

СТОМАНЕН ПЕШЕХОДЕН МОСТ В ГР. КЪРДЖАЛИ

I. ОБЩИ ПОЛОЖЕНИЯ.

Проектът е изцяло в съответствие с изискванията на следните норми от системата „Еврокод“ (включително Националните приложения към тях):

- Еврокод 0: БДС EN 1990: Основи на проектирането на строителните конструкции.
- Еврокод 0: БДС EN 1990/A1: Основи на проектирането на строителните конструкции – Приложения A1/A2.
- Еврокод 1: БДС EN 1990-1-1: Въздействия върху строителните конструкции. Част 1-1: Основни въздействия. Плътност, собствени тегла.
- Еврокод 1: БДС EN 1991-2: Въздействия върху строителните конструкции. Част 2: Подвижни натоварвания от трафик върху мостове.
- Еврокод 1: БДС EN 1991-4: Въздействия върху строителните конструкции. Част 4: Основни въздействия – натоварване от вятър.
- Еврокод 1: БДС EN 1991-5: Въздействия върху строителните конструкции. Част 4: Основни въздействия – температурни въздействия.
- Еврокод 2: БДС EN 1992-1-1: Проектиране на бетонни и стоманобетонни конструкции. Част 1-1: Общи правила и правила за сгради.
- Еврокод 2: БДС EN 1992-2: Проектиране на бетонни и стоманобетонни конструкции. Част 2: Стоманобетонни мостове. Правила за проектиране и конструиране.
- Еврокод 3: БДС EN 1993-1-1: Проектиране на стоманени конструкции. Част 1-1: Общи правила и правила за сгради
- Еврокод 3: БДС EN 1993-1-5: Проектиране на стоманени конструкции. Част 1-5: Пълностенни конструктивни елементи
- Еврокод 3: БДС EN 1993-1-8: Проектиране на стоманени конструкции. Част 1-8: Проектиране на възли
- Еврокод 3: БДС EN 1993-2: Проектиране на стоманени конструкции. Част 2: Стоманени мостове
- Еврокод 7: БДС EN 1997-1: Геотехническо проектиране. Част 1: Основни правила.

- Еврокод 8: БДС EN 1998-1: Проектиране на конструкциите за сеизмични въздействия. Част 1: Основни правила, сеизмични въздействия и правила за сгради. Възприето е сеизмичното райониране нормирано от Националното приложение към Еврокод 8, съгласно което съоръжението попада в зона с референтно максимално ускорение на земната основа $a_{gr} = 0.11$ ($k_c = 0.11$).
- Еврокод 8: БДС EN 1998-2: Проектиране на конструкциите за сеизмични въздействия. Част 2: Мостове.
- Еврокод 8: БДС EN 1998-5: Проектиране на конструкциите за сеизмични въздействия. Част 5: Фундаменти, опорни конструкции и геотехнически аспекти.
- БДС EN 1337-1: Лагери в строителството, основни правила

Статическото изследване на пространствената система на моста, която включва всичките ѝ елементи с реалните им връзки, коравини и съдействащи ширини, е извършено със софтуерния продукт SOFiSTiK.

В настоящия свитък със статически изчисления са показани необходимите за проверките входни данни и резултатите от изчислението. По-голяма част от резултатите са показани в прегледен графичен вид. Текстовете, които поясняват изчисленията са на английски език – оригиналният език на SOFiSTiK.

II. МОДЕЛИРАНЕ

Изчислителният модел на съоръжението е пространствен. Надлъжният наклон е пренебрегнат в модела.

III. ТОВАРИ

- 1.1. Постоянни товари
 - Собствено тегло
 - Пътна настилка
- 1.2. Подвижни товари
 - Натоварване от пешеходци от 5kN/m^2
 - Специално возило
- 1.3. Температура
- 1.4. Напрягане на окачвачите
- 1.5. Сеизмично въздействие

Съгласно сеизмичната карта на България с референтен период на повторяемост 475 години, съоръжението попада в зона с $a_{gr} = 0.11g = 1.08 \text{ m/s}^2$. Избраният клас почва е "C", $S=1.2$. Проектното сеизмично ускорение е $a_g = 1.4 \cdot 1.08 = 1.51 \text{ m/s}^2$. Коефициентът на поведение на конструкцията в двете хоризонтални направления е $q = 1.2$. Във вертикално направление коефициента на поведение е $q = 1.0$.

IV. ПРИЛОЖЕНИЯ ОТ ПРОГРАМАТА SOFISTIK:

- Материали
- Напречни сечения
- Въздействия
- Разрезни усилия в отделните елементи

Стоманен пешеходен мост в Кърджали
Materials

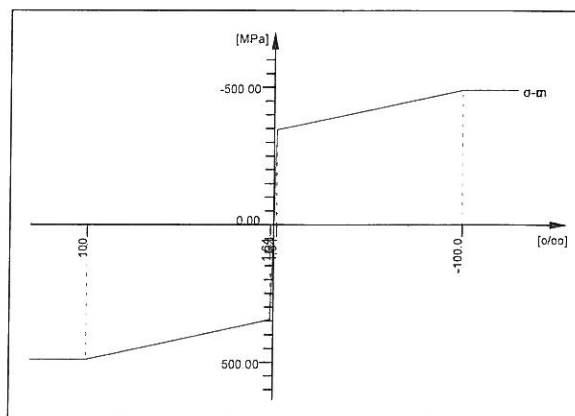
Default design code is EuroNorm EN 1993 (2005) Steel Structures (Europe) V 30.0
Structure: C (Footbridges)
Snow load zone : 1

No. 1 S 355 (EN 10025-2)

Young's modulus	E	210000	[N/mm2]	Safetyfactor		1.10	[-]
Poisson ratio	μ	0.30	[-]	Yield stress	fy	345.00	[MPa]
Shear modulus	G	80769	[N/mm2]	Compressive yield	fyc	345.00	[MPa]
Compression modulus	K	175000	[N/mm2]	Tensile strength	ft	490.00	[MPa]
Weight	γ	78.5	[kN/m3]	Compressive strength	fc	490.00	[MPa]
Density	ρ	7850.00	[kg/m3]	Ultimate strain		100.00	[o/oo]
Elongation coefficient	α	1.20E-05	[1/K]	relative bond coeff.		0.00	[-]
max. thickness		40.00	[mm]	EN 1992 bond coeff.	k1	0.00	[-]
				Hardening modulus	Eh	0.00	[MPa]
				Proportional limit	fp	345.00	[MPa]
				Dynamic allowance	σ -dyn	0.00	[MPa]

Stress-Strain for serviceability	ϵ [o/oo]	σ -m[MPa]	E-t[N/mm2]
Is also extended beyond the	1000.000	490.00	0
defined stress range	100.000	490.00	0
	1.643	345.00	1474
	0.000	0.00	210000
	-1.643	-345.00	1474
	-100.000	-490.00	0
	-1000.000	-490.00	0
Safetyfactor			1.10

Stress-Strain for ultimate load	ϵ [o/oo]	σ -u[MPa]	E-t[N/mm2]
Is also extended beyond the	1000.000	490.00	0
defined stress range	100.000	490.00	0
	1.643	345.00	1474
	0.000	0.00	210000
	-1.643	-345.00	1474
	-100.000	-490.00	0
	-1000.000	-490.00	0
Safetyfactor			1.10



S 355 (EN 10025-2)

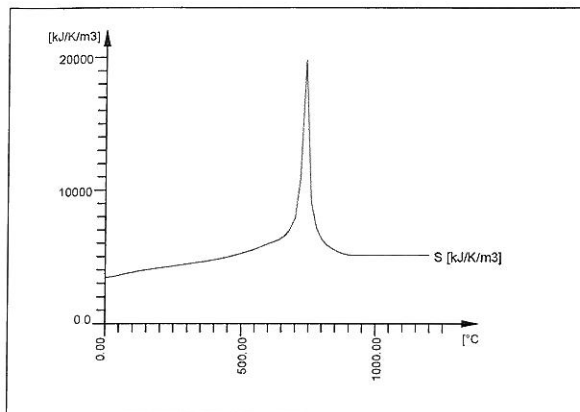
Thermal material constants

No.	T[°C]	S[kJ/K/m3]	Kxx[W/K/m]	Kyy[W/K/m]	Kzz[W/K/m]	
1	AUTO	3.45E+03	5.333E+01	0.000E+00	0.000E+00	S 355 (EN 10025-2)
	0	3.45E+03	5.333E+01			
	100	3.83E+03	5.067E+01			
	200	4.16E+03	4.734E+01			
	300	4.43E+03	4.401E+01			
	400	4.76E+03	4.068E+01			
	500	5.23E+03	3.735E+01			
	600	5.97E+03	3.402E+01			
	700	7.91E+03	3.069E+01			
	740	1.98E+04	2.936E+01			
	800	6.31E+03	2.736E+01			

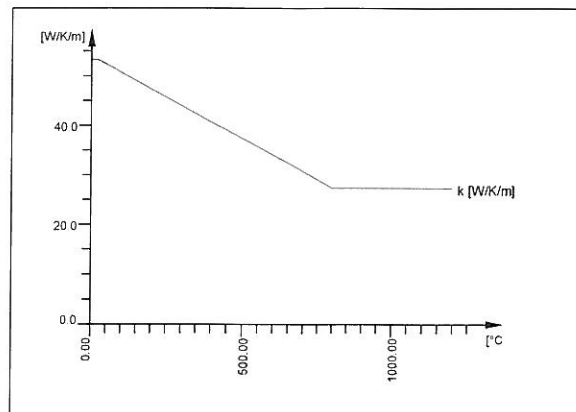
Стоманен пешеходен мост в Кърджали
Materials

Thermal material constants

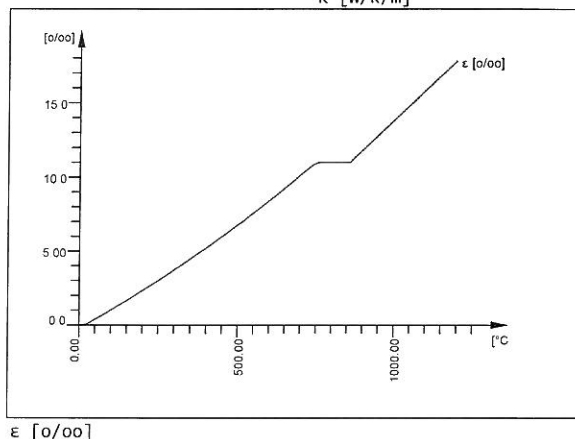
No.	T [°C]	S [kJ/K/m ³]	Kxx [W/K/m]	Kyy [W/K/m]	Kzz [W/K/m]
	900	5.11E+03	2.730E+01		
	1000	5.10E+03	2.730E+01		
	1100	5.10E+03	2.730E+01		
	1200	5.10E+03	2.730E+01		



S [kJ/K/m³]



k [W/K/m]



ε [o/oo]

No. 2 S 355 (EN 10025-2) NW

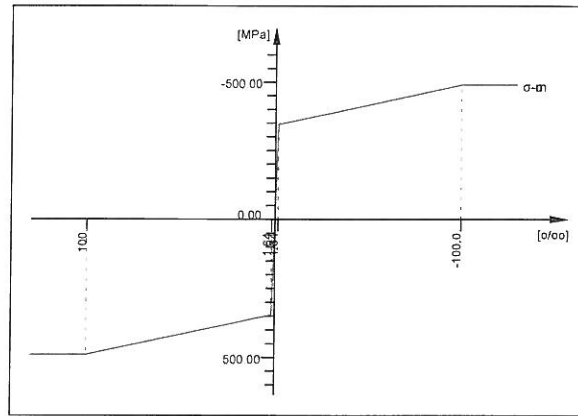
Young's modulus	E	210000 [N/mm ²]	Safetyfactor	1.10 [-]
Poisson ratio	μ	0.30 [-]	Yield stress	fy 345.00 [MPa]
Shear modulus	G	80769 [N/mm ²]	Compressive yield	fyc 345.00 [MPa]
Compression modulus	K	175000 [N/mm ²]	Tensile strength	ft 490.00 [MPa]
Weight	γ	0.0 [kN/m ³]	Compressive strength	fc 490.00 [MPa]
Density	ρ	7850.00 [kg/m ³]	Ultimate strain	100.00 [o/oo]
Elongation coefficient	α	1.20E-05 [1/K]	relative bond coeff.	0.00 [-]
max. thickness		40.00 [mm]	EN 1992 bond coeff.	k1 0.00 [-]
			Hardening modulus	Eh 0.00 [MPa]
			Proportional limit	fp 345.00 [MPa]
			Dynamic allowance	σ-dyn 0.00 [MPa]

Stress-Strain for serviceability	ε [o/oo]	σ-m [MPa]	E-t [N/mm ²]
Is also extended beyond the defined stress range	1000.000	490.00	0
	100.000	490.00	0
	1.643	345.00	1474
	0.000	0.00	210000
	-1.643	-345.00	1474
	-100.000	-490.00	0
	-1000.000	-490.00	0
Safetyfactor			1.10

Stress-Strain for ultimate load	ε [o/oo]	σ-u [MPa]	E-t [N/mm ²]
Is also extended beyond the defined stress range	1000.000	490.00	0
	100.000	490.00	0

Стоманен пешеходен мост в Кърджали
Materials

Stress-Strain for ultimate load	$\epsilon [o/oo]$	$\sigma-u [MPa]$	$E-t [N/mm^2]$
	1.643	345.00	1474
	0.000	0.00	210000
	-1.643	-345.00	1474
	-100.000	-490.00	0
	-1000.000	-490.00	0
Safetyfactor			1.10

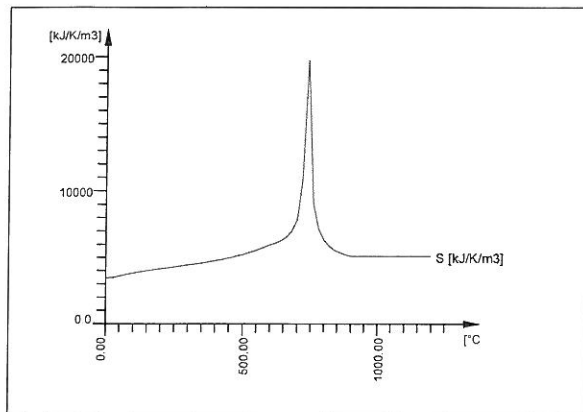


S 355 (EN 10025-2) NW

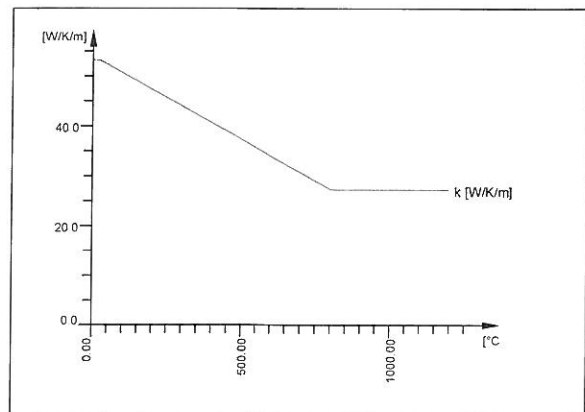
Thermal material constants

No.	T [°C]	S [kJ/K/m3]	Kxx [W/K/m]	Kyy [W/K/m]	Kzz [W/K/m]	
2	AUTO	3.45E+03	5.333E+01	0.000E+00	0.000E+00	S 355 (EN 10025-2) NW
	0	3.45E+03	5.333E+01			
	100	3.83E+03	5.067E+01			
	200	4.16E+03	4.734E+01			
	300	4.43E+03	4.401E+01			
	400	4.76E+03	4.068E+01			
	500	5.23E+03	3.735E+01			
	600	5.97E+03	3.402E+01			
	700	7.91E+03	3.069E+01			
	740	1.98E+04	2.936E+01			
	800	6.31E+03	2.736E+01			
	900	5.11E+03	2.730E+01			
	1000	5.10E+03	2.730E+01			
	1100	5.10E+03	2.730E+01			
	1200	5.10E+03	2.730E+01			

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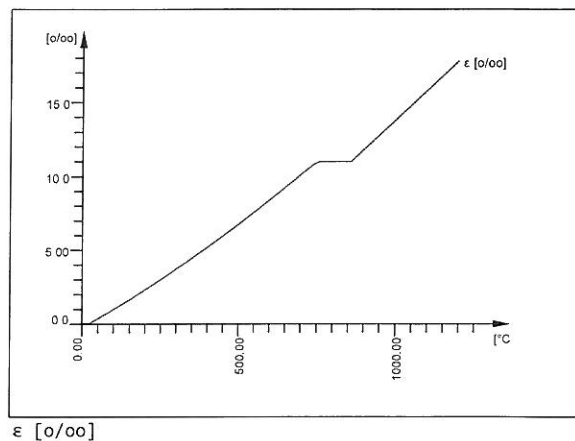


S [kJ/K/m3]



k [W/K/m]

Стоманен пешеходен мост в Кърджали
Materials



No. 3 Y 1570 C (EN 1992)

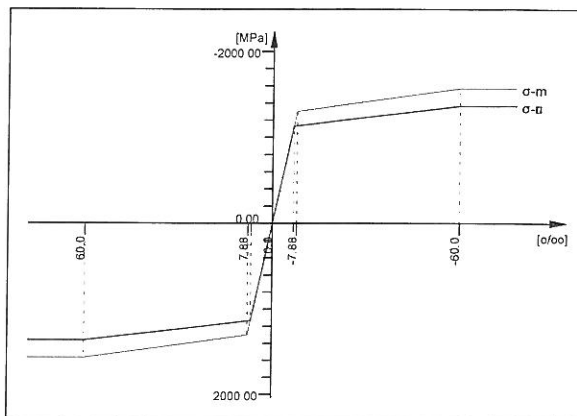
Young's modulus	E	165000	[N/mm ²]	Safetyfactor	1.15	[-]
Poisson ratio	μ	0.30	[-]	Yield stress	f _y	1300.00 [MPa]
Shear modulus	G	63462	[N/mm ²]	Compressive yield	f _{yc}	1300.00 [MPa]
Compression modulus	K	137500	[N/mm ²]	Tensile strength	f _t	1570.00 [MPa]
Weight	γ	78.5	[kN/m ³]	Compressive strength	f _c	1570.00 [MPa]
Density	ρ	7850.00	[kg/m ³]	Ultimate strain		60.00 [‰]
Elongation coefficient	α	1.20E-05	[1/K]	relative bond coeff.		0.75 [-]
Relaxation	EN-1992	Class 1		EN 1992 bond coeff.	k ₁	1.60 [-]
Relaxation	ρ(1000h)	8.00	[%]	Hardening modulus	E _h	0.00 [MPa]
				Proportional limit	f _p	1300.00 [MPa]
				Dynamic allowance	σ-dyn	160.87 [MPa]

Stress-Strain for serviceability	ε [‰]	σ-m [MPa]	E-t [N/mm ²]
Is also extended beyond the defined stress range	1000.000	1570.00	0
	60.000	1570.00	0
	7.879	1300.00	5180
	0.000	0.00	165000
	-7.879	-1300.00	5180
	-60.000	-1570.00	0
	-1000.000	-1570.00	0
Safetyfactor			1.15

Stress-Strain for ultimate load	ε [‰]	σ-u [MPa]	E-t [N/mm ²]
Is also extended beyond the defined stress range	1000.000	1365.22	0
	60.000	1365.22	0
	6.851	1130.43	4417
	0.000	0.00	165000
	-6.851	-1130.43	4417
	-60.000	-1365.22	0
	-1000.000	-1365.22	0
Safetyfactor			1.15

Stress-Strain of calc. mean values	ε [‰]	σ-r [MPa]	E-t [N/mm ²]
Is also extended beyond the defined stress range	1000.000	1365.22	0
	60.000	1365.22	0
	6.851	1130.43	4417
	0.000	0.00	165000
	-6.851	-1130.43	4417
	-60.000	-1365.22	0
	-1000.000	-1365.22	0
Safetyfactor			(1.15)

Стоманен пешеходен мост в Кърджали
Materials

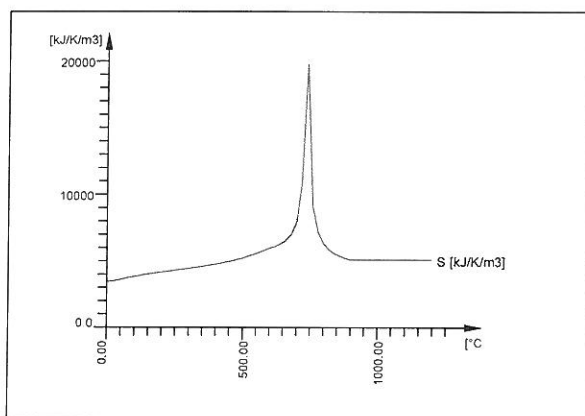


Y 1570 C (EN 1992)

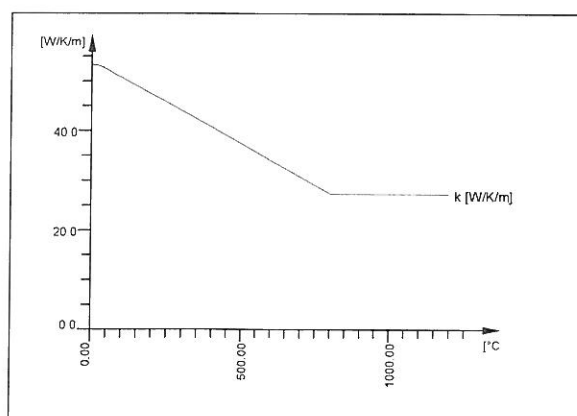
Thermal material constants

No.	T [°C]	S [kJ/K/m³]	Kxx [W/K/m]	Kyy [W/K/m]	Kzz [W/K/m]	
3	AUTO	3.45E+03	5.333E+01	0.000E+00	0.000E+00	Y 1570 C (EN 1992)
	0	3.45E+03	5.333E+01			
	100	3.83E+03	5.067E+01			
	200	4.16E+03	4.734E+01			
	300	4.43E+03	4.401E+01			
	400	4.76E+03	4.068E+01			
	500	5.23E+03	3.735E+01			
	600	5.97E+03	3.402E+01			
	700	7.91E+03	3.069E+01			
	740	1.98E+04	2.936E+01			
	800	6.31E+03	2.736E+01			
	900	5.11E+03	2.730E+01			
	1000	5.10E+03	2.730E+01			
	1100	5.10E+03	2.730E+01			
	1200	5.10E+03	2.730E+01			

