

UŽSAKOVAS: **KAZLŲ RŪDOS SAVIVALDYBĖS
ADMINISTRACIJA**

STATYTOJAS: **KAZLŲ RŪDOS SAVIVALDYBĖS**

PROJEKTAS: **PAGALBINIO ŪKIO PASTATO
(INVENTORINIAME PLANE 2I1/P) VYTAUTO
G.58, KAZLŲ RŪDOJE, REKONSTRAVIMO Į
LOPŠELĮ-DARŽELĮ (MOKSLO PASKIRTIES
PASTATĄ) PROJEKTAS**

STATYBOS VIETA: **KAZLŲ RŪDA, VYTAUTO G.58**

STATINIO KATEGORIJA: **NEYPATINGASIS**

STATYBOS RŪŠIS: **REKONSTRAVIMAS**

PROJEKTO RENGIMO ETAPAS: **TECHNINIS PROJEKTAS**


DALIS: **KONSTRUKCIJŲ SKAIČIAVIMAS**

TOMAS **04**

PROJEKTO NR. **24373-04-TP-SK**

DIREKTORIUS **T. VAIKASAS**

PV ATEST. NR. A1960 **Atestuotas Architektas T. VAIKASAS**

PDV ATEST Nr.: 38763 **Atestuotas Inžinierius A. ANANKA** 

LAIDA: **0**

2024 KAUNAS

**STATYBINIŲ KONSTRUKCIJŲ DALIES AIŠKINAMASIS RAŠTAS
PROJEKTUOJAMO STATINIO PAŽINTINIAI DUOMENYS**

Techninis projektas parengtas vadovaujantis projektavimo užduotimi, kadastriniais matavimas, gautomis projektavimo/techninėmis sąlygomis ir kitais teisiniais dokumentais, patvirtintais Užsakovo, pastabomis bei nurodymais, gautais tarpinių derinimų metu.

Projektuotojas – MB „Trimatės idėjos“

Statinio objekto adresas – Vytauto g.58, Kazlų Rūda

Rekonstruojamas pastatas į lopšelj-darželį (mokslo paskirties) – ūkinis pastatas 2I1/p

Statybos rūšis – rekonstravimas

Rekonstruojamo statinio kategorija – neypatingasis

Rekonstruojamo statinio paskirtis: esama-pagalbinio ūkio, būsimas- mokslo

Rekonstruojamo statinio unikalus Nr.: 5198-8003-9029 (2I1/p)

**PRIVALOMŲJŲ TDP DOKUMENTŲ BEI PAGRINDINIŲ NORMATYVINIŲ STATYBOS TECHNINIŲ DOKUMENTŲ,
KURIAIS VADOVAUJANTIS PARENGTAS TDP, SĄRAŠAS**

LR ĮSTATYMAI

1. LR Statybos įstatymas.
2. LR Atliekų tvarkymo įstatymas.
3. LR saugomų teritorijų įstatymas.
4. Specialiosios žemės ir miško naudojimo sąlygos.

STATYBOS TECHNINIAI REGLAMENTAI

Eil. Nr.	Reglamentas	Pavadinimas					
1.	STR 1.04.04:2017	Statinio projektavimas, projekto ekspertizė.					
2.	STR 1.06.01:2016	Statybos darbai. Statinio statybos priežiūra.					
3.	STR 1.05.01:2017	Statybą leidžiantys dokumentai. Statybos užbaigimas. Statybos sustabdymas. Savavališkos statybos padarinių šalinimas. Statybos pagal neteisėtai išduotą statybą leidžiantį dokumentą padarinių šalinimas.					
4.	STR 1.01.03:2017	Statinių klasifikavimas pagal jų naudojimo paskirtį.					
5.	STR 1.01.08:2002	Statinio statybos rūšys.					
0	2024	STATYBOS LEIDIMUI					
LAIDA	IŠLEDIMO DATA	LAIDOS STATUSAS, KEITIMO PRIEŽASTIS (JEI TAIKOMA)					
	 <small>Tel. +370 672 72728 www.trimatesidejos.lt</small>	STATINIO PROJEKTO PAVADINIMAS PAGALBINIO ŪKIO PASTATO (INVENTORINIAME PLANE 2I1/P) VYTAUTO G.58, KAZLŲ RŪDOJE, REKONSTRAVIMO Į LOPŠELJ-DARŽELĮ (MOKSLO PASKIRTIES PASTATĄ) PROJEKTAS					
A1960	PV	Tomas Vaikasas	PAVADINIMAS				
KVAL. PATV. DOK. NR.	 UAB „TS Projects“ <small>Į / k: 300021780, Lietuvininkų g. 61, Šilutė Tel/fax.: (8-441) 54807</small>		AIŠKINAMASIS RAŠTAS				
38763	SK PDV	Andrius Ananka					
LT	STATYTOJAS IR (ARBA) UŽSAKOVAS: KAZLŲ RŪDOS SAVIVALDYBĖS ADMINISTRACIJA	DOKUMENTO ŽYMUO 24373-04-TP-SK-AR	<table border="1"> <tr> <td>LAPAS</td> <td>LAPŲ</td> </tr> <tr> <td align="center">1</td> <td align="center">4</td> </tr> </table>	LAPAS	LAPŲ	1	4
LAPAS	LAPŲ						
1	4						

6.	STR 2.01.01(1):2005	Mechaninis atsparumas ir pastovumas
7.	STR 2.01.01(2):1999	Esminiai statinio reikalavimai. Gaisrinė sauga.
8.	STR 2.01.01(3):1999	Esminiai statinio reikalavimai. Higiena, sveikata, aplinkos apsauga
9.	STR 2.01.01(4):2008	Esminiai statinio reikalavimai. Naudojimo sauga.
10.	STR 2.01.01(5):2008	Esminis statinio reikalavimas. Apsauga nuo triukšmo.
11.	STR 2.01.01(6):2008	Esminis statinio reikalavimas. Energijos taupymas ir šilumos išsaugojimas.
12.	STR 2.01.02:2016	Pastatų energinio naudingumo projektavimas ir sertifikavimas.
13.	STR 2.01.06:2009	Statinių apsauga nuo žaibo. Išorinė statinių apsauga nuo žaibo.
14.	STR 2.01.07:2003	Pastatų vidaus ir išorės aplinkos apsauga nuo triukšmo.
15.	STR 2.02.01:2004	Gyvenamieji pastatai.
16.	STR 2.02.09:2005	Vienbučiai ir dvibučiai gyvenamieji pastatai.
17.	STR 2.02.02:2004	Visuomeninės paskirties statiniai
18.	STR 2.02.04:2004	Vandens ėmimas, vandenruoša. Pagrindinės nuostatos
19.	STR 2.02.06:2004	Nuotekų valyklos. Pagrindinės nuostatos.
20.	STR 2.02.08:2012	Automobilių saugyklų projektavimas
21.	STR 2.02.11:2004	Šaldomieji pastatai ir patalpos.
22.	STR 2.04.01:2018	Pastatų atitvaros. Sienos, stogai, langai ir išorinės jėgimo durys.
23.	STR 2.05.03:2003	Statybinių konstrukcijų projektavimo pagrindai.
24.	STR 2.05.04:2003	Poveikiai ir apkrovos.
25.	STR 2.05.05:2005	Betoninių ir gelžbetoninių konstrukcijų projektavimas.
26.	STR 2.05.07:2005	Medinių konstrukcijų projektavimas.
27.	STR 2.05.09:2005	Mūrinių konstrukcijų projektavimas.
28.	STR 2.05.13:2004	Statybinių konstrukcijų grindys.
29.	STR 2.06.04:2014	Įtvirtinimo ir vietinės reikšmės keliai. Bendrieji reikalavimai.
30.	STR 2.07.01:2003	Vandentiekis ir nuotekų šalintuvas. Pastato inžinerinės sistemos. Lauko inžineriniai tinklai.
31.	STR 2.09.02:2005	Šildymas, vėdinimas ir oro kondicionavimas.

HIGIENOS NORMOS

Nr.	Norma	Pavadinimas
1.	HN 24:2017	Geriamojo vandens saugos ir kokybės reikalavimai.
2.	HN 121:2010	Kvapo koncentracijos ribinė vertė gyvenamosios aplinkos ore.
3.	HN 24:2003	Geriamojo vandens saugos ir kokybės reikalavimai.
4.	HN 33:2011	Triukšmo ribiniai dydžiai gyvenamuosiuose ir visuomeninės paskirties pastatuose bei jų aplinkoje.
5.	HN 42:2009	Gyvenamųjų ir visuomeninių pastatų patalpų mikroklimatas.

KITOS TAISYKLĖS

1. Elektros įrenginių įrengimo bendrosios taisyklės.
2. Elektros linijų ir instaliacijos įrengimo taisyklės.
3. Apšvietimo elektros įrenginių įrengimo taisyklės.
4. Šilumos tiekimo tinklų ir šilumos punktų įrengimo taisyklės.
5. Gaisrinės saugos pagrindiniai reikalavimai.
6. Visuomeninių statybinių gaisrinės saugos taisyklės.
7. Gaisro aptikimo ir signalizavimo sistemų projektavimo ir įrengimo taisyklės.
8. Lauko gaisrinio vandentiekio tinklų ir statybinių projektavimo ir įrengimo taisyklės.

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	2	4	0

9. Stacionariųjų gaisrų gesinimo sistemų projektavimo ir įrengimo taisyklės.
10. Statinių vidaus gaisrinio vandentiekio sistemų projektavimo ir įrengimo taisyklės.

Statybos normos, taisyklės ir kt.

1. RSN 156-94. Statybinė klimatologija.
2. Statybinių atliekų tvarkymo taisyklės.
3. Gaisro aptikimo ir signalizavimo sistemos. Projektavimo ir įrengimo taisyklės.
4. Lauko gaisrinio vandentiekio tinklai ir statiniai. Projektavimo ir įrengimo taisyklės.
5. Visuomeninių statinių gaisrinės saugos taisyklės.
6. Gaisrinės saugos pagrindiniai reikalavimai.
7. Saugos ir sveikatos taisyklės statyboje DT 5-00.
8. Darboviečių įrengimo statybvietėse nuostatai.
9. Darbo įrenginių naudojimo bendrieji nuostatai.
10. Kėlimo kranų naudojimo taisyklės.
11. Elektros įrenginių įrengimo bendrosios taisyklės.
12. R34-01 „Automobilių kelių pagrindai“
13. R35-01 „Automobilių kelių asfaltbetonio ir žvyro dangos“
14. ST 2235248.02:2003 „Bendrieji susisiekimui komunikacijų (automobilių kelių, gatvių) tiesimo darbai“.
15. Automobilių kelių dangos konstrukcijos sluoksnių be rišiklių įrengimo taisyklės JT SBR 07.
16. Automobilių kelių standartizuotų dangų konstrukcijų projektavimo taisyklės KPT SDK 07.
17. Automobilių kelių mineralinių medžiagų techninių reikalavimų aprašas TRA MIN 07.

3. Apkrovos

Apkrovų dydžiai ir patikimumo koeficientai priimti pagal STR 2.05.04:2003. Statinio skaičiuojamoji schema rėminė

Pastato skaičiavimo schema

Nuolatinė apkrova (SS+N)

Nuolatinę apkrovą sudaro: konstrukcijų nuosavas svoris – skaičiavimo schemeje parodytų konstrukcijų svoris (SS) ir pastovi (nuolatinė) apkrova nuo skaičiavimo schemeje neparodytų konstrukcijų (N).

- Nuolatinės apkrovos (SS+N) patikimumo koeficientas priimtas 1,35.

Naudojimo apkrova (NAUD)

Norminės naudojimo apkrovos (pagal STR 2.05.04:2004) priimtose:

- stogui (panaudojimo kategorija H) – 0,4 kN/m², 1,1 kN;
- naudojimo apkrovos (NAUD) patikimumo koeficientas priimtas 1,3.

Sniego apkrova (S)

Norminė sniego apkrova priimta $S_k=1,2\text{kN/m}^2$ I-ajam sniego apkrovos rajonui pagal STR 2.05.04:2003. Sniego apkrovos patikimumo koeficientas priimtas 1,3.

Vėjo apkrova (V1; V2)

Norminė vėjo apkrova priimta $v_{ref,0}=24$ m/s I-ajam vėjo greičio rajonui pagal STR 2.05.04:2003, patikimumo koeficientas 1,3.

Apledėjimo apkrovos

Apledėjimo apkrovos, projektuojant pastatus ir statinius nepriimamos.

Apkrovos statybos metu

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	3	4	0

Statybos metu atsirandančios apkrovos nuo statybinių mechanizmų, medžiagų sandėliavimo ir kt. neturi viršyti apkrovų pagrindinių laikinųjų konstrukcijų, kurias betarpiškai veikia.

Nr.	Tarpaukštinė perdanga apkrova DL2	kg/m ³	d, m	kN/m ²	kN/m ²
1	Gipso kartono pertvaros			1,2	1,62
2	Išlyginamasis betono sluoksnis	25	0,06	1,5	2,03
3	ISOVER FLO arba ISOVER VKL	2,3	0,03	0,069	0,09
4	Išlyginamasis keramzito sluoksnis	6	0,04	0,24	0,32
				3,01	4,06

Nr.	Tarpaukštinė perdanga apkrova LL1	kg/m ³	d, m	kN/m ²	kN/m ²
1	C1 kategorija			3	3,9

Nr.	Tarpaukštinė perdanga apkrova DL3	kg/m ³	d, m	kN/m ²	kN/m ²
1	Perdanga 200mm		0.2	2,66	3,46

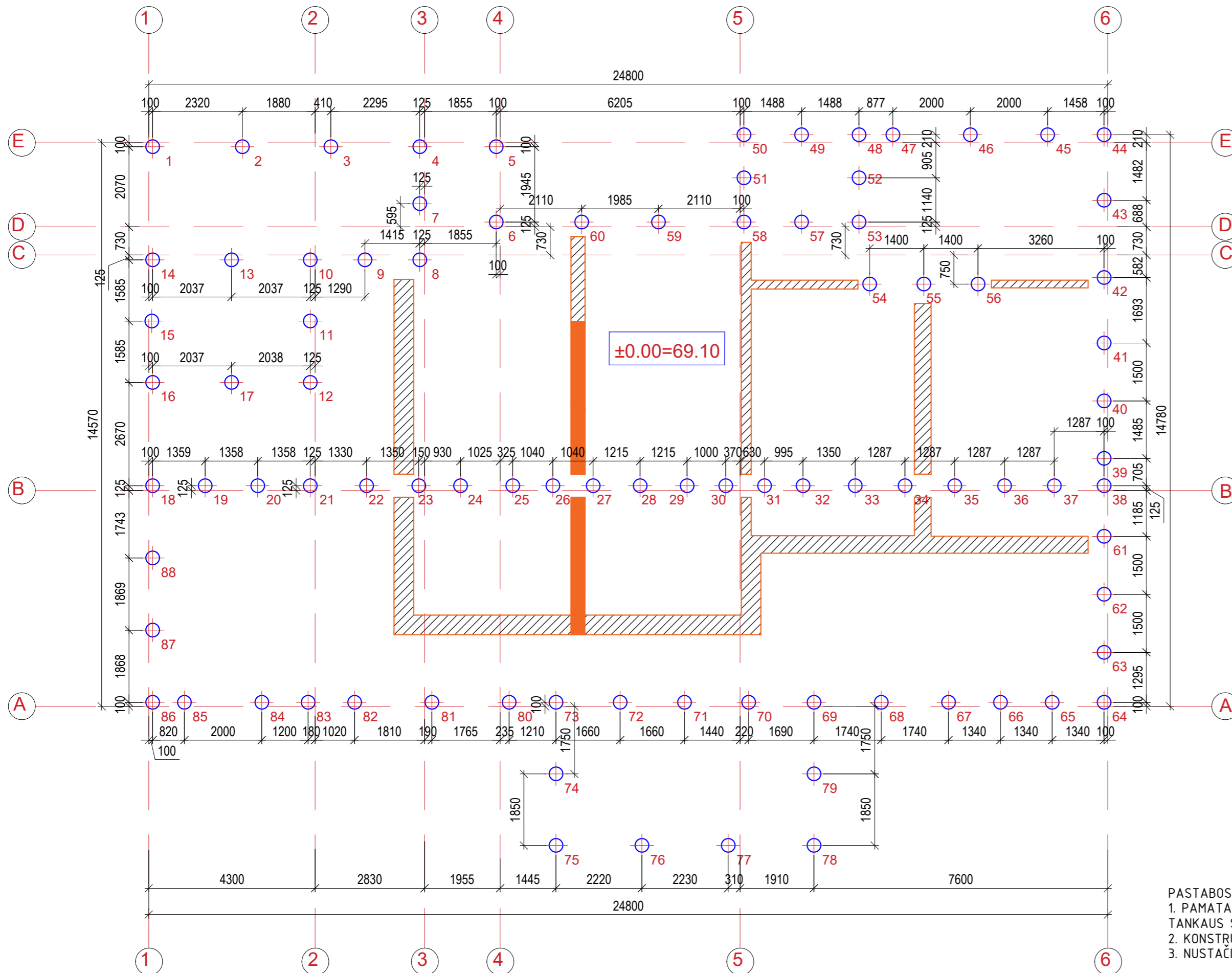
	STOGO APKROVA DL1	kg/m ³	d, m	Charakteristinė kN/m ²	Skaičiuotinė kN/m ²
1	2 sluoksniai prilydomosios ruloninės dangos	-	-	0,11	0,15
2	Akmens vatos plokštės, 30 mm.	200	0,03	0,06	0,08
3	Polistireninis putplastis EPS 100, 250 mm.	15	0,3	0,05	0,06
4	Polistireninis putplastis EPS 100, 50-450 mm.	15	0,45	0,07	0,09
5	Pakabinamos lubos	-	-	0,10	0,14
6	Ortakiai	-	-	0,50	0,68
7	Įrenginiai	-	-	2,50	3,38
			Viso:	3,38	4,57

Nr.	Deginio apkrova LL2	kg/m ³	d, m	kN/m ²	kN/m ²
1	H kategorija			0,4	0,52

Nr.	Deginio apkrova SN1	kg/m ³	d, m	kN/m ²	kN/m ²
1	I KATEGORIJA			1,2	1,56

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	4	4	0

ESAMŲ PAMATŲ IR GRĘŽINIŲ POLIŲ PLANAS M 1:100



POLIŲ EKSPLIKACIJA

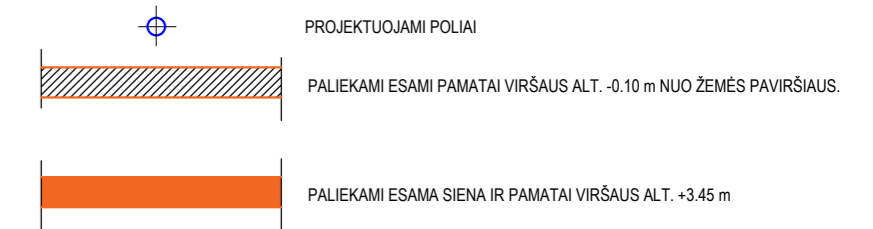
EIL. NR.	PAMATAS	PAMATO SKERS., M	PAMATO ILGIS, M	PAMATO VIRŠ. ALT.	PAMATO AP. ALT.	APROVOS, KN
1	GP-1	0,35	4	-0,75	-4,75	140,21
2	GP-1	0,35	4	-0,75	-4,75	118,58
3	GP-1	0,35	4	-0,75	-4,75	46,53
4	GP-1	0,35	4	-0,75	-4,75	175,31
5	GP-1	0,35	4	-0,75	-4,75	183,89
6	GP-1	0,35	4	-0,75	-4,75	227,89
7	GP-1	0,35	4	-0,75	-4,75	156,31
8	GP-1	0,35	4	-0,75	-4,75	166,95
9	GP-1	0,35	4	-0,75	-4,75	186,32
10	GP-1	0,35	4	-0,75	-4,75	183,70
11	GP-1	0,35	4	-0,75	-4,75	150,54
12	GP-1	0,35	4	-0,75	-4,75	148,51
13	GP-1	0,35	4	-0,75	-4,75	166,12
14	GP-1	0,35	4	-0,75	-4,75	154,92
15	GP-1	0,35	4	-0,75	-4,75	123,13
16	GP-1	0,35	4	-0,75	-4,75	136,31
17	GP-1	0,35	4	-0,75	-4,75	127,80
18	GP-1	0,35	4	-0,75	-4,75	141,33
19	GP-1	0,35	4	-0,75	-4,75	140,27
20	GP-1	0,35	4	-0,75	-4,75	141,71
21	GP-1	0,35	4	-0,75	-4,75	181,80
22	GP-1	0,35	4	-0,75	-4,75	164,75
23	GP-1	0,35	4	-0,75	-4,75	199,72
24	GP-1	0,35	4	-0,75	-4,75	180,02
25	GP-1	0,35	4	-0,75	-4,75	208,87
26	GP-1	0,35	4	-0,75	-4,75	228,52
27	GP-1	0,35	4	-0,75	-4,75	215,94
28	GP-1	0,35	4	-0,75	-4,75	205,4
29	GP-1	0,35	4	-0,75	-4,75	213,74
30	GP-1	0,35	4	-0,75	-4,75	238,35
31	GP-1	0,35	4	-0,75	-4,75	242,31
32	GP-1	0,35	4	-0,75	-4,75	222,64
33	GP-1	0,35	4	-0,75	-4,75	231,27
34	GP-1	0,35	4	-0,75	-4,75	232,79
35	GP-1	0,35	4	-0,75	-4,75	217,84
36	GP-1	0,35	4	-0,75	-4,75	184,20
37	GP-1	0,35	4	-0,75	-4,75	150,09
38	GP-1	0,35	4	-0,75	-4,75	154,94
39	GP-1	0,35	4	-0,75	-4,75	125,23
40	GP-1	0,35	4	-0,75	-4,75	45,47
41	GP-1	0,35	4	-0,75	-4,75	132,26
42	GP-1	0,35	4	-0,75	-4,75	81,74
43	GP-1	0,35	4	-0,75	-4,75	130,38
44	GP-1	0,35	4	-0,75	-4,75	145,21
45	GP-1	0,35	4	-0,75	-4,75	113,27
46	GP-1	0,35	4	-0,75	-4,75	34,52
47	GP-1	0,35	4	-0,75	-4,75	98,66
48	GP-1	0,35	4	-0,75	-4,75	122,16
49	GP-1	0,35	4	-0,75	-4,75	119,81
50	GP-1	0,35	4	-0,75	-4,75	111,79
51	GP-1	0,35	4	-0,75	-4,75	148,11
52	GP-1	0,35	4	-0,75	-4,75	115,65
53	GP-1	0,35	4	-0,75	-4,75	108,48
54	GP-1	0,35	4	-0,75	-4,75	94,66

POLIŲ EKSPLIKACIJA

EIL. NR.	PAMATAS	PAMATO SKERS., M	PAMATO ILGIS, M	PAMATO VIRŠ. ALT.	PAMATO AP. ALT.	APROVOS, KN
55	GP-1	0,35	4	-0,75	-4,75	155,28
56	GP-1	0,35	4	-0,75	-4,75	130,84
57	GP-1	0,35	4	-0,75	-4,75	160,14
58	GP-1	0,35	4	-0,75	-4,75	200,28
59	GP-1	0,35	4	-0,75	-4,75	45,12
60	GP-1	0,35	4	-0,75	-4,75	34,98
61	GP-1	0,35	4	-0,75	-4,75	227,93
62	GP-1	0,35	4	-0,75	-4,75	120,42
63	GP-1	0,35	4	-0,75	-4,75	39,1
64	GP-1	0,35	4	-0,75	-4,75	69,29
65	GP-1	0,35	4	-0,75	-4,75	100,12
66	GP-1	0,35	4	-0,75	-4,75	110,7
67	GP-1	0,35	4	-0,75	-4,75	115,29
68	GP-1	0,35	4	-0,75	-4,75	93,96
69	GP-1	0,35	4	-0,75	-4,75	66,83
70	GP-1	0,35	4	-0,75	-4,75	199,97
71	GP-1	0,35	4	-0,75	-4,75	198
72	GP-1	0,35	4	-0,75	-4,75	194,38
73	GP-1	0,35	4	-0,75	-4,75	192,47
74	GP-1	0,35	4	-0,75	-4,75	196,68
75	GP-1	0,35	4	-0,75	-4,75	171,03
76	GP-1	0,35	4	-0,75	-4,75	132,9
77	GP-1	0,35	4	-0,75	-4,75	148,69
78	GP-1	0,35	4	-0,75	-4,75	98,68
79	GP-1	0,35	4	-0,75	-4,75	148,14
80	GP-1	0,35	4	-0,75	-4,75	146,91
81	GP-1	0,35	4	-0,75	-4,75	42,58
82	GP-1	0,35	4	-0,75	-4,75	142,21
83	GP-1	0,35	4	-0,75	-4,75	148,04
84	GP-1	0,35	4	-0,75	-4,75	134,26
85	GP-1	0,35	4	-0,75	-4,75	118,08
86	GP-1	0,35	4	-0,75	-4,75	109,6
87	GP-1	0,35	4	-0,75	-4,75	116,49
88	GP-1	0,35	4	-0,75	-4,75	124,41

- PASTABOS:
 1. PAMATAI ĮGILINTI Į MAŽAI DULKINGO TOLYGIAI IŠRŪŠIUOTO, GELSVAI RUDO, TANKAUS SMĖLIO (SaFu) SLUOKSNĮ, q = 10-14 MPa.
 2. KONSTRUKCIJŲ MĀTMENIS IR SPRENDINIUS TIKSLINTI DARBO PROJEKTE.
 3. NUSTĀCIUS AUKŠTUS GRUNTINIUS VANDENIS NAUDOTI APSAUGINĮ VAMZDĮ.

SUTARTINIAI PAŪYMĖJIMAI



0	2024	Statybos leidimui
LAIDA	IŠLEIDIMO DATA	LAIDOS STATUSAS IR IŠLEIDIMO PRIEŖASTIS (JEI TAIKOMA)
ATESTATO NR.	TRIMATĖS IDEJOS Tel. +370 672 22228 www.trimatesidejos.lt	OBJEKTAS: PAGALBINIO ŪKIO PASTATO (INVENTORINIAME PLANE 211/P) VYTAUTO G.58, KAZLŲ RŪDOJE, REKONSTRAVIMO Į LOPŠELĮ-DARŽELĮ (MOKSLO PASKIRTIES PASTATĄ) PROJEKTAS
A 1960	SPV Tomas Vaikasas	BRĖŽINIO PAVADINIMAS
	TS Projects UAB "TS Projects" I / k: 300021780, Lietuvosinkų g. 51 Šiaurė Tel/Fax: (8-441) 54807 Mob.tel.: 8-616-41649 e-mail: tsprojects@gmail.com	ESAMŲ PAMATŲ IR GRĘŽINIŲ POLIŲ PLANAS M 1:100
38763	SK PDV Andrius Ananka	
LT	Užsakovas: KAZLŲ RŪDOS SAVIVALDYBĖS ADMINISTRACIJA	BRĖŽINIO ŽYMUO: 24373-04-TP-SK.B-01
		LAPAS 1
		LAPŲ 1
		LAIDA 0

Polio skersmuo:

$b = 0,35$ m

Polio ilgis:

$d = 4$ m

Sąlyga:

$d/b = 11,4286 > 5$

Polio pado plotis:

$A_b = 0,0962$ m²

(Tikrasis aukštis įvedamas atmetus rostverko aukštį)

Polio įgilinimas į sluoksnį

$d_1 = 2,33$ m

Tikrasis sluoksnio aukštis

$d_1 = 2,33$ m

Savitasis sunkis

$\gamma_1 = 20,0$ kN/m³

IGS-2

$d_2 = 1,67$ m

$d_1 = 1,67$ m

$\gamma_2 = 20,0$ kN/m³

IGS-3

$d_3 = 0$ m

$d_2 = 0,00$ m

$\gamma_3 = 0,0$ kN/m³

$d_4 = 0$ m

$d_3 = 0,00$ m

$\gamma_4 = 0,0$ kN/m³

$d_5 = 0$ m

$d_4 = 0,00$ m

$\gamma_5 = 0,0$ kN/m³

$d_6 = 0$ m

$d_5 = 0,00$ m

$\gamma_5 = 0,0$ kN/m⁴

$d_7 = 0$ m

$d_5 = 0,00$ m

$\gamma_5 = 0,0$ kN/m⁵

$d_8 = 0$ m

$d_5 = 0,00$ m

$\gamma_5 = 0,0$ kN/m⁶

Trinties stiprumas

$A_{s,1} = 2,5620$ m²

$q_{s1} = 0,06$ MPa

Kūginis stiprumas

$q_{c1} = 7,30$ MPa

IGS-2

$A_{s,1} = 1,8363$ m²

$q_{s1} = 0,08$ MPa

$q_{c1} = 10,20$ MPa

IGS-3

$A_{s,1} = 0,0000$ m²

$q_{s3} = 0$ MPa

$q_{c3} = 0,00$ MPa

$A_{s,1} = 0,0000$ m²

$q_{s4} = 0$ MPa

$q_{c4} = 0,00$ MPa

$A_{s,1} = 0,0000$ m²

$q_{s5} = 0$ MPa

$q_{c5} = 0,00$ MPa

$A_{s,1} = 0,0000$ m³

$q_{s5} = 0$ MPa

$q_{c5} = 0,00$ MPa

$A_{s,1} = 0,0000$ m⁴

$q_{s5} = 0$ MPa

$q_{c5} = 0,00$ MPa

$A_{s,1} = 0,0000$ m⁵

$q_{s5} = 0$ MPa

$q_{c5} = 0,00$ MPa

Laikomoji galia padu:

$R_b = 490,7$ kN

$R_b = \alpha_b \cdot q_e \cdot A_b$

Laikomoji galia šoniniu paviršiumi:

$R_s = 300,6$ kN

$R_{s,i} = \sum q_{s,i} \cdot A_{s,i}$

Kalbruotoji laikomoji galia:

$R_{c,cal} = 445,8$ kN

$R_{c,cal} = \frac{R_b}{\gamma_{mb}} + \frac{R_s}{\gamma_{ms}}$

Charakteristinė laikomoji galia:

$R_{c,k} = 340,3$ kN

$R_{c,k} = \frac{R_{c,cal}}{\xi_3 \text{ arba } \xi_4}$

Skaiciuotinė laikomoji galia:

$R_{c,d} = 309,3$ kN

$R_{c,d} = \frac{R_{c,k}}{\gamma_c}$

IŠVADA: POLIO LAIKOMOJI GALIA PAKANKAMA $R_{c,d} > R_d$

Naudojami deriniai:

1 derinys: A1 + M1 + R1

2 derinys: A2 + M1 arba M2 + R4

Empirinių koreliacijos koeficientų reikšmės (Pastatų konstruktoriaus ir

Grunto tipas	Kūginis stipris q_c , MPa	α_b	q_{ei} , MPa	$q_{ei,max}$, MPa
Moreninis molis	1 - 5	1,0	0,05 $\cdot q_{ci}$	0,200
	> 5	0,8		
Juostinis molis		1,0	0,035 $\cdot q_{ci}$	0,150
Dulkis		0,6	0,025 $\cdot q_{ci}$	0,150
Smėlis	0 - 10	0,5	0,01 $\cdot q_{ci}$	0,180
	≥ 25	0,5	0,008 $\cdot q_{ci}$	

Tarpinės lentelės reikšmės tiesiškai interpoluojamos.

Modeliavimo koeficientų reikšmės

Polio tipas	γ_{mb}	γ_{ms}
Spraustiniai	1,1	1,1
Spraustiniai gręžtiniai	1,1	1,35
CFA	2	1,5
Gręžtiniai	2	1,5

Charakteristinių verčių, gautų remiantis grunto tyrimo rezultatais (n – ištirtų pjūvių

ξ	n						
	1	2	3	4	5	7	10
ξ_3	1,4	1,35	1,33	1,31	1,29	1,27	1,25
ξ_4	1,4	1,27	1,23	1,2	1,15	1,12	1,08

Daliniai koeficientai γ_R polių pagrindo atsparumui pagal EN 1997-1:2004.

Atsparumas	Polio tipas	Simbolis	Aprokrovų grupė			
			R1	R2	R3	R4
Polio pado laikomoji galia	kaltiniai gręžtiniai	γ_b	1	1,1	1	1,3
	gręžtiniai		1,25			1,6
	CFA		1,1			1,45
Polio kamieno šoninio paviršiaus laikomoji galia gniuždymui	kaltiniai gręžtiniai	γ_s	1	1,1	1	1,3
	gręžtiniai		1			1,3
	CFA		1			1,3
Polio pado suminis atsparumas gniuždymui	kaltiniai gręžtiniai	γ_t	1	1,1	1	1,3
	gręžtiniai		1,15			1,5
	CFA		1,1			1,4
Polio laikomoji galia tempimui	kaltiniai gręžtiniai	$\gamma_{s,t}$	1,25	1,15	1,1	1,6
	gręžtiniai		1,25			1,6
	CFA		1,25			1,6

Rostverko aukštis grunte:

$d = 0,5$ m

Polio ilgis:

$h_{sot} = 4,0$ m

Sąlyginis pamato gylis:

$d_s = 4,5$ m

Persikirstymo kampas

$\alpha_1 = 8,75$ °

$\alpha_2 = 8,75$ °

$\alpha_3 = 0,00$ °

$\alpha_4 = 0,00$ °

$\alpha_5 = 0,00$ °

Vidinės trinties kampas

$\varphi_{s1} = 35,0$ °

$\varphi_{s2} = 35,0$ °

$\varphi_{s3} = 0,0$ °

$\varphi_{s4} = 0,0$ °

$\varphi_{s5} = 0,0$ °

$\alpha = \frac{\varphi'_d}{4}$

Sąlyginio pamato pado plotis:

$B_s = 1,598$ m

$B_s = b + 2 \cdot h_{pot} \cdot \text{tgo}$

Sąlyginio pamato pado plotis:

$L_s = 1,598$ m

$L_s = B_s$

Sąlyginio pamato pado plotas:

$A_s = 2,55$ m²

$A_s = B_s \cdot L_s$

Grunto svertinis vidutinis svorio tankis sluosniuotam pagrindui:

$\gamma_{d,m} = 20,00$ kN/m³

$\gamma_{d,m} = \frac{\sum \gamma_{d,i} \cdot l_i}{\sum l_i}$

Poliaus tūris:

$V_p = 0,385$ m³

Betono svorio tankis:

$\gamma_{betono} = 25,0$ kN/m³

Poliaus svoris:

$G_p = 9,6$ kN

Sąlyginio pamato svoris:

$G_s = 249,1$ kN

$G_s = A_s \cdot \gamma_{d,m} + G_p$

Veikianti vertikali jėga:

$V_d = 240,0$ kN

$V_d < R_{c,d} = 309,3$ kN

Bendra vertikali jėga veikianti pamato pado lygyje:

$V_{d,t} = 489,07$ kN

Papildomi įtempiai pamato pado lygyje:

$\sigma_{sp,0} = 101,5$ kPa

$\sigma_{sp,0} = \frac{V_{d,t}}{A_s} - \gamma_{d,m} \cdot d_s$

Grunto padalinimo sluoksnio storis:

$h_i = 0,20$ m

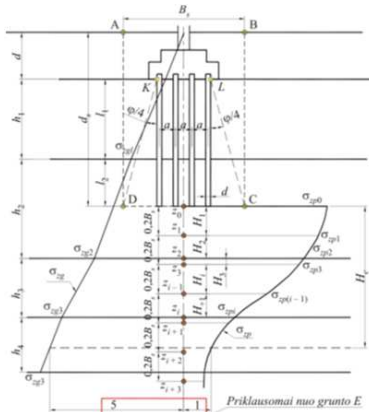
Bendras poliaus nuosėdis:

$s = 2,3$ mm

$s = 0,8 \cdot \sum z_i$

s, lim = 10,5 mm

Išvada: $s = 2,3$ mm < $s_u = 10,5$ mm. Faktinis pamato nuosėdis yra mažesnis už leistiną nuosėdį.



Eil. Nr.	Gylis, m	z, m	γ , kN/m ³	σ_{sp} , kPa	$0,2 \cdot \sigma_{sp}$	ζ	k	σ_{sp} , kPa	h_i , m	$E \cdot 10^3$, kPa	Δs , mm	ζ	k	k
1.	4,5	0	19	90,00	18,00	0,0	1,000	101,52	0,200	40,0	0,50	0,0	1,0	1,0
2.	4,700	0,200	19	93,80	18,76	0,250	0,968	98,28	0,200	40,0	0,47	0,4	0,949	0,968
3.	4,900	0,400	19	97,60	19,52	0,501	0,900	91,41	0,200	40,0	0,43	0,8	0,756	0,900
4.	5,100	0,600	19	101,40	20,28	0,751	0,782	79,35	0,200	40,0	0,36	1,2	0,547	0,782
5.	5,300	0,800	19	105,20	21,04	1,001	0,651	66,07	0,200	40,0	0,30	1,6	0,390	0,651
6.	5,500	1,000	19	109,00	21,80	1,252	0,527	53,48	0,200	40,0	0,24	2,0	0,285	0,527
7.	5,700	1,200	19	112,80	22,56	1,502	0,416	42,21	0,200	40,0	0,19	2,4	0,214	0,416
8.	5,900	1,400	19	116,60	23,32	1,752	0,350	35,54	0,200	40,0	0,16	2,8	0,165	0,350
9.	6,100	1,600	19	120,40	24,08	2,003	0,285	28,89	0,200	40,0	0,13	3,2	0,130	0,285
10.	6,300	1,800	19	124,20	24,84	2,253	0,240	24,38	0,200	40,0	0,11	3,6	0,106	0,240
11.	6,500	2,000	19	128,00	25,60	2,503	0,201	20,44	0,200	40,0	0,09	4,0	0,087	0,201
12.	6,700	2,200	19	131,80	26,36	2,753	0,157	15,92	0,200	40,0	0,08	4,4	0,073	0,157
13.	6,900	2,400	19	135,60	27,12	3,004	0,147	14,94	0,200	40,0	0,07	4,8	0,067	0,147
14.	7,100	2,600	19	139,40	27,88	3,254	0,127	12,87	0,200	40,0	0,06	5,2	0,053	0,127
15.	7,300													

POLIO LAIKOMOSIOS GALIOS IR NUOSEDZIŲ SKAICIAVIMAS PAGAL GR-2

Polio skersmuo:

$b = 0,35$ m

Polio ilgis:

$d = 4$ m

Sąlyga:

$d/b = 11,4286 > 5$

Polio pado plotis:

$A_b = 0,0962$ m²

(Tikrasis aukštis įvedamas atmetus rostverko aukštį)

Polio iğilnimas į sluoksni

Tikrasis sluoksniu aukštis

Savitasis sunkis

$d_1 = 0,54$ m	$d_1 = 0,54$ m	$\gamma_1 = 20,0$ kN/m ³	IGS-1
$d_2 = 0,4$ m	$d_1 = 0,40$ m	$\gamma_2 = 20,0$ kN/m ³	IGS-2
$d_3 = 1,4$ m	$d_2 = 1,40$ m	$\gamma_3 = 20,0$ kN/m ³	IGS-1
$d_4 = 1,66$ m	$d_3 = 1,66$ m	$\gamma_4 = 20,0$ kN/m ³	IGS-3
$d_5 = 0$ m	$d_4 = 0,00$ m	$\gamma_5 = 0,0$ kN/m ³	
$d_6 = 0$ m	$d_5 = 0,00$ m	$\gamma_5 = 0,0$ kN/m ⁴	
$d_7 = 0$ m	$d_5 = 0,00$ m	$\gamma_5 = 0,0$ kN/m ⁵	
$d_8 = 0$ m	$d_5 = 0,00$ m	$\gamma_5 = 0,0$ kN/m ⁶	

Trinties stiprumas

Kūginis stiprumas

$A_{s,1} = 0,5938$ m ²	$q_{s1} = 0,02$ MPa	$q_{c1} = 3,30$ MPa	IGS-1
$A_{s,1} = 0,4398$ m ²	$q_{s2} = 0,04$ MPa	$q_{c2} = 7,00$ MPa	IGS-2
$A_{s,1} = 1,5394$ m ²	$q_{s3} = 0,02$ MPa	$q_{c3} = 3,60$ MPa	IGS-1
$A_{s,1} = 1,8253$ m ²	$q_{s4} = 0,12$ MPa	$q_{c4} = 12,00$ MPa	IGS-3
$A_{s,1} = 0,0000$ m ²	$q_{s5} = 0$ MPa	$q_{c5} = 0,00$ MPa	
$A_{s,1} = 0,0000$ m ³	$q_{s5} = 0$ MPa	$q_{c5} = 0,00$ MPa	
$A_{s,1} = 0,0000$ m ⁴	$q_{s5} = 0$ MPa	$q_{c5} = 0,00$ MPa	
$A_{s,1} = 0,0000$ m ⁵	$q_{s5} = 0$ MPa	$q_{c5} = 0,00$ MPa	

Laikomoji galia padu:

$R_b = 577,3$ kN

$R_b = \alpha_b \cdot q_{c1} \cdot A_b$

Laikomoji galia šoniniu paviršiumi:

$R_{s,d} = 279,3$ kN

$R_{s,d} = \sum q_{s,i} \cdot A_{s,i}$

Kalbruotoji laikomoji galia:

$R_{c,cak} = 474,8$ kN

$R_{c,cak} = \frac{R_b}{\gamma_{mb}} + \frac{R_s}{\gamma_{m,s}}$

Charakteristinė laikomoji galia:

$R_{c,k} = 362,5$ kN

$R_{c,k} = \frac{R_{c,cak}}{\xi_3 \text{ arba } \xi_4}$

Skaičiuotinė laikomoji galia:

$R_{c,d} = 329,5$ kN

$R_{c,d} = \frac{R_{c,k}}{\gamma_c}$

IŠVADA: POLIO LAIKOMOJI GALIA PAKANKAMA $R_{c,d} > R_d$

Naudojami deriniai:

1 derinys: A1 + M1 + R1

2 derinys: A2 + M1 arba M2 + R4

Empirinių koreliacijos koeficientų reikšmės (Pastatų konstruktoriaus ir

Grunto tipas	Kūginis stipris $q_{c,i}$ MPa	α_b	$q_{s,i}$, MPa	$q_{s,i,max}$, MPa
Moreninis molis	1 - 5	1,0	0,05	q_{ci}
	> 5	0,8		
Justinis molis		1,0	0,035	q_{ci}
Dulkis		0,6	0,025	q_{ci}
Smėlis	0 - 10	0,5	0,01	q_{ci}
	≥ 25	0,5	0,008	

Tarpinės lentelės reikšmės tiesiškai interpoluojamos.

Modeliavimo koeficientų reikšmės

Polio tipas	γ_{mb}	$\gamma_{m,s}$
Spraustiniai	1,1	1,1
Spraustiniai gręžiniai	1,1	1,35
CFA	2	1,5
Gręžiniai	2	1,5

Charakteristinių verčių, gautų remiantis grunto tyrimo rezultatais (n – iširtų pjūvių

ξ	1	2	3	n	5	7	10
ξ_3	1,4	1,35	1,33	1,31	1,29	1,27	1,25
ξ_4	1,4	1,27	1,23	1,2	1,15	1,12	1,08

Daliniai koeficientai γ_R polių pagrindo atsparumui pagal EN 1997-1:2004.

Atsparumas	Polio tipas	Simbolis	Aprokrovų grupė			
			R1	R2	R3	R4
Polio pado laikomoji galia	kaltiniai gręžiniai	γ_b	1	1,1	1	1,3
	CFA		1,1			1,6
						1,45
Polio kamieno šoninio paviršiaus laikomoji galia gniuždynui	kaltiniai gręžiniai	γ_s	1	1,1	1	1,3
	CFA					
Polio pado suminis atsparumas gniuždynui	kaltiniai gręžiniai	γ_t	1	1,1	1	1,3
	CFA		1,15			1,5
			1,1			1,4
Polio laikomoji galia tempimui	kaltiniai gręžiniai	$\gamma_{s,t}$	1,25	1,15	1,1	1,6
	CFA					

Rostverko aukštis grunte:

$d = 0,5$ m

Polio ilgis:

$h_{pol} = 4,0$ m

Sąlyginis pamato gytlis:

$d_s = 4,5$ m

Persiskirstymo kampas

Vidinės trinties kampas

$\alpha_1 = 7,50$ °	$\varphi'_{d1} = 30,0$ °	$\alpha = \frac{\varphi'_d}{4}$
$\alpha_2 = 9,00$ °	$\varphi'_{d2} = 36,0$ °	
$\alpha_3 = 7,50$ °	$\varphi'_{d3} = 30,0$ °	
$\alpha_4 = 9,50$ °	$\varphi'_{d4} = 38,0$ °	
$\alpha_5 = 0,00$ °	$\varphi'_{d5} = 0,0$ °	

Sąlyginio pamato pado plotis:

$B_s = b + 2 \cdot h_{pol} \cdot \tan \alpha$

Sąlyginio pamato pado plotis:

$L_s = B_s$

Sąlyginio pamato pado plotas:

$A_s = B_s \cdot L_s$

Grunto svertinis vidutinis svorio tankis sluosniuotam pagrindu:

$\gamma_{d,m} = 20,00$ kN/m³

$\gamma_{d,m} = \frac{\sum \gamma_{d,i} \cdot l_i}{\sum l_i}$

Poliaus tūris:

$V_p = 0,385$ m³

Betono svorio tankis:

$\gamma_{betono} = 25,0$ kN/m³

Poliaus svoris:

$G_{dp} = 9,6$ kN

Sąlyginio pamato svoris:

$G_s = 228,8$ kN

$G_s = A_s \cdot \gamma_{d,m} + G_{dp}$

Veikianti vertikali jėga:

$V_d = 240,0$ kN

$R_{c,d} = 329,5$ kN

Bendra vertikali jėga veikianti pamato pado lygyje:

$V_{d,0} = 468,82$ kN

Papildomi įtempiai pamato pado lygyje:

$\sigma_{sp,0} = 111,3$ kPa

$\sigma_{sp,0} = \frac{V_{d,0}}{A_s} - \gamma_{d,m} \cdot d_s$

Grunto padalijimo sluoksniu storis:

$h_i = 0,20$ m

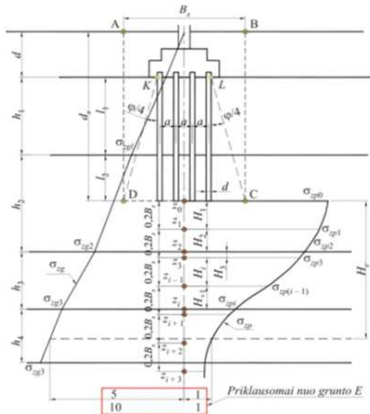
Benirus poliaus nuosėdis:

$s = 2,2$ mm

$s_{lim} = 10,5$ mm

$s = 0,8 \sum s_i$

Išvada: $s = 2,2$ mm < $s_{lim} = 10,5$ mm. Faktinis pamato nuosėdis yra mažesnis už leistiną nuosėdį.



Eil. Nr.	Gylis, m	z, m	γ , kN/m ³	σ_{sp} , kPa	$0,2 \sigma_{sp}$	ζ	k	σ_{sp} , kPa	h_c , m	$E \cdot 10^3$, kPa	Δs , mm
1.	4,5	0	19	90,00	18,00	0,0	1,000	111,33	0,200	45,0	0,49
2.	4,700	0,200	19	93,80	18,76	0,262	0,967	107,61	0,200	45,0	0,46
3.	4,900	0,400	19	97,60	19,52	0,524	0,889	98,97	0,200	45,0	0,41
4.	5,100	0,600	19	101,40	20,28	0,786	0,763	84,96	0,200	45,0	0,34
5.	5,300	0,800	19	105,20	21,04	1,048	0,626	69,71	0,200	45,0	0,28
6.	5,500	1,000	19	109,00	21,80	1,311	0,504	56,06	0,200	45,0	0,22
7.	5,700	1,200	19	112,80	22,56	1,573	0,397	44,21	0,200	45,0	0,18
8.	5,900	1,400	19	116,60	23,32	1,835	0,328	36,55	0,200	45,0	0,15
9.	6,100	1,600	19	120,40	24,08	2,097	0,268	29,81	0,200	45,0	0,12
10.	6,300	1,800	19	124,20	24,84	2,359	0,221	24,63	0,200	45,0	0,10
11.	6,500	2,000	19	128,00	25,60	2,621	0,187	20,81	0,200	45,0	0,09
12.	6,700	2,200	19	131,80	26,36	2,883	0,158	17,56	0,200	45,0	0,07
13.	6,900	2,400	19	135,60	27,12	3,145	0,135	15,00	0,200	45,0	0,06
14.	7,100	2,600	19	139,40	27,88	3,408	0,118	13,09	0,200	45,0	0,05
15.	7,300	2,800	19	143,20	28,64	3,670	0,103	11,43	0,200	45,0	0,05

ζ	k	k
0,0	1,0	1,0
0,4	0,949	0,967
0,8	0,756	0,889
1,2	0,547	0,763
1,6	0,390	0,626
2,0	0,285	0,504
2,4	0,214	0,397
2,8	0,165	0,328
3,2	0,130	0,268
3,6	0,106	0,221
4,0	0,087	0,187
4,4	0,073	0,158
4,8	0,067	0,135
5,2	0,053	0,118
5,6	0,046	0,103

$\sum \Delta s = 2,75$

Polio skersmuo:

$b = 0,35$ m

Polio ilgis:

$d = 4$ m

Sąlyga:

$d/b = 11,4286 > 5$

Polio pado plotis:

$A_b = 0,0962$ m²

(Tikrasis aukštis įvedamas atmetus rostverko aukštį)

Polio įgilinimas į sluoksnį

Tikrasis sluoksnio aukštis

Savitasis sunkis

$d_1 = 0,35$ m	$d_1 = 0,35$ m	$\gamma_1 = 20,0$ kN/m ³	IGS-2
$d_2 = 1$ m	$d_2 = 1,00$ m	$\gamma_2 = 20,0$ kN/m ³	IGS-2
$d_3 = 1$ m	$d_3 = 1,00$ m	$\gamma_3 = 20,0$ kN/m ³	IGS-1
$d_4 = 1,65$ m	$d_4 = 1,65$ m	$\gamma_4 = 20,0$ kN/m ³	IGS-3
$d_5 = 0$ m	$d_5 = 0,00$ m	$\gamma_5 = 0,0$ kN/m ³	
$d_6 = 0$ m	$d_6 = 0,00$ m	$\gamma_5 = 0,0$ kN/m ⁴	
$d_7 = 0$ m	$d_7 = 0,00$ m	$\gamma_5 = 0,0$ kN/m ⁵	
$d_8 = 0$ m	$d_8 = 0,00$ m	$\gamma_5 = 0,0$ kN/m ⁶	

Trinties stiprumas

Kūginis stiprumas

$A_{s,1} = 0,3848$ m ²	$q_{s1} = 0,03$ MPa	$q_{c1} = 5,50$ MPa	IGS-2
$A_{s,1} = 1,0996$ m ²	$q_{s2} = 0,04$ MPa	$q_{c2} = 9,50$ MPa	IGS-2
$A_{s,1} = 1,0996$ m ²	$q_{s3} = 0,03$ MPa	$q_{c3} = 4,50$ MPa	IGS-1
$A_{s,1} = 1,8143$ m ²	$q_{s4} = 0,09$ MPa	$q_{c4} = 14,00$ MPa	IGS-3
$A_{s,1} = 0,0000$ m ²	$q_{s5} = 0$ MPa	$q_{c5} = 0,00$ MPa	
$A_{s,1} = 0,0000$ m ³	$q_{s5} = 0$ MPa	$q_{c5} = 0,00$ MPa	
$A_{s,1} = 0,0000$ m ⁴	$q_{s5} = 0$ MPa	$q_{c5} = 0,00$ MPa	
$A_{s,1} = 0,0000$ m ⁵	$q_{s5} = 0$ MPa	$q_{c5} = 0,00$ MPa	

Laikomoji galia padu:

$R_b = 673,5$ kN

$R_b = \alpha_b \cdot q_c \cdot A_b$

Laikomoji galia šoniniu paviršiumi:

$R_s = 251,8$ kN

$R_{s,i} = \sum q_{s,i} \cdot A_{s,i}$

Kalibruotoji laikomoji galia:

$R_{c,cal} = 504,6$ kN

$R_{c,cal} = \frac{R_b}{\gamma_{mb}} + \frac{R_s}{\gamma_{ms}}$

Charakteristinė laikomoji galia:

$R_{c,k} = 385,2$ kN

$R_{c,k} = \frac{R_{c,cal}}{\xi_3 \text{ arba } \xi_4}$

Skaičiuotinė laikomoji galia:

$R_{c,d} = 350,2$ kN

$R_{c,d} = \frac{R_{c,k}}{\gamma_c}$

IŠVADA: POLIO LAIKOMOJI GALIA PAKANKAMA $R_{c,d} > R_d$

Naudojami deriniai:

1 derinys: A1 + M1 + R1

2 derinys: A2 + M1 arba M2 + R4

Empirinių koreliacijos koeficientų reikšmės (Pastatų konstruktoriaus ir

Grunto tipas	Kūginis stipris q_c , MPa	α_b	q_{ci} , MPa	q_{ci} , MPa	$q_{si,max}$, MPa
Moreninis molis	1 - 5	1,0	0,05	q_{ci}	0,200
	> 5	0,8			
Juostinis molis		1,0	0,035	q_{ci}	0,150
Dulkis		0,6	0,025	q_{ci}	0,150
Smėlis	0 - 10	0,5	0,01	q_{ci}	0,180
	> 25	0,5	0,008		

Tarpinės lentelės reikšmės tiesiškai interpoluojamos.

Modeliavimo koeficientų reikšmės

Polio tipas	γ_{mb}	γ_{ms}
Spraustiniai	1,1	1,1
Spraustiniai gręžtiniai	1,1	1,35
CFA	2	1,5
Gręžtiniai	2	1,5

Charakteristinių verčių, gautų remiantis grunto tyrimo rezultatais (n – ištirtų pjūvių

ξ	n						
	1	2	3	4	5	7	10
ξ_3	1,4	1,35	1,33	1,31	1,29	1,27	1,25
ξ_4	1,4	1,27	1,23	1,2	1,15	1,12	1,08

Daliniai koeficientai γ_{Ri} polių pagrindo atsparumui pagal EN 1997-1:2004.

Atsparumas	Polio tipas	Simbolis	Aprokrovų grupė			
			R1	R2	R3	R4
Polio pado laikomoji galia	kaltiniai gręžtiniai	γ_b	1	1,1	1	1,3
	CFA		1,1			1,6
	gręžtiniai		1,1			1,45
Polio kamieno šoninio paviršiaus laikomoji galia gniuždymui	kaltiniai gręžtiniai	γ_s	1	1,1	1	1,3
	CFA		1			1,4
	gręžtiniai		1,1			1,4
Polio pado suminis atsparumas gniuždymui	kaltiniai gręžtiniai	γ_t	1	1,1	1	1,3
	CFA		1,1			1,4
	gręžtiniai		1,1			1,4
Polio laikomoji galia tempimui	kaltiniai gręžtiniai	$\gamma_{s,t}$	1,25	1,15	1,1	1,6
	CFA		1,25			1,6
	gręžtiniai		1,25			1,6

Rostverko aukštis grunte:

$d = 0,5$ m

Polio ilgis:

$h_{pol} = 4,00$ m

Sąlyginis pamato gylis:

$d_s = 4,5$ m

Persiskirstymo kampas

Vidinės trinties kampas

$\alpha_1 = 8,25$ °	$\varphi_{d1} = 33,0$ °	$\alpha = \frac{\varphi_d}{4}$
$\alpha_2 = 8,25$ °	$\varphi_{d2} = 33,0$ °	
$\alpha_3 = 7,50$ °	$\varphi_{d3} = 30,0$ °	
$\alpha_4 = 9,50$ °	$\varphi_{d4} = 38,0$ °	
$\alpha_5 = 0,00$ °	$\varphi_{d5} = 0,0$ °	

Sąlyginio pamato pado plotis:

$B_s = 1,526$ m

$B_s = b + 2 \cdot h_{pol} \cdot \tan \alpha$

Sąlyginio pamato pado plotis:

$L_s = B_s$

$L_s = B_s$

Sąlyginio pamato pado plotas:

$A_s = 2,33$ m²

$A_s = B_s \cdot L_s$

Grunto svertinis vidutinis svorio tankis slausniuotam pagrindui:

$\gamma_{d,m} = 20,00$ kN/m³

$\gamma_{d,m} = \frac{\sum \gamma_{d,i} \cdot l_i}{\sum l_i}$

Poliaus tūris:

$V_p = 0,385$ m³

Betono svorio tankis:

$\gamma_{betono} = 25,0$ kN/m³

Poliaus svoris:

$G_{dp} = 9,6$ kN

$G_x = A_s \cdot d_s \cdot \gamma_{d,m} + G_{dp}$

Sąlyginio pamato svoris:

$G_s = 228,8$ kN

Veikianti vertikali jėga:

$V_d = 240,0$ kN

$R_{c,d} = 350,2$ kN

Bendra vertikali jėga veikianti pamato lygįje:

$V_{d,0} = 468,82$ kN

Papildomi įtempiami pamato pado lygįje:

$\sigma_{p,0} = 111,3$ kPa

$\sigma_{p,0} = \frac{V_{d,0}}{A_s} - \gamma_{d,m} \cdot d_s$

Grunto padalinimo sluoksnio storis:

$h_i = 0,20$ m

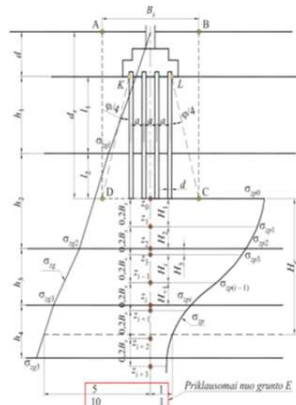
Bendras poliaus nuosėdis:

$s = 2,0$ mm

$s = 0,8 \sum s_i$

$s, \text{ lim} = 10,5$ mm

Išvada: $s = 2,0$ mm $<$ $s_u = 10,5$ mm. Faktinis pamato nuosėdis yra mažesnis už leistiną nuosėdį.



