



	2
-	3
-	4
-	5
-	7
()	19



Model_01_s Fundamenti_.twp
 12.5.2018

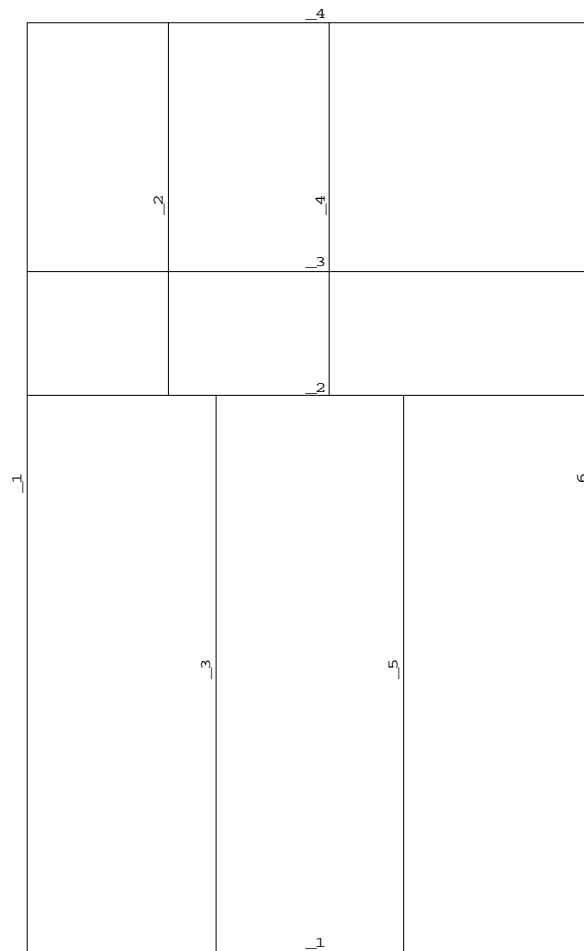
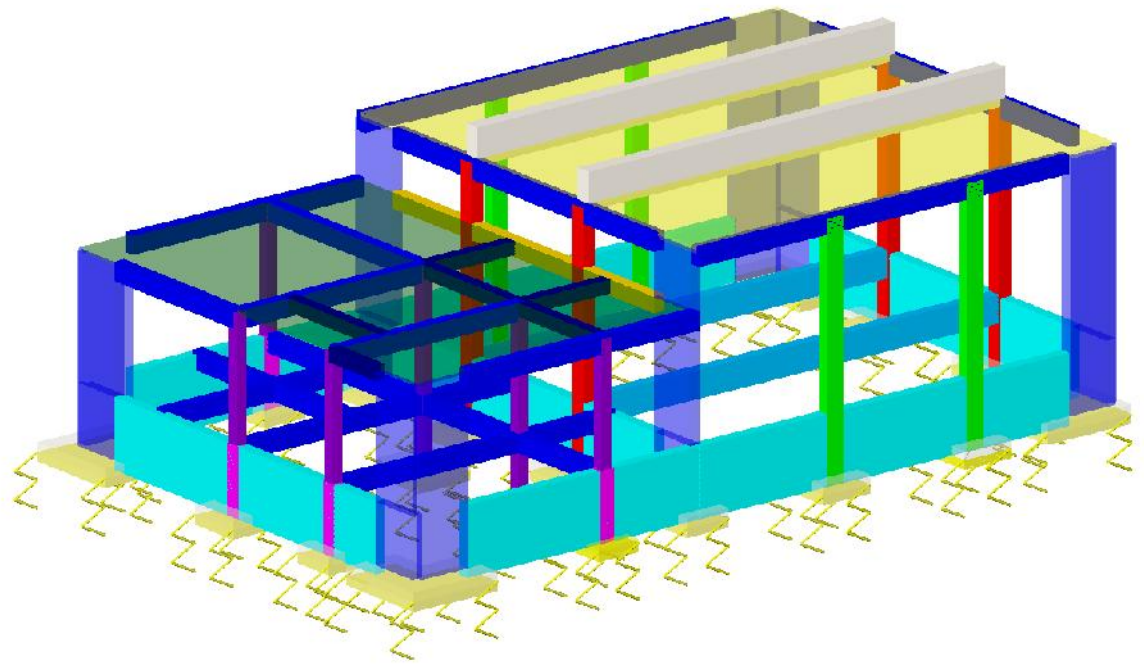
3D

I

II

1373
 1061
 291
 1524
 8
 7

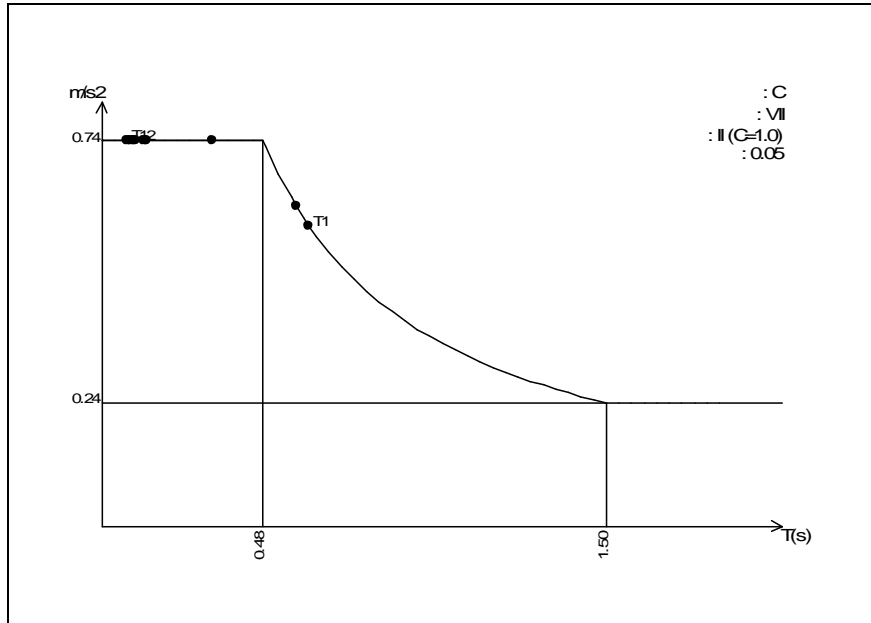
m [cm,mm]
 kN
 Celsius



LC	
1	(g)
2	
3	
4	(qk)
5	(St)
6	Zx
7	Zy
8	SRSS: VI+VII
9	∴ 1.2xI+1.35xII+1.2xIII
10	∴ 1.2xI+1.35xII+1.2xIII+1.3xIV
11	∴ 1.2xI+1.35xII+1.2xIII+1.4xV
12	∴ 1.2xI+1.35xII+1.2xIII+1.24xIV+1.33xV
13	∴ I+II+III+IV+V
14	∴ I+II+III+0.8xIV+0.8xV+VIII
15	∴ I+II+III+0.8xIV+0.8xV-1xVIII

C
VII
II (C=1.0)
0.05

	[°]	k _x	k _{x, +90°}	K _z	
Zx	0	1.000	0.000	0.000	0.300
Zy	90	1.000	0.000	0.000	0.300



Zx : 0.30

Z [m]	1			2			3		
	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
4.00	0.00	-0.02	0.00	88.25	0.08	0.17	-6.21	-0.12	-0.03
2.70	0.00	-0.01	0.00	42.35	-0.07	-0.01	11.39	0.24	-0.00
0.00	-0.00	-0.01	-0.00	40.72	0.13	0.76	4.39	-0.15	0.17
-1.50	0.00	-0.00	-0.00	0.23	-0.00	0.05	0.02	0.00	-0.00
=	0.00	-0.05	0.00	171.55	0.14	0.96	9.59	-0.03	0.14

Z [m]	4			5			6		
	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
4.00	-2.74	-1.03	1.67	-0.77	0.27	-1.63	-0.10	2.41	0.20
2.70	-0.04	0.83	0.01	-0.17	-0.35	-0.02	-0.06	-1.77	-0.17
0.00	12.20	2.22	0.03	3.95	-0.13	-0.02	0.65	-5.40	-0.04
-1.50	0.00	0.00	0.00	0.00	-0.00	-0.00	0.00	-0.01	-0.00
=	9.42	2.03	1.71	3.02	-0.22	-1.67	0.49	-4.77	-0.01

Z [m]	7			8			9		
	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
4.00	-5.78	-4.16	-1.43	0.19	0.04	0.00	-0.25	2.43	1.34
2.70	-1.21	5.20	0.83	-1.02	-0.13	0.06	0.12	-3.89	0.23
0.00	30.58	1.38	0.34	1.56	0.23	-0.11	0.77	2.10	-0.06
-1.50	0.06	0.02	0.02	-0.02	0.00	-0.01	0.00	-0.01	0.00
=	23.65	2.43	-0.24	0.72	0.13	-0.05	0.64	0.63	1.51

Z [m]	10			11			12		
	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
4.00	0.00	0.02	0.00	-0.00	-0.00	0.01	-0.24	-0.18	-0.31
2.70	-0.01	-0.04	0.01	0.01	-0.00	0.00	0.31	0.38	-0.10
0.00	0.05	0.03	-0.00	0.01	0.02	0.00	0.11	-0.57	0.02
-1.50	0.00	-0.00	-0.00	0.00	-0.00	0.00	0.00	0.00	-0.00
=	0.04	0.02	0.01	0.01	0.01	0.01	0.18	-0.36	-0.39

Zy : 0.30

Z [m]	1			2			3		
	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
4.00	-0.03	81.44	-0.25	0.07	0.00	0.00	0.02	0.00	0.00
2.70	-0.05	43.62	-0.74	0.03	-0.00	-0.00	-0.04	-0.00	0.00
0.00	0.03	38.07	0.61	0.03	0.00	0.00	-0.02	0.00	-0.00
-1.50	-0.00	0.22	0.04	0.00	-0.00	0.00	-0.00	-0.00	0.00
=	-0.05	163.36	-0.33	0.14	0.00	0.00	-0.03	0.00	-0.00

Z [m]	4			5			6		
	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
4.00	-0.59	-0.22	0.36	0.05	-0.02	0.12	0.96	-23.43	-1.92
2.70	-0.01	0.18	0.00	0.01	0.02	0.00	0.59	17.24	1.68
0.00	2.63	0.48	0.01	-0.28	0.01	0.00	-6.32	52.58	0.38
-1.50	0.00	0.00	0.00	-0.00	0.00	0.00	-0.00	0.06	0.00
=	2.03	0.44	0.37	-0.22	0.02	0.12	-4.77	46.45	0.14

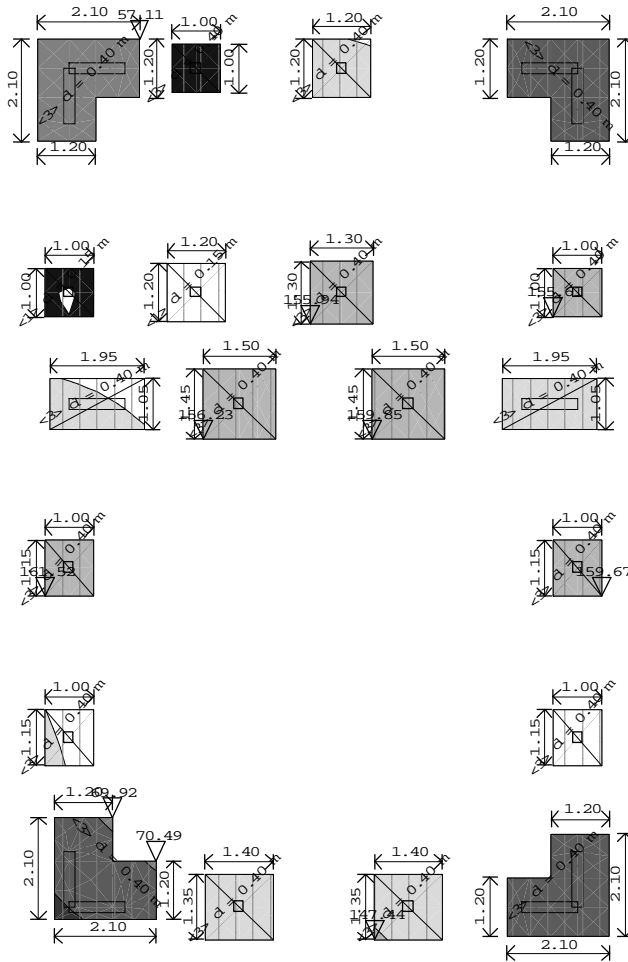
Z [m]	7			8			9		
	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
4.00	-0.59	-0.43	-0.15	0.03	0.01	0.00	-0.24	2.39	1.31
2.70	-0.12	0.53	0.08	-0.18	-0.02	0.01	0.12	-3.82	0.22
0.00	3.14	0.14	0.04	0.28	0.04	-0.02	0.75	2.06	-0.05
-1.50	0.01	0.00	0.00	-0.00	0.00	-0.00	0.00	-0.01	0.00
=	2.43	0.25	-0.03	0.13	0.02	-0.01	0.63	0.62	1.48

