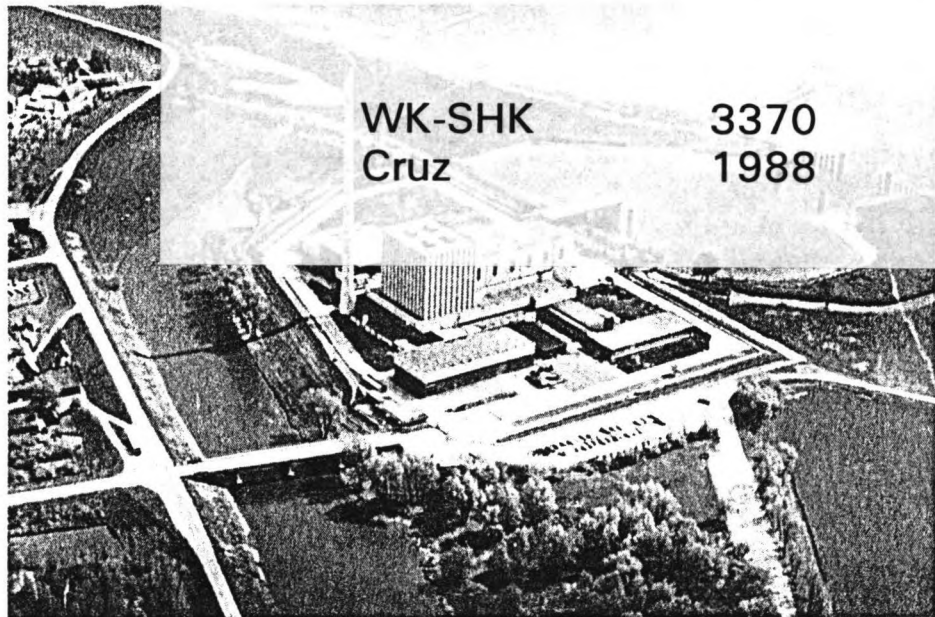


DIJKVERBETERING

nabij

DODEWAARD

g. cruz



BIJLAGEN dl. B

BIJ OPEN DAMWAND

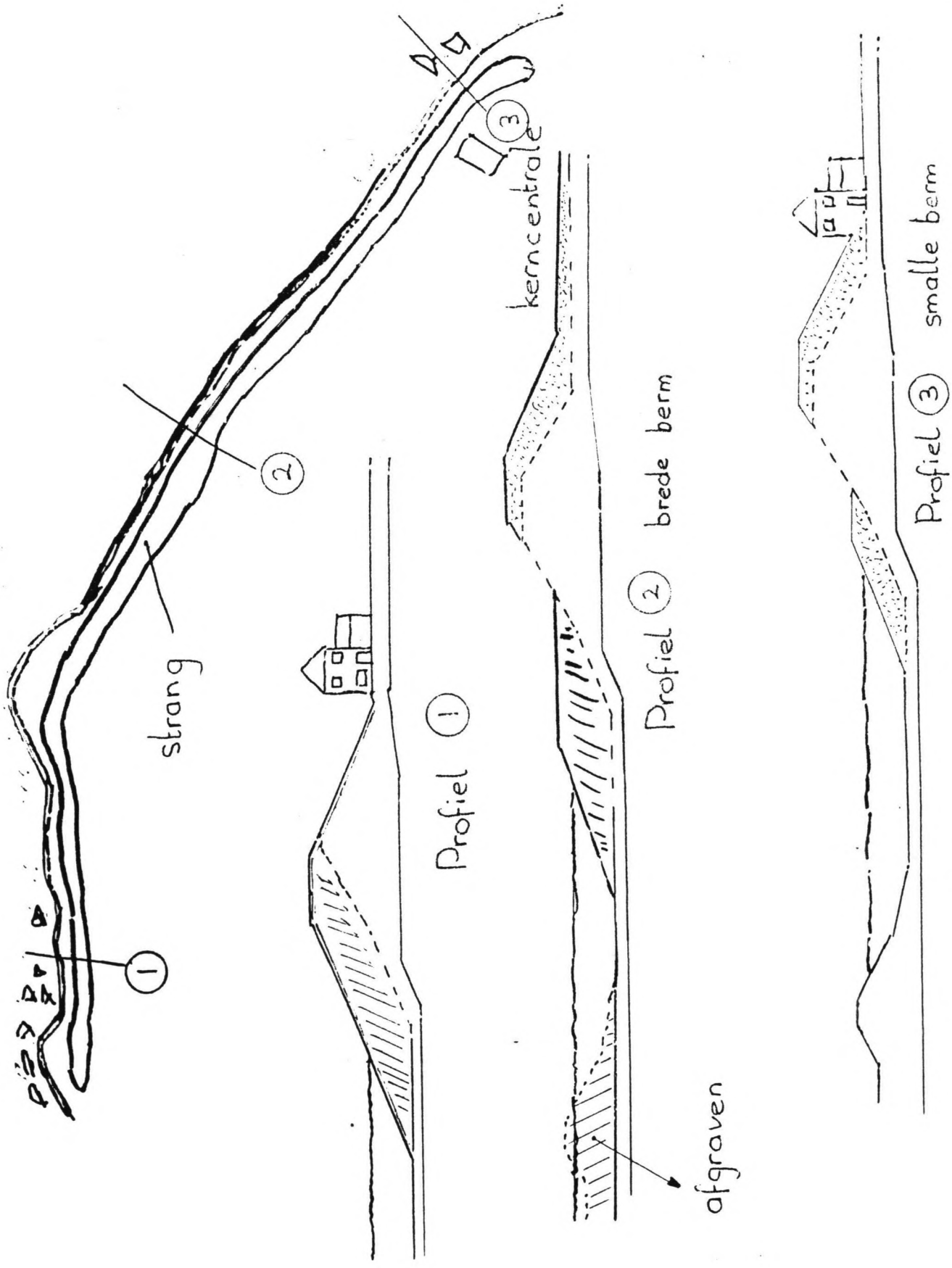
TU Delft

Technische Universiteit Delft

Faculteit der Civiele Techniek

Lijst van opgenomen bijlagen

- 1 Schets met keuze van het polderdistrict
- 2 Principeschets van de variant oplossing
- 3 Ontwerpwaarde voor de windsnelheid
- 4 Berekening voor de effectieve strijklengte
- 5 Grafiek voor de significante golfhoogte Hs
- 6 Relatie tussen de waakhoogte en de golfhoogte Hs
- 7 Ontwerpprofiel
- 8 Vierkantennet ter bepaling v/d freatische lijn
- 9 Invoer gegevens v/h dijkprofiel in STABIL
- 10 Profiel Dijk 1
- 11 Profiel Dijk 2
- 12 Profiel Dijk 3
- 13 Profiel Dijk 4
- 14 Gronddruk-supperpositie (actief)
Homogene grond zonder water
- 15 Gronddruk-supperpositie (actief)
Gelaagde grond zonder water
- 16 Gronddruk-supperpositie (actief)
Gelaagde grond met water
- 17 Gronddruk-supperpositie (passief)
Gelaagde grond met water
- 18 Damwand gegevens in profiel 317A
- 19 Damwand gegevens in profiel 317B
- 20 Damwand gegevens in profiel 317D
- 21 Damwand gegevens in profiel 317F
- 22 Damwand gegevens in profiel 317G
- 23 Damwand gegevens in profiel 317H
- 24 Constructie tekening

