

## Statische berekening

Project: Woning a/d Lindenstraat 15D  
te Alteveer

Onderdeel: Fundering

Opdr.gever. Endurowoningen

Projectnr.: 220450

Rapportnr.: 220450-S2-Rev 0

Versie	Datum:	Omschrijving:
0	08-11-2022	Eerst uitgave

Gecontroleerd	vrijgegeven
	
Par.:	Par.:
d.d.: 08-11-2022	d.d.:

## Inhoudsopgave

<b>1</b>	<b>INLEIDING.....</b>	<b>2</b>
<b>2</b>	<b>ALGEMEEN .....</b>	<b>2</b>
<b>3</b>	<b>VOORSCHRIFTEN VAN TOEPASSING .....</b>	<b>2</b>
<b>4</b>	<b>CONSTRUCTIEOVERZICHT .....</b>	<b>2</b>
<b>5</b>	<b>BELASTINGEN.....</b>	<b>3</b>
<b>6</b>	<b>FUNDERING .....</b>	<b>4</b>
6.1	ALGEMEEN .....	4
6.2	ONDSCHIEDEN LIJN- EN PUNTLASTEN OP DE FUNDERING .....	6
6.3	LIJN- EN PUNTLASTEN .....	7
6.4	STROKEN CONTROL.....	7
6.5	CONTROLE WAPENING .....	49

## **1 Inleiding**

In deze berekening is de fundering nader uitgewerkt en de strook zettingen gecontroleerd aan de hand van de aangeleverde sonderingen. Voor alle overige onderdelen wordt verwezen naar 220450-S1-Rev 0

## **2 Algemeen**

Het betreft hier een eengezinswoning:

- Ontwerplevensduurklasse 3 (50 jaar)
- Gevolgklasse CC1

## **3 Voorschriften van toepassing**

Eurocodes + NB t.w.:

NEN-EN 1990	Grondslagen van het ontwerp
NEN-EN 1991	Belastingen op constructies
NEN-EN 1992	Betonconstructies
NEN-EN 1993	Staalconstructies
NEN-EN 1995	Houtconstructies
NEN-EN 1996	Metselwerkconstructies
NEN-EN 1997	Geotechnisch ontwerp

## **4 Constructieoverzicht**

Voor de constructie overzichten wordt verwezen naar de bijlagen.

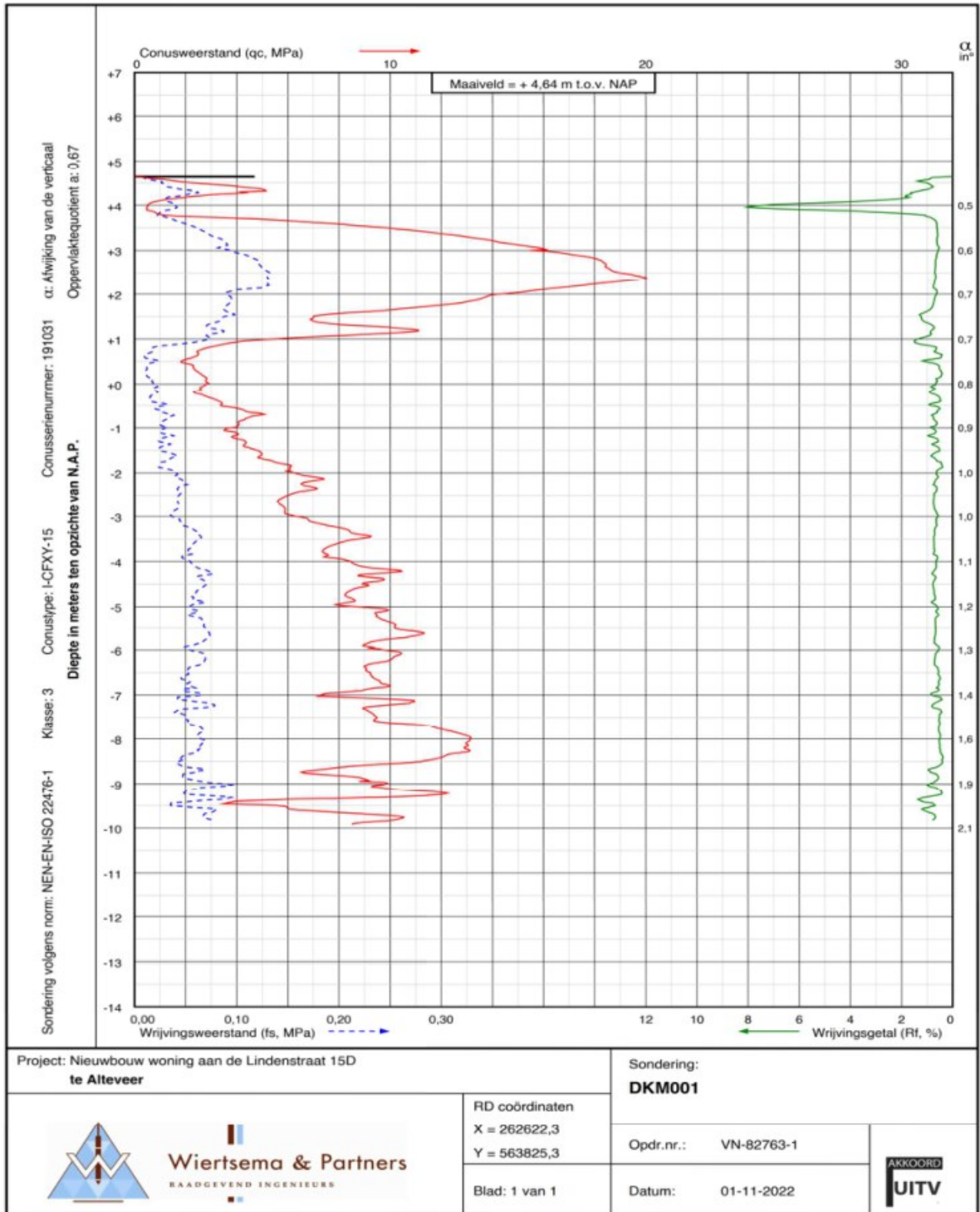
## 5 Belastingen

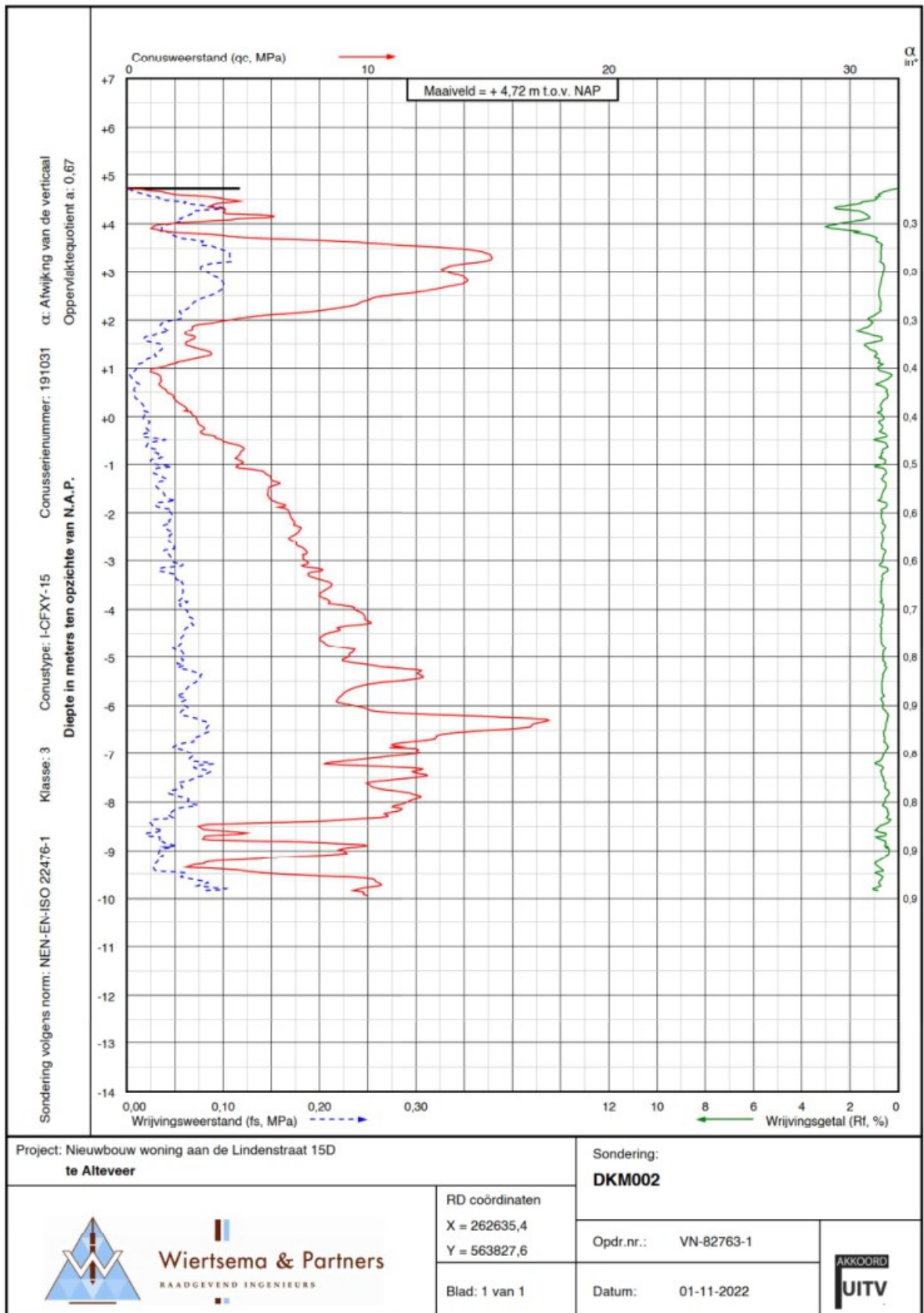
Dak schuin	G	dakpannen + latten	$P_{g;Ek} = 0,50 \text{ kN/m}^2$	
		geïsoleerde dakplaten	0,10	
		sporen	0,10	
		<u>totaal</u>	$P_{g;Ek} = 0,70 \text{ kN/m}^2$	
zonnepanelen		+ 0,20 kN/m <sup>2</sup> in het dakvlak (rechterzijgevel)		
	Q	Sneeuw- en windbelasting conform NEN-EN 1991		
Zoldervloer	G	houten balklaag	0,15 kN/m <sup>2</sup>	(h < 2,2 m)
		beschot	0,10	Q $P_{q;k} = 0,7 \text{ kN/m}^2$
		plafond	0,15	$\psi_0 = 0,4$
		<u>totaal</u>	$P_{g;k} = 0,40 \text{ kN/m}^2$	
Verd. vloer	G	kanaalplaatvloer A-260	3,80 kN/m <sup>2</sup>	Q $P_{q;k} = 1,75 + 0,5 \rightarrow$
		afwerkvloer	1,40	2,25 kN/m <sup>2</sup> ; $\psi_0 = 0,4$
		<u>totaal</u>	$P_{g;k} = 5,20 \text{ kN/m}^2$	
BG vloer	G	systeemvloer	3,10 kN/m <sup>2</sup>	Q $P_{q;k} = 1,75 + 0,5 \rightarrow$
		afwerkvloer	1,40	2,25 kN/m <sup>2</sup> ; $\psi_0 = 0,4$
		<u>totaal</u>	$P_{g;k} = 4,50 \text{ kN/m}^2$	
Wanden	G	spouwmuur	$P_{g;k} = 4,0 \text{ kN/m}^2$	
		Cellenbeton (G4-600) 140mm	$P_{g;k} = 2,0 \text{ kN/m}^2$	
		puien	$P_{g;k} = 1,0 \text{ kN/m}^2$	

## 6 Fundering

### 6.1 Algemeen

Ter plaatse is 2 maal gesondeerd:





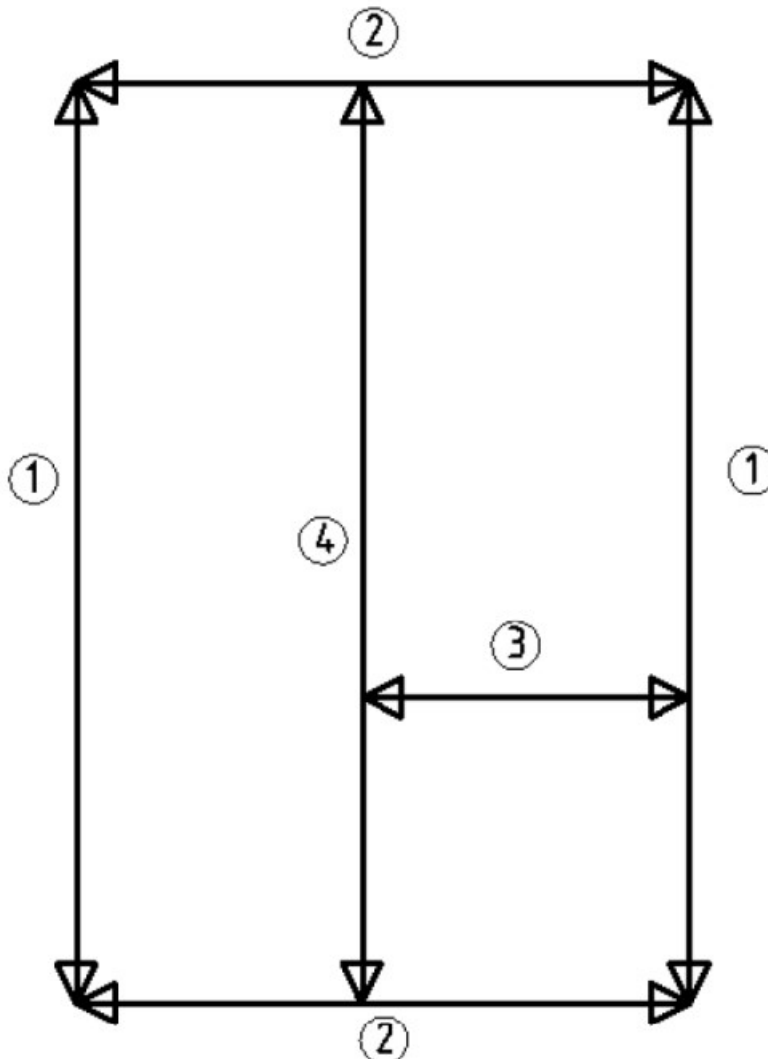
Voor het volledige rapport zie document VN-82763-1; d.d. 07-11-2022 van Wiertsema & Partners raadgevend ingenieurs. Er is gekozen voor een fundering op stroken.

Bepaling aanlegniveau:

Put niveau :	4,72 + N.A.P.
Peil van de woning:	5,10 + N.A.P.
Gemiddeld maaiveld:	5,00 + N.A.P.
Aanlegniveau fundering:	3,80 + N.A.P.

## 6.2 Onderscheiden lijn- en puntlasten op de fundering

(Niet op schaal)



### 6.3 Lijn- en puntlasten

De puntlasten zijn verwerkt in de lijnlasten.

lijnlast nr. belastingen in kN/m	1			2			3			4		
	Pb	Vb	$\psi$	Pb	Vb	$\psi$	Pb	Vb	$\psi$	Pb	Vb	$\psi$
uit het dak	5,0	1,6	0,0	0,9	0,1	0,0			0,0			
uit zoldervoer		0,7	0,4	0,2	0,4	0,4			0,4			
uit verd.vloer	16,6	7,2	0,4	3,1	1,4	0,4	6,2	2,7	0,4			
uit Begane grond	7,7	3,8	0,4	2,7	1,4	0,4	5,4	2,7	0,4	14,4	7,2	0,4
uit gevel	12,8			21,2								
uit binnenwanden							6,0			2,0		
uit balk+metselwerk	7,0			7,0			6,3			6,3		
<b>totaal</b>	<b>49,1</b>	<b>11,3</b>		<b>35,1</b>	<b>3,0</b>		<b>23,9</b>	<b>5,4</b>		<b>22,7</b>	<b>7,2</b>	
Q <sub>kEd</sub> (rekenwaarde)	68,3			44,4			33,1			34,2		
Q <sub>kαC</sub> (incidenteel)	60,4			38,1			29,3			29,9		

### 6.4 Stroken control

#### lijnlast 1 , 2 (NEN-EN1997-1:2016/NB:2016)

#### SONDERINGSDIAGRAMMEN

##### Sondeerdiagram

82763\_DKM001.GEF

##### Maaiveldniveau

4.640

##### Grondwaterniveau

-10.000

82763\_DKM002.GEF

4.720

-10.000

-

m

m

#### ALGEMENE GEGEVENS

Minimum dekking	0.150 [m]
Minimale strookbreedte	0.800 [m]
Maximale strookbreedte	0.800 [m]
Lengte van de strook	8.000 [m]
Minimale diepte	3.800 [m]
Maximale diepte	2.800 [m]

#### BELASTING

Excentriciteit (#5.2.1)	e;B	0.12
Excentriciteit	e;L	0.00

#### Uiterste Grenstoestand

#### Bruikbaarheidsgrenstoestand

[kN/m]	q;s,v,d	68.30 [kN/m]	q;s,v,d	60.40
[kN/m]	q;s,h,d	0.00 [kN/m]	q;s,h,d	0.00
[kN/m]	p;sur,d	8.70 [kN/m]	p;sur,d	7.20

#### TOETSING GRENSTOESTANDEN 1A, 1B EN 2

Ongedraineerde situatie	NEN-EN1997-1#6.5.2.2(f)
Gedraineerde situatie	NEN-EN1997-1#6.5.2.2(i)
Zakking bovenzijde funderingselement	NEN-EN1997-1#6.6.2



## OVERZICHT ZETTINGEN GRENSTOESTAND 2

82763\_DKM001.GEF

Diepte

Breedte

	0.800
3.800	1.3
3.600	0.8
3.400	0.6
3.200	0.5
3.000	0.5
2.800	0.4
<b>m</b>	<b>mm</b>

82763\_DKM002.GEF

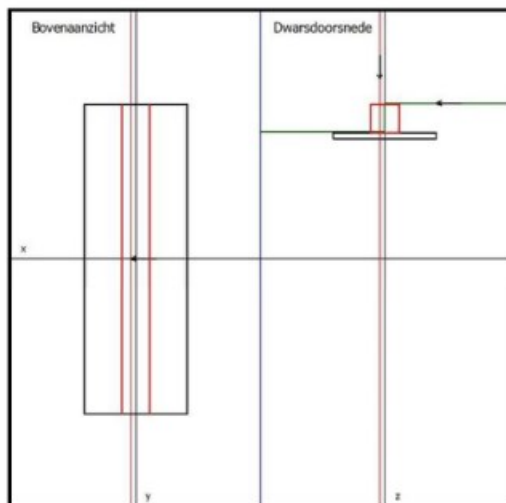
Diepte

Breedte

	0.800
3.800	1.3
3.600	1.0
3.400	0.8
3.200	0.7
3.000	0.6
2.800	0.7
<b>m</b>	<b>mm</b>

Opm: \*\*\*\* duidt erop dat de belasting niet opneembaar is

### LIJNLAST 1, 2 TEKENING



**lijnlast 1 , 2 (NEN-EN1997-1:2016/NB:2016)**
**BEREKENING GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(M)**

Phi		30.0 [°]
te	(5.2.1 figuur 5b)	0.886 [m]
ae	(5.2.1 figuur 5b)	4.500 [m]

Sector	Y;c	Y;c,rev	Y;sat	Y;sat,rev	C;u	C;u,corr
4	18.00	18.00	20.00	20.00	0.00	0.00
5	19.00	19.00	21.00	21.00	0.00	0.00
6	19.00	19.00	21.00	21.00	0.00	0.00
7	19.00	19.00	21.00	21.00	0.00	0.00
8	18.00	18.00	20.00	20.00	0.00	0.00
9	18.00	18.00	20.00	20.00	0.00	0.00
10	18.00	18.00	20.00	20.00	0.00	0.00
11	17.00	17.00	19.00	19.00	0.00	0.00
12	21.00	21.00	21.00	21.00	200.00	200.00
13	17.00	17.00	19.00	19.00	0.00	0.00
14	21.00	21.00	21.00	21.00	200.00	200.00
15	17.00	17.00	19.00	19.00	0.00	0.00
-	kN/m <sup>2</sup>	kN/m <sup>2</sup>	kN/m <sup>2</sup>	kN/m <sup>2</sup>	kN/m <sup>2</sup>	kN/m <sup>2</sup>

**BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)**

Gehanteerd invloedstrajekt 3.800 tot 2.933 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
4	3.800 3.640	0.16	0.79	30.00	26.09	0.00	0.00	18.00	16.36	3.28	0.00	2.06 0.13
5	3.640 3.390	0.25	0.58	35.00	30.43	0.00	0.00	19.00	17.27	4.43	0.00	2.51 0.15
6	3.390 2.933	0.46	0.23	37.50	32.61	0.00	0.00	19.00	17.27	3.41	0.00	1.80 0.10
										11.12	0.00	6.38 0.38

Phi;e,d	11.12 / 0.38	29.58 [°]
c;e,d	0.00 / 0.38	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	6.38 / 0.38	16.97 [kN/m <sup>2</sup> ]

**BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)**

Gehanteerd invloedstrajekt 3.800 tot 2.237 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
4	3.800 3.640	0.16	1.48	30.00	26.09	0.00	0.00	18.00	16.36	6.19	0.00	3.88 0.24
5	3.640 3.390	0.25	1.28	35.00	30.43	0.00	0.00	19.00	17.27	9.72	0.00	5.52 0.32
6	3.390 2.237	1.15	0.58	37.50	32.61	0.00	0.00	19.00	17.27	21.67	0.00	11.48 0.66
										37.58	0.00	20.88 1.22

Phi;e,d	37.58 / 1.22	30.77 [°]
c;e,d	0.00 / 1.22	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	20.88 / 1.22	17.10 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.094 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
Som;H;i·X;i													
4	3.800 3.640	0.16	1.63	30.00	26.09	0.00	0.00	18.00	16.36	6.79	0.00	4.26	0.26
5	3.640 3.390	0.25	1.42	35.00	30.43	0.00	0.00	19.00	17.27	10.81	0.00	6.14	0.36
6	3.390 2.140	1.25	0.67	37.50	32.61	0.00	0.00	19.00	17.27	27.34	0.00	14.48	0.84
7	2.140 2.094	0.05	0.02	35.00	30.43	0.00	0.00	19.00	17.27	0.03	0.00	0.02	0.00
										----	----	----	----
										44.97	0.00	24.89	1.45

Phi;e,d 44.97 / 1.45 30.91 [°]

c;e,d 0.00 / 1.45 0.00 [kN/m²]

Gamma;e,d 24.89 / 1.45 17.11 [kN/m³]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 1.961 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
Som;H;i·X;i													
4	3.800 3.640	0.16	1.76	30.00	26.09	0.00	0.00	18.00	16.36	7.34	0.00	4.60	0.28
5	3.640 3.390	0.25	1.55	35.00	30.43	0.00	0.00	19.00	17.27	11.82	0.00	6.71	0.39
6	3.390 2.140	1.25	0.80	37.50	32.61	0.00	0.00	19.00	17.27	32.76	0.00	17.35	1.00
7	2.140 1.961	0.18	0.09	35.00	30.43	0.00	0.00	19.00	17.27	0.49	0.00	0.28	0.02
										----	----	----	----
										52.41	0.00	28.95	1.69

Phi;e,d 52.41 / 1.69 31.00 [°]

c;e,d 0.00 / 1.69 0.00 [kN/m²]

Gamma;e,d 28.95 / 1.69 17.12 [kN/m³]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 1.878 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
Som;H;i·X;i													
4	3.800 3.640	0.16	1.84	30.00	26.09	0.00	0.00	18.00	16.36	7.69	0.00	4.82	0.29
5	3.640 3.390	0.25	1.64	35.00	30.43	0.00	0.00	19.00	17.27	12.45	0.00	7.07	0.41
6	3.390 2.140	1.25	0.89	37.50	32.61	0.00	0.00	19.00	17.27	36.15	0.00	19.15	1.11
7	2.140 1.890	0.25	0.14	35.00	30.43	0.00	0.00	19.00	17.27	1.04	0.00	0.59	0.03
8	1.890 1.878	0.01	0.01	32.50	28.26	0.00	0.00	18.00	16.36	0.00	0.00	0.00	0.00
										----	----	----	----
										57.34	0.00	31.63	1.85

Phi;e,d 57.34 / 1.85 31.05 [°]

c;e,d 0.00 / 1.85 0.00 [kN/m²]

Gamma;e,d 31.63 / 1.85 17.13 [kN/m³]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 1.384 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
Som;H;i·X;i													
4	3.800 3.640	0.16	2.34	30.00	26.09	0.00	0.00	18.00	16.36	9.75	0.00	6.12	0.37
5	3.640 3.390	0.25	2.13	35.00	30.43	0.00	0.00	19.00	17.27	16.22	0.00	9.20	0.53

6	3.390	2.140	1.25	1.38	37.50	32.61	0.00	0.00	19.00	17.27	56.31	0.00	29.82	1.73
7	2.140	1.890	0.25	0.63	35.00	30.43	0.00	0.00	19.00	17.27	4.80	0.00	2.73	0.16
8	1.890	1.640	0.25	0.38	32.50	28.26	0.00	0.00	18.00	16.36	2.69	0.00	1.56	0.10
9	1.640	1.384	0.26	0.13	30.00	26.09	0.00	0.00	18.00	16.36	0.86	0.00	0.54	0.03
											---	---	---	---
											90.63	0.00	49.97	2.92

Phi;e,d	90.63 / 2.92	31.04 [°]
c;e,d	0.00 / 2.92	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	49.97 / 2.92	17.12 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -1.938 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma		
Som;H;i-X;i														
4	3.800 3.640	0.16	5.66	30.00	26.09	0.00	0.00	18.00	16.36	23.62	0.00	14.81	0.91	
5	3.640 3.390	0.25	5.45	35.00	30.43	0.00	0.00	19.00	17.27	41.49	0.00	23.55	1.36	
6	3.390 2.140	1.25	4.70	37.50	32.61	0.00	0.00	19.00	17.27	191.70	0.00	101.54	5.88	
7	2.140 1.890	0.25	3.95	35.00	30.43	0.00	0.00	19.00	17.27	30.08	0.00	17.07	0.99	
8	1.890 1.640	0.25	3.70	32.50	28.26	0.00	0.00	18.00	16.36	26.16	0.00	15.15	0.93	
9	1.640 1.140	0.50	3.33	30.00	26.09	0.00	0.00	18.00	16.36	43.41	0.00	27.23	1.66	
10	1.140 0.890	0.25	2.95	25.00	21.74	0.00	0.00	18.00	16.36	16.05	0.00	12.08	0.74	
11	0.890 0.640	0.25	2.70	30.00	26.09	0.00	0.00	17.00	15.45	17.63	0.00	10.44	0.68	
12	0.640 -0.360	1.00	2.08	27.50	23.91	2.50	1.56	21.00	19.09	49.69	3.25	39.67	2.08	
13	-0.360 -1.938	1.58	0.79	30.00	26.09	0.00	0.00	17.00	15.45	32.48	0.00	19.24	1.25	
										---	---	---	---	
										472.30	3.25	280.79	16.46	

Phi;e,d	472.30 / 16.46	28.69 [°]
c;e,d	3246.91 / 16.46	0.20 [kN/m <sup>2</sup> ]
Gamma;e,d	280.79 / 16.46	17.06 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -2.262 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma		
Som;H;i-X;i														
4	3.800 3.640	0.16	5.98	30.00	26.09	0.00	0.00	18.00	16.36	24.97	0.00	15.66	0.96	
5	3.640 3.390	0.25	5.78	35.00	30.43	0.00	0.00	19.00	17.27	43.96	0.00	24.95	1.44	
6	3.390 2.140	1.25	5.03	37.50	32.61	0.00	0.00	19.00	17.27	204.91	0.00	108.54	6.28	
7	2.140 1.890	0.25	4.28	35.00	30.43	0.00	0.00	19.00	17.27	32.54	0.00	18.47	1.07	
8	1.890 1.640	0.25	4.03	32.50	28.26	0.00	0.00	18.00	16.36	28.45	0.00	16.47	1.01	
9	1.640 1.140	0.50	3.65	30.00	26.09	0.00	0.00	18.00	16.36	47.64	0.00	29.88	1.83	
10	1.140 0.890	0.25	3.28	25.00	21.74	0.00	0.00	18.00	16.36	17.81	0.00	13.41	0.82	
11	0.890 0.640	0.25	3.03	30.00	26.09	0.00	0.00	17.00	15.45	19.74	0.00	11.70	0.76	
12	0.640 -0.360	1.00	2.40	27.50	23.91	2.50	1.56	21.00	19.09	57.44	3.75	45.86	2.40	
13	-0.360 -2.262	1.90	0.95	30.00	26.09	0.00	0.00	17.00	15.45	47.19	0.00	27.96	1.81	
										---	---	---	---	
										524.64	3.75	312.88	18.37	

Phi;e,d	524.64 / 18.37	28.55 [°]
c;e,d	3753.18 / 18.37	0.20 [kN/m <sup>2</sup> ]
Gamma;e,d	312.88 / 18.37	17.03 [kN/m <sup>2</sup> ]

**KORRELSPANNINGEN SIGMA';V,Z,0,D**

Locatie Waarde	Diepte	Waarde	Locatie	Diepte
Zonder invloed bovenbelasting			Inclusief invloed bovenbelasting	
Midden sector 1 10.95	4.515	2.25	Midden sector 1	4.515
Onderzijde 1 13.20	4.390	4.50	Onderzijde 1	4.390
Midden sector 2 15.45	4.265	6.75	Midden sector 2	4.265
Onderzijde 2 17.70	4.140	9.00	Onderzijde 2	4.140
Midden sector 3 19.95	4.015	11.25	Midden sector 3	4.015
Onderzijde 3 22.20	3.890	13.50	Onderzijde 3	3.890
Midden sector 4 24.45	3.765	15.75	Midden sector 4	3.765
Onderzijde 4 26.70	3.640	18.00	Onderzijde 4	3.640
Midden sector 5 29.07	3.515	20.38	Midden sector 5	3.515
Onderzijde 5 31.45	3.390	22.75	Onderzijde 5	3.390
Midden sector 6 43.33	2.765	34.63	Midden sector 6	2.765
Onderzijde 6 55.20	2.140	46.50	Onderzijde 6	2.140
Midden sector 7 57.58	2.015	48.88	Midden sector 7	2.015
Onderzijde 7 59.95	1.890	51.25	Onderzijde 7	1.890
Midden sector 8 62.20	1.765	53.50	Midden sector 8	1.765
Onderzijde 8 64.45	1.640	55.75	Onderzijde 8	1.640
Midden sector 9 68.95	1.390	60.25	Midden sector 9	1.390
Onderzijde 9 73.45	1.140	64.75	Onderzijde 9	1.140
Midden sector 10 75.70	1.015	67.00	Midden sector 10	1.015
Onderzijde 10 77.95	0.890	69.25	Onderzijde 10	0.890
Midden sector 11 80.08	0.765	71.38	Midden sector 11	0.765
Onderzijde 11 82.20	0.640	73.50	Onderzijde 11	0.640
Midden sector 12 92.70	0.140	84.00	Midden sector 12	0.140
Onderzijde 12 103.20	-0.360	94.50	Onderzijde 12	-0.360
Midden sector 13 179.70	-4.860	171.00	Midden sector 13	-4.860
Onderzijde 13 256.20	-9.360	247.50	Onderzijde 13	-9.360
Midden sector 14	-9.485	250.13	Midden sector 14	-9.485

258.82				
Onderzijde 14	-9.610	252.75	Onderzijde 14	-9.610
261.45				
Midden sector 15	-9.735	254.88	Midden sector 15	-9.735
263.57				
Onderzijde 15	-9.860	257.00	Onderzijde 15	-9.860
265.70				
-		<b>m</b>	<b>kN/m<sup>2</sup> -</b>	<b>m</b>
<b>kN/m<sup>2</sup></b>				

### lijnlast 1 , 2 (NEN-EN1997-1:2016/NB:2016)

#### GRONDOPBOUW (REGIO : NEN-EN1997-1 TABEL 2.B (GRIND))

Nr.	Naam	Bijmengsel	Consistentie	Van	Tot	Y;c	Y:sat	c'	C;u	Phi'	Delta;Sigma';v,k
1	Zand	Schoon	Matig	4.640	4.390	18.00	20.00	0.00	0.00	32.50	4.50 4.50
2	Grind	Sterk siltig	Los	4.390	4.140	18.00	20.00	0.00	0.00	30.00	4.50 9.00
3	Klei	Sterk zandig	-	4.140	3.890	18.00	18.00	0.00	0.00	27.50	4.50 13.50
4	Grind	Sterk siltig	Los	3.890	3.640	18.00	20.00	0.00	0.00	30.00	4.50 18.00
5	Zand	Schoon	Vast	3.640	3.390	19.00	21.00	0.00	0.00	35.00	4.75 22.75
6	Grind	Zwak siltig	Vast	3.390	2.140	19.00	21.00	0.00	0.00	37.50	23.75 46.50
7	Zand	Schoon	Vast	2.140	1.890	19.00	21.00	0.00	0.00	35.00	4.75 51.25
8	Zand	Schoon	Matig	1.890	1.640	18.00	20.00	0.00	0.00	32.50	4.50 55.75
9	Grind	Sterk siltig	Los	1.640	1.140	18.00	20.00	0.00	0.00	30.00	9.00 64.75
10	Zand	Sterk siltig, kleiig	-	1.140	0.890	18.00	20.00	0.00	0.00	25.00	4.50 69.25
11	Zand	Schoon	Los	0.890	0.640	17.00	19.00	0.00	0.00	30.00	4.25 73.50
12	Leem	Zwak zandig	Vast	0.640	-0.360	21.00	21.00	2.50	200.0	27.50	21.00 94.50
13	Zand	Schoon	Los	-0.360	-9.360	17.00	19.00	0.00	0.00	30.00	153.00
247.50											
14	Leem	Zwak zandig	Vast	-9.360	-9.610	21.00	21.00	2.50	200.0	27.50	5.25
252.75											
15	Zand	Schoon	Los	-9.610	-9.860	17.00	19.00	0.00	0.00	30.00	4.25
257.00											
-	-	-	-	<b>m</b>	<b>m</b>	<b>kN/m<sup>3</sup></b>	<b>kN/m<sup>3</sup></b>	<b>kN/m<sup>2</sup></b>	<b>kN/m<sup>2</sup></b>	<b>°</b>	<b>kN/m</b> <b>kN/m</b>

#### ALGEMENE GEGEVENS

Breedte	0.800	[m]
Lengte	8.000	[m]
Diepte	3.800	[m]
Minimum dekking	0.150	[m]
Ontgravingsdiepte (eenzijdig)	3.950	[m]

#### SONDEERDIAGRAM

Sondeerdiagram	82763_DKM001.GEF
Maaiveldniveau	4.640 [m]
Grondwaterniveau	-10.000 [m]
Geotechnische categorie	GC2

#### BELASTING

Excentriciteit (#5.2.1)	e;B	0.12
Excentriciteit	e;L	0.00

#### Uiterste Grenstoestand

[kN/m]	q;s,v,d	68.30	[kN/m]
[kN/m]	q;s,h,d	0.00	[kN/m]
[kN/m]	p;sur,d	8.70	[kN/m]

#### Bruikbaarheidsgrenstoestand

q;s,v,d	60.40
q;s,h,d	0.00
p;sur,d	7.20

**TOETSING GRENSTOESTANDEN 1A, 1B EN 2**

Ongedraineerde situatie	NEN-EN1997-1#6.5.2.2(f)
Gedraineerde situatie	NEN-EN1997-1#6.5.2.2(i)
Zakking bovenzijde funderingselement	NEN-EN1997-1#6.6.2

**GRENSTOESTAND 1A: MAX DRAAGVERMOGEN NEN-EN1997-1:2016 #6.5.2.2(R)**

Ongedraineerde situatie vlgs #5.2.2.1 geval c  
Doorponsen bij gelaagde grond; 8° spreiding

Nr.	z	B;z	L;z	Sigma';v,z,0,d	C;u,d	S;c	I;c	Sigma';max,d	F;r,v,d	F;v,d opm
12	0.640	1.442	8.888	61.08	148.15	1.03	1.00	847.52	1222.30	115.00 -
14	-9.360	4.253	11.699	235.08	148.15	1.07	1.00	1052.18	4474.96	254.20 -
-	m	m	m	kN/m <sup>2</sup>	kN/m <sup>2</sup>	-	-	kN/m <sup>2</sup>	kN/m	kN/m -

Invloed ontgraving verwerkt met belastingfactor 1.00

In alle lagen wordt voldaan aan de ponstoetsing

**GRENSTOESTAND 1A: MAX DRAAGVERMOGEN NEN-EN1997-1:2016 #6.5.2.2**

Gedraineerde situatie #6.5.2.2 geval c

Invloedsgebied loopt van 3.800 tot 2.933 m

Gewogen parameters #6.5.2.2	Phi';e,d	29.58 [°]
(1A)	c';e,d	0.00 [kN/m <sup>2</sup> ]
(1A)	Y';e,d	16.97 [kN/m <sup>3</sup> ]

Invloed ontgraving verwerkt met belastingfactor 1.00

Sigma';v,z,0,d	z= 3.800 m	2.70 [kN/m <sup>2</sup> ]
xB	0.00*(0.000+0.840)/68.30	0.000 [m]
B';z	0.800-2*[0.123+0.000]	0.554 [m]
L';z	8.000-2*[0.000+0.000]	8.000 [m]
N;q		17.55 [-]
N;c		29.16 [-]
N;Gamma		18.79 [-]
i;q	(1-0.7*0.00/(68.30+0.00))^3	1.00 [-]
i;c	(1.00*17.55-1)/(17.55-1)	1.00 [-]
i;Gamma	(1-1.0*0.00/(68.30+0.00))^3	1.00 [-]
s;q	(1+0.554/8.000*0.52)	1.03 [-]
s;c	(1.03*17.55-1)/(17.55-1)	1.04 [-]
s;Gamma	1-0.30*0.554/8.000	0.98 [-]
Sigma';max,d	0.00+49.01+86.49	135.50 [kN/m <sup>2</sup> ]

F;r,v,d	0.554*135.50	75.07 [kN/m]
F;s,v,d <= F;r,v,d	68.30 <= 75.07	0.91 [-]

Aan de eis in gedraineerde toestand is voldaan

**GRENSTOESTAND 1A: MAX DRAAGVERMOGEN NEN-EN1997-1:2016 #6.5.2.2(R)**

Gedraineerde situatie #6.5.2.2 geval c

Doorponsen bij gelaagde grond; 8° spreiding

Nr.	z	B;z	L;z	Sigma';v,z,0,d	Phi';e,d	c';e,d	Gamma';e,d	Sigma';max,d	F;r,v,d	F;v,d opm
9	1.640	1.161	8.607	43.33	30.77	0.00	17.10	1147.60	1.33e+03	100.80 -
10	1.140	1.302	8.748	52.33	30.91	0.00	17.11	1397.56	1.82e+03	108.00 -
11	0.890	1.372	8.818	56.83	31.00	0.00	17.12	1531.12	2.10e+03	111.60 -
12	0.640	1.442	8.888	61.08	31.05	0.00	17.13	1652.06	2.38e+03	115.00 -
13	-0.360	1.723	9.169	82.08	31.04	0.00	17.12	2197.56	3.79e+03	131.80 -
14	-9.360	4.253	11.699	235.08	28.69	0.20	17.06	4918.84	2.09e+04	254.20 -
15	-9.610	4.323	11.769	240.33	28.55	0.20	17.03	4949.09	2.14e+04	258.40 -
-	m	m	m	kN/m <sup>2</sup>	°	kN/m <sup>2</sup>	kN/m <sup>2</sup>	kN/m <sup>2</sup>	kN/m	kN/m -

Invloed ontgraving verwerkt met belastingfactor 1.00

In alle lagen wordt voldaan aan de ponstoetsing

**GRENSTOESTAND 2: ZAKKING VLGS NEN-EN 1997-1:2016 #6.6.2**

Tgv momentane belastingcombinatie

(NEN-EN1990:2007 #6.5.3c)

Spanningstoename vlgs NEN-EN 1997-1:2016 #6.6.2

i	Nr.	H;i	Z;mid	e	Sigma';v,mid,z,o,d	Delta Sigma';v,mid,z,d	w;1,d	w;2,d	Som w;1,d	Som w;2,d
Som w;d										
Aanleg			3.800			109.03				
1	4	0.160	3.720	0.65	16.56	102.80	0.0005	0.0000	0.0005	0.0000
0.0005										
2	5	0.250	3.515	0.50	20.38	83.31	0.0003	0.0000	0.0008	0.0000
0.0008										
3	6	1.250	2.765	0.50	34.63	30.37	0.0004	0.0000	0.0012	0.0000
0.0012										
4	7	0.250	2.015	0.50	48.88	15.78	0.0000	0.0000	0.0012	0.0000
0.0012										
5	8	0.250	1.765	0.65	53.50	13.15	0.0001	0.0000	0.0013	0.0000
0.0013										
6	9	0.500	1.390		60.25	10.14	< 20%			
-	-	m	m	-	kN/m <sup>2</sup>	kN/m <sup>2</sup>	m	m	m	m
									-----	-----
									-----	-----
Zetting na 10000 dagen									0.0013	0.0000
0.0013										

Invloed bovenbelasting verwerkt met factor 1.00

Invloed ontgraving verwerkt met belastingfactor 1.00

Aan zettingseis uit NEN-EN1997-1:2016 #2.4.8 is voldaan

**lijnlast 1 , 2 (NEN-EN1997-1:2016/NB:2016)**
**BEREKENING GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(M)**

Phi		30.0 [°]
te	(5.2.1 figuur 5b)	0.886 [m]
ae	(5.2.1 figuur 5b)	4.500 [m]

