Idejni projekt lokalne ceste

Lugović, Bruno

SVEUČILIŠTE U SPLITU
FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE

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Završni rad

Split, 2019.

SVEUČILIŠTE U SPLITU
FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE

Split, Matice Hrvatske 15

STUDIJ:	**PREDDIPLOMSKI SVEUČILIŠNI STUDIJ GRAĐEVINARSTVA**
KANDIDAT:	**BRUNO LUGOVIĆ**
BROJ INDEKSA:	**4547**
KATEDRA:	**Katedra za prometnice i geodeziju**
PREDMET:	**Ceste**

ZADATAK ZA ZAVRŠNI RAD

Tema: IDEJNI PROJEKT LOKALNE CESTE

Opis zadatka: uz pomoć programa za projektiranje cesta Autodesk AutoCAD Civil 3D potrebno je izraditi idejni projekt ceste na geodetskoj podlozi koja je korištena za izradu programa u okviru kolegija Ceste. Trasu treba položiti od točke A do točke B prema svim podacima iz programskog zadatka.

Zadatak treba sadržavati:

1. Kopiju programskog zadatka
2. Tehnički opis
3. Građevinsku situaciju u M 1:1000
4. Uzdužni presjek u M 1:1000/100
5. Karakteristične poprečne presjeke u M 1:100
6. Računalne ispise koordinatnih točaka osi
7. Proračun količina zemljanih radova
8. Proračun količine radova po presjecima

U Splitu, lipanj 2019.

Voditelj Završnog rada:

Prof.dr.sc. Dražen Cvitanić

IDEJNI PROJEKT LOKALNE CESTE

Sažetak:

Idejni projekt lokalne ceste izrađen je na geodetskoj podlozi, prema zadatku iz kolegija Ceste, služeći se programom Autodesk AutoCAD Civil 3D. Cesta je projektirana za godišnji dnevni promet (PGDP) od 950 vozila na dan, na brdovitom terenu. Projektna brzina ceste iznosi 40 km/h. Idejno rješenje izrađeno je prema Pravilniku o 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 Autodesk AutoCAD 3D. The road is designed for the annual average daily traffic (AADT) of 950 vehicles per day, on the hilly terrain. Design speed for the road is 40 km/h. 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

SVEUČILIŠTE U SPLITU
FAKULTET GRAĐEVINARSTVA, ARHITEKTURE
I GEODEZIJE

Split, ak.god. 2016/2017.

Katedra za prometnice

Studij: Preddiplomski

Nastavni predmet: CESTE

Student: BRUNO LUGOVIĆ

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: **brdovit.**

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

Predmetni nastavnik:

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

2. TEHNIČKI OPIS

OPĆI PODACI

Ovim idejnim projektom obuhvaćeno je projektiranje lokalne ceste na dionici od točke A (266 m.n.m) do točke B (246 m.n.m) u dužini od 410.07 m koja se proteže smjeru zapad-istok na brdovitom terenu.

Za izradu idejnog rješenja korištena je katastarsko-topografska podloga u mjerilu 1:1000, prilog iz programa predmeta Ceste. Situacija je priložena u mjerilu 1:1000.

TEHNIČKI ELEMENTI IZGRADNJE:

Opis trase:

Početak prometnice je u točki A (266 m.n.m) na stacionaži 0+000,00, a završava u točki B (246 m.n.m) na stacionaži 0+410,07. Na prostorno vođenje prometnice utječu topografske karakteristike terena. Prometnica se nalazi na brdovitom krškom terenu.

Temeljem „Pravilnika o osnovnim uvjetima kojima javne ceste izvan naselja i njihovi elementi moraju udovoljavati sa stajališta sigurnosti prometa“, definirani su projektni elementi trase i elementi poprečnog profila.

U tablici 1.2, koja je dio Pravilnika, dani su elementi za definiciju kategorije prometnice.

Tabl. 1.2

Kategorija ceste	Društ. gospod. značenje (1.1.1.)	Vrsta prometa (1.1.2.)	Veličina prometa (1.1.3.)	Zadaća povezivanja (1.1.4.)	Srednja duljina putovanja (km)
AC	Državna	Prom. mot. vozila	>14000	Međudržavno i državno	>100
1. kat.	Državna	Prom. mot. vozila	>12000	Međudržavno i državno-regionalno	50-100
2. kat.	Državna	Prom. mot. v. mješoviti prom.	7000-12000	Državno i županijsko	20-50
3. kat.	Državna; županijska	Mješoviti promet	3000-7000	Međuopćinsko	5-50
4. kat.	Županijska; lokalna	Mješoviti promet	1000-3000	Općinsko	5-20
5. kat.	Lokalna	Mješoviti promet	<1000	Općinsko-lokalno	<5

U pravilu se usvaja najviša kategorija ceste koja se dobije primjenom kriterija iz tablice 1.2.

Predmetna cesta je lokalnog značaja s PGDP-om od 950 voz/dan što je svrstava u petu kategoriju.

Prema tablici 1.3. 1 iz Pravilnika, ceste pete kategorije projektiraju se za projektne brzine 40-60 km/h ovisno o terenskim ograničenjima.

Tabl. 1.3.1. Projektne brzine i najveći nagibi nivelete

PROMETNO -TEHNIČKO RAZVRSTAVANJE		PROJEKTNA BRZINA V_p (km/h) / NAGIB s_{max} (%)							
KAT.	Razina usluge	120 a.	100 b.	90 c.	80 d.	70 e.	60 f.	50 g.	40 h.
AC	C/D	≥120/4°	100/5*	90/5.5**	80/6***				
1. kat.	D		100/5.5°	90/5.5*	80/6**	70/7***			
2. kat.	D		100/5.5°	90/5.5*	80/6*	70/7**	60/8***		
3. kat.	E				80/7°	70/7*	60/8**	50/9***	
4. kat.	E					70/8°	60/9*	50/10**	40/11***
5. kat.	E						60/10°	50/11*	40/12** 40(30)/12***

OZNAKE:
° BEZ OGRANIČENJA BO
* UMJERENA OGRANIČENJA UO
** ZNATNA OGRANIČENJA ZO
*** VELIKA OGRANIČENJA VO

Vrijednost u zagradi primjenjuje se iznimno

Za predmetnu prometnicu, obzirom da se radi o brdovitom terenu sa značajnim ograničenjima, prema navedenoj tablici, projektna brzina je 40km/h i maksimalni uzdužni nagib je 12%.

Iz odabrane projektne brzine proizlaze i projektni elementi horizontalne i vertikalne geometrije trase:

- minimalni radijus horizontalne krivine R = 45 m
- minimalna duljina klotoidne prelazne krivine L = 30 m
- maksimalni uzdužni nagib i = 12 %
- minimalni polumjer konkavnog zaobljenja nivelete (za 0%) R = 200 m
- minimalni polumjere konveksnog zaobljenja nivelete (za 0%) R = 300 m

Tlocrtni elementi trase:

Trasa ceste ima duljinu od 410.07 m, sastoji se od četiri pravca i tri krivine.

Prva krivina ima radijus R = 70 m i duljinu prijelazne krivine L = 40 m, druga ima radijus R = 45 m i duljinu prijelazne krivine L = 30 m, a treća ima radijus R = 60 m i duljinu prijelazne krivine L = 40 m.

Duljina prvog pravca iznosi 11.02 m, duljina drugog pravca je 64.28 m, duljina trećeg pravca iznosi 6,37 m, a duljina četvrtog pravca iznosi 22.33 m.

Krivine su konstruirane pomoću tri prijelazne krivine oblika klotoide i kružnog luka.

Vertikalni elementi trase:

Vertikalni tok trase sastoji se od dva pravca i jedn konkavne krivine. Radijus krivine je R = 7500 m i pripadajuća tangenta je duljine 38.36 m.

Uzdužni nagib prvog pravca iznosi S_1 = 5.08%, a drugog S_2 = 4.57%.

Elementi poprečnog profila:

Planirana prometnica predviđena je za dvosmjerni promet, s po jednim voznim trakom za svaki smjer.

Širina voznog traka poprečnog presjeka iznosi 2.75 m, a širina rubnog traka 0.20 m.

U nasipu se izvodi bankina širine 1.0 m i nagiba 5%, a u usjeku berma širine 1.0 m, a nagiba 5%. U usjecima se izvode i rigoli za odvodnju vode širine 0.65 m i drenaža koja je postavljena u glinenu posteljicu. Cesta se u većem dijelu nalazi u zasjeku.

Poprečni nagib ceste u pravcu iznosi 2.5%, a u krivinama je u ovisnosti od polumjera kružnog luka i usvojene računske brzine, Vr = 40 km/h.

Poprečni nagib prve krivine je q1 = 5.1%, druge krivine q2 = 7.0%, a treće krivine q3 = 5.8%

Nagibi usjeka su 2:1, dok su nagibi nasipa 1:1.5.

Kolnička konstrukcija:

Projektom je predviđena sljedeća kolnička konstrukcija:

- asfaltbeton habajući sloj AB 11 4 cm
- bitumenizirani nosivi sloj BNS 22 6 cm
- mehanički zbijeni nosivi sloj MZNS 30 cm

Odvodnja:

Odvodnja prometnice predviđa izvedbu otvorenog sustava odvodnje kojim se vrši prihvat voda s kolnika i pribrežnih voda izvedbom betonskih rigola. Uzdužnim i poprečnim nagibima kolnika vode se usmjeravaju u betonske rigole u koje se vrši i prihvat pribrežnih voda u usjecima i ispuštaju u teren.