Z [m]	10			11			12		
	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
4.00	0.00	0.01	0.00	-0.01	-0.01	0.02	0.47	0.36	0.61
2.70	-0.01	-0.02	0.00	0.01	-0.00	0.00	-0.62	-0.76	0.21
0.00	0.02	0.01	-0.00	0.01	0.03	0.00	-0.21	1.12	-0.04
-1.50	0.00	-0.00	-0.00	0.00	-0.00	0.00	-0.01	-0.00	0.00
=	0.02	0.01	0.00	0.01	0.02	0.02	-0.36	0.72	0.78

\	1. Zx	2. Zy
1	0.000	0.771
2	0.782	0.000
3	0.044	0.000
4	0.043	0.002
5	0.014	0.000
6	0.002	0.219
7	0.108	0.001
8	0.003	0.000
9	0.003	0.003
10	0.000	0.000
11	0.000	0.000
12	0.001	0.003

	U [=0°]	U [=90°]
1	0.00	64.16
2	63.22	0.00
3	2.97	0.00
4	2.97	0.14
5	0.95	0.00
6	0.15	14.36
7	7.33	0.08
8	0.22	0.01
9	0.22	0.21
10	0.01	0.00
11	0.00	0.01
12	0.06	0.23
U (%)	78.11	79.19

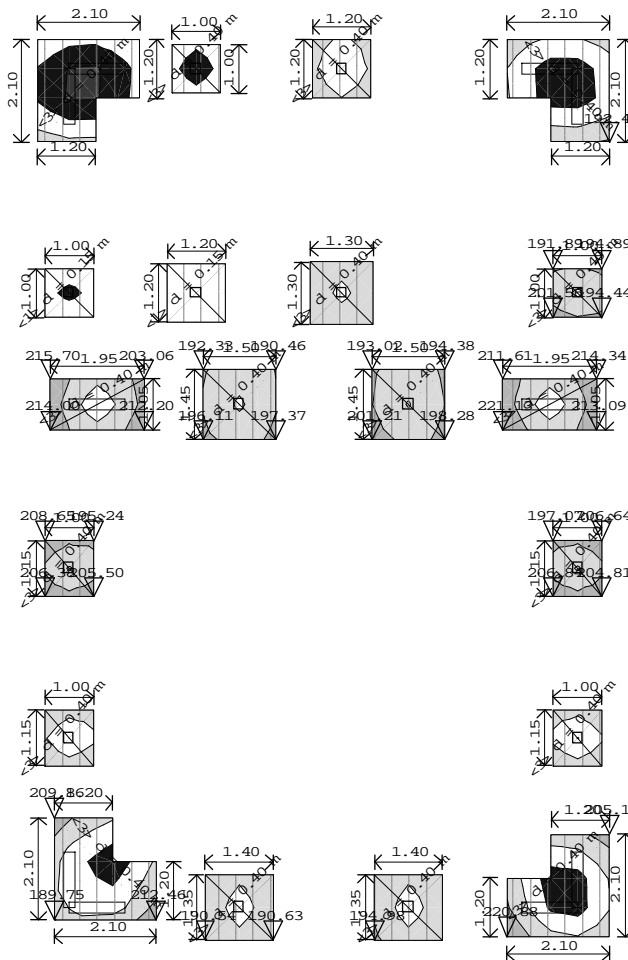
. 13 H+III+IV+V



[kN/m ²]
57.11
72.03
86.94
101.86
116.77
131.69
146.60
161.52

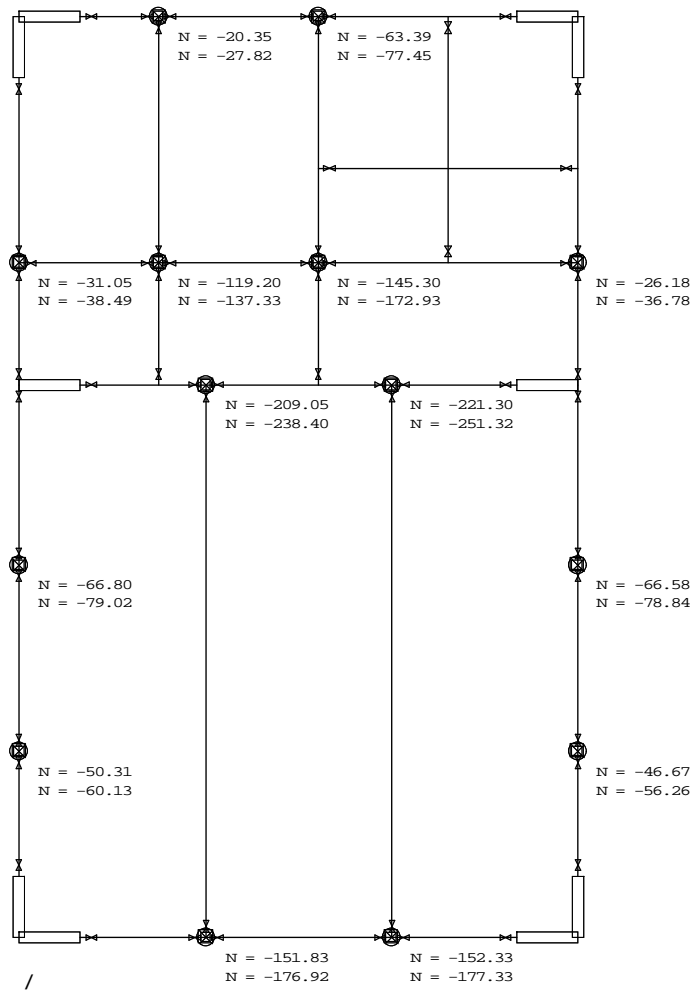
:[-1.50m] :max , =161.52/min , =57.11 kN/m²

. 16 []14,15

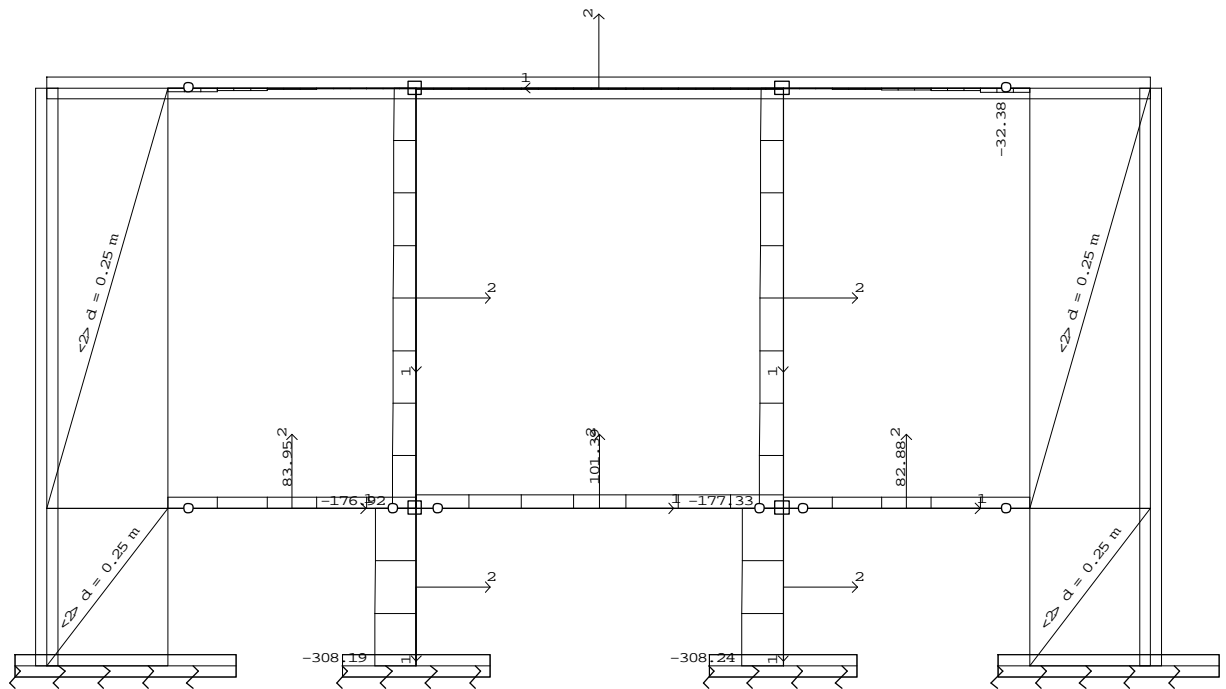


[kN/m ²]
0.00
31.59
63.18
94.77
126.37
157.96
189.55
221.14

:[-1.50m] :max , =221.13/min , =0.00 kN/m²

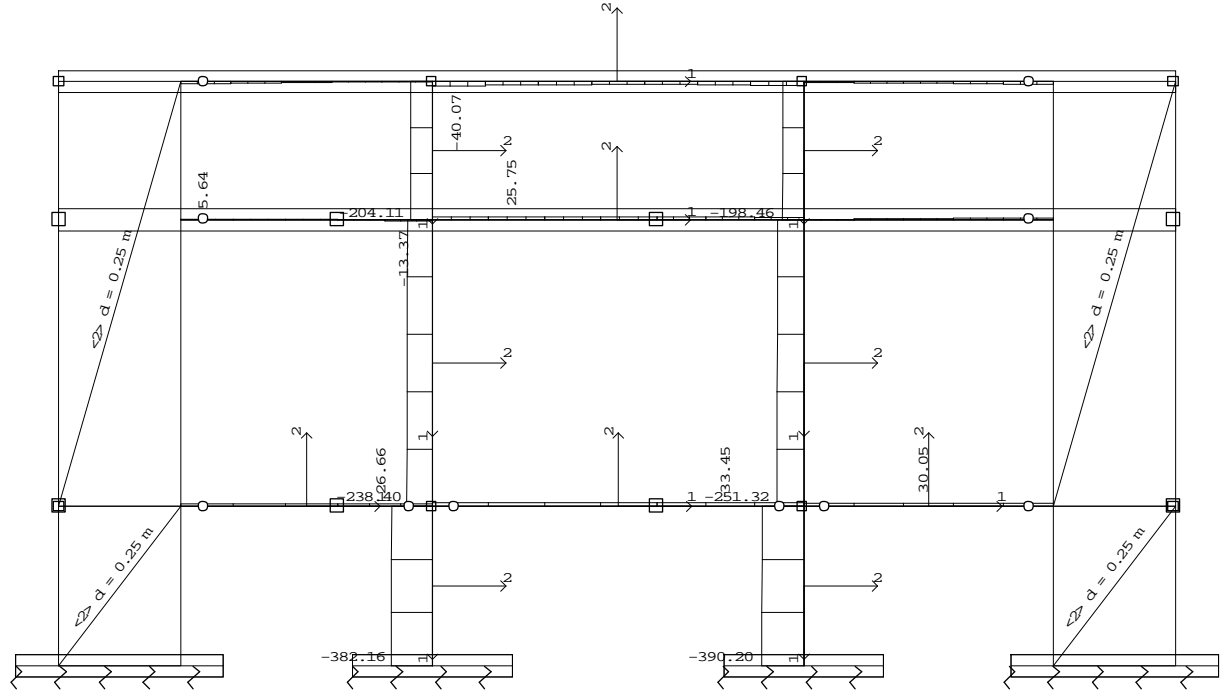


: [0.00m]

