Idejni projekt dionice ceste

Miošić, Maja

Undergraduate thesis / Završni rad

2019

Degree Grantor / Ustanova koja je dodijelila akademski / stručni stupanj:
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

Maja Miošić

Split, 2019

SVEUČILIŠTE U SPLITU
FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE

IDEJNI PROJEKT DIONICE CESTE

Završni rad

Split, 2019

SVEUČILIŠTE U SPLITU
FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE

Split, Matice hrvatske 15

STUDIJ: **PREDDIPLOMSKI SVEUČILIŠNI STUDIJ GRAĐEVINARSTVA**

KANDIDAT: **Maja Miošić**

BROJ INDEKSA: **4469**

KATEDRA: **Katedra za prometnice**

PREDMET: **CESTE**

ZADATAK ZA ZAVRŠNI RAD

Tema: Idejni projekt dionice ceste

Opis zadatka: U programu CIVIL 3D 2016 Metric potrebno je izraditi idejni projekt dionice ceste između točaka A i B naznačenih na geodetskoj podlozi koja je korištena za izradu programskog zadatka iz kolgija Ceste.

Idejni projekt treba sadržavati:

1. Kopiju programskog zadatka
2. Tehnički opis
3. Građevinsku situaciju 1:1000
4. Uzdužni presjek 1:1000
5. Karakteristične poprečne presjeke 1:200
6. Računalne ispise točaka osi
7. Račun kota kolnika
8. Vertikalni tok trase
9. Proračun količina zemljanih radova
10. Proračun količina radova po presjecima

U Splitu, lipanj 2019

Voditelj Završnog rada: **Dr. sc. Dražen Cvitanić**

IDEJNI PROJEKT DIONICE CESTE

Sažetak:

Uz pomoć geodetske podloge korištene za izradu programskog zadatka iz kolegija Ceste u programu CIVIL 3D 2016 Metric izređen je teren na kojem je projektirana dionica ceste između točaka A i B naznačenih na podlozi. Cesta je projektirana za prosječni godišnji dnevni promet (PGDP) od 950 vozila/dan te za vrstu terena brdoviti. Projektna brzina za ovu kategoriju ceste je v_p=40km/h.

Ključne riječi:

Idejni projekt, teren, dionica ceste, projektna brzina, os ceste, uzdužni presjek, poprečni presjek, niveleta, kolnik, prijelaznica , krivina

CONCEPTUAL PROJECT OF A LOCAL ROAD

Abstract:

With the help of a geodetic basis used in the creation of a task from the course " Roads", a terrain is constructed using software Civil 3D 2016 Metric. On that terrain a local road section is designed between points A and B indicated on the basis. The road is designed for an annual average daily traffic (AADT) of 950 vehicles per day, for the hilly type of terrain. The project speed for this category of road is v_p = 40km / h.

Keywords:

conceptual project, terrain, road section, project speed, road axis, longitudinal section, cross section, profile, pavement, transition, curve

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1. PROGRAMSKI ZADATAK

SVEUČILIŠTE U SPLITU
FAKULTET GRAĐEVINARSTVA, ARHITEKTURE
I GEODEZIJE

Split, ak.god. 2018/2019.

Katedra za prometnice

Studij: Preddiplomski

Nastavni predmet: CESTE

Student/ica: Maja Miošić

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.

2. TEHNIČKI OPIS

OPĆENITO
Na priloženoj geodetskoj podlozi u mjerilu 1:1000 izrađen je idejni projekt ceste na dionici od točke A koja se nalazi na 316m nadmorske visine, do točke B koja se nalazi na 292m nadmorske visine.
Cesta je projektirana za prosječni godišnji dnevni promet od 950 voz/dan i to na brdovitom terenu.
Predviđena projektna brzina za ovu kategoriju ceste je v_p=40km/h

HORIZONTALNI ELEMENTI
Za određenu kategoriju prema pravilniku, minimalni radijus krivine je 45m, a prijelaznice 30m.
Trasa konstruirane ceste ima dužinu od 334,09 m, a sastoji se od tri pravaca i dvije krivine.
Prva krivina ima radijus R=45m i duljinu prijelaznice L=30m.
Druga krivina ima radijus R=60m i duljinu prijelaznice L=40m.
Svaka krivina je konstruirana pomoću dvije prijelazne krivine oblika klotoide i jednog kružnog luka.
Proširenje kružnog luka za promet teretnih vozila s priključkom u prvoj krivini iznosi 0,93m, u drugoj 0,70m.

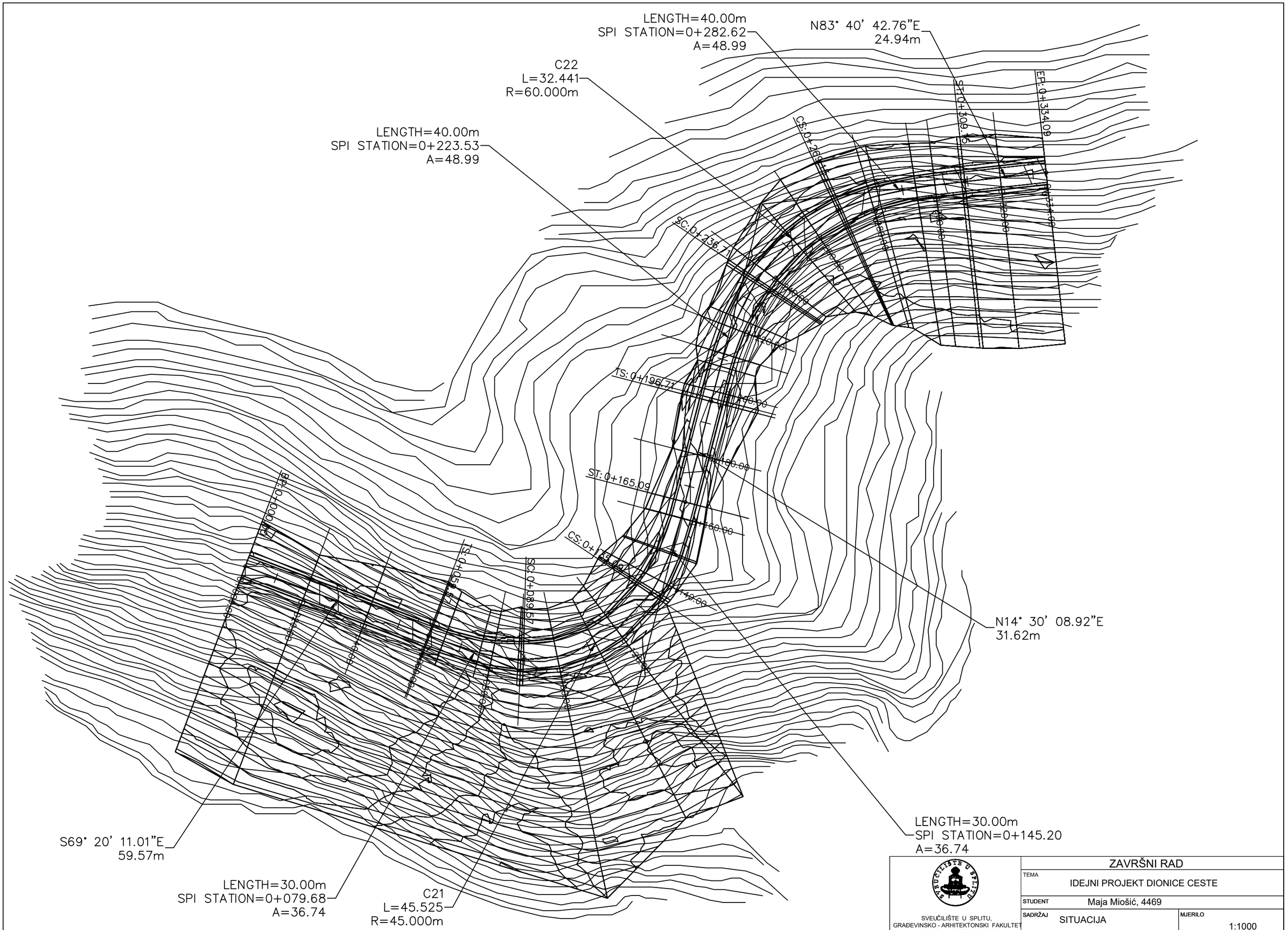
VERTIKALNI ELEMENTI
Maksimalni nagib nivelete je 12%, a minimalni radijus krivine 300m.
U programu se tok sastoji od dva pravca i jedne krivine.
Nagib prvog pravca je 6,60 % , a drugog 7,88%.
Tangenta krivine je dužine 58,65m , a radijus konveksne krivine 4650m.

POPREČNI PRESJEK
Cesta ove kategorije ima dva kolnička traka širine svakog po 2,95m, betonski rubni trak širine 0,20m te bankine širine 1m i nagiba 4% . Cesta se dijelom nalazi u zasjeku, a dijelom u usjeku. Na usjecima se izvode rigoli za odvodnju vode i drenaža koja je postavljena u glinenu posteljicu.
Nagibi usjeka su 2:1 , a nasipa 1:1,5 .

KOLNIČKA KONSTRUKCIJA
Projektom je predviđena kolnička konstrukcija sa sljedećim slojevima:
- Asfalt- beton habajući sloj- AB11 u debljini od 4cm
-Bitumenizirani nosivi sloj- BNS22 u debljini od 6cm
-Mehanički zbijeni nosivi sloj debljine 30cm.

