

Reference document for the application of the De Beer method for the prediction of the ultimate (single) unit pile base resistance of CPT (version 11-09-2002)

Introduction

This document summarizes the application of the De Beer method for the determination of the unit pile base resistance out of Cone Penetration Test (CPT) results.

Furthermore it contains the detailed calculation results for different CPT and different pile base diameters. These calculations have been carried out with the calculation software of the Ministry of the Flemish Community (LIN-AOSO), and can be considered as reference calculations in order to verify other calculation software.

De Beer method : calculation methodology

The following methodology has been adopted :

- Application of the De Beer algorithm outlined in De Beer, E. 1971-1972. Méthodes de déduction de la capacité portante d'un pieu à partir des résultats des essais de pénétration. *Annales des Travaux Publiques de Belgique/Tijdschrift der openbare werken van België*, No 4 (p.191-268), 5 (p321-353) & 6 (p 351-405), Bruxelles.
- Values of the cone resistance q_c obtained by CPT at intervals of 0.20m have to be introduced.
- The starting point of the q_c -values to be introduced in the De Beer calculation should always be the soil surface level (0 m), or the first value of q_c 0.2 m after the start of the test.
- Calculation of the ultimate unit pile base resistance $q_{r,b}$ is performed for pile diameters that are a common multiple of 0.20 m. For piles that are not a common multiple of 0.20 m, $q_{r,b}$ is determined by linear interpolation, e.g. if the pile base diameter is 0.45 m, then $q_{r,b,0.45m}$ will be determined by linear interpolation between the values $q_{r,b,0.40m}$ and $q_{r,b,0.60m}$ that are obtained with the De Beer method. This procedure was developed to take into account the discontinuities in this method, and is described in the research report "IRSIA-convention 2178 – Recherche sur la charge portante des pieux battus fondés dans la partie supérieure d'une couche de sable compact et située en-dessous d'une couche molle – juin 1985.
- Furthermore the following assumptions have been made for the calculation : density of soil above ground water level = 1600 kg/m³ and density of soil beneath ground water level = 2000 kg/m³
- Determination of groundwater level is whenever possible to be taken from piezometer readings in the vicinity of the CPT test; if no such records are available one can introduce the water level measurements performed in the CPT-hole after the test; When the CPT hole collapsed before water level was detected, one has to introduce this level as groundwater level.
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Examples

Several examples have been worked out. The detailed calculation results are also available in pdf-format. The following symbols are used in these examples:

- q_c : cone resistance measured in CPT
- σ'_v : effective vertical stress
- φ, φ' : friction angles calculated by the De Beer method
- h : depth pile base
- d : diameter cone (3.57 cm)
- D : diameter pile base
- β_c : the value of the angle β corresponding with the case of the cone with diameter d
- β_p : the value of the angle β corresponding with the case of the pile with diameter D
- β : an angle related to the rupture scheme of the soil when a pile (cone) is pushed into the soil and function of φ' and h/d ; when β equals $\pi/2$ one can speak of a deep foundation
- $q_{p(1)}$: homogeneous values
- $q_{p,j+1}$: downward values
- $q_{p,q+1}$: upward values
- $q_{r,b D}$: blended values = the ultimate unit pile base resistance for a pile with base diameter D ;
- $Q_{r,b D} = (q_{r,b D}) \cdot A_b$ with A_b the pile base section.

Case Oud Turnhout

- groundwater level is considered at a depth of 5.0 m
- calculations performed for $D_b=0.4$ m

Case Limelette

- groundwater level is considered at a depth of 0.25 m
- calculations performed for $D_b=1.0$ m, 0.508 m (interpolation between 0.4 and 0.6 m), and 0.282 m (interpolation between 0.2 and 0.4 m)

Case Zwijnaarde

- groundwater level is considered at a depth of 1.0 m
- calculations performed for $D_b=0.52$ m (interpolation between 0.4 and 0.6 m), and 1.531 m (interpolation between 1.4 and 1.6 m)

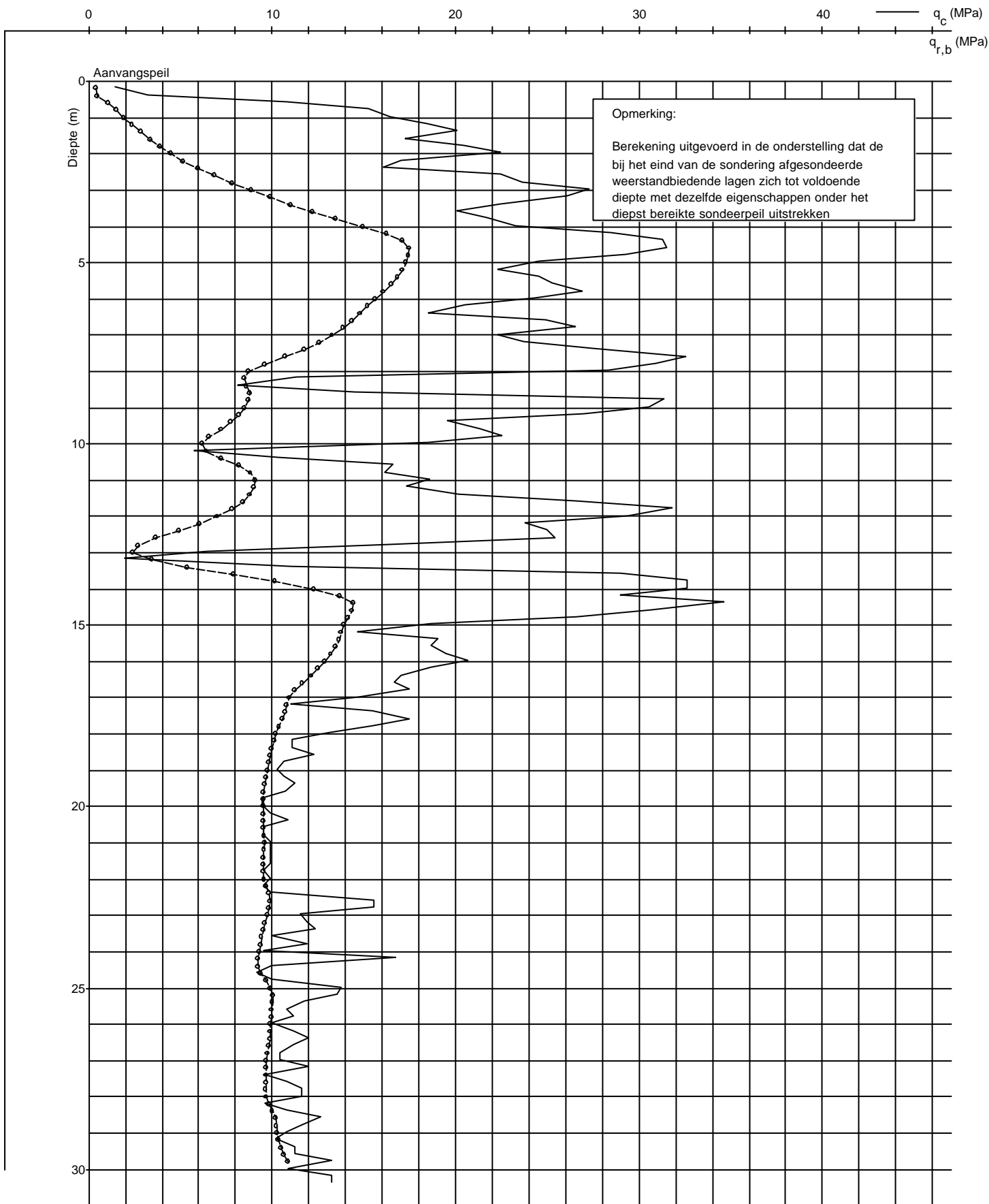
Case Zwijndrecht

- groundwater level is considered at a depth of 0.0 m
- calculations performed for $D_b=0.8$ m

SONDERING (CPT-M) : $q_{r,b}$ -berekening

Opdracht DBEER-02/qp	Datum 01/01/1971	OUD-TURNHOUT QP-BEREKENING DE BEER	Proef II
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Apparaat : 200kN	Conus : M1
Water op : 5, m opgemeten op 01/01/1971	$q_{r,b}$ -berekening : De Beer
	Diameter : (o) 0,4 m



Algemene gegevens

Opdrachtnummer :	DBEER-02/qp
Sondeernummer :	II
Datum uitvoering :	01/01/1971
Plaats :	OUD-TURNHOUT QP-BEREKENING DE BEER
Lambertcoördinaten :	X= Y=
Aanvangspeil :	
Apparaat Type :	200kN
Conus Type :	M1
Meetlichaam :	H100
Grondsoort aan de conus :	
Diepte water :	5, m (t.o.v. aanvangspeil)
Datum opmeting waterpeil:	01/01/1971 00:00
Aantal buizen :	0

Constanten

Massa eindbuis :	6,4 kg
Massa verlengbuis :	6,4 kg
Massa kleefvangerbuis :	6,4 kg
Massa eindstang :	0 kg
Massa verlengstang :	0 kg
Oppervlakte conus :	10 cm ²
Oppervlakte plunjer :	100 cm ²

Ijkcoëfficiënten

Coëfficiënten conus :	a: 0,1	b: 0
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Diameter paalbasis : 0,4 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
0,20	1,43	3,139	35,7	5,60	1,033	0,50	0,146	0,398	0,235	0,235	0,398	0,050
0,40	3,23	6,278	36,3	11,21	1,571	1,00	0,260	0,470	0,399	0,399	0,470	0,059
0,60	10,84	9,418	39,9	16,81	1,571	1,50	0,295	1,280	0,710	0,710	1,093	0,137
0,80	15,24	12,557	40,2	22,42	1,571	2,00	0,367	1,996	1,085	1,085	1,498	0,188
1,00	16,44	15,696	39,5	28,02	1,571	2,50	0,454	2,599	1,483	1,483	1,918	0,241
1,20	18,44	18,835	39,2	33,63	1,571	3,00	0,531	3,370	1,925	1,925	2,369	0,298
1,40	20,04	21,974	38,9	39,23	1,571	3,50	0,606	4,214	2,348	2,348	2,857	0,359
1,60	17,26	25,114	37,7	44,84	1,571	4,00	0,720	4,640	2,834	2,834	3,375	0,424
1,80	20,46	28,253	37,9	50,44	1,571	4,50	0,773	5,910	3,390	3,390	3,911	0,492
2,00	22,46	31,392	37,8	56,05	1,571	5,00	0,836	7,171	3,902	3,902	4,487	0,564
2,20	17,06	34,531	36,1	61,65	1,571	5,50	0,995	7,355	4,443	4,443	5,156	0,648
2,40	16,06	37,670	35,4	67,26	1,571	6,00	1,108	8,313	5,117	5,117	5,951	0,748
2,60	22,47	40,810	36,6	72,86	1,571	6,50	1,088	10,950	5,907	5,907	6,851	0,861
2,80	23,67	43,949	36,5	78,47	1,571	7,00	1,155	12,787	6,828	6,828	7,838	0,985
3,00	27,27	47,088	36,9	84,07	1,571	7,50	1,188	15,351	7,818	7,818	8,865	1,114
3,20	26,07	50,227	36,4	89,68	1,571	8,00	1,292	17,282	8,870	8,870	9,920	1,247
3,40	22,47	53,366	35,4	95,28	1,571	8,50	1,459	19,159	9,908	9,908	10,992	1,381
3,60	20,08	56,506	34,5	100,89	1,571	9,00	1,571	20,084	10,981	10,981	12,179	1,530
3,80	21,68	59,645	34,7	106,49	1,571	9,50	1,571	21,684	12,088	12,088	13,499	1,696
4,00	23,28	62,784	34,7	112,10	1,571	10,00	1,571	23,284	13,468	13,468	14,913	1,874
4,20	28,48	65,923	35,5	117,70	1,571	10,50	1,571	28,484	14,941	14,941	16,254	2,043
4,40	31,28	69,062	35,7	123,31	1,571	11,00	1,571	31,284	16,331	16,331	17,113	2,151
4,60	31,50	72,202	35,5	128,91	1,571	11,50	1,571	31,498	17,490	17,490	17,484	2,197
4,80	29,30	75,341	35,0	134,52	1,571	12,00	1,571	29,298	18,267	17,518	17,428	2,190
5,00	24,50	78,480	33,9	140,12	1,571	12,50	1,571	24,498	18,705	17,445	17,300	2,174
5,20	22,30	80,442	33,3	145,73	1,571	13,00	1,571	22,298	19,235	17,322	17,110	2,150
5,40	24,50	82,404	33,7	151,33	1,571	13,50	1,571	24,498	19,781	17,134	16,847	2,117
5,60	25,31	84,366	33,7	156,94	1,571	14,00	1,571	25,312	20,384	16,875	16,506	2,074
5,80	26,91	86,328	33,9	162,54	1,571	14,50	1,571	26,912	20,810	16,532	16,093	2,022
6,00	24,31	88,290	33,3	168,15	1,571	15,00	1,571	24,312	21,005	16,113	15,634	1,965
6,20	20,51	90,252	32,3	173,75	1,571	15,50	1,571	20,512	20,512	15,633	15,205	1,911
6,40	18,51	92,214	31,7	179,36	1,571	16,00	1,571	18,512	18,512	15,156	14,796	1,859
6,60	24,93	94,176	33,1	184,96	1,571	16,50	1,571	24,926	19,121	14,827	14,381	1,807
6,80	26,53	96,138	33,3	190,57	1,571	17,00	1,571	26,526	19,471	14,406	13,881	1,744
7,00	22,33	98,100	32,3	196,17	1,571	17,50	1,571	22,326	19,877	13,910	13,289	1,670
7,20	23,73	100,062	32,5	201,78	1,571	18,00	1,571	23,726	20,435	13,326	12,580	1,581
7,40	27,53	102,024	33,2	207,38	1,571	18,50	1,571	27,526	21,259	12,630	11,734	1,475
7,60	32,54	103,986	33,9	212,99	1,571	19,00	1,571	32,540	21,957	11,785	10,739	1,349
7,80	30,94	105,948	33,6	218,59	1,571	19,50	1,571	30,940	22,481	10,788	9,619	1,209
8,00	28,34	107,910	33,0	224,20	1,571	20,00	1,571	28,340	22,078	9,643	8,736	1,098
8,20	11,34	109,872	27,5	229,80	1,571	20,50	1,571	11,340	11,340	8,425	8,464	1,064
8,40	8,14	111,834	24,9	235,41	1,571	21,00	1,571	8,140	8,140	8,140	8,605	1,081
8,60	14,55	113,796	29,1	241,01	1,571	21,50	1,571	14,554	8,827	8,827	8,803	1,106
8,80	31,35	115,758	33,2	246,62	1,571	22,00	1,571	31,354	10,032	8,849	8,698	1,093
9,00	30,55	117,720	33,0	252,22	1,571	22,50	1,571	30,554	10,991	8,733	8,487	1,067
9,20	26,95	119,682	32,2	257,83	1,571	23,00	1,571	26,954	11,519	8,511	8,179	1,028
9,40	19,55	121,644	30,5	263,43	1,571	23,50	1,571	19,554	12,381	8,217	7,765	0,976
9,60	21,37	123,606	30,9	269,04	1,571	24,00	1,571	21,368	13,338	7,809	7,218	0,907
9,80	22,57	125,568	31,1	274,64	1,571	24,50	1,571	22,568	14,323	7,268	6,537	0,822
10,00	18,57	127,530	29,9	280,25	1,571	25,00	1,571	18,568	14,833	6,577	6,198	0,779

Diameter paalbasis : 0,4 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
10,20	5,77	129,492	20,8	285,85	1,571	25,50	1,571	5,768	5,768	5,768	6,433	0,808
10,40	10,37	131,454	25,5	291,46	1,571	26,00	1,571	10,368	6,249	6,249	7,239	0,910
10,60	16,58	133,416	28,9	297,06	1,571	26,50	1,571	16,582	7,283	7,283	8,204	1,031
10,80	16,18	135,378	28,6	302,67	1,571	27,00	1,571	16,182	8,184	8,184	8,822	1,109
11,00	18,58	137,340	29,4	308,27	1,571	27,50	1,571	18,582	9,233	9,145	9,109	1,145
11,20	17,38	139,302	28,9	313,88	1,571	28,00	1,571	17,382	10,073	9,136	9,008	1,132
11,40	20,18	141,264	29,8	319,48	1,571	28,50	1,571	20,182	11,103	9,044	8,786	1,104
11,60	26,60	143,226	31,2	325,09	1,571	29,00	1,571	26,596	12,652	8,843	8,396	1,055
11,80	31,80	145,188	32,1	330,69	1,571	29,50	1,571	31,796	14,557	8,470	7,805	0,981
12,00	29,40	147,150	31,6	336,30	1,571	30,00	1,571	29,396	16,060	7,874	7,019	0,882
12,20	23,80	149,112	30,4	341,90	1,571	30,50	1,571	23,796	16,893	7,072	6,050	0,760
12,40	25,00	151,074	30,6	347,51	1,571	31,00	1,571	24,996	17,765	6,110	4,904	0,616
12,60	25,41	153,036	30,7	353,11	1,571	31,50	1,571	25,410	18,596	4,969	3,668	0,461
12,80	16,21	154,998	27,6	358,72	1,571	32,00	1,571	16,210	16,210	3,634	2,682	0,337
13,00	6,41	156,960	20,0	364,32	1,571	32,50	1,571	6,410	6,410	2,402	2,429	0,305
13,20	2,01	158,922	7,6	369,93	1,571	33,00	1,571	2,010	2,010	2,010	3,417	0,429
13,40	11,01	160,884	24,4	375,53	1,571	33,50	1,571	11,010	2,874	2,874	5,406	0,679
13,60	29,02	162,846	31,0	381,14	1,571	34,00	1,571	29,024	5,367	5,367	7,898	0,992
13,80	32,62	164,808	31,6	386,74	1,571	34,50	1,571	32,624	7,976	7,976	10,166	1,277
14,00	32,62	166,770	31,5	392,35	1,571	35,00	1,571	32,624	10,351	10,351	12,293	1,545
14,20	29,02	168,732	30,8	397,95	1,571	35,50	1,571	29,024	12,171	12,171	13,698	1,721
14,40	34,62	170,694	31,7	403,56	1,571	36,00	1,571	34,624	14,356	14,356	14,452	1,816
14,60	30,64	172,656	31,0	409,16	1,571	36,50	1,571	30,638	15,968	14,568	14,391	1,808
14,80	26,64	174,618	30,2	414,77	1,571	37,00	1,571	26,638	17,057	14,431	14,158	1,779
15,00	18,64	176,580	27,7	420,37	1,571	37,50	1,571	18,638	17,293	14,174	13,945	1,752
15,20	14,64	178,542	25,8	425,98	1,571	38,00	1,571	14,638	14,638	13,868	13,775	1,731
15,40	19,04	180,504	27,7	431,58	1,571	38,50	1,571	19,038	15,125	13,793	13,645	1,715
15,60	18,65	182,466	27,4	437,19	1,571	39,00	1,571	18,652	15,532	13,662	13,459	1,691
15,80	19,45	184,428	27,7	442,79	1,571	39,50	1,571	19,452	15,976	13,479	13,210	1,660
16,00	20,65	186,390	28,0	448,40	1,571	40,00	1,571	20,652	16,493	13,235	12,896	1,621
16,20	18,65	188,352	27,2	454,00	1,571	40,50	1,571	18,652	16,774	12,916	12,522	1,574
16,40	17,05	190,314	26,5	459,61	1,571	41,00	1,571	17,052	16,879	12,538	12,106	1,521
16,60	16,67	192,276	26,2	465,21	1,571	41,50	1,571	16,666	16,666	12,113	11,647	1,464
16,80	17,47	194,238	26,5	470,82	1,571	42,00	1,571	17,466	16,818	11,667	11,216	1,409
17,00	14,67	196,200	25,1	476,42	1,571	42,50	1,571	14,666	14,666	11,162	10,926	1,373
17,20	11,07	198,162	22,7	482,03	1,571	43,00	1,571	11,066	11,066	10,819	10,779	1,355
17,40	15,47	200,124	25,3	487,63	1,571	43,50	1,571	15,466	11,528	10,795	10,701	1,345
17,60	17,48	202,086	26,2	493,24	1,571	44,00	1,571	17,480	12,136	10,723	10,568	1,328
17,80	15,48	204,048	25,2	498,84	1,571	44,50	1,571	15,480	12,503	10,585	10,387	1,305
18,00	13,08	206,010	23,8	504,45	1,571	45,00	1,571	13,080	12,611	10,397	10,223	1,285
18,20	11,08	207,972	22,3	510,05	1,571	45,50	1,571	11,080	11,080	10,180	10,089	1,268
18,40	11,08	209,934	22,3	515,66	1,571	46,00	1,571	11,080	11,080	10,092	9,987	1,255
18,60	12,29	211,896	23,1	521,26	1,571	46,50	1,571	12,294	11,240	9,995	9,887	1,242
18,80	10,69	213,858	21,8	526,87	1,571	47,00	1,571	10,694	10,694	9,874	9,804	1,232
19,00	10,29	215,820	21,4	532,47	1,571	47,50	1,571	10,294	10,294	9,793	9,740	1,224
19,20	10,69	217,782	21,7	538,08	1,571	48,00	1,571	10,694	10,374	9,744	9,676	1,216
19,40	11,29	219,744	22,0	543,68	1,571	48,50	1,571	11,294	10,502	9,682	9,598	1,206
19,60	10,71	221,706	21,5	549,29	1,571	49,00	1,571	10,708	10,564	9,602	9,539	1,199
19,80	9,51	223,668	20,4	554,89	1,571	49,50	1,571	9,508	9,508	9,508	9,520	1,196
20,00	9,51	225,630	20,3	560,50	1,571	50,00	1,571	9,508	9,508	9,508	9,532	1,198
20,20	9,91	227,592	20,6	566,10	1,571	50,50	1,571	9,908	9,583	9,545	9,536	1,198

