



DR. SPANG

Projekt: S6 2. Baustufe

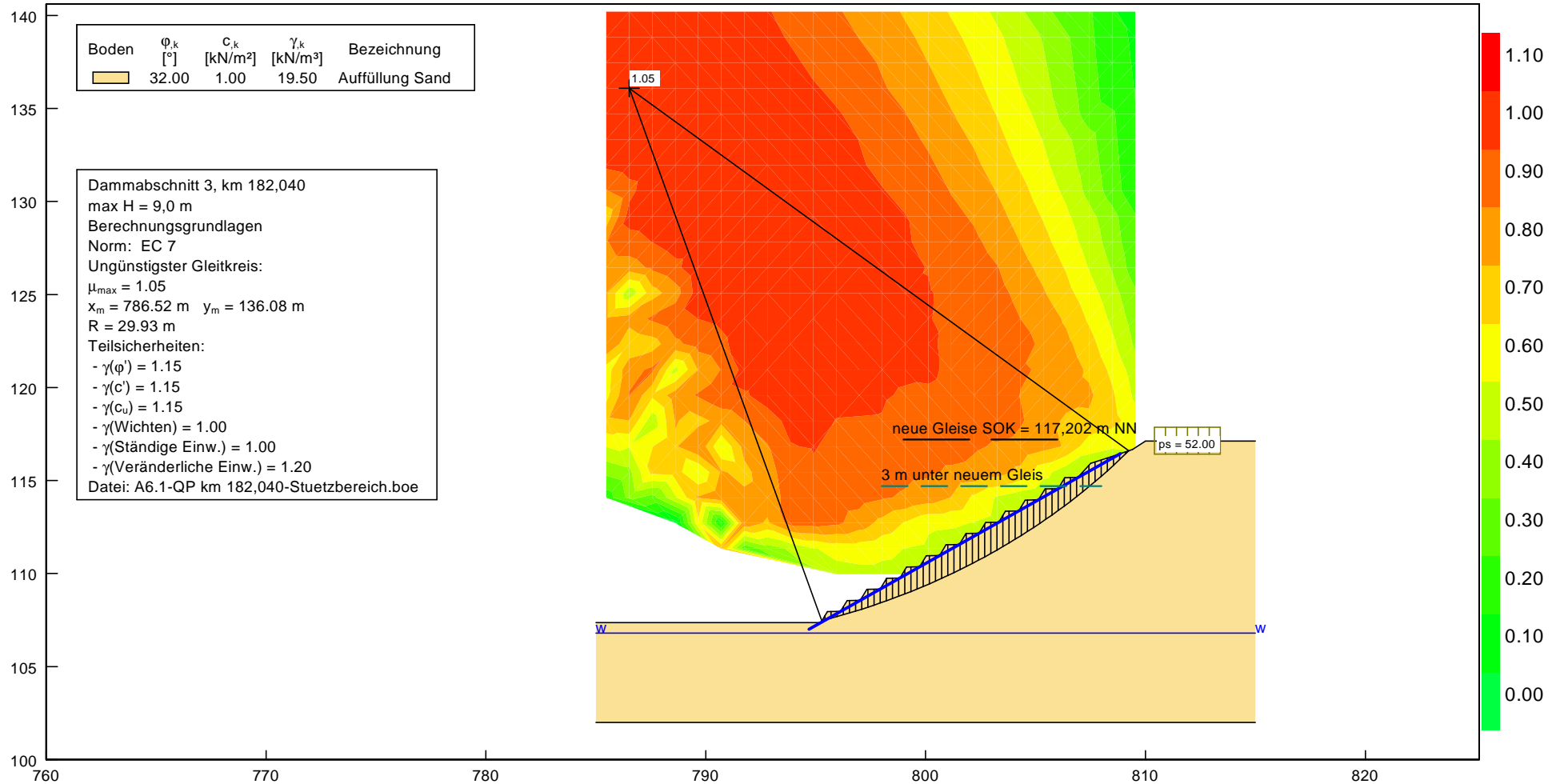
Böschungsbruchberechnung, D3 QP km 182,040, Abtreppung auf Stützbereich

Projekt: P 33.3184

Anlage: 6.1

Bearbeiter: Den/Fe

Datum: 01.08.2013

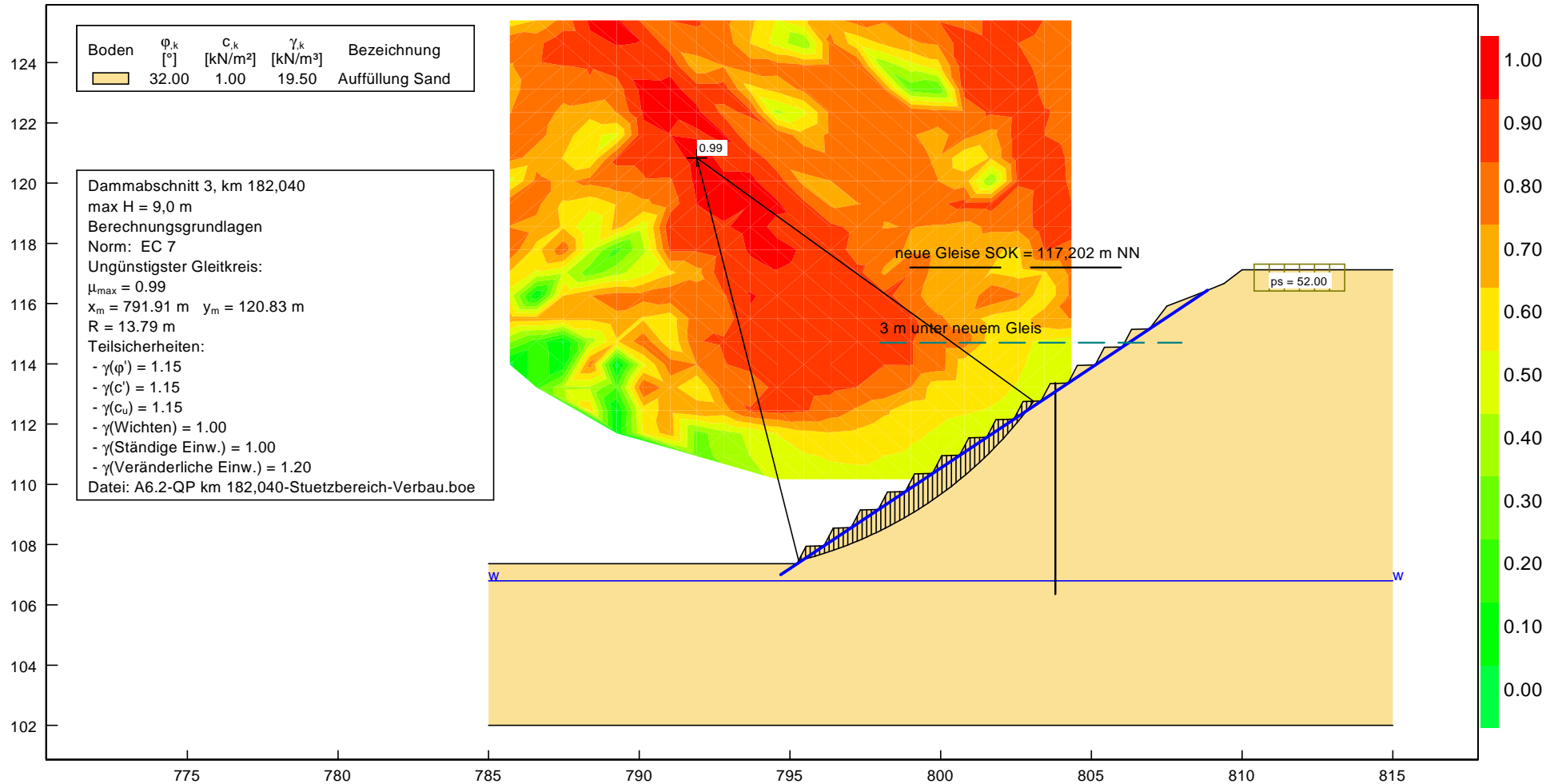




DR. SPANG

Projekt: S6 2. Baustufe Böschungsbruchberechnung, D3 QP km 182,040, Verbau

Projekt: P 33.3184
Anlage: 6.2
Bearbeiter: Den/Fe
Datum: 01.08.2013



**Böschungsberechnung nach EC 7
mit Kreisleitflächen**

Dammabschnitt 3, km 182,040
max H = 9,0 m
Datei: A6.2-QP km 182,040-Stuetzbereich-Verbau.boe

Parameterliste

phi [°] = Reibungswinkel
c [kN/m²] = Kohäsion
gamma [kN/m³] = Wichte
mue [-] = Ausnutzungsgrad
xm,ym [m] = x,y-Wert des Gleitkreismittelpunktes
rad [m] = Radius des Gleitkreises

Teilsicherheiten: (GEO-3)

- gam(phi) = 1.15
- gam(c') = 1.15
- gam(cu) = 1.15
- gam(Wichten) = 1.00
- gam(Ständige Einw.) = 1.00
- gam(Veränderliche Einw.) = 1.20

Bewegungsrichtung des Gleitkörpers nach links

Koordinaten der Geländepunkte

Nr.	x	y	Nr.	x	y	Nr.	x	y	Nr.	x	y	Nr.	x	y
[-]	[m]	[m]	[-]	[m]	[m]	[-]	[m]	[m]	[-]	[m]	[m]	[-]	[m]	[m]
1	785.000	107.363	2	795.230	107.363	3	795.530	107.948	4	796.130	107.963	5	796.430	108.548
6	797.030	108.563	7	797.330	109.148	8	797.930	109.163	9	798.230	109.748	10	798.830	109.763
11	799.130	110.348	12	799.730	110.363	13	800.030	110.948	14	800.630	110.963	15	800.930	111.548
16	801.530	111.563	17	801.830	112.148	18	802.430	112.163	19	802.730	112.748	20	803.330	112.763
21	803.630	113.348	22	804.230	113.363	23	804.530	113.948	24	805.130	113.963	25	805.430	114.548
26	806.030	114.563	27	806.330	115.148	28	806.930	115.163	29	807.505	115.917	30	808.413	116.263
31	808.856	116.444	32	809.402	116.667	33	810.000	117.122	34	815.000	117.122			

Charakteristische Bodenkennwerte

Boden	φ _k	c _k	γ _k	Bezeichnung
[-]	[°]	[kN/m ²]	[kN/m ³]	
1	32.00	1.00	19.50	Auffüllung Sand

Bemessungs-Bodenkennwerte

Boden	φ _d	c _d	γ _d	Bezeichnung
[-]	[°]	[kN/m ²]	[kN/m ³]	
1	28.52	0.87	19.50	Auffüllung Sand

Koordinaten der Schichten und Bodennummern

Nr.	x(links)	y(links)	x(rechts)	y(rechts)	Boden-Nr.
[-]	[m]	[m]	[m]	[m]	
1	785.000	102.000	815.000	102.000	1

Koordinaten des Porenwasserdruck-Polygonzuges

Nr.	x	y	Nr.	x	y
[-]	[m]	[m]	[-]	[m]	[m]
1	785.000	106.800	2	815.000	106.800

Ständige Lasten

Nr.	Größe(links)	Größe(rechts)	x(links)	x(rechts)	y
[-]	[kN/m ²]	[kN/m ²]	[m]	[m]	[m]
1	52.00	52.00	810.40	813.40	116.42

Bauteil 1

Nr.	x	y
[-]	[m]	[m]
1	803.80	113.36
2	803.80	106.36

Wasserstand vor der Böschung links [m] = 106.80

Wasserstand vor der Böschung rechts [m] = 106.80

gamma Wasser [kN/m³] = 10.000

Berechnung mit Berücksichtigung des passiven Erddruckkeils

Ergebnisse
 Suchbereich
 Art Suchradius
 Horizontale Tangenten
 x / y (Anfang): 816.7547 117.3475
 x / y (Ende): 816.5857 99.4353
 Anzahl Radien = 40

Nr	xm	ym	Radius	Lamellen	mue	Zähler	Nenner	M(Ti)	M(R)	M(Gi)	M(S)
[-]	[m]	[m]	[m]	[-]	[-]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]
1	804.3370	107.1253	nicht berechnet								
2	804.3370	107.8869	nicht berechnet								
3	804.3370	108.6485	nicht berechnet								
4	804.3370	109.4102	nicht berechnet								
5	804.3370	110.1718	8.1549	58	0.4414	5950.847	13481.219	13481.2	0.0	5950.8	0.0
6	804.3370	110.9334	8.8290	58	0.4571	7147.542	15637.484	15637.5	0.0	7147.5	0.0
7	804.3370	111.6950	9.6168	57	0.4718	8526.401	18073.063	18073.1	0.0	8526.4	0.0
8	804.3370	112.4567	10.3789	55	0.4769	9764.535	20473.699	20473.7	0.0	9764.5	0.0
9	804.3370	113.2183	9.6801	55	0.4797	7935.756	16543.613	16543.6	0.0	7935.8	0.0
10	804.3370	113.9799	9.5149	51	0.4895	7323.018	14959.317	14959.3	0.0	7323.0	0.0
11	804.3370	114.7415	8.9561	51	0.5013	6018.296	12005.134	12005.1	0.0	6018.3	0.0
12	804.3370	115.5032	2.1999	50	0.7526	27.680	36.779	36.8	0.0	27.7	0.0
13	804.3370	116.2648	2.6573	50	0.7747	24.818	32.036	32.0	0.0	24.8	0.0
14	804.3370	117.0264	2.9115	50	0.7764	2.253	2.902	2.9	0.0	2.3	0.0
15	804.3370	117.7880	4.0230	50	0.8417	64.872	77.073	77.1	0.0	64.9	0.0
16	804.3370	118.5497	4.7846	50	0.8603	109.416	127.187	127.2	0.0	109.4	0.0
17	804.3370	119.3113	5.5463	50	0.8512	162.985	191.487	191.5	0.0	163.0	0.0
18	804.3370	120.0729	6.3079	50	0.8383	229.090	273.284	273.3	0.0	229.1	0.0
19	804.3370	120.8345	7.0695	50	0.8352	312.097	373.697	373.7	0.0	312.1	0.0
20	804.3370	121.5962	7.3833	50	0.8197	189.724	231.465	231.5	0.0	189.7	0.0
21	804.3370	122.3578	8.5928	50	0.8418	546.400	649.063	649.1	0.0	546.4	0.0
22	804.3370	123.1194	9.3544	50	0.8389	694.647	828.092	828.1	0.0	694.6	0.0
23	804.3370	123.8810	10.1160	50	0.8412	886.247	1053.533	1053.5	0.0	886.2	0.0
24	804.3370	124.6427	10.8776	50	0.8303	1077.572	1297.811	1297.8	0.0	1077.6	0.0
25	804.3370	125.4043	11.6393	50	0.8131	1269.235	1560.936	1560.9	0.0	1269.2	0.0
26	803.4494	107.1253	nicht berechnet								
27	803.4494	107.8869	nicht berechnet								
28	803.4494	108.6485	nicht berechnet								
29	803.4494	109.4102	nicht berechnet								
30	803.4494	110.1718	8.1549	58	0.4487	5624.112	12533.417	12533.4	0.0	5624.1	0.0
31	803.4494	110.9334	8.8290	56	0.4757	6926.031	14560.112	14560.1	0.0	6926.0	0.0
32	803.4494	111.6950	9.6168	55	0.4946	8484.996	17154.757	17154.8	0.0	8485.0	0.0
33	803.4494	112.4567	10.1756	54	0.5107	9525.122	18652.423	18652.4	0.0	9525.1	0.0
34	803.4494	113.2183	10.4041	52	0.5183	9621.690	18563.118	18563.1	0.0	9621.7	0.0
35	803.4494	113.9799	10.3532	52	0.5270	9102.495	17271.208	17271.2	0.0	9102.5	0.0
36	803.4494	114.7415	10.2261	50	0.5352	8399.409	15694.472	15694.5	0.0	8399.4	0.0
37	803.4494	115.5032	2.1999	50	0.7207	3.242	4.499	4.5	0.0	3.2	0.0
38	803.4494	116.2648	10.1371	50	0.5622	7294.396	12975.356	12975.4	0.0	7294.4	0.0
39	803.4494	117.0264	3.3433	50	0.6402	1.917	2.994	3.0	0.0	1.9	0.0
40	803.4494	117.7880	4.4708	50	0.8520	63.617	74.665	74.7	0.0	63.6	0.0
41	803.4494	118.5497	5.2324	50	0.9121	118.378	129.789	129.8	0.0	118.4	0.0
42	803.4494	119.3113	5.9941	50	0.9139	182.435	199.618	199.6	0.0	182.4	0.0
43	803.4494	120.0729	6.3079	50	0.9016	93.521	103.724	103.7	0.0	93.5	0.0
44	803.4494	120.8345	7.0695	50	0.8968	145.241	161.958	162.0	0.0	145.2	0.0
45	803.4494	121.5962	7.8311	50	0.8497	208.682	245.598	245.6	0.0	208.7	0.0
46	803.4494	122.3578	8.5928	50	0.8522	290.682	341.086	341.1	0.0	290.7	0.0
47	803.4494	123.1194	9.3544	50	0.8389	374.463	446.352	446.4	0.0	374.5	0.0
48	803.4494	123.8810	9.6682	50	0.8273	197.781	239.078	239.1	0.0	197.8	0.0
49	803.4494	124.6427	10.8776	50	0.8380	622.240	742.563	742.6	0.0	622.2	0.0
50	803.4494	125.4043	11.6393	50	0.8487	814.893	960.176	960.2	0.0	814.9	0.0
51	802.5619	107.1253	nicht berechnet								

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52	802.5619	107.8869	nicht berechnet								
53	802.5619	108.6485	nicht berechnet								
54	802.5619	109.4102	nicht berechnet								
55	802.5619	110.1718	8.1549	59	0.4605	5273.161	11451.492	11451.5	0.0	5273.2	0.0
56	802.5619	110.9334	8.8290	55	0.4887	6554.644	13413.581	13413.6	0.0	6554.6	0.0
57	802.5619	111.6950	9.6168	54	0.5101	8110.575	15898.436	15898.4	0.0	8110.6	0.0
58	802.5619	112.4567	10.3789	53	0.5330	9788.867	18366.185	18366.2	0.0	9788.9	0.0
59	802.5619	113.2183	10.8868	52	0.5465	10747.064	19666.012	19666.0	0.0	10747.1	0.0
60	802.5619	113.9799	10.9120	51	0.5595	10397.523	18584.559	18584.6	0.0	10397.5	0.0
61	802.5619	114.7415	11.1786	50	0.5711	10521.249	18424.272	18424.3	0.0	10521.2	0.0
62	802.5619	115.5032	11.0896	50	0.5837	9797.307	16783.557	16783.6	0.0	9797.3	0.0
63	802.5619	116.2648	3.4447	50	0.7657	2.320	3.030	3.0	0.0	2.3	0.0
64	802.5619	117.0264	11.1148	50	0.6098	8661.234	14202.553	14202.6	0.0	8661.2	0.0
65	802.5619	117.7880	4.4708	50	0.6320	2.078	3.288	3.3	0.0	2.1	0.0
66	802.5619	118.5497	5.2324	50	0.7745	3.825	4.939	4.9	0.0	3.8	0.0
67	802.5619	119.3113	5.9941	50	0.7762	40.550	52.240	52.2	0.0	40.5	0.0
68	802.5619	120.0729	6.7557	50	0.8716	94.010	107.855	107.9	0.0	94.0	0.0
69	802.5619	120.8345	7.5173	50	0.9046	156.484	172.988	173.0	0.0	156.5	0.0
70	802.5619	121.5962	8.2789	50	0.9030	228.761	253.327	253.3	0.0	228.8	0.0
71	802.5619	122.3578	9.0406	50	0.8910	314.825	353.353	353.4	0.0	314.8	0.0
72	802.5619	123.1194	9.8022	50	0.8892	421.814	474.384	474.4	0.0	421.8	0.0
73	802.5619	123.8810	10.5638	50	0.8736	528.900	605.412	605.4	0.0	528.9	0.0
74	802.5619	124.6427	11.3254	50	0.8502	636.618	748.817	748.8	0.0	636.6	0.0
75	802.5619	125.4043	12.0871	50	0.8709	847.916	973.633	973.6	0.0	847.9	0.0
76	785.6982	125.4043	20.1475	50	0.5773	9.668	16.747	16.7	0.0	9.7	0.0
77	785.6982	124.6427	19.8337	50	0.8440	24.069	28.517	28.5	0.0	24.1	0.0
78	785.6982	123.8810	19.0721	50	0.7376	15.179	20.578	20.6	0.0	15.2	0.0
79	785.6982	123.1194	18.3104	50	0.6897	16.290	23.620	23.6	0.0	16.3	0.0
80	785.6982	122.3578	18.4444	50	0.7448	12.196	16.374	16.4	0.0	12.2	0.0
81	785.6982	121.5962	17.2350	50	0.7986	17.027	21.321	21.3	0.0	17.0	0.0
82	785.6982	120.8345	16.4734	50	0.7812	23.045	29.499	29.5	0.0	23.0	0.0
83	785.6982	120.0729	17.0552	50	0.5198	5.985	11.514	11.5	0.0	6.0	0.0
84	785.6982	119.3113	15.3979	50	0.8376	16.604	19.824	19.8	0.0	16.6	0.0
85	785.6982	118.5497	14.6363	50	0.7478	11.465	15.331	15.3	0.0	11.5	0.0
86	785.6982	117.7880	14.3225	50	0.8275	13.002	15.713	15.7	0.0	13.0	0.0
87	785.6982	117.0264	14.1371	50	0.6392	7.049	11.027	11.0	0.0	7.0	0.0
88	785.6982	116.2648	13.2864	50	0.5046	3.381	6.701	6.7	0.0	3.4	0.0
89	785.6982	115.5032	12.5119	50	0.7064	7.078	10.020	10.0	0.0	7.1	0.0
90	785.6982	114.7415	nicht berechnet								
91	785.6982	113.9799	12.0297	50	0.0249	0.070	2.816	2.8	0.0	0.1	0.0
92	785.6982	113.2183	nicht berechnet								
93	785.6982	112.4567	nicht berechnet								
94	785.6982	111.6950	nicht berechnet								
95	785.6982	110.9334	nicht berechnet								
96	785.6982	110.1718	nicht berechnet								
97	785.6982	109.4102	nicht berechnet								
98	785.6982	108.6485	nicht berechnet								
99	785.6982	107.8869	nicht berechnet								
100	785.6982	107.1253	nicht berechnet								
101	786.5857	125.4043	19.6997	50	0.6527	13.749	21.066	21.1	0.0	13.7	0.0
102	786.5857	124.6427	19.3859	50	0.8221	19.894	24.199	24.2	0.0	19.9	0.0
103	786.5857	123.8810	18.6243	50	0.8333	177.125	212.568	212.6	0.0	177.1	0.0
104	786.5857	123.1194	18.3104	50	0.8419	18.177	21.591	21.6	0.0	18.2	0.0
105	786.5857	122.3578	17.5488	50	0.8282	17.224	20.797	20.8	0.0	17.2	0.0
106	786.5857	121.5962	16.7872	50	0.7749	13.873	17.903	17.9	0.0	13.9	0.0
107	786.5857	120.8345	16.4734	50	0.7139	9.467	13.261	13.3	0.0	9.5	0.0
108	786.5857	120.0729	15.7117	50	0.7760	11.739	15.127	15.1	0.0	11.7	0.0
109	786.5857	119.3113	14.9501	50	0.7758	11.569	14.912	14.9	0.0	11.6	0.0
110	786.5857	118.5497	14.1885	50	0.7228	9.197	12.725	12.7	0.0	9.2	0.0
111	786.5857	117.7880	13.4269	50	0.6125	5.484	8.953	9.0	0.0	5.5	0.0
112	786.5857	117.0264	12.8418	50	0.5372	3.339	6.215	6.2	0.0	3.3	0.0
113	786.5857	116.2648	12.8928	50	0.0484	0.028	0.570	0.6	0.0	0.0	0.0
114	786.5857	115.5032	12.1564	50	0.6988	7.104	10.167	10.2	0.0	7.1	0.0
115	786.5857	114.7415	12.1311	50	0.2100	1.423	6.779	6.8	0.0	1.4	0.0
116	786.5857	113.9799	nicht berechnet								
117	786.5857	113.2183	10.4041	50	0.2145	0.673	3.137	3.1	0.0	0.7	0.0
118	786.5857	112.4567	nicht berechnet								
119	786.5857	111.6950	nicht berechnet								

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120	786.5857	110.9334	nicht berechnet								
121	786.5857	110.1718	nicht berechnet								
122	786.5857	109.4102	nicht berechnet								
123	786.5857	108.6485	nicht berechnet								
124	786.5857	107.8869	nicht berechnet								
125	786.5857	107.1253	nicht berechnet								
126	787.4733	125.4043	19.6997	50	0.7855	15.683	19.965	20.0	0.0	15.7	0.0
127	787.4733	124.6427	18.9381	50	0.9278	428.080	461.410	461.4	0.0	428.1	0.0
128	787.4733	123.8810	18.1765	50	0.8477	236.040	278.434	278.4	0.0	236.0	0.0
129	787.4733	123.1194	17.4148	50	0.8012	23.668	29.541	29.5	0.0	23.7	0.0
130	787.4733	122.3578	17.1010	50	0.7172	10.069	14.039	14.0	0.0	10.1	0.0
131	787.4733	121.5962	16.3394	50	0.7074	9.484	13.406	13.4	0.0	9.5	0.0
132	787.4733	120.8345	15.5778	50	0.6454	7.083	10.974	11.0	0.0	7.1	0.0
133	787.4733	120.0729	14.8161	50	0.7293	14.628	20.058	20.1	0.0	14.6	0.0
134	787.4733	119.3113	14.5023	50	0.6324	5.826	9.212	9.2	0.0	5.8	0.0
135	787.4733	118.5497	13.7407	50	0.6410	5.829	9.093	9.1	0.0	5.8	0.0
136	787.4733	117.7880	12.9791	50	0.8202	18.862	22.997	23.0	0.0	18.9	0.0
137	787.4733	117.0264	12.4101	50	0.4730	2.243	4.741	4.7	0.0	2.2	0.0
138	787.4733	116.2648	11.7117	50	0.6496	5.428	8.357	8.4	0.0	5.4	0.0
139	787.4733	115.5032	11.4452	50	0.6692	5.514	8.239	8.2	0.0	5.5	0.0
140	787.4733	114.7415	10.5436	50	0.0418	0.010	0.242	0.2	0.0	0.0	0.0
141	787.4733	113.9799	10.0738	50	0.0806	0.044	0.550	0.6	0.0	0.0	0.0
142	787.4733	113.2183	9.6801	50	0.4320	1.953	4.521	4.5	0.0	2.0	0.0
143	787.4733	112.4567	5.5006	50	0.0001	0.000	87.535	87.5	0.0	0.0	0.0
144	787.4733	111.6950	nicht berechnet								
145	787.4733	110.9334	nicht berechnet								
146	787.4733	110.1718	nicht berechnet								
147	787.4733	109.4102	nicht berechnet								
148	787.4733	108.6485	nicht berechnet								
149	787.4733	107.8869	nicht berechnet								
150	787.4733	107.1253	nicht berechnet								
151	788.3609	125.4043	19.2519	50	0.9694	757.425	781.341	781.3	0.0	757.4	0.0
152	788.3609	124.6427	18.4903	50	0.9257	496.568	536.443	536.4	0.0	496.6	0.0
153	788.3609	123.8810	17.7287	50	0.8565	290.876	339.615	339.6	0.0	290.9	0.0
154	788.3609	123.1194	16.9670	50	0.8420	25.616	30.423	30.4	0.0	25.6	0.0
155	788.3609	122.3578	16.2054	50	0.6876	12.423	18.068	18.1	0.0	12.4	0.0
156	788.3609	121.5962	15.8916	50	0.5622	4.595	8.173	8.2	0.0	4.6	0.0
157	788.3609	120.8345	15.1300	50	0.5565	4.290	7.709	7.7	0.0	4.3	0.0
158	788.3609	120.0729	14.3683	50	0.7824	16.796	21.468	21.5	0.0	16.8	0.0
159	788.3609	119.3113	13.6067	50	0.5901	6.451	10.932	10.9	0.0	6.5	0.0
160	788.3609	118.5497	13.2929	50	0.4514	2.151	4.765	4.8	0.0	2.2	0.0
161	788.3609	117.7880	12.5313	50	0.4705	2.236	4.751	4.8	0.0	2.2	0.0
162	788.3609	117.0264	11.9783	50	0.2929	0.687	2.345	2.3	0.0	0.7	0.0
163	788.3609	116.2648	11.3181	50	0.7466	7.741	10.369	10.4	0.0	7.7	0.0
164	788.3609	115.5032	11.0896	50	0.6686	5.705	8.533	8.5	0.0	5.7	0.0
165	788.3609	114.7415	10.2261	50	0.4027	1.379	3.425	3.4	0.0	1.4	0.0
166	788.3609	113.9799	9.5149	50	0.7882	7.238	9.182	9.2	0.0	7.2	0.0
167	788.3609	113.2183	8.9561	50	0.4387	1.540	3.509	3.5	0.0	1.5	0.0
168	788.3609	112.4567	8.5495	50	0.6285	4.235	6.738	6.7	0.0	4.2	0.0
169	788.3609	111.6950	nicht berechnet								
170	788.3609	110.9334	nicht berechnet								
171	788.3609	110.1718	nicht berechnet								
172	788.3609	109.4102	nicht berechnet								
173	788.3609	108.6485	nicht berechnet								
174	788.3609	107.8869	nicht berechnet								
175	788.3609	107.1253	nicht berechnet								
176	789.2484	125.4043	18.8041	50	0.9648	824.412	854.526	854.5	0.0	824.4	0.0
177	789.2484	124.6427	18.0425	50	0.9552	546.017	571.603	571.6	0.0	546.0	0.0
178	789.2484	123.8810	17.2809	50	0.8988	334.749	372.443	372.4	0.0	334.7	0.0
179	789.2484	123.1194	16.5192	50	0.8013	173.943	217.076	217.1	0.0	173.9	0.0
180	789.2484	122.3578	15.7576	50	0.7517	22.576	30.033	30.0	0.0	22.6	0.0
181	789.2484	121.5962	14.9960	50	0.5336	4.970	9.314	9.3	0.0	5.0	0.0
182	789.2484	120.8345	14.6822	50	0.8644	199.113	230.345	230.3	0.0	199.1	0.0
183	789.2484	120.0729	13.9205	50	0.8220	17.661	21.485	21.5	0.0	17.7	0.0
184	789.2484	119.3113	13.1589	50	0.6591	8.344	12.659	12.7	0.0	8.3	0.0
185	789.2484	118.5497	13.2929	50	0.6894	7.582	10.999	11.0	0.0	7.6	0.0
186	789.2484	117.7880	12.0835	50	0.2167	0.346	1.597	1.6	0.0	0.3	0.0
187	789.2484	117.0264	11.9783	50	0.4147	2.122	5.116	5.1	0.0	2.1	0.0

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188	789.2484	116.2648	10.9244	50	0.7978	8.824	11.060	11.1	0.0	8.8	0.0
189	789.2484	115.5032	10.0228	50	0.7260	8.443	11.630	11.6	0.0	8.4	0.0
190	789.2484	114.7415	9.5911	50	0.6375	3.888	6.099	6.1	0.0	3.9	0.0
191	789.2484	113.9799	7.8384	50	0.0013	0.709	536.541	536.5	0.0	0.7	0.0
192	789.2484	113.2183	8.2320	50	0.2475	0.331	1.338	1.3	0.0	0.3	0.0
193	789.2484	112.4567	7.7365	50	0.0389	0.008	0.217	0.2	0.0	0.0	0.0
194	789.2484	111.6950	5.8176	51	0.0479	20.526	428.737	428.7	0.0	20.5	0.0
195	789.2484	110.9334	nicht berechnet								
196	789.2484	110.1718	nicht berechnet								
197	789.2484	109.4102	nicht berechnet								
198	789.2484	108.6485	nicht berechnet								
199	789.2484	107.8869	nicht berechnet								
200	789.2484	107.1253	nicht berechnet								
201	790.1360	125.4043	17.9085	50	0.8260	22.434	27.159	27.2	0.0	22.4	0.0
202	790.1360	124.6427	17.5947	50	0.9479	607.203	640.549	640.5	0.0	607.2	0.0
203	790.1360	123.8810	16.8331	50	0.8982	386.952	430.802	430.8	0.0	387.0	0.0
204	790.1360	123.1194	16.5192	50	0.9878	851.445	861.969	862.0	0.0	851.4	0.0
205	790.1360	122.3578	15.7576	50	0.9629	602.488	625.715	625.7	0.0	602.5	0.0
206	790.1360	121.5962	14.9960	50	0.9251	398.411	430.658	430.7	0.0	398.4	0.0
207	790.1360	120.8345	14.2344	50	0.8640	237.483	274.869	274.9	0.0	237.5	0.0
208	790.1360	120.0729	13.4727	50	0.8444	16.925	20.044	20.0	0.0	16.9	0.0
209	790.1360	119.3113	12.7111	50	0.7272	15.915	21.885	21.9	0.0	15.9	0.0
210	790.1360	118.5497	11.9495	50	0.4908	2.997	6.106	6.1	0.0	3.0	0.0
211	790.1360	117.7880	12.0835	50	0.4339	2.277	5.247	5.2	0.0	2.3	0.0
212	790.1360	117.0264	10.6831	50	0.5132	3.218	6.271	6.3	0.0	3.2	0.0
213	790.1360	116.2648	10.5307	50	0.7893	8.039	10.185	10.2	0.0	8.0	0.0
214	790.1360	115.5032	10.0228	50	0.6374	4.495	7.052	7.1	0.0	4.5	0.0
215	790.1360	114.7415	8.9561	50	0.8201	14.352	17.499	17.5	0.0	14.4	0.0
216	790.1360	113.9799	8.3972	50	0.5304	2.051	3.866	3.9	0.0	2.1	0.0
217	790.1360	113.2183	7.7493	50	0.8633	9.108	10.550	10.5	0.0	9.1	0.0
218	790.1360	112.4567	7.1267	50	0.6010	2.427	4.038	4.0	0.0	2.4	0.0
219	790.1360	111.6950	6.6435	51	0.5616	2.122	3.779	3.8	0.0	2.1	0.0
220	790.1360	110.9334	nicht berechnet								
221	790.1360	110.1718	nicht berechnet								
222	790.1360	109.4102	nicht berechnet								
223	790.1360	108.6485	nicht berechnet								
224	790.1360	107.8869	nicht berechnet								
225	790.1360	107.1253	nicht berechnet								
226	791.0236	125.4043	17.4607	50	0.8501	187.282	220.317	220.3	0.0	187.3	0.0
227	791.0236	124.6427	16.6991	50	0.7939	25.826	32.532	32.5	0.0	25.8	0.0
228	791.0236	123.8810	16.3852	50	0.9278	427.460	460.722	460.7	0.0	427.5	0.0
229	791.0236	123.1194	16.0714	50	0.9796	878.921	897.255	897.3	0.0	878.9	0.0
230	791.0236	122.3578	15.3098	50	0.9538	640.253	671.231	671.2	0.0	640.3	0.0
231	791.0236	121.5962	14.5482	50	0.9492	427.438	450.322	450.3	0.0	427.4	0.0
232	791.0236	120.8345	13.7865	50	0.8997	264.978	294.508	294.5	0.0	265.0	0.0
233	791.0236	120.0729	13.0249	50	0.8410	14.474	17.211	17.2	0.0	14.5	0.0
234	791.0236	119.3113	12.2633	50	0.7991	19.977	24.998	25.0	0.0	20.0	0.0
235	791.0236	118.5497	11.9495	50	0.9294	250.231	269.233	269.2	0.0	250.2	0.0
236	791.0236	117.7880	11.1879	50	0.8670	137.765	158.892	158.9	0.0	137.8	0.0
237	791.0236	117.0264	10.2513	50	0.6306	5.479	8.688	8.7	0.0	5.5	0.0
238	791.0236	116.2648	9.7434	50	0.8267	12.282	14.856	14.9	0.0	12.3	0.0
239	791.0236	115.5032	8.9561	50	0.5874	3.923	6.679	6.7	0.0	3.9	0.0
240	791.0236	114.7415	8.3210	50	0.5606	4.194	7.481	7.5	0.0	4.2	0.0
241	791.0236	113.9799	7.8384	50	0.8077	14.149	17.518	17.5	0.0	14.1	0.0
242	791.0236	113.2183	7.2666	50	0.6917	3.690	5.334	5.3	0.0	3.7	0.0
243	791.0236	112.4567	6.5169	50	0.6884	3.522	5.116	5.1	0.0	3.5	0.0
244	791.0236	111.6950	5.9828	51	0.7058	3.174	4.497	4.5	0.0	3.2	0.0
245	791.0236	110.9334	nicht berechnet								
246	791.0236	110.1718	nicht berechnet								
247	791.0236	109.4102	nicht berechnet								
248	791.0236	108.6485	nicht berechnet								
249	791.0236	107.8869	nicht berechnet								
250	791.0236	107.1253	nicht berechnet								
251	791.9111	125.4043	17.0129	50	0.8590	242.662	282.506	282.5	0.0	242.7	0.0
252	791.9111	124.6427	16.6991	50	0.8276	15.156	18.314	18.3	0.0	15.2	0.0
253	791.9111	123.8810	15.4896	50	0.6807	13.299	19.537	19.5	0.0	13.3	0.0
254	791.9111	123.1194	15.1758	50	0.9047	266.441	294.509	294.5	0.0	266.4	0.0
255	791.9111	122.3578	14.8620	50	0.9708	664.731	684.716	684.7	0.0	664.7	0.0