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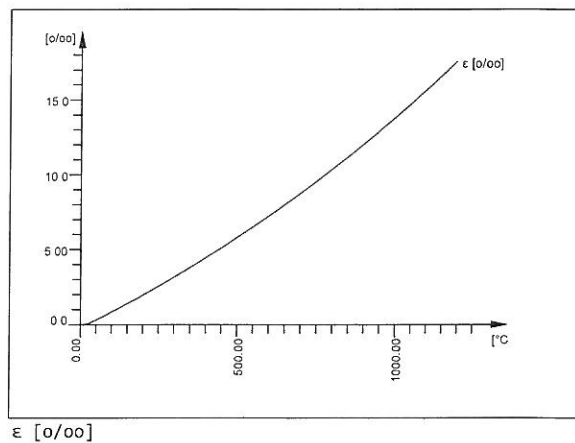


S [kJ/K/m³]



k [W/K/m]

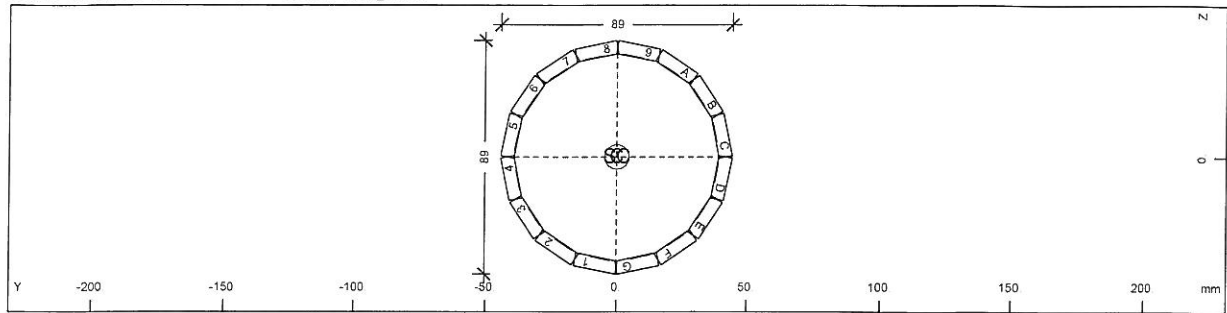
Стоманен пешеходен мост в Кърджали
Materials



Static properties of cross section									
No.	Mat	A[m ²]	Ay[m ²]	Iy[m ⁴]	yc[mm]	ysc[mm]	E[N/mm ²]	g[kN/m]	
	MRF	It[m ⁴]	Az[m ²]	Iz[m ⁴]	zc[mm]	zsc[mm]	G[N/mm ²]		
			Ayz[m ²]	Iyz[m ⁴]					
2	1	1.3210E-03	6.720E-04	3.184E-06	0.0	0.0	210000	0.10	
		1.422E-08	4.851E-04	2.753E-07	0.0	0.0	80769	(TRUSS)	
= Truss vertical									

Стоманен пешеходен мост в Кърджали
Sections

Cross section No. 3 - Truss diagonal



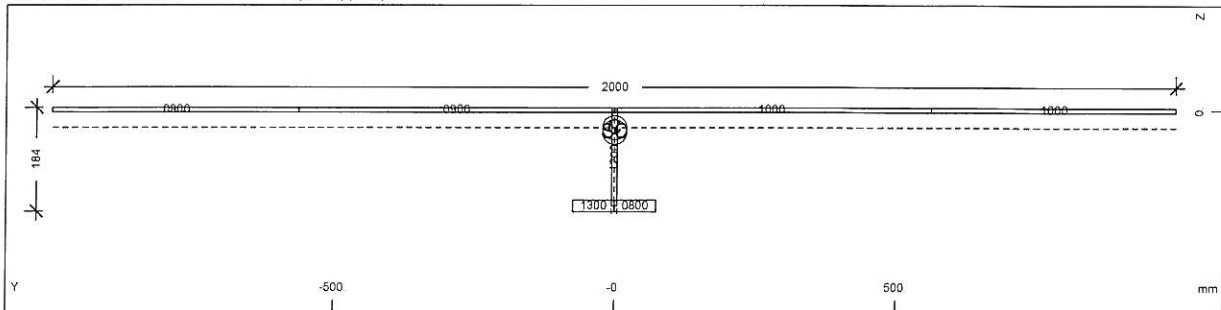
Cross section No. 3 - Truss diagonal

Static properties of cross section

No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRF	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
			Ayz[m2]	Iyz[m4]				
3	1	1.3094E-03	6.464E-04	1.123E-06	0.0	0.0	210000	0.10
		2.228E-06	6.464E-04	1.123E-06	0.0	0.0	80769	(TRUSS)
				1.167E-14				
= Truss diagonal								

Cross section No. 4 - CB_Inn_Sp_M

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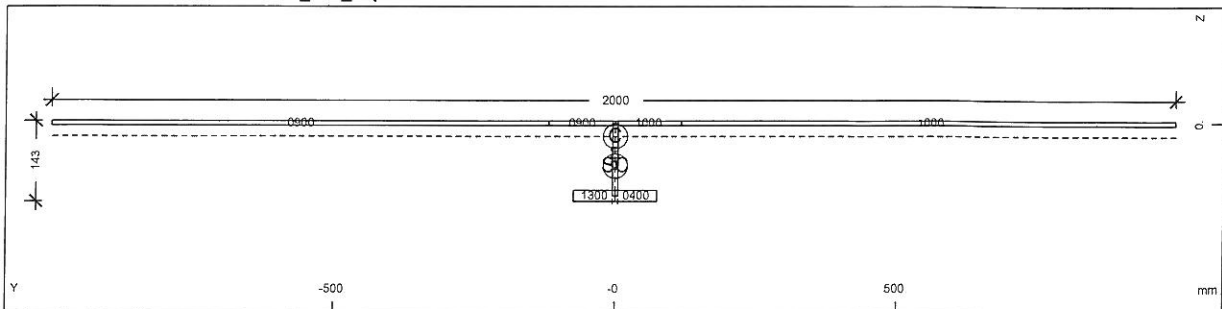


Cross section No. 4 - CB_Inn_Sp_M

Static properties of cross section

No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRF	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
			Ayz[m2]	Iyz[m4]				
4	1	2.0700E-02	4.850E-03	8.238E-05	0.0	0.0	210000	1.62
		7.980E-07	9.296E-04	5.339E-03	31.6	39.4	80769	(BEAM)
		1.3708E-02		-1.371E-20				
				7.183E-05	0.0	0.0		(effective)
				9.574E-04	47.7	39.4		
= CB_Inn_Sp_M								

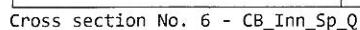
Cross section No. 5 - CB_Inn_Sup



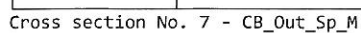
Cross section No. 5 - CB_Inn_Sup

Static properties of cross section

Cross section No. 6 - CB_Inn_Sp_Q



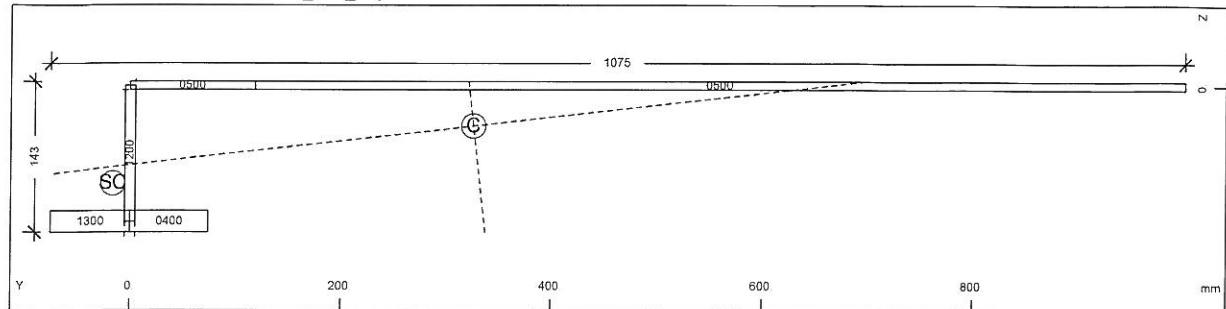
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Static properties of cross section								
No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRF	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
			Ayz[m2]	Iyz[m4]				
7	1	1.2650E-02	1.193E-03	6.516E-05	316.2	-100.5	210000	0.99
		6.257E-07	5.674E-04	1.407E-03	49.9	79.9	80769	(BEAM)
				-1.996E-04				
		9.1540E-03		5.314E-05	138.5	-100.5		(effective)
				3.059E-04	68.9	79.9		
				-8.741E-05				
		= CB Out Sp M						

Стоманен пешеходен мост в Кърджали
Sections

Cross section No. 8 - CB_Out_Sup



Cross section No. 8 - CB_Out_Sup

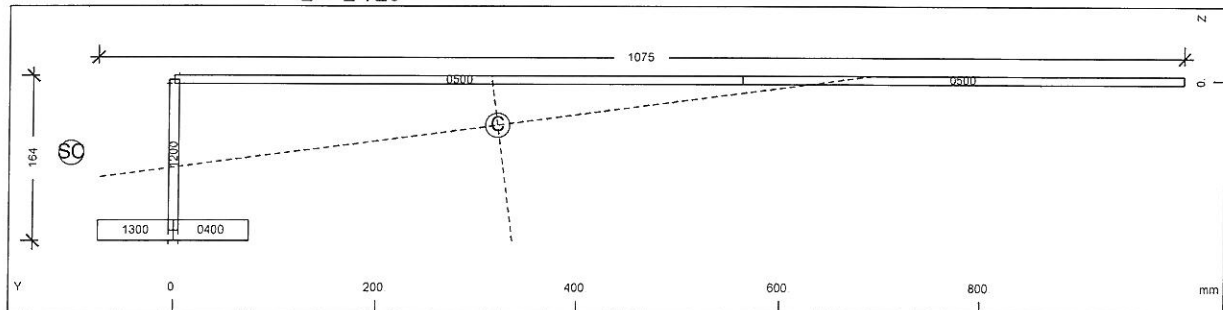
Static properties of cross section

No.	Mat	A[m ²]	Ay[m ²]	Iy[m ⁴]	yc[mm]	ysc[mm]	E[N/mm ²]	g[kN/m]
	MRF	It[m ⁴]	Az[m ²]	Iz[m ⁴]	zc[mm]	zsc[mm]	G[N/mm ²]	
8	1	1.2290E-02	4.711E-07	3.909E-05	325.5	-16.3	210000	0.96
		6.137E-07	7.169E-06	1.370E-03	38.3	92.6	80769	(BEAM)
		5.2420E-03		-1.530E-04				
				1.490E-05	10.8	-16.3		(effective)
				9.507E-06	89.7	92.6		
				-5.081E-06				

= CB_Out_Sup

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Cross section No. 9 - CB_Out_Sp_Q



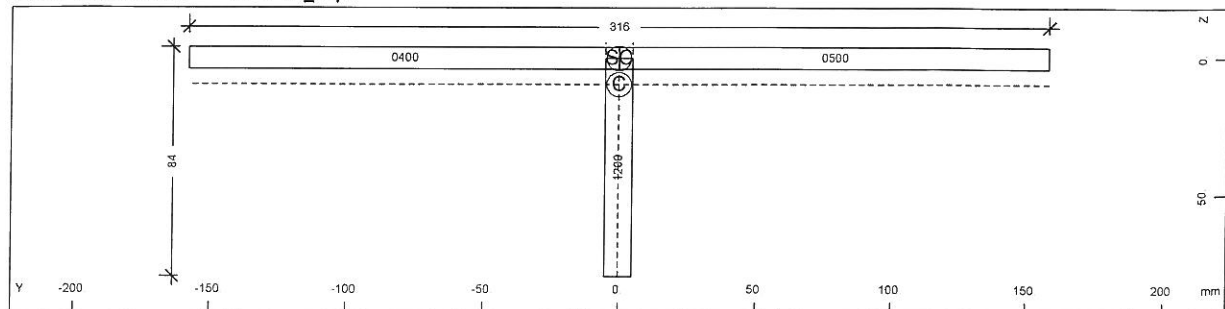
Cross section No. 9 - CB_Out_Sp_Q

Static properties of cross section

No.	Mat	A[m ²]	Ay[m ²]	Iy[m ⁴]	yc[mm]	ysc[mm]	E[N/mm ²]	g[kN/m]
	MRF	It[m ⁴]	Az[m ²]	Iz[m ⁴]	zc[mm]	zsc[mm]	G[N/mm ²]	
9	1	1.2495E-02	1.169E-03	5.307E-05	320.1	-101.5	210000	0.98
		6.205E-07	4.671E-04	1.392E-03	44.8	72.6	80769	(BEAM)
		8.9990E-03		-1.794E-04				
				4.331E-05	140.9	-101.5		(effective)
				3.029E-04	62.3	72.6		
				-7.893E-05				

= CB_Out_Sp_Q

Cross section No. 10 - LB_Sup1



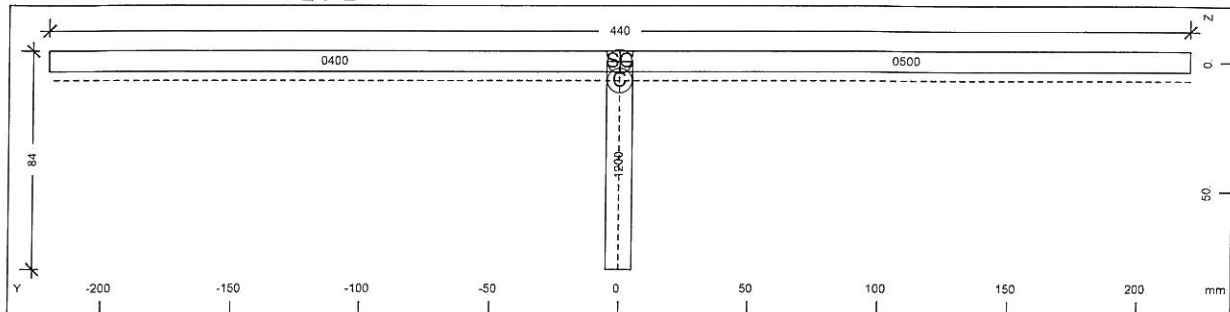
Cross section No. 10 - LB_Sup1

Стоманен пешеходен мост в Кърджали
 Sections

Static properties of cross section

No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRf	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
10	1	3.3280E-03	2.107E-03	1.399E-06	0.0	0.0	210000	0.06
		8.060E-08	4.051E-04	2.104E-05	9.6	0.0	80769	(BEAM)
= LB_Sup1								
= Composit with materials: 1 2								

Cross section No. 11 - LB_Sp1_M

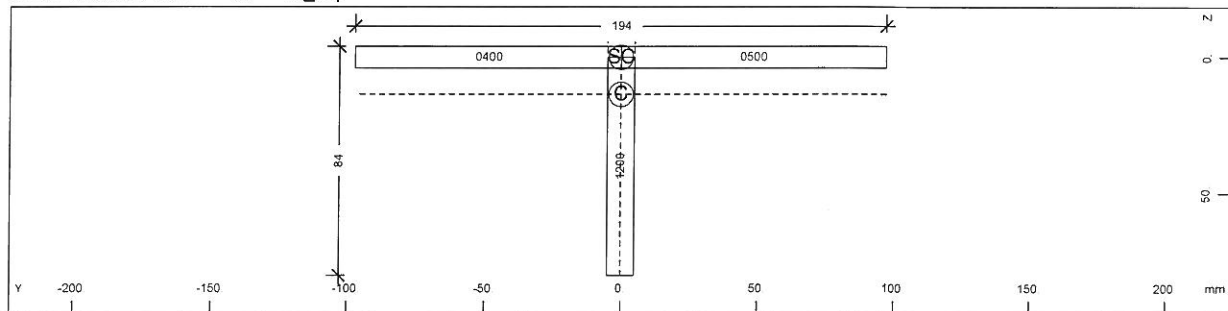


Cross section No. 11 - LB_Sp1_M

Static properties of cross section

No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRf	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
11	1	4.3200E-03	2.933E-03	1.470E-06	0.0	0.0	210000	0.06
		1.018E-07	3.420E-04	5.679E-05	7.4	0.0	80769	(BEAM)
= LB_Sp1_M								
= Composit with materials: 1 2								

Cross section No. 12 - LB_Sup



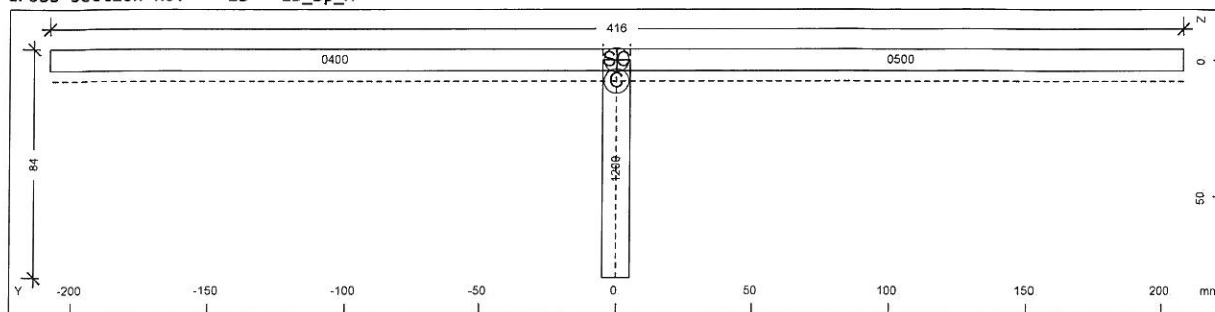
Cross section No. 12 - LB_Sup

Static properties of cross section

No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRf	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
12	1	2.3520E-03	1.293E-03	1.271E-06	0.0	0.0	210000	0.06
		5.978E-08	4.952E-04	4.868E-06	13.6	0.0	80769	(BEAM)
= LB_Sup								
= Composit with materials: 1 2								

Стоманен пешеходен мост в Кърджали
 Sections

Cross section No. 13 - LB_Sp_M

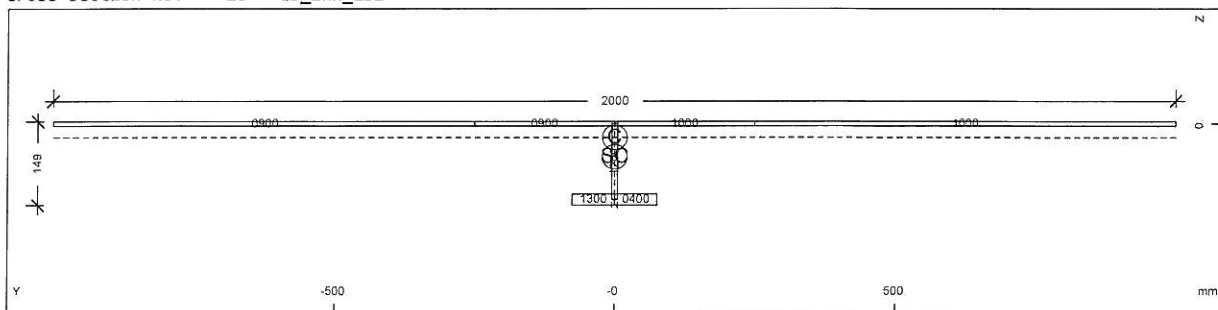


Cross section No. 13 - LB_Sp_M

Static properties of cross section

No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRf	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
13	1	4.1280E-03	2.773E-03	1.459E-06	0.0	0.0	210000	0.06
		9.766E-08	3.527E-04	4.799E-05	7.8	0.0	80769	(BEAM)
= LB_Sp_M								
= Composit with materials: 1 2								

Cross section No. 20 - CB_Inn_LB1

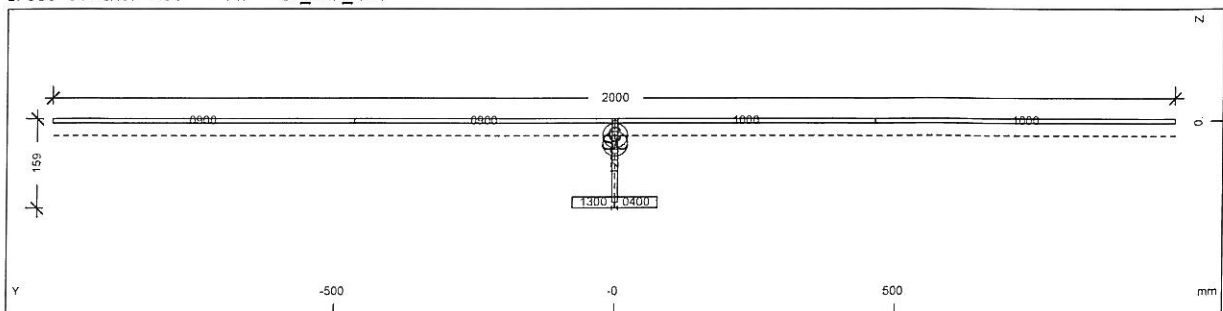


Cross section No. 20 - CB_Inn_LB1

Static properties of cross section

No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRf	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
20	1	2.0350E-02	3.399E-05	5.078E-05	0.0	0.0	210000	1.60
		7.863E-07	3.530E-04	5.339E-03	24.4	58.7	80769	(BEAM)
		8.3340E-03		3.334E-05	0.0	0.0		(effective)
				8.796E-05	59.5	58.7		
= CB_Inn_LB1								