Sector	Y;c	Y;c,rev	Y;sat	Y;sat,rev	C;u	C;u,corr
2	18.00	18.00	20.00	20.00	0.00	0.00
3	19.00	19.00	21.00	21.00	0.00	0.00
4	19.00	19.00	21.00	21.00	0.00	0.00
5	19.00	19.00	21.00	21.00	0.00	0.00
6	18.00	18.00	20.00	20.00	0.00	0.00
7	18.00	18.00	20.00	20.00	0.00	0.00
8	17.00	17.00	19.00	19.00	0.00	0.00
9	21.00	21.00	21.00	21.00	200.00	200.00
10	17.00	17.00	19.00	19.00	0.00	0.00
11	20.00	20.00	20.00	20.00	120.00	120.00
12	18.00	18.00	18.00	18.00	80.00	80.00
13	19.00	19.00	19.00	19.00	100.00	100.00
14	21.00	21.00	21.00	21.00	200.00	200.00
15	17.00	17.00	19.00	19.00	0.00	0.00
16	18.00	18.00	20.00	20.00	0.00	0.00
17	17.00	17.00	19.00	19.00	0.00	0.00
18	18.00	18.00	20.00	20.00	0.00	0.00
19	18.00	18.00	20.00	20.00	0.00	0.00



20	18.00	18.00	20.00	20.00	0.00	0.00
21	17.00	17.00	19.00	19.00	0.00	0.00
22	19.00	19.00	19.00	19.00	100.00	100.00
23	21.00	21.00	21.00	21.00	200.00	200.00
24	17.00	17.00	19.00	19.00	0.00	0.00
-	kN/m <sup>3</sup>	kN/m <sup>3</sup>	kN/m <sup>3</sup>	kN/m <sup>3</sup>	kN/m <sup>2</sup>	kN/m <sup>2</sup>

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.904 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	0.86	30.00	26.09	0.00	0.00	18.00	16.36	1.79	0.00	1.12 0.07
3	3.720 3.470	0.25	0.69	35.00	30.43	0.00	0.00	19.00	17.27	5.25	0.00	2.98 0.17
4	3.470 2.970	0.50	0.32	37.50	32.61	0.00	0.00	19.00	17.27	5.15	0.00	2.73 0.16
5	2.970 2.904	0.07	0.03	35.00	30.43	0.00	0.00	19.00	17.27	0.07	0.00	0.04 0.00
										----	----	----
										12.25	0.00	6.86 0.40

Phi;e,d	12.25 / 0.40	30.55 [°]
c;e,d	0.00 / 0.40	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	6.86 / 0.40	17.12 [kN/m <sup>3</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.455 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	1.31	30.00	26.09	0.00	0.00	18.00	16.36	2.72	0.00	1.71 0.10
3	3.720 3.470	0.25	1.14	35.00	30.43	0.00	0.00	19.00	17.27	8.68	0.00	4.92 0.29
4	3.470 2.970	0.50	0.77	37.50	32.61	0.00	0.00	19.00	17.27	12.48	0.00	6.61 0.38
5	2.970 2.470	0.50	0.27	35.00	30.43	0.00	0.00	19.00	17.27	4.04	0.00	2.29 0.13
6	2.470 2.455	0.02	0.01	32.50	28.26	0.00	0.00	18.00	16.36	0.00	0.00	0.00 0.00
										----	----	----
										27.92	0.00	15.54 0.90

Phi;e,d	27.92 / 0.90	30.85 [°]
c;e,d	0.00 / 0.90	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	15.54 / 0.90	17.17 [kN/m <sup>3</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.418 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	1.34	30.00	26.09	0.00	0.00	18.00	16.36	2.80	0.00	1.76 0.11
3	3.720 3.470	0.25	1.18	35.00	30.43	0.00	0.00	19.00	17.27	8.95	0.00	5.08 0.29
4	3.470 2.970	0.50	0.80	37.50	32.61	0.00	0.00	19.00	17.27	13.07	0.00	6.93 0.40
5	2.970 2.470	0.50	0.30	35.00	30.43	0.00	0.00	19.00	17.27	4.59	0.00	2.61 0.15
6	2.470 2.418	0.05	0.03	32.50	28.26	0.00	0.00	18.00	16.36	0.04	0.00	0.02 0.00
										----	----	----
										29.46	0.00	16.39 0.95

Phi;e,d	29.46 / 0.95	30.86 [°]
c;e,d	0.00 / 0.95	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	16.39 / 0.95	17.17 [kN/m <sup>3</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.409 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
Som;H;i·X;i													
2	3.800 3.720	0.08	1.35	30.00	26.09	0.00	0.00	18.00	16.36	2.82	0.00	1.77	0.11
3	3.720 3.470	0.25	1.19	35.00	30.43	0.00	0.00	19.00	17.27	9.02	0.00	5.12	0.30
4	3.470 2.970	0.50	0.81	37.50	32.61	0.00	0.00	19.00	17.27	13.22	0.00	7.00	0.41
5	2.970 2.470	0.50	0.31	35.00	30.43	0.00	0.00	19.00	17.27	4.73	0.00	2.68	0.16
6	2.470 2.409	0.06	0.03	32.50	28.26	0.00	0.00	18.00	16.36	0.05	0.00	0.03	0.00
										29.84	0.00	16.61	0.97

Phi;e,d	29.84 / 0.97	30.86 [°]
c;e,d	0.00 / 0.97	0.00 [kN/m²]
Gamma;e,d	16.61 / 0.97	17.17 [kN/m²]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.371 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
Som;H;i·X;i													
2	3.800 3.720	0.08	1.39	30.00	26.09	0.00	0.00	18.00	16.36	2.90	0.00	1.82	0.11
3	3.720 3.470	0.25	1.22	35.00	30.43	0.00	0.00	19.00	17.27	9.32	0.00	5.29	0.31
4	3.470 2.970	0.50	0.85	37.50	32.61	0.00	0.00	19.00	17.27	13.85	0.00	7.33	0.42
5	2.970 2.470	0.50	0.35	35.00	30.43	0.00	0.00	19.00	17.27	5.32	0.00	3.02	0.17
6	2.470 2.371	0.10	0.05	32.50	28.26	0.00	0.00	18.00	16.36	0.14	0.00	0.08	0.00
										31.52	0.00	17.54	1.02

Phi;e,d	31.52 / 1.02	30.85 [°]
c;e,d	0.00 / 1.02	0.00 [kN/m²]
Gamma;e,d	17.54 / 1.02	17.17 [kN/m²]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.345 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
Som;H;i·X;i													
2	3.800 3.720	0.08	1.41	30.00	26.09	0.00	0.00	18.00	16.36	2.95	0.00	1.85	0.11
3	3.720 3.470	0.25	1.25	35.00	30.43	0.00	0.00	19.00	17.27	9.51	0.00	5.40	0.31
4	3.470 2.970	0.50	0.87	37.50	32.61	0.00	0.00	19.00	17.27	14.26	0.00	7.55	0.44
5	2.970 2.470	0.50	0.37	35.00	30.43	0.00	0.00	19.00	17.27	5.70	0.00	3.24	0.19
6	2.470 2.345	0.12	0.06	32.50	28.26	0.00	0.00	18.00	16.36	0.22	0.00	0.13	0.01
										32.64	0.00	18.16	1.06

Phi;e,d	32.64 / 1.06	30.85 [°]
c;e,d	0.00 / 1.06	0.00 [kN/m²]
Gamma;e,d	18.16 / 1.06	17.17 [kN/m²]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.235 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	1.52	30.00	26.09	0.00	0.00	18.00	16.36	3.18	0.00	2.00 0.12
3	3.720 3.470	0.25	1.36	35.00	30.43	0.00	0.00	19.00	17.27	10.35	0.00	5.87 0.34
4	3.470 2.970	0.50	0.98	37.50	32.61	0.00	0.00	19.00	17.27	16.06	0.00	8.51 0.49
5	2.970 2.470	0.50	0.48	35.00	30.43	0.00	0.00	19.00	17.27	7.38	0.00	4.19 0.24
6	2.470 2.235	0.23	0.12	32.50	28.26	0.00	0.00	18.00	16.36	0.78	0.00	0.45 0.03
										---	---	---
										37.75	0.00	21.01 1.22

Phi;e,d	37.75 / 1.22	30.83 [°]
c;e,d	0.00 / 1.22	0.00 [kN/m²]
Gamma;e,d	21.01 / 1.22	17.16 [kN/m²]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.103 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	1.66	30.00	26.09	0.00	0.00	18.00	16.36	3.46	0.00	2.17 0.13
3	3.720 3.470	0.25	1.49	35.00	30.43	0.00	0.00	19.00	17.27	11.35	0.00	6.44 0.37
4	3.470 2.970	0.50	1.12	37.50	32.61	0.00	0.00	19.00	17.27	18.20	0.00	9.64 0.56
5	2.970 2.470	0.50	0.62	35.00	30.43	0.00	0.00	19.00	17.27	9.38	0.00	5.32 0.31
6	2.470 2.220	0.25	0.24	32.50	28.26	0.00	0.00	18.00	16.36	1.71	0.00	0.99 0.06
7	2.220 2.103	0.12	0.06	30.00	26.09	0.00	0.00	18.00	16.36	0.18	0.00	0.11 0.01
										---	---	---
										44.28	0.00	24.68 1.44

Phi;e,d	44.28 / 1.44	30.77 [°]
c;e,d	0.00 / 1.44	0.00 [kN/m²]
Gamma;e,d	24.68 / 1.44	17.15 [kN/m²]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 1.674 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	2.09	30.00	26.09	0.00	0.00	18.00	16.36	4.35	0.00	2.73 0.17
3	3.720 3.470	0.25	1.92	35.00	30.43	0.00	0.00	19.00	17.27	14.61	0.00	8.29 0.48
4	3.470 2.970	0.50	1.55	37.50	32.61	0.00	0.00	19.00	17.27	25.20	0.00	13.35 0.77
5	2.970 2.470	0.50	1.05	35.00	30.43	0.00	0.00	19.00	17.27	15.91	0.00	9.03 0.52
6	2.470 2.220	0.25	0.67	32.50	28.26	0.00	0.00	18.00	16.36	4.74	0.00	2.74 0.17
7	2.220 1.970	0.25	0.42	30.00	26.09	0.00	0.00	18.00	16.36	2.74	0.00	1.72 0.11
8	1.970 1.720	0.25	0.17	30.00	26.09	0.00	0.00	17.00	15.45	1.11	0.00	0.66 0.04
9	1.720 1.674	0.05	0.02	27.50	23.91	2.50	1.56	21.00	19.09	0.02	0.00	0.02 0.00
										---	---	---
										68.70	0.00	38.55 2.26

Phi;e,d	68.70 / 2.26	30.41 [°]
c;e,d	1.63 / 2.26	0.00 [kN/m²]
Gamma;e,d	38.55 / 2.26	17.06 [kN/m²]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 1.415 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
2	3.800 3.720	0.08	2.34	30.00	26.09	0.00	0.00	18.00	16.36	4.89	0.00	3.07 0.19	
3	3.720 3.470	0.25	2.18	35.00	30.43	0.00	0.00	19.00	17.27	16.59	0.00	9.41 0.54	
4	3.470 2.970	0.50	1.80	37.50	32.61	0.00	0.00	19.00	17.27	29.43	0.00	15.59 0.90	
5	2.970 2.470	0.50	1.30	35.00	30.43	0.00	0.00	19.00	17.27	19.86	0.00	11.27 0.65	
6	2.470 2.220	0.25	0.93	32.50	28.26	0.00	0.00	18.00	16.36	6.57	0.00	3.80 0.23	
7	2.220 1.970	0.25	0.68	30.00	26.09	0.00	0.00	18.00	16.36	4.43	0.00	2.78 0.17	
8	1.970 1.720	0.25	0.43	30.00	26.09	0.00	0.00	17.00	15.45	2.80	0.00	1.66 0.11	
9	1.720 1.470	0.25	0.18	27.50	23.91	2.50	1.56	21.00	19.09	1.08	0.07	0.86 0.04	
10	1.470 1.415	0.05	0.03	30.00	26.09	0.00	0.00	17.00	15.45	0.04	0.00	0.02 0.00	
										-----	-----	-----	-----
										85.68	0.07	48.47	2.84

Phi;e,d	85.68 / 2.84	30.13 [°]
c;e,d	70.25 / 2.84	0.02 [kN/m²]
Gamma;e,d	48.47 / 2.84	17.04 [kN/m³]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -0.332 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
2	3.800 3.720	0.08	4.09	30.00	26.09	0.00	0.00	18.00	16.36	8.54	0.00	5.36 0.33	
3	3.720 3.470	0.25	3.93	35.00	30.43	0.00	0.00	19.00	17.27	29.88	0.00	16.96 0.98	
4	3.470 2.970	0.50	3.55	37.50	32.61	0.00	0.00	19.00	17.27	57.92	0.00	30.68 1.78	
5	2.970 2.470	0.50	3.05	35.00	30.43	0.00	0.00	19.00	17.27	46.45	0.00	26.36 1.53	
6	2.470 2.220	0.25	2.68	32.50	28.26	0.00	0.00	18.00	16.36	18.92	0.00	10.95 0.67	
7	2.220 1.970	0.25	2.43	30.00	26.09	0.00	0.00	18.00	16.36	15.83	0.00	9.93 0.61	
8	1.970 1.720	0.25	2.18	30.00	26.09	0.00	0.00	17.00	15.45	14.20	0.00	8.41 0.54	
9	1.720 1.470	0.25	1.93	27.50	23.91	2.50	1.56	21.00	19.09	11.52	0.75	9.20 0.48	
10	1.470 1.220	0.25	1.68	30.00	26.09	0.00	0.00	17.00	15.45	10.94	0.00	6.48 0.42	
11	1.220 0.970	0.25	1.43	22.50	19.57	13.00	8.12	20.00	18.18	6.98	2.90	6.49 0.36	
12	0.970 0.720	0.25	1.18	22.50	19.57	5.00	3.12	18.00	16.36	5.76	0.92	4.82 0.29	
13	0.720 0.220	0.50	0.80	17.50	15.22	13.00	8.12	19.00	17.27	6.11	3.26	6.93 0.40	
14	0.220 -0.280	0.50	0.30	27.50	23.91	2.50	1.56	21.00	19.09	3.62	0.24	2.89 0.15	
15	-0.280 -0.332	0.05	0.03	30.00	26.09	0.00	0.00	17.00	15.45	0.04	0.00	0.02 0.00	
										-----	-----	-----	-----
										236.71	8.07	145.48	8.54

Phi;e,d	236.71 / 8.54	27.72 [°]
c;e,d	8068.78 / 8.54	0.94 [kN/m²]
Gamma;e,d	145.48 / 8.54	17.04 [kN/m³]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -0.461 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	4.22	30.00	26.09	0.00	0.00	18.00	16.36	8.81	0.00	5.53 0.34
3	3.720 3.470	0.25	4.06	35.00	30.43	0.00	0.00	19.00	17.27	30.86	0.00	17.51 1.01
4	3.470 2.970	0.50	3.68	37.50	32.61	0.00	0.00	19.00	17.27	60.01	0.00	31.79 1.84
5	2.970 2.470	0.50	3.18	35.00	30.43	0.00	0.00	19.00	17.27	48.40	0.00	27.47 1.59

6	2.470	2.220	0.25	2.81	32.50	28.26	0.00	0.00	18.00	16.36	19.82	0.00	11.48	0.70
7	2.220	1.970	0.25	2.56	30.00	26.09	0.00	0.00	18.00	16.36	16.67	0.00	10.45	0.64
8	1.970	1.720	0.25	2.31	30.00	26.09	0.00	0.00	17.00	15.45	15.04	0.00	8.91	0.58
9	1.720	1.470	0.25	2.06	27.50	23.91	2.50	1.56	21.00	19.09	12.29	0.80	9.81	0.51
10	1.470	1.220	0.25	1.81	30.00	26.09	0.00	0.00	17.00	15.45	11.78	0.00	6.98	0.45
11	1.220	0.970	0.25	1.56	22.50	19.57	13.00	8.12	20.00	18.18	7.61	3.16	7.07	0.39
12	0.970	0.720	0.25	1.31	22.50	19.57	5.00	3.12	18.00	16.36	6.39	1.02	5.34	0.33
13	0.720	0.220	0.50	0.93	17.50	15.22	13.00	8.12	19.00	17.27	7.08	3.78	8.04	0.47
14	0.220	-0.280	0.50	0.43	27.50	23.91	2.50	1.56	21.00	19.09	5.15	0.34	4.11	0.22
15	-0.280	-0.461	0.18	0.09	30.00	26.09	0.00	0.00	17.00	15.45	0.43	0.00	0.25	0.02

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250.31    9.10    154.73    9.08

Phi;e,d	250.31 / 9.08	27.58 [°]
c;e,d	9099.40 / 9.08	1.00 [kN/m <sup>2</sup> ]
Gamma;e,d	154.73 / 9.08	17.05 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -0.605 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	4.36	30.00	26.09	0.00	0.00	18.00	16.36	9.11	0.00	5.71 0.35
3	3.720 3.470	0.25	4.20	35.00	30.43	0.00	0.00	19.00	17.27	31.95	0.00	18.13 1.05
4	3.470 2.970	0.50	3.82	37.50	32.61	0.00	0.00	19.00	17.27	62.36	0.00	33.03 1.91
5	2.970 2.470	0.50	3.32	35.00	30.43	0.00	0.00	19.00	17.27	50.59	0.00	28.71 1.66
6	2.470 2.220	0.25	2.95	32.50	28.26	0.00	0.00	18.00	16.36	20.84	0.00	12.07 0.74
7	2.220 1.970	0.25	2.70	30.00	26.09	0.00	0.00	18.00	16.36	17.61	0.00	11.04 0.67
8	1.970 1.720	0.25	2.45	30.00	26.09	0.00	0.00	17.00	15.45	15.98	0.00	9.46 0.61
9	1.720 1.470	0.25	2.20	27.50	23.91	2.50	1.56	21.00	19.09	13.15	0.86	10.50 0.55
10	1.470 1.220	0.25	1.95	30.00	26.09	0.00	0.00	17.00	15.45	12.71	0.00	7.53 0.49
11	1.220 0.970	0.25	1.70	22.50	19.57	13.00	8.12	20.00	18.18	8.31	3.45	7.73 0.42
12	0.970 0.720	0.25	1.45	22.50	19.57	5.00	3.12	18.00	16.36	7.09	1.13	5.93 0.36
13	0.720 0.220	0.50	1.07	17.50	15.22	13.00	8.12	19.00	17.27	8.18	4.37	9.28 0.54
14	0.220 -0.280	0.50	0.57	27.50	23.91	2.50	1.56	21.00	19.09	6.87	0.45	5.49 0.29
15	-0.280 -0.605	0.32	0.16	30.00	26.09	0.00	0.00	17.00	15.45	1.37	0.00	0.81 0.05

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266.13    10.26    165.43    9.70

Phi;e,d	266.13 / 9.70	27.43 [°]
c;e,d	10258.75 / 9.70	1.06 [kN/m <sup>2</sup> ]
Gamma;e,d	165.43 / 9.70	17.05 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -0.735 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	4.50	30.00	26.09	0.00	0.00	18.00	16.36	9.38	0.00	5.88 0.36
3	3.720 3.470	0.25	4.33	35.00	30.43	0.00	0.00	19.00	17.27	32.95	0.00	18.70 1.08
4	3.470 2.970	0.50	3.96	37.50	32.61	0.00	0.00	19.00	17.27	64.49	0.00	34.16 1.98
5	2.970 2.470	0.50	3.46	35.00	30.43	0.00	0.00	19.00	17.27	52.58	0.00	29.84 1.73
6	2.470 2.220	0.25	3.08	32.50	28.26	0.00	0.00	18.00	16.36	21.76	0.00	12.60 0.77
7	2.220 1.970	0.25	2.83	30.00	26.09	0.00	0.00	18.00	16.36	18.46	0.00	11.58 0.71
8	1.970 1.720	0.25	2.58	30.00	26.09	0.00	0.00	17.00	15.45	16.83	0.00	9.97 0.65
9	1.720 1.470	0.25	2.33	27.50	23.91	2.50	1.56	21.00	19.09	13.93	0.91	11.12 0.58
10	1.470 1.220	0.25	2.08	30.00	26.09	0.00	0.00	17.00	15.45	13.57	0.00	8.04 0.52

11	1.220	0.970	0.25	1.83	22.50	19.57	13.00	8.12	20.00	18.18	8.95	3.72	8.32	0.46
12	0.970	0.720	0.25	1.58	22.50	19.57	5.00	3.12	18.00	16.36	7.73	1.23	6.47	0.40
13	0.720	0.220	0.50	1.21	17.50	15.22	13.00	8.12	19.00	17.27	9.17	4.90	10.41	0.60
14	0.220	-0.280	0.50	0.71	27.50	23.91	2.50	1.56	21.00	19.09	8.43	0.55	6.73	0.35
15	-0.280	-0.735	0.46	0.23	30.00	26.09	0.00	0.00	17.00	15.45	2.71	0.00	1.60	0.10
											-----	-----	-----	-----
											280.95	11.31	175.43	10.28