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256	791.9111	121.5962	14.1004	50	0.9416	454.321	482.508	482.5	0.0	454.3	0.0
257	791.9111	120.8345	13.7865	50	0.9895	847.908	856.928	856.9	0.0	847.9	0.0
258	791.9111	120.0729	13.0249	50	0.9747	620.829	636.940	636.9	0.0	620.8	0.0
259	791.9111	119.3113	12.2633	50	0.9519	431.970	453.820	453.8	0.0	432.0	0.0
260	791.9111	118.5497	11.5017	50	0.9176	280.813	306.047	306.0	0.0	280.8	0.0
261	791.9111	117.7880	10.7400	50	0.8628	164.267	190.380	190.4	0.0	164.3	0.0
262	791.9111	117.0264	9.8196	50	0.7168	7.294	10.175	10.2	0.0	7.3	0.0
263	791.9111	116.2648	9.3497	50	0.7983	79.192	99.201	99.2	0.0	79.2	0.0
264	791.9111	115.5032	8.6005	50	0.8221	11.583	14.090	14.1	0.0	11.6	0.0
265	791.9111	114.7415	8.0035	50	0.8454	9.411	11.132	11.1	0.0	9.4	0.0
266	791.9111	113.9799	7.2795	50	0.7508	7.054	9.396	9.4	0.0	7.1	0.0
267	791.9111	113.2183	6.5426	50	0.5383	2.646	4.916	4.9	0.0	2.6	0.0
268	791.9111	112.4567	6.1104	50	0.7357	3.714	5.048	5.0	0.0	3.7	0.0
269	791.9111	111.6950	7.1391	51	0.3070	492.715	1605.194	1605.2	0.0	492.7	0.0
270	791.9111	110.9334	6.5411	56	0.2955	423.525	1433.391	1433.4	0.0	423.5	0.0
271	791.9111	110.1718	nicht berechnet								
272	791.9111	109.4102	nicht berechnet								
273	791.9111	108.6485	nicht berechnet								
274	791.9111	107.8869	nicht berechnet								
275	791.9111	107.1253	nicht berechnet								
276	792.7987	125.4043	16.5651	50	0.7793	13.379	17.168	17.2	0.0	13.4	0.0
277	792.7987	124.6427	15.8035	50	0.8078	138.767	171.775	171.8	0.0	138.8	0.0
278	792.7987	123.8810	15.0418	50	0.7469	16.826	22.528	22.5	0.0	16.8	0.0
279	792.7987	123.1194	14.7280	50	0.9012	312.478	346.733	346.7	0.0	312.5	0.0
280	792.7987	122.3578	13.9664	50	0.8229	170.666	207.397	207.4	0.0	170.7	0.0
281	792.7987	121.5962	13.6526	50	0.9631	485.199	503.801	503.8	0.0	485.2	0.0
282	792.7987	120.8345	12.8909	50	0.9273	315.455	340.193	340.2	0.0	315.5	0.0
283	792.7987	120.0729	12.5771	50	0.9651	640.064	663.197	663.2	0.0	640.1	0.0
284	792.7987	119.3113	11.8155	50	0.9697	450.823	464.909	464.9	0.0	450.8	0.0
285	792.7987	118.5497	11.0539	50	0.9438	300.615	318.502	318.5	0.0	300.6	0.0
286	792.7987	117.7880	10.2922	50	0.9023	183.322	203.169	203.2	0.0	183.3	0.0
287	792.7987	117.0264	9.8196	50	0.9302	272.156	292.581	292.6	0.0	272.2	0.0
288	792.7987	116.2648	8.9561	50	0.8390	117.583	140.145	140.1	0.0	117.6	0.0
289	792.7987	115.5032	8.2449	50	0.7875	71.054	90.231	90.2	0.0	71.1	0.0
290	792.7987	114.7415	7.6860	50	0.8669	90.855	104.810	104.8	0.0	90.9	0.0
291	792.7987	113.9799	7.0001	50	0.8422	58.121	69.012	69.0	0.0	58.1	0.0
292	792.7987	113.2183	6.3013	50	0.8106	37.577	46.357	46.4	0.0	37.6	0.0
293	792.7987	112.4567	5.5006	50	0.7105	3.592	5.056	5.1	0.0	3.6	0.0
294	792.7987	111.6950	7.6346	51	0.4115	1031.508	2506.898	2506.9	0.0	1031.5	0.0
295	792.7987	110.9334	7.0495	56	0.3838	854.186	2225.359	2225.4	0.0	854.2	0.0
296	792.7987	110.1718	nicht berechnet								
297	792.7987	109.4102	nicht berechnet								
298	792.7987	108.6485	nicht berechnet								
299	792.7987	107.8869	nicht berechnet								
300	792.7987	107.1253	nicht berechnet								
301	793.6863	125.4043	16.1173	50	0.6732	7.853	11.666	11.7	0.0	7.9	0.0
302	793.6863	124.6427	15.3557	50	0.6482	6.862	10.587	10.6	0.0	6.9	0.0
303	793.6863	123.8810	14.5940	50	0.8014	19.434	24.250	24.3	0.0	19.4	0.0
304	793.6863	123.1194	13.8324	50	0.6148	7.744	12.596	12.6	0.0	7.7	0.0
305	793.6863	122.3578	13.5186	50	0.8737	200.350	229.308	229.3	0.0	200.3	0.0
306	793.6863	121.5962	12.7570	50	0.7646	94.735	123.901	123.9	0.0	94.7	0.0
307	793.6863	120.8345	12.4431	50	0.9212	345.430	374.980	375.0	0.0	345.4	0.0
308	793.6863	120.0729	12.1293	50	0.9662	651.386	674.176	674.2	0.0	651.4	0.0
309	793.6863	119.3113	11.3677	50	0.9517	468.953	492.763	492.8	0.0	469.0	0.0
310	793.6863	118.5497	11.0539	50	0.9702	753.907	777.097	777.1	0.0	753.9	0.0
311	793.6863	117.7880	10.2922	50	0.9596	557.663	581.159	581.2	0.0	557.7	0.0
312	793.6863	117.0264	9.3878	50	0.9256	294.881	318.567	318.6	0.0	294.9	0.0
313	793.6863	116.2648	8.9561	50	0.9536	402.875	422.470	422.5	0.0	402.9	0.0
314	793.6863	115.5032	8.2449	50	0.9449	305.204	323.002	323.0	0.0	305.2	0.0
315	793.6863	114.7415	7.3685	50	0.8987	150.828	167.828	167.8	0.0	150.8	0.0
316	793.6863	113.9799	6.7207	50	0.8993	126.810	141.008	141.0	0.0	126.8	0.0
317	793.6863	113.2183	5.8186	50	0.7446	33.612	45.139	45.1	0.0	33.6	0.0
318	793.6863	112.4567	5.2973	50	0.8665	50.348	58.106	58.1	0.0	50.3	0.0
319	793.6863	111.6950	7.6346	51	0.4701	1326.066	2820.965	2821.0	0.0	1326.1	0.0
320	793.6863	110.9334	7.4308	56	0.4512	1379.735	3057.888	3057.9	0.0	1379.7	0.0
321	793.6863	110.1718	nicht berechnet								
322	793.6863	109.4102	nicht berechnet								
323	793.6863	108.6485	nicht berechnet								

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324	793.6863	107.8869	nicht berechnet								
325	793.6863	107.1253	nicht berechnet								
326	794.5738	125.4043	15.2217	50	0.5421	7.265	13.402	13.4	0.0	7.3	0.0
327	794.5738	124.6427	14.9079	50	0.5087	3.280	6.447	6.4	0.0	3.3	0.0
328	794.5738	123.8810	14.1462	50	0.7962	60.930	76.528	76.5	0.0	60.9	0.0
329	794.5738	123.1194	13.3846	50	0.6848	10.011	14.619	14.6	0.0	10.0	0.0
330	794.5738	122.3578	12.6230	50	0.4253	2.275	5.350	5.3	0.0	2.3	0.0
331	794.5738	121.5962	12.3092	50	0.8324	114.965	138.115	138.1	0.0	115.0	0.0
332	794.5738	120.8345	11.5475	50	0.7841	13.153	16.774	16.8	0.0	13.2	0.0
333	794.5738	120.0729	11.2337	50	0.8986	232.396	258.617	258.6	0.0	232.4	0.0
334	794.5738	119.3113	10.9199	50	0.9608	470.519	489.692	489.7	0.0	470.5	0.0
335	794.5738	118.5497	10.1583	50	0.9382	330.000	351.732	351.7	0.0	330.0	0.0
336	794.5738	117.7880	9.8444	50	0.9624	558.507	580.352	580.4	0.0	558.5	0.0
337	794.5738	117.0264	9.3878	50	0.9483	656.040	691.820	691.8	0.0	656.0	0.0
338	794.5738	116.2648	8.5624	50	0.9378	438.913	468.041	468.0	0.0	438.9	0.0
339	794.5738	115.5032	7.8893	50	0.9294	360.994	388.422	388.4	0.0	361.0	0.0
340	794.5738	114.7415	7.3685	50	0.9320	382.931	410.885	410.9	0.0	382.9	0.0
341	794.5738	113.9799	6.4412	50	0.9041	193.536	214.074	214.1	0.0	193.5	0.0
342	794.5738	113.2183	5.8186	50	0.9040	165.709	183.300	183.3	0.0	165.7	0.0
343	794.5738	112.4567	5.0941	50	0.8827	111.651	126.489	126.5	0.0	111.7	0.0
344	794.5738	111.6950	5.6524	51	0.5544	451.163	813.714	813.7	0.0	451.2	0.0
345	794.5738	110.9334	6.4140	56	0.4957	966.166	1949.039	1949.0	0.0	966.2	0.0
346	794.5738	110.1718	7.2647	60	0.4742	1701.087	3587.034	3587.0	0.0	1701.1	0.0
347	794.5738	109.4102	nicht berechnet								
348	794.5738	108.6485	nicht berechnet								
349	794.5738	107.8869	nicht berechnet								
350	794.5738	107.1253	nicht berechnet								
351	795.4614	125.4043	14.7739	50	0.6335	8.174	12.904	12.9	0.0	8.2	0.0
352	795.4614	124.6427	14.0123	50	0.3530	1.458	4.130	4.1	0.0	1.5	0.0
353	795.4614	123.8810	19.5199	50	0.7713	19011.055	24647.252	24647.3	0.0	19011.1	0.0
354	795.4614	123.1194	18.7582	50	0.7745	17710.148	22867.411	22867.4	0.0	17710.1	0.0
355	795.4614	122.3578	12.1752	50	0.5266	3.876	7.360	7.4	0.0	3.9	0.0
356	795.4614	121.5962	12.3092	50	0.6865	6.869	10.007	10.0	0.0	6.9	0.0
357	795.4614	120.8345	11.0997	50	0.8244	13.390	16.241	16.2	0.0	13.4	0.0
358	795.4614	120.0729	16.1595	50	0.7158	12886.192	18002.163	18002.2	0.0	12886.2	0.0
359	795.4614	119.3113	10.0243	50	0.8726	145.585	166.842	166.8	0.0	145.6	0.0
360	795.4614	118.5497	9.7105	50	0.9320	334.458	358.848	358.8	0.0	334.5	0.0
361	795.4614	117.7880	9.3966	50	0.9455	550.435	582.185	582.2	0.0	550.4	0.0
362	795.4614	117.0264	8.9561	50	0.9394	647.579	689.385	689.4	0.0	647.6	0.0
363	795.4614	116.2648	8.1687	50	0.9331	465.098	498.458	498.5	0.0	465.1	0.0
364	795.4614	115.5032	7.5337	50	0.9343	408.865	437.632	437.6	0.0	408.9	0.0
365	795.4614	114.7415	6.7335	50	0.9213	267.867	290.760	290.8	0.0	267.9	0.0
366	795.4614	113.9799	5.8824	50	0.8945	145.294	162.424	162.4	0.0	145.3	0.0
367	795.4614	113.2183	5.3359	50	0.8791	148.876	169.345	169.3	0.0	148.9	0.0
368	795.4614	112.4567	5.0941	50	0.8620	242.177	280.953	281.0	0.0	242.2	0.0
369	795.4614	111.6950	5.6524	51	0.6199	632.928	1020.954	1021.0	0.0	632.9	0.0
370	795.4614	110.9334	6.4140	56	0.5366	1192.158	2221.780	2221.8	0.0	1192.2	0.0
371	795.4614	110.1718	7.1757	60	0.5015	1898.082	3784.606	3784.6	0.0	1898.1	0.0
372	795.4614	109.4102	nicht berechnet								
373	795.4614	108.6485	nicht berechnet								
374	795.4614	107.8869	nicht berechnet								
375	795.4614	107.1253	nicht berechnet								
376	796.3489	125.4043	14.3261	50	0.7199	16.668	23.154	23.2	0.0	16.7	0.0
377	796.3489	124.6427	19.8337	50	0.7748	19380.286	25012.291	25012.3	0.0	19380.3	0.0
378	796.3489	123.8810	19.0721	50	0.7849	18304.478	23320.301	23320.3	0.0	18304.5	0.0
379	796.3489	123.1194	12.4890	50	0.7706	11.635	15.099	15.1	0.0	11.6	0.0
380	796.3489	122.3578	17.9966	50	0.7734	17665.787	22842.074	22842.1	0.0	17665.8	0.0
381	796.3489	121.5962	17.2350	50	0.7713	16177.490	20973.262	20973.3	0.0	16177.5	0.0
382	796.3489	120.8345	10.6519	50	0.7676	65.133	84.851	84.9	0.0	65.1	0.0
383	796.3489	120.0729	15.7117	50	0.7495	12876.819	17179.926	17179.9	0.0	12876.8	0.0
384	796.3489	119.3113	14.9501	50	0.7331	11239.738	15330.854	15330.9	0.0	11239.7	0.0
385	796.3489	118.5497	8.8149	50	0.8709	9.814	11.269	11.3	0.0	9.8	0.0
386	796.3489	117.7880	8.5010	50	0.9143	227.789	249.144	249.1	0.0	227.8	0.0
387	796.3489	117.0264	8.0926	50	0.9283	329.800	355.283	355.3	0.0	329.8	0.0
388	796.3489	116.2648	7.7750	50	0.9224	483.804	524.497	524.5	0.0	483.8	0.0
389	796.3489	115.5032	6.8225	50	0.9181	251.341	273.748	273.7	0.0	251.3	0.0
390	796.3489	114.7415	6.4160	50	0.8965	318.701	355.508	355.5	0.0	318.7	0.0
391	796.3489	113.9799	5.6029	50	0.8817	197.509	224.015	224.0	0.0	197.5	0.0

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392	796.3489	113.2183	4.6119	50	0.8717	71.137	81.604	81.6	0.0	71.1	0.0
393	796.3489	112.4567	4.8908	50	0.8021	299.839	373.821	373.8	0.0	299.8	0.0
394	796.3489	111.6950	5.6524	51	0.6416	811.753	1265.296	1265.3	0.0	811.8	0.0
395	796.3489	110.9334	6.4140	56	0.5593	1417.883	2534.966	2535.0	0.0	1417.9	0.0
396	796.3489	110.1718	7.1757	60	0.5199	2169.947	4173.458	4173.5	0.0	2169.9	0.0
397	796.3489	109.4102	nicht berechnet								
398	796.3489	108.6485	nicht berechnet								
399	796.3489	107.8869	nicht berechnet								
400	796.3489	107.1253	nicht berechnet								
401	797.2365	125.4043	13.8783	50	0.7882	20.963	26.597	26.6	0.0	21.0	0.0
402	797.2365	124.6427	13.1166	50	0.5797	7.060	12.180	12.2	0.0	7.1	0.0
403	797.2365	123.8810	12.8028	50	0.8538	14.059	16.467	16.5	0.0	14.1	0.0
404	797.2365	123.1194	12.0412	50	0.7773	10.418	13.403	13.4	0.0	10.4	0.0
405	797.2365	122.3578	17.5488	50	0.7828	16946.008	21647.076	21647.1	0.0	16946.0	0.0
406	797.2365	121.5962	10.9658	50	0.8164	9.451	11.576	11.6	0.0	9.5	0.0
407	797.2365	120.8345	10.2041	50	0.8076	9.008	11.154	11.2	0.0	9.0	0.0
408	797.2365	120.0729	9.4425	50	0.7903	14.915	18.871	18.9	0.0	14.9	0.0
409	797.2365	119.3113	14.9501	50	0.7482	12795.470	17102.684	17102.7	0.0	12795.5	0.0
410	797.2365	118.5497	8.3671	50	0.8252	89.062	107.931	107.9	0.0	89.1	0.0
411	797.2365	117.7880	7.6054	50	0.8025	31.860	39.702	39.7	0.0	31.9	0.0
412	797.2365	117.0264	7.2291	50	0.8772	121.161	138.117	138.1	0.0	121.2	0.0
413	797.2365	116.2648	6.9877	50	0.9186	269.306	293.161	293.2	0.0	269.3	0.0
414	797.2365	115.5032	6.4669	50	0.9020	285.799	316.839	316.8	0.0	285.8	0.0
415	797.2365	114.7415	6.0985	50	0.8831	360.581	408.315	408.3	0.0	360.6	0.0
416	797.2365	113.9799	4.7647	50	0.8740	76.712	87.768	87.8	0.0	76.7	0.0
417	797.2365	113.2183	4.3705	50	0.8491	111.465	131.281	131.3	0.0	111.5	0.0
418	797.2365	112.4567	4.8908	50	0.7358	426.462	579.605	579.6	0.0	426.5	0.0
419	797.2365	111.6950	5.6524	51	0.6273	976.454	1556.489	1556.5	0.0	976.5	0.0
420	797.2365	110.9334	6.4140	56	0.5641	1633.702	2895.918	2895.9	0.0	1633.7	0.0
421	797.2365	110.1718	7.6208	60	0.5263	2910.622	5530.667	5530.7	0.0	2910.6	0.0
422	797.2365	109.4102	nicht berechnet								
423	797.2365	108.6485	nicht berechnet								
424	797.2365	107.8869	nicht berechnet								
425	797.2365	107.1253	nicht berechnet								
426	798.1241	125.4043	13.4305	50	0.7597	72.278	95.135	95.1	0.0	72.3	0.0
427	798.1241	124.6427	12.6688	50	0.6694	10.427	15.576	15.6	0.0	10.4	0.0
428	798.1241	123.8810	12.3550	50	0.3742	3.546	9.475	9.5	0.0	3.5	0.0
429	798.1241	123.1194	17.8626	50	0.7695	17108.827	22233.811	22233.8	0.0	17108.8	0.0
430	798.1241	122.3578	17.1010	50	0.7804	16104.131	20634.908	20634.9	0.0	16104.1	0.0
431	798.1241	121.5962	16.3394	50	0.7906	15088.103	19085.451	19085.5	0.0	15088.1	0.0
432	798.1241	120.8345	15.5778	50	0.7956	13937.079	17517.474	17517.5	0.0	13937.1	0.0
433	798.1241	120.0729	15.2639	50	0.7730	14116.280	18260.779	18260.8	0.0	14116.3	0.0
434	798.1241	119.3113	14.5023	50	0.7611	12570.611	16515.479	16515.5	0.0	12570.6	0.0
435	798.1241	118.5497	13.7407	50	0.7465	10973.490	14699.501	14699.5	0.0	10973.5	0.0
436	798.1241	117.7880	7.1576	50	0.7921	46.462	58.659	58.7	0.0	46.5	0.0
437	798.1241	117.0264	6.3656	50	0.7351	7.003	9.527	9.5	0.0	7.0	0.0
438	798.1241	116.2648	6.2004	50	0.8757	122.546	139.935	139.9	0.0	122.5	0.0
439	798.1241	115.5032	5.7558	50	0.9103	165.483	181.782	181.8	0.0	165.5	0.0
440	798.1241	114.7415	5.4635	50	0.8724	253.571	290.651	290.7	0.0	253.6	0.0
441	798.1241	113.9799	4.4852	50	0.8516	110.660	129.942	129.9	0.0	110.7	0.0
442	798.1241	113.2183	4.1292	50	0.8249	146.921	178.118	178.1	0.0	146.9	0.0
443	798.1241	112.4567	4.8908	50	0.6695	544.734	813.692	813.7	0.0	544.7	0.0
444	798.1241	111.6950	5.6524	51	0.5875	1117.870	1902.694	1902.7	0.0	1117.9	0.0
445	798.1241	110.9334	7.3037	56	0.5497	2689.530	4892.617	4892.6	0.0	2689.5	0.0
446	798.1241	110.1718	7.1757	60	0.5272	2693.007	5107.827	5107.8	0.0	2693.0	0.0
447	798.1241	109.4102	nicht berechnet								
448	798.1241	108.6485	nicht berechnet								
449	798.1241	107.8869	nicht berechnet								
450	798.1241	107.1253	nicht berechnet								
451	799.0116	125.4043	12.9827	50	0.7801	112.339	144.005	144.0	0.0	112.3	0.0
452	799.0116	124.6427	12.2210	50	0.7429	13.353	17.973	18.0	0.0	13.4	0.0
453	799.0116	123.8810	11.4594	50	0.5038	3.699	7.343	7.3	0.0	3.7	0.0
454	799.0116	123.1194	11.1456	50	0.2857	2.426	8.491	8.5	0.0	2.4	0.0
455	799.0116	122.3578	10.3840	50	0.8372	16.570	19.793	19.8	0.0	16.6	0.0
456	799.0116	121.5962	16.3394	50	0.7556	15582.579	20622.806	20622.8	0.0	15582.6	0.0
457	799.0116	120.8345	15.5778	50	0.7650	14546.397	19013.917	19013.9	0.0	14546.4	0.0
458	799.0116	120.0729	14.8161	50	0.7704	13571.240	17615.957	17616.0	0.0	13571.2	0.0
459	799.0116	119.3113	14.0545	50	0.7659	12176.730	15898.926	15898.9	0.0	12176.7	0.0

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460	799.0116	118.5497	13.2929	50	0.7526	10697.804	14214.403	14214.4	0.0	10697.8	0.0
461	799.0116	117.7880	12.5313	50	0.7329	9211.021	12567.530	12567.5	0.0	9211.0	0.0
462	799.0116	117.0264	5.9338	50	0.8477	8.993	10.609	10.6	0.0	9.0	0.0
463	799.0116	116.2648	5.4130	50	0.7952	34.907	43.898	43.9	0.0	34.9	0.0
464	799.0116	115.5032	5.0446	50	0.8681	81.942	94.397	94.4	0.0	81.9	0.0
465	799.0116	114.7415	4.5110	50	0.8530	89.052	104.403	104.4	0.0	89.1	0.0
466	799.0116	113.9799	3.6470	50	0.8532	33.980	39.827	39.8	0.0	34.0	0.0
467	799.0116	113.2183	4.1292	50	0.7500	237.051	316.060	316.1	0.0	237.1	0.0
468	799.0116	112.4567	8.1430	51	0.5843	3587.731	6139.944	6139.9	0.0	3587.7	0.0
469	799.0116	111.6950	7.6346	51	0.5599	3156.091	5636.507	5636.5	0.0	3156.1	0.0
470	799.0116	110.9334	8.8290	56	0.5396	5076.905	9408.255	9408.3	0.0	5076.9	0.0
471	799.0116	110.1718	8.1549	60	0.5202	4188.729	8052.528	8052.5	0.0	4188.7	0.0
472	799.0116	109.4102	nicht berechnet								
473	799.0116	108.6485	nicht berechnet								
474	799.0116	107.8869	nicht berechnet								
475	799.0116	107.1253	nicht berechnet								
476	799.8992	125.4043	12.5349	50	0.8461	124.050	146.611	146.6	0.0	124.0	0.0
477	799.8992	124.6427	11.7732	50	0.7608	20.298	26.680	26.7	0.0	20.3	0.0
478	799.8992	123.8810	11.0116	50	0.6050	5.907	9.763	9.8	0.0	5.9	0.0
479	799.8992	123.1194	10.2500	50	0.2383	0.436	1.831	1.8	0.0	0.4	0.0
480	799.8992	122.3578	9.9362	50	0.7954	58.395	73.416	73.4	0.0	58.4	0.0
481	799.8992	121.5962	9.1745	50	0.7236	8.628	11.925	11.9	0.0	8.6	0.0
482	799.8992	120.8345	15.1300	50	0.7439	13610.171	18295.562	18295.6	0.0	13610.2	0.0
483	799.8992	120.0729	14.3683	50	0.7510	12658.038	16855.858	16855.9	0.0	12658.0	0.0
484	799.8992	119.3113	7.3375	50	0.8308	10.139	12.203	12.2	0.0	10.1	0.0
485	799.8992	118.5497	12.8451	50	0.7410	10253.986	13838.419	13838.4	0.0	10254.0	0.0
486	799.8992	117.7880	12.0835	50	0.7224	8860.486	12264.641	12264.6	0.0	8860.5	0.0
487	799.8992	117.0264	11.9783	50	0.6992	9327.770	13340.336	13340.3	0.0	9327.8	0.0
488	799.8992	116.2648	11.7117	50	0.6739	9213.720	13672.806	13672.8	0.0	9213.7	0.0
489	799.8992	115.5032	4.3334	50	0.7680	29.608	38.554	38.6	0.0	29.6	0.0
490	799.8992	114.7415	3.8759	50	0.8158	47.794	58.585	58.6	0.0	47.8	0.0
491	799.8992	113.9799	3.6470	50	0.8153	97.178	119.193	119.2	0.0	97.2	0.0
492	799.8992	113.2183	8.7147	50	0.5845	4471.890	7650.704	7650.7	0.0	4471.9	0.0
493	799.8992	112.4567	8.9561	51	0.5637	5155.986	9146.532	9146.5	0.0	5156.0	0.0
494	799.8992	111.6950	8.7909	52	0.5443	5131.287	9426.464	9426.5	0.0	5131.3	0.0
495	799.8992	110.9334	8.8290	56	0.5291	5424.343	10252.358	10252.4	0.0	5424.3	0.0
496	799.8992	110.1718	8.1549	60	0.5095	4495.292	8823.542	8823.5	0.0	4495.3	0.0
497	799.8992	109.4102	nicht berechnet								
498	799.8992	108.6485	nicht berechnet								
499	799.8992	107.8869	nicht berechnet								
500	799.8992	107.1253	nicht berechnet								
501	800.7868	125.4043	12.0871	50	0.8114	131.906	162.565	162.6	0.0	131.9	0.0
502	800.7868	124.6427	11.7732	50	0.9139	346.512	379.154	379.2	0.0	346.5	0.0
503	800.7868	123.8810	11.0116	50	0.9143	245.730	268.768	268.8	0.0	245.7	0.0
504	800.7868	123.1194	10.2500	50	0.8882	157.413	177.225	177.2	0.0	157.4	0.0
505	800.7868	122.3578	9.4884	50	0.7831	80.132	102.322	102.3	0.0	80.1	0.0
506	800.7868	121.5962	8.7267	50	0.7885	9.632	12.215	12.2	0.0	9.6	0.0
507	800.7868	120.8345	7.9651	50	0.5709	3.453	6.048	6.0	0.0	3.5	0.0
508	800.7868	120.0729	14.3683	50	0.7024	12842.271	18284.566	18284.6	0.0	12842.3	0.0
509	800.7868	119.3113	6.8897	50	0.8844	9.727	10.998	11.0	0.0	9.7	0.0
510	800.7868	118.5497	12.8451	50	0.7103	10947.931	15413.078	15413.1	0.0	10947.9	0.0
511	800.7868	117.7880	12.0835	50	0.6977	9650.621	13832.277	13832.3	0.0	9650.6	0.0
512	800.7868	117.0264	11.9783	50	0.6790	10118.875	14903.423	14903.4	0.0	10118.9	0.0
513	800.7868	116.2648	11.7117	50	0.6582	10010.326	15208.513	15208.5	0.0	10010.3	0.0
514	800.7868	115.5032	3.6222	50	0.6978	3.948	5.657	5.7	0.0	3.9	0.0
515	800.7868	114.7415	3.2409	50	0.8052	21.861	27.150	27.1	0.0	21.9	0.0
516	800.7868	113.9799	11.7503	50	0.5965	11744.383	19688.300	19688.3	0.0	11744.4	0.0
517	800.7868	113.2183	11.1282	51	0.5759	10311.069	17904.308	17904.3	0.0	10311.1	0.0
518	800.7868	112.4567	10.3789	51	0.5551	8633.997	15553.318	15553.3	0.0	8634.0	0.0
519	800.7868	111.6950	9.4516	52	0.5275	6628.723	12565.608	12565.6	0.0	6628.7	0.0
520	800.7868	110.9334	8.8290	55	0.5135	5723.666	11145.479	11145.5	0.0	5723.7	0.0
521	800.7868	110.1718	8.1549	60	0.4943	4759.278	9627.751	9627.8	0.0	4759.3	0.0
522	800.7868	109.4102	nicht berechnet								
523	800.7868	108.6485	nicht berechnet								
524	800.7868	107.8869	nicht berechnet								
525	800.7868	107.1253	nicht berechnet								
526	801.6743	125.4043	12.0871	50	0.8699	442.397	508.561	508.6	0.0	442.4	0.0
527	801.6743	124.6427	11.3254	50	0.8704	335.380	385.324	385.3	0.0	335.4	0.0

P 33.3184 S6 2. Baustufe
Böschungsbruchberechnung D3 QP km 182,040, Verbau

528	801.6743	123.8810	10.5638	50	0.8655	236.445	273.178	273.2	0.0	236.4	0.0
529	801.6743	123.1194	9.8022	50	0.8551	159.914	187.018	187.0	0.0	159.9	0.0
530	801.6743	122.3578	9.0406	50	0.8674	90.742	104.619	104.6	0.0	90.7	0.0
531	801.6743	121.5962	8.2789	50	0.7090	26.922	37.972	38.0	0.0	26.9	0.0
532	801.6743	120.8345	7.5173	50	0.6573	4.491	6.833	6.8	0.0	4.5	0.0
533	801.6743	120.0729	6.7557	50	0.3429	0.696	2.030	2.0	0.0	0.7	0.0
534	801.6743	119.3113	6.4419	50	0.8866	7.535	8.498	8.5	0.0	7.5	0.0
535	801.6743	118.5497	5.6802	50	0.7743	5.023	6.486	6.5	0.0	5.0	0.0
536	801.6743	117.7880	11.6357	50	0.6639	9004.624	13562.525	13562.5	0.0	9004.6	0.0
537	801.6743	117.0264	11.5466	50	0.6470	9481.050	14654.724	14654.7	0.0	9481.1	0.0
538	801.6743	116.2648	3.8384	50	0.8354	3.345	4.004	4.0	0.0	3.3	0.0
539	801.6743	115.5032	11.4452	50	0.6169	10474.840	16979.096	16979.1	0.0	10474.8	0.0
540	801.6743	114.7415	11.8136	50	0.5988	12035.739	20100.626	20100.6	0.0	12035.7	0.0
541	801.6743	113.9799	11.7503	50	0.5827	12367.865	21224.481	21224.5	0.0	12367.9	0.0
542	801.6743	113.2183	11.1282	51	0.5647	10945.959	19384.939	19384.9	0.0	10946.0	0.0
543	801.6743	112.4567	10.3789	52	0.5468	9281.921	16973.690	16973.7	0.0	9281.9	0.0
544	801.6743	111.6950	9.6168	54	0.5208	7603.114	14598.901	14598.9	0.0	7603.1	0.0
545	801.6743	110.9334	8.8290	54	0.4966	6030.072	12142.535	12142.5	0.0	6030.1	0.0
546	801.6743	110.1718	8.1549	60	0.4759	4977.608	10458.825	10458.8	0.0	4977.6	0.0
547	801.6743	109.4102	nicht berechnet								
548	801.6743	108.6485	nicht berechnet								
549	801.6743	107.8869	nicht berechnet								
550	801.6743	107.1253	nicht berechnet								

Ungünstigster Gleitkreis

Nr	xm	ym	Radius	Lamellen	mue	Zähler	Nenner	M(Ti)	M(R)	M(Gi)	M(S)
[-]	[m]	[m]	[m]	[-]	[-]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]
257	791.9111	120.8345	13.7865	50	0.9895	847.908	856.928	856.9	0.0	847.9	0.0



DR. SPANG

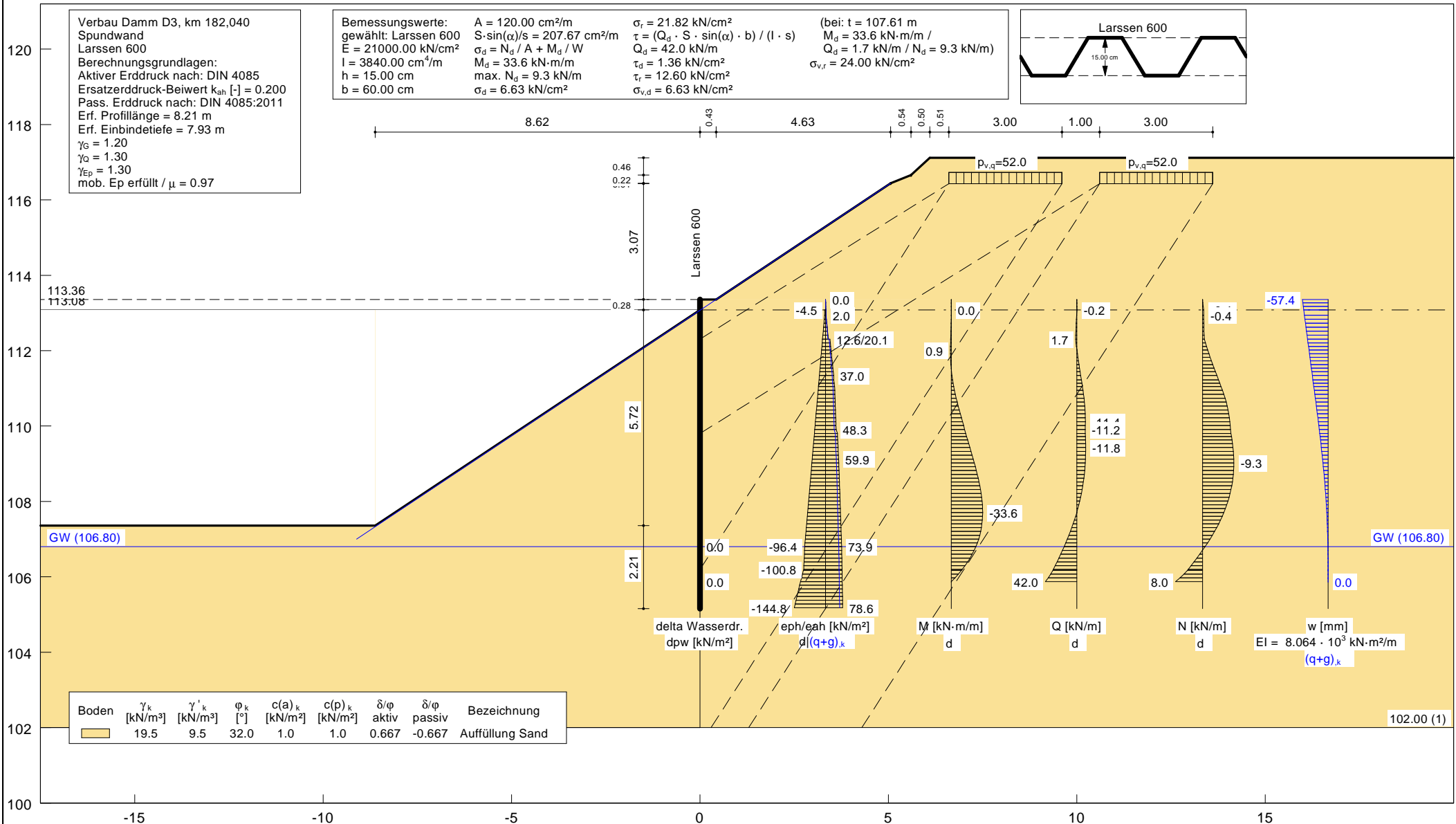
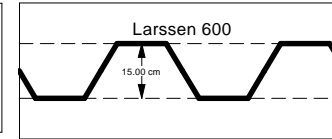
Projekt: S6 2. Baustufe

Stat. Berechnung Verbauwand nach EC 7, Damm D3 QP km 182,040, max. h = 9,0 m

Projekt: P 33.3184
 Anlage: 6.3
 Bearbeiter: Fe/Den
 Datum: 01.08.2013

Verbau Damm D3, km 182,040
 Spundwand
 Larssen 600
 Berechnungsgrundlagen:
 Aktiver Erddruck nach: DIN 4085
 Ersatzerddruck-Beiwert $k_{ah} [-] = 0.200$
 Pass. Erddruck nach: DIN 4085:2011
 Erf. Profillänge = 8.21 m
 Erf. Einbindetiefe = 7.93 m
 $\gamma_G = 1.20$
 $\gamma_Q = 1.30$
 $\gamma_{Ep} = 1.30$
 mob. Ep erfüllt / $\mu = 0.97$

Bemessungswerte:
 gewählt: Larssen 600
 $E = 21000.00 \text{ kN/cm}^2$
 $I = 3840.00 \text{ cm}^4/\text{m}$
 $h = 15.00 \text{ cm}$
 $b = 60.00 \text{ cm}$
 $A = 120.00 \text{ cm}^2/\text{m}$
 $S \cdot \sin(\alpha)/s = 207.67 \text{ cm}^2/\text{m}$
 $\sigma_d = N_d / A + M_d / W$
 $M_d = 33.6 \text{ kN-m/m}$
 $\max. N_d = 9.3 \text{ kN/m}$
 $\sigma_d = 6.63 \text{ kN/cm}^2$
 $\sigma_r = 21.82 \text{ kN/cm}^2$
 $\tau = (Q_d \cdot S \cdot \sin(\alpha) \cdot b) / (I \cdot s)$
 $Q_d = 42.0 \text{ kN/m}$
 $\tau_d = 1.36 \text{ kN/cm}^2$
 $\tau_r = 12.60 \text{ kN/cm}^2$
 $\sigma_{v,d} = 6.63 \text{ kN/cm}^2$
 (bei: $t = 107.61 \text{ m}$
 $M_d = 33.6 \text{ kN-m/m}$
 $Q_d = 1.7 \text{ kN/m} / N_d = 9.3 \text{ kN/m}$
 $\sigma_{v,r} = 24.00 \text{ kN/cm}^2$)



Spundwand
=====

Teilsicherheitskonzept (EC 7)

Verbau Damm D3, km 182,040

Indices:

d = Bemessungswert

k = charakteristisch

g = Ständig, einschließlich Wasserdruck

q = Veränderlich

g+q = Ständig + Veränderlich, einschließlich Wasserdruck

w = Wasserdruck

Wandkopf = 113.36 m

Maximale Teilung bis Baugrubensohle: 0.100

Maximale Teilung unter Baugrubensohle: 0.100

Baugrubensohle = 113.08 m

Grundwasserstand (rechts) = 106.80 m

Grundwasserstand (links) = 106.80 m

Wasserdruck auf "0.0" gesetzt, wenn zur Erdseite gerichtet.