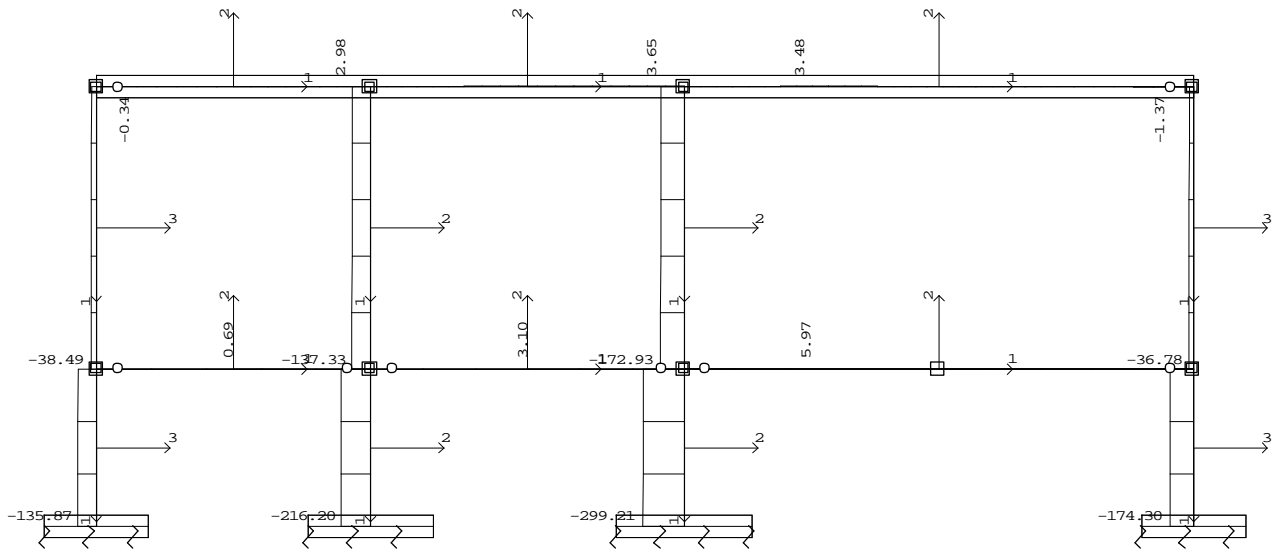


: _1

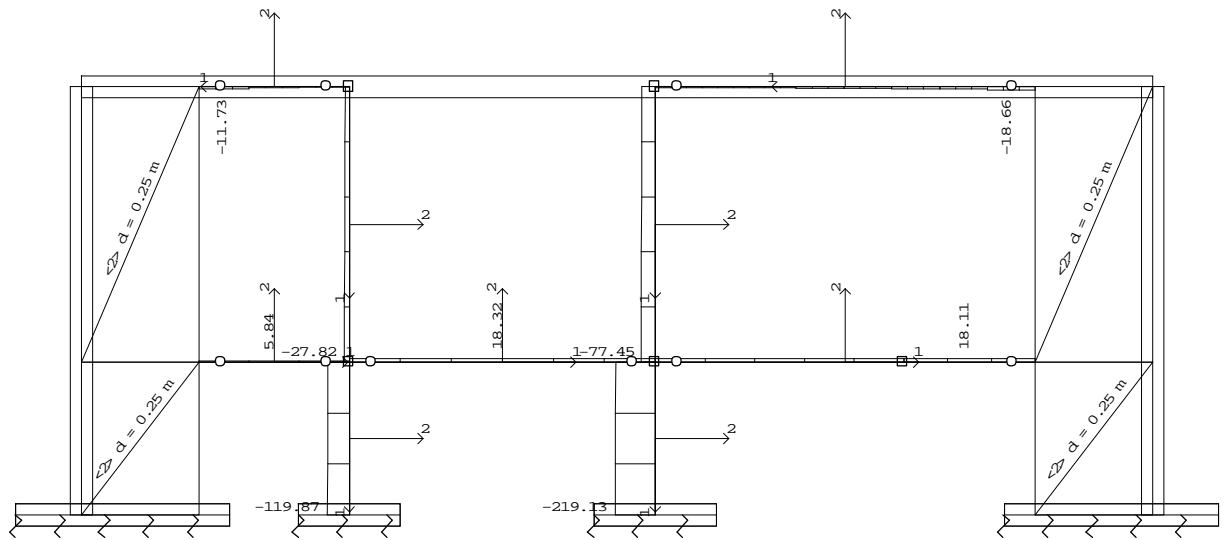
: max N1= 101.39 / min N1= -308.24 kN



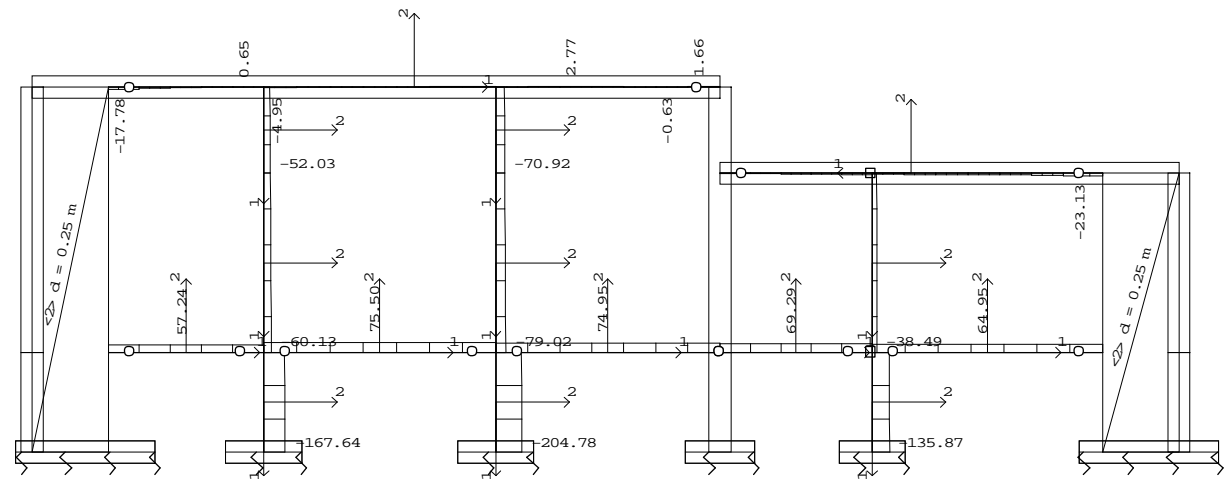
: _2 : max N1= 33.45 / min N1= -390.20 kN



