

**NATIONAL ROAD ADMINISTRATION (ANE)  
GOVERNMENT OF REPUBLIC OF MOZAMBIQUE**

**PREPARATORY SURVEY  
FOR  
NACALA CORRIDOR ROAD NETWORK  
UPGRADING PROJECT  
IN  
THE REPUBLIC OF MOZAMBIQUE**

**FINAL REPORT  
DRAWINGS (BASIC OPTION)**

**MAY 2018**

**JAPAN INTERNATIONAL COOPERATION AGENCY**

**ORIENTAL CONSULTANTS GLOBAL CO., LTD.  
EIGHT-JAPAN ENGINEERING CONSULTANTS INC.  
KOKUSAI KOGYO CO., LTD.**

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| <b>18-015</b> |

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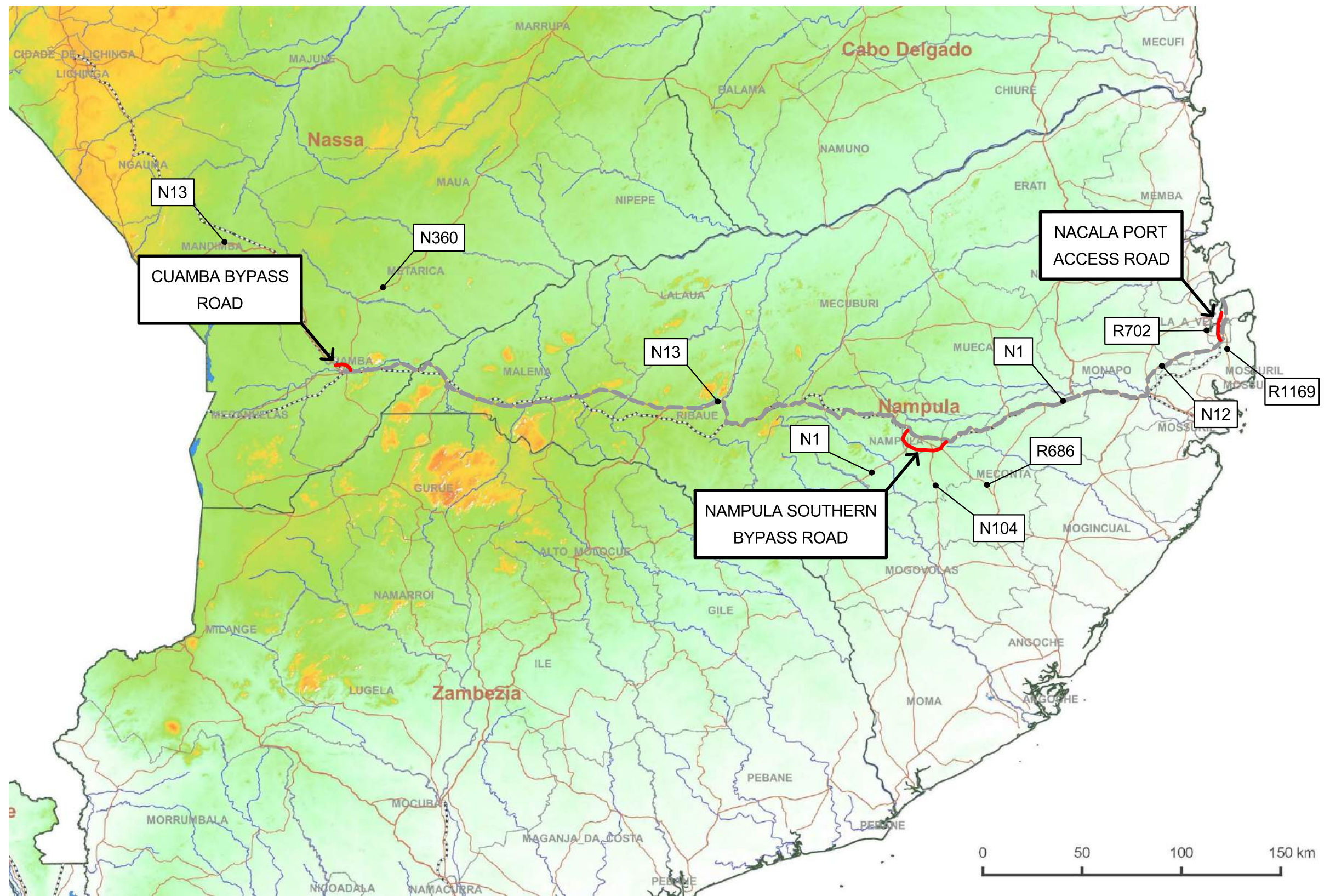
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**(A) GENERAL**



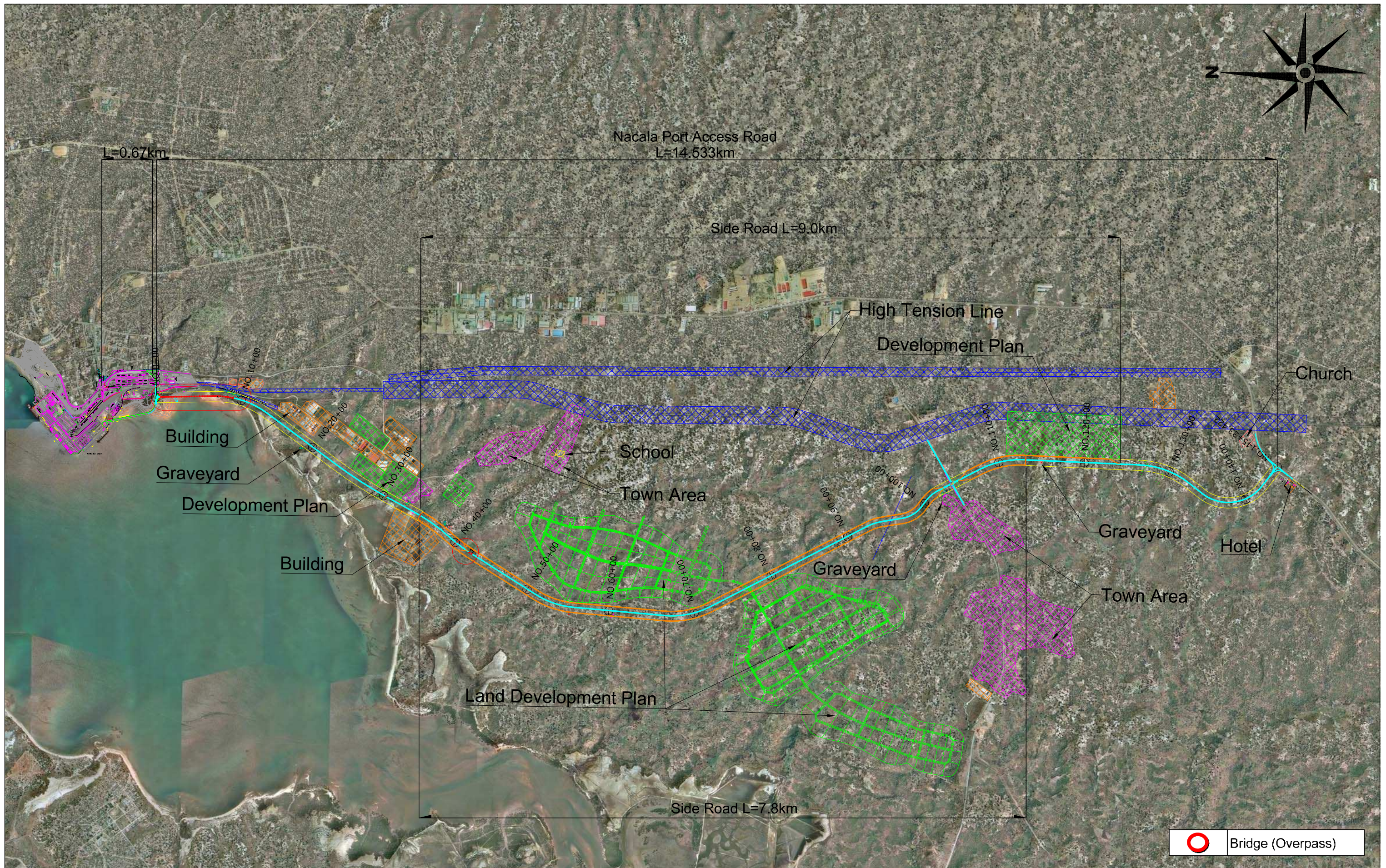
# Project Location Map



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| Japan International Cooperation Agency | Oriental Consultants Global Co., Ltd<br>Eight-Japan Engineering Consultants Inc.<br>Kokusai Kogyo Co., Ltd | PREPARED BY | CHECKED BY | APPROVED BY | PROJECT TITLE:<br><b>The Preparatory Survey for Nacala Corridor Road Network Improvement Project</b> | DRAWING TITLE:<br><b>Project Location Map</b> |           |             |          |
|  |  | NAME        |            |             |  | SCALE   | SHEET NO. | DRAWING NO. | REV. NO. |
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**(B) NACALA PORT ACCESS ROAD**



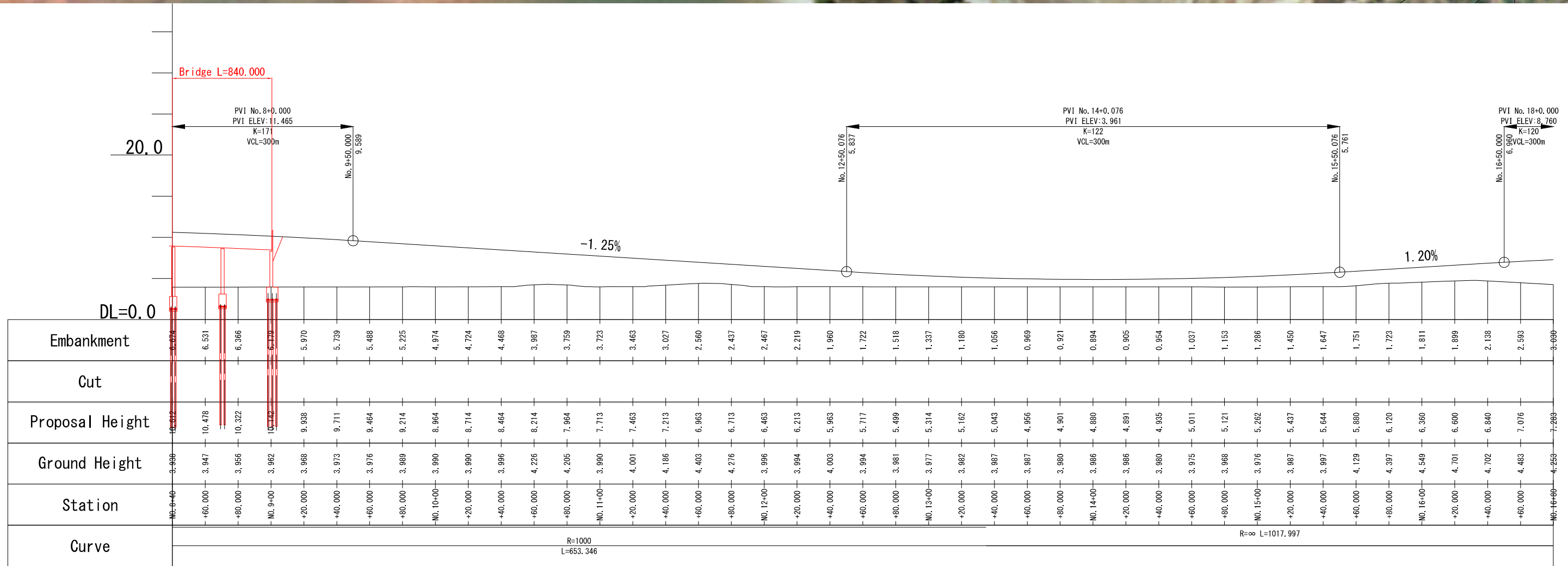


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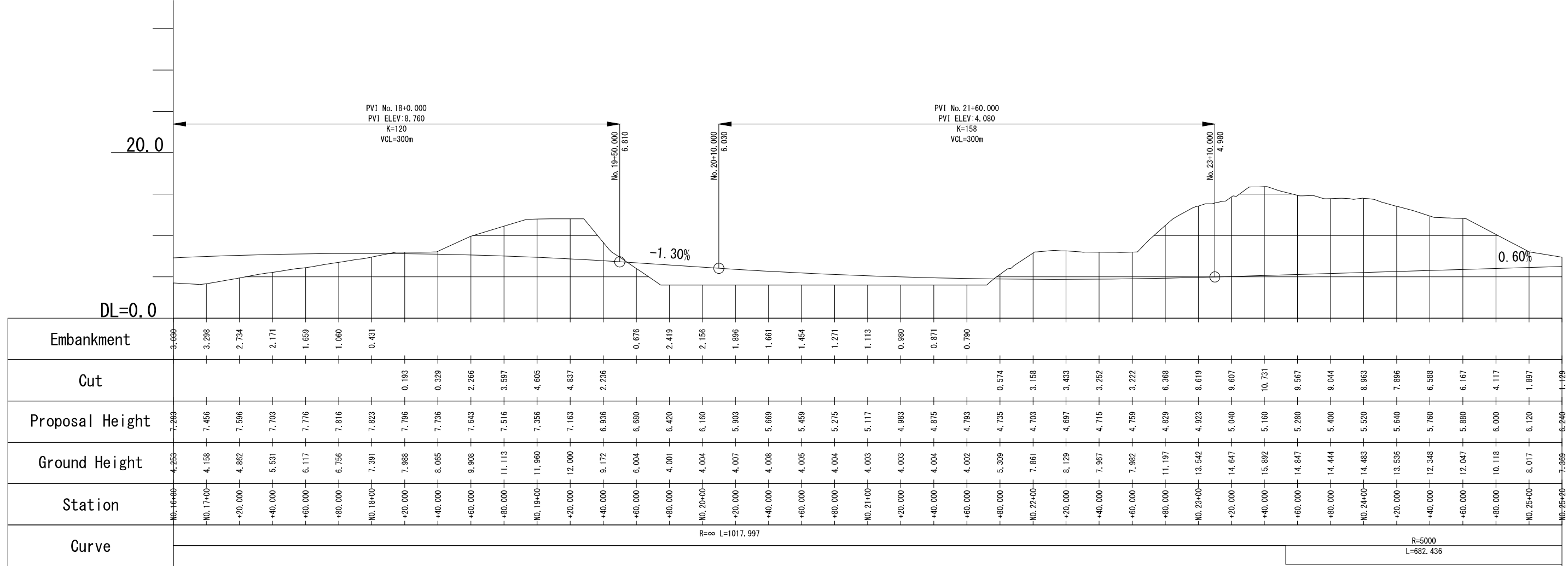
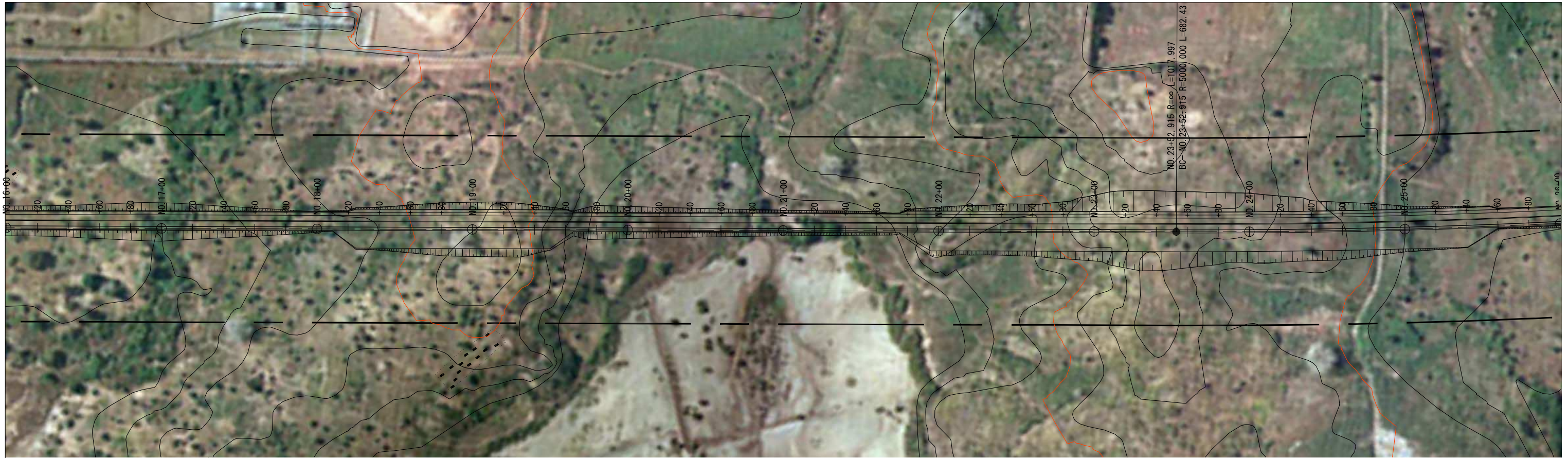






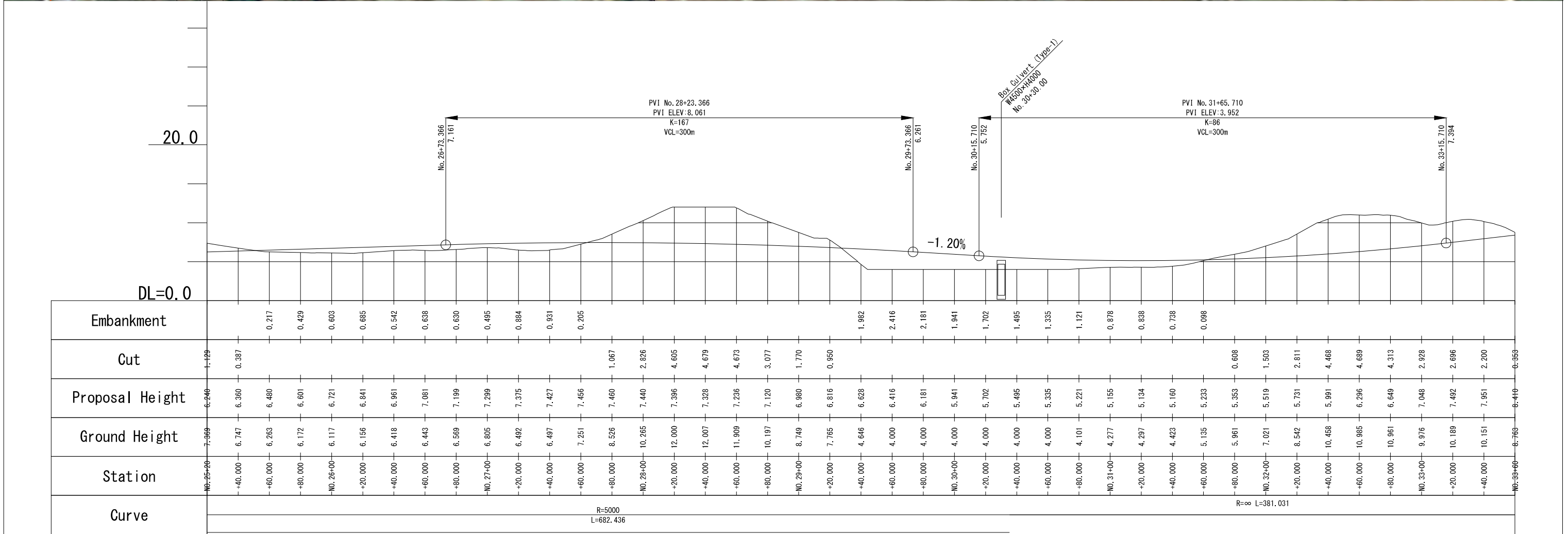
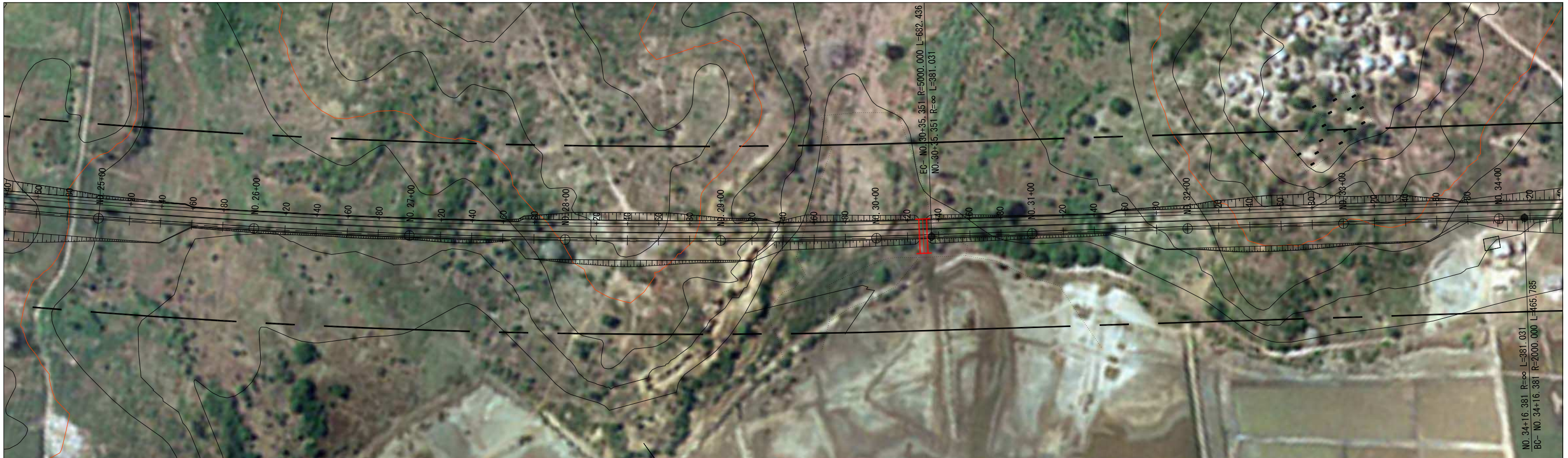
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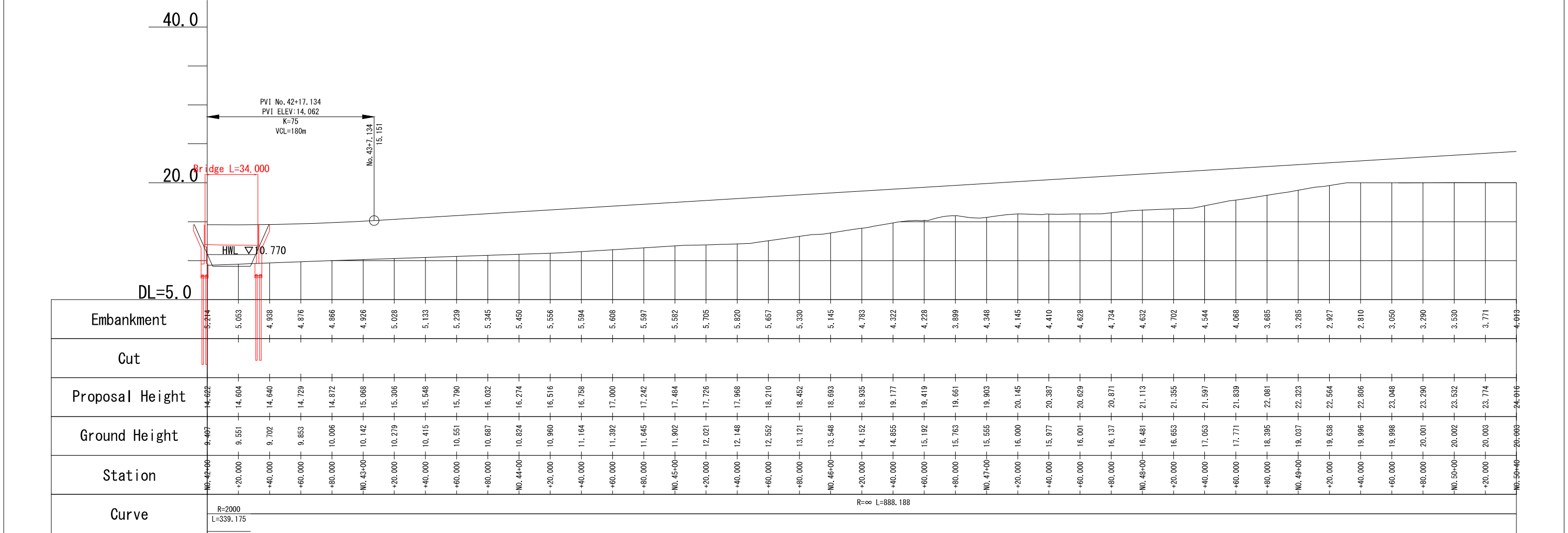
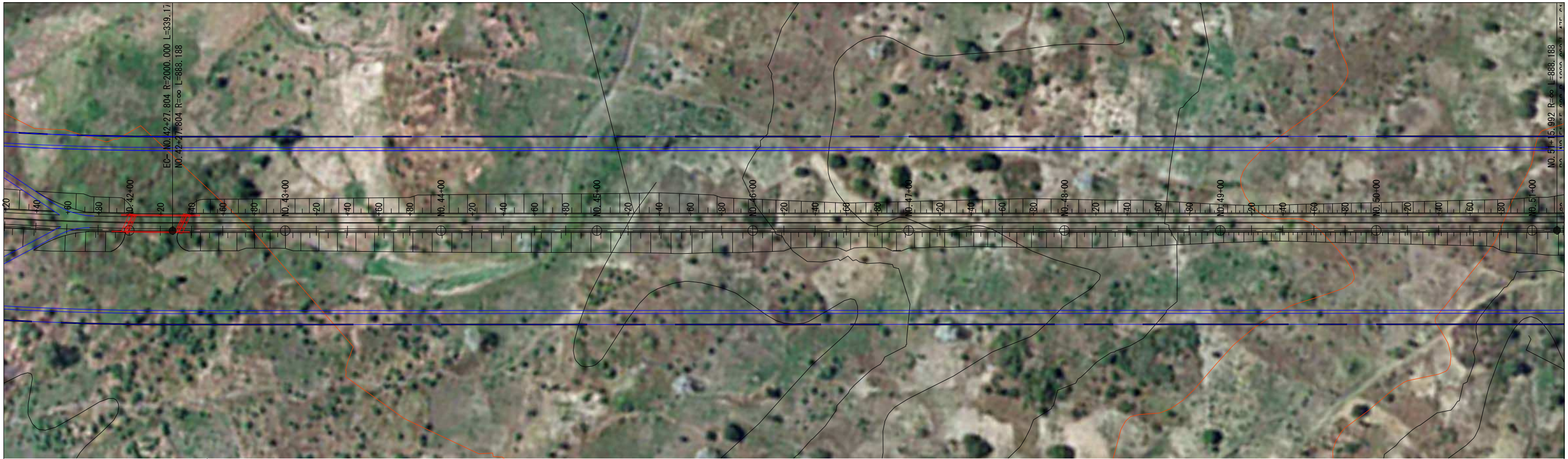


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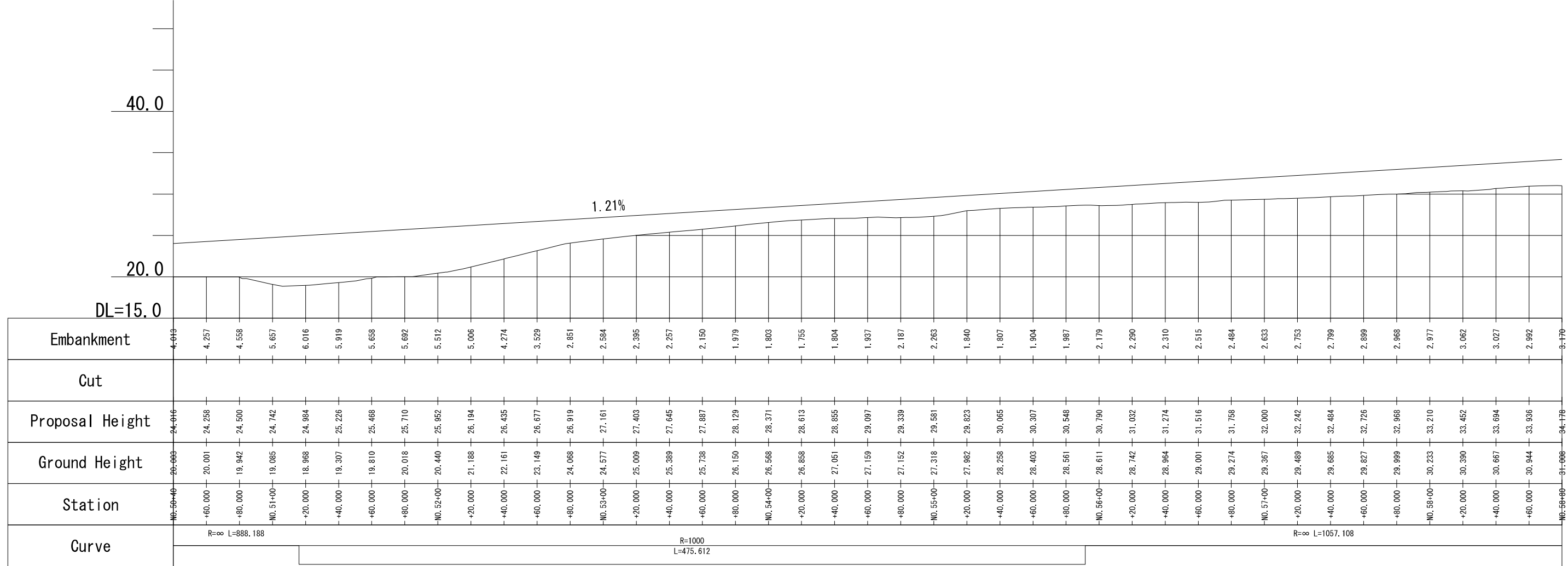
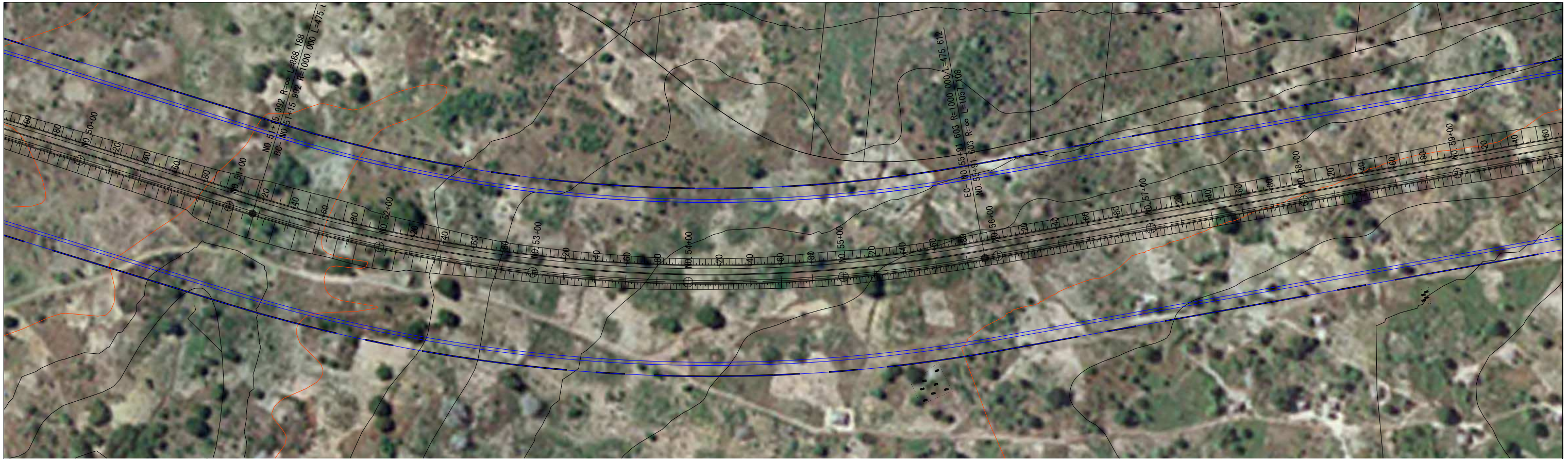






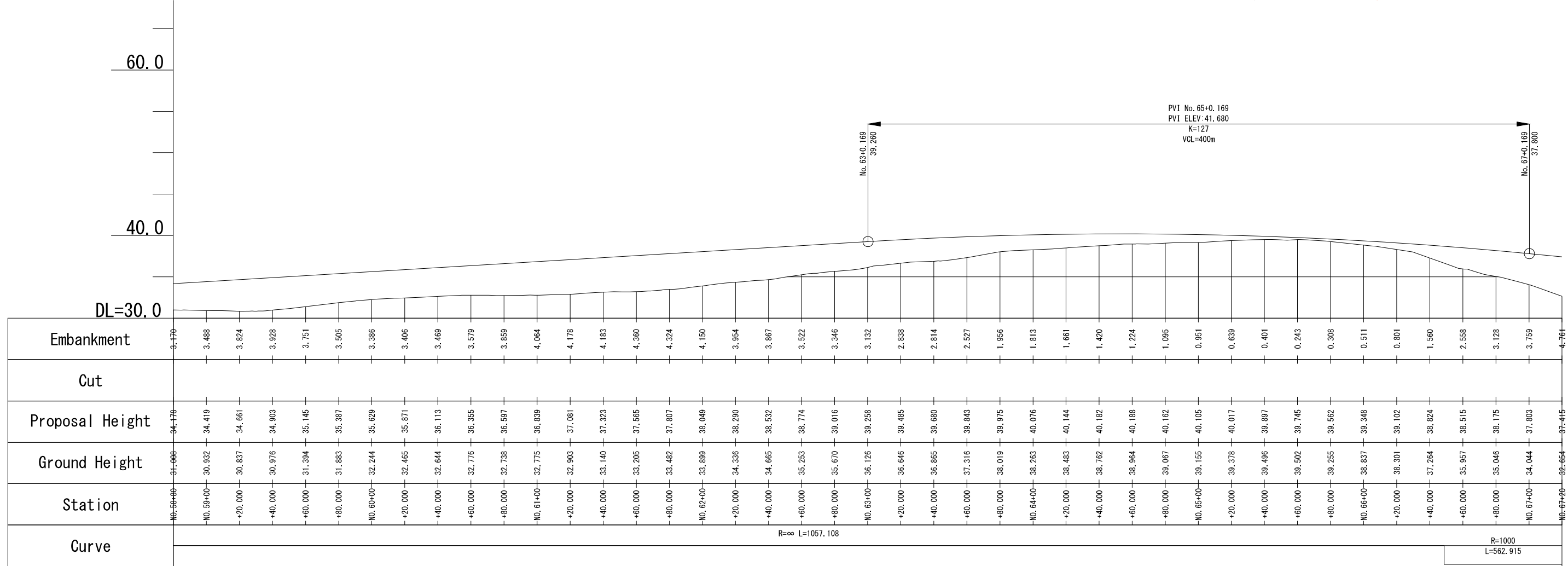
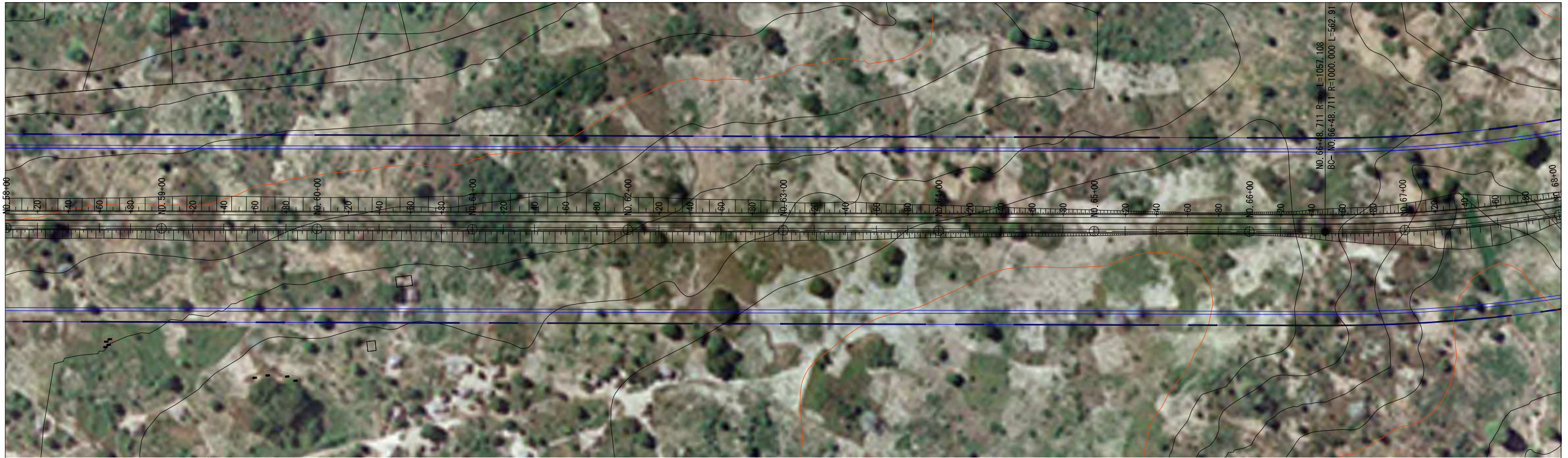
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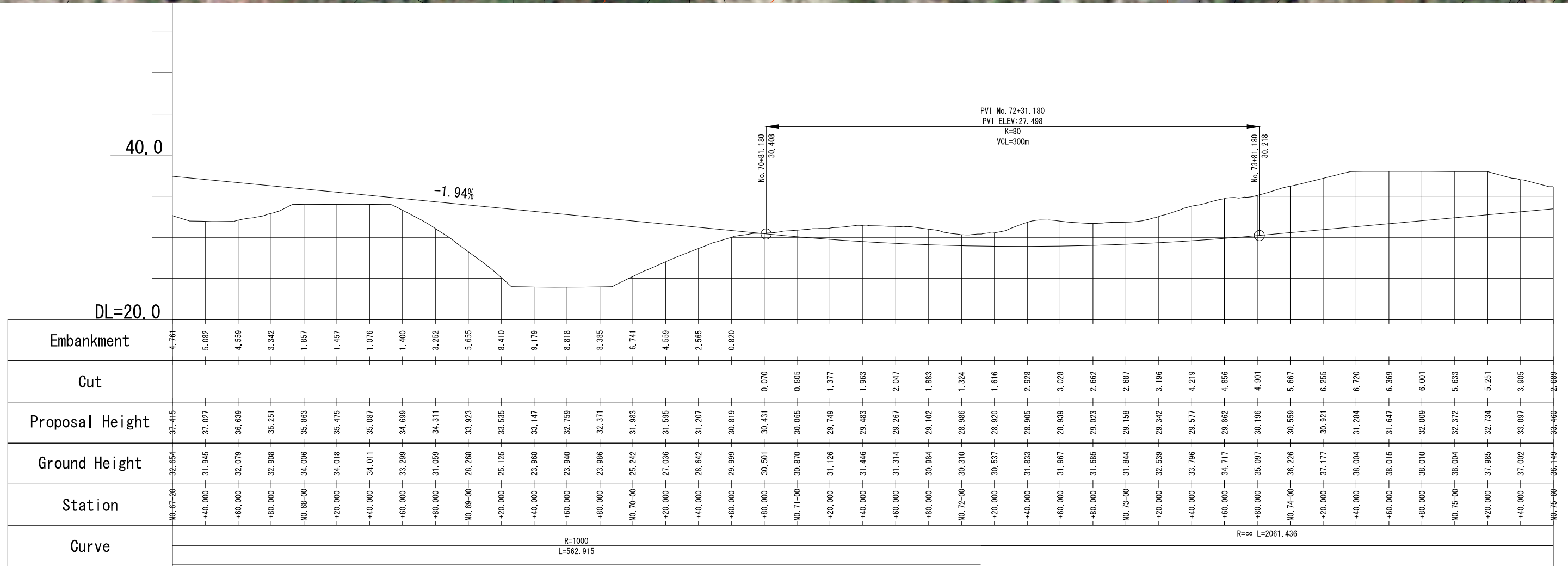
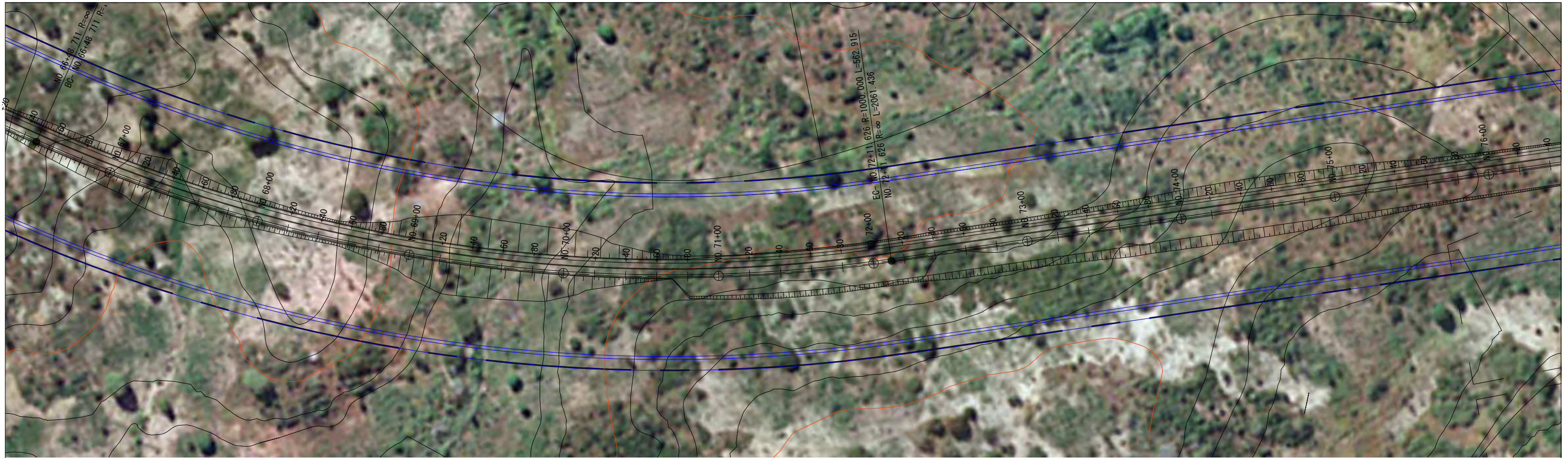
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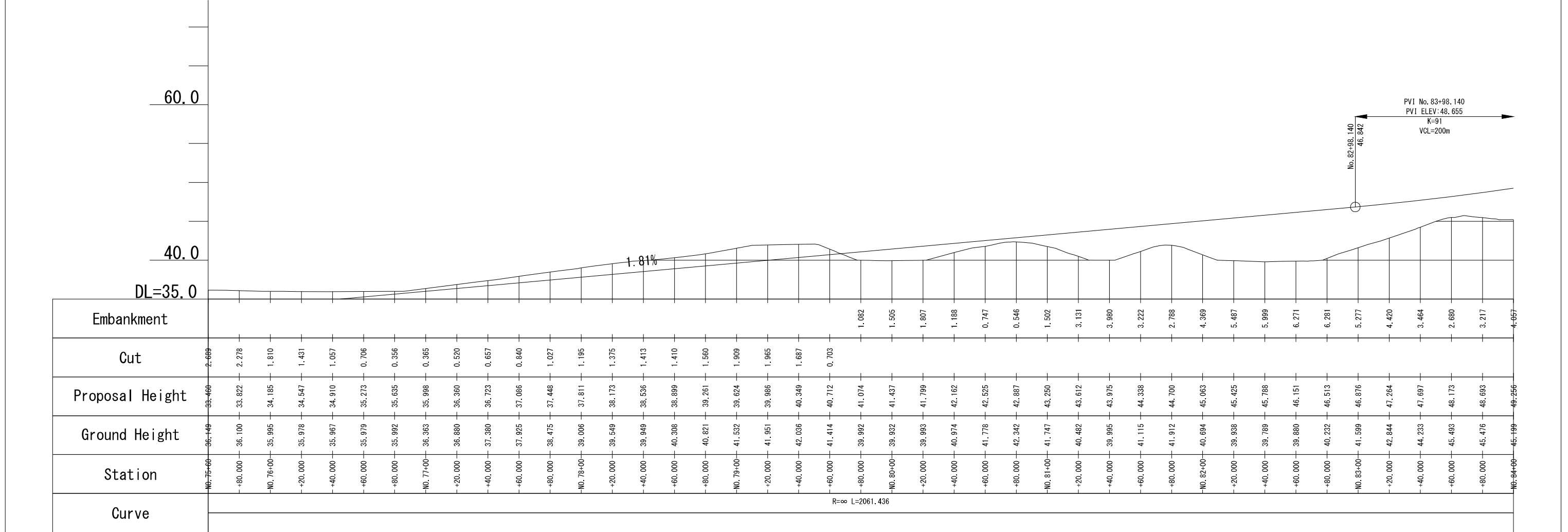
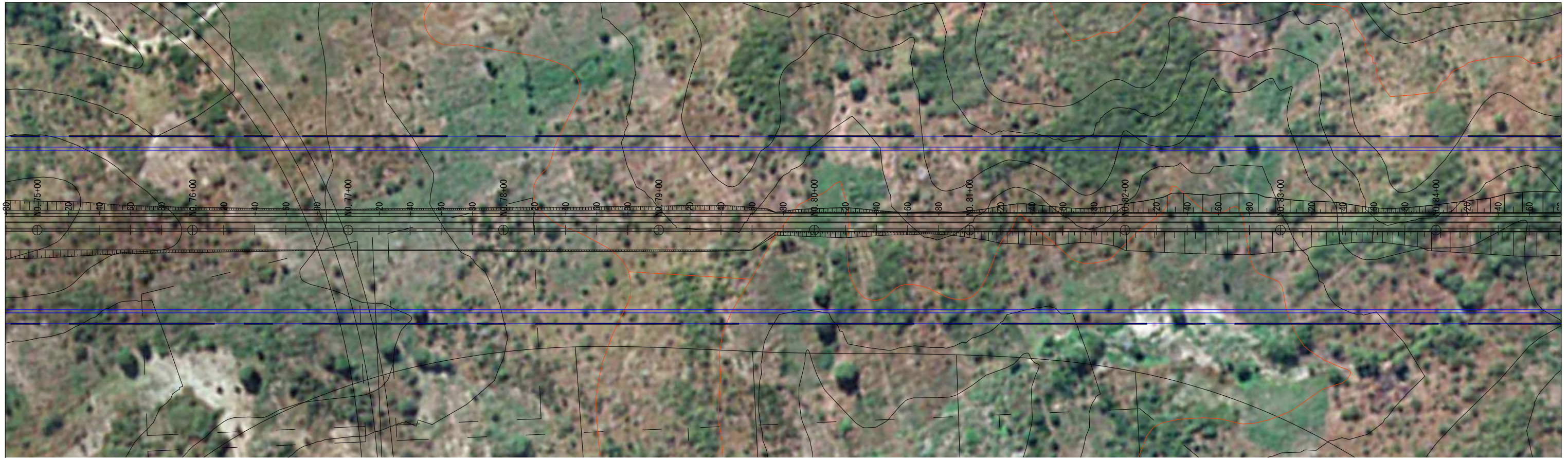
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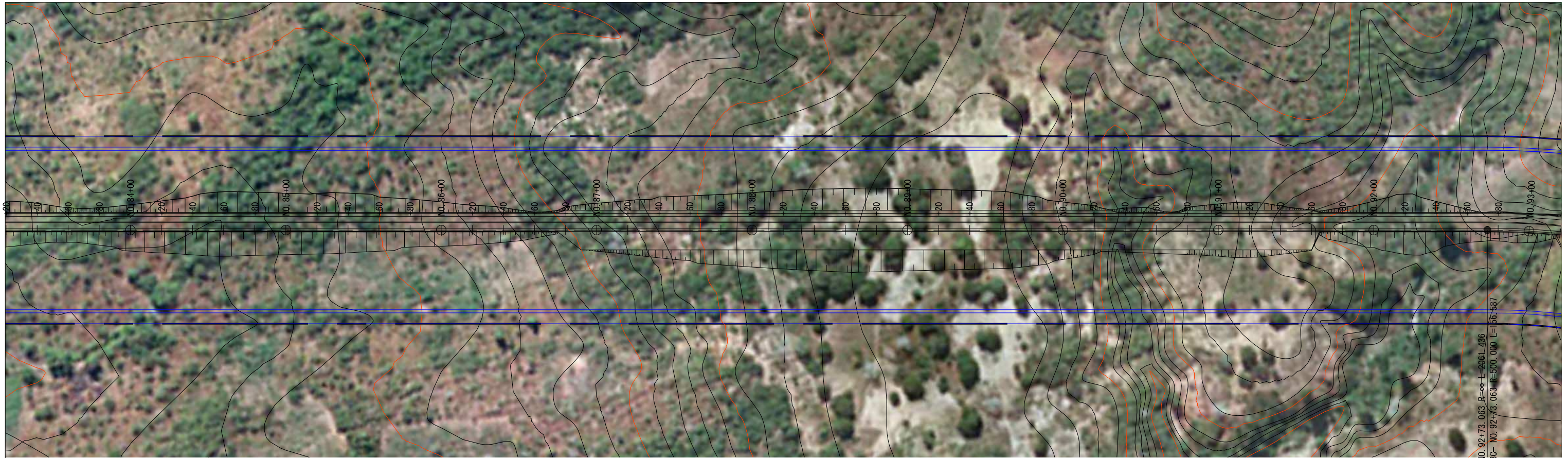
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