Phi;e,d	280.95 / 10.28	27.32 [°]
c;e,d	11311.06 / 10.28	1.10 [kN/m <sup>2</sup> ]
Gamma;e,d	175.43 / 10.28	17.06 [kN/m <sup>3</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -0.806 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma		
Som;H;i-X;i														
2	3.800 3.720	0.08	4.57	30.00	26.09	0.00	0.00	18.00	16.36	9.53	0.00	5.98	0.37	
3	3.720 3.470	0.25	4.40	35.00	30.43	0.00	0.00	19.00	17.27	33.49	0.00	19.01	1.10	
4	3.470 2.970	0.50	4.03	37.50	32.61	0.00	0.00	19.00	17.27	65.65	0.00	34.77	2.01	
5	2.970 2.470	0.50	3.53	35.00	30.43	0.00	0.00	19.00	17.27	53.66	0.00	30.45	1.76	
6	2.470 2.220	0.25	3.15	32.50	28.26	0.00	0.00	18.00	16.36	22.26	0.00	12.89	0.79	
7	2.220 1.970	0.25	2.90	30.00	26.09	0.00	0.00	18.00	16.36	18.92	0.00	11.87	0.73	
8	1.970 1.720	0.25	2.65	30.00	26.09	0.00	0.00	17.00	15.45	17.29	0.00	10.24	0.66	
9	1.720 1.470	0.25	2.40	27.50	23.91	2.50	1.56	21.00	19.09	14.36	0.94	11.46	0.60	
10	1.470 1.220	0.25	2.15	30.00	26.09	0.00	0.00	17.00	15.45	14.03	0.00	8.31	0.54	
11	1.220 0.970	0.25	1.90	22.50	19.57	13.00	8.12	20.00	18.18	9.30	3.86	8.64	0.48	
12	0.970 0.720	0.25	1.65	22.50	19.57	5.00	3.12	18.00	16.36	8.08	1.29	6.76	0.41	
13	0.720 0.220	0.50	1.28	17.50	15.22	13.00	8.12	19.00	17.27	9.71	5.18	11.02	0.64	
14	0.220 -0.280	0.50	0.78	27.50	23.91	2.50	1.56	21.00	19.09	9.28	0.61	7.41	0.39	
15	-0.280 -0.806	0.53	0.26	30.00	26.09	0.00	0.00	17.00	15.45	3.61	0.00	2.14	0.14	
										-----	-----	-----	-----	
										289.17	11.88	180.95	10.61	

Phi;e,d	289.17 / 10.61	27.26 [°]
c;e,d	11881.18 / 10.61	1.12 [kN/m <sup>2</sup> ]
Gamma;e,d	180.95 / 10.61	17.06 [kN/m <sup>3</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -0.943 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma		
Som;H;i-X;i														
2	3.800 3.720	0.08	4.70	30.00	26.09	0.00	0.00	18.00	16.36	9.81	0.00	6.16	0.38	
3	3.720 3.470	0.25	4.54	35.00	30.43	0.00	0.00	19.00	17.27	34.53	0.00	19.60	1.13	
4	3.470 2.970	0.50	4.16	37.50	32.61	0.00	0.00	19.00	17.27	67.87	0.00	35.95	2.08	
5	2.970 2.470	0.50	3.66	35.00	30.43	0.00	0.00	19.00	17.27	55.74	0.00	31.63	1.83	
6	2.470 2.220	0.25	3.29	32.50	28.26	0.00	0.00	18.00	16.36	23.23	0.00	13.45	0.82	
7	2.220 1.970	0.25	3.04	30.00	26.09	0.00	0.00	18.00	16.36	19.81	0.00	12.43	0.76	
8	1.970 1.720	0.25	2.79	30.00	26.09	0.00	0.00	17.00	15.45	18.18	0.00	10.77	0.70	
9	1.720 1.470	0.25	2.54	27.50	23.91	2.50	1.56	21.00	19.09	15.17	0.99	12.11	0.63	
10	1.470 1.220	0.25	2.29	30.00	26.09	0.00	0.00	17.00	15.45	14.92	0.00	8.84	0.57	
11	1.220 0.970	0.25	2.04	22.50	19.57	13.00	8.12	20.00	18.18	9.97	4.14	9.26	0.51	
12	0.970 0.720	0.25	1.79	22.50	19.57	5.00	3.12	18.00	16.36	8.74	1.40	7.31	0.45	
13	0.720 0.220	0.50	1.41	17.50	15.22	13.00	8.12	19.00	17.27	10.75	5.74	12.20	0.71	
14	0.220 -0.280	0.50	0.91	27.50	23.91	2.50	1.56	21.00	19.09	10.91	0.71	8.71	0.46	

15	-0.280	-0.943	0.66	0.33	30.00	26.09	0.00	0.00	17.00	15.45	5.73	0.00	3.40	0.22
											---	---	---	---
											305.38	12.98	191.83	11.25

Phi;e,d	305.38 / 11.25	27.15 [°]
c;e,d	12980.31 / 11.25	1.15 [kN/m <sup>2</sup> ]
Gamma;e,d	191.83 / 11.25	17.06 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -1.231 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	4.99	30.00	26.09	0.00	0.00	18.00	16.36	10.42	0.00	6.53 0.40
3	3.720 3.470	0.25	4.83	35.00	30.43	0.00	0.00	19.00	17.27	36.72	0.00	20.84 1.21
4	3.470 2.970	0.50	4.45	37.50	32.61	0.00	0.00	19.00	17.27	72.57	0.00	38.44 2.23
5	2.970 2.470	0.50	3.95	35.00	30.43	0.00	0.00	19.00	17.27	60.12	0.00	34.12 1.98
6	2.470 2.220	0.25	3.58	32.50	28.26	0.00	0.00	18.00	16.36	25.26	0.00	14.63 0.89
7	2.220 1.970	0.25	3.33	30.00	26.09	0.00	0.00	18.00	16.36	21.69	0.00	13.60 0.83
8	1.970 1.720	0.25	3.08	30.00	26.09	0.00	0.00	17.00	15.45	20.06	0.00	11.88 0.77
9	1.720 1.470	0.25	2.83	27.50	23.91	2.50	1.56	21.00	19.09	16.89	1.10	13.49 0.71
10	1.470 1.220	0.25	2.58	30.00	26.09	0.00	0.00	17.00	15.45	16.80	0.00	9.95 0.64
11	1.220 0.970	0.25	2.33	22.50	19.57	13.00	8.12	20.00	18.18	11.38	4.72	10.57 0.58
12	0.970 0.720	0.25	2.08	22.50	19.57	5.00	3.12	18.00	16.36	10.15	1.62	8.49 0.52
13	0.720 0.220	0.50	1.70	17.50	15.22	13.00	8.12	19.00	17.27	12.94	6.91	14.69 0.85
14	0.220 -0.280	0.50	1.20	27.50	23.91	2.50	1.56	21.00	19.09	14.36	0.94	11.46 0.60
15	-0.280 -1.231	0.95	0.48	30.00	26.09	0.00	0.00	17.00	15.45	11.79	0.00	6.98 0.45
										----	----	----
										341.13	15.30	215.68 12.65

Phi;e,d	341.13 / 12.65	26.96 [°]
c;e,d	15296.31 / 12.65	1.21 [kN/m <sup>2</sup> ]
Gamma;e,d	215.68 / 12.65	17.04 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -1.631 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	5.39	30.00	26.09	0.00	0.00	18.00	16.36	11.25	0.00	7.06 0.43
3	3.720 3.470	0.25	5.23	35.00	30.43	0.00	0.00	19.00	17.27	39.77	0.00	22.57 1.31
4	3.470 2.970	0.50	4.85	37.50	32.61	0.00	0.00	19.00	17.27	79.10	0.00	41.90 2.43
5	2.970 2.470	0.50	4.35	35.00	30.43	0.00	0.00	19.00	17.27	66.22	0.00	37.58 2.18
6	2.470 2.220	0.25	3.98	32.50	28.26	0.00	0.00	18.00	16.36	28.09	0.00	16.27 0.99
7	2.220 1.970	0.25	3.73	30.00	26.09	0.00	0.00	18.00	16.36	24.30	0.00	15.24 0.93
8	1.970 1.720	0.25	3.48	30.00	26.09	0.00	0.00	17.00	15.45	22.67	0.00	13.43 0.87
9	1.720 1.470	0.25	3.23	27.50	23.91	2.50	1.56	21.00	19.09	19.29	1.26	15.40 0.81
10	1.470 1.220	0.25	2.98	30.00	26.09	0.00	0.00	17.00	15.45	19.41	0.00	11.50 0.74
11	1.220 0.970	0.25	2.73	22.50	19.57	13.00	8.12	20.00	18.18	13.34	5.54	12.39 0.68
12	0.970 0.720	0.25	2.48	22.50	19.57	5.00	3.12	18.00	16.36	12.11	1.93	10.13 0.62
13	0.720 0.220	0.50	2.10	17.50	15.22	13.00	8.12	19.00	17.27	15.99	8.54	18.15 1.05
14	0.220 -0.280	0.50	1.60	27.50	23.91	2.50	1.56	21.00	19.09	19.15	1.25	15.29 0.80
15	-0.280 -1.631	1.35	0.68	30.00	26.09	0.00	0.00	17.00	15.45	23.82	0.00	14.11 0.91
										----	----	----
										394.51	18.52	251.02 14.75

Phi;e,d	394.51 / 14.75	26.75 [°]
c;e,d	18521.25 / 14.75	1.26 [kN/m <sup>2</sup> ]
Gamma;e,d	251.02 / 14.75	17.02 [kN/m <sup>3</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -2.231 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma		
Som;H;i;X;i														
2	3.800 3.720	0.08	5.99	30.00	26.09	0.00	0.00	18.00	16.36	12.50	0.00	7.84	0.48	
3	3.720 3.470	0.25	5.83	35.00	30.43	0.00	0.00	19.00	17.27	44.32	0.00	25.16	1.46	
4	3.470 2.970	0.50	5.45	37.50	32.61	0.00	0.00	19.00	17.27	88.87	0.00	47.07	2.73	
5	2.970 2.470	0.50	4.95	35.00	30.43	0.00	0.00	19.00	17.27	75.33	0.00	42.75	2.48	
6	2.470 2.220	0.25	4.58	32.50	28.26	0.00	0.00	18.00	16.36	32.33	0.00	18.72	1.14	
7	2.220 1.970	0.25	4.33	30.00	26.09	0.00	0.00	18.00	16.36	28.21	0.00	17.70	1.08	
8	1.970 1.720	0.25	4.08	30.00	26.09	0.00	0.00	17.00	15.45	26.58	0.00	15.75	1.02	
9	1.720 1.470	0.25	3.83	27.50	23.91	2.50	1.56	21.00	19.09	22.87	1.49	18.26	0.96	
10	1.470 1.220	0.25	3.58	30.00	26.09	0.00	0.00	17.00	15.45	23.32	0.00	13.81	0.89	
11	1.220 0.970	0.25	3.33	22.50	19.57	13.00	8.12	20.00	18.18	16.27	6.75	15.12	0.83	
12	0.970 0.720	0.25	3.08	22.50	19.57	5.00	3.12	18.00	16.36	15.04	2.40	12.58	0.77	
13	0.720 0.220	0.50	2.70	17.50	15.22	13.00	8.12	19.00	17.27	20.55	10.97	23.32	1.35	
14	0.220 -0.280	0.50	2.20	27.50	23.91	2.50	1.56	21.00	19.09	26.31	1.72	21.00	1.10	
15	-0.280 -2.231	1.95	0.98	30.00	26.09	0.00	0.00	17.00	15.45	49.62	0.00	29.40	1.90	
										----	----	----	----	
										482.12	23.34	308.48	18.18	

Phi;e,d	482.12 / 18.18	26.51 [°]
c;e,d	23341.93 / 18.18	1.28 [kN/m <sup>2</sup> ]
Gamma;e,d	308.48 / 18.18	16.96 [kN/m <sup>3</sup> ]

### KORRELSPANNINGEN SIGMA';V,Z,0,D

Locatie	Diepte	Waarde	Locatie	Diepte
Zonder invloed bovenbelasting		Inclusief invloed bovenbelasting		
Midden sector 1	4.470	4.50	Midden sector 1	4.470
13.20				
Onderzijde 1	4.220	9.00	Onderzijde 1	4.220
17.70				
Midden sector 2	3.970	13.50	Midden sector 2	3.970
22.20				
Onderzijde 2	3.720	18.00	Onderzijde 2	3.720
26.70				
Midden sector 3	3.595	20.38	Midden sector 3	3.595
29.07				
Onderzijde 3	3.470	22.75	Onderzijde 3	3.470
31.45				
Midden sector 4	3.220	27.50	Midden sector 4	3.220
36.20				
Onderzijde 4	2.970	32.25	Onderzijde 4	2.970
40.95				
Midden sector 5	2.720	37.00	Midden sector 5	2.720
45.70				
Onderzijde 5	2.470	41.75	Onderzijde 5	2.470
50.45				
Midden sector 6	2.345	44.00	Midden sector 6	2.345
52.70				
Onderzijde 6	2.220	46.25	Onderzijde 6	2.220
54.95				



Midden sector 7 57.20	2.095	48.50	Midden sector 7	2.095
Onderzijde 7 59.45	1.970	50.75	Onderzijde 7	1.970
Midden sector 8 61.58	1.845	52.88	Midden sector 8	1.845
Onderzijde 8 63.70	1.720	55.00	Onderzijde 8	1.720
Midden sector 9 66.33	1.595	57.63	Midden sector 9	1.595
Onderzijde 9 68.95	1.470	60.25	Onderzijde 9	1.470
Midden sector 10 71.08	1.345	62.38	Midden sector 10	1.345
Onderzijde 10 73.20	1.220	64.50	Onderzijde 10	1.220
Midden sector 11 75.70	1.095	67.00	Midden sector 11	1.095
Onderzijde 11 78.20	0.970	69.50	Onderzijde 11	0.970
Midden sector 12 80.45	0.845	71.75	Midden sector 12	0.845
Onderzijde 12 82.70	0.720	74.00	Onderzijde 12	0.720
Midden sector 13 87.45	0.470	78.75	Midden sector 13	0.470
Onderzijde 13 92.20	0.220	83.50	Onderzijde 13	0.220
Midden sector 14 97.45	-0.030	88.75	Midden sector 14	-0.030
Onderzijde 14 102.70	-0.280	94.00	Onderzijde 14	-0.280
Midden sector 15 145.20	-2.780	136.50	Midden sector 15	-2.780
Onderzijde 15 187.70	-5.280	179.00	Onderzijde 15	-5.280
Midden sector 16 189.95	-5.405	181.25	Midden sector 16	-5.405
Onderzijde 16 192.20	-5.530	183.50	Onderzijde 16	-5.530
Midden sector 17 196.45	-5.780	187.75	Midden sector 17	-5.780
Onderzijde 17 200.70	-6.030	192.00	Onderzijde 17	-6.030
Midden sector 18 202.95	-6.155	194.25	Midden sector 18	-6.155
Onderzijde 18 205.20	-6.280	196.50	Onderzijde 18	-6.280
Midden sector 19 207.45	-6.405	198.75	Midden sector 19	-6.405
Onderzijde 19 209.70	-6.530	201.00	Onderzijde 19	-6.530
Midden sector 20 211.95	-6.655	203.25	Midden sector 20	-6.655
Onderzijde 20 214.20	-6.780	205.50	Onderzijde 20	-6.780
Midden sector 21	-7.655	220.38	Midden sector 21	-7.655

229.08				
Onderzijde 21	-8.530	235.25	Onderzijde 21	-8.530
243.95				
Midden sector 22	-8.655	237.63	Midden sector 22	-8.655
246.33				
Onderzijde 22	-8.780	240.00	Onderzijde 22	-8.780
248.70				
Midden sector 23	-9.155	247.88	Midden sector 23	-9.155
256.57				
Onderzijde 23	-9.530	255.75	Onderzijde 23	-9.530
264.45				
Midden sector 24	-9.655	257.88	Midden sector 24	-9.655
266.57				
Onderzijde 24	-9.780	260.00	Onderzijde 24	-9.780
268.70				
-	m	kN/m <sup>2</sup>	-	m
kN/m <sup>2</sup>				

### lijnlast 1 , 2 (NEN-EN1997-1:2016/NB:2016)

#### GRONDOPBOUW (REGIO : NEN-EN1997-1 TABEL 2.B (GRIND))

Nr.	Naam	Bijmengsel	Consistentie	Van	Tot	Y;c	Y;sat	c'	C;u	Phi'	Delta;Sigma';v,k
1	Zand	Schoon	Matig	4.720	4.220	18.00	20.00	0.00	0.00	32.50	9.00 9.00
2	Grind	Sterk siltig	Los	4.220	3.720	18.00	20.00	0.00	0.00	30.00	9.00 18.00
3	Zand	Schoon	Vast	3.720	3.470	19.00	21.00	0.00	0.00	35.00	4.75 22.75
4	Grind	Zwak siltig	Vast	3.470	2.970	19.00	21.00	0.00	0.00	37.50	9.50 32.25
5	Zand	Schoon	Vast	2.970	2.470	19.00	21.00	0.00	0.00	35.00	9.50 41.75
6	Zand	Schoon	Matig	2.470	2.220	18.00	20.00	0.00	0.00	32.50	4.50 46.25
7	Grind	Sterk siltig	Los	2.220	1.970	18.00	20.00	0.00	0.00	30.00	4.50 50.75
8	Zand	Schoon	Los	1.970	1.720	17.00	19.00	0.00	0.00	30.00	4.25 55.00
9	Leem	Zwak zandig	Vast	1.720	1.470	21.00	21.00	2.50	200.0	27.50	5.25 60.25
10	Zand	Schoon	Los	1.470	1.220	17.00	19.00	0.00	0.00	30.00	4.25 64.50
11	Klei	Zwak zandig	Matig	1.220	0.970	20.00	20.00	13.00	120.0	22.50	5.00 69.50
12	Klei	Zwak zandig	Vast	0.970	0.720	18.00	18.00	5.00	80.00	22.50	4.50 74.00
13	Klei	Schoon	Vast	0.720	0.220	19.00	19.00	13.00	100.0	17.50	9.50 83.50
14	Leem	Zwak zandig	Vast	0.220	-0.280	21.00	21.00	2.50	200.0	27.50	10.50 94.00
15	Zand	Schoon	Los	-0.280	-5.280	17.00	19.00	0.00	0.00	30.00	85.00
16	Zand	Sterk siltig, kleiig	-	-5.280	-5.530	18.00	20.00	0.00	0.00	25.00	4.50
17	Zand	Schoon	Los	-5.530	-6.030	17.00	19.00	0.00	0.00	30.00	8.50
18	Zand	Sterk siltig, kleiig	-	-6.030	-6.280	18.00	20.00	0.00	0.00	25.00	4.50
19	Grind	Sterk siltig	Los	-6.280	-6.530	18.00	20.00	0.00	0.00	30.00	4.50
20	Zand	Sterk siltig, kleiig	-	-6.530	-6.780	18.00	20.00	0.00	0.00	25.00	4.50
21	Zand	Schoon	Los	-6.780	-8.530	17.00	19.00	0.00	0.00	30.00	29.75
22	Klei	Schoon	Vast	-8.530	-8.780	19.00	19.00	13.00	100.0	17.50	4.75
23	Leem	Zwak zandig	Vast	-8.780	-9.530	21.00	21.00	2.50	200.0	27.50	15.75

255.75

24	Zand	Schoon	Los	-9.530	-9.780	17.00	19.00	0.00	0.00	30.00	4.25
260.00											
-	-	-	-	m	m	kN/m <sup>3</sup>	kN/m <sup>3</sup>	kN/m <sup>2</sup>	kN/m <sup>2</sup>	°	kN/m

### ALGEMENE GEGEVENS

Breedte	0.800	[m]
Lengte	8.000	[m]
Diepte	3.800	[m]
Minimum dekking	0.150	[m]
Ontgravingsdiepte (eenzijdig)	3.950	[m]

### SONDEERDIAGRAM

Sondeerdiagram	82763_DKM002.GEF
Maaiveldniveau	4.720 [m]
Grondwaterniveau	-10.000 [m]
Geotechnische categorie	GC2

### BELASTING

Excentriciteit (#5.2.1)	e;B	0.12
Excentriciteit	e;L	0.00

#### Uiterste Grenstoestand

[kN/m]	q;s,v,d	68.30	[kN/m]
[kN/m]	q;s,h,d	0.00	[kN/m]
[kN/m]	p;sur,d	8.70	[kN/m]

#### Bruikbaarheidsgrenstoestand

[kN/m]	q;s,v,d	60.40
[kN/m]	q;s,h,d	0.00
[kN/m]	p;sur,d	7.20

### TOETSING GRENSTOESTANDEN 1A, 1B EN 2

Ongedraineerde situatie	NEN-EN1997-1#6.5.2.2(f)
Gedraineerde situatie	NEN-EN1997-1#6.5.2.2(i)
Zakking bovenzijde funderingselement	NEN-EN1997-1#6.6.2

### GRENSTOESTAND 1A: MAX DRAAGVERMOGEN NEN-EN1997-1:2016 #6.5.2.2(R)

Ongedraineerde situatie vlgs #5.2.2.1 geval c  
Doorponsen bij gelaagde grond; 8° spreiding

Nr.	z	B;z	L;z	Sigma';v,z,0,d	C;u,d	S;c	I;c	Sigma';max,d	F;r,v,d	F;v,d opm
9	1.720	1.139	8.585	41.14	148.15	1.03	1.00	823.06	937.18	99.05 -
11	1.220	1.279	8.725	50.64	88.89	1.03	1.00	521.07	666.55	106.65 -
12	0.970	1.349	8.795	55.64	59.26	1.03	1.00	369.68	498.86	110.65 -
13	0.720	1.420	8.866	60.14	74.07	1.03	1.00	453.20	643.42	114.25 -
14	0.220	1.560	9.006	69.64	148.15	1.03	1.00	857.75	1338.32	121.85 -
22	-8.530	4.020	11.466	221.39	74.07	1.07	1.00	628.95	2528.23	243.25 -
23	-8.780	4.090	11.536	226.14	148.15	1.07	1.00	1041.87	4261.26	247.05 -
-	m	m	m	kN/m <sup>2</sup>	kN/m <sup>2</sup>	-	-	kN/m <sup>2</sup>	kN/m	kN/m -

