

Committente: **INTERPROGETTI**

**PIATTAFORMA INTERMODALE DI TREMESTIERI IN
PROVINCIA DI MESSINA**

CONSULENZA GEOTECNICA

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ALLEGATO 3

Responsabile scientifico
Prof. Ing. Giuseppe Scarpelli

Giuseppe Scarpelli

Il Direttore del Dipartimento
Prof. Ing. Giacomo Moriconi

Giacomo Moriconi

Collaboratori
Ing. Paolo Ruggeri
Ing. Viviene Fruzzetti
Ing. David Segato

REPORT

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1. General Information

Table [1] Units

Type	Unit
Length	m
Force	kN
Time	s

Table [2] Model dimensions

	min.	max.
X	-35,000	40,000
Y	-40,000	6,500

Table [3] Model

Model	Plane strain
Element	6-Noded

2. Structures

Table [4] Beams

Plate no.	Data set	Length [m]	Nodes
1	HZ1080MA-12/AZ13-770	32,500	1675, 1672, 1668, 1664, 1625, 1552, 1486, 1438, 1271, 1091, 691.
2	HZ1080MA-12/AZ13-770	31,800	1651, 244, 1403, 1497, 912, 1497, 1593, 1746, 1798, 1822, 1834.

Table [5] Node-to-node anchors

Anchor no.	Data set	Length [m]	First node	Last node
1	ø40/2.06m	8,500	1672	1834

3. Material data

Table [6] Soil data sets parameters

<i>Linear Elastic</i>		4
		Calcestruzzo
Type		Drained
γ_{unsat}	[kN/m ³]	25,00
γ_{sat}	[kN/m ³]	25,00
k_x	[m/s]	0,000
k_y	[m/s]	0,000
e_{init}	[-]	0,500
c_k	[-]	1E15
E_{ref}	[kN/m ²]	35000000,00
ν	[-]	0,200
G_{ref}	[kN/m ²]	14583333,333
E_{oed}	[kN/m ²]	38888888,889
E_{incr}	[kN/m ² /m]	0,00
y_{ref}	[m]	0,000
R_{inter}	[-]	1,000
Interface permeability		Neutral

<i>Mohr-Coulomb</i>		1	2	3	5
		Strato 1 - S+G	Strato 2 - G+Ciot	Riempimento	Strato 1 rid
Type		Drained	Drained	Drained	Drained
γ_{unsat}	[kN/m ³]	19,50	19,50	19,50	19,50
γ_{sat}	[kN/m ³]	19,50	19,50	19,50	19,50
k_x	[m/s]	0,000	0,000	0,000	0,000

<i>Mohr-Coulomb</i>		1	2	3	5
		Strato 1 - S+G	Strato 2 - G+Ciot	Riempimento	Strato 1 rid
k_y	[m/s]	0,000	0,000	0,000	0,000
c_{init}	[-]	0,500	0,500	0,500	0,500
c_k	[-]	1E15	1E15	1E15	1E15
E_{ref}	[kN/m ²]	35000,000	35000,000	35000,000	35000,000
ν	[-]	0,300	0,270	0,300	0,300
G_{ref}	[kN/m ²]	13461,538	13779,528	13461,538	13461,538
E_{oed}	[kN/m ²]	47115,385	43735,022	47115,385	47115,385
c_{ref}	[kN/m ²]	0,00	0,00	0,00	0,00
φ	[°]	34,00	38,00	34,00	28,30
ψ	[°]	10,00	5,00	0,00	10,00
E_{inc}	[kN/m ² /m]	0,00	0,00	0,00	0,00
y_{ref}	[m]	0,000	0,000	0,000	0,000
$c_{increment}$	[kN/m ² /m]	0,00	0,00	0,00	0,00
$T_{str.}$	[kN/m ²]	0,00	0,00	0,00	0,00
$R_{inter.}$	[-]	0,70	0,70	0,50	0,70
Interface		Neutral	Neutral	Neutral	Neutral
permeability					

<i>Mohr-Coulomb</i>		6	7	8
		Strato 2 rid	jet grouting	Massi
Type		Drained	Drained	Drained
γ_{unsat}	[kN/m ³]	19,50	20,00	19,00
γ_{sat}	[kN/m ³]	19,50	20,00	19,00
k_x	[m/s]	0,000	0,000	0,000
k_y	[m/s]	0,000	0,000	0,000
c_{init}	[-]	0,500	0,500	0,500
c_k	[-]	1E15	1E15	1E15

Mohr-Coulomb		6	7	8
		Strato 2 rid	jet grouting	Massi
E_{ref}	[kN/m ²]	35000,000	70000,000	50000,000
v	[-]	0,270	0,200	0,200
G_{ref}	[kN/m ²]	13779,528	29166,667	20833,333
E_{oed}	[kN/m ²]	43735,022	77777,778	55555,556
c_{ref}	[kN/m ²]	0,00	1000,00	0,00
φ	[°]	32,00	0,00	45,00
ψ	[°]	5,00	0,00	0,00
E_{inc}	[kN/m ² /m]	0,00	0,00	0,00
y_{ref}	[m]	0,000	0,000	0,000
C_{increment}	[kN/m ² /m]	0,00	0,00	0,00
T_{str.}	[kN/m ²]	0,00	0,00	0,00
R_{inter.}	[-]	0,70	0,50	1,00
Interface permeability		Neutral	Neutral	Neutral

Table [7] Beam data sets parameters

No.	Identification	EA	EI	w	v	Mp	Np
		[kN/m]	[kNm ² /m]	[kN/m/m]	[-]	[kNm/m]	[kN/m]
1	HZ1080MA-12/AZ13-770	6,174E6	8,485E5	1,50	0,15	1E15	1E15

Table [8] Anchor data sets parameters

No.	Identification	EA	 F_{max,comp} 	 F_{max,tens} 	L spacing
		[kN]	[kN]	[kN]	[m]
1	φ40/2.06m	125000,00	1E15	1E15	1,00

4. Calculation phases

Table [9] List of phases

Phase	Ph-No.	Start phase	Calculation type	Load input	First step	Last step
Initial phase	0	0		-	0	0
Litostatiche	1	0	Plastic	Total multipliers	1	7
Paratie	2	1	Plastic	Staged construction	8	9
riemp. 1+2	3	2	Plastic	Staged construction	10	38
riemp. 3+4	4	3	Plastic	Staged construction	39	79
solettone+jet-grout	5	4	Plastic	Staged construction	80	84
SLE qp	16	5	Plastic	Staged construction	149	158
SLE fr cavo	22	5	Plastic	Staged construction	344	360
SLE fr cresta	23	5	Plastic	Staged construction	361	372
SLE raro cavo	6	5	Plastic	Staged construction	85	121
SLE raro cresta	15	5	Plastic	Staged construction	122	148
west+10kPa	7	5	Plastic	Staged construction	159	178
SLV	8	7	Plastic	Total multipliers	179	236
SLV+fi rid	9	8	Plastic	Staged construction	237	270
SLU12 cavo	17	6	Plastic	Staged construction	271	290
SLU12 cresta	18	15	Plastic	Staged construction	291	302
SLU11 cavo	19	6	Plastic	Staged construction	303	314
SLU11 cresta	20	15	Plastic	Total multipliers	315	335
west (SLD)	21	16	Plastic	Staged construction	393	400
SLD	24	21	Plastic	Total multipliers	373	392

5. Results for phase 5

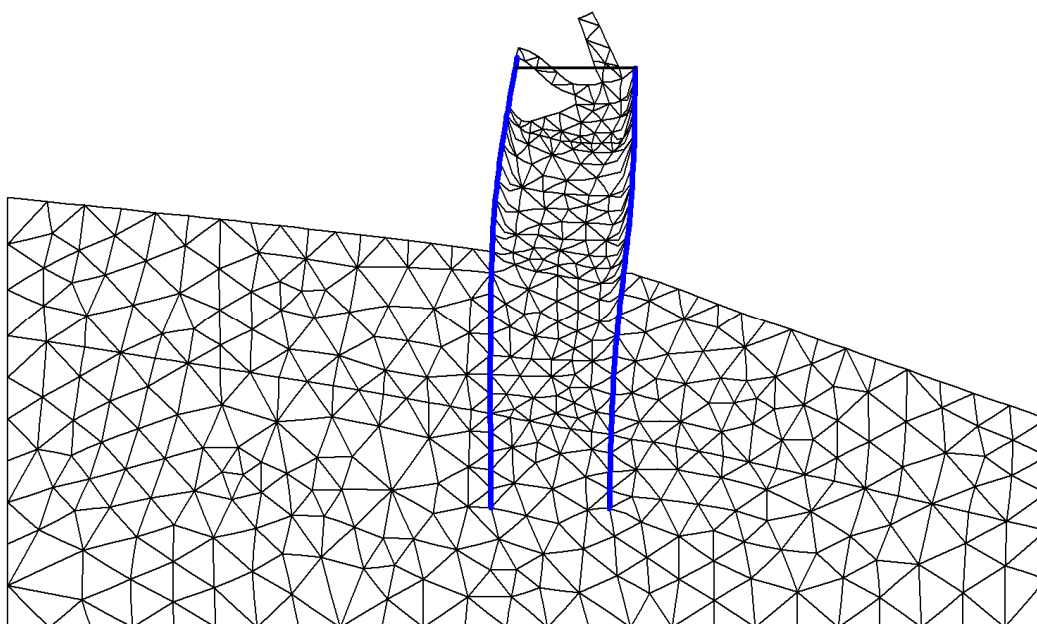


Fig. 1 Plot of deformed mesh
 - step no: 84 - (phase: 5)

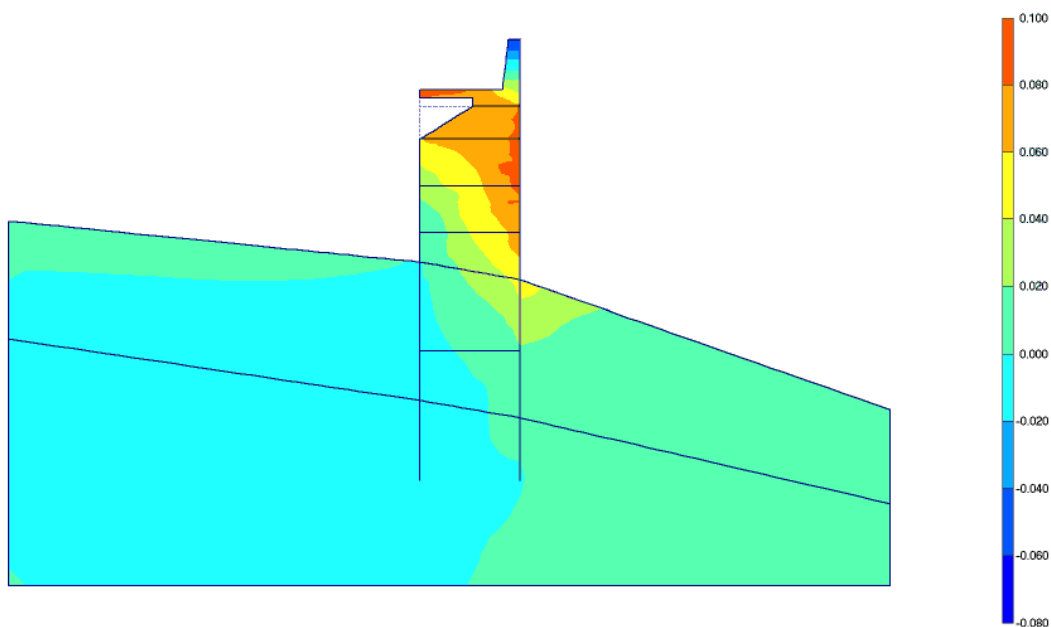


Fig. 2 Plot of horizontal displacements (shadings)
 - step no: 84 - (phase: 5)

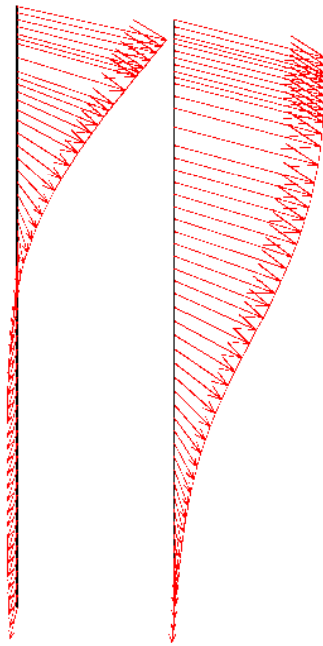


Fig. 3 Total displacements in beam

Extreme value $93,53 \cdot 10^{-3}$ m (phase: 5)

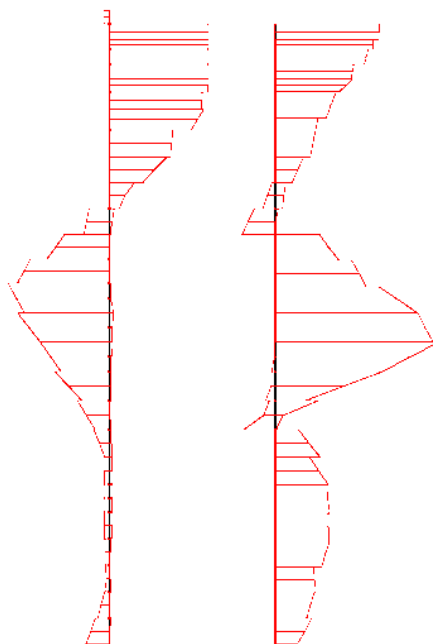


Fig. 4 Shear forces envelop in beam

Extreme value -164,52 kN/m (phase: 5)

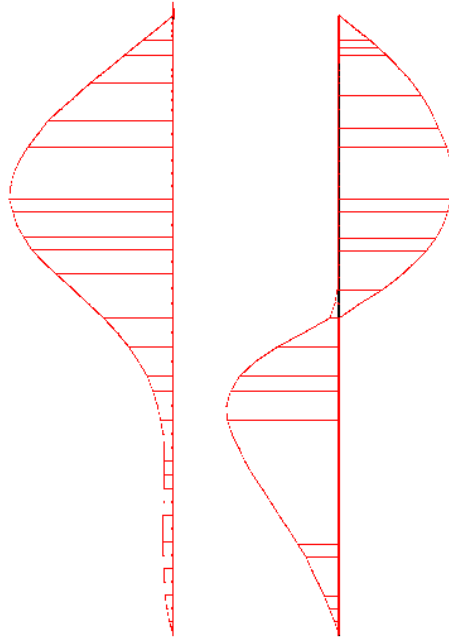


Fig. 5 Bending moment envelop in beam

Extreme value 681,13 kN/m/m (phase: 5)

Table [10] Anchors phase no: 5

Anchor no.	Node	x-coord. [m]	y-coord. [m]	F [kN]	Fmax,comp [kN]	Fmax,tens [kN]	EA [kN]	Rotation [°]	Le [m]
1	1672	0,000	0,800	104,931	1E15	1E15	125000,0	N/A	8,500
	1834	8,500	0,800				0		