Oprema ceste:

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

3. GRAFIČKI PRILOZI

3.1 SITUACIJA

M 1:1000

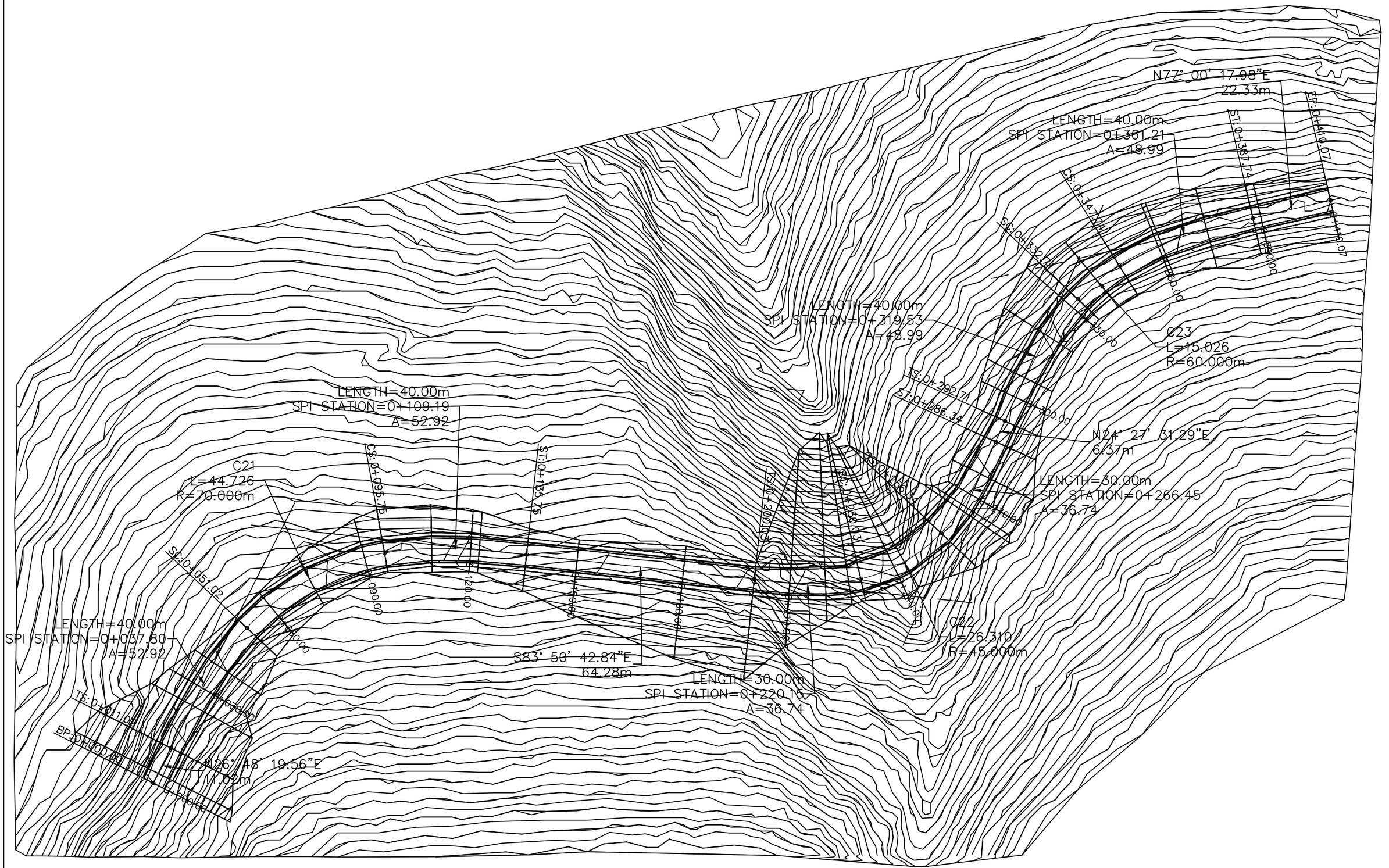
3.2 UZDUŽNI PRESJEK

M 1.1000/100

3.3 KARAKTERISTIČNI POPREČNI PRESJECI

M 1:200

3.4 TABLICA UKUPNOG VOLUMENA ZEMLJANIH RADOVA



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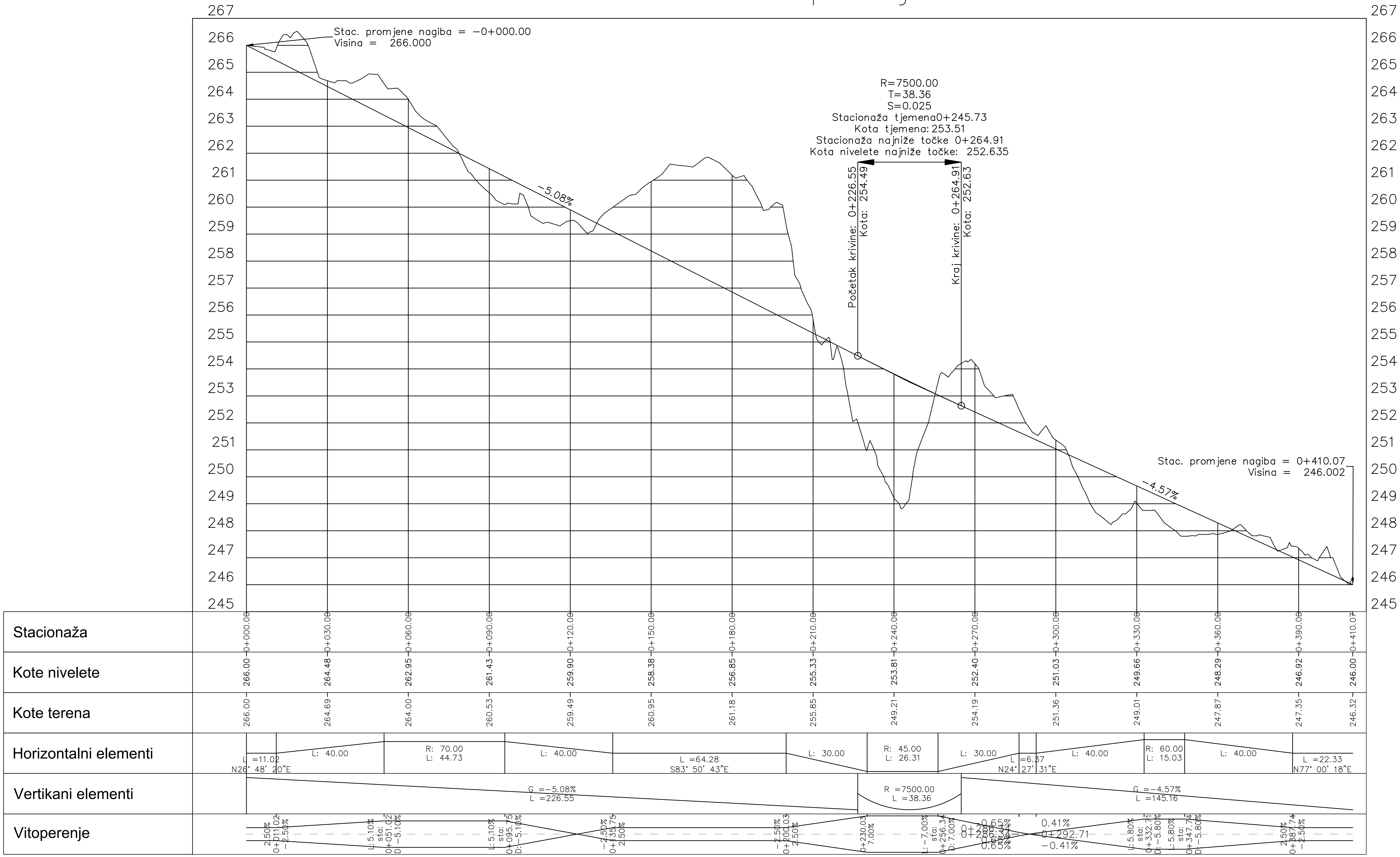
PREDMET :	ZAVRŠNI RAD - PROMETNICA	DATUM: lipanj 2019.
STUDIJ :	PREDDIPLOMSKI GRAĐEVINSKI FAKULTET	
SADRŽAJ LISTA :	SITUACIJA	M 1:1000
STUDENT :	BRUNO LUGOVIĆ	

Uzdužni presjek



FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE U SPLITU		
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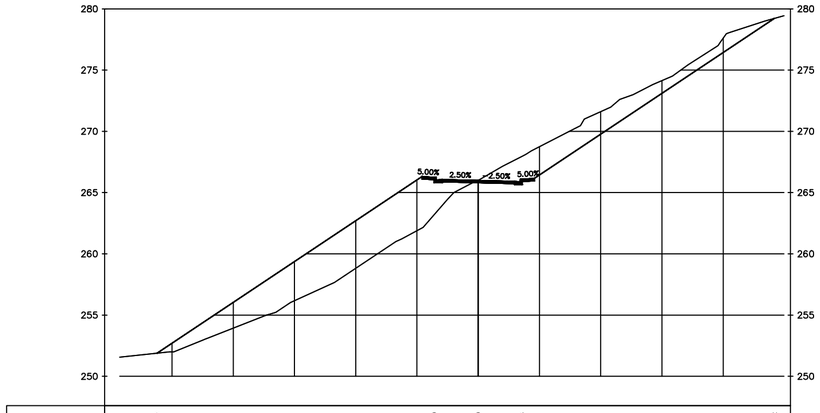
SADRŽAJ LISTA :	UZDUŽNI PRESJEK	M 1:1000 M 1:100
STUDENT :	BRUNO LUGOVIĆ	