Eil. Nr.	Gylis, m	z, m	γ , kN/m ³	σ_{p0} , kPa	$0,2 \sigma_{p0}$	ζ	k	σ_{p1} , kPa	h_i , m	$E \cdot 10^4$, kPa	Δs , mm	ζ	k	k
1.	4,5	0	19	90,00	18,00	0,0	1,000	111,33	0,200	50,0	0,44	0,0	1,0	1,0
2.	4,700	0,200	19	93,80	18,76	0,262	0,967	107,61	0,200	50,0	0,41	0,4	0,949	0,967
3.	4,900	0,400	19	97,60	19,52	0,524	0,889	98,97	0,200	50,0	0,37	0,8	0,756	0,889
4.	5,100	0,600	19	101,40	20,28	0,786	0,763	84,96	0,200	50,0	0,31	1,2	0,547	0,763
5.	5,300	0,800	19	105,20	21,04	1,048	0,626	69,71	0,200	50,0	0,25	1,6	0,390	0,626
6.	5,500	1,000	19	109,00	21,80	1,311	0,504	56,06	0,200	50,0	0,20	2,0	0,285	0,504
7.	5,700	1,200	19	112,80	22,56	1,573	0,397	44,21	0,200	50,0	0,16	2,4	0,214	0,397
8.	5,900	1,400	19	116,60	23,32	1,835	0,328	36,55	0,200	50,0	0,13	2,8	0,165	0,328
9.	6,100	1,600	19	120,40	24,08	2,097	0,268	29,81	0,200	50,0	0,11	3,2	0,130	0,268
10.	6,300	1,800	19	124,20	24,84	2,359	0,221	24,63	0,200	50,0	0,09	3,6	0,106	0,221
11.	6,500	2,000	19	128,00	25,60	2,621	0,187	20,81	0,200	50,0	0,08	4,0	0,087	0,187
12.	6,700	2,200	19	131,80	26,36	2,883	0,158	17,56	0,200	50,0	0,07	4,4	0,073	0,158
13.	6,900	2,400	19	135,60	27,12	3,145	0,135	15,00	0,200	50,0	0,06	4,8	0,067	0,135
14.	7,100	2,600	19	139,40	27,88	3,408	0,118	13,09	0,200	50,0	0,05	5,2	0,053	0,118
15.	7,300	2,800	19	143,20	28,64	3,670	0,103	11,43	0,200	50,0	0,05	5,6	0,046	0,103

$\Sigma \Delta s$:	2,47
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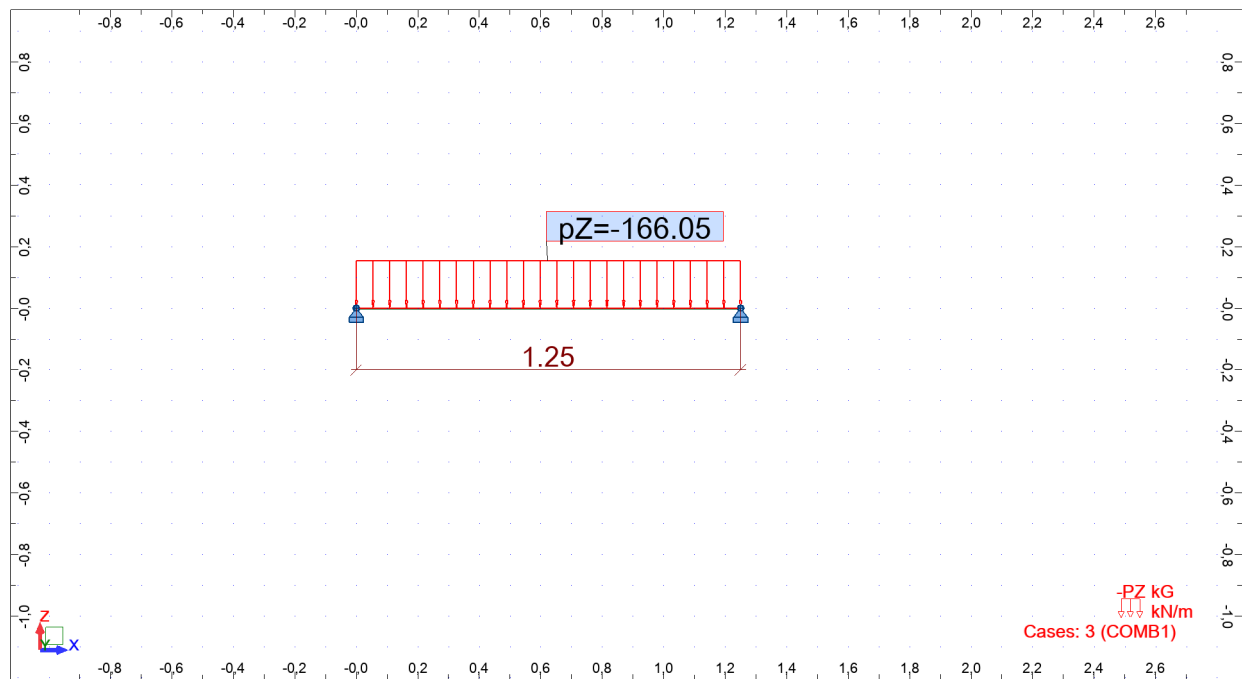
KONSTRUKCIJŲ ŠILUMINIŲ VARŽŲ SKAIČIAVIMAS

1. GRINDYS ANT GRUNTO				
Nr.	Pavadinimas	W/mK	t, m	R, W/(m2K)
Rsi	Atitvaros vidinio paviršius	-	-	-
2	Armuotos betono sluoksnis, 100 mm.	2,5	0,1	0,04
3	Polietileno plėvelė - 0,2 mm.	-	-	0,04
4	Polistireninis putplastis EPS 100, 0.035 W/mK	0,041	0,30	7,32
Rse	Atitvaros vidinio paviršius	-	-	-
			Viso:	7,40
Šilumos perdavimo koeficientas po rekonstrukcijos:		Uproj.	0,135	W/(m2K)
Norminis šilumos perdavimo koeficientas:		Un.	0,140	W/(m2K)
IŠVADA: Uproj.<Un. Neviršija norminių				

2. SIENOS APŠILTINIMAS				
Nr.	Pavadinimas	W/mK	t, m	R, W/(m2K)
Rsi	Atitvaros vidinis paviršius	-	-	0,13
1	Vidus. Tinkas (kalkių - smėlio - cemento) 10 mm	1	0,01	0,01
2	Silikatinių blokelių mūras 180mm, 0.68 W/mK	0,71	0,18	0,25
4	Polistireninis putplastis EPS 70N, 0.032 W/mK	0,034	0,30	8,82
1	Išorės apdaila tinkas 10 mm	1	0,01	0,03
Rse	Atitvaros išorinis paviršius	-	-	0,04
			Viso:	9,29
Šilumos perdavimo koeficientas po rekonstrukcijos:		Uproj.	0,118	W/(m2K)
Pataisa dėl cinkuotų tvirtinimo detalių		U	0,010	W/(m2K)
Norminis šilumos perdavimo koeficientas:		Un.	0,120	W/(m2K)
IŠVADA: Uproj.<Un. Neviršija norminių				

3. STOGO APŠILTINIMAS				
Nr.	Pavadinimas	W/mK	t, m	R, W/(m2K)
Rsi	Atitvaros vidinio paviršius	-	-	0,1
1	Hidroizoliacija 2 sl.			0,02
2	Akmens vata, 30 mm, 0.038 W/mK	0,04	0,04	1,00
3	Polistireninis putplastis EPS 100, 300 mm, 0.035 W/mK	0,037	0,30	8,11
4	Polistireninis putplastis EPS 100, 50-450 mm, 0.035 W/m	0,037	0,05	1,35
5	G/b surenkama perdanga t -200 mm, R-0,306 m2K/W			0,306
Rse	Atitvaros vidinio paviršius	-	-	0,04
			Viso:	10,93
Šilumos perdavimo koeficientas po rekonstrukcijos:		Uproj.	0,104	W/(m2K)
Pataisa dėl cinkuotų tvirtinimo detalių		U	0,012	W/(m2K)
Norminis šilumos perdavimo koeficientas:		Un.	0,110	W/(m2K)
IŠVADA: Uproj.<Un. Neviršija norminių				

View - Cases: 3 (COMB1)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : φ_{π} = No results
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : no requirements

2 SAŖAMOS 1SR-1 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L.sup. (m)	L (m)	R.sup. (m)
	P1	Span 0,25	1,00	0,25	
	Span length: $L_o = 1,25$ (m)				
	Section from 0,00 to 1,00 (m)				
	25,0 x 30,0 (cm)				
	without left slab				
	without right slab				

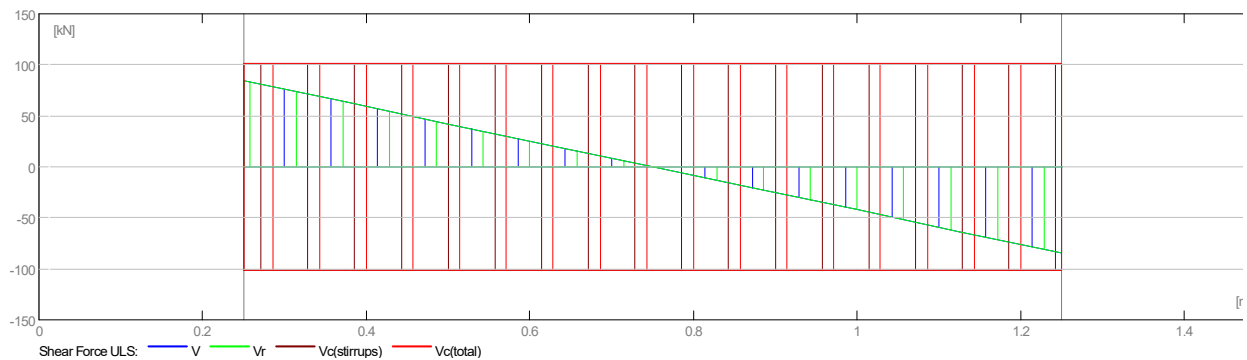
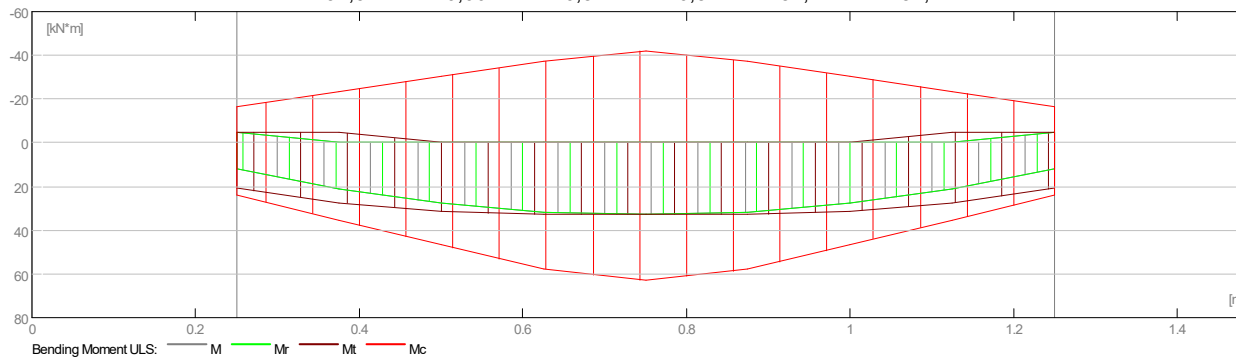
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom : c = 3,5 (cm)
: side : c1= 3,5 (cm)
: top : c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

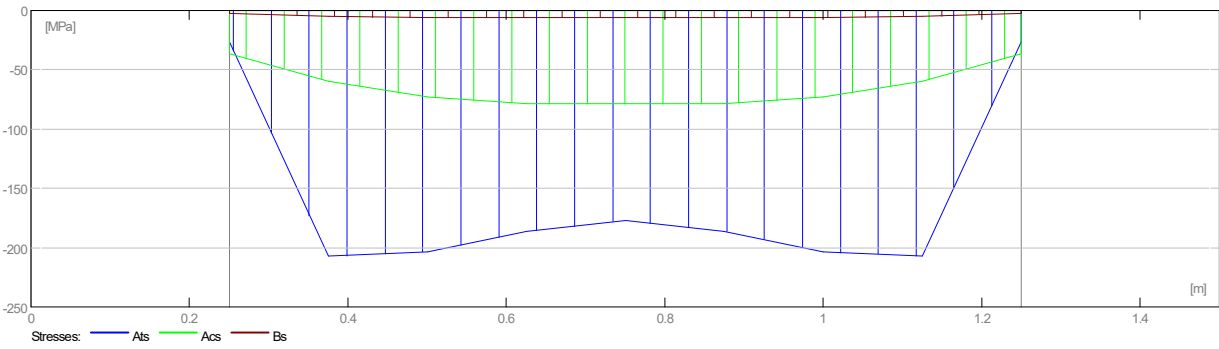
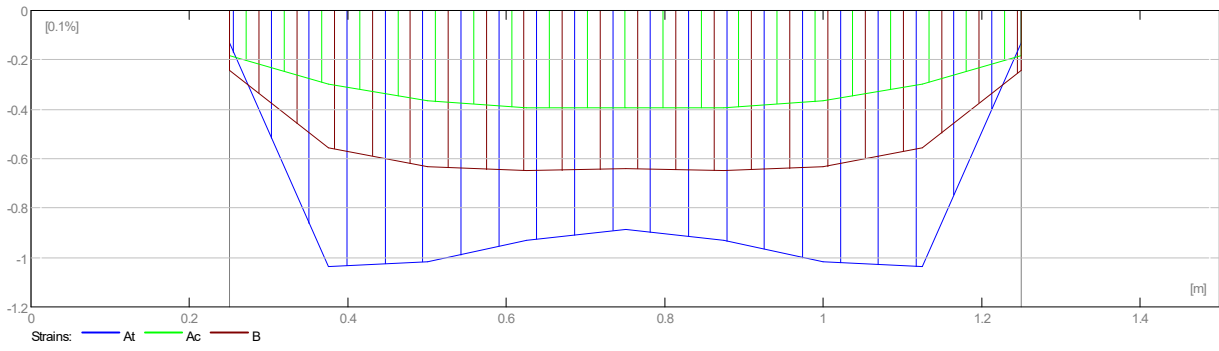
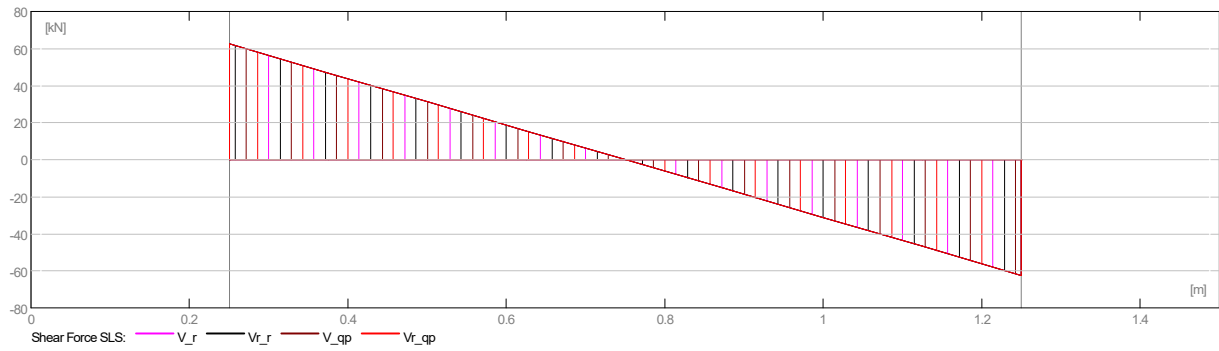
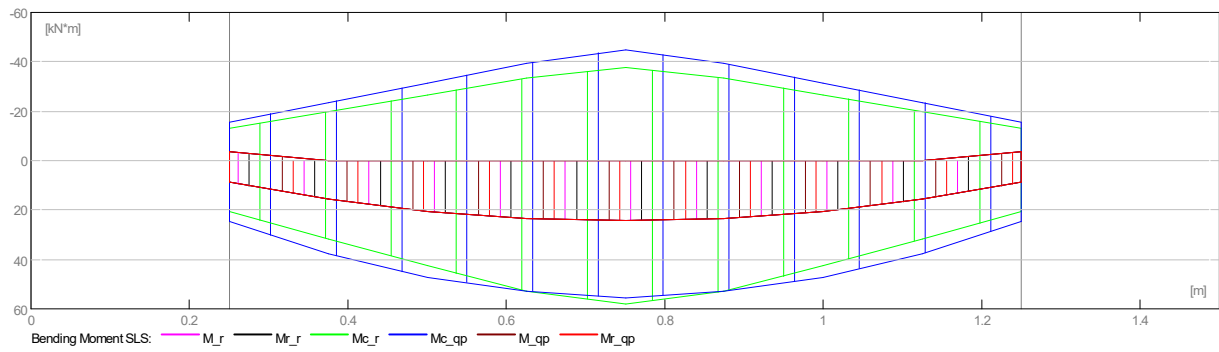
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	32,92	-0,00	20,81	20,81	84,27	-84,27



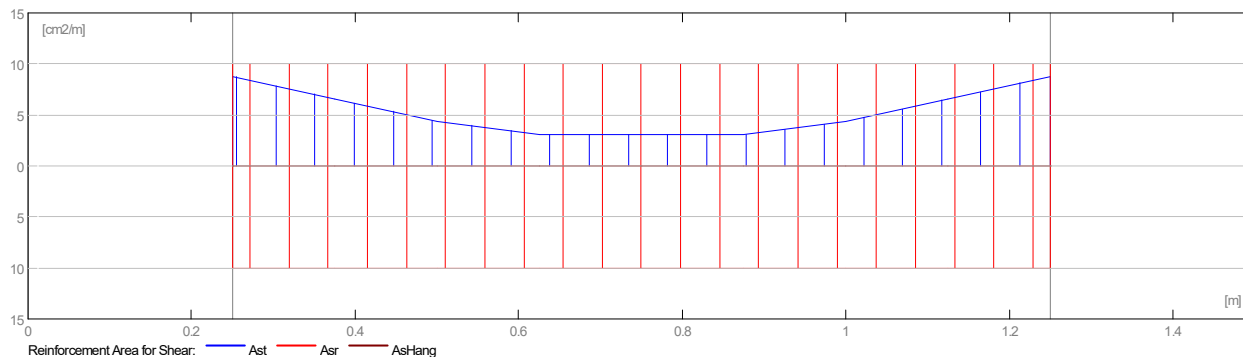
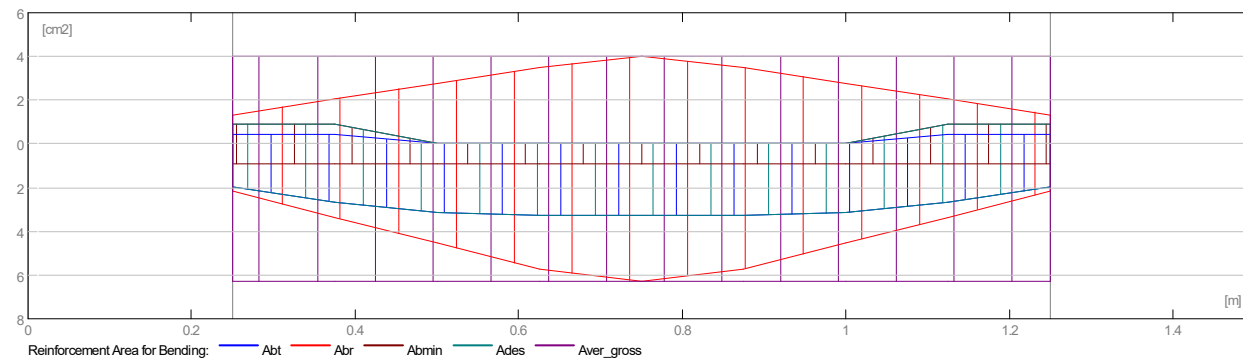
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	24,38	0,00	8,78	8,78	62,42	-62,42



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	3,28	0,00	1,96	0,45	1,96	0,45



2.4.4 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,1	0,5	0,0	0,0	0,2

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,25 to 1,25 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
0,25	20,81	-4,94	8,78	-3,66	1,96	0,45
0,38	27,47	-4,80	15,60	0,00	2,65	0,44
0,50	31,49	-0,00	20,48	0,00	3,13	0,00
0,63	32,88	-0,00	23,41	0,00	3,28	0,00
0,75	32,92	0,00	24,38	0,00	3,28	0,00
0,88	32,88	-0,00	23,41	0,00	3,28	0,00
1,00	31,49	-0,00	20,48	0,00	3,13	0,00
1,13	27,47	-4,80	15,60	0,00	2,65	0,44
1,25	20,81	-4,94	8,78	-3,66	1,96	0,45

Abscissa (m)	ULS		SLS
	V max. (kN)	V max. (kN)	afp (mm)

0,25	84,27	62,42	0,0
0,38	63,20	46,81	0,2
0,50	42,13	31,21	0,2
0,63	21,07	15,60	0,1
0,75	0,00	0,00	0,1
0,88	-21,07	-15,60	0,1
1,00	-42,13	-31,21	0,2
1,13	-63,20	-46,81	0,2
1,25	-84,27	-62,42	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,25 to 1,25 (m)

Longitudinal reinforcement:

- bottom (B500B)
 - 2 ϕ 20 $l = 1,46$ from 1,48 to 0,02
- support (B500B)
 - 2 ϕ 16 $l = 1,46$ from 0,02 to 1,48

Transversal reinforcement:

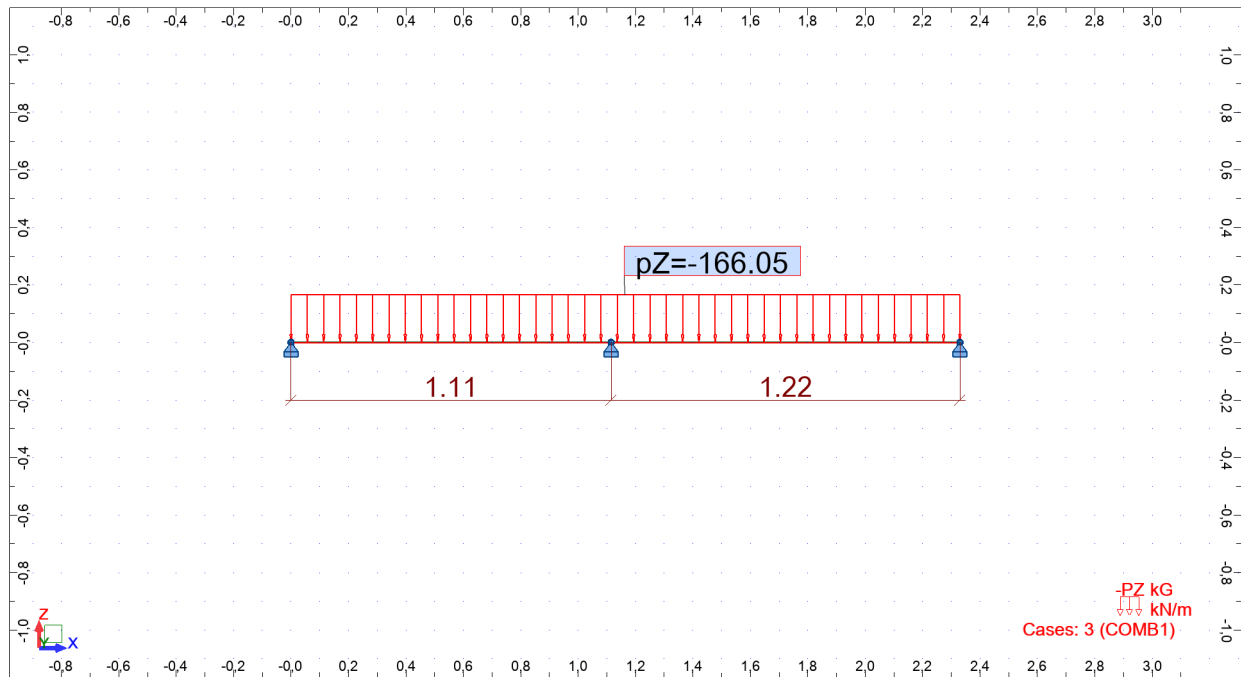
- main (B500B)
 - stirrups 13 ϕ 8 $l = 1,01$
 $e = 1 \cdot -0,22 + 1 \cdot 0,10 + 1 \cdot 0,12 + 10 \cdot 0,10$ (m)

3 Material survey:

- Concrete volume = 0,11 (m3)
- Formwork = 1,30 (m2)
- Steel B500B
 - Total weight = 17,74 (kG)
 - Density = 157,68 (kG/m3)
 - Average diameter = 10,8 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
8	1,01	0,40	15	5,96
16	1,46	2,30	2	4,60
20	1,46	3,59	2	7,18

View - Cases: 3 (COMB1)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : φ_{π} = No results
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : no requirements

2 1SR-2 SAĖAMOS SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,25	0,80	0,38	
	Span length: $L_o = 1,12$ (m) Section from 0,00 to 0,80 (m) 25,0 x 30,0 (cm) without left slab without right slab				
2.2.2	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P2	Span 0,38	0,90	0,25	
	Span length: $L_o = 1,22$ (m) Section from 0,00 to 0,90 (m) 25,0 x 30,0 (cm)				

without left slab
 without right slab

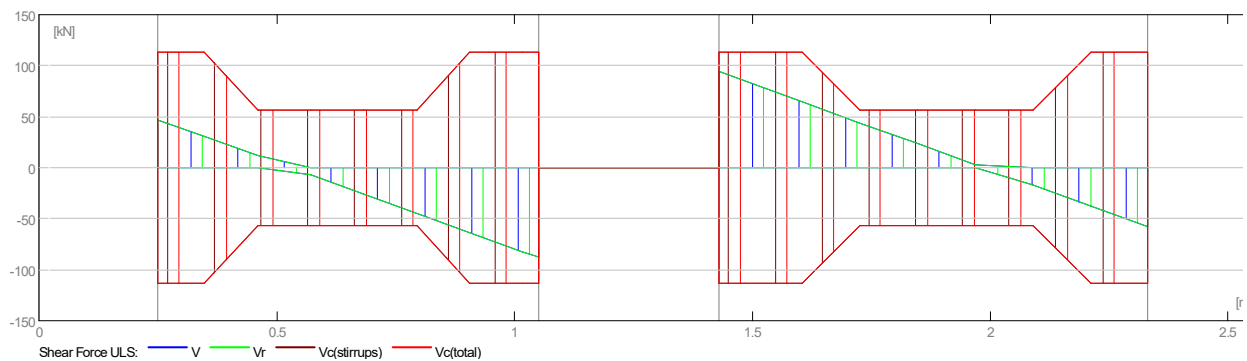
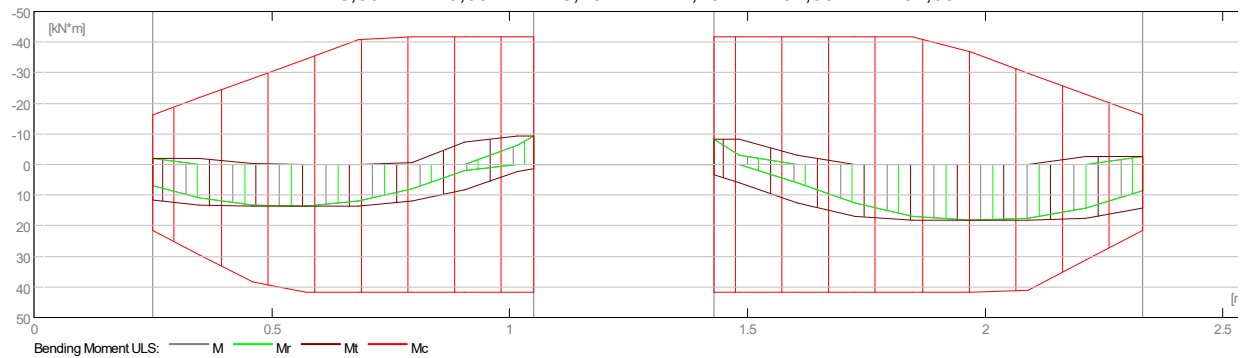
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom c = 3,5 (cm)
 : side c1= 3,5 (cm)
 : top c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

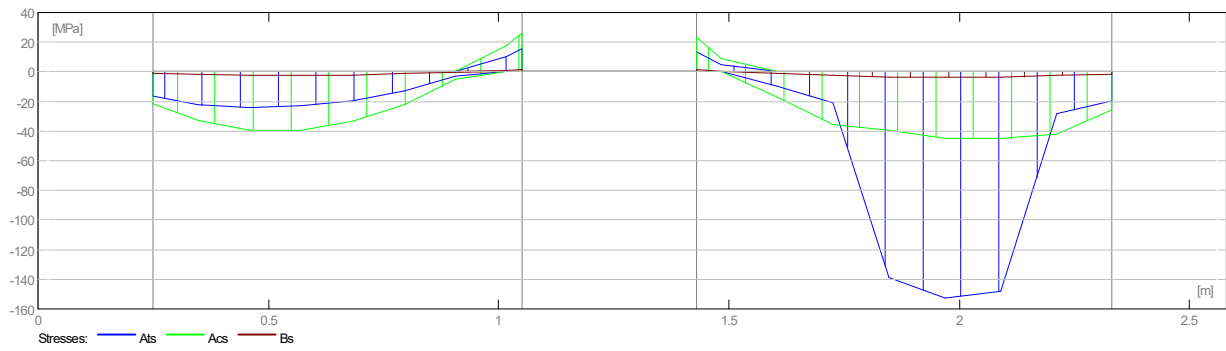
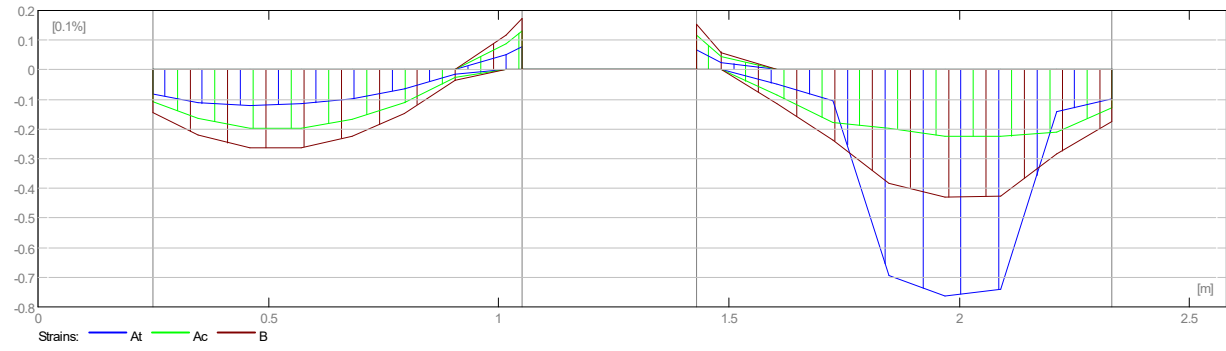
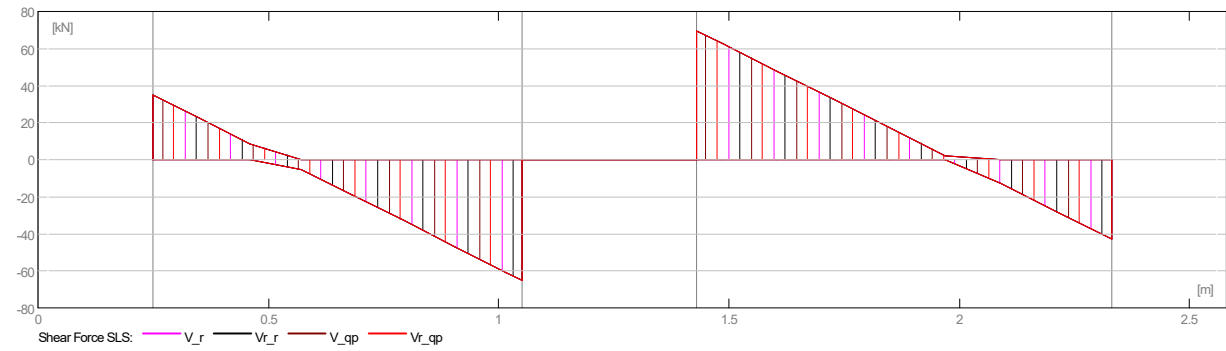
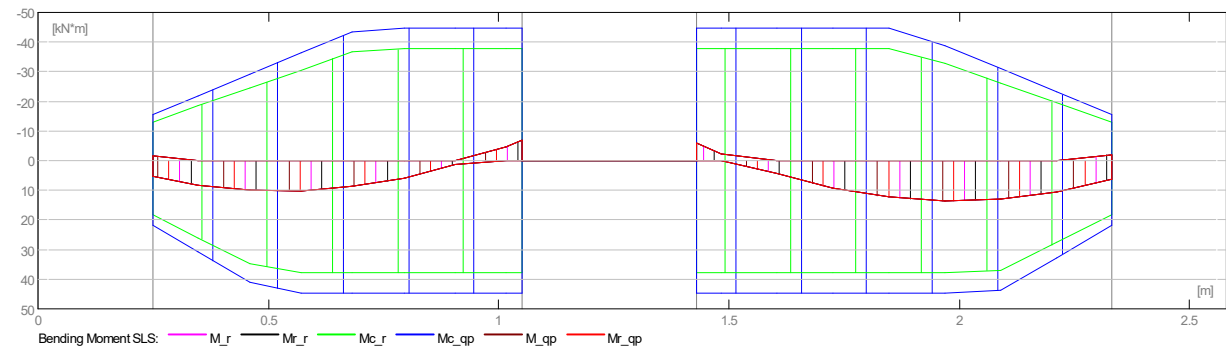
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	13,64	-0,56	11,51	-9,26	47,11	-87,72
P2	18,36	-0,00	-8,15	14,25	94,03	-57,65



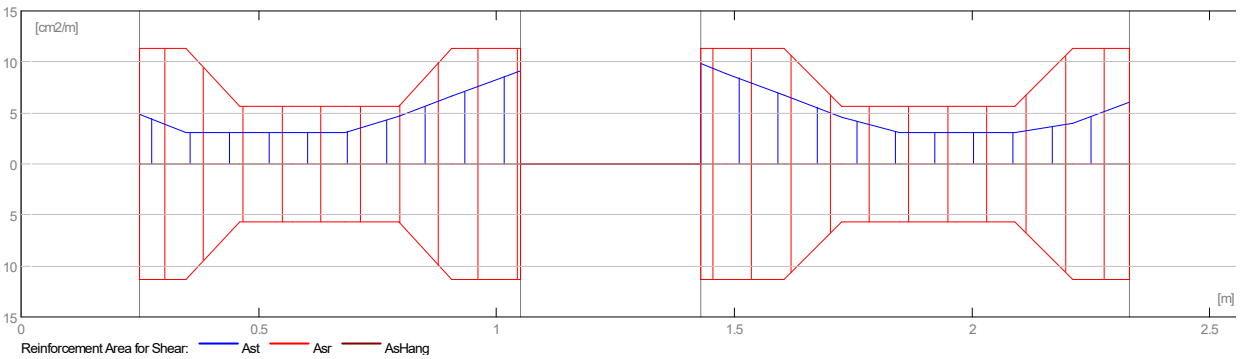
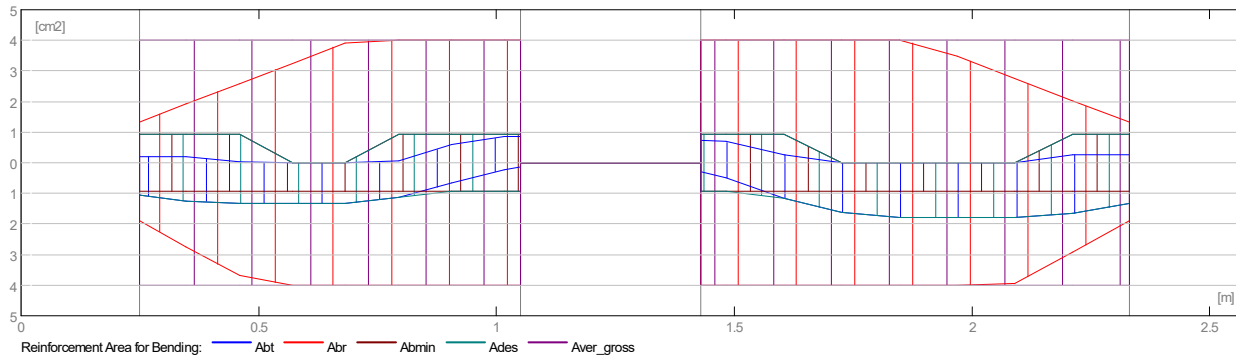
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	10,11	0,00	5,25	-6,86	34,89	-64,98
P2	13,60	0,00	-6,04	6,29	69,65	-42,71



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	1,31	0,00	1,07	0,19	0,14	0,86
P2	1,78	0,00	0,30	0,72	1,33	0,25



2.4.4 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,0	0,4	0,0	0,0	0,0
P2	0,0	0,5	0,0	0,0	0,1

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,25 to 1,05 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
0,25	11,51	-2,05	5,25	-1,52	1,07	0,19
0,35	13,40	-2,05	8,16	0,00	1,25	0,19
0,46	13,64	-0,21	9,91	0,00	1,31	0,02
0,57	13,64	-0,00	10,11	0,00	1,31	0,00
0,68	13,64	-0,00	8,75	0,00	1,31	0,00
0,79	11,98	-0,56	5,85	0,00	1,14	0,05
0,91	8,24	-7,15	1,39	0,00	0,67	0,58
1,02	2,41	-9,26	0,00	-4,62	0,22	0,84
1,05	1,49	-9,26	0,00	-6,86	0,14	0,86

Abscissa	ULS		SLS
	V max.	V max.	afp

(m)	(kN)	(kN)	(mm)
0,25	47,11	34,89	0,0
0,35	30,59	22,66	0,0
0,46	11,80	8,74	0,0
0,57	-6,99	-5,18	0,0
0,68	-25,78	-19,10	0,0
0,79	-44,58	-33,02	0,0
0,91	-63,37	-46,94	0,0
1,02	-82,16	-60,86	0,0
1,05	-87,72	-64,98	0,0

2.5.2 P2 : Span from 1,43 to 2,33 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
1,43	3,38	-8,15	0,00	-6,04	0,30	0,72
1,48	6,00	-8,15	0,00	-2,29	0,50	0,68
1,60	12,61	-3,10	4,44	0,00	1,16	0,28
1,73	16,72	-0,00	9,34	0,00	1,62	0,00
1,85	18,36	-0,00	12,39	0,00	1,78	0,00
1,97	18,36	-0,00	13,60	0,00	1,78	0,00
2,09	18,36	-0,00	12,96	0,00	1,78	0,00
2,21	17,50	-2,75	10,48	0,00	1,65	0,25
2,33	14,25	-2,75	6,29	-2,04	1,33	0,25

Abscissa (m)	ULS		SLS
	V max. (kN)	V max. (kN)	afp (mm)
1,43	94,03	69,65	0,0
1,48	85,09	63,03	0,0
1,60	64,62	47,86	0,0
1,73	44,14	32,70	0,0
1,85	23,66	17,53	0,1
1,97	3,19	2,36	0,1
2,09	-17,29	-12,81	0,1
2,21	-37,77	-27,98	0,0
2,33	-57,65	-42,71	0,0

2.6 Reinforcement:**2.6.1 P1 : Span from 0,25 to 1,05 (m)****Longitudinal reinforcement:****Transversal reinforcement:**

- main (B500B)
stirrups 13 $\phi 6$ $l = 0,94$
 $e = 1*0,00 + 4*0,05 + 4*0,10 + 4*0,05$ (m)

2.6.2 P2 : Span from 1,43 to 2,33 (m)**Longitudinal reinforcement:**

- bottom (B500B)
2 $\phi 16$ $l = 2,52$ from 2,55 to 0,03
- support (B500B)
2 $\phi 16$ $l = 2,52$ from 0,03 to 2,55

Transversal reinforcement:

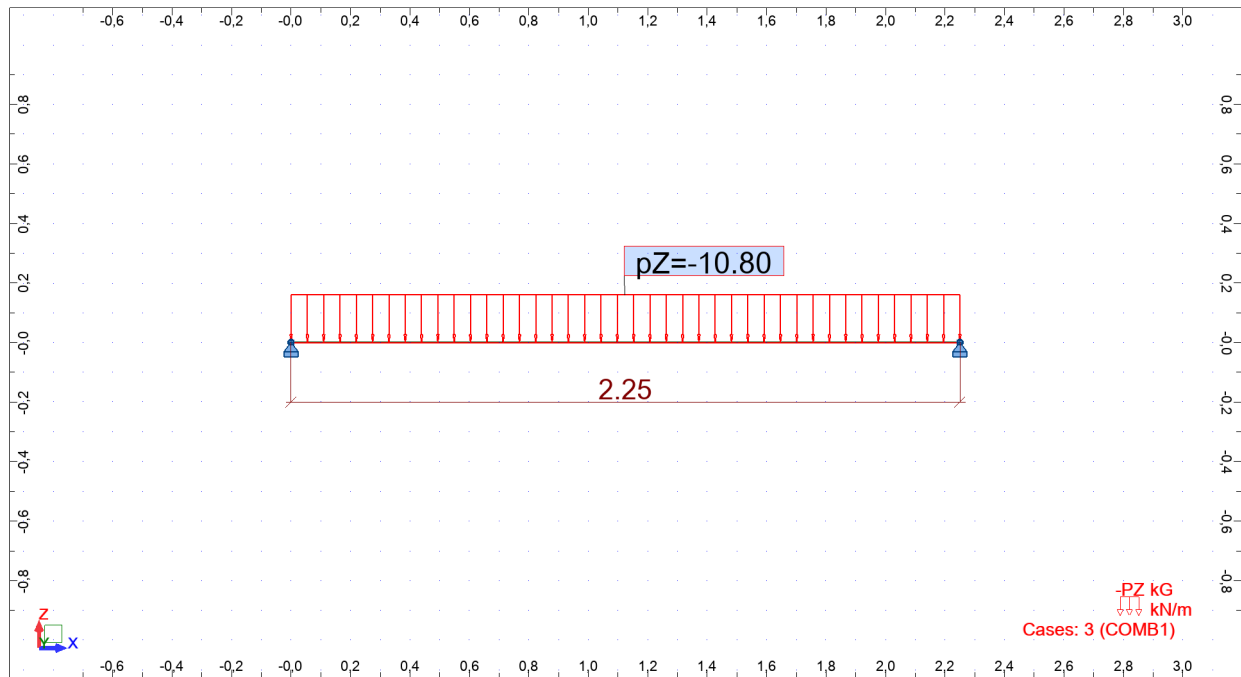
- main (B500B)
stirrups 14 $\phi 6$ $l = 0,94$
 $e = 1*-0,00 + 4*0,05 + 5*0,10 + 4*0,05$ (m)

3 Material survey:

- Concrete volume = 0,19 (m3)
- Formwork = 2,12 (m2)
- Steel B500B
 - Total weight = 21,56 (kG)
 - Density = 111,43 (kG/m3)
 - Average diameter = 8,9 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	0,94	0,21	27	5,62
16	2,52	3,99	4	15,94

View - Cases: 3 (COMB1)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : φ_{π} = No results
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : no requirements

2 SAŖAMŲ SR-3, 4 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram

2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,25	2,00	0,25	
	Span length: $L_o = 2,25$ (m)				
	Section from 0,00 to 2,00 (m)				
	18,0 x 25,0 (cm)				
	without left slab				
	without right slab				

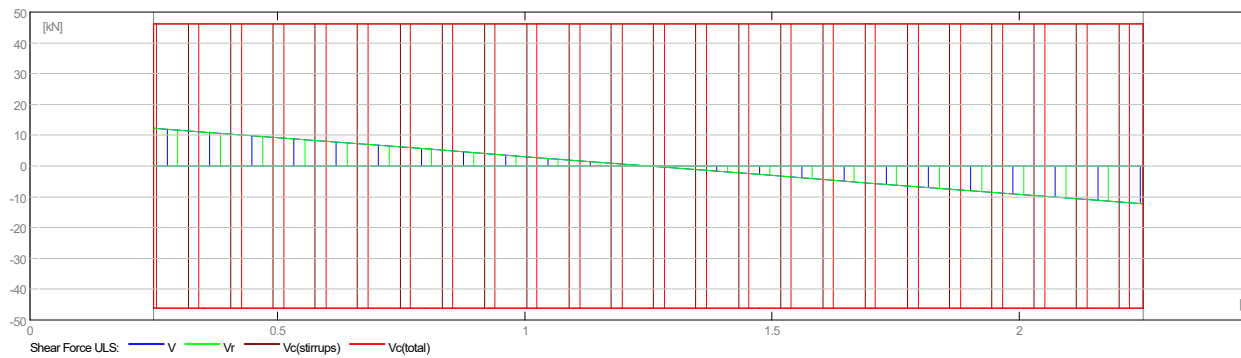
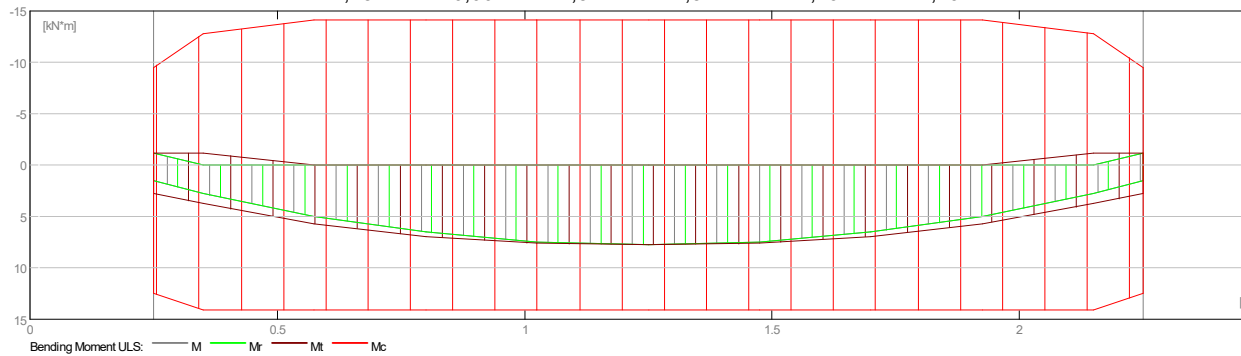
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom : $c = 3,5$ (cm)
 : side : $c1 = 3,5$ (cm)
 : top : $c2 = 3,5$ (cm)
- Cover deviations : $Cdev = 1,0$ (cm), $Cdur = 0,0$ (cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

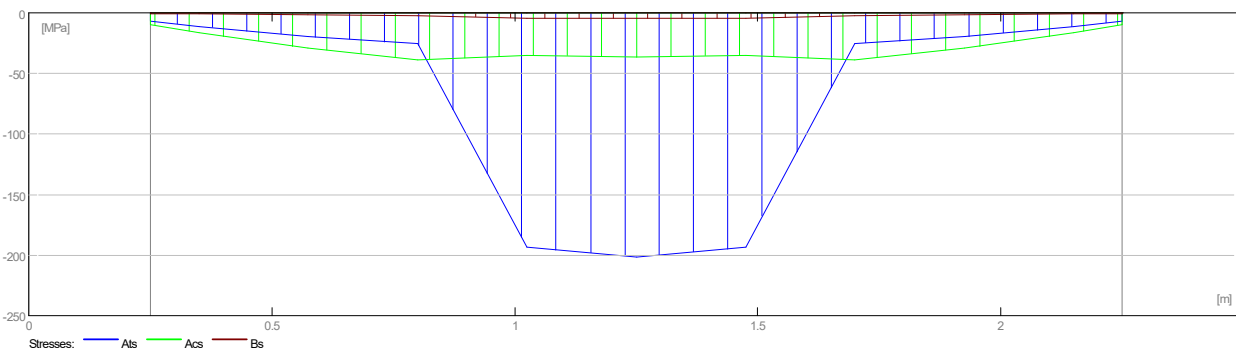
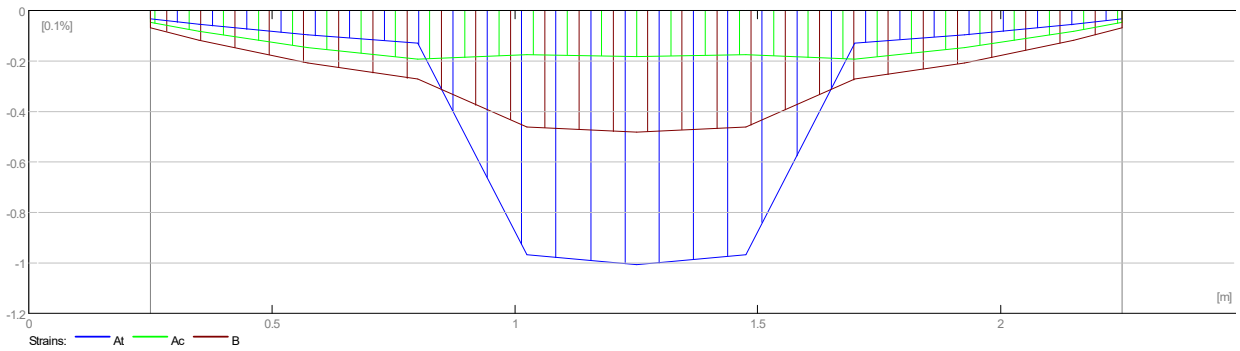
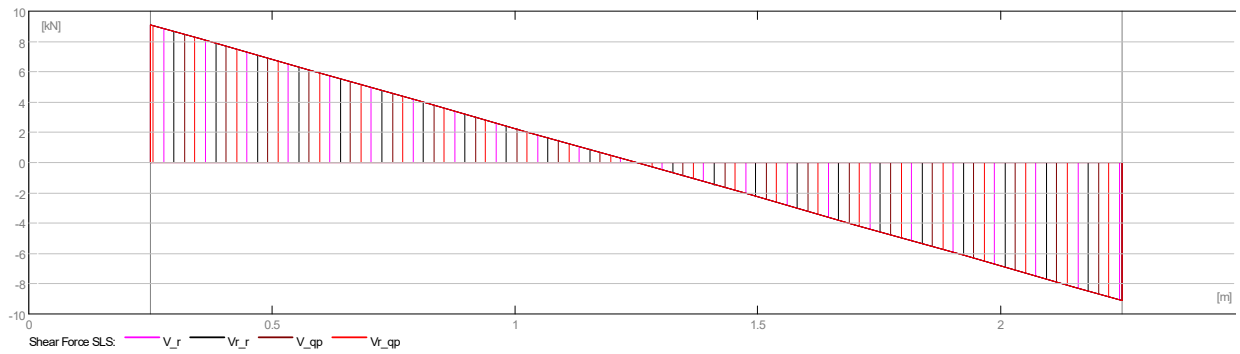
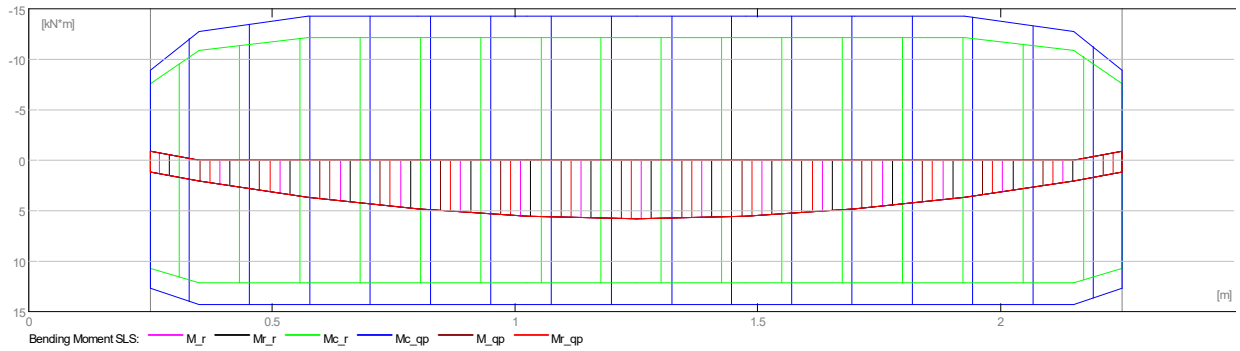
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	7,78	-0,00	2,81	2,81	12,29	-12,29



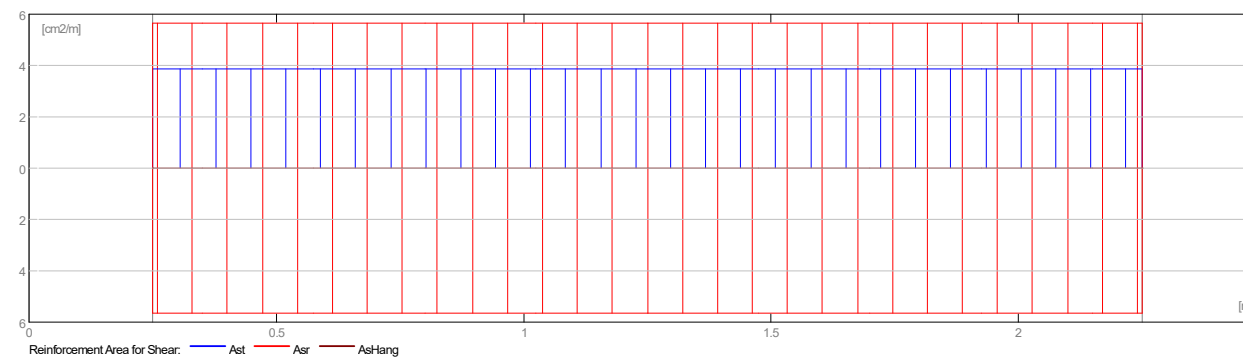
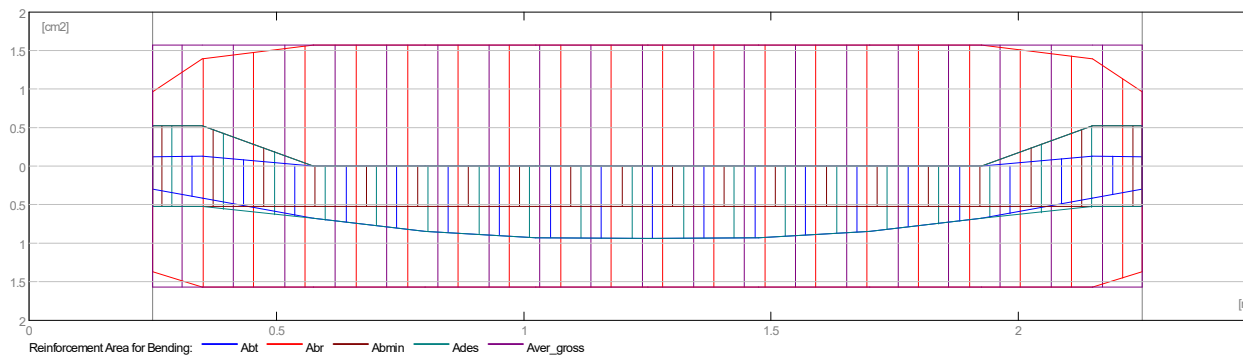
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	5,76	0,00	1,15	1,15	9,10	-9,10



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	0,94	0,00	0,30	0,12	0,30	0,12



2.4.4 Deflection and cracking

wt(QP) Total due to quasi-permanent combination

wt(QP)dop Allowable due to quasi-permanent combination

Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.

Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,3	0,9	0,0	0,5	0,1

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,25 to 2,25 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
0,25	2,81	-1,17	1,15	-0,86	0,30	0,12
0,35	3,78	-1,17	2,07	0,00	0,42	0,13
0,58	5,68	-0,00	3,69	0,00	0,68	0,00
0,80	6,95	-0,00	4,84	0,00	0,84	0,00
1,03	7,61	-0,00	5,53	0,00	0,92	0,00
1,25	7,78	0,00	5,76	0,00	0,94	0,00
1,48	7,61	-0,00	5,53	0,00	0,92	0,00
1,70	6,95	-0,00	4,84	0,00	0,84	0,00
1,93	5,68	-0,00	3,69	0,00	0,68	0,00
2,15	3,78	-1,17	2,07	0,00	0,42	0,13
2,25	2,81	-1,17	1,15	-0,86	0,30	0,12
	ULS	SLS				

Abscissa (m)	V max. (kN)	V max. (kN)	afp (mm)
0,25	12,29	9,10	0,0
0,35	11,06	8,19	0,0
0,58	8,30	6,15	0,0
0,80	5,53	4,10	0,0
1,03	2,77	2,05	0,1
1,25	0,00	0,00	0,1
1,48	-2,77	-2,05	0,1
1,70	-5,53	-4,10	0,0
1,93	-8,30	-6,15	0,0
2,15	-11,06	-8,19	0,0
2,25	-12,29	-9,10	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,25 to 2,25 (m)

Longitudinal reinforcement:

- bottom (B500B)
 - 2 ϕ 10 $l = 2,44$ from 2,47 to 0,03
- support (B500B)
 - 2 ϕ 10 $l = 2,44$ from 0,03 to 2,47

Transversal reinforcement:

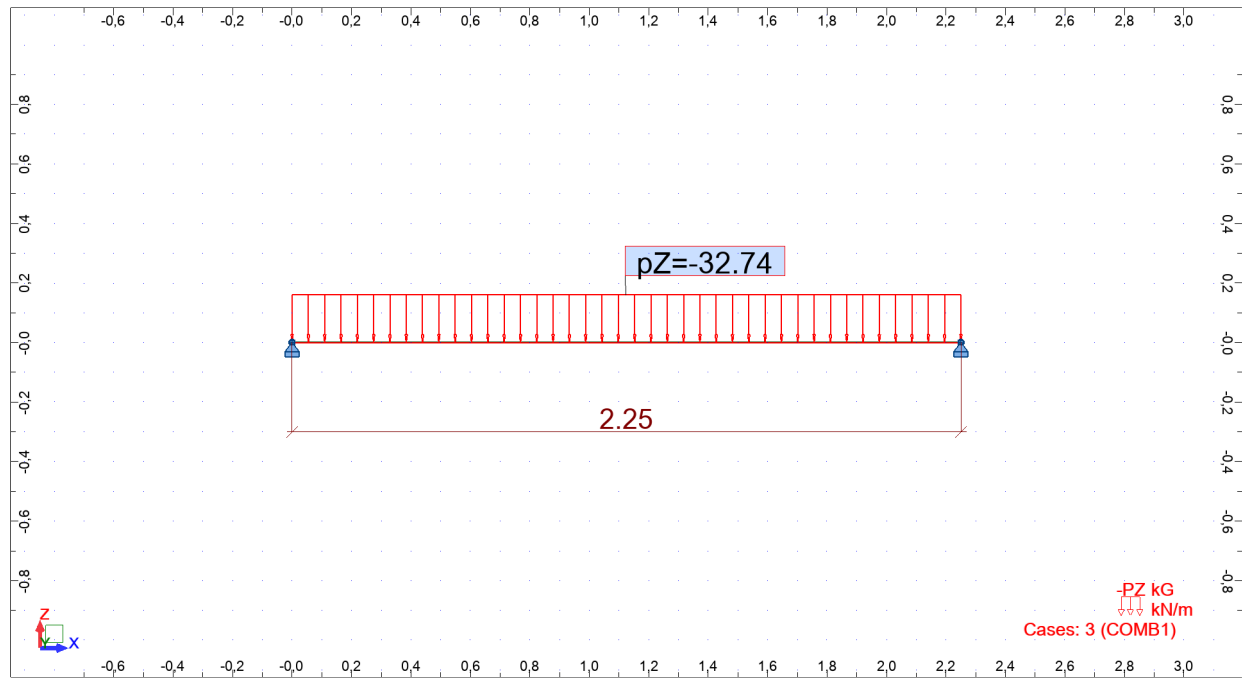
- main (B500B)
 - stirrups 21 ϕ 6 $l = 0,70$
 $e = 1*0,00 + 20*0,10$ (m)

3 Material survey:

- Concrete volume = 0,11 (m3)
- Formwork = 1,70 (m2)
- Steel B500B
 - Total weight = 9,28 (kG)
 - Density = 82,51 (kG/m3)
 - Average diameter = 7,6 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	0,70	0,15	21	3,25
10	2,44	1,51	4	6,03

View - Cases: 3 (COMB1)



1 Level:

- Name : Level ±0,00
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : φ_{π} = No results
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : no requirements

2 SAŖAMOS 1SR-5 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram

2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,25	2,00	0,25	
	Span length: $L_o = 2,25$ (m)				
	Section from 0,00 to 2,00 (m)				
	18,0 x 25,0 (cm)				
	without left slab				
	without right slab				

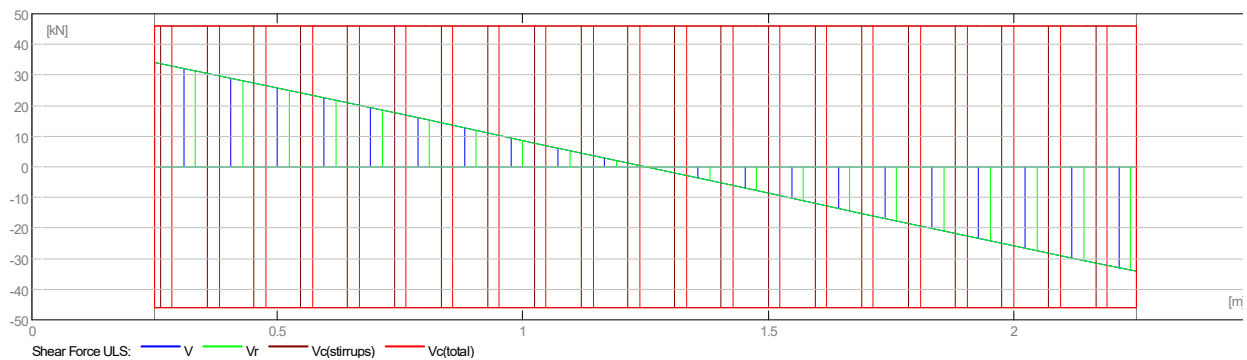
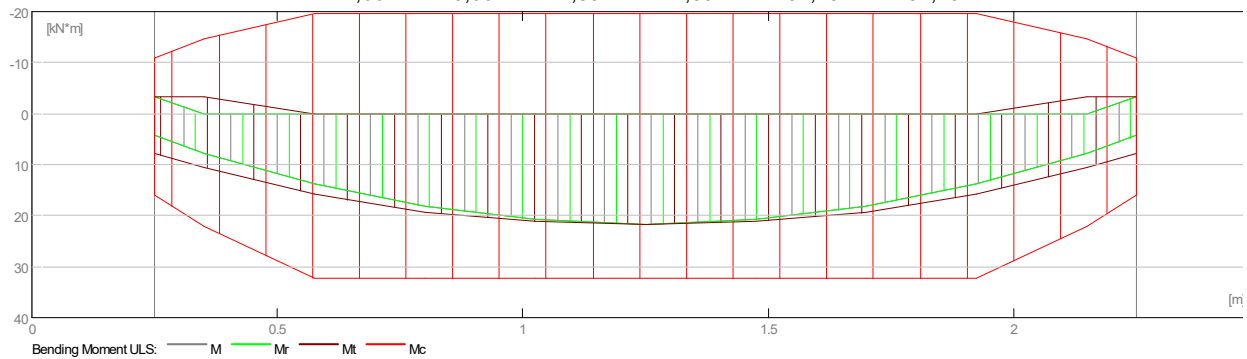
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom : $c = 3,5$ (cm)
 : side : $c1 = 3,5$ (cm)
 : top : $c2 = 3,5$ (cm)
- Cover deviations : $Cdev = 1,0$ (cm), $Cdur = 0,0$ (cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

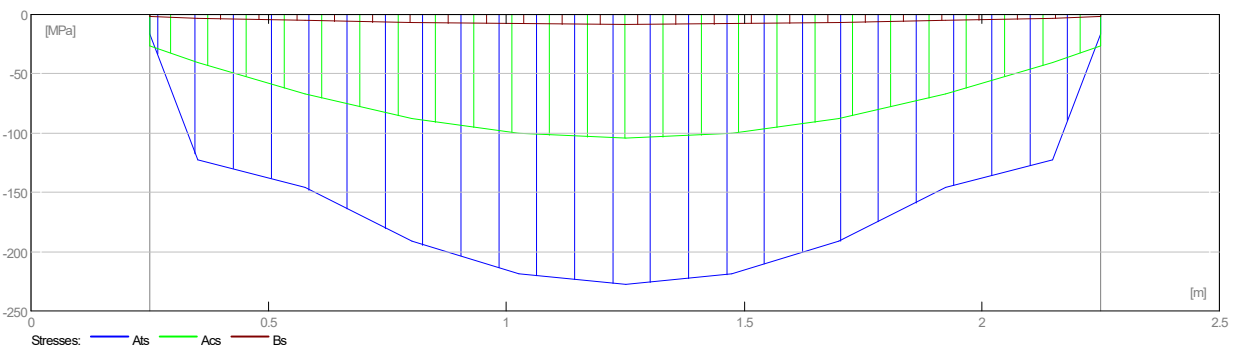
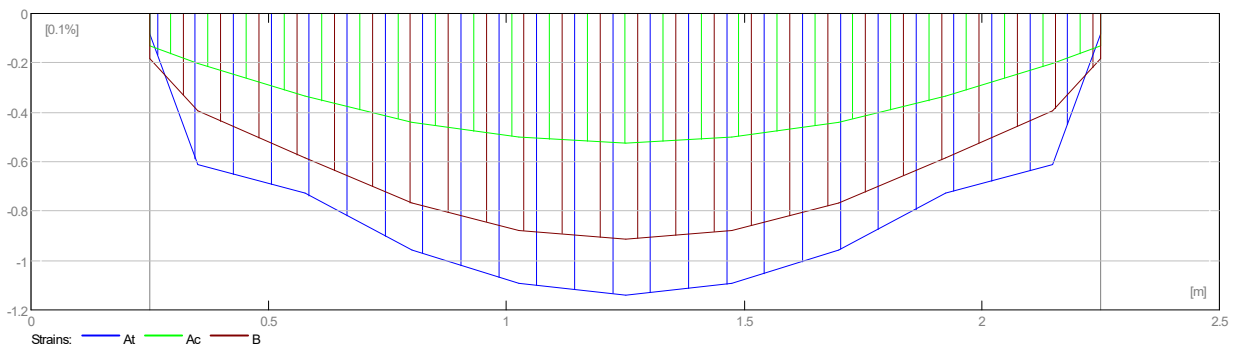
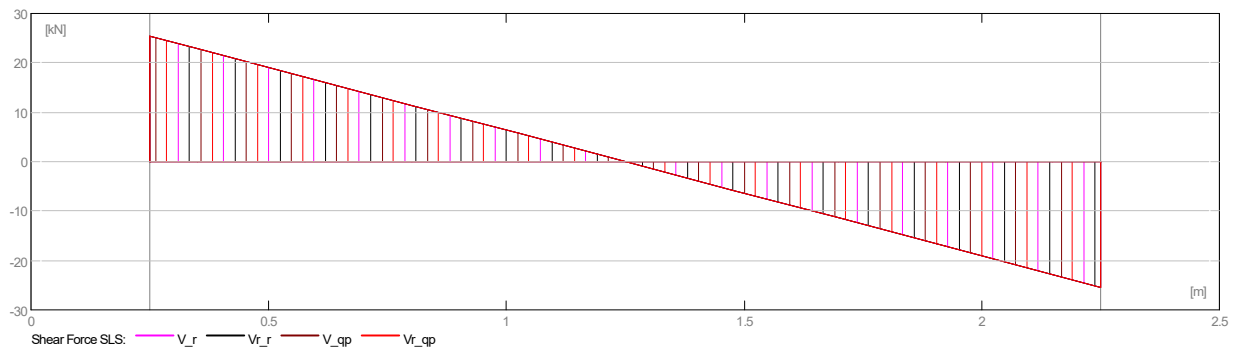
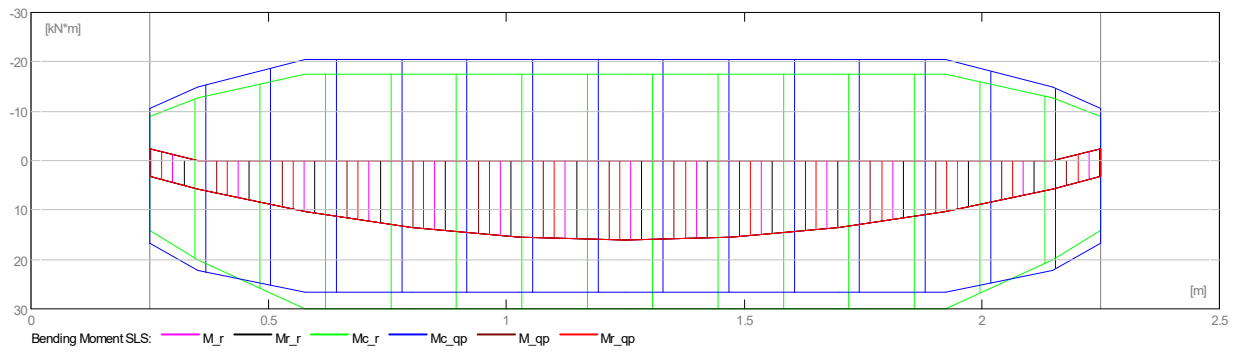
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	21,66	-0,00	7,83	7,83	34,23	-34,23



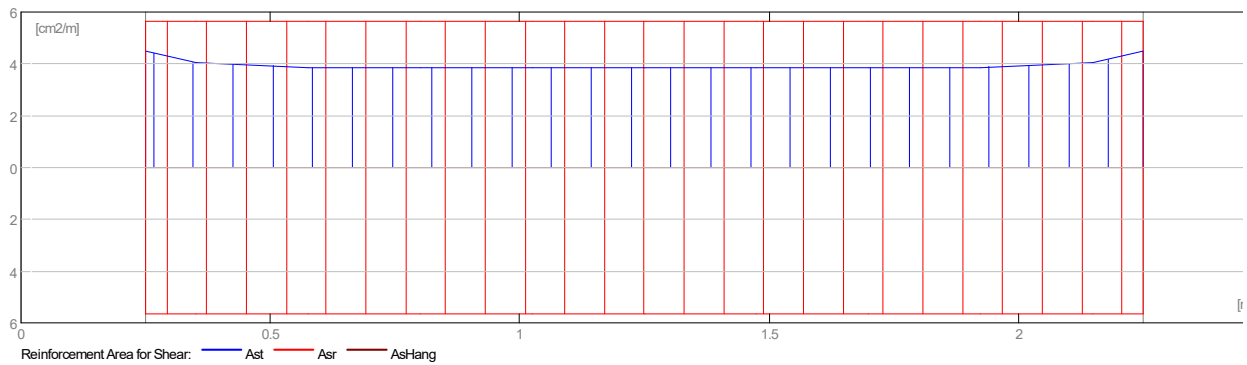
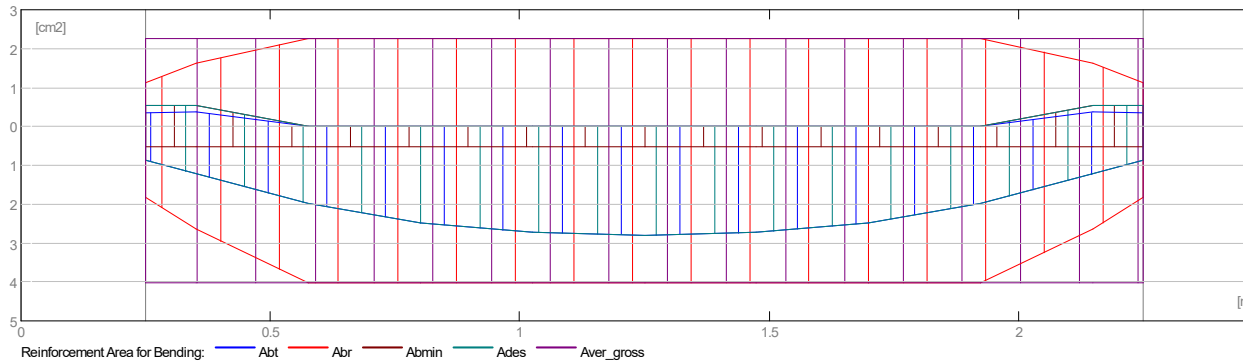
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	16,04	0,00	3,21	3,21	25,35	-25,35



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	2,80	0,00	0,87	0,35	0,87	0,35



2.4.4 Deflection and cracking

wt(QP) Total due to quasi-permanent combination

wt(QP)dop Allowable due to quasi-permanent combination

Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.

Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,5	0,9	0,0	0,0	0,2

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,25 to 2,25 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
0,25	7,83	-3,25	3,21	-2,41	0,87	0,35
0,35	10,53	-3,25	5,78	0,00	1,22	0,37
0,58	15,81	-0,00	10,27	0,00	1,99	0,00
0,80	19,36	-0,00	13,48	0,00	2,47	0,00
1,03	21,18	-0,00	15,40	0,00	2,73	0,00
1,25	21,66	0,00	16,04	0,00	2,80	0,00
1,48	21,18	-0,00	15,40	0,00	2,73	0,00
1,70	19,36	-0,00	13,48	0,00	2,47	0,00
1,93	15,81	-0,00	10,27	0,00	1,99	0,00
2,15	10,53	-3,25	5,78	0,00	1,22	0,37
2,25	7,83	-3,25	3,21	-2,41	0,87	0,35

Abscissa (m)	ULS	SLS	afp (mm)
	V max. (kN)	V max. (kN)	
0,25	34,23	25,35	0,0
0,35	30,80	22,82	0,1
0,58	23,10	17,11	0,1
0,80	15,40	11,41	0,1
1,03	7,70	5,70	0,2
1,25	-0,00	0,00	0,2
1,48	-7,70	-5,70	0,2
1,70	-15,40	-11,41	0,1
1,93	-23,10	-17,11	0,1
2,15	-30,80	-22,82	0,1
2,25	-34,23	-25,35	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,25 to 2,25 (m)

Longitudinal reinforcement:

- bottom (B500B)
2 ϕ 16 l = 2,45 from 2,48 to 0,03
- support (B500B)
2 ϕ 12 l = 2,45 from 0,03 to 2,48

Transversal reinforcement:

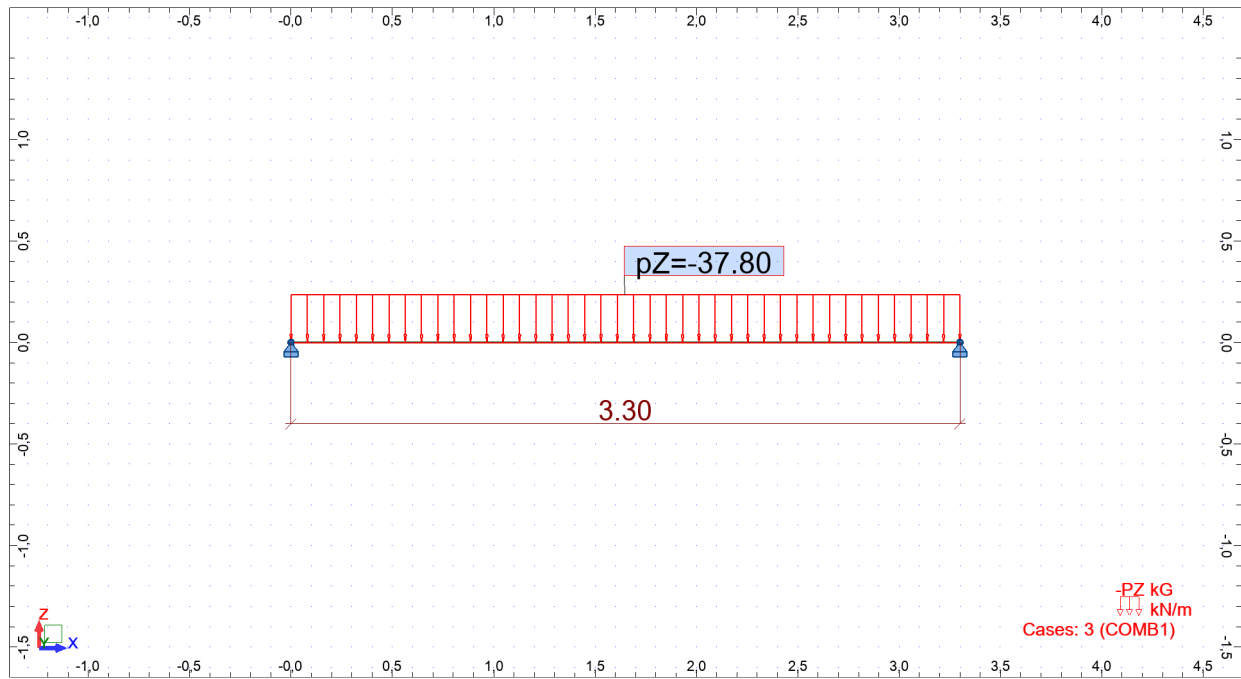
- main (B500B)
stirrups 21 ϕ 6 l = 0,72
e = 1*0,00 + 20*0,10 (m)

3 Material survey:

- Concrete volume = 0,11 (m3)
- Formwork = 1,70 (m2)
- Steel B500B
 - Total weight = 15,45 (kG)
 - Density = 137,36 (kG/m3)
 - Average diameter = 9,1 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	0,72	0,16	21	3,36
12	2,45	2,18	2	4,35
16	2,45	3,87	2	7,74

View - Cases: 3 (COMB1)



1 Level:

- Name : Level $\pm 0,00$
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : φ_{π} = No results
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : no requirements

2 SAĖAMOS 1SR-6 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,40	2,90	0,40	
	Span length: $L_0 = 3,30$ (m)				
	Section from 0,00 to 2,90 (m)				
	18,0 x 35,0 (cm)				
	without left slab				
	without right slab				

2.3 Calculation options:

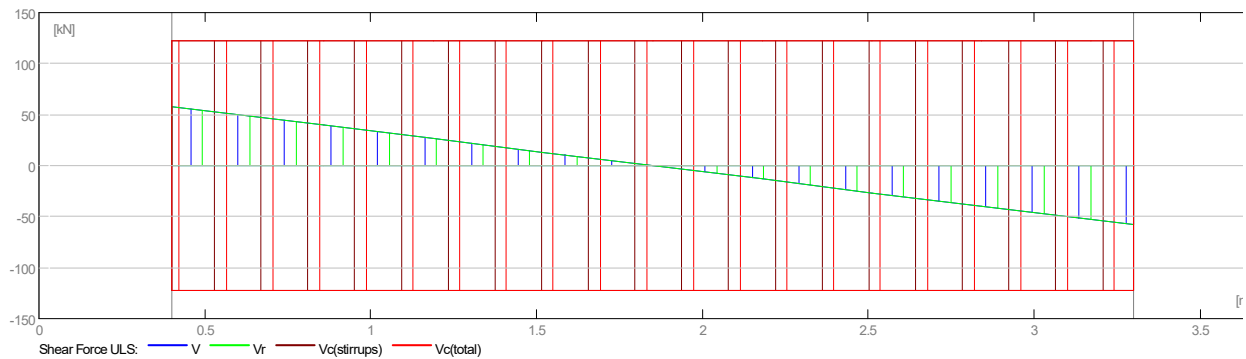
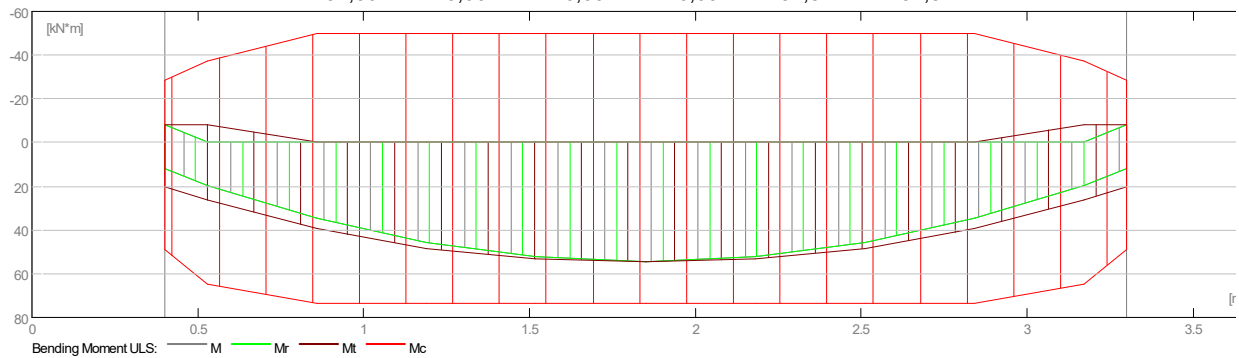
- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)

- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom c = 3,5 (cm)
 : side c1= 3,5 (cm)
 : top c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

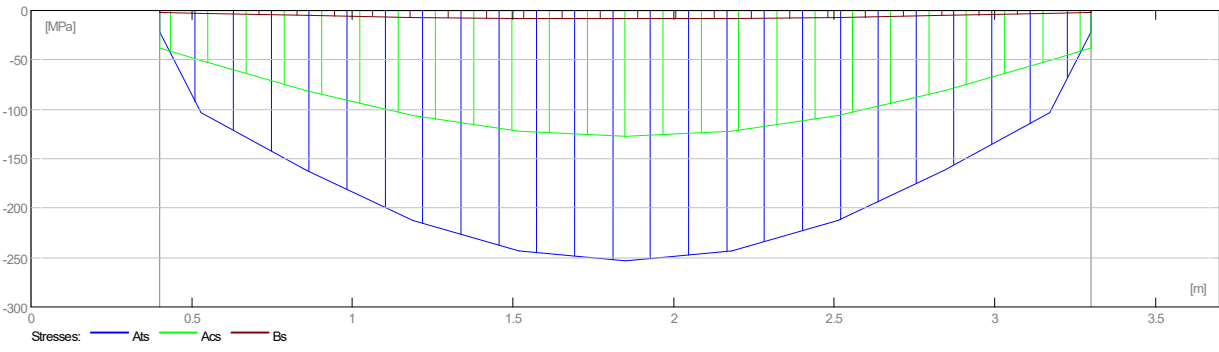
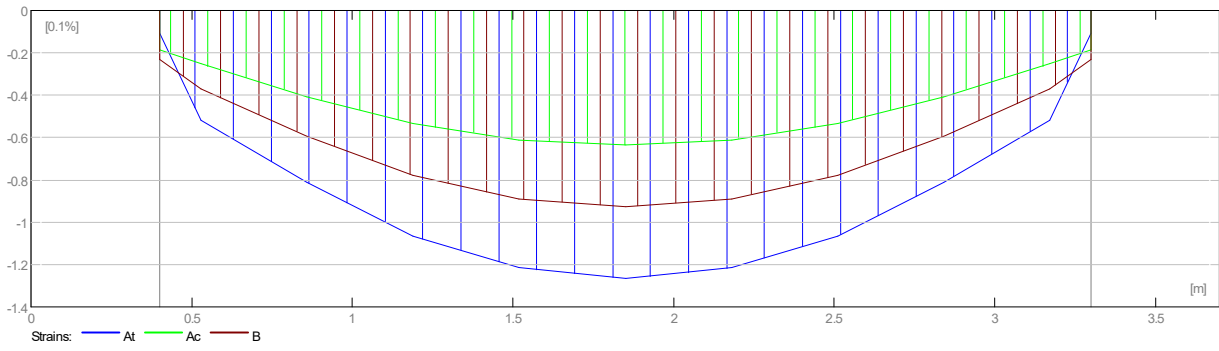
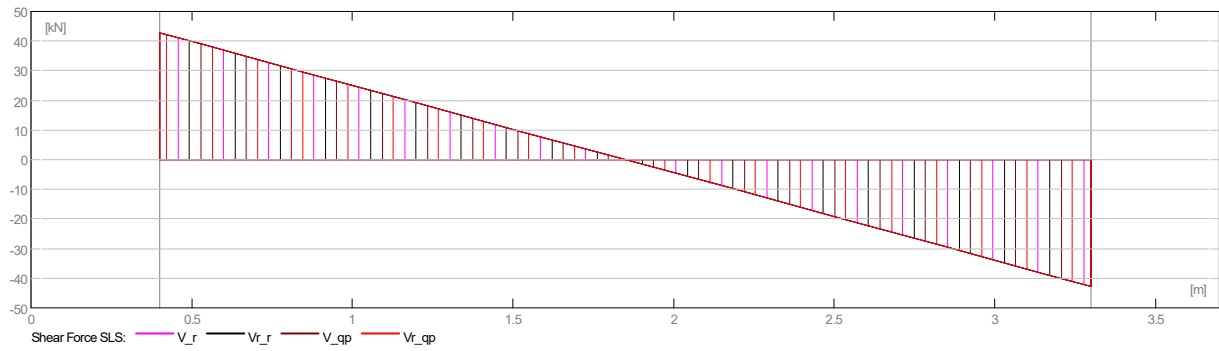
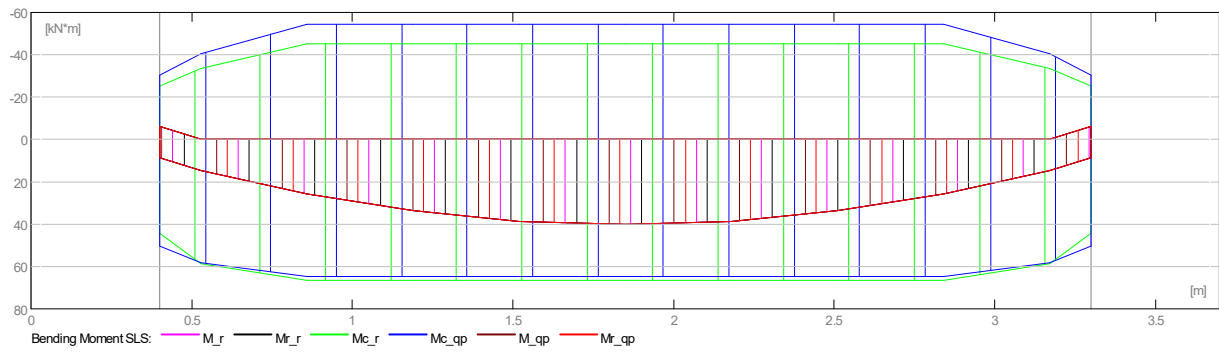
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	54,30	-0,00	20,09	20,09	57,84	-57,84



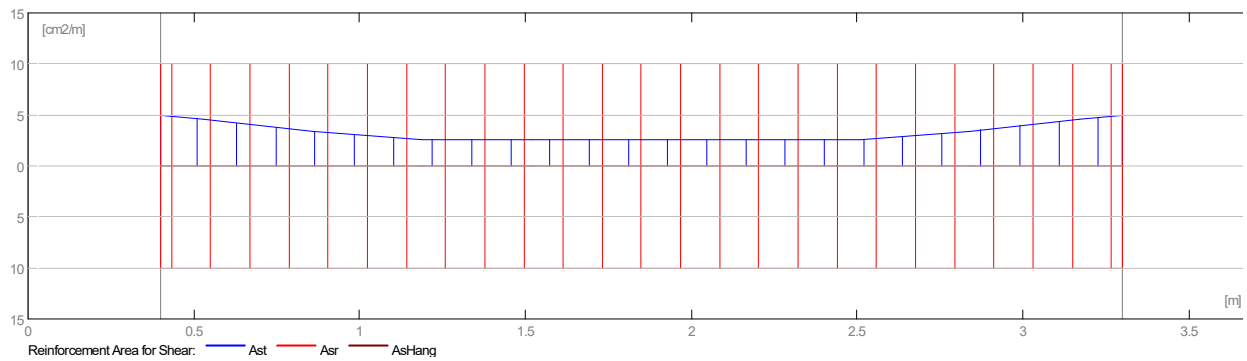
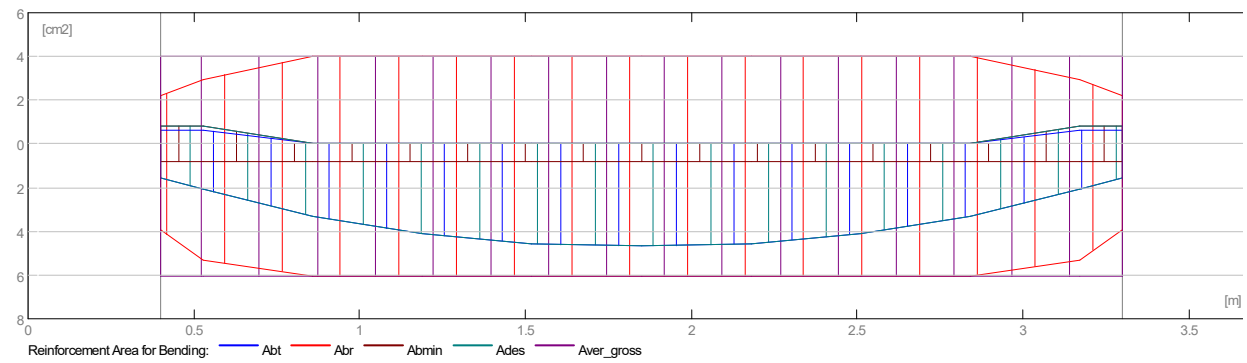
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	40,22	0,00	8,77	8,77	42,84	-42,84



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	4,68	0,00	1,55	0,61	1,55	0,61



2.4.4 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,8	1,3	0,0	0,0	0,2

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,40 to 3,30 (m)

Abscissa (m)	ULS				SLS	
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)	A bottom (cm ²)	A top (cm ²)
0,40	20,09	-8,14	8,77	-6,03	1,55	0,61
0,53	26,08	-8,14	14,48	0,00	2,08	0,63
0,86	39,41	-0,00	25,74	0,00	3,30	0,00
1,19	48,41	-0,00	33,78	0,00	4,12	0,00
1,52	53,06	-0,00	38,61	0,00	4,56	0,00
1,85	54,30	0,00	40,22	0,00	4,68	0,00
2,18	53,06	-0,00	38,61	0,00	4,56	0,00
2,51	48,41	-0,00	33,78	0,00	4,12	0,00
2,84	39,41	-0,00	25,74	0,00	3,30	0,00
3,17	26,08	-8,14	14,48	0,00	2,08	0,63
3,30	20,09	-8,14	8,77	-6,03	1,55	0,61
	ULS	SLS				

Abscissa (m)	V max. (kN)	V max. (kN)	afp (mm)
0,40	57,84	42,84	0,0
0,53	52,65	39,00	0,1
0,86	39,49	29,25	0,1
1,19	26,32	19,50	0,1
1,52	13,16	9,75	0,2
1,85	0,00	0,00	0,2
2,18	-13,16	-9,75	0,2
2,51	-26,32	-19,50	0,1
2,84	-39,49	-29,25	0,1
3,17	-52,65	-39,00	0,1
3,30	-57,84	-42,84	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,40 to 3,30 (m)

Longitudinal reinforcement:

- bottom (B500B)
 - 3 ϕ 16 l = 3,66 from 3,68 to 0,02
- support (B500B)
 - 2 ϕ 16 l = 3,66 from 0,02 to 3,68

Transversal reinforcement:

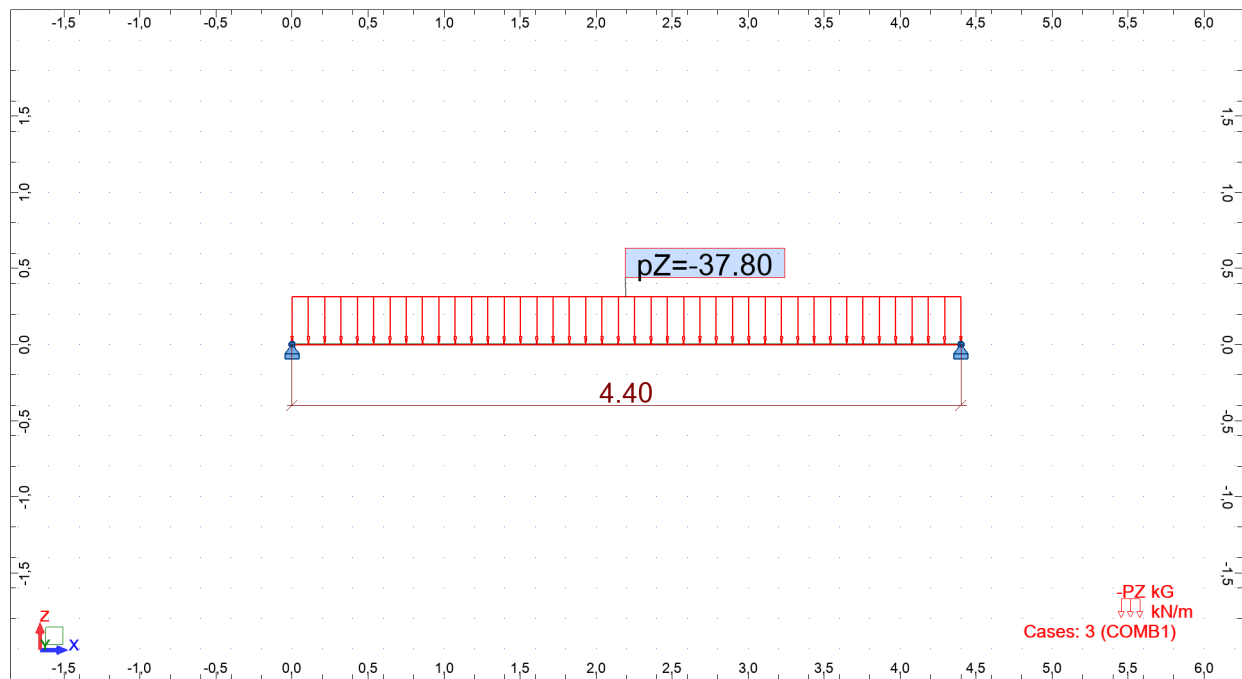
- main (B500B)
 - stirrups 30 ϕ 8 l = 0,97
e = 1*0,00 + 29*0,10 (m)

3 Material survey:

- Concrete volume = 0,23 (m3)
- Formwork = 3,24 (m2)
- Steel B500B
 - Total weight = 40,30 (kG)
 - Density = 172,90 (kG/m3)
 - Average diameter = 11,1 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
8	0,97	0,38	30	11,44
16	3,66	5,77	5	28,86

View - Cases: 3 (COMB1)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : φ_{π} = No results
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : no requirements

2 SAŖAMOS 1SR-7 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L.sup. (m)	L (m)	R.sup. (m)
	P1	Span 0,40	4,00	0,40	
	Span length: $L_o = 4,40$ (m)				
	Section from 0,00 to 4,00 (m)				
	18,0 x 40,0 (cm)				
	without left slab				
	without right slab				

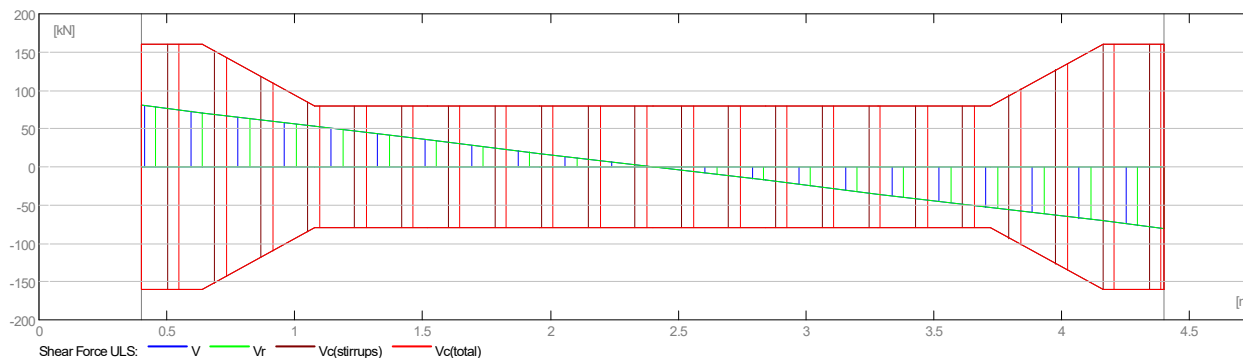
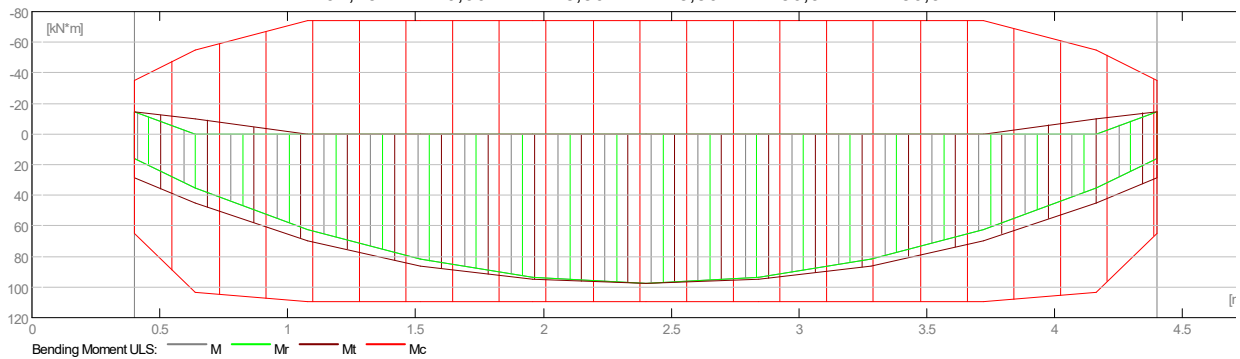
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom : $c = 3,5$ (cm)
 : side : $c1 = 3,5$ (cm)
 : top : $c2 = 3,5$ (cm)
- Cover deviations : $C_{dev} = 1,0$ (cm), $C_{dur} = 0,0$ (cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

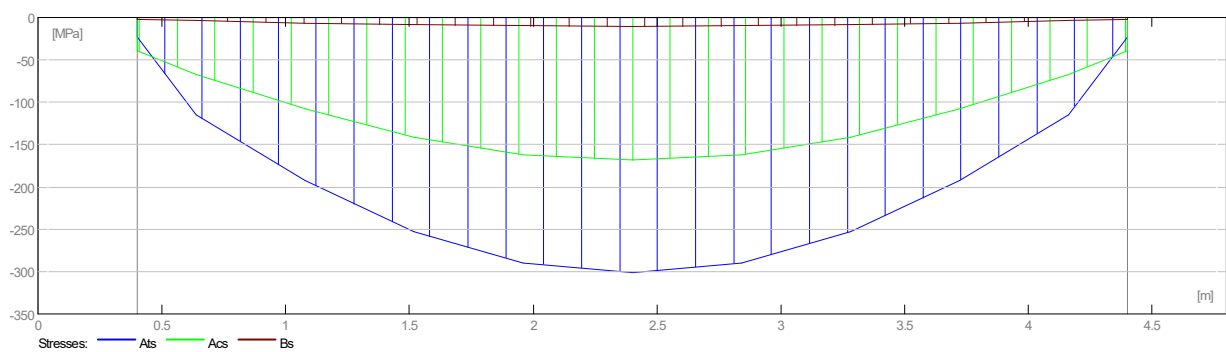
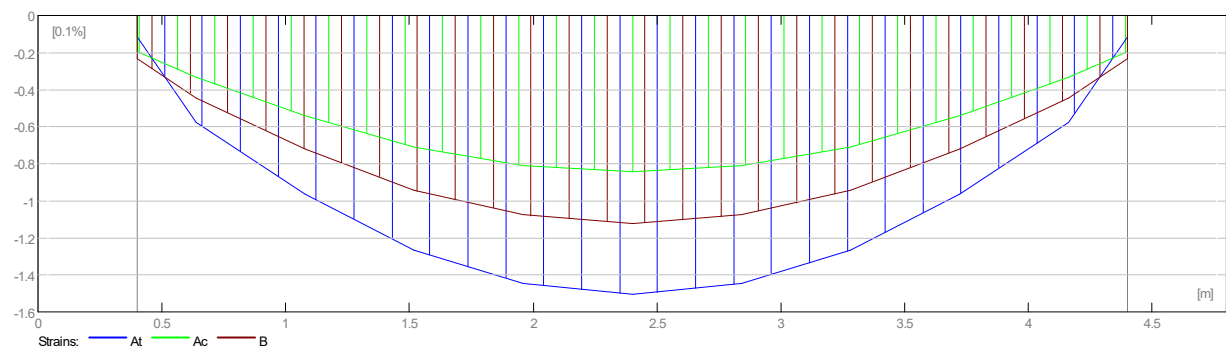
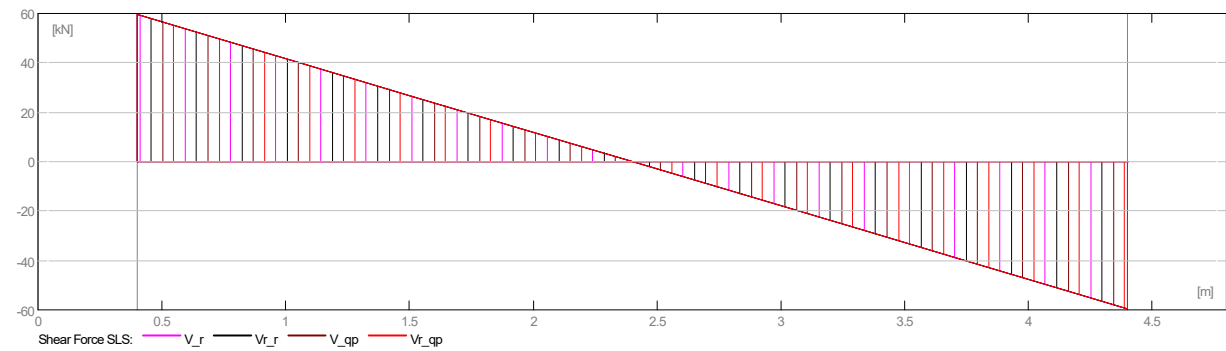
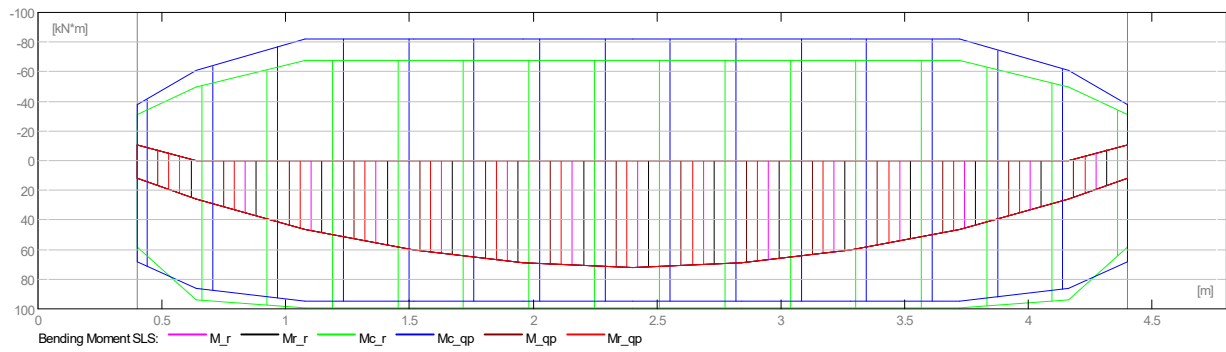
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	97,25	-0,00	28,80	28,80	80,37	-80,37



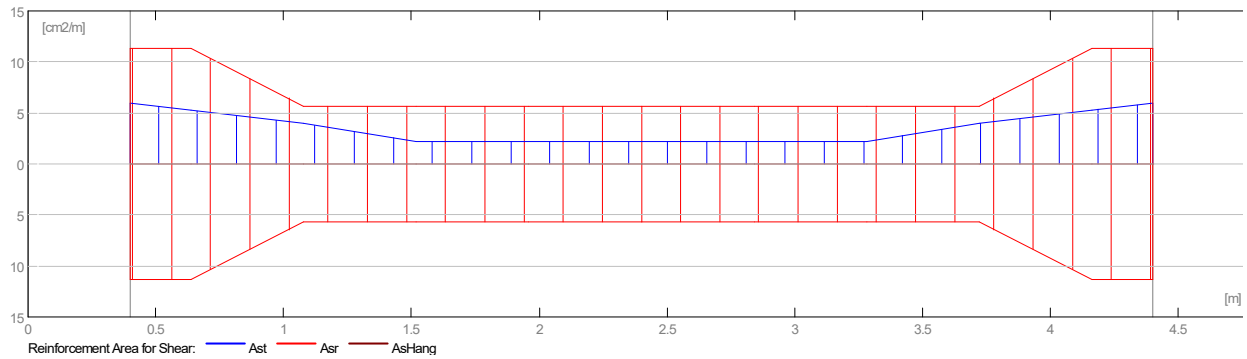
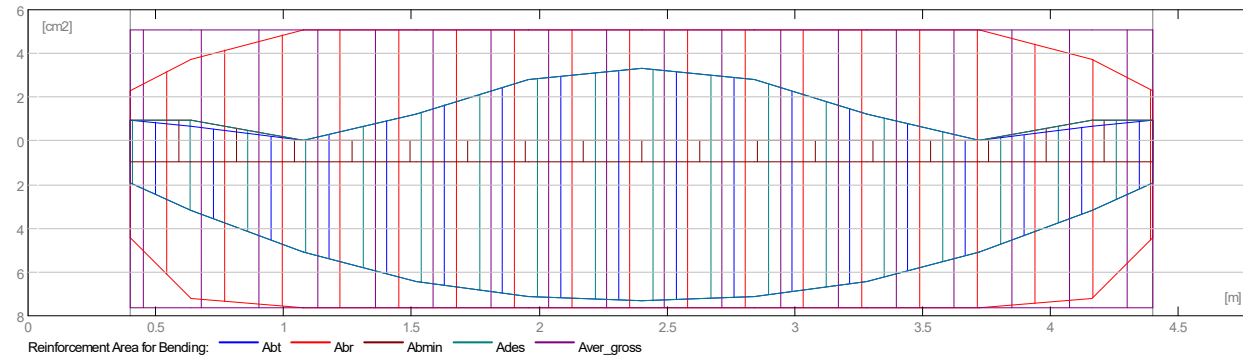
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	72,03	0,00	11,79	11,79	59,53	-59,53



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	7,30	3,30	1,94	0,96	1,94	0,96



2.4.4 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	1,5	1,8	0,0	0,0	0,2

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,40 to 4,40 (m)

Abscissa (m)	ULS				SLS		
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)	A bottom (cm ²)	A top (cm ²)	A compressive (cm ²)
0,40	28,80	-14,59	11,79	-10,81	1,94	0,96	0,00
0,64	45,03	-9,85	25,93	0,00	3,17	0,66	0,00
1,08	69,40	-0,00	46,10	0,00	5,08	0,00	0,00
1,52	85,98	-0,00	60,51	0,00	6,42	1,24	1,24
1,96	94,79	-0,00	69,15	0,00	7,11	2,79	2,79
2,40	97,25	0,00	72,03	0,00	7,30	3,30	3,30
2,84	94,79	-0,00	69,15	0,00	7,11	2,79	2,79
3,28	85,98	-0,00	60,51	0,00	6,42	1,24	1,24
3,72	69,40	-0,00	46,10	0,00	5,08	0,00	0,00
4,16	45,03	-9,85	25,93	0,00	3,17	0,66	0,00
4,40	28,80	-14,59	11,79	-10,81	1,94	0,96	0,00
	ULS	SLS					

Abscissa (m)	V max. (kN)	V max. (kN)	afp (mm)
0,40	80,37	59,53	0,0
0,64	70,72	52,39	0,1
1,08	53,04	39,29	0,1
1,52	35,36	26,19	0,2
1,96	17,68	13,10	0,2
2,40	0,00	0,00	0,2
2,84	-17,68	-13,10	0,2
3,28	-35,36	-26,19	0,2
3,72	-53,04	-39,29	0,1
4,16	-70,72	-52,39	0,1
4,40	-80,37	-59,53	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,40 to 4,40 (m)

Longitudinal reinforcement:

- bottom (B500B)
 - 3 ϕ 18 $l = 4,76$ from 4,78 to 0,02
- support (B500B)
 - 2 ϕ 18 $l = 4,76$ from 0,02 to 4,78

Transversal reinforcement:

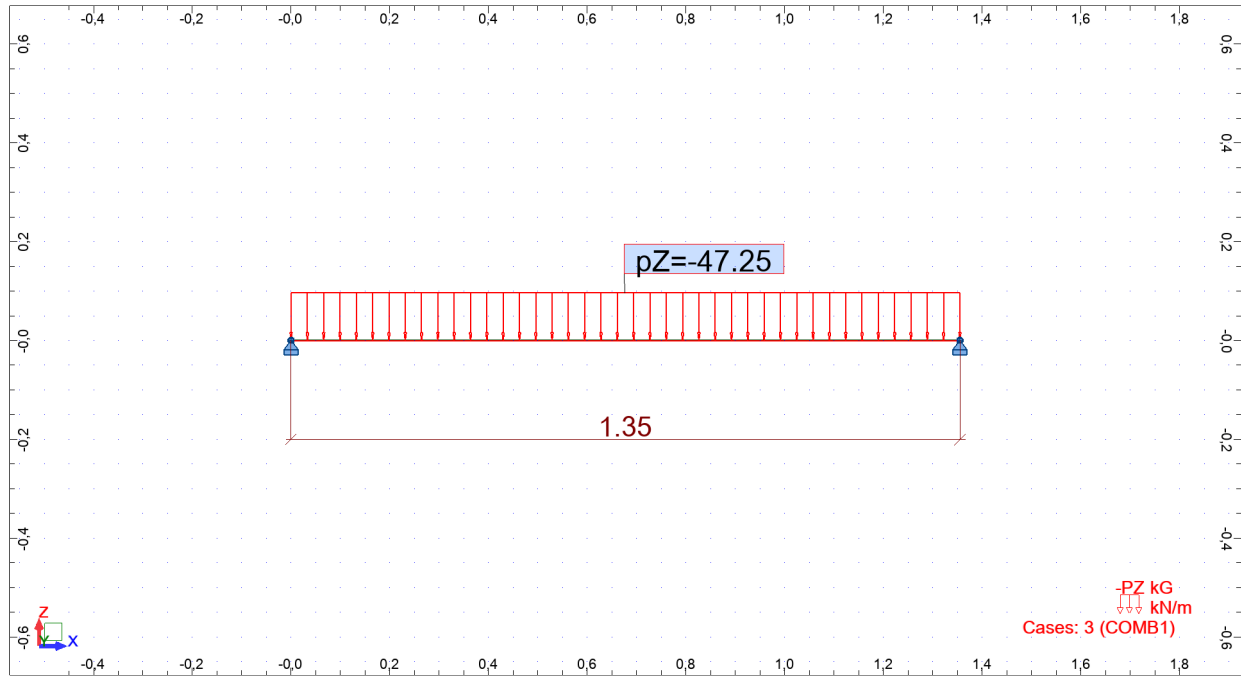
- main (B500B)
 - stirrups 59 ϕ 6 $l = 1,05$
 $e = 1 \cdot -0,38 + 7 \cdot 0,05 + 1 \cdot 0,03 + 10 \cdot 0,05 + 30 \cdot 0,10 + 10 \cdot 0,05$ (m)

3 Material survey:

- Concrete volume = 0,35 (m3)
- Formwork = 4,70 (m2)
- Steel B500B
 - Total weight = 63,07 (kG)
 - Density = 182,50 (kG/m3)
 - Average diameter = 9,0 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	1,05	0,23	67	15,55
18	4,76	9,50	5	47,52

View - Cases: 3 (COMB1)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : φ_{π} = No results
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : no requirements

2 SAŖAMOS 1SR-8 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,25	1,11	0,25	
	Span length: $L_o = 1,36$ (m)				
	Section from 0,00 to 1,11 (m)				
	25,0 x 25,0 (cm)				
	without left slab				
	without right slab				

2.3 Calculation options:

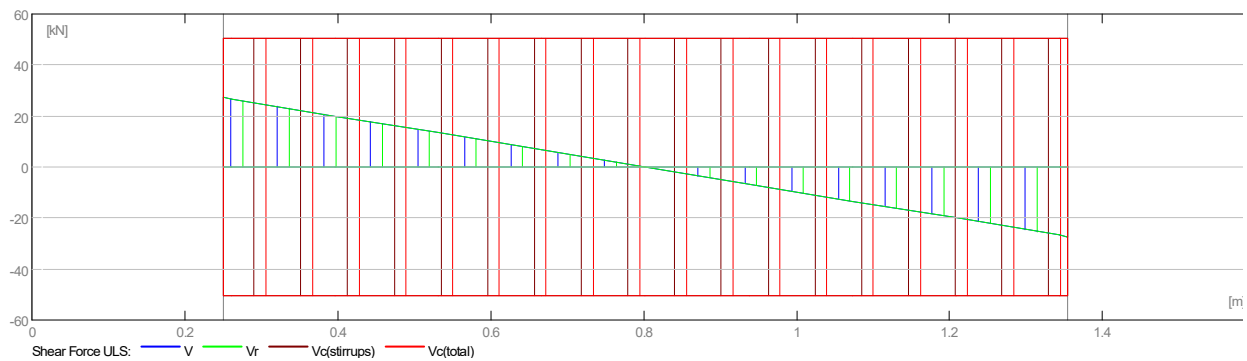
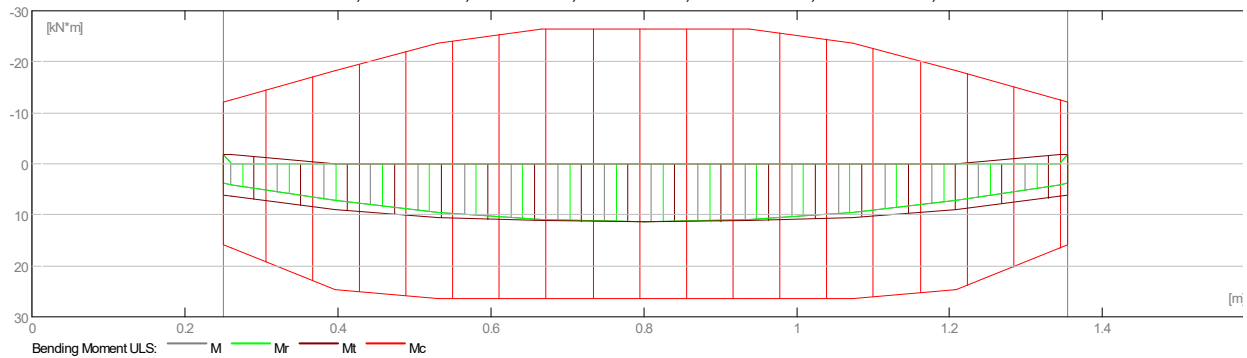
- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom c = 3,5 (cm)
 : side c1= 3,5 (cm)
 : top c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