Invloed ontgraving verwerkt met belastingfactor 1.00

In alle lagen wordt voldaan aan de ponstoetsing

### GRENSTOESTAND 1A: MAX DRAAGVERMOGEN NEN-EN1997-1:2016 #6.5.2.2

Gedraineerde situatie #6.5.2.2 geval c

Invloedsgebied loopt van 3.800 tot 2.904 m

Gewogen parameters #6.5.2.2	Phi;e,d	30.55	[°]
(1A)	c;e,d	0.00	[kN/m <sup>2</sup> ]
(1A)	Y;e,d	17.12	[kN/m <sup>2</sup> ]

Invloed ontgraving verwerkt met belastingfactor 1.00

Sigma';v,z,0,d	z= 3.800 m	2.70	[kN/m <sup>2</sup> ]
xB	0.00*(0.000+0.920)/68.30	0.000	[m]

B';z	0.800-2* 0.123+0.000	0.554 [m]
L';z	8.000-2* 0.000+0.000	8.000 [m]
N;q		19.59 [-]
N;c		31.49 [-]
N;Gamma		21.94 [-]
i;q	$(1-0.7*0.00/(68.30+0.00))^3$	1.00 [-]
i;c	$(1.00*19.59-1)/(19.59-1)$	1.00 [-]
i;Gamma	$(1-1.0*0.00/(68.30+0.00))^3$	1.00 [-]
s;q	$(1+0.554/8.000*0.53)$	1.04 [-]
s;c	$(1.04*19.59-1)/(19.59-1)$	1.04 [-]
s;Gamma	$1-0.30*0.554/8.000$	0.98 [-]
Sigma;max,d	0.00+54.75+101.86	156.61 [kN/m <sup>2</sup> ]
F;r,v,d	0.554*156.61	86.76 [kN/m]
F;s,v,d <= F;r,v,d	68.30 <= 86.76	0.79 [-]

Aan de eis in gedraineerde toestand is voldaan

### GRENSTOESTAND 1A: MAX DRAAGVERMOGEN NEN-EN1997-1:2016 #6.5.2.2(R)

Gedraineerde situatie #6.5.2.2 geval c

Doorponsen bij gelaagde grond; 8° spreiding

Nr.	z	B;z	L;z	Sigma;v,z,0,d	Phi';e,d	c';e,d	Gamma';e,d	Sigma';max,d	F;r,v,d	F;v,d opm
7	2.220	0.998	8.444	32.39	30.85	0.00	17.17	887.13	8.85e+02	92.05 -
8	1.970	1.068	8.514	36.89	30.86	0.00	17.17	1000.15	1.07e+03	95.65 -
9	1.720	1.139	8.585	41.14	30.86	0.00	17.17	1107.94	1.26e+03	99.05 -
10	1.470	1.209	8.655	46.39	30.85	0.00	17.17	1237.80	1.50e+03	103.25 -
11	1.220	1.279	8.725	50.64	30.85	0.00	17.17	1346.19	1.72e+03	106.65 -
12	0.970	1.349	8.795	55.64	30.83	0.00	17.16	1467.16	1.98e+03	110.65 -
13	0.720	1.420	8.866	60.14	30.77	0.00	17.15	1569.95	2.23e+03	114.25 -
14	0.220	1.560	9.006	69.64	30.41	0.00	17.06	1730.89	2.70e+03	121.85 -
15	-0.280	1.701	9.147	80.14	30.13	0.02	17.04	1918.01	3.26e+03	130.25 -
16	-5.280	3.106	10.552	165.14	27.72	0.94	17.04	3044.72	9.46e+03	198.25 -
17	-5.530	3.176	10.622	169.64	27.58	1.00	17.05	3079.64	9.78e+03	201.85 -
18	-6.030	3.317	10.763	178.14	27.43	1.06	17.05	3187.16	1.06e+04	208.65 -
19	-6.280	3.387	10.833	182.64	27.32	1.10	17.06	3226.38	1.09e+04	212.25 -
20	-6.530	3.458	10.904	187.14	27.26	1.12	17.06	3286.09	1.14e+04	215.85 -
21	-6.780	3.528	10.974	191.64	27.15	1.15	17.06	3327.03	1.17e+04	219.45 -
22	-8.530	4.020	11.466	221.39	26.96	1.21	17.04	3783.86	1.52e+04	243.25 -
23	-8.780	4.090	11.536	226.14	26.75	1.26	17.02	3773.30	1.54e+04	247.05 -
24	-9.530	4.301	11.747	241.89	26.51	1.28	16.96	3933.35	1.69e+04	259.65 -
-	m	m	m	kN/m <sup>2</sup>	°	kN/m <sup>2</sup>	kN/m <sup>2</sup>	kN/m <sup>2</sup>	kN/m	kN/m -

Invloed ontgraving verwerkt met belastingfactor 1.00

In alle lagen wordt voldaan aan de ponstoetsing

### GRENSTOESTAND 2: ZAKKING VLGS NEN-EN 1997-1:2016 #6.6.2

Tgv momentane belastingcombinatie

(NEN-EN1990:2007 #6.5.3c)

Spanningstoename vlgs NEN-EN 1997-1:2016 #6.6.2

i	Nr.	H;i	Z;mid	e	Sigma';v,mid,z,0,d	Delta Sigma';v,mid,z,d	w;1,d	w;2,d	Som w;1,d	Som w;2,d
			3.800				109.03			
	Aanleg									
	1	2	0.080	3.760	0.65	17.28	102.02	0.0002	0.0000	0.0002
										0.0000
	2	3	0.250	3.595	0.50	20.38	91.54	0.0003	0.0000	0.0005
										0.0000
	3	4	0.500	3.220	0.50	27.50	51.87	0.0003	0.0000	0.0008
										0.0000

0.0008											
4	5	0.500	2.720	0.50	37.00	27.55	0.0002	0.0000	0.0010	0.0000	
0.0010											
5	6	0.250	2.345	0.65	44.00	19.07	0.0001	0.0000	0.0011	0.0000	
0.0011											
6	7	0.250	2.095	0.65	48.50	15.34	0.0001	0.0000	0.0012	0.0000	
0.0012											
7	8	0.250	1.845	0.83	52.88	12.48	0.0001	0.0000	0.0013	0.0000	
0.0013											
8	9	0.250	1.595		57.63	10.23	< 20%				
-	-										
		<b>m</b>	<b>m</b>	<b>-</b>	<b>kN/m<sup>2</sup></b>	<b>kN/m<sup>2</sup></b>	<b>m</b>	<b>m</b>	<b>m</b>	<b>m</b>	<b>m</b>
									-----	-----	
									-----	-----	
Zetting na 10000 dagen									0.0013	0.0000	
0.0013											

Invloed bovenbelasting verwerkt met factor 1.00  
 Invloed ontgraving verwerkt met belastingfactor 1.00

Aan zettingseis uit NEN-EN1997-1:2016 #2.4.8 is voldaan

### Lijnlast 3 , 4 (NEN-EN1997-1:2016/NB:2016)

#### SONDERINGSDIAGRAMMEN

Sondeerdiagram	Maaiveldniveau	Grondwaterniveau
82763_DKM001.GEF	4.640	-10.000
82763_DKM002.GEF	4.720	-10.000
-	<b>m</b>	<b>m</b>

#### ALGEMENE GEGEVENS

Minimum dekking	0.150 [m]
Minimale strookbreedte	0.600 [m]
Maximale strookbreedte	0.600 [m]
Lengte van de strook	8.000 [m]
Minimale diepte	3.800 [m]
Maximale diepte	2.800 [m]

#### BELASTING

Excentriciteit (#5.2.1)	e;B	0.00
Excentriciteit	e;L	0.00

#### Uiterste Grenstoestand

	q;s,v,d	34.20 [kN/m]	Bruikbaarheidsgrenstoestand	q;s,v,d	29.90
[kN/m]					
	q;s,h,d	0.00 [kN/m]	q;s,h,d	0.00	
[kN/m]					
	p;sur,d	8.70 [kN/m]	p;sur,d	7.20	
[kN/m]					

#### TOETSING GRENSTOESTANDEN 1A, 1B EN 2

Ongedraineerde situatie	NEN-EN1997-1#6.5.2.2(f)
Gedraineerde situatie	NEN-EN1997-1#6.5.2.2(i)
Zakking bovenzijde funderingselement	NEN-EN1997-1#6.6.2

## OVERZICHT ZETTINGEN GRENSTOESTAND 2

82763\_DKM001.GEF

Diepte

Breedte

	0.600
3.800	0.7
3.600	0.4
3.400	0.2
3.200	0.2
3.000	0.2
2.800	0.1
<b>m</b>	<b>mm</b>

82763\_DKM002.GEF

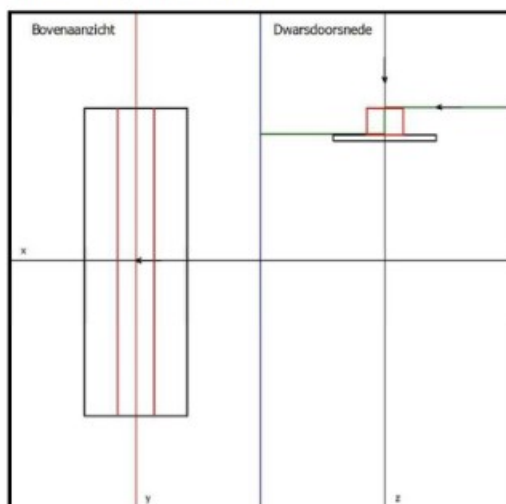
Diepte

Breedte

	0.600
3.800	0.6
3.600	0.4
3.400	0.3
3.200	0.2
3.000	0.2
2.800	0.1
<b>m</b>	<b>mm</b>

Opm: \*\*\*\* duidt erop dat de belasting niet opneembaar is

### LIJNLAST 3 , 4 TEKENING



### Lijnlast 3 , 4 (NEN-EN1997-1:2016/NB:2016)

### BEREKENING GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(M)

Phi		30.0 [°]
te	(5.2.1 figuur 5b)	0.960 [m]
ae	(5.2.1 figuur 5b)	4.500 [m]

Sector	Y;c	Y;c,rev	Y;sat	Y;sat,rev	C;u	C;u,corr
4	18.00	18.00	20.00	20.00	0.00	0.00
5	19.00	19.00	21.00	21.00	0.00	0.00
6	19.00	19.00	21.00	21.00	0.00	0.00

7	19.00	19.00	21.00	21.00	0.00	0.00
8	18.00	18.00	20.00	20.00	0.00	0.00
9	18.00	18.00	20.00	20.00	0.00	0.00
10	18.00	18.00	20.00	20.00	0.00	0.00
11	17.00	17.00	19.00	19.00	0.00	0.00
12	21.00	21.00	21.00	21.00	200.00	200.00
13	17.00	17.00	19.00	19.00	0.00	0.00
14	21.00	21.00	21.00	21.00	200.00	200.00
15	17.00	17.00	19.00	19.00	0.00	0.00
-	kN/m <sup>2</sup>	kN/m <sup>2</sup>	kN/m <sup>2</sup>	kN/m <sup>2</sup>	kN/m <sup>2</sup>	kN/m <sup>2</sup>

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.855 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
4	3.800 3.640	0.16	0.86	30.00	26.09	0.00	0.00	18.00	16.36	3.61	0.00	2.26 0.14
5	3.640 3.390	0.25	0.66	35.00	30.43	0.00	0.00	19.00	17.27	5.02	0.00	2.85 0.16
6	3.390 2.855	0.53	0.27	37.50	32.61	0.00	0.00	19.00	17.27	4.66	0.00	2.47 0.14
										-----	-----	-----
										13.28	0.00	7.58 0.45

Phi;e,d	13.28 / 0.45	29.78 [°]
c;e,d	0.00 / 0.45	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	7.58 / 0.45	16.99 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.177 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
4	3.800 3.640	0.16	1.54	30.00	26.09	0.00	0.00	18.00	16.36	6.44	0.00	4.04 0.25
5	3.640 3.390	0.25	1.34	35.00	30.43	0.00	0.00	19.00	17.27	10.18	0.00	5.78 0.33
6	3.390 2.177	1.21	0.61	37.50	32.61	0.00	0.00	19.00	17.27	24.01	0.00	12.72 0.74
										-----	-----	-----
										40.63	0.00	22.54 1.32

Phi;e,d	40.63 / 1.32	30.83 [°]
c;e,d	0.00 / 1.32	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	22.54 / 1.32	17.10 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.032 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
4	3.800 3.640	0.16	1.69	30.00	26.09	0.00	0.00	18.00	16.36	7.04	0.00	4.42 0.27
5	3.640 3.390	0.25	1.48	35.00	30.43	0.00	0.00	19.00	17.27	11.28	0.00	6.40 0.37
6	3.390 2.140	1.25	0.73	37.50	32.61	0.00	0.00	19.00	17.27	29.87	0.00	15.82 0.92
7	2.140 2.032	0.11	0.05	35.00	30.43	0.00	0.00	19.00	17.27	0.18	0.00	0.10 0.01
										-----	-----	-----
										48.37	0.00	26.74 1.56

Phi;e,d	48.37 / 1.56	30.96 [°]
c;e,d	0.00 / 1.56	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	26.74 / 1.56	17.12 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 1.899 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
Som;H;i·X;i													
4	3.800 3.640	0.16	1.82	30.00	26.09	0.00	0.00	18.00	16.36	7.60	0.00	4.77 0.29	
5	3.640 3.390	0.25	1.62	35.00	30.43	0.00	0.00	19.00	17.27	12.30	0.00	6.98 0.40	
6	3.390 2.140	1.25	0.87	37.50	32.61	0.00	0.00	19.00	17.27	35.32	0.00	18.71 1.08	
7	2.140 1.899	0.24	0.12	35.00	30.43	0.00	0.00	19.00	17.27	0.89	0.00	0.50 0.03	
										----	----	----	----
										56.11	0.00	30.96	1.81

Phi;e,d	56.11 / 1.81	31.04 [°]
c;e,d	0.00 / 1.81	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	30.96 / 1.81	17.13 [kN/m <sup>3</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 1.815 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
Som;H;i·X;i													
4	3.800 3.640	0.16	1.91	30.00	26.09	0.00	0.00	18.00	16.36	7.95	0.00	4.99 0.30	
5	3.640 3.390	0.25	1.70	35.00	30.43	0.00	0.00	19.00	17.27	12.94	0.00	7.34 0.43	
6	3.390 2.140	1.25	0.95	37.50	32.61	0.00	0.00	19.00	17.27	38.73	0.00	20.51 1.19	
7	2.140 1.890	0.25	0.20	35.00	30.43	0.00	0.00	19.00	17.27	1.52	0.00	0.86 0.05	
8	1.890 1.815	0.08	0.04	32.50	28.26	0.00	0.00	18.00	16.36	0.08	0.00	0.05 0.00	
										----	----	----	----
										61.22	0.00	33.75	1.97

Phi;c,d	61.22 / 1.97	31.07 [°]
c;e,d	0.00 / 1.97	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	33.75 / 1.97	17.13 [kN/m <sup>3</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 1.319 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
Som;H;i·X;i													
4	3.800 3.640	0.16	2.40	30.00	26.09	0.00	0.00	18.00	16.36	10.02	0.00	6.29 0.38	
5	3.640 3.390	0.25	2.20	35.00	30.43	0.00	0.00	19.00	17.27	16.71	0.00	9.48 0.55	
6	3.390 2.140	1.25	1.45	37.50	32.61	0.00	0.00	19.00	17.27	58.93	0.00	31.22 1.81	
7	2.140 1.890	0.25	0.70	35.00	30.43	0.00	0.00	19.00	17.27	5.29	0.00	3.00 0.17	
8	1.890 1.640	0.25	0.45	32.50	28.26	0.00	0.00	18.00	16.36	3.15	0.00	1.82 0.11	
9	1.640 1.319	0.32	0.16	30.00	26.09	0.00	0.00	18.00	16.36	1.34	0.00	0.84 0.05	
										----	----	----	----
										95.45	0.00	52.66	3.08

Phi;e,d	95.45 / 3.08	31.02 [°]
c;e,d	0.00 / 3.08	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	52.66 / 3.08	17.11 [kN/m <sup>3</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -2.000 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
--------	-------	-----	-----	-------	-------	----	------	--------	----------	---------	-------	-----------



**Som;H;i·X;i**

4	3.800	3.640	0.16	5.72	30.00	26.09	0.00	0.00	18.00	16.36	23.88	0.00	14.98	0.92
5	3.640	3.390	0.25	5.52	35.00	30.43	0.00	0.00	19.00	17.27	41.96	0.00	23.82	1.38
6	3.390	2.140	1.25	4.77	37.50	32.61	0.00	0.00	19.00	17.27	194.23	0.00	102.88	5.96
7	2.140	1.890	0.25	4.02	35.00	30.43	0.00	0.00	19.00	17.27	30.55	0.00	17.34	1.00
8	1.890	1.640	0.25	3.77	32.50	28.26	0.00	0.00	18.00	16.36	26.60	0.00	15.40	0.94
9	1.640	1.140	0.50	3.39	30.00	26.09	0.00	0.00	18.00	16.36	44.22	0.00	27.74	1.70
10	1.140	0.890	0.25	3.02	25.00	21.74	0.00	0.00	18.00	16.36	16.39	0.00	12.33	0.75
11	0.890	0.640	0.25	2.77	30.00	26.09	0.00	0.00	17.00	15.45	18.03	0.00	10.68	0.69
12	0.640	-0.360	1.00	2.14	27.50	23.91	2.50	1.56	21.00	19.09	51.18	3.34	40.86	2.14
13	-0.360	-2.000	1.64	0.82	30.00	26.09	0.00	0.00	17.00	15.45	35.09	0.00	20.79	1.35

-----  
482.12    3.34    286.81    16.82

Phi;e,d	482.12 / 16.82	28.66 [°]
c;e,d	3343.94 / 16.82	0.20 [kN/m <sup>2</sup> ]
Gamma;e,d	286.81 / 16.82	17.05 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -2.327 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
4	3.800 3.640	0.16	6.05	30.00	26.09	0.00	0.00	18.00	16.36	25.24	0.00	15.83	0.97
5	3.640 3.390	0.25	5.84	35.00	30.43	0.00	0.00	19.00	17.27	44.45	0.00	25.22	1.46
6	3.390 2.140	1.25	5.09	37.50	32.61	0.00	0.00	19.00	17.27	207.54	0.00	109.93	6.36
7	2.140 1.890	0.25	4.34	35.00	30.43	0.00	0.00	19.00	17.27	33.03	0.00	18.75	1.09
8	1.890 1.640	0.25	4.09	32.50	28.26	0.00	0.00	18.00	16.36	28.91	0.00	16.74	1.02
9	1.640 1.140	0.50	3.72	30.00	26.09	0.00	0.00	18.00	16.36	48.48	0.00	30.41	1.86
10	1.140 0.890	0.25	3.34	25.00	21.74	0.00	0.00	18.00	16.36	18.16	0.00	13.67	0.84
11	0.890 0.640	0.25	3.09	30.00	26.09	0.00	0.00	17.00	15.45	20.16	0.00	11.94	0.77
12	0.640 -0.360	1.00	2.47	27.50	23.91	2.50	1.56	21.00	19.09	58.98	3.85	47.09	2.47
13	-0.360 -2.327	1.97	0.98	30.00	26.09	0.00	0.00	17.00	15.45	50.44	0.00	29.88	1.93
										-----	-----	-----	-----
										535.38	3.85	319.47	18.77

Phi;e,d	535.38 / 18.77	28.53 [°]
c;e,d	3853.96 / 18.77	0.21 [kN/m <sup>2</sup> ]
Gamma;e,d	319.47 / 18.77	17.02 [kN/m <sup>2</sup> ]

### KORRELSPANNINGEN SIGMA';V,Z,0,D

Locatie	Diepte	Waarde	Locatie	Diepte
Zonder invloed bovenbelasting		Inclusief invloed bovenbelasting		
Midden sector 1	4.515	2.25	Midden sector 1	4.515
10.95				
Onderzijde 1	4.390	4.50	Onderzijde 1	4.390
13.20				
Midden sector 2	4.265	6.75	Midden sector 2	4.265
15.45				
Onderzijde 2	4.140	9.00	Onderzijde 2	4.140
17.70				
Midden sector 3	4.015	11.25	Midden sector 3	4.015
19.95				
Onderzijde 3	3.890	13.50	Onderzijde 3	3.890
22.20				
Midden sector 4	3.765	15.75	Midden sector 4	3.765

