

# Idejni projekt lokalne ceste

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**Krivić, Brigita**

**Undergraduate thesis / Završni rad**

**2022**

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

# **ZAVRŠNI RAD**

**BRIGITA KRIVIĆ**

**Split, 2022.**

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

# **IDEJNI PROJEKT LOKALNE CESTE**

**Završni rad**

**Split, 2022.**

**SVEUČILIŠTE U SPLITU**

**FAKULTET GRAĐEVINARSTVA, ARHITEKTURE I GEODEZIJE**

Split, Matice hrvatske 15

STUDIJ: **PREDDIPLOMSKI SVEUČILIŠNI STUDIJ  
GRAĐEVINARSTVA**

KANDIDAT: **Brigita Krivić**

MATIČNI BROJ (JMBG): 0083223254

KATEDRA: **Katedra za prometnice**

PREDMET: **Ceste**

### **ZADATAK ZA ZAVRŠNI RAD**

Tema: Idejni projekt lokalne ceste

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

Zadatak treba sadržavati:

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

U Splitu, rujan 2022.

Voditelj završnog rada:

Prof. dr. sc. Dražen Cvitanić

## **Idejni projekt lokalne ceste**

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

Ključne riječi:

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

## **Conceptual project of local road**

Abstract:

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

Keywords:

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

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## **1. PROGRAMSKI ZADATAK**

Katedra za prometnice

Studij: Preddiplomski

Nastavni predmet: CESTE

Student/ica: ..... Brižita Krivić .....

## ZADATAK

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

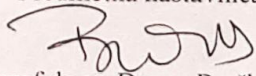
Zadano je:

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

Idejni projekt treba sadržavati:

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

Predmetna nastavnica:

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



## **2. TEHNIČKI OPIS**

### **2.1. Općenito**

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

### **2.2. Horizontalni elementi**

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

### **2.3. Vertikalni elementi**

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

### **2.4. Poprečni presjek**

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

### **2.5. Kolnička konstrukcija**

Projektom je predviđena kolnička konstrukcija sa sljedećim slojevima:

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

## **2.6. Odvodnja**

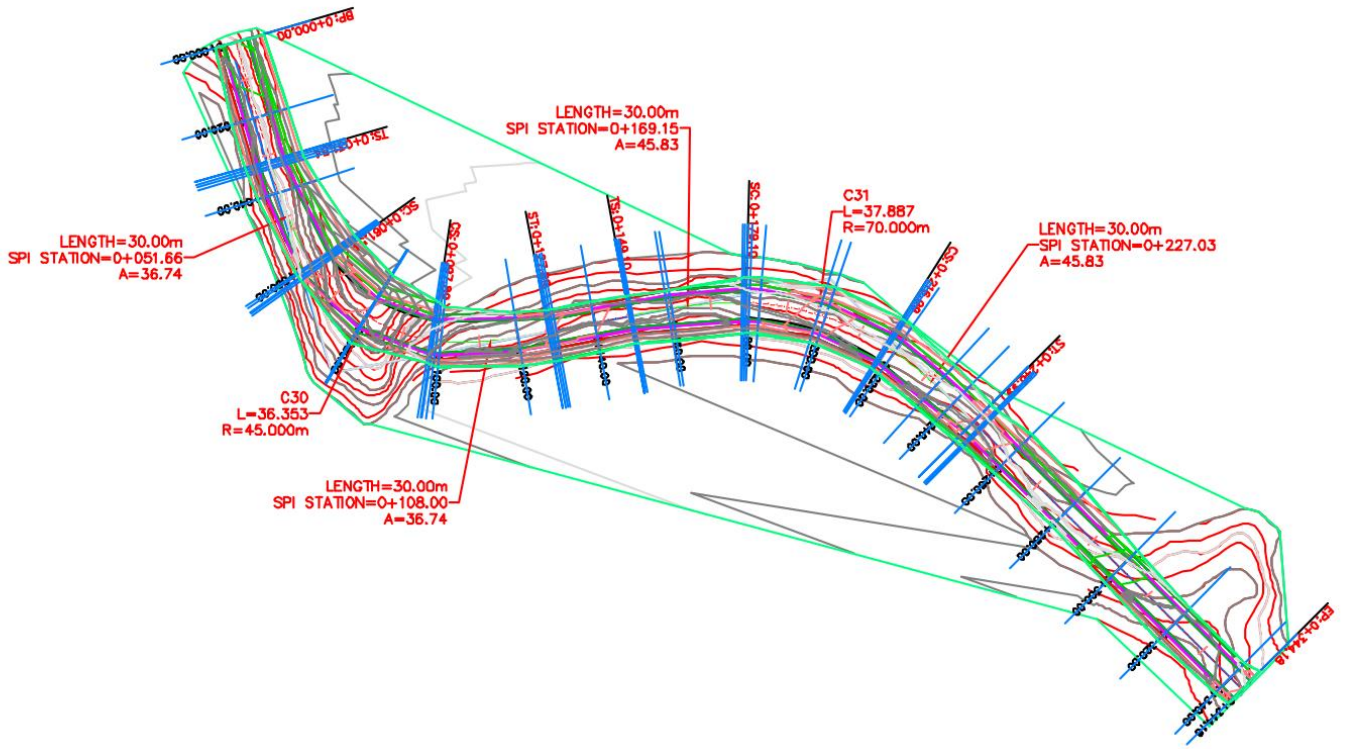
Odvodnja kolnika predviđa se otvorenim sustavom odvodnje prihvaćanjem kolničkih pribrežnih voda u zasjeku i usjeku u betonske rigole te kontroliranim ispuštanjem u teren direktno ili betonskim cijevnim propustima kroz trup kolnika.

