

Idejni projekt lokalne ceste

Krivić, Brigita

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UNIVERSITY OF SPLIT



SVEUČILIŠTE U SPLITU
FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE

ZAVRŠNI RAD

BRIGITA KRIVIĆ

Split, 2022.

SVEUČILIŠTE U SPLITU
FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE

IDEJNI PROJEKT LOKALNE CESTE

Završni rad

Split, 2022.

SVEUČILIŠTE U SPLITU

FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE

Split, Matice hrvatske 15

STUDIJ: **PREDDIPLOMSKI SVEUČILIŠNI STUDIJ
GRAĐEVINARSTVA**

KANDIDAT: **Brigita Krivić**

MATIČNI BROJ (JMBG): 0083223254

KATEDRA: **Katedra za prometnice**

PREDMET: **Ceste**

ZADATAK ZA ZAVRŠNI RAD

Tema: Idejni projekt lokalne ceste

Opis zadatka: Uz pomoć programa za projektiranje cesta AutoCAD Civil 3D potrebno je izraditi idejni projekt ceste na geodetskoj podlozi koja je korištena za izradu programa u okviru kolegija Ceste. Trasa se treba položiti od točke A do točke B koristeći podatke iz programskog zadatka.

Zadatak treba sadržavati:

1. Kopiju programskog zadatka
2. Tehnički opis s prikazom korištenja programa Civil 3D
3. Građevinsku situaciju u mjerilu 1:1000
4. Uzdužni presjek u mjerilu 1:1000/100
5. Karakteristične poprečne presjeke u mjerilu 1:200
6. Obradu na računalu
7. Računalne ispise koordinatnih točaka osi
8. Proračun količina zemljanih radova
9. Proračun količine radova po presjecima

U Splitu, rujan 2022.

Voditelj završnog rada:

Prof. dr. sc. Dražen Cvitanić

Idejni projekt lokalne ceste

Sažetak: Idejni projekt lokalne ceste je izrađen na geodetskoj podlozi, prema zadatku iz kolegija Ceste, koristeći se programom AutoCAD Civil 3D. Cesta je projektirana za godišnji dnevni promet (PGDP) od 950 vozila na dan, na brdovitom terenu. Predviđena projektna brzina ceste je 40 km/h. Idejno rješenje izrađeno je prema Pravilniku i osnovnim uvjetimaza projektiranje ceste s elementima koji zadovoljavaju važeće propise, kao i sigurnosne i estetske kriterije.

Ključne riječi:

Idejni projekt, lokalna cesta, projektna brzina, os ceste, niveleta, poprečni presjek

Conceptual project of local road

Abstract:

A conceptual project of local road, on a geodetic ground according to the task from course „Roads“, is made using software AutoCAD Civil 3D. The road is designed for the annual average daily traffic (AADT) of 950 vehicles per day, on the hilly terrain. The predicted project speed of the road is 40 miles per hour. Preliminary design of local road was created according to the Regulations on the basic conditions for the design of public roads with the elements that meet the applicable rules, as well as safety and aesthetic criteria.

Keywords:

Conceptual project, local road, design speed, the road axis, profile, cross-section

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1. PROGRAMSKI ZADATAK

Katedra za prometnice

Studij: Preddiplomski

Nastavni predmet: CESTE

Student/ica: Brižita Krivić

ZADATAK

Treba izraditi idejni projekt dionice ceste između točaka A i B naznačenih na priloženoj geodetskoj podlozi u mjerilu 1:1000.

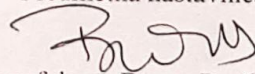
Zadano je:

- PGDP - prosječni godišnji dnevni promet: **950 voz/dan**
- vrsta terena: **brdoviti.**

Idejni projekt treba sadržavati:

1. Tehnički opis
2. Proračun horizontalne geometrije
3. Proračun proširenja kolnika u krivini
4. Proračun vertikalne geometrije i kota nivelete
5. Proračun vitoperenja kolnika
6. Građevinska situacija MJ. 1:1000
7. Uzdužni presjek MJ. 1:1000/100
8. Normalni poprečni presjek MJ. 1:50
9. Karakteristični poprečni presjeci MJ. 1:100
10. Predmjer radova
11. Aproximativni troškovnik

Predmetna nastavnica:



izv.prof.dr.sc. Deana Breški, dipl.ing.grad.

2. TEHNIČKI OPIS

2.1. Općenito

Na priloženoj geodetskoj podlozi u mjerilu 1:1000 izrađen je idejni projekt ceste na dionici od točke A koja se nalazi na 240 metara nadmorske visine, do točke B koja se nalazi na 252 metara nadmorske visine. Cesta je projektirana za prosječni godišnji dnevni promet od 950 vozila na dan i to na brdovitom terenu (cesta je V. kategorije). Predviđena projektna brzina je 40 km/h.

2.2. Horizontalni elementi

Za navedenu kategoriju prema pravilniku, minimalni radijus horizontalne krivine je 45 m, a prijelaznice 30 m. Trasa kontinuirane ceste ima dužinu od 344.18 m, a sastoji se od tri pravca i dvije krivine. Prva krivina ima radijus 45 m i duljinu prijelaznice 30 m, druga krivina ima radijus 70 m i duljinu prijelaznice 30 m. Svaka krivina je konstruirana pomoću dvije prijelaznice oblika klotoide i jednog kružnog luka. Proširenje kružnog luka za promet teretnih vozila s priključkom u prvoj krivini iznosi 1,866 m, u drugoj 1.2 m.

2.3. Vertikalni elementi

Na temelju kategorije ceste najveći dopušteni nagib nivelete iznosi 12%, a najmanji dopušteni radijus vertikalne krivine 300 m. Tok trase se sastoji od dva pravca i jedne krivine. Nagib prvog pravca iznosi 3.10 %, a drugog 4.08 %. Tangenta krivine je dužine 50.96 m, a radijus konkavne krivine 5187.45 m.

2.4. Poprečni presjek

Projektirana cesta ima dva kolnička traka širine svakog po 2.75 m, betonski rubni trak širine 0.20 m i bankinu širine 1 m i nagiba 4%. Cesta se dijelom nalazi u zasjeku, a dijelom u usjeku i nasipu. Nagib pokosa nasipa iznosi 1:1, a usjeka 2:1. Na usjecima se izvode rigoli za odvodnju vode širine 0.65 m i drenaža koja je postavljena u glinenu posteljicu, a u nasipu se izvode potporni zidovi zbog konfiguracije terena.

2.5. Kolnička konstrukcija

Projektom je predviđena kolnička konstrukcija sa sljedećim slojevima:

- Habajući sloj AC 11 surf (BIT50/70) AG4 M4 u debljini 4 cm
- Nosivi sloj AC 22 base (BIT50/70) AG6 M2 u debljini 6 cm
- Mehanički zbijeni nosivi sloj debljine 30 cm

2.6. Odvodnja

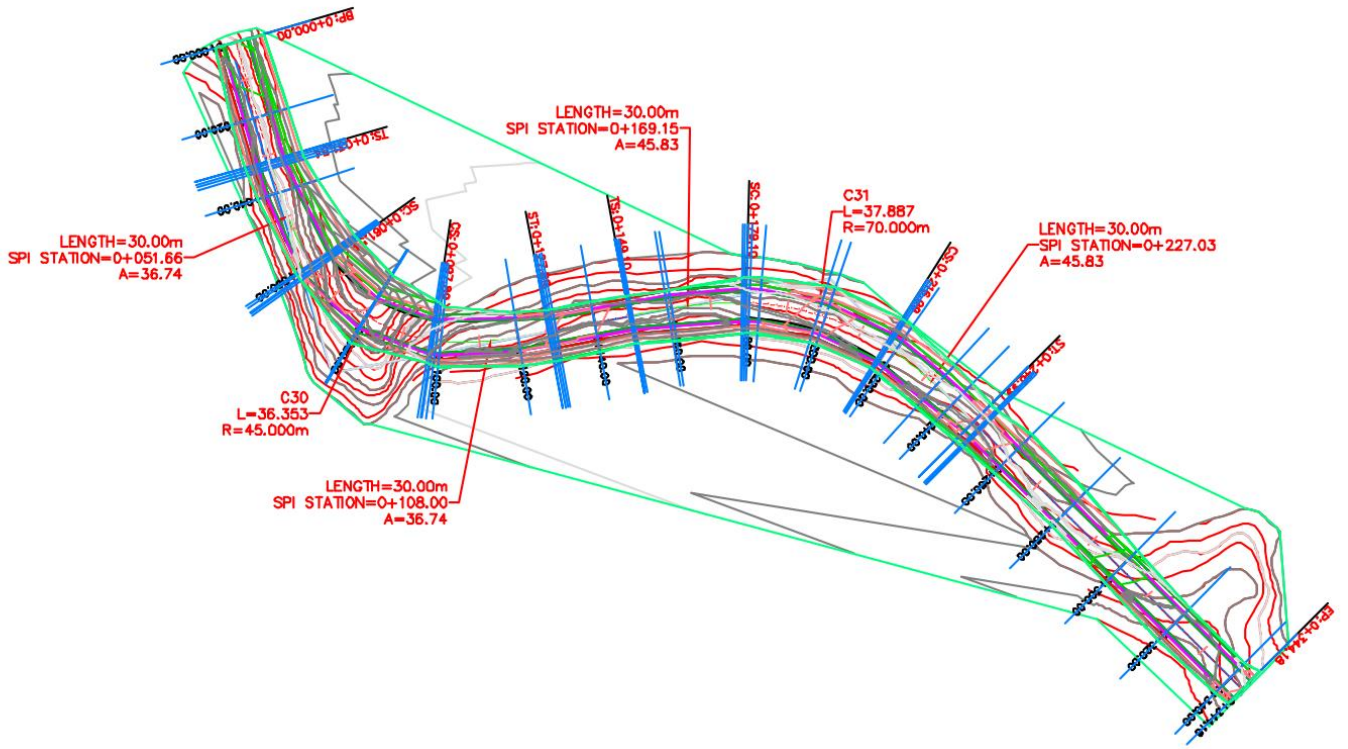
Odvodnja kolnika predviđa se otvorenim sustavom odvodnje prihvaćanjem kolničkih pribrežnih voda u zasjeku i usjeku u betonske rigole te kontroliranim ispuštanjem u teren direktno ili betonskim cijevnim propustima kroz trup kolnika.

2.7. Oprema ceste

Idejnim rješenjem je predviđena horizontalna signalizacija koja se sastoji od jedne pune razdjelne crte širine 10 cm koja se postavlja u osi prometnice i punih rubnih crta širine 10 cm koje se postavljaju na svaki od rubnih trakova. Na nasip se postavlja jednostrana zaštitna čelična ograda.

