

Memo

Project	REKO 2
Projectnummer	WIU000397
Onderwerp	Zetting Asphaltberg
Aan	Arjan de Graaf
Auteur	Gordana Filipovic
Datum	07 januari 2020

Algemeen

Deze memo bevat de zettingsberekening voor de asphaltberg bij REKO.

Uitgangspunten:

De zettingsberekeningen zijn gemaakt met de volgende uitgangspunten:

- 15 m asfalt vanaf 2012 t/m 2019
- 25 m asfalt vanaf 2019 t/m 2022

Het terrein is vanaf 2003 t/m 2012 al voorbelast met 15,5 m asfalt. Hierna is de toen aanwezige asfaltconstructie verwijderd en is er een nieuwe asfaltconstructie aangebracht.

- volume gewicht asfalt 20 kN/m³
- bodemopbouw conform sondering 1, opdracht nr 318418. Bij de sonderingen DKM27 t/m 37 ontbreekt eerste 5,0 m en deze sonderingen is niet mogelijk voor de zettingsberekening mee te nemen.
- zettingsparameters conform NEN 9997-1, tabel 2.b.
- GWS NAP +2,50 m

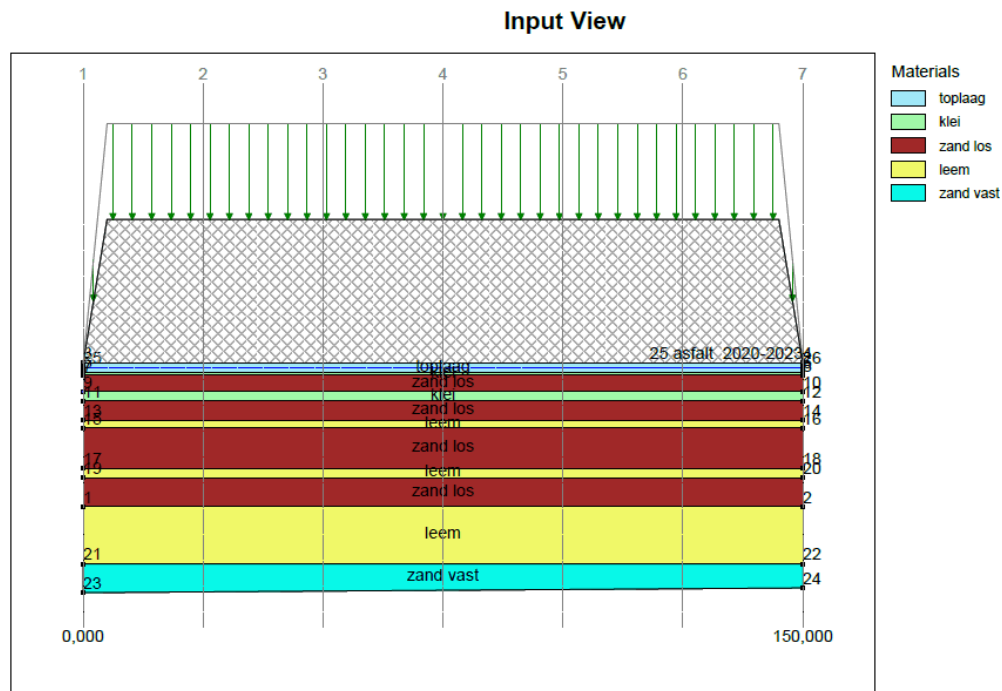
Opmerking:

De grondopbouw in de eerste vijf meter is vertaald in een toplaag (blauw) e.e.a. op basis van de ontvangen grondboringen en is hiervoor een gemiddelde aangenomen; dit geeft een mate van onzekerheid.

Berekening methode:

Verwachte zetting/restzetting is berekend met het programma D-Settlement, versie 19.1, build 2.26123, model NEN- Koppejan/ Darcy.

Maatgevende geometrie:



Resultaten:

In de tabellen hieronder zijn aanwezige belastingen, tijd en verwachte zakking/ restzakking in (m) t.p.v verticaal 1 (teen ophoging) en verticaal 4 (max. ophoging) weergegeven.

