

Static Calculation

7574

Part 6

Air Liquide AGS GmbH
Füttingsweg 34
47805 Krefeld

K70101, ASU No. 9 Kosice
Oxygen-Station

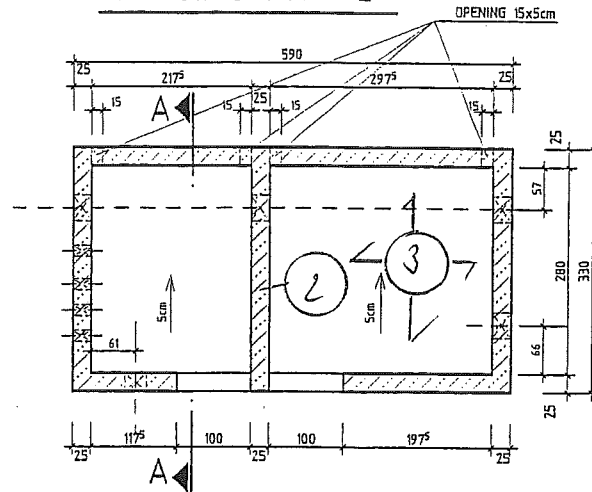
Saarbrücken, im März 2005

(statische Berechnung Seiten 1-79)

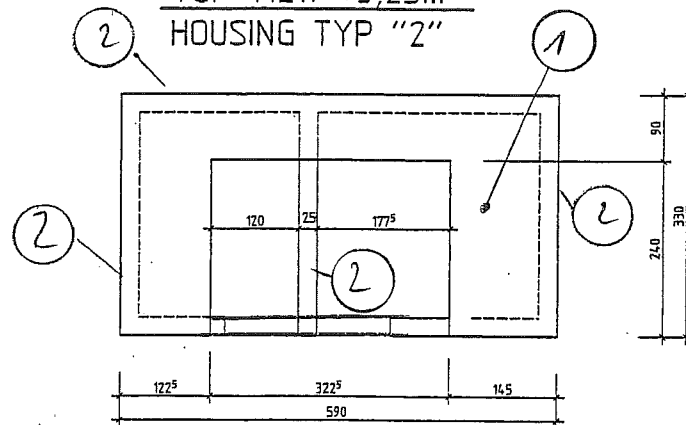
**KIM**

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PLAN
HOUSING TYP "2"

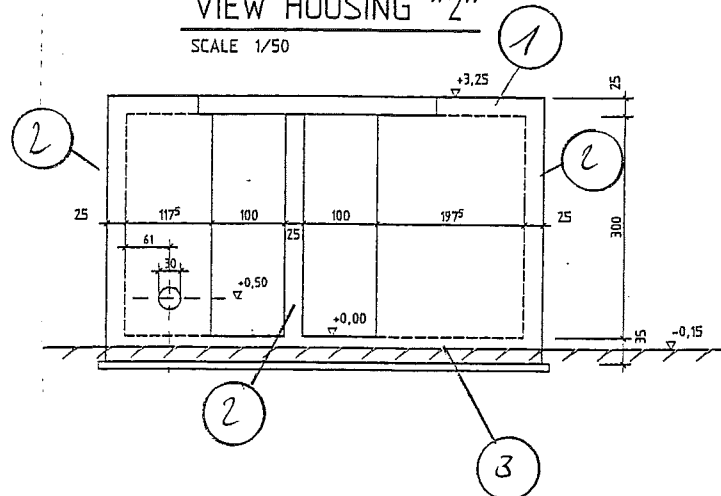


TOP VIEW +3,25m
HOUSING TYP "2"



VIEW HOUSING "2"

SCALE 1/50



KIVA

Ingenieurgesellschaft mbH

Saarbrücker Straße 9

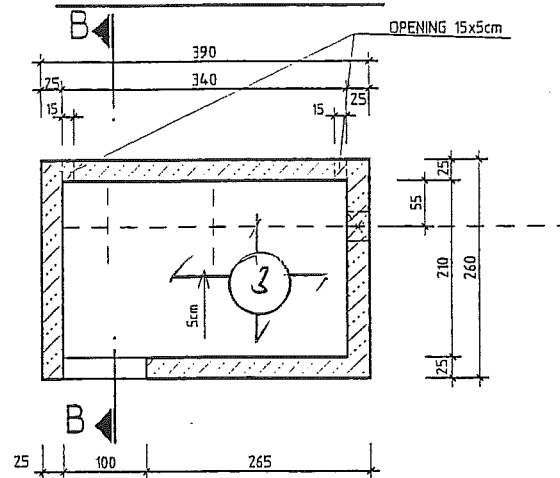
66130 Saarbrücken-Brebach

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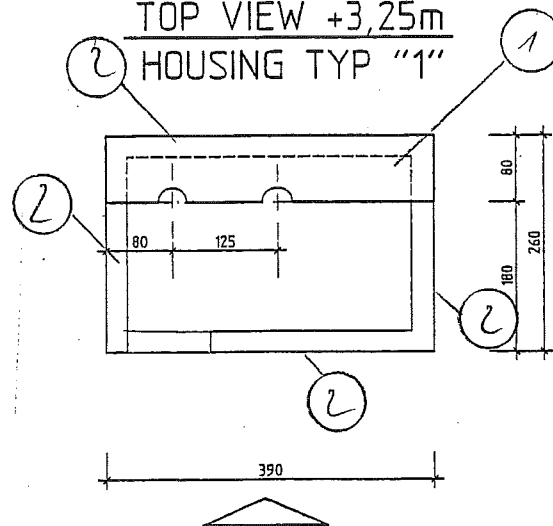
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PLAN HOUSING TYP "1"

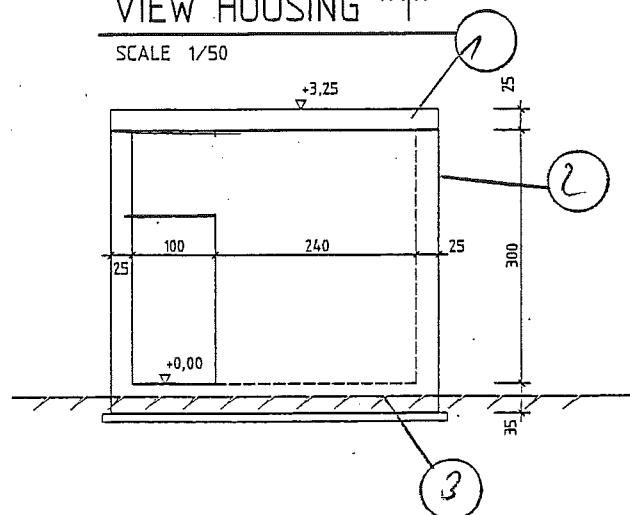


TOP VIEW +3,25m HOUSING TYP "1"



VIEW HOUSING "1"

SCALE 1/50



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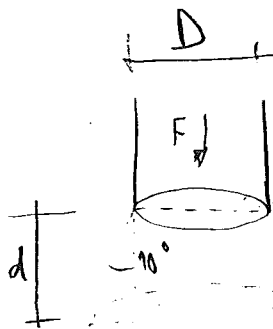
Jet - Loads

- 4 -

pressure	P	bara	28
diameter (piping)	D	cm	25
force	F	daN	17251
distance pipe-wall	d	cm	0
exposed area	A	cm ²	490,873852 ✓
pressure created	F/A	Pa	3514344,86 ✓
		bar	35,1434486 ✓

$$F = 1.017 \times PD^2 - 0.81 \times D^2$$

$$A = \frac{\pi \cdot (D + 2 \cdot d \cdot \tan 10^\circ)^2}{4}$$



$$d = 0$$

$$A = \frac{\pi \cdot (D + 2 \cdot d \cdot \tan 10^\circ)^2}{4}$$

EXPOSED AREA = A

$$A = \frac{3.14 (0.25 + 2 \cdot 0 \cdot \tan 10^\circ)^2}{4}$$

$$A = \underline{\underline{0,0490 \text{ m}^2}}$$

Pos ① Design Loads

a) Dead Load

$$g = 0,25 \cdot 250 = \underline{\underline{6,25 \frac{\text{KN}}{\text{m}^2}}}$$

b) Live Load

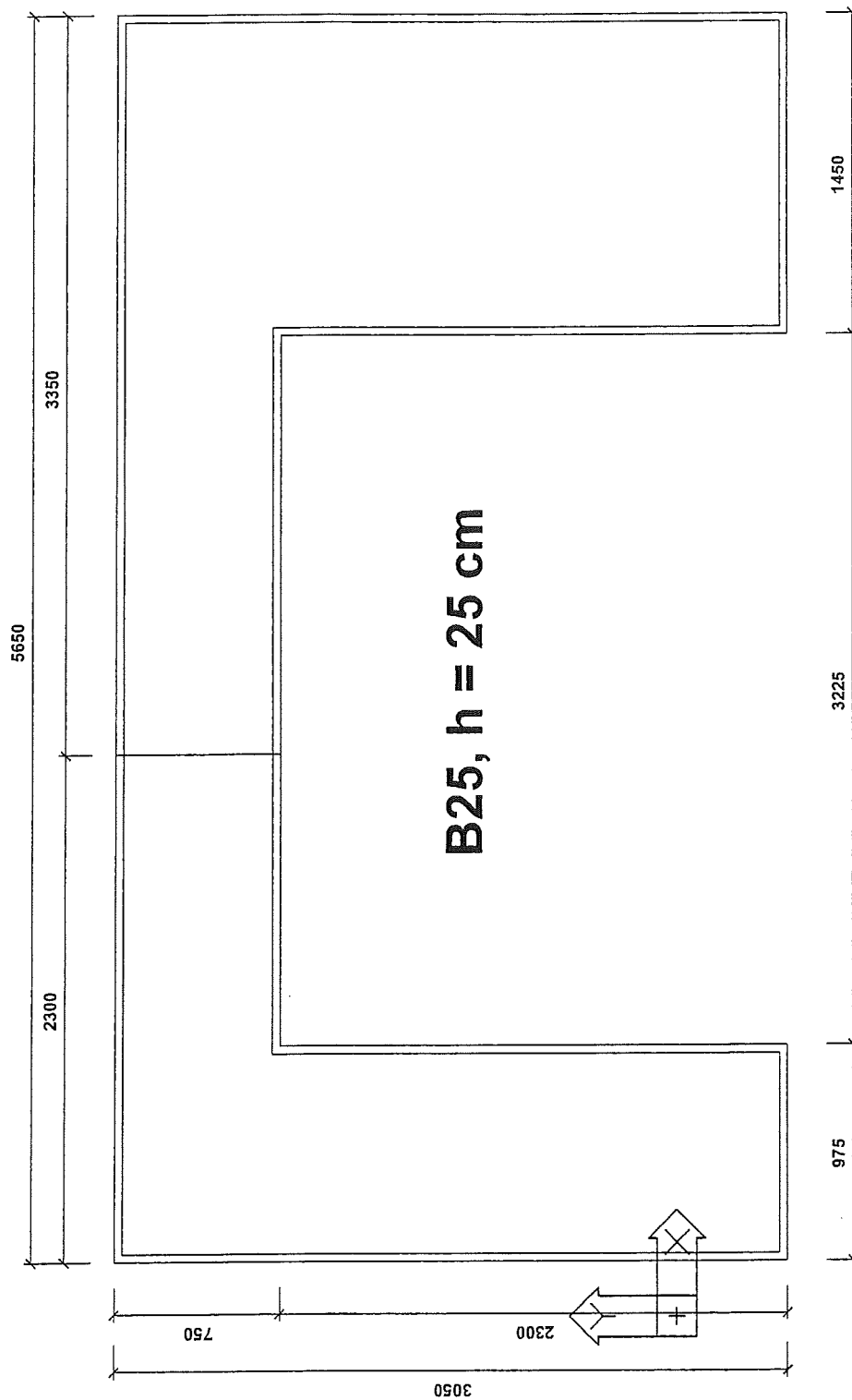
$$- p = 1,50 \frac{\text{KN}}{\text{m}^2}$$

c) Jet-Load

$$F = 172,51 \text{ KN}$$

$$A = 490,87 \text{ cm}^2$$

$$\Rightarrow p = \frac{172,51}{490,87 \cdot 10^{-4}} = \underline{\underline{3514 \frac{\text{KN}}{\text{m}^2}}}$$



Pos 1

Basic data

Type of structure : General XYZ

Number of nodes: 208
 Number of members: 0
 Number of 1D macros: 0
 Number of bound. lines: 2
 Number of 2D macros: 1
 Number of profiles : 0
 Number of cases: 8
 Number of materials: 1

Material

Name: B 25
 E modulus 30000.00 MPa
 Poisson coeff. 0.20
 Density 2500.000 kg/m³
 Extensibility 0.01 mm/m.K

List of material - Macro2D

Group of members :
 1/2

no.	Name	quality	unit volume weight kgm ³	volume m ³	weight kg
4	B 25	B 25	2500.00	2.45	6134.37

The total weight of the structure: 6134.37 kg

Nodes

node	X m	Y m	Z m	node	X m	Y m	Z m
1	0.250	-0.500	0.000	15	0.250	0.050	0.000
2	0.250	2.550	0.000	16	0.250	0.160	0.000
3	5.900	2.550	0.000	17	0.250	0.270	0.000
4	5.900	-0.500	0.000	18	0.250	0.380	0.000
5	4.450	-0.500	0.000	19	0.250	0.490	0.000
6	4.450	1.800	0.000	20	0.250	0.600	0.000
7	1.225	1.800	0.000	21	0.250	0.710	0.000
8	1.225	-0.500	0.000	22	0.250	0.820	0.000
9	2.550	1.800	0.000	23	0.250	0.930	0.000
10	2.550	2.550	0.000	24	0.250	1.040	0.000
11	0.250	-0.390	0.000	25	0.250	1.150	0.000
12	0.250	-0.280	0.000	26	0.250	1.260	0.000
13	0.250	-0.170	0.000	27	0.250	1.370	0.000
14	0.250	-0.060	0.000	28	0.250	1.480	0.000

node	X m	Y m	Z m	node	X m	Y m	Z m
29	0.250	1.590	0.000	79	4.790	2.550	0.000
30	0.250	1.700	0.000	80	4.900	2.550	0.000
31	0.250	1.810	0.000	81	5.010	2.550	0.000
32	0.250	1.920	0.000	82	5.120	2.550	0.000
33	0.250	2.030	0.000	83	5.230	2.550	0.000
34	0.250	2.140	0.000	84	5.340	2.550	0.000
35	0.250	2.250	0.000	85	5.450	2.550	0.000
36	0.250	2.360	0.000	86	5.560	2.550	0.000
37	0.250	2.470	0.000	87	5.670	2.550	0.000
38	0.280	2.550	0.000	88	5.780	2.550	0.000
39	0.390	2.550	0.000	89	5.890	2.550	0.000
40	0.500	2.550	0.000	90	5.900	2.450	0.000
41	0.610	2.550	0.000	91	5.900	2.340	0.000
42	0.720	2.550	0.000	92	5.900	2.230	0.000
43	0.830	2.550	0.000	93	5.900	2.120	0.000
44	0.940	2.550	0.000	94	5.900	2.010	0.000
45	1.050	2.550	0.000	95	5.900	1.900	0.000
46	1.160	2.550	0.000	96	5.900	1.790	0.000
47	1.270	2.550	0.000	97	5.900	1.680	0.000
48	1.380	2.550	0.000	98	5.900	1.570	0.000
49	1.490	2.550	0.000	99	5.900	1.460	0.000
50	1.600	2.550	0.000	100	5.900	1.350	0.000
51	1.710	2.550	0.000	101	5.900	1.240	0.000
52	1.820	2.550	0.000	102	5.900	1.130	0.000
53	1.930	2.550	0.000	103	5.900	1.020	0.000
54	2.040	2.550	0.000	104	5.900	0.910	0.000
55	2.150	2.550	0.000	105	5.900	0.800	0.000
56	2.260	2.550	0.000	106	5.900	0.690	0.000
57	2.370	2.550	0.000	107	5.900	0.580	0.000
58	2.480	2.550	0.000	108	5.900	0.470	0.000
59	2.590	2.550	0.000	109	5.900	0.360	0.000
60	2.700	2.550	0.000	110	5.900	0.250	0.000
61	2.810	2.550	0.000	111	5.900	0.140	0.000
62	2.920	2.550	0.000	112	5.900	0.030	0.000
63	3.030	2.550	0.000	113	5.900	-0.080	0.000
64	3.140	2.550	0.000	114	5.900	-0.190	0.000
65	3.250	2.550	0.000	115	5.900	-0.300	0.000
66	3.360	2.550	0.000	116	5.900	-0.410	0.000
67	3.470	2.550	0.000	117	5.880	-0.500	0.000
68	3.580	2.550	0.000	118	5.770	-0.500	0.000
69	3.690	2.550	0.000	119	5.660	-0.500	0.000
70	3.800	2.550	0.000	120	5.550	-0.500	0.000
71	3.910	2.550	0.000	121	5.440	-0.500	0.000
72	4.020	2.550	0.000	122	5.330	-0.500	0.000
73	4.130	2.550	0.000	123	5.220	-0.500	0.000
74	4.240	2.550	0.000	124	5.110	-0.500	0.000
75	4.350	2.550	0.000	125	5.000	-0.500	0.000
76	4.460	2.550	0.000	126	4.890	-0.500	0.000
77	4.570	2.550	0.000	127	4.780	-0.500	0.000
78	4.680	2.550	0.000	128	4.670	-0.500	0.000

node	X m	Y m	Z m	node	X m	Y m	Z m
129	4.560	-0.500	0.000	169	2.350	1.800	0.000
130	4.450	-0.390	0.000	170	2.240	1.800	0.000
131	4.450	-0.280	0.000	171	2.130	1.800	0.000
132	4.450	-0.170	0.000	172	2.020	1.800	0.000
133	4.450	-0.060	0.000	173	1.910	1.800	0.000
134	4.450	0.050	0.000	174	1.800	1.800	0.000
135	4.450	0.160	0.000	175	1.690	1.800	0.000
136	4.450	0.270	0.000	176	1.580	1.800	0.000
137	4.450	0.380	0.000	177	1.470	1.800	0.000
138	4.450	0.490	0.000	178	1.360	1.800	0.000
139	4.450	0.600	0.000	179	1.250	1.800	0.000
140	4.450	0.710	0.000	180	1.225	1.715	0.000
141	4.450	0.820	0.000	181	1.225	1.605	0.000
142	4.450	0.930	0.000	182	1.225	1.495	0.000
143	4.450	1.040	0.000	183	1.225	1.385	0.000
144	4.450	1.150	0.000	184	1.225	1.275	0.000
145	4.450	1.260	0.000	185	1.225	1.165	0.000
146	4.450	1.370	0.000	186	1.225	1.055	0.000
147	4.450	1.480	0.000	187	1.225	0.945	0.000
148	4.450	1.590	0.000	188	1.225	0.835	0.000
149	4.450	1.700	0.000	189	1.225	0.725	0.000
150	4.440	1.800	0.000	190	1.225	0.615	0.000
151	4.330	1.800	0.000	191	1.225	0.505	0.000
152	4.220	1.800	0.000	192	1.225	0.395	0.000
153	4.110	1.800	0.000	193	1.225	0.285	0.000
154	4.000	1.800	0.000	194	1.225	0.175	0.000
155	3.890	1.800	0.000	195	1.225	0.065	0.000
156	3.780	1.800	0.000	196	1.225	-0.045	0.000
157	3.670	1.800	0.000	197	1.225	-0.155	0.000
158	3.560	1.800	0.000	198	1.225	-0.265	0.000
159	3.450	1.800	0.000	199	1.225	-0.375	0.000
160	3.340	1.800	0.000	200	1.225	-0.485	0.000
161	3.230	1.800	0.000	201	1.130	-0.500	0.000
162	3.120	1.800	0.000	202	1.020	-0.500	0.000
163	3.010	1.800	0.000	203	0.910	-0.500	0.000
164	2.900	1.800	0.000	204	0.800	-0.500	0.000
165	2.790	1.800	0.000	205	0.690	-0.500	0.000
166	2.680	1.800	0.000	206	0.580	-0.500	0.000
167	2.570	1.800	0.000	207	0.470	-0.500	0.000
168	2.460	1.800	0.000	208	0.360	-0.500	0.000

Boundaries

bound.	line	type	node
1		Polygon	1,2,3,4,5,6,7,8,1
2		Line	9,10

2D Macros

```

num type
1
    B 25      Thickness 0.25 m
    Boundary: 1
    Nodes :   11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32
              33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54
              55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76
              77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98
              99,100,101,102,103,104,105,106,107,108,109,110,111,112,113,114
              115,116,117,118,119,120,121,122,123,124,125,126,127,128,129,5
              130,131,132,133,134,135,136,137,138,139,140,141,142,143,144,145
              146,147,148,149,150,151,152,153,154,155,156,157,158,159,160,161
              162,163,164,165,166,167,168,169,170,171,172,173,174,175,176,177
              178,179,180,181,182,183,184,185,186,187,188,189,190,191,192,193
              194,195,196,197,198,199,200,201,202,203,204,205,206,207,208

1 Inner line: 2
  
```

Supports

support	boundary	node	type	flexibility kN/m-kNm/rad	Size m
1	2		XYZRxRyRz		0.20
2		1	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
3		2	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
4		3	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
5		4	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
6		5	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
7		8	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
8		10	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25

Date : Mittwoch, 2. März 2005

support	boundary	node	type	flexibility kN/m-kNm/rad	Size m
9		11	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
10		12	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
11		13	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
12		14	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
13		15	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
14		16	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
15		17	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
16		18	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
17		19	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
18		20	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
19		21	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
20		22	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
21		23	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
22		24	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
23		25	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25

support	boundary	node	type	flexibility kN/m-kNm/rad	Size m
24		26	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
25		27	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
26		28	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
27		29	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
28		30	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
29		31	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
30		32	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
31		33	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
32		34	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
33		35	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
34		36	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
35		37	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
36		38	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
37		39	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
38		40	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25

support	boundary	node	type	flexibility kN/m-kNm/rad	Size m
39		41	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
40		42	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
41		43	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
42		44	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
43		45	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
44		46	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
45		47	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
46		48	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
47		49	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
48		50	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
49		51	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
50		52	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
51		53	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
52		54	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
53		55	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25

Date : Mittwoch, 2. März 2005

support	boundary	node	type	flexibility kN/m-kNm/rad	Size m
54		56	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
55		57	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
56		58	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
57		59	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
58		60	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
59		61	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
60		62	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
61		63	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
62		64	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
63		65	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
64		66	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
65		67	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
66		68	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
67		69	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
68		70	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25

support	boundary	node	type	flexibility kN/m-kNm/rad	Size m
69		71	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
70		72	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
71		73	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
72		74	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
73		75	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
74		76	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
75		77	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
76		78	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
77		79	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
78		80	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
79		81	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
80		82	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
81		83	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
82		84	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
83		85	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25

support	boundary	node	type	flexibility kN/m-kNm/rad	Size m
84		86	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
85		87	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
86		88	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
87		89	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
88		90	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
89		91	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
90		92	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
91		93	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
92		94	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
93		95	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
94		96	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
95		97	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
96		98	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
97		99	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
98		100	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25