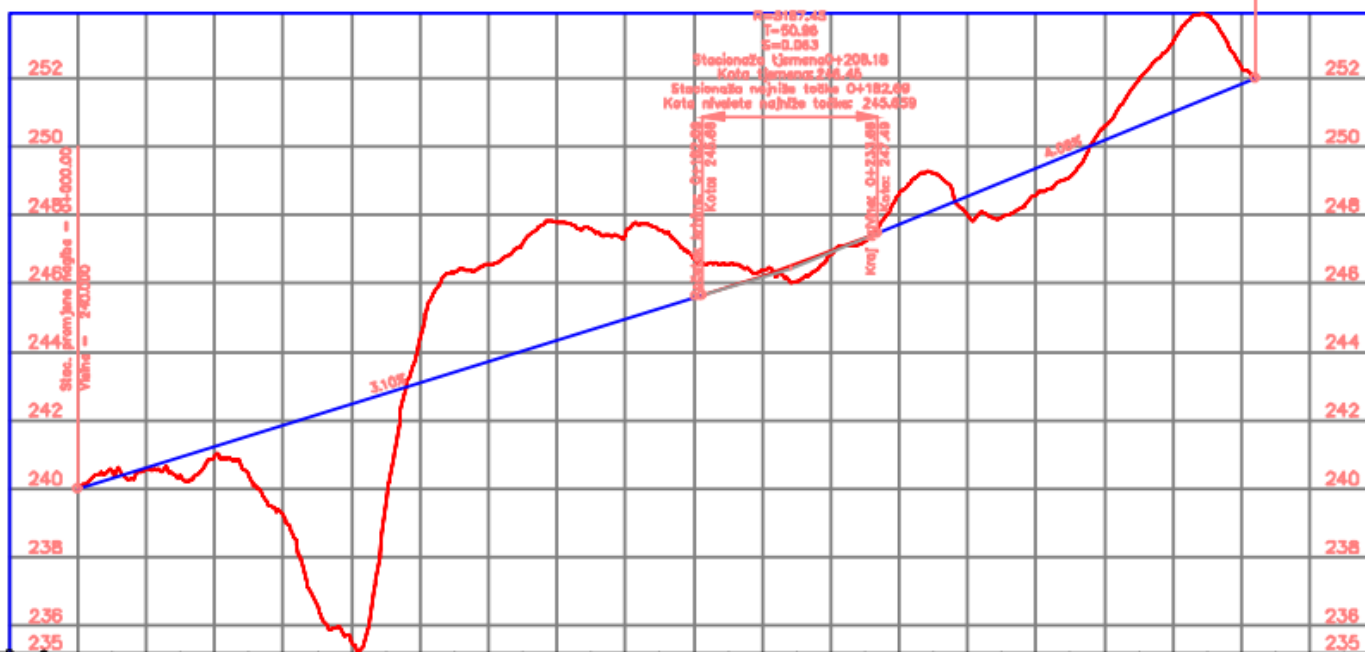
3. GRAFIČKI PRILOZI

3.1. Situacija M 1:1000



3.2. Uzdužni presjek M 1:1000/100

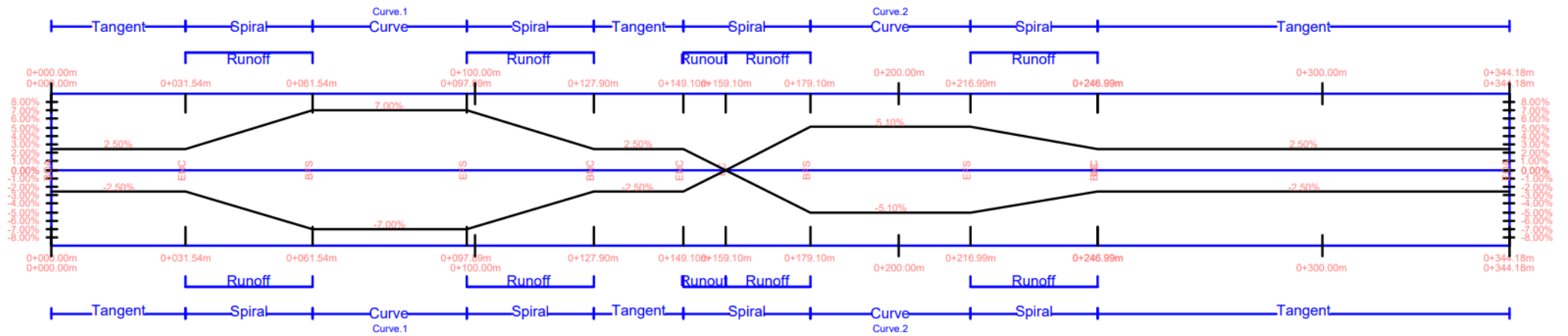
os 1 (6) PROFILE



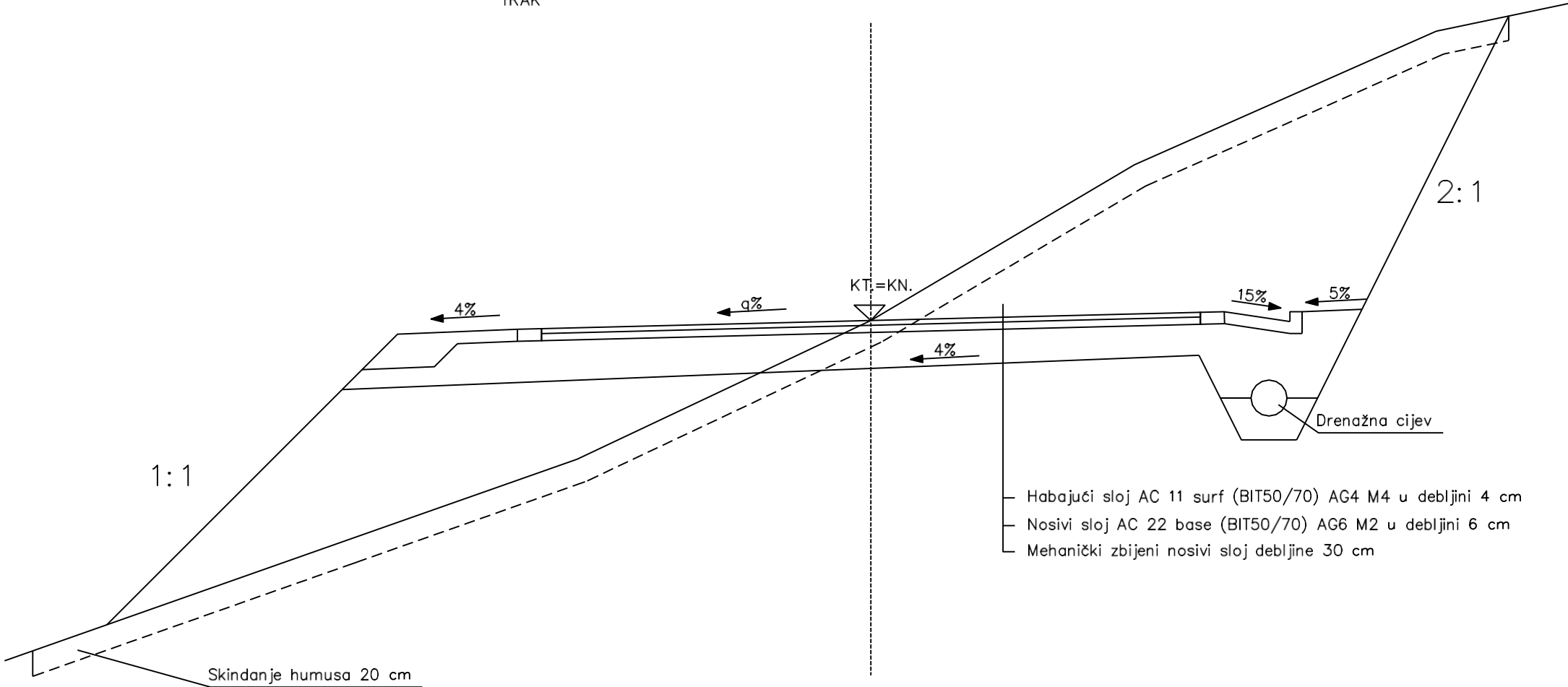
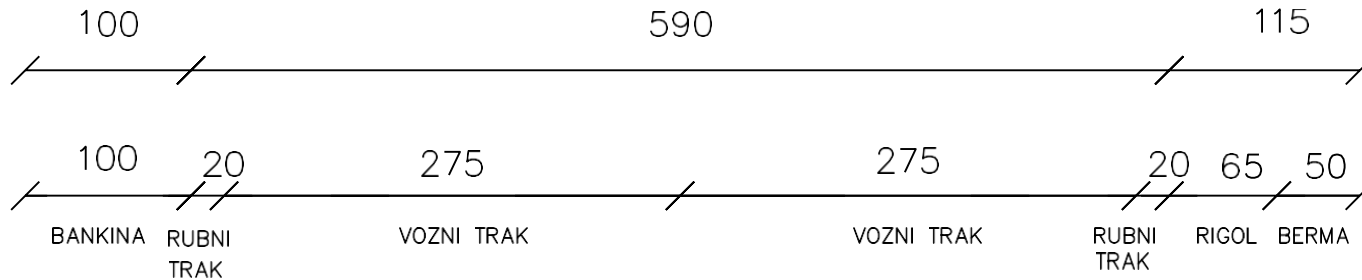
Stat. promjena nivoleta = 0+344.18
Vilina = 252.000

Stacionaža	0+000.00	0+050.00	0+100.00	0+150.00	0+200.00	0+250.00	0+300.00	0+350.00	0+380.00
Kote niveleta	240.00	240.48	240.59	240.37	240.06	240.41	238.19	235.57	235.53
Kote terena	240.00	240.48	240.59	240.37	240.06	240.41	238.19	235.57	235.53
Horizontalni elementi									
Vitoperenje									

Superelevation

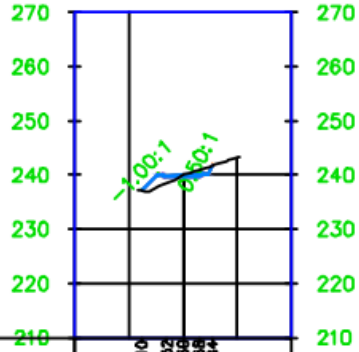


3.3. Normalni poprečni presjek M 1:50



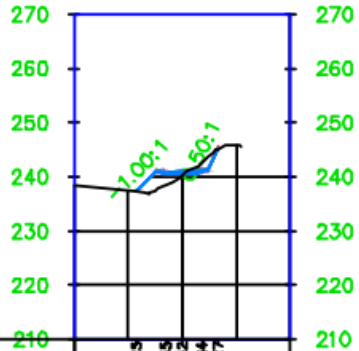
3.4. Karakteristični poprečni presjeci M 1:200

0+000.00



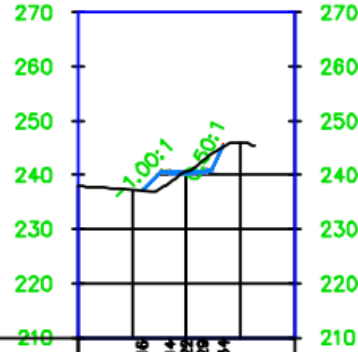
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Udaljenost od osi		239.62	-3.00	239.62
Kote terena		239.62	0.00	239.62
		239.62	3.00	241.84
		241.84	6.10	245.84

0+032.96



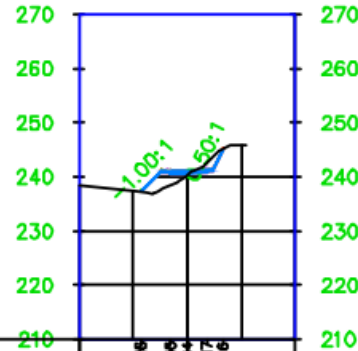
Kote projekta		237.25	-8.52	237.25
Udaljenost od osi		240.55	-3.03	240.55
Kote terena		240.82	0.00	240.82
		240.84	3.64	240.84
		245.27	6.65	245.27

0+020.00



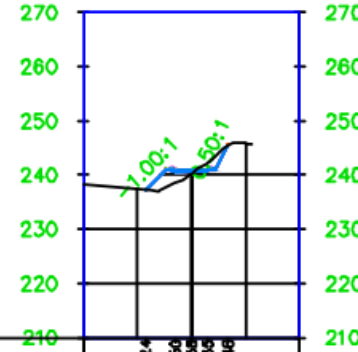
Kote projekta		237.16	-8.19	237.16
Udaljenost od osi		240.14	-3.00	240.14
Kote terena		240.22	0.00	240.22
		240.29	3.00	240.29
		245.34	6.89	245.34

0+033.68



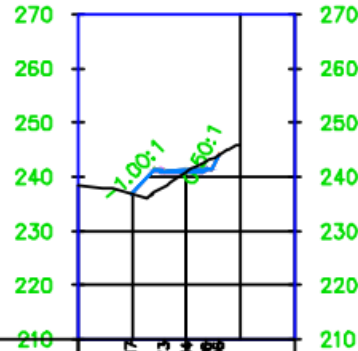
Kote projekta		237.26	-8.63	237.26
Udaljenost od osi		240.66	-3.15	240.66
Kote terena		240.84	0.00	240.84
		240.87	3.64	240.87
		245.16	6.58	245.16

0+031.54



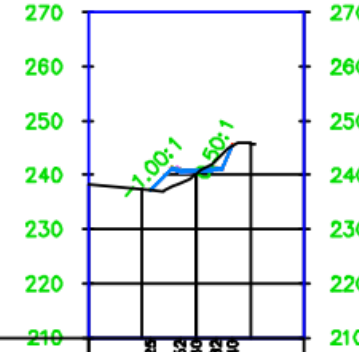
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Udaljenost od osi		240.58	-3.00	240.58
Kote terena		240.58	0.00	240.58
		240.65	3.00	240.65
		245.46	6.77	245.46