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

3. GRAĐEVINSKA SITUACIJA 1:1000

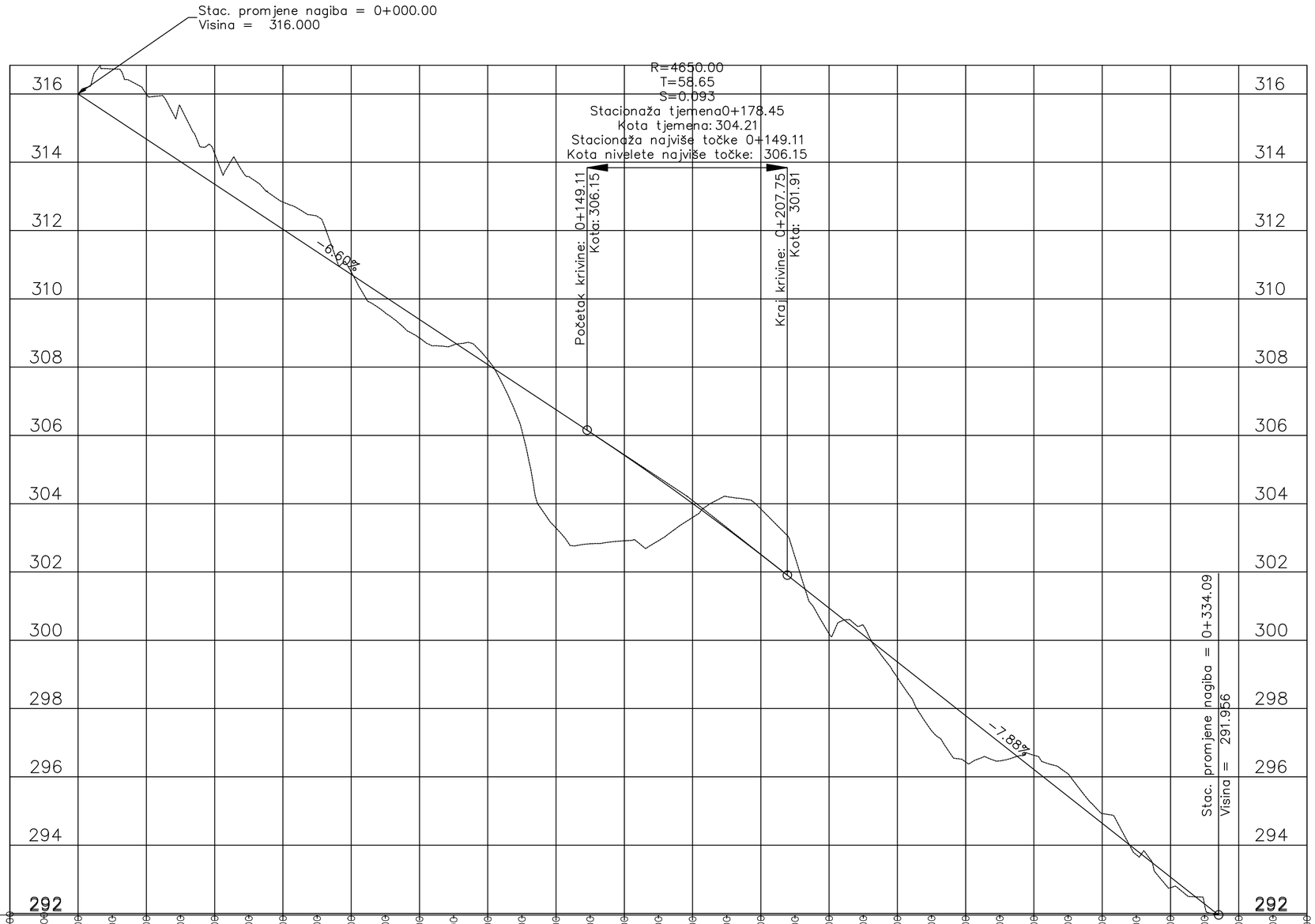


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	ZAVRŠNI RAD
TEMA	IDEJNI PROJEKT DIONICE CESTE
STUDENT	Maja Miošić, 4469
SADRŽAJ	SITUACIJA
MJERILO	1:1000
DATUM	lipanj 2019.

4. UZDUŽNI PRESJEK 1:1000

OS1 PROFILE



Stacionaža	0+020.00	0+010.00	0+000.00	0+010.00	0+020.00	0+030.00	0+040.00	0+050.00	0+060.00	0+070.00	0+080.00	0+090.00	0+100.00	0+110.00	0+120.00	0+130.00	0+140.00	0+150.00	0+160.00	0+170.00	0+180.00	0+190.00	0+200.00	0+210.00	0+220.00	0+230.00	0+240.00	0+250.00	0+260.00	0+270.00	0+280.00	0+290.00	0+300.00	0+310.00	0+320.00	0+330.00	0+340.00	0+350.00	0+360.00
Kote nivelete			316.00	315.34	314.68	314.02	313.36	312.70	312.04	311.38	310.72	310.06	309.40	308.74	308.07	307.41	306.75	306.09	305.42	304.73	304.01	303.27	302.51	301.73	300.94	300.15	299.37	298.58	297.79	297.00	296.22	295.43	294.64	293.85	293.07	292.28		
Kote terena			316.00	315.34	314.68	314.02	313.36	312.70	312.04	311.38	310.72	310.06	309.40	308.74	308.07	307.41	306.75	306.09	305.42	304.73	304.01	303.27	302.51	301.73	300.94	300.15	299.37	298.58	297.79	297.00	296.22	295.43	294.64	293.85	293.07	292.28		
Horizontalni elementi			L =59.57 S69° 20' 11"E						L: 30.00		R: 45.00 L: 45.52						L: 30.00				L =31.62 N14° 30' 09"E				L: 40.00			R: 60.00 L: 32.44			L: 40.00					L =24.94 N83° 40' 43"E		
Vertikani elementi			G =−6.60% L =149.11																		R =4650.00m L =58.65m										G =−7.88% L =126.34						
Vitoperenje																																						

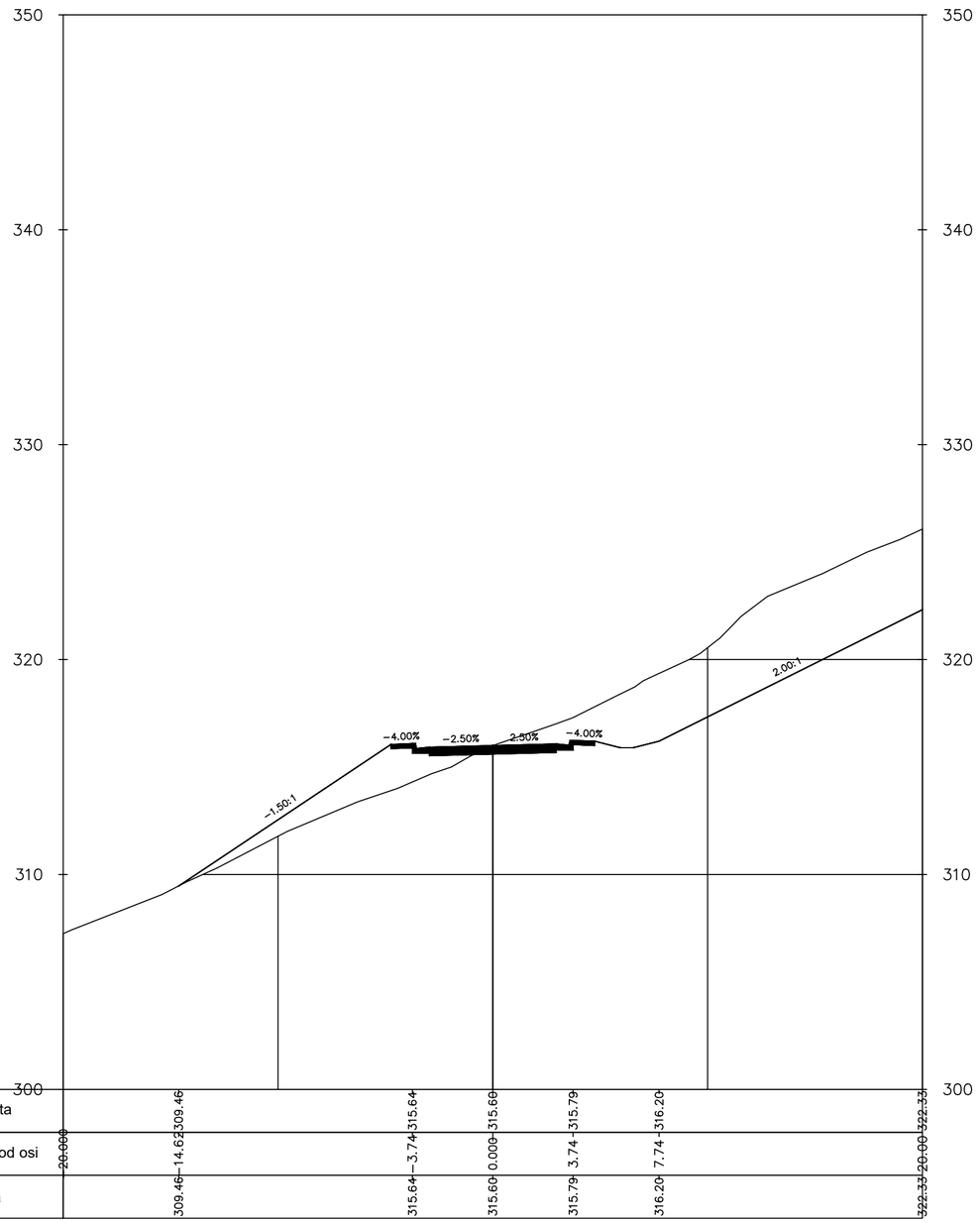
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	ZAVRŠNI RAD
TEMA	IDEJNI PROJEKT DIONICE CESTE
STUDENT	Maja Miošić, 4469
SADRŽAJ	UZDUŽNI PRESJEK
MJERILO	1:1000
DATUM	lipanj 2019.

5. KARAKTERISTIČNI POPREČNI PRESJECI 1:200

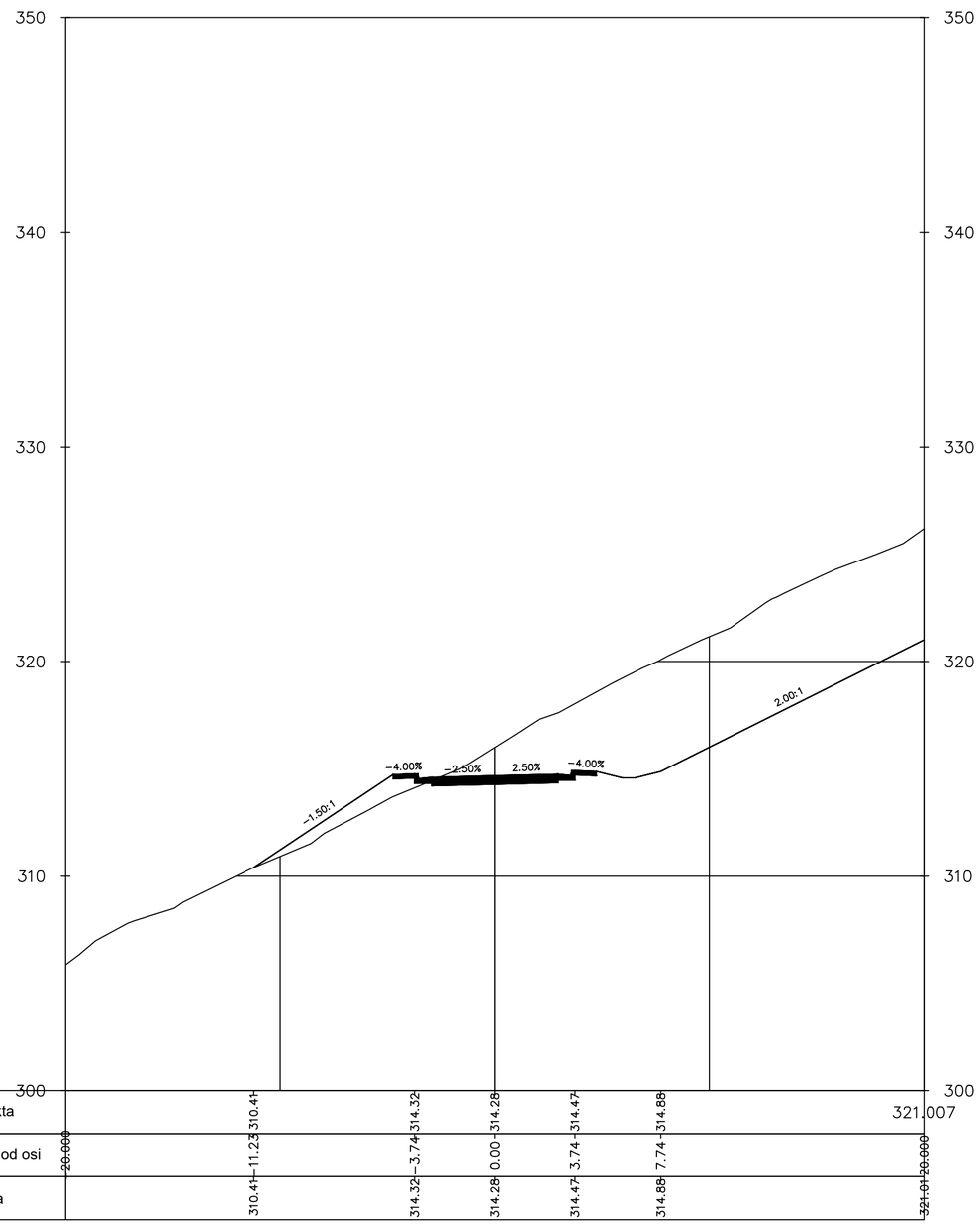
POPREČNI PRESJECI 1–2

0+000.00



Kote projekta		309.46	315.64	315.60	315.79	316.20	322.33
Udaljenost od osi	20.000	14.62	3.74	0.000	3.74	7.74	20.000
Kote terena		309.46	315.64	315.60	315.79	316.20	322.33