: _3 : max N1= 5.97 / min N1= -299.21 kN

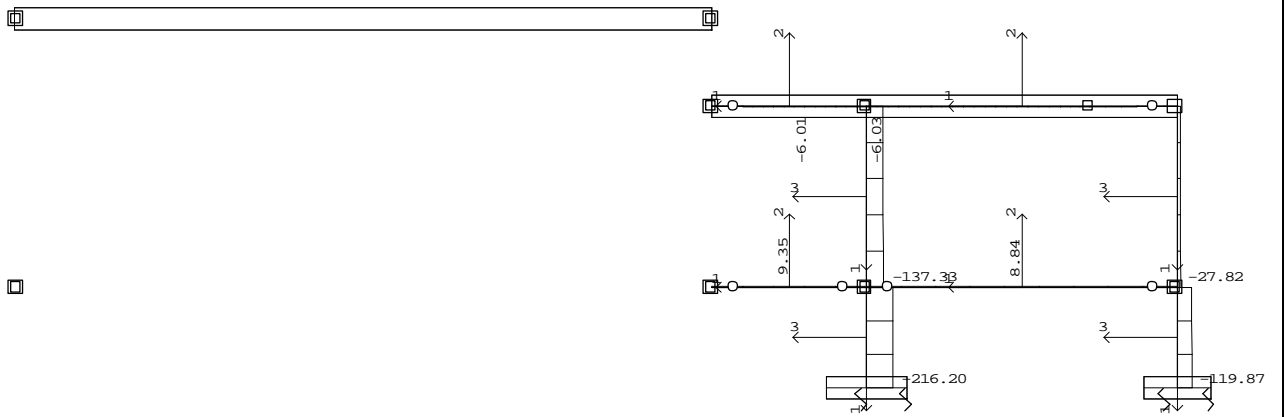


: _4 : max N1= 18.32 / min N1= -219.13 kN



: _1 : max N1= 75.50 / min N1= -204.78 kN

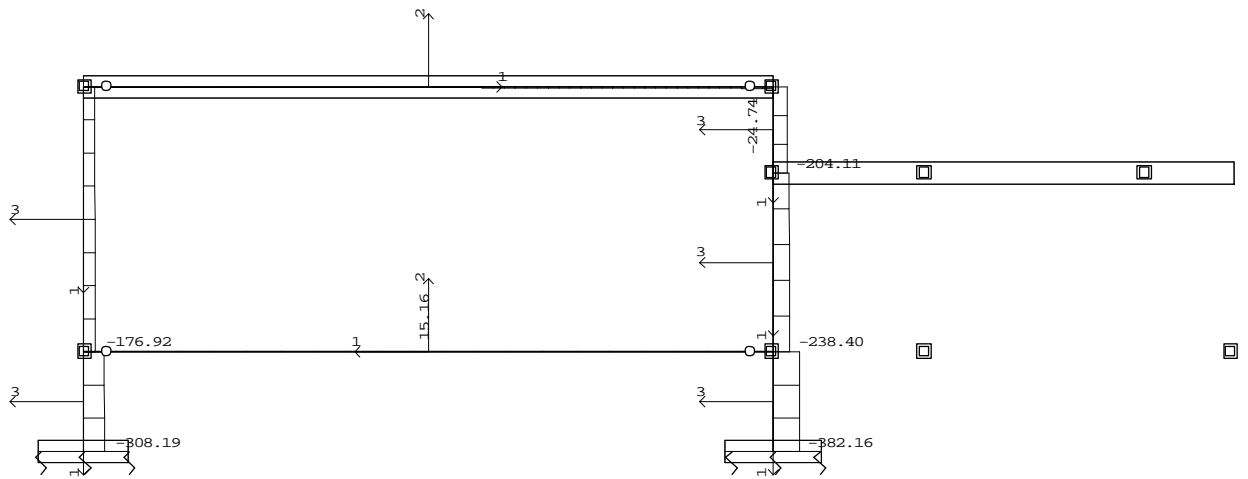
.16 [.]9-12



: _2

: max N1= 9.35 / min N1= -216.20 kN

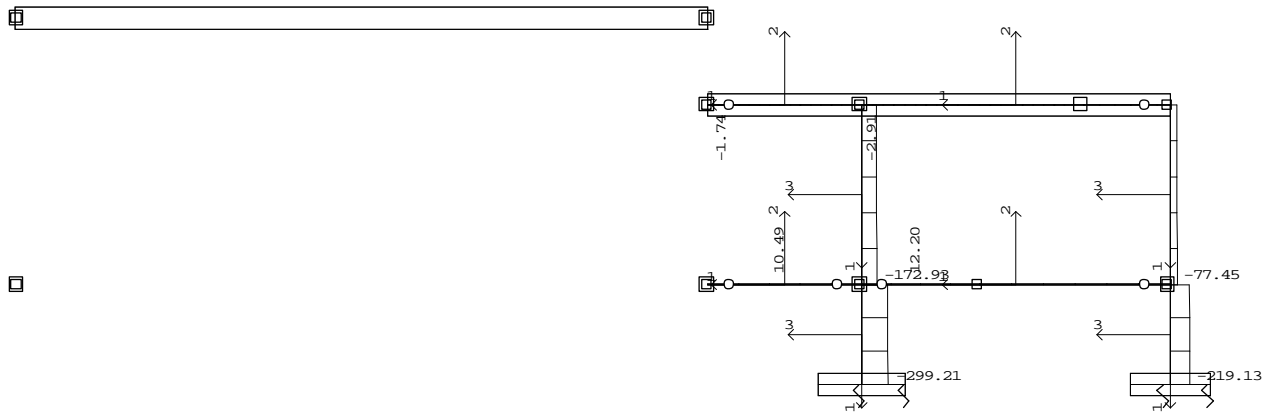
.16 [.]9-12



: _3

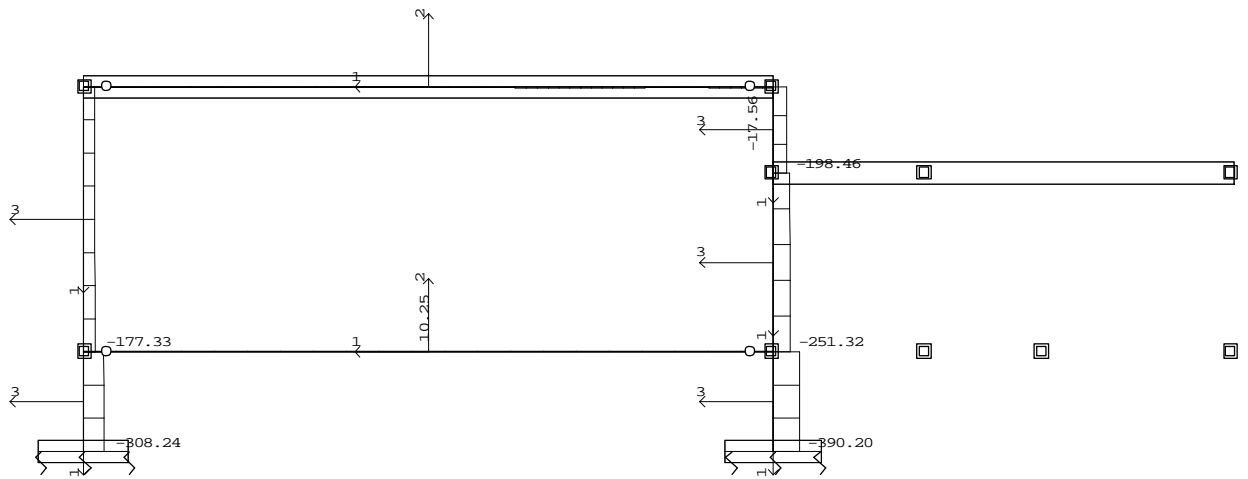
: max N1= 15.16 / min N1= -382.16 kN

.16 [.]9-12

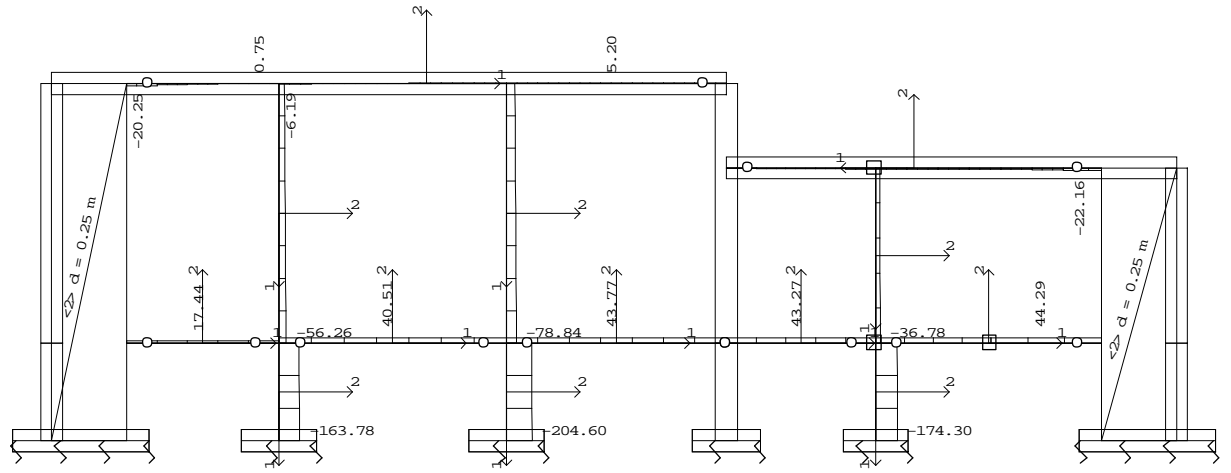


: _4 : max N1= 12.20/ min N1=-299.21 kN

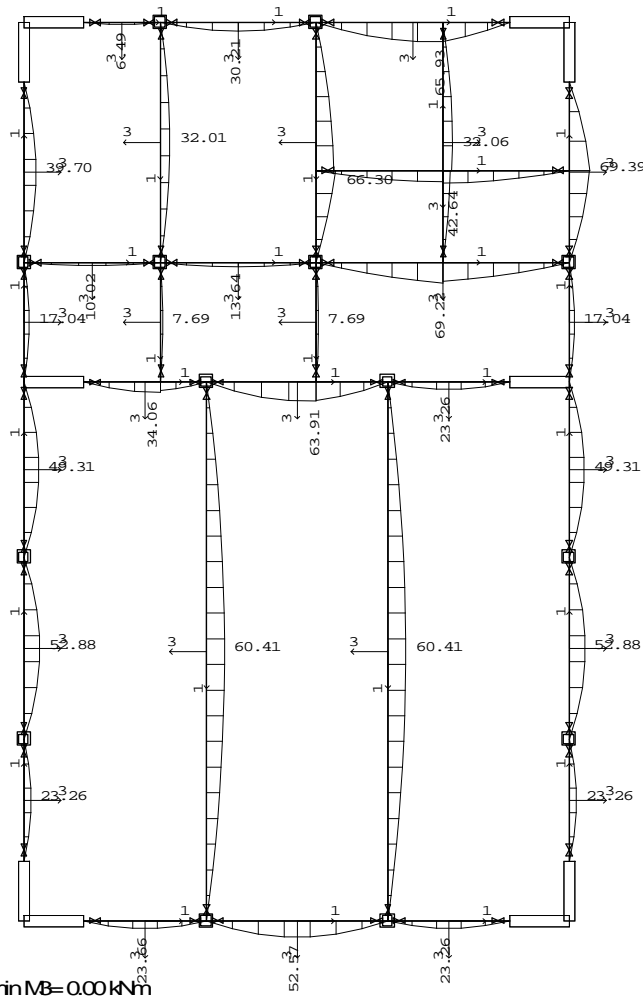
.16 [.]9-12



: _5 : max N1= 10.25/ min N1=-390.20 kN

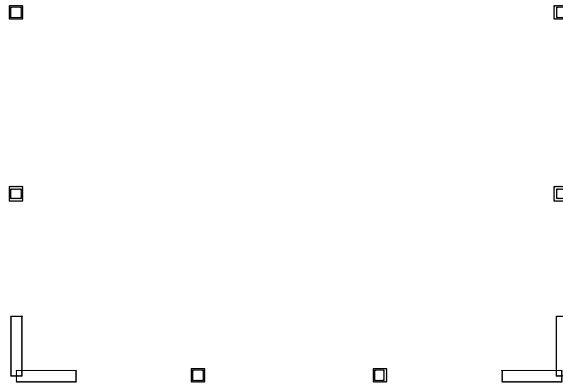
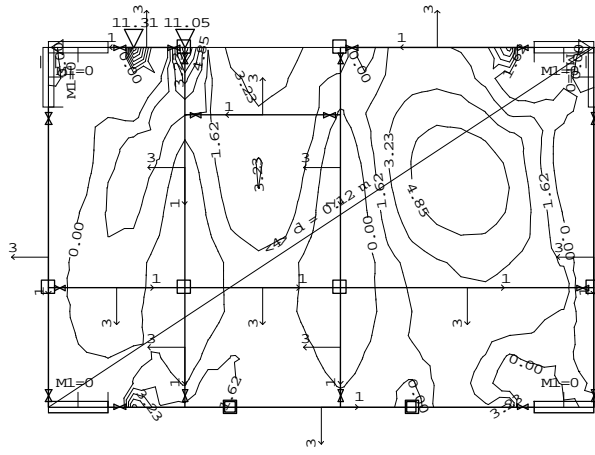


: _6 : max N1= 44.29/ min N1= -204.60 kN



: [0.00m] : max M8= 69.39/ min M8= 0.00 kNm

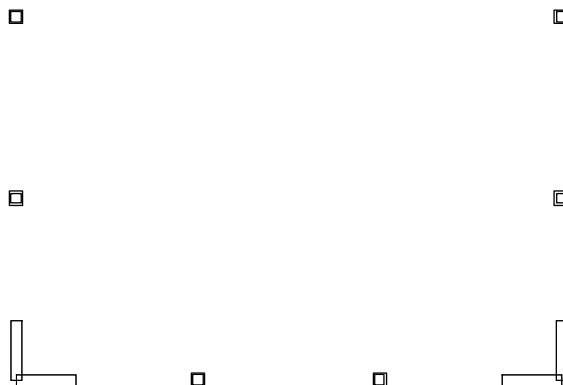
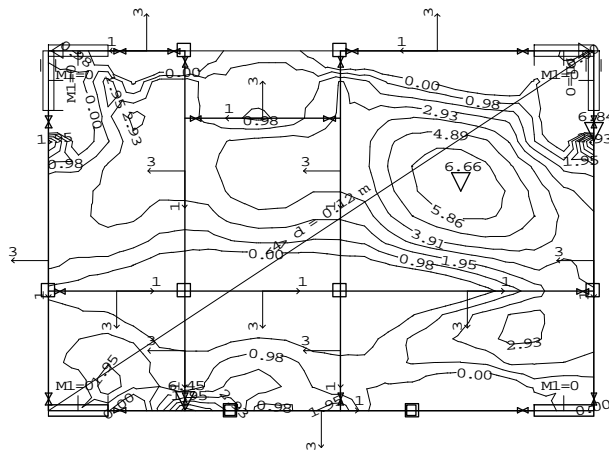
. 16 [.] 9-12



: [270m]

: max M= 11.31 / min M= 0.00 kNm/m

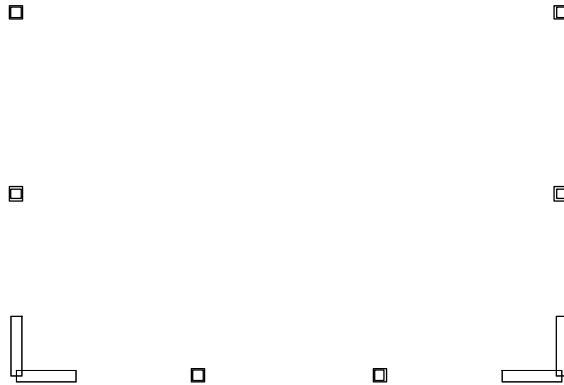
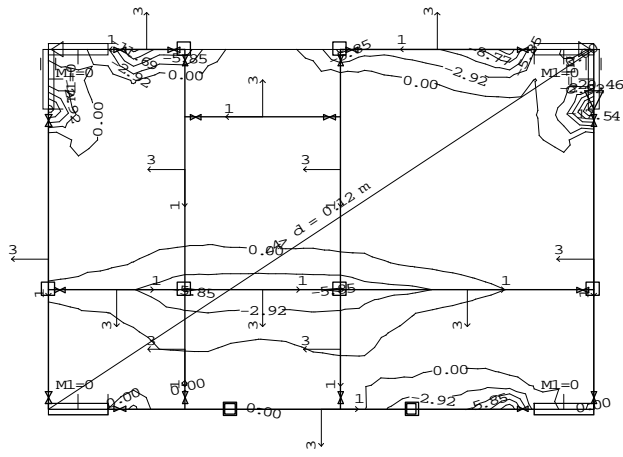
. 16 [.] 9-12



: [270m]

: max M= 6.84 / min M= 0.00 kNm/m

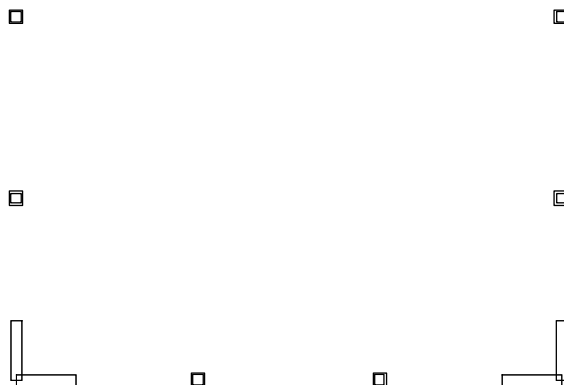
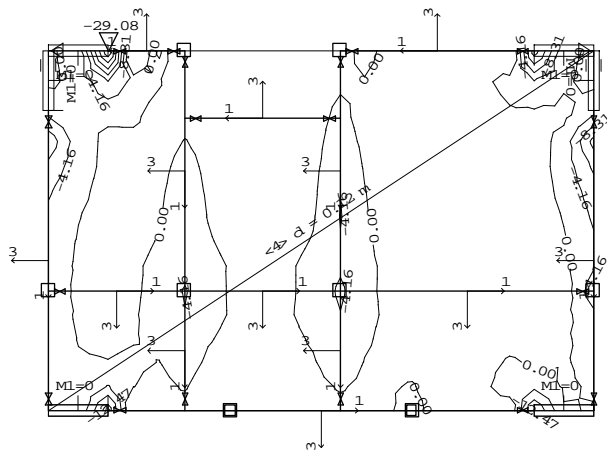
. 16 [] 9-12



: [270m]

: max $M_y = 0.00$ / min $M_y = -20.46$ kNm/m

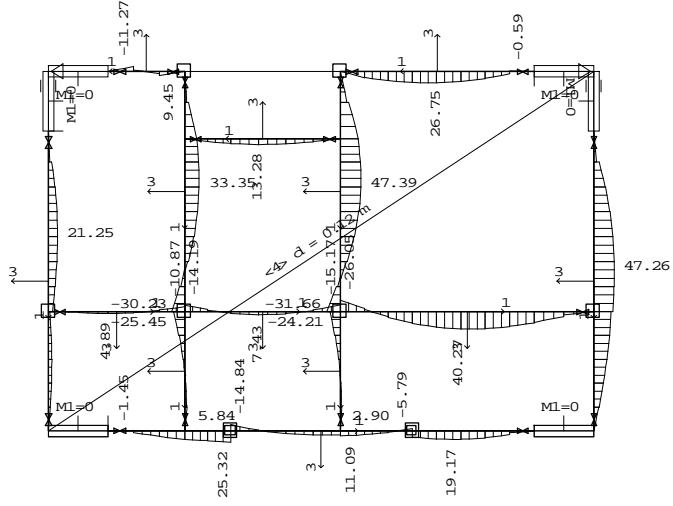
. 16 [] 9-12



: [270m]