Teilsicherheiten

$\gamma_G = 1.20$

$\gamma_Q = 1.30$

$\gamma_{Ep} = 1.30$

Anpassungsfaktor Erdwiderstand = 1.00

Bermen auf der Aktivseite

Nr.	x1	x2	dh	a	x	y	Auflast	Verkehr
[-]	[m]	[m]	[m]	[m]	[m]	[m]	[kN/m ²]	[-]
1	0.43	5.06	3.08	0.27	0.15	1.60	0.00	nein
2	5.06	5.60	0.22	2.04	4.76	0.51	0.00	nein
3	5.60	6.10	0.46	3.50	1.94	0.17	0.00	nein

Der Einfluss von Aktivbermen auf den aktiven Erddruck wird gemäß den Beziehungen in "Spundwand-Handbuch Berechnung (1977) Abschnitt 4.9.2.2" berechnet.

Bermen Nr.	auf x1	der x2	Passivseite dh	Auflast
[-]	[m]	[m]	[m]	[kN/m ²]
1	0.00	-8.62	-5.72	0.00

Der Einfluss von Passivbermen auf den passiven Erddruck wird in Analogie zu den Beziehungen in "Spundwand-Handbuch Berechnung (1977) Abschnitt 4.9.2.2" für Aktivbermen berechnet.

Blocklasten

Aktiver Erddruck für Blocklasten verwendet

Nr.	sig(v)	sig(h)	x(links)	x(rechts)	Tiefe
[-]	[kN/m ²]	[kN/m ²]	[m]	[m]	[m]
1	52.00	0.00	6.61	9.61	116.43
2	52.00	0.00	10.61	13.61	116.43

Lastordinaten Blocklasten (aktiver Anteil)

Nr.	y(oben)	y(mitte)	y(unten)	p(oben)	p(mitte)	p(unten)	Typ
[-]	[m]	[m]	[m]	[kN/m ²]	[kN/m ²]	[kN/m ²]	
1	112.30	106.20	101.55	5.76	5.76	5.76	0 Verkehrslast
2	109.81	100.00	95.35	4.28	4.28	4.28	0 Verkehrslast

Typ = 0 ==> rechteckförmig verteilt

Typ = 1 ==> dreieckförmig verteilt (Maximum mittig)

Typ = 2 ==> dreieckförmig verteilt (Maximum oben)

Typ = 3 ==> trapezförmig (oben / unten = 3:1)

Blocklasten nicht umgelagert

Art des Fußlagers:
Profillänge automatisch

Nachweis Fußauflager erbracht mit folgenden Kräften:
 $E_{ph,d} = 405.76 \text{ kN/m}$ ($E_{pv,d} = -158.56 \text{ kN/m}$)
 Ausnutzungsgrad (Erdwiderstand) = $B_{h,d} / E_{ph,d} = 1.000$
 $B_{h(g+q),d} = 405.76 \text{ kN/m}$
 $B_{h,g,d} = 330.30 \text{ kN/m}$
 $B_{h,q,d} = 75.45 \text{ kN/m}$

Ersatzkräfte C_h (Blum)

$C_{h,k} = 34.35 \text{ kN/m}$
 $C_{h,g,k} = 26.41 \text{ kN/m}$
 $C_{h,q,k} = 7.94 \text{ kN/m}$
 $C_{h,w,k} = 0.00 \text{ kN/m}$

Bodenkennwerte

Schicht	UK	γ_k	γ'_{k}	ϕ_k	$c(\text{akt}),k$	$c(\text{pas}),k$	$d(a)/\phi$	$d(p)/\phi$
[-]	[m]	[kN/m ³]	[kN/m ³]	[°]	[kN/m ²]	[kN/m ²]	[-]	[-]
1	102.00	19.50	9.50	32.00	1.00	1.00	0.667	-0.667

Aktive Erddruckbeiwerte

Ersatzerddruck-Beiwert $k_{ah} [-] = 0.200$
 bestimmt nach: DIN 4085

(Erddruckbeiwerte für horizontales Gelände)

Schicht	UK	k_{agh}	k_{ach}	ϕ_k	δ	θ
[-]	[m]	[-]	[-]	[°]	[°]	[°]
1	102.00	0.256	0.877	32.000	21.34	57.17

Aktive Erddruckordinaten ($[g+q],k$)

von	bis	oben	unten	Wasserdruck	Wasserdruck
[m]	[m]	[kN/m ²]	[kN/m ²]	oben[kN/m ²]	unten[kN/m ²]
113.360	113.080	0.000	1.092	0.00	0.00
113.080	112.943	1.092	1.628	0.00	0.00
112.943	112.305	1.628	10.531	0.00	0.00
112.305	111.344	16.289	30.337	0.00	0.00
111.344	111.224	30.337	30.934	0.00	0.00
111.224	111.051	30.935	34.093	0.00	0.00
111.051	110.324	34.094	37.725	0.00	0.00
110.324	109.805	37.725	44.602	0.00	0.00
109.805	109.635	44.602	45.450	0.00	0.00
109.635	109.327	45.450	47.648	0.00	0.00
109.327	109.122	47.648	49.113	0.00	0.00
109.122	109.021	49.113	49.618	0.00	0.00
109.021	108.314	49.618	53.148	0.00	0.00
108.314	107.709	53.148	56.173	0.00	0.00
107.709	107.305	56.173	58.191	0.00	0.00
107.305	106.800	58.191	60.712	0.00	0.00
106.800	106.296	60.712	61.938	0.00	0.00
106.296	106.196	61.938	62.183	0.00	0.00
106.196	106.173	62.183	62.237	0.00	0.00
106.173	105.875	62.237	62.962	0.00	0.00
105.875	102.000	62.962	72.393	0.00	0.00

Passive Erddruckbeiwerte

bestimmt nach: DIN 4085:2011

(Erddruckbeiwerte für horizontales Gelände)

Schicht	UK	k_{pgh}	k_{pch}	ϕ_k	δ	θ
[-]	[m]	[-]	[-]	[°]	[°]	[°]
1	102.00	5.787	5.912	32.000	-21.34	16.70

Passive Erddruckordinaten (Bemessungswerte)

Teilsicherheit Erdwiderstand = 1.30

Anpassungsfaktor Erdwiderstand = 1.00

von bis oben unten

[m]	[m]	[kN/m ²]	[kN/m ²]
113.36	113.08	0.00	0.00
113.08	112.94	-4.55	-4.79
112.94	112.30	-4.79	-14.30
112.30	111.34	-14.30	-28.64
111.34	111.22	-28.64	-30.42
111.22	111.05	-30.42	-32.99
111.05	110.32	-32.99	-43.83
110.32	109.81	-43.83	-51.58
109.81	109.64	-51.58	-54.11
109.64	109.33	-54.11	-58.70
109.33	109.12	-58.70	-61.77
109.12	109.02	-61.77	-63.27
109.02	108.31	-63.27	-73.81
108.31	107.71	-73.81	-82.84
107.71	107.30	-82.84	-88.87
107.30	106.80	-88.87	-96.39
106.80	106.30	-96.39	-100.05
106.30	106.20	-100.05	-100.79
106.20	106.17	-100.79	-102.75
106.17	105.88	-102.75	-115.36
105.88	102.00	-115.36	-279.25

Resultierende Belastung (h)orizontal und (v)ertikal (Bemessungswerte)

Tiefe [m]	h [kN/m ²]	v [kN/m ²]
113.36	0.00	1.13
113.08	1.31	1.64
113.08	-3.24	-0.13
112.94	-2.83	0.02
112.30	-1.66	0.48
112.30	5.82	3.40
111.34	8.34	4.39
111.22	7.28	3.97
111.05	8.49	4.45
110.32	2.01	1.92
109.81	2.95	2.28
109.64	1.44	1.69
109.33	-0.52	0.93
109.12	-1.83	0.42
109.02	-2.73	0.07
108.31	-9.03	-2.40
107.71	-14.43	-4.51
107.30	-18.03	-5.92
106.80	-22.54	-7.68
106.30	-24.72	-8.53
106.20	-25.16	-8.70
106.17	-27.07	-9.45
105.88	-38.80	-14.03

Resultierende Belastung (h)orizontal und (v)ertikal ([g+q],k)

Tiefe [m]	h [kN/m ²]	v [kN/m ²]
113.36	0.00	0.94
113.08	1.09	1.37
113.08	-2.65	-0.09
112.94	-2.31	0.04
112.30	-1.22	0.46
112.30	4.54	2.71
111.34	6.80	3.60
111.22	5.94	3.26
111.05	6.98	3.67
110.32	1.70	1.61
109.81	2.22	1.81
109.64	0.98	1.33
109.33	-0.59	0.71
109.12	-1.65	0.30
109.02	-2.38	0.01

108.31	-7.51	-1.99
107.71	-11.91	-3.71
107.30	-14.84	-4.86
106.80	-18.50	-6.29
106.30	-20.29	-6.98
106.20	-20.64	-7.12
106.17	-22.21	-7.74
105.88	-31.84	-11.50

Resultierende Belastung (h)orizontal und (v)ertikal (g,k)

Tiefe [m]	h [kN/m ²]	v [kN/m ²]
113.36	0.00	0.94
113.08	1.09	1.37
113.08	-1.95	0.18
112.94	-1.58	0.33
112.30	0.96	1.32
111.34	5.42	3.06
111.22	4.83	2.83
111.05	6.27	3.39
110.32	2.65	1.98
109.81	0.06	0.97
109.64	-0.79	0.63
109.33	-1.66	0.29
109.12	-2.25	0.06
109.02	-2.75	-0.13
108.31	-6.27	-1.51
107.71	-9.29	-2.69
107.30	-11.30	-3.47
106.80	-13.81	-4.46
106.30	-15.03	-4.93
106.20	-15.28	-5.03
106.17	-16.54	-5.52
105.88	-24.25	-8.53

Resultierende Belastung (h)orizontal und (v)ertikal (q,k)

Tiefe [m]	h [kN/m ²]	v [kN/m ²]
113.36	0.00	0.00
113.08	0.00	0.00
113.08	-0.69	-0.27
112.94	-0.73	-0.29
112.30	-2.19	-0.85
112.30	3.57	1.40
111.34	1.38	0.54
111.22	1.11	0.43
111.05	0.71	0.28
110.32	-0.94	-0.37
109.81	2.16	0.84
109.64	1.77	0.69
109.33	1.07	0.42
109.12	0.60	0.23
109.02	0.37	0.14
108.31	-1.24	-0.48
107.71	-2.62	-1.02
107.30	-3.54	-1.38
106.80	-4.69	-1.83
106.30	-5.25	-2.05
106.20	-5.36	-2.10
106.17	-5.66	-2.21
105.88	-7.59	-2.97

Schnittgrößen (Bemessungswerte)

Tiefe [m]	N [kN/m]	Q [kN/m]	M [kN·m/m]
113.36	0.0	0.0	0.0
113.08	-0.4	-0.2	0.0
112.94	-0.4	0.2	0.0

112.30	-0.5	1.7	0.6
111.34	-4.3	-5.1	-0.8
111.22	-4.8	-6.0	-1.5
111.05	-5.5	-7.4	-2.6
110.32	-7.8	-11.2	-9.7
109.81	-8.4	-11.3	-15.5
109.64	-8.7	-11.6	-17.5
109.33	-9.1	-11.7	-21.1
109.12	-9.3	-11.5	-23.5
109.02	-9.3	-11.2	-24.6
108.31	-8.4	-7.0	-31.3
107.71	-6.3	0.2	-33.6
107.30	-4.2	6.8	-32.2
106.80	-0.7	17.1	-26.3
106.30	3.4	29.0	-14.7
106.20	4.2	31.6	-11.7
106.17	4.4	32.2	-11.0
105.88	8.0	42.0	0.0

Schnittgrößen ([g+q],k)

Tiefe [m]	N [kN/m]	Q [kN/m]	M [kN·m/m]
113.36	0.0	0.0	0.0
113.08	-0.3	-0.2	0.0
112.94	-0.3	0.2	0.0
112.30	-0.5	1.3	0.5
111.34	-3.5	-4.1	-0.7
111.22	-3.9	-4.9	-1.2
111.05	-4.5	-6.0	-2.2
110.32	-6.4	-9.2	-7.9
109.81	-7.0	-9.3	-12.7
109.64	-7.2	-9.6	-14.3
109.33	-7.6	-9.6	-17.3
109.12	-7.7	-9.4	-19.3
109.02	-7.7	-9.2	-20.2
108.31	-7.0	-5.7	-25.7
107.71	-5.3	0.2	-27.5
107.30	-3.5	5.6	-26.4
106.80	-0.7	14.0	-21.5
106.30	2.6	23.8	-12.0
106.20	3.3	25.8	-9.5
106.17	3.5	26.3	-9.0
105.88	6.4	34.4	0.0

Schnittgrößen (g,k)

Tiefe [m]	N [kN/m]	Q [kN/m]	M [kN·m/m]
113.36	0.0	0.0	0.0
113.08	-0.3	-0.2	0.0
112.94	-0.4	0.1	0.0
112.30	-0.9	0.3	0.2
111.34	-3.0	-2.8	-0.7
111.22	-3.3	-3.4	-1.0
111.05	-3.9	-4.4	-1.7
110.32	-5.8	-7.6	-6.2
109.81	-6.6	-8.3	-10.4
109.64	-6.7	-8.2	-11.8
109.33	-6.9	-7.9	-14.3
109.12	-6.9	-7.5	-15.9
109.02	-6.9	-7.2	-16.6
108.31	-6.3	-4.0	-20.7
107.71	-5.1	0.7	-21.8
107.30	-3.8	4.8	-20.7
106.80	-1.8	11.2	-16.7
106.30	0.6	18.5	-9.3
106.20	1.1	20.0	-7.4
106.17	1.2	20.3	-6.9
105.88	3.3	26.4	0.0

Schnittgrößen (q,k)

Tiefe [m]	N [kN/m]	Q [kN/m]	M [kN·m/m]
113.36	0.0	0.0	0.0
113.08	0.0	0.0	0.0
112.94	0.0	0.1	0.0
112.30	0.4	1.0	0.3
111.34	-0.5	-1.4	0.0
111.22	-0.6	-1.5	-0.2
111.05	-0.6	-1.7	-0.5
110.32	-0.6	-1.6	-1.7
109.81	-0.4	-1.0	-2.3
109.64	-0.5	-1.3	-2.5
109.33	-0.7	-1.8	-3.0
109.12	-0.8	-1.9	-3.4
109.02	-0.8	-2.0	-3.6
108.31	-0.7	-1.7	-5.0
107.71	-0.2	-0.5	-5.7
107.30	0.3	0.7	-5.7
106.80	1.1	2.8	-4.8
106.30	2.1	5.3	-2.8
106.20	2.3	5.8	-2.2
106.17	2.3	6.0	-2.1
105.88	3.1	7.9	0.0

Schnittgrößen (w,k)

Tiefe [m]	N [kN/m]	Q [kN/m]	M [kN·m/m]
113.36	0.0	0.0	0.0
113.08	0.0	0.0	0.0
112.94	0.0	0.0	0.0
112.30	0.0	0.0	0.0
111.34	0.0	0.0	0.0
111.22	0.0	0.0	0.0
111.05	0.0	0.0	0.0
110.32	0.0	0.0	0.0
109.81	0.0	0.0	0.0
109.64	0.0	0.0	0.0
109.33	0.0	0.0	0.0
109.12	0.0	0.0	0.0
109.02	0.0	0.0	0.0
108.31	0.0	0.0	0.0
107.71	0.0	0.0	0.0
107.30	0.0	0.0	0.0
106.80	0.0	0.0	0.0
106.30	0.0	0.0	0.0
106.20	0.0	0.0	0.0
106.17	0.0	0.0	0.0
105.88	0.0	0.0	0.0

Momentennullpunkte (Bemessungswerte)

Tiefe
[m]
112.91
111.53

Momentennullpunkte ([g+q],k)

Tiefe
[m]
112.91
111.54

Momentennullpunkte (g,k)

Tiefe
[m]
112.83
111.69

105.88

Momentennullpunkte (q,k)

Tiefe
[m]
113.08
111.35

Momentennullpunkte (w,k)

Tiefe
[m]

Querkraftnullpunkte (Bemessungswerte)

Tiefe
[m]
113.02
112.03
107.72

Querkraftnullpunkte ([g+q],k)

Tiefe
[m]
113.02
112.03
107.72

Querkraftnullpunkte (g,k)

Tiefe
[m]
112.99
112.11
107.79

Querkraftnullpunkte (q,k)

Tiefe
[m]
113.27
111.98
107.53

Querkraftnullpunkte (r,k)

Tiefe
[m]

Weggrößen (g,k)

berechnet mit $EI = 8.064E+3 \text{ kN}\cdot\text{m}^2/\text{m}$

Tiefe [m]	w [mm]
113.36	-45.7
113.08	-43.2
112.94	-42.0
112.30	-36.4
111.34	-27.9
111.22	-26.8
111.05	-25.3
110.32	-19.0
109.81	-14.7
109.64	-13.4
109.33	-11.1
109.12	-9.6
109.02	-9.0
108.31	-4.9
107.71	-2.3
107.30	-1.2
106.80	-0.4
106.30	0.0
106.20	0.0
106.17	0.0

105.88 0.0

Verdrehung (Theoretischer Fußpunkt) [°]
phi,g,k: 0.00000000
Theoretischer Fußpunkt = 105.875 m

Nachweis Spundwand

gewählt: Larssen 600:

$E = 21000.00 \text{ kN/cm}^2$

$I = 3840.00 \text{ cm}^4/\text{m}$

$h = 15.00 \text{ cm}$

$b = 60.00 \text{ cm}$

$A = 120.00 \text{ cm}^2/\text{m}$

$S \cdot \sin(\alpha_p)/s = 207.67 \text{ cm}^2/\text{m}$

$\sigma_d = N_d / A + M_d / W$

$M_d = 33.6 \text{ kN}\cdot\text{m}/\text{m}$

max. $N_d = 9.3 \text{ kN}$

$\sigma_d = 6.63 \text{ kN/cm}^2$

$\sigma_r = 21.82 \text{ kN/cm}^2$

Nachweis mit zugehörigen Größen:

Maximum in einer Tiefe von 107.81 m

$\sigma_d = 6.61 \text{ kN/cm}^2$

$w_k = -4.2 \text{ mm}$

$N_d = -6.33 \text{ kN}/\text{m}$

$M_d = -33.56 \text{ kN}\cdot\text{m}/\text{m}$

$\tau_d = (\max Q_d \cdot S \cdot \sin(\alpha_p) \cdot b) / (I \cdot s)$

max $Q_d = 42.0 \text{ kN}/\text{m}$

$\tau_d = 1.36 \text{ kN/cm}^2$

$\tau_r = 12.60 \text{ kN/cm}^2$

$\sigma_{v,d} = 6.63 \text{ kN/cm}^2$

(bei: $t = 107.61 \text{ m}$)

$M_d = 33.56 \text{ kN}\cdot\text{m} / Q_d = 1.68 \text{ kN} / N_d = 9.30 \text{ kN}$

$\sigma_{v,r} = 24.00 \text{ kN/cm}^2$

max $M_d = 33.6 \text{ kN}\cdot\text{m}/\text{m}$ (Tiefe = 107.71 m)

Zugehörige Werte: $N_d = -6.3 \text{ kN}/\text{m}$; $Q_d = 0.2 \text{ kN}/\text{m}$; $w_k = 3.7 \text{ mm}$

max $Q_d = 42.0 \text{ kN}\cdot\text{m}/\text{m}$ (Tiefe = 105.88 m)

Zugehörige Werte: $N_d = 8.0 \text{ kN}/\text{m}$; $M_d = 0.0 \text{ kN}\cdot\text{m}/\text{m}$; $w_k = 0.0 \text{ mm}$

max $N_d = 9.3 \text{ kN}/\text{m}$ (Tiefe = 109.02 m)

Zugehörige Werte: $Q_d = -11.2 \text{ kN}/\text{m}$; $M_d = -24.6 \text{ kN}\cdot\text{m}/\text{m}$; $w_k = 13.9 \text{ mm}$

max $w_k = 57.4 \text{ mm}$ (Tiefe = 113.36 m)

Zugehörige Werte: $N_d = 0.0 \text{ kN}/\text{m}$; $Q_d = 0.0 \text{ kN}/\text{m}$; $M_d = 0.0 \text{ kN}\cdot\text{m}/\text{m}$

Längenzuschlag dx über Formel bestimmt

Ersatzkräfte C_h (Blum)

$C_{h,g,k} = 26.41$

$C_{h,q,k} = 7.94$

$C_{h,w,k} = 0.00$

$\Delta t = C_{h,d} \cdot \gamma_{Ep} / e_{ph(\phi, \delta),k}$

$C_{h,d} = 0.5 \cdot [(C_{h,g,k} - C_{h,w,k})] \cdot \gamma_W + C_{h,q,k} \cdot \gamma_Q + C_{h,w,k} \cdot \gamma_W$

$\gamma_W = 1.20$

$C_{h,d} = 21.01 \text{ kN}/\text{m}$

$e_{ph(\phi, \delta),k} = k_{pgh} \cdot \sigma_z + k_{pch} \cdot c_k = 294.55 + 2.35 = 296.90 \text{ kN}/\text{m}^2$

k_{pgh} (Streck) = 2.155

$\sigma_z = 136.70 \text{ kN}/\text{m}^2$

$\phi_k = 32.0^\circ$

$\delta_p/\phi_k = 0.333$

k_{pch} (Streck) = 2.346

$c_k = 1.0 \text{ kN}/\text{m}^2$

$\Delta t = 0.72 \text{ m}$

Mindesteinbindetiefe nach EAU 2012 8.2.9 berücksichtigt.

Theoretische Einbindetiefe $t_1 = 7.20 \text{ m}$

Einbindetiefe $t_g = 7.93 \text{ m}$

Profillänge = 8.21 m

Nachweis Summe V

Das Vorzeichen ist positiv, wenn Kraftgröße nach unten gerichtet ist.

Nachweis des mobilisierten Erdwiderstands

Bedingung: $G_k + P_{v,k} + E_{av,k} + 0.5 \cdot C_{h,k} \cdot \tan(\delta_c) \geq B_{v,k} - 0.5 \cdot C_{h,k} \cdot \tan(\delta_p)$

$G_k = 7.73 \text{ kN/m}$

$P_{v,k} = 0.00 \text{ kN/m}$

$E_{av,k} = 116.88 \text{ kN/m}$ ($E_{ah,k} = 299.09 \text{ kN/m}$)

$C_{h,k} = 34.35 \text{ kN/m}$

$B_{v,k} = -130.30 \text{ kN/m}$

$\delta_p [^\circ] = -21.3$

$\delta_c [^\circ] = 10.7$

Summe $V_k = 4.25 \text{ kN/m}$ (Druck)

Nachweis der vertikalen Tragfähigkeit

Nachweis mit Bemessungsgrößen

$(Q_{g,k} + B_{v,k} - 0.5 \cdot C_{h,k} \cdot \tan(\delta_p)) / \gamma_p \geq P_{v,d} + E_{av,d} + G_d + 0.5 \cdot C_{h,d} \cdot \tan(\delta_c)$

($Q_{g,k}$ = Druckkraft infolge Mantelreibung und Spitzendruck)

(Mantelreibung nur unterhalb des rechnerischen Fußpunktes)

γ_p i.a. = 1.40

$P_{v,d} = 0.00 \text{ kN/m}$

$E_{av,d} = 142.36 \text{ kN/m}$

$G_d = 9.28 \text{ kN/m}$

$C_{h,d} = 42.02 \text{ kN/m}$

Folgender Nachweis ist zu erbringen:

$(Q_{g,k} + 130.30 - 6.71) / \gamma_p \geq 155.59$

Horizontaler Wasserdruck herkömmlich bestimmt.

Ausnutzungsgrad Hydraulischer Grundbruch = 0.00

gamma(Gewicht) = 0.95

gamma(Strömungskraft) = 1.30

UK Schicht = 113.36

Nachweis Auftriebssicherheit nicht erforderlich !

Nachweis Aufbruchssicherheit nach EB 99

Verkehrslasten vereinfacht nach EAB EB 104 berücksichtigt

Faktor Verkehrslasten $f_Q = 1.300 / 1.200 = 1.083$

Teilsicherheit (Grundbruch) $\gamma_{Gr} = 1.300$

Breite = 1.16 m

Gewicht G_k (einschließlich Verkehr) = 169.36 [kN/m]

(Verkehr erhöht mit Faktor = 1.083)

$E_{av,k} (\delta = 2/3 \cdot \varphi) = 94.55 \text{ [kN/m]}$

Kohäsionskraft $K_k = 8.21 \text{ [kN/m]}$

Grundbruchlast $P_{g,k} = 4021.61 \text{ [kN/m]}$

$\mu_e = [G_k \cdot \gamma_G] / [(P_{g,k} + K_k) / \gamma_{Gr} + E_{av,k}] = 0.064$

$\mu_e = [169.36 \cdot 1.20] / [(4021.61 + 8.21) / 1.300 + 94.55] = 0.064$



DR. SPANG

Projekt: S6 2. Baustufe

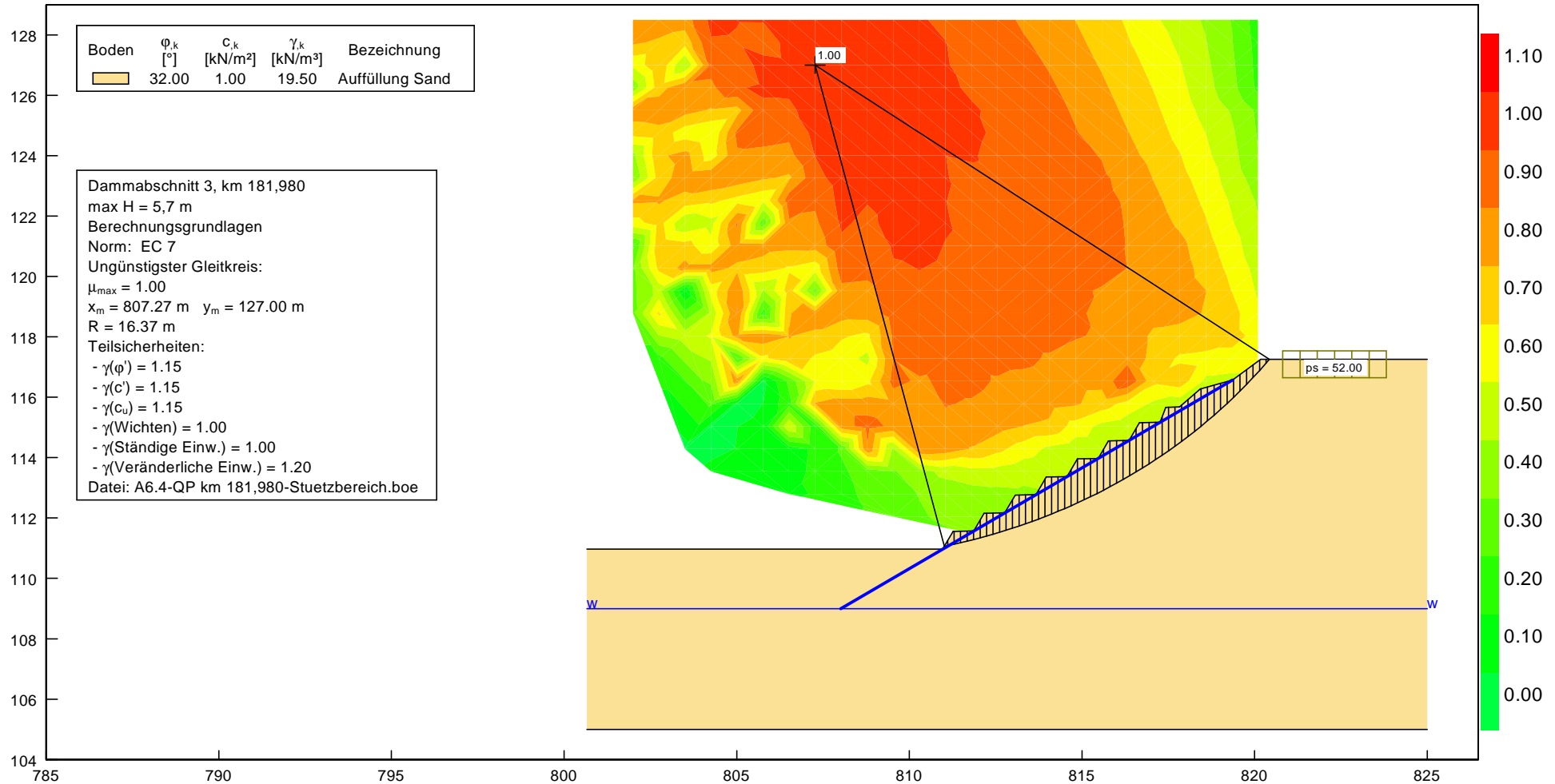
Böschungsbruchberechnung, D3 QP km 181,980, Abtreppung auf Stützbereich

Projekt: P 33.3184

Anlage: 6.4

Bearbeiter: Den/Fe

Datum: 01.08.2013



**Böschungsberechnung nach EC 7
 mit Kreisleitflächen**

Dammabschnitt 3, km 181,980
 max H = 5,7 m
 Datei: A6.4-QP km 181,980-Stuetzbereich.boe

Parameterliste

phi [°] = Reibungswinkel
 c [kN/m²] = Kohäsion
 gamma [kN/m³] = Wichte
 mue [-] = Ausnutzungsgrad
 xm,ym [m] = x,y-Wert des Gleitkreismittelpunktes
 rad [m] = Radius des Gleitkreises

Teilsicherheiten: (GEO-3)

- gam(phi) = 1.15
- gam(c') = 1.15
- gam(cu) = 1.15
- gam(Wichten) = 1.00
- gam(Ständige Einw.) = 1.00
- gam(Veränderliche Einw.) = 1.20

Bewegungsrichtung des Gleitkörpers nach links

Koordinaten der Geländepunkte

Nr.	x	y	Nr.	x	y	Nr.	x	y	Nr.	x	y	Nr.	x	y
[-]	[m]	[m]	[-]	[m]	[m]	[-]	[m]	[m]	[-]	[m]	[m]	[-]	[m]	[m]
1	800.660	110.971	2	810.966	110.971	3	811.266	111.556	4	811.866	111.571	5	812.166	112.156
6	812.766	112.171	7	813.066	112.756	8	813.666	112.771	9	813.966	113.356	10	814.566	113.371
11	814.866	113.956	12	815.466	113.971	13	815.766	114.556	14	816.366	114.571	15	816.666	115.156
16	817.266	115.171	17	817.426	115.664	18	817.826	115.681	19	818.426	116.271	20	819.361	116.567
21	820.178	117.255	22	825.000	117.255									

Charakteristische Bodenkennwerte

Boden	φ _k	c _k	γ _k	Bezeichnung
[-]	[°]	[kN/m ²]	[kN/m ³]	
1	32.00	1.00	19.50	Auffüllung Sand

Bemessungs-Bodenkennwerte

Boden	φ _d	c _d	γ _d	Bezeichnung
[-]	[°]	[kN/m ²]	[kN/m ³]	
1	28.52	0.87	19.50	Auffüllung Sand

Koordinaten der Schichten und Bodennummern

Nr.	x(links)	y(links)	x(rechts)	y(rechts)	Boden-Nr.
[-]	[m]	[m]	[m]	[m]	
1	800.660	105.000	825.000	105.000	1

Koordinaten des Porenwasserdruck-Polygonzuges

Nr.	x	y	Nr.	x	y
[-]	[m]	[m]	[-]	[m]	[m]
1	800.660	109.000	2	825.000	109.000

Ständige Lasten

Nr.	Größe(links)	Größe(rechts)	x(links)	x(rechts)	y
[-]	[kN/m ²]	[kN/m ²]	[m]	[m]	[m]
1	52.00	52.00	820.82	823.82	116.65