Verticaal 1:

Asfalt	Vanaf	Tot/met	Tijd (dagen)	Totaal dagen	Verwachte zakking (m)	Verwachte restzetting (m)
15,5 m	2003	2012	3560	3650	0,24	-
15,0 m	2013	2019	2555	6205	0,25	0,01
25,0 m	2020	2023	1095	7300	0,33	0,08

Verticaal 4:

Asfalt	Vanaf	Tot/met	Tijd (dagen)	Totaal dagen	Verwachte zakking (m)	Verwachte restzetting (m)
15,5 m	2003	2012	3560	3650	0,54	-
15,0 m	2013	2019	2555	6205	0,56	0,02
25,0 m	2020	2023	1095	7300	0,70	0,14

Bij de berekening van zakking wordt een marge van ca. 30 % op de berekende resultaten aangehouden.

In bijlage A is D-Settlement berekening weergegeven.

Bijlage A: D-Settlement berekening

Report for D-Settlement 19.1

Settlement Calculations
Developed by Deltares

Date of report: 07-01-2020
Time of report: 11:32:42
Report with version: 19.1.2.26123

Date of calculation: 06-01-2020
Time of calculation: 12:06:36
Calculated with version: 19.1.2.26123

File name: d:\LIEVENSE\2018\WIU003797 REKO2\GEO\Zakking asphaltberg_

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2 Echo of the Input

2.1 Layer Boundaries

Boundary number	Co-ordinates [m]			
11 - X -	0,000	150,000		
11 - Y -	3,000	3,000		
10 - X -	0,000	150,000		
10 - Y -	2,000	2,000		
9 - X -	0,000	150,000		
9 - Y -	1,700	1,700		
8 - X -	0,000	150,000		
8 - Y -	0,000	0,000		
7 - X -	0,000	150,000		
7 - Y -	-1,000	-1,000		
6 - X -	0,000	150,000		
6 - Y -	-3,000	-3,000		
5 - X -	0,000	150,000		
5 - Y -	-3,800	-3,800		
4 - X -	0,000	150,000		
4 - Y -	-8,000	-8,000		
3 - X -	0,000	150,000		
3 - Y -	-9,000	-9,000		
2 - X -	0,000	150,000		
2 - Y -	-12,000	-12,000		
1 - X -	0,000	150,000		
1 - Y -	-18,000	-18,000		
0 - X -	0,000	150,000		
0 - Y -	-21,000	-20,500		

2.2 PI-lines

PI-line number	Co-ordinates [m]			
1 - X -	0,000	150,000		
1 - Y -	2,500	2,500		

2.3 General Data

Soil model:	Koppejan
Consolidation model:	Darcy
Strain model:	Linear
Groundwater level:	Initial determined by PI-line number 1
Unit weight of water:	9,81 [kN/m³]
Stress distribution	
- Soil:	Buisman
- Loads:	None
End of consolidation:	7300,00 [days]
No maintain profile	
Pc (initial):	Constant
Pc (per step):	Automatic increased to the initial effective stresses
Creep rate reference time:	1,000 [days]
With imaginary surface:	determined by layer boundary number 11
Load column width:	1,00 [m]
No submerging	
Load column width	
- Non-Uniform Loads :	1,00 [m]
- Trapeziform Loads :	1,00 [m]

2.4 Soil Profiles

Layer number	Material name	PI-line top	PI-line bottom
11	toplaag	1	1
10	klei	1	1

Layer number	Material name	PI-line top	PI-line bottom
9	zand los	1	1
8	klei	1	1
7	zand los	1	1
6	leem	1	1
5	zand los	1	1
4	leem	1	1
3	zand los	1	1
2	leem	1	1
1	zand vast	1	1

2.5 Soil Properties

Layer number	Drained	Unit weight	
		Unsaturated [kN/m ³]	Saturated [kN/m ³]
11	Yes	18,00	20,00
10	No	17,00	17,00
9	Yes	17,00	19,00
8	No	17,00	17,00
7	Yes	17,00	19,00
6	No	20,00	20,00
5	Yes	17,00	19,00
4	No	20,00	20,00
3	Yes	17,00	19,00
2	No	20,00	20,00
1	Yes	19,00	21,00