## **2.7. Oprema ceste**

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

### **3. GRAFIČKI PRILOZI**

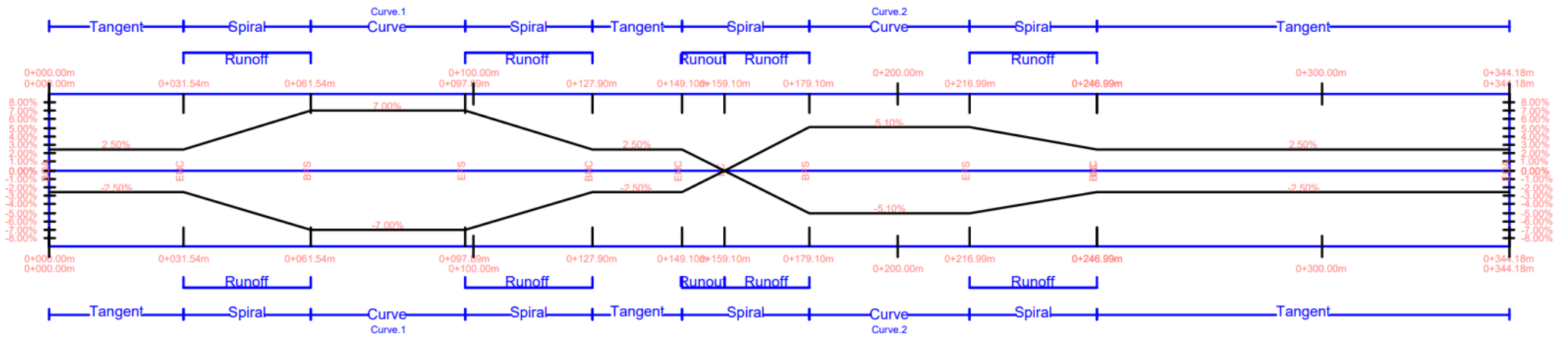
#### **3.1. Situacija M 1:1000**



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

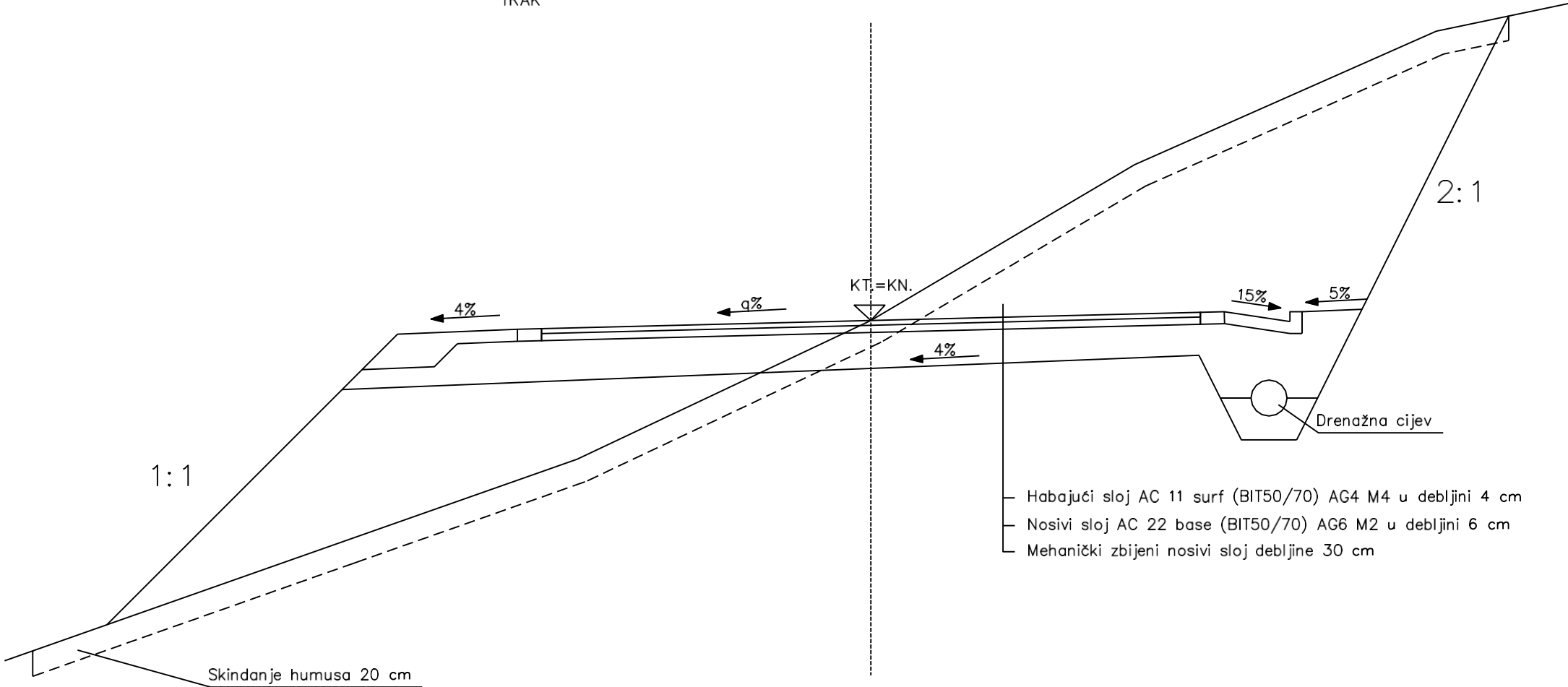
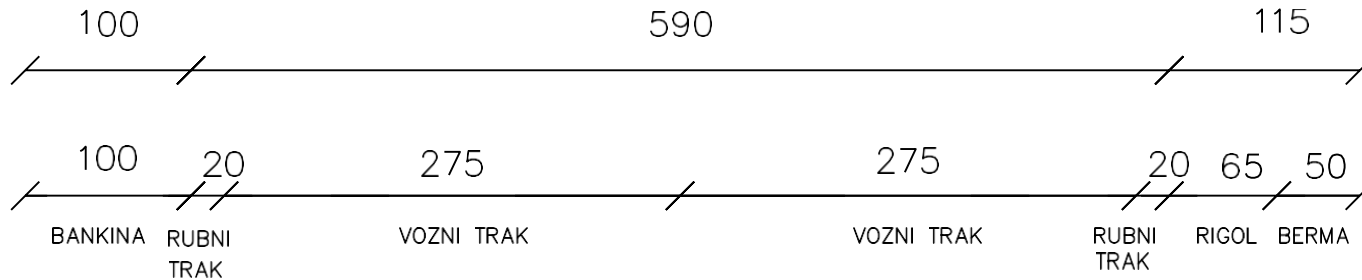


# Superelevation



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

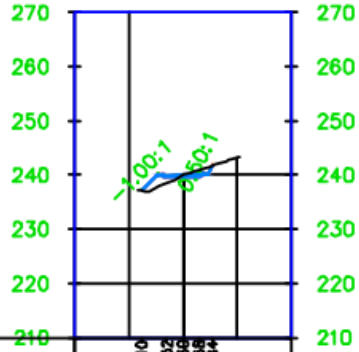




- Habajući sloj AC 11 surf (BIT50/70) AG4 M4 u debljini 4 cm
- Nosivi sloj AC 22 base (BIT50/70) AG6 M2 u debljini 6 cm
- Mehanički zbijeni nosivi sloj debljine 30 cm

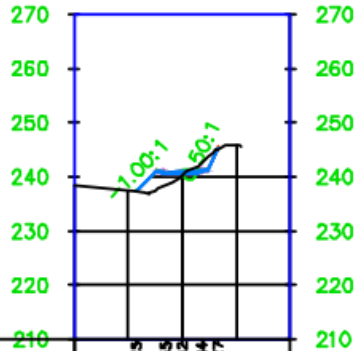
#### **3.4. Karakteristični poprečni presjeci M 1:200**

0+000.00



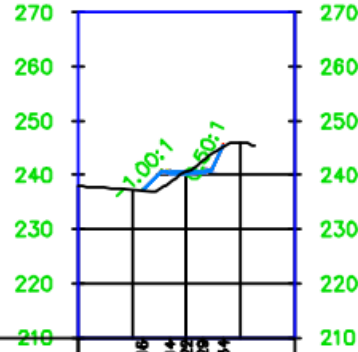
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| Kote projekta     | 237.10 | -7.63 | 237.10 |
| Udaljenost od osi | 239.62 | -3.00 | 239.62 |
| Kote terena       | 239.62 | 0.00  | 239.62 |
|                   | 239.62 | 3.00  | 241.84 |
|                   | 241.84 | 6.10  | 245.84 |

0+032.96



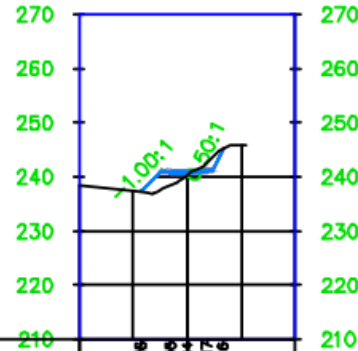
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| Udaljenost od osi | 240.55 | -3.03 | 240.55 |
| Kote terena       | 240.82 | 0.00  | 240.82 |
|                   | 240.84 | 3.64  | 240.84 |
|                   | 245.27 | 6.65  | 245.27 |