0+000.00

Kote projekta		251.89	265.80	265.80	265.66	279.22
Udaljenost od osi	−29.275	−26.21	−3.59	0.000	3.59	24.18 24.961
Kote terena		251.89	265.80	265.80	265.66	279.22

0+030.00

Kote projekta		260.60	264.28	264.28	264.19	270.57	
Udaljenost od osi	−20.000	−10.85	−3.59	0.000	3.38	13.94	20.000
Kote terena		260.60	264.28	264.28	264.19	270.57	

0+060.00

Kote projekta		262.98	262.75	262.75	262.66	266.53	
Udaljenost od osi	−20.000	−5.00	−3.59	0.000	3.55	10.35	20.000
Kote terena		262.98	262.75	262.75	262.66	266.53	

0+090.00

Kote projekta		257.37	261.23	261.23	261.14	262.12	
Udaljenost od osi	−20.000	−11.13	−3.59	0.000	3.55	6.02	20.000
Kote terena		257.37	261.23	261.23	261.14	262.12	

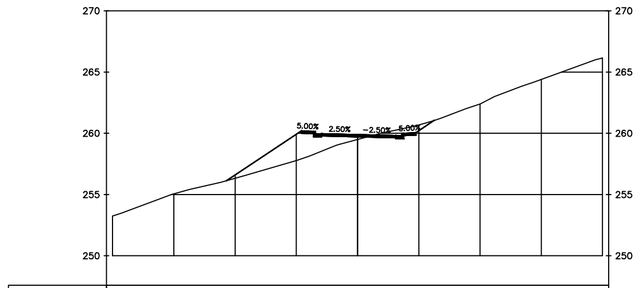
FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE U SPLITU

PREDMET : ZAVRŠNI RAD - PROMETNICA
STUDIJ : PREDDIPLOMSKI GRAĐEVINSKI FAKULTET
SADRŽAJ LISTA : KARAKTERISTIČNI POPREČNI PRESJECI
STUDENT : BRUNO LUGOVIĆ

DATUM:
lipanj 2019.

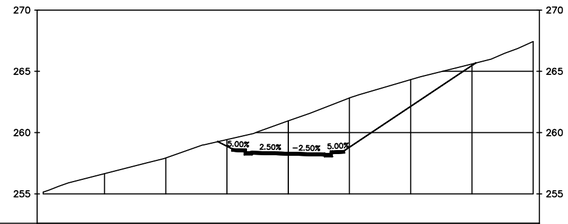
M 1:100

0+120.00



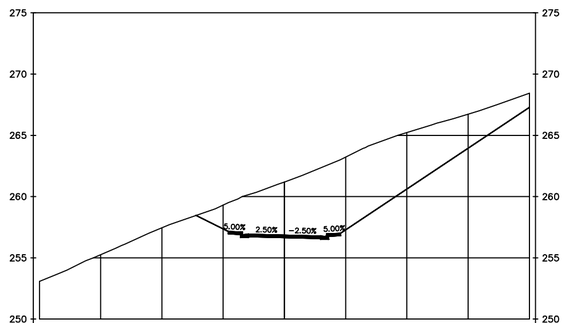
Kote projekta		256.12	259.70	259.70	259.62	261.03	
Udaljenost od osi	−20.000	−10.72	−3.59	0.000	3.12	6.23	20.000
Kote terena		256.12	259.70	259.70	259.62	261.03	

0+150.00



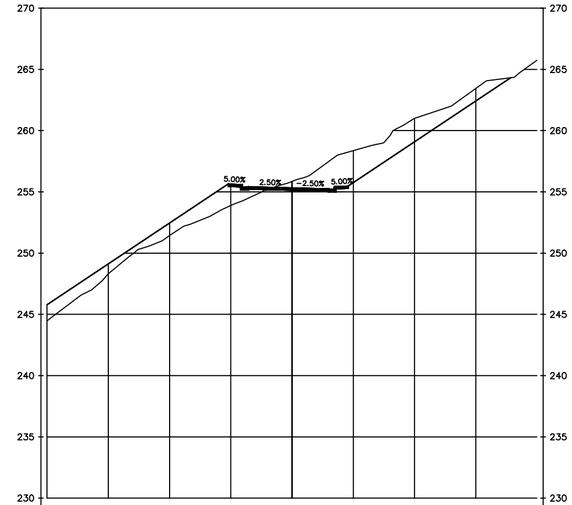
Kote projekta		259.26	258.18	258.18	258.03	265.68	
Udaljenost od osi	−20.000	−5.75	−3.59	0.00	3.59	15.31	20.000
Kote terena		259.26	258.18	258.18	258.03	265.68	

0+180.00



Kote projekta		258.46	256.66	256.65	256.51	267.280
Udaljenost od osi	−20.000	−7.20	−3.59	0.000	3.59	20.000
Kote terena		258.46	256.66	256.65	256.51	267.28

0+210.00



Kote projekta	245.787		255.22	255.127	255.13	254.98	264.31	
Udaljenost od osi	−20.000		−3.57	0.000	0.00	3.59	17.84	20.000
Kote terena	245.79		255.22		255.13	254.98	264.31	

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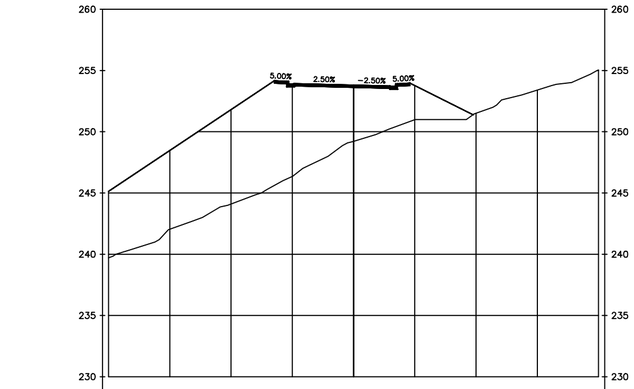
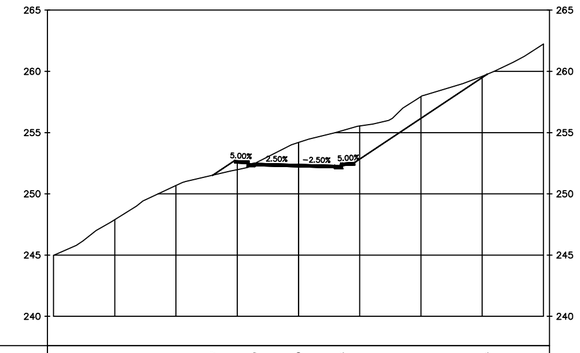
SADRŽAJ LISTA :	KARAKTERISTIČNI POPREČNI PRESJECI	M 1:100
STUDENT :	BRUNO LUGOVIĆ	

0+240.00



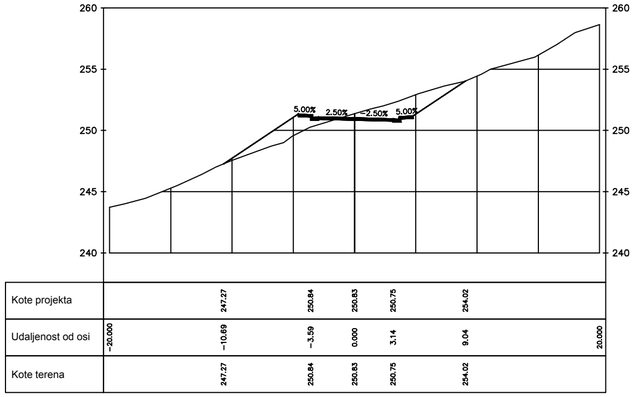
Kote projekta	245.139		253.74	253.61	253.47	251.39	
Udaljenost od osi	−20.000		−4.82	0.000	3.59	9.76	20.000
Kote terena	245.14		253.74	253.61	253.47	251.39	

0+270.00



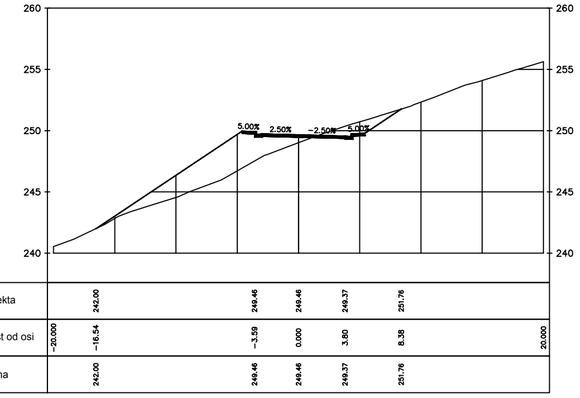
Kote projekta		251.52	252.29	252.20	252.06	259.76	
Udaljenost od osi	−20.000	−7.01	−3.57	0.000	3.59	15.39	20.000
Kote terena		251.52	252.29	252.20	252.06	259.76	

0+300.00



Kote projekta		247.27	250.84	250.83	250.75	254.02	
Udaljenost od osi	−20.000	−10.69	−3.59	0.000	3.14	9.04	20.000
Kote terena		247.27	250.84	250.83	250.75	254.02	

0+330.00



Kote projekta		242.00	249.46	249.46	249.37	251.76	
Udaljenost od osi	−20.000	−16.54	−3.59	0.000	3.80	8.38	20.000
Kote terena		242.00	249.46	249.46	249.37	251.76	