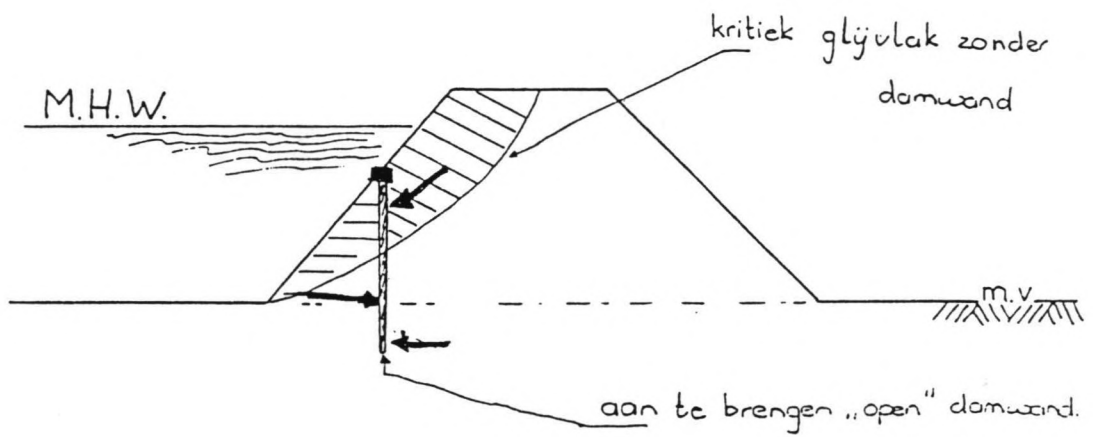


Profiel ①

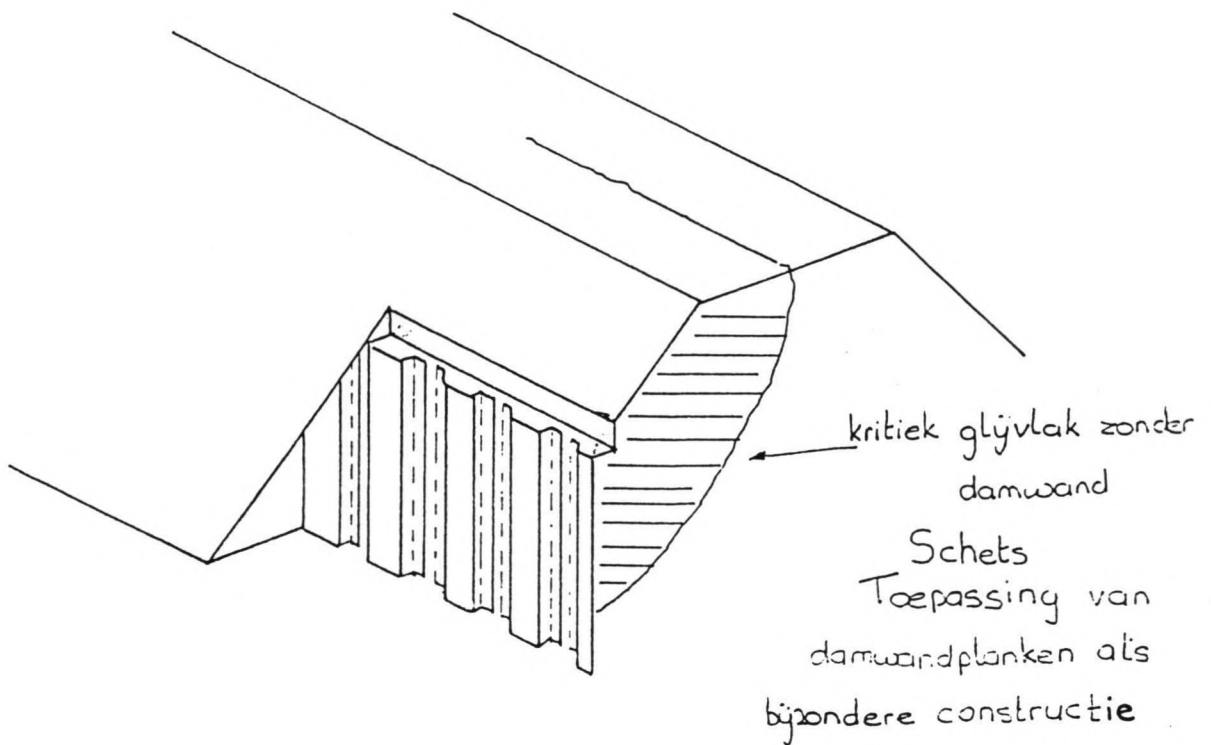
Profiel ② brede berm

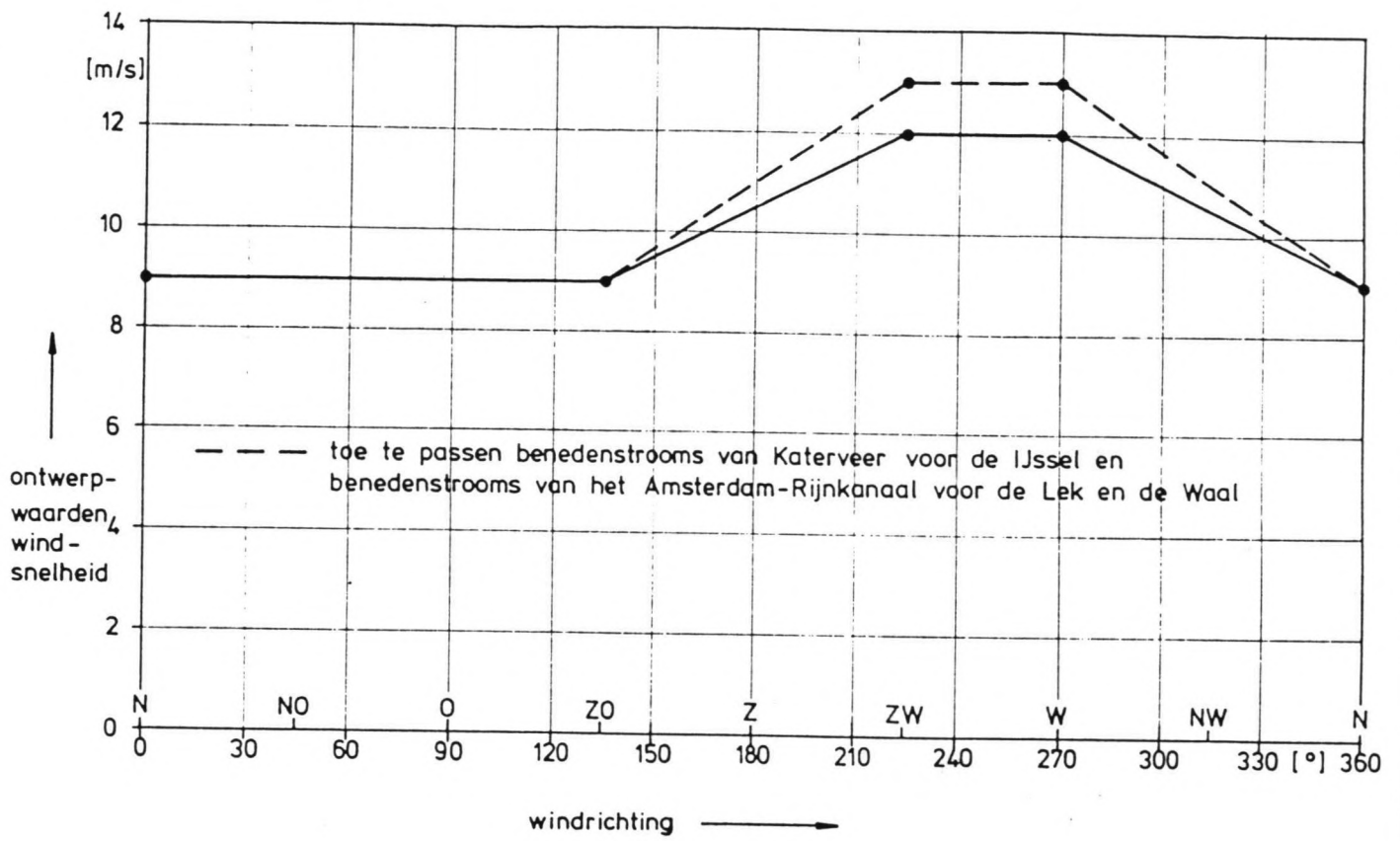
Profiel ③ smalle berm

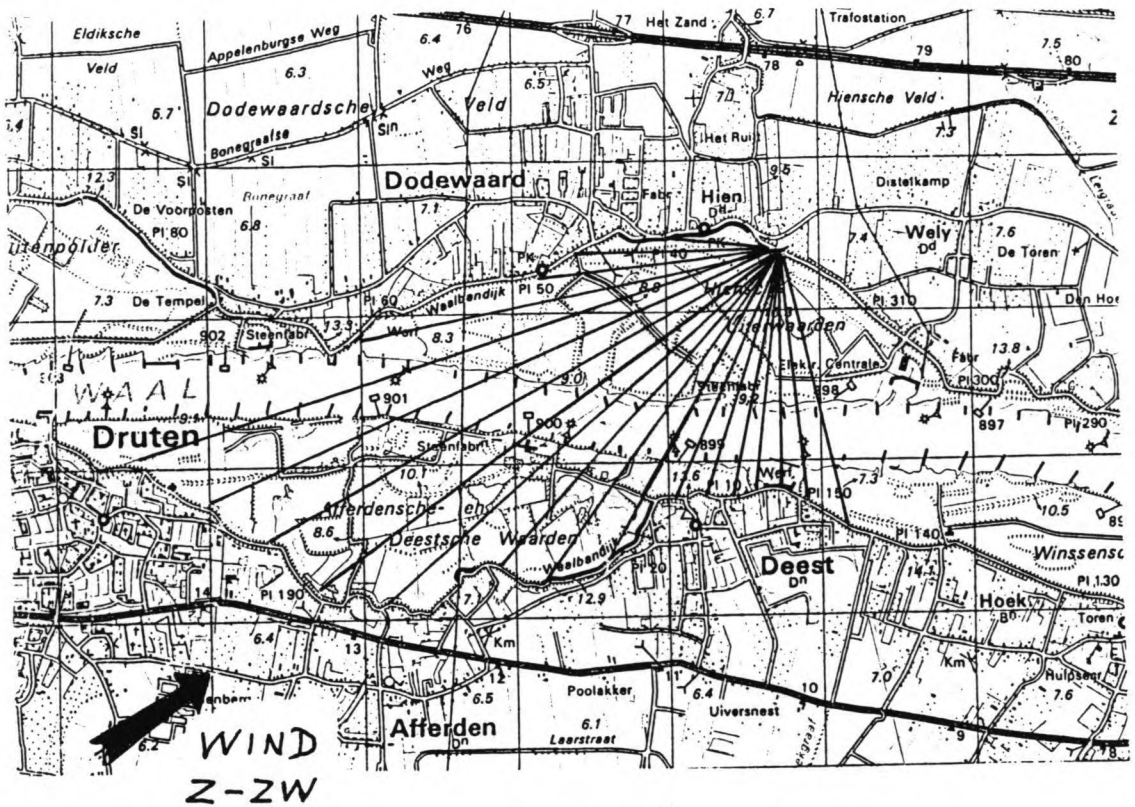
Keuze van het polderdistrict



Dwarsprofiel







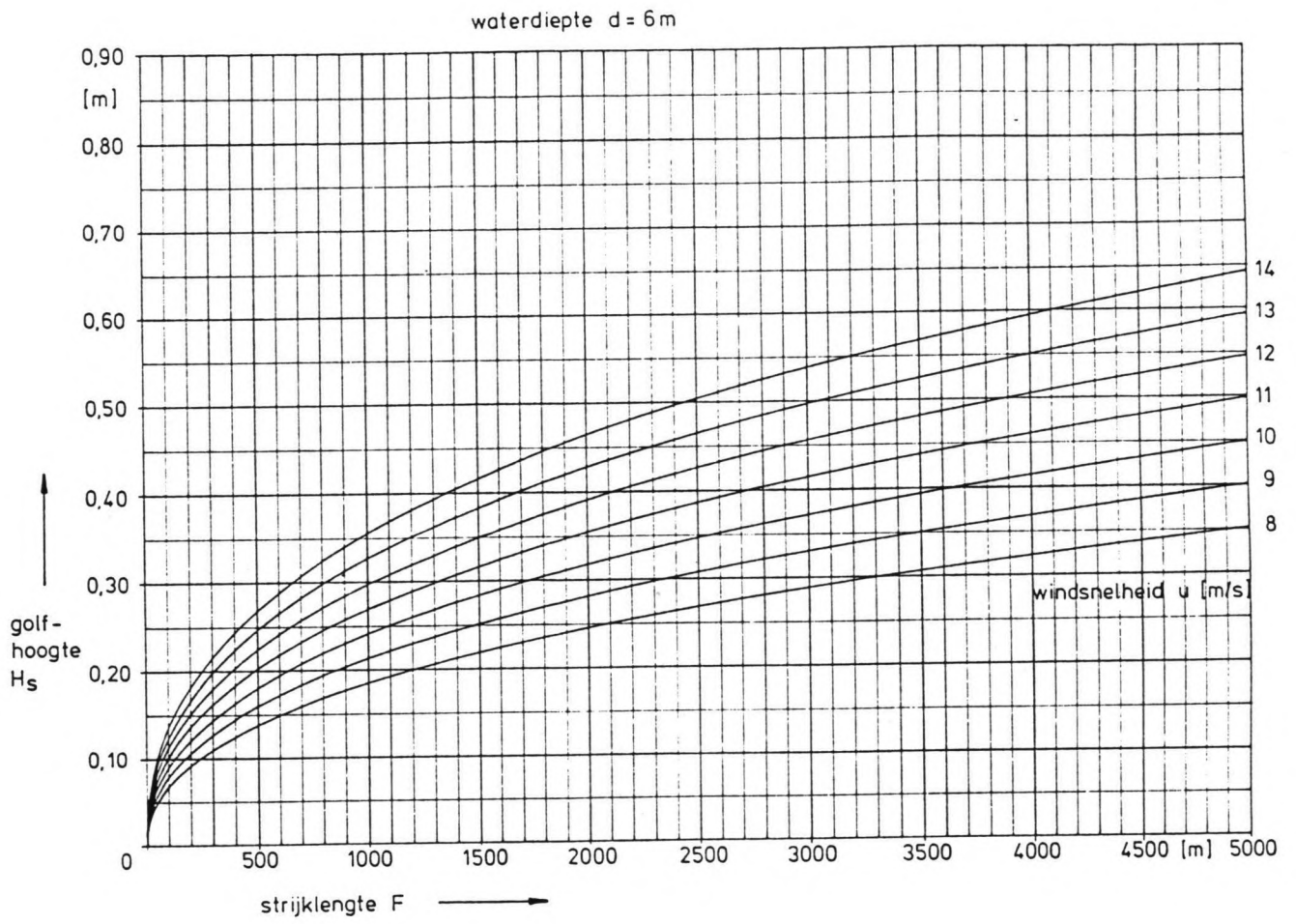
schaal 1:50.000

$\bar{\alpha}$ in °	$\cos \bar{\alpha}$	$\cos^2 \bar{\alpha}$	$R(\bar{\alpha})$ in m	$R(\bar{\alpha}) * \cos^2 \bar{\alpha}$
-42	0.743	0.552	750	414
-36	0.809	0.654	1350	883
-30	0.866	0.750	1600	1200
-24	0.914	0.835	2900	2421
-18	0.951	0.904	4500	4068
-12	0.978	0.956	4150	3967
-6	0.995	0.990	3850	3812
0	1.000	1.000	3750	3750
6	0.995	0.990	3500	3465
12	0.978	0.956	2750	2629
18	0.951	0.904	2650	2396
24	0.914	0.835	2400	2004
30	0.866	0.750	1750	1313
36	0.809	0.654	1700	1112
42	0.743	0.552	1650	911
$\Sigma \cos \bar{\alpha} = 13.512$			$\Sigma R(\bar{\alpha}) * \cos^2 \bar{\alpha} = 34345$	

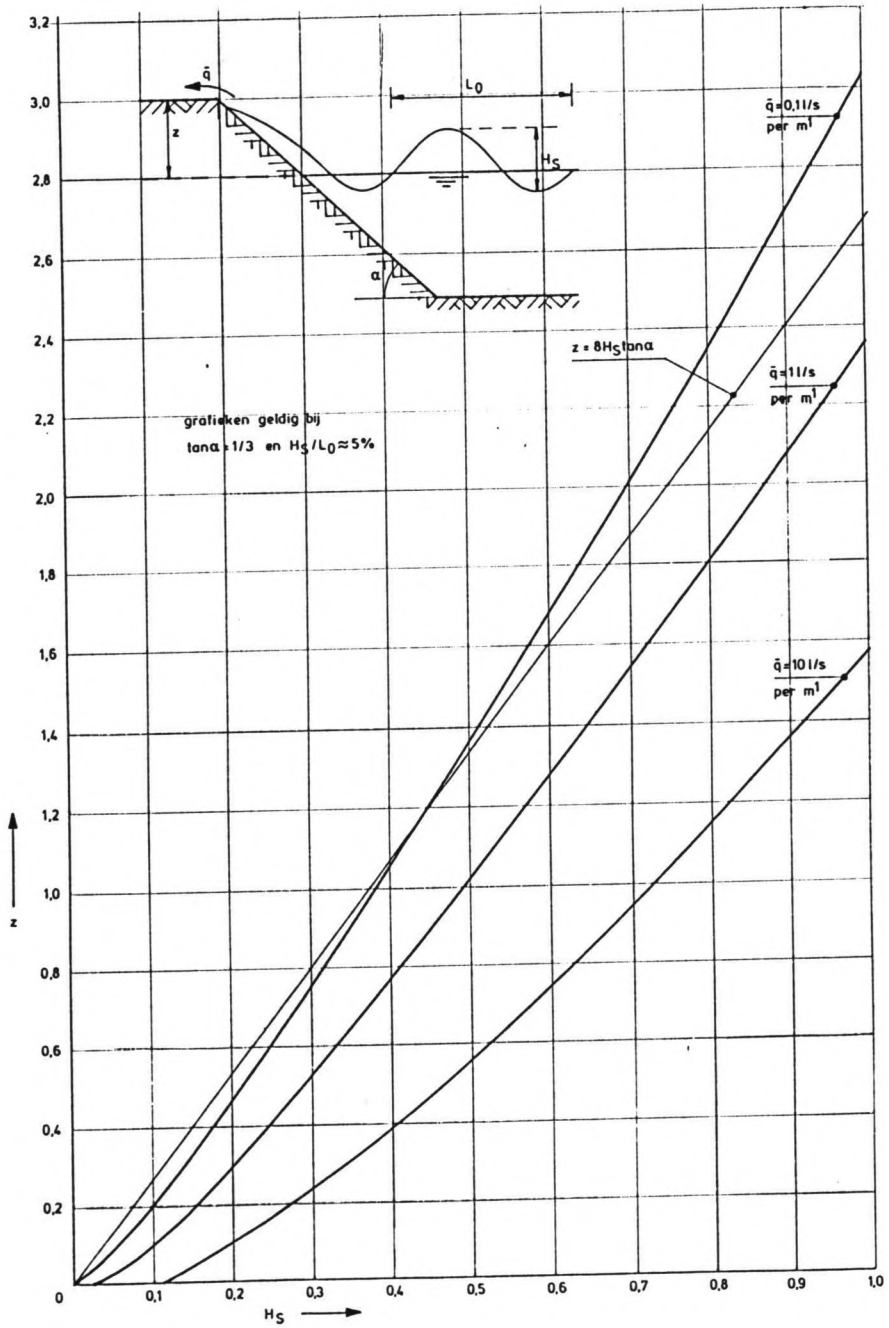
De effectieve strijklengte F_e volgt uit:

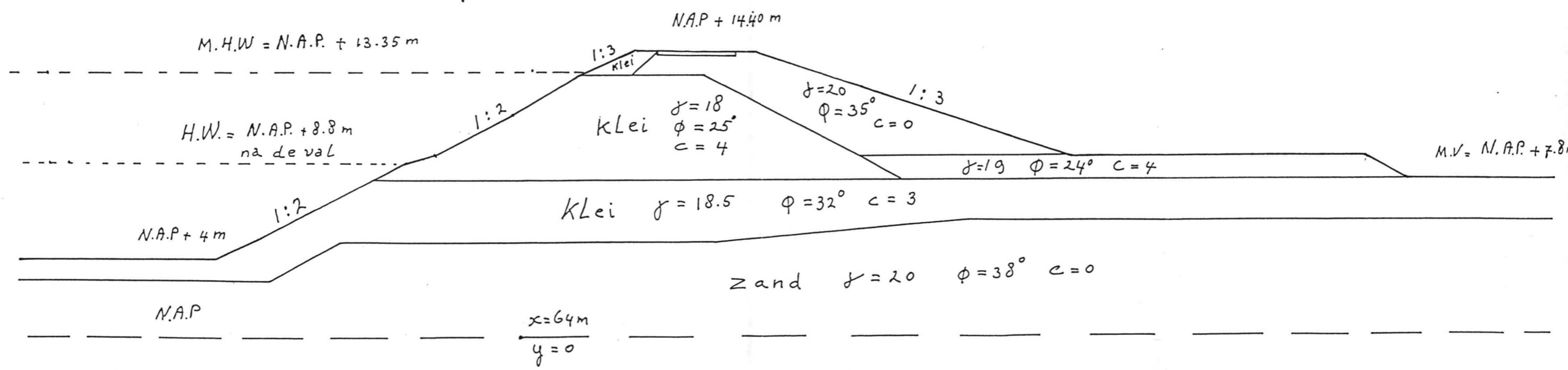
$$F_e = \frac{\Sigma R(\bar{\alpha}) * \cos^2 \bar{\alpha}}{\Sigma \cos \bar{\alpha}}$$

$$F_e = \frac{34345}{13.512} = 2542 \text{ m}$$



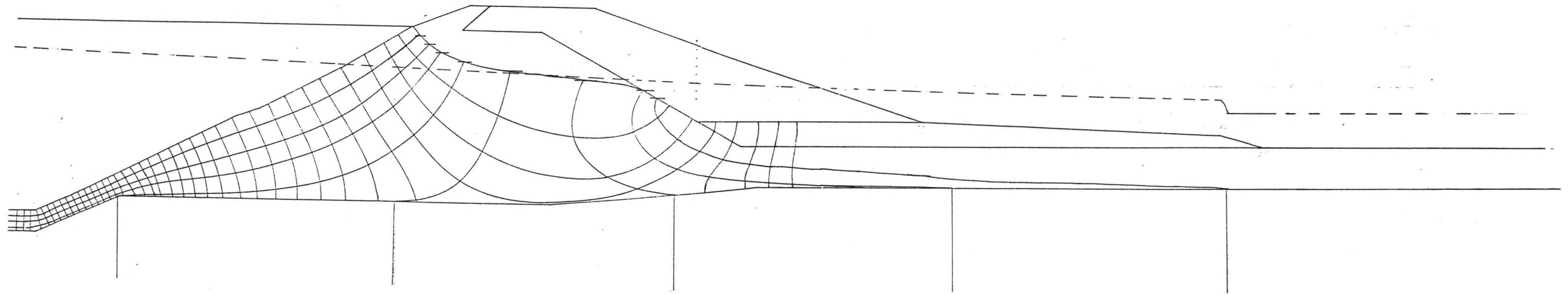
Relatie golfhoogte-waakhoogte bij overslagdebieten van 10, 1 en 0,1 l/s per m¹ dijk





ONTWERPPROFIEL

Schaal 1:100



VIERKANTENNET Schaal 1:200

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=====
=====
===== Slope stability =====
===== STABIL 2.3 =====
===== A. Verruijt, 1986 =====
=====
=====

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Laboratorium voor Geotechniek
 Technische Universiteit Delft
 === Alleen voor studenten ===

Method used : Modified Bishop

dijk1

Coordinates of nodal points :

i	x	y
1	0.000	7.800
2	34.000	3.800
3	49.000	4.000
4	50.800	4.800
5	74.000	4.800
6	86.960	5.800
7	116.000	5.800
8	0.000	8.800
9	58.600	8.800
10	57.000	8.000
11	83.700	7.800
12	116.000	7.800
13	60.200	9.200
14	1.000	0.100
15	64.000	11.230
16	63.990	8.000
17	64.700	11.600
18	67.300	13.200
19	73.800	13.200
20	79.500	10.100
21	67.800	12.500
22	69.300	11.800
23	74.060	8.000
24	80.200	8.000
25	1.500	0.000
26	26.860	4.472
27	2.500	0.100
28	109.000	7.800
29	92.500	9.000
30	81.500	9.000
31	89.600	10.000
32	78.000	10.700
33	53.800	4.800
34	56.800	4.800
35	59.800	4.800
36	63.980	4.800
37	68.600	4.800
38	80.160	5.400
39	0.015	6.150

dijk:

40	98.980	6.500
41	98.990	7.100
42	116.000	7.100
43	116.000	6.500
44	0.010	6.150
45	1.500	0.000
46	2.000	0.000
47	2.500	0.000
48	3.000	0.000
49	3.500	0.000
50	98.950	0.000
51	86.990	7.100
52	86.980	6.500
53	0.020	6.150
54	80.190	7.100
55	80.180	6.500
56	0.025	6.150
57	74.040	7.100
58	74.030	6.500
59	0.030	6.150
60	0.000	5.400
61	87.000	7.800
62	98.960	5.800
63	63.970	0.000
64	70.500	14.400
65	71.500	14.400
66	76.500	14.400
67	107.000	8.700
68	110.000	0.700
69	0.100	0.000
70	70.000	13.200
71	110.500	0.000
72	111.000	0.000
73	111.500	0.000
74	112.000	0.000
75	112.500	0.000
76	113.000	0.000
77	113.500	0.000
78	114.000	0.000
79	114.500	0.000
80	115.000	0.000

Water table :

i	x	y
1	0.000	8.800
2	58.600	8.800
3	60.200	9.200
4	64.000	11.230
5	64.700	11.600
6	67.300	13.200
7	67.800	12.500
8	69.300	11.800
9	78.000	10.700
10	79.500	10.100
11	89.600	10.000
12	92.500	9.000

dijk1

13	107.000	8.700
14	115.000	7.800

Boundary 1 : Points : 1 - 2 - 3 - 4 - 10 - 9 - 13 - 15 - 17
 - 18 - 64 - 65 66 - 31 - 29 - 67 - 28 - 12

Soil below previous boundaries and above next boundaries :

Soil A

Volumetric weight dry soil	: 18 kN/m ³
Volumetric weight soil + water	: 18 kN/m ³
Cohesion	: 3.077 kN/m ²
Angle of internal friction	: 21.008 Degrees
Pore pressures hydrostatic	
Capillary zone	: 1 m

Boundary 2 : Points : 18 - 70 - 65

Soil below previous boundaries and above next boundaries :

Soil B

Volumetric weight dry soil	: 20 kN/m ³
Volumetric weight soil + water	: 20 kN/m ³
Cohesion	: 0 kN/m ²
Angle of internal friction	: 30.435 Degrees
Pore pressures hydrostatic	
Capillary zone	: .5 m

Boundary 3 : Points : 70 - 19 - 32 - 20 - 30 - 29

Soil below previous boundaries and above next boundaries :

Soil C

Volumetric weight dry soil	: 19 kN/m ³
Volumetric weight soil + water	: 19 kN/m ³
Cohesion	: 3.077 kN/m ²
Angle of internal friction	: 20 Degrees
Pore pressures hydrostatic	
Capillary zone	: 1 m

Boundary 4 : Points : 30 - 11 - 28

Soil below previous boundaries and above next boundaries :

Soil D

Volumetric weight dry soil	: 18 kN/m ³
Volumetric weight soil + water	: 18 kN/m ³
Cohesion	: 3.077 kN/m ²
Angle of internal friction	: 21.008 Degrees
Pore pressures hydrostatic	
Capillary zone	: 1 m

Boundary 5 : Points : 10 - 16 - 15

Soil below previous boundaries and above next boundaries :

Soil E

Volumetric weight dry soil	: 18 kN/m ³
Volumetric weight soil + water	: 18 kN/m ³
Cohesion	: 3.077 kN/m ²
Angle of internal friction	: 21.008 Degrees
Pore pressures hydrostatic	
Capillary zone	: 1 m

dijk1

Boundary 6 : Points : 16 - 23 - 24 - 11

Soil below previous boundaries and above next boundaries :

Soil F

Volumetric weight dry soil : 18.5 kN/m³
 Volumetric weight soil + water : 18.5 kN/m³
 Cohesion : 2.308 kN/m²
 Angle of internal friction : 26.667 Degrees
 Pore pressures hydrostatic
 Capillary zone : 1 m

Boundary 7 : Points : 4 - 36 - 16

Soil below previous boundaries and above next boundaries :

Soil G

Volumetric weight dry soil : 18.5 kN/m³
 Volumetric weight soil + water : 18.5 kN/m³
 Cohesion : 2.308 kN/m²
 Angle of internal friction : 26.667 Degrees
 Pore pressures hydrostatic
 Capillary zone : 1 m

Boundary 8 : Points : 36 - 5 - 58 - 57 - 23

Soil below previous boundaries and above next boundaries :

Soil H

Volumetric weight dry soil : 18.5 kN/m³
 Volumetric weight soil + water : 18.5 kN/m³
 Cohesion : 2.308 kN/m²
 Angle of internal friction : 26.667 Degrees
 Pore pressures hydrostatic
 Capillary zone : 1 m

Boundary 9 : Points : 58 - 55 - 54 - 24

Soil below previous boundaries and above next boundaries :

Soil I

Volumetric weight dry soil : 18.5 kN/m³
 Volumetric weight soil + water : 18.5 kN/m³
 Cohesion : 2.308 kN/m²
 Angle of internal friction : 26.667 Degrees
 Pore pressures hydrostatic
 Capillary zone : 1 m

Boundary 10 : Points : 5 - 38 - 55

Soil below previous boundaries and above next boundaries :

Soil J

Volumetric weight dry soil : 18.5 kN/m³
 Volumetric weight soil + water : 18.5 kN/m³
 Cohesion : 2.308 kN/m²
 Angle of internal friction : 26.667 Degrees
 Pore pressures hydrostatic
 Capillary zone : 1 m

dijk

Boundary 11 : Points : S4 - S1 - 61

Soil below previous boundaries and above next boundaries :

Soil K

Volumetric weight dry soil	: 18.5 kN/m ³
Volumetric weight soil + water	: 18.5 kN/m ³
Cohesion	: 2.308 kN/m ²
Angle of internal friction	: 26.667 Degrees
Pore pressures hydrostatic	
Capillary zone	: 1 m

Boundary 12 : Points : S5 - S2 - S1

Soil below previous boundaries and above next boundaries :

Soil L

Volumetric weight dry soil	: 18.5 kN/m ³
Volumetric weight soil + water	: 18.5 kN/m ³
Cohesion	: 2.308 kN/m ²
Angle of internal friction	: 26.667 Degrees
Pore pressures hydrostatic	
Capillary zone	: 1 m

Boundary 13 : Points : S8 - 6 - S2

Soil below previous boundaries and above next boundaries :

Soil M

Volumetric weight dry soil	: 18.5 kN/m ³
Volumetric weight soil + water	: 18.5 kN/m ³
Cohesion	: 2.308 kN/m ²
Angle of internal friction	: 26.667 Degrees
Pore pressures hydrostatic	
Capillary zone	: 1 m

