

建築基礎設計士一次試験 実技試問題参考資料

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注) この資料の M-N 関係等を、解答の一部として利用してもよい。
その場合は、利用したページを切り離して提出する。

設計資料

PHCパイルの断面諸元

外径 D (mm)	厚さ t (mm)	区分	断面積 Ac × 10 ² (mm ²)	換算断面積 Ae × 10 ² (mm ²)	断面一次 モーメント So × 10 ³ (mm ³)	断面二次 モーメント Ic × 10 ⁶ (mm ⁴)	換算断面 一次モーメント Ie × 10 ⁶ (mm ⁴)
300	60	A	452	462	1,764	346.1	352.7
		B		470			359.0
		C		476			363.4
400	65	A	684	699	3,693	995.8	1,017
		B		710			1,031
		C		720			1,045
450	70	A	836	854	5,111	1,560	1,592
		B		872			1,624
		C		880			1,639
500	80	A	1,056	1,076	7,141	2,412	2,459
		B		1,097			2,507
		C		1,112			2,541
600	90	A	1,442	1,470	11,830	4,834	4,928
		B		1,498			5,025
		C		1,517			5,089
700	100	A	1,885	1,922	18,170	8,718	8,890
		B		1,964			9,086
		C		1,989			9,202
800	110	A	2,384	2,434	26,410	14,550	14,850
		B		2,485			15,170
		C		2,512			15,340
900	120	A	2,941	3,002	36,790	22,890	23,370
		B		3,060			23,820
		C		3,093			24,080
1,000	130	A	3,553	3,625	49,560	34,370	35,060
		B		3,697			35,760
		C		3,737			36,150

OPRCパイルの断面諸元

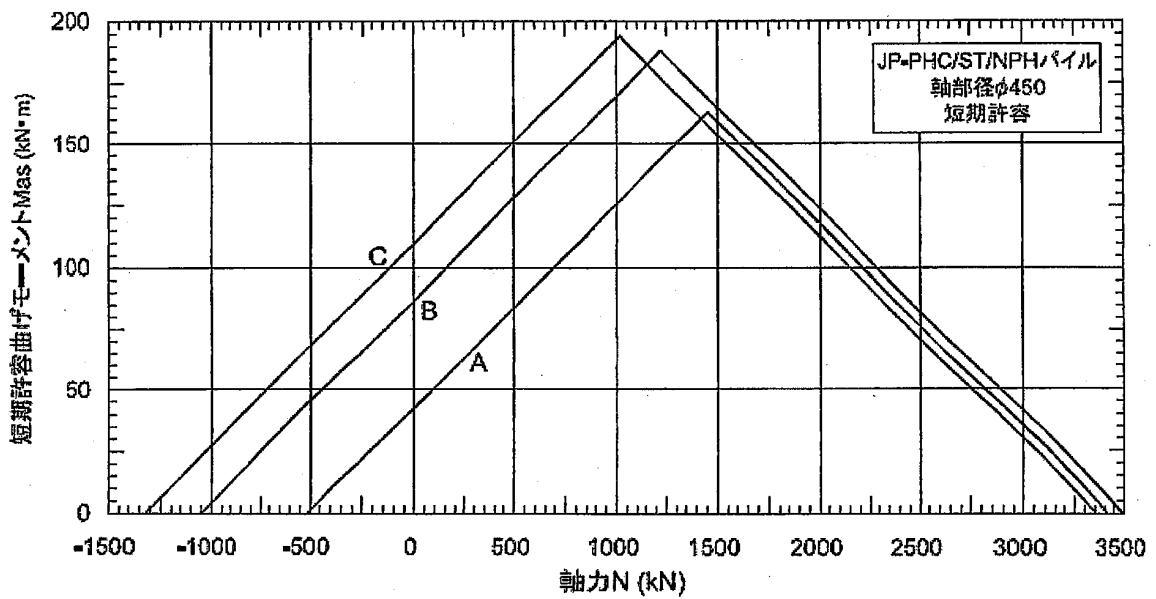
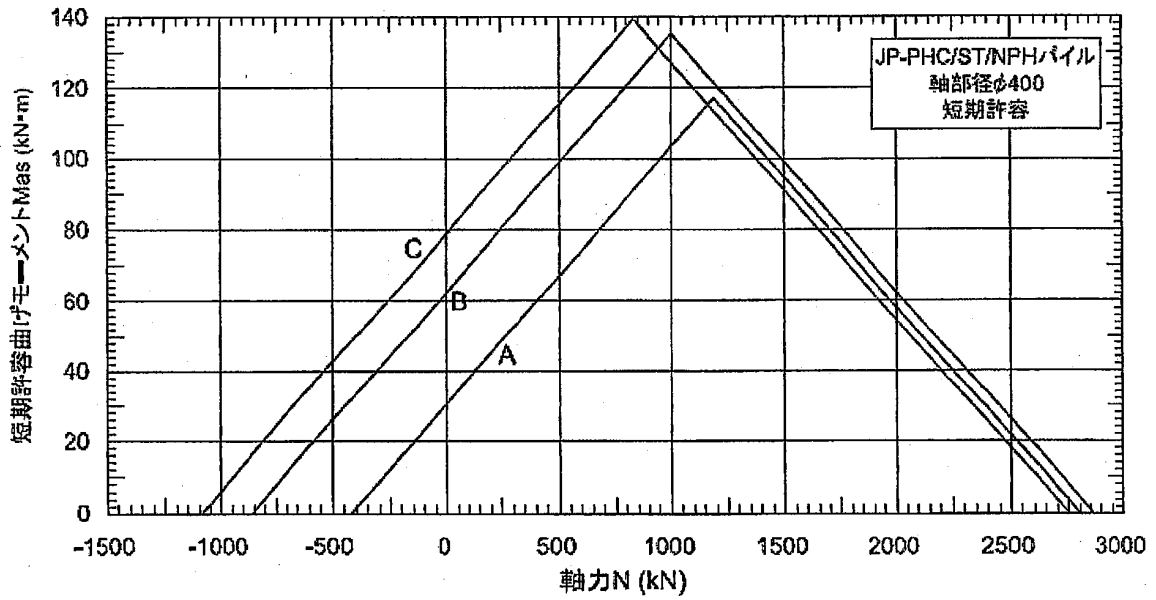
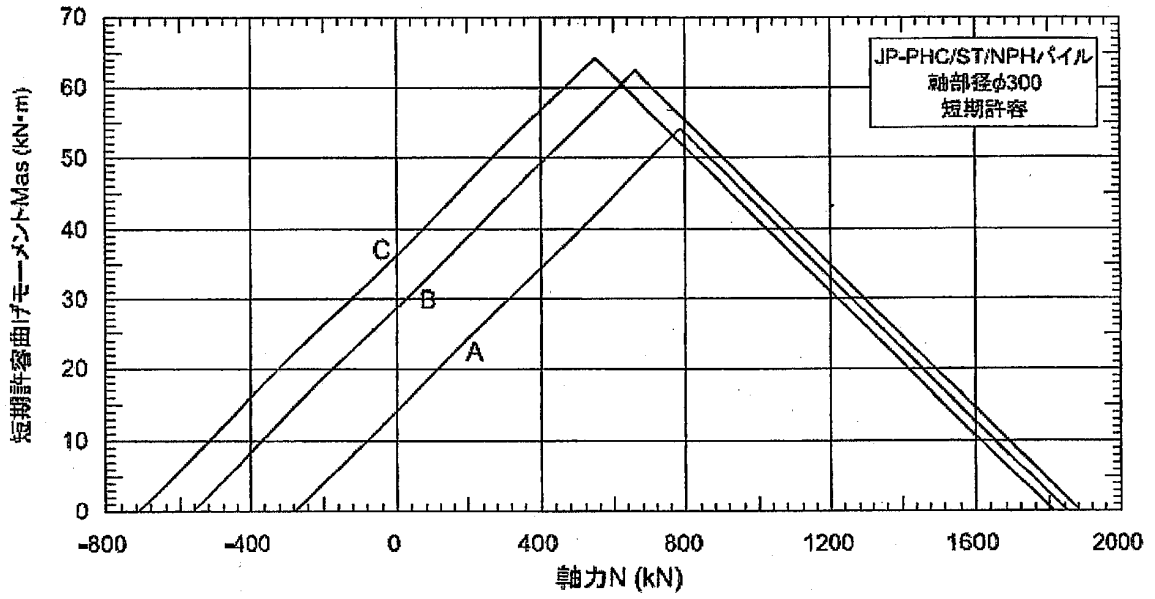
外径 D (mm)	厚さ t (mm)	区分	断面積 Ac × 10 ² (mm ²)	換算断面積 Ae × 10 ² (mm ²)	断面一次 モーメント So × 10 ³ (mm ³)	断面二次 モーメント Ic × 10 ⁶ (mm ⁴)	換算断面 一次モーメント Ie × 10 ⁶ (mm ⁴)
300	60	I	452	502	1,764	346.1	381.1
		II		519			392.4
		III		540			405.6
		IV		564			420.1
400	65	I	684	750	3,693	995.8	1,084
		II		773			1,114
		III		801			1,148
		IV		833			1,187
450	70	I	836	918	5,111	1,560	1,707
		II		947			1,756
		III		982			1,814
		IV		1,022			1,879
500	80	I	1,056	1,154	7,141	2,412	2,628
		II		1,189			2,700
		III		1,231			2,786
		IV		1,279			2,882
600	90	I	1,442	1,573	11,830	4,834	5,259
		II		1,619			5,402
		III		1,676			5,574
		IV		1,740			5,766
700	100	I	1,885	2,030	18,170	8,718	9,369
		II		2,073			9,544
		III		2,132			9,810
		IV		2,197			10,081
		V		2,273			10,399
		VI		2,360			10,752
800	110	I	2,384	2,548	26,410	14,550	15,521
		II		2,596			15,784
		III		2,663			16,181
		IV		2,735			16,587
		V		2,821			17,064
		VI		2,919			17,598

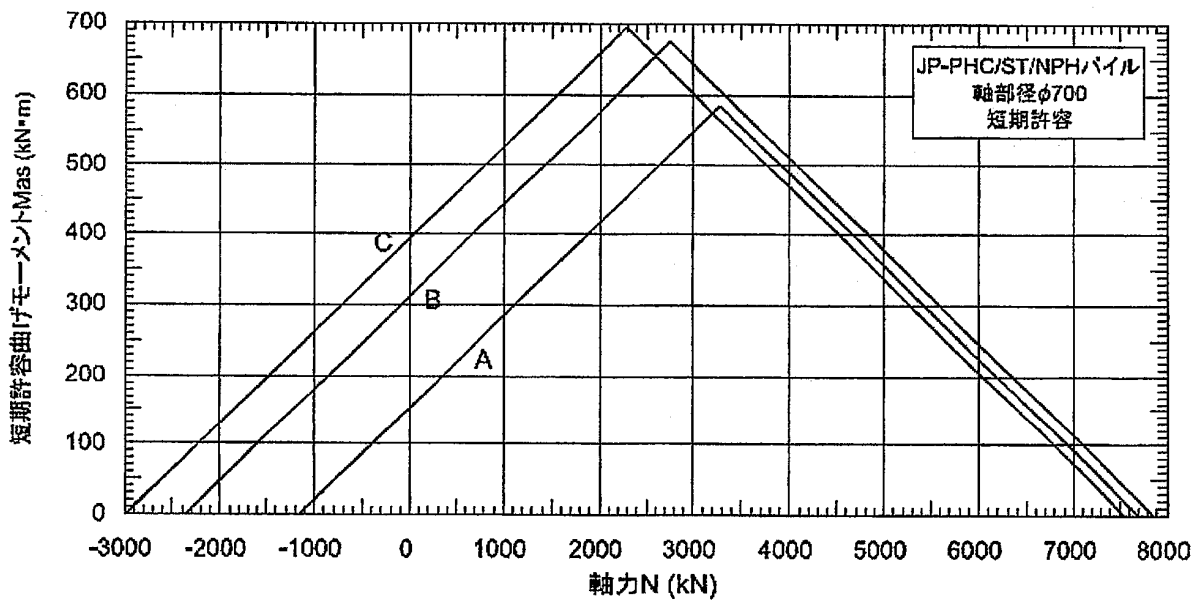
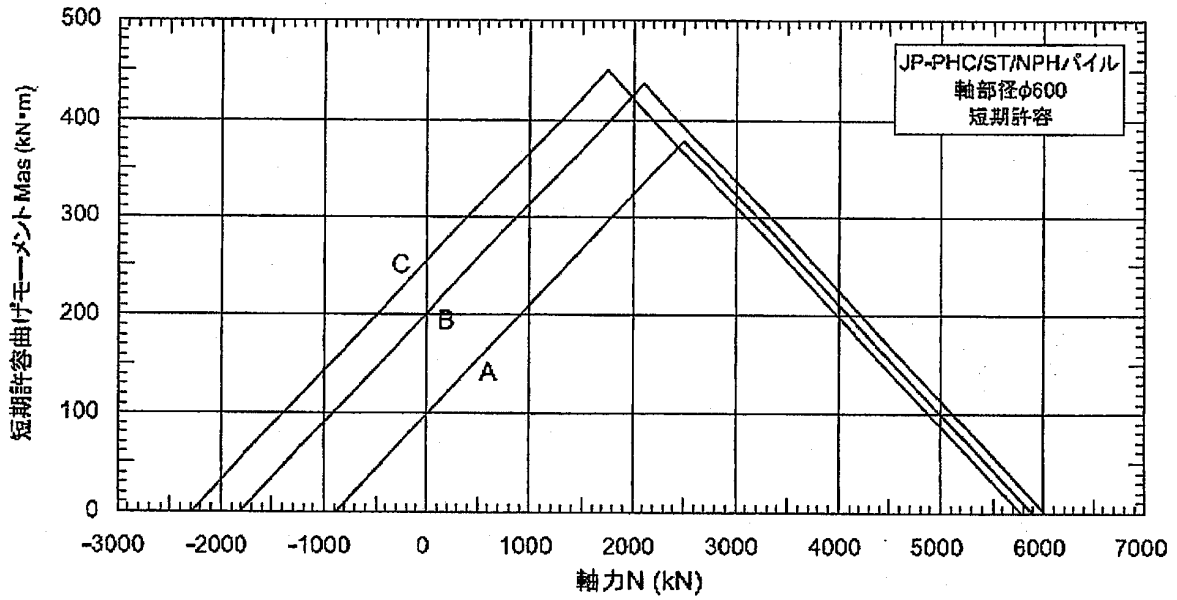
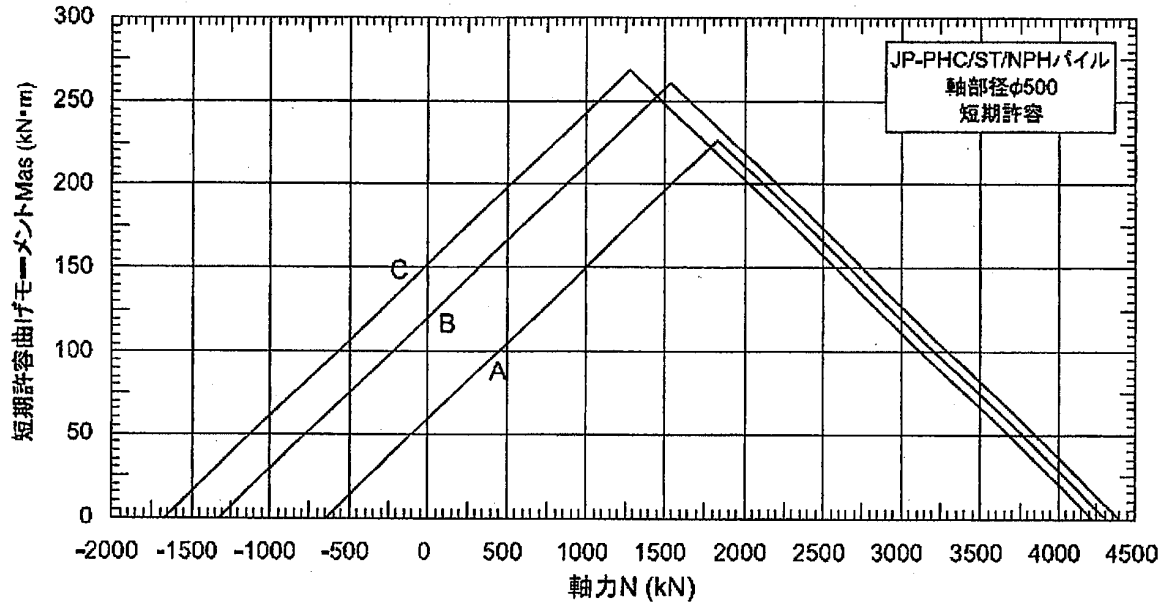
900	120	I	2,941	3,122	36,790	22,890	24,269
		II		3,175			24,646
		III		3,250			25,210
		IV		3,330			25,792
		V		3,426			26,475
		VI		3,534			27,240
1,000	130	I	3,553	3,771	49,560	34,370	36,424
		II		3,835			36,991
		III		3,924			37,833
		IV		4,021			38,706
		V		4,136			39,733
		VI		4,266			40,884