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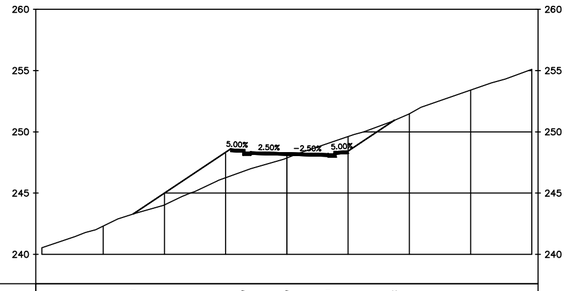
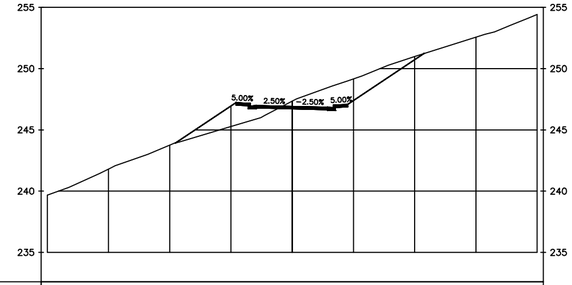
	SADRŽAJ LISTA :	KARAKTERISTIČNI POPREČNI PRESJECI	M 1:100
	STUDENT :	BRUNO LUGOVIĆ	

0+360.00



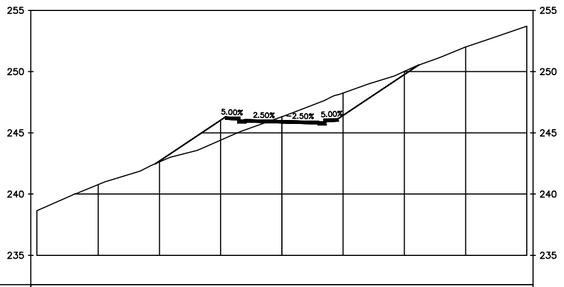
Kote projekta		243.31	248.09	248.09	248.01	250.82	
Udaljenost od osi	-20.000	-12.52	-3.59	0.00	3.37	8.74	20.000
Kote terena		243.31	248.09	248.09	248.01	250.82	

0+390.00



Kote projekta		243.93	246.72	246.72	246.58	251.22	
Udaljenost od osi	-20.000	-9.53	-3.59	0.000	3.52	10.74	20.000
Kote terena		243.93	246.72	246.72	246.58	251.22	

0+410.07



Kote projekta		242.49	245.81	245.80	245.66	250.53	
Udaljenost od osi	-20.000	-10.32	-3.59	0.000	3.59	11.15	20.000
Kote terena		242.49	245.81	245.80	245.66	250.53	

FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE U SPLITU

PREDMET :	ZAVRŠNI RAD - PROMETNICA	DATUM: lipanj 2019.
STUDIJ :	PREDDIPLOMSKI GRAĐEVINSKI FAKULTET	
SADRŽAJ LISTA :	KARAKTERISTIČNI POPREČNI PRESJECI	M 1:100
STUDENT :	BRUNO LUGOVIĆ	

3.4 TABLICA UKUPNOG VOLUMENA ZEMLJANIH RADOVA

PREDMJER RADOVA

Alignment: Glavna OS
Sample Line Group: Poprečni presjeci
Start Sta: -0+000.000
End Sta: 0+410.071

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0+000.000	33.14	0.00	0.00	67.80	0.00	0.00	0.00	0.00	-0.00
0+030.000	19.92	781.27	781.27	9.07	1180.89	781.27	781.27	1180.89	-399.61
0+060.000	15.76	507.22	507.22	0.04	145.67	1288.49	1288.49	1326.55	-38.06
0+090.000	1.00	240.66	240.66	16.77	269.25	1529.15	1529.15	1595.80	-66.65
0+120.000	2.38	48.61	48.61	11.89	452.69	1577.76	1577.76	2048.49	-470.73
0+150.000	49.05	766.55	766.55	0.00	179.64	2344.31	2344.31	2228.14	116.18
0+180.000	102.19	2268.56	2268.56	0.00	0.00	4612.87	4612.87	2228.14	2384.74
0+210.000	28.85	1980.77	1980.77	18.46	273.08	6593.64	6593.64	2501.22	4092.42
0+210.032	28.75	0.91	0.91	18.67	0.59	6594.55	6594.55	2501.80	4092.75
0+240.000	0.00	485.22	485.22	160.94	2309.60	7079.77	7079.77	4811.41	2268.37
0+270.000	31.58	519.70	519.70	1.17	2050.82	7599.47	7599.47	6862.23	737.25
0+300.000	10.08	633.40	633.40	7.00	120.35	8232.88	8232.88	6982.58	1250.30
0+330.000	4.79	214.39	214.39	25.39	515.75	8447.27	8447.27	7498.33	948.94
0+360.000	5.61	144.89	144.89	14.24	654.74	8592.16	8592.16	8153.07	439.10
0+390.000	13.39	278.23	278.23	7.49	335.86	8870.39	8870.39	8488.93	381.46
0+410.071	12.87	263.49	263.49	7.41	149.55	9133.88	9133.88	8638.48	495.40

UKUPNI VOLUMEN

Volume Summary

Name	Type	Cut Factor	Fill Factor	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
Kolicina zemljanih radova	full	1.000	1.000	10458.25	10285.88	8883.08	1402.80<Cut>

Totals

	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
Total	10458.25	10285.88	8883.08	1402.80<Cut>

4. OBRADA NA RAČUNALU

Prilikom izrade predmetnog zadatka korišteno je računalo uz odgovarajući program Autodesk AutoCad Civil 3D. Postupak projektiranja trase na računalu je sličan ručnoj izradi rješenja, no mnogo brži. Radu na računalu prethodi definiranje problema, uočavanje nedostataka te određivanje načina na koje bi se idejno rješenje kvalitetno izradilo.

Prvi korak pri izradi idejnog rješenja na računalu je digitaliziranje terena na temelju zadanih slojnica. Unošenjem slojnica u obliku 3D polilinija sa zadanim nadmorskim visinama pomoću kojih definiramo površinu odnosno trodimenzionalni model terena postojećeg stanja na području obuhvaćenim predmetnim zadatkom.
Nadalje se unose koordinate točaka tangenti (po dvije za svaku tangentu) koje ih definiraju na terenu. Sjecišta tangenti se definiraju ubacivanjem odgovarajućih kružnih lukova i prijelaznih krivina čime se dobije horizontalni tok ceste.

Sljedeći korak je izrada uzdužnog presjeka ceste. Linija terena se automatski generira iz zadane horizontalne osi ceste. Niveleta se postavlja tako da se riješe geometrijski i sigurnosni elementi i odvodnja. Između tangenti se umeće kružna krivina radijusa prema potrebi.

Treba definirati i poprečni profil prometnice. Poprečnim presjekom su definirani: poprečni nagib i širina kolnika, te pokosi usjeka i nasipa.
Iz definirane osi trase, nivelete i poprečnog presjeka definira se koridor. Tako se dođe do poprečnih presjeka u svim karakterističnim i zadanim točkama osi ceste, a time i točke spajanja pokosa usjeka i nasipa s terenom. S navedenim se može definirati cijela dionica ceste u prostoru.

Kao izlazni podatci dobiju se računalni ispisi koordinatnih točaka osi, točaka svakog poprečnog presjeka, te količina zemljanih radova po presjeku.

5. IZLAZNI PODACI PROGRAMA

5.1 TOČKE HORIZONTALNE GEOMETRIJE

KOORDINATNI RAČUN GLAVNIH TOČAKA OSI

Alignment: Glavna_OS
Description:

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+000.000	277965050.656	-166330708.261
End:	0+011.022	277965060.494	-166330703.290

Tangent Data

Parameter	Value	Parameter	Value
Length:	11.022	Course:	N 26° 48' 19.5552" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	0+011.022	277965060.494	-166330703.290
SPI:		277965084.398	-166330691.212
SC:	0+051.022	277965094.198	-166330682.018

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	40.000	L Tan:	26.782
Radius:	70.000	S Tan:	13.438
Theta:	16° 22' 12.8018"	P:	0.950
X:	39.675	K:	19.946
Y:	3.787	A:	52.915
Chord:	39.855	Course:	N 32° 15' 30.2195" E

Curve Point Data

Description	Station	Northing	Easting
SC:	0+051.022	277965094.198	-166330682.018
RP:		277965046.301	-166330630.970
CS:	0+095.749	277965115.191	-166330643.384

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	36° 36' 32.0055"	Type:	RIGHT
Radius:	70.000		
Length:	44.726	Tangent:	23.156

Mid-Ord:	3.542	External:	3.731
Chord:	43.969	Course:	N 61° 28' 48.3596" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	0+095.749	277965115.191	-166330643.384
SPI:		277965117.575	-166330630.159
ST:	0+135.749	277965114.703	-166330603.532

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	40.000	L Tan:	26.782
Radius:	70.000	S Tan:	13.438
Theta:	16° 22' 12.8018"	P:	0.950
X:	39.675	K:	19.946
Y:	3.787	A:	52.915
Chord:	39.855	Course:	S 89° 17' 53.5009" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+135.749	277965114.703	-166330603.532
End:	0+200.032	277965107.811	-166330539.620

Tangent Data

Parameter	Value	Parameter	Value
Length:	64.283	Course:	S 83° 50' 42.8360" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	0+200.032	277965107.811	-166330539.620
SPI:		277965105.654	-166330519.618
SC:	0+230.032	277965107.918	-166330509.768

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 89° 47' 40.4677" E

Curve Point Data

Description	Station	Northing	Easting
SC:	0+230.032	277965107.918	-166330509.768

RP:		277965151.775	-166330519.847
CS:	0+256.342	277965120.766	-166330487.237

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	33° 29' 56.0021"	Type:	LEFT
Radius:	45.000		
Length:	26.310	Tangent:	13.543
Mid-Ord:	1.909	External:	1.994
Chord:	25.937	Course:	N 60° 18' 24.2278" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	0+256.342	277965120.766	-166330487.237
SPI:		277965128.091	-166330480.272
ST:	0+286.342	277965146.403	-166330471.943