Boundary 14 : Points : S1 - 41 - 28

Soil below previous boundaries and above next boundaries :

Soil N

Volumetric weight dry soil	: 18.5 kN/m ³
Volumetric weight soil + water	: 18.5 kN/m ³
Cohesion	: 2.308 kN/m ²
Angle of internal friction	: 26.667 Degrees
Pore pressures hydrostatic	
Capillary zone	: 1 m

Boundary 15 : Points : S2 - 40 - 41

Soil below previous boundaries and above next boundaries :

Soil O

Volumetric weight dry soil	: 18.5 kN/m ³
Volumetric weight soil + water	: 18.5 kN/m ³
Cohesion	: 2.308 kN/m ²
Angle of internal friction	: 26.667 Degrees
Pore pressures hydrostatic	
Capillary zone	: 1 m

dijk1

Boundary 16 : Points : 6 - 62 - 40

Soil below previous boundaries and above next boundaries :

Soil P

Volumetric weight dry soil	: 18.5 kN/m ³
Volumetric weight soil + water	: 18.5 kN/m ³
Cohesion	: 2.308 kN/m ²
Angle of internal friction	: 26.667 Degrees
Pore pressures hydrostatic	
Capillary zone	: 1 m

Boundary 17 : Points : 41 - 42 - 12

Soil below previous boundaries and above next boundaries :

Soil Q

Volumetric weight dry soil	: 18.5 kN/m ³
Volumetric weight soil + water	: 18.5 kN/m ³
Cohesion	: 2.308 kN/m ²
Angle of internal friction	: 26.667 Degrees
Pore pressures hydrostatic	
Capillary zone	: 1 m

Boundary 18 : Points : 40 - 43 - 42

Soil below previous boundaries and above next boundaries :

Soil R

Volumetric weight dry soil	: 18.5 kN/m ³
Volumetric weight soil + water	: 18.5 kN/m ³
Cohesion	: 2.308 kN/m ²
Angle of internal friction	: 26.667 Degrees
Pore pressures hydrostatic	
Capillary zone	: 1 m

Boundary 19 : Points : 62 - 7 - 43

Soil below previous boundaries and above next boundaries :

Soil S

Volumetric weight dry soil	: 20 kN/m ³
Volumetric weight soil + water	: 20 kN/m ³
Cohesion	: 0 kN/m ²
Angle of internal friction	: 33.043 Degrees
Zero level groundwater head	: 8.6 m

Boundary 20 : Points : 63 - 50 - 62

Soil below previous boundaries and above next boundaries :

Soil T

Volumetric weight dry soil	: 20 kN/m ³
Volumetric weight soil + water	: 20 kN/m ³
Cohesion	: 0 kN/m ²
Angle of internal friction	: 33.043 Degrees
Zero level groundwater head	: 8.6 m

Boundary 21 : Points : 69 - 63 - 36

Soil below previous boundaries and above next boundaries :

Soil U

Volumetric weight dry soil	: 20 kN/m ³
Volumetric weight soil + water	: 20 kN/m ³
Cohesion	: 0 kN/m ²
Angle of internal friction	: 33.043 Degrees
Zero level groundwater head	: 8.6 m

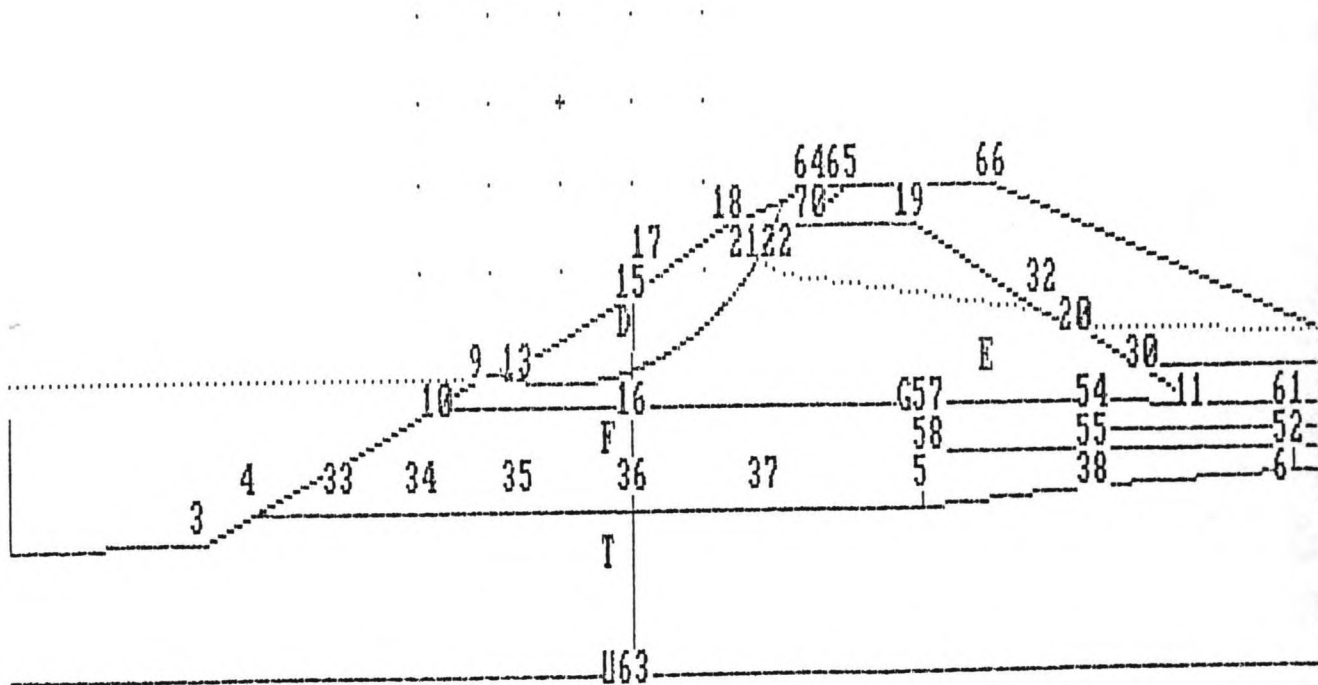
Number of slices : 100

STABIL 2.3

dijk1

Circle : x =	56.500,	y =	12.000,	A =	8.078	F =	1.660
Circle : x =	59.000,	y =	12.000,	A =	5.831	F =	1.220
Circle : x =	56.500,	y =	14.500,	A =	9.301	F =	1.116
Circle : x =	59.000,	y =	14.500,	A =	7.433	F =	0.904
Circle : x =	61.500,	y =	14.500,	A =	6.042	F =	0.717
Circle : x =	64.000,	y =	14.500,	A =	5.500	F =	0.853
Circle : x =	66.500,	y =	14.500,	A =	6.042	F =	1.294
Circle : x =	56.500,	y =	17.000,	A =	10.966	F =	0.928
Circle : x =	59.000,	y =	17.000,	A =	9.434	F =	0.745
Circle : x =	61.500,	y =	17.000,	A =	8.382	F =	0.706
Circle : x =	64.000,	y =	17.000,	A =	8.000	F =	0.856
Circle : x =	66.500,	y =	17.000,	A =	8.382	F =	1.242
Circle : x =	56.500,	y =	19.500,	A =	12.903	F =	0.807
Circle : x =	59.000,	y =	19.500,	A =	11.630	F =	0.708
Circle : x =	61.500,	y =	19.500,	A =	10.794	F =	0.742
Circle : x =	64.000,	y =	19.500,	A =	10.500	F =	0.917
Circle : x =	66.500,	y =	19.500,	A =	10.794	F =	1.280
Circle : x =	56.500,	y =	22.000,	A =	15.008	F =	0.752
Circle : x =	59.000,	y =	22.000,	A =	13.928	F =	0.720
Circle : x =	61.500,	y =	22.000,	A =	13.238	F =	0.788
Circle : x =	64.000,	y =	22.000,	A =	13.000	F =	0.995
Circle : x =	66.500,	y =	22.000,	A =	13.238	F =	1.354

---- Smallest stability factor : F = 0.706
 Circle : x = 61.500, y = 17.000, A = 8.382
 First point .. : x = 59.182, y = 8.946
 Last point ... : x = 69.308, y = 13.953



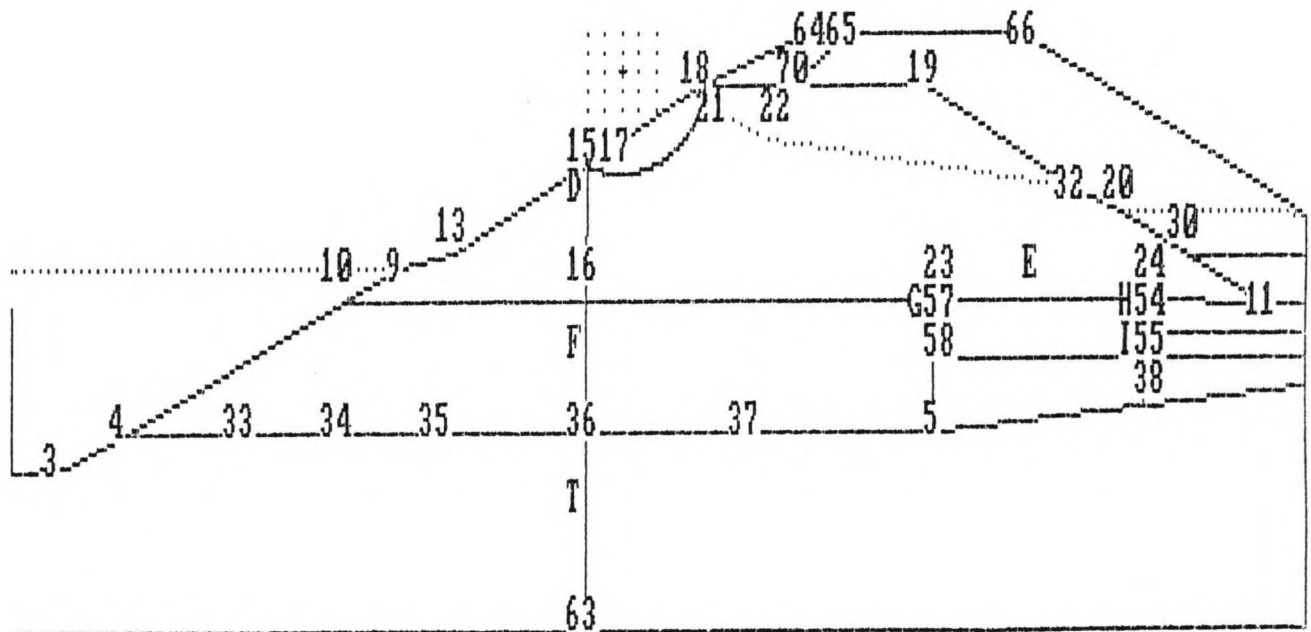
STABIL 2.3 ----- dijk1 ----- Stability Factor : 0.706

STABIL 2.3

dijk2

Circle	:	x =	64.000,	y =	12.600,	R =	1.370	:	F =	3.839
Circle	:	x =	64.500,	y =	12.600,	R =	1.458	:	F =	1.634
Circle	:	x =	64.000,	y =	13.050,	R =	1.820	:	F =	2.768
Circle	:	x =	64.500,	y =	13.050,	R =	1.887	:	F =	1.430
Circle	:	x =	64.000,	y =	13.500,	R =	2.270	:	F =	2.168
Circle	:	x =	64.500,	y =	13.500,	R =	2.324	:	F =	1.277
Circle	:	x =	65.000,	y =	13.500,	R =	2.481	:	F =	1.016
Circle	:	x =	64.000,	y =	13.950,	R =	2.720	:	F =	1.790
Circle	:	x =	64.500,	y =	13.950,	R =	2.766	:	F =	1.158
Circle	:	x =	65.000,	y =	13.950,	R =	2.898	:	F =	1.018
Circle	:	x =	65.500,	y =	13.950,	R =	3.106	:	F =	1.084
Circle	:	x =	64.000,	y =	14.400,	R =	3.170	:	F =	1.533
Circle	:	x =	64.500,	y =	14.400,	R =	3.209	:	F =	1.075
Circle	:	x =	65.000,	y =	14.400,	R =	3.324	:	F =	1.038
Circle	:	x =	65.500,	y =	14.400,	R =	3.507	:	F =	1.086
Circle	:	x =	66.000,	y =	14.400,	R =	3.748	:	F =	1.186

---- Smallest stability factor : F = 1.016
 Circle : x = 65.000, y = 13.500, R = 2.481
 First point .. : x = 64.000, y = 11.230
 Last point ... : x = 67.469, y = 13.263



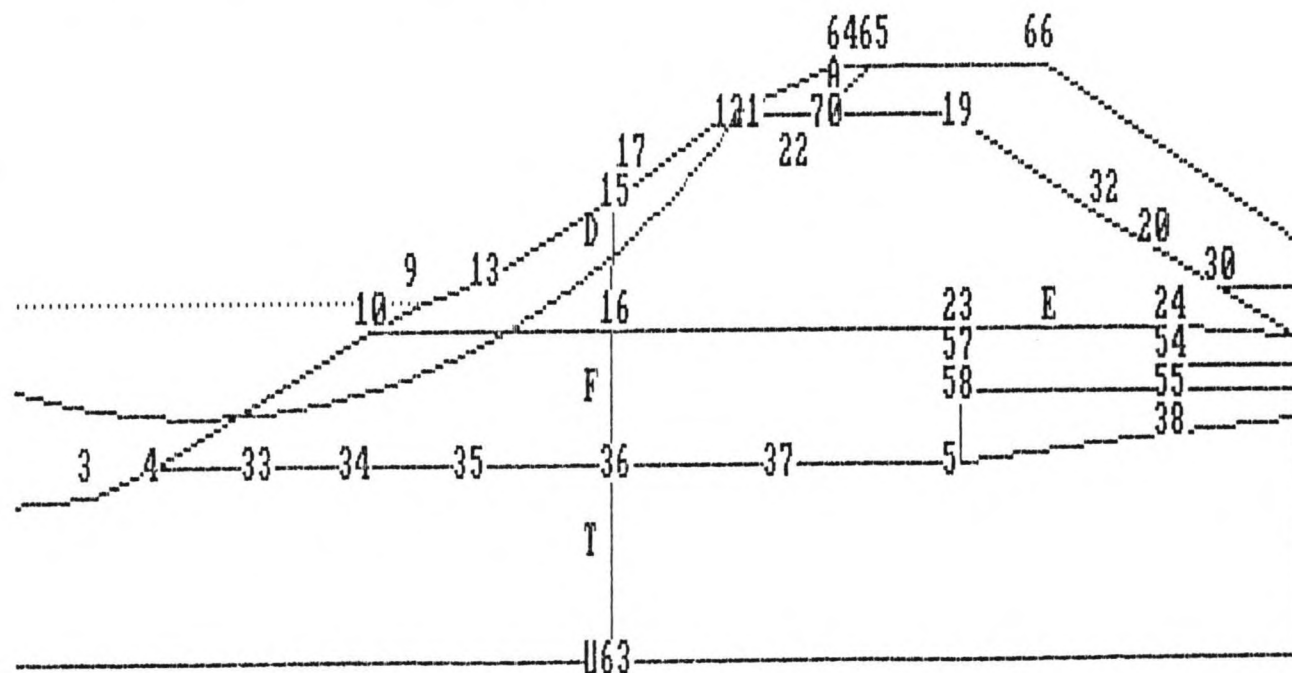
STABIL 2.3 ----- dijk2 ----- Stability Factor : 1.016

STABIL 2.3

dijk3

Circle : x =	S1.000,	y =	25.500,	A =	19.614	: F =	1.271
Circle : x =	S1.500,	y =	25.500,	A =	19.566	: F =	1.184
Circle : x =	S2.000,	y =	25.500,	A =	19.532	: F =	1.145
Circle : x =	S2.500,	y =	25.500,	A =	19.510	: F =	1.167
Circle : x =	S3.000,	y =	25.500,	A =	19.500	: F =	1.233
Circle : x =	S1.000,	y =	26.000,	A =	20.111	: F =	1.230
Circle : x =	S1.500,	y =	26.000,	A =	20.065	: F =	1.165
Circle : x =	S2.000,	y =	26.000,	A =	20.031	: F =	1.161
Circle : x =	S2.500,	y =	26.000,	A =	20.009	: F =	1.176
Circle : x =	S3.000,	y =	26.000,	A =	20.000	: F =	1.257
Circle : x =	S1.000,	y =	26.500,	A =	20.608	: F =	1.207
Circle : x =	S1.500,	y =	26.500,	A =	20.563	: F =	1.176
Circle : x =	S2.000,	y =	26.500,	A =	20.530	: F =	1.129
Circle : x =	S2.500,	y =	26.500,	A =	20.509	: F =	1.191
Circle : x =	S3.000,	y =	26.500,	A =	20.500	: F =	1.292
Circle : x =	S1.000,	y =	27.000,	A =	21.106	: F =	1.190
Circle : x =	S1.500,	y =	27.000,	A =	21.062	: F =	1.159
Circle : x =	S2.000,	y =	27.000,	A =	21.029	: F =	1.192
Circle : x =	S2.500,	y =	27.000,	A =	21.009	: F =	1.219
Circle : x =	S3.000,	y =	27.000,	A =	21.000	: F =	1.290
Circle : x =	S1.000,	y =	27.500,	A =	21.603	: F =	1.184
Circle : x =	S1.500,	y =	27.500,	A =	21.560	: F =	1.158
Circle : x =	S2.000,	y =	27.500,	A =	21.529	: F =	1.138
Circle : x =	S2.500,	y =	27.500,	A =	21.509	: F =	1.241
Circle : x =	S3.000,	y =	27.500,	A =	21.500	: F =	1.289

---- Smallest stability factor : F = 1.129
 Circle : x = 52.000, y = 26.500, A = 20.530
 First point .. : x = 41.598, y = 8.800
 Last point ... : x = 67.796, y = 13.386