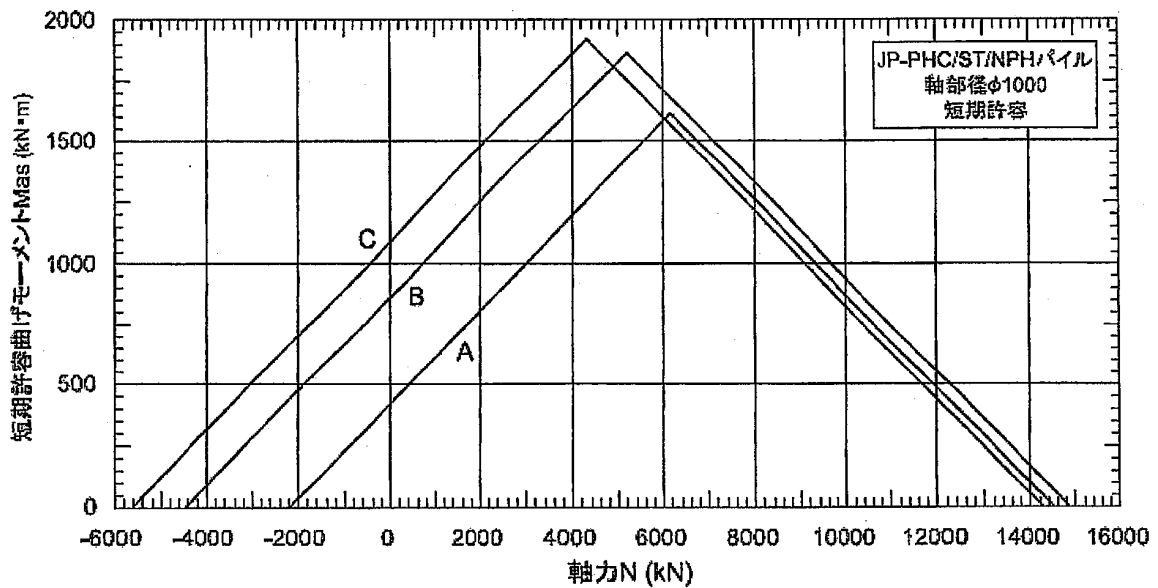
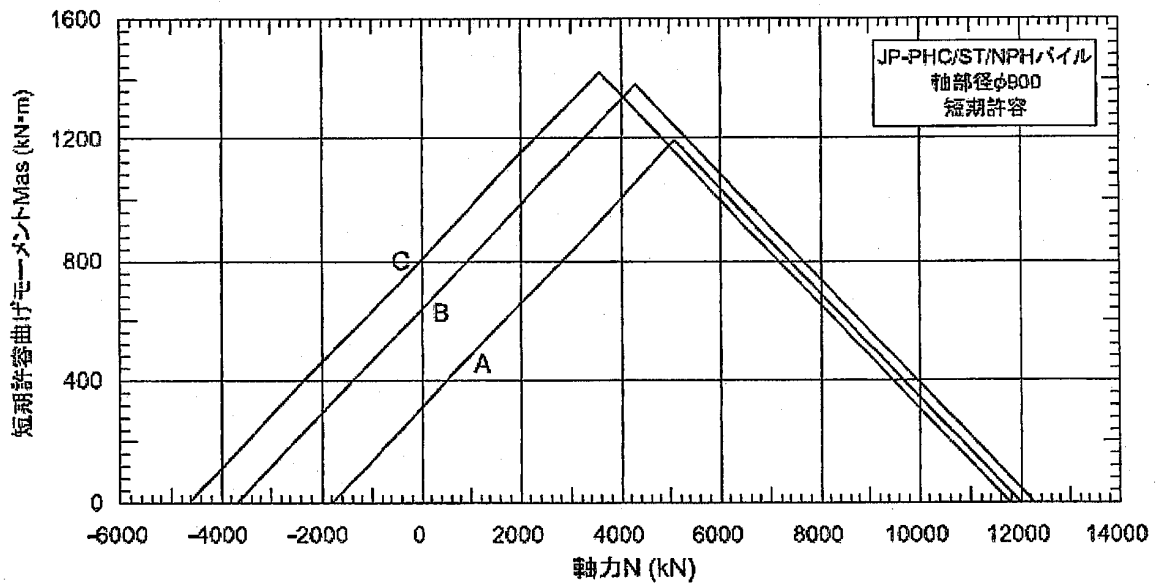
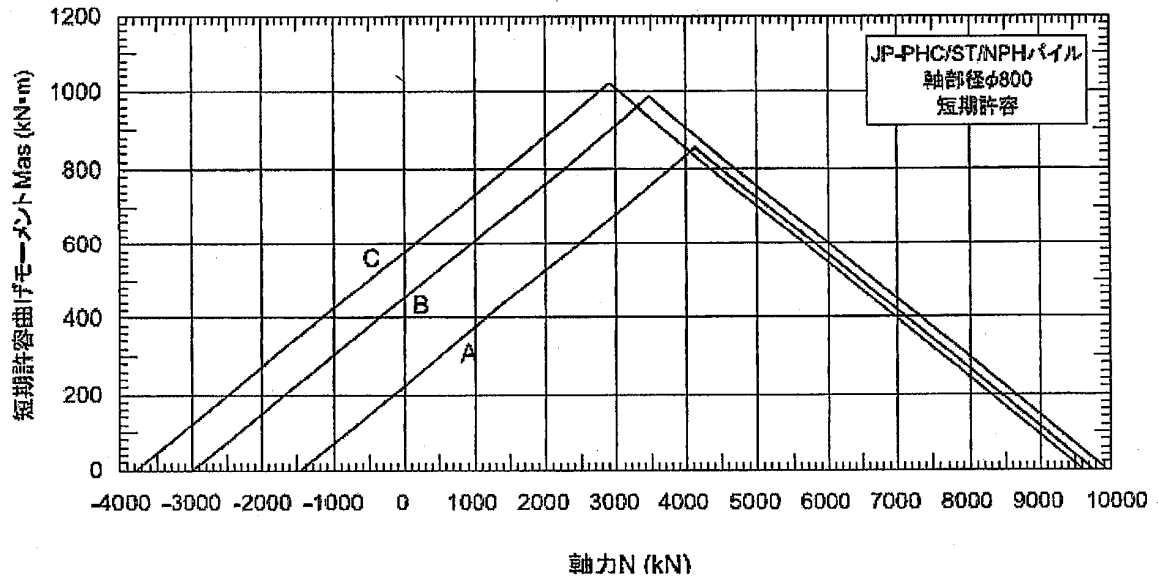
SCパイルの断面諸元

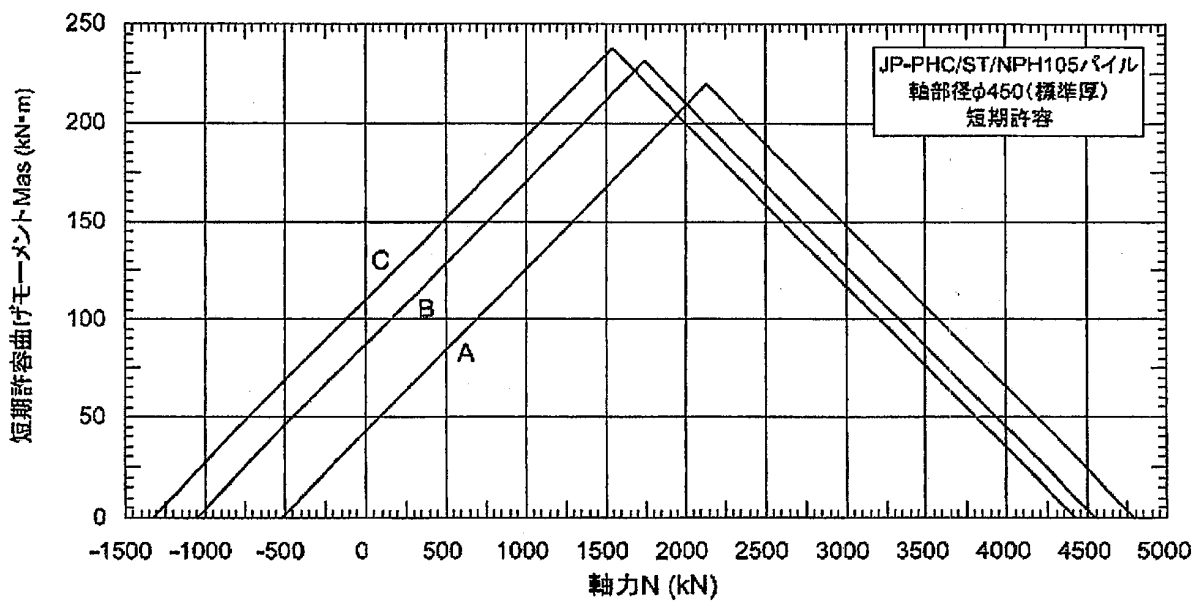
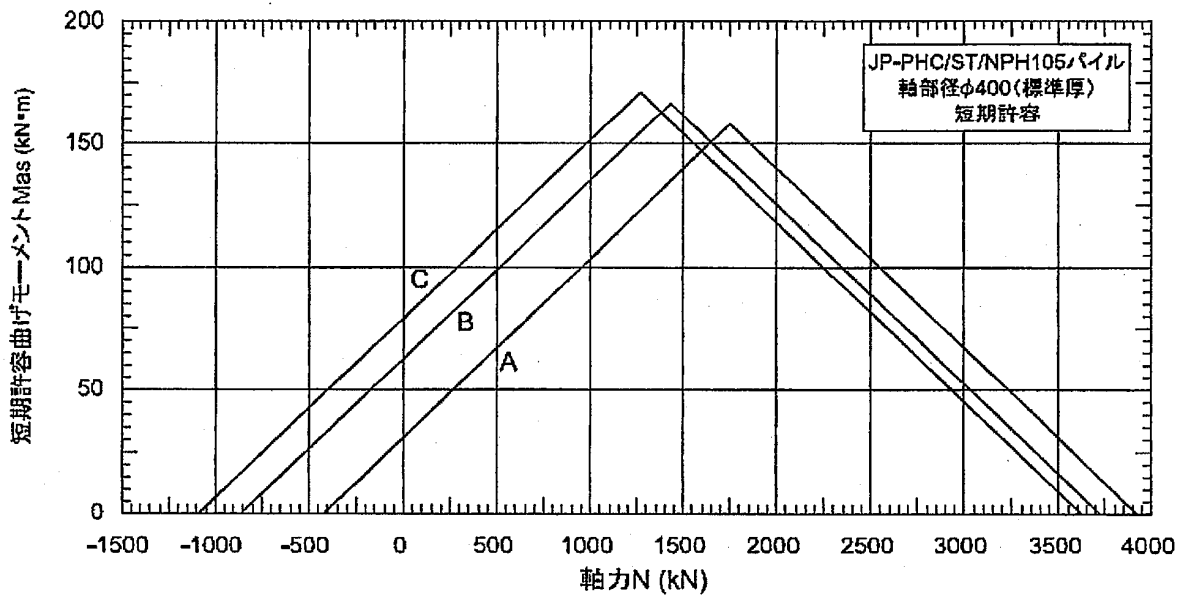
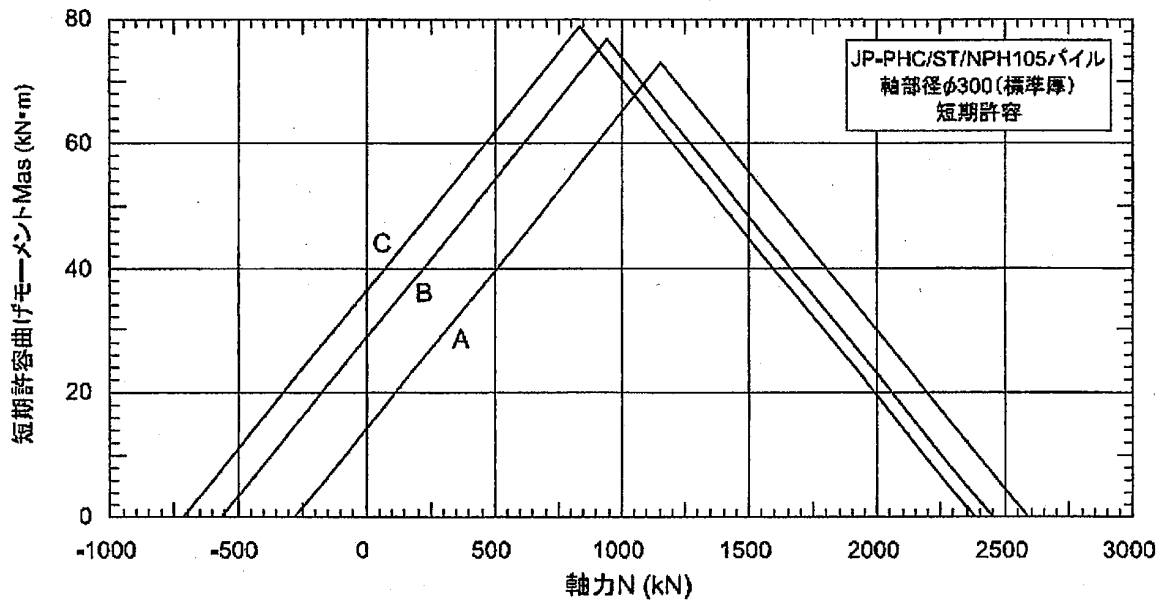
外径 D (mm)	厚さ t (mm)	鋼管板厚 ts (mm)	鋼管 断面積 As ×10 ² (mm ²)	コンクリート Ac ×10 ² (mm ²)	換算 断面積 Ae ×10 ² (mm ²)	換算断 面積 Ie ×10 ⁸ (mm ⁴)
400	65	4.5	43.38	628	850	1,319
		6.0	61.73	610	926	1,463
		9.0	98.02	574	1,076	1,740
		12.0	133.74	538	1,223	2,004
450	70	4.5	48.88	773	1,023	2,022
		6.0	69.59	752	1,109	2,228
		9.0	110.58	711	1,278	2,628
		12.0	151.02	671	1,445	3,012
500	80	4.5	54.37	986	1,264	3,049
		6.0	77.44	962	1,359	3,334
		9.0	123.15	917	1,548	3,888
		12.0	168.30	872	1,734	4,422
		14.0	198.08	842	1,857	4,767
		16.0	227.61	812	1,979	5,104
600	90	4.5	65.37	1,358	1,693	5,941
		6.0	93.15	1,330	1,807	6,439
		9.0	148.28	1,275	2,035	7,412
		12.0	202.85	1,220	2,260	8,355
		14.0	238.92	1,184	2,409	8,968
		16.0	274.73	1,148	2,556	9,568
700	100	19.0	327.98	1,095	2,776	10,444
		6.0	108.86	1,754	2,312	11,280
		9.0	173.42	1,690	2,578	12,840
		12.0	237.41	1,626	2,842	14,360
		14.0	279.76	1,583	3,017	15,350
		16.0	321.86	1,541	3,191	16,330
800	110	19.0	384.53	1,478	3,449	17,760
		22.0	446.64	1,416	3,705	19,150
		6.0	124.56	2,235	2,873	18,390
		9.0	198.55	2,161	3,178	20,740
		12.0	271.97	2,087	3,481	23,040
		14.0	320.60	2,039	3,682	24,540
		16.0	368.98	1,990	3,881	26,020
		19.0	441.08	1,918	4,179	28,200
900	120	22.0	512.61	1,847	4,474	30,320
		25.0	583.58	1,776	4,767	32,400
		6.0	140.27	2,772	3,491	28,370
		9.0	223.68	2,689	3,835	31,740
		12.0	306.53	2,606	4,177	35,040
		14.0	361.44	2,551	4,403	37,210
		16.0	416.10	2,496	4,629	39,340
		19.0	497.63	2,415	4,965	42,490
1,000	130	22.0	578.59	2,334	5,299	45,570
		25.0	658.98	2,253	5,631	48,580
		6.0	155.98	3,366	4,165	41,910
		9.0	248.81	3,273	4,548	46,550
		12.0	341.08	3,181	4,929	51,110
		14.0	402.28	3,119	5,181	54,100
		16.0	463.23	3,059	5,433	57,060
		19.0	554.18	2,968	5,808	61,430
1,000	130	22.0	644.56	2,877	6,181	65,710
		25.0	734.38	2,787	6,551	69,920