0+020.00



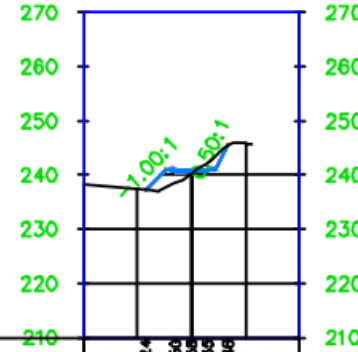
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| Udaljenost od osi | 240.14 | -3.00 | 240.14 |
| Kote terena       | 240.22 | 0.00  | 240.22 |
|                   | 240.29 | 3.00  | 240.29 |
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0+033.68



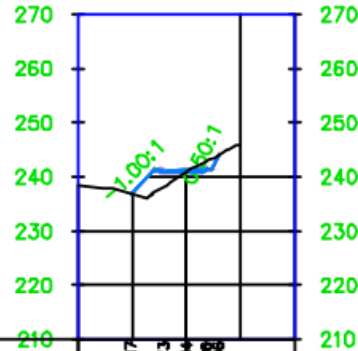
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| Udaljenost od osi | 240.66 | -3.15 | 240.66 |
| Kote terena       | 240.84 | 0.00  | 240.84 |
|                   | 240.87 | 3.64  | 240.87 |
|                   | 245.16 | 6.58  | 245.16 |

0+031.54



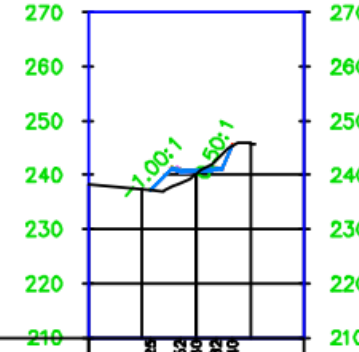
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| Kote terena       | 240.58 | 0.00  | 240.58 |
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|                   | 245.46 | 6.77  | 245.46 |

0+040.00



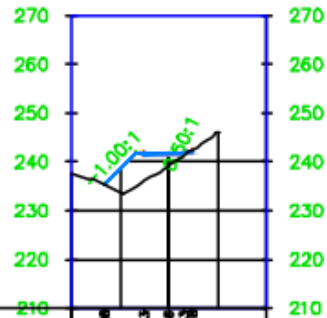
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| Kote projekta     | 236.87 | -10.25 | 236.87 |
| Udaljenost od osi | 240.73 | -4.19  | 240.73 |
| Kote terena       | 240.84 | 0.00   | 240.84 |
|                   | 241.98 | 3.64   | 241.98 |
|                   | 245.98 | 7.71   | 245.98 |

0+032.24



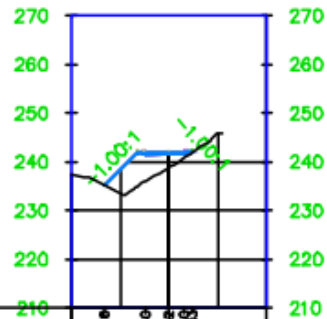
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| Udaljenost od osi | 240.52 | -3.00 | 240.52 |
| Kote terena       | 240.82 | 0.00  | 240.82 |
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|                   | 245.46 | 6.73  | 245.46 |

0+060.00



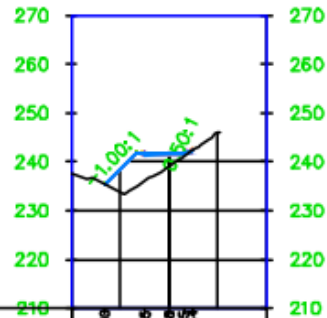
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| Kote projekta     | 235.36 | 241.33 | 241.48 | 242.38 |
| Udaljenost od osi | -13.1  | 0.00   | 0.00   | 3.00   |
| Kote terena       | 235.36 | 241.33 | 241.48 | 242.38 |

0+061.99



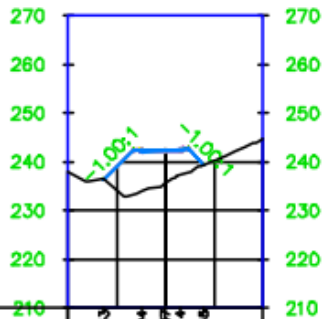
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| Kote projekta     | 235.19 | 241.40 | 241.52 | 242.53 |
| Udaljenost od osi | -13.3  | -4.57  | 0.00   | 3.79   |
| Kote terena       | 235.19 | 241.40 | 241.52 | 242.53 |

0+060.54



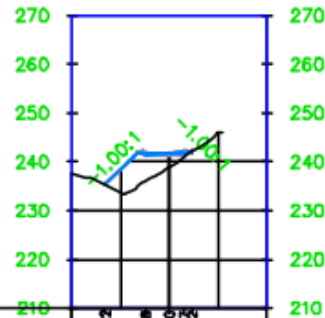
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| Udaljenost od osi | -13.2  | -4.95  | 0.00   | 3.79   |
| Kote terena       | 235.36 | 241.35 | 241.48 | 242.55 |

0+079.62



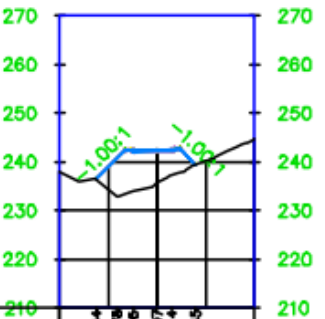
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| Kote projekta     | 236.43 | 241.84 | 242.07 | 242.14 |
| Udaljenost od osi | -12.5  | -4.57  | 0.00   | 3.00   |
| Kote terena       | 236.43 | 241.84 | 242.07 | 242.14 |

0+061.26



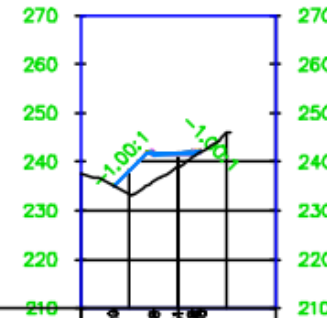
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| Udaljenost od osi | -13.2  | -4.89  | 0.00   | 3.00   |
| Kote terena       | 235.72 | 241.38 | 241.50 | 242.72 |

0+079.72



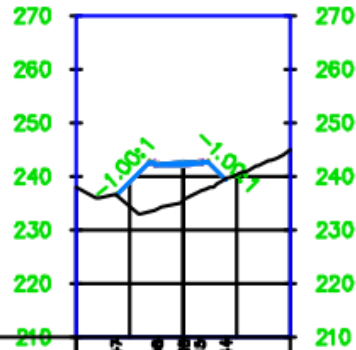
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| Kote terena       | 236.44 | 240.78 | 242.07 | 242.14 |

0+061.54



|                   |        |        |        |        |
|-------------------|--------|--------|--------|--------|
| Kote projekta     | 235.26 | 241.38 | 241.51 | 242.58 |
| Udaljenost od osi | -13.2  | -4.87  | 0.00   | 3.79   |
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0+080.00