0+040.00



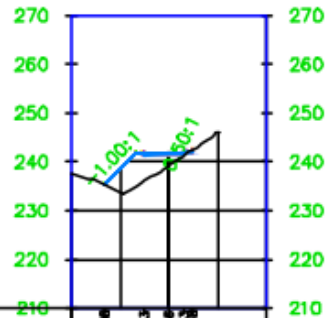
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		241.98	3.88	241.98
		245.98	7.71	245.98

0+032.24



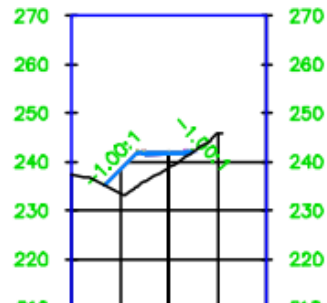
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Udaljenost od osi		240.52	-3.00	240.52
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		240.82	3.64	240.82
		245.46	6.73	245.46

0+060.00



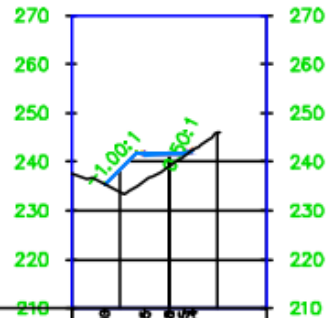
Kote projekta	235.36	-13.1	235.36	241.33	-5.01	241.33	241.48	0.00	241.48	242.38	3.00	242.38
Udaljenost od osi	0.00		0.00	0.00		0.00	0.00		0.00	3.00		3.00
Kote terena	235.36		235.36	241.33		241.33	241.48		241.48	242.38		242.38

0+061.99



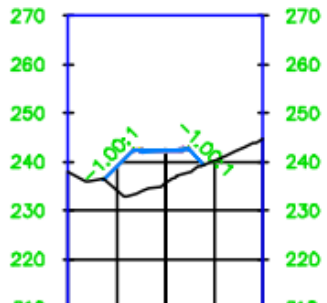
Kote projekta	235.19	-13.3	235.19	241.40	-4.57	241.40	241.82	0.00	241.82	242.89	3.79	242.89
Udaljenost od osi	0.00		0.00	0.00		0.00	0.00		0.00	3.79		3.79
Kote terena	235.19		235.19	241.40		241.40	241.82		241.82	242.89		242.89

0+060.54



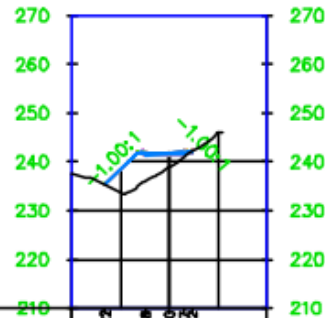
Kote projekta	235.36	-13.2	235.36	241.35	-4.95	241.35	241.48	0.00	241.48	242.55	3.79	242.55
Udaljenost od osi	0.00		0.00	0.00		0.00	0.00		0.00	3.79		3.79
Kote terena	235.36		235.36	241.35		241.35	241.48		241.48	242.55		242.55

0+079.62



Kote projekta	236.43	-12.5	236.43	241.84	-4.57	241.84	242.07	0.00	242.07	242.14	3.00	242.14
Udaljenost od osi	0.00		0.00	0.00		0.00	0.00		0.00	3.00		3.00
Kote terena	236.43		236.43	241.84		241.84	242.07		242.07	242.14		242.14

0+061.26



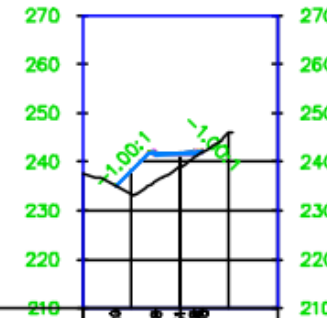
Kote projekta	235.22	-13.2	235.22	241.38	-4.89	241.38	241.50	0.00	241.50	242.72	3.00	242.72
Udaljenost od osi	0.00		0.00	0.00		0.00	0.00		0.00	3.00		3.00
Kote terena	235.22		235.22	241.38		241.38	241.50		241.50	242.72		242.72

0+079.72



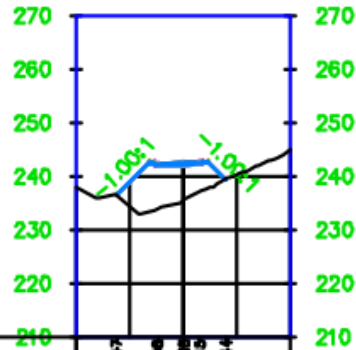
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Udaljenost od osi	0.00		0.00	0.00		0.00	0.00		0.00	3.00		3.00
Kote terena	236.44		236.44	240.78		240.78	241.86		241.86	242.07		242.07

0+061.54



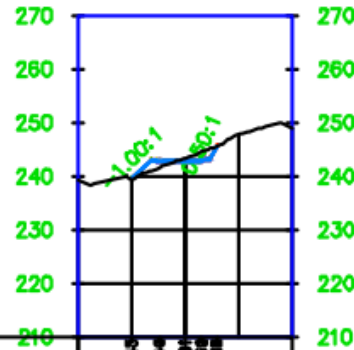
Kote projekta	235.26	-13.2	235.26	241.38	-4.87	241.38	241.51	0.00	241.51	242.08	3.79	242.08
Udaljenost od osi	0.00		0.00	0.00		0.00	0.00		0.00	3.79		3.79
Kote terena	235.26		235.26	241.38		241.38	241.51		241.51	242.08		242.08

0+080.00



Kote projekta					
Udaljenost od osi	0.00	12.54	4.87	3.00	7.59
Kote terena	238.47	241.98	242.08	242.15	238.44

0+097.25



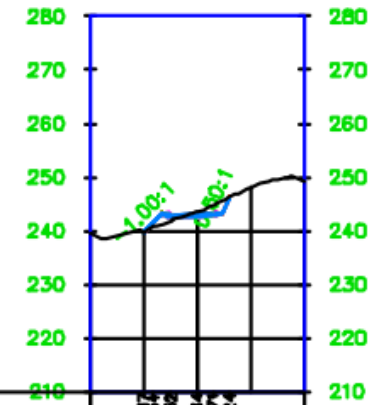
Kote projekta					
Udaljenost od osi	0.00	10.11	4.87	3.00	3.86
Kote terena	238.48	242.48	242.81	242.88	245.88

0+097.89



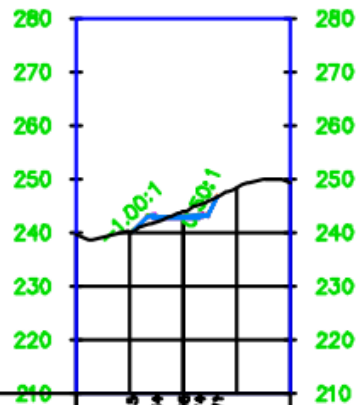
Kote projekta					
Udaljenost od osi	0.00	8.87	4.88	3.00	6.07
Kote terena	239.82	242.51	242.83	242.71	248.12

0+098.07



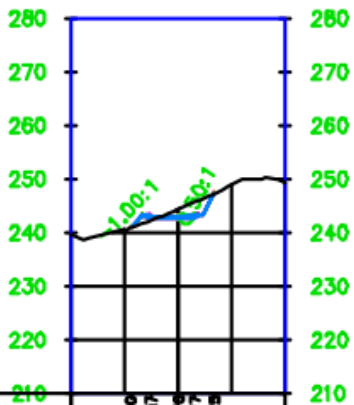
Kote projekta					
Udaljenost od osi	0.00	8.90	4.88	3.00	6.13
Kote terena	239.57	242.68	242.84	242.71	248.24

0+098.89



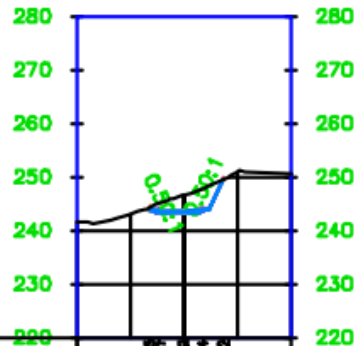
Kote projekta					
Udaljenost od osi	0.00	9.58	4.87	3.00	6.35
Kote terena	240.15	242.94	242.68	242.74	248.71

0+100.00



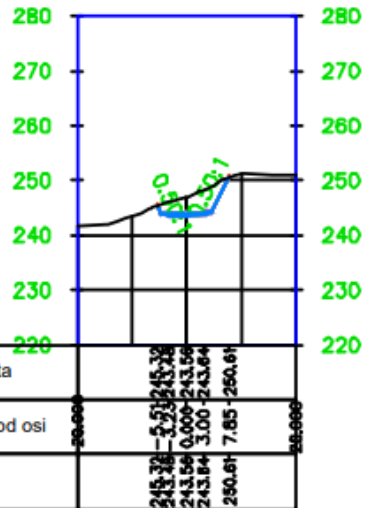
Kote projekta					
Udaljenost od osi	0.00	8.88	4.87	3.00	6.60
Kote terena	241.00	242.97	242.78	242.77	247.25

0+120.00

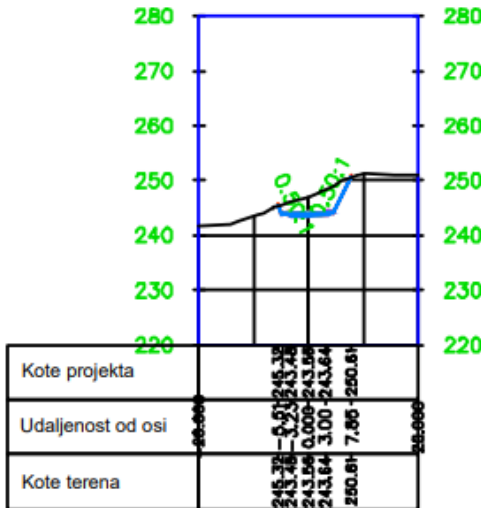


Kote projekta					
Udaljenost od osi	0.00	8.76	4.84	3.84	7.47
Kote terena	241.25	243.32	243.54	243.84	248.82

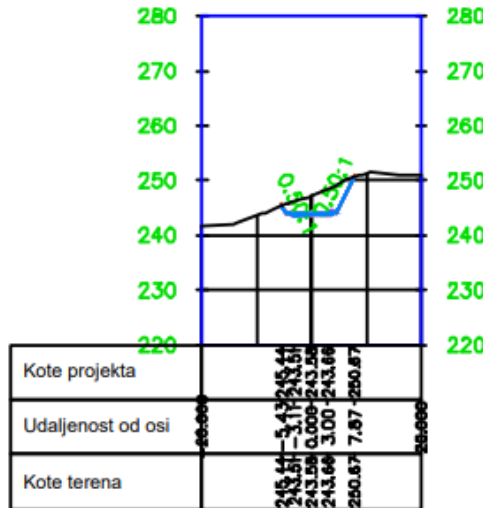
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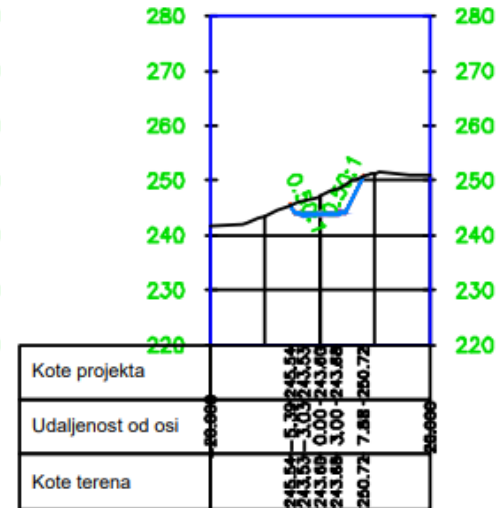
0+127.90