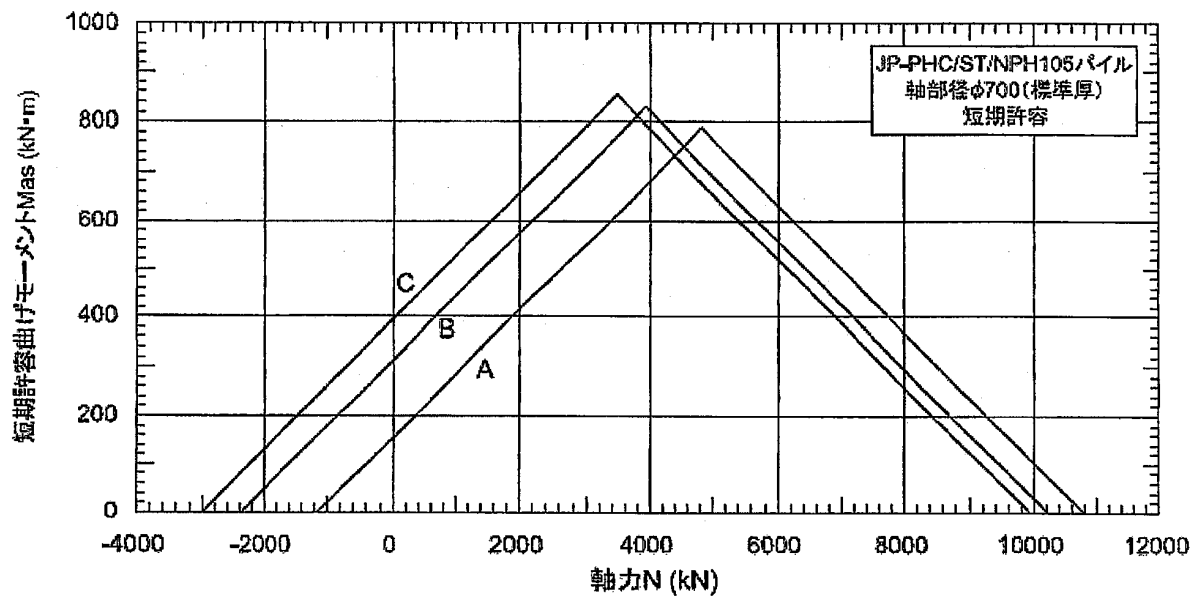
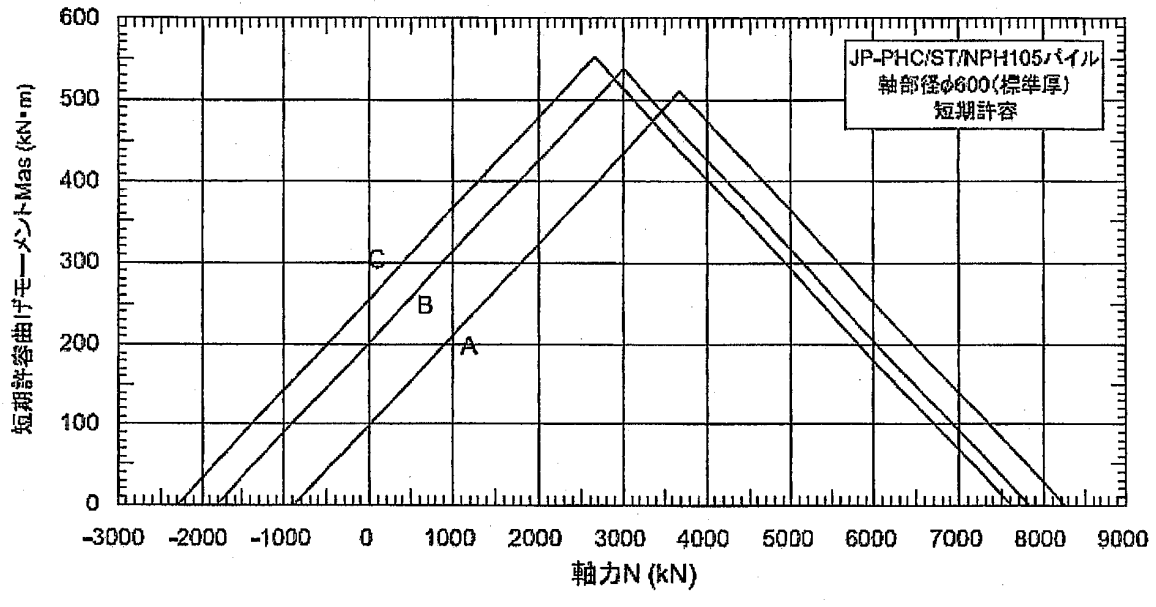
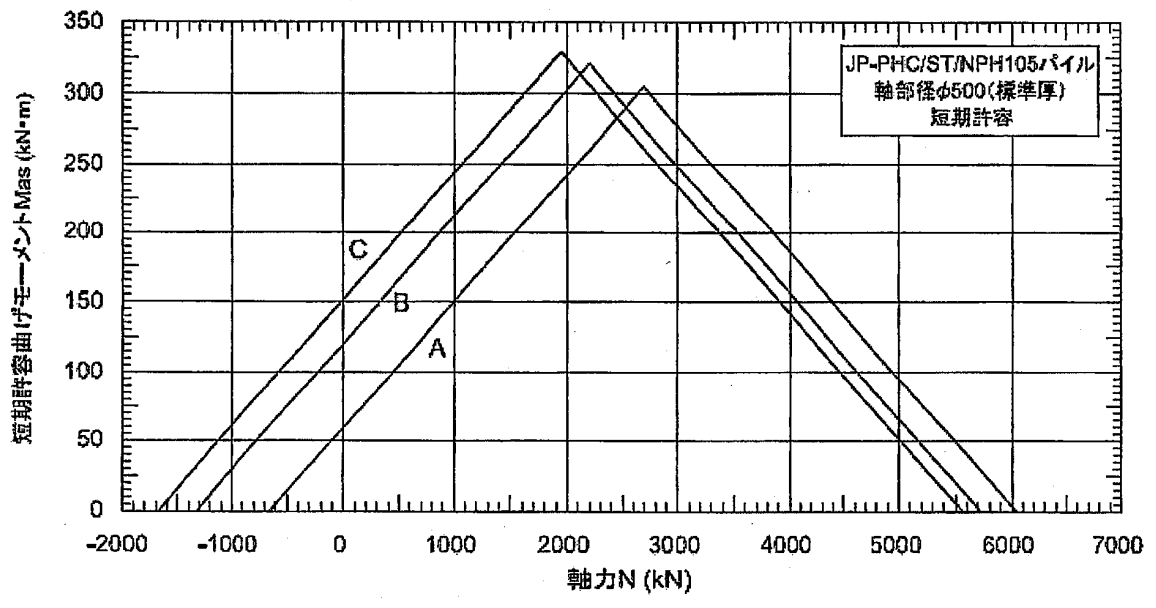
※ 外径・厚さ・鋼管板厚以外の数値は
腐食しろ1mmを考慮した値を示す。

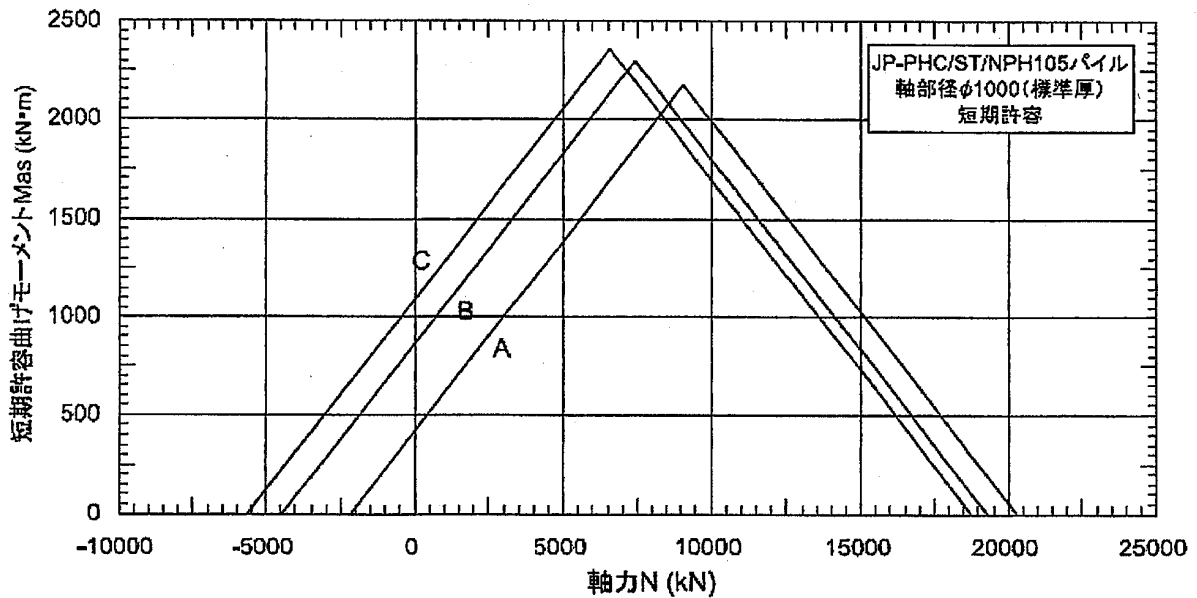
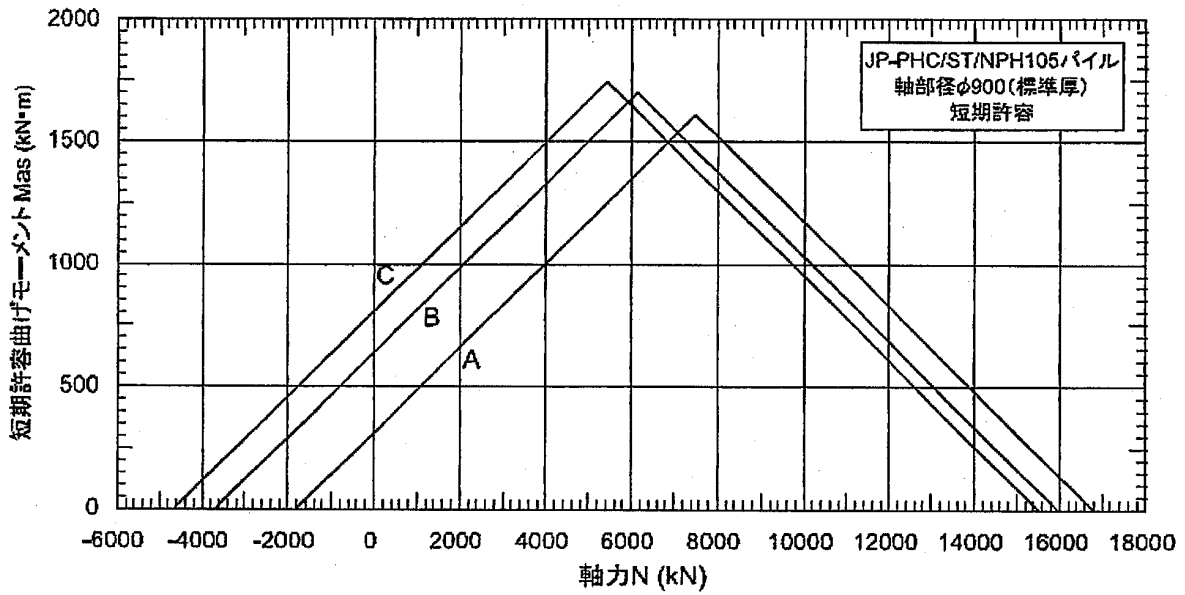
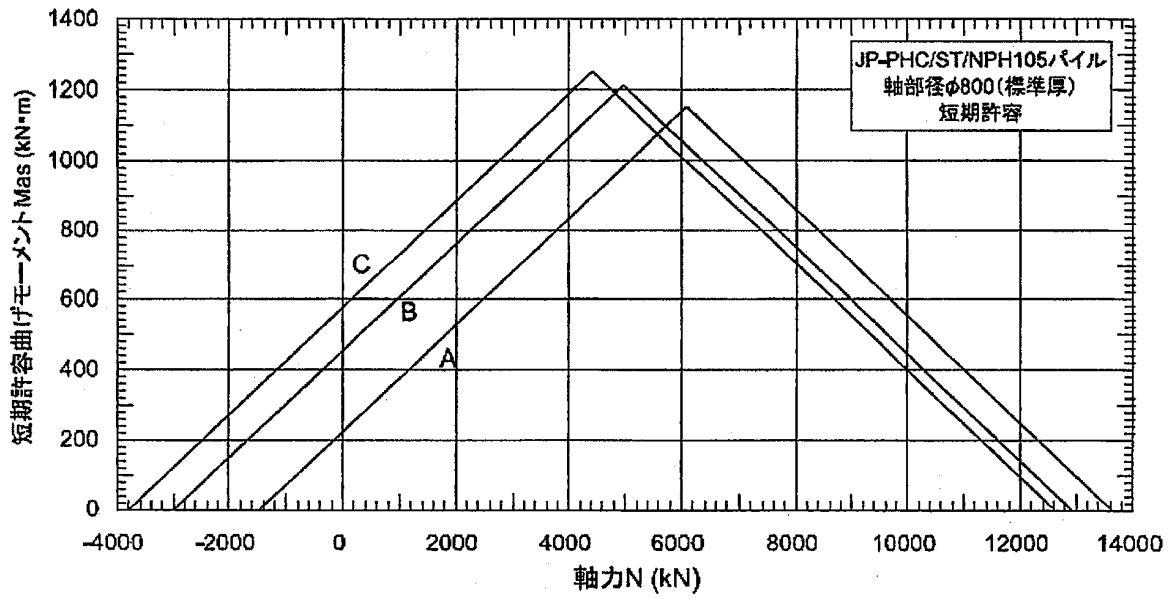


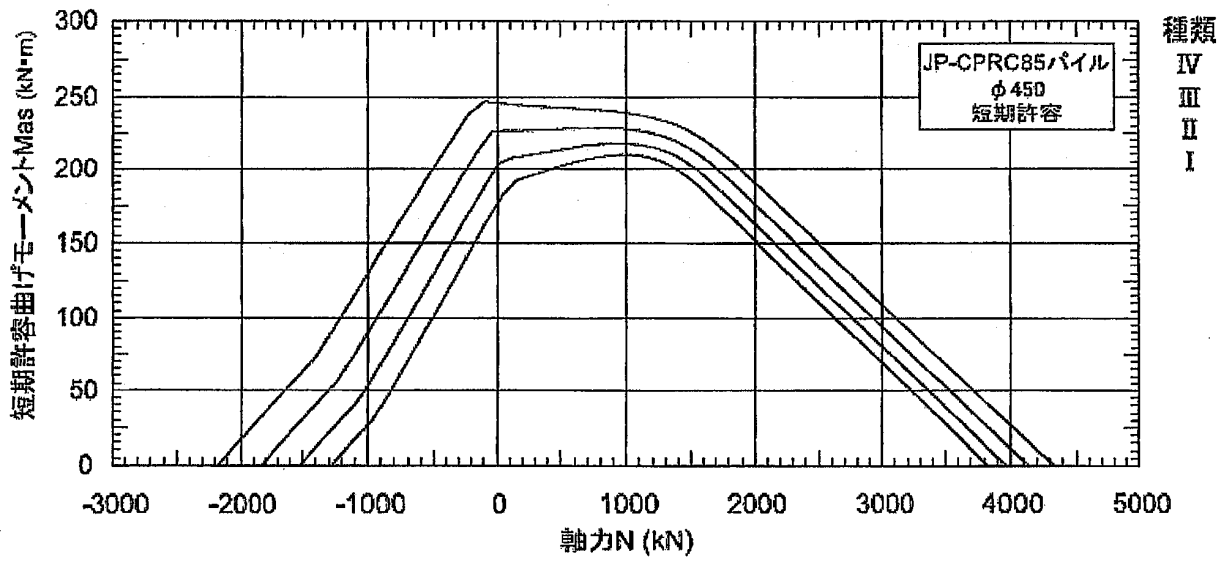
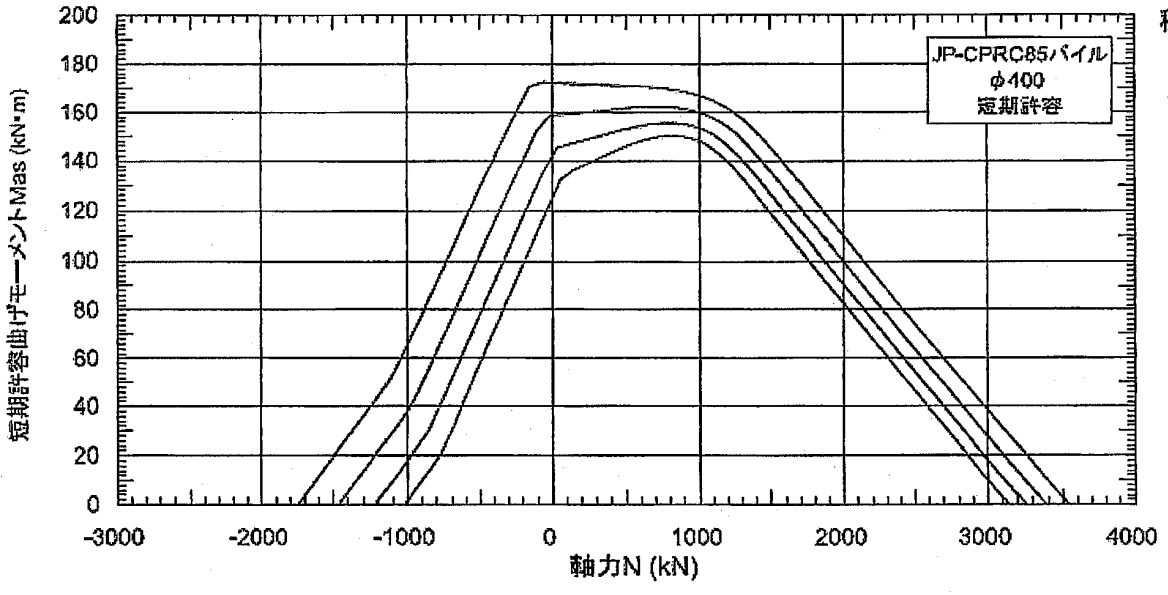
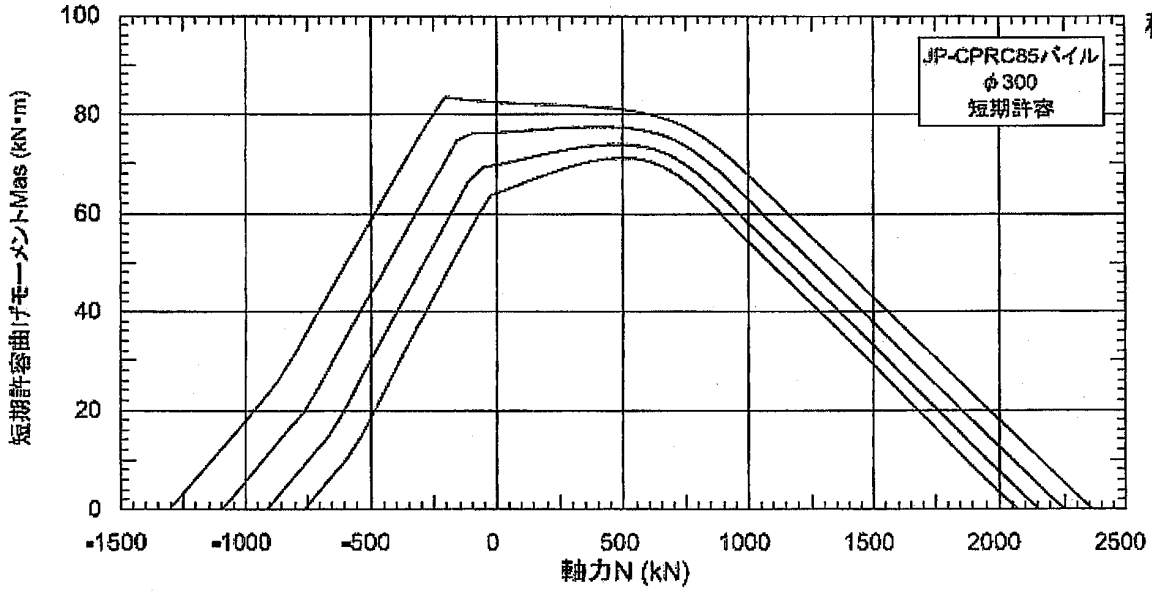