: max $M_x = 0.00$ / min $M_x = -29.08$ kNm/m

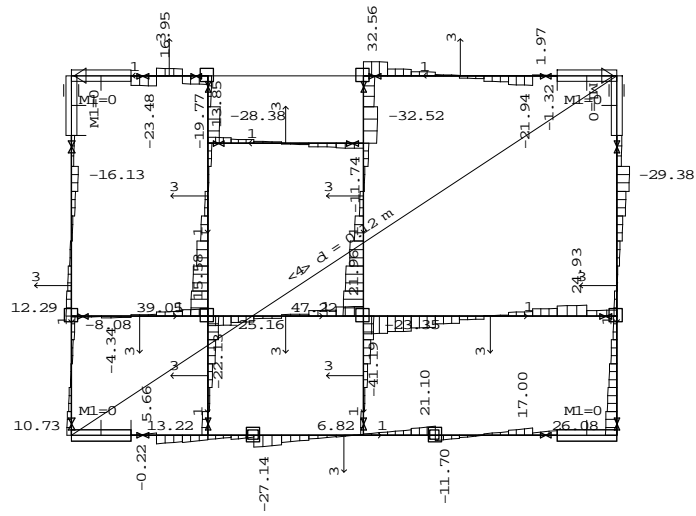
. 16 [.] 9-12



: [270m]

: max MB= 47.39 / min MB= -31.66 kNm

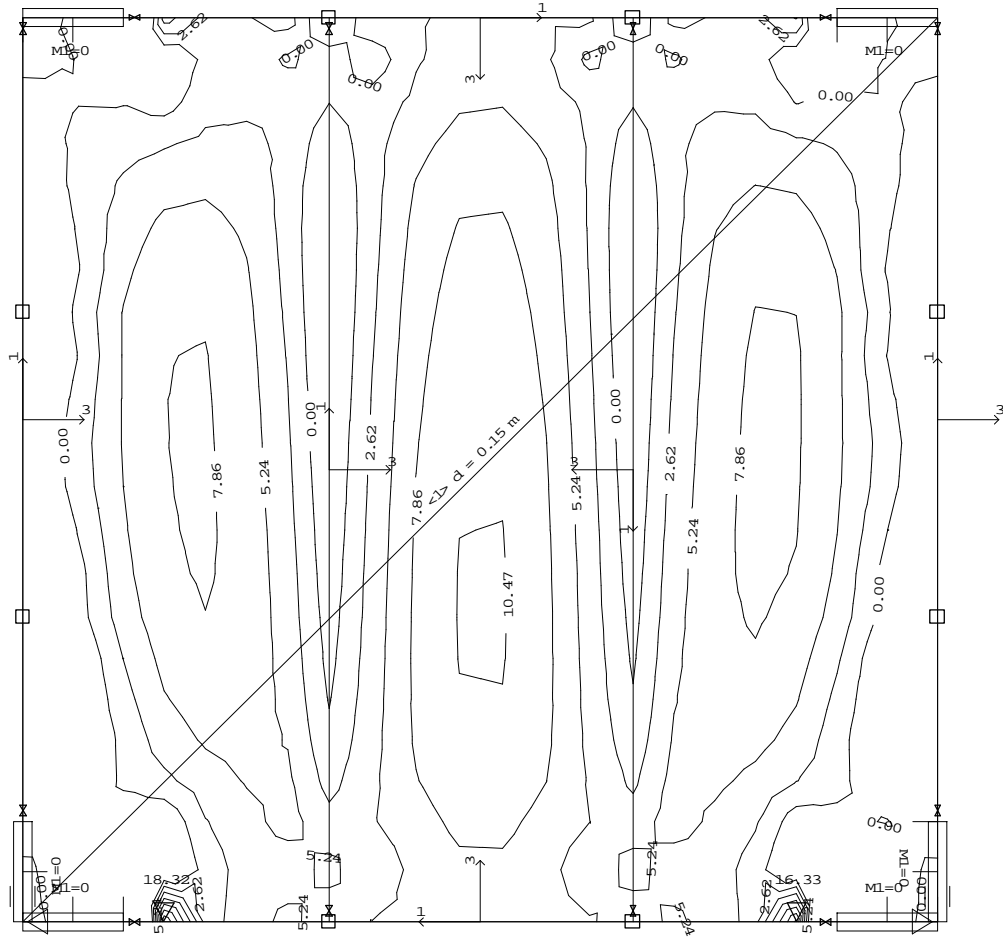
. 16 [.] 9-12



: [270m]

: max T2= 47.22 / min T2= -41.19 kNm

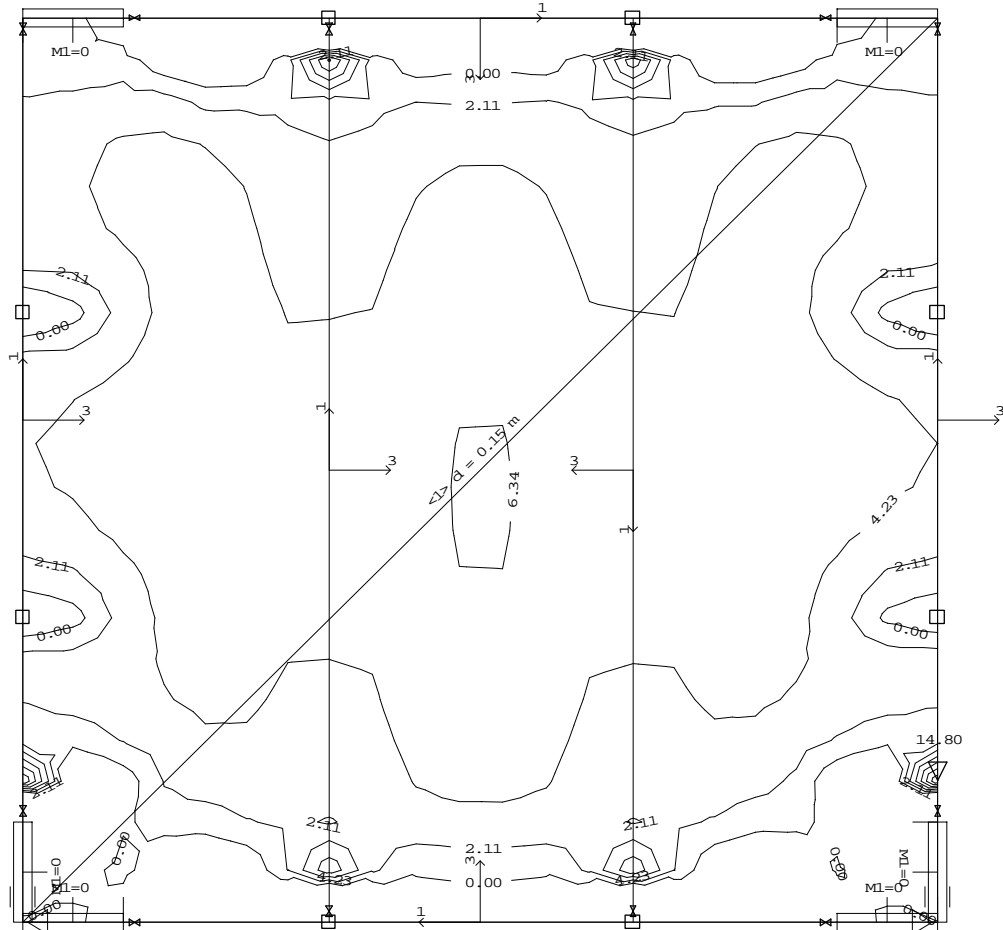
. 16 [] 9-12



: [4.00m]

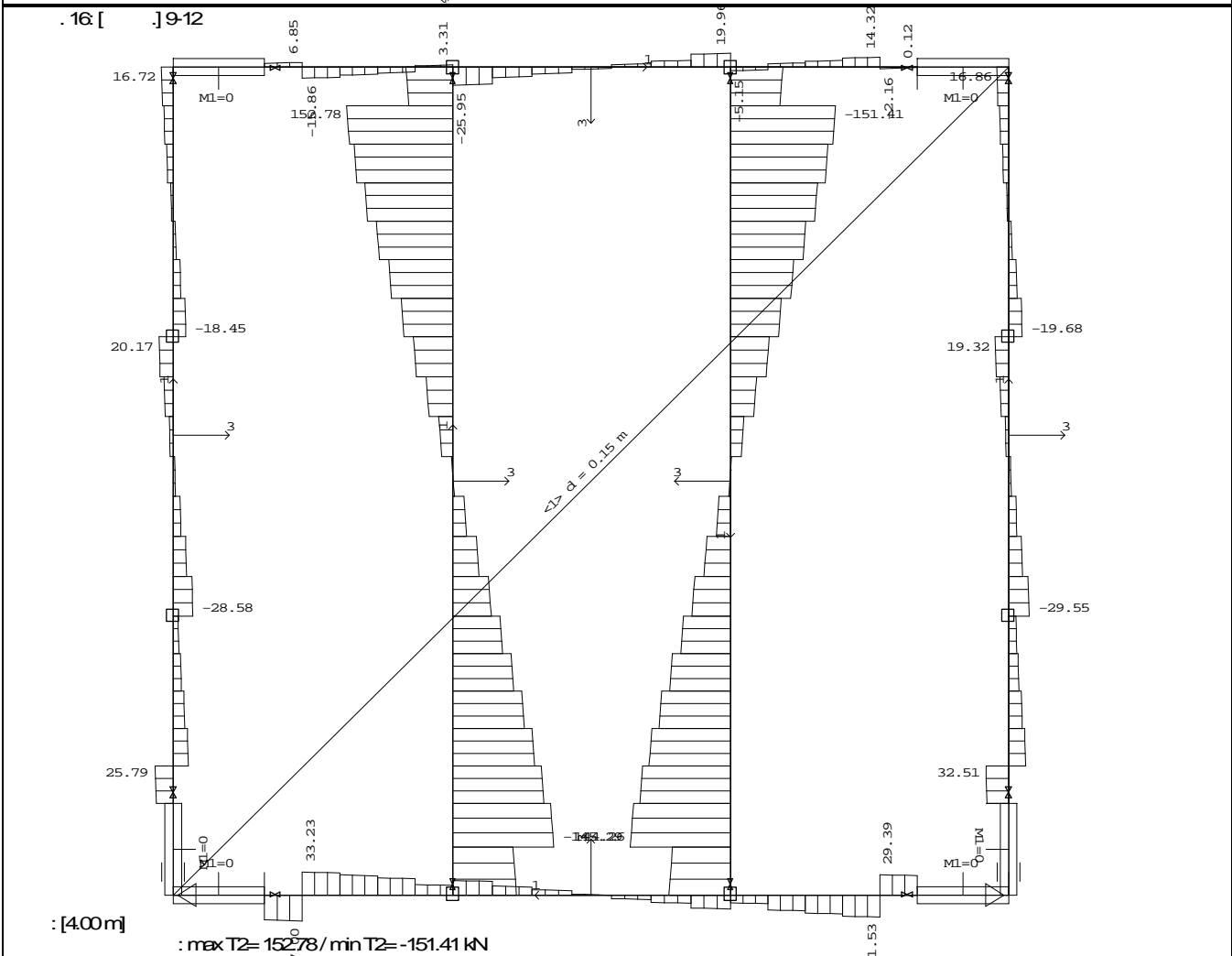
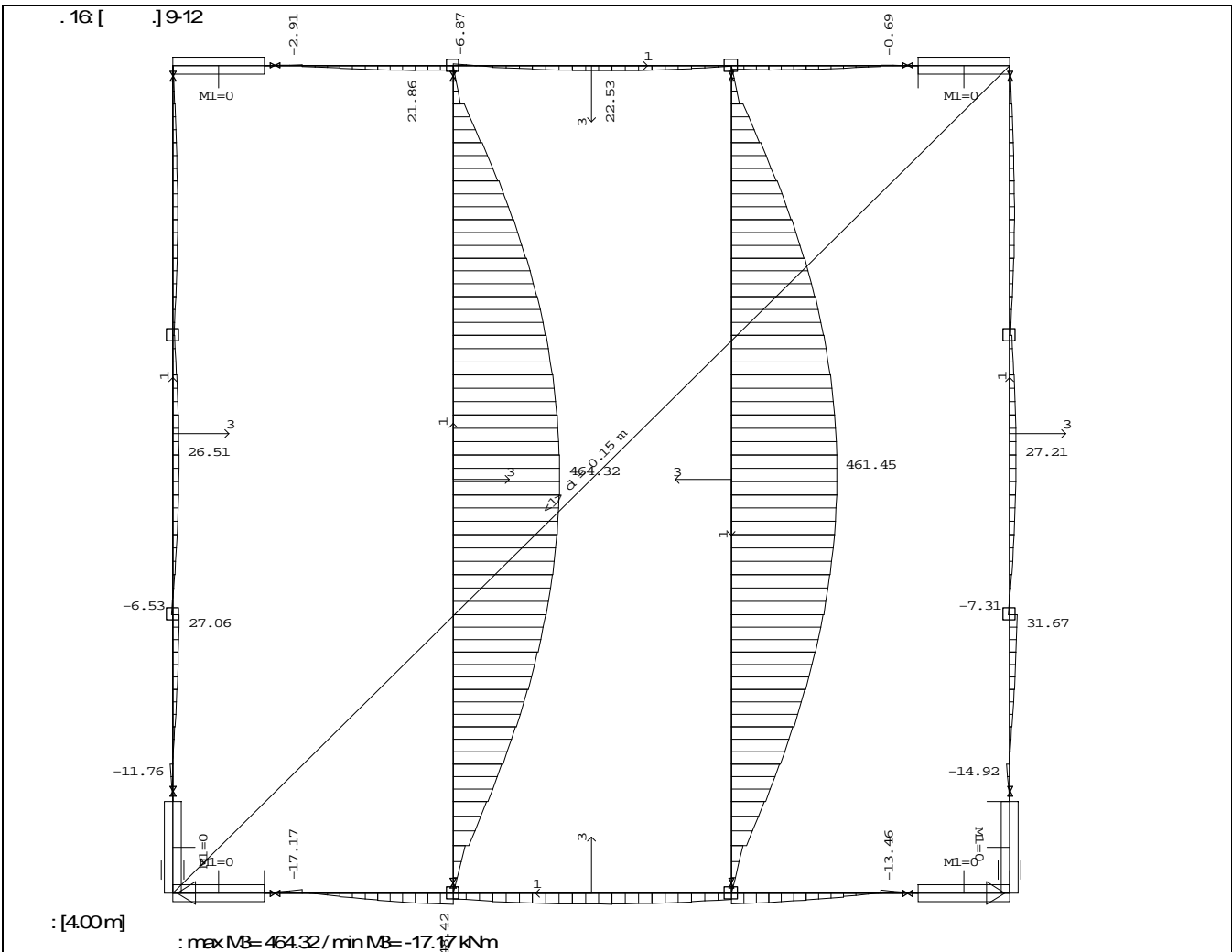
: max M = 18.32 / min M = 0.00 kNm/m