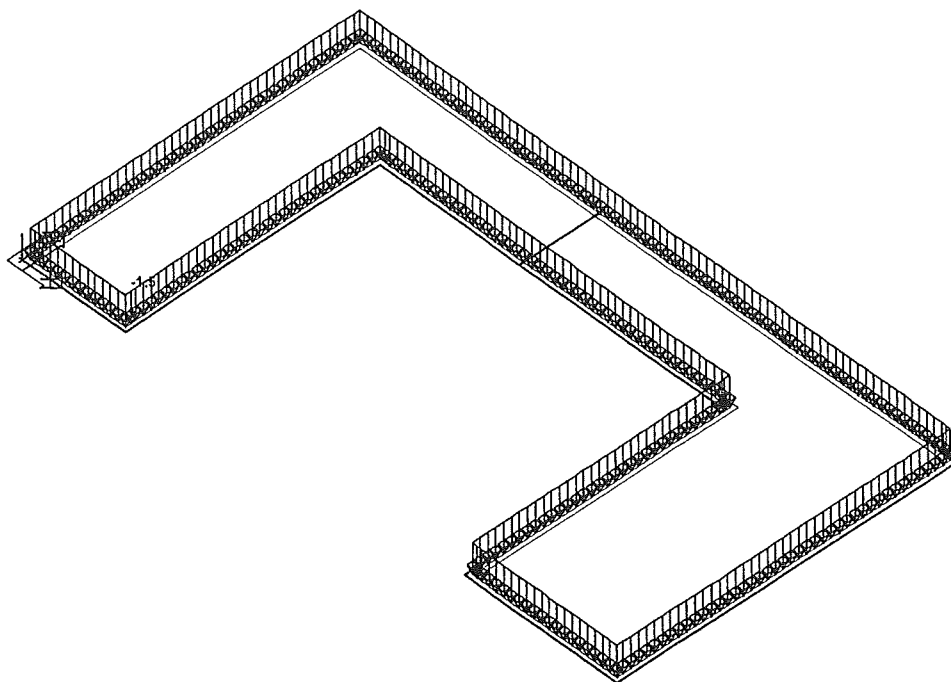
support	boundary	node	type	flexibility kN/m-kNm/rad	Size m
99		101	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
100		102	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
101		103	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
102		104	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
103		105	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
104		106	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
105		107	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
106		108	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
107		109	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
108		110	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
109		111	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
110		112	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
111		113	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
112		114	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
113		115	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25

support	boundary	node	type	flexibility kN/m-kNm/rad	Size m
114		116	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
115		117	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
116		118	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
117		119	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
118		120	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
119		121	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
120		122	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
121		123	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
122		124	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
123		125	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
124		126	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
125		127	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
126		128	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
127		129	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
128		200	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25

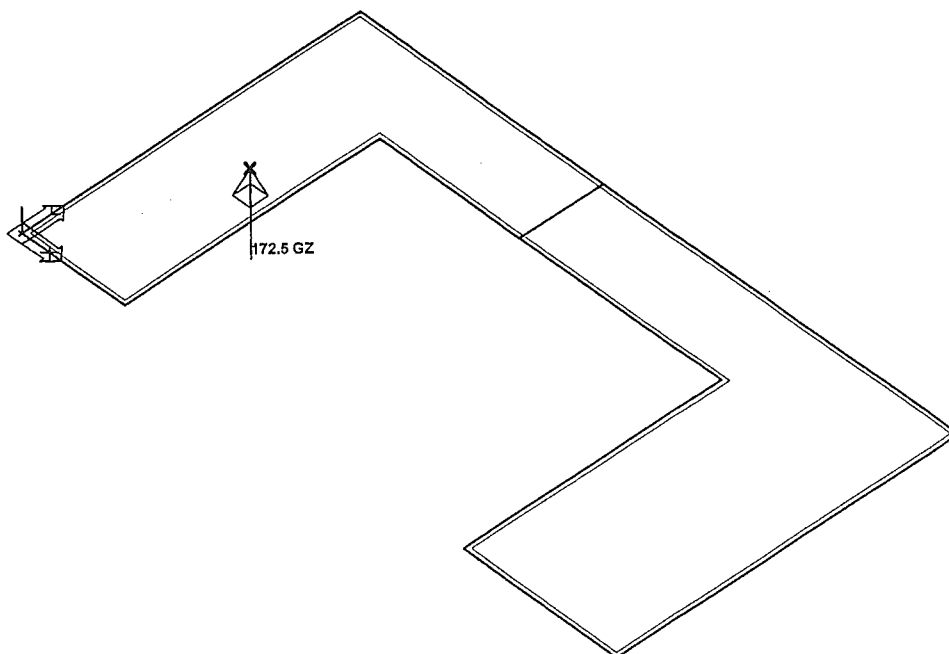
support	boundary	node	type	flexibility kN/m-kNm/rad	Size m
129		201	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
130		202	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
131		203	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
132		204	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
133		205	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
134		206	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
135		207	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25
136		208	XYZRxRyRz	kz =100000.00 krx =35000.00 kry =35000.00 krz =35000.00	0.25

Loadcases

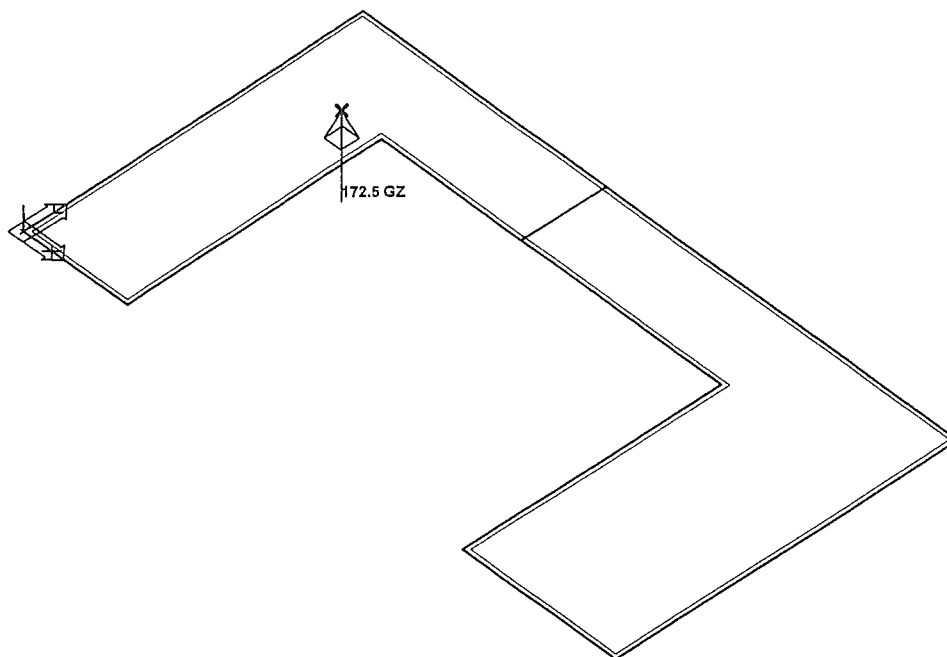
Case	Name	Description
1	weight of the concrete	Self weight. Direction -Z
2	Live Loads	Variable - p
3	Jet-Load 1	Variable - Jet-Load Excl.
4	Jet-Load 2	Variable - Jet-Load Excl.
5	Jet-Load 3	Variable - Jet-Load Excl.
6	Jet-Load 4	Variable - Jet-Load Excl.
7	Jet-Load 5	Variable - Jet-Load Excl.
8	Jet-Load 6	Variable - Jet-Load Excl.



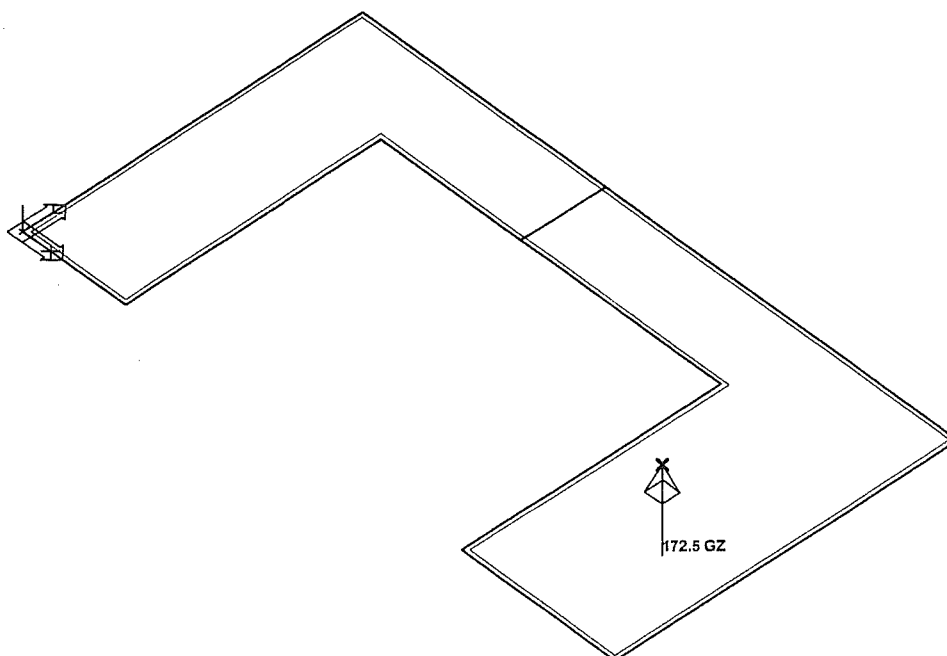
2. Live Loads



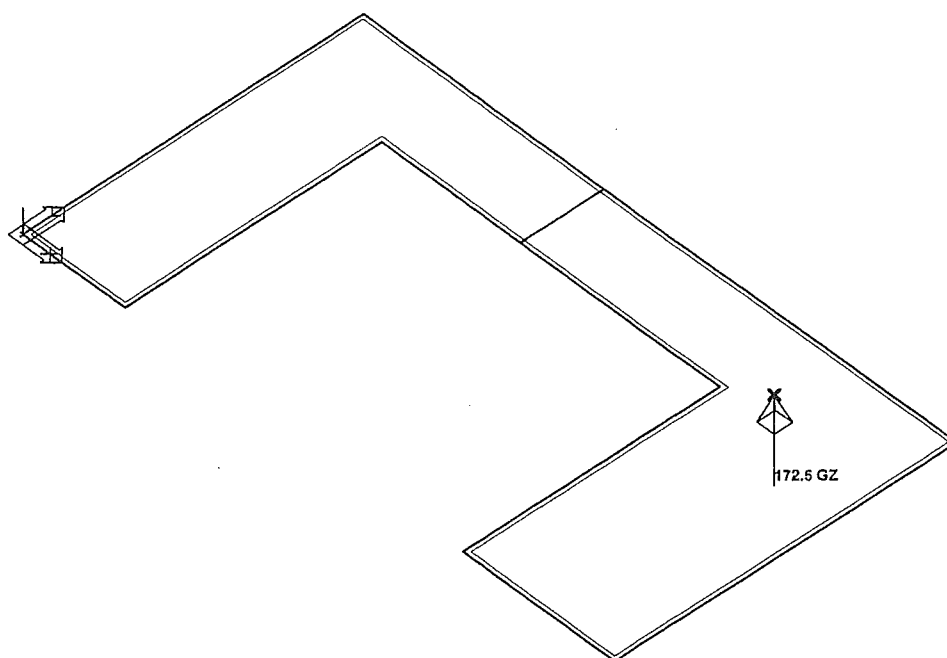
3. Jet-Load 1



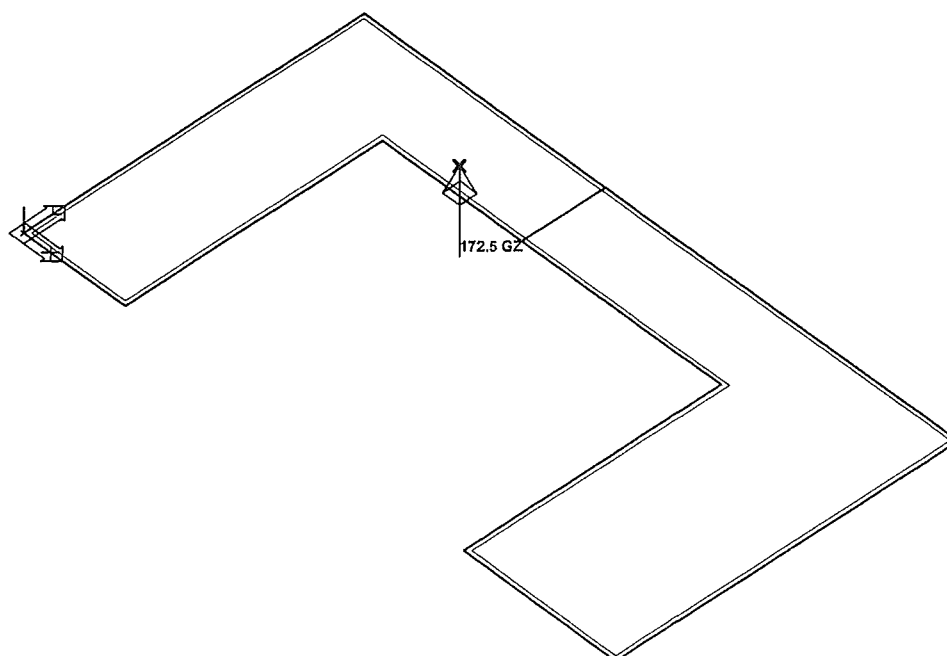
4. Jet-Load 2



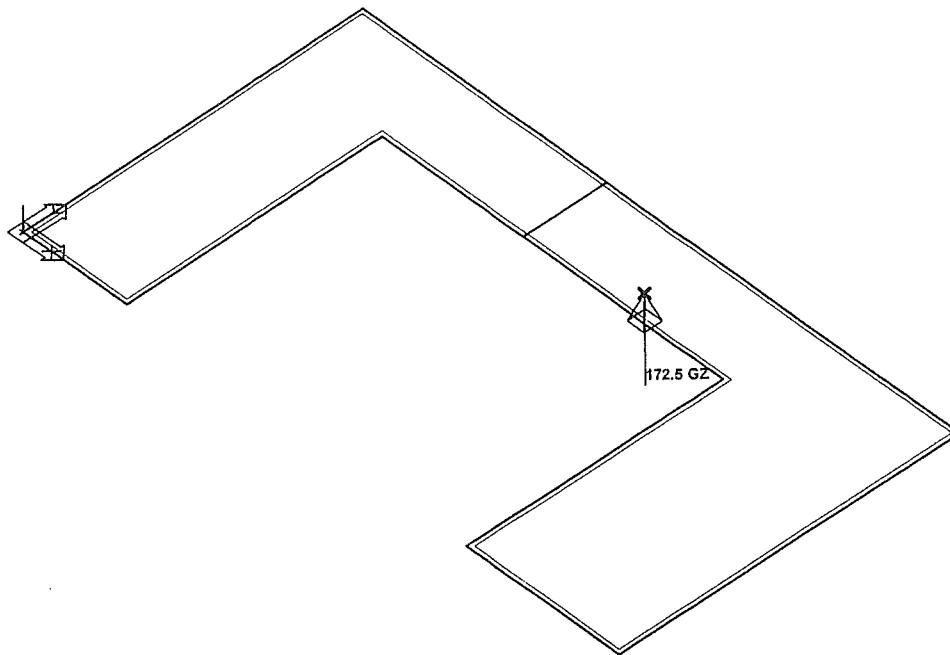
5. Jet-Load 3



6. Jet-Load 4



7. Jet-Load 5



8. Jet-Load 6

Loadcase no. 2 - distributed loads

memb	macro	bound	type	dx m	exY m	exZ m	X beg end	Y beg end	Z beg end
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Loadcase no. 2 - Distributed loads 2D

macro	qx kN/m ²	qy kN/m ²	qz kN/m ²
1	0.00	0.00	-1.50

Loadcase no. 3 - Free loads

Forces/Moments

Index	x m	y m	Fx / Mx kN / kNm	Fy / My kN / kNm	Fz / Mz kN / kNm	System	Validity
1	0.60	1.50	0.00	0.00	172.51	Global	All

Loadcase no. 4 - Free loads

Forces/Moments

Index	x m	y m	Fx / Mx kN / kNm	Fy / My kN / kNm	Fz / Mz kN / kNm	System	Validity
1	0.60	2.30	0.00	0.00	172.51	Global	All

Loadcase no. 5 - Free loads

Forces/Moments

Index	x m	y m	Fx / Mx kN / kNm	Fy / My kN / kNm	Fz / Mz kN / kNm	System	Validity
1	4.50	1.50	0.00	0.00	172.51	Global	All

Loadcase no. 6 - Free loads

Forces/Moments

Index	x m	y m	Fx / Mx kN / kNm	Fy / My kN / kNm	Fz / Mz kN / kNm	System	Validity
1	4.50	2.50	0.00	0.00	172.51	Global	All

Loadcase no. 7 - Free loads

Forces/Moments

Index	x m	y m	Fx / Mx kN / kNm	Fy / My kN / kNm	Fz / Mz kN / kNm	System	Validity
1	1.50	2.50	0.00	0.00	172.51	Global	All

Loadcase no. 8 - Free loads

Forces/Moments

Index	x m	y m	Fx / Mx kN / kNm	Fy / My kN / kNm	Fz / Mz kN / kNm	System	Validity
1	3.25	2.50	0.00	0.00	172.51	Global	All

Combinations

Combi	Norm	Case	coeff
1.	User-ultimate	1 weight of the concrete	1.00
		2 Live Loads	1.00
		3 Jet-Load 1	1.00
		4 Jet-Load 2	1.00
		5 Jet-Load 3	1.00

Combi	Norm	Case	coeff
		6 Jet-Load 4	1.00
		7 Jet-Load 5	1.00
		8 Jet-Load 6	1.00

Grundregeln für Generierung der Tragfähigkeitskombinationen.

1 : 1.00*LF1 / 1.00*LF2 / 1.00*LF3 / 1.00*LF4 / 1.00*LF5 / 1.00*LF6 / 1.00*LF7 / 1.00*LF8

Liste von krit. Tragfähigkeitskombinationen

- 1/ 1 : +1.00*LF1
- 2/ 1 : +1.00*LF1+1.00*LF2
- 3/ 1 : +1.00*LF1+1.00*LF3
- 4/ 1 : +1.00*LF1+1.00*LF4
- 5/ 1 : +1.00*LF1+1.00*LF5
- 6/ 1 : +1.00*LF1+1.00*LF6
- 7/ 1 : +1.00*LF1+1.00*LF7
- 8/ 1 : +1.00*LF1+1.00*LF8
- 9/ 1 : +1.00*LF1+1.00*LF2+1.00*LF3
- 10/ 1 : +1.00*LF1+1.00*LF2+1.00*LF4
- 11/ 1 : +1.00*LF1+1.00*LF2+1.00*LF5
- 12/ 1 : +1.00*LF1+1.00*LF2+1.00*LF6
- 13/ 1 : +1.00*LF1+1.00*LF2+1.00*LF7
- 14/ 1 : +1.00*LF1+1.00*LF2+1.00*LF8

Subsoils

Name:	Type of position	C1x kN/m ³	C1y kN/m ³	C1z kN/m ³	C2x kN/m	C2y kN/m	SigZpl kN/m ²
gemischtkörniger Sand	Under plate, block	1000.000	1000.000	30000.000	0.000	0.000	0.000

Calculation protocol.

Lineare Berechnung

Anzahl 2D-Elemente	332
Anzahl 1D-Elemente	0
Anzahl Netzknoten	366
Anzahl Gleichungen	2196

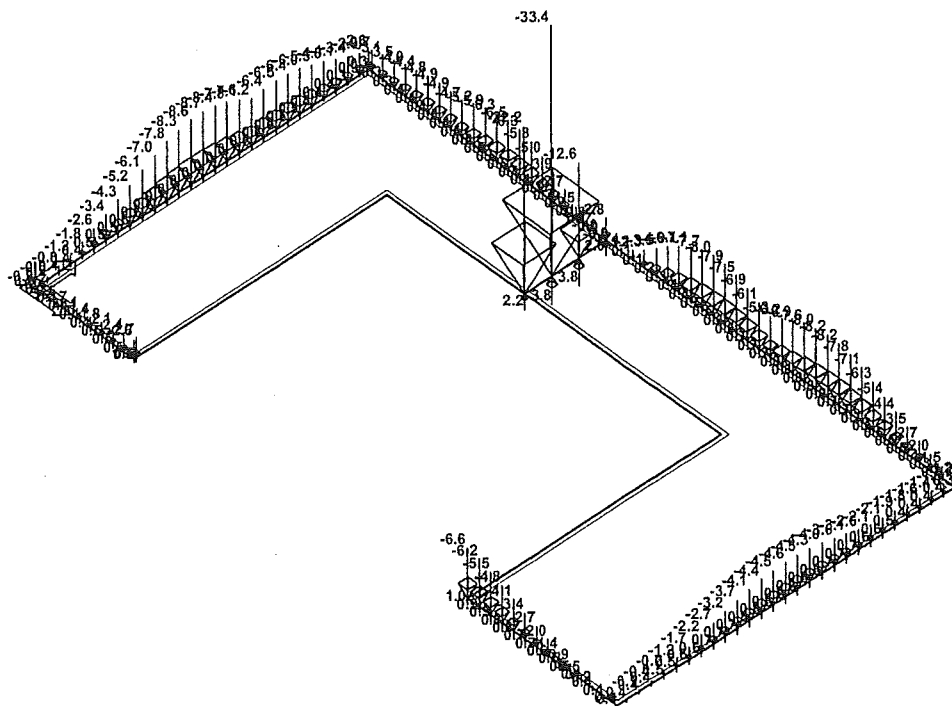
Lastfälle	LF 1 weight of the concrete
	LF 2 Live Loads
	LF 3 Jet-Load 1
	LF 4 Jet-Load 2
	LF 5 Jet-Load 3
	LF 6 Jet-Load 4
	LF 7 Jet-Load 5
	LF 8 Jet-Load 6

Biegetheorie	Mindlin
Start der Berechnung	02.03.2005 11:11
Berechnung beendet	02.03.2005 11:12

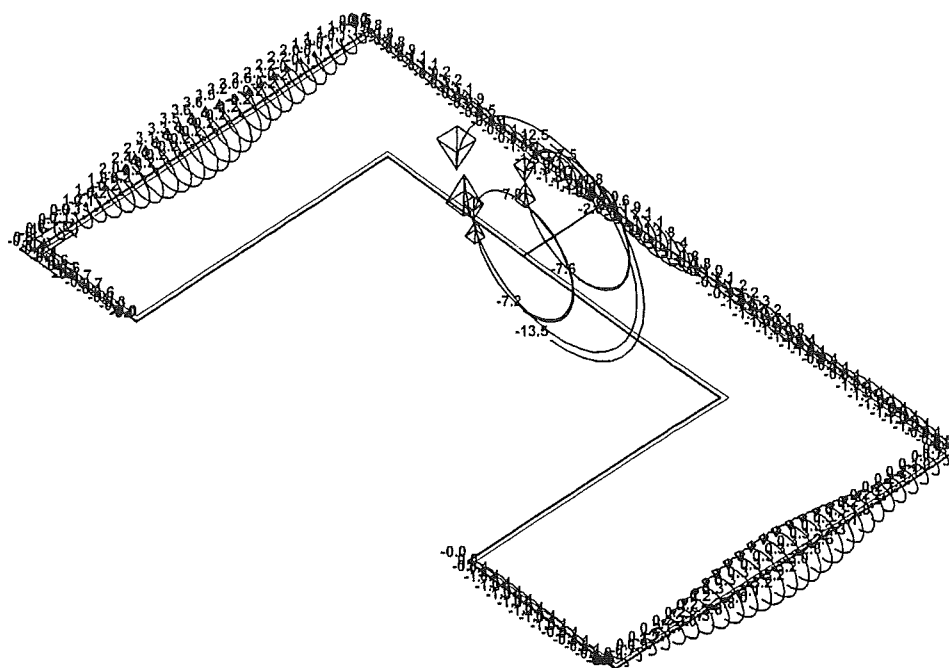
Sum of loads and reactions.