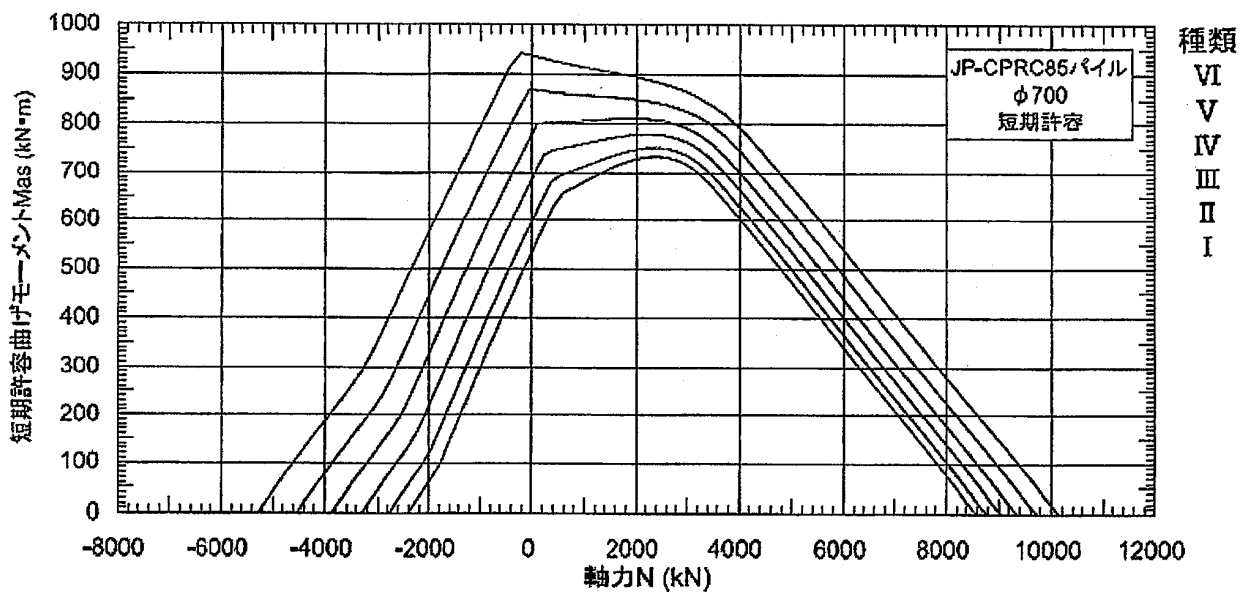
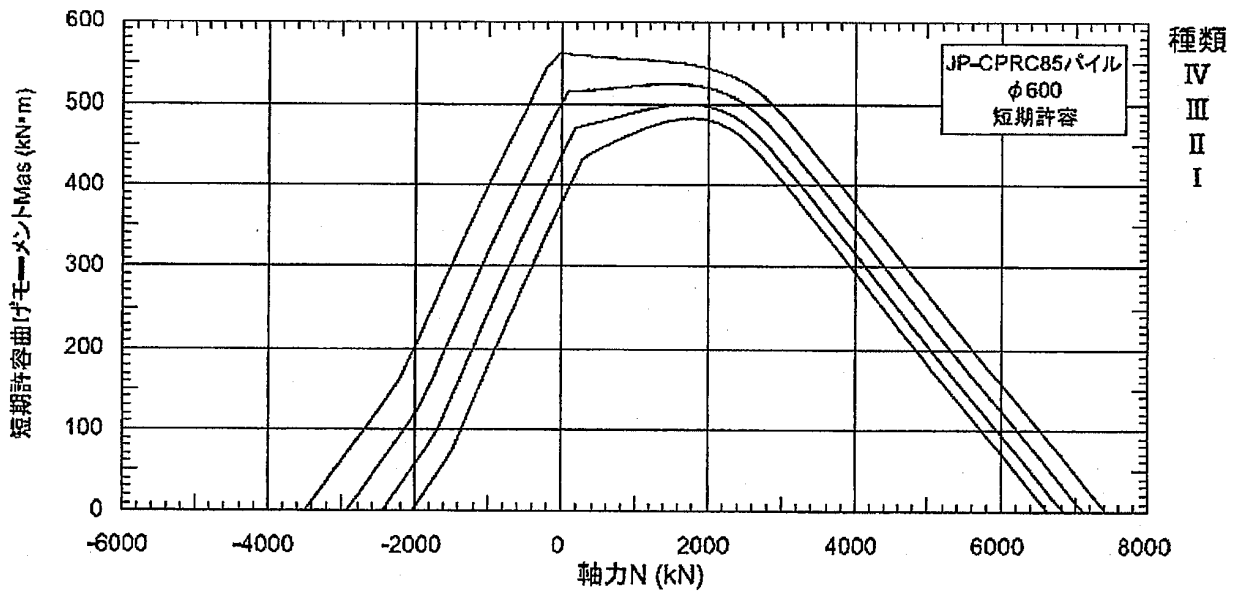
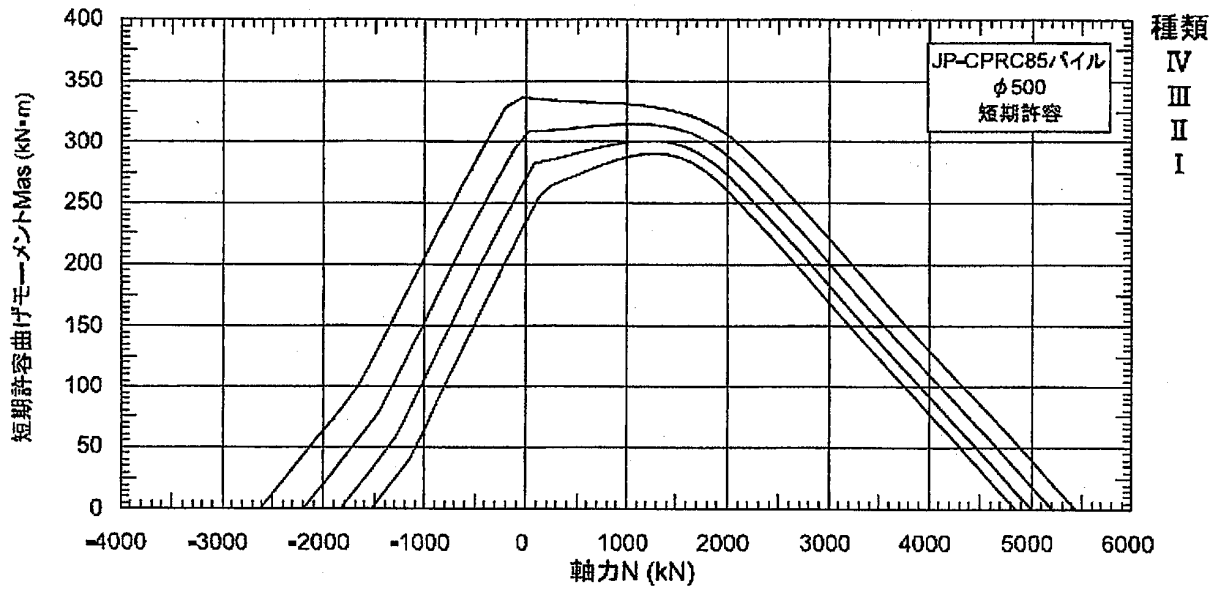


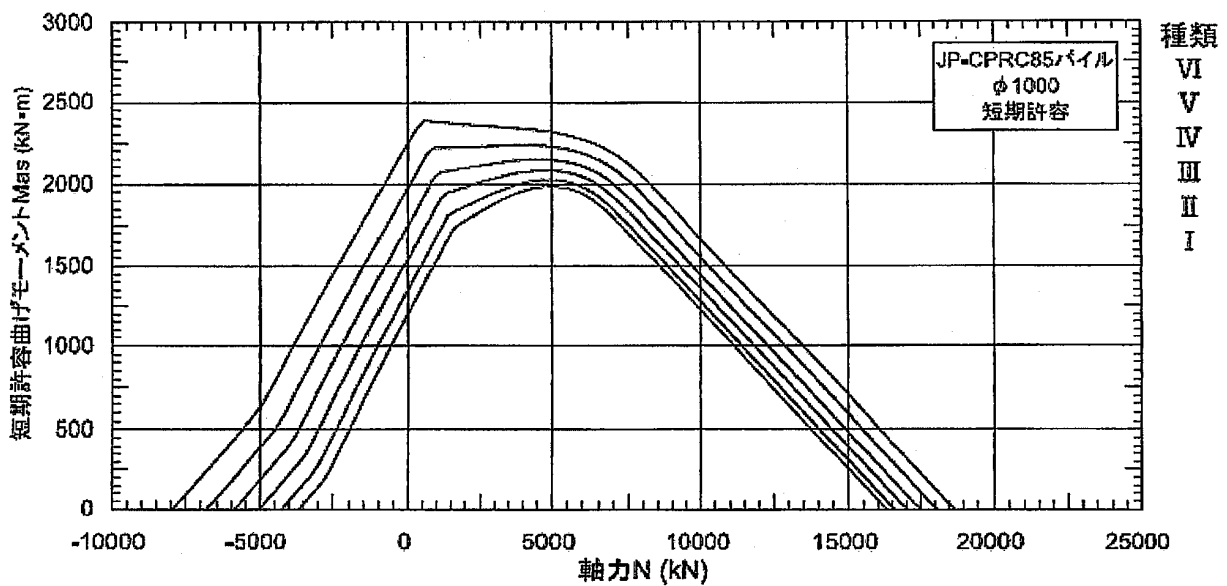
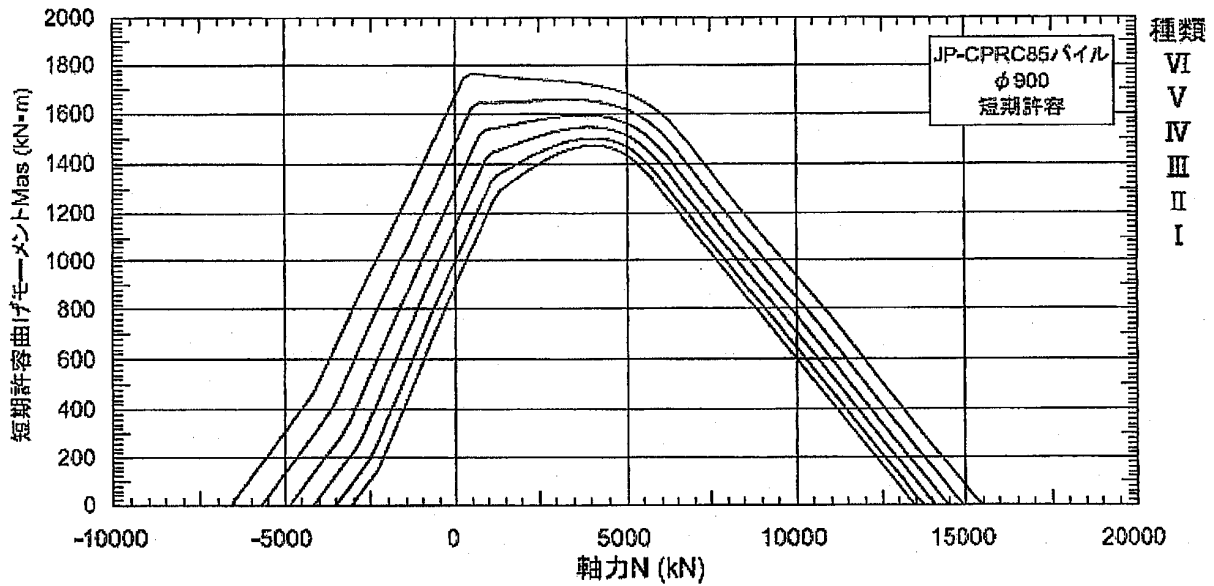
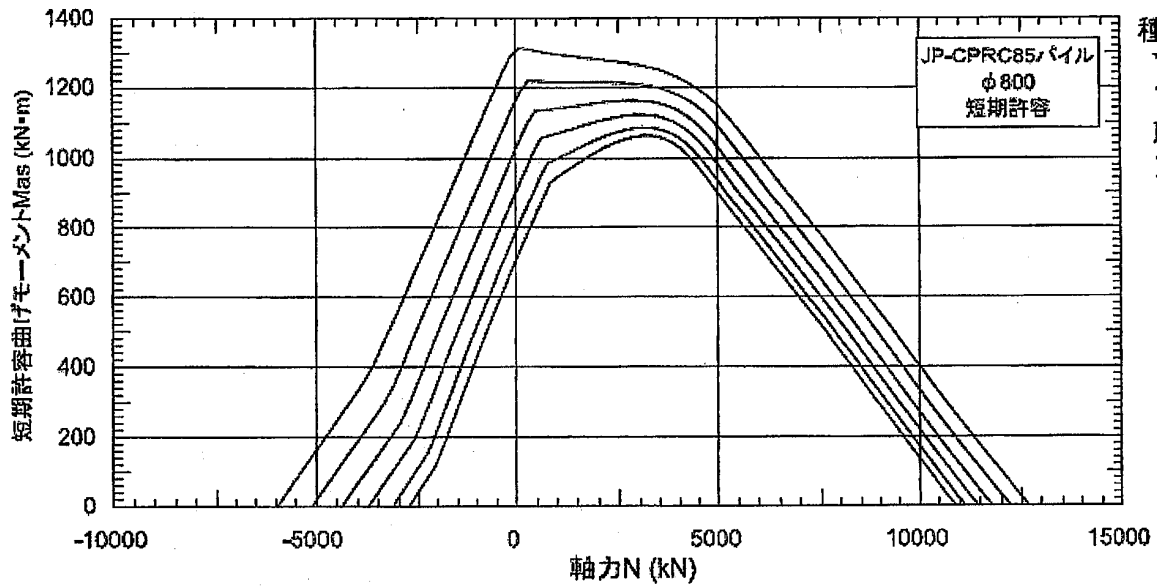


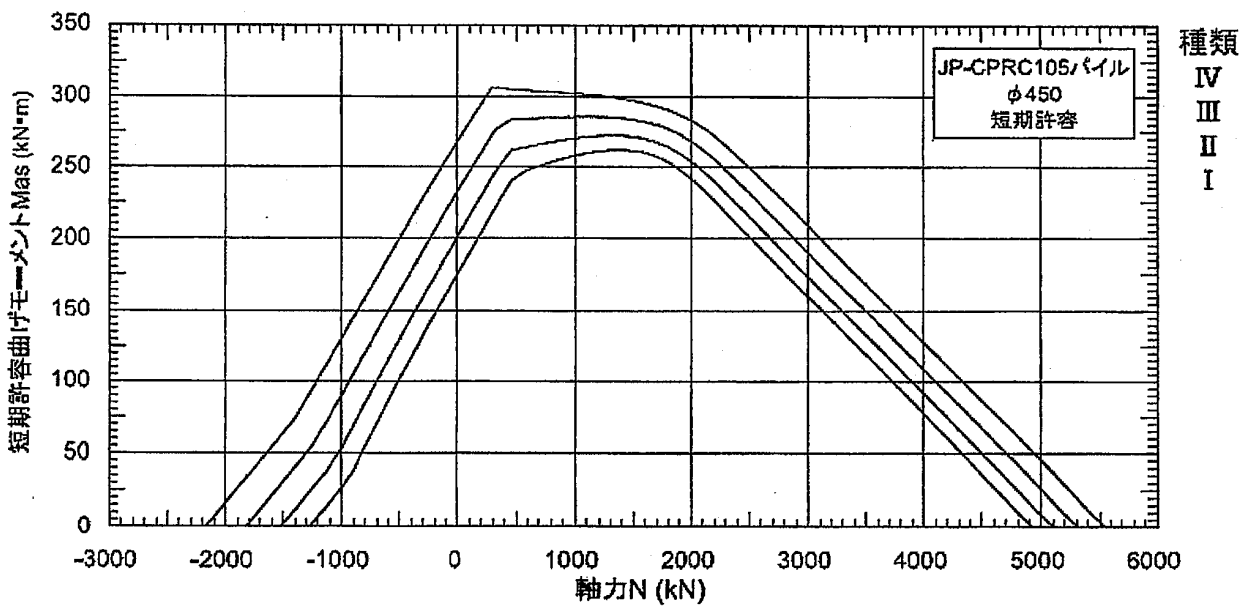
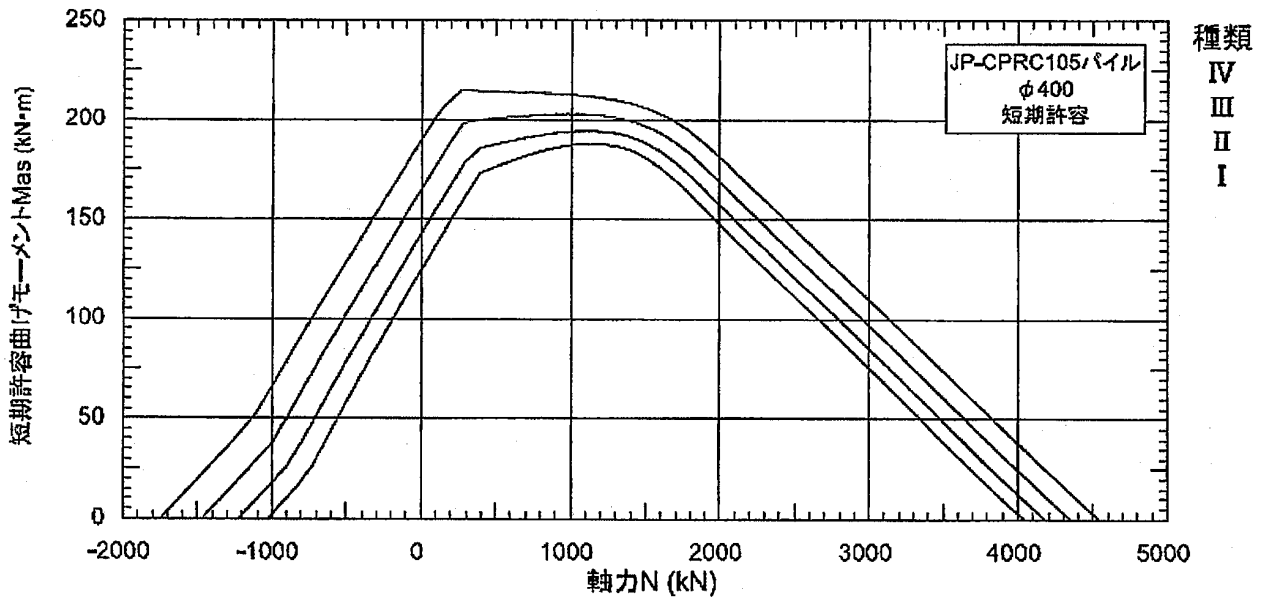
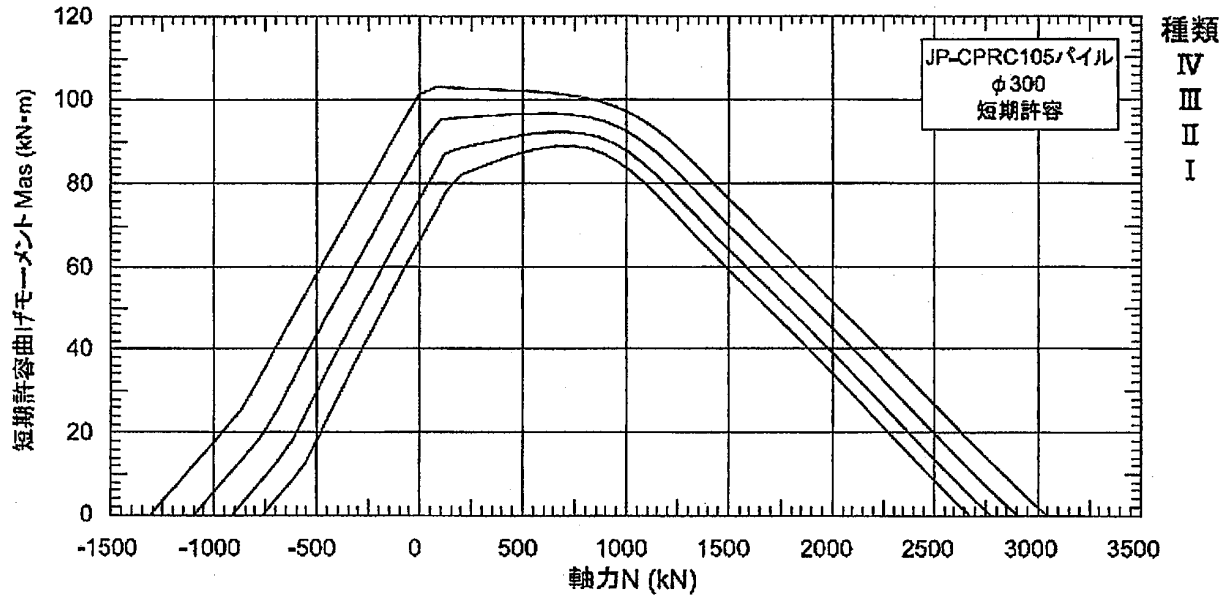