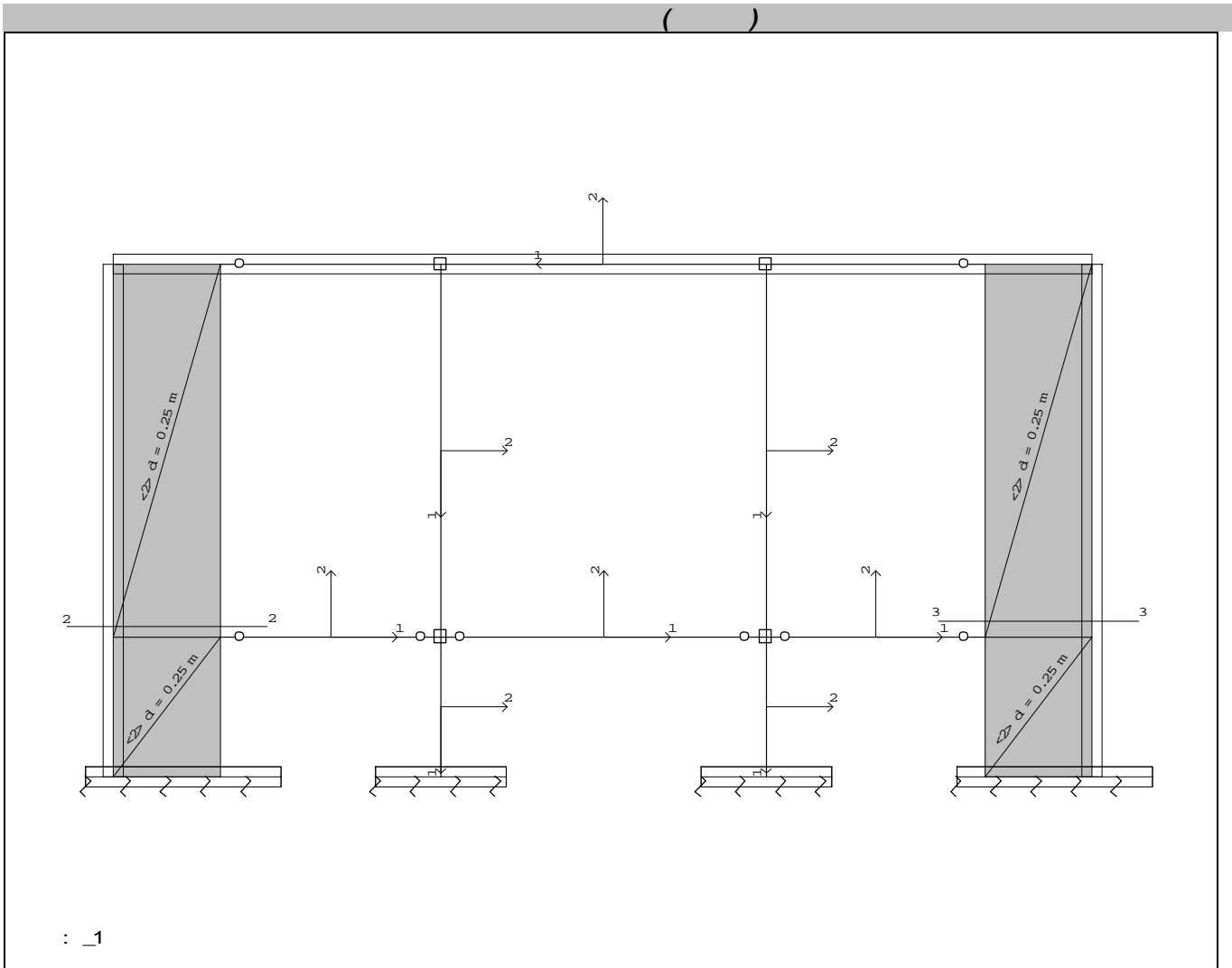
. 16 [] 9-12



: [4.00m]

: max M = 14.80 / min M = 0.00 kNm/m





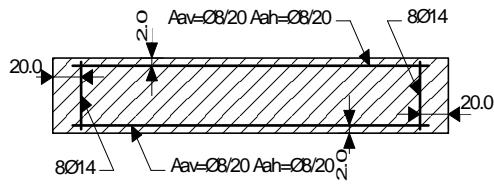
: _1

2 - 2 (Z=0.11m)

B 25

A III
A III

: 14,15



b/d = 25/115 cm Ab = 2875 cm²

I+II+III+0.80xIV+0.80xV-1.00xVIII

I+II+III+0.80xIV+0.80xV+VIII

Md = -78.13 kNm

Nd = 57.85 kN

Td = 23.00 kN

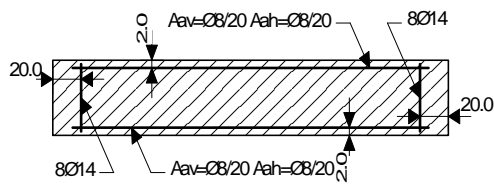
Aa1 =	3.14 cm ²	(:1.01)	(:8Ø14)
Aa2 =	3.14 cm ²	(:1.01)	(:8Ø14)
Aav =	±1.92 cm ² /m	(:±0.03)	(:±Ø8/20)
Aah =	±1.31 cm ² /m	(:±0.31)	(:±Ø8/20)

3 - 3 (Z=0.17m)

B 25

A III
A III

: 14,15



b/d = 25/115 cm Ab = 2875 cm²

I+II+III+0.80xIV+0.80xV-1.00xVIII

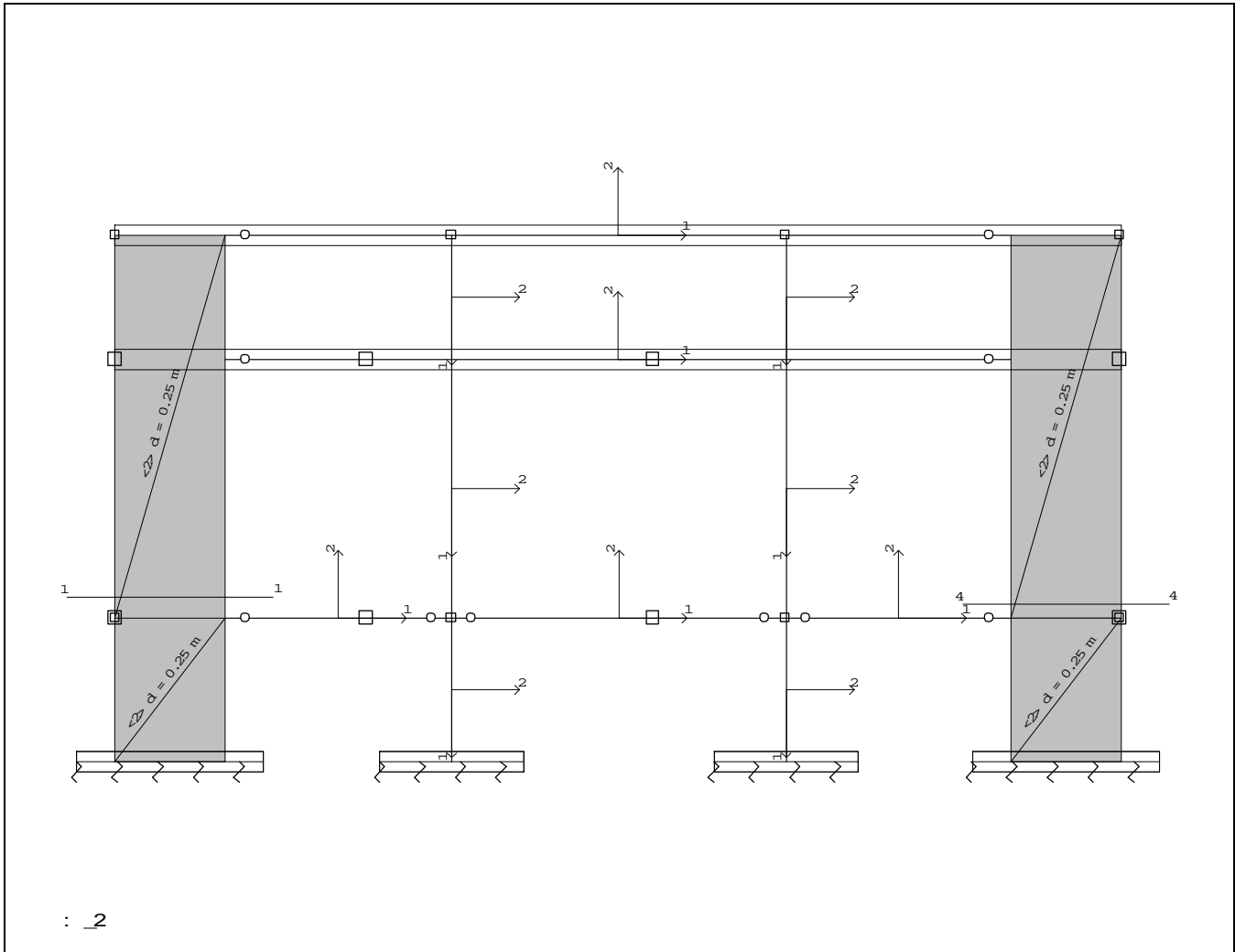
I+II+III+0.80xIV+0.80xV-1.00xVIII

Md = -88.87 kNm

Nd = 81.25 kN

Td = -38.65 kN

Aa1 =	3.82 cm ²	(:1.01)	(:8Ø14)
Aa2 =	3.82 cm ²	(:1.01)	(:8Ø14)
Aav =	±1.92 cm ² /m	(:±0.03)	(:±Ø8/20)
Aah =	±1.31 cm ² /m	(:±0.31)	(:±Ø8/20)



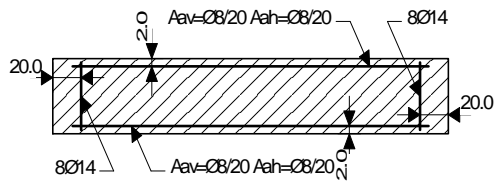
: 2

1 - 1 (Z=0.12m)

B 25

A III
A III

: 14,15



b/d = 25/115 cm Ab = 2875 cm²

I+II+III+0.80xIV+0.80xV-1.00xVIII

I+II+III+0.80xIV+0.80xV+VIII

Md = -72.04 kNm

Nd = -159.58 kN

Td = 15.46 kN

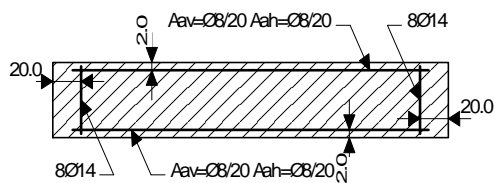
Aa1 =	1.44 cm ²	(:1.01)	(:Ø14)
Aa2 =	1.44 cm ²	(:1.01)	(:Ø14)
Aav =	±1.92 cm ² /m	(:±0.03)	(:±Ø8/20)
Aah =	±1.31 cm ² /m	(:±0.31)	(:±Ø8/20)