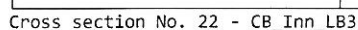
Cross section No. 21 - CB_Inn_LB2



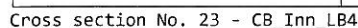
Cross section No. 21 - CB_Inn_LB2

Static properties of cross section

Cross section No. 22 - CB_Inn_LB3



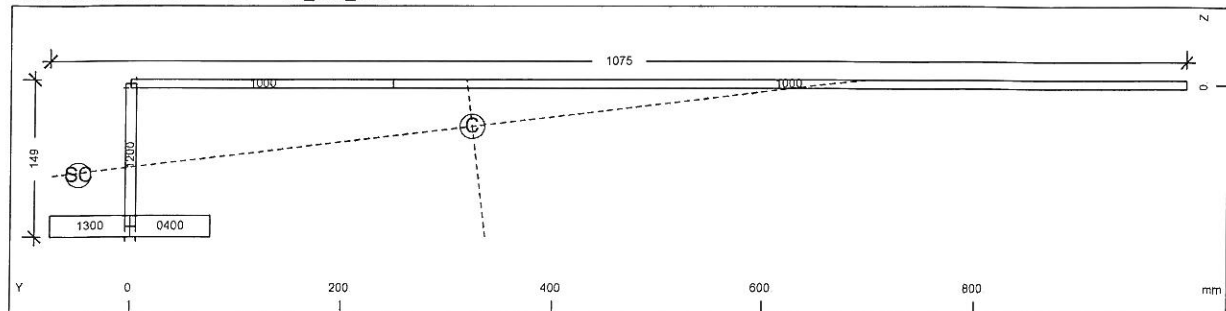
Static Properties of Cross Section								
No.	Mat MRf	Ay[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
		It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
			Ayz[m2]	Iyz[m4]				
22	1	2.0550E-02	4.850E-03	6.783E-05	0.0	0.0	210000	1.61
		7.930E-07	8.124E-04	5.339E-03	28.5	35.6	80769	(BEAM)
				-1.235E-20				
		1.3558E-02		5.924E-05	0.0	0.0	(effective)	
				9.574E-04	43.2	35.6		
	= CB Inn LB3							



No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
		It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
23	1	2.0650E-02	4.850E-03	7.736E-05	0.0	0.0	210000	1.62
		7.963E-07	8.902E-04	5.339E-03	30.6	38.1	80769	(BEAM)
				-1.325E-20				
		1.3658E-02		6.749E-05	0.0	0.0		(effective)
				9.574E-04	46.2	38.1		

Стоманен пешеходен мост в Кърджали
Sections

Cross section No. 30 - CB_Out_LB1



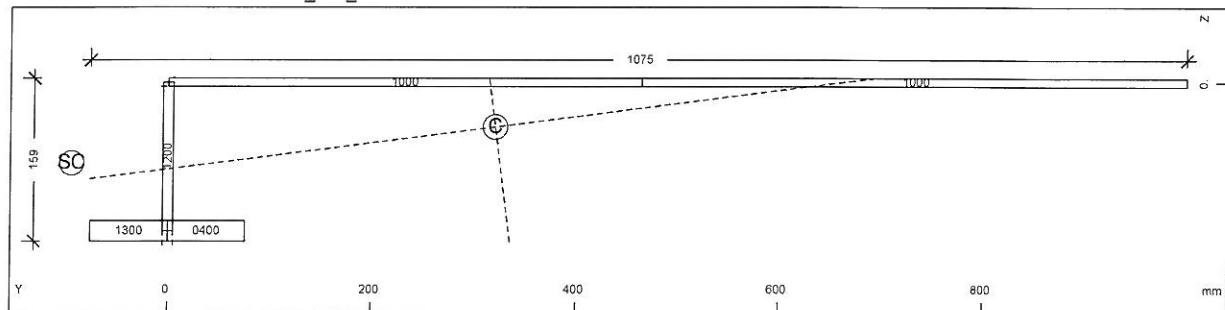
Cross section No. 30 - CB_Out_LB1

Static properties of cross section

No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRf	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
			Ayz[m2]	Iyz[m4]				
30	1	1.2350E-02	5.764E-06	4.295E-05	323.9	-48.5	210000	0.97
		6.157E-07	1.244E-05	1.377E-03	40.2	86.4	80769	(BEAM)
		6.3420E-03		-1.607E-04				
				2.407E-05	39.1	-48.5		(effective)
				3.710E-05	78.2	86.4		
				-1.940E-05				
= CB_Out_LB1								

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Cross section No. 31 - CB_Out_LB2

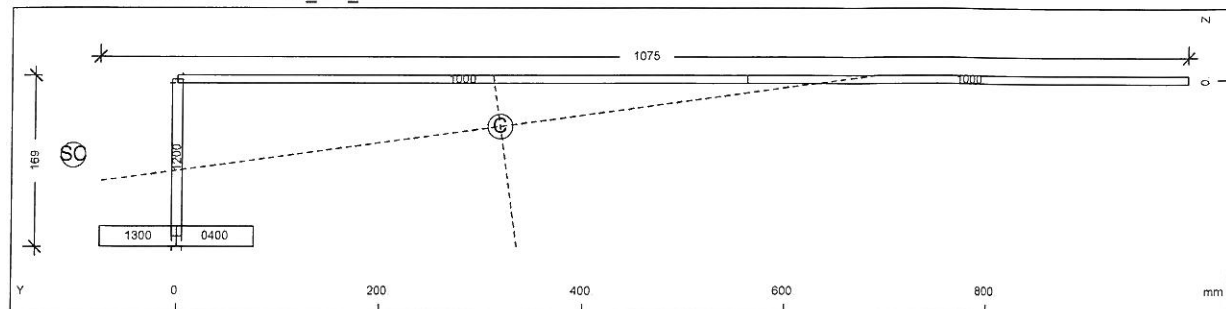


Cross section No. 31 - CB_Out_LB2

Static properties of cross section

No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRf	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
			Ayz[m2]	Iyz[m4]				
31	1	1.2450E-02	2.897E-04	4.980E-05	321.3	-93.1	210000	0.98
		6.190E-07	1.792E-04	1.387E-03	43.4	78.5	80769	(BEAM)
		8.1700E-03		-1.735E-04				
				3.753E-05	105.9	-93.1		(effective)
				1.822E-04	66.1	78.5		
				-5.718E-05				
= CB_Out_LB2								

Cross section No. 32 - CB_Out_LB3



Cross section No. 32 - CB_Out_LB3

Static properties of cross section

No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRF	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
			Ayz[m2]	Iyz[m4]				
32	1	1.2550E-02 6.223E-07	1.178E-03 5.018E-04	5.721E-05 1.397E-03 -1.865E-04	318.7 46.6	-101.2 75.2	210000 80769	0.99 (BEAM)
		9.0540E-03		4.667E-05 3.040E-04 -8.194E-05	140.0 64.6	-101.2 75.2	(effective)	
		= CB_Out_LB3						

Static properties of cross section

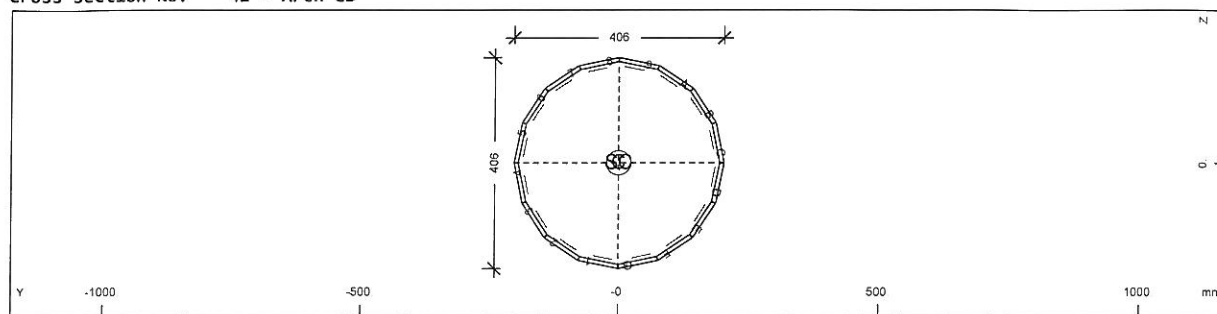
[illegible]

Cross section No. 40 - Arch

Static properties of cross section

No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRF	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
			Ayz[m2]	Iyz[m4]				
40	1	1.5545E-02 9.276E-04	7.674E-03 7.674E-03	4.697E-04 4.697E-04 8.492E-12	0.0 0.0	0.0 0.0	210000 80769	1.22 (COMPR)
	= Arch							

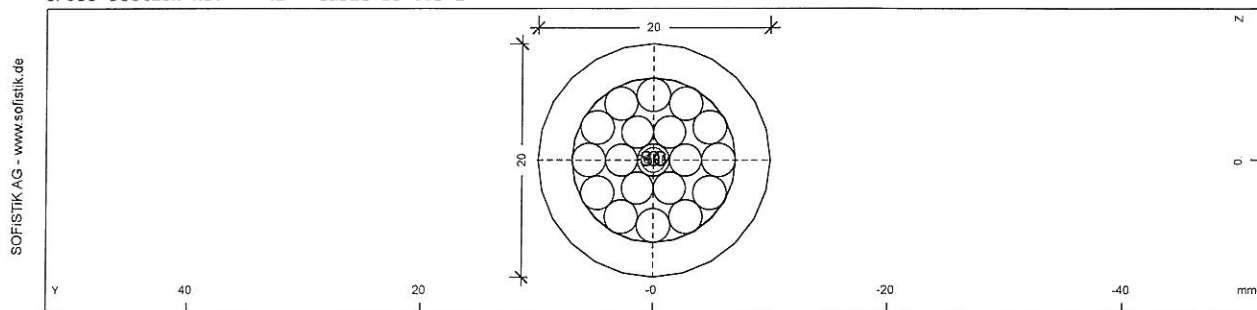
Cross section No. 41 - Arch CB



Cross section No. 41 - Arch CB

No.	Mat MRf	A[m2] It[m4]	Ay[m2] Az[m2] Ayz[m2]	Iy[m4] Iz[m4] Iyz[m4]	yc[mm] zc[mm]	ysc[mm] zsc[mm]	E[N/mm2] G[N/mm2]	g[kN/m]
41	1	9.9487E-03 3.800E-04	4.911E-03 4.911E-03	1.924E-04 1.924E-04 1.097E-12	0.0 0.0	0.0 0.0	210000 80769	0.78 (COMPR)
= Arch CB								

Cross section No. 42 - Cable 20 VVS-1



Cross section No. 42 - Cable 20 VVS-1

No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRf	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
			Ayz[m2]	Iyz[m4]				
42	3	1.9984E-04		4.996E-09	0.0	0.0	165000	0.01
		0.000E+00		4.996E-09	0.0	0.0	63462	(CABLE)
		= Cable 20 VVS-1						

Mesh Generation

Sectional Values

No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRf	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
			Ayz[m2]	Iyz[m4]				
1	1	4.1847E-03	2.066E-03	2.309E-05	0.0	0.0	210000	0.33
		4.563E-05	2.066E-03	2.309E-05	0.0	0.0	80769	(BEAM)
				4.164E-13				
		= Truss flange						
2	1	1.3210E-03	6.720E-04	3.184E-06	0.0	0.0	210000	0.10
		1.422E-08	4.851E-04	2.753E-07	0.0	0.0	80769	(TRUSS)
		= Truss vertical						
3	1	1.3094E-03	6.464E-04	1.123E-06	0.0	0.0	210000	0.10
		2.228E-06	6.464E-04	1.123E-06	0.0	0.0	80769	(TRUSS)
				1.167E-14				
		= Truss diagonal						
4	1	2.0700E-02	4.850E-03	8.238E-05	0.0	0.0	210000	1.62
		7.980E-07	9.296E-04	5.339E-03	31.6	39.4	80769	(BEAM)
				-1.371E-20				
		1.3708E-02		7.183E-05	0.0	0.0		(effective)
				9.574E-04	47.7	39.4		
		= CB_Inn_Sp_M						
5	1	2.0290E-02	7.183E-07	4.618E-05	0.0	0.0	210000	1.59
		7.843E-07	8.055E-05	5.339E-03	23.2	75.8	80769	(BEAM)
		6.1940E-03		2.138E-05	0.0	0.0		(effective)
				1.461E-05	75.9	75.8		
				2.692E-12				
		= CB_Inn_Sup						
6	1	2.0495E-02	4.850E-03	6.287E-05	0.0	0.0	210000	1.61
		7.912E-07	7.703E-04	5.339E-03	27.3	34.2	80769	(BEAM)
				-1.186E-20				
		1.3503E-02		5.494E-05	0.0	0.0		(effective)
				9.574E-04	41.5	34.2		
		= CB_Inn_Sp_Q						
7	1	1.2650E-02	1.193E-03	6.516E-05	316.2	-100.5	210000	0.99
		6.257E-07	5.674E-04	1.407E-03	49.9	79.9	80769	(BEAM)
				-1.996E-04				
		9.1540E-03		5.314E-05	138.5	-100.5		(effective)
				3.059E-04	68.9	79.9		
				-8.741E-05				
		= CB_Out_Sp_M						
8	1	1.2290E-02	4.711E-07	3.909E-05	325.5	-16.3	210000	0.96
		6.137E-07	7.169E-06	1.370E-03	38.3	92.6	80769	(BEAM)
				-1.530E-04				
		5.2420E-03		1.490E-05	10.8	-16.3		(effective)
				9.507E-06	89.7	92.6		
				-5.081E-06				
		= CB_Out_Sup						
9	1	1.2495E-02	1.169E-03	5.307E-05	320.1	-101.5	210000	0.98
		6.205E-07	4.671E-04	1.392E-03	44.8	72.6	80769	(BEAM)
				-1.794E-04				
		8.9990E-03		4.331E-05	140.9	-101.5		(effective)
				3.029E-04	62.3	72.6		
				-7.893E-05				
		= CB_Out_Sp_Q						
10	1	3.3280E-03	2.107E-03	1.399E-06	0.0	0.0	210000	0.06
		8.060E-08	4.051E-04	2.104E-05	9.6	0.0	80769	(BEAM)
		= LB_Sup1						
		= Materials 1 2						
11	1	4.3200E-03	2.933E-03	1.470E-06	0.0	0.0	210000	0.06
		1.018E-07	3.420E-04	5.679E-05	7.4	0.0	80769	(BEAM)
		= LB_Sp1_M						
		= Materials 1 2						
12	1	2.3520E-03	1.293E-03	1.271E-06	0.0	0.0	210000	0.06
		5.978E-08	4.952E-04	4.868E-06	13.6	0.0	80769	(BEAM)
		= LB_Sup						
		= Materials 1 2						
13	1	4.1280E-03	2.773E-03	1.459E-06	0.0	0.0	210000	0.06
		9.766E-08	3.527E-04	4.799E-05	7.8	0.0	80769	(BEAM)
		= LB_Sp_M						

Mesh Generation

Sectional Values

No.	Mat	A[m2]	Ay[m2]	Iy[m4]	yc[mm]	ysc[mm]	E[N/mm2]	g[kN/m]
	MRf	It[m4]	Az[m2]	Iz[m4]	zc[mm]	zsc[mm]	G[N/mm2]	
= Materials 1 2								
20	1	2.0350E-02	3.399E-05	5.078E-05	0.0	0.0	210000	1.60
		7.863E-07	3.530E-04	5.339E-03	24.4	58.7	80769	(BEAM)
		8.3340E-03		3.334E-05	0.0	0.0		(effective)
				8.796E-05	59.5	58.7		
= CB_Inn_LB1								
21	1	2.0450E-02	1.871E-03	5.897E-05	0.0	0.0	210000	1.61
		7.897E-07	7.361E-04	5.339E-03	26.4	41.0	80769	(BEAM)
		1.1890E-02		4.870E-05	0.0	0.0		(effective)
				5.419E-04	45.4	41.0		
				-5.036E-12				
= CB_Inn_LB2								
22	1	2.0550E-02	4.850E-03	6.783E-05	0.0	0.0	210000	1.61
		7.930E-07	8.124E-04	5.339E-03	28.5	35.6	80769	(BEAM)
				-1.235E-20				
		1.3558E-02		5.924E-05	0.0	0.0		(effective)
				9.574E-04	43.2	35.6		
= CB_Inn_LB3								
23	1	2.0650E-02	4.850E-03	7.736E-05	0.0	0.0	210000	1.62
		7.963E-07	8.902E-04	5.339E-03	30.6	38.1	80769	(BEAM)
				-1.325E-20				
		1.3658E-02		6.749E-05	0.0	0.0		(effective)
				9.574E-04	46.2	38.1		
= CB_Inn_LB4								
30	1	1.2350E-02	5.764E-06	4.295E-05	323.9	-48.5	210000	0.97
		6.157E-07	1.244E-05	1.377E-03	40.2	86.4	80769	(BEAM)
				-1.607E-04				
		6.3420E-03		2.407E-05	39.1	-48.5		(effective)
				3.710E-05	78.2	86.4		
				-1.940E-05				
= CB_Out_LB1								
31	1	1.2450E-02	2.897E-04	4.980E-05	321.3	-93.1	210000	0.98
		6.190E-07	1.792E-04	1.387E-03	43.4	78.5	80769	(BEAM)
				-1.735E-04				
		8.1700E-03		3.753E-05	105.9	-93.1		(effective)
				1.822E-04	66.1	78.5		
				-5.718E-05				
= CB_Out_LB2								
32	1	1.2550E-02	1.178E-03	5.721E-05	318.7	-101.2	210000	0.99
		6.223E-07	5.018E-04	1.397E-03	46.6	75.2	80769	(BEAM)
				-1.865E-04				
		9.0540E-03		4.667E-05	140.0	-101.2		(effective)
				3.040E-04	64.6	75.2		
				-8.194E-05				
= CB_Out_LB3								
33	1	1.2650E-02	1.193E-03	6.516E-05	316.2	-100.5	210000	0.99
		6.257E-07	5.674E-04	1.407E-03	49.9	79.9	80769	(BEAM)
				-1.996E-04				
		9.1540E-03		5.314E-05	138.5	-100.5		(effective)
				3.059E-04	68.9	79.9		
				-8.741E-05				
= CB_Out_LB4								
40	1	1.5545E-02	7.674E-03	4.697E-04	0.0	0.0	210000	1.22
		9.276E-04	7.674E-03	4.697E-04	0.0	0.0	80769	(COMPR)
				8.492E-12				
= Arch								
41	1	9.9487E-03	4.911E-03	1.924E-04	0.0	0.0	210000	0.78
		3.800E-04	4.911E-03	1.924E-04	0.0	0.0	80769	(COMPR)
				1.097E-12				
= Arch CB								
42	3	1.9984E-04		4.996E-09	0.0	0.0	165000	0.01
		0.000E+00		4.996E-09	0.0	0.0	63462	(CABLE)
= Cable 20 VVS-1								

Mesh Generation

Geometric axis A (A)

Segments

from station[-]	to station[-]	Total Length[m]
0.000	1.000	78.000

Стоманен пешеходен мост в Кърджали
Generation of Node and Element Loads

Actions

type	part	sup	Title	$\gamma-u$	$\gamma-f$	$\gamma-a$	$\psi-0$	$\psi-1$	$\psi-2$	$\psi-1'$
G_1	G	perm	Dead weight	1.35	1.00	1.00	1.00	1.00	1.00	1.00
		1	Dead weight							
G_2	G	perm	Superimposed dead weight	1.35	1.00	1.00	1.00	1.00	1.00	1.00
		2	Superimposed dead weight							
P	P	perm	Prestressing	1.00	1.00	1.00	1.00	1.00	1.00	1.00
		8	Prestress							
L	Q	excl	Footbridge gr2	1.35	0.00	1.00	0.00	0.00	0.00	1.00
L_U	Q	cond	Footbridge gr1	1.35	0.00	1.00	0.40	0.40	0.00	1.00
		3	Pedestrians sp1							
		4	Pedestrians sp2							
		5	Pedestrians sp3							
		6	Pedestrians sp4							
		7	Pedestrians sp5							
T	Q	excl	Temperature loading	1.50	0.00	1.00	0.60	0.60	0.50	1.00
		10	Positive uniform T				0.00			
		11	Negative uniform T				0.00			
		12	Positive linear T				0.00			
		13	Negative linear T				0.00			
			Reduction coefficient	xsi	0.850					

Load Case 1 (G_1) Dead weight

Factor forces and moments	1.000
Factor dead weight DL-XX	0.000
Factor dead weight DL-YY	0.000
Factor dead weight DL-ZZ	-1.000
unfavourable safety factor	1.350
favourable safety factor	1.000
Combination coefficient $\psi-0$	1.000 (rare)
Combination coefficient $\psi-1'$	1.000 (non frequent)
Combination coefficient $\psi-1$	1.000 (frequent)
Combination coefficient $\psi-2$	1.000 (permanent)

Load Case 2 (G_2) Superimposed dead weight

Factor forces and moments	1.000
Factor dead weight DL-XX	0.000
Factor dead weight DL-YY	0.000
Factor dead weight DL-ZZ	0.000
unfavourable safety factor	1.350
favourable safety factor	1.000
Combination coefficient $\psi-0$	1.000 (rare)
Combination coefficient $\psi-1'$	1.000 (non frequent)
Combination coefficient $\psi-1$	1.000 (frequent)
Combination coefficient $\psi-2$	1.000 (permanent)

Load Case 3 (L_U) Pedestrians sp1

Factor forces and moments	1.000
Factor dead weight DL-XX	0.000
Factor dead weight DL-YY	0.000
Factor dead weight DL-ZZ	0.000
unfavourable safety factor	1.350
favourable safety factor	0.000
Combination coefficient $\psi-0$	0.400 (rare)
Combination coefficient $\psi-1'$	1.000 (non frequent)
Combination coefficient $\psi-1$	0.400 (frequent)
Combination coefficient $\psi-2$	0.000 (permanent)