Layer number	Storage type	Vert. consolid. coefficient Cv [m ² /s]	Vertical permeability [m/s]	Permeability strain mod. [-]	Initial vertical permeability [m/s]
11	Vert. cons.	-	-	-	-
10	Vert. cons.	3,00E-07	-	-	-
9	Vert. cons.	-	-	-	-
8	Vert. cons.	3,00E-07	-	-	-
7	Vert. cons.	-	-	-	-
6	Vert. cons.	3,00E-01	-	-	-
5	Vert. cons.	-	-	-	-
4	Vert. cons.	3,00E-01	-	-	-
3	Vert. cons.	-	-	-	-
2	Vert. cons.	3,00E-01	-	-	-
1	Vert. cons.	-	-	-	-

Layer number	Precons. pressure [kN/m ²]	POP [kN/m ²]	OCR [-]
11	-	-	1,00
10	-	-	1,00
9	-	-	1,00
8	-	-	1,00
7	-	-	1,00
6	-	-	1,00
5	-	-	1,00
4	-	-	1,00
3	-	-	1,00
2	-	-	1,00
1	-	-	1,00

Layer number	Primary compr. coeff.		Secular compr. coeff.		Swell constants	
	Cp [-]	Cp' [-]	Cs [-]	Cs' [-]	Ap [-]	As [-]
11	1,00E+04	6,00E+02	1,00E+04	1,00E+04	1,00E+00	1,00E+00
10	6,00E+01	1,50E+01	1,00E+04	1,60E+02	1,00E+00	1,00E+00
9	1,00E+04	6,00E+02	1,00E+04	1,00E+04	1,00E+00	1,00E+00
8	6,00E+01	1,50E+01	1,00E+04	1,60E+02	1,00E+00	1,00E+00
7	1,00E+04	6,00E+02	1,00E+04	1,00E+04	1,00E+00	1,00E+00
6	2,00E+02	4,50E+01	1,00E+04	1,30E+03	1,00E+00	1,00E+00

Layer number	Primary compr. coeff.		Secular compr. coeff.		Swell constants	
	Cp [-]	Cp' [-]	Cs [-]	Cs' [-]	Ap [-]	As [-]
5	1,00E+04	6,00E+02	1,00E+04	1,00E+04	1,00E+00	1,00E+00
4	2,00E+02	4,50E+01	1,00E+04	1,30E+03	1,00E+00	1,00E+00
3	1,00E+04	6,00E+02	1,00E+04	1,00E+04	1,00E+00	1,00E+00
2	2,00E+02	4,50E+01	1,00E+04	1,30E+03	1,00E+00	1,00E+00
1	1,00E+04	1,00E+04	1,00E+04	1,00E+04	1,00E+00	1,00E+00

2.6 Non-Uniform Loads

Load number	Time [days]	Unit weight	
		Unsaturated [kN/m³]	Saturated [kN/m³]
1	0	20,00	20,00
2	6205	20,00	20,00

Load number	Co-ordinates [m]					
1 - X -	0,00	5,00	145,00	150,00		
1 - Y -	3,00	18,00	18,00	3,00		
2 - X -	0,00	5,00	145,00	150,00		
2 - Y -	3,00	28,00	28,00	3,00		

2.7 Verticals

Vertical number	X co-ordinates [m]				
1 - 5	0,000	25,000	50,000	75,000	100,000
6 - 7	125,000	150,000			

