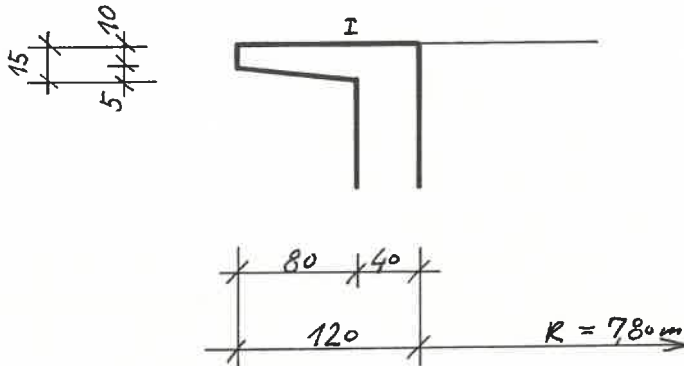


II. BELEBUNGS- und NACHKLÄRBECKENPos. 1 Laufsteg um das Nachklärbecken $d = 15 \text{ cm}$  am AnschnittBelastungEigengewicht:  $(0,10 + 0,15) \cdot 0,5 \cdot 25,0 + 0,37 =$ 

$g = 3,50 \text{ KN/m}^2$

Verkehrslast

$p = 3,50 \text{ KN/m}^2$

$q = 7,00 \text{ KN/m}^2$

$M = 7,0 \cdot 0,80 \cdot 0,60 = 3,36 \text{ KNm/m}$

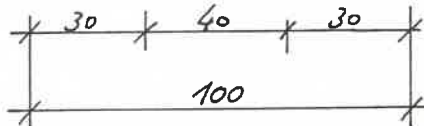
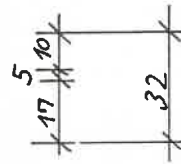
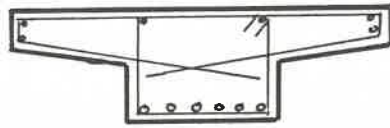
$Q_I = 7,0 \cdot 0,80 = 5,60 \text{ KN/m}$

$N_I = - 7,0 \cdot 0,80^2 / 2 = - 2,24 \text{ KNm/m}$

B 25 - BSt. 420/500 $d = 15 \text{ cm}, h = 12 \text{ cm}$ 

$F_e = 4,5 \cdot 2,24 / 12 = 0,84 \text{ cm}^2 / \text{m}$

gewählt:  $\varnothing 8, t = 17 \text{ cm}$  mit  $F_e = 2,96 \text{ cm}^2 / \text{m}$ V.E.  $\varnothing 6, t = 15 \text{ cm}$

Pos. 2 Laufsteg über das BelebungsbeckenBelastung

Eigengewicht:

$$(0,40 \cdot 0,32 + 0,60 \cdot 0,125) \cdot 25,0 + 0,42 = 5,50 \text{ KN/m}$$

Verkehrslast:  $3,50 \cdot 1,0$ 

$$= \underline{3,50 \text{ KN/m}}$$

$$q = 9,00 \text{ KN/m}$$

$$l = 9,40 \text{ m}$$

$$A = B = (5,50 + 3,50) \cdot 9,40/2 = 25,85 + 16,45 = 42,30 \text{ KN}$$

$$M = 9,0 \cdot 9,40^2/8 = 99,41 \text{ KNm}$$

B 25 - BSt. 420/500

$$d = 32 \text{ cm}, h = 27 \text{ cm}, l/h = 34,8 < 35$$

$$k_h = 27/\sqrt{99,41/1,0} = 2,71$$

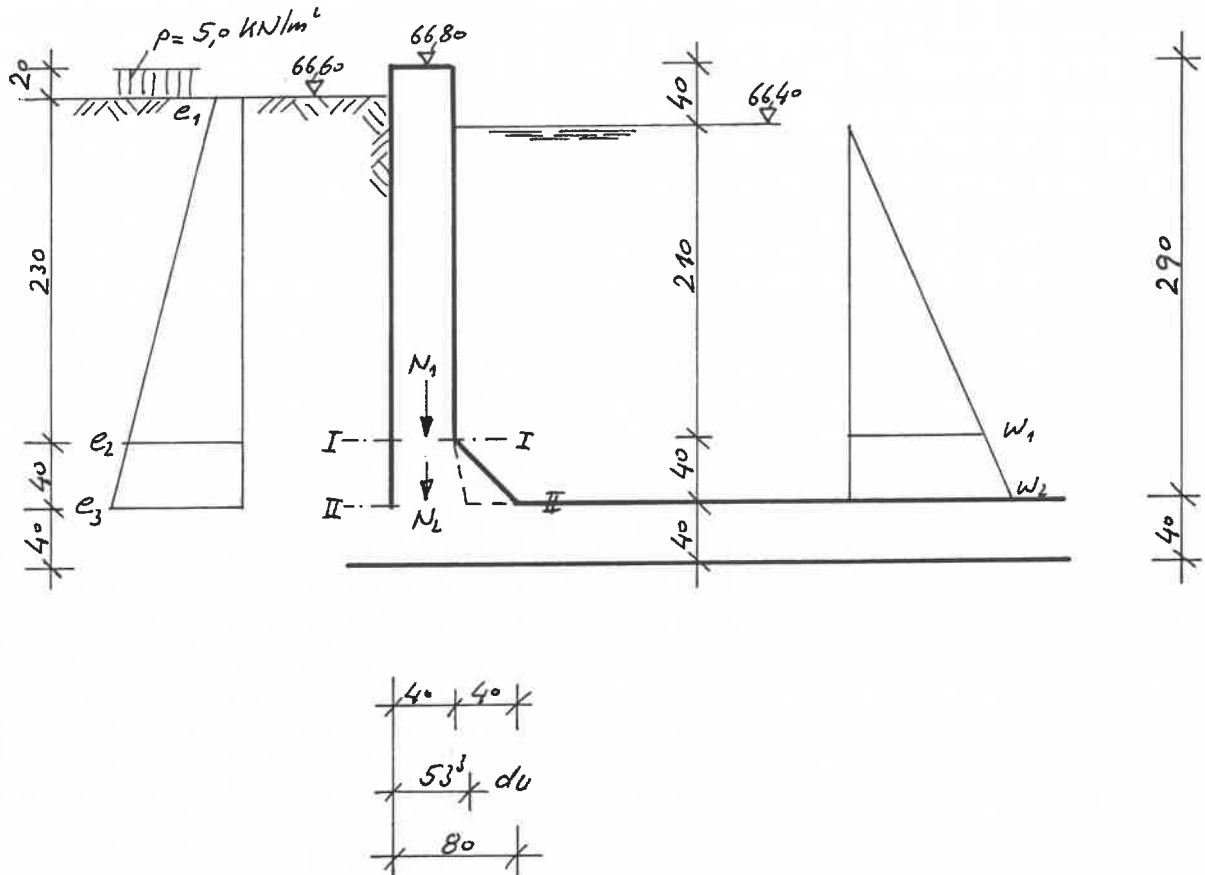
$$F_e = 4,6 \cdot 99,41/27 = 16,94 \text{ cm}^2$$

$$\tau_o < 0,75$$

gewählt: 6  $\varnothing 20$  mit  $F_e = 18,8 \text{ cm}^2$ Bügel  $\varnothing 8$ ,  $t = 20 \text{ cm}$ *einseitig verschieblich  
lagern!*

**Pos. 3** Außenwand des Belebungsbeckens

$$d = 40 \text{ cm}, \quad d_u = 40 + 40/3 = 53,3 \text{ cm}$$


Belastungen und Schnittkräfte

a) Wandgewicht:  $0,40 \cdot 2,50 \cdot 24,0 =$

$$N_I = 24,00 \text{ KN/m}$$

$$0,40 \cdot 2,90 \cdot 24,0 =$$

$$N_{II} = 27,84 \text{ KN/m}$$

b) Wasserdruck (von innen)

$$w_1 = -10,0 \cdot 2,10 = -21,00 \text{ KN/m}^2$$

$$w_2 = -10,0 \cdot 2,50 = -25,00 \text{ KN/m}^2$$

$$M_{Ii} = -21,0 \cdot 2,10^2 / 6 = -15,44 \text{ KNm/m}$$

$$M_{IIi} = -25,0 \cdot 2,5^2 / 6 = -26,04 \text{ KNm/m}$$

c) Erddruck

$$\delta = 30^\circ, \lambda_o = 0,50, \gamma = 20 \text{ KN/m}^3$$

Das Grundwasser wird durch Kugelventile in der Bodenplatte entspannt.

$$e_1 = 5,0 \cdot 0,50 = 2,50 \text{ KN/m}^2$$

$$e_2 = (5,0 + 20,0 \cdot 2,30) \cdot 0,50 = 25,50 \text{ KN/m}^2$$

$$e_3 = (5,0 + 20,0 \cdot 2,70) \cdot 0,50 = 29,50 \text{ KN/m}^2$$

$$\begin{aligned} M_{Ia} &= 2,50 \cdot 2,30 \cdot 2,30/2 &= 6,61 \\ &+ 23,0 \cdot 2,30 \cdot 2,30/6 &= \underline{20,28} \\ &&26,89 \text{ KNm/m} \end{aligned}$$

$$\begin{aligned} M_{IIa} &= 2,50 \cdot 2,70 \cdot 2,70/2 &= 9,11 \\ &+ 27,0 \cdot 2,70 \cdot 2,70/6 &= \underline{32,81} \\ &&41,92 \text{ KNm/m} \end{aligned}$$

B 25 - BSt. 420/500

$$d_1 = 40 \text{ cm}, h_1 = 36 \text{ cm}, y_{11} = 16 \text{ cm}$$

$$d_2 = 53,3 \text{ cm}, h_2 = 49 \text{ cm}, y_{12} = 22,3 \text{ cm}$$

$$\text{Mindestbewehrung } F_{e \min} = 4,0 \text{ cm}^2/\text{m}$$

$$M_{Ia} = 26,89 \text{ KNm/m} \quad N_1 = - 24,0 \text{ KN/m}$$

$$M_e = 26,89 + 24,0 \cdot 0,16 = 30,73 \text{ KNm/m}$$

$$F_e = 4,3 \cdot 30,73/36 - 24,0/24,0 = 3,67 - 1,00 = 2,67 \text{ cm}^2/\text{m}$$

$$\text{gewählt: } \varnothing 10, t = 20 \text{ cm mit } F_e = 3,93 \text{ cm}^2/\text{m}$$

$$\text{V.E. } \varnothing 8, t = 20 \text{ cm}$$

$$M_{IIa} = 41,92 \text{ KNm/m} \quad N_{II} = - 27,84 \text{ KN/m}$$

$$M_e = 41,92 + 27,84 \cdot 0,223 = 48,13 \text{ KNm/m}$$

$$F_e = 4,3 \cdot 48,13/49,0 - 27,84/24,0 = 4,22 - 1,16 = 3,06 \text{ cm}^2/\text{m}$$

gewählt:  $\varnothing 10$ ,  $t = 20 \text{ cm}$  mit  $F_e = 3,93 \text{ cm}^2$

V.E.  $\varnothing 8$ ,  $t = 15 \text{ cm}$

Nachweis der Rissesicherheit

$$\mu_z = 3,93/40 = 0,10 \% < 0,30 \%$$

Verminderung der Rissebildung

$$F = 0,40 \cdot 1,0 = 0,40 \text{ m}^2$$

$$W = 1,0 \cdot 0,40^2/6 = 0,0267 \text{ m}^3$$

$$\sigma_N = - 0,024/0,40 = - 0,060 \text{ MN/m}^2$$

$$\sigma_M = 0,02689/0,0267 = 1,007 \text{ MN/m}^2$$

$$\sigma_v = 1,6 (- 0,06 + 1,007) = 1,52 \text{ MN/m}^2 < 0,35^2 \sqrt[3]{25^2} = 2,99$$

$$\underline{M_{Ii} = 15,44 \text{ KNm/m} \quad N_I = - 24,00 \text{ KN/m}}$$

$$M_e = 15,44 + 24,0 \cdot 0,16 = 19,28 \text{ KNm/m}$$

$$k_h = 36 / \sqrt{19,28 / 1,0} = 8,2$$

$$F_e = 4,3 \cdot 19,28 / 36,0 - 24,0 / 24,0 = 2,30 - 1,00 = 1,30 \text{ cm}^2 / \text{m}$$

gewählt:  $\varnothing 10$ ,  $t = 20 \text{ cm}$  mit  $F_e = 3,93 \text{ cm}^2 / \text{m}$

V.E.  $\varnothing 8$ ,  $t = 20 \text{ cm}$

$$\underline{M_{IIi} = 26,04 \text{ KNm/m} \quad N_{II} = - 27,84 \text{ KN/m}}$$

$$M_e = 26,04 + 27,84 \cdot 0,223 = 32,25 \text{ KNm/m}$$

$$k_h = 49 / \sqrt{32,25 / 1,0} = 8,63$$

$$F_e = 4,3 \cdot 32,25 / 49,0 - 27,84 / 24,0 = 2,83 - 1,16 = 1,67 \text{ cm}^2 / \text{m}$$

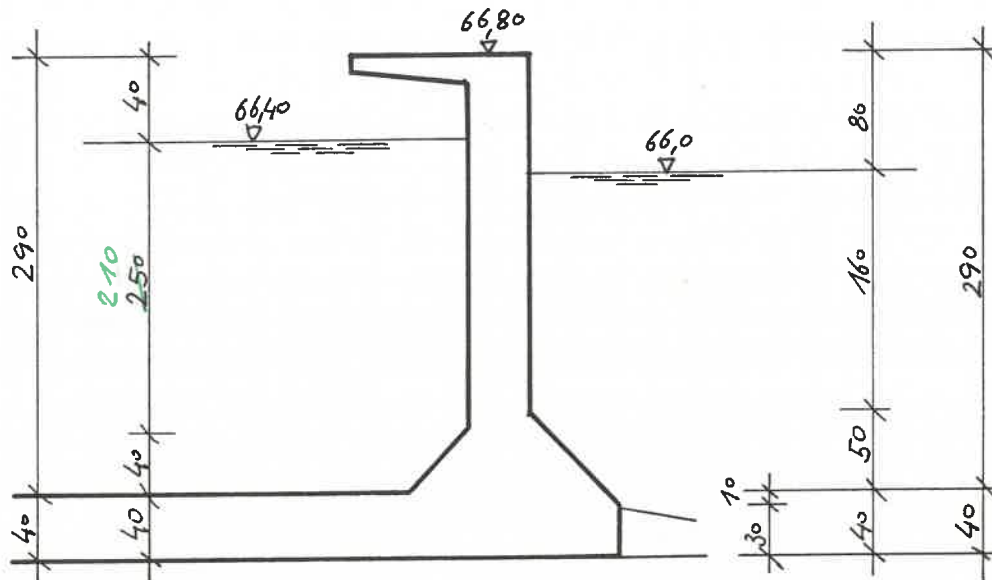
gewählt:  $\varnothing 10$ ,  $t = 20 \text{ cm}$  mit  $F_e = 3,93 \text{ cm}^2 / \text{m}$

V.E.  $\varnothing 8$ ,  $t = 20 \text{ cm}$

Pos. 4 Innenwand des Belebungsbeckens

$$d = 40 \text{ cm}$$

$$d_u = 40 + 40/3 = 53,3 \text{ m}$$



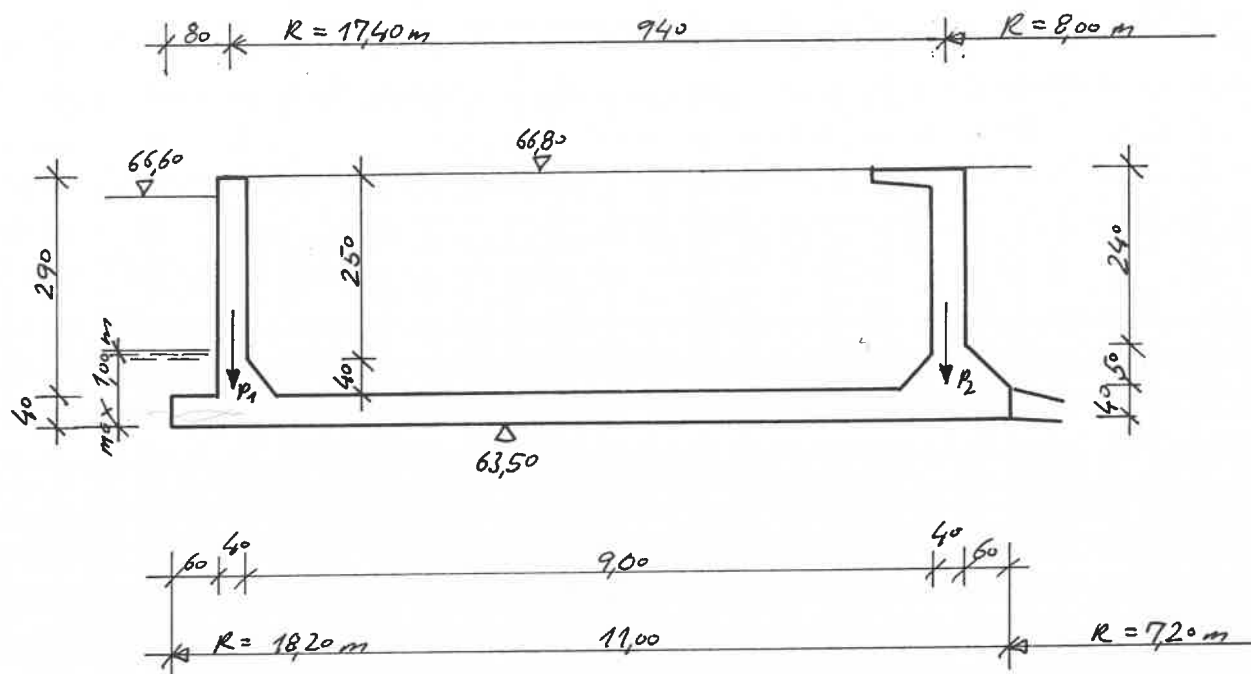
40 40 60

Bei gleichem bzw. von rechts kleinerem Wasserdruck ausgeführt  
wie auf Seite 86 gerechnet.

