Idejni projekt lokalne ceste

Mamić, Andrea

Undergraduate thesis / Završni rad

2021

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University of Split, Faculty of Civil Engineering, Architecture and Geodesy / Sveučilište u Splitu, Fakultet građevinarstva, arhitekture i geodezije

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SVEUČILIŠTE U SPLITU

FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE

ZAVRŠNI RAD

ANDREA MAMIĆ

Split, 2021.

SVEUČILIŠTE U SPLITU

FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE

IDEJNI PROJEKT LOKALNE CESTE

Završni rad

Split, 2021.

SVEUČILIŠTE U SPLITU

FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE

Split, Matice hrvatske 15

STUDIJ: **PREDDIPLOMSKI SVEUČILIŠNI STUDIJ GRAĐEVINARSTVA**

KANDIDAT: Andrea Mamić

MATIČNI BROJ (JMBAG): 0083223441

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 2021.

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 uvjetima za 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

SADRŽAJ

1. PROGRAMSKI ZADATAK……..……...1.str.
2. TEHNIČKI OPIS……..2.str.

2.1. Općenito……2.str.

2.2. Horizontalni elementi……..……..2.str.

2.3. Vertikalni elementi ……...……...…….2.str.

2.4. Poprečni presjek……...…….2.str.

2.5. Kolnička konstrukcija……..……..2.str.

2.6. Odvodnja……...……3.str.

2.7. Oprema ceste…….3.str.

3. GRAFIČKI PRILOZI……...……4.str.

3.1. Situacija M 1:1000……...……5.str.

3.2. Uzdužni presjek M 1:1000/100…….6.str.

3.3. Normalni poprečni presjek M 1:50…….……..9.str.

3.4. Karakteristični poprečni presjeci M 1:200……..11.str.

4. TABLICA UKUPNOG VOLUMENA ZEMLJANIH RADOVA…….25.str.
5. OBRADA NA RAČUNALU……..……28.str.
6. IZLAZNI PODACI IZ PROGRAMA…….…….....……..29.str.

6.1. Koordinatni račun glavnih točaka osi…….……30.str.

6.2.Koordinatni račun detaljnih točaka osi……...…41.str.

6.3.Račun kota kolnika……...……43.str.

6.4.Vertikalni tok trase……..……52.str.

7. LITERATURA…….……..……...54.str.

1. PROGRAMSKI ZADATAK

SVEUČILIŠTE U SPLITU
FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE

Split, ak.god. 2020/2021.

Katedra za prometnice

Studij: Preddiplomski

Nastavni predmet: CESTE

Student/ica: ANDREA MAMIĆ

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. Aproksimativni troškovnik

Predmetna nastavnica:

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

REDMI NOTE 9
AI QUAD CAMERA

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 180 metara nadmorske visine, do točke B koja se nalazi na 155metra nadmorske visine. Cesta je projektirana za prosječni dnevni promet od 950 vozila na dan i to na brdovitom terenu (ceste 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 311m, a sastoji se od tri pravca i dvije krivine. Prva krivina ima radijus 50 m, a duljinu prijelaznice 30 m, a druga krivina ima radijus 90,a duljinu prijelaznice 40. Svaka krivina je konstruirana pomoću dvije prijelaznice oblika klotoide i jednog kružnog luka. Proširenje kružnog luka za promet teretnih vozila s priključkom u prvoj i u drugoj krivini iznosi 1.68 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 tri pravca i dvije krivine. Nagib prvog pravca iznosi 8,9%, a drugog 7.8%. Tangenta krivine je dužine 40,15 m, a radijus konkavne krivine 500 m.

2.4. Poprečni presjek

Projektirana cesta ima dva kolnička traka širine svakog po 3 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 1:1.5, 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

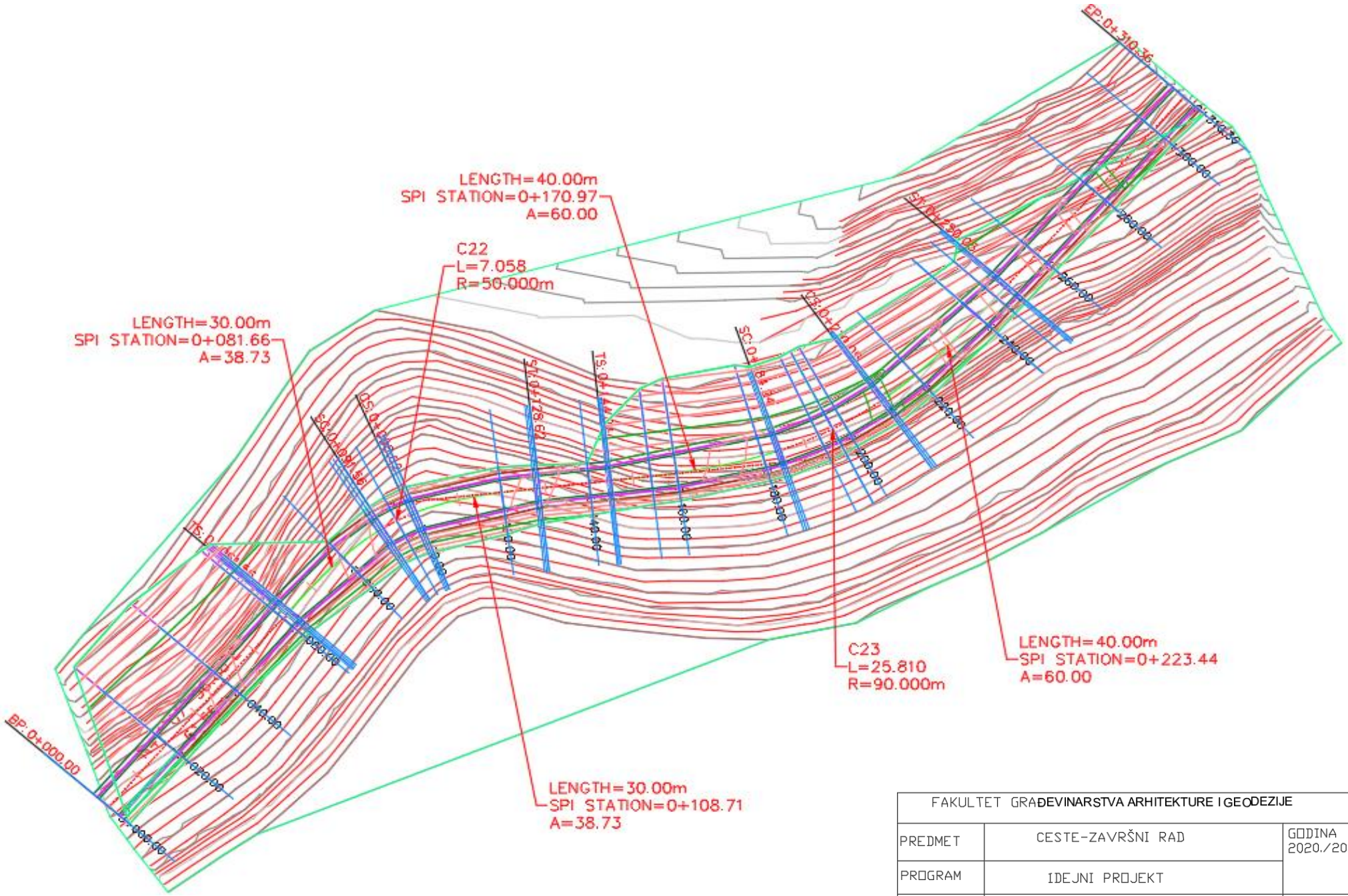
Odvodnja kolnika predviđa se otvorenim sustavom odvodnje prihvaćanjem kolničkih pribrežnih voda u zasjeku i usjeku u betonske rigole te kontroliranim ispuštanjem u teren direktno ili betonskim cijevnim propustima kroz trup kolnika.

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.

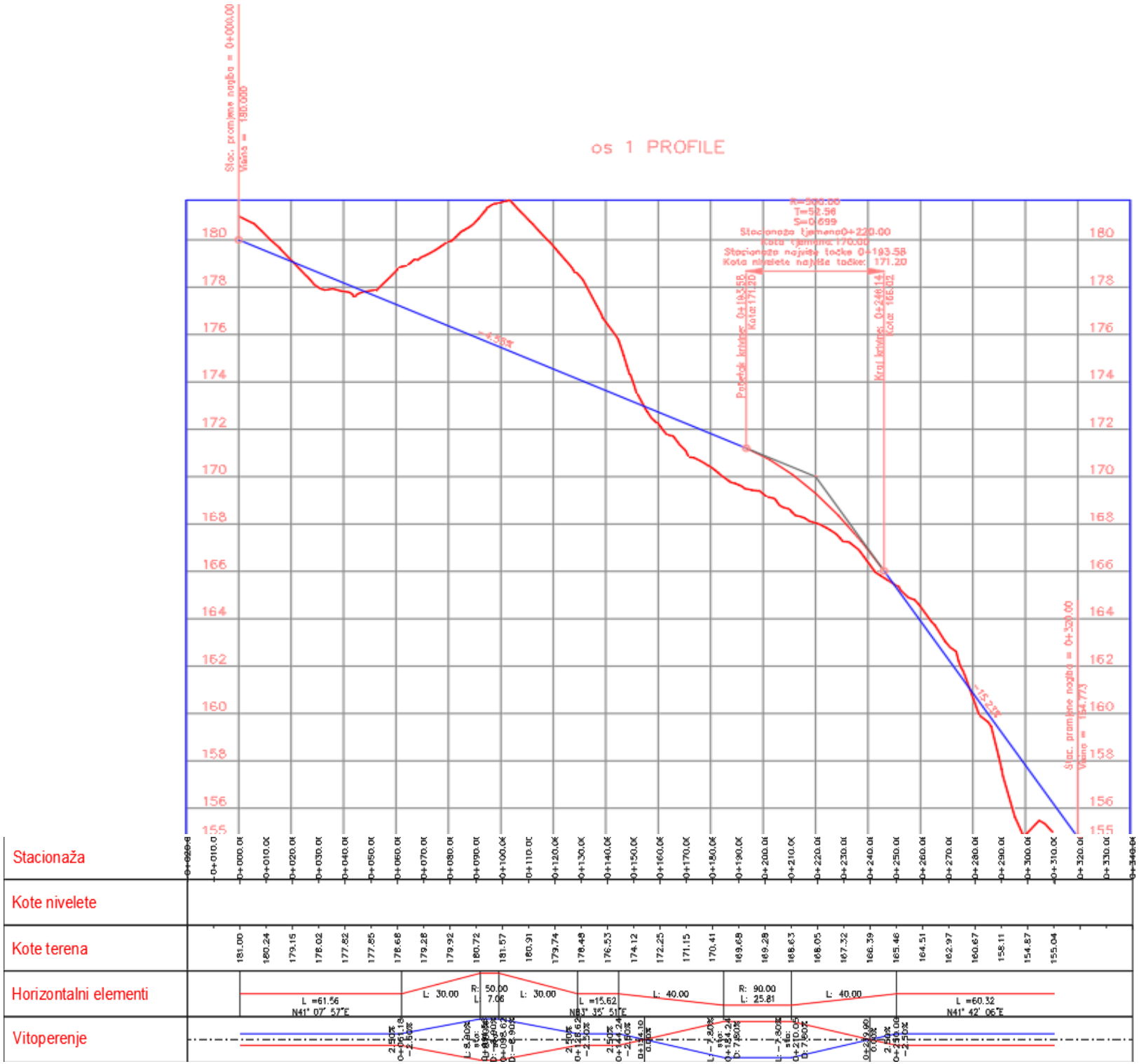
3. GRAFIČKI PRILOZI

3.1. Situacija M 1:1000



FAKULTET GRAĐEVINARSTVA ARHITEKTURE I GEODEZIJE		
PREDMET	CESTE-ZAVRŠNI RAD	GODINA 2020./2021.
PROGRAM	IDEJNI PROJEKT	
SADRŽAJ	GRAĐEVINSKA SITUACIJA	M 1:1000
STUDENTICA	ANDREA MAMIĆ	

3.2. Uzdužni presjek M 1:1000/100



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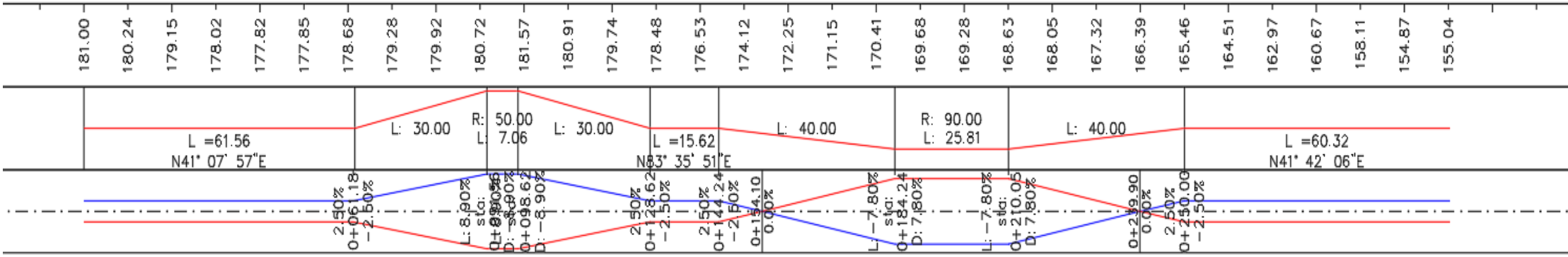
PREDMET	CESTE-ZAVRŠNI RAD	GODINA 2020./2021.
PROGRAM	IDEJNI PROJEKT	
SADRŽAJ	UZDUŽNI PRESJEK	M 1:1000/100
STUDENTICA	ANDREA MAMIĆ	