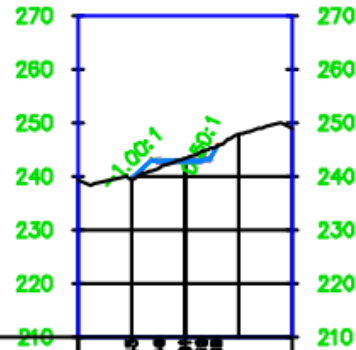
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0+098.89



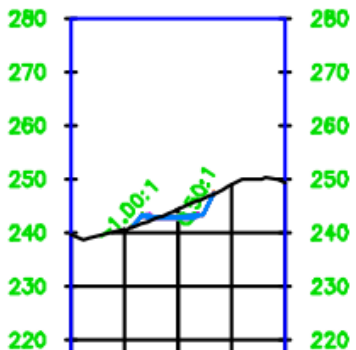
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| Kote projekta     |        |        |        |        |        |
| Udaljenost od osi | 0.00   | 9.58   | 4.87   | 3.00   | 6.35   |
| Kote terena       | 240.15 | 242.94 | 242.68 | 242.74 | 246.71 |

0+097.25



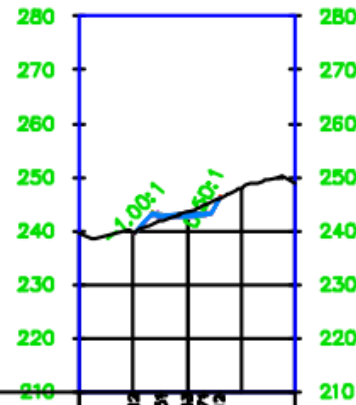
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| Kote projekta     |        |        |        |        |        |
| Udaljenost od osi | 0.00   | 10.11  | 4.87   | 3.00   | 3.86   |
| Kote terena       | 238.48 | 242.48 | 242.81 | 242.88 | 245.88 |

0+100.00



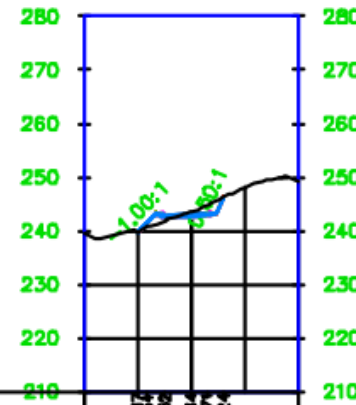
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|-------------------|--------|--------|--------|--------|--------|
| Kote projekta     |        |        |        |        |        |
| Udaljenost od osi | 0.00   | 8.88   | 4.87   | 3.00   | 6.60   |
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0+097.89



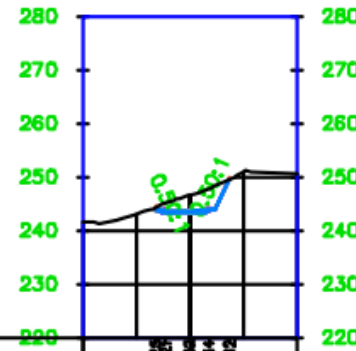
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|-------------------|--------|--------|--------|--------|--------|
| Kote projekta     |        |        |        |        |        |
| Udaljenost od osi | 0.00   | 8.87   | 4.88   | 3.00   | 6.07   |
| Kote terena       | 239.82 | 242.51 | 242.83 | 242.71 | 246.12 |

0+098.07



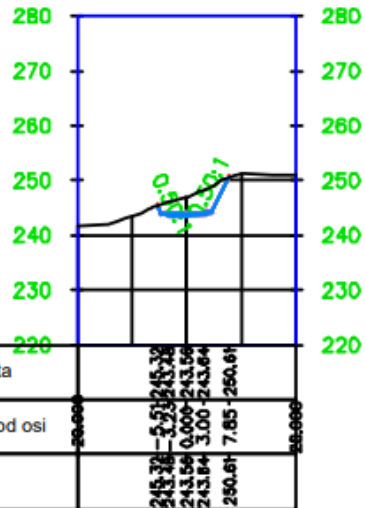
|                   |        |        |        |        |        |
|-------------------|--------|--------|--------|--------|--------|
| Kote projekta     |        |        |        |        |        |
| Udaljenost od osi | 0.00   | 8.90   | 4.88   | 3.00   | 6.13   |
| Kote terena       | 239.57 | 242.65 | 242.84 | 242.71 | 246.24 |

0+120.00

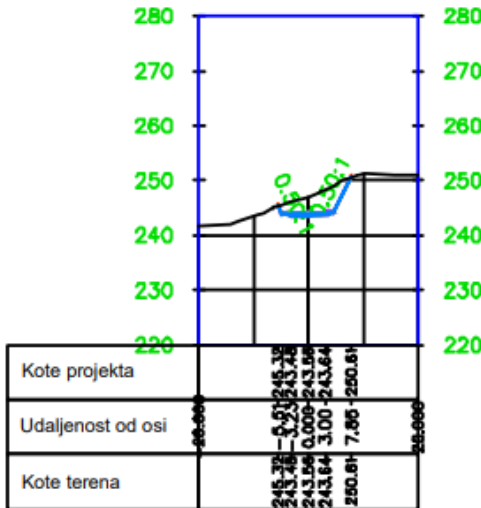


|                   |        |        |        |        |  |
|-------------------|--------|--------|--------|--------|--|
| Kote projekta     |        |        |        |        |  |
| Udaljenost od osi | 0.00   | 6.76   | 3.84   | 7.47   |  |
| Kote terena       | 244.25 | 243.72 | 243.84 | 246.82 |  |

