

Idejni projekt ceste

Vučko, Hrvoje

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2016

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UNIVERSITY OF SPLIT



DIGITALNI AKADEMSKI ARHIVI I REPOZITORIJI

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

ZAVRŠNI RAD

Hrvoje Vučko

Split, 2015./2016.

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

IDEJNI PROJEKT CESTE

Završni rad

Split, 2015./2016.

Sažetak:

Priložen je idejni projekt ceste 5.kategorije na geodetskoj podlozi u mjerilu 1:1000, izrađene u programu AutoCad Civil 3D Metric.

Ključne riječi:

Idejni projekt ceste

Abstract:

Attached is a preliminary design of the road 5.category on the geodetic surveying in scale 1:1000, made in AutoCad CIVIL 3D Metric.

Keywords:

The preliminary design of the road

SADRŽAJ:

1. Tehnički opis
2. Situacija
3. Vitoperenje
4. Uzdužni presjek
5. Karakteristični poprečni presjeci

PRILOZI:

Prilog 1- Horizontalni tok trase

Prilog 2- Koordinatni račun detaljnih točaka osi

Prilog 3- Račun kota kolnika

Prilog 4- Vertikalni tok trase

TEHNIČKI OPIS

1)OPĆENITO

-Izrađen je idejni projekt ceste na priloženoj geodetskoj podlozi. Cesta je 5. kategorije s PGDP-om koji iznosi 950 vozila na dan. Projektna brzina zadane trase iznosi 40km/h, dok predviđena duljina trase iznosi 278.14 metara.

2)HORIZONTALNI ELEMENTI

-Za projektnu brzinu od 40 km/h minimalni dozvoljen radijus iznosi 45 m, a minimalno dozvoljena duljina prijelaznice iznosi 30 m.

-Projektirana trasa ima dvije krivine. U prvoj krivini radijus iznosi 90 m, a prijelazna krivina iznosi 30 m. U drugoj krivini radijus iznosi 45 m, a duljina prijelazne krivine iznosi 30 m.

3)VERTIKALNI ELEMENTI

-Za cestu 5. kategorije i projektne brzine 40 km/h, maksimalni dozvoljeni nagib nivelete iznosi 12%, minimalni radijus konveksne vertikalne krivine iznosi 300 m, konkavne vertikalne krivine iznosi 200 m.

Primijenjen je konkavni radijus od 5000m.

-Niveleta se sastoji od dvije tangente s ubačenim vertikalnim kružnim lukom. Prva tangenta ima nagib od 6,84%, a drugi nagib je predviđen u padu od 3,52%.

4)POPREČNI PRESJEK

-Poprečni presjek se sastoji od dva prometna traka širine 3,00m. Predviđeni poprečni nagib kolnika u pravcu iznosi 2.5%, a maksimalni predviđeni poprečni nagib u krivini iznosi 7%. Ugrađen je betonski rubni trak širine 20 cm, jednakog poprečnog nagiba kao i prometni trak. Bankina i berma su širine 1 m, poprečni nagib bankine iznosi 4%, a poprečni nagib berme iznosi 5%. Trasa se velikim dijelom svoje dužine nalazi u zasjeku, a tek malim dijelom u nasipu. Nagib pokosa usjeka iznosi 1:1, a nagib pokosa nasipa iznosi 1:1.5.

5)KOLNIČKA KONSTRUKCIJA

-Projektom je predviđena sljedeća kolnička konstrukcija:

-habajući sloj (asfalt-beton) AB 11

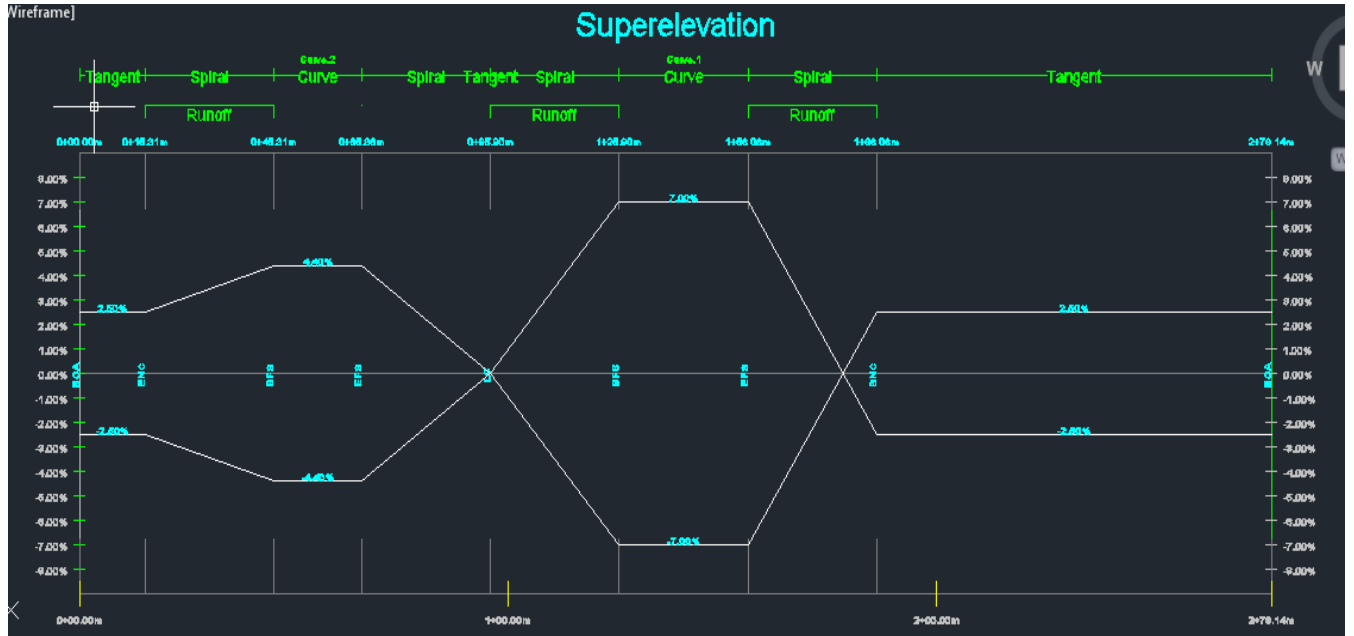
-bitumenizirani nosivi sloj BNS 22

-mehanički zbijeni nosivi sloj 30 cm

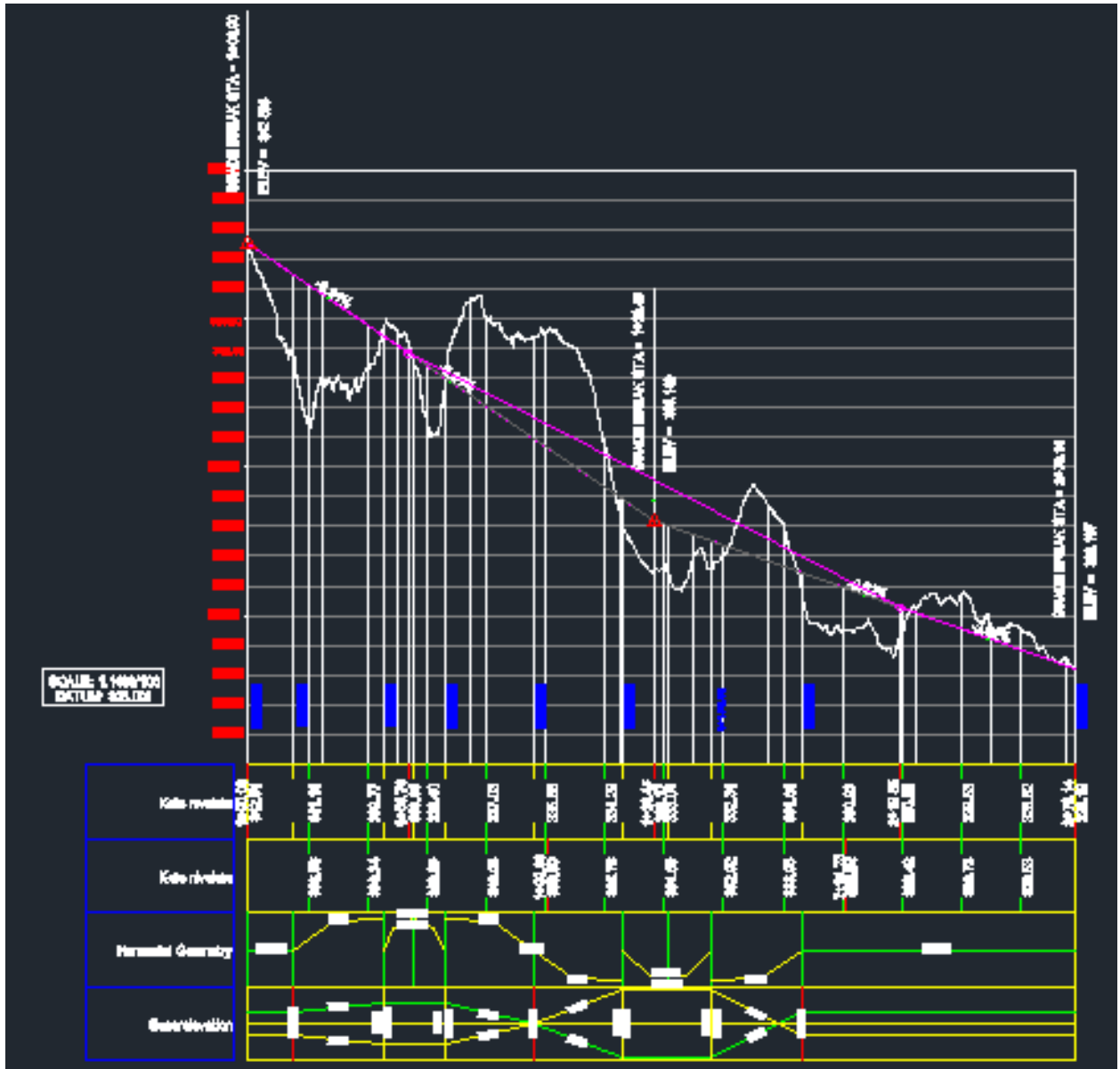
6)ODVODNJA

-Odvodnja kolnika predviđa se otvorenim sustavom odvodnje prihvaćanjem kolničkih i pribrežnih voda u zasjeku i usjeku u betonske rigole, te dalje kontroliranom odvodnjom preko drenažnih cijevi direktno u teren.

VITOPERENJE



UZDUŽNI PRESJEK



KARAKTERISTIČNI POPREČNI PRESJECI

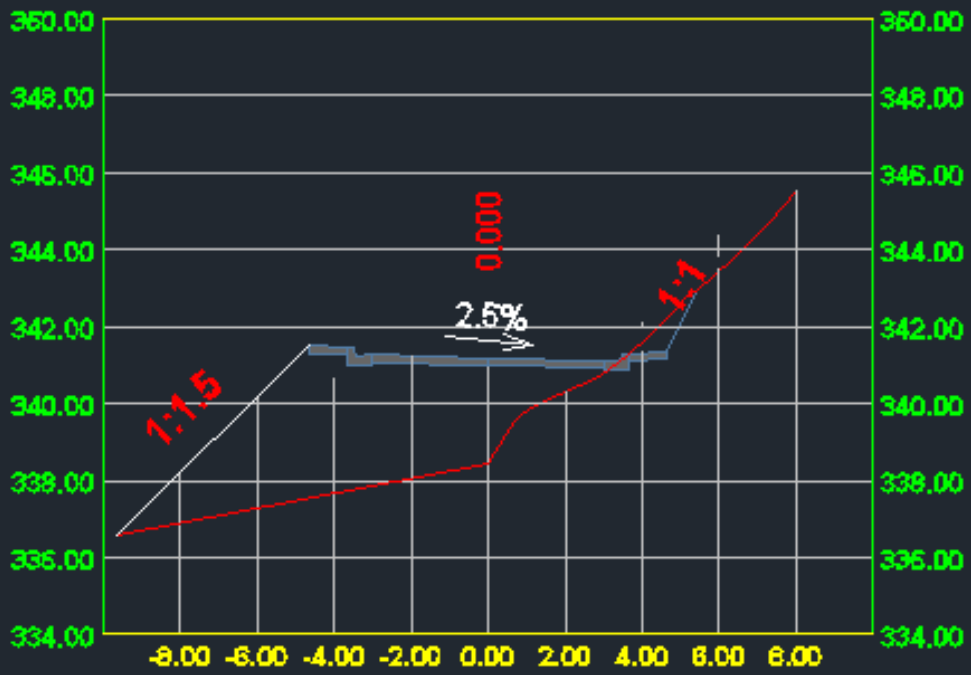


PRESJEK 2

K.T. :341.14m
K.N. :336.66m



0+15.31

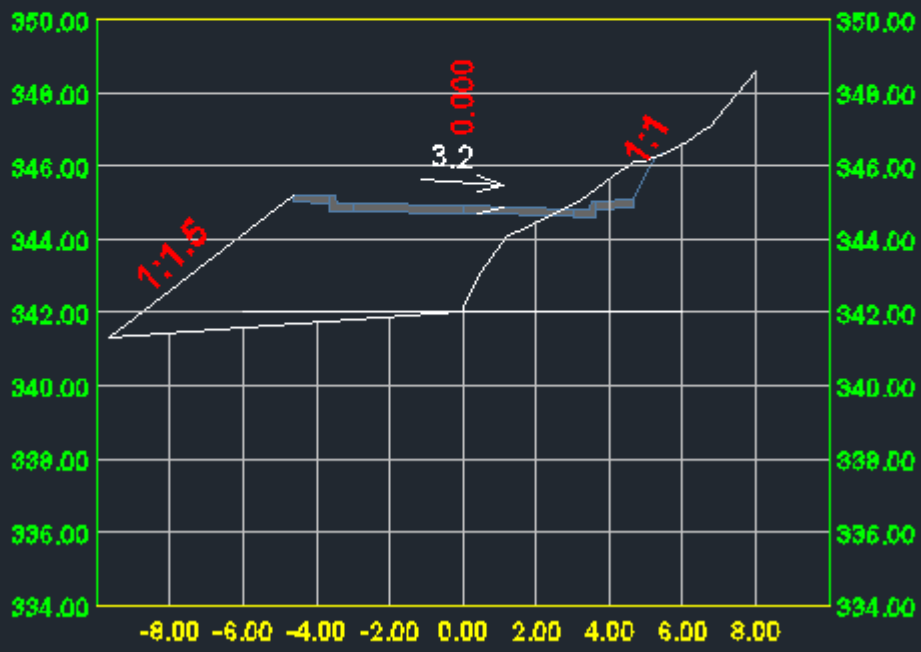


PRESJEK 3

K.T. : 338.00m

K.N. : 340.80m

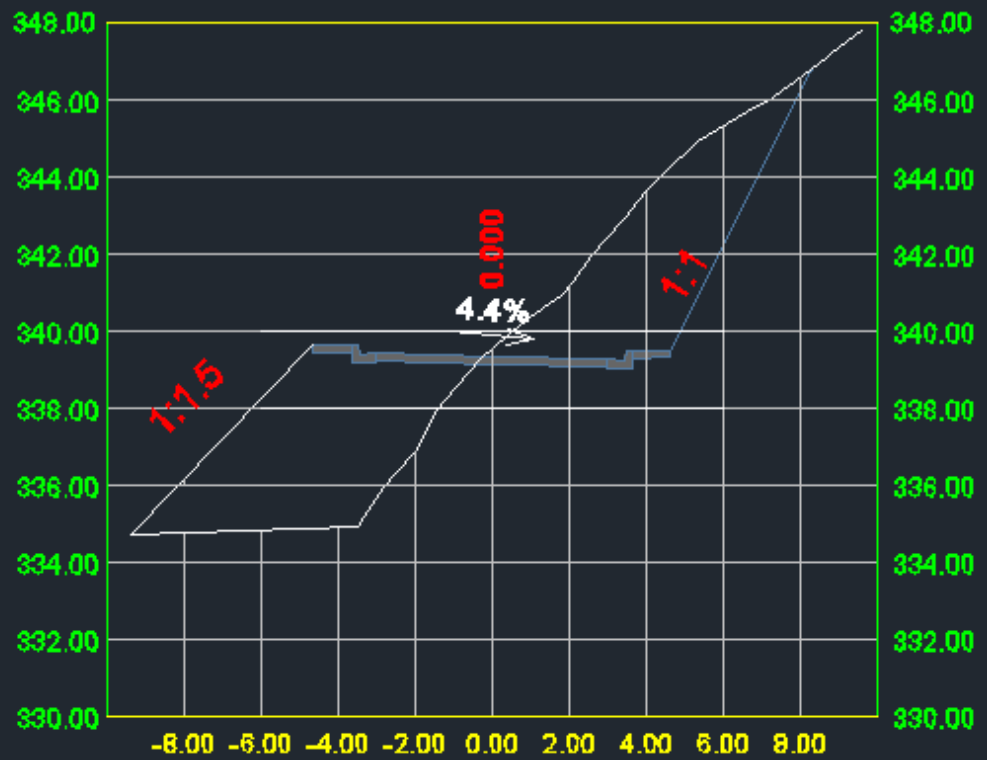
0+25.00



PRESJEK 4

K.T. :339.60m
K.N. :339.20m

0+45.31

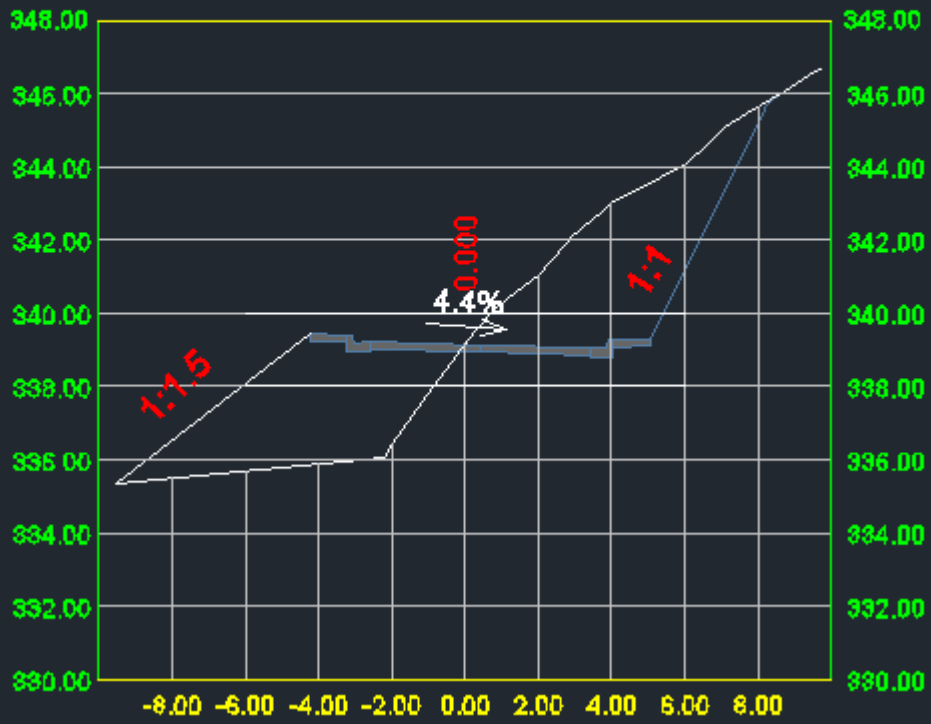


PRESJEK 5

K.T. :339.70m

K.N. :339.10m

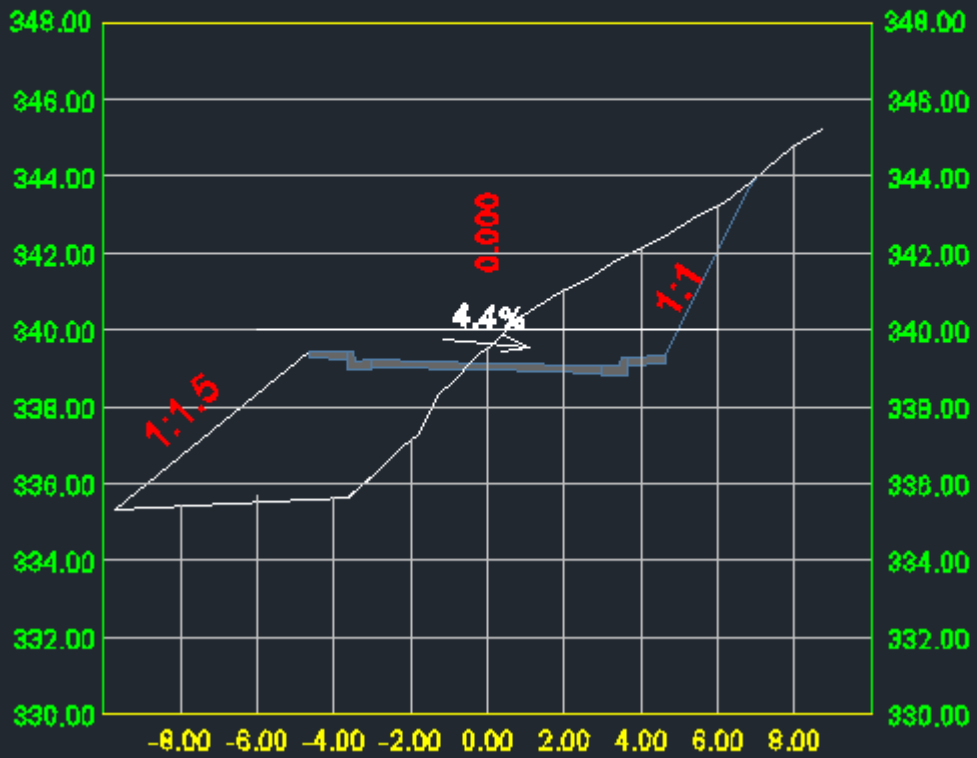
0+50.00



PRESJEK 6

K.T. : 339.20m
K.N. : 338.90m

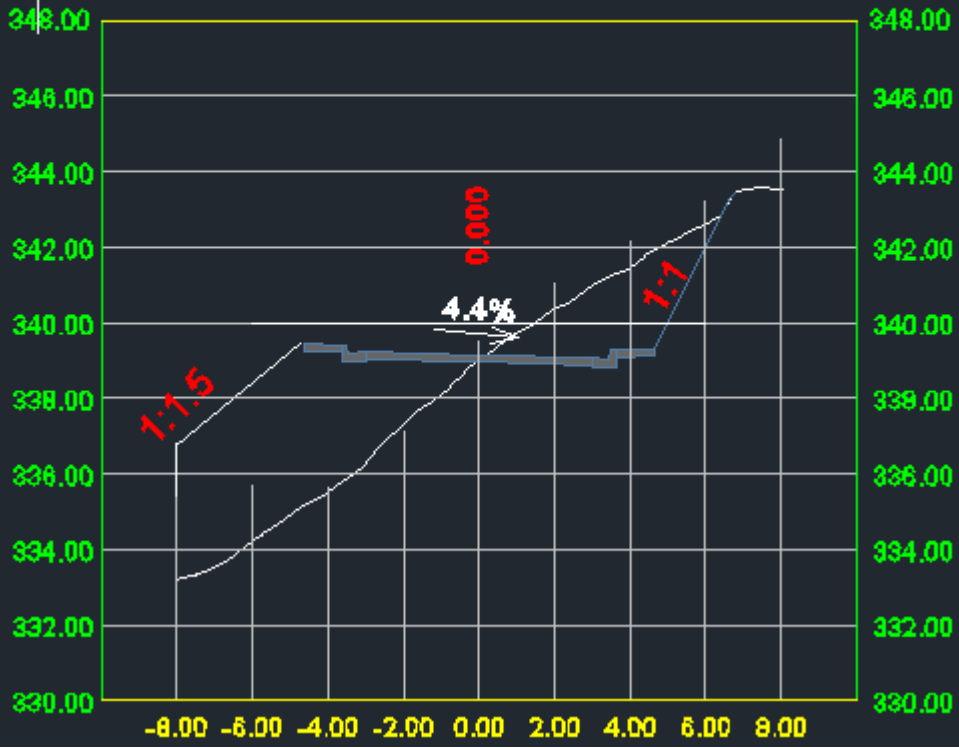
0+53.70



PRESJEK 7

K.T. : 338.80m
K.N. : 338.80m

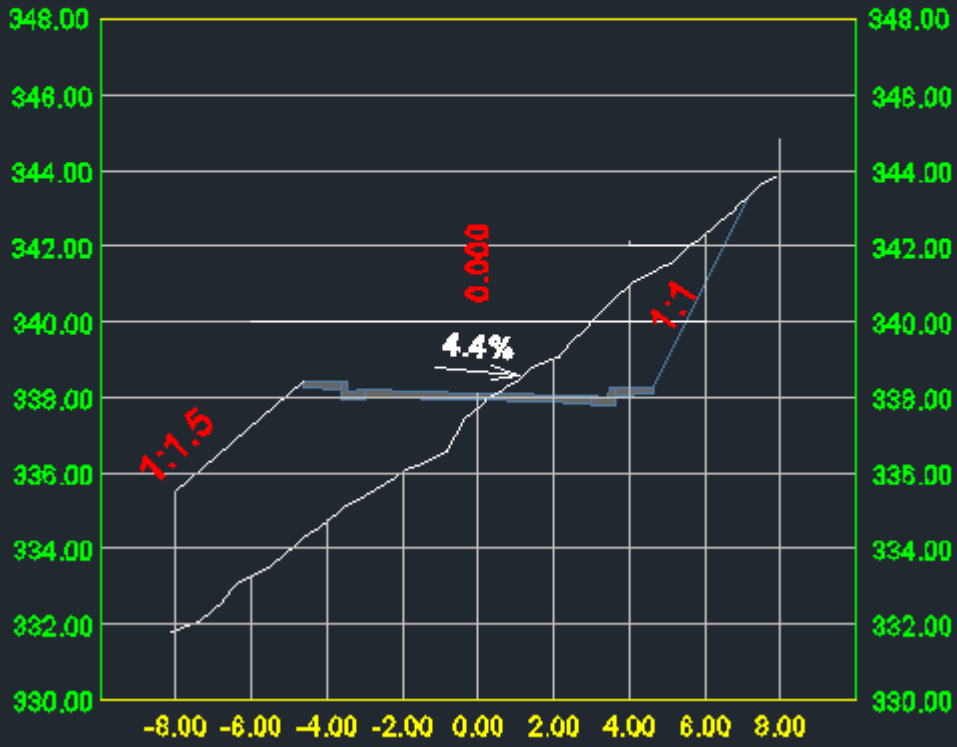
0+55.58



PRESJEK 8

K.T. :337.60m
K.N. 338.10m

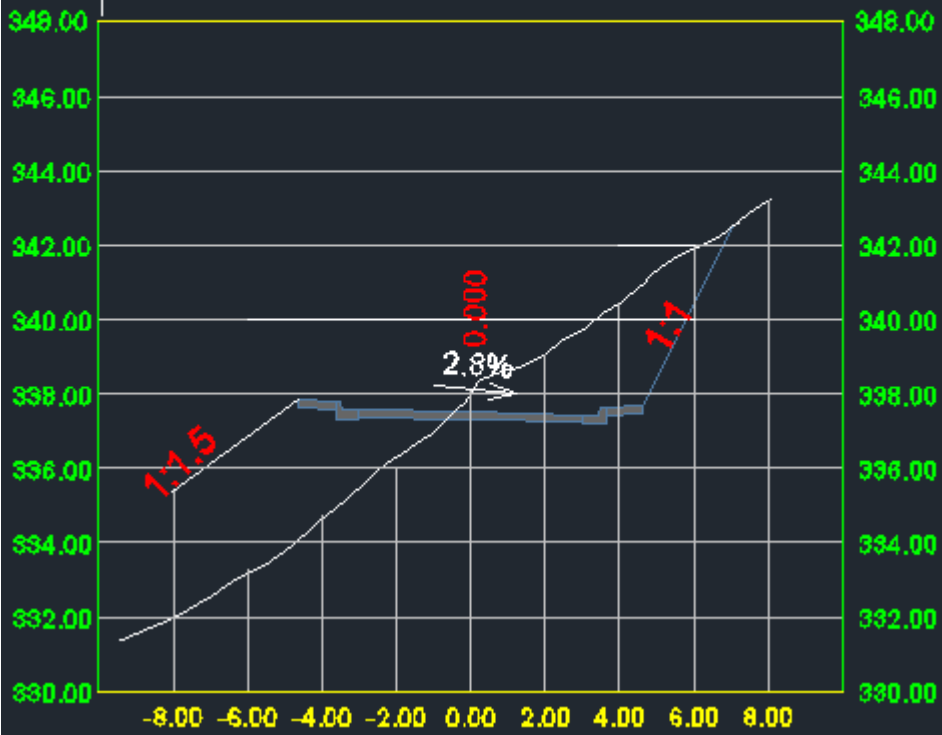
0+65.86



PRESJEK 9

K.T. :340.60m
K.N. :337.60m

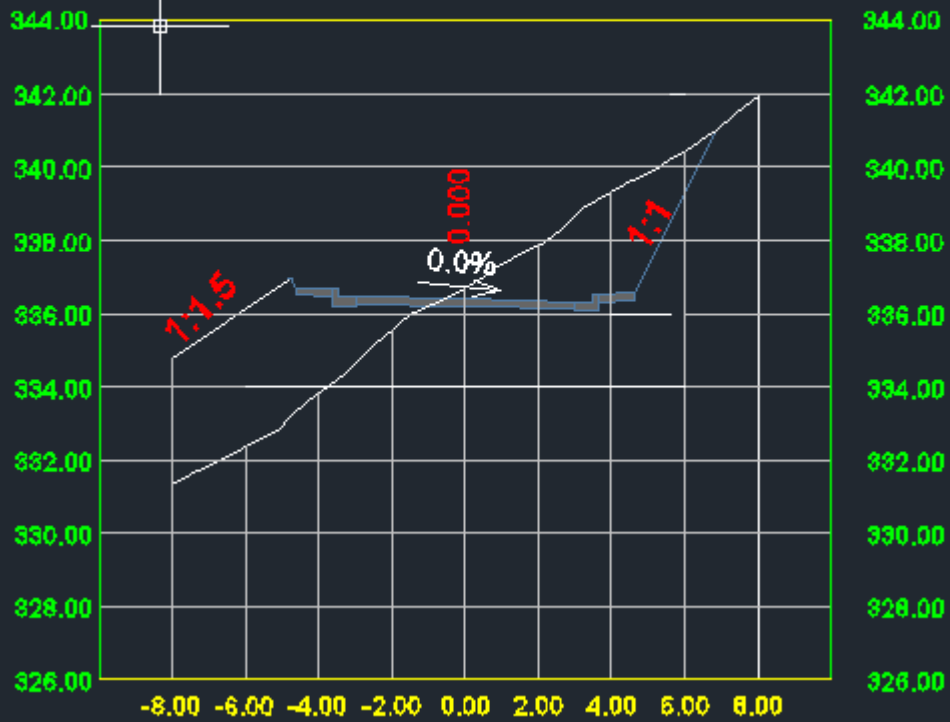
0+75.00



PRESJEK 10

K.T. : 339.40m
K.N. : 336.30m

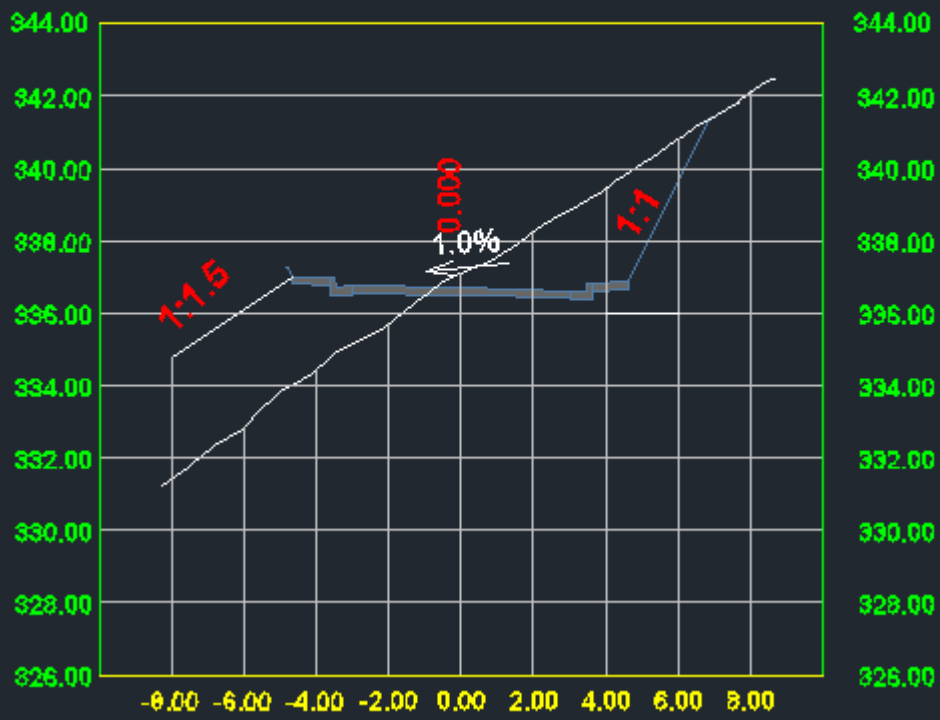
0+95.90



PREREK 11

K.T.: 339.50m
K.N.: 336.50m

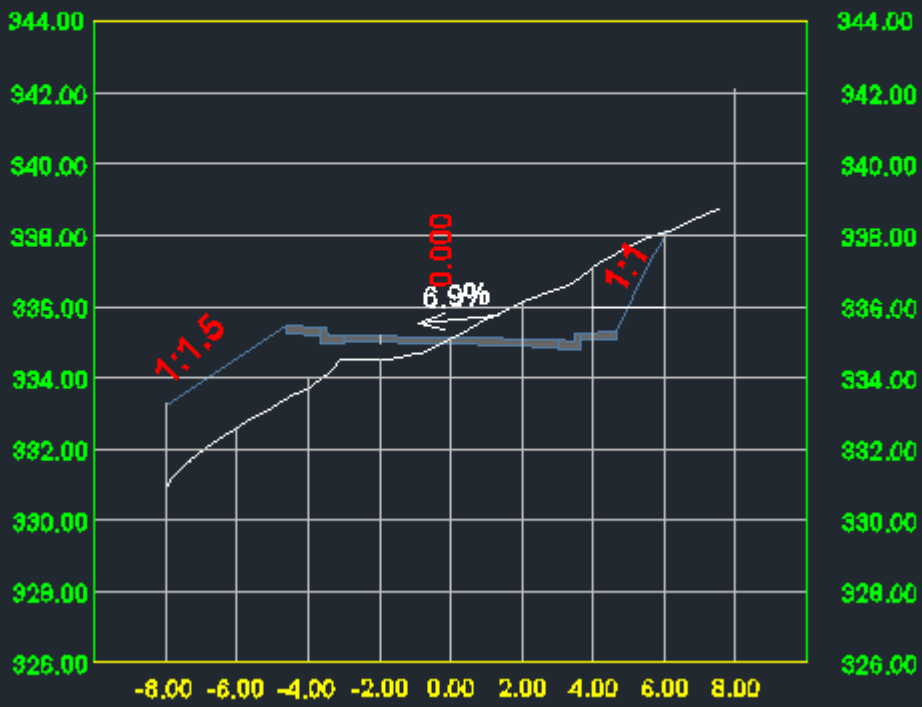
0+100.00



PRESJEK 12

K.T.: 333.50m
K.N.: 335.10m

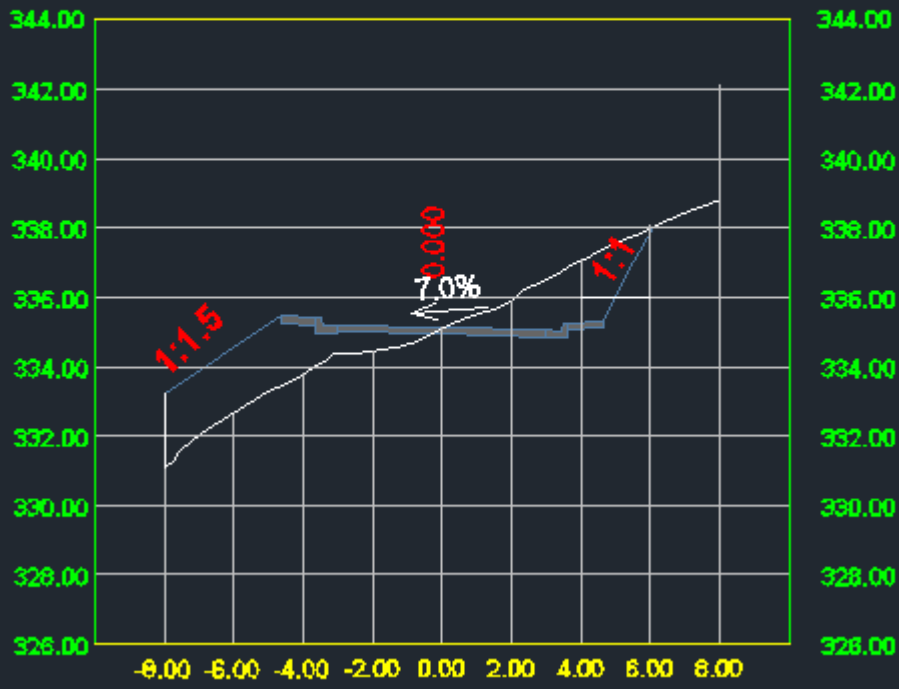
0+125.00



PRESJEK 13

K.T. :339.40m
K.N. :335.05m

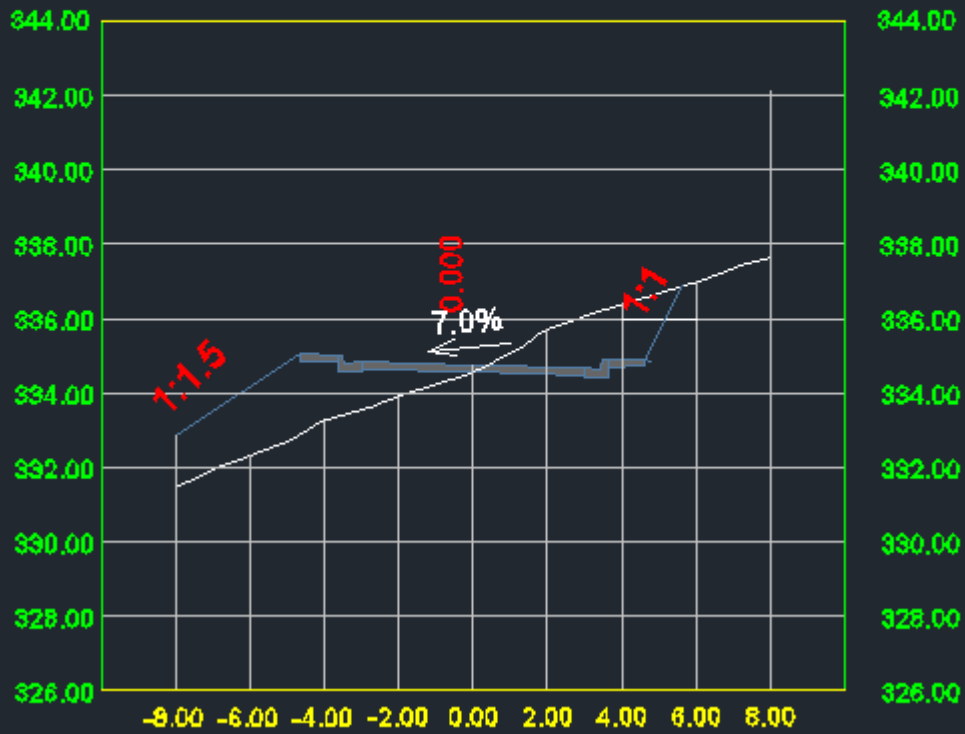
0+125.90



PRESJEK 14

K.T.: 331.50m
K.N.: 334.60m

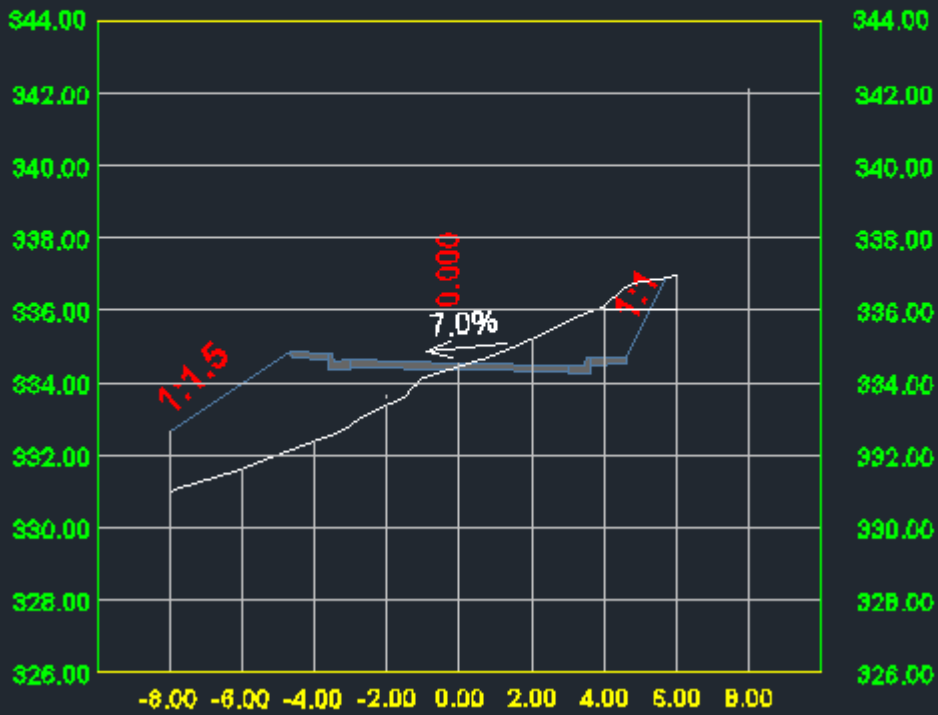
0+136.45



PRESJEK 15

K.T. :331.60m
K.N. :334.30m

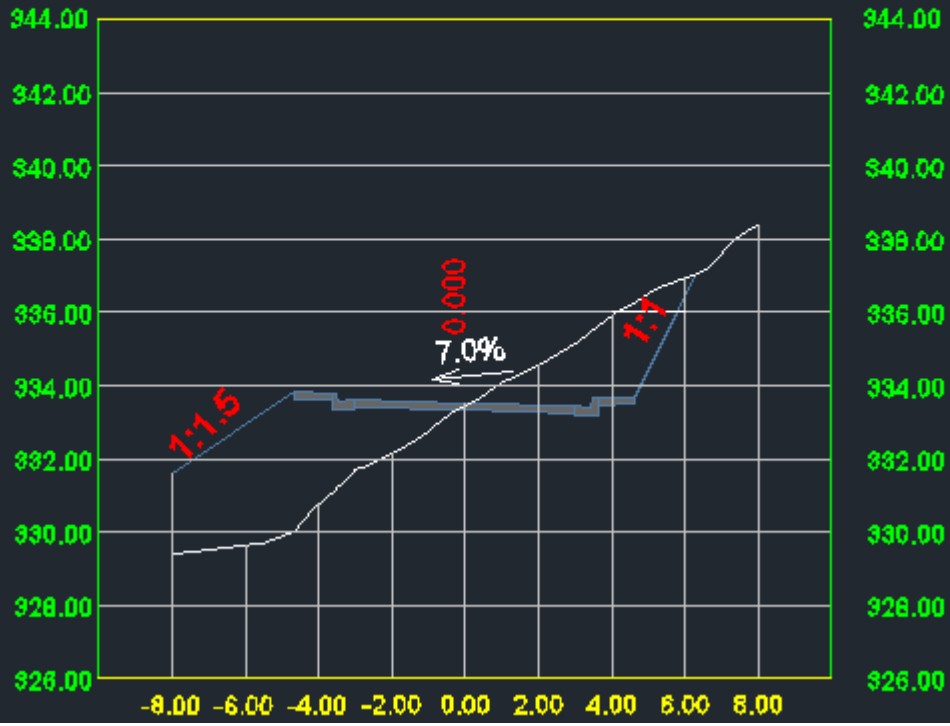
0+140.98



PRESJEK 16

K.T.: 332.50m
K.N.: 333.50m

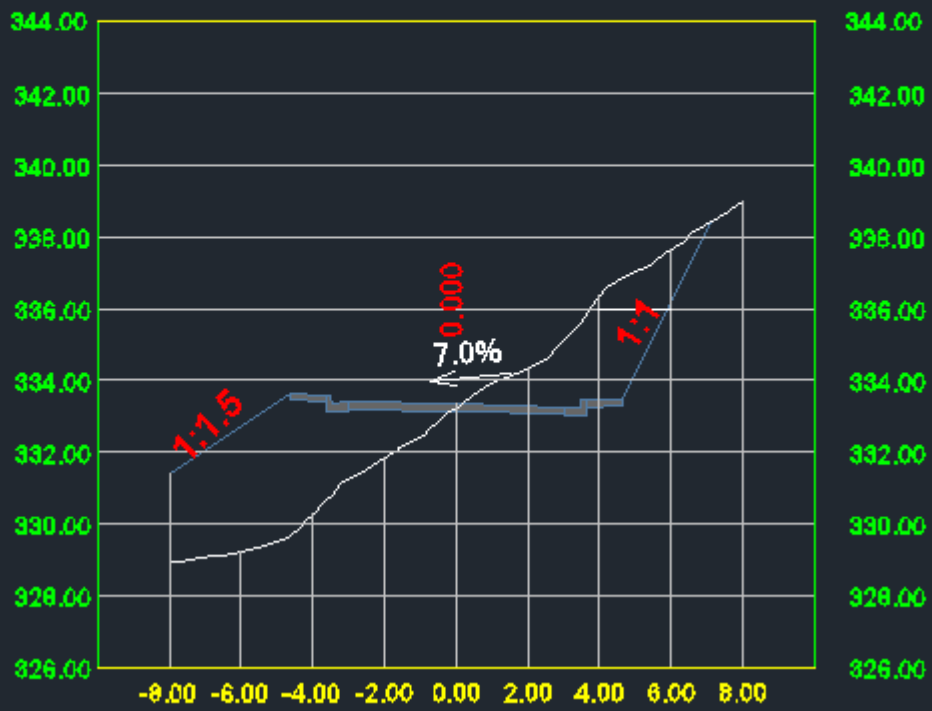
0+150.00



PRESJEK 17

0+156.06

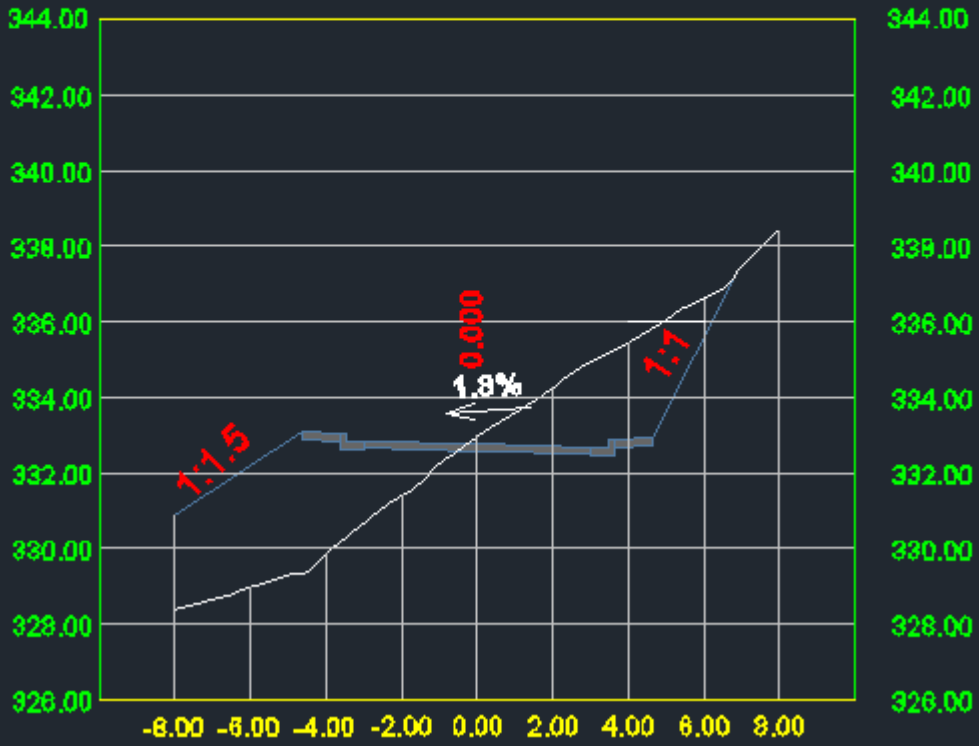
K.T. :332.00m
K.N. :339.30m



PRESJEK 19

K.T. :333.70m
K.N. :332.70m

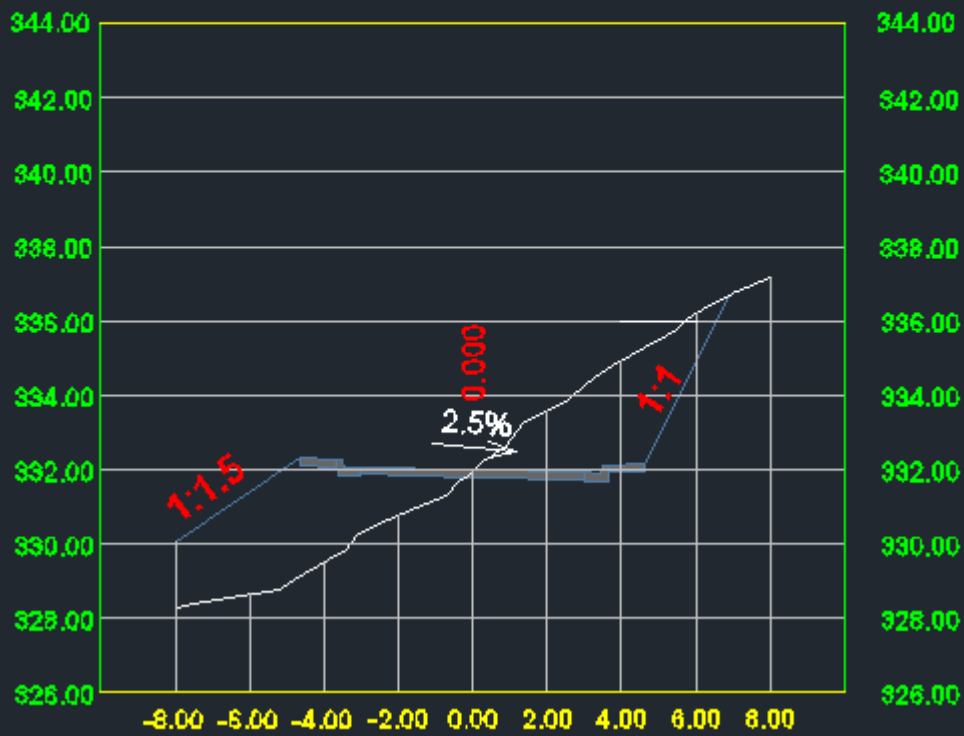
0+175.00



PRESJEK 19

K.T. :392.40m
K.N. :332.00m

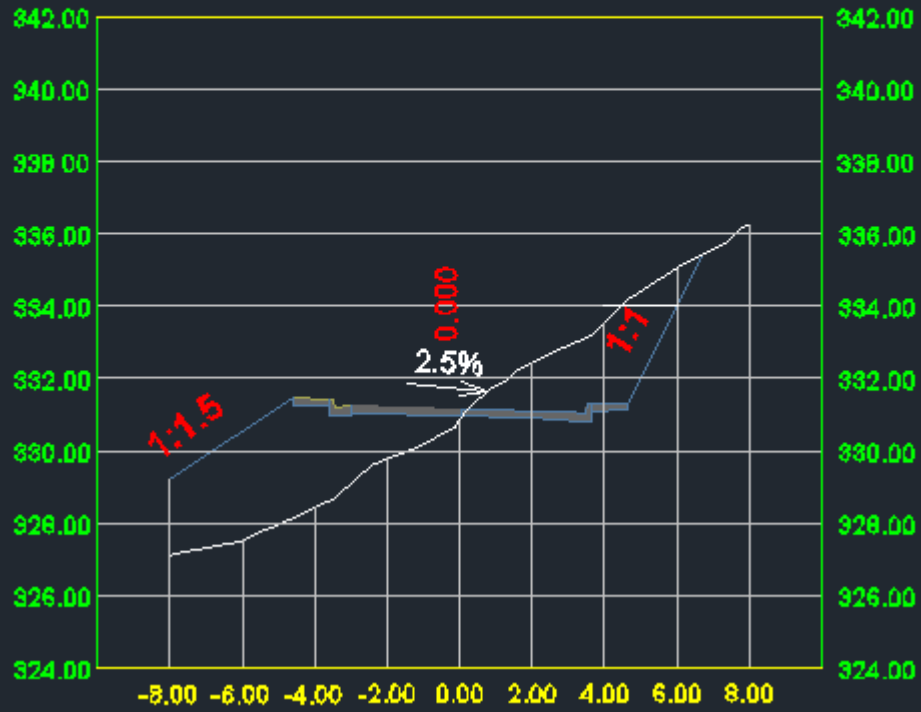
0+186.06



PRESJEK 20

K.T.: 329.40m
K.N.: 331.20m

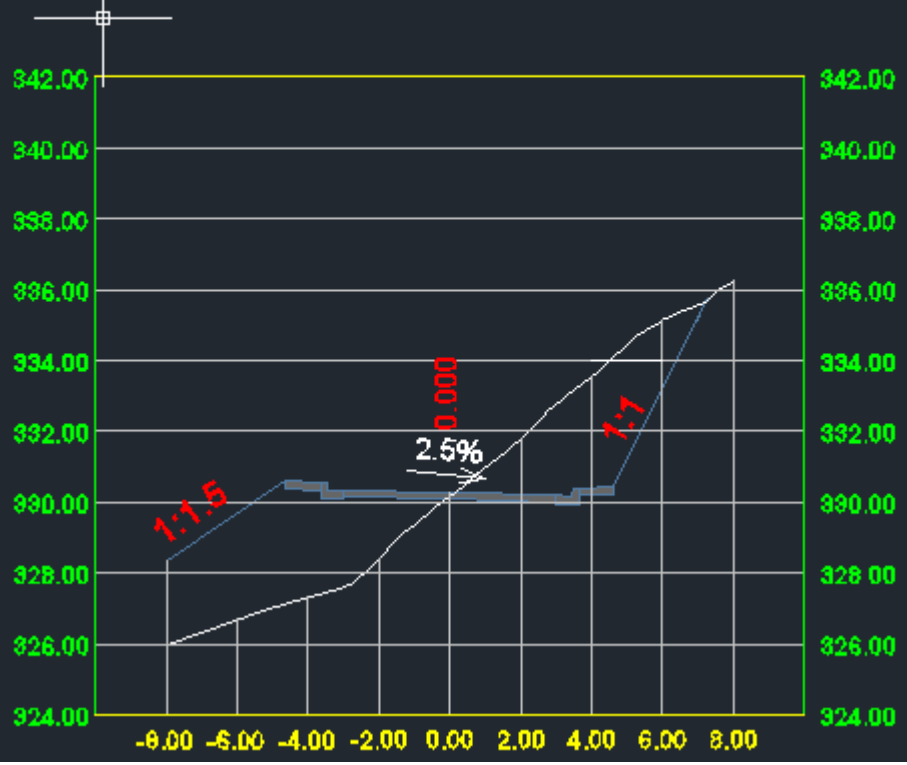
0+200.00



PRESJEK 21

K.T.: 329.42m
K.N.: 330.25m

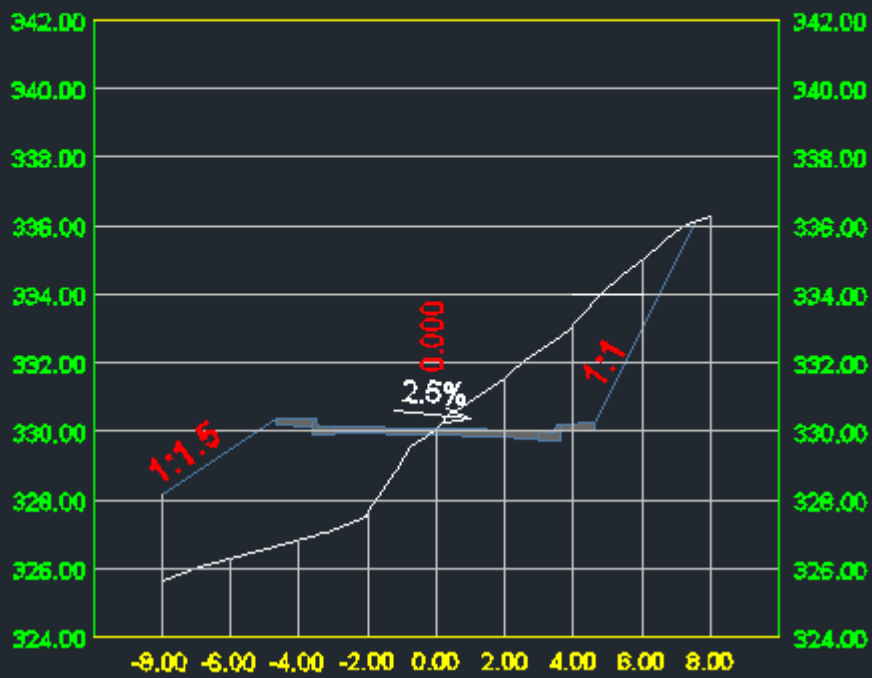
0+219.35



PRESJEK 22

K.T. :330.20m
K.N. :330.05m

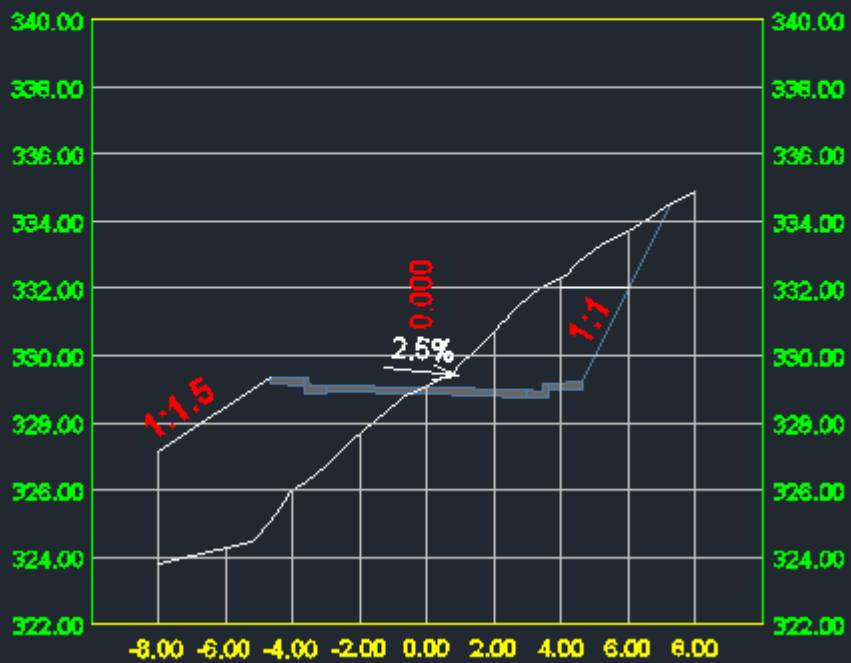
0+225.00



PRESJEK 23

K.T. :329 70m
K.N. :329 10m

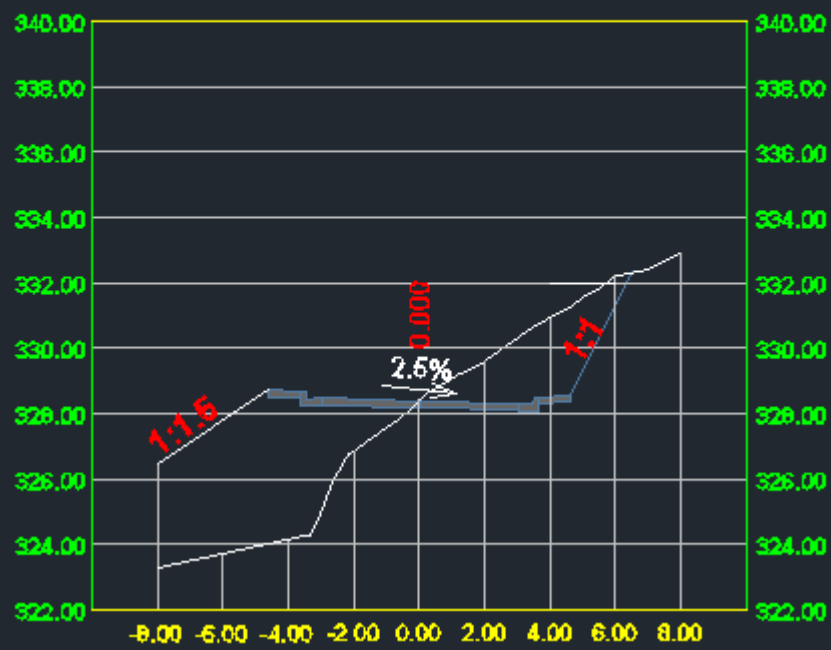
0+250.00



PRESJEK 24

K.T. :329.60m
K.N. :328.30m

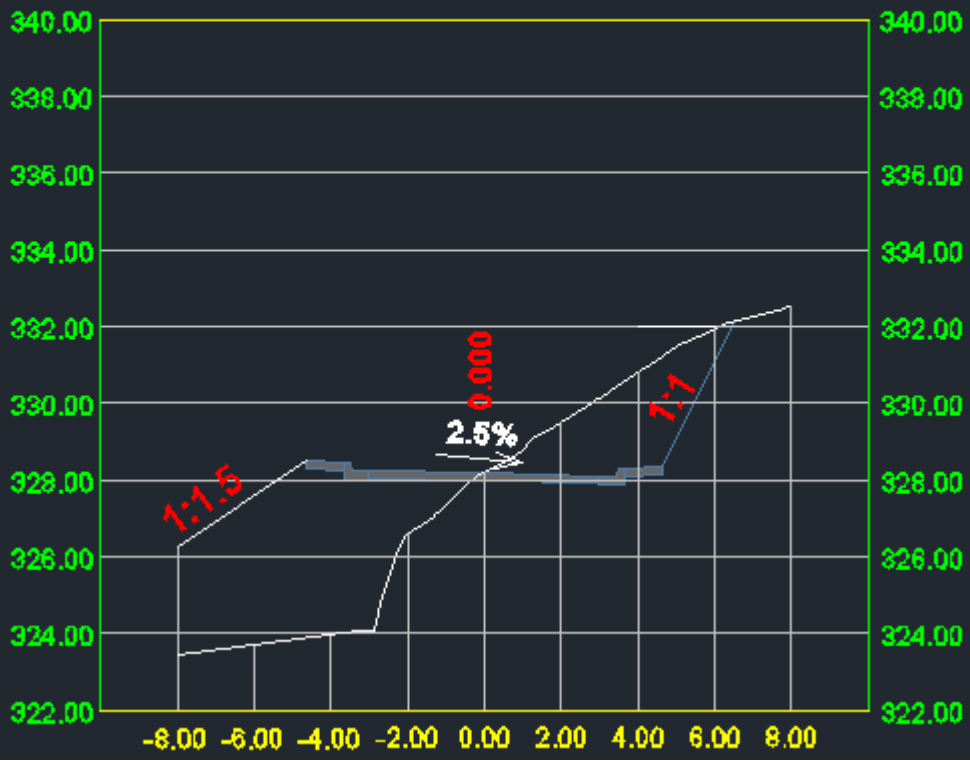
0+275.00



PRESJEK 25

KT.: 328.19m
KN.: 328.19m

0+278.14



PRILOG 1- HORIZONTALNI TOK TRASE

Alignment: OS_1

Description:

Tangent Data

| Description | PT Station | Northing | Easting |
|-------------|------------|----------|---------|
| Start: | 0+00.000 | 100.989 | 126.922 |
| End: | 0+15.310 | 106.858 | 141.061 |

Tangent Data

| Parameter | Value | Parameter | Value |
|-----------|--------|-----------|----------------------|
| Length: | 15.310 | Course: | N 67° 27' 24.4902" E |

Spiral Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| TS: | 0+15.310 | 106.858 | 141.061 |
| SPI: | | 114.537 | 159.560 |
| SC: | 0+45.310 | 116.791 | 169.330 |

Spiral Curve Data: clothoid

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Length: | 30.000 | L Tan: | 20.029 |
| Radius: | 90.000 | S Tan: | 10.027 |
| Theta: | 09° 32' 57.4677" | P: | 0.416 |
| X: | 29.917 | K: | 14.986 |
| Y: | 1.663 | A: | 51.962 |
| Chord: | 29.963 | Course: | N 70° 38' 20.9496" E |

Curve Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| SC: | 0+45.310 | 116.791 | 169.330 |
| RP: | | 29.096 | 189.566 |
| CS: | 0+65.857 | 119.096 | 189.702 |

Circular Curve Data

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|--------|
| Delta: | 13° 04' 50.1464" | Type: | RIGHT |
| Radius: | 90.000 | | |
| Length: | 20.547 | Tangent: | 10.318 |

Mid-Ord: 0.586 External: 0.590
 Chord: 20.502 Course: N 83° 32' 47.0311" E

Spiral Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| CS: | 0+65.857 | 119.096 | 189.702 |
| SPI: | | 119.081 | 199.729 |
| ST: | 0+95.857 | 115.728 | 219.475 |

Spiral Curve Data: clothoid

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Length: | 30.000 | L Tan: | 20.029 |
| Radius: | 90.000 | S Tan: | 10.027 |
| Theta: | 09° 32' 57.4677" | P: | 0.416 |
| X: | 29.917 | K: | 14.986 |
| Y: | 1.663 | A: | 51.962 |
| Chord: | 29.963 | Course: | S 83° 32' 46.8874" E |

Tangent Data

| Description | PT Station | Northing | Easting |
|-------------|------------|----------|---------|
| Start: | 0+95.857 | 115.728 | 219.475 |
| End: | 0+95.902 | 115.720 | 219.520 |

Tangent Data

| Parameter | Value | Parameter | Value |
|-----------|-------|-----------|----------------------|
| Length: | 0.045 | Course: | S 80° 21' 50.4280" E |

Spiral Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| TS: | 0+95.902 | 115.720 | 219.520 |
| SPI: | | 112.353 | 239.354 |
| SC: | 1+25.902 | 114.015 | 249.323 |

Spiral Curve Data: clothoid

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Length: | 30.000 | L Tan: | 20.118 |
| Radius: | 45.000 | S Tan: | 10.107 |
| Theta: | 19° 05' 54.9354" | P: | 0.830 |
| X: | 29.668 | K: | 14.945 |
| Y: | 3.307 | A: | 36.742 |
| Chord: | 29.852 | Course: | S 86° 43' 27.1241" E |

Curve Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| SC: | 1+25.902 | 114.015 | 249.323 |

RP: 158.402 241.925
 CS: 1+56.062 128.212 275.295

Circular Curve Data

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Delta: | 38° 24' 05.9106" | Type: | LEFT |
| Radius: | 45.000 | | |
| Length: | 30.161 | Tangent: | 15.671 |
| Mid-Ord: | 2.503 | External: | 2.651 |
| Chord: | 29.599 | Course: | N 61° 20' 11.6813" E |

Spiral Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| CS: | 1+56.062 | 128.212 | 275.295 |
| SPI: | | 135.707 | 282.076 |
| ST: | 1+86.062 | 154.220 | 289.949 |

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 29° 23' 50.4866" E |

Tangent Data

| Description | PT Station | Northing | Easting |
|-------------|------------|----------|---------|
| Start: | 1+86.062 | 154.220 | 289.949 |
| End: | 2+78.136 | 238.951 | 325.979 |

Tangent Data

| Parameter | Value | Parameter | Value |
|-----------|--------|-----------|----------------------|
| Length: | 92.073 | Course: | N 23° 02' 13.7905" E |

Alignment: OS 1-Left-3.000
 Description:

Tangent Data

| Description | PT Station | Northing | Easting |
|-------------|------------|----------|---------|
| Start: | 0+00.000 | 103.759 | 125.771 |
| End: | 0+15.310 | 109.629 | 139.911 |

Tangent Data

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

Length: 15.310 Course: N 67° 27' 24.4902" E

Spiral Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| TS: | 0+15.310 | 109.629 | 139.911 |
| SPI: | | 117.404 | 158.641 |
| SC: | 0+45.810 | 119.714 | 168.655 |

Spiral Curve Data: clothoid

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Length: | 30.500 | L Tan: | 20.362 |
| Radius: | 93.000 | S Tan: | 10.193 |
| Theta: | 09° 23' 42.9924" | P: | 0.416 |
| X: | 30.418 | K: | 15.236 |
| Y: | 1.664 | A: | 53.259 |
| Chord: | 30.462 | Course: | N 70° 39' 54.9169" E |

Curve Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| SC: | 0+45.810 | 119.714 | 168.655 |
| RP: | | 29.096 | 189.566 |
| PT: | 0+65.402 | 122.084 | 188.067 |

Circular Curve Data

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Delta: | 12° 04' 14.0503" | Type: | RIGHT |
| Radius: | 93.000 | | |
| Length: | 19.592 | Tangent: | 9.833 |
| Mid-Ord: | 0.515 | External: | 0.518 |
| Chord: | 19.556 | Course: | N 83° 02' 28.9831" E |

Tangent Data

| Description | PT Station | Northing | Easting |
|-------------|------------|----------|---------|
| Start: | 0+65.402 | 122.084 | 188.067 |
| End: | 0+80.875 | 122.132 | 203.540 |

Tangent Data

| Parameter | Value | Parameter | Value |
|-----------|--------|-----------|----------------------|
| Length: | 15.473 | Course: | N 89° 49' 17.7516" E |

Tangent Data

| Description | PT Station | Northing | Easting |
|-------------|------------|----------|---------|
| Start: | 0+80.875 | 122.132 | 203.540 |
| End: | 0+96.117 | 120.791 | 218.723 |

Tangent Data

| Parameter | Value | Parameter | Value |
|-----------|--------|-----------|----------------------|
| Length: | 15.243 | Course: | S 84° 57' 10.3613" E |

Spiral Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| TS: | 0+96.117 | 120.791 | 218.723 |
| SPI: | | 120.702 | 219.246 |
| ST: | 0+97.706 | 120.525 | 220.290 |

Spiral Curve Data: clothoid

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Length: | 1.589 | L Tan: | 1.059 |
| Radius: | 1706.609 | S Tan: | 0.530 |
| Theta: | 00° 01' 36.0178" | P: | 0.000 |
| X: | 1.589 | K: | 0.794 |
| Y: | 0.000 | A: | 52.073 |
| Chord: | 1.589 | Course: | S 80° 22' 22.5025" E |

Tangent Data

| Description | PT Station | Northing | Easting |
|-------------|------------|----------|---------|
| Start: | 0+97.706 | 120.525 | 220.290 |
| End: | 0+97.751 | 120.518 | 220.334 |

Tangent Data

| Parameter | Value | Parameter | Value |
|-----------|-------|-----------|----------------------|
| Length: | 0.045 | Course: | S 80° 21' 50.4280" E |

Spiral Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| TS: | 0+97.751 | 120.518 | 220.334 |
| SPI: | | 117.287 | 239.361 |
| SC: | 1+26.129 | 118.814 | 248.523 |

Spiral Curve Data: clothoid

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Length: | 28.378 | L Tan: | 19.044 |
| Radius: | 40.134 | S Tan: | 9.573 |
| Theta: | 20° 15' 22.9914" | P: | 0.832 |
| X: | 28.025 | K: | 14.130 |
| Y: | 3.315 | A: | 33.748 |
| Chord: | 28.240 | Course: | S 86° 32' 31.1038" E |

Curve Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| SC: | 1+26.129 | 118.814 | 248.523 |

RP: 158.402 241.925
 CS: 1+53.028 131.477 271.687

Circular Curve Data

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Delta: | 38° 24' 05.9106" | Type: | LEFT |
| Radius: | 40.134 | | |
| Length: | 26.899 | Tangent: | 13.977 |
| Mid-Ord: | 2.233 | External: | 2.364 |
| Chord: | 26.399 | Course: | N 61° 20' 11.6813" E |

Spiral Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| CS: | 1+53.028 | 131.477 | 271.687 |
| SPI: | | 138.365 | 277.918 |
| ST: | 1+81.406 | 156.125 | 285.471 |

Spiral Curve Data: clothoid

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Length: | 28.378 | L Tan: | 19.044 |
| Radius: | 40.134 | S Tan: | 9.573 |
| Theta: | 20° 15' 22.9914" | P: | 0.832 |
| X: | 28.025 | K: | 14.130 |
| Y: | 3.315 | A: | 33.748 |
| Chord: | 28.240 | Course: | N 29° 12' 54.4663" E |

Tangent Data

| Description | PT Station | Northing | Easting |
|-------------|------------|----------|---------|
| Start: | 1+81.406 | 156.125 | 285.471 |
| End: | 1+83.734 | 158.267 | 286.381 |

Tangent Data

| Parameter | Value | Parameter | Value |
|-----------|-------|-----------|----------------------|
| Length: | 2.328 | Course: | N 23° 02' 13.7905" E |

Curve Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| PC: | 1+83.734 | 158.267 | 286.381 |
| RP: | | 140.657 | 327.793 |
| PT: | 1+86.768 | 161.016 | 287.662 |

Circular Curve Data

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|-------|
| Delta: | 03° 51' 44.1215" | Type: | RIGHT |
| Radius: | 45.000 | | |
| Length: | 3.033 | Tangent: | 1.517 |

Mid-Ord: 0.026 External: 0.026
 Chord: 3.033 Course: N 24° 58' 05.8513" E

Tangent Data

| Description | PT Station | Northing | Easting |
|-------------|------------|----------|---------|
| Start: | 1+86.768 | 161.016 | 287.662 |
| End: | 2+12.110 | 183.617 | 299.127 |

Tangent Data

| Parameter | Value | Parameter | Value |
|-----------|--------|-----------|----------------------|
| Length: | 25.342 | Course: | N 26° 53' 57.9120" E |

Curve Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| PC: | 2+12.110 | 183.617 | 299.127 |
| RP: | | 194.927 | 276.832 |
| PT: | 2+13.795 | 185.144 | 299.839 |

Circular Curve Data

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Delta: | 03° 51' 44.1215" | Type: | LEFT |
| Radius: | 25.000 | | |
| Length: | 1.685 | Tangent: | 0.843 |
| Mid-Ord: | 0.014 | External: | 0.014 |
| Chord: | 1.685 | Course: | N 24° 58' 05.8513" E |

Tangent Data

| Description | PT Station | Northing | Easting |
|-------------|------------|----------|---------|
| Start: | 2+13.795 | 185.144 | 299.839 |
| End: | 2+73.541 | 240.125 | 323.219 |

Tangent Data

| Parameter | Value | Parameter | Value |
|-----------|--------|-----------|----------------------|
| Length: | 59.746 | Course: | N 23° 02' 13.7905" E |

Alignment: OS 1-Right-3.000
 Description:

Tangent Data

| Description | PT Station | Northing | Easting |
|-------------|------------|----------|---------|
| Start: | 0+00.000 | 98.218 | 128.072 |
| End: | 0+15.310 | 104.087 | 142.211 |

Tangent Data

| Parameter | Value | Parameter | Value |
|-----------|--------|-----------|----------------------|
| Length: | 15.310 | Course: | N 67° 27' 24.4902" E |

Spiral Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| TS: | 0+15.310 | 104.087 | 142.211 |
| SPI: | | 111.670 | 160.479 |
| SC: | 0+44.810 | 113.868 | 170.004 |

Spiral Curve Data: clothoid

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Length: | 29.500 | L Tan: | 19.696 |
| Radius: | 87.000 | S Tan: | 9.860 |
| Theta: | 09° 42' 50.1827" | P: | 0.416 |
| X: | 29.415 | K: | 14.736 |
| Y: | 1.664 | A: | 50.661 |
| Chord: | 29.464 | Course: | N 70° 36' 43.7979" E |

Curve Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| SC: | 0+44.810 | 113.868 | 170.004 |
| RP: | | 29.096 | 189.566 |
| CS: | 0+64.672 | 116.096 | 189.698 |

Circular Curve Data

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Delta: | 13° 04' 50.1464" | Type: | RIGHT |
| Radius: | 87.000 | | |
| Length: | 19.862 | Tangent: | 9.974 |
| Mid-Ord: | 0.566 | External: | 0.570 |
| Chord: | 19.819 | Course: | N 83° 32' 47.0311" E |

Spiral Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| CS: | 0+64.672 | 116.096 | 189.698 |
| SPI: | | 116.081 | 199.474 |
| ST: | 0+94.172 | 112.770 | 218.973 |

Spiral Curve Data: clothoid

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Length: | 29.500 | L Tan: | 19.696 |
| Radius: | 87.000 | S Tan: | 9.860 |
| Theta: | 09° 42' 50.1827" | P: | 0.416 |
| X: | 29.415 | K: | 14.736 |
| Y: | 1.664 | A: | 50.661 |
| Chord: | 29.464 | Course: | S 83° 31' 09.7357" E |

Tangent Data

| Description | PT Station | Northing | Easting |
|-------------|------------|----------|---------|
| Start: | 0+94.172 | 112.770 | 218.973 |
| End: | 0+94.217 | 112.763 | 219.018 |

Tangent Data

| Parameter | Value | Parameter | Value |
|-----------|-------|-----------|----------------------|
| Length: | 0.045 | Course: | S 80° 21' 50.4280" E |

Spiral Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| TS: | 0+94.217 | 112.763 | 219.018 |
| SPI: | | 109.311 | 239.349 |
| SC: | 1+25.217 | 111.055 | 249.817 |

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 86° 49' 37.4088" E |

Curve Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| SC: | 1+25.217 | 111.055 | 249.817 |
| RP: | | 158.402 | 241.925 |
| CS: | 1+57.388 | 126.200 | 277.520 |

Circular Curve Data

| Parameter | Value | Parameter | Value |
|-----------|------------------|-----------|----------------------|
| Delta: | 38° 24' 05.9106" | Type: | LEFT |
| Radius: | 48.000 | | |
| Length: | 32.171 | Tangent: | 16.716 |
| Mid-Ord: | 2.670 | External: | 2.827 |
| Chord: | 31.572 | Course: | N 61° 20' 11.6813" E |

Spiral Point Data

| Description | Station | Northing | Easting |
|-------------|----------|----------|---------|
| CS: | 1+57.388 | 126.200 | 277.520 |
| SPI: | | 134.069 | 284.639 |
| ST: | 1+88.388 | 153.046 | 292.709 |

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 29° 30' 00.7713" E |

Tangent Data

| Description | PT Station | Northing | Easting |
|-------------|------------|----------|---------|
| Start: | 1+88.388 | 153.046 | 292.709 |
| End: | 2+80.462 | 237.777 | 328.740 |

Tangent Data

| Parameter | Value | Parameter | Value |
|-----------|--------|-----------|----------------------|
| Length: | 92.073 | Course: | N 23° 02' 13.7905" E |

PRILOG 2- KOORDINATNI RAČUN DETALJNIH TOČAKA OSI

Alignment Name: OS 1

Description:

Station Range: Start: 0+00.00, End: 278+14.00

Station Increment: 20.00

| Station | Northing | Easting | Tangential Direction |
|---------|-----------|-----------|----------------------|
| 0+00.00 | 100.9887m | 126.9215m | N67° 27' 24.49"E |
| 0+20.00 | 108.6504m | 145.3958m | N67° 41' 24.82"E |
| 0+40.00 | 115.4545m | 164.1920m | N73° 55' 30.11"E |
| 0+60.00 | 118.9141m | 183.8496m | N86° 21' 29.89"E |
| 0+80.00 | 118.1389m | 203.8048m | S83° 01' 54.35"E |
| 1+00.00 | 115.0427m | 223.5618m | S80° 43' 13.53"E |
| 1+20.00 | 113.4029m | 243.4568m | N87° 18' 45.37"E |
| 1+40.00 | 118.4552m | 262.6432m | N62° 35' 12.98"E |
| 1+60.00 | 131.2393m | 277.8118m | N37° 27' 04.25"E |
| 1+80.00 | 148.6524m | 287.5509m | N23° 49' 01.42"E |
| 2+00.00 | 167.0466m | 295.4027m | N23° 02' 13.79"E |
| 2+20.00 | 185.4516m | 303.2293m | N23° 02' 13.79"E |
| 2+40.00 | 203.8567m | 311.0559m | N23° 02' 13.79"E |
| 2+60.00 | 222.2617m | 318.8824m | N23° 02' 13.79"E |

Alignment Name: OS 1-Left-3.000

Description:

Station Range: Start: 0+00.00, End: 273+54.00

Station Increment: 20.00

| Station | Northing | Easting | Tangential Direction |
|---------|-----------|-----------|----------------------|
| 0+00.00 | 103.7595m | 125.7714m | N67° 27' 24.49"E |
| 0+20.00 | 111.3965m | 144.1854m | N67° 40' 57.50"E |
| 0+40.00 | 118.2213m | 162.9620m | N73° 42' 52.91"E |
| 0+60.00 | 121.8399m | 182.6717m | N85° 44' 54.88"E |
| 0+80.00 | 122.1292m | 202.6654m | N89° 49' 17.75"E |
| 1+00.00 | 120.1231m | 222.6685m | S80° 29' 02.19"E |
| 1+20.00 | 118.2415m | 242.7009m | N87° 53' 47.25"E |
| 1+40.00 | 123.3905m | 261.5445m | N60° 44' 07.03"E |
| 1+60.00 | 136.7428m | 275.7727m | N33° 54' 16.45"E |
| 1+80.00 | 154.7602m | 284.8900m | N23° 05' 02.67"E |
| 2+00.00 | 172.8168m | 293.6484m | N26° 53' 57.91"E |
| 2+20.00 | 190.8540m | 302.2666m | N23° 02' 13.79"E |
| 2+40.00 | 209.2590m | 310.0932m | N23° 02' 13.79"E |
| 2+60.00 | 227.6640m | 317.9197m | N23° 02' 13.79"E |

Alignment Name: OS 1-Right-3.000

Description:

Station Range: Start: 0+00.00, End: 280+46.00

Station Increment: 20.00

| Station | Northing | Easting | Tangential Direction |
|---------|-----------|-----------|----------------------|
| 0+00.00 | 98.2179m | 128.0717m | N67° 27' 24.49"E |
| 0+20.00 | 105.9050m | 146.6078m | N67° 41' 53.55"E |
| 0+40.00 | 112.6837m | 165.4139m | N74° 08' 46.14"E |
| 0+60.00 | 115.9774m | 185.0282m | N87° 00' 36.28"E |
| 0+80.00 | 114.9830m | 204.8500m | S82° 34' 04.03"E |
| 1+00.00 | 111.8416m | 224.5734m | S81° 01' 43.25"E |
| 1+20.00 | 110.4553m | 244.4958m | N86° 25' 28.38"E |
| 1+40.00 | 115.6753m | 263.7978m | N62° 53' 28.70"E |
| 1+60.00 | 128.2418m | 279.2687m | N39° 03' 11.05"E |
| 1+80.00 | 145.5355m | 289.4426m | N24° 26' 07.76"E |
| 2+00.00 | 163.7323m | 297.2533m | N23° 02' 13.79"E |
| 2+20.00 | 182.1373m | 305.0799m | N23° 02' 13.79"E |
| 2+40.00 | 200.5423m | 312.9065m | N23° 02' 13.79"E |
| 2+60.00 | 218.9474m | 320.7330m | N23° 02' 13.79"E |
| 2+80.00 | 237.3524m | 328.5596m | N23° 02' 13.79"E |

PRILOG 3- RAČUN KOTA KOLNIKA

Base Alignment Name: OS 1

Station Range: Start: 0+00.00, End: 2+78.14

CHAINAGE 0+00.00

| POINT | X | Y | Z | OFFSET | STRING CUT |
|-------|----------|----------|----------|----------|-----------------|
| 1 | 113.6520 | 132.9560 | 322.8387 | -34.612m | Before_Rounding |
| 2 | 125.1420 | 105.2757 | 342.8189 | -4.642m | EPS |
| 3 | 125.1424 | 105.2748 | 342.6189 | -4.641m | EPS_Sub |
| 4 | 125.5254 | 104.3521 | 342.7789 | -3.642m | Back_Curb |
| 5 | 125.5829 | 104.2136 | 342.7789 | -3.492m | Top_Curb |
| 6 | 125.5989 | 104.1751 | 342.5539 | -3.450m | Flowline_Gutter |
| 7 | 125.7714 | 103.7595 | 342.5809 | -3.000m | ETW |
| 8 | 125.7714 | 103.7595 | 342.3809 | -3.000m | ETW_SubBase |
| 9 | 128.0717 | 98.2179 | 342.2309 | 3.000m | ETW_SubBase |
| 10 | 128.0717 | 98.2179 | 342.4309 | 3.000m | Flange |
| 11 | 128.2442 | 97.8023 | 342.4039 | 3.450m | Flowline_Gutter |
| 12 | 128.2602 | 97.7638 | 342.6289 | 3.492m | Top_Curb |
| 13 | 128.3177 | 97.6252 | 342.6289 | 3.642m | Back_Curb |
| 14 | 128.7007 | 96.7026 | 342.4689 | 4.641m | EPS_Sub |
| 15 | 128.7011 | 96.7016 | 342.6689 | 4.642m | Hinge_Cut |
| 16 | 129.4059 | 95.0036 | 346.3458 | 6.480m | Before_Rounding |
| 17 | 129.4680 | 94.8540 | 346.5377 | 6.642m | Daylight |

CHAINAGE 0+25.00

| POINT | X | Y | Z | OFFSET | STRING CUT |
|-------|----------|----------|----------|---------|-----------------|
| 1 | 148.3278 | 114.8385 | 341.1081 | -4.642m | EPS |
| 2 | 148.3282 | 114.8376 | 340.9081 | -4.641m | EPS_Sub |
| 3 | 148.6951 | 113.9084 | 341.0681 | -3.642m | Back_Curb |
| 4 | 148.7502 | 113.7689 | 341.0681 | -3.492m | Top_Curb |
| 5 | 148.7655 | 113.7301 | 340.8431 | -3.450m | Flowline_Gutter |
| 6 | 148.9308 | 113.3115 | 340.6701 | -3.000m | ETW_SubBase |
| 7 | 148.9308 | 113.3115 | 340.8701 | -3.000m | Flange |
| 8 | 151.1343 | 107.7308 | 340.7201 | 3.000m | ETW |
| 9 | 151.1343 | 107.7308 | 340.5201 | 3.000m | ETW_SubBase |
| 10 | 151.2996 | 107.3123 | 340.6931 | 3.450m | Flowline_Gutter |
| 11 | 151.3149 | 107.2735 | 340.9181 | 3.492m | Top_Curb |
| 12 | 151.3700 | 107.1340 | 340.9181 | 3.642m | Back_Curb |
| 13 | 151.7369 | 106.2048 | 340.7581 | 4.641m | EPS_Sub |
| 14 | 151.7373 | 106.2039 | 340.9581 | 4.642m | Ditch_Out |
| 15 | 151.9512 | 105.6620 | 342.1233 | 5.224m | Before_Rounding |
| 16 | 152.0321 | 105.4573 | 342.2176 | 5.444m | Daylight |

CHAINAGE 0+50.00

| POINT | X | Y | Z | OFFSET | STRING CUT |
|-------|---|---|---|--------|------------|
|-------|---|---|---|--------|------------|

| | | | | | |
|----|----------|----------|----------|---------|-----------------|
| 1 | 173.1189 | 122.2974 | 339.3974 | -4.642m | EPS |
| 2 | 173.1191 | 122.2965 | 339.1974 | -4.641m | EPS_Sub |
| 3 | 173.2927 | 121.3127 | 339.3574 | -3.642m | Back_Curb |
| 4 | 173.3188 | 121.1649 | 339.3574 | -3.492m | Top_Curb |
| 5 | 173.3260 | 121.1239 | 339.1324 | -3.450m | Flowline_Gutter |
| 6 | 173.4042 | 120.6807 | 338.9594 | -3.000m | ETW_SubBase |
| 7 | 173.4042 | 120.6807 | 339.1594 | -3.000m | Flange |
| 8 | 174.4469 | 114.7720 | 339.0094 | 3.000m | ETW |
| 9 | 174.4469 | 114.7720 | 338.8094 | 3.000m | ETW_SubBase |
| 10 | 174.5251 | 114.3289 | 338.9824 | 3.450m | Flowline_Gutter |
| 11 | 174.5324 | 114.2878 | 339.2074 | 3.492m | Top_Curb |
| 12 | 174.5585 | 114.1401 | 339.2074 | 3.642m | Back_Curb |
| 13 | 174.7321 | 113.1563 | 339.0474 | 4.641m | EPS_Sub |
| 14 | 174.7322 | 113.1553 | 339.2474 | 4.642m | Ditch_Out |
| 15 | 175.2953 | 109.9645 | 345.7275 | 7.882m | Before_Rounding |
| 16 | 175.3341 | 109.7447 | 345.8556 | 8.105m | Daylight |

CHAINAGE 0+75.00

| POINT | X | Y | Z | OFFSET | STRING CUT |
|-------|----------|----------|----------|----------|-----------------|
| 1 | 201.5607 | 149.7170 | 320.0000 | -31.172m | Before_Rounding |
| 2 | 199.2390 | 123.2888 | 337.6866 | -4.642m | EPS |
| 3 | 199.2389 | 123.2878 | 337.4866 | -4.641m | EPS_Sub |
| 4 | 199.1515 | 122.2926 | 337.6466 | -3.642m | Back_Curb |
| 5 | 199.1384 | 122.1432 | 337.6466 | -3.492m | Top_Curb |
| 6 | 199.1347 | 122.1017 | 337.4216 | -3.450m | Flowline_Gutter |
| 7 | 199.0953 | 121.6534 | 337.4486 | -3.000m | ETW |
| 8 | 199.0953 | 121.6534 | 337.2486 | -3.000m | ETW_SubBase |
| 9 | 198.5702 | 115.6764 | 337.0986 | 3.000m | ETW_SubBase |
| 10 | 198.5702 | 115.6764 | 337.2986 | 3.000m | Flange |
| 11 | 198.5309 | 115.2281 | 337.2716 | 3.450m | Flowline_Gutter |
| 12 | 198.5272 | 115.1866 | 337.4966 | 3.492m | Top_Curb |
| 13 | 198.5141 | 115.0372 | 337.4966 | 3.642m | Back_Curb |
| 14 | 198.4267 | 114.0420 | 337.3366 | 4.641m | EPS_Sub |
| 15 | 198.4266 | 114.0410 | 337.5366 | 4.642m | Hinge_Cut |
| 16 | 198.0355 | 109.5895 | 346.4741 | 9.110m | Before_Rounding |
| 17 | 198.0178 | 109.3881 | 346.6285 | 9.313m | Daylight |

CHAINAGE 1+00.00

| POINT | X | Y | Z | OFFSET | STRING CUT |
|-------|----------|----------|----------|---------|-----------------|
| 1 | 224.3412 | 119.8129 | 336.2349 | -4.833m | Daylight |
| 2 | 224.3334 | 119.7650 | 336.2623 | -4.785m | Before_Rounding |
| 3 | 224.3103 | 119.6237 | 335.9759 | -4.642m | Ditch_Out |
| 4 | 224.3101 | 119.6227 | 335.7759 | -4.641m | EPS_Sub |
| 5 | 224.1491 | 118.6368 | 335.9359 | -3.642m | Back_Curb |
| 6 | 224.1249 | 118.4887 | 335.9359 | -3.492m | Top_Curb |
| 7 | 224.1181 | 118.4476 | 335.7109 | -3.450m | Flowline_Gutter |
| 8 | 224.0456 | 118.0035 | 335.7379 | -3.000m | ETW |
| 9 | 224.0456 | 118.0035 | 335.5379 | -3.000m | ETW_SubBase |
| 10 | 223.0781 | 112.0820 | 335.5879 | 3.000m | ETW |
| 11 | 223.0781 | 112.0820 | 335.3879 | 3.000m | ETW_SubBase |
| 12 | 223.0055 | 111.6379 | 335.5609 | 3.450m | Flowline_Gutter |
| 13 | 222.9988 | 111.5967 | 335.7859 | 3.492m | Top_Curb |
| 14 | 222.9746 | 111.4487 | 335.7859 | 3.642m | Back_Curb |
| 15 | 222.8135 | 110.4628 | 335.6259 | 4.641m | EPS_Sub |
| 16 | 222.8133 | 110.4618 | 335.8259 | 4.642m | Hinge_Cut |
| 17 | 222.0568 | 105.8314 | 345.2095 | 9.333m | Before_Rounding |
| 18 | 222.0214 | 105.6146 | 345.3426 | 9.553m | Daylight |

CHAINAGE 1+25.00

| POINT | X | Y | Z | OFFSET | STRING CUT |
|-------|----------|----------|----------|----------|-----------------|
| 1 | 245.5379 | 133.6398 | 324.1490 | -19.976m | Daylight |
| 2 | 245.5736 | 133.3964 | 324.2067 | -19.729m | Before_Rounding |
| 3 | 247.7598 | 118.4678 | 334.2652 | -4.642m | EPS |
| 4 | 247.7600 | 118.4668 | 334.0652 | -4.641m | EPS_Sub |
| 5 | 247.9047 | 117.4784 | 334.2252 | -3.642m | Back_Curb |
| 6 | 247.9265 | 117.3300 | 334.2252 | -3.492m | Top_Curb |
| 7 | 247.9325 | 117.2887 | 334.0002 | -3.450m | Flowline_Gutter |
| 8 | 247.9977 | 116.8434 | 334.0272 | -3.000m | ETW |
| 9 | 247.9977 | 116.8434 | 333.8272 | -3.000m | ETW_SubBase |
| 10 | 248.8671 | 110.9068 | 333.6772 | 3.000m | ETW_SubBase |
| 11 | 248.8671 | 110.9068 | 333.8772 | 3.000m | Flange |
| 12 | 248.9324 | 110.4615 | 333.8502 | 3.450m | Flowline_Gutter |
| 13 | 248.9384 | 110.4203 | 334.0752 | 3.492m | Top_Curb |
| 14 | 248.9601 | 110.2718 | 334.0752 | 3.642m | Back_Curb |
| 15 | 249.1049 | 109.2834 | 333.9152 | 4.641m | EPS_Sub |
| 16 | 249.1050 | 109.2824 | 334.1152 | 4.642m | Hinge_Cut |
| 17 | 249.2583 | 108.2358 | 336.2307 | 5.699m | Before_Rounding |
| 18 | 249.2939 | 107.9925 | 336.3225 | 5.945m | Daylight |

CHAINAGE 1+50.00

| POINT | X | Y | Z | OFFSET | STRING CUT |
|-------|----------|----------|----------|----------|-----------------|
| 1 | 259.2513 | 137.8598 | 324.1295 | -18.126m | Daylight |
| 2 | 259.4112 | 137.6703 | 324.1806 | -17.879m | Before_Rounding |
| 3 | 267.9454 | 127.5519 | 333.0051 | -4.642m | EPS |
| 4 | 267.9460 | 127.5512 | 332.8051 | -4.641m | EPS_Sub |
| 5 | 268.5901 | 126.7875 | 332.9651 | -3.642m | Back_Curb |
| 6 | 268.6868 | 126.6729 | 332.9651 | -3.492m | Top_Curb |
| 7 | 268.7137 | 126.6410 | 332.7401 | -3.450m | Flowline_Gutter |
| 8 | 269.0038 | 126.2970 | 332.7671 | -3.000m | ETW |
| 9 | 269.0038 | 126.2970 | 332.5671 | -3.000m | ETW_SubBase |
| 10 | 272.8722 | 121.7105 | 332.4171 | 3.000m | ETW_SubBase |
| 11 | 272.8722 | 121.7105 | 332.6171 | 3.000m | Flange |
| 12 | 273.1623 | 121.3665 | 332.5901 | 3.450m | Flowline_Gutter |
| 13 | 273.1892 | 121.3347 | 332.8151 | 3.492m | Top_Curb |
| 14 | 273.2859 | 121.2200 | 332.8151 | 3.642m | Back_Curb |
| 15 | 273.9300 | 120.4564 | 332.6551 | 4.641m | EPS_Sub |
| 16 | 273.9307 | 120.4556 | 332.8551 | 4.642m | Hinge_Cut |
| 17 | 274.7249 | 119.5140 | 335.3188 | 5.874m | Before_Rounding |
| 18 | 274.8677 | 119.3446 | 335.4493 | 6.095m | Daylight |

CHAINAGE 1+75.00

| POINT | X | Y | Z | OFFSET | STRING CUT |
|-------|----------|----------|----------|----------|-----------------|
| 1 | 268.9222 | 152.0467 | 323.0344 | -18.351m | Daylight |
| 2 | 269.0344 | 151.9928 | 323.0698 | -18.226m | Before_Rounding |
| 3 | 281.2818 | 146.1159 | 332.1261 | -4.642m | EPS |
| 4 | 281.2827 | 146.1155 | 331.9261 | -4.641m | EPS_Sub |
| 5 | 282.1834 | 145.6833 | 332.0861 | -3.642m | Back_Curb |
| 6 | 282.3186 | 145.6184 | 332.0861 | -3.492m | Top_Curb |
| 7 | 282.3562 | 145.6003 | 331.8611 | -3.450m | Flowline_Gutter |
| 8 | 282.7619 | 145.4057 | 331.8881 | -3.000m | ETW |
| 9 | 282.7619 | 145.4057 | 331.6881 | -3.000m | ETW_SubBase |
| 10 | 288.1714 | 142.8099 | 331.5381 | 3.000m | ETW_SubBase |
| 11 | 288.1714 | 142.8099 | 331.7381 | 3.000m | Flange |
| 12 | 288.5771 | 142.6153 | 331.7111 | 3.450m | Flowline_Gutter |
| 13 | 288.6147 | 142.5972 | 331.9361 | 3.492m | Top_Curb |
| 14 | 288.7499 | 142.5323 | 331.9361 | 3.642m | Back_Curb |
| 15 | 289.6506 | 142.1001 | 331.7761 | 4.641m | EPS_Sub |

| | | | | | |
|----|----------|----------|----------|--------|-----------------|
| 16 | 289.6515 | 142.0997 | 331.9761 | 4.642m | Hinge_Cut |
| 17 | 292.6215 | 140.6745 | 338.5646 | 7.936m | Before_Rounding |
| 18 | 292.7421 | 140.6167 | 338.6526 | 8.070m | Daylight |

CHAINAGE 2+00.00

| POINT | X | Y | Z | OFFSET | STRING CUT |
|-------|----------|----------|----------|----------|-----------------|
| 1 | 277.0584 | 174.8473 | 321.1562 | -19.934m | Daylight |
| 2 | 277.2843 | 174.7513 | 321.2158 | -19.689m | Before_Rounding |
| 3 | 291.1312 | 168.8630 | 331.2470 | -4.642m | EPS |
| 4 | 291.1321 | 168.8626 | 331.0470 | -4.641m | EPS_Sub |
| 5 | 292.0515 | 168.4717 | 331.2070 | -3.642m | Back_Curb |
| 6 | 292.1895 | 168.4130 | 331.2070 | -3.492m | Top_Curb |
| 7 | 292.2279 | 168.3967 | 330.9820 | -3.450m | Flowline_Gutter |
| 8 | 292.6420 | 168.2206 | 331.0090 | -3.000m | ETW |
| 9 | 292.6420 | 168.2206 | 330.8090 | -3.000m | ETW_SubBase |
| 10 | 298.1635 | 165.8726 | 330.6590 | 3.000m | ETW_SubBase |
| 11 | 298.1635 | 165.8726 | 330.8590 | 3.000m | Flange |
| 12 | 298.5776 | 165.6965 | 330.8320 | 3.450m | Flowline_Gutter |
| 13 | 298.6160 | 165.6802 | 331.0570 | 3.492m | Top_Curb |
| 14 | 298.7540 | 165.6215 | 331.0570 | 3.642m | Back_Curb |
| 15 | 299.6734 | 165.2306 | 330.8970 | 4.641m | EPS_Sub |
| 16 | 299.6743 | 165.2302 | 331.0970 | 4.642m | Hinge_Cut |
| 17 | 300.9284 | 164.6969 | 333.8225 | 6.004m | Before_Rounding |
| 18 | 301.1343 | 164.6093 | 333.9499 | 6.228m | Daylight |

CHAINAGE 2+25.00

| POINT | X | Y | Z | OFFSET | STRING CUT |
|-------|----------|----------|----------|----------|-----------------|
| 1 | 286.3658 | 198.0560 | 320.0000 | -20.451m | Daylight |
| 2 | 286.6027 | 197.9552 | 320.0000 | -20.194m | Before_Rounding |
| 3 | 300.9144 | 191.8693 | 330.3679 | -4.642m | EPS |
| 4 | 300.9153 | 191.8689 | 330.1679 | -4.641m | EPS_Sub |
| 5 | 301.8347 | 191.4780 | 330.3279 | -3.642m | Back_Curb |
| 6 | 301.9727 | 191.4193 | 330.3279 | -3.492m | Top_Curb |
| 7 | 302.0111 | 191.4030 | 330.1029 | -3.450m | Flowline_Gutter |
| 8 | 302.4252 | 191.2269 | 330.1299 | -3.000m | ETW |
| 9 | 302.4252 | 191.2269 | 329.9299 | -3.000m | ETW_SubBase |
| 10 | 307.9467 | 188.8789 | 329.7799 | 3.000m | ETW_SubBase |
| 11 | 307.9467 | 188.8789 | 329.9799 | 3.000m | Flange |

| | | | | | |
|----|----------|----------|----------|--------|-----------------|
| 12 | 308.3608 | 188.7028 | 329.9529 | 3.450m | Flowline_Gutter |
| 13 | 308.3992 | 188.6865 | 330.1779 | 3.492m | Top_Curb |
| 14 | 308.5372 | 188.6278 | 330.1779 | 3.642m | Back_Curb |
| 15 | 309.4566 | 188.2368 | 330.0179 | 4.641m | EPS_Sub |
| 16 | 309.4575 | 188.2365 | 330.2179 | 4.642m | Hinge_Cut |
| 17 | 311.9629 | 187.1710 | 335.6631 | 7.364m | Before_Rounding |
| 18 | 312.1006 | 187.1125 | 335.7652 | 7.514m | Daylight |

CHAINAGE 2+50.00

| POINT | X | Y | Z | OFFSET | STRING CUT |
|-------|----------|----------|----------|----------|-----------------|
| 1 | 297.5994 | 220.4455 | 320.0000 | -18.875m | Before_Rounding |
| 2 | 310.6976 | 214.8756 | 329.4889 | -4.642m | EPS |
| 3 | 310.6985 | 214.8752 | 329.2889 | -4.641m | EPS_Sub |
| 4 | 311.6179 | 214.4843 | 329.4489 | -3.642m | Back_Curb |
| 5 | 311.7559 | 214.4256 | 329.4489 | -3.492m | Top_Curb |
| 6 | 311.7943 | 214.4092 | 329.2239 | -3.450m | Flowline_Gutter |
| 7 | 312.2084 | 214.2331 | 329.2509 | -3.000m | ETW |
| 8 | 312.2084 | 214.2331 | 329.0509 | -3.000m | ETW_SubBase |
| 9 | 317.7299 | 211.8852 | 328.9009 | 3.000m | ETW_SubBase |
| 10 | 317.7299 | 211.8852 | 329.1009 | 3.000m | Flange |
| 11 | 318.1440 | 211.7091 | 329.0739 | 3.450m | Flowline_Gutter |
| 12 | 318.1824 | 211.6928 | 329.2989 | 3.492m | Top_Curb |
| 13 | 318.3204 | 211.6341 | 329.2989 | 3.642m | Back_Curb |
| 14 | 319.2398 | 211.2431 | 329.1389 | 4.641m | EPS_Sub |
| 15 | 319.2407 | 211.2427 | 329.3389 | 4.642m | Hinge_Cut |
| 16 | 322.5767 | 209.8241 | 336.5891 | 8.267m | Before_Rounding |
| 17 | 322.7583 | 209.7469 | 336.7487 | 8.464m | Daylight |

CHAINAGE 2+75.00

| POINT | X | Y | Z | OFFSET | STRING CUT |
|-------|----------|----------|----------|---------|-----------------|
| 1 | 320.4808 | 237.8819 | 328.6098 | -4.642m | EPS |
| 2 | 320.4817 | 237.8815 | 328.4098 | -4.641m | EPS_Sub |
| 3 | 321.4011 | 237.4905 | 328.5698 | -3.642m | Back_Curb |
| 4 | 321.5391 | 237.4318 | 328.5698 | -3.492m | Top_Curb |
| 5 | 321.5775 | 237.4155 | 328.3448 | -3.450m | Flowline_Gutter |
| 6 | 321.9916 | 237.2394 | 328.1718 | -3.000m | ETW_SubBase |
| 7 | 321.9916 | 237.2394 | 328.3718 | -3.000m | Flange |

| | | | | | |
|----|----------|----------|----------|--------|-----------------|
| 8 | 327.5131 | 234.8915 | 328.2218 | 3.000m | ETW |
| 9 | 327.5131 | 234.8915 | 328.0218 | 3.000m | ETW_SubBase |
| 10 | 327.9272 | 234.7154 | 328.1948 | 3.450m | Flowline_Gutter |
| 11 | 327.9656 | 234.6990 | 328.4198 | 3.492m | Top_Curb |
| 12 | 328.1036 | 234.6403 | 328.4198 | 3.642m | Back_Curb |
| 13 | 329.0230 | 234.2494 | 328.2598 | 4.641m | EPS_Sub |
| 14 | 329.0239 | 234.2490 | 328.4598 | 4.642m | Ditch_Out |
| 15 | 331.0172 | 233.4014 | 332.7920 | 6.808m | Before_Rounding |
| 16 | 331.2249 | 233.3130 | 332.9167 | 7.033m | Daylight |

PRILOG 4- VERTIKALNI TOK TRASE

Station Range: Start: 0+00.00, End: 278+14.00

| PVI Station | Grade Out | Curve Length |
|--------------|-----------|--------------|
| 0.00 0+00.00 | -6.84% | |
| 1.00 1+36.45 | -3.52% | 165.65m |

Vertical Curve Information:(sag curve)

PVC Station: 0+53.70 Elevation: 338.85m

PVI Station: 1+36.45 Elevation: 333.20m

PVT Station: 2+19.35 Elevation: 330.25m

Low Point: 2+19.35 Elevation: 330.25m

Grade in: -6.84% Grade out: -3.52%

Change: 3.32% K:

Curve Length: 165.65m

Headlight Distance:

2.00 2+78.14