Discretisation = 100

3 Results per Vertical

3.1 Results for Vertical 1 (X = 0,00 m; Z = 0,00 m)

Depth [m]	Effective Stress [kPa]	Hydraulic head [m]	Loading [kPa]	Settlement [m]
3,000	25,001	3,000	25,000	0,330
2,900	26,802	2,900	25,002	0,330
2,800	28,630	2,800	25,030	0,329
2,700	30,543	2,700	25,143	0,329
2,600	32,611	2,600	25,411	0,328
2,500	34,892	2,500	25,892	0,328
2,400	36,640	2,500	26,621	0,328
2,300	38,644	2,500	27,606	0,328
2,200	40,888	2,500	28,831	0,327
2,100	43,345	2,500	30,269	0,327
2,000	45,982	2,500	31,887	0,327
2,000	45,982	2,500	31,887	0,327
1,850	49,751	2,500	34,578	0,311
1,700	53,753	2,500	37,501	0,295
1,700	53,754	2,500	37,502	0,295
0,850	79,853	2,500	55,790	0,293
0,000	105,944	2,500	74,069	0,291
0,000	105,944	2,500	74,069	0,291
-0,500	119,673	2,500	84,203	0,237
-1,000	132,801	2,500	93,736	0,182
-1,000	132,802	2,500	93,737	0,182
-2,000	159,124	2,500	110,869	0,180
-3,000	182,932	2,500	125,487	0,177
-3,000	182,932	2,500	125,487	0,177
-3,400	192,208	2,500	130,687	0,166
-3,800	201,148	2,500	135,551	0,155
-3,800	201,148	2,500	135,551	0,155
-4,500	215,348	2,500	143,318	0,153
-5,500	234,189	2,500	152,969	0,151
-5,900	241,311	2,500	156,415	0,150
-6,600	253,279	2,500	161,950	0,149
-7,600	269,421	2,500	168,902	0,147
-8,000	275,604	2,500	171,409	0,146
-8,000	275,604	2,500	171,409	0,146
-8,500	283,639	2,500	174,349	0,134
-9,000	291,476	2,500	177,091	0,122
-9,000	291,476	2,500	177,091	0,122
-9,800	302,849	2,500	181,112	0,120
-10,500	312,472	2,500	184,302	0,119
-11,200	321,827	2,500	187,224	0,118
-12,000	332,229	2,500	190,274	0,117
-12,000	332,229	2,500	190,274	0,117
-13,000	345,853	2,500	193,708	0,096
-14,000	359,116	2,500	196,781	0,075
-15,000	372,070	2,500	199,545	0,056
-16,500	391,012	2,500	203,202	0,028
-18,000	409,468	2,500	206,373	0,001
-18,000	409,468	2,500	206,373	0,001
-19,500	429,025	2,500	209,145	0,000
-21,000	448,251	2,500	211,586	0,000

3.2 Results for Vertical 2 (X = 25,00 m; Z = 0,00 m)

Depth [m]	Effective Stress [kPa]	Hydraulic head [m]	Loading [kPa]	Settlement [m]
3,000	500,001	3,000	500,000	0,685
2,900	501,800	2,900	500,000	0,684
2,800	503,600	2,800	500,000	0,683
2,700	505,400	2,700	500,000	0,682
2,600	507,200	2,600	500,000	0,681
2,500	509,000	2,500	500,000	0,680
2,400	510,019	2,500	500,000	0,679
2,300	511,038	2,500	500,000	0,678
2,200	512,057	2,500	500,000	0,678
2,100	513,076	2,500	500,000	0,677
2,000	514,095	2,500	500,000	0,676
2,000	514,095	2,500	500,000	0,676
1,850	515,173	2,500	499,999	0,628
1,700	516,251	2,500	499,999	0,581
1,700	516,251	2,500	499,999	0,581
0,850	524,055	2,500	499,992	0,575
0,000	531,845	2,500	499,970	0,570
0,000	531,845	2,500	499,970	0,570
-0,500	535,083	2,534	499,945	0,446
-1,000	538,972	2,500	499,907	0,326
-1,000	538,972	2,500	499,907	0,326
-2,000	548,035	2,500	499,780	0,321
-3,000	557,005	2,500	499,560	0,316
-3,000	557,005	2,500	499,560	0,316
-3,400	560,960	2,500	499,439	0,294
-3,800	564,894	2,500	499,297	0,272
-3,800	564,894	2,500	499,297	0,272
-4,500	571,022	2,500	498,992	0,269
-5,500	579,636	2,500	498,416	0,265
-5,900	583,031	2,500	498,135	0,263
-6,600	588,898	2,500	497,569	0,260
-7,600	597,108	2,500	496,589	0,257
-8,000	600,334	2,500	496,139	0,255
-8,000	600,334	2,500	496,139	0,255
-8,500	604,817	2,500	495,527	0,233
-9,000	609,247	2,500	494,862	0,212
-9,000	609,247	2,500	494,862	0,212
-9,800	615,423	2,500	493,686	0,210
-10,500	620,716	2,500	492,546	0,207
-11,200	625,907	2,500	491,304	0,205
-12,000	631,719	2,500	489,764	0,203
-12,000	631,719	2,500	489,764	0,203
-13,000	639,813	2,500	487,668	0,166
-14,000	647,730	2,500	485,395	0,131
-15,000	655,487	2,500	482,962	0,097
-16,500	666,859	2,500	479,049	0,048
-18,000	677,971	2,500	474,876	0,002
-18,000	677,971	2,500	474,876	0,002
-19,458	690,038	2,500	470,624	0,001
-20,917	701,965	2,500	466,232	0,000