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 30° 49' 07.9872" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+286.342	277965146.403	-166330471.943
End:	0+292.711	277965152.200	-166330469.306

Tangent Data

Parameter	Value	Parameter	Value
Length:	6.369	Course:	N 24° 27' 31.2906" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	0+292.711	277965152.200	-166330469.306
SPI:		277965176.617	-166330458.200
SC:	0+332.711	277965186.383	-166330448.914

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 30° 49' 07.9872" E

Curve Point Data

Description	Station	Northing	Easting
SC:	0+332.711	277965186.383	-166330448.914
RP:		277965145.038	-166330405.432
CS:	0+347.737	277965195.869	-166330437.311

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	14° 20' 56.8190"	Type:	RIGHT
Radius:	60.000		
Length:	15.026	Tangent:	7.553
Mid-Ord:	0.470	External:	0.473
Chord:	14.987	Course:	N 50° 43' 54.6358" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	0+347.737	277965195.869	-166330437.311
SPI:		277965203.029	-166330425.894
ST:	0+387.737	277965209.060	-166330399.757

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 70° 38' 41.2848" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+387.737	277965209.060	-166330399.757
End:	0+410.071	277965214.083	-166330377.996

Tangent Data

Parameter	Value	Parameter	Value
Length:	22.334	Course:	N 77° 00' 17.9810" E

Alignment: Prosirenje desno
Description:

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+000.000	277965049.326	-166330705.628
End:	0+011.022	277965059.164	-166330700.657

Tangent Data

Parameter	Value	Parameter	Value
Length:	11.022	Course:	N 26° 48' 19.5552" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+011.022	277965059.164	-166330700.657
End:	0+024.259	277965070.821	-166330694.387

Tangent Data

Parameter	Value	Parameter	Value
Length:	13.236	Course:	N 28° 16' 30.5706" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+024.259	277965070.821	-166330694.387
End:	0+037.278	277965081.871	-166330687.503

Tangent Data

Parameter	Value	Parameter	Value
Length:	13.019	Course:	N 31° 55' 17.4082" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+037.278	277965081.871	-166330687.503
End:	0+050.051	277965091.769	-166330679.429

Tangent Data

Parameter	Value	Parameter	Value
Length:	12.773	Course:	N 39° 12' 23.2493" E

Curve Point Data

Description	Station	Northing	Easting
PC:	0+050.051	277965091.769	-166330679.429
RP:		277965046.301	-166330630.970
PT:	0+092.509	277965111.698	-166330642.755

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	36° 36' 32.0058"	Type:	RIGHT
Radius:	66.450		
Length:	42.458	Tangent:	21.982
Mid-Ord:	3.362	External:	3.541
Chord:	41.739	Course:	N 61° 28' 48.3597" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+092.509	277965111.698	-166330642.755
End:	0+105.281	277965113.087	-166330630.058

Tangent Data

Parameter	Value	Parameter	Value
Length:	12.773	Course:	N 83° 45' 13.4691" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+105.281	277965113.087	-166330630.058
End:	0+118.301	277965112.851	-166330617.040

Tangent Data

Parameter	Value	Parameter	Value
Length:	13.019	Course:	S 88° 57' 40.6895" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+118.301	277965112.851	-166330617.040
End:	0+131.537	277965111.770	-166330603.848

Tangent Data

Parameter	Value	Parameter	Value
Length:	13.236	Course:	S 85° 18' 53.8513" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+131.537	277965111.770	-166330603.848
End:	0+195.820	277965104.878	-166330539.936

Tangent Data

Parameter	Value	Parameter	Value
Length:	64.283	Course:	S 83° 50' 42.8360" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	0+195.820	277965104.878	-166330539.936

SPI:		277965102.668	-166330519.441
SC:	0+226.803	277965105.043	-166330509.107

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.983	L Tan:	20.770
Radius:	47.950	S Tan:	10.432
Theta:	18° 30' 39.9504"	P:	0.831
X:	30.661	K:	15.438
Y:	3.312	A:	38.544
Chord:	30.829	Course:	N 89° 41' 36.1588" E

Curve Point Data

Description	Station	Northing	Easting
SC:	0+226.803	277965105.043	-166330509.107
RP:		277965151.775	-166330519.847
CS:	0+254.838	277965118.733	-166330485.099

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	33° 29' 56.0017"	Type:	LEFT
Radius:	47.950		
Length:	28.035	Tangent:	14.431
Mid-Ord:	2.034	External:	2.124
Chord:	27.637	Course:	N 60° 18' 24.2278" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	0+254.838	277965118.733	-166330485.099
SPI:		277965126.418	-166330477.792
ST:	0+285.822	277965145.182	-166330469.257

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.983	L Tan:	20.770
Radius:	47.950	S Tan:	10.432
Theta:	18° 30' 39.9504"	P:	0.831
X:	30.661	K:	15.438
Y:	3.312	A:	38.544
Chord:	30.829	Course:	N 30° 55' 12.2962" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+285.822	277965145.182	-166330469.257
End:	0+292.190	277965150.979	-166330466.620

Tangent Data

Parameter	Value	Parameter	Value
Length:	6.369	Course:	N 24° 27' 31.2898" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+292.190	277965150.979	-166330466.620
End:	0+305.410	277965162.843	-166330460.789

Tangent Data

Parameter	Value	Parameter	Value
Length:	13.220	Course:	N 26° 10' 26.9970" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+305.410	277965162.843	-166330460.789
End:	0+318.371	277965174.018	-166330454.225

Tangent Data

Parameter	Value	Parameter	Value
Length:	12.961	Course:	N 30° 25' 48.2184" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+318.371	277965174.018	-166330454.225
End:	0+331.032	277965183.868	-166330446.268

Tangent Data

Parameter	Value	Parameter	Value
Length:	12.661	Course:	N 38° 55' 52.9389" E

Curve Point Data

Description	Station	Northing	Easting
PC:	0+331.032	277965183.868	-166330446.268
RP:		277965145.038	-166330405.432
PT:	0+345.144	277965192.777	-166330435.371

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	14° 20' 56.8186"	Type:	RIGHT
Radius:	56.350		
Length:	14.112	Tangent:	7.093
Mid-Ord:	0.441	External:	0.445
Chord:	14.075	Course:	N 50° 43' 54.6357" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+345.144	277965192.777	-166330435.371
End:	0+357.806	277965198.617	-166330424.137

Tangent Data

Parameter	Value	Parameter	Value
Length:	12.661	Course:	N 62° 31' 56.3340" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+357.806	277965198.617	-166330424.137
End:	0+370.766	277965202.829	-166330411.880

Tangent Data

Parameter	Value	Parameter	Value
Length:	12.961	Course:	N 71° 02' 01.0534" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+370.766	277965202.829	-166330411.880
End:	0+383.986	277965206.186	-166330399.094

Tangent Data

Parameter	Value	Parameter	Value
Length:	13.220	Course:	N 75° 17' 22.2752" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+383.986	277965206.186	-166330399.094
End:	0+406.320	277965211.208	-166330377.332

Tangent Data

Parameter	Value	Parameter	Value
Length:	22.334	Course:	N 77° 00' 17.9810" E

Alignment: Prosirenje lijevo
Description:

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+000.000	277965051.987	-166330710.894
End:	0+011.022	277965061.825	-166330705.923

Tangent Data

Parameter	Value	Parameter	Value
Length:	11.022	Course:	N 26° 48' 19.5552" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	0+011.022	277965061.825	-166330705.923
SPI:		277965086.107	-166330693.654
SC:	0+051.865	277965096.216	-166330684.169

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	40.843	L Tan:	27.341
Radius:	72.950	S Tan:	13.717
Theta:	16° 02' 21.2201"	P:	0.950
X:	40.524	K:	20.368
Y:	3.790	A:	54.585
Chord:	40.694	Course:	N 32° 18' 53.1682" E

Curve Point Data

Description	Station	Northing	Easting
SC:	0+051.865	277965096.216	-166330684.169
RP:		277965046.301	-166330630.970
CS:	0+098.476	277965118.095	-166330643.907

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	36° 36' 32.0044"	Type:	RIGHT
Radius:	72.950		
Length:	46.611	Tangent:	24.132
Mid-Ord:	3.691	External:	3.888
Chord:	45.822	Course:	N 61° 28' 48.3596" E

Spiral Point Data

Description	Station	Northing	Easting

CS:	0+098.476	277965118.095	-166330643.907
SPI:		277965120.553	-166330630.265
ST:	0+139.319	277965117.636	-166330603.216

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	40.843	L Tan:	27.341
Radius:	72.950	S Tan:	13.717
Theta:	16° 02' 21.2201"	P:	0.950
X:	40.524	K:	20.368
Y:	3.790	A:	54.585
Chord:	40.694	Course:	S 89° 21' 16.4498" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+139.319	277965117.636	-166330603.216
End:	0+203.602	277965110.744	-166330539.303

Tangent Data

Parameter	Value	Parameter	Value
Length:	64.283	Course:	S 83° 50' 42.8360" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+203.602	277965110.744	-166330539.303
End:	0+213.497	277965110.426	-166330529.414

Tangent Data

Parameter	Value	Parameter	Value
Length:	9.894	Course:	S 88° 09' 34.3004" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+213.497	277965110.426	-166330529.414
End:	0+223.076	277965110.845	-166330519.844

Tangent Data

Parameter	Value	Parameter	Value
Length:	9.580	Course:	N 87° 29' 39.6651" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+223.076	277965110.845	-166330519.844
End:	0+232.245	277965112.616	-166330510.847

