mass Per Metre	Surface Area Per Metre	Second Moment Of Area		Radius Of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter u	Torsional Index x	Warping Constant H	Torsional Constant J
			Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y				
mm	kg/m	m ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³			dm ⁶	cm ⁴
200x200	56.2	1.17	4983	1702	8.35	4.88	498	167	565	257	0.826	14.3	0.150	39.6
250x250	63.8	1.45	8703	2938	10.3	6.01	713	233	797	357	0.828	19.5	0.399	37.1
	64.5	1.45	8787	2939	10.3	5.98	720	233	805	358	0.829	19.0	0.399	39.5
	82.2	1.46	11480	3877	10.5	6.09	919	304	1039	468	0.827	15.4	0.540	79.0
300x300	83.4	1.75	16640	5514	12.5	7.20	1132	365	1260	558	0.829	21.9	1.10	56.3
	84.5	1.74	16870	5517	12.5	7.16	1147	365	1277	560	0.831	21.1	1.10	61.4
	106	1.76	21540	7106	12.6	7.26	1436	466	1614	716	0.829	17.4	1.44	116
	142	1.79	29870	9955	12.9	7.42	1927	642	2199	992	0.828	13.4	2.09	271
350x350	105	2.03	27740	9377	14.4	8.39	1642	534	1822	815	0.827	23.5	2.48	81.4
	106	2.02	28190	9381	14.4	8.33	1668	535	1851	818	0.829	22.5	2.48	90.3
	129	2.05	34880	11840	14.6	8.48	2028	669	2269	1024	0.826	19.4	3.19	151
	131	2.04	35330	11850	14.6	8.43	2054	669	2299	1027	0.828	18.7	3.19	164
	154	2.07	42350	14430	14.7	8.57	2420	808	2730	1241	0.826	16.5	3.95	252
	156	2.06	42800	14430	14.7	8.53	2446	809	2760	1244	0.827	16.1	3.95	270
400x400	140	2.32	48970	16260	16.6	9.55	2524	809	2802	1237	0.830	22.5	5.66	156
	168	2.33	59720	19960	16.7	9.65	3031	986	3390	1511	0.828	19.2	7.05	264
	197	2.35	70890	23810	16.8	9.75	3545	1167	3992	1794	0.828	16.7	8.55	415
	235	2.38	86470	29200	17.0	9.87	4239	1418	4818	2185	0.827	14.2	10.7	694



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Designation Size	Mass Per Metre		Depth Of Section	Width Of Section	Thickness		Root Radius	Depth Between Fillets	Area Of Section	Ratios For Local Buckling		Dimensions For Detailing		
					Flange T	Web t				Flange b/T	Web d/t	End Clearance C	N	Notch n
DxB	lb/ft	kg/m	D	B	mm	mm	mm	mm	cm ²			mm	mm	mm
8x8	30	44.9	200.2	205.9	9.5	9.5	10.2	160.8	57.2	10.8	16.9	7	108	22
(203x203)	36	53.9	204.0	207.7	11.4	11.3	10.2	160.8	68.7	9.11	14.2	8	108	22
10x10	42	63.0	247.1	256.6	10.7	10.6	12.7	200.3	80.2	12.0	18.9	7	133	23
(254x254)	48	71.0	249.7	258.0	12	12	12.7	200.3	90.4	10.8	16.7	8	133	25
	57	85.1	254.3	260.4	14.3	14.4	12.7	200.3	108	9.10	13.9	9	133	27
12x12	53	78.9	299.3	306.4	11.1	11	15.2	246.7	100	13.8	22.4	8	158	26
(305x305)	59	88.0	301.7	307.8	12.3	12.4	15.2	246.7	112	12.5	19.9	8	158	28
	63	93.0	303.3	308.0	13.1	13.1	15.2	246.7	119	11.8	18.8	9	157	28
	64	94.9	303.7	308.7	13.3	13.3	15.2	246.7	121	11.6	18.5	9	158	29
	74	110.0	307.9	310.7	15.4	15.3	15.2	246.7	140	10.1	16.1	10	158	31
	84	125.0	311.9	312.3	17.4	17.4	15.2	246.7	159	8.97	14.2	11	157	33
	85	126.1	312.3	312.9	17.6	17.5	15.2	246.7	161	8.89	14.1	11	158	33
	100	149.1	318.5	316.0	20.7	20.6	15.2	246.7	190	7.63	12.0	12	158	36
	121	180.0	326.7	319.7	24.8	24.8	15.2	246.7	229	6.45	9.95	14	157	40
	125	186.0	328.3	320.9	25.6	25.5	15.2	246.7	237	6.27	9.67	15	158	41
	149	222.9	337.9	325.7	30.4	30.3	15.2	246.7	284	5.36	8.14	17	158	46
13x13	60	89.3	318.5	327.7	11.68	11.68	15.2	264.7	113	14.0	22.7	8	168	27
(330x330)	73	108.6	323.8	330.3	14.35	14.35	15.2	264.7	139	11.5	18.4	9	168	30
	87	129.5	328.9	332.9	16.89	16.89	15.2	264.7	164	9.85	15.7	10	168	32
	100	148.8	334.0	335.4	19.43	19.43	15.2	264.7	190	8.63	13.6	12	168	35
14x14 1/2	73	108.9	346.4	371.0	12.9	12.8	15.2	290.2	139	14.4	22.7	8	189	38
(356x368)	89	133.0	352.0	373.8	15.7	15.6	15.2	290.2	169	11.9	18.6	10	189	31
	102	152.0	356.4	376.0	17.9	17.8	15.2	290.2	194	10.5	16.3	11	189	33
	117	173.9	361.4	378.5	20.4	20.3	15.2	290.2	221	9.25	14.3	12	189	36
	121	180.0	362.9	378.8	21.1	21.1	15.2	290.3	230	8.98	13.8	13	189	36