3.3 Results for Vertical 3 (X = 50,00 m; Z = 0,00 m)

Depth [m]	Effective Stress [kPa]	Hydraulic head [m]	Loading [kPa]	Settlement [m]
3,000	500,001	3,000	500,000	0,689
2,900	501,800	2,900	500,000	0,688
2,800	503,600	2,800	500,000	0,686
2,700	505,400	2,700	500,000	0,685
2,600	507,200	2,600	500,000	0,685

Depth [m]	Effective Stress [kPa]	Hydraulic head [m]	Loading [kPa]	Settlement [m]
2,500	509,000	2,500	500,000	0,684
2,400	510,019	2,500	500,000	0,683
2,300	511,038	2,500	500,000	0,682
2,200	512,057	2,500	500,000	0,681
2,100	513,076	2,500	500,000	0,681
2,000	514,095	2,500	500,000	0,680
2,000	514,095	2,500	500,000	0,680
1,850	515,173	2,500	500,000	0,632
1,700	516,252	2,500	500,000	0,585
1,700	516,252	2,500	500,000	0,585
0,850	524,063	2,500	500,000	0,579
0,000	531,873	2,500	499,998	0,574
0,000	531,873	2,500	499,998	0,574
-0,500	535,135	2,534	499,997	0,450
-1,000	539,060	2,500	499,995	0,330
-1,000	539,060	2,500	499,995	0,330
-2,000	548,243	2,500	499,988	0,325
-3,000	557,420	2,500	499,975	0,320
-3,000	557,420	2,500	499,975	0,320
-3,400	561,489	2,500	499,968	0,297
-3,800	565,556	2,500	499,959	0,275
-3,800	565,556	2,500	499,959	0,275
-4,500	571,970	2,500	499,940	0,272
-5,500	581,123	2,500	499,903	0,268
-5,900	584,779	2,500	499,883	0,267
-6,600	591,173	2,500	499,844	0,264
-7,600	600,290	2,500	499,771	0,260
-8,000	603,931	2,500	499,736	0,259
-8,000	603,931	2,500	499,736	0,259
-8,500	608,977	2,500	499,687	0,237
-9,000	614,016	2,500	499,631	0,216
-9,000	614,017	2,500	499,631	0,216
-9,800	621,266	2,500	499,529	0,213
-10,500	627,595	2,500	499,425	0,211
-11,200	633,908	2,500	499,305	0,209
-12,000	641,102	2,500	499,147	0,206
-12,000	641,102	2,500	499,147	0,206
-13,000	651,063	2,500	498,918	0,169
-14,000	660,985	2,500	498,650	0,133
-15,000	670,865	2,500	498,340	0,099
-16,500	685,601	2,500	497,791	0,049
-18,000	700,231	2,500	497,136	0,002
-18,000	700,232	2,500	497,136	0,002
-19,417	715,362	2,500	496,415	0,001
-20,833	730,389	2,500	495,589	0,000