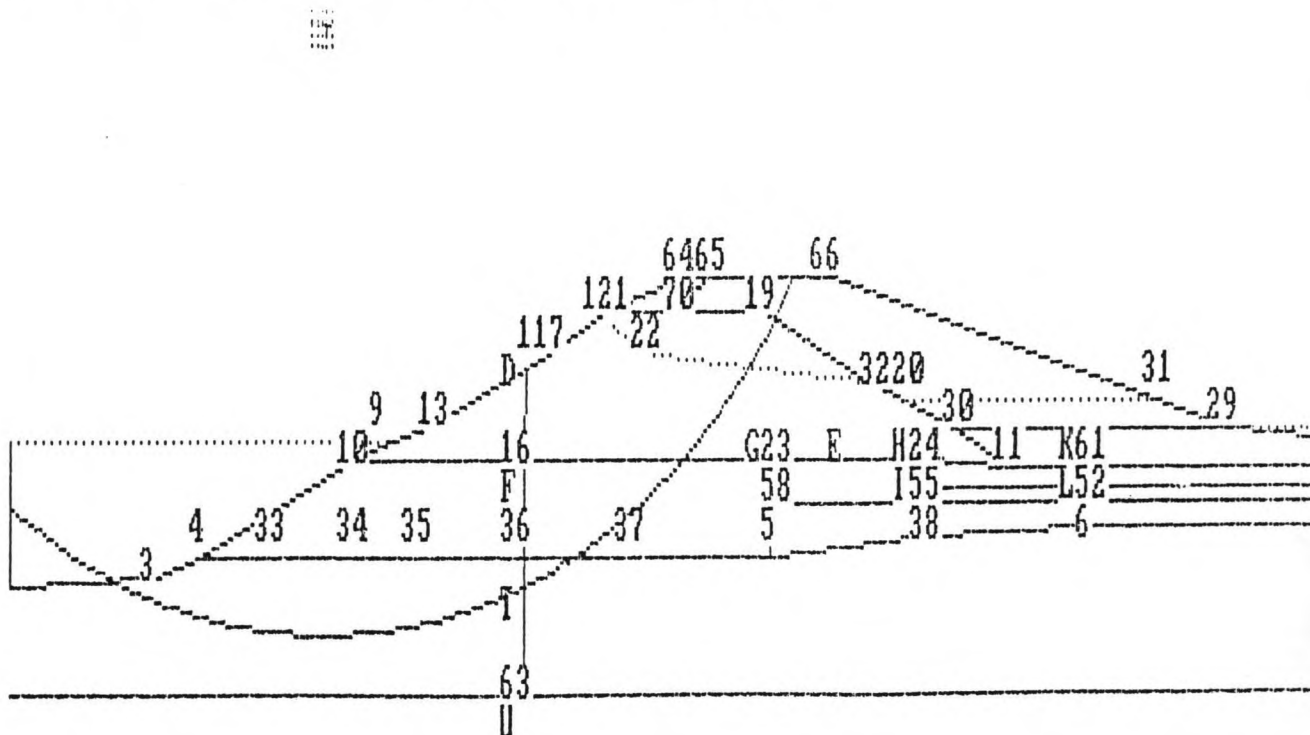
STABIL 2.3 ---- dijk3 ---- Stability Factor : 1.129

STABIL 2.3

dijk4

Circle : x =	55.300,	y =	22.400,	A =	20.598	: F =	1.370
Circle : x =	55.500,	y =	22.400,	A =	20.514	: F =	1.369
Circle : x =	55.700,	y =	22.400,	A =	20.432	: F =	1.352
Circle : x =	55.900,	y =	22.400,	A =	20.351	: F =	1.354
Circle : x =	56.100,	y =	22.400,	A =	20.273	: F =	1.359
Circle : x =	55.300,	y =	22.700,	A =	20.870	: F =	1.371
Circle : x =	55.500,	y =	22.700,	A =	20.787	: F =	1.351
Circle : x =	55.700,	y =	22.700,	A =	20.706	: F =	1.353
Circle : x =	55.900,	y =	22.700,	A =	20.627	: F =	1.357
Circle : x =	56.100,	y =	22.700,	A =	20.549	: F =	1.344
Circle : x =	55.300,	y =	23.000,	A =	21.143	: F =	1.369
Circle : x =	55.500,	y =	23.000,	A =	21.061	: F =	1.353
Circle : x =	55.700,	y =	23.000,	A =	20.981	: F =	1.356
Circle : x =	55.900,	y =	23.000,	A =	20.903	: F =	1.343
Circle : x =	56.100,	y =	23.000,	A =	20.826	: F =	1.347
Circle : x =	55.300,	y =	23.300,	A =	21.417	: F =	1.353
Circle : x =	55.500,	y =	23.300,	A =	21.336	: F =	1.355
Circle : x =	55.700,	y =	23.300,	A =	21.257	: F =	1.358
Circle : x =	55.900,	y =	23.300,	A =	21.180	: F =	1.345
Circle : x =	56.100,	y =	23.300,	A =	21.104	: F =	1.350
Circle : x =	55.300,	y =	23.600,	A =	21.691	: F =	1.355
Circle : x =	55.500,	y =	23.600,	A =	21.612	: F =	1.358
Circle : x =	55.700,	y =	23.600,	A =	21.534	: F =	1.344
Circle : x =	55.900,	y =	23.600,	A =	21.458	: F =	1.348
Circle : x =	56.100,	y =	23.600,	A =	21.383	: F =	1.351

---- Smallest stability factor : F = 1.343
 Circle : x = 55.900, y = 23.000, A = 20.903
 First point .. : x = 40.560, y = 8.800
 Last point ... : x = 74.952, y = 14.400

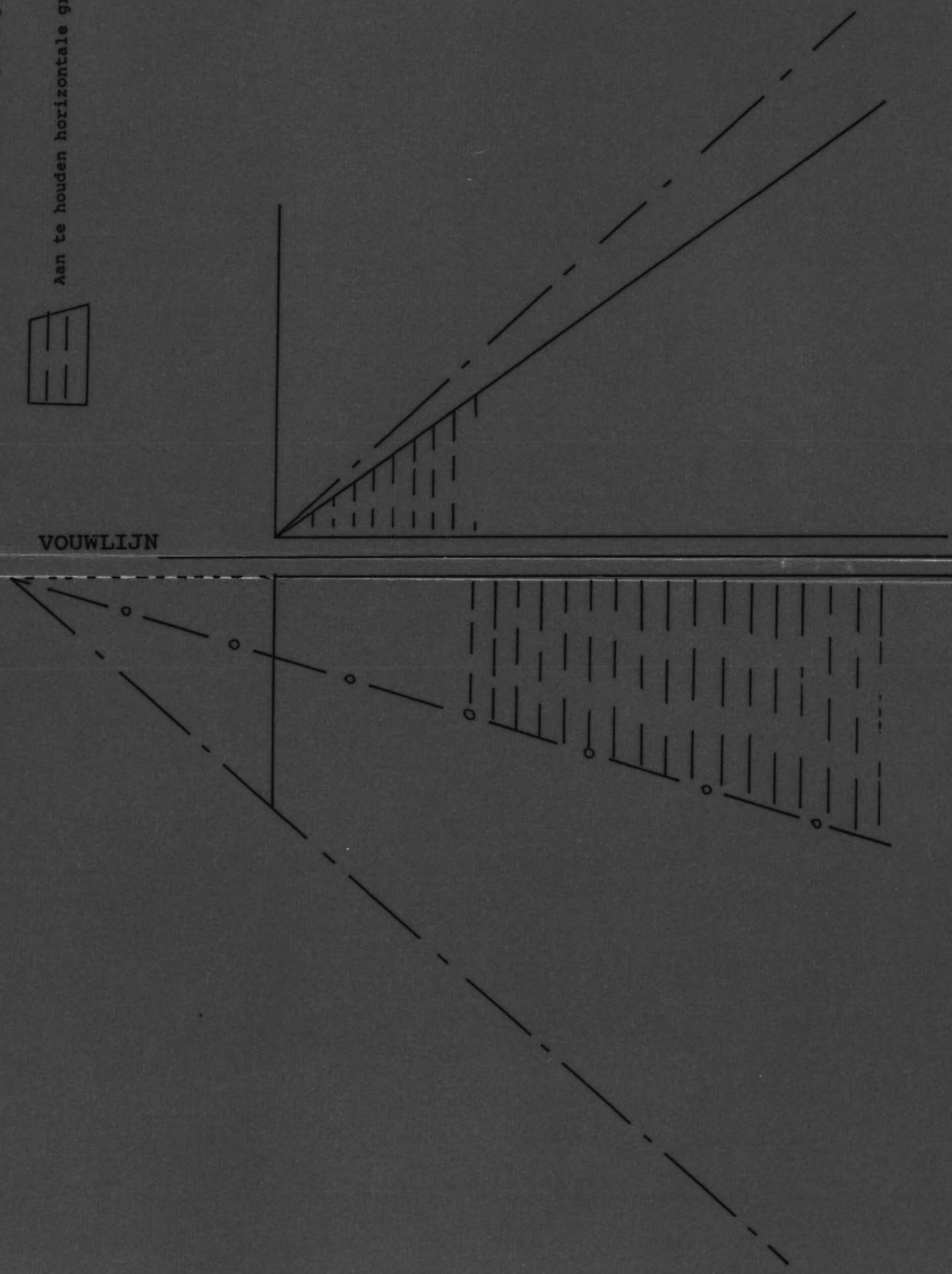


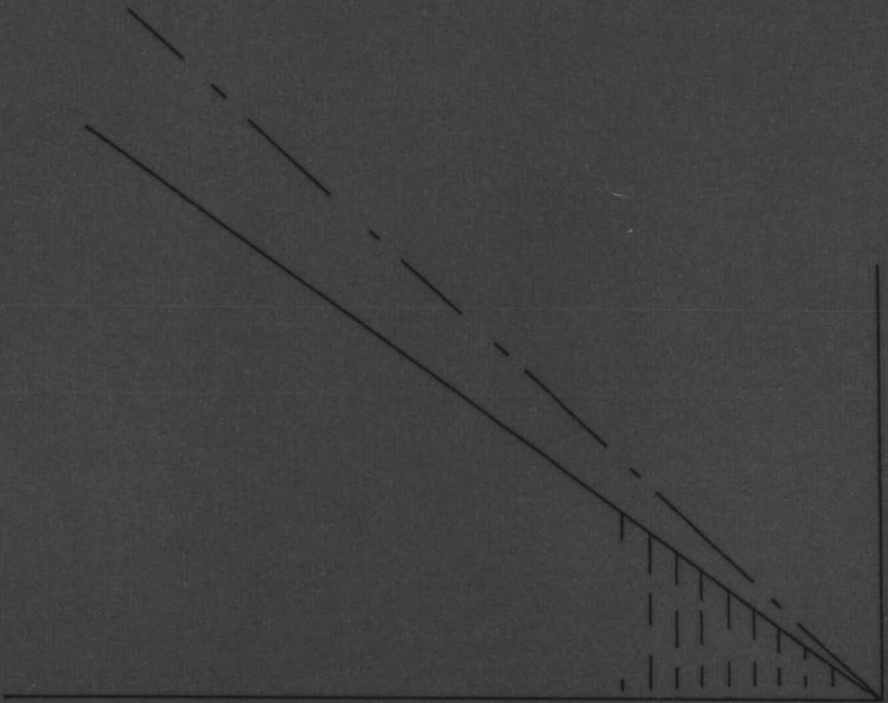
Homogene grond zonder water
 — — — Vertikale grondspanning
 — — — Actieve horizontale grondspanning met $\beta \neq 0$
 — 0 — Actieve horizontale grondspanning met $\beta = 0$



Aan te houden horizontale grondspanning

VOUWLIJN



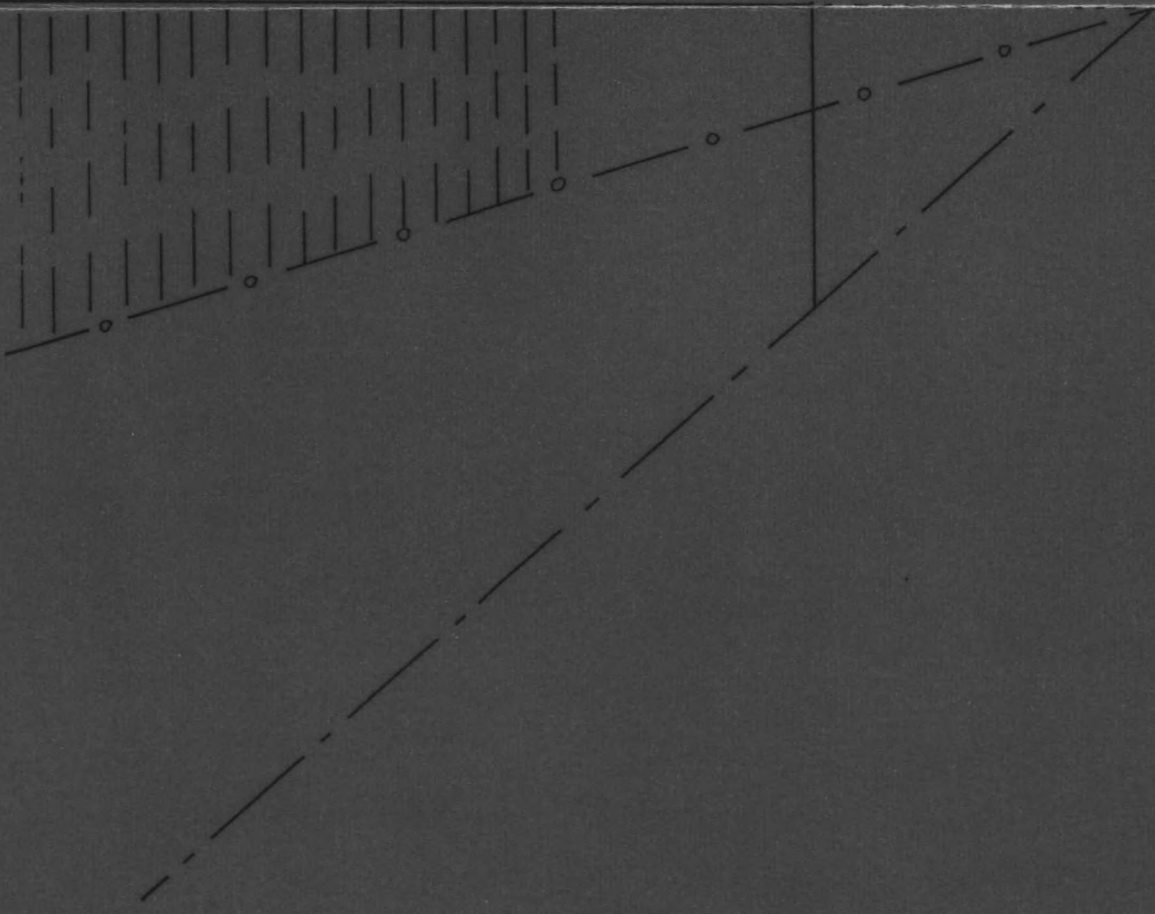


АУМАЛГА



үсн тс нондун хоризонтале дрондгеснунд

- 0 — үсртеле хоризонтале дрондгеснунд мөс б = 0
 - — — үсртеле хоризонтале дрондгеснунд мөс б ≠ 0
 - — — үсртеле дрондгеснунд
- номдону дрондгеснунд мөс б = 0

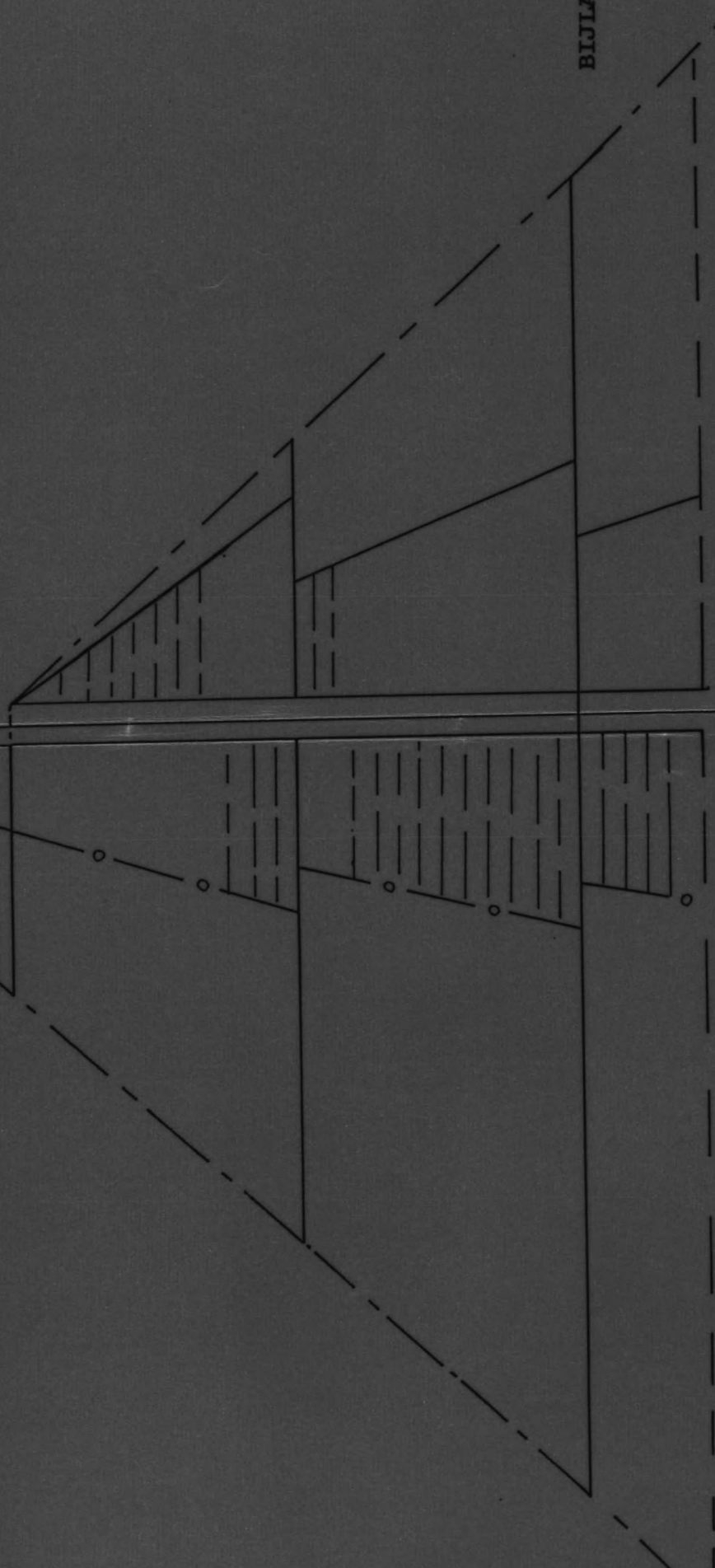


Gelaagde grond zonder water
— — — Vertikale grondspanning
— — — Actieve horizontale grondspanning met $\beta \neq 0$
— 0 — — Actieve horizontale grondspanning met $\beta = 0$