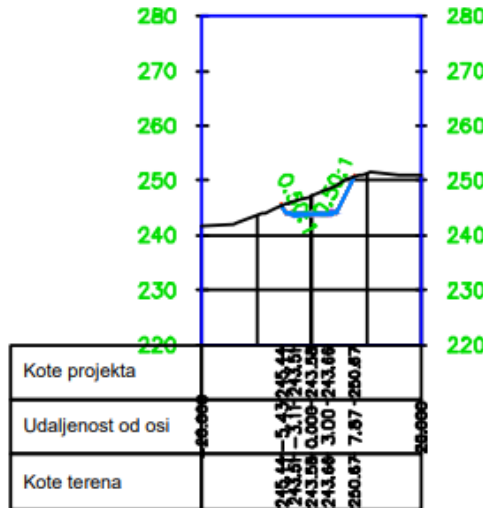
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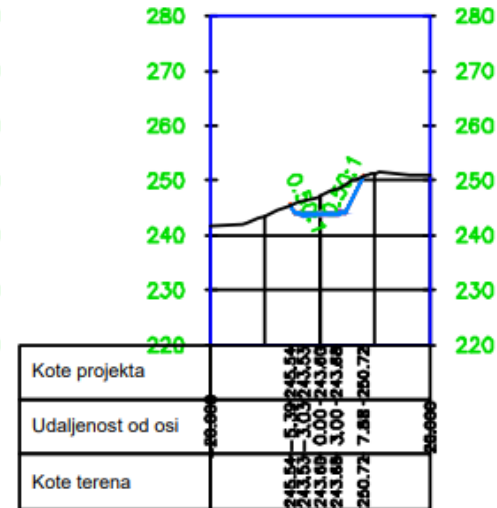
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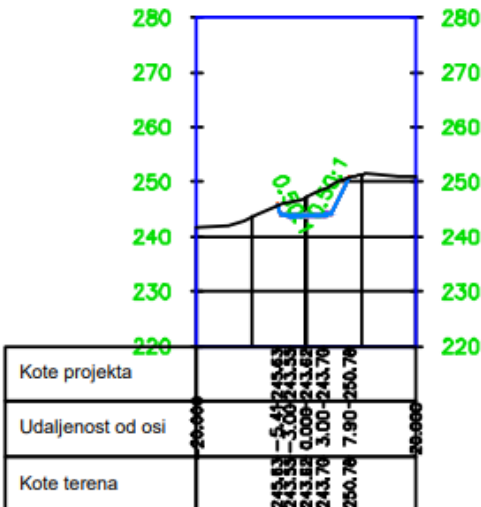
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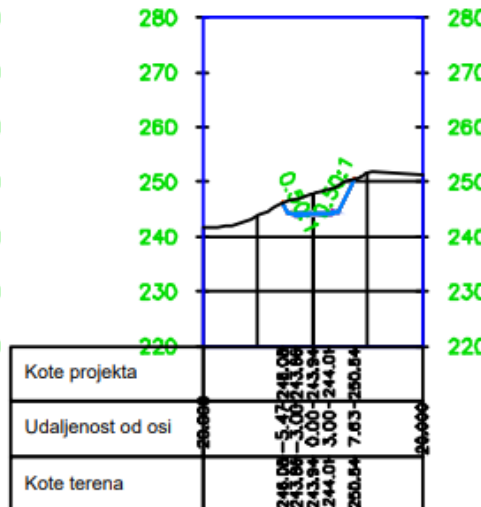
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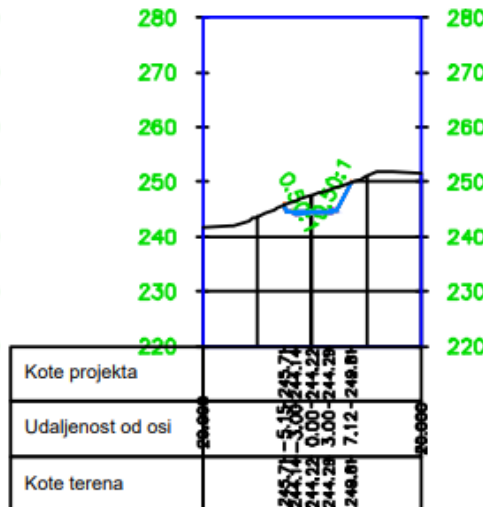
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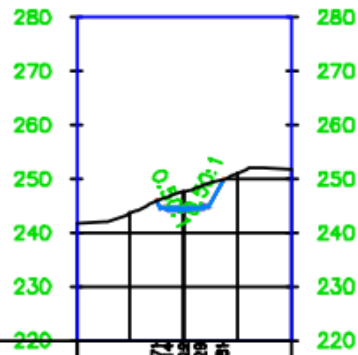
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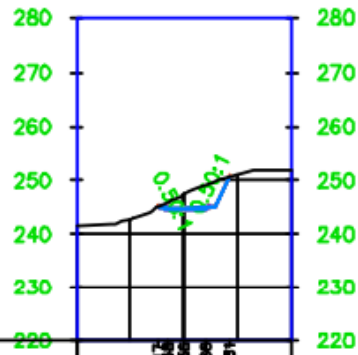


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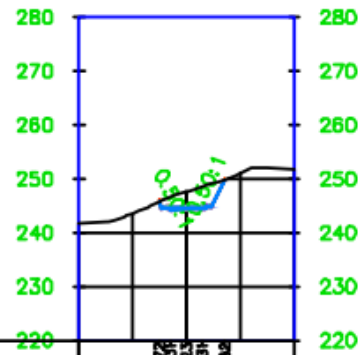
|                   |        |        |        |        |        |
|-------------------|--------|--------|--------|--------|--------|
| Kote projekta     | 245.71 | 245.71 | 244.29 | 244.29 | 249.81 |
| Udaljenost od osi | 0.00   | 5.13   | 0.00   | 3.00   | 7.12   |
| Kote terena       | 245.71 | 245.71 | 244.29 | 244.29 | 249.81 |

0+160.00



|                   |        |        |        |        |        |
|-------------------|--------|--------|--------|--------|--------|
| Kote projekta     | 245.12 | 245.12 | 244.58 | 244.58 | 250.81 |
| Udaljenost od osi | 0.00   | 5.70   | 0.00   | 4.08   | 8.40   |
| Kote terena       | 245.12 | 245.12 | 244.58 | 244.58 | 250.81 |

0+149.55



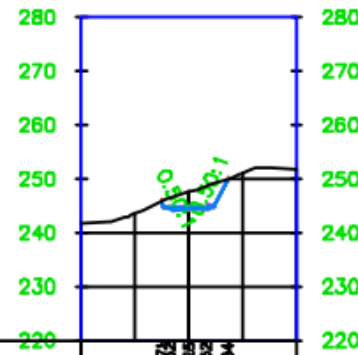
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| Kote projekta     | 245.72 | 245.72 | 244.31 | 244.31 | 249.82 |
| Udaljenost od osi | 0.00   | 5.15   | 0.00   | 3.01   | 7.13   |
| Kote terena       | 245.72 | 245.72 | 244.31 | 244.31 | 249.82 |

0+178.23



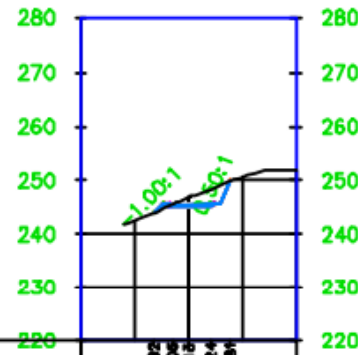
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|-------------------|--------|--------|--------|--------|--------|
| Kote projekta     | 243.93 | 243.93 | 245.05 | 245.19 | 245.23 |
| Udaljenost od osi | 6.32   | 3.00   | 0.00   | 4.24   | 7.91   |
| Kote terena       | 243.93 | 245.05 | 245.19 | 245.23 | 248.86 |

0+149.99



|                   |        |        |        |        |        |
|-------------------|--------|--------|--------|--------|--------|
| Kote projekta     | 245.71 | 245.71 | 244.32 | 244.32 | 249.84 |
| Udaljenost od osi | 0.00   | 5.13   | 0.00   | 3.05   | 7.17   |
| Kote terena       | 245.71 | 245.71 | 244.32 | 244.32 | 249.84 |

0+178.66



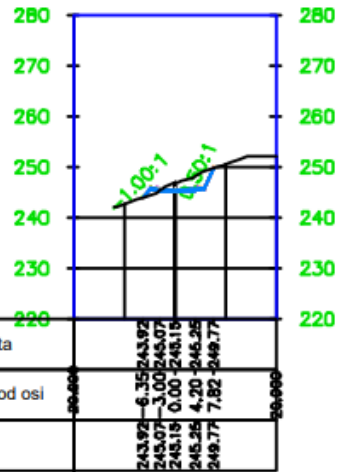
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|-------------------|--------|--------|--------|--------|--------|
| Kote projekta     | 243.92 | 243.92 | 245.06 | 245.18 | 245.24 |
| Udaljenost od osi | 6.34   | 3.00   | 0.00   | 4.21   | 7.86   |
| Kote terena       | 243.92 | 245.06 | 245.18 | 245.24 | 249.81 |