Beam1

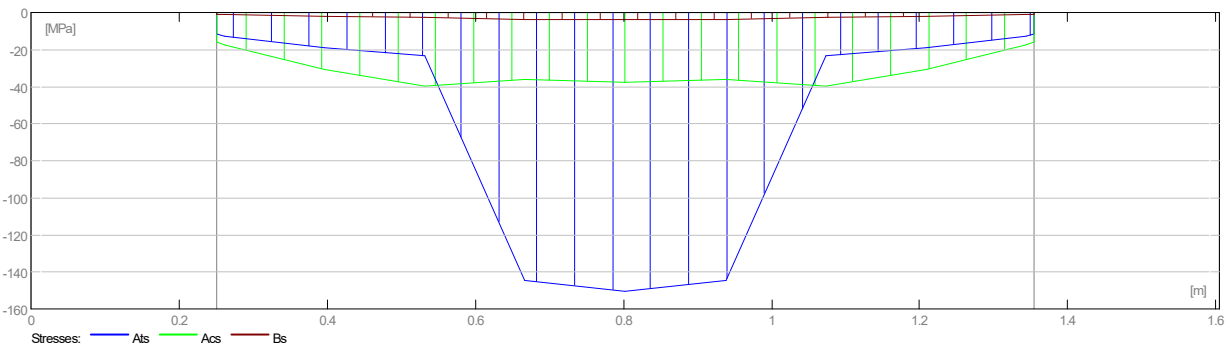
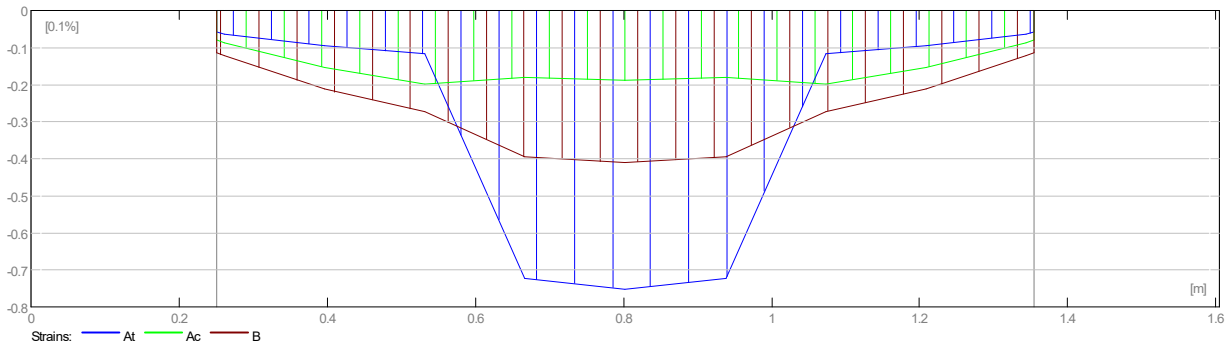
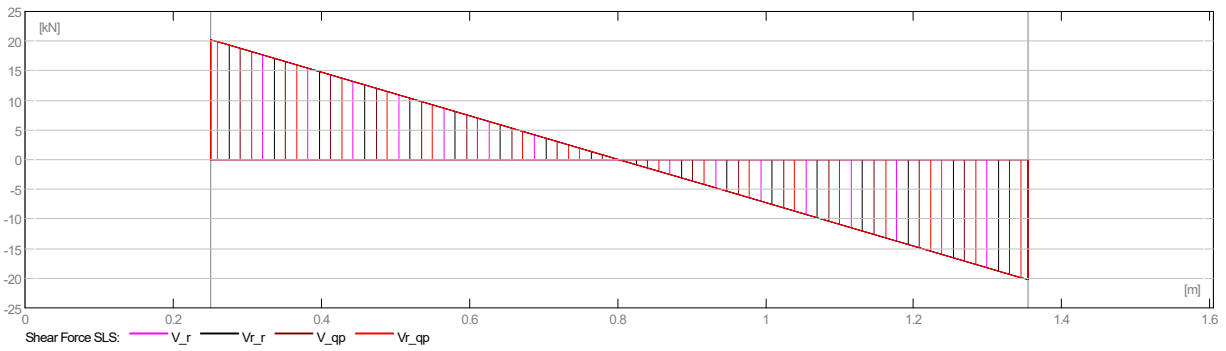
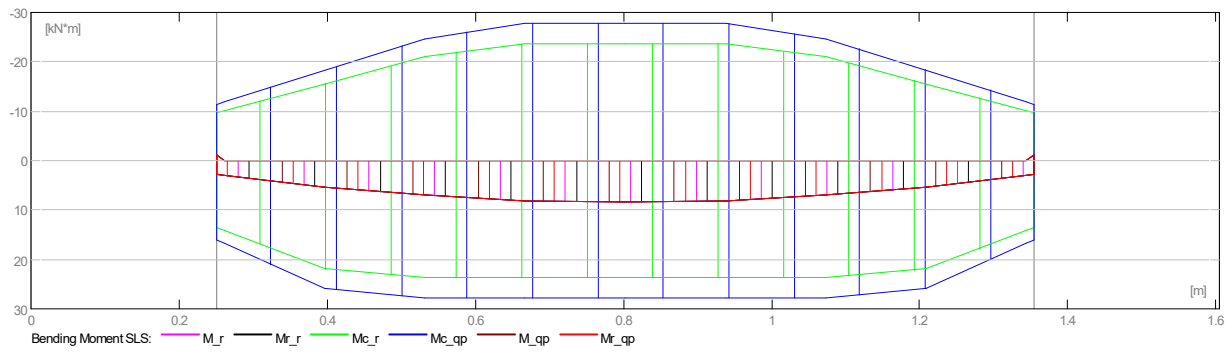
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	11,32	-0,00	6,20	6,20	27,25	-27,25



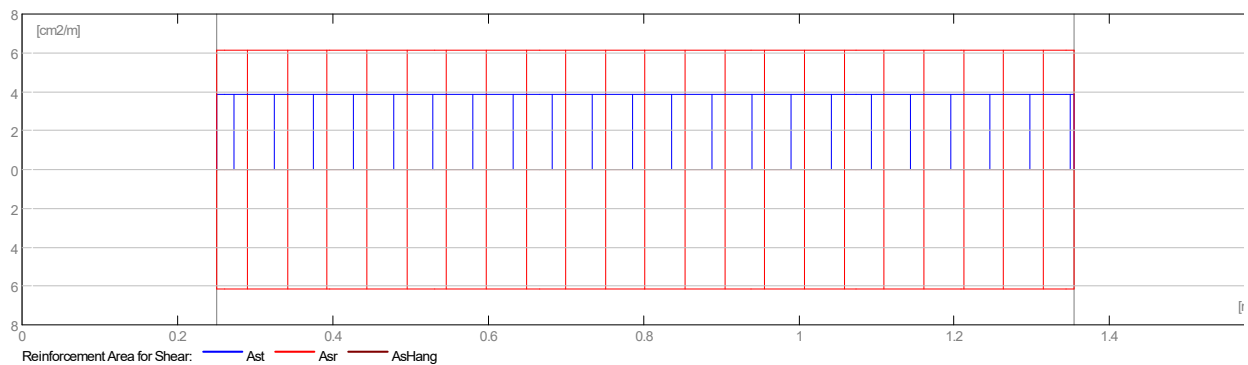
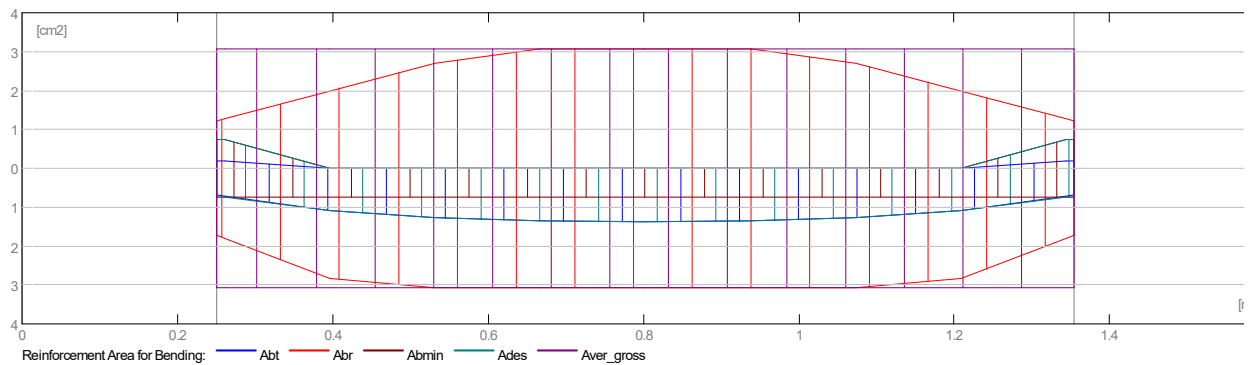
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	8,38	0,00	2,78	2,78	20,18	-20,18



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	1,38	0,00	0,70	0,19	0,70	0,19



2.4.4 Deflection and cracking

wt(QP) Total due to quasi-permanent combination

wt(QP)dop Allowable due to quasi-permanent combination

Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.

Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,1	0,5	0,0	0,0	0,1

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,25 to 1,36 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
0,25	6,20	-1,70	2,78	-1,26	0,70	0,19
0,26	6,44	-1,70	3,02	0,00	0,73	0,19
0,40	8,94	-0,00	5,37	0,00	1,08	0,00
0,53	10,52	-0,00	7,04	0,00	1,28	0,00
0,67	11,20	-0,00	8,05	0,00	1,36	0,00
0,80	11,32	0,00	8,38	0,00	1,38	0,00
0,94	11,20	-0,00	8,05	0,00	1,36	0,00
1,07	10,52	-0,00	7,04	0,00	1,28	0,00
1,21	8,94	-0,00	5,37	0,00	1,08	0,00
1,34	6,44	-1,70	3,02	0,00	0,73	0,19
1,36	6,20	-1,70	2,78	-1,26	0,70	0,19

Abscissa (m)	ULS	SLS	afp (mm)
	V max. (kN)	V max. (kN)	
0,25	27,25	20,18	0,0
0,26	26,73	19,80	0,0
0,40	20,05	14,85	0,0
0,53	13,37	9,90	0,0
0,67	6,68	4,95	0,1
0,80	0,00	0,00	0,1
0,94	-6,68	-4,95	0,1
1,07	-13,37	-9,90	0,0
1,21	-20,05	-14,85	0,0
1,34	-26,73	-19,80	0,0
1,36	-27,25	-20,18	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,25 to 1,36 (m)

Longitudinal reinforcement:

- bottom (B500B)
2 ϕ 14 l = 1,56 from 1,58 to 0,03
- support (B500B)
2 ϕ 14 l = 1,56 from 0,03 to 1,58

Transversal reinforcement:

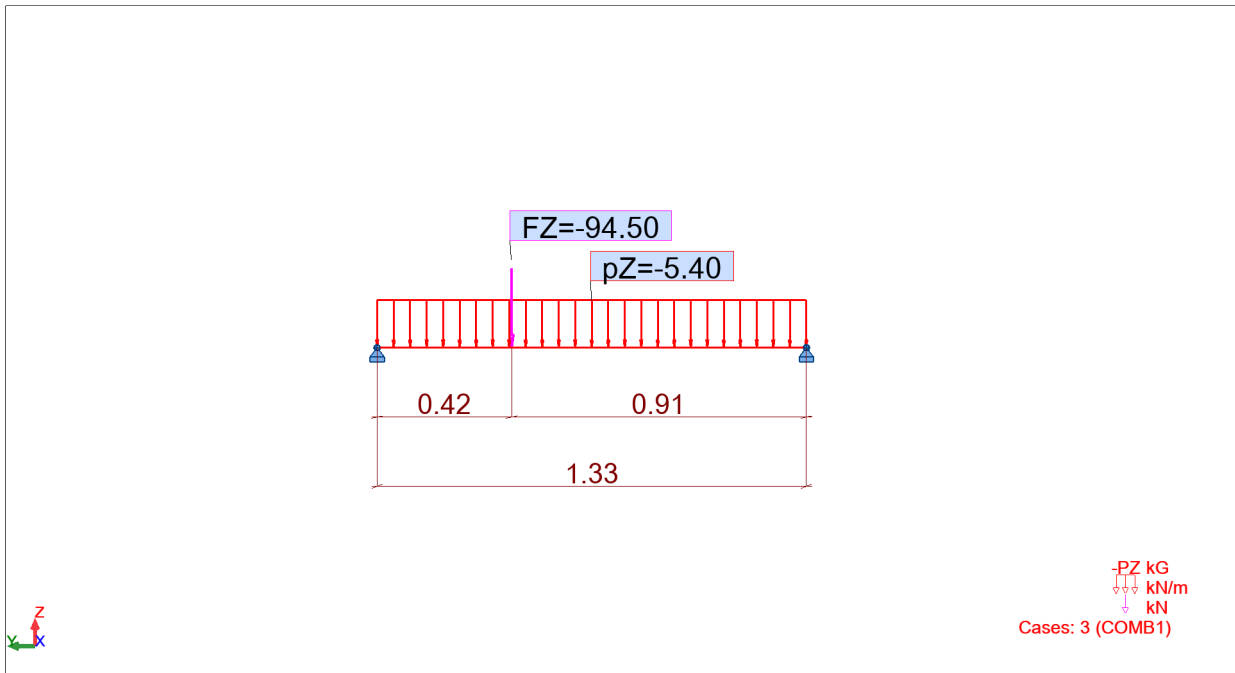
- main (B500B)
stirrups 13 ϕ 6 l = 0,86
e = 1*0,00 + 12*0,09 (m)

3 Material survey:

- Concrete volume = 0,10 (m3)
- Formwork = 1,20 (m2)
- Steel B500B
 - Total weight = 10,01 (kG)
 - Density = 99,75 (kG/m3)
 - Average diameter = 8,9 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	0,86	0,19	13	2,49
14	1,56	1,88	4	7,52

View - Cases: 3 (COMB1)



1 Level:

- Name : Level -3,40
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : $\varphi_{\pi} = 2,43$
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : no requirements

2 SĄRAMOS 1SR-9 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,25	1,00	0,40	
	Span length: $L_o = 1,33$ (m)				
	Section from 0,00 to 1,00 (m)				
	25,0 x 35,0 (cm)				
	without left slab				
	without right slab				

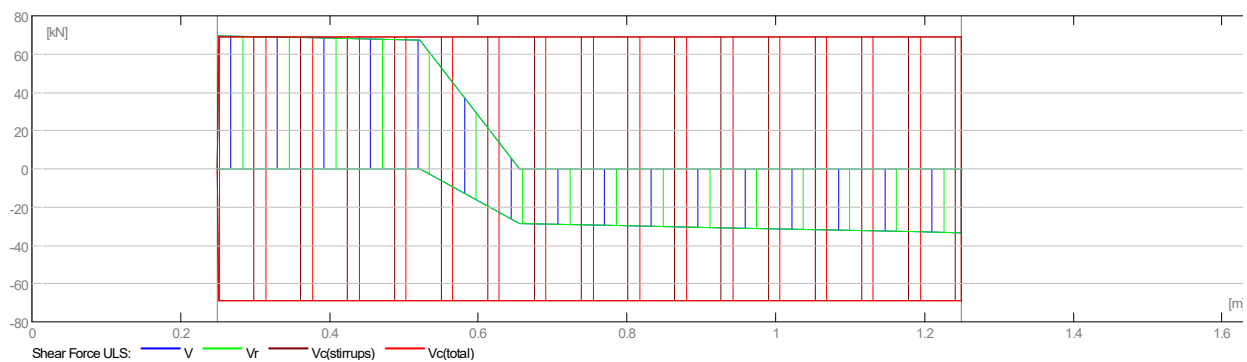
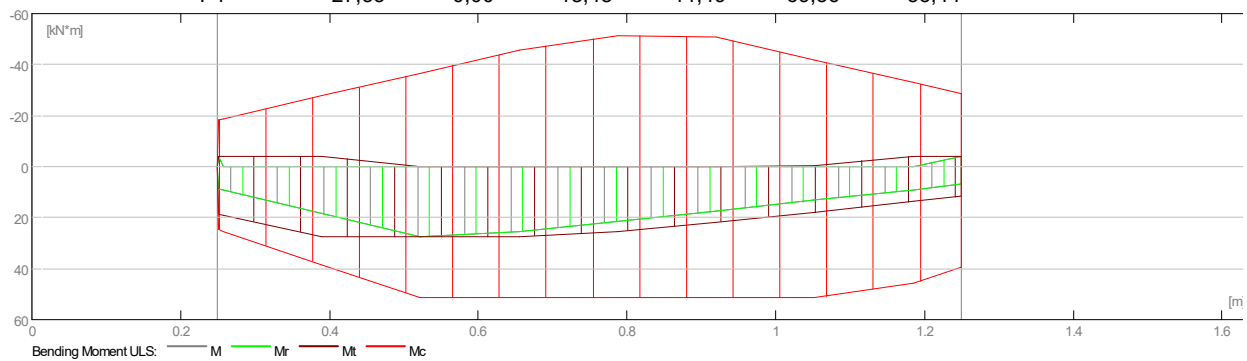
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom : $c = 3,5$ (cm)
 : side : $c_1 = 3,5$ (cm)
 : top : $c_2 = 3,5$ (cm)
- Cover deviations : $C_{dev} = 1,0$ (cm), $C_{dur} = 0,0$ (cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

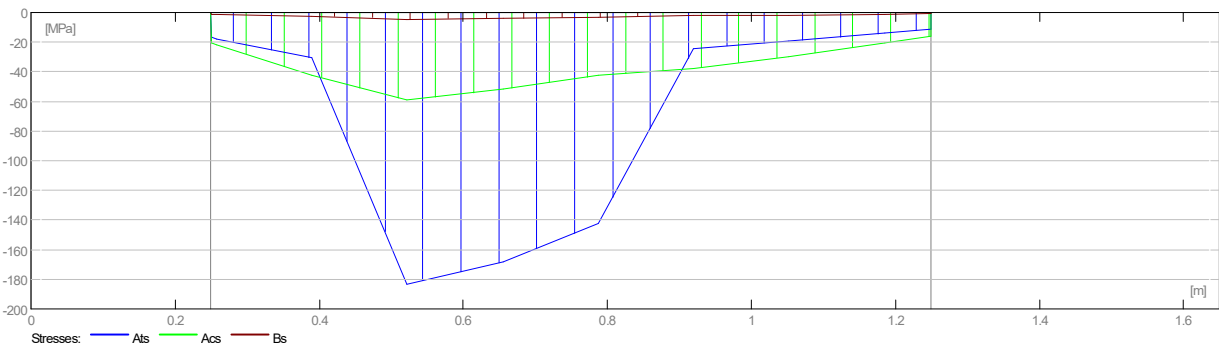
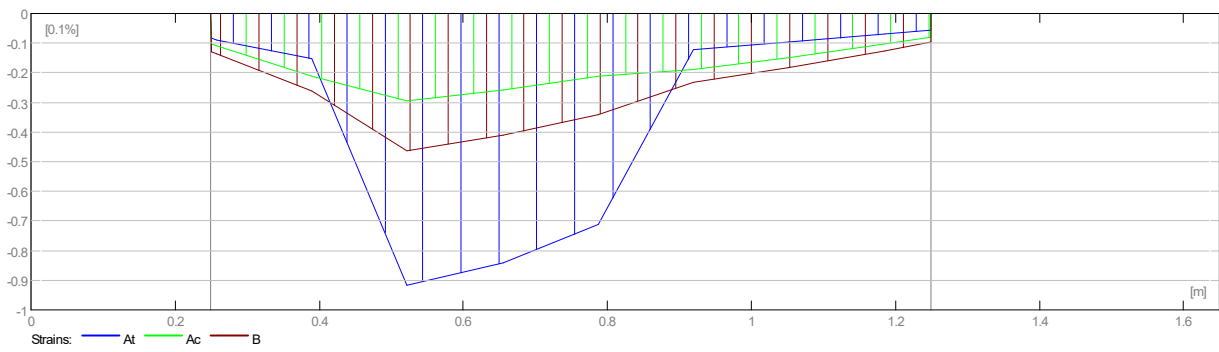
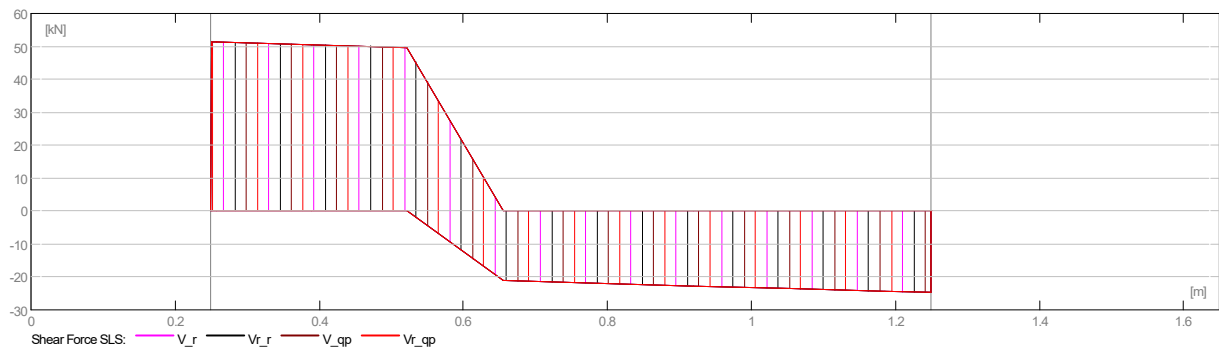
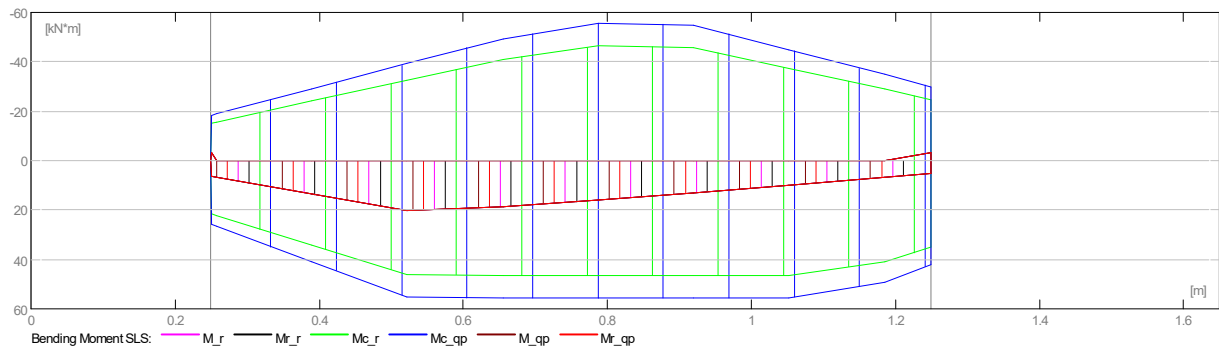
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	27,33	-0,00	18,48	11,49	69,36	-33,44



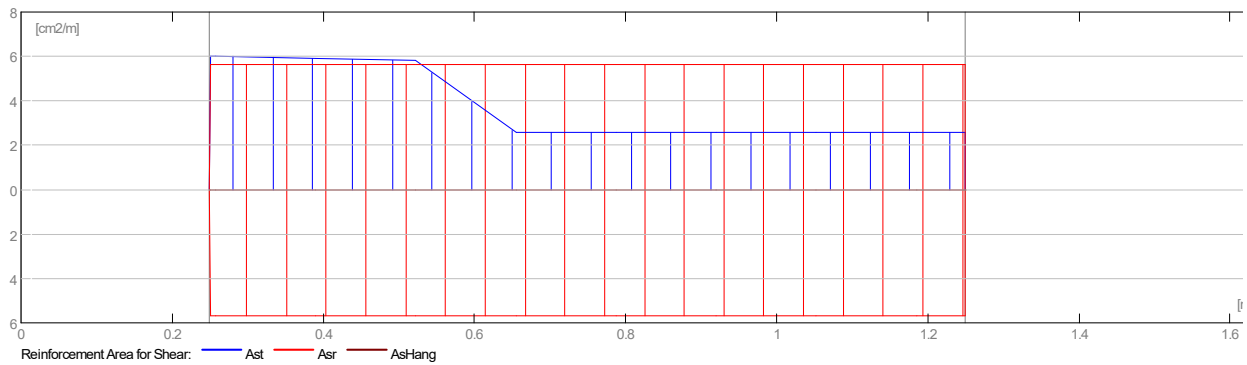
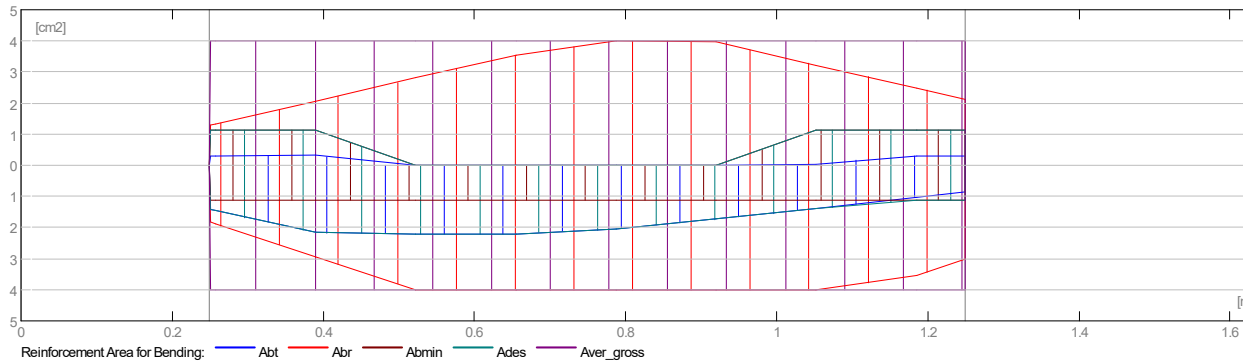
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	20,24	0,00	6,47	5,06	51,38	-24,77



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	2,20	0,00	1,43	0,31	0,86	0,30



2.4.4 Deflection and cracking

wt(QP) Total due to quasi-permanent combination

wt(QP)dop Allowable due to quasi-permanent combination

Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.

Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,0	0,5	0,0	0,3	0,1

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,25 to 1,25 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
0,25	18,48	-4,10	6,47	-3,04	1,43	0,31
0,26	18,99	-4,10	6,86	0,00	1,47	0,31
0,39	27,33	-4,10	13,60	0,00	2,17	0,32
0,52	27,33	-0,00	20,24	0,00	2,20	0,00
0,66	27,33	-0,00	18,72	0,00	2,20	0,00
0,79	25,42	-0,00	15,87	0,00	2,04	0,00
0,92	21,70	-0,00	12,91	0,00	1,74	0,00
1,05	17,71	-0,58	9,85	0,00	1,41	0,05
1,19	13,58	-4,10	6,67	0,00	1,03	0,31
1,25	11,49	-4,10	5,06	-3,04	0,86	0,30
	ULS	SLS				

Abscissa (m)	V max. (kN)	V max. (kN)	afp (mm)
0,25	69,36	51,38	0,0
0,26	69,30	51,33	0,0
0,39	68,20	50,52	0,0
0,52	67,10	49,70	0,1
0,66	-28,50	-21,11	0,1
0,79	-29,60	-21,92	0,1
0,92	-30,70	-22,74	0,0
1,05	-31,80	-23,55	0,0
1,19	-32,90	-24,37	0,0
1,25	-33,44	-24,77	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,25 to 1,25 (m)

Longitudinal reinforcement:

- bottom (B500B)
 - 2 ϕ 16 l = 1,61 from 1,63 to 0,02
- support (B500B)
 - 2 ϕ 16 l = 1,61 from 0,02 to 1,63

Transversal reinforcement:

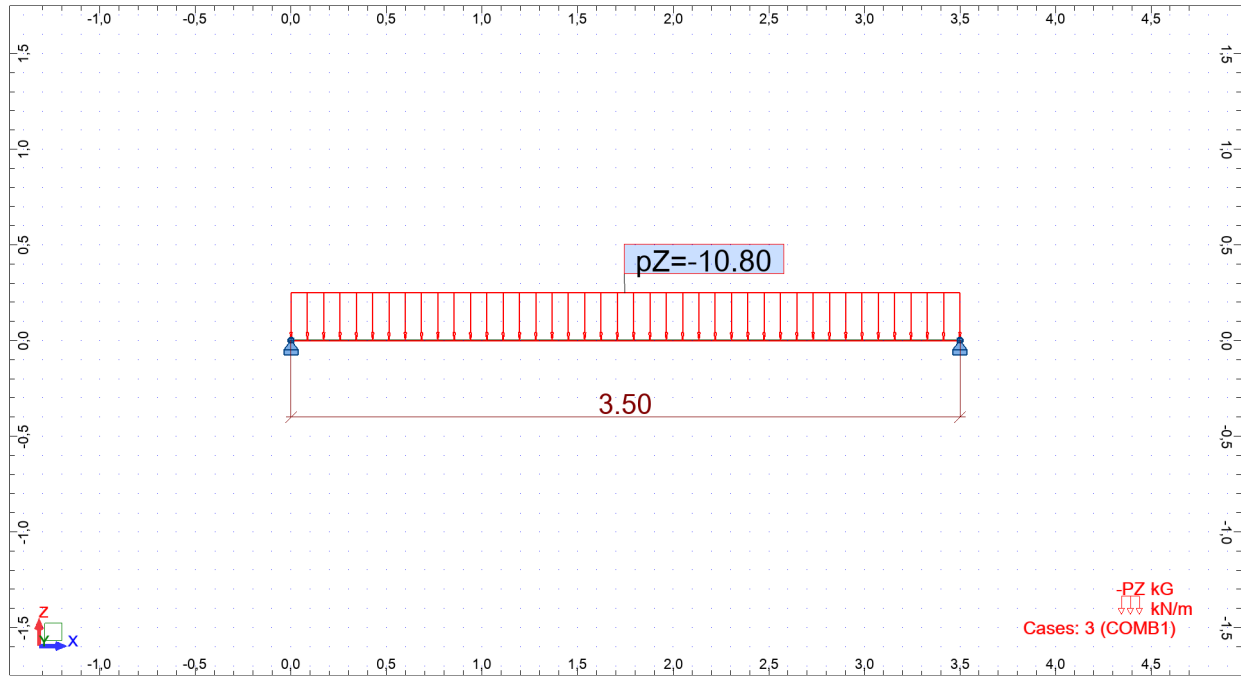
- main (B500B)
 - stirrups 11 ϕ 6 l = 1,09
e = 1*0,00 + 10*0,10 (m)

3 Material survey:

- Concrete volume = 0,14 (m3)
- Formwork = 1,58 (m2)
- Steel B500B
 - Total weight = 12,79 (kG)
 - Density = 88,62 (kG/m3)
 - Average diameter = 9,5 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	1,09	0,24	11	2,65
16	1,61	2,54	4	10,14

View - Cases: 3 (COMB1)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : φ_{π} = No results
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : no requirements

2 SAŖAMOS 1SR-10 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,25	3,25	0,25	
	Span length: $L_o = 3,50$ (m)				
	Section from 0,00 to 3,25 (m)				
	18,0 x 30,0 (cm)				
	without left slab				
	without right slab				

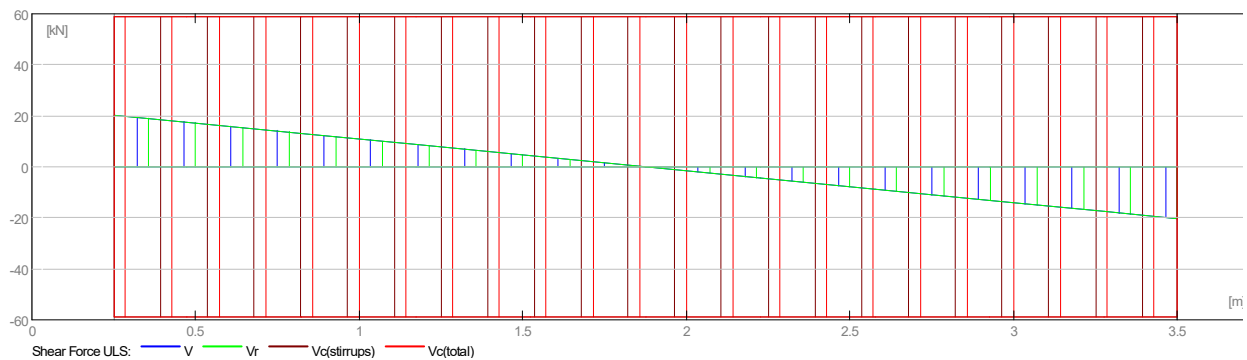
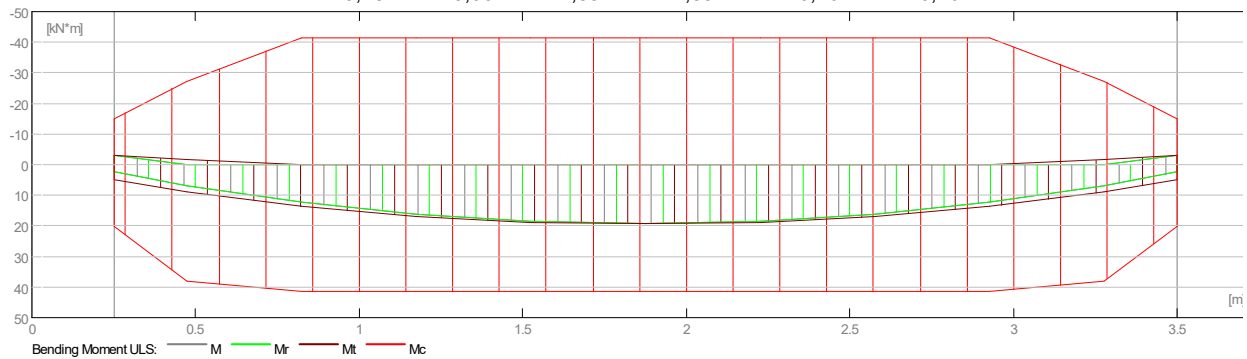
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom c = 3,5 (cm)
 : side c1= 3,5 (cm)
 : top c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

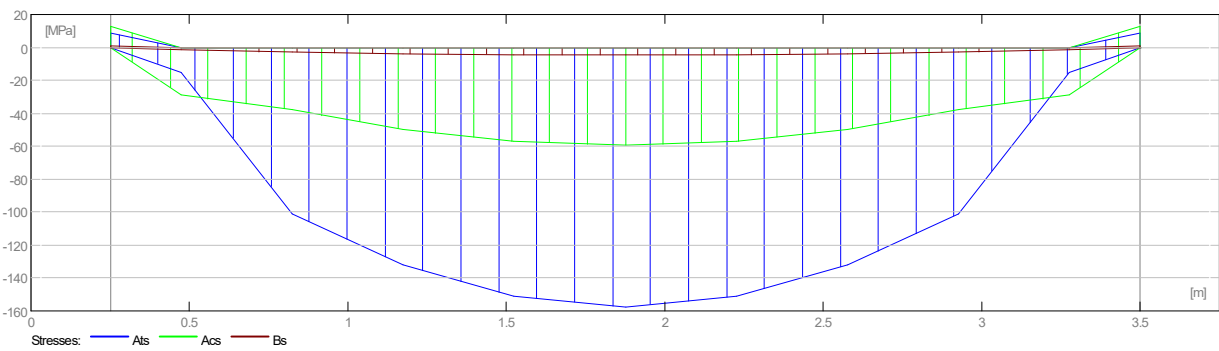
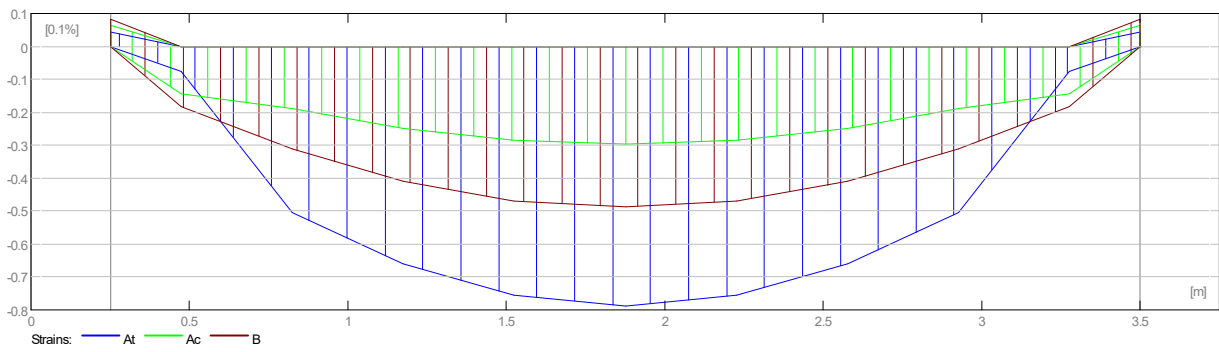
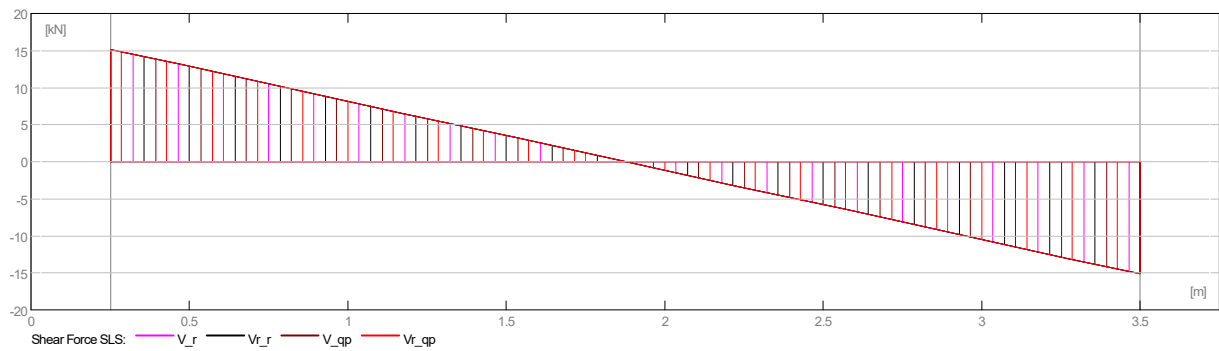
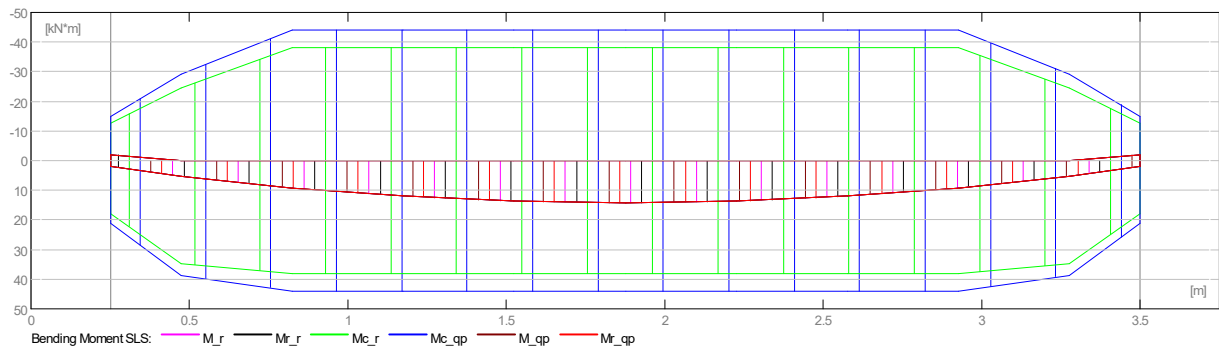
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	19,28	-0,00	4,89	4,89	20,46	-20,46



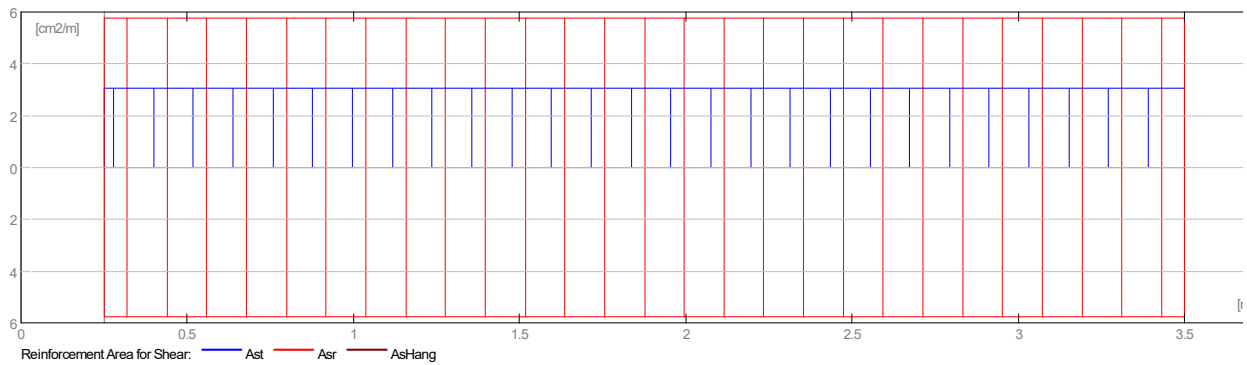
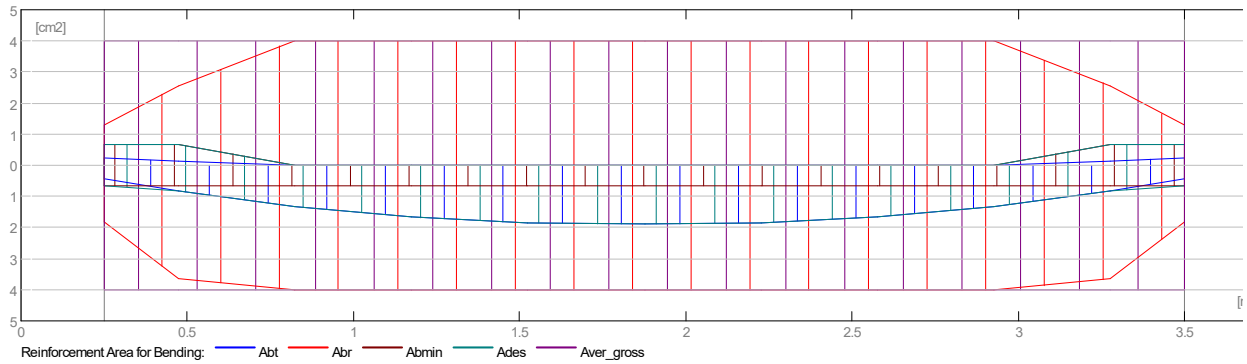
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	14,28	0,00	-2,14	-2,14	15,15	-15,15



2.4.3 Required reinforcement area

Span	Span (cm2)		Left support (cm2)		Right support (cm2)	
	bottom	top	bottom	top	bottom	top
P1	1,90	0,00	0,42	0,24	0,42	0,24



2.4.4 Deflection and cracking

wt(QP) Total due to quasi-permanent combination

wt(QP)dop Allowable due to quasi-permanent combination

Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.

Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,6	1,4	0,0	0,7	0,1

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,25 to 3,50 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
0,25	4,89	-2,89	1,84	-2,14	0,42	0,24
0,48	8,81	-1,56	5,14	0,00	0,82	0,14
0,83	13,67	-0,00	9,14	0,00	1,33	0,00
1,18	16,99	-0,00	11,99	0,00	1,66	0,00
1,53	18,77	-0,00	13,71	0,00	1,85	0,00
1,88	19,28	0,00	14,28	0,00	1,90	0,00
2,23	18,77	-0,00	13,71	0,00	1,85	0,00
2,58	16,99	-0,00	11,99	0,00	1,66	0,00
2,93	13,67	-0,00	9,14	0,00	1,33	0,00
3,28	8,81	-1,56	5,14	0,00	0,82	0,14
3,50	4,89	-2,89	1,84	-2,14	0,42	0,24

Abscissa (m)	ULS	SLS	afp (mm)
	V max. (kN)	V max. (kN)	
0,25	20,46	15,15	0,0
0,48	17,62	13,05	0,0
0,83	13,22	9,79	0,1
1,18	8,81	6,53	0,1
1,53	4,41	3,26	0,1
1,88	0,00	0,00	0,1
2,23	-4,41	-3,26	0,1
2,58	-8,81	-6,53	0,1
2,93	-13,22	-9,79	0,1
3,28	-17,62	-13,05	0,0
3,50	-20,46	-15,15	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,25 to 3,50 (m)

Longitudinal reinforcement:

- bottom (B500B)
2 ϕ 16 l = 3,70 from 3,73 to 0,02
- support (B500B)
2 ϕ 16 l = 3,70 from 0,02 to 3,73

Transversal reinforcement:

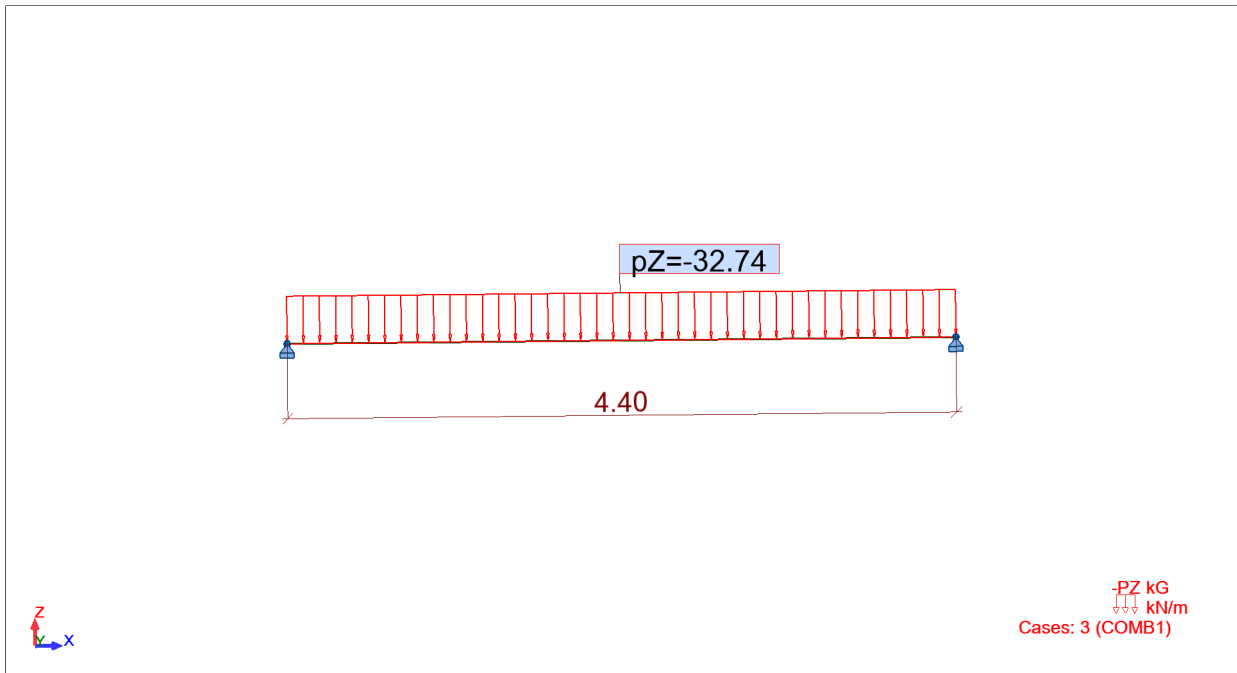
- main (B500B)
stirrups 34 ϕ 6 l = 0,84
e = 1*0,00 + 33*0,10 (m)

3 Material survey:

- Concrete volume = 0,20 (m3)
- Formwork = 2,94 (m2)
- Steel B500B
 - Total weight = 29,72 (kG)
 - Density = 146,75 (kG/m3)
 - Average diameter = 9,4 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	0,84	0,19	34	6,32
16	3,70	5,85	4	23,39

View - Cases: 3 (COMB1)



1 Level:

- Name : Level ±0,00
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : φ_{π} = No results
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : no requirements

2 SAŖAMOS 1SR-11 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L.sup. (m)	L (m)	R.sup. (m)
	P1	Span 0,40	4,00	0,40	
	Span length: $L_o = 4,40$ (m)				
	Section from 0,00 to 4,00 (m)				
	18,0 x 40,0 (cm)				
	without left slab				
	without right slab				

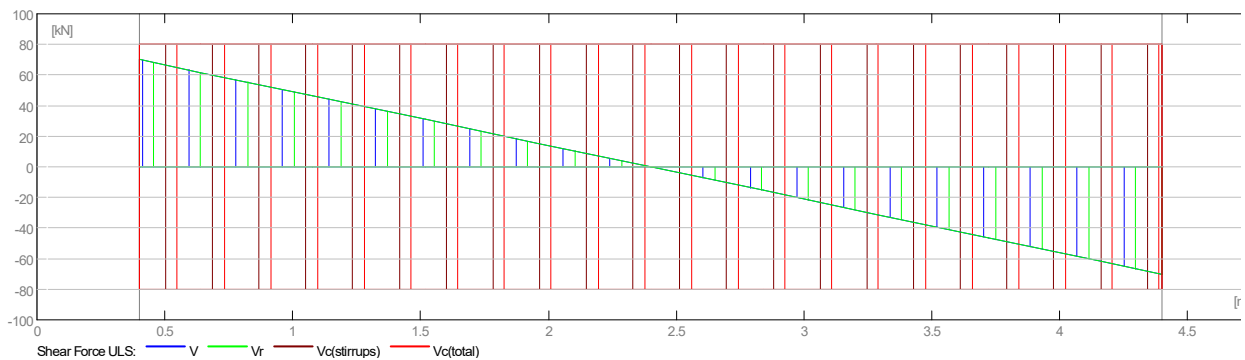
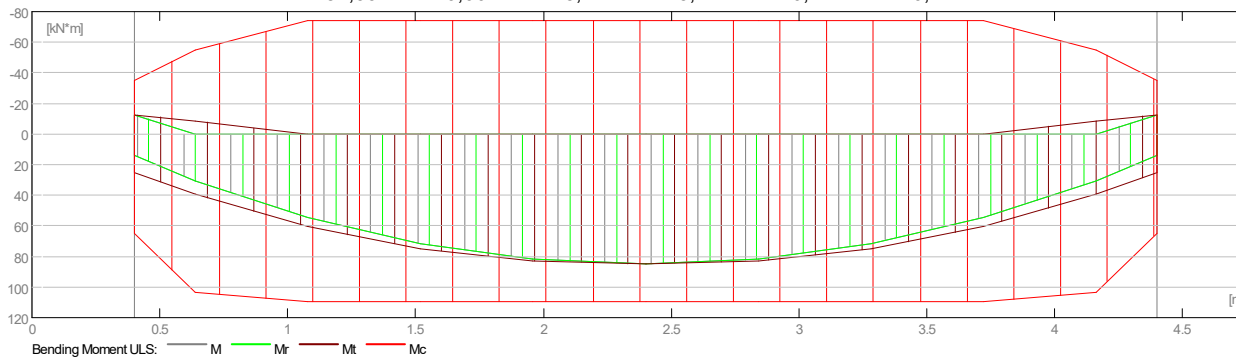
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom c = 3,5 (cm)
 : side c1= 3,5 (cm)
 : top c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

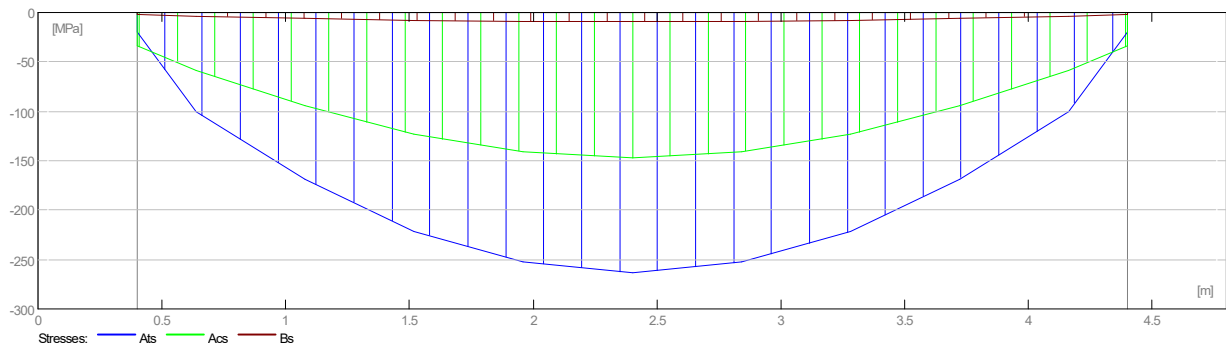
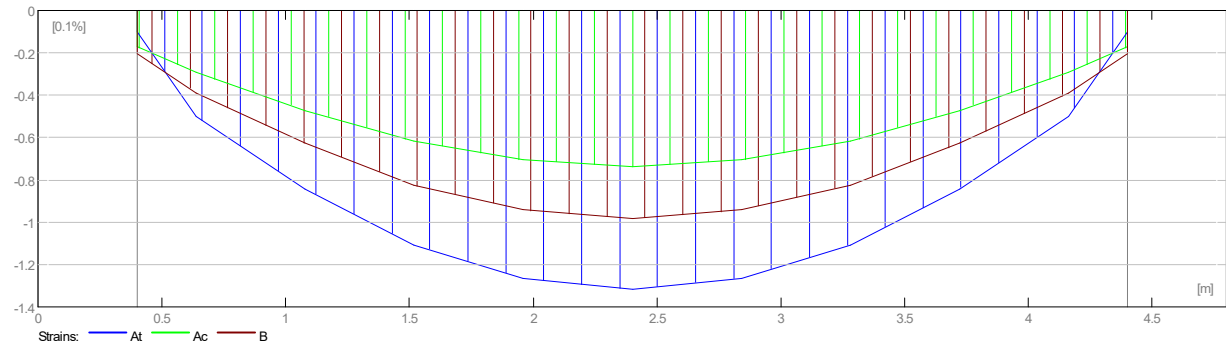
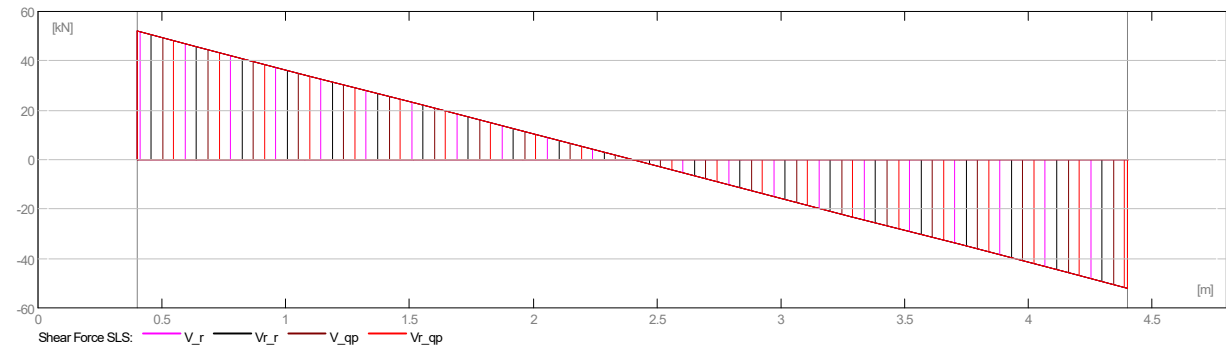
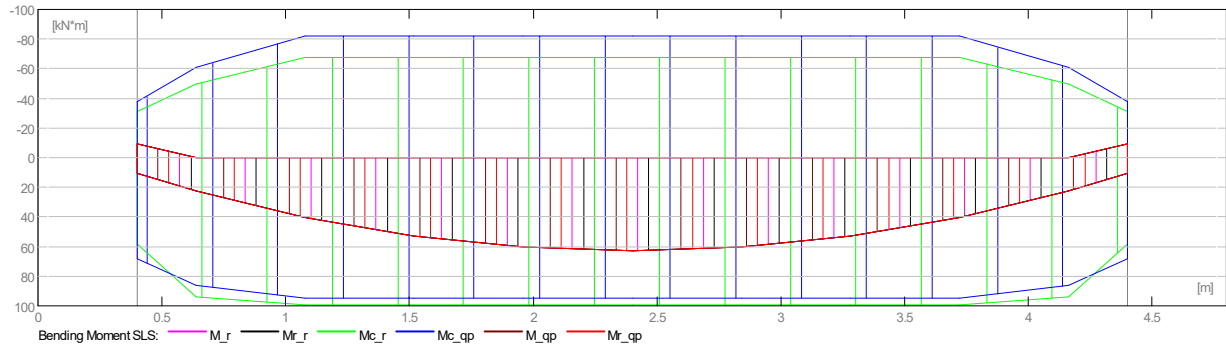
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	84,99	-0,00	25,17	25,17	70,24	-70,24



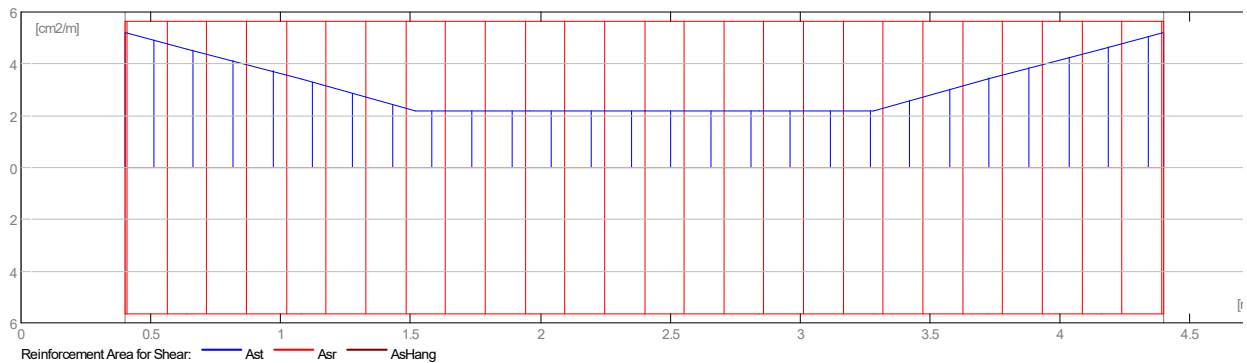
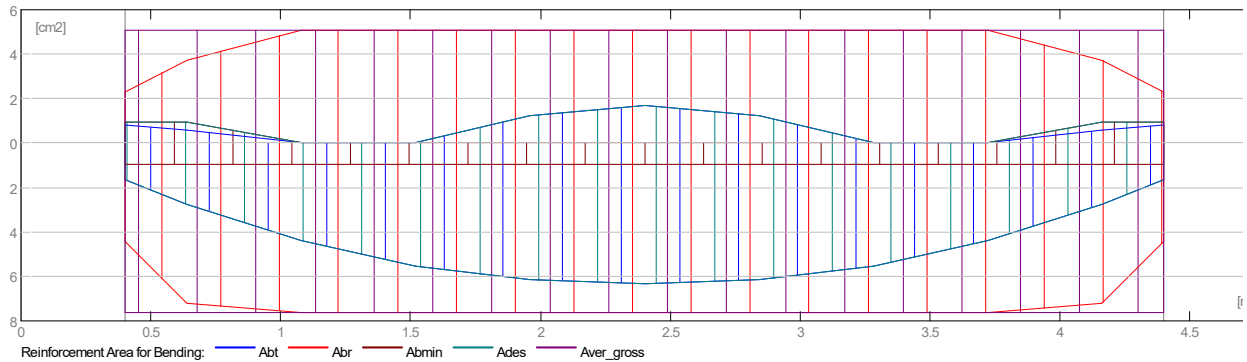
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	62,96	0,00	10,30	10,30	52,03	-52,03



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	6,33	1,68	1,66	0,83	1,66	0,83



2.4.4 Deflection and cracking

wt(QP) Total due to quasi-permanent combination

wt(QP)dop Allowable due to quasi-permanent combination

Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.

Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	1,3	1,8	0,0	0,0	0,2

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,40 to 4,40 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)	A compressive (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)			
0,40	25,17	-12,75	10,30	-9,44	1,66	0,83	0,00
0,64	39,36	-8,61	22,67	0,00	2,74	0,58	0,00
1,08	60,66	-0,00	40,29	0,00	4,38	0,00	0,00
1,52	75,15	-0,00	52,89	0,00	5,55	0,00	0,00
1,96	82,85	-0,00	60,44	0,00	6,17	1,23	1,23
2,40	84,99	0,00	62,96	0,00	6,33	1,68	1,68
2,84	82,85	-0,00	60,44	0,00	6,17	1,23	1,23
3,28	75,15	-0,00	52,89	0,00	5,55	0,00	0,00
3,72	60,66	-0,00	40,29	0,00	4,38	0,00	0,00
4,16	39,36	-8,61	22,67	0,00	2,74	0,58	0,00
4,40	25,17	-12,75	10,30	-9,44	1,66	0,83	0,00

Abscissa (m)	ULS	SLS	afp (mm)
	V max. (kN)	V max. (kN)	
0,40	70,24	52,03	0,0
0,64	61,81	45,79	0,1
1,08	46,36	34,34	0,1
1,52	30,91	22,89	0,1
1,96	15,45	11,45	0,2
2,40	0,00	0,00	0,2
2,84	-15,45	-11,45	0,2
3,28	-30,91	-22,89	0,1
3,72	-46,36	-34,34	0,1
4,16	-61,81	-45,79	0,1
4,40	-70,24	-52,03	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,40 to 4,40 (m)

Longitudinal reinforcement:

- bottom (B500B)
3 ϕ 18 l = 4,76 from 4,78 to 0,02
- support (B500B)
2 ϕ 18 l = 4,76 from 0,02 to 4,78

Transversal reinforcement:

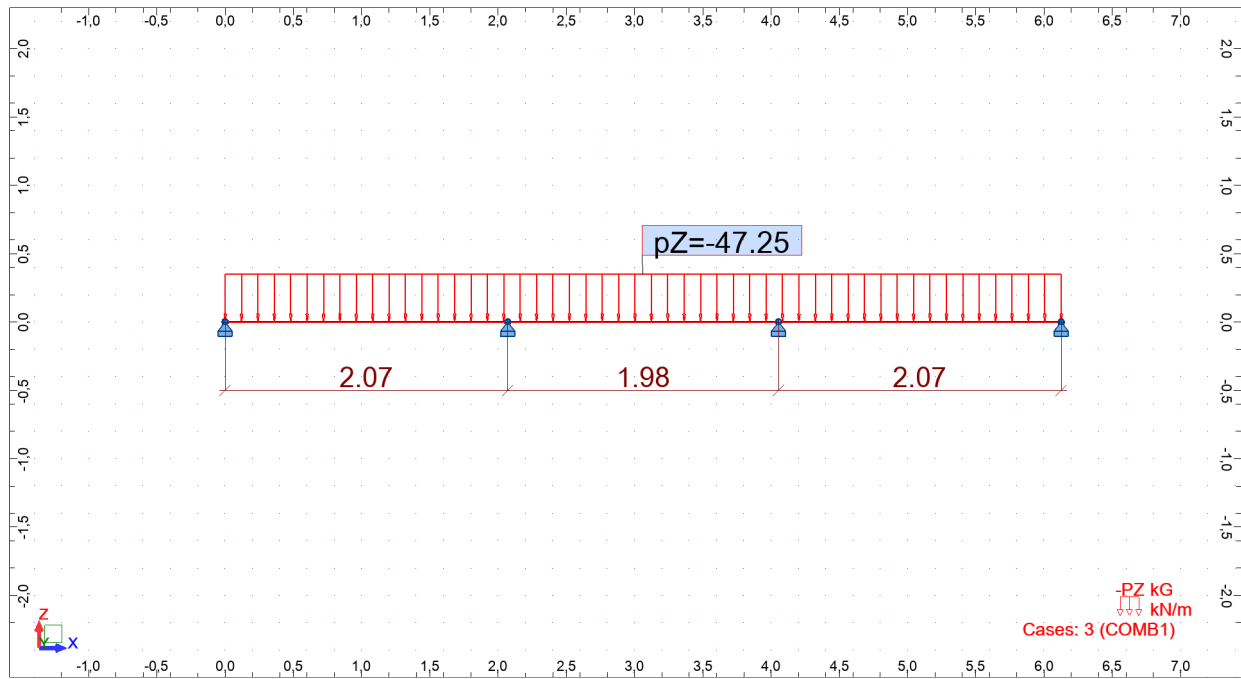
- main (B500B)
stirrups 45 ϕ 6 l = 1,05
e = 1*0,38 + 3*0,10 + 1*0,08 + 40*0,10 (m)

3 Material survey:

- Concrete volume = 0,35 (m3)
- Formwork = 4,70 (m2)
- Steel B500B
 - Total weight = 58,89 (kG)
 - Density = 170,41 (kG/m3)
 - Average diameter = 9,8 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	1,05	0,23	49	11,38
18	4,76	9,50	5	47,52

View - Cases: 3 (COMB1)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : φ_{π} = No results
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : no requirements

2 SAŖAMOS 1SR-12 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,48	1,71	0,25	
	Span length: $L_o = 2,07$ (m) Section from 0,00 to 1,71 (m) 25,0 x 35,0 (cm) without left slab without right slab				
2.2.2	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P2	Span 0,25	1,74	0,25	
	Span length: $L_o = 1,99$ (m) Section from 0,00 to 1,74 (m)				

25,0 x 35,0 (cm)
 without left slab
 without right slab

2.2.3	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P3	Span 0,25	1,71	0,48	
	Span length: $L_0 = 2,07$ (m)				
	Section from 0,00 to 1,71 (m)				
	25,0 x 35,0 (cm)				
	without left slab				
	without right slab				

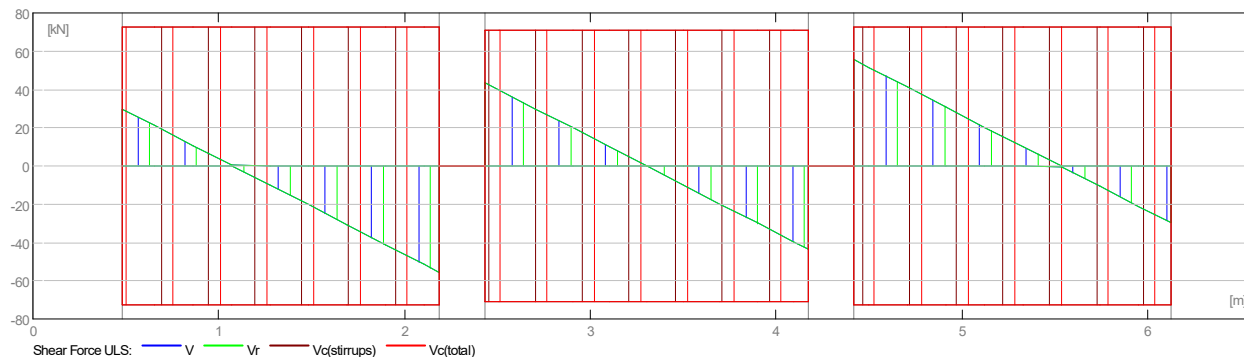
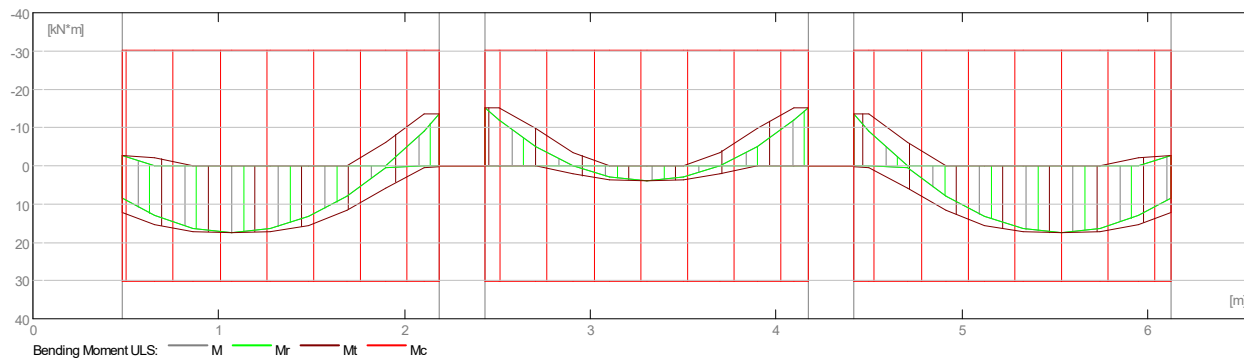
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom c = 3,5 (cm)
 : side c1= 3,5 (cm)
 : top c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

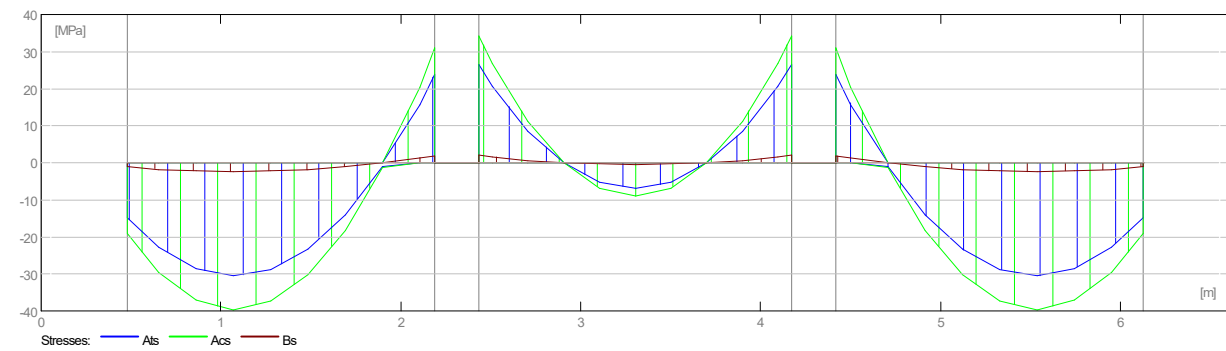
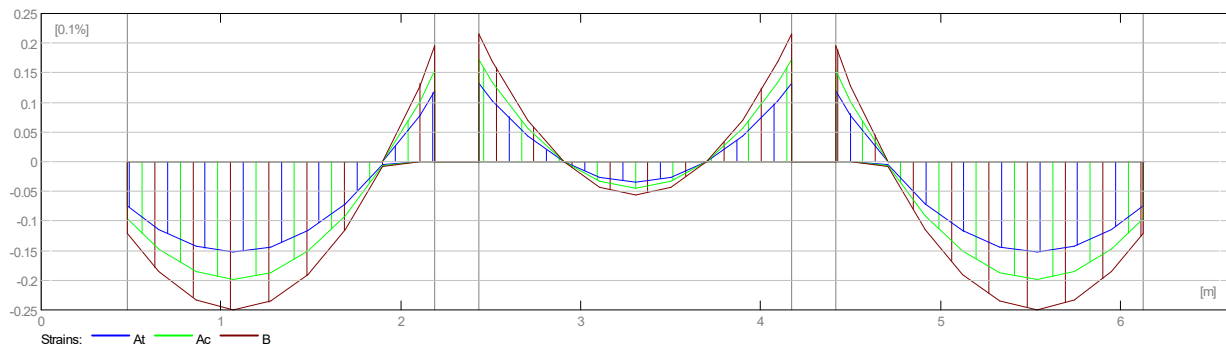
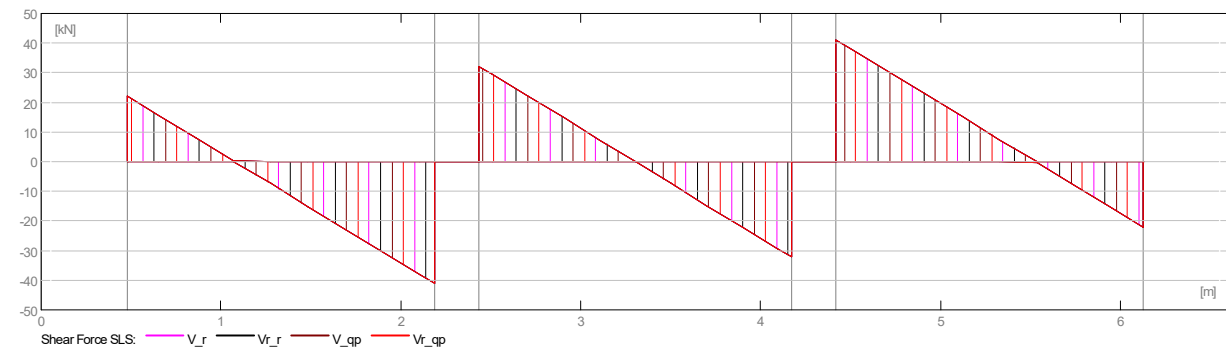
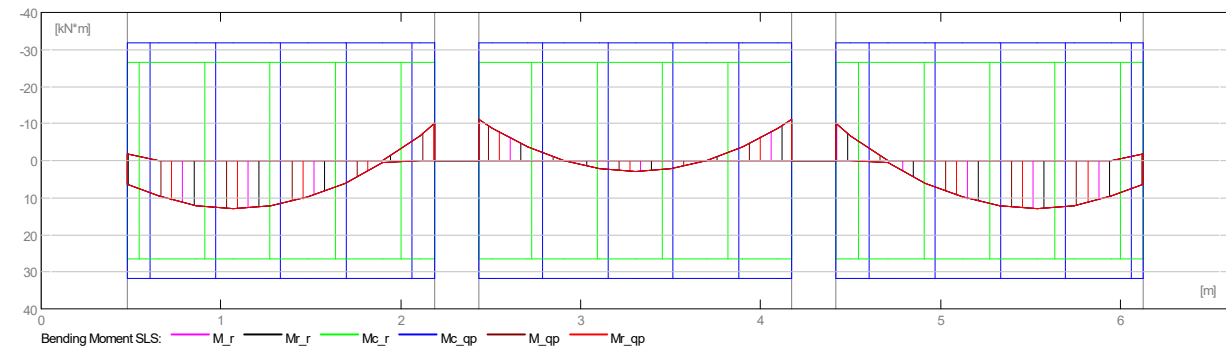
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	17,49	-0,00	12,20	-13,64	29,85	-55,65
P2	3,97	-3,51	-15,13	-15,13	43,50	-43,50
P3	17,49	-0,00	-13,64	12,20	55,65	-29,85



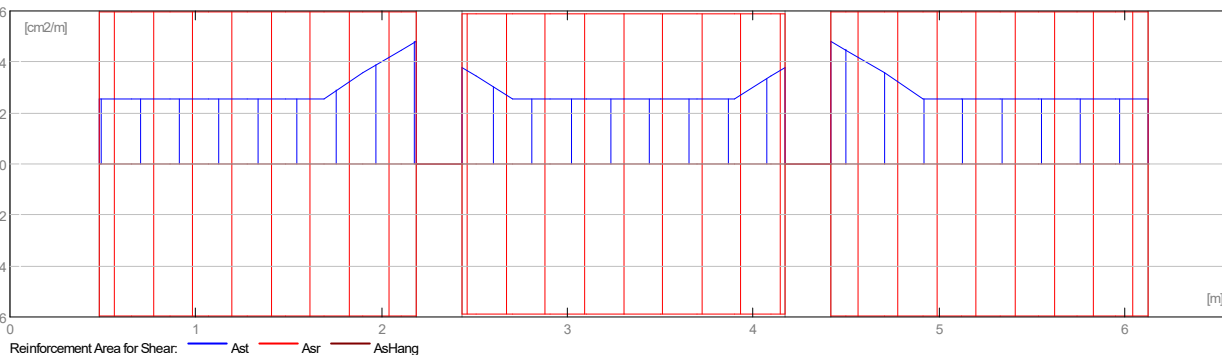
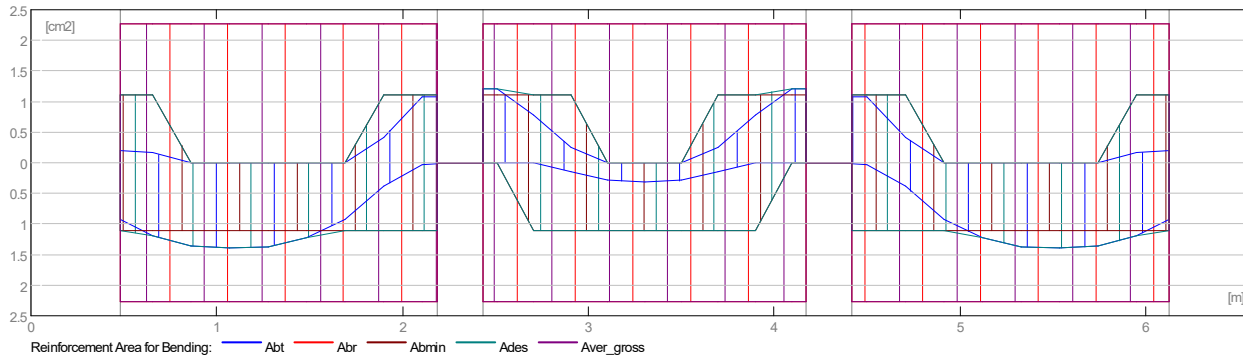
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	12,96	0,00	6,27	-10,10	22,11	-41,22
P2	2,94	0,00	-11,21	-11,21	32,22	-32,22
P3	12,96	0,00	-10,10	6,27	41,22	-22,11



2.4.3 Required reinforcement area

Span	Span (cm2)		Left support (cm2)		Right support (cm2)	
	bottom	top	bottom	top	bottom	top
P1	1,39	0,00	0,93	0,20	0,01	1,08
P2	0,31	0,00	0,00	1,20	0,00	1,20
P3	1,39	0,00	0,01	1,08	0,93	0,20



2.4.4 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,0	0,8	0,0	0,4	0,0
P2	-0,0	0,8	-0,0	0,4	0,0
P3	0,0	0,8	0,0	0,4	0,0

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,48 to 2,19 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
0,48	12,20	-2,62	6,27	-1,94	0,93	0,20
0,65	15,30	-2,14	9,66	0,00	1,19	0,16
0,86	17,13	-0,00	12,11	0,00	1,36	0,00
1,07	17,49	-0,00	12,96	0,00	1,39	0,00
1,28	17,18	-0,00	12,22	0,00	1,37	0,00
1,48	15,50	-0,00	9,89	0,00	1,23	0,00
1,69	11,68	-0,00	5,96	0,00	0,92	0,00
1,90	5,71	-6,15	0,45	0,00	0,39	0,42
2,10	0,42	-13,64	0,00	-6,66	0,03	1,08
2,19	0,18	-13,64	0,00	-10,10	0,01	1,08

Abscissa (m)	ULS	SLS	afp (mm)
	V max. (kN)	V max. (kN)	
0,48	29,85	22,11	0,0
0,65	21,13	15,65	0,0
0,86	10,75	7,96	0,0
1,07	0,37	0,27	0,0
1,28	-10,01	-7,42	0,0
1,48	-20,39	-15,11	0,0
1,69	-30,77	-22,80	0,0
1,90	-41,16	-30,49	0,0
2,10	-51,54	-38,17	0,0
2,19	-55,65	-41,22	0,0

2.5.2 P2 : Span from 2,44 to 4,17 (m)

Abscissa (m)	ULS		SLS		A bottom (cm2)	A top (cm2)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
2,44	0,00	-15,13	0,00	-11,21	0,00	1,20
2,51	0,00	-15,13	0,00	-8,77	0,00	1,20
2,71	0,01	-9,86	0,00	-3,65	0,00	0,78
2,91	2,14	-3,51	0,01	0,00	0,15	0,25
3,10	3,69	-0,00	2,21	0,00	0,29	0,00
3,30	3,97	0,00	2,94	0,00	0,31	0,00
3,50	3,69	-0,00	2,21	0,00	0,29	0,00
3,70	2,14	-3,51	0,01	0,00	0,15	0,25
3,90	0,01	-9,86	0,00	-3,65	0,00	0,78
4,10	0,00	-15,13	0,00	-8,77	0,00	1,20
4,17	0,00	-15,13	0,00	-11,21	0,00	1,20

Abscissa (m)	ULS	SLS	afp (mm)
	V max. (kN)	V max. (kN)	
2,44	43,50	32,22	0,0
2,51	39,82	29,49	0,0
2,71	29,86	22,12	0,0
2,91	19,91	14,75	0,0
3,10	9,95	7,37	0,0
3,30	0,00	0,00	0,0
3,50	-9,95	-7,37	0,0
3,70	-19,91	-14,75	0,0
3,90	-29,86	-22,12	0,0
4,10	-39,82	-29,49	0,0
4,17	-43,50	-32,22	0,0

2.5.3 P3 : Span from 4,42 to 6,13 (m)

Abscissa (m)	ULS		SLS		A bottom (cm2)	A top (cm2)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
4,42	0,18	-13,64	0,00	-10,10	0,01	1,08
4,50	0,42	-13,64	0,00	-6,66	0,03	1,08
4,71	5,71	-6,15	0,45	0,00	0,39	0,42
4,92	11,68	-0,00	5,96	0,00	0,92	0,00
5,12	15,50	-0,00	9,89	0,00	1,23	0,00
5,33	17,18	-0,00	12,22	0,00	1,37	0,00
5,54	17,49	-0,00	12,96	0,00	1,39	0,00
5,74	17,13	-0,00	12,11	0,00	1,36	0,00
5,95	15,30	-2,14	9,66	0,00	1,19	0,16
6,13	12,20	-2,62	6,27	-1,94	0,93	0,20

Abscissa (m)	ULS	SLS	afp (mm)
	V max. (kN)	V max. (kN)	
4,42	55,65	41,22	0,0
4,50	51,54	38,17	0,0
4,71	41,16	30,49	0,0
4,92	30,77	22,80	0,0
5,12	20,39	15,11	0,0
5,33	10,01	7,42	0,0

5,54	-0,37	-0,27	0,0
5,74	-10,75	-7,96	0,0
5,95	-21,13	-15,65	0,0
6,13	-29,85	-22,11	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,48 to 2,19 (m)

Longitudinal reinforcement:

Transversal reinforcement:

- main (B500B)
stirrups 19 $\phi 6$ l = 1,06
e = 1*0,00 + 18*0,09 (m)

2.6.2 P2 : Span from 2,44 to 4,17 (m)

Longitudinal reinforcement:

- bottom (B500B)
2 $\phi 12$ l = 6,56 from 6,58 to 0,03
- support (B500B)
2 $\phi 12$ l = 6,56 from 0,03 to 6,58

Transversal reinforcement:

- main (B500B)
stirrups 19 $\phi 6$ l = 1,06
e = 1*-0,00 + 18*0,10 (m)

2.6.3 P3 : Span from 4,42 to 6,13 (m)

Longitudinal reinforcement:

Transversal reinforcement:

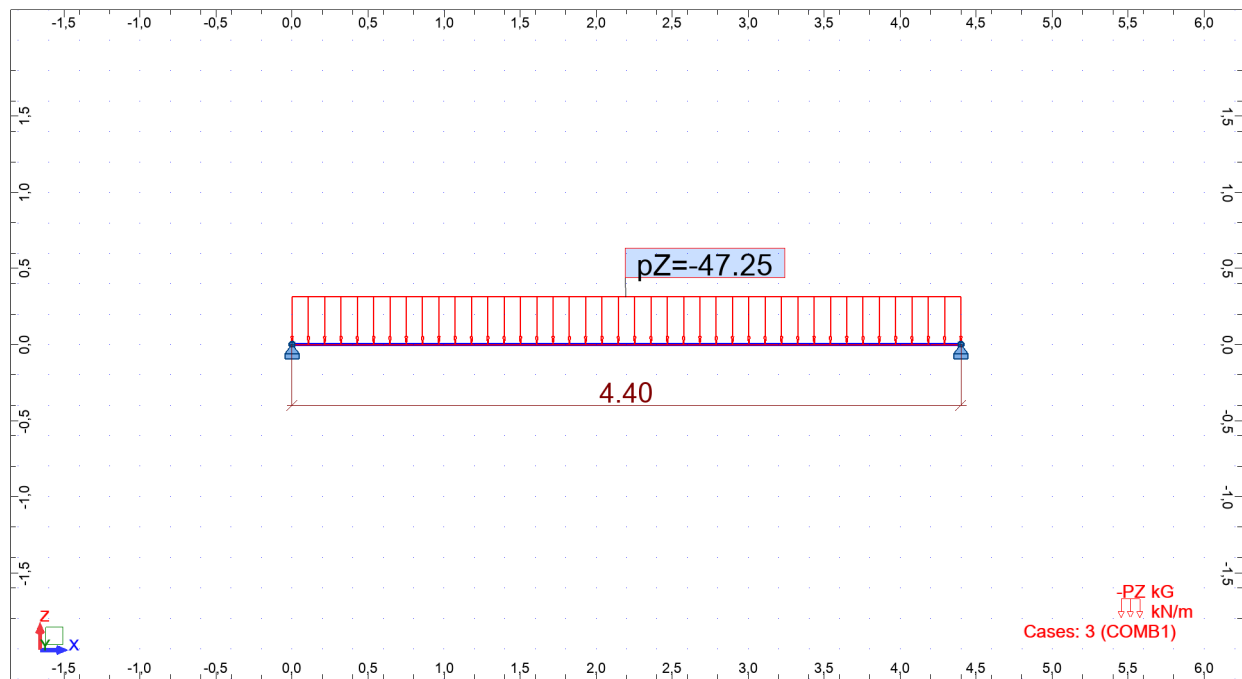
- main (B500B)
stirrups 19 $\phi 6$ l = 1,06
e = 1*-0,00 + 18*0,09 (m)

3 Material survey:

- Concrete volume = 0,58 (m3)
- Formwork = 6,08 (m2)
- Steel B500B
 - Total weight = 36,72 (kG)
 - Density = 63,54 (kG/m3)
 - Average diameter = 7,8 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	1,06	0,24	57	13,44
12	6,56	5,82	4	23,29

View - Cases: 3 (COMB1)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : $\varphi_{\pi} = 2,51$
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : no requirements

2 1SR-14 identical elements: 1

Number of

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kG/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,40	4,00	0,40	
	Span length: $L_0 = 4,40$ (m)				
	Section from 0,00 to 4,00 (m)				
	18,0 x 40,0 (cm)				
	without left slab				
	without right slab				

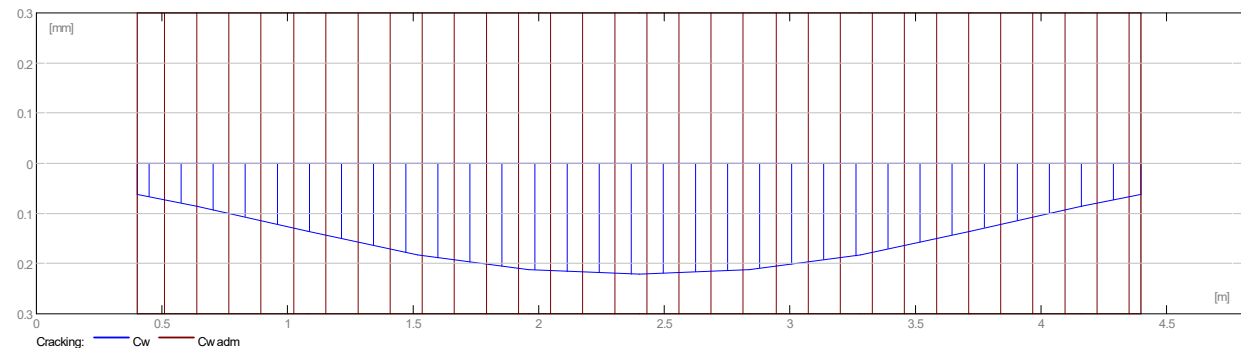
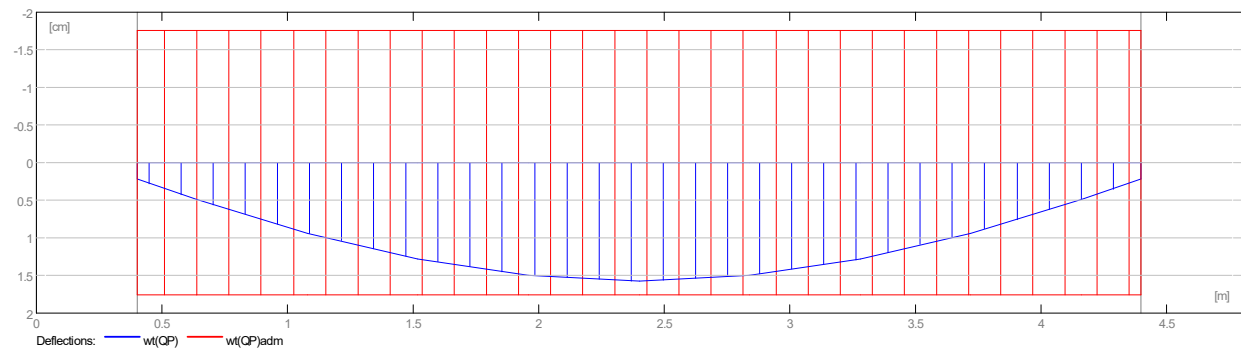
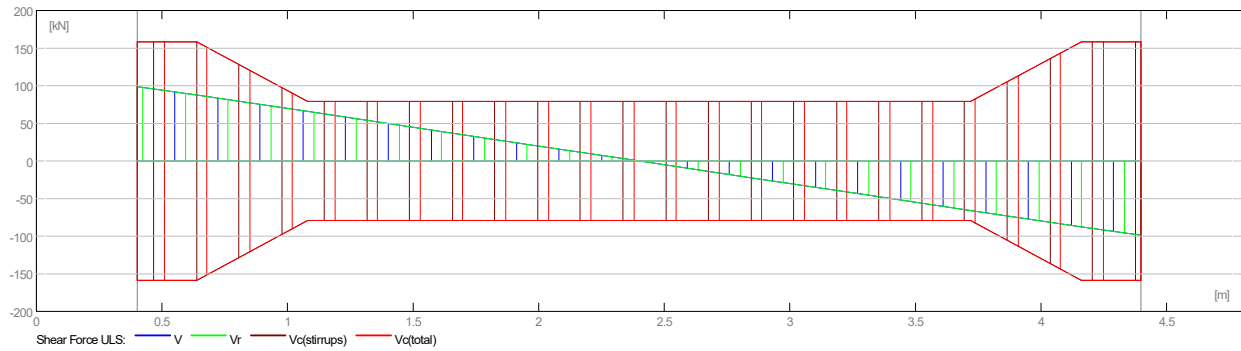
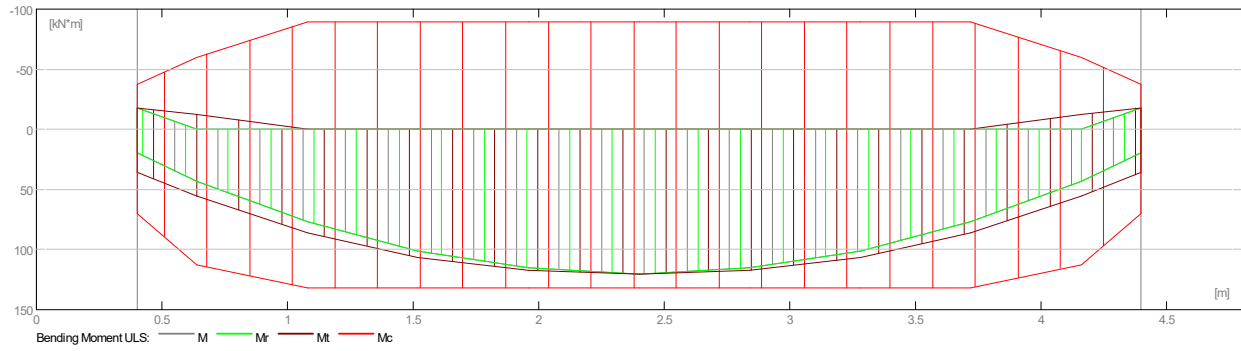
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom c = 3,5 (cm)
: side c1= 3,5 (cm)
: top c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

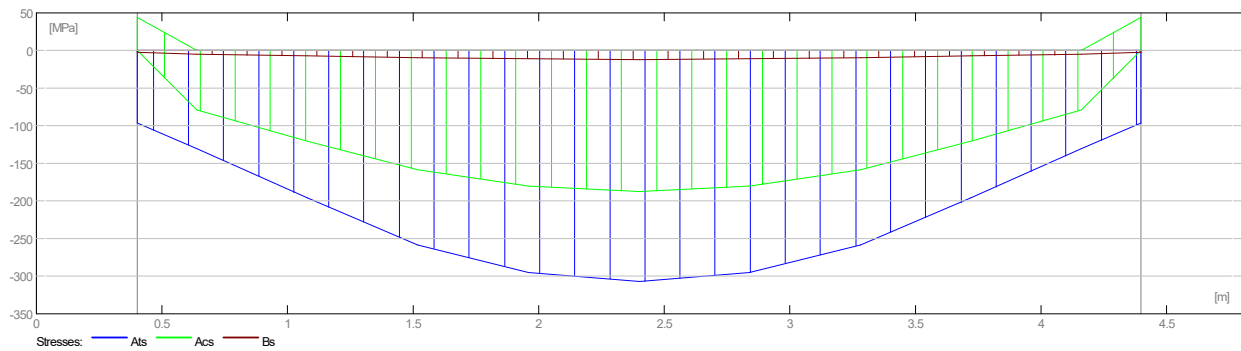
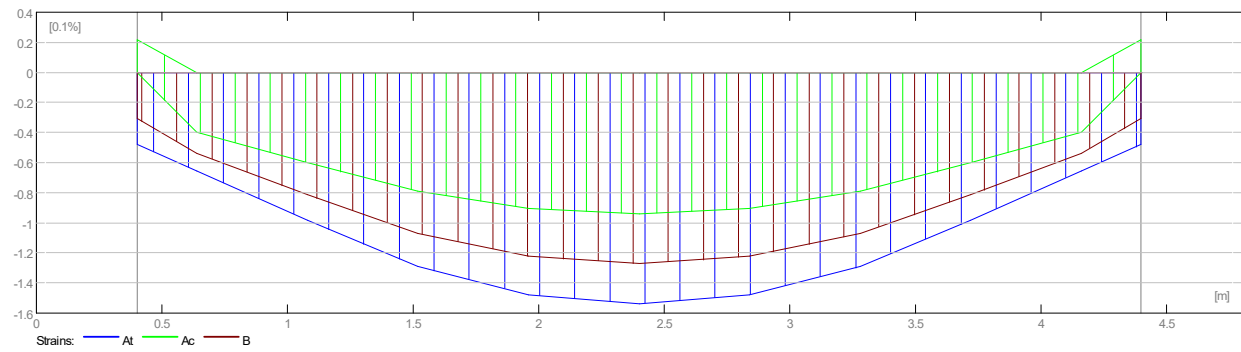
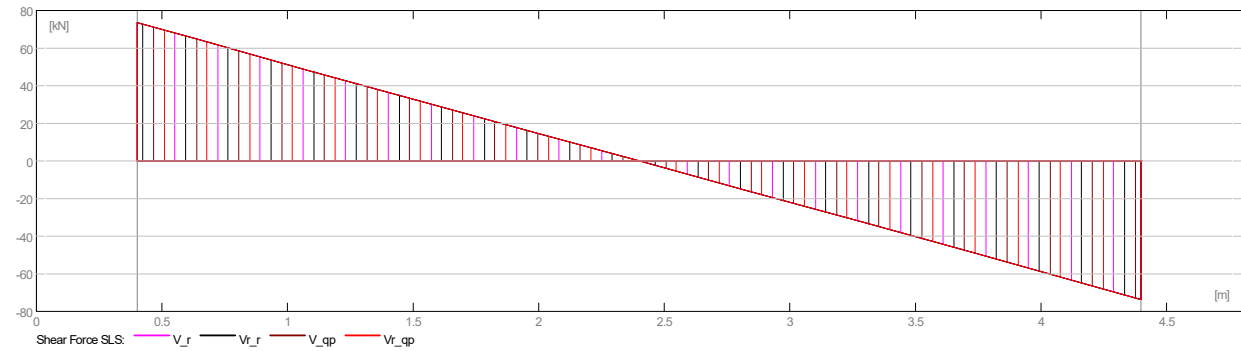
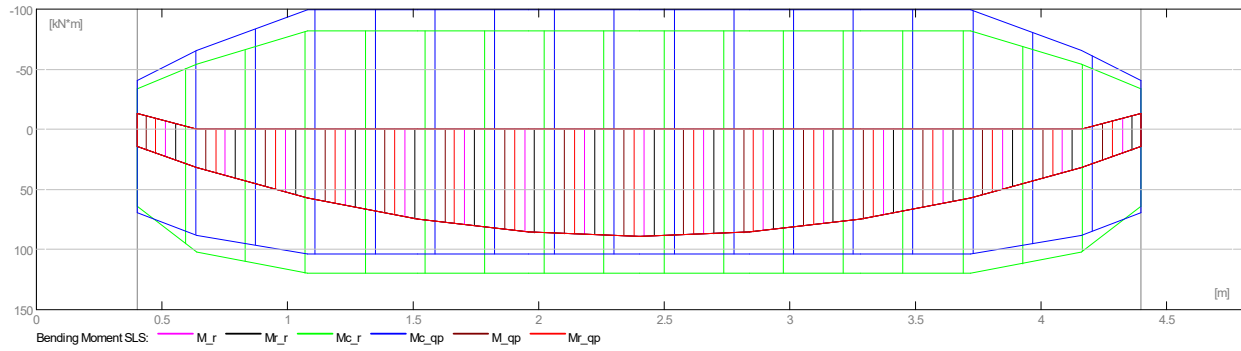
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	120,12	-0,00	35,58	35,58	99,27	-99,27



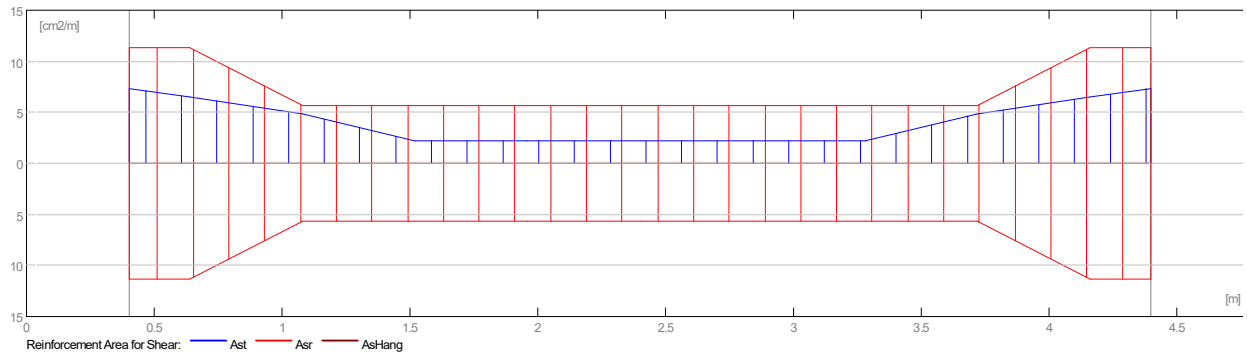
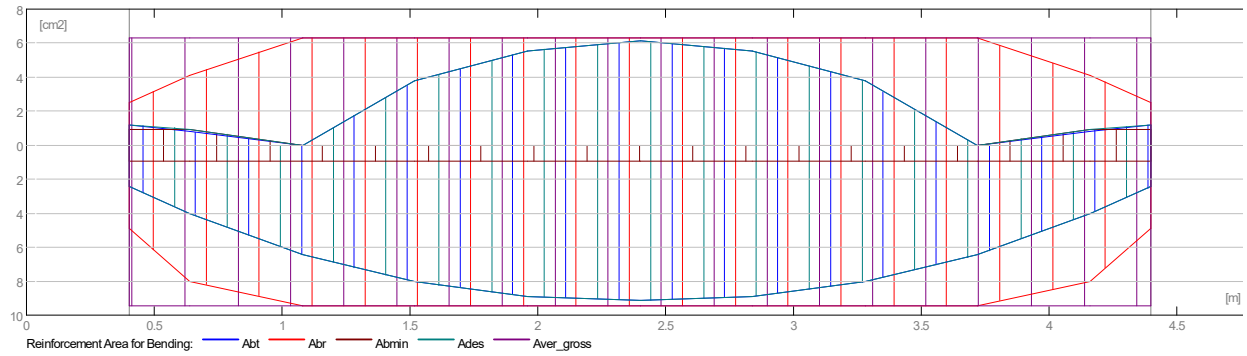
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	88,97	0,00	14,56	14,56	73,53	-73,53



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	9,13	6,14	2,45	1,21	2,45	1,21



2.4.4 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	1,6	1,8	0,0	0,0	0,2

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,40 to 4,40 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)	A compressive (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)			
0,40	35,58	-18,02	14,56	-13,35	2,45	1,21	0,00
0,64	55,62	-12,16	32,03	0,00	3,99	0,82	0,00
1,08	85,72	-0,00	56,94	0,00	6,44	0,00	0,00
1,52	106,20	-0,00	74,74	0,00	8,03	3,75	3,75
1,96	117,08	-0,00	85,42	0,00	8,89	5,55	5,55
2,40	120,12	0,00	88,97	0,00	9,13	6,14	6,14
2,84	117,08	-0,00	85,42	0,00	8,89	5,55	5,55
3,28	106,20	-0,00	74,74	0,00	8,03	3,75	3,75
3,72	85,72	-0,00	56,94	0,00	6,44	0,00	0,00
4,16	55,62	-12,16	32,03	0,00	3,99	0,82	0,00
4,40	35,58	-18,02	14,56	-13,35	2,45	1,21	0,00
	ULS	SLS					

Abscissa (m)	V max. (kN)	V max. (kN)	afp (mm)
0,40	99,27	73,53	0,1
0,64	87,36	64,71	0,1
1,08	65,52	48,53	0,1
1,52	43,68	32,35	0,2
1,96	21,84	16,18	0,2
2,40	-0,00	0,00	0,2
2,84	-21,84	-16,18	0,2
3,28	-43,68	-32,35	0,2
3,72	-65,52	-48,53	0,1
4,16	-87,36	-64,71	0,1
4,40	-99,27	-73,53	0,1

2.6 Reinforcement:

2.6.1 P1 : Span from 0,40 to 4,40 (m)

Longitudinal reinforcement:

- bottom (B500B)
 - 3 ϕ 20 l = 4,75 from 4,78 to 0,03
- support (B500B)
 - 2 ϕ 20 l = 4,75 from 0,03 to 4,78

Transversal reinforcement:

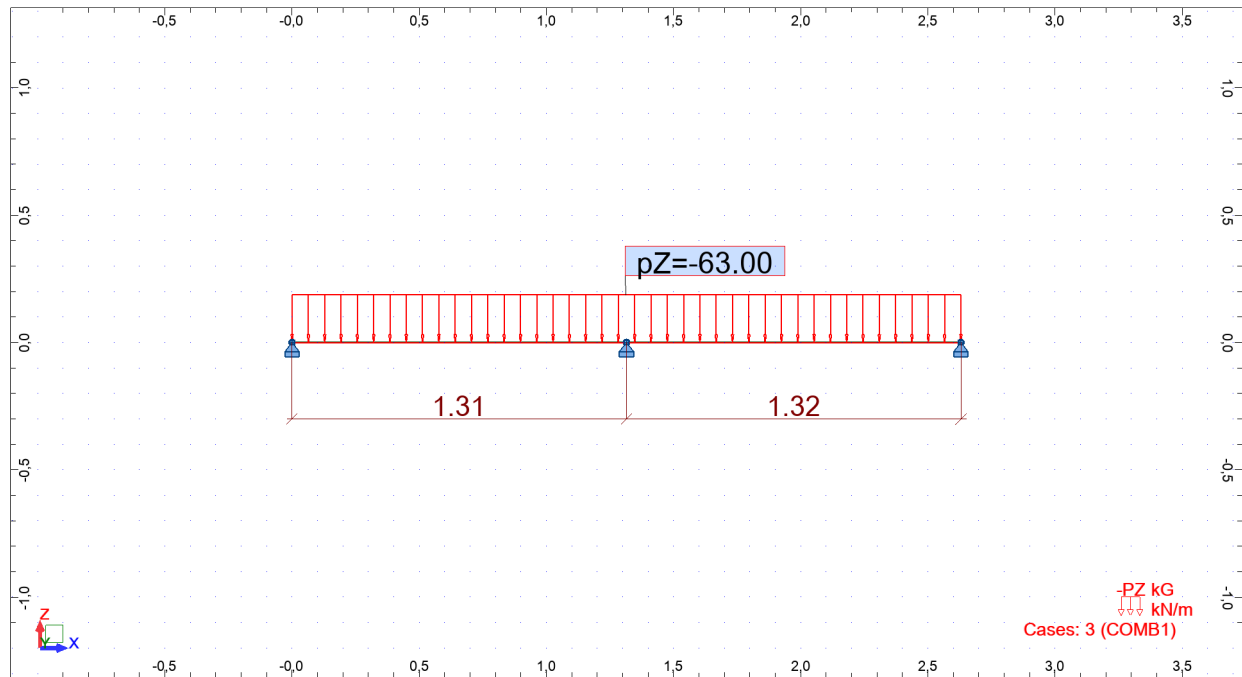
- main (B500B)
 - stirrups 57 ϕ 6 l = 1,02
e = 1*-0,37 + 6*0,05 + 1*0,07 + 10*0,05 + 30*0,10 + 9*0,05 (m)

3 Material survey:

- Concrete volume = 0,35 (m3)
- Formwork = 4,70 (m2)
- Steel B500B
 - Total weight = 73,34 (kG)
 - Density = 212,20 (kG/m3)
 - Average diameter = 9,7 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	1,02	0,23	65	14,74
20	4,75	11,72	5	58,59

View - Cases: 3 (COMB1)



1 Level:

- Name : Level $\pm 0,00$
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : φ_{π} = No results
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : no requirements

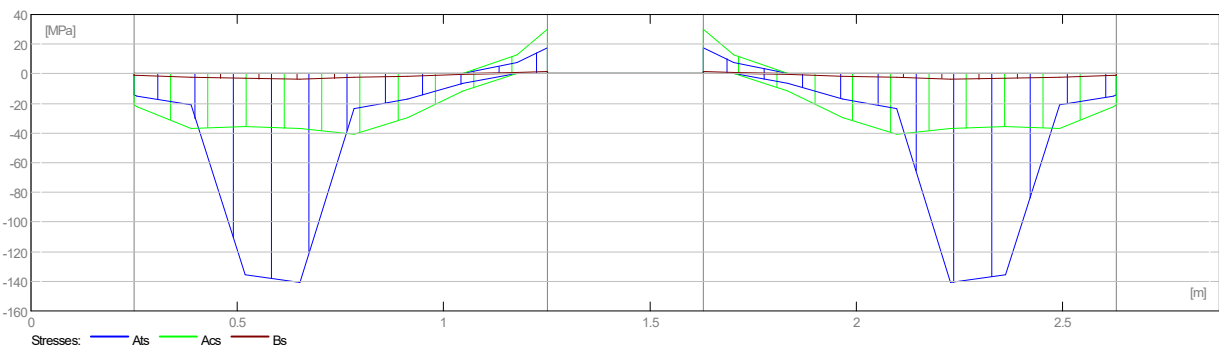
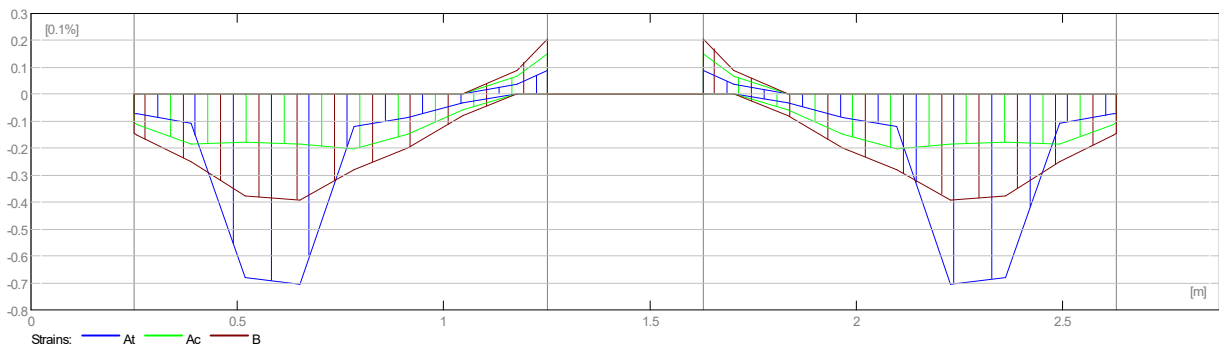
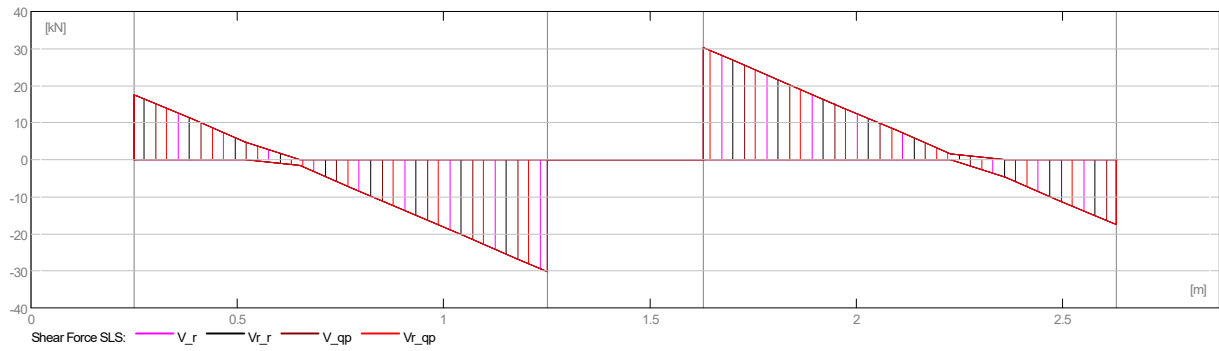
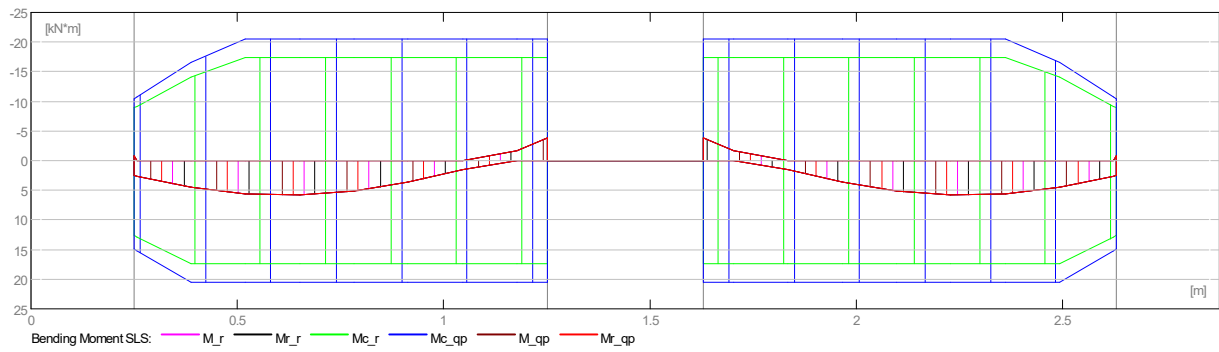
2 SAŖAMOS 2SR-1 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

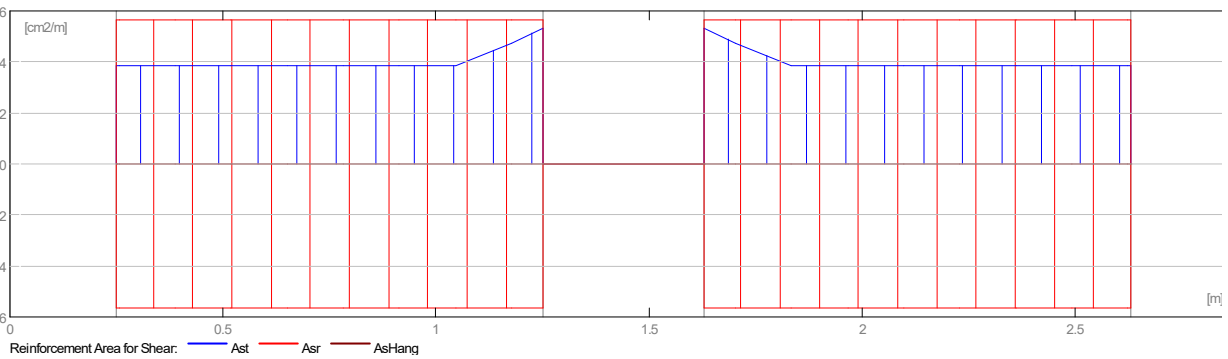
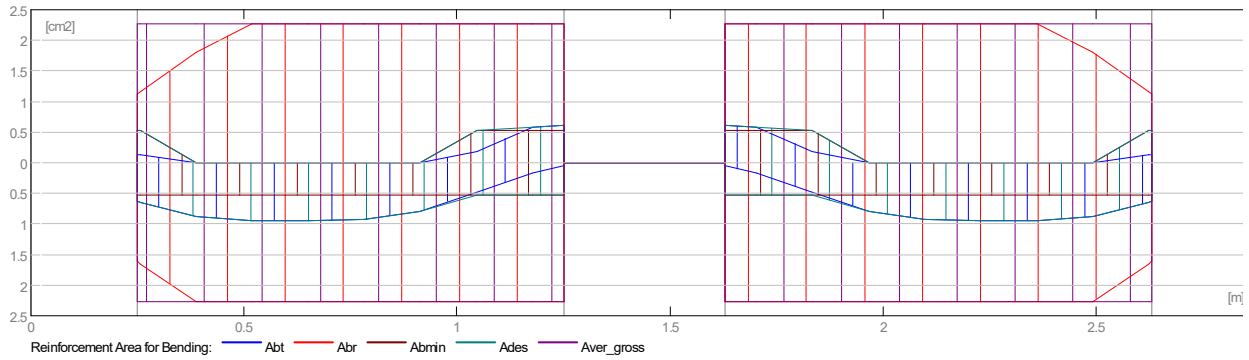
2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,25	1,00	0,38	
	Span length: $L_o = 1,32$ (m) Section from 0,00 to 1,00 (m) 18,0 x 25,0 (cm) without left slab without right slab				
2.2.2	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P2	Span 0,38	1,00	0,25	
	Span length: $L_o = 1,32$ (m) Section from 0,00 to 1,00 (m)				