Load Case 4 (L_U) Pedestrians sp2

Стоманен пешеходен мост в Кърджали
Generation of Node and Element Loads

Load Case 4 (L_U) Pedestrians sp2

Factor forces and moments	1.000
Factor dead weight DL-XX	0.000
Factor dead weight DL-YY	0.000
Factor dead weight DL-ZZ	0.000
unfavourable safety factor	1.350
favourable safety factor	0.000
Combination coefficient $\psi-0$	0.400 (rare)
Combination coefficient $\psi-1'$	1.000 (non frequent)
Combination coefficient $\psi-1$	0.400 (frequent)
Combination coefficient $\psi-2$	0.000 (permanent)

Load Case 5 (L_U) Pedestrians sp3

Factor forces and moments	1.000
Factor dead weight DL-XX	0.000
Factor dead weight DL-YY	0.000
Factor dead weight DL-ZZ	0.000
unfavourable safety factor	1.350
favourable safety factor	0.000
Combination coefficient $\psi-0$	0.400 (rare)
Combination coefficient $\psi-1'$	1.000 (non frequent)
Combination coefficient $\psi-1$	0.400 (frequent)
Combination coefficient $\psi-2$	0.000 (permanent)

Load Case 6 (L_U) Pedestrians sp4

Factor forces and moments	1.000
Factor dead weight DL-XX	0.000
Factor dead weight DL-YY	0.000
Factor dead weight DL-ZZ	0.000
unfavourable safety factor	1.350
favourable safety factor	0.000
Combination coefficient $\psi-0$	0.400 (rare)
Combination coefficient $\psi-1'$	1.000 (non frequent)
Combination coefficient $\psi-1$	0.400 (frequent)
Combination coefficient $\psi-2$	0.000 (permanent)

Load Case 7 (L_U) Pedestrians sp5

Factor forces and moments	1.000
Factor dead weight DL-XX	0.000
Factor dead weight DL-YY	0.000
Factor dead weight DL-ZZ	0.000
unfavourable safety factor	1.350
favourable safety factor	0.000
Combination coefficient $\psi-0$	0.400 (rare)
Combination coefficient $\psi-1'$	1.000 (non frequent)
Combination coefficient $\psi-1$	0.400 (frequent)
Combination coefficient $\psi-2$	0.000 (permanent)

Load Case 8 (P) Prestress

Factor forces and moments	1.000
Factor dead weight DL-XX	0.000
Factor dead weight DL-YY	0.000
Factor dead weight DL-ZZ	0.000
unfavourable safety factor	1.000
favourable safety factor	1.000
Combination coefficient $\psi-0$	1.000 (rare)
Combination coefficient $\psi-1'$	1.000 (non frequent)
Combination coefficient $\psi-1$	1.000 (frequent)
Combination coefficient $\psi-2$	1.000 (permanent)

Стоманен пешеходен мост в Кърджали
Generation of Node and Element Loads

Load Case 9 Qflk

Factor forces and moments	1.000
Factor dead weight DL-XX	0.000
Factor dead weight DL-YY	0.000
Factor dead weight DL-ZZ	0.000
unfavourable safety factor	1.500
favourable safety factor	1.000
accidental safety factor	0.998
Combination coefficient $\psi-0$	1.000 (rare)
Combination coefficient $\psi-1'$	1.000 (non frequent)
Combination coefficient $\psi-1$	1.000 (frequent)
Combination coefficient $\psi-2$	1.000 (permanent)

Load Case 10 (T) Positive uniform T

Factor forces and moments	1.000
Factor dead weight DL-XX	0.000
Factor dead weight DL-YY	0.000
Factor dead weight DL-ZZ	0.000
unfavourable safety factor	1.500
favourable safety factor	0.000
Combination coefficient $\psi-0$	0.000 (rare)
Combination coefficient $\psi-1'$	1.000 (non frequent)
Combination coefficient $\psi-1$	0.600 (frequent)
Combination coefficient $\psi-2$	0.500 (permanent)

Load Case 11 (T) Negative uniform T

Factor forces and moments	1.000
Factor dead weight DL-XX	0.000
Factor dead weight DL-YY	0.000
Factor dead weight DL-ZZ	0.000
unfavourable safety factor	1.500
favourable safety factor	0.000
Combination coefficient $\psi-0$	0.000 (rare)
Combination coefficient $\psi-1'$	1.000 (non frequent)
Combination coefficient $\psi-1$	0.600 (frequent)
Combination coefficient $\psi-2$	0.500 (permanent)

Load Case 12 (T) Positive linear T

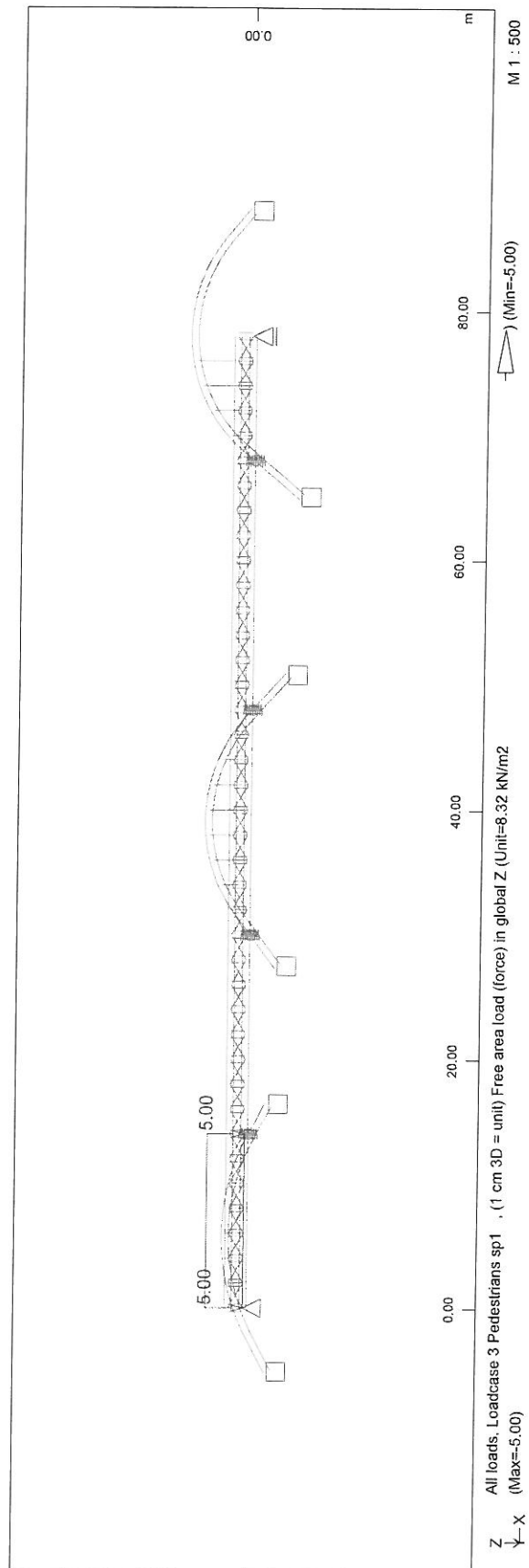
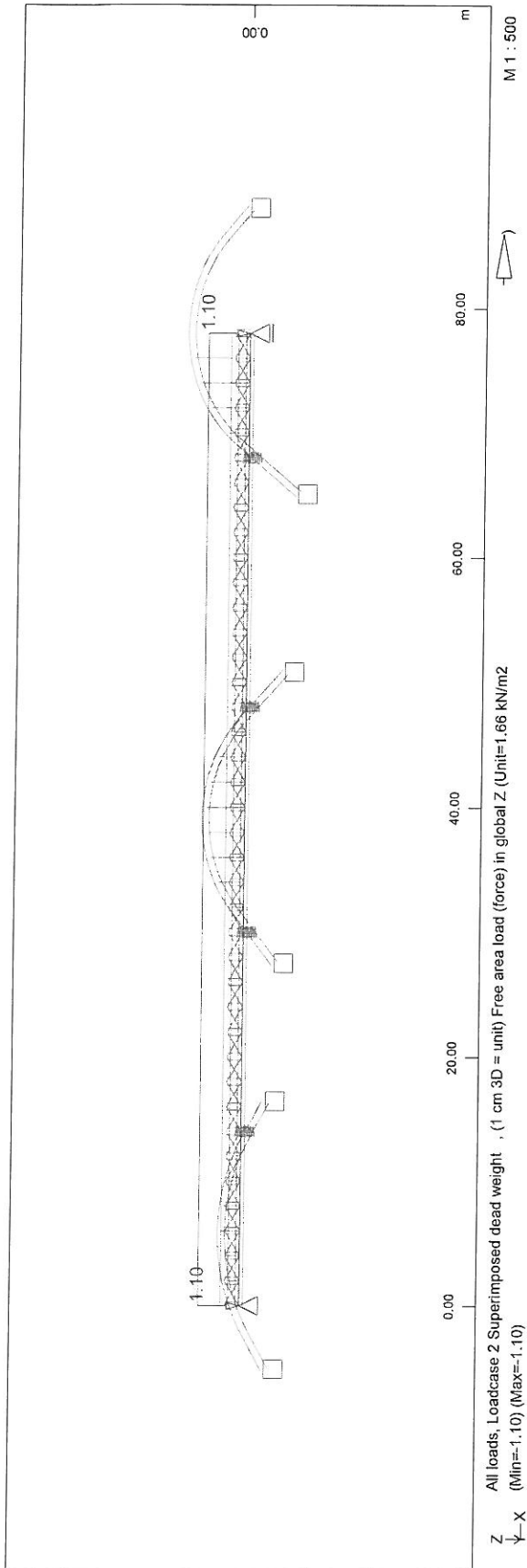
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Factor dead weight DL-XX	0.000
Factor dead weight DL-YY	0.000
Factor dead weight DL-ZZ	0.000
unfavourable safety factor	1.500
favourable safety factor	0.000
Combination coefficient $\psi-0$	0.000 (rare)
Combination coefficient $\psi-1'$	1.000 (non frequent)
Combination coefficient $\psi-1$	0.600 (frequent)
Combination coefficient $\psi-2$	0.500 (permanent)

Load Case 13 (T) Negative linear T

Factor forces and moments	1.000
Factor dead weight DL-XX	0.000
Factor dead weight DL-YY	0.000
Factor dead weight DL-ZZ	0.000
unfavourable safety factor	1.500
favourable safety factor	0.000
Combination coefficient $\psi-0$	0.000 (rare)
Combination coefficient $\psi-1'$	1.000 (non frequent)
Combination coefficient $\psi-1$	0.600 (frequent)
Combination coefficient $\psi-2$	0.500 (permanent)

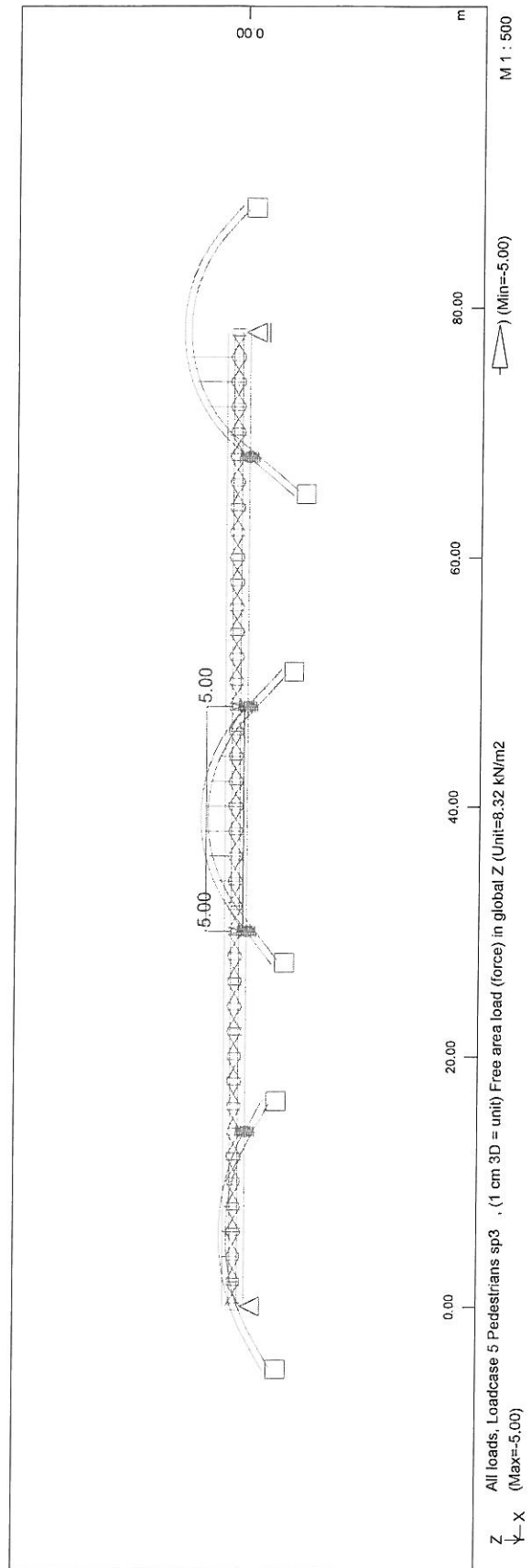
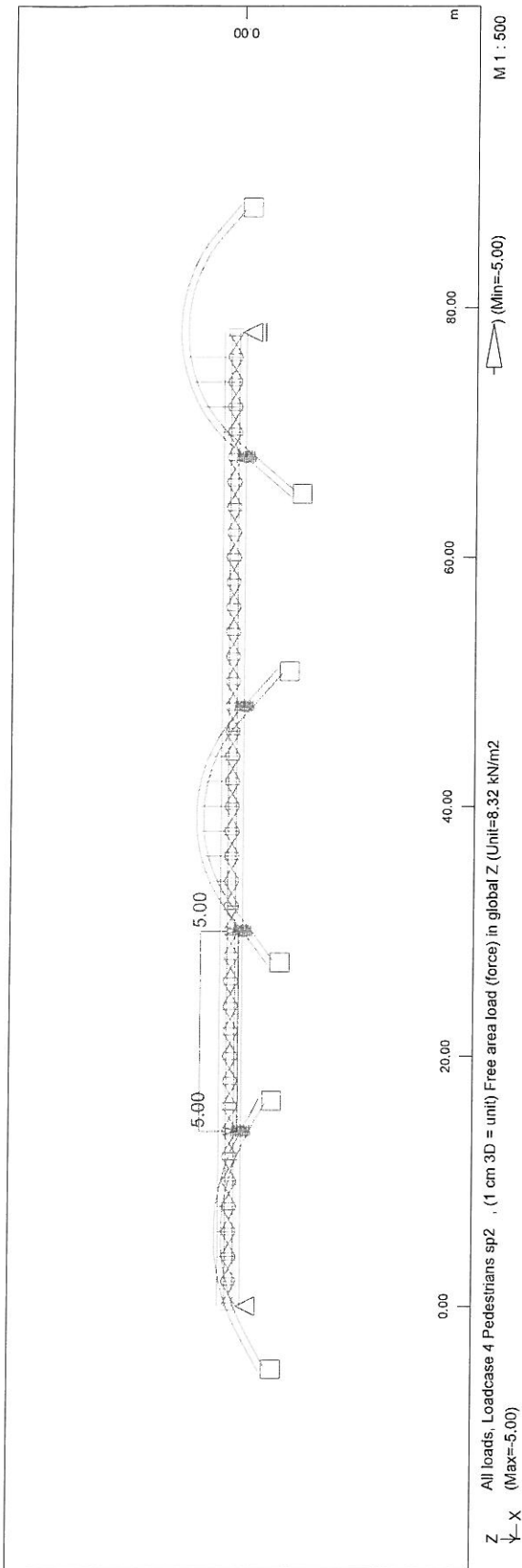
Стоманен пешеходен мост в Кърджали
 Натоварване

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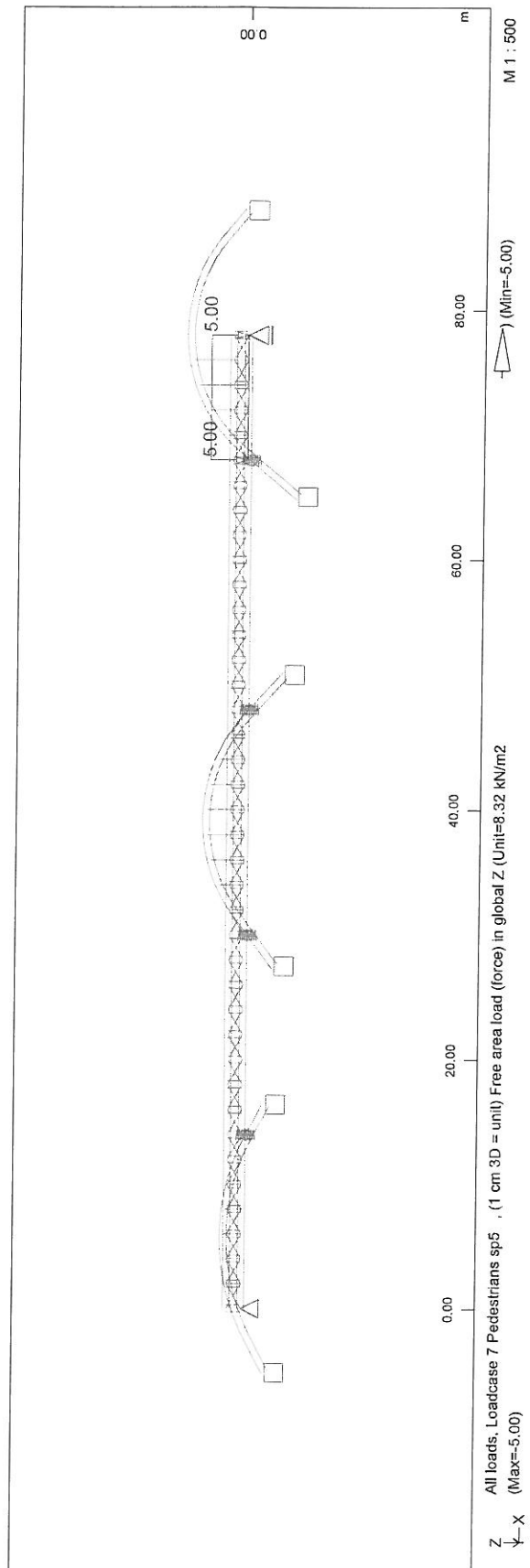
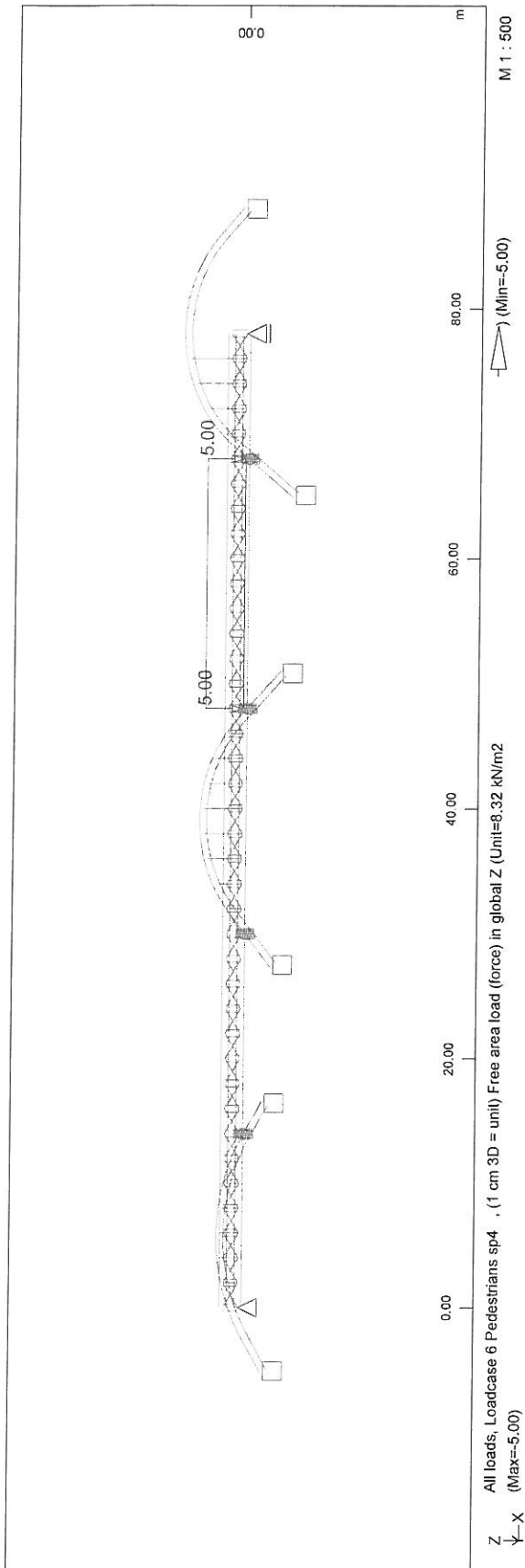
Стоманен пешеходен мост в Кърджали
 Натоварване