Wasserstand vor der Böschung links [m] = 109.00

Wasserstand vor der Böschung rechts [m] = 109.00

gamma Wasser [kN/m³] = 10.000

Berechnung mit Berücksichtigung des passiven Erddruckkeils

Ergebnisse

Suchbereich
Art Suchradius
Horizontale Tangenten
x / y (Anfang): 816.7547 117.3475
x / y (Ende): 816.5857 99.4353
Anzahl Radien = 40

Nr	xm	ym	Radius	Lamellen	mue	Zähler	Nenner	M(Ti)	M(R)	M(Gi)	M(S)
[-]	[m]	[m]	[m]	[-]	[-]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]
1	801.9920	128.4949	19.6557	50	0.8371	25.808	30.830	30.8	0.0	25.8	0.0
2	801.9920	127.7473	18.9081	50	0.7687	26.891	34.981	35.0	0.0	26.9	0.0
3	801.9920	126.9997	18.1605	50	0.5699	9.091	15.950	16.0	0.0	9.1	0.0
4	801.9920	126.2521	17.8607	50	0.3783	1.833	4.847	4.8	0.0	1.8	0.0
5	801.9920	125.5044	17.1130	50	0.8077	20.166	24.966	25.0	0.0	20.2	0.0
6	801.9920	124.7568	16.3654	50	0.6904	16.531	23.946	23.9	0.0	16.5	0.0
7	801.9920	124.0092	15.6178	50	0.4204	2.561	6.091	6.1	0.0	2.6	0.0
8	801.9920	123.2616	15.3180	50	0.3562	1.356	3.806	3.8	0.0	1.4	0.0
9	801.9920	122.5140	14.5704	50	0.7703	14.945	19.401	19.4	0.0	14.9	0.0
10	801.9920	121.7663	14.7183	50	0.6120	6.277	10.256	10.3	0.0	6.3	0.0
11	801.9920	121.0187	13.5229	50	0.2271	0.440	1.936	1.9	0.0	0.4	0.0
12	801.9920	120.2711	12.7753	50	0.3323	0.956	2.876	2.9	0.0	1.0	0.0
13	801.9920	119.5235	nicht berechnet								
14	801.9920	118.7759	12.1757	50	0.3212	1.342	4.179	4.2	0.0	1.3	0.0
15	801.9920	118.0283	nicht berechnet								
16	801.9920	117.2806	nicht berechnet								
17	801.9920	116.5330	5.6994	50	0.0001	0.000	26.295	26.3	0.0	0.0	0.0
18	801.9920	115.7854	nicht berechnet								
19	801.9920	115.0378	nicht berechnet								
20	801.9920	114.2902	3.3522	50	0.0001	0.000	3.487	3.5	0.0	0.0	0.0
21	801.9920	113.5425	nicht berechnet								
22	801.9920	112.7949	nicht berechnet								
23	801.9920	112.0473	nicht berechnet								
24	801.9920	111.2997	nicht berechnet								
25	801.9920	110.5521	nicht berechnet								
26	802.7464	128.4949	19.2079	50	0.8215	168.705	205.357	205.4	0.0	168.7	0.0
27	802.7464	127.7473	18.9081	50	0.7325	11.888	16.231	16.2	0.0	11.9	0.0
28	802.7464	126.9997	18.1605	50	0.7428	12.282	16.535	16.5	0.0	12.3	0.0
29	802.7464	126.2521	17.4129	50	0.7051	10.396	14.743	14.7	0.0	10.4	0.0
30	802.7464	125.5044	16.6652	50	0.8180	24.511	29.962	30.0	0.0	24.5	0.0
31	802.7464	124.7568	16.3654	50	0.7146	9.469	13.250	13.2	0.0	9.5	0.0
32	802.7464	124.0092	15.6178	50	0.7322	10.016	13.680	13.7	0.0	10.0	0.0
33	802.7464	123.2616	14.8702	50	0.6914	8.338	12.060	12.1	0.0	8.3	0.0
34	802.7464	122.5140	14.1226	50	0.7623	16.850	22.105	22.1	0.0	16.9	0.0
35	802.7464	121.7663	13.8227	50	0.6934	7.245	10.449	10.4	0.0	7.2	0.0
36	802.7464	121.0187	13.0751	50	0.7214	7.932	10.994	11.0	0.0	7.9	0.0
37	802.7464	120.2711	12.3275	50	0.6763	6.454	9.543	9.5	0.0	6.5	0.0
38	802.7464	119.5235	12.0277	50	0.4862	2.527	5.197	5.2	0.0	2.5	0.0
39	802.7464	118.7759	11.2801	50	0.6653	5.205	7.822	7.8	0.0	5.2	0.0
40	802.7464	118.0283	nicht berechnet								
41	802.7464	117.2806	10.2894	50	0.2191	0.458	2.092	2.1	0.0	0.5	0.0
42	802.7464	116.5330	5.6994	50	0.0001	0.000	26.295	26.3	0.0	0.0	0.0
43	802.7464	115.7854	nicht berechnet								
44	802.7464	115.0378	4.3036	50	0.0001	0.000	31.354	31.4	0.0	0.0	0.0
45	802.7464	114.2902	3.6472	50	0.0001	0.000	36.156	36.2	0.0	0.0	0.0
46	802.7464	113.5425	nicht berechnet								
47	802.7464	112.7949	nicht berechnet								
48	802.7464	112.0473	nicht berechnet								
49	802.7464	111.2997	nicht berechnet								
50	802.7464	110.5521	nicht berechnet								
51	803.5008	128.4949	18.7601	50	0.8011	115.588	144.280	144.3	0.0	115.6	0.0
52	803.5008	127.7473	18.0125	50	0.6898	16.557	24.002	24.0	0.0	16.6	0.0
53	803.5008	126.9997	17.2649	50	0.4347	3.631	8.352	8.4	0.0	3.6	0.0
54	803.5008	126.2521	16.9650	50	0.8377	174.972	208.867	208.9	0.0	175.0	0.0
55	803.5008	125.5044	16.2174	50	0.7886	24.914	31.592	31.6	0.0	24.9	0.0
56	803.5008	124.7568	15.4698	50	0.5935	8.936	15.056	15.1	0.0	8.9	0.0
57	803.5008	124.0092	15.6178	50	0.7870	12.187	15.486	15.5	0.0	12.2	0.0
58	803.5008	123.2616	14.4224	50	0.8141	16.057	19.723	19.7	0.0	16.1	0.0
59	803.5008	122.5140	13.6748	50	0.7098	15.268	21.509	21.5	0.0	15.3	0.0

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60	803.5008	121.7663	12.9271	50	0.4541	2.584	5.692	5.7	0.0	2.6	0.0
61	803.5008	121.0187	13.0751	50	0.6904	7.207	10.438	10.4	0.0	7.2	0.0
62	803.5008	120.2711	11.8797	50	0.7848	11.920	15.188	15.2	0.0	11.9	0.0
63	803.5008	119.5235	11.1321	50	0.0490	0.013	0.259	0.3	0.0	0.0	0.0
64	803.5008	118.7759	8.1455	50	0.0001	0.000	126.016	126.0	0.0	0.0	0.0
65	803.5008	118.0283	10.5325	50	0.5022	2.837	5.649	5.6	0.0	2.8	0.0
66	803.5008	117.2806	6.7338	50	0.0001	0.000	124.892	124.9	0.0	0.0	0.0
67	803.5008	116.5330	6.1065	50	0.0001	0.000	149.296	149.3	0.0	0.0	0.0
68	803.5008	115.7854	nicht berechnet								
69	803.5008	115.0378	4.3036	50	0.0001	0.000	31.354	31.4	0.0	0.0	0.0
70	803.5008	114.2902	4.2371	50	0.0166	2.927	175.995	176.0	0.0	2.9	0.0
71	803.5008	113.5425	nicht berechnet								
72	803.5008	112.7949	nicht berechnet								
73	803.5008	112.0473	nicht berechnet								
74	803.5008	111.2997	nicht berechnet								
75	803.5008	110.5521	nicht berechnet								
76	804.2551	128.4949	18.7601	50	0.9742	787.757	808.601	808.6	0.0	787.8	0.0
77	804.2551	127.7473	18.0125	50	0.9417	521.299	553.581	553.6	0.0	521.3	0.0
78	804.2551	126.9997	17.2649	50	0.8828	317.502	359.661	359.7	0.0	317.5	0.0
79	804.2551	126.2521	16.5172	50	0.8294	149.313	180.022	180.0	0.0	149.3	0.0
80	804.2551	125.5044	15.7696	50	0.7410	15.584	21.031	21.0	0.0	15.6	0.0
81	804.2551	124.7568	15.4698	50	0.5503	4.227	7.681	7.7	0.0	4.2	0.0
82	804.2551	124.0092	14.7222	50	0.5921	4.943	8.347	8.3	0.0	4.9	0.0
83	804.2551	123.2616	13.9746	50	0.8392	21.162	25.216	25.2	0.0	21.2	0.0
84	804.2551	122.5140	13.2270	50	0.6749	9.942	14.732	14.7	0.0	9.9	0.0
85	804.2551	121.7663	12.9271	50	0.5163	2.984	5.779	5.8	0.0	3.0	0.0
86	804.2551	121.0187	12.1795	50	0.5770	3.776	6.544	6.5	0.0	3.8	0.0
87	804.2551	120.2711	11.4319	50	0.7875	14.507	18.422	18.4	0.0	14.5	0.0
88	804.2551	119.5235	11.5799	50	0.5945	5.248	8.827	8.8	0.0	5.2	0.0
89	804.2551	118.7759	10.3845	50	0.4688	1.886	4.022	4.0	0.0	1.9	0.0
90	804.2551	118.0283	9.6368	50	0.5607	2.736	4.879	4.9	0.0	2.7	0.0
91	804.2551	117.2806	6.7338	50	0.0001	0.000	124.892	124.9	0.0	0.0	0.0
92	804.2551	116.5330	6.1065	50	0.0001	0.000	149.296	149.3	0.0	0.0	0.0
93	804.2551	115.7854	8.2167	50	0.2667	0.720	2.699	2.7	0.0	0.7	0.0
94	804.2551	115.0378	5.3006	50	0.0261	9.708	372.283	372.3	0.0	9.7	0.0
95	804.2551	114.2902	4.5320	50	0.0374	10.764	287.659	287.7	0.0	10.8	0.0
96	804.2551	113.5425	3.8049	53	0.0630	14.271	226.702	226.7	0.0	14.3	0.0
97	804.2551	112.7949	nicht berechnet								
98	804.2551	112.0473	nicht berechnet								
99	804.2551	111.2997	nicht berechnet								
100	804.2551	110.5521	nicht berechnet								
101	805.0095	128.4949	18.3123	50	0.9562	722.995	756.090	756.1	0.0	723.0	0.0
102	805.0095	127.7473	17.5647	50	0.9380	459.647	490.009	490.0	0.0	459.6	0.0
103	805.0095	126.9997	16.8171	50	0.8734	254.991	291.937	291.9	0.0	255.0	0.0
104	805.0095	126.2521	16.5172	50	0.9428	15.857	16.819	16.8	0.0	15.9	0.0
105	805.0095	125.5044	15.3218	50	0.7120	15.561	21.856	21.9	0.0	15.6	0.0
106	805.0095	124.7568	15.0220	50	0.8694	17.404	20.019	20.0	0.0	17.4	0.0
107	805.0095	124.0092	14.2744	50	0.8394	149.320	177.887	177.9	0.0	149.3	0.0
108	805.0095	123.2616	13.5268	50	0.8103	22.286	27.505	27.5	0.0	22.3	0.0
109	805.0095	122.5140	12.7792	50	0.6161	8.429	13.681	13.7	0.0	8.4	0.0
110	805.0095	121.7663	12.4793	50	0.8623	13.872	16.087	16.1	0.0	13.9	0.0
111	805.0095	121.0187	11.7317	50	0.8055	11.276	13.999	14.0	0.0	11.3	0.0
112	805.0095	120.2711	10.9841	50	0.7300	13.469	18.449	18.4	0.0	13.5	0.0
113	805.0095	119.5235	10.6843	50	0.8434	10.139	12.022	12.0	0.0	10.1	0.0
114	805.0095	118.7759	9.9367	50	0.8559	10.572	12.353	12.4	0.0	10.6	0.0
115	805.0095	118.0283	9.1890	50	0.7884	8.262	10.479	10.5	0.0	8.3	0.0
116	805.0095	117.2806	8.5116	50	0.2295	0.272	1.185	1.2	0.0	0.3	0.0
117	805.0095	116.5330	8.1419	50	0.8205	6.898	8.407	8.4	0.0	6.9	0.0
118	805.0095	115.7854	6.3682	50	0.0271	18.446	679.805	679.8	0.0	18.4	0.0
119	805.0095	115.0378	5.6329	50	0.0495	28.340	572.631	572.6	0.0	28.3	0.0
120	805.0095	114.2902	4.8269	50	0.0517	22.243	430.128	430.1	0.0	22.2	0.0
121	805.0095	113.5425	4.3200	53	0.0824	36.865	447.444	447.4	0.0	36.9	0.0
122	805.0095	112.7949	nicht berechnet								
123	805.0095	112.0473	nicht berechnet								
124	805.0095	111.2997	nicht berechnet								
125	805.0095	110.5521	nicht berechnet								
126	805.7638	128.4949	17.8645	50	0.9571	644.166	673.029	673.0	0.0	644.2	0.0
127	805.7638	127.7473	17.1169	50	0.8913	413.710	464.164	464.2	0.0	413.7	0.0

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128	805.7638	126.9997	16.8171	50	0.9968	906.507	909.422	909.4	0.0	906.5	0.0
129	805.7638	126.2521	16.0694	50	0.9644	639.656	663.300	663.3	0.0	639.7	0.0
130	805.7638	125.5044	15.3218	50	0.9333	430.028	460.766	460.8	0.0	430.0	0.0
131	805.7638	124.7568	14.5742	50	0.8770	262.267	299.037	299.0	0.0	262.3	0.0
132	805.7638	124.0092	13.8266	50	0.8334	126.797	152.138	152.1	0.0	126.8	0.0
133	805.7638	123.2616	13.0790	50	0.7627	13.497	17.696	17.7	0.0	13.5	0.0
134	805.7638	122.5140	12.3313	50	0.5648	5.038	8.920	8.9	0.0	5.0	0.0
135	805.7638	121.7663	12.0315	50	0.2797	0.631	2.257	2.3	0.0	0.6	0.0
136	805.7638	121.0187	11.2839	50	0.7915	63.320	80.003	80.0	0.0	63.3	0.0
137	805.7638	120.2711	10.5363	50	0.7019	8.641	12.310	12.3	0.0	8.6	0.0
138	805.7638	119.5235	9.7887	50	0.4398	2.033	4.622	4.6	0.0	2.0	0.0
139	805.7638	118.7759	9.4889	50	0.1992	0.242	1.214	1.2	0.0	0.2	0.0
140	805.7638	118.0283	8.7412	50	0.8171	11.530	14.111	14.1	0.0	11.5	0.0
141	805.7638	117.2806	8.0671	50	0.6273	3.359	5.355	5.4	0.0	3.4	0.0
142	805.7638	116.5330	7.3277	50	0.0272	27.420	1007.298	1007.3	0.0	27.4	0.0
143	805.7638	115.7854	6.7379	50	0.0507	50.958	1005.265	1005.3	0.0	51.0	0.0
144	805.7638	115.0378	5.9652	50	0.0645	52.995	821.551	821.6	0.0	53.0	0.0
145	805.7638	114.2902	5.4168	50	0.0826	66.992	811.331	811.3	0.0	67.0	0.0
146	805.7638	113.5425	4.8352	53	0.1022	76.012	743.780	743.8	0.0	76.0	0.0
147	805.7638	112.7949	nicht berechnet								
148	805.7638	112.0473	nicht berechnet								
149	805.7638	111.2997	nicht berechnet								
150	805.7638	110.5521	nicht berechnet								
151	806.5182	128.4949	17.8645	50	0.9941	1387.546	1395.839	1395.8	0.0	1387.5	0.0
152	806.5182	127.7473	17.1169	50	0.9846	1076.946	1093.831	1093.8	0.0	1076.9	0.0
153	806.5182	126.9997	16.3693	50	0.9771	820.719	839.985	840.0	0.0	820.7	0.0
154	806.5182	126.2521	15.6216	50	0.9695	575.514	593.630	593.6	0.0	575.5	0.0
155	806.5182	125.5044	14.8740	50	0.9311	364.356	391.328	391.3	0.0	364.4	0.0
156	806.5182	124.7568	14.1264	50	0.8698	212.383	244.181	244.2	0.0	212.4	0.0
157	806.5182	124.0092	13.3788	50	0.8239	89.628	108.788	108.8	0.0	89.6	0.0
158	806.5182	123.2616	12.6312	50	0.7354	14.055	19.113	19.1	0.0	14.1	0.0
159	806.5182	122.5140	12.3313	50	0.9104	226.835	249.153	249.2	0.0	226.8	0.0
160	806.5182	121.7663	11.5837	50	0.8371	120.867	144.397	144.4	0.0	120.9	0.0
161	806.5182	121.0187	10.8361	50	0.7790	38.646	49.612	49.6	0.0	38.6	0.0
162	806.5182	120.2711	10.0885	50	0.6382	7.524	11.789	11.8	0.0	7.5	0.0
163	806.5182	119.5235	9.7887	50	0.6987	5.174	7.406	7.4	0.0	5.2	0.0
164	806.5182	118.7759	9.0411	50	0.7454	5.967	8.005	8.0	0.0	6.0	0.0
165	806.5182	118.0283	8.2934	50	0.7526	11.091	14.738	14.7	0.0	11.1	0.0
166	806.5182	117.2806	8.0671	50	0.7333	5.200	7.091	7.1	0.0	5.2	0.0
167	806.5182	116.5330	6.9207	50	0.2752	0.324	1.178	1.2	0.0	0.3	0.0
168	806.5182	115.7854	6.7379	50	0.2195	0.323	1.473	1.5	0.0	0.3	0.0
169	806.5182	115.0378	5.9652	50	0.5530	1.722	3.114	3.1	0.0	1.7	0.0
170	806.5182	114.2902	5.7117	50	0.1022	106.865	1045.604	1045.6	0.0	106.9	0.0
171	806.5182	113.5425	5.0927	53	0.1069	97.077	908.057	908.1	0.0	97.1	0.0
172	806.5182	112.7949	4.5525	60	0.1282	104.821	817.343	817.3	0.0	104.8	0.0
173	806.5182	112.0473	nicht berechnet								
174	806.5182	111.2997	nicht berechnet								
175	806.5182	110.5521	nicht berechnet								
176	807.2725	128.4949	17.4167	50	0.9888	1249.612	1263.744	1263.7	0.0	1249.6	0.0
177	807.2725	127.7473	17.1169	50	0.9979	1847.036	1850.931	1850.9	0.0	1847.0	0.0
178	807.2725	126.9997	16.3693	50	1.0019	1527.699	1524.823	1524.8	0.0	1527.7	0.0
179	807.2725	126.2521	15.6216	50	0.9952	1214.628	1220.508	1220.5	0.0	1214.6	0.0
180	807.2725	125.5044	14.8740	50	0.9956	953.361	957.532	957.5	0.0	953.4	0.0
181	807.2725	124.7568	14.1264	50	0.9779	711.925	727.986	728.0	0.0	711.9	0.0
182	807.2725	124.0092	13.3788	50	0.9522	500.226	525.357	525.4	0.0	500.2	0.0
183	807.2725	123.2616	12.6312	50	0.9185	335.063	364.780	364.8	0.0	335.1	0.0
184	807.2725	122.5140	11.8835	50	0.8660	204.096	235.690	235.7	0.0	204.1	0.0
185	807.2725	121.7663	11.1359	50	0.8321	101.601	122.102	122.1	0.0	101.6	0.0
186	807.2725	121.0187	10.3883	50	0.7842	10.804	13.777	13.8	0.0	10.8	0.0
187	807.2725	120.2711	9.6407	50	0.5951	4.481	7.530	7.5	0.0	4.5	0.0
188	807.2725	119.5235	10.6843	50	0.3095	1043.017	3370.469	3370.5	0.0	1043.0	0.0
189	807.2725	118.7759	8.5933	50	0.7944	48.346	60.861	60.9	0.0	48.3	0.0
190	807.2725	118.0283	7.8456	50	0.7323	6.836	9.335	9.3	0.0	6.8	0.0
191	807.2725	117.2806	7.1782	50	0.6324	5.139	8.125	8.1	0.0	5.1	0.0
192	807.2725	116.5330	6.5136	50	0.5647	2.380	4.215	4.2	0.0	2.4	0.0
193	807.2725	115.7854	5.9985	50	0.7566	4.810	6.357	6.4	0.0	4.8	0.0
194	807.2725	115.0378	6.6298	50	0.1781	284.715	1598.518	1598.5	0.0	284.7	0.0
195	807.2725	114.2902	6.0067	50	0.1672	233.546	1396.547	1396.5	0.0	233.5	0.0

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196	807.2725	113.5425	5.6078	53	0.1731	241.817	1396.882	1396.9	0.0	241.8	0.0
197	807.2725	112.7949	4.7727	60	0.1570	155.581	990.723	990.7	0.0	155.6	0.0
198	807.2725	112.0473	nicht berechnet								
199	807.2725	111.2997	nicht berechnet								
200	807.2725	110.5521	nicht berechnet								
201	808.0269	128.4949	16.9689	50	0.9812	1104.973	1126.202	1126.2	0.0	1105.0	0.0
202	808.0269	127.7473	16.2213	50	0.9782	869.930	889.351	889.4	0.0	869.9	0.0
203	808.0269	126.9997	15.9215	50	0.9852	1382.609	1403.312	1403.3	0.0	1382.6	0.0
204	808.0269	126.2521	15.1738	50	0.9958	1102.658	1107.295	1107.3	0.0	1102.7	0.0
205	808.0269	125.5044	14.4262	50	0.9944	851.378	856.199	856.2	0.0	851.4	0.0
206	808.0269	124.7568	13.6786	50	0.9838	639.359	649.920	649.9	0.0	639.4	0.0
207	808.0269	124.0092	12.9310	50	0.9495	442.312	465.848	465.8	0.0	442.3	0.0
208	808.0269	123.2616	12.6312	50	0.9929	791.577	797.256	797.3	0.0	791.6	0.0
209	808.0269	122.5140	11.8835	50	0.9784	579.605	592.389	592.4	0.0	579.6	0.0
210	808.0269	121.7663	11.1359	50	0.9611	411.534	428.213	428.2	0.0	411.5	0.0
211	808.0269	121.0187	10.3883	50	0.9357	275.116	294.024	294.0	0.0	275.1	0.0
212	808.0269	120.2711	9.6407	50	0.8954	168.501	188.194	188.2	0.0	168.5	0.0
213	808.0269	119.5235	8.8931	50	0.8266	89.520	108.300	108.3	0.0	89.5	0.0
214	808.0269	118.7759	8.1455	50	0.7939	30.296	38.162	38.2	0.0	30.3	0.0
215	808.0269	118.0283	7.3978	50	0.6606	6.176	9.348	9.3	0.0	6.2	0.0
216	808.0269	117.2806	6.7338	50	0.6017	3.014	5.009	5.0	0.0	3.0	0.0
217	808.0269	116.5330	6.1065	50	0.5503	2.989	5.433	5.4	0.0	3.0	0.0
218	808.0269	115.7854	5.6288	50	0.8082	9.667	11.962	12.0	0.0	9.7	0.0
219	808.0269	115.0378	4.9682	50	0.8044	5.219	6.488	6.5	0.0	5.2	0.0
220	808.0269	114.2902	6.5966	50	0.2608	584.729	2242.207	2242.2	0.0	584.7	0.0
221	808.0269	113.5425	5.8654	53	0.2317	413.255	1783.585	1783.6	0.0	413.3	0.0
222	808.0269	112.7949	5.2131	60	0.2182	315.022	1443.527	1443.5	0.0	315.0	0.0
223	808.0269	112.0473	nicht berechnet								
224	808.0269	111.2997	nicht berechnet								
225	808.0269	110.5521	nicht berechnet								
226	808.7812	128.4949	17.4167	50	0.9953	3110.081	3124.752	3124.8	0.0	3110.1	0.0
227	808.7812	127.7473	16.6691	50	0.9924	2610.030	2629.923	2629.9	0.0	2610.0	0.0
228	808.7812	126.9997	15.9215	50	0.9764	2109.111	2160.070	2160.1	0.0	2109.1	0.0
229	808.7812	126.2521	14.7260	50	0.9761	996.640	1021.048	1021.0	0.0	996.6	0.0
230	808.7812	125.5044	14.4262	50	0.9819	1461.019	1487.969	1488.0	0.0	1461.0	0.0
231	808.7812	124.7568	13.6786	50	0.9813	1187.215	1209.810	1209.8	0.0	1187.2	0.0
232	808.7812	124.0092	12.9310	50	0.9824	931.991	948.683	948.7	0.0	932.0	0.0
233	808.7812	123.2616	12.1834	50	0.9769	719.143	736.155	736.2	0.0	719.1	0.0
234	808.7812	122.5140	11.4357	50	0.9538	520.192	545.397	545.4	0.0	520.2	0.0
235	808.7812	121.7663	10.6881	50	0.9344	358.811	384.008	384.0	0.0	358.8	0.0
236	808.7812	121.0187	9.9405	50	0.8990	231.259	257.234	257.2	0.0	231.3	0.0
237	808.7812	120.2711	9.1929	50	0.8892	141.554	159.193	159.2	0.0	141.6	0.0
238	808.7812	119.5235	8.4453	50	0.8175	73.521	89.936	89.9	0.0	73.5	0.0
239	808.7812	118.7759	7.6976	50	0.8011	7.479	9.336	9.3	0.0	7.5	0.0
240	808.7812	118.0283	6.9500	50	0.6275	3.562	5.677	5.7	0.0	3.6	0.0
241	808.7812	117.2806	6.2893	50	0.5188	2.412	4.650	4.7	0.0	2.4	0.0
242	808.7812	116.5330	5.6994	50	0.6239	3.123	5.006	5.0	0.0	3.1	0.0
243	808.7812	115.7854	5.2591	50	0.8059	20.493	25.430	25.4	0.0	20.5	0.0
244	808.7812	115.0378	4.6359	50	0.8913	5.281	5.925	5.9	0.0	5.3	0.0
245	808.7812	114.2902	3.9421	50	0.8358	5.247	6.278	6.3	0.0	5.2	0.0
246	808.7812	113.5425	6.3805	53	0.3007	778.528	2589.454	2589.5	0.0	778.5	0.0
247	808.7812	112.7949	5.6534	60	0.2724	548.021	2011.858	2011.9	0.0	548.0	0.0
248	808.7812	112.0473	nicht berechnet								
249	808.7812	111.2997	nicht berechnet								
250	808.7812	110.5521	nicht berechnet								
251	809.5356	128.4949	16.9689	50	0.9706	2759.622	2843.099	2843.1	0.0	2759.6	0.0
252	809.5356	127.7473	16.6691	50	0.9814	3616.999	3685.374	3685.4	0.0	3617.0	0.0
253	809.5356	126.9997	15.9215	50	0.9864	3117.557	3160.457	3160.5	0.0	3117.6	0.0
254	809.5356	126.2521	15.1738	50	0.9827	2617.355	2663.356	2663.4	0.0	2617.4	0.0
255	809.5356	125.5044	13.9784	50	0.9722	1310.997	1348.443	1348.4	0.0	1311.0	0.0
256	809.5356	124.7568	13.2308	50	0.9778	1070.010	1094.287	1094.3	0.0	1070.0	0.0
257	809.5356	124.0092	12.4832	50	0.9730	834.383	857.508	857.5	0.0	834.4	0.0
258	809.5356	123.2616	11.7356	50	0.9750	642.943	659.418	659.4	0.0	642.9	0.0
259	809.5356	122.5140	11.4357	50	0.9751	956.815	981.255	981.3	0.0	956.8	0.0
260	809.5356	121.7663	10.6881	50	0.9721	745.277	766.703	766.7	0.0	745.3	0.0
261	809.5356	121.0187	9.9405	50	0.9570	550.774	575.509	575.5	0.0	550.8	0.0
262	809.5356	120.2711	9.1929	50	0.9443	394.928	418.213	418.2	0.0	394.9	0.0
263	809.5356	119.5235	8.4453	50	0.9170	272.899	297.613	297.6	0.0	272.9	0.0

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264	809.5356	118.7759	7.6976	50	0.8983	179.947	200.310	200.3	0.0	179.9	0.0
265	809.5356	118.0283	6.9500	50	0.8636	108.181	125.272	125.3	0.0	108.2	0.0
266	809.5356	117.2806	6.2893	50	0.8529	79.366	93.059	93.1	0.0	79.4	0.0
267	809.5356	116.5330	5.6994	50	0.8862	77.448	87.391	87.4	0.0	77.4	0.0
268	809.5356	115.7854	4.8894	50	0.7800	28.370	36.371	36.4	0.0	28.4	0.0
269	809.5356	115.0378	4.3036	50	0.8266	23.396	28.303	28.3	0.0	23.4	0.0
270	809.5356	114.2902	3.3522	50	0.4349	0.765	1.759	1.8	0.0	0.8	0.0
271	809.5356	113.5425	6.6380	53	0.3415	1082.332	3169.582	3169.6	0.0	1082.3	0.0
272	809.5356	112.7949	6.0938	60	0.3169	861.074	2717.424	2717.4	0.0	861.1	0.0
273	809.5356	112.0473	5.4830	66	0.3043	663.330	2179.805	2179.8	0.0	663.3	0.0
274	809.5356	111.2997	nicht berechnet								
275	809.5356	110.5521	nicht berechnet								
276	810.2899	128.4949	16.5211	50	0.9550	2520.133	2638.934	2638.9	0.0	2520.1	0.0
277	810.2899	127.7473	15.7735	50	0.9607	2134.940	2222.175	2222.2	0.0	2134.9	0.0
278	810.2899	126.9997	15.0259	50	0.9677	1769.995	1829.031	1829.0	0.0	1770.0	0.0
279	810.2899	126.2521	14.7260	50	0.9856	2456.448	2492.366	2492.4	0.0	2456.4	0.0
280	810.2899	125.5044	13.9784	50	0.9774	2010.119	2056.640	2056.6	0.0	2010.1	0.0
281	810.2899	124.7568	12.7830	50	0.9715	950.918	978.842	978.8	0.0	950.9	0.0
282	810.2899	124.0092	12.0354	50	0.9713	748.340	770.426	770.4	0.0	748.3	0.0
283	810.2899	123.2616	11.2878	50	0.9705	564.606	581.779	581.8	0.0	564.6	0.0
284	810.2899	122.5140	10.9879	50	0.9689	854.623	882.034	882.0	0.0	854.6	0.0
285	810.2899	121.7663	10.2403	50	0.9727	666.340	685.013	685.0	0.0	666.3	0.0
286	810.2899	121.0187	9.4927	50	0.9612	494.110	514.073	514.1	0.0	494.1	0.0
287	810.2899	120.2711	9.1929	50	0.9509	716.211	753.159	753.2	0.0	716.2	0.0
288	810.2899	119.5235	8.4453	50	0.9416	534.725	567.872	567.9	0.0	534.7	0.0
289	810.2899	118.7759	7.6976	50	0.9330	389.880	417.875	417.9	0.0	389.9	0.0
290	810.2899	118.0283	6.9500	50	0.9185	270.966	295.000	295.0	0.0	271.0	0.0
291	810.2899	117.2806	6.2893	50	0.9139	219.237	239.896	239.9	0.0	219.2	0.0
292	810.2899	116.5330	5.2923	50	0.8331	68.558	82.292	82.3	0.0	68.6	0.0
293	810.2899	115.7854	4.8894	50	0.8022	106.591	132.878	132.9	0.0	106.6	0.0
294	810.2899	115.0378	3.9713	50	0.8166	34.395	42.121	42.1	0.0	34.4	0.0
295	810.2899	114.2902	3.3522	50	0.8366	27.289	32.618	32.6	0.0	27.3	0.0
296	810.2899	113.5425	3.8049	53	0.4067	156.384	384.531	384.5	0.0	156.4	0.0
297	810.2899	112.7949	6.5341	60	0.3531	1269.965	3596.802	3596.8	0.0	1270.0	0.0
298	810.2899	112.0473	5.8485	66	0.3400	953.617	2804.893	2804.9	0.0	953.6	0.0
299	810.2899	111.2997	nicht berechnet								
300	810.2899	110.5521	nicht berechnet								
301	811.0443	128.4949	16.0733	50	0.9406	2298.628	2443.891	2443.9	0.0	2298.6	0.0
302	811.0443	127.7473	15.3257	50	0.9510	1960.042	2061.032	2061.0	0.0	1960.0	0.0
303	811.0443	126.9997	14.5780	50	0.9534	1624.667	1704.069	1704.1	0.0	1624.7	0.0
304	811.0443	126.2521	14.7260	50	0.9572	3252.003	3397.309	3397.3	0.0	3252.0	0.0
305	811.0443	125.5044	13.9784	50	0.9637	2812.158	2918.173	2918.2	0.0	2812.2	0.0
306	811.0443	124.7568	13.2308	50	0.9636	2365.792	2455.221	2455.2	0.0	2365.8	0.0
307	811.0443	124.0092	12.4832	50	0.9503	1920.503	2020.934	2020.9	0.0	1920.5	0.0
308	811.0443	123.2616	11.2878	50	0.9520	968.973	1017.857	1017.9	0.0	969.0	0.0
309	811.0443	122.5140	10.5401	50	0.9505	765.162	805.022	805.0	0.0	765.2	0.0
310	811.0443	121.7663	9.7925	50	0.9530	587.963	616.963	617.0	0.0	588.0	0.0
311	811.0443	121.0187	9.0449	50	0.9489	440.048	463.727	463.7	0.0	440.0	0.0
312	811.0443	120.2711	8.7451	50	0.9445	640.350	677.970	678.0	0.0	640.3	0.0
313	811.0443	119.5235	7.5497	50	0.9341	198.888	212.909	212.9	0.0	198.9	0.0
314	811.0443	118.7759	7.2498	50	0.9328	339.270	363.696	363.7	0.0	339.3	0.0
315	811.0443	118.0283	6.5022	50	0.9240	234.811	254.122	254.1	0.0	234.8	0.0
316	811.0443	117.2806	6.2893	50	0.8920	384.107	430.593	430.6	0.0	384.1	0.0
317	811.0443	116.5330	5.2923	50	0.8735	178.153	203.963	204.0	0.0	178.2	0.0
318	811.0443	115.7854	4.5197	50	0.8549	106.672	124.778	124.8	0.0	106.7	0.0
319	811.0443	115.0378	3.9713	50	0.8303	95.940	115.544	115.5	0.0	95.9	0.0
320	811.0443	114.2902	3.3522	50	0.8149	74.705	91.675	91.7	0.0	74.7	0.0
321	811.0443	113.5425	3.8049	53	0.4826	224.293	464.783	464.8	0.0	224.3	0.0
322	811.0443	112.7949	6.7543	60	0.3865	1634.568	4228.695	4228.7	0.0	1634.6	0.0
323	811.0443	112.0473	6.2141	66	0.3672	1303.344	3549.538	3549.5	0.0	1303.3	0.0
324	811.0443	111.2997	nicht berechnet								
325	811.0443	110.5521	nicht berechnet								
326	811.7986	128.4949	15.6255	50	0.9073	1975.823	2177.731	2177.7	0.0	1975.8	0.0
327	811.7986	127.7473	14.8779	50	0.9200	1690.108	1837.053	1837.1	0.0	1690.1	0.0
328	811.7986	126.9997	14.5780	50	0.9342	2324.362	2488.149	2488.1	0.0	2324.4	0.0
329	811.7986	126.2521	13.8304	50	0.9451	1987.061	2102.562	2102.6	0.0	1987.1	0.0
330	811.7986	125.5044	13.5306	50	0.9538	2594.683	2720.484	2720.5	0.0	2594.7	0.0
331	811.7986	124.7568	12.7830	50	0.9598	2202.515	2294.877	2294.9	0.0	2202.5	0.0

