

# Idejni projekt lokalne ceste

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**Trogrančić, Mateo**

**Undergraduate thesis / Završni rad**

**2023**

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UNIVERSITY OF SPLIT



**SVEUČILIŠTE U SPLITU**  
**FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE**

# **ZAVRŠNI RAD**

**MATEO TROGRANČIĆ**

**Split, 2023.**

**SVEUČILIŠTE U SPLITU**  
**FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE**

# **IDEJNI PROJEKT LOKALNE CESTE**

**Završni rad**

**Split, 2023.**

**SVEUČILIŠTE U SPLITU**  
**FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE**

Split, Matice hrvatske 15

STUDIJ: **PREDDIPLOMSKI SVEUČILIŠNI STUDIJ**  
**GRAĐEVINARSTVA**

KANDIDAT: Mateo Trogrančić

MATIČNI BROJ AKADEMSKOG

GRAĐANA (JMBAG): 0083227916

KATEDRA: **Katedra za prometnice**

PREDMET: Ceste

**ZADATAK ZA ZAVRŠNI RAD**

Tema: Idejni projekt lokalne ceste

Opis zadatka: Uz pomoć softvera za projektiranje cesta Autodesk Civil 3D potrebno je izraditi idejni projekt dionice ceste na geodetskoj podlozi koja je korištena za izradu programa u okviru kolegija Ceste. Trasa ceste se treba položiti od točke A do točke B upotrebom svih podataka 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. Normalni poprečni presjek u mjerilu 1:50
6. Karakteristične poprečne presjeke u mjerilu 1:200
7. Obradu na računalu
8. Računalne ispise koordinatnih točaka osi
9. Proračun količina zemljanih radova
10. Proračun količine radova po presjecima

U Splitu, lipanj 2023.

Voditelj završnog rada:

Prof. dr. sc. Dražen Cvitanić

## **Idejni projekt lokalne ceste**

### ***Sažetak:***

Idejni projekt lokalne ceste je izrađen na zadanoj geodetskoj podlozi, prema zadatku iz kolegija Ceste, koristeći se softverom Autodesk Civil 3D 2024. Cesta je projektirana za godišnji dnevni promet (PGDP) od 950 vozila na dan, na brdovitom terenu. Cesta se formira od točke A koja se nalazi na 258 metara nadmorske visine prema točki B koja se nalazi na 281 metara nadmorske visine. Duljina trase kontinuirane ceste iznosi 393,36 m. 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, geodetska podloga, projektna brzina, os ceste, niveleta, radijus krivine, uzdužni presjek, poprečni presjek, stacionaža

## **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 Civil 3D 2024. The road is designed for the annual average daily traffic (AADT) of 950 vehicles per day, on the hilly terrain. The road is formed from point A located at 258 meters above sea level towards point B, which is located at 281 meters above sea level. The length of the continuous road is 393,36 meter. The predicted project speed of the road is 40 kilometers 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, geodetic basis, design speed, the road axis, profile, the radius of curvature, longitudinal section, cross section, stationing

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## **1. KOPIJA PROGRAMSKOG ZADATKA**

SVEUČILIŠTE U SPLITU  
FAKULTET GRAĐEVINARSTVA, ARHITEKTURE  
I GEODEZIJE

Split, ak.god. 2022/2023.

Katedra za prometnice

Studij: Preddiplomski

Nastavni predmet: CESTE

Student/ica: Mateo Trogrančić

## ZADATAK

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

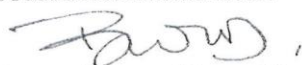
Zadano je:

- 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 (ukupno i po pojedinim presjecima)
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



## 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 258 metara nadmorske visine, do točke B koja se nalazi na 281 metara nadmorske visine. Cesta je projektirana za prosječni godišnji dnevni promet od 950 vozila na dan i to na brdovitom terenu (5. kategorija ceste). S obzirom na to da je teren brdovit radi se o znatnom ograničenju (ZO). Na temelju 5. kategorije ceste i znatnog stupnja ograničenja prema pravilniku određuje se projektna brzina  $v_p=40$  km/h. Ukupna duljina trase koja se sastoji od tri pravca i dvije krivine je 393,36 metra.

### 2.2. Horizontalni elementi

Za navedenu kategoriju i projektnu brzinu prema pravilniku, minimalni dozvoljeni polumjer horizontalnog zavoja je 45 m, a minimalna dozvoljena duljina prijelaznice 30 m. Trasa konstruirane ceste ukupne dužine 393,36 m sastoji se od tri pravca i dvije krivine. Poštujući minimalne zahtjeve za obje krivine odabrani su optimalni polumjeri zakrivljenosti i duljine prijelaznica. Prva kružna krivina s početkom na stacionaži 0+158,35 ima kružni luk polumjera 50 m i duljinu prijelaznice 30 m te završava na stacionaži 0+248,25. Druga kružna krivina s početkom na stacionaži 0+262,81 ima kružni luk polumjera 55 m i duljinu prijelaznice 30 m te završava na stacionaži 0+361,91. Između protusmjernih krivina proteže se pravac od stacionaže 0+248,25 do stacionaže 0+262,81 ukupne duljine 14,56 m. Prvi pravac ukupne duljine 158,35 počinje na stacionaži 0+000,00 i završava na stacionaži 0+158,35, a drugi pravac ukupne duljine 31,45 m proteže se od stacionaže 0+361,91 do stacionaže 0+393,36. Konstrukcija svake krivine je izvedena pomoću dvije prijelaznice oblika klotoide i jednog kružnog luka. Proširenje kolnika kružnog luka za promet teretnih vozila s priključkom u prvoj krivini iznosi 1,68 m, a u drugoj 1,52 m.

### 2.3. Vertikalni elementi

Na temelju kategorije ceste i stupnja ograničenja maksimalni dozvoljeni uzdužni nagib nivelete iznosi 12%, a minimalni dopušteni radijus vertikalne krivine 300 m. Niveleta se sastoji od dva pravca i jedne konveksne krivine te je rastuća na cijelom području trase (od A do B). Nagibi pravaca tangenti su redom (od A do B): 6,77 % i 4,97 %. Tangenta vertikalne krivine je dužine 80,79 m, a polumjer konveksne vertikalne krivine 4500 m.

## 2.4. Poprečni presjek

Projektirana cesta sadrži dva prometna traka širine svakog po 2,75 m, betonski rubni trak širine 0,20 m te bankinu i bermu širine 1 m i nagiba 4%. Poprečni nagibi kolnika kreću se od 0,0% do 6,50%. 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.

## 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 predviđena je 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.

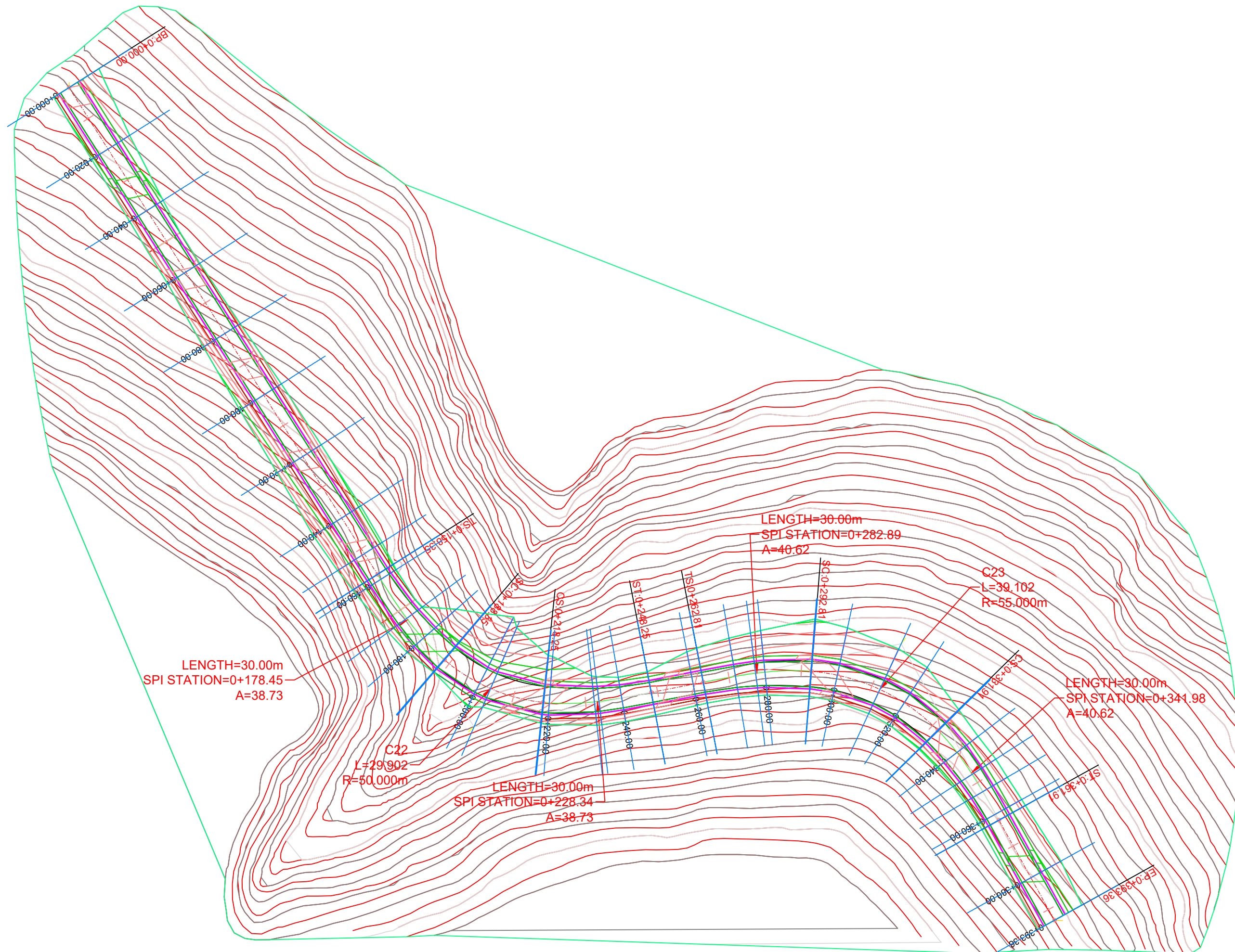
## 2.7. Oprema ceste


Idejnim rješenjem predviđa se horizontalna signalizacija koja se sastoji od jedne pune razdjelne crte širine 10 cm postavljene 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**

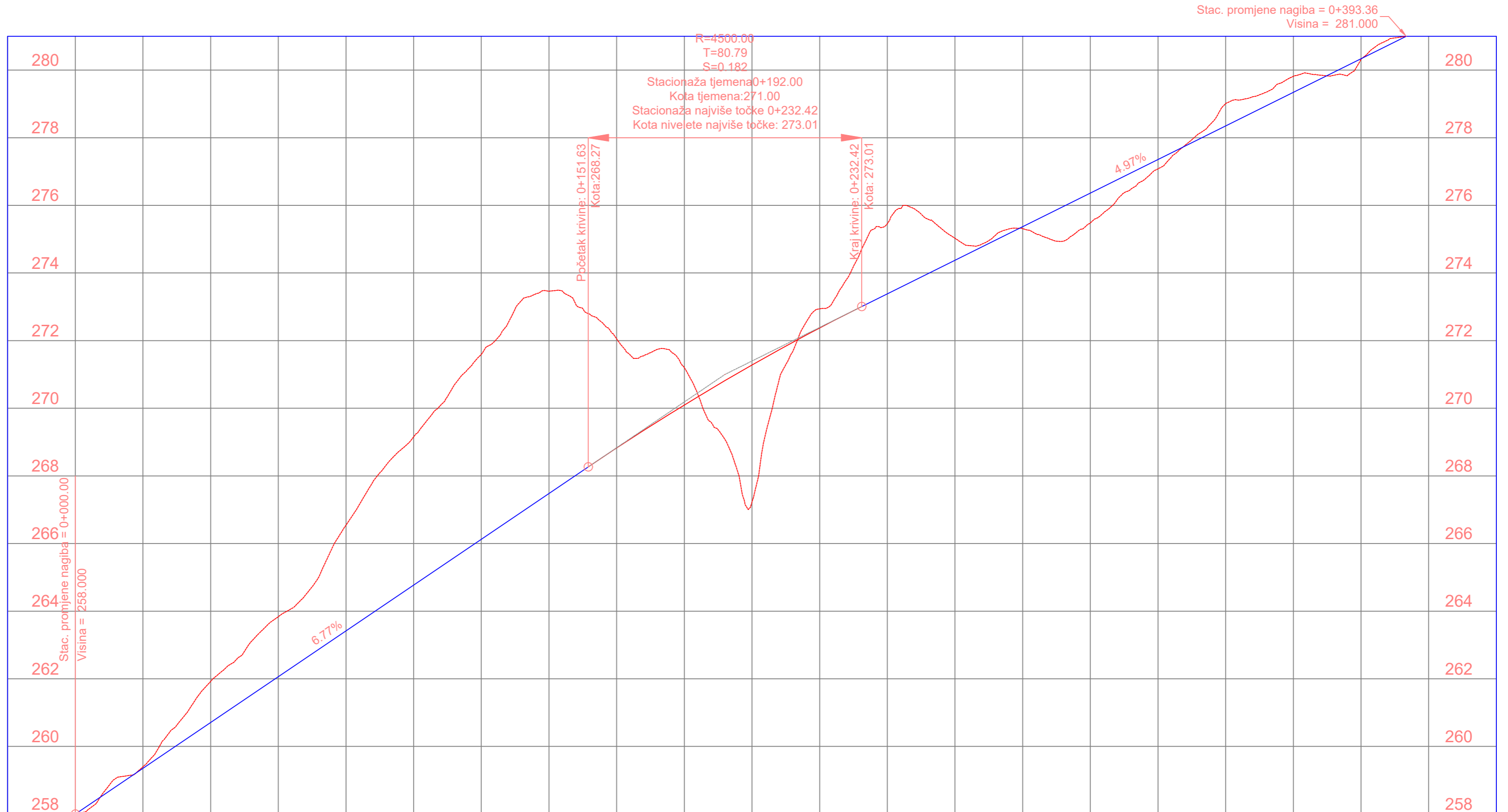
# SITUACIJA 1:1000



 <p>SVEUČILIŠTE U SPLITU GRABEVINSKO - ARHITEKTONSKI FAKULTET 2100 SPLIT, MATICE HRVATSKE 15</p>	Završni rad		
	TEMA	IDEJNI PROJEKT LOKALNE CESTE	
	STUDENT	Mateo Trogranić	MENTOR Prof. dr. sc. Dražen Cvitanić
	SADRŽAJ	Situacija	MJERILO 1:1000
DATUM	lipanj 2023.	BROJ PRILOGA	1

### **3.2. Uzdužni presjek M 1:1000 / 1:100**

# UZDUŽNI PRESJEK 1:1000 / 1:100



<b>Stacionaža</b>	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	0+370.00	0+380.00	0+390.00	0+400.00	0+410.00	0+425.00			
<b>Kote nivelete</b>		258.00	258.68	259.35	260.03	260.71	261.39	262.06	262.74	263.42	264.09	264.77	265.45	266.12	266.80	267.48	268.16	268.83	269.47	270.10	270.70	271.28	271.84	272.37	272.89	273.38	273.88	274.38	274.87	275.37	275.87	276.36	276.86	277.36	277.85	278.35	278.85	279.34	279.83	279.84	280.34	280.83				
<b>Kote terena</b>		258.00	258.85	259.40	260.63	261.92	262.81	263.84	264.72	266.54	268.09	268.15	270.35	271.60	272.94	273.46	272.94	272.05	271.64	271.20	269.37	267.23	271.29	272.94	274.20	275.46	275.74	275.03	274.96	275.31	274.94	275.48	276.37	277.08	277.94	279.01	279.27	279.82	279.83	280.31	280.95					
<b>Horizontalni elementi</b>		L = 158.35 S32° 21' 18"E															L: 30.00	R: 50.00 L: 29.90	L: 30.00	L = 14.55 N79° 00' 09"E	L: 30.00	R: 55.00 L: 39.10	L: 30.00	L = 31.46 S29° 00' 41"E																						
<b>Vitoperenje</b>																	-2.50% 0+158.35 2.50%	L: -6.50% sta. 0+186.35 D: 6.50%	L: -6.50% sta. 0+216.25 D: 6.50%	-2.50% 0+246.25 2.50%	-2.50% 0+262.81 2.50%	0.00% 0+271.81	L: 6.20% sta. 0+292.81 D: -6.20%	L: 6.20% sta. 0+331.91 D: -6.20%	0.00% 0+332.91	-2.50% 0+361.91 2.50%																				



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21000 SPLIT, MATICE HRVATSKE 15

**Završni rad**

TEMA: **IDEJNI PROJEKT LOKALNE CESTE**

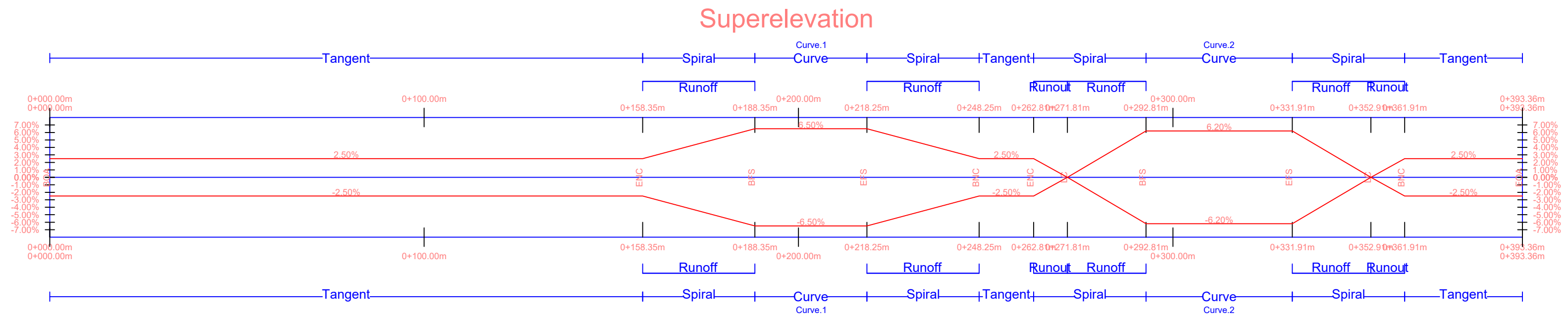
STUDENT: **Mateo Trogranić**      MENTOR: **Prof. dr. sc. Dražen Cvitanić**

SADRŽAJ: **Uzdužni presjek**      MJERILO: **1:1000 / 1:100**

DATUM: **lipanj 2023.**      BROJ PRILOGA: **2**

### **3.3. Dijagram vitoperenja M 1:1000**

# DIJAGRAM VITOPERENJA 1:1000

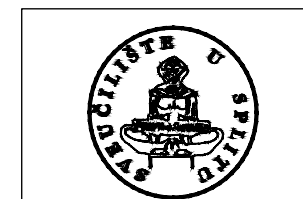
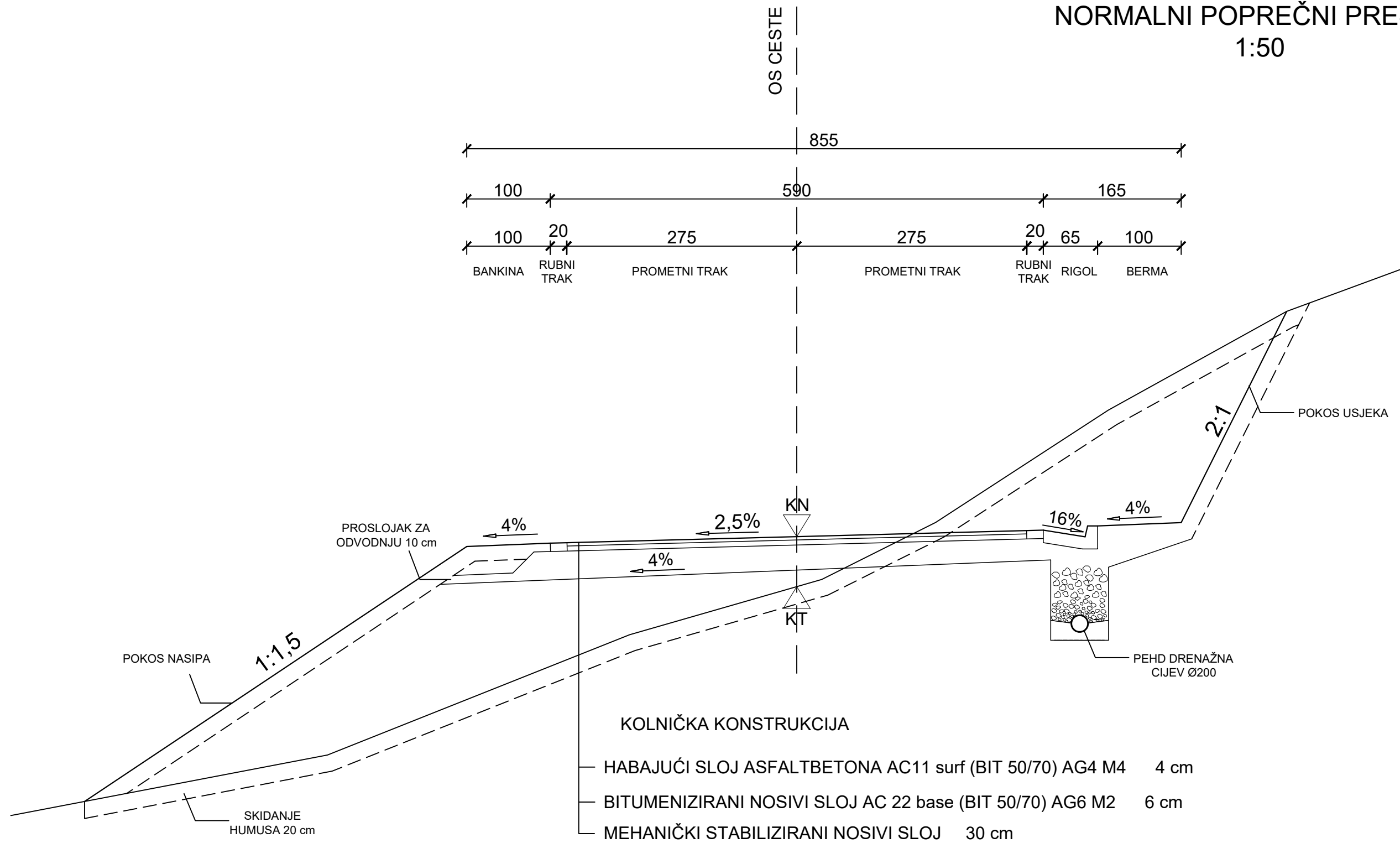


 <small>SVEUČILIŠTE U SPLITU,          GRAĐEVINSKO - ARHITEKTONSKI FAKULTET          2100 SPLIT, MATICE HRVATSKE 15</small>	Završni rad		
	TEMA <b>IDEJNI PROJEKT LOKALNE CESTE</b>		
	STUDENT <b>Mateo Trogrančić</b>		MENTOR <b>Prof. dr. sc. Dražen Cvitanić</b>
	SADRŽAJ <b>Dijagram vitoperenja</b>		MJERILO <b>1:1000</b>
	DATUM <b>lipanj 2023.</b>		BROJ PRILOGA <b>3</b>



### **3.4. Normalni poprečni presjek M 1:50**

# NORMALNI POPREČNI PRESJEK 1:50

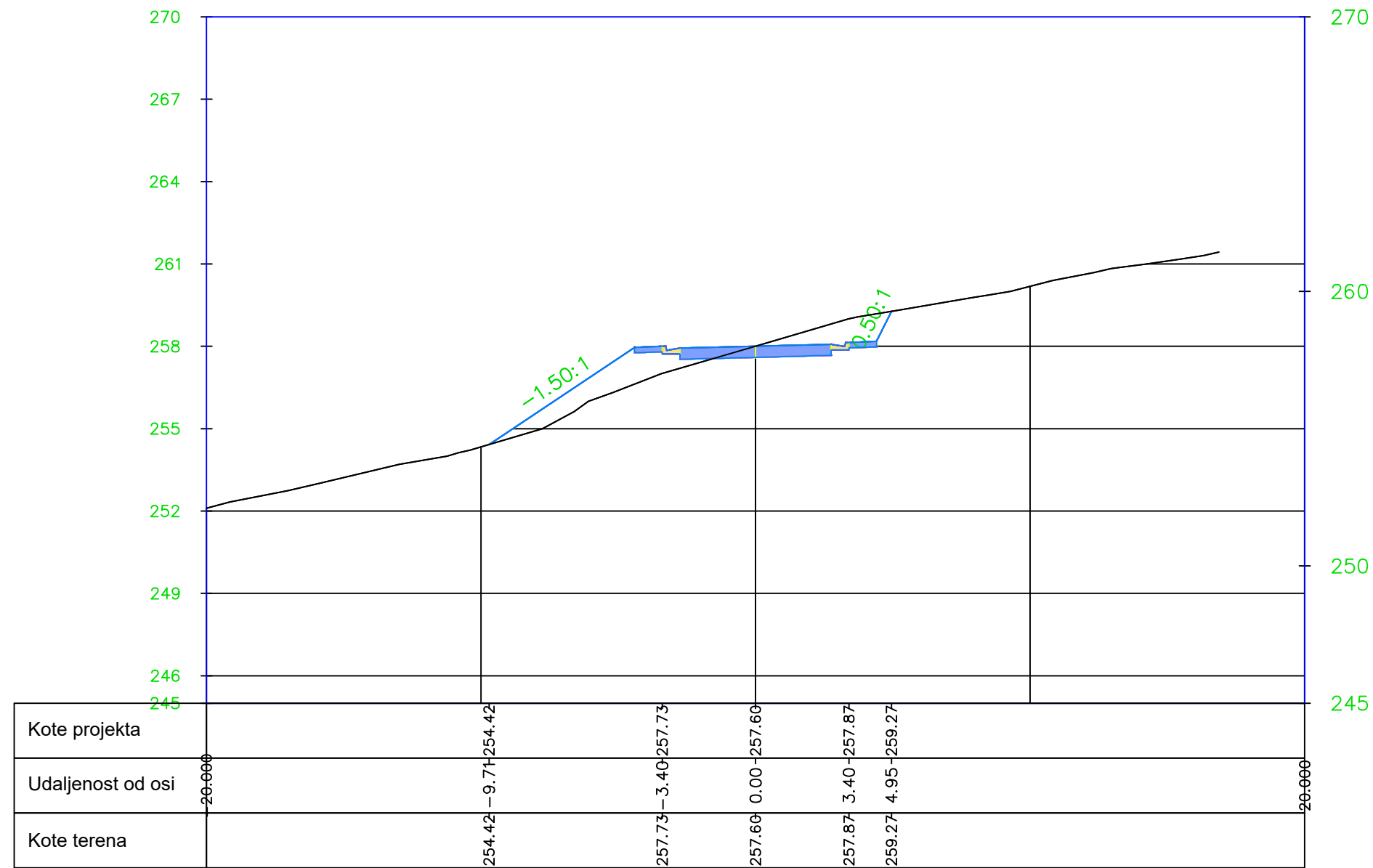


SVEUČILIŠTE U SPLITU,  
GRADEVINSKO - ARHITEKTONSKI FAKULTET  
2100 SPLIT, MATICE HRVATSKE 15

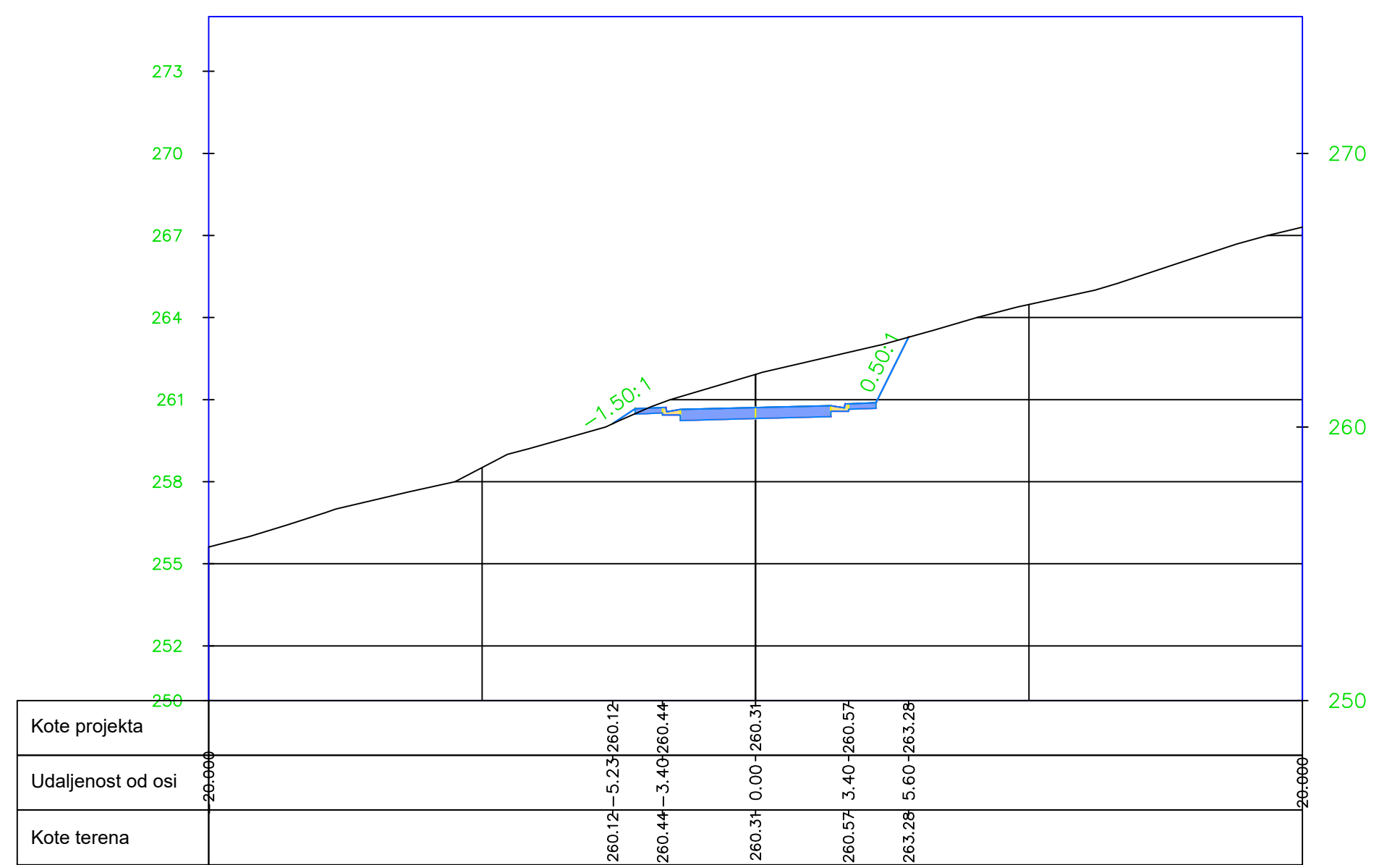
Završni rad		
TEMA	IDEJNI PROJEKT LOKALNE CESTE	
STUDENT	Mateo Trogrančić	MENTOR Prof. dr. sc. Dražen Cvitanić
SADRŽAJ	Normalni poprečni presjek	MJERILO 1:50
DATUM	lipanj 2023.	BROJ PRILOGA 4