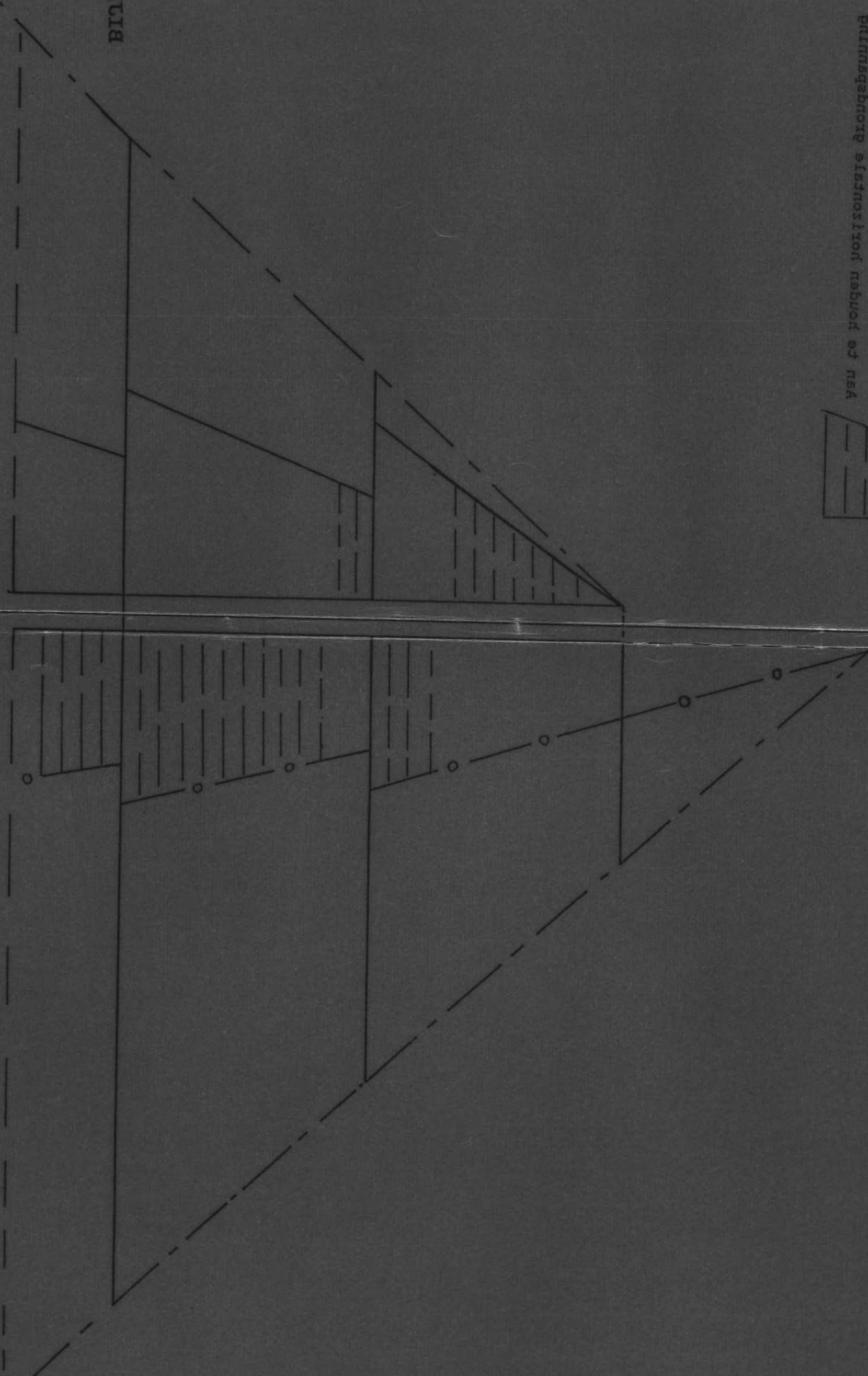


Aan te houden horizontale grondspanning

VOUWLIJN



БИЛҮҮЦЕ 12



ҮЭН ТЭ ҮӨНГӨН ҮӨЛІСӨНГЭ ӨСӨНӨӨСӨНӨӨ

- 0 — ҮСӨТӨӨ ҮӨЛІСӨНГЭ ӨСӨНӨӨСӨНӨӨ
 - 0 — ҮСӨТӨӨ ҮӨЛІСӨНГЭ ӨСӨНӨӨСӨНӨӨ
 - 0 — ҮСӨТӨӨ ҮӨЛІСӨНГЭ ӨСӨНӨӨСӨНӨӨ
 - 0 — ҮСӨТӨӨ ҮӨЛІСӨНГЭ ӨСӨНӨӨСӨНӨӨ
- СӨЛІСӨӨ ӨСӨНӨӨ ӨСӨНӨӨ ӨСӨНӨӨ

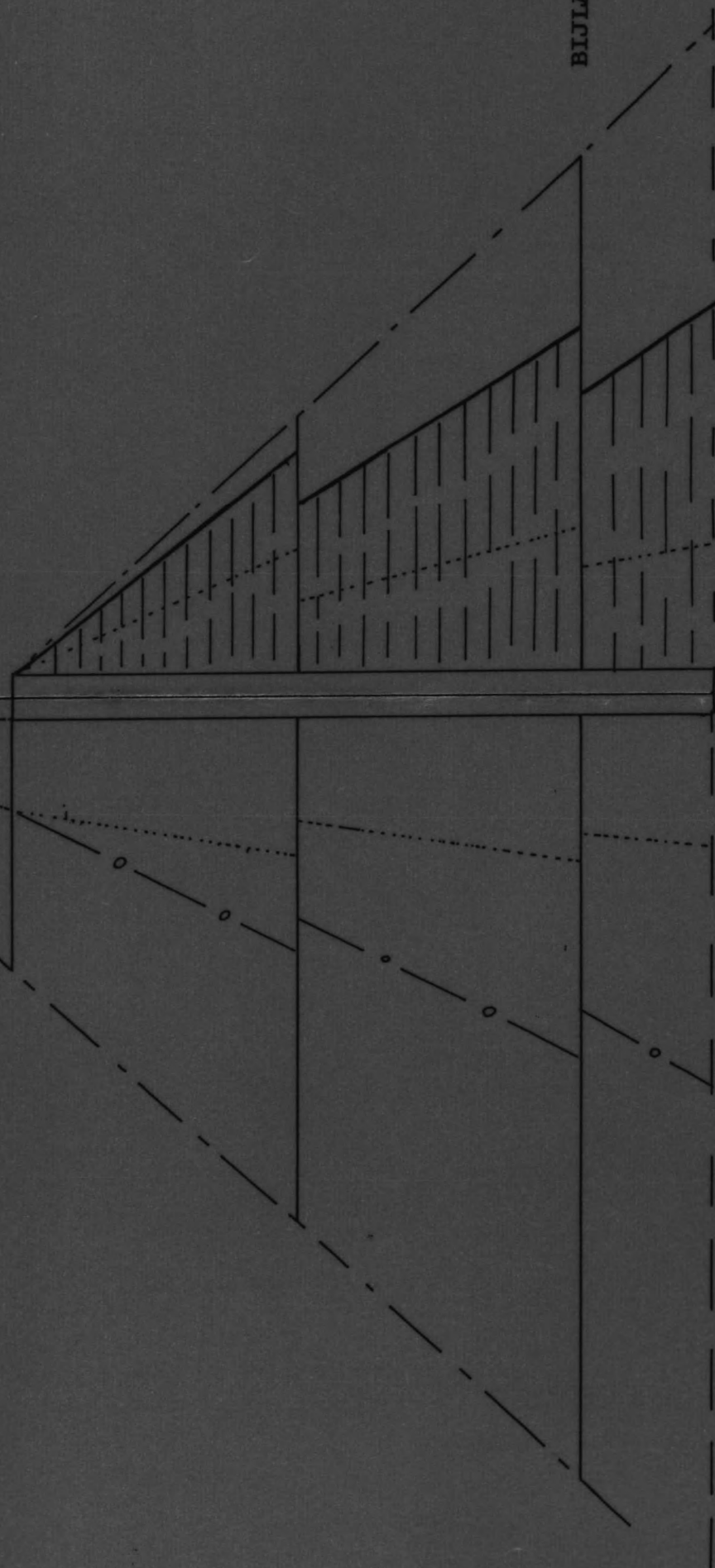
МІЛІМҮӨВ

VOUWLIJN

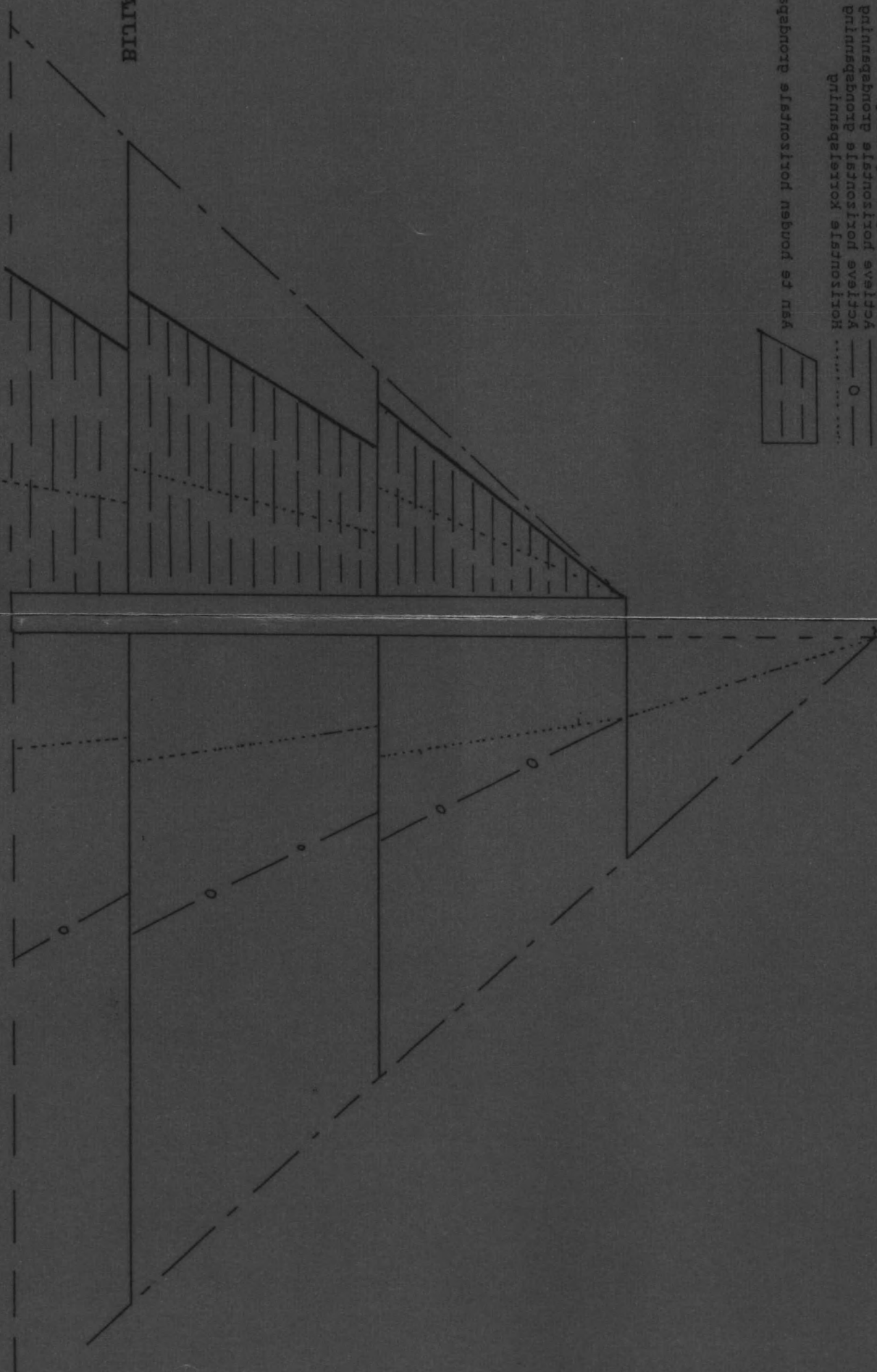
- Gelaagde grond met water
- — — Vertikale grondspanning
 - — — Actieve horizontale grondspanning met $\beta \neq 0$
 - — — Actieve horizontale grondspanning met $\beta = 0$
 - Horizontale korrelspanning



Aan te houden horizontale grondspanning



БИЛҮГЭ 10



үсн тэ понгуу покисонтэје дронгэбснунд

- Нокисонтэје коллэјэбснунд
 - 0 —— үсрлэе покисонтэје дронгэбснунд мөт б = 0
 - — — үсрлэе покисонтэје дронгэбснунд мөт б ≠ 0
 - — — үсрлэе покисонтэје дронгэбснунд
- сөјсдэе дронг мөт мсрл

VOUMIIN

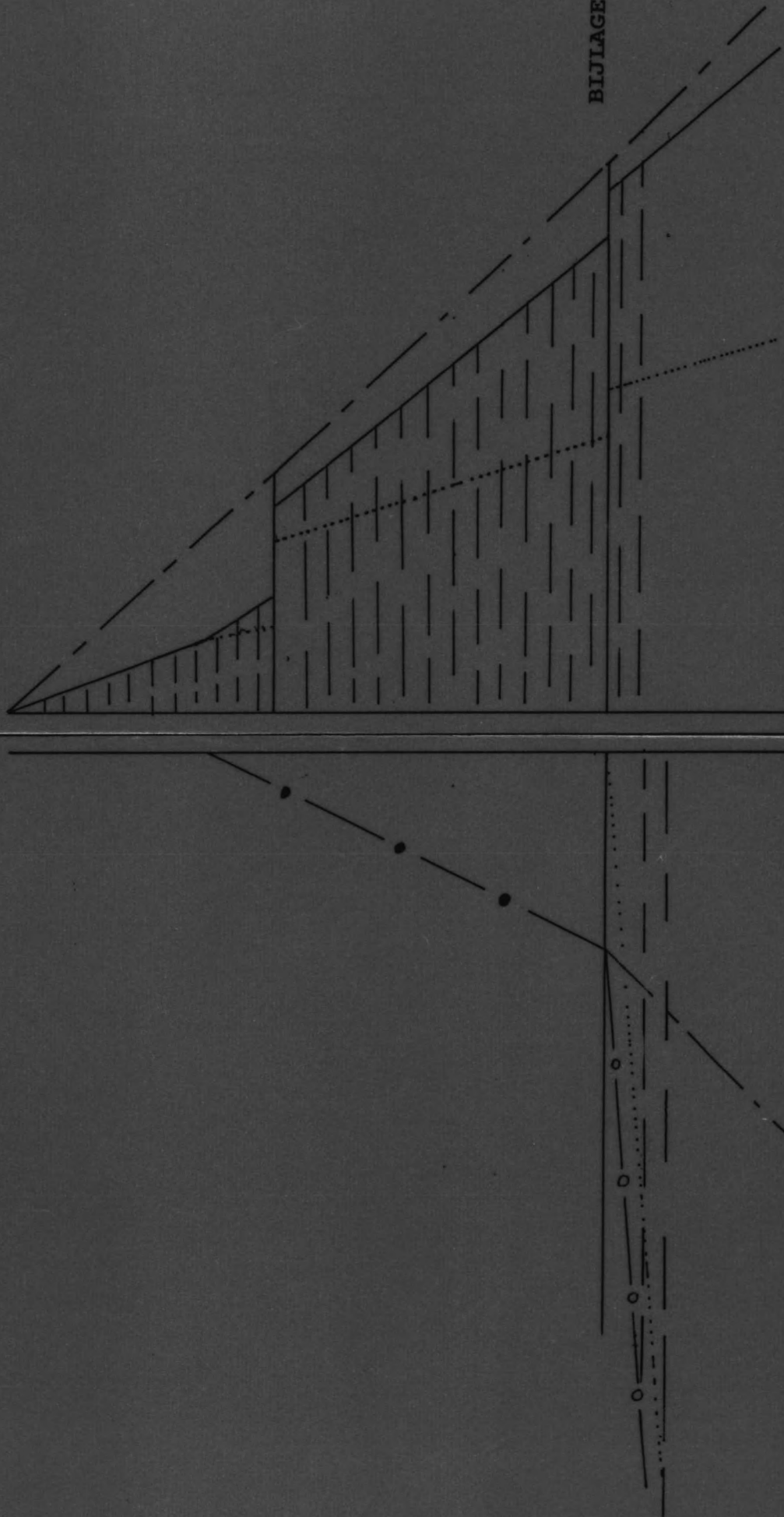
VOUWLIJN

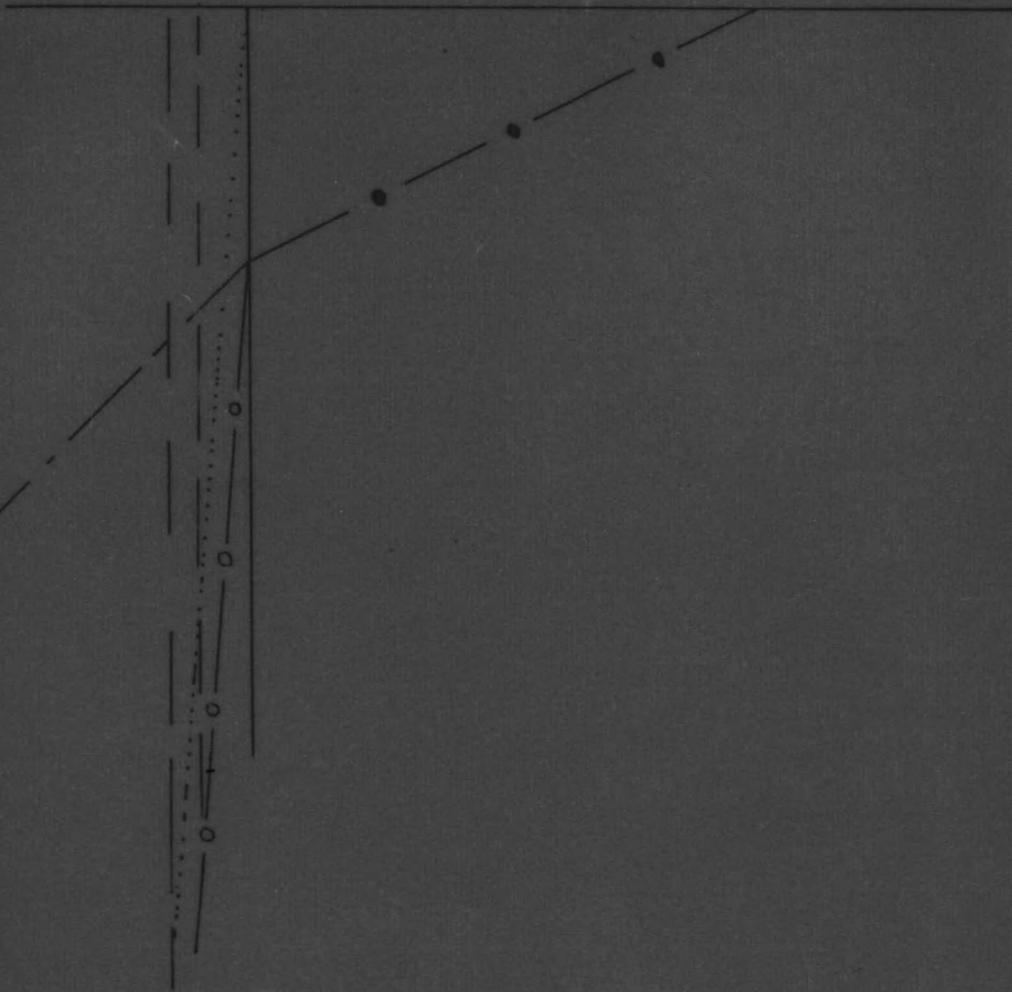
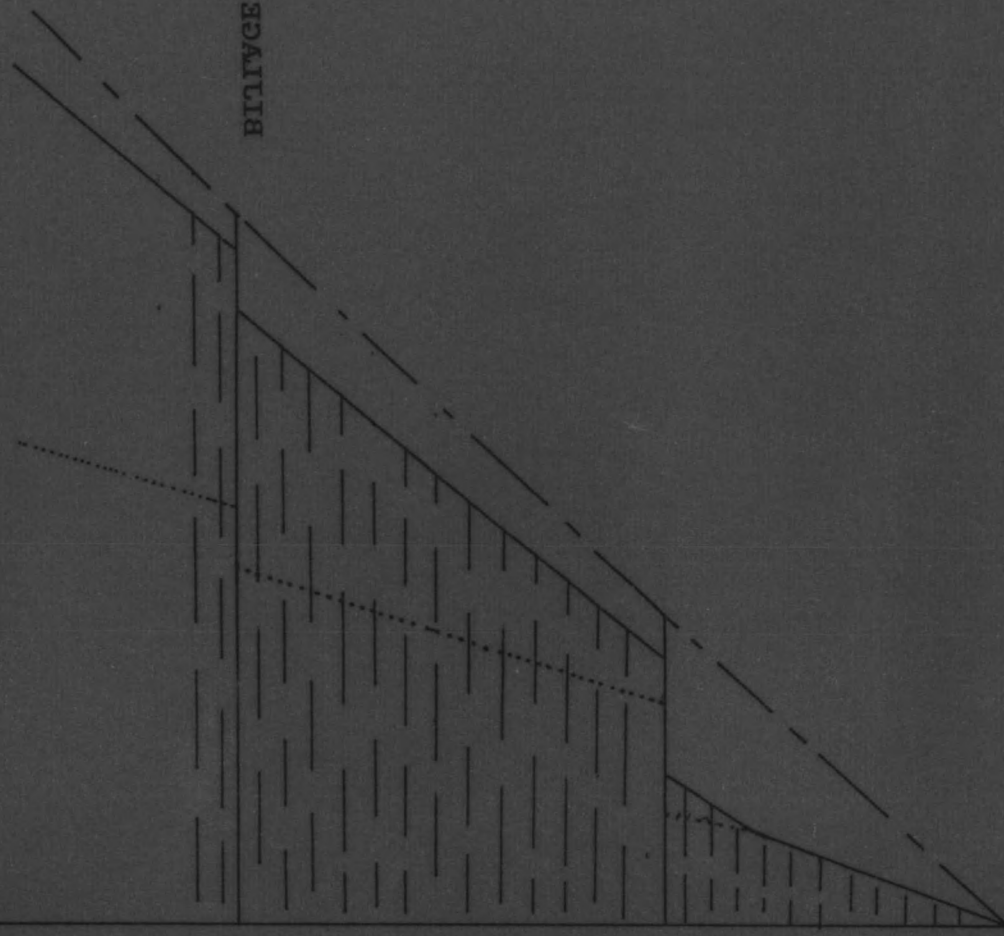
- Gelaagde grond met water
- Vertikale grondspanning
 - Passieve horizontale grondspanning met $\beta \neq 0$
 - 0 Passieve horizontale grondspanning met $\beta = 0$
 - Horizontale korrelspanning



Aan te houden horizontale grondspanning

Alleen water (-spanning)





— Үйлээн эсгэр. (-эбснүүд)



үсн тэ монгол хоригцуулга дорнодбагснүүд

- Хоригцуулга келлежбснүүд
- 0 — Бэсрэг хоригцуулга дорнодбагснүүд мөт $B = 0$
- Бэсрэг хоригцуулга дорнодбагснүүд мөт $B \neq 0$
- Асфальт дорнодбагснүүд

Гелсэдгэ дорнод мөт эсгэр.