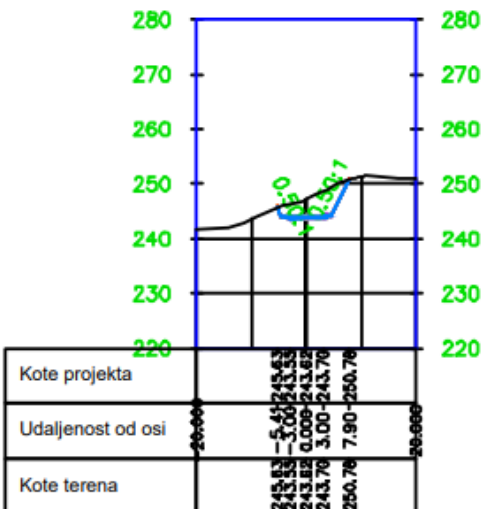
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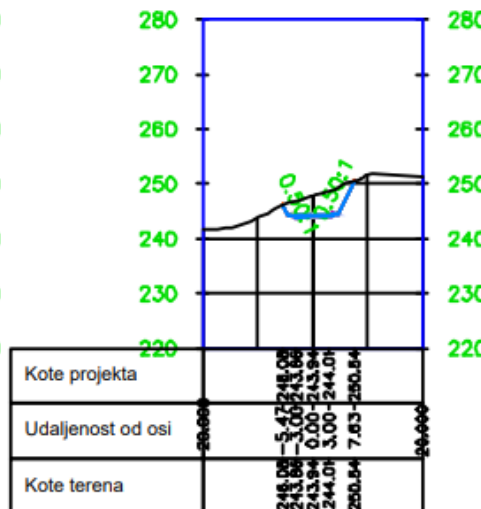
0+129.26



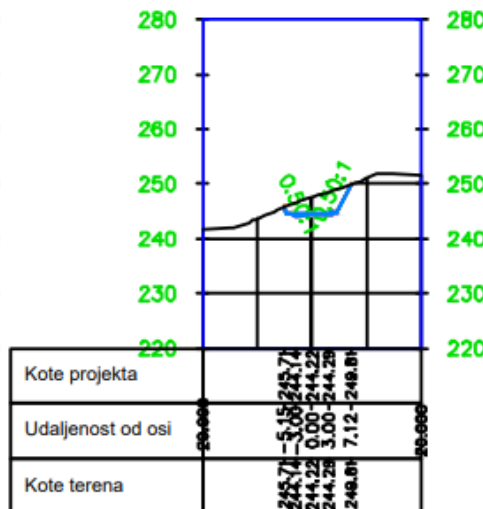
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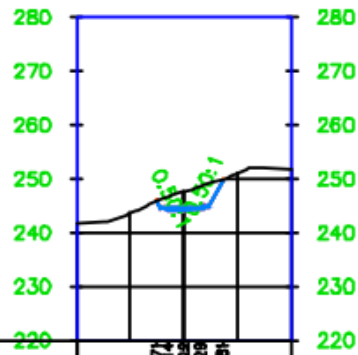
0+140.00



0+149.10

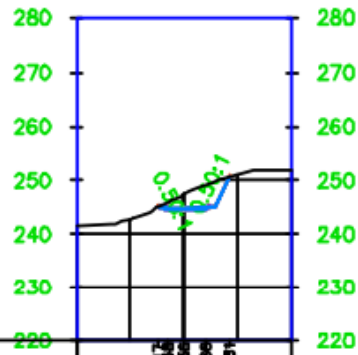


0+149.10



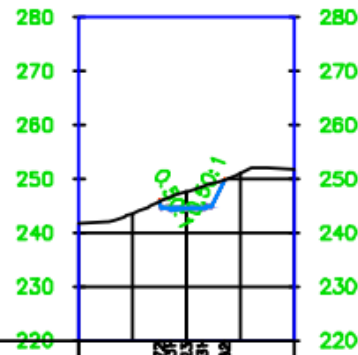
Kote projekta	245.71	245.71	245.71	245.71
Udaljenost od osi	20.00	5.15	0.00	249.81
Kote terena	245.71	244.29	244.29	249.81

0+160.00



Kote projekta	245.12	245.12	245.12	245.12
Udaljenost od osi	20.00	5.70	0.00	250.81
Kote terena	245.12	244.58	244.58	250.81

0+149.55



Kote projekta	245.72	245.72	245.72	245.72
Udaljenost od osi	20.00	5.15	0.00	249.82
Kote terena	245.72	244.31	244.31	249.82

0+178.23



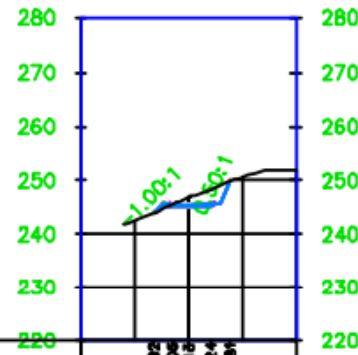
Kote projekta	243.93	243.93	243.93	243.93
Udaljenost od osi	20.00	6.32	3.00	248.86
Kote terena	243.93	245.05	245.19	248.86

0+149.99



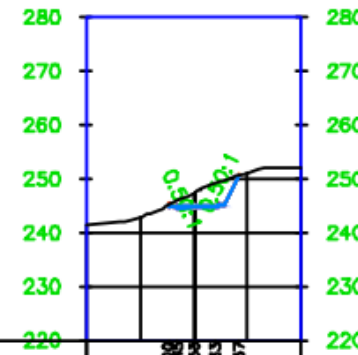
Kote projekta	245.73	245.73	245.73	245.73
Udaljenost od osi	20.00	5.13	0.00	249.84
Kote terena	245.73	244.32	244.32	249.84

0+178.66



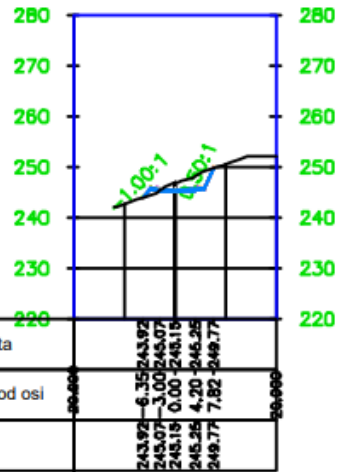
Kote projekta	243.92	243.92	243.92	243.92
Udaljenost od osi	20.00	6.34	3.00	248.85
Kote terena	243.92	245.18	245.24	248.85

0+159.10

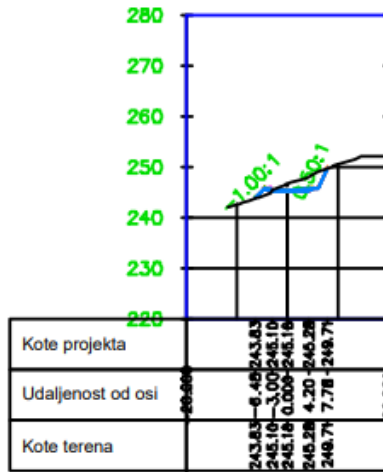


Kote projekta	245.80	245.80	245.80	245.80
Udaljenost od osi	20.00	7.00	0.00	250.57
Kote terena	245.80	244.53	244.63	250.57

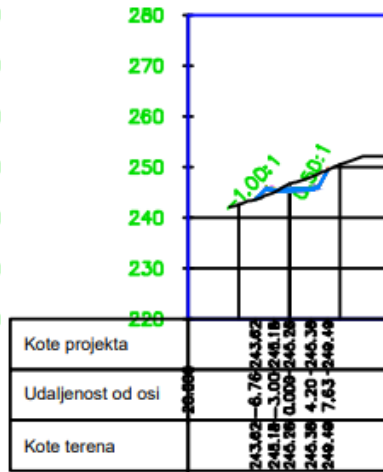
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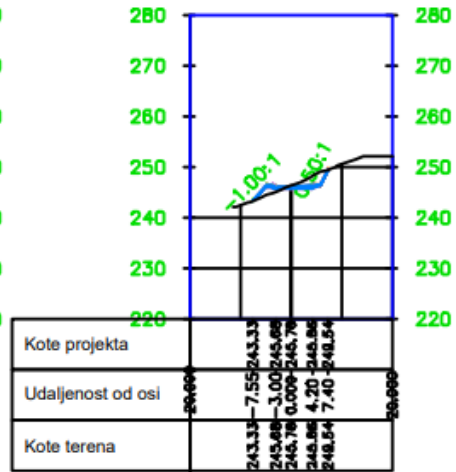
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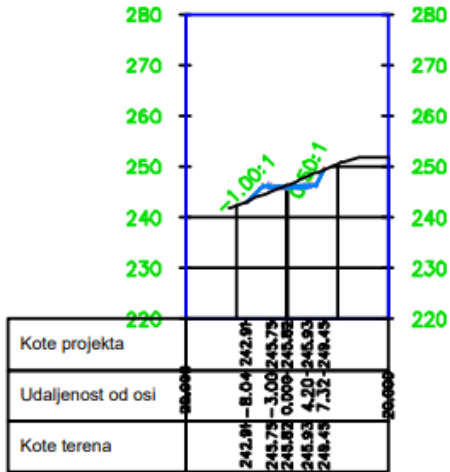
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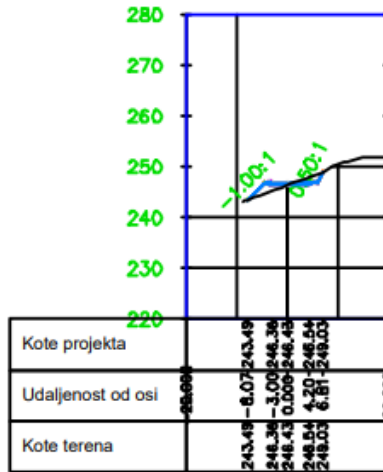
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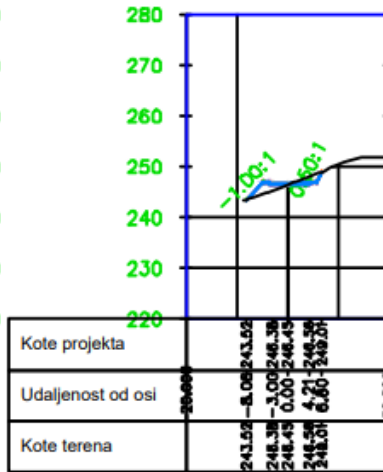
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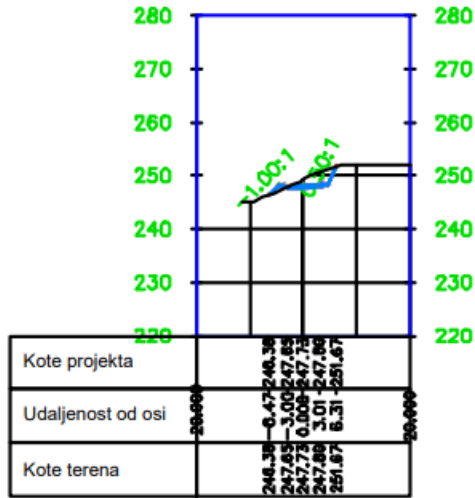
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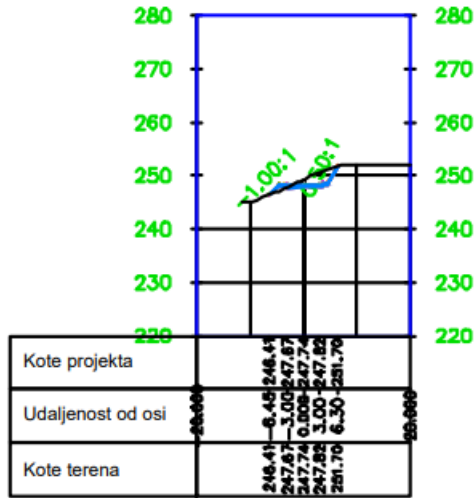
0+217.47