0+159.10

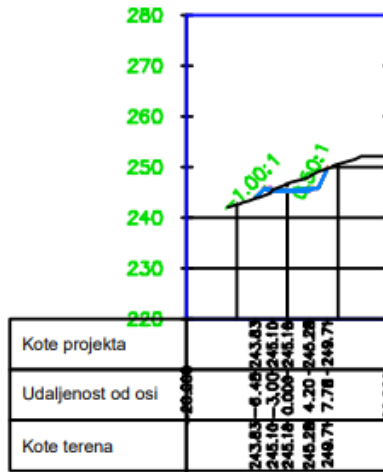


|                   |        |        |        |        |        |
|-------------------|--------|--------|--------|--------|--------|
| Kote projekta     | 245.80 | 245.80 | 244.53 | 244.63 | 250.57 |
| Udaljenost od osi | 0.00   | 7.00   | 0.00   | 3.98   | 8.32   |
| Kote terena       | 245.80 | 245.80 | 244.53 | 244.63 | 250.57 |

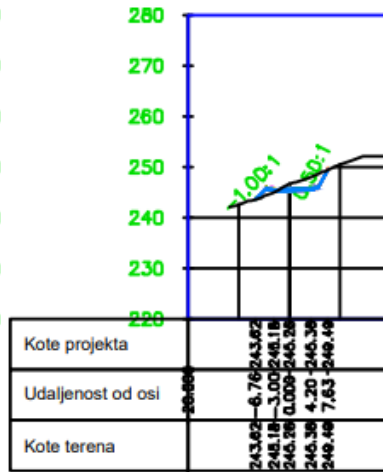
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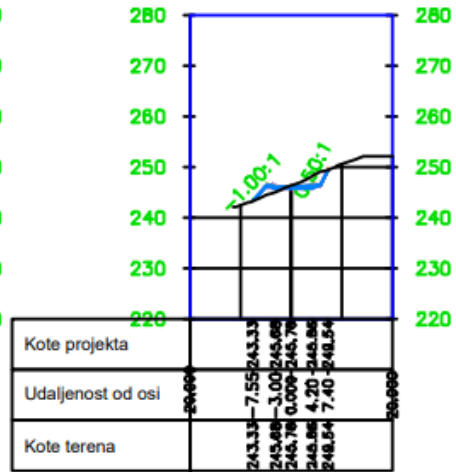
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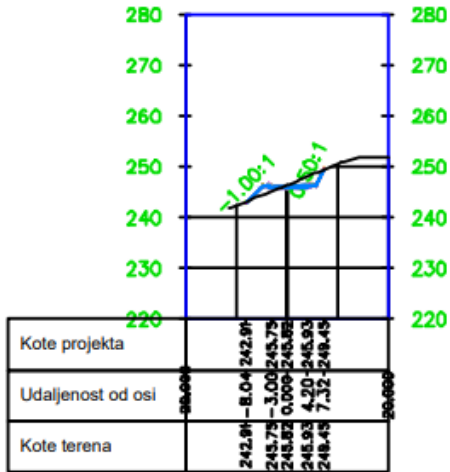
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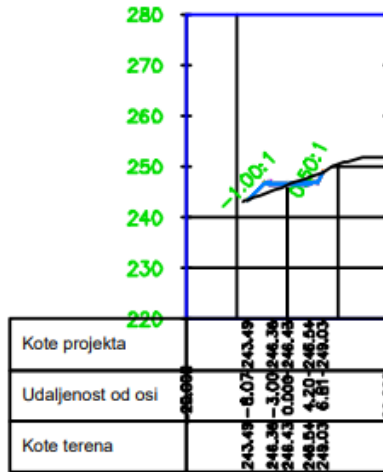
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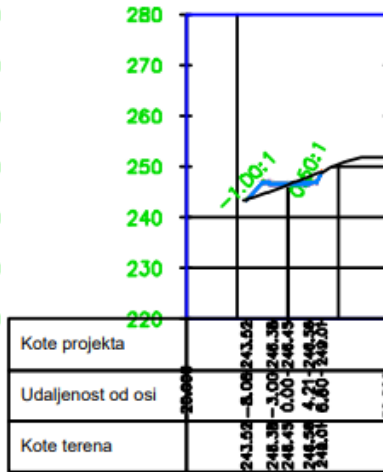
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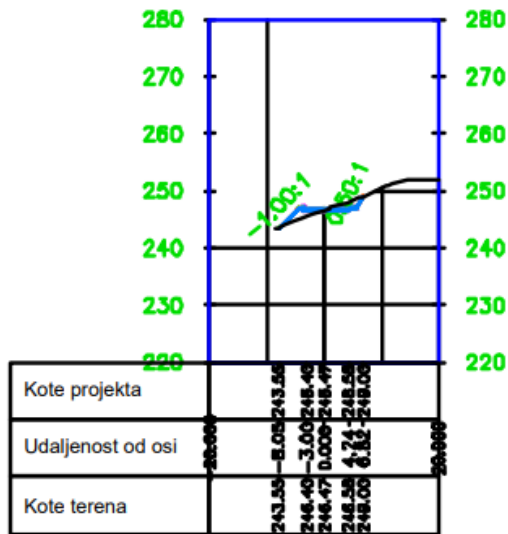


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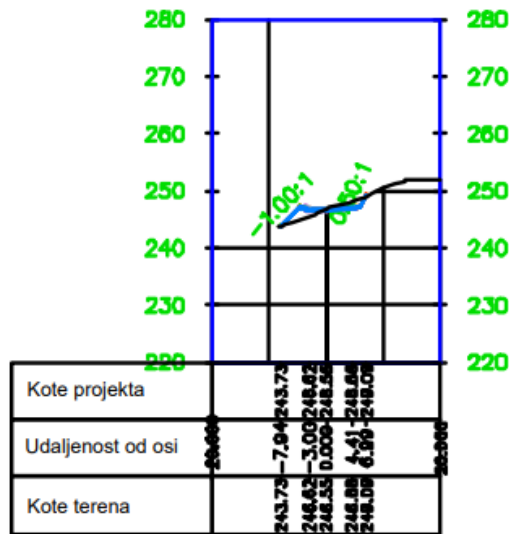