SOFiSTiK AG - www.sofistik.de



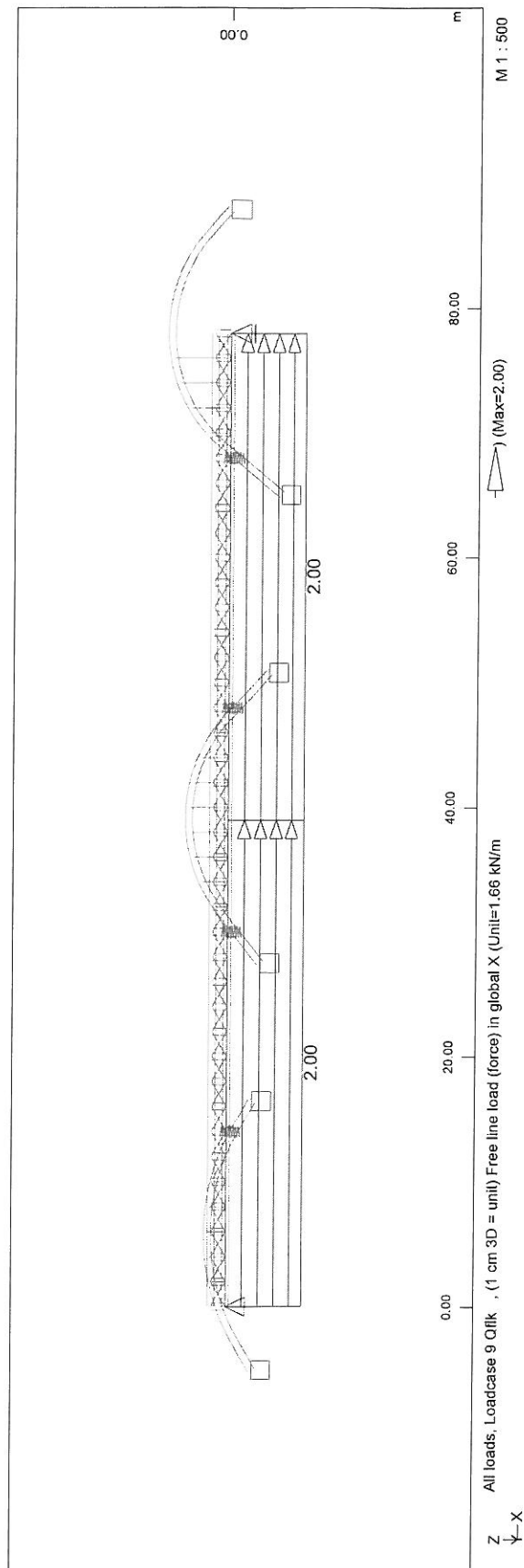
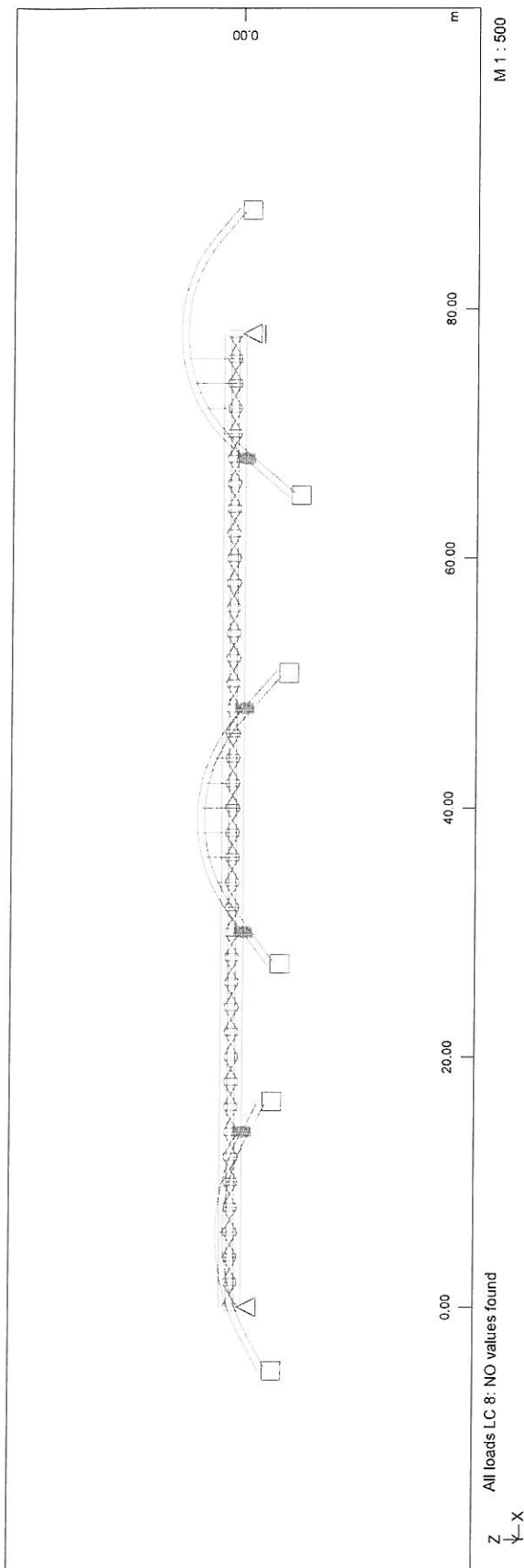
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 Натоварване

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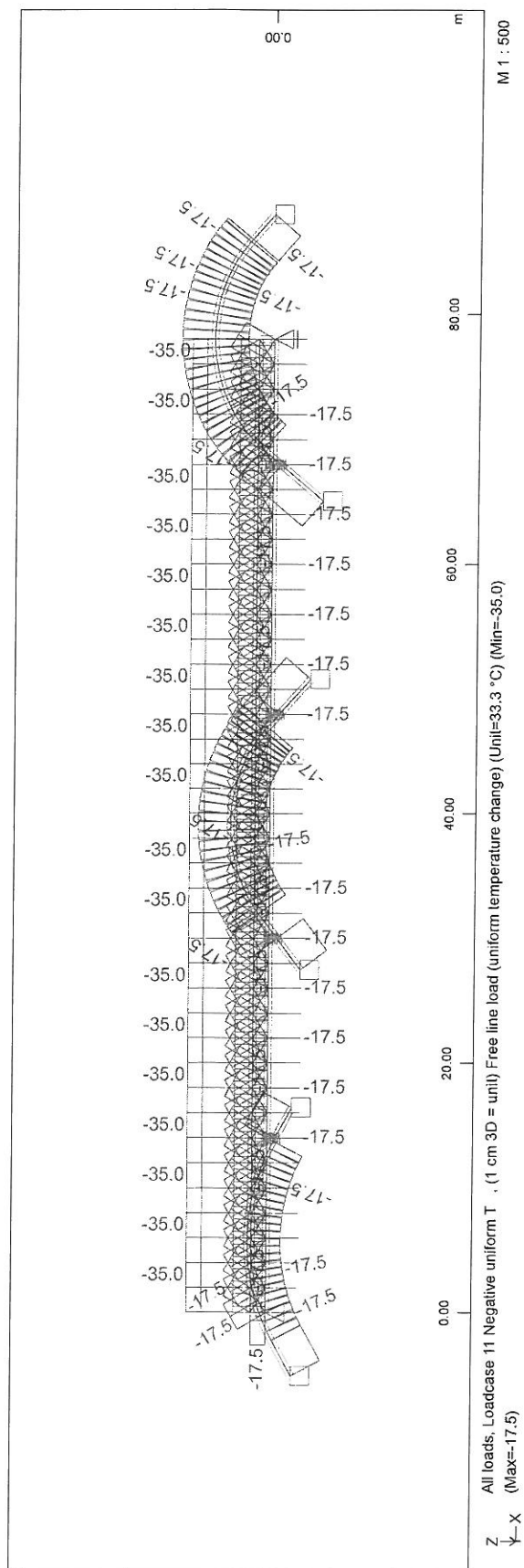


Стоманен пешеходен мост в Кърджали
 Натоварване

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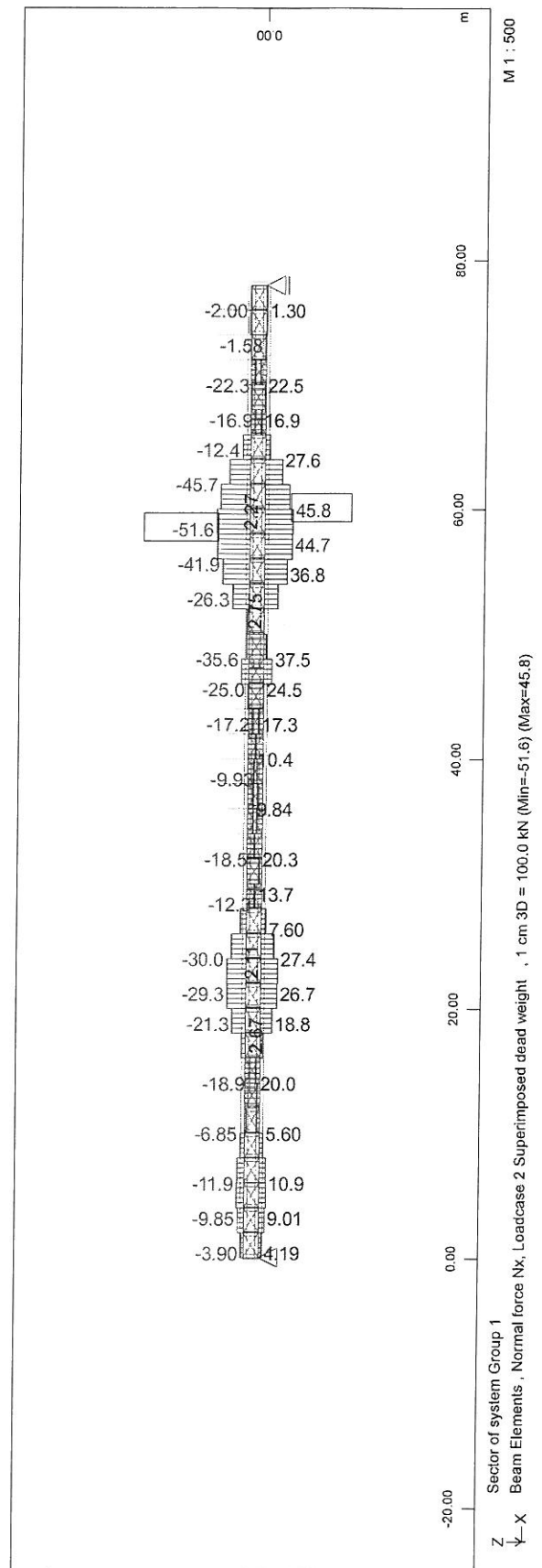
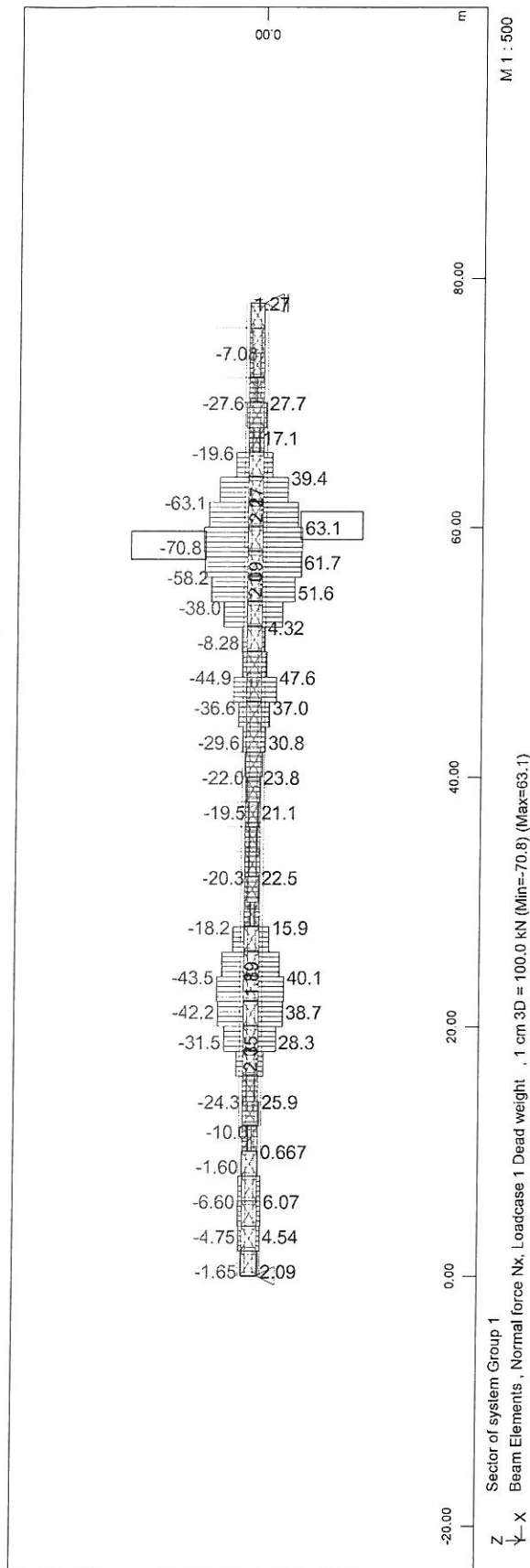


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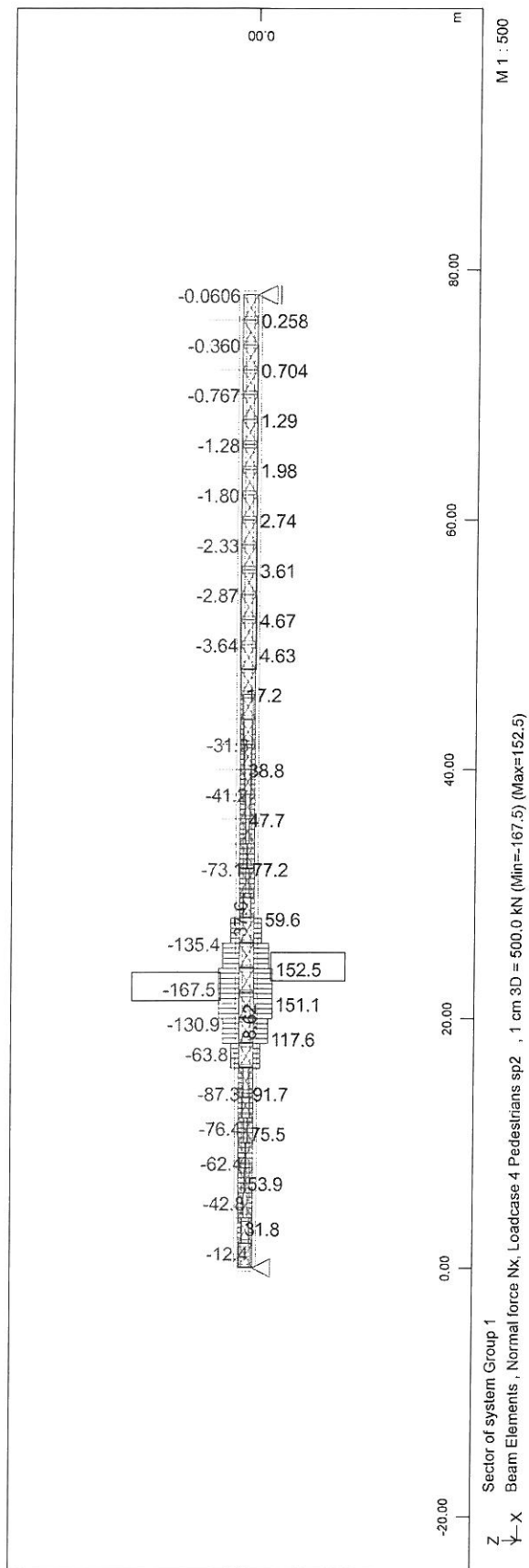
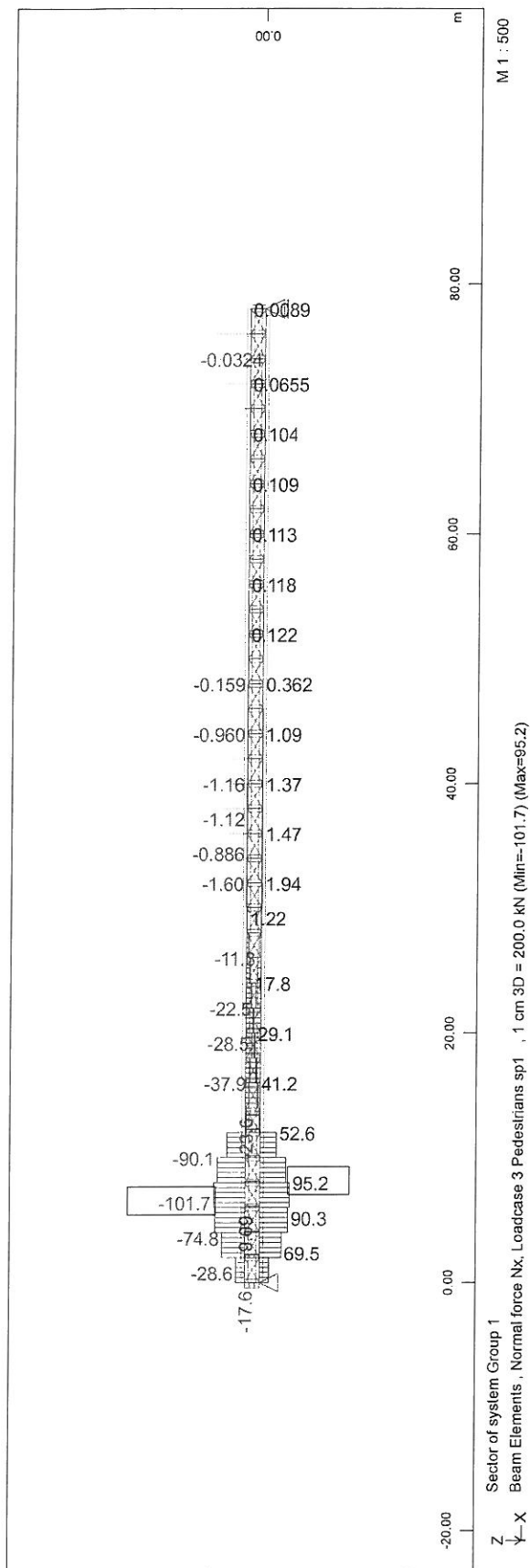
Стоманен пешеходен мост в Кърджали
 Нормални усилия в поясите на фермата