0+020.00



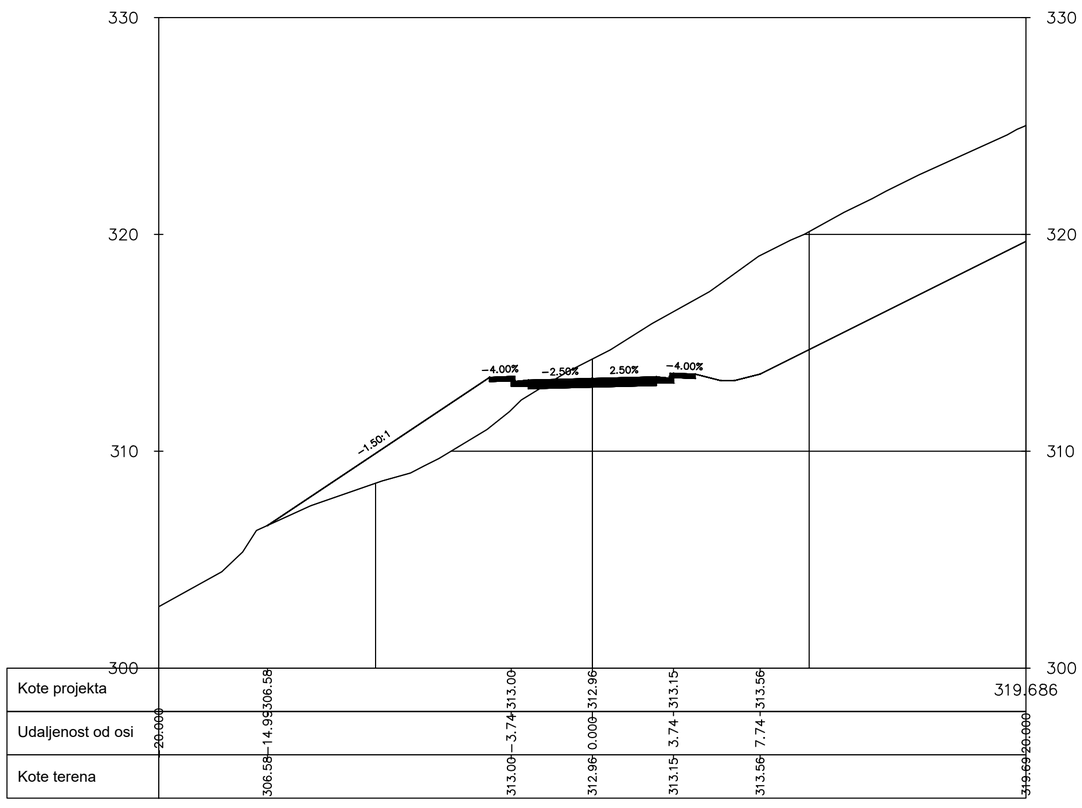
Kote projekta		310.41	314.32	314.28	314.47	314.88	321.007
Udaljenost od osi	20.000	11.23	3.74	0.00	3.74	7.74	20.000
Kote terena		310.41	314.32	314.28	314.47	314.88	321.01

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ZAVRŠNI RAD	
TEMA	IDEJNI PROJEKT DIONICE CESTE
STUDENT	Maja Miošić, 4469
SADRŽAJ	POPREČNI PRESJECI
MJERILO	1:200
DATUM	lipanj 2019.

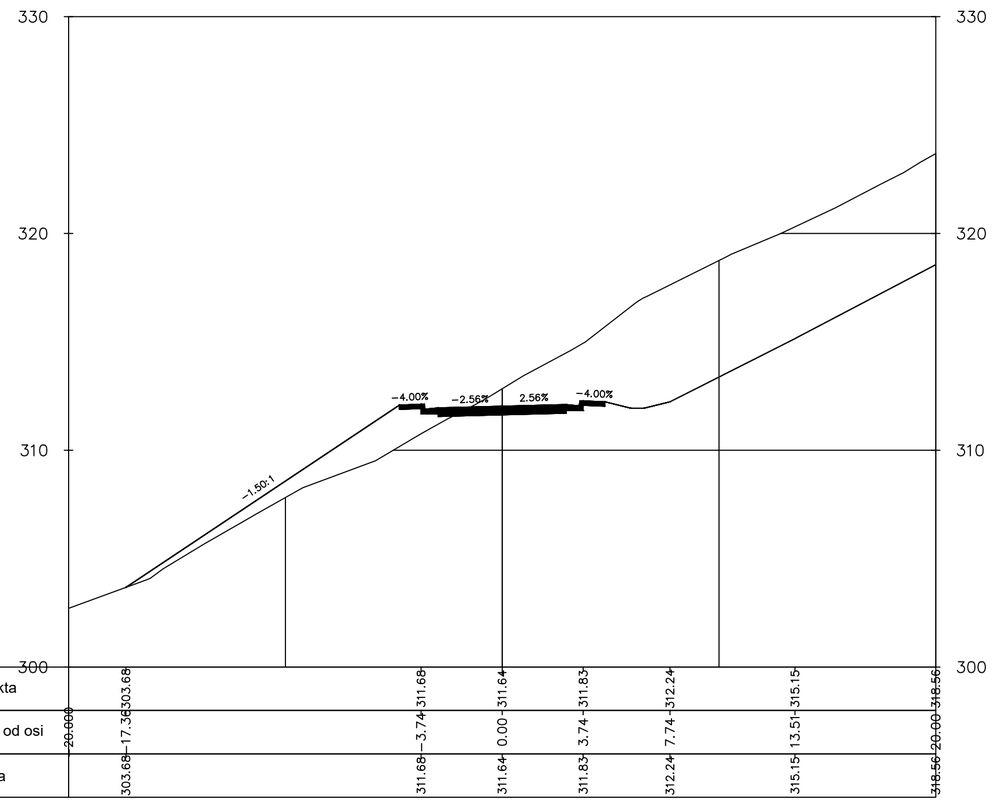
POPREČNI PRESJECI 3–4

0+040.00



Kote projekta		306.58	313.00	312.96	313.15	313.56	
Udaljenost od osi	20.000	14.99	3.74	0.000	3.74	7.74	20.000
Kote terena		306.58	313.00	312.96	313.15	313.56	319.69

0+060.00



Kote projekta		303.68	311.68	311.64	311.83	312.24	315.15	
Udaljenost od osi	20.000	17.36	3.74	0.00	3.74	7.74	13.51	20.00
Kote terena		303.68	311.68	311.64	311.83	312.24	315.15	318.56

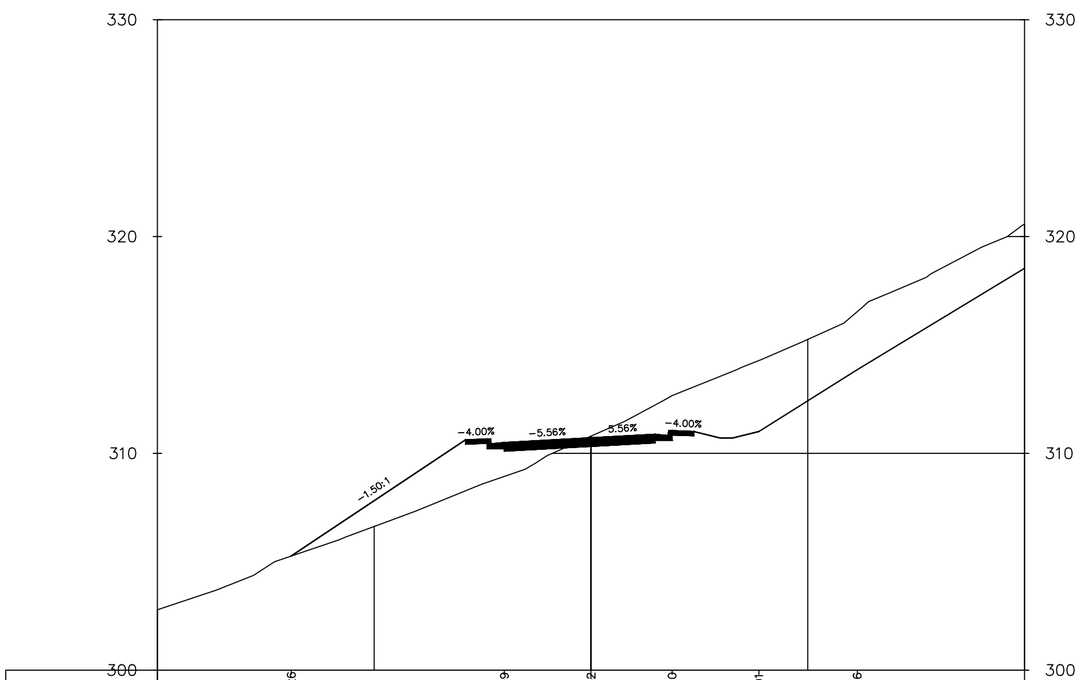
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ZAVRŠNI RAD

TEMA	IDEJNI PROJEKT DIONICE CESTE
STUDENT	Maja Miošić, 4469
SADRŽAJ	POPREČNI PRESJECI
MJERILO	1:200
DATUM	lipanj 2019.