Diameter paalbasis : 0,4 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
20,40	10,91	229,554	21,4	571,71	1,571	51,00	1,571	10,908	9,744	9,542	9,529	1,197
20,60	9,52	231,516	20,1	577,31	1,571	51,50	1,571	9,522	9,522	9,522	9,542	1,199
20,80	9,52	233,478	20,0	582,92	1,571	52,00	1,571	9,522	9,522	9,522	9,561	1,202
21,00	9,92	235,440	20,3	588,52	1,571	52,50	1,571	9,922	9,595	9,582	9,578	1,204
21,20	9,92	237,402	20,2	594,13	1,571	53,00	1,571	9,922	9,662	9,580	9,570	1,203
21,40	9,92	239,364	20,2	599,73	1,571	53,50	1,571	9,922	9,722	9,572	9,555	1,201
21,60	9,94	241,326	20,1	605,34	1,571	54,00	1,571	9,936	9,778	9,558	9,545	1,200
21,80	9,54	243,288	19,7	610,94	1,571	54,50	1,571	9,536	9,536	9,536	9,538	1,199
22,00	9,94	245,250	20,0	616,55	1,571	55,00	1,571	9,936	9,608	9,542	9,562	1,202
22,20	9,54	247,212	19,5	622,15	1,571	55,50	1,571	9,536	9,536	9,536	9,697	1,219
22,40	9,94	249,174	19,8	627,76	1,571	56,00	1,571	9,936	9,607	9,607	9,827	1,235
22,60	15,55	251,136	23,6	633,36	1,571	56,50	1,571	15,550	10,193	9,949	9,907	1,245
22,80	15,55	253,098	23,5	638,97	1,571	57,00	1,571	15,550	10,726	9,925	9,840	1,237
23,00	11,55	255,060	21,0	644,57	1,571	57,50	1,571	11,550	10,840	9,846	9,741	1,224
23,20	11,95	257,022	21,2	650,18	1,571	58,00	1,571	11,950	10,981	9,749	9,619	1,209
23,40	12,35	258,984	21,4	655,78	1,571	58,50	1,571	12,350	11,146	9,628	9,513	1,195
23,60	9,96	260,946	19,4	661,39	1,571	59,00	1,571	9,964	9,964	9,480	9,424	1,184
23,80	11,96	262,908	21,0	666,99	1,571	59,50	1,571	11,964	10,183	9,432	9,377	1,178
24,00	9,56	264,870	18,9	672,60	1,571	60,00	1,571	9,564	9,564	9,359	9,315	1,171
24,20	16,76	266,832	23,7	678,20	1,571	60,50	1,571	16,764	10,263	9,339	9,255	1,163
24,40	9,96	268,794	19,2	683,81	1,571	61,00	1,571	9,964	9,964	9,248	9,236	1,161
24,60	9,18	270,756	18,3	689,41	1,571	61,50	1,571	9,178	9,178	9,178	9,396	1,181
24,80	9,98	272,718	19,0	695,02	1,571	62,00	1,571	9,978	9,282	9,282	9,688	1,217
25,00	13,78	274,680	21,8	700,62	1,571	62,50	1,571	13,778	9,728	9,728	9,943	1,249
25,20	13,58	276,642	21,7	706,23	1,571	63,00	1,571	13,578	10,116	10,053	10,041	1,262
25,40	11,78	278,604	20,4	711,83	1,571	63,50	1,571	11,778	10,302	10,047	10,019	1,259
25,60	10,79	280,566	19,5	717,44	1,571	64,00	1,571	10,792	10,380	10,022	9,982	1,254
25,80	11,19	282,528	19,8	723,04	1,571	64,50	1,571	11,192	10,488	9,987	9,953	1,251
26,00	9,99	284,490	18,7	728,65	1,571	65,00	1,571	9,992	9,992	9,938	9,928	1,248
26,20	11,19	286,452	19,6	734,25	1,571	65,50	1,571	11,192	10,134	9,933	9,906	1,245
26,40	11,99	288,414	20,2	739,86	1,571	66,00	1,571	11,992	10,337	9,913	9,866	1,240
26,60	11,21	290,376	19,5	745,46	1,571	66,50	1,571	11,206	10,449	9,871	9,814	1,233
26,80	10,41	292,338	18,8	751,07	1,571	67,00	1,571	10,406	10,406	9,815	9,755	1,226
27,00	10,41	294,300	18,7	756,67	1,571	67,50	1,571	10,406	10,406	9,757	9,685	1,217
27,20	12,01	296,262	20,0	762,28	1,571	68,00	1,571	12,006	10,585	9,693	9,665	1,215
27,40	9,61	298,224	17,9	767,88	1,571	68,50	1,571	9,606	9,606	9,606	9,664	1,214
27,60	10,82	300,186	18,9	773,49	1,571	69,00	1,571	10,820	9,747	9,696	9,684	1,217
27,80	11,62	302,148	19,5	779,09	1,571	69,50	1,571	11,620	9,948	9,691	9,659	1,214
28,00	11,62	304,110	19,4	784,70	1,571	70,00	1,571	11,620	10,132	9,666	9,681	1,217
28,20	9,62	306,072	17,6	790,30	1,571	70,50	1,571	9,620	9,620	9,620	9,810	1,233
28,40	10,82	308,034	18,7	795,91	1,571	71,00	1,571	10,820	9,759	9,759	10,012	1,258
28,60	12,63	309,996	20,0	801,51	1,571	71,50	1,571	12,634	10,052	10,052	10,173	1,278
28,80	11,63	311,958	19,2	807,12	1,571	72,00	1,571	11,634	10,226	10,226	10,234	1,286
29,00	10,83	313,920	18,5	812,72	1,571	72,50	1,571	10,834	10,311	10,241	10,277	1,291
29,20	10,23	315,882	17,9	818,33	1,571	73,00	1,571	10,234	10,234	10,234	10,352	1,301
29,40	11,23	317,844	18,7	823,93	1,571	73,50	1,571	11,234	10,355	10,355	10,524	1,322
29,60	11,25	319,806	18,7	829,54	1,571	74,00	1,571	11,248	10,466	10,466	10,669	1,341
29,80	13,25	321,768	20,1	835,14	1,571	74,50	1,571	13,248	10,751	10,751	10,862	1,365
30,00	10,85	323,730	18,2	840,75	1,571	75,00	1,571	10,848	10,790	10,790	0,000	0,000
30,20	13,25	325,692	20,0	846,35	1,571	75,50	1,571	13,248	11,046	11,046	0,000	0,000
30,40	13,25	327,654	20,0	851,96	1,571	76,00	1,571	13,248	0,000	0,000	0,000	0,000

Algemene systeem gegevens

CreationMark :

Aangemaakt door defoorfr op 22/02/02 15:10:36

LastModifiedMark :

Aangepast door defoorfr op 1/03/02 9:55:01

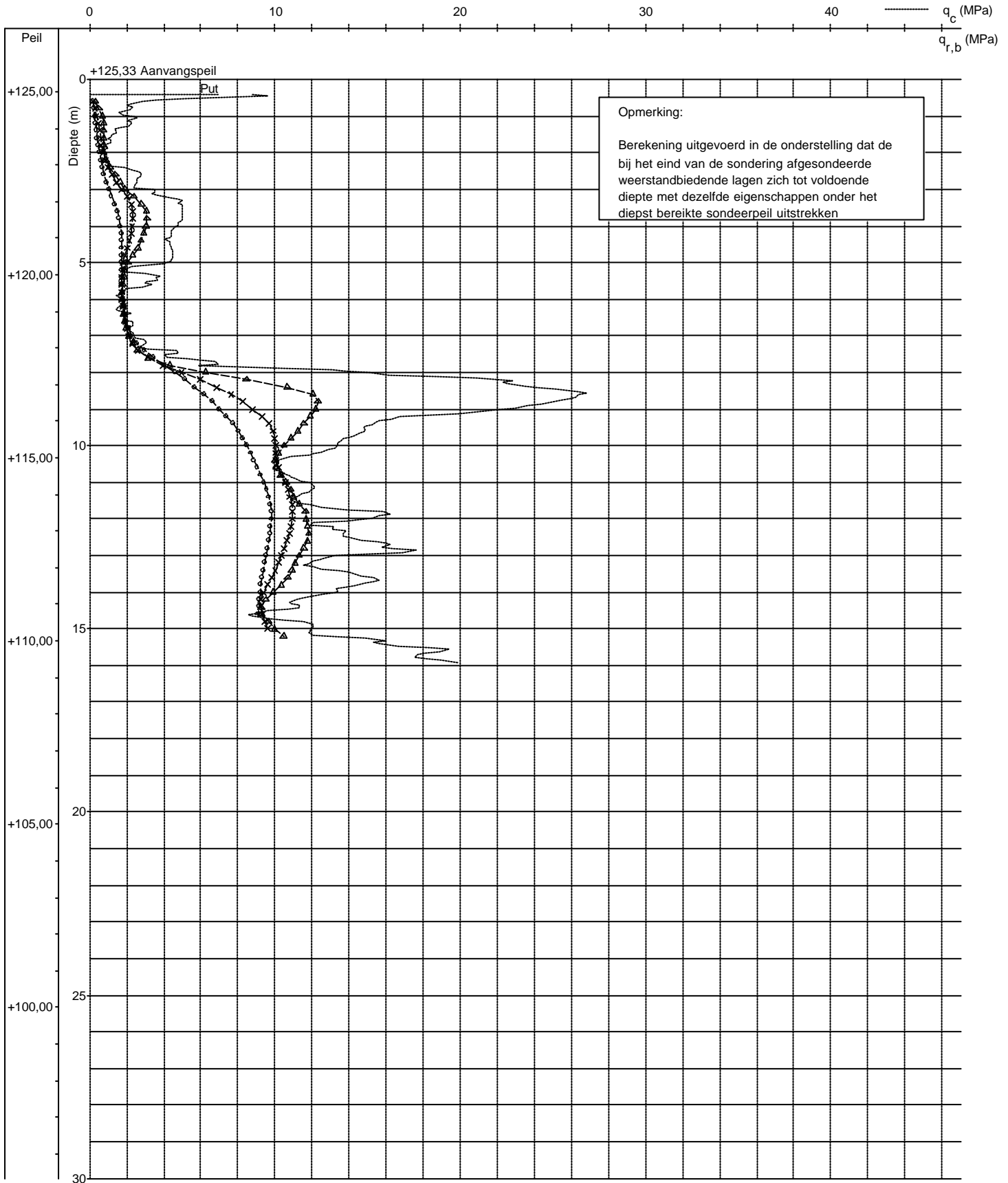
Filename & date :

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SONDERING (CPT-E) : $q_{r,b}$ -berekening

Opdracht 10371-01/70	Datum 17/05/2001	LIMELETTE $x = 160842,22$ $y = 153009,11$ $z = +125,33$	Proef EC10
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Apparaat : 200kN - MAN2	Conus : E
Sondeergat dicht op : 0,25 m (peil +125,08) opgemeten op 17/05/2001	$q_{r,b}$ -berekening : De Beer
Opmerkingen : CPT3	Diameters : (o) 1,0 m (x) 0,5 m (Δ) 0,3 m



Algemene gegevens

Opdrachtnummer : 10371-01/70
Sondeernummer : EC10
Datum uitvoering : 17/05/2001
Plaats : LIMELETTE
Lambertcoördinaten : X= 160842,22 Y= 153009,11
Aanvangspeil : +125,33
Apparaat Type : 200kN - MAN2
Conus Type : E
Meetlichaam : CFI
Ploegbaas : BAELE G
Opmerkingen: CPT3
Grondsoort aan de conus :
Diepte water : geen opmeting waterpeil
Datum opmeting waterpeil: 17/05/2001 00:00
Diepte put : 0,40 m (t.o.v. maaiveld)
Sondeergat dichtgevallen op : 0,25 m (t.o.v. maaiveld)
Diepte plaatsen verlengbuis: 0,50 m (t.o.v. maaiveld)
Gesondeerd tot 0,5 m met 2,66 m buizen.

Constanten

Massa eindbuis : 6,4 kg
Massa verlengbuis : 6,4 kg
Massa kleefvangerbuis : 6,4 kg
Massa eindstang : 0 kg
Massa verlengstang : 0 kg
Oppervlakte conus : 10 cm²
Oppervlakte plunjers : 10 cm²
Net area ratio : 0,8

Ijkcoëfficiënten

Coëfficiënten conus : a: 1,0 b: 0
Coëfficiënten kleef : a: 1,0 b: 0
Coëfficiënten helling : a: 1,0 b: 0

Diameter paalbasis : 1 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	$q_{r,b 1}$ MPa	$Q_{r,b 1}$ MN
0,60	3,63	7,358	36,1	0,191	0,150
0,80	2,38	9,320	32,9	0,238	0,187
1,00	1,86	11,282	30,6	0,282	0,221
1,20	2,27	13,244	30,8	0,324	0,255
1,40	1,40	15,206	26,7	0,365	0,287
1,60	1,12	17,168	24,0	0,413	0,324
1,80	0,94	19,130	21,7	0,468	0,367
2,00	0,73	21,092	18,5	0,531	0,417
2,20	0,92	23,054	19,8	0,607	0,477
2,40	1,10	25,016	20,7	0,699	0,549
2,60	2,80	26,978	27,6	0,805	0,632
2,80	2,53	28,940	26,3	0,923	0,725
3,00	2,39	30,902	25,3	1,052	0,826
3,20	3,60	32,864	28,0	1,195	0,938
3,40	4,77	34,826	29,5	1,348	1,059
3,60	4,98	36,788	29,4	1,485	1,167
3,80	5,03	38,750	29,2	1,599	1,255
4,00	4,76	40,712	28,4	1,685	1,323
4,20	4,41	42,674	27,5	1,742	1,368
4,40	4,06	44,636	26,6	1,770	1,390
4,60	4,39	46,598	26,8	1,766	1,387
4,80	4,49	48,560	26,7	1,753	1,377
5,00	4,44	50,522	26,3	1,740	1,367
5,20	1,99	52,484	19,4	1,734	1,362
5,40	3,84	54,446	24,6	1,740	1,367
5,60	2,98	56,408	22,3	1,752	1,376
5,80	1,89	58,370	17,9	1,774	1,393
6,00	1,71	60,332	16,6	1,807	1,420
6,20	1,79	62,294	16,8	1,856	1,457
6,40	2,26	64,256	18,7	1,912	1,502
6,60	1,84	66,218	16,4	1,981	1,556
6,80	2,16	68,180	17,7	2,088	1,640
7,00	2,42	70,142	18,5	2,282	1,792
7,20	3,07	72,104	20,4	2,574	2,021
7,40	3,13	74,066	20,3	2,971	2,333
7,60	4,17	76,028	22,6	3,464	2,721
7,80	6,93	77,990	26,4	4,031	3,166
8,00	13,80	79,952	30,9	4,627	3,634
8,20	20,92	81,914	32,9	5,181	4,069
8,40	23,49	83,876	33,4	5,711	4,485
8,60	26,84	85,838	33,9	6,193	4,864
8,80	25,52	87,800	33,5	6,629	5,207
9,00	22,98	89,762	32,9	7,026	5,518
9,20	18,40	91,724	31,7	7,400	5,812
9,40	15,48	93,685	30,6	7,747	6,084
9,60	14,86	95,648	30,3	8,037	6,312
9,80	14,10	97,610	29,9	8,283	6,506
10,00	13,39	99,572	29,4	8,498	6,674

Diameter paalbasis : 1 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	$q_{r,b 1}$ MPa	$Q_{r,b 1}$ MN
10,20	12,51	101,534	28,8	8,694	6,828
10,40	10,38	103,496	27,3	8,871	6,967
10,60	9,97	105,458	26,9	9,047	7,106
10,80	10,60	107,420	27,2	9,244	7,261
11,00	11,41	109,382	27,6	9,428	7,405
11,20	12,17	111,344	27,9	9,577	7,522
11,40	11,27	113,306	27,2	9,688	7,609
11,60	11,22	115,268	27,1	9,766	7,670
11,80	13,99	117,230	28,6	9,812	7,706
12,00	15,26	119,192	29,1	9,804	7,700
12,20	11,95	121,154	27,2	9,773	7,676
12,40	13,75	123,116	28,1	9,733	7,644
12,60	14,65	125,078	28,4	9,683	7,605
12,80	15,75	127,040	28,8	9,623	7,558
13,00	14,96	129,002	28,4	9,554	7,504
13,20	12,09	130,964	26,7	9,475	7,442
13,40	12,54	132,926	26,9	9,393	7,377
13,60	14,64	134,888	27,9	9,307	7,310
13,80	14,90	136,850	27,9	9,254	7,268
14,00	13,38	138,812	27,0	9,244	7,260
14,20	11,50	140,774	25,8	9,278	7,287
14,40	11,32	142,736	25,5	9,380	7,367
14,60	9,09	144,698	23,7	9,572	7,518
14,80	10,49	146,660	24,7	0,000	0,000
15,00	12,10	148,622	25,7	0,000	0,000
15,20	12,04	150,584	25,6	0,000	0,000
15,40	15,36	152,546	27,3	0,000	0,000
15,60	19,39	154,508	28,9	0,000	0,000
15,80	17,54	156,470	28,1	0,000	0,000

Diameter paalbasis : 0,508 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	$q_{r,b 0,4}$ MPa	$q_{r,b 0,6}$ MPa	$q_{r,b 0,508}$ MPa	$Q_{r,b 0,508}$ MN
0,60	3,63	7,358	36,13	0,204	0,190	0,196	0,040
0,80	2,38	9,320	32,90	0,313	0,263	0,286	0,058
1,00	1,86	11,282	30,63	0,429	0,336	0,379	0,077
1,20	2,27	13,244	30,83	0,548	0,409	0,473	0,096
1,40	1,40	15,206	26,68	0,647	0,472	0,552	0,112
1,60	1,12	17,168	24,01	0,707	0,534	0,614	0,124
1,80	0,94	19,130	21,67	0,748	0,597	0,666	0,135
2,00	0,73	21,092	18,54	0,789	0,689	0,735	0,149
2,20	0,92	23,054	19,84	0,920	0,815	0,863	0,175
2,40	1,10	25,016	20,70	1,102	0,964	1,027	0,208
2,60	2,80	26,978	27,56	1,316	1,157	1,230	0,249
2,80	2,53	28,940	26,29	1,536	1,383	1,454	0,295
3,00	2,39	30,902	25,35	1,819	1,644	1,724	0,350
3,20	3,60	32,864	27,96	2,170	1,889	2,018	0,409
3,40	4,77	34,826	29,53	2,442	2,069	2,240	0,454
3,60	4,98	36,788	29,45	2,572	2,159	2,349	0,476
3,80	5,03	38,750	29,16	2,559	2,159	2,343	0,475
4,00	4,76	40,712	28,42	2,502	2,123	2,297	0,466
4,20	4,41	42,674	27,53	2,419	2,072	2,232	0,452
4,40	4,06	44,636	26,59	2,311	2,007	2,147	0,435
4,60	4,39	46,598	26,85	2,177	1,928	2,042	0,414
4,80	4,49	48,560	26,71	2,016	1,859	1,931	0,391
5,00	4,44	50,522	26,33	1,893	1,803	1,845	0,374
5,20	1,99	52,484	19,38	1,812	1,760	1,784	0,362
5,40	3,84	54,446	24,63	1,775	1,740	1,756	0,356
5,60	2,98	56,408	22,28	1,739	1,731	1,735	0,352
5,80	1,89	58,370	17,91	1,726	1,744	1,736	0,352
6,00	1,71	60,332	16,63	1,758	1,773	1,766	0,358
6,20	1,79	62,294	16,76	1,801	1,816	1,809	0,367
6,40	2,26	64,256	18,69	1,853	1,867	1,861	0,377
6,60	1,84	66,218	16,43	1,904	1,929	1,918	0,389
6,80	2,16	68,180	17,71	1,995	2,010	2,003	0,406
7,00	2,42	70,142	18,51	2,109	2,121	2,116	0,429
7,20	3,07	72,104	20,42	2,271	2,306	2,290	0,464
7,40	3,13	74,066	20,35	2,548	2,659	2,608	0,529
7,60	4,17	76,028	22,59	3,127	3,202	3,168	0,642
7,80	6,93	77,990	26,41	4,007	3,943	3,973	0,805
8,00	13,80	79,952	30,87	5,146	4,814	4,967	1,007
8,20	20,92	81,914	32,90	6,314	5,675	5,969	1,210
8,40	23,49	83,876	33,36	7,414	6,453	6,895	1,397
8,60	26,84	85,838	33,91	8,305	7,089	7,648	1,550
8,80	25,52	87,800	33,55	8,969	7,657	8,261	1,674
9,00	22,98	89,762	32,91	9,554	8,173	8,808	1,785
9,20	18,40	91,724	31,66	10,004	8,665	9,281	1,881
9,40	15,48	93,685	30,64	10,297	9,149	9,677	1,961
9,60	14,86	95,648	30,31	10,335	9,534	9,903	2,007
9,80	14,10	97,610	29,90	10,259	9,787	10,004	2,028
10,00	13,39	99,572	29,41	10,145	9,927	10,027	2,032

Diameter paalbasis : 0,508 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	$q_{r,b 0,4}$ MPa	$q_{r,b 0,6}$ MPa	$q_{r,b 0,508}$ MPa	$Q_{r,b 0,508}$ MN
10,20	12,51	101,534	28,79	10,044	10,009	10,025	2,032
10,40	10,38	103,496	27,31	10,031	10,081	10,058	2,039
10,60	9,97	105,458	26,88	10,137	10,208	10,175	2,062
10,80	10,60	107,420	27,19	10,343	10,373	10,359	2,100
11,00	11,41	109,382	27,60	10,550	10,531	10,540	2,136
11,20	12,17	111,344	27,94	10,732	10,646	10,685	2,166
11,40	11,27	113,306	27,25	10,954	10,702	10,818	2,193
11,60	11,22	115,268	27,09	11,148	10,712	10,912	2,212
11,80	13,99	117,230	28,57	11,285	10,681	10,959	2,221
12,00	15,26	119,192	29,06	11,275	10,632	10,928	2,215
12,20	11,95	121,154	27,19	11,214	10,564	10,863	2,202
12,40	13,75	123,116	28,09	11,125	10,477	10,775	2,184
12,60	14,65	125,078	28,44	10,994	10,366	10,655	2,160
12,80	15,75	127,040	28,84	10,816	10,244	10,507	2,130
13,00	14,96	129,002	28,36	10,632	10,111	10,351	2,098
13,20	12,09	130,964	26,70	10,451	9,970	10,191	2,066
13,40	12,54	132,926	26,86	10,272	9,818	10,027	2,032
13,60	14,64	134,888	27,89	10,051	9,646	9,832	1,993
13,80	14,90	136,850	27,91	9,784	9,474	9,617	1,949
14,00	13,38	138,812	27,02	9,524	9,309	9,408	1,907
14,20	11,50	140,774	25,78	9,288	9,228	9,256	1,876
14,40	11,32	142,736	25,55	9,219	9,259	9,241	1,873
14,60	9,09	144,698	23,71	9,324	9,382	9,355	1,896
14,80	10,49	146,660	24,74	9,592	9,644	9,620	1,950
15,00	12,10	148,622	25,75	9,990	10,036	10,015	2,030
15,20	12,04	150,584	25,61	10,581	0,000	0,000	0,000
15,40	15,36	152,546	27,34	0,000	0,000	0,000	0,000
15,60	19,39	154,508	28,92	0,000	0,000	0,000	0,000
15,80	17,54	156,470	28,12	0,000	0,000	0,000	0,000

Diameter paalbasis : 0,282 m volgens methode De Beer

Diepte (m)	q_c MPa	$\frac{\sigma}{\omega}$ kPa	φ (°)	$q_{r,b 0,2}$ MPa	$q_{r,b 0,4}$ MPa	$q_{r,b 0,282}$ MPa	$Q_{r,b 0,282}$ MN
0,60	3,63	7,358	36,13	0,404	0,204	0,322	0,020
0,80	2,38	9,320	32,90	0,656	0,313	0,515	0,032
1,00	1,86	11,282	30,63	0,873	0,429	0,691	0,043
1,20	2,27	13,244	30,83	0,938	0,548	0,778	0,049
1,40	1,40	15,206	26,68	0,872	0,647	0,780	0,049
1,60	1,12	17,168	24,01	0,799	0,707	0,761	0,048
1,80	0,94	19,130	21,67	0,749	0,748	0,748	0,047
2,00	0,73	21,092	18,54	0,764	0,789	0,774	0,048
2,20	0,92	23,054	19,84	0,843	0,920	0,875	0,055
2,40	1,10	25,016	20,70	1,102	1,102	1,102	0,069
2,60	2,80	26,978	27,56	1,461	1,316	1,402	0,088
2,80	2,53	28,940	26,29	1,708	1,536	1,637	0,102
3,00	2,39	30,902	25,35	2,015	1,819	1,935	0,121
3,20	3,60	32,864	27,96	2,505	2,170	2,368	0,148
3,40	4,77	34,826	29,53	3,040	2,442	2,795	0,175
3,60	4,98	36,788	29,45	3,406	2,572	3,064	0,191
3,80	5,03	38,750	29,16	3,500	2,559	3,114	0,194
4,00	4,76	40,712	28,42	3,423	2,502	3,045	0,190
4,20	4,41	42,674	27,53	3,282	2,419	2,928	0,183
4,40	4,06	44,636	26,59	3,103	2,311	2,778	0,174
4,60	4,39	46,598	26,85	2,881	2,177	2,592	0,162
4,80	4,49	48,560	26,71	2,581	2,016	2,349	0,147
5,00	4,44	50,522	26,33	2,192	1,893	2,070	0,129
5,20	1,99	52,484	19,38	1,973	1,812	1,907	0,119
5,40	3,84	54,446	24,63	1,927	1,775	1,865	0,116
5,60	2,98	56,408	22,28	1,812	1,739	1,782	0,111
5,80	1,89	58,370	17,91	1,726	1,726	1,726	0,108
6,00	1,71	60,332	16,63	1,729	1,758	1,741	0,109
6,20	1,79	62,294	16,76	1,796	1,801	1,798	0,112
6,40	2,26	64,256	18,69	1,842	1,853	1,847	0,115
6,60	1,84	66,218	16,43	1,881	1,904	1,891	0,118
6,80	2,16	68,180	17,71	1,981	1,995	1,987	0,124
7,00	2,42	70,142	18,51	2,149	2,109	2,133	0,133
7,20	3,07	72,104	20,42	2,353	2,271	2,320	0,145
7,40	3,13	74,066	20,35	2,624	2,548	2,593	0,162
7,60	4,17	76,028	22,59	3,205	3,127	3,173	0,198
7,80	6,93	77,990	26,41	4,589	4,007	4,350	0,272
8,00	13,80	79,952	30,87	7,042	5,146	6,265	0,391
8,20	20,92	81,914	32,90	9,965	6,314	8,468	0,529
8,40	23,49	83,876	33,36	12,919	7,414	10,662	0,666
8,60	26,84	85,838	33,91	14,642	8,305	12,044	0,752
8,80	25,52	87,800	33,55	14,670	8,969	12,333	0,770
9,00	22,98	89,762	32,91	14,097	9,554	12,234	0,764
9,20	18,40	91,724	31,66	13,228	10,004	11,906	0,744
9,40	15,48	93,685	30,64	12,442	10,297	11,562	0,722
9,60	14,86	95,648	30,31	11,849	10,335	11,229	0,701
9,80	14,10	97,610	29,90	11,278	10,259	10,861	0,678
10,00	13,39	99,572	29,41	10,743	10,145	10,497	0,656