### **3.5. Karakteristični poprečni presjeci M 1:200**

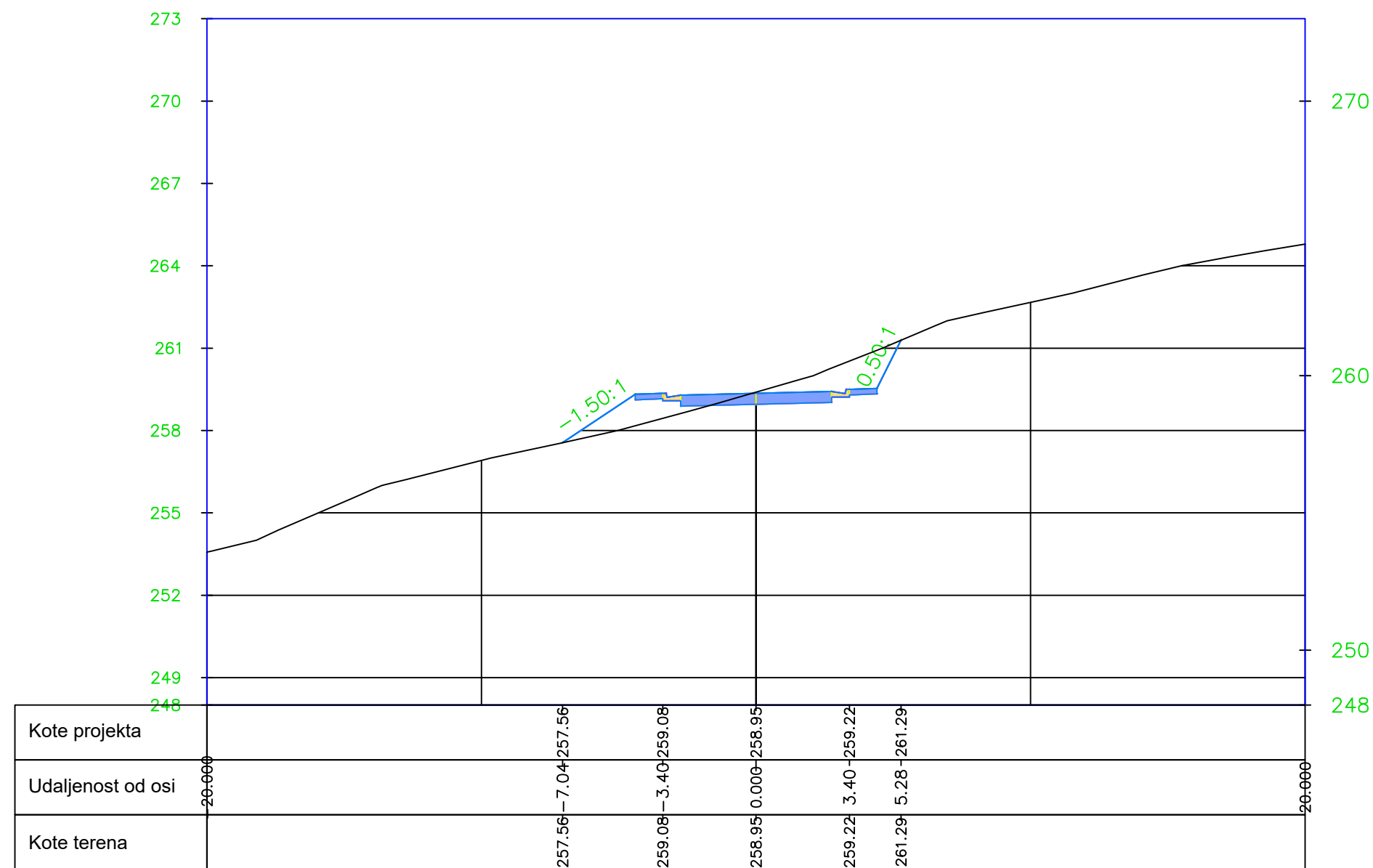
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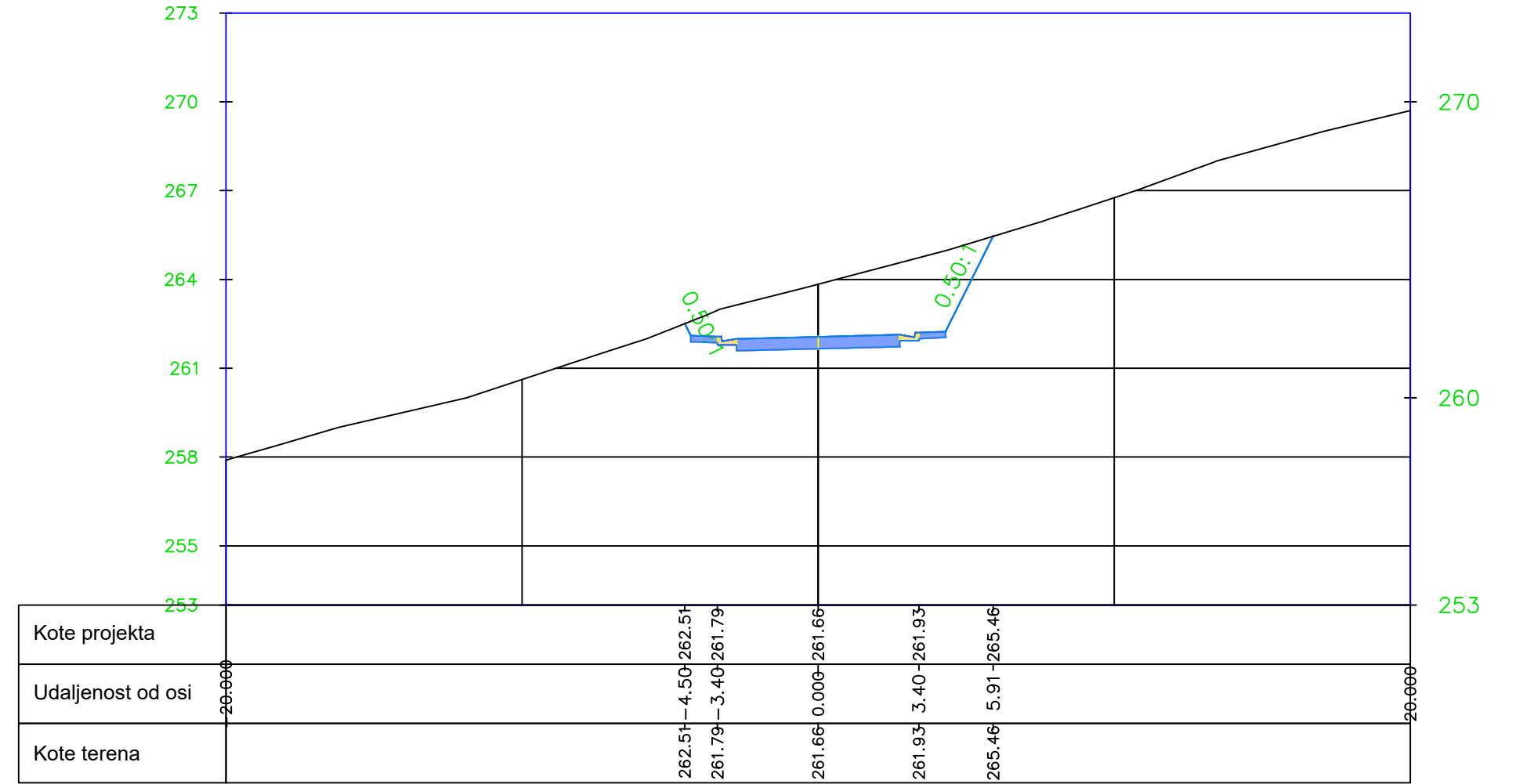
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0+020.00

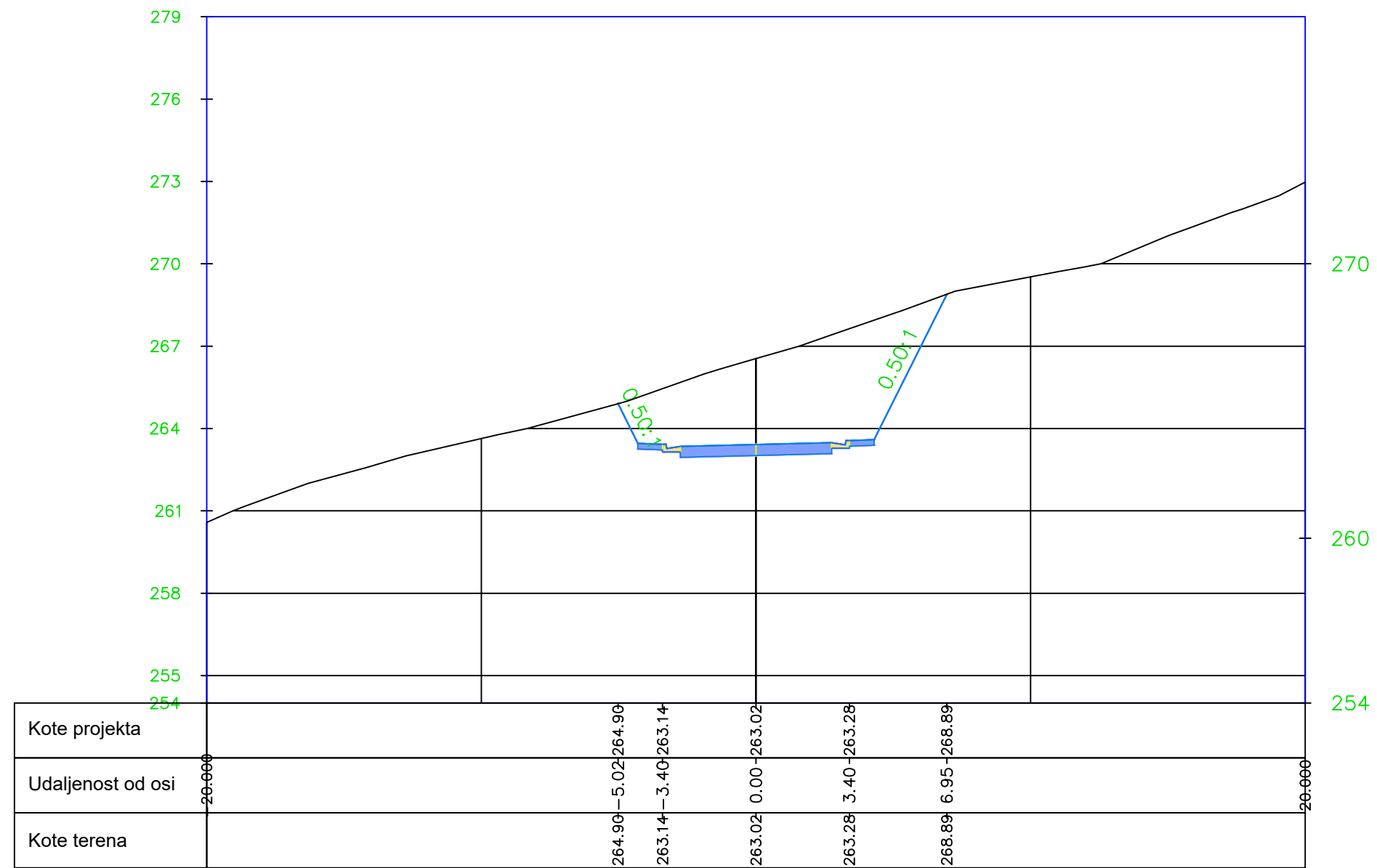


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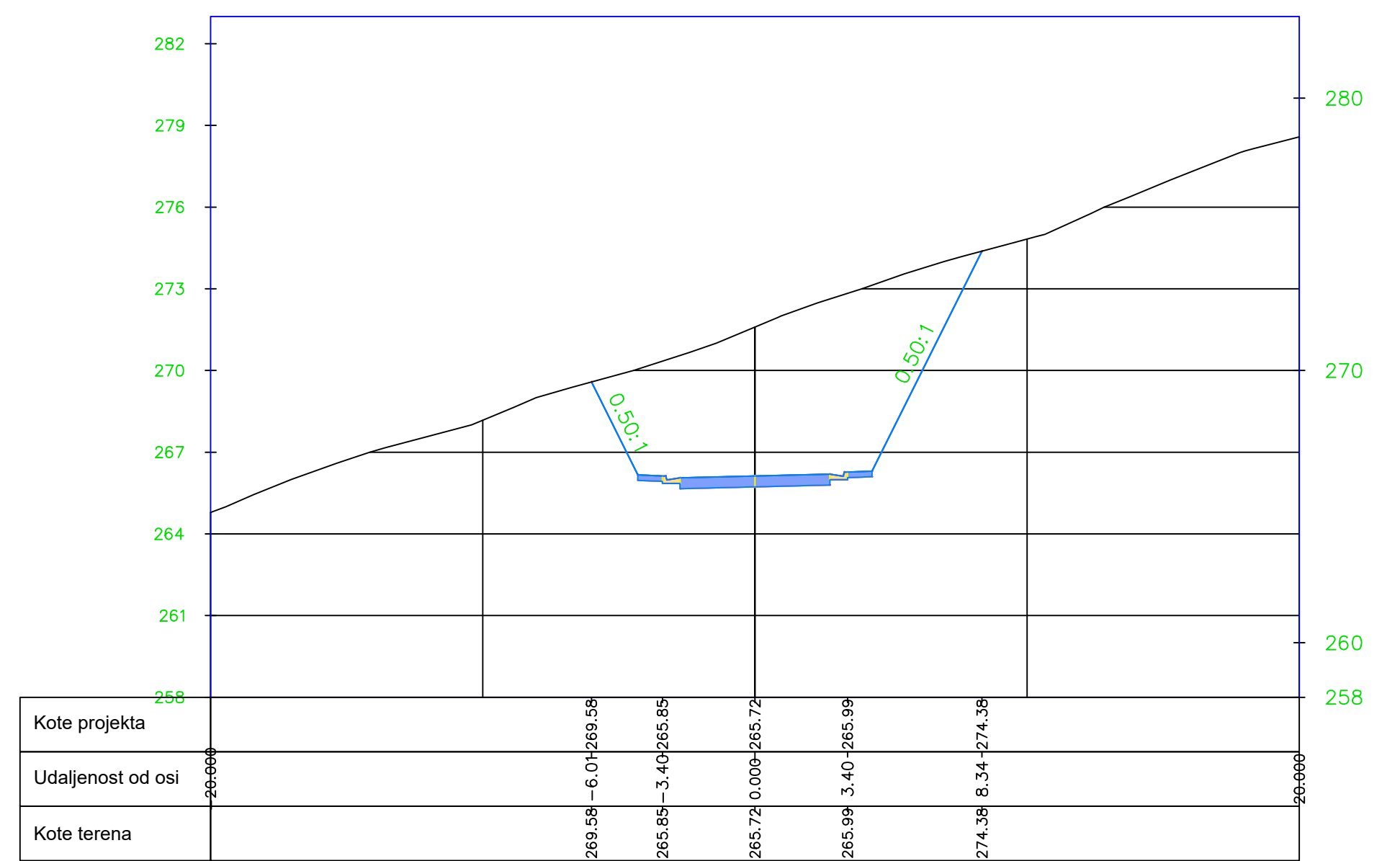


<b>Završni rad</b>		
TEMA	<b>IDEJNI PROJEKT LOKALNE CESTE</b>	
STUDENT	Mateo Trogranić	MENTOR Prof. dr. sc. Dražen Cvitanić
SADRŽAJ	Poprečni presjeci	MJERILO 1:200
DATUM	lipanj 2023.	BROJ PRILOGA 5

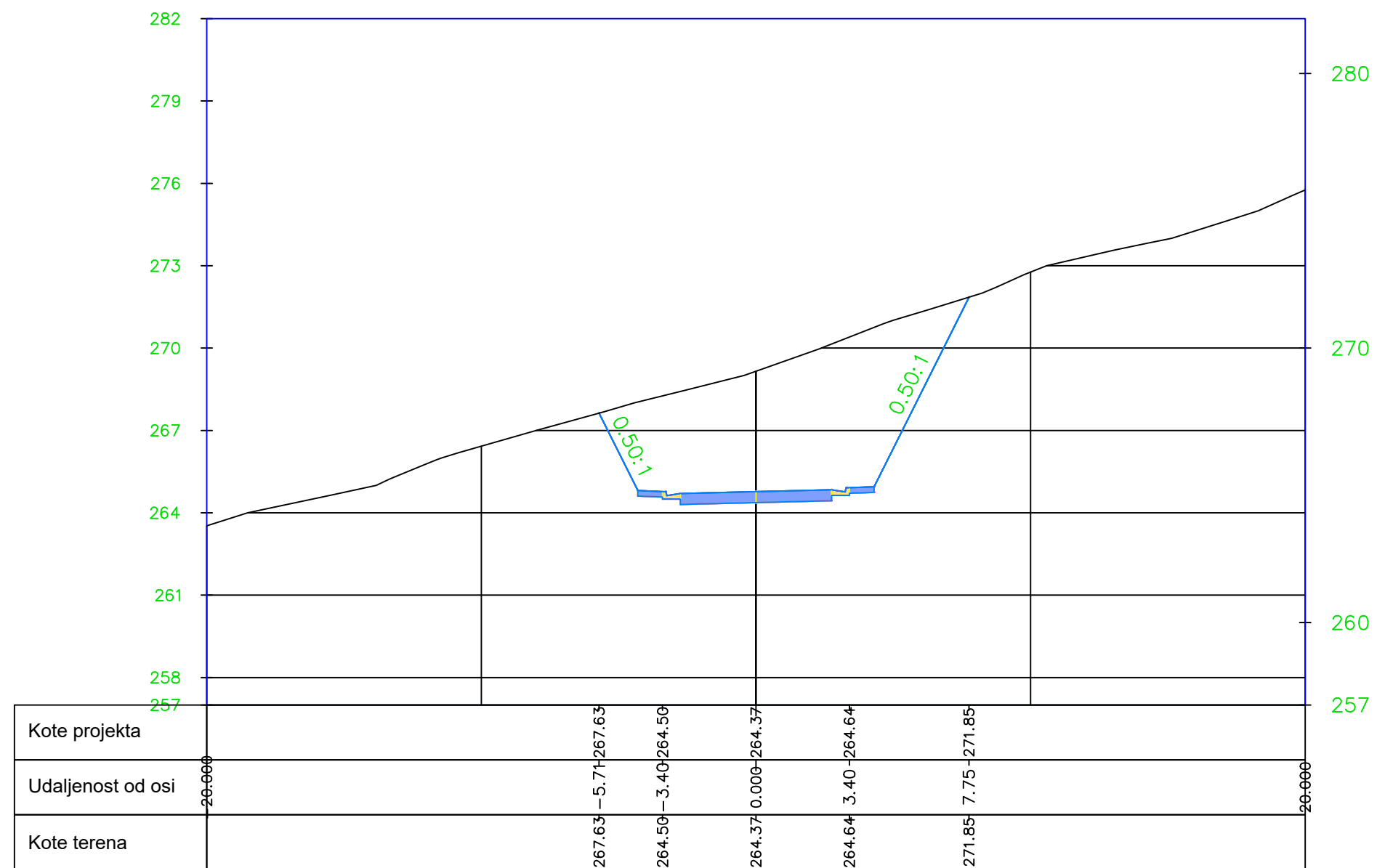
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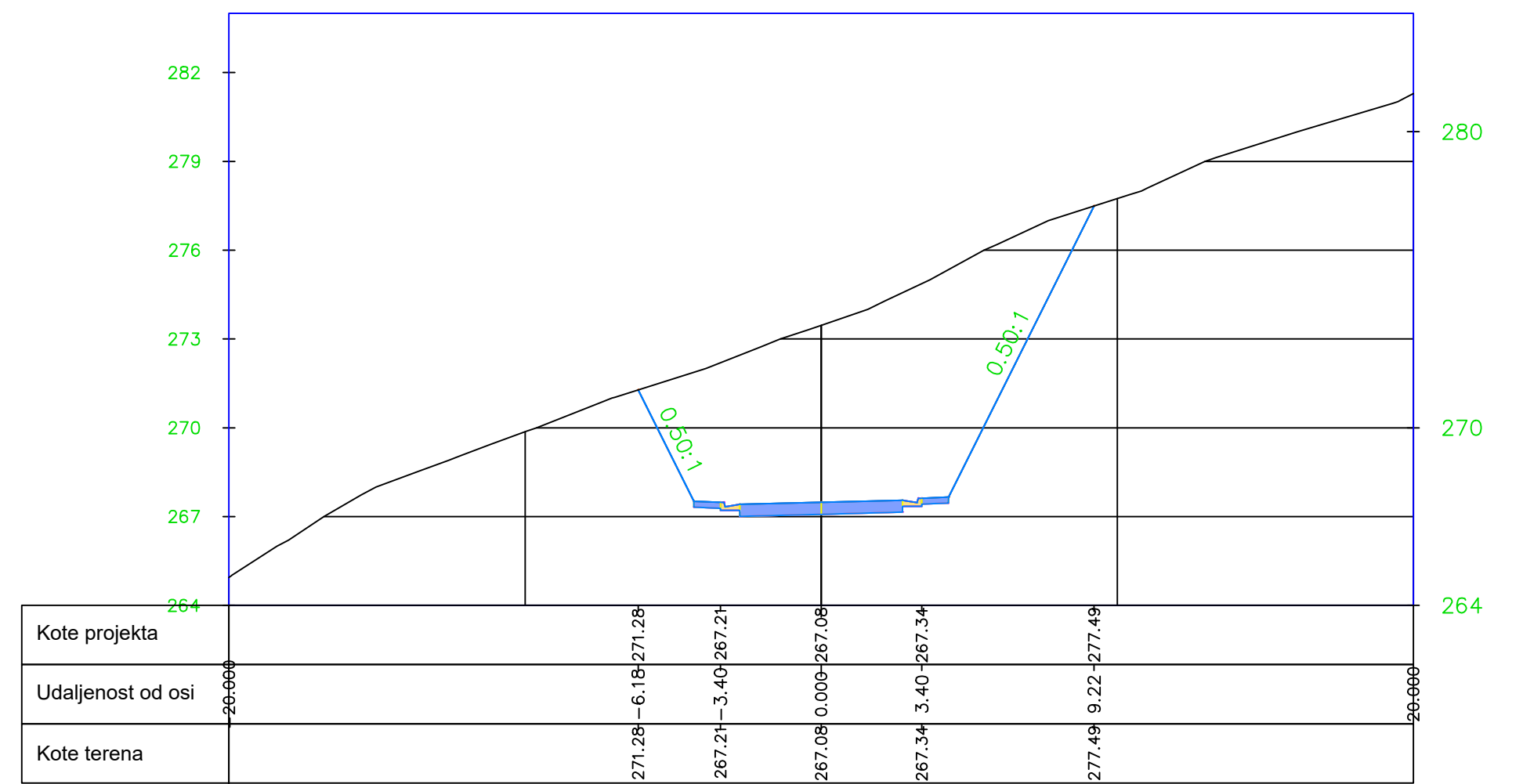
0+120.00



0+100.00



0+140.00





SVEUČILIŠTE U SPLITU,  
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2100 SPLIT, MATICE HRVATSKE 15

**Završni rad**

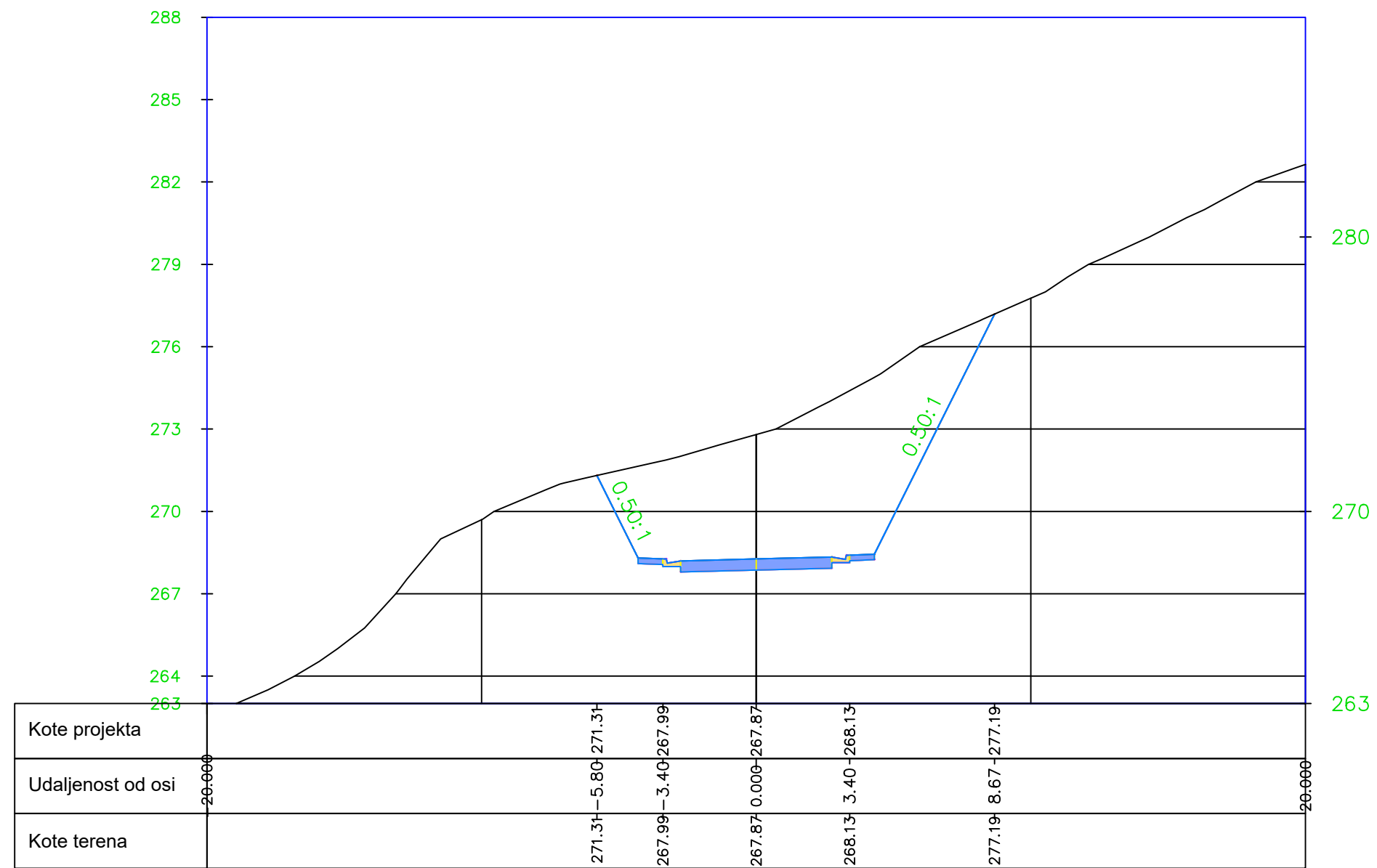
TEMA: **IDEJNI PROJEKT LOKALNE CESTE**

STUDENT: **Mateo Trogranjčić**      MENTOR: **Prof. dr. sc. Dražen Cvitanić**

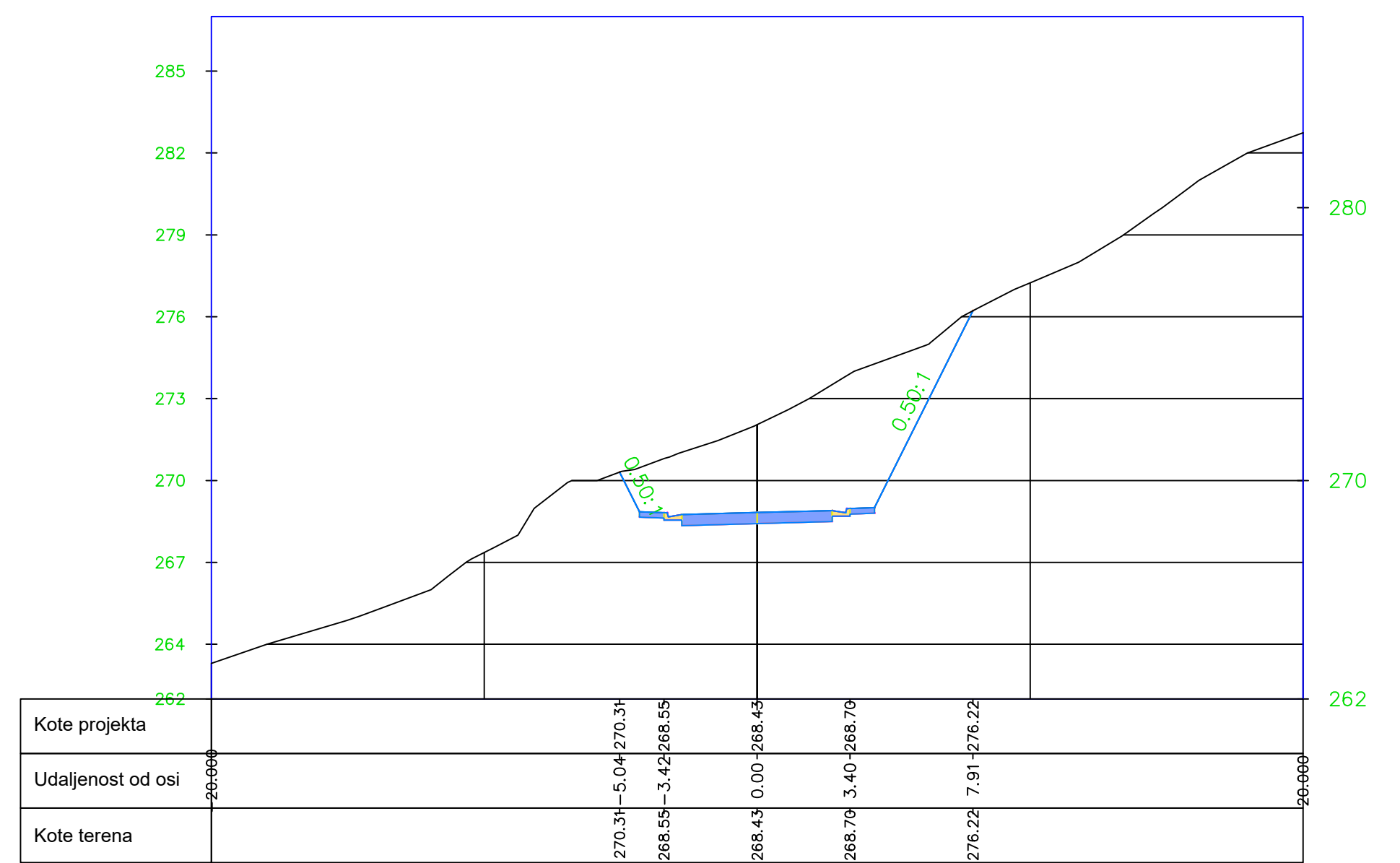
SADRŽAJ: **Poprečni presjeci**      MJERILO: **1:200**