6. Results for phase 16

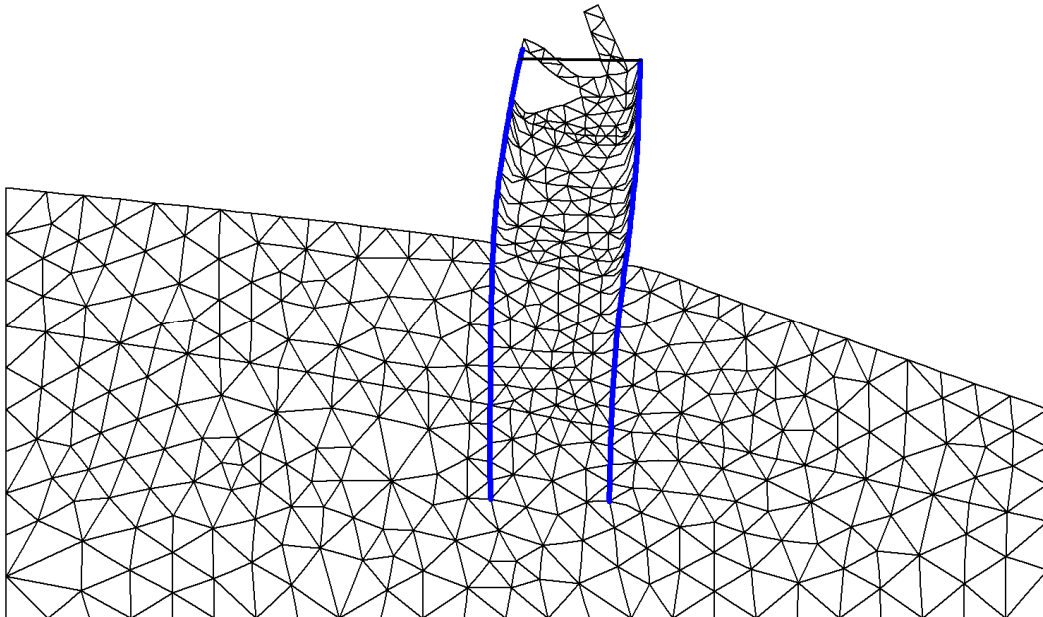


Fig. 6 Plot of deformed mesh
- step no: 158 - (phase: 16)

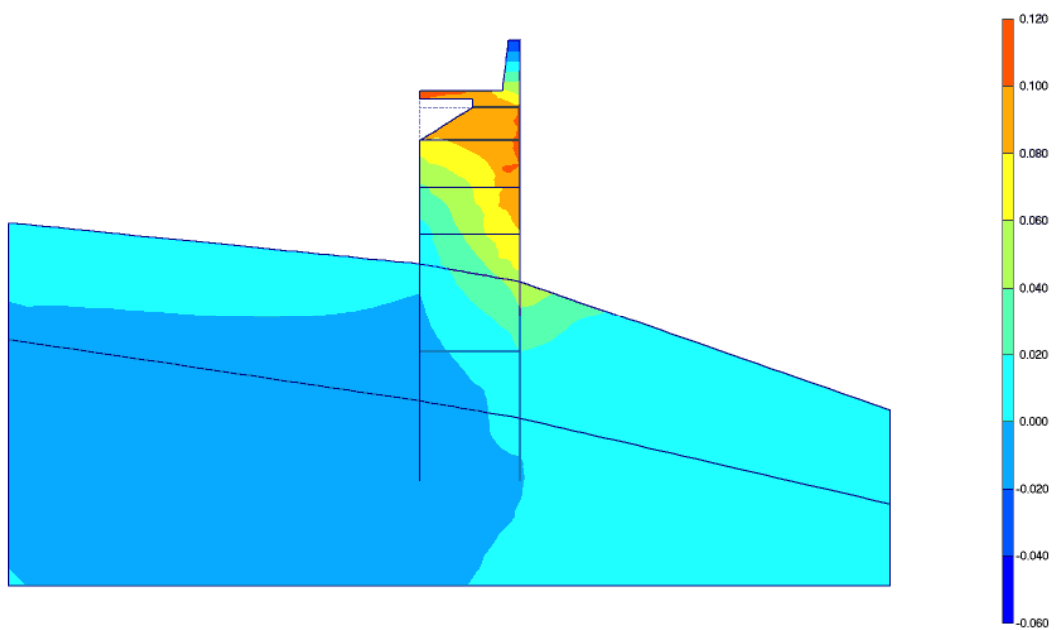


Fig. 7 Plot of horizontal displacements (shadings)

- step no: 158 - (phase: 16)

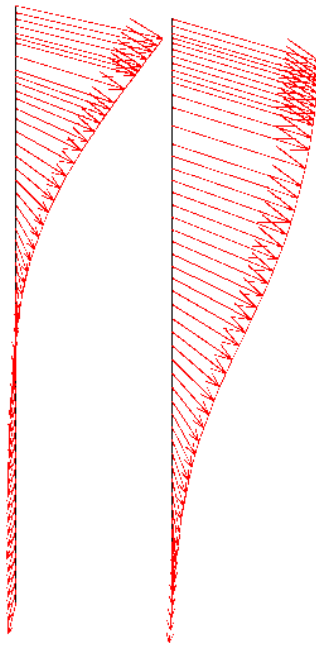


Fig. 8 Total displacements in beam

Extreme value $114,09 \cdot 10^{-3}$ m (phase: 16)

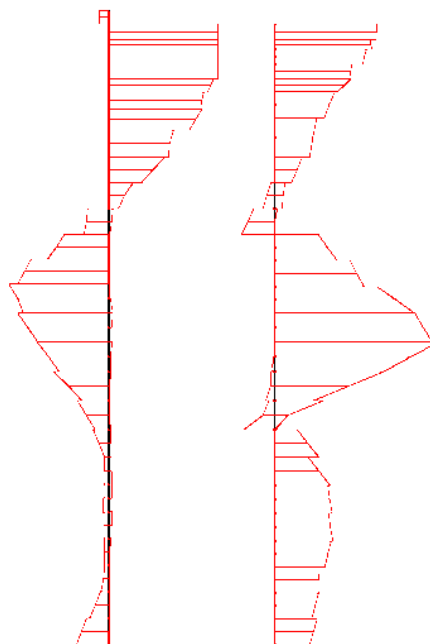


Fig. 9 Shear forces envelop in beam

Extreme value -167,24 kN/m (phase: 16)

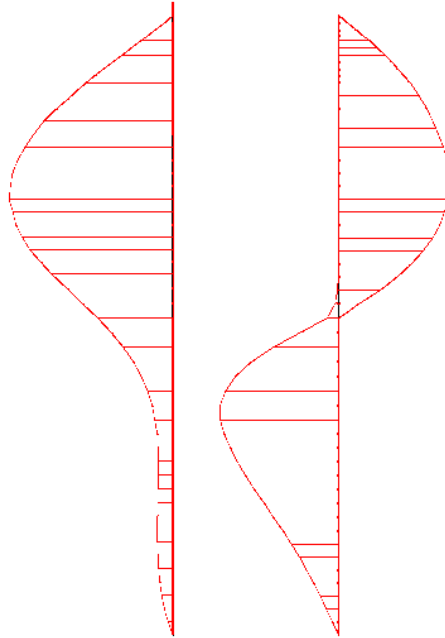


Fig. 10 Bending moment envelop in beam

Extreme value 702,77 kN/m/m (phase: 16)

Table [11] Anchors phase no: 16

Anchor no.	Node	x-coord. [m]	y-coord. [m]	F [kN]	Fmax,comp [kN]	Fmax,tens [kN]	EA [kN]	Rotation [°]	Le [m]
1	1672	0,000	0,800	120,932	1E15	1E15	125000,0	N/A	8,500
	1834	8,500	0,800				0		

7. Results for phase 22

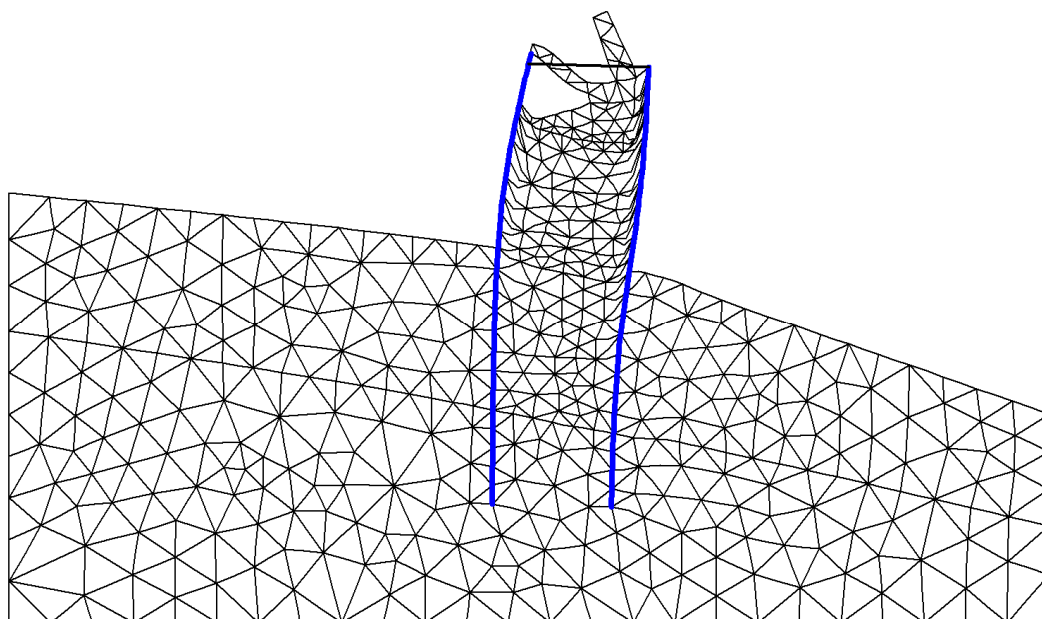


Fig. 11 Plot of deformed mesh
 - step no: 360 - (phase: 22)

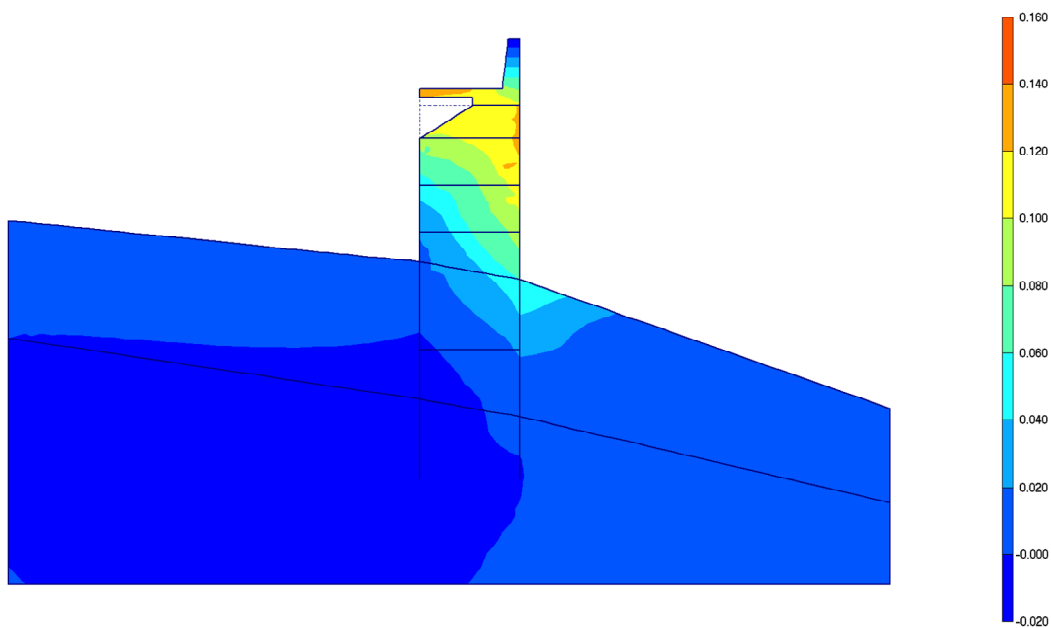


Fig. 12 Plot of horizontal displacements (shadings)

- step no: 360 - (phase: 22)

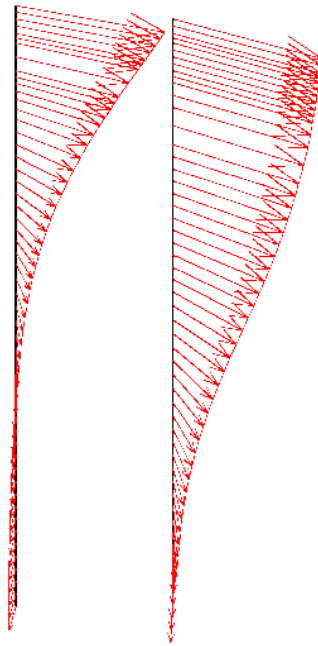


Fig. 13 Total displacements in beam

Extreme value $136,95 \cdot 10^{-3}$ m (phase: 22)

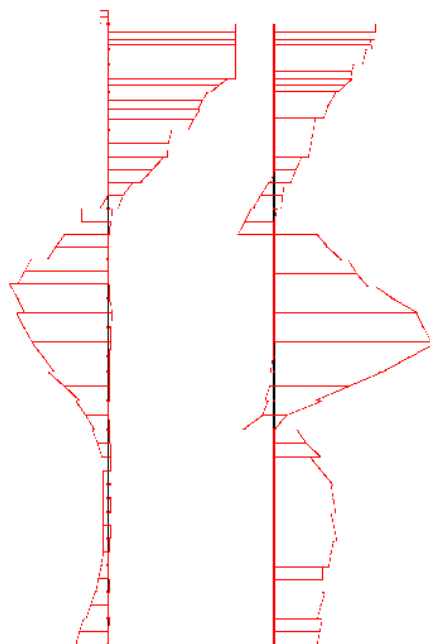


Fig. 14 Shear forces envelop in beam

Extreme value -168,65 kN/m (phase: 22)

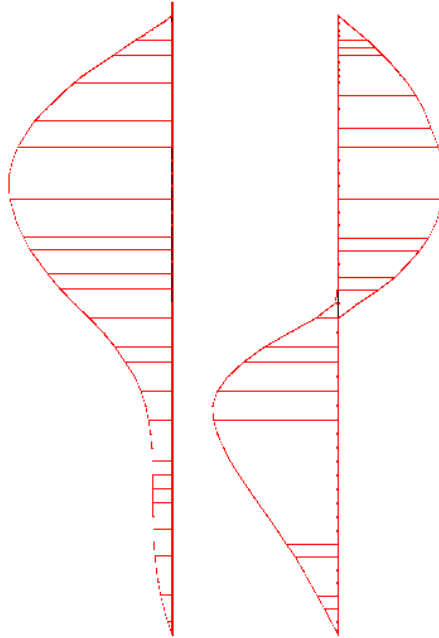


Fig. 15 Bending moment envelop in beam

Extreme value 734,27 kN/m/m (phase: 22)

Table [12] Anchors phase no: 22

Anchor no.	Node	x-coord. [m]	y-coord. [m]	F [kN]	Fmax,comp [kN]	Fmax,tens [kN]	EA [kN]	Rotation [°]	Le [m]
1	1672	0,000	0,800	131,997	1E15	1E15	125000,0	N/A	8,500
	1834	8,500	0,800				0		