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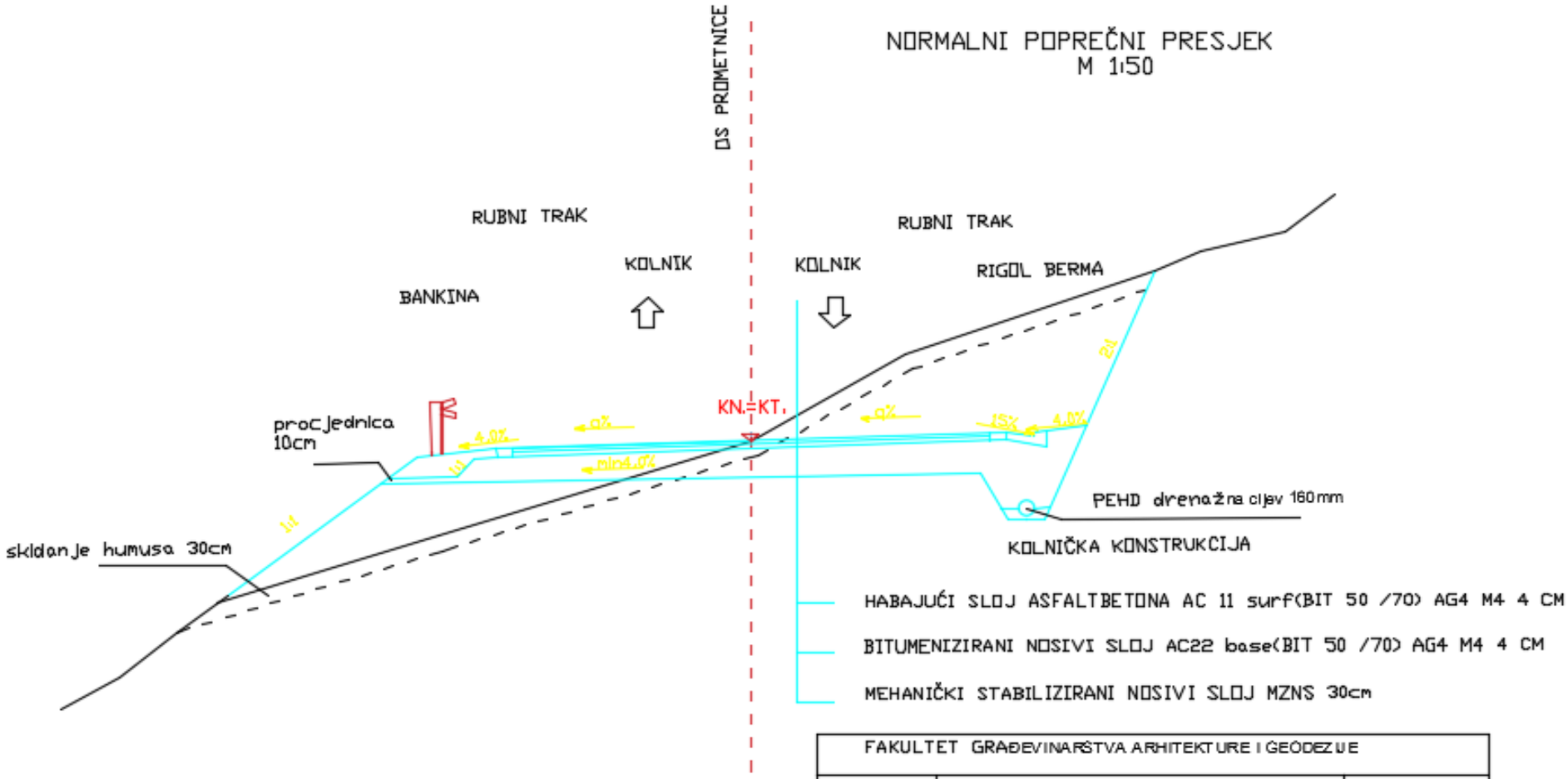
PREDMET	CESTE-ZAVRŠNI RAD	GODINA 2020./2021.
PROGRAM	IDEJNI PROJEKT	
SADRŽAJ	UZDUŽNI PRESJEK	M 1:1000/100
STUDENTICA	ANDREA MAMIĆ	

3.3. Normalni poprečni presjek M 1:50

NORMALNI POPREČNI PRESJEK
M 1:50



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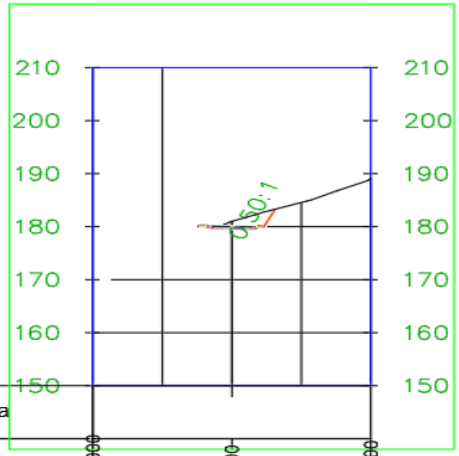
PREDMET	CESTE-ZAVRŠNI RAD	GODINA 2020./2021.
PROGRAM	IDEJNI PROJEKT	
SADRŽAJ	KARAKTERISTIČNI POPREČNI PRESJECI	M 1:200
STUDENTICA	ANDREA MAMIĆ	

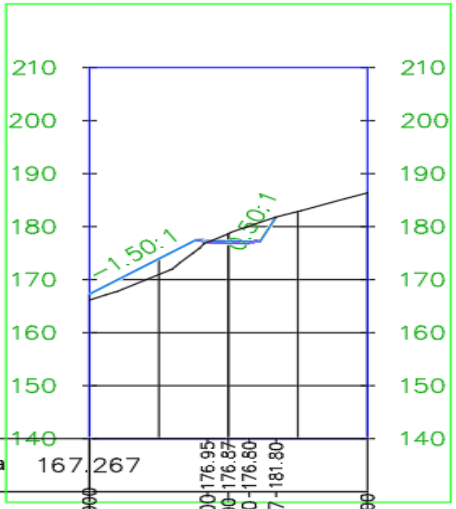
3.4. Karakteristični poprečni presjeci M 1:200

0+000.00



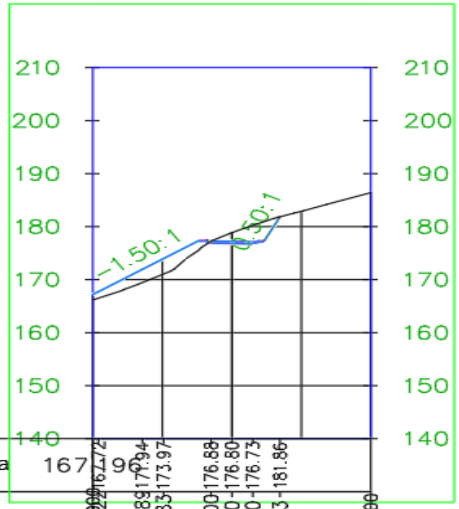
Kote projekta		
Udaljenost od osi	20.000	0.000 20.000
Kote terena		

0+060.00



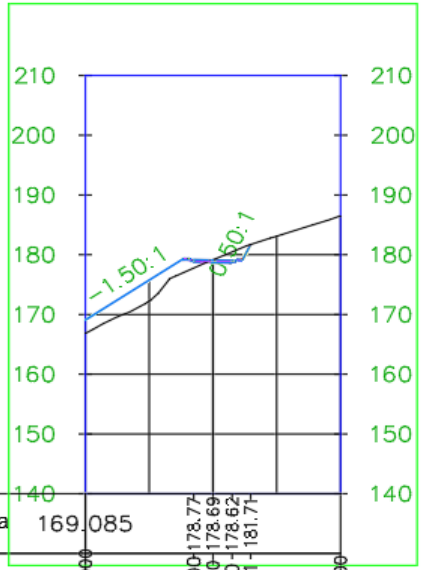
Kote projekta	167.267				
Udaljenost od osi	20.000	3.00	0.000	3.00	6.87 20.000
Kote terena	167.27	176.95	176.87	176.80	181.80

0+061.56



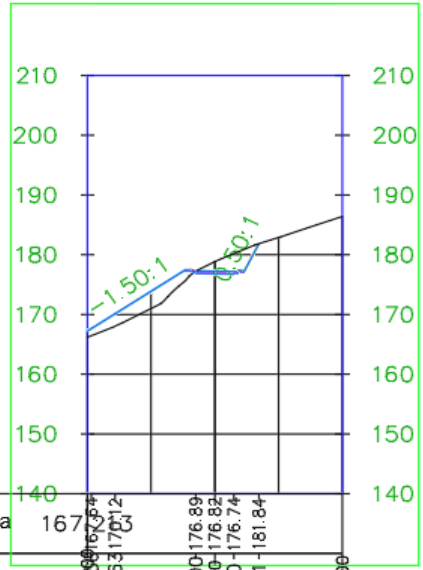
Kote projekta	167.90				
Udaljenost od osi	20.000	12.83	3.00	0.00	3.00 6.93 20.000
Kote terena	167.90	171.94	176.88	176.80	176.73 181.86

0+020.00



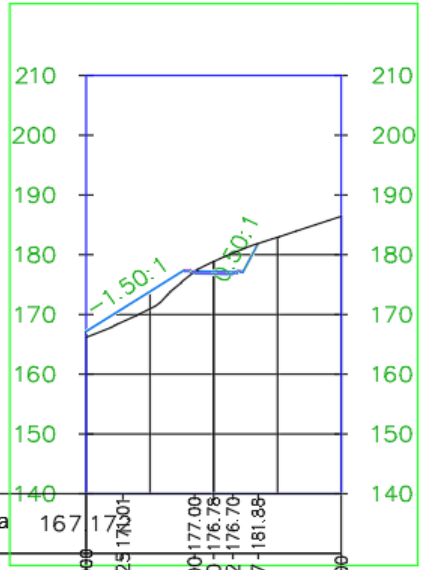
Kote projekta	169.085				
Udaljenost od osi	20.000	3.00	0.000	3.00	5.91 20.000
Kote terena	169.09	178.77	178.69	178.62	181.71

0+061.18



Kote projekta	167.213				
Udaljenost od osi	20.000	15.63	3.00	0.000	3.00 6.91 20.000
Kote terena	167.64	170.12	176.89	176.82	176.74 181.84

0+062.08



Kote projekta	167.17				
Udaljenost od osi	20.000	14.25	3.00	0.00	3.02 6.97 20.000
Kote terena	167.17	171.01	177.00	176.78	176.70 181.88

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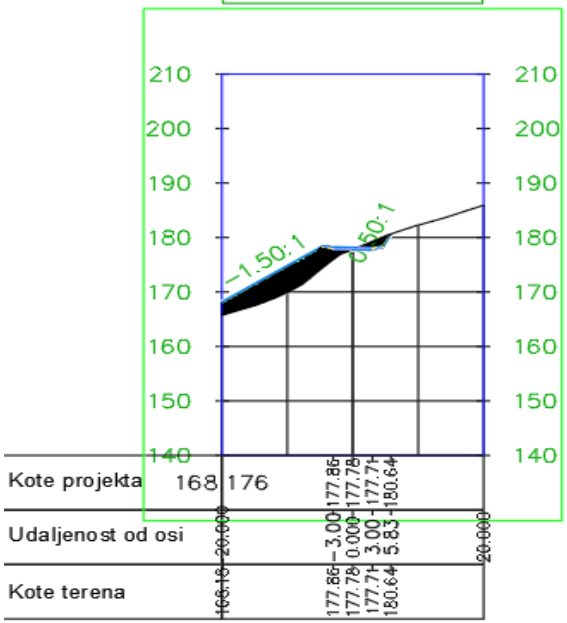
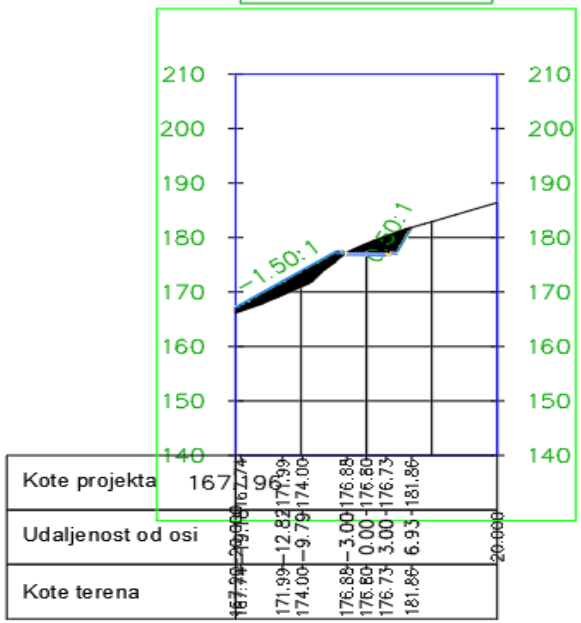
PREDMET	CESTE-ZAVRŠNI RAD	GODINA 2020./2021.
PROGRAM	IDEJNI PROJEKT	
SADRŽAJ	KARAKTERISTIČNI POPREČNI PRESJECI	M 1:200
STUDENTICA	ANDREA MAMIĆ	

0+040.00



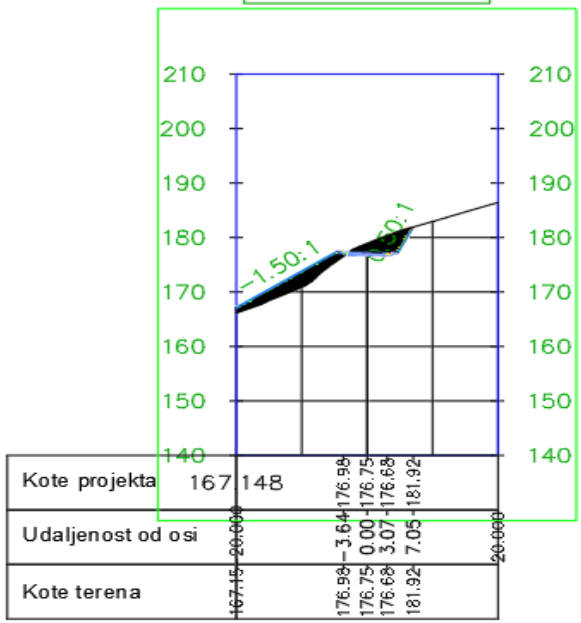
Kote projekta	168	176									
Udaljenost od osi	-20.000	-16.19	-3.00	0.00	3.00	5.83	20.000				
Kote terena	166.19	175.96	177.86	177.78	177.71	180.64					

0+061.56



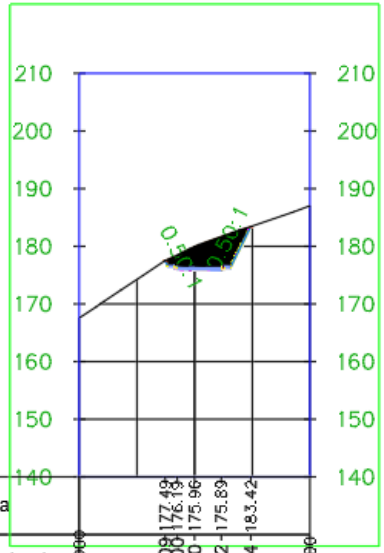
Kote projekta	167	90									
Udaljenost od osi	-20.000	-12.82	-3.00	0.00	3.00	6.93	20.000				
Kote terena	171.99	174.00	176.88	176.80	176.73	181.86					