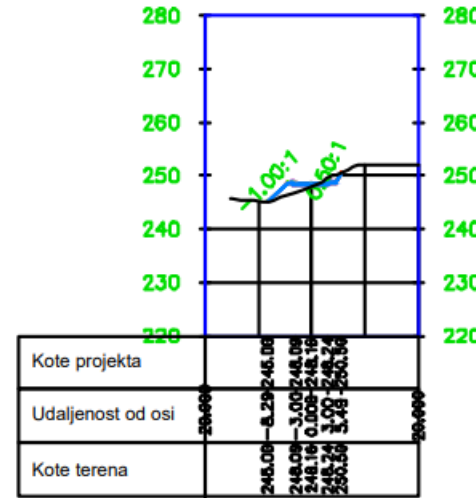
0+249.29



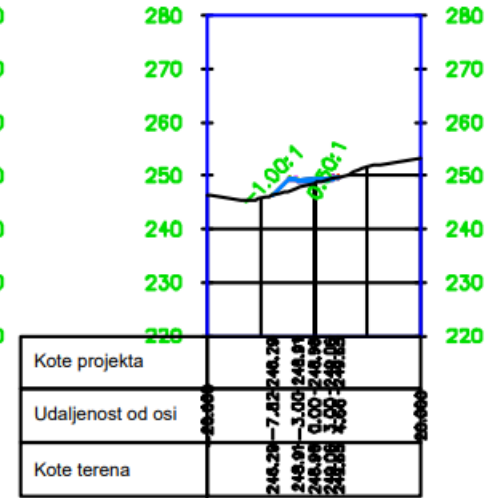
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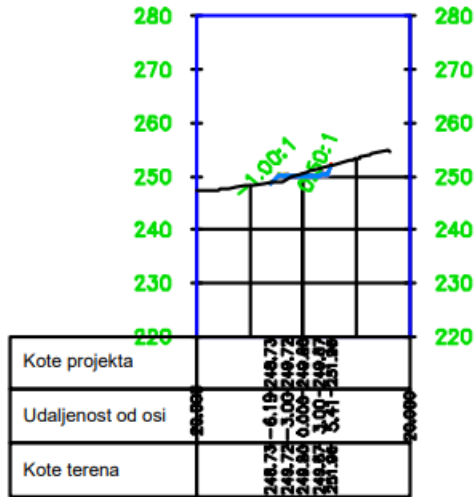
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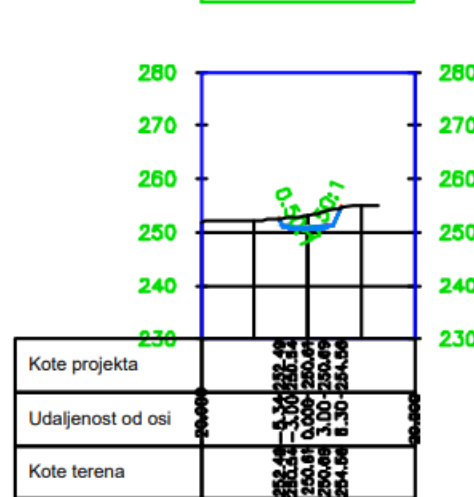
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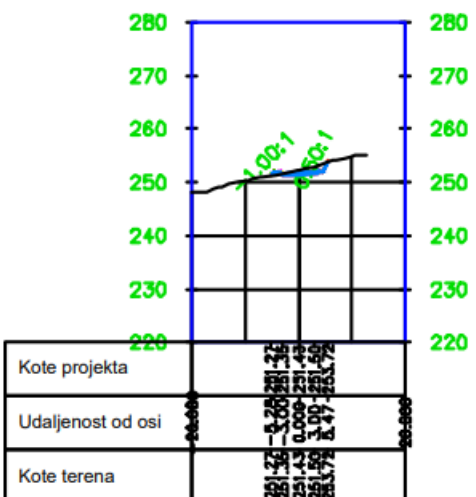
0+300.00



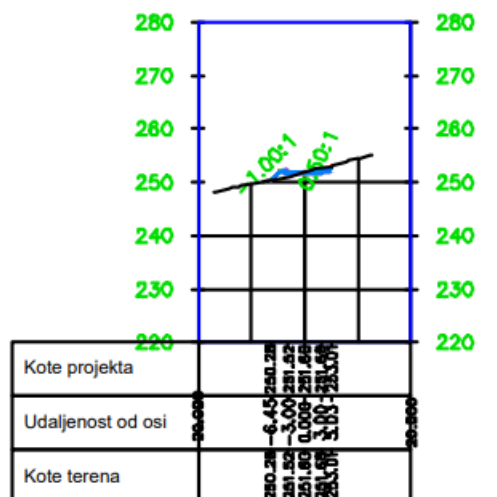
0+320.00



0+340.00



0+344.18



4. TABLICA UKUPNOG VOLUMENA ZEMLJANIH RADOVA

Station	Cut Area (Sq.m.)	Cut Volume (Cu.m.)	Reusable Volume (Cu.m.)	Fill Area (Sq.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Reusable Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)	Cum. Net Vol. (Cu.m.)
0+000.000	5.33	0.00	0.00	8.04	0.00	0.00	0.00	0.00	0.00
0+020.000	11.43	167.61	167.61	11.95	199.90	167.61	167.61	199.90	-32.29
0+031.539	8.17	113.12	113.12	15.70	159.52	280.73	280.73	359.42	-78.69
0+031.541	8.17	0.01	0.01	15.70	0.02	280.75	280.75	359.45	-78.70
0+032.238	7.77	5.56	5.56	15.73	10.96	286.31	286.31	370.41	-84.10
0+032.960	7.47	5.50	5.50	15.97	11.44	291.81	291.81	381.85	-90.04
0+033.677	7.36	5.32	5.32	16.26	11.56	297.12	297.12	393.41	-96.28
0+040.000	6.95	45.88	45.88	21.84	117.98	343.01	343.01	511.39	-168.38
0+060.000	0.23	75.08	75.08	60.89	760.75	418.09	418.09	1272.14	-854.05
0+060.536	0.12	0.09	0.09	62.20	33.01	418.18	418.18	1305.14	-886.96
0+061.263	0.03	0.05	0.05	63.98	45.83	418.24	418.24	1350.97	-932.74
0+061.539	0.01	0.00	0.00	64.75	17.78	418.24	418.24	1368.76	-950.51
0+061.993	0.00	0.00	0.00	66.24	29.75	418.24	418.24	1398.51	-980.26
0+079.620	0.00	0.00	0.00	114.17	1449.79	418.24	418.24	2848.29	-2430.05
0+079.716	0.00	0.00	0.00	114.32	10.98	418.24	418.24	2859.27	-2441.03
0+080.000	0.00	0.00	0.00	114.73	32.57	418.24	418.24	2891.84	-2473.59
0+097.246	8.93	81.43	81.43	6.76	974.36	499.68	499.68	3866.19	-3366.52
0+097.892	10.70	6.34	6.34	5.54	3.98	506.02	506.02	3870.17	-3364.15
0+098.069	11.30	1.95	1.95	5.25	0.95	507.97	507.97	3871.12	-3363.15
0+098.887	14.22	11.01	11.01	4.06	3.26	518.98	518.98	3874.39	-3355.41
0+100.000	18.40	19.05	19.05	3.13	3.44	538.03	538.03	3877.83	-3339.80
0+120.000	38.13	576.52	576.52	0.00	28.54	1114.55	1114.55	3906.36	-2791.82
0+127.892	41.50	315.44	315.44	0.00	0.00	1429.99	1429.99	3906.36	-2476.38

0+127.897	41.50	0.20	0.20	0.00	0.00	1430.19	1430.19	3906.36	-2476.18
0+128.610	42.11	29.80	29.80	0.00	0.00	1459.98	1459.98	3906.36	-2446.38
0+129.261	42.52	27.54	27.54	0.00	0.00	1487.52	1487.52	3906.36	-2418.84
0+129.916	43.25	28.10	28.10	0.00	0.00	1515.61	1515.61	3906.36	-2390.75
0+140.000	42.97	434.72	434.72	0.00	0.00	1950.33	1950.33	3906.36	-1956.03
0+149.100	36.13	359.88	359.88	0.00	0.00	2310.22	2310.22	3906.36	-1596.15
0+149.100	36.13	0.00	0.00	0.00	0.00	2310.23	2310.23	3906.36	-1596.14
0+149.547	35.89	16.08	16.08	0.00	0.00	2326.31	2326.31	3906.36	-1580.06
0+149.992	35.75	15.95	15.95	0.00	0.00	2342.25	2342.25	3906.36	-1564.11
0+159.100	35.98	324.96	324.96	0.00	0.00	2667.21	2667.21	3906.36	-1239.15
0+160.000	36.62	32.66	32.66	0.00	0.00	2699.87	2699.87	3906.36	-1206.50
0+178.228	22.88	527.96	527.96	1.10	10.46	3227.83	3227.83	3916.82	-689.00
0+178.664	22.13	9.80	9.80	1.25	0.51	3237.63	3237.63	3917.33	-679.71
0+179.100	21.32	9.48	9.48	1.49	0.60	3247.11	3247.11	3917.93	-670.82
0+180.000	20.07	18.62	18.62	1.93	1.54	3265.73	3265.73	3919.47	-653.74
0+182.693	17.67	48.50	48.50	2.74	6.71	3314.24	3314.24	3926.19	-611.95
0+198.044	12.46	219.61	219.61	4.49	59.22	3533.85	3533.85	3985.40	-451.55
0+200.000	11.75	22.37	22.37	4.94	9.86	3556.22	3556.22	3995.26	-439.04
0+216.987	6.54	146.63	146.63	7.68	114.31	3702.85	3702.85	4109.56	-406.72
0+217.466	6.57	3.14	3.14	7.62	3.66	3705.99	3705.99	4113.23	-407.24
0+217.944	6.66	3.16	3.16	7.54	3.62	3709.15	3709.15	4116.85	-407.70
0+220.000	7.46	13.76	13.76	7.70	16.59	3722.90	3722.90	4133.44	-410.54
0+233.656	11.64	125.58	125.58	3.98	83.15	3848.48	3848.48	4216.59	-368.11
0+240.000	16.61	88.15	88.15	2.96	22.51	3936.63	3936.63	4239.10	-302.48
0+246.987	16.31	114.99	114.99	1.51	15.61	4051.62	4051.62	4254.72	-203.10
0+246.987	16.31	114.99	114.99	1.51	15.61	4051.62	4051.62	4254.72	-203.10
0+246.989	16.31	0.02	0.02	1.51	0.00	4051.64	4051.64	4254.72	-203.08
0+248.888	16.14	30.81	30.81	1.78	3.12	4082.45	4082.45	4257.84	-175.39
0+249.293	15.87	6.49	6.49	1.93	0.75	4088.94	4088.94	4258.59	-169.66
0+249.699	15.73	6.42	6.42	2.01	0.80	4095.36	4095.36	4259.40	-164.03
0+260.000	4.45	103.94	103.94	9.26	58.07	4199.30	4199.30	4317.47	-118.17
0+280.000	0.45	48.96	48.96	8.99	182.57	4248.26	4248.26	4500.03	-251.78
0+300.000	7.44	78.89	78.89	2.57	115.63	4327.15	4327.15	4615.66	-288.51
0+320.000	26.32	337.55	337.55	0.00	25.69	4664.70	4664.70	4641.35	23.35
0+340.000	8.40	347.14	347.14	0.43	4.28	5011.84	5011.84	4645.63	366.20
0+344.182	3.68	25.26	25.26	3.60	8.43	5037.09	5037.09	4654.06	383.03

5. OBRADA NA RAČUNALU

Za izradu idejnog projekta lokalne ceste korišten je AutoCAD Civil 3D koji znatno olakšava izradu programskog zadatka. U odnosu na ručno rješavanje, postupak na računalu je znatno brži i jednostavniji.

Prvi korak pri izradi idejnog rješenja je skeniranje geodetske podloge te slijedi iscrtavanje slojnica. Slojnice se iscrtavaju pomoću 3D poligonalnih linija te se postupkom triangulacije na tim linijama dobije trodimenzionalni model terena. Zatim definiramo koordinate točaka tangenti (dvije točke ta svaku tangentu) te ih definiramo na terenu. Na sjecištima tangenti definiramo kružne lukove i prijelazne krivine te na taj način definiramo horizontalni tok ceste.

Slijedi izrada uzdužnog presjeka ceste kojeg definira niveleta. Niveleta se postavlja tako da se zadovolje geometrijski i sigurnosni elementi te odvodnja. Između tangenti se ubacuje kružna krivina određenog radijusa.

Sljedeći korak je definiranje poprečnog profila prometnice. Poprečnim presjekom su definirani: poprečni nagib i širina kolnika te pokosi usjeka i nasipa.

Na temelju definiranih horizontalnih i vertikalnih elemenata te osi ceste, izrađujemo koridor. On omogućuje uvid u poprečne presjeke u svim karakterističnim i zadanim točkama osi ceste. Time smo definirali cijelu dionicu ceste.

Izlazni podaci su računalni ispisi koordinatnih točaka osi, točaka svakog poprečnog presjeka te količina zemljanih radova po presjeku.