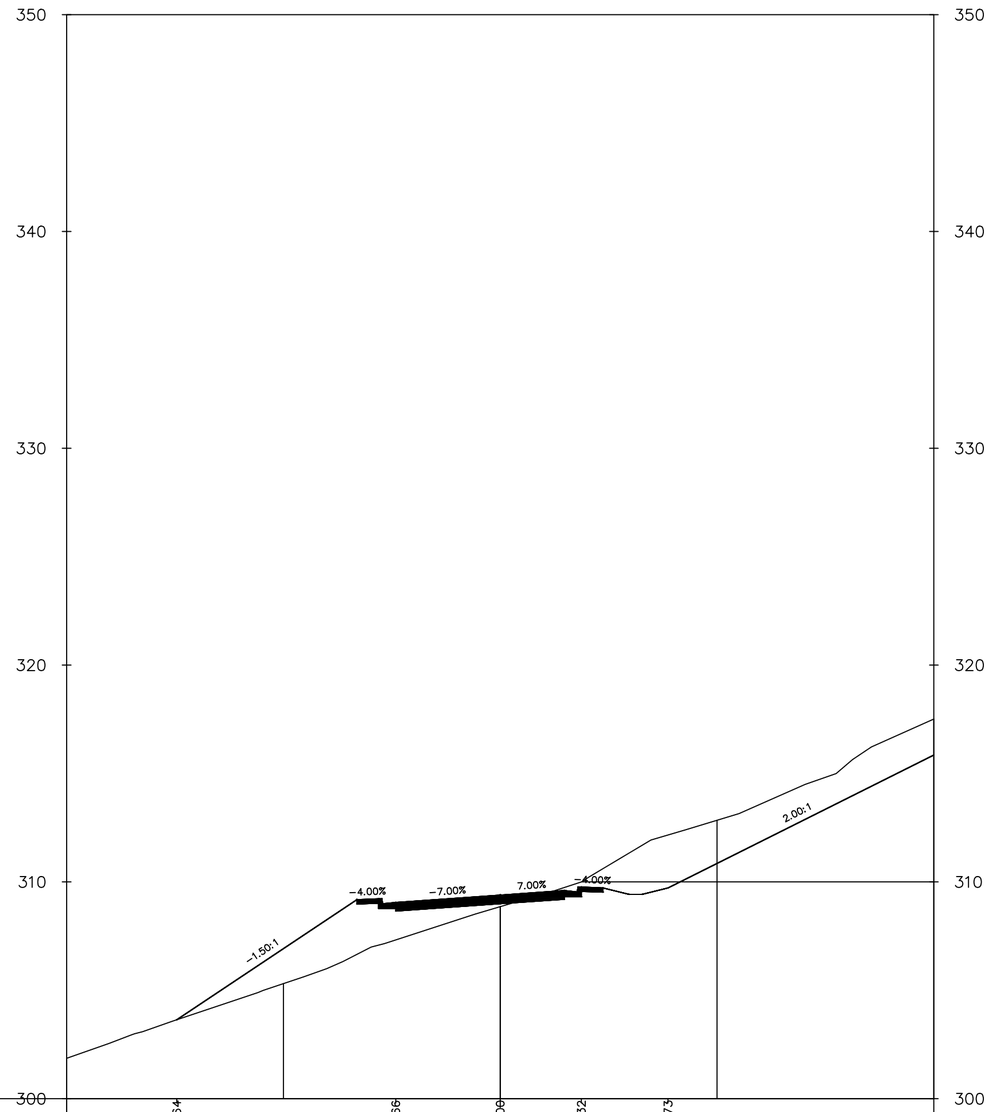
POPREČNI PRESJECI 5–6

0+080.00



Kote projekta		305.26		310.09	310.32	310.60	311.01	313.86	318.531
Udaljenost od osi	20.000	13.82	305.26	4.00	0.000	3.74	7.74	12.28	20.000
Kote terena		305.26		310.09	310.32	310.60	311.01	313.86	318.53

0+100.00



Kote projekta		303.64		308.66	309.00	309.32	309.73	315.856
Udaljenost od osi	20.000	14.92	303.64	4.82	0.000	3.74	7.74	20.000
Kote terena		303.64		308.66	309.00	309.32	309.73	315.86

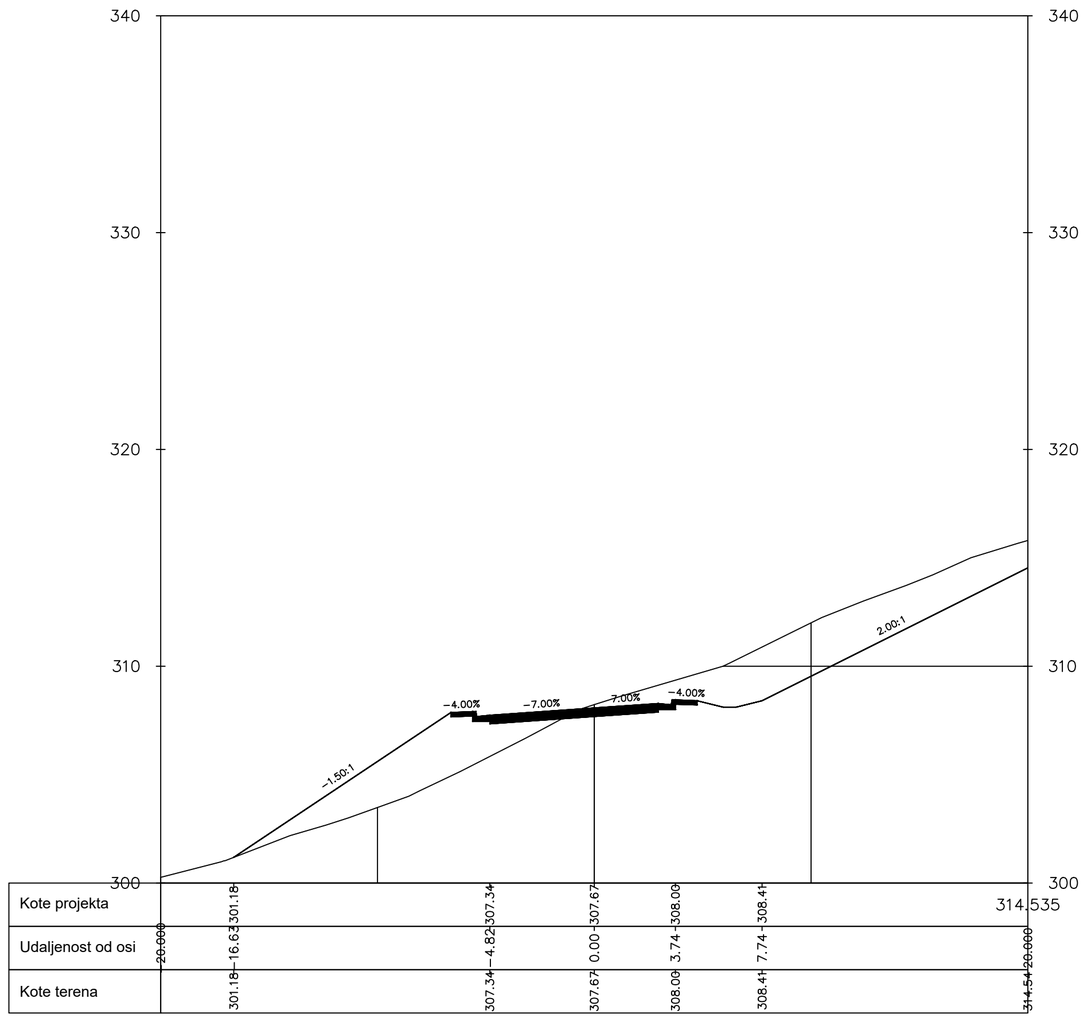
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ZAVRŠNI RAD

TEMA	IDEJNI PROJEKT DIONICE CESTE
STUDENT	Maja Miošić, 4469
SADRŽAJ	POPREČNI PRESJECI
MJERILO	1:200
DATUM	lipanj 2019.

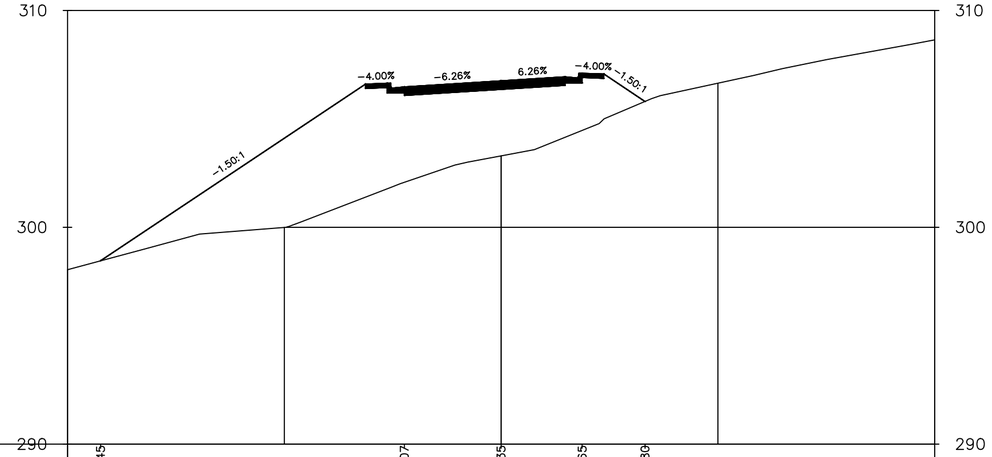
POPREČNI PRESJECI 7–8

0+120.00



Kote projekta		301.18	307.34	307.67	308.09	308.41	314.535
Udaljenost od osi	20.000	16.63	4.82	0.00	3.74	7.74	20.000
Kote terena		301.18	307.34	307.67	308.09	308.41	314.54

0+140.00



Kote projekta		298.45	306.07	306.35	306.65	305.80
Udaljenost od osi	20.000	18.48	4.46	0.00	3.74	6.64	20.000
Kote terena		298.45	306.07	306.35	306.65	305.80	

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ZAVRŠNI RAD

TEMA: IDEJNI PROJEKT DIONICE CESTE

STUDENT: Maja Miošić, 4469

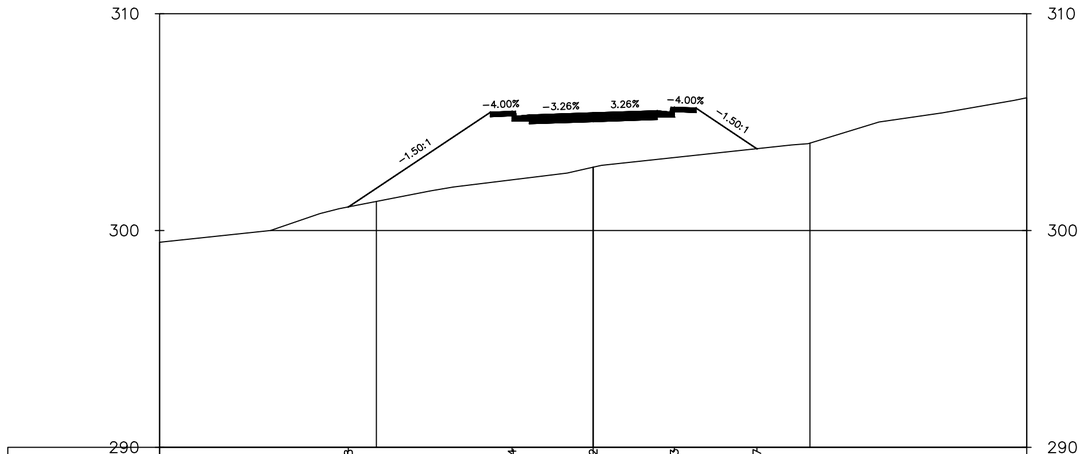
SADRŽAJ: POPREČNI PRESJECI

MJERILO: 1:200

DATUM: lipanj 2019.