Diameter paalbasis : 0,282 m volgens methode De Beer

Diepte (m)	q_c MPa	σ_w^3 kPa	φ (°)	$q_{r,b 0,2}$ MPa	$q_{r,b 0,4}$ MPa	$q_{r,b 0,282}$ MPa	$Q_{r,b 0,282}$ MN
10,20	12,51	101,534	28,79	10,263	10,044	10,173	0,635
10,40	10,38	103,496	27,31	10,007	10,031	10,016	0,626
10,60	9,97	105,458	26,88	10,066	10,137	10,095	0,631
10,80	10,60	107,420	27,19	10,316	10,343	10,327	0,645
11,00	11,41	109,382	27,60	10,666	10,550	10,619	0,663
11,20	12,17	111,344	27,94	10,939	10,732	10,854	0,678
11,40	11,27	113,306	27,25	11,074	10,954	11,025	0,689
11,60	11,22	115,268	27,09	11,435	11,148	11,317	0,707
11,80	13,99	117,230	28,57	11,891	11,285	11,642	0,727
12,00	15,26	119,192	29,06	11,996	11,275	11,701	0,731
12,20	11,95	121,154	27,19	12,152	11,214	11,768	0,735
12,40	13,75	123,116	28,09	12,354	11,125	11,850	0,740
12,60	14,65	125,078	28,44	12,298	10,994	11,763	0,735
12,80	15,75	127,040	28,84	12,108	10,816	11,578	0,723
13,00	14,96	129,002	28,36	11,771	10,632	11,304	0,706
13,20	12,09	130,964	26,70	11,512	10,451	11,077	0,692
13,40	12,54	132,926	26,86	11,369	10,272	10,919	0,682
13,60	14,64	134,888	27,89	11,123	10,051	10,683	0,667
13,80	14,90	136,850	27,91	10,716	9,784	10,334	0,645
14,00	13,38	138,812	27,02	10,158	9,524	9,898	0,618
14,20	11,50	140,774	25,78	9,667	9,288	9,512	0,594
14,40	11,32	142,736	25,55	9,289	9,219	9,260	0,578
14,60	9,09	144,698	23,71	9,244	9,324	9,277	0,579
14,80	10,49	146,660	24,74	9,672	9,592	9,639	0,602
15,00	12,10	148,622	25,75	10,165	9,990	10,093	0,630
15,20	12,04	150,584	25,61	10,869	10,581	10,751	0,671
15,40	15,36	152,546	27,34	12,121	0,000	0,000	0,000
15,60	19,39	154,508	28,92	0,000	0,000	0,000	0,000
15,80	17,54	156,470	28,12	0,000	0,000	0,000	0,000

Algemene gegevens

Opdrachtnummer : 10371-01/70
Sondeernummer : EC10
Datum uitvoering : 17/05/2001
Plaats : LIMELETTE
Lambertcoördinaten : X= 160842,22 Y= 153009,11
Aanvangspeil : +125,33
Apparaat Type : 200kN - MAN2
Conus Type : E
Meetlichaam : CFI
Ploegbaas : BAELE G
Opmerkingen: CPT3
Grondsoort aan de conus :
Diepte water : geen opmeting waterpeil
Datum opmeting waterpeil: 17/05/2001 00:00
Diepte put : 0,40 m (t.o.v. aanvangspeil)
Sondeergat dichtgevallen op : 0,25 m (t.o.v. aanvangspeil)
Gesondeerd tot 0,5 m met 2,66 m buizen.

Constanten

Massa eindbuis : 6,4 kg
Massa verlengbuis : 6,4 kg
Massa kleefvangerbuis : 6,4 kg
Massa eindstang : 0 kg
Massa verlengstang : 0 kg
Oppervlakte conus : 10 cm²
Oppervlakte plunjier : 10 cm²

Ijkcoëfficiënten

Coëfficiënten conus : a: 1,0 b: 0
Coëfficiënten kleef : a: 1,0 b: 0
Coëfficiënten helling : a: 1,0 b: 0

Diameter paalbasis : 1 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
0,60	3,63	7,358	36,1	16,81	1,571	0,60	0,168	0,468	0,064	0,064	0,191	0,150
0,80	2,38	9,320	32,9	22,42	1,571	0,80	0,258	0,435	0,115	0,115	0,238	0,187
1,00	1,86	11,282	30,6	28,02	1,571	1,00	0,350	0,438	0,167	0,167	0,282	0,221
1,20	2,27	13,244	30,8	33,63	1,571	1,20	0,405	0,564	0,224	0,224	0,324	0,255
1,40	1,40	15,206	26,7	39,23	1,571	1,40	0,562	0,508	0,268	0,268	0,365	0,287
1,60	1,12	17,168	24,0	44,84	1,571	1,60	0,714	0,522	0,308	0,308	0,413	0,324
1,80	0,94	19,130	21,7	50,44	1,571	1,80	0,888	0,546	0,345	0,345	0,468	0,367
2,00	0,73	21,092	18,5	56,05	1,571	2,00	1,169	0,557	0,379	0,379	0,531	0,417
2,20	0,92	23,054	19,8	61,65	1,571	2,20	1,199	0,704	0,420	0,420	0,607	0,477
2,40	1,10	25,016	20,7	67,26	1,571	2,40	1,250	0,863	0,470	0,470	0,699	0,549
2,60	2,80	26,978	27,6	72,86	1,571	2,60	0,907	1,400	0,554	0,554	0,805	0,632
2,80	2,53	28,940	26,3	78,47	1,571	2,80	1,037	1,493	0,638	0,638	0,923	0,725
3,00	2,39	30,902	25,3	84,07	1,571	3,00	1,168	1,632	0,725	0,725	1,052	0,826
3,20	3,60	32,864	28,0	89,68	1,571	3,20	1,058	2,089	0,836	0,836	1,195	0,938
3,40	4,77	34,826	29,5	95,28	1,571	3,40	1,016	2,545	0,968	0,968	1,348	1,059
3,60	4,98	36,788	29,4	100,89	1,571	3,60	1,071	2,833	1,109	1,109	1,485	1,167
3,80	5,03	38,750	29,2	106,49	1,571	3,80	1,142	3,116	1,259	1,259	1,599	1,255
4,00	4,76	40,712	28,4	112,10	1,571	4,00	1,253	3,375	1,415	1,415	1,685	1,323
4,20	4,41	42,674	27,5	117,70	1,571	4,20	1,400	3,690	1,580	1,580	1,742	1,368
4,40	4,06	44,636	26,6	123,31	1,571	4,40	1,571	4,060	1,756	1,756	1,770	1,390
4,60	4,39	46,598	26,8	128,91	1,571	4,60	1,571	4,390	1,941	1,793	1,766	1,387
4,80	4,49	48,560	26,7	134,52	1,571	4,80	1,571	4,490	2,122	1,788	1,753	1,377
5,00	4,44	50,522	26,3	140,12	1,571	5,00	1,571	4,440	2,289	1,775	1,740	1,367
5,20	1,99	52,484	19,4	145,73	1,571	5,20	1,571	1,990	1,990	1,756	1,734	1,362
5,40	3,84	54,446	24,6	151,33	1,571	5,40	1,571	3,840	2,124	1,748	1,740	1,367
5,60	2,98	56,408	22,3	156,94	1,571	5,60	1,571	2,980	2,205	1,734	1,752	1,376
5,80	1,89	58,370	17,9	162,54	1,571	5,80	1,571	1,890	1,890	1,716	1,774	1,393
6,00	1,71	60,332	16,6	168,15	1,571	6,00	1,571	1,710	1,710	1,710	1,807	1,420
6,20	1,79	62,294	16,8	173,75	1,571	6,20	1,571	1,790	1,740	1,740	1,856	1,457
6,40	2,26	64,256	18,7	179,36	1,571	6,40	1,571	2,260	1,793	1,793	1,912	1,502
6,60	1,84	66,218	16,4	184,96	1,571	6,60	1,571	1,840	1,821	1,821	1,981	1,556
6,80	2,16	68,180	17,7	190,57	1,571	6,80	1,571	2,160	1,864	1,864	2,088	1,640
7,00	2,42	70,142	18,5	196,17	1,571	7,00	1,571	2,420	1,917	1,917	2,282	1,792
7,20	3,07	72,104	20,4	201,78	1,571	7,20	1,571	3,070	1,999	1,999	2,574	2,021
7,40	3,13	74,066	20,3	207,38	1,571	7,40	1,571	3,130	2,079	2,079	2,971	2,333
7,60	4,17	76,028	22,6	212,99	1,571	7,60	1,571	4,170	2,207	2,207	3,464	2,721
7,80	6,93	77,990	26,4	218,59	1,571	7,80	1,571	6,930	2,460	2,460	4,031	3,166
8,00	13,80	79,952	30,9	224,20	1,571	8,00	1,571	13,800	3,030	3,030	4,627	3,634
8,20	20,92	81,914	32,9	229,80	1,571	8,20	1,571	20,920	3,666	3,666	5,181	4,069
8,40	23,49	83,876	33,4	235,41	1,571	8,40	1,571	23,490	4,383	4,383	5,711	4,485
8,60	26,84	85,838	33,9	241,01	1,571	8,60	1,571	26,840	5,041	5,041	6,193	4,864
8,80	25,52	87,800	33,5	246,62	1,571	8,80	1,571	25,520	5,608	5,608	6,629	5,207
9,00	22,98	89,762	32,9	252,22	1,571	9,00	1,571	22,980	6,031	6,031	7,026	5,518
9,20	18,40	91,724	31,7	257,83	1,571	9,20	1,571	18,400	6,359	6,359	7,400	5,812
9,40	15,48	93,685	30,6	263,43	1,571	9,40	1,571	15,480	6,842	6,842	7,747	6,084
9,60	14,86	95,648	30,3	269,04	1,571	9,60	1,571	14,860	7,277	7,277	8,037	6,312
9,80	14,10	97,610	29,9	274,64	1,571	9,80	1,571	14,100	7,658	7,658	8,283	6,506
10,00	13,39	99,572	29,4	280,25	1,571	10,00	1,571	13,390	7,991	7,991	8,498	6,674
10,20	12,51	101,534	28,8	285,85	1,571	10,20	1,571	12,510	8,270	8,270	8,694	6,828
10,40	10,38	103,496	27,3	291,46	1,571	10,40	1,571	10,380	8,441	8,441	8,871	6,967

Diameter paalbasis : 1 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
10,60	9,97	105,458	26,9	297,06	1,571	10,60	1,571	9,970	8,586	8,586	9,047	7,106
10,80	10,60	107,420	27,2	302,67	1,571	10,80	1,571	10,600	8,752	8,752	9,244	7,261
11,00	11,41	109,382	27,6	308,27	1,571	11,00	1,571	11,410	8,946	8,946	9,428	7,405
11,20	12,17	111,344	27,9	313,88	1,571	11,20	1,571	12,170	9,166	9,166	9,577	7,522
11,40	11,27	113,306	27,2	319,48	1,571	11,40	1,571	11,270	9,336	9,336	9,688	7,609
11,60	11,22	115,268	27,1	325,09	1,571	11,60	1,571	11,220	9,496	9,496	9,766	7,670
11,80	13,99	117,230	28,6	330,69	1,571	11,80	1,571	13,990	9,770	9,770	9,812	7,706
12,00	15,26	119,192	29,1	336,30	1,571	12,00	1,571	15,260	10,088	9,853	9,804	7,700
12,20	11,95	121,154	27,2	341,90	1,571	12,20	1,571	11,950	10,249	9,844	9,773	7,676
12,40	13,75	123,116	28,1	347,51	1,571	12,40	1,571	13,750	10,480	9,829	9,733	7,644
12,60	14,65	125,078	28,4	353,11	1,571	12,60	1,571	14,650	10,740	9,805	9,683	7,605
12,80	15,75	127,040	28,8	358,72	1,571	12,80	1,571	15,750	11,037	9,770	9,623	7,558
13,00	14,96	129,002	28,4	364,32	1,571	13,00	1,571	14,960	11,288	9,724	9,554	7,504
13,20	12,09	130,964	26,7	369,93	1,571	13,20	1,571	12,090	11,404	9,666	9,475	7,442
13,40	12,54	132,926	26,9	375,53	1,571	13,40	1,571	12,540	11,535	9,601	9,393	7,377
13,60	14,64	134,888	27,9	381,14	1,571	13,60	1,571	14,640	11,749	9,530	9,307	7,310
13,80	14,90	136,850	27,9	386,74	1,571	13,80	1,571	14,900	11,965	9,448	9,254	7,268
14,00	13,38	138,812	27,0	392,35	1,571	14,00	1,571	13,380	12,108	9,355	9,244	7,260
14,20	11,50	140,774	25,8	397,95	1,571	14,20	1,571	11,500	11,500	9,253	9,278	7,287
14,40	11,32	142,736	25,5	403,56	1,571	14,40	1,571	11,320	11,320	9,170	9,380	7,367
14,60	9,09	144,698	23,7	409,16	1,571	14,60	1,571	9,090	9,090	9,090	9,572	7,518
14,80	10,49	146,660	24,7	414,77	1,571	14,80	1,571	10,490	9,208	9,208	0,000	0,000
15,00	12,10	148,622	25,7	420,37	1,571	15,00	1,571	12,100	9,389	9,389	0,000	0,000
15,20	12,04	150,584	25,6	425,98	1,571	15,20	1,571	12,040	9,560	9,560	0,000	0,000
15,40	15,36	152,546	27,3	431,58	1,571	15,40	1,571	15,360	9,862	9,862	0,000	0,000
15,60	19,39	154,508	28,9	437,19	1,571	15,60	1,571	19,390	10,322	10,322	0,000	0,000
15,80	17,54	156,470	28,1	442,79	1,571	15,80	1,571	17,540	0,000	0,000	0,000	0,000

Diameter paalbasis : 0,4 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
0,60	3,63	7,358	36,1	16,81	1,571	1,50	0,369	0,628	0,106	0,106	0,204	0,026
0,80	2,38	9,320	32,9	22,42	1,571	2,00	0,554	0,639	0,200	0,200	0,313	0,039
1,00	1,86	11,282	30,6	28,02	1,571	2,50	0,746	0,700	0,305	0,305	0,429	0,054
1,20	2,27	13,244	30,8	33,63	1,571	3,00	0,853	0,964	0,434	0,434	0,548	0,069
1,40	1,40	15,206	26,7	39,23	1,571	3,50	1,242	1,006	0,548	0,548	0,647	0,081
1,60	1,12	17,168	24,0	44,84	1,571	4,00	1,571	1,120	0,661	0,661	0,707	0,089
1,80	0,94	19,130	21,7	50,44	1,571	4,50	1,571	0,940	0,732	0,730	0,748	0,094
2,00	0,73	21,092	18,5	56,05	1,571	5,00	1,571	0,730	0,730	0,730	0,789	0,099
2,20	0,92	23,054	19,8	61,65	1,571	5,50	1,571	0,920	0,784	0,784	0,920	0,116
2,40	1,10	25,016	20,7	67,26	1,571	6,00	1,571	1,100	0,853	0,853	1,102	0,138
2,60	2,80	26,978	27,6	72,86	1,571	6,50	1,571	2,800	1,123	1,123	1,316	0,165
2,80	2,53	28,940	26,3	78,47	1,571	7,00	1,571	2,530	1,329	1,329	1,536	0,193
3,00	2,39	30,902	25,3	84,07	1,571	7,50	1,571	2,390	1,495	1,495	1,819	0,229
3,20	3,60	32,864	28,0	89,68	1,571	8,00	1,571	3,600	1,784	1,784	2,170	0,273
3,40	4,77	34,826	29,5	95,28	1,571	8,50	1,571	4,770	2,176	2,176	2,442	0,307
3,60	4,98	36,788	29,4	100,89	1,571	9,00	1,571	4,980	2,551	2,551	2,572	0,323
3,80	5,03	38,750	29,2	106,49	1,571	9,50	1,571	5,030	2,891	2,598	2,559	0,322
4,00	4,76	40,712	28,4	112,10	1,571	10,00	1,571	4,760	3,165	2,569	2,502	0,314
4,20	4,41	42,674	27,5	117,70	1,571	10,50	1,571	4,410	3,370	2,511	2,419	0,304
4,40	4,06	44,636	26,6	123,31	1,571	11,00	1,571	4,060	3,515	2,426	2,311	0,290
4,60	4,39	46,598	26,8	128,91	1,571	11,50	1,571	4,390	3,679	2,320	2,177	0,274
4,80	4,49	48,560	26,7	134,52	1,571	12,00	1,571	4,490	3,836	2,187	2,016	0,253
5,00	4,44	50,522	26,3	140,12	1,571	12,50	1,571	4,440	3,970	2,025	1,893	0,238
5,20	1,99	52,484	19,4	145,73	1,571	13,00	1,571	1,990	1,990	1,835	1,812	0,228
5,40	3,84	54,446	24,6	151,33	1,571	13,50	1,571	3,840	2,219	1,820	1,775	0,223
5,60	2,98	56,408	22,3	156,94	1,571	14,00	1,571	2,980	2,335	1,780	1,739	0,219
5,80	1,89	58,370	17,9	162,54	1,571	14,50	1,571	1,890	1,890	1,726	1,726	0,217
6,00	1,71	60,332	16,6	168,15	1,571	15,00	1,571	1,710	1,710	1,710	1,758	0,221
6,20	1,79	62,294	16,8	173,75	1,571	15,50	1,571	1,790	1,743	1,743	1,801	0,226
6,40	2,26	64,256	18,7	179,36	1,571	16,00	1,571	2,260	1,821	1,821	1,853	0,233
6,60	1,84	66,218	16,4	184,96	1,571	16,50	1,571	1,840	1,840	1,840	1,904	0,239
6,80	2,16	68,180	17,7	190,57	1,571	17,00	1,571	2,160	1,897	1,897	1,995	0,251
7,00	2,42	70,142	18,5	196,17	1,571	17,50	1,571	2,420	1,975	1,975	2,109	0,265
7,20	3,07	72,104	20,4	201,78	1,571	18,00	1,571	3,070	2,111	2,111	2,271	0,285
7,40	3,13	74,066	20,3	207,38	1,571	18,50	1,571	3,130	2,241	2,241	2,548	0,320
7,60	4,17	76,028	22,6	212,99	1,571	19,00	1,571	4,170	2,462	2,462	3,127	0,393
7,80	6,93	77,990	26,4	218,59	1,571	19,50	1,571	6,930	2,941	2,941	4,007	0,504
8,00	13,80	79,952	30,9	224,20	1,571	20,00	1,571	13,800	3,977	3,977	5,146	0,647
8,20	20,92	81,914	32,9	229,80	1,571	20,50	1,571	20,920	5,103	5,103	6,314	0,793
8,40	23,49	83,876	33,4	235,41	1,571	21,00	1,571	23,490	6,359	6,359	7,414	0,932
8,60	26,84	85,838	33,9	241,01	1,571	21,50	1,571	26,840	7,479	7,479	8,305	1,044
8,80	25,52	87,800	33,5	246,62	1,571	22,00	1,571	25,520	8,404	8,404	8,969	1,127
9,00	22,98	89,762	32,9	252,22	1,571	22,50	1,571	22,980	9,033	9,033	9,554	1,201
9,20	18,40	91,724	31,7	257,83	1,571	23,00	1,571	18,400	9,471	9,471	10,004	1,257
9,40	15,48	93,685	30,6	263,43	1,571	23,50	1,571	15,480	10,156	10,156	10,297	1,294
9,60	14,86	95,648	30,3	269,04	1,571	24,00	1,571	14,860	10,716	10,383	10,335	1,299
9,80	14,10	97,610	29,9	274,64	1,571	24,50	1,571	14,100	11,148	10,351	10,259	1,289
10,00	13,39	99,572	29,4	280,25	1,571	25,00	1,571	13,390	11,470	10,273	10,145	1,275
10,20	12,51	101,534	28,8	285,85	1,571	25,50	1,571	12,510	11,674	10,155	10,044	1,262
10,40	10,38	103,496	27,3	291,46	1,571	26,00	1,571	10,380	10,380	10,007	10,031	1,260

Diameter paalbasis : 0,4 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
10,60	9,97	105,458	26,9	297,06	1,571	26,50	1,571	9,970	9,970	9,970	10,137	1,274
10,80	10,60	107,420	27,2	302,67	1,571	27,00	1,571	10,600	10,115	10,115	10,343	1,300
11,00	11,41	109,382	27,6	308,27	1,571	27,50	1,571	11,410	10,325	10,325	10,550	1,326
11,20	12,17	111,344	27,9	313,88	1,571	28,00	1,571	12,170	10,588	10,588	10,732	1,349
11,40	11,27	113,306	27,2	319,48	1,571	28,50	1,571	11,270	10,738	10,738	10,954	1,377
11,60	11,22	115,268	27,1	325,09	1,571	29,00	1,571	11,220	10,869	10,869	11,148	1,401
11,80	13,99	117,230	28,6	330,69	1,571	29,50	1,571	13,990	11,255	11,255	11,285	1,418
12,00	15,26	119,192	29,1	336,30	1,571	30,00	1,571	15,260	11,728	11,319	11,275	1,417
12,20	11,95	121,154	27,2	341,90	1,571	30,50	1,571	11,950	11,836	11,279	11,214	1,409
12,40	13,75	123,116	28,1	347,51	1,571	31,00	1,571	13,750	12,107	11,225	11,125	1,398
12,60	14,65	125,078	28,4	353,11	1,571	31,50	1,571	14,650	12,440	11,139	10,994	1,382
12,80	15,75	127,040	28,8	358,72	1,571	32,00	1,571	15,750	12,847	11,011	10,816	1,359
13,00	14,96	129,002	28,4	364,32	1,571	32,50	1,571	14,960	13,140	10,831	10,632	1,336
13,20	12,09	130,964	26,7	369,93	1,571	33,00	1,571	12,090	12,090	10,605	10,451	1,313
13,40	12,54	132,926	26,9	375,53	1,571	33,50	1,571	12,540	12,215	10,460	10,272	1,291
13,60	14,64	134,888	27,9	381,14	1,571	34,00	1,571	14,640	12,529	10,288	10,051	1,263
13,80	14,90	136,850	27,9	386,74	1,571	34,50	1,571	14,900	12,839	10,069	9,784	1,229
14,00	13,38	138,812	27,0	392,35	1,571	35,00	1,571	13,380	12,974	9,797	9,524	1,197
14,20	11,50	140,774	25,8	397,95	1,571	35,50	1,571	11,500	11,500	9,486	9,288	1,167
14,40	11,32	142,736	25,5	403,56	1,571	36,00	1,571	11,320	11,320	9,289	9,219	1,159
14,60	9,09	144,698	23,7	409,16	1,571	36,50	1,571	9,090	9,090	9,090	9,324	1,172
14,80	10,49	146,660	24,7	414,77	1,571	37,00	1,571	10,490	9,279	9,279	9,592	1,205
15,00	12,10	148,622	25,7	420,37	1,571	37,50	1,571	12,100	9,604	9,604	9,990	1,255
15,20	12,04	150,584	25,6	425,98	1,571	38,00	1,571	12,040	9,893	9,893	10,581	1,330
15,40	15,36	152,546	27,3	431,58	1,571	38,50	1,571	15,360	10,471	10,471	0,000	0,000
15,60	19,39	154,508	28,9	437,19	1,571	39,00	1,571	19,390	11,380	11,380	0,000	0,000
15,80	17,54	156,470	28,1	442,79	1,571	39,50	1,571	17,540	0,000	0,000	0,000	0,000