			X	Y	Z
loadcase	1	loads	0.0	0.0	-61.3
		reactions	0.0	0.0	61.3
		contact	0.0	0.0	0.0
loadcase	2	loads	0.0	0.0	-14.7
		reactions	0.0	0.0	14.7
		contact	0.0	0.0	0.0
loadcase	3	loads	0.0	0.0	172.5
		reactions	0.0	0.0	-172.5
		contact	0.0	0.0	0.0
loadcase	4	loads	0.0	0.0	172.5
		reactions	0.0	0.0	-172.5
		contact	0.0	0.0	0.0

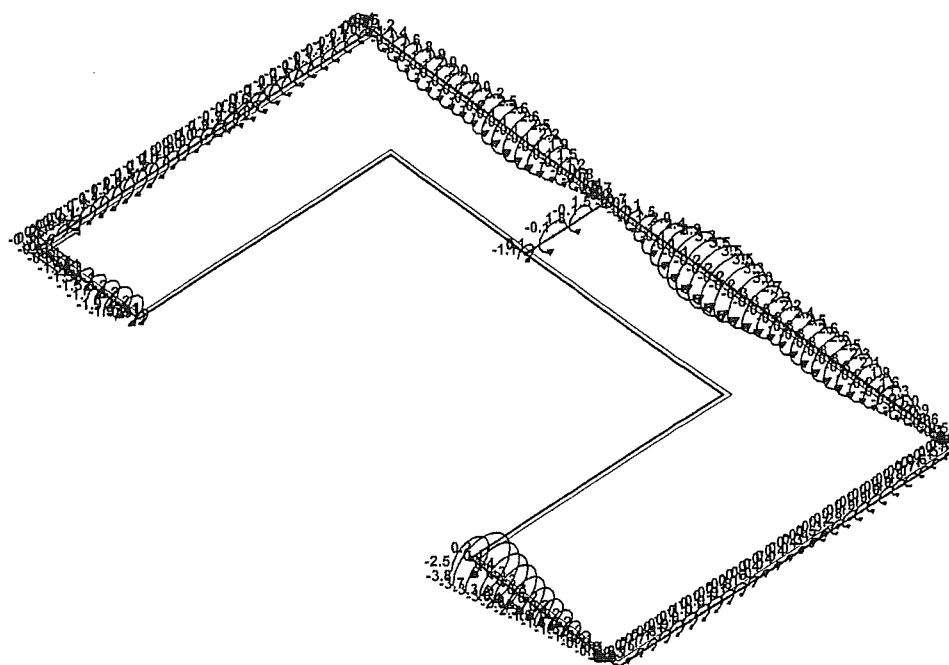
			X	Y	Z
loadcase	5	loads	0.0	0.0	172.5
		reactions	0.0	0.0	-172.5
		contact	0.0	0.0	0.0
loadcase	6	loads	0.0	0.0	172.5
		reactions	0.0	0.0	-172.5
		contact	0.0	0.0	0.0
loadcase	7	loads	0.0	0.0	172.5
		reactions	0.0	0.0	-172.5
		contact	0.0	0.0	0.0
loadcase	8	loads	0.0	0.0	172.5
		reactions	0.0	0.0	-172.5
		contact	0.0	0.0	0.0



Reactions. Ult. combi : 1/14



Reactions. Ult. combi : 1/14



Reactions. Ult. combi : 1/14

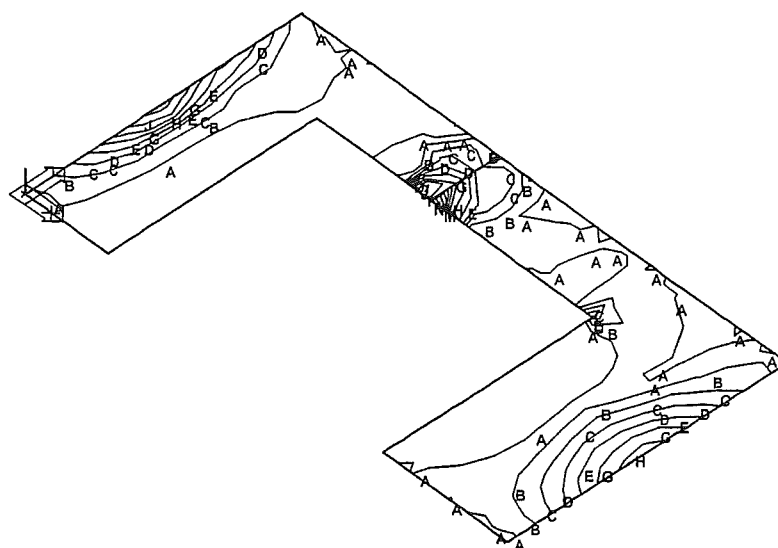
Reactions in support(s) - nodal values. Global extreme

Linear static - extreme or all combinations

Group of node(s) : 1/208

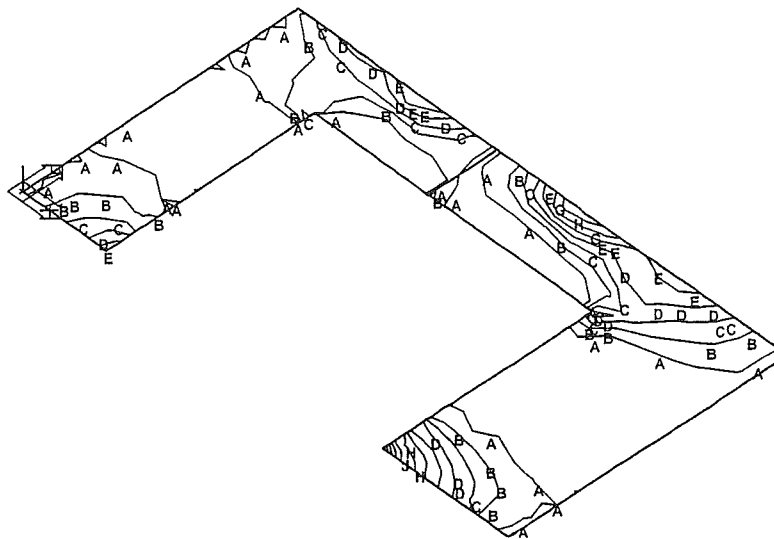
Group of ultimate combi : 1/14

support	node	combi	Rx [kN]	Ry [kN]	Rz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]
1	265	2	0.00	0.00	3.81	-0.13	-0.00	0.00
		7	0.00	0.00	-33.36	1.79	-13.55	0.00
66	68	8	0.00	0.00	-8.04	3.51	0.20	0.00
127	129	5	0.00	0.00	-6.19	-3.84	-0.79	0.00
1	265	8	0.00	0.00	-26.60	1.68	12.51	0.00
		13	0.00	0.00	-32.62	1.76	-13.55	0.00



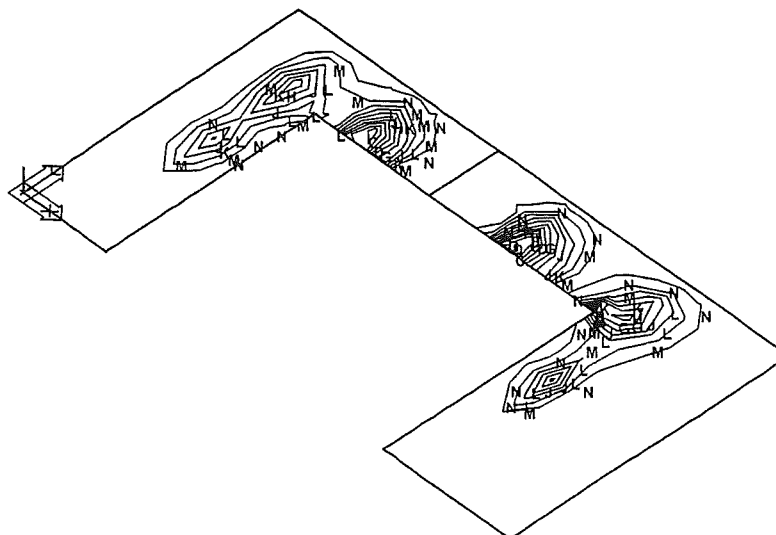
Max mx [kNm/m]	
Max	48.88
N	48.05
M	42.21
L	38.38
K	34.64
J	30.71
H	28.87
G	23.03
E	19.20
D	15.36
C	11.53
B	7.69
A	3.86
Min	0.02

Internal force - max mx - FEM Combi : 1



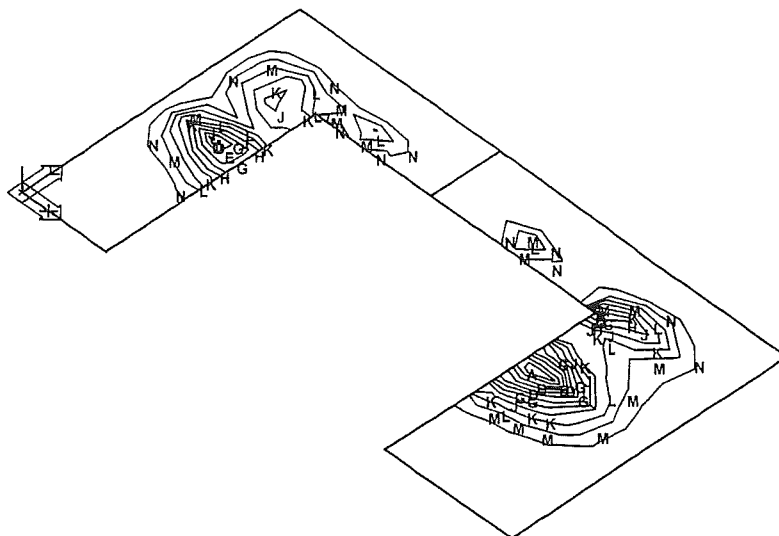
Max my [kN/m]	
Max	52.18
N	48.18
M	44.18
L	40.17
K	38.17
J	32.17
H	28.17
G	24.17
E	20.17
D	16.16
C	12.16
B	8.16
A	4.16
Min	0.16

Internal force - max my - FEM Combi : 1



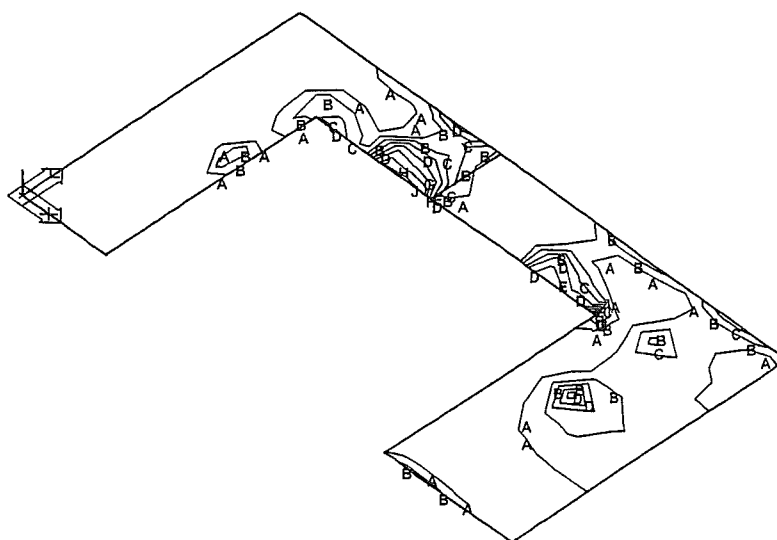
Min mx [kN/m]	
Max	0.30
N	-4.33
M	-8.66
L	-12.88
K	-17.31
J	-21.64
H	-25.97
G	-30.29
E	-34.62
D	-38.95
C	-43.28
B	-47.60
A	-51.93
Min	-56.26

Internal force - min mx - FEM Combi : 1



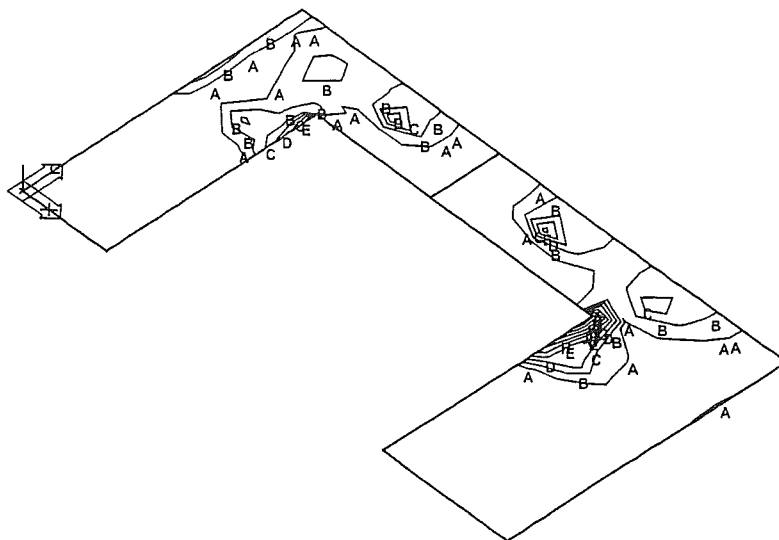
Min my [kNm/m]	
Max	0.44
N	-4.57
M	-9.14
L	-13.71
K	-18.28
J	-22.84
H	-27.41
G	-31.98
E	-36.55
D	-41.12
C	-45.69
B	-50.26
A	-54.83
Min	-59.40

Internal force - min my - FEM Combi : 1



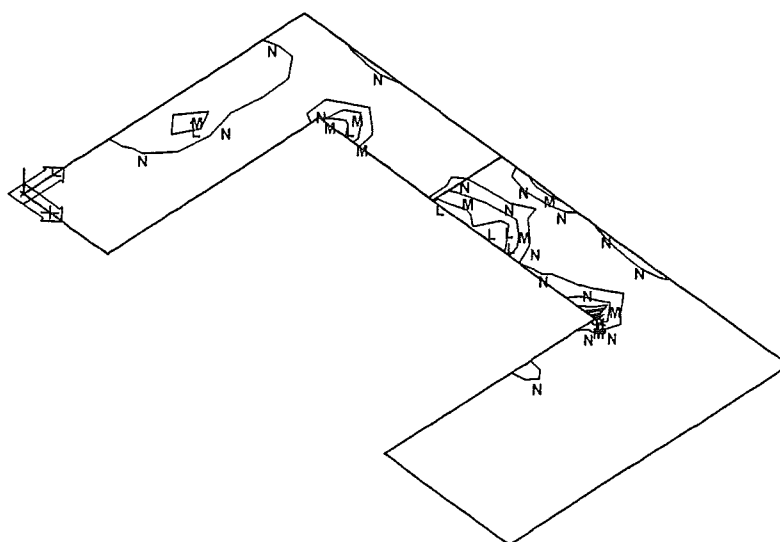
Max qx [kN/m]	
Max	352.59
N	325.27
M	297.94
L	270.61
K	243.28
J	215.96
H	188.63
G	161.30
E	133.97
D	106.63
C	79.32
B	51.99
A	24.66
Min	-2.68

Internal force - max qx - FEM Combi : 1



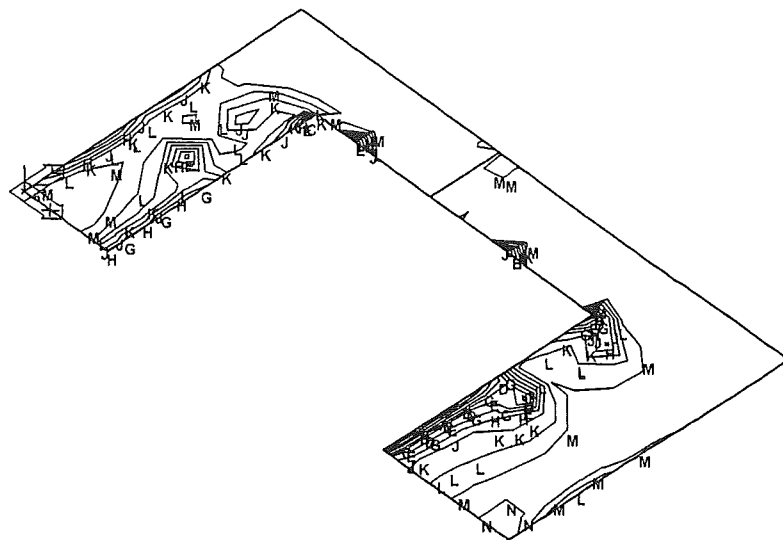
Max qy [kN/m]	
Max	445.58
N	411.27
M	376.96
L	342.65
K	308.34
J	274.03
H	239.72
G	205.41
E	171.10
D	136.79
C	102.49
B	68.18
A	33.87
Min	-0.44

Internal force - max qy - FEM Combi : 1



Min qx [kN/m]	
Max	1.58
N	-51.92
M	-103.83
L	-155.75
K	-207.66
J	-259.58
H	-311.49
G	-363.41
E	-415.32
D	-467.24
C	-519.15
B	-571.07
A	-622.98
Min	-674.80

Internal force - min qx - FEM Combi : 1



Min qy [kN/m]	
Max	3.23
N	0.00
M	-14.61
L	-29.22
K	-43.83
J	-58.43
H	-73.04
G	-87.65
E	-102.26
D	-116.87
C	-131.48
B	-146.09
A	-160.70
Min	-175.30

Internal force - min qy - FEM Combi : 1

RESULTS : INTERNAL FORCES

FEM Combi:

C1 Eigen-Tragfähigk.

Global extremes

Rotation of the local system: No

Basic magnitudes - bending

node	mx [kNm/m]	my [kNm/m]	mxy [kNm/m]	qx [kN/m]	qy [kN/m]
167	49.88	9.61	0.03	8.72	0.09
150	-56.26	-22.21	-0.95	-674.90	-84.28
5	0.09	52.18	0.09	27.95	18.38
307	-6.63	-59.40	-1.71	-76.20	-19.25
6	17.69	13.34	28.36	272.46	445.58
63	-0.31	-0.63	-12.69	-127.81	-1.73
150	21.35	3.08	23.99	352.59	207.85
	-56.26	-22.21	-0.95	-674.90	-84.28
6	17.69	13.34	28.36	272.46	445.58
	-48.53	-41.86	-1.25	-540.16	-175.30

Selection was done for macros: 1

Code for calculation: DIN 1045 7/88

Explanation of concrete symbols

Abbreviation	Explanation
betaWN	Concrete cube compression strength.
betaR	Design concrete compression strength.
Tau01	1st shear stress limit according Table 13.
Tau02	2nd shear stress limit according Table 13.
Tau03	3rd shear stress limit according Table 13.

Concrete characteristics

	B 25
betaWN	25000.00 kPa
betaR	17500.00 kPa
Tau011_1 plates	350.00 kPa
Tau011_2 plates	500.00 kPa
Tau02 plates	1800.00 kPa
Tau012 beams	750.00 kPa
Tau02 beams	1800.00 kPa
Tau03 beams	3000.00 kPa

Explanation of reinforcement steel symbols

Abbreviation	Explanation
betaS	Characteristic yield strength of reinforcement

Steel characteristics

	BSt 500
betaS	500000.00 kPa
E modulus	200000000.00 kPa

Input parameters

Description	Percentage
Maximum % of reinforcement	9.00
Minimum % of net reinforcement	0.00
Minimum % of pressure reinforcement	0.50
Minimum % of tension reinforcement	0.00
Minimum % of transverse reinforcement	20.00

Shear mode	
Tension reinforcement is partially anchored in the field.	

Description	Value
height < 7 cm represents increase of internal forces (§ 17.2.1 (6))	ON
Structural reinforcement of deep beam	OFF

Explanation of symbols - longitudinal reinforcement

Symbol	Explanation
c	Minimum constructive reinforcement superposing statically required pressure reinforcement
s	Minimum constructive reinforcement superposing statically required tension reinforcement
v	Virtual tension reinf (elliptic pressure state)

Explanation of symbols - shear reinforcement

Symbol Explanation

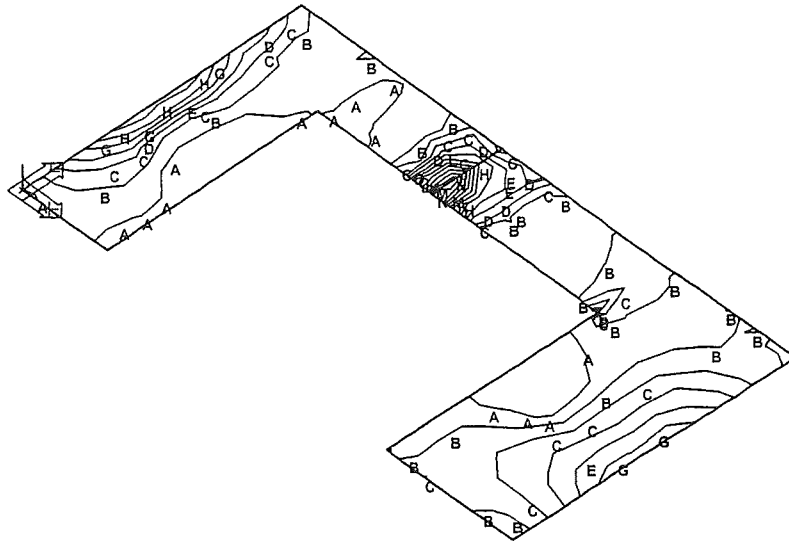
+ Shear reinforcement required (Shear Region 2)

Global extremes

Necessary areas

node	As1+ [cm ² /m]	As2+ [cm ² /m]	As3+ [cm ² /m]	As3- [cm ² /m]	As2- [cm ² /m]	As1- [cm ² /m]	Ass [cm ² /m ²]	tau [MPa]	tau0 [MPa]	Error
150	16.09	9.34v	~	~	1.19	4.81	~	1.91	2.08	
294	0.09	0.17	~	~	2.09	1.39	0.00+	0.00	0.01	
6	14.94	13.52	~	~	3.46	3.91	~+	2.85	2.85	
9	0.44	0.05	~	~	2.19	10.45	19.64+	0.56	1.01	
5	0.83	0.85	~	~	9.78	1.96	12.33+	0.35	0.84	
183	0.80	3.21c	~	~	0.08	0.45	10.27+	0.29	0.73	
9	0.44	0.05	~	~	2.19	10.45	19.64+	0.56	1.01	
177	3.43v	1.49	~	~	0.90	0.11	15.42+	0.44	0.89	
148	2.31	3.03	~	~	2.41	1.42	44.08	1.26	1.52	
1	0.12	0.15	~	~	0.81	0.86	0.00+	0.00	0.01	
6	14.94	13.52	~	~	3.46	3.91	~+	2.85	2.85	
1	0.12	0.15	~	~	0.81	0.86	0.00+	0.00	0.01	
6	14.94	13.52	~	~	3.46	3.91	~+	2.85	2.85	
226	0.96	0.18	~	~	2.42	1.47	0.00	0.00	0.01	

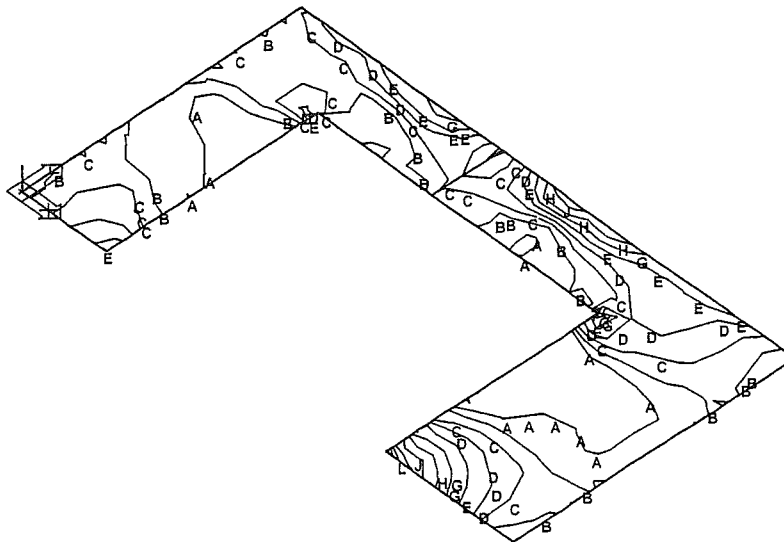
Selection was done for macros: 1



As1- [cm²/2m]	
Max	10.45
N	9.65
M	8.86
L	8.06
K	7.27
J	6.47
H	5.68
G	4.88
E	4.09
D	3.29
C	2.49
B	1.70
A	0.90
Min	0.11

See: 4/12/10 cm

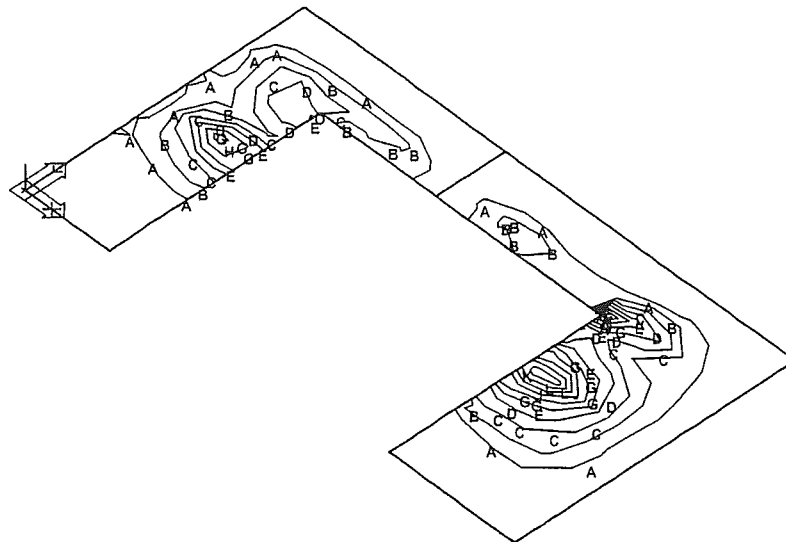
2D reinforcement - As1-



As2- [cm²/2m]	
Max	9.78
N	9.03
M	8.28
L	7.54
K	6.80
J	6.05
H	5.30
G	4.56
E	3.81
D	3.07
C	2.32
B	1.57
A	0.83
Min	0.08