0+062.61



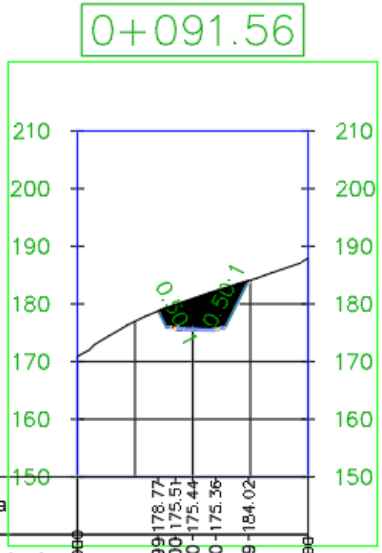
Kote projekta	167	148									
Udaljenost od osi	-20.000	-3.64	0.00	3.07	7.05	20.000					
Kote terena	176.98	176.75	176.68	181.92							

0+080.00



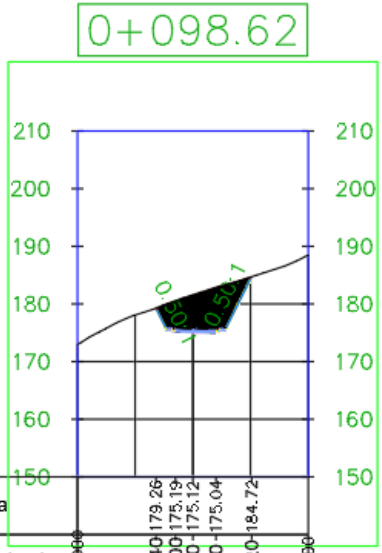
Kote projekta											
Udaljenost od osi	-20.000	-5.08	-3.00	0.00	4.62	9.74	20.000				
Kote terena	177.49	176.19	175.96	175.89	183.42						

0+091.56



Kote projekta											
Udaljenost od osi	-20.000	-5.99	-3.00	0.00	4.00	9.69	20.000				
Kote terena	178.77	175.51	175.44	175.36	184.02						

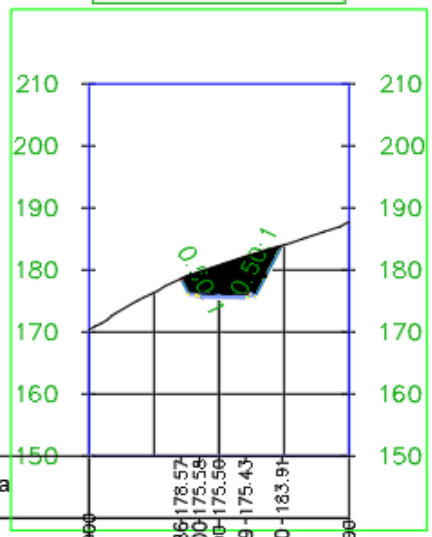
0+098.62



Kote projekta											
Udaljenost od osi	-20.000	-6.40	-3.00	0.00	4.00	10.20	20.000				
Kote terena	179.26	175.19	175.12	175.04	184.72						

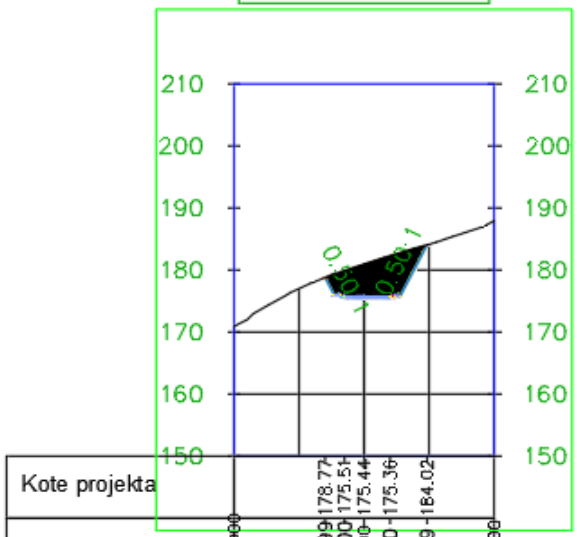
FAKULTET GRAĐEVINARSTVA ARHITEKTURE I GEODEZIJE		
PREDMET	CESTE-ZAVRŠNI RAD	GODINA 2020./2021.
PROGRAM	IDEJNI PROJEKT	
SADRŽAJ	KARAKTERISTIČNI POPREČNI PRESJECI	M 1:200
STUDENTICA	ANDREA MAMIĆ	

0+090.10



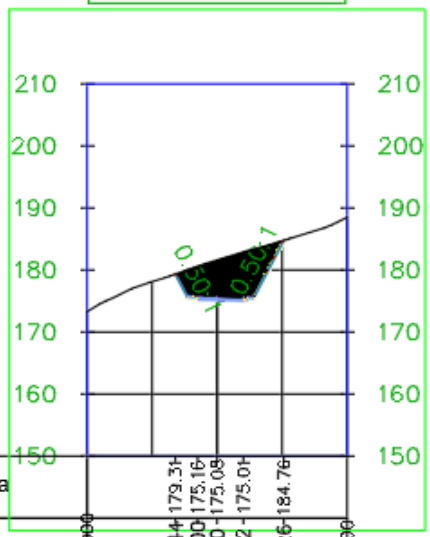
Kote projekta			178.57	175.58	175.50	175.43	183.91	
Udaljenost od osi	20.000	−5.86	−3.00	0.000	4.09	9.70	20.000	
Kote terena		178.57	175.58	175.50	175.43	183.91		

0+091.56



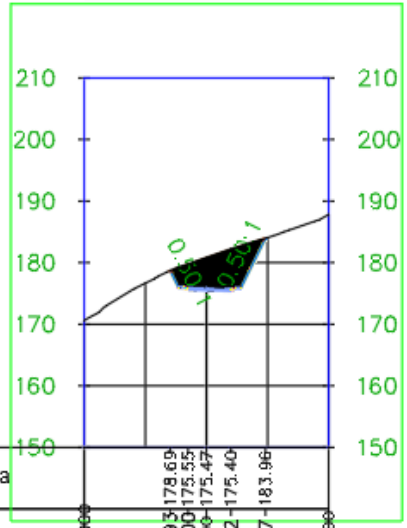
Kote projekta			178.77	175.51	175.44	175.36	184.02	
Udaljenost od osi	20.000	−5.99	−3.00	0.000	4.00	9.69	20.000	
Kote terena		178.77	175.51	175.44	175.36	184.02		

0+099.36



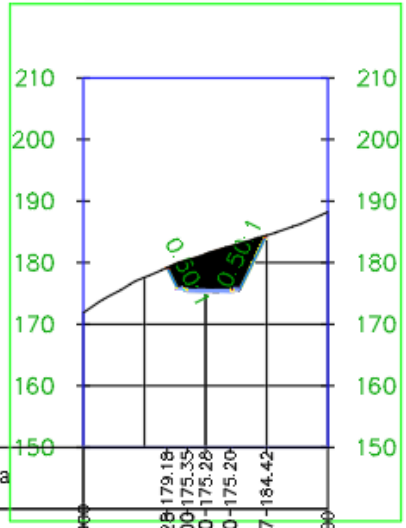
Kote projekta			179.31	175.16	175.09	175.01	184.76	
Udaljenost od osi	20.000	−6.44	−3.00	0.00	4.02	10.26	20.000	
Kote terena		179.31	175.16	175.09	175.01	184.76		

0+090.83



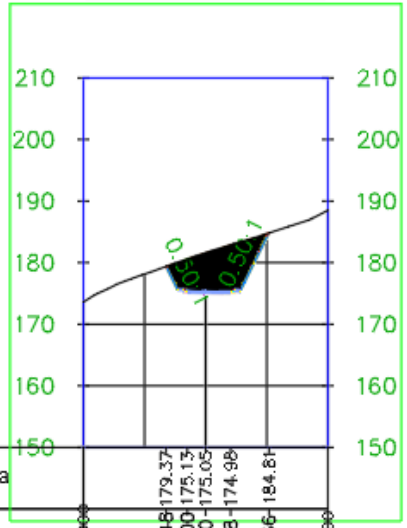
Kote projekta			178.69	175.55	175.47	175.40	183.96	
Udaljenost od osi	20.000	−5.93	−3.00	0.000	4.02	9.67	20.000	
Kote terena		178.69	175.55	175.47	175.40	183.96		

0+095.09



Kote projekta			179.18	175.35	175.28	175.20	184.42	
Udaljenost od osi	20.000	−6.28	−3.00	0.00	4.00	9.97	20.000	
Kote terena		179.18	175.35	175.28	175.20	184.42		

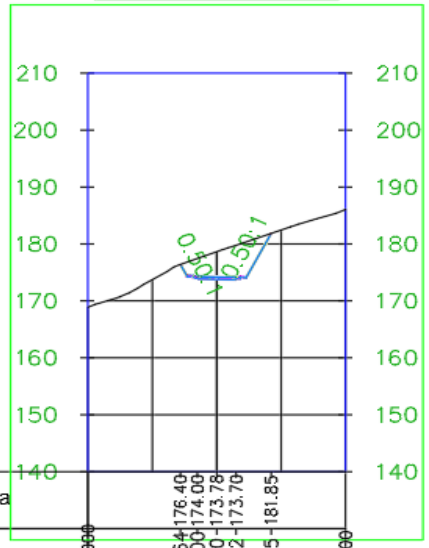
0+100.00



Kote projekta			179.37	175.13	175.05	174.98	184.81	
Udaljenost od osi	20.000	−6.48	−3.00	0.00	4.08	10.36	20.000	
Kote terena		179.37	175.13	175.05	174.98	184.81		

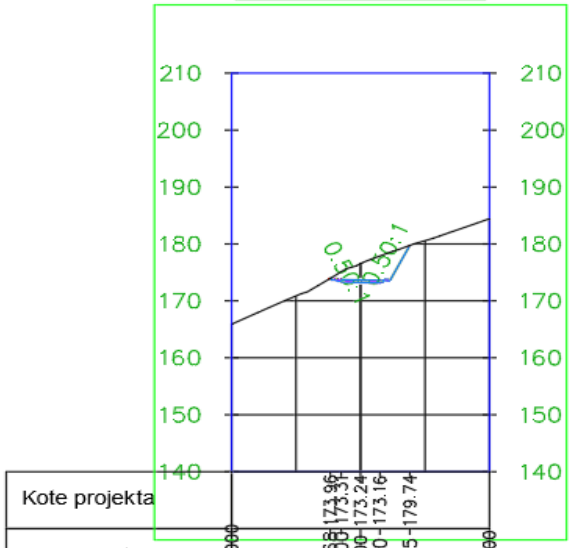
FAKULTET GRAĐEVINARSTVA ARHITEKTURE I GEODEZIJE		
PREDMET	CESTE-ZAVRŠNI RAD	GODINA 2020./2021.
PROGRAM	IDEJNI PROJEKT	
SADRŽAJ	KARAKTERISTIČNI POPREČNI PRESJECI	M 1:200
STUDENTICA	ANDREA MAMIĆ	

0+128.10



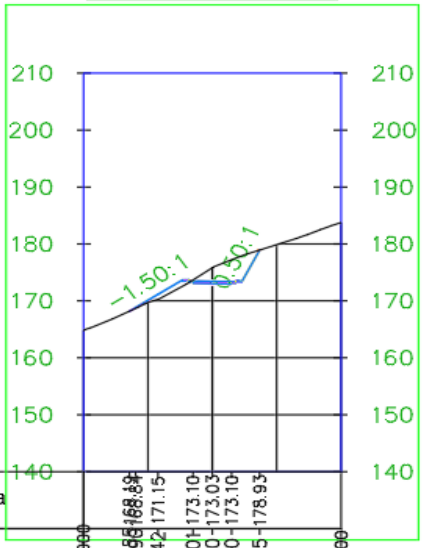
Kote projekta		176.40	176.40	174.00	173.78	181.85
Udaljenost od osi	20.000	-5.64	-3.00	0.00	3.02	8.45	20.000
Kote terena		176.40	174.00	173.78	173.70	181.85

0+140.00



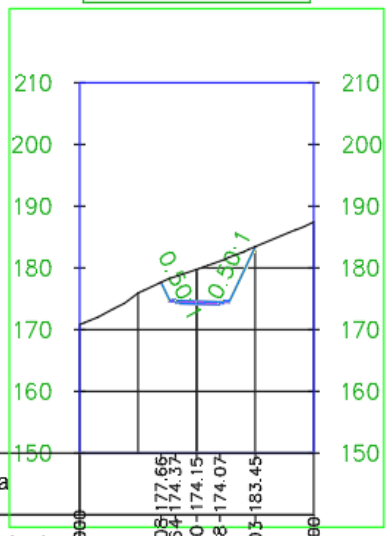
Kote projekta		173.96	173.31	173.24	173.16	179.74
Udaljenost od osi	20.000	-4.68	-3.00	0.00	3.00	7.65	20.000
Kote terena		173.96	173.31	173.24	173.16	179.74

0+144.63



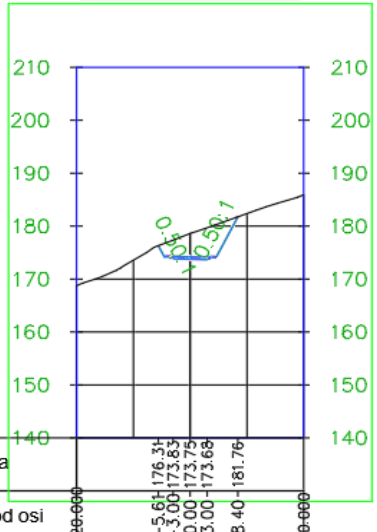
Kote projekta		168.84	168.84	173.10	173.03	178.93
Udaljenost od osi	20.000	-12.96	-3.01	0.00	3.00	7.35	20.000
Kote terena		171.15	173.10	173.03	173.10	178.93