DATUM: **lipanj 2023.**      BROJ PRILOGA: **6**

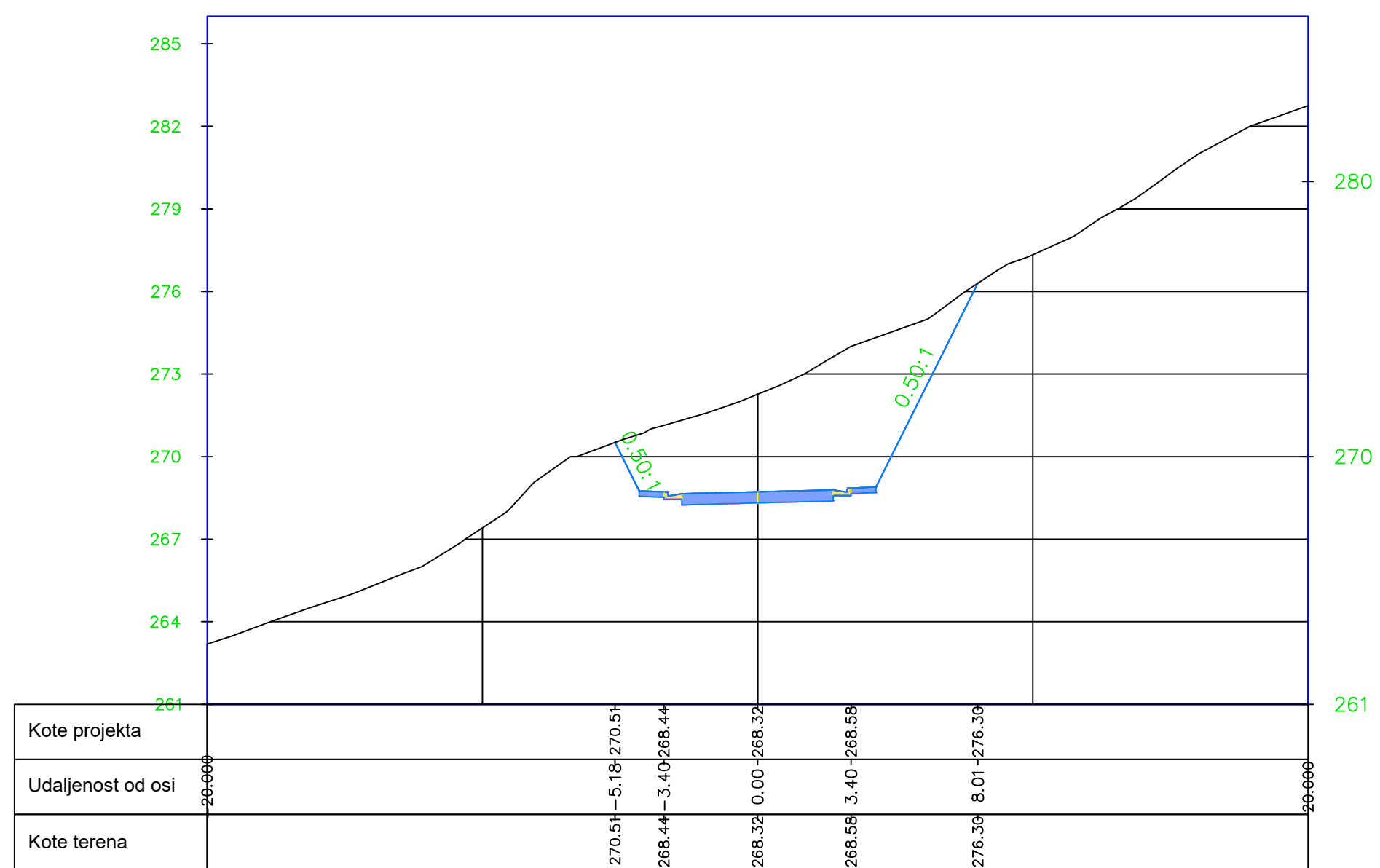
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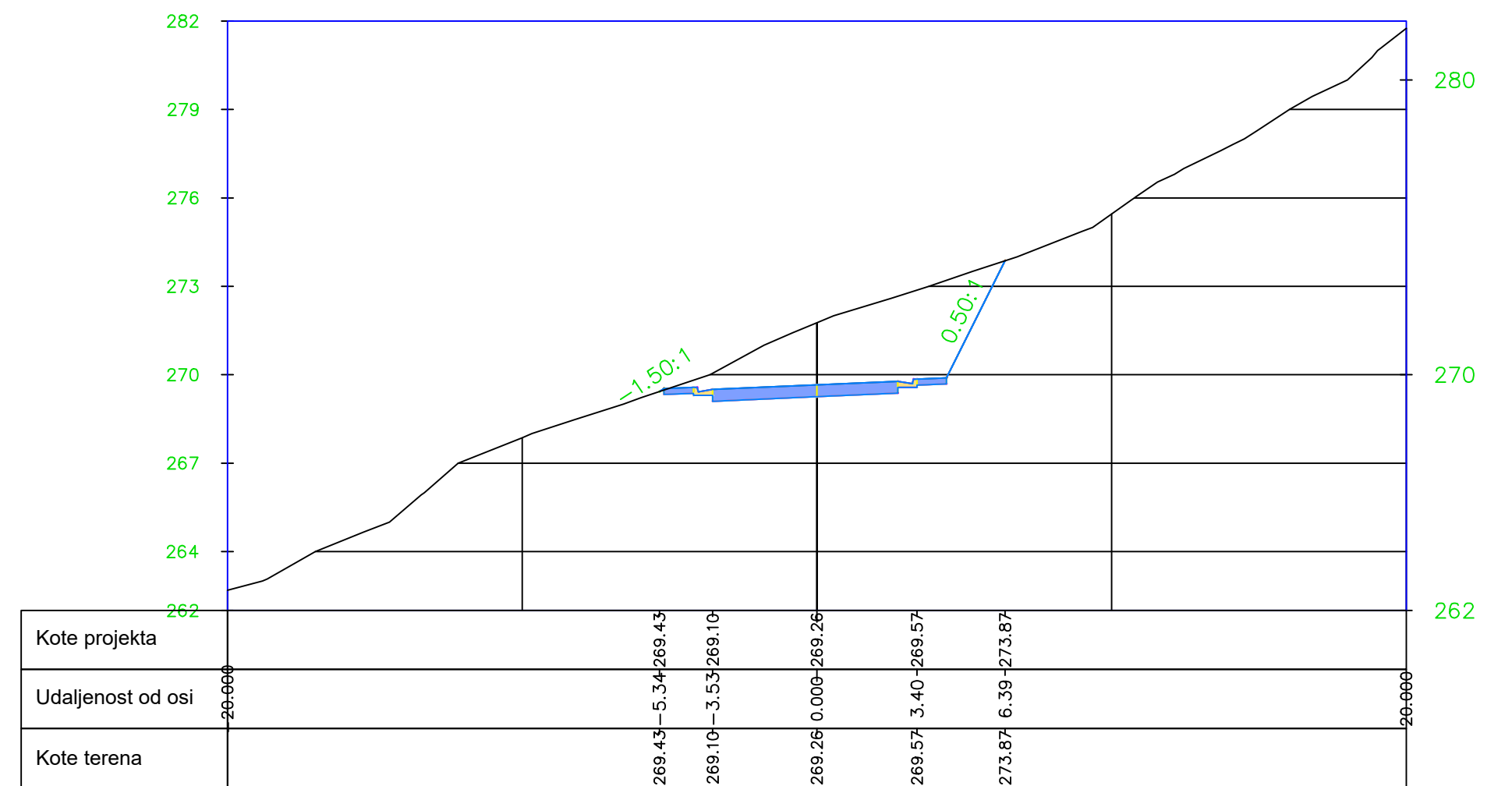
0+160.00



0+158.35

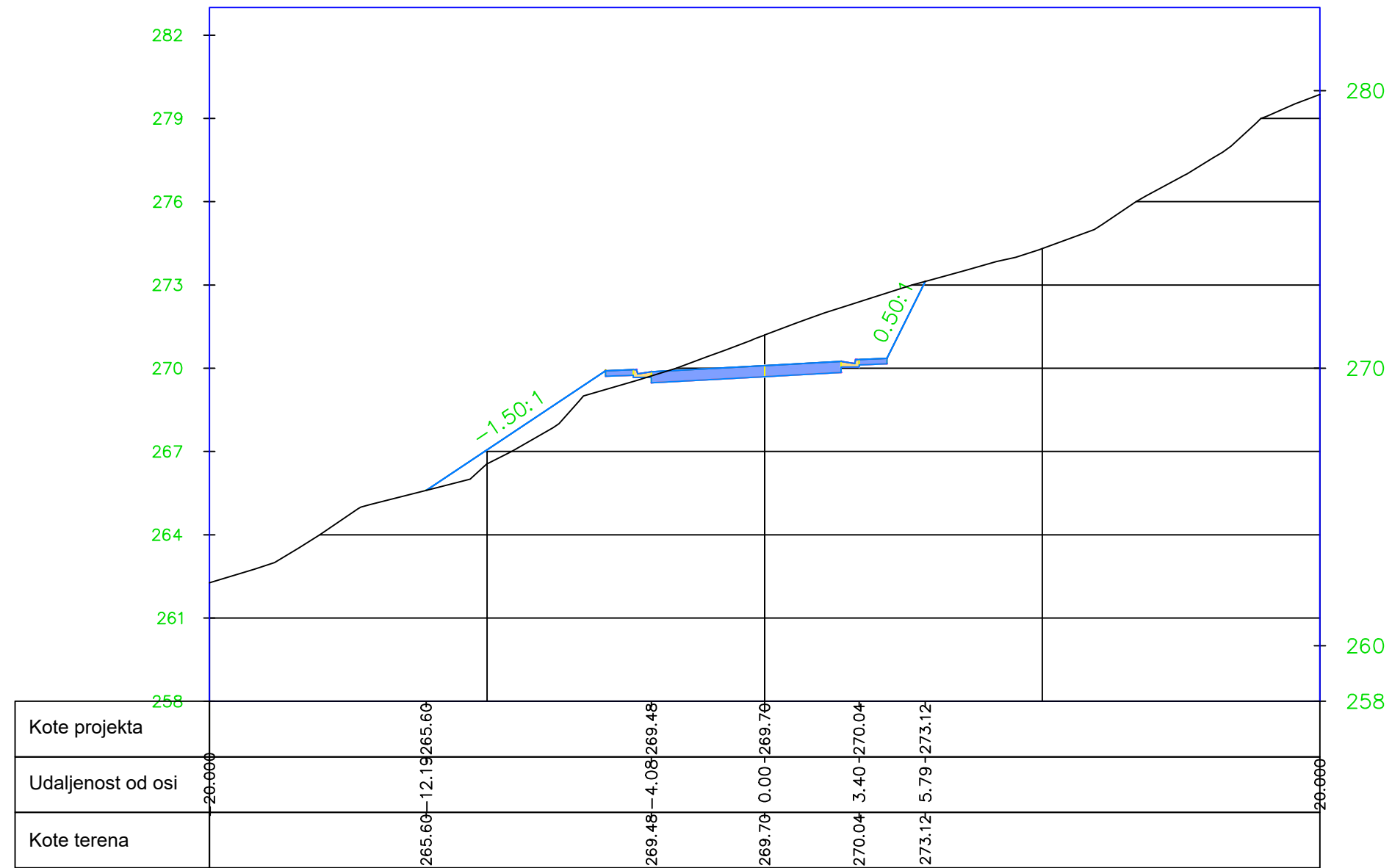


0+172.89

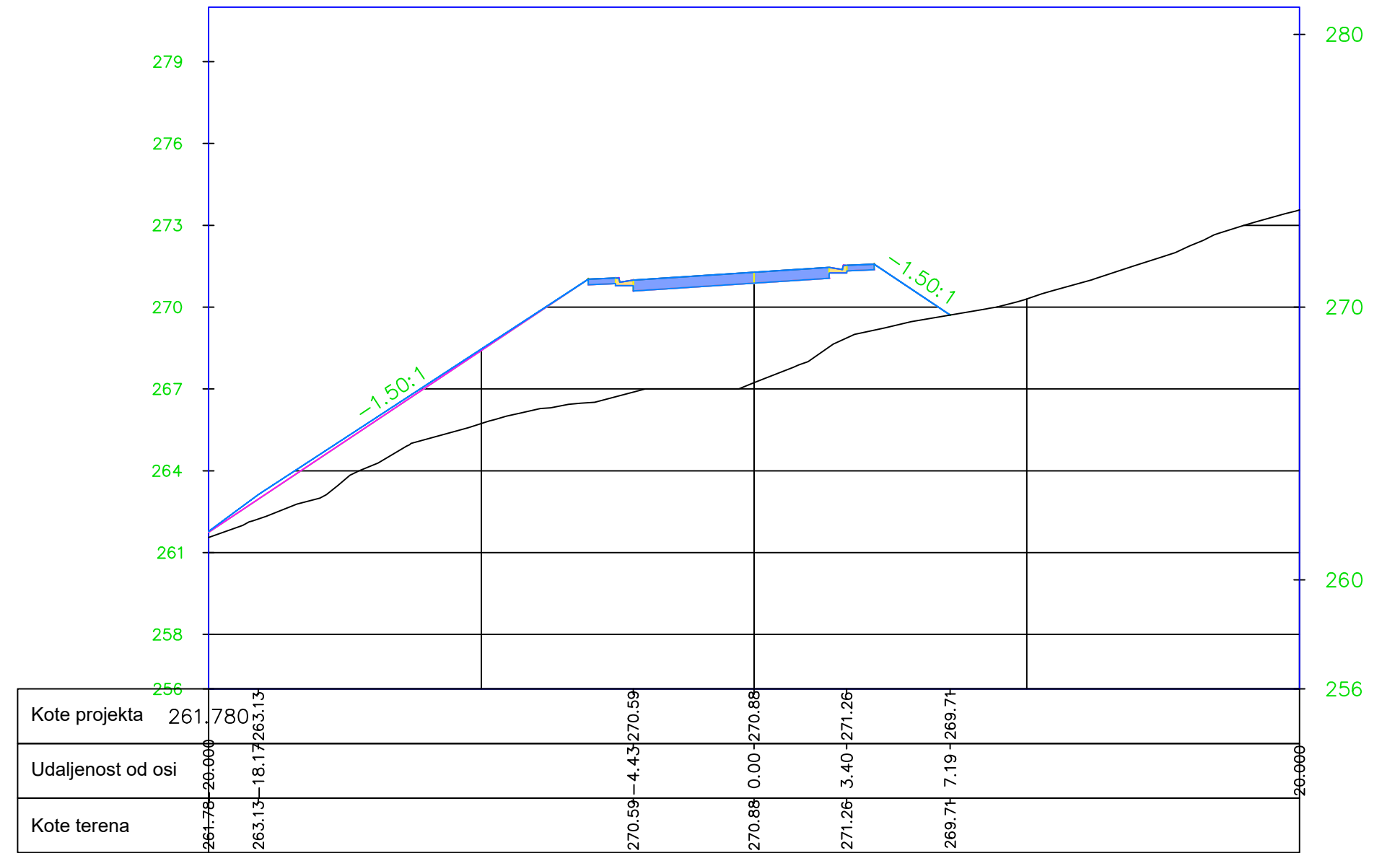


<b>Završni rad</b>		
TEMA	<b>IDEJNI PROJEKT LOKALNE CESTE</b>	
STUDENT	Mateo Trogranjčić	MENTOR
		Prof. dr. sc. Dražen Cvitanić
SADRŽAJ	Poprečni presjeci	MJERILO
		1:200
DATUM	lipanj 2023.	BROJ PRILOGA
		7

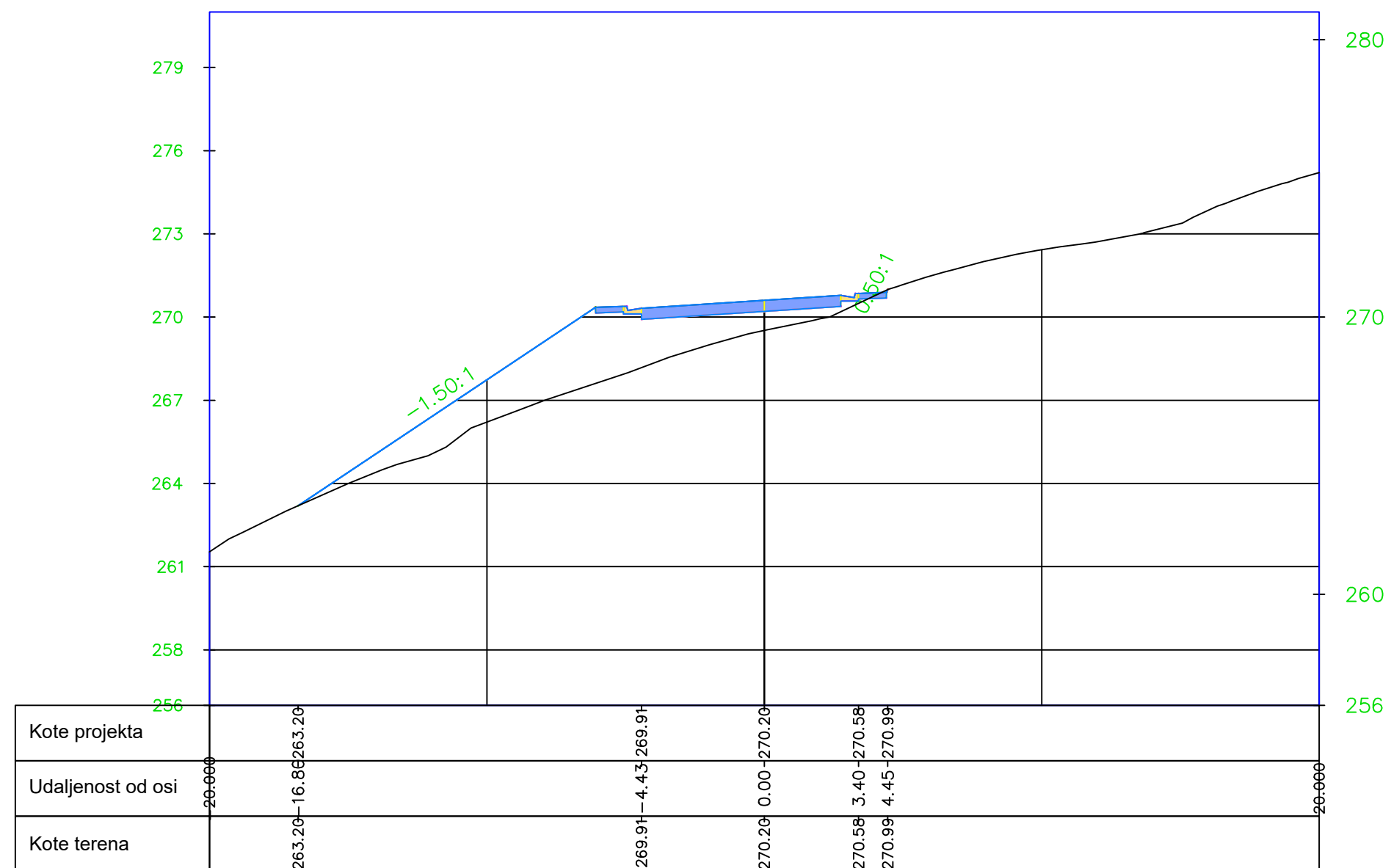
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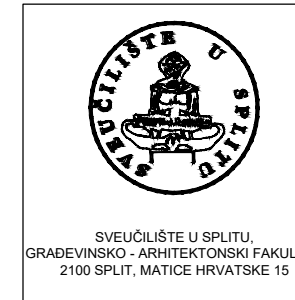
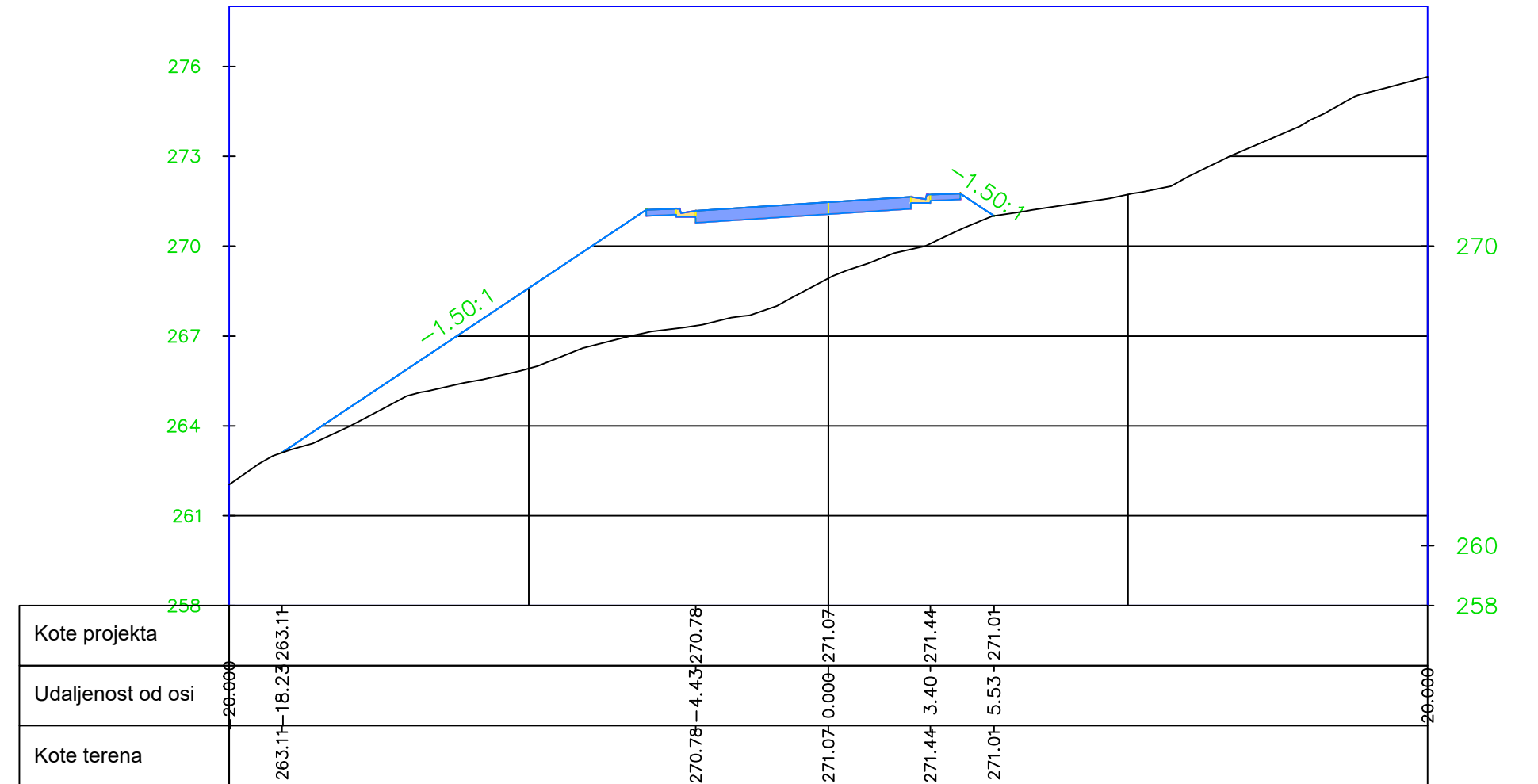
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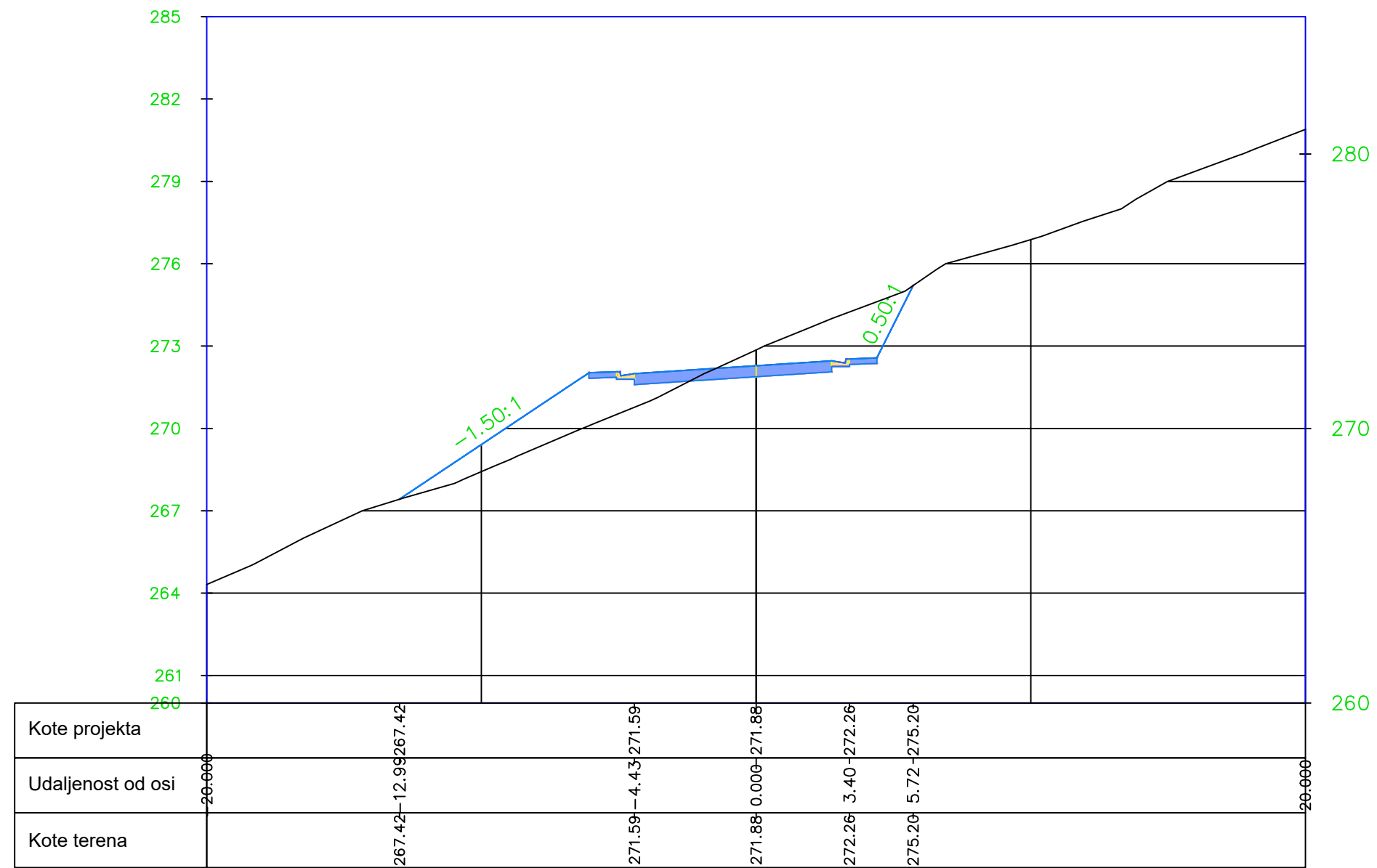