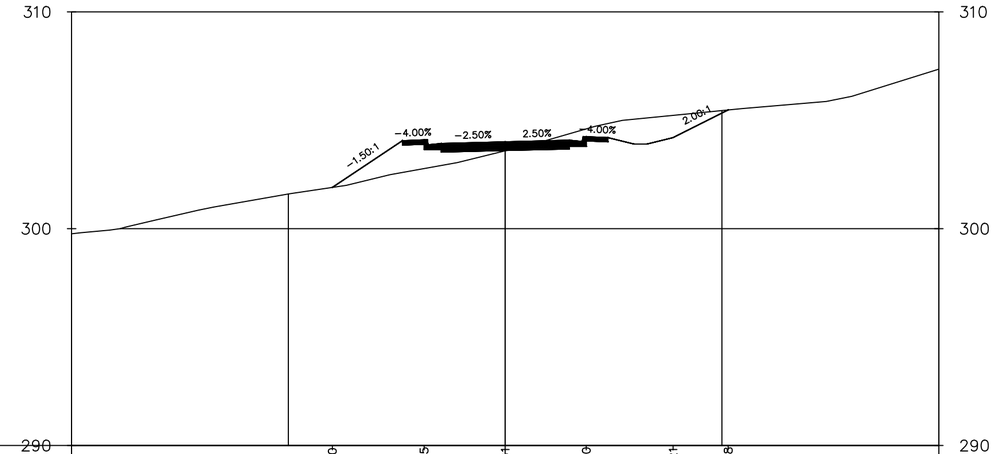
POPREČNI PRESJECI 9–12

0+160.00



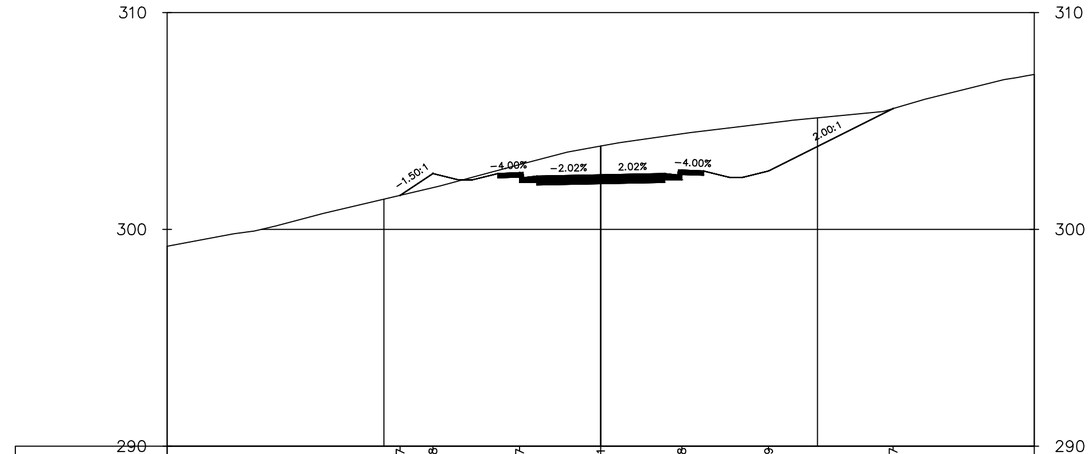
Kote projekta		301.08	305.04	305.02	305.23	303.77	
Udaljenost od osi	20.000	11.29	3.74	0.000	3.74	7.55	20.000
Kote terena		301.08	305.04	305.02	305.23	303.77	

0+180.00



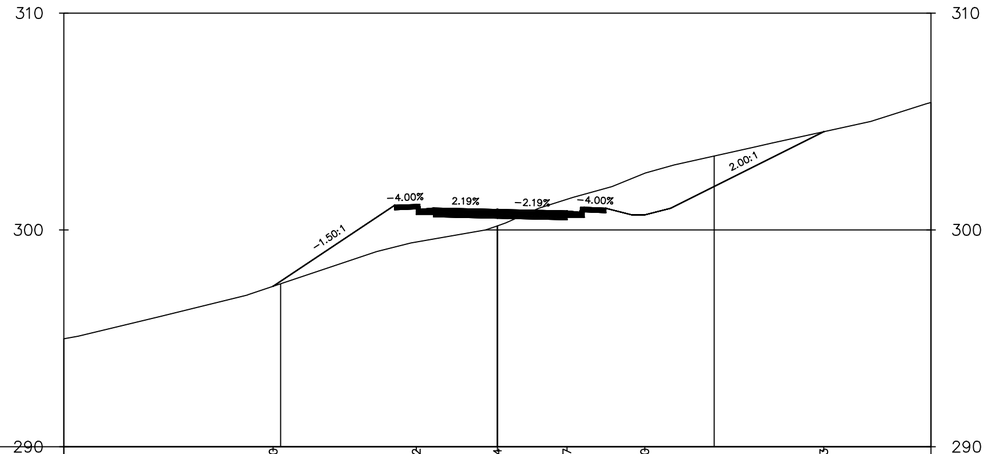
Kote projekta		301.90	303.65	303.61	303.80	304.21	305.48
Udaljenost od osi	20.000	7.97	3.74	0.00	3.74	7.74	10.29
Kote terena		301.90	303.65	303.61	303.80	304.21	305.48

0+200.00



Kote projekta		301.57	302.58	302.17	302.11	302.28	302.69	305.57
Udaljenost od osi	20.000	9.25	7.74	3.74	0.000	3.74	7.74	13.49
Kote terena		301.57	302.58	302.17	302.11	302.28	302.69	305.57

0+220.00



Kote projekta		297.40	300.72	300.54	300.47	300.76	304.53
Udaljenost od osi	20.000	10.34	3.74	0.000	3.21	6.80	15.05
Kote terena		297.40	300.72	300.54	300.47	300.76	304.53

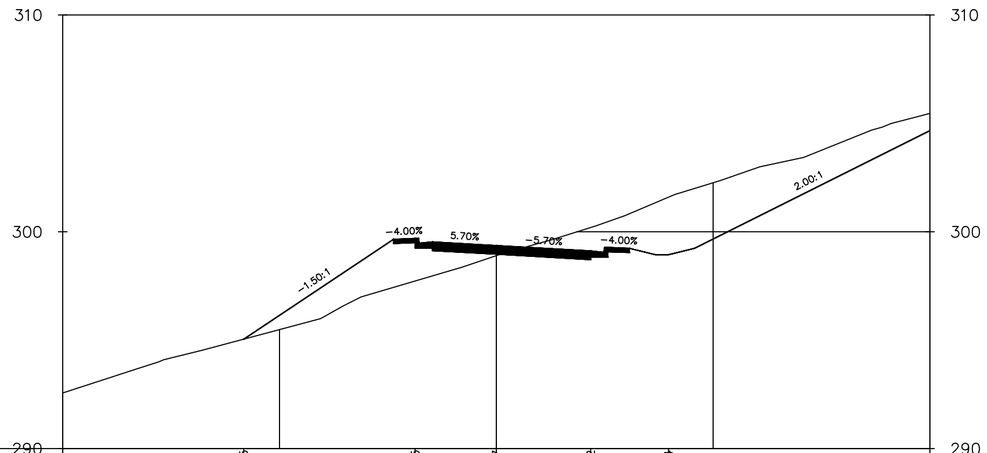
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21000 SPLIT, MATICE HRVATSKE 15

ZAVRŠNI RAD

TEMA	IDEJNI PROJEKT DIONICE CESTE	
STUDENT	Maja Miošić, 4469	
SADRŽAJ	POPREČNI PRESJECI	MJERILO 1:200
DATUM	lipanj 2019.	

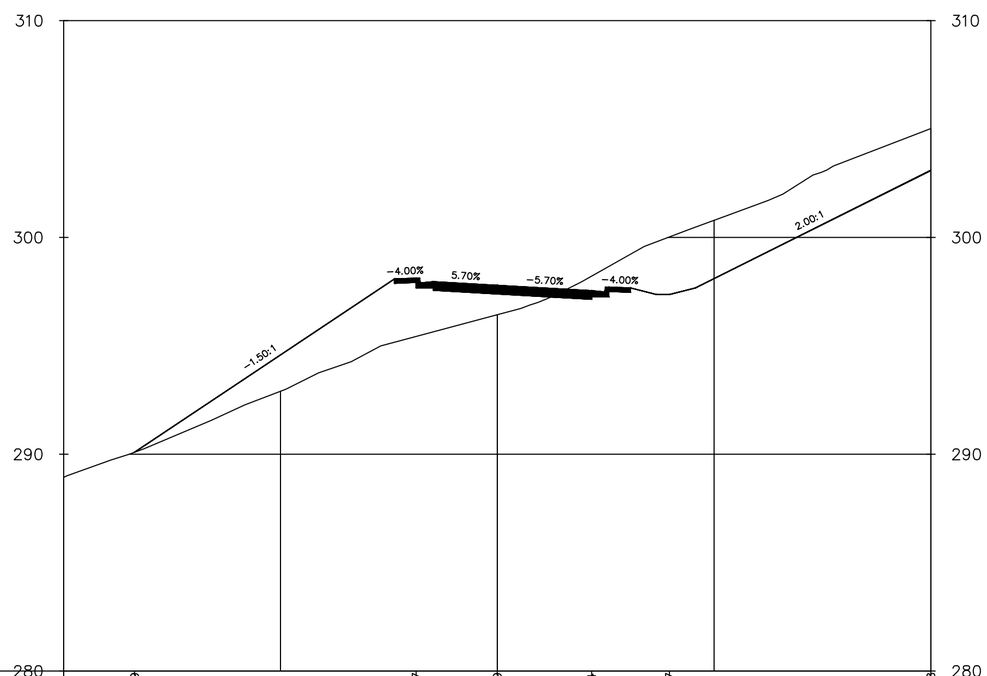
POPREČNI PRESJECI 13–14

0+240.00



Kote projekta		295.05	299.25	298.97	298.72	298.94	304.673
Udaljenost od osi	20.000	11.66	3.74	0.00	4.35	7.94	20.000
Kote terena		295.05	299.25	298.97	298.72	298.94	304.67

0+260.00



Kote projekta		290.09	297.67	297.39	297.14	297.37	303.08
Udaljenost od osi	20.000	16.73	3.74	0.00	4.35	7.94	20.00
Kote terena		290.09	297.67	297.39	297.14	297.37	303.08