===== DAMWAND+ =====

Berekening van een damwand als verend ondersteunde ligger

Probleem: PRF317A

Buigstijfheid damwand = 200000 (kNm²)

Totale lengte damwand = 12.5 (m)

Hoek met vertikaal = 0 (gr)

Inheidiepte = 12.5 (m)

(13.5 (m)) bis

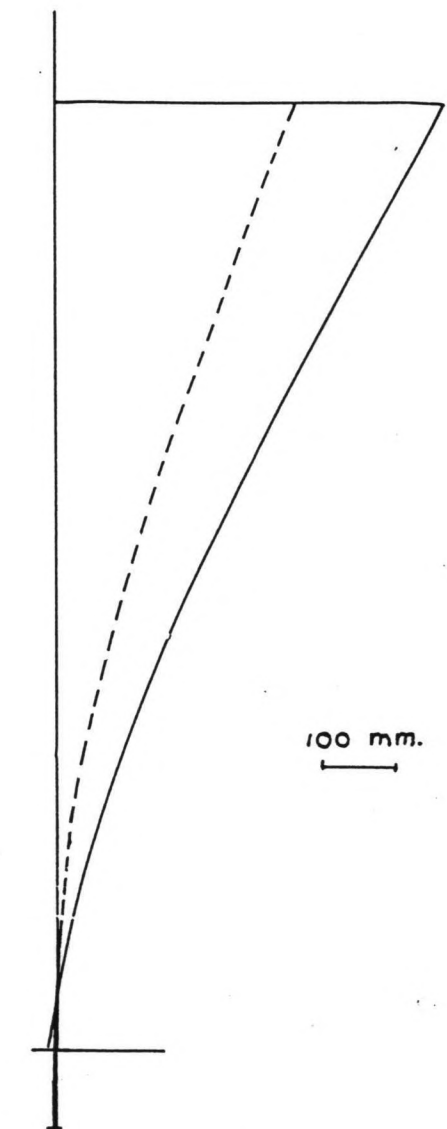
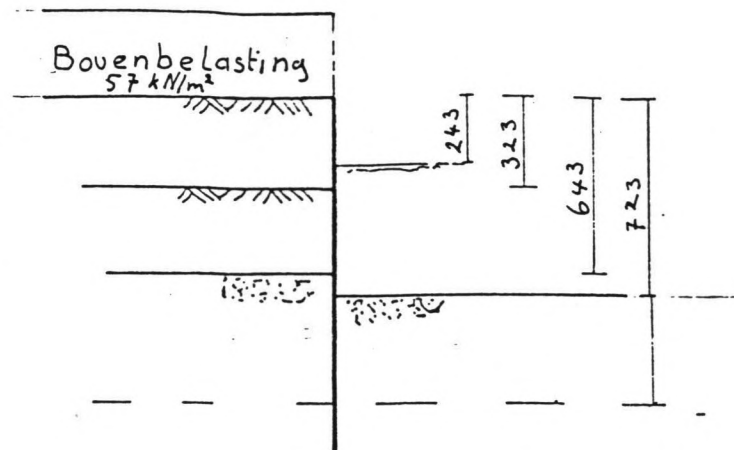
----- bovenbelasting

Gelijkmatig verdeeld = 57 (kN/m²)

----- lagen

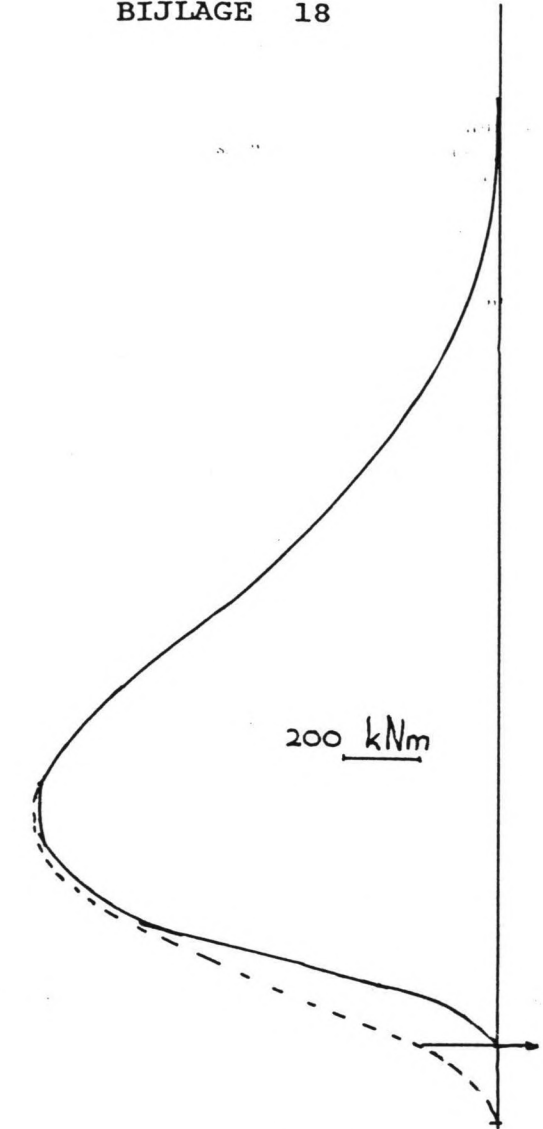
Nr.	l/r	bvk	gw	sg	inw.wr	wandrijving	coh	strek	Ka	Kn	Kp	Ca	Cp	w.oversp.	vert.spanning		
		m	kN/m ³	kN/m ³	gr	act -gr- pas	kN/m ²	m						kN/m ²	bov - kN/m ² - ond		
1	1	0	7.05	18	25	16.5 -16.5	4	.01	.346	.549	3.889	4.44	20.864	0	0	0	0
2	1	3.23	7.05	18.5	32	20 -20	3	.01	.259	.447	6.471	2.851	22.732	0	0	0	0
3	1	6.43	10	20	38	24 -24	0	.01	.198	.384	11.881	0	0	-5.33	0	0	0
													(-677) bis				
1	r	2.43	10	10	0	0 0	0	0	0	0	0	0	0	0	0	0	0
2	r	7.23	10	20	38	24 -24	0	.01	.198	.384	11.881	0	0	0	0	0	0

Grootste positieve moment : 0 kNm voor x = 0 m
 Grootste negatieve moment : -1220.1393 kNm voor x = 9.48857144 m
 Grootste pos. verplaatsing: 512.5 mm voor x = 0 m

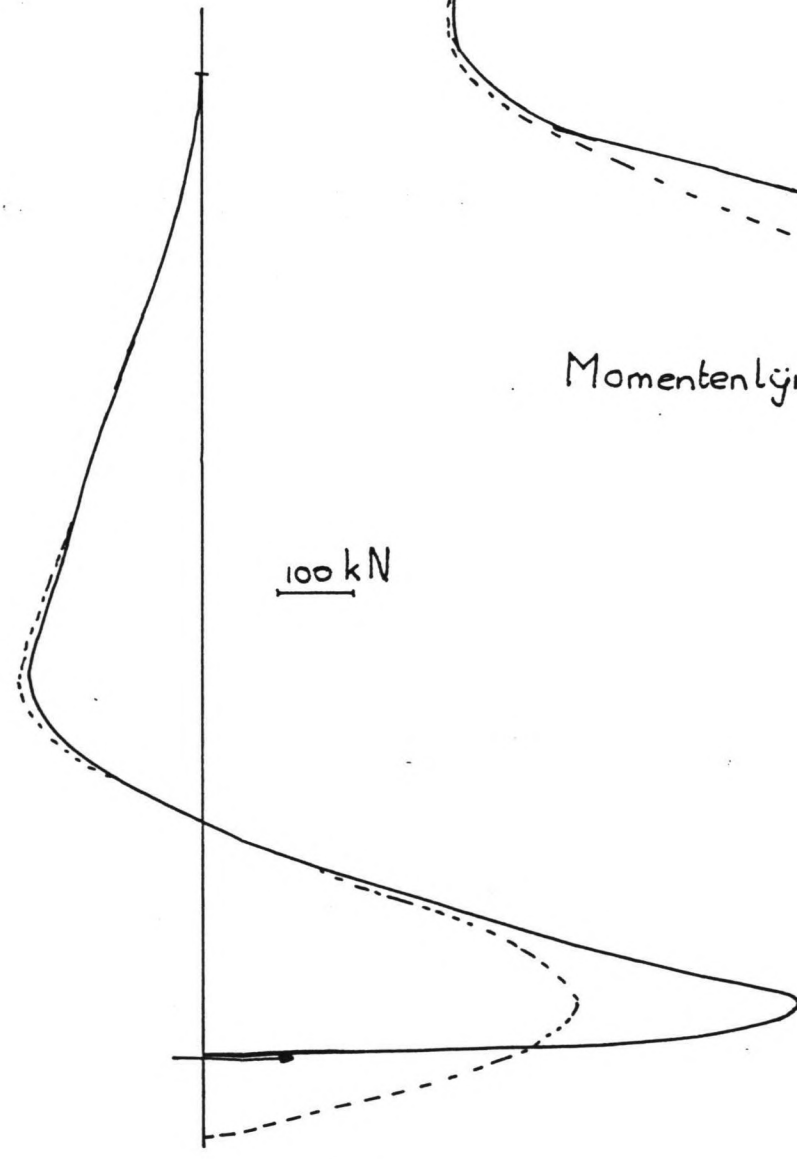


Verplaatsingslijn

--- Cp = -677
 — Cp = 0



Momentenlijn

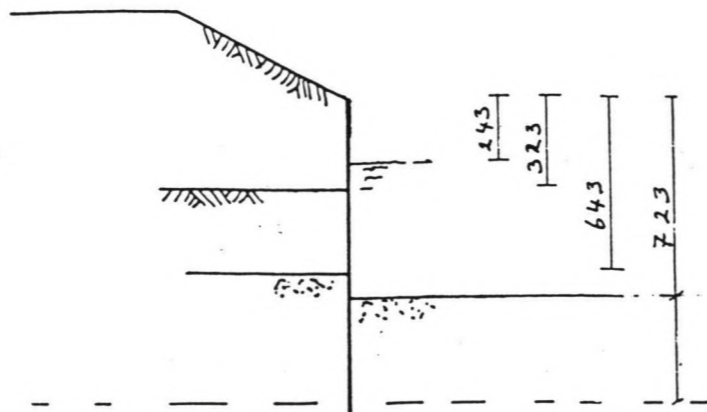


Dwarskrachtenlijn

===== DAMWAND+ =====

Berekening van een damwand als verend ondersteunde ligger
 Probleem: PRF317B

Buigstijfheid damwand = 200000 (kNm²)
 Totale lengte damwand = 12.5 (m)
 Hoek met vertikaal = 0 (gr)
 Inheidsdiepte = 12.5 (m)

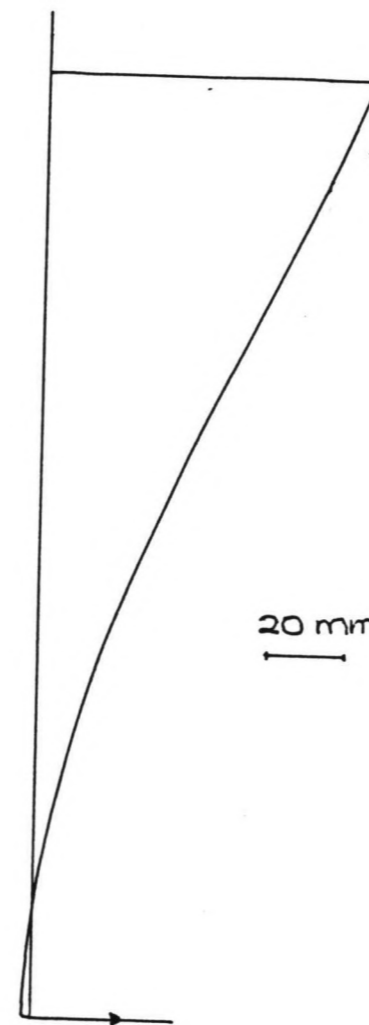


----- bovenbelasting -----

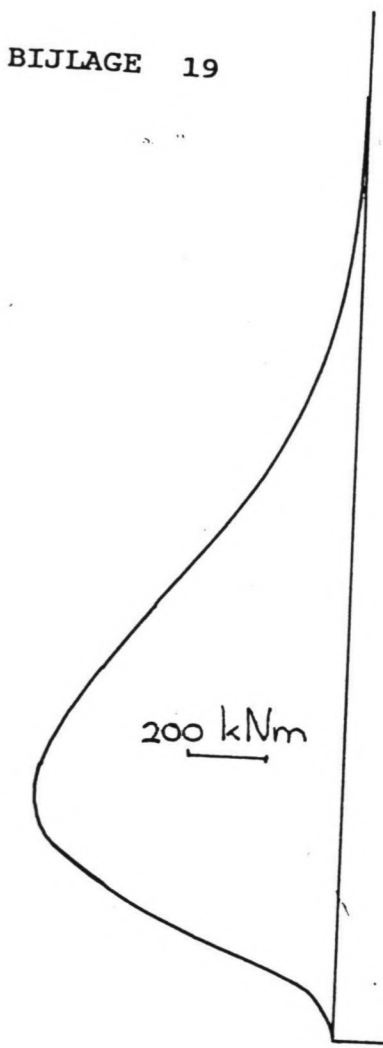
----- lagen -----

Nr.	l/r	bvk m	gw kN/m ³	sg kN/m ³	inw.wr gr	wandwrijving act -gr- pas	coh kN/m ²	strek m	Ka	Kn	Kp	Ca	Dp	w.oversp. kN/m ²	vert.spanning bov - kN/m ² - ond		
1	1	0	7.05	18	25	16.5	-16.5	4	.01	.815	1	14	5	20	0	0	0
2	1	3.23	7.05	18.5	32	20	-20	3	.01	.455	.6	14	5	22	0	0	0
3	1	6.43	10	20	38	24	-24	0	.01	.3	.5	11.881	0	0	-5.33	0	0
1	r	2.43	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0
2	r	7.23	10	20	38	24	-24	0	.01	.198	.384	11.881	0	0	0	0	0

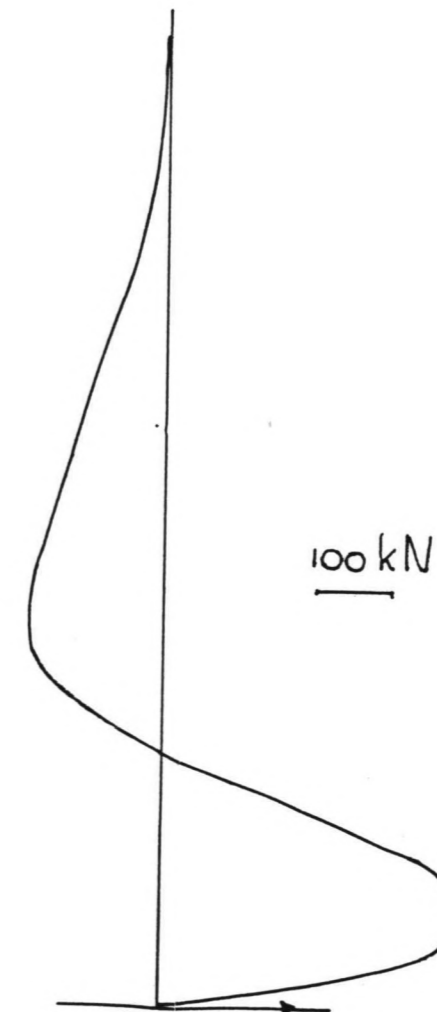
Grootste positieve moment : 0 kNm voor x = 0 m
 Grootste negatieve moment : -807.6735 kNm voor x = 9.11214287 m
 Grootste pos. verplaatsing: 213.66 mm voor x = 0 m



Verplaatsingslijn



Momentenlijn

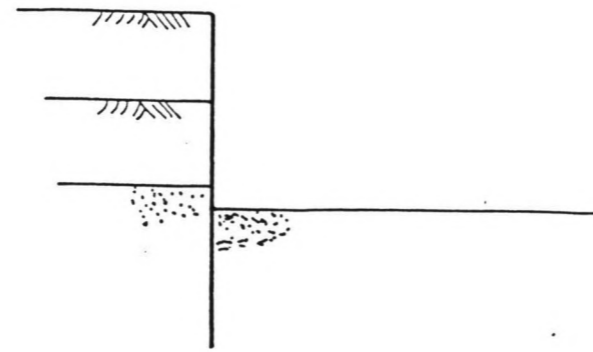


Dwarskrachtenlijn

===== DAMWAND+ =====

Berekening van een damwand als verend ondersteunde ligger
 Probleem: PRF317D

Buigstijfheid damwand = 200000 (kN*m²)
 Totale lengte damwand = 12.5 (m)
 Hoek met vertikaal = 0 (gr)
 Inheidiepte = 12.5 (m)