Diameter paalbasis : 0,6 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
0,60	3,63	7,358	36,1	16,81	1,571	1,00	0,263	0,538	0,081	0,081	0,190	0,054
0,80	2,38	9,320	32,9	22,42	1,571	1,33	0,398	0,522	0,149	0,149	0,263	0,074
1,00	1,86	11,282	30,6	28,02	1,571	1,67	0,537	0,547	0,222	0,222	0,336	0,095
1,20	2,27	13,244	30,8	33,63	1,571	2,00	0,617	0,727	0,306	0,306	0,409	0,116
1,40	1,40	15,206	26,7	39,23	1,571	2,33	0,866	0,690	0,374	0,374	0,472	0,134
1,60	1,12	17,168	24,0	44,84	1,571	2,67	1,132	0,758	0,440	0,440	0,534	0,151
1,80	0,94	19,130	21,7	50,44	1,571	3,00	1,535	0,914	0,515	0,515	0,597	0,169
2,00	0,73	21,092	18,5	56,05	1,571	3,33	1,571	0,730	0,561	0,561	0,689	0,195
2,20	0,92	23,054	19,8	61,65	1,571	3,67	1,571	0,920	0,621	0,621	0,815	0,230
2,40	1,10	25,016	20,7	67,26	1,571	4,00	1,571	1,100	0,691	0,691	0,964	0,273
2,60	2,80	26,978	27,6	72,86	1,571	4,33	1,443	2,450	0,883	0,883	1,157	0,327
2,80	2,53	28,940	26,3	78,47	1,571	4,67	1,571	2,530	1,064	1,064	1,383	0,391
3,00	2,39	30,902	25,3	84,07	1,571	5,00	1,571	2,390	1,217	1,217	1,644	0,465
3,20	3,60	32,864	28,0	89,68	1,571	5,33	1,571	3,600	1,463	1,463	1,889	0,534
3,40	4,77	34,826	29,5	95,28	1,571	5,67	1,571	4,770	1,790	1,790	2,069	0,585
3,60	4,98	36,788	29,4	100,89	1,571	6,00	1,571	4,980	2,108	2,108	2,159	0,610
3,80	5,03	38,750	29,2	106,49	1,571	6,33	1,571	5,030	2,404	2,195	2,159	0,610
4,00	4,76	40,712	28,4	112,10	1,571	6,67	1,571	4,760	2,655	2,182	2,123	0,600
4,20	4,41	42,674	27,5	117,70	1,571	7,00	1,571	4,410	2,857	2,152	2,072	0,586
4,40	4,06	44,636	26,6	123,31	1,571	7,33	1,571	4,060	3,014	2,107	2,007	0,567
4,60	4,39	46,598	26,8	128,91	1,571	7,67	1,571	4,390	3,185	2,050	1,928	0,545
4,80	4,49	48,560	26,7	134,52	1,571	8,00	1,571	4,490	3,349	1,978	1,859	0,526
5,00	4,44	50,522	26,3	140,12	1,571	8,33	1,571	4,440	3,497	1,892	1,803	0,510
5,20	1,99	52,484	19,4	145,73	1,571	8,67	1,571	1,990	1,990	1,790	1,760	0,498
5,40	3,84	54,446	24,6	151,33	1,571	9,00	1,571	3,840	2,166	1,778	1,740	0,492
5,60	2,98	56,408	22,3	156,94	1,571	9,33	1,571	2,980	2,264	1,753	1,731	0,490
5,80	1,89	58,370	17,9	162,54	1,571	9,67	1,571	1,890	1,890	1,721	1,744	0,493
6,00	1,71	60,332	16,6	168,15	1,571	10,00	1,571	1,710	1,710	1,710	1,773	0,501
6,20	1,79	62,294	16,8	173,75	1,571	10,33	1,571	1,790	1,742	1,742	1,816	0,513
6,40	2,26	64,256	18,7	179,36	1,571	10,67	1,571	2,260	1,805	1,805	1,867	0,528
6,60	1,84	66,218	16,4	184,96	1,571	11,00	1,571	1,840	1,834	1,834	1,929	0,545
6,80	2,16	68,180	17,7	190,57	1,571	11,33	1,571	2,160	1,883	1,883	2,010	0,568
7,00	2,42	70,142	18,5	196,17	1,571	11,67	1,571	2,420	1,947	1,947	2,121	0,600
7,20	3,07	72,104	20,4	201,78	1,571	12,00	1,571	3,070	2,053	2,053	2,306	0,652
7,40	3,13	74,066	20,3	207,38	1,571	12,33	1,571	3,130	2,157	2,157	2,659	0,752
7,60	4,17	76,028	22,6	212,99	1,571	12,67	1,571	4,170	2,328	2,328	3,202	0,905
7,80	6,93	77,990	26,4	218,59	1,571	13,00	1,571	6,930	2,685	2,685	3,943	1,115
8,00	13,80	79,952	30,9	224,20	1,571	13,33	1,571	13,800	3,468	3,468	4,814	1,361
8,20	20,92	81,914	32,9	229,80	1,571	13,67	1,571	20,920	4,328	4,328	5,675	1,605
8,40	23,49	83,876	33,4	235,41	1,571	14,00	1,571	23,490	5,293	5,293	6,453	1,825
8,60	26,84	85,838	33,9	241,01	1,571	14,33	1,571	26,840	6,168	6,168	7,089	2,004
8,80	25,52	87,800	33,5	246,62	1,571	14,67	1,571	25,520	6,910	6,910	7,657	2,165
9,00	22,98	89,762	32,9	252,22	1,571	15,00	1,571	22,980	7,441	7,441	8,173	2,311
9,20	18,40	91,724	31,7	257,83	1,571	15,33	1,571	18,400	7,835	7,835	8,665	2,450
9,40	15,48	93,685	30,6	263,43	1,571	15,67	1,571	15,480	8,444	8,444	9,149	2,587
9,60	14,86	95,648	30,3	269,04	1,571	16,00	1,571	14,860	8,970	8,970	9,534	2,696
9,80	14,10	97,610	29,9	274,64	1,571	16,33	1,571	14,100	9,410	9,410	9,787	2,767
10,00	13,39	99,572	29,4	280,25	1,571	16,67	1,571	13,390	9,772	9,772	9,927	2,807
10,20	12,51	101,534	28,8	285,85	1,571	17,00	1,571	12,510	10,050	9,986	10,009	2,830
10,40	10,38	103,496	27,3	291,46	1,571	17,33	1,571	10,380	10,163	9,981	10,081	2,850

Diameter paalbasis : 0,6 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
10,60	9,97	105,458	26,9	297,06	1,571	17,67	1,571	9,970	9,970	9,970	10,208	2,886
10,80	10,60	107,420	27,2	302,67	1,571	18,00	1,571	10,600	10,099	10,099	10,373	2,933
11,00	11,41	109,382	27,6	308,27	1,571	18,33	1,571	11,410	10,274	10,274	10,531	2,978
11,20	12,17	111,344	27,9	313,88	1,571	18,67	1,571	12,170	10,489	10,489	10,646	3,010
11,40	11,27	113,306	27,2	319,48	1,571	19,00	1,571	11,270	10,628	10,628	10,702	3,026
11,60	11,22	115,268	27,1	325,09	1,571	19,33	1,571	11,220	10,754	10,734	10,712	3,029
11,80	13,99	117,230	28,6	330,69	1,571	19,67	1,571	13,990	11,057	10,733	10,681	3,020
12,00	15,26	119,192	29,1	336,30	1,571	20,00	1,571	15,260	11,426	10,712	10,632	3,006
12,20	11,95	121,154	27,2	341,90	1,571	20,33	1,571	11,950	11,549	10,667	10,564	2,987
12,40	13,75	123,116	28,1	347,51	1,571	20,67	1,571	13,750	11,784	10,611	10,477	2,962
12,60	14,65	125,078	28,4	353,11	1,571	21,00	1,571	14,650	12,063	10,537	10,366	2,931
12,80	15,75	127,040	28,8	358,72	1,571	21,33	1,571	15,750	12,398	10,441	10,244	2,896
13,00	14,96	129,002	28,4	364,32	1,571	21,67	1,571	14,960	12,658	10,317	10,111	2,859
13,20	12,09	130,964	26,7	369,93	1,571	22,00	1,571	12,090	12,090	10,169	9,970	2,819
13,40	12,54	132,926	26,9	375,53	1,571	22,33	1,571	12,540	12,204	10,048	9,818	2,776
13,60	14,64	134,888	27,9	381,14	1,571	22,67	1,571	14,640	12,450	9,911	9,646	2,727
13,80	14,90	136,850	27,9	386,74	1,571	23,00	1,571	14,900	12,697	9,751	9,474	2,679
14,00	13,38	138,812	27,0	392,35	1,571	23,33	1,571	13,380	12,827	9,564	9,309	2,632
14,20	11,50	140,774	25,8	397,95	1,571	23,67	1,571	11,500	11,500	9,358	9,228	2,609
14,40	11,32	142,736	25,5	403,56	1,571	24,00	1,571	11,320	11,320	9,223	9,259	2,618
14,60	9,09	144,698	23,7	409,16	1,571	24,33	1,571	9,090	9,090	9,090	9,382	2,653
14,80	10,49	146,660	24,7	414,77	1,571	24,67	1,571	10,490	9,240	9,240	9,644	2,727
15,00	12,10	148,622	25,7	420,37	1,571	25,00	1,571	12,100	9,485	9,485	10,036	2,838
15,20	12,04	150,584	25,6	425,98	1,571	25,33	1,571	12,040	9,712	9,712	0,000	0,000
15,40	15,36	152,546	27,3	431,58	1,571	25,67	1,571	15,360	10,141	10,141	0,000	0,000
15,60	19,39	154,508	28,9	437,19	1,571	26,00	1,571	19,390	10,807	10,807	0,000	0,000
15,80	17,54	156,470	28,1	442,79	1,571	26,33	1,571	17,540	0,000	0,000	0,000	0,000

Diameter paalbasis : 0,2 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
0,60	3,63	7,358	36,1	16,81	1,571	3,00	0,636	0,928	0,283	0,283	0,404	0,013
0,80	2,38	9,320	32,9	22,42	1,571	4,00	0,951	1,068	0,526	0,526	0,656	0,021
1,00	1,86	11,282	30,6	28,02	1,571	5,00	1,317	1,376	0,785	0,785	0,873	0,027
1,20	2,27	13,244	30,8	33,63	1,571	6,00	1,541	2,192	1,180	0,961	0,938	0,029
1,40	1,40	15,206	26,7	39,23	1,571	7,00	1,571	1,400	1,299	0,914	0,872	0,027
1,60	1,12	17,168	24,0	44,84	1,571	8,00	1,571	1,120	1,120	0,830	0,799	0,025
1,80	0,94	19,130	21,7	50,44	1,571	9,00	1,571	0,940	0,940	0,767	0,749	0,024
2,00	0,73	21,092	18,5	56,05	1,571	10,00	1,571	0,730	0,730	0,730	0,764	0,024
2,20	0,92	23,054	19,8	61,65	1,571	11,00	1,571	0,920	0,797	0,797	0,843	0,026
2,40	1,10	25,016	20,7	67,26	1,571	12,00	1,571	1,100	0,888	0,888	1,102	0,035
2,60	2,80	26,978	27,6	72,86	1,571	13,00	1,571	2,800	1,316	1,316	1,461	0,046
2,80	2,53	28,940	26,3	78,47	1,571	14,00	1,571	2,530	1,606	1,606	1,708	0,054
3,00	2,39	30,902	25,3	84,07	1,571	15,00	1,571	2,390	1,810	1,810	2,015	0,063
3,20	3,60	32,864	28,0	89,68	1,571	16,00	1,571	3,600	2,220	2,220	2,505	0,079
3,40	4,77	34,826	29,5	95,28	1,571	17,00	1,571	4,770	2,789	2,789	3,040	0,096
3,60	4,98	36,788	29,4	100,89	1,571	18,00	1,571	4,980	3,292	3,292	3,406	0,107
3,80	5,03	38,750	29,2	106,49	1,571	19,00	1,571	5,030	3,709	3,520	3,500	0,110
4,00	4,76	40,712	28,4	112,10	1,571	20,00	1,571	4,760	3,993	3,479	3,423	0,108
4,20	4,41	42,674	27,5	117,70	1,571	21,00	1,571	4,410	4,153	3,367	3,282	0,103
4,40	4,06	44,636	26,6	123,31	1,571	22,00	1,571	4,060	4,060	3,197	3,103	0,097
4,60	4,39	46,598	26,8	128,91	1,571	23,00	1,571	4,390	4,196	3,009	2,881	0,090
4,80	4,49	48,560	26,7	134,52	1,571	24,00	1,571	4,490	4,325	2,752	2,581	0,081
5,00	4,44	50,522	26,3	140,12	1,571	25,00	1,571	4,440	4,418	2,410	2,192	0,069
5,20	1,99	52,484	19,4	145,73	1,571	26,00	1,571	1,990	1,990	1,974	1,973	0,062
5,40	3,84	54,446	24,6	151,33	1,571	27,00	1,571	3,840	2,378	1,971	1,927	0,061
5,60	2,98	56,408	22,3	156,94	1,571	28,00	1,571	2,980	2,529	1,882	1,812	0,057
5,80	1,89	58,370	17,9	162,54	1,571	29,00	1,571	1,890	1,890	1,742	1,726	0,054
6,00	1,71	60,332	16,6	168,15	1,571	30,00	1,571	1,710	1,710	1,710	1,729	0,054
6,20	1,79	62,294	16,8	173,75	1,571	31,00	1,571	1,790	1,748	1,748	1,796	0,056
6,40	2,26	64,256	18,7	179,36	1,571	32,00	1,571	2,260	1,868	1,845	1,842	0,058
6,60	1,84	66,218	16,4	184,96	1,571	33,00	1,571	1,840	1,840	1,840	1,881	0,059
6,80	2,16	68,180	17,7	190,57	1,571	34,00	1,571	2,160	1,923	1,923	1,981	0,062
7,00	2,42	70,142	18,5	196,17	1,571	35,00	1,571	2,420	2,040	2,040	2,149	0,068
7,20	3,07	72,104	20,4	201,78	1,571	36,00	1,571	3,070	2,258	2,258	2,353	0,074
7,40	3,13	74,066	20,3	207,38	1,571	37,00	1,571	3,130	2,448	2,448	2,624	0,082
7,60	4,17	76,028	22,6	212,99	1,571	38,00	1,571	4,170	2,800	2,800	3,205	0,101
7,80	6,93	77,990	26,4	218,59	1,571	39,00	1,571	6,930	3,610	3,610	4,589	0,144
8,00	13,80	79,952	30,9	224,20	1,571	40,00	1,571	13,800	5,568	5,568	7,042	0,221
8,20	20,92	81,914	32,9	229,80	1,571	41,00	1,571	20,920	8,515	8,515	9,965	0,313
8,40	23,49	83,876	33,4	235,41	1,571	42,00	1,571	23,490	11,415	11,415	12,919	0,406
8,60	26,84	85,838	33,9	241,01	1,571	43,00	1,571	26,840	14,422	14,422	14,642	0,460
8,80	25,52	87,800	33,5	246,62	1,571	44,00	1,571	25,520	16,639	14,863	14,670	0,461
9,00	22,98	89,762	32,9	252,22	1,571	45,00	1,571	22,980	17,979	14,477	14,097	0,443
9,20	18,40	91,724	31,7	257,83	1,571	46,00	1,571	18,400	18,217	13,717	13,228	0,416
9,40	15,48	93,685	30,6	263,43	1,571	47,00	1,571	15,480	15,480	12,739	12,442	0,391
9,60	14,86	95,648	30,3	269,04	1,571	48,00	1,571	14,860	14,860	12,144	11,849	0,372
9,80	14,10	97,610	29,9	274,64	1,571	49,00	1,571	14,100	14,100	11,555	11,278	0,354
10,00	13,39	99,572	29,4	280,25	1,571	50,00	1,571	13,390	13,390	11,002	10,743	0,337
10,20	12,51	101,534	28,8	285,85	1,571	51,00	1,571	12,510	12,510	10,483	10,263	0,322
10,40	10,38	103,496	27,3	291,46	1,571	52,00	1,571	10,380	10,380	10,043	10,007	0,314

Diameter paalbasis : 0,2 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
10,60	9,97	105,458	26,9	297,06	1,571	53,00	1,571	9,970	9,970	9,970	10,066	0,316
10,80	10,60	107,420	27,2	302,67	1,571	54,00	1,571	10,600	10,163	10,163	10,316	0,324
11,00	11,41	109,382	27,6	308,27	1,571	55,00	1,571	11,410	10,470	10,470	10,666	0,335
11,20	12,17	111,344	27,9	313,88	1,571	56,00	1,571	12,170	10,862	10,862	10,939	0,344
11,40	11,27	113,306	27,2	319,48	1,571	57,00	1,571	11,270	11,016	11,016	11,074	0,348
11,60	11,22	115,268	27,1	325,09	1,571	58,00	1,571	11,220	11,131	11,131	11,435	0,359
11,80	13,99	117,230	28,6	330,69	1,571	59,00	1,571	13,990	11,738	11,738	11,891	0,374
12,00	15,26	119,192	29,1	336,30	1,571	60,00	1,571	15,260	12,471	12,043	11,996	0,377
12,20	11,95	121,154	27,2	341,90	1,571	61,00	1,571	11,950	11,950	11,950	12,152	0,382
12,40	13,75	123,116	28,1	347,51	1,571	62,00	1,571	13,750	12,362	12,355	12,354	0,388
12,60	14,65	125,078	28,4	353,11	1,571	63,00	1,571	14,650	12,865	12,353	12,298	0,386
12,80	15,75	127,040	28,8	358,72	1,571	64,00	1,571	15,750	13,481	12,242	12,108	0,380
13,00	14,96	129,002	28,4	364,32	1,571	65,00	1,571	14,960	13,839	11,973	11,771	0,370
13,20	12,09	130,964	26,7	369,93	1,571	66,00	1,571	12,090	12,090	11,568	11,512	0,362
13,40	12,54	132,926	26,9	375,53	1,571	67,00	1,571	12,540	12,247	11,455	11,369	0,357
13,60	14,64	134,888	27,9	381,14	1,571	68,00	1,571	14,640	12,762	11,283	11,123	0,349
13,80	14,90	136,850	27,9	386,74	1,571	69,00	1,571	14,900	13,232	10,962	10,716	0,337
14,00	13,38	138,812	27,0	392,35	1,571	70,00	1,571	13,380	13,336	10,469	10,158	0,319
14,20	11,50	140,774	25,8	397,95	1,571	71,00	1,571	11,500	11,500	9,847	9,667	0,304
14,40	11,32	142,736	25,5	403,56	1,571	72,00	1,571	11,320	11,320	9,488	9,289	0,292
14,60	9,09	144,698	23,7	409,16	1,571	73,00	1,571	9,090	9,090	9,090	9,244	0,290
14,80	10,49	146,660	24,7	414,77	1,571	74,00	1,571	10,490	9,398	9,398	9,672	0,304
15,00	12,10	148,622	25,7	420,37	1,571	75,00	1,571	12,100	9,946	9,946	10,165	0,319
15,20	12,04	150,584	25,6	425,98	1,571	76,00	1,571	12,040	10,384	10,384	10,869	0,341
15,40	15,36	152,546	27,3	431,58	1,571	77,00	1,571	15,360	11,354	11,354	12,121	0,381
15,60	19,39	154,508	28,9	437,19	1,571	78,00	1,571	19,390	12,889	12,889	0,000	0,000
15,80	17,54	156,470	28,1	442,79	1,571	79,00	1,571	17,540	0,000	0,000	0,000	0,000

Diameter paalbasis : 0,4 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
0,60	3,63	7,358	36,1	16,81	1,571	1,50	0,369	0,628	0,106	0,106	0,204	0,026
0,80	2,38	9,320	32,9	22,42	1,571	2,00	0,554	0,639	0,200	0,200	0,313	0,039
1,00	1,86	11,282	30,6	28,02	1,571	2,50	0,746	0,700	0,305	0,305	0,429	0,054
1,20	2,27	13,244	30,8	33,63	1,571	3,00	0,853	0,964	0,434	0,434	0,548	0,069
1,40	1,40	15,206	26,7	39,23	1,571	3,50	1,242	1,006	0,548	0,548	0,647	0,081
1,60	1,12	17,168	24,0	44,84	1,571	4,00	1,571	1,120	0,661	0,661	0,707	0,089
1,80	0,94	19,130	21,7	50,44	1,571	4,50	1,571	0,940	0,732	0,730	0,748	0,094
2,00	0,73	21,092	18,5	56,05	1,571	5,00	1,571	0,730	0,730	0,730	0,789	0,099
2,20	0,92	23,054	19,8	61,65	1,571	5,50	1,571	0,920	0,784	0,784	0,920	0,116
2,40	1,10	25,016	20,7	67,26	1,571	6,00	1,571	1,100	0,853	0,853	1,102	0,138
2,60	2,80	26,978	27,6	72,86	1,571	6,50	1,571	2,800	1,123	1,123	1,316	0,165
2,80	2,53	28,940	26,3	78,47	1,571	7,00	1,571	2,530	1,329	1,329	1,536	0,193
3,00	2,39	30,902	25,3	84,07	1,571	7,50	1,571	2,390	1,495	1,495	1,819	0,229
3,20	3,60	32,864	28,0	89,68	1,571	8,00	1,571	3,600	1,784	1,784	2,170	0,273
3,40	4,77	34,826	29,5	95,28	1,571	8,50	1,571	4,770	2,176	2,176	2,442	0,307
3,60	4,98	36,788	29,4	100,89	1,571	9,00	1,571	4,980	2,551	2,551	2,572	0,323
3,80	5,03	38,750	29,2	106,49	1,571	9,50	1,571	5,030	2,891	2,598	2,559	0,322
4,00	4,76	40,712	28,4	112,10	1,571	10,00	1,571	4,760	3,165	2,569	2,502	0,314
4,20	4,41	42,674	27,5	117,70	1,571	10,50	1,571	4,410	3,370	2,511	2,419	0,304
4,40	4,06	44,636	26,6	123,31	1,571	11,00	1,571	4,060	3,515	2,426	2,311	0,290
4,60	4,39	46,598	26,8	128,91	1,571	11,50	1,571	4,390	3,679	2,320	2,177	0,274
4,80	4,49	48,560	26,7	134,52	1,571	12,00	1,571	4,490	3,836	2,187	2,016	0,253
5,00	4,44	50,522	26,3	140,12	1,571	12,50	1,571	4,440	3,970	2,025	1,893	0,238
5,20	1,99	52,484	19,4	145,73	1,571	13,00	1,571	1,990	1,990	1,835	1,812	0,228
5,40	3,84	54,446	24,6	151,33	1,571	13,50	1,571	3,840	2,219	1,820	1,775	0,223
5,60	2,98	56,408	22,3	156,94	1,571	14,00	1,571	2,980	2,335	1,780	1,739	0,219
5,80	1,89	58,370	17,9	162,54	1,571	14,50	1,571	1,890	1,890	1,726	1,726	0,217
6,00	1,71	60,332	16,6	168,15	1,571	15,00	1,571	1,710	1,710	1,710	1,758	0,221
6,20	1,79	62,294	16,8	173,75	1,571	15,50	1,571	1,790	1,743	1,743	1,801	0,226
6,40	2,26	64,256	18,7	179,36	1,571	16,00	1,571	2,260	1,821	1,821	1,853	0,233
6,60	1,84	66,218	16,4	184,96	1,571	16,50	1,571	1,840	1,840	1,840	1,904	0,239
6,80	2,16	68,180	17,7	190,57	1,571	17,00	1,571	2,160	1,897	1,897	1,995	0,251
7,00	2,42	70,142	18,5	196,17	1,571	17,50	1,571	2,420	1,975	1,975	2,109	0,265
7,20	3,07	72,104	20,4	201,78	1,571	18,00	1,571	3,070	2,111	2,111	2,271	0,285
7,40	3,13	74,066	20,3	207,38	1,571	18,50	1,571	3,130	2,241	2,241	2,548	0,320
7,60	4,17	76,028	22,6	212,99	1,571	19,00	1,571	4,170	2,462	2,462	3,127	0,393
7,80	6,93	77,990	26,4	218,59	1,571	19,50	1,571	6,930	2,941	2,941	4,007	0,504
8,00	13,80	79,952	30,9	224,20	1,571	20,00	1,571	13,800	3,977	3,977	5,146	0,647
8,20	20,92	81,914	32,9	229,80	1,571	20,50	1,571	20,920	5,103	5,103	6,314	0,793
8,40	23,49	83,876	33,4	235,41	1,571	21,00	1,571	23,490	6,359	6,359	7,414	0,932
8,60	26,84	85,838	33,9	241,01	1,571	21,50	1,571	26,840	7,479	7,479	8,305	1,044
8,80	25,52	87,800	33,5	246,62	1,571	22,00	1,571	25,520	8,404	8,404	8,969	1,127
9,00	22,98	89,762	32,9	252,22	1,571	22,50	1,571	22,980	9,033	9,033	9,554	1,201
9,20	18,40	91,724	31,7	257,83	1,571	23,00	1,571	18,400	9,471	9,471	10,004	1,257
9,40	15,48	93,685	30,6	263,43	1,571	23,50	1,571	15,480	10,156	10,156	10,297	1,294
9,60	14,86	95,648	30,3	269,04	1,571	24,00	1,571	14,860	10,716	10,383	10,335	1,299
9,80	14,10	97,610	29,9	274,64	1,571	24,50	1,571	14,100	11,148	10,351	10,259	1,289
10,00	13,39	99,572	29,4	280,25	1,571	25,00	1,571	13,390	11,470	10,273	10,145	1,275
10,20	12,51	101,534	28,8	285,85	1,571	25,50	1,571	12,510	11,674	10,155	10,044	1,262
10,40	10,38	103,496	27,3	291,46	1,571	26,00	1,571	10,380	10,380	10,007	10,031	1,260