See: 4/12/10 cm

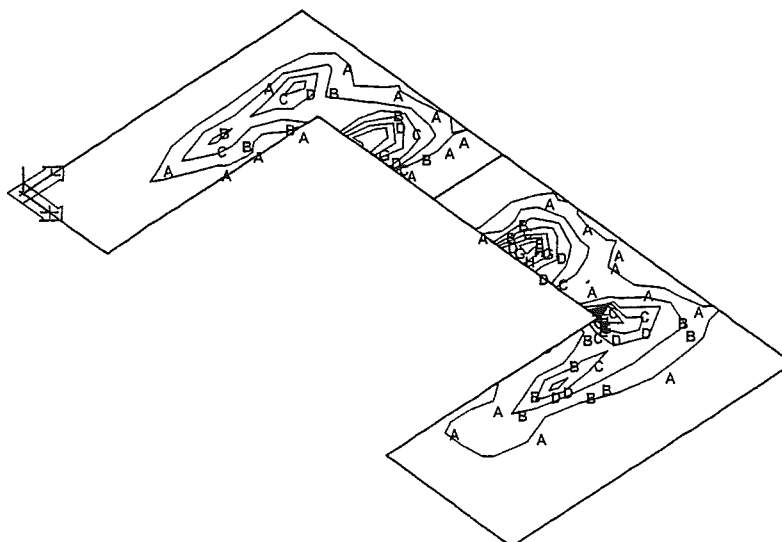
2D reinforcement - As2-



As2+ [cm ² /m]	
Max	13.52
N	12.48
M	11.45
L	10.41
K	9.38
J	8.34
H	7.30
G	6.27
E	5.23
D	4.19
C	3.16
B	2.12
A	1.08
Min	0.05

Sw. 412/100m

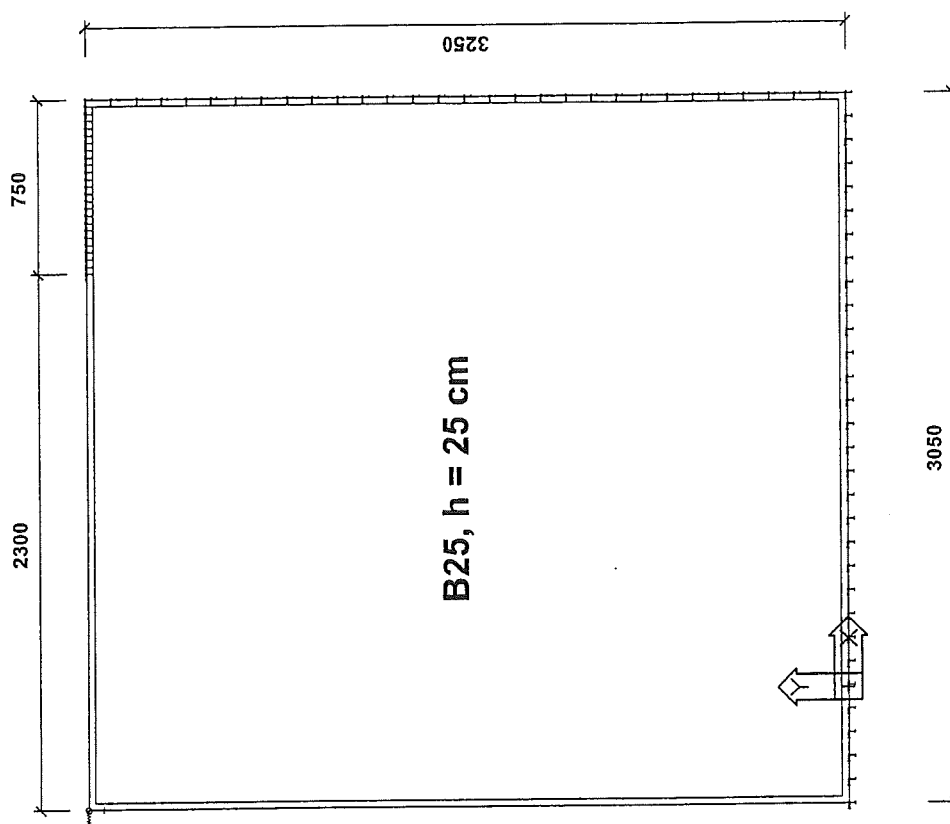
2D reinforcement - As2+



As1+ [cm ² /m]	
Max	16.09
N	14.88
M	13.63
L	12.39
K	11.16
J	9.93
H	8.70
G	7.47
E	6.24
D	5.01
C	3.78
B	2.55
A	1.32
Min	0.09

Sw. 412/100m

2D reinforcement - As1+



Basic data**Type of structure : General XYZ**

Number of nodes: 5
 Number of members: 0
 Number of 1D macros: 0
 Number of bound. lines: 5
 Number of 2D macros: 1
 Number of profiles : 0
 Number of cases: 9
 Number of materials: 1

Material

Name:

B 25

E modulus 30000.00 MPa
 Poisson coeff. 0.20
 Density 2500.000 kg/m³
 Extensibility 0.01 mm/m.K

List of material - Macro2D**Group of members :**

1/1

no.	Name:	quality	unit volume weight kgm ³	volume m ³	weight kg
4	B 25	B 25	2500.00	2.48	6195.31

The total weight of the structure: 6195.31 kg

Nodes

node	X m	Y m	Z m
1	0.250	-0.500	0.000
2	0.250	-0.500	3.250
3	0.250	2.550	3.250
4	0.250	2.550	0.000
5	0.250	1.800	3.250

Boundaries

bound. line	type	node
1	Line	1,2
2	Line	2,5
3	Line	3,4

bound. line	type	node
4	Line	4,1
5	Line	5,3

2D Macros

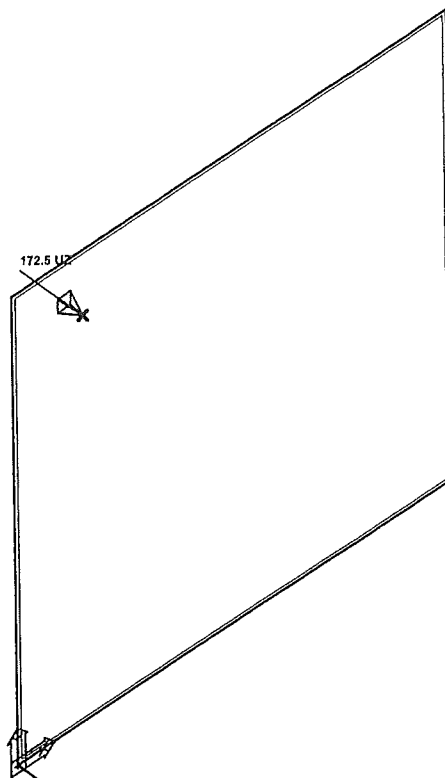
num	type
1	B 25 Thickness 0.25 m
	Boundary: 1,2,5,3,4
	Nodes : 5

Supports

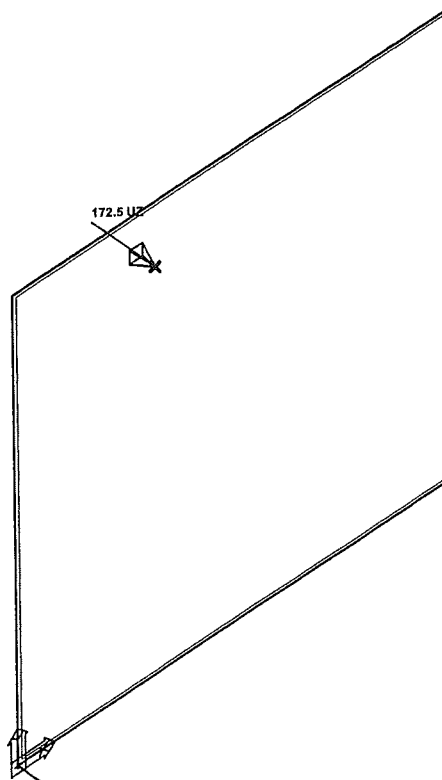
support	boundary	node	type	flexibility kN/m-kNm/rad	Size m
1	3		XYZRxRyRz	kx =100000.00 ky =100000.00 kz =100000.00 krx =35000.00	0.25
2	4		XYZRxRyRz	kx =100000.00 ky =100000.00 kz =100000.00 krx =35000.00	0.25
3	5		XYZRxRyRz	kx =100000.00 ky =100000.00 kz =100000.00 krx =35000.00	0.25
4		2	XYZ	kx =100000.00 ky =100000.00 kz =100000.00	0.25

Loadcases

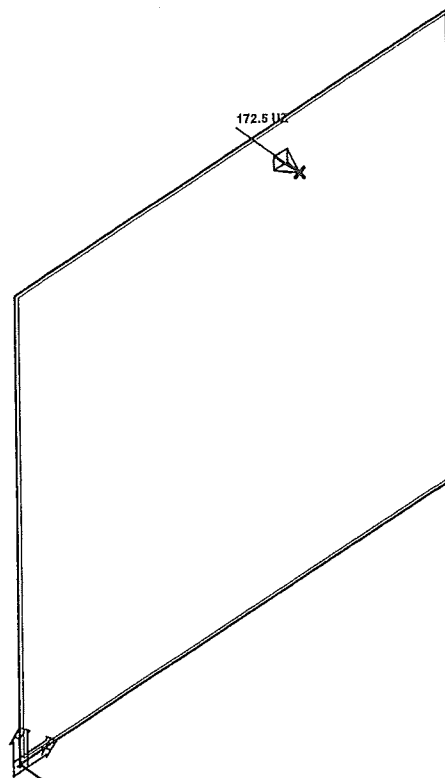
Case	Name:	Description
1	weight of the concrete	Self weight. Direction -Z
2	Jet-Load 1	Variable - Jet-Load Excl.
3	Jet-Load 2	Variable - Jet-Load Excl.
4	Jet-Load 3	Variable - Jet-Load Excl.
5	Jet-Load 4	Variable - Jet-Load Excl.
6	Jet-Load 5	Variable - Jet-Load Excl.
7	Jet-Load 6	Variable - Jet-Load Excl.
8	Wind +X	Variable - Wind Excl.
9	Wind -X	Variable - Wind Excl.



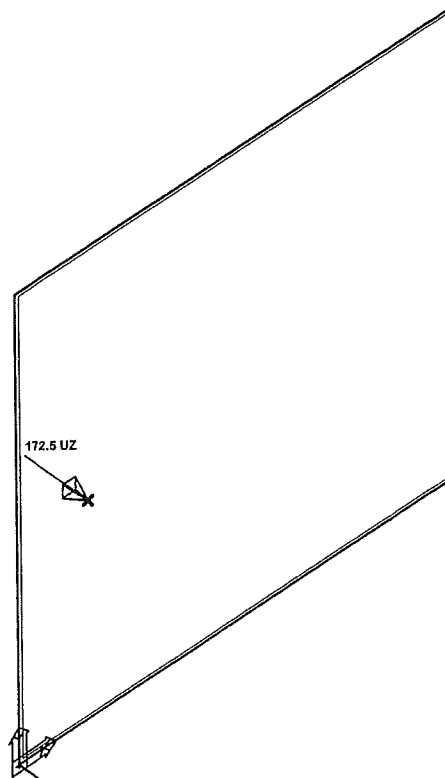
2. Jet-Load 1



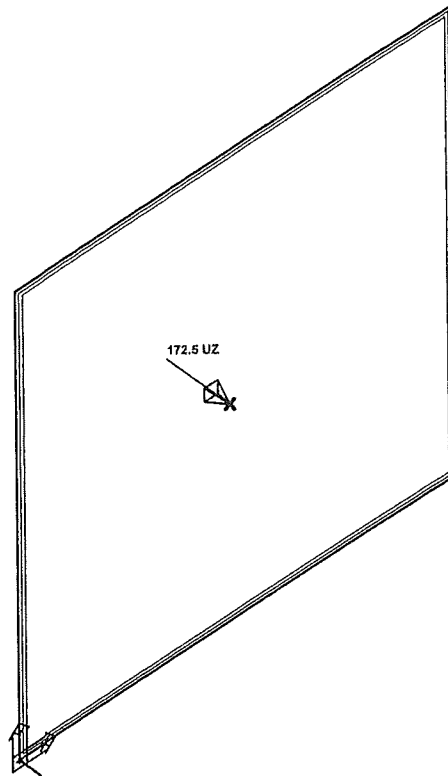
3. Jet-Load 2



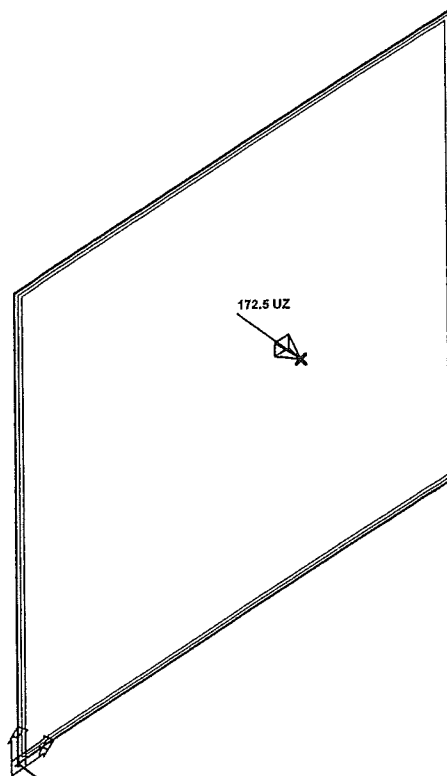
4. Jet-Load 3



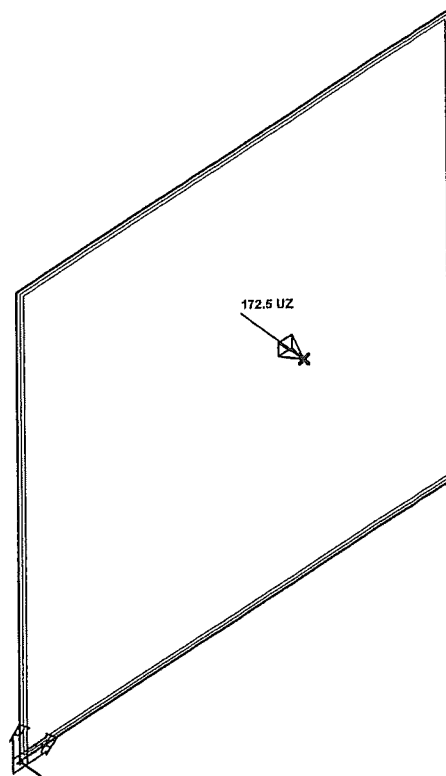
5. Jet-Load 4



6. Jet-Load 5



7. Jet-Load 6



7. Jet-Load 6

Variable loads group

Name:

Wind Excl.

Jet-Load Excl.

Loadcase no. 8 - Distributed loads 2D

macro	qx kN/m ²	qy kN/m ²	qz kN/m ²
1	0.65	0.00	0.00

Loadcase no. 9 - Distributed loads 2D

macro	qx kN/m ²	qy kN/m ²	qz kN/m ²
1	-0.65	0.00	0.00

Loadcase no. 2 - Free loads**Forces/Moments**

Index	x m	y m	Fx / Mx kN / kNm	Fy / My kN / kNm	Fz / Mz kN / kNm	System	Validity
1	0.50	2.80	0.00	0.00	172.51	UCS	All

Loadcase no. 3 - Free loads**Forces/Moments**

Index	x m	y m	Fx / Mx kN / kNm	Fy / My kN / kNm	Fz / Mz kN / kNm	System	Validity
1	1.00	2.80	0.00	0.00	172.51	UCS	All

Loadcase no. 4 - Free loads**Forces/Moments**

Index	x m	y m	Fx / Mx kN / kNm	Fy / My kN / kNm	Fz / Mz kN / kNm	System	Validity
1	2.00	2.80	0.00	0.00	172.51	UCS	All

Loadcase no. 5 - Free loads**Forces/Moments**

Index	x m	y m	Fx / Mx kN / kNm	Fy / My kN / kNm	Fz / Mz kN / kNm	System	Validity
1	0.50	1.50	0.00	0.00	172.51	UCS	All

Loadcase no. 6 - Free loads**Forces/Moments**

Index	x m	y m	Fx / Mx kN / kNm	Fy / My kN / kNm	Fz / Mz kN / kNm	System	Validity
1	1.50	1.50	0.00	0.00	172.51	UCS	All

Loadcase no. 7 - Free loads**Forces/Moments**

Index	x m	y m	Fx / Mx kN / kNm	Fy / My kN / kNm	Fz / Mz kN / kNm	System	Validity
1	2.00	1.50	0.00	0.00	172.51	UCS	All

Combinations

Combi	Norm	Case	coeff
1.	User-ultimate	1 weight of the concrete	1.00
		2 Jet-Load 1	1.00
		3 Jet-Load 2	1.00
		4 Jet-Load 3	1.00
		5 Jet-Load 4	1.00
		6 Jet-Load 5	1.00
		7 Jet-Load 6	1.00
		8 Wind +X	1.00
		9 Wind -X	1.00

Basic rules for generation of ultimate load combinations:

1 : 1.00*LC1 / 1.00*LC2 / 1.00*LC3 / 1.00*LC4 / 1.00*LC5 / 1.00*LC6 / 1.00*LC7
/ 1.00*LC8 / 1.00*LC9

List of extreme ultimate load combinations

- 1/ 1 : +1.00*LC1
- 2/ 1 : +1.00*LC1+1.00*LC9
- 3/ 1 : +1.00*LC1+1.00*LC2+1.00*LC8
- 4/ 1 : +1.00*LC1+1.00*LC3+1.00*LC8
- 5/ 1 : +1.00*LC1+1.00*LC4+1.00*LC8
- 6/ 1 : +1.00*LC1+1.00*LC3+1.00*LC9
- 7/ 1 : +1.00*LC1+1.00*LC4+1.00*LC9
- 8/ 1 : +1.00*LC1+1.00*LC5+1.00*LC8
- 9/ 1 : +1.00*LC1+1.00*LC6+1.00*LC8
- 10/ 1 : +1.00*LC1+1.00*LC5+1.00*LC9
- 11/ 1 : +1.00*LC1+1.00*LC7+1.00*LC8
- 12/ 1 : +1.00*LC1+1.00*LC7+1.00*LC9

Subsoils

Name:	Type of position	C1x kN/m ³	C1y kN/m ³	C1z kN/m ³	C2x kN/m	C2y kN/m	SigZpl kN/m ²
gemischtkörniger Sand	Under plate, block	1000.000	1000.000	30000.000	0.000	0.000	0.000

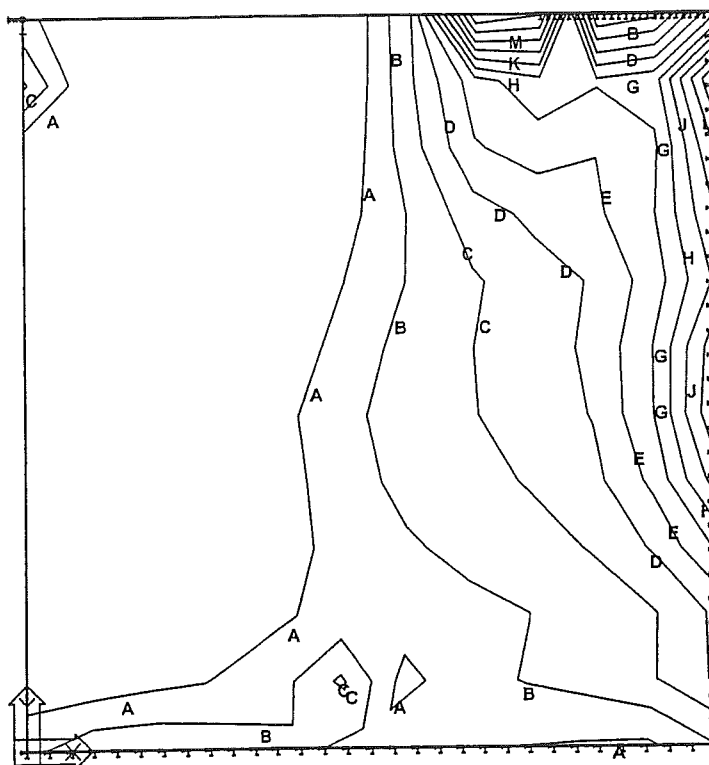
Calculation protocol.**Linear calculation**

Number of 2D elements	121
Number of 1D elements	0
Number of mesh nodes	143
Number of equations	858
Loadcases	LC 1 weight of the concrete
	LC 2 Jet-Load 1
	LC 3 Jet-Load 2
	LC 4 Jet-Load 3
	LC 5 Jet-Load 4
	LC 6 Jet-Load 5
	LC 7 Jet-Load 6
	LC 8 Wind +X
	LC 9 Wind -X

Number of 2D elements 121
 Number of 1D elements 0
 Number of mesh nodes 143
 Number of equations 858
 Bending theory Mindlin
 Start of calculation 03.03.2005 11:48
 End of calculation 03.03.2005 11:48

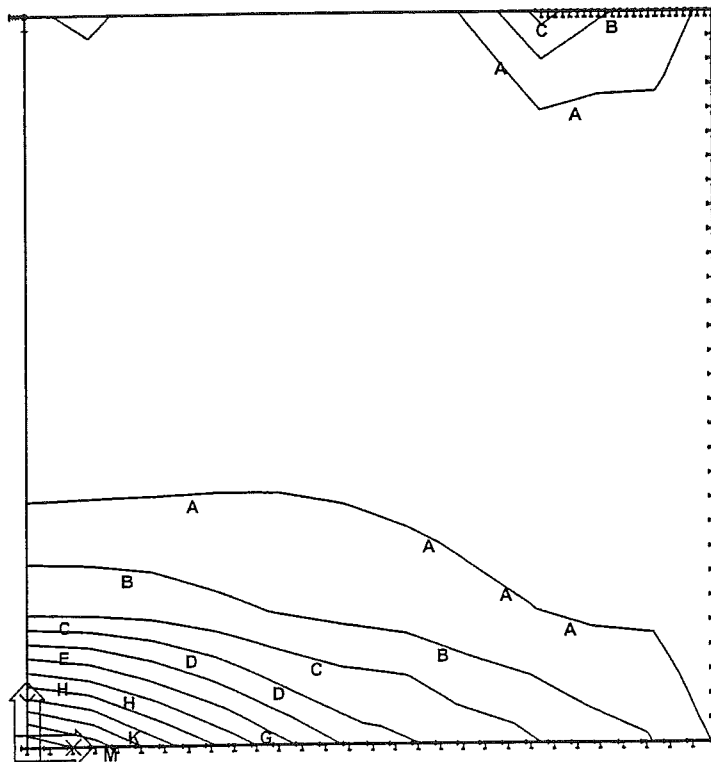
Sum of loads and reactions.