0+120.00



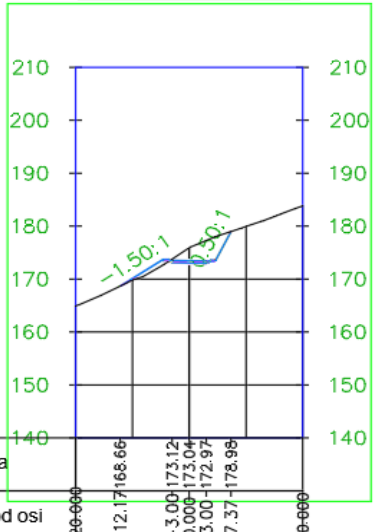
Kote projekta		177.66	174.37	174.15	174.07	183.45
Udaljenost od osi	20.000	-6.08	-3.64	0.00	3.98	10.03	20.000
Kote terena		177.66	174.37	174.15	174.07	183.45

0+128.62



Kote projekta		176.31	173.83	173.75	173.68	181.76
Udaljenost od osi	20.000	-5.61	-3.00	0.00	3.00	8.40	20.000
Kote terena		176.31	173.83	173.75	173.68	181.76

0+144.24

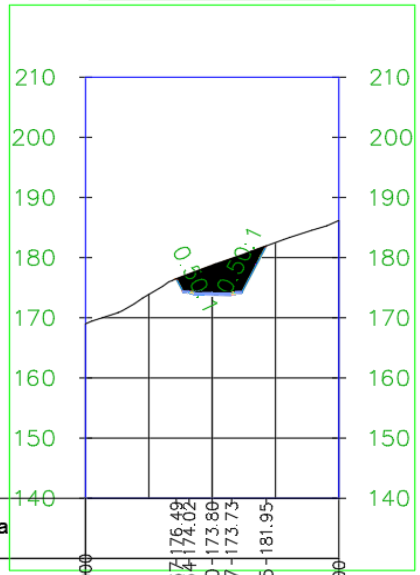


Kote projekta		168.66	173.12	173.04	172.97	178.98
Udaljenost od osi	20.000	-12.17	-3.00	0.00	3.00	7.37	20.000
Kote terena		168.66	173.12	173.04	172.97	178.98

FAKULTET GRAĐEVINARSTVA ARHITEKTURE I GEODEZIJE		
PREDMET	CESTE-ZAVRŠNI RAD	GODINA 2020./2021.
PROGRAM	IDEJNI PROJEKT	
SADRŽAJ	KARAKTERISTIČNI POPREČNI PRESJECI	M 1:200
STUDENTICA	ANDREA MAMIĆ	

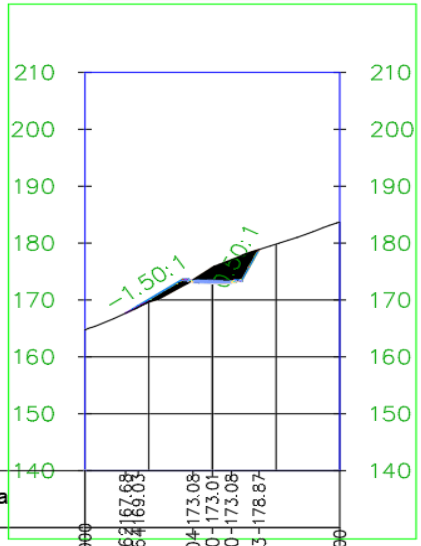
nej

0+127.58



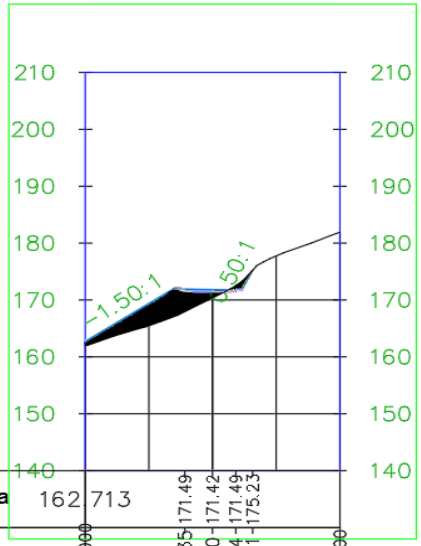
| | | |

0+145.02



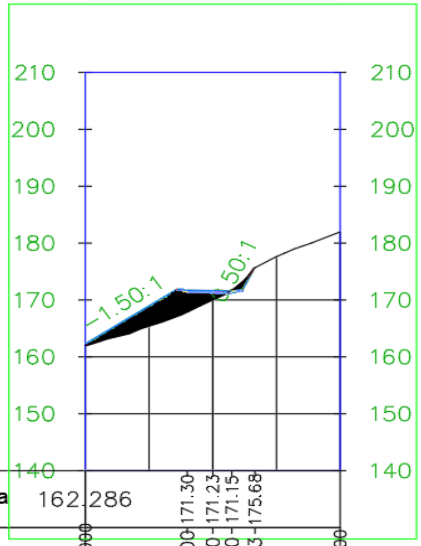
Kote projekta									
Udaljenost od osi	20.000	-13.62	-11.64	-3.04	0.00	3.00	7.33		20.000
Kote terena	167.68	169.03		173.08	173.01	173.08	178.87		

0+180.00



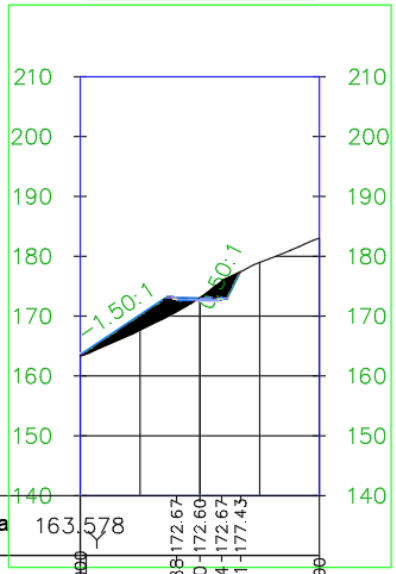
Kote projekta	162.713								
Udaljenost od osi	20.000			-4.35	0.00	3.64	6.31		20.000
Kote terena	162.71			171.49	171.42	171.49	175.23		

0+184.24



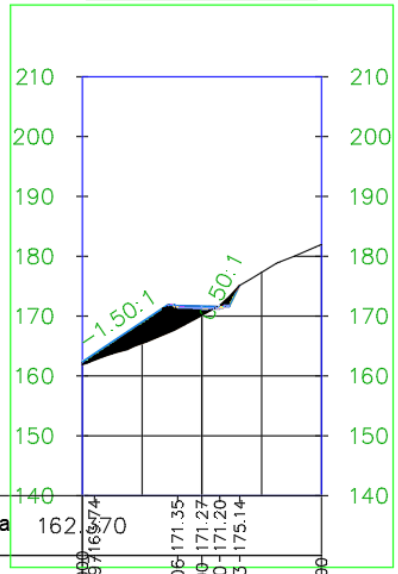
Kote projekta	162.286								
Udaljenost od osi	20.000			-4.00	0.00	3.00	6.63		20.000
Kote terena	162.29			171.30	171.23	171.15	175.68		

0+154.10



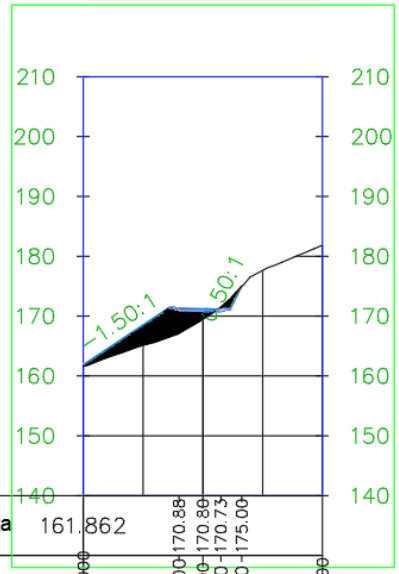
Kote projekta	163.578								
Udaljenost od osi	20.000		-3.88		0.00	3.64	6.81		20.000
Kote terena	163.58		172.67	172.60	172.60	172.67	177.43		

0+183.20



Kote projekta	162.370								
Udaljenost od osi	20.000			-4.06	0.000	3.00	6.33		20.000
Kote terena	163.37	163.74	17.91	171.35	171.27	171.20	175.14		

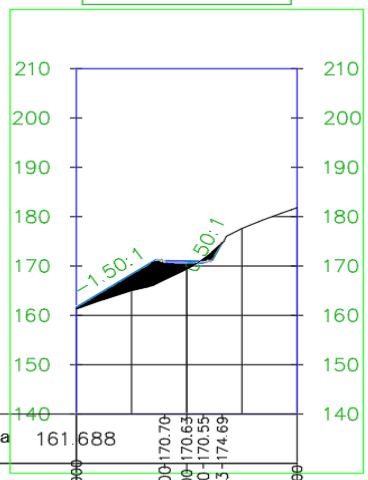
0+193.58



Kote projekta	161.862								
Udaljenost od osi	20.000			-4.00	0.000	3.00	6.50		20.000
Kote terena	161.86			170.88	170.80	170.73	175.00		

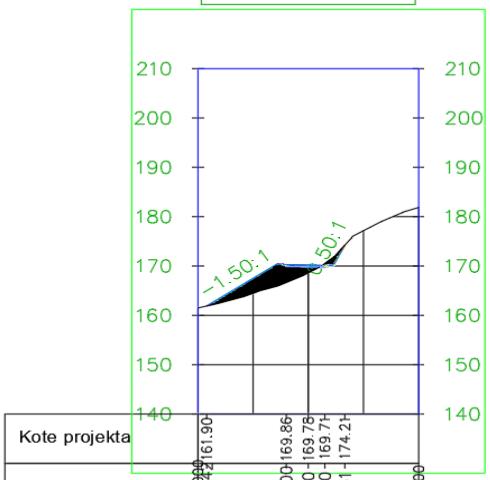
FAKULTET GRAĐEVINARSTVA ARHITEKTURE I GEODEZIJE		
PREDMET	CESTE-ZAVRŠNI RAD	GODINA 2020./2021.
PROGRAM	IDEJNI PROJEKT	
SADRŽAJ	KARAKTERISTIČNI POPREČNI PRESJECI	M 1:200
STUDENTICA	ANDREA MAMIĆ	

0+197.12



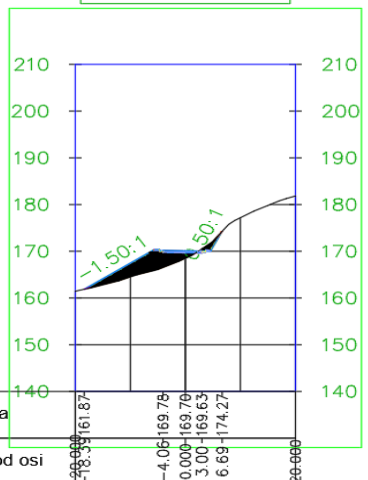
Kote projekta	161.688		170.70	−4.00	170.70			
Udaljenost od osi		20.000	0.000		0.000	3.00	6.43	20.000
Kote terena		161.69	170.63		170.63	170.55	174.69	

0+210.00



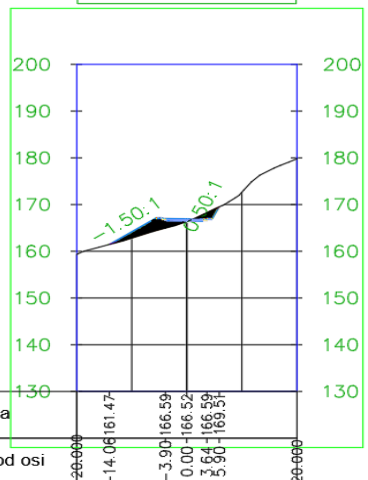
Kote projekta			161.90	−4.00	169.86			
Udaljenost od osi		20.000	0.000		0.000	3.00	6.61	20.000
Kote terena		161.90	169.78		169.78	169.71	174.21	

0+211.04



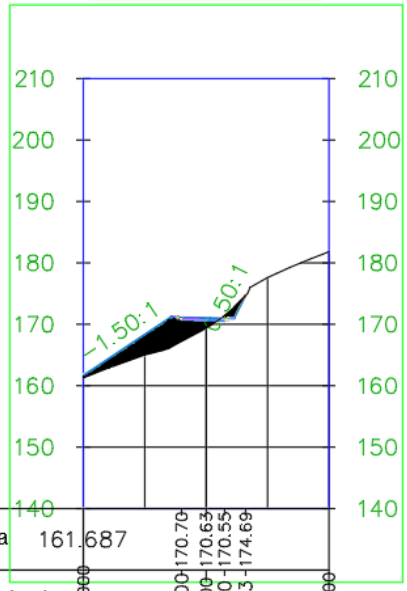
Kote projekta			161.87	−4.06	169.78			
Udaljenost od osi		20.000	0.000		0.000	3.00	6.69	20.000
Kote terena		161.87	169.70		169.70	169.63	174.27	

0+240.00



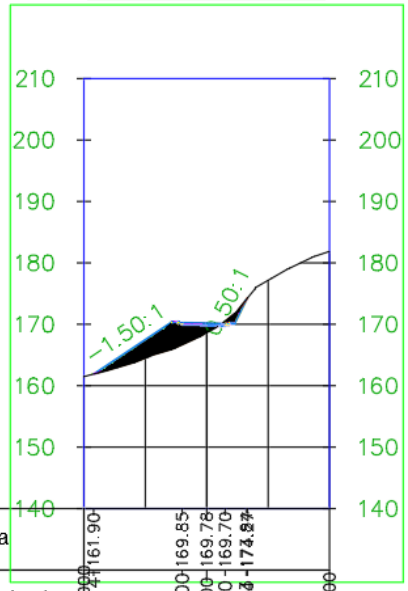
Kote projekta			161.47	−14.06	161.47			
Udaljenost od osi		20.000	0.000		0.00	3.64	5.90	20.000
Kote terena		161.47	166.59		166.52	166.59	169.51	