6. IZLAZNI PODACI IZ PROGRAMA

6.1. Koordinatni račun glavnih točaka

Alignment: os_1_(6)

Description:

<u>Tangent Data</u>			
Description	PT Station	Northing	Easting
Start:	0+00.000	664.744	814.398
End:	0+31.539	634.461	823.212

<u>Tangent Data</u>			
Parameter	Value	Parameter	Value
Length:	31.539	Course:	S 16° 13' 35.5816" E

<u>Spiral Point Data</u>			
Description	Station	Northing	Easting
TS:	0+31.539	634.461	823.212
SPI:		615.145	828.833
SC:	0+61.539	606.899	834.677

<u>Spiral Curve Data: clothoid</u>			
Parameter	Value	Parameter	Value
Length:	30.000	L Tan:	20.118

Radius:	45.000	S Tan:	10.107
Theta:	19° 05' 54.9354"	P:	0.830
X:	29.668	K:	14.945
Y:	3.307	A:	36.742
Chord:	29.852	Course:	S 22° 35' 12.2777" E

Curve Point Data

Description	Station	Northing	Easting
SC:	0+61.539	606.899	834.677
RP:		632.919	871.392
CS:	0+97.892	588.400	864.827

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	46° 17' 10.8045"	Type:	LEFT
Radius:	45.000		
Length:	36.353	Tangent:	19.234
Mid-Ord:	3.621	External:	3.938
Chord:	35.373	Course:	S 58° 28' 05.9193" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	0+97.892	588.400	864.827
SPI:		586.926	874.826
ST:	1+27.892	590.664	894.593

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.000	L Tan:	20.118
Radius:	45.000	S Tan:	10.107
Theta:	19° 05' 54.9354"	P:	0.830
X:	29.668	K:	14.945
Y:	3.307	A:	36.742
Chord:	29.852	Course:	N 85° 39' 00.4392" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	1+27.892	590.664	894.593
End:	1+49.100	594.606	915.432

Tangent Data

Parameter	Value	Parameter	Value
-----------	-------	-----------	-------

Length: 21.208 Course: N 79° 17' 23.7431" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	1+49.100	594.606	915.432
SPI:		598.331	935.131
SC:	1+79.100	598.057	945.171

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.000	L Tan:	20.048
Radius:	70.000	S Tan:	10.044
Theta:	12° 16' 39.6013"	P:	0.535
X:	29.863	K:	14.977
Y:	2.136	A:	45.826
Chord:	29.939	Course:	N 83° 22' 51.2099" E

Curve Point Data

Description	Station	Northing	Easting
SC:	1+79.100	598.057	945.171
RP:		528.083	943.256
CS:	2+16.987	587.069	980.948

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	31° 00' 39.2607"	Type:	RIGHT
Radius:	70.000		
Length:	37.887	Tangent:	19.420
Mid-Ord:	2.548	External:	2.644
Chord:	37.426	Course:	S 72° 55' 37.0252" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	2+16.987	587.069	980.948
SPI:		581.660	989.412
ST:	2+46.987	567.520	1003.623

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.000	L Tan:	20.048
Radius:	70.000	S Tan:	10.044
Theta:	12° 16' 39.6013"	P:	0.535

X:	29.863	K:	14.977
Y:	2.136	A:	45.826
Chord:	29.939	Course:	S 49° 14' 05.2604" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	2+46.987	567.520	1003.623
End:	3+44.182	498.965	1072.523

Tangent Data

Parameter	Value	Parameter	Value
Length:	97.195	Course:	S 45° 08' 37.7936" E

Alignment: os 1 (6)-Left-3.000

Description:



Tangent Data

Description	PT Station	Northing	Easting
Start:	0+00.000	665.582	817.279
End:	0+31.539	635.300	826.092

Tangent Data

Parameter	Value	Parameter	Value
Length:	31.539	Course:	S 16° 13' 35.5816" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	0+31.539	635.300	826.092
SPI:		634.852	826.222
SC:	0+32.238	634.629	826.287

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	0.699	L Tan:	0.466
Radius:	1927.684	S Tan:	0.233
Theta:	00° 00' 37.3804"	P:	0.000
X:	0.699	K:	0.349
Y:	0.000	A:	36.700
Chord:	0.699	Course:	S 16° 13' 48.0272" E

Curve Point Data

Description	Station	Northing	Easting
SC:	0+32.238	634.629	826.287
RP:		636.866	833.968
PT:	0+33.680	633.288	826.813

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	10° 19' 37.2587"	Type:	LEFT
Radius:	8.000		
Length:	1.442	Tangent:	0.723
Mid-Ord:	0.032	External:	0.033
Chord:	1.440	Course:	S 21° 24' 01.5623" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+33.680	633.288	826.813
End:	0+59.161	610.497	838.208

Tangent Data

Parameter	Value	Parameter	Value
Length:	25.481	Course:	S 26° 33' 50.1916" E

Curve Point Data

Description	Station	Northing	Easting
PC:	0+59.161	610.497	838.208
RP:		614.075	845.363
PCC:	0+60.465	609.383	838.883

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	09° 20' 22.4700"	Type:	LEFT
Radius:	8.000		
Length:	1.304	Tangent:	0.653
Mid-Ord:	0.027	External:	0.027
Chord:	1.303	Course:	S 31° 14' 01.4266" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	0+60.465	609.383	838.883
RP:		632.919	871.392

PCC: 0+91.905 593.302 864.967

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	44° 53' 05.6248"	Type:	LEFT
Radius:	40.134		
Length:	31.441	Tangent:	16.577
Mid-Ord:	3.040	External:	3.289
Chord:	30.643	Course:	S 58° 20' 45.4740" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	0+91.905	593.302	864.967
RP:		601.199	866.248
PT:	0+93.375	593.201	866.432

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	10° 31' 37.5332"	Type:	LEFT
Radius:	8.000		
Length:	1.470	Tangent:	0.737
Mid-Ord:	0.034	External:	0.034
Chord:	1.468	Course:	S 86° 03' 07.0530" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+93.375	593.201	866.432
End:	1+21.672	593.851	894.721

Tangent Data

Parameter	Value	Parameter	Value
Length:	28.297	Course:	N 88° 41' 04.1803" E

Curve Point Data

Description	Station	Northing	Easting
PC:	1+21.672	593.851	894.721
RP:		601.849	894.537
PT:	1+22.984	593.988	896.024

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	09° 23' 40.4373"	Type:	LEFT
Radius:	8.000		

Length:	1.312	Tangent:	0.657
Mid-Ord:	0.027	External:	0.027
Chord:	1.310	Course:	N 83° 59' 13.9617" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	1+22.984	593.988	896.024
End:	1+42.168	597.553	914.874

Tangent Data

Parameter	Value	Parameter	Value
Length:	19.185	Course:	N 79° 17' 23.7431" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	1+42.168	597.553	914.874
SPI:		601.339	934.891
SC:	1+72.811	601.055	945.253

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.643	L Tan:	20.476
Radius:	73.000	S Tan:	10.257
Theta:	12° 01' 31.3904"	P:	0.535
X:	30.508	K:	15.299
Y:	2.137	A:	47.296
Chord:	30.580	Course:	N 83° 25' 25.8627" E

Curve Point Data

Description	Station	Northing	Easting
SC:	1+72.811	601.055	945.253
RP:		528.083	943.256
CS:	2+12.322	589.597	982.563

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	31° 00' 39.2607"	Type:	RIGHT
Radius:	73.000		
Length:	39.511	Tangent:	20.252
Mid-Ord:	2.657	External:	2.757
Chord:	39.030	Course:	S 72° 55' 37.0252" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	2+12.322	589.597	982.563
SPI:		584.015	991.299
ST:	2+42.965	569.646	1005.739

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.643	L Tan:	20.476
Radius:	73.000	S Tan:	10.257
Theta:	12° 01' 31.3904"	P:	0.535
X:	30.508	K:	15.299
Y:	2.137	A:	47.296
Chord:	30.580	Course:	S 49° 16' 39.9132" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	2+42.965	569.646	1005.739
End:	3+40.160	501.092	1074.639

Tangent Data

Parameter	Value	Parameter	Value
Length:	97.195	Course:	S 45° 08' 37.7936" E

Alignment: os 1 (6)-Right-3.000

Description:

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+00.000	663.906	811.518
End:	0+31.539	633.623	820.331

Tangent Data

Parameter	Value	Parameter	Value
Length:	31.539	Course:	S 16° 13' 35.5816" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	0+31.539	633.623	820.331

SPI: 613.822 826.094
 SC: 0+62.539 605.164 832.230

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	31.000	L Tan:	20.781
Radius:	48.000	S Tan:	10.437
Theta:	18° 30' 06.3437"	P:	0.831
X:	30.678	K:	15.446
Y:	3.312	A:	38.575
Chord:	30.846	Course:	S 22° 41' 22.5624" E

Curve Point Data

Description	Station	Northing	Easting
SC:	0+62.539	605.164	832.230
RP:		632.919	871.392
CS:	1+01.316	585.432	864.390

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	46° 17' 10.8045"	Type:	LEFT
Radius:	48.000		
Length:	38.777	Tangent:	20.516
Mid-Ord:	3.863	External:	4.201
Chord:	37.731	Course:	S 58° 28' 05.9193" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	1+01.316	585.432	864.390
SPI:		583.884	874.888
ST:	1+32.316	587.717	895.151

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	31.000	L Tan:	20.781
Radius:	48.000	S Tan:	10.437
Theta:	18° 30' 06.3437"	P:	0.831
X:	30.678	K:	15.446
Y:	3.312	A:	38.575
Chord:	30.846	Course:	N 85° 45' 10.7238" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	1+32.316	587.717	895.151
End:	1+53.524	591.658	915.989

Tangent Data

Parameter	Value	Parameter	Value
Length:	21.208	Course:	N 79° 17' 23.7431" E

Curve Point Data

Description	Station	Northing	Easting
PC:	1+53.524	591.658	915.989
RP:		583.797	917.476
PT:	1+54.417	591.775	916.874

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	06° 23' 46.4566"	Type:	RIGHT
Radius:	8.000		
Length:	0.893	Tangent:	0.447
Mid-Ord:	0.012	External:	0.012
Chord:	0.893	Course:	N 82° 29' 16.9714" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	1+54.417	591.775	916.874
End:	1+81.856	593.838	944.236

Tangent Data

Parameter	Value	Parameter	Value
Length:	27.439	Course:	N 85° 41' 10.1997" E

Curve Point Data

Description	Station	Northing	Easting
PC:	1+81.856	593.838	944.236
RP:		585.861	944.837
PCC:	1+82.677	593.858	945.056

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	05° 52' 53.1447"	Type:	RIGHT
Radius:	8.000		
Length:	0.821	Tangent:	0.411
Mid-Ord:	0.011	External:	0.011

Chord: 0.821 Course: N 88° 37' 36.7721" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	1+82.677	593.858	945.056
RP:		528.083	943.256
PCC:	2+18.291	583.529	978.687

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	31° 00' 39.2607"	Type:	RIGHT
Radius:	65.800		
Length:	35.614	Tangent:	18.255
Mid-Ord:	2.395	External:	2.485
Chord:	35.181	Course:	S 72° 55' 37.0252" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	2+18.291	583.529	978.687
RP:		576.788	974.379
PT:	2+19.192	583.002	979.417

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	06° 27' 21.0541"	Type:	RIGHT
Radius:	8.000		
Length:	0.901	Tangent:	0.451
Mid-Ord:	0.013	External:	0.013
Chord:	0.901	Course:	S 54° 11' 36.8679" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	2+19.192	583.002	979.417
End:	2+49.328	564.023	1002.826

Tangent Data

Parameter	Value	Parameter	Value
Length:	30.136	Course:	S 50° 57' 56.3409" E

Curve Point Data

Description	Station	Northing	Easting
PC:	2+49.328	564.023	1002.826

RP: 557.809 997.787
 PT: 2+50.141 563.480 1003.430

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	05° 49' 18.5473"	Type:	RIGHT
Radius:	8.000		
Length:	0.813	Tangent:	0.407
Mid-Ord:	0.010	External:	0.010
Chord:	0.813	Course:	S 48° 03' 17.0672" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	2+50.141	563.480	1003.430
End:	3+44.624	496.839	1070.407

Tangent Data

Parameter	Value	Parameter	Value
Length:	94.483	Course:	S 45° 08' 37.7936" E

6.2. Koordinatni račun detaljnih točaka osi

Alignment Name: os 1 (6)

Description:

Station Range: Start: 0+000.00, End: 0+344.18

Station Increment: 20.00

Station	Northing	Easting	Tangential Direction
0+000.00	664.7441m	814.3985m	S16° 13' 36"E
0+020.00	645.5408m	819.9872m	S16° 13' 36"E
0+040.00	626.3590m	825.6476m	S17° 44' 44"E
0+060.00	608.1694m	833.8087m	S33° 24' 57"E
0+080.00	594.4150m	848.1013m	S58° 49' 49"E
0+100.00	588.1404m	866.9188m	S84° 12' 03"E
0+120.00	589.2573m	886.8277m	N80° 36' 42"E
0+140.00	592.9144m	906.4902m	N79° 17' 24"E
0+160.00	596.5301m	926.1601m	N80° 54' 38"E
0+180.00	598.0262m	946.0704m	S87° 41' 45"E
0+200.00	594.3976m	965.6694m	S71° 19' 33"E
0+220.00	585.3940m	983.4524m	S55° 04' 46"E
0+240.00	572.4288m	998.6514m	S45° 48' 35"E
0+260.00	558.3414m	1,012.8480m	S45° 08' 38"E
0+280.00	544.2348m	1,027.0256m	S45° 08' 38"E
0+300.00	530.1283m	1,041.2032m	S45° 08' 38"E
0+320.00	516.0217m	1,055.3808m	S45° 08' 38"E
0+340.00	501.9151m	1,069.5584m	S45° 08' 38"E
0+344.18	498.9668m	1,072.5215m	S45° 08' 38"E

6.3. Račun kota kolnika

Corridor Name: koridorr

Description:

Base Alignment Name: os 1 (6)

Station Range: Start: 0+000.00, End: 0+344.18

CHAINAGE 0+000.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	821.7207	666.8751	237.0987	-7.626m	Daylight
2	818.8553	666.0411	240.0830	-4.642m	Hinge
3	818.8543	666.0409	239.8830	-4.641m	EPS_Sub
4	817.8951	665.7617	240.1230	-3.642m	Back_Curb
5	817.7511	665.7198	240.1230	-3.492m	Top_Curb
6	817.7111	665.7081	239.8980	-3.450m	Flowline_Gutter
7	817.2790	665.5824	239.5250	-3.000m	ETW_SubBase
8	817.2790	665.5824	239.9250	-3.000m	ETW
9	811.5180	663.9058	239.6750	3.000m	ETW_SubBase
10	811.5180	663.9058	240.0750	3.000m	ETW
11	811.0859	663.7800	240.0480	3.450m	Flowline_Gutter
12	811.0459	663.7684	240.2730	3.492m	Top_Curb
13	810.9019	663.7265	240.2730	3.642m	Back_Curb
14	809.9427	663.4473	240.0330	4.641m	EPS_Sub
15	809.9417	663.4470	240.2330	4.642m	EPS
16	809.1695	663.2223	241.8416	5.446m	Daylight

CHAINAGE 0+020.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	827.8474	647.8283	237.1580	-8.186m	Daylight
2	824.4440	646.8379	240.7025	-4.642m	Hinge
3	824.4430	646.8376	240.5025	-4.641m	EPS_Sub
4	823.4838	646.5584	240.7425	-3.642m	Back_Curb
5	823.3398	646.5165	240.7425	-3.492m	Top_Curb

6	823.2998	646.5048	240.5175	-3.450m	Flowline_Gutter
7	822.8677	646.3791	240.1445	-3.000m	ETW_SubBase
8	822.8677	646.3791	240.5445	-3.000m	ETW
9	817.1067	644.7025	240.2945	3.000m	ETW_SubBase
10	817.1067	644.7025	240.6945	3.000m	ETW
11	816.6746	644.5767	240.6675	3.450m	Flowline_Gutter
12	816.6346	644.5651	240.8925	3.492m	Top_Curb
13	816.4906	644.5232	240.8925	3.642m	Back_Curb
14	815.5314	644.2440	240.6525	4.641m	EPS_Sub
15	815.5304	644.2437	240.8525	4.642m	EPS
16	813.3761	643.6168	245.3400	6.885m	Daylight

CHAINAGE 0+040.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	835.4114	629.4836	236.8729	-10.252m	Daylight
2	831.2023	628.1366	241.2923	-5.832m	Hinge
3	831.2013	628.1363	241.0923	-5.831m	EPS_Sub
4	830.2499	627.8318	241.3323	-4.832m	Back_Curb
5	830.1070	627.7861	241.3323	-4.682m	Top_Curb
6	830.0673	627.7734	241.1073	-4.641m	Flowline_Gutter
7	829.6387	627.6362	240.7343	-4.191m	ETW_SubBase
8	829.6387	627.6362	241.1343	-4.191m	ETW
9	822.7911	625.4449	240.9140	2.999m	ETW_SubBase
10	822.7911	625.4449	241.3140	2.999m	ETW
11	822.3625	625.3077	241.2870	3.449m	Flowline_Gutter
12	822.3228	625.2950	241.5120	3.491m	Top_Curb
13	822.1800	625.2493	241.5120	3.641m	Back_Curb
14	821.2285	624.9448	241.2720	4.640m	EPS_Sub
15	821.2275	624.9445	241.4720	4.641m	EPS
16	820.0441	624.5658	243.9571	5.883m	Daylight

CHAINAGE 0+060.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	844.8124	615.4294	235.3615	-13.183m	Daylight
2	839.3621	611.8334	241.8913	-6.653m	Hinge
3	839.3612	611.8328	241.6913	-6.652m	EPS_Sub
4	838.5274	611.2827	241.9313	-5.653m	Back_Curb
5	838.4022	611.2001	241.9313	-5.503m	Top_Curb
6	838.3674	611.1771	241.7063	-5.462m	Flowline_Gutter

7	837.9917	610.9293	241.3333	-5.012m	ETW_SubBase
8	837.9917	610.9293	241.7333	-5.012m	ETW
9	831.3043	606.5171	241.5335	3.000m	ETW_SubBase
10	831.3043	606.5171	241.9335	3.000m	ETW
11	830.9287	606.2692	241.9065	3.450m	Flowline_Gutter
12	830.8939	606.2463	242.1315	3.492m	Top_Curb
13	830.7687	606.1637	242.1315	3.642m	Back_Curb
14	829.9348	605.6135	241.8915	4.641m	EPS_Sub
15	829.9340	605.6130	242.0915	4.642m	EPS
16	829.7721	605.5062	242.4793	4.836m	Daylight

CHAINAGE 0+080.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	854.5994	605.1576	236.4670	-12.555m	Daylight
2	851.4695	599.9832	242.5144	-6.508m	Hinge
3	851.4689	599.9823	242.3144	-6.507m	EPS_Sub
4	850.9519	599.1276	242.5544	-5.508m	Back_Curb
5	850.8743	598.9992	242.5544	-5.358m	Top_Curb
6	850.8527	598.9635	242.3294	-5.316m	Flowline_Gutter
7	850.6198	598.5785	242.3564	-4.866m	Flange
8	850.6198	598.5785	241.9564	-4.866m	ETW_SubBase
9	846.5485	591.8480	242.5531	3.000m	Flange
10	846.5485	591.8480	242.1531	3.000m	ETW_SubBase
11	846.3156	591.4630	242.5261	3.450m	Flowline_Gutter
12	846.2940	591.4273	242.7511	3.492m	Top_Curb
13	846.2164	591.2990	242.7511	3.642m	Back_Curb
14	845.6993	590.4442	242.5111	4.641m	EPS_Sub
15	845.6988	590.4433	242.7111	4.642m	Hinge
16	844.0054	587.6439	239.4393	7.913m	Daylight

CHAINAGE 0+100.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	867.8160	596.9745	241.0000	-8.879m	Daylight
2	867.6010	594.8575	243.1278	-6.752m	Hinge
3	867.6009	594.8566	242.9278	-6.751m	EPS_Sub
4	867.4999	593.8627	243.1678	-5.752m	Back_Curb
5	867.4848	593.7134	243.1678	-5.602m	Top_Curb
6	867.4805	593.6719	242.9428	-5.560m	Flowline_Gutter
7	867.4351	593.2242	242.5698	-5.110m	ETW_SubBase

8	867.4351	593.2242	242.9698	-5.110m	ETW
9	866.6156	585.1554	242.7726	3.000m	ETW_SubBase
10	866.6156	585.1554	243.1726	3.000m	ETW
11	866.5701	584.7077	243.1456	3.450m	Flowline_Gutter
12	866.5659	584.6662	243.3706	3.492m	Top_Curb
13	866.5508	584.5170	243.3706	3.642m	Back_Curb
14	866.4498	583.5231	243.1306	4.641m	EPS_Sub
15	866.4497	583.5221	243.3306	4.642m	EPS
16	866.2515	581.5701	247.2547	6.604m	Daylight

CHAINAGE 0+120.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	885.7933	595.5141	244.2532	-6.342m	Daylight
2	885.8332	595.2726	243.7637	-6.097m	EPS
3	885.8333	595.2716	243.5637	-6.096m	EPS_Sub
4	885.9963	594.2860	243.8037	-5.097m	Back_Curb
5	886.0208	594.1380	243.8037	-4.947m	Top_Curb
6	886.0276	594.0969	243.5787	-4.905m	Flowline_Gutter
7	886.1010	593.6529	243.6057	-4.455m	ETW
8	886.1010	593.6529	243.2057	-4.455m	ETW_SubBase
9	887.3170	586.2983	243.7921	2.999m	ETW
10	887.3170	586.2983	243.3921	2.999m	ETW_SubBase
11	887.3904	585.8543	243.7651	3.449m	Flowline_Gutter
12	887.3972	585.8131	243.9901	3.491m	Top_Curb
13	887.4217	585.6652	243.9901	3.641m	Back_Curb
14	887.5846	584.6795	243.7501	4.640m	EPS_Sub
15	887.5848	584.6786	243.9501	4.641m	Hinge_Cut
16	888.0471	581.8827	249.6177	7.475m	Daylight

CHAINAGE 0+140.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	905.4730	598.2926	246.0833	-5.474m	Daylight
2	905.6276	597.4753	244.4196	-4.642m	EPS
3	905.6278	597.4743	244.2196	-4.641m	EPS_Sub
4	905.8134	596.4927	244.4596	-3.642m	Back_Curb
5	905.8413	596.3453	244.4596	-3.492m	Top_Curb
6	905.8491	596.3043	244.2346	-3.450m	Flowline_Gutter
7	905.9327	595.8621	244.2616	-3.000m	ETW
8	905.9327	595.8621	243.8616	-3.000m	ETW_SubBase

9	907.0477	589.9667	244.4116	3.000m	ETW
10	907.0477	589.9667	244.0116	3.000m	ETW_SubBase
11	907.1314	589.5245	244.3846	3.450m	Flowline_Gutter
12	907.1391	589.4835	244.6096	3.492m	Top_Curb
13	907.1670	589.3361	244.6096	3.642m	Back_Curb
14	907.3526	588.3545	244.3696	4.641m	EPS_Sub
15	907.3528	588.3536	244.5696	4.642m	Hinge_Cut
16	907.9078	585.4194	250.5419	7.628m	Daylight

CHAINAGE 0+160.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	925.4161	601.1802	245.1740	-4.709m	Daylight
2	925.4268	601.1136	245.0391	-4.642m	EPS
3	925.4269	601.1126	244.8391	-4.641m	EPS_Sub
4	925.5847	600.1261	245.0791	-3.642m	Back_Curb
5	925.6084	599.9780	245.0791	-3.492m	Top_Curb
6	925.6150	599.9368	244.8541	-3.450m	Flowline_Gutter
7	925.6861	599.4925	244.8811	-3.000m	ETW
8	925.6861	599.4925	244.4811	-3.000m	ETW_SubBase
9	926.8011	592.5233	245.0575	4.058m	ETW
10	926.8011	592.5233	244.6575	4.058m	ETW_SubBase
11	926.8722	592.0790	245.0305	4.508m	Flowline_Gutter
12	926.8787	592.0378	245.2555	4.549m	Top_Curb
13	926.9024	591.8897	245.2555	4.699m	Back_Curb
14	927.0603	590.9032	245.0155	5.698m	EPS_Sub
15	927.0604	590.9023	245.2155	5.699m	Hinge_Cut
16	927.4863	588.2402	250.6074	8.395m	Daylight