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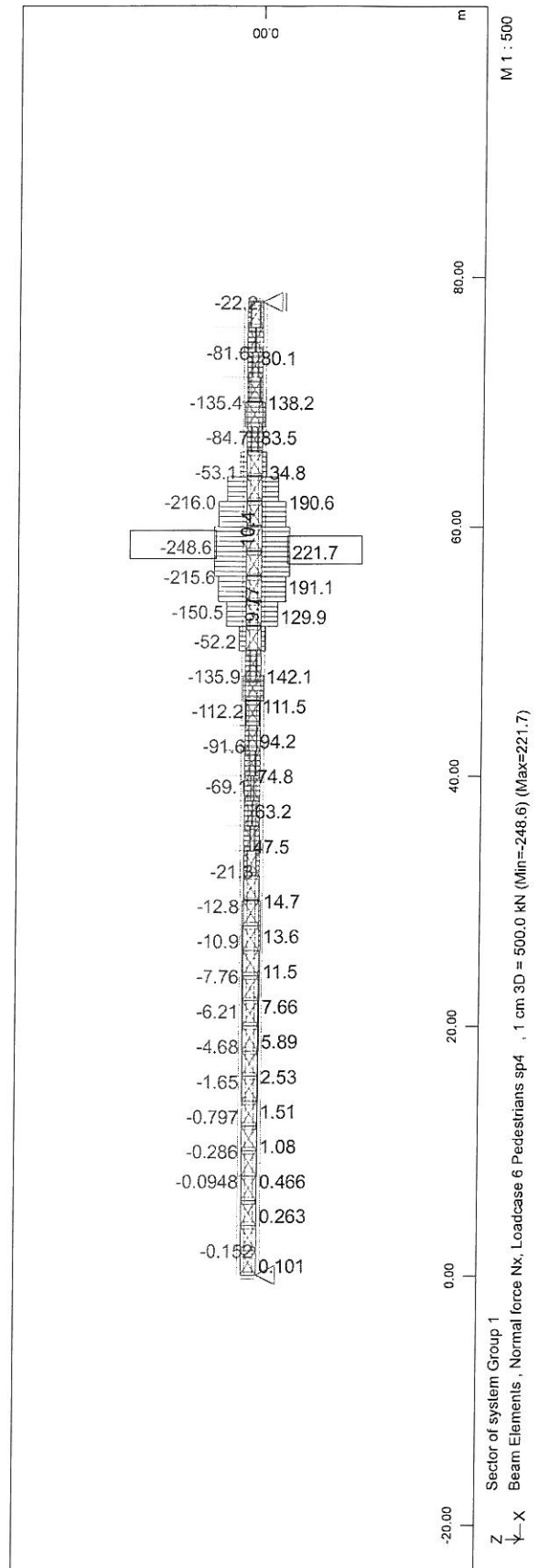
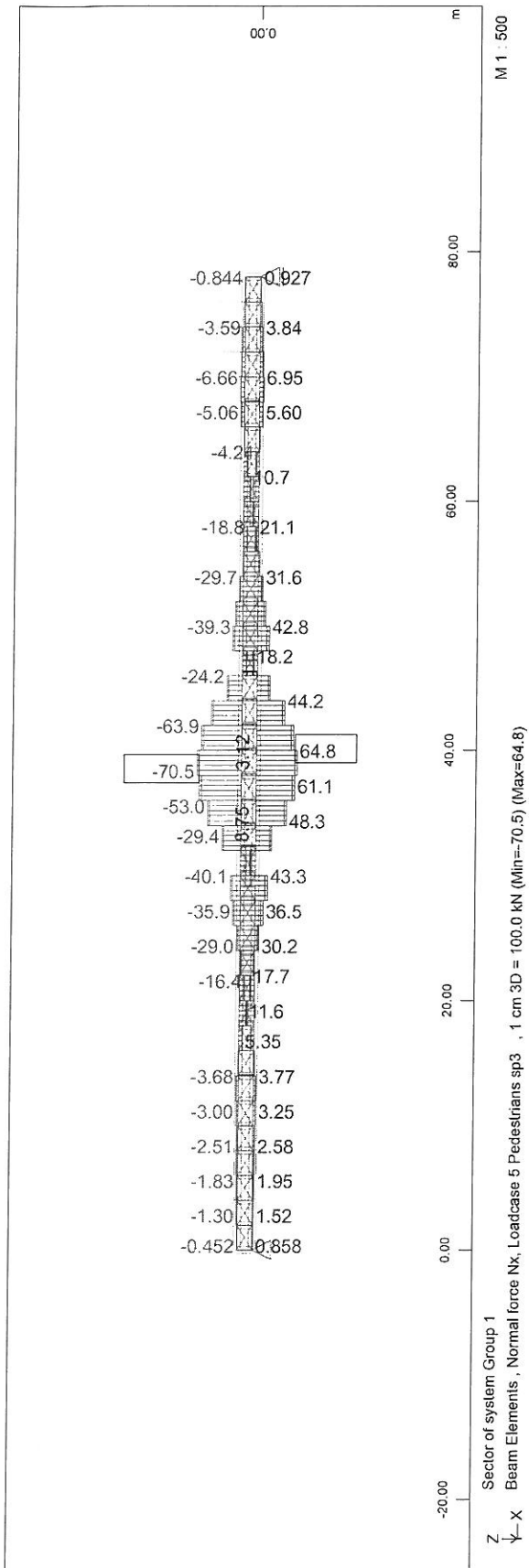
Стоманен пешеходен мост в Кърджали
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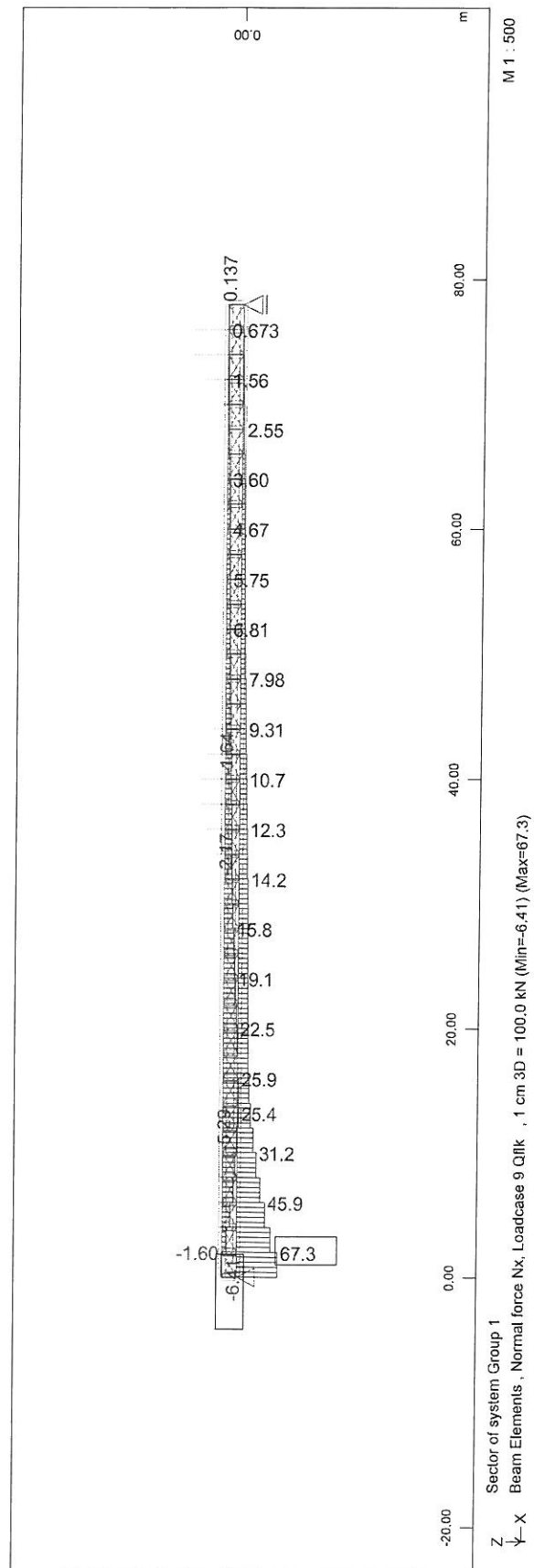
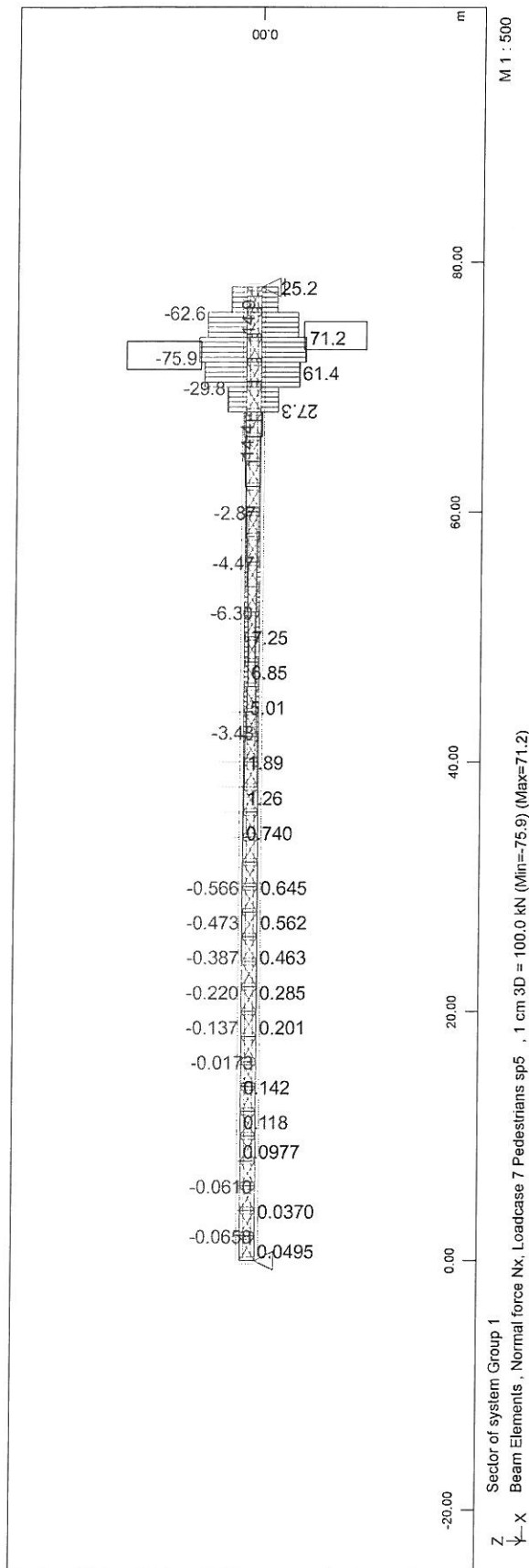
Стоманен пешеходен мост в Кърджали
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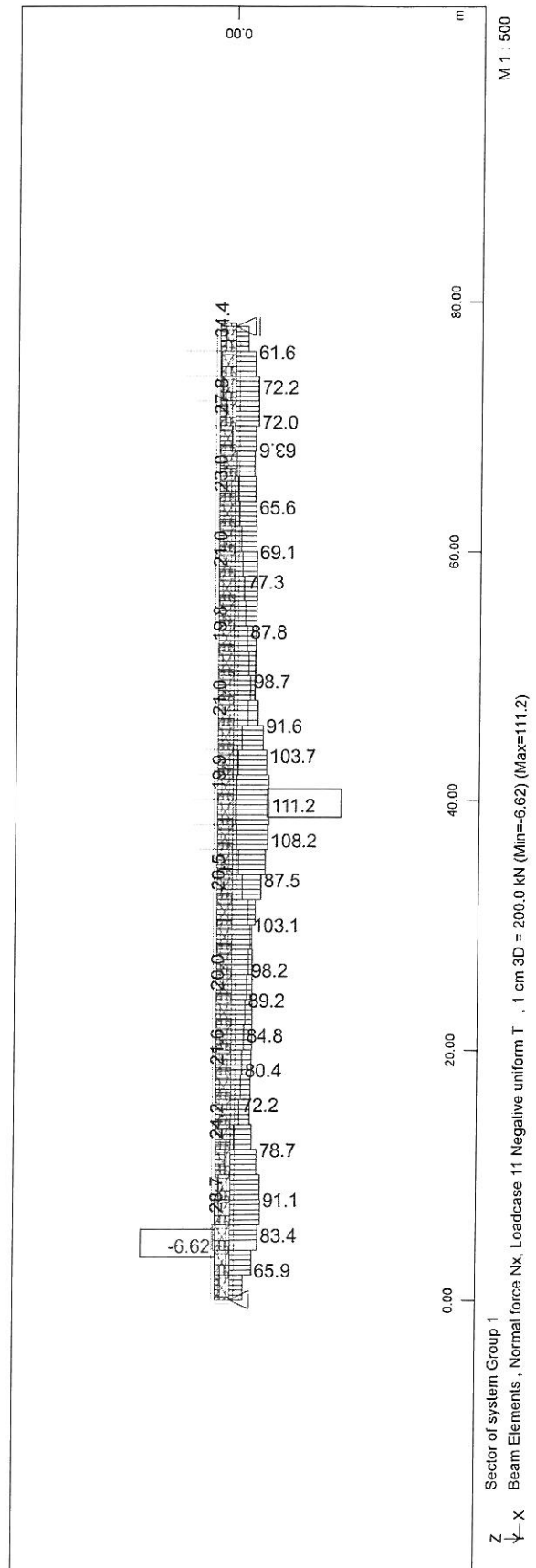
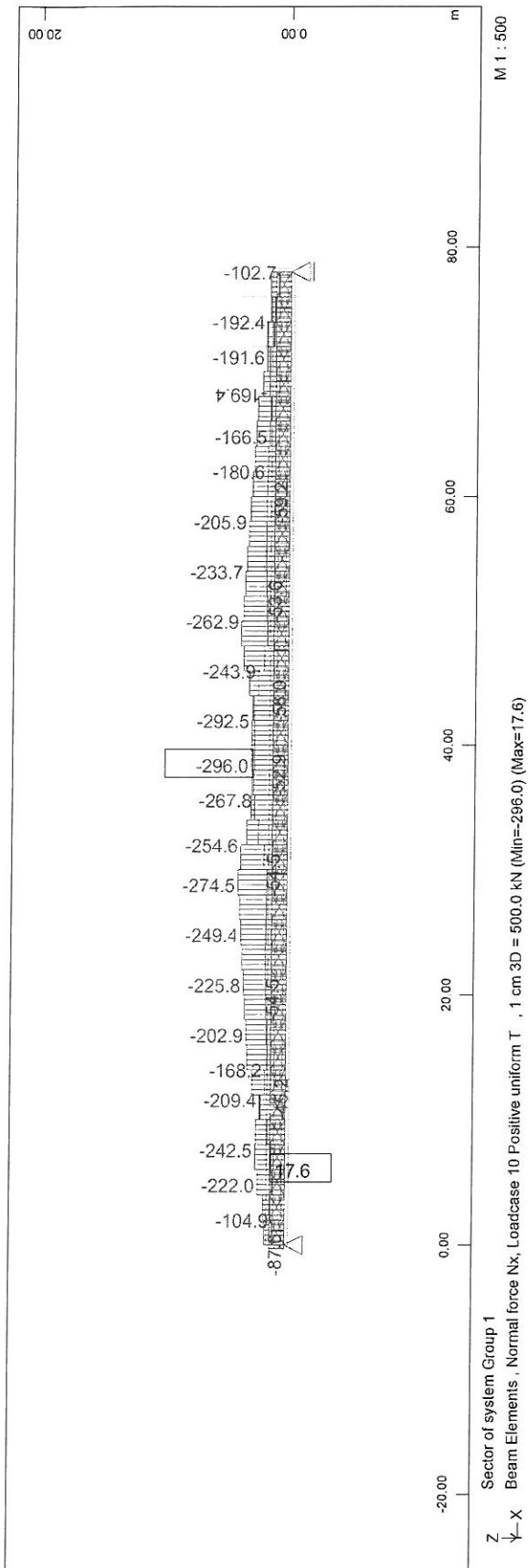
Стоманен пешеходен мост в Кърджали
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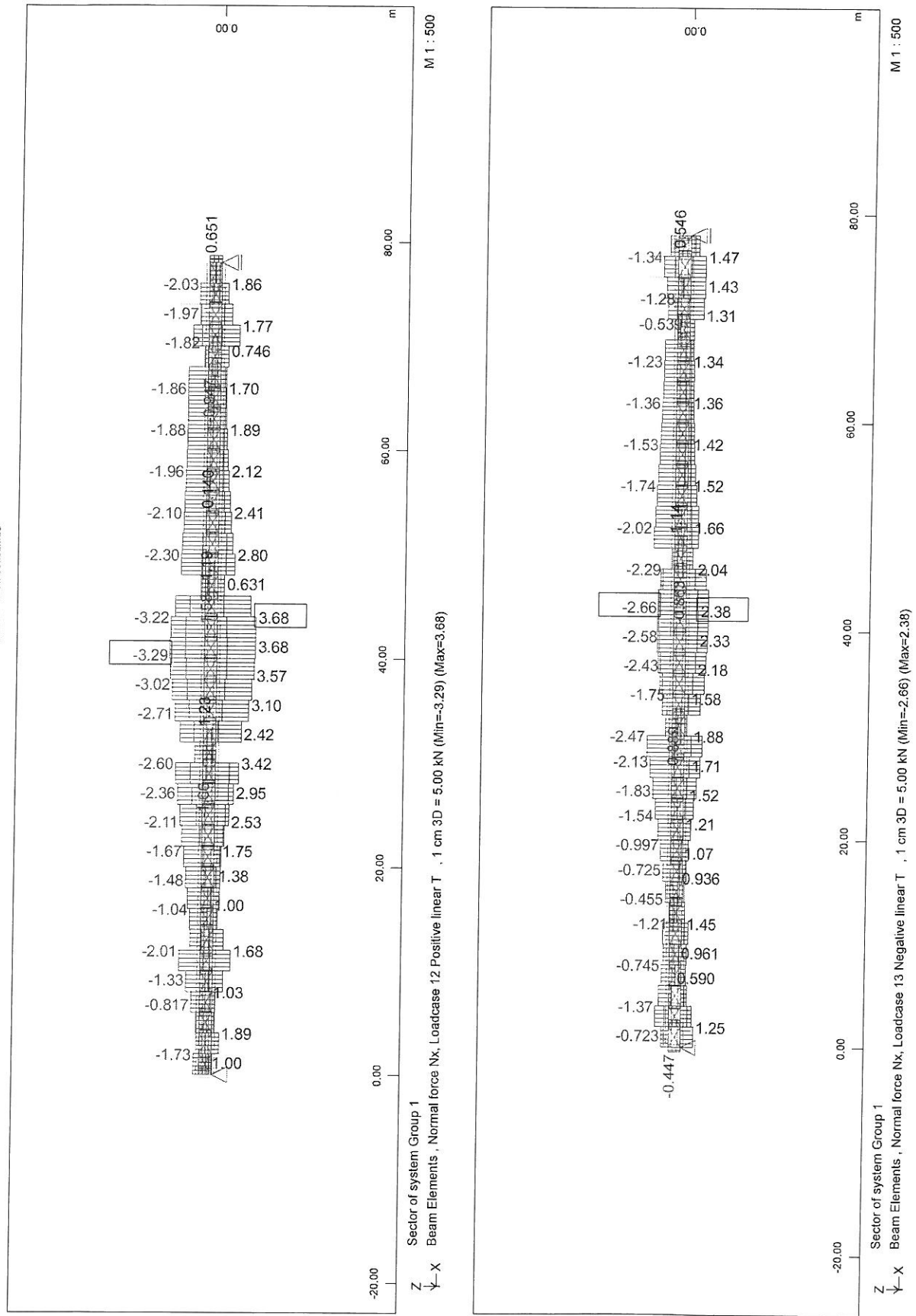
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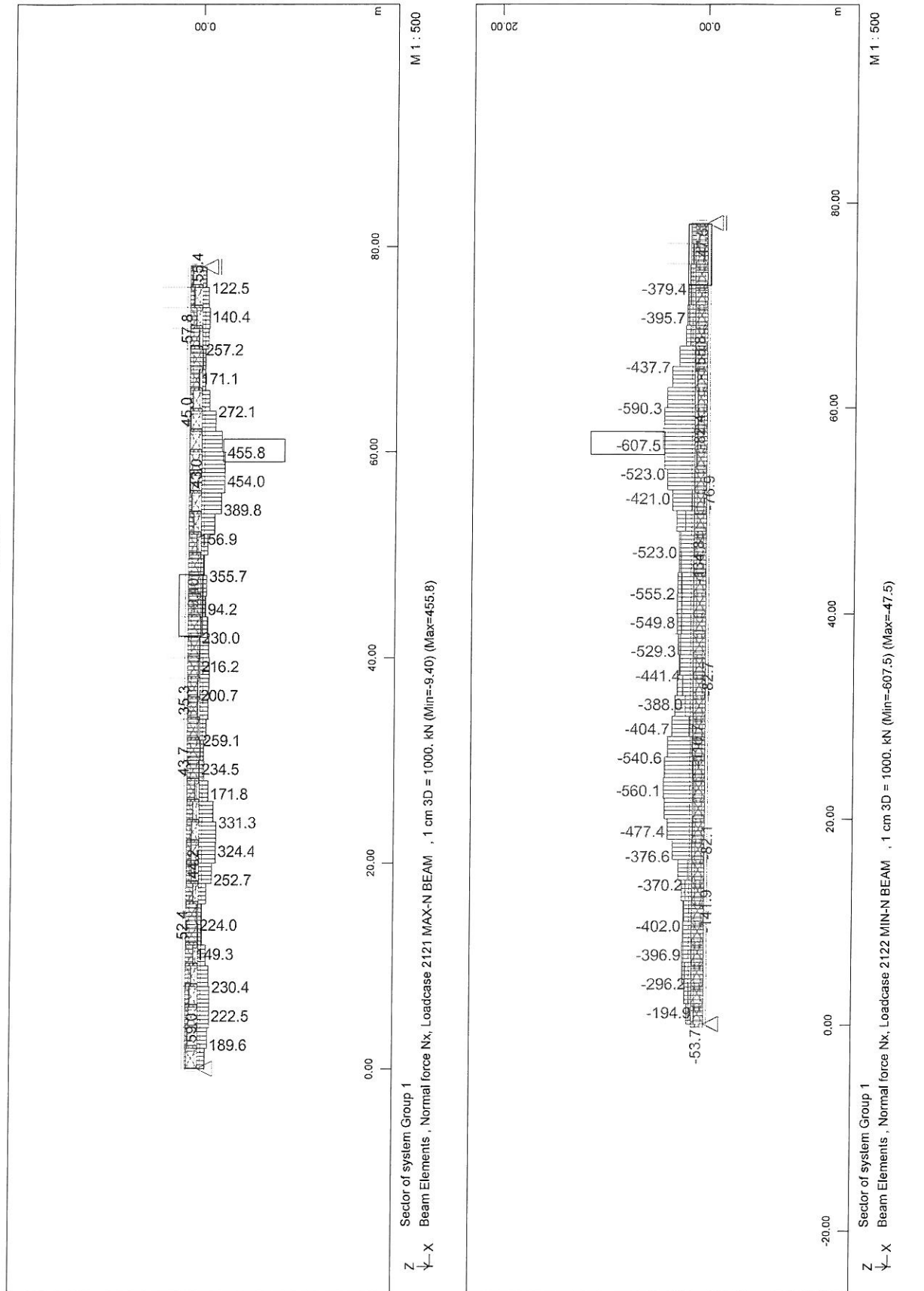
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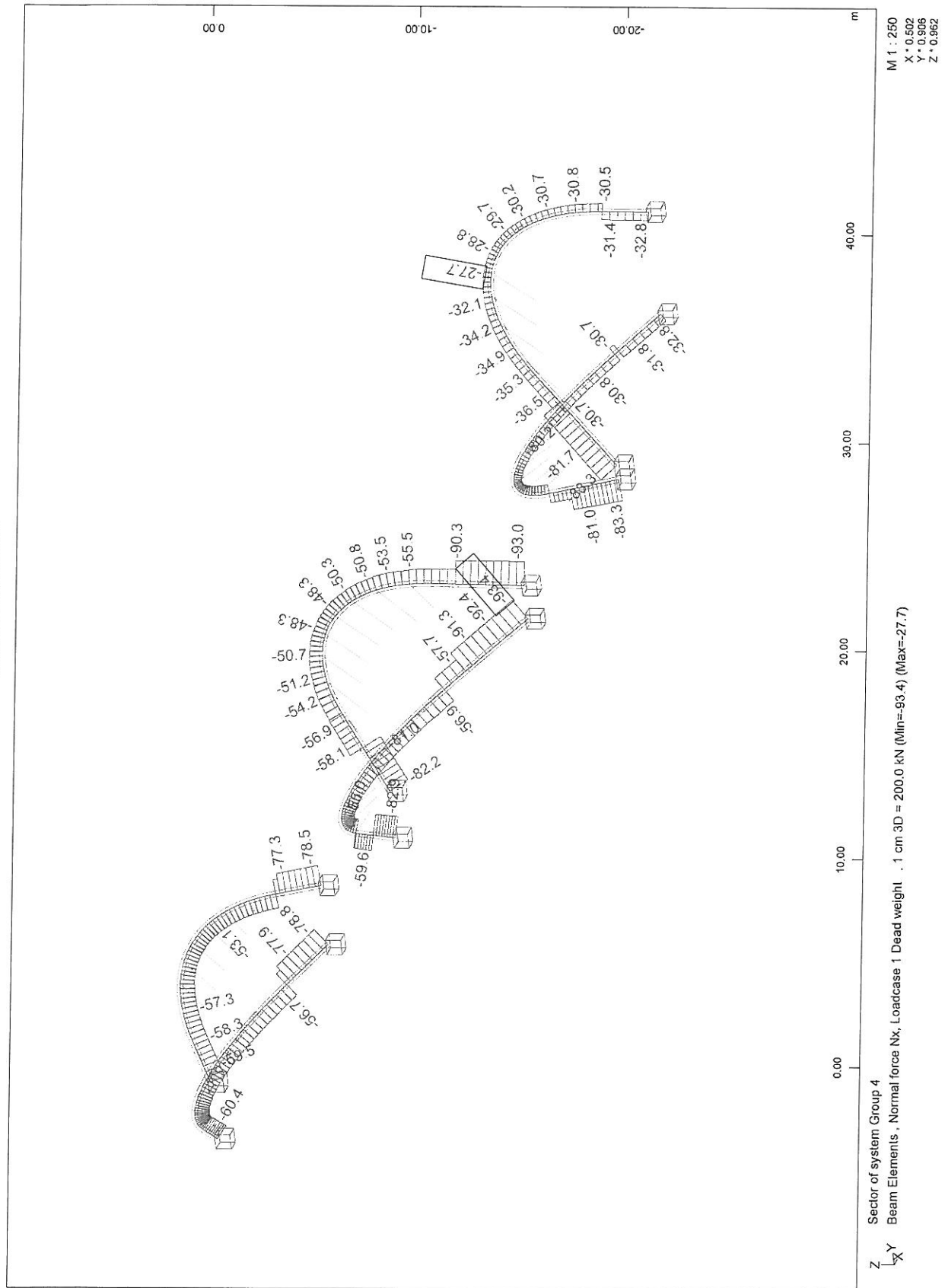
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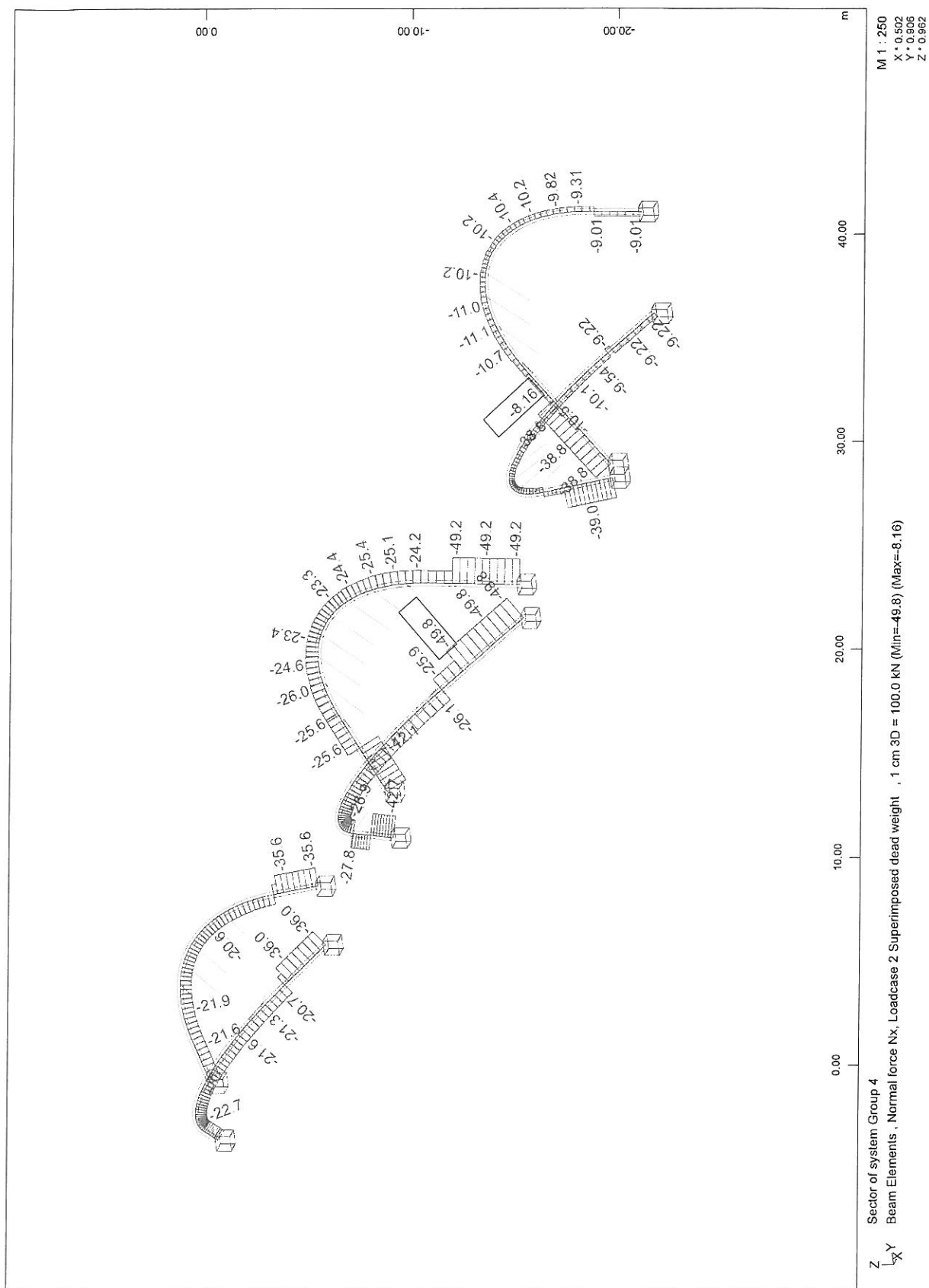