0+197.14



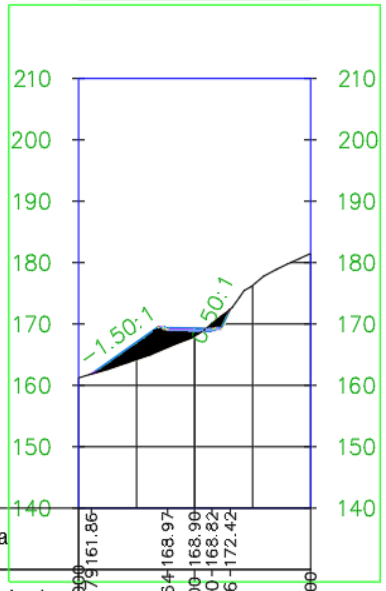
Kote projekta	161.687		170.70	−4.00	170.70			
Udaljenost od osi		20.000	0.000		0.000	3.00	6.43	20.000
Kote terena		161.69	170.63		170.63	170.55	174.69	

0+210.05



Kote projekta			161.90	−4.00	169.85			
Udaljenost od osi		20.000	0.000		0.000	3.00	6.61	20.000
Kote terena		161.90	169.78		169.78	169.70	174.21	

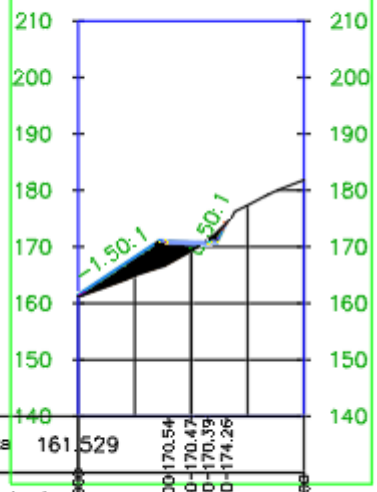
0+220.00



Kote projekta			161.86	−4.64	168.97			
Udaljenost od osi		20.000	0.000		0.000	3.00	6.16	20.000
Kote terena		161.86	168.90		168.90	168.82	172.42	

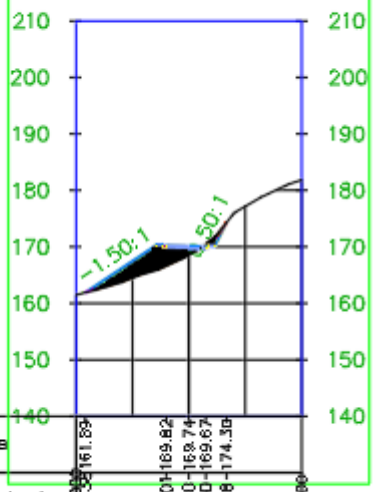
FAKULTET GRAĐEVINARSTVA ARHITEKTURE I GEODEZIJE		
PREDMET	CESTE-ZAVRŠNI RAD	GODINA 2020./2021.
PROGRAM	IDEJNI PROJEKT	
SADRŽAJ	KARAKTERISTIČNI POPREČNI PRESJECI	M 1:200
STUDENTICA	ANDREA MAMIĆ	

0+200.00



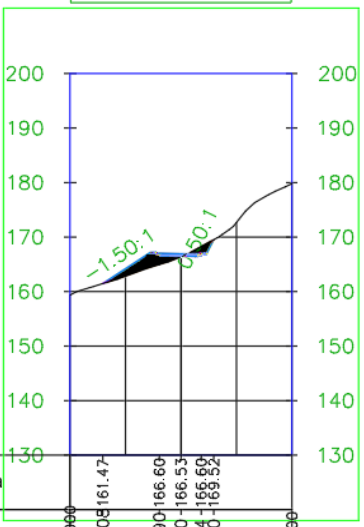
Kote projekta	161.529			170.54		170.47	170.39	174.26	
Udaljenost od osi	20.000			−4.00		0.00	3.00	6.30	20.000
Kote terena	161.53			170.54		170.47	170.39	174.26	

0+210.52



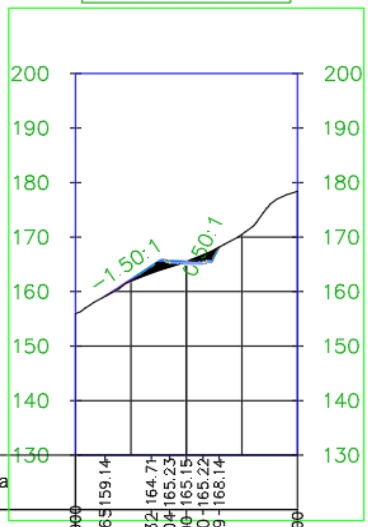
Kote projekta				161.89		169.82	168.74	169.67	174.39
Udaljenost od osi				−18.39		−4.01	0.00	3.00	6.68	20.000
Kote terena				161.89		169.82	168.74	169.67	174.39	

0+239.90



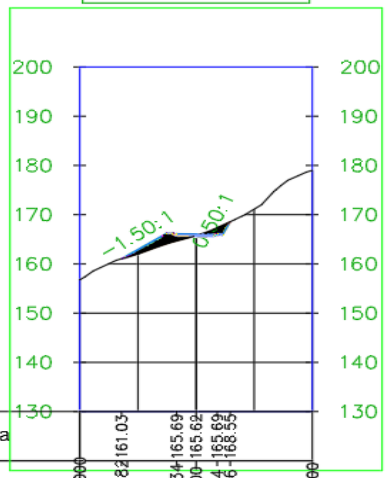
Kote projekta				161.47		166.60	166.53	166.60	169.52
Udaljenost od osi	20.000			−14.09		−3.90	0.00	3.64	5.90	20.000
Kote terena	161.47			161.47		166.60	166.53	166.60	169.52	

0+249.21



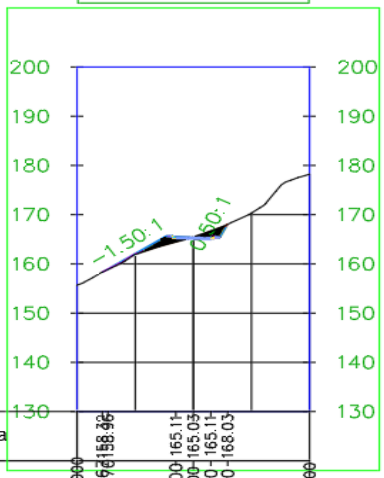
Kote projekta				159.14		164.71	165.23	165.15	165.22
Udaljenost od osi	20.000			−14.65		−6.32	−3.04	0.000	3.00	20.000
Kote terena	159.14			159.14		164.71	165.23	165.15	165.22	168.14

0+246.14



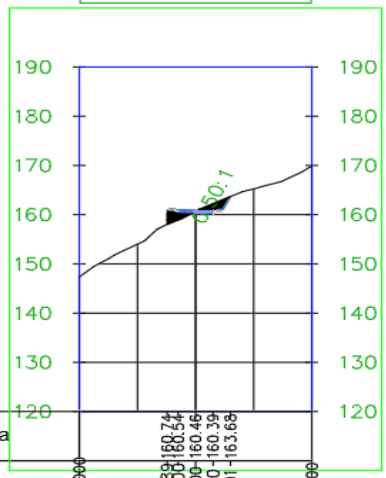
Kote projekta				161.03		165.69	165.62	165.69	168.55
Udaljenost od osi	20.000			−12.82		−3.34	0.000	3.64	5.86	20.000
Kote terena	161.03			161.03		165.69	165.62	165.69	168.55	

0+250.00



Kote projekta				158.96		165.11	165.03	165.11	168.03
Udaljenost od osi	20.000			−15.67		−3.00	0.000	3.00	5.90	20.000
Kote terena	158.96			158.96		165.11	165.03	165.11	168.03	

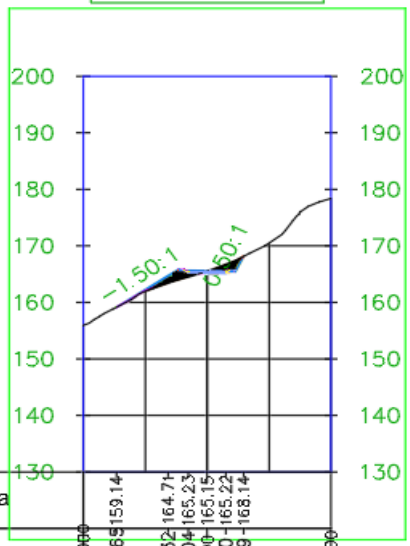
0+280.00



Kote projekta				160.74		160.54	160.46	160.39	163.68
Udaljenost od osi	20.000			−4.89		−3.00	0.000	3.00	6.01	20.000
Kote terena	160.74			160.54		160.46	160.39	163.68		

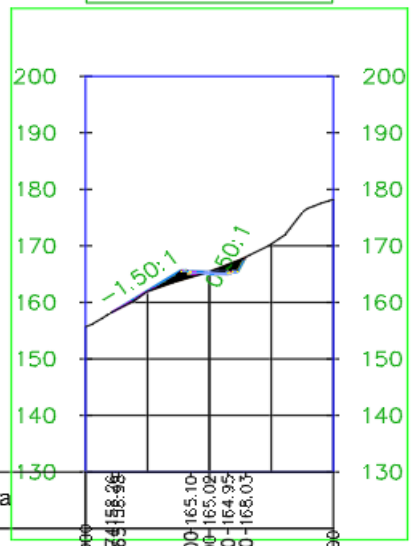
FAKULTET GRAĐEVINARSTVA ARHITEKTURE I GEODEZIJE		
PREDMET	CESTE-ZAVRŠNI RAD	GODINA 2020./2021.
PROGRAM	IDEJNI PROJEKT	
SADRŽAJ	KARAKTERISTIČNI POPREČNI PRESJECI	M 1:200
STUDENTICA	ANDREA MAMIĆ	

0+249.21



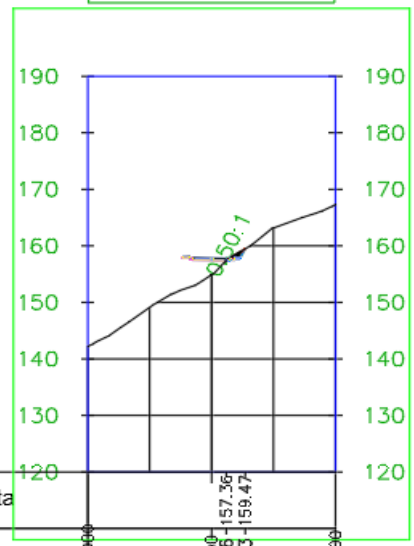
Kote projekta		159.14	164.71	165.23	165.15	165.22	168.14	
Udaljenost od osi	20.000	-14.65	-6.32	-3.04	0.000	3.00	5.89	20.000
Kote terena		159.14	164.71	165.23	165.15	165.22	168.14	

0+250.05



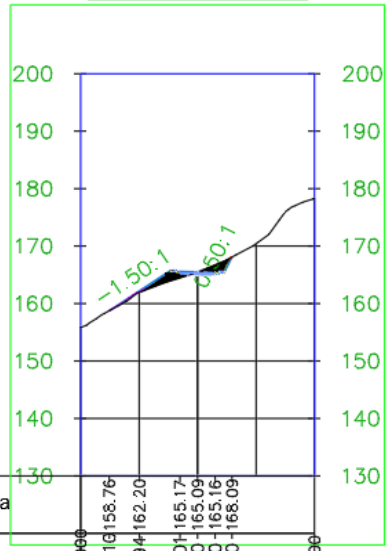
Kote projekta		158.98	165.10	165.02	164.95	168.03		
Udaljenost od osi	20.000	-14.74	-3.00	0.000	3.00	5.90		20.000
Kote terena		158.98	165.10	165.02	164.95	168.03		

0+300.00



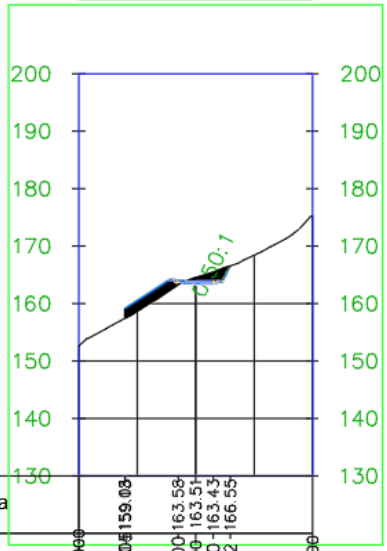
Kote projekta		157.36	159.47		
Udaljenost od osi	20.000	0.000	5.43		20.000
Kote terena		157.36	159.47		

0+249.61



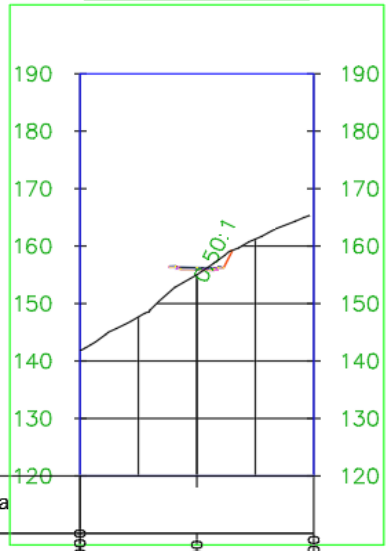
Kote projekta		158.76	162.20	165.17	165.09	165.16	168.09	
Udaljenost od osi	20.000	-15.10	-9.94	-3.01	0.00	3.00	5.90	20.000
Kote terena		158.76	162.20	165.17	165.09	165.16	168.09	

0+260.00



Kote projekta		159.03	163.58	163.51	163.43	166.55		
Udaljenost od osi	20.000	-12.05	-3.00	0.000	3.00	5.92		20.000
Kote terena		159.03	163.58	163.51	163.43	166.55		

0+310.36



Kote projekta			
Udaljenost od osi	20.000	0.000	20.000
Kote terena			

FAKULTET GRAĐEVINARSTVA ARHITEKTURE I GEODEZIJE		
PREDMET	CESTE-ZAVRŠNI RAD	GODINA 2020./2021.
PROGRAM	IDEJNI PROJEKT	
SADRŽAJ	KARAKTERISTIČNI POPREČNI PRESJECI	M 1:200
STUDENTICA	ANDREA MAMIĆ	