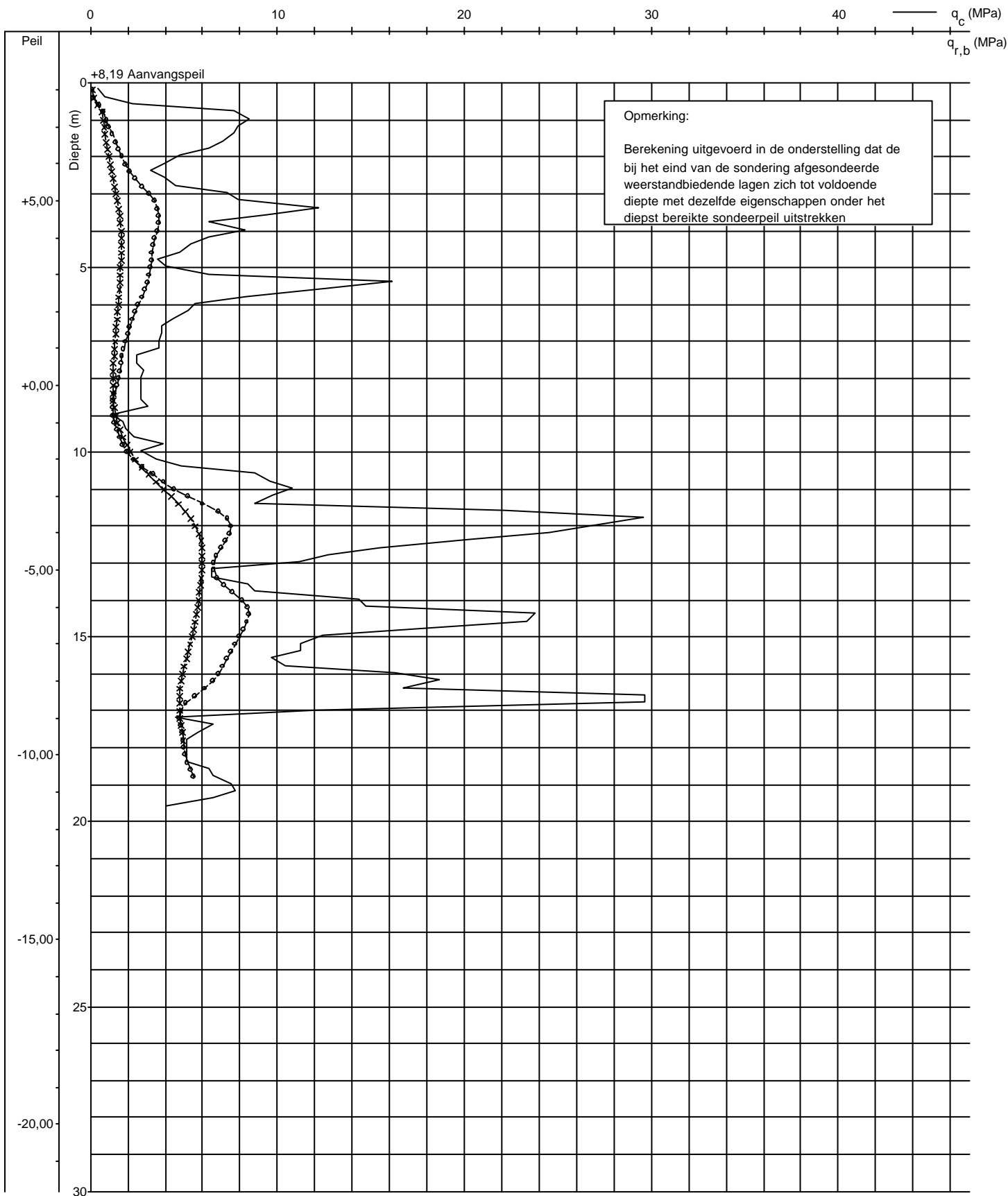
Diameter paalbasis : 0,4 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
10,60	9,97	105,458	26,9	297,06	1,571	26,50	1,571	9,970	9,970	9,970	10,137	1,274
10,80	10,60	107,420	27,2	302,67	1,571	27,00	1,571	10,600	10,115	10,115	10,343	1,300
11,00	11,41	109,382	27,6	308,27	1,571	27,50	1,571	11,410	10,325	10,325	10,550	1,326
11,20	12,17	111,344	27,9	313,88	1,571	28,00	1,571	12,170	10,588	10,588	10,732	1,349
11,40	11,27	113,306	27,2	319,48	1,571	28,50	1,571	11,270	10,738	10,738	10,954	1,377
11,60	11,22	115,268	27,1	325,09	1,571	29,00	1,571	11,220	10,869	10,869	11,148	1,401
11,80	13,99	117,230	28,6	330,69	1,571	29,50	1,571	13,990	11,255	11,255	11,285	1,418
12,00	15,26	119,192	29,1	336,30	1,571	30,00	1,571	15,260	11,728	11,319	11,275	1,417
12,20	11,95	121,154	27,2	341,90	1,571	30,50	1,571	11,950	11,836	11,279	11,214	1,409
12,40	13,75	123,116	28,1	347,51	1,571	31,00	1,571	13,750	12,107	11,225	11,125	1,398
12,60	14,65	125,078	28,4	353,11	1,571	31,50	1,571	14,650	12,440	11,139	10,994	1,382
12,80	15,75	127,040	28,8	358,72	1,571	32,00	1,571	15,750	12,847	11,011	10,816	1,359
13,00	14,96	129,002	28,4	364,32	1,571	32,50	1,571	14,960	13,140	10,831	10,632	1,336
13,20	12,09	130,964	26,7	369,93	1,571	33,00	1,571	12,090	12,090	10,605	10,451	1,313
13,40	12,54	132,926	26,9	375,53	1,571	33,50	1,571	12,540	12,215	10,460	10,272	1,291
13,60	14,64	134,888	27,9	381,14	1,571	34,00	1,571	14,640	12,529	10,288	10,051	1,263
13,80	14,90	136,850	27,9	386,74	1,571	34,50	1,571	14,900	12,839	10,069	9,784	1,229
14,00	13,38	138,812	27,0	392,35	1,571	35,00	1,571	13,380	12,974	9,797	9,524	1,197
14,20	11,50	140,774	25,8	397,95	1,571	35,50	1,571	11,500	11,500	9,486	9,288	1,167
14,40	11,32	142,736	25,5	403,56	1,571	36,00	1,571	11,320	11,320	9,289	9,219	1,159
14,60	9,09	144,698	23,7	409,16	1,571	36,50	1,571	9,090	9,090	9,090	9,324	1,172
14,80	10,49	146,660	24,7	414,77	1,571	37,00	1,571	10,490	9,279	9,279	9,592	1,205
15,00	12,10	148,622	25,7	420,37	1,571	37,50	1,571	12,100	9,604	9,604	9,990	1,255
15,20	12,04	150,584	25,6	425,98	1,571	38,00	1,571	12,040	9,893	9,893	10,581	1,330
15,40	15,36	152,546	27,3	431,58	1,571	38,50	1,571	15,360	10,471	10,471	0,000	0,000
15,60	19,39	154,508	28,9	437,19	1,571	39,00	1,571	19,390	11,380	11,380	0,000	0,000
15,80	17,54	156,470	28,1	442,79	1,571	39,50	1,571	17,540	0,000	0,000	0,000	0,000

SONDERING (CPT-M) : $q_{r,b}$ -berekening

Opdracht DBEER-02/qp	Datum 01/01/1971	ZWIJNAARDE QP-BEREKENING DE BEER	Proef V
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Apparaat : 200kN	Conus : M1
Water op : 1 m (peil +7,19) opgemeten op 01/01/1971	$q_{r,b}$ -berekening : De Beer
	Diameters : (o) 0,5 m (x) 1,5 m



Algemene gegevens

Opdrachtnummer :	DBEER-02/qp
Sondeernummer :	V
Datum uitvoering :	01/01/1971
Plaats :	ZWIJNAARDE QP-BEREKENING DE BEER
Lambertcoördinaten :	X= Y=
Aanvangspeil :	+8,19
Apparaat Type :	200kN
Conus Type :	M1
Meetlichaam :	H100
Grondsoort aan de conus :	
Diepte water :	1 m (t.o.v. aanvangspeil)
Datum opmeting waterpeil:	01/01/1971 00:00
Aantal buizen :	0

Constanten

Massa eindbuis :	6,4 kg
Massa verlengbuis :	6,4 kg
Massa kleefvangerbuis :	6,4 kg
Massa eindstang :	0 kg
Massa verlengstang :	0 kg
Oppervlakte conus :	10 cm ²
Oppervlakte plunjers :	100 cm ²
Net area ratio :	0,8

Ijkcoëfficiënten

Coëfficiënten conus :	a: 1	b: 0
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Diameter paalbasis : 0,52 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	$q_{r,b 0,4}$ MPa	$q_{r,b 0,6}$ MPa	$q_{r,b 0,52}$ MPa	$Q_{r,b 0,52}$ MN
0,20	0,42	3,139	29,4	0,090	0,084	0,087	0,018
0,40	0,82	6,278	29,2	0,215	0,190	0,200	0,042
0,60	2,29	9,418	32,7	0,541	0,459	0,492	0,105
0,80	7,69	12,557	37,1	0,776	0,668	0,711	0,151
1,00	8,48	15,696	36,5	0,979	0,803	0,873	0,185
1,20	7,89	17,658	35,7	1,186	0,933	1,034	0,220
1,40	7,70	19,620	35,0	1,396	1,056	1,192	0,253
1,60	7,11	21,582	34,2	1,613	1,180	1,353	0,287
1,80	6,33	23,544	33,2	1,858	1,305	1,526	0,324
2,00	4,77	25,506	31,3	2,099	1,445	1,707	0,362
2,20	3,98	27,468	29,9	2,353	1,609	1,907	0,405
2,40	3,20	29,430	27,9	2,608	1,813	2,131	0,453
2,60	3,99	31,392	29,0	2,993	2,064	2,435	0,517
2,80	4,58	33,354	29,5	3,486	2,349	2,804	0,595
3,00	7,33	35,316	31,8	3,957	2,644	3,169	0,673
3,20	7,92	37,278	32,0	4,225	2,934	3,450	0,733
3,40	12,24	39,240	33,9	4,281	3,141	3,597	0,764
3,60	9,50	41,202	32,4	4,232	3,262	3,650	0,775
3,80	6,36	43,164	30,0	4,148	3,307	3,643	0,774
4,00	8,32	45,126	31,2	4,025	3,267	3,570	0,758
4,20	6,36	47,088	29,4	3,878	3,208	3,476	0,738
4,40	5,39	49,050	28,0	3,739	3,150	3,386	0,719
4,60	4,80	51,012	26,8	3,655	3,094	3,318	0,705
4,80	3,63	52,974	24,4	3,616	3,041	3,271	0,695
5,00	4,02	54,936	24,9	3,597	2,984	3,229	0,686
5,20	6,38	56,898	28,1	3,543	2,907	3,161	0,671
5,40	16,19	58,860	33,3	3,445	2,804	3,060	0,650
5,60	12,66	60,822	31,8	3,295	2,676	2,924	0,621
5,80	8,35	62,784	29,3	3,104	2,528	2,758	0,586
6,00	5,61	64,746	26,2	2,884	2,375	2,579	0,548
6,20	5,22	66,708	25,4	2,674	2,230	2,408	0,511
6,40	4,43	68,670	23,9	2,495	2,097	2,256	0,479
6,60	3,85	70,632	22,5	2,343	1,980	2,125	0,451
6,80	3,85	72,594	22,3	2,202	1,868	2,002	0,425
7,00	3,66	74,556	21,6	2,053	1,771	1,884	0,400
7,20	3,66	76,518	21,4	1,934	1,688	1,787	0,379
7,40	2,49	78,480	17,7	1,842	1,618	1,708	0,363
7,60	2,49	80,442	17,5	1,776	1,561	1,647	0,350
7,80	2,88	82,404	18,6	1,701	1,498	1,579	0,335
8,00	2,69	84,366	17,8	1,613	1,428	1,502	0,319
8,20	2,69	86,328	17,6	1,514	1,352	1,417	0,301
8,40	2,70	88,290	17,3	1,401	1,269	1,322	0,281
8,60	2,70	90,252	17,1	1,273	1,216	1,239	0,263
8,80	3,09	92,214	18,2	1,205	1,199	1,202	0,255
9,00	1,13	94,176	7,0	1,207	1,225	1,218	0,259
9,20	1,72	96,138	11,8	1,295	1,322	1,311	0,279
9,40	1,92	98,100	12,8	1,446	1,430	1,436	0,305
9,60	2,32	100,062	14,6	1,609	1,558	1,578	0,335

Diameter paalbasis : 0,52 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	$q_{r,b 0,4}$ MPa	$q_{r,b 0,6}$ MPa	$q_{r,b 0,52}$ MPa	$Q_{r,b 0,52}$ MN
9,80	3,89	102,024	19,4	1,795	1,721	1,751	0,372
10,00	2,72	103,986	15,8	1,997	1,958	1,973	0,419
10,20	3,51	105,948	18,1	2,377	2,296	2,329	0,495
10,40	4,88	107,910	20,9	2,921	2,737	2,811	0,597
10,60	8,81	109,872	25,6	3,606	3,234	3,383	0,719
10,80	9,60	111,834	26,1	4,261	3,701	3,925	0,834
11,00	10,78	113,796	26,9	4,832	4,286	4,504	0,957
11,20	9,80	115,758	26,0	5,595	4,945	5,205	1,105
11,40	8,82	117,720	25,1	6,537	5,673	6,019	1,278
11,60	22,16	119,682	31,2	7,533	6,391	6,848	1,454
11,80	29,62	121,644	32,6	8,083	6,850	7,343	1,559
12,00	26,88	123,606	32,1	8,202	7,068	7,522	1,597
12,20	24,53	125,568	31,5	8,021	7,066	7,448	1,582
12,40	20,21	127,530	30,4	7,722	6,938	7,251	1,540
12,60	15,51	129,492	28,6	7,338	6,773	6,999	1,486
12,80	12,76	131,454	27,1	6,918	6,638	6,750	1,434
13,00	11,20	133,416	26,0	6,630	6,585	6,603	1,402
13,20	6,49	135,378	21,4	6,568	6,625	6,602	1,402
13,40	6,49	137,340	21,3	6,727	6,851	6,801	1,444
13,60	8,46	139,302	23,4	7,135	7,208	7,179	1,525
13,80	8,84	141,264	23,7	7,706	7,566	7,622	1,619
14,00	14,35	143,226	27,3	8,549	7,861	8,136	1,728
14,20	14,74	145,188	27,4	9,127	7,991	8,446	1,794
14,40	23,77	147,150	30,5	9,407	7,945	8,530	1,812
14,60	23,38	149,112	30,4	9,244	7,809	8,383	1,780
14,80	17,89	151,074	28,5	8,995	7,635	8,179	1,737
15,00	12,40	153,036	25,7	8,723	7,435	7,950	1,688
15,20	11,23	154,998	24,8	8,450	7,237	7,722	1,640
15,40	11,23	156,960	24,7	8,229	7,042	7,517	1,596
15,60	9,66	158,922	23,4	8,033	6,845	7,320	1,555
15,80	10,45	160,884	24,0	7,843	6,637	7,120	1,512
16,00	16,34	162,846	27,3	7,581	6,390	6,867	1,458
16,20	18,69	164,808	28,2	7,225	6,083	6,540	1,389
16,40	16,74	166,770	27,3	6,732	5,702	6,114	1,298
16,60	29,69	168,732	31,0	6,062	5,278	5,592	1,188
16,80	29,69	170,694	30,9	5,322	4,971	5,111	1,086
17,00	12,03	172,656	24,5	4,873	4,791	4,824	1,025
17,20	4,58	174,618	15,9	4,760	4,753	4,756	1,010
17,40	6,55	176,580	19,2	4,885	4,837	4,856	1,031
17,60	5,76	178,542	17,9	4,955	4,893	4,918	1,044
17,80	5,18	180,504	16,7	5,001	4,937	4,962	1,054
18,00	5,18	182,466	16,6	5,043	4,996	5,015	1,065
18,20	5,18	184,428	16,5	5,117	5,075	5,092	1,081
18,40	5,19	186,390	16,4	5,228	5,186	5,203	1,105
18,60	6,37	188,352	18,3	5,403	5,331	5,360	1,138
18,80	6,57	190,314	18,5	5,605	5,471	5,525	1,173
19,00	7,55	192,276	19,7	5,789	0,000	0,000	0,000
19,20	7,75	194,238	19,8	0,000	0,000	0,000	0,000
19,40	6,57	196,200	18,2	0,000	0,000	0,000	0,000

Diameter paalbasis : 0,52 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	$q_{r,b 0,4}$ MPa	$q_{r,b 0,6}$ MPa	$q_{r,b 0,52}$ MPa	$Q_{r,b 0,52}$ MN
19,60	4,03	198,162	13,2	0,000	0,000	0,000	0,000

Diameter paalbasis : 1,531 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	$q_{r,b 1,4}$ MPa	$q_{r,b 1,6}$ MPa	$q_{r,b 1,531}$ MPa	$Q_{r,b 1,531}$ MN
0,20	0,42	3,139	29,45	0,077	0,077	0,077	0,141
0,40	0,82	6,278	29,20	0,162	0,159	0,160	0,295
0,60	2,29	9,418	32,66	0,371	0,363	0,365	0,673
0,80	7,69	12,557	37,14	0,610	0,612	0,611	1,125
1,00	8,48	15,696	36,55	0,675	0,672	0,673	1,239
1,20	7,89	17,658	35,66	0,736	0,729	0,731	1,346
1,40	7,70	19,620	35,03	0,796	0,787	0,790	1,454
1,60	7,11	21,582	34,17	0,858	0,847	0,851	1,567
1,80	6,33	23,544	33,16	0,925	0,910	0,915	1,685
2,00	4,77	25,506	31,29	0,997	0,975	0,983	1,809
2,20	3,98	27,468	29,93	1,072	1,044	1,054	1,940
2,40	3,20	29,430	27,91	1,153	1,100	1,118	2,059
2,60	3,99	31,392	29,01	1,242	1,198	1,213	2,233
2,80	4,58	33,354	29,55	1,336	1,280	1,299	2,392
3,00	7,33	35,316	31,83	1,433	1,357	1,383	2,546
3,20	7,92	37,278	31,96	1,518	1,424	1,456	2,681
3,40	12,24	39,240	33,90	1,590	1,481	1,518	2,795
3,60	9,50	41,202	32,37	1,649	1,527	1,569	2,889
3,80	6,36	43,164	30,03	1,696	1,565	1,610	2,965
4,00	8,32	45,126	31,22	1,731	1,593	1,640	3,020
4,20	6,36	47,088	29,44	1,749	1,607	1,656	3,049
4,40	5,39	49,050	27,97	1,751	1,611	1,659	3,055
4,60	4,80	51,012	26,84	1,740	1,603	1,650	3,038
4,80	3,63	52,974	24,40	1,725	1,592	1,638	3,015
5,00	4,02	54,936	24,93	1,707	1,578	1,622	2,986
5,20	6,38	56,898	28,12	1,684	1,561	1,603	2,951
5,40	16,19	58,860	33,27	1,657	1,541	1,581	2,910
5,60	12,66	60,822	31,85	1,627	1,518	1,555	2,864
5,80	8,35	62,784	29,33	1,592	1,493	1,527	2,811
6,00	5,61	64,746	26,22	1,554	1,466	1,496	2,755
6,20	5,22	66,708	25,44	1,516	1,438	1,465	2,697
6,40	4,43	68,670	23,93	1,477	1,409	1,433	2,638
6,60	3,85	70,632	22,54	1,439	1,380	1,401	2,579
6,80	3,85	72,594	22,31	1,402	1,351	1,368	2,519
7,00	3,66	74,556	21,65	1,365	1,321	1,336	2,459
7,20	3,66	76,518	21,43	1,330	1,290	1,304	2,400
7,40	2,49	78,480	17,70	1,295	1,260	1,272	2,341
7,60	2,49	80,442	17,48	1,261	1,237	1,245	2,292
7,80	2,88	82,404	18,64	1,235	1,220	1,225	2,256
8,00	2,69	84,366	17,77	1,217	1,212	1,214	2,235
8,20	2,69	86,328	17,56	1,210	1,218	1,215	2,237
8,40	2,70	88,290	17,35	1,219	1,233	1,228	2,261
8,60	2,70	90,252	17,15	1,241	1,260	1,253	2,307
8,80	3,09	92,214	18,25	1,277	1,304	1,295	2,384
9,00	1,13	94,176	6,97	1,335	1,378	1,363	2,510
9,20	1,72	96,138	11,82	1,430	1,485	1,466	2,698
9,40	1,92	98,100	12,81	1,556	1,620	1,598	2,941
9,60	2,32	100,062	14,59	1,715	1,778	1,756	3,233

Diameter paalbasis : 1,531 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	$q_{r,b 1,4}$ MPa	$q_{r,b 1,6}$ MPa	$q_{r,b 1,531}$ MPa	$Q_{r,b 1,531}$ MN
9,80	3,89	102,024	19,43	1,903	1,954	1,936	3,565
10,00	2,72	103,986	15,82	2,105	2,180	2,154	3,965
10,20	3,51	105,948	18,12	2,372	2,451	2,424	4,462
10,40	4,88	107,910	20,95	2,692	2,761	2,737	5,039
10,60	8,81	109,872	25,63	3,052	3,129	3,102	5,711
10,80	9,60	111,834	26,15	3,466	3,525	3,505	6,452
11,00	10,78	113,796	26,89	3,913	3,931	3,925	7,225
11,20	9,80	115,758	26,05	4,366	4,324	4,339	7,988
11,40	8,82	117,720	25,11	4,797	4,691	4,727	8,703
11,60	22,16	119,682	31,24	5,198	5,033	5,090	9,370
11,80	29,62	121,644	32,65	5,526	5,315	5,388	9,918
12,00	26,88	123,606	32,07	5,790	5,543	5,628	10,361
12,20	24,53	125,568	31,52	5,996	5,723	5,817	10,709
12,40	20,21	127,530	30,42	6,113	5,830	5,928	10,913
12,60	15,51	129,492	28,59	6,162	5,880	5,978	11,004
12,80	12,76	131,454	27,07	6,163	5,889	5,984	11,016
13,00	11,20	133,416	25,98	6,149	5,874	5,969	10,988
13,20	6,49	135,378	21,45	6,129	5,853	5,948	10,951
13,40	6,49	137,340	21,33	6,104	5,826	5,922	10,901
13,60	8,46	139,302	23,43	6,070	5,792	5,888	10,839
13,80	8,84	141,264	23,68	6,027	5,751	5,846	10,763
14,00	14,35	143,226	27,30	5,975	5,703	5,797	10,672
14,20	14,74	145,188	27,40	5,913	5,648	5,740	10,566
14,40	23,77	147,150	30,52	5,843	5,586	5,675	10,447
14,60	23,38	149,112	30,36	5,764	5,517	5,602	10,313
14,80	17,89	151,074	28,51	5,677	5,442	5,523	10,167
15,00	12,40	153,036	25,71	5,582	5,360	5,437	10,008
15,20	11,23	154,998	24,84	5,481	5,271	5,343	9,837
15,40	11,23	156,960	24,75	5,370	5,174	5,241	9,649
15,60	9,66	158,922	23,44	5,249	5,068	5,130	9,445
15,80	10,45	160,884	23,98	5,116	4,980	5,027	9,254
16,00	16,34	162,846	27,32	5,006	4,906	4,941	9,095
16,20	18,69	164,808	28,21	4,915	4,846	4,870	8,966
16,40	16,74	166,770	27,32	4,843	4,801	4,815	8,865
16,60	29,69	168,732	30,97	4,791	4,770	4,778	8,795
16,80	29,69	170,694	30,91	4,761	4,756	4,757	8,758
17,00	12,03	172,656	24,54	4,753	4,762	4,759	8,761
17,20	4,58	174,618	15,86	4,776	4,792	4,787	8,812
17,40	6,55	176,580	19,17	4,831	4,849	4,843	8,915
17,60	5,76	178,542	17,89	4,888	4,908	4,901	9,022
17,80	5,18	180,504	16,75	4,951	4,967	4,962	9,134
18,00	5,18	182,466	16,65	5,017	0,000	0,000	0,000
18,20	5,18	184,428	16,55	0,000	0,000	0,000	0,000
18,40	5,19	186,390	16,45	0,000	0,000	0,000	0,000
18,60	6,37	188,352	18,32	0,000	0,000	0,000	0,000
18,80	6,57	190,314	18,51	0,000	0,000	0,000	0,000
19,00	7,55	192,276	19,70	0,000	0,000	0,000	0,000
19,20	7,75	194,238	19,84	0,000	0,000	0,000	0,000
19,40	6,57	196,200	18,24	0,000	0,000	0,000	0,000