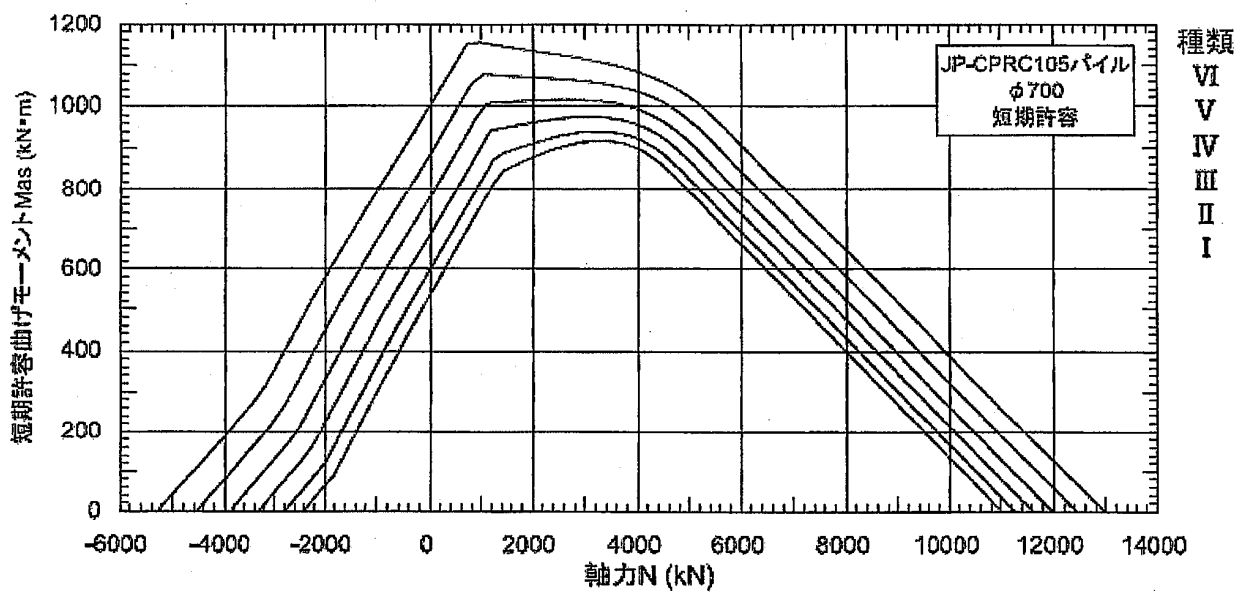
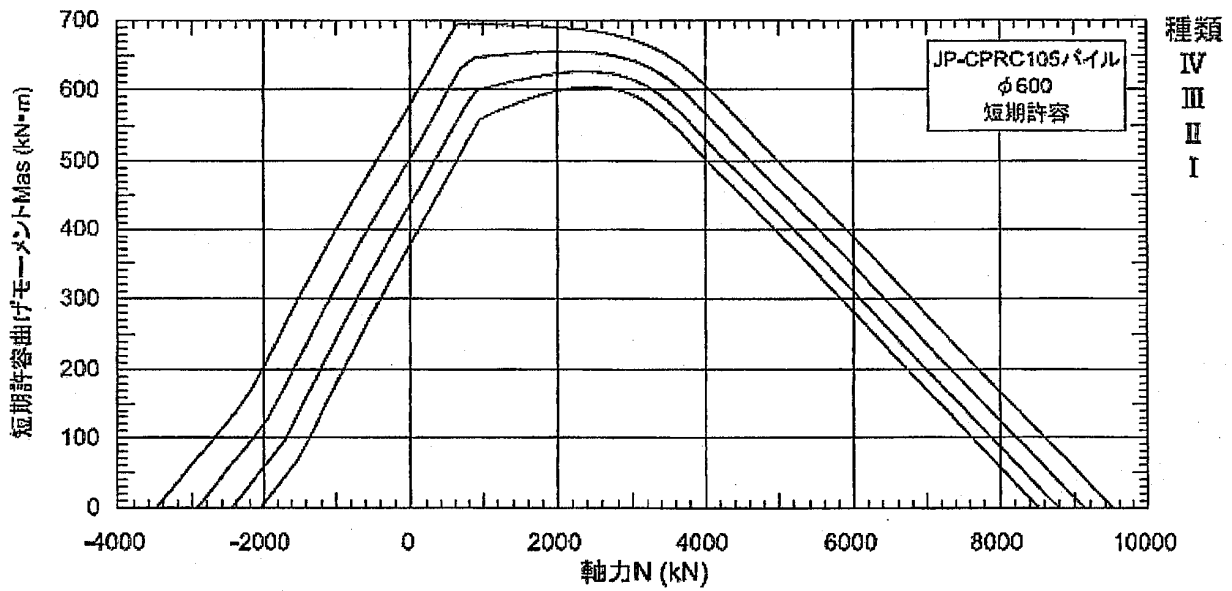
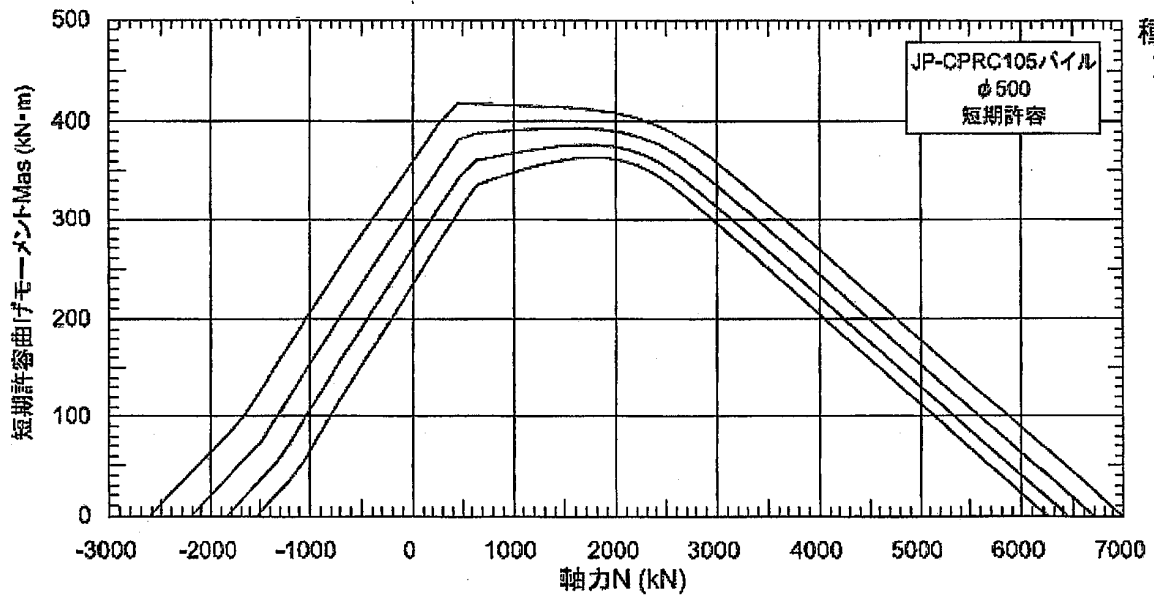


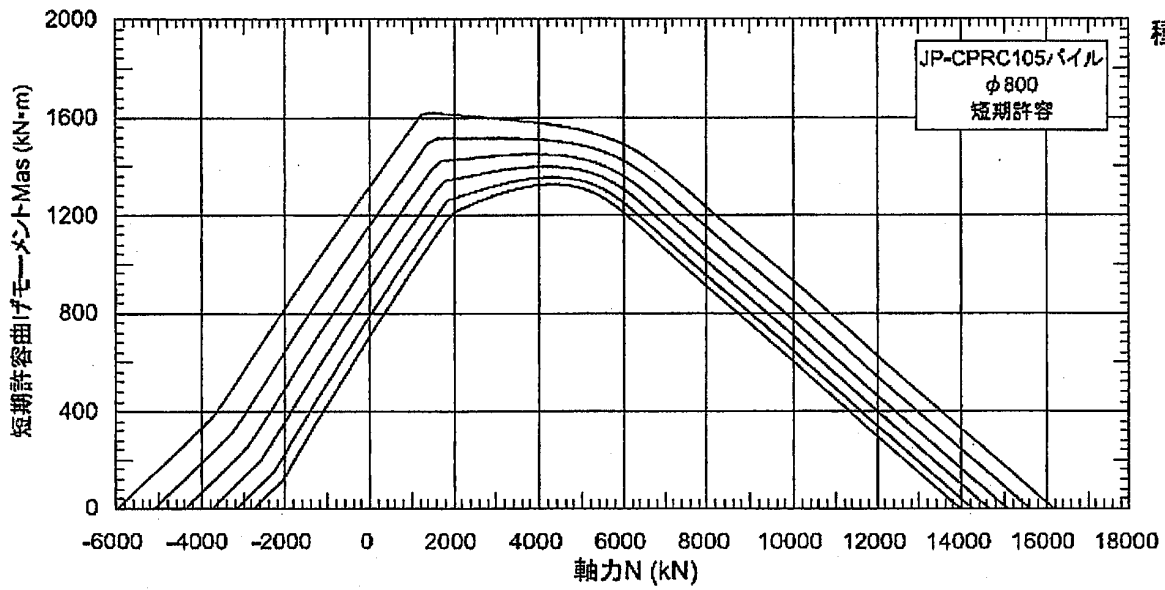




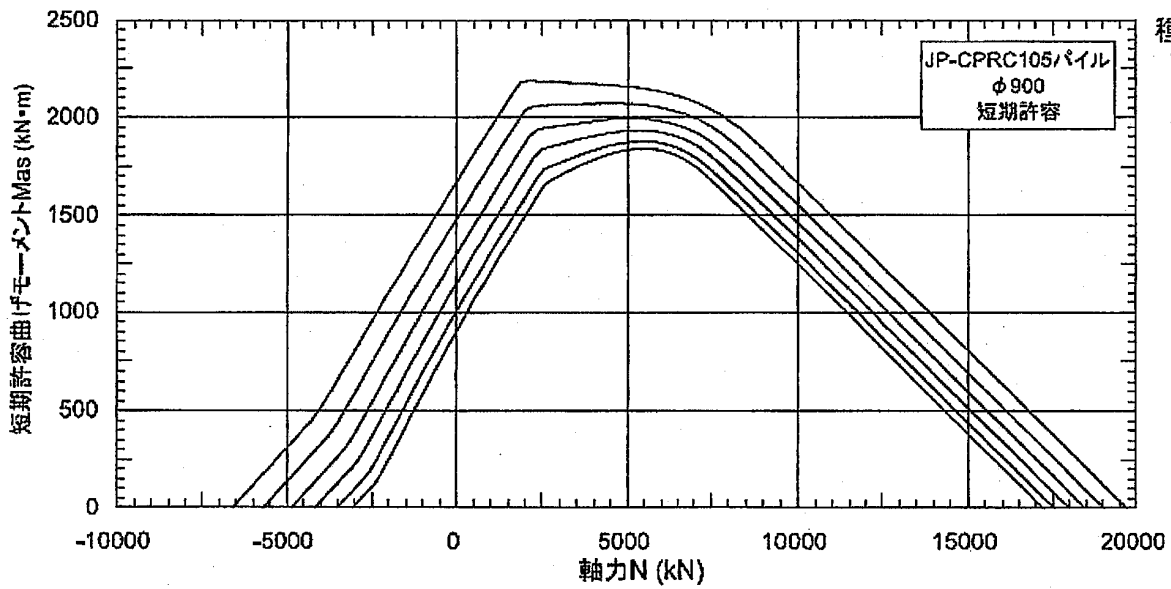




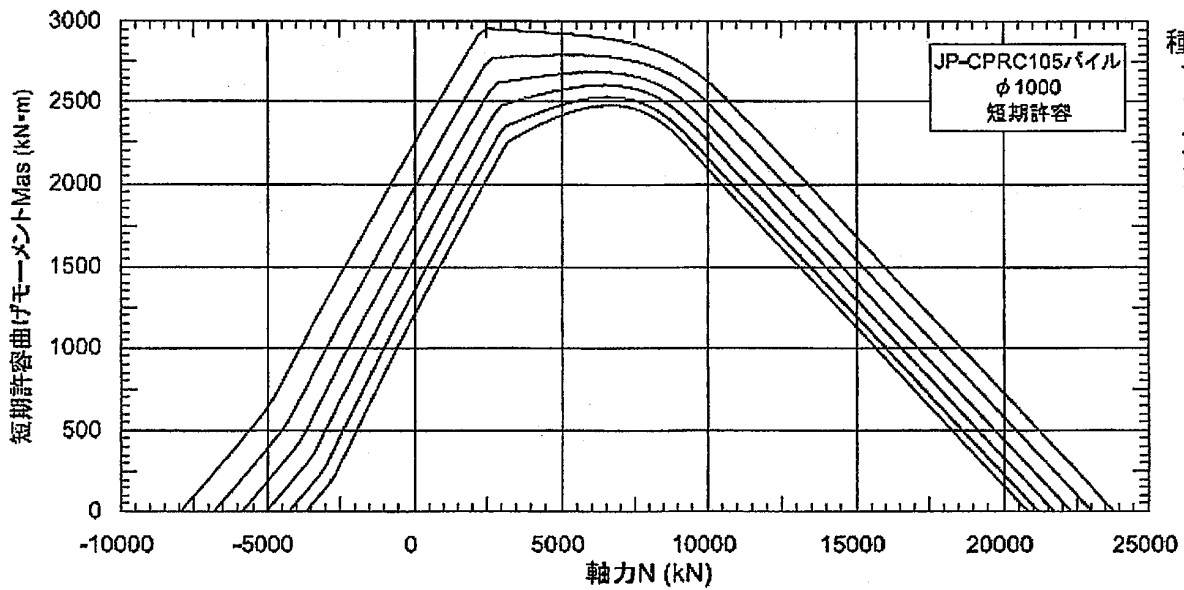




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VI
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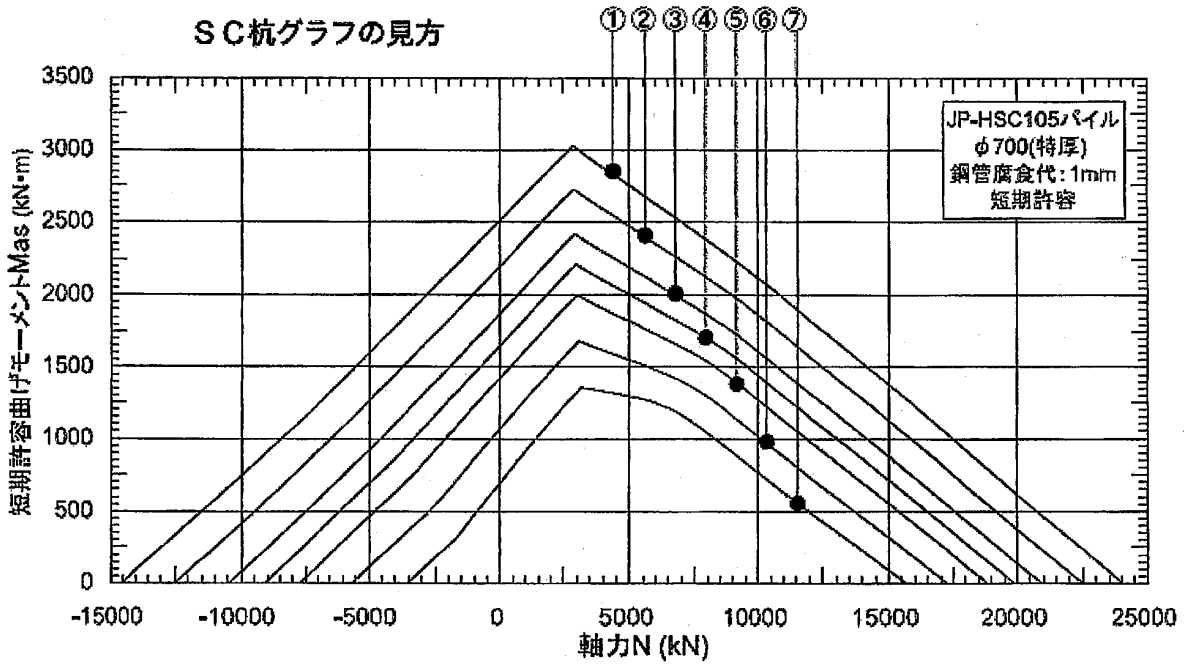