SVEUČILIŠTE U SPLITU,
GRAĐEVINSKO - ARHITEKTONSKI FAKULTET
21000 SPLIT, MATICE HRVATSKE 15

ZAVRŠNI RAD

TEMA: IDEJNI PROJEKT DIONICE CESTE

STUDENT: Maja Miošić, 4469

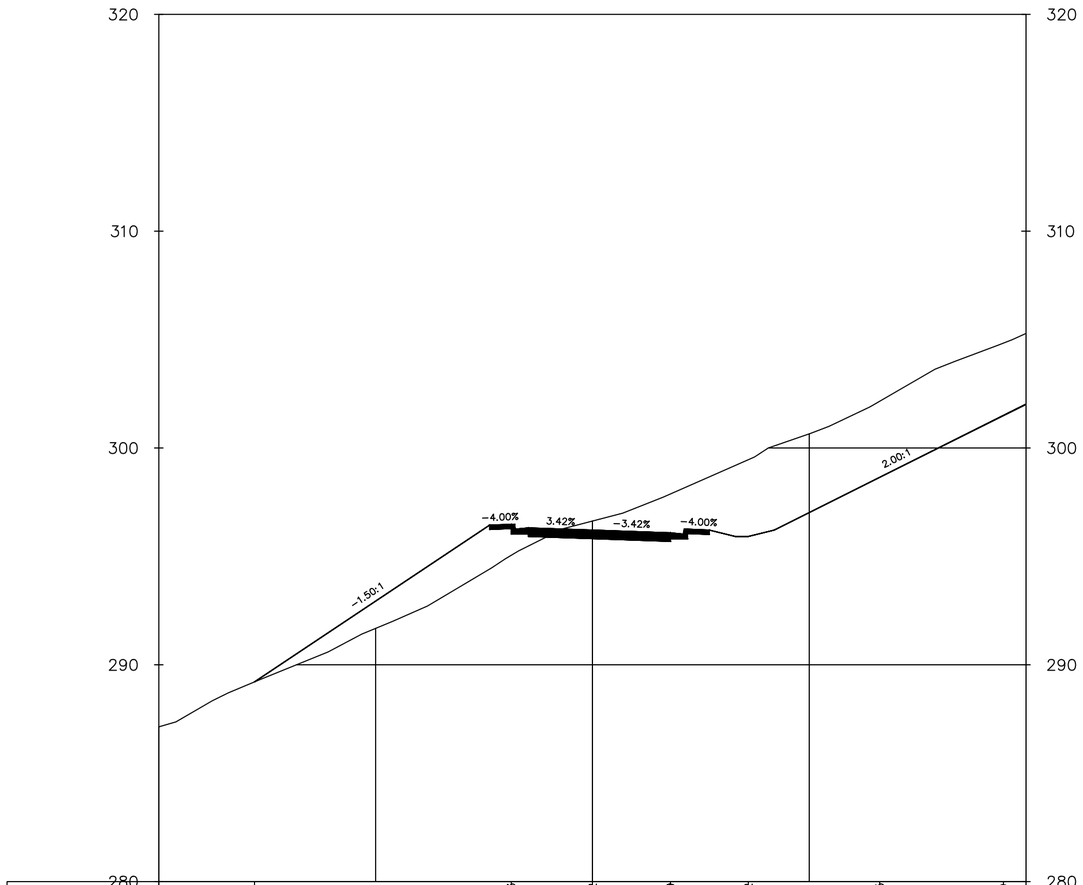
SADRŽAJ: POPREČNI PRESJECI

MJERILO: 1:200

DATUM: lipanj 2019.

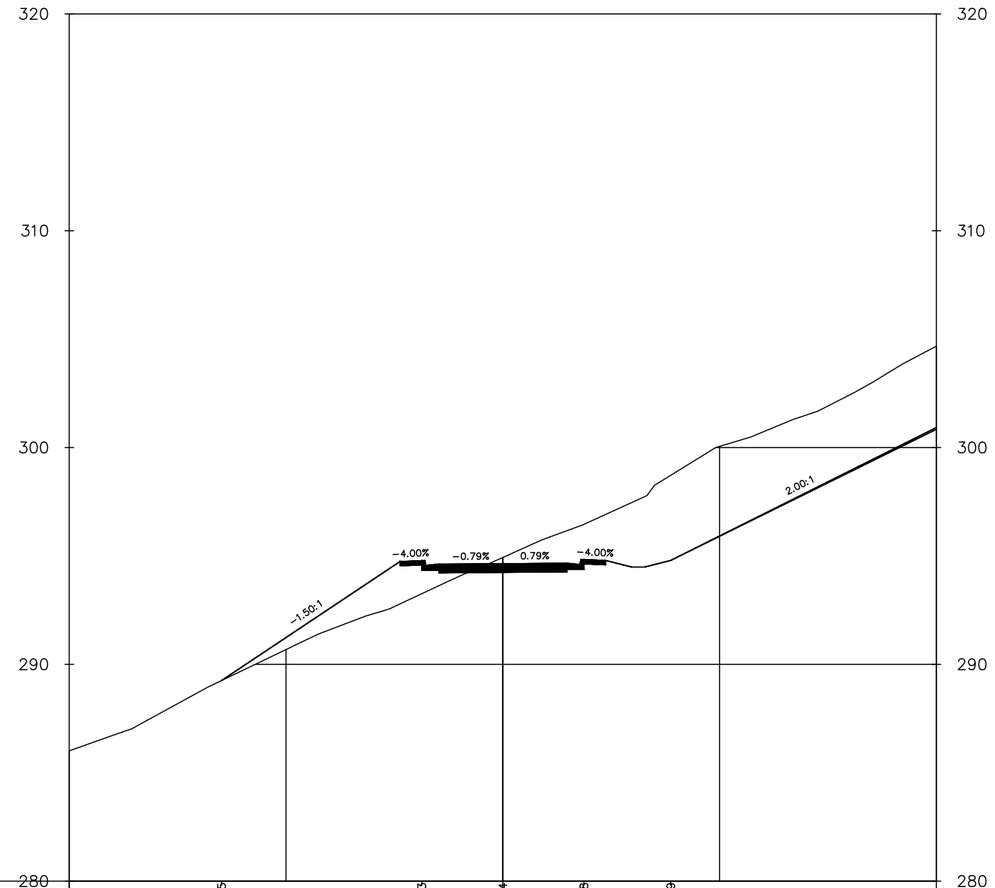
POPREČNI PRESJECI 15–16

0+280.00



Kote projekta		289.21	296.03	295.82	295.69	295.92	298.65	302.013
Udaljenost od osi	20.000	15.55	3.74	0.00	3.60	7.19	13.26	18.96
Kote terena		289.21	296.03	295.82	295.69	295.92	298.65	301.49

0+300.00



Kote projekta		289.25	294.33	294.24	294.38	294.79	300.837
Udaljenost od osi	20.000	12.97	3.74	0.000	3.74	7.74	20.000
Kote terena		289.25	294.33	294.24	294.38	294.79	300.84

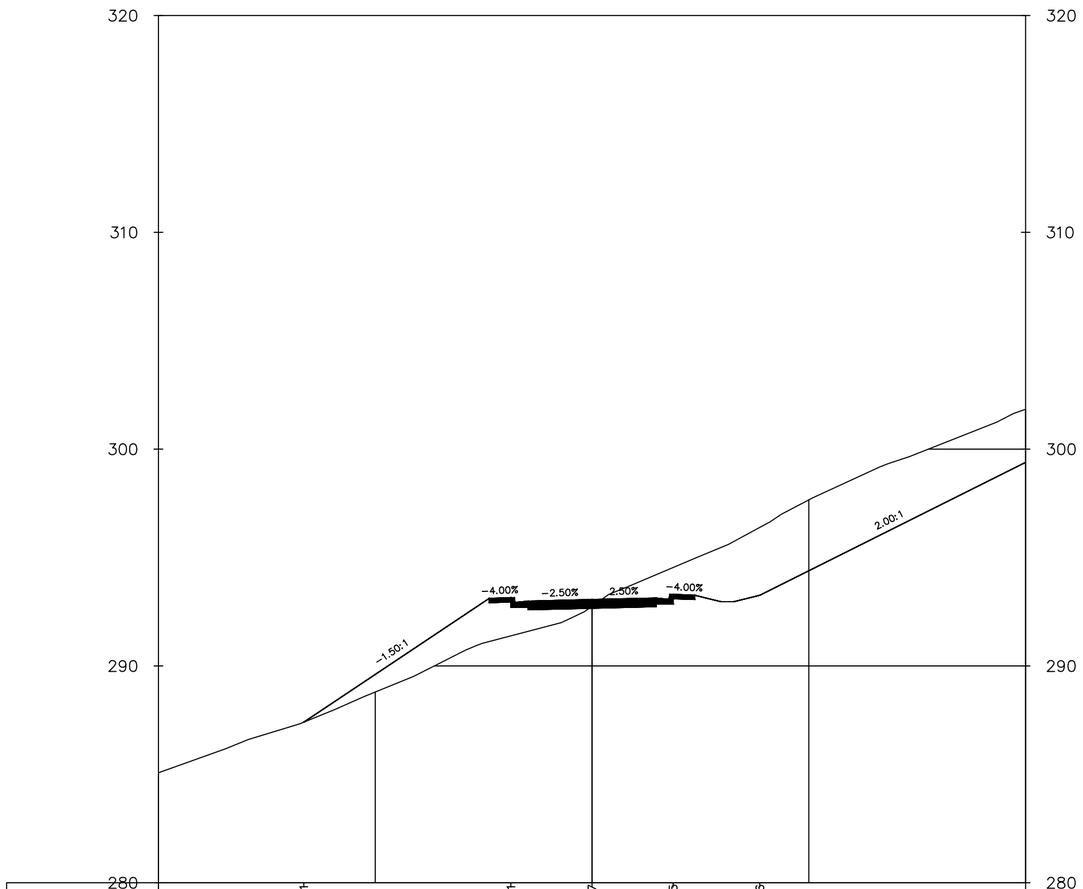
SVEUČILIŠTE U SPLITU,
GRAĐEVINSKO - ARHITEKTONSKI FAKULTET
21000 SPLIT, MATICE HRVATSKE 15

ZAVRŠNI RAD

TEMA	IDEJNI PROJEKT DIONICE CESTE
STUDENT	Maja Miošić, 4469
SADRŽAJ	POPREČNI PRESJECI
MJERILO	1:200
DATUM	lipanj 2019.

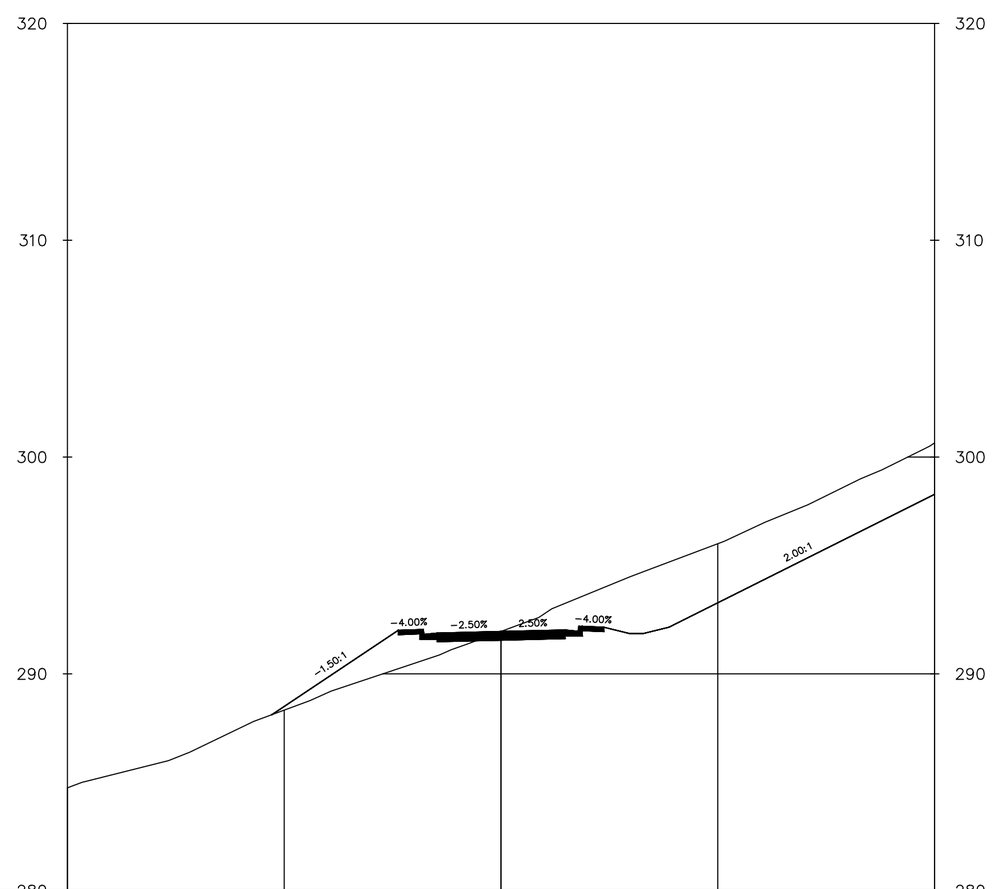
POPREČNI PRESJECI 17–18

0+320.00



Kote projekta		287.41	292.71	292.67	292.85	293.26	
Udaljenost od osi	20.000	13.36	3.74	0.00	3.74	7.74	20.000
Kote terena		287.41	292.71	292.67	292.85	293.26	299.394