Diameter paalbasis : 1,531 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	$q_{r,b 1,4}$ MPa	$q_{r,b 1,6}$ MPa	$q_{r,b 1,531}$ MPa	$Q_{r,b 1,531}$ MN
19,60	4,03	198,162	13,19	0,000	0,000	0,000	0,000

Algemene gegevens

Opdrachtnummer :	DBEER-02/qp
Sondeernummer :	V
Datum uitvoering :	01/01/1971
Plaats :	ZWIJNAARDE QP-BEREKENING DE BEER
Lambertcoördinaten :	X= Y=
Aanvangspeil :	+8,19
Apparaat Type :	200kN
Conus Type :	M1
Meetlichaam :	H100
Grondsoort aan de conus :	
Diepte water :	1 m (t.o.v. aanvangspeil)
Datum opmeting waterpeil:	01/01/1971 00:00
Aantal buizen :	0

Constanten

Massa eindbuis :	6,4 kg
Massa verlengbuis :	6,4 kg
Massa kleefvangerbuis :	6,4 kg
Massa eindstang :	0 kg
Massa verlengstang :	0 kg
Oppervlakte conus :	10 cm ²
Oppervlakte plunjer :	100 cm ²

Ijkcoëfficiënten

Coëfficiënten conus :	a: 1	b: 0
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Diameter paalbasis : 0,4 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
0,20	0,42	3,139	29,4	5,60	1,571	0,50	0,201	0,090	0,090	0,090	0,090	0,011
0,40	0,82	6,278	29,2	11,21	1,571	1,00	0,375	0,215	0,167	0,167	0,215	0,027
0,60	2,29	9,418	32,7	16,81	1,571	1,50	0,445	0,541	0,299	0,299	0,541	0,068
0,80	7,69	12,557	37,1	22,42	1,571	2,00	0,440	1,386	0,576	0,576	0,776	0,097
1,00	8,48	15,696	36,5	28,02	1,571	2,50	0,541	1,842	0,775	0,775	0,979	0,123
1,20	7,89	17,658	35,7	33,63	1,571	3,00	0,653	2,116	0,976	0,976	1,186	0,149
1,40	7,70	19,620	35,0	39,23	1,571	3,50	0,760	2,472	1,185	1,185	1,396	0,175
1,60	7,11	21,582	34,2	44,84	1,571	4,00	0,883	2,798	1,399	1,399	1,613	0,203
1,80	6,33	23,544	33,2	50,44	1,571	4,50	1,026	3,107	1,605	1,605	1,858	0,233
2,00	4,77	25,506	31,3	56,05	1,571	5,00	1,258	3,257	1,834	1,834	2,099	0,264
2,20	3,98	27,468	29,9	61,65	1,571	5,50	1,523	3,771	2,134	2,134	2,353	0,296
2,40	3,20	29,430	27,9	67,26	1,571	6,00	1,571	3,202	2,330	2,330	2,608	0,328
2,60	3,99	31,392	29,0	72,86	1,571	6,50	1,571	3,989	2,595	2,595	2,993	0,376
2,80	4,58	33,354	29,5	78,47	1,571	7,00	1,571	4,580	2,899	2,899	3,486	0,438
3,00	7,33	35,316	31,8	84,07	1,571	7,50	1,571	7,330	3,485	3,485	3,957	0,497
3,20	7,92	37,278	32,0	89,68	1,571	8,00	1,571	7,922	4,075	4,075	4,225	0,531
3,40	12,24	39,240	33,9	95,28	1,571	8,50	1,571	12,240	4,533	4,310	4,281	0,538
3,60	9,50	41,202	32,4	100,89	1,571	9,00	1,571	9,496	4,753	4,288	4,232	0,532
3,80	6,36	43,164	30,0	106,49	1,571	9,50	1,571	6,360	5,031	4,243	4,148	0,521
4,00	8,32	45,126	31,2	112,10	1,571	10,00	1,571	8,325	5,493	4,166	4,025	0,506
4,20	6,36	47,088	29,4	117,70	1,571	10,50	1,571	6,365	5,694	4,036	3,878	0,487
4,40	5,39	49,050	28,0	123,31	1,571	11,00	1,571	5,388	5,388	3,873	3,739	0,470
4,60	4,80	51,012	26,8	128,91	1,571	11,50	1,571	4,801	4,801	3,725	3,655	0,459
4,80	3,63	52,974	24,4	134,52	1,571	12,00	1,571	3,627	3,627	3,620	3,616	0,454
5,00	4,02	54,936	24,9	140,12	1,571	12,50	1,571	4,022	3,729	3,619	3,597	0,452
5,20	6,38	56,898	28,1	145,73	1,571	13,00	1,571	6,379	4,067	3,608	3,543	0,445
5,40	16,19	58,860	33,3	151,33	1,571	13,50	1,571	16,192	4,643	3,563	3,445	0,433
5,60	12,66	60,822	31,8	156,94	1,571	14,00	1,571	12,663	4,931	3,458	3,295	0,414
5,80	8,35	62,784	29,3	162,54	1,571	14,50	1,571	8,349	5,356	3,313	3,104	0,390
6,00	5,61	64,746	26,2	168,15	1,571	15,00	1,571	5,605	5,457	3,113	2,884	0,362
6,20	5,22	66,708	25,4	173,75	1,571	15,50	1,571	5,216	5,216	2,884	2,674	0,336
6,40	4,43	68,670	23,9	179,36	1,571	16,00	1,571	4,433	4,433	2,655	2,495	0,314
6,60	3,85	70,632	22,5	184,96	1,571	16,50	1,571	3,847	3,847	2,481	2,343	0,294
6,80	3,85	72,594	22,3	190,57	1,571	17,00	1,571	3,850	3,850	2,348	2,202	0,277
7,00	3,66	74,556	21,6	196,17	1,571	17,50	1,571	3,657	3,657	2,200	2,053	0,258
7,20	3,66	76,518	21,4	201,78	1,571	18,00	1,571	3,660	3,660	2,058	1,934	0,243
7,40	2,49	78,480	17,7	207,38	1,571	18,50	1,571	2,486	2,486	1,901	1,842	0,231
7,60	2,49	80,442	17,5	212,99	1,571	19,00	1,571	2,488	2,488	1,844	1,776	0,223
7,80	2,88	82,404	18,6	218,59	1,571	19,50	1,571	2,883	2,555	1,780	1,701	0,214
8,00	2,69	84,366	17,8	224,20	1,571	20,00	1,571	2,690	2,596	1,705	1,613	0,203
8,20	2,69	86,328	17,6	229,80	1,571	20,50	1,571	2,693	2,632	1,617	1,514	0,190
8,40	2,70	88,290	17,3	235,41	1,571	21,00	1,571	2,696	2,666	1,518	1,401	0,176
8,60	2,70	90,252	17,1	241,01	1,571	21,50	1,571	2,698	2,696	1,406	1,273	0,160
8,80	3,09	92,214	18,2	246,62	1,571	22,00	1,571	3,093	2,761	1,279	1,205	0,151
9,00	1,13	94,176	7,0	252,22	1,571	22,50	1,571	1,134	1,134	1,134	1,207	0,152
9,20	1,72	96,138	11,8	257,83	1,571	23,00	1,571	1,725	1,203	1,203	1,295	0,163
9,40	1,92	98,100	12,8	263,43	1,571	23,50	1,571	1,925	1,285	1,285	1,446	0,182
9,60	2,32	100,062	14,6	269,04	1,571	24,00	1,571	2,319	1,398	1,398	1,609	0,202
9,80	3,89	102,024	19,4	274,64	1,571	24,50	1,571	3,892	1,655	1,655	1,795	0,226
10,00	2,72	103,986	15,8	280,25	1,571	25,00	1,571	2,717	1,773	1,773	1,997	0,251

Diameter paalbasis : 0,4 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
10,20	3,51	105,948	18,1	285,85	1,571	25,50	1,571	3,505	1,958	1,958	2,377	0,299
10,40	4,88	107,910	20,9	291,46	1,571	26,00	1,571	4,881	2,259	2,259	2,921	0,367
10,60	8,81	109,872	25,6	297,06	1,571	26,50	1,571	8,807	2,916	2,916	3,606	0,453
10,80	9,60	111,834	26,1	302,67	1,571	27,00	1,571	9,595	3,589	3,589	4,261	0,536
11,00	10,78	113,796	26,9	308,27	1,571	27,50	1,571	10,775	4,315	4,315	4,832	0,607
11,20	9,80	115,758	26,0	313,88	1,571	28,00	1,571	9,797	4,880	4,880	5,595	0,703
11,40	8,82	117,720	25,1	319,48	1,571	28,50	1,571	8,818	5,299	5,299	6,537	0,821
11,60	22,16	119,682	31,2	325,09	1,571	29,00	1,571	22,163	6,605	6,605	7,533	0,947
11,80	29,62	121,644	32,6	330,69	1,571	29,50	1,571	29,621	7,707	7,707	8,083	1,016
12,00	26,88	123,606	32,1	336,30	1,571	30,00	1,571	26,877	8,634	8,288	8,202	1,031
12,20	24,53	125,568	31,5	341,90	1,571	30,50	1,571	24,525	10,227	8,255	8,021	1,008
12,40	20,21	127,530	30,4	347,51	1,571	31,00	1,571	20,213	11,261	8,061	7,722	0,970
12,60	15,51	129,492	28,6	353,11	1,571	31,50	1,571	15,506	11,747	7,748	7,338	0,922
12,80	12,76	131,454	27,1	358,72	1,571	32,00	1,571	12,762	11,925	7,357	6,918	0,869
13,00	11,20	133,416	26,0	364,32	1,571	32,50	1,571	11,195	11,195	6,909	6,630	0,833
13,20	6,49	135,378	21,4	369,93	1,571	33,00	1,571	6,489	6,489	6,489	6,568	0,825
13,40	6,49	137,340	21,3	375,53	1,571	33,50	1,571	6,492	6,492	6,492	6,727	0,845
13,60	8,46	139,302	23,4	381,14	1,571	34,00	1,571	8,456	6,722	6,722	7,135	0,897
13,80	8,84	141,264	23,7	386,74	1,571	34,50	1,571	8,842	6,967	6,967	7,706	0,968
14,00	14,35	143,226	27,3	392,35	1,571	35,00	1,571	14,348	7,716	7,716	8,549	1,074
14,20	14,74	145,188	27,4	397,95	1,571	35,50	1,571	14,743	8,434	8,434	9,127	1,147
14,40	23,77	147,150	30,5	403,56	1,571	36,00	1,571	23,772	9,948	9,496	9,407	1,182
14,60	23,38	149,112	30,4	409,16	1,571	36,50	1,571	23,381	11,287	9,452	9,244	1,162
14,80	17,89	151,074	28,5	414,77	1,571	37,00	1,571	17,891	11,982	9,272	8,995	1,130
15,00	12,40	153,036	25,7	420,37	1,571	37,50	1,571	12,400	12,092	9,007	8,723	1,096
15,20	11,23	154,998	24,8	425,98	1,571	38,00	1,571	11,226	11,226	8,705	8,450	1,062
15,40	11,23	156,960	24,7	431,58	1,571	38,50	1,571	11,230	11,230	8,458	8,229	1,034
15,60	9,66	158,922	23,4	437,19	1,571	39,00	1,571	9,661	9,661	8,186	8,033	1,009
15,80	10,45	160,884	24,0	442,79	1,571	39,50	1,571	10,449	9,790	8,042	7,843	0,986
16,00	16,34	162,846	27,3	448,40	1,571	40,00	1,571	16,339	10,464	7,871	7,581	0,953
16,20	18,69	164,808	28,2	454,00	1,571	40,50	1,571	18,695	11,300	7,617	7,225	0,908
16,40	16,74	166,770	27,3	459,61	1,571	41,00	1,571	16,736	11,875	7,256	6,732	0,846
16,60	29,69	168,732	31,0	465,21	1,571	41,50	1,571	29,687	13,622	6,804	6,062	0,762
16,80	29,69	170,694	30,9	470,82	1,571	42,00	1,571	29,690	15,212	6,136	5,322	0,669
17,00	12,03	172,656	24,5	476,42	1,571	42,50	1,571	12,035	12,035	5,247	4,873	0,612
17,20	4,58	174,618	15,9	482,03	1,571	43,00	1,571	4,582	4,582	4,582	4,760	0,598
17,40	6,55	176,580	19,2	487,63	1,571	43,50	1,571	6,547	4,791	4,791	4,885	0,614
17,60	5,76	178,542	17,9	493,24	1,571	44,00	1,571	5,764	4,907	4,907	4,955	0,623
17,80	5,18	180,504	16,7	498,84	1,571	44,50	1,571	5,179	4,957	4,957	5,001	0,628
18,00	5,18	182,466	16,6	504,45	1,571	45,00	1,571	5,182	5,002	5,002	5,043	0,634
18,20	5,18	184,428	16,5	510,05	1,571	45,50	1,571	5,184	5,044	5,044	5,117	0,643
18,40	5,19	186,390	16,4	515,66	1,571	46,00	1,571	5,188	5,082	5,082	5,228	0,657
18,60	6,37	188,352	18,3	521,26	1,571	46,50	1,571	6,367	5,227	5,227	5,403	0,679
18,80	6,57	190,314	18,5	526,87	1,571	47,00	1,571	6,566	5,377	5,377	5,605	0,704
19,00	7,55	192,276	19,7	532,47	1,571	47,50	1,571	7,550	5,606	5,606	5,789	0,728
19,20	7,75	194,238	19,8	538,08	1,571	48,00	1,571	7,749	5,833	5,833	0,000	0,000
19,40	6,57	196,200	18,2	543,68	1,571	48,50	1,571	6,575	5,929	5,929	0,000	0,000
19,60	4,03	198,162	13,2	549,29	1,571	49,00	1,571	4,026	0,000	0,000	0,000	0,000

Diameter paalbasis : 0,6 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
0,20	0,42	3,139	29,4	5,60	1,571	0,33	0,138	0,084	0,084	0,084	0,084	0,024
0,40	0,82	6,278	29,2	11,21	1,571	0,67	0,263	0,190	0,150	0,150	0,190	0,054
0,60	2,29	9,418	32,7	16,81	1,571	1,00	0,317	0,459	0,255	0,255	0,459	0,130
0,80	7,69	12,557	37,1	22,42	1,571	1,33	0,317	1,151	0,463	0,463	0,668	0,189
1,00	8,48	15,696	36,5	28,02	1,571	1,67	0,393	1,479	0,602	0,602	0,803	0,227
1,20	7,89	17,658	35,7	33,63	1,571	2,00	0,478	1,645	0,737	0,737	0,933	0,264
1,40	7,70	19,620	35,0	39,23	1,571	2,33	0,558	1,862	0,871	0,871	1,056	0,299
1,60	7,11	21,582	34,2	44,84	1,571	2,67	0,649	2,035	1,003	1,003	1,180	0,334
1,80	6,33	23,544	33,2	50,44	1,571	3,00	0,751	2,169	1,119	1,119	1,305	0,369
2,00	4,77	25,506	31,3	56,05	1,571	3,33	0,905	2,120	1,231	1,231	1,445	0,409
2,20	3,98	27,468	29,9	61,65	1,571	3,67	1,057	2,205	1,366	1,366	1,609	0,455
2,40	3,20	29,430	27,9	67,26	1,571	4,00	1,298	2,397	1,505	1,505	1,813	0,513
2,60	3,99	31,392	29,0	72,86	1,571	4,33	1,296	2,940	1,679	1,679	2,064	0,584
2,80	4,58	33,354	29,5	78,47	1,571	4,67	1,336	3,508	1,888	1,888	2,349	0,664
3,00	7,33	35,316	31,8	84,07	1,571	5,00	1,213	4,702	2,182	2,182	2,644	0,748
3,20	7,92	37,278	32,0	89,68	1,571	5,33	1,269	5,437	2,507	2,507	2,934	0,830
3,40	12,24	39,240	33,9	95,28	1,571	5,67	1,171	7,154	2,821	2,821	3,141	0,888
3,60	9,50	41,202	32,4	100,89	1,571	6,00	1,363	7,300	3,068	3,068	3,262	0,922
3,80	6,36	43,164	30,0	106,49	1,571	6,33	1,571	6,360	3,403	3,340	3,307	0,935
4,00	8,32	45,126	31,2	112,10	1,571	6,67	1,571	8,325	3,870	3,336	3,267	0,924
4,20	6,36	47,088	29,4	117,70	1,571	7,00	1,571	6,365	4,146	3,302	3,208	0,907
4,40	5,39	49,050	28,0	123,31	1,571	7,33	1,571	5,388	4,323	3,249	3,150	0,891
4,60	4,80	51,012	26,8	128,91	1,571	7,67	1,571	4,801	4,440	3,181	3,094	0,875
4,80	3,63	52,974	24,4	134,52	1,571	8,00	1,571	3,627	3,627	3,101	3,041	0,860
5,00	4,02	54,936	24,9	140,12	1,571	8,33	1,571	4,022	3,719	3,068	2,984	0,844
5,20	6,38	56,898	28,1	145,73	1,571	8,67	1,571	6,379	3,983	3,027	2,907	0,822
5,40	16,19	58,860	33,3	151,33	1,571	9,00	1,571	16,192	4,439	2,967	2,804	0,793
5,60	12,66	60,822	31,8	156,94	1,571	9,33	1,571	12,663	4,682	2,873	2,676	0,757
5,80	8,35	62,784	29,3	162,54	1,571	9,67	1,571	8,349	5,025	2,759	2,528	0,715
6,00	5,61	64,746	26,2	168,15	1,571	10,00	1,571	5,605	5,140	2,616	2,375	0,671
6,20	5,22	66,708	25,4	173,75	1,571	10,33	1,571	5,216	5,216	2,456	2,230	0,631
6,40	4,43	68,670	23,9	179,36	1,571	10,67	1,571	4,433	4,433	2,282	2,097	0,593
6,60	3,85	70,632	22,5	184,96	1,571	11,00	1,571	3,847	3,847	2,146	1,980	0,560
6,80	3,85	72,594	22,3	190,57	1,571	11,33	1,571	3,850	3,850	2,038	1,868	0,528
7,00	3,66	74,556	21,6	196,17	1,571	11,67	1,571	3,657	3,657	1,924	1,771	0,501
7,20	3,66	76,518	21,4	201,78	1,571	12,00	1,571	3,660	3,660	1,814	1,688	0,477
7,40	2,49	78,480	17,7	207,38	1,571	12,33	1,571	2,486	2,486	1,697	1,618	0,458
7,60	2,49	80,442	17,5	212,99	1,571	12,67	1,571	2,488	2,488	1,647	1,561	0,441
7,80	2,88	82,404	18,6	218,59	1,571	13,00	1,571	2,883	2,544	1,594	1,498	0,424
8,00	2,69	84,366	17,8	224,20	1,571	13,33	1,571	2,690	2,582	1,534	1,428	0,404
8,20	2,69	86,328	17,6	229,80	1,571	13,67	1,571	2,693	2,618	1,468	1,352	0,382
8,40	2,70	88,290	17,3	235,41	1,571	14,00	1,571	2,696	2,651	1,395	1,269	0,359
8,60	2,70	90,252	17,1	241,01	1,571	14,33	1,571	2,698	2,682	1,316	1,216	0,344
8,80	3,09	92,214	18,2	246,62	1,571	14,67	1,571	3,093	2,738	1,229	1,199	0,339
9,00	1,13	94,176	7,0	252,22	1,571	15,00	1,571	1,134	1,134	1,134	1,225	0,346
9,20	1,72	96,138	11,8	257,83	1,571	15,33	1,571	1,725	1,186	1,186	1,322	0,374
9,40	1,92	98,100	12,8	263,43	1,571	15,67	1,571	1,925	1,248	1,248	1,430	0,404
9,60	2,32	100,062	14,6	269,04	1,571	16,00	1,571	2,319	1,333	1,333	1,558	0,440
9,80	3,89	102,024	19,4	274,64	1,571	16,33	1,571	3,892	1,521	1,521	1,721	0,487
10,00	2,72	103,986	15,8	280,25	1,571	16,67	1,571	2,717	1,617	1,617	1,958	0,554

Diameter paalbasis : 0,6 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
10,20	3,51	105,948	18,1	285,85	1,571	17,00	1,571	3,505	1,760	1,760	2,296	0,649
10,40	4,88	107,910	20,9	291,46	1,571	17,33	1,571	4,881	1,987	1,987	2,737	0,774
10,60	8,81	109,872	25,6	297,06	1,571	17,67	1,571	8,807	2,468	2,468	3,234	0,915
10,80	9,60	111,834	26,1	302,67	1,571	18,00	1,571	9,595	2,971	2,971	3,701	1,046
11,00	10,78	113,796	26,9	308,27	1,571	18,33	1,571	10,775	3,523	3,523	4,286	1,212
11,20	9,80	115,758	26,0	313,88	1,571	18,67	1,571	9,797	3,975	3,975	4,945	1,398
11,40	8,82	117,720	25,1	319,48	1,571	19,00	1,571	8,818	4,333	4,333	5,673	1,604
11,60	22,16	119,682	31,2	325,09	1,571	19,33	1,571	22,163	5,313	5,313	6,391	1,807
11,80	29,62	121,644	32,6	330,69	1,571	19,67	1,571	29,621	6,158	6,158	6,850	1,937
12,00	26,88	123,606	32,1	336,30	1,571	20,00	1,571	26,877	6,887	6,887	7,068	1,998
12,20	24,53	125,568	31,5	341,90	1,571	20,33	1,571	24,525	8,118	7,206	7,066	1,998
12,40	20,21	127,530	30,4	347,51	1,571	20,67	1,571	20,213	8,984	7,148	6,938	1,962
12,60	15,51	129,492	28,6	353,11	1,571	21,00	1,571	15,506	9,484	7,032	6,773	1,915
12,80	12,76	131,454	27,1	358,72	1,571	21,33	1,571	12,762	9,769	6,877	6,638	1,877
13,00	11,20	133,416	26,0	364,32	1,571	21,67	1,571	11,195	9,932	6,694	6,585	1,862
13,20	6,49	135,378	21,4	369,93	1,571	22,00	1,571	6,489	6,489	6,489	6,625	1,873
13,40	6,49	137,340	21,3	375,53	1,571	22,33	1,571	6,492	6,492	6,492	6,851	1,937
13,60	8,46	139,302	23,4	381,14	1,571	22,67	1,571	8,456	6,665	6,665	7,208	2,038
13,80	8,84	141,264	23,7	386,74	1,571	23,00	1,571	8,842	6,853	6,853	7,566	2,139
14,00	14,35	143,226	27,3	392,35	1,571	23,33	1,571	14,348	7,392	7,392	7,861	2,223
14,20	14,74	145,188	27,4	397,95	1,571	23,67	1,571	14,743	7,923	7,923	7,991	2,259
14,40	23,77	147,150	30,5	403,56	1,571	24,00	1,571	23,772	9,016	8,094	7,945	2,247
14,60	23,38	149,112	30,4	409,16	1,571	24,33	1,571	23,381	10,016	8,036	7,809	2,208
14,80	17,89	151,074	28,5	414,77	1,571	24,67	1,571	17,891	10,594	7,911	7,635	2,159
15,00	12,40	153,036	25,7	420,37	1,571	25,00	1,571	12,400	10,777	7,741	7,435	2,102
15,20	11,23	154,998	24,8	425,98	1,571	25,33	1,571	11,226	10,871	7,549	7,237	2,046
15,40	11,23	156,960	24,7	431,58	1,571	25,67	1,571	11,230	10,958	7,339	7,042	1,991
15,60	9,66	158,922	23,4	437,19	1,571	26,00	1,571	9,661	9,661	7,110	6,845	1,935
15,80	10,45	160,884	24,0	442,79	1,571	26,33	1,571	10,449	9,768	6,949	6,637	1,877
16,00	16,34	162,846	27,3	448,40	1,571	26,67	1,571	16,339	10,252	6,771	6,390	1,807
16,20	18,69	164,808	28,2	454,00	1,571	27,00	1,571	18,695	10,859	6,551	6,083	1,720
16,40	16,74	166,770	27,3	459,61	1,571	27,33	1,571	16,736	11,302	6,278	5,702	1,612
16,60	29,69	168,732	31,0	465,21	1,571	27,67	1,571	29,687	12,558	5,961	5,278	1,492
16,80	29,69	170,694	30,9	470,82	1,571	28,00	1,571	29,690	13,739	5,544	4,971	1,406
17,00	12,03	172,656	24,5	476,42	1,571	28,33	1,571	12,035	12,035	5,025	4,791	1,355
17,20	4,58	174,618	15,9	482,03	1,571	28,67	1,571	4,582	4,582	4,582	4,753	1,344
17,40	6,55	176,580	19,2	487,63	1,571	29,00	1,571	6,547	4,733	4,733	4,837	1,368
17,60	5,76	178,542	17,9	493,24	1,571	29,33	1,571	5,764	4,825	4,825	4,893	1,384
17,80	5,18	180,504	16,7	498,84	1,571	29,67	1,571	5,179	4,872	4,872	4,937	1,396
18,00	5,18	182,466	16,6	504,45	1,571	30,00	1,571	5,182	4,917	4,917	4,996	1,413
18,20	5,18	184,428	16,5	510,05	1,571	30,33	1,571	5,184	4,959	4,959	5,075	1,435
18,40	5,19	186,390	16,4	515,66	1,571	30,67	1,571	5,188	4,998	4,998	5,186	1,466
18,60	6,37	188,352	18,3	521,26	1,571	31,00	1,571	6,367	5,111	5,111	5,331	1,507
18,80	6,57	190,314	18,5	526,87	1,571	31,33	1,571	6,566	5,230	5,230	5,471	1,547
19,00	7,55	192,276	19,7	532,47	1,571	31,67	1,571	7,550	5,404	5,404	0,000	0,000
19,20	7,75	194,238	19,8	538,08	1,571	32,00	1,571	7,749	5,580	5,580	0,000	0,000
19,40	6,57	196,200	18,2	543,68	1,571	32,33	1,571	6,575	5,671	5,671	0,000	0,000
19,60	4,03	198,162	13,2	549,29	1,571	32,67	1,571	4,026	0,000	0,000	0,000	0,000