3.4 Results for Vertical 4 (X = 75,00 m; Z = 0,00 m)

Depth [m]	Effective Stress [kPa]	Hydraulic head [m]	Loading [kPa]	Settlement [m]
3,000	500,001	3,000	500,000	0,689
2,900	501,800	2,900	500,000	0,688
2,800	503,600	2,800	500,000	0,687
2,700	505,400	2,700	500,000	0,686
2,600	507,200	2,600	500,000	0,685
2,500	509,000	2,500	500,000	0,684
2,400	510,019	2,500	500,000	0,683
2,300	511,038	2,500	500,000	0,682
2,200	512,057	2,500	500,000	0,682
2,100	513,076	2,500	500,000	0,681
2,000	514,095	2,500	500,000	0,680

Depth [m]	Effective Stress [kPa]	Hydraulic head [m]	Loading [kPa]	Settlement [m]
2,000	514,095	2,500	500,000	0,680
1,850	515,173	2,500	500,000	0,632
1,700	516,252	2,500	500,000	0,585
1,700	516,252	2,500	500,000	0,585
0,850	524,063	2,500	500,000	0,579
0,000	531,874	2,500	499,999	0,574
0,000	531,875	2,500	499,999	0,574
-0,500	535,137	2,534	499,999	0,450
-1,000	539,063	2,500	499,998	0,330
-1,000	539,063	2,500	499,998	0,330
-2,000	548,251	2,500	499,996	0,325
-3,000	557,436	2,500	499,991	0,320
-3,000	557,436	2,500	499,991	0,320
-3,400	561,510	2,500	499,989	0,298
-3,800	565,583	2,500	499,986	0,276
-3,800	565,583	2,500	499,986	0,276
-4,500	572,009	2,500	499,979	0,273
-5,500	581,185	2,500	499,965	0,269
-5,900	584,854	2,500	499,958	0,267
-6,600	591,273	2,500	499,944	0,264
-7,600	600,436	2,500	499,917	0,261
-8,000	604,099	2,500	499,904	0,259
-8,000	604,099	2,500	499,904	0,259
-8,500	609,176	2,500	499,886	0,237
-9,000	614,250	2,500	499,865	0,216
-9,000	614,250	2,500	499,865	0,216
-9,800	621,563	2,500	499,826	0,213
-10,500	627,956	2,500	499,786	0,211
-11,200	634,343	2,500	499,740	0,209
-12,000	641,633	2,500	499,678	0,206
-12,000	641,633	2,500	499,678	0,206
-13,000	651,733	2,500	499,588	0,169
-14,000	661,815	2,500	499,480	0,134
-15,000	671,878	2,500	499,353	0,099
-16,500	686,933	2,500	499,123	0,049
-18,000	701,937	2,500	498,842	0,002
-18,000	701,937	2,500	498,842	0,002
-19,375	717,015	2,500	498,533	0,001
-20,750	732,040	2,500	498,172	0,000

3.5 Results for Vertical 5 (X = 100,00 m; Z = 0,00 m)

Depth [m]	Effective Stress [kPa]	Hydraulic head [m]	Loading [kPa]	Settlement [m]
3,000	500,001	3,000	500,000	0,689
2,900	501,800	2,900	500,000	0,687
2,800	503,600	2,800	500,000	0,686
2,700	505,400	2,700	500,000	0,685
2,600	507,200	2,600	500,000	0,685
2,500	509,000	2,500	500,000	0,684
2,400	510,019	2,500	500,000	0,683
2,300	511,038	2,500	500,000	0,682
2,200	512,057	2,500	500,000	0,681
2,100	513,076	2,500	500,000	0,681
2,000	514,095	2,500	500,000	0,680
2,000	514,095	2,500	500,000	0,680
1,850	515,173	2,500	500,000	0,632
1,700	516,252	2,500	500,000	0,585
1,700	516,252	2,500	500,000	0,585
0,850	524,063	2,500	500,000	0,579
0,000	531,873	2,500	499,998	0,574