24.45				
Onderzijde 4	3.640	18.00	Onderzijde 4	3.640
26.70				
Midden sector 5	3.515	20.38	Midden sector 5	3.515
29.07				
Onderzijde 5	3.390	22.75	Onderzijde 5	3.390
31.45				
Midden sector 6	2.765	34.63	Midden sector 6	2.765
43.33				
Onderzijde 6	2.140	46.50	Onderzijde 6	2.140
55.20				
Midden sector 7	2.015	48.88	Midden sector 7	2.015
57.58				
Onderzijde 7	1.890	51.25	Onderzijde 7	1.890
59.95				
Midden sector 8	1.765	53.50	Midden sector 8	1.765
62.20				
Onderzijde 8	1.640	55.75	Onderzijde 8	1.640
64.45				
Midden sector 9	1.390	60.25	Midden sector 9	1.390
68.95				
Onderzijde 9	1.140	64.75	Onderzijde 9	1.140
73.45				
Midden sector 10	1.015	67.00	Midden sector 10	1.015
75.70				
Onderzijde 10	0.890	69.25	Onderzijde 10	0.890
77.95				
Midden sector 11	0.765	71.38	Midden sector 11	0.765
80.08				
Onderzijde 11	0.640	73.50	Onderzijde 11	0.640
82.20				
Midden sector 12	0.140	84.00	Midden sector 12	0.140
92.70				
Onderzijde 12	-0.360	94.50	Onderzijde 12	-0.360
103.20				
Midden sector 13	-4.860	171.00	Midden sector 13	-4.860
179.70				
Onderzijde 13	-9.360	247.50	Onderzijde 13	-9.360
256.20				
Midden sector 14	-9.485	250.13	Midden sector 14	-9.485
258.82				
Onderzijde 14	-9.610	252.75	Onderzijde 14	-9.610
261.45				
Midden sector 15	-9.735	254.88	Midden sector 15	-9.735
263.57				
Onderzijde 15	-9.860	257.00	Onderzijde 15	-9.860
265.70				
-	<b>m</b>	<b>kN/m<sup>2</sup></b>	-	<b>m</b>
<b>kN/m<sup>2</sup></b>				

**Lijnlast 3 , 4 (NEN-EN1997-1:2016/NB:2016)**
**GRONDOPBOUW (REGIO : NEN-EN1997-1 TABEL 2.B (GRIND))**

Nr.	Naam	Bijmengsel	Consistentie	Van	Tot	Y;c	Y:sat	c'	C;u	Phi'	Delta;Sigma';v,k
1	Zand	Schoon	Matig	4.640	4.390	18.00	20.00	0.00	0.00	32.50	4.50 4.50
2	Grind	Sterk siltig	Los	4.390	4.140	18.00	20.00	0.00	0.00	30.00	4.50 9.00
3	Klei	Sterk zandig	-	4.140	3.890	18.00	18.00	0.00	0.00	27.50	4.50 13.50
4	Grind	Sterk siltig	Los	3.890	3.640	18.00	20.00	0.00	0.00	30.00	4.50 18.00
5	Zand	Schoon	Vast	3.640	3.390	19.00	21.00	0.00	0.00	35.00	4.75 22.75
6	Grind	Zwak siltig	Vast	3.390	2.140	19.00	21.00	0.00	0.00	37.50	23.75 46.50
7	Zand	Schoon	Vast	2.140	1.890	19.00	21.00	0.00	0.00	35.00	4.75 51.25
8	Zand	Schoon	Matig	1.890	1.640	18.00	20.00	0.00	0.00	32.50	4.50 55.75
9	Grind	Sterk siltig	Los	1.640	1.140	18.00	20.00	0.00	0.00	30.00	9.00 64.75
10	Zand	Sterk siltig, kleilig	-	1.140	0.890	18.00	20.00	0.00	0.00	25.00	4.50 69.25
11	Zand	Schoon	Los	0.890	0.640	17.00	19.00	0.00	0.00	30.00	4.25 73.50
12	Leem	Zwak zandig	Vast	0.640	-0.360	21.00	21.00	2.50	200.0	27.50	21.00 94.50
13	Zand	Schoon	Los	-0.360	-9.360	17.00	19.00	0.00	0.00	30.00	153.00
14	Leem	Zwak zandig	Vast	-9.360	-9.610	21.00	21.00	2.50	200.0	27.50	5.25
15	Zand	Schoon	Los	-9.610	-9.860	17.00	19.00	0.00	0.00	30.00	4.25
-	-	-	-	m	m	kN/m <sup>3</sup>	kN/m <sup>3</sup>	kN/m <sup>2</sup>	kN/m <sup>2</sup>	°	kN/m kN/m

**ALGEMENE GEGEVENS**

Breedte	0.600 [m]
Lengte	8.000 [m]
Diepte	3.800 [m]
Minimum dekking	0.150 [m]
Ontgravingsdiepte (eezijdig)	3.950 [m]

**SONDEERDIAGRAM**

Sondeerdiagram	82763_DKM001.GEF
Maaiveldniveau	4.640 [m]
Grondwaterniveau	-10.000 [m]
Geotechnische categorie	GC2

**BELASTING**

Excentriciteit (#5.2.1)	e;B	0.00
Excentriciteit	e;L	0.00

**Uiterste Grenstoestand**

	q;s,v,d	34.20 [kN/m]	Bruikbaarheidsgrenstoestand	q;s,v,d	29.90
[kN/m]	q;s,h,d	0.00 [kN/m]	q;s,h,d	0.00	
[kN/m]	p;sur,d	8.70 [kN/m]	p;sur,d	7.20	
[kN/m]					

**TOETSING GRENSTOESTANDEN 1A, 1B EN 2**

Ongedraineerde situatie	NEN-EN1997-1#6.5.2.2(f)
Gedraineerde situatie	NEN-EN1997-1#6.5.2.2(i)
Zakking bovenzijde funderingselement	NEN-EN1997-1#6.6.2

**GRENSTOESTAND 1A: MAX DRAAGVERMOGEN NEN-EN1997-1:2016 #6.5.2.2(R)**

Ongedraineerde situatie vlgs #5.2.2.1 geval c  
Doorponsen bij gelaagde grond; 8° spreiding

Nr.	z	B;z	L;z	Sigma';v,z,0,d	C;u,d	S;c	I;c	Sigma';max,d	F;r,v,d	F;v,d opm
12	0.640	1.488	8.888	61.08	148.15	1.03	1.00	848.30	1262.46	69.23 -
14	-9.360	4.299	11.699	235.08	148.15	1.07	1.00	1052.78	4525.94	173.63 -
-	m	m	m	kN/m <sup>2</sup>	kN/m <sup>2</sup>	-	-	kN/m <sup>2</sup>	kN/m	kN/m -

Invloed ontgraving verwerkt met belastingfactor 1.00

In alle lagen wordt voldaan aan de ponstoetsing

## GRENSTOESTAND 1A: MAX DRAAGVERMOGEN NEN-EN1997-1:2016 #6.5.2.2

Gedraineerde situatie #6.5.2.2 geval c

Invloedsgebied loopt van 3.800 tot 2.855 m

Gewogen parameters #6.5.2.2	Phi';e,d	29.78	[°]
(1A)	c';e,d	0.00	[kN/m <sup>2</sup> ]
(1A)	Y';e,d	16.99	[kN/m <sup>2</sup> ]

Invloed ontgraving verwerkt met belastingfactor 1.00

Sigma';v,z,0,d	z= 3.800 m	2.70	[kN/m <sup>2</sup> ]
xB	0.00*(0.000+0.840)/34.20	0.000	[m]
B';z	0.600-2* 0.000+0.000	0.600	[m]
L';z	8.000-2* 0.000+0.000	8.000	[m]
N;q		17.95	[-]
N;c		29.62	[-]
N;Gamma		19.41	[-]
i;q	(1-0.7*0.00/(34.20+0.00))^3	1.00	[-]
i;c	(1.00*17.95-1)/(17.95-1)	1.00	[-]
i;Gamma	(1-1.0*0.00/(34.20+0.00))^3	1.00	[-]
s;q	(1+0.600/8.000*0.52)	1.04	[-]
s;c	(1.04*17.95-1)/(17.95-1)	1.04	[-]
s;Gamma	1-0.30*0.600/8.000	0.98	[-]
Sigma';max,d	0.00+50.28+96.69	146.97	[kN/m <sup>2</sup> ]

F;r,v,d	0.600*146.97	88.18	[kN/m]
F;s,v,d <= F;r,v,d	34.20 <= 88.18	0.39	[-]

Aan de eis in gedraineerde toestand is voldaan

## GRENSTOESTAND 1A: MAX DRAAGVERMOGEN NEN-EN1997-1:2016 #6.5.2.2(R)

Gedraineerde situatie #6.5.2.2 geval c

Doorponsen bij gelaagde grond; 8° spreiding

Nr.	z	B;z	L;z	Sigma';v,z,0,d	Phi';e,d	c';e,d	Gamma';e,d	Sigma';max,d	F;r,v,d	F;v,d opm
9	1.640	1.207	8.607	43.33	30.83	0.00	17.10	1167.25	1.41e+03	58.58 -
10	1.140	1.348	8.748	52.33	30.96	0.00	17.12	1417.24	1.91e+03	63.98 -
11	0.890	1.418	8.818	56.83	31.04	0.00	17.13	1549.20	2.20e+03	66.68 -
12	0.640	1.488	8.888	61.08	31.07	0.00	17.13	1668.84	2.48e+03	69.23 -
13	-0.360	1.769	9.169	82.08	31.02	0.00	17.11	2202.84	3.90e+03	81.83 -
14	-9.360	4.299	11.699	235.08	28.66	0.20	17.05	4914.56	2.11e+04	173.63 -
15	-9.610	4.369	11.769	240.33	28.53	0.21	17.02	4945.64	2.16e+04	176.78 -
-	m	m	m	kN/m <sup>2</sup>	°	kN/m <sup>2</sup>	kN/m <sup>3</sup>	kN/m <sup>2</sup>	kN/m	kN/m -

Invloed ontgraving verwerkt met belastingfactor 1.00

In alle lagen wordt voldaan aan de ponstoetsing

## GRENSTOESTAND 2: ZAKKING VLGS NEN-EN 1997-1:2016 #6.6.2

Tgv momentane belastingcombinatie

(NEN-EN1990:2007 #6.5.3c)

Spanningstoename vlgs NEN-EN 1997-1:2016 #6.6.2

i	Nr.	H;i	Z;mid	e	Sigma';v,mid,z,0,d	Delta Sigma';v,mid,z,d	w;1,d	w;2,d	Som w;1,d	Som w;2,d
Som w;d			3.800			49.83				
Aanleg			3.800			49.83				
1	4	0.160	3.720	0.65	16.56	44.25	0.0003	0.0000	0.0003	0.0000
0.0003										
2	5	0.250	3.515	0.50	20.38	36.49	0.0002	0.0000	0.0005	0.0000
0.0005										

3	6	1.250	2.765	0.50	34.63	12.28	0.0002	0.0000	0.0007	0.0000
0.0007										
4	7	0.250	2.015		48.88	5.15	< 20%			
-	-	m	m	-	kN/m <sup>2</sup>	kN/m <sup>2</sup>	m	m	m	m m
									-----	-----
									-----	-----
Zetting na 10000 dagen									0.0007	0.0000
0.0007										

Invloed bovenbelasting verwerkt met factor 1.00  
 Invloed ontgraving verwerkt met belastingfactor 1.00

Aan zettingseis uit NEN-EN1997-1:2016 #2.4.8 is voldaan

### Lijnlast 3 , 4 (NEN-EN1997-1:2016/NB:2016)

#### BEREKENING GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(M)

Phi		30.0 [°]
te	(5.2.1 figuur 5b)	0.960 [m]
ae	(5.2.1 figuur 5b)	4.500 [m]

Sector	Y;c	Y;c,rev	Y;sat	Y;sat,rev	C;u	C;u,corr
2	18.00	18.00	20.00	20.00	0.00	0.00
3	19.00	19.00	21.00	21.00	0.00	0.00
4	19.00	19.00	21.00	21.00	0.00	0.00
5	19.00	19.00	21.00	21.00	0.00	0.00
6	18.00	18.00	20.00	20.00	0.00	0.00
7	18.00	18.00	20.00	20.00	0.00	0.00
8	17.00	17.00	19.00	19.00	0.00	0.00
9	21.00	21.00	21.00	21.00	200.00	200.00
10	17.00	17.00	19.00	19.00	0.00	0.00
11	20.00	20.00	20.00	20.00	120.00	120.00
12	18.00	18.00	18.00	18.00	80.00	80.00
13	19.00	19.00	19.00	19.00	100.00	100.00
14	21.00	21.00	21.00	21.00	200.00	200.00
15	17.00	17.00	19.00	19.00	0.00	0.00
16	18.00	18.00	20.00	20.00	0.00	0.00
17	17.00	17.00	19.00	19.00	0.00	0.00
18	18.00	18.00	20.00	20.00	0.00	0.00
19	18.00	18.00	20.00	20.00	0.00	0.00
20	18.00	18.00	20.00	20.00	0.00	0.00
21	17.00	17.00	19.00	19.00	0.00	0.00
22	19.00	19.00	19.00	19.00	100.00	100.00
23	21.00	21.00	21.00	21.00	200.00	200.00
24	17.00	17.00	19.00	19.00	0.00	0.00
-	kN/m <sup>3</sup>	kN/m <sup>3</sup>	kN/m <sup>3</sup>	kN/m <sup>3</sup>	kN/m <sup>2</sup>	kN/m <sup>2</sup>

#### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.825 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	0.93	30.00	26.09	0.00	0.00	18.00	16.36	1.95	0.00	1.22 0.07
3	3.720 3.470	0.25	0.77	35.00	30.43	0.00	0.00	19.00	17.27	5.86	0.00	3.32 0.19
4	3.470 2.970	0.50	0.39	37.50	32.61	0.00	0.00	19.00	17.27	6.43	0.00	3.41 0.20

5	2.970	2.825	0.14	0.07	35.00	30.43	0.00	0.00	19.00	17.27	0.32	0.00	0.18	0.01
											---	---	---	---
											14.56	0.00	8.14	0.47

Phi;e,d	14.56 / 0.47	30.65 [°]
c;e,d	0.00 / 0.47	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	8.14 / 0.47	17.13 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.398 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	1.36	30.00	26.09	0.00	0.00	18.00	16.36	2.84	0.00	1.78 0.11
3	3.720 3.470	0.25	1.20	35.00	30.43	0.00	0.00	19.00	17.27	9.11	0.00	5.17 0.30
4	3.470 2.970	0.50	0.82	37.50	32.61	0.00	0.00	19.00	17.27	13.40	0.00	7.10 0.41
5	2.970 2.470	0.50	0.32	35.00	30.43	0.00	0.00	19.00	17.27	4.90	0.00	2.78 0.16
6	2.470 2.398	0.07	0.04	32.50	28.26	0.00	0.00	18.00	16.36	0.07	0.00	0.04 0.00
										---	---	---
										30.33	0.00	16.87 0.98

Phi;e,d	30.33 / 0.98	30.86 [°]
c;e,d	0.00 / 0.98	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	16.87 / 0.98	17.17 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.367 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	1.39	30.00	26.09	0.00	0.00	18.00	16.36	2.91	0.00	1.82 0.11
3	3.720 3.470	0.25	1.23	35.00	30.43	0.00	0.00	19.00	17.27	9.35	0.00	5.30 0.31
4	3.470 2.970	0.50	0.85	37.50	32.61	0.00	0.00	19.00	17.27	13.91	0.00	7.37 0.43
5	2.970 2.470	0.50	0.35	35.00	30.43	0.00	0.00	19.00	17.27	5.38	0.00	3.05 0.18
6	2.470 2.367	0.10	0.05	32.50	28.26	0.00	0.00	18.00	16.36	0.15	0.00	0.09 0.01
										---	---	---
										31.70	0.00	17.64 1.03

Phi;e,d	31.70 / 1.03	30.85 [°]
c;e,d	0.00 / 1.03	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	17.64 / 1.03	17.17 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.357 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma
2	3.800 3.720	0.08	1.40	30.00	26.09	0.00	0.00	18.00	16.36	2.93	0.00	1.84 0.11
3	3.720 3.470	0.25	1.24	35.00	30.43	0.00	0.00	19.00	17.27	9.42	0.00	5.35 0.31
4	3.470 2.970	0.50	0.86	37.50	32.61	0.00	0.00	19.00	17.27	14.07	0.00	7.45 0.43
5	2.970 2.470	0.50	0.36	35.00	30.43	0.00	0.00	19.00	17.27	5.53	0.00	3.14 0.18
6	2.470 2.357	0.11	0.06	32.50	28.26	0.00	0.00	18.00	16.36	0.18	0.00	0.10 0.01
										---	---	---
										32.13	0.00	17.88 1.04

Phi;e,d	32.13 / 1.04	30.85 [°]
c;e,d	0.00 / 1.04	0.00 [kN/m <sup>2</sup> ]

Gamma;e,d      17.88 / 1.04      17.17 [kN/m<sup>2</sup>]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.316 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma		
Som;H;i·X;i														
2	3.800 3.720	0.08	1.44	30.00	26.09	0.00	0.00	18.00	16.36	3.01	0.00	1.89	0.12	
3	3.720 3.470	0.25	1.28	35.00	30.43	0.00	0.00	19.00	17.27	9.73	0.00	5.52	0.32	
4	3.470 2.970	0.50	0.90	37.50	32.61	0.00	0.00	19.00	17.27	14.75	0.00	7.81	0.45	
5	2.970 2.470	0.50	0.40	35.00	30.43	0.00	0.00	19.00	17.27	6.15	0.00	3.49	0.20	
6	2.470 2.316	0.15	0.08	32.50	28.26	0.00	0.00	18.00	16.36	0.34	0.00	0.19	0.01	
										----	----	----	----	
										33.98	0.00	18.91	1.10	

Phi;e,d      33.98 / 1.10      30.85 [°]

 c;e,d      0.00 / 1.10      0.00 [kN/m<sup>2</sup>]

 Gamma;e,d      18.91 / 1.10      17.17 [kN/m<sup>2</sup>]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.288 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma		
Som;H;i·X;i														
2	3.800 3.720	0.08	1.47	30.00	26.09	0.00	0.00	18.00	16.36	3.07	0.00	1.93	0.12	
3	3.720 3.470	0.25	1.31	35.00	30.43	0.00	0.00	19.00	17.27	9.95	0.00	5.64	0.33	
4	3.470 2.970	0.50	0.93	37.50	32.61	0.00	0.00	19.00	17.27	15.20	0.00	8.05	0.47	
5	2.970 2.470	0.50	0.43	35.00	30.43	0.00	0.00	19.00	17.27	6.58	0.00	3.73	0.22	
6	2.470 2.288	0.18	0.09	32.50	28.26	0.00	0.00	18.00	16.36	0.47	0.00	0.27	0.02	
										----	----	----	----	
										35.26	0.00	19.62	1.14	

Phi;e,d      35.26 / 1.14      30.84 [°]

 c;e,d      0.00 / 1.14      0.00 [kN/m<sup>2</sup>]

 Gamma;e,d      19.62 / 1.14      17.17 [kN/m<sup>2</sup>]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.175 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma		
Som;H;i·X;i														
2	3.800 3.720	0.08	1.59	30.00	26.09	0.00	0.00	18.00	16.36	3.31	0.00	2.08	0.13	
3	3.720 3.470	0.25	1.42	35.00	30.43	0.00	0.00	19.00	17.27	10.81	0.00	6.13	0.36	
4	3.470 2.970	0.50	1.05	37.50	32.61	0.00	0.00	19.00	17.27	17.05	0.00	9.03	0.52	
5	2.970 2.470	0.50	0.55	35.00	30.43	0.00	0.00	19.00	17.27	8.30	0.00	4.71	0.27	
6	2.470 2.220	0.25	0.17	32.50	28.26	0.00	0.00	18.00	16.36	1.20	0.00	0.70	0.04	
7	2.220 2.175	0.05	0.02	30.00	26.09	0.00	0.00	18.00	16.36	0.03	0.00	0.02	0.00	
										----	----	----	----	
										40.70	0.00	22.66	1.32	

Phi;e,d      40.70 / 1.32      30.80 [°]

 c;e,d      0.00 / 1.32      0.00 [kN/m<sup>2</sup>]

 Gamma;e,d      22.66 / 1.32      17.16 [kN/m<sup>2</sup>]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 2.041 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
2	3.800 3.720	0.08	1.72	30.00	26.09	0.00	0.00	18.00	16.36	3.59	0.00	2.25 0.14	
3	3.720 3.470	0.25	1.55	35.00	30.43	0.00	0.00	19.00	17.27	11.82	0.00	6.71 0.39	
4	3.470 2.970	0.50	1.18	37.50	32.61	0.00	0.00	19.00	17.27	19.22	0.00	10.18 0.59	
5	2.970 2.470	0.50	0.68	35.00	30.43	0.00	0.00	19.00	17.27	10.33	0.00	5.86 0.34	
6	2.470 2.220	0.25	0.30	32.50	28.26	0.00	0.00	18.00	16.36	2.15	0.00	1.24 0.08	
7	2.220 2.041	0.18	0.09	30.00	26.09	0.00	0.00	18.00	16.36	0.42	0.00	0.26 0.02	
										---	---	---	---
										47.53	0.00	26.51	1.55

Phi;e,d	47.53 / 1.55	30.72 [°]
c;e,d	0.00 / 1.55	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	26.51 / 1.55	17.14 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 1.610 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
2	3.800 3.720	0.08	2.15	30.00	26.09	0.00	0.00	18.00	16.36	4.49	0.00	2.81 0.17	
3	3.720 3.470	0.25	1.98	35.00	30.43	0.00	0.00	19.00	17.27	15.10	0.00	8.57 0.50	
4	3.470 2.970	0.50	1.61	37.50	32.61	0.00	0.00	19.00	17.27	26.25	0.00	13.90 0.80	
5	2.970 2.470	0.50	1.11	35.00	30.43	0.00	0.00	19.00	17.27	16.89	0.00	9.59 0.55	
6	2.470 2.220	0.25	0.73	32.50	28.26	0.00	0.00	18.00	16.36	5.19	0.00	3.01 0.18	
7	2.220 1.970	0.25	0.48	30.00	26.09	0.00	0.00	18.00	16.36	3.16	0.00	1.98 0.12	
8	1.970 1.720	0.25	0.23	30.00	26.09	0.00	0.00	17.00	15.45	1.53	0.00	0.91 0.06	
9	1.720 1.610	0.11	0.05	27.50	23.91	2.50	1.56	21.00	19.09	0.14	0.01	0.12 0.01	
										---	---	---	---
										72.76	0.01	40.89	2.40