gewählt: außen und innen  $\varnothing 10$ ,  $t = 20 \text{ cm}$

V.E.  $\varnothing 8$ ,  $t = 20 \text{ cm}$

Pos. 5 Bodenplatte

$$d = 40 \text{ cm}$$


## Belastung

aus Wand:  $(0,40 \cdot 2,90 + 0,40^2/2) \cdot 25,0 =$

$$P_1 = 31,00 \text{ KN/m}$$

aus Laufsteg:  $3,50 \cdot 0,80$

$$= 2,80 \text{ KN/m}$$

aus Wand:  $31,00 + 0,50 \cdot 0,60 \cdot 0,5 \cdot 25,0$

$$= 34,75 \text{ KN/m}$$

$$P_2 = 37,55 \text{ KN/m}$$

Platteneigengewicht:  $0,40 \cdot 25,0 =$

$$g = 10,00 \text{ KN/m}^2$$

Wasserdruck bis zur Flutung

max 1,0 m ab UK-Platte:  $-1,0 \cdot 10,0 =$

$$W = -10,00 \text{ KN/m}^2$$

System s. Blatt



KLAERANLAGE MARKT INDERSDORF

BELEBUNGSBECKEN

Durch Vergleichsrechnung geprüft

B O D E N P L A T T E

ELEMENTTEILUNG 10 QUER-STREIFEN 12 LAENGS-STREIFEN

E-M O D U L = .3000E 08 Q U E R D E H N U N G S Z A H L = .1670

## E L E M E N T - T Y P E N T A B E L L E

NR	X1	Y1	T	ALFA	BETA	PHI	X2	Y2
1	.565	.800	.400	102.5	102.5	22.5	.628	.800
2	.628	.940	.400	102.5	102.5	22.5	.702	.940
3	.702	.940	.400	102.5	102.5	22.5	.776	.940
4	.776	.940	.400	102.5	102.5	22.5	.850	.940
5	.849	.940	.400	102.5	102.5	22.5	.923	.940
6	.923	.940	.400	102.5	102.5	22.5	.997	.940
7	.997	.940	.400	102.5	102.5	22.5	1.071	.940
8	1.071	.940	.400	102.5	102.5	22.5	1.145	.940
9	1.145	.940	.400	102.5	102.5	22.5	1.219	.940
10	1.218	.940	.400	102.5	102.5	22.5	1.292	.940
11	1.292	.940	.400	102.5	102.5	22.5	1.366	.940
12	1.366	.800	.400	102.5	102.5	22.5	1.429	.800
13	.565	.800	.400	102.5	102.5	17.5	.628	.800
14	.628	.940	.400	102.5	102.5	17.5	.702	.940
15	.702	.940	.400	102.5	102.5	17.5	.776	.940
16	.776	.940	.400	102.5	102.5	17.5	.850	.940
17	.849	.940	.400	102.5	102.5	17.5	.923	.940
18	.923	.940	.400	102.5	102.5	17.5	.997	.940
19	.997	.940	.400	102.5	102.5	17.5	1.071	.940
20	1.071	.940	.400	102.5	102.5	17.5	1.145	.940
21	1.145	.940	.400	102.5	102.5	17.5	1.219	.940
22	1.218	.940	.400	102.5	102.5	17.5	1.292	.940
23	1.292	.940	.400	102.5	102.5	17.5	1.366	.940
24	1.366	.800	.400	102.5	102.5	17.5	1.429	.800
25	.565	.800	.400	102.5	102.5	12.5	.628	.800
26	.628	.940	.400	102.5	102.5	12.5	.702	.940
27	.702	.940	.400	102.5	102.5	12.5	.776	.940
28	.776	.940	.400	102.5	102.5	12.5	.850	.940
29	.849	.940	.400	102.5	102.5	12.5	.923	.940
30	.923	.940	.400	102.5	102.5	12.5	.997	.940
31	.997	.940	.400	102.5	102.5	12.5	1.071	.940
32	1.071	.940	.400	102.5	102.5	12.5	1.145	.940
33	1.145	.940	.400	102.5	102.5	12.5	1.219	.940
34	1.218	.940	.400	102.5	102.5	12.5	1.292	.940
35	1.292	.940	.400	102.5	102.5	12.5	1.366	.940
36	1.366	.800	.400	102.5	102.5	12.5	1.429	.800

KLAERANLAGE MARKT INDERSDORF

BELEBUNGSBECKEN

Durch Vergleichsrechnung geprüft

B O D E N P L A T T E

## E L E M E N T - T Y P E N T A B E L L E

NR	X1	Y1	T	ALFA	BETA	PHI	X2	Y2
37	.565	.800	.400	102.5	102.5	7.5	.628	.800
38	.628	.940	.400	102.5	102.5	7.5	.702	.940
39	.702	.940	.400	102.5	102.5	7.5	.776	.940
40	.776	.940	.400	102.5	102.5	7.5	.850	.940
41	.849	.940	.400	102.5	102.5	7.5	.923	.940
42	.923	.940	.400	102.5	102.5	7.5	.997	.940
43	.997	.940	.400	102.5	102.5	7.5	1.071	.940
44	1.071	.940	.400	102.5	102.5	7.5	1.145	.940
45	1.145	.940	.400	102.5	102.5	7.5	1.219	.940
46	1.218	.940	.400	102.5	102.5	7.5	1.292	.940
47	1.292	.940	.400	102.5	102.5	7.5	1.366	.940
48	1.366	.800	.400	102.5	102.5	7.5	1.429	.800
49	.565	.800	.400	102.5	102.5	2.5	.628	.800
50	.628	.940	.400	102.5	102.5	2.5	.702	.940
51	.702	.940	.400	102.5	102.5	2.5	.776	.940
52	.776	.940	.400	102.5	102.5	2.5	.850	.940
53	.849	.940	.400	102.5	102.5	2.5	.923	.940
54	.923	.940	.400	102.5	102.5	2.5	.997	.940
55	.997	.940	.400	102.5	102.5	2.5	1.071	.940
56	1.071	.940	.400	102.5	102.5	2.5	1.145	.940
57	1.145	.940	.400	102.5	102.5	2.5	1.219	.940
58	1.218	.940	.400	102.5	102.5	2.5	1.292	.940
59	1.292	.940	.400	102.5	102.5	2.5	1.366	.940
60	1.366	.800	.400	102.5	102.5	2.5	1.429	.800
61	.565	.800	.400	102.5	102.5	-2.5	.628	.800
62	.628	.940	.400	102.5	102.5	-2.5	.702	.940
63	.702	.940	.400	102.5	102.5	-2.5	.776	.940
64	.776	.940	.400	102.5	102.5	-2.5	.850	.940
65	.849	.940	.400	102.5	102.5	-2.5	.923	.940
66	.923	.940	.400	102.5	102.5	-2.5	.997	.940
67	.997	.940	.400	102.5	102.5	-2.5	1.071	.940
68	1.071	.940	.400	102.5	102.5	-2.5	1.145	.940
69	1.145	.940	.400	102.5	102.5	-2.5	1.219	.940
70	1.218	.940	.400	102.5	102.5	-2.5	1.292	.940
71	1.292	.940	.400	102.5	102.5	-2.5	1.366	.940
72	1.366	.800	.400	102.5	102.5	-2.5	1.429	.800
73	.565	.800	.400	102.5	102.5	-7.5	.628	.800
74	.628	.940	.400	102.5	102.5	-7.5	.702	.940
75	.702	.940	.400	102.5	102.5	-7.5	.776	.940
76	.776	.940	.400	102.5	102.5	-7.5	.850	.940
77	.849	.940	.400	102.5	102.5	-7.5	.923	.940
78	.923	.940	.400	102.5	102.5	-7.5	.997	.940
79	.997	.940	.400	102.5	102.5	-7.5	1.071	.940
80	1.071	.940	.400	102.5	102.5	-7.5	1.145	.940
81	1.145	.940	.400	102.5	102.5	-7.5	1.219	.940

KLAERANLAGE MARKT INDERSDORF

BELEBUNGSBECKEN

Durch Vergleichsrechnung geprüft

B O D E N P L A T T E

## E L E M E N T - T Y P E N T A B E L L E

NR	X1	Y1	T	ALFA	BETA	PHI	X2	Y2
82	1.218	.940	.400	102.5	102.5	-7.5	1.292	.940
83	1.292	.940	.400	102.5	102.5	-7.5	1.366	.940
84	1.366	.800	.400	102.5	102.5	-7.5	1.429	.800
85	.565	.800	.400	102.5	102.5	-12.5	.628	.800
86	.628	.940	.400	102.5	102.5	-12.5	.702	.940
87	.702	.940	.400	102.5	102.5	-12.5	.776	.940
88	.776	.940	.400	102.5	102.5	-12.5	.850	.940
89	.849	.940	.400	102.5	102.5	-12.5	.923	.940
90	.923	.940	.400	102.5	102.5	-12.5	.997	.940
91	.997	.940	.400	102.5	102.5	-12.5	1.071	.940
92	1.071	.940	.400	102.5	102.5	-12.5	1.145	.940
93	1.145	.940	.400	102.5	102.5	-12.5	1.219	.940
94	1.218	.940	.400	102.5	102.5	-12.5	1.292	.940
95	1.292	.940	.400	102.5	102.5	-12.5	1.366	.940
96	1.366	.800	.400	102.5	102.5	-12.5	1.429	.800
97	.565	.800	.400	102.5	102.5	-17.5	.628	.800
98	.628	.940	.400	102.5	102.5	-17.5	.702	.940
99	.702	.940	.400	102.5	102.5	-17.5	.776	.940
100	.776	.940	.400	102.5	102.5	-17.5	.850	.940
101	.849	.940	.400	102.5	102.5	-17.5	.923	.940
102	.923	.940	.400	102.5	102.5	-17.5	.997	.940
103	.997	.940	.400	102.5	102.5	-17.5	1.071	.940
104	1.071	.940	.400	102.5	102.5	-17.5	1.145	.940
105	1.145	.940	.400	102.5	102.5	-17.5	1.219	.940
106	1.218	.940	.400	102.5	102.5	-17.5	1.292	.940
107	1.292	.940	.400	102.5	102.5	-17.5	1.366	.940
108	1.366	.800	.400	102.5	102.5	-17.5	1.429	.800
109	.565	.800	.400	102.5	102.5	-22.5	.628	.800
110	.628	.940	.400	102.5	102.5	-22.5	.702	.940
111	.702	.940	.400	102.5	102.5	-22.5	.776	.940
112	.776	.940	.400	102.5	102.5	-22.5	.850	.940
113	.849	.940	.400	102.5	102.5	-22.5	.923	.940
114	.923	.940	.400	102.5	102.5	-22.5	.997	.940
115	.997	.940	.400	102.5	102.5	-22.5	1.071	.940
116	1.071	.940	.400	102.5	102.5	-22.5	1.145	.940
117	1.145	.940	.400	102.5	102.5	-22.5	1.219	.940
118	1.218	.940	.400	102.5	102.5	-22.5	1.292	.940
119	1.292	.940	.400	102.5	102.5	-22.5	1.366	.940
120	1.366	.800	.400	102.5	102.5	-22.5	1.429	.800

KLAERANLAGE MARKT INDERSDORF

BELEBUNGSBECKEN

Durch Vergleichsrechnung geprüft

B O D E N P L A T T E

BODENKENNWERTE DES ISOTROPEN HALBRAUMES UNTER DER PLATTE

ELEMENT-TYP	VON/BIS	E	NY	T
	1 120	50000.0	3.000	10.000

ELASTISCHE AUFLAGERUNGEN BZW. EINSpanNUNGEN

LAENGs(X)		QUER(Y)		FEDERKONSTANTEN			
VON	BIS	VON	BIS	C-AZ	C-MX	C-MY	EINSP.WINKEL

KLAERANLAGE MARKT INDERSDORF

Durch Vergleichsrechnung geprüft

BELEBUNGSBECKEN

B O D E N P L A T T E

ANORDNUNG DER ELEMENTE

	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	13	14	15	16	17	18	19	20	21	22	23	24
3	25	26	27	28	29	30	31	32	33	34	35	36
4	37	38	39	40	41	42	43	44	45	46	47	48
5	49	50	51	52	53	54	55	56	57	58	59	60
6	61	62	63	64	65	66	67	68	69	70	71	72
7	73	74	75	76	77	78	79	80	81	82	83	84
8	85	86	87	88	89	90	91	92	93	94	95	96
9	97	98	99	100	101	102	103	104	105	106	107	108
10	109	110	111	112	113	114	115	116	117	118	119	120

ANZAHL DER GLEICHUNGEN 429      BANDBREITE 39

# KLAERANLAGE MARKT INDERSDORF

## BELEBUNGSBECKEN

B E L A S T U N G S A N G A B E N    L A S T F A L L    1

2	1	11	2	2	0	37.549988	0.000000	0.000000	0.000000
2	1	11	12	12	0	31.000000	0.000000	0.000000	0.000000

LASTSUMME	659.27
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KLAERANLAGE MARKT INDERSDORF

BELEBUNGSBECKEN

Durch Vergleichsrechnung geprüft

B O D E N P L A T T E

BEMESSUNGSMOMENTE UND BEMESSUNG NACH "BAUMANN"

Beton B 25		BSt 500	nue 1.750	h' .040	phil-o 0.00	phi2-o 100.00	phil-u 0.00	phi2-u 100.00		
Pkt	El	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
1/ 1	1	.360	-1.1	-1.4	.2	0.0	.11	.14	.02	0.00
1/ 2	1	.360	-.2	0.0	7.4	12.2	.02	0.00	.73	1.21
1/ 3	1	.360	0.0	-4.5	1.0	0.0	0.00	.45	.10	0.00
1/ 4	1	.360	-.8	-7.5	1.3	0.0	.08	.74	.13	0.00
1/ 5	1	.360	-.9	-6.7	1.1	0.0	.09	.67	.11	0.00
1/ 6	1	.360	-.6	-5.6	1.0	0.0	.06	.55	.10	0.00
1/ 7	1	.360	-.6	-5.5	1.0	0.0	.06	.55	.10	0.00
1/ 8	1	.360	-1.0	-6.7	1.2	0.0	.09	.66	.11	0.00
1/ 9	1	.360	-1.6	-8.0	1.3	0.0	.16	.79	.13	0.00
1/10	1	.360	-1.9	-7.9	1.3	0.0	.19	.78	.12	0.00
1/11	1	.360	-.3	-3.7	.5	0.0	.03	.37	.05	0.00
1/12	1	.360	-.0	0.0	2.5	4.5	.00	0.00	.24	.45
1/13	2	.360	-.1	0.0	0.0	.1	.01	0.00	0.00	.01
2/ 1	1	.360	-.3	-.6	.8	.5	.03	.06	.08	.05
2/ 2	1	.360	-.3	0.0	5.8	10.7	.03	0.00	.58	1.06
2/ 3	1	.360	0.0	-4.1	.7	0.0	0.00	.40	.07	0.00
2/ 4	1	.360	-.9	-7.1	.7	0.0	.09	.70	.06	0.00
2/ 5	1	.360	-.9	-6.4	.7	0.0	.09	.63	.07	0.00
2/ 6	1	.360	-.7	-5.5	.7	0.0	.07	.54	.07	0.00
2/ 7	1	.360	-.9	-5.6	.7	0.0	.09	.56	.07	0.00
2/ 8	1	.360	-1.4	-6.8	.7	0.0	.13	.67	.07	0.00
2/ 9	1	.360	-1.9	-8.1	.4	0.0	.19	.80	.04	0.00
2/10	1	.360	-1.7	-7.7	0.0	0.0	.17	.77	0.00	0.00

## KLAERANLAGE MARKT INDERSDORF

## BELEBUNGSBECKEN

Durch Vergleichsrechnung geprüft

## B O D E N P L A T T E

Beton		BSt	nue	h'	phil-o	phi2-o	phil-u	phi2-u		
B 25		500	1.750	.040	0.00	100.00	0.00	100.00		
Pkt	El	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
2/11	1	.360	-.5	-4.0	0.0	0.0	.05	.40	0.00	0.00
2/12	1	.360	-.1	0.0	2.9	6.2	.01	0.00	.28	.62
2/13	2	.360	-.1	-.3	.2	0.0	.01	.03	.02	0.00
3/ 1	1	.360	-.7	-.9	.8	.6	.07	.09	.07	.06
3/ 2	1	.360	-.3	0.0	4.4	9.7	.03	0.00	.44	.96
3/ 3	1	.360	0.0	-3.8	.6	0.0	0.00	.37	.06	0.00
3/ 4	1	.360	-.8	-6.7	.4	0.0	.08	.66	.04	0.00
3/ 5	1	.360	-1.0	-6.2	.3	0.0	.09	.61	.03	0.00
3/ 6	1	.360	-.9	-5.4	.3	0.0	.09	.53	.03	0.00
3/ 7	1	.360	-1.1	-5.7	.2	0.0	.11	.56	.02	0.00
3/ 8	1	.360	-1.6	-7.0	0.0	0.0	.16	.69	0.00	0.00
3/ 9	1	.360	-2.0	-8.3	0.0	0.0	.20	.82	0.00	0.00
3/10	1	.360	-1.8	-7.9	0.0	0.0	.18	.78	0.00	0.00
3/11	1	.360	-1.0	-4.0	0.0	0.0	.10	.40	0.00	0.00
3/12	1	.360	-.1	0.0	2.6	7.0	.01	0.00	.25	.69
3/13	2	.360	-.0	-.4	.4	.0	.00	.04	.04	.00
4/ 1	1	.360	-1.1	-.8	.3	.7	.11	.08	.03	.07
4/ 2	1	.360	0.0	0.0	3.2	9.0	0.00	0.00	.31	.89
4/ 3	1	.360	0.0	-3.6	.4	0.0	0.00	.35	.04	0.00
4/ 4	1	.360	-.7	-6.4	.2	0.0	.06	.63	.02	0.00
4/ 5	1	.360	-.9	-5.9	.1	0.0	.09	.58	.01	0.00
4/ 6	1	.360	-1.0	-5.3	0.0	0.0	.10	.52	0.00	0.00
4/ 7	1	.360	-1.3	-5.7	0.0	0.0	.13	.56	0.00	0.00
4/ 8	1	.360	-1.7	-7.1	0.0	0.0	.17	.70	0.00	0.00