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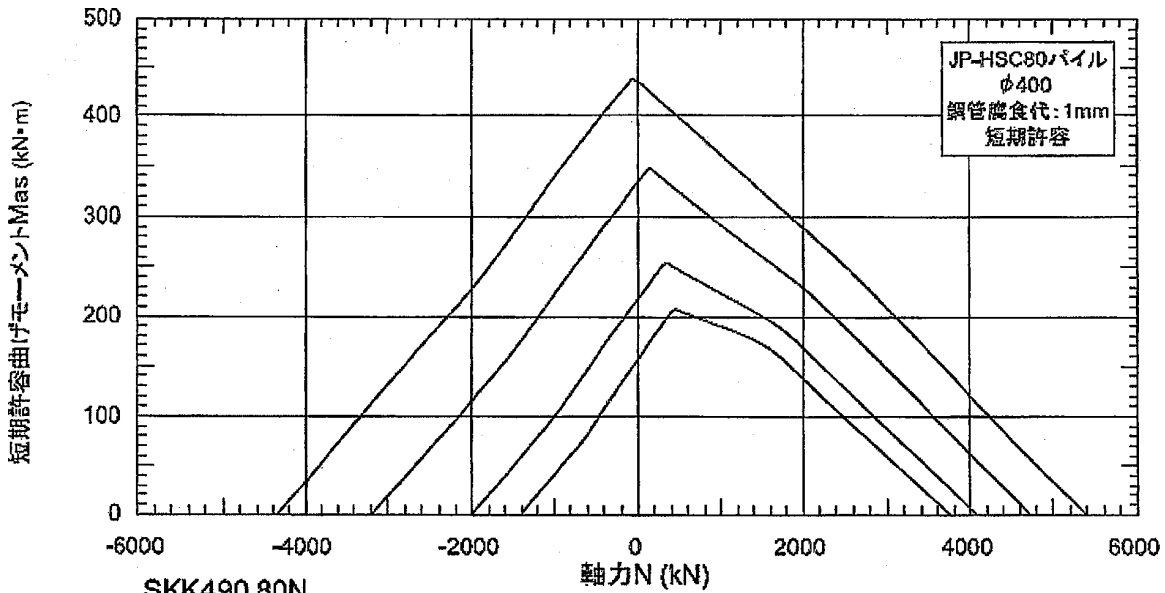
種類
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SC杭グラフの見方



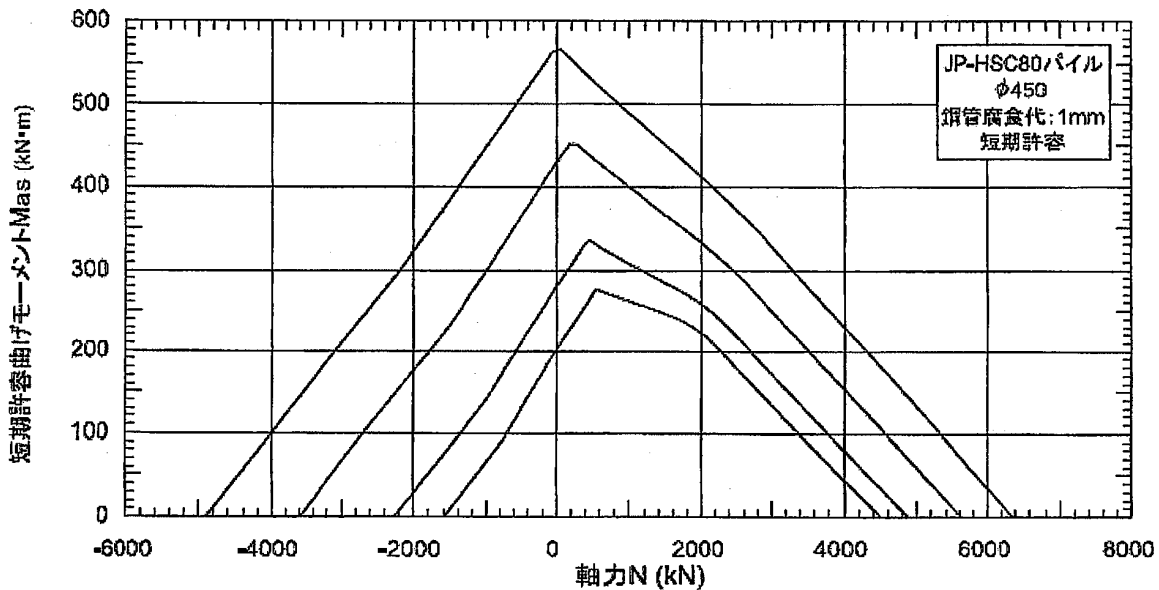
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 - ts=14 ④
 - ts=12 ⑤
 - ts=9 ⑥
 - ts=6 ⑦

SKK490 80N

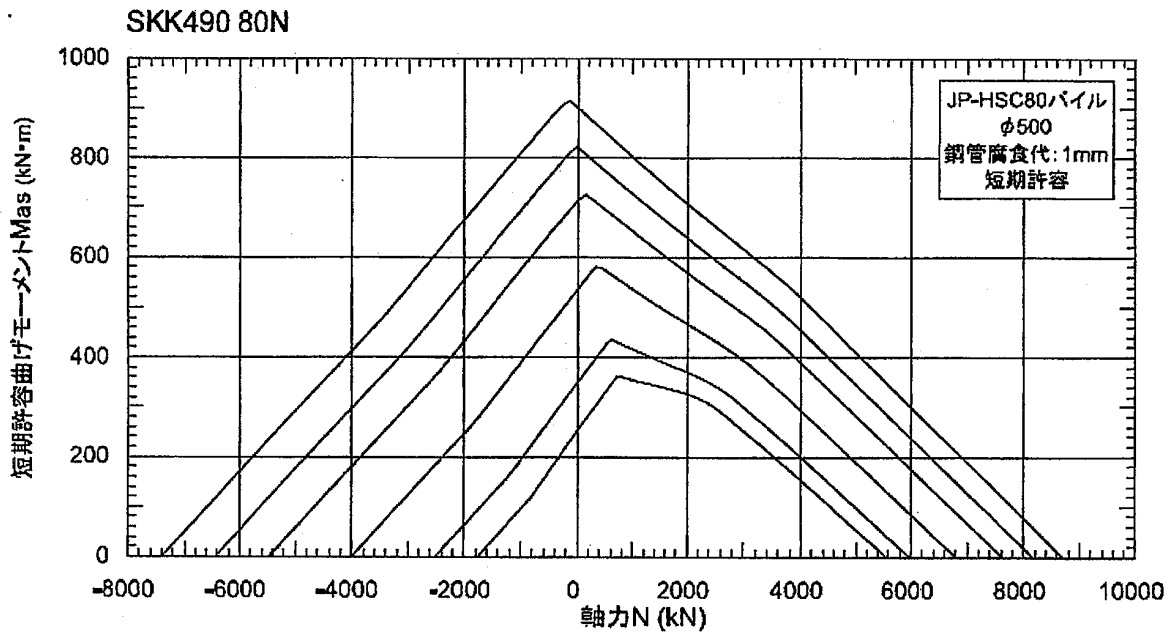


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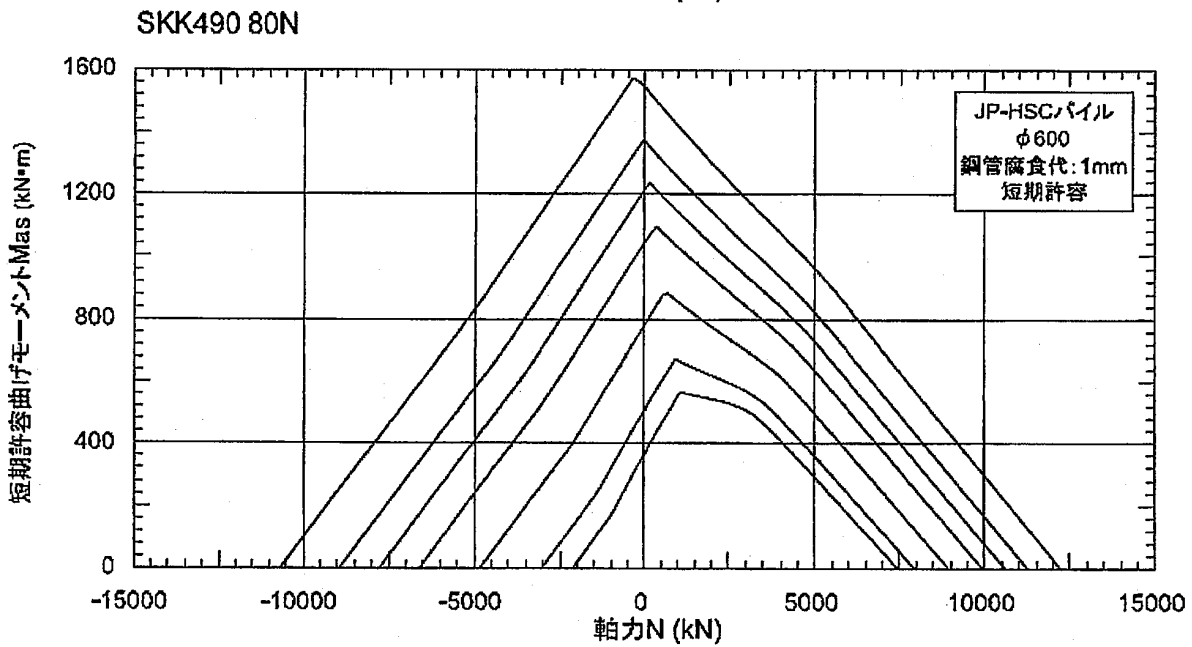
SKK490 80N