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332	811.7986	124.0092	12.0354	50	0.9550	1809.196	1894.404	1894.4	0.0	1809.2	0.0
333	811.7986	123.2616	11.7356	50	0.9389	2200.786	2344.041	2344.0	0.0	2200.8	0.0
334	811.7986	122.5140	10.0923	50	0.9436	680.524	721.213	721.2	0.0	680.5	0.0
335	811.7986	121.7663	9.3447	50	0.9383	514.431	548.244	548.2	0.0	514.4	0.0
336	811.7986	121.0187	8.5971	50	0.9429	385.470	408.825	408.8	0.0	385.5	0.0
337	811.7986	120.2711	8.2973	50	0.9326	564.082	604.846	604.8	0.0	564.1	0.0
338	811.7986	119.5235	7.5497	50	0.9248	419.018	453.104	453.1	0.0	419.0	0.0
339	811.7986	118.7759	6.8020	50	0.9086	293.452	322.979	323.0	0.0	293.5	0.0
340	811.7986	118.0283	6.0544	50	0.8937	198.413	222.019	222.0	0.0	198.4	0.0
341	811.7986	117.2806	5.4004	50	0.8717	155.893	178.830	178.8	0.0	155.9	0.0
342	811.7986	116.5330	4.8853	50	0.8731	157.738	180.666	180.7	0.0	157.7	0.0
343	811.7986	115.7854	4.1500	50	0.8428	98.758	117.184	117.2	0.0	98.8	0.0
344	811.7986	115.0378	3.6390	50	0.8047	96.739	120.220	120.2	0.0	96.7	0.0
345	811.7986	114.2902	3.0573	50	0.7437	73.823	99.267	99.3	0.0	73.8	0.0
346	811.7986	113.5425	3.8049	53	0.5176	290.933	562.085	562.1	0.0	290.9	0.0
347	811.7986	112.7949	7.1947	60	0.4071	2201.425	5407.056	5407.1	0.0	2201.4	0.0
348	811.7986	112.0473	6.5797	66	0.3888	1729.241	4447.620	4447.6	0.0	1729.2	0.0
349	811.7986	111.2997	nicht berechnet								
350	811.7986	110.5521	nicht berechnet								
351	812.5530	128.4949	15.1777	50	0.8864	1757.688	1983.011	1983.0	0.0	1757.7	0.0
352	812.5530	127.7473	14.4301	50	0.9041	1512.688	1673.125	1673.1	0.0	1512.7	0.0
353	812.5530	126.9997	14.1302	50	0.9181	2097.879	2284.911	2284.9	0.0	2097.9	0.0
354	812.5530	126.2521	13.3826	50	0.9330	1807.367	1937.151	1937.2	0.0	1807.4	0.0
355	812.5530	125.5044	12.6350	50	0.9435	1515.354	1606.148	1606.1	0.0	1515.4	0.0
356	812.5530	124.7568	11.8874	50	0.9424	1223.309	1298.015	1298.0	0.0	1223.3	0.0
357	812.5530	124.0092	12.0354	50	0.9356	2442.251	2610.386	2610.4	0.0	2442.3	0.0
358	812.5530	123.2616	11.2878	50	0.9373	2050.344	2187.451	2187.5	0.0	2050.3	0.0
359	812.5530	122.5140	9.6445	50	0.9311	591.392	635.177	635.2	0.0	591.4	0.0
360	812.5530	121.7663	8.8969	50	0.9309	452.333	485.912	485.9	0.0	452.3	0.0
361	812.5530	121.0187	8.1493	50	0.9323	329.589	353.526	353.5	0.0	329.6	0.0
362	812.5530	120.2711	7.4017	50	0.9299	233.285	250.876	250.9	0.0	233.3	0.0
363	812.5530	119.5235	7.1019	50	0.9217	366.063	397.162	397.2	0.0	366.1	0.0
364	812.5530	118.7759	6.3542	50	0.9026	253.697	281.087	281.1	0.0	253.7	0.0
365	812.5530	118.0283	5.6066	50	0.8849	167.805	189.621	189.6	0.0	167.8	0.0
366	812.5530	117.2806	4.9559	50	0.8774	130.706	148.968	149.0	0.0	130.7	0.0
367	812.5530	116.5330	4.4782	50	0.8424	139.767	165.922	165.9	0.0	139.8	0.0
368	812.5530	115.7854	3.7803	50	0.8195	94.061	114.782	114.8	0.0	94.1	0.0
369	812.5530	115.0378	2.9743	50	0.7885	44.681	56.668	56.7	0.0	44.7	0.0
370	812.5530	114.2902	3.0573	50	0.6770	115.041	169.923	169.9	0.0	115.0	0.0
371	812.5530	113.5425	3.8049	53	0.5150	351.961	683.354	683.4	0.0	352.0	0.0
372	812.5530	112.7949	7.6350	60	0.4197	2843.401	6775.548	6775.5	0.0	2843.4	0.0
373	812.5530	112.0473	6.9453	66	0.4035	2213.983	5486.269	5486.3	0.0	2214.0	0.0
374	812.5530	111.2997	6.1932	72	0.3880	1617.635	4168.793	4168.8	0.0	1617.6	0.0
375	812.5530	110.5521	nicht berechnet								
376	813.3074	128.4949	14.7299	50	0.8347	1440.041	1725.315	1725.3	0.0	1440.0	0.0
377	813.3074	127.7473	14.4301	50	0.8606	2035.196	2364.937	2364.9	0.0	2035.2	0.0
378	813.3074	126.9997	13.6824	50	0.8815	1790.789	2031.503	2031.5	0.0	1790.8	0.0
379	813.3074	126.2521	12.9348	50	0.9005	1546.799	1717.652	1717.7	0.0	1546.8	0.0
380	813.3074	125.5044	12.1872	50	0.9150	1303.034	1424.035	1424.0	0.0	1303.0	0.0
381	813.3074	124.7568	11.8874	50	0.9219	1763.315	1912.722	1912.7	0.0	1763.3	0.0
382	813.3074	124.0092	11.1398	50	0.9311	1471.499	1580.358	1580.4	0.0	1471.5	0.0
383	813.3074	123.2616	10.8400	50	0.9322	1888.414	2025.824	2025.8	0.0	1888.4	0.0
384	813.3074	122.5140	10.0923	50	0.9301	1545.098	1661.211	1661.2	0.0	1545.1	0.0
385	813.3074	121.7663	8.4491	50	0.9274	388.752	419.193	419.2	0.0	388.8	0.0
386	813.3074	121.0187	7.7015	50	0.9204	278.257	302.329	302.3	0.0	278.3	0.0
387	813.3074	120.2711	6.9539	50	0.9297	195.335	210.103	210.1	0.0	195.3	0.0
388	813.3074	119.5235	6.6541	50	0.9151	312.435	341.422	341.4	0.0	312.4	0.0
389	813.3074	118.7759	5.9064	50	0.9094	218.521	240.302	240.3	0.0	218.5	0.0
390	813.3074	118.0283	5.1588	50	0.8853	138.814	156.804	156.8	0.0	138.8	0.0
391	813.3074	117.2806	4.5114	50	0.8728	105.594	120.983	121.0	0.0	105.6	0.0
392	813.3074	116.5330	4.0711	50	0.8234	120.693	146.575	146.6	0.0	120.7	0.0
393	813.3074	115.7854	3.0409	50	0.8049	34.085	42.347	42.3	0.0	34.1	0.0
394	813.3074	115.0378	2.6420	50	0.7483	43.150	57.667	57.7	0.0	43.2	0.0
395	813.3074	114.2902	3.0573	50	0.6022	152.677	253.534	253.5	0.0	152.7	0.0
396	813.3074	113.5425	3.8049	53	0.4867	403.895	829.943	829.9	0.0	403.9	0.0
397	813.3074	112.7949	7.6350	60	0.4281	3103.708	7249.790	7249.8	0.0	3103.7	0.0
398	813.3074	112.0473	6.9453	66	0.4096	2399.439	5857.874	5857.9	0.0	2399.4	0.0
399	813.3074	111.2997	6.1932	72	0.3935	1758.237	4468.693	4468.7	0.0	1758.2	0.0

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400	813.3074	110.5521	nicht berechnet								
401	814.0617	128.4949	14.7299	50	0.7977	1959.446	2456.357	2456.4	0.0	1959.4	0.0
402	814.0617	127.7473	13.9823	50	0.8202	1755.085	2139.886	2139.9	0.0	1755.1	0.0
403	814.0617	126.9997	13.2346	50	0.8426	1550.262	1839.933	1839.9	0.0	1550.3	0.0
404	814.0617	126.2521	12.4870	50	0.8640	1346.021	1557.830	1557.8	0.0	1346.0	0.0
405	814.0617	125.5044	11.7394	50	0.8824	1141.709	1293.939	1293.9	0.0	1141.7	0.0
406	814.0617	124.7568	11.4396	50	0.8982	1568.212	1745.965	1746.0	0.0	1568.2	0.0
407	814.0617	124.0092	10.6920	50	0.9128	1319.463	1445.455	1445.5	0.0	1319.5	0.0
408	814.0617	123.2616	9.9443	50	0.9182	1071.145	1166.563	1166.6	0.0	1071.1	0.0
409	814.0617	122.5140	9.6445	50	0.9074	1353.603	1491.763	1491.8	0.0	1353.6	0.0
410	814.0617	121.7663	8.8969	50	0.9200	1123.691	1221.444	1221.4	0.0	1123.7	0.0
411	814.0617	121.0187	7.2537	50	0.8881	236.255	266.030	266.0	0.0	236.3	0.0
412	814.0617	120.2711	6.9539	50	0.8911	364.700	409.256	409.3	0.0	364.7	0.0
413	814.0617	119.5235	6.2063	50	0.8868	260.205	293.426	293.4	0.0	260.2	0.0
414	814.0617	118.7759	5.4586	50	0.8915	182.956	205.212	205.2	0.0	183.0	0.0
415	814.0617	118.0283	4.2632	50	0.8844	2.785	3.149	3.1	0.0	2.8	0.0
416	814.0617	117.2806	4.0670	50	0.8383	85.943	102.515	102.5	0.0	85.9	0.0
417	814.0617	116.5330	3.6640	50	0.8104	103.443	127.645	127.6	0.0	103.4	0.0
418	814.0617	115.7854	3.0409	50	0.7831	75.115	95.924	95.9	0.0	75.1	0.0
419	814.0617	115.0378	2.3097	50	0.7317	38.647	52.817	52.8	0.0	38.6	0.0
420	814.0617	114.2902	3.0573	51	0.5269	185.449	351.981	352.0	0.0	185.4	0.0
421	814.0617	113.5425	8.4409	51	0.4634	4598.345	9923.776	9923.8	0.0	4598.3	0.0
422	814.0617	112.7949	7.6350	60	0.4427	3506.158	7920.552	7920.6	0.0	3506.2	0.0
423	814.0617	112.0473	6.9453	66	0.4135	2614.984	6323.659	6323.7	0.0	2615.0	0.0
424	814.0617	111.2997	6.1932	72	0.3934	1894.033	4814.710	4814.7	0.0	1894.0	0.0
425	814.0617	110.5521	nicht berechnet								
426	814.8161	128.4949	14.2821	50	0.7486	1601.181	2138.953	2139.0	0.0	1601.2	0.0
427	814.8161	127.7473	13.5345	50	0.7712	1436.821	1863.123	1863.1	0.0	1436.8	0.0
428	814.8161	126.9997	12.7868	50	0.7942	1272.742	1602.555	1602.6	0.0	1272.7	0.0
429	814.8161	126.2521	12.0392	50	0.8172	1108.275	1356.241	1356.2	0.0	1108.3	0.0
430	814.8161	125.5044	11.2916	50	0.8383	943.976	1126.090	1126.1	0.0	944.0	0.0
431	814.8161	124.7568	10.5440	50	0.8551	779.544	911.676	911.7	0.0	779.5	0.0
432	814.8161	124.0092	10.2442	50	0.8723	1117.304	1280.867	1280.9	0.0	1117.3	0.0
433	814.8161	123.2616	9.4965	50	0.8836	913.847	1034.245	1034.2	0.0	913.8	0.0
434	814.8161	122.5140	9.1967	50	0.8935	1215.797	1360.653	1360.7	0.0	1215.8	0.0
435	814.8161	121.7663	8.4491	50	0.8928	968.944	1085.250	1085.3	0.0	968.9	0.0
436	814.8161	121.0187	8.1493	50	0.8884	1221.131	1374.538	1374.5	0.0	1221.1	0.0
437	814.8161	120.2711	6.5061	50	0.8671	304.910	351.652	351.7	0.0	304.9	0.0
438	814.8161	119.5235	5.7584	50	0.8611	216.403	251.312	251.3	0.0	216.4	0.0
439	814.8161	118.7759	5.0108	50	0.8637	147.389	170.642	170.6	0.0	147.4	0.0
440	814.8161	118.0283	4.2632	50	0.8563	94.494	110.351	110.4	0.0	94.5	0.0
441	814.8161	117.2806	3.6225	50	0.8185	67.609	82.604	82.6	0.0	67.6	0.0
442	814.8161	116.5330	3.2569	50	0.7851	85.621	109.050	109.1	0.0	85.6	0.0
443	814.8161	115.7854	2.3015	50	0.7628	27.115	35.546	35.5	0.0	27.1	0.0
444	814.8161	115.0378	2.3097	50	0.6080	61.138	100.561	100.6	0.0	61.1	0.0
445	814.8161	114.2902	8.3662	52	0.4873	4742.654	9733.432	9733.4	0.0	4742.7	0.0
446	814.8161	113.5425	8.4409	54	0.4664	4929.605	10568.877	10568.9	0.0	4929.6	0.0
447	814.8161	112.7949	7.6350	60	0.4491	3831.098	8530.948	8530.9	0.0	3831.1	0.0
448	814.8161	112.0473	6.9453	66	0.4231	2936.360	6939.560	6939.6	0.0	2936.4	0.0
449	814.8161	111.2997	6.1932	72	0.3922	2058.848	5249.030	5249.0	0.0	2058.8	0.0
450	814.8161	110.5521	nicht berechnet								
451	815.5704	128.4949	13.8343	50	0.6958	1274.660	1831.988	1832.0	0.0	1274.7	0.0
452	815.5704	127.7473	13.0867	50	0.7182	1146.559	1596.367	1596.4	0.0	1146.6	0.0
453	815.5704	126.9997	12.3390	50	0.7418	1018.248	1372.676	1372.7	0.0	1018.2	0.0
454	815.5704	126.2521	11.5914	50	0.7664	889.827	1161.048	1161.0	0.0	889.8	0.0
455	815.5704	125.5044	10.8438	50	0.7899	761.416	963.932	963.9	0.0	761.4	0.0
456	815.5704	124.7568	10.0962	50	0.8107	633.196	781.011	781.0	0.0	633.2	0.0
457	815.5704	124.0092	9.7964	50	0.8456	976.087	1154.300	1154.3	0.0	976.1	0.0
458	815.5704	123.2616	9.0487	50	0.8656	808.308	933.851	933.9	0.0	808.3	0.0
459	815.5704	122.5140	8.3011	50	0.8751	640.880	732.325	732.3	0.0	640.9	0.0
460	815.5704	121.7663	8.0013	50	0.8828	874.268	990.303	990.3	0.0	874.3	0.0
461	815.5704	121.0187	7.7015	50	0.8859	1105.099	1247.407	1247.4	0.0	1105.1	0.0
462	815.5704	120.2711	6.9539	50	0.8742	852.029	974.604	974.6	0.0	852.0	0.0
463	815.5704	119.5235	5.3106	50	0.8442	177.791	210.593	210.6	0.0	177.8	0.0
464	815.5704	118.7759	4.5630	50	0.8313	115.355	138.757	138.8	0.0	115.4	0.0
465	815.5704	118.0283	3.8154	50	0.8403	73.548	87.520	87.5	0.0	73.5	0.0
466	815.5704	117.2806	3.1781	50	0.8270	53.696	64.928	64.9	0.0	53.7	0.0
467	815.5704	116.5330	2.4428	50	0.7796	25.863	33.176	33.2	0.0	25.9	0.0

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468	815.5704	115.7854	1.9318	50	0.7017	21.581	30.757	30.8	0.0	21.6	0.0
469	815.5704	115.0378	2.3097	51	0.5223	80.413	153.961	154.0	0.0	80.4	0.0
470	815.5704	114.2902	8.3662	52	0.4793	4953.359	10334.105	10334.1	0.0	4953.4	0.0
471	815.5704	113.5425	8.1834	55	0.4613	4791.168	10387.194	10387.2	0.0	4791.2	0.0
472	815.5704	112.7949	7.6350	59	0.4479	4090.784	9133.346	9133.3	0.0	4090.8	0.0
473	815.5704	112.0473	6.9453	66	0.4256	3192.802	7502.473	7502.5	0.0	3192.8	0.0
474	815.5704	111.2997	6.1932	72	0.3991	2311.949	5793.535	5793.5	0.0	2311.9	0.0
475	815.5704	110.5521	nicht berechnet								
476	816.3248	128.4949	13.8343	50	0.6369	1516.895	2381.758	2381.8	0.0	1516.9	0.0
477	816.3248	127.7473	13.0867	50	0.6574	1389.595	2113.637	2113.6	0.0	1389.6	0.0
478	816.3248	126.9997	12.7868	50	0.6802	1872.117	2752.162	2752.2	0.0	1872.1	0.0
479	816.3248	126.2521	12.0392	50	0.7063	1731.833	2452.032	2452.0	0.0	1731.8	0.0
480	816.3248	125.5044	11.2916	50	0.7293	1565.157	2146.043	2146.0	0.0	1565.2	0.0
481	816.3248	124.7568	10.5440	50	0.7534	1398.510	1856.326	1856.3	0.0	1398.5	0.0
482	816.3248	124.0092	9.7964	50	0.7785	1231.724	1582.166	1582.2	0.0	1231.7	0.0
483	816.3248	123.2616	8.6009	50	0.8191	660.447	806.272	806.3	0.0	660.4	0.0
484	816.3248	122.5140	7.8533	50	0.8389	529.476	631.129	631.1	0.0	529.5	0.0
485	816.3248	121.7663	7.5535	50	0.8437	732.040	867.617	867.6	0.0	732.0	0.0
486	816.3248	121.0187	6.8059	50	0.8468	565.557	667.911	667.9	0.0	565.6	0.0
487	816.3248	120.2711	6.0583	50	0.8495	429.190	505.207	505.2	0.0	429.2	0.0
488	816.3248	119.5235	5.7584	50	0.8369	548.770	655.749	655.7	0.0	548.8	0.0
489	816.3248	118.7759	4.1152	50	0.8109	89.697	110.620	110.6	0.0	89.7	0.0
490	816.3248	118.0283	3.3676	50	0.8132	53.098	65.298	65.3	0.0	53.1	0.0
491	816.3248	117.2806	2.7336	50	0.8163	39.732	48.676	48.7	0.0	39.7	0.0
492	816.3248	116.5330	1.6286	50	0.9432	1.707	1.810	1.8	0.0	1.7	0.0
493	816.3248	115.7854	1.5621	50	0.6101	15.757	25.826	25.8	0.0	15.8	0.0
494	816.3248	115.0378	7.2945	51	0.4879	3527.211	7228.716	7228.7	0.0	3527.2	0.0
495	816.3248	114.2902	7.4814	56	0.4656	3891.307	8357.403	8357.4	0.0	3891.3	0.0
496	816.3248	113.5425	7.4107	56	0.4494	3896.571	8670.755	8670.8	0.0	3896.6	0.0
497	816.3248	112.7949	7.4148	58	0.4387	3986.092	9086.856	9086.9	0.0	3986.1	0.0
498	816.3248	112.0473	6.9453	66	0.4212	3387.960	8044.485	8044.5	0.0	3388.0	0.0
499	816.3248	111.2997	6.1932	72	0.3988	2503.606	6277.955	6278.0	0.0	2503.6	0.0
500	816.3248	110.5521	nicht berechnet								
501	817.0791	128.4949	13.3865	50	0.5693	1137.630	1998.355	1998.4	0.0	1137.6	0.0
502	817.0791	127.7473	13.0867	50	0.5923	1552.051	2620.561	2620.6	0.0	1552.1	0.0
503	817.0791	126.9997	12.3390	50	0.6249	1502.771	2404.852	2404.9	0.0	1502.8	0.0
504	817.0791	126.2521	11.5914	50	0.6465	1376.619	2129.350	2129.4	0.0	1376.6	0.0
505	817.0791	125.5044	10.8438	50	0.6692	1246.751	1863.001	1863.0	0.0	1246.8	0.0
506	817.0791	124.7568	10.0962	50	0.6936	1116.858	1610.175	1610.2	0.0	1116.9	0.0
507	817.0791	124.0092	9.3486	50	0.7194	987.071	1372.075	1372.1	0.0	987.1	0.0
508	817.0791	123.2616	8.6009	50	0.7461	857.313	1149.106	1149.1	0.0	857.3	0.0
509	817.0791	122.5140	7.8533	50	0.7732	727.524	940.879	940.9	0.0	727.5	0.0
510	817.0791	121.7663	7.1057	50	0.7970	597.927	750.189	750.2	0.0	597.9	0.0
511	817.0791	121.0187	6.3581	50	0.8348	496.048	594.190	594.2	0.0	496.0	0.0
512	817.0791	120.2711	5.6105	50	0.8325	362.551	435.522	435.5	0.0	362.6	0.0
513	817.0791	119.5235	5.3106	50	0.8130	462.967	569.426	569.4	0.0	463.0	0.0
514	817.0791	118.7759	5.0108	50	0.7837	543.606	693.675	693.7	0.0	543.6	0.0
515	817.0791	118.0283	3.3676	50	0.7308	97.492	133.406	133.4	0.0	97.5	0.0
516	817.0791	117.2806	2.2891	50	0.7201	25.922	35.996	36.0	0.0	25.9	0.0
517	817.0791	116.5330	1.6286	50	0.6753	14.370	21.279	21.3	0.0	14.4	0.0
518	817.0791	115.7854	1.5621	51	0.5309	26.204	49.360	49.4	0.0	26.2	0.0
519	817.0791	115.0378	6.6298	54	0.4609	2806.817	6090.166	6090.2	0.0	2806.8	0.0
520	817.0791	114.2902	6.8915	55	0.4435	3213.541	7245.373	7245.4	0.0	3213.5	0.0
521	817.0791	113.5425	6.6380	59	0.4301	3064.588	7125.874	7125.9	0.0	3064.6	0.0
522	817.0791	112.7949	6.7543	59	0.4199	3269.845	7787.583	7787.6	0.0	3269.8	0.0
523	817.0791	112.0473	6.7625	66	0.4083	3290.414	8059.630	8059.6	0.0	3290.4	0.0
524	817.0791	111.2997	6.1932	72	0.3919	2638.789	6733.010	6733.0	0.0	2638.8	0.0
525	817.0791	110.5521	nicht berechnet								
526	817.8335	128.4949	12.9387	50	0.4900	783.781	1599.513	1599.5	0.0	783.8	0.0
527	817.8335	127.7473	12.6388	50	0.5325	1203.817	2260.501	2260.5	0.0	1203.8	0.0
528	817.8335	126.9997	11.8912	50	0.5557	1134.656	2041.767	2041.8	0.0	1134.7	0.0
529	817.8335	126.2521	11.1436	50	0.5754	1038.855	1805.410	1805.4	0.0	1038.9	0.0
530	817.8335	125.5044	10.3960	50	0.5970	943.061	1579.753	1579.8	0.0	943.1	0.0
531	817.8335	124.7568	9.6484	50	0.6204	847.429	1365.923	1365.9	0.0	847.4	0.0
532	817.8335	124.0092	9.3486	50	0.6545	1173.289	1792.743	1792.7	0.0	1173.3	0.0
533	817.8335	123.2616	8.6009	50	0.6788	1040.720	1533.192	1533.2	0.0	1040.7	0.0
534	817.8335	122.5140	7.8533	50	0.7048	908.196	1288.598	1288.6	0.0	908.2	0.0
535	817.8335	121.7663	6.6579	50	0.7324	464.801	634.634	634.6	0.0	464.8	0.0

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536	817.8335	121.0187	5.9103	50	0.7788	391.387	502.553	502.6	0.0	391.4	0.0
537	817.8335	120.2711	5.1627	50	0.7955	292.506	367.710	367.7	0.0	292.5	0.0
538	817.8335	119.5235	4.8628	50	0.8029	402.470	501.248	501.2	0.0	402.5	0.0
539	817.8335	118.7759	4.5630	50	0.7785	471.421	605.589	605.6	0.0	471.4	0.0
540	817.8335	118.0283	3.8154	50	0.7168	298.949	417.082	417.1	0.0	298.9	0.0
541	817.8335	117.2806	4.0670	50	0.6327	543.020	858.269	858.3	0.0	543.0	0.0
542	817.8335	116.5330	0.8145	50	0.7148	1.289	1.803	1.8	0.0	1.3	0.0
543	817.8335	115.7854	4.8894	52	0.4862	1189.450	2446.584	2446.6	0.0	1189.5	0.0
544	817.8335	115.0378	4.9682	56	0.4418	1323.814	2996.151	2996.2	0.0	1323.8	0.0
545	817.8335	114.2902	6.0067	58	0.4147	2316.969	5587.018	5587.0	0.0	2317.0	0.0
546	817.8335	113.5425	5.8654	59	0.4019	2283.730	5681.867	5681.9	0.0	2283.7	0.0
547	817.8335	112.7949	6.0938	62	0.3907	2546.653	6517.458	6517.5	0.0	2546.7	0.0
548	817.8335	112.0473	6.2141	65	0.3806	2666.382	7005.647	7005.6	0.0	2666.4	0.0
549	817.8335	111.2997	6.1932	72	0.3765	2662.634	7072.783	7072.8	0.0	2662.6	0.0
550	817.8335	110.5521	nicht berechnet								
551	818.5878	128.4949	12.9387	50	0.4394	907.805	2065.816	2065.8	0.0	907.8	0.0
552	818.5878	127.7473	12.1910	50	0.4536	842.008	1856.360	1856.4	0.0	842.0	0.0
553	818.5878	126.9997	11.4434	50	0.4689	776.073	1655.237	1655.2	0.0	776.1	0.0
554	818.5878	126.2521	10.6958	50	0.4855	710.269	1462.867	1462.9	0.0	710.3	0.0
555	818.5878	125.5044	10.3960	50	0.5175	996.855	1926.322	1926.3	0.0	996.9	0.0
556	818.5878	124.7568	9.6484	50	0.5489	951.054	1732.550	1732.5	0.0	951.1	0.0
557	818.5878	124.0092	8.9008	50	0.5695	854.883	1500.993	1501.0	0.0	854.9	0.0
558	818.5878	123.2616	8.1531	50	0.6049	792.637	1310.446	1310.4	0.0	792.6	0.0
559	818.5878	122.5140	7.4055	50	0.6302	693.457	1100.359	1100.4	0.0	693.5	0.0
560	818.5878	121.7663	6.6579	50	0.6573	594.363	904.293	904.3	0.0	594.4	0.0
561	818.5878	121.0187	5.9103	50	0.6853	495.554	723.111	723.1	0.0	495.6	0.0
562	818.5878	120.2711	5.1627	50	0.7114	396.874	557.908	557.9	0.0	396.9	0.0
563	818.5878	119.5235	4.4150	50	0.7508	316.011	420.905	420.9	0.0	316.0	0.0
564	818.5878	118.7759	3.6674	50	0.7440	214.519	288.333	288.3	0.0	214.5	0.0
565	818.5878	118.0283	3.3676	50	0.7157	254.134	355.070	355.1	0.0	254.1	0.0
566	818.5878	117.2806	3.6225	50	0.6183	451.268	729.895	729.9	0.0	451.3	0.0
567	818.5878	116.5330	3.2569	51	0.5282	365.341	691.657	691.7	0.0	365.3	0.0
568	818.5878	115.7854	3.7803	59	0.4647	621.813	1338.185	1338.2	0.0	621.8	0.0
569	818.5878	115.0378	4.3036	59	0.4208	943.891	2243.162	2243.2	0.0	943.9	0.0
570	818.5878	114.2902	4.8269	61	0.3905	1344.055	3442.290	3442.3	0.0	1344.1	0.0
571	818.5878	113.5425	5.3503	63	0.3684	1778.839	4828.439	4828.4	0.0	1778.8	0.0
572	818.5878	112.7949	5.2131	63	0.3558	1726.447	4852.691	4852.7	0.0	1726.4	0.0
573	818.5878	112.0473	5.4830	65	0.3488	1944.984	5576.655	5576.7	0.0	1945.0	0.0
574	818.5878	111.2997	6.1932	72	0.3470	2518.565	7259.131	7259.1	0.0	2518.6	0.0
575	818.5878	110.5521	nicht berechnet								
576	819.3422	128.4949	12.4909	50	0.3444	538.848	1564.792	1564.8	0.0	538.8	0.0
577	819.3422	127.7473	11.7432	50	0.3554	499.768	1406.218	1406.2	0.0	499.8	0.0
578	819.3422	126.9997	10.9956	50	0.3676	460.815	1253.630	1253.6	0.0	460.8	0.0
579	819.3422	126.2521	10.2480	50	0.3809	421.834	1107.554	1107.6	0.0	421.8	0.0
580	819.3422	125.5044	9.9482	50	0.4399	715.202	1625.882	1625.9	0.0	715.2	0.0
581	819.3422	124.7568	9.2006	50	0.4631	670.279	1447.293	1447.3	0.0	670.3	0.0
582	819.3422	124.0092	8.4530	50	0.4811	603.083	1253.451	1253.5	0.0	603.1	0.0
583	819.3422	123.2616	7.7053	50	0.5011	536.111	1069.927	1069.9	0.0	536.1	0.0
584	819.3422	122.5140	7.4055	50	0.5356	736.754	1375.555	1375.6	0.0	736.8	0.0
585	819.3422	121.7663	6.6579	50	0.5577	643.770	1154.267	1154.3	0.0	643.8	0.0
586	819.3422	121.0187	5.9103	50	0.5948	573.672	964.467	964.5	0.0	573.7	0.0
587	819.3422	120.2711	4.7149	50	0.6198	285.960	461.341	461.3	0.0	286.0	0.0
588	819.3422	119.5235	3.9672	50	0.6477	217.618	335.961	336.0	0.0	217.6	0.0
589	819.3422	118.7759	3.2196	50	0.6868	160.130	233.149	233.1	0.0	160.1	0.0
590	819.3422	118.0283	2.4720	50	0.6827	97.771	143.203	143.2	0.0	97.8	0.0
591	819.3422	117.2806	2.2891	50	0.6194	128.009	206.663	206.7	0.0	128.0	0.0
592	819.3422	116.5330	2.4428	57	0.5091	189.866	372.961	373.0	0.0	189.9	0.0
593	819.3422	115.7854	2.6712	59	0.4380	265.920	607.118	607.1	0.0	265.9	0.0
594	819.3422	115.0378	3.9713	64	0.3964	793.426	2001.810	2001.8	0.0	793.4	0.0
595	819.3422	114.2902	4.2371	64	0.3632	964.748	2656.260	2656.3	0.0	964.7	0.0
596	819.3422	113.5425	4.3200	65	0.3391	1041.789	3072.266	3072.3	0.0	1041.8	0.0
597	819.3422	112.7949	4.5525	66	0.3233	1195.145	3696.715	3696.7	0.0	1195.1	0.0
598	819.3422	112.0473	5.6658	65	0.3124	1896.970	6072.636	6072.6	0.0	1897.0	0.0
599	819.3422	111.2997	nicht berechnet								
600	819.3422	110.5521	nicht berechnet								
601	820.0965	128.4949	12.0431	50	0.2015	173.331	860.186	860.2	0.0	173.3	0.0
602	820.0965	127.7473	11.2954	50	0.2131	171.205	803.490	803.5	0.0	171.2	0.0
603	820.0965	126.9997	10.5478	50	0.2201	157.372	714.928	714.9	0.0	157.4	0.0

P 33.3184 S6 2. Baustufe
 Böschungsbruchberechnung D3 QP km 181,980, Abtreppung auf Stützbereich

604	820.0965	126.2521	9.8002	50	0.2279	143.582	630.107	630.1	0.0	143.6	0.0
605	820.0965	125.5044	9.5004	50	0.3300	417.429	1264.833	1264.8	0.0	417.4	0.0
606	820.0965	124.7568	8.7528	50	0.3416	378.512	1108.041	1108.0	0.0	378.5	0.0
607	820.0965	124.0092	8.0051	50	0.3545	339.775	958.551	958.6	0.0	339.8	0.0
608	820.0965	123.2616	7.7053	50	0.4017	520.342	1295.218	1295.2	0.0	520.3	0.0
609	820.0965	122.5140	6.9577	50	0.4374	500.162	1143.397	1143.4	0.0	500.2	0.0
610	820.0965	121.7663	6.2101	50	0.4586	440.669	960.803	960.8	0.0	440.7	0.0
611	820.0965	121.0187	5.4625	50	0.4774	373.657	782.739	782.7	0.0	373.7	0.0
612	820.0965	120.2711	5.1627	50	0.5143	491.977	956.688	956.7	0.0	492.0	0.0
613	820.0965	119.5235	3.9672	50	0.5360	255.891	477.441	477.4	0.0	255.9	0.0
614	820.0965	118.7759	2.7718	50	0.5693	100.115	175.851	175.9	0.0	100.1	0.0
615	820.0965	118.0283	2.0242	50	0.6200	64.057	103.310	103.3	0.0	64.1	0.0
616	820.0965	117.2806	1.4002	51	0.6217	38.974	62.691	62.7	0.0	39.0	0.0
617	820.0965	116.5330	1.6286	66	0.4925	78.776	159.937	159.9	0.0	78.8	0.0
618	820.0965	115.7854	2.3015	69	0.4061	196.786	484.631	484.6	0.0	196.8	0.0
619	820.0965	115.0378	3.3066	66	0.3611	497.660	1378.016	1378.0	0.0	497.7	0.0
620	820.0965	114.2902	3.6472	69	0.3338	652.395	1954.404	1954.4	0.0	652.4	0.0
621	820.0965	113.5425	3.8049	67	0.3097	723.472	2335.963	2336.0	0.0	723.5	0.0
622	820.0965	112.7949	4.5525	68	0.2807	1037.125	3694.221	3694.2	0.0	1037.1	0.0
623	820.0965	112.0473	nicht berechnet								
624	820.0965	111.2997	nicht berechnet								
625	820.0965	110.5521	nicht berechnet								

Ungünstigster Gleitkreis

Nr	xm	ym	Radius	Lamellen	mue	Zähler	Nenner	M(Ti)	M(R)	M(Gi)	M(S)
[-]	[m]	[m]	[m]	[-]	[-]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]
178	807.2725	126.9997	16.3693	50	1.0019	1527.699	1524.823	1524.8	0.0	1527.7	0.0