8. Results for phase 23

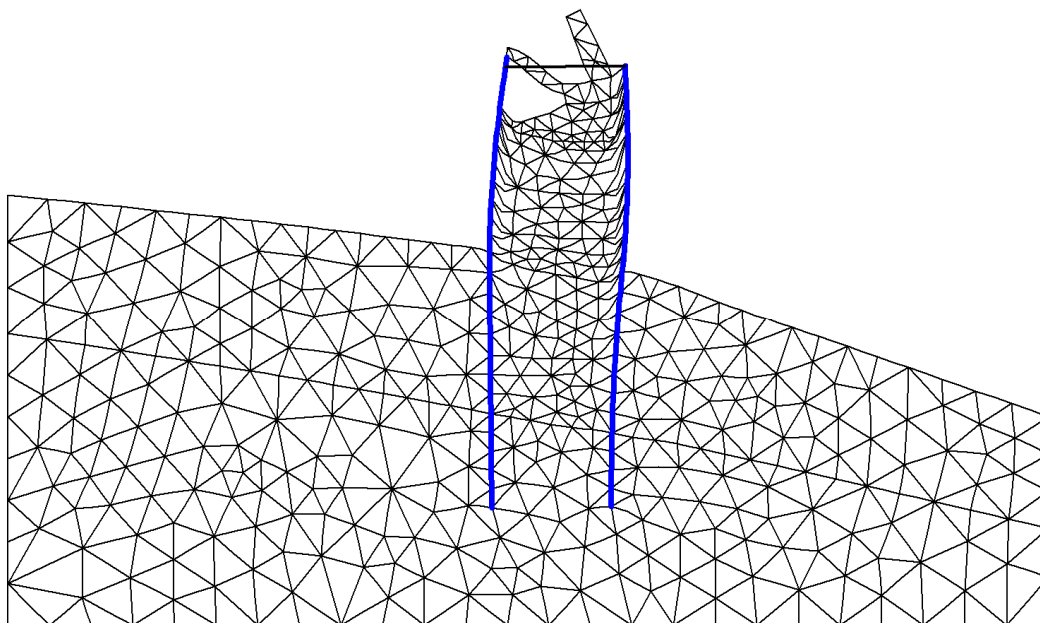


Fig. 16 Plot of deformed mesh

- step no: 372 - (phase: 23)

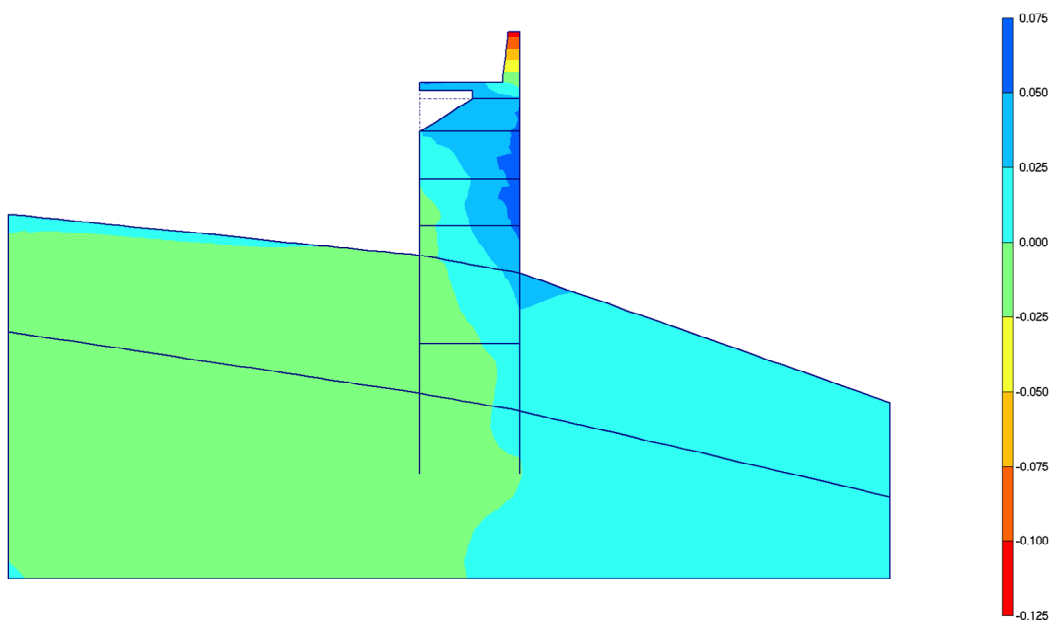


Fig. 17 Plot of horizontal displacements (shadings)

- step no: 372 - (phase: 23)

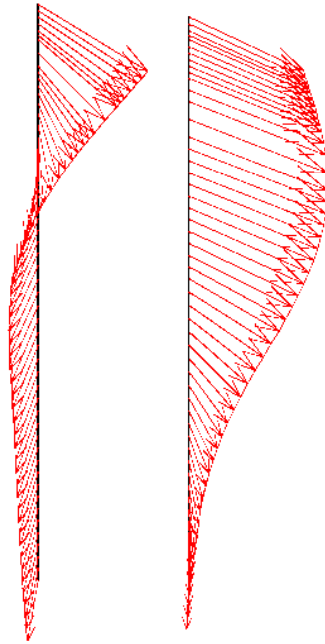


Fig. 18 Total displacements in beam

Extreme value $64,50 \cdot 10^{-3}$ m (phase: 23)

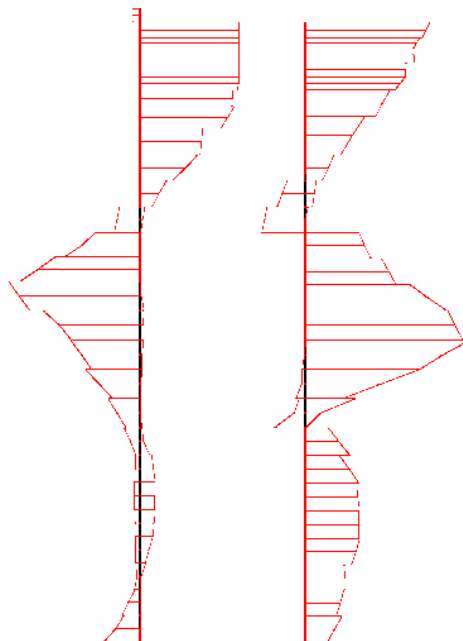


Fig. 19 Shear forces envelop in beam

Extreme value -164,84 kN/m (phase: 23)

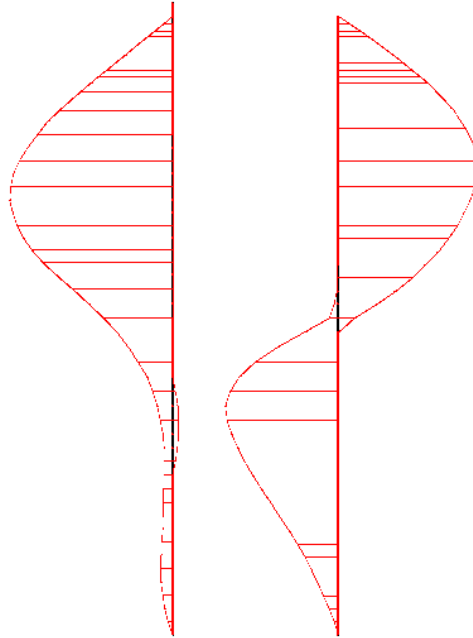


Fig. 20 Bending moment envelop in beam

Extreme value 681,13 kN/m/m (phase: 23)

Table [13] Anchors phase no: 23

Anchor no.	Node	x-coord. [m]	y-coord. [m]	F [kN]	Fmax,comp [kN]	Fmax,tens [kN]	EA [kN]	Rotation [°]	Le [m]
1	1672	0,000	0,800	101,542	1E15	1E15	125000,00	N/A	8,500
	1834	8,500	0,800						

9. Results for phase 6

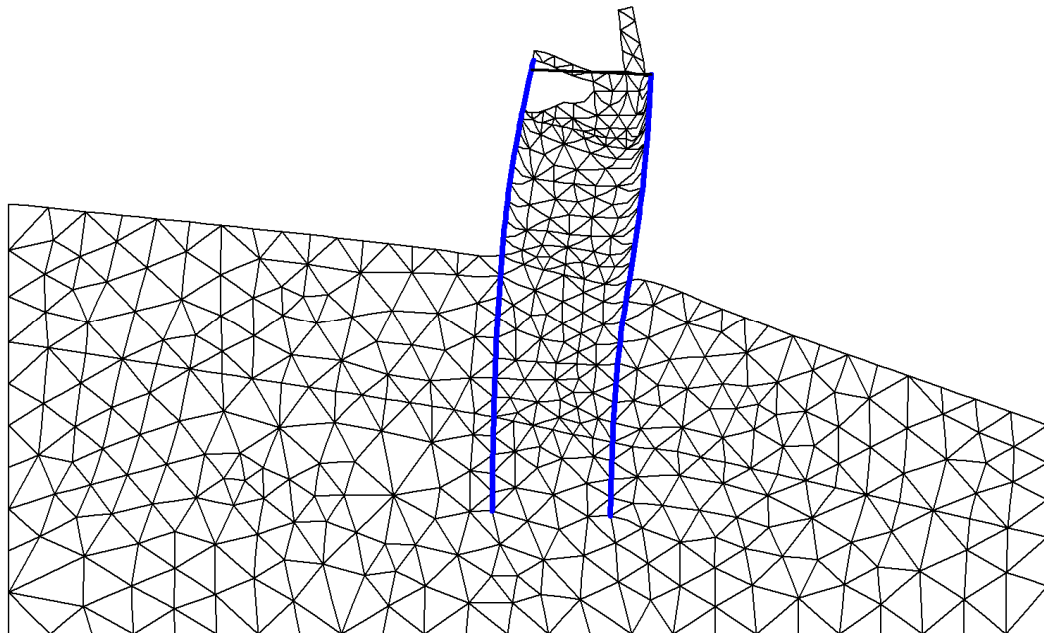


Fig. 21 Plot of deformed mesh
- step no: 121 - (phase: 6)

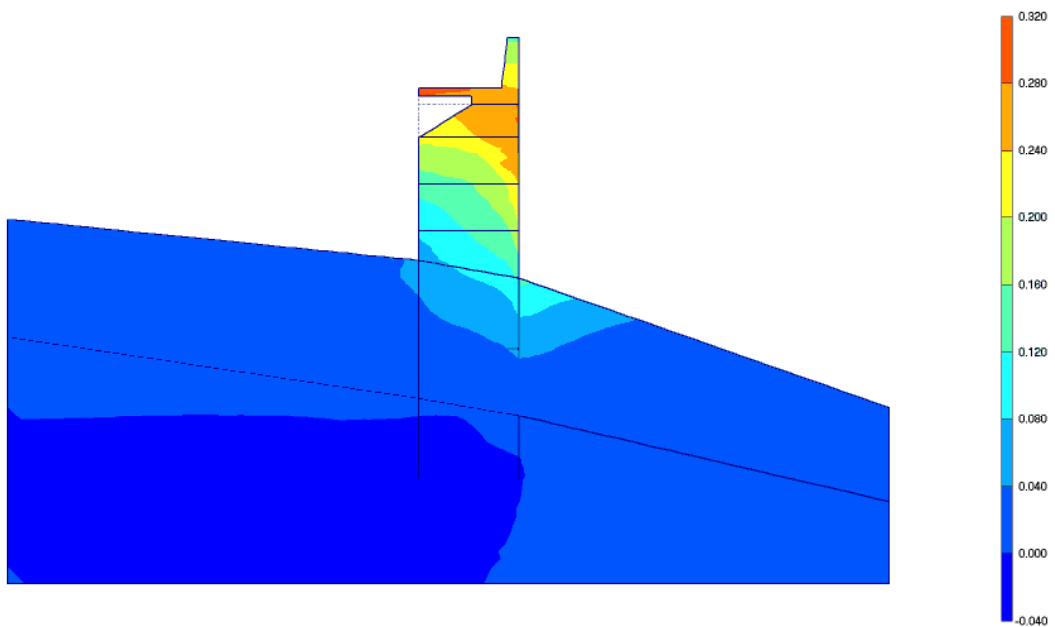


Fig. 22 Plot of horizontal displacements (shadings)

- step no: 121 - (phase: 6)

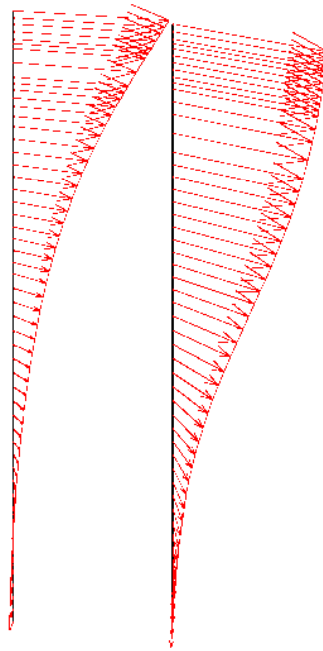


Fig. 23 Total displacements in beam

Extreme value $293,62 \cdot 10^{-3}$ m (phase: 6)

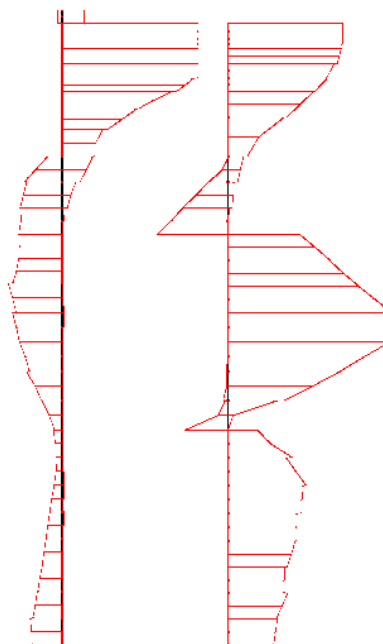


Fig. 24 Shear forces envelop in beam

Extreme value -307,29 kN/m (phase: 6)

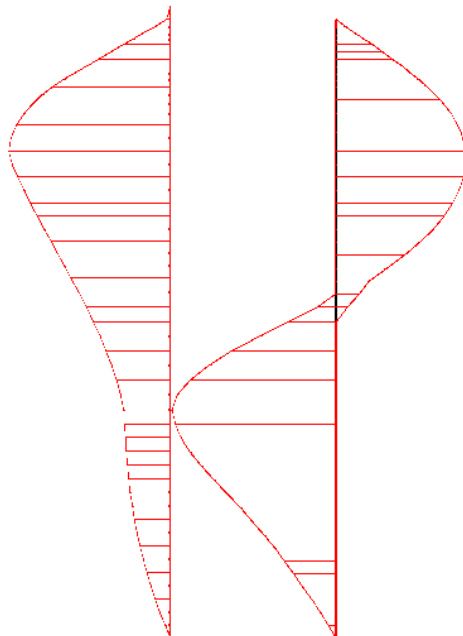


Fig. 25 Bending moment envelop in beam

Extreme value $1,24 \cdot 10^3$ kN/m/m (phase: 6)

Table [14] Anchors phase no: 6

Anchor no.	Node	x-coord. [m]	y-coord. [m]	F [kN]	Fmax,comp [kN]	Fmax,tens [kN]	EA [kN]	Rotation [°]	Le [m]
1	1672	0,000	0,800	213,424	1E15	1E15	125000,00	N/A	8,500
	1834	8,500	0,800						