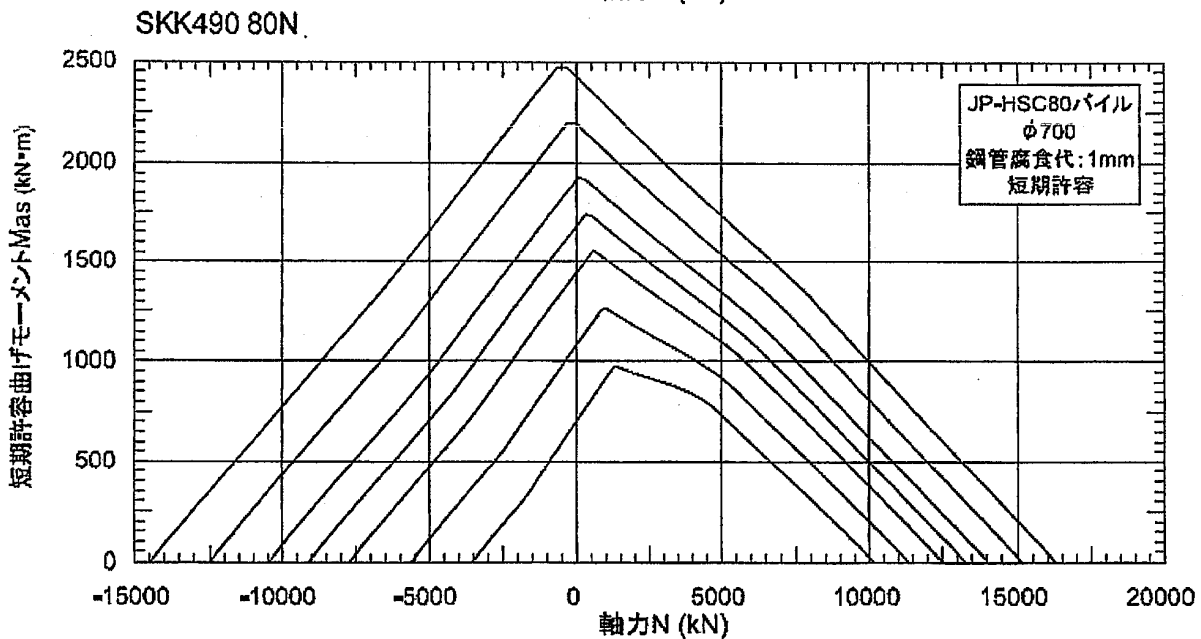
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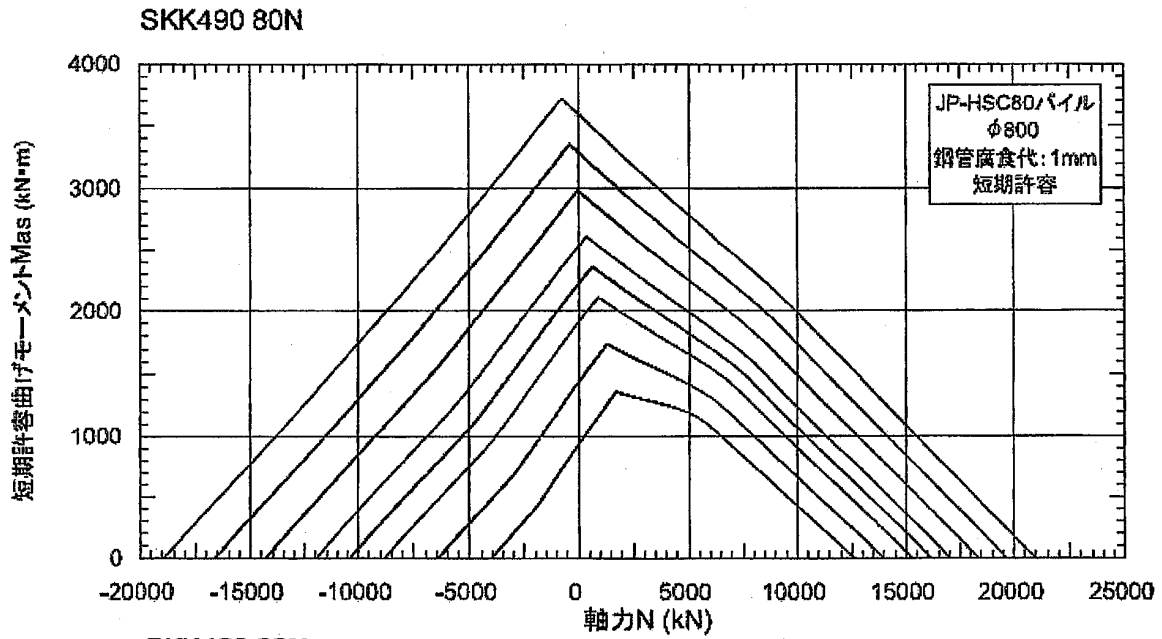
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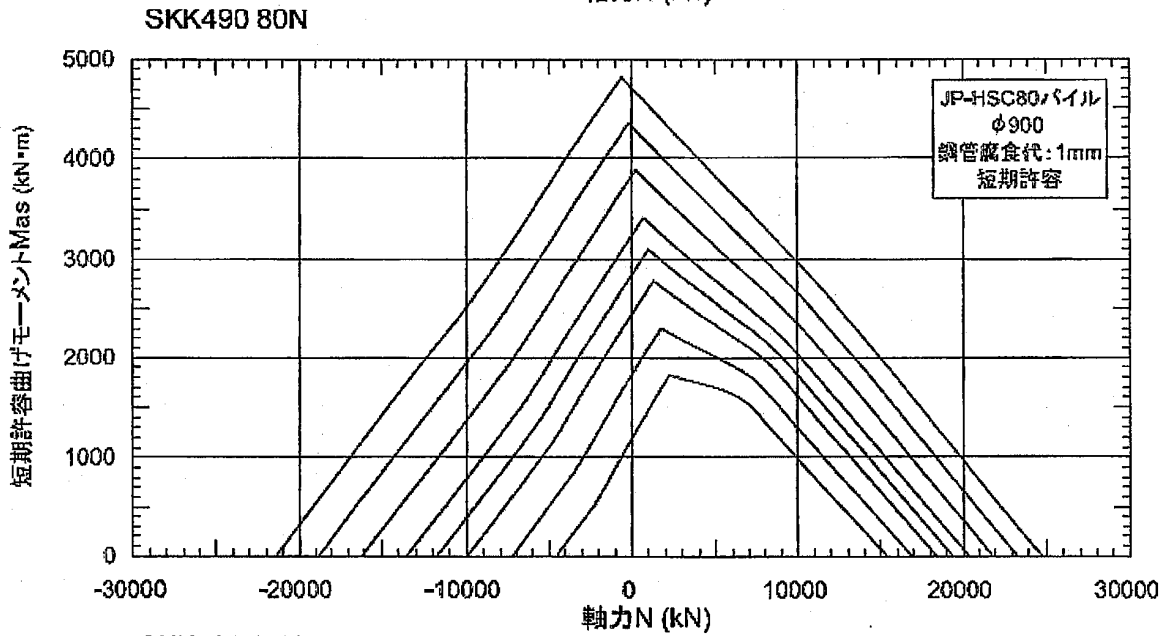
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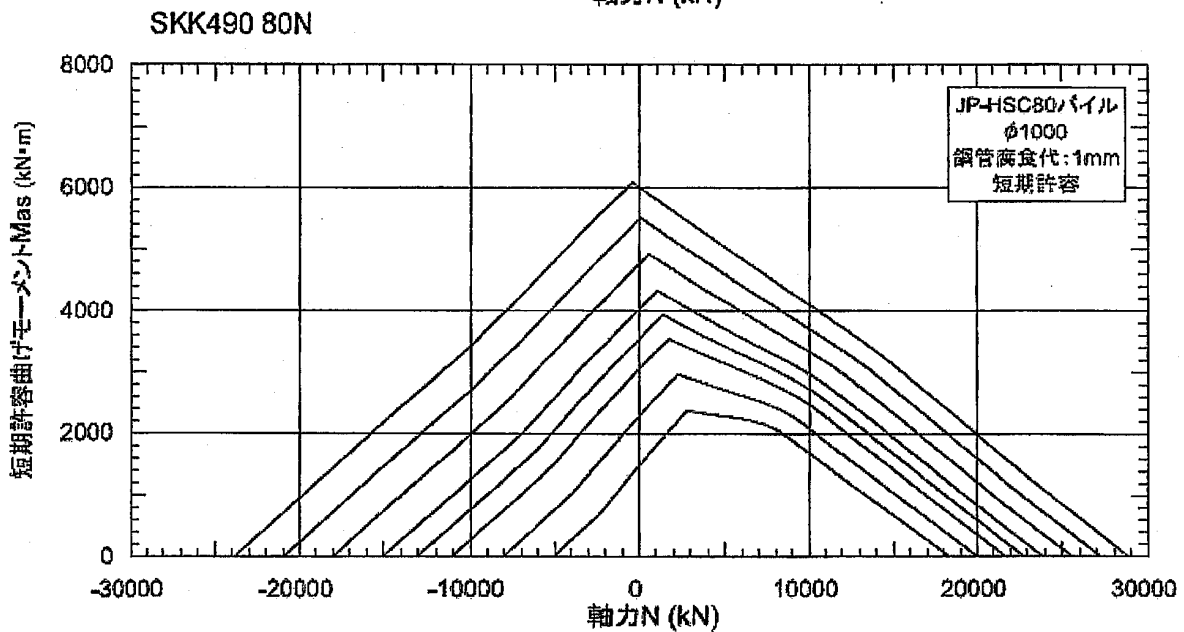
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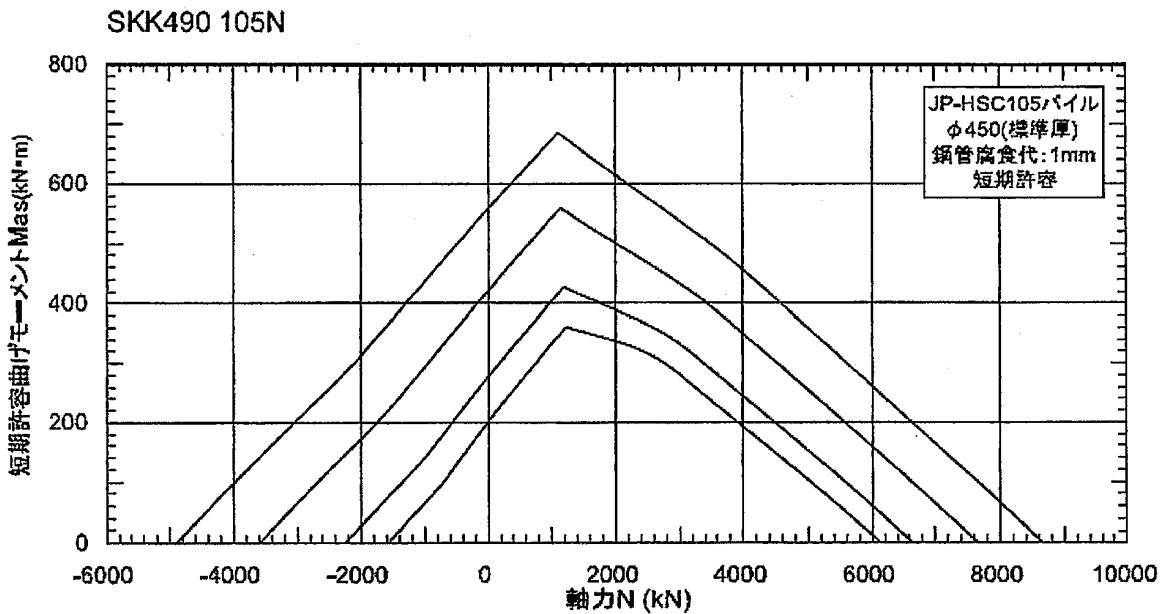
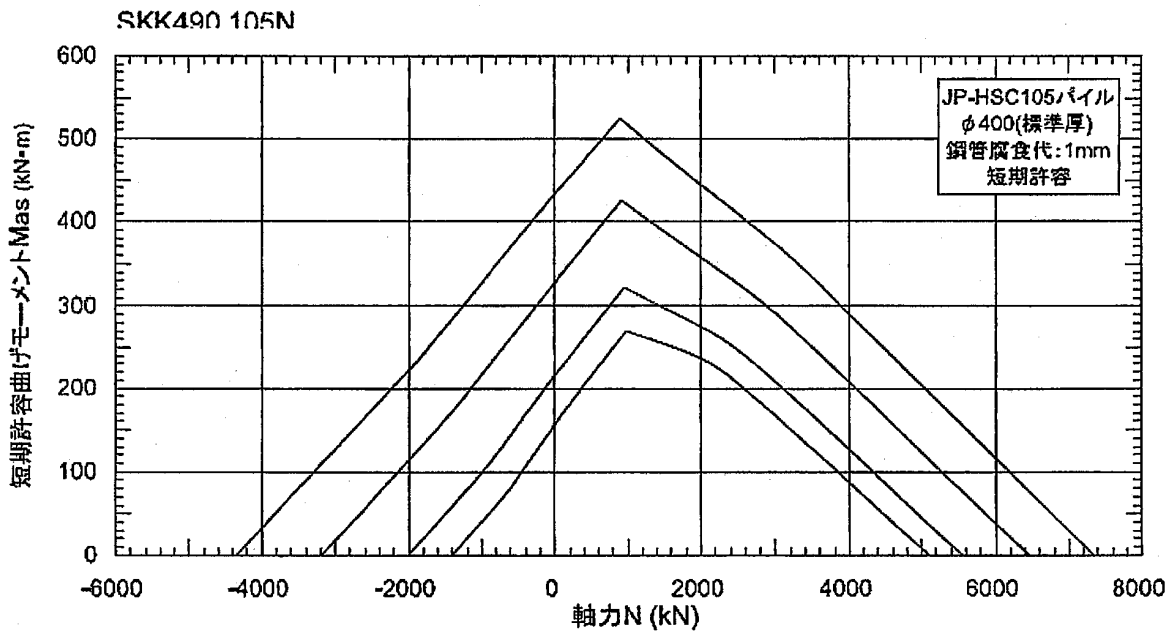
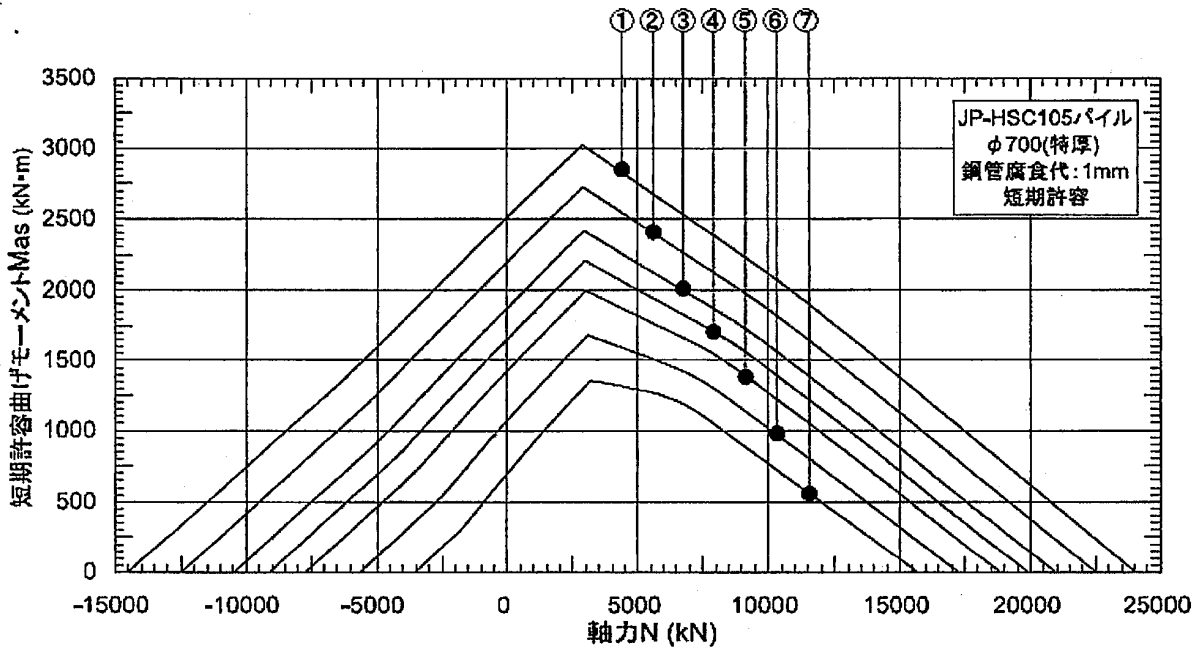
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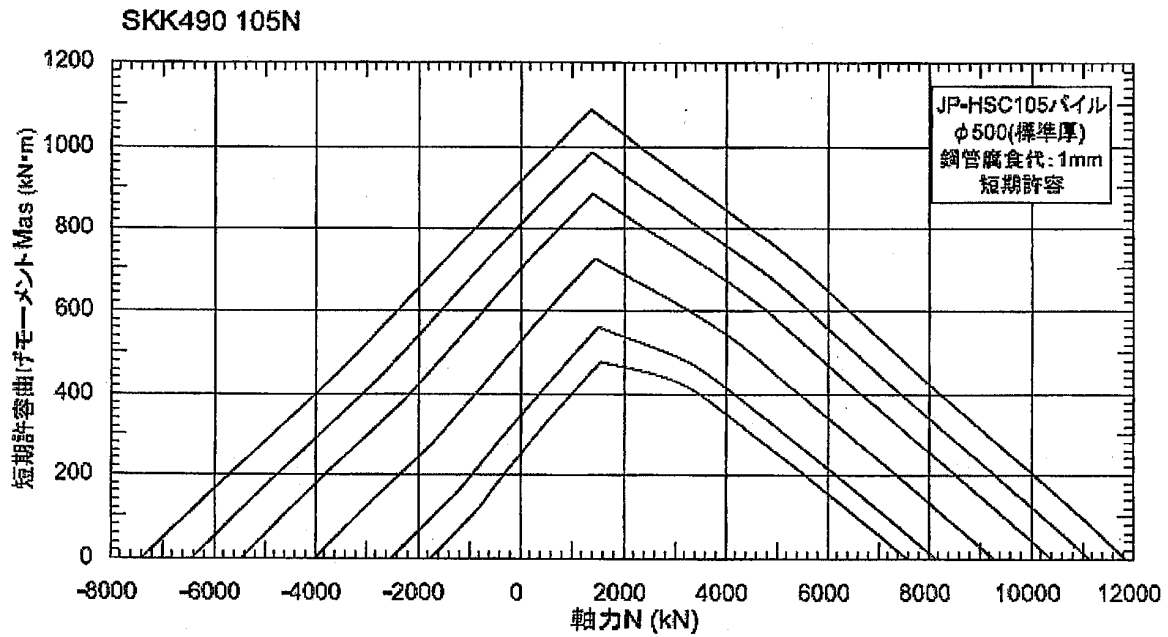


鋼管厚 (mm)
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ts=12
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ts=6

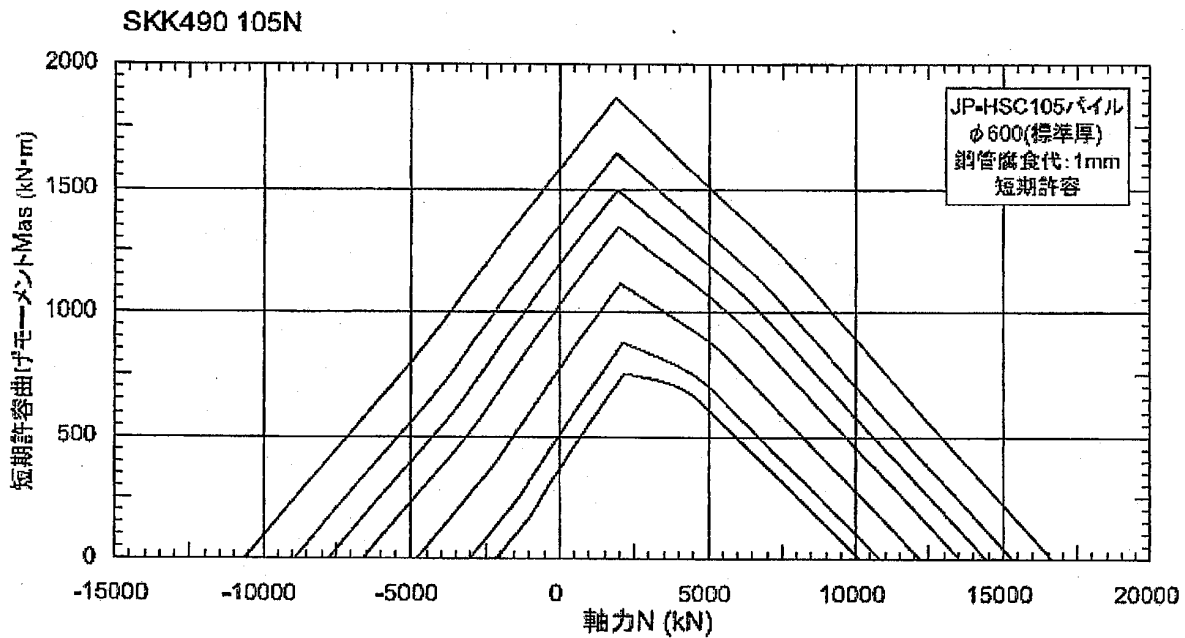


鋼管厚 (mm)
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ts=16
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ts=12
ts=9
ts=6