Стоманен пешеходен мост в Кърджали
 Нормални усилия в дъгите

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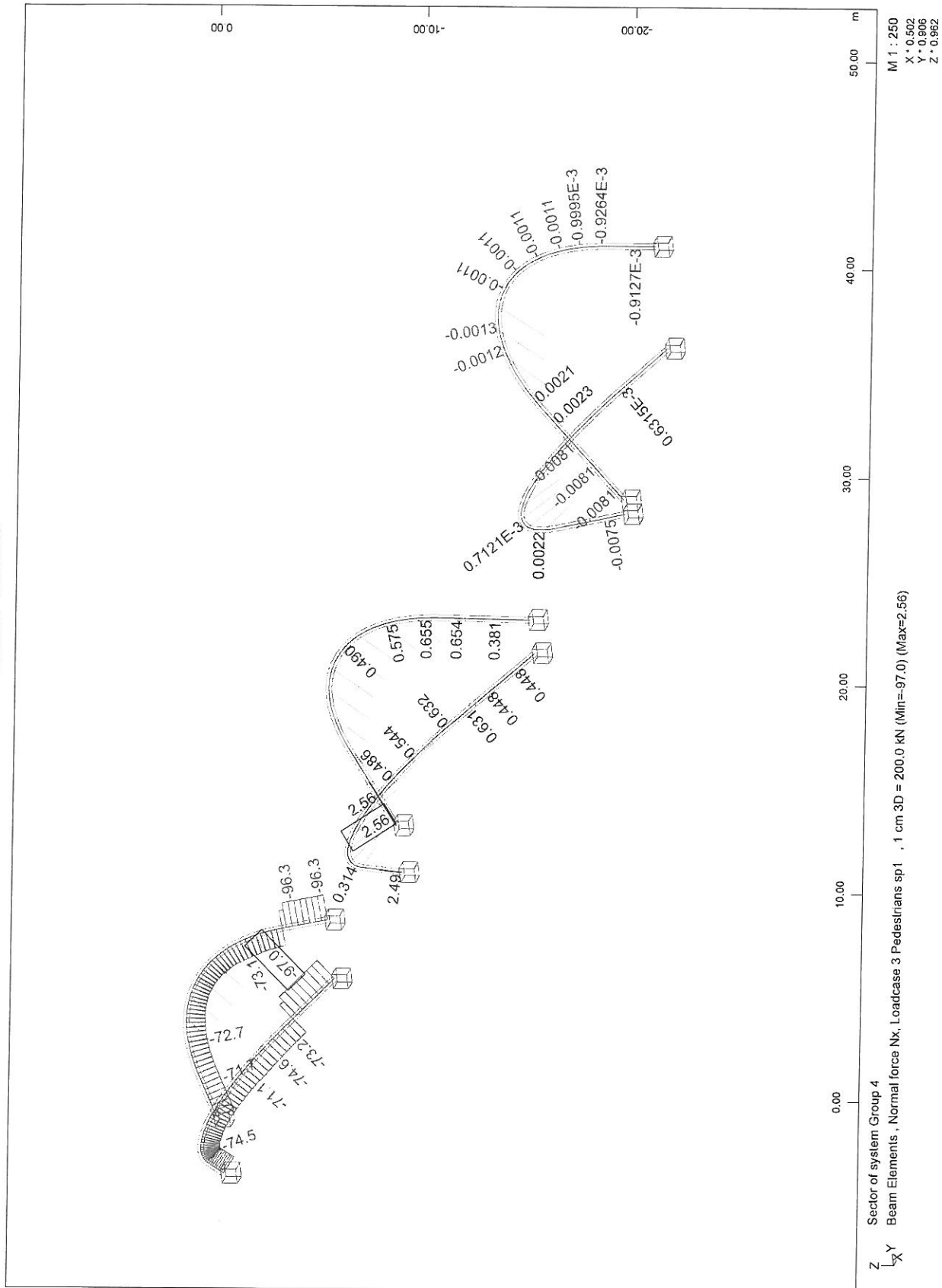


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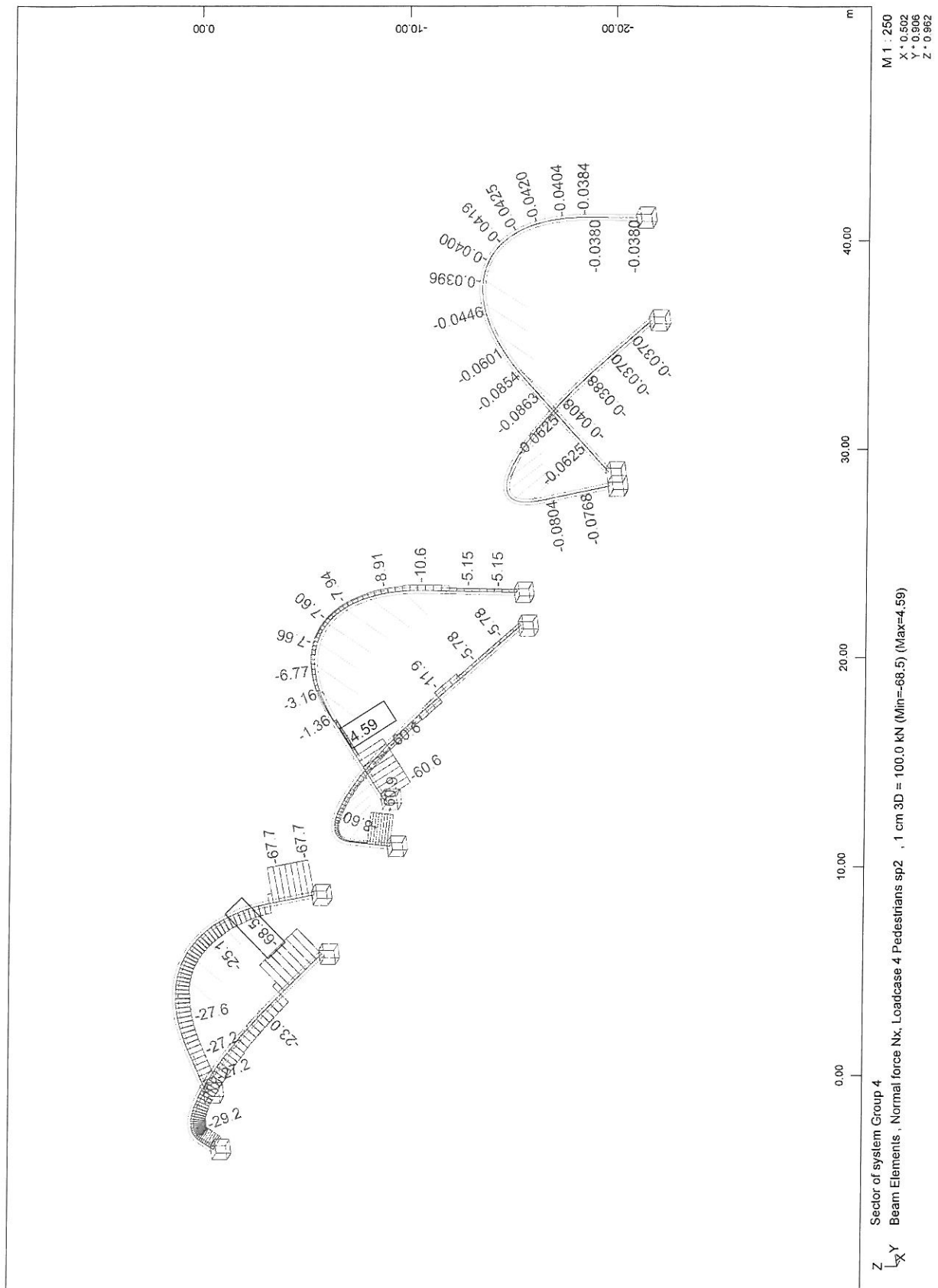
Стоманен пешеходен мост в Кърджали
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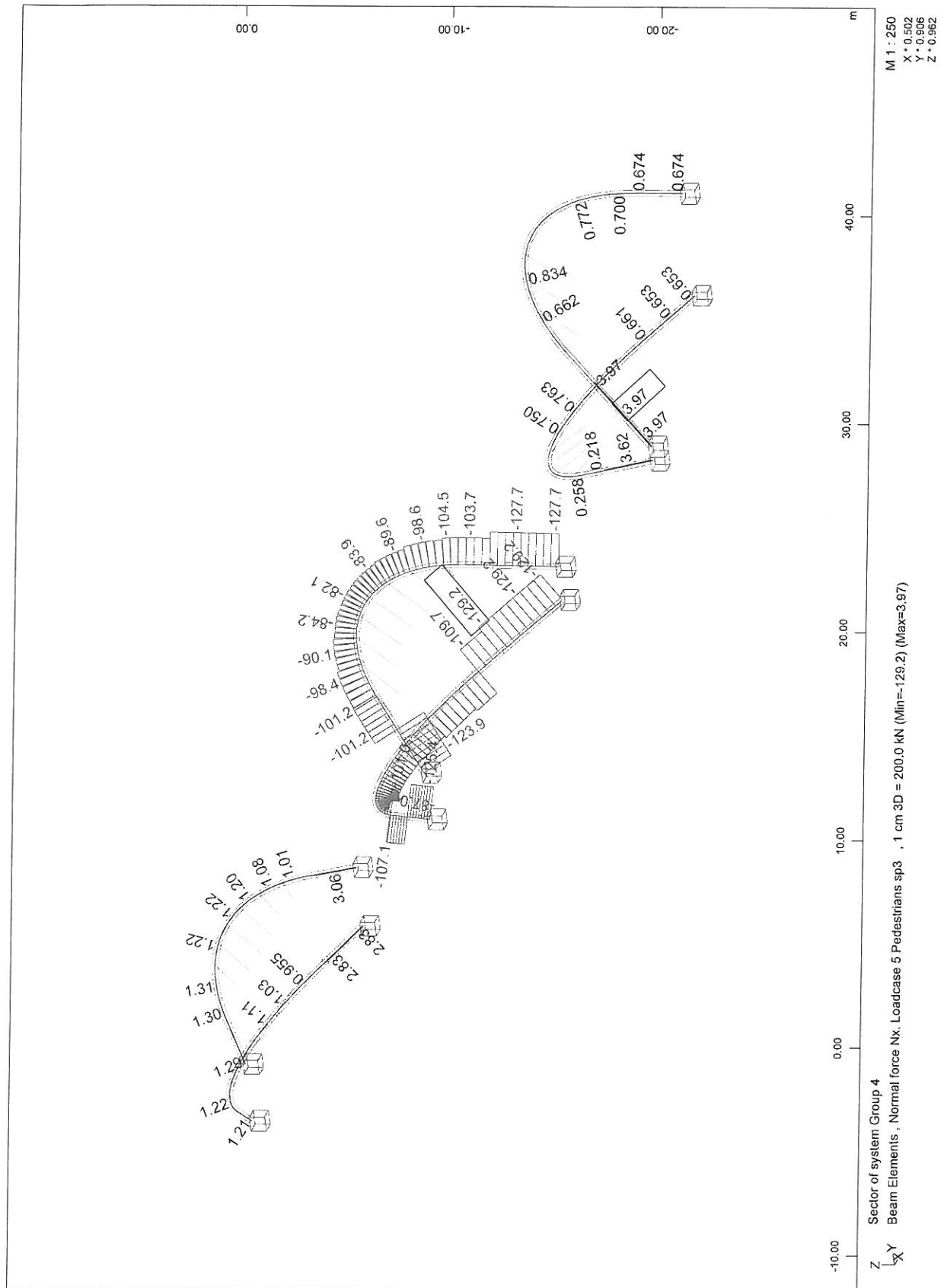
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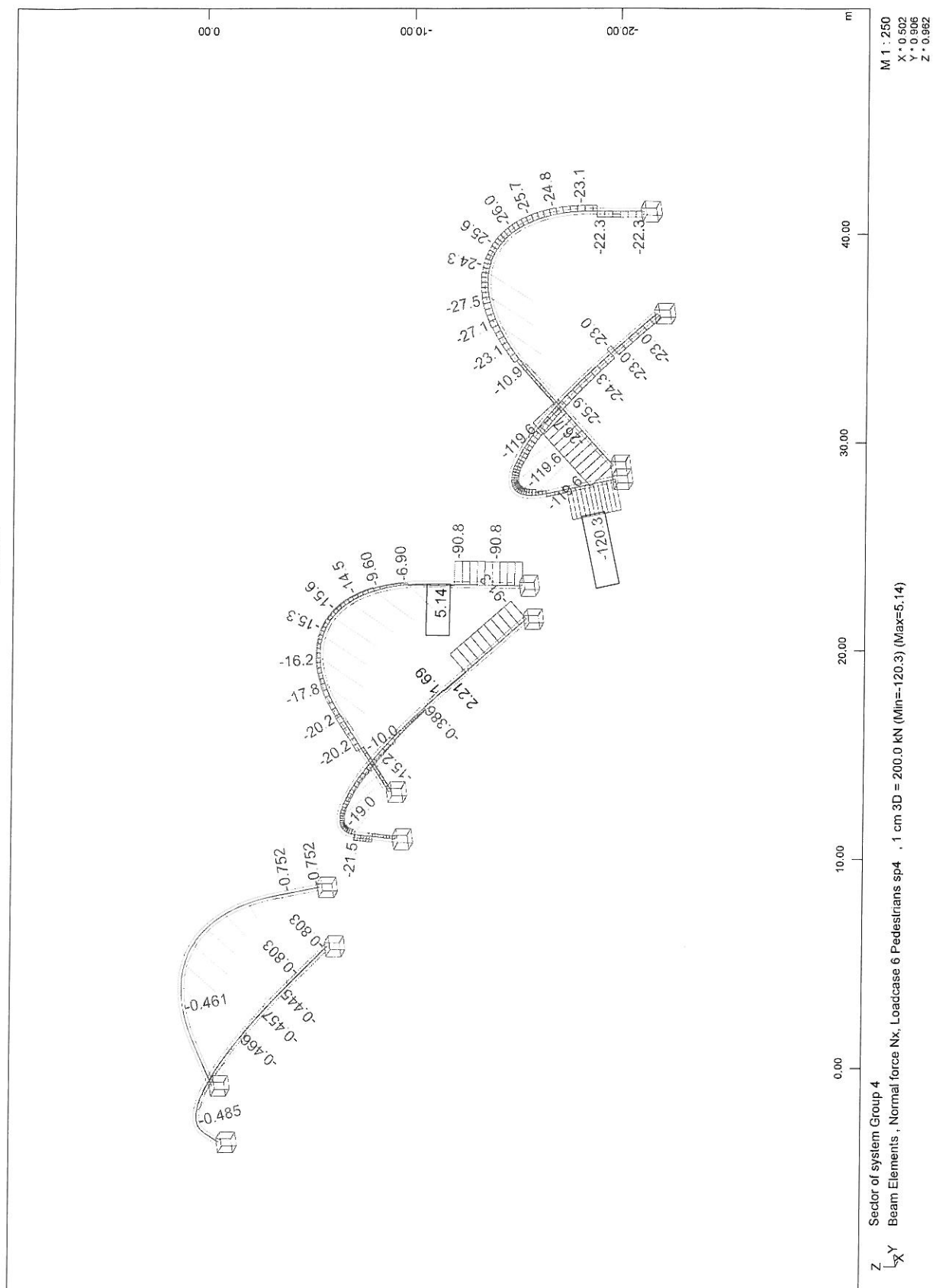