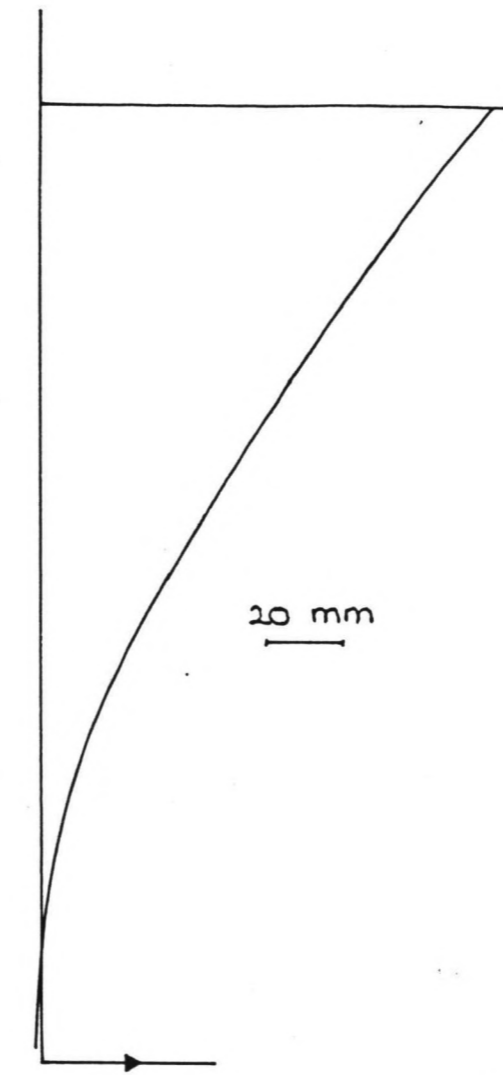


----- bovenbelasting -----

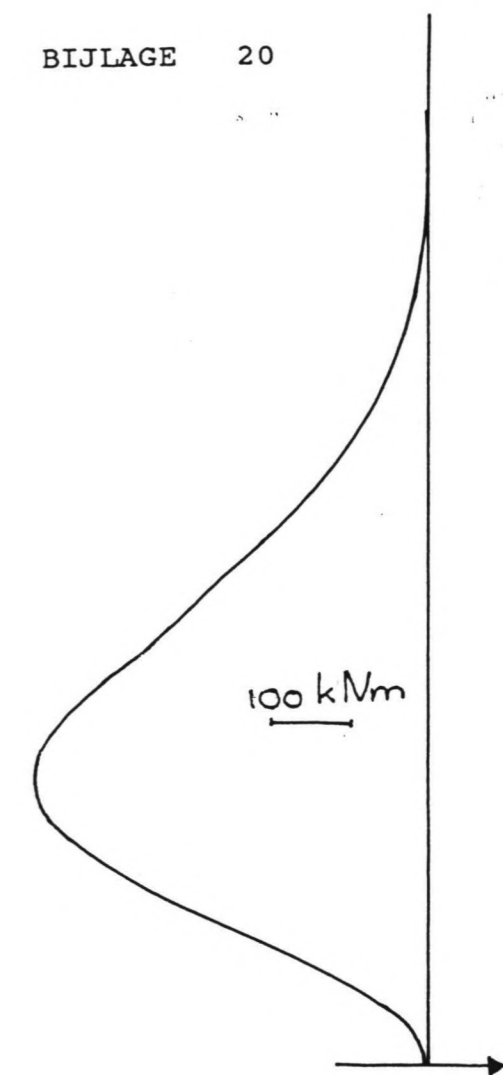
----- lagen -----

Nr.	l/r	bvk	gw	sg	inw.wr	wandwrijving		coh	strek	Ka	Kn	Kp	Ca	Cp	w.oversp.	vert.spanning	
		m	kN/m3	kN/m3	gr	act	-gr-pas	kN/m2	m						kN/m2	bov	- kN/m2- ond
1	1	0	7.05	18	25	16.5	-16.5	4	.01	.346	.549	3.889	4.44	20.864	0	0	0
2	1	3.23	7.05	18.5	32	20	-20	3	.01	.259	.447	6.471	2.851	22.732	0	0	0
3	1	6.43	10	20	38	24	-24	0	.01	.198	.384	11.881	0	0	-5.33	0	0
1	r	2.43	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0
2	r	7.23	10	20	38	24	-24	0	.01	.198	.384	11.881	0	0	0	0	0

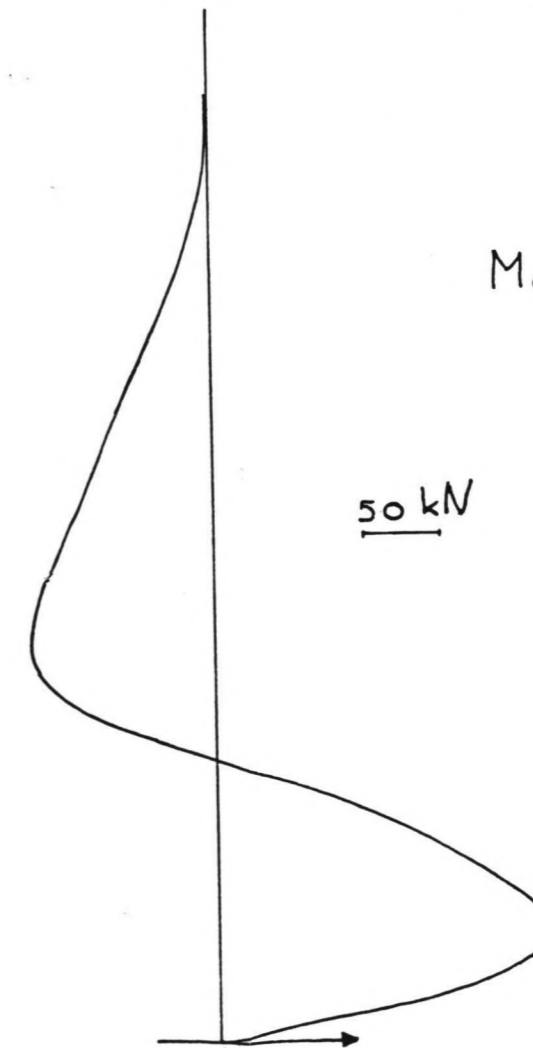
Grootste positieve moment : 0 kNm voor x = 0 m
 Grootste negatieve moment : -512.0772 kNm voor x = 8.73571429 m
 Grootste pos. verplaatsing: 117.7 mm voor x = 0 m



Verplaatsingslijn



Momentenlijn

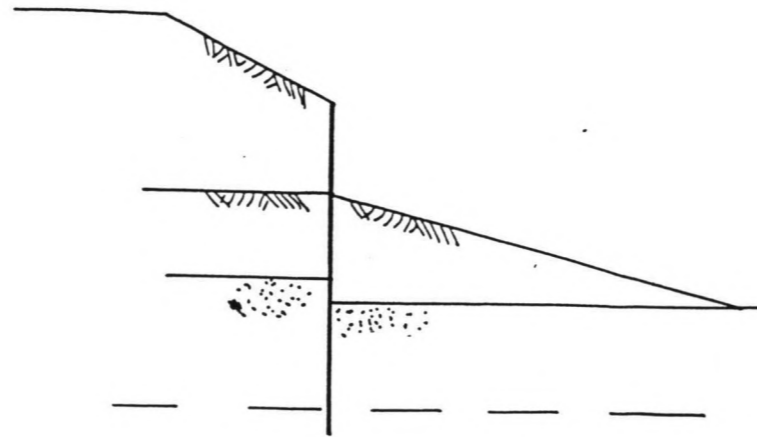


Dwarskrachtenlijn

===== DAMWAND+ =====

Berekening van een damwand als verend ondersteunde ligger
 Probleem: PRF317B

Buigstijfheid damwand = 200000 (kNm²)
 Totale lengte damwand = 12 (m)
 Hoek met vertikaal = 0 (gr)
 Inheidiepte = 12 (m)

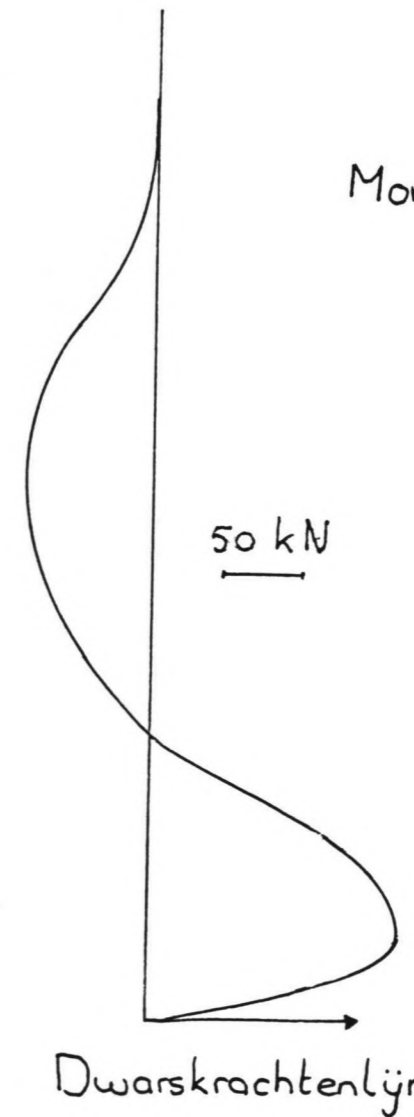
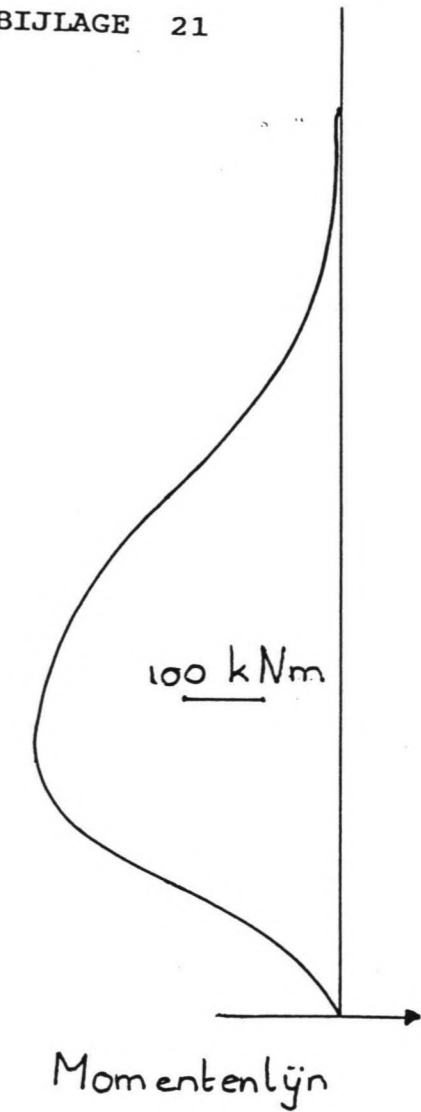
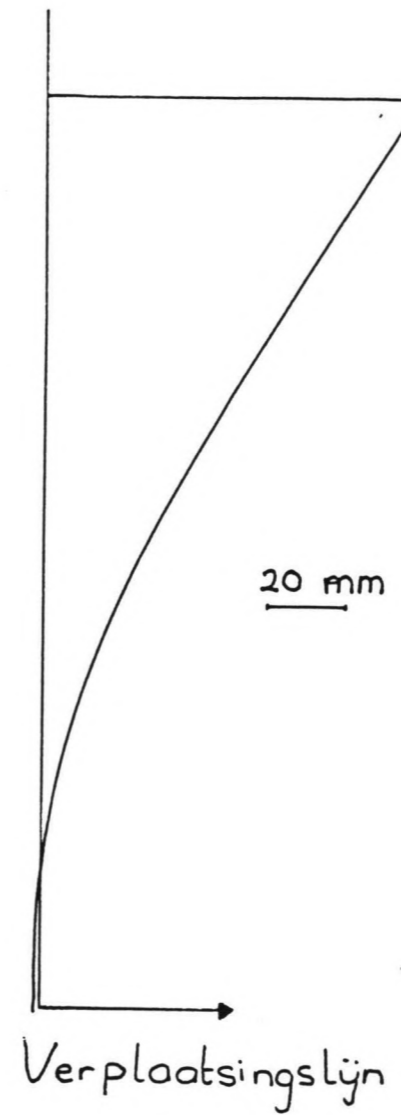


----- bovenbelasting -----

----- lagen -----

Nr.	l/r	bvk	gw	sg	inw.wr	wandwrijving		coh	strek	Ka	Kn	Kp	Ca	Cp	w.oversp.	vert.spanning	
		m	kN/m ³	kN/m ³	gr	act	-gr-	pas	kN/m ²	m					kN/m ²	bov	- kN/m ² - ond
1	l	0	7.05	18	25	16.5	-16.5	4	.01	.815	1	14.781	5	20.864	0	0	0
2	l	2.43	7.05	18	25	16.5	-16.5	4	.01	.815	1	14.782	5	20.864	0	0	0
3	l	3.23	7.05	18.5	32	20	-20	3	.01	.455	.6	14	5	22	0	0	0
4	l	6.43	10	20	38	24	-24	0	.01	.3	.5	11.881	0	0	-5.33	0	0
1	r	2.43	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0
2	r	3	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0
3	r	3.23	10	18.5	32	20	-20	3	.01	.223	.35	2.1	2.4	0	0	0	0
4	r	6.43	10	18.5	32	20	-20	3	.01	.223	.35	2.1	2.4	0	0	0	0
5	r	7.23	10	20	38	24	-24	0	.01	.198	.384	11.881	0	0	0	-34	-34
6	r	8.03	10	20	38	24	-24	0	.01	.198	.384	11.881	0	0	0	-34	-34

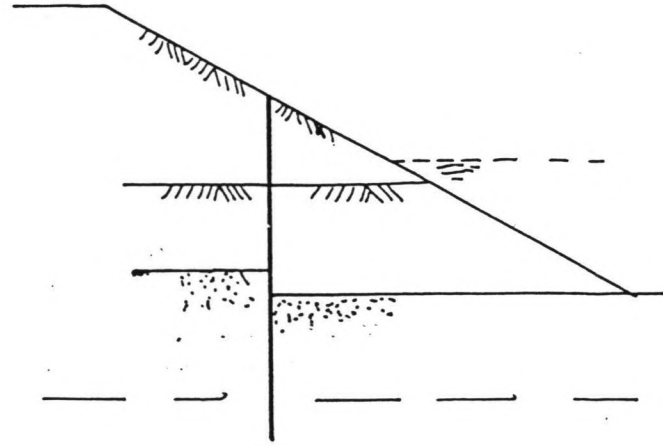
Grootste positieve moment : 0 kNm voor x = 0 m
 Grootste negatieve moment : -395.3269 kNm voor x = 8.19541667 m
 Grootste pos. verplaatsing: 98.33 mm voor x = 0 m



===== DAMWAND+ =====

Berekening van een damwand als verend ondersteunde ligger
 Probleem: PRF317F

Buigstijfheid damwand = 20000 (kN/m²)
 Totale lengte damwand = 7.5 (m)
 Hoek met vertikaal = 0 (gr)
 Inheidiepte = 7.5 (m)

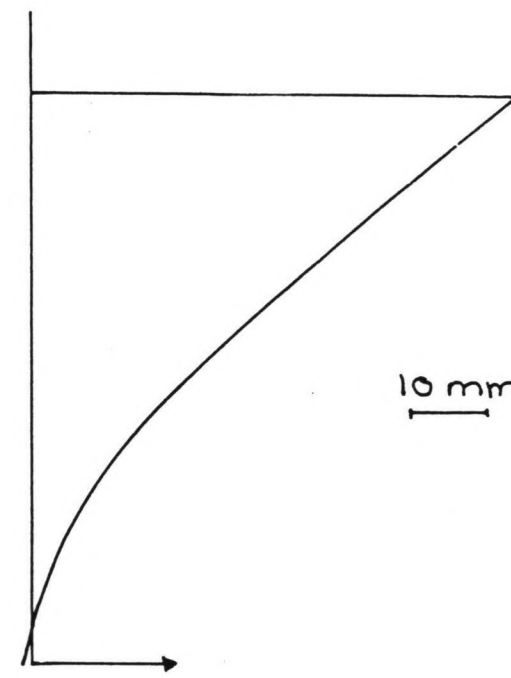


----- bovenbelasting -----

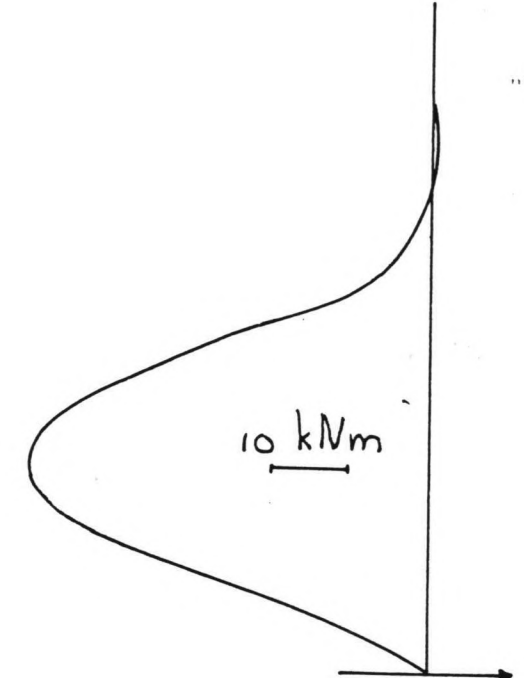
----- lagen -----

Nr.	l/r	byk	gw	sg	inw.wr	wandwrijving	coh	strek	Ka	Kn	Kp	Ca	Cp	w.oversp.	vert.spanning		
		m	kN/m ³	kN/m ³	gr	act -gr- pas	kN/m ²	m						kN/m ²	bov - kN/m ² - ond		
1	1	0	7.05	18	25	16.5 -16.5	4	.01	.815	1	14.781	5	20.864	0	0	0	0
2	1	2.43	7.05	18	25	16.5 -16.5	4	.01	.815	1	14.782	5	20.864	0	0	0	0
3	1	3.23	7.05	18.5	32	20 -20	3	.01	.455	.6	14	5	22	0	0	0	0
4	1	6.43	10	20	38	24 -24	0	.01	.3	.5	11.881	0	0	-5.33	0	0	0
1	r	0	0	18	25	16.5 -16.5	4	.01	.264	.3	.4	3.326	0	0	0	0	0
2	r	2.43	10	18	25	16.5 -16.5	4	.01	.264	.3	.4	3.326	0	0	0	0	0
3	r	3.23	10	18.5	32	10 -20	3	.01	.203	.3	.8	2.02	0	0	0	0	0
4	r	6.43	10	18.5	32	20 -20	3	.01	.203	.3	.8	2.02	0	0	0	0	0
5	r	7.23	10	20	38	24 -24	0	.01	.198	.384	11.881	0	0	0	-84	-84	
6	r	8.03	10	20	38	24 -24	0	.01	.198	.384	11.881	0	0	0	-84	-84	