Phi;e,d	72.76 / 2.40	30.34 [°]
c;e,d	9.44 / 2.40	0.00 [kN/m <sup>2</sup> ]
Gamma;e,d	40.89 / 2.40	17.05 [kN/m <sup>2</sup> ]

### BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot 1.351 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
2	3.800 3.720	0.08	2.41	30.00	26.09	0.00	0.00	18.00	16.36	5.03	0.00	3.15 0.19	
3	3.720 3.470	0.25	2.24	35.00	30.43	0.00	0.00	19.00	17.27	17.08	0.00	9.69 0.56	
4	3.470 2.970	0.50	1.87	37.50	32.61	0.00	0.00	19.00	17.27	30.48	0.00	16.14 0.93	
5	2.970 2.470	0.50	1.37	35.00	30.43	0.00	0.00	19.00	17.27	20.84	0.00	11.83 0.68	
6	2.470 2.220	0.25	0.99	32.50	28.26	0.00	0.00	18.00	16.36	7.03	0.00	4.07 0.25	
7	2.220 1.970	0.25	0.74	30.00	26.09	0.00	0.00	18.00	16.36	4.85	0.00	3.05 0.19	
8	1.970 1.720	0.25	0.49	30.00	26.09	0.00	0.00	17.00	15.45	3.22	0.00	1.91 0.12	
9	1.720 1.470	0.25	0.24	27.50	23.91	2.50	1.56	21.00	19.09	1.46	0.10	1.17 0.06	
10	1.470 1.351	0.12	0.06	30.00	26.09	0.00	0.00	17.00	15.45	0.19	0.00	0.11 0.01	
										---	---	---	---
										90.17	0.10	51.11	3.00

Phi;e,d	90.17 / 3.00	30.06 [°]
c;e,d	95.44 / 3.00	0.03 [kN/m <sup>2</sup> ]
Gamma;e,d	51.11 / 3.00	17.04 [kN/m <sup>2</sup> ]



## BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -0.393 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma		
Som;H;i·X;i														
2	3.800 3.720	0.08	4.15	30.00	26.09	0.00	0.00	18.00	16.36	8.67	0.00	5.44	0.33	
3	3.720 3.470	0.25	3.99	35.00	30.43	0.00	0.00	19.00	17.27	30.35	0.00	17.22	1.00	
4	3.470 2.970	0.50	3.61	37.50	32.61	0.00	0.00	19.00	17.27	58.91	0.00	31.21	1.81	
5	2.970 2.470	0.50	3.11	35.00	30.43	0.00	0.00	19.00	17.27	47.38	0.00	26.89	1.56	
6	2.470 2.220	0.25	2.74	32.50	28.26	0.00	0.00	18.00	16.36	19.35	0.00	11.20	0.68	
7	2.220 1.970	0.25	2.49	30.00	26.09	0.00	0.00	18.00	16.36	16.23	0.00	10.18	0.62	
8	1.970 1.720	0.25	2.24	30.00	26.09	0.00	0.00	17.00	15.45	14.60	0.00	8.65	0.56	
9	1.720 1.470	0.25	1.99	27.50	23.91	2.50	1.56	21.00	19.09	11.89	0.78	9.49	0.50	
10	1.470 1.220	0.25	1.74	30.00	26.09	0.00	0.00	17.00	15.45	11.34	0.00	6.72	0.43	
11	1.220 0.970	0.25	1.49	22.50	19.57	13.00	8.12	20.00	18.18	7.28	3.02	6.77	0.37	
12	0.970 0.720	0.25	1.24	22.50	19.57	5.00	3.12	18.00	16.36	6.06	0.97	5.07	0.31	
13	0.720 0.220	0.50	0.86	17.50	15.22	13.00	8.12	19.00	17.27	6.57	3.51	7.46	0.43	
14	0.220 -0.280	0.50	0.36	27.50	23.91	2.50	1.56	21.00	19.09	4.34	0.28	3.47	0.18	
15	-0.280 -0.393	0.11	0.06	30.00	26.09	0.00	0.00	17.00	15.45	0.17	0.00	0.10	0.01	
										----	----	----	----	
										243.12	8.56	149.85	8.79	

Phi;e,d	243.12 / 8.79	27.65 [°]
c;e,d	8558.88 / 8.79	0.97 [kN/m <sup>2</sup> ]
Gamma;e,d	149.85 / 8.79	17.04 [kN/m <sup>2</sup> ]

## BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -0.522 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma		
Som;H;i·X;i														
2	3.800 3.720	0.08	4.28	30.00	26.09	0.00	0.00	18.00	16.36	8.94	0.00	5.60	0.34	
3	3.720 3.470	0.25	4.12	35.00	30.43	0.00	0.00	19.00	17.27	31.32	0.00	17.78	1.03	
4	3.470 2.970	0.50	3.74	37.50	32.61	0.00	0.00	19.00	17.27	61.00	0.00	32.31	1.87	
5	2.970 2.470	0.50	3.24	35.00	30.43	0.00	0.00	19.00	17.27	49.33	0.00	28.00	1.62	
6	2.470 2.220	0.25	2.87	32.50	28.26	0.00	0.00	18.00	16.36	20.25	0.00	11.73	0.72	
7	2.220 1.970	0.25	2.62	30.00	26.09	0.00	0.00	18.00	16.36	17.06	0.00	10.70	0.65	
8	1.970 1.720	0.25	2.37	30.00	26.09	0.00	0.00	17.00	15.45	15.43	0.00	9.14	0.59	
9	1.720 1.470	0.25	2.12	27.50	23.91	2.50	1.56	21.00	19.09	12.65	0.83	10.10	0.53	
10	1.470 1.220	0.25	1.87	30.00	26.09	0.00	0.00	17.00	15.45	12.17	0.00	7.21	0.47	
11	1.220 0.970	0.25	1.62	22.50	19.57	13.00	8.12	20.00	18.18	7.91	3.28	7.35	0.40	
12	0.970 0.720	0.25	1.37	22.50	19.57	5.00	3.12	18.00	16.36	6.68	1.07	5.59	0.34	
13	0.720 0.220	0.50	0.99	17.50	15.22	13.00	8.12	19.00	17.27	7.54	4.03	8.56	0.50	
14	0.220 -0.280	0.50	0.49	27.50	23.91	2.50	1.56	21.00	19.09	5.88	0.38	4.69	0.25	
15	-0.280 -0.522	0.24	0.12	30.00	26.09	0.00	0.00	17.00	15.45	0.76	0.00	0.45	0.03	
										----	----	----	----	
										256.94	9.59	159.22	9.34	

Phi;e,d	256.94 / 9.34	27.52 [°]
c;e,d	9590.41 / 9.34	1.03 [kN/m <sup>2</sup> ]
Gamma;e,d	159.22 / 9.34	17.05 [kN/m <sup>2</sup> ]

## BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -0.666 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma		
Som;H;i·X;i														
2	3.800 3.720	0.08	4.43	30.00	26.09	0.00	0.00	18.00	16.36	9.24	0.00	5.79	0.35	
3	3.720 3.470	0.25	4.26	35.00	30.43	0.00	0.00	19.00	17.27	32.42	0.00	18.40	1.07	
4	3.470 2.970	0.50	3.89	37.50	32.61	0.00	0.00	19.00	17.27	63.35	0.00	33.56	1.94	
5	2.970 2.470	0.50	3.39	35.00	30.43	0.00	0.00	19.00	17.27	51.52	0.00	29.24	1.69	
6	2.470 2.220	0.25	3.01	32.50	28.26	0.00	0.00	18.00	16.36	21.27	0.00	12.32	0.75	
7	2.220 1.970	0.25	2.76	30.00	26.09	0.00	0.00	18.00	16.36	18.00	0.00	11.29	0.69	
8	1.970 1.720	0.25	2.51	30.00	26.09	0.00	0.00	17.00	15.45	16.37	0.00	9.70	0.63	
9	1.720 1.470	0.25	2.26	27.50	23.91	2.50	1.56	21.00	19.09	13.51	0.88	10.79	0.57	
10	1.470 1.220	0.25	2.01	30.00	26.09	0.00	0.00	17.00	15.45	13.11	0.00	7.77	0.50	
11	1.220 0.970	0.25	1.76	22.50	19.57	13.00	8.12	20.00	18.18	8.61	3.58	8.00	0.44	
12	0.970 0.720	0.25	1.51	22.50	19.57	5.00	3.12	18.00	16.36	7.39	1.18	6.18	0.38	
13	0.720 0.220	0.50	1.14	17.50	15.22	13.00	8.12	19.00	17.27	8.64	4.61	9.81	0.57	
14	0.220 -0.280	0.50	0.64	27.50	23.91	2.50	1.56	21.00	19.09	7.60	0.50	6.07	0.32	
15	-0.280 -0.666	0.39	0.19	30.00	26.09	0.00	0.00	17.00	15.45	1.94	0.00	1.15	0.07	
										-----	-----	-----	-----	
										272.97	10.75	170.06	9.97	

Phi;e,d	272.97 / 9.97	27.38 [°]
c;e,d	10748.71 / 9.97	1.08 [kN/m <sup>2</sup> ]
Gamma;e,d	170.06 / 9.97	17.06 [kN/m <sup>2</sup> ]

## BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -0.797 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma		
Som;H;i·X;i														
2	3.800 3.720	0.08	4.56	30.00	26.09	0.00	0.00	18.00	16.36	9.51	0.00	5.96	0.36	
3	3.720 3.470	0.25	4.39	35.00	30.43	0.00	0.00	19.00	17.27	33.41	0.00	18.96	1.10	
4	3.470 2.970	0.50	4.02	37.50	32.61	0.00	0.00	19.00	17.27	65.49	0.00	34.69	2.01	
5	2.970 2.470	0.50	3.52	35.00	30.43	0.00	0.00	19.00	17.27	53.51	0.00	30.37	1.76	
6	2.470 2.220	0.25	3.14	32.50	28.26	0.00	0.00	18.00	16.36	22.20	0.00	12.85	0.79	
7	2.220 1.970	0.25	2.89	30.00	26.09	0.00	0.00	18.00	16.36	18.86	0.00	11.83	0.72	
8	1.970 1.720	0.25	2.64	30.00	26.09	0.00	0.00	17.00	15.45	17.23	0.00	10.21	0.66	
9	1.720 1.470	0.25	2.39	27.50	23.91	2.50	1.56	21.00	19.09	14.30	0.93	11.41	0.60	
10	1.470 1.220	0.25	2.14	30.00	26.09	0.00	0.00	17.00	15.45	13.97	0.00	8.27	0.54	
11	1.220 0.970	0.25	1.89	22.50	19.57	13.00	8.12	20.00	18.18	9.25	3.84	8.60	0.47	
12	0.970 0.720	0.25	1.64	22.50	19.57	5.00	3.12	18.00	16.36	8.03	1.28	6.72	0.41	
13	0.720 0.220	0.50	1.27	17.50	15.22	13.00	8.12	19.00	17.27	9.64	5.15	10.94	0.63	
14	0.220 -0.280	0.50	0.77	27.50	23.91	2.50	1.56	21.00	19.09	9.17	0.60	7.32	0.38	
15	-0.280 -0.797	0.52	0.26	30.00	26.09	0.00	0.00	17.00	15.45	3.48	0.00	2.06	0.13	
										-----	-----	-----	-----	
										288.03	11.80	180.19	10.56	

Phi;e,d	288.03 / 10.56	27.27 [°]
c;e,d	11802.96 / 10.56	1.12 [kN/m <sup>2</sup> ]
Gamma;e,d	180.19 / 10.56	17.06 [kN/m <sup>2</sup> ]

**BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)**

Gehanteerd invloedstrajekt 3.800 tot -0.867 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
Som;H;i·X;i													
2	3.800 3.720	0.08	4.63	30.00	26.09	0.00	0.00	18.00	16.36	9.66	0.00	6.06	0.37
3	3.720 3.470	0.25	4.46	35.00	30.43	0.00	0.00	19.00	17.27	33.95	0.00	19.27	1.12
4	3.470 2.970	0.50	4.09	37.50	32.61	0.00	0.00	19.00	17.27	66.64	0.00	35.30	2.04
5	2.970 2.470	0.50	3.59	35.00	30.43	0.00	0.00	19.00	17.27	54.59	0.00	30.98	1.79
6	2.470 2.220	0.25	3.21	32.50	28.26	0.00	0.00	18.00	16.36	22.70	0.00	13.14	0.80
7	2.220 1.970	0.25	2.96	30.00	26.09	0.00	0.00	18.00	16.36	19.32	0.00	12.12	0.74
8	1.970 1.720	0.25	2.71	30.00	26.09	0.00	0.00	17.00	15.45	17.69	0.00	10.48	0.68
9	1.720 1.470	0.25	2.46	27.50	23.91	2.50	1.56	21.00	19.09	14.72	0.96	11.75	0.62
10	1.470 1.220	0.25	2.21	30.00	26.09	0.00	0.00	17.00	15.45	14.43	0.00	8.55	0.55
11	1.220 0.970	0.25	1.96	22.50	19.57	13.00	8.12	20.00	18.18	9.60	3.99	8.92	0.49
12	0.970 0.720	0.25	1.71	22.50	19.57	5.00	3.12	18.00	16.36	8.38	1.34	7.00	0.43
13	0.720 0.220	0.50	1.34	17.50	15.22	13.00	8.12	19.00	17.27	10.17	5.43	11.55	0.67
14	0.220 -0.280	0.50	0.84	27.50	23.91	2.50	1.56	21.00	19.09	10.01	0.65	7.99	0.42
15	-0.280 -0.867	0.59	0.29	30.00	26.09	0.00	0.00	17.00	15.45	4.50	0.00	2.66	0.17
										-----	-----	-----	-----
										296.34	12.37	185.77	10.89

Phi;e,d	296.34 / 10.89	27.21 [°]
c;e,d	12371.92 / 10.89	1.14 [kN/m <sup>2</sup> ]
Gamma;e,d	185.77 / 10.89	17.06 [kN/m <sup>2</sup> ]

**BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)**

Gehanteerd invloedstrajekt 3.800 tot -1.004 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
Som;H;i·X;i													
2	3.800 3.720	0.08	4.76	30.00	26.09	0.00	0.00	18.00	16.36	9.94	0.00	6.24	0.38
3	3.720 3.470	0.25	4.60	35.00	30.43	0.00	0.00	19.00	17.27	34.99	0.00	19.86	1.15
4	3.470 2.970	0.50	4.22	37.50	32.61	0.00	0.00	19.00	17.27	68.87	0.00	36.48	2.11
5	2.970 2.470	0.50	3.72	35.00	30.43	0.00	0.00	19.00	17.27	56.67	0.00	32.16	1.86
6	2.470 2.220	0.25	3.35	32.50	28.26	0.00	0.00	18.00	16.36	23.66	0.00	13.70	0.84
7	2.220 1.970	0.25	3.10	30.00	26.09	0.00	0.00	18.00	16.36	20.21	0.00	12.68	0.77
8	1.970 1.720	0.25	2.85	30.00	26.09	0.00	0.00	17.00	15.45	18.58	0.00	11.01	0.71
9	1.720 1.470	0.25	2.60	27.50	23.91	2.50	1.56	21.00	19.09	15.54	1.02	12.41	0.65
10	1.470 1.220	0.25	2.35	30.00	26.09	0.00	0.00	17.00	15.45	15.32	0.00	9.08	0.59
11	1.220 0.970	0.25	2.10	22.50	19.57	13.00	8.12	20.00	18.18	10.27	4.26	9.54	0.52
12	0.970 0.720	0.25	1.85	22.50	19.57	5.00	3.12	18.00	16.36	9.04	1.44	7.56	0.46
13	0.720 0.220	0.50	1.47	17.50	15.22	13.00	8.12	19.00	17.27	11.22	5.99	12.73	0.74
14	0.220 -0.280	0.50	0.97	27.50	23.91	2.50	1.56	21.00	19.09	11.65	0.76	9.30	0.49
15	-0.280 -1.004	0.72	0.36	30.00	26.09	0.00	0.00	17.00	15.45	6.84	0.00	4.05	0.26
										-----	-----	-----	-----
										312.81	13.47	196.80	11.54

Phi;e,d	312.81 / 11.54	27.11 [°]
c;e,d	13473.75 / 11.54	1.17 [kN/m <sup>2</sup> ]
Gamma;e,d	196.80 / 11.54	17.05 [kN/m <sup>2</sup> ]

## BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -1.289 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
Som;H;i·X;i													
2	3.800 3.720	0.08	5.05	30.00	26.09	0.00	0.00	18.00	16.36	10.54	0.00	6.61	0.40
3	3.720 3.470	0.25	4.88	35.00	30.43	0.00	0.00	19.00	17.27	37.16	0.00	21.09	1.22
4	3.470 2.970	0.50	4.51	37.50	32.61	0.00	0.00	19.00	17.27	73.51	0.00	38.94	2.25
5	2.970 2.470	0.50	4.01	35.00	30.43	0.00	0.00	19.00	17.27	61.00	0.00	34.62	2.00
6	2.470 2.220	0.25	3.63	32.50	28.26	0.00	0.00	18.00	16.36	25.67	0.00	14.86	0.91
7	2.220 1.970	0.25	3.38	30.00	26.09	0.00	0.00	18.00	16.36	22.07	0.00	13.84	0.85
8	1.970 1.720	0.25	3.13	30.00	26.09	0.00	0.00	17.00	15.45	20.44	0.00	12.11	0.78
9	1.720 1.470	0.25	2.88	27.50	23.91	2.50	1.56	21.00	19.09	17.24	1.13	13.76	0.72
10	1.470 1.220	0.25	2.63	30.00	26.09	0.00	0.00	17.00	15.45	17.18	0.00	10.18	0.66
11	1.220 0.970	0.25	2.38	22.50	19.57	13.00	8.12	20.00	18.18	11.66	4.84	10.83	0.60
12	0.970 0.720	0.25	2.13	22.50	19.57	5.00	3.12	18.00	16.36	10.44	1.67	8.73	0.53
13	0.720 0.220	0.50	1.76	17.50	15.22	13.00	8.12	19.00	17.27	13.38	7.14	15.19	0.88
14	0.220 -0.280	0.50	1.26	27.50	23.91	2.50	1.56	21.00	19.09	15.05	0.98	12.01	0.63
15	-0.280 -1.289	1.01	0.50	30.00	26.09	0.00	0.00	17.00	15.45	13.27	0.00	7.86	0.51
										----	----	----	----
										348.59	15.76	220.63	12.95

Phi;e,d	348.59 / 12.95	26.92 [°]
c;e,d	15762.71 / 12.95	1.22 [kN/m²]
Gamma;e,d	220.63 / 12.95	17.04 [kN/m²]

## BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)

Gehanteerd invloedstrajekt 3.800 tot -1.693 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma	
Som;H;i·X;i													
2	3.800 3.720	0.08	5.45	30.00	26.09	0.00	0.00	18.00	16.36	11.38	0.00	7.14	0.44
3	3.720 3.470	0.25	5.29	35.00	30.43	0.00	0.00	19.00	17.27	40.23	0.00	22.83	1.32
4	3.470 2.970	0.50	4.91	37.50	32.61	0.00	0.00	19.00	17.27	80.10	0.00	42.43	2.46
5	2.970 2.470	0.50	4.41	35.00	30.43	0.00	0.00	19.00	17.27	67.15	0.00	38.11	2.21
6	2.470 2.220	0.25	4.04	32.50	28.26	0.00	0.00	18.00	16.36	28.53	0.00	16.52	1.01
7	2.220 1.970	0.25	3.79	30.00	26.09	0.00	0.00	18.00	16.36	24.70	0.00	15.49	0.95
8	1.970 1.720	0.25	3.54	30.00	26.09	0.00	0.00	17.00	15.45	23.07	0.00	13.67	0.88
9	1.720 1.470	0.25	3.29	27.50	23.91	2.50	1.56	21.00	19.09	19.65	1.28	15.69	0.82
10	1.470 1.220	0.25	3.04	30.00	26.09	0.00	0.00	17.00	15.45	19.81	0.00	11.74	0.76
11	1.220 0.970	0.25	2.79	22.50	19.57	13.00	8.12	20.00	18.18	13.63	5.66	12.67	0.70
12	0.970 0.720	0.25	2.54	22.50	19.57	5.00	3.12	18.00	16.36	12.41	1.98	10.38	0.63
13	0.720 0.220	0.50	2.16	17.50	15.22	13.00	8.12	19.00	17.27	16.45	8.79	18.68	1.08
14	0.220 -0.280	0.50	1.66	27.50	23.91	2.50	1.56	21.00	19.09	19.88	1.30	15.87	0.83
15	-0.280 -1.693	1.41	0.71	30.00	26.09	0.00	0.00	17.00	15.45	26.03	0.00	15.42	1.00
										----	----	----	----
										403.03	19.01	256.63	15.08