Diameter paalbasis : 1,4 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
0,20	0,42	3,139	29,4	5,60	1,571	0,14	0,062	0,077	0,077	0,077	0,077	0,119
0,40	0,82	6,278	29,2	11,21	1,571	0,29	0,121	0,162	0,132	0,132	0,162	0,249
0,60	2,29	9,418	32,7	16,81	1,571	0,43	0,149	0,371	0,210	0,210	0,371	0,571
0,80	7,69	12,557	37,1	22,42	1,571	0,57	0,152	0,896	0,353	0,353	0,610	0,938
1,00	8,48	15,696	36,5	28,02	1,571	0,71	0,192	1,098	0,440	0,440	0,675	1,039
1,20	7,89	17,658	35,7	33,63	1,571	0,86	0,236	1,163	0,518	0,518	0,736	1,133
1,40	7,70	19,620	35,0	39,23	1,571	1,00	0,280	1,260	0,593	0,593	0,796	1,225
1,60	7,11	21,582	34,2	44,84	1,571	1,14	0,328	1,316	0,661	0,661	0,858	1,321
1,80	6,33	23,544	33,2	50,44	1,571	1,29	0,381	1,338	0,719	0,719	0,925	1,424
2,00	4,77	25,506	31,3	56,05	1,571	1,43	0,458	1,232	0,770	0,770	0,997	1,534
2,20	3,98	27,468	29,9	61,65	1,571	1,57	0,530	1,202	0,824	0,824	1,072	1,651
2,40	3,20	29,430	27,9	67,26	1,571	1,71	0,629	1,180	0,873	0,873	1,153	1,775
2,60	3,99	31,392	29,0	72,86	1,571	1,86	0,637	1,415	0,931	0,931	1,242	1,912
2,80	4,58	33,354	29,5	78,47	1,571	2,00	0,658	1,628	0,997	0,997	1,336	2,057
3,00	7,33	35,316	31,8	84,07	1,571	2,14	0,619	2,249	1,092	1,092	1,433	2,206
3,20	7,92	37,278	32,0	89,68	1,571	2,29	0,647	2,503	1,193	1,193	1,518	2,337
3,40	12,24	39,240	33,9	95,28	1,571	2,43	0,612	3,375	1,294	1,294	1,590	2,448
3,60	9,50	41,202	32,4	100,89	1,571	2,57	0,695	3,129	1,374	1,374	1,649	2,538
3,80	6,36	43,164	30,0	106,49	1,571	2,71	0,823	2,678	1,468	1,468	1,696	2,611
4,00	8,32	45,126	31,2	112,10	1,571	2,86	0,804	3,285	1,585	1,585	1,731	2,664
4,20	6,36	47,088	29,4	117,70	1,571	3,00	0,921	3,058	1,686	1,686	1,749	2,692
4,40	5,39	49,050	28,0	123,31	1,571	3,14	1,041	3,070	1,783	1,772	1,751	2,696
4,60	4,80	51,012	26,8	128,91	1,571	3,29	1,159	3,165	1,878	1,772	1,740	2,679
4,80	3,63	52,974	24,4	134,52	1,571	3,43	1,434	3,204	1,971	1,769	1,725	2,656
5,00	4,02	54,936	24,9	140,12	1,571	3,57	1,441	3,564	2,075	1,764	1,707	2,627
5,20	6,38	56,898	28,1	145,73	1,571	3,71	1,195	4,268	2,204	1,755	1,684	2,592
5,40	16,19	58,860	33,3	151,33	1,571	3,86	0,905	6,761	2,359	1,744	1,657	2,551
5,60	12,66	60,822	31,8	156,94	1,571	4,00	1,012	6,323	2,489	1,728	1,627	2,504
5,80	8,35	62,784	29,3	162,54	1,571	4,14	1,218	5,614	2,655	1,708	1,592	2,451
6,00	5,61	64,746	26,2	168,15	1,571	4,29	1,571	5,605	2,814	1,683	1,554	2,392
6,20	5,22	66,708	25,4	173,75	1,571	4,43	1,571	5,216	2,951	1,653	1,516	2,333
6,40	4,43	68,670	23,9	179,36	1,571	4,57	1,571	4,433	3,052	1,619	1,477	2,274
6,60	3,85	70,632	22,5	184,96	1,571	4,71	1,571	3,847	3,125	1,582	1,439	2,216
6,80	3,85	72,594	22,3	190,57	1,571	4,86	1,571	3,850	3,195	1,542	1,402	2,158
7,00	3,66	74,556	21,6	196,17	1,571	5,00	1,571	3,657	3,254	1,498	1,365	2,102
7,20	3,66	76,518	21,4	201,78	1,571	5,14	1,571	3,660	3,311	1,452	1,330	2,047
7,40	2,49	78,480	17,7	207,38	1,571	5,29	1,571	2,486	2,486	1,404	1,295	1,993
7,60	2,49	80,442	17,5	212,99	1,571	5,43	1,571	2,488	2,488	1,375	1,261	1,941
7,80	2,88	82,404	18,6	218,59	1,571	5,57	1,571	2,883	2,532	1,346	1,235	1,901
8,00	2,69	84,366	17,8	224,20	1,571	5,71	1,571	2,690	2,567	1,315	1,217	1,874
8,20	2,69	86,328	17,6	229,80	1,571	5,86	1,571	2,693	2,600	1,283	1,210	1,862
8,40	2,70	88,290	17,3	235,41	1,571	6,00	1,571	2,696	2,632	1,248	1,219	1,877
8,60	2,70	90,252	17,1	241,01	1,571	6,14	1,571	2,698	2,663	1,212	1,241	1,910
8,80	3,09	92,214	18,2	246,62	1,571	6,29	1,571	3,093	2,706	1,174	1,277	1,966
9,00	1,13	94,176	7,0	252,22	1,571	6,43	1,571	1,134	1,134	1,134	1,335	2,055
9,20	1,72	96,138	11,8	257,83	1,571	6,57	1,571	1,725	1,166	1,166	1,430	2,201
9,40	1,92	98,100	12,8	263,43	1,571	6,71	1,571	1,925	1,205	1,205	1,556	2,395
9,60	2,32	100,062	14,6	269,04	1,571	6,86	1,571	2,319	1,255	1,255	1,715	2,641
9,80	3,89	102,024	19,4	274,64	1,571	7,00	1,571	3,892	1,359	1,359	1,903	2,929
10,00	2,72	103,986	15,8	280,25	1,571	7,14	1,571	2,717	1,419	1,419	2,105	3,240

Diameter paalbasis : 1,4 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
10,20	3,51	105,948	18,1	285,85	1,571	7,29	1,571	3,505	1,504	1,504	2,372	3,651
10,40	4,88	107,910	20,9	291,46	1,571	7,43	1,571	4,881	1,634	1,634	2,692	4,143
10,60	8,81	109,872	25,6	297,06	1,571	7,57	1,571	8,807	1,894	1,894	3,052	4,698
10,80	9,60	111,834	26,1	302,67	1,571	7,71	1,571	9,595	2,173	2,173	3,466	5,336
11,00	10,78	113,796	26,9	308,27	1,571	7,86	1,571	10,775	2,484	2,484	3,913	6,024
11,20	9,80	115,758	26,0	313,88	1,571	8,00	1,571	9,797	2,752	2,752	4,366	6,721
11,40	8,82	117,720	25,1	319,48	1,571	8,14	1,571	8,818	2,979	2,979	4,797	7,384
11,60	22,16	119,682	31,2	325,09	1,571	8,29	1,571	22,163	3,555	3,555	5,198	8,002
11,80	29,62	121,644	32,6	330,69	1,571	8,43	1,571	29,621	4,063	4,063	5,526	8,507
12,00	26,88	123,606	32,1	336,30	1,571	8,57	1,571	26,877	4,513	4,513	5,790	8,913
12,20	24,53	125,568	31,5	341,90	1,571	8,71	1,571	24,525	5,212	5,212	5,996	9,230
12,40	20,21	127,530	30,4	347,51	1,571	8,86	1,571	20,213	5,747	5,747	6,113	9,411
12,60	15,51	129,492	28,6	353,11	1,571	9,00	1,571	15,506	6,111	6,111	6,162	9,486
12,80	12,76	131,454	27,1	358,72	1,571	9,14	1,571	12,762	6,374	6,194	6,163	9,487
13,00	11,20	133,416	26,0	364,32	1,571	9,29	1,571	11,195	6,577	6,190	6,149	9,465
13,20	6,49	135,378	21,4	369,93	1,571	9,43	1,571	6,489	6,489	6,180	6,129	9,436
13,40	6,49	137,340	21,3	375,53	1,571	9,57	1,571	6,492	6,492	6,172	6,104	9,396
13,60	8,46	139,302	23,4	381,14	1,571	9,71	1,571	8,456	6,601	6,163	6,070	9,344
13,80	8,84	141,264	23,7	386,74	1,571	9,86	1,571	8,842	6,718	6,152	6,027	9,278
14,00	14,35	143,226	27,3	392,35	1,571	10,00	1,571	14,348	7,009	6,137	5,975	9,198
14,20	14,74	145,188	27,4	397,95	1,571	10,14	1,571	14,743	7,304	6,114	5,913	9,103
14,40	23,77	147,150	30,5	403,56	1,571	10,29	1,571	23,772	7,879	6,083	5,843	8,994
14,60	23,38	149,112	30,4	409,16	1,571	10,43	1,571	23,381	8,425	6,036	5,764	8,872
14,80	17,89	151,074	28,5	414,77	1,571	10,57	1,571	17,891	8,780	5,974	5,677	8,739
15,00	12,40	153,036	25,7	420,37	1,571	10,71	1,571	12,400	8,950	5,900	5,582	8,593
15,20	11,23	154,998	24,8	425,98	1,571	10,86	1,571	11,226	9,078	5,820	5,481	8,437
15,40	11,23	156,960	24,7	431,58	1,571	11,00	1,571	11,230	9,202	5,735	5,370	8,267
15,60	9,66	158,922	23,4	437,19	1,571	11,14	1,571	9,661	9,272	5,645	5,249	8,079
15,80	10,45	160,884	24,0	442,79	1,571	11,29	1,571	10,449	9,364	5,550	5,116	7,875
16,00	16,34	162,846	27,3	448,40	1,571	11,43	1,571	16,339	9,639	5,450	5,006	7,705
16,20	18,69	164,808	28,2	454,00	1,571	11,57	1,571	18,695	9,978	5,340	4,915	7,566
16,40	16,74	166,770	27,3	459,61	1,571	11,71	1,571	16,736	10,247	5,219	4,843	7,456
16,60	29,69	168,732	31,0	465,21	1,571	11,86	1,571	29,687	10,912	5,088	4,791	7,376
16,80	29,69	170,694	30,9	470,82	1,571	12,00	1,571	29,690	11,558	4,935	4,761	7,328
17,00	12,03	172,656	24,5	476,42	1,571	12,14	1,571	12,035	11,637	4,762	4,753	7,317
17,20	4,58	174,618	15,9	482,03	1,571	12,29	1,571	4,582	4,582	4,582	4,776	7,353
17,40	6,55	176,580	19,2	487,63	1,571	12,43	1,571	6,547	4,668	4,668	4,831	7,437
17,60	5,76	178,542	17,9	493,24	1,571	12,57	1,571	5,764	4,727	4,727	4,888	7,525
17,80	5,18	180,504	16,7	498,84	1,571	12,71	1,571	5,179	4,766	4,766	4,951	7,621
18,00	5,18	182,466	16,6	504,45	1,571	12,86	1,571	5,182	4,804	4,804	5,017	7,723
18,20	5,18	184,428	16,5	510,05	1,571	13,00	1,571	5,184	4,841	4,841	0,000	0,000
18,40	5,19	186,390	16,4	515,66	1,571	13,14	1,571	5,188	4,876	4,876	0,000	0,000
18,60	6,37	188,352	18,3	521,26	1,571	13,29	1,571	6,367	4,947	4,947	0,000	0,000
18,80	6,57	190,314	18,5	526,87	1,571	13,43	1,571	6,566	5,021	5,021	0,000	0,000
19,00	7,55	192,276	19,7	532,47	1,571	13,57	1,571	7,550	5,123	5,123	0,000	0,000
19,20	7,75	194,238	19,8	538,08	1,571	13,71	1,571	7,749	5,228	5,228	0,000	0,000
19,40	6,57	196,200	18,2	543,68	1,571	13,86	1,571	6,575	5,295	5,295	0,000	0,000
19,60	4,03	198,162	13,2	549,29	1,571	14,00	1,571	4,026	0,000	0,000	0,000	0,000

Diameter paalbasis : 1,6 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
0,20	0,42	3,139	29,4	5,60	1,571	0,13	0,054	0,077	0,077	0,077	0,077	0,154
0,40	0,82	6,278	29,2	11,21	1,571	0,25	0,107	0,159	0,130	0,130	0,159	0,321
0,60	2,29	9,418	32,7	16,81	1,571	0,38	0,132	0,363	0,206	0,206	0,363	0,729
0,80	7,69	12,557	37,1	22,42	1,571	0,50	0,134	0,873	0,343	0,343	0,612	1,231
1,00	8,48	15,696	36,5	28,02	1,571	0,63	0,170	1,063	0,426	0,426	0,672	1,351
1,20	7,89	17,658	35,7	33,63	1,571	0,75	0,210	1,121	0,500	0,500	0,729	1,465
1,40	7,70	19,620	35,0	39,23	1,571	0,88	0,249	1,207	0,570	0,570	0,787	1,582
1,60	7,11	21,582	34,2	44,84	1,571	1,00	0,293	1,255	0,634	0,634	0,847	1,703
1,80	6,33	23,544	33,2	50,44	1,571	1,13	0,341	1,270	0,687	0,687	0,910	1,830
2,00	4,77	25,506	31,3	56,05	1,571	1,25	0,410	1,162	0,735	0,735	0,975	1,961
2,20	3,98	27,468	29,9	61,65	1,571	1,38	0,474	1,127	0,784	0,784	1,044	2,099
2,40	3,20	29,430	27,9	67,26	1,571	1,50	0,562	1,100	0,828	0,828	1,100	2,212
2,60	3,99	31,392	29,0	72,86	1,571	1,63	0,570	1,315	0,881	0,881	1,198	2,408
2,80	4,58	33,354	29,5	78,47	1,571	1,75	0,590	1,507	0,939	0,939	1,280	2,573
3,00	7,33	35,316	31,8	84,07	1,571	1,88	0,556	2,080	1,023	1,023	1,357	2,727
3,20	7,92	37,278	32,0	89,68	1,571	2,00	0,582	2,307	1,112	1,112	1,424	2,863
3,40	12,24	39,240	33,9	95,28	1,571	2,13	0,551	3,110	1,202	1,202	1,481	2,977
3,60	9,50	41,202	32,4	100,89	1,571	2,25	0,626	2,866	1,272	1,272	1,527	3,071
3,80	6,36	43,164	30,0	106,49	1,571	2,38	0,739	2,430	1,353	1,353	1,565	3,147
4,00	8,32	45,126	31,2	112,10	1,571	2,50	0,723	2,978	1,454	1,454	1,593	3,202
4,20	6,36	47,088	29,4	117,70	1,571	2,63	0,826	2,747	1,540	1,540	1,607	3,232
4,40	5,39	49,050	28,0	123,31	1,571	2,75	0,930	2,727	1,621	1,621	1,611	3,239
4,60	4,80	51,012	26,8	128,91	1,571	2,88	1,029	2,773	1,700	1,630	1,603	3,223
4,80	3,63	52,974	24,4	134,52	1,571	3,00	1,241	2,690	1,772	1,628	1,592	3,200
5,00	4,02	54,936	24,9	140,12	1,571	3,13	1,249	2,981	1,852	1,625	1,578	3,172
5,20	6,38	56,898	28,1	145,73	1,571	3,25	1,062	3,705	1,957	1,620	1,561	3,138
5,40	16,19	58,860	33,3	151,33	1,571	3,38	0,817	6,023	2,088	1,612	1,541	3,098
5,60	12,66	60,822	31,8	156,94	1,571	3,50	0,911	5,576	2,195	1,601	1,518	3,052
5,80	8,35	62,784	29,3	162,54	1,571	3,63	1,085	4,838	2,329	1,588	1,493	3,001
6,00	5,61	64,746	26,2	168,15	1,571	3,75	1,374	4,619	2,449	1,571	1,466	2,947
6,20	5,22	66,708	25,4	173,75	1,571	3,88	1,521	4,975	2,578	1,551	1,438	2,891
6,40	4,43	68,670	23,9	179,36	1,571	4,00	1,571	4,433	2,682	1,528	1,409	2,834
6,60	3,85	70,632	22,5	184,96	1,571	4,13	1,571	3,847	2,761	1,501	1,380	2,775
6,80	3,85	72,594	22,3	190,57	1,571	4,25	1,571	3,850	2,837	1,473	1,351	2,715
7,00	3,66	74,556	21,6	196,17	1,571	4,38	1,571	3,657	2,903	1,441	1,321	2,655
7,20	3,66	76,518	21,4	201,78	1,571	4,50	1,571	3,660	2,966	1,408	1,290	2,594
7,40	2,49	78,480	17,7	207,38	1,571	4,63	1,571	2,486	2,486	1,373	1,260	2,533
7,60	2,49	80,442	17,5	212,99	1,571	4,75	1,571	2,488	2,488	1,347	1,237	2,487
7,80	2,88	82,404	18,6	218,59	1,571	4,88	1,571	2,883	2,531	1,321	1,220	2,454
8,00	2,69	84,366	17,8	224,20	1,571	5,00	1,571	2,690	2,565	1,294	1,212	2,437
8,20	2,69	86,328	17,6	229,80	1,571	5,13	1,571	2,693	2,598	1,265	1,218	2,449
8,40	2,70	88,290	17,3	235,41	1,571	5,25	1,571	2,696	2,630	1,234	1,233	2,479
8,60	2,70	90,252	17,1	241,01	1,571	5,38	1,571	2,698	2,660	1,202	1,260	2,534
8,80	3,09	92,214	18,2	246,62	1,571	5,50	1,571	3,093	2,703	1,169	1,304	2,622
9,00	1,13	94,176	7,0	252,22	1,571	5,63	1,571	1,134	1,134	1,134	1,378	2,771
9,20	1,72	96,138	11,8	257,83	1,571	5,75	1,571	1,725	1,165	1,165	1,485	2,985
9,40	1,92	98,100	12,8	263,43	1,571	5,88	1,571	1,925	1,201	1,201	1,620	3,256
9,60	2,32	100,062	14,6	269,04	1,571	6,00	1,571	2,319	1,248	1,248	1,778	3,575
9,80	3,89	102,024	19,4	274,64	1,571	6,13	1,571	3,892	1,344	1,344	1,954	3,929
10,00	2,72	103,986	15,8	280,25	1,571	6,25	1,571	2,717	1,400	1,400	2,180	4,383