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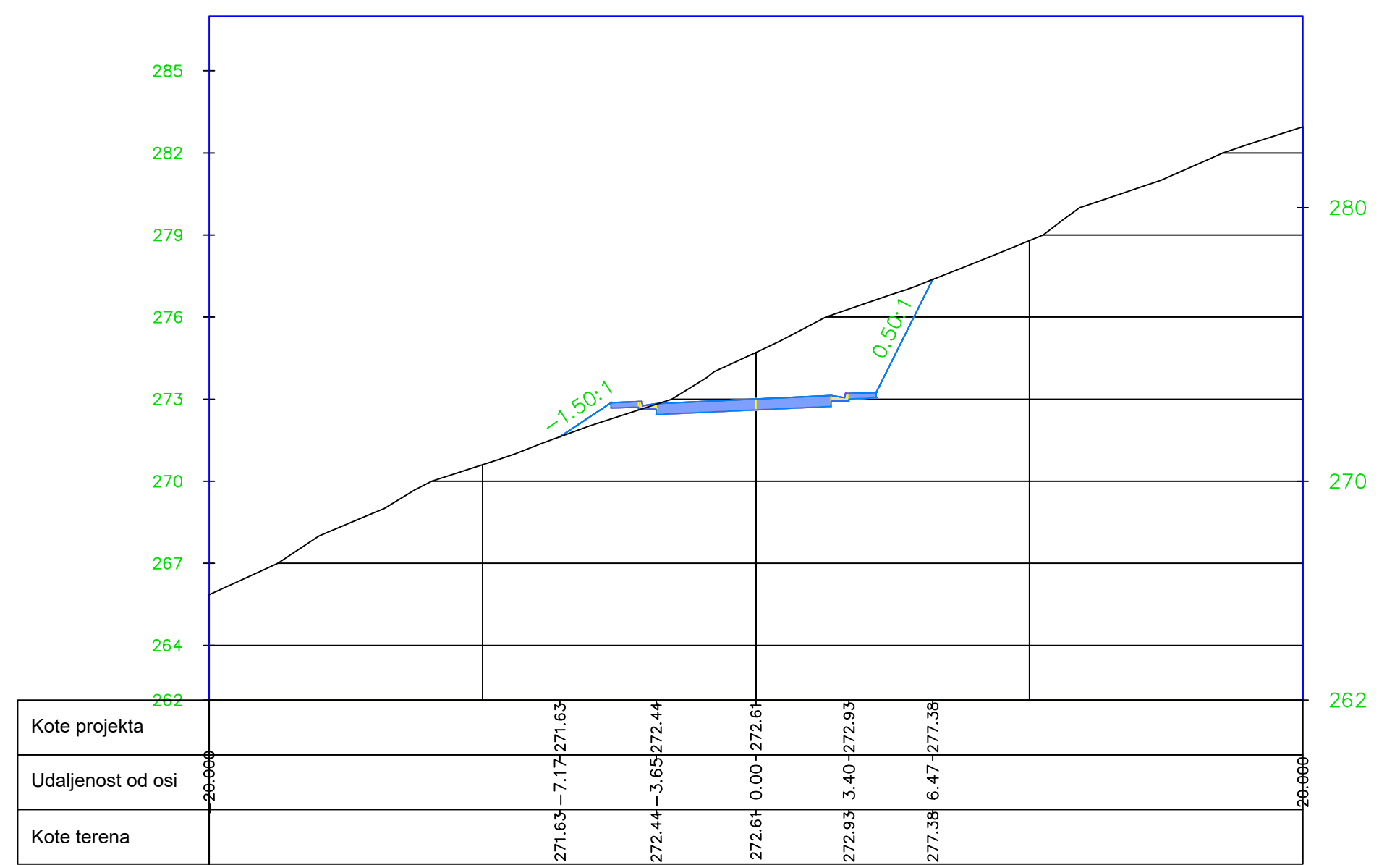


<b>Završni rad</b>		
TEMA	<b>IDEJNI PROJEKT LOKALNE CESTE</b>	
STUDENT	Mateo Trogranjčić	MENTOR
		Prof. dr. sc. Dražen Cvitanić
SADRŽAJ	Poprečni presjeci	MJERILO
		1:200
DATUM	lipanj 2023.	BROJ PRILOGA
		8

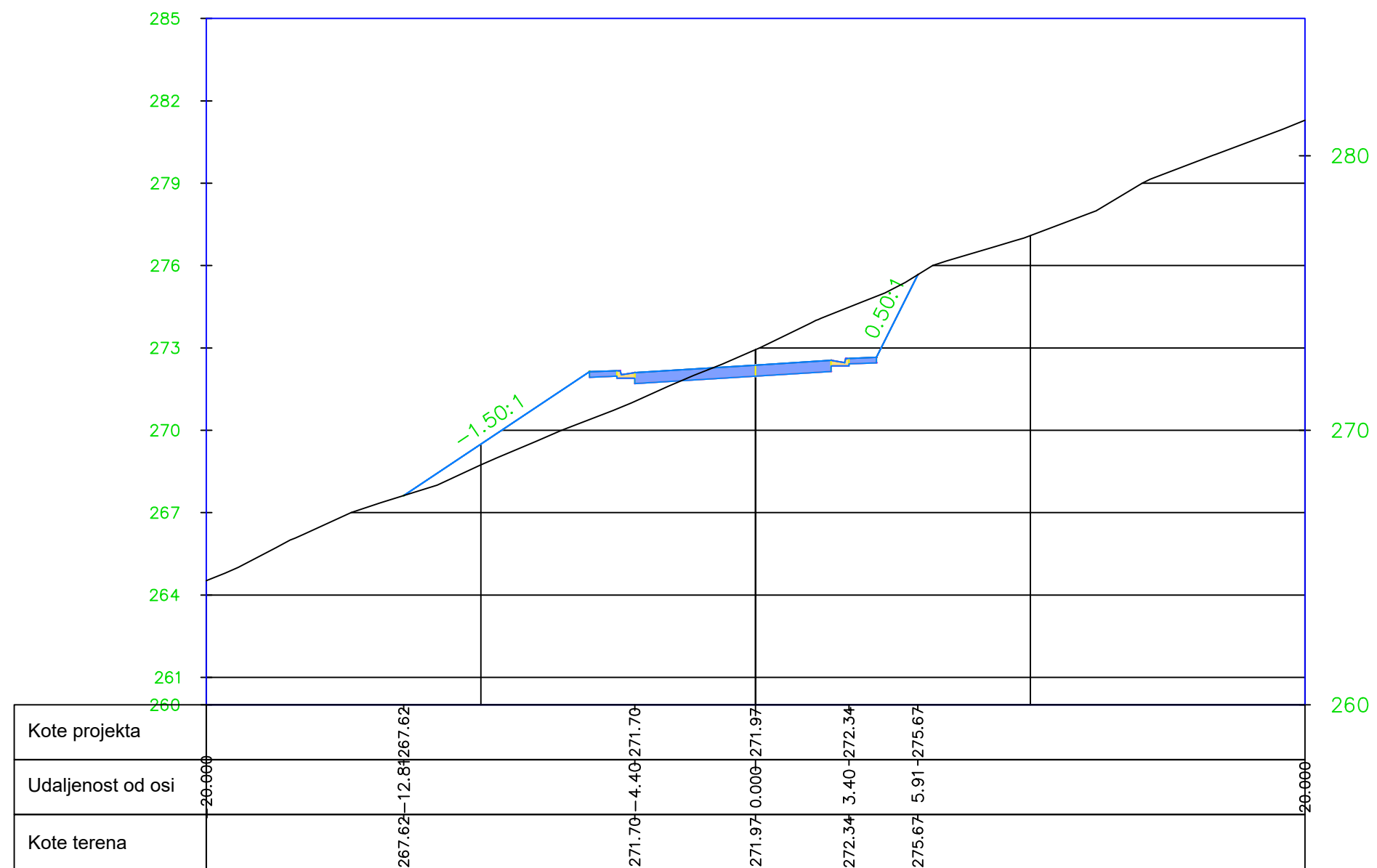
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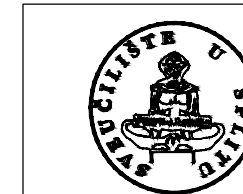
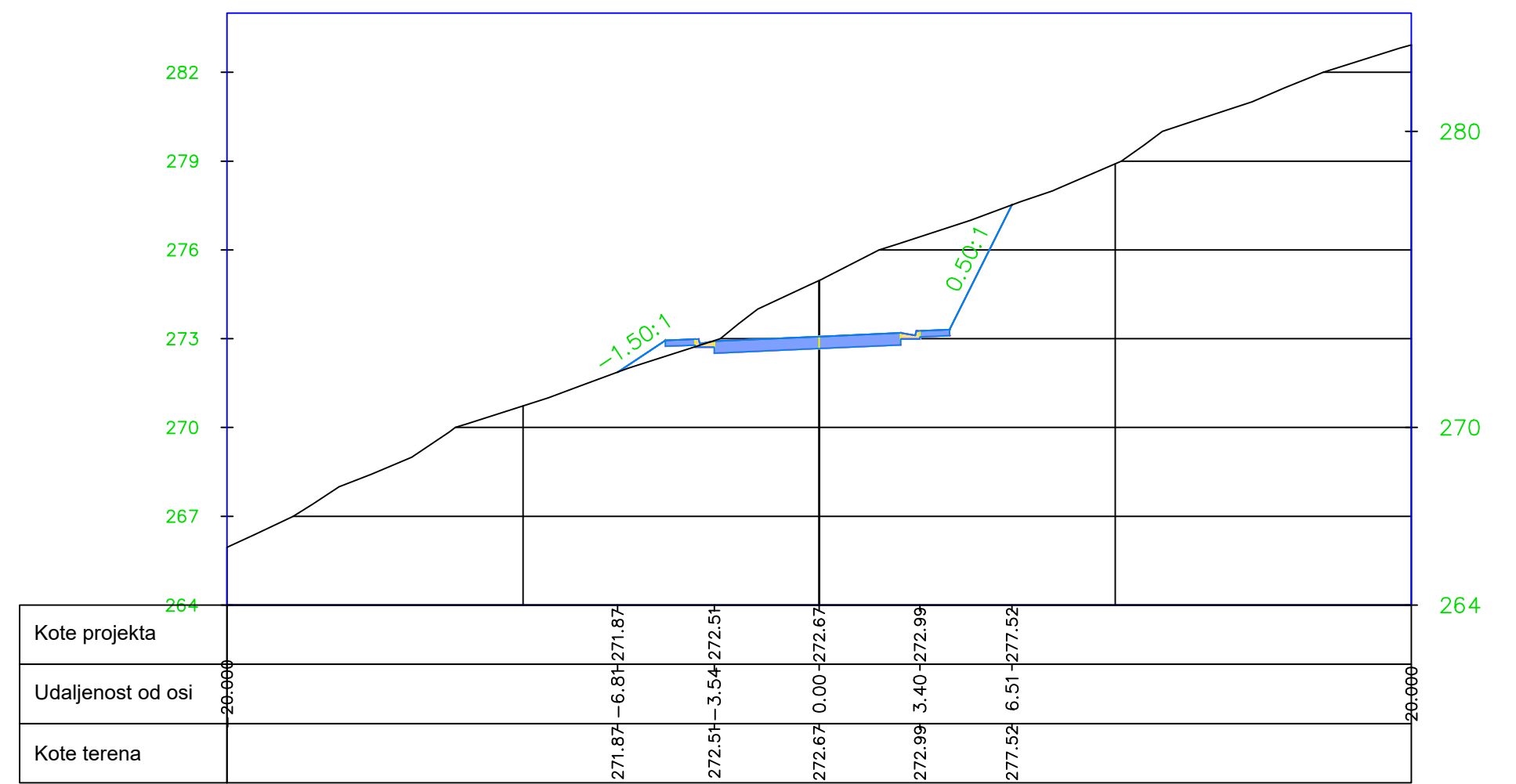
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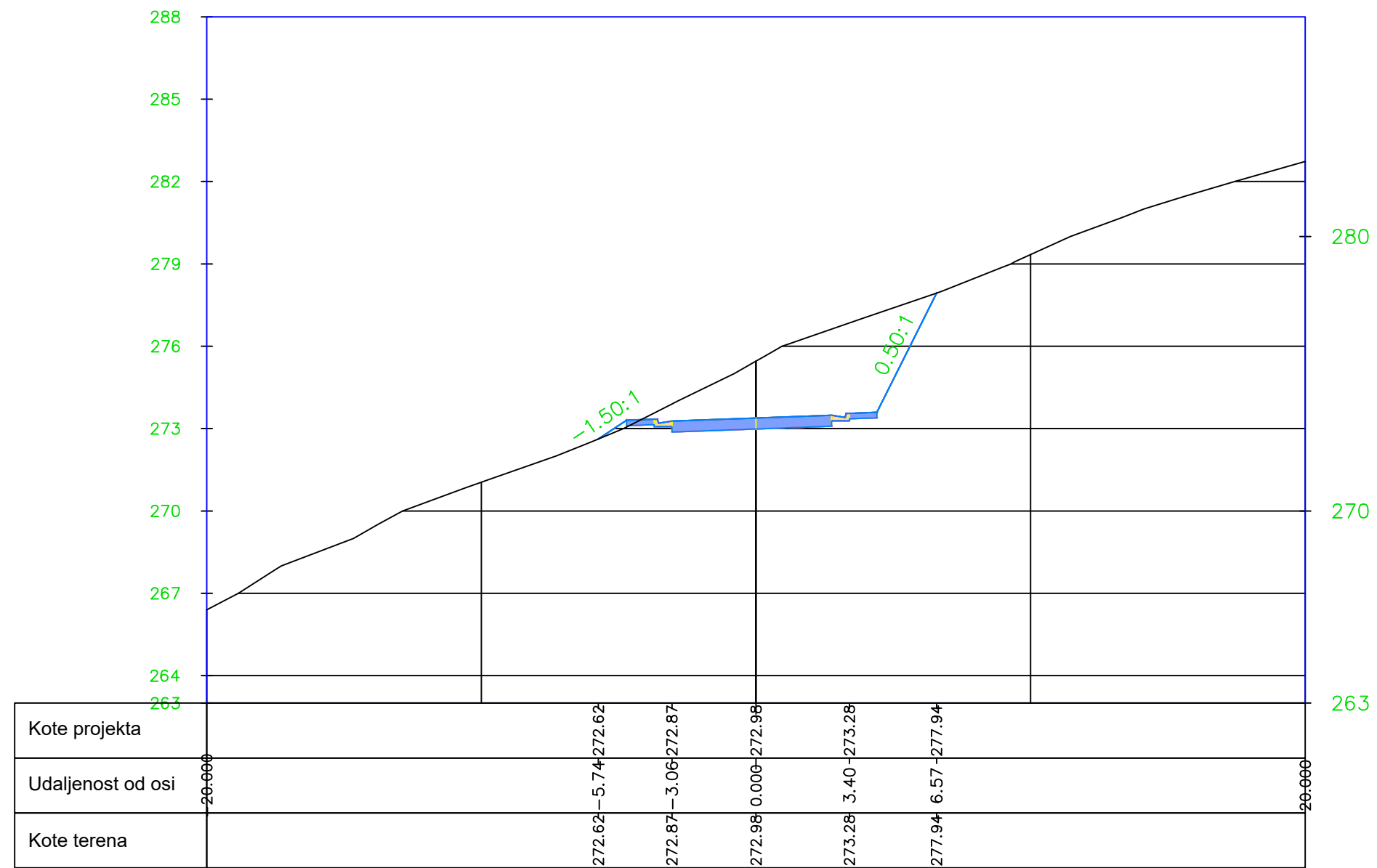
SVEUČILIŠTE U SPLITU,  
 GRAĐEVINSKO - ARHITEKTONSKI FAKULTET  
 2100 SPLIT, MATICE HRVATSKE 15

Završni rad

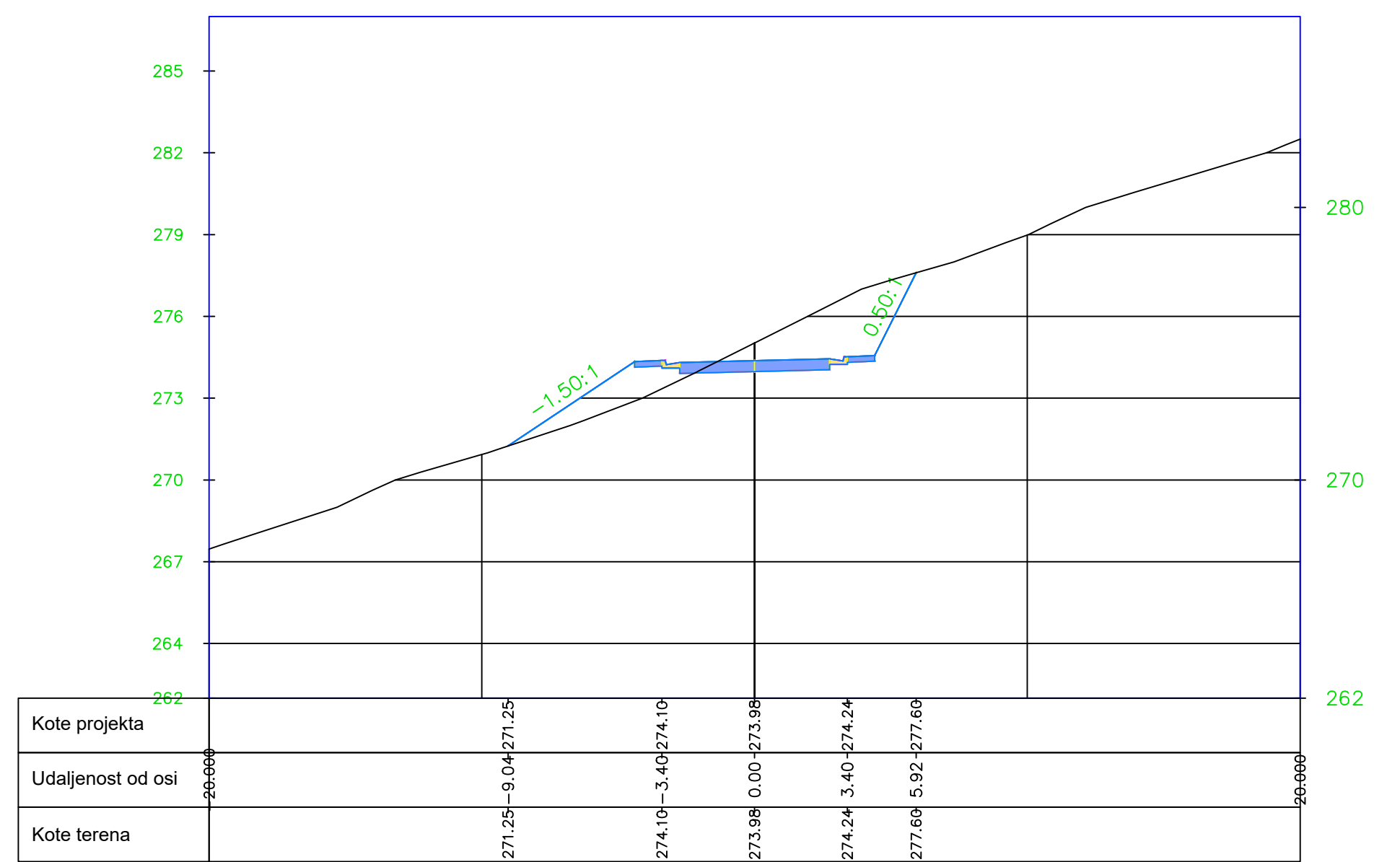
TEMA	IDEJNI PROJEKT LOKALNE CESTE	
STUDENT	Mateo Trogranjčić	MENTOR Prof. dr. sc. Dražen Cvitanić
SADRŽAJ	Poprečni presjeci	MJERILO 1:200
DATUM	lipanj 2023.	BROJ PRILOGA 9



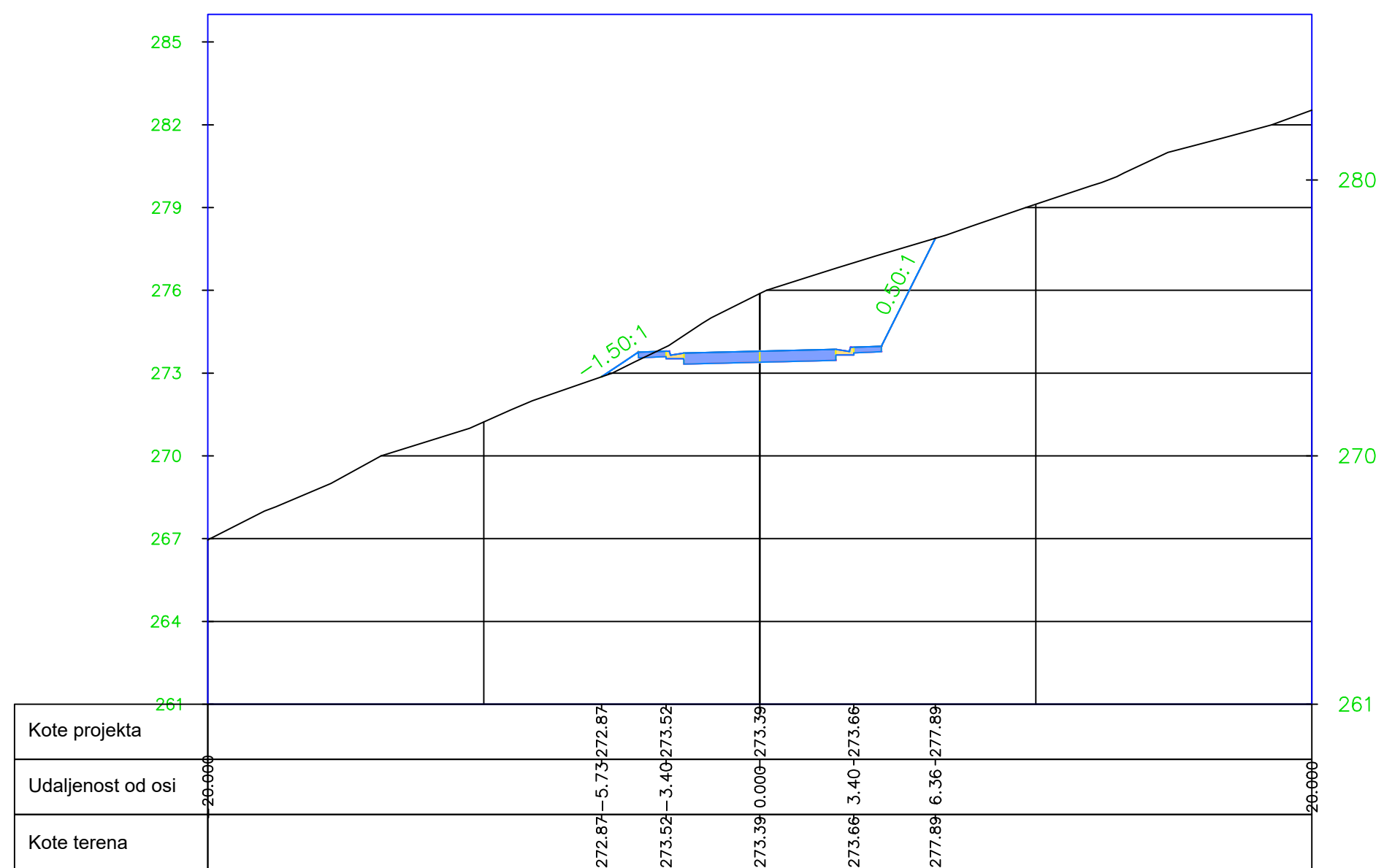
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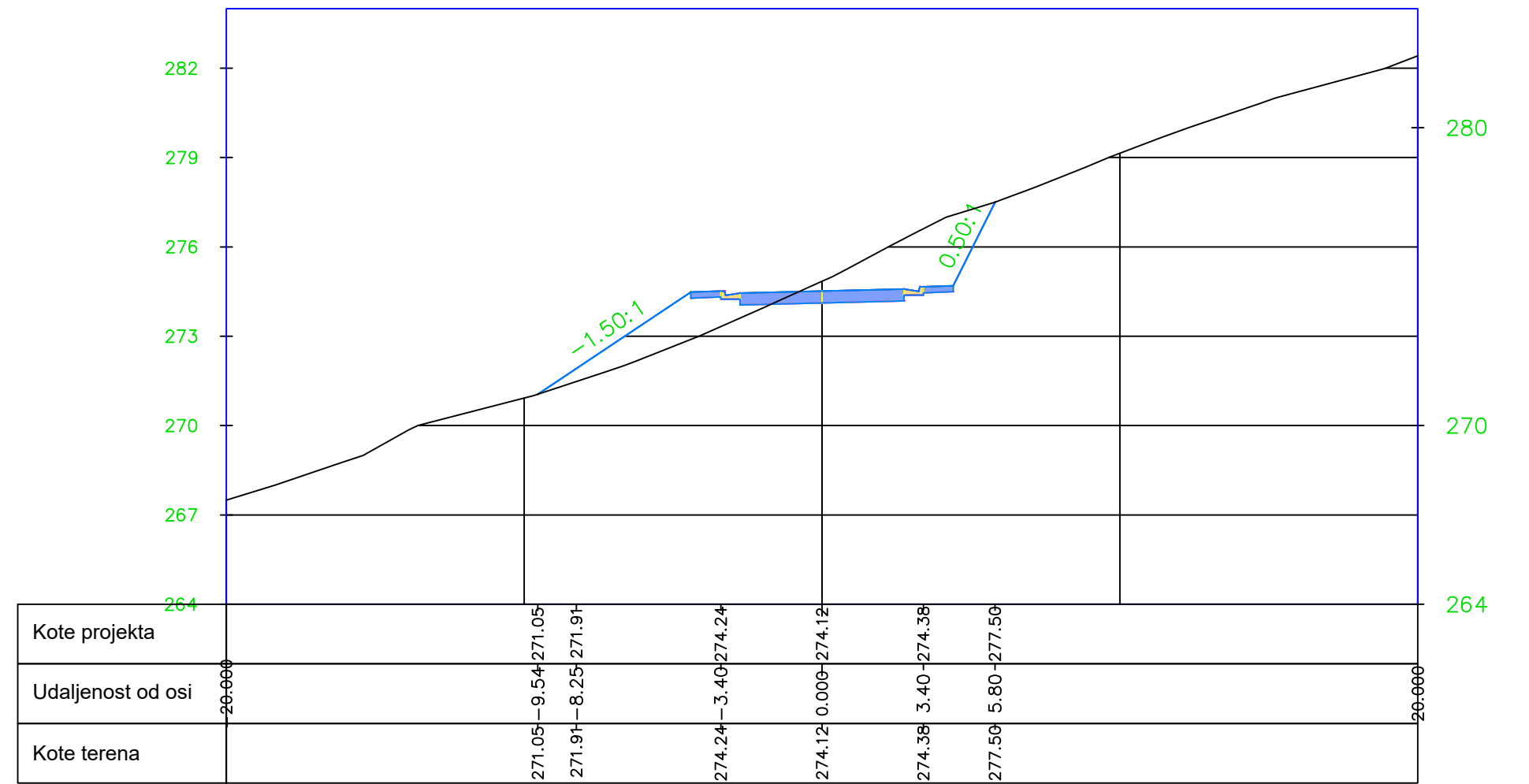
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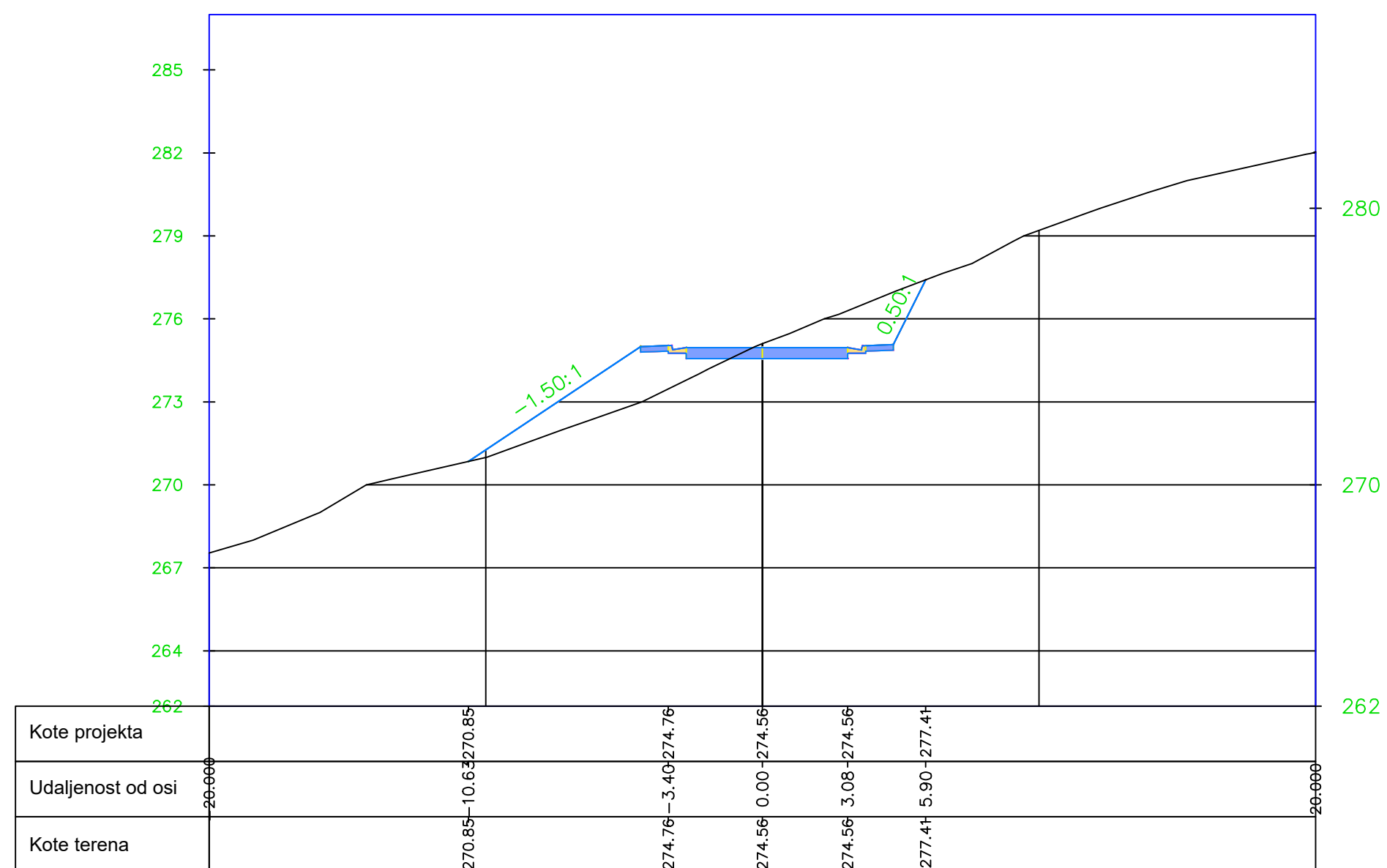