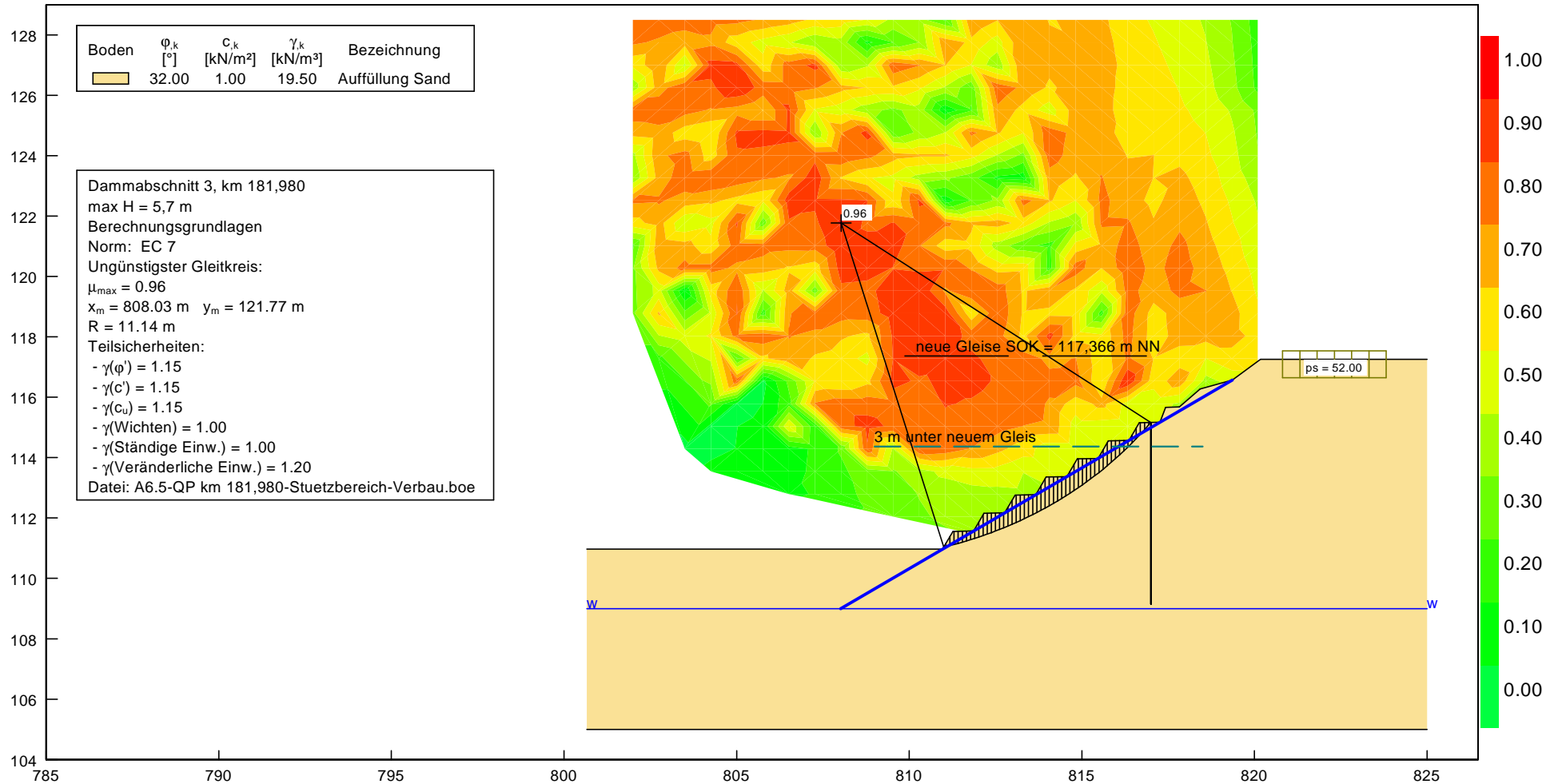


DR. SPANG

Projekt: S6 2. Baustufe

Böschungsbruchberechnung, D3 QP km 181,980, Verbau

Projekt: P 33.3184
 Anlage: 6.5
 Bearbeiter: Den/Fe
 Datum: 01.08.2013



**Böschungsberechnung nach EC 7
 mit Kreisgleitflächen**

Dammabschnitt 3, km 181,980
 max H = 5,7 m
 Datei: A6.5-QP km 181,980-Stuetzbereich-Verbau.boe

Parameterliste

phi [°] = Reibungswinkel
 c [kN/m²] = Kohäsion
 gamma [kN/m³] = Wichte
 mue [-] = Ausnutzungsgrad
 xm,ym [m] = x,y-Wert des Gleitkreismittelpunktes
 rad [m] = Radius des Gleitkreises

Teilsicherheiten: (GEO-3)

- gam(phi) = 1.15
- gam(c') = 1.15
- gam(cu) = 1.15
- gam(Wichten) = 1.00
- gam(Ständige Einw.) = 1.00
- gam(Veränderliche Einw.) = 1.20

Bewegungsrichtung des Gleitkörpers nach links

Koordinaten der Geländepunkte

Nr.	x	y	Nr.	x	y	Nr.	x	y	Nr.	x	y	Nr.	x	y
[-]	[m]	[m]	[-]	[m]	[m]	[-]	[m]	[m]	[-]	[m]	[m]	[-]	[m]	[m]
1	800.660	110.971	2	810.966	110.971	3	811.266	111.556	4	811.866	111.571	5	812.166	112.156
6	812.766	112.171	7	813.066	112.756	8	813.666	112.771	9	813.966	113.356	10	814.566	113.371
11	814.866	113.956	12	815.466	113.971	13	815.766	114.556	14	816.366	114.571	15	816.666	115.156
16	817.266	115.171	17	817.426	115.664	18	817.826	115.681	19	818.426	116.271	20	819.361	116.567
21	820.178	117.255	22	825.000	117.255									

Charakteristische Bodenkennwerte

Boden	φ _k	c _k	γ _k	Bezeichnung
[-]	[°]	[kN/m ²]	[kN/m ³]	
1	32.00	1.00	19.50	Auffüllung Sand

Bemessungs-Bodenkennwerte

Boden	φ _d	c _d	γ _d	Bezeichnung
[-]	[°]	[kN/m ²]	[kN/m ³]	
1	28.52	0.87	19.50	Auffüllung Sand

Koordinaten der Schichten und Bodennummern

Nr.	x(links)	y(links)	x(rechts)	y(rechts)	Boden-Nr.
[-]	[m]	[m]	[m]	[m]	
1	800.660	105.000	825.000	105.000	1

Koordinaten des Porenwasserdruck-Polygonzuges

Nr.	x	y	Nr.	x	y
[-]	[m]	[m]	[-]	[m]	[m]
1	800.660	109.000	2	825.000	109.000

Ständige Lasten

Nr.	Größe(links)	Größe(rechts)	x(links)	x(rechts)	y
[-]	[kN/m ²]	[kN/m ²]	[m]	[m]	[m]
1	52.00	52.00	820.82	823.82	116.65

Bauteil 1

Nr.	x	y
[-]	[m]	[m]
1	817.00	115.15
2	817.00	109.15

Wasserstand vor der Böschung links [m] = 109.00
 Wasserstand vor der Böschung rechts [m] = 109.00

gamma Wasser [kN/m³] = 10.000

Berechnung mit Berücksichtigung des passiven Erddruckkeils

Ergebnisse
 Suchbereich
 Art Suchradius
 Horizontale Tangenten
 x / y (Anfang): 816.7547 117.3475
 x / y (Ende): 816.5857 99.4353
 Anzahl Radian = 40

Nr	xm	ym	Radius	Lamellen	mue	Zähler	Nenner	M(Ti)	M(R)	M(Gi)	M(S)
[-]	[m]	[m]	[m]	[-]	[-]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]
1	801.9920	128.4949	19.6557	50	0.8371	25.808	30.830	30.8	0.0	25.8	0.0
2	801.9920	127.7473	18.9081	50	0.7687	26.891	34.981	35.0	0.0	26.9	0.0
3	801.9920	126.9997	18.1605	50	0.5699	9.091	15.950	16.0	0.0	9.1	0.0
4	801.9920	126.2521	17.8607	50	0.3783	1.833	4.847	4.8	0.0	1.8	0.0
5	801.9920	125.5044	17.1130	50	0.8077	20.166	24.966	25.0	0.0	20.2	0.0
6	801.9920	124.7568	16.3654	50	0.6904	16.531	23.946	23.9	0.0	16.5	0.0
7	801.9920	124.0092	15.6178	50	0.4204	2.561	6.091	6.1	0.0	2.6	0.0
8	801.9920	123.2616	15.3180	50	0.3562	1.356	3.806	3.8	0.0	1.4	0.0
9	801.9920	122.5140	14.5704	50	0.7703	14.945	19.401	19.4	0.0	14.9	0.0
10	801.9920	121.7663	14.7183	50	0.6120	6.277	10.256	10.3	0.0	6.3	0.0
11	801.9920	121.0187	13.5229	50	0.2271	0.440	1.936	1.9	0.0	0.4	0.0
12	801.9920	120.2711	12.7753	50	0.3323	0.956	2.876	2.9	0.0	1.0	0.0
13	801.9920	119.5235	nicht berechnet								
14	801.9920	118.7759	12.1757	50	0.3212	1.342	4.179	4.2	0.0	1.3	0.0
15	801.9920	118.0283	nicht berechnet								
16	801.9920	117.2806	nicht berechnet								
17	801.9920	116.5330	5.6994	50	0.0001	0.000	26.295	26.3	0.0	0.0	0.0
18	801.9920	115.7854	4.8894	50	0.0001	0.000	11.728	11.7	0.0	0.0	0.0
19	801.9920	115.0378	nicht berechnet								
20	801.9920	114.2902	3.3522	50	0.0001	0.000	3.487	3.5	0.0	0.0	0.0
21	801.9920	113.5425	nicht berechnet								
22	801.9920	112.7949	nicht berechnet								
23	801.9920	112.0473	nicht berechnet								
24	801.9920	111.2997	nicht berechnet								
25	801.9920	110.5521	nicht berechnet								
26	802.7464	128.4949	19.2079	50	0.8215	168.705	205.357	205.4	0.0	168.7	0.0
27	802.7464	127.7473	18.9081	50	0.7325	11.888	16.231	16.2	0.0	11.9	0.0
28	802.7464	126.9997	18.1605	50	0.7428	12.282	16.535	16.5	0.0	12.3	0.0
29	802.7464	126.2521	17.4129	50	0.7051	10.396	14.743	14.7	0.0	10.4	0.0
30	802.7464	125.5044	16.6652	50	0.8180	24.511	29.962	30.0	0.0	24.5	0.0
31	802.7464	124.7568	16.3654	50	0.7146	9.469	13.250	13.2	0.0	9.5	0.0
32	802.7464	124.0092	15.6178	50	0.7322	10.016	13.680	13.7	0.0	10.0	0.0
33	802.7464	123.2616	14.8702	50	0.6914	8.338	12.060	12.1	0.0	8.3	0.0
34	802.7464	122.5140	14.1226	50	0.7623	16.850	22.105	22.1	0.0	16.9	0.0
35	802.7464	121.7663	13.8227	50	0.6934	7.245	10.449	10.4	0.0	7.2	0.0
36	802.7464	121.0187	13.0751	50	0.7214	7.932	10.994	11.0	0.0	7.9	0.0
37	802.7464	120.2711	12.3275	50	0.6763	6.454	9.543	9.5	0.0	6.5	0.0
38	802.7464	119.5235	12.0277	50	0.4862	2.527	5.197	5.2	0.0	2.5	0.0
39	802.7464	118.7759	11.2801	50	0.6653	5.205	7.822	7.8	0.0	5.2	0.0
40	802.7464	118.0283	nicht berechnet								
41	802.7464	117.2806	10.2894	50	0.2191	0.458	2.092	2.1	0.0	0.5	0.0
42	802.7464	116.5330	5.6994	50	0.0001	0.000	26.295	26.3	0.0	0.0	0.0
43	802.7464	115.7854	4.8894	50	0.0001	0.000	11.728	11.7	0.0	0.0	0.0
44	802.7464	115.0378	4.3036	50	0.0001	0.000	31.354	31.4	0.0	0.0	0.0
45	802.7464	114.2902	3.3522	50	0.0001	0.000	3.487	3.5	0.0	0.0	0.0
46	802.7464	113.5425	nicht berechnet								
47	802.7464	112.7949	nicht berechnet								
48	802.7464	112.0473	nicht berechnet								
49	802.7464	111.2997	nicht berechnet								
50	802.7464	110.5521	nicht berechnet								
51	803.5008	128.4949	18.7601	50	0.8011	115.588	144.280	144.3	0.0	115.6	0.0
52	803.5008	127.7473	18.0125	50	0.6898	16.557	24.002	24.0	0.0	16.6	0.0
53	803.5008	126.9997	17.2649	50	0.4347	3.631	8.352	8.4	0.0	3.6	0.0

P 33.3184 S6 2. Baustufe
Böschungsbruchberechnung D3 QP km 181,980, Verbau

54	803.5008	126.2521	16.9650	50	0.8377	174.972	208.867	208.9	0.0	175.0	0.0
55	803.5008	125.5044	16.2174	50	0.7886	24.914	31.592	31.6	0.0	24.9	0.0
56	803.5008	124.7568	15.4698	50	0.5935	8.936	15.056	15.1	0.0	8.9	0.0
57	803.5008	124.0092	15.6178	50	0.7870	12.187	15.486	15.5	0.0	12.2	0.0
58	803.5008	123.2616	14.4224	50	0.8141	16.057	19.723	19.7	0.0	16.1	0.0
59	803.5008	122.5140	13.6748	50	0.7098	15.268	21.509	21.5	0.0	15.3	0.0
60	803.5008	121.7663	12.9271	50	0.4541	2.584	5.692	5.7	0.0	2.6	0.0
61	803.5008	121.0187	13.0751	50	0.6904	7.207	10.438	10.4	0.0	7.2	0.0
62	803.5008	120.2711	11.8797	50	0.7848	11.920	15.188	15.2	0.0	11.9	0.0
63	803.5008	119.5235	11.1321	50	0.0490	0.013	0.259	0.3	0.0	0.0	0.0
64	803.5008	118.7759	nicht berechnet								
65	803.5008	118.0283	10.5325	50	0.5022	2.837	5.649	5.6	0.0	2.8	0.0
66	803.5008	117.2806	6.7338	50	0.0001	0.000	124.892	124.9	0.0	0.0	0.0
67	803.5008	116.5330	5.6994	50	0.0001	0.000	26.295	26.3	0.0	0.0	0.0
68	803.5008	115.7854	4.8894	50	0.0001	0.000	11.728	11.7	0.0	0.0	0.0
69	803.5008	115.0378	4.3036	50	0.0001	0.000	31.354	31.4	0.0	0.0	0.0
70	803.5008	114.2902	4.2371	50	0.0166	2.927	175.995	176.0	0.0	2.9	0.0
71	803.5008	113.5425	nicht berechnet								
72	803.5008	112.7949	nicht berechnet								
73	803.5008	112.0473	nicht berechnet								
74	803.5008	111.2997	nicht berechnet								
75	803.5008	110.5521	nicht berechnet								
76	804.2551	128.4949	18.3123	50	0.7904	21.975	27.804	27.8	0.0	22.0	0.0
77	804.2551	127.7473	18.0125	50	0.7261	7.808	10.754	10.8	0.0	7.8	0.0
78	804.2551	126.9997	17.2649	50	0.8828	317.502	359.661	359.7	0.0	317.5	0.0
79	804.2551	126.2521	16.5172	50	0.8294	149.313	180.022	180.0	0.0	149.3	0.0
80	804.2551	125.5044	15.7696	50	0.7410	15.584	21.031	21.0	0.0	15.6	0.0
81	804.2551	124.7568	15.4698	50	0.5503	4.227	7.681	7.7	0.0	4.2	0.0
82	804.2551	124.0092	14.7222	50	0.5921	4.943	8.347	8.3	0.0	4.9	0.0
83	804.2551	123.2616	13.9746	50	0.8392	21.162	25.216	25.2	0.0	21.2	0.0
84	804.2551	122.5140	13.2270	50	0.6749	9.942	14.732	14.7	0.0	9.9	0.0
85	804.2551	121.7663	12.9271	50	0.5163	2.984	5.779	5.8	0.0	3.0	0.0
86	804.2551	121.0187	12.1795	50	0.5770	3.776	6.544	6.5	0.0	3.8	0.0
87	804.2551	120.2711	11.4319	50	0.7875	14.507	18.422	18.4	0.0	14.5	0.0
88	804.2551	119.5235	11.5799	50	0.5945	5.248	8.827	8.8	0.0	5.2	0.0
89	804.2551	118.7759	10.3845	50	0.4688	1.886	4.022	4.0	0.0	1.9	0.0
90	804.2551	118.0283	9.6368	50	0.5607	2.736	4.879	4.9	0.0	2.7	0.0
91	804.2551	117.2806	6.7338	50	0.0001	0.000	124.892	124.9	0.0	0.0	0.0
92	804.2551	116.5330	6.5136	50	0.0001	0.000	351.061	351.1	0.0	0.0	0.0
93	804.2551	115.7854	8.2167	50	0.2667	0.720	2.699	2.7	0.0	0.7	0.0
94	804.2551	115.0378	5.3006	50	0.0261	9.708	372.283	372.3	0.0	9.7	0.0
95	804.2551	114.2902	4.5320	50	0.0374	10.764	287.659	287.7	0.0	10.8	0.0
96	804.2551	113.5425	3.8049	53	0.0630	14.271	226.702	226.7	0.0	14.3	0.0
97	804.2551	112.7949	nicht berechnet								
98	804.2551	112.0473	nicht berechnet								
99	804.2551	111.2997	nicht berechnet								
100	804.2551	110.5521	nicht berechnet								
101	805.0095	128.4949	17.8645	50	0.7804	24.060	30.832	30.8	0.0	24.1	0.0
102	805.0095	127.7473	17.1169	50	0.5905	8.932	15.125	15.1	0.0	8.9	0.0
103	805.0095	126.9997	16.8171	50	0.8734	254.991	291.937	291.9	0.0	255.0	0.0
104	805.0095	126.2521	16.5172	50	0.9428	15.857	16.819	16.8	0.0	15.9	0.0
105	805.0095	125.5044	15.3218	50	0.7120	15.561	21.856	21.9	0.0	15.6	0.0
106	805.0095	124.7568	15.0220	50	0.8694	17.404	20.019	20.0	0.0	17.4	0.0
107	805.0095	124.0092	14.2744	50	0.8394	149.320	177.887	177.9	0.0	149.3	0.0
108	805.0095	123.2616	13.5268	50	0.8103	22.286	27.505	27.5	0.0	22.3	0.0
109	805.0095	122.5140	12.7792	50	0.6161	8.429	13.681	13.7	0.0	8.4	0.0
110	805.0095	121.7663	12.4793	50	0.8623	13.872	16.087	16.1	0.0	13.9	0.0
111	805.0095	121.0187	11.7317	50	0.8055	11.276	13.999	14.0	0.0	11.3	0.0
112	805.0095	120.2711	10.9841	50	0.7300	13.469	18.449	18.4	0.0	13.5	0.0
113	805.0095	119.5235	10.6843	50	0.8434	10.139	12.022	12.0	0.0	10.1	0.0
114	805.0095	118.7759	9.9367	50	0.8559	10.572	12.353	12.4	0.0	10.6	0.0
115	805.0095	118.0283	9.1890	50	0.7884	8.262	10.479	10.5	0.0	8.3	0.0
116	805.0095	117.2806	8.5116	50	0.2295	0.272	1.185	1.2	0.0	0.3	0.0
117	805.0095	116.5330	8.1419	50	0.8205	6.898	8.407	8.4	0.0	6.9	0.0
118	805.0095	115.7854	6.3682	50	0.0271	18.446	679.805	679.8	0.0	18.4	0.0
119	805.0095	115.0378	5.6329	50	0.0495	28.340	572.631	572.6	0.0	28.3	0.0
120	805.0095	114.2902	4.8269	50	0.0517	22.243	430.128	430.1	0.0	22.2	0.0
121	805.0095	113.5425	4.3200	53	0.0824	36.865	447.444	447.4	0.0	36.9	0.0

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122	805.0095	112.7949	nicht berechnet								
123	805.0095	112.0473	nicht berechnet								
124	805.0095	111.2997	nicht berechnet								
125	805.0095	110.5521	nicht berechnet								
126	805.7638	128.4949	17.4167	50	0.7385	22.417	30.354	30.4	0.0	22.4	0.0
127	805.7638	127.7473	16.6691	50	0.5144	6.266	12.180	12.2	0.0	6.3	0.0
128	805.7638	126.9997	16.3693	50	0.5853	3.912	6.683	6.7	0.0	3.9	0.0
129	805.7638	126.2521	15.6216	50	0.8062	18.907	23.451	23.5	0.0	18.9	0.0
130	805.7638	125.5044	14.8740	50	0.6462	8.913	13.792	13.8	0.0	8.9	0.0
131	805.7638	124.7568	14.5742	50	0.8770	262.267	299.037	299.0	0.0	262.3	0.0
132	805.7638	124.0092	13.8266	50	0.8334	126.797	152.138	152.1	0.0	126.8	0.0
133	805.7638	123.2616	13.0790	50	0.7627	13.497	17.696	17.7	0.0	13.5	0.0
134	805.7638	122.5140	12.3313	50	0.5648	5.038	8.920	8.9	0.0	5.0	0.0
135	805.7638	121.7663	12.0315	50	0.2797	0.631	2.257	2.3	0.0	0.6	0.0
136	805.7638	121.0187	11.2839	50	0.7915	63.320	80.003	80.0	0.0	63.3	0.0
137	805.7638	120.2711	10.5363	50	0.7019	8.641	12.310	12.3	0.0	8.6	0.0
138	805.7638	119.5235	9.7887	50	0.4398	2.033	4.622	4.6	0.0	2.0	0.0
139	805.7638	118.7759	9.4889	50	0.1992	0.242	1.214	1.2	0.0	0.2	0.0
140	805.7638	118.0283	8.7412	50	0.8171	11.530	14.111	14.1	0.0	11.5	0.0
141	805.7638	117.2806	8.0671	50	0.6273	3.359	5.355	5.4	0.0	3.4	0.0
142	805.7638	116.5330	7.3277	50	0.0272	27.420	1007.298	1007.3	0.0	27.4	0.0
143	805.7638	115.7854	6.7379	50	0.0507	50.958	1005.265	1005.3	0.0	51.0	0.0
144	805.7638	115.0378	5.9652	50	0.0645	52.995	821.551	821.6	0.0	53.0	0.0
145	805.7638	114.2902	5.4168	50	0.0826	66.992	811.331	811.3	0.0	67.0	0.0
146	805.7638	113.5425	4.8352	53	0.1022	76.012	743.780	743.8	0.0	76.0	0.0
147	805.7638	112.7949	nicht berechnet								
148	805.7638	112.0473	nicht berechnet								
149	805.7638	111.2997	nicht berechnet								
150	805.7638	110.5521	nicht berechnet								
151	806.5182	128.4949	16.9689	50	0.6996	14.830	21.197	21.2	0.0	14.8	0.0
152	806.5182	127.7473	16.2213	50	0.4598	3.783	8.228	8.2	0.0	3.8	0.0
153	806.5182	126.9997	15.9215	50	0.8005	11.467	14.325	14.3	0.0	11.5	0.0
154	806.5182	126.2521	15.1738	50	0.8020	21.737	27.103	27.1	0.0	21.7	0.0
155	806.5182	125.5044	14.8740	50	0.8664	11.391	13.147	13.1	0.0	11.4	0.0
156	806.5182	124.7568	14.1264	50	0.8698	212.383	244.181	244.2	0.0	212.4	0.0
157	806.5182	124.0092	13.3788	50	0.8239	89.628	108.788	108.8	0.0	89.6	0.0
158	806.5182	123.2616	12.6312	50	0.7354	14.055	19.113	19.1	0.0	14.1	0.0
159	806.5182	122.5140	12.3313	50	0.9104	226.835	249.153	249.2	0.0	226.8	0.0
160	806.5182	121.7663	11.5837	50	0.8371	120.867	144.397	144.4	0.0	120.9	0.0
161	806.5182	121.0187	10.8361	50	0.7790	38.646	49.612	49.6	0.0	38.6	0.0
162	806.5182	120.2711	10.0885	50	0.6382	7.524	11.789	11.8	0.0	7.5	0.0
163	806.5182	119.5235	9.7887	50	0.6987	5.174	7.406	7.4	0.0	5.2	0.0
164	806.5182	118.7759	9.0411	50	0.7454	5.967	8.005	8.0	0.0	6.0	0.0
165	806.5182	118.0283	8.2934	50	0.7526	11.091	14.738	14.7	0.0	11.1	0.0
166	806.5182	117.2806	8.0671	50	0.7333	5.200	7.091	7.1	0.0	5.2	0.0
167	806.5182	116.5330	6.9207	50	0.2752	0.324	1.178	1.2	0.0	0.3	0.0
168	806.5182	115.7854	6.7379	50	0.2195	0.323	1.473	1.5	0.0	0.3	0.0
169	806.5182	115.0378	5.9652	50	0.5530	1.722	3.114	3.1	0.0	1.7	0.0
170	806.5182	114.2902	5.7117	50	0.1022	106.865	1045.604	1045.6	0.0	106.9	0.0
171	806.5182	113.5425	5.0927	53	0.1069	97.077	908.057	908.1	0.0	97.1	0.0
172	806.5182	112.7949	4.5525	60	0.1282	104.821	817.343	817.3	0.0	104.8	0.0
173	806.5182	112.0473	nicht berechnet								
174	806.5182	111.2997	nicht berechnet								
175	806.5182	110.5521	nicht berechnet								
176	807.2725	128.4949	16.5211	50	0.6270	7.186	11.461	11.5	0.0	7.2	0.0
177	807.2725	127.7473	15.7735	50	0.3573	1.980	5.542	5.5	0.0	2.0	0.0
178	807.2725	126.9997	15.4737	50	0.8779	18.892	21.520	21.5	0.0	18.9	0.0
179	807.2725	126.2521	14.7260	50	0.7578	20.679	27.290	27.3	0.0	20.7	0.0
180	807.2725	125.5044	13.9784	50	0.5367	6.144	11.449	11.4	0.0	6.1	0.0
181	807.2725	124.7568	13.6786	50	0.3477	4.835	13.905	13.9	0.0	4.8	0.0
182	807.2725	124.0092	12.9310	50	0.8192	15.163	18.509	18.5	0.0	15.2	0.0
183	807.2725	123.2616	12.6312	50	0.9185	335.063	364.780	364.8	0.0	335.1	0.0
184	807.2725	122.5140	11.8835	50	0.8660	204.096	235.690	235.7	0.0	204.1	0.0
185	807.2725	121.7663	11.1359	50	0.8321	101.601	122.102	122.1	0.0	101.6	0.0
186	807.2725	121.0187	10.3883	50	0.7842	10.804	13.777	13.8	0.0	10.8	0.0
187	807.2725	120.2711	9.6407	50	0.5951	4.481	7.530	7.5	0.0	4.5	0.0
188	807.2725	119.5235	10.2365	50	0.2892	651.794	2253.483	2253.5	0.0	651.8	0.0
189	807.2725	118.7759	8.5933	50	0.7944	48.346	60.861	60.9	0.0	48.3	0.0

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190	807.2725	118.0283	7.8456	50	0.7323	6.836	9.335	9.3	0.0	6.8	0.0
191	807.2725	117.2806	7.1782	50	0.6324	5.139	8.125	8.1	0.0	5.1	0.0
192	807.2725	116.5330	6.5136	50	0.5647	2.380	4.215	4.2	0.0	2.4	0.0
193	807.2725	115.7854	5.9985	50	0.7566	4.810	6.357	6.4	0.0	4.8	0.0
194	807.2725	115.0378	6.6298	50	0.1781	284.715	1598.518	1598.5	0.0	284.7	0.0
195	807.2725	114.2902	6.0067	50	0.1672	233.546	1396.547	1396.5	0.0	233.5	0.0
196	807.2725	113.5425	5.6078	53	0.1731	241.817	1396.882	1396.9	0.0	241.8	0.0
197	807.2725	112.7949	4.7727	60	0.1570	155.581	990.723	990.7	0.0	155.6	0.0
198	807.2725	112.0473	nicht berechnet								
199	807.2725	111.2997	nicht berechnet								
200	807.2725	110.5521	nicht berechnet								
201	808.0269	128.4949	16.0733	50	0.6094	7.459	12.241	12.2	0.0	7.5	0.0
202	808.0269	127.7473	15.7735	50	0.4133	9.202	22.261	22.3	0.0	9.2	0.0
203	808.0269	126.9997	15.0259	50	0.3630	4.525	12.467	12.5	0.0	4.5	0.0
204	808.0269	126.2521	14.2782	50	0.6820	16.274	23.862	23.9	0.0	16.3	0.0
205	808.0269	125.5044	13.5306	50	0.4928	3.874	7.863	7.9	0.0	3.9	0.0
206	808.0269	124.7568	13.2308	50	0.7444	6.615	8.887	8.9	0.0	6.6	0.0
207	808.0269	124.0092	12.4832	50	0.8258	18.743	22.697	22.7	0.0	18.7	0.0
208	808.0269	123.2616	11.7356	50	0.6430	7.944	12.355	12.4	0.0	7.9	0.0
209	808.0269	122.5140	11.4357	50	0.8621	167.117	193.846	193.8	0.0	167.1	0.0
210	808.0269	121.7663	11.1359	50	0.9611	411.534	428.213	428.2	0.0	411.5	0.0
211	808.0269	121.0187	10.3883	50	0.9357	275.116	294.024	294.0	0.0	275.1	0.0
212	808.0269	120.2711	9.6407	50	0.8954	168.501	188.194	188.2	0.0	168.5	0.0
213	808.0269	119.5235	8.8931	50	0.8266	89.520	108.300	108.3	0.0	89.5	0.0
214	808.0269	118.7759	8.1455	50	0.7939	30.296	38.162	38.2	0.0	30.3	0.0
215	808.0269	118.0283	7.3978	50	0.6606	6.176	9.348	9.3	0.0	6.2	0.0
216	808.0269	117.2806	6.7338	50	0.6017	3.014	5.009	5.0	0.0	3.0	0.0
217	808.0269	116.5330	6.1065	50	0.5503	2.989	5.433	5.4	0.0	3.0	0.0
218	808.0269	115.7854	5.6288	50	0.8082	9.667	11.962	12.0	0.0	9.7	0.0
219	808.0269	115.0378	4.9682	50	0.8044	5.219	6.488	6.5	0.0	5.2	0.0
220	808.0269	114.2902	6.5966	50	0.2608	584.729	2242.207	2242.2	0.0	584.7	0.0
221	808.0269	113.5425	5.8654	53	0.2317	413.255	1783.585	1783.6	0.0	413.3	0.0
222	808.0269	112.7949	5.2131	60	0.2182	315.022	1443.527	1443.5	0.0	315.0	0.0
223	808.0269	112.0473	nicht berechnet								
224	808.0269	111.2997	nicht berechnet								
225	808.0269	110.5521	nicht berechnet								
226	808.7812	128.4949	15.6255	50	0.5433	5.822	10.716	10.7	0.0	5.8	0.0
227	808.7812	127.7473	14.8779	50	0.1225	0.104	0.849	0.8	0.0	0.1	0.0
228	808.7812	126.9997	14.5780	50	0.4378	7.270	16.606	16.6	0.0	7.3	0.0
229	808.7812	126.2521	13.8304	50	0.6480	6.345	9.791	9.8	0.0	6.3	0.0
230	808.7812	125.5044	13.0828	50	0.3877	2.112	5.448	5.4	0.0	2.1	0.0
231	808.7812	124.7568	12.7830	50	0.8847	14.001	15.826	15.8	0.0	14.0	0.0
232	808.7812	124.0092	12.0354	50	0.7785	18.336	23.552	23.6	0.0	18.3	0.0
233	808.7812	123.2616	11.2878	50	0.5560	5.711	10.272	10.3	0.0	5.7	0.0
234	808.7812	122.5140	10.9879	50	0.8536	142.308	166.716	166.7	0.0	142.3	0.0
235	808.7812	121.7663	10.2403	50	0.8219	10.733	13.058	13.1	0.0	10.7	0.0
236	808.7812	121.0187	9.9405	50	0.8990	231.259	257.234	257.2	0.0	231.3	0.0
237	808.7812	120.2711	9.1929	50	0.8892	141.554	159.193	159.2	0.0	141.6	0.0
238	808.7812	119.5235	8.4453	50	0.8175	73.521	89.936	89.9	0.0	73.5	0.0
239	808.7812	118.7759	7.6976	50	0.8011	7.479	9.336	9.3	0.0	7.5	0.0
240	808.7812	118.0283	6.9500	50	0.6275	3.562	5.677	5.7	0.0	3.6	0.0
241	808.7812	117.2806	6.2893	50	0.5188	2.412	4.650	4.7	0.0	2.4	0.0
242	808.7812	116.5330	5.6994	50	0.6239	3.123	5.006	5.0	0.0	3.1	0.0
243	808.7812	115.7854	5.2591	50	0.8059	20.493	25.430	25.4	0.0	20.5	0.0
244	808.7812	115.0378	4.6359	50	0.8913	5.281	5.925	5.9	0.0	5.3	0.0
245	808.7812	114.2902	3.9421	50	0.8358	5.247	6.278	6.3	0.0	5.2	0.0
246	808.7812	113.5425	6.3805	53	0.3007	778.528	2589.454	2589.5	0.0	778.5	0.0
247	808.7812	112.7949	5.6534	60	0.2724	548.021	2011.858	2011.9	0.0	548.0	0.0
248	808.7812	112.0473	nicht berechnet								
249	808.7812	111.2997	nicht berechnet								
250	808.7812	110.5521	nicht berechnet								
251	809.5356	128.4949	15.1777	50	0.4237	3.010	7.104	7.1	0.0	3.0	0.0
252	809.5356	127.7473	14.8779	50	0.2475	1.735	7.011	7.0	0.0	1.7	0.0
253	809.5356	126.9997	14.1302	50	0.8192	51.371	62.706	62.7	0.0	51.4	0.0
254	809.5356	126.2521	13.3826	50	0.6366	7.008	11.009	11.0	0.0	7.0	0.0
255	809.5356	125.5044	12.6350	50	0.3218	1.083	3.365	3.4	0.0	1.1	0.0
256	809.5356	124.7568	12.3352	50	0.2690	1.819	6.760	6.8	0.0	1.8	0.0
257	809.5356	124.0092	11.5876	50	0.6925	14.379	20.764	20.8	0.0	14.4	0.0