Depth [m]	Effective Stress [kPa]	Hydraulic head [m]	Loading [kPa]	Settlement [m]
0,000	531,873	2,500	499,998	0,574
-0,500	535,135	2,534	499,997	0,450
-1,000	539,060	2,500	499,995	0,330
-1,000	539,060	2,500	499,995	0,330
-2,000	548,243	2,500	499,988	0,325
-3,000	557,420	2,500	499,975	0,320
-3,000	557,420	2,500	499,975	0,320
-3,400	561,489	2,500	499,968	0,297
-3,800	565,556	2,500	499,959	0,275
-3,800	565,556	2,500	499,959	0,275
-4,500	571,970	2,500	499,940	0,272
-5,500	581,123	2,500	499,903	0,268
-5,900	584,779	2,500	499,883	0,267
-6,600	591,173	2,500	499,844	0,264
-7,600	600,290	2,500	499,771	0,260
-8,000	603,931	2,500	499,736	0,259
-8,000	603,931	2,500	499,736	0,259
-8,500	608,977	2,500	499,687	0,237
-9,000	614,016	2,500	499,631	0,216
-9,000	614,017	2,500	499,631	0,216
-9,800	621,266	2,500	499,529	0,213
-10,500	627,595	2,500	499,425	0,211
-11,200	633,908	2,500	499,305	0,209
-12,000	641,102	2,500	499,147	0,206
-12,000	641,102	2,500	499,147	0,206
-13,000	651,063	2,500	498,918	0,169
-14,000	660,985	2,500	498,650	0,133
-15,000	670,865	2,500	498,340	0,099
-16,500	685,601	2,500	497,791	0,049
-18,000	700,231	2,500	497,136	0,001
-18,000	700,232	2,500	497,136	0,001
-19,333	714,475	2,500	496,460	0,001
-20,667	728,626	2,500	495,691	0,000

3.6 Results for Vertical 6 (X = 125,00 m; Z = 0,00 m)

Depth [m]	Effective Stress [kPa]	Hydraulic head [m]	Loading [kPa]	Settlement [m]
3,000	500,001	3,000	500,000	0,685
2,900	501,800	2,900	500,000	0,684
2,800	503,600	2,800	500,000	0,682
2,700	505,400	2,700	500,000	0,682
2,600	507,200	2,600	500,000	0,681
2,500	509,000	2,500	500,000	0,680
2,400	510,019	2,500	500,000	0,679
2,300	511,038	2,500	500,000	0,678
2,200	512,057	2,500	500,000	0,677
2,100	513,076	2,500	500,000	0,677
2,000	514,095	2,500	500,000	0,676
2,000	514,095	2,500	500,000	0,676
1,850	515,173	2,500	499,999	0,628
1,700	516,251	2,500	499,999	0,581
1,700	516,251	2,500	499,999	0,581
0,850	524,055	2,500	499,992	0,575
0,000	531,845	2,500	499,970	0,570
0,000	531,845	2,500	499,970	0,570
-0,500	535,083	2,534	499,945	0,446
-1,000	538,972	2,500	499,907	0,326
-1,000	538,972	2,500	499,907	0,326
-2,000	548,035	2,500	499,780	0,321
-3,000	557,005	2,500	499,560	0,316

Depth [m]	Effective Stress [kPa]	Hydraulic head [m]	Loading [kPa]	Settlement [m]
-3,000	557,005	2,500	499,560	0,316
-3,400	560,960	2,500	499,439	0,293
-3,800	564,894	2,500	499,297	0,272
-3,800	564,894	2,500	499,297	0,272
-4,500	571,022	2,500	498,992	0,269
-5,500	579,636	2,500	498,416	0,264
-5,900	583,031	2,500	498,135	0,263
-6,600	588,898	2,500	497,569	0,260
-7,600	597,108	2,500	496,589	0,256
-8,000	600,334	2,500	496,139	0,255
-8,000	600,334	2,500	496,139	0,255
-8,500	604,817	2,500	495,527	0,233
-9,000	609,247	2,500	494,862	0,212
-9,000	609,247	2,500	494,862	0,212
-9,800	615,423	2,500	493,686	0,209
-10,500	620,716	2,500	492,546	0,207
-11,200	625,907	2,500	491,304	0,205
-12,000	631,719	2,500	489,764	0,203
-12,000	631,719	2,500	489,764	0,203
-13,000	639,813	2,500	487,668	0,166
-14,000	647,730	2,500	485,395	0,131
-15,000	655,487	2,500	482,962	0,097
-16,500	666,859	2,500	479,049	0,048
-18,000	677,971	2,500	474,876	0,001
-18,000	677,971	2,500	474,876	0,001
-19,292	688,667	2,500	471,118	0,001
-20,583	699,248	2,500	467,246	0,000