BEARING PILES

Designation Size	Mass Per Mtr		Surface Area Per Metre	Second Moment Of Area		Radius Of Gyration		Elastic Modulus		Plastic Modulus		Buckling Parameter	Torsional Index	Warping Constant	Torsional Constant
				Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y				
in(mm)	lb/ft	kg/m	m ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	u	x	H	J
8x8	30	44.9	1.19	4100	1384	8.46	4.92	410	134	459	206	0.827	18.6	0.126	19.2
(203x203)	36	53.9	1.20	5027	1705	8.55	4.98	493	164	557	252	0.827	15.8	0.158	32.7
10x10	42	63.0	1.48	8861	3016	10.5	6.13	717	235	799	360	0.827	20.5	0.421	34.3
(254x254)	48	71.0	1.49	10070	3439	10.6	6.17	807	267	904	409	0.826	18.4	0.486	48.4
	57	85.1	1.50	12290	4216	10.6	6.24	966	324	1092	498	0.825	15.6	0.607	81.8
12x12	53	78.9	1.78	16450	5327	12.8	7.28	1099	348	1218	531	0.832	23.9	1.11	46.9
(305x305)	59	88.0	1.78	18430	5985	12.8	7.31	1221	389	1360	595	0.830	21.6	1.25	64.2
	63	93.0	1.79	19690	6387	12.9	7.33	1298	415	1449	635	0.831	20.5	1.34	76.4
	64	94.9	1.79	20050	6529	12.9	7.35	1320	423	1474	648	0.830	20.2	1.38	80.0
	74	110.0	1.80	23560	7710	13.0	7.42	1531	496	1720	762	0.830	17.7	1.65	122
	84	125.0	1.81	27040	8849	13.0	7.46	1734	567	1961	872	0.829	15.8	1.92	177
	85	126.1	1.82	27410	9002	13.1	7.49	1755	575	1986	885	0.829	15.7	1.95	182
	100	149.1	1.83	33070	10910	13.2	7.58	2076	691	2370	1066	0.828	13.5	2.42	295
	121	180.0	1.86	40970	13550	13.4	7.69	2508	847	2897	1313	0.827	11.5	3.09	510
	125	186.0	1.86	42610	14140	13.4	7.73	2596	881	3003	1366	0.827	11.1	3.24	560
	149	222.9	1.89	52700	17580	13.6	7.87	3119	1079	3653	1680	0.826	9.55	4.16	943
13x13	60	89.3	1.90	20940	6857	13.6	7.79	1315	418	1457	639	0.830	24.3	1.61	57.9
(330x330)	73	108.6	1.91	26200	8628	13.7	7.88	1618	522	1808	800	0.829	20.1	2.07	106
	87	129.5	1.93	31430	10400	13.8	7.96	1911	625	2151	959	0.828	17.3	2.53	171
	100	148.8	1.94	36860	12240	13.9	8.03	2207	730	2502	1123	0.828	15.2	3.03	260
14x14 1/2	73	108.9	2.13	30630	10990	14.9	8.90	1769	592	1956	903	0.823	24.2	3.06	84.6
(356x368)	89	133.0	2.14	37980	13680	15.0	8.99	2158	732	2406	1119	0.822	20.1	3.87	151
	102	152.0	2.16	43970	15880	15.1	9.05	2468	845	2767	1293	0.821	17.8	4.55	223
	117	173.9	2.17	51010	18460	15.2	9.13	2823	976	3186	1497	0.821	15.8	5.37	330
	121	180.0	2.17	53040	19140	15.2	9.13	2923	1011	3306	1552	0.821	15.3	5.59	367