4 - 4 (Z=0.14m)

B 25

A III
A III

: 14,15



b/d = 25/115 cm Ab = 2875 cm²

I+II+III+0.80xIV+0.80xV-1.00xVIII

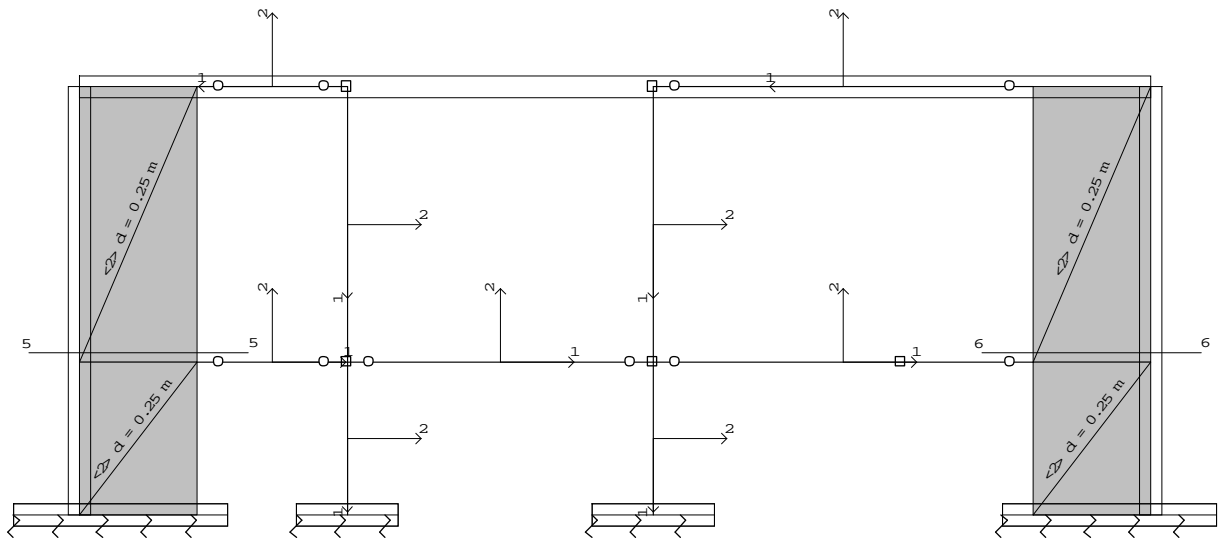
I+II+III+0.80xIV+0.80xV-1.00xVIII

Md = -68.92 kNm

Nd = -166.36 kN

Td = -8.51 kN

Aa1 =	1.44 cm ²	(:1.01)	(:Ø14)
Aa2 =	1.44 cm ²	(:1.01)	(:Ø14)
Aav =	±1.92 cm ² /m	(:±0.03)	(:±Ø8/20)
Aah =	±1.31 cm ² /m	(:±0.31)	(:±Ø8/20)



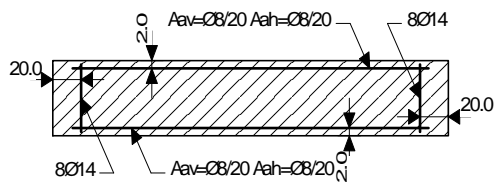
: _4

5 - 5 (Z=0.09m)

B 25

A III
A III

: 14,15



b/d = 25/115 cm Ab = 2875 cm²

I+II+III+0.80xIV+0.80xV-1.00xVIII

I+II+III+0.80xIV+0.80xV+VIII

Md = 41.04 kNm
Nd = -165.32 kN
Td = 34.81 kN

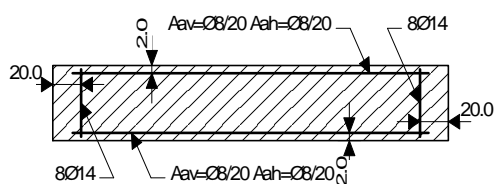
Aa1 =	1.44	cm ²	(:1.01)	(:Ø14)
Aa2 =	1.44	cm ²	(:1.01)	(:Ø14)
Aav =	±1.92	cm ² /m	(:±0.03)	(:±Ø8/20)
Aah =	±1.31	cm ² /m	(:±0.31)	(:±Ø8/20)

6 - 6 (Z=0.09m)

B 25

A III
A III

: 14,15



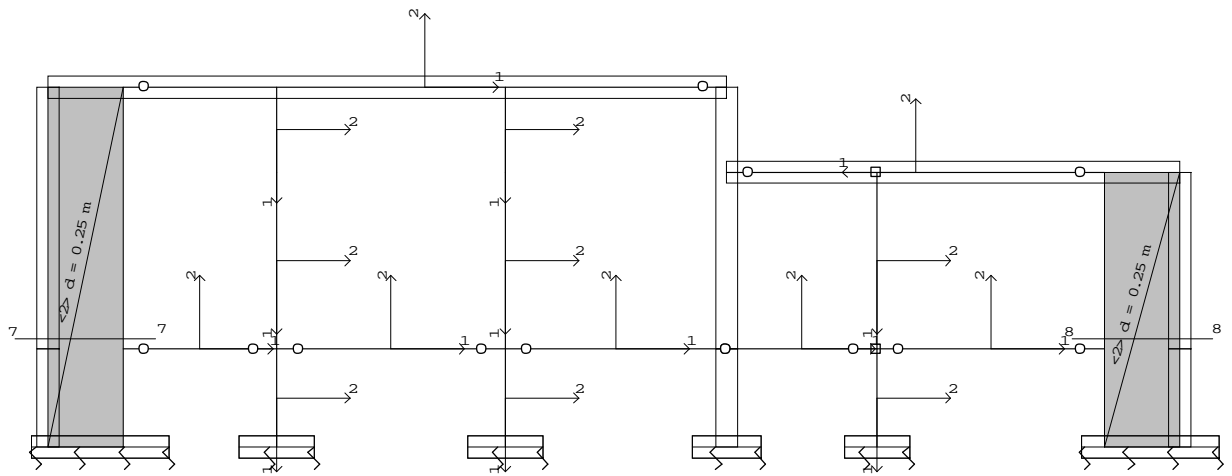
b/d = 25/115 cm Ab = 2875 cm²

I+II+III+0.80xIV+0.80xV-1.00xVIII

I+II+III+0.80xIV+0.80xV-1.00xVIII

Md = -43.86 kNm
Nd = -154.19 kN
Td = -39.84 kN

Aa1 =	1.44	cm ²	(:1.01)	(:Ø14)
Aa2 =	1.44	cm ²	(:1.01)	(:Ø14)
Aav =	±1.92	cm ² /m	(:±0.03)	(:±Ø8/20)
Aah =	±1.31	cm ² /m	(:±0.31)	(:±Ø8/20)



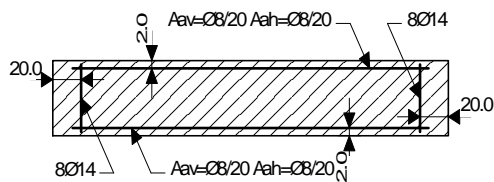
: _1

7 - 7 (Z=0.16m)

B 25

A III
A III

: 14,15



b/d = 25/115 cm $A_b = 2875 \text{ cm}^2$

I+II+III+0.80xIV+0.80xV-1.00xVIII

I+II+III+0.80xIV+0.80xV+VIII

Md = 90.28 kNm
Nd = 32.40 kN
Td = 20.23 kN

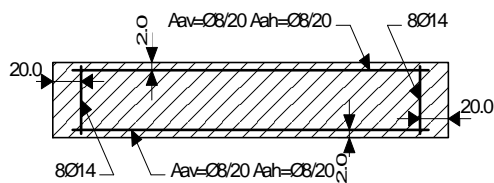
Aa1 =	3.09 cm ²	(:1.01)	(:8Ø14)
Aa2 =	3.09 cm ²	(:1.01)	(:8Ø14)
Aav =	±1.92 cm ² /m	(:±0.03)	(:±Ø8/20)
Aah =	±1.31 cm ² /m	(:±0.31)	(:±Ø8/20)

8 - 8 (Z=0.16m)

B 25

A III
A III

: 14,15



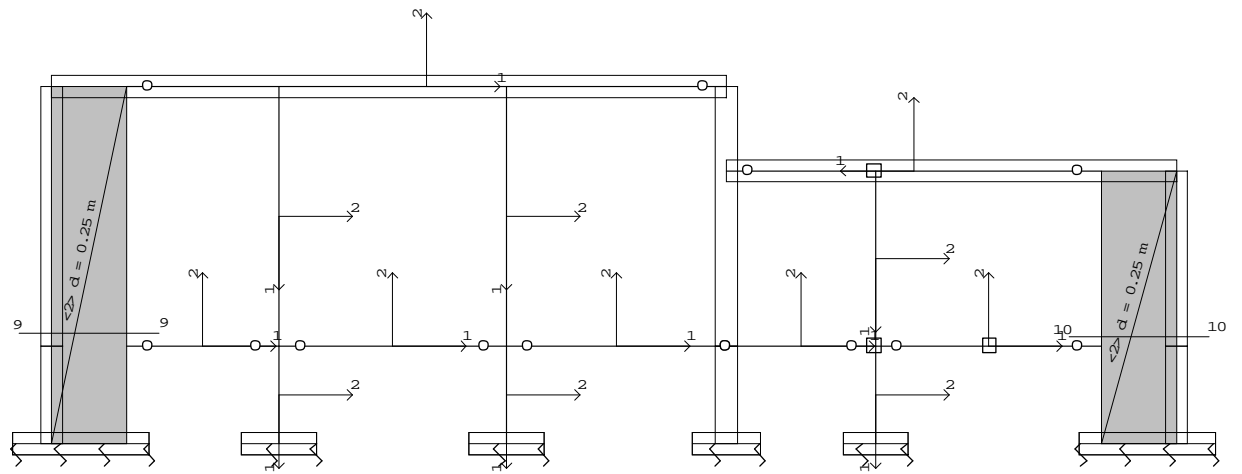
b/d = 25/115 cm $A_b = 2875 \text{ cm}^2$

I+II+III+0.80xIV+0.80xV-1.00xVIII

I+II+III+0.80xIV+0.80xV-1.00xVIII

Md = 61.19 kNm
Nd = 41.00 kN
Td = -39.93 kN

Aa1 =	2.39 cm ²	(:1.01)	(:8Ø14)
Aa2 =	2.39 cm ²	(:1.01)	(:8Ø14)
Aav =	±1.92 cm ² /m	(:±0.03)	(:±Ø8/20)
Aah =	±1.31 cm ² /m	(:±0.31)	(:±Ø8/20)



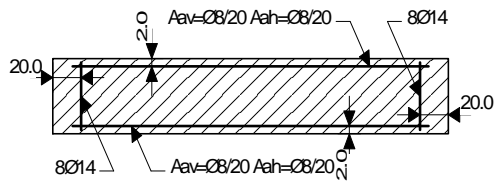
: 6

9 - 9 (Z=0.20m)

B 25

A III
A III

: 14,15



b/d = 25/115 cm Ab = 2875 cm²

I+II+III+0.80xIV+0.80xV-1.00xVIII

I+II+III+0.80xIV+0.80xV+VIII

Md = -78.75 kNm
Nd = 17.15 kN
Td = 39.40 kN

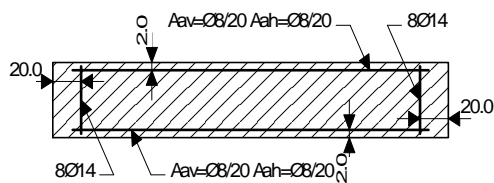
Aa1 =	2.51 cm ²	(:1.01)	(:8Ø14)
Aa2 =	2.51 cm ²	(:1.01)	(:8Ø14)
Aav =	±1.92 cm ² /m	(:±0.03)	(:±Ø8/20)
Aah =	±1.31 cm ² /m	(:±0.31)	(:±Ø8/20)

10 - 10 (Z=0.14m)