4. TABLICA UKUPNOG VOLUMENA ZEMLJANIH RADOVA

Stacionaža	Površina usjeka	Volumen usjeka	Površina nasipa	Volumen nasipa	Kumulativni Volumen usjeka	Kumulaticni Volumen nasipa	Kumulativni volumen
0+000.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0+020.000	8.18	81.80	46.46	464.61	81.80	464.61	-382.81
0+040.000	6.11	142.92	70.02	1164.82	224.72	1629.43	-1404.71
0+060.000	20.04	261.57	38.30	1083.20	486.29	2712.63	-2226.34
0+061.180	21.80	24.69	35.72	43.67	510.97	2756.30	-2245.33
0+061.561	22.17	8.38	35.24	13.53	519.36	2769.83	-2250.47
0+061.565	22.18	0.07	35.24	0.12	519.43	2769.94	-2250.51
0+062.084	22.73	11.67	34.60	18.15	531.10	2788.09	-2256.99
0+062.606	23.41	12.03	33.95	17.87	543.12	2805.96	-2262.83
0+080.000	54.91	669.03	0.00	317.16	1212.16	3123.12	-1910.97
0+090.097	70.45	608.67	0.00	0.00	1820.83	3123.12	-1302.29
0+090.827	71.57	51.83	0.00	0.00	1872.66	3123.12	-1250.46
0+091.561	73.14	53.12	0.00	0.00	1925.78	3123.12	-1197.34
0+091.565	73.15	0.24	0.00	0.00	1926.02	3123.12	-1197.10
0+095.093	82.48	263.84	0.00	0.00	2189.86	3123.12	-933.26
0+098.622	87.73	288.76	0.00	0.00	2478.62	3123.12	-644.51
0+099.357	88.79	64.82	0.00	0.00	2543.43	3123.12	-579.69
0+100.000	90.25	57.60	0.00	0.00	2601.03	3123.12	-522.09
0+100.087	90.47	7.82	0.00	0.00	2608.85	3123.12	-514.27
0+120.000	76.60	1621.93	0.00	0.00	4230.78	3123.12	1107.66
0+127.578	58.07	507.19	0.00	0.00	4737.97	3123.12	1614.85
0+128.099	56.90	29.98	0.00	0.00	4767.95	3123.12	1644.83
0+128.620	56.10	29.43	0.00	0.00	4797.38	3123.12	1674.26
0+128.622	56.10	0.13	0.00	0.00	4797.51	3123.12	1674.38
0+140.000	36.47	526.63	0.00	0.00	5324.13	3123.12	2201.01
0+144.238	29.64	140.08	5.30	11.23	5464.21	3134.35	2329.86
0+144.240	29.63	0.06	5.30	0.01	5464.27	3134.36	2329.91
0+144.630	29.03	11.45	6.00	2.21	5475.72	3136.56	2339.16
0+145.022	28.00	11.16	6.80	2.51	5486.89	3139.07	2347.82
0+154.100	13.72	189.37	35.52	192.13	5676.25	3331.20	2345.05
0+160.000	11.36	74.92	49.01	240.92	5751.18	3572.12	2179.06
0+180.000	3.16	149.18	57.79	997.58	5900.35	4569.70	1330.65
0+183.202	3.32	10.83	55.21	164.55	5911.19	4734.25	1176.93
0+183.719	3.14	1.67	55.28	28.58	5912.86	4762.83	1150.03
0+184.238	3.21	1.65	55.45	28.74	5914.51	4791.57	1122.94
0+193.582	3.98	35.20	55.00	468.87	5949.71	5260.44	689.27
0+197.119	4.09	14.94	53.57	174.68	5964.65	5435.12	529.53
0+197.143	4.09	0.10	53.56	1.27	5964.75	5436.39	528.36
0+200.000	3.75	11.74	53.56	138.99	5976.49	5575.38	401.10
0+210.000	3.79	39.50	45.84	452.92	6015.99	6028.30	-12.31

0+210.048	3.81	0.18	45.80	2.18	6016.17	6030.48	-14.31
0+210.520	3.91	1.83	45.57	21.60	6017.99	6052.08	-34.08
0+211.039	4.01	2.05	45.51	23.61	6020.05	6075.69	-55.64
0+220.000	4.88	41.41	38.69	349.76	6061.46	6425.45	-363.99
0+239.900	5.64	106.83	18.98	550.28	6168.29	6975.73	-807.44
0+240.000	5.66	0.56	18.91	1.89	6168.86	6977.63	-808.77
0+246.144	5.94	35.62	12.90	97.72	6204.48	7075.35	-870.87
0+249.214	7.04	19.93	9.01	33.64	6224.42	7108.99	-884.57
0+249.607	7.28	2.81	8.75	3.49	6227.23	7112.47	-885.24
0+250.000	7.54	2.92	8.63	3.42	6230.14	7115.89	-885.75
0+250.048	7.58	0.36	8.63	0.41	6230.50	7116.30	-885.80
0+260.000	10.57	90.30	15.42	119.68	6320.81	7235.98	-915.17
0+280.000	7.77	183.42	6.68	221.04	6504.23	7457.02	-952.79
0+300.000	1.98	97.49	0.00	66.82	6601.72	7523.84	-922.12
0+310.364	0.00	10.24	0.00	0.00	6611.96	7523.84	-911.88

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

Description:

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+00.000	-104.197	441.011
End:	0+61.565	-57.827	481.509

Tangent Data

Parameter	Value	Parameter	Value
Length:	61.565	Course:	N 41° 07' 56.8794" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	0+61.565	-57.827	481.509
SPI:		-42.692	494.727
SC:	0+91.565	-37.395	503.311

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.000	L Tan:	20.095
Radius:	50.000	S Tan:	10.087
Theta:	17° 11' 19.4419"	P:	0.748
X:	29.731	K:	14.955
Y:	2.981	A:	38.730
Chord:	29.880	Course:	N 46° 51' 27.6102" E

Curve Point Data

Description	Station	Northing	Easting
SC:	0+91.565	-37.395	503.311
RP:		-79.945	529.569
CS:	0+98.622	-34.124	509.558

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	08° 05' 14.9285"	Type:	RIGHT
Radius:	50.000		
Length:	7.058	Tangent:	3.535
Mid-Ord:	0.124	External:	0.125
Chord:	7.052	Course:	N 62° 21' 53.7855" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	0+98.622	-34.124	509.558

SPI:		-30.087	518.802
ST:	1+28.622	-27.846	538.772

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.000	L Tan:	20.095
Radius:	50.000	S Tan:	10.087
Theta:	17° 11' 19.4419"	P:	0.748
X:	29.731	K:	14.955
Y:	2.981	A:	38.730
Chord:	29.880	Course:	N 77° 52' 19.9608" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	1+28.622	-27.846	538.772
End:	1+44.238	-26.105	554.290

Tangent Data

Parameter	Value	Parameter	Value
Length:	15.616	Course:	N 83° 35' 50.6916" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	1+44.238	-26.105	554.290
SPI:		-23.124	580.859
SC:	1+84.238	-18.732	593.515

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	40.000	L Tan:	26.736
Radius:	90.000	S Tan:	13.396
Theta:	12° 43' 56.6236"	P:	0.739
X:	39.803	K:	19.967
Y:	2.953	A:	60.000
Chord:	39.912	Course:	N 79° 21' 18.2122" E

Curve Point Data

Description	Station	Northing	Easting
SC:	1+84.238	-18.732	593.515
RP:		66.295	564.014
CS:	2+10.048	-6.915	616.361

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	16° 25' 51.1803"	Type:	LEFT
Radius:	90.000		
Length:	25.810	Tangent:	12.994
Mid-Ord:	0.924	External:	0.933
Chord:	25.721	Course:	N 62° 38' 58.4779" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	2+10.048	-6.915	616.361
SPI:		0.877	627.259
ST:	2+50.048	20.838	645.045

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	40.000	L Tan:	26.736
Radius:	90.000	S Tan:	13.396
Theta:	12° 43' 56.6236"	P:	0.739
X:	39.803	K:	19.967
Y:	2.953	A:	60.000
Chord:	39.912	Course:	N 45° 56' 38.7436" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	2+50.048	20.838	645.045
End:	3+10.364	65.871	685.170

Tangent Data

Parameter	Value	Parameter	Value
Length:	60.316	Course:	N 41° 42' 06.2641" E

Alignment: os 1-Left-3.000

Description:

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+00.000	-102.224	438.752
End:	0+61.565	-55.854	479.249

Tangent Data

Parameter	Value	Parameter	Value
Length:	61.565	Course:	N 41° 07' 56.8794" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	0+61.565	-55.854	479.249
SPI:		-40.377	492.766
SC:	0+92.465	-34.842	501.736

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.900	L Tan:	20.692

Radius:	53.000	S Tan:	10.384
Theta:	16° 42' 08.1369"	P:	0.748
X:	30.638	K:	15.406
Y:	2.984	A:	40.469
Chord:	30.776	Course:	N 46° 56' 28.4125" E

Curve Point Data

Description	Station	Northing	Easting
SC:	0+92.465	-34.842	501.736
RP:		-79.945	529.569
CS:	0+99.946	-31.375	508.358

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	08° 05' 14.9285"	Type:	RIGHT
Radius:	53.000		
Length:	7.481	Tangent:	3.747
Mid-Ord:	0.132	External:	0.132
Chord:	7.475	Course:	N 62° 21' 53.7855" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	0+99.946	-31.375	508.358
SPI:		-27.156	518.017
ST:	1+30.846	-24.865	538.437

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.900	L Tan:	20.692
Radius:	53.000	S Tan:	10.384
Theta:	16° 42' 08.1369"	P:	0.748
X:	30.638	K:	15.406
Y:	2.984	A:	40.469
Chord:	30.776	Course:	N 77° 47' 19.1585" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	1+30.846	-24.865	538.437
End:	1+46.461	-23.124	553.955

Tangent Data

Parameter	Value	Parameter	Value
Length:	15.616	Course:	N 83° 35' 50.6916" E

Curve Point Data

Description	Station	Northing	Easting
PC:	1+46.461	-23.124	553.955
RP:		-15.174	553.063

PT:	1+47.246	-22.998	554.730

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	05° 37' 17.3055"	Type:	LEFT
Radius:	8.000		
Length:	0.785	Tangent:	0.393
Mid-Ord:	0.010	External:	0.010
Chord:	0.785	Course:	N 80° 47' 12.0389" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	1+47.246	-22.998	554.730
End:	1+84.584	-15.220	591.248

Tangent Data

Parameter	Value	Parameter	Value
Length:	37.338	Course:	N 77° 58' 33.3861" E

Curve Point Data

Description	Station	Northing	Easting
PC:	1+84.584	-15.220	591.248
RP:		-7.395	589.582
PCC:	1+85.577	-14.953	592.204

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	07° 06' 39.3181"	Type:	LEFT
Radius:	8.000		
Length:	0.993	Tangent:	0.497
Mid-Ord:	0.015	External:	0.015
Chord:	0.992	Course:	N 74° 25' 13.7271" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	1+85.577	-14.953	592.204
RP:		66.295	564.014
PCC:	2+10.194	-3.688	613.998

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	16° 24' 02.2348"	Type:	LEFT
Radius:	86.000		
Length:	24.617	Tangent:	12.393
Mid-Ord:	0.879	External:	0.888
Chord:	24.533	Course:	N 62° 39' 52.9506" E

Curve Point Data

Description	Station	Northing	Easting

PCC:	2+10.194	-3.688	613.998
RP:		2.822	609.348
PT:	2+11.189	-3.061	614.770

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	07° 07' 34.2606"	Type:	LEFT
Radius:	8.000		
Length:	0.995	Tangent:	0.498
Mid-Ord:	0.015	External:	0.015
Chord:	0.994	Course:	N 50° 54' 04.7030" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	2+11.189	-3.061	614.770
End:	2+48.520	22.238	642.222

Tangent Data

Parameter	Value	Parameter	Value
Length:	37.331	Course:	N 47° 20' 17.5727" E

Curve Point Data

Description	Station	Northing	Easting
PC:	2+48.520	22.238	642.222
RP:		28.121	636.800
CS:	2+49.307	22.798	642.773

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	05° 38' 11.2437"	Type:	LEFT
Radius:	8.000		
Length:	0.787	Tangent:	0.394
Mid-Ord:	0.010	External:	0.010
Chord:	0.787	Course:	N 44° 31' 11.9509" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	2+49.307	22.798	642.773
SPI:		22.798	642.773
ST:	2+49.355	22.834	642.805

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	0.048	L Tan:	0.032
Radius:	75615.462	S Tan:	0.016
Theta:	00° 00' 00.0649"	P:	0.000
X:	0.048	K:	0.024
Y:	0.000	A:	59.998
Chord:	0.048	Course:	N 41° 42' 06.2641" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	2+49.355	22.834	642.805
End:	3+09.671	67.867	682.930

Tangent Data

Parameter	Value	Parameter	Value
Length:	60.316	Course:	N 41° 42' 06.2641" E

Alignment: os 1-Right-3.000

Description:

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+00.000	-106.171	443.271
End:	0+61.561	-59.803	483.766

Tangent Data

Parameter	Value	Parameter	Value
Length:	61.561	Course:	N 41° 07' 56.8794" E

Curve Point Data

Description	Station	Northing	Easting
PC:	0+61.561	-59.803	483.766
RP:		-65.066	489.792
PT:	0+62.607	-59.062	484.504

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	07° 29' 33.9639"	Type:	RIGHT
Radius:	8.000		
Length:	1.046	Tangent:	0.524
Mid-Ord:	0.017	External:	0.017
Chord:	1.045	Course:	N 44° 52' 43.8613" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+62.607	-59.062	484.504
End:	0+89.019	-41.605	504.323

Tangent Data

Parameter	Value	Parameter	Value
Length:	26.411	Course:	N 48° 37' 30.8432" E

Curve Point Data

Description	Station	Northing	Easting
PC:	0+89.019	-41.605	504.323
RP:		-47.608	509.611
CS:	0+90.372	-40.800	505.409

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	09° 41' 31.7878"	Type:	RIGHT
Radius:	8.000		
Length:	1.353	Tangent:	0.678
Mid-Ord:	0.029	External:	0.029
Chord:	1.352	Course:	N 53° 28' 16.7371" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	0+90.372	-40.800	505.409
SPI:		-40.800	505.410
SC:	0+90.375	-40.799	505.412

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	0.003	L Tan:	0.002
Radius:	46.000	S Tan:	0.002
Theta:	00° 00' 13.6902"	P:	0.000
X:	0.003	K:	0.000
Y:	0.000	A:	34.177
Chord:	0.003	Course:	N 58° 19' 09.4760" E

Curve Point Data

Description	Station	Northing	Easting
SC:	0+90.375	-40.799	505.412
RP:		-79.945	529.569
PCC:	0+96.868	-37.790	511.159