0+334.09



Kote projekta		288.12	291.60	291.56	291.75	292.16	
Udaljenost od osi	20.000	10.57	3.74	0.000	3.74	7.74	20.000
Kote terena		288.12	291.60	291.56	291.75	292.16	298.284

SVEUČILIŠTE U SPLITU
GRAĐEVINSKO - ARHITEKTONSKI FAKULTET
21000 SPLIT, MATICE HRVATSKE 15

ZAVRŠNI RAD

TEMA: IDEJNI PROJEKT DIONICE CESTE

STUDENT: Maja Miošić, 4469

SADRŽAJ: POPREČNI PRESJECI

MJERILO: 1:200

DATUM: lipanj 2019.

6. RAČUNALNI ISPISI TOČAKA OSI

RAČUN GLAVNIH TOČAKA OSI

Alignment Station and Curve Report
Project Name: ZAVRŠNI RAD
Report Date: 2019

Alignment: OS1

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+00.000	7426.711	-8708.698
End:	0+59.566	7405.692	-8652.964

Tangent Data

Parameter	Value	Parameter	Value
Length:	59.566	Course:	S 69° 20' 11.0147" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	0+59.566	7405.692	-8652.964
SPI:		7398.593	-8634.141
SC:	0+89.566	7398.317	-8624.037

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:	S 75° 41' 47.7108" E

Curve Point Data

Description	Station	Northing	Easting
SC:	0+89.566	7398.317	-8624.037
RP:		7443.300	-8622.808

CS:	1+35.090	7418.396	-8585.327

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	57° 57' 50.1978"	Type:	LEFT
Radius:	45.000		
Length:	45.525	Tangent:	24.925
Mid-Ord:	5.635	External:	6.442
Chord:	43.608	Course:	N 62° 34' 58.9510" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	1+35.090	7418.396	-8585.327
SPI:		7426.815	-8579.734
ST:	1+65.090	7446.291	-8574.696

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 20° 51' 45.6128" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	1+65.090	7446.291	-8574.696
End:	1+96.707	7476.901	-8566.779

Tangent Data

Parameter	Value	Parameter	Value
Length:	31.617	Course:	N 14° 30' 08.9167" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	1+96.707	7476.901	-8566.779
SPI:		7502.870	-8560.061
SC:	2+36.707	7514.094	-8552.604

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	40.000	L Tan:	26.824
Radius:	60.000	S Tan:	13.476
Theta:	19° 05' 54.9354"	P:	1.107
X:	39.558	K:	19.926

Y:	4.409	A:	48.990
Chord:	39.803	Course:	N 20° 51' 45.6128" E

Curve Point Data

Description	Station	Northing	Easting
SC:	2+36.707	7514.094	-8552.604
RP:		7480.890	-8502.629
CS:	2+69.148	7535.081	-8528.384

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	30° 58' 43.9701"	Type:	RIGHT
Radius:	60.000		
Length:	32.441	Tangent:	16.628
Mid-Ord:	2.179	External:	2.261
Chord:	32.047	Course:	N 49° 05' 25.8372" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	2+69.148	7535.081	-8528.384
SPI:		7540.865	-8516.213
ST:	3+09.148	7543.819	-8489.552

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	40.000	L Tan:	26.824
Radius:	60.000	S Tan:	13.476
Theta:	19° 05' 54.9354"	P:	1.107
X:	39.558	K:	19.926
Y:	4.409	A:	48.990
Chord:	39.803	Course:	N 77° 19' 06.0615" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	3+09.148	7543.819	-8489.552
End:	3+34.092	7546.565	-8464.761

Tangent Data

Parameter	Value	Parameter	Value
Length:	24.943	Course:	N 83° 40' 42.7576" E

RAČUN DETALJNIH TOČAKA OSI

Date: 2019

Alignment Name: OS1
Station Range: Start: 0+000.00, End: 33+409.00
Station Increment: 20.00

Station	Northing	Easting	Tangential Direction
0+000.00	7,426.7113m	-8,708.6978m	S69° 20' 11"E
0+020.00	7,419.6537m	-8,689.9845m	S69° 20' 11"E
0+040.00	7,412.5961m	-8,671.2711m	S69° 20' 11"E
0+060.00	7,405.5385m	-8,652.5577m	S69° 20' 25"E
0+080.00	7,399.4820m	-8,633.5190m	S78° 11' 50"E
0+100.00	7,399.2380m	-8,613.6673m	N78° 16' 47"E
0+120.00	7,407.4488m	-8,595.6107m	N52° 48' 54"E
0+140.00	7,422.6185m	-8,582.8259m	N27° 51' 42"E
0+160.00	7,441.3672m	-8,575.9867m	N15° 03' 09"E
0+180.00	7,460.7258m	-8,570.9625m	N14° 30' 09"E
0+200.00	7,480.0879m	-8,565.9516m	N14° 37' 55"E
0+220.00	7,499.2029m	-8,560.1042m	N20° 58' 43"E
0+240.00	7,516.7851m	-8,550.7072m	N36° 44' 43"E
0+260.00	7,530.5403m	-8,536.3160m	N55° 50' 38"E
0+280.00	7,538.9139m	-8,518.2438m	N73° 32' 13"E
0+300.00	7,542.7587m	-8,498.6389m	N82° 40' 46"E
0+320.00	7,545.0136m	-8,478.7666m	N83° 40' 43"E

7. RAČUN KOTA KOLNIKA

Corridor Name: koridor ceste
Base Alignment Name: OS1
Station Range: Start: 0+000.00, End: 0+334.09

CHAINAGE 0+000.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-8,703.5379	7,440.3930	309.4641	-14.622m	Daylight
2	-8,707.0246	7,431.1479	316.0513	-4.742m	Hinge
3	-8,707.0249	7,431.1470	315.8512	-4.741m	EPS_Sub
4	-8,707.3775	7,430.2123	316.0912	-3.742m	Back_Curb
5	-8,707.4304	7,430.0719	316.0912	-3.592m	Top_Curb
6	-8,707.4451	7,430.0329	315.8663	-3.550m	Flowline_Gutter
7	-8,707.6568	7,429.4715	315.8862	-2.950m	ETW_Pave1
8	-8,707.6568	7,429.4715	315.9263	-2.950m	ETW
9	-8,707.6568	7,429.4715	315.5262	-2.950m	ETW_Sub
10	-8,707.6568	7,429.4715	315.8262	-2.950m	ETW_Pave2
11	-8,708.6978	7,426.7113	316.0000	0.000m	Crown
12	-8,708.6978	7,426.7113	315.6000	0.000m	Crown_Sub
13	-8,708.6978	7,426.7113	315.9000	0.000m	Crown_Pave2
14	-8,708.6978	7,426.7113	315.9600	0.000m	Crown_Pave1
15	-8,709.7388	7,423.9511	315.6737	2.950m	ETW_Sub
16	-8,709.7388	7,423.9511	315.9737	2.950m	ETW_Pave2
17	-8,709.7388	7,423.9511	316.0737	2.950m	ETW
18	-8,709.7388	7,423.9511	316.0337	2.950m	ETW_Pave1
19	-8,709.9506	7,423.3897	316.0137	3.550m	Flowline_Gutter
20	-8,709.9653	7,423.3506	316.2387	3.592m	Top_Curb
21	-8,710.0182	7,423.2103	316.2387	3.742m	Back_Curb
22	-8,710.3707	7,422.2756	315.9987	4.741m	EPS_Sub
23	-8,710.3711	7,422.2746	316.1987	4.742m	EPS
24	-8,710.7946	7,421.1518	315.8987	5.942m	Ditch_In
25	-8,711.0063	7,420.5904	315.8987	6.542m	Ditch_Out
26	-8,711.4297	7,419.4676	316.1987	7.742m	Hinge_Cut
27	-8,729.9881	7,370.2598	342.4943	60.333m	Daylight

CHAINAGE 0+025.00

CHAINAGE 0+050.00

CHAINAGE 0+075.00

CHAINAGE 0+100.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-8,616.6982	7,413.8477	303.6437	-14.921m	Daylight
2	-8,615.0104	7,405.7118	309.1831	-6.612m	Hinge
3	-8,615.0102	7,405.7108	308.9831	-6.611m	EPS_Sub
4	-8,614.8072	7,404.7327	309.2231	-5.612m	Back_Curb
5	-8,614.7768	7,404.5858	309.2231	-5.462m	Top_Curb
6	-8,614.7683	7,404.5450	308.9981	-5.420m	Flowline_Gutter
7	-8,614.6464	7,403.9575	309.0181	-4.820m	ETW_Pave1
8	-8,614.6464	7,403.9575	309.0581	-4.820m	ETW
9	-8,614.6464	7,403.9575	308.6581	-4.820m	ETW_Sub
10	-8,614.6464	7,403.9575	308.9581	-4.820m	ETW_Pave2
11	-8,613.6673	7,399.2380	309.3955	0.000m	Crown
12	-8,613.6673	7,399.2380	308.9955	0.000m	Crown_Sub
13	-8,613.6673	7,399.2380	309.2955	0.000m	Crown_Pave2
14	-8,613.6673	7,399.2380	309.3555	0.000m	Crown_Pave1
15	-8,613.0680	7,396.3495	309.2020	2.950m	ETW_Sub
16	-8,613.0680	7,396.3495	309.5020	2.950m	ETW_Pave2
17	-8,613.0680	7,396.3495	309.6020	2.950m	ETW
18	-8,613.0680	7,396.3495	309.5620	2.950m	ETW_Pave1
19	-8,612.9462	7,395.7620	309.5420	3.550m	Flowline_Gutter
20	-8,612.9377	7,395.7211	309.7670	3.592m	Top_Curb
21	-8,612.9072	7,395.5743	309.7670	3.742m	Back_Curb
22	-8,612.7043	7,394.5961	309.5270	4.741m	EPS_Sub
23	-8,612.7041	7,394.5951	309.7270	4.742m	EPS
24	-8,612.4603	7,393.4201	309.4270	5.942m	Ditch_In
25	-8,612.3384	7,392.8327	309.4270	6.542m	Ditch_Out
26	-8,612.0947	7,391.6577	309.7270	7.742m	Hinge_Cut
27	-8,598.4113	7,325.7008	343.4076	75.103m	Daylight