## KLAERANLAGE MARKT INDERSDORF

## BELEBUNGSBECKEN

Durch Vergleichsrechnung geprüft

## B O D E N P L A T T E

Beton B 25		BSt 500	nue 1.750	h' .040	phil-o 0.00	phi2-o 100.00	phil-u 0.00	phi2-u 100.00		
Pkt	El	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
4/ 9	1	.360	-2.1	-8.5	0.0	0.0	.21	.85	0.00	0.00
4/10	1	.360	-2.0	-8.1	0.0	0.0	.19	.80	0.00	0.00
4/11	1	.360	-1.4	-3.7	0.0	0.0	.13	.37	0.00	0.00
4/12	1	.360	0.0	0.0	1.9	7.1	0.00	0.00	.19	.71
4/13	2	.360	-.1	-.3	.2	.1	.01	.03	.02	.01
5/ 1	1	.360	-1.2	-.4	0.0	.5	.12	.04	0.00	.05
5/ 2	1	.360	0.0	0.0	2.1	8.2	0.00	0.00	.21	.81
5/ 3	1	.360	0.0	-3.4	.3	0.0	0.00	.34	.03	0.00
5/ 4	1	.360	-.5	-6.1	0.0	0.0	.05	.60	0.00	0.00
5/ 5	1	.360	-.7	-5.7	0.0	0.0	.07	.56	0.00	0.00
5/ 6	1	.360	-.9	-5.1	0.0	0.0	.09	.51	0.00	0.00
5/ 7	1	.360	-1.2	-5.6	0.0	0.0	.12	.56	0.00	0.00
5/ 8	1	.360	-1.7	-7.2	0.0	0.0	.17	.71	0.00	0.00
5/ 9	1	.360	-2.1	-8.6	0.0	0.0	.21	.85	0.00	0.00
5/10	1	.360	-2.0	-8.1	0.0	0.0	.20	.80	0.00	0.00
5/11	1	.360	-1.5	-3.3	0.0	0.0	.14	.33	0.00	0.00
5/12	1	.360	0.0	0.0	1.3	7.0	0.00	0.00	.13	.69
5/13	2	.360	-.2	-.2	.1	.1	.02	.02	.01	.01
6/ 1	1	.360	-1.0	-.0	0.0	.3	.10	.00	0.00	.02
6/ 2	1	.360	0.0	0.0	1.5	7.7	0.00	0.00	.15	.76
6/ 3	1	.360	0.0	-3.5	.3	0.0	0.00	.34	.03	0.00
6/ 4	1	.360	-.3	-5.9	0.0	0.0	.03	.58	0.00	0.00
6/ 5	1	.360	-.5	-5.4	0.0	0.0	.05	.54	0.00	0.00
6/ 6	1	.360	-.7	-4.9	0.0	0.0	.07	.49	0.00	0.00

## KLAERANLAGE MARKT INDERSDORF

Durch Vergleichsrechnung geprüft

## BELEBUNGSBECKEN

## B O D E N P L A T T E

Beton B 25		BSt 500	nue 1.750	h' .040	phil-o 0.00	phi2-o 100.00	phil-u 0.00	phi2-u 100.00		
Pkt	El	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
6/ 7 1		.360	-1.1	-5.5	0.0	0.0	.10	.54	0.00	0.00
6/ 8 1		.360	-1.6	-7.0	0.0	0.0	.15	.69	0.00	0.00
6/ 9 1		.360	-2.0	-8.6	0.0	0.0	.20	.85	0.00	0.00
6/10 1		.360	-2.2	-8.2	0.0	0.0	.22	.81	0.00	0.00
6/11 1		.360	-1.4	-3.0	0.0	0.0	.13	.30	0.00	0.00
6/12 1		.360	0.0	0.0	1.0	6.8	0.00	0.00	.09	.67
6/13 2		.360	-.2	-.2	.0	.1	.02	.02	.00	.01
7/ 1 1		.360	-1.0	-.1	0.0	.3	.10	.01	0.00	.03
7/ 2 1		.360	0.0	0.0	2.5	8.5	0.00	0.00	.25	.84
7/ 3 1		.360	0.0	-3.6	.4	0.0	0.00	.35	.04	0.00
7/ 4 1		.360	-.4	-6.1	0.0	0.0	.04	.60	0.00	0.00
7/ 5 1		.360	-.7	-5.7	0.0	0.0	.07	.56	0.00	0.00
7/ 6 1		.360	-.9	-5.1	0.0	0.0	.09	.50	0.00	0.00
7/ 7 1		.360	-1.2	-5.6	0.0	0.0	.12	.55	0.00	0.00
7/ 8 1		.360	-1.7	-7.1	0.0	0.0	.17	.71	0.00	0.00
7/ 9 1		.360	-2.2	-8.7	0.0	0.0	.22	.86	0.00	0.00
7/10 1		.360	-2.2	-8.2	0.0	0.0	.22	.81	0.00	0.00
7/11 1		.360	-1.2	-2.9	0.0	0.0	.11	.29	0.00	0.00
7/12 1		.360	0.0	0.0	1.6	7.2	0.00	0.00	.15	.71
7/13 2		.360	-.2	-.1	0.0	.0	.02	.01	0.00	.00
8/ 1 1		.360	-1.0	-.4	0.0	.5	.10	.04	0.00	.05
8/ 2 1		.360	0.0	0.0	3.6	9.1	0.00	0.00	.36	.90
8/ 3 1		.360	0.0	-3.7	.5	0.0	0.00	.37	.05	0.00
8/ 4 1		.360	-.6	-6.4	.2	0.0	.06	.63	.02	0.00

Zusatzbewehrung aus Zug

$$H = 25,0 \cdot 2,50/2 = 31,25 \text{ KN/m}$$

$$F_{ez} = 31,25/28,6 = 1,09 \text{ cm}^2/\text{m}$$

Gesamtbewehrung

$$\max F_{eo} = 0,86 + 1,09 \geq 1,95 \text{ cm}^2/\text{m}$$

gewählt: oben R 377 jeweils radial in den 8 Feldern  
+ R 221 im Bereich der Wandmomente *insgesamt*  
Querbewehrung 4  $\emptyset$  10/m

$$\max F_{ev} = 0,96 + 1,09 = 2,05 \text{ cm}^2/\text{m}$$

gewählt: unten Q 221 jeweils radial in den 8 Feldern  
+ R 317 im Bereich der Wandmomente  
Querbewehrung 4  $\emptyset$  10/m

Ringzugbewehrung in Wand und Bodenplatte

a) Wandbereich bis 1,90 m ab OK-Wand

$$H = 15,0 \cdot 1,50 \cdot 0,5 \cdot 17,40 = 195,75 \text{ KN}$$

$$F_{ez} = 195,75/24,0 = 8,16 \text{ cm}^2$$

gewählt: beidseitig  $\emptyset$  10, t = 20 cm =

$$\text{mit } F_e \geq 19 \cdot 0,5 \geq 9,50 \text{ cm}^2 > 8,16 \text{ cm}^2$$

b) unterer Bereich Wand (1,0 m) und Bodenplatte

$$H = (15,0 + 25,0) \cdot 1,0 \cdot 0,5 \cdot 17,40 = 348,0 \text{ KN}$$

$$F_{ez} = 348,0/24,0 = 14,50 \text{ cm}^2$$

gewählt: in Wand beidseitig  $\emptyset$  10, t = 15 cm  $\geq 6,70 \text{ cm}^2$

im Boden 8  $\emptyset$  12 mit 9,10 cm<sup>2</sup>

$$F_{ez} \geq 15,80 \text{ cm}^2 > 14,50 \text{ cm}^2$$

Alle nicht gerechneten kleineren Bauteile der Gesamtanlage

werden konstruktiv ausreichend bemessen ausgeführt.

(s. Bewehrungspläne)

In statischer Hinsicht geprüft  
Zugrunde lagen die Pläne des Entwurfverfassers  
Ing. Büro Greiner, München  
vom Juni 84 Siehe Prüfbericht  
Nr. 84/92/1 vom 4. Dez. 84  
Zeittarn, Ing. 4. Dez. 84  
Der Bauherr Der Prüfingenieur  
Bulenda  
Prof. Dipl.-Ing. Ulrich Bulenda  
Zeilbergstraße 29 - 8411 Zeilarn - Tel. 0941/62614  
Anerkannt mit MS vom 23.9.1981, II B 11-9143/2-168

Pos. 5, N1 Bodenplatte  
 $d = 40 \text{ cm}$

In der Nachrechnung N1 der Bodenplatte Pos. 5 werden in die Finite-Elemente<sup>Berechnung</sup> folgende zusätzliche Eingaben mit aufgenommen.

1. Die Wände des Belebungsbeckens werden als Balken eingegeben.
2. Momente aus den Wänden werden direkt bei der Plattenberechnung berücksichtigt, was eine Umordnung<sup>in folgende</sup> Lastfälle zur Folge hat.

- a. LF-1 : Vor der Flutung - ohne Erddruck  
 entspricht ständiger Last
- b. LF-2 : Vor der Flutung - mit Erddruck
- c. LF-3 : Flutung Innenbecken - mit Erddruck
- d. LF-4 : Flutung Außenbecken - ohne Erddruck

Durch den Flutungsmechanismus des Beckens kann mit einer konstanten Grundwasserhöhe von +1m über U.K. Bodenplatte gerechnet werden.

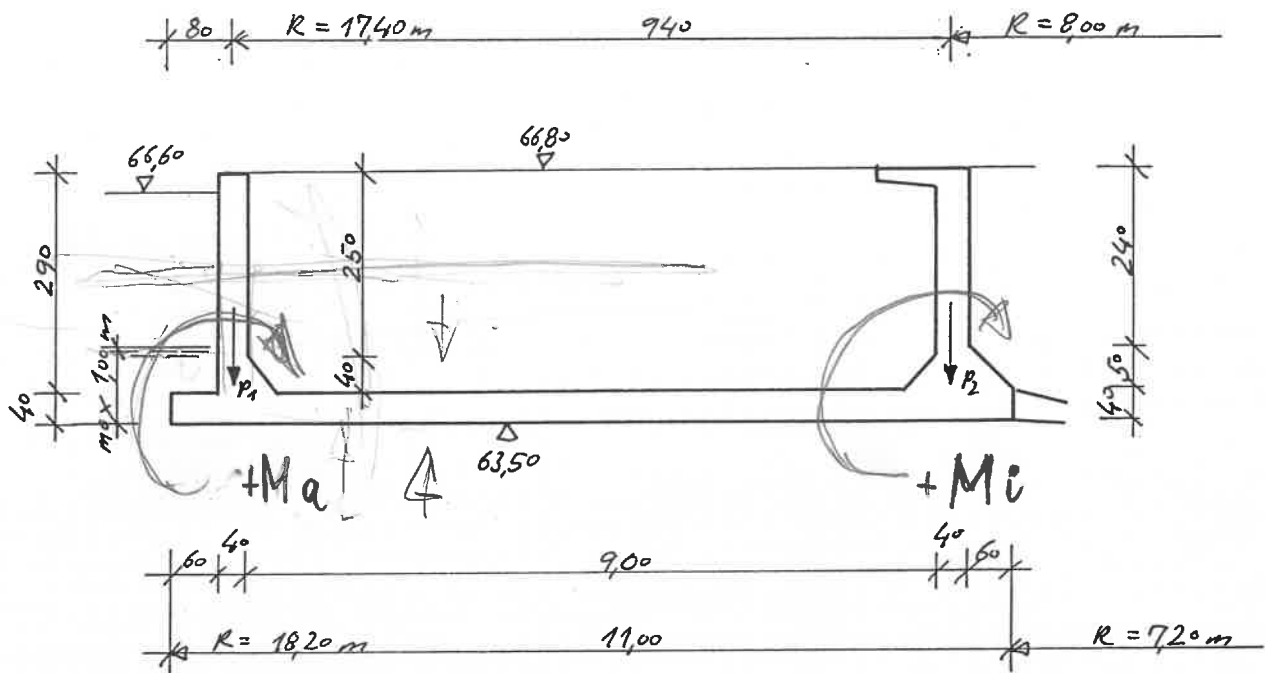
Zur LF-Überlagerung:

Die Lastfälle 2 bis 4 schließen sich gegenseitig aus. D.h. nur der am ungünstigsten wirkende dieser drei Lastfälle wird zum LF-1 aufaddiert.

~~Pos. 5 Bodenplatte~~

$d = 40 \text{ cm}$

System u. Belastungsskizze!



a. LF-A : Vor der Flutung - ohne Erddruck

Belastung

aus Wand:  $(0,40 \cdot 2,90 + 0,40^2/2) \cdot 25,0 =$

$P_1 = 31,00 \text{ KN/m}$

aus Laufsteg:  $3,50 \cdot 0,80$

$= 2,80 \text{ KN/m}$

aus Wand:  $31,00 + 0,50 \cdot 0,60 \cdot 0,5 \cdot 25,0$

$= 34,75 \text{ KN/m}$

$P_{2,3} = 37,55 \text{ KN/m}$

Platteneigengewicht:  $0,40 \cdot 25,0 =$

$g = 10,00 \text{ KN/m}^2$

Wasserdruck bis zur Flutung

max 1,0 m ab UK-Platte:  $-1,0 \cdot 10,0 =$

$W = -10,00 \text{ KN/m}^2$

$-6,0 \cdot 0,6 \cdot 0,4 / 2 =$

$M_A = -0,72 \text{ KNm/m}$

(wird vernachlässigt)

~~System s. Blatt~~

- 0 -

## B. LF-2: Vor der Flöutung - mit Erddruck

Belastung:

S. LF-1

$$(P_1 = 31,0 \text{ kN/m})$$

$$(P_2 = 37,55 \text{ kN/m})$$

$$(g = 10,0 \text{ kN/m}^2)$$

$$(W = -10,0 \text{ kN/m}^2)$$

Erddruck Außenwand Abs. 3 (MIIa)

$$M_a = 41,32 \text{ kNm/m}$$

verteilt auf x- und y-Richtung:

$$M_x = \pm M_a \cdot \cos \varphi \cdot b$$

$$M_y = \pm M_a \cdot \sin \varphi \cdot b$$

PKT	$\varphi(g)$	$b(m)$	$M_x(kNm)$	$M_y(kNm)$
1/12	25	0,715	+ 27,69	+ 11,47
2/12	20	1,419	+ 56,97	+ 18,51
3/12	15	1,419	+ 58,25	+ 13,98
4/12	10	1,419	+ 59,17	+ 9,37
5/12	5	1,419	+ 59,72	+ 4,70
6/12	0	1,429	59,90	0
7/12	-5	1,419	+ 59,72	- 4,70
8/12	-10	1,419	+ 59,17	- 9,37
9/12	-15	1,429	+ 58,25	- 13,98
10/12	-20	1,429	+ 56,97	- 18,51
11/12	-25	0,715	- 27,69	- 11,47

✓

C. LF-3 : Flütlung Innenbecken - mit Erddruck

Belast.

$$(P1 = 31,0 \text{ kN/m})$$

$$(P2 = 37,55 \text{ kN/m})$$

Erddruck Außenwand Ps.3 ( $M_{\text{Pa}}$ )

$$M_a = 41,92 \text{ kNm/m}$$

Wasserdruck Innenwand Ps.4

$$M_i = -15,44 \text{ kNm/m}$$

verteilt auf x- und y-Richtung:

$$M_x = \pm M \cdot \cos \varphi \cdot b$$

$$M_y = \pm M \cdot \sin \varphi \cdot b$$

Verteilung des Erddrucklasten  $M_e$  wie bei LF-2

Verteilung des Wasserdrucklasten  $M_i$ :

Part	$\varphi (^\circ)$	b (m)	$M_x$ (kNm)	$M_y$ (kNm)
1/2	25	0,203	- 4,03	- 1,67
2/2	20	0,565	- 8,30	- 2,70
3/2	15	0,565	- 8,48	- 2,04
4/2	10	0,565	- 8,62	- 1,36
5/2	5	0,565	- 8,70	- 0,68
6/2	0	0,565	- 8,72	0
7/2	-5	0,565	- 8,70	+ 0,68
8/2	-10	0,565	- 8,62	+ 1,36
9/2	-15	0,565	- 8,48	+ 2,04
10/2	-20	0,565	- 8,30	+ 2,70
11/2	-25	0,203	- 4,03	+ 1,67

✓

d.) LF-4 : Flutung Außenbecken - ohne Erddruck

Belastung :

Plattenlast  
Wassersäulelast  
Wasserdruk Außenwand  
Wasserdruk Innenwand

( $q_1 = 31,0 \text{ KN/m}$ )  
( $p_2 = 37,55 \text{ KN/m}$ )  
 $g = 10,0 \text{ KN/m}^2$   
 $w = 25,0 \text{ KN/m}^2$   
 $M_a = -26,04 \text{ KNm/m}$   
 $M_i = +26,04 \text{ KNm/m}$

Plat.	$\phi (g)$	$b (m)$	$M_x (KNm)$	$M_y (KNm)$
1/12	25	0,715	- 17,28	- 7,12
2/12	20	1,429	- 35,39	- 11,50
3/12	15	1,429	- 36,18	- 8,69
4/12	10	1,429	- 36,75	- 5,82
5/12	5	1,429	- 37,10	- 2,92
6/12	0	1,429	- 37,21	0
7/12	-5	1,429	- 37,18	+ 2,92
8/12	-10	1,429	- 36,75	+ 5,82
9/12	-15	1,429	- 36,18	+ 8,69
10/12	-20	1,429	- 35,39	+ 11,50
11/12	-25	0,715	- 17,28	+ 7,12
1/2	25	0,283	+ 6,79	+ 2,82
2/2	20	0,565	+ 14,08	+ 4,55
3/2	15	0,565	+ 14,31	+ 3,44
4/2	10	0,565	+ 14,53	+ 2,03
5/2	5	0,565	+ 14,67	+ 1,15
6/2	0	0,565	+ 14,71	0
7/2	-5	0,565	+ 14,67	- 1,15
8/2	-10	0,565	+ 14,53	- 2,03
9/2	-15	0,565	+ 14,31	- 3,44
10/2	-20	0,565	+ 14,08	- 4,55
11/2	-25	0,283	+ 6,79	- 2,82



Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

ELEMENTTEILUNG 10 QUER-STREIFEN 12 LAENGST-STREIFEN

E-M O D U L = .3000E 08 Q U E R D E H N U N G S Z A H L = .1670

## E L E M E N T - T Y P E N T A B E L L E

NR	X1	Y1	T	ALFA	BETA	PHI	X2	Y2
1	.565	.800	.400	102.5	102.5	22.5	.628	.800
2	.628	.940	.400	102.5	102.5	22.5	.702	.940
3	.702	.940	.400	102.5	102.5	22.5	.776	.940
4	.776	.940	.400	102.5	102.5	22.5	.850	.940
5	.849	.940	.400	102.5	102.5	22.5	.923	.940
6	.923	.940	.400	102.5	102.5	22.5	.997	.940
7	.997	.940	.400	102.5	102.5	22.5	1.071	.940
8	1.071	.940	.400	102.5	102.5	22.5	1.145	.940
9	1.145	.940	.400	102.5	102.5	22.5	1.219	.940
10	1.218	.940	.400	102.5	102.5	22.5	1.292	.940
11	1.292	.940	.400	102.5	102.5	22.5	1.366	.940
12	1.366	.800	.400	102.5	102.5	22.5	1.429	.800
13	.565	.800	.400	102.5	102.5	17.5	.628	.800
14	.628	.940	.400	102.5	102.5	17.5	.702	.940
15	.702	.940	.400	102.5	102.5	17.5	.776	.940
16	.776	.940	.400	102.5	102.5	17.5	.850	.940
17	.849	.940	.400	102.5	102.5	17.5	.923	.940
18	.923	.940	.400	102.5	102.5	17.5	.997	.940
19	.997	.940	.400	102.5	102.5	17.5	1.071	.940
20	1.071	.940	.400	102.5	102.5	17.5	1.145	.940
21	1.145	.940	.400	102.5	102.5	17.5	1.219	.940
22	1.218	.940	.400	102.5	102.5	17.5	1.292	.940
23	1.292	.940	.400	102.5	102.5	17.5	1.366	.940
24	1.366	.800	.400	102.5	102.5	17.5	1.429	.800
25	.565	.800	.400	102.5	102.5	12.5	.628	.800
26	.628	.940	.400	102.5	102.5	12.5	.702	.940
27	.702	.940	.400	102.5	102.5	12.5	.776	.940
28	.776	.940	.400	102.5	102.5	12.5	.850	.940
29	.849	.940	.400	102.5	102.5	12.5	.923	.940
30	.923	.940	.400	102.5	102.5	12.5	.997	.940
31	.997	.940	.400	102.5	102.5	12.5	1.071	.940
32	1.071	.940	.400	102.5	102.5	12.5	1.145	.940
33	1.145	.940	.400	102.5	102.5	12.5	1.219	.940
34	1.218	.940	.400	102.5	102.5	12.5	1.292	.940
35	1.292	.940	.400	102.5	102.5	12.5	1.366	.940
36	1.366	.800	.400	102.5	102.5	12.5	1.429	.800

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

## ANORDNUNG DER ELEMENTE

	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	13	14	15	16	17	18	19	20	21	22	23	24
3	25	26	27	28	29	30	31	32	33	34	35	36
4	37	38	39	40	41	42	43	44	45	46	47	48
5	49	50	51	52	53	54	55	56	57	58	59	60
6	61	62	63	64	65	66	67	68	69	70	71	72
7	73	74	75	76	77	78	79	80	81	82	83	84
8	85	86	87	88	89	90	91	92	93	94	95	96
9	97	98	99	100	101	102	103	104	105	106	107	108
10	109	110	111	112	113	114	115	116	117	118	119	120

ANZAHL DER GLEICHUNGEN 429 BANDBREITE 39

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

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## E L E M E N T - T Y P E N T A B E L L E

NR	X1	Y1	T	ALFA	BETA	PHI	X2	Y2
37	.565	.800	.400	102.5	102.5	7.5	.628	.800
38	.628	.940	.400	102.5	102.5	7.5	.702	.940
39	.702	.940	.400	102.5	102.5	7.5	.776	.940
40	.776	.940	.400	102.5	102.5	7.5	.850	.940
41	.849	.940	.400	102.5	102.5	7.5	.923	.940
42	.923	.940	.400	102.5	102.5	7.5	.997	.940
43	.997	.940	.400	102.5	102.5	7.5	1.071	.940
44	1.071	.940	.400	102.5	102.5	7.5	1.145	.940
45	1.145	.940	.400	102.5	102.5	7.5	1.219	.940
46	1.218	.940	.400	102.5	102.5	7.5	1.292	.940
47	1.292	.940	.400	102.5	102.5	7.5	1.366	.940
48	1.366	.800	.400	102.5	102.5	7.5	1.429	.800
49	.565	.800	.400	102.5	102.5	2.5	.628	.800
50	.628	.940	.400	102.5	102.5	2.5	.702	.940
51	.702	.940	.400	102.5	102.5	2.5	.776	.940
52	.776	.940	.400	102.5	102.5	2.5	.850	.940
53	.849	.940	.400	102.5	102.5	2.5	.923	.940
54	.923	.940	.400	102.5	102.5	2.5	.997	.940
55	.997	.940	.400	102.5	102.5	2.5	1.071	.940
56	1.071	.940	.400	102.5	102.5	2.5	1.145	.940
57	1.145	.940	.400	102.5	102.5	2.5	1.219	.940
58	1.218	.940	.400	102.5	102.5	2.5	1.292	.940
59	1.292	.940	.400	102.5	102.5	2.5	1.366	.940
60	1.366	.800	.400	102.5	102.5	2.5	1.429	.800
61	.565	.800	.400	102.5	102.5	-2.5	.628	.800
62	.628	.940	.400	102.5	102.5	-2.5	.702	.940
63	.702	.940	.400	102.5	102.5	-2.5	.776	.940
64	.776	.940	.400	102.5	102.5	-2.5	.850	.940
65	.849	.940	.400	102.5	102.5	-2.5	.923	.940
66	.923	.940	.400	102.5	102.5	-2.5	.997	.940
67	.997	.940	.400	102.5	102.5	-2.5	1.071	.940
68	1.071	.940	.400	102.5	102.5	-2.5	1.145	.940
69	1.145	.940	.400	102.5	102.5	-2.5	1.219	.940
70	1.218	.940	.400	102.5	102.5	-2.5	1.292	.940
71	1.292	.940	.400	102.5	102.5	-2.5	1.366	.940
72	1.366	.800	.400	102.5	102.5	-2.5	1.429	.800
73	.565	.800	.400	102.5	102.5	-7.5	.628	.800
74	.628	.940	.400	102.5	102.5	-7.5	.702	.940
75	.702	.940	.400	102.5	102.5	-7.5	.776	.940
76	.776	.940	.400	102.5	102.5	-7.5	.850	.940
77	.849	.940	.400	102.5	102.5	-7.5	.923	.940
78	.923	.940	.400	102.5	102.5	-7.5	.997	.940
79	.997	.940	.400	102.5	102.5	-7.5	1.071	.940
80	1.071	.940	.400	102.5	102.5	-7.5	1.145	.940
81	1.145	.940	.400	102.5	102.5	-7.5	1.219	.940

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

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## E L E M E N T - T Y P E N T A B E L L E

NR	X1	Y1	T	ALFA	BETA	PHI	X2	Y2
82	1.218	.940	.400	102.5	102.5	-7.5	1.292	.940
83	1.292	.940	.400	102.5	102.5	-7.5	1.366	.940
84	1.366	.800	.400	102.5	102.5	-7.5	1.429	.800
85	.565	.800	.400	102.5	102.5	-12.5	.628	.800
86	.628	.940	.400	102.5	102.5	-12.5	.702	.940
87	.702	.940	.400	102.5	102.5	-12.5	.776	.940
88	.776	.940	.400	102.5	102.5	-12.5	.850	.940
89	.849	.940	.400	102.5	102.5	-12.5	.923	.940
90	.923	.940	.400	102.5	102.5	-12.5	.997	.940
91	.997	.940	.400	102.5	102.5	-12.5	1.071	.940
92	1.071	.940	.400	102.5	102.5	-12.5	1.145	.940
93	1.145	.940	.400	102.5	102.5	-12.5	1.219	.940
94	1.218	.940	.400	102.5	102.5	-12.5	1.292	.940
95	1.292	.940	.400	102.5	102.5	-12.5	1.366	.940
96	1.366	.800	.400	102.5	102.5	-12.5	1.429	.800
97	.565	.800	.400	102.5	102.5	-17.5	.628	.800
98	.628	.940	.400	102.5	102.5	-17.5	.702	.940
99	.702	.940	.400	102.5	102.5	-17.5	.776	.940
100	.776	.940	.400	102.5	102.5	-17.5	.850	.940
101	.849	.940	.400	102.5	102.5	-17.5	.923	.940
102	.923	.940	.400	102.5	102.5	-17.5	.997	.940
103	.997	.940	.400	102.5	102.5	-17.5	1.071	.940
104	1.071	.940	.400	102.5	102.5	-17.5	1.145	.940
105	1.145	.940	.400	102.5	102.5	-17.5	1.219	.940
106	1.218	.940	.400	102.5	102.5	-17.5	1.292	.940
107	1.292	.940	.400	102.5	102.5	-17.5	1.366	.940
108	1.366	.800	.400	102.5	102.5	-17.5	1.429	.800
109	.565	.800	.400	102.5	102.5	-22.5	.628	.800
110	.628	.940	.400	102.5	102.5	-22.5	.702	.940
111	.702	.940	.400	102.5	102.5	-22.5	.776	.940
112	.776	.940	.400	102.5	102.5	-22.5	.850	.940
113	.849	.940	.400	102.5	102.5	-22.5	.923	.940
114	.923	.940	.400	102.5	102.5	-22.5	.997	.940
115	.997	.940	.400	102.5	102.5	-22.5	1.071	.940
116	1.071	.940	.400	102.5	102.5	-22.5	1.145	.940
117	1.145	.940	.400	102.5	102.5	-22.5	1.219	.940
118	1.218	.940	.400	102.5	102.5	-22.5	1.292	.940
119	1.292	.940	.400	102.5	102.5	-22.5	1.366	.940
120	1.366	.800	.400	102.5	102.5	-22.5	1.429	.800

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

## =====

## BODENKENNWERTE DES ISOTROPEN HALBRAUMES UNTER DER PLATTE

ELEMENT-TYP	VON/BIS	E	NY	T
	1 120	50000.0	3.000	10.000

## ELASTISCHE AUFLAGERUNGEN BZW. EINSpanNUNGEN

LAENGs(X)		QUER(Y)		FEDERKONSTANTEN			
VON	BIS	VON	BIS	C-AZ	C-MX	C-MY	EINSP.WINKEL

## B A L K E N E L E M E N T E

ACHSE	VON	BIS		MITW.B	D-PLATTE	B-TR	HTR	JT
2	1	11	X-RICHTUNG	.400	.400	.400	2.900	.0001
12	1	11	X-RICHTUNG	.400	.400	.400	2.900	.0001

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

 $G = 50 \text{ } 000 \text{ } \text{Kw/m}^2$ 

## BEMESSUNGSMOMENTE UND BEMESSUNG NACH "BAUMANN"

Beton B 25		BSt 500	nue 1.750	h' .040	phil-o 0.00	phi2-o 100.00	phil-u 0.00	phi2-u 100.00		
Pkt	El	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
1/ 1	1	.360	-1.1	-1.4	1.3	1.2	.11	.14	.13	.12
1/ 2	1	.360	-.4	-7.2	10.0	22.0	.04	.71	1.00	2.20
1/ 3	1	.360	-1.1	-14.3	4.3	2.6	.11	1.42	.43	.26
1/ 4	1	.360	-1.0	-11.1	3.6	0.0	.10	1.10	.36	0.00
1/ 5	1	.360	-2.4	-8.5	3.3	0.0	.24	.84	.33	0.00
1/ 6	1	.360	-3.4	-9.3	3.2	0.0	.33	.93	.31	0.00
1/ 7	1	.360	-4.4	-9.6	4.1	0.0	.44	.95	.41	0.00
1/ 8	1	.360	-5.5	-8.7	4.4	0.0	.54	.87	.43	0.00
1/ 9	1	.360	-5.5	-8.1	5.6	1.5	.54	.80	.56	.15
1/10	1	.360	-2.8	-13.7	7.0	7.5	.28	1.36	.69	.74
1/11	1	.360	-7.0	-20.1	9.4	26.4	.70	2.01	.94	2.65
1/12	1	.360	-.2	0.0	8.3	11.0	.02	0.00	.82	1.09
1/13	2	.360	-.4	-.2	6.0	1.2	.04	.02	.59	.12
2/ 1	1	.360	-.5	-.6	2.6	3.2	.05	.06	.25	.32
2/ 2	1	.360	-.9	-9.0	9.2	22.3	.08	.89	.92	2.22
2/ 3	1	.360	-.6	-12.9	1.7	1.6	.06	1.28	.17	.16
2/ 4	1	.360	-1.3	-9.9	1.5	0.0	.13	.98	.15	0.00
2/ 5	1	.360	-2.6	-8.2	1.9	0.0	.26	.81	.19	0.00
2/ 6	1	.360	-3.5	-8.8	2.4	0.0	.35	.87	.23	0.00
2/ 7	1	.360	-4.4	-8.8	2.9	0.0	.44	.87	.29	0.00
2/ 8	1	.360	-5.0	-7.6	3.4	0.0	.49	.75	.33	0.00
2/ 9	1	.360	-4.0	-8.8	3.4	0.0	.40	.87	.34	0.00
2/10	1	.360	-1.8	-13.5	2.6	7.0	.17	1.34	.26	.69



Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Beleungsbeckens

E = 50 000

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Beton B 25		BSt 500	nue 1.750	h' .040	phi1-o 0.00	phi2-o 100.00	phi1-u 0.00	phi2-u 100.00		
Pkt	El	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
2/11	1	.360	-3.4	-16.7	7.8	24.8	.34	1.66	.78	2.48
2/12	1	.360	-.2	0.0	4.9	10.6	.02	0.00	.48	1.05
2/13	2	.360	-.2	-.3	.9	2.4	.02	.03	.09	.23
3/ 1	1	.360	-1.6	-.9	2.1	3.2	.16	.09	.21	.32
3/ 2	1	.360	-1.1	-9.3	7.2	21.3	.11	.92	.72	2.13
3/ 3	1	.360	-1.8	-12.4	1.7	1.5	.18	1.23	.17	.15
3/ 4	1	.360	-1.1	-9.3	1.0	0.0	.11	.92	.10	0.00
3/ 5	1	.360	-2.2	-7.9	.5	0.0	.22	.78	.05	0.00
3/ 6	1	.360	-3.1	-8.2	.9	0.0	.30	.82	.09	0.00
3/ 7	1	.360	-3.8	-8.1	1.1	0.0	.37	.80	.11	0.00
3/ 8	1	.360	-4.1	-7.0	1.1	0.0	.40	.69	.11	0.00
3/ 9	1	.360	-3.2	-9.3	.5	0.0	.31	.92	.05	0.00
3/10	1	.360	-1.8	-13.7	0.0	7.1	.18	1.36	0.00	.71
3/11	1	.360	-3.0	-16.4	6.6	24.2	.30	1.63	.66	2.42
3/12	1	.360	-.2	0.0	5.0	13.6	.02	0.00	.49	1.34
3/13	2	.360	-.4	-.4	1.1	2.2	.03	.04	.11	.21
4/ 1	1	.360	-2.1	-.8	1.1	3.2	.21	.08	.11	.32
4/ 2	1	.360	-1.5	-9.4	5.4	20.1	.14	.93	.54	2.00
4/ 3	1	.360	-2.3	-12.2	1.7	1.3	.23	1.21	.17	.13
4/ 4	1	.360	-1.8	-8.9	.7	0.0	.17	.88	.07	0.00
4/ 5	1	.360	-1.7	-7.4	.1	0.0	.17	.73	.01	0.00
4/ 6	1	.360	-2.4	-7.7	0.0	0.0	.24	.76	0.00	0.00
4/ 7	1	.360	-3.0	-7.4	0.0	0.0	.30	.74	0.00	0.00
4/ 8	1	.360	-3.2	-7.1	0.0	0.0	.32	.70	0.00	0.00

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,Nl Bodenplatte des Beleungsbeckens

E = 50 000

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Beton B 25		BSt 500	nue 1.750	h' .040	phil-o 0.00	phi2-o 100.00	phil-u 0.00	phi2-u 100.00		
Pkt	E1	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
4/ 9	1	.360	-2.5	-10.2	0.0	0.0	.25	1.01	0.00	0.00
4/10	1	.360	-2.4	-14.3	.0	7.4	.24	1.42	.00	.74
4/11	1	.360	-2.9	-15.3	5.2	23.3	.29	1.52	.52	2.33
4/12	1	.360	-.0	-.1	3.9	14.3	.00	.01	.39	1.42
4/13	2	.360	-.2	-.3	1.1	2.3	.02	.03	.10	.22
5/ 1	1	.360	-2.0	-.4	0.0	2.8	.19	.04	0.00	.28
5/ 2	1	.360	-1.5	-9.4	4.9	20.8	.15	.93	.49	2.08
5/ 3	1	.360	-2.3	-11.9	1.7	1.3	.23	1.18	.17	.13
5/ 4	1	.360	-2.0	-8.7	.2	0.0	.20	.86	.02	0.00
5/ 5	1	.360	-1.5	-6.9	0.0	0.0	.15	.69	0.00	0.00
5/ 6	1	.360	-1.8	-7.2	0.0	0.0	.18	.71	0.00	0.00
5/ 7	1	.360	-2.3	-6.9	0.0	0.0	.23	.68	0.00	0.00
5/ 8	1	.360	-2.5	-7.2	0.0	0.0	.25	.71	0.00	0.00
5/ 9	1	.360	-2.3	-10.9	0.0	0.0	.23	1.08	0.00	0.00
5/10	1	.360	-2.9	-14.6	0.0	7.5	.29	1.45	0.00	.74
5/11	1	.360	-3.0	-14.5	3.9	22.2	.29	1.44	.39	2.22
5/12	1	.360	0.0	-.2	2.6	14.1	0.00	.02	.26	1.40
5/13	2	.360	-.2	-.2	.6	2.2	.02	.02	.06	.21
6/ 1	1	.360	-1.4	-1.6	1.7	2.1	.14	.16	.17	.21
6/ 2	1	.360	-1.5	-9.3	4.1	13.2	.15	.92	.41	1.30
6/ 3	1	.360	-2.1	-11.6	.3	1.2	.21	1.15	.03	.12
6/ 4	1	.360	-2.0	-8.5	.0	0.0	.20	.84	.00	0.00
6/ 5	1	.360	-1.6	-6.5	0.0	0.0	.16	.65	0.00	0.00
6/ 6	1	.360	-1.4	-6.8	0.0	0.0	.14	.67	0.00	0.00



Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

E + 50 000

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Beton B 25		BSt 500	nue 1.750	h' .040	phil-o 0.00	phi2-o 100.00	phil-u 0.00	phi2-u 100.00		
Pkt	E1	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
6/ 7 1		.360	-1.8	-6.4	0.0	0.0	.17	.63	0.00	0.00
6/ 8 1		.360	-2.0	-7.0	0.0	0.0	.20	.69	0.00	0.00
6/ 9 1		.360	-2.6	-11.2	0.0	0.0	.26	1.11	0.00	0.00
6/10 1		.360	-3.1	-14.8	0.0	7.4	.31	1.47	0.00	.74
6/11 1		.360	-3.0	-14.3	2.8	21.2	.30	1.42	.28	2.12
6/12 1		.360	0.0	-.2	1.8	13.6	0.00	.02	.18	1.36
6/13 2		.360	-.2	-.2	.3	2.0	.02	.02	.03	.20
7/ 1 1		.360	-1.7	-.1	.0	2.5	.17	.01	.00	.24
7/ 2 1		.360	-1.3	-9.3	4.4	19.6	.13	.92	.44	1.96
7/ 3 1		.360	-2.4	-11.9	1.8	1.4	.24	1.18	.17	.14
7/ 4 1		.360	-2.1	-8.7	.2	0.0	.21	.86	.02	0.00
7/ 5 1		.360	-1.5	-6.9	0.0	0.0	.15	.68	0.00	0.00
7/ 6 1		.360	-1.7	-7.2	0.0	0.0	.17	.71	0.00	0.00
7/ 7 1		.360	-2.3	-6.9	0.0	0.0	.22	.68	0.00	0.00
7/ 8 1		.360	-2.6	-7.1	0.0	0.0	.25	.71	0.00	0.00
7/ 9 1		.360	-2.3	-10.9	0.0	0.0	.23	1.08	0.00	0.00
7/10 1		.360	-2.9	-14.6	0.0	7.2	.29	1.46	0.00	.72
7/11 1		.360	-3.0	-14.6	3.0	21.6	.30	1.45	.30	2.15
7/12 1		.360	0.0	-.2	3.1	14.5	0.00	.02	.31	1.44
7/13 2		.360	-.2	-.1	.4	1.8	.02	.01	.03	.18
8/ 1 1		.360	-2.0	-.4	.3	2.9	.20	.04	.03	.28
8/ 2 1		.360	-1.2	-9.4	5.9	20.3	.12	.93	.59	2.03
8/ 3 1		.360	-2.4	-12.2	1.9	1.4	.24	1.21	.19	.14
8/ 4 1		.360	-1.8	-9.0	.7	0.0	.18	.89	.07	0.00

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

G = 50 000

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Beton B 25		BSt 500	nue 1.750	h' .040	phil-o 0.00	phi2-o 100.00	phil-u 0.00	phi2-u 100.00		
Pkt	El	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
8/ 5 1		.360	-1.6	-7.4	.0	0.0	.16	.73	.00	0.00
8/ 6 1		.360	-2.3	-7.7	0.0	0.0	.23	.76	0.00	0.00
8/ 7 1		.360	-3.0	-7.4	0.0	0.0	.29	.73	0.00	0.00
8/ 8 1		.360	-3.3	-7.1	0.0	0.0	.32	.70	0.00	0.00
8/ 9 1		.360	-2.8	-10.2	0.0	0.0	.27	1.01	0.00	0.00
8/10 1		.360	-2.4	-14.3	0.0	7.1	.24	1.42	0.00	.71
8/11 1		.360	-2.9	-15.3	4.2	22.7	.29	1.52	.42	2.27
8/12 1		.360	-.1	-.1	4.5	14.6	.01	.01	.45	1.45
8/13 2		.360	-.0	-.1	.6	2.0	.00	.01	.06	.20
9/ 1 1		.360	-1.6	-.4	1.0	2.9	.16	.04	.09	.29
9/ 2 1		.360	-1.2	-9.4	7.9	21.5	.12	.93	.79	2.15
9/ 3 1		.360	-1.8	-12.4	2.0	1.6	.18	1.23	.20	.16
9/ 4 1		.360	-1.1	-9.3	1.0	0.0	.11	.92	.10	0.00
9/ 5 1		.360	-2.1	-7.8	.5	0.0	.21	.77	.05	0.00
9/ 6 1		.360	-2.9	-8.2	.9	0.0	.29	.81	.09	0.00
9/ 7 1		.360	-3.7	-8.0	1.1	0.0	.36	.79	.11	0.00
9/ 8 1		.360	-4.1	-6.9	1.0	0.0	.41	.69	.10	0.00
9/ 9 1		.360	-3.5	-9.2	.4	0.0	.34	.92	.04	0.00
9/10 1		.360	-2.0	-13.6	0.0	6.9	.20	1.35	0.00	.69
9/11 1		.360	-3.2	-16.5	5.5	23.9	.31	1.64	.55	2.39
9/12 1		.360	-.4	0.0	5.8	13.8	.04	0.00	.57	1.37
9/13 2		.360	-.4	-.1	.7	2.0	.04	.01	.07	.20
10/ 1 1		.360	-.5	0.0	1.8	3.1	.05	0.00	.18	.31
10/ 2 1		.360	-.8	-8.2	10.1	22.4	.08	.81	1.01	2.24

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,Nl Bodenplatte des Belebungsbeckens

€ = 50 000

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Beton		BSt	nue	h'	phil-o	phi2-o	phil-u	phi2-u		
B 25		500	1.750	.040	0.00	100.00	0.00	100.00		
Pkt	E1	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
10/ 3	1	.360	-.6	-12.9	1.8	1.6	.06	1.28	.17	.16
10/ 4	1	.360	-1.3	-9.9	1.6	0.0	.13	.98	.16	0.00
10/ 5	1	.360	-2.5	-8.2	1.9	0.0	.25	.81	.19	0.00
10/ 6	1	.360	-3.4	-8.8	2.4	0.0	.34	.87	.24	0.00
10/ 7	1	.360	-4.3	-8.8	2.9	0.0	.42	.87	.29	0.00
10/ 8	1	.360	-4.9	-7.6	3.4	0.0	.48	.75	.33	0.00
10/ 9	1	.360	-4.2	-8.7	3.4	0.0	.41	.86	.34	0.00
10/10	1	.360	-2.0	-13.4	2.6	6.9	.19	1.33	.26	.68
10/11	1	.360	-3.8	-16.6	6.8	24.5	.38	1.65	.68	2.45
10/12	1	.360	-.2	0.0	4.7	10.6	.02	0.00	.46	1.05
10/13	2	.360	-1.6	-.1	.4	2.3	.16	.01	.04	.23
11/ 1	3	.360	-1.1	-1.4	1.3	1.2	.11	.14	.13	.12
11/ 2	3	.360	-.4	-7.1	10.0	22.0	.04	.71	1.00	2.20
11/ 3	3	.360	-1.1	-14.3	4.3	2.6	.11	1.42	.43	.26
11/ 4	3	.360	-1.0	-11.1	3.6	0.0	.10	1.10	.36	0.00
11/ 5	3	.360	-2.4	-8.5	3.3	0.0	.24	.84	.33	0.00
11/ 6	3	.360	-3.4	-9.3	3.2	0.0	.33	.93	.31	0.00
11/ 7	3	.360	-4.5	-9.6	4.1	0.0	.44	.95	.41	0.00
11/ 8	3	.360	-5.5	-8.7	4.4	0.0	.54	.87	.43	0.00
11/ 9	3	.360	-5.5	-8.1	5.6	1.5	.54	.80	.56	.15
11/10	3	.360	-2.8	-13.7	7.0	7.5	.28	1.36	.69	.74
11/11	3	.360	-7.0	-20.1	9.4	26.5	.70	2.01	.94	2.66
11/12	3	.360	-.2	0.0	8.3	11.0	.02	0.00	.82	1.09
11/13	4	.360	-.4	-.2	6.0	1.2	.04	.02	.59	.12

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

*E = 50 000*

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Beton		BSt	nue	h'	phi1-o	phi2-o	phi1-u	phi2-u		
B 25		500	1.750	.040	0.00	100.00	0.00	100.00		
Pkt	E1	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
1/12	2	.360	-12.7	-20.5	27.3	56.1	1.27	2.05	2.77	5.70
2/12	2	.360	-7.4	-19.4	20.4	52.0	.73	1.93	2.07	5.28
3/12	2	.360	-3.8	-12.7	15.9	48.0	.38	1.26	1.61	4.86
4/12	2	.360	-2.2	-8.1	12.3	44.6	.22	.80	1.24	4.51
5/12	2	.360	-1.5	-5.3	9.1	41.4	.15	.53	.92	4.19
6/12	2	.360	-1.4	-4.4	7.3	39.5	.14	.44	.74	4.00
7/12	2	.360	-1.5	-5.4	10.1	42.1	.15	.53	1.02	4.26
8/12	2	.360	-2.2	-8.2	13.3	45.1	.22	.81	1.35	4.57
9/12	2	.360	-3.9	-12.7	17.1	48.4	.39	1.26	1.73	4.90
10/12	2	.360	-6.5	-19.3	21.7	52.3	.65	1.92	2.21	5.30



Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

E = 50 000

## B E L A S T U N G S A N G A B E N L A S T F A L L 1

LAENG			QUER			L A S T W E R T E			
ART	VON	BIS	VON	BIS	ECK				
2	1	11	2	2	0	37.549988	0.000000	0.000000	0.000000
2	1	11	12	12	0	31.000000	0.000000	0.000000	0.000000

LASTSUMME 659.27

## B E L A S T U N G S A N G A B E N L A S T F A L L 2

LAENG			QUER			L A S T W E R T E			
ART	VON	BIS	VON	BIS	ECK				
3	1	1	12	12	0	0.000000	27.689987	11.469999	0.000000
3	2	2	12	12	0	0.000000	56.969986	18.509995	0.000000
3	3	3	12	12	0	0.000000	58.250000	13.980000	0.000000
3	4	4	12	12	0	0.000000	59.169998	9.370000	0.000000
3	5	5	12	12	0	0.000000	59.719986	4.700000	0.000000
3	6	6	12	12	0	0.000000	59.899994	0.000000	0.000000
3	7	7	12	12	0	0.000000	59.719986	-4.700000	0.000000
3	8	8	12	12	0	0.000000	59.169998	-9.370000	0.000000
3	9	9	12	12	0	0.000000	58.250000	-13.980000	0.000000
3	10	10	12	12	0	0.000000	56.969986	-18.509995	0.000000
3	11	11	12	12	0	0.000000	27.689987	-11.469999	0.000000

LASTSUMME 0.00

## B E L A S T U N G S A N G A B E N L A S T F A L L 2

LAENG			QUER			L A S T W E R T E			
ART	VON	BIS	VON	BIS	ECK				
3	1	1	12	12	0	0.000000	27.689987	11.469999	0.000000
3	2	2	12	12	0	0.000000	56.969986	18.509995	0.000000
3	3	3	12	12	0	0.000000	58.250000	13.980000	0.000000
3	4	4	12	12	0	0.000000	59.169998	9.370000	0.000000
3	5	5	12	12	0	0.000000	59.719986	4.700000	0.000000
3	6	6	12	12	0	0.000000	59.899994	0.000000	0.000000
3	7	7	12	12	0	0.000000	59.719986	-4.700000	0.000000
3	8	8	12	12	0	0.000000	59.169998	-9.370000	0.000000
3	9	9	12	12	0	0.000000	58.250000	-13.980000	0.000000
3	10	10	12	12	0	0.000000	56.969986	-18.509995	0.000000
3	11	11	12	12	0	0.000000	27.689987	-11.469999	0.000000
3	1	1	2	2	0	0.000000	-4.030000	-1.669999	0.000000

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

*E = 50000*

## B E L A S T U N G S A N G A B E N L A S T F A L L 3

LAENGS		QUER		ECK		L A S T W E R T E			
ART	VON	BIS	VON	BIS	ECK				
3	2	2	2	2	0	0.000000	-8.299999	-2.700000	0.000000
3	3	3	2	2	0	0.000000	-8.480000	-2.040000	0.000000
3	4	4	2	2	0	0.000000	-8.620000	-1.360000	0.000000
3	5	5	2	2	0	0.000000	-8.700000	-.680000	0.000000
3	7	7	2	2	0	0.000000	-8.700000	.680000	0.000000
3	8	8	2	2	0	0.000000	-8.620000	1.360000	0.000000
3	9	9	2	2	0	0.000000	-8.480000	2.040000	0.000000
3	10	10	2	2	0	0.000000	-8.299999	2.700000	0.000000
3	11	11	2	2	0	0.000000	-4.030000	1.669999	0.000000

LASTSUMME 0.00

## B E L A S T U N G S A N G A B E N L A S T F A L L 4

LAENGS		QUER		ECK		L A S T W E R T E			
ART	VON	BIS	VON	BIS	ECK				
1	1	10	1	12	0	35.000000	0.000000	0.000000	0.000000
3	1	1	12	12	0	0.000000	-17.199997	-7.120000	0.000000
3	2	2	12	12	0	0.000000	-35.389999	-11.500000	0.000000
3	3	3	12	12	0	0.000000	-36.179993	-8.690000	0.000000
3	4	4	12	12	0	0.000000	-36.750000	-5.820000	0.000000
3	5	5	12	12	0	0.000000	-37.099991	-2.919999	0.000000
3	6	6	12	12	0	0.000000	-37.209991	0.000000	0.000000
3	7	7	12	12	0	0.000000	-37.099991	2.919999	0.000000
3	8	8	12	12	0	0.000000	-36.750000	5.820000	0.000000
3	9	9	12	12	0	0.000000	-36.179993	8.690000	0.000000
3	10	10	12	12	0	0.000000	-35.389999	11.500000	0.000000
3	11	11	12	12	0	0.000000	-17.199997	7.120000	0.000000
3	1	1	2	2	0	0.000000	6.790000	2.820000	0.000000
3	2	2	2	2	0	0.000000	14.000000	4.549999	0.000000
3	3	3	2	2	0	0.000000	14.309999	3.440000	0.000000
3	4	4	2	2	0	0.000000	14.530000	2.030000	0.000000
3	5	5	2	2	0	0.000000	14.669999	1.150000	0.000000
3	6	6	2	2	0	0.000000	14.709999	0.000000	0.000000
3	7	7	2	2	0	0.000000	14.669999	-1.150000	0.000000
3	8	8	2	2	0	0.000000	14.530000	-2.030000	0.000000
3	9	9	2	2	0	0.000000	14.309999	-3.440000	0.000000
3	10	10	2	2	0	0.000000	14.000000	-4.549999	0.000000
3	11	11	2	2	0	0.000000	6.790000	-2.820000	0.000000

LASTSUMME 3835.49

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

ELEMENTTEILUNG 10 QUER-STREIFEN 12 LAENGST-STREIFEN

E-M O D U L = .3000E 08 Q U E R D E H N U N G S Z A H L = .1670

## E L E M E N T - T Y P E N T A B E L L E

NR	X1	Y1	T	ALFA	BETA	PHI	X2	Y2
1	.565	.800	.400	102.5	102.5	22.5	.628	.800
2	.628	.940	.400	102.5	102.5	22.5	.702	.940
3	.702	.940	.400	102.5	102.5	22.5	.776	.940
4	.776	.940	.400	102.5	102.5	22.5	.850	.940
5	.849	.940	.400	102.5	102.5	22.5	.923	.940
6	.923	.940	.400	102.5	102.5	22.5	.997	.940
7	.997	.940	.400	102.5	102.5	22.5	1.071	.940
8	1.071	.940	.400	102.5	102.5	22.5	1.145	.940
9	1.145	.940	.400	102.5	102.5	22.5	1.219	.940
10	1.218	.940	.400	102.5	102.5	22.5	1.292	.940
11	1.292	.940	.400	102.5	102.5	22.5	1.366	.940
12	1.366	.800	.400	102.5	102.5	22.5	1.429	.800
13	.565	.800	.400	102.5	102.5	17.5	.628	.800
14	.628	.940	.400	102.5	102.5	17.5	.702	.940
15	.702	.940	.400	102.5	102.5	17.5	.776	.940
16	.776	.940	.400	102.5	102.5	17.5	.850	.940
17	.849	.940	.400	102.5	102.5	17.5	.923	.940
18	.923	.940	.400	102.5	102.5	17.5	.997	.940
19	.997	.940	.400	102.5	102.5	17.5	1.071	.940
20	1.071	.940	.400	102.5	102.5	17.5	1.145	.940
21	1.145	.940	.400	102.5	102.5	17.5	1.219	.940
22	1.218	.940	.400	102.5	102.5	17.5	1.292	.940
23	1.292	.940	.400	102.5	102.5	17.5	1.366	.940
24	1.366	.800	.400	102.5	102.5	17.5	1.429	.800
25	.565	.800	.400	102.5	102.5	12.5	.628	.800
26	.628	.940	.400	102.5	102.5	12.5	.702	.940
27	.702	.940	.400	102.5	102.5	12.5	.776	.940
28	.776	.940	.400	102.5	102.5	12.5	.850	.940
29	.849	.940	.400	102.5	102.5	12.5	.923	.940
30	.923	.940	.400	102.5	102.5	12.5	.997	.940
31	.997	.940	.400	102.5	102.5	12.5	1.071	.940
32	1.071	.940	.400	102.5	102.5	12.5	1.145	.940
33	1.145	.940	.400	102.5	102.5	12.5	1.219	.940
34	1.218	.940	.400	102.5	102.5	12.5	1.292	.940
35	1.292	.940	.400	102.5	102.5	12.5	1.366	.940
36	1.366	.800	.400	102.5	102.5	12.5	1.429	.800