2.4.3 Required reinforcement area

Span	Span (cm2)		Left support (cm2)		Right support (cm2)	
	bottom	top	bottom	top	bottom	top
P1	0,95	0,00	0,62	0,13	0,05	0,61
P2	0,95	0,00	0,05	0,61	0,62	0,13



2.4.4 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,0	0,5	0,0	0,3	0,1
P2	0,0	0,5	0,0	0,3	0,1

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,25 to 1,25 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
0,25	5,43	-1,17	2,55	-0,87	0,62	0,13
0,26	5,56	-1,17	2,68	0,00	0,64	0,13
0,39	7,21	-0,00	4,54	0,00	0,87	0,00
0,52	7,74	-0,00	5,58	0,00	0,94	0,00
0,65	7,81	-0,00	5,78	0,00	0,95	0,00
0,78	7,61	-0,00	5,16	0,00	0,92	0,00
0,91	6,52	-0,00	3,72	0,00	0,79	0,00
1,05	4,31	-1,72	1,45	0,00	0,47	0,19
1,18	1,50	-5,17	0,00	-1,65	0,17	0,58
1,25	0,42	-5,17	0,00	-3,83	0,05	0,61
	ULS	SLS				

Abscissa (m)	V max. (kN)	V max. (kN)	afp (mm)
0,25	23,74	17,59	0,0
0,26	23,32	17,28	0,0
0,39	14,84	10,99	0,0
0,52	6,36	4,71	0,1
0,65	-2,12	-1,57	0,1
0,78	-10,60	-7,85	0,0
0,91	-19,08	-14,14	0,0
1,05	-27,56	-20,42	0,0
1,18	-36,04	-26,70	0,0
1,25	-40,75	-30,19	0,0

2.5.2 P2 : Span from 1,63 to 2,63 (m)

Abscissa (m)	ULS		SLS		A bottom (cm2)	A top (cm2)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
1,63	0,42	-5,17	0,00	-3,83	0,05	0,61
1,70	1,50	-5,17	0,00	-1,65	0,17	0,58
1,83	4,31	-1,72	1,45	0,00	0,47	0,19
1,97	6,52	-0,00	3,72	0,00	0,79	0,00
2,10	7,61	-0,00	5,16	0,00	0,92	0,00
2,23	7,81	-0,00	5,78	0,00	0,95	0,00
2,36	7,74	-0,00	5,58	0,00	0,94	0,00
2,49	7,21	-0,00	4,54	0,00	0,87	0,00
2,62	5,56	-1,17	2,68	0,00	0,64	0,13
2,63	5,43	-1,17	2,55	-0,87	0,62	0,13

Abscissa (m)	ULS		afp (mm)
	V max. (kN)	V max. (kN)	
1,63	40,75	30,19	0,0
1,70	36,04	26,70	0,0
1,83	27,56	20,42	0,0
1,97	19,08	14,14	0,0
2,10	10,60	7,85	0,0
2,23	2,12	1,57	0,1
2,36	-6,36	-4,71	0,1
2,49	-14,84	-10,99	0,0
2,62	-23,32	-17,28	0,0
2,63	-23,74	-17,59	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,25 to 1,25 (m)

Longitudinal reinforcement:

Transversal reinforcement:

- main (B500B)
- stirrups 11 $\phi 6$ $l = 0,72$
 $e = 1*0,00 + 10*0,10$ (m)

2.6.2 P2 : Span from 1,63 to 2,63 (m)

Longitudinal reinforcement:

- bottom (B500B)
2 $\phi 12$ $l = 2,83$ from 2,86 to 0,03
- support (B500B)
2 $\phi 12$ $l = 2,83$ from 0,03 to 2,86

Transversal reinforcement:

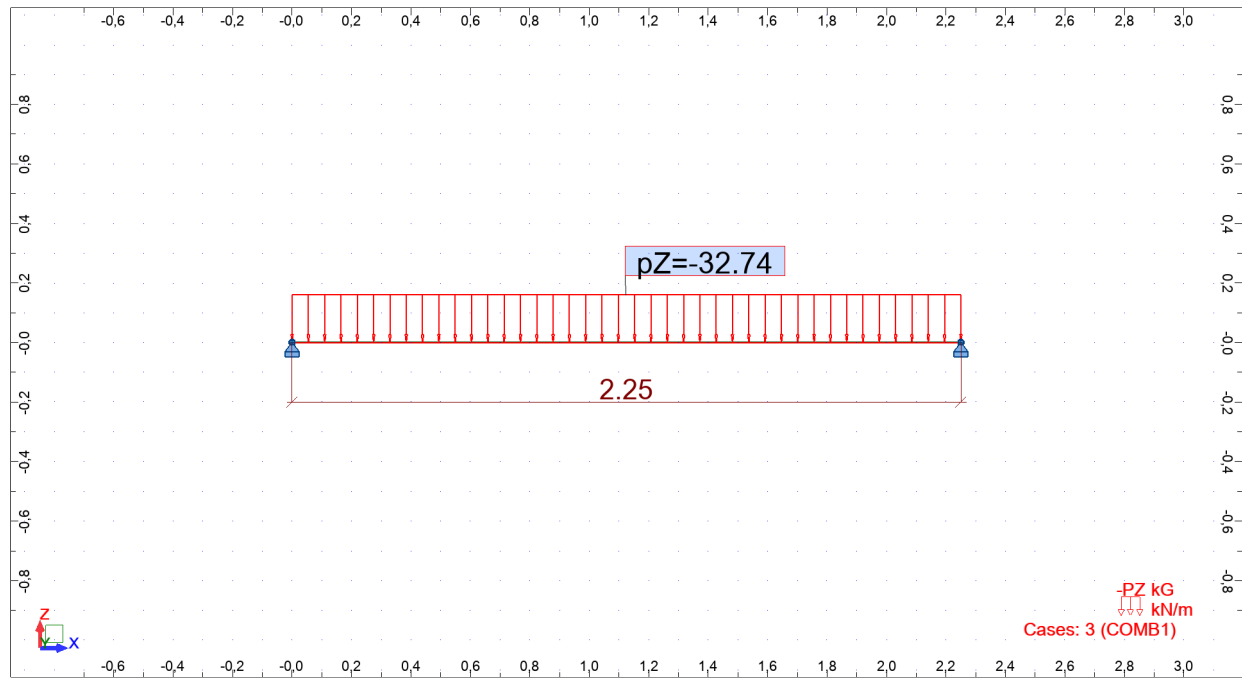
- main (B500B)
- stirrups 11 $\phi 6$ $l = 0,72$
 $e = 1*0,00 + 10*0,10$ (m)

3 Material survey:

- Concrete volume = 0,13 (m3)
- Formwork = 1,89 (m2)
- Steel B500B
 - Total weight = 13,58 (kG)
 - Density = 104,77 (kG/m3)
 - Average diameter = 8,5 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	0,72	0,16	22	3,52
12	2,83	2,51	4	10,05

View - Cases: 3 (COMB1)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : φ_{π} = No results
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : no requirements

2 SAŖAMOS 2SR-2 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram

2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,25	2,00	0,25	
	Span length: $L_o = 2,25$ (m)				
	Section from 0,00 to 2,00 (m)				
	18,0 x 25,0 (cm)				
	without left slab				
	without right slab				

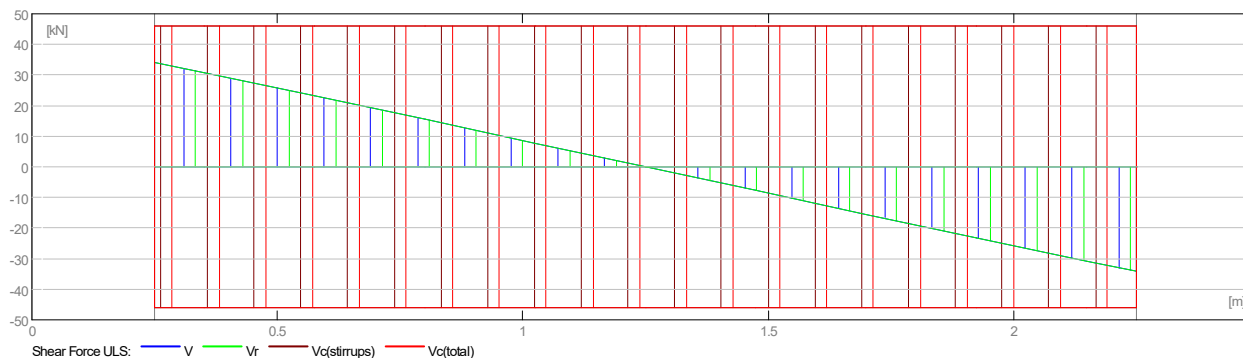
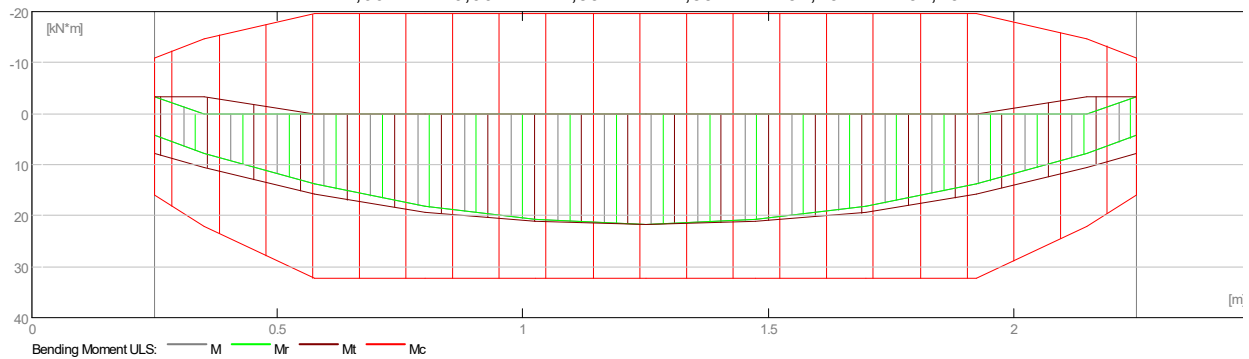
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom c = 3,5 (cm)
 : side c1= 3,5 (cm)
 : top c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

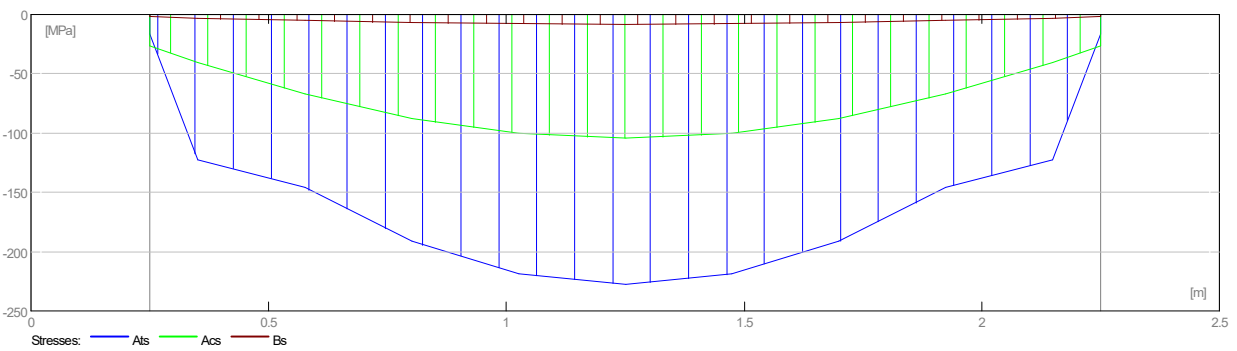
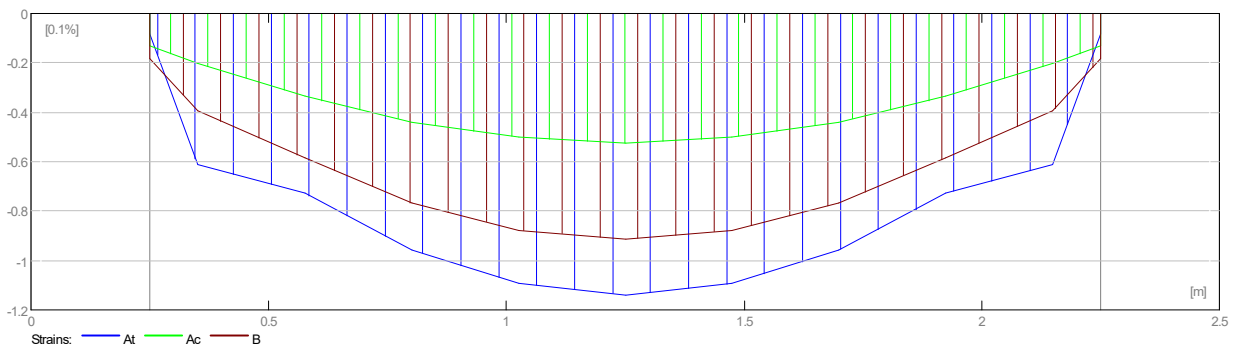
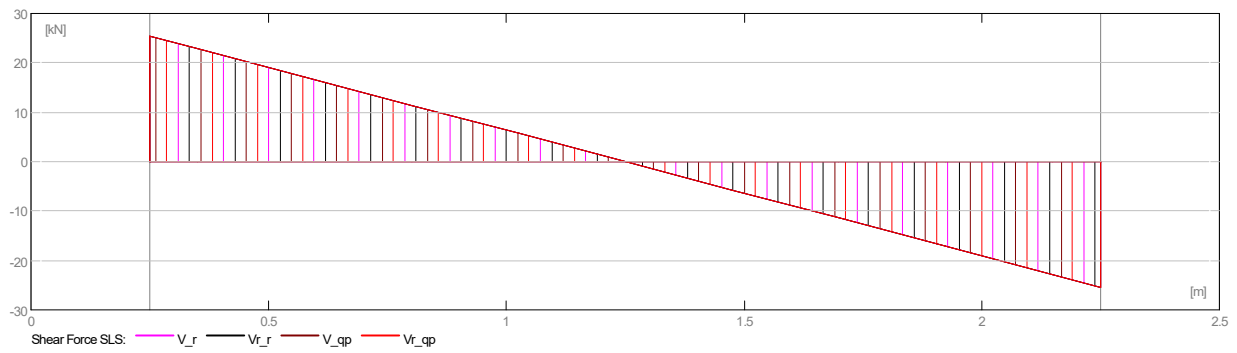
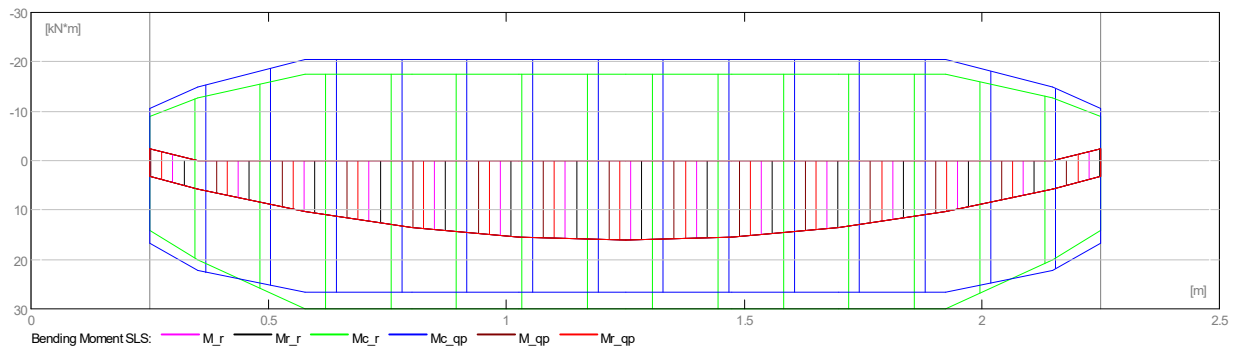
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	21,66	-0,00	7,83	7,83	34,23	-34,23



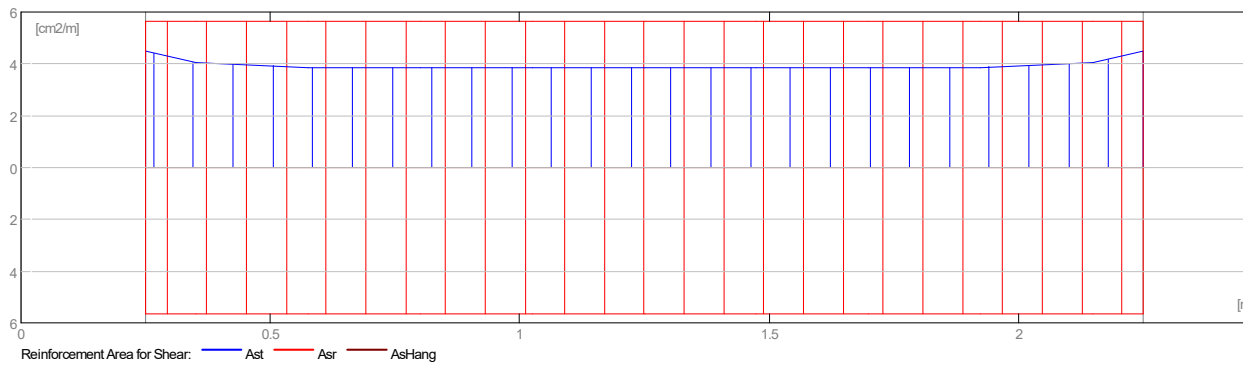
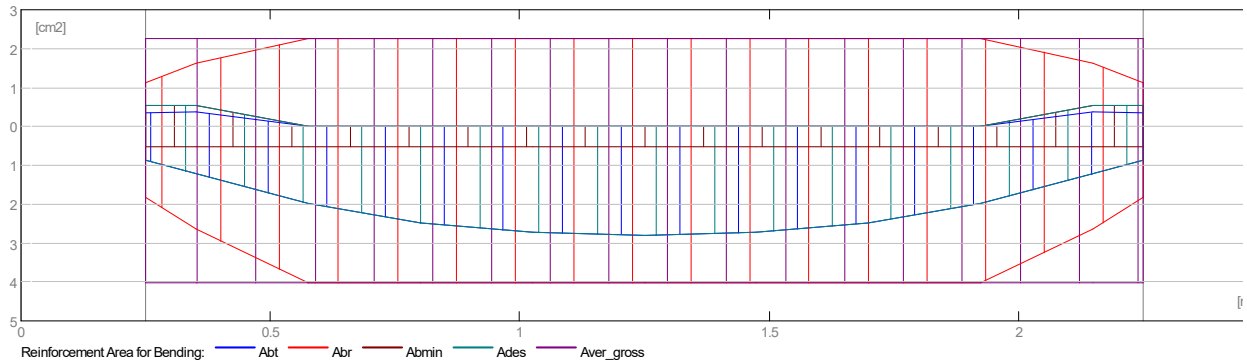
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	16,04	0,00	3,21	3,21	25,35	-25,35



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	2,80	0,00	0,87	0,35	0,87	0,35



2.4.4 Deflection and cracking

wt(QP) Total due to quasi-permanent combination

wt(QP)dop Allowable due to quasi-permanent combination

Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.

Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,5	0,9	0,0	0,0	0,2

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,25 to 2,25 (m)

Abscissa (m)	ULS				SLS	
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)	A bottom (cm ²)	A top (cm ²)
0,25	7,83	-3,25	3,21	-2,41	0,87	0,35
0,35	10,53	-3,25	5,78	0,00	1,22	0,37
0,58	15,81	-0,00	10,27	0,00	1,99	0,00
0,80	19,36	-0,00	13,48	0,00	2,47	0,00
1,03	21,18	-0,00	15,40	0,00	2,73	0,00
1,25	21,66	0,00	16,04	0,00	2,80	0,00
1,48	21,18	-0,00	15,40	0,00	2,73	0,00
1,70	19,36	-0,00	13,48	0,00	2,47	0,00
1,93	15,81	-0,00	10,27	0,00	1,99	0,00
2,15	10,53	-3,25	5,78	0,00	1,22	0,37
2,25	7,83	-3,25	3,21	-2,41	0,87	0,35

Abscissa (m)	ULS	SLS	afp (mm)
	V max. (kN)	V max. (kN)	
0,25	34,23	25,35	0,0
0,35	30,80	22,82	0,1
0,58	23,10	17,11	0,1
0,80	15,40	11,41	0,1
1,03	7,70	5,70	0,2
1,25	-0,00	0,00	0,2
1,48	-7,70	-5,70	0,2
1,70	-15,40	-11,41	0,1
1,93	-23,10	-17,11	0,1
2,15	-30,80	-22,82	0,1
2,25	-34,23	-25,35	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,25 to 2,25 (m)

Longitudinal reinforcement:

- bottom (B500B)
2 ϕ 16 l = 2,45 from 2,48 to 0,03
- support (B500B)
2 ϕ 12 l = 2,45 from 0,03 to 2,48

Transversal reinforcement:

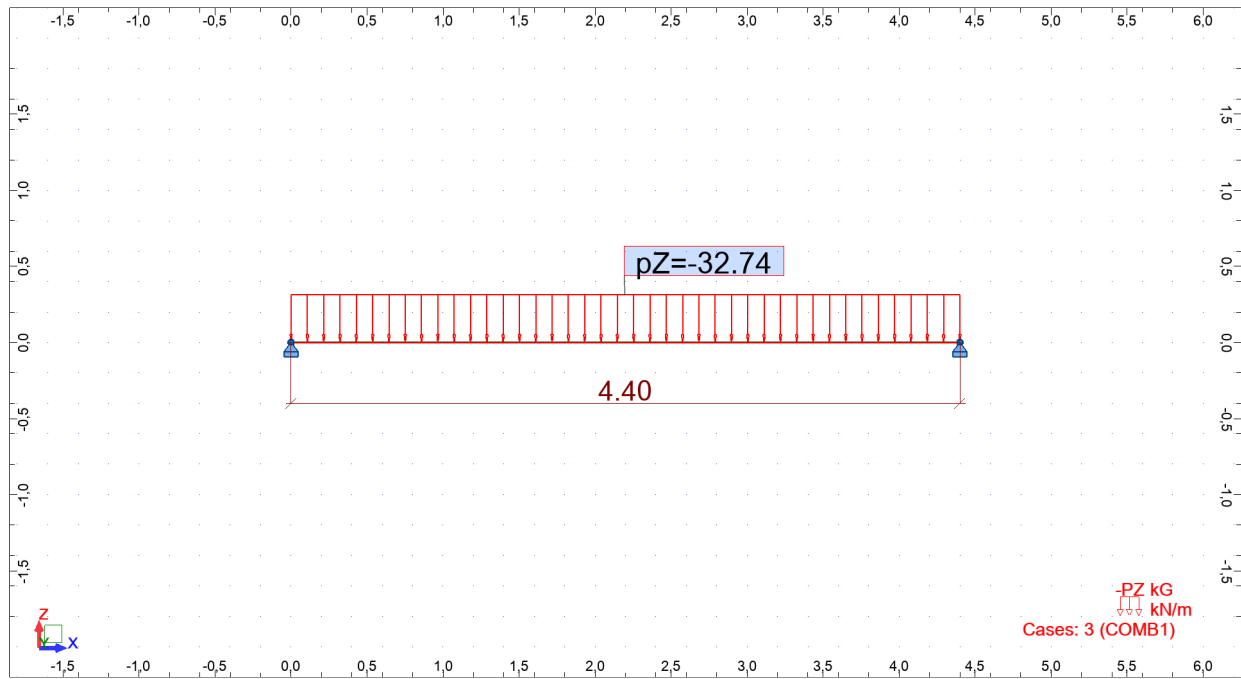
- main (B500B)
stirrups 21 ϕ 6 l = 0,72
e = 1*0,00 + 20*0,10 (m)

3 Material survey:

- Concrete volume = 0,11 (m3)
- Formwork = 1,70 (m2)
- Steel B500B
 - Total weight = 15,45 (kG)
 - Density = 137,36 (kG/m3)
 - Average diameter = 9,1 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	0,72	0,16	21	3,36
12	2,45	2,18	2	4,35
16	2,45	3,87	2	7,74

View - Cases: 3 (COMB1)



1 Level:

- Name : Level ±0,00
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : $\varphi_{\pi} = 2,51$
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : R 60(EN 1992-1-2:2004)

2 Beam: Beam1 identical elements: 1

Number of

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kG/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,40	4,00	0,40	
	Span length: $L_0 = 4,40$ (m)				
	Section from 0,00 to 4,00 (m)				
	18,0 x 40,0 (cm)				
	without left slab				
	without right slab				

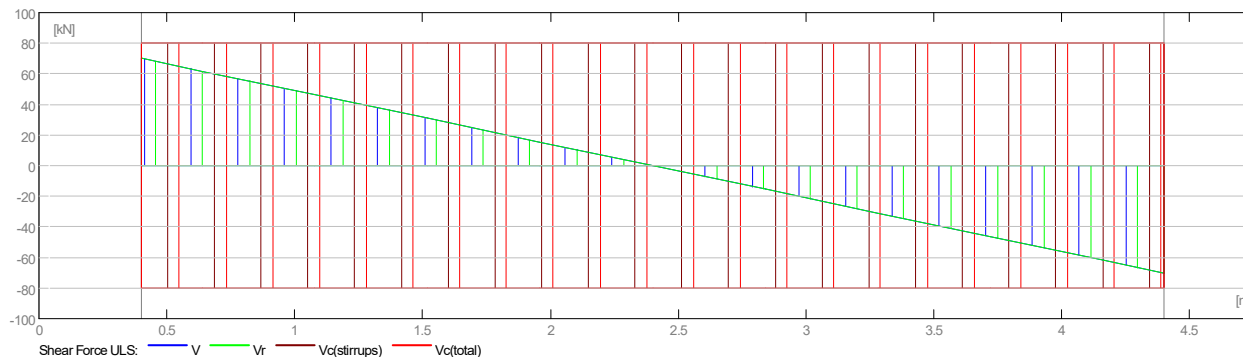
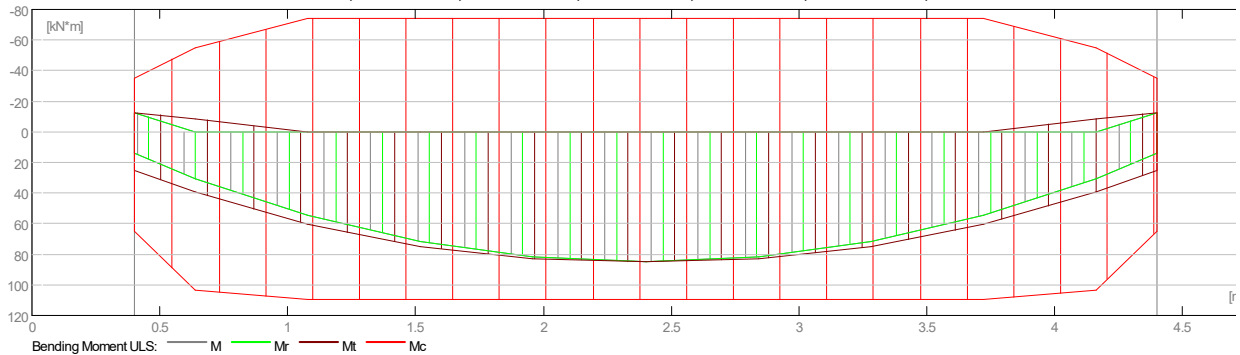
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom c = 3,5 (cm)
 : side c1= 3,6 (cm)
 : top c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

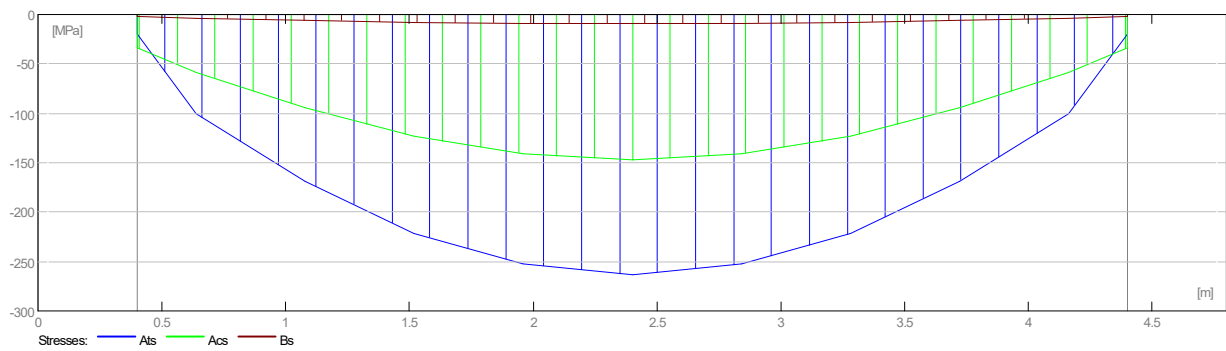
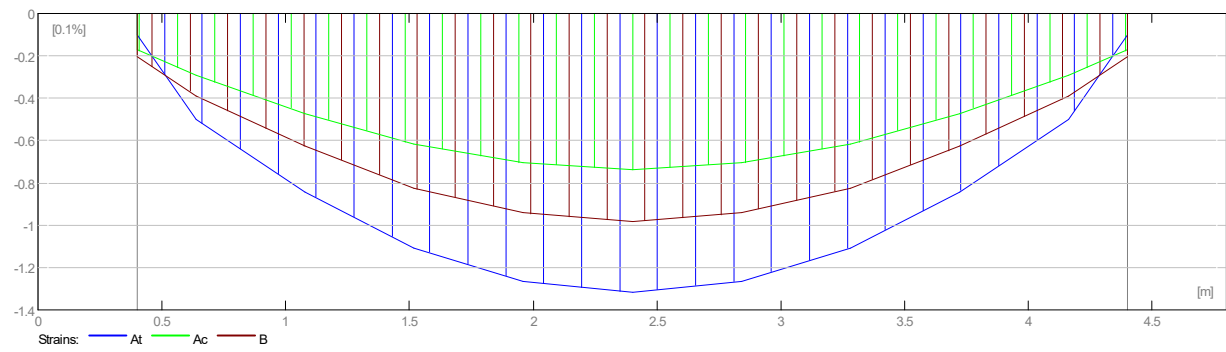
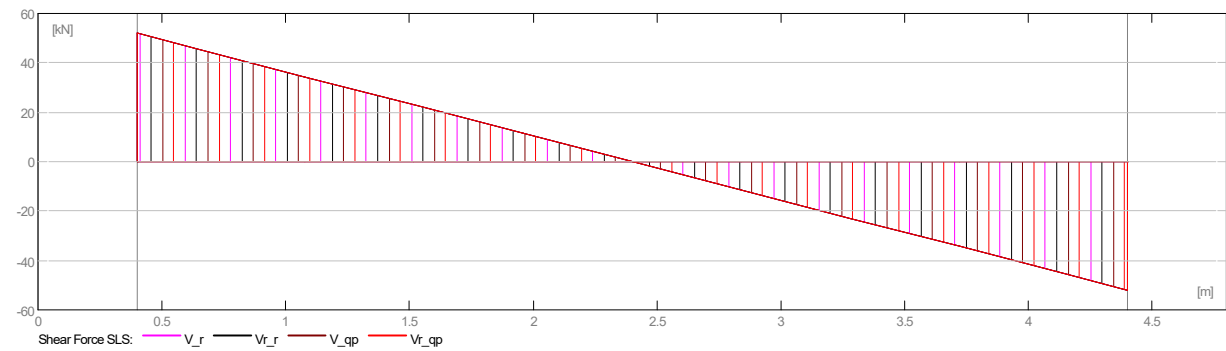
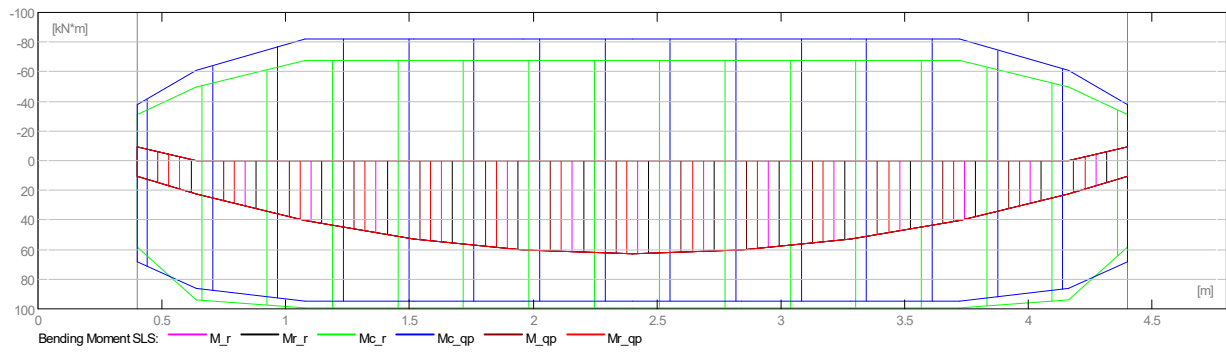
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	84,99	-0,00	25,17	25,17	70,24	-70,24



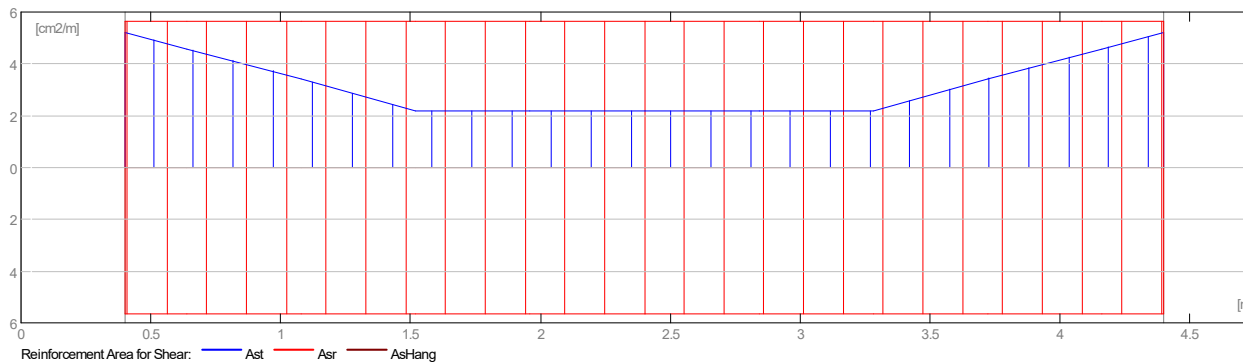
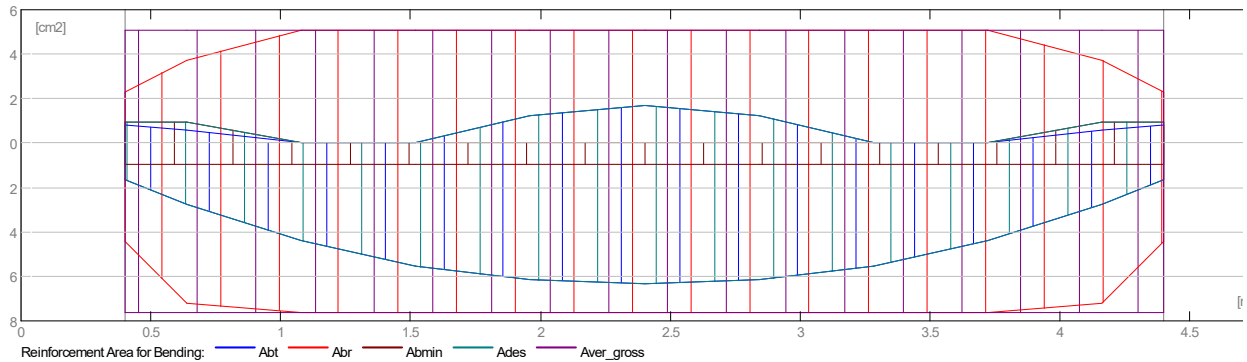
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	62,96	0,00	10,30	10,30	52,03	-52,03



2.4.3 Required reinforcement area

Span	Span (cm2)		Left support (cm2)		Right support (cm2)	
	bottom	top	bottom	top	bottom	top
P1	6,33	1,68	1,66	0,83	1,66	0,83



2.4.4 Fire resistance

Fire resistance :R 60(EN 1992-1-2:2004)
 Calculations according to :EN 1992-1-2:2004
 Estimation in accordance with section 5. Tabulated data.
 Number of sides exposed to fire :3
 Web type :WA
 Beam type :freely supported
 `b_min = 0,12(m)
 a_min = 0,03(m)

2.4.5 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	1,3	1,8	0,0	0,9	0,2

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,40 to 4,40 (m)

Abscissa (m)	ULS				SLS		
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)	A bottom (cm ²)	A top (cm ²)	A compressive (cm ²)

0,40	25,17	-12,75	10,30	-9,44	1,66	0,83	0,00
0,64	39,36	-8,61	22,67	0,00	2,74	0,58	0,00
1,08	60,66	-0,00	40,29	0,00	4,38	0,00	0,00
1,52	75,15	-0,00	52,89	0,00	5,55	0,00	0,00
1,96	82,85	-0,00	60,44	0,00	6,17	1,23	1,23
2,40	84,99	0,00	62,96	0,00	6,33	1,68	1,68
2,84	82,85	-0,00	60,44	0,00	6,17	1,23	1,23
3,28	75,15	-0,00	52,89	0,00	5,55	0,00	0,00
3,72	60,66	-0,00	40,29	0,00	4,38	0,00	0,00
4,16	39,36	-8,61	22,67	0,00	2,74	0,58	0,00
4,40	25,17	-12,75	10,30	-9,44	1,66	0,83	0,00

Abscissa (m)	ULS	SLS	afp (mm)
	V max. (kN)	V max. (kN)	
0,40	70,24	52,03	0,0
0,64	61,81	45,79	0,1
1,08	46,36	34,34	0,1
1,52	30,91	22,89	0,1
1,96	15,45	11,45	0,2
2,40	0,00	0,00	0,2
2,84	-15,45	-11,45	0,2
3,28	-30,91	-22,89	0,1
3,72	-46,36	-34,34	0,1
4,16	-61,81	-45,79	0,1
4,40	-70,24	-52,03	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,40 to 4,40 (m)

Longitudinal reinforcement:

- bottom (B500B)
 - 3 ϕ 18 $l = 4,76$ from 4,78 to 0,02
- support (B500B)
 - 2 ϕ 18 $l = 4,76$ from 0,02 to 4,78

Transversal reinforcement:

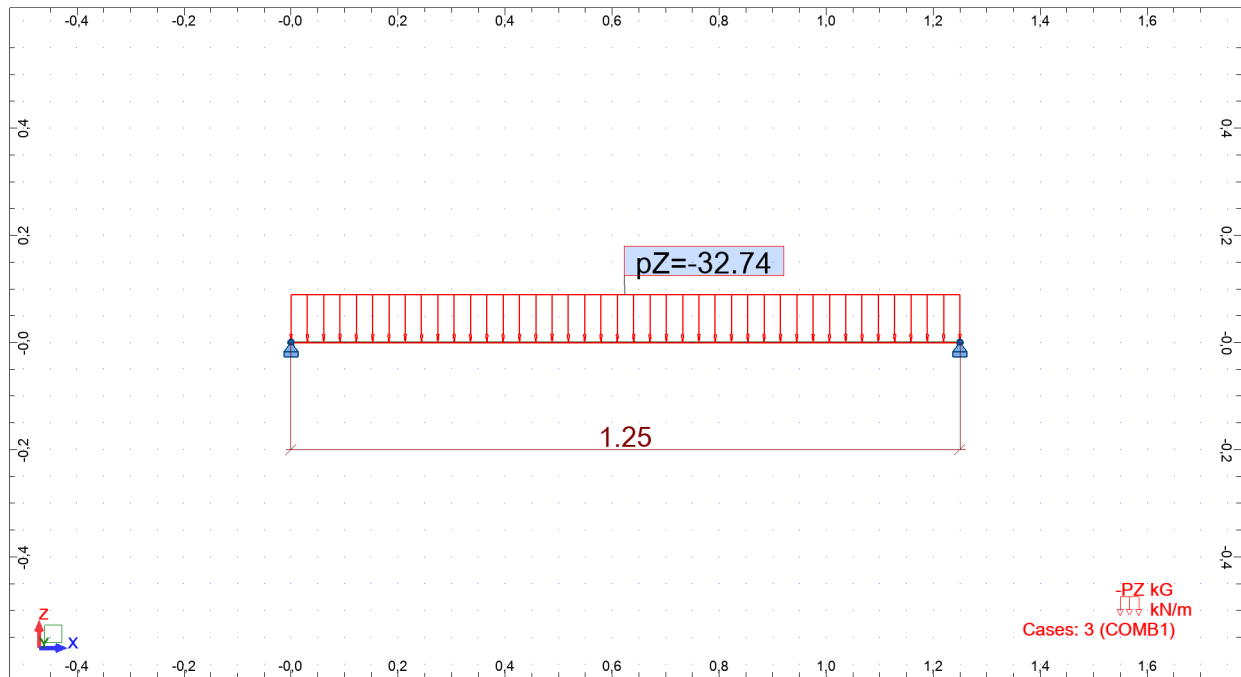
- main (B500B)
 - stirrups 45 ϕ 6 $l = 1,05$
 $e = 1 \cdot 0,38 + 3 \cdot 0,10 + 1 \cdot 0,08 + 40 \cdot 0,10$ (m)

3 Material survey:

- Concrete volume = 0,35 (m³)
- Formwork = 4,70 (m²)
- Steel B500B
 - Total weight = 58,89 (kG)
 - Density = 170,41 (kG/m³)
 - Average diameter = 9,8 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	1,05	0,23	49	11,38
18	4,76	9,50	5	47,52

View - Cases: 3 (COMB1)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : $\varphi_{\pi} = 2,64$
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : R 60(EN 1992-1-2:2004)

2 SAŖAMOS 2SR-4 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram

2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,25	1,00	0,25	
	Span length: $L_o = 1,25$ (m)				
	Section from 0,00 to 1,00 (m)				
	18,0 x 20,0 (cm)				
	without left slab				
	without right slab				

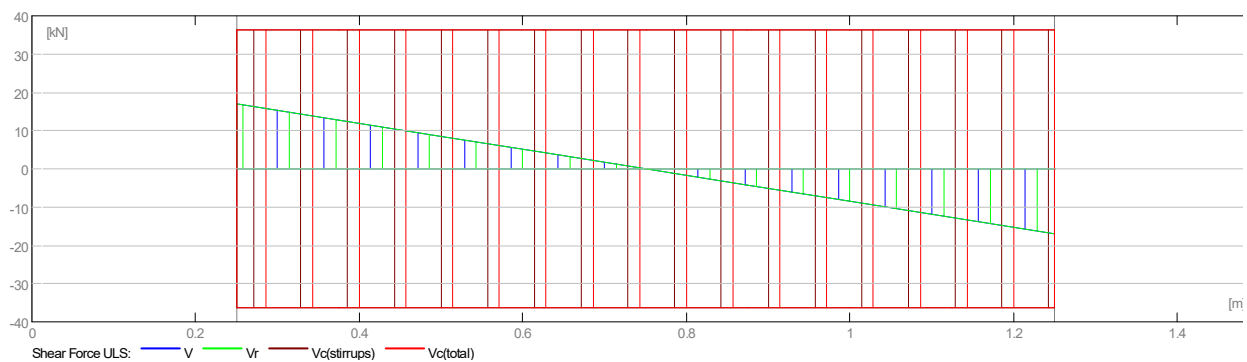
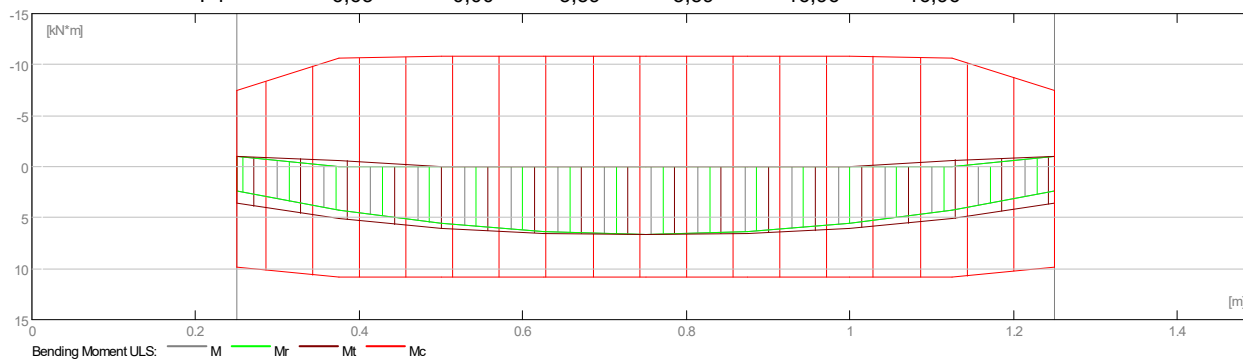
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom c = 3,5 (cm)
 : side c1= 3,6 (cm)
 : top c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

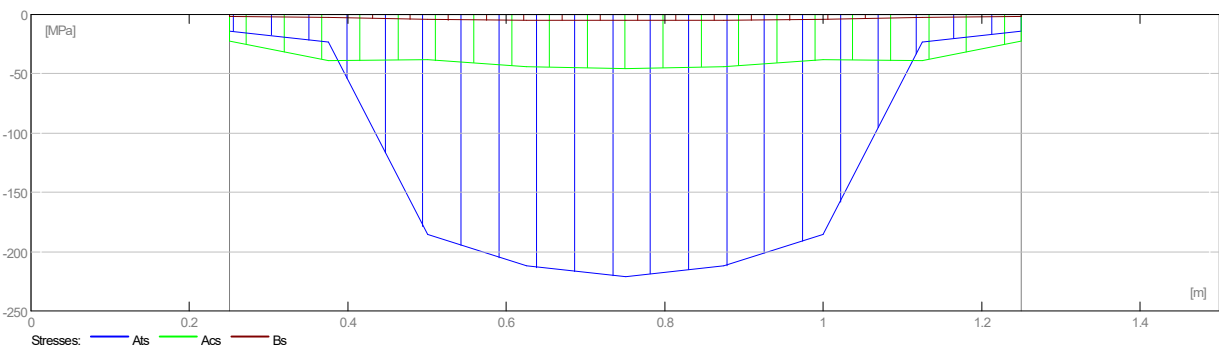
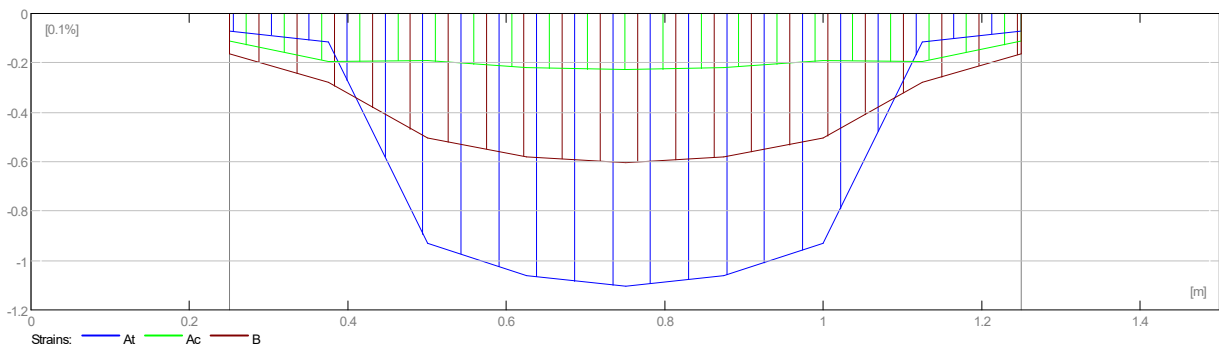
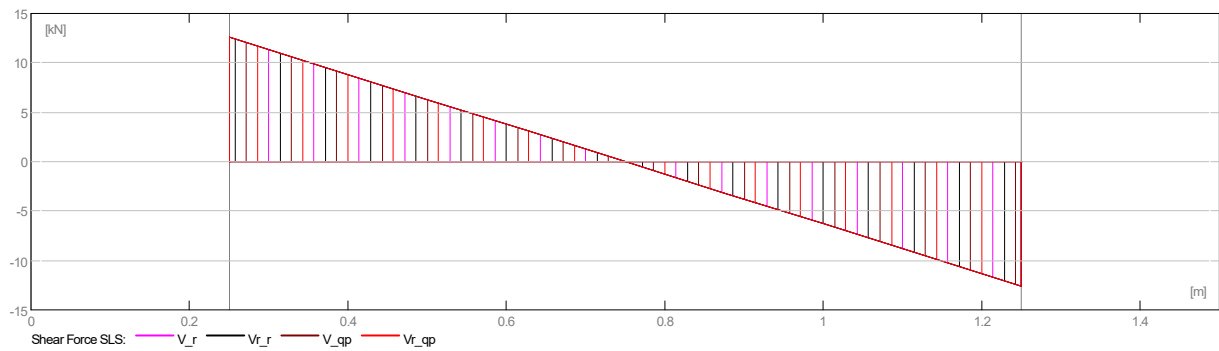
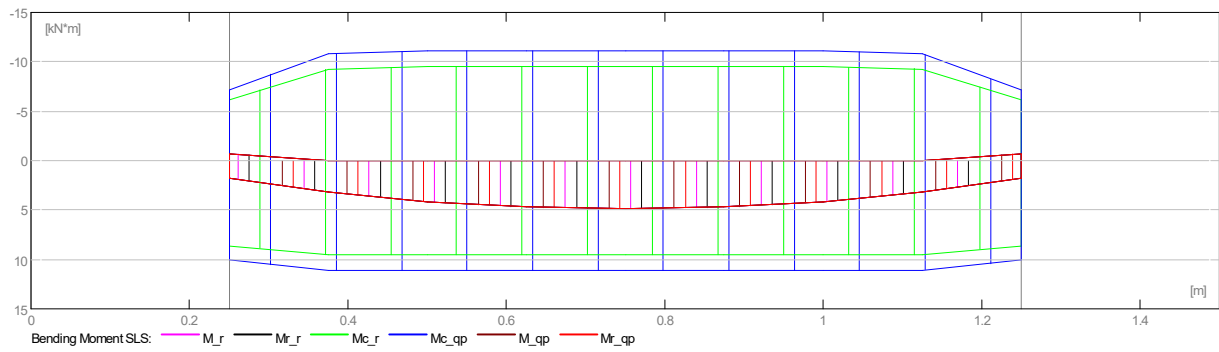
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	6,63	-0,00	3,59	3,59	16,96	-16,96



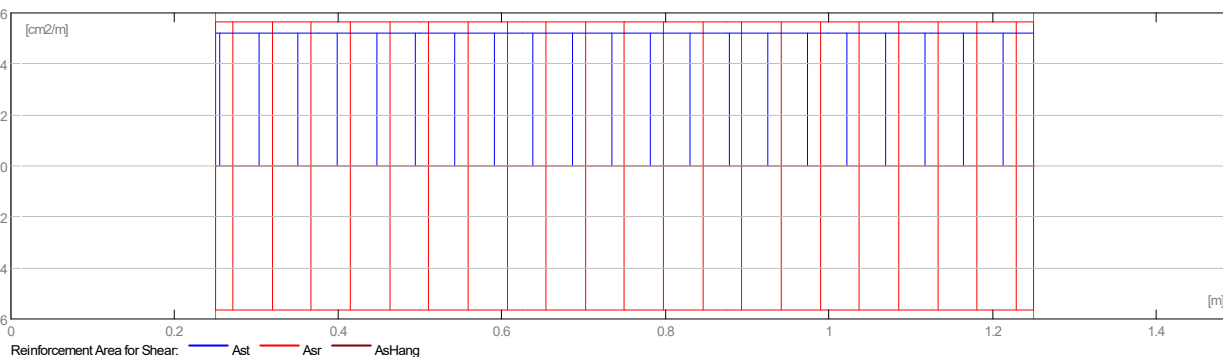
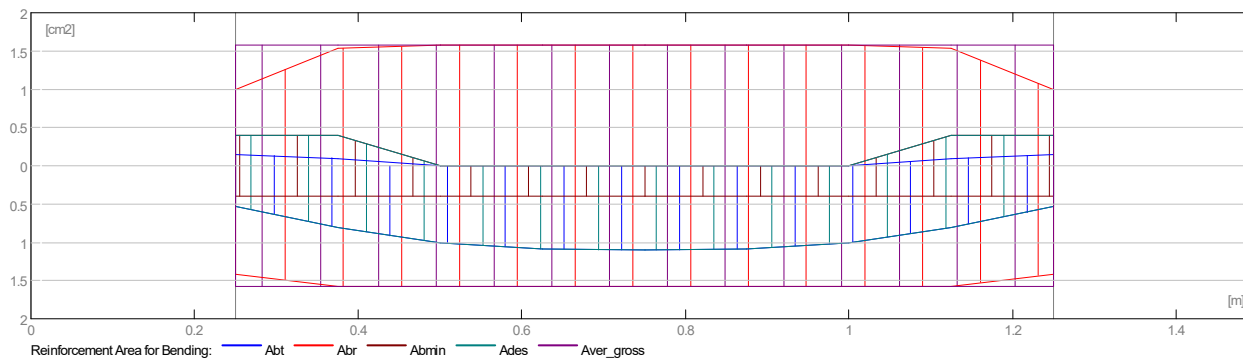
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	4,91	0,00	1,77	1,77	12,57	-12,57



2.4.3 Required reinforcement area

Span	Span (cm2)		Left support (cm2)		Right support (cm2)	
	bottom	top	bottom	top	bottom	top
P1	1,10	0,00	0,53	0,15	0,53	0,15



2.4.4 Fire resistance

Fire resistance :R 60(EN 1992-1-2:2004)
 Calculations according to :EN 1992-1-2:2004
 Estimation in accordance with section 5. Tabulated data.
 Number of sides exposed to fire :3
 Web type :WA
 Beam type :freely supported
 `b_min = 0,12(m)
 a_min = 0,03(m)

2.4.5 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,1	0,5	0,0	0,3	0,1

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,25 to 1,25 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		

0,25	3,59	-0,99	1,77	-0,74	0,53	0,15
0,38	5,10	-0,64	3,14	0,00	0,81	0,10
0,50	6,08	-0,00	4,12	0,00	1,01	0,00
0,63	6,53	-0,00	4,71	0,00	1,09	0,00
0,75	6,63	0,00	4,91	0,00	1,10	0,00
0,88	6,53	-0,00	4,71	0,00	1,09	0,00
1,00	6,08	-0,00	4,12	0,00	1,01	0,00
1,13	5,10	-0,64	3,14	0,00	0,81	0,10
1,25	3,59	-0,99	1,77	-0,74	0,53	0,15

Abscissa (m)	ULS		SLS	afp (mm)
	V max. (kN)	V max. (kN)	V max. (kN)	
0,25	16,96	12,57	0,0	
0,38	12,72	9,42	0,0	
0,50	8,48	6,28	0,1	
0,63	4,24	3,14	0,1	
0,75	-0,00	0,00	0,1	
0,88	-4,24	-3,14	0,1	
1,00	-8,48	-6,28	0,1	
1,13	-12,72	-9,42	0,0	
1,25	-16,96	-12,57	0,0	

2.6 Reinforcement:

2.6.1 P1 : Span from 0,25 to 1,25 (m)

Longitudinal reinforcement:

- bottom (B500B)
2 ϕ 10 $l = 1,46$ from 1,48 to 0,02
- support (B500B)
2 ϕ 10 $l = 1,46$ from 0,02 to 1,48

Transversal reinforcement:

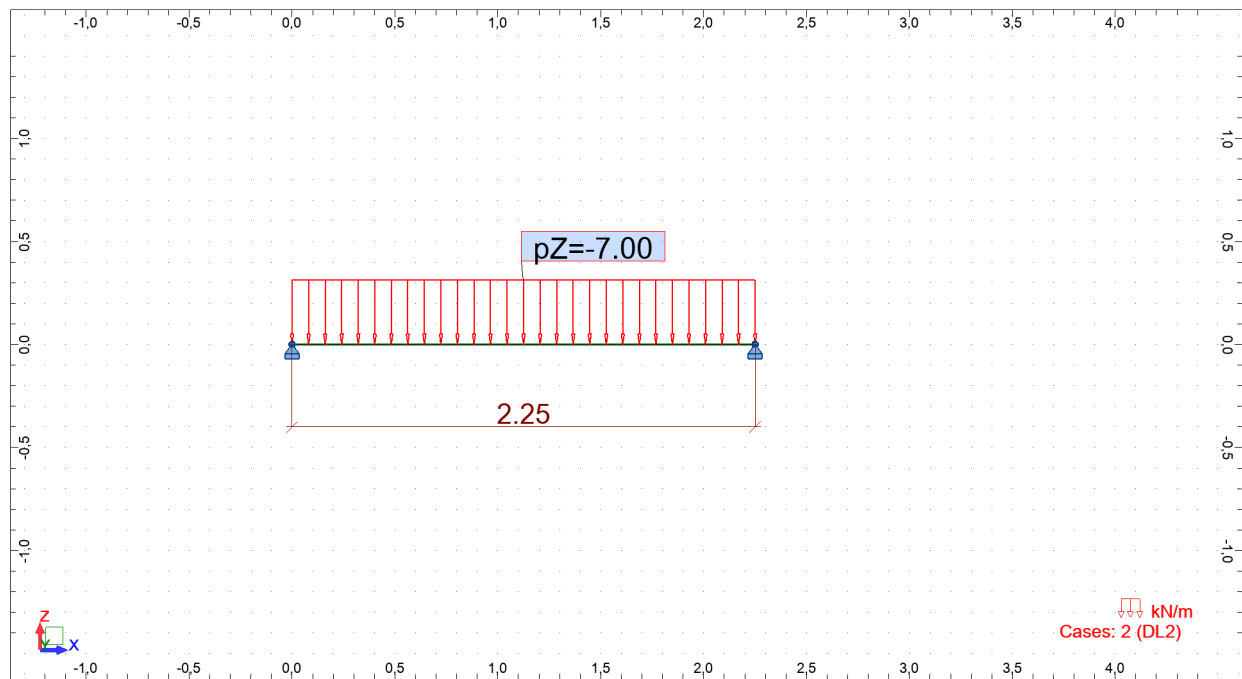
- main (B500B)
stirrups 11 ϕ 6 $l = 0,65$
 $e = 1*0,00 + 10*0,10$ (m)

3 Material survey:

- Concrete volume = 0,05 (m3)
- Formwork = 0,85 (m2)
- Steel B500B
 - Total weight = 5,17 (kG)
 - Density = 95,72 (kG/m3)
 - Average diameter = 7,8 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	0,65	0,14	11	1,58
10	1,46	0,90	4	3,59

View - Cases: 2 (DL2)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : $\varphi_{\pi} = 2,64$
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : R 60(EN 1992-1-2:2004)

2 SAŖAMOS 2SR-5 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L.supp. (m)	L (m)	R.supp. (m)
	P1	Span 0,25	2,00	0,25	
	Span length: $L_o = 2,25$ (m)				
	Section from 0,00 to 2,00 (m)				
	18,0 x 20,0 (cm)				
	without left slab				
	without right slab				

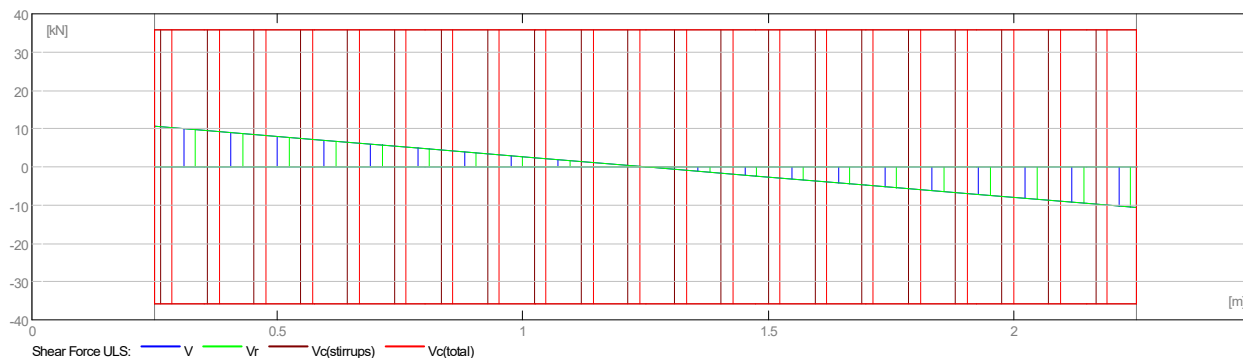
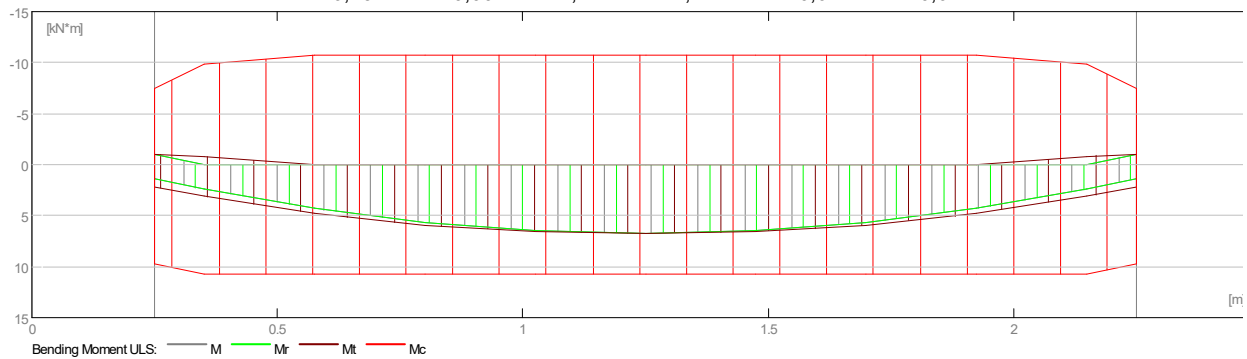
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom c = 3,5 (cm)
 : side c1= 3,6 (cm)
 : top c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

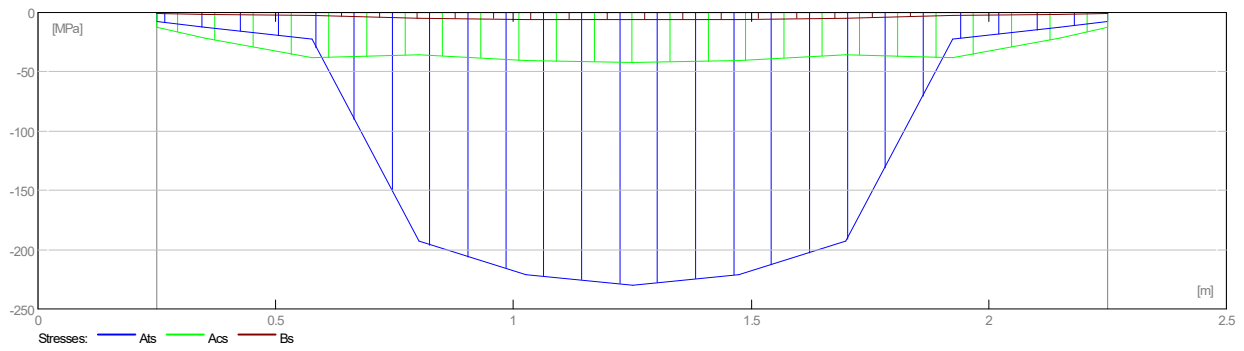
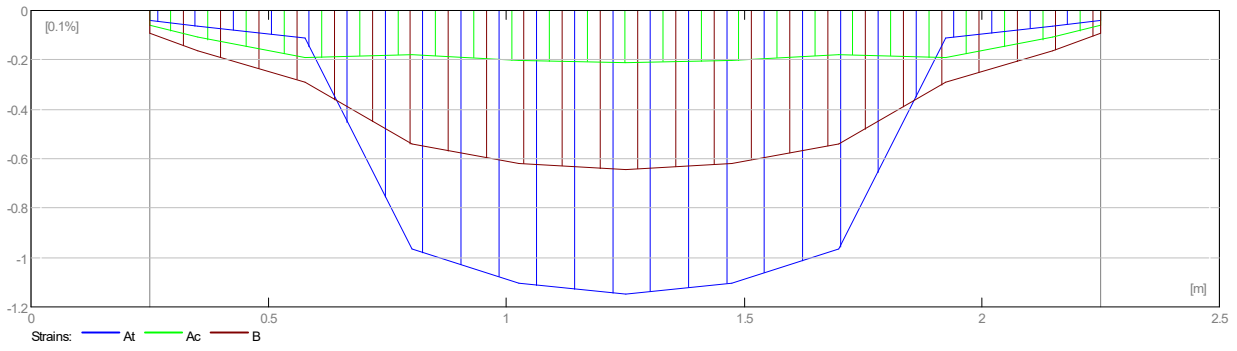
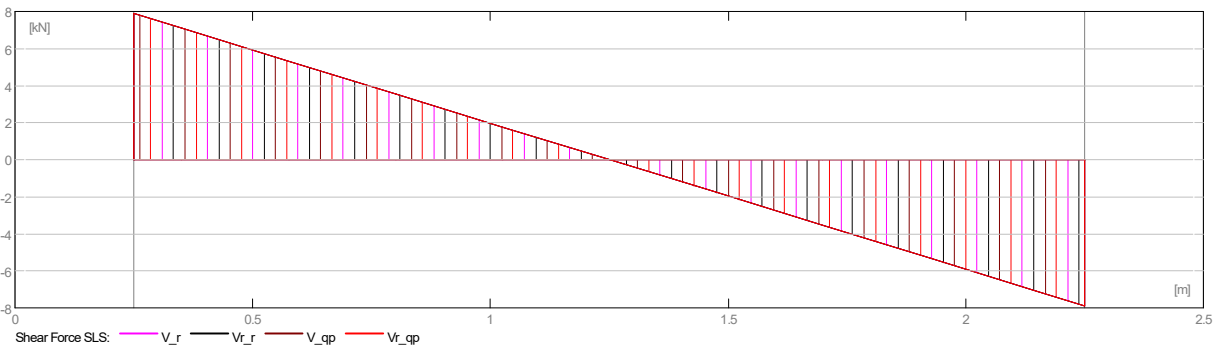
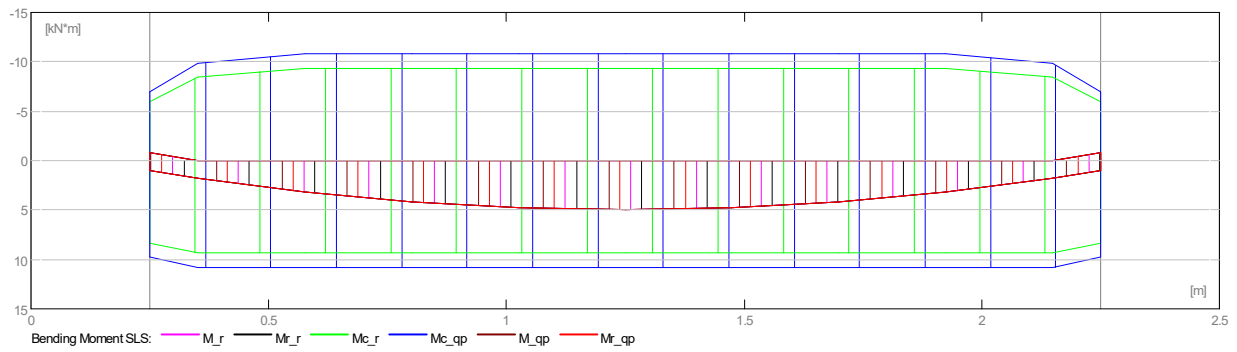
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	6,73	-0,00	2,22	2,22	10,64	-10,64



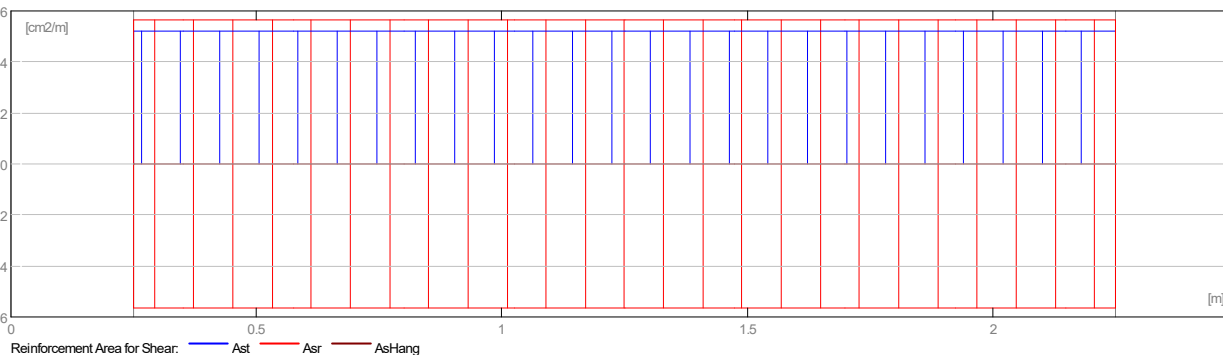
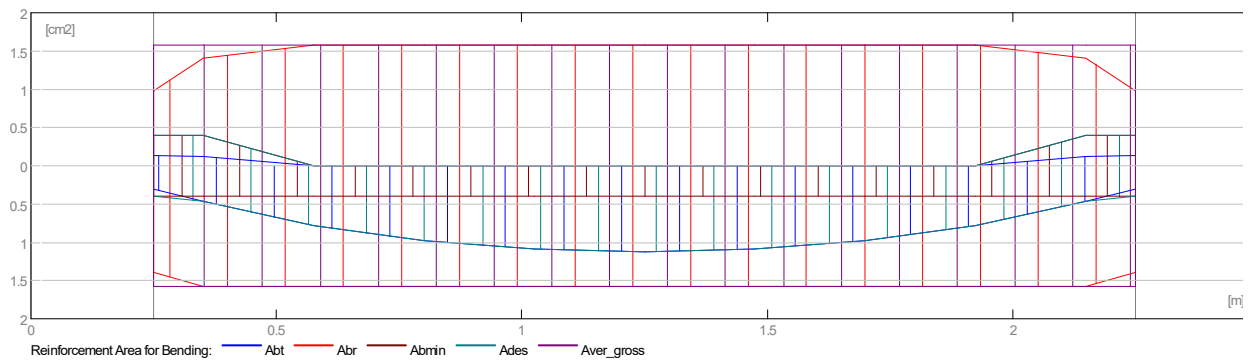
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	4,99	0,00	1,00	1,00	7,88	-7,88



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	1,12	0,00	0,31	0,14	0,31	0,14



2.4.4 Fire resistance

Fire resistance :R 60(EN 1992-1-2:2004)
 Calculations according to :EN 1992-1-2:2004
 Estimation in accordance with section 5. Tabulated data.
 Number of sides exposed to fire :3
 Web type :WA
 Beam type :freely supported
 `b_min = 0,12(m)
 a_min = 0,03(m)

2.4.5 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,5	0,9	0,0	0,5	0,2

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,25 to 2,25 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		

0,25	2,22	-1,01	1,00	-0,75	0,31	0,14
0,35	3,10	-0,82	1,80	0,00	0,46	0,12
0,58	4,79	-0,00	3,19	0,00	0,79	0,00
0,80	5,95	-0,00	4,19	0,00	0,98	0,00
1,03	6,56	-0,00	4,79	0,00	1,09	0,00
1,25	6,73	0,00	4,99	0,00	1,12	0,00
1,48	6,56	-0,00	4,79	0,00	1,09	0,00
1,70	5,95	-0,00	4,19	0,00	0,98	0,00
1,93	4,79	-0,00	3,19	0,00	0,79	0,00
2,15	3,10	-0,82	1,80	0,00	0,46	0,12
2,25	2,22	-1,01	1,00	-0,75	0,31	0,14

Abscissa (m)	ULS	SLS	afp (mm)
	V max. (kN)	V max. (kN)	
0,25	10,64	7,88	0,0
0,35	9,58	7,09	0,0
0,58	7,18	5,32	0,0
0,80	4,79	3,55	0,1
1,03	2,39	1,77	0,2
1,25	0,00	0,00	0,2
1,48	-2,39	-1,77	0,2
1,70	-4,79	-3,55	0,1
1,93	-7,18	-5,32	0,0
2,15	-9,58	-7,09	0,0
2,25	-10,64	-7,88	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,25 to 2,25 (m)

Longitudinal reinforcement:

- bottom (B500B)
2 ϕ 10 $l = 2,45$ from 2,48 to 0,03
- support (B500B)
2 ϕ 10 $l = 2,45$ from 0,03 to 2,48

Transversal reinforcement:

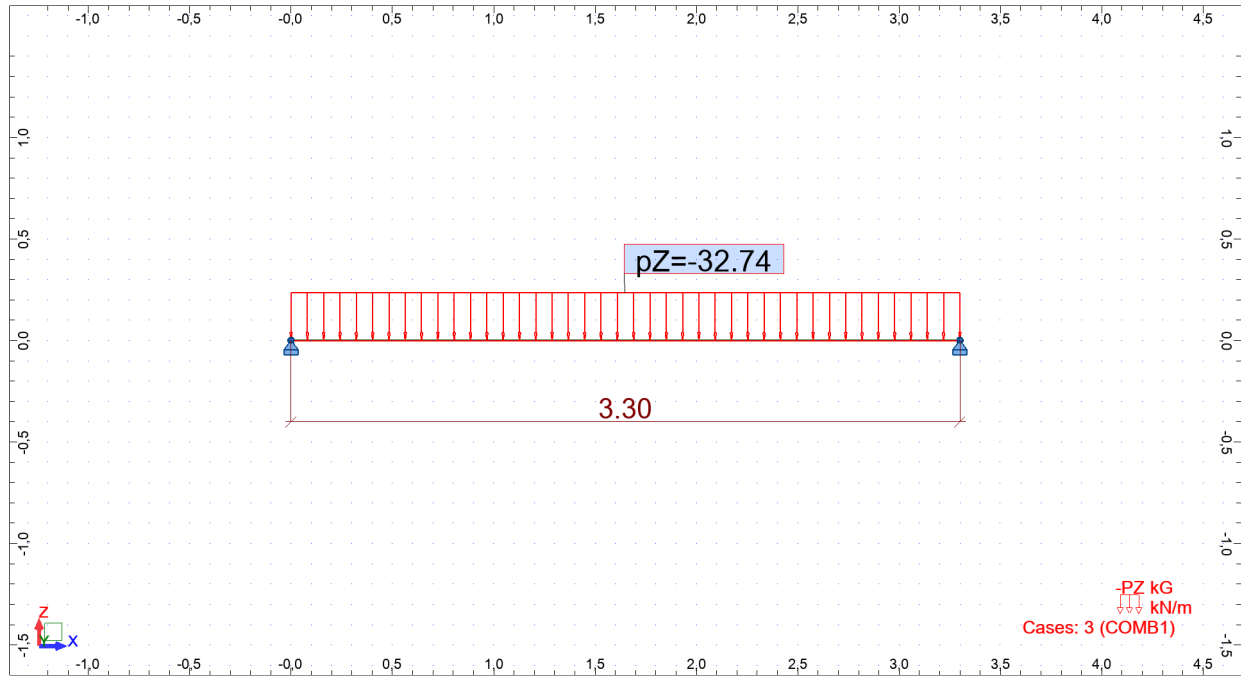
- main (B500B)
stirrups 21 ϕ 6 $l = 0,62$
 $e = 1*0,00 + 20*0,10$ (m)

3 Material survey:

- Concrete volume = 0,09 (m3)
- Formwork = 1,43 (m2)
- Steel B500B
 - Total weight = 8,94 (kG)
 - Density = 99,36 (kG/m3)
 - Average diameter = 7,7 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	0,62	0,14	21	2,90
10	2,45	1,51	4	6,04

View - Cases: 3 (COMB1)



1 Level:

- Name : Level ±0,00
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : XC1
- Concrete creep coefficient : $\varphi_{\pi} = 2,53$
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : R 60(EN 1992-1-2:2004)

2 SAŖAMOS 2SR-6 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram

2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,30	3,00	0,30	
	Span length: $L_o = 3,30$ (m)				
	Section from 0,00 to 3,00 (m)				
	18,0 x 35,0 (cm)				
	without left slab				
	without right slab				

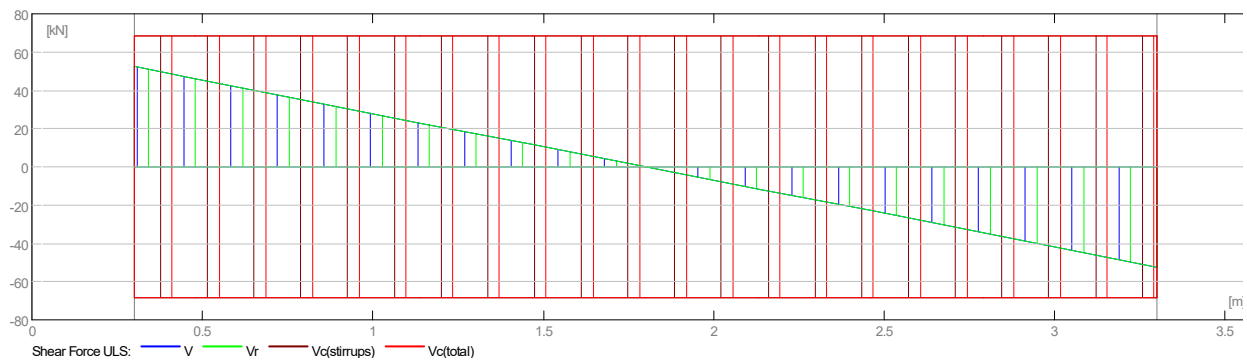
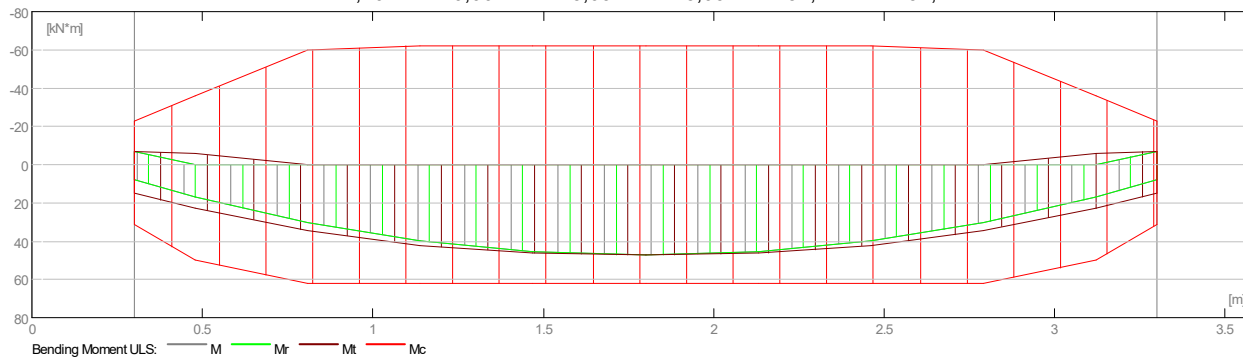
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom : $c = 3,5$ (cm)
 : side : $c1 = 3,6$ (cm)
 : top : $c2 = 3,5$ (cm)
- Cover deviations : $C_{dev} = 1,0$ (cm), $C_{dur} = 0,0$ (cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

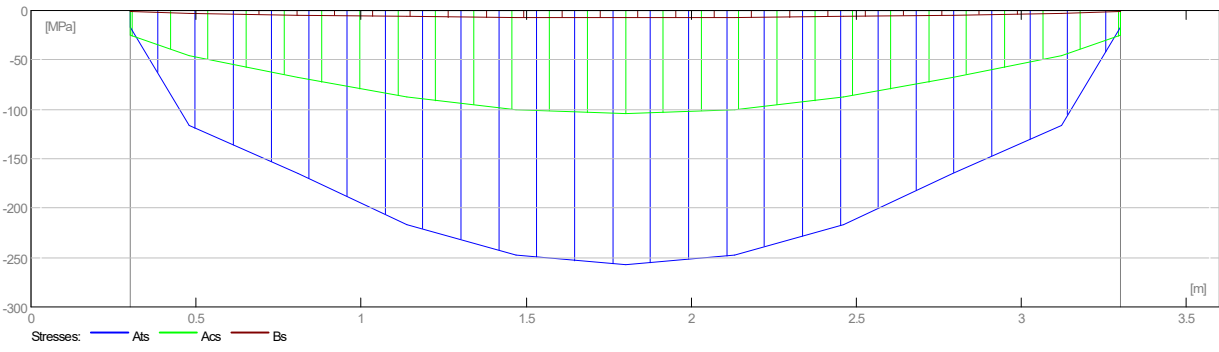
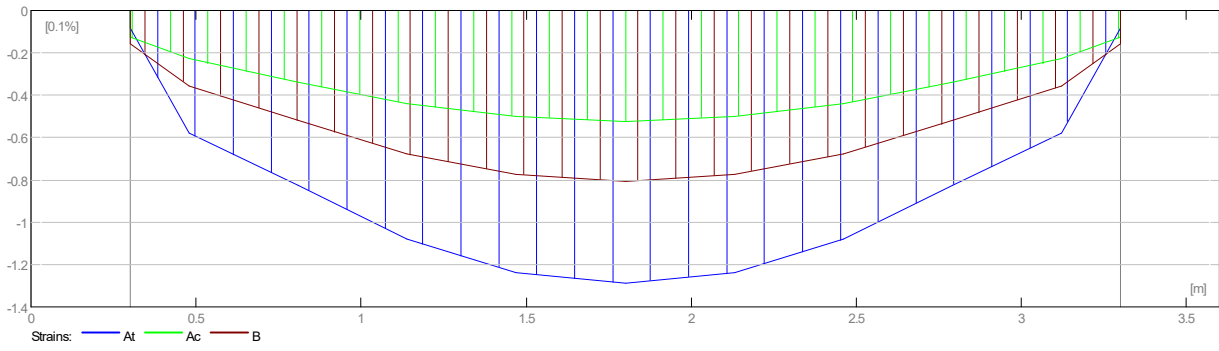
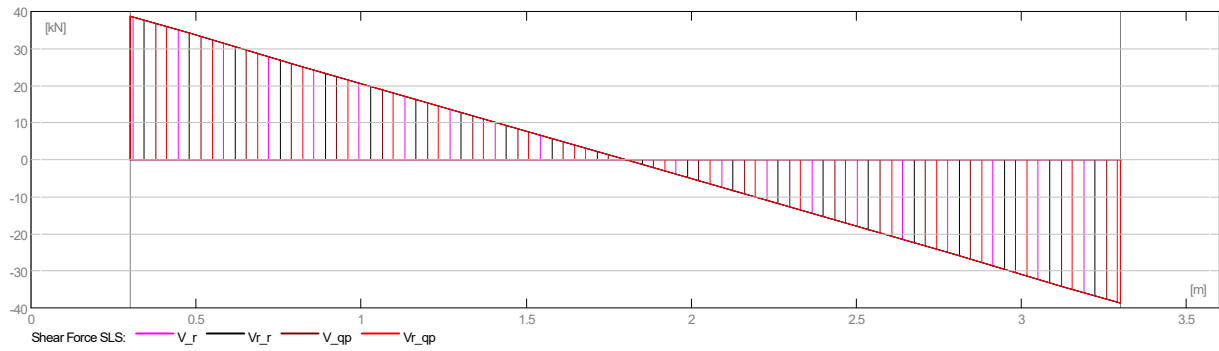
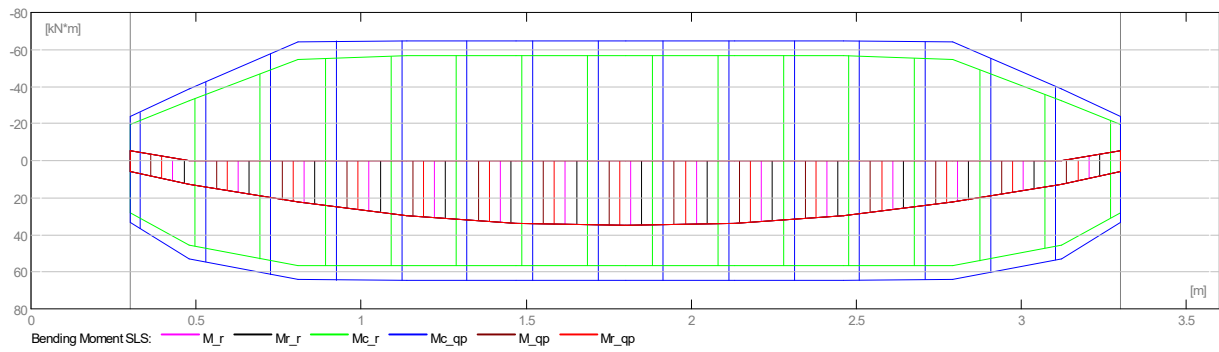
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	47,40	-0,00	15,09	15,09	52,24	-52,24



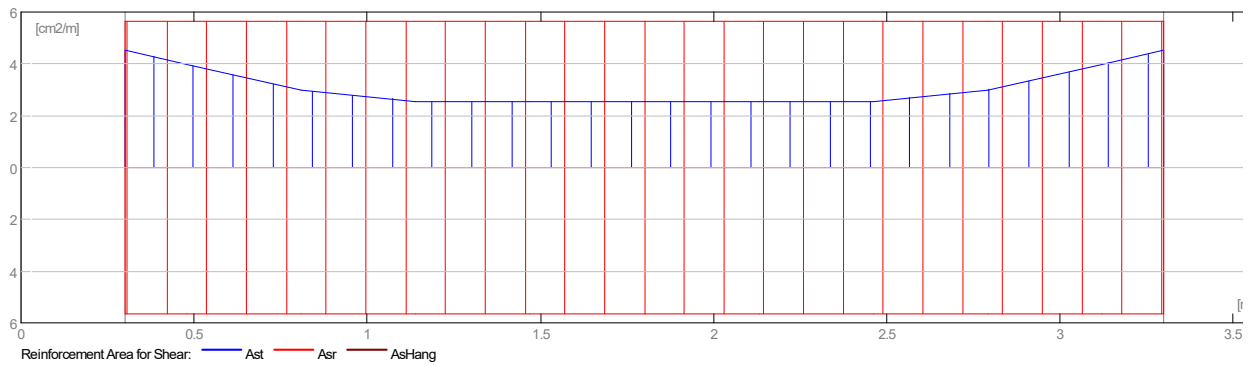
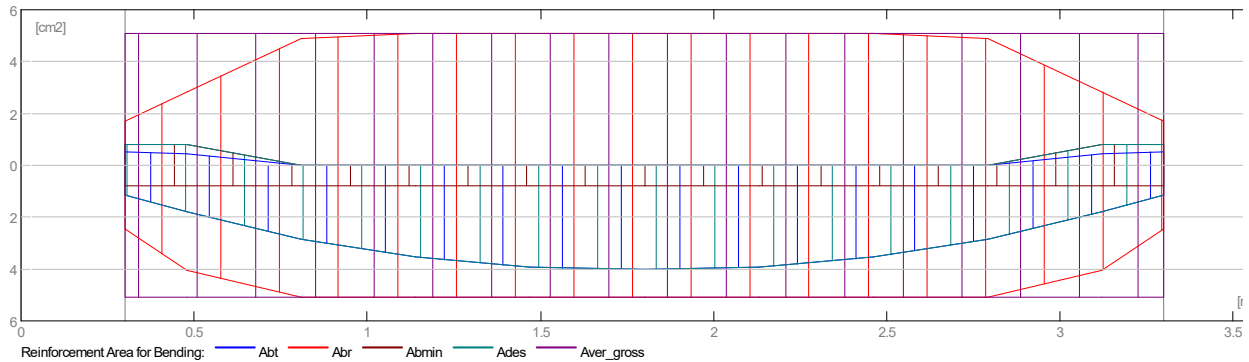
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	35,11	0,00	5,75	5,75	38,69	-38,69



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	4,03	0,00	1,14	0,53	1,14	0,53



2.4.4 Fire resistance

Fire resistance :R 60(EN 1992-1-2:2004)
 Calculations according to :EN 1992-1-2:2004
 Estimation in accordance with section 5. Tabulated data.
 Number of sides exposed to fire :3
 Web type :WA
 Beam type :freely supported
 `b_min = 0,12(m)
 a_min = 0,03(m)

2.4.5 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,8	1,3	0,0	0,7	0,2

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,30 to 3,30 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		

0,30	15,09	-7,11	5,75	-5,27	1,14	0,53
0,48	22,77	-5,60	12,64	0,00	1,80	0,43
0,81	34,41	-0,00	22,47	0,00	2,85	0,00
1,14	42,26	-0,00	29,50	0,00	3,55	0,00
1,47	46,32	-0,00	33,71	0,00	3,93	0,00
1,80	47,40	0,00	35,11	0,00	4,03	0,00
2,13	46,32	-0,00	33,71	0,00	3,93	0,00
2,46	42,26	-0,00	29,50	0,00	3,55	0,00
2,79	34,41	-0,00	22,47	0,00	2,85	0,00
3,12	22,77	-5,60	12,64	0,00	1,80	0,43
3,30	15,09	-7,11	5,75	-5,27	1,14	0,53

Abscissa (m)	ULS		SLS
	V max. (kN)	V max. (kN)	afp (mm)
0,30	52,24	38,69	0,0
0,48	45,97	34,05	0,1
0,81	34,48	25,54	0,1
1,14	22,98	17,02	0,2
1,47	11,49	8,51	0,2
1,80	-0,00	0,00	0,2
2,13	-11,49	-8,51	0,2
2,46	-22,98	-17,02	0,2
2,79	-34,48	-25,54	0,1
3,12	-45,97	-34,05	0,1
3,30	-52,24	-38,69	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,30 to 3,30 (m)

Longitudinal reinforcement:

- bottom (B500B)
 - 2 ϕ 18 l = 3,55 from 3,58 to 0,03
- support (B500B)
 - 2 ϕ 18 l = 3,55 from 0,03 to 3,58

Transversal reinforcement:

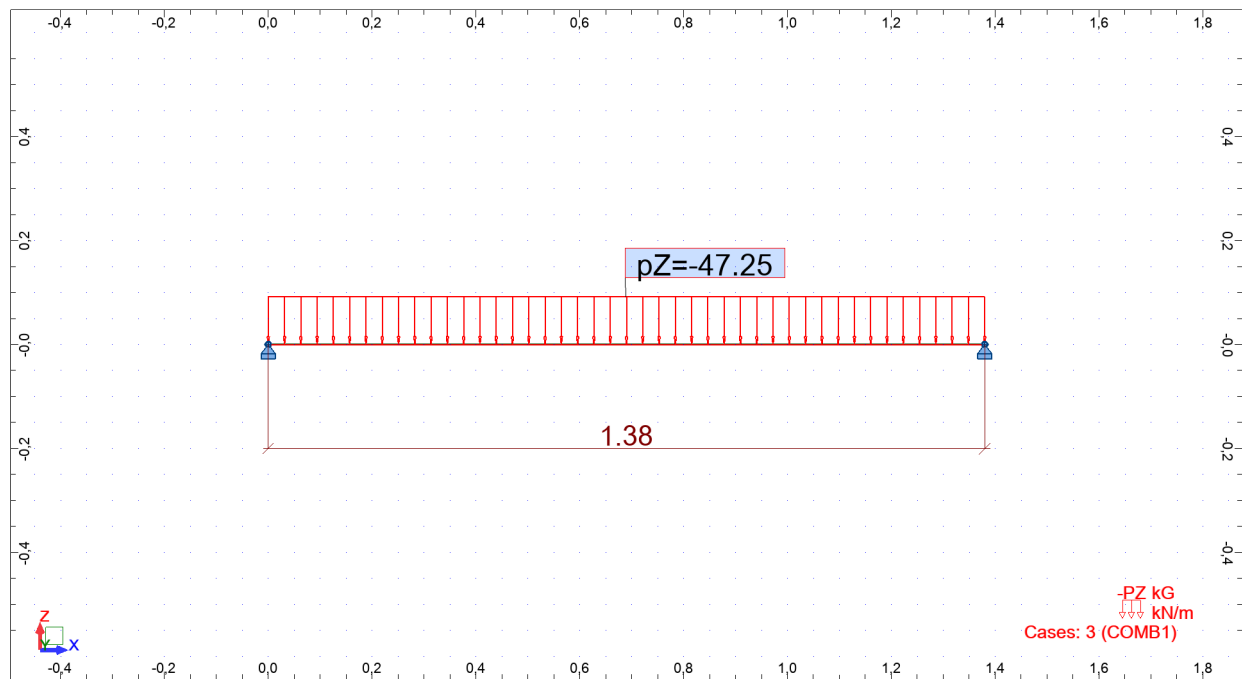
- main (B500B)
 - stirrups 31 ϕ 6 l = 0,92
 - e = 1*0,00 + 30*0,10 (m)

3 Material survey:

- Concrete volume = 0,23 (m3)
- Formwork = 3,19 (m2)
- Steel B500B
 - Total weight = 34,72 (kG)
 - Density = 153,08 (kG/m3)
 - Average diameter = 10,0 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	0,92	0,20	31	6,34
18	3,55	7,09	4	28,38

View - Cases: 3 (COMB1)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : $\varphi_{\pi} = 2,50$
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : R 60(EN 1992-1-2:2004)

2 SAŖAMOS 2SR-7 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain diagram

2.2 Geometry:

2.2.1	Span	Position	L.sup. (m)	L (m)	R.sup. (m)
	P1	Span 0,25	1,13	0,25	
	Span length: $L_o = 1,38$ (m)				
	Section from 0,00 to 1,13 (m)				
	25,0 x 25,0 (cm)				
	without left slab				
	without right slab				

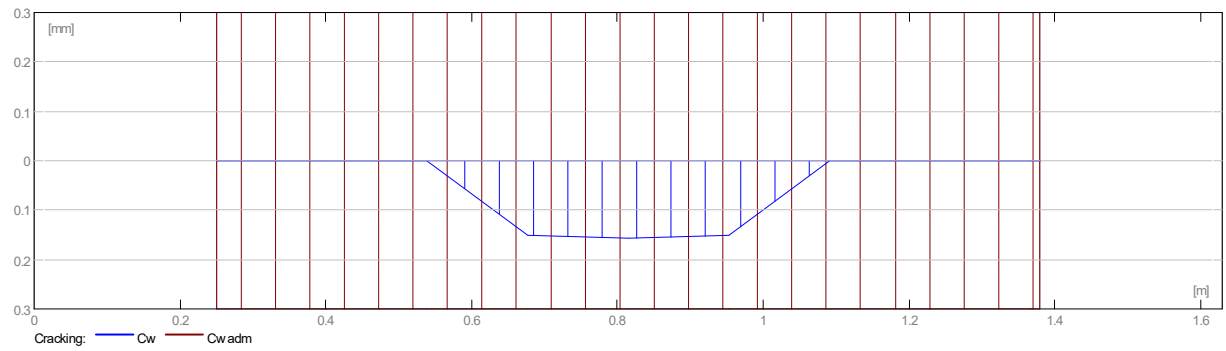
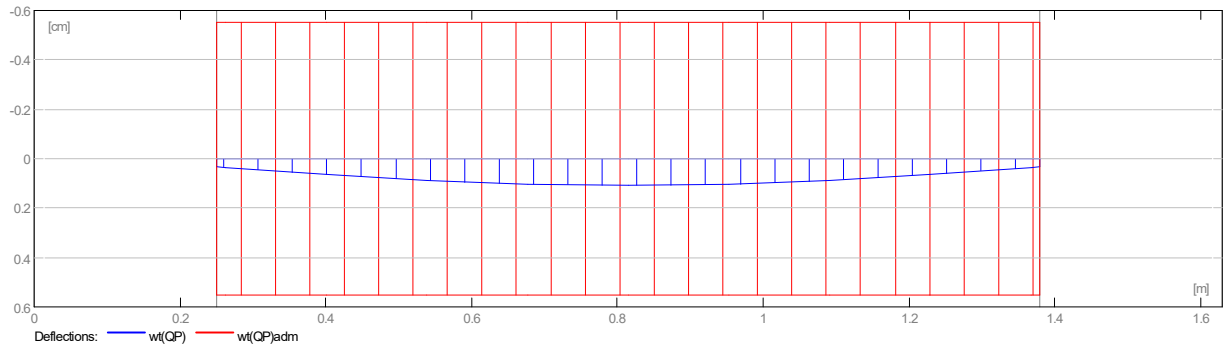
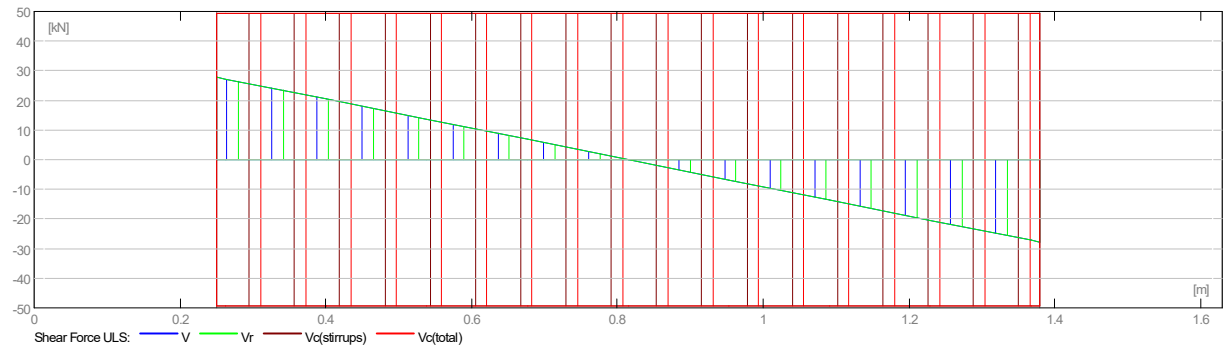
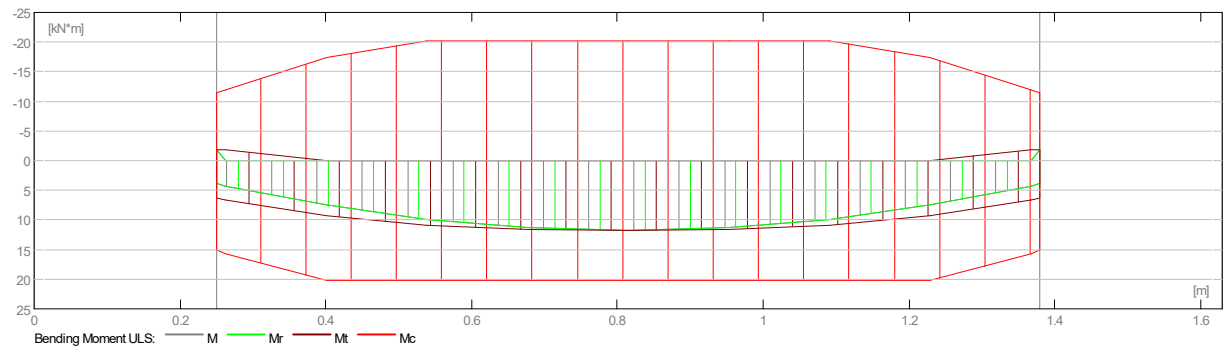
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom c = 3,5 (cm)
: side c1= 3,5 (cm)
: top c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

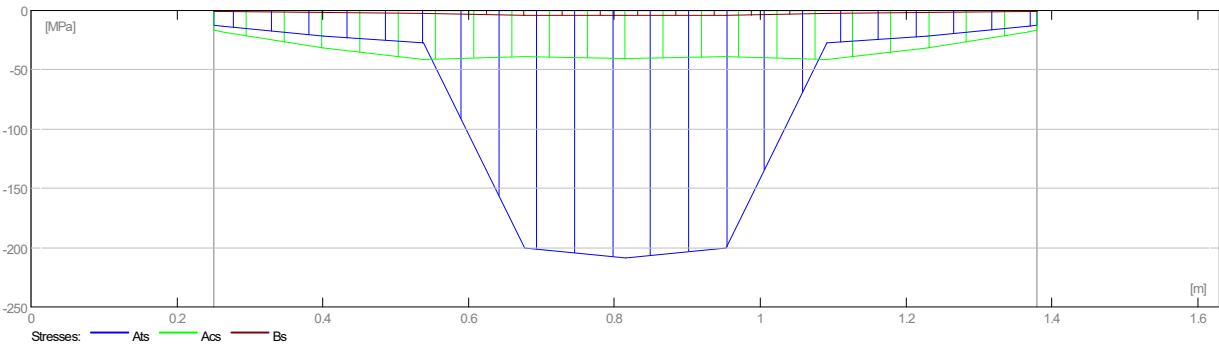
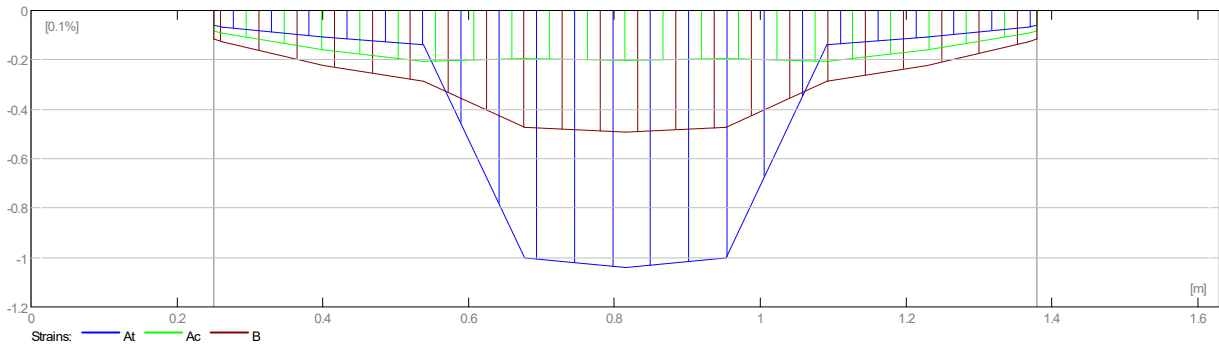
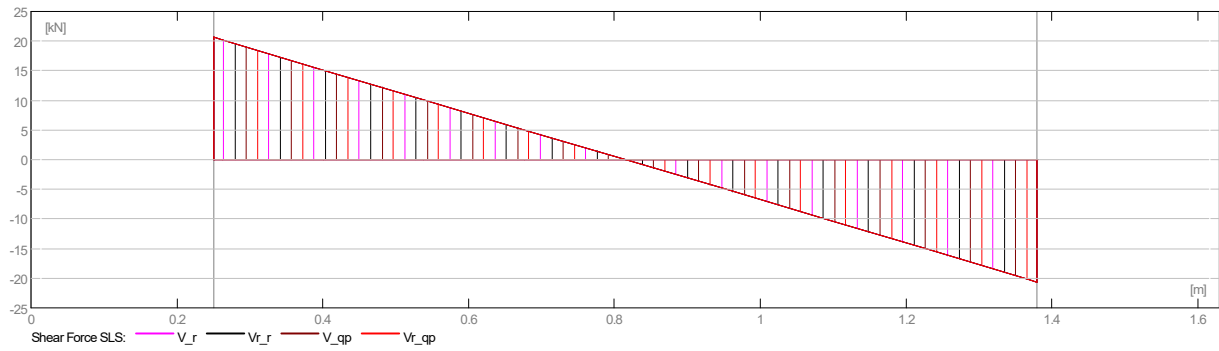
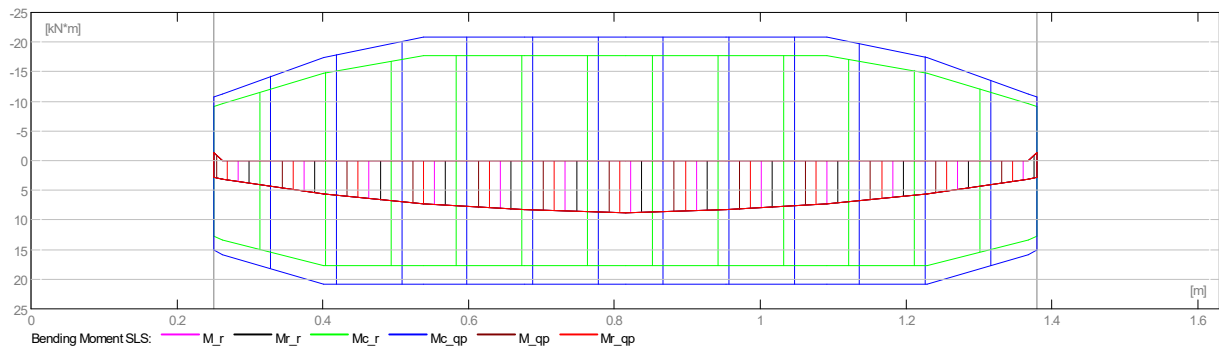
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	11,74	-0,00	6,33	6,33	27,87	-27,87



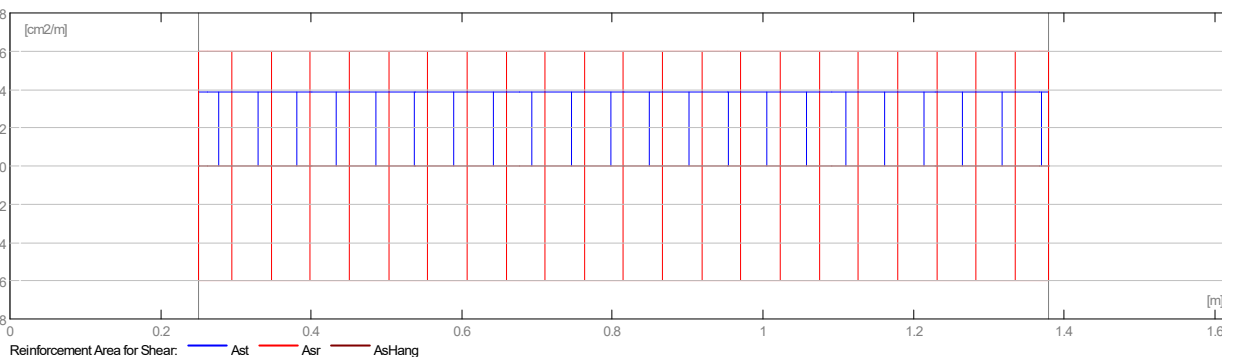
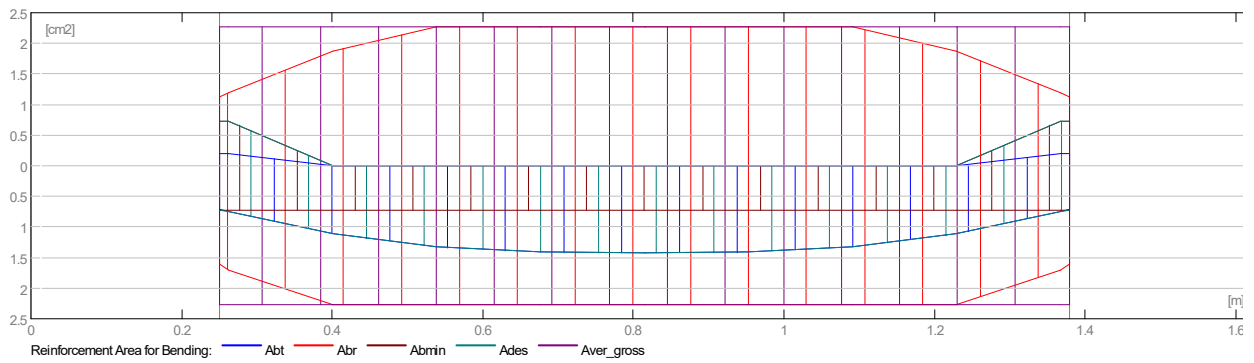
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	8,70	0,00	2,84	2,84	20,64	-20,64



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	1,43	0,00	0,71	0,20	0,71	0,20



2.4.4 Fire resistance

Fire resistance :R 60(EN 1992-1-2:2004)
 Calculations according to :EN 1992-1-2:2004
 Estimation in accordance with section 5. Tabulated data.
 Number of sides exposed to fire :3
 Web type :WA
 Beam type :freely supported
 `b_min = 0,12(m)
 a_min = 0,03(m)

2.4.5 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,1	0,6	0,0	0,3	0,2

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,25 to 1,38 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		

0,25	6,33	-1,76	2,84	-1,30	0,71	0,20
0,26	6,64	-1,76	3,13	0,00	0,75	0,20
0,40	9,24	-0,00	5,57	0,00	1,12	0,00
0,54	10,90	-0,00	7,31	0,00	1,32	0,00
0,68	11,62	-0,00	8,35	0,00	1,41	0,00
0,82	11,74	0,00	8,70	0,00	1,43	0,00
0,95	11,62	-0,00	8,35	0,00	1,41	0,00
1,09	10,90	-0,00	7,31	0,00	1,32	0,00
1,23	9,24	-0,00	5,57	0,00	1,12	0,00
1,37	6,64	-1,76	3,13	0,00	0,75	0,20
1,38	6,33	-1,76	2,84	-1,30	0,71	0,20

Abscissa (m)	ULS	SLS	afp (mm)
	V max. (kN)	V max. (kN)	
0,25	27,87	20,64	0,0
0,26	27,22	20,17	0,0
0,40	20,42	15,12	0,0
0,54	13,61	10,08	0,0
0,68	6,81	5,04	0,2
0,82	0,00	0,00	0,2
0,95	-6,81	-5,04	0,2
1,09	-13,61	-10,08	0,0
1,23	-20,42	-15,12	0,0
1,37	-27,22	-20,17	0,0
1,38	-27,87	-20,64	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,25 to 1,38 (m)

Longitudinal reinforcement:

- bottom (B500B)
 - 2 ϕ 12 l = 1,58 from 1,61 to 0,03
- support (B500B)
 - 2 ϕ 12 l = 1,58 from 0,03 to 1,61

Transversal reinforcement:

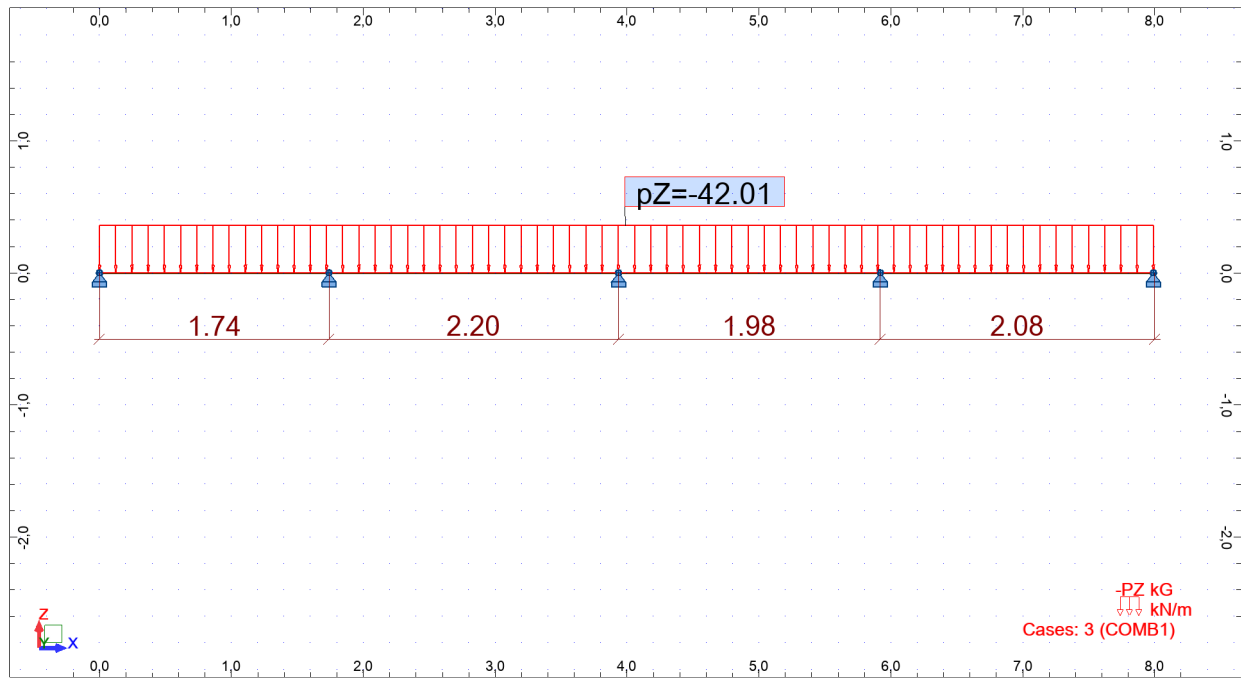
- main (B500B)
 - stirrups 13 ϕ 6 l = 0,86
e = 1*0,00 + 12*0,09 (m)

3 Material survey:

- Concrete volume = 0,10 (m3)
- Formwork = 1,22 (m2)
- Steel B500B
 - Total weight = 8,10 (kG)
 - Density = 79,51 (kG/m3)
 - Average diameter = 8,2 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	0,86	0,19	13	2,49
12	1,58	1,40	4	5,61

View - Cases: 3 (COMB1)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : $\varphi_{\pi} = 2,43$
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : R 60(EN 1992-1-2:2004)

2 SAŖAMOS 2SR-8 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L.sup. (m)	L (m)	R.sup. (m)
	P1	Span 0,76	1,00	0,73	
	Span length: $L_o = 1,74$ (m) Section from 0,00 to 1,00 (m) 25,0 x 35,0 (cm) without left slab without right slab				
2.2.2	Span	Position	L.sup. (m)	L (m)	R.sup. (m)
	P2	Span 0,73	1,73	0,20	
	Span length: $L_o = 2,20$ (m) Section from 0,00 to 1,73 (m)				

25,0 x 35,0 (cm)
without left slab
without right slab

2.2.3	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P3	Span 0,20	1,79	0,20	
	Span length: $L_0 = 1,99$ (m)				
	Section from 0,00 to 1,79 (m)				
	25,0 x 35,0 (cm)				
	without left slab				
	without right slab				