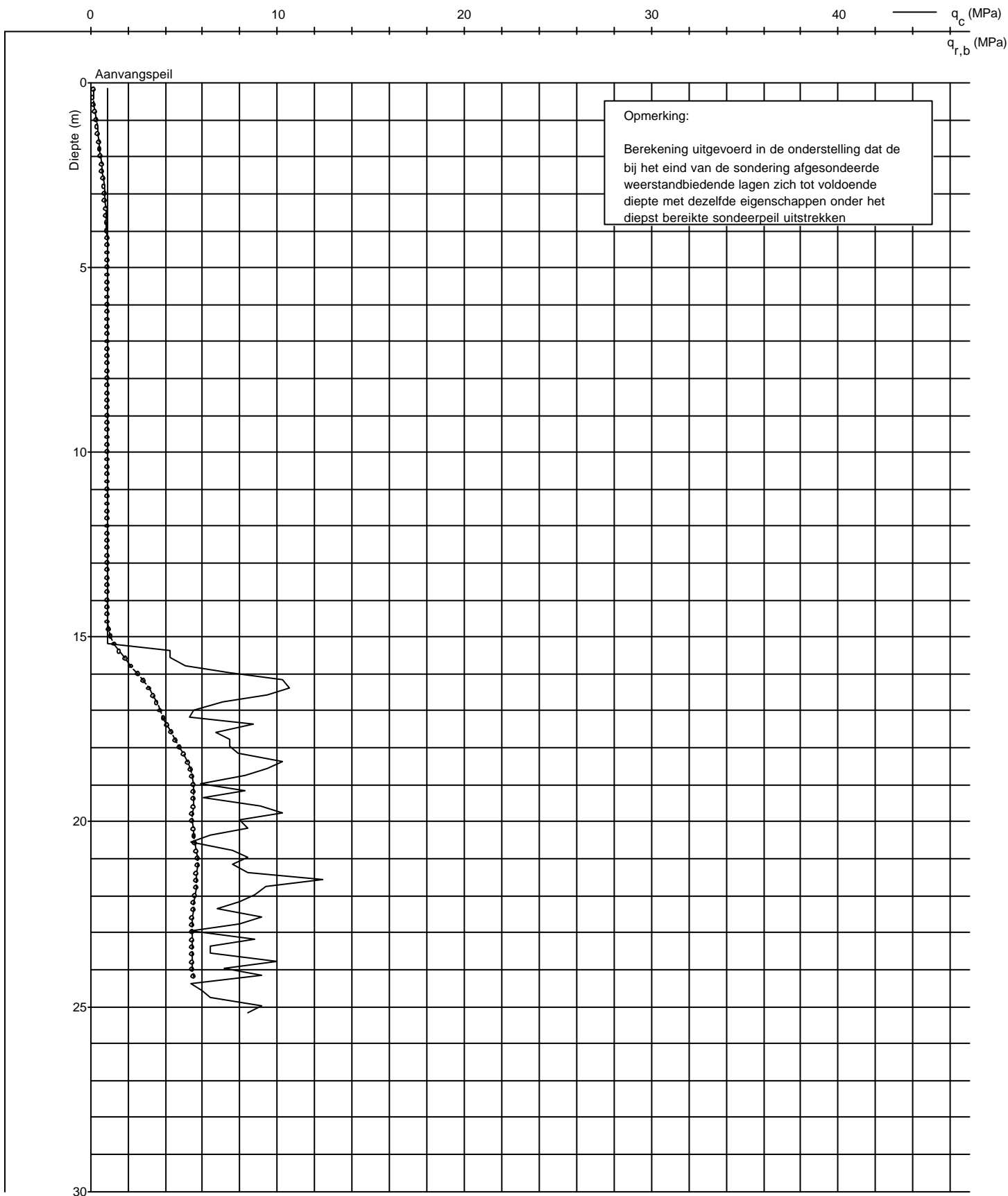
Diameter paalbasis : 1,6 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
10,20	3,51	105,948	18,1	285,85	1,571	6,38	1,571	3,505	1,479	1,479	2,451	4,929
10,40	4,88	107,910	20,9	291,46	1,571	6,50	1,571	4,881	1,598	1,598	2,761	5,552
10,60	8,81	109,872	25,6	297,06	1,571	6,63	1,571	8,807	1,837	1,837	3,129	6,291
10,80	9,60	111,834	26,1	302,67	1,571	6,75	1,571	9,595	2,093	2,093	3,525	7,088
11,00	10,78	113,796	26,9	308,27	1,571	6,88	1,571	10,775	2,378	2,378	3,931	7,903
11,20	9,80	115,758	26,0	313,88	1,571	7,00	1,571	9,797	2,625	2,625	4,324	8,695
11,40	8,82	117,720	25,1	319,48	1,571	7,13	1,571	8,818	2,836	2,836	4,691	9,431
11,60	22,16	119,682	31,2	325,09	1,571	7,25	1,571	22,163	3,372	3,372	5,033	10,119
11,80	29,62	121,644	32,6	330,69	1,571	7,38	1,571	29,621	3,846	3,846	5,315	10,686
12,00	26,88	123,606	32,1	336,30	1,571	7,50	1,571	26,877	4,267	4,267	5,543	11,144
12,20	24,53	125,568	31,5	341,90	1,571	7,63	1,571	24,525	4,907	4,907	5,723	11,507
12,40	20,21	127,530	30,4	347,51	1,571	7,75	1,571	20,213	5,402	5,402	5,830	11,722
12,60	15,51	129,492	28,6	353,11	1,571	7,88	1,571	15,506	5,743	5,743	5,880	11,823
12,80	12,76	131,454	27,1	358,72	1,571	8,00	1,571	12,762	5,993	5,923	5,889	11,841
13,00	11,20	133,416	26,0	364,32	1,571	8,13	1,571	11,195	6,190	5,921	5,874	11,810
13,20	6,49	135,378	21,4	369,93	1,571	8,25	1,571	6,489	6,243	5,915	5,853	11,768
13,40	6,49	137,340	21,3	375,53	1,571	8,38	1,571	6,492	6,294	5,908	5,826	11,713
13,60	8,46	139,302	23,4	381,14	1,571	8,50	1,571	8,456	6,401	5,899	5,792	11,645
13,80	8,84	141,264	23,7	386,74	1,571	8,63	1,571	8,842	6,516	5,888	5,751	11,563
14,00	14,35	143,226	27,3	392,35	1,571	8,75	1,571	14,348	6,787	5,873	5,703	11,467
14,20	14,74	145,188	27,4	397,95	1,571	8,88	1,571	14,743	7,063	5,852	5,648	11,356
14,40	23,77	147,150	30,5	403,56	1,571	9,00	1,571	23,772	7,592	5,825	5,586	11,232
14,60	23,38	149,112	30,4	409,16	1,571	9,13	1,571	23,381	8,095	5,784	5,517	11,093
14,80	17,89	151,074	28,5	414,77	1,571	9,25	1,571	17,891	8,428	5,732	5,442	10,941
15,00	12,40	153,036	25,7	420,37	1,571	9,38	1,571	12,400	8,595	5,670	5,360	10,776
15,20	11,23	154,998	24,8	425,98	1,571	9,50	1,571	11,226	8,723	5,604	5,271	10,598
15,40	11,23	156,960	24,7	431,58	1,571	9,63	1,571	11,230	8,848	5,532	5,174	10,402
15,60	9,66	158,922	23,4	437,19	1,571	9,75	1,571	9,661	8,925	5,457	5,068	10,190
15,80	10,45	160,884	24,0	442,79	1,571	9,88	1,571	10,449	9,022	5,378	4,980	10,012
16,00	16,34	162,846	27,3	448,40	1,571	10,00	1,571	16,339	9,281	5,295	4,906	9,865
16,20	18,69	164,808	28,2	454,00	1,571	10,13	1,571	18,695	9,601	5,204	4,846	9,744
16,40	16,74	166,770	27,3	459,61	1,571	10,25	1,571	16,736	9,857	5,103	4,801	9,652
16,60	29,69	168,732	31,0	465,21	1,571	10,38	1,571	29,687	10,469	4,995	4,770	9,591
16,80	29,69	170,694	30,9	470,82	1,571	10,50	1,571	29,690	11,065	4,870	4,756	9,562
17,00	12,03	172,656	24,5	476,42	1,571	10,63	1,571	12,035	11,154	4,729	4,762	9,575
17,20	4,58	174,618	15,9	482,03	1,571	10,75	1,571	4,582	4,582	4,582	4,792	9,635
17,40	6,55	176,580	19,2	487,63	1,571	10,88	1,571	6,547	4,662	4,662	4,849	9,749
17,60	5,76	178,542	17,9	493,24	1,571	11,00	1,571	5,764	4,718	4,718	4,908	9,868
17,80	5,18	180,504	16,7	498,84	1,571	11,13	1,571	5,179	4,755	4,755	4,967	9,988
18,00	5,18	182,466	16,6	504,45	1,571	11,25	1,571	5,182	4,792	4,792	0,000	0,000
18,20	5,18	184,428	16,5	510,05	1,571	11,38	1,571	5,184	4,828	4,828	0,000	0,000
18,40	5,19	186,390	16,4	515,66	1,571	11,50	1,571	5,188	4,863	4,863	0,000	0,000
18,60	6,37	188,352	18,3	521,26	1,571	11,63	1,571	6,367	4,929	4,929	0,000	0,000
18,80	6,57	190,314	18,5	526,87	1,571	11,75	1,571	6,566	4,999	4,999	0,000	0,000
19,00	7,55	192,276	19,7	532,47	1,571	11,88	1,571	7,550	5,094	5,094	0,000	0,000
19,20	7,75	194,238	19,8	538,08	1,571	12,00	1,571	7,749	5,191	5,191	0,000	0,000
19,40	6,57	196,200	18,2	543,68	1,571	12,13	1,571	6,575	5,254	5,254	0,000	0,000
19,60	4,03	198,162	13,2	549,29	1,571	12,25	1,571	4,026	0,000	0,000	0,000	0,000

SONDERING (CPT-M) : $q_{r,b}$ -berekening

Opdracht DBEER-02/qp	Datum 01/01/1971	ZWIJNDRECHT-QP-BEREKENING DE BEER	Proef XXIV
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Apparaat : 200kN	Conus : M1
Water op : 0 m opgemeten op 01/01/1971	$q_{r,b}$ -berekening : De Beer
	Diameter : (o) 0,8 m



Algemene gegevens

Opdrachtnummer :	DBEER-02/qp
Sondeernummer :	XXIV
Datum uitvoering :	01/01/1971
Plaats :	ZWIJNDRECHT-QP-BEREKENING DE BEER
Lambertcoördinaten :	X= Y=
Aanvangspeil :	
Apparaat Type :	200kN
Conus Type :	M1
Meetlichaam :	H10
Grondsoort aan de conus :	
Diepte water :	0 m (t.o.v. aanvangspeil)
Datum opmeting waterpeil:	01/01/1971 00:00
Aantal buizen :	0

Constanten

Massa eindbuis :	6,4 kg
Massa verlengbuis :	6,4 kg
Massa kleefvangerbuis :	6,4 kg
Massa eindstang :	0 kg
Massa verlengstang :	0 kg
Oppervlakte conus :	10 cm ²
Oppervlakte plunjer :	10 cm ²

Ijkcoëfficiënten

Coëfficiënten conus :	a: 0,1	b: 0
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Diameter paalbasis : 0,8 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
0,20	0,90	1,962	35,8	5,60	1,031	0,25	0,076	0,227	0,077	0,077	0,165	0,083
0,40	0,90	3,924	32,3	11,21	1,571	0,50	0,174	0,153	0,127	0,127	0,153	0,077
0,60	0,90	5,886	30,2	16,81	1,571	0,75	0,278	0,199	0,168	0,168	0,199	0,100
0,80	0,90	7,848	28,3	22,42	1,571	1,00	0,391	0,253	0,207	0,207	0,253	0,127
1,00	0,90	9,810	26,6	28,02	1,571	1,25	0,511	0,311	0,244	0,244	0,311	0,156
1,20	0,90	11,772	25,3	33,63	1,571	1,50	0,637	0,373	0,282	0,282	0,367	0,184
1,40	0,90	13,734	24,0	39,23	1,571	1,75	0,771	0,441	0,322	0,322	0,414	0,208
1,60	0,90	15,696	23,0	44,84	1,571	2,00	0,917	0,517	0,364	0,364	0,464	0,233
1,80	0,90	17,658	22,0	50,44	1,571	2,25	1,080	0,606	0,408	0,408	0,516	0,259
2,00	0,90	19,620	21,1	56,05	1,571	2,50	1,277	0,718	0,458	0,458	0,567	0,285
2,20	0,90	21,582	20,2	61,65	1,571	2,75	1,553	0,888	0,518	0,518	0,617	0,310
2,40	0,90	23,544	19,4	67,26	1,571	3,00	1,571	0,900	0,572	0,572	0,661	0,332
2,60	0,90	25,506	18,7	72,86	1,571	3,25	1,571	0,900	0,621	0,621	0,702	0,353
2,80	0,90	27,468	18,0	78,47	1,571	3,50	1,571	0,900	0,666	0,666	0,739	0,371
3,00	0,90	29,430	17,4	84,07	1,571	3,75	1,571	0,900	0,706	0,706	0,772	0,388
3,20	0,90	31,392	16,7	89,68	1,571	4,00	1,571	0,900	0,742	0,742	0,803	0,403
3,40	0,90	33,354	16,1	95,28	1,571	4,25	1,571	0,900	0,775	0,775	0,830	0,417
3,60	0,90	35,316	15,6	100,89	1,571	4,50	1,571	0,900	0,805	0,805	0,855	0,430
3,80	0,90	37,278	15,0	106,49	1,571	4,75	1,571	0,900	0,833	0,833	0,874	0,439
4,00	0,90	39,240	14,5	112,10	1,571	5,00	1,571	0,900	0,858	0,858	0,888	0,446
4,20	0,90	41,202	14,0	117,70	1,571	5,25	1,571	0,900	0,881	0,881	0,896	0,450
4,40	0,90	43,164	13,5	123,31	1,571	5,50	1,571	0,900	0,900	0,900	0,900	0,452
4,60	0,90	45,126	13,0	128,91	1,571	5,75	1,571	0,900	0,900	0,900	0,900	0,452
4,80	0,90	47,088	12,5	134,52	1,571	6,00	1,571	0,900	0,900	0,900	0,900	0,452
5,00	0,90	49,050	12,1	140,12	1,571	6,25	1,571	0,900	0,900	0,900	0,900	0,452
5,20	0,90	51,012	11,6	145,73	1,571	6,50	1,571	0,900	0,900	0,900	0,900	0,452
5,40	0,90	52,974	11,2	151,33	1,571	6,75	1,571	0,900	0,900	0,900	0,900	0,452
5,60	0,90	54,936	10,8	156,94	1,571	7,00	1,571	0,900	0,900	0,900	0,900	0,452
5,80	0,90	56,898	10,4	162,54	1,571	7,25	1,571	0,900	0,900	0,900	0,900	0,452
6,00	0,90	58,860	10,0	168,15	1,571	7,50	1,571	0,900	0,900	0,900	0,900	0,452
6,20	0,90	60,822	9,6	173,75	1,571	7,75	1,571	0,900	0,900	0,900	0,900	0,452
6,40	0,90	62,784	9,2	179,36	1,571	8,00	1,571	0,900	0,900	0,900	0,900	0,452
6,60	0,90	64,746	8,8	184,96	1,571	8,25	1,571	0,900	0,900	0,900	0,900	0,452
6,80	0,90	66,708	8,4	190,57	1,571	8,50	1,571	0,900	0,900	0,900	0,900	0,452
7,00	0,90	68,670	8,1	196,17	1,571	8,75	1,571	0,900	0,900	0,900	0,900	0,452
7,20	0,90	70,632	7,7	201,78	1,571	9,00	1,571	0,900	0,900	0,900	0,900	0,452
7,40	0,90	72,594	7,3	207,38	1,571	9,25	1,571	0,900	0,900	0,900	0,900	0,452
7,60	0,90	74,556	7,0	212,99	1,571	9,50	1,571	0,900	0,900	0,900	0,900	0,452
7,80	0,90	76,518	6,7	218,59	1,571	9,75	1,571	0,900	0,900	0,900	0,900	0,452
8,00	0,90	78,480	6,3	224,20	1,571	10,00	1,571	0,900	0,900	0,900	0,900	0,452
8,20	0,90	80,442	6,0	229,80	1,571	10,25	1,571	0,900	0,900	0,900	0,900	0,452
8,40	0,90	82,404	5,7	235,41	1,571	10,50	1,571	0,900	0,900	0,900	0,900	0,452
8,60	0,90	84,366	5,4	241,01	1,571	10,75	1,571	0,900	0,900	0,900	0,900	0,452
8,80	0,90	86,328	5,0	246,62	1,571	11,00	1,571	0,900	0,900	0,900	0,900	0,452
9,00	0,90	88,290	4,7	252,22	1,571	11,25	1,571	0,900	0,900	0,900	0,900	0,452
9,20	0,90	90,252	4,4	257,83	1,571	11,50	1,571	0,900	0,900	0,900	0,900	0,452
9,40	0,90	92,214	4,1	263,43	1,571	11,75	1,571	0,900	0,900	0,900	0,900	0,452
9,60	0,90	94,176	3,8	269,04	1,571	12,00	1,571	0,900	0,900	0,900	0,900	0,452
9,80	0,90	96,138	3,5	274,64	1,571	12,25	1,571	0,900	0,900	0,900	0,900	0,452
10,00	0,90	98,100	3,2	280,25	1,571	12,50	1,571	0,900	0,900	0,900	0,900	0,452

Diameter paalbasis : 0,8 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
10,20	0,90	100,062	2,9	285,85	1,571	12,75	1,571	0,900	0,900	0,900	0,900	0,452
10,40	0,90	102,024	2,6	291,46	1,571	13,00	1,571	0,900	0,900	0,900	0,900	0,452
10,60	0,90	103,986	2,3	297,06	1,571	13,25	1,571	0,900	0,900	0,900	0,900	0,452
10,80	0,90	105,948	2,0	302,67	1,571	13,50	1,571	0,900	0,900	0,900	0,900	0,452
11,00	0,90	107,910	1,7	308,27	1,571	13,75	1,571	0,900	0,900	0,900	0,900	0,452
11,20	0,90	109,872	1,4	313,88	1,571	14,00	1,571	0,900	0,900	0,900	0,900	0,452
11,40	0,90	111,834	1,1	319,48	1,571	14,25	1,571	0,900	0,900	0,900	0,900	0,452
11,60	0,90	113,796	0,9	325,09	1,571	14,50	1,571	0,900	0,900	0,900	0,900	0,452
11,80	0,90	115,758	0,6	330,69	1,571	14,75	1,571	0,900	0,900	0,900	0,900	0,452
12,00	0,90	117,720	0,3	336,30	1,571	15,00	1,571	0,900	0,900	0,900	0,900	0,452
12,20	0,90	119,682	0,0	341,90	1,571	15,25	1,571	0,900	0,900	0,900	0,900	0,452
12,40	0,90	121,644	0,0	347,51	1,571	15,50	1,571	0,900	0,900	0,900	0,900	0,452
12,60	0,90	123,606	0,0	353,11	1,571	15,75	1,571	0,900	0,900	0,900	0,900	0,452
12,80	0,90	125,568	0,0	358,72	1,571	16,00	1,571	0,900	0,900	0,900	0,900	0,452
13,00	0,90	127,530	0,0	364,32	1,571	16,25	1,571	0,900	0,900	0,900	0,900	0,452
13,20	0,90	129,492	0,0	369,93	1,571	16,50	1,571	0,900	0,900	0,900	0,900	0,452
13,40	0,90	131,454	0,0	375,53	1,571	16,75	1,571	0,900	0,900	0,900	0,900	0,452
13,60	0,90	133,416	0,0	381,14	1,571	17,00	1,571	0,900	0,900	0,900	0,900	0,452
13,80	0,90	135,378	0,0	386,74	1,571	17,25	1,571	0,900	0,900	0,900	0,900	0,452
14,00	0,90	137,340	0,0	392,35	1,571	17,50	1,571	0,900	0,900	0,900	0,900	0,452
14,20	0,90	139,302	0,0	397,95	1,571	17,75	1,571	0,900	0,900	0,900	0,900	0,452
14,40	0,90	141,264	0,0	403,56	1,571	18,00	1,571	0,900	0,900	0,900	0,900	0,452
14,60	0,90	143,226	0,0	409,16	1,571	18,25	1,571	0,900	0,900	0,900	0,936	0,470
14,80	0,90	145,188	0,0	414,77	1,571	18,50	1,571	0,900	0,900	0,900	1,005	0,505
15,00	0,90	147,150	0,0	420,37	1,571	18,75	1,571	0,900	0,900	0,900	1,116	0,561
15,20	0,90	149,112	0,0	425,98	1,571	19,00	1,571	0,900	0,900	0,900	1,289	0,648
15,40	4,30	151,074	16,7	431,58	1,571	19,25	1,571	4,300	1,078	1,078	1,551	0,779
15,60	4,30	153,036	16,5	437,19	1,571	19,50	1,571	4,300	1,249	1,249	1,865	0,937
15,80	5,10	154,998	18,1	442,79	1,571	19,75	1,571	5,100	1,451	1,451	2,217	1,114
16,00	7,50	156,960	21,4	448,40	1,571	20,00	1,571	7,500	1,766	1,766	2,573	1,294
16,20	10,30	158,922	24,0	454,00	1,571	20,25	1,571	10,300	2,208	2,208	2,893	1,454
16,40	10,70	160,884	24,2	459,61	1,571	20,50	1,571	10,700	2,649	2,649	3,148	1,582
16,60	9,50	162,846	23,1	465,21	1,571	20,75	1,571	9,500	3,010	3,010	3,370	1,694
16,80	7,10	164,808	20,5	470,82	1,571	21,00	1,571	7,100	3,233	3,233	3,554	1,787
17,00	5,50	166,770	18,1	476,42	1,571	21,25	1,571	5,500	3,365	3,365	3,733	1,877
17,20	5,30	168,732	17,6	482,03	1,571	21,50	1,571	5,300	3,481	3,481	3,924	1,973
17,40	8,70	170,694	22,0	487,63	1,571	21,75	1,571	8,700	3,762	3,762	4,132	2,077
17,60	6,70	172,656	19,6	493,24	1,571	22,00	1,571	6,700	3,930	3,930	4,346	2,185
17,80	7,50	174,618	20,5	498,84	1,571	22,25	1,571	7,500	4,129	4,129	4,578	2,301
18,00	7,50	176,580	20,4	504,45	1,571	22,50	1,571	7,500	4,320	4,320	4,808	2,417
18,20	7,90	178,542	20,8	510,05	1,571	22,75	1,571	7,900	4,521	4,521	5,010	2,518
18,40	10,30	180,504	22,9	515,66	1,571	23,00	1,571	10,300	4,833	4,833	5,208	2,618
18,60	9,50	182,466	22,2	521,26	1,571	23,25	1,571	9,500	5,090	5,090	5,350	2,689
18,80	8,30	184,428	20,9	526,87	1,571	23,50	1,571	8,300	5,275	5,275	5,440	2,734
19,00	5,90	186,390	17,7	532,47	1,571	23,75	1,571	5,900	5,333	5,333	5,491	2,760
19,20	8,30	188,352	20,7	538,08	1,571	24,00	1,571	8,300	5,507	5,507	5,526	2,778
19,40	6,10	190,314	17,8	543,68	1,571	24,25	1,571	6,100	5,564	5,543	5,520	2,775
19,60	9,10	192,276	21,3	549,29	1,571	24,50	1,571	9,100	5,766	5,542	5,500	2,765
19,80	10,30	194,238	22,3	554,89	1,571	24,75	1,571	10,300	6,018	5,531	5,472	2,750
20,00	8,00	196,200	20,0	560,50	1,571	25,00	1,571	8,000	6,145	5,508	5,472	2,751
20,20	8,40	198,162	20,4	566,10	1,571	25,25	1,571	8,400	6,285	5,479	5,510	2,770

Diameter paalbasis : 0,8 m volgens methode De Beer

Diepte (m)	q_c MPa	σ'_v kPa	φ (°)	h/d	β_c (rad)	h/D	β_p (rad)	$q_{p(1)}$ MPa	$q_{p,j+1}$ MPa	$q_{p,q+1}$ MPa	$q_{r,b}$ MPa	$Q_{r,b}$ MN
20,40	6,40	200,124	17,8	571,71	1,571	25,50	1,571	6,400	6,321	5,441	5,567	2,798
20,60	5,40	202,086	16,0	577,31	1,571	25,75	1,571	5,400	5,400	5,400	5,630	2,830
20,80	7,60	204,048	19,2	582,92	1,571	26,00	1,571	7,600	5,533	5,533	5,699	2,865
21,00	8,40	206,010	20,0	588,52	1,571	26,25	1,571	8,400	5,699	5,699	5,737	2,884
21,20	7,60	207,972	19,0	594,13	1,571	26,50	1,571	7,600	5,819	5,760	5,734	2,882
21,40	8,40	209,934	19,9	599,73	1,571	26,75	1,571	8,400	5,971	5,757	5,710	2,870
21,60	12,40	211,896	23,1	605,34	1,571	27,00	1,571	12,400	6,313	5,747	5,677	2,853
21,80	9,40	213,858	20,7	610,94	1,571	27,25	1,571	9,400	6,492	5,721	5,634	2,832
22,00	8,80	215,820	20,0	616,55	1,571	27,50	1,571	8,800	6,634	5,685	5,584	2,807
22,20	8,00	217,782	19,1	622,15	1,571	27,75	1,571	8,000	6,729	5,641	5,527	2,778
22,40	6,80	219,744	17,5	627,76	1,571	28,00	1,571	6,800	6,761	5,590	5,500	2,765
22,60	9,20	221,706	20,2	633,36	1,571	28,25	1,571	9,200	6,909	5,535	5,482	2,756
22,80	8,00	223,668	18,8	638,97	1,571	28,50	1,571	8,000	6,992	5,471	5,474	2,752
23,00	5,40	225,630	14,9	644,57	1,571	28,75	1,571	5,400	5,400	5,400	5,477	2,753
23,20	8,80	227,592	19,6	650,18	1,571	29,00	1,571	8,800	5,588	5,505	5,489	2,759
23,40	6,40	229,554	16,5	655,78	1,571	29,25	1,571	6,400	5,650	5,501	5,475	2,752
23,60	6,40	231,516	16,4	661,39	1,571	29,50	1,571	6,400	5,710	5,494	5,455	2,742
23,80	10,00	233,478	20,5	666,99	1,571	29,75	1,571	10,000	5,942	5,484	5,446	2,738
24,00	7,20	235,440	17,4	672,60	1,571	30,00	1,571	7,200	6,026	5,462	5,453	2,741
24,20	9,20	237,402	19,6	678,20	1,571	30,25	1,571	9,200	6,204	5,436	5,504	2,767
24,40	5,40	239,364	14,3	683,81	1,571	30,50	1,571	5,400	5,400	5,400	0,000	0,000
24,60	6,00	241,326	15,3	689,41	1,571	30,75	1,571	6,000	5,450	5,450	0,000	0,000
24,80	6,40	243,288	15,9	695,02	1,571	31,00	1,571	6,400	5,517	5,517	0,000	0,000
25,00	9,20	245,250	19,3	700,62	1,571	31,25	1,571	9,200	5,717	5,717	0,000	0,000
25,20	8,40	247,212	18,4	706,23	1,571	31,50	1,571	8,400	0,000	0,000	0,000	0,000