10. Results for phase 15

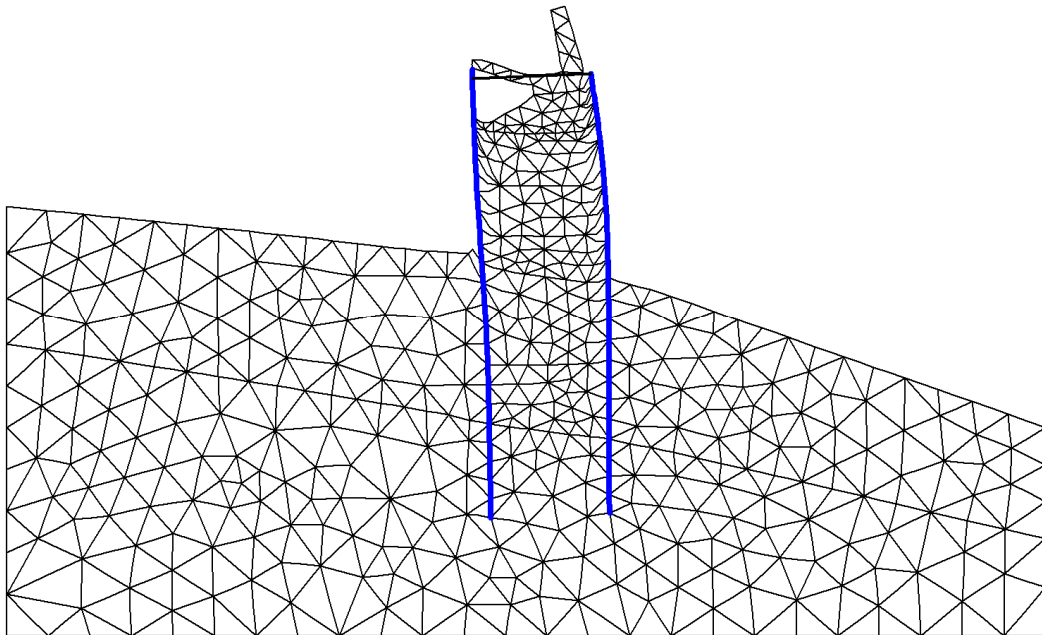


Fig. 26 Plot of deformed mesh
- step no: 148 - (phase: 15)

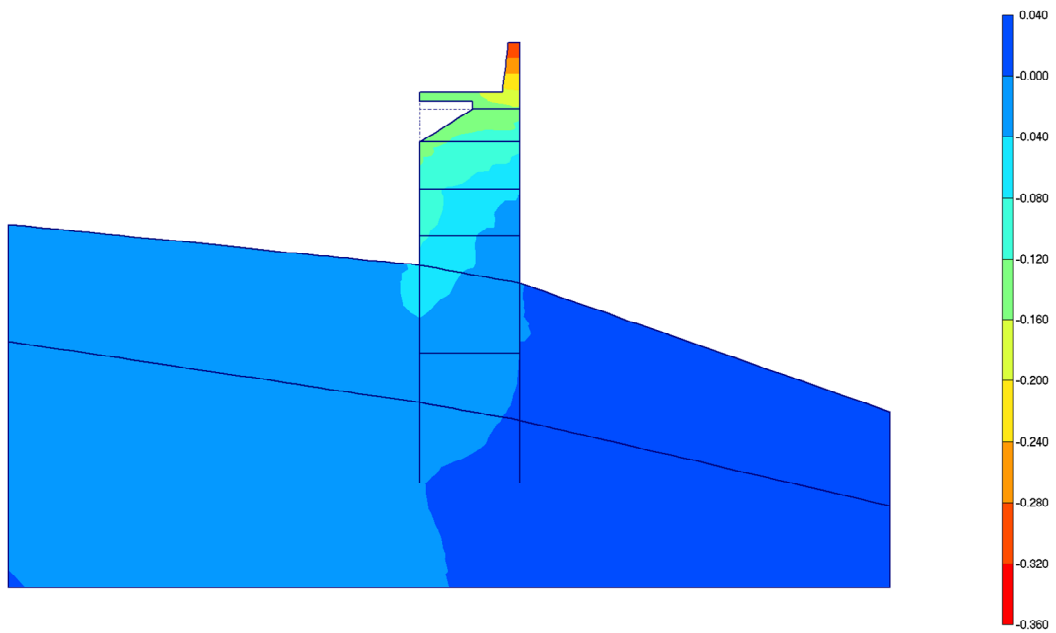


Fig. 27 Plot of horizontal displacements (shadings)

- step no: 148 - (phase: 15)

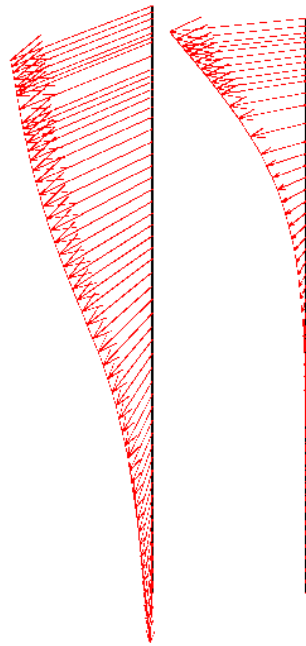


Fig. 28 Total displacements in beam

Extreme value $148,59 \cdot 10^{-3}$ m (phase: 15)

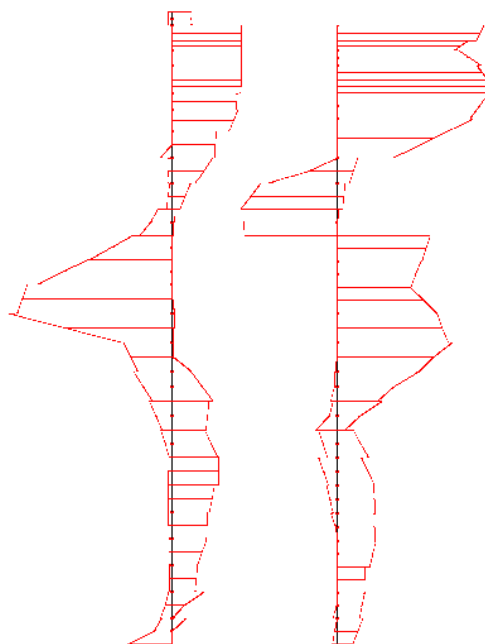


Fig. 29 Shear forces envelop in beam

Extreme value 234,34 kN/m (phase: 15)

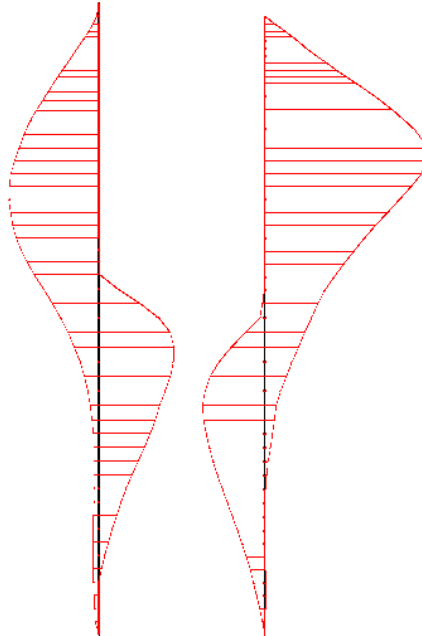


Fig. 30 Bending moment envelop in beam

Extreme value 1,24*10³ kN/m/m (phase: 15)

Table [15] Anchors phase no: 15

Anchor no.	Node	x-coord. [m]	y-coord. [m]	F [kN]	Fmax,comp [kN]	Fmax,tens [kN]	EA [kN]	Rotation [°]	Le [m]
1	1672	0,000	0,800	45,387	1E15	1E15	125000,00	N/A	8,500
	1834	8,500	0,800						

11. Results for phase 8

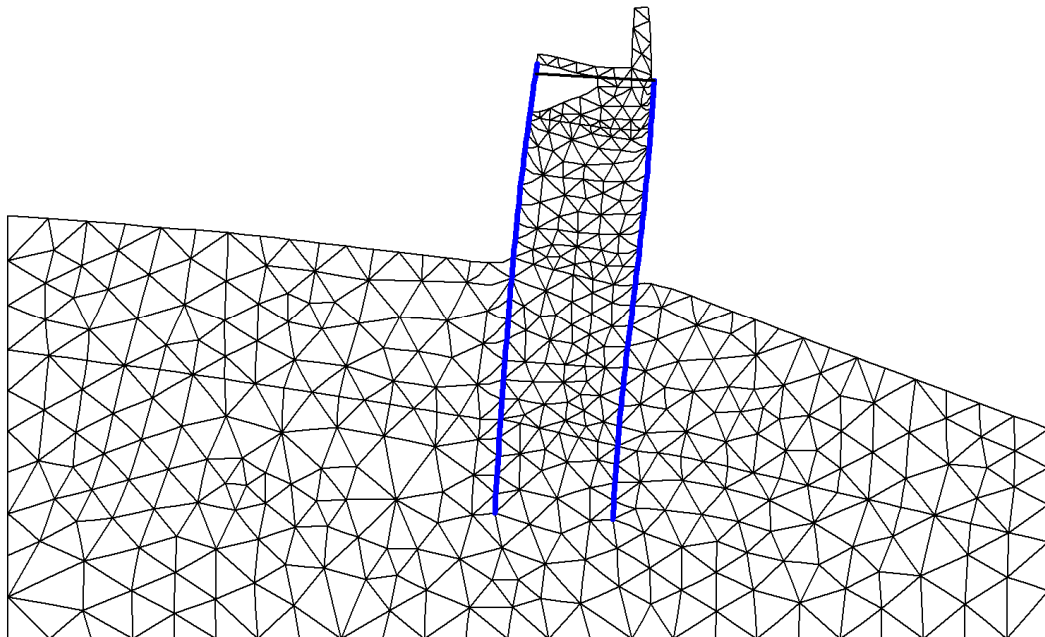


Fig. 31 Plot of deformed mesh

- step no: 236 - (phase: 8)

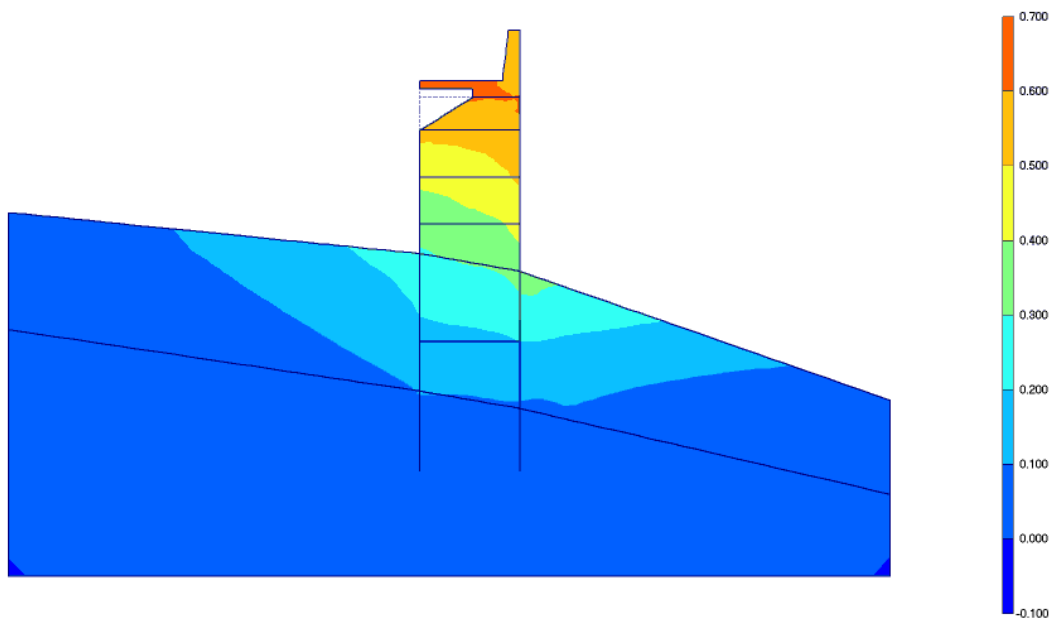


Fig. 32 Plot of horizontal displacements (shadings)

- step no: 236 - (phase: 8)



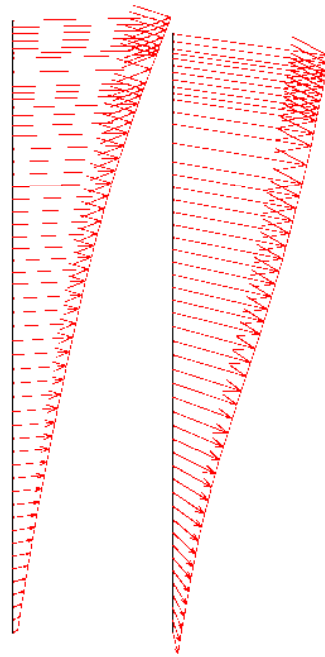


Fig. 33 Total displacements in beam

Extreme value $628,61 \cdot 10^{-3}$ m (phase: 8)

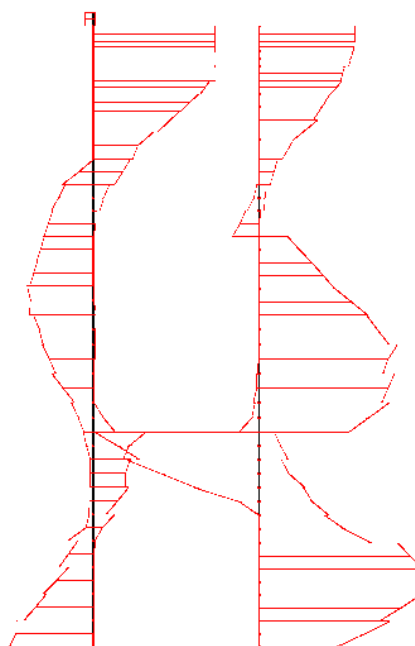


Fig. 34 Shear forces envelop in beam

Extreme value 253,12 kN/m (phase: 8)

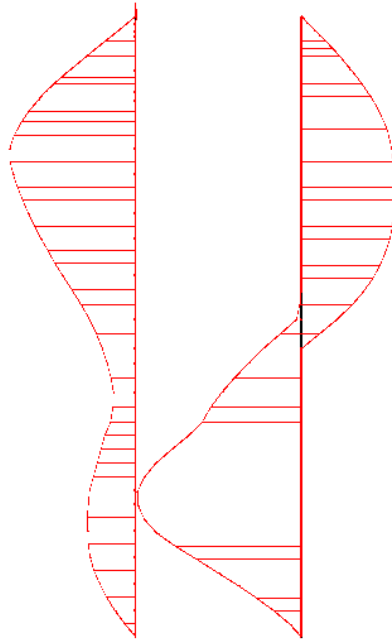


Fig. 35 Bending moment envelop in beam

Extreme value $-1,29 \cdot 10^3$ kN/m/m (phase: 8)

Table [16] Anchors phase no: 8

Anchor no.	Node	x-coord. [m]	y-coord. [m]	F [kN]	Fmax,comp [kN]	Fmax,tens [kN]	EA [kN]	Rotation [°]	Le [m]
1	1672	0,000	0,800	189,665	1E15	1E15	125000,00	N/A	8,500
	1834	8,500	0,800						