Phi;e,d	403.03 / 15.08	26.72 [°]
c;e,d	19013.36 / 15.08	1.26 [kN/m²]
Gamma;e,d	256.63 / 15.08	17.01 [kN/m²]

**BEREKENING GEWOGEN GEMIDDELDEN GRONDPARAMETERS VLGS NEN-EN 1997-1:2016 #6.5.2.2(N)**

Gehanteerd invloedstrajekt 3.800 tot -2.295 m

Sector	Range	H;i	X;i	Phi;i	Phi;d	c'	c';d	Gamma'	Gamma';d	Som;Phi	Som;c	Som;Gamma		
Som;H;i·X;i														
2	3.800 3.720	0.08	6.06	30.00	26.09	0.00	0.00	18.00	16.36	12.64	0.00	7.93	0.48	
3	3.720 3.470	0.25	5.89	35.00	30.43	0.00	0.00	19.00	17.27	44.82	0.00	25.43	1.47	
4	3.470 2.970	0.50	5.52	37.50	32.61	0.00	0.00	19.00	17.27	89.92	0.00	47.63	2.76	
5	2.970 2.470	0.50	5.02	35.00	30.43	0.00	0.00	19.00	17.27	76.32	0.00	43.31	2.51	
6	2.470 2.220	0.25	4.64	32.50	28.26	0.00	0.00	18.00	16.36	32.78	0.00	18.98	1.16	
7	2.220 1.970	0.25	4.39	30.00	26.09	0.00	0.00	18.00	16.36	28.63	0.00	17.96	1.10	
8	1.970 1.720	0.25	4.14	30.00	26.09	0.00	0.00	17.00	15.45	27.00	0.00	16.00	1.04	
9	1.720 1.470	0.25	3.89	27.50	23.91	2.50	1.56	21.00	19.09	23.26	1.52	18.57	0.97	
10	1.470 1.220	0.25	3.64	30.00	26.09	0.00	0.00	17.00	15.45	23.74	0.00	14.06	0.91	
11	1.220 0.970	0.25	3.39	22.50	19.57	13.00	8.12	20.00	18.18	16.58	6.89	15.41	0.85	
12	0.970 0.720	0.25	3.14	22.50	19.57	5.00	3.12	18.00	16.36	15.36	2.45	12.85	0.79	
13	0.720 0.220	0.50	2.77	17.50	15.22	13.00	8.12	19.00	17.27	21.04	11.23	23.88	1.38	
14	0.220 -0.280	0.50	2.27	27.50	23.91	2.50	1.56	21.00	19.09	27.08	1.77	21.62	1.13	
15	-0.280 -2.295	2.02	1.01	30.00	26.09	0.00	0.00	17.00	15.45	52.96	0.00	31.37	2.03	
										----	----	----	----	
										492.11	23.86	315.00	18.57	

Phi;e,d	492.11 / 18.57	26.49 [°]
c;e,d	23860.95 / 18.57	1.28 [kN/m <sup>2</sup> ]
Gamma;e,d	315.00 / 18.57	16.96 [kN/m <sup>2</sup> ]

**KORRELSPANNINGEN SIGMA';V,Z,0,D**

Locatie	Diepte	Waarde	Locatie	Diepte
Zonder invloed bovenbelasting		Inclusief invloed bovenbelasting		
Waarde				
Midden sector 1	4.470	4.50	Midden sector 1	4.470
13.20				
Onderzijde 1	4.220	9.00	Onderzijde 1	4.220
17.70				
Midden sector 2	3.970	13.50	Midden sector 2	3.970
22.20				
Onderzijde 2	3.720	18.00	Onderzijde 2	3.720
26.70				
Midden sector 3	3.595	20.38	Midden sector 3	3.595
29.07				
Onderzijde 3	3.470	22.75	Onderzijde 3	3.470
31.45				
Midden sector 4	3.220	27.50	Midden sector 4	3.220
36.20				
Onderzijde 4	2.970	32.25	Onderzijde 4	2.970
40.95				
Midden sector 5	2.720	37.00	Midden sector 5	2.720
45.70				
Onderzijde 5	2.470	41.75	Onderzijde 5	2.470
50.45				
Midden sector 6	2.345	44.00	Midden sector 6	2.345
52.70				
Onderzijde 6	2.220	46.25	Onderzijde 6	2.220
54.95				
Midden sector 7	2.095	48.50	Midden sector 7	2.095
57.20				
Onderzijde 7	1.970	50.75	Onderzijde 7	1.970

59.45			
Midden sector 8	1.845	52.88 Midden sector 8	1.845
61.58			
Onderzijde 8	1.720	55.00 Onderzijde 8	1.720
63.70			
Midden sector 9	1.595	57.63 Midden sector 9	1.595
66.33			
Onderzijde 9	1.470	60.25 Onderzijde 9	1.470
68.95			
Midden sector 10	1.345	62.38 Midden sector 10	1.345
71.08			
Onderzijde 10	1.220	64.50 Onderzijde 10	1.220
73.20			
Midden sector 11	1.095	67.00 Midden sector 11	1.095
75.70			
Onderzijde 11	0.970	69.50 Onderzijde 11	0.970
78.20			
Midden sector 12	0.845	71.75 Midden sector 12	0.845
80.45			
Onderzijde 12	0.720	74.00 Onderzijde 12	0.720
82.70			
Midden sector 13	0.470	78.75 Midden sector 13	0.470
87.45			
Onderzijde 13	0.220	83.50 Onderzijde 13	0.220
92.20			
Midden sector 14	-0.030	88.75 Midden sector 14	-0.030
97.45			
Onderzijde 14	-0.280	94.00 Onderzijde 14	-0.280
102.70			
Midden sector 15	-2.780	136.50 Midden sector 15	-2.780
145.20			
Onderzijde 15	-5.280	179.00 Onderzijde 15	-5.280
187.70			
Midden sector 16	-5.405	181.25 Midden sector 16	-5.405
189.95			
Onderzijde 16	-5.530	183.50 Onderzijde 16	-5.530
192.20			
Midden sector 17	-5.780	187.75 Midden sector 17	-5.780
196.45			
Onderzijde 17	-6.030	192.00 Onderzijde 17	-6.030
200.70			
Midden sector 18	-6.155	194.25 Midden sector 18	-6.155
202.95			
Onderzijde 18	-6.280	196.50 Onderzijde 18	-6.280
205.20			
Midden sector 19	-6.405	198.75 Midden sector 19	-6.405
207.45			
Onderzijde 19	-6.530	201.00 Onderzijde 19	-6.530
209.70			
Midden sector 20	-6.655	203.25 Midden sector 20	-6.655
211.95			
Onderzijde 20	-6.780	205.50 Onderzijde 20	-6.780
214.20			
Midden sector 21	-7.655	220.38 Midden sector 21	-7.655
229.08			
Onderzijde 21	-8.530	235.25 Onderzijde 21	-8.530
243.95			
Midden sector 22	-8.655	237.63 Midden sector 22	-8.655

246.33					
Onderzijde 22	-8.780	240.00	Onderzijde 22		-8.780
248.70					
Midden sector 23	-9.155	247.88	Midden sector 23		-9.155
256.57					
Onderzijde 23	-9.530	255.75	Onderzijde 23		-9.530
264.45					
Midden sector 24	-9.655	257.88	Midden sector 24		-9.655
266.57					
Onderzijde 24	-9.780	260.00	Onderzijde 24		-9.780
268.70					
-		<b>m</b>	<b>kN/m<sup>2</sup></b>	<b>-</b>	<b>m</b>
<b>kN/m<sup>2</sup></b>					

### Lijnlast 3 , 4 (NEN-EN1997-1:2016/NB:2016)

#### GRONDOPBOUW (REGIO : NEN-EN1997-1 TABEL 2.B (GRIND))

Nr.	Naam Sigma';v,k	Bijmengsel	Consistentie	Van	Tot	Y;c	Y:sat	c'	C;u	Phi'	Delta;Sigma';v,k
1	Zand	Schoon	Matig	4.720	4.220	18.00	20.00	0.00	0.00	32.50	9.00 9.00
2	Grind	Sterk siltig	Los	4.220	3.720	18.00	20.00	0.00	0.00	30.00	9.00 18.00
3	Zand	Schoon	Vast	3.720	3.470	19.00	21.00	0.00	0.00	35.00	4.75 22.75
4	Grind	Zwak siltig	Vast	3.470	2.970	19.00	21.00	0.00	0.00	37.50	9.50 32.25
5	Zand	Schoon	Vast	2.970	2.470	19.00	21.00	0.00	0.00	35.00	9.50 41.75
6	Zand	Schoon	Matig	2.470	2.220	18.00	20.00	0.00	0.00	32.50	4.50 46.25
7	Grind	Sterk siltig	Los	2.220	1.970	18.00	20.00	0.00	0.00	30.00	4.50 50.75
8	Zand	Schoon	Los	1.970	1.720	17.00	19.00	0.00	0.00	30.00	4.25 55.00
9	Leem	Zwak zandig	Vast	1.720	1.470	21.00	21.00	2.50	200.0	27.50	5.25 60.25
10	Zand	Schoon	Los	1.470	1.220	17.00	19.00	0.00	0.00	30.00	4.25 64.50
11	Klei	Zwak zandig	Matig	1.220	0.970	20.00	20.00	13.00	120.0	22.50	5.00 69.50
12	Klei	Zwak zandig	Vast	0.970	0.720	18.00	18.00	5.00	80.00	22.50	4.50 74.00
13	Klei	Schoon	Vast	0.720	0.220	19.00	19.00	13.00	100.0	17.50	9.50 83.50
14	Leem	Zwak zandig	Vast	0.220	-0.280	21.00	21.00	2.50	200.0	27.50	10.50 94.00
15	Zand	Schoon	Los	-0.280	-5.280	17.00	19.00	0.00	0.00	30.00	85.00
179.00											
16	Zand	Sterk siltig, kleiig	-	-5.280	-5.530	18.00	20.00	0.00	0.00	25.00	4.50
183.50											
17	Zand	Schoon	Los	-5.530	-6.030	17.00	19.00	0.00	0.00	30.00	8.50
192.00											
18	Zand	Sterk siltig, kleiig	-	-6.030	-6.280	18.00	20.00	0.00	0.00	25.00	4.50
196.50											
19	Grind	Sterk siltig	Los	-6.280	-6.530	18.00	20.00	0.00	0.00	30.00	4.50
201.00											
20	Zand	Sterk siltig, kleiig	-	-6.530	-6.780	18.00	20.00	0.00	0.00	25.00	4.50
205.50											
21	Zand	Schoon	Los	-6.780	-8.530	17.00	19.00	0.00	0.00	30.00	29.75
235.25											
22	Klei	Schoon	Vast	-8.530	-8.780	19.00	19.00	13.00	100.0	17.50	4.75
240.00											
23	Leem	Zwak zandig	Vast	-8.780	-9.530	21.00	21.00	2.50	200.0	27.50	15.75
255.75											
24	Zand	Schoon	Los	-9.530	-9.780	17.00	19.00	0.00	0.00	30.00	4.25
260.00											
-	-	-	-	<b>m</b>	<b>m</b>	<b>kN/m<sup>3</sup></b>	<b>kN/m<sup>3</sup></b>	<b>kN/m<sup>2</sup></b>	<b>kN/m<sup>2</sup></b>	<b>°</b>	<b>kN/m</b> <b>kN/m</b>

**ALGEMENE GEGEVENS**

Breedte	0.600 [m]
Lengte	8.000 [m]
Diepte	3.800 [m]
Minimum dekking	0.150 [m]
Ontgravingsdiepte (eenzijdig)	3.950 [m]

**SONDEERDIAGRAM**

Sondeerdiagram	82763_DKM002.GEF
Maaiveldniveau	4.720 [m]
Grondwaterniveau	-10.000 [m]
Geotechnische categorie	GC2

**BELASTING**

Excentriciteit (#5.2.1)	e;B	0.00
Excentriciteit	e;L	0.00

**Uiterste Grenstoestand**

[kN/m]	q;s,v,d	34.20 [kN/m]
[kN/m]	q;s,h,d	0.00 [kN/m]
[kN/m]	p;sur,d	8.70 [kN/m]

**Bruikbaarheidsgrenstoestand**

q;s,v,d	29.90
q;s,h,d	0.00
p;sur,d	7.20

**TOETSING GRENSTOESTANDEN 1A, 1B EN 2**

Ongedraineerde situatie	NEN-EN1997-1#6.5.2.2(f)
Gedraineerde situatie	NEN-EN1997-1#6.5.2.2(i)
Zakking bovenzijde funderingselement	NEN-EN1997-1#6.6.2

**GRENSTOESTAND 1A: MAX DRAAGVERMOGEN NEN-EN1997-1:2016 #6.5.2.2(R)**

Ongedraineerde situatie vlgs #5.2.2.1 geval c  
Doorponsen bij gelaagde grond; 8° spreiding

Nr.	z	B;z	L;z	Sigma';v,z,0,d	C;u,d	S;c	I;c	Sigma';max,d	F;r,v,d	F;v,d opm
9	1.720	1.185	8.585	41.14	148.15	1.03	1.00	823.88	976.01	57.26 -
11	1.220	1.325	8.725	50.64	88.89	1.03	1.00	521.55	691.16	62.96 -
12	0.970	1.395	8.795	55.64	59.26	1.03	1.00	369.99	516.31	65.96 -
13	0.720	1.466	8.866	60.14	74.07	1.03	1.00	453.59	664.84	68.66 -
14	0.220	1.606	9.006	69.64	148.15	1.04	1.00	858.53	1379.03	74.36 -
22	-8.530	4.066	11.466	221.39	74.07	1.07	1.00	629.26	2558.40	165.41 -
23	-8.780	4.136	11.536	226.14	148.15	1.07	1.00	1042.48	4311.70	168.26 -
-	m	m	m	kN/m <sup>2</sup>	kN/m <sup>2</sup>	-	-	kN/m <sup>2</sup>	kN/m	kN/m -

Invloed ontgraving verwerkt met belastingfactor 1.00

In alle lagen wordt voldaan aan de ponstoetsing

**GRENSTOESTAND 1A: MAX DRAAGVERMOGEN NEN-EN1997-1:2016 #6.5.2.2**

Gedraineerde situatie #6.5.2.2 geval c

Invloedsgebied loopt van 3.800 tot 2.825 m

Gewogen parameters #6.5.2.2 Phi;e,d 30.65 [°]

(1A)	c;e,d	0.00 [kN/m <sup>2</sup> ]
(1A)	Y;e,d	17.13 [kN/m <sup>3</sup> ]

Invloed ontgraving verwerkt met belastingfactor 1.00

Sigma';v,z,0,d	z= 3.800 m	2.70 [kN/m <sup>2</sup> ]
xB	0.00*(0.000+0.920)/34.20	0.000 [m]
B';z	0.600-2*[0.000+0.000]	0.600 [m]
L';z	8.000-2*[0.000+0.000]	8.000 [m]
N;q		19.82 [-]
N;c		31.76 [-]



N;Gamma		22.31 [-]
i;q	$(1-0.7*0.00/(34.20+0.00))^3$	1.00 [-]
i;c	$(1.00*19.82-1)/(19.82-1)$	1.00 [-]
i;Gamma	$(1-1.0*0.00/(34.20+0.00))^3$	1.00 [-]
s;q	$(1+0.600/8.000*0.54)$	1.04 [-]
s;c	$(1.04*19.82-1)/(19.82-1)$	1.04 [-]
s;Gamma	$1-0.30*0.600/8.000$	0.98 [-]
Sigma;max,d	$0.00+55.57+112.09$	167.66 [kN/m²]
F;r,v,d	$0.600*167.66$	100.60 [kN/m]
F;s,v,d <= F;r,v,d	$34.20 <= 100.60$	0.34 [-]

Aan de eis in gedraineerde toestand is voldaan

### GRENSTOESTAND 1A: MAX DRAAGVERMOGEN NEN-EN1997-1:2016 #6.5.2.2(R)

Gedraineerde situatie #6.5.2.2 geval c

Doorponsen bij gelaagde grond; 8° spreiding

Nr.	z	B;z	L;z	Sigma';v,z,0,d	Phi';e,d	c';e,d	Gamma';e,d	Sigma';max,d	F;r,v,d	F;v,d opm
7	2.220	1.044	8.444	32.39	30.86	0.00	17.17	897.88	9.37e+02	52.01 -
8	1.970	1.114	8.514	36.89	30.85	0.00	17.17	1010.48	1.13e+03	54.71 -
9	1.720	1.185	8.585	41.14	30.85	0.00	17.17	1118.26	1.32e+03	57.26 -
10	1.470	1.255	8.655	46.39	30.85	0.00	17.17	1247.49	1.57e+03	60.41 -
11	1.220	1.325	8.725	50.64	30.84	0.00	17.17	1355.39	1.80e+03	62.96 -
12	0.970	1.395	8.795	55.64	30.80	0.00	17.16	1474.06	2.06e+03	65.96 -
13	0.720	1.466	8.866	60.14	30.72	0.00	17.14	1573.03	2.31e+03	68.66 -
14	0.220	1.606	9.006	69.64	30.34	0.00	17.05	1727.87	2.78e+03	74.36 -
15	-0.280	1.747	9.147	80.14	30.06	0.03	17.04	1912.62	3.34e+03	80.66 -
16	-5.280	3.152	10.552	165.14	27.65	0.97	17.04	3029.89	9.55e+03	131.66 -
17	-5.530	3.222	10.622	169.64	27.52	1.03	17.05	3066.68	9.88e+03	134.36 -
18	-6.030	3.363	10.763	178.14	27.38	1.08	17.06	3175.76	1.07e+04	139.46 -
19	-6.280	3.433	10.833	182.64	27.27	1.12	17.06	3216.46	1.10e+04	142.16 -
20	-6.530	3.504	10.904	187.14	27.21	1.14	17.06	3276.80	1.15e+04	144.86 -
21	-6.780	3.574	10.974	191.64	27.11	1.17	17.05	3319.06	1.19e+04	147.56 -
22	-8.530	4.066	11.466	221.39	26.92	1.22	17.04	3777.94	1.54e+04	165.41 -
23	-8.780	4.136	11.536	226.14	26.72	1.26	17.01	3769.97	1.56e+04	168.26 -
24	-9.530	4.347	11.747	241.89	26.49	1.28	16.96	3932.75	1.71e+04	177.71 -
-	m	m	m	kN/m²	°	kN/m²	kN/m²	kN/m²	kN/m	kN/m -

Invloed ontgraving verwerkt met belastingfactor 1.00

In alle lagen wordt voldaan aan de ponstoetsing

### GRENSTOESTAND 2: ZAKKING VLGS NEN-EN 1997-1:2016 #6.6.2

Tgv momentane belastingcombinatie

(NEN-EN1990:2007 #6.5.3c)

Spanningstoename vlgs NEN-EN 1997-1:2016 #6.6.2

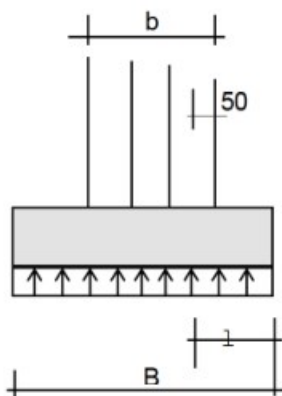
i	Nr.	H;i	Z;mid	e	Sigma';v,mid,z,0,d	Delta Sigma';v,mid,z,d	w;1,d	w;2,d	Som w;1,d	Som w;2,d
<b>Som w;d</b>										
Aanleg			3.800			49.83				
1	2	0.080	3.760	0.65	17.28	43.04	0.0002	0.0000	0.0002	0.0000
0.0002										
2	3	0.250	3.595	0.50	20.38	39.02	0.0002	0.0000	0.0003	0.0000
0.0003										
3	4	0.500	3.220	0.50	27.50	21.75	0.0002	0.0000	0.0005	0.0000
0.0005										

4	5	0.500	2.720	0.50	37.00	10.17	0.0001	0.0000	0.0006	0.0000
0.0006										
5	6	0.250	2.345		44.00	6.03	< 20%			
-	-	m	m	-	kN/m <sup>2</sup>	kN/m <sup>2</sup>	m	m	m	m
									-----	-----
									-----	-----
Zetting na 10000 dagen									0.0006	0.0000
0.0006										

Invloed bovenbelasting verwerkt met factor 1.00  
 Invloed ontgraving verwerkt met belastingfactor 1.00

Aan zettingseis uit NEN-EN1997-1:2016 #2.4.8 is voldaan

## 6.5 Controle wapening



Stroken  $H = 150$  mm  
 Beton C20/25, milieukl.XC 2  
 Wapening B500B, ondermet

#  $\bar{\phi}$  8 — 150 —  $\uparrow$  ( $A_s = 335$  mm<sup>2</sup>)

$d = 116$  mm

$M_{Rd} = 15,2$  kNm

$V_{Rd} = 53,4$  kN

strook	$q_{Ed}$ (kN/m)	B (mm)	$\sigma_{gr;Ed}$ (kN/m <sup>2</sup> )	b (mm)	l (mm)	$M_{Ed}$ (kNm/m)	$V_{Ed}$ (kN/m)
1	68,3	800	85	345	277,5	3,3	19
2	44,4	800	55	345	277,5	2,1	13
3	33,1	600	55	100	300	2,5	14
4	34,2	600	57	210	245	1,7	11