Tangent Data

Parameter	Value	Parameter	Value

Length:	9.169	Course:	N 78° 51' 57.8871" E

Curve Point Data

Description	Station	Northing	Easting
PC:	0+232.245	277965112.616	-166330510.847
RP:		277965151.775	-166330519.847
PT:	0+255.737	277965124.088	-166330490.730

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	33° 29' 56.0000"	Type:	LEFT
Radius:	40.180		
Length:	23.492	Tangent:	12.092
Mid-Ord:	1.705	External:	1.780
Chord:	23.159	Course:	N 60° 18' 24.2278" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+255.737	277965124.088	-166330490.730
End:	0+264.906	277965130.928	-166330484.624

Tangent Data

Parameter	Value	Parameter	Value
Length:	9.169	Course:	N 41° 44' 50.5674" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+264.906	277965130.928	-166330484.624
End:	0+274.485	277965138.952	-166330479.390

Tangent Data

Parameter	Value	Parameter	Value
Length:	9.580	Course:	N 33° 07' 08.7908" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+274.485	277965138.952	-166330479.390
End:	0+284.380	277965147.624	-166330474.628

Tangent Data

Parameter	Value	Parameter	Value
Length:	9.894	Course:	N 28° 46' 22.7558" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+284.380	277965147.624	-166330474.628

End:	0+290.749	277965153.422	-166330471.991

Tangent Data

Parameter	Value	Parameter	Value
Length:	6.369	Course:	N 24° 27' 31.2906" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	0+290.749	277965153.422	-166330471.991
SPI:		277965178.290	-166330460.679
SC:	0+331.732	277965188.416	-166330451.051

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	40.983	L Tan:	27.475
Radius:	62.950	S Tan:	13.800
Theta:	18° 39' 03.9183"	P:	1.108
X:	40.551	K:	20.419
Y:	4.413	A:	50.793
Chord:	40.780	Course:	N 30° 53' 43.4015" E

Curve Point Data

Description	Station	Northing	Easting
SC:	0+331.732	277965188.416	-166330451.051
RP:		277965145.038	-166330405.432
CS:	0+347.497	277965198.368	-166330438.878

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	14° 20' 56.8212"	Type:	RIGHT
Radius:	62.950		
Length:	15.765	Tangent:	7.924
Mid-Ord:	0.493	External:	0.497
Chord:	15.724	Course:	N 50° 43' 54.6357" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	0+347.497	277965198.368	-166330438.878
SPI:		277965205.792	-166330427.041
ST:	0+388.481	277965211.935	-166330400.421

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	40.983	L Tan:	27.475
Radius:	62.950	S Tan:	13.800
Theta:	18° 39' 03.9183"	P:	1.108

X:	40.551	K:	20.419
Y:	4.413	A:	50.793
Chord:	40.780	Course:	N 70° 34' 05.8703" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	0+388.481	277965211.935	-166330400.421
End:	0+410.814	277965216.957	-166330378.659

Tangent Data

Parameter	Value	Parameter	Value
Length:	22.334	Course:	N 77° 00' 17.9810" E

KOORDINATNI RAČUN DETALJNIH TOČAKA OSI

Alignment Name: Glavna OS
Description:
Station Range: Start: 0+000.00, End: 0+410.07
Station Increment: 30.00

Station	Northing	Easting	Tangential Direction
0+000.00	277,965,050.6564m	-166,330,708.2606m	N26° 48' 20"E
0+030.00	277,965,077.2423m	-166,330,694.3723m	N30° 29' 25"E
0+060.00	277,965,100.3335m	-166,330,675.4725m	N50° 31' 26"E
0+090.00	277,965,113.9410m	-166,330,648.9933m	N75° 04' 45"E
0+120.00	277,965,116.1603m	-166,330,619.2117m	S86° 22' 58"E
0+150.00	277,965,113.1754m	-166,330,589.3627m	S83° 50' 43"E
0+180.00	277,965,109.9589m	-166,330,559.5357m	S83° 50' 43"E
0+210.00	277,965,106.8642m	-166,330,529.6968m	S85° 57' 14"E
0+240.00	277,965,111.2046m	-166,330,500.3781m	N64° 21' 50"E
0+270.00	277,965,131.7654m	-166,330,479.1920m	N30° 07' 32"E
0+300.00	277,965,158.8245m	-166,330,466.2630m	N25° 05' 35"E
0+330.00	277,965,184.3778m	-166,330,450.7373m	N41° 03' 24"E
0+360.00	277,965,201.3981m	-166,330,426.3820m	N67° 49' 18"E
0+390.00	277,965,209.5693m	-166,330,397.5522m	N77° 00' 18"E
0+410.07	277,965,214.0824m	-166,330,377.9962m	N77° 00' 18"E

Alignment Name: Prosirenje desno
Description:
Station Range: Start: 0+000.00, End: 0+406.32
Station Increment: 30.00

Station	Northing	Easting	Tangential Direction
0+000.00	277,965,049.3261m	-166,330,705.6276m	N26° 48' 20"E
0+030.00	277,965,075.6941m	-166,330,691.3510m	N31° 55' 17"E
0+060.00	277,965,098.4885m	-166,330,672.1045m	N51° 45' 15"E
0+090.00	277,965,111.2064m	-166,330,645.2144m	N77° 37' 17"E
0+120.00	277,965,112.7127m	-166,330,615.3468m	S85° 18' 54"E
0+150.00	277,965,109.7908m	-166,330,585.4918m	S83° 50' 43"E
0+180.00	277,965,106.5744m	-166,330,555.6647m	S83° 50' 43"E
0+210.00	277,965,103.7096m	-166,330,526.0521m	S87° 50' 44"E
0+240.00	277,965,109.7207m	-166,330,496.8115m	N61° 17' 15"E
0+270.00	277,965,131.2027m	-166,330,476.1152m	N29° 26' 20"E

0+300.00	277,965,157.9877m	-166,330,463.1755m	N26° 10' 27"E
0+330.00	277,965,183.0647m	-166,330,446.9170m	N38° 55' 53"E
0+360.00	277,965,199.3298m	-166,330,422.0622m	N71° 02' 01"E
0+390.00	277,965,207.5383m	-166,330,393.2340m	N77° 00' 18"E

Alignment Name: Prosirenje lijevo
Description:
Station Range: Start: 0+000.00, End: 0+410.81
Station Increment: 30.00

Station	**Northing**	**Easting**	**Tangential Direction**
0+000.00	277,965,051.9868m	-166,330,710.8936m	N26° 48' 20"E
0+030.00	277,965,078.3947m	-166,330,697.1165m	N30° 20' 23"E
0+060.00	277,965,101.8263m	-166,330,678.2841m	N49° 33' 53"E
0+090.00	277,965,116.1107m	-166,330,652.1432m	N73° 07' 38"E
0+120.00	277,965,119.2775m	-166,330,622.2507m	S87° 30' 28"E
0+150.00	277,965,116.4912m	-166,330,592.5965m	S83° 50' 43"E
0+180.00	277,965,113.2747m	-166,330,562.7694m	S83° 50' 43"E
0+210.00	277,965,110.5388m	-166,330,532.9087m	S88° 09' 34"E
0+240.00	277,965,115.0692m	-166,330,503.5033m	N65° 59' 52"E
0+270.00	277,965,135.1950m	-166,330,481.8411m	N33° 07' 09"E
0+300.00	277,965,161.6649m	-166,330,468.1848m	N25° 25' 55"E
0+330.00	277,965,187.1147m	-166,330,452.2543m	N41° 58' 38"E
0+360.00	277,965,204.1063m	-166,330,427.5533m	N67° 46' 54"E
0+390.00	277,965,212.2766m	-166,330,398.9401m	N77° 00' 18"E

5.2 TOČKE VERTIKALNE GEOMETRIJE

VERTIKALNI TOK TRASE

Vertical Alignment: Niveleta
Description:
Station Range: Start: 0+000.00, End: 0+410.07

PVI	Station	Grade Out	Curve Length
0.00	0+245.73	-4.57%	38.358m

Vertical Curve Information:(sag curve)

PVC Station:	0+226.55	Elevation:	254.486m
PVI Station:	0+245.73	Elevation:	253.511m
PVT Station:	0+264.91	Elevation:	252.635m
Low Point:	0+264.91	Elevation:	252.635m
Grade in:	-5.08%	Grade out:	-4.57%
Change:	0.51%	K:	
Curve Length:	38.358m		
Headlight Distance:			

5.3 TOČKE POPREČNIH PRESJEKA

RAČUN KOTA KOLNIKA

Corridor Name: Corridor
Description:
Base Alignment Name: Glavna OS
Station Range: Start: 0+000.00, End: 0+410.07

CHAINAGE 0+000.00

CHAINAGE 0+030.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-166,330,703.7247	277,965,082.7492	260.6041	-10.853m	Daylight
2	-166,330,698.3283	277,965,079.5717	264.7790	-4.591m	Hinge
3	-166,330,698.3274	277,965,079.5712	264.5790	-4.590m	EPS_Sub
4	-166,330,697.4666	277,965,079.0643	264.7290	-3.591m	Back_Curb
5	-166,330,697.3373	277,965,078.9882	264.7290	-3.441m	Top_Curb
6	-166,330,697.3014	277,965,078.9670	264.5040	-3.399m	Flowline_Gutter
7	-166,330,696.9136	277,965,078.7387	264.5490	-2.949m	ETW
8	-166,330,696.9136	277,965,078.7387	264.3490	-2.949m	ETW_SubBase
9	-166,330,691.4562	277,965,075.5253	264.3907	3.384m	Flange
10	-166,330,691.4562	277,965,075.5253	264.1907	3.384m	ETW_SubBase
11	-166,330,691.0684	277,965,075.2969	264.3457	3.834m	Flowline_Gutter
12	-166,330,691.0325	277,965,075.2758	264.5707	3.876m	Top_Curb
13	-166,330,690.9032	277,965,075.1997	264.5707	4.026m	Back_Curb
14	-166,330,690.0424	277,965,074.6928	264.4207	5.025m	EPS_Sub
15	-166,330,690.0415	277,965,074.6923	264.6207	5.026m	Hinge_Cut
16	-166,330,682.3571	277,965,070.1675	270.5658	13.943m	Daylight