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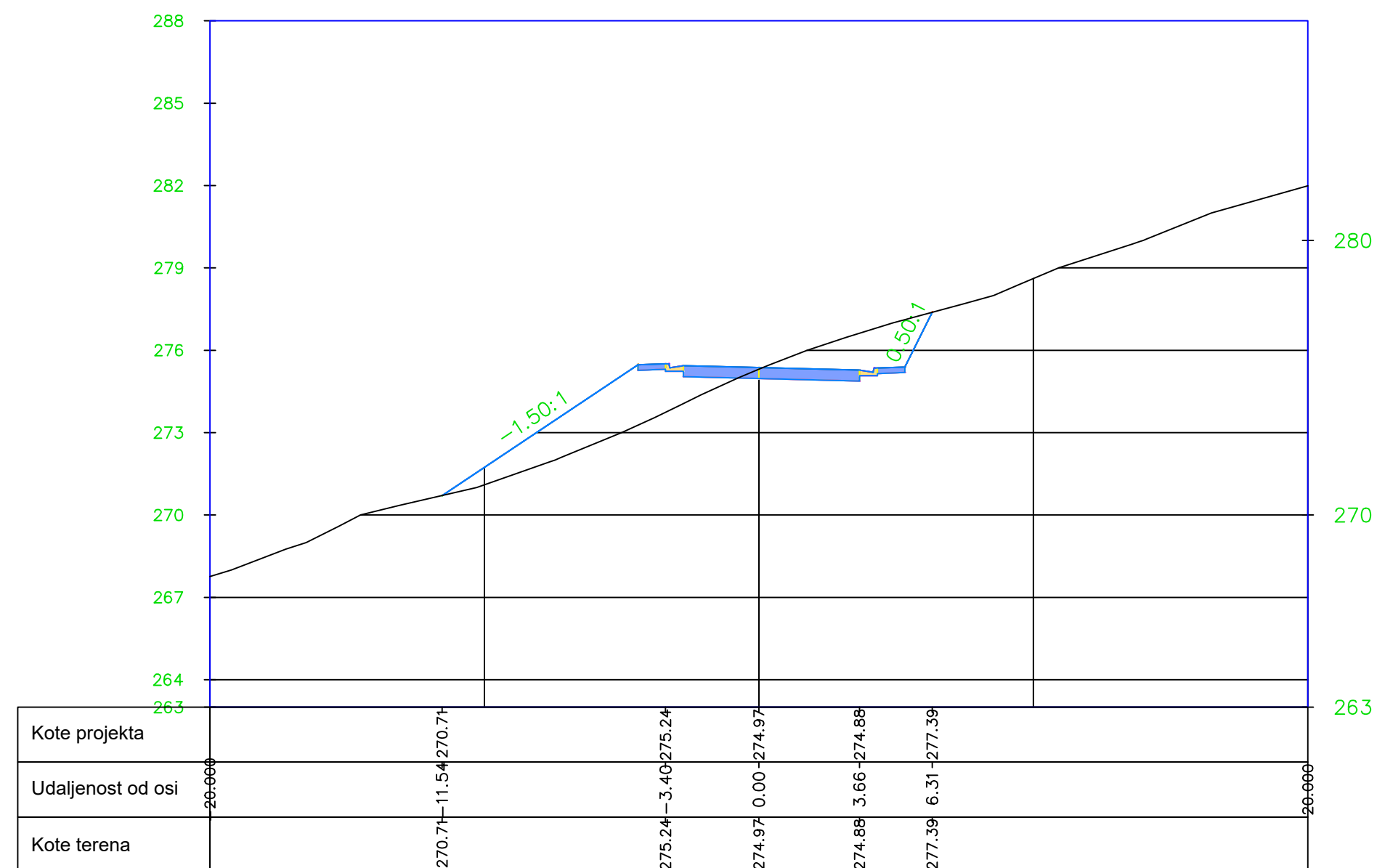


Završni rad		
TEMA	IDEJNI PROJEKT LOKALNE CESTE	
STUDENT	Mateo Trogranjčić	MENTOR Prof. dr. sc. Dražen Cvitanić
SADRŽAJ	Poprečni presjeci	MJERILO 1:200
DATUM	lipanj 2023.	BROJ PRILOGA 10

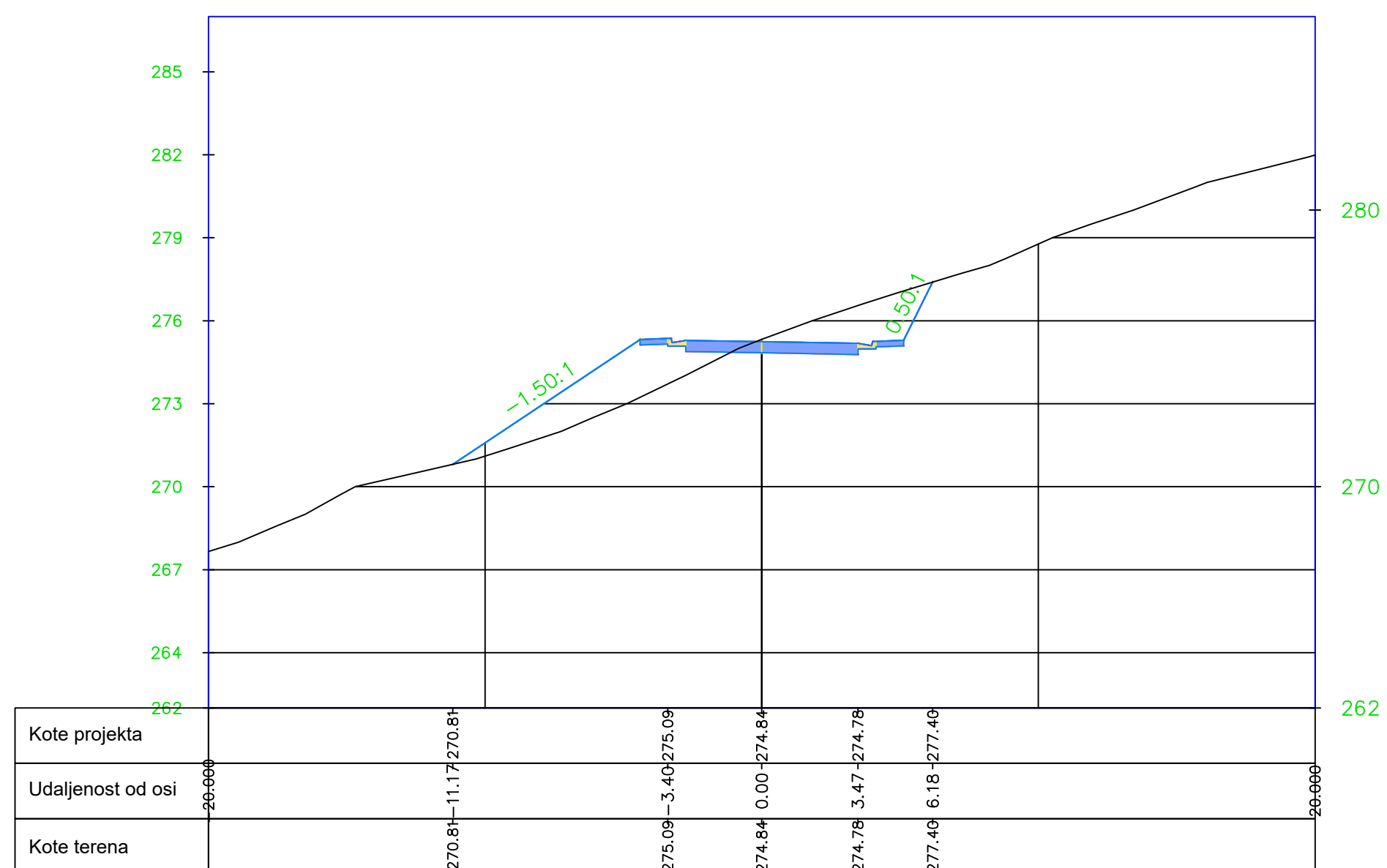
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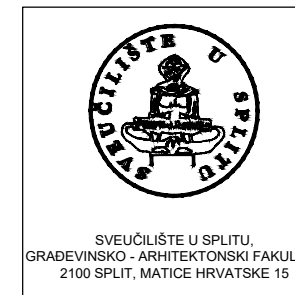
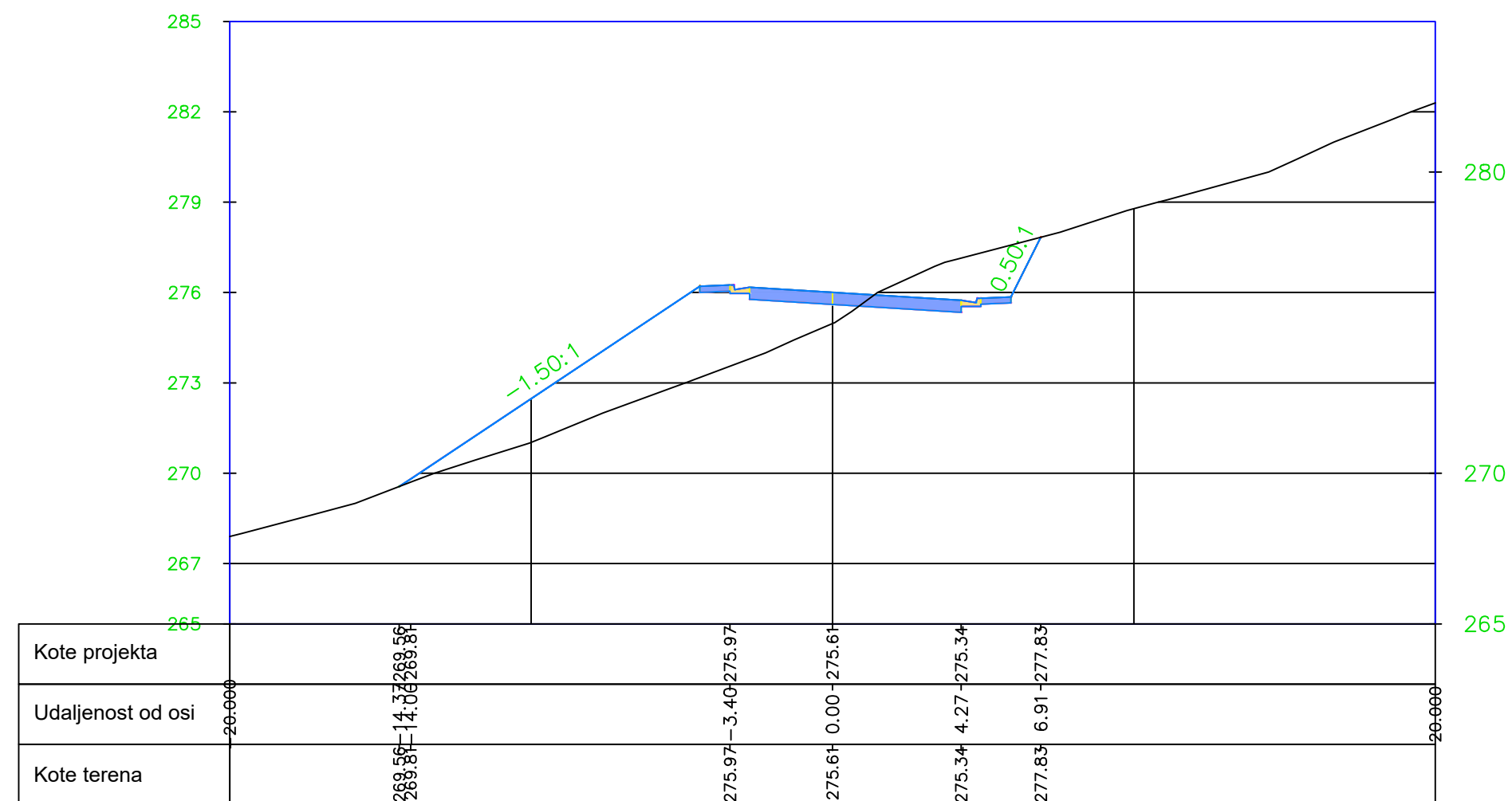
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0+277.43

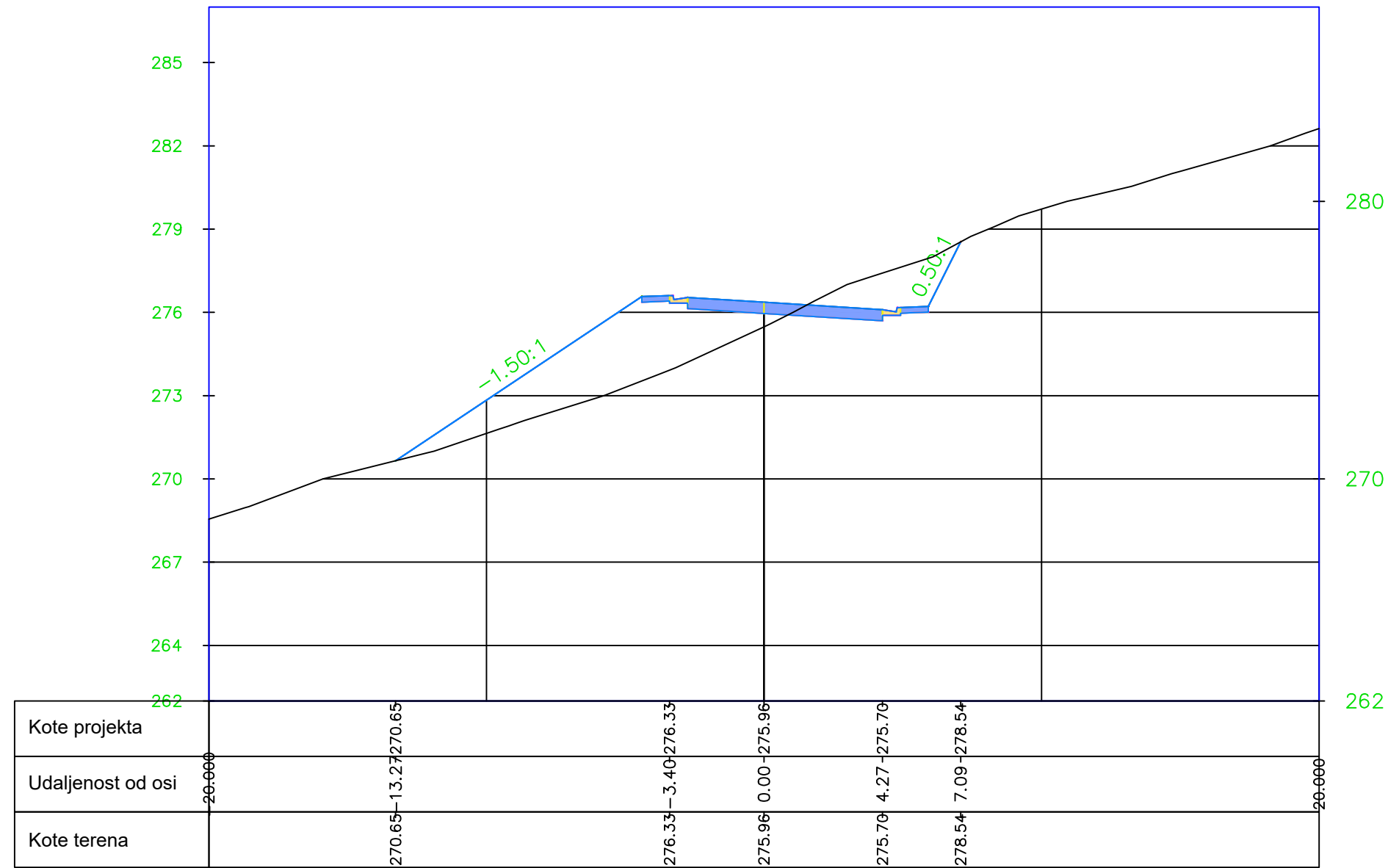


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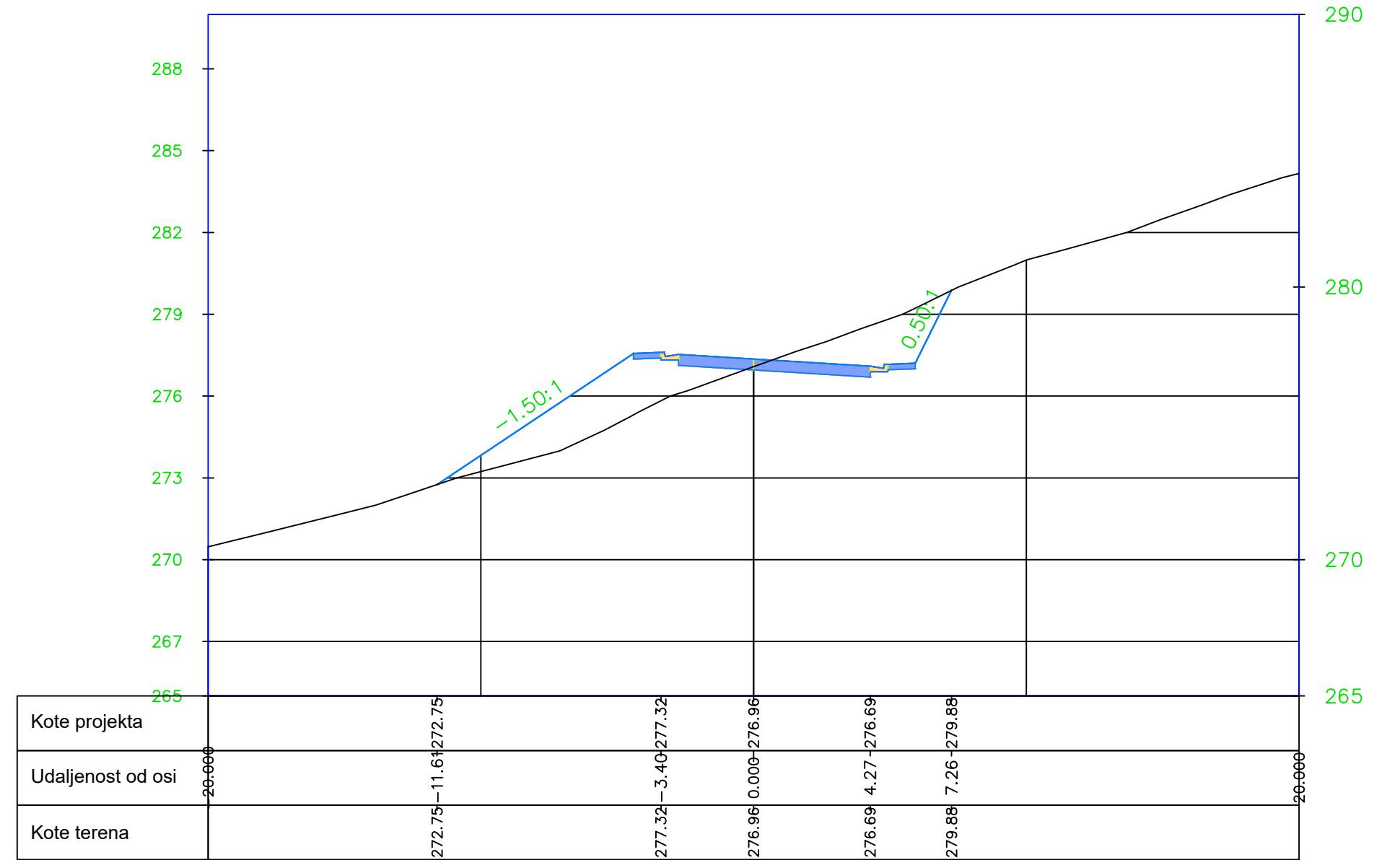


Završni rad		
TEMA	IDEJNI PROJEKT LOKALNE CESTE	
STUDENT	Mateo Trogranjčić	MENTOR Prof. dr. sc. Dražen Cvitanić
SADRŽAJ	Poprečni presjeci	MJERILO 1:200
DATUM	lipanj 2023.	BROJ PRILOGA 11

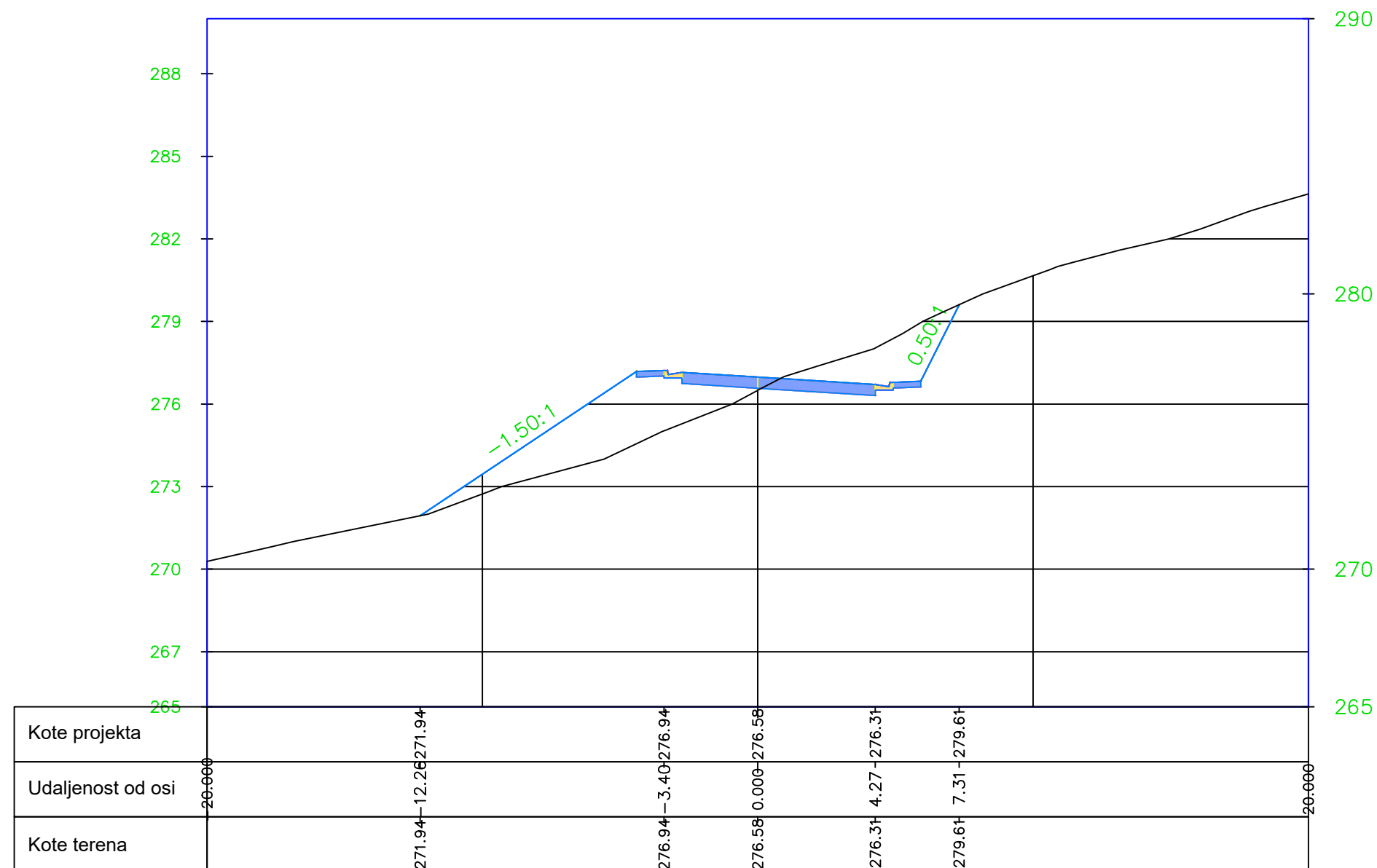
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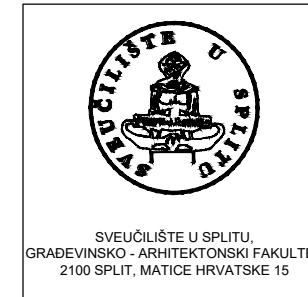
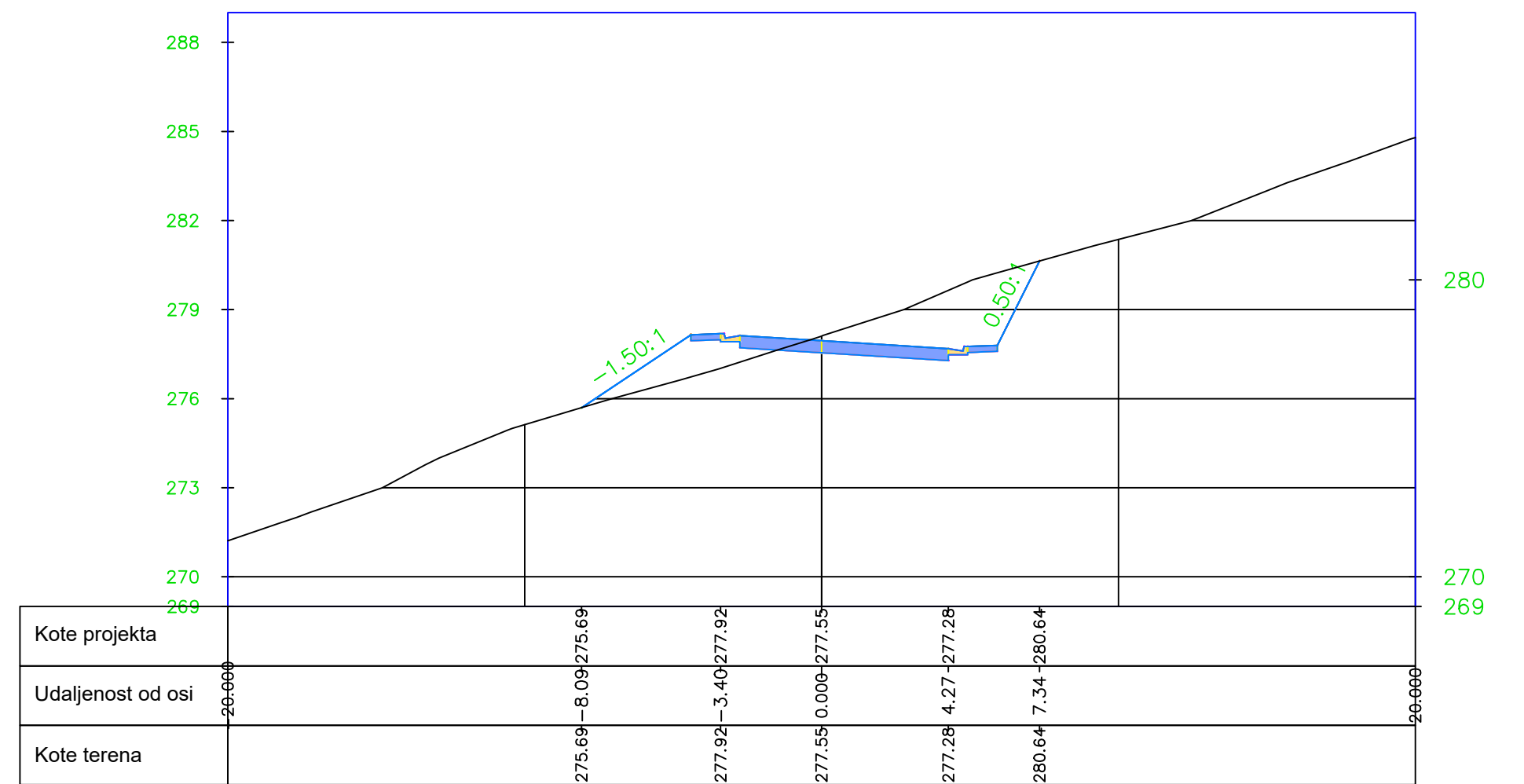
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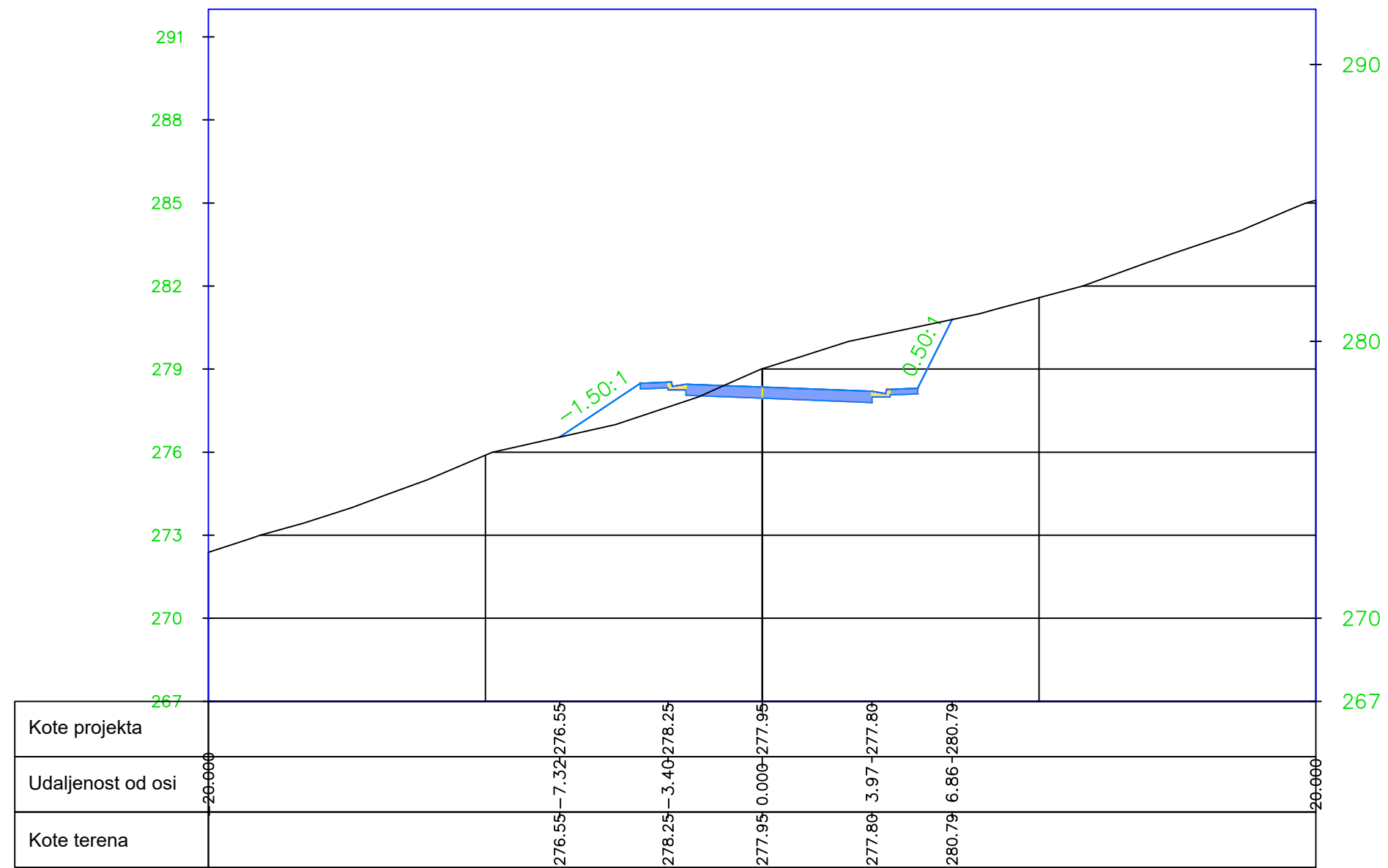