CHAINAGE 0+180.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	946.3307	604.4963	243.8250	-6.475m	Daylight
2	946.2570	602.6641	245.6586	-4.642m	Hinge
3	946.2570	602.6631	245.4586	-4.641m	EPS_Sub
4	946.2168	601.6650	245.6986	-3.642m	Back_Curb
5	946.2108	601.5151	245.6986	-3.492m	Top_Curb
6	946.2091	601.4734	245.4736	-3.450m	Flowline_Gutter
7	946.1910	601.0238	245.1006	-3.000m	ETW_SubBase
8	946.1910	601.0238	245.5006	-3.000m	ETW
9	945.9016	593.8296	245.2806	4.200m	ETW_SubBase

10	945.9016	593.8296	245.6806	4.200m	ETW
11	945.8835	593.3800	245.6536	4.650m	Flowline_Gutter
12	945.8818	593.3383	245.8786	4.692m	Top_Curb
13	945.8758	593.1884	245.8786	4.842m	Back_Curb
14	945.8356	592.1902	245.6386	5.841m	EPS_Sub
15	945.8356	592.1892	245.8386	5.842m	EPS
16	945.7578	590.2561	249.7080	7.776m	Daylight

CHAINAGE 0+200.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	968.2423	602.0103	242.9130	-8.036m	Daylight
2	967.1556	598.7949	246.3070	-4.642m	Hinge
3	967.1553	598.7940	246.1070	-4.641m	EPS_Sub
4	966.8354	597.8476	246.3470	-3.642m	Back_Curb
5	966.7874	597.7055	246.3470	-3.492m	Top_Curb
6	966.7740	597.6660	246.1220	-3.450m	Flowline_Gutter
7	966.6300	597.2396	245.7490	-3.000m	ETW_SubBase
8	966.6300	597.2396	246.1490	-3.000m	ETW
9	964.3246	590.4187	245.9290	4.200m	ETW_SubBase
10	964.3246	590.4187	246.3290	4.200m	ETW
11	964.1805	589.9924	246.3020	4.650m	Flowline_Gutter
12	964.1672	589.9529	246.5270	4.692m	Top_Curb
13	964.1191	589.8108	246.5270	4.842m	Back_Curb
14	963.7993	588.8644	246.2870	5.841m	EPS_Sub
15	963.7990	588.8634	246.4870	5.842m	EPS
16	963.3246	587.4601	249.4497	7.323m	Daylight

CHAINAGE 0+220.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	987.9992	591.9068	243.7307	-7.943m	Daylight
2	986.1094	589.1998	247.0320	-4.642m	Hinge
3	986.1088	589.1990	246.8320	-4.641m	EPS_Sub
4	985.5369	588.3799	247.0720	-3.642m	Back_Curb
5	985.4511	588.2569	247.0720	-3.492m	Top_Curb
6	985.4272	588.2227	246.8470	-3.450m	Flowline_Gutter
7	985.1696	587.8537	246.4740	-3.000m	ETW_SubBase
8	985.1696	587.8537	246.8740	-3.000m	ETW
9	980.9277	581.7777	246.6593	4.410m	ETW_SubBase
10	980.9277	581.7777	247.0593	4.410m	ETW

11	980.6701	581.4088	247.0323	4.860m	Flowline_Gutter
12	980.6462	581.3746	247.2573	4.902m	Top_Curb
13	980.5603	581.2516	247.2573	5.052m	Back_Curb
14	979.9885	580.4325	247.0173	6.051m	EPS_Sub
15	979.9879	580.4316	247.2173	6.052m	EPS
16	979.4529	579.6653	249.0864	6.987m	Daylight

CHAINAGE 0+240.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	1,003.4801	577.3959	245.5445	-6.927m	Daylight
2	1,001.8867	575.7569	247.8304	-4.641m	Hinge
3	1,001.8860	575.7561	247.6304	-4.640m	EPS_Sub
4	1,001.1896	575.0398	247.8704	-3.641m	Back_Curb
5	1,001.0851	574.9323	247.8704	-3.491m	Top_Curb
6	1,001.0560	574.9024	247.6454	-3.450m	Flowline_Gutter
7	1,000.7424	574.5797	247.2724	-3.000m	ETW_SubBase
8	1,000.7424	574.5797	247.6724	-3.000m	ETW
9	995.9218	569.6209	247.4453	3.916m	ETW_SubBase
10	995.9218	569.6209	247.8453	3.916m	ETW
11	995.6081	569.2982	247.8183	4.366m	Flowline_Gutter
12	995.5790	569.2683	248.0433	4.408m	Top_Curb
13	995.4745	569.1608	248.0433	4.558m	Back_Curb
14	994.7781	568.4444	247.8033	5.557m	EPS_Sub
15	994.7774	568.4437	248.0033	5.558m	EPS
16	993.6072	567.2400	251.3610	7.237m	Daylight

CHAINAGE 0+260.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	1,018.6941	564.2170	245.0000	-8.288m	Daylight
2	1,016.1219	561.6318	248.6468	-4.642m	Hinge
3	1,016.1212	561.6311	248.4468	-4.641m	EPS_Sub
4	1,015.4166	560.9230	248.6868	-3.642m	Back_Curb
5	1,015.3108	560.8166	248.6868	-3.492m	Top_Curb
6	1,015.2814	560.7871	248.4618	-3.450m	Flowline_Gutter
7	1,014.9640	560.4681	248.0888	-3.000m	ETW_SubBase
8	1,014.9640	560.4681	248.4888	-3.000m	ETW
9	1,010.7320	556.2148	248.2388	3.000m	ETW_SubBase
10	1,010.7320	556.2148	248.6388	3.000m	ETW
11	1,010.4146	555.8958	248.6118	3.450m	Flowline_Gutter

12	1,010.3852	555.8662	248.8368	3.492m	Top_Curb
13	1,010.2794	555.7599	248.8368	3.642m	Back_Curb
14	1,009.5748	555.0517	248.5968	4.641m	EPS_Sub
15	1,009.5741	555.0510	248.7968	4.642m	EPS
16	1,008.9749	554.4488	250.4958	5.491m	Daylight

CHAINAGE 0+280.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	1,032.5403	549.7773	246.2862	-7.819m	Daylight
2	1,030.2995	547.5253	249.4631	-4.642m	Hinge
3	1,030.2988	547.5245	249.2631	-4.641m	EPS_Sub
4	1,029.5942	546.8164	249.5031	-3.642m	Back_Curb
5	1,029.4884	546.7100	249.5031	-3.492m	Top_Curb
6	1,029.4590	546.6805	249.2781	-3.450m	Flowline_Gutter
7	1,029.1416	546.3615	248.9051	-3.000m	ETW_SubBase
8	1,029.1416	546.3615	249.3051	-3.000m	ETW
9	1,024.9096	542.1082	249.0551	3.000m	ETW_SubBase
10	1,024.9096	542.1082	249.4551	3.000m	ETW
11	1,024.5922	541.7892	249.4281	3.450m	Flowline_Gutter
12	1,024.5628	541.7597	249.6531	3.492m	Top_Curb
13	1,024.4570	541.6533	249.6531	3.642m	Back_Curb
14	1,023.7524	540.9451	249.4131	4.641m	EPS_Sub
15	1,023.7517	540.9444	249.6131	4.642m	EPS
16	1,023.7371	540.9298	249.6544	4.662m	Daylight

CHAINAGE 0+300.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	1,045.5699	534.5169	248.7302	-6.191m	Daylight
2	1,044.4771	533.4187	250.2795	-4.642m	Hinge
3	1,044.4764	533.4180	250.0795	-4.641m	EPS_Sub
4	1,043.7718	532.7098	250.3195	-3.642m	Back_Curb
5	1,043.6660	532.6035	250.3195	-3.492m	Top_Curb
6	1,043.6366	532.5739	250.0945	-3.450m	Flowline_Gutter
7	1,043.3192	532.2549	249.7215	-3.000m	ETW_SubBase
8	1,043.3192	532.2549	250.1215	-3.000m	ETW
9	1,039.0872	528.0016	249.8715	3.000m	ETW_SubBase
10	1,039.0872	528.0016	250.2715	3.000m	ETW
11	1,038.7698	527.6826	250.2445	3.450m	Flowline_Gutter
12	1,038.7404	527.6531	250.4695	3.492m	Top_Curb

13	1,038.6346	527.5467	250.4695	3.642m	Back_Curb
14	1,037.9300	526.8386	250.2295	4.641m	EPS_Sub
15	1,037.9292	526.8378	250.4295	4.642m	EPS
16	1,037.3890	526.2948	251.9615	5.408m	Daylight

CHAINAGE 0+320.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	1,059.1471	519.8069	252.4920	-5.340m	Daylight
2	1,058.6547	519.3121	251.0959	-4.642m	EPS
3	1,058.6540	519.3114	250.8959	-4.641m	EPS_Sub
4	1,057.9494	518.6032	251.1359	-3.642m	Back_Curb
5	1,057.8436	518.4969	251.1359	-3.492m	Top_Curb
6	1,057.8142	518.4673	250.9109	-3.450m	Flowline_Gutter
7	1,057.4968	518.1483	250.9379	-3.000m	ETW
8	1,057.4968	518.1483	250.5379	-3.000m	ETW_SubBase
9	1,053.2648	513.8950	251.0879	3.000m	ETW
10	1,053.2648	513.8950	250.6879	3.000m	ETW_SubBase
11	1,052.9474	513.5760	251.0609	3.450m	Flowline_Gutter
12	1,052.9180	513.5465	251.2859	3.492m	Top_Curb
13	1,052.8122	513.4401	251.2859	3.642m	Back_Curb
14	1,052.1075	512.7320	251.0459	4.641m	EPS_Sub
15	1,052.1068	512.7313	251.2459	4.642m	Hinge_Cut
16	1,050.9394	511.5579	254.5564	6.297m	Daylight

CHAINAGE 0+340.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	1,073.2838	505.6593	251.2721	-5.282m	Daylight
2	1,072.8323	505.2055	251.9123	-4.642m	Hinge
3	1,072.8316	505.2048	251.7123	-4.641m	EPS_Sub
4	1,072.1270	504.4966	251.9523	-3.642m	Back_Curb
5	1,072.0212	504.3903	251.9523	-3.492m	Top_Curb
6	1,071.9917	504.3607	251.7273	-3.450m	Flowline_Gutter
7	1,071.6743	504.0417	251.3543	-3.000m	ETW_SubBase
8	1,071.6743	504.0417	251.7543	-3.000m	ETW
9	1,067.4424	499.7884	251.5043	3.000m	ETW_SubBase
10	1,067.4424	499.7884	251.9043	3.000m	ETW
11	1,067.1250	499.4694	251.8773	3.450m	Flowline_Gutter
12	1,067.0956	499.4399	252.1023	3.492m	Top_Curb
13	1,066.9898	499.3335	252.1023	3.642m	Back_Curb

14	1,066.2851	498.6254	251.8623	4.641m	EPS_Sub
15	1,066.2844	498.6247	252.0623	4.642m	EPS
16	1,065.6994	498.0367	253.7212	5.471m	Daylight

6.4. Vertikalni tok trase

Vertical Alignment: niveletaa

Description:

Station Range: Start: 0+000.00, End: 0+344.18

PVI	Station	Grade Out	Curve Length
0.00	0+000.00	3.10%	
1.00	0+208.18	4.08%	50.963m

Vertical Curve Information:(sag curve) -----			
PVC Station:	0+182.69	Elevation:	245.659m
PVI Station:	0+208.18	Elevation:	246.448m
PVT Station:	0+233.66	Elevation:	247.488m
Low Point:	0+182.69	Elevation:	245.659m
Grade in:	3.10%	Grade out:	4.08%
Change:	0.98%	K:	
Curve Length:	50.963m		
Headlight Distance:			

7. LITERATURA

- 1) Prof. dr. sc. Željko Korlaet, Prof. dr. sc. Vesna Dragčević “Osnove projektiranja cesta“, Građevinski Fakultet Sveučilišta u Zagrebu, Zagreb, 2003.
- 2) Ministarstvo pomorstva, prometa i veza, “Pravilnik o osnovnim uvjetima kojima javne ceste izvan naselja i njihovi elementi moraju udovoljavati sa stajališta sigurnosti prometa“, Narodne novine, Zagreb, 30. studenoga 2001.
- 3) Hrvatske ceste – Hrvatske autoceste, „Opći tehnički uvjeti za radove na cestama“, Institut građevinarstva Hrvatske, Zagreb, prosinac 2001.
- 4) Zakon o gradnji 153/13