CHAINAGE 0+125.00

CHAINAGE 0+150.00

CHAINAGE 0+175.00

CHAINAGE 0+200.00

POINT	X	Y	Z	OFFSET	STRING CUT

1	-8,574.9030	7,482.4249	301.5681	-9.251m	Daylight
2	-8,573.4403	7,482.0430	302.5760	-7.740m	Hinge
3	-8,572.2792	7,481.7399	302.2760	-6.540m	Ditch_Out
4	-8,571.6987	7,481.5883	302.2760	-5.940m	Ditch_In
5	-8,570.5376	7,481.2852	302.5760	-4.740m	EPS
6	-8,570.5366	7,481.2849	302.3760	-4.739m	EPS_Sub
7	-8,569.5700	7,481.0326	302.6160	-3.740m	Back_Curb
8	-8,569.4249	7,480.9947	302.6160	-3.590m	Top_Curb
9	-8,569.3845	7,480.9841	302.3910	-3.548m	Flowline_Gutter
10	-8,568.8040	7,480.8326	302.4510	-2.948m	Flange
11	-8,568.8040	7,480.8326	302.0510	-2.948m	ETW_Sub
12	-8,568.8040	7,480.8326	302.3510	-2.948m	ETW_Pave2
13	-8,568.8040	7,480.8326	302.4110	-2.948m	ETW_Pave1
14	-8,565.9516	7,480.0879	302.5104	0.000m	Crown
15	-8,565.9516	7,480.0879	302.1104	0.000m	Crown_Sub
16	-8,565.9516	7,480.0879	302.4704	0.000m	Crown_Pave1
17	-8,565.9516	7,480.0879	302.4104	0.000m	Crown_Pave2
18	-8,563.0973	7,479.3427	302.1700	2.950m	ETW_Sub
19	-8,563.0973	7,479.3427	302.5700	2.950m	Flange
20	-8,563.0973	7,479.3427	302.4700	2.950m	ETW_Pave2
21	-8,563.0973	7,479.3427	302.5300	2.950m	ETW_Pave1
22	-8,562.5168	7,479.1911	302.5100	3.550m	Flowline_Gutter
23	-8,562.4764	7,479.1806	302.7350	3.592m	Top_Curb
24	-8,562.3313	7,479.1427	302.7350	3.742m	Back_Curb
25	-8,561.3647	7,478.8904	302.4950	4.741m	EPS_Sub
26	-8,561.3637	7,478.8901	302.6950	4.742m	EPS
27	-8,560.2026	7,478.5870	302.3950	5.942m	Ditch_In
28	-8,559.6221	7,478.4354	302.3950	6.542m	Ditch_Out
29	-8,558.4610	7,478.1323	302.6950	7.742m	Hinge_Cut
30	-8,552.8962	7,476.6794	305.5706	13.493m	Daylight

CHAINAGE 0+225.00

CHAINAGE 0+250.00

CHAINAGE 0+275.00

CHAINAGE 0+300.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-8,500.2922	7,555.6279	289.2540	-12.975m	Daylight
2	-8,499.2430	7,547.4614	294.7431	-4.741m	Hinge

3	-8,499.2429	7,547.4604	294.5431	-4.740m	EPS_Sub
4	-8,499.1156	7,546.4696	294.7831	-3.741m	Back_Curb
5	-8,499.0965	7,546.3208	294.7831	-3.591m	Top_Curb
6	-8,499.0912	7,546.2794	294.5581	-3.550m	Flowline_Gutter
7	-8,499.0147	7,545.6843	294.5781	-2.950m	ETW_Pave1
8	-8,499.0147	7,545.6843	294.6181	-2.950m	ETW
9	-8,499.0147	7,545.6843	294.2181	-2.950m	ETW_Sub
10	-8,499.0147	7,545.6843	294.5181	-2.950m	ETW_Pave2
11	-8,498.6389	7,542.7587	294.6413	0.000m	Crown
12	-8,498.6389	7,542.7587	294.2413	0.000m	Crown_Sub
13	-8,498.6389	7,542.7587	294.5413	0.000m	Crown_Pave2
14	-8,498.6389	7,542.7587	294.6013	0.000m	Crown_Pave1
15	-8,498.2630	7,539.8327	294.2645	2.950m	ETW_Sub
16	-8,498.2630	7,539.8327	294.5645	2.950m	ETW_Pave2
17	-8,498.2630	7,539.8327	294.6645	2.950m	ETW
18	-8,498.2630	7,539.8327	294.6245	2.950m	ETW_Pave1
19	-8,498.1866	7,539.2376	294.6045	3.550m	Flowline_Gutter
20	-8,498.1812	7,539.1963	294.8295	3.592m	Top_Curb
21	-8,498.1621	7,539.0475	294.8295	3.742m	Back_Curb
22	-8,498.0348	7,538.0566	294.5895	4.741m	EPS_Sub
23	-8,498.0347	7,538.0556	294.7895	4.742m	EPS
24	-8,497.8818	7,536.8654	294.4895	5.942m	Ditch_In
25	-8,497.8054	7,536.2703	294.4895	6.542m	Ditch_Out
26	-8,497.6525	7,535.0801	294.7895	7.742m	Hinge_Cut
27	-8,492.3348	7,493.6864	315.6564	49.476m	Daylight

CHAINAGE 0+325.00

8. VERTIKALNI TOK TRASE

Vertical Alignment: NIVELETA
Station Range: Start: 0+000.00, End: 33+409.00

PVI	Station	Grade Out	Curve Length
0.00	0+000.00	-6.60%	
1.00	0+178.45	-7.88%	58.645m
	Vertical Curve Information:(crest curve)		
	PVC Station: 0+149.11	Elevation: 306.152m	
	PVI Station: 0+178.45	Elevation: 304.215m	
	PVT Station: 0+207.75	Elevation: 301.906m	
	High Point: 0+149.11	Elevation: 306.152m	
	Grade in: -6.60%	Grade out: -7.88%	
	Change: 1.27%	K:	
	Curve Length: 58.645m		
	Passing Distance:	Stopping Distance:	
2.00	0+334.09		

9. PRORAČUN KOLIČINA ZEMLJANIH RADOVA

10. Cut/Fill Report

Generated: 2019-06-13 16:28:30

By user: MOJE RACUNALO

Drawing: C:\Users\MOJE RACUNALO\Desktop\ZAVRŠNI RAD\C:\Users\MOJE RACUNALO\Desktop\ZAVRŠNI RAD\ZAVRŠNI CESTE PRINT.dwg

Volume Summary

Name	**Type**	**Cut Factor**	**Fill Factor**	**2d Area** (sq.m)	**Cut** (Cu. M.)	**Fill** (Cu. M.)	**Net** (Cu. M.)
Surface7	full	1.000	1.000	19273.17	35302.23	7646.84	27655.39<Cut>

Totals

	2d Area (sq.m)	**Cut** (Cu. M.)	**Fill** (Cu. M.)	**Net** (Cu. M.)
Total	19273.17	35302.23	7646.84	27655.39<Cut>

* Value adjusted by cut or fill factor other than 1.0

11. PRORAČUN KOLIČINA RADOVA PO PRESJECIMA

Volume Report
Alignment: OS1
Sample Line Group: PRESJECI
Start Sta: 0+000.000
End Sta: 0+334.092

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	59.19	0.00	0.00	12.95	0.00	0.00	0.00	0.00	0.00
0+020.000	94.63	1538.19	1538.19	4.57	175.19	1538.19	1538.19	175.19	1363.00
0+040.000	94.40	1890.27	1890.27	16.21	207.84	3428.46	3428.46	383.03	3045.43
0+059.566	90.44	1808.22	1808.22	13.16	287.30	5236.68	5236.68	670.33	4566.35
0+059.570	90.44	0.39	0.39	13.15	0.06	5237.07	5237.07	670.39	4566.68
0+060.000	90.47	38.90	38.90	12.53	5.52	5275.96	5275.96	675.91	4600.05
0+080.000	46.55	1485.15	1485.15	14.66	256.12	6761.11	6761.11	932.03	5829.08
0+089.566	25.42	410.79	410.79	15.94	125.65	7171.91	7171.91	1057.67	6114.23
0+100.000	29.52	355.68	355.68	18.07	146.98	7527.58	7527.58	1204.65	6322.93
0+120.000	36.39	819.97	819.97	22.03	329.35	8347.56	8347.56	1534.00	6813.55
0+135.090	0.00	338.84	338.84	59.29	520.80	8686.40	8686.40	2054.81	6631.59
0+140.000	0.00	0.00	0.00	71.20	282.78	8686.40	8686.40	2337.59	6348.81
0+160.000	0.00	0.00	0.00	34.66	1008.89	8686.40	8686.40	3346.48	5339.92
0+160.079	0.00	0.00	0.00	34.51	2.72	8686.40	8686.40	3349.20	5337.19

0+160.085	0.00	0.00	0.00	34.50	0.21	8686.40	8686.40	3349.41	5336.99
0+160.091	0.00	0.00	0.00	34.49	0.21	8686.40	8686.40	3349.61	5336.78
0+165.090	0.00	0.00	0.00	29.74	160.55	8686.40	8686.40	3510.16	5176.24
0+165.090	0.00	0.00	0.00	29.74	0.01	8686.40	8686.40	3510.17	5176.22
0+180.000	6.67	49.71	49.71	5.22	260.58	8736.11	8736.11	3770.75	4965.36
0+196.707	29.33	300.76	300.76	0.87	50.87	9036.87	9036.87	3821.62	5215.25
0+196.710	29.34	0.08	0.08	0.87	0.00	9036.94	9036.94	3821.62	5215.32
0+200.000	27.78	93.96	93.96	0.91	2.93	9130.90	9130.90	3824.56	5306.35
0+220.000	14.83	413.61	413.61	10.10	113.20	9544.51	9544.51	3937.75	5606.76
0+236.707	34.35	360.13	360.13	10.10	180.03	9904.64	9904.64	4117.78	5786.86
0+240.000	32.17	90.70	90.70	13.12	41.78	9995.34	9995.34	4159.56	5835.78
0+260.000	36.39	555.25	555.25	27.28	445.79	10550.60	10550.60	4605.35	5945.24
0+269.148	46.94	305.65	305.65	26.01	272.05	10856.25	10856.25	4877.40	5978.85
0+280.000	61.62	492.81	492.81	15.29	248.72	11349.06	11349.06	5126.12	6222.94
0+294.112	64.75	799.82	799.82	9.32	185.66	12148.87	12148.87	5311.78	6837.09
0+300.000	63.90	357.17	357.17	9.78	58.10	12506.04	12506.04	5369.88	7136.16
0+309.148	55.51	546.19	546.19	12.33	101.11	13052.23	13052.23	5470.99	7581.24
0+309.150	55.51	0.09	0.09	12.33	0.02	13052.32	13052.32	5471.01	7581.30
0+320.000	49.39	569.05	569.05	13.01	137.44	13621.36	13621.36	5608.45	8012.91
0+334.092	45.28	666.98	666.98	7.63	145.42	14288.35	14288.35	5753.87	8534.48

12. LITERATURA

1) Prof. dr. sc. Željko Korlaet, "Uvod u projektiranje i građenje cesta" , Građevinski Fakultet Sveučilišta u Zagrebu, Zagreb, 1995.

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.