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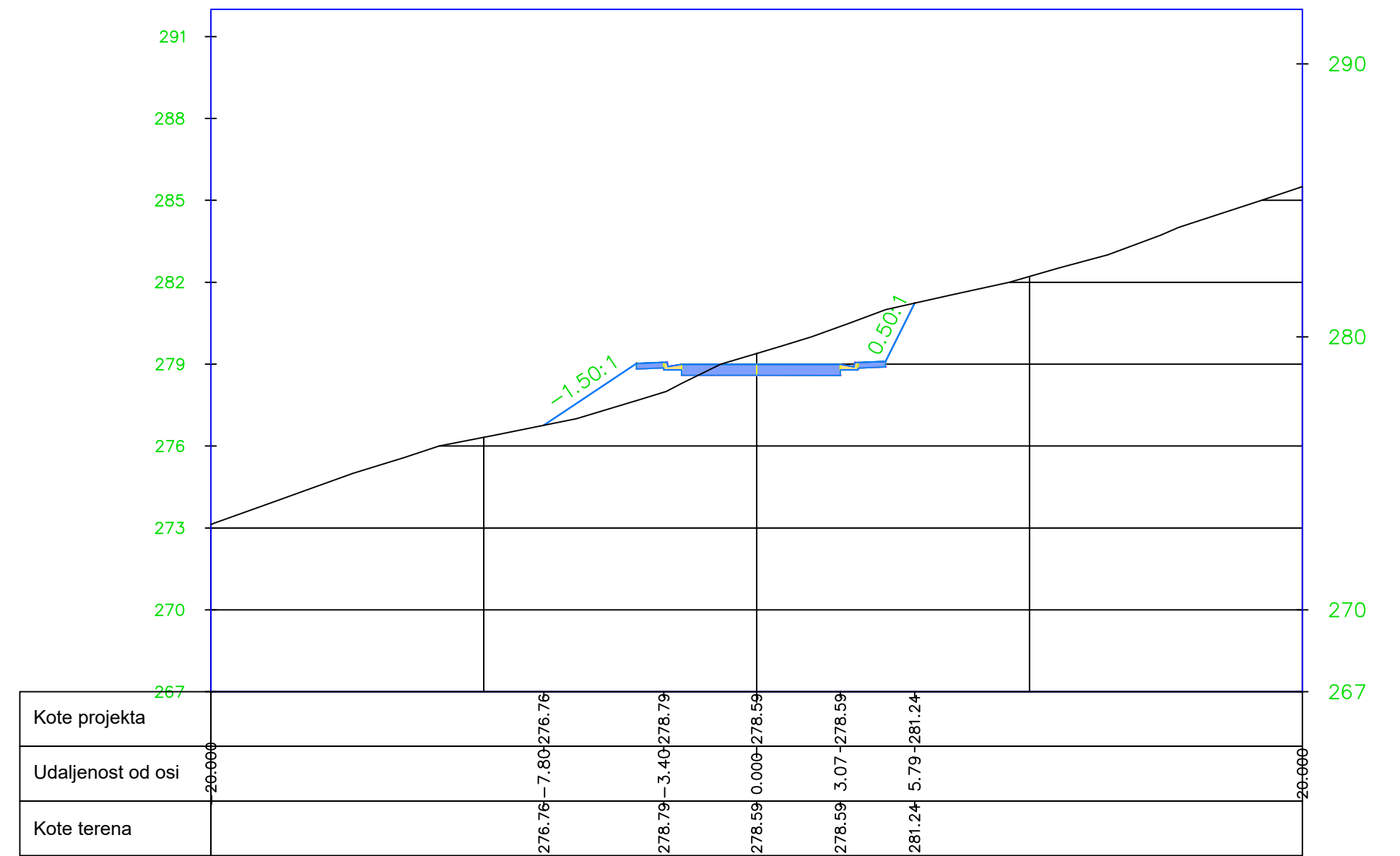


<b>Završni rad</b>		
TEMA	<b>IDEJNI PROJEKT LOKALNE CESTE</b>	
STUDENT	Mateo Trogranjčić	MENTOR Prof. dr. sc. Dražen Cvitanić
SADRŽAJ	Poprečni presjeci	MJERILO 1:200
DATUM	lipanj 2023.	BROJ PRILOGA 12

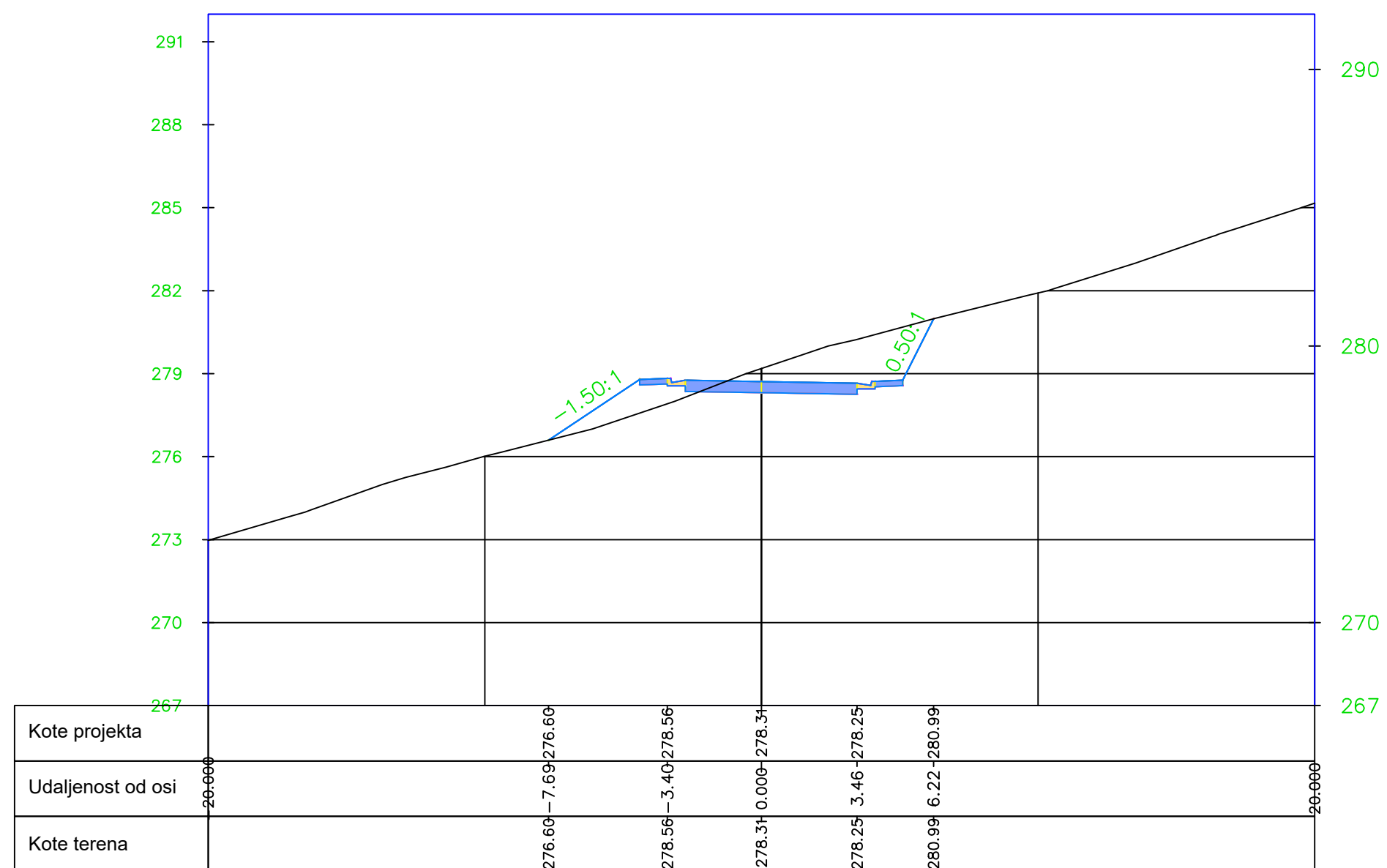
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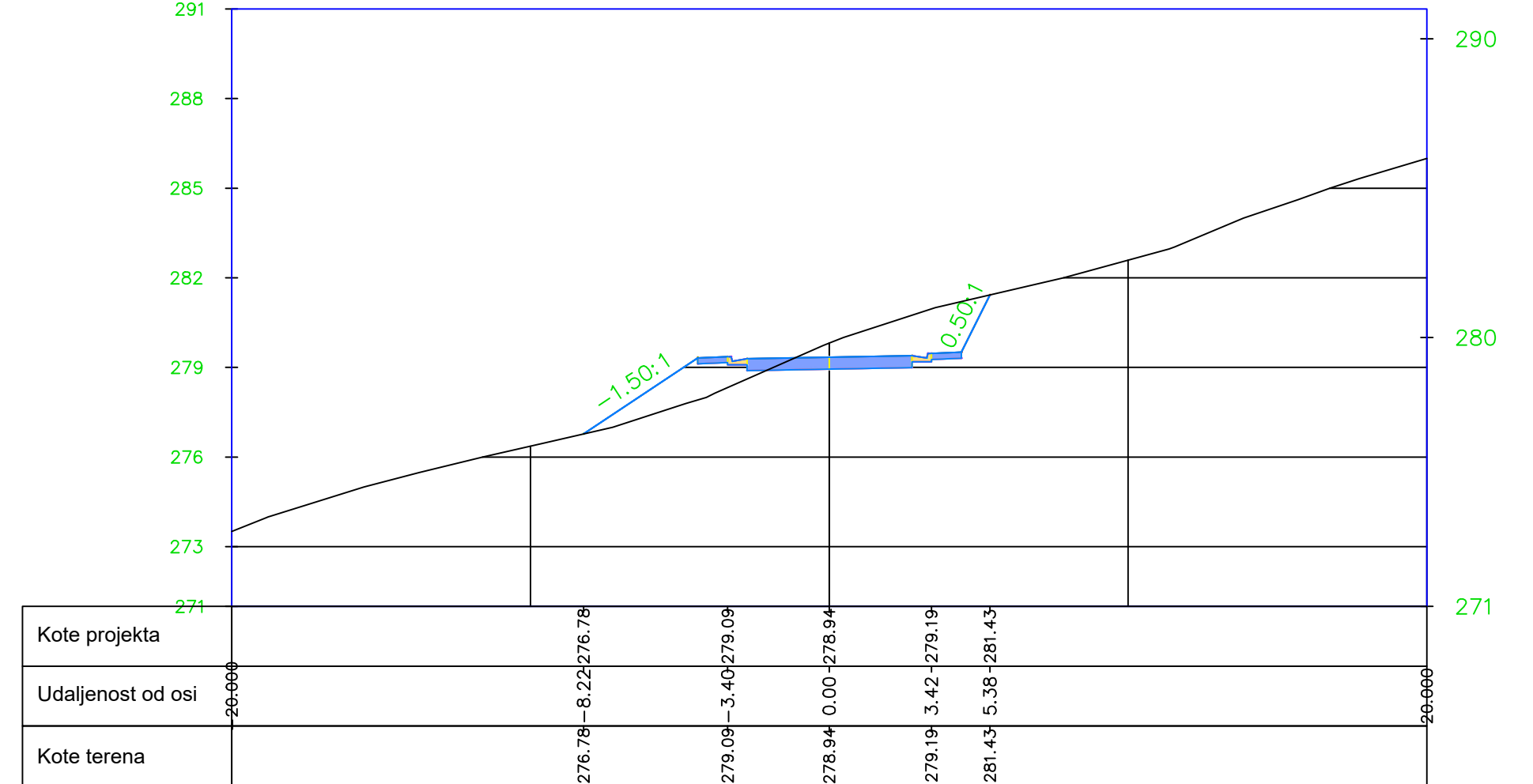
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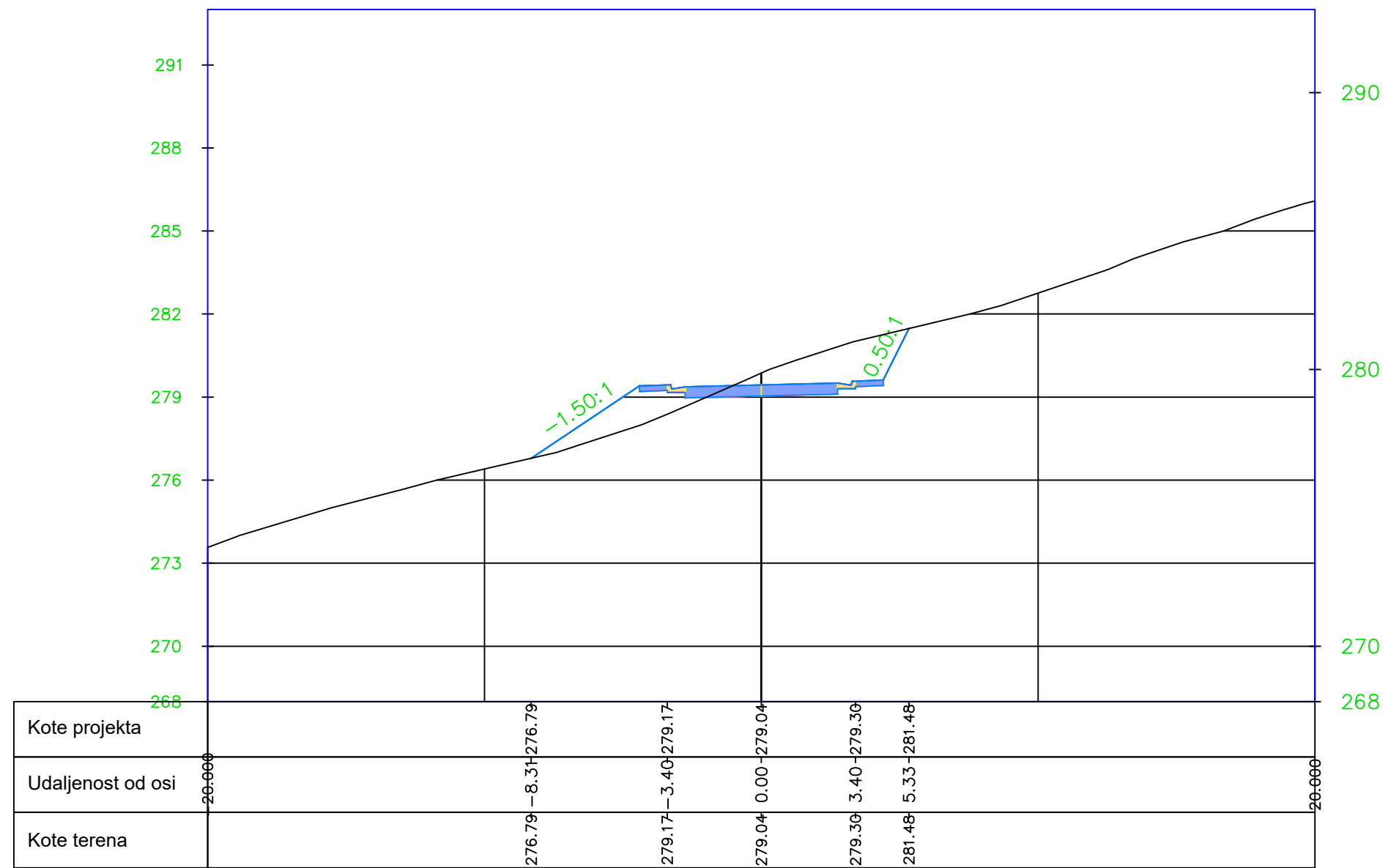


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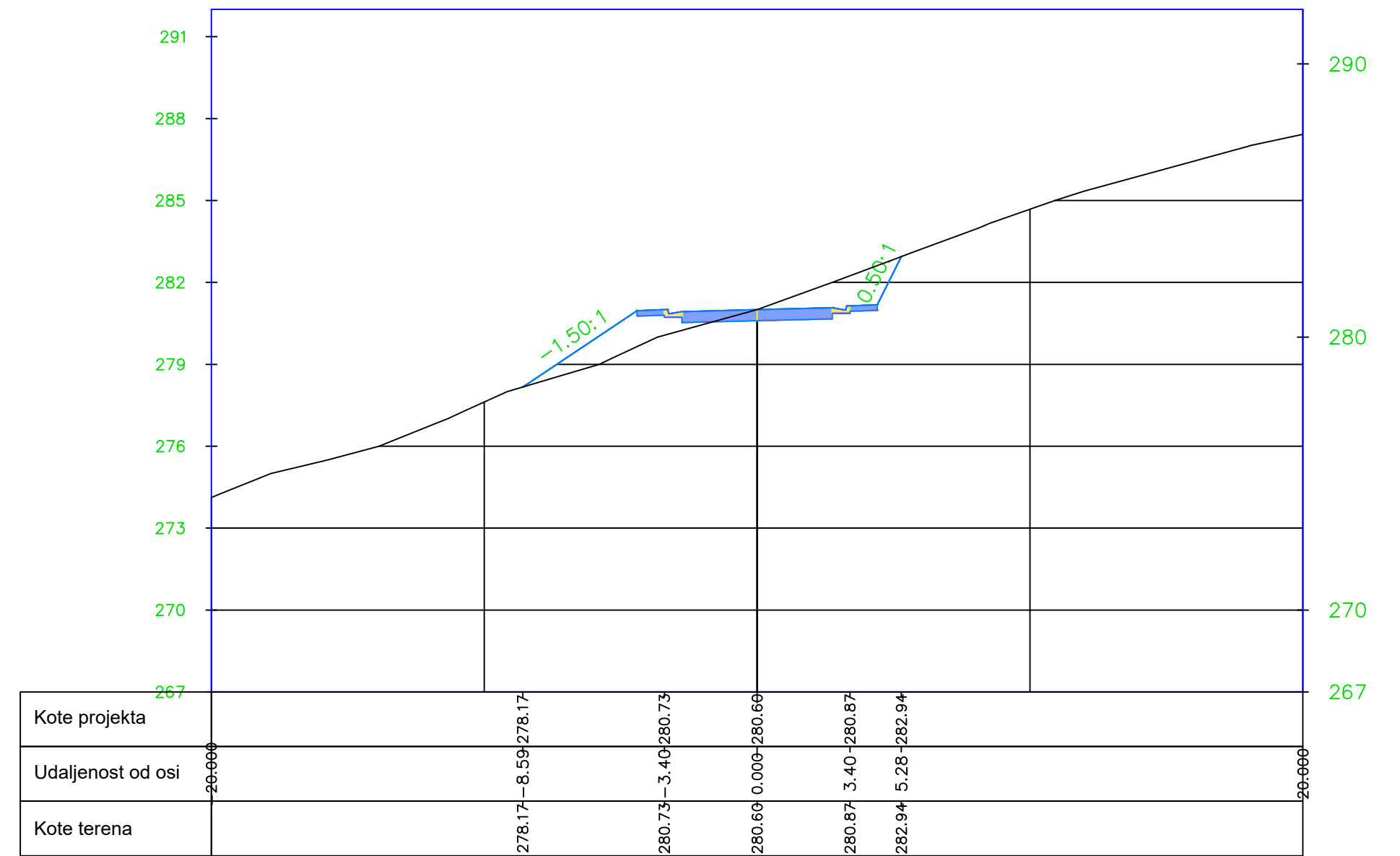


<b>Završni rad</b>		
TEMA	<b>IDEJNI PROJEKT LOKALNE CESTE</b>	
STUDENT	Mateo Trogranjčić	MENTOR Prof. dr. sc. Dražen Cvitanić
SADRŽAJ	Poprečni presjeci	MJERILO 1:200
DATUM	lipanj 2023.	BROJ PRILOGA 13

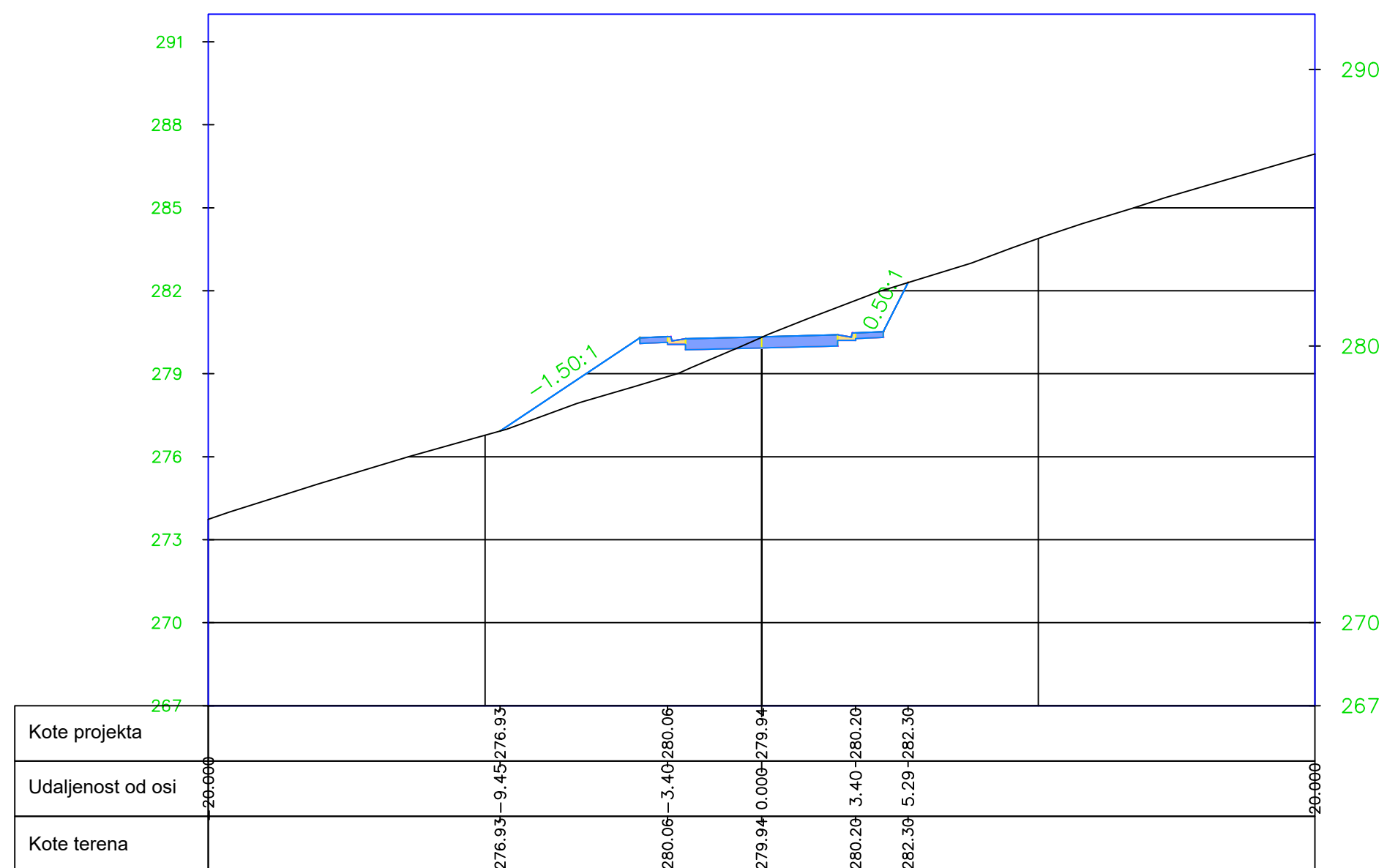
0+361.91



0+393.36



0+380.00



## 4. OBRADA NA RAČUNALU

Prilikom izrade idejnog projekta dionice lokalne ceste korišten je računalni softver Autodesk Civil 3D 2024 koji značajno olakšava izradu zadatka. U odnosu na klasično ručno rješavanje, računalni postupak je znatno brži i jednostavniji.

Prvi korak izrade idejnog rješenja je skeniranje geodetske podloge te iscrtavanje slojnica. Slojnice se iscrtavaju pomoću 3D poligonalnih linija te se postupkom triangulacije na tim linijama dobije trodimenzionalni model terena. Zatim se određuju koordinate točaka tangenti (dvije točke za svaku tangentu) te se definiraju na modelu terena. Na sjecištima tangenti utvrđuju se kružni lukovi i prijelazne krivine te na taj način se regulira horizontalni tok trase.