		X	Y	Z
loadcase 1	loads	0.0	0.0	-62.0
	reactions	0.0	1.9	9.8
	contact	0.0	-1.9	52.1
loadcase 2	loads	172.5	0.0	-0.0
	reactions	-88.0	0.0	0.0
	contact	-84.5	-0.0	0.0
loadcase 3	loads	172.5	0.0	-0.0
	reactions	-59.6	0.0	0.0
	contact	-112.9	-0.0	0.0
loadcase 4	loads	172.5	0.0	-0.0
	reactions	-17.1	-0.0	0.0
	contact	-155.4	0.0	0.0
loadcase 5	loads	172.5	0.0	-0.0
	reactions	-35.6	0.0	0.0
	contact	-136.9	-0.0	0.0
loadcase 6	loads	172.5	0.0	-0.0
	reactions	-14.6	0.0	0.0
	contact	-157.9	-0.0	0.0
loadcase 7	loads	172.5	0.0	-0.0
	reactions	-7.6	-0.0	0.0
	contact	-164.9	0.0	0.0
loadcase 8	loads	6.4	0.0	0.0
	reactions	-0.8	0.0	0.0
	contact	-5.6	0.0	0.0
loadcase 9	loads	-6.4	0.0	0.0
	reactions	0.8	0.0	0.0
	contact	5.6	0.0	0.0



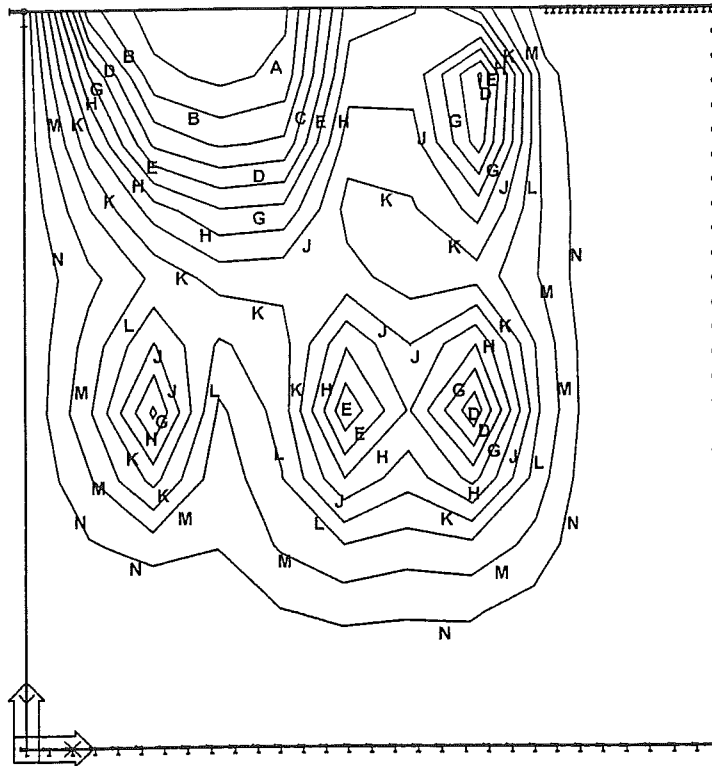
Max mx [kNm/m]	
Max	41.81
N	38.60
M	35.38
L	32.17
K	28.95
J	25.74
H	22.52
G	19.31
E	16.09
D	12.88
C	9.66
B	6.45
A	3.23
Min	0.02

Internal force - max mx - FEM Combi : 1



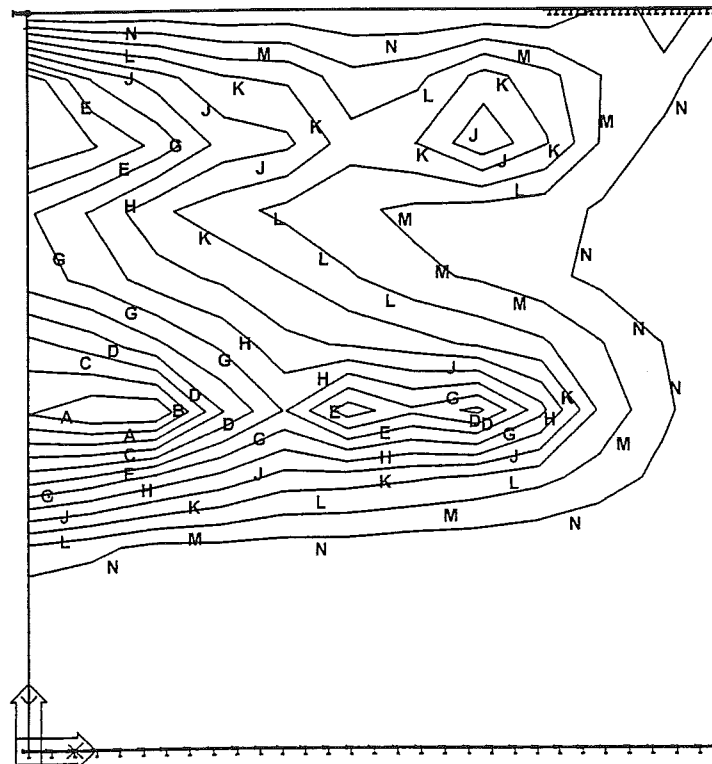
Max my [kNm/m]	
Max	79.37
N	73.27
M	67.16
L	61.06
K	54.96
J	48.85
H	42.75
G	36.64
E	30.54
D	24.44
C	18.33
B	12.23
A	6.13
Min	0.02

Internal force - max my - FEM Combi : 1



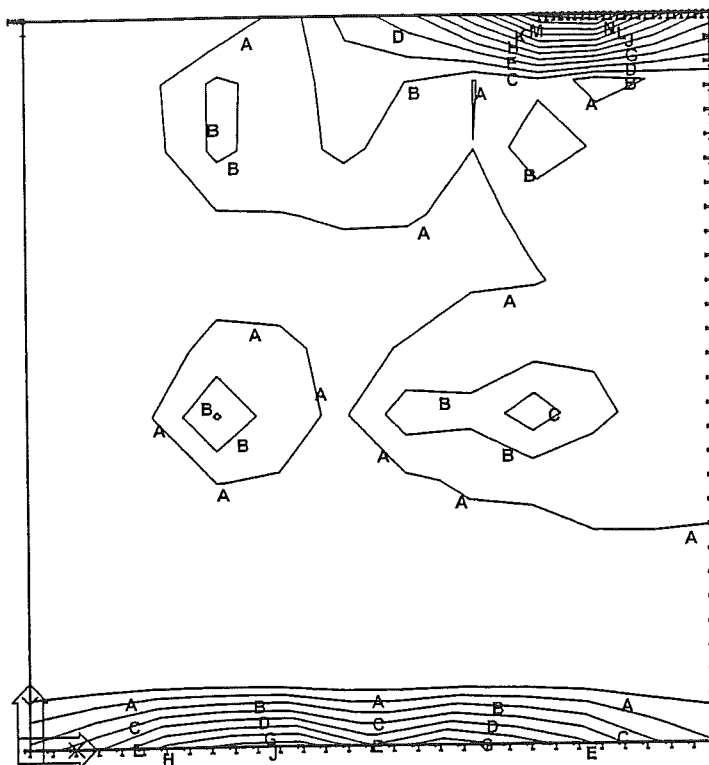
Min mx [kNm/m]	
Max	-0.01
N	-4.30
M	-8.58
L	-12.87
K	-17.15
J	-21.43
H	-25.72
G	-30.00
E	-34.29
D	-38.57
C	-42.86
B	-47.14
A	-51.42
Min	-55.71

Internal force - min mx - FEM Combi : 1



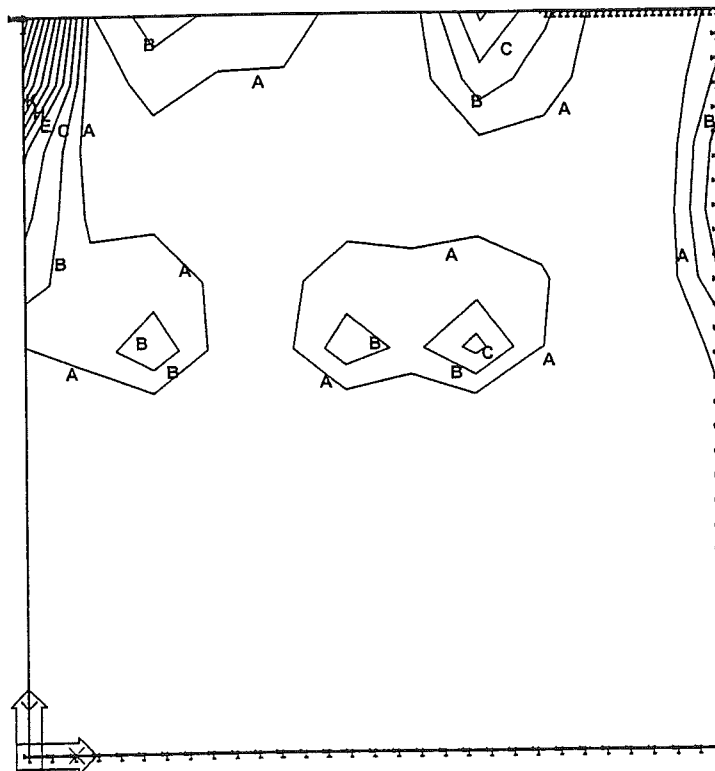
Min my [kNm/m]	
Max	-0.04
N	-4.60
M	-9.17
L	-13.73
K	-18.30
J	-22.87
H	-27.43
G	-32.00
E	-36.56
D	-41.13
C	-45.69
B	-50.26
A	-54.83
Min	-59.39

Internal force - min my - FEM Combi : 1



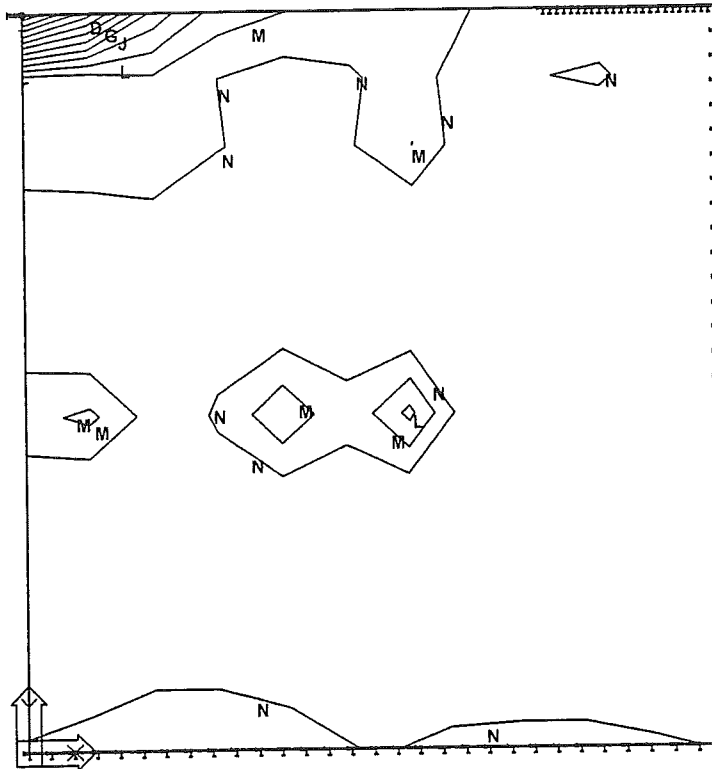
Max qx [kN/m]	
Max	464.87
N	429.11
M	393.35
L	357.59
K	321.83
J	286.07
H	250.31
G	214.55
E	178.80
D	143.04
C	107.28
B	71.52
A	35.76
Min	0.00

Internal force - max qx - FEM Combi : 1



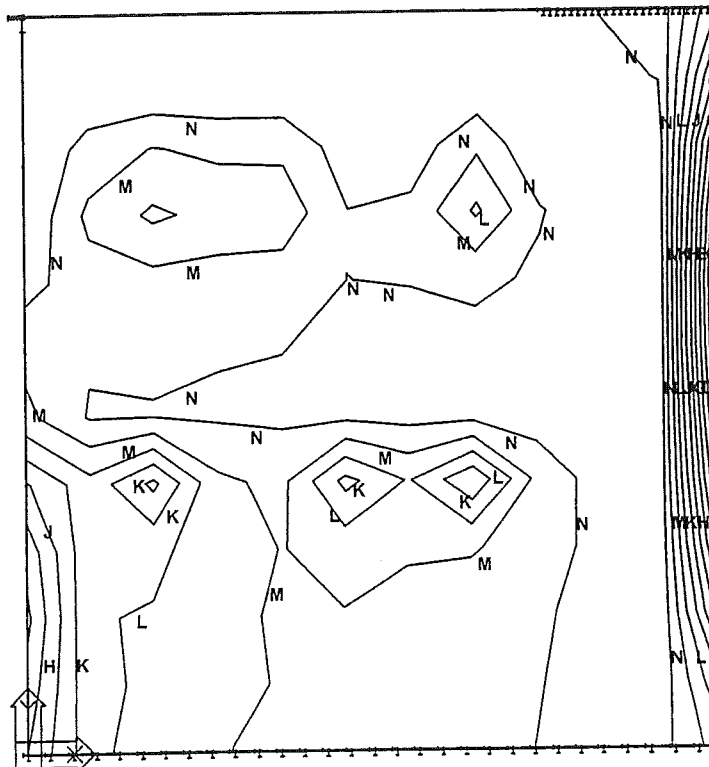
Max qy [kN/m]	
Max	406.90
N	375.61
M	344.32
L	313.03
K	281.73
J	250.44
H	219.15
G	187.86
E	156.57
D	125.27
C	93.98
B	62.69
A	31.40
Min	0.11

Internal force - max qy - FEM Combi : 1



Min qx [kN/m]	
Max	-0.25
N	-31.93
M	-63.62
L	-95.30
K	-126.98
J	-158.66
H	-190.34
G	-222.02
E	-253.70
D	-285.38
C	-317.06
B	-348.74
A	-380.42
Min	-412.10

Internal force - min qx - FEM Combi : 1



Min qy [kN/m]	
Max	-0.09
N	-24.31
M	-48.53
L	-72.74
K	-96.96
J	-121.18
H	-145.40
G	-169.61
E	-193.83
D	-218.05
C	-242.27
B	-266.48
A	-290.70
Min	-314.92

Internal force - min qy - FEM Combi : 1

RESULTS : INTERNAL FORCES**FEM Combi:**

C1 User-ultimate

Global extremes

Rotation of the local system: No
Basic magnitudes - bending

node	mx [kNm/m]	my [kNm/m]	mxy [kNm/m]	qx [kN/m]	qy [kN/m]
136	41.81	8.12	9.77	283.93	132.25
140	-55.71	-0.60	-0.12	-80.56	-0.16
1	5.56	79.37	2.91	117.55	20.97
69	-30.88	-59.39	-5.21	-17.60	-23.06
2	4.20	3.64	25.49	3.95	406.90
15	-0.12	-0.63	-13.60	-45.37	-39.56
134	3.11	13.09	15.58	464.87	16.46
2	-0.06	-0.05	-0.28	-412.10	-3.99
	4.20	3.64	25.49	3.95	406.90
84	-0.57	-0.08	-12.84	-0.85	-314.92

Selection was done for macros: 1

Code for calculation: DIN 1045 7/88

Explanation of concrete symbols

Abbreviation	Explanation
betaWN	Concrete cube compression strength.
betaR	Design concrete compression strength.
Tau01	1st shear stress limit according Table 13.
Tau02	2nd shear stress limit according Table 13.
Tau03	3rd shear stress limit according Table 13.

Concrete characteristics

	B 25
betaWN	25000.00 kPa
betaR	17500.00 kPa
Tau011_1 plates	1500.00 kPa
Tau011_2 plates	1500.00 kPa
Tau02 plates	1800.00 kPa
Tau012 beams	750.00 kPa
Tau02 beams	1800.00 kPa
Tau03 beams	3000.00 kPa

Explanation of reinforcement steel symbols

Abbreviation	Explanation
betaS	Characteristic yield strength of reinforcement

Steel characteristics

BSI 500
 betaS 500000.00 kPa
 E modulus 200000000.00 kPa

Input parameters

Description	Percentage
Maximum % of reinforcement	9.00
Minimum % of net reinforcement	0.00
Minimum % of pressure reinforcement	0.00
Minimum % of tension reinforcement	0.00
Minimum % of transverse reinforcement	20.00

Shear mode

Compression reinforcement goes from one support to the other in full value.

Description	Value
height < 7 cm represents increase of internal forces (§ 17.2.1 (6))	ON
Structural reinforcement of deep beam	OFF

Explanation of symbols - longitudinal reinforcement

Symbol	Explanation
s	Minimum constructive reinforcement superposing statically required tension reinforcement
v	Virtual tension reinf (elliptic pressure state)
c	Minimum constructive reinforcement superposing statically required pressure reinforcement

Explanation of symbols - shear reinforcement

Symbol	Explanation
+	Shear reinforcement required (Shear Region 2)

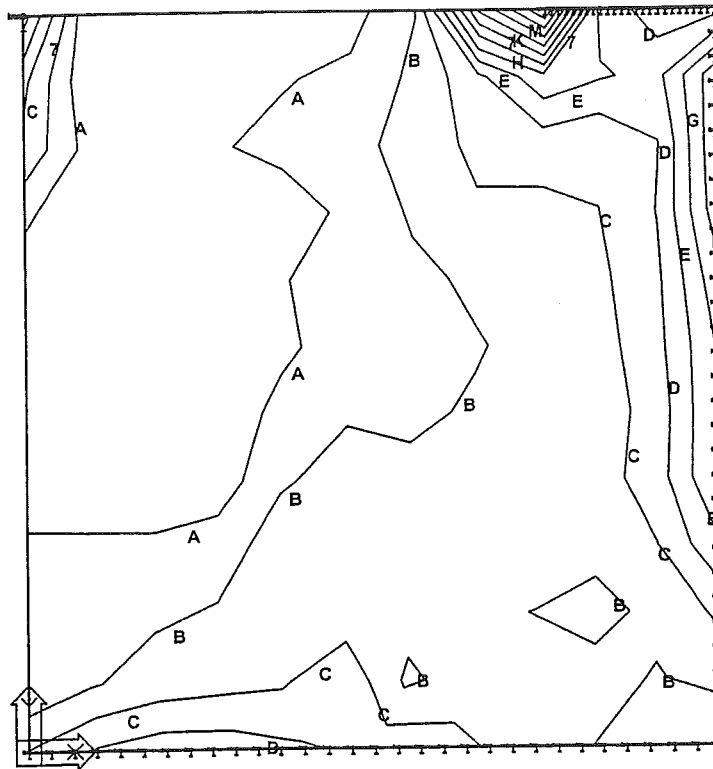
Global extremes

Necessary areas

node	As1+ [cm^2/m]	As2+ [cm^2/m]	As3+ [cm^2/m]	As3- [cm^2/m]	As2- [cm^2/m]	As1- [cm^2/m]	Ass [cm^2/m^2]	tau [MPa]	tau0 [MPa]	Error
142	11.13	1.71	~	~	2.95	0.27	~	0.52	1.31	
3	0.18	1.43	~	~	1.25	3.34	0.00	0.00	0.00	
131	2.71	13.87	~	~	0.97	3.05	~	0.49	1.26	
23	1.02	0.02	~	~	1.17	2.20	0.00	0.00	0.50	
1	0.72	0.14s	~	~	15.79	2.92	0.00	0.00	0.00	
104	6.04	3.83	~	~	0.04	0.19	0.00	0.00	0.29	
5	4.38	2.22	~	~	5.85	12.02	~	1.98	2.06	
80	1.98v	6.11c	~	~	0.28	0.11	0.00	0.00	0.12	
133	0.47	3.51	~	~	2.23	3.26	29.16	0.83	0.97	
1	0.72	0.14s	~	~	15.79	2.92	0.00	0.00	0.00	
2	3.03	5.88	~	~	6.05	5.14	~	4.06	2.96	
1	0.72	0.14s	~	~	15.79	2.92	0.00	0.00	0.00	
2	3.03	5.88	~	~	6.05	5.14	~	4.06	2.96	
1	0.72	0.14s	~	~	15.79	2.92	0.00	0.00	0.00	

Selection was done for macros: 1

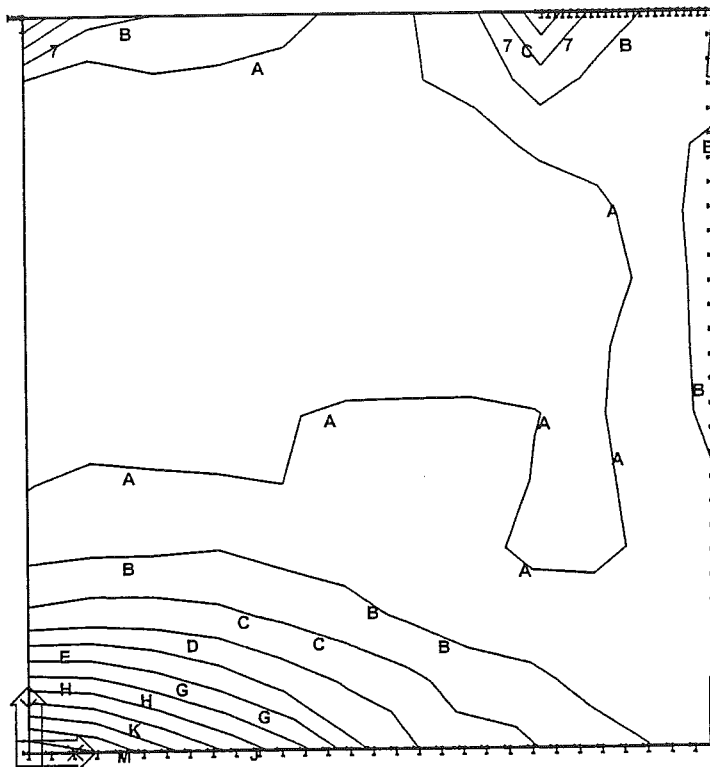
Error 7 - not dimensionable due to shear (shear zone 3)



As1- [cm ² /m]	
Max	12.02
N	11.11
M	10.19
L	9.27
K	8.36
J	7.44
H	6.52
G	5.61
E	4.69
D	3.78
C	2.86
B	1.94
A	1.03
Min	0.11

See 7/12/10 cm

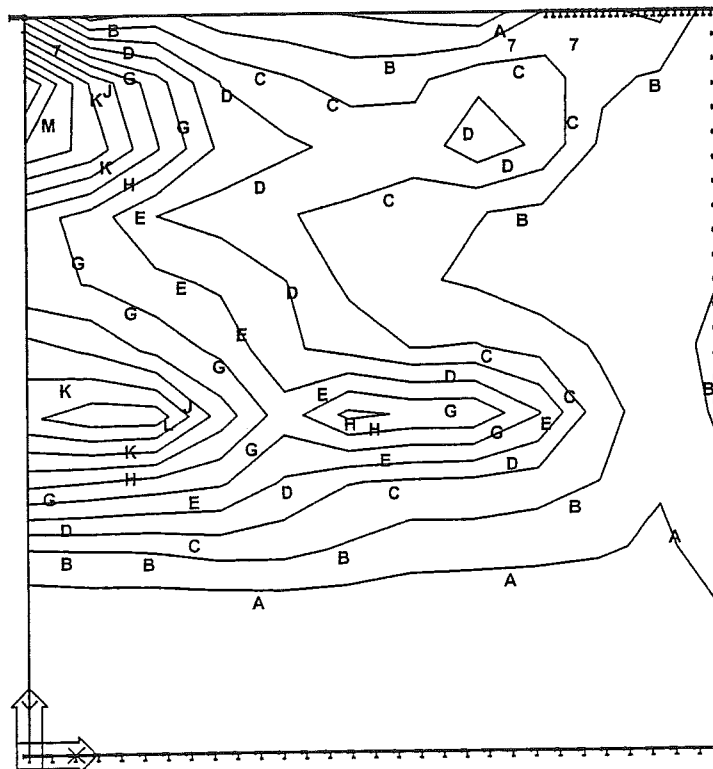
2D reinforcement - As1-



As2- [cm ² /m]	
Max	15.79
N	14.58
M	13.37
L	12.15
K	10.94
J	9.73
H	8.52
G	7.31
E	6.10
D	4.89
C	3.67
B	2.46
A	1.25
Min	0.04

See: 1/12/100cm

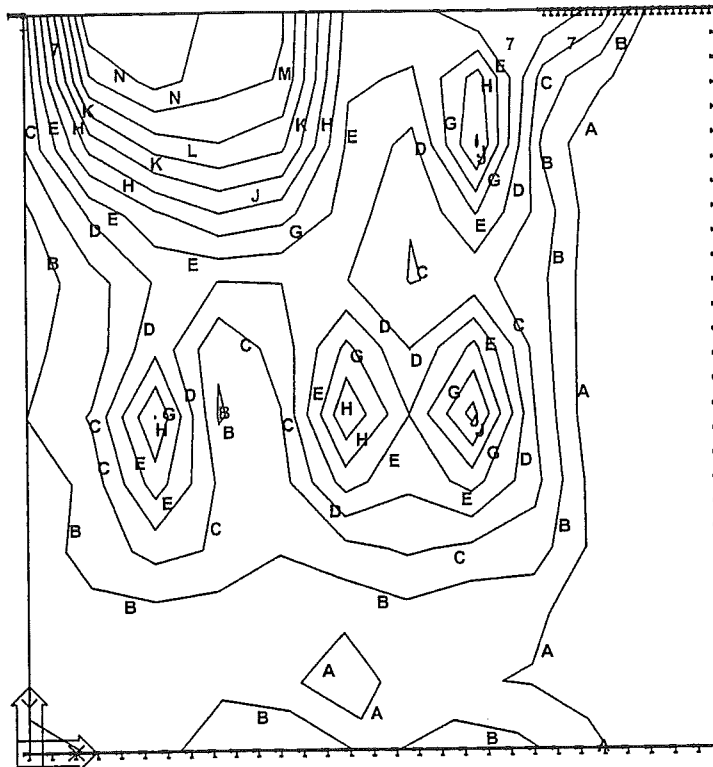
2D reinforcement - As2-



As2+ [cm ² /m]	
Max	13.87
N	12.80
M	11.74
L	10.67
K	9.60
J	8.54
H	7.47
G	6.41
E	5.34
D	4.28
C	3.21
B	2.15
A	1.08
Min	0.02