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	08° 05' 14.9285"	Type:	RIGHT
Radius:	46.000		
Length:	6.493	Tangent:	3.252
Mid-Ord:	0.115	External:	0.115
Chord:	6.488	Course:	N 62° 21' 53.7855" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	0+96.868	-37.790	511.159
RP:		-45.121	514.361
PT:	0+98.222	-37.355	512.439

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	09° 41' 38.7810"	Type:	RIGHT
Radius:	8.000		
Length:	1.354	Tangent:	0.678
Mid-Ord:	0.029	External:	0.029
Chord:	1.352	Course:	N 71° 15' 20.6403" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+98.222	-37.355	512.439
End:	1+24.632	-31.012	538.077

Tangent Data

Parameter	Value	Parameter	Value
Length:	26.411	Course:	N 76° 06' 10.0307" E

Curve Point Data

Description	Station	Northing	Easting
PC:	1+24.632	-31.012	538.077
RP:		-38.778	539.998
PT:	1+25.679	-30.828	539.106

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	07° 29' 40.6609"	Type:	RIGHT
Radius:	8.000		
Length:	1.046	Tangent:	0.524
Mid-Ord:	0.017	External:	0.017
Chord:	1.046	Course:	N 79° 51' 00.3612" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	1+25.679	-30.828	539.106
End:	1+41.294	-29.086	554.625

Tangent Data

Parameter	Value	Parameter	Value
Length:	15.616	Course:	N 83° 35' 50.6916" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	1+41.294	-29.086	554.625
SPI:		-26.067	581.526
SC:	1+81.961	-21.567	594.499

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	40.667	L Tan:	27.179
Radius:	93.000	S Tan:	13.618

Theta:	12° 31' 37.3232"	P:	0.740
X:	40.473	K:	20.301
Y:	2.954	A:	61.498
Chord:	40.577	Course:	N 79° 19' 12.8811" E

Curve Point Data

Description	Station	Northing	Easting
SC:	1+81.961	-21.567	594.499
RP:		66.295	564.014
CS:	2+08.631	-9.355	618.106

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	16° 25' 51.1803"	Type:	LEFT
Radius:	93.000		
Length:	26.670	Tangent:	13.427
Mid-Ord:	0.954	External:	0.964
Chord:	26.579	Course:	N 62° 38' 58.4779" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	2+08.631	-9.355	618.106
SPI:		-1.369	629.276
ST:	2+49.298	18.843	647.285

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	40.667	L Tan:	27.179
Radius:	93.000	S Tan:	13.618
Theta:	12° 31' 37.3232"	P:	0.740
X:	40.473	K:	20.301
Y:	2.954	A:	61.498
Chord:	40.577	Course:	N 45° 58' 44.0747" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	2+49.298	18.843	647.285
End:	3+09.614	63.876	687.410

Tangent Data

Parameter	Value	Parameter	Value
Length:	60.316	Course:	N 41° 42' 06.2641" E

Alignment: Os 1-Right-3.000

Description:

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+00.000	3281.864	-19917.608
End:	0+31.538	3271.816	-19887.713

Tangent Data

Parameter	Value	Parameter	Value
Length:	31.538	Course:	S 71° 25' 23.5199" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	0+31.538	3271.816	-19887.713
SPI:		3265.270	-19868.235
SC:	0+62.438	3265.015	-19857.698

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.900	L Tan:	20.692
Radius:	53.000	S Tan:	10.384
Theta:	16° 42' 08.1369"	P:	0.748
X:	30.638	K:	15.406
Y:	2.984	A:	40.469
Chord:	30.776	Course:	S 77° 13' 55.0530" E

Curve Point Data

Description	Station	Northing	Easting
SC:	0+62.438	3265.015	-19857.698
RP:		3317.999	-19856.415
CS:	0+95.090	3274.014	-19826.846

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	35° 17' 52.9015"	Type:	LEFT
Radius:	53.000		
Length:	32.652	Tangent:	16.863
Mid-Ord:	2.495	External:	2.618
Chord:	32.138	Course:	N 73° 44' 20.5875" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	0+95.090	3274.014	-19826.846
SPI:		3279.894	-19818.099
ST:	1+25.990	3295.885	-19805.195

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.900	L Tan:	20.692
Radius:	53.000	S Tan:	10.384
Theta:	16° 42' 08.1369"	P:	0.748
X:	30.638	K:	15.406
Y:	2.984	A:	40.469
Chord:	30.776	Course:	N 44° 42' 36.2280" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	1+25.990	3295.885	-19805.195
End:	1+35.505	3303.290	-19799.220

Tangent Data

Parameter	Value	Parameter	Value
Length:	9.515	Course:	N 38° 54' 04.6949" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	1+35.505	3303.290	-19799.220
End:	1+39.527	3306.778	-19797.216

Tangent Data

Parameter	Value	Parameter	Value
Length:	4.022	Course:	N 29° 52' 32.8644" E

Curve Point Data

Description	Station	Northing	Easting
PC:	1+39.527	3306.778	-19797.216
RP:		3302.793	-19790.280
PT:	1+40.573	3307.648	-19796.637

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	07° 29' 40.6609"	Type:	RIGHT
Radius:	8.000		
Length:	1.046	Tangent:	0.524
Mid-Ord:	0.017	External:	0.017
Chord:	1.046	Course:	N 33° 37' 23.1948" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	1+40.573	3307.648	-19796.637
End:	1+66.984	3328.637	-19780.607

Tangent Data

Parameter	Value	Parameter	Value
Length:	26.411	Course:	N 37° 22' 13.5253" E

Curve Point Data

Description	Station	Northing	Easting
PC:	1+66.984	3328.637	-19780.607
RP:		3323.782	-19774.249
PCC:	1+68.337	3329.639	-19779.699

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	09° 41' 38.7810"	Type:	RIGHT
Radius:	8.000		
Length:	1.354	Tangent:	0.678
Mid-Ord:	0.029	External:	0.029
Chord:	1.352	Course:	N 42° 13' 02.9158" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	1+68.337	3329.639	-19779.699
RP:		3295.961	-19748.365
PCC:	2+30.730	3333.744	-19722.126

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	77° 42' 49.7150"	Type:	RIGHT
Radius:	46.000		
Length:	62.393	Tangent:	37.060
Mid-Ord:	10.179	External:	13.072
Chord:	57.719	Course:	N 85° 55' 17.1638" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	2+30.730	3333.744	-19722.126
RP:		3327.173	-19726.689
PT:	2+32.084	3332.882	-19721.085

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	09° 41' 38.7810"	Type:	RIGHT
Radius:	8.000		
Length:	1.354	Tangent:	0.678
Mid-Ord:	0.029	External:	0.029
Chord:	1.352	Course:	S 50° 22' 28.5882" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	2+32.084	3332.882	-19721.085
End:	2+58.494	3314.379	-19702.239

Tangent Data

Parameter	Value	Parameter	Value
Length:	26.411	Course:	S 45° 31' 39.1978" E

Curve Point Data

Description	Station	Northing	Easting
PC:	2+58.494	3314.379	-19702.239
RP:		3308.671	-19707.843
PT:	2+59.541	3313.600	-19701.542

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	07° 29' 40.6609"	Type:	RIGHT
Radius:	8.000		
Length:	1.046	Tangent:	0.524
Mid-Ord:	0.017	External:	0.017
Chord:	1.046	Course:	S 41° 46' 48.8673" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	2+59.541	3313.600	-19701.542
End:	2+89.922	3289.669	-19682.823

Tangent Data

Parameter	Value	Parameter	Value
Length:	30.382	Course:	S 38° 01' 58.5369" E

6.2. Koordinatni račun detaljnih točaka osi

Alignment Name: os 1
Description:
Station Range: Start: 0+000.00, End: 31+036.00
Station Increment: 20.00

Station	Northing	Easting	Tangential Direction
0+000.00	-104.1971m	441.0115m	N41° 07' 57"E
0+020.00	-89.1333m	454.1675m	N41° 07' 57"E
0+040.00	-74.0695m	467.3236m	N41° 07' 57"E
0+060.00	-59.0057m	480.4796m	N41° 07' 57"E
0+080.00	-44.4172m	494.1440m	N47° 37' 24"E
0+100.00	-33.5897m	510.8284m	N67° 57' 04"E
0+120.00	-28.8785m	530.2117m	N82° 10' 39"E
0+140.00	-26.5775m	550.0785m	N83° 35' 51"E
0+160.00	-24.1673m	569.9317m	N81° 37' 13"E
0+180.00	-20.0300m	589.4815m	N73° 25' 12"E
0+200.00	-12.2913m	607.8793m	N60° 49' 50"E
0+220.00	-0.7259m	624.1503m	N48° 53' 11"E
0+240.00	13.3680m	638.3257m	N42° 30' 18"E
0+260.00	28.2690m	651.6657m	N41° 42' 06"E
0+280.00	43.2013m	664.9708m	N41° 42' 06"E
0+300.00	58.1337m	678.2758m	N41° 42' 06"E

6.3. Račun kota kolnika

Corridor Name: koridor0
Description:
Base Alignment Name: os 1
Station Range: Start: 0+000.00, End: 0+310.36

CHAINAGE 0+000.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	437.5154	-101.1438	180.2330	-4.642m	Hinge_Cut
2	437.5162	-101.1445	180.0330	-4.641m	EPS_Sub
3	438.2686	-101.8016	180.2730	-3.642m	Back_Curb
4	438.3816	-101.9003	180.2730	-3.492m	Top_Curb
5	438.4130	-101.9277	180.0480	-3.450m	Flowline_Gutter
6	438.7519	-102.2237	180.0750	-3.000m	ETW
7	438.7519	-102.2237	179.6750	-3.000m	ETW_SubBase
8	443.2711	-106.1705	179.5250	3.000m	ETW_SubBase
9	443.2711	-106.1705	179.9250	3.000m	Flange
10	443.6100	-106.4666	179.8980	3.450m	Flowline_Gutter
11	443.6414	-106.4940	180.1230	3.492m	Top_Curb
12	443.7544	-106.5927	180.1230	3.642m	Back_Curb
13	444.5068	-107.2498	179.8830	4.641m	EPS_Sub
14	444.5076	-107.2505	180.0830	4.642m	EPS
15	445.7127	-108.3029	183.2830	6.242m	Daylight

CHAINAGE 0+020.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	433.0924	-70.7273	163.7643	-27.981m	Daylight
2	450.6714	-86.0800	179.3239	-4.642m	Hinge
3	450.6722	-86.0807	179.1239	-4.641m	EPS_Sub
4	451.4246	-86.7378	179.3639	-3.642m	Back_Curb
5	451.5376	-86.8365	179.3639	-3.492m	Top_Curb
6	451.5690	-86.8639	179.1389	-3.450m	Flowline_Gutter
7	451.9080	-87.1599	179.1659	-3.000m	ETW
8	451.9080	-87.1599	178.7659	-3.000m	ETW_SubBase
9	456.4271	-91.1067	179.0159	3.000m	Flange
10	456.4271	-91.1067	178.6159	3.000m	ETW_SubBase
11	456.7660	-91.4027	178.9889	3.450m	Flowline_Gutter
12	456.7974	-91.4302	179.2139	3.492m	Top_Curb
13	456.9104	-91.5288	179.2139	3.642m	Back_Curb
14	457.6629	-92.1860	178.9739	4.641m	EPS_Sub
15	457.6636	-92.1866	179.1739	4.642m	Hinge_Cut
16	458.6187	-93.0208	181.7101	5.910m	Daylight

CHAINAGE 0+040.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	446.0205	-55.4644	162.6534	-28.284m	Daylight

2	463.8275	-71.0162	178.4148	-4.642m	Hinge
3	463.8282	-71.0168	178.2148	-4.641m	EPS_Sub
4	464.5807	-71.6740	178.4548	-3.642m	Back_Curb
5	464.6937	-71.7727	178.4548	-3.492m	Top_Curb
6	464.7251	-71.8001	178.2298	-3.450m	Flowline_Gutter
7	465.0640	-72.0961	178.2568	-3.000m	ETW
8	465.0640	-72.0961	177.8568	-3.000m	ETW_SubBase
9	469.5831	-76.0429	178.1068	3.000m	Flange
10	469.5831	-76.0429	177.7068	3.000m	ETW_SubBase
11	469.9221	-76.3389	178.0798	3.450m	Flowline_Gutter
12	469.9535	-76.3664	178.3048	3.492m	Top_Curb
13	470.0665	-76.4650	178.3048	3.642m	Back_Curb
14	470.8189	-77.1222	178.0648	4.641m	EPS_Sub
15	470.8197	-77.1228	178.2648	4.642m	Hinge_Cut
16	471.7159	-77.9056	180.6448	5.832m	Daylight

CHAINAGE 0+060.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	461.9750	-42.8446	164.2213	-24.568m	Daylight
2	476.9835	-55.9524	177.5057	-4.642m	Hinge
3	476.9843	-55.9530	177.3057	-4.641m	EPS_Sub
4	477.7367	-56.6102	177.5457	-3.642m	Back_Curb
5	477.8497	-56.7088	177.5457	-3.492m	Top_Curb
6	477.8811	-56.7363	177.3207	-3.450m	Flowline_Gutter
7	478.2200	-57.0323	177.3477	-3.000m	ETW
8	478.2200	-57.0323	176.9477	-3.000m	ETW_SubBase
9	482.7392	-60.9791	177.1977	3.000m	Flange
10	482.7392	-60.9791	176.7977	3.000m	ETW_SubBase
11	483.0781	-61.2751	177.1707	3.450m	Flowline_Gutter
12	483.1095	-61.3025	177.3957	3.492m	Top_Curb
13	483.2225	-61.4012	177.3957	3.642m	Back_Curb
14	483.9749	-62.0583	177.1557	4.641m	EPS_Sub
15	483.9757	-62.0590	177.3557	4.642m	Hinge_Cut
16	485.6508	-63.5219	181.8036	6.866m	Daylight

CHAINAGE 0+080.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	490.7134	-40.6572	177.4931	-5.090m	Daylight
2	491.0155	-40.9883	176.5966	-4.642m	EPS
3	491.0162	-40.9890	176.3966	-4.641m	EPS_Sub
4	491.6895	-41.7270	176.6366	-3.642m	Back_Curb
5	491.7906	-41.8378	176.6366	-3.492m	Top_Curb
6	491.8187	-41.8686	176.4116	-3.450m	Flowline_Gutter
7	492.1220	-42.2011	176.4386	-3.000m	ETW