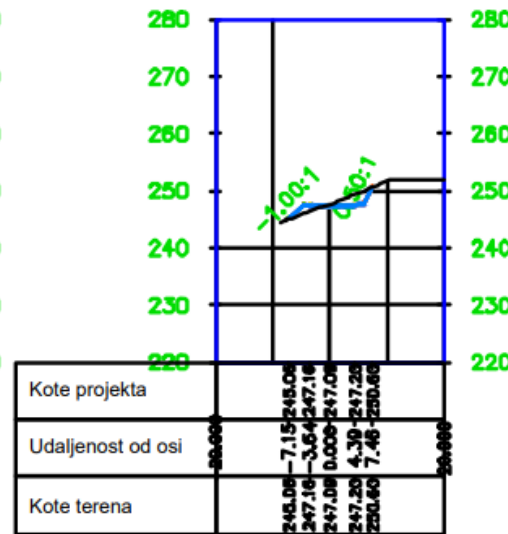
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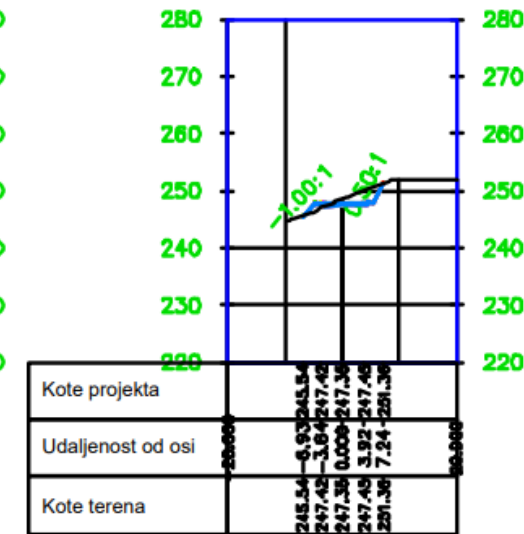
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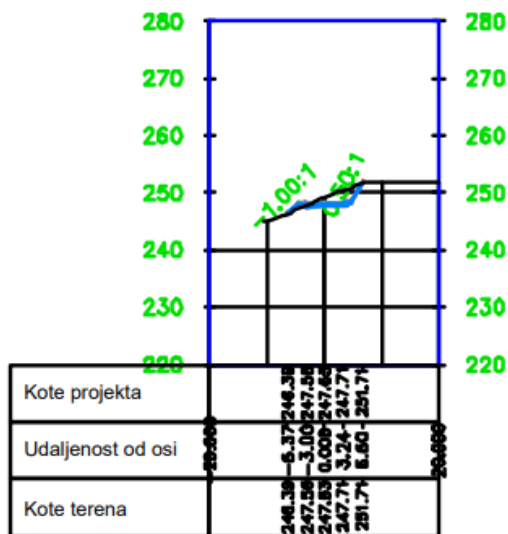
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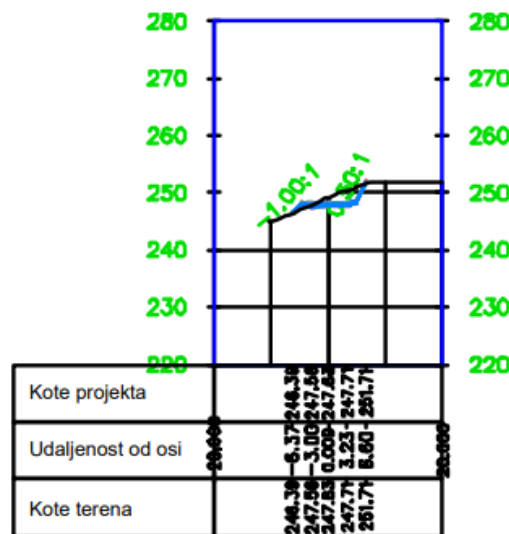
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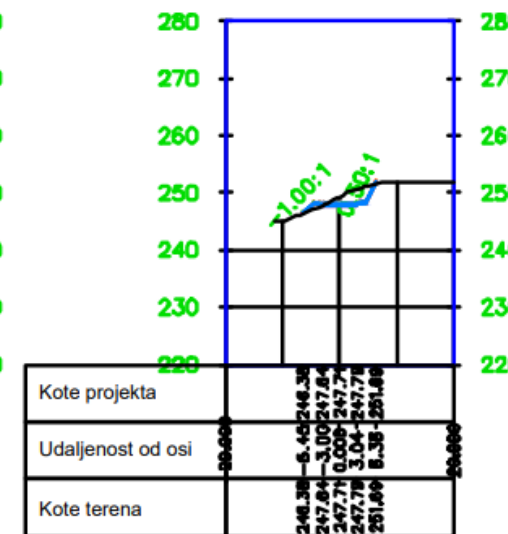
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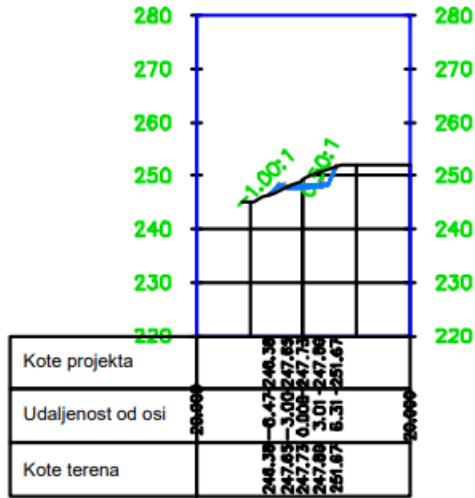
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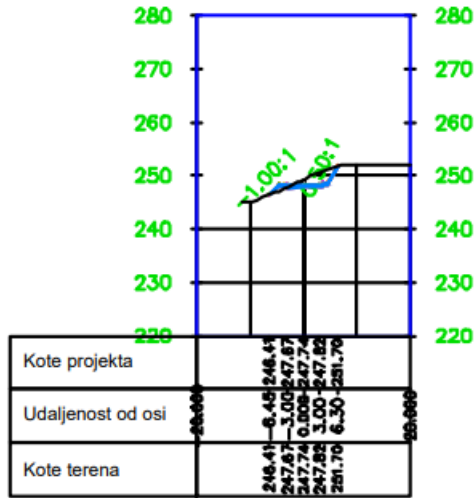
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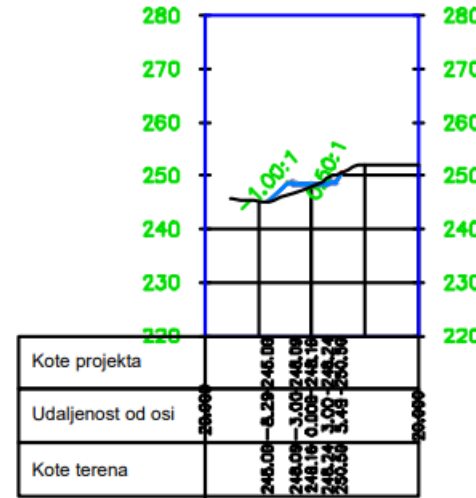
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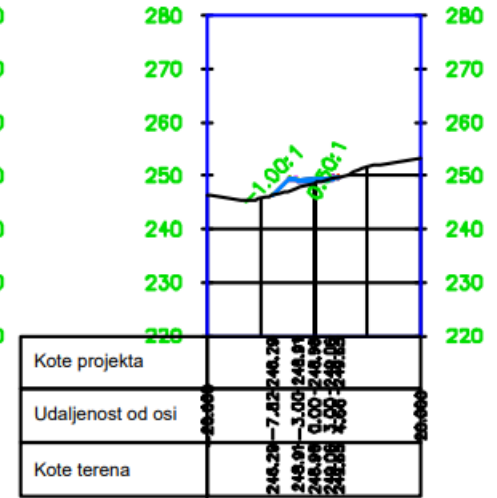
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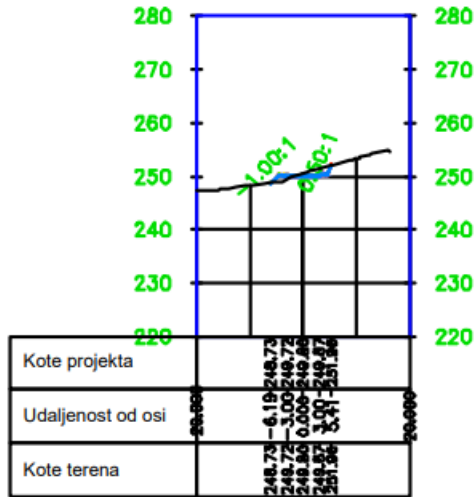
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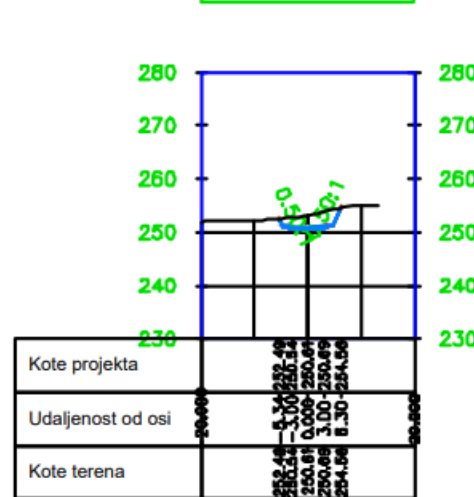
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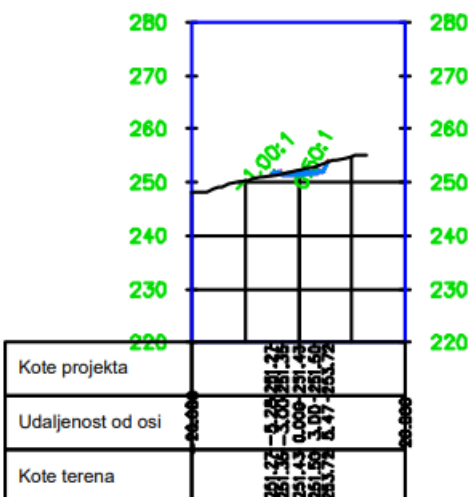
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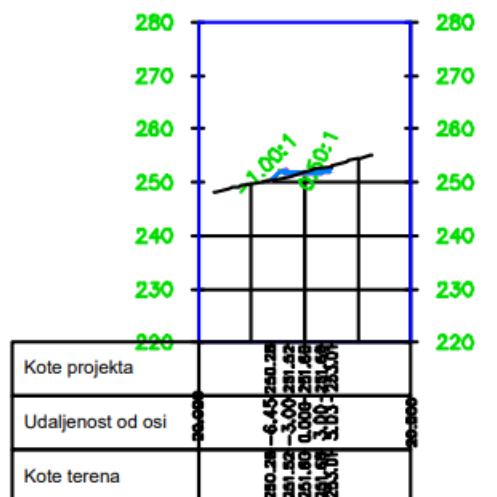
0+320.00