See: 1/12/100cm

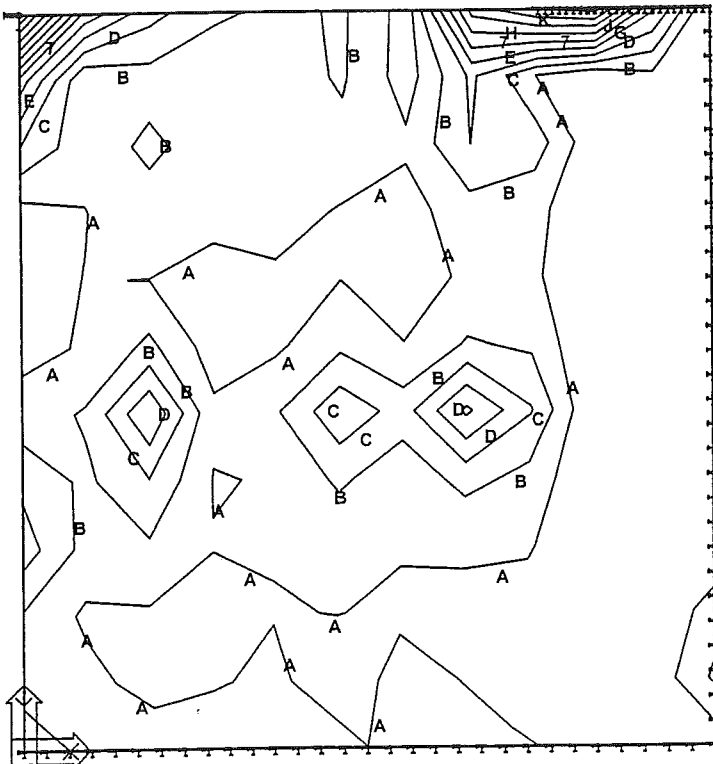
2D reinforcement - As2+



As1+ [cm ² /m]	
Max	11.13
N	10.29
M	9.45
L	8.61
K	7.77
J	6.92
H	6.08
G	5.24
E	4.40
D	3.55
C	2.71
B	1.87
A	1.03
Min	0.18

80-12/10cm

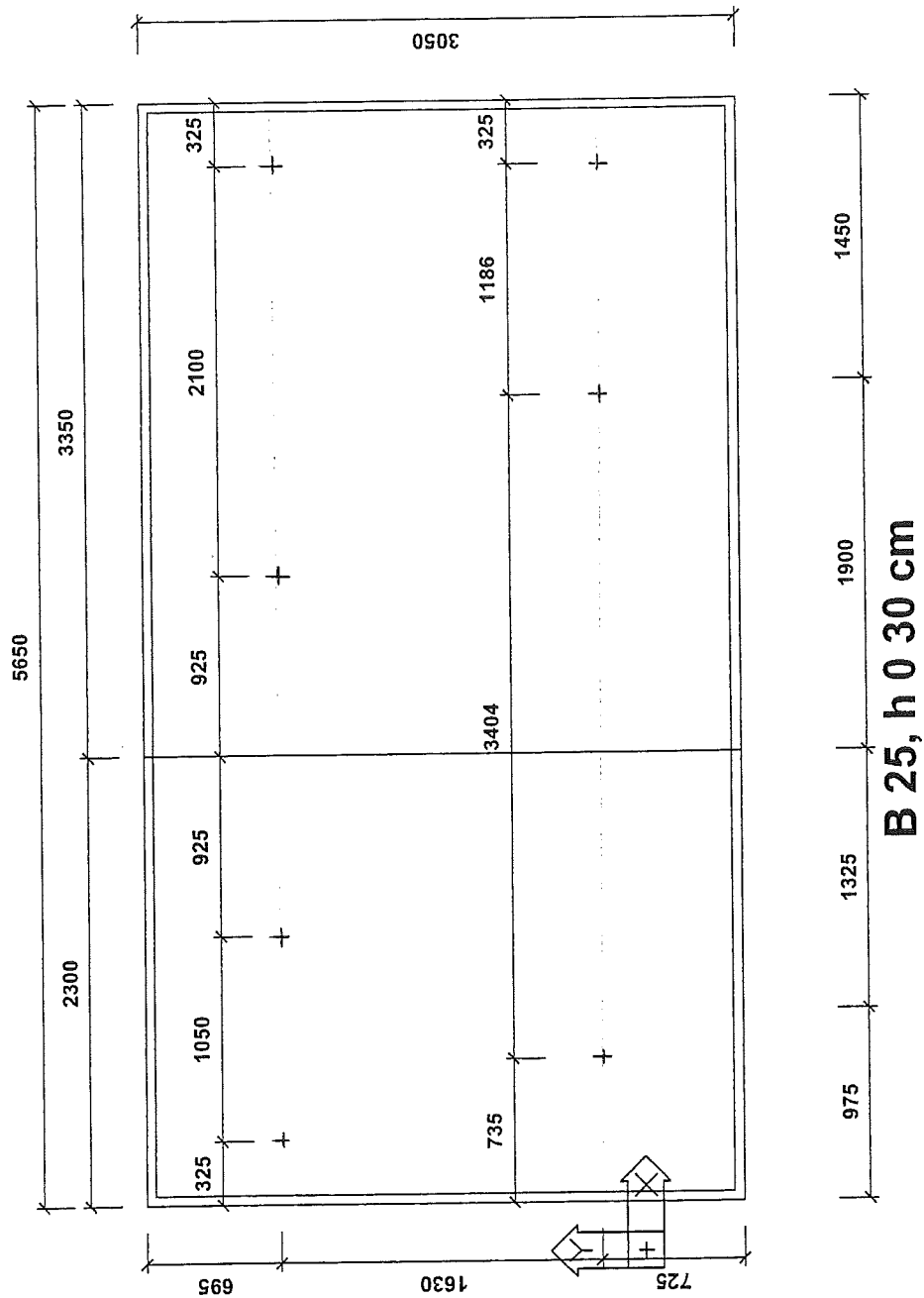
2D reinforcement - As1+



tau0 [kPa]	
Max	2963.05
N	2735.12
M	2507.20
L	2279.27
K	2051.34
J	1823.42
H	1595.49
G	1367.56
E	1139.63
D	911.71
C	683.78
B	455.85
A	227.93
Min	0.00

< 500 kPa

2D reinforcement - tau0



B 25, h 0 30 cm

Pos 3

Basic data**Type of structure : General XYZ**

Number of nodes: 16
 Number of members: 0
 Number of 1D macros: 0
 Number of bound. lines: 10
 Number of 2D macros: 1
 Number of profiles : 0
 Number of cases: 10
 Number of materials: 1

Material

Name:

B 25

E modulus 30000.00 MPa
 Poisson coeff. 0.20
 Density 2500.000 kg/m³
 Extensibility 0.01 mm/m.K

List of material - Macro2D**Group of members :**

1/2

no.	Name:	quality	unit volume weight kgm ³	volume m ³	weight kg
-----	-------	---------	--	--------------------------	--------------

The total weight of the structure: 0.00 kg

Nodes

node	X m	Y m	Z m
1	0.250	-0.500	0.000
2	0.250	2.550	0.000
3	5.900	2.550	0.000
4	5.900	-0.500	0.000
5	4.450	-0.500	0.000
6	1.225	-0.500	0.000
7	2.550	-0.500	0.000
8	2.550	2.550	0.000

node	X m	Y m	Z m
9	2.550	1.800	0.000
10	0.985	0.225	0.000
11	0.575	1.855	0.000
12	1.625	1.855	0.000
13	3.475	1.855	0.000
14	5.575	1.855	0.000
15	4.389	0.225	0.000
16	5.575	0.225	0.000

Boundaries

bound. line	type	node
1	Line	1,6

bound. line	type	node
2	Line	6,7

bound. line	type	node
3	Line	7,5

bound. line	type	node	bound. line	type	node	bound. line	type	node
4	Line	5,4	7	Line	8,2	10	Line	9,8
5	Line	4,3	8	Line	2,1			
6	Line	3,8	9	Line	7,9			

2D Macros

num	type	
1		
	B 25	Thickness 0.30 m
	Boundary:	1,2,3,4,5,6,7,8
	Nodes :	9,10,11,12,13,14,15,16
1	Inner line:	9,10

Material properties - constant isotropy

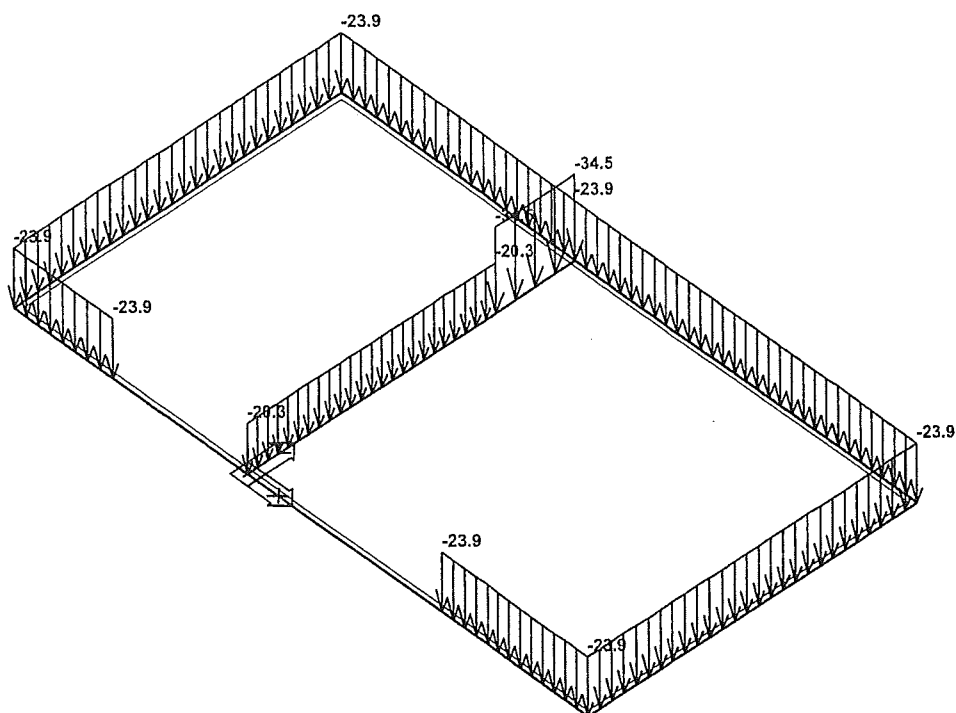
Macro	Thickness cm	Material
1	0.0	B 25

Soil - 2D macro

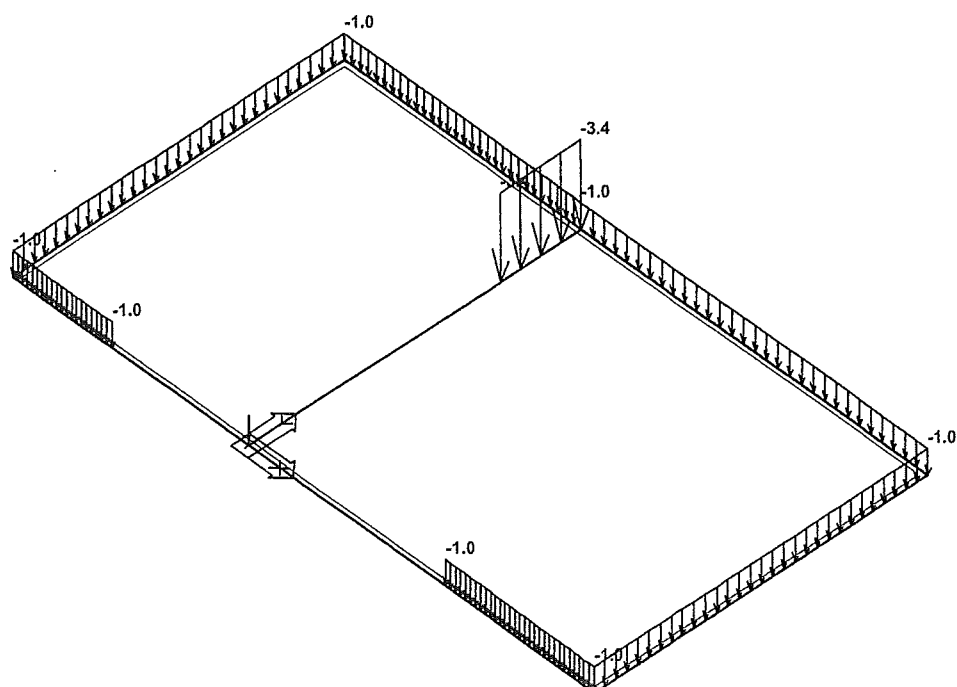
Index	2D macro	Name of subsoil
1	1	gemischtkörniger Sand

Loadcases

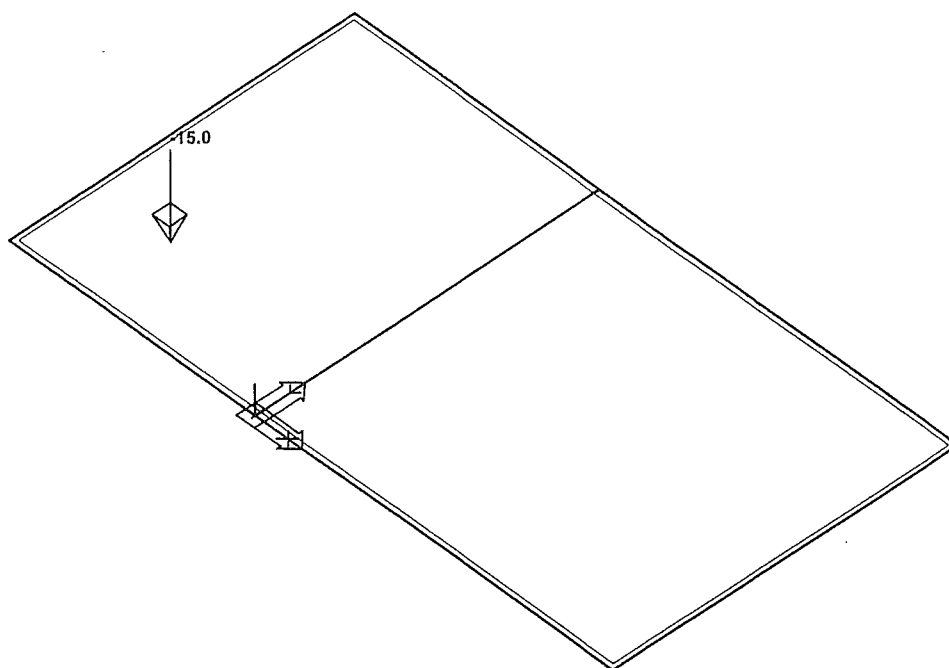
Case	Name	Description
1	weight of the concrete	Self weight. Direction -Z
2	dead loads	Permanent - Loads
3	live loads	Variable - p
4	P1	Variable - p
5	P2	Variable - p
6	P3	Variable - p
7	P4	Variable - p
8	P5	Variable - p
9	P6	Variable - p
10	P7	Variable - p



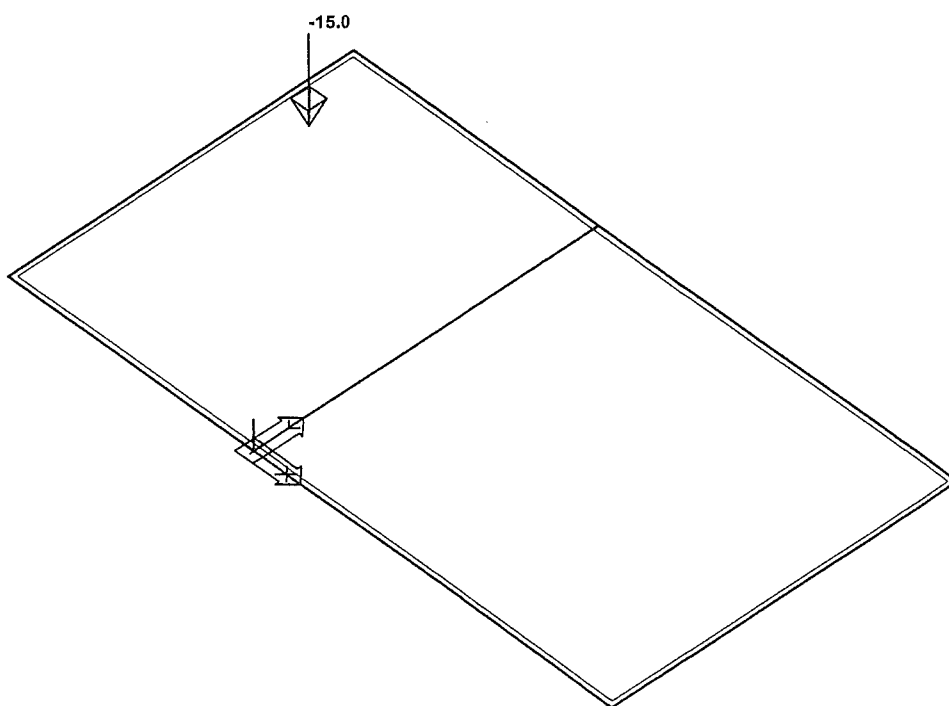
2. dead loads



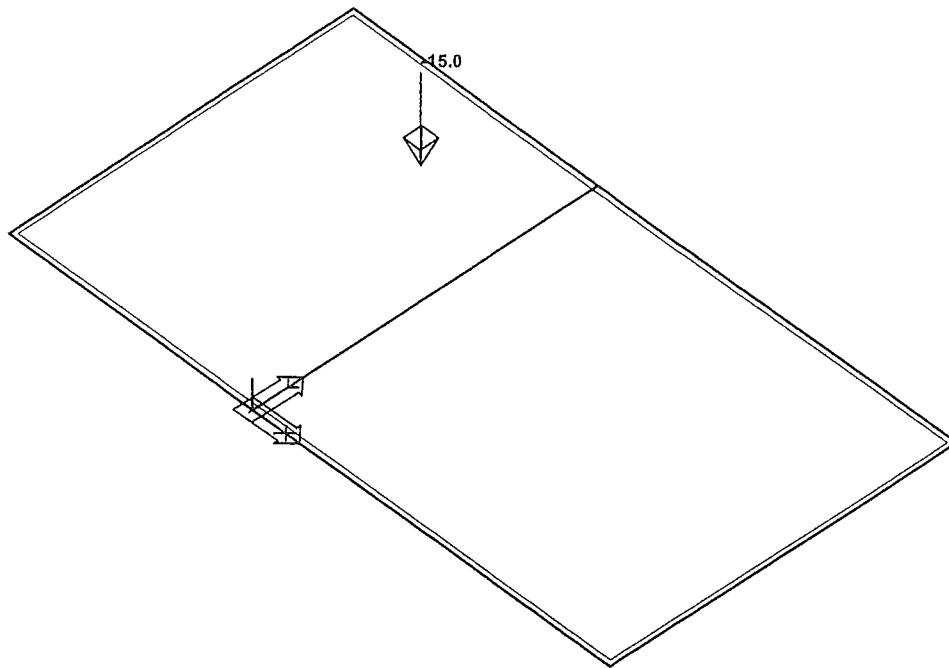
3. live loads



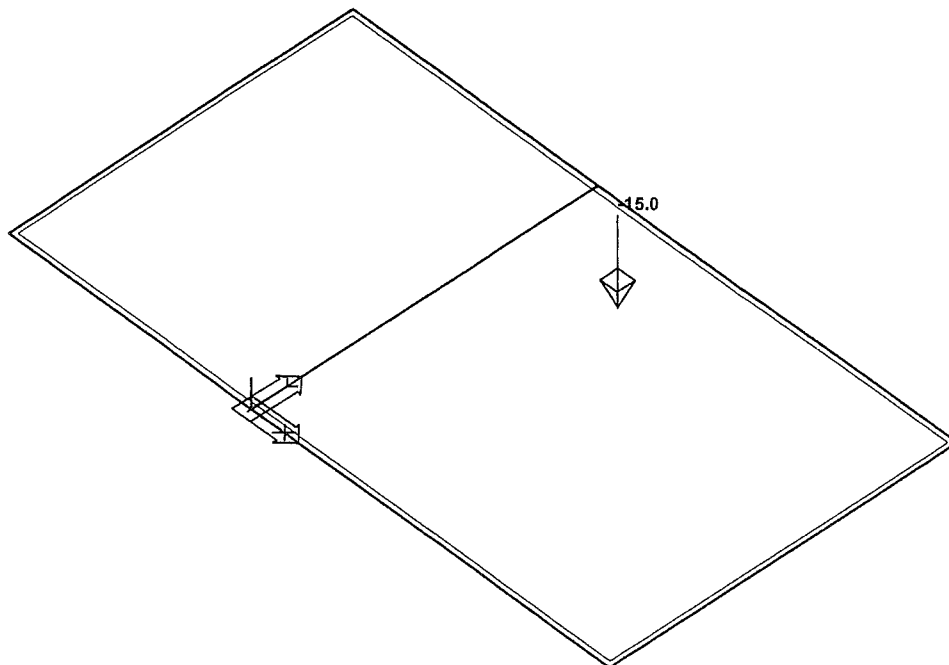
4. P1



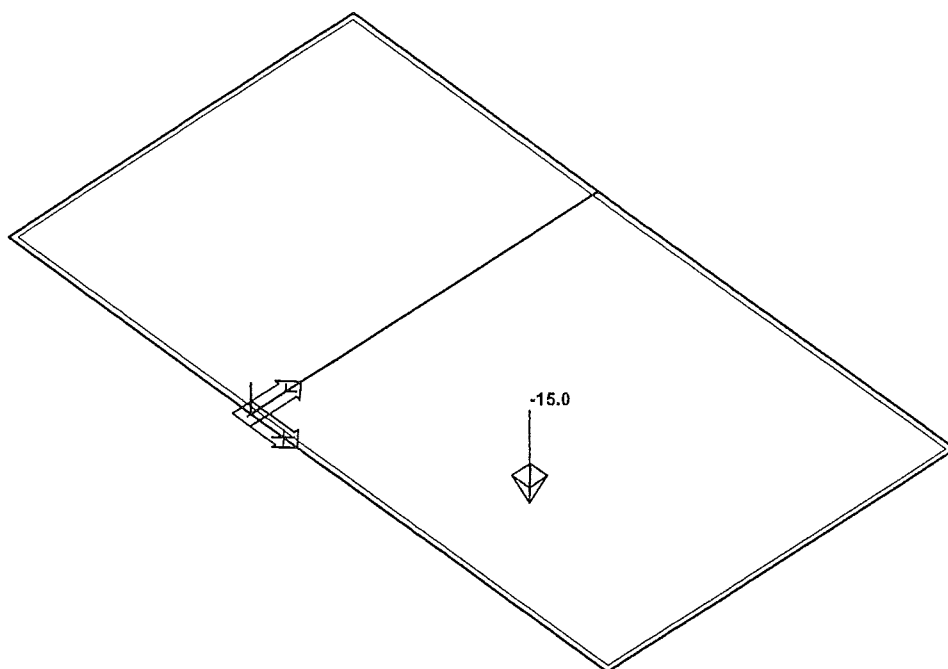
5. P2



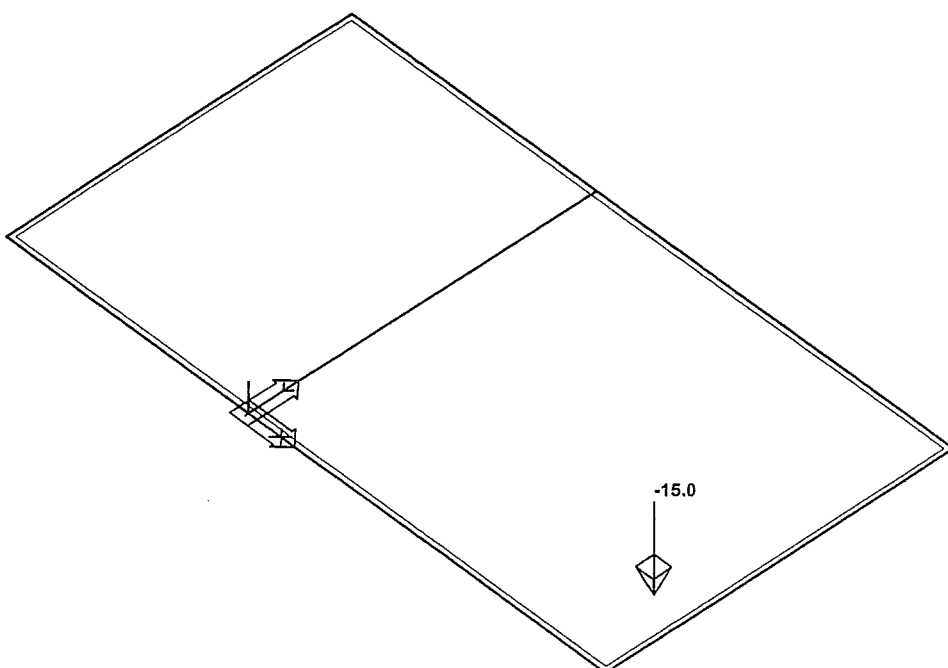
6. P3



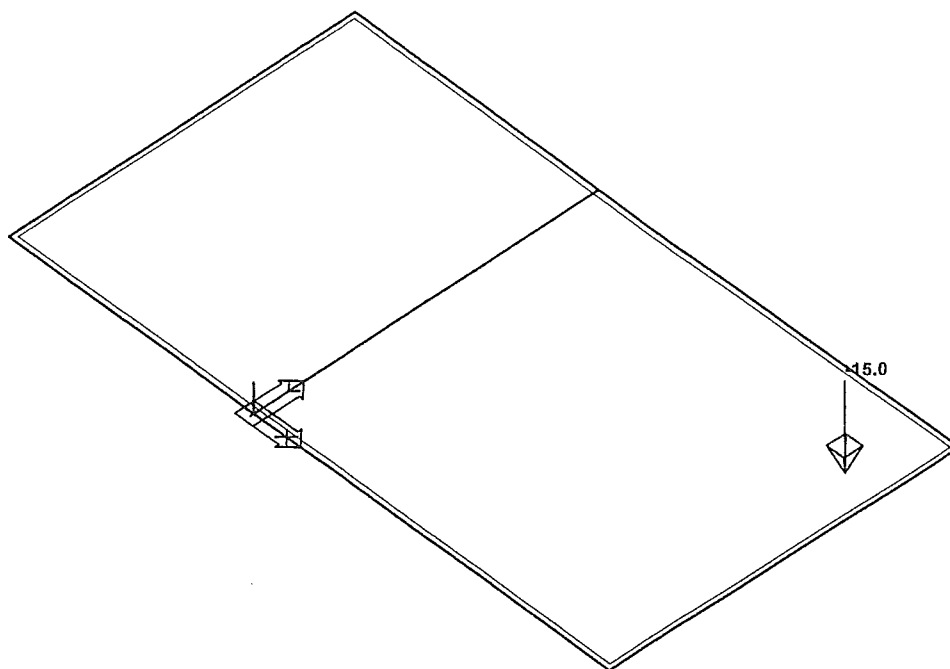
7. P4



8. P5



9. P6



10. P7

Variable loads group

Name:

p

Loadcase no. 4 - nodal loads

node	Fx kN	Fy kN	Fz kN	Mx kNm	My kNm	Mz kNm
10	0.00	0.00	-15.00	0.00	0.00	0.00

Loadcase no. 5 - nodal loads

node	Fx kN	Fy kN	Fz kN	Mx kNm	My kNm	Mz kNm
11	0.00	0.00	-15.00	0.00	0.00	0.00

Loadcase no. 6 - nodal loads

node	Fx kN	Fy kN	Fz kN	Mx kNm	My kNm	Mz kNm
12	0.00	0.00	-15.00	0.00	0.00	0.00

Loadcase no. 7 - nodal loads

node	Fx kN	Fy kN	Fz kN	Mx kNm	My kNm	Mz kNm
13	0.00	0.00	-15.00	0.00	0.00	0.00

Loadcase no. 8 - nodal loads

node	Fx kN	Fy kN	Fz kN	Mx kNm	My kNm	Mz kNm
15	0.00	0.00	-15.00	0.00	0.00	0.00

Loadcase no. 9 - nodal loads

node	Fx kN	Fy kN	Fz kN	Mx kNm	My kNm	Mz kNm
16	0.00	0.00	-15.00	0.00	0.00	0.00

Loadcase no. 10 - nodal loads

node	Fx kN	Fy kN	Fz kN	Mx kNm	My kNm	Mz kNm
14	0.00	0.00	-15.00	0.00	0.00	0.00

Loadcase no. 2 - distributed loads

bound	type	dx m	exY m	exZ m		X beg end	Y beg end	Z beg end
1	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	0.00 -23.95
4	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	0.00 -23.95
5	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	0.00 -23.95
6	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	0.00 -23.95
7	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	0.00 -23.95
8	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	0.00 -23.95
9	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	0.00 -20.31
10	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	0.00 -34.51

Loadcase no. 3 - distributed loads

bound	type	dx m	exY m	exZ m		X beg end	Y beg end	Z beg end
1	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	-1.00 -1.00

bound	type	dx m	exY m	exZ m		X beg end	Y beg end	Z beg end
4	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	0.00 -1.00
5	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	0.00 -1.00
6	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	0.00 -1.00
7	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	0.00 -1.00
8	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	0.00 -1.00
10	force kN/m	0.00 1.00	rel	0.00	0.00	glo len	0.00 0.00	-3.40 -3.40

Combinations

Combi	Norm	Case	coeff
1.	User-ultimate	1 weight of the concrete	1.00
		2 dead loads	1.00
		3 live loads	1.00
		4 P1	1.00
		5 P2	1.00
		6 P3	1.00
		7 P4	1.00
		8 P5	1.00
		9 P6	1.00
		10 P7	1.00

Basic rules for generation of ultimate load combinations:

1 : 1.00*LC1 / 1.00*LC2 / 1.00*LC3 / 1.00*LC4 / 1.00*LC5 / 1.00*LC6 / 1.00*LC7
/ 1.00*LC8 / 1.00*LC9 / 1.00*LC10

Subsoils

Name	Type of position	C1x kN/m^3	C1y kN/m^3	C1z kN/m^3	C2x kN/m	C2y kN/m	SigZpl kN/m^2
gemischtkörniger Sand	Under plate, block	1000.000	1000.000	30000.000	0.000	0.000	0.000

Calculation protocol.

Linear calculation

Number of 2D elements	199
Number of 1D elements	0
Number of mesh nodes	223
Number of equations	1338
Loadcases	LC 1 weight of the concrete
	LC 2 dead loads
	LC 3 live loads
	LC 4 P1
	LC 5 P2

Number of 2D elements 199
 Number of 1D elements 0
 Number of mesh nodes 223
 Number of equations 1338

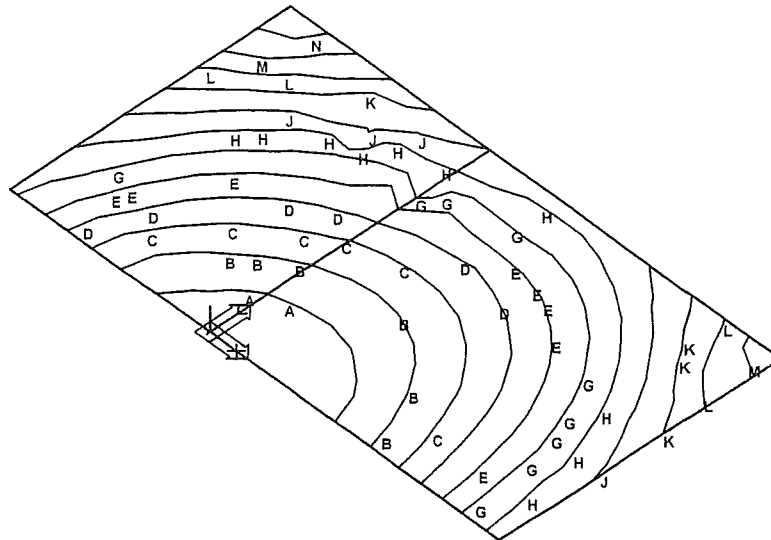
LC 6 P3
 LC 7 P4
 LC 8 P5
 LC 9 P6
 LC 10 P7

Bending theory Mindlin
 Start of calculation 07.03.2005 08:39
 End of calculation 07.03.2005 08:39

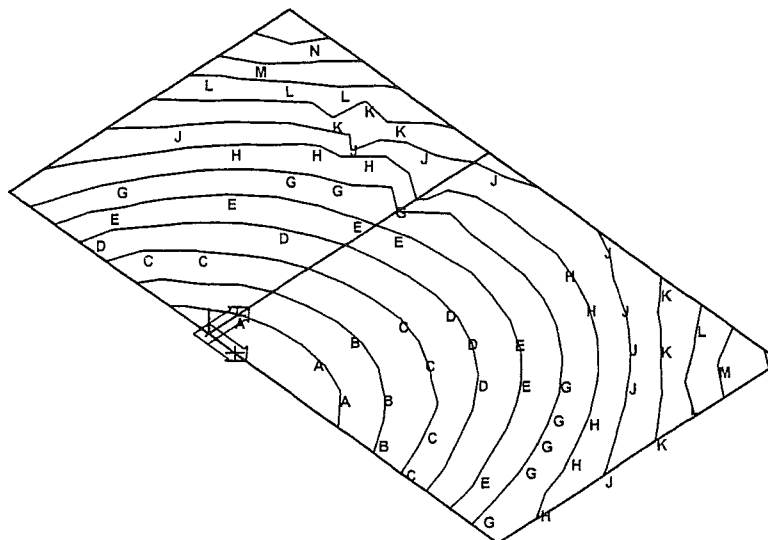
Sum of loads and reactions.

			X	Y	Z
loadcase 1	loads		0.0	0.0	-129.2
	reactions		0.0	0.0	0.0
	contact		0.0	0.0	129.2
loadcase 2	loads		0.0	0.0	-412.1
	reactions		0.0	0.0	0.0
	contact		0.0	0.0	412.1
loadcase 3	loads		0.0	0.0	-16.7
	reactions		0.0	0.0	0.0
	contact		0.0	0.0	16.7
loadcase 4	loads		0.0	0.0	-15.0
	reactions		0.0	0.0	0.0
	contact		0.0	0.0	15.0
loadcase 5	loads		0.0	0.0	-15.0
	reactions		0.0	0.0	0.0
	contact		0.0	0.0	15.0

			X	Y	Z
loadcase 6	loads		0.0	0.0	-15.0
	reactions		0.0	0.0	0.0
	contact		0.0	0.0	15.0
loadcase 7	loads		0.0	0.0	-15.0
	reactions		0.0	0.0	0.0
	contact		0.0	0.0	15.0
loadcase 8	loads		0.0	0.0	-15.0
	reactions		0.0	0.0	0.0
	contact		0.0	0.0	15.0
loadcase 9	loads		0.0	0.0	-15.0
	reactions		0.0	0.0	0.0
	contact		0.0	0.0	15.0
loadcase 10	loads		0.0	0.0	-15.0
	reactions		0.0	0.0	0.0
	contact		0.0	0.0	15.0



Contact stress - max sigmz - FEM Combi : 1



Contact stress - min sigmz - FEM Combi : 1

RESULTS : CONTACT STRESSES

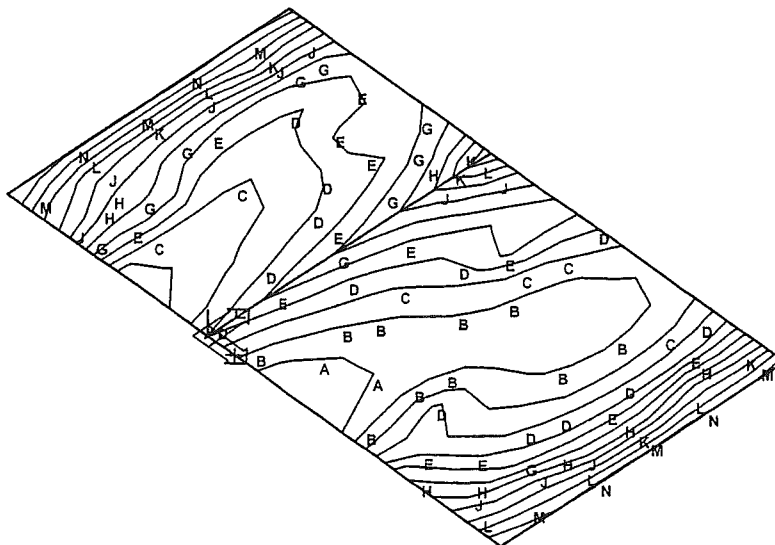
FEM Combi:

C1 User-ultimate

Global extremes

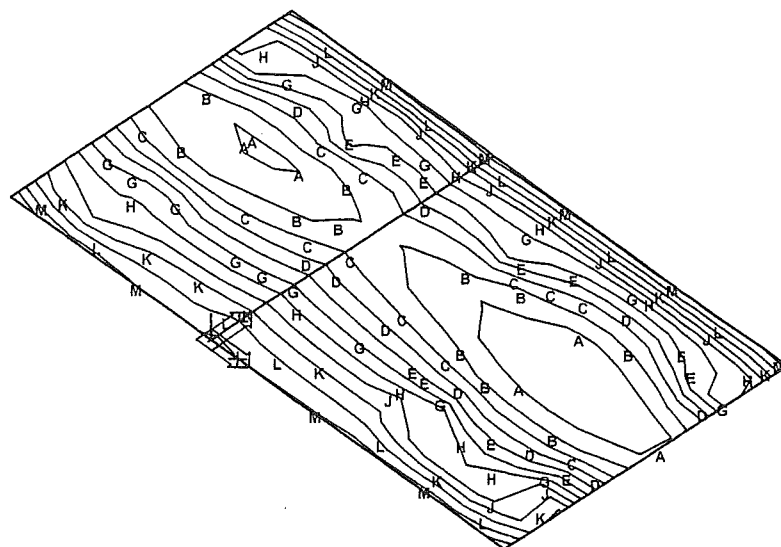
node	tauxx [kPa]	tauyy [kPa]	sigmz [kPa]
1	0.00	0.00	44.07
	0.00	0.00	44.07
	0.00	0.00	44.07
	0.00	0.00	44.07
2	0.00	0.00	76.15
182	0.00	0.00	6.98

Selection was done for macros: 1



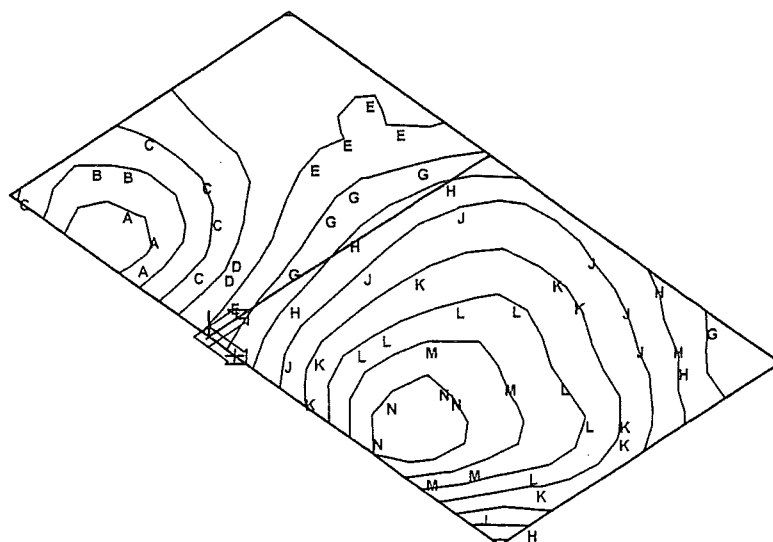
Max mx [kN/m]	
Max	2.45
N	0.00
H	-1.82
M	-3.23
L	-4.85
K	-6.46
J	-8.08
I	-9.69
E	-11.31
D	-12.92
C	-14.54
B	-16.15
A	-17.77
Min	-19.38

Internal force - max mx - FEM Combi : 1



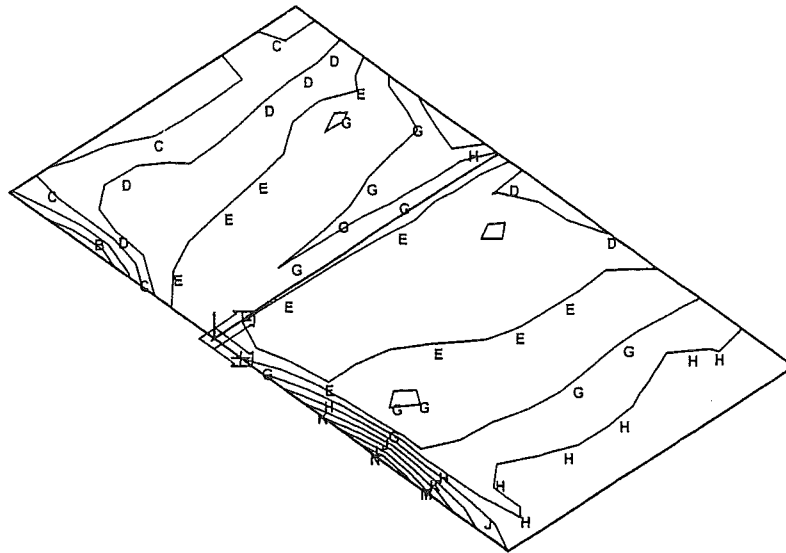
Max my [kNm/m]	
Max	2.12
N	1.08
M	0.00
L	-1.20
K	-2.58
J	-3.88
H	-5.17
G	-6.46
E	-7.75
D	-9.05
C	-10.34
B	-11.63
A	-12.92
Min	-14.22

Internal force - max my - FEM Combi : 1



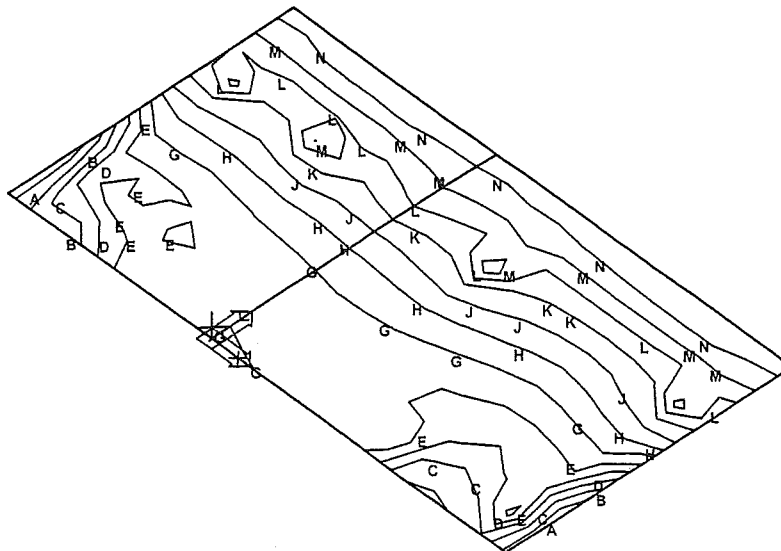
Max mxy [kNm/m]	
Max	7.15
N	6.35
M	5.59
L	4.76
K	3.97
J	3.18
H	2.38
G	1.59
E	0.79
D	0.00
C	-0.77
B	-1.54
A	-2.30
Min	-3.07

Internal force - max mxy - FEM Combi : 1



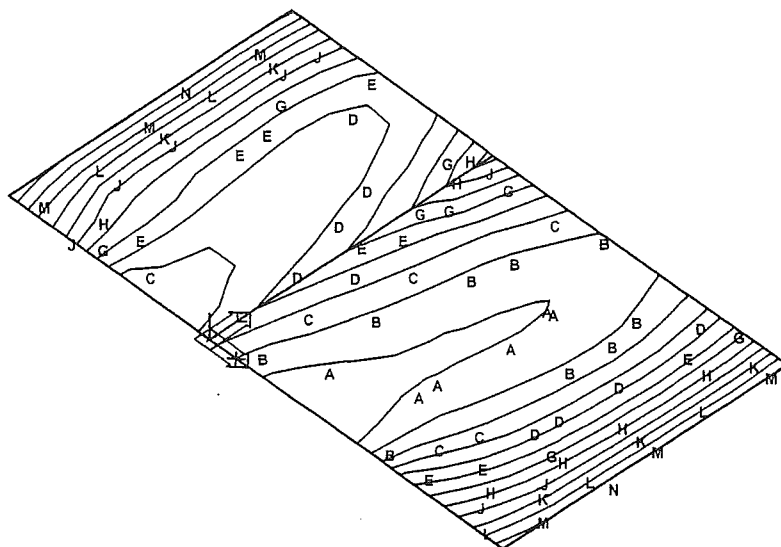
Max qx [kN/m]	
Max	69.20
N	60.55
M	51.00
L	43.25
K	34.60
J	25.95
H	17.30
G	8.65
E	0.00
D	-8.18
C	-16.35
B	-24.53
A	-32.71
Min	-40.88

Internal force - max qx - FEM Combi : 1



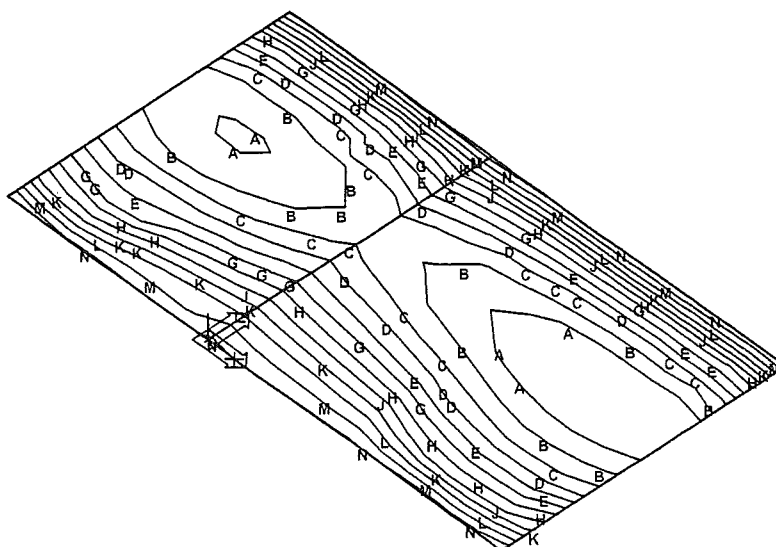
Max qy [kN/m]	
Max	22.20
N	18.58
M	14.86
L	11.15
K	7.43
J	3.72
H	0.00
G	-3.32
E	-6.63
D	-9.95
C	-13.27
B	-16.58
A	-19.90
Min	-23.21

Internal force - max qy - FEM Combi : 1



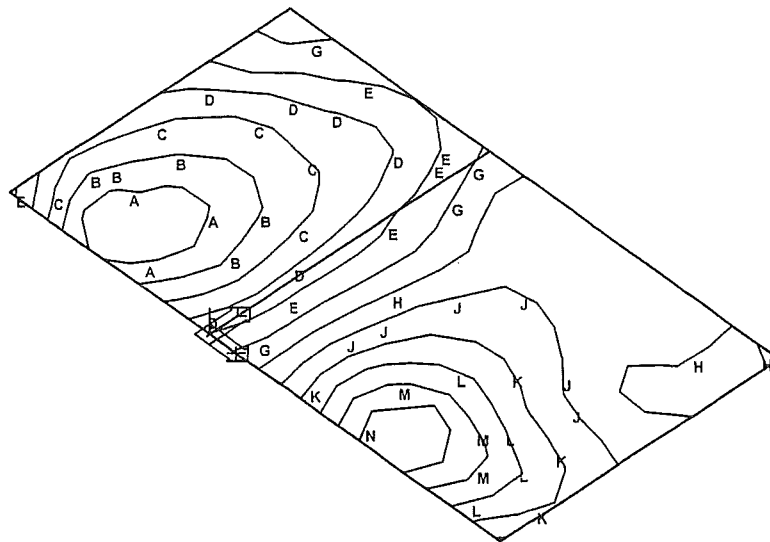
Min mx [kNm/m]	
Max	1.79
N	0.00
M	-2.24
L	-4.48
K	-6.72
J	-8.97
H	-11.21
G	-13.45
E	-15.69
D	-17.93
C	-20.17
B	-22.41
A	-24.66
Min	-28.90