8	492.1220	-42.2011	176.0386	-3.000m	ETW_SubBase
9	497.2569	-47.8291	175.8886	4.619m	ETW_SubBase
10	497.2569	-47.8291	176.2886	4.619m	ETW
11	497.5602	-48.1615	176.2616	5.069m	Flowline_Gutter
12	497.5883	-48.1923	176.4866	5.110m	Top_Curb
13	497.6894	-48.3031	176.4866	5.260m	Back_Curb
14	498.3627	-49.0411	176.2466	6.259m	EPS_Sub
15	498.3634	-49.0418	176.4466	6.260m	Hinge_Cut
16	500.7118	-51.6158	183.4153	9.745m	Daylight

CHAINAGE 0+100.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	508.3955	-27.5829	179.3651	-6.481m	Daylight
2	509.0858	-29.2872	175.6875	-4.642m	EPS
3	509.0861	-29.2881	175.4875	-4.641m	EPS_Sub
4	509.4612	-30.2141	175.7275	-3.642m	Back_Curb
5	509.5175	-30.3531	175.7275	-3.492m	Top_Curb
6	509.5331	-30.3918	175.5025	-3.450m	Flowline_Gutter
7	509.7021	-30.8089	175.5295	-3.000m	ETW
8	509.7021	-30.8089	175.1295	-3.000m	ETW_SubBase
9	512.3614	-37.3749	174.9795	4.084m	ETW_SubBase
10	512.3614	-37.3749	175.3795	4.084m	ETW
11	512.5303	-37.7920	175.3525	4.534m	Flowline_Gutter
12	512.5460	-37.8306	175.5775	4.576m	Top_Curb
13	512.6023	-37.9697	175.5775	4.726m	Back_Curb
14	512.9773	-38.8956	175.3375	5.725m	EPS_Sub
15	512.9777	-38.8965	175.5375	5.726m	Hinge_Cut
16	514.7184	-43.1945	184.8117	10.363m	Daylight

CHAINAGE 0+120.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	529.3838	-22.8519	177.6630	-6.083m	Daylight
2	529.5801	-24.2808	174.7785	-4.641m	EPS
3	529.5802	-24.2818	174.5785	-4.640m	EPS_Sub
4	529.7162	-25.2715	174.8185	-3.641m	Back_Curb
5	529.7366	-25.4201	174.8185	-3.491m	Top_Curb
6	529.7423	-25.4614	174.5935	-3.449m	Flowline_Gutter
7	529.8035	-25.9072	174.6205	-2.999m	ETW
8	529.8035	-25.9072	174.2205	-2.999m	ETW_SubBase
9	530.7537	-32.8238	174.0705	3.982m	ETW_SubBase
10	530.7537	-32.8238	174.4705	3.982m	ETW
11	530.8150	-33.2696	174.4435	4.432m	Flowline_Gutter
12	530.8206	-33.3109	174.6685	4.474m	Top_Curb
13	530.8411	-33.4595	174.6685	4.624m	Back_Curb

14	530.9770	-34.4492	174.4285	5.623m	EPS_Sub
15	530.9772	-34.4502	174.6285	5.624m	Hinge_Cut
16	531.5774	-38.8192	183.4484	10.034m	Daylight

CHAINAGE 0+140.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	549.5561	-21.9219	173.9556	-4.685m	Daylight
2	549.5609	-21.9648	173.8694	-4.642m	EPS
3	549.5610	-21.9658	173.6694	-4.641m	EPS_Sub
4	549.6724	-22.9585	173.9094	-3.642m	Back_Curb
5	549.6891	-23.1076	173.9094	-3.492m	Top_Curb
6	549.6938	-23.1491	173.6844	-3.450m	Flowline_Gutter
7	549.7440	-23.5962	173.7114	-3.000m	ETW
8	549.7440	-23.5962	173.3114	-3.000m	ETW_SubBase
9	550.4130	-29.5588	173.1614	3.000m	ETW_SubBase
10	550.4130	-29.5588	173.5614	3.000m	ETW
11	550.4632	-30.0060	173.5344	3.450m	Flowline_Gutter
12	550.4679	-30.0475	173.7594	3.492m	Top_Curb
13	550.4846	-30.1965	173.7594	3.642m	Back_Curb
14	550.5960	-31.1893	173.5194	4.641m	EPS_Sub
15	550.5961	-31.1903	173.7194	4.642m	Hinge_Cut
16	550.9320	-34.1835	179.7434	7.654m	Daylight

CHAINAGE 0+160.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	566.6074	-1.5999	161.7269	-22.811m	Daylight
2	569.0630	-18.2700	172.9603	-5.961m	Hinge
3	569.0631	-18.2710	172.7603	-5.960m	EPS_Sub
4	569.2087	-19.2594	173.0003	-4.961m	Back_Curb
5	569.2306	-19.4078	173.0003	-4.811m	Top_Curb
6	569.2367	-19.4490	172.7753	-4.769m	Flowline_Gutter
7	569.3022	-19.8942	172.8023	-4.319m	ETW
8	569.3022	-19.8942	172.4023	-4.319m	ETW_SubBase
9	570.3689	-27.1353	172.6523	3.000m	Flange
10	570.3689	-27.1353	172.2523	3.000m	ETW_SubBase
11	570.4345	-27.5805	172.6253	3.450m	Flowline_Gutter
12	570.4405	-27.6218	172.8503	3.492m	Top_Curb
13	570.4624	-27.7702	172.8503	3.642m	Back_Curb
14	570.6080	-28.7585	172.6103	4.641m	EPS_Sub
15	570.6081	-28.7595	172.8103	4.642m	Hinge_Cut
16	570.9174	-30.8593	177.0552	6.764m	Daylight

CHAINAGE 0+180.00

POINT	X	Y	Z	OFFSET	STRING CUT

1	583.0385	1.6101	160.9933	-22.579m	Daylight
2	587.7716	-14.2871	172.0512	-5.992m	Hinge
3	587.7719	-14.2880	171.8512	-5.991m	EPS_Sub
4	588.0570	-15.2455	172.0912	-4.992m	Back_Curb
5	588.0998	-15.3893	172.0912	-4.842m	Top_Curb
6	588.1117	-15.4292	171.8662	-4.800m	Flowline_Gutter
7	588.2401	-15.8605	171.8932	-4.350m	ETW
8	588.2401	-15.8605	171.4932	-4.350m	ETW_SubBase
9	590.3374	-22.9050	171.7432	3.000m	Flange
10	590.3374	-22.9050	171.3432	3.000m	ETW_SubBase
11	590.4658	-23.3363	171.7162	3.450m	Flowline_Gutter
12	590.4777	-23.3762	171.9412	3.491m	Top_Curb
13	590.5205	-23.5200	171.9412	3.641m	Back_Curb
14	590.8056	-24.4775	171.7012	4.640m	EPS_Sub
15	590.8059	-24.4784	171.9012	4.641m	Hinge_Cut
16	591.2806	-26.0730	175.2288	6.305m	Daylight

CHAINAGE 0+200.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	597.6439	6.0459	160.8616	-21.000m	Daylight
2	605.1296	-7.3650	171.1007	-5.642m	Hinge
3	605.1301	-7.3659	170.9007	-5.641m	EPS_Sub
4	605.6170	-8.2382	171.1407	-4.642m	Back_Curb
5	605.6901	-8.3692	171.1407	-4.492m	Top_Curb
6	605.7104	-8.4056	170.9157	-4.450m	Flowline_Gutter
7	605.9298	-8.7985	170.9427	-4.000m	ETW
8	605.9298	-8.7985	170.5427	-4.000m	ETW_SubBase
9	609.3415	-14.9108	170.7927	3.000m	Flange
10	609.3415	-14.9108	170.3927	3.000m	ETW_SubBase
11	609.5608	-15.3038	170.7657	3.450m	Flowline_Gutter
12	609.5812	-15.3402	170.9907	3.492m	Top_Curb
13	609.6543	-15.4711	170.9907	3.642m	Back_Curb
14	610.1412	-16.3435	170.7507	4.641m	EPS_Sub
15	610.1417	-16.3443	170.9507	4.642m	Hinge_Cut
16	610.9481	-17.7891	174.2599	6.296m	Daylight

CHAINAGE 0+220.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	612.4505	12.6794	161.8579	-17.793m	Daylight
2	620.0185	4.0082	169.5307	-6.284m	Hinge
3	620.0192	4.0074	169.3307	-6.283m	EPS_Sub
4	620.6761	3.2548	169.5707	-5.284m	Back_Curb
5	620.7747	3.1418	169.5707	-5.134m	Top_Curb
6	620.8021	3.1103	169.3457	-5.092m	Flowline_Gutter

7	621.0980	2.7713	169.3727	-4.642m	ETW
8	621.0980	2.7713	168.9727	-4.642m	ETW_SubBase
9	626.1232	-2.9864	169.2227	3.000m	Flange
10	626.1232	-2.9864	168.8227	3.000m	ETW_SubBase
11	626.4191	-3.3254	169.1957	3.450m	Flowline_Gutter
12	626.4465	-3.3568	169.4207	3.492m	Top_Curb
13	626.5451	-3.4698	169.4207	3.642m	Back_Curb
14	627.2020	-4.2225	169.1807	4.641m	EPS_Sub
15	627.2027	-4.2232	169.3807	4.642m	Hinge_Cut
16	628.2014	-5.3675	172.4183	6.161m	Daylight

CHAINAGE 0+240.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	627.9600	22.8681	161.4668	-14.061m	Daylight
2	634.2432	17.1096	167.1487	-5.538m	Hinge
3	634.2439	17.1089	166.9487	-5.537m	EPS_Sub
4	634.9804	16.4340	167.1887	-4.538m	Back_Curb
5	635.0910	16.3326	167.1887	-4.388m	Top_Curb
6	635.1217	16.3044	166.9637	-4.346m	Flowline_Gutter
7	635.4535	16.0004	166.9907	-3.896m	ETW
8	635.4535	16.0004	166.5907	-3.896m	ETW_SubBase
9	640.5370	11.3414	166.8407	2.999m	Flange
10	640.5370	11.3414	166.4407	2.999m	ETW_SubBase
11	640.8687	11.0373	166.8137	3.449m	Flowline_Gutter
12	640.8995	11.0092	167.0387	3.491m	Top_Curb
13	641.0101	10.9078	167.0387	3.641m	Back_Curb
14	641.7465	10.2328	166.7987	4.640m	EPS_Sub
15	641.7473	10.2322	166.9987	4.641m	Hinge_Cut
16	642.6726	9.3841	169.5091	5.896m	Daylight

CHAINAGE 0+260.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	648.2001	31.3569	164.1424	-4.642m	EPS
2	648.2009	31.3562	163.9424	-4.641m	EPS_Sub
3	648.9468	30.6916	164.1824	-3.642m	Back_Curb
4	649.0587	30.5918	164.1824	-3.492m	Top_Curb
5	649.0899	30.5641	163.9574	-3.450m	Flowline_Gutter
6	649.4259	30.2647	163.9844	-3.000m	ETW
7	649.4259	30.2647	163.5844	-3.000m	ETW_SubBase
8	653.9056	26.2732	163.8344	3.000m	Flange
9	653.9056	26.2732	163.4344	3.000m	ETW_SubBase
10	654.2415	25.9738	163.8074	3.450m	Flowline_Gutter
11	654.2727	25.9461	164.0324	3.492m	Top_Curb
12	654.3847	25.8463	164.0324	3.642m	Back_Curb

13	655.1305	25.1817	163.7924	4.641m	EPS_Sub
14	655.1313	25.1811	163.9924	4.642m	EPS
15	656.0866	24.3299	166.5513	5.921m	Daylight

CHAINAGE 0+280.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	661.5052	46.2892	161.0970	-4.642m	EPS
2	661.5059	46.2886	160.8970	-4.641m	EPS_Sub
3	662.2518	45.6240	161.1370	-3.642m	Back_Curb
4	662.3638	45.5242	161.1370	-3.492m	Top_Curb
5	662.3949	45.4964	160.9120	-3.450m	Flowline_Gutter
6	662.7309	45.1971	160.9390	-3.000m	ETW
7	662.7309	45.1971	160.5390	-3.000m	ETW_SubBase
8	667.2106	41.2056	160.7890	3.000m	Flange
9	667.2106	41.2056	160.3890	3.000m	ETW_SubBase
10	667.5466	40.9062	160.7620	3.450m	Flowline_Gutter
11	667.5777	40.8785	160.9870	3.492m	Top_Curb
12	667.6897	40.7787	160.9870	3.642m	Back_Curb
13	668.4356	40.1141	160.7470	4.641m	EPS_Sub
14	668.4364	40.1134	160.9470	4.642m	EPS
15	669.4560	39.2049	163.6784	6.007m	Daylight

CHAINAGE 0+300.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	674.8103	61.2216	158.0517	-4.642m	EPS
2	674.8110	61.2209	157.8517	-4.641m	EPS_Sub
3	675.5569	60.5563	158.0917	-3.642m	Back_Curb
4	675.6689	60.4565	158.0917	-3.492m	Top_Curb
5	675.7000	60.4288	157.8667	-3.450m	Flowline_Gutter
6	676.0360	60.1294	157.8937	-3.000m	ETW
7	676.0360	60.1294	157.4937	-3.000m	ETW_SubBase
8	680.5157	56.1379	157.7437	3.000m	Flange
9	680.5157	56.1379	157.3437	3.000m	ETW_SubBase
10	680.8517	55.8386	157.7167	3.450m	Flowline_Gutter
11	680.8828	55.8108	157.9417	3.492m	Top_Curb
12	680.9948	55.7110	157.9417	3.642m	Back_Curb
13	681.7407	55.0464	157.7017	4.641m	EPS_Sub
14	681.7414	55.0458	157.9017	4.642m	EPS
15	682.3263	54.5246	159.4685	5.425m	Daylight

6.4. Vertikalni tok trase

Vertical Alignment: niveleta

PVI	Station	Grade Out	Curve Length
0.00	0+000.00	-4.55%	
1.00	0+220.00	-15.23%	52.562m

Vertical Curve Information:(crest curve)

PVC Station:	0+193.58	Elevation:	171.201m
PVI Station:	0+220.00	Elevation:	170.000m
PVT Station:	0+246.14	Elevation:	166.019m
High Point:	0+193.58	Elevation:	171.201m
Grade in:	-4.55%	Grade out:	-15.23%
Change:	10.68%	K:	
Curve Length:	52.562m		
Passing Distance:		Stopping Distance:	

2.00	0+320.00	

7. LITERATURA

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