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

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## E L E M E N T - T Y P E N T A B E L L E

NR	X1	Y1	T	ALFA	BETA	PHI	X2	Y2
37	.565	.800	.400	102.5	102.5	7.5	.628	.800
38	.628	.940	.400	102.5	102.5	7.5	.702	.940
39	.702	.940	.400	102.5	102.5	7.5	.776	.940
40	.776	.940	.400	102.5	102.5	7.5	.850	.940
41	.849	.940	.400	102.5	102.5	7.5	.923	.940
42	.923	.940	.400	102.5	102.5	7.5	.997	.940
43	.997	.940	.400	102.5	102.5	7.5	1.071	.940
44	1.071	.940	.400	102.5	102.5	7.5	1.145	.940
45	1.145	.940	.400	102.5	102.5	7.5	1.219	.940
46	1.218	.940	.400	102.5	102.5	7.5	1.292	.940
47	1.292	.940	.400	102.5	102.5	7.5	1.366	.940
48	1.366	.800	.400	102.5	102.5	7.5	1.429	.800
49	.565	.800	.400	102.5	102.5	2.5	.628	.800
50	.628	.940	.400	102.5	102.5	2.5	.702	.940
51	.702	.940	.400	102.5	102.5	2.5	.776	.940
52	.776	.940	.400	102.5	102.5	2.5	.850	.940
53	.849	.940	.400	102.5	102.5	2.5	.923	.940
54	.923	.940	.400	102.5	102.5	2.5	.997	.940
55	.997	.940	.400	102.5	102.5	2.5	1.071	.940
56	1.071	.940	.400	102.5	102.5	2.5	1.145	.940
57	1.145	.940	.400	102.5	102.5	2.5	1.219	.940
58	1.218	.940	.400	102.5	102.5	2.5	1.292	.940
59	1.292	.940	.400	102.5	102.5	2.5	1.366	.940
60	1.366	.800	.400	102.5	102.5	2.5	1.429	.800
61	.565	.800	.400	102.5	102.5	-2.5	.628	.800
62	.628	.940	.400	102.5	102.5	-2.5	.702	.940
63	.702	.940	.400	102.5	102.5	-2.5	.776	.940
64	.776	.940	.400	102.5	102.5	-2.5	.850	.940
65	.849	.940	.400	102.5	102.5	-2.5	.923	.940
66	.923	.940	.400	102.5	102.5	-2.5	.997	.940
67	.997	.940	.400	102.5	102.5	-2.5	1.071	.940
68	1.071	.940	.400	102.5	102.5	-2.5	1.145	.940
69	1.145	.940	.400	102.5	102.5	-2.5	1.219	.940
70	1.218	.940	.400	102.5	102.5	-2.5	1.292	.940
71	1.292	.940	.400	102.5	102.5	-2.5	1.366	.940
72	1.366	.800	.400	102.5	102.5	-2.5	1.429	.800
73	.565	.800	.400	102.5	102.5	-7.5	.628	.800
74	.628	.940	.400	102.5	102.5	-7.5	.702	.940
75	.702	.940	.400	102.5	102.5	-7.5	.776	.940
76	.776	.940	.400	102.5	102.5	-7.5	.850	.940
77	.849	.940	.400	102.5	102.5	-7.5	.923	.940
78	.923	.940	.400	102.5	102.5	-7.5	.997	.940
79	.997	.940	.400	102.5	102.5	-7.5	1.071	.940
80	1.071	.940	.400	102.5	102.5	-7.5	1.145	.940
81	1.145	.940	.400	102.5	102.5	-7.5	1.219	.940



Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

## E L E M E N T - T Y P E N T A B E L L E

NR	X1	Y1	T	ALFA	BETA	PHI	X2	Y2
82	1.218	.940	.400	102.5	102.5	-7.5	1.292	.940
83	1.292	.940	.400	102.5	102.5	-7.5	1.366	.940
84	1.366	.800	.400	102.5	102.5	-7.5	1.429	.800
85	.565	.800	.400	102.5	102.5	-12.5	.628	.800
86	.628	.940	.400	102.5	102.5	-12.5	.702	.940
87	.702	.940	.400	102.5	102.5	-12.5	.776	.940
88	.776	.940	.400	102.5	102.5	-12.5	.850	.940
89	.849	.940	.400	102.5	102.5	-12.5	.923	.940
90	.923	.940	.400	102.5	102.5	-12.5	.997	.940
91	.997	.940	.400	102.5	102.5	-12.5	1.071	.940
92	1.071	.940	.400	102.5	102.5	-12.5	1.145	.940
93	1.145	.940	.400	102.5	102.5	-12.5	1.219	.940
94	1.218	.940	.400	102.5	102.5	-12.5	1.292	.940
95	1.292	.940	.400	102.5	102.5	-12.5	1.366	.940
96	1.366	.800	.400	102.5	102.5	-12.5	1.429	.800
97	.565	.800	.400	102.5	102.5	-17.5	.628	.800
98	.628	.940	.400	102.5	102.5	-17.5	.702	.940
99	.702	.940	.400	102.5	102.5	-17.5	.776	.940
100	.776	.940	.400	102.5	102.5	-17.5	.850	.940
101	.849	.940	.400	102.5	102.5	-17.5	.923	.940
102	.923	.940	.400	102.5	102.5	-17.5	.997	.940
103	.997	.940	.400	102.5	102.5	-17.5	1.071	.940
104	1.071	.940	.400	102.5	102.5	-17.5	1.145	.940
105	1.145	.940	.400	102.5	102.5	-17.5	1.219	.940
106	1.218	.940	.400	102.5	102.5	-17.5	1.292	.940
107	1.292	.940	.400	102.5	102.5	-17.5	1.366	.940
108	1.366	.800	.400	102.5	102.5	-17.5	1.429	.800
109	.565	.800	.400	102.5	102.5	-22.5	.628	.800
110	.628	.940	.400	102.5	102.5	-22.5	.702	.940
111	.702	.940	.400	102.5	102.5	-22.5	.776	.940
112	.776	.940	.400	102.5	102.5	-22.5	.850	.940
113	.849	.940	.400	102.5	102.5	-22.5	.923	.940
114	.923	.940	.400	102.5	102.5	-22.5	.997	.940
115	.997	.940	.400	102.5	102.5	-22.5	1.071	.940
116	1.071	.940	.400	102.5	102.5	-22.5	1.145	.940
117	1.145	.940	.400	102.5	102.5	-22.5	1.219	.940
118	1.218	.940	.400	102.5	102.5	-22.5	1.292	.940
119	1.292	.940	.400	102.5	102.5	-22.5	1.366	.940
120	1.366	.800	.400	102.5	102.5	-22.5	1.429	.800

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

## BODENKENNWERTE DES ISOTROPEN HALBRAUMES UNTER DER PLATTE

ELEMENT-TYP	VON/BIS	E	NY	T
	1 120	5000.0	3.000	10.000

## ELASTISCHE AUFLAGERUNGEN BZW. EINSpanNUNGEN

LAENGs(X)		QUER(Y)		FEDERKONSTANTEN			
VON	BIS	VON	BIS	C-AZ	C-MX	C-MY	EINSP.WINKEL

## B A L K E N E L E M E N T E

ACHSE	VON	BIS		MITW.B	D-PLATTE	B-TR	HTR	JT
2	1	11	X-RICHTUNG	.400	.400	.400	2.900	.0001
12	1	11	X-RICHTUNG	.400	.400	.400	2.900	.0001

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

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## ANORDNUNG DER ELEMENTE

	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	13	14	15	16	17	18	19	20	21	22	23	24
3	25	26	27	28	29	30	31	32	33	34	35	36
4	37	38	39	40	41	42	43	44	45	46	47	48
5	49	50	51	52	53	54	55	56	57	58	59	60
6	61	62	63	64	65	66	67	68	69	70	71	72
7	73	74	75	76	77	78	79	80	81	82	83	84
8	85	86	87	88	89	90	91	92	93	94	95	96
9	97	98	99	100	101	102	103	104	105	106	107	108
10	109	110	111	112	113	114	115	116	117	118	119	120

ANZAHL DER GLEICHUNGEN 429 BANDBREITE 39

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

## B E L A S T U N G S A N G A B E N L A S T F A L L 1

LAENGS			QUER			L A S T W E R T E			
ART	VON	BIS	VON	BIS	ECK				
2	1	11	2	2	0	37.549988	0.000000	0.000000	0.000000
2	1	11	12	12	0	31.000000	0.000000	0.000000	0.000000

LASTSUMME 659.27

## B E L A S T U N G S A N G A B E N L A S T F A L L 2

LAENGS			QUER			L A S T W E R T E			
ART	VON	BIS	VON	BIS	ECK				
3	1	1	12	12	0	0.000000	27.689987	11.469999	0.000000
3	2	2	12	12	0	0.000000	56.969986	18.509995	0.000000
3	3	3	12	12	0	0.000000	58.250000	13.980000	0.000000
3	4	4	12	12	0	0.000000	59.169998	9.370000	0.000000
3	5	5	12	12	0	0.000000	59.719986	4.700000	0.000000
3	6	6	12	12	0	0.000000	59.899994	0.000000	0.000000
3	7	7	12	12	0	0.000000	59.719986	-4.700000	0.000000
3	8	8	12	12	0	0.000000	59.169998	-9.370000	0.000000
3	9	9	12	12	0	0.000000	58.250000	-13.980000	0.000000
3	10	10	12	12	0	0.000000	56.969986	-18.509995	0.000000
3	11	11	12	12	0	0.000000	27.689987	-11.469999	0.000000

LASTSUMME 0.00

## B E L A S T U N G S A N G A B E N L A S T F A L L 2

LAENGS			QUER			L A S T W E R T E			
ART	VON	BIS	VON	BIS	ECK				
3	1	1	12	12	0	0.000000	27.689987	11.469999	0.000000
3	2	2	12	12	0	0.000000	56.969986	18.509995	0.000000
3	3	3	12	12	0	0.000000	58.250000	13.980000	0.000000
3	4	4	12	12	0	0.000000	59.169998	9.370000	0.000000
3	5	5	12	12	0	0.000000	59.719986	4.700000	0.000000
3	6	6	12	12	0	0.000000	59.899994	0.000000	0.000000
3	7	7	12	12	0	0.000000	59.719986	-4.700000	0.000000
3	8	8	12	12	0	0.000000	59.169998	-9.370000	0.000000
3	9	9	12	12	0	0.000000	58.250000	-13.980000	0.000000
3	10	10	12	12	0	0.000000	56.969986	-18.509995	0.000000
3	11	11	12	12	0	0.000000	27.689987	-11.469999	0.000000
3	1	1	2	2	0	0.000000	-4.030000	-1.669999	0.000000

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

## B E L A S T U N G S A N G A B E N L A S T F A L L 3

LAENG		QUER		ECK		L A S T W E R T E			
ART	VON	BIS	VON	BIS	ECK				
3	2	2	2	2	0	0.000000	-8.299999	-2.700000	0.000000
3	3	3	2	2	0	0.000000	-8.480000	-2.040000	0.000000
3	4	4	2	2	0	0.000000	-8.620000	-1.360000	0.000000
3	5	5	2	2	0	0.000000	-8.700000	-.680000	0.000000
3	7	7	2	2	0	0.000000	-8.700000	.680000	0.000000
3	8	8	2	2	0	0.000000	-8.620000	1.360000	0.000000
3	9	9	2	2	0	0.000000	-8.480000	2.040000	0.000000
3	10	10	2	2	0	0.000000	-8.299999	2.700000	0.000000
3	11	11	2	2	0	0.000000	-4.030000	1.669999	0.000000

LASTSUMME 0.00

## B E L A S T U N G S A N G A B E N L A S T F A L L 4

LAENG		QUER		ECK		L A S T W E R T E			
ART	VON	BIS	VON	BIS	ECK				
1	1	10	2	11	0	35.000000	0.000000	0.000000	0.000000
1	1	10	12	12	0	43.750000	0.000000	0.000000	0.000000
3	1	1	12	12	0	0.000000	-17.199997	-7.120000	0.000000
3	2	2	12	12	0	0.000000	-35.389999	-11.500000	0.000000
3	3	3	12	12	0	0.000000	-36.179993	-8.690000	0.000000
3	4	4	12	12	0	0.000000	-36.750000	-5.820000	0.000000
3	5	5	12	12	0	0.000000	-37.099991	-2.919999	0.000000
3	6	6	12	12	0	0.000000	-37.209991	0.000000	0.000000
3	7	7	12	12	0	0.000000	-37.099991	2.919999	0.000000
3	8	8	12	12	0	0.000000	-36.750000	5.820000	0.000000
3	9	9	12	12	0	0.000000	-36.179993	8.690000	0.000000
3	10	10	12	12	0	0.000000	-35.389999	11.500000	0.000000
3	11	11	12	12	0	0.000000	-17.199997	7.120000	0.000000
3	1	1	2	2	0	0.000000	6.790000	2.820000	0.000000
3	2	2	2	2	0	0.000000	14.000000	4.549999	0.000000
3	3	3	2	2	0	0.000000	14.309999	3.440000	0.000000
3	4	4	2	2	0	0.000000	14.530000	2.030000	0.000000
3	5	5	2	2	0	0.000000	14.669999	1.150000	0.000000
3	6	6	2	2	0	0.000000	14.709999	0.000000	0.000000
3	7	7	2	2	0	0.000000	14.669999	-1.150000	0.000000
3	8	8	2	2	0	0.000000	14.530000	-2.030000	0.000000
3	9	9	2	2	0	0.000000	14.309999	-3.440000	0.000000
3	10	10	2	2	0	0.000000	14.000000	-4.549999	0.000000
3	11	11	2	2	0	0.000000	6.790000	-2.820000	0.000000

LASTSUMME 3766.37

Bauverhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

E = 5000

BEMESSUNGSMOMENTE UND BEMESSUNG NACH "BAUMANN"

Beton		BSt	nue	h'	phil-o	phi2-o	phil-u	phi2-u		
B 25		500	1.750	.040	0.00	100.00	0.00	100.00		
Pkt	El	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
1/ 1 1		.360	-2.4	-6.0	1.8	0.0	.24	.59	.18	0.00
1/ 2 1		.360	-.8	-7.8	19.3	25.4	.08	.77	1.93	2.54
1/ 3 1		.360	-.2	-19.3	10.8	0.0	.02	1.93	1.07	0.00
1/ 4 1		.360	-1.5	-25.7	8.4	0.0	.15	2.59	.84	0.00
1/ 5 1		.360	-5.6	-33.3	6.2	0.0	.57	3.37	.62	0.00
1/ 6 1		.360	-8.0	-36.9	7.7	0.0	.81	3.74	.78	0.00
1/ 7 1		.360	-8.9	-37.9	9.2	0.0	.89	3.84	.93	0.00
1/ 8 1		.360	-8.2	-40.4	10.6	0.0	.82	4.10	1.08	0.00
1/ 9 1		.360	-5.4	-43.5	11.6	1.1	.53	4.42	1.17	.11
1/10 1		.360	-6.0	-43.5	11.8	11.2	.61	4.42	1.19	1.11
1/11 1		.360	-12.6	-40.1	13.5	32.7	1.28	4.06	1.36	3.30
1/12 1		.360	-.5	-4.0	8.4	4.8	.05	.40	.83	.47
1/13 2		.360	-.4	-.8	9.6	1.7	.04	.08	.95	.17
2/ 1 1		.360	0.0	-2.5	5.3	1.4	0.00	.25	.53	.14
2/ 2 1		.360	-2.0	-11.5	13.8	22.9	.20	1.14	1.37	2.29
2/ 3 1		.360	0.0	-17.6	8.2	0.0	0.00	1.75	.82	0.00
2/ 4 1		.360	-2.6	-25.3	6.4	0.0	.26	2.54	.64	0.00
2/ 5 1		.360	-6.3	-32.4	5.0	0.0	.63	3.28	.51	0.00
2/ 6 1		.360	-8.2	-35.8	6.3	0.0	.82	3.62	.63	0.00
2/ 7 1		.360	-8.6	-36.6	6.7	0.0	.86	3.69	.67	0.00
2/ 8 1		.360	-7.2	-39.8	6.7	0.0	.71	4.04	.68	0.00
2/ 9 1		.360	-5.3	-42.1	5.8	0.0	.54	4.28	.58	0.00
2/10 1		.360	-7.0	-40.7	3.6	11.7	.71	4.11	.36	1.16



Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

F = 5000

Beton B 25		BSt 500	nue 1.750	h' .040	phil-o 0.00	phi2-o 100.00	phil-u 0.00	phi2-u 100.00		
Pkt	El	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
2/11	1	.360	-6.6	-33.9	11.1	30.4	.66	3.41	1.11	3.05
2/12	1	.360	-.8	-.1	5.2	5.8	.08	.01	.51	.58
2/13	2	.360	-1.4	-1.8	2.6	3.4	.14	.18	.25	.34
3/ 1	1	.360	-1.8	-4.8	5.1	2.1	.18	.47	.51	.21
3/ 2	1	.360	-2.8	-12.5	8.8	20.7	.27	1.24	.88	2.07
3/ 3	1	.360	0.0	-16.3	5.2	0.0	0.00	1.63	.52	0.00
3/ 4	1	.360	-2.7	-24.6	3.8	0.0	.27	2.48	.38	0.00
3/ 5	1	.360	-6.0	-31.5	2.8	0.0	.60	3.17	.28	0.00
3/ 6	1	.360	-7.7	-34.8	3.2	0.0	.77	3.50	.33	0.00
3/ 7	1	.360	-7.9	-35.0	2.8	0.0	.79	3.54	.29	0.00
3/ 8	1	.360	-6.5	-39.3	1.8	0.0	.64	3.97	.18	0.00
3/ 9	1	.360	-6.0	-41.2	.3	0.0	.61	4.16	.03	0.00
3/10	1	.360	-6.3	-39.2	1.9	11.5	.64	3.96	.19	1.14
3/11	1	.360	-5.3	-32.1	9.2	30.2	.54	3.23	.92	3.02
3/12	1	.360	-1.4	0.0	6.1	10.3	.14	0.00	.61	1.02
3/13	2	.360	-1.1	-1.9	3.6	3.6	.10	.19	.36	.35
4/ 1	1	.360	-4.4	-4.4	2.8	2.6	.44	.43	.27	.26
4/ 2	1	.360	-2.8	-11.5	6.1	19.1	.28	1.14	.61	1.90
4/ 3	1	.360	-.9	-15.3	2.8	0.0	.09	1.53	.28	0.00
4/ 4	1	.360	-2.5	-24.2	1.3	0.0	.25	2.44	.13	0.00
4/ 5	1	.360	-5.3	-30.8	.5	0.0	.53	3.09	.05	0.00
4/ 6	1	.360	-6.9	-33.9	.2	0.0	.69	3.41	.02	0.00
4/ 7	1	.360	-7.1	-34.9	0.0	0.0	.71	3.52	0.00	0.00
4/ 8	1	.360	-6.0	-39.3	0.0	0.0	.60	3.97	0.00	0.00

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

E = 5000

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Beton B 25		BSt 500	nue 1.750	h' .040	phil-o 0.00	phi2-o 100.00	phil-u 0.00	phi2-u 100.00		
Pkt	E1	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
4/ 9	1	.360	-6.7	-41.0	0.0	0.0	.67	4.15	0.00	0.00
4/10	1	.360	-6.6	-38.7	.9	11.3	.66	3.91	.09	1.12
4/11	1	.360	-5.0	-29.9	7.0	29.3	.50	3.01	.70	2.94
4/12	1	.360	-1.3	0.0	4.8	11.4	.13	0.00	.48	1.13
4/13	2	.360	-.8	-1.4	3.1	3.6	.08	.14	.31	.36
5/ 1	1	.360	-4.5	-2.4	0.0	1.8	.45	.24	0.00	.18
5/ 2	1	.360	-2.3	-10.2	4.4	18.9	.22	1.01	.43	1.88
5/ 3	1	.360	-1.2	-14.4	1.2	0.0	.12	1.44	.12	0.00
5/ 4	1	.360	-2.3	-24.0	0.0	0.0	.23	2.41	0.00	0.00
5/ 5	1	.360	-4.6	-30.1	0.0	0.0	.46	3.02	0.00	0.00
5/ 6	1	.360	-6.0	-33.1	0.0	0.0	.60	3.33	0.00	0.00
5/ 7	1	.360	-6.4	-34.8	0.0	0.0	.63	3.51	0.00	0.00
5/ 8	1	.360	-6.3	-39.2	0.0	0.0	.64	3.97	0.00	0.00
5/ 9	1	.360	-7.2	-41.0	0.0	0.0	.73	4.15	0.00	0.00
5/10	1	.360	-7.0	-38.2	0.0	10.8	.71	3.86	0.00	1.07
5/11	1	.360	-5.4	-28.9	4.8	28.1	.54	2.90	.48	2.81
5/12	1	.360	-.4	0.0	2.8	11.2	.04	0.00	.28	1.11
5/13	2	.360	-.3	-.7	2.1	3.4	.03	.07	.20	.33
6/ 1	1	.360	-3.3	-1.8	1.1	.2	.32	.17	.11	.02
6/ 2	1	.360	-1.4	-9.2	3.8	11.5	.14	.91	.38	1.14
6/ 3	1	.360	-1.0	-13.9	.4	0.0	.10	1.38	.04	0.00
6/ 4	1	.360	-2.0	-24.0	0.0	0.0	.20	2.40	0.00	0.00
6/ 5	1	.360	-3.7	-29.5	0.0	0.0	.37	2.97	0.00	0.00
6/ 6	1	.360	-5.0	-32.2	0.0	0.0	.50	3.25	0.00	0.00



Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

E = 5000

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Beton B 25		BSt 500	nue 1.750	h' .040	phil-o 0.00	phi2-o 100.00	phil-u 0.00	phi2-u 100.00		
Pkt	El	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
6/ 7	1	.360	-5.6	-34.3	0.0	0.0	.56	3.46	0.00	0.00
6/ 8	1	.360	-6.3	-38.8	0.0	0.0	.63	3.92	0.00	0.00
6/ 9	1	.360	-7.2	-40.7	0.0	0.0	.73	4.12	0.00	0.00
6/10	1	.360	-7.3	-38.1	0.0	10.1	.74	3.86	0.00	1.00
6/11	1	.360	-5.8	-28.6	2.8	26.5	.58	2.87	.28	2.65
6/12	1	.360	0.0	0.0	1.2	10.1	0.00	0.00	.12	1.00
6/13	2	.360	0.0	-.2	.9	2.4	0.00	.02	.09	.24
7/ 1	1	.360	-4.4	-2.3	0.0	1.5	.43	.22	0.00	.14
7/ 2	1	.360	-1.9	-10.1	4.7	18.4	.19	1.00	.47	1.83
7/ 3	1	.360	-1.2	-14.7	1.5	0.0	.12	1.47	.15	0.00
7/ 4	1	.360	-2.0	-24.0	0.0	0.0	.20	2.40	0.00	0.00
7/ 5	1	.360	-4.4	-29.9	0.0	0.0	.44	3.01	0.00	0.00
7/ 6	1	.360	-5.9	-33.0	0.0	0.0	.59	3.32	0.00	0.00
7/ 7	1	.360	-6.5	-34.8	0.0	0.0	.65	3.51	0.00	0.00
7/ 8	1	.360	-6.5	-39.3	0.0	0.0	.66	3.97	0.00	0.00
7/ 9	1	.360	-7.5	-41.2	0.0	0.0	.76	4.17	0.00	0.00
7/10	1	.360	-7.3	-38.5	0.0	10.3	.73	3.89	0.00	1.02
7/11	1	.360	-5.7	-29.0	3.9	27.4	.57	2.91	.39	2.75
7/12	1	.360	-.4	0.0	3.3	11.5	.04	0.00	.33	1.14
7/13	2	.360	-.1	-.5	1.7	3.0	.01	.05	.17	.30
8/ 1	1	.360	-4.5	-4.0	1.8	2.2	.45	.40	.18	.21
8/ 2	1	.360	-1.9	-10.9	6.7	19.3	.19	1.08	.67	1.92
8/ 3	1	.360	-1.0	-15.7	3.1	0.0	.10	1.57	.31	0.00
8/ 4	1	.360	-2.2	-24.1	1.5	0.0	.22	2.42	.15	0.00

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

 $\epsilon = 5000$ 

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Beton B 25		BSt 500	nue 1.750	h' .040	phil-o 0.00	phi2-o 100.00	phil-u 0.00	phi2-u 100.00		
Pkt	E1	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
8/ 5 1		.360	-5.2	-30.6	.6	0.0	.51	3.08	.07	0.00
8/ 6 1		.360	-6.8	-33.8	.0	0.0	.68	3.40	.00	0.00
8/ 7 1		.360	-7.3	-34.9	0.0	0.0	.72	3.52	0.00	0.00
8/ 8 1		.360	-6.4	-39.4	0.0	0.0	.63	3.98	0.00	0.00
8/ 9 1		.360	-6.8	-41.1	0.0	0.0	.69	4.16	0.00	0.00
8/10 1		.360	-6.7	-38.8	.1	10.9	.68	3.92	.01	1.08
8/11 1		.360	-5.4	-30.1	6.0	28.8	.55	3.03	.60	2.89
8/12 1		.360	-1.1	0.0	5.5	11.6	.11	0.00	.54	1.15
8/13 2		.360	-.3	-1.1	3.1	3.5	.03	.11	.30	.34
9/ 1 1		.360	-2.3	-4.0	3.5	1.8	.22	.39	.35	.18
9/ 2 1		.360	-1.4	-10.9	9.4	20.9	.14	1.08	.94	2.08
9/ 3 1		.360	0.0	-16.9	5.5	0.0	0.00	1.69	.55	0.00
9/ 4 1		.360	-2.4	-24.5	3.8	0.0	.24	2.47	.38	0.00
9/ 5 1		.360	-5.8	-31.5	3.1	0.0	.58	3.18	.31	0.00
9/ 6 1		.360	-7.6	-34.7	3.1	0.0	.76	3.50	.31	0.00
9/ 7 1		.360	-7.9	-34.9	2.7	0.0	.79	3.53	.28	0.00
9/ 8 1		.360	-6.8	-39.3	1.6	0.0	.67	3.97	.16	0.00
9/ 9 1		.360	-6.2	-41.1	.1	0.0	.62	4.16	.01	0.00
9/10 1		.360	-6.3	-39.2	1.1	11.2	.64	3.96	.11	1.11
9/11 1		.360	-5.9	-32.3	8.2	29.8	.59	3.25	.82	2.99
9/12 1		.360	-1.0	0.0	7.1	10.4	.10	0.00	.70	1.03
9/13 2		.360	-.5	-1.5	3.5	3.5	.05	.15	.35	.34
10/ 1 1		.360	0.0	-2.3	4.8	1.4	0.00	.22	.47	.14
10/ 2 1		.360	-.6	-9.3	13.7	23.0	.06	.92	1.36	2.30

Bauvorhaben: Kllaeranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

E = 5000

=====

Beton		BSt	nue	h'	phil-o	phi2-o	phil-u	phi2-u		
B 25		500	1.750	.040	0.00	100.00	0.00	100.00		
Pkt	El	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
10/ 3	1	.360	0.0	-17.6	7.7	0.0	0.00	1.76	.77	0.00
10/ 4	1	.360	-2.5	-25.2	6.5	0.0	.25	2.54	.65	0.00
10/ 5	1	.360	-6.1	-32.4	5.5	0.0	.61	3.28	.55	0.00
10/ 6	1	.360	-8.0	-35.8	6.2	0.0	.80	3.62	.62	0.00
10/ 7	1	.360	-8.4	-36.6	6.7	0.0	.84	3.69	.68	0.00
10/ 8	1	.360	-7.2	-39.8	6.5	0.0	.71	4.04	.66	0.00
10/ 9	1	.360	-4.8	-42.1	5.6	0.0	.49	4.28	.57	0.00
10/10	1	.360	-6.0	-40.7	3.9	11.6	.60	4.11	.40	1.15
10/11	1	.360	-7.5	-34.0	10.0	30.1	.75	3.42	1.00	3.02
10/12	1	.360	-.2	-.1	5.1	5.8	.02	.01	.50	.58
10/13	2	.360	-3.4	-1.5	1.3	3.3	.34	.15	.13	.33
11/ 1	3	.360	-2.3	-5.7	1.8	0.0	.23	.57	.18	0.00
11/ 2	3	.360	-.8	-7.7	19.3	25.4	.08	.77	1.93	2.54
11/ 3	3	.360	-.2	-19.3	10.7	0.0	.02	1.93	1.07	0.00
11/ 4	3	.360	-1.5	-25.7	8.3	0.0	.15	2.59	.83	0.00
11/ 5	3	.360	-5.7	-33.3	6.2	0.0	.57	3.37	.62	0.00
11/ 6	3	.360	-8.1	-36.9	7.8	0.0	.81	3.74	.79	0.00
11/ 7	3	.360	-9.0	-37.9	9.2	0.0	.90	3.84	.93	0.00
11/ 8	3	.360	-8.2	-40.4	10.7	0.0	.82	4.10	1.08	0.00
11/ 9	3	.360	-5.4	-43.5	11.6	1.1	.53	4.41	1.18	.11
11/10	3	.360	-6.0	-43.4	11.6	11.2	.61	4.41	1.18	1.11
11/11	3	.360	-12.6	-39.8	13.6	32.8	1.28	4.03	1.37	3.30
11/12	3	.360	-.5	-4.1	8.4	4.7	.04	.41	.83	.47
11/13	4	.360	-.4	-.9	9.7	1.7	.04	.09	.96	.17

Bauvorhaben: Klaieranlage in Markt Indersdorf

Pos. 5,N1 Bodenplatte des Belebungsbeckens

*E = 5000*

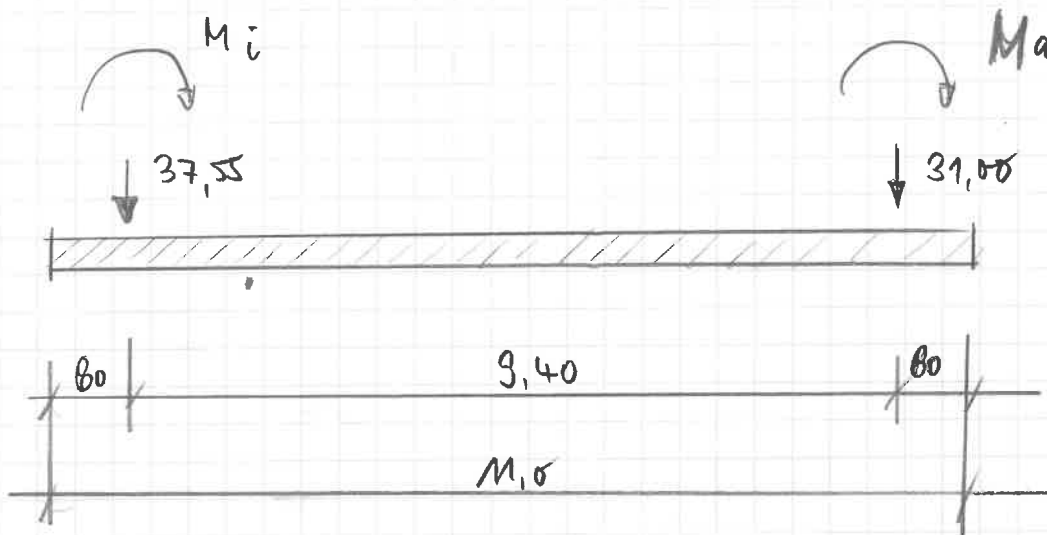
=====

Beton		BSt	nue	h'	phil-o	phi2-o	phil-u	phi2-u		
B 25		500	1.750	.040	0.00	100.00	0.00	100.00		
Pkt	El	h	M1-o	M2-o	M1-u	M2-u	As1-o	As2-o	As1-u	As2-u
<u>1/12</u>	2	.360	-15.1	-27.1	27.5	54.9	1.51	2.71	2.79	5.58
<u>2/12</u>	2	.360	-7.3	-24.7	21.4	53.8	.73	2.47	2.17	5.46
<u>3/12</u>	2	.360	-3.3	-16.9	17.3	51.8	.33	1.68	1.76	5.26
<u>4/12</u>	2	.360	-2.6	-12.7	13.8	50.2	.25	1.26	1.40	5.10
<u>5/12</u>	2	.360	-2.5	-10.2	10.4	48.0	.24	1.01	1.05	4.87
<u>6/12</u>	2	.360	-2.1	-9.0	8.0	46.0	.21	.89	.81	4.67
<u>7/12</u>	2	.360	-2.4	-10.3	11.2	48.6	.24	1.02	1.14	4.94
<u>8/12</u>	2	.360	-2.2	-12.8	14.7	50.7	.22	1.27	1.49	5.15
<u>9/12</u>	2	.360	-2.8	-16.8	18.5	52.2	.28	1.67	1.88	5.30
<u>10/12</u>	2	.360	-5.9	-24.5	22.6	54.0	.59	2.45	2.30	5.49



Pr. 5 Bodenplatte

$b_0 = 9m$



LF1:

$$M_i = M_a = 0$$

LF2:

$$M_a = -41,92$$

LF3:

$$M_a = -41,92 \text{ kNm/m}$$

$$M_i = +15,44 \text{ kNm/m}$$

LF4:

$$M_i = -26,04 \text{ kNm/m}$$

$$M_a = +26,04 \text{ kNm/m}$$

$$q = 35,0 \text{ kN/m}^2$$

LF5:

$$M_i = -26,04 \text{ kNm/m}$$

$$M_a = +26,04 \text{ kNm/m}$$

$$q = 35,0 \text{ kN/m}^2 \text{ (nur zwischen Einzellasten)}$$

Programm EL, Vers. 0.4  
Projekt: Klaieranlage in Markt Indersdorf  
Job-Nr 2

Seite  
Pos: 5

Ing.-Buero H. Tischner, Klosterstr. 7, 8060 Dachau, Tel. 08131/

Pos 5-LF1 Elastisch gebetteter Balken  
=====

Berechnung nach dem Steifzahlverfahren

Querschnittstyp (PL,RQ,PB): PL

l (m)	b (m)	d (m)	I (m <sup>4</sup> /m)
11.00	9.000	.400	.005333

B 25 - BSt 500 / 550  
=====

ho' = .040 m ; hu' = .040 m

Bodenkennwerte:

Steifzahl Es  
(KN/m<sup>2</sup>)  
50000.0

Tiefe t  
(m)  
10.0

Belastungseingaben:

Gleichlast

q = 0.00 KN/m<sup>2</sup>

Einzellasten:

Stelle x  
(m)

.80  
10.20  
\*

Kraft P  
(KN/m)  
37.55  
31.00

Moment t M  
(KNm/m)  
0.00  
-41.92

Trapezlasten:

qli  
(KN/m<sup>2</sup>)  
\*

a  
(m)

b  
(m)

qre  
(KN/m<sup>2</sup>)