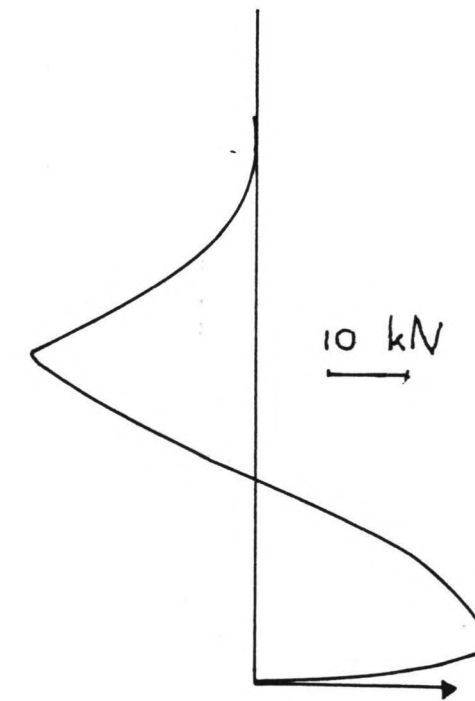
Grootste positieve moment : 5.6E-03 kNm voor x = .639473684 m
 Grootste negatieve moment : -52.1428 kNm voor x = 4.83 m
 Grootste pos. verplaatsing: 64.36 mm voor x = 0 m



Verplaatsingslijn



Momentenlijn

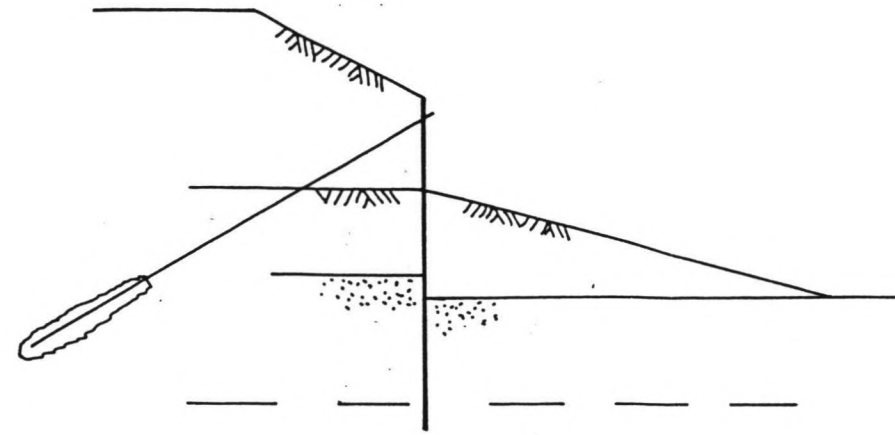


Dwarskrachtenlijn

===== DAMWAND+ =====

Berekening van een damwand als verend ondersteunde ligger
 Probleem: PRF317H

Buigstijfheid damwand = 20000 (kNm²)
 Totale lengte damwand = 7.5 (m)
 Hoek met vertikaal = 0 (gr)
 Inheidiepte = 7.5 (m)



----- bovenbelasting -----

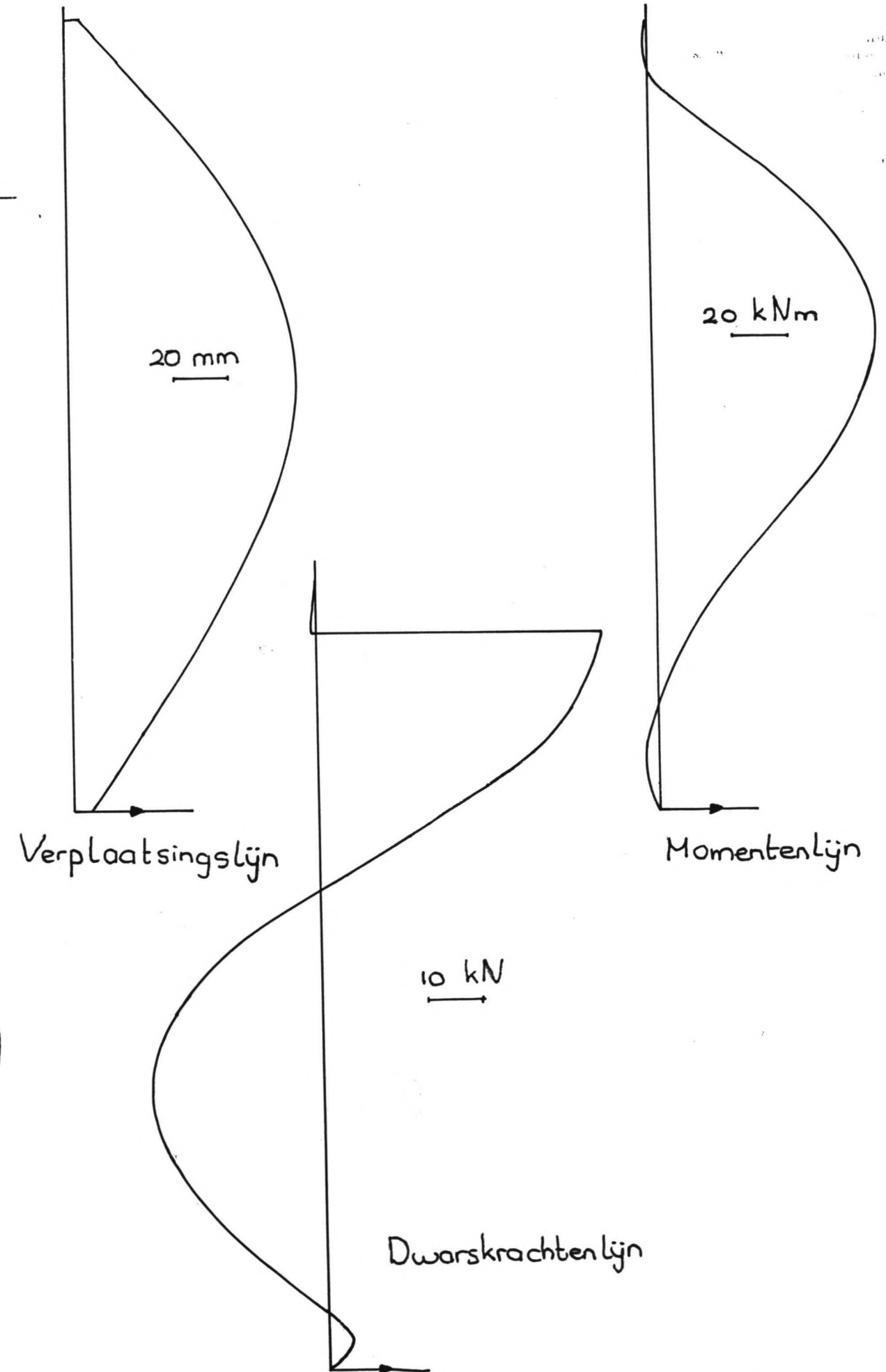
----- ankers, stempels of discrete krachten -----

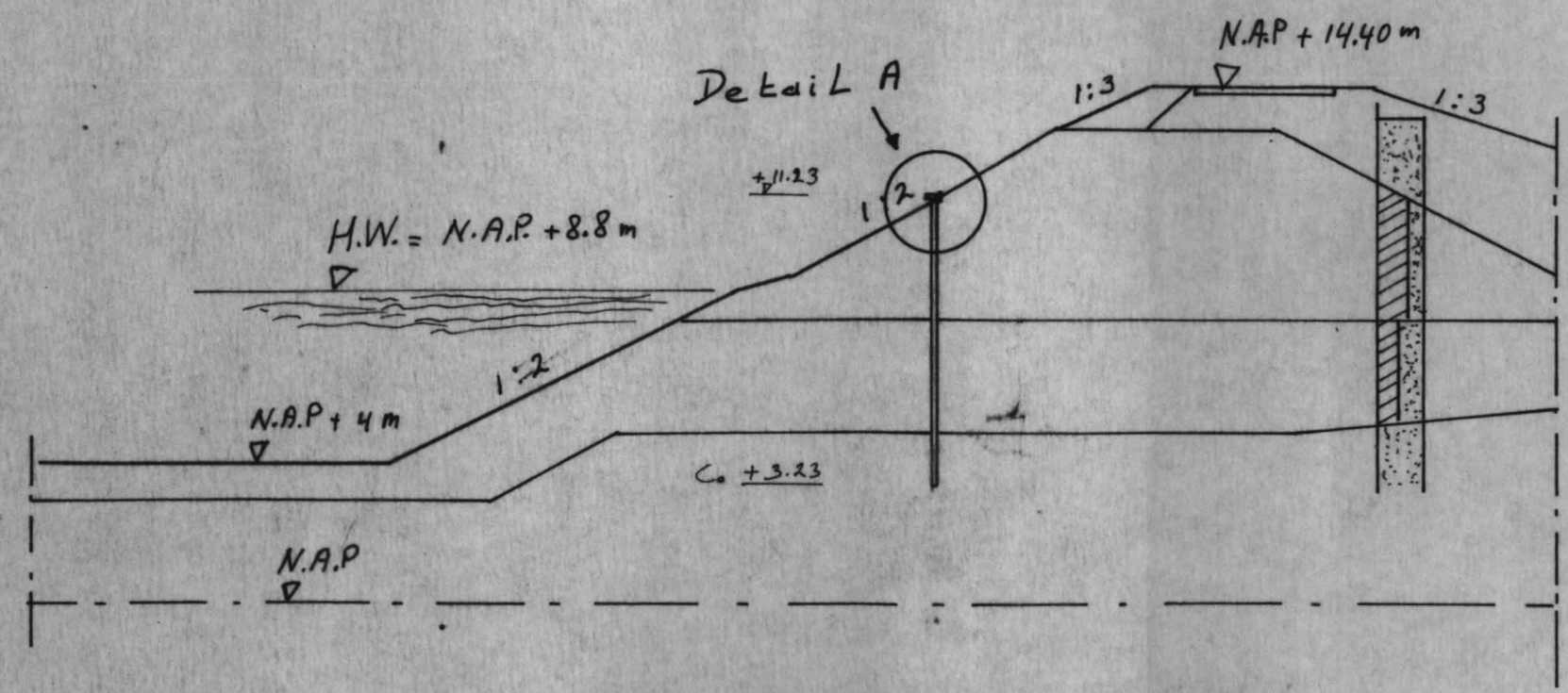
Nr.	diepte (m)	max.kracht (kN)	lin.traject (m)	hoek met hor. (gr)
1	.5	100	.01	30

----- lagen -----

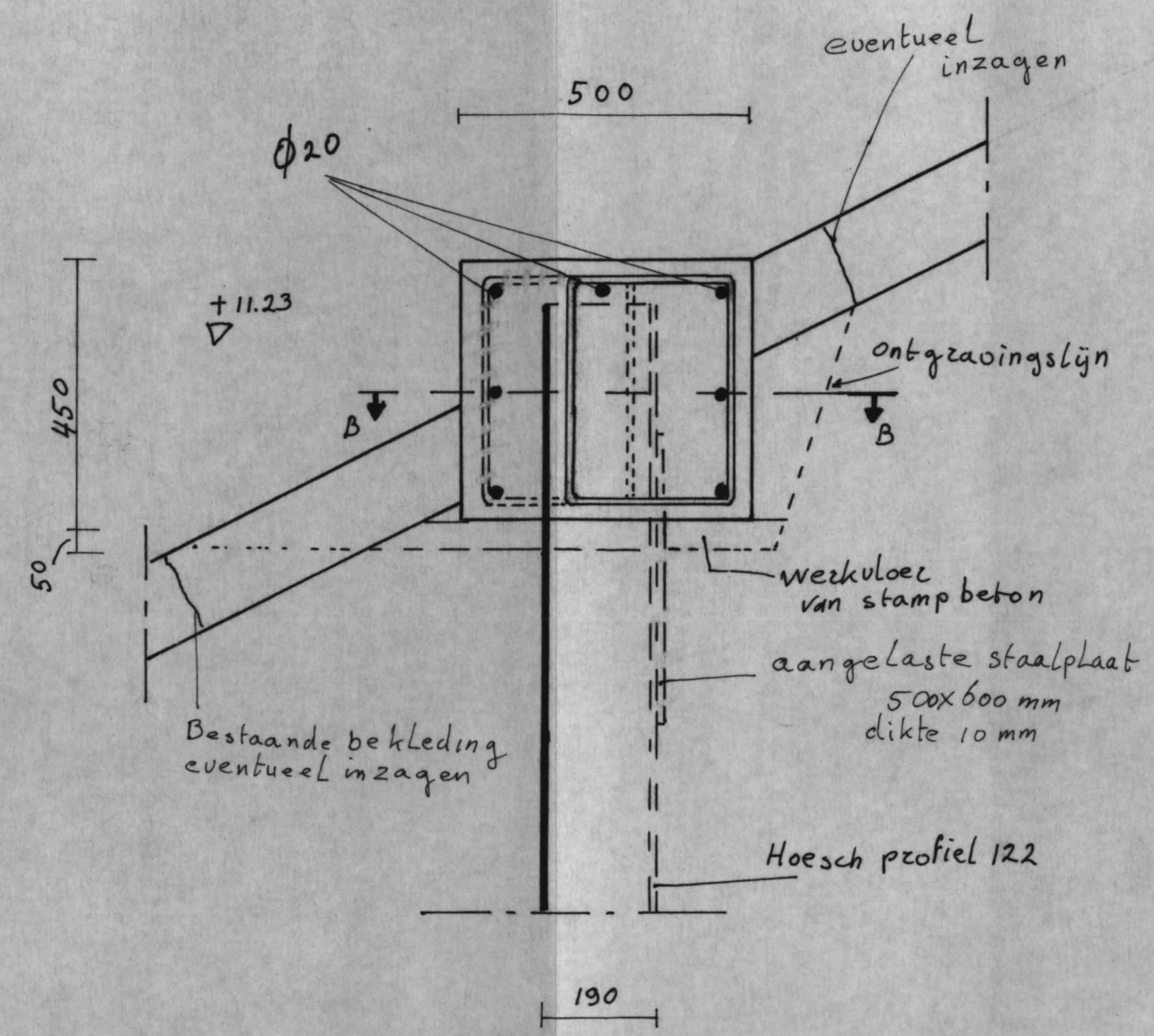
Nr.	l/r	bvk m	gw kN/m ³	sg kN/m ³	inw.wr gr	wandrijving act -gr- pas	coh kN/m ²	strek m	Ka	Kn	Kp	Ca	Cp	w.oversp. kN/m ²	vert.spanning bov - kN/m ² - ond
1	l	0	7.05	18	25	16.5 -16.5	4	.01	.815	1	14.781	5	20.864	0	0
2	l	2.43	7.05	18	25	16.5 -16.5	4	.01	.815	1	14.782	5	20.864	0	0
3	l	3.23	7.05	18.5	32	20 -20	3	.01	.455	.6	14	5	22	0	0
4	l	6.43	10	20	38	24 -24	0	.01	.3	.5	11.881	0	0	-5.33	0
1	r	2.43	10	10	0	0	0	0	0	0	0	0	0	0	0
2	r	3	10	10	0	0	0	0	0	0	0	0	0	0	0
3	r	3.23	10	18.5	32	20 -20	3	.01	.223	.35	2.1	2.4	0	0	0
4	r	6.43	10	18.5	32	20 -20	3	.01	.223	.35	2.1	2.4	0	0	0
5	r	7.23	10	20	38	24 -24	0	.01	.198	.384	11.881	0	0	0	-34
6	r	8.03	10	20	38	24 -24	0	.01	.198	.384	11.881	0	0	0	-34

Grootste positieve moment : 83.8966 kNm voor x = 3 m
 Grootste negatieve moment : -1.7066 kNm voor x = 6.88714287 m
 Grootste pos. verplaatsing: 21.45 mm voor x = 3.34428571 m
 Anker- of stempelkracht 1 : 63.2541954 kN voor x = .5 m

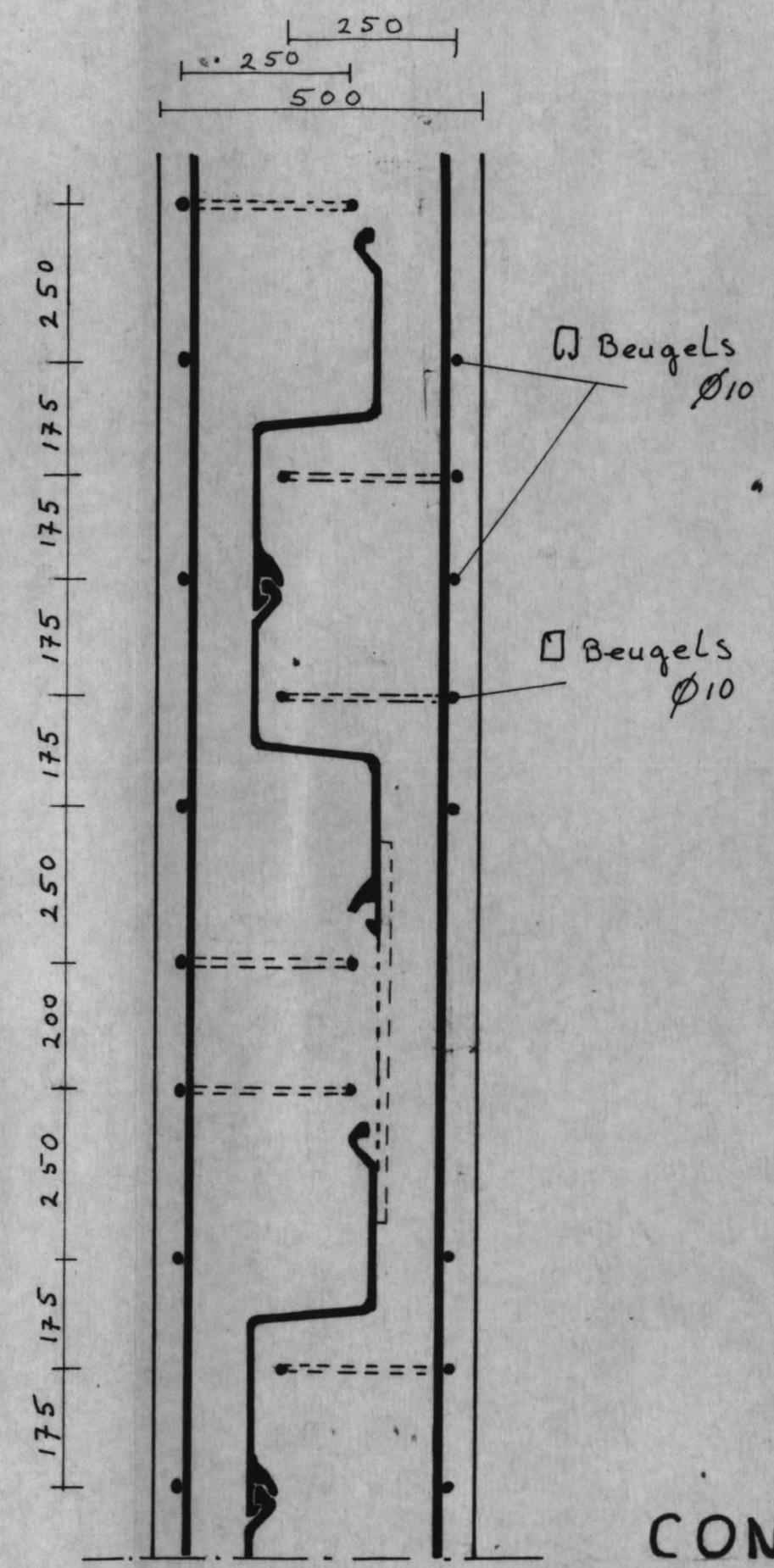




Dijk profiel
schaal 1:200



Detail A
schaal 1:10



Doorsnede B-B
schaal 1:10

CONSTRUCTIE-TEKENING