Стоманен пешеходен мост в Кърджали
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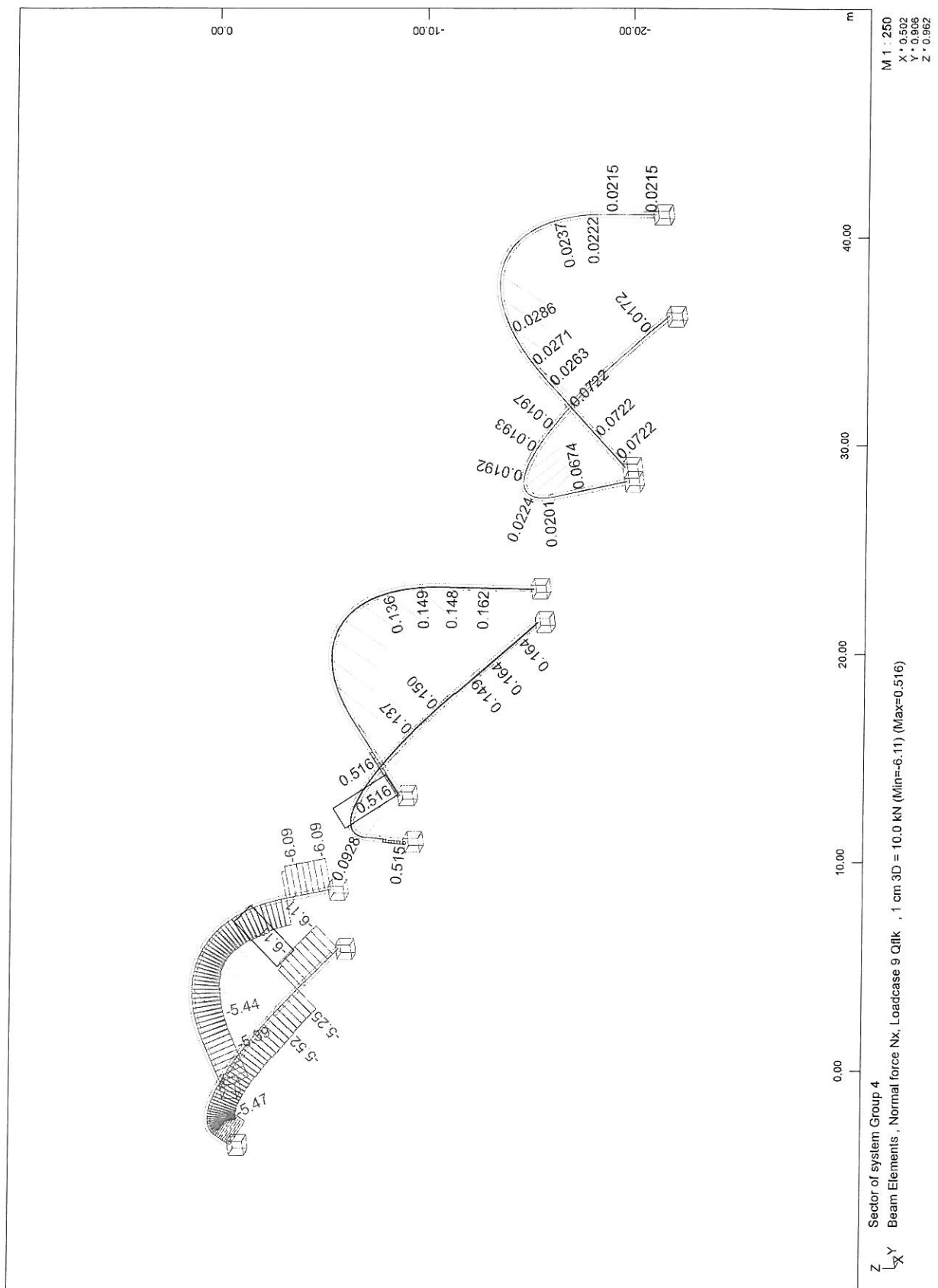
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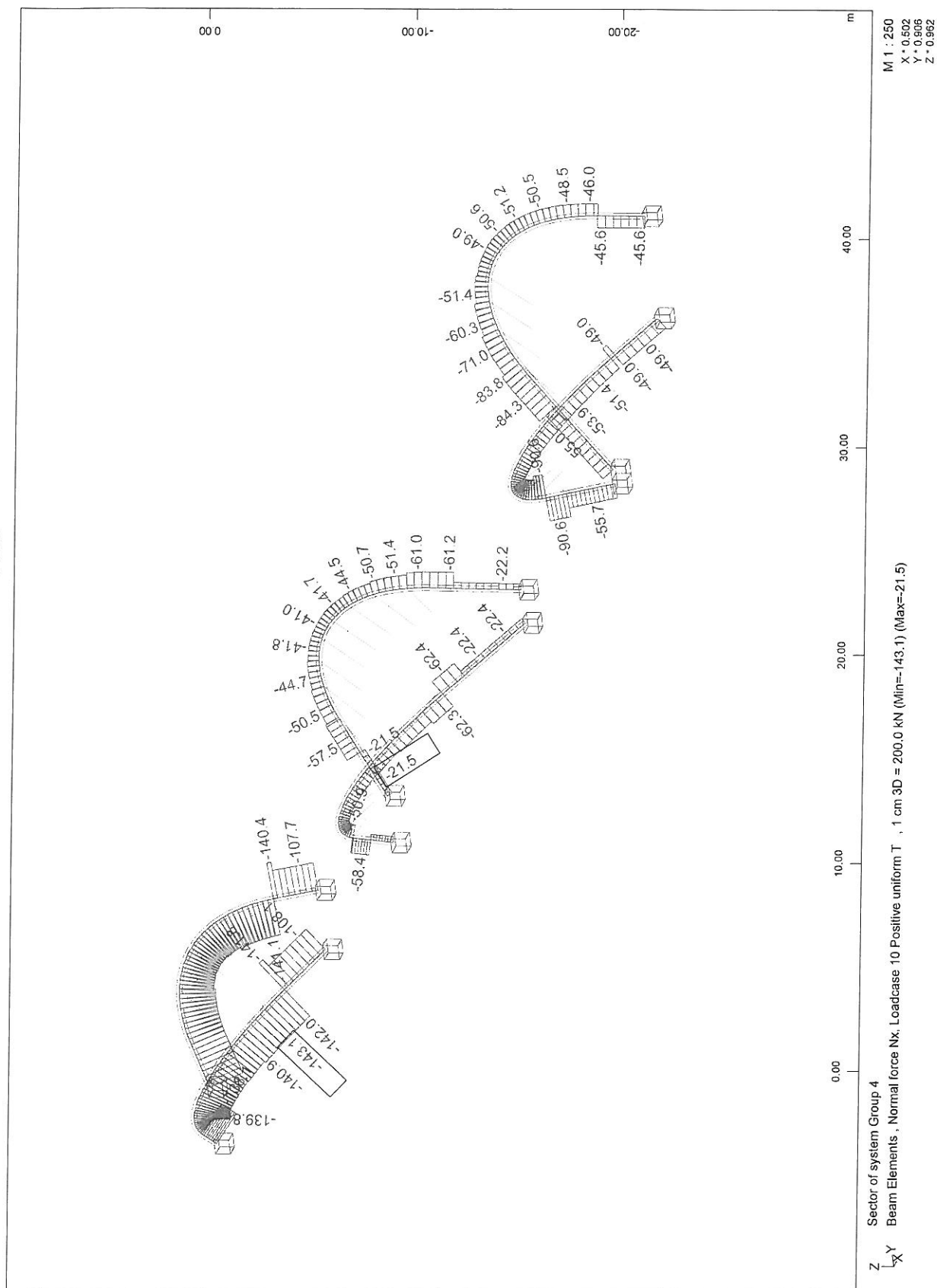
Нормални усилия в дъгите



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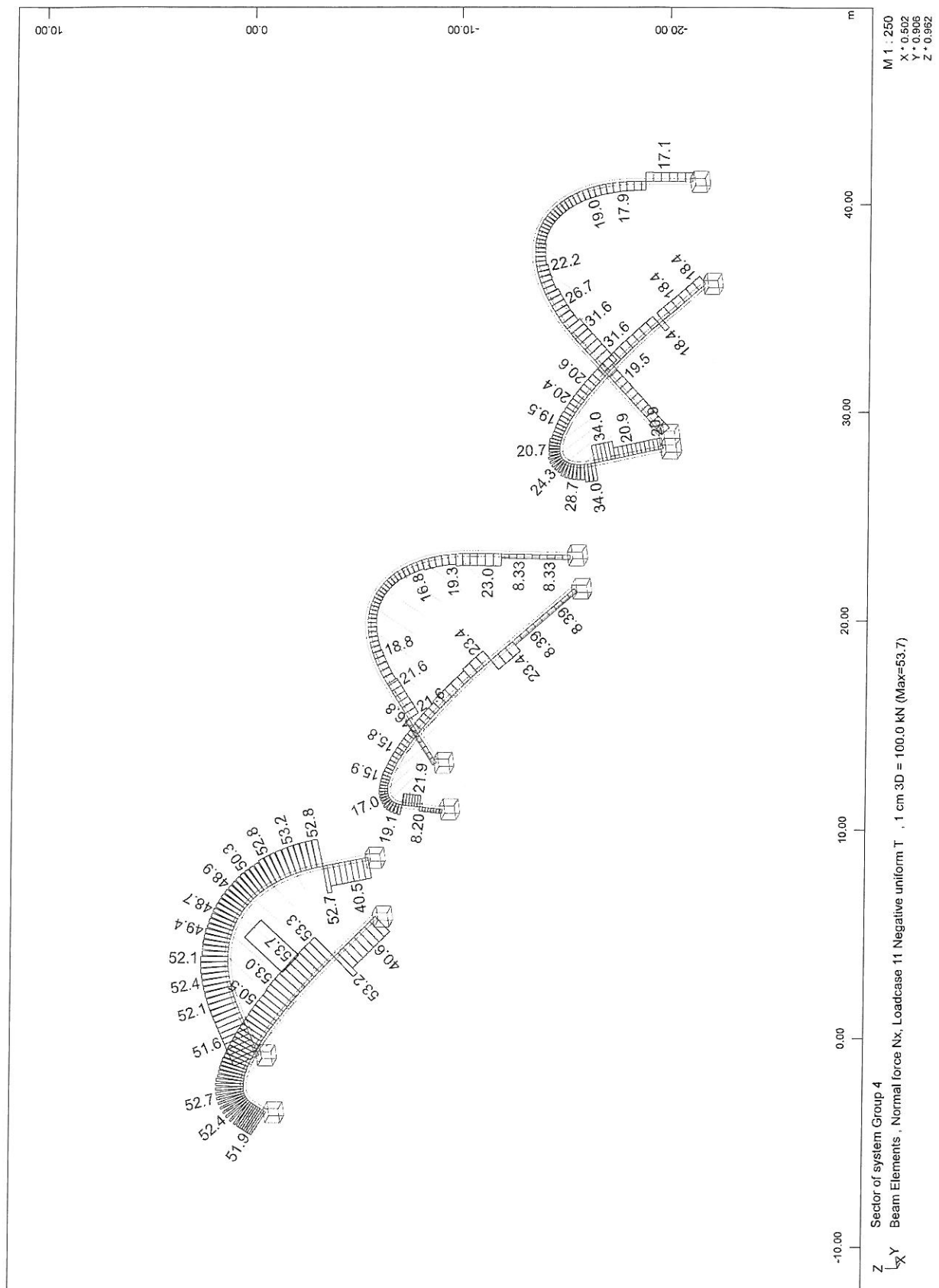


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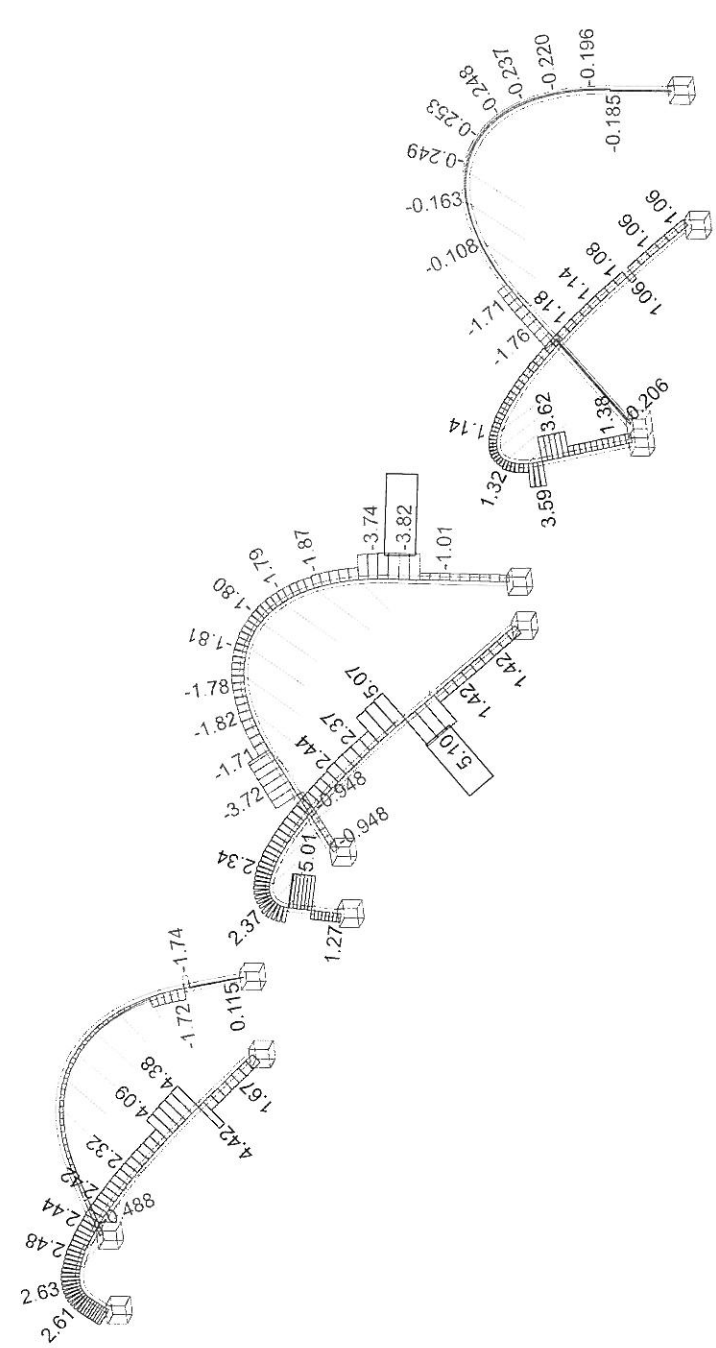


Стоманен пешеходен мост в Кърджали
 Нормални усилия в дъгите

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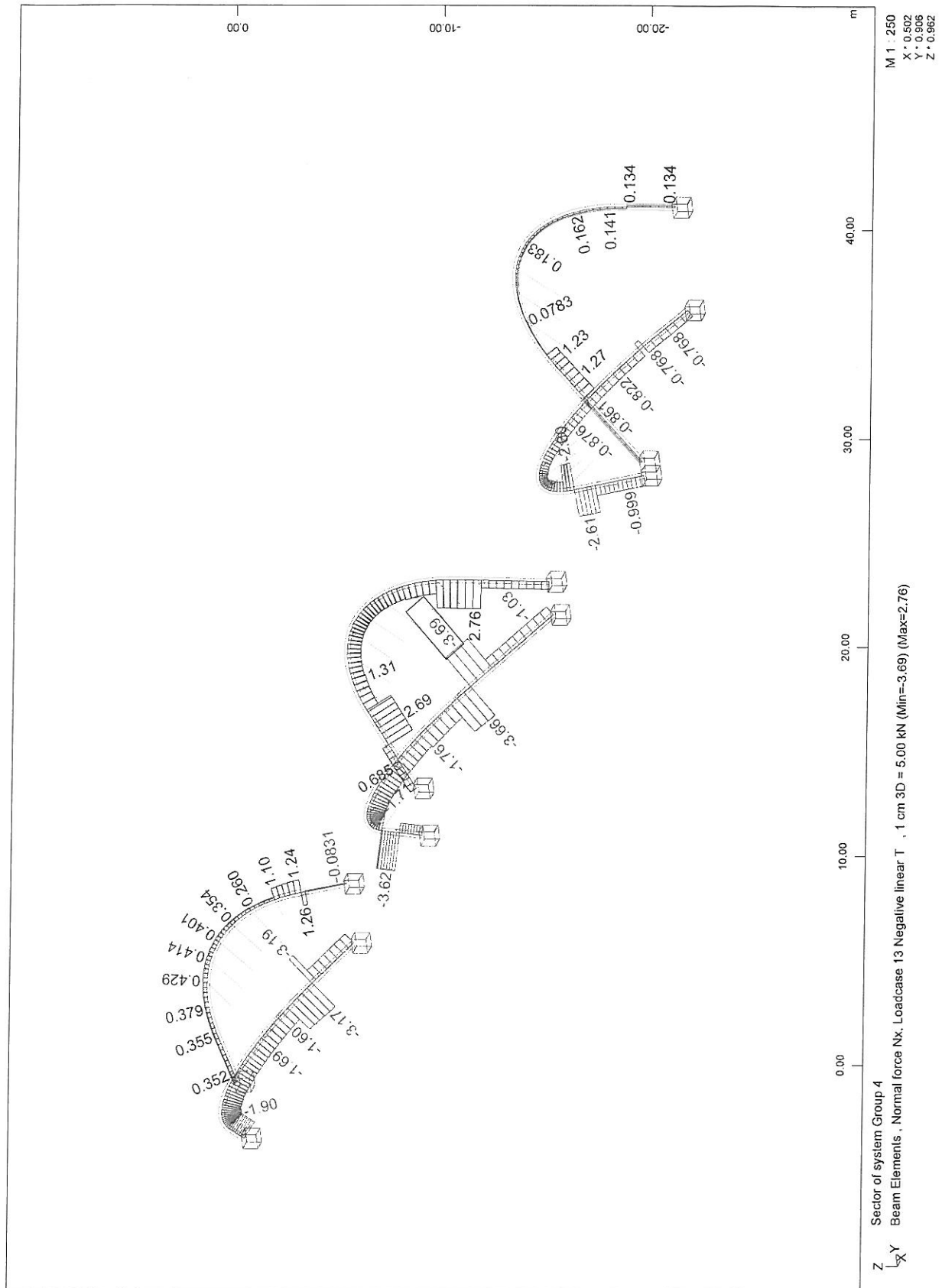


Нормални усилия в дъгите



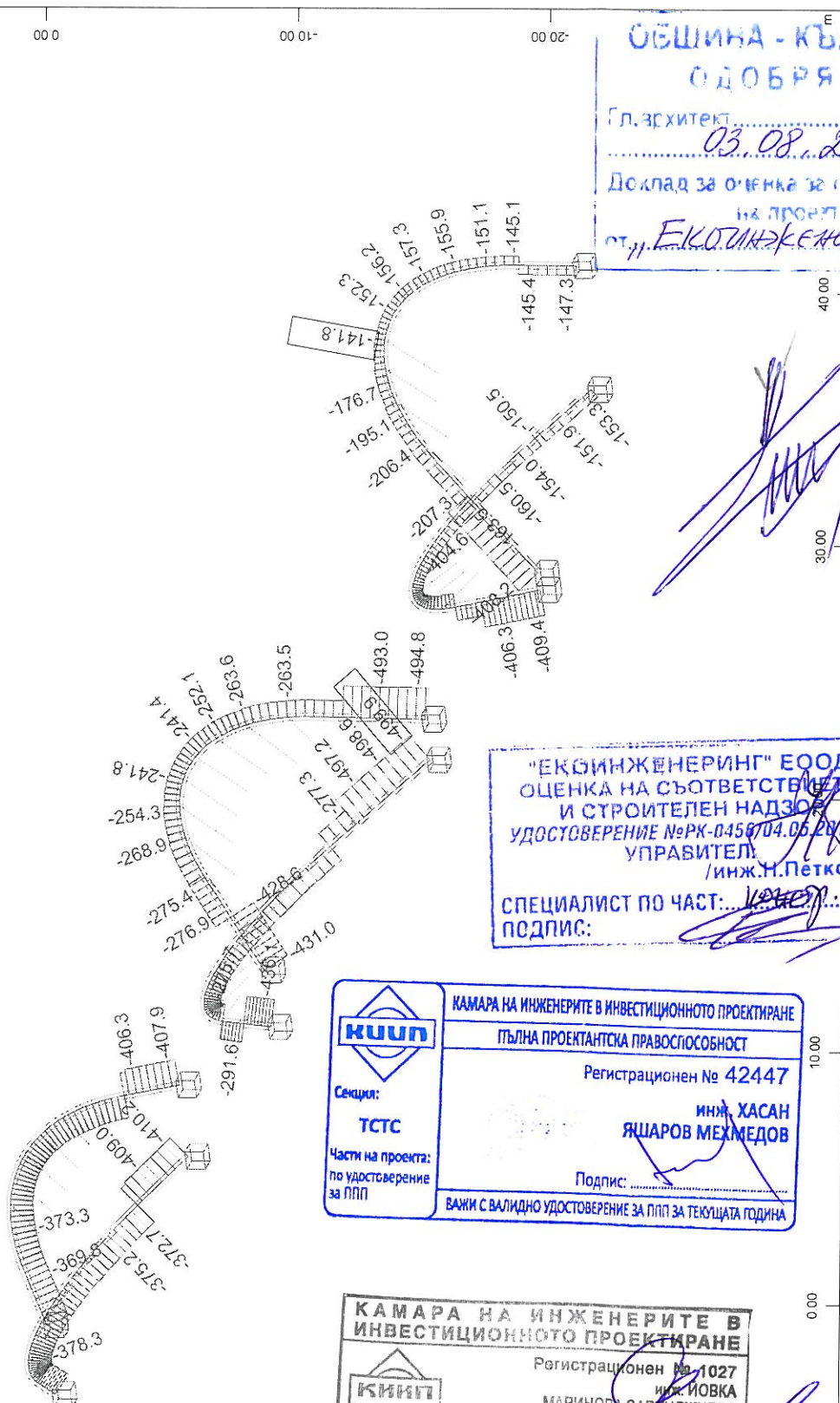
Стоманен пешеходен мост в Кърджали
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Стоманен пешеходен мост в Кърджали
 Нормални усилия в дъгите

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ОБЩИНА - КЪРДЖАЛИ
 ОДОБРЯВА

Гл. архитект
 03.08.2017
 Доклад за оценка за съответствие
 на проекта
 от „ЕК ИНЖЕНЕРИНГ“ ЕООД

„ЕК ИНЖЕНЕРИНГ“ ЕООД
 ОЦЕНКА НА СЪОТВЕТСТВИЕТО
 И СТРОИТЕЛЕН НАДЗОР
 УДОСТОВЕРЕНИЕ № РК-0456704.05.2016
 УПРАВИТЕЛ
 /инж. Н. Петкова/
 СПЕЦИАЛИСТ ПО ЧАСТ: *конст.*
 ПОДПИС: *[Signature]*

КАМАРА НА ИНЖЕНЕРИТЕ В ИНВЕСТИЦИОННОТО ПРОЕКТИРАНЕ
 ПЪЛНА ПРОЕКТАНТСКА ПРАВОСПОСОБНОСТ
 Регистрационен № 42447
 инж. ХАСАН
 ЯШАРОВ МЕХМЕДОВ
 Подпис: *[Signature]*
 ВАЖИ С ВАЛИДНО УДОСТОВЕРЕНИЕ ЗА ППП ЗА ТЕКУЩАТА ГОДИНА

КАМАРА НА ИНЖЕНЕРИТЕ В
 ИНВЕСТИЦИОННОТО ПРОЕКТИРАНЕ
 Регистрационен № 1027
 инж. ИОВКА
 МАРИНОВА САРЪНДЖИЕВА
 Подпис: *[Signature]*
 ТЕХНИЧЕСКО ПОДСЪДЪЖАНИЕ КОНСТРУКТИВНА НА ТС

Sector of system Group 4
 Beam Elements, Normal force Nx, Loadcase 2122 MIN-N BEAM, 1 cm 3D = 1000. KN (Min=-299.9) (Max=-141.8)