B 25

A III
A III

: 14,15



b/d = 25/115 cm Ab = 2875 cm²

I+II+III+0.80xIV+0.80xV-1.00xVIII

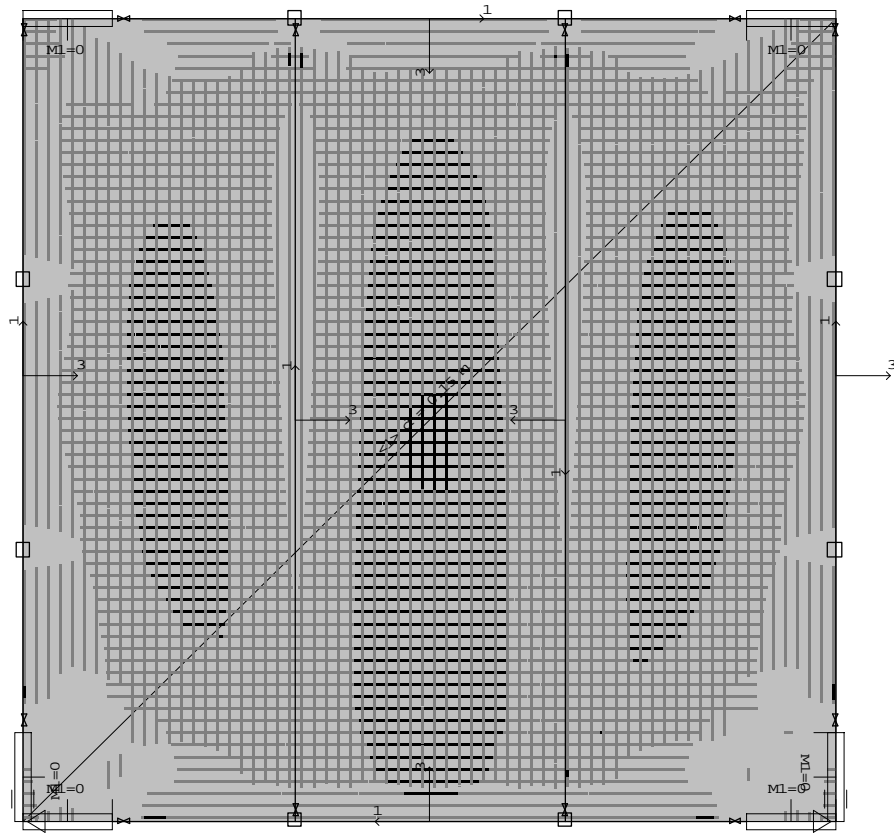
I+II+III+0.80xIV+0.80xV-1.00xVIII

Md = 50.58 kNm
Nd = -148.33 kN
Td = -45.48 kN

Aa1 =	1.44 cm ²	(:1.01)	(:8Ø14)
Aa2 =	1.44 cm ²	(:1.01)	(:8Ø14)
Aav =	±1.92 cm ² /m	(:±0.03)	(:±Ø8/20)
Aah =	±1.31 cm ² /m	(:±0.31)	(:±Ø8/20)

: 9-12
 , B25, AIII, $\alpha=3.00\text{cm}$

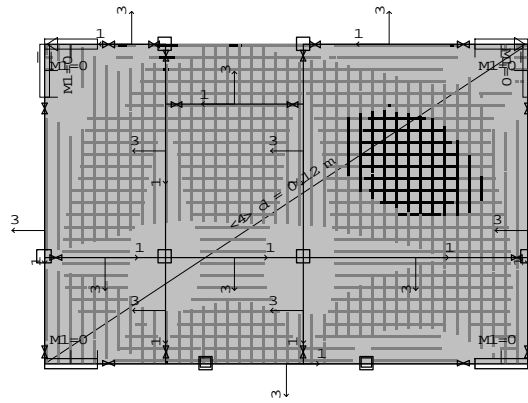
Aa -	[cm ² /m]
	0.00
	1.45
	2.89



Aa- : [4.00m]
 - max Aa = 2.89 cm²/m

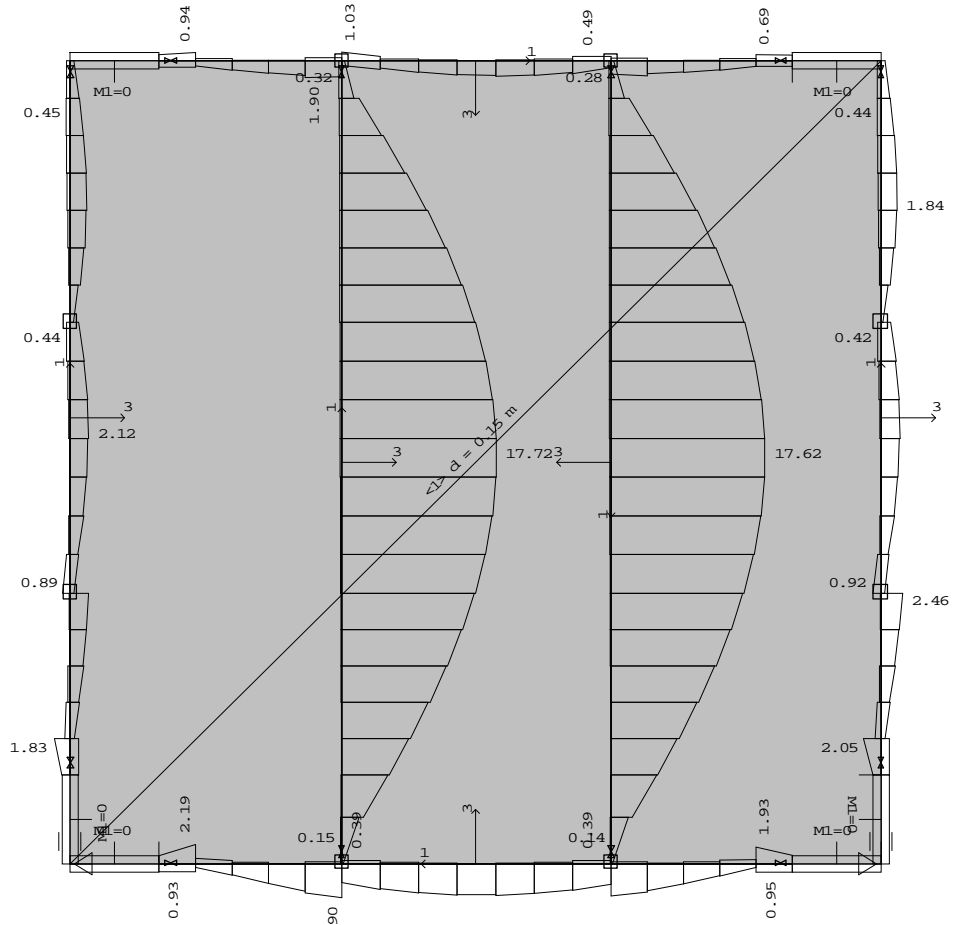
: 9-12
 , B25, AIII, $\alpha=3.00\text{cm}$

Aa -	[cm ² /m]
	0.00
	1.35
	2.70



Aa- : [2.70m]
 - max Aa = 2.69 cm²/m

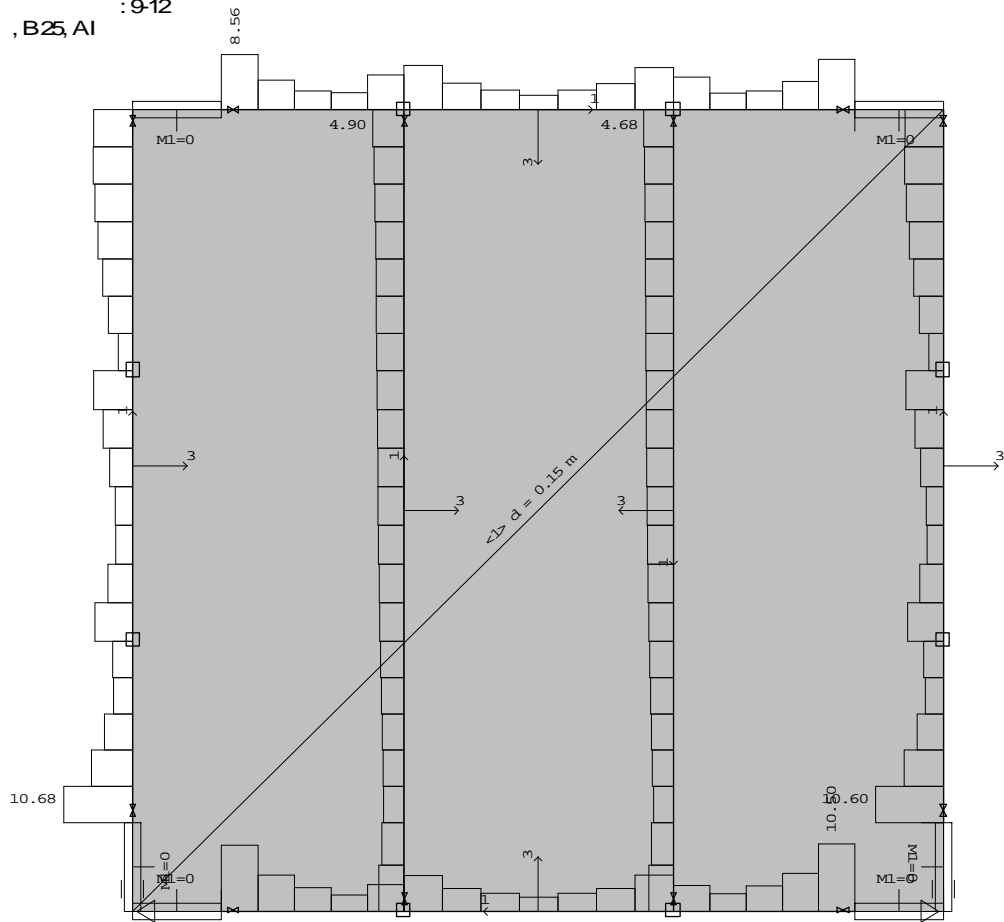
, B25, AIII : 9-12



: [4.00m]

: max $A_2/A_1 = 2.19 / 17.72 \text{ cm}^2$

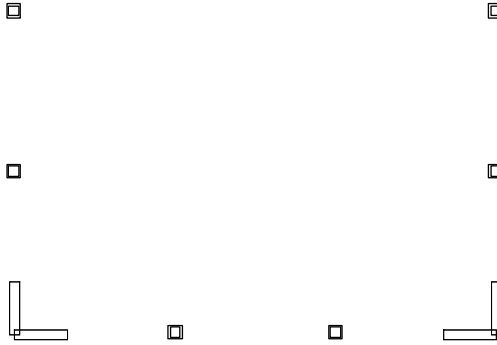
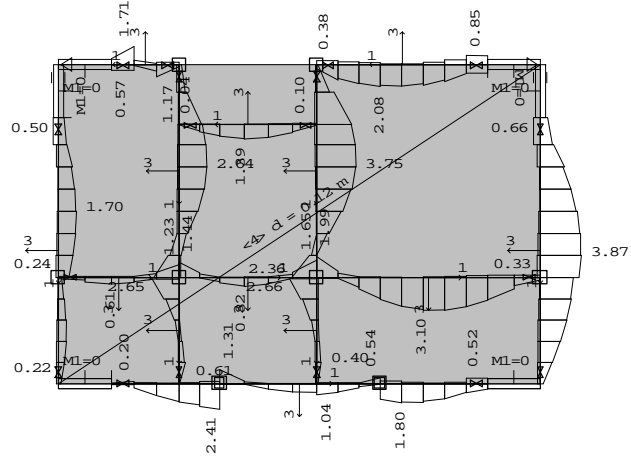
, B25, AI : 9-12



: [4.00m]

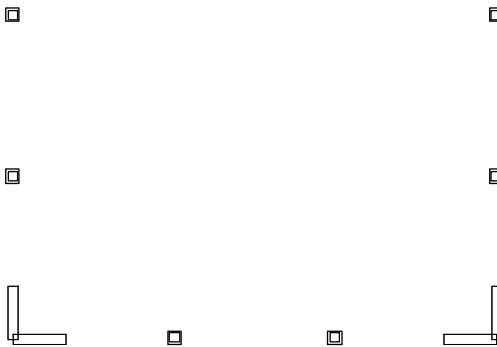
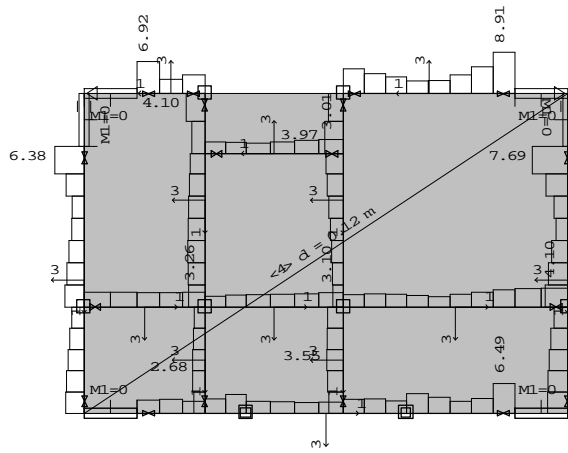
: max $A_2 = 10.68 / 2.19 \text{ cm}^2$

, B25, AIII : 9-12



: [270m] : $\max A_{a2}/A_{a1} = 2.66 / 3.87 \text{ cm}^2$

, B25, AI : 9-12



: [270m] : $\max A_{a1} = 8.91 / 2.22 \text{ cm}^2$