Internal force - min mx - FEM Combi : 1



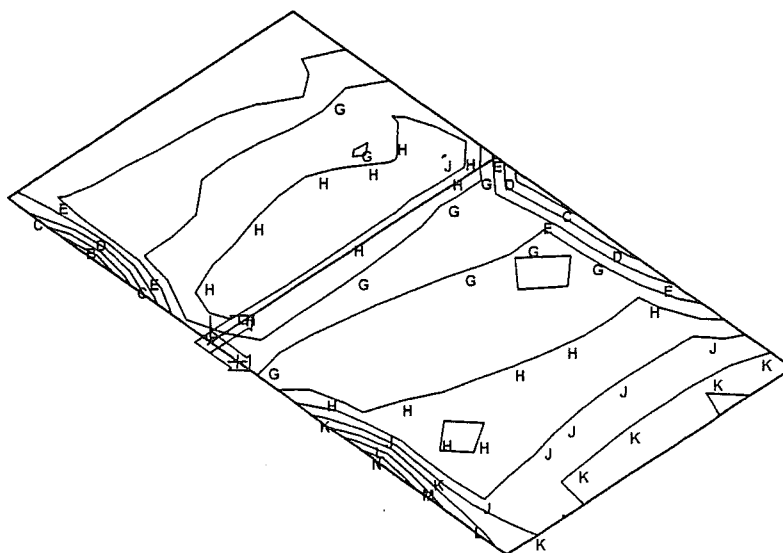
Min my [kNm/m]	
Max	1.55
N	0.00
M	-1.32
L	-2.64
K	-3.96
J	-5.28
H	-6.61
G	-7.93
E	-9.25
D	-10.57
C	-11.89
B	-13.21
A	-14.53
Min	-15.85

Internal force - min my - FEM Combi : 1



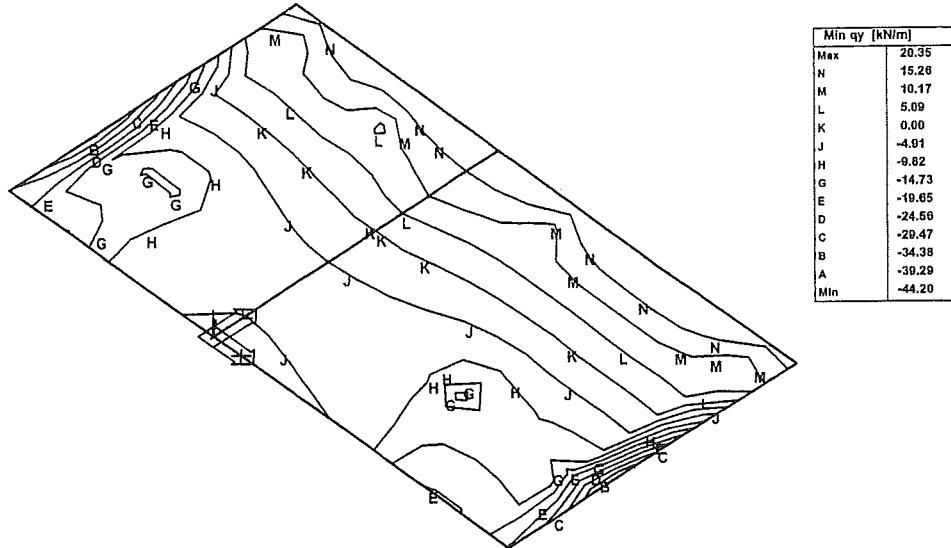
Min mxy [kNm/m]	
Max	4.25
N	3.54
M	2.83
L	2.12
K	1.42
J	0.71
H	0.00
G	-0.73
E	-1.45
D	-2.18
C	-2.91
B	-3.63
A	-4.36
Min	-5.09

Internal force - min mxy - FEM Combi : 1



Min qx [kNm/m]	
Max	48.48
N	40.40
M	32.32
L	24.24
K	16.16
J	8.08
H	0.00
G	-8.25
E	-16.50
D	-24.75
C	-33.00
B	-41.25
A	-49.49
Min	-57.74

Internal force - min qx - FEM Combi : 1



Internal force - min qy - FEM Combi : 1

RESULTS : INTERNAL FORCES**FEM Combi:**

C1 Eigen-Tragfähigk.

Global extremes

Rotation of the local system: No

Basic magnitudes - bending

node	mx [kNm/m]	my [kNm/m]	mxy [kNm/m]	qx [kN/m]	qy [kN/m]
1	2.45	2.12	-0.55	-25.40	-21.64
184	-26.90	0.05	2.08	20.89	-4.81
1	2.45	2.12	-0.55	-25.40	-21.64
154	-19.23	-15.85	0.31	6.50	-1.10
187	-13.56	-3.78	7.15	5.83	-3.39
45	-14.91	-3.91	-5.09	-11.57	-11.80
5	-13.31	0.22	6.35	69.20	-8.92
6	-15.06	0.27	-4.49	-57.74	-12.91
210	-10.78	0.03	1.25	17.14	22.29
199	0.09	-13.06	0.79	20.78	-44.20

Selection was done for macros: 1

Code for calculation: DIN 1045 7/88

Explanation of concrete symbols

Abbreviation	Explanation
betaWN	Concrete cube compression strength.
betaR	Design concrete compression strength.
Tau01	1st shear stress limit according Table 13.
Tau02	2nd shear stress limit according Table 13.
Tau03	3rd shear stress limit according Table 13.

Concrete characteristics

	B 25
betaWN	25000.00 kPa
betaR	17500.00 kPa
Tau011_1 plates	350.00 kPa
Tau011_2 plates	500.00 kPa
Tau02 plates	1800.00 kPa
Tau012 beams	750.00 kPa
Tau02 beams	1800.00 kPa
Tau03 beams	3000.00 kPa

Explanation of reinforcement steel symbols

Abbreviation	Explanation
betaS	Characteristic yield strength of reinforcement

Steel characteristics

	BSt 500
betaS	500000.00 kPa
E modulus	200000000.00 kPa

Input parameters

Description	Percentage
Maximum % of reinforcement	9.00
Minimum % of net reinforcement	0.00
Minimum % of pressure reinforcement	0.50
Minimum % of tension reinforcement	0.00
Minimum % of transverse reinforcement	20.00

Shear mode
Tension reinforcement is partially anchored in the field.

Description	Value
height < 7 cm represents increase of internal forces (§ 17.2.1 (6))	ON
Structural reinforcement of deep beam	OFF

Explanation of symbols - longitudinal reinforcement

Symbol	Explanation
c	Minimum constructive reinforcement superposing statically required pressure reinforcement
v	Virtual tension reinf (elliptic pressure state)
s	Minimum constructive reinforcement superposing statically required tension reinforcement

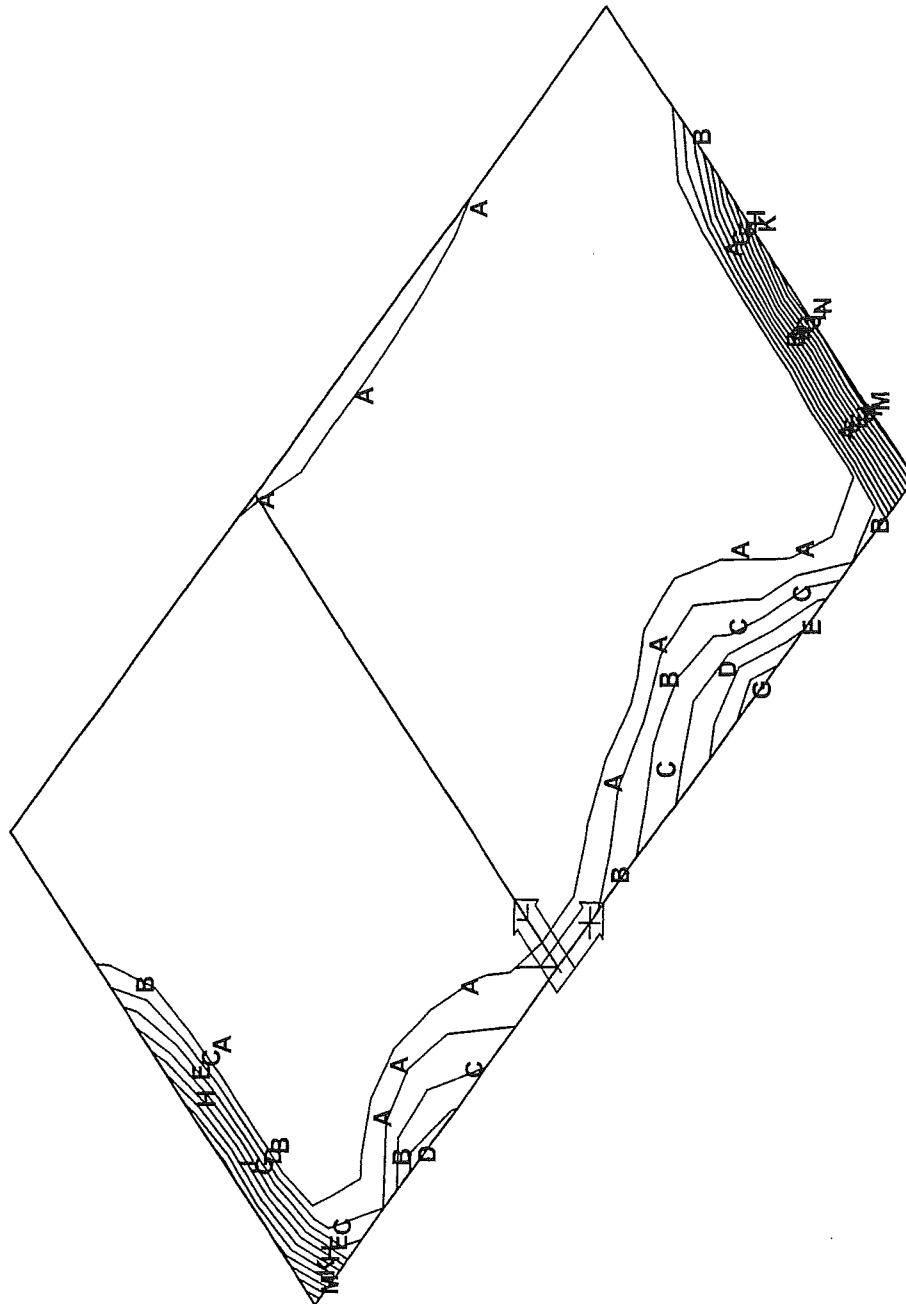
Global extremes

Necessary areas

node	As1+ [cm^2/m]	As2+ [cm^2/m]	As3+ [cm^2/m]	As3- [cm^2/m]	As2- [cm^2/m]	As1- [cm^2/m]	Ass [cm^2/m^2]	tau [MPa]	tau0 [MPa]
111	4.28	1.18s	~	~	0.54v	0.11c	0.00	0.00	0.03
1	0.00	0.00	~	~	0.33v	0.34c	0.00	0.00	0.13
152	3.79	2.82	~	~	0.00	0.00	0.00	0.00	0.01
1	0.00	0.00	~	~	0.33v	0.34c	0.00	0.00	0.13
5	3.68	0.89	~	~	0.96v	0.19c	0.00	0.00	0.24
2	0.01	0.05	~	~	0.00v	0.00c	0.00	0.00	0.11
199	0.46	2.01	~	~	0.07	0.37	0.00	0.00	0.10
2	0.01	0.05	~	~	0.00v	0.00c	0.00	0.00	0.11
1	0.00	0.00	~	~	0.33v	0.34c	0.00	0.00	0.13
	0.00	0.00	~	~	0.33v	0.34c	0.00	0.00	0.13
	0.00	0.00	~	~	0.33v	0.34c	0.00	0.00	0.13
	0.00	0.00	~	~	0.33v	0.34c	0.00	0.00	0.13
5	3.68	0.89	~	~	0.96v	0.19c	0.00	0.00	0.24
151	3.88	2.77	~	~	0.00	0.00	0.00	0.00	0.01

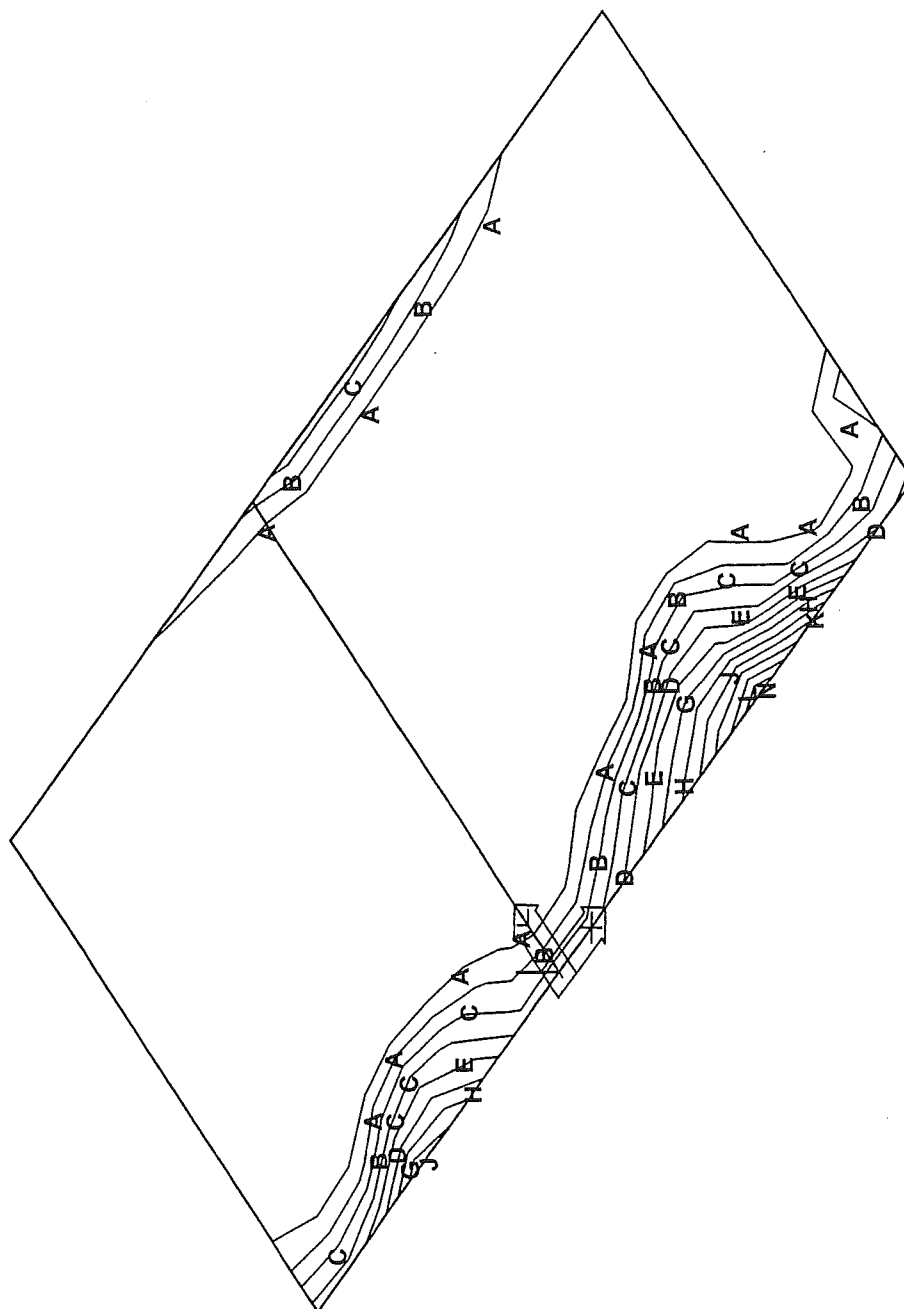
Selection was done for macros: 1

As1- [cm ² /m]	
Max	0.37
N	0.34
M	0.31
L	0.28
K	0.25
J	0.23
H	0.20
G	0.17
E	0.14
D	0.11
C	0.08
B	0.06
A	0.03
Min	0.00



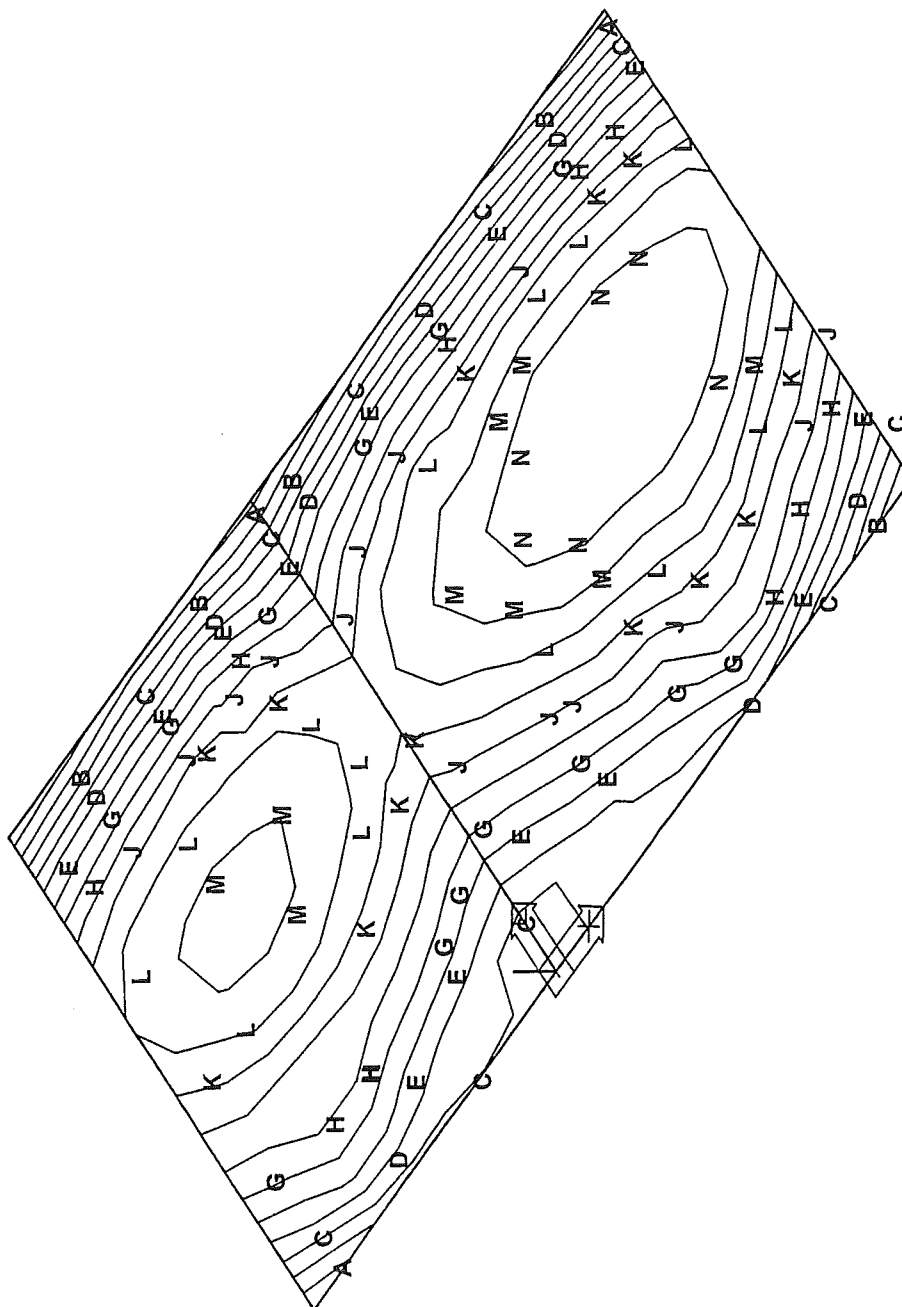
2D reinforcement - As1-

As2- [cm ² /m]	
Max	0.96
N	0.88
M	0.81
L	0.74
K	0.66
J	0.59
H	0.52
G	0.44
E	0.37
D	0.29
C	0.22
B	0.15
A	0.07
Min	0.00



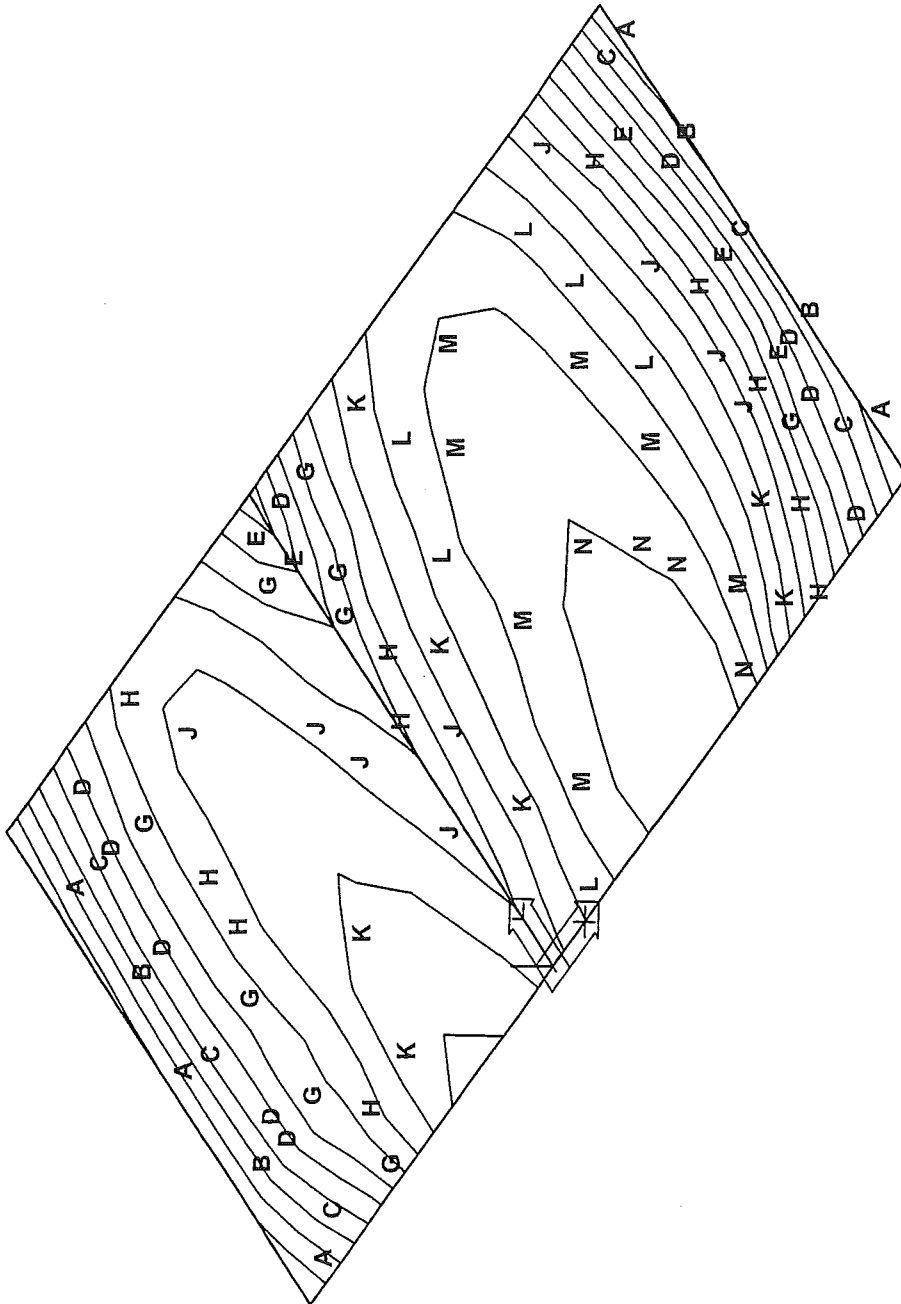
2D reinforcement - As2-

As2+ [cm ² /m]	
Max	2.82
N	2.60
M	2.39
L	2.17
K	1.95
J	1.74
H	1.52
G	1.30
E	1.09
D	0.87
C	0.65
B	0.43
A	0.22
Min	0.00



2D reinforcement - As2+

As1+ [cm ² /m]	
Max	4.28
N	3.95
M	3.62
L	3.29
K	2.96
J	2.63
H	2.30
G	1.98
E	1.65
D	1.32
C	0.99
B	0.66
A	0.33
Min	0.00



2D reinforcement - As1+