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258	809.5356	123.2616	10.8400	50	0.5247	3.731	7.111	7.1	0.0	3.7	0.0
259	809.5356	122.5140	10.5401	50	0.5644	2.097	3.715	3.7	0.0	2.1	0.0
260	809.5356	121.7663	9.7925	50	0.8534	15.048	17.633	17.6	0.0	15.0	0.0
261	809.5356	121.0187	9.4927	50	0.8993	206.131	229.207	229.2	0.0	206.1	0.0
262	809.5356	120.2711	8.7451	50	0.8463	119.460	141.148	141.1	0.0	119.5	0.0
263	809.5356	119.5235	8.4453	50	0.9170	272.899	297.613	297.6	0.0	272.9	0.0
264	809.5356	118.7759	7.6976	50	0.8983	179.947	200.310	200.3	0.0	179.9	0.0
265	809.5356	118.0283	6.9500	50	0.8636	108.181	125.272	125.3	0.0	108.2	0.0
266	809.5356	117.2806	6.2893	50	0.8529	79.366	93.059	93.1	0.0	79.4	0.0
267	809.5356	116.5330	5.6994	50	0.8862	77.448	87.391	87.4	0.0	77.4	0.0
268	809.5356	115.7854	4.8894	50	0.7800	28.370	36.371	36.4	0.0	28.4	0.0
269	809.5356	115.0378	4.3036	50	0.8266	23.396	28.303	28.3	0.0	23.4	0.0
270	809.5356	114.2902	3.3522	50	0.4349	0.765	1.759	1.8	0.0	0.8	0.0
271	809.5356	113.5425	6.6380	53	0.3415	1082.332	3169.582	3169.6	0.0	1082.3	0.0
272	809.5356	112.7949	6.0938	60	0.3169	861.074	2717.424	2717.4	0.0	861.1	0.0
273	809.5356	112.0473	5.4830	66	0.3043	663.330	2179.805	2179.8	0.0	663.3	0.0
274	809.5356	111.2997	nicht berechnet								
275	809.5356	110.5521	nicht berechnet								
276	810.2899	128.4949	15.1777	50	0.3933	8.441	21.466	21.5	0.0	8.4	0.0
277	810.2899	127.7473	14.4301	50	0.3508	4.372	12.464	12.5	0.0	4.4	0.0
278	810.2899	126.9997	13.6824	50	0.7560	46.662	61.723	61.7	0.0	46.7	0.0
279	810.2899	126.2521	12.9348	50	0.5672	5.613	9.896	9.9	0.0	5.6	0.0
280	810.2899	125.5044	12.6350	50	0.4080	7.834	19.201	19.2	0.0	7.8	0.0
281	810.2899	124.7568	11.8874	50	0.3709	4.121	11.108	11.1	0.0	4.1	0.0
282	810.2899	124.0092	11.1398	50	0.6655	5.136	7.717	7.7	0.0	5.1	0.0
283	810.2899	123.2616	10.3921	50	0.4126	2.072	5.020	5.0	0.0	2.1	0.0
284	810.2899	122.5140	10.0923	50	0.8680	8.596	9.903	9.9	0.0	8.6	0.0
285	810.2899	121.7663	9.3447	50	0.8026	15.338	19.111	19.1	0.0	15.3	0.0
286	810.2899	121.0187	9.0449	50	0.7569	3.851	5.088	5.1	0.0	3.9	0.0
287	810.2899	120.2711	8.2973	50	0.8347	92.475	110.787	110.8	0.0	92.5	0.0
288	810.2899	119.5235	7.9975	50	0.9306	238.309	256.094	256.1	0.0	238.3	0.0
289	810.2899	118.7759	7.2498	50	0.9055	151.047	166.812	166.8	0.0	151.0	0.0
290	810.2899	118.0283	6.9500	50	0.9185	270.966	295.000	295.0	0.0	271.0	0.0
291	810.2899	117.2806	6.2893	50	0.9139	219.237	239.896	239.9	0.0	219.2	0.0
292	810.2899	116.5330	5.2923	50	0.8331	68.558	82.292	82.3	0.0	68.6	0.0
293	810.2899	115.7854	4.8894	50	0.8022	106.591	132.878	132.9	0.0	106.6	0.0
294	810.2899	115.0378	3.9713	50	0.8166	34.395	42.121	42.1	0.0	34.4	0.0
295	810.2899	114.2902	3.3522	50	0.8366	27.289	32.618	32.6	0.0	27.3	0.0
296	810.2899	113.5425	3.8049	53	0.4067	156.384	384.531	384.5	0.0	156.4	0.0
297	810.2899	112.7949	6.5341	60	0.3531	1269.965	3596.802	3596.8	0.0	1270.0	0.0
298	810.2899	112.0473	5.8485	66	0.3400	953.617	2804.893	2804.9	0.0	953.6	0.0
299	810.2899	111.2997	nicht berechnet								
300	810.2899	110.5521	nicht berechnet								
301	811.0443	128.4949	15.1777	50	0.2332	4.012	17.201	17.2	0.0	4.0	0.0
302	811.0443	127.7473	13.9823	50	0.7295	86.551	118.650	118.6	0.0	86.6	0.0
303	811.0443	126.9997	13.2346	50	0.6517	35.059	53.794	53.8	0.0	35.1	0.0
304	811.0443	126.2521	12.4870	50	0.4383	2.879	6.568	6.6	0.0	2.9	0.0
305	811.0443	125.5044	12.1872	50	0.0715	0.084	1.172	1.2	0.0	0.1	0.0
306	811.0443	124.7568	11.4396	50	0.4519	6.554	14.504	14.5	0.0	6.6	0.0
307	811.0443	124.0092	10.6920	50	0.6650	6.213	9.343	9.3	0.0	6.2	0.0
308	811.0443	123.2616	9.9443	50	0.3647	1.188	3.258	3.3	0.0	1.2	0.0
309	811.0443	122.5140	9.6445	50	0.0925	0.127	1.377	1.4	0.0	0.1	0.0
310	811.0443	121.7663	8.8969	50	0.7757	9.376	12.087	12.1	0.0	9.4	0.0
311	811.0443	121.0187	13.5229	50	0.5942	8293.163	13957.324	13957.3	0.0	8293.2	0.0
312	811.0443	120.2711	7.8495	50	0.8418	79.049	93.907	93.9	0.0	79.0	0.0
313	811.0443	119.5235	7.1019	50	0.7326	33.556	45.804	45.8	0.0	33.6	0.0
314	811.0443	118.7759	6.8020	50	0.9005	124.921	138.728	138.7	0.0	124.9	0.0
315	811.0443	118.0283	6.5022	50	0.9240	234.811	254.122	254.1	0.0	234.8	0.0
316	811.0443	117.2806	6.2893	50	0.8920	384.107	430.593	430.6	0.0	384.1	0.0
317	811.0443	116.5330	5.2923	50	0.8735	178.153	203.963	204.0	0.0	178.2	0.0
318	811.0443	115.7854	4.5197	50	0.8549	106.672	124.778	124.8	0.0	106.7	0.0
319	811.0443	115.0378	3.9713	50	0.8303	95.940	115.544	115.5	0.0	95.9	0.0
320	811.0443	114.2902	3.3522	50	0.8149	74.705	91.675	91.7	0.0	74.7	0.0
321	811.0443	113.5425	3.8049	53	0.4826	224.293	464.783	464.8	0.0	224.3	0.0
322	811.0443	112.7949	4.5525	60	0.3744	487.032	1300.898	1300.9	0.0	487.0	0.0
323	811.0443	112.0473	5.8485	66	0.3629	1091.035	3006.681	3006.7	0.0	1091.0	0.0
324	811.0443	111.2997	nicht berechnet								
325	811.0443	110.5521	nicht berechnet								

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326	811.7986	128.4949	14.2821	50	0.7424	118.818	160.052	160.1	0.0	118.8	0.0
327	811.7986	127.7473	13.5345	50	0.6236	60.911	97.680	97.7	0.0	60.9	0.0
328	811.7986	126.9997	12.7868	50	0.5471	15.734	28.761	28.8	0.0	15.7	0.0
329	811.7986	126.2521	12.4870	50	0.2825	3.059	10.830	10.8	0.0	3.1	0.0
330	811.7986	125.5044	11.7394	50	0.2379	1.400	5.886	5.9	0.0	1.4	0.0
331	811.7986	124.7568	10.9918	50	0.7754	39.727	51.232	51.2	0.0	39.7	0.0
332	811.7986	124.0092	10.2442	50	0.5896	5.114	8.673	8.7	0.0	5.1	0.0
333	811.7986	123.2616	9.9443	50	0.2887	2.773	9.603	9.6	0.0	2.8	0.0
334	811.7986	122.5140	9.1967	50	0.2550	1.369	5.369	5.4	0.0	1.4	0.0
335	811.7986	121.7663	8.4491	50	0.6722	3.546	5.276	5.3	0.0	3.5	0.0
336	811.7986	121.0187	13.0751	50	0.6163	7790.418	12640.438	12640.4	0.0	7790.4	0.0
337	811.7986	120.2711	7.4017	50	0.7399	3.080	4.163	4.2	0.0	3.1	0.0
338	811.7986	119.5235	6.6541	50	0.8341	11.642	13.958	14.0	0.0	11.6	0.0
339	811.7986	118.7759	11.2801	50	0.5819	6228.631	10703.326	10703.3	0.0	6228.6	0.0
340	811.7986	118.0283	5.6066	50	0.8100	55.881	68.988	69.0	0.0	55.9	0.0
341	811.7986	117.2806	5.4004	50	0.8717	155.893	178.830	178.8	0.0	155.9	0.0
342	811.7986	116.5330	4.8853	50	0.8731	157.738	180.666	180.7	0.0	157.7	0.0
343	811.7986	115.7854	4.1500	50	0.8428	98.758	117.184	117.2	0.0	98.8	0.0
344	811.7986	115.0378	3.6390	50	0.8047	96.739	120.220	120.2	0.0	96.7	0.0
345	811.7986	114.2902	3.0573	50	0.7437	73.823	99.267	99.3	0.0	73.8	0.0
346	811.7986	113.5425	3.8049	53	0.5176	290.933	562.085	562.1	0.0	290.9	0.0
347	811.7986	112.7949	7.1947	60	0.4071	2201.425	5407.056	5407.1	0.0	2201.4	0.0
348	811.7986	112.0473	6.5797	66	0.3888	1729.241	4447.620	4447.6	0.0	1729.2	0.0
349	811.7986	111.2997	nicht berechnet								
350	811.7986	110.5521	nicht berechnet								
351	812.5530	128.4949	13.8343	50	0.6539	69.507	106.289	106.3	0.0	69.5	0.0
352	812.5530	127.7473	13.0867	50	0.5027	18.426	36.653	36.7	0.0	18.4	0.0
353	812.5530	126.9997	12.3390	50	0.3761	5.523	14.684	14.7	0.0	5.5	0.0
354	812.5530	126.2521	12.0392	50	0.8241	130.582	158.455	158.5	0.0	130.6	0.0
355	812.5530	125.5044	11.2916	50	0.7262	70.393	96.928	96.9	0.0	70.4	0.0
356	812.5530	124.7568	10.5440	50	0.6618	29.598	44.725	44.7	0.0	29.6	0.0
357	812.5530	124.0092	9.7964	50	0.4441	2.522	5.679	5.7	0.0	2.5	0.0
358	812.5530	123.2616	9.0487	50	0.1236	0.072	0.585	0.6	0.0	0.1	0.0
359	812.5530	122.5140	8.7489	50	0.3696	3.342	9.044	9.0	0.0	3.3	0.0
360	812.5530	121.7663	8.0013	50	0.6972	5.044	7.234	7.2	0.0	5.0	0.0
361	812.5530	121.0187	7.2537	50	0.4053	1.150	2.838	2.8	0.0	1.2	0.0
362	812.5530	120.2711	12.3275	50	0.6127	7396.703	12071.348	12071.3	0.0	7396.7	0.0
363	812.5530	119.5235	6.2063	50	0.8068	6.394	7.925	7.9	0.0	6.4	0.0
364	812.5530	118.7759	5.9064	50	0.8285	3.116	3.761	3.8	0.0	3.1	0.0
365	812.5530	118.0283	5.1588	50	0.7894	44.112	55.878	55.9	0.0	44.1	0.0
366	812.5530	117.2806	4.5114	50	0.8086	32.113	39.713	39.7	0.0	32.1	0.0
367	812.5530	116.5330	4.4782	50	0.8424	139.767	165.922	165.9	0.0	139.8	0.0
368	812.5530	115.7854	3.7803	50	0.8195	94.061	114.782	114.8	0.0	94.1	0.0
369	812.5530	115.0378	2.9743	50	0.7885	44.681	56.668	56.7	0.0	44.7	0.0
370	812.5530	114.2902	3.0573	50	0.6770	115.041	169.923	169.9	0.0	115.0	0.0
371	812.5530	113.5425	3.8049	53	0.5150	351.961	683.354	683.4	0.0	352.0	0.0
372	812.5530	112.7949	7.6350	60	0.4197	2843.401	6775.548	6775.5	0.0	2843.4	0.0
373	812.5530	112.0473	6.9453	66	0.4035	2213.983	5486.269	5486.3	0.0	2214.0	0.0
374	812.5530	111.2997	6.1932	72	0.3880	1617.635	4168.793	4168.8	0.0	1617.6	0.0
375	812.5530	110.5521	nicht berechnet								
376	813.3074	128.4949	13.8343	50	0.7334	231.166	315.209	315.2	0.0	231.2	0.0
377	813.3074	127.7473	13.0867	50	0.7469	184.888	247.543	247.5	0.0	184.9	0.0
378	813.3074	126.9997	12.3390	50	0.7493	138.859	185.314	185.3	0.0	138.9	0.0
379	813.3074	126.2521	11.5914	50	0.7241	93.235	128.758	128.8	0.0	93.2	0.0
380	813.3074	125.5044	10.8438	50	0.6160	48.213	78.274	78.3	0.0	48.2	0.0
381	813.3074	124.7568	10.0962	50	0.5535	13.318	24.062	24.1	0.0	13.3	0.0
382	813.3074	124.0092	9.3486	50	0.3235	2.044	6.320	6.3	0.0	2.0	0.0
383	813.3074	123.2616	9.4965	50	0.0912	0.442	4.842	4.8	0.0	0.4	0.0
384	813.3074	122.5140	8.3011	50	0.7929	31.216	39.370	39.4	0.0	31.2	0.0
385	813.3074	121.7663	7.5535	50	0.6107	4.284	7.015	7.0	0.0	4.3	0.0
386	813.3074	121.0187	6.8059	50	0.2775	0.295	1.061	1.1	0.0	0.3	0.0
387	813.3074	120.2711	11.8797	50	0.6245	6822.467	10925.306	10925.3	0.0	6822.5	0.0
388	813.3074	119.5235	11.1321	50	0.6366	6301.704	9899.216	9899.2	0.0	6301.7	0.0
389	813.3074	118.7759	10.3845	50	0.6382	5658.222	8866.429	8866.4	0.0	5658.2	0.0
390	813.3074	118.0283	9.6368	50	0.6213	4786.336	7703.868	7703.9	0.0	4786.3	0.0
391	813.3074	117.2806	4.0670	50	0.8030	20.624	25.685	25.7	0.0	20.6	0.0
392	813.3074	116.5330	3.6640	50	0.8138	44.315	54.457	54.5	0.0	44.3	0.0
393	813.3074	115.7854	3.0409	50	0.8049	34.085	42.347	42.3	0.0	34.1	0.0

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394	813.3074	115.0378	2.6420	50	0.7483	43.150	57.667	57.7	0.0	43.2	0.0
395	813.3074	114.2902	3.0573	50	0.6022	152.677	253.534	253.5	0.0	152.7	0.0
396	813.3074	113.5425	8.4409	53	0.4516	4185.279	9267.726	9267.7	0.0	4185.3	0.0
397	813.3074	112.7949	7.6350	60	0.4281	3103.708	7249.790	7249.8	0.0	3103.7	0.0
398	813.3074	112.0473	6.9453	66	0.4096	2399.439	5857.874	5857.9	0.0	2399.4	0.0
399	813.3074	111.2997	6.1932	72	0.3935	1758.237	4468.693	4468.7	0.0	1758.2	0.0
400	813.3074	110.5521	nicht berechnet								
401	814.0617	128.4949	13.3865	50	0.6437	148.063	230.032	230.0	0.0	148.1	0.0
402	814.0617	127.7473	12.6388	50	0.6722	114.194	169.877	169.9	0.0	114.2	0.0
403	814.0617	126.9997	11.8912	50	0.6702	83.264	124.242	124.2	0.0	83.3	0.0
404	814.0617	126.2521	11.1436	50	0.6358	52.943	83.265	83.3	0.0	52.9	0.0
405	814.0617	125.5044	10.3960	50	0.4971	23.441	47.151	47.2	0.0	23.4	0.0
406	814.0617	124.7568	10.0962	50	0.8163	144.972	177.587	177.6	0.0	145.0	0.0
407	814.0617	124.0092	9.3486	50	0.8044	98.143	122.009	122.0	0.0	98.1	0.0
408	814.0617	123.2616	8.6009	50	0.7079	51.710	73.052	73.1	0.0	51.7	0.0
409	814.0617	122.5140	7.8533	50	0.6635	22.699	34.212	34.2	0.0	22.7	0.0
410	814.0617	121.7663	7.1057	50	0.4381	3.228	7.369	7.4	0.0	3.2	0.0
411	814.0617	121.0187	6.8059	50	0.2198	1.270	5.778	5.8	0.0	1.3	0.0
412	814.0617	120.2711	6.0583	50	0.2058	0.690	3.353	3.4	0.0	0.7	0.0
413	814.0617	119.5235	5.3106	50	0.7378	3.457	4.686	4.7	0.0	3.5	0.0
414	814.0617	118.7759	10.3845	50	0.6203	5831.021	9400.403	9400.4	0.0	5831.0	0.0
415	814.0617	118.0283	4.2632	50	0.8844	2.785	3.149	3.1	0.0	2.8	0.0
416	814.0617	117.2806	3.6225	50	0.7253	18.031	24.859	24.9	0.0	18.0	0.0
417	814.0617	116.5330	2.8499	50	0.7803	3.253	4.169	4.2	0.0	3.3	0.0
418	814.0617	115.7854	2.6712	50	0.7387	29.391	39.787	39.8	0.0	29.4	0.0
419	814.0617	115.0378	2.3097	50	0.7317	38.647	52.817	52.8	0.0	38.6	0.0
420	814.0617	114.2902	8.6611	51	0.4850	4864.931	10030.888	10030.9	0.0	4864.9	0.0
421	814.0617	113.5425	8.4409	51	0.4634	4598.345	9923.776	9923.8	0.0	4598.3	0.0
422	814.0617	112.7949	7.6350	60	0.4427	3506.158	7920.552	7920.6	0.0	3506.2	0.0
423	814.0617	112.0473	6.9453	66	0.4135	2614.984	6323.659	6323.7	0.0	2615.0	0.0
424	814.0617	111.2997	6.1932	72	0.3934	1894.033	4814.710	4814.7	0.0	1894.0	0.0
425	814.0617	110.5521	nicht berechnet								
426	814.8161	128.4949	13.3865	50	0.6677	334.964	501.697	501.7	0.0	335.0	0.0
427	814.8161	127.7473	12.6388	50	0.6566	246.363	375.223	375.2	0.0	246.4	0.0
428	814.8161	126.9997	11.8912	50	0.6647	197.725	297.483	297.5	0.0	197.7	0.0
429	814.8161	126.2521	11.1436	50	0.6864	164.755	240.023	240.0	0.0	164.8	0.0
430	814.8161	125.5044	10.3960	50	0.7051	131.783	186.903	186.9	0.0	131.8	0.0
431	814.8161	124.7568	9.6484	50	0.7142	98.954	138.544	138.5	0.0	99.0	0.0
432	814.8161	124.0092	8.9008	50	0.6970	66.345	95.187	95.2	0.0	66.3	0.0
433	814.8161	123.2616	8.1531	50	0.6351	32.350	50.936	50.9	0.0	32.4	0.0
434	814.8161	122.5140	7.4055	50	0.5501	10.033	18.240	18.2	0.0	10.0	0.0
435	814.8161	121.7663	6.6579	50	0.3619	1.931	5.336	5.3	0.0	1.9	0.0
436	814.8161	121.0187	nicht berechnet								
437	814.8161	120.2711	5.6105	50	0.8051	21.183	26.311	26.3	0.0	21.2	0.0
438	814.8161	119.5235	4.8628	50	0.6303	3.085	4.894	4.9	0.0	3.1	0.0
439	814.8161	118.7759	9.9367	50	0.6142	5221.092	8500.059	8500.1	0.0	5221.1	0.0
440	814.8161	118.0283	9.1890	50	0.6225	4742.295	7617.918	7617.9	0.0	4742.3	0.0
441	814.8161	117.2806	3.1781	50	0.7545	1.250	1.657	1.7	0.0	1.3	0.0
442	814.8161	116.5330	2.4428	50	0.7851	1.640	2.089	2.1	0.0	1.6	0.0
443	814.8161	115.7854	1.9318	50	0.5913	4.547	7.690	7.7	0.0	4.5	0.0
444	814.8161	115.0378	8.2914	50	0.5097	4491.396	8811.898	8811.9	0.0	4491.4	0.0
445	814.8161	114.2902	8.3662	52	0.4873	4742.654	9733.432	9733.4	0.0	4742.7	0.0
446	814.8161	113.5425	8.4409	54	0.4664	4929.605	10568.877	10568.9	0.0	4929.6	0.0
447	814.8161	112.7949	7.6350	60	0.4491	3831.098	8530.948	8530.9	0.0	3831.1	0.0
448	814.8161	112.0473	6.9453	66	0.4231	2936.360	6939.560	6939.6	0.0	2936.4	0.0
449	814.8161	111.2997	6.1932	72	0.3922	2058.848	5249.030	5249.0	0.0	2058.8	0.0
450	814.8161	110.5521	nicht berechnet								
451	815.5704	128.4949	13.3865	50	0.6743	671.655	996.049	996.0	0.0	671.7	0.0
452	815.5704	127.7473	12.6388	50	0.6943	579.243	834.339	834.3	0.0	579.2	0.0
453	815.5704	126.9997	11.8912	50	0.7127	486.755	682.967	683.0	0.0	486.8	0.0
454	815.5704	126.2521	11.1436	50	0.7097	365.605	515.129	515.1	0.0	365.6	0.0
455	815.5704	125.5044	10.3960	50	0.7085	275.430	388.751	388.8	0.0	275.4	0.0
456	815.5704	124.7568	9.6484	50	0.6948	197.489	284.228	284.2	0.0	197.5	0.0
457	815.5704	124.0092	8.9008	50	0.7254	164.066	226.178	226.2	0.0	164.1	0.0
458	815.5704	123.2616	8.1531	50	0.7544	130.686	173.235	173.2	0.0	130.7	0.0
459	815.5704	122.5140	7.4055	50	0.7753	97.342	125.556	125.6	0.0	97.3	0.0
460	815.5704	121.7663	6.6579	50	0.7673	64.148	83.602	83.6	0.0	64.1	0.0
461	815.5704	121.0187	5.9103	50	0.6710	31.315	46.669	46.7	0.0	31.3	0.0

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462	815.5704	120.2711	5.1627	50	0.6492	14.475	22.297	22.3	0.0	14.5	0.0
463	815.5704	119.5235	4.4150	50	0.4718	2.275	4.823	4.8	0.0	2.3	0.0
464	815.5704	118.7759	3.6674	50	0.2079	0.107	0.513	0.5	0.0	0.1	0.0
465	815.5704	118.0283	9.1890	50	0.5756	4647.147	8073.404	8073.4	0.0	4647.1	0.0
466	815.5704	117.2806	8.5116	50	0.5771	4246.586	7359.118	7359.1	0.0	4246.6	0.0
467	815.5704	116.5330	7.7348	50	0.5607	3517.256	6273.013	6273.0	0.0	3517.3	0.0
468	815.5704	115.7854	1.5621	50	0.6809	5.418	7.957	8.0	0.0	5.4	0.0
469	815.5704	115.0378	7.2945	51	0.5029	3343.313	6647.598	6647.6	0.0	3343.3	0.0
470	815.5704	114.2902	8.3662	52	0.4793	4953.359	10334.105	10334.1	0.0	4953.4	0.0
471	815.5704	113.5425	8.1834	55	0.4613	4791.168	10387.194	10387.2	0.0	4791.2	0.0
472	815.5704	112.7949	7.6350	59	0.4479	4090.784	9133.346	9133.3	0.0	4090.8	0.0
473	815.5704	112.0473	6.9453	66	0.4256	3192.802	7502.473	7502.5	0.0	3192.8	0.0
474	815.5704	111.2997	6.1932	72	0.3991	2311.949	5793.535	5793.5	0.0	2311.9	0.0
475	815.5704	110.5521	nicht berechnet								
476	816.3248	128.4949	12.9387	50	0.5814	417.602	718.275	718.3	0.0	417.6	0.0
477	816.3248	127.7473	12.1910	50	0.5966	354.456	594.126	594.1	0.0	354.5	0.0
478	816.3248	126.9997	11.4434	50	0.6092	291.319	478.214	478.2	0.0	291.3	0.0
479	816.3248	126.2521	10.6958	50	0.5950	205.151	344.793	344.8	0.0	205.2	0.0
480	816.3248	125.5044	9.9482	50	0.5786	144.750	250.165	250.2	0.0	144.7	0.0
481	816.3248	124.7568	9.2006	50	0.6043	123.775	204.832	204.8	0.0	123.8	0.0
482	816.3248	124.0092	8.4530	50	0.6459	102.597	158.835	158.8	0.0	102.6	0.0
483	816.3248	123.2616	7.7053	50	0.6747	81.724	121.126	121.1	0.0	81.7	0.0
484	816.3248	122.5140	6.9577	50	0.6978	60.877	87.246	87.2	0.0	60.9	0.0
485	816.3248	121.7663	6.6579	50	0.7624	143.365	188.033	188.0	0.0	143.4	0.0
486	816.3248	121.0187	5.9103	50	0.7994	109.826	137.384	137.4	0.0	109.8	0.0
487	816.3248	120.2711	5.1627	50	0.8205	76.286	92.972	93.0	0.0	76.3	0.0
488	816.3248	119.5235	4.4150	50	0.7860	43.041	54.759	54.8	0.0	43.0	0.0
489	816.3248	118.7759	3.6674	50	0.8040	22.743	28.288	28.3	0.0	22.7	0.0
490	816.3248	118.0283	2.9198	50	0.7866	9.871	12.548	12.5	0.0	9.9	0.0
491	816.3248	117.2806	2.2891	50	0.7664	4.986	6.505	6.5	0.0	5.0	0.0
492	816.3248	116.5330	1.6286	50	0.9432	1.707	1.810	1.8	0.0	1.7	0.0
493	816.3248	115.7854	7.1076	50	0.5119	3104.612	6065.310	6065.3	0.0	3104.6	0.0
494	816.3248	115.0378	7.2945	51	0.4879	3527.211	7228.716	7228.7	0.0	3527.2	0.0
495	816.3248	114.2902	7.4814	56	0.4656	3891.307	8357.403	8357.4	0.0	3891.3	0.0
496	816.3248	113.5425	7.4107	56	0.4494	3896.571	8670.755	8670.8	0.0	3896.6	0.0
497	816.3248	112.7949	7.4148	58	0.4387	3986.092	9086.856	9086.9	0.0	3986.1	0.0
498	816.3248	112.0473	6.9453	66	0.4212	3387.960	8044.485	8044.5	0.0	3388.0	0.0
499	816.3248	111.2997	6.1932	72	0.3988	2503.606	6277.955	6278.0	0.0	2503.6	0.0
500	816.3248	110.5521	nicht berechnet								
501	817.0791	128.4949	12.9387	50	0.5402	620.238	1148.194	1148.2	0.0	620.2	0.0
502	817.0791	127.7473	12.1910	50	0.5587	556.446	996.025	996.0	0.0	556.4	0.0
503	817.0791	126.9997	11.4434	50	0.5781	492.623	852.116	852.1	0.0	492.6	0.0
504	817.0791	126.2521	10.6958	50	0.5982	428.751	716.717	716.7	0.0	428.8	0.0
505	817.0791	125.5044	9.9482	50	0.6185	364.831	589.894	589.9	0.0	364.8	0.0
506	817.0791	124.7568	9.2006	50	0.6371	300.910	472.278	472.3	0.0	300.9	0.0
507	817.0791	124.0092	8.4530	50	0.6504	236.971	364.329	364.3	0.0	237.0	0.0
508	817.0791	123.2616	7.7053	50	0.6491	173.044	266.591	266.6	0.0	173.0	0.0
509	817.0791	122.5140	6.9577	50	0.6226	114.591	184.061	184.1	0.0	114.6	0.0
510	817.0791	121.7663	6.2101	50	0.6577	93.549	142.230	142.2	0.0	93.5	0.0
511	817.0791	121.0187	5.4625	50	0.6925	72.522	104.725	104.7	0.0	72.5	0.0
512	817.0791	120.2711	4.7149	50	0.7178	51.475	71.713	71.7	0.0	51.5	0.0
513	817.0791	119.5235	3.9672	50	0.6981	30.448	43.615	43.6	0.0	30.4	0.0
514	817.0791	118.7759	3.2196	50	0.6083	12.667	20.824	20.8	0.0	12.7	0.0
515	817.0791	118.0283	2.4720	50	0.6038	5.617	9.303	9.3	0.0	5.6	0.0
516	817.0791	117.2806	1.8447	50	0.6468	4.137	6.396	6.4	0.0	4.1	0.0
517	817.0791	116.5330	1.2215	50	0.5844	1.663	2.846	2.8	0.0	1.7	0.0
518	817.0791	115.7854	6.7379	51	0.4884	2778.591	5689.238	5689.2	0.0	2778.6	0.0
519	817.0791	115.0378	6.6298	54	0.4609	2806.817	6090.166	6090.2	0.0	2806.8	0.0
520	817.0791	114.2902	6.8915	55	0.4435	3213.541	7245.373	7245.4	0.0	3213.5	0.0
521	817.0791	113.5425	6.6380	59	0.4301	3064.588	7125.874	7125.9	0.0	3064.6	0.0
522	817.0791	112.7949	6.7543	59	0.4199	3269.845	7787.583	7787.6	0.0	3269.8	0.0
523	817.0791	112.0473	6.7625	66	0.4083	3290.414	8059.630	8059.6	0.0	3290.4	0.0
524	817.0791	111.2997	6.1932	72	0.3919	2638.789	6733.010	6733.0	0.0	2638.8	0.0
525	817.0791	110.5521	nicht berechnet								
526	817.8335	128.4949	12.9387	50	0.4900	783.781	1599.513	1599.5	0.0	783.8	0.0
527	817.8335	127.7473	12.1910	50	0.5067	718.910	1418.692	1418.7	0.0	718.9	0.0
528	817.8335	126.9997	11.4434	50	0.5249	654.199	1246.330	1246.3	0.0	654.2	0.0
529	817.8335	126.2521	10.6958	50	0.5446	589.505	1082.469	1082.5	0.0	589.5	0.0

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530	817.8335	125.5044	9.9482	50	0.5658	524.797	927.465	927.5	0.0	524.8	0.0
531	817.8335	124.7568	9.2006	50	0.5887	460.171	781.726	781.7	0.0	460.2	0.0
532	817.8335	124.0092	8.4530	50	0.6265	419.436	669.509	669.5	0.0	419.4	0.0
533	817.8335	123.2616	8.1531	50	0.6735	656.037	974.045	974.0	0.0	656.0	0.0
534	817.8335	122.5140	7.4055	50	0.7028	560.442	797.439	797.4	0.0	560.4	0.0
535	817.8335	121.7663	6.6579	50	0.7324	464.801	634.634	634.6	0.0	464.8	0.0
536	817.8335	121.0187	5.9103	50	0.7788	391.387	502.553	502.6	0.0	391.4	0.0
537	817.8335	120.2711	5.1627	50	0.7955	292.506	367.710	367.7	0.0	292.5	0.0
538	817.8335	119.5235	4.4150	50	0.7767	193.686	249.364	249.4	0.0	193.7	0.0
539	817.8335	118.7759	3.2196	50	0.6960	44.882	64.485	64.5	0.0	44.9	0.0
540	817.8335	118.0283	2.9198	50	0.6871	68.175	99.228	99.2	0.0	68.2	0.0
541	817.8335	117.2806	1.8447	50	0.6032	14.415	23.896	23.9	0.0	14.4	0.0
542	817.8335	116.5330	0.8145	50	0.7148	1.289	1.803	1.8	0.0	1.3	0.0
543	817.8335	115.7854	6.7379	52	0.4373	2595.827	5936.088	5936.1	0.0	2595.8	0.0
544	817.8335	115.0378	5.9652	56	0.4384	2180.808	4974.349	4974.3	0.0	2180.8	0.0
545	817.8335	114.2902	6.0067	58	0.4147	2316.969	5587.018	5587.0	0.0	2317.0	0.0
546	817.8335	113.5425	5.8654	59	0.4019	2283.730	5681.867	5681.9	0.0	2283.7	0.0
547	817.8335	112.7949	6.0938	62	0.3907	2546.653	6517.458	6517.5	0.0	2546.7	0.0
548	817.8335	112.0473	6.2141	65	0.3806	2666.382	7005.647	7005.6	0.0	2666.4	0.0
549	817.8335	111.2997	6.1932	72	0.3765	2662.634	7072.783	7072.8	0.0	2662.6	0.0
550	817.8335	110.5521	nicht berechnet								
551	818.5878	128.4949	12.9387	50	0.4394	907.805	2065.816	2065.8	0.0	907.8	0.0
552	818.5878	127.7473	12.1910	50	0.4536	842.008	1856.360	1856.4	0.0	842.0	0.0
553	818.5878	126.9997	11.4434	50	0.4689	776.073	1655.237	1655.2	0.0	776.1	0.0
554	818.5878	126.2521	10.6958	50	0.4855	710.269	1462.867	1462.9	0.0	710.3	0.0
555	818.5878	125.5044	10.3960	50	0.5175	996.855	1926.322	1926.3	0.0	996.9	0.0
556	818.5878	124.7568	9.6484	50	0.5489	951.054	1732.550	1732.5	0.0	951.1	0.0
557	818.5878	124.0092	8.9008	50	0.5695	854.883	1500.993	1501.0	0.0	854.9	0.0
558	818.5878	123.2616	8.1531	50	0.6049	792.637	1310.446	1310.4	0.0	792.6	0.0
559	818.5878	122.5140	7.4055	50	0.6302	693.457	1100.359	1100.4	0.0	693.5	0.0
560	818.5878	121.7663	6.6579	50	0.6573	594.363	904.293	904.3	0.0	594.4	0.0
561	818.5878	121.0187	5.9103	50	0.6853	495.554	723.111	723.1	0.0	495.6	0.0
562	818.5878	120.2711	5.1627	50	0.7114	396.874	557.908	557.9	0.0	396.9	0.0
563	818.5878	119.5235	4.4150	50	0.7508	316.011	420.905	420.9	0.0	316.0	0.0
564	818.5878	118.7759	3.6674	50	0.7440	214.519	288.333	288.3	0.0	214.5	0.0
565	818.5878	118.0283	2.9198	50	0.6838	124.163	181.565	181.6	0.0	124.2	0.0
566	818.5878	117.2806	1.8447	50	0.5484	27.367	49.903	49.9	0.0	27.4	0.0
567	818.5878	116.5330	1.6286	51	0.4166	29.413	70.604	70.6	0.0	29.4	0.0
568	818.5878	115.7854	nicht berechnet								
569	818.5878	115.0378	6.2975	59	0.3773	2214.916	5870.273	5870.3	0.0	2214.9	0.0
570	818.5878	114.2902	5.4168	61	0.3803	1739.345	4573.259	4573.3	0.0	1739.3	0.0
571	818.5878	113.5425	5.3503	63	0.3684	1778.839	4828.439	4828.4	0.0	1778.8	0.0
572	818.5878	112.7949	5.2131	63	0.3558	1726.447	4852.691	4852.7	0.0	1726.4	0.0
573	818.5878	112.0473	5.4830	65	0.3488	1944.984	5576.655	5576.7	0.0	1945.0	0.0
574	818.5878	111.2997	6.1932	72	0.3470	2518.565	7259.131	7259.1	0.0	2518.6	0.0
575	818.5878	110.5521	nicht berechnet								
576	819.3422	128.4949	12.4909	50	0.3444	538.848	1564.792	1564.8	0.0	538.8	0.0
577	819.3422	127.7473	11.7432	50	0.3554	499.768	1406.218	1406.2	0.0	499.8	0.0
578	819.3422	126.9997	10.9956	50	0.3676	460.815	1253.630	1253.6	0.0	460.8	0.0
579	819.3422	126.2521	10.2480	50	0.3809	421.834	1107.554	1107.6	0.0	421.8	0.0
580	819.3422	125.5044	9.9482	50	0.4399	715.202	1625.882	1625.9	0.0	715.2	0.0
581	819.3422	124.7568	9.2006	50	0.4631	670.279	1447.293	1447.3	0.0	670.3	0.0
582	819.3422	124.0092	8.4530	50	0.4811	603.083	1253.451	1253.5	0.0	603.1	0.0
583	819.3422	123.2616	7.7053	50	0.5011	536.111	1069.927	1069.9	0.0	536.1	0.0
584	819.3422	122.5140	7.4055	50	0.5356	736.754	1375.555	1375.6	0.0	736.8	0.0
585	819.3422	121.7663	6.6579	50	0.5577	643.770	1154.267	1154.3	0.0	643.8	0.0
586	819.3422	121.0187	5.9103	50	0.5948	573.672	964.467	964.5	0.0	573.7	0.0
587	819.3422	120.2711	4.7149	50	0.6198	285.960	461.341	461.3	0.0	286.0	0.0
588	819.3422	119.5235	3.9672	50	0.6477	217.618	335.961	336.0	0.0	217.6	0.0
589	819.3422	118.7759	3.2196	50	0.6868	160.130	233.149	233.1	0.0	160.1	0.0
590	819.3422	118.0283	2.4720	50	0.6827	97.771	143.203	143.2	0.0	97.8	0.0
591	819.3422	117.2806	2.2891	50	0.6194	128.009	206.663	206.7	0.0	128.0	0.0
592	819.3422	116.5330	2.0357	57	0.4860	106.597	219.330	219.3	0.0	106.6	0.0
593	819.3422	115.7854	1.5621	59	0.3135	42.202	134.631	134.6	0.0	42.2	0.0
594	819.3422	115.0378	nicht berechnet								
595	819.3422	114.2902	5.7117	64	0.3333	1765.294	5296.953	5297.0	0.0	1765.3	0.0
596	819.3422	113.5425	5.0927	65	0.3272	1445.569	4418.518	4418.5	0.0	1445.6	0.0
597	819.3422	112.7949	4.5525	66	0.3233	1195.145	3696.715	3696.7	0.0	1195.1	0.0