Sljedeći korak je dijagram vitoperenja kolnika i reguliranje uzdužnog presjeka ceste kojeg definira niveleta. Niveleta se postavlja na način da se zadovolje svi kriteriji u pogledu geometrije, sigurnosti i odvodnje. Između tangenti se ubacuje vertikalna krivina određenog polumjera vodeći računa o osiguranju zaustavne preglednosti i optičkim zahtjevima. Vertikalni i horizontalni tok trase u konačnici trebaju biti postavljeni da zadovolje sve zahtjeve u pogledu sigurnosti prometa i zaštite okoliša te da uravnoteženo prostorno prate teren.

Konačno se definira poprečni profil prometnice. Poprečnim presjekom prikazani su elementi po širini ceste: poprečni nagibi i širina kolnika te nagibi pokosa nasipa i usjeka. Na temelju određenih horizontalnih i vertikalnih elemenata te osi ceste se izrađuje koridor. Koridor omogućuje uvid u poprečne presjeke u svim karakterističnim i zadanim točkama osi ceste. Time je utvrđena cijela dionica ceste od početne do konačne točke. Izlazni podaci tvore računalni ispis koordinata točaka osi, točaka elemenata svakog poprečnog presjeka te količina zemljanih radova po presjecima.

## **5. IZLAZNI PODACI IZ PROGRAMA**

## 5.1. Koordinatni račun glavnih točaka osi

### Alignment Station and Curve Report

Client: Client Company

Project Name: Conceptual project of local road

Project Description:

Report Date: 26.6.2023. 8:34:18

Prepared by: Mateo Trogrančić

Alignment: Os\_cesta

Description:

#### Tangent Data

Description	PT Station	Northing	Easting
Start:	0+00.000	24954691.619	-4878754.563
End:	1+58.352	24954557.851	-4878669.819

#### Tangent Data

Parameter	Value	Parameter	Value
Length:	158.352	Course:	S 32° 21' 17.7640" E

#### Spiral Point Data

Description	Station	Northing	Easting
TS:	1+58.352	24954557.851	-4878669.819
SPI:		24954540.876	-4878659.065
SC:	1+88.352	24954534.331	-4878651.390

#### 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:	S 38° 04' 48.4948" E

#### Curve Point Data

Description	Station	Northing	Easting
SC:	1+88.352	24954534.331	-4878651.390
RP:		24954572.376	-4878618.947
CS:	2+18.254	24954522.668	-4878624.339

#### Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	34° 15' 54.0013"	Type:	LEFT
Radius:	50.000		
Length:	29.902	Tangent:	15.413
Mid-Ord:	2.219	External:	2.322
Chord:	29.458	Course:	S 66° 40' 34.2065" E



Spiral Point Data

Description	Station	Northing	Easting
CS:	2+18.254	24954522.668	-4878624.339
SPI:		24954521.580	-4878614.311
ST:	2+48.254	24954525.413	-4878594.585

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 84° 43' 40.0818" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	2+48.254	24954525.413	-4878594.585
End:	2+62.807	24954528.189	-4878580.299

Tangent Data

Parameter	Value	Parameter	Value
Length:	14.553	Course:	N 79° 00' 09.3509" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	2+62.807	24954528.189	-4878580.299
SPI:		24954532.020	-4878560.589
SC:	2+92.807	24954531.207	-4878550.551

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.000	L Tan:	20.078
Radius:	55.000	S Tan:	10.071
Theta:	15° 37' 34.0381"	P:	0.680
X:	29.778	K:	14.963
Y:	2.713	A:	40.620
Chord:	29.901	Course:	N 84° 12' 28.8684" E

Curve Point Data

Description	Station	Northing	Easting
SC:	2+92.807	24954531.207	-4878550.551
RP:		24954476.386	-4878554.989
CS:	3+31.909	24954515.030	-4878515.853

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	40° 44' 01.8076"	Type:	RIGHT
Radius:	55.000		
Length:	39.102	Tangent:	20.418
Mid-Ord:	3.438	External:	3.668
Chord:	38.283	Course:	S 65° 00' 15.7072" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	3+31.909	24954515.030	-4878515.853
SPI:		24954507.864	-4878508.777
ST:	3+61.909	24954490.305	-4878499.039

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.000	L Tan:	20.078
Radius:	55.000	S Tan:	10.071
Theta:	15° 37' 34.0381"	P:	0.680
X:	29.778	K:	14.963
Y:	2.713	A:	40.620
Chord:	29.901	Course:	S 34° 13' 00.2828" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	3+61.909	24954490.305	-4878499.039
End:	3+93.365	24954462.796	-4878483.783

Tangent Data

Parameter	Value	Parameter	Value
Length:	31.456	Course:	S 29° 00' 40.7653" E

**Alignment: Os ceste-Left-2.750****Description:**Tangent Data

Description	PT Station	Northing	Easting
Start:	0+00.000	24954693.090	-4878752.240
End:	1+58.352	24954559.323	-4878667.496

Tangent Data

Parameter	Value	Parameter	Value
Length:	158.352	Course:	S 32° 21' 17.7640" E

Curve Point Data

Description	Station	Northing	Easting
PC:	1+58.352	24954559.323	-4878667.496
RP:		24954563.604	-4878660.738
PCC:	1+58.361	24954559.315	-4878667.491

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	00° 03' 49.4223"	Type:	LEFT
Radius:	8.000		
Length:	0.009	Tangent:	0.004
Mid-Ord:	0.000	External:	0.000
Chord:	0.009	Course:	S 32° 23' 12.4780" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	1+58.361	24954559.315	-4878667.491
RP:		24954609.342	-4878588.719
PCC:	1+87.029	24954537.836	-4878648.674

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	17° 36' 08.2490"	Type:	LEFT
Radius:	93.315		
Length:	28.668	Tangent:	14.448
Mid-Ord:	1.099	External:	1.112
Chord:	28.555	Course:	S 41° 13' 11.3108" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	1+87.029	24954537.836	-4878648.674
RP:		24954518.679	-4878664.737
PCC:	1+87.237	24954537.702	-4878648.515

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	00° 28' 38.2293"	Type:	RIGHT
Radius:	25.000		
Length:	0.208	Tangent:	0.104
Mid-Ord:	0.000	External:	0.000
Chord:	0.208	Course:	S 49° 46' 56.3203" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	1+87.237	24954537.702	-4878648.515
RP:		24954572.376	-4878618.947
PCC:	2+14.490	24954527.072	-4878623.861

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	34° 15' 54.0014"	Type:	LEFT
Radius:	45.570		
Length:	27.253	Tangent:	14.047
Mid-Ord:	2.022	External:	2.116
Chord:	26.848	Course:	S 66° 40' 34.2065" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	2+14.490	24954527.072	-4878623.861
RP:		24954502.218	-4878626.557
PCC:	2+14.674	24954527.051	-4878623.678

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	00° 25' 18.2527"	Type:	RIGHT
Radius:	25.000		
Length:	0.184	Tangent:	0.092
Mid-Ord:	0.000	External:	0.000
Chord:	0.184	Course:	S 83° 35' 52.0794" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	2+14.674	24954527.051	-4878623.678
RP:		24954620.487	-4878612.846
PCC:	2+43.354	24954528.109	-4878595.129

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	17° 28' 11.2796"	Type:	LEFT
Radius:	94.061		
Length:	28.680	Tangent:	14.452
Mid-Ord:	1.091	External:	1.104
Chord:	28.569	Course:	N 87° 52' 41.4056" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	2+43.354	24954528.109	-4878595.129
RP:		24954535.966	-4878596.636
PT:	2+43.373	24954528.113	-4878595.110

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	00° 08' 26.4149"	Type:	LEFT
Radius:	8.000		
Length:	0.020	Tangent:	0.010
Mid-Ord:	0.000	External:	0.000
Chord:	0.020	Course:	N 79° 04' 22.5550" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	2+43.373	24954528.113	-4878595.110
End:	2+57.927	24954530.889	-4878580.824

Tangent Data

Parameter	Value	Parameter	Value
Length:	14.553	Course:	N 79° 00' 09.3509" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	2+57.927	24954530.889	-4878580.824
SPI:		24954534.791	-4878560.744
SC:	2+88.677	24954533.948	-4878550.329

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.750	L Tan:	20.577
Radius:	57.750	S Tan:	10.320
Theta:	15° 15' 14.6562"	P:	0.680
X:	30.533	K:	15.339
Y:	2.715	A:	42.140
Chord:	30.648	Course:	N 84° 16' 17.8046" E

Curve Point Data

Description	Station	Northing	Easting
SC:	2+88.677	24954533.948	-4878550.329
RP:		24954476.386	-4878554.989
CS:	3+29.733	24954516.963	-4878513.896

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	40° 44' 01.8076"	Type:	RIGHT

Radius:	57.750		
Length:	41.057	Tangent:	21.439
Mid-Ord:	3.610	External:	3.851
Chord:	40.198	Course:	S 65° 00' 15.7072" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	3+29.733	24954516.963	-4878513.896
SPI:		24954509.528	-4878506.555
ST:	3+60.483	24954491.638	-4878496.634

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.750	L Tan:	20.577
Radius:	57.750	S Tan:	10.320
Theta:	15° 15' 14.6562"	P:	0.680
X:	30.533	K:	15.339
Y:	2.715	A:	42.140
Chord:	30.648	Course:	S 34° 16' 49.2190" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	3+60.483	24954491.638	-4878496.634
End:	3+91.939	24954464.129	-4878481.378

Tangent Data

Parameter	Value	Parameter	Value
Length:	31.456	Course:	S 29° 00' 40.7653" E

**Alignment: Os ceste-Right-2.750****Description:**Tangent Data

Description	PT Station	Northing	Easting
Start:	0+00.000	24954690.147	-4878756.886
End:	1+58.352	24954556.379	-4878672.142

Tangent Data

Parameter	Value	Parameter	Value
Length:	158.352	Course:	S 32° 21' 17.7640" E

Spiral Point Data

Description	Station	Northing	Easting
TS:	1+58.352	24954556.379	-4878672.142
SPI:		24954539.053	-4878661.165
SC:	1+89.177	24954532.238	-4878653.174

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.825	L Tan:	20.643
Radius:	52.750	S Tan:	10.359
Theta:	16° 44' 26.4706"	P:	0.748
X:	30.563	K:	15.369
Y:	2.984	A:	40.324
Chord:	30.701	Course:	S 38° 09' 24.9005" E

Curve Point Data

Description	Station	Northing	Easting
SC:	1+89.177	24954532.238	-4878653.174
RP:		24954572.376	-4878618.947
CS:	2+20.724	24954519.934	-4878624.636

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	34° 15' 54.0014"	Type:	LEFT
Radius:	52.750		
Length:	31.546	Tangent:	16.261
Mid-Ord:	2.341	External:	2.449
Chord:	31.078	Course:	S 66° 40' 34.2065" E

Spiral Point Data

Description	Station	Northing	Easting
CS:	2+20.724	24954519.934	-4878624.636
SPI:		24954518.801	-4878614.195
ST:	2+51.549	24954522.714	-4878594.061

Spiral Curve Data: clothoid

Parameter	Value	Parameter	Value
Length:	30.825	L Tan:	20.643
Radius:	52.750	S Tan:	10.359
Theta:	16° 44' 26.4706"	P:	0.748
X:	30.563	K:	15.369
Y:	2.984	A:	40.324
Chord:	30.701	Course:	N 84° 48' 16.4875" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	2+51.549	24954522.714	-4878594.061
End:	2+66.102	24954525.490	-4878579.775

Tangent Data

Parameter	Value	Parameter	Value
Length:	14.553	Course:	N 79° 00' 09.3509" E

Curve Point Data

Description	Station	Northing	Easting
PC:	2+66.102	24954525.490	-4878579.775
RP:		24954517.637	-4878578.248
PCC:	2+66.124	24954525.494	-4878579.753

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	00° 09' 26.1487"	Type:	RIGHT
Radius:	8.000		
Length:	0.022	Tangent:	0.011
Mid-Ord:	0.000	External:	0.000
Chord:	0.022	Course:	N 79° 04' 52.4212" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	2+66.124	24954525.494	-4878579.753
RP:		24954422.920	-4878560.111
PCC:	2+94.958	24954526.964	-4878551.048

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	15° 49' 07.9737"	Type:	RIGHT
Radius:	104.438		
Length:	28.834	Tangent:	14.510
Mid-Ord:	0.994	External:	1.003
Chord:	28.743	Course:	N 87° 04' 09.4864" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	2+94.958	24954526.964	-4878551.048
RP:		24954551.869	-4878548.878
PCC:	2+95.111	24954526.951	-4878550.895

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	00° 21' 00.0845"	Type:	LEFT
Radius:	25.000		
Length:	0.153	Tangent:	0.076
Mid-Ord:	0.000	External:	0.000
Chord:	0.153	Course:	S 85° 11' 46.5690" E



Curve Point Data

Description	Station	Northing	Easting
PCC:	2+95.111	24954526.951	-4878550.895
RP:		24954476.386	-4878554.989
PCC:	3+31.177	24954512.030	-4878518.891

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	40° 44' 01.8076"	Type:	RIGHT
Radius:	50.730		
Length:	36.066	Tangent:	18.833
Mid-Ord:	3.171	External:	3.383
Chord:	35.311	Course:	S 65° 00' 15.7072" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	3+31.177	24954512.030	-4878518.891
RP:		24954529.596	-4878501.102
PCC:	3+31.370	24954511.893	-4878518.755

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	00° 26' 34.0738"	Type:	LEFT
Radius:	25.000		
Length:	0.193	Tangent:	0.097
Mid-Ord:	0.000	External:	0.000
Chord:	0.193	Course:	S 44° 51' 31.8405" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	3+31.370	24954511.893	-4878518.755
RP:		24954438.996	-4878591.449
PCC:	3+60.184	24954488.975	-4878501.446

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	16° 02' 11.1352"	Type:	RIGHT
Radius:	102.948		
Length:	28.814	Tangent:	14.502
Mid-Ord:	1.006	External:	1.016
Chord:	28.720	Course:	S 37° 03' 43.3093" E

Curve Point Data

Description	Station	Northing	Easting
PCC:	3+60.184	24954488.975	-4878501.446
RP:		24954485.091	-4878508.440
PT:	3+60.189	24954488.971	-4878501.444

Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	00° 01' 56.9763"	Type:	RIGHT
Radius:	8.000		
Length:	0.005	Tangent:	0.002
Mid-Ord:	0.000	External:	0.000
Chord:	0.005	Course:	S 29° 01' 39.2722" E

Tangent Data

Description	PT Station	Northing	Easting
Start:	3+60.189	24954488.971	-4878501.444
End:	3+91.645	24954461.462	-4878486.188

Tangent Data

Parameter	Value	Parameter	Value
Length:	31.456	Course:	S 29° 00' 40.7653" E

## 5.2. Koordinatni račun glavnih točaka osi

**Client:**

\_\_\_\_\_  
\_\_\_\_\_

**Prepared by:**

Mateo Trogrančić

**Date:** 26.6.2023. 8:37:34

Alignment Name: Os ceste

Description:

Station Range: Start: 0+000.00, End: 39+336.00

Station Increment: 20.00

Station	Northing	Easting	Tangential Direction
0+000.00	24,954,691.6188m	-4,878,754.5630m	S32° 21' 18"E
0+020.00	24,954,674.7238m	-4,878,743.8598m	S32° 21' 18"E
0+040.00	24,954,657.8288m	-4,878,733.1565m	S32° 21' 18"E
0+060.00	24,954,640.9339m	-4,878,722.4533m	S32° 21' 18"E
0+080.00	24,954,624.0389m	-4,878,711.7500m	S32° 21' 18"E
0+100.00	24,954,607.1439m	-4,878,701.0468m	S32° 21' 18"E
0+120.00	24,954,590.2489m	-4,878,690.3435m	S32° 21' 18"E
0+140.00	24,954,573.3539m	-4,878,679.6403m	S32° 21' 18"E
0+160.00	24,954,556.4592m	-4,878,668.9366m	S32° 24' 24"E
0+180.00	24,954,540.2107m	-4,878,657.3114m	S41° 18' 19"E
0+200.00	24,954,527.8688m	-4,878,641.7306m	S62° 53' 28"E
0+220.00	24,954,522.5090m	-4,878,622.6002m	S85° 45' 05"E
0+240.00	24,954,523.9000m	-4,878,602.6990m	N80° 18' 13"E
0+260.00	24,954,527.6539m	-4,878,583.0548m	N79° 00' 09"E
0+280.00	24,954,530.9629m	-4,878,563.3378m	N84° 08' 05"E
0+300.00	24,954,530.1600m	-4,878,543.4399m	S77° 52' 42"E
0+320.00	24,954,522.5359m	-4,878,525.0691m	S57° 02' 36"E
0+340.00	24,954,508.9097m	-4,878,510.5696m	S37° 20' 43"E
0+360.00	24,954,491.9738m	-4,878,499.9654m	S29° 04' 29"E
0+380.00	24,954,474.4837m	-4,878,490.2652m	S29° 00' 41"E

Alignment Name: Os ceste-Left-2.750

Description:

Station Range: Start: 0+000.00, End: 39+194.00

Station Increment: 20.00

Station	Northing	Easting	Tangential Direction
0+000.00	24,954,693.0905m	-4,878,752.2399m	S32° 21' 18"E
0+020.00	24,954,676.1955m	-4,878,741.5367m	S32° 21' 18"E
0+040.00	24,954,659.3005m	-4,878,730.8334m	S32° 21' 18"E
0+060.00	24,954,642.4055m	-4,878,720.1302m	S32° 21' 18"E
0+080.00	24,954,625.5106m	-4,878,709.4269m	S32° 21' 18"E
0+100.00	24,954,608.6156m	-4,878,698.7237m	S32° 21' 18"E
0+120.00	24,954,591.7206m	-4,878,688.0204m	S32° 21' 18"E
0+140.00	24,954,574.8256m	-4,878,677.3172m	S32° 21' 18"E
0+160.00	24,954,557.9394m	-4,878,666.6003m	S33° 25' 30"E
0+180.00	24,954,542.5509m	-4,878,653.8856m	S45° 42' 18"E
0+200.00	24,954,530.8792m	-4,878,637.7787m	S65° 35' 25"E
0+220.00	24,954,526.5879m	-4,878,618.3731m	S86° 37' 53"E
0+240.00	24,954,527.5361m	-4,878,598.4333m	N81° 11' 10"E
0+260.00	24,954,531.2746m	-4,878,578.8346m	N79° 04' 25"E
0+280.00	24,954,534.0469m	-4,878,559.1505m	N87° 03' 16"E
0+300.00	24,954,531.9371m	-4,878,539.2040m	S74° 08' 13"E
0+320.00	24,954,523.2808m	-4,878,521.2851m	S54° 17' 39"E
0+340.00	24,954,508.9792m	-4,878,507.1945m	S35° 56' 42"E
0+360.00	24,954,492.0510m	-4,878,496.8629m	S29° 00' 55"E
0+380.00	24,954,474.5707m	-4,878,487.1689m	S29° 00' 41"E

Alignment Name: Os ceste-Right-2.750

Description:

Station Range: Start: 0+000.00, End: 39+164.00

Station Increment: 20.00

Station	Northing	Easting	Tangential Direction
0+000.00	24,954,690.1471m	-4,878,756.8861m	S32° 21' 18"E
0+020.00	24,954,673.2521m	-4,878,746.1828m	S32° 21' 18"E
0+040.00	24,954,656.3571m	-4,878,735.4796m	S32° 21' 18"E
0+060.00	24,954,639.4622m	-4,878,724.7763m	S32° 21' 18"E
0+080.00	24,954,622.5672m	-4,878,714.0731m	S32° 21' 18"E
0+100.00	24,954,605.6722m	-4,878,703.3698m	S32° 21' 18"E
0+120.00	24,954,588.7772m	-4,878,692.6666m	S32° 21' 18"E
0+140.00	24,954,571.8822m	-4,878,681.9633m	S32° 21' 18"E
0+160.00	24,954,555.0228m	-4,878,671.2820m	S32° 24' 15"E
0+180.00	24,954,538.8495m	-4,878,659.7728m	S40° 49' 57"E
0+200.00	24,954,526.1068m	-4,878,644.2789m	S61° 17' 57"E
0+220.00	24,954,520.0166m	-4,878,625.3543m	S83° 01' 22"E
0+240.00	24,954,520.7051m	-4,878,605.2359m	N81° 24' 55"E
0+260.00	24,954,524.3259m	-4,878,585.7643m	N79° 00' 09"E
0+280.00	24,954,527.1921m	-4,878,565.9913m	N86° 46' 21"E
0+300.00	24,954,526.3223m	-4,878,546.0489m	S79° 50' 58"E
0+320.00	24,954,519.0575m	-4,878,527.5538m	S57° 15' 39"E
0+340.00	24,954,505.5507m	-4,878,512.9068m	S40° 16' 38"E
0+360.00	24,954,489.1360m	-4,878,501.5357m	S29° 08' 47"E
0+380.00	24,954,471.6456m	-4,878,491.8359m	S29° 00' 41"E

**5.3. Račun kota kolnika****Client:**\_\_\_\_\_  
\_\_\_\_\_**Prepared by:**

Mateo Trogrančić

**Date:** 26.6.2023. 8:47:39

Corridor Name: KORIDOR

Description:

Base Alignment Name: Os ceste

Station Range: Start: 0+000.00, End: 0+393.36

**CHAINAGE 0+000.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,746.3616	24,954,696.8145	254.4249	-9.709m	Daylight
2	-4,878,750.8447	24,954,693.9744	257.9628	-4.402m	Hinge
3	-4,878,750.8455	24,954,693.9739	257.7628	-4.401m	EPS_Sub
4	-4,878,751.6894	24,954,693.4393	258.0028	-3.402m	Back_Curb
5	-4,878,751.7908	24,954,693.3750	258.0028	-3.282m	Top_Curb
6	-4,878,751.8260	24,954,693.3527	257.8528	-3.240m	Flowline_Gutter
7	-4,878,752.2399	24,954,693.0905	257.9312	-2.750m	ETW
8	-4,878,752.2399	24,954,693.0905	257.5312	-2.750m	ETW_SubBase
9	-4,878,756.8861	24,954,690.1471	257.6688	2.750m	ETW_SubBase
10	-4,878,756.8861	24,954,690.1471	258.0688	2.750m	ETW
11	-4,878,757.3000	24,954,689.8849	257.9904	3.240m	Flowline_Gutter
12	-4,878,757.3352	24,954,689.8626	258.1404	3.282m	Top_Curb
13	-4,878,757.4366	24,954,689.7983	258.1404	3.402m	Back_Curb
14	-4,878,758.2805	24,954,689.2637	257.9804	4.401m	EPS_Sub
15	-4,878,758.2813	24,954,689.2632	258.1804	4.402m	EPS
16	-4,878,758.7432	24,954,688.9706	259.2738	4.948m	Daylight

**CHAINAGE 0+020.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,737.9090	24,954,678.4937	257.5552	-7.044m	Daylight
2	-4,878,740.1414	24,954,677.0794	259.3170	-4.402m	Hinge
3	-4,878,740.1423	24,954,677.0789	259.1170	-4.401m	EPS_Sub
4	-4,878,740.9862	24,954,676.5443	259.3570	-3.402m	Back_Curb
5	-4,878,741.0875	24,954,676.4801	259.3570	-3.282m	Top_Curb
6	-4,878,741.1228	24,954,676.4577	259.2070	-3.240m	Flowline_Gutter
7	-4,878,741.5367	24,954,676.1955	259.2854	-2.750m	ETW
8	-4,878,741.5367	24,954,676.1955	258.8854	-2.750m	ETW_SubBase
9	-4,878,746.1828	24,954,673.2521	259.0229	2.750m	ETW_SubBase
10	-4,878,746.1828	24,954,673.2521	259.4229	2.750m	ETW
11	-4,878,746.5967	24,954,672.9899	259.3445	3.240m	Flowline_Gutter
12	-4,878,746.6320	24,954,672.9676	259.4945	3.282m	Top_Curb
13	-4,878,746.7333	24,954,672.9034	259.4945	3.402m	Back_Curb
14	-4,878,747.5772	24,954,672.3687	259.3345	4.401m	EPS_Sub
15	-4,878,747.5781	24,954,672.3682	259.5345	4.402m	EPS
16	-4,878,748.3192	24,954,671.8987	261.2891	5.279m	Daylight

**CHAINAGE 0+040.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,728.7426	24,954,660.6251	260.1222	-5.225m	Daylight
2	-4,878,729.4382	24,954,660.1845	260.6712	-4.402m	Hinge
3	-4,878,729.4390	24,954,660.1839	260.4712	-4.401m	EPS_Sub
4	-4,878,730.2829	24,954,659.6493	260.7112	-3.402m	Back_Curb
5	-4,878,730.3843	24,954,659.5851	260.7112	-3.282m	Top_Curb
6	-4,878,730.4195	24,954,659.5628	260.5612	-3.240m	Flowline_Gutter
7	-4,878,730.8334	24,954,659.3005	260.6396	-2.750m	ETW
8	-4,878,730.8334	24,954,659.3005	260.2396	-2.750m	ETW_SubBase
9	-4,878,735.4796	24,954,656.3571	260.3771	2.750m	ETW_SubBase
10	-4,878,735.4796	24,954,656.3571	260.7771	2.750m	ETW
11	-4,878,735.8935	24,954,656.0949	260.6987	3.240m	Flowline_Gutter
12	-4,878,735.9287	24,954,656.0726	260.8487	3.282m	Top_Curb
13	-4,878,736.0301	24,954,656.0084	260.8487	3.402m	Back_Curb
14	-4,878,736.8740	24,954,655.4737	260.6887	4.401m	EPS_Sub
15	-4,878,736.8748	24,954,655.4732	260.8887	4.402m	EPS
16	-4,878,737.8868	24,954,654.8321	263.2847	5.600m	Daylight

**CHAINAGE 0+060.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,718.6486	24,954,643.3441	262.5056	-4.504m	Daylight
2	-4,878,718.8194	24,954,643.2360	262.1013	-4.302m	EPS
3	-4,878,718.8202	24,954,643.2354	261.9013	-4.301m	EPS_Sub
4	-4,878,719.5797	24,954,642.7543	262.0653	-3.402m	Back_Curb
5	-4,878,719.6810	24,954,642.6901	262.0653	-3.282m	Top_Curb
6	-4,878,719.7163	24,954,642.6678	261.9153	-3.240m	Flowline_Gutter
7	-4,878,720.1302	24,954,642.4055	261.9937	-2.750m	ETW
8	-4,878,720.1302	24,954,642.4055	261.5937	-2.750m	ETW_SubBase
9	-4,878,724.7763	24,954,639.4622	261.7313	2.750m	ETW_SubBase
10	-4,878,724.7763	24,954,639.4622	262.1313	2.750m	ETW
11	-4,878,725.1902	24,954,639.1999	262.0529	3.240m	Flowline_Gutter
12	-4,878,725.2255	24,954,639.1776	262.2029	3.282m	Top_Curb
13	-4,878,725.3268	24,954,639.1134	262.2029	3.402m	Back_Curb
14	-4,878,726.0863	24,954,638.6323	262.0389	4.301m	EPS_Sub
15	-4,878,726.0871	24,954,638.6317	262.2389	4.302m	Hinge_Cut
16	-4,878,727.4479	24,954,637.7697	265.4606	5.913m	Daylight

**CHAINAGE 0+080.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,707.5053	24,954,626.7279	264.9016	-5.025m	Daylight
2	-4,878,708.1161	24,954,626.3410	263.4555	-4.302m	EPS
3	-4,878,708.1170	24,954,626.3404	263.2555	-4.301m	EPS_Sub
4	-4,878,708.8764	24,954,625.8593	263.4195	-3.402m	Back_Curb
5	-4,878,708.9778	24,954,625.7951	263.4195	-3.282m	Top_Curb
6	-4,878,709.0130	24,954,625.7728	263.2695	-3.240m	Flowline_Gutter
7	-4,878,709.4269	24,954,625.5106	263.3479	-2.750m	ETW
8	-4,878,709.4269	24,954,625.5106	262.9479	-2.750m	ETW_SubBase
9	-4,878,714.0731	24,954,622.5672	263.0854	2.750m	ETW_SubBase
10	-4,878,714.0731	24,954,622.5672	263.4854	2.750m	ETW
11	-4,878,714.4870	24,954,622.3049	263.4070	3.240m	Flowline_Gutter
12	-4,878,714.5222	24,954,622.2826	263.5570	3.282m	Top_Curb
13	-4,878,714.6236	24,954,622.2184	263.5570	3.402m	Back_Curb
14	-4,878,715.3830	24,954,621.7373	263.3930	4.301m	EPS_Sub
15	-4,878,715.3839	24,954,621.7368	263.5930	4.302m	Hinge_Cut
16	-4,878,717.6197	24,954,620.3203	268.8864	6.948m	Daylight



**CHAINAGE 0+100.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,696.2218	24,954,610.2006	267.6298	-5.712m	Daylight
2	-4,878,697.4129	24,954,609.4460	264.8097	-4.302m	EPS
3	-4,878,697.4137	24,954,609.4455	264.6097	-4.301m	EPS_Sub
4	-4,878,698.1732	24,954,608.9643	264.7737	-3.402m	Back_Curb
5	-4,878,698.2745	24,954,608.9001	264.7737	-3.282m	Top_Curb
6	-4,878,698.3098	24,954,608.8778	264.6237	-3.240m	Flowline_Gutter
7	-4,878,698.7237	24,954,608.6156	264.7021	-2.750m	ETW
8	-4,878,698.7237	24,954,608.6156	264.3021	-2.750m	ETW_SubBase
9	-4,878,703.3698	24,954,605.6722	264.4396	2.750m	ETW_SubBase
10	-4,878,703.3698	24,954,605.6722	264.8396	2.750m	ETW
11	-4,878,703.7837	24,954,605.4100	264.7612	3.240m	Flowline_Gutter
12	-4,878,703.8190	24,954,605.3876	264.9112	3.282m	Top_Curb
13	-4,878,703.9203	24,954,605.3234	264.9112	3.402m	Back_Curb
14	-4,878,704.6798	24,954,604.8423	264.7472	4.301m	EPS_Sub
15	-4,878,704.6806	24,954,604.8418	264.9472	4.302m	Hinge_Cut
16	-4,878,707.5967	24,954,602.9944	271.8511	7.754m	Daylight