12. Results for phase 9

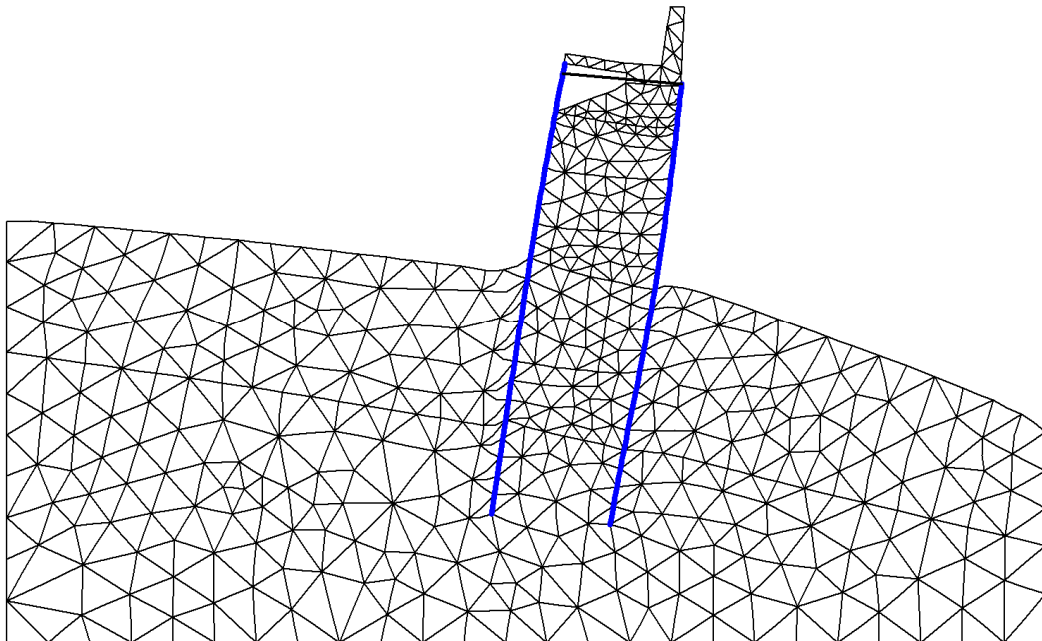


Fig. 36 Plot of deformed mesh

- step no: 270 - (phase: 9)

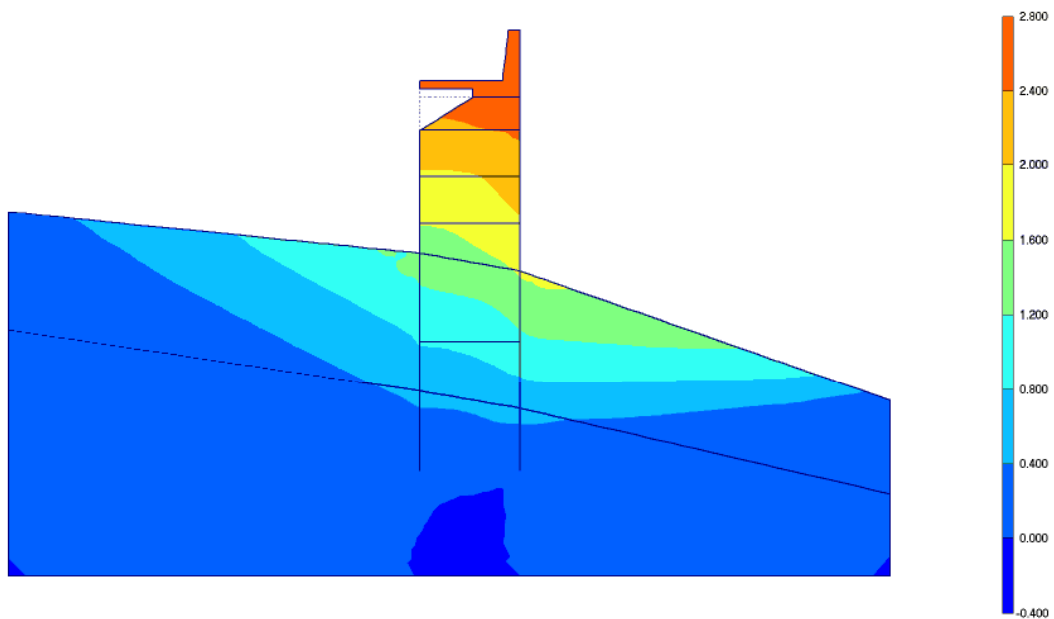


Fig. 37 Plot of horizontal displacements (shadings)

- step no: 270 - (phase: 9)

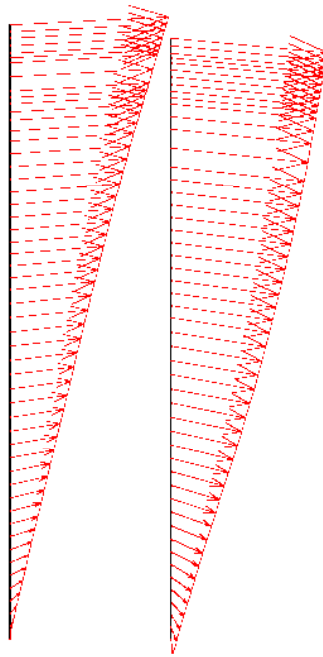


Fig. 38 Total displacements in beam

Extreme value 2,65 m (phase: 9)

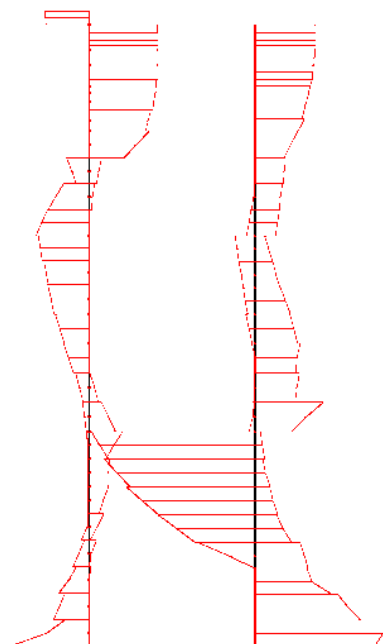


Fig. 39 Shear forces envelop in beam

Extreme value -783,00 kN/m (phase: 9)

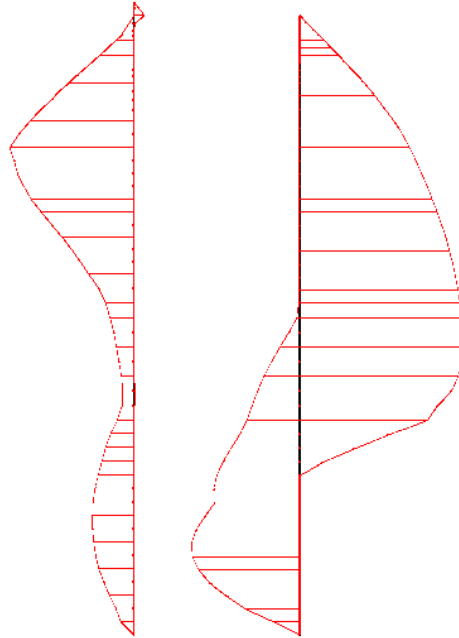


Fig. 40 Bending moment envelop in beam

Extreme value $-2,45 \cdot 10^3$ kN/m/m (phase: 9)

Table [17] Anchors phase no: 9

Anchor no.	Node	x-coord. [m]	y-coord. [m]	F [kN]	Fmax,comp [kN]	Fmax,tens [kN]	EA [kN]	Rotation [°]	Le [m]
1	1672	0,000	0,800	535,536	1E15	1E15	125000,00	N/A	8,500
	1834	8,500	0,800						

Table of beam force envelops phase no: 9 – PORTA SIDE BEAM

Node no.	x-coord. [m]	y-coord. [m]	N _{min} [kN/m]	N _{max} [kN/m]	Q _{min} [kN/m]	Q _{max} [kN/m]	M _{min} [kNm/m]	M _{max} [kNm/m]
1675	0,000	1,500	-145,377	0,000	-2,581	209,246	0,000	0,000

Node no.	x-coord. [m]	y-coord. [m]	N _{min} [kN/m]	N _{max} [kN/m]	Q _{min} [kN/m]	Q _{max} [kN/m]	M _{min} [kNm/m]	M _{max} [kNm/m]
1673	0,000	1,150	-145,902	0,000	-2,623	209,190	-0,911	73,226
1672	0,000	0,800	-146,427	0,000	-2,666	209,133	-1,836	146,433
1672	0,000	0,800	-146,427	0,000	-326,403	0,207	-1,836	146,433
1670	0,000	0,400	-147,027	0,000	-326,468	0,207	-74,140	15,858
1668	0,000	0,000	-147,627	0,000	-326,533	0,207	-149,410	0,165
1668	0,000	0,000	-147,626	0,000	-326,516	0,207	-149,410	0,165
1665	0,000	-0,250	-148,004	0,000	-326,607	0,207	-196,477	0,217
1664	0,000	-0,500	-148,381	0,000	-326,698	0,207	-278,045	0,269
1664	0,000	-0,500	-148,378	0,000	-326,640	0,207	-278,045	0,269
1627	0,000	-1,250	-149,510	0,000	-326,886	0,207	-523,117	0,424
1625	0,000	-2,000	-150,641	0,000	-327,132	0,207	-768,374	0,579
1625	0,000	-2,000	-144,551	0,000	-317,611	0,207	-768,374	0,579
1613	0,000	-2,342	-145,506	0,000	-319,521	0,207	-877,335	0,650
1611	0,000	-2,684	-146,462	0,000	-321,430	0,207	-986,950	0,720
1611	0,000	-2,684	-147,082	0,000	-314,097	0,207	-986,950	0,720
1589	0,000	-3,115	-146,464	0,000	-306,790	0,207	-1120,732	0,809
1587	0,000	-3,546	-145,846	0,000	-299,483	0,207	-1251,366	0,898
1587	0,000	-3,546	-141,070	0,000	-292,273	0,207	-1251,366	0,898
1559	0,000	-4,089	-143,537	0,000	-279,608	0,207	-1406,617	1,011
1557	0,000	-4,632	-146,005	0,000	-266,943	0,207	-1554,992	1,123
1557	0,000	-4,632	-159,642	0,000	-284,434	0,207	-1554,992	1,123
1554	0,000	-5,316	-157,309	0,000	-224,124	0,207	-1728,937	1,264
1552	0,000	-6,000	-155,252	11,499	-163,814	0,207	-1861,626	1,406
1552	0,000	-6,000	-150,084	192,939	-56,795	108,731	-1861,626	1,406
1539	0,000	-6,667	-160,557	263,746	-44,655	83,354	-1797,598	1,544
1537	0,000	-7,333	-172,462	334,552	-32,632	63,493	-1750,488	1,681
1537	0,000	-7,333	-179,493	349,722	-24,403	123,952	-1750,488	1,681
1513	0,000	-8,000	-180,851	395,190	-15,197	161,494	-1655,339	1,819
1511	0,000	-8,667	-183,103	440,659	-9,734	199,037	-1535,162	1,957
1511	0,000	-8,667	-214,358	461,430	-4,165	202,997	-1535,162	1,957
1487	0,000	-9,333	-211,018	515,942	-2,490	228,989	-1391,166	2,095
1486	0,000	-10,000	-207,678	570,454	-0,816	254,981	-1229,843	2,233
1486	0,000	-10,000	-228,747	562,331	0,000	244,544	-1229,843	2,233
1473	0,000	-10,625	-242,057	577,358	0,000	235,081	-1079,960	2,362
1471	0,000	-11,250	-255,367	592,384	0,000	225,618	-935,992	2,491
1471	0,000	-11,250	-260,951	573,935	0,000	217,722	-935,992	2,491
1439	0,000	-11,875	-270,174	564,871	0,000	207,065	-803,246	2,620
1438	0,000	-12,500	-279,398	555,808	0,000	196,408	-677,161	2,750
1438	0,000	-12,500	-271,897	554,080	-0,672	199,321	-677,161	2,750
1409	0,000	-13,250	-292,060	539,627	-1,064	184,202	-533,340	2,150
1407	0,000	-14,000	-312,223	525,173	-4,062	169,082	-427,563	1,358
1407	0,000	-14,000	-316,969	522,635	-3,595	162,762	-427,563	1,358
1377	0,000	-14,750	-329,624	501,909	-2,810	141,204	-362,204	0,541
1375	0,000	-15,500	-342,279	481,182	-2,728	119,645	-305,735	0,000
1375	0,000	-15,500	-340,226	486,531	-2,912	124,173	-305,735	0,000
1357	0,000	-16,250	-351,840	467,296	-1,609	99,483	-260,427	0,000

Node no.	x-coord. [m]	y-coord. [m]	N _{min} [kN/m]	N _{max} [kN/m]	Q _{min} [kN/m]	Q _{max} [kN/m]	M _{min} [kNm/m]	M _{max} [kNm/m]
1355	0,000	-17,000	-363,453	448,061	-2,091	74,794	-221,977	0,000
1355	0,000	-17,000	-372,140	428,789	-3,431	64,914	-221,977	0,000
1301	0,000	-17,750	-376,324	423,149	-23,374	46,653	-192,130	0,000
1299	0,000	-18,500	-380,507	417,510	-43,523	29,172	-174,026	21,561
1299	0,000	-18,500	-387,848	400,253	-57,094	34,079	-174,026	21,561
1273	0,000	-19,250	-393,302	370,163	-90,797	23,403	-179,187	8,444
1271	0,000	-20,000	-398,756	340,072	-125,577	14,288	-256,750	0,000
1271	0,000	-20,000	-402,908	282,177	-156,208	16,026	-256,750	0,000
1224	0,000	-20,704	-407,448	326,377	-117,815	10,259	-352,155	0,000
1222	0,000	-21,407	-411,988	370,576	-79,578	4,753	-421,212	0,000
1222	0,000	-21,407	-415,292	341,403	-95,660	4,708	-421,212	0,000
1168	0,000	-22,111	-419,773	335,129	-90,827	4,977	-484,206	0,000
1167	0,000	-22,815	-424,254	328,854	-92,707	5,466	-540,641	0,000
1167	0,000	-22,815	-424,183	302,650	-89,403	5,474	-540,641	0,000
1093	0,000	-23,519	-422,844	327,221	-66,958	5,488	-582,791	0,000
1091	0,000	-24,222	-421,504	351,792	-45,248	7,439	-610,120	0,005
1091	0,000	-24,222	-422,530	300,800	-70,256	7,117	-610,120	0,005
946	0,000	-24,900	-415,007	335,072	-35,337	12,116	-625,318	0,384
944	0,000	-25,578	-407,484	369,345	-1,943	40,272	-619,099	0,674
944	0,000	-25,578	-407,320	355,843	-31,811	24,921	-619,099	0,674
939	0,000	-26,256	-392,706	339,961	-9,998	50,144	-605,961	0,922
940	0,000	-26,933	-378,093	324,079	-0,246	77,482	-572,304	1,056
940	0,000	-26,933	-377,477	329,556	-4,527	62,292	-572,304	1,056
830	0,000	-27,611	-354,290	357,896	-0,548	99,716	-528,117	0,948
829	0,000	-28,289	-331,103	386,236	-0,986	146,878	-450,789	0,529
829	0,000	-28,289	-329,750	320,018	-0,826	116,272	-450,789	0,529
824	0,000	-28,967	-294,752	298,264	-0,515	143,455	-371,717	0,163
825	0,000	-29,644	-259,754	276,509	-0,281	171,026	-277,781	0,000
825	0,000	-29,644	-258,245	167,296	-1,445	118,427	-277,781	0,000
692	0,000	-30,322	-224,298	316,282	0,000	204,920	-196,401	0,000
691	0,000	-31,000	-190,351	483,315	0,000	381,438	0,000	0,000
Max:			-141,070	592,384	0,000	381,438	0,000	146,433
Min:			-424,254	0,000	-327,132	0,000	-1861,626	0,000