Pos 5-LF1 Elastisch gebetteter Balken

x	s	ps	M	Asu	Aso	Q	tauo
m	cm	KN/m <sup>2</sup>	KNm/m	cm <sup>2</sup> /m	cm <sup>2</sup> /m	KN/m	MN/m <sup>2</sup>
0.00	.11	55.0	.0	.00		0.0	0.000
.27	.10	28.8	1.6	.15		11.5	.032
.55	.10	14.8	5.3	.52		15.8	.045
.80	.09	13.0	9.8	.96		19.3	.055
.80	.09	13.0	9.8	.96		-18.2	.052
.82	.09	12.8	9.8	.91		-17.9	.051
1.10	.09	10.8	4.8	.47		-14.7	.041
1.37	.08	9.2	1.2	.11		-11.9	.034
1.65	.08	7.8	-1.8		.18	-9.6	.027
1.92	.07	6.6	-4.2	.400	.005	-7.7	.022
2.20	.07	5.6	-6.1		.59	-6.0	.017
2.47	.06	4.7	-7.5		.74	-4.6	.013
2.75	.06	3.9	-8.6		.84	-3.4	.010
3.02	.05	3.5	-9.4		.92	-2.4	.007
3.30	.05	2.7	-10.0		.98	-1.6	.005
3.57	.05	2.3	-10.3	.040 m	1.01	-.9	.003
3.85	.04	1.9	-10.5		1.03	-.4	.001
4.12	.04	1.6	-10.5		1.03	.1	.000
4.40	.04	1.5	-10.4		1.03	.5	.002
4.67	.04	1.4	-9.9		1.01	.9	.003
4.95	.04	1.4	-9.5		.98	1.3	.004
5.22	.04	1.4	-9.0		.93	1.7	.005
5.50	.04	1.0	-8.4	10.0	.88	2.1	.006
5.77	.04	2.0	-7.6		.82	2.5	.007
6.05	.04	2.4	-6.7		.75	3.0	.009
6.32	.05	2.8	-5.6		.65	3.6	.010
6.60	.05	3.2	-4.3		.55	4.4	.012
6.87	.05	3.7	-2.7		.42	5.2	.015
7.15	.05	4.3	-.9		.26	6.1	.017
7.42	.05	4.9	1.3	.13	.09	7.2	.020
7.70	.06	5.6	3.8	.37		8.5	.024
7.97	.06	6.2	6.8	.66		9.9	.028
8.25	.06	7.4	10.2	1.00		11.6	.033
8.52	.06	8.0	14.1	1.40		13.4	.038
8.80	.06	8.4	18.6	1.85		15.3	.044
9.07	.06	8.4	23.8	2.36		17.4	.050
9.35	.06	8.5	29.5	2.95		19.7	.056
9.62	.06	8.3	35.9	3.61		22.0	.063
9.90	.06	7.4	42.9	4.34		24.4	.070
10.17	.05	6.9	43.6	4.41		26.6	.077
10.20	.05	6.9	1.7	.16		26.7	.078
10.20	.05	6.9	1.7	.16		26.7	.075
10.45	.05	5.4	.8	.07		-4.3	.012
10.72	.04	5.0	.2	.02		-2.7	.008
11.00	.04	5.5	-.0		.00	-1.4	.004
						-.0	.000

Ing.-Buero H. Tischner, Klosterstr. 7, 8060 Dachau, Tel. 08131/4222

x m	s cm	ps KN/m <sup>2</sup>	M KNm/m	Asu cm <sup>2</sup> /m	Aso cm <sup>2</sup> /m	Q KN/m	tauo MN/m <sup>2</sup>
0.00	.09	40.1	.0	.00		0.0	0.000
.27	.09	21.8	1.2	.11		8.5	.024
.55	.09	12.3	4.0	.39		12.0	.034
.80	.08	11.6	7.4	.72		15.0	.042
.80	.08	11.6	22.8	2.27		15.0	.043
.80	.08	11.6	22.8	2.27		-22.6	.065
.82	.08	11.5	22.2	2.21		-22.3	.064
1.10	.08	10.6	16.5	1.63		-19.2	.055
1.37	.08	9.6	11.6	1.14		-16.5	.047
1.65	.08	8.6	7.4	.73		-14.0	.040
1.92	.07	7.6	3.9	.38		-11.8	.033
2.20	.07	6.7	.9	.09		-9.8	.028
2.47	.07	5.9	-1.6		.15	-8.1	.023
2.75	.06	5.1	-3.6		.35	-6.6	.019
3.02	.06	4.4	-5.2		.51	-5.3	.015
3.30	.06	3.9	-6.5		.64	-4.1	.012
3.57	.05	3.3	-7.5		.73	-3.2	.009
3.85	.05	2.9	-8.2		.81	-2.3	.006
4.12	.05	2.6	-8.8		.86	-1.5	.004
4.40	.05	2.3	-9.1		.89	-.9	.002
4.67	.05	2.1	-9.3		.91	-.3	.001
4.95	.05	2.0	-9.3		.91	.3	.001
5.22	.04	2.0	-9.1		.89	.9	.002
5.50	.04	2.1	-8.8		.86	1.4	.004
5.77	.05	2.2	-8.3		.82	2.0	.006
6.05	.05	2.4	-7.7		.75	2.6	.007
6.32	.05	2.7	-6.9		.67	3.3	.009
6.60	.05	3.1	-5.8		.57	4.1	.012
6.87	.05	3.5	-4.6		.45	5.0	.014
7.15	.05	4.0	-3.0		.30	6.1	.017
7.42	.05	4.5	-1.2		.12	7.2	.020
7.70	.06	5.1	.9	.09		8.5	.024
7.97	.06	5.7	3.5	.34		10.0	.028
8.25	.06	6.3	6.5	.63		11.6	.033
8.52	.06	6.9	9.9	.97		13.5	.038
8.80	.06	7.5	13.9	1.37		15.4	.044
9.07	.06	8.0	18.4	1.82		17.6	.050
9.35	.06	8.4	23.6	2.35		19.8	.057
9.62	.06	8.5	29.3	2.94		22.2	.064
9.90	.06	8.3	35.8	3.60		24.5	.071
10.17	.05	7.0	42.8	4.33		26.7	.077
10.20	.05	6.9	43.5	4.40		26.9	.078
10.20	.05	6.9	1.6	.15		26.9	.076
10.20	.05	6.9	1.6	.15		-4.1	.012
10.45	.05	5.3	.7	.07		-2.6	.007
10.72	.04	4.8	.2	.02		-1.3	.004
11.00	.04	5.0	-.0		.00	-.0	.000



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Pos 5-LF1 Elastisch gebetteter Balken  
=====

Berechnung nach dem Steifezahlverfahren

Querschnittstyp (PL,RQ,PB): PL

l (m)	b (m)	d (m)	I (m <sup>4</sup> /m)
11.00	9.000	.400	.005333

B 25 - BSt 500 / 550  
=====

ho' = .040 m ; hu' = .040 m

Bodenkennwerte:

Steifezahl Es (KN/m <sup>2</sup> )	Tiefe t (m)
50000.0	10.0

Belastungseingaben:

Gleichlast q = 35.00 KN/m<sup>2</sup>

Einzellasten:

Stelle x (m)	Kraft P (KN/m)	Moment M (KNm/m)
.80	37.55	-26.04
10.20	31.00	26.04
*		

Trapezlasten:

qli (KN/m <sup>2</sup> )	a (m)	b (m)	qre (KN/m <sup>2</sup> )
*			

Programm EL, Vers. 0.4 Job-Nr 5  
Projekt: Kläieranlage in Markt Indersdorf

Seite  
Pos: 5-L

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Pos 5-LF5 Elastisch gebetteter Balken  
=====

Berechnung nach dem Steifezahlverfahren

Querschnittstyp (PL,RQ,PB): PL

l	b	d	I
(m)	(m)	(m)	(m <sup>4</sup> /m)
11.00	9.000	.400	.005333

B 25 - BSt 500 / 550  
=====

ho' = .040 m ; hu' = .040 m

Bodenkennwerte:

Steifezahl Es (KN/m <sup>2</sup> )	Tiefe t (m)
50000.0	10.0

Belastungseingaben:

Gleichlast

q = 0.00 KN/m<sup>2</sup>

Einzellasten:

Stelle x (m)	Kraft P (KN/m)	Moment M (KNm/m)
.80	37.55	-26.04
10.20	31.00	26.04
*		

Trapezlasten:

qli (KN/m <sup>2</sup> )	a (m)	b (m)	qre (KN/m <sup>2</sup> )
35.00	.80	.80	35.00
*			

x	s	ps	M	Asu	Aso	Q	t
m	cm	KN/m <sup>2</sup>	KNm/m	cm <sup>2</sup> /m	cm <sup>2</sup> /m	KN/m	MN
0.00	.32	116.7					
.27	.32	65.2	.0	.00		0.0	0.0
.55	.33	38.6	3.4	.34		25.0	.0
.80	.33	36.3	11.8	1.16		35.9	.1
.80	.33	36.3	22.0	2.18		44.5	.1
.82	.33	36.3	-4.1		.40	44.5	.1
1.10	.33	36.0	-4.1		.40	7.0	.0
1.37	.34	33.7	-4.0		.39	7.8	.0
1.65	.34	32.8	-1.9		.18	7.7	.0
1.92	.35	32.4	.2	.02		7.1	.0
2.20	.36	32.3	2.0	.20		6.4	.0
2.47	.36	32.3	3.7	.36		5.7	.0
2.75	.37	32.5	5.1	.50		4.9	.0
3.02	.37	32.7	6.4	.63		4.2	.0
3.30	.37	33.0	7.5	.73		3.5	.0
3.57	.38	33.3	8.4	.82		3.0	.0
3.85	.38	33.5	9.1	.89		2.4	.0
4.12	.38	33.7	9.7	.95		2.0	.0
4.40	.39	33.9	10.2	1.00		1.6	.0
4.67	.39	34.1	10.6	1.04		1.3	.0
4.95	.39	34.2	10.9	1.08		1.0	.0
5.22	.39	34.3	11.2	1.10		.8	.0
5.50	.39	34.4	11.4	1.12		.6	.0
5.77	.39	34.4	11.5	1.14		.4	.0
6.05	.39	34.3	11.6	1.15		.3	.0
6.32	.39	34.2	11.7	1.15		.1	.0
6.60	.39	34.1	11.7	1.15		-.1	.0
6.87	.39	33.9	11.6	1.15		-.3	.0
7.15	.38	33.7	11.5	1.13		-.6	.0
7.42	.38	33.4	11.3	1.11		-.9	.0
7.70	.38	33.1	11.0	1.08		-1.3	.0
7.97	.37	32.8	10.6	1.04		-1.8	.0
8.25	.37	32.4	10.0	.98		-2.4	.0
8.52	.36	32.0	9.3	.91		-3.0	.0
8.80	.36	31.6	8.3	.82		-3.8	.0
9.07	.35	31.3	7.1	.70		-4.7	.0
9.35	.34	31.0	5.7	.56		-5.7	.0
9.62	.34	30.9	4.0	.39		-6.7	.0
9.90	.33	31.1	2.0	.20		-7.8	.0
10.17	.32	31.7	-.3		.03	-8.9	.0
10.20	.32	33.7	-2.9		.28	-10.0	.0
10.20	.32	33.9	-5.7		.56	-10.8	.0
10.20	.32	33.9	-5.9		.58	-10.0	.0
10.45	.32	33.9	20.2	2.00		-10.0	.0
10.72	.31	35.9	20.2	2.00		-41.0	.1
11.00	.30	59.9	10.8	1.06		-33.0	.0
	.30	106.6	3.1	.31		-22.9	.0
			-.0		.00	-.0	.0

x	s	ps	M	Asu	Aso	Q	tauo
m	cm	KN/m2	KNm/m	cm2/m	cm2/m	KN/m	MN/m2
0.00	.41	170.3	.0	.00		0.0	0.000
.27	.41	92.5	3.6	.36		26.5	.075
.55	.41	51.5	11.6	1.15		31.6	.090
.80	.41	46.9	20.0	1.99		35.2	.100
.80	.41	46.9	-6.0		.59	35.2	.099
.80	.41	46.9	-6.0		.59	-2.3	.007
.82	.41	46.4	-6.1		.60	-2.0	.006
1.10	.41	41.8	-6.3		.62	.3	.001
1.37	.41	39.2	-6.0		.59	1.8	.005
1.65	.40	37.6	-5.4		.53	2.7	.008
1.92	.40	36.4	-4.6		.45	3.2	.009
2.20	.40	35.5	-3.7		.36	3.4	.010
2.47	.40	34.9	-2.8		.27	3.5	.010
2.75	.41	34.5	-1.8		.18	3.4	.009
3.02	.41	34.2	-.9		.09	3.2	.009
3.30	.41	34.0	-.1		.01	2.9	.008
3.57	.41	33.9	.7	.07		2.7	.007
3.85	.41	33.8	1.4	.13		2.3	.007
4.12	.41	33.8	2.0	.19		2.0	.006
4.40	.41	33.8	2.5	.24		1.7	.005
4.67	.41	33.7	2.9	.28		1.3	.004
4.95	.41	33.7	3.2	.31		1.0	.003
5.22	.41	33.7	3.4	.33		.6	.002
5.50	.41	33.7	3.5	.35		.3	.001
5.77	.41	33.7	3.6	.35		-.1	.000
6.05	.41	33.6	3.5	.34		-.5	.001
6.32	.41	33.6	3.3	.32		-.8	.002
6.60	.40	33.6	3.0	.30		-1.2	.003
6.87	.40	33.5	2.6	.26		-1.6	.005
7.15	.40	33.5	2.1	.21		-2.0	.006
7.42	.40	33.5	1.5	.15		-2.4	.007
7.70	.40	33.5	.8	.08		-2.9	.008
7.97	.40	33.6	-.0		.00	-3.3	.009
8.25	.40	33.8	-1.0		.10	-3.6	.010
8.52	.40	34.0	-2.0		.20	-3.9	.011
8.80	.39	34.5	-3.1		.31	-4.1	.012
9.07	.39	35.1	-4.3		.42	-4.2	.012
9.35	.39	36.1	-5.4		.53	-4.1	.011
9.62	.39	37.6	-6.5		.64	-3.6	.010
9.90	.39	39.9	-7.4		.72	-2.7	.008
10.17	.39	44.0	-7.9		.77	-.9	.003
10.20	.39	44.5	-7.8		.77	-.6	.002
10.20	.39	44.5	18.2	1.80		-.6	.002
10.20	.39	44.5	18.2	1.80		-31.6	.090
10.45	.39	48.7	10.6	1.04		-28.7	.081
10.72	.39	87.2	3.3	.32		-24.4	.069
11.00	.39	160.2	-.0		.00	-.0	.000

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Pos 5-LF1 Elastisch gebetteter Balken  
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Berechnung nach dem Steifezahlverfahren

Querschnittstyp (PL,RQ,PB): PL

l	b	d	I
(m)	(m)	(m)	(m <sup>4</sup> /m)
11.00	9.000	.400	.005333

B 25 - BSt 500 / 550  
=====

ho' = .040 m ; hu' = .040 m

Bodenkennwerte:

Steifezahl Es	Tiefe t
(KN/m <sup>2</sup> )	(m)
50000.0	10.0

Belastungseingaben:

Gleichlast q = 0.00 KN/m<sup>2</sup>

Einzellasten:

Stelle x	Kraft P	Moment M
(m)	(KN/m)	(KNm/m)
.80	37.55	0.00
10.20	31.00	0.00
*		

Trapezlasten:

qli	a	b	qre
(KN/m <sup>2</sup> )	(m)	(m)	(KN/m <sup>2</sup> )
*			

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x	s	ps	M	Asu	Aso	Q	tauo
m	cm	KN/m2	KNm/m	cm2/m	cm2/m	KN/m	MN/m2
0.00	.11	56.3	.0	.00		0.0	0.000
.27	.10	29.4	1.6	.16		11.8	.033
.55	.10	15.0	5.5	.53		16.2	.046
.80	.09	13.1	10.0	.98		19.7	.056
.80	.09	13.1	10.0	.98		-17.9	.051
.82	.09	12.9	9.5	.93		-17.5	.050
1.10	.09	10.8	5.1	.50		-14.3	.040
1.37	.08	9.2	1.6	.15		-11.6	.032
1.65	.07	7.8	-1.3		.13	-9.2	.026
1.92	.07	6.5	-3.6		.35	-7.3	.021
2.20	.06	5.4	-5.3		.52	-5.7	.016
2.47	.06	4.5	-6.7		.66	-4.3	.012
2.75	.05	3.7	-7.7		.76	-3.2	.009
3.02	.05	2.9	-8.5		.83	-2.3	.006
3.30	.04	2.3	-9.0		.89	-1.6	.004
3.57	.04	1.8	-9.4		.92	-1.0	.003
3.85	.04	1.3	-9.6		.94	-.6	.002
4.12	.03	1.0	-9.7		.95	-.3	.001
4.40	.03	.7	-9.8		.96	-.0	.000
4.67	.03	.4	-9.7		.96	.1	.000
4.95	.03	.3	-9.7		.95	.2	.001
5.22	.03	.2	-9.7		.95	.2	.001
5.50	.03	.1	-9.6		.94	.3	.001
5.77	.03	.1	-9.5		.93	.3	.001
6.05	.03	.2	-9.4		.92	.3	.001
6.32	.03	.3	-9.3		.91	.4	.001
6.60	.03	.5	-9.2		.90	.5	.001
6.87	.03	.7	-9.0		.89	.7	.002
7.15	.03	1.0	-8.8		.86	.9	.003
7.42	.04	1.4	-8.5		.84	1.2	.003
7.70	.04	1.8	-8.1		.80	1.6	.005
7.97	.04	2.3	-7.6		.74	2.2	.006
8.25	.04	2.9	-6.9		.68	2.9	.008
8.52	.05	3.6	-6.0		.58	3.8	.011
8.80	.05	4.4	-4.8		.47	4.9	.014
9.07	.06	5.3	-3.2		.31	6.3	.018
9.35	.06	6.3	-1.3		.13	7.8	.022
9.62	.07	7.5	1.1	.11		9.7	.027
9.90	.07	8.8	4.1	.40		12.0	.034
10.17	.08	10.6	7.8	.76		14.6	.041
10.20	.08	10.7	8.2	.80		14.9	.042
10.20	.08	10.7	8.2	.80		-16.1	.046
10.45	.08	12.3	4.5	.44		-13.2	.037
10.72	.08	24.1	1.3	.13		-9.6	.027
11.00	.09	46.0	-.0		.00	-.0	.000