3.7 Results for Vertical 7 (X = 150,00 m; Z = 0,00 m)

Depth [m]	Effective Stress [kPa]	Hydraulic head [m]	Loading [kPa]	Settlement [m]
3,000	25,001	3,000	25,000	0,330
2,900	26,802	2,900	25,002	0,330
2,800	28,630	2,800	25,030	0,329
2,700	30,543	2,700	25,143	0,329
2,600	32,611	2,600	25,411	0,328
2,500	34,892	2,500	25,892	0,328
2,400	36,640	2,500	26,621	0,328
2,300	38,644	2,500	27,606	0,328
2,200	40,888	2,500	28,831	0,327
2,100	43,345	2,500	30,269	0,327
2,000	45,982	2,500	31,887	0,327
2,000	45,982	2,500	31,887	0,327
1,850	49,751	2,500	34,578	0,311
1,700	53,753	2,500	37,501	0,295
1,700	53,754	2,500	37,502	0,295
0,850	79,853	2,500	55,790	0,293
0,000	105,944	2,500	74,069	0,291
0,000	105,944	2,500	74,069	0,291
-0,500	119,673	2,500	84,203	0,237
-1,000	132,801	2,500	93,736	0,182
-1,000	132,802	2,500	93,737	0,182
-2,000	159,124	2,500	110,869	0,180
-3,000	182,932	2,500	125,487	0,177
-3,000	182,932	2,500	125,487	0,177
-3,400	192,208	2,500	130,687	0,166
-3,800	201,148	2,500	135,551	0,155
-3,800	201,148	2,500	135,551	0,155
-4,500	215,348	2,500	143,318	0,153
-5,500	234,189	2,500	152,969	0,151

Depth [m]	Effective Stress [kPa]	Hydraulic head [m]	Loading [kPa]	Settlement [m]
-5,900	241,311	2,500	156,415	0,150
-6,600	253,279	2,500	161,950	0,148
-7,600	269,421	2,500	168,902	0,146
-8,000	275,604	2,500	171,409	0,146
-8,000	275,604	2,500	171,409	0,146
-8,500	283,639	2,500	174,349	0,134
-9,000	291,476	2,500	177,091	0,122
-9,000	291,476	2,500	177,091	0,122
-9,800	302,849	2,500	181,112	0,120
-10,500	312,472	2,500	184,302	0,119
-11,200	321,827	2,500	187,224	0,118
-12,000	332,229	2,500	190,274	0,116
-12,000	332,229	2,500	190,274	0,116
-13,000	345,853	2,500	193,708	0,095
-14,000	359,116	2,500	196,781	0,075
-15,000	372,070	2,500	199,545	0,056
-16,500	391,012	2,500	203,202	0,028
-18,000	409,468	2,500	206,373	0,001
-18,000	409,468	2,500	206,373	0,001
-19,250	425,790	2,500	208,707	0,000
-20,500	441,876	2,500	210,806	0,000

4 Settlements

4.1 Settlements

Vertical number	X co-ordinate [m]	Z co-ordinate [m]	Surface level [m]	Settlement [m]
1	0,00	0,00	3,00	0,330
2	25,00	0,00	3,00	0,685
3	50,00	0,00	3,00	0,689
4	75,00	0,00	3,00	0,689
5	100,00	0,00	3,00	0,689
6	125,00	0,00	3,00	0,685
7	150,00	0,00	3,00	0,330

End of Report