CHAINAGE 0+060.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-166,330,678.6501	277,965,104.1916	262.9833	-4.998m	Daylight
2	-166,330,678.3917	277,965,103.8778	263.2544	-4.592m	Hinge
3	-166,330,678.3910	277,965,103.8770	263.0544	-4.591m	EPS_Sub
4	-166,330,677.7559	277,965,103.1059	263.2044	-3.592m	Back_Curb
5	-166,330,677.6606	277,965,102.9901	263.2044	-3.442m	Top_Curb
6	-166,330,677.6341	277,965,102.9579	262.9794	-3.400m	Flowline_Gutter
7	-166,330,677.3480	277,965,102.6106	263.0244	-2.950m	ETW
8	-166,330,677.3480	277,965,102.6106	262.8244	-2.950m	ETW_SubBase
9	-166,330,673.2155	277,965,097.5933	262.8619	3.550m	Flange
10	-166,330,673.2155	277,965,097.5933	262.6619	3.550m	ETW_SubBase
11	-166,330,672.9295	277,965,097.2459	262.8169	4.000m	Flowline_Gutter

12	-166,330,672.9029	277,965,097.2137	263.0419	4.042m	Top_Curb
13	-166,330,672.8076	277,965,097.0979	263.0419	4.192m	Back_Curb
14	-166,330,672.1725	277,965,096.3268	262.8919	5.191m	EPS_Sub
15	-166,330,672.1718	277,965,096.3261	263.0919	5.192m	Hinge_Cut
16	-166,330,668.8897	277,965,092.3412	266.5335	10.354m	Daylight

CHAINAGE 0+090.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-166,330,651.8584	277,965,124.6930	257.3727	-11.127m	Daylight
2	-166,330,650.1756	277,965,118.3778	261.7297	-4.592m	Hinge
3	-166,330,650.1754	277,965,118.3769	261.5297	-4.591m	EPS_Sub
4	-166,330,649.9181	277,965,117.4116	261.6797	-3.592m	Back_Curb
5	-166,330,649.8795	277,965,117.2666	261.6797	-3.442m	Top_Curb
6	-166,330,649.8688	277,965,117.2263	261.4547	-3.400m	Flowline_Gutter
7	-166,330,649.7529	277,965,116.7915	261.4997	-2.950m	ETW
8	-166,330,649.7529	277,965,116.7915	261.2997	-2.950m	ETW_SubBase
9	-166,330,648.0793	277,965,110.5107	261.3372	3.550m	Flange
10	-166,330,648.0793	277,965,110.5107	261.1372	3.550m	ETW_SubBase
11	-166,330,647.9634	277,965,110.0758	261.2922	4.000m	Flowline_Gutter
12	-166,330,647.9527	277,965,110.0355	261.5172	4.042m	Top_Curb
13	-166,330,647.9141	277,965,109.8906	261.5172	4.192m	Back_Curb
14	-166,330,647.6568	277,965,108.9253	261.3672	5.191m	EPS_Sub
15	-166,330,647.6566	277,965,108.9243	261.5672	5.192m	Hinge_Cut
16	-166,330,647.4420	277,965,108.1191	262.1227	6.025m	Daylight

CHAINAGE 0+120.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-166,330,618.5356	277,965,126.8542	256.1227	-10.715m	Daylight
2	-166,330,618.9220	277,965,120.7429	260.2050	-4.592m	Hinge
3	-166,330,618.9220	277,965,120.7419	260.0050	-4.591m	EPS_Sub
4	-166,330,618.9851	277,965,119.7449	260.1550	-3.592m	Back_Curb
5	-166,330,618.9945	277,965,119.5952	260.1550	-3.442m	Top_Curb
6	-166,330,618.9972	277,965,119.5536	259.9300	-3.400m	Flowline_Gutter
7	-166,330,619.0255	277,965,119.1045	259.9750	-2.950m	ETW
8	-166,330,619.0255	277,965,119.1045	259.7750	-2.950m	ETW_SubBase
9	-166,330,619.4086	277,965,113.0455	259.8232	3.121m	Flange
10	-166,330,619.4086	277,965,113.0455	259.6232	3.121m	ETW_SubBase
11	-166,330,619.4370	277,965,112.5964	259.7782	3.571m	Flowline_Gutter
12	-166,330,619.4396	277,965,112.5548	260.0032	3.613m	Top_Curb
13	-166,330,619.4491	277,965,112.4051	260.0032	3.763m	Back_Curb
14	-166,330,619.5121	277,965,111.4081	259.8532	4.762m	EPS_Sub

15	-166,330,619.5121	277,965,111.4071	260.0532	4.763m	Hinge_Cut
16	-166,330,619.6046	277,965,109.9448	261.0300	6.228m	Daylight

CHAINAGE 0+150.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-166,330,588.7464	277,965,118.8913	259.2589	-5.749m	Daylight
2	-166,330,588.8704	277,965,117.7406	258.6803	-4.592m	EPS
3	-166,330,588.8705	277,965,117.7396	258.4803	-4.591m	EPS_Sub
4	-166,330,588.9777	277,965,116.7464	258.6303	-3.592m	Back_Curb
5	-166,330,588.9937	277,965,116.5972	258.6303	-3.442m	Top_Curb
6	-166,330,588.9982	277,965,116.5558	258.4053	-3.400m	Flowline_Gutter
7	-166,330,589.0465	277,965,116.1084	258.4503	-2.950m	ETW
8	-166,330,589.0465	277,965,116.1084	258.2503	-2.950m	ETW_SubBase
9	-166,330,589.6790	277,965,110.2424	258.1028	2.950m	ETW_SubBase
10	-166,330,589.6790	277,965,110.2424	258.3028	2.950m	ETW
11	-166,330,589.7273	277,965,109.7950	258.2578	3.400m	Flowline_Gutter
12	-166,330,589.7317	277,965,109.7535	258.4828	3.442m	Top_Curb
13	-166,330,589.7478	277,965,109.6044	258.4828	3.592m	Back_Curb
14	-166,330,589.8549	277,965,108.6111	258.3328	4.591m	EPS_Sub
15	-166,330,589.8550	277,965,108.6101	258.5328	4.592m	Hinge_Cut
16	-166,330,591.0038	277,965,097.9572	265.6759	15.306m	Daylight

CHAINAGE 0+180.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-166,330,558.7633	277,965,117.1217	258.4618	-7.204m	Daylight
2	-166,330,559.0434	277,965,114.5242	257.1556	-4.592m	EPS
3	-166,330,559.0435	277,965,114.5232	256.9556	-4.591m	EPS_Sub
4	-166,330,559.1506	277,965,113.5299	257.1056	-3.592m	Back_Curb
5	-166,330,559.1667	277,965,113.3808	257.1056	-3.442m	Top_Curb
6	-166,330,559.1711	277,965,113.3393	256.8806	-3.400m	Flowline_Gutter
7	-166,330,559.2194	277,965,112.8919	256.9256	-2.950m	ETW
8	-166,330,559.2194	277,965,112.8919	256.7256	-2.950m	ETW_SubBase
9	-166,330,559.8519	277,965,107.0259	256.5781	2.950m	ETW_SubBase
10	-166,330,559.8519	277,965,107.0259	256.7781	2.950m	ETW
11	-166,330,559.9002	277,965,106.5785	256.7331	3.400m	Flowline_Gutter
12	-166,330,559.9047	277,965,106.5371	256.9581	3.442m	Top_Curb
13	-166,330,559.9207	277,965,106.3879	256.9581	3.592m	Back_Curb
14	-166,330,560.0278	277,965,105.3947	256.8081	4.591m	EPS_Sub
15	-166,330,560.0280	277,965,105.3937	257.0081	4.592m	Hinge_Cut
16	-166,330,562.1683	277,965,085.5457	270.3168	24.555m	Daylight

CHAINAGE 0+210.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-166,330,527.0713	277,965,143.9823	234.3135	-37.211m	Daylight
2	-166,330,529.3291	277,965,112.0627	255.6464	-5.212m	Hinge
3	-166,330,529.3292	277,965,112.0617	255.4464	-5.211m	EPS_Sub
4	-166,330,529.3997	277,965,111.0652	255.5964	-4.212m	Back_Curb
5	-166,330,529.4102	277,965,110.9156	255.5964	-4.062m	Top_Curb
6	-166,330,529.4132	277,965,110.8740	255.3714	-4.020m	Flowline_Gutter
7	-166,330,529.4449	277,965,110.4251	255.4164	-3.570m	ETW
8	-166,330,529.4449	277,965,110.4251	255.2164	-3.570m	ETW_SubBase
9	-166,330,529.9050	277,965,103.9215	255.2534	2.950m	Flange
10	-166,330,529.9050	277,965,103.9215	255.0534	2.950m	ETW_SubBase
11	-166,330,529.9367	277,965,103.4726	255.2084	3.400m	Flowline_Gutter
12	-166,330,529.9397	277,965,103.4310	255.4334	3.442m	Top_Curb
13	-166,330,529.9502	277,965,103.2814	255.4334	3.592m	Back_Curb
14	-166,330,530.0207	277,965,102.2849	255.2834	4.591m	EPS_Sub
15	-166,330,530.0208	277,965,102.2839	255.4834	4.592m	Hinge_Cut
16	-166,330,530.9553	277,965,089.0727	264.3128	17.836m	Daylight