2.2.4	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P4	Span 0,20	1,73	0,48	
	Span length: $L_0 = 2,07$ (m)				
	Section from 0,00 to 1,73 (m)				
	25,0 x 35,0 (cm)				
	without left slab				
	without right slab				

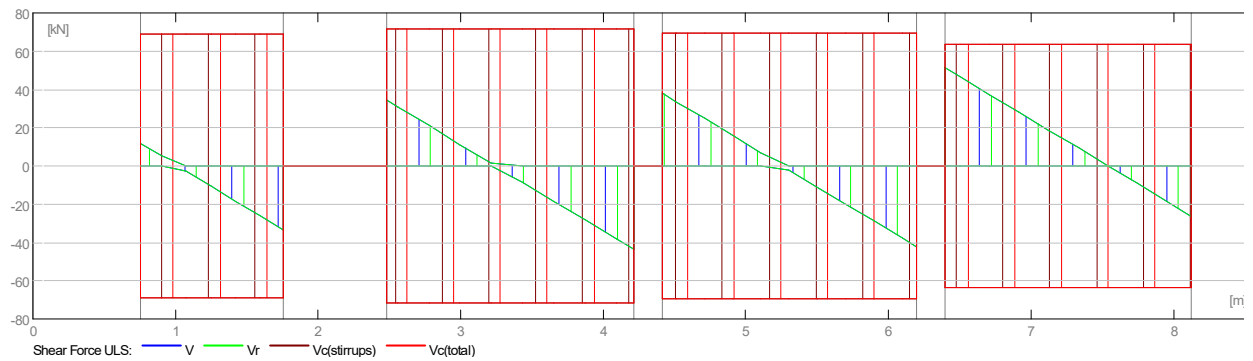
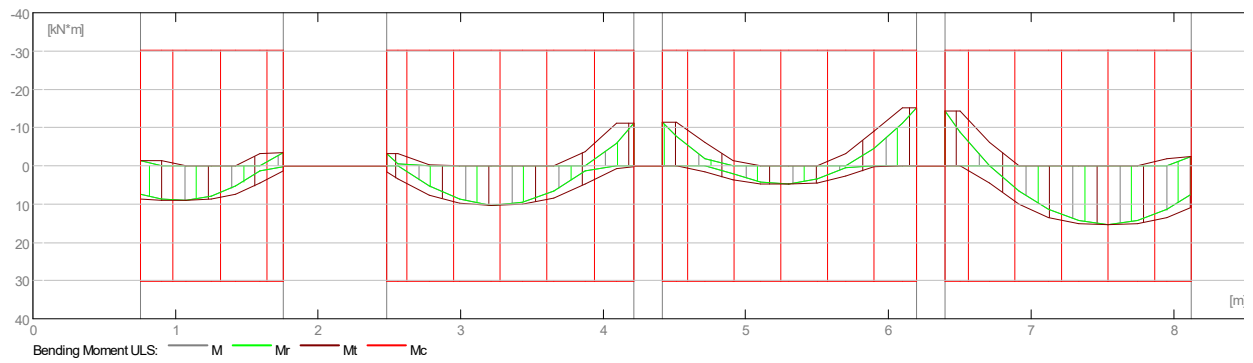
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom c = 3,5 (cm)
: side c1= 3,5 (cm)
: top c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

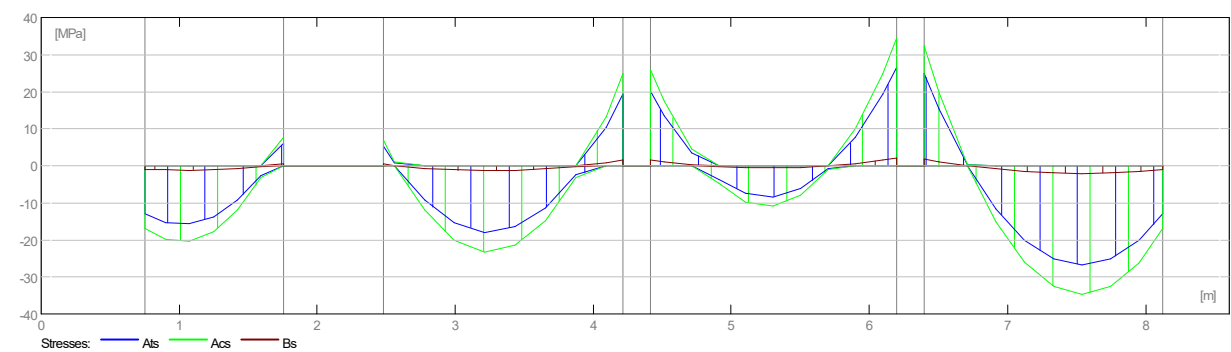
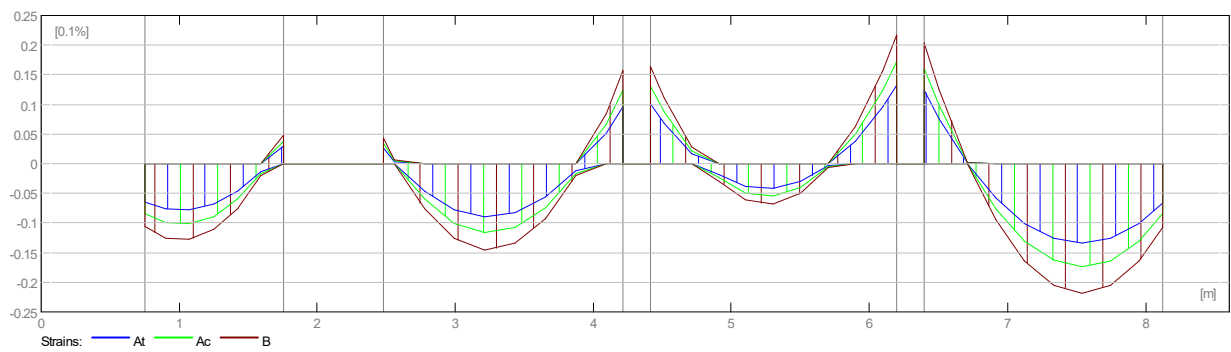
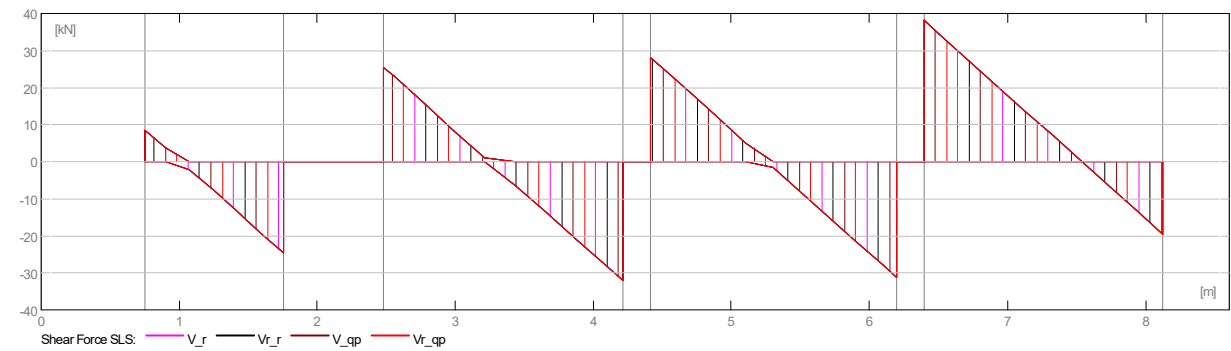
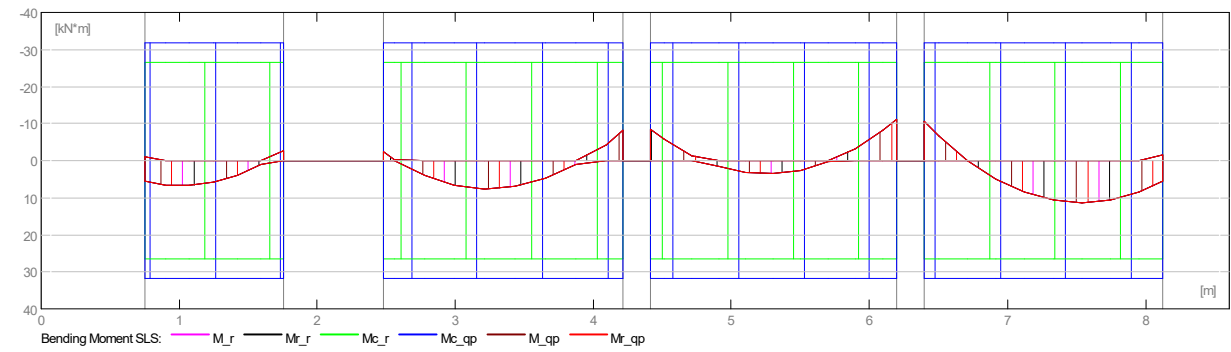
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	8,98	-0,00	8,75	-3,42	11,58	-33,22
P2	10,23	-0,00	-3,07	-11,00	34,28	-43,41
P3	4,79	-3,14	-11,49	-15,15	38,03	-42,13
P4	15,35	-0,07	-14,24	10,77	51,34	-26,35



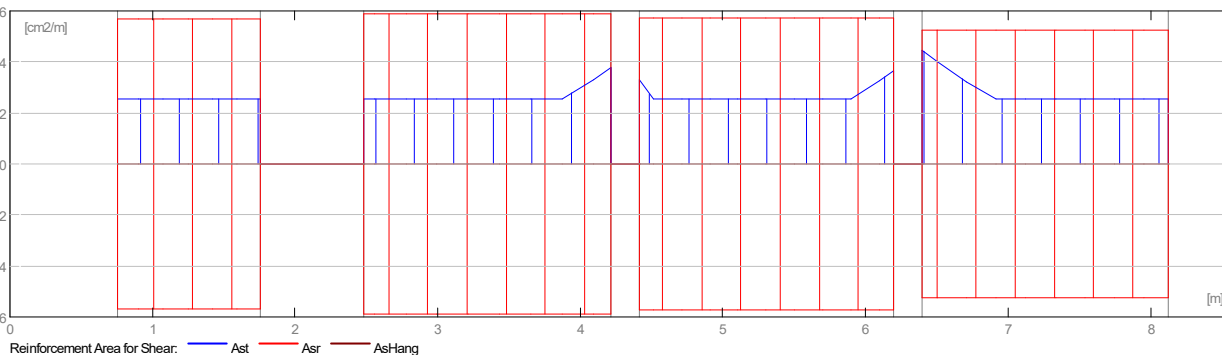
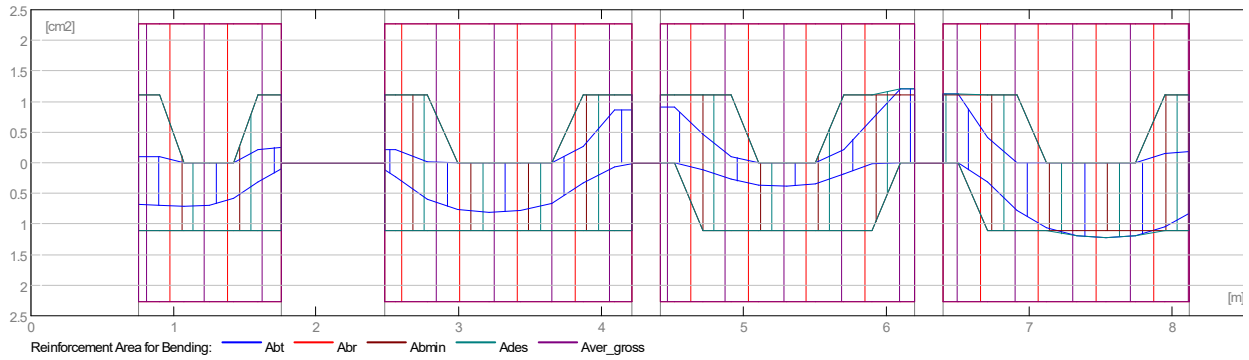
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	6,65	0,00	5,54	-2,53	8,58	-24,61
P2	7,58	0,00	-2,28	-8,15	25,39	-32,16
P3	3,55	0,00	-8,51	-11,22	28,17	-31,21
P4	11,37	0,00	-10,55	5,55	38,03	-19,52



2.4.3 Required reinforcement area

Span	Span (cm2)		Left support (cm2)		Right support (cm2)	
	bottom	top	bottom	top	bottom	top
P1	0,71	0,00	0,67	0,10	0,10	0,25
P2	0,81	0,00	0,12	0,22	0,01	0,87
P3	0,38	0,00	0,00	0,91	0,00	1,20
P4	1,22	0,00	0,00	1,13	0,82	0,17



2.4.4 Fire resistance

Fire resistance :R 60(EN 1992-1-2:2004)
 Calculations according to :EN 1992-1-2:2004
 Estimation in accordance with section 5. Tabulated data.
 Number of sides exposed to fire :3
 Web type :WA
 Beam type :continuous
 `b_min = 0,12(m)
 a_min = 0,01(m)

2.4.5 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,0	0,7	0,0	0,3	0,0
P2	0,0	0,9	0,0	0,4	0,0
P3	0,0	0,8	0,0	0,4	0,0
P4	0,0	0,8	0,0	0,4	0,0

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,76 to 1,75 (m)

Abscissa (m)	ULS		SLS		A bottom (cm2)	A top (cm2)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
0,76	8,75	-1,35	5,54	-1,00	0,67	0,10
0,90	8,94	-1,32	6,50	0,00	0,69	0,10
1,07	8,98	-0,00	6,65	0,00	0,71	0,00
1,25	8,77	-0,00	5,80	0,00	0,69	0,00
1,42	7,36	-0,00	3,94	0,00	0,58	0,00
1,60	4,60	-3,09	1,07	0,00	0,32	0,22
1,75	1,31	-3,42	0,10	-2,53	0,10	0,25

Abscissa (m)	ULS		SLS
	V max. (kN)	V max. (kN)	afp (mm)
0,76	11,58	8,58	0,0
0,90	5,09	3,77	0,0
1,07	-2,72	-2,02	0,0
1,25	-10,54	-7,81	0,0
1,42	-18,35	-13,59	0,0
1,60	-26,17	-19,38	0,0
1,75	-33,22	-24,61	0,0

2.5.2 P2 : Span from 2,48 to 4,21 (m)

Abscissa (m)	ULS		SLS		A bottom (cm2)	A top (cm2)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
2,48	1,63	-3,07	0,00	-2,28	0,12	0,22
2,56	3,42	-3,07	0,00	-0,31	0,23	0,21
2,78	7,59	-0,27	3,92	0,00	0,59	0,02
3,00	9,74	-0,00	6,55	0,00	0,77	0,00
3,22	10,23	-0,00	7,58	0,00	0,81	0,00
3,43	9,96	-0,00	7,00	0,00	0,79	0,00
3,65	8,41	-0,00	4,82	0,00	0,66	0,00
3,87	4,70	-3,79	1,04	0,00	0,32	0,26
4,09	0,91	-11,00	0,00	-4,34	0,07	0,86
4,21	0,14	-11,00	0,00	-8,15	0,01	0,87

Abscissa (m)	ULS		SLS
	V max. (kN)	V max. (kN)	afp (mm)
2,48	34,28	25,39	0,0
2,56	30,96	22,93	0,0
2,78	21,10	15,63	0,0
3,00	11,24	8,33	0,0
3,22	1,39	1,03	0,0
3,43	-8,47	-6,28	0,0
3,65	-18,33	-13,58	0,0
3,87	-28,19	-20,88	0,0
4,09	-38,04	-28,18	0,0
4,21	-43,41	-32,16	0,0

2.5.3 P3 : Span from 4,41 to 6,20 (m)

Abscissa (m)	ULS		SLS		A bottom (cm2)	A top (cm2)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
4,41	0,00	-11,49	0,00	-8,51	0,00	0,91
4,51	0,00	-11,49	0,00	-5,73	0,00	0,91
4,71	1,47	-6,08	0,00	-1,45	0,11	0,46
4,91	3,67	-1,39	1,53	0,00	0,27	0,10
5,11	4,65	-0,00	3,19	0,00	0,36	0,00
5,31	4,79	-0,00	3,55	0,00	0,38	0,00
5,50	4,42	-0,00	2,59	0,00	0,35	0,00
5,70	2,62	-3,14	0,32	0,00	0,18	0,21
5,90	0,31	-9,11	0,00	-3,25	0,02	0,72
6,10	0,00	-15,15	0,00	-8,14	0,00	1,20
6,20	0,00	-15,15	0,00	-11,22	0,00	1,20

Abscissa	ULS		SLS
	V max.	V max.	afp

(m)	(kN)	(kN)	(mm)
4,41	38,03	28,17	0,0
4,51	33,61	24,90	0,0
4,71	24,69	18,29	0,0
4,91	15,78	11,69	0,0
5,11	6,86	5,09	0,0
5,31	-2,05	-1,52	0,0
5,50	-10,96	-8,12	0,0
5,70	-19,88	-14,73	0,0
5,90	-28,79	-21,33	0,0
6,10	-37,71	-27,93	0,0
6,20	-42,13	-31,21	0,0

2.5.4 P4 : Span from 6,40 to 8,13 (m)

Abscissa (m)	ULS		SLS		A bottom (cm2)	A top (cm2)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		
6,40	0,00	-14,24	0,00	-10,55	0,00	1,13
6,50	0,00	-14,24	0,00	-6,49	0,00	1,13
6,71	4,55	-6,03	0,00	-0,07	0,32	0,42
6,92	9,95	-0,07	4,93	0,00	0,78	0,01
7,13	13,46	-0,00	8,50	0,00	1,07	0,00
7,33	15,04	-0,00	10,65	0,00	1,19	0,00
7,54	15,35	-0,00	11,37	0,00	1,22	0,00
7,75	15,05	-0,00	10,66	0,00	1,19	0,00
7,95	13,49	-1,88	8,53	0,00	1,05	0,14
8,13	10,77	-2,30	5,55	-1,71	0,82	0,17

Abscissa (m)	ULS		SLS
	V max. (kN)	V max. (kN)	afp (mm)
6,40	51,34	38,03	0,0
6,50	46,54	34,47	0,0
6,71	37,24	27,59	0,0
6,92	27,95	20,70	0,0
7,13	18,65	13,82	0,0
7,33	9,35	6,93	0,0
7,54	0,06	0,04	0,0
7,75	-9,24	-6,84	0,0
7,95	-18,53	-13,73	0,0
8,13	-26,35	-19,52	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,76 to 1,75 (m)

Longitudinal reinforcement:

Transversal reinforcement:

- main (B500B)
stirrups 11 $\phi 6$ $l = 1,06$
 $e = 1*0,00 + 10*0,10$ (m)

2.6.2 P2 : Span from 2,48 to 4,21 (m)

Longitudinal reinforcement:

- bottom (B500B)
2 $\phi 12$ $l = 8,56$ from 8,58 to 0,03
- support (B500B)
2 $\phi 12$ $l = 8,56$ from 0,03 to 8,58

Transversal reinforcement:

- main (B500B)
stirrups 19 $\phi 6$ $l = 1,06$
 $e = 1*0,00 + 18*0,10$ (m)

2.6.3 P3 : Span from 4,41 to 6,20 (m)**Longitudinal reinforcement:****Transversal reinforcement:**

- main (B500B)
- stirrups 19 $\phi 6$ l = 1,06
e = 1*0,00 + 18*0,10 (m)

2.6.4 P4 : Span from 6,40 to 8,13 (m)**Longitudinal reinforcement:****Transversal reinforcement:**

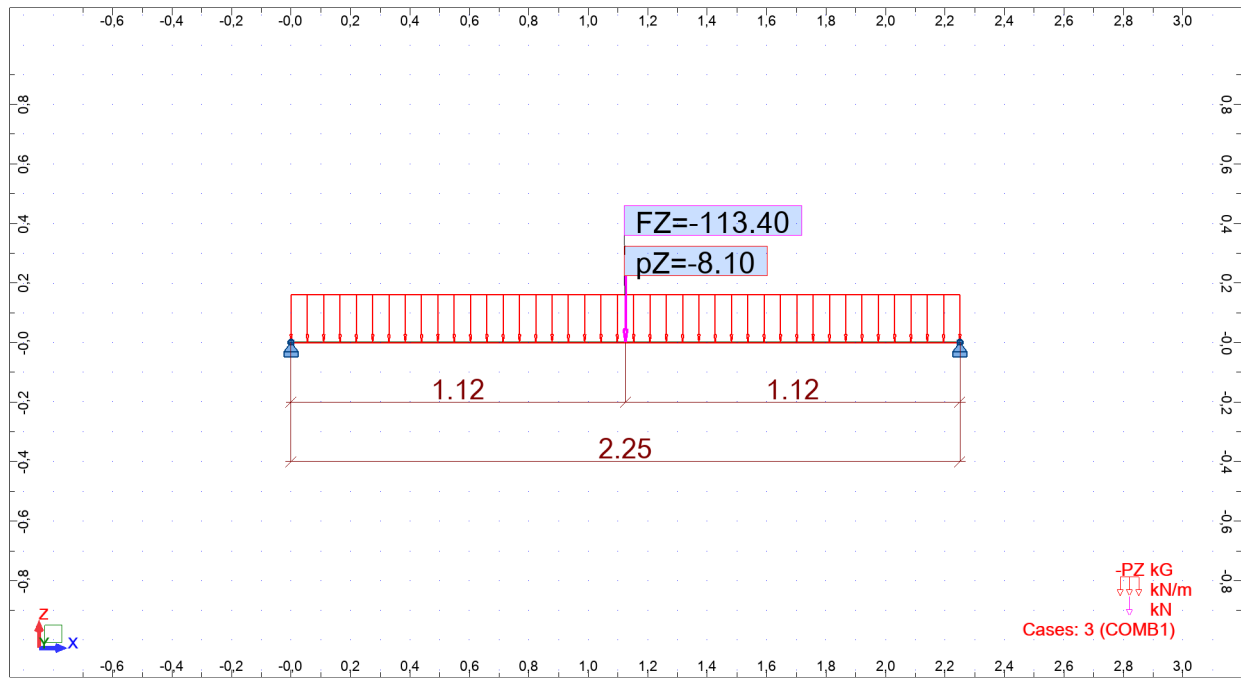
- main (B500B)
- stirrups 17 $\phi 6$ l = 1,06
e = 1*0,00 + 16*0,11 (m)

3 Material survey:

- Concrete volume = 0,75 (m3)
- Formwork = 7,76 (m2)
- Steel B500B
 - Total weight = 45,96 (kG)
 - Density = 61,02 (kG/m3)
 - Average diameter = 8,0 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	1,06	0,24	66	15,56
12	8,56	7,60	4	30,40

View - Cases: 3 (COMB1)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : $\varphi_{\pi} = 2,51$
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : R 60(EN 1992-1-2:2004)

2 SAŖAMOS 2SR-9 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L supp. (m)	L (m)	R supp. (m)
	P1	Span 0,25	2,00	0,25	
	Span length: $L_o = 2,25$ (m)				
	Section from 0,00 to 2,00 (m)				
	18,0 x 40,0 (cm)				
	without left slab				
	without right slab				

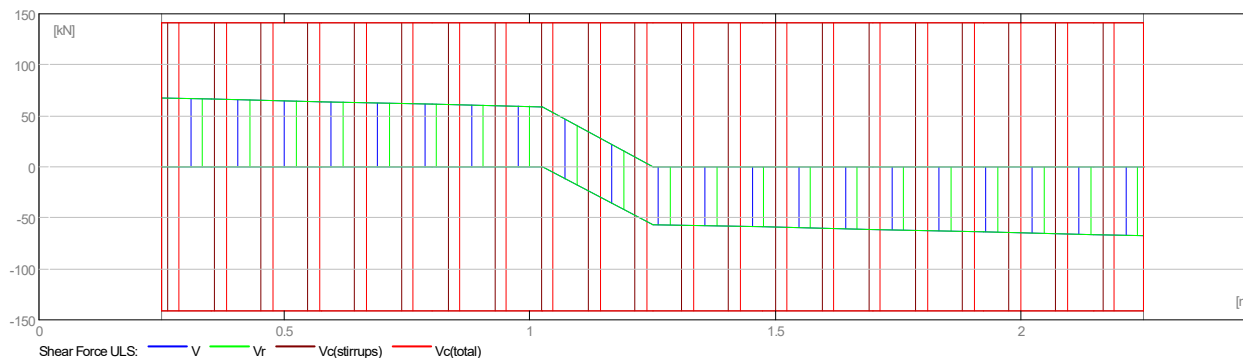
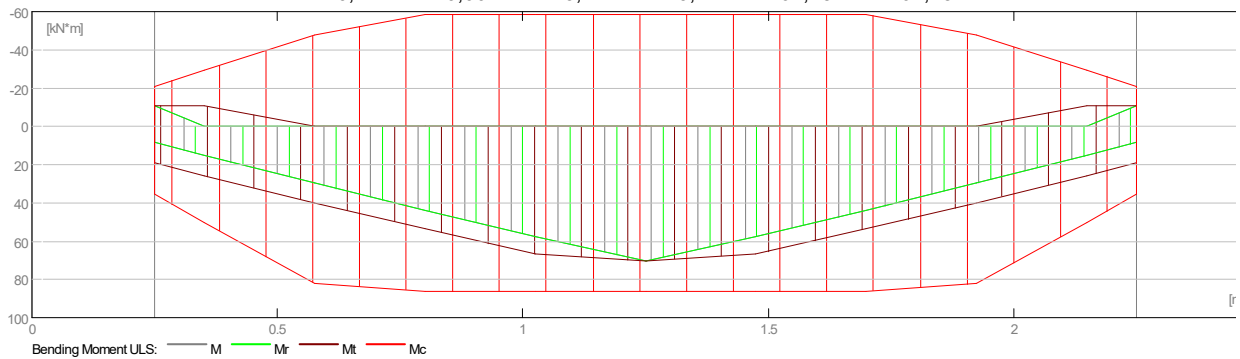
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom : $c = 3,5$ (cm)
 : side : $c1 = 3,6$ (cm)
 : top : $c2 = 3,5$ (cm)
- Cover deviations : $C_{dev} = 1,0$ (cm), $C_{dur} = 0,0$ (cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

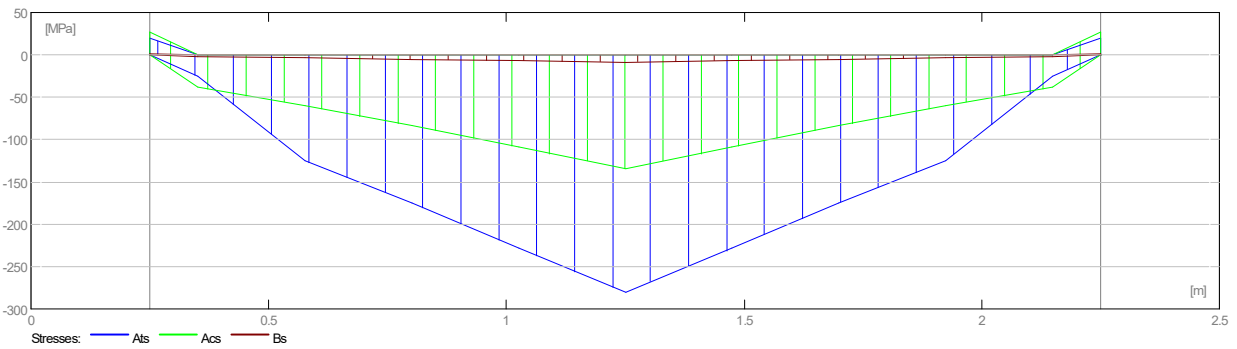
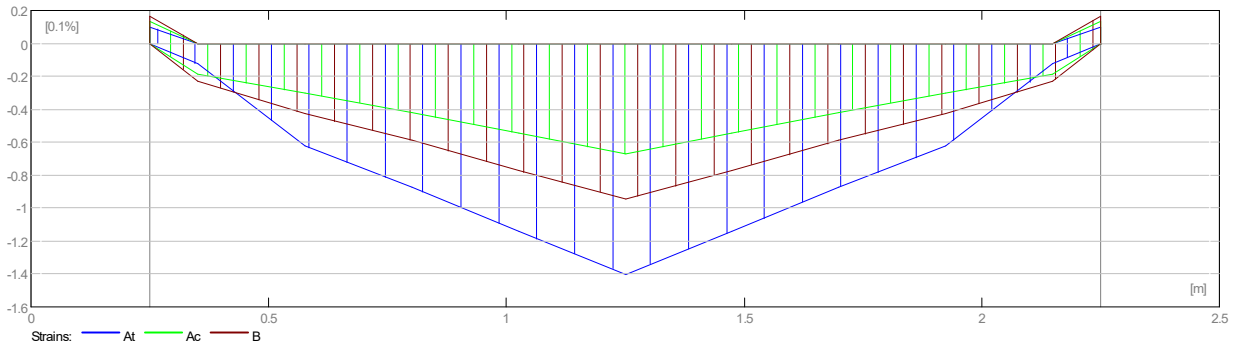
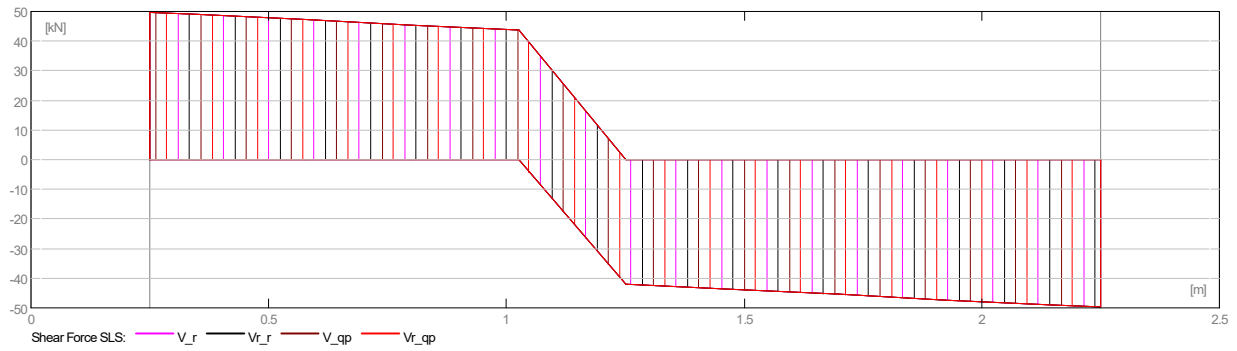
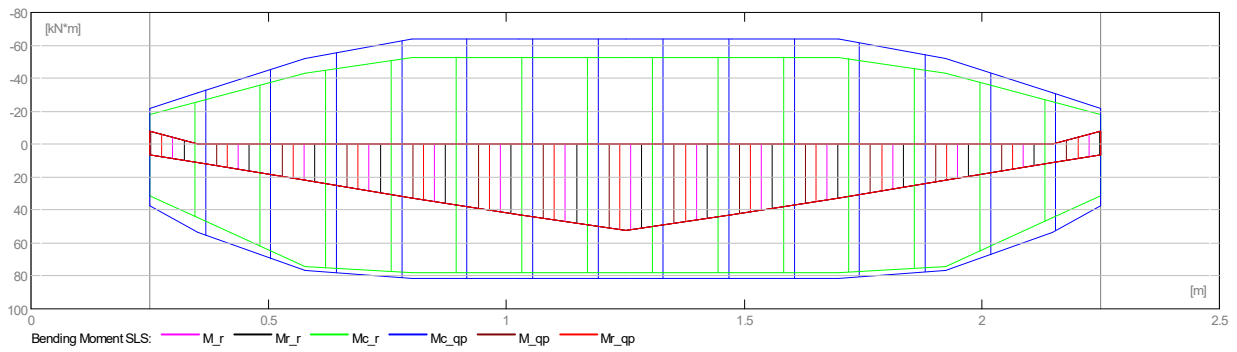
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	70,42	-0,00	19,17	19,17	67,18	-67,18



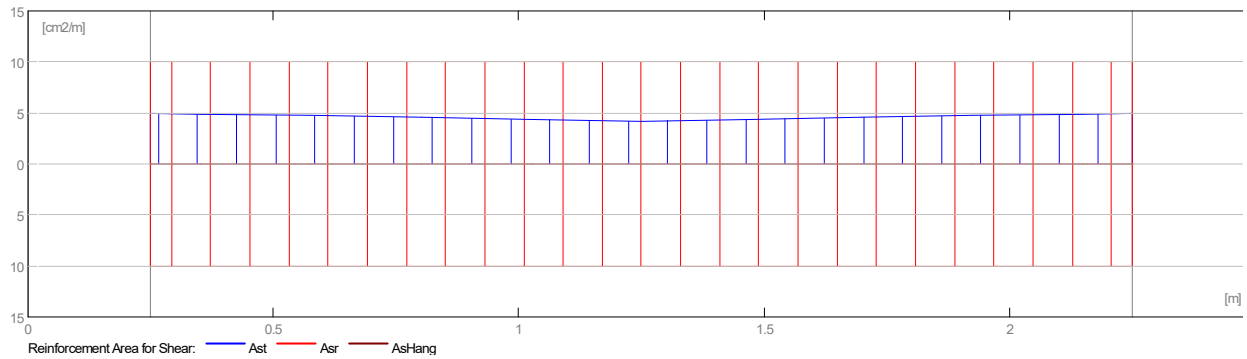
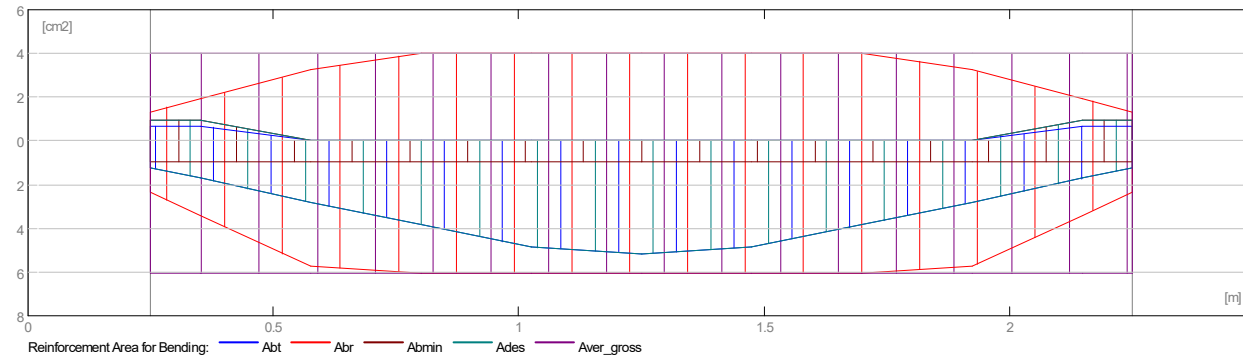
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	52,16	0,00	-7,82	-7,82	49,77	-49,77



2.4.3 Required reinforcement area

Span	Span (cm ²)		Left support (cm ²)		Right support (cm ²)	
	bottom	top	bottom	top	bottom	top
P1	5,16	0,00	1,23	0,67	1,23	0,67



2.4.4 Fire resistance

Fire resistance :R 60(EN 1992-1-2:2004)
 Calculations according to :EN 1992-1-2:2004
 Estimation in accordance with section 5. Tabulated data.
 Number of sides exposed to fire :3
 Web type :WA
 Beam type :freely supported
 `b_min = 0,12(m)
 a_min = 0,03(m)

2.4.5 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,3	0,9	0,0	0,5	0,2

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,25 to 2,25 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		

0,25	19,17	-10,56	6,23	-7,82	1,23	0,67
0,35	25,67	-10,56	11,22	0,00	1,71	0,69
0,58	39,90	-0,00	22,05	0,00	2,80	0,00
0,80	53,60	-0,00	32,48	0,00	3,83	0,00
1,03	66,78	-0,00	42,52	0,00	4,87	0,00
1,25	70,42	-0,00	52,16	0,00	5,16	0,00
1,48	66,78	-0,00	42,52	0,00	4,87	0,00
1,70	53,60	-0,00	32,48	0,00	3,83	0,00
1,93	39,90	-0,00	22,05	0,00	2,80	0,00
2,15	25,67	-10,56	11,22	0,00	1,71	0,69
2,25	19,17	-10,56	6,23	-7,82	1,23	0,67

Abscissa (m)	ULS	SLS	afp (mm)
	V max. (kN)	V max. (kN)	
0,25	67,18	49,77	0,0
0,35	66,14	48,99	0,0
0,58	63,78	47,24	0,1
0,80	61,42	45,49	0,1
1,03	59,06	43,75	0,2
1,25	-56,70	-42,00	0,2
1,48	-59,06	-43,75	0,2
1,70	-61,42	-45,49	0,1
1,93	-63,78	-47,24	0,1
2,15	-66,14	-48,99	0,0
2,25	-67,18	-49,77	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,25 to 2,25 (m)

Longitudinal reinforcement:

- bottom (B500B)
 - 3 ϕ 16 $l = 2,45$ from 2,48 to 0,02
- support (B500B)
 - 2 ϕ 16 $l = 2,45$ from 0,02 to 2,48

Transversal reinforcement:

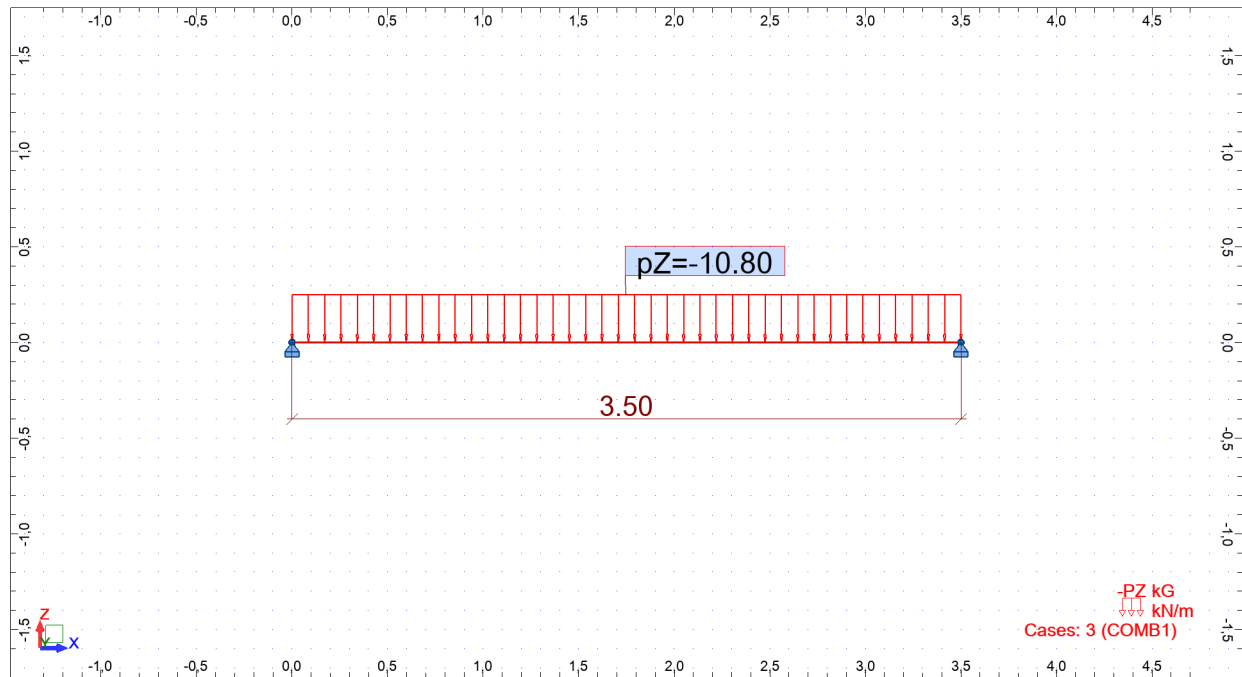
- main (B500B)
 - stirrups 21 ϕ 8 $l = 1,06$
 $e = 1*0,00 + 20*0,10$ (m)

3 Material survey:

- Concrete volume = 0,18 (m3)
- Formwork = 2,50 (m2)
- Steel B500B
 - Total weight = 28,14 (kG)
 - Density = 156,36 (kG/m3)
 - Average diameter = 10,8 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
8	1,06	0,42	21	8,77
16	2,45	3,87	5	19,37

View - Cases: 3 (COMB1)



1 Level:

- Name :
- Reference level : ---
- Maximum cracking : 0,30 (mm)
- Exposure : X0
- Concrete creep coefficient : $\varphi_{\pi} = 2,56$
- Cement class : N
- Concrete age : 5 (years)
- Concrete age (loading moment) : 28 (days)
- Concrete age after erecting a structure : 365 (days)
- Structure class : S1
- Fire resistance class : R 60(EN 1992-1-2:2004)

2 SAŖAMOS 2SR-10 SKAIČIAVIMAS

2.1 Material properties:

- Concrete : C30/37 $f_{ck} = 30,00$ (MPa)
Rectangular stress distribution
[3.1.7(3)]
Density : 2501,36 (kg/m³)
Aggregate size : 20,0 (mm)
- Longitudinal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Transversal reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram
Ductility class : B
- Additional reinforcement: : B500B $f_{yk} = 500,00$ (MPa)
Horizontal branch of the stress-strain
diagram

2.2 Geometry:

2.2.1	Span	Position	L.sup. (m)	L (m)	R.sup. (m)
	P1	Span 0,25	3,25	0,25	
	Span length: $L_o = 3,50$ (m)				
	Section from 0,00 to 3,25 (m)				
	18,0 x 30,0 (cm)				
	without left slab				
	without right slab				

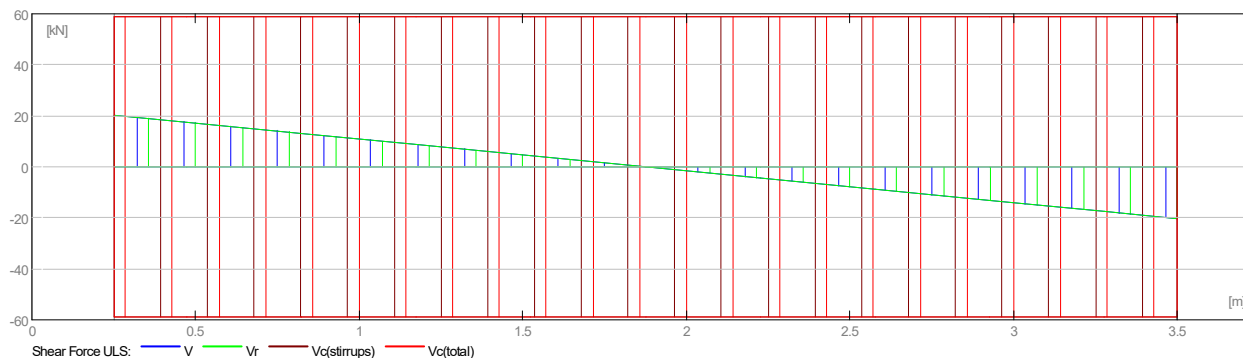
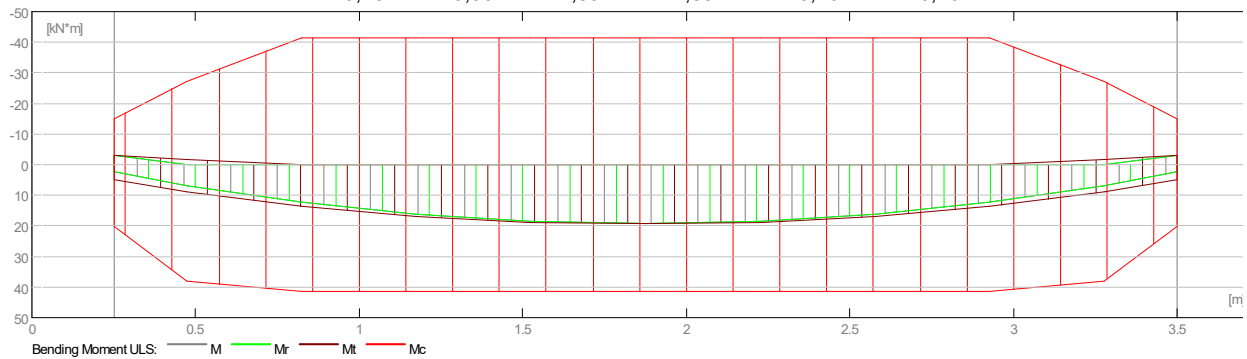
2.3 Calculation options:

- Regulation of combinations : EN 1990:2002/AC:2010 (Eq.6.10)
- Calculations according to : EN 1992-1-1:2004/A1:2014
- Seismic dispositions : No requirements
- Precast beam : no
- Cover : bottom c = 3,5 (cm)
 : side c1= 3,6 (cm)
 : top c2= 3,5 (cm)
- Cover deviations : Cdev = 1,0(cm), Cdur = 0,0(cm)
- Coefficient $\beta_2 = 0.50$: long-term or cyclic load
- Method of shear calculations : strut inclination

2.4 Calculation results:

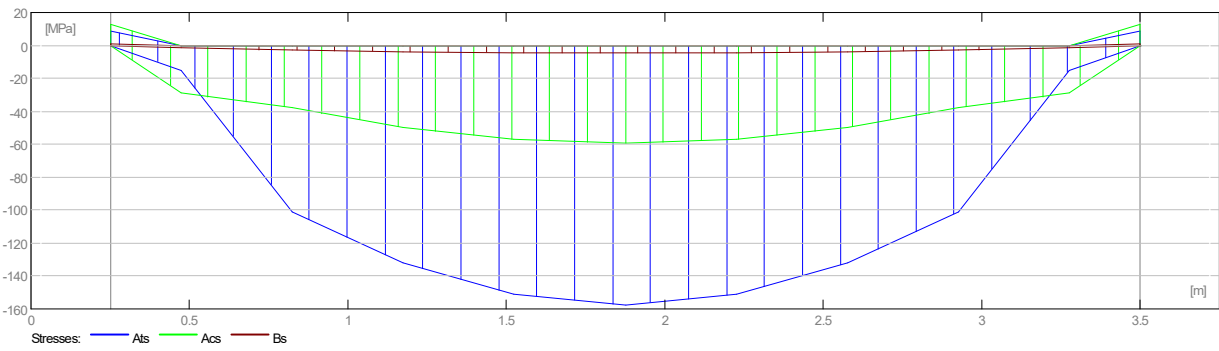
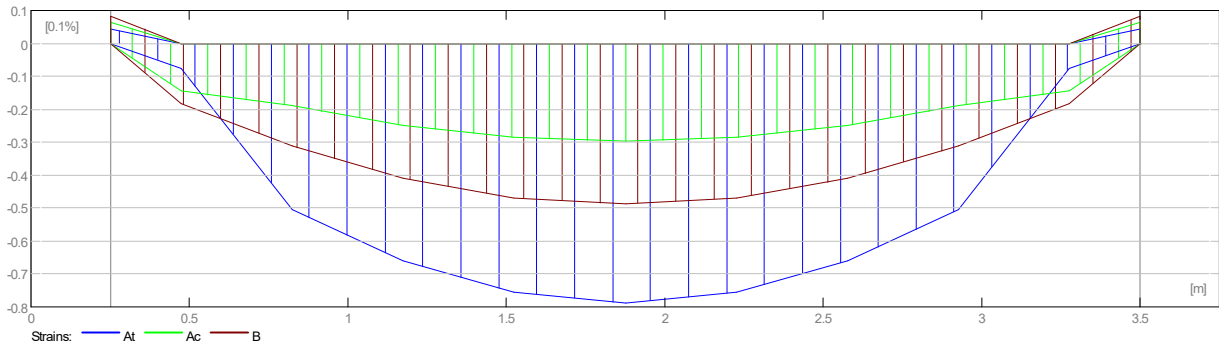
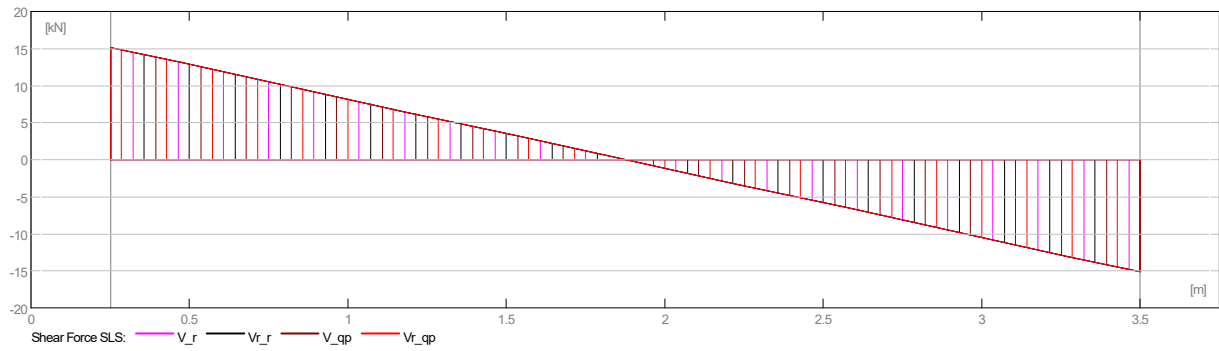
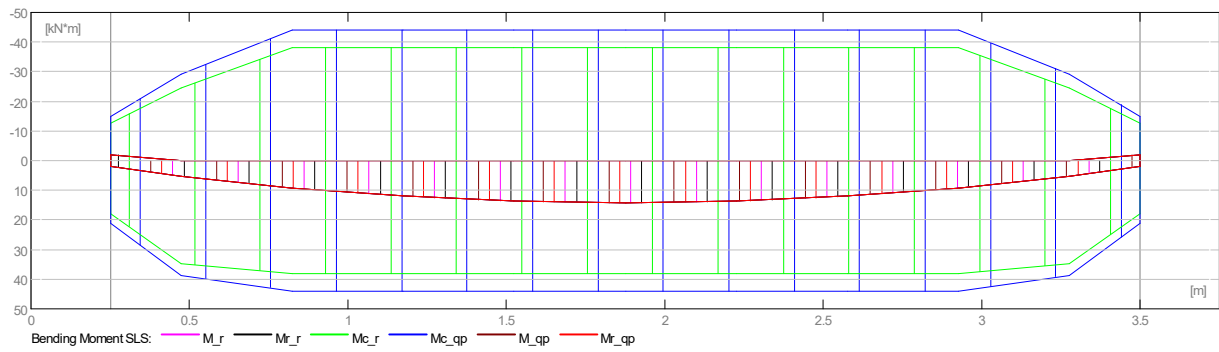
2.4.1 Internal forces in ULS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	19,28	-0,00	4,89	4,89	20,46	-20,46



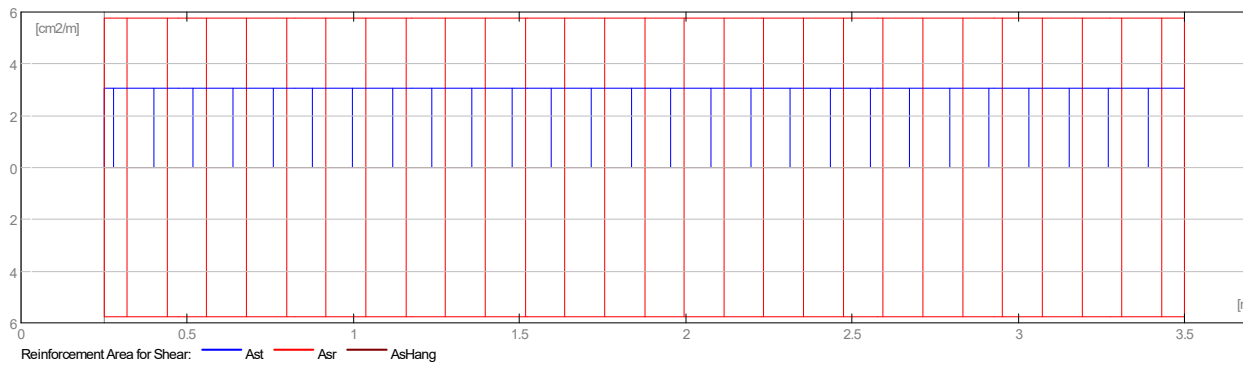
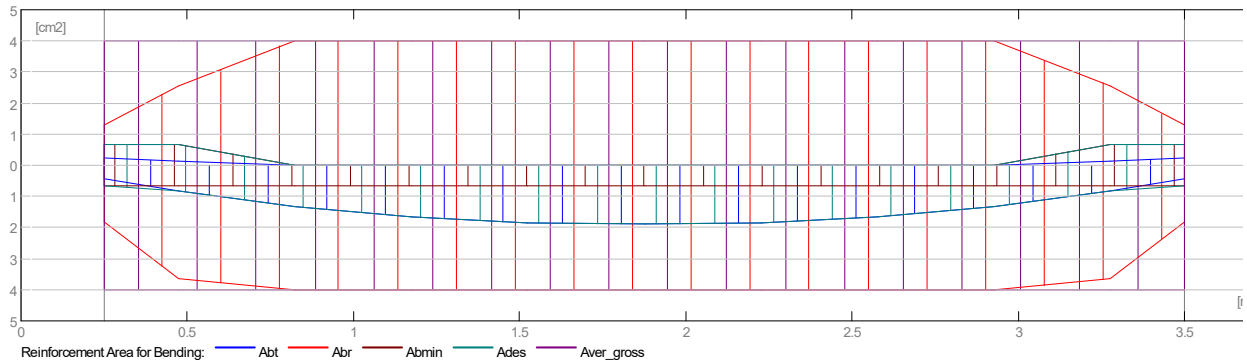
2.4.2 Internal forces in SLS

Span	Mt max. (kN*m)	Mt min. (kN*m)	Ml (kN*m)	Mr (kN*m)	Ql (kN)	Qr (kN)
P1	14,28	0,00	-2,14	-2,14	15,15	-15,15



2.4.3 Required reinforcement area

Span	Span (cm2)		Left support (cm2)		Right support (cm2)	
	bottom	top	bottom	top	bottom	top
P1	1,90	0,00	0,42	0,24	0,42	0,24



2.4.4 Fire resistance

Fire resistance :R 60(EN 1992-1-2:2004)
 Calculations according to :EN 1992-1-2:2004
 Estimation in accordance with section 5. Tabulated data.
 Number of sides exposed to fire :3
 Web type :WA
 Beam type :freely supported
 $b_{min} = 0,12(m)$
 $a_{min} = 0,03(m)$

2.4.5 Deflection and cracking

wt(QP) Total due to quasi-permanent combination
 wt(QP)dop Allowable due to quasi-permanent combination
 Dwt(QP) Deflection increment from the quasi-permanent load combination after erecting a structure.
 Dwt(QP)dop Admissible deflection increment from the quasi-permanent load combination after erecting a structure.

wk - width of perpendicular cracks

Span	wt(QP) (cm)	wt(QP)dop (cm)	Dwt(QP) (cm)	Dwt(QP)dop (cm)	wk (mm)
P1	0,6	1,4	0,0	0,7	0,1

2.5 Theoretical results - detailed results:

2.5.1 P1 : Span from 0,25 to 3,50 (m)

Abscissa (m)	ULS		SLS		A bottom (cm ²)	A top (cm ²)
	M max. (kN*m)	M min. (kN*m)	M max. (kN*m)	M min. (kN*m)		

0,25	4,89	-2,89	1,84	-2,14	0,42	0,24
0,48	8,81	-1,56	5,14	0,00	0,82	0,14
0,83	13,67	-0,00	9,14	0,00	1,33	0,00
1,18	16,99	-0,00	11,99	0,00	1,66	0,00
1,53	18,77	-0,00	13,71	0,00	1,85	0,00
1,88	19,28	0,00	14,28	0,00	1,90	0,00
2,23	18,77	-0,00	13,71	0,00	1,85	0,00
2,58	16,99	-0,00	11,99	0,00	1,66	0,00
2,93	13,67	-0,00	9,14	0,00	1,33	0,00
3,28	8,81	-1,56	5,14	0,00	0,82	0,14
3,50	4,89	-2,89	1,84	-2,14	0,42	0,24

Abscissa (m)	ULS	SLS	afp (mm)
	V max. (kN)	V max. (kN)	
0,25	20,46	15,15	0,0
0,48	17,62	13,05	0,0
0,83	13,22	9,79	0,1
1,18	8,81	6,53	0,1
1,53	4,41	3,26	0,1
1,88	0,00	0,00	0,1
2,23	-4,41	-3,26	0,1
2,58	-8,81	-6,53	0,1
2,93	-13,22	-9,79	0,1
3,28	-17,62	-13,05	0,0
3,50	-20,46	-15,15	0,0

2.6 Reinforcement:

2.6.1 P1 : Span from 0,25 to 3,50 (m)

Longitudinal reinforcement:

- bottom (B500B)
 - 2 ϕ 16 $l = 3,70$ from 3,73 to 0,02
- support (B500B)
 - 2 ϕ 16 $l = 3,70$ from 0,02 to 3,73

Transversal reinforcement:

- main (B500B)
 - stirrups 34 ϕ 6 $l = 0,84$
 $e = 1*0,00 + 33*0,10$ (m)

3 Material survey:

- Concrete volume = 0,20 (m³)
- Formwork = 2,94 (m²)
- Steel B500B
 - Total weight = 29,72 (kG)
 - Density = 146,75 (kG/m³)
 - Average diameter = 9,4 (mm)
 - Survey according to diameters:

Diameter (mm)	Length (m)	Weight (kG)	Number (No.)	Total weight (kG)
6	0,84	0,19	34	6,32
16	3,70	5,85	4	23,39