**CHAINAGE 0+120.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,685.2673	24,954,593.4648	269.5788	-6.009m	Daylight
2	-4,878,686.7096	24,954,592.5510	266.1638	-4.302m	EPS
3	-4,878,686.7105	24,954,592.5505	265.9638	-4.301m	EPS_Sub
4	-4,878,687.4699	24,954,592.0694	266.1278	-3.402m	Back_Curb
5	-4,878,687.5713	24,954,592.0051	266.1278	-3.282m	Top_Curb
6	-4,878,687.6065	24,954,591.9828	265.9778	-3.240m	Flowline_Gutter
7	-4,878,688.0204	24,954,591.7206	266.0562	-2.750m	ETW
8	-4,878,688.0204	24,954,591.7206	265.6562	-2.750m	ETW_SubBase
9	-4,878,692.6666	24,954,588.7772	265.7938	2.750m	ETW_SubBase
10	-4,878,692.6666	24,954,588.7772	266.1938	2.750m	ETW
11	-4,878,693.0805	24,954,588.5150	266.1154	3.240m	Flowline_Gutter
12	-4,878,693.1157	24,954,588.4927	266.2654	3.282m	Top_Curb
13	-4,878,693.2171	24,954,588.4284	266.2654	3.402m	Back_Curb
14	-4,878,693.9765	24,954,587.9473	266.1014	4.301m	EPS_Sub
15	-4,878,693.9774	24,954,587.9468	266.3014	4.302m	Hinge_Cut
16	-4,878,697.3899	24,954,585.7849	274.3808	8.341m	Daylight

**CHAINAGE 0+140.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,674.4186	24,954,576.6619	271.2771	-6.181m	Daylight
2	-4,878,676.0064	24,954,575.6560	267.5180	-4.302m	EPS
3	-4,878,676.0072	24,954,575.6555	267.3180	-4.301m	EPS_Sub
4	-4,878,676.7667	24,954,575.1744	267.4820	-3.402m	Back_Curb
5	-4,878,676.8680	24,954,575.1102	267.4820	-3.282m	Top_Curb
6	-4,878,676.9033	24,954,575.0878	267.3320	-3.240m	Flowline_Gutter
7	-4,878,677.3172	24,954,574.8256	267.4104	-2.750m	ETW
8	-4,878,677.3172	24,954,574.8256	267.0104	-2.750m	ETW_SubBase
9	-4,878,681.9633	24,954,571.8822	267.1479	2.750m	ETW_SubBase
10	-4,878,681.9633	24,954,571.8822	267.5479	2.750m	ETW
11	-4,878,682.3772	24,954,571.6200	267.4695	3.240m	Flowline_Gutter
12	-4,878,682.4125	24,954,571.5977	267.6195	3.282m	Top_Curb
13	-4,878,682.5138	24,954,571.5335	267.6195	3.402m	Back_Curb
14	-4,878,683.2733	24,954,571.0523	267.4555	4.301m	EPS_Sub
15	-4,878,683.2741	24,954,571.0518	267.6555	4.302m	Hinge_Cut
16	-4,878,687.4283	24,954,568.4201	277.4909	9.219m	Daylight

**CHAINAGE 0+160.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,664.6805	24,954,559.1609	270.3055	-5.041m	Daylight
2	-4,878,665.2916	24,954,558.7730	268.8579	-4.317m	EPS
3	-4,878,665.2924	24,954,558.7725	268.6579	-4.316m	EPS_Sub
4	-4,878,666.0514	24,954,558.2907	268.8219	-3.417m	Back_Curb
5	-4,878,666.1527	24,954,558.2264	268.8219	-3.297m	Top_Curb
6	-4,878,666.1879	24,954,558.2040	268.6719	-3.256m	Flowline_Gutter
7	-4,878,666.6016	24,954,557.9414	268.7503	-2.766m	ETW
8	-4,878,666.6016	24,954,557.9414	268.3503	-2.766m	ETW_SubBase
9	-4,878,671.2576	24,954,554.9859	268.5003	2.749m	ETW_SubBase
10	-4,878,671.2576	24,954,554.9859	268.9003	2.749m	ETW
11	-4,878,671.6713	24,954,554.7233	268.8219	3.239m	Flowline_Gutter
12	-4,878,671.7065	24,954,554.7009	268.9719	3.281m	Top_Curb
13	-4,878,671.8078	24,954,554.6366	268.9719	3.401m	Back_Curb
14	-4,878,672.5668	24,954,554.1548	268.8079	4.300m	EPS_Sub
15	-4,878,672.5676	24,954,554.1543	269.0079	4.301m	Hinge_Cut
16	-4,878,675.6134	24,954,552.2209	276.2230	7.908m	Daylight

**CHAINAGE 0+180.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,648.1515	24,954,548.2594	265.6018	-12.194m	Daylight
2	-4,878,653.0051	24,954,543.9946	269.9093	-5.733m	Hinge
3	-4,878,653.0059	24,954,543.9939	269.7093	-5.732m	EPS_Sub
4	-4,878,653.7564	24,954,543.3345	269.9493	-4.733m	Back_Curb
5	-4,878,653.8465	24,954,543.2553	269.9493	-4.613m	Top_Curb
6	-4,878,653.8778	24,954,543.2278	269.7993	-4.571m	Flowline_Gutter
7	-4,878,654.2459	24,954,542.9043	269.8777	-4.081m	ETW
8	-4,878,654.2459	24,954,542.9043	269.4777	-4.081m	ETW_SubBase
9	-4,878,659.3774	24,954,538.3954	269.8456	2.750m	ETW_SubBase
10	-4,878,659.3774	24,954,538.3954	270.2456	2.750m	ETW
11	-4,878,659.7455	24,954,538.0720	270.1672	3.240m	Flowline_Gutter
12	-4,878,659.7768	24,954,538.0444	270.3172	3.282m	Top_Curb
13	-4,878,659.8670	24,954,537.9652	270.3172	3.402m	Back_Curb
14	-4,878,660.6174	24,954,537.3058	270.1572	4.401m	EPS_Sub
15	-4,878,660.6182	24,954,537.3052	270.3572	4.402m	EPS
16	-4,878,661.6577	24,954,536.3917	273.1249	5.786m	Daylight

**CHAINAGE 0+200.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,632.3955	24,954,546.1043	261.4208	-20.486m	Daylight
2	-4,878,638.9593	24,954,533.2824	271.0237	-6.082m	Hinge
3	-4,878,638.9597	24,954,533.2815	270.8237	-6.081m	EPS_Sub
4	-4,878,639.4149	24,954,532.3922	271.0637	-5.082m	Back_Curb
5	-4,878,639.4696	24,954,532.2854	271.0637	-4.962m	Top_Curb
6	-4,878,639.4886	24,954,532.2483	270.9137	-4.920m	Flowline_Gutter
7	-4,878,639.7119	24,954,531.8121	270.9921	-4.430m	Flange
8	-4,878,639.7119	24,954,531.8121	270.5921	-4.430m	ETW_SubBase
9	-4,878,642.9837	24,954,525.4209	271.4588	2.750m	Flange
10	-4,878,642.9837	24,954,525.4209	271.0588	2.750m	ETW_SubBase
11	-4,878,643.2070	24,954,524.9847	271.3804	3.240m	Flowline_Gutter
12	-4,878,643.2260	24,954,524.9476	271.5304	3.282m	Top_Curb
13	-4,878,643.2807	24,954,524.8408	271.5304	3.402m	Back_Curb
14	-4,878,643.7359	24,954,523.9515	271.3704	4.401m	EPS_Sub
15	-4,878,643.7364	24,954,523.9506	271.5704	4.402m	Hinge
16	-4,878,645.0088	24,954,521.4650	269.7088	7.194m	Daylight

**CHAINAGE 0+220.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,621.6509	24,954,535.2867	267.6230	-12.813m	Daylight
2	-4,878,622.1517	24,954,528.5462	272.1290	-6.054m	Hinge
3	-4,878,622.1517	24,954,528.5452	271.9290	-6.053m	EPS_Sub
4	-4,878,622.2258	24,954,527.5490	272.1690	-5.054m	Back_Curb
5	-4,878,622.2346	24,954,527.4293	272.1690	-4.934m	Top_Curb
6	-4,878,622.2377	24,954,527.3877	272.0190	-4.892m	Flowline_Gutter
7	-4,878,622.2740	24,954,526.8991	272.0974	-4.402m	ETW
8	-4,878,622.2740	24,954,526.8991	271.6974	-4.402m	ETW_SubBase
9	-4,878,622.8039	24,954,519.7662	272.1457	2.750m	ETW_SubBase
10	-4,878,622.8039	24,954,519.7662	272.5457	2.750m	ETW
11	-4,878,622.8402	24,954,519.2776	272.4673	3.240m	Flowline_Gutter
12	-4,878,622.8433	24,954,519.2360	272.6173	3.282m	Top_Curb
13	-4,878,622.8522	24,954,519.1163	272.6173	3.402m	Back_Curb
14	-4,878,622.9262	24,954,518.1201	272.4573	4.401m	EPS_Sub
15	-4,878,622.9263	24,954,518.1191	272.6573	4.402m	EPS
16	-4,878,623.0378	24,954,516.6183	275.6671	5.907m	Daylight

**CHAINAGE 0+240.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,603.6659	24,954,529.5586	272.6214	-5.741m	Daylight
2	-4,878,603.4932	24,954,528.5478	273.3050	-4.715m	Hinge
3	-4,878,603.4930	24,954,528.5468	273.1050	-4.714m	EPS_Sub
4	-4,878,603.3248	24,954,527.5621	273.3450	-3.715m	Back_Curb
5	-4,878,603.3046	24,954,527.4438	273.3450	-3.595m	Top_Curb
6	-4,878,603.2975	24,954,527.4027	273.1950	-3.553m	Flowline_Gutter
7	-4,878,603.2150	24,954,526.9197	273.2734	-3.063m	ETW
8	-4,878,603.2150	24,954,526.9197	272.8734	-3.063m	ETW_SubBase
9	-4,878,602.2360	24,954,521.1901	273.0827	2.749m	ETW_SubBase
10	-4,878,602.2360	24,954,521.1901	273.4827	2.749m	ETW
11	-4,878,602.1535	24,954,520.7071	273.4043	3.239m	Flowline_Gutter
12	-4,878,602.1464	24,954,520.6660	273.5543	3.281m	Top_Curb
13	-4,878,602.1262	24,954,520.5477	273.5543	3.401m	Back_Curb
14	-4,878,601.9580	24,954,519.5630	273.3943	4.400m	EPS_Sub
15	-4,878,601.9578	24,954,519.5620	273.5943	4.401m	EPS
16	-4,878,601.5922	24,954,517.4222	277.9359	6.572m	Daylight

**CHAINAGE 0+260.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,584.7796	24,954,536.5292	271.2467	-9.041m	Daylight
2	-4,878,583.8945	24,954,531.9748	274.3398	-4.402m	Hinge
3	-4,878,583.8943	24,954,531.9738	274.1398	-4.401m	EPS_Sub
4	-4,878,583.7037	24,954,530.9931	274.3798	-3.402m	Back_Curb
5	-4,878,583.6809	24,954,530.8753	274.3798	-3.282m	Top_Curb
6	-4,878,583.6729	24,954,530.8344	274.2298	-3.240m	Flowline_Gutter
7	-4,878,583.5794	24,954,530.3534	274.3082	-2.750m	ETW
8	-4,878,583.5794	24,954,530.3534	273.9082	-2.750m	ETW_SubBase
9	-4,878,582.5302	24,954,524.9544	274.0457	2.750m	ETW_SubBase
10	-4,878,582.5302	24,954,524.9544	274.4457	2.750m	ETW
11	-4,878,582.4367	24,954,524.4734	274.3673	3.240m	Flowline_Gutter
12	-4,878,582.4288	24,954,524.4325	274.5173	3.282m	Top_Curb
13	-4,878,582.4059	24,954,524.3147	274.5173	3.402m	Back_Curb
14	-4,878,582.2153	24,954,523.3340	274.3573	4.401m	EPS_Sub
15	-4,878,582.2151	24,954,523.3330	274.5573	4.402m	EPS
16	-4,878,581.9251	24,954,521.8403	277.5985	5.922m	Daylight

**CHAINAGE 0+280.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,564.5174	24,954,542.4461	270.7089	-11.544m	Daylight
2	-4,878,563.7876	24,954,535.3417	275.4701	-4.402m	Hinge
3	-4,878,563.7875	24,954,535.3407	275.2701	-4.401m	EPS_Sub
4	-4,878,563.6854	24,954,534.3470	275.5101	-3.402m	Back_Curb
5	-4,878,563.6731	24,954,534.2276	275.5101	-3.282m	Top_Curb
6	-4,878,563.6689	24,954,534.1861	275.3601	-3.240m	Flowline_Gutter
7	-4,878,563.6188	24,954,533.6987	275.4385	-2.750m	ETW
8	-4,878,563.6188	24,954,533.6987	275.0385	-2.750m	ETW_SubBase
9	-4,878,562.9634	24,954,527.3188	274.8791	3.663m	ETW_SubBase
10	-4,878,562.9634	24,954,527.3188	275.2791	3.663m	ETW
11	-4,878,562.9133	24,954,526.8313	275.2007	4.153m	Flowline_Gutter
12	-4,878,562.9091	24,954,526.7898	275.3507	4.195m	Top_Curb
13	-4,878,562.8968	24,954,526.6705	275.3507	4.315m	Back_Curb
14	-4,878,562.7947	24,954,525.6767	275.1907	5.314m	EPS_Sub
15	-4,878,562.7946	24,954,525.6757	275.3907	5.315m	EPS
16	-4,878,562.6926	24,954,524.6828	277.3869	6.313m	Daylight

**CHAINAGE 0+300.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,540.6533	24,954,543.1341	270.6533	-13.270m	Daylight
2	-4,878,542.5156	24,954,534.4636	276.5655	-4.402m	Hinge
3	-4,878,542.5158	24,954,534.4626	276.3655	-4.401m	EPS_Sub
4	-4,878,542.7255	24,954,533.4859	276.6055	-3.402m	Back_Curb
5	-4,878,542.7507	24,954,533.3686	276.6055	-3.282m	Top_Curb
6	-4,878,542.7595	24,954,533.3278	276.4555	-3.240m	Flowline_Gutter
7	-4,878,542.8624	24,954,532.8487	276.5339	-2.750m	ETW
8	-4,878,542.8624	24,954,532.8487	276.1339	-2.750m	ETW_SubBase
9	-4,878,544.3365	24,954,525.9852	275.6987	4.270m	ETW_SubBase
10	-4,878,544.3365	24,954,525.9852	276.0987	4.270m	ETW
11	-4,878,544.4394	24,954,525.5062	276.0203	4.760m	Flowline_Gutter
12	-4,878,544.4482	24,954,525.4654	276.1703	4.802m	Top_Curb
13	-4,878,544.4734	24,954,525.3481	276.1703	4.922m	Back_Curb
14	-4,878,544.6831	24,954,524.3713	276.0103	5.921m	EPS_Sub
15	-4,878,544.6834	24,954,524.3704	276.2103	5.922m	EPS
16	-4,878,544.9280	24,954,523.2314	278.5402	7.087m	Daylight

**CHAINAGE 0+320.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,518.7543	24,954,532.2761	272.7544	-11.608m	Daylight
2	-4,878,522.6746	24,954,526.2293	277.5587	-4.402m	Hinge
3	-4,878,522.6751	24,954,526.2285	277.3587	-4.401m	EPS_Sub
4	-4,878,523.2186	24,954,525.3902	277.5987	-3.402m	Back_Curb
5	-4,878,523.2839	24,954,525.2895	277.5987	-3.282m	Top_Curb
6	-4,878,523.3065	24,954,525.2545	277.4487	-3.240m	Flowline_Gutter
7	-4,878,523.5731	24,954,524.8434	277.5271	-2.750m	ETW
8	-4,878,523.5731	24,954,524.8434	277.1271	-2.750m	ETW_SubBase
9	-4,878,527.3920	24,954,518.9530	276.6919	4.270m	ETW_SubBase
10	-4,878,527.3920	24,954,518.9530	277.0919	4.270m	ETW
11	-4,878,527.6586	24,954,518.5419	277.0135	4.760m	Flowline_Gutter
12	-4,878,527.6812	24,954,518.5069	277.1635	4.802m	Top_Curb
13	-4,878,527.7465	24,954,518.4062	277.1635	4.922m	Back_Curb
14	-4,878,528.2900	24,954,517.5680	277.0035	5.921m	EPS_Sub
15	-4,878,528.2905	24,954,517.5671	277.2035	5.922m	EPS
16	-4,878,529.0175	24,954,516.4458	279.8762	7.258m	Daylight

**CHAINAGE 0+340.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,504.7542	24,954,513.3471	276.5454	-7.315m	Daylight
2	-4,878,507.0700	24,954,511.5800	278.4874	-4.402m	Hinge
3	-4,878,507.0708	24,954,511.5794	278.2874	-4.401m	EPS_Sub
4	-4,878,507.8650	24,954,510.9734	278.5274	-3.402m	Back_Curb
5	-4,878,507.9604	24,954,510.9006	278.5274	-3.282m	Top_Curb
6	-4,878,507.9936	24,954,510.8753	278.3774	-3.240m	Flowline_Gutter
7	-4,878,508.3831	24,954,510.5781	278.4558	-2.750m	ETW
8	-4,878,508.3831	24,954,510.5781	278.0558	-2.750m	ETW_SubBase
9	-4,878,513.7238	24,954,506.5029	277.7969	3.968m	ETW_SubBase
10	-4,878,513.7238	24,954,506.5029	278.1969	3.968m	ETW
11	-4,878,514.1133	24,954,506.2057	278.1185	4.458m	Flowline_Gutter
12	-4,878,514.1465	24,954,506.1804	278.2685	4.499m	Top_Curb
13	-4,878,514.2419	24,954,506.1076	278.2685	4.619m	Back_Curb
14	-4,878,515.0361	24,954,505.5016	278.1085	5.618m	EPS_Sub
15	-4,878,515.0369	24,954,505.5010	278.3085	5.619m	EPS
16	-4,878,516.0229	24,954,504.7486	280.7891	6.860m	Daylight

**CHAINAGE 0+360.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,492.7817	24,954,495.9680	276.7753	-8.219m	Daylight
2	-4,878,496.1192	24,954,494.1123	279.3212	-4.401m	Hinge
3	-4,878,496.1201	24,954,494.1118	279.1212	-4.400m	EPS_Sub
4	-4,878,496.9932	24,954,493.6264	279.3612	-3.401m	Back_Curb
5	-4,878,497.0981	24,954,493.5681	279.3612	-3.281m	Top_Curb
6	-4,878,497.1345	24,954,493.5478	279.2112	-3.239m	Flowline_Gutter
7	-4,878,497.5628	24,954,493.3097	279.2896	-2.749m	ETW
8	-4,878,497.5628	24,954,493.3097	278.8896	-2.749m	ETW_SubBase
9	-4,878,502.3846	24,954,490.6287	278.9969	2.768m	ETW_SubBase
10	-4,878,502.3846	24,954,490.6287	279.3969	2.768m	ETW
11	-4,878,502.8128	24,954,490.3906	279.3185	3.258m	Flowline_Gutter
12	-4,878,502.8493	24,954,490.3704	279.4685	3.300m	Top_Curb
13	-4,878,502.9542	24,954,490.3120	279.4685	3.420m	Back_Curb
14	-4,878,503.8273	24,954,489.8266	279.3085	4.419m	EPS_Sub
15	-4,878,503.8281	24,954,489.8261	279.5085	4.420m	EPS
16	-4,878,504.6664	24,954,489.3600	281.4267	5.379m	Daylight

**CHAINAGE 0+380.00**

<b>POINT</b>	<b>X</b>	<b>Y</b>	<b>Z</b>	<b>OFFSET</b>	<b>STRING CUT</b>
1	-4,878,481.9970	24,954,479.0689	276.9306	-9.454m	Daylight
2	-4,878,486.4158	24,954,476.6184	280.2991	-4.402m	Hinge
3	-4,878,486.4167	24,954,476.6179	280.0991	-4.401m	EPS_Sub
4	-4,878,487.2903	24,954,476.1334	280.3391	-3.402m	Back_Curb
5	-4,878,487.3952	24,954,476.0752	280.3391	-3.282m	Top_Curb
6	-4,878,487.4317	24,954,476.0550	280.1891	-3.240m	Flowline_Gutter
7	-4,878,487.8602	24,954,475.8174	280.2675	-2.750m	ETW
8	-4,878,487.8602	24,954,475.8174	279.8675	-2.750m	ETW_SubBase
9	-4,878,492.6701	24,954,473.1500	280.0050	2.750m	ETW_SubBase
10	-4,878,492.6701	24,954,473.1500	280.4050	2.750m	ETW
11	-4,878,493.0986	24,954,472.9123	280.3266	3.240m	Flowline_Gutter
12	-4,878,493.1351	24,954,472.8921	280.4766	3.282m	Top_Curb
13	-4,878,493.2400	24,954,472.8339	280.4766	3.402m	Back_Curb
14	-4,878,494.1137	24,954,472.3494	280.3166	4.401m	EPS_Sub
15	-4,878,494.1146	24,954,472.3489	280.5166	4.402m	EPS
16	-4,878,494.8935	24,954,471.9169	282.2981	5.292m	Daylight



**5.4. Vertikalni tok trase****Client:**\_\_\_\_\_  
\_\_\_\_\_**Prepared by:**

Mateo Trogrančić

**Date:** 26.6.2023. 8:47:14

Vertical Alignment: Niveleta

Description:

Station Range: Start: 0+000.00, End: 39+336.00

PVI	Station	Grade Out	Curve Length
0.00	0+000.00	6.77%	
1.00	0+192.00	4.97%	80.792m
Vertical Curve Information:(crest curve) ----- PVC Station: 0+151.63 Elevation: 268.266m PVI Station: 0+192.00 Elevation: 271.000m PVT Station: 0+232.42 Elevation: 273.007m High Point: 0+232.42 Elevation: 273.007m Grade in: 6.77% Grade out: 4.97% Change: 1.80% K: Curve Length: 80.792m Passing Distance: Stopping Distance:			
2.00	0+393.36		

## **6. PRORAČUN KOLIČINA RADOVA ZA TROŠKOVNIK**

## Proračun količina zemljanih radova za troškovnik

**Cut/Fill Report**

**Generated:** 2023-07  
**By user:** Mateo  
**Drawing:** C:\Users\Mateo\Desktop

Volume Summary							
Name	Type	Cut Factor	Fill Factor	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
Surface3	full	1.000	1.000	5887.48	8510.08	2705.82	5804.26<Cut>
Totals							
				2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
Total				5887.48	8510.08	2705.82	5804.26<Cut>

\* Value adjusted by cut or fill factor other than 1.0

## **7. PRORAČUN KOLIČINE RADOVA PO PRESJECIMA**

## TABLICA UKUPNOG VOLUMENA ZEMLJANIH RADOVA

Total Volume Table						
Station	Fill Area	Cut Area	Fill Volume	Cut Volume	Cumulative Fill Vol	Cumulative Cut Vol
0+000.00	5.49	4.51	0.00	0.00	0.00	0.00
0+020.00	2.87	5.42	83.62	99.26	83.62	99.26
0+040.00	0.07	14.04	29.44	194.60	113.06	293.85
0+060.00	0.00	20.18	0.73	342.26	113.79	636.11
0+080.00	0.00	35.91	0.00	560.96	113.79	1197.07
0+100.00	0.00	53.58	0.00	894.92	113.79	2091.99
0+120.00	0.00	66.93	0.00	1205.11	113.79	3297.10
0+140.00	0.00	77.99	0.00	1449.20	113.79	4746.30
0+151.63	0.00	60.33	0.00	804.01	113.79	5550.31
0+158.35	0.00	44.77	0.00	353.38	113.79	5903.69
0+158.35	0.00	44.77	0.00	0.09	113.79	5903.78
0+158.36	0.00	44.76	0.00	0.20	113.79	5903.98
0+158.36	0.00	44.75	0.00	0.20	113.79	5904.18
0+160.00	0.00	41.31	0.00	70.53	113.79	5974.71
0+172.89	0.00	23.79	0.03	423.27	113.82	6397.99
0+180.00	3.97	14.30	12.71	137.91	126.53	6535.90
0+188.12	23.60	0.18	98.40	60.61	224.93	6596.50
0+188.24	23.94	0.13	2.71	0.02	227.64	6596.52
0+188.35	24.29	0.09	2.75	0.01	230.39	6596.53
0+200.00	68.43	0.00	480.14	0.56	710.53	6597.10
0+203.30	49.45	0.00	174.23	0.00	884.76	6597.10
0+218.25	10.45	9.83	395.73	76.97	1280.50	6674.07
0+218.35	10.36	9.87	1.05	0.99	1281.55	6675.06
0+218.46	10.25	9.90	1.04	1.00	1282.59	6676.06
0+220.00	8.62	10.69	12.48	16.64	1295.06	6692.70
0+232.42	0.79	21.04	52.20	203.25	1347.26	6895.95
0+233.70	0.62	22.59	0.90	27.88	1348.17	6923.83
0+240.00	0.14	24.17	2.29	149.52	1350.46	7073.35
0+248.23	0.22	22.39	1.45	192.69	1351.91	7266.04
0+248.24	0.22	22.38	0.00	0.22	1351.91	7266.26

Station	Fill Area	Cut Area	Fill Volume	Cut Volume	Cumulative Fill Vol	Cumulative Cut Vol
0+248.25	0.22	22.38	0.00	0.13	1351.91	7266.39
0+248.25	0.23	22.38	0.00	0.09	1351.92	7266.48
0+260.00	5.01	11.97	30.74	201.71	1382.66	7468.18
0+262.81	6.21	9.87	15.75	30.65	1398.40	7498.84
0+262.81	6.21	9.87	0.02	0.03	1398.42	7498.86
0+262.82	6.21	9.86	0.05	0.08	1398.47	7498.94
0+262.83	6.22	9.85	0.07	0.11	1398.54	7499.05
0+271.81	9.40	7.97	71.17	79.37	1469.71	7578.42
0+277.43	11.12	8.14	60.03	44.28	1529.74	7622.70
0+280.00	12.36	7.82	31.87	19.86	1561.61	7642.56
0+292.64	23.46	7.22	245.57	89.86	1807.19	7732.43
0+292.72	23.48	7.22	1.94	0.60	1809.13	7733.02
0+292.81	23.50	7.22	1.95	0.60	1811.07	7733.62
0+300.00	21.75	7.04	180.09	47.25	1991.16	7780.87
0+312.36	16.14	8.49	258.26	88.38	2249.42	7869.25
0+320.00	13.33	8.84	124.17	61.12	2373.59	7930.38
0+331.91	4.52	12.18	116.89	116.07	2490.48	8046.44
0+332.01	4.47	12.19	0.47	1.28	2490.95	8047.72
0+332.12	4.41	12.20	0.46	1.28	2491.42	8049.00
0+340.00	3.07	13.32	31.62	95.11	2523.04	8144.11
0+347.32	3.39	10.37	24.86	83.82	2547.91	8227.93
0+352.91	3.99	8.94	21.36	52.97	2569.26	8280.90
0+360.00	4.33	8.28	29.98	60.57	2599.24	8341.47
0+361.90	4.51	7.95	8.41	15.45	2607.66	8356.92
0+361.91	4.51	7.94	0.01	0.02	2607.67	8356.94
0+361.91	4.51	7.94	0.01	0.02	2607.68	8356.96
0+361.91	4.51	7.94	0.00	0.01	2607.68	8356.97
0+380.00	6.87	5.72	102.92	123.58	2710.60	8480.55
0+393.36	4.52	5.62	76.11	75.74	2786.70	8556.29

## **8. LITERATURA**

- 1) Ministarstvo pomorstva, prometa i veza, “Pravilnik o osnovnim uvjetima kojima javne ceste izvan naselja i njihovi elementi moraju udovoljavati sastajališta sigurnosti prometa“, Narodne novine, Zagreb, 30. studenoga 2001.
- 2) Prof. dr. sc. Željko Korlaet, Prof. dr. sc. Vesna Dragčević, “Osnove projektiranja cesta“, Građevinski Fakultet Sveučilišta u Zagrebu, Zagreb, 2003.
- 3) Hrvatske ceste – Hrvatske autoceste, „Opći tehnički uvjeti za radove na cestama“, Institut građevinarstva Hrvatske, Zagreb, prosinac 2001.
- 4) Ministarstvo mora, prometa i infrastrukture, “Pravilnik o prometnim znakovima, signalizaciji i opremi na cestama“, Narodne novine, Zagreb, 30. rujna 2019.
- 5) Zakon o gradnji NN 153/13