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Böschungsbruchberechnung D3 QP km 181,980, Verbau

598	819.3422	112.0473	5.6658	65	0.3124	1896.970	6072.636	6072.6	0.0	1897.0	0.0
599	819.3422	111.2997	nicht berechnet								
600	819.3422	110.5521	nicht berechnet								
601	820.0965	128.4949	12.0431	50	0.2015	173.331	860.186	860.2	0.0	173.3	0.0
602	820.0965	127.7473	11.2954	50	0.2131	171.205	803.490	803.5	0.0	171.2	0.0
603	820.0965	126.9997	10.5478	50	0.2201	157.372	714.928	714.9	0.0	157.4	0.0
604	820.0965	126.2521	9.8002	50	0.2279	143.582	630.107	630.1	0.0	143.6	0.0
605	820.0965	125.5044	9.5004	50	0.3300	417.429	1264.833	1264.8	0.0	417.4	0.0
606	820.0965	124.7568	8.7528	50	0.3416	378.512	1108.041	1108.0	0.0	378.5	0.0
607	820.0965	124.0092	8.0051	50	0.3545	339.775	958.551	958.6	0.0	339.8	0.0
608	820.0965	123.2616	7.7053	50	0.4017	520.342	1295.218	1295.2	0.0	520.3	0.0
609	820.0965	122.5140	6.9577	50	0.4374	500.162	1143.397	1143.4	0.0	500.2	0.0
610	820.0965	121.7663	6.2101	50	0.4586	440.669	960.803	960.8	0.0	440.7	0.0
611	820.0965	121.0187	5.4625	50	0.4774	373.657	782.739	782.7	0.0	373.7	0.0
612	820.0965	120.2711	5.1627	50	0.5143	491.977	956.688	956.7	0.0	492.0	0.0
613	820.0965	119.5235	3.9672	50	0.5360	255.891	477.441	477.4	0.0	255.9	0.0
614	820.0965	118.7759	2.7718	50	0.5693	100.115	175.851	175.9	0.0	100.1	0.0
615	820.0965	118.0283	2.0242	50	0.6200	64.057	103.310	103.3	0.0	64.1	0.0
616	820.0965	117.2806	1.4002	51	0.6217	38.974	62.691	62.7	0.0	39.0	0.0
617	820.0965	116.5330	1.6286	66	0.4925	78.776	159.937	159.9	0.0	78.8	0.0
618	820.0965	115.7854	1.9318	69	0.4056	126.117	310.959	311.0	0.0	126.1	0.0
619	820.0965	115.0378	nicht berechnet								
620	820.0965	114.2902	nicht berechnet								
621	820.0965	113.5425	nicht berechnet								
622	820.0965	112.7949	4.7727	68	0.2788	1142.413	4097.187	4097.2	0.0	1142.4	0.0
623	820.0965	112.0473	nicht berechnet								
624	820.0965	111.2997	nicht berechnet								
625	820.0965	110.5521	nicht berechnet								

Ungünstigster Gleitkreis

Nr	xm	ym	Radius	Lamellen	mue	Zähler	Nenner	M(Ti)	M(R)	M(Gi)	M(S)
[-]	[m]	[m]	[m]	[-]	[-]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]	[kN*m/m]
210	808.0269	121.7663	11.1359	50	0.9611	411.534	428.213	428.2	0.0	411.5	0.0

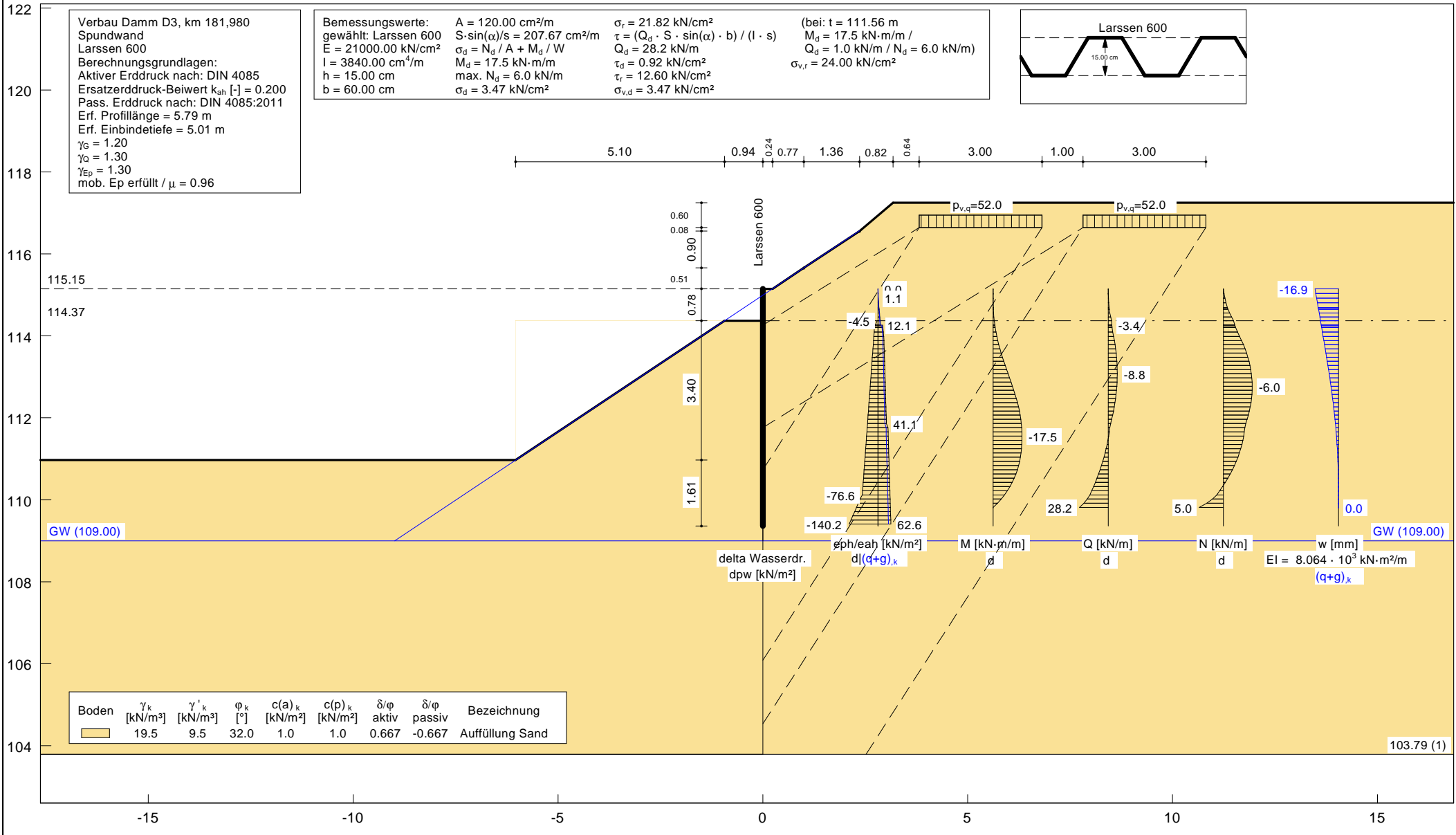


DR. SPANG

Projekt: S6 2. Baustufe

Stat. Berechnung Verbauwand nach EC 7, Damm D3 QP km 181,980, max. h = 5,7 m

Projekt: P 33.3184
 Anlage: 6.6
 Bearbeiter: Fe/Den
 Datum: 01.08.2013



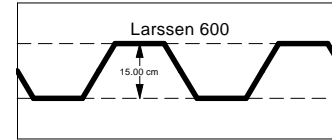
Verbau Damm D3, km 181,980
 Spundwand
 Larssen 600
 Berechnungsgrundlagen:
 Aktiver Erddruck nach: DIN 4085
 Ersatzerddruck-Beiwert $k_{ah} [-] = 0.200$
 Pass. Erddruck nach: DIN 4085:2011
 Erf. Profillänge = 5.79 m
 Erf. Einbindtiefe = 5.01 m
 $\gamma_G = 1.20$
 $\gamma_Q = 1.30$
 $\gamma_{Ep} = 1.30$
 mob. Ep erfüllt / $\mu = 0.96$

Bemessungswerte: $A = 120.00 \text{ cm}^2/\text{m}$
 gewählt: Larssen 600 $S \cdot \sin(\alpha)/s = 207.67 \text{ cm}^2/\text{m}$
 $E = 21000.00 \text{ kN/cm}^2$
 $I = 3840.00 \text{ cm}^4/\text{m}$
 $h = 15.00 \text{ cm}$
 $b = 60.00 \text{ cm}$

$\sigma_d = N_d / A + M_d / W$
 $M_d = 17.5 \text{ kN}\cdot\text{m}/\text{m}$
 $\max. N_d = 6.0 \text{ kN}/\text{m}$
 $\sigma_d = 3.47 \text{ kN}/\text{cm}^2$

$\sigma_r = 21.82 \text{ kN}/\text{cm}^2$
 $\tau = (Q_d \cdot S \cdot \sin(\alpha) \cdot b) / (I \cdot s)$
 $Q_d = 28.2 \text{ kN}/\text{m}$
 $\tau_d = 0.92 \text{ kN}/\text{cm}^2$
 $\tau_r = 12.60 \text{ kN}/\text{cm}^2$
 $\sigma_{v,d} = 3.47 \text{ kN}/\text{cm}^2$

(bei: $t = 111.56 \text{ m}$
 $M_d = 17.5 \text{ kN}\cdot\text{m}/\text{m}$
 $Q_d = 1.0 \text{ kN}/\text{m} / N_d = 6.0 \text{ kN}/\text{m}$
 $\sigma_{v,r} = 24.00 \text{ kN}/\text{cm}^2$)



Boden	γ_k [kN/m ³]	γ'_k [kN/m ³]	ϕ_k [°]	$c(a)_k$ [kN/m ²]	$c(p)_k$ [kN/m ²]	δ/ϕ aktiv	δ/ϕ passiv	Bezeichnung
	19.5	9.5	32.0	1.0	1.0	0.667	-0.667	Auffüllung Sand

103.79 (1)

Spundwand

=====

Teilsicherheitskonzept (EC 7)

Verbau Damm D3, km 181,980

Indices:

d = Bemessungswert

k = charakteristisch

g = Ständig, einschließlich Wasserdruck

q = Veränderlich

g+q = Ständig + Veränderlich, einschließlich Wasserdruck

w = Wasserdruck

Wandkopf = 115.15 m

Maximale Teilung bis Baugrubensohle: 0.100

Maximale Teilung unter Baugrubensohle: 0.100

Baugrubensohle = 114.37 m

Grundwasserstand (rechts) = 109.00 m

Grundwasserstand (links) = 109.00 m

Wasserdruck auf "0.0" gesetzt, wenn zur Erdseite gerichtet.

Teilsicherheiten

$\gamma_G = 1.20$

$\gamma_Q = 1.30$

$\gamma_{Ep} = 1.30$

Anpassungsfaktor Erdwiderstand = 1.00

Bermen auf der Aktivseite

Nr.	x1	x2	dh	a	x	y	Auflast	Verkehr
[-]	[m]	[m]	[m]	[m]	[m]	[m]	[kN/m ²]	[-]
1	0.24	1.00	0.51	0.15	0.08	0.26	0.00	nein
2	1.00	2.36	0.90	0.62	0.35	0.47	0.00	nein
3	2.36	3.18	0.69	1.48	0.82	0.28	0.00	nein

Der Einfluss von Aktivbermen auf den aktiven Erddruck wird gemäß den Beziehungen in "Spundwand-Handbuch Berechnung (1977) Abschnitt 4.9.2.2" berechnet.

Bermen Nr.	auf x1	der x2	Passivseite dh	Auflast
[-]	[m]	[m]	[m]	[kN/m ²]
1	-0.94	-6.04	-3.40	0.00

Der Einfluss von Passivbermen auf den passiven Erddruck wird in Analogie zu den Beziehungen in "Spundwand-Handbuch Berechnung (1977) Abschnitt 4.9.2.2" für Aktivbermen berechnet.

Blocklasten

Aktiver Erddruck für Blocklasten verwendet

Nr.	sig(v)	sig(h)	x(links)	x(rechts)	Tiefe
[-]	[kN/m ²]	[kN/m ²]	[m]	[m]	[m]
1	52.00	0.00	3.82	6.82	116.65
2	52.00	0.00	7.82	10.82	116.65

Lastordinaten Blocklasten (aktiver Anteil)

Nr.	y(oben)	y(mitte)	y(unten)	p(oben)	p(mitte)	p(unten)	Typ	
[-]	[m]	[m]	[m]	[kN/m ²]	[kN/m ²]	[kN/m ²]		
1	114.26	110.73	106.08	7.57	7.57	7.57	0	Verkehrslast
2	111.76	104.53	99.88	5.21	5.21	5.21	0	Verkehrslast

Typ = 0 ==> rechteckförmig verteilt

Typ = 1 ==> dreieckförmig verteilt (Maximum mittig)

Typ = 2 ==> dreieckförmig verteilt (Maximum oben)

Typ = 3 ==> trapezförmig (oben / unten = 3:1)

Blocklasten nicht umgelagert

Art des Fußlagers:
Profillänge automatisch

Nachweis Fußauflager erbracht mit folgenden Kräften:
 $E_{ph,d} = 221.30 \text{ kN/m}$ ($E_{pv,d} = -86.48 \text{ kN/m}$)
 Ausnutzungsgrad (Erdrwiderstand) = $B_{h,d} / E_{ph,d} = 1.000$
 $B_{h(g+q),d} = 221.30 \text{ kN/m}$
 $B_{h,g,d} = 160.90 \text{ kN/m}$
 $B_{h,q,d} = 60.40 \text{ kN/m}$

Ersatzkräfte C_h (Blum)

$C_{h,k} = 23.07 \text{ kN/m}$
 $C_{h,g,k} = 17.43 \text{ kN/m}$
 $C_{h,q,k} = 5.63 \text{ kN/m}$
 $C_{h,w,k} = 0.00 \text{ kN/m}$

Bodenkennwerte

Schicht	UK	γ_k	γ'_{k}	ϕ_k	$c(\text{akt}),k$	$c(\text{pas}),k$	$d(a)/\phi$	$d(p)/\phi$
[-]	[m]	[kN/m ³]	[kN/m ³]	[°]	[kN/m ²]	[kN/m ²]	[-]	[-]
1	103.79	19.50	9.50	32.00	1.00	1.00	0.667	-0.667

Aktive Erddruckbeiwerte

Ersatzerddruck-Beiwert $k_{ah} [-] = 0.200$
 bestimmt nach: DIN 4085

(Erddruckbeiwerte für horizontales Gelände)

Schicht	UK	k_{agh}	k_{ach}	ϕ_k	δ	θ
[-]	[m]	[-]	[-]	[°]	[°]	[°]
1	103.79	0.256	0.877	32.000	21.34	57.17

Aktive Erddruckordinaten ($[g+q],k$)

von	bis	oben	unten	Wasserdruck	Wasserdruck
[m]	[m]	[kN/m ²]	[kN/m ²]	oben[kN/m ²]	unten[kN/m ²]
115.150	114.922	0.000	0.890	0.00	0.00
114.922	114.689	0.890	3.663	0.00	0.00
114.689	114.657	3.664	4.436	0.00	0.00
114.657	114.370	4.437	8.619	0.00	0.00
114.370	114.269	8.620	10.096	0.00	0.00
114.269	114.261	10.097	10.292	0.00	0.00
114.261	114.219	17.867	18.992	0.00	0.00
114.219	114.205	18.993	19.230	0.00	0.00
114.205	114.096	19.231	21.109	0.00	0.00
114.096	113.986	21.109	22.988	0.00	0.00
113.986	113.076	22.989	27.534	0.00	0.00
113.076	112.773	27.534	29.049	0.00	0.00
112.773	112.065	29.049	32.585	0.00	0.00
112.065	111.762	32.585	39.314	0.00	0.00
111.762	111.556	39.314	40.342	0.00	0.00
111.556	111.144	40.342	42.398	0.00	0.00
111.144	110.733	42.398	44.454	0.00	0.00
110.733	110.119	44.454	47.519	0.00	0.00
110.119	109.814	47.519	49.044	0.00	0.00
109.814	109.000	49.044	53.108	0.00	0.00
109.000	106.083	53.108	52.634	0.00	0.00
106.083	104.533	52.634	56.405	0.00	0.00
104.533	103.790	56.405	58.214	0.00	0.00

Passive Erddruckbeiwerte

bestimmt nach: DIN 4085:2011

(Erddruckbeiwerte für horizontales Gelände)

Schicht	UK	k_{pgh}	k_{pch}	ϕ_k	δ	θ
[-]	[m]	[-]	[-]	[°]	[°]	[°]
1	103.79	5.787	5.912	32.000	-21.34	16.70

Passive Erddruckordinaten (Bemessungswerte)

Teilsicherheit Erdrwiderstand = 1.30

Anpassungsfaktor Erdwiderstand = 1.00

von [m]	bis [m]	oben [kN/m ²]	unten [kN/m ²]
114.66	114.37	0.00	0.00
114.37	114.27	-4.55	-13.36
114.27	114.26	-13.36	-14.00
114.26	114.22	-14.00	-17.66
114.22	114.21	-17.66	-18.86
114.21	114.10	-18.86	-18.65
114.10	113.99	-18.65	-20.25
113.99	113.08	-20.25	-33.51
113.08	112.77	-33.51	-37.93
112.77	112.06	-37.93	-48.25
112.06	111.76	-48.25	-52.67
111.76	111.56	-52.67	-55.67
111.56	111.14	-55.67	-61.68
111.14	110.73	-61.68	-67.68
110.73	110.12	-67.68	-76.62
110.12	109.81	-76.62	-104.92
109.81	109.00	-104.92	-175.56
109.00	106.08	-175.56	-298.91
106.08	104.53	-298.91	-364.45
104.53	103.79	-364.45	-395.89

Resultierende Belastung (h)orizontal und (v)ertikal (Bemessungswerte)

Tiefe [m]	h [kN/m ²]	v [kN/m ²]
115.15	0.00	1.13
114.92	1.07	1.55
114.69	4.40	2.85
114.66	5.32	3.21
114.37	10.34	5.17
114.37	5.80	3.40
114.27	-1.24	0.64
114.26	-1.65	0.49
114.26	8.20	4.33
114.22	5.89	3.43
114.21	4.97	3.07
114.10	7.44	4.04
113.99	8.10	4.29
113.08	0.29	1.24
112.77	-2.32	0.22
112.06	-8.39	-2.15
111.76	-4.22	-0.52
111.56	-5.99	-1.21
111.14	-9.52	-2.59
110.73	-13.05	-3.97
110.12	-18.32	-6.03
109.81	-44.79	-16.37

Resultierende Belastung (h)orizontal und (v)ertikal ([g+q],k)

Tiefe [m]	h [kN/m ²]	v [kN/m ²]
115.15	0.00	0.94
114.92	0.89	1.29
114.69	3.66	2.37
114.66	4.44	2.68
114.37	8.62	4.31
114.37	4.88	2.85
114.27	-0.90	0.59
114.26	-1.23	0.46
114.26	6.34	3.42
114.22	4.45	2.68
114.21	3.70	2.39
114.10	5.75	3.19
113.99	6.32	3.41
113.08	-0.06	0.92
112.77	-2.18	0.09

112.06	-7.14	-1.85
111.76	-4.06	-0.64
111.56	-5.50	-1.21
111.14	-8.38	-2.33
110.73	-11.27	-3.46
110.12	-15.57	-5.14
109.81	-37.34	-13.65

Resultierende Belastung (h)orizontal und (v)ertikal (g,k)

Tiefe [m]	h [kN/m ²]	v [kN/m ²]
115.15	0.00	0.94
114.92	0.89	1.29
114.69	3.66	2.37
114.66	4.44	2.68
114.37	8.62	4.31
114.37	5.90	3.25
114.27	2.10	1.76
114.26	1.91	1.69
114.22	0.85	1.27
114.21	0.37	1.09
114.10	2.37	1.87
113.99	3.30	2.23
113.08	-0.10	0.90
112.77	-1.23	0.46
112.06	-3.87	-0.57
111.76	-5.01	-1.01
111.56	-5.77	-1.31
111.14	-7.31	-1.91
110.73	-8.85	-2.51
110.12	-11.14	-3.41
109.81	-26.55	-9.43

Resultierende Belastung (h)orizontal und (v)ertikal (q,k)

Tiefe [m]	h [kN/m ²]	v [kN/m ²]
115.15	0.00	0.00
114.92	0.00	0.00
114.69	0.00	0.00
114.66	0.00	0.00
114.37	0.00	0.00
114.37	-1.02	-0.40
114.27	-3.00	-1.17
114.26	-3.15	-1.23
114.26	4.43	1.73
114.22	3.60	1.41
114.21	3.33	1.30
114.10	3.38	1.32
113.99	3.02	1.18
113.08	0.04	0.02
112.77	-0.95	-0.37
112.06	-3.27	-1.28
111.76	0.95	0.37
111.56	0.28	0.11
111.14	-1.07	-0.42
110.73	-2.42	-0.95
110.12	-4.43	-1.73
109.81	-10.79	-4.22

Schnittgrößen (Bemessungswerte)

Tiefe [m]	N [kN/m]	Q [kN/m]	M [kN·m/m]
115.15	0.0	0.0	0.0
114.92	-0.3	-0.1	0.0
114.69	-0.8	-0.8	-0.1
114.66	-0.9	-0.9	-0.1
114.37	-2.1	-3.2	-0.7
114.27	-2.3	-3.4	-1.0

114.26	-2.3	-3.4	-1.0
114.22	-2.5	-3.7	-1.2
114.21	-2.5	-3.7	-1.2
114.10	-2.9	-4.4	-1.7
113.99	-3.4	-5.2	-2.2
113.08	-5.8	-8.8	-9.1
112.77	-6.0	-8.4	-11.7
112.06	-5.1	-4.2	-16.5
111.76	-4.4	-1.5	-17.3
111.56	-4.2	-0.3	-17.5
111.14	-3.3	3.1	-17.0
110.73	-1.8	8.0	-14.7
110.12	1.4	18.1	-6.9
109.81	5.0	28.2	0.0

Schnittgrößen ([g+q],k)

Tiefe [m]	N [kN/m]	Q [kN/m]	M [kN·m/m]
115.15	0.0	0.0	0.0
114.92	-0.3	-0.1	0.0
114.69	-0.7	-0.6	-0.1
114.66	-0.8	-0.8	-0.1
114.37	-1.8	-2.6	-0.6
114.27	-1.9	-2.8	-0.8
114.26	-1.9	-2.8	-0.9
114.22	-2.1	-3.1	-1.0
114.21	-2.1	-3.1	-1.0
114.10	-2.4	-3.6	-1.4
113.99	-2.8	-4.3	-1.8
113.08	-4.7	-7.1	-7.5
112.77	-4.9	-6.8	-9.6
112.06	-4.3	-3.5	-13.5
111.76	-3.7	-1.3	-14.2
111.56	-3.5	-0.3	-14.3
111.14	-2.8	2.6	-13.9
110.73	-1.6	6.6	-12.1
110.12	1.1	14.8	-5.6
109.81	4.0	23.1	0.0

Schnittgrößen (g,k)

Tiefe [m]	N [kN/m]	Q [kN/m]	M [kN·m/m]
115.15	0.0	0.0	0.0
114.92	-0.3	-0.1	0.0
114.69	-0.7	-0.6	-0.1
114.66	-0.8	-0.8	-0.1
114.37	-1.8	-2.6	-0.6
114.27	-2.0	-3.0	-0.9
114.26	-2.0	-3.1	-0.9
114.22	-2.1	-3.1	-1.0
114.21	-2.1	-3.1	-1.0
114.10	-2.3	-3.3	-1.4
113.99	-2.5	-3.6	-1.8
113.08	-3.9	-5.0	-5.9
112.77	-4.1	-4.8	-7.4
112.06	-4.1	-3.0	-10.3
111.76	-3.8	-1.7	-11.1
111.56	-3.6	-0.6	-11.3
111.14	-2.9	2.1	-11.0
110.73	-2.0	5.4	-9.5
110.12	-0.2	11.6	-4.3
109.81	1.8	17.4	0.0

Schnittgrößen (q,k)

Tiefe [m]	N [kN/m]	Q [kN/m]	M [kN·m/m]
115.15	0.0	0.0	0.0
114.92	0.0	0.0	0.0

114.69	0.0	0.0	0.0
114.66	0.0	0.0	0.0
114.37	0.0	0.0	0.0
114.27	0.1	0.2	0.0
114.26	0.1	0.2	0.0
114.22	0.0	0.1	0.0
114.21	0.0	0.0	0.0
114.10	-0.1	-0.4	0.0
113.99	-0.3	-0.7	-0.1
113.08	-0.8	-2.1	-1.5
112.77	-0.8	-2.0	-2.2
112.06	-0.2	-0.5	-3.1
111.76	0.2	0.4	-3.1
111.56	0.1	0.3	-3.0
111.14	0.2	0.4	-2.9
110.73	0.5	1.2	-2.6
110.12	1.3	3.3	-1.3
109.81	2.2	5.6	0.0

Schnittgrößen (w,k)

Tiefe [m]	N [kN/m]	Q [kN/m]	M [kN·m/m]
115.15	0.0	0.0	0.0
114.92	0.0	0.0	0.0
114.69	0.0	0.0	0.0
114.66	0.0	0.0	0.0
114.37	0.0	0.0	0.0
114.27	0.0	0.0	0.0
114.26	0.0	0.0	0.0
114.22	0.0	0.0	0.0
114.21	0.0	0.0	0.0
114.10	0.0	0.0	0.0
113.99	0.0	0.0	0.0
113.08	0.0	0.0	0.0
112.77	0.0	0.0	0.0
112.06	0.0	0.0	0.0
111.76	0.0	0.0	0.0
111.56	0.0	0.0	0.0
111.14	0.0	0.0	0.0
110.73	0.0	0.0	0.0
110.12	0.0	0.0	0.0
109.81	0.0	0.0	0.0

Momentennullpunkte (Bemessungswerte)

Tiefe
[m]
109.81

Momentennullpunkte ([g+q],k)

Tiefe
[m]
109.81

Momentennullpunkte (g,k)

Tiefe
[m]

Momentennullpunkte (q,k)

Tiefe
[m]
115.04
114.70
114.69
114.66
114.11
109.81

Momentennullpunkte (w,k)

Tiefe
[m]

Querkraftnullpunkte (Bemessungswerte)

Tiefe
[m]
111.51

Querkraftnullpunkte ([g+q],k)

Tiefe
[m]
111.51

Querkraftnullpunkte (g,k)

Tiefe
[m]
111.46

Querkraftnullpunkte (q,k)

Tiefe
[m]
114.92
114.81
114.69
114.20
111.93

Querkraftnullpunkte (r,k)

Tiefe
[m]

Weggrößen (g,k)

berechnet mit $EI = 8.064E+3 \text{ kN}\cdot\text{m}^2/\text{m}$

Tiefe [m]	w [mm]
115.15	-13.2
114.92	-12.3
114.69	-11.4
114.66	-11.3
114.37	-10.1
114.27	-9.7
114.26	-9.7
114.22	-9.6
114.21	-9.5
114.10	-9.1
113.99	-8.6
113.08	-5.3
112.77	-4.2
112.06	-2.2
111.76	-1.6
111.56	-1.2
111.14	-0.6
110.73	-0.2
110.12	0.0
109.81	0.0

Verdrehung (Theoretischer Fußpunkt) [°]

phi,g,k: 0.00000000

Theoretischer Fußpunkt = 109.814 m

Nachweis Spundwand

gewählt: Larssen 600:

$E = 21000.00 \text{ kN}/\text{cm}^2$

$I = 3840.00 \text{ cm}^4/\text{m}$

$h = 15.00 \text{ cm}$

$b = 60.00 \text{ cm}$

$A = 120.00 \text{ cm}^2/\text{m}$

$$S \cdot \sin(\alpha_p) / s = 207.67 \text{ cm}^2/\text{m}$$

$$\sigma_d = N_d / A + M_d / W$$

$$M_d = 17.5 \text{ kN}\cdot\text{m}/\text{m}$$

$$\max. N_d = 6.0 \text{ kN}$$

$$\sigma_d = 3.47 \text{ kN}/\text{cm}^2$$

$$\sigma_r = 21.82 \text{ kN}/\text{cm}^2$$

Nachweis mit zugehörigen Größen:

Maximum in einer Tiefe von 111.66 m

$$\sigma_d = 3.45 \text{ kN}/\text{cm}^2$$

$$w_k = -2.1 \text{ mm}$$

$$N_d = -4.19 \text{ kN}/\text{m}$$

$$M_d = -17.51 \text{ kN}\cdot\text{m}/\text{m}$$

$$\tau_d = (\max Q_d \cdot S \cdot \sin(\alpha_p) \cdot b) / (l \cdot s)$$

$$\max Q_d = 28.2 \text{ kN}/\text{m}$$

$$\tau_d = 0.92 \text{ kN}/\text{cm}^2$$

$$\tau_r = 12.60 \text{ kN}/\text{cm}^2$$

$$\sigma_{v,d} = 3.47 \text{ kN}/\text{cm}^2$$

(bei: $t = 111.56 \text{ m}$)

$$M_d = 17.51 \text{ kN}\cdot\text{m} / Q_d = 0.95 \text{ kN} / N_d = 5.95 \text{ kN}$$

$$\sigma_{v,r} = 24.00 \text{ kN}/\text{cm}^2$$

$$\max M_d = 17.5 \text{ kN}\cdot\text{m}/\text{m} \text{ (Tiefe} = 111.56 \text{ m)}$$

$$\text{Zugehörige Werte: } N_d = -4.2 \text{ kN}/\text{m}; Q_d = -0.3 \text{ kN}/\text{m}; w_k = 1.8 \text{ mm}$$

$$\max Q_d = 28.2 \text{ kN}\cdot\text{m}/\text{m} \text{ (Tiefe} = 109.81 \text{ m)}$$

$$\text{Zugehörige Werte: } N_d = 5.0 \text{ kN}/\text{m}; M_d = 0.0 \text{ kN}\cdot\text{m}/\text{m}; w_k = 0.0 \text{ mm}$$

$$\max N_d = 6.0 \text{ kN}/\text{m} \text{ (Tiefe} = 112.77 \text{ m)}$$

$$\text{Zugehörige Werte: } Q_d = -8.4 \text{ kN}/\text{m}; M_d = -11.7 \text{ kN}\cdot\text{m}/\text{m}; w_k = 6.7 \text{ mm}$$

$$\max w_k = 16.9 \text{ mm} \text{ (Tiefe} = 115.15 \text{ m)}$$

$$\text{Zugehörige Werte: } N_d = 0.0 \text{ kN}/\text{m}; Q_d = 0.0 \text{ kN}/\text{m}; M_d = 0.0 \text{ kN}\cdot\text{m}/\text{m}$$

Längenzuschlag dx über Formel bestimmt

Ersatzkräfte C_h (Blum)

$$C_{h,g,k} = 17.43$$

$$C_{h,q,k} = 5.63$$

$$C_{h,w,k} = 0.00$$

$$\Delta t = C_{h,d} \cdot \gamma_{Ep} / e_{ph(\varphi, \delta),k}$$

$$C_{h,d} = 0.5 \cdot [(C_{h,g,k} - C_{h,w,k})] \cdot \gamma_W + C_{h,q,k} \cdot \gamma_Q + C_{h,w,k} \cdot \gamma_W$$

$$\gamma_W = 1.20$$

$$C_{h,d} = 14.12 \text{ kN}/\text{m}$$

$$e_{ph(\varphi, \delta),k} = k_{pgh} \cdot \sigma_z + k_{pch} \cdot c_k = 224.21 + 2.35 = 226.56 \text{ kN}/\text{m}^2$$

$$k_{pgh} \text{ (Streck)} = 2.155$$

$$\sigma_z = 104.06 \text{ kN}/\text{m}^2$$

$$\varphi_k = 32.0^\circ$$

$$\delta_p / \varphi_k = 0.333$$

$$k_{pch} \text{ (Streck)} = 2.346$$

$$c_k = 1.0 \text{ kN}/\text{m}^2$$

$$\Delta t = 0.46 \text{ m}$$

Mindesteinbindetiefe nach EAU 2012 8.2.9 berücksichtigt.

Theoretische Einbindetiefe $t_1 = 4.56 \text{ m}$

Einbindetiefe $t_g = 5.01 \text{ m}$

Profillänge = 5.79 m

Nachweis Summe V

Das Vorzeichen ist positiv, wenn Kraftgröße nach unten gerichtet ist.

Nachweis des mobilisierten Erdwiderstands

$$\text{Bedingung: } G_k + P_{v,k} + E_{av,k} + 0.5 \cdot C_{h,k} \cdot \tan(\delta_c) \geq B_{v,k} - 0.5 \cdot C_{h,k} \cdot \tan(\delta_p)$$

$$G_k = 5.46 \text{ kN}/\text{m}$$

$$P_{v,k} = 0.00 \text{ kN}/\text{m}$$

$$E_{av,k} = 62.19 \text{ kN}/\text{m} \text{ (} E_{ah,k} = 159.14 \text{ kN}/\text{m)}$$

$$C_{h,k} = 23.07 \text{ kN}/\text{m}$$

$$B_{v,k} = -71.20 \text{ kN}/\text{m}$$

$$\delta_p [^\circ] = -21.3$$

$$\delta_c [^\circ] = 10.7$$

Summe $V_k = 3.12 \text{ kN/ m}$ (Druck)

Nachweis der vertikalen Tragfähigkeit

Nachweis mit Bemessungsgrößen

$$(Q_{g,k} + B_{v,k} - 0.5 \cdot C_{h,k} \cdot \tan(\delta_p)) / \gamma_p \geq P_{v,d} + E_{av,d} + G_d + 0.5 \cdot C_{h,d} \cdot \tan(\delta_c)$$

($Q_{g,k}$ = Druckkraft infolge Mantelreibung und Spitzendruck)

(Mantelreibung nur unterhalb des rechnerischen Fußpunktes)

γ_p i.a. = 1.40

$P_{v,d} = 0.00 \text{ kN/ m}$

$E_{av,d} = 76.35 \text{ kN/ m}$

$G_d = 6.55 \text{ kN/ m}$

$C_{h,d} = 28.24 \text{ kN/ m}$

Folgender Nachweis ist zu erbringen:

$$(Q_{g,k} + 71.20 - 4.51) / \gamma_p \geq 85.55$$

Horizontaler Wasserdruck herkömmlich bestimmt.

Ausnutzungsgrad Hydraulischer Grundbruch = 0.00

gamma(Gewicht) = 0.95

gamma(Strömungskraft) = 1.30

UK Schicht = 115.15

Nachweis Auftriebssicherheit nicht erforderlich !

Nachweis Aufbruchsicherheit nach EB 99

Verkehrslasten vereinfacht nach EAB EB 104 berücksichtigt

Faktor Verkehrslasten $f_Q = 1.300 / 1.200 = 1.083$

Teilsicherheit (Grundbruch) $\gamma_{Gr} = 1.300$

Breite = 0.66 m

Gewicht G_k (einschließlich Verkehr) = 75.24 [kN/m]

(Verkehr erhöht mit Faktor = 1.083)

$E_{av,k} (\delta = 2/3 \cdot \varphi) = 78.09 \text{ [kN/m]}$

Kohäsionskraft $K_k = 5.79 \text{ [kN/m]}$

Grundbruchlast $P_{g,k} = 1761.20 \text{ [kN/m]}$

$$\mu_e = [G_k \cdot \gamma_G] / [(P_{g,k} + K_k) / \gamma_{Gr} + E_{av,k}] = 0.063$$

$$\mu_e = [75.24 \cdot 1.20] / [(1761.20 + 5.79) / 1.300 + 78.09] = 0.063$$