0+340.00



0+344.18



#### **4. TABLICA UKUPNOG VOLUMENA ZEMLJANIH RADOVA**

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

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

## 5. OBRADA NA RAČUNALU

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

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

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

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

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

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

## **6. IZLAZNI PODACI IZ PROGRAMA**

### **6.1. Koordinatni račun glavnih točaka**

## Alignment: os\_1\_(6)

### Description:

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

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

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

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



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

Curve Point Data

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

Circular Curve Data

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

Spiral Point Data

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

Spiral Curve Data: clothoid

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

Tangent Data

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

Tangent Data

| Parameter | Value | Parameter | Value |
|-----------|-------|-----------|-------|
|-----------|-------|-----------|-------|

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

Spiral Point Data

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

Spiral Curve Data: clothoid

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

Curve Point Data

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

Circular Curve Data

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

Spiral Point Data

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

Spiral Curve Data: clothoid

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

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

Tangent Data

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

Tangent Data

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

**Alignment: os 1 (6)-Left-3.000**

**Description:**



Tangent Data

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

Tangent Data

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

Spiral Point Data

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

Spiral Curve Data: clothoid

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

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Curve Point Data

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

Circular Curve Data

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

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Tangent Data

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

Tangent Data

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

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Curve Point Data

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

Circular Curve Data

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

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Curve Point Data

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

PCC: 0+91.905 593.302 864.967

Circular Curve Data

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

Curve Point Data

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

Circular Curve Data

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

Tangent Data

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

Tangent Data

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

Curve Point Data

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

Circular Curve Data

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

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

Tangent Data

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

Tangent Data

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

Spiral Point Data

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

Spiral Curve Data: clothoid

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

Curve Point Data

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

Circular Curve Data

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

Spiral Point Data

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

Spiral Curve Data: clothoid

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

Tangent Data

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

Tangent Data

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

**Alignment: os 1 (6)-Right-3.000**

**Description:**

Tangent Data

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

Tangent Data

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

Spiral Point Data

| Description | Station  | Northing | Easting |
|-------------|----------|----------|---------|
| TS:         | 0+31.539 | 633.623  | 820.331 |

SPI: 613.822 826.094  
 SC: 0+62.539 605.164 832.230

Spiral Curve Data: clothoid

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

Curve Point Data

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

Circular Curve Data

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

Spiral Point Data

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

Spiral Curve Data: clothoid

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

Tangent Data



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

Tangent Data

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

Curve Point Data

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

Circular Curve Data

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

Tangent Data

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

Tangent Data

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

Curve Point Data

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

Circular Curve Data

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

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

Curve Point Data

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

Circular Curve Data

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

Curve Point Data

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

Circular Curve Data

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

Tangent Data

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

Tangent Data

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

Curve Point Data

| Description | Station  | Northing | Easting  |
|-------------|----------|----------|----------|
| PC:         | 2+49.328 | 564.023  | 1002.826 |

RP: 557.809 997.787  
 PT: 2+50.141 563.480 1003.430

Circular Curve Data

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

Tangent Data

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

Tangent Data

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

## **6.2. Koordinatni račun detaljnih točaka osi**

Alignment Name: os 1 (6)

Description:

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

Station Increment: 20.00

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

### **6.3. Račun kota kolnika**

Corridor Name: koridorr

Description:

Base Alignment Name: os 1 (6)

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

CHAINAGE 0+000.00

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

CHAINAGE 0+020.00

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

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

CHAINAGE 0+040.00

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

CHAINAGE 0+060.00

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



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

CHAINAGE 0+080.00

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

CHAINAGE 0+100.00

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

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

CHAINAGE 0+120.00

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

CHAINAGE 0+140.00

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

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

CHAINAGE 0+160.00

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

CHAINAGE 0+180.00

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

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

CHAINAGE 0+200.00

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

CHAINAGE 0+220.00

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

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

CHAINAGE 0+240.00

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

CHAINAGE 0+260.00

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

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

CHAINAGE 0+280.00

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

CHAINAGE 0+300.00

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

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

CHAINAGE 0+320.00

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

CHAINAGE 0+340.00

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

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



#### **6.4. Vertikalni tok trase**

Vertical Alignment: niveletaa

Description:

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

| <b>PVI</b> | <b>Station</b> | <b>Grade Out</b> | <b>Curve Length</b> |
|------------|----------------|------------------|---------------------|
| 0.00       | 0+000.00       | 3.10%            |                     |
| 1.00       | 0+208.18       | 4.08%            | 50.963m             |

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

## 7. LITERATURA

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