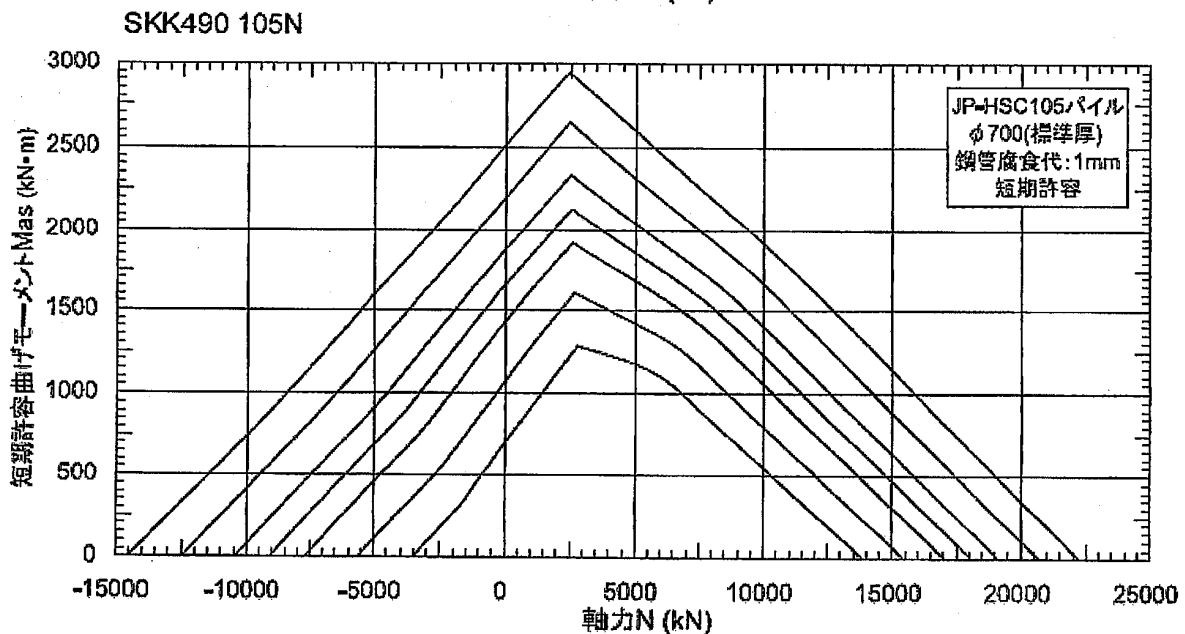




鋼管厚
(mm)
ts=16
ts=14
ts=12
ts=9
ts=6
ts=4.5

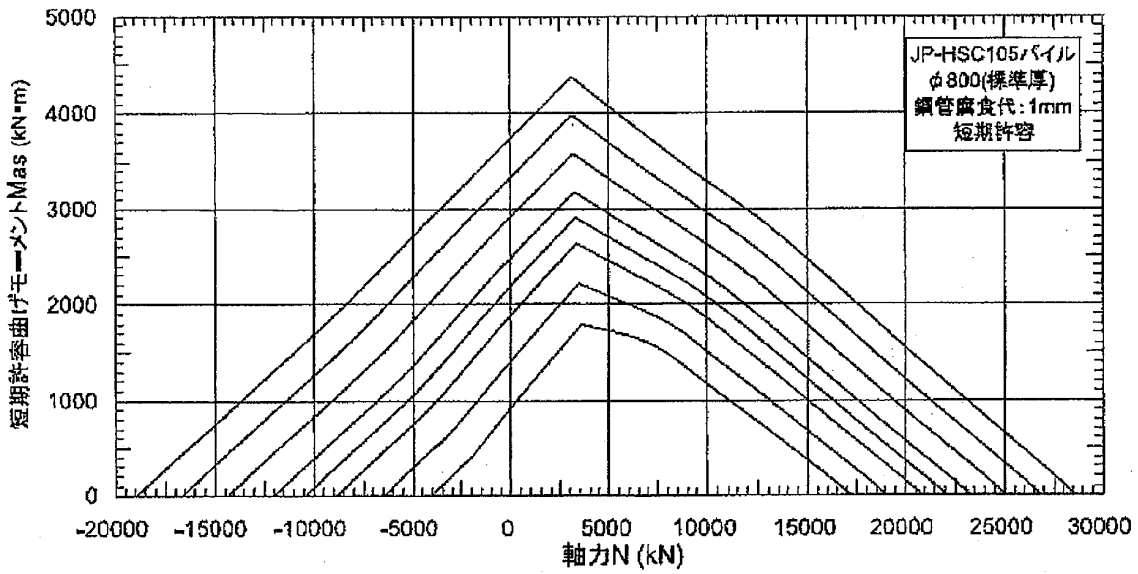


鋼管厚
(mm)
ts=19
ts=16
ts=14
ts=12
ts=9
ts=6
ts=4.5



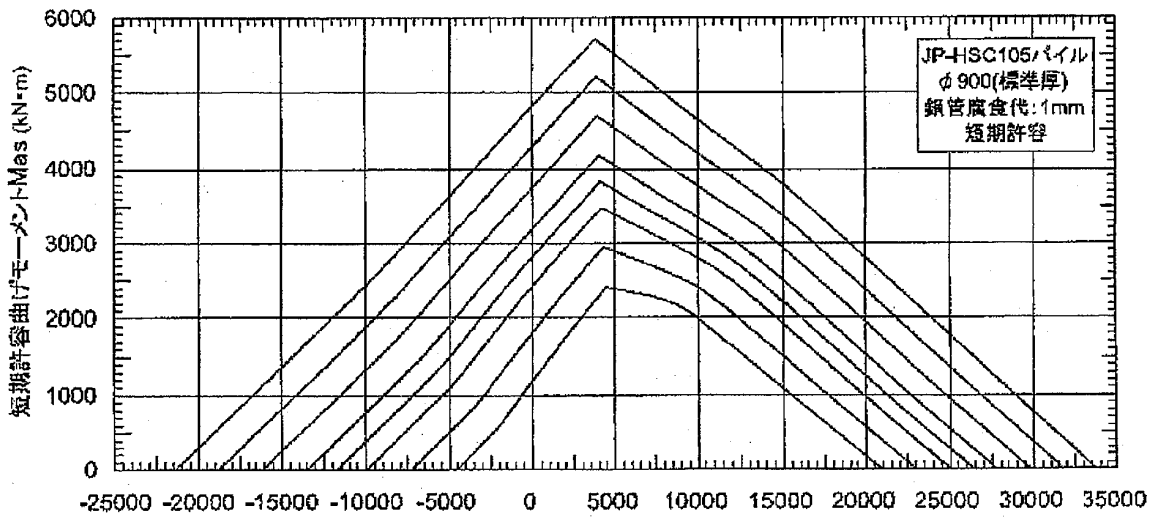
鋼管厚
(mm)
ts=22
ts=19
ts=16
ts=14
ts=12
ts=9
ts=6

SKK490 105N



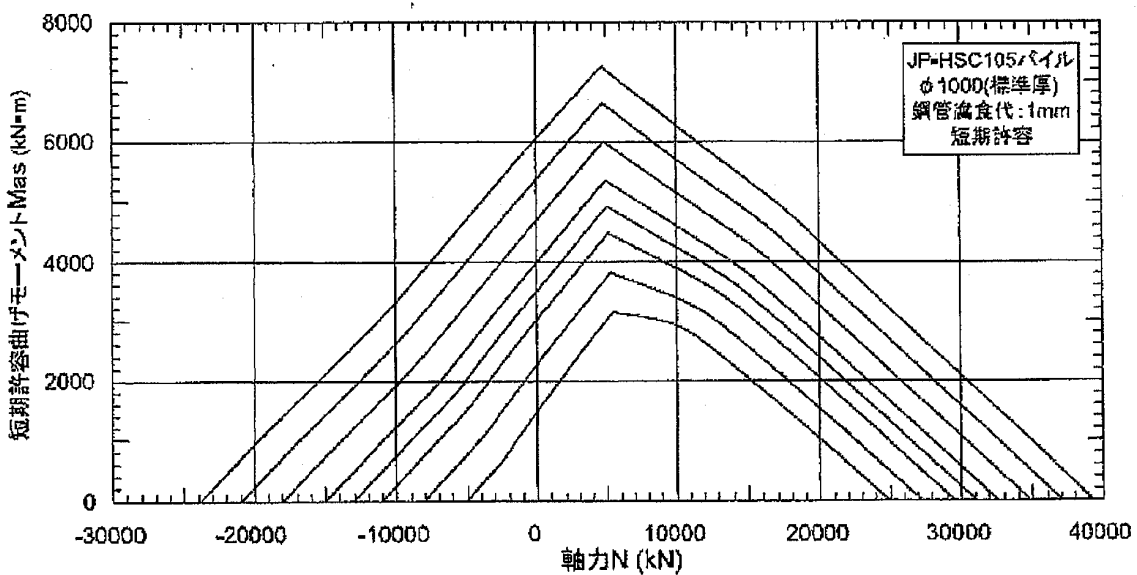
鋼管厚 (mm)
ts=25
ts=22
ts=19
ts=16
ts=14
ts=12
ts=9
ts=6

SKK490 105N



鋼管厚 (mm)
ts=25
ts=22
ts=19
ts=16
ts=14
ts=12
ts=9
ts=6

SKK490 105N



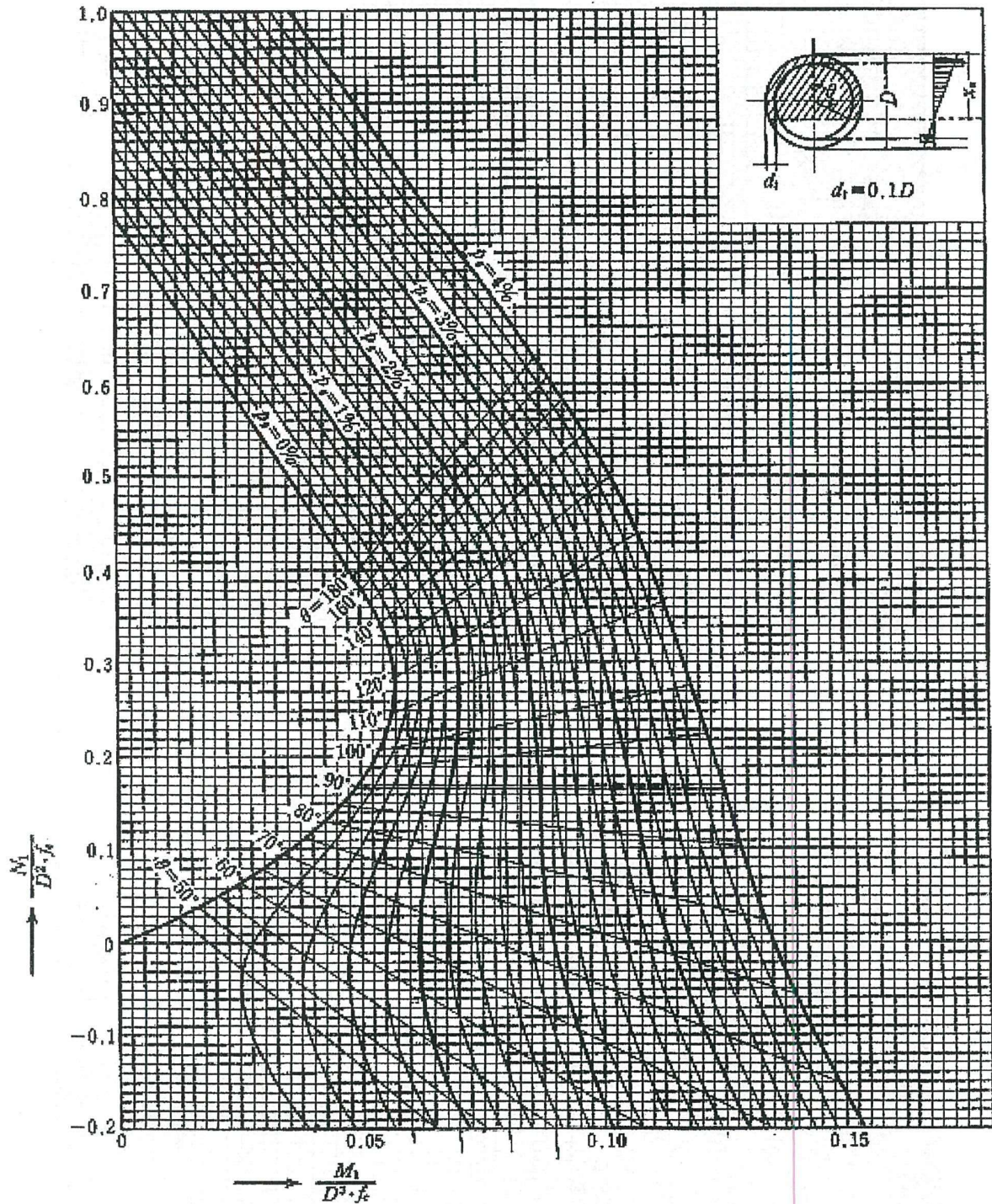
鋼管厚 (mm)
ts=25
ts=22
ts=19
ts=16
ts=14
ts=12
ts=9
ts=6

鉄筋の断面数量

異形棒鋼の断面積および周長表 (太字は断面積mm²、細字は周長mm)

呼び名	単位質量 (kg/m)	1	2	3	4	5	6	7	8	9	10
D6	0.249	32	64	96	128	160	192	224	256	288	320
		20	40	60	80	100	120	140	160	180	200
D8	0.389	50	99	149	198	248	297	347	396	446	495
		25	50	75	100	125	150	175	200	225	250
D10	0.560	71	143	214	285	357	428	499	570	642	713
		30	60	90	120	150	180	210	240	270	300
D13	0.995	127	254	381	508	635	762	889	1016	1143	1270
		40	80	120	160	200	240	280	320	360	400
D16	1.56	199	398	597	796	995	1194	1393	1592	1791	1990
		50	100	150	200	250	300	350	400	450	500
D19	2.25	287	574	861	1148	1435	1722	2009	2296	2583	2870
		60	120	180	240	300	360	420	480	540	600
D22	3.04	387	774	1161	1548	1935	2322	2709	3096	3483	3870
		70	140	210	280	350	420	490	560	630	700
D25	3.98	507	1014	1521	2028	2535	3042	3549	4056	4563	5070
		80	160	240	320	400	480	560	640	720	800
D29	5.04	642	1284	1926	2568	3210	3852	4494	5136	5778	6420
		90	180	270	360	450	540	630	720	810	900
D32	6.23	794	1588	2382	3176	3970	4764	5558	6352	7146	7940
		100	200	300	400	500	600	700	800	900	1000
D35	7.51	957	1914	2871	3828	4785	5742	6699	7656	8613	9570
		110	220	330	440	550	660	770	880	990	1100
D38	8.95	1140	2280	3420	4560	5700	6840	7980	9120	10260	11400
		120	240	360	480	600	720	840	960	1080	1200
D41	10.5	1340	2680	4020	5360	6700	8040	9380	10720	12060	13400
		130	260	390	520	650	780	910	1040	1170	1300

RC円形断面柱計算図表



$$p_s = (\text{鉄筋全断面積}) / (\text{コンクリート全断面積}), n = 15$$

図 15.3(a) 円形断面柱 (コンクリートで耐力が決まる場合)

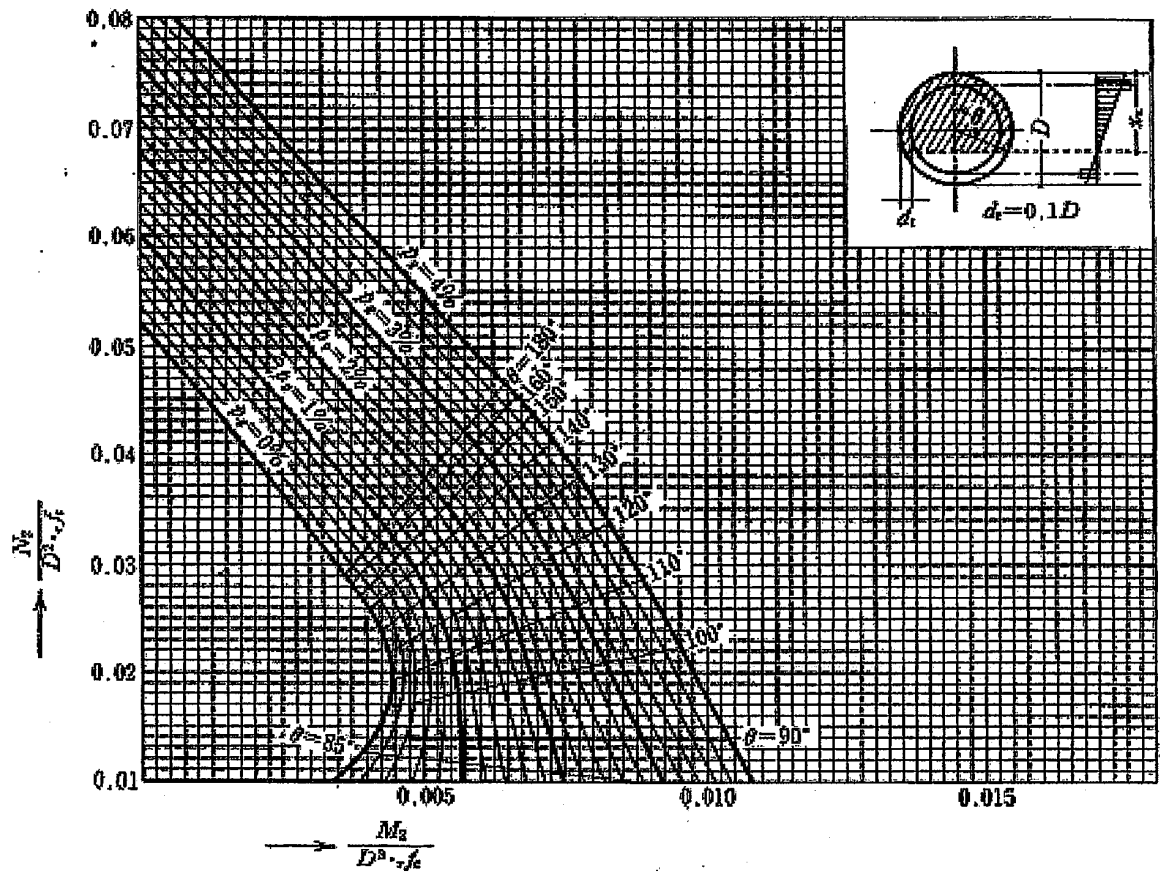


図 15.3(b) 円形断面柱 (圧縮鉄筋で耐力が決まる場合)

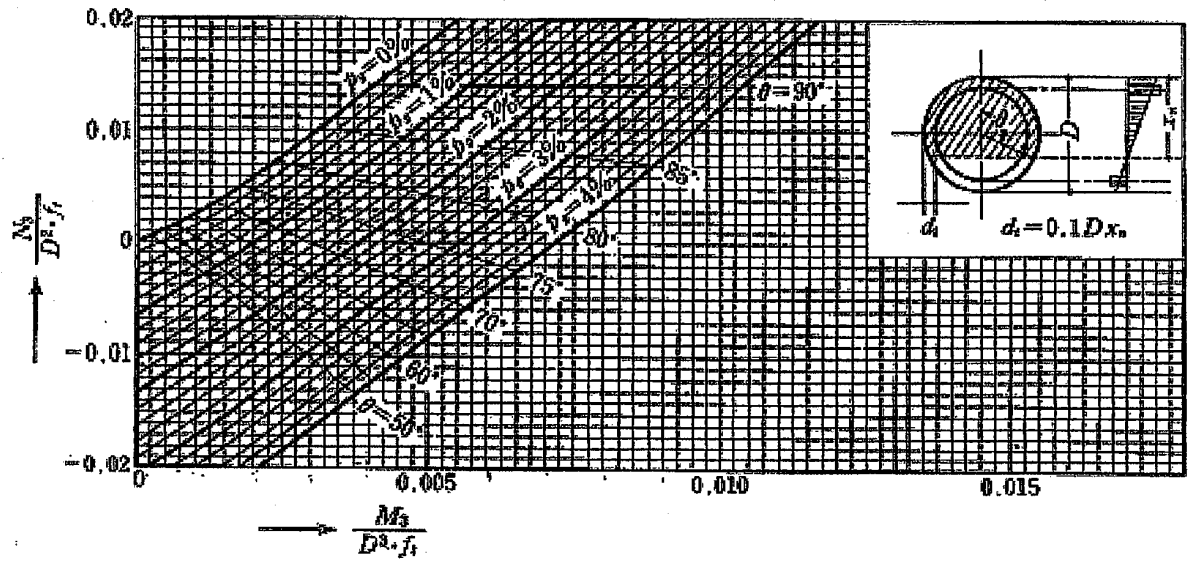


図 15.3(c) 円形断面柱 (引張鉄筋で耐力が決まる場合)