CHAINAGE 0+240.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-166,330,516.5699	277,965,144.9451	233.5231	-37.425m	Daylight
2	-166,330,503.1737	277,965,117.0302	254.1650	-6.462m	Hinge
3	-166,330,503.1733	277,965,117.0293	253.9650	-6.461m	EPS_Sub
4	-166,330,502.7411	277,965,116.1287	254.1150	-5.462m	Back_Curb
5	-166,330,502.6762	277,965,115.9934	254.1150	-5.312m	Top_Curb
6	-166,330,502.6581	277,965,115.9558	253.8900	-5.270m	Flowline_Gutter
7	-166,330,502.4634	277,965,115.5501	253.7350	-4.820m	ETW_SubBase
8	-166,330,502.4634	277,965,115.5501	253.9350	-4.820m	Flange
9	-166,330,499.1017	277,965,108.5450	253.7408	2.950m	Flange
10	-166,330,499.1017	277,965,108.5450	253.5408	2.950m	ETW_SubBase
11	-166,330,498.9070	277,965,108.1393	253.6958	3.400m	Flowline_Gutter
12	-166,330,498.8890	277,965,108.1017	253.9208	3.442m	Top_Curb
13	-166,330,498.8241	277,965,107.9665	253.9208	3.592m	Back_Curb
14	-166,330,498.3919	277,965,107.0658	253.7708	4.591m	EPS_Sub
15	-166,330,498.3915	277,965,107.0649	253.9708	4.592m	EPS
16	-166,330,496.1555	277,965,102.4055	251.3867	9.760m	Daylight

CHAINAGE 0+270.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-166,330,485.2576	277,965,135.2851	251.5201	-7.013m	Daylight
2	-166,330,483.6989	277,965,134.3806	252.7215	-5.211m	Hinge

3	-166,330,483.6980	277,965,134.3801	252.5215	-5.210m	EPS_Sub
4	-166,330,482.8339	277,965,133.8787	252.6715	-4.211m	Back_Curb
5	-166,330,482.7042	277,965,133.8034	252.6715	-4.061m	Top_Curb
6	-166,330,482.6681	277,965,133.7825	252.4465	-4.019m	Flowline_Gutter
7	-166,330,482.2789	277,965,133.5566	252.4915	-3.569m	ETW
8	-166,330,482.2789	277,965,133.5566	252.2915	-3.569m	ETW_SubBase
9	-166,330,476.6402	277,965,130.2846	252.3285	2.950m	Flange
10	-166,330,476.6402	277,965,130.2846	252.1285	2.950m	ETW_SubBase
11	-166,330,476.2510	277,965,130.0588	252.2835	3.400m	Flowline_Gutter
12	-166,330,476.2149	277,965,130.0379	252.5085	3.442m	Top_Curb
13	-166,330,476.0852	277,965,129.9626	252.5085	3.592m	Back_Curb
14	-166,330,475.2211	277,965,129.4612	252.3585	4.591m	EPS_Sub
15	-166,330,475.2203	277,965,129.4607	252.5585	4.592m	Hinge_Cut
16	-166,330,465.8795	277,965,124.0404	259.7582	15.392m	Daylight

CHAINAGE 0+300.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-166,330,475.9458	277,965,163.3588	247.2685	-10.692m	Daylight
2	-166,330,470.4213	277,965,160.7718	251.3353	-4.592m	Hinge
3	-166,330,470.4204	277,965,160.7714	251.1353	-4.591m	EPS_Sub
4	-166,330,469.5157	277,965,160.3477	251.2853	-3.592m	Back_Curb
5	-166,330,469.3798	277,965,160.2841	251.2853	-3.442m	Top_Curb
6	-166,330,469.3421	277,965,160.2664	251.0603	-3.400m	Flowline_Gutter
7	-166,330,468.9346	277,965,160.0756	251.1053	-2.950m	ETW
8	-166,330,468.9346	277,965,160.0756	250.9053	-2.950m	ETW_SubBase
9	-166,330,463.4188	277,965,157.4926	250.9530	3.141m	Flange
10	-166,330,463.4188	277,965,157.4926	250.7530	3.141m	ETW_SubBase
11	-166,330,463.0113	277,965,157.3018	250.9080	3.591m	Flowline_Gutter
12	-166,330,462.9735	277,965,157.2841	251.1330	3.632m	Top_Curb
13	-166,330,462.8377	277,965,157.2205	251.1330	3.782m	Back_Curb
14	-166,330,461.9330	277,965,156.7968	250.9830	4.781m	EPS_Sub
15	-166,330,461.9321	277,965,156.7964	251.1830	4.782m	Hinge_Cut
16	-166,330,458.0787	277,965,154.9919	254.0197	9.037m	Daylight

CHAINAGE 0+330.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-166,330,463.2126	277,965,195.2441	241.9966	-16.544m	Daylight
2	-166,330,454.2001	277,965,187.3940	249.9646	-4.592m	Hinge
3	-166,330,454.1994	277,965,187.3934	249.7646	-4.591m	EPS_Sub
4	-166,330,453.4461	277,965,186.7372	249.9146	-3.592m	Back_Curb
5	-166,330,453.3330	277,965,186.6387	249.9146	-3.442m	Top_Curb

6	-166,330,453.3015	277,965,186.6113	249.6896	-3.400m	Flowline_Gutter
7	-166,330,452.9622	277,965,186.3157	249.7346	-2.950m	ETW
8	-166,330,452.9622	277,965,186.3157	249.5346	-2.950m	ETW_SubBase
9	-166,330,447.8722	277,965,181.8822	249.5658	3.800m	Flange
10	-166,330,447.8722	277,965,181.8822	249.3658	3.800m	ETW_SubBase
11	-166,330,447.5329	277,965,181.5867	249.5208	4.250m	Flowline_Gutter
12	-166,330,447.5014	277,965,181.5593	249.7458	4.291m	Top_Curb
13	-166,330,447.3883	277,965,181.4608	249.7458	4.441m	Back_Curb
14	-166,330,446.6350	277,965,180.8046	249.5958	5.440m	EPS_Sub
15	-166,330,446.6343	277,965,180.8040	249.7958	5.441m	Hinge_Cut
16	-166,330,444.4162	277,965,178.8720	251.7568	8.383m	Daylight

CHAINAGE 0+360.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-166,330,431.1097	277,965,212.9956	243.3051	-12.524m	Daylight
2	-166,330,428.1151	277,965,205.6495	248.5938	-4.591m	Hinge
3	-166,330,428.1147	277,965,205.6486	248.3938	-4.590m	EPS_Sub
4	-166,330,427.7376	277,965,204.7235	248.5438	-3.591m	Back_Curb
5	-166,330,427.6809	277,965,204.5846	248.5438	-3.441m	Top_Curb
6	-166,330,427.6652	277,965,204.5459	248.3188	-3.399m	Flowline_Gutter
7	-166,330,427.4953	277,965,204.1292	248.3638	-2.949m	ETW
8	-166,330,427.4953	277,965,204.1292	248.1638	-2.949m	ETW_SubBase
9	-166,330,425.1116	277,965,198.2818	248.2059	3.365m	Flange
10	-166,330,425.1116	277,965,198.2818	248.0059	3.365m	ETW_SubBase
11	-166,330,424.9418	277,965,197.8651	248.1609	3.815m	Flowline_Gutter
12	-166,330,424.9260	277,965,197.8265	248.3859	3.857m	Top_Curb
13	-166,330,424.8694	277,965,197.6876	248.3859	4.007m	Back_Curb
14	-166,330,424.4923	277,965,196.7625	248.2359	5.006m	EPS_Sub
15	-166,330,424.4919	277,965,196.7616	248.4359	5.007m	Hinge_Cut
16	-166,330,423.0842	277,965,193.3085	250.9220	8.736m	Daylight

CHAINAGE 0+390.00

POINT	X	Y	Z	OFFSET	STRING CUT
1	-166,330,399.6951	277,965,218.8547	243.9312	-9.529m	Daylight
2	-166,330,398.5848	277,965,214.0434	247.2231	-4.592m	Hinge
3	-166,330,398.5845	277,965,214.0425	247.0231	-4.591m	EPS_Sub
4	-166,330,398.3599	277,965,213.0690	247.1731	-3.592m	Back_Curb
5	-166,330,398.3262	277,965,212.9229	247.1731	-3.442m	Top_Curb
6	-166,330,398.3168	277,965,212.8823	246.9481	-3.400m	Flowline_Gutter
7	-166,330,398.2156	277,965,212.4438	246.9931	-2.950m	ETW
8	-166,330,398.2156	277,965,212.4438	246.7931	-2.950m	ETW_SubBase

9	-166,330,396.9041	277,965,206.7609	246.8473	2.882m	Flange
10	-166,330,396.9041	277,965,206.7609	246.6473	2.882m	ETW_SubBase
11	-166,330,396.8029	277,965,206.3224	246.8023	3.332m	Flowline_Gutter
12	-166,330,396.7936	277,965,206.2818	247.0273	3.374m	Top_Curb
13	-166,330,396.7598	277,965,206.1357	247.0273	3.524m	Back_Curb
14	-166,330,396.5352	277,965,205.1622	246.8773	4.523m	EPS_Sub
15	-166,330,396.5350	277,965,205.1613	247.0773	4.524m	Hinge_Cut
16	-166,330,395.1361	277,965,199.0998	251.2245	10.745m	Daylight

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