Table of beam force envelops phase no: 9 – SEA SIDE BEAM

Node no.	x-coord. [m]	y-coord. [m]	N _{min} [kN/m]	N _{max} [kN/m]	Q _{min} [kN/m]	Q _{max} [kN/m]	M _{min} [kNm/m]	M _{max} [kNm/m]
1679	8,500	-2,667	-364,173	0,000	-0,183	252,936	-964,534	0,654
1681	8,500	-2,333	-356,970	0,000	-0,183	262,047	-878,703	0,593
1746	8,500	-2,000	-349,799	0,000	-0,183	271,159	-789,835	0,532
1651	8,500	-4,000	-378,298	0,000	-0,183	220,812	-	0,898
1652	8,500	-3,333	-369,823	0,000	-0,183	237,677	-	0,776
1679	8,500	-2,667	-361,349	0,000	-0,183	254,541	-964,534	0,654
700	8,500	-27,025	-	0,000	0,000	253,121	0,000	1603,386
702	8,500	-26,363	-	0,000	-123,311	233,581	0,000	1624,425



Node no.	x-coord. [m]	y-coord. [m]	N _{min} [kN/m]	N _{max} [kN/m]	Q _{min} [kN/m]	Q _{max} [kN/m]	M _{min} [kNm/m]	M _{max} [kNm/m]
912	8,500	-25,700	-	0,000	-271,311	214,041	0,000	1564,801
351	8,500	-28,350	-	0,000	0,000	365,582	-0,003	1343,314
353	8,500	-27,688	-	0,000	0,000	270,942	0,000	1507,178
700	8,500	-27,025	-	0,000	0,000	246,125	0,000	1603,386
310	8,500	-29,675	-	0,000	0,000	503,523	-0,030	803,419
311	8,500	-29,013	-	0,000	0,000	443,044	-0,018	1098,950
351	8,500	-28,350	-	0,000	0,000	392,660	-0,003	1343,314
244	8,500	-31,000	-	0,000	-0,024	567,806	0,000	0,000
246	8,500	-30,338	-	0,000	-0,022	606,354	-0,015	388,941
310	8,500	-29,675	-	0,000	-0,021	644,902	-0,030	803,419
1261	8,500	-18,500	-	0,000	-322,620	6,492	-630,928	2276,447
1203	8,500	-19,250	-	0,000	-244,241	11,919	-714,890	2065,293
1201	8,500	-20,000	-	0,000	-169,648	32,154	-785,214	1910,085
1314	8,500	-17,000	-867,221	0,000	-208,587	3,789	-422,400	2430,894
1262	8,500	-17,750	-943,115	0,000	-198,968	4,327	-530,748	2379,601
1261	8,500	-18,500	-	0,000	-189,349	9,720	-630,928	2276,447
1368	8,500	-15,500	-776,588	0,000	-213,808	20,547	-168,957	2446,477
1316	8,500	-16,250	-807,930	0,000	-198,977	1,394	-302,618	2450,286
1314	8,500	-17,000	-851,949	0,000	-191,017	3,711	-422,400	2430,894
1403	8,500	-14,000	-648,824	0,000	-165,228	44,813	-16,763	2401,178
1370	8,500	-14,750	-702,757	0,000	-182,576	30,199	-38,891	2429,307
1368	8,500	-15,500	-759,427	0,000	-200,267	15,585	-168,957	2446,477
1431	8,500	-12,667	-569,234	0,000	-118,012	57,907	-2,484	2337,523
1405	8,500	-13,333	-617,556	0,000	-142,800	47,741	-6,305	2372,739
1403	8,500	-14,000	-668,749	0,000	-167,588	37,574	-16,763	2401,178
1478	8,500	-11,333	-512,610	0,000	-82,224	77,782	-2,240	2246,251
1433	8,500	-12,000	-540,989	0,000	-99,160	68,454	-2,362	2294,996
1431	8,500	-12,667	-570,339	0,000	-116,965	59,127	-2,484	2337,523
1497	8,500	-10,000	-444,025	0,000	-44,233	96,786	-1,996	2129,528
1479	8,500	-10,667	-478,477	0,000	-62,624	87,542	-2,118	2190,971
1478	8,500	-11,333	-515,554	0,000	-81,842	78,298	-2,240	2246,251
1135	8,500	-21,425	-	0,000	-701,437	45,038	-852,422	1023,716
1137	8,500	-20,713	-	0,000	-742,220	33,398	-	889,621
1201	8,500	-20,000	-	0,000	-783,002	23,362	-	785,214
1036	8,500	-22,850	-	0,000	-597,601	70,989	0,000	1239,477
1038	8,500	-22,138	-	0,000	-659,366	45,638	-360,619	1150,684
1135	8,500	-21,425	-	0,000	-721,132	34,331	-852,422	1023,716
964	8,500	-24,275	-	0,000	-462,756	108,356	0,000	1284,448
966	8,500	-23,563	-	0,000	-538,320	82,303	0,000	1286,545
1036	8,500	-22,850	-	0,000	-613,883	68,250	0,000	1239,477
912	8,500	-25,700	-	0,000	-286,510	174,728	0,000	1564,801
914	8,500	-24,988	-	0,000	-375,612	132,746	0,000	1430,977
964	8,500	-24,275	-	0,000	-464,713	101,636	0,000	1284,448
1567	8,500	-7,333	-423,229	0,000	-0,183	130,438	-	1,508
1568	8,500	-6,667	-420,865	0,000	-0,183	136,204	-	1,386
1593	8,500	-6,000	-418,502	0,000	-0,183	141,970	-	1,264



Node no.	x-coord. [m]	y-coord. [m]	N _{min} [kN/m]	N _{max} [kN/m]	Q _{min} [kN/m]	Q _{max} [kN/m]	M _{min} [kNm/m]	M _{max} [kNm/m]
1526	8,500	-8,667	-415,465	0,000	-18,311	112,562	-	1,752
1528	8,500	-8,000	-413,604	0,000	-9,017	120,275	-	1,630
1567	8,500	-7,333	-412,380	0,000	-3,809	127,988	-	1,508
1497	8,500	-10,000	-437,987	0,000	-42,152	96,311	-	1,996
1499	8,500	-9,333	-427,337	0,000	-30,609	104,205	-	1,874
1526	8,500	-8,667	-416,871	0,000	-21,629	112,099	-	1,752
1593	8,500	-6,000	-433,573	0,000	-0,183	133,440	-	1,264
1595	8,500	-5,000	-396,287	0,000	-0,183	183,591	-	1,081
1651	8,500	-4,000	-360,852	0,000	-0,183	233,741	-	0,898
1770	8,500	-1,250	-348,884	0,000	-0,183	280,016	-585,386	0,394
1772	8,500	-0,875	-345,623	0,000	-0,183	282,016	-480,005	0,326
1798	8,500	-0,500	-342,362	0,000	-0,183	284,017	-373,874	0,257
1746	8,500	-2,000	-356,406	0,000	-0,183	269,658	-789,835	0,532
1748	8,500	-1,625	-353,978	0,000	-0,183	272,599	-688,162	0,463
1770	8,500	-1,250	-351,549	0,000	-0,183	275,540	-585,386	0,394
1798	8,500	-0,500	-343,059	0,000	-0,183	286,688	-373,874	0,257
1800	8,500	-0,250	-341,368	0,000	-0,183	286,727	-302,197	0,211
1822	8,500	0,000	-339,677	0,000	-0,183	286,765	-230,510	0,165
1822	8,500	0,000	-339,751	0,000	-0,207	288,232	-230,510	0,165
1824	8,500	0,400	-336,523	0,000	-0,207	288,138	-115,236	0,083
1834	8,500	0,800	-333,314	0,472	-0,207	288,044	0,000	0,000
Max:			-333,314	0,472	0,000	644,902	0,000	2450,286
Min:			-	0,000	-783,002	0,000	-	0,000

13. Results for phase 17

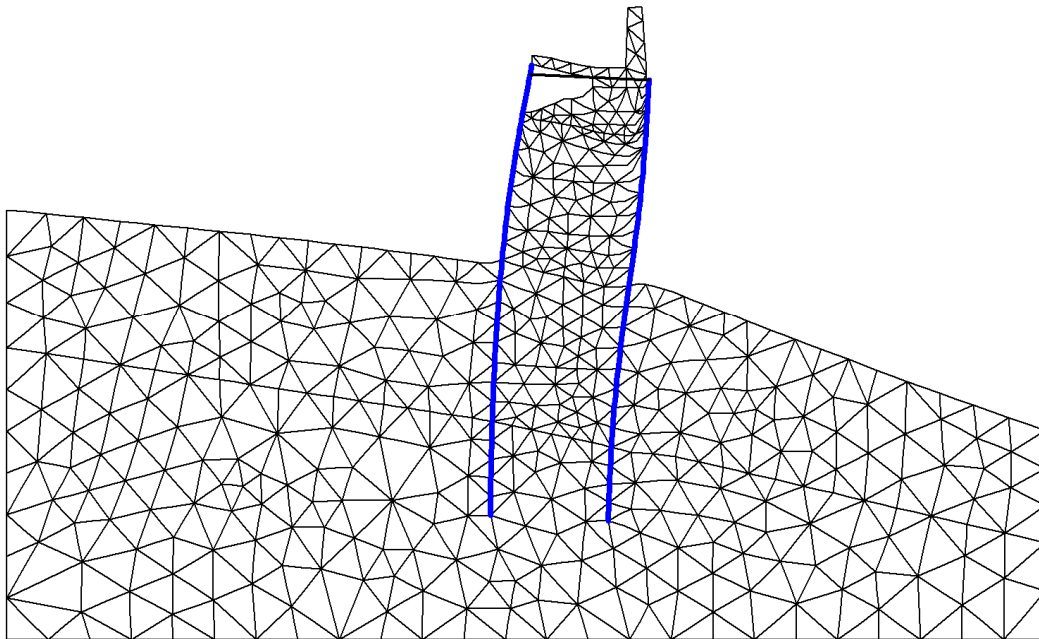


Fig. 41 Plot of deformed mesh
- step no: 290 - (phase: 17)

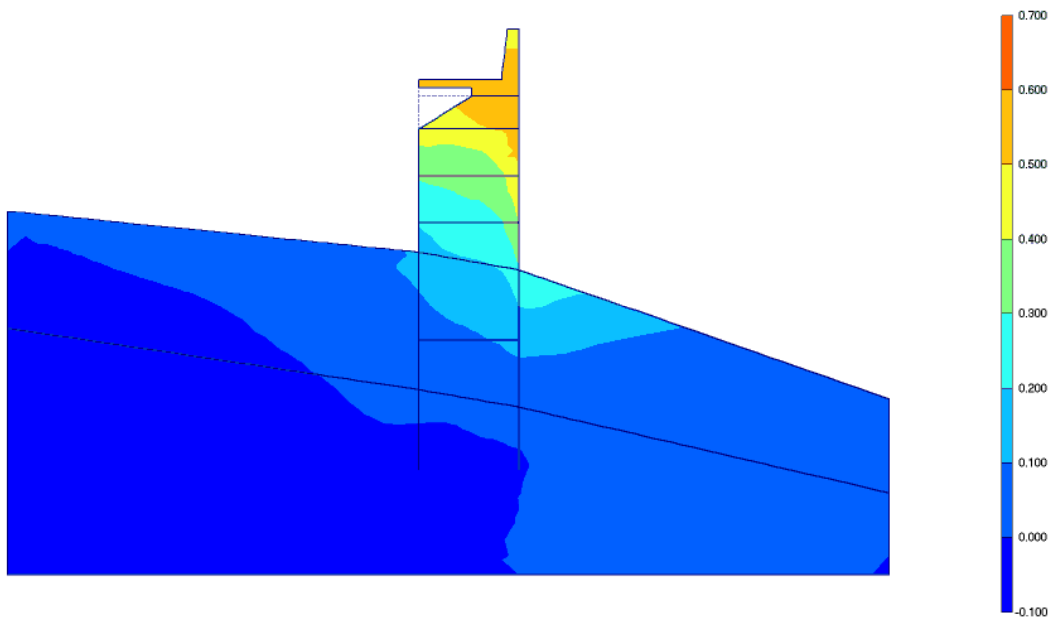


Fig. 42 Plot of horizontal displacements (shadings)
- step no: 290 - (phase: 17)

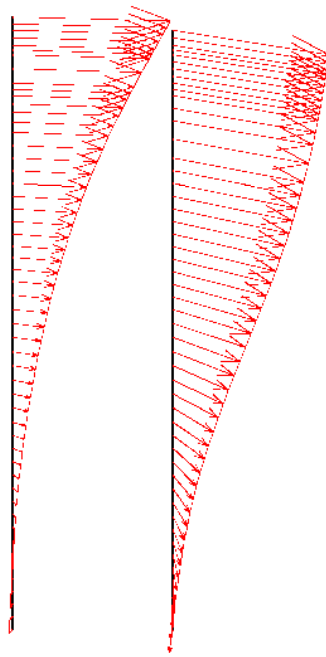


Fig. 43 Total displacements in beam

Extreme value $587,12 \cdot 10^{-3}$ m (phase: 17)

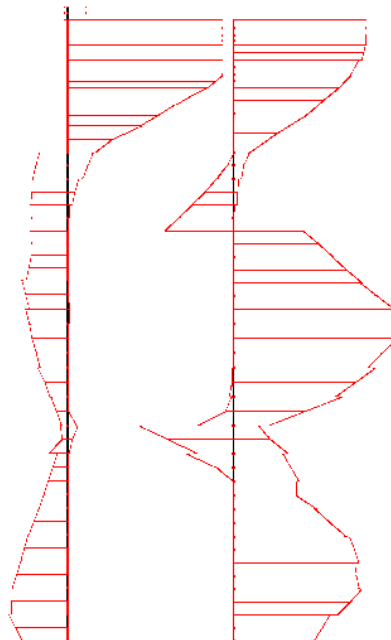


Fig. 44 Shear forces envelop in beam

Extreme value -365,12 kN/m (phase: 17)

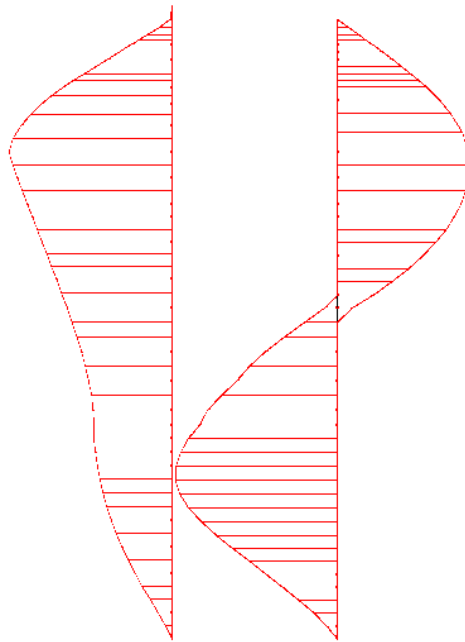


Fig. 45 Bending moment envelop in beam

Extreme value $1,79 \cdot 10^3$ kN/m/m (phase: 17)

Table [18] Anchors phase no: 17

Anchor no.	Node	x-coord. [m]	y-coord. [m]	F [kN]	Fmax,comp [kN]	Fmax,tens [kN]	EA [kN]	Rotation [°]	Le [m]
1	1672 1834	0,000 8,500	0,800 0,800	334,740	1E15	1E15	125000,0 0	N/A	8,500

14. Results for phase 18

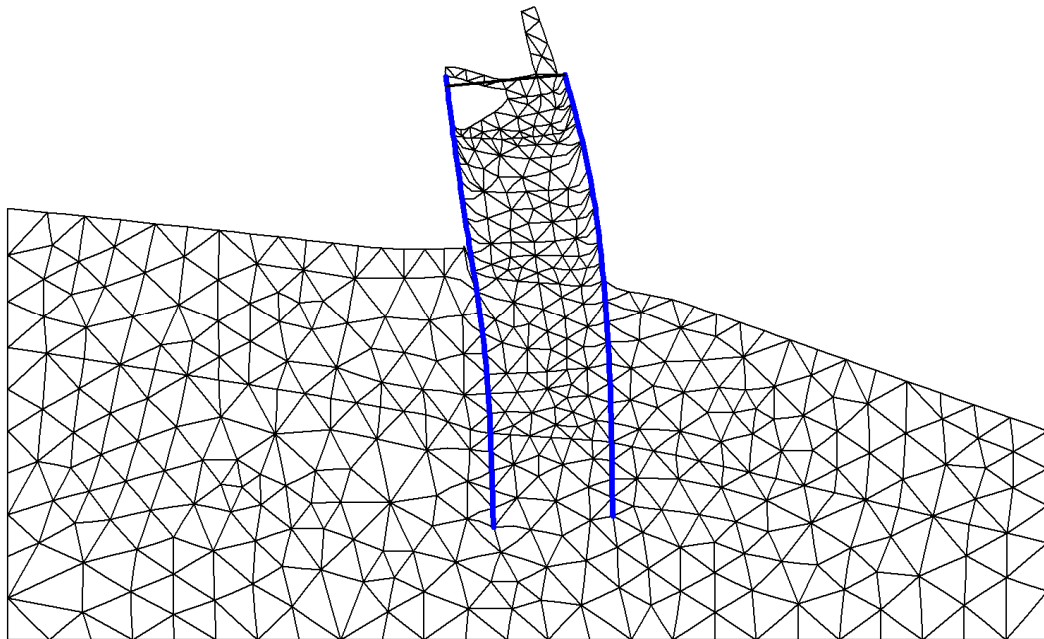


Fig. 46 Plot of deformed mesh
- step no: 302 - (phase: 18)

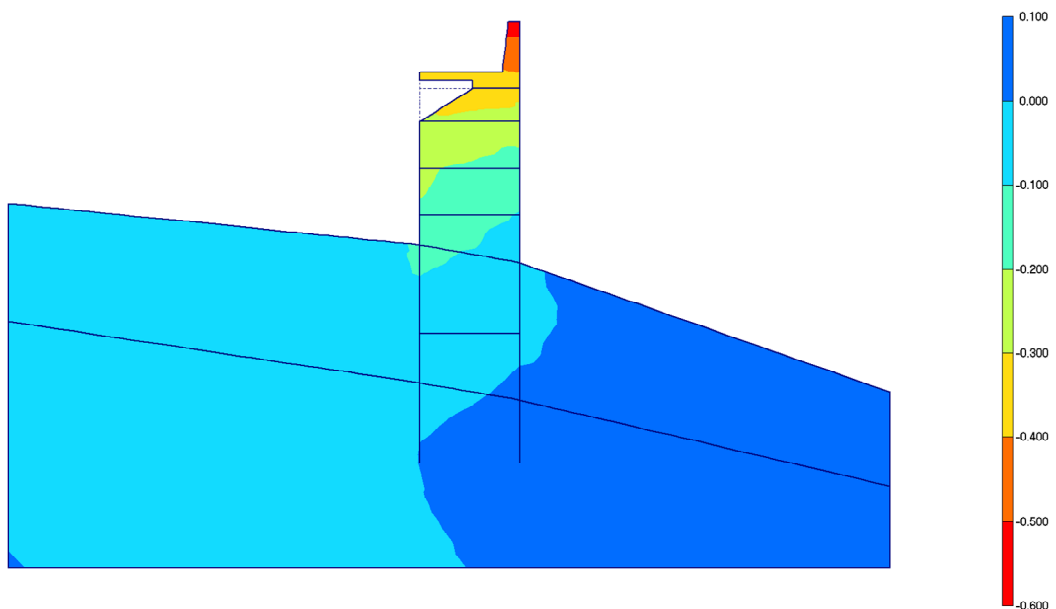


Fig. 47 Plot of horizontal displacements (shadings)
- step no: 302 - (phase: 18)

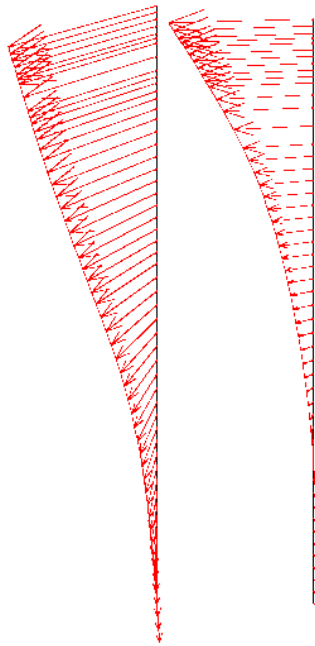


Fig. 48 Total displacements in beam

Extreme value $353,35 \cdot 10^{-3}$ m (phase: 18)

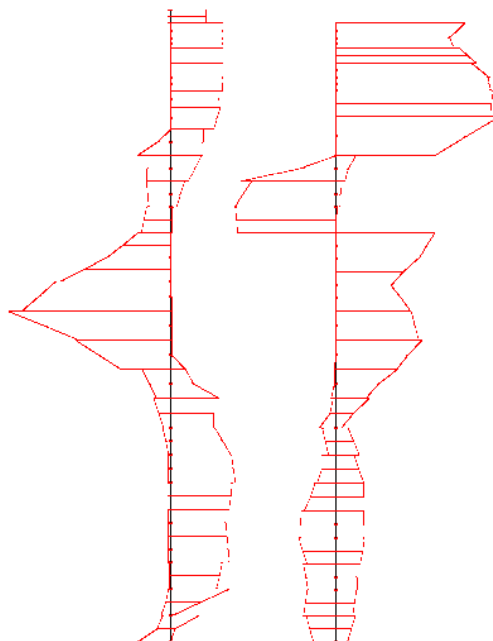


Fig. 49 Shear forces envelop in beam

Extreme value 312,62 kN/m (phase: 18)

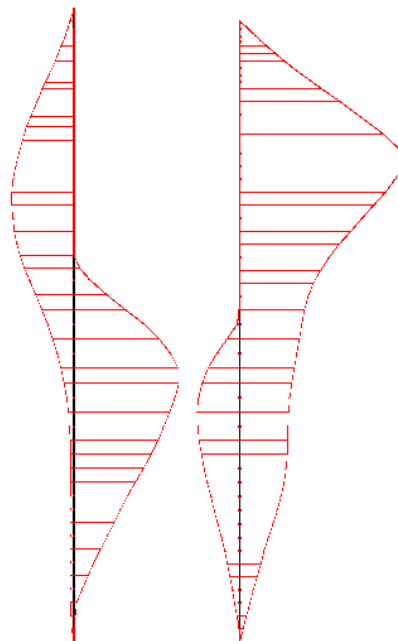


Fig. 50 Bending moment envelop in beam

Extreme value $1,79 \cdot 10^3$ kN/m/m (phase: 18)

Table [19] Anchors phase no: 18

Anchor no.	Node	x-coord. [m]	y-coord. [m]	F [kN]	Fmax,comp [kN]	Fmax,tens [kN]	EA [kN]	Rotation [°]	Le [m]
1	1672	0,000	0,800	5,324	1E15	1E15	125000,00	N/A	8,500
	1834	8,500	0,800						

15. Results for phase 19

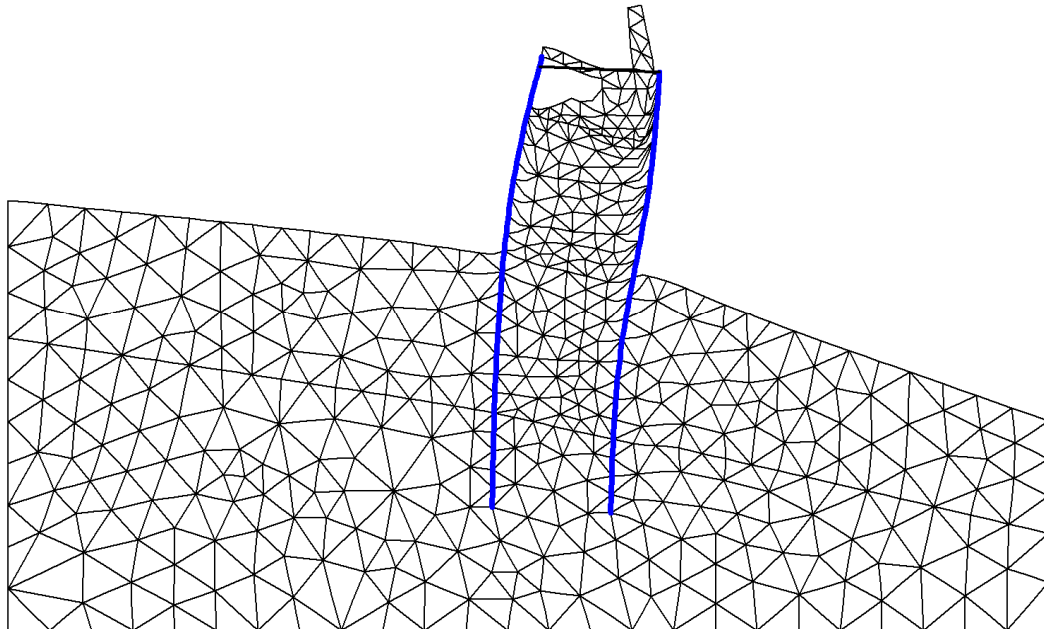


Fig. 51 Plot of deformed mesh
- step no: 314 - (phase: 19)

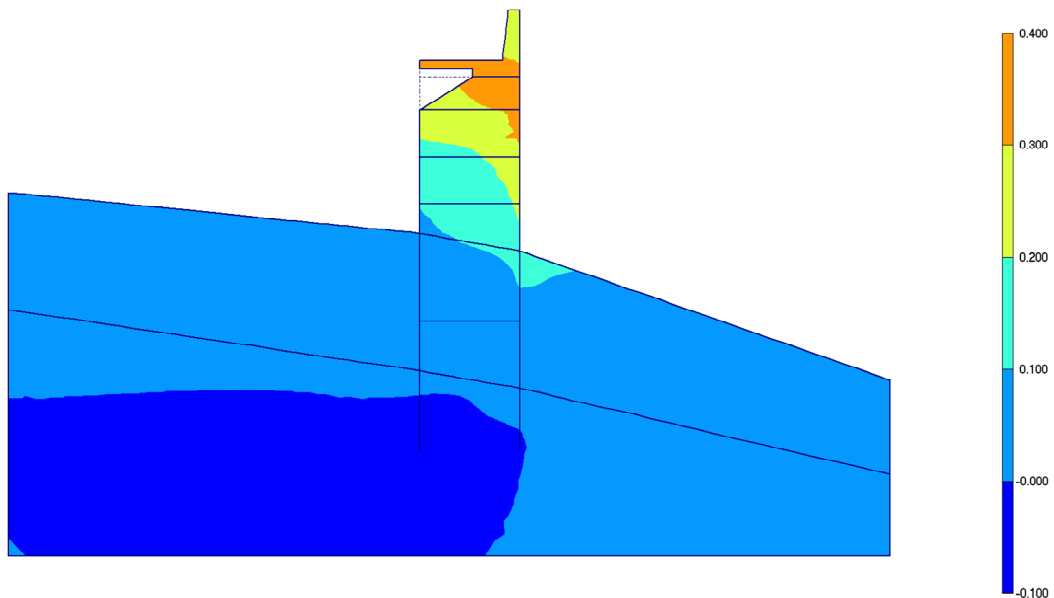


Fig. 52 Plot of horizontal displacements (shadings)
- step no: 314 - (phase: 19)

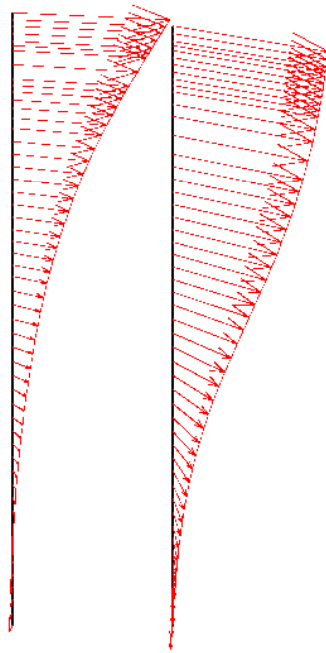


Fig. 53 Total displacements in beam

Extreme value $351,78 \cdot 10^{-3}$ m (phase: 19)

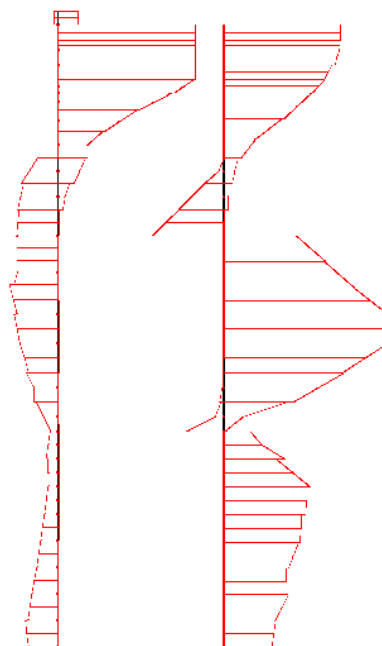


Fig. 54 Shear forces envelop in beam

Extreme value -345,59 kN/m (phase: 19)

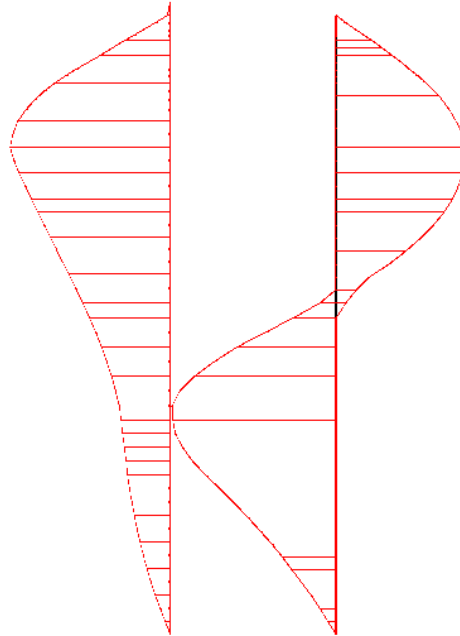


Fig. 55 Bending moment envelop in beam

Extreme value $1,44 \cdot 10^3$ kN/m/m (phase: 19)

Table [20] Anchors phase no: 19

Anchor no.	Node	x-coord. [m]	y-coord. [m]	F [kN]	Fmax,comp [kN]	Fmax,tens [kN]	EA [kN]	Rotation [°]	Le [m]
1	1672	0,000	0,800	246,827	1E15	1E15	125000,0	N/A	8,500
	1834	8,500	0,800				0		

16. Results for phase 20

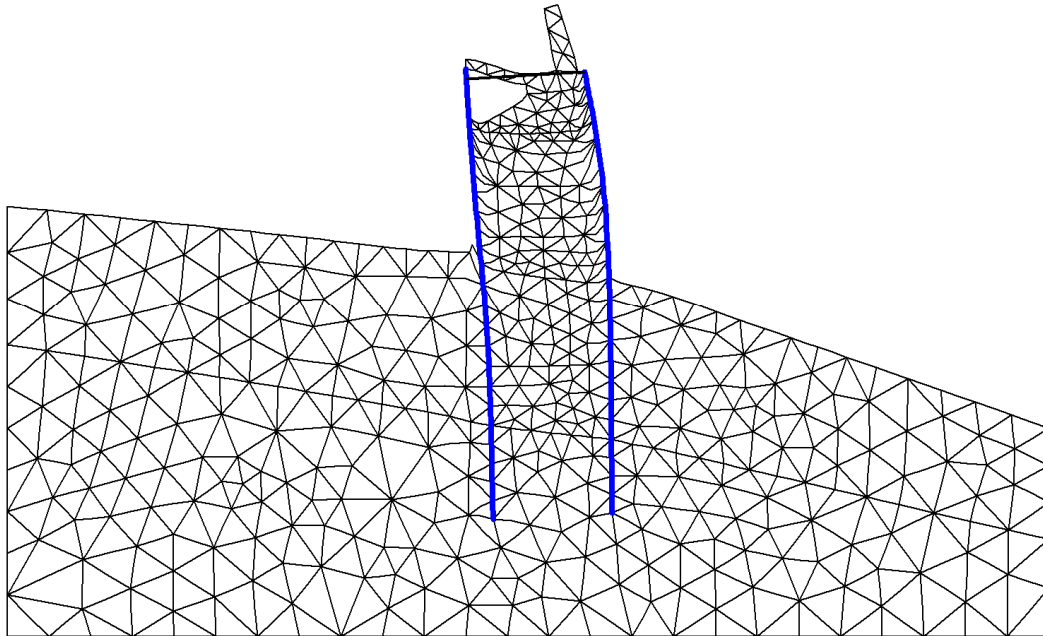


Fig. 56 Plot of deformed mesh
- step no: 335 - (phase: 20)

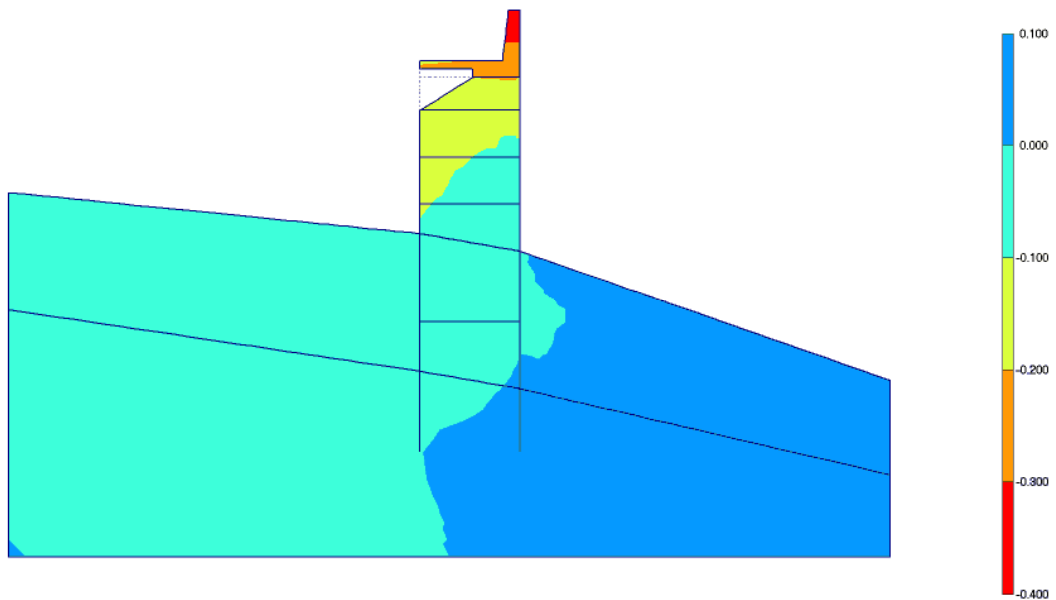


Fig. 57 Plot of horizontal displacements (shadings)
- step no: 335 - (phase: 20)

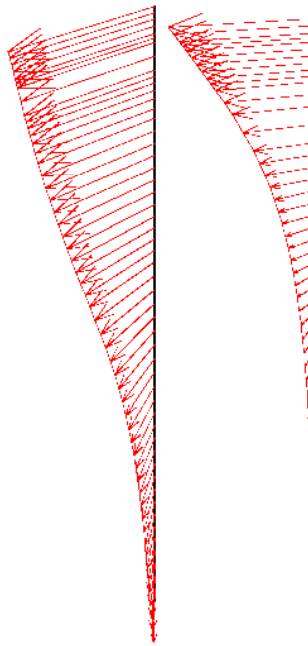


Fig. 58 Total displacements in beam

Extreme value $207,11 \cdot 10^{-3}$ m (phase: 20)

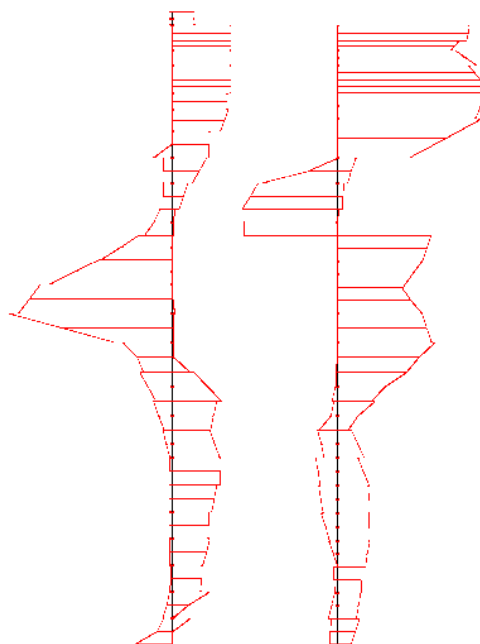


Fig. 59 Shear forces envelop in beam

Extreme value 276,74 kN/m (phase: 20)

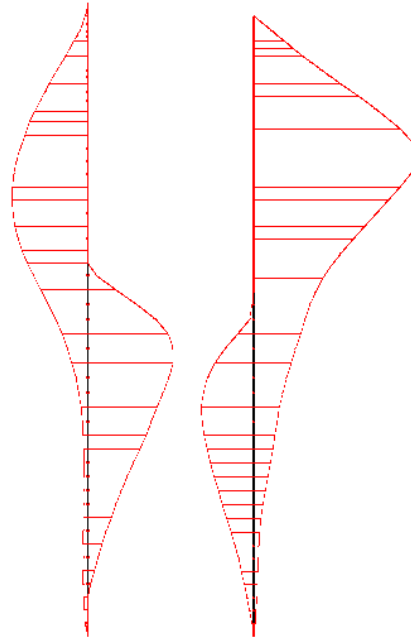


Fig. 60 Bending moment envelop in beam

Extreme value $1,46 \cdot 10^3$ kN/m/m (phase: 20)

Table [21] Anchors phase no: 20

Anchor no.	Node	x-coord. [m]	y-coord. [m]	F [kN]	Fmax,comp [kN]	Fmax,tens [kN]	EA [kN]	Rotation [°]	Le [m]
1	1672	0,000	0,800	27,967	1E15	1E15	125000,00	N/A	8,500
	1834	8,500	0,800						

17. Results for phase 24

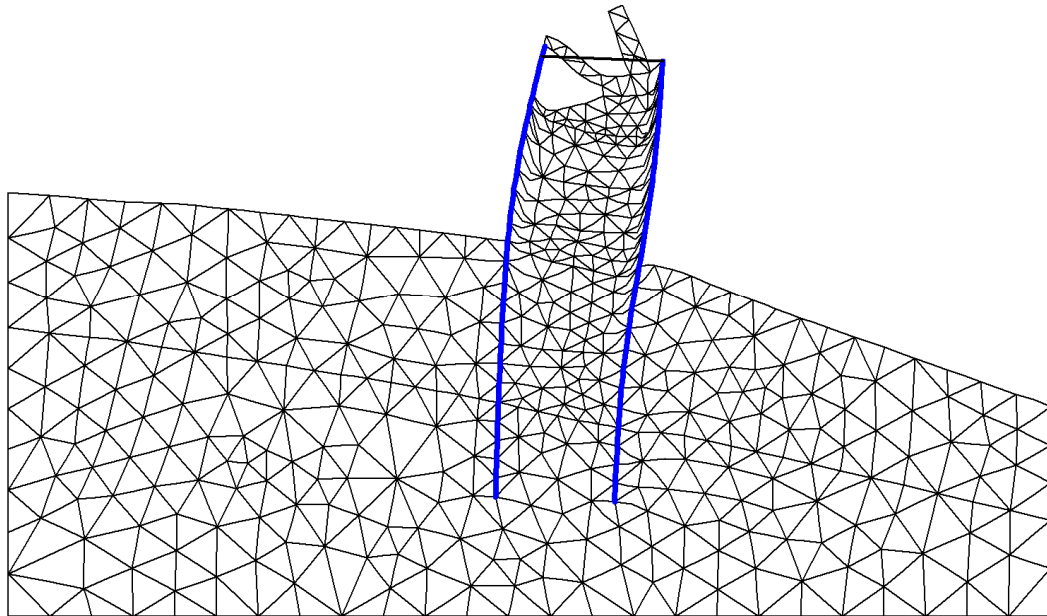


Fig. 61 Plot of deformed mesh
- step no: 392 - (phase: 24)

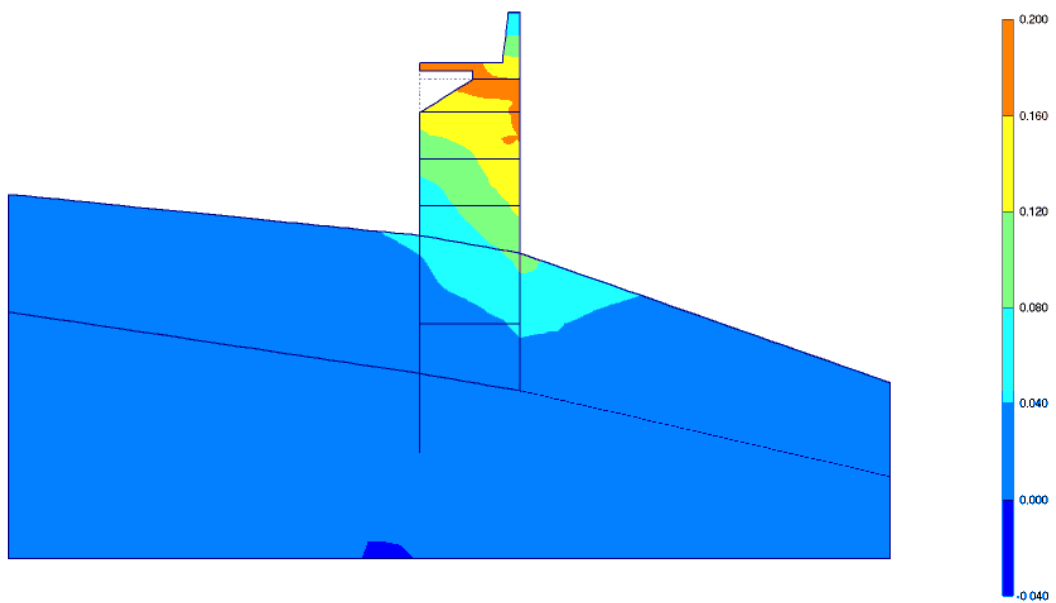


Fig. 62 Plot of horizontal displacements (shadings)

- step no: 392 - (phase: 24)

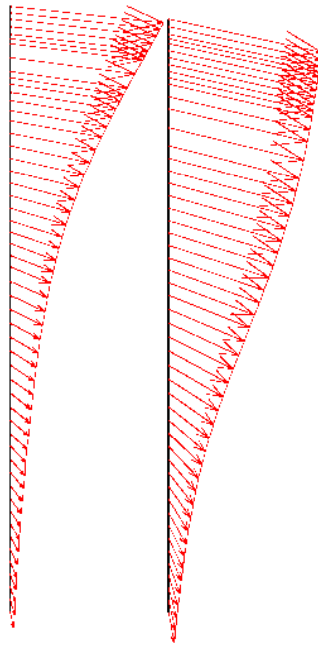


Fig. 63 Total displacements in beam

Extreme value $183,72 \cdot 10^{-3}$ m (phase: 24)

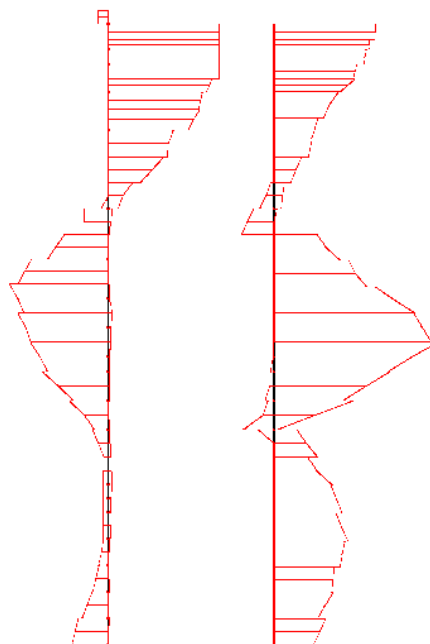


Fig. 64 Shear forces envelop in beam

Extreme value -168,89 kN/m (phase: 24)

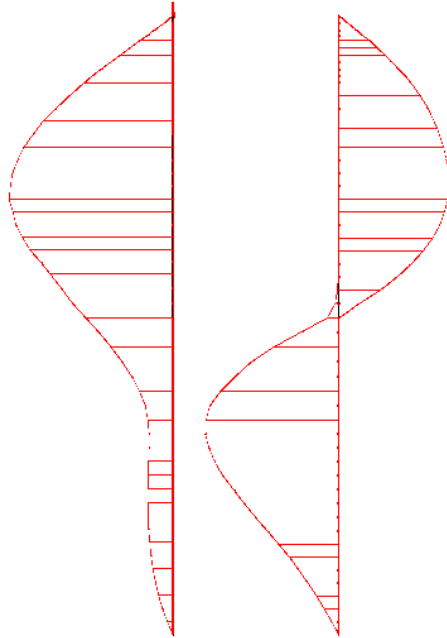


Fig. 65 Bending moment envelop in beam

Extreme value 702,77 kN/m/m (phase: 24)

Table [22] Anchors phase no: 24

Anchor no.	Node	x-coord. [m]	y-coord. [m]	F [kN]	Fmax,comp [kN]	Fmax,tens [kN]	EA [kN]	Rotation [°]	Le [m]
1	1672	0,000	0,800	121,769	1E15	1E15	125000,00	N/A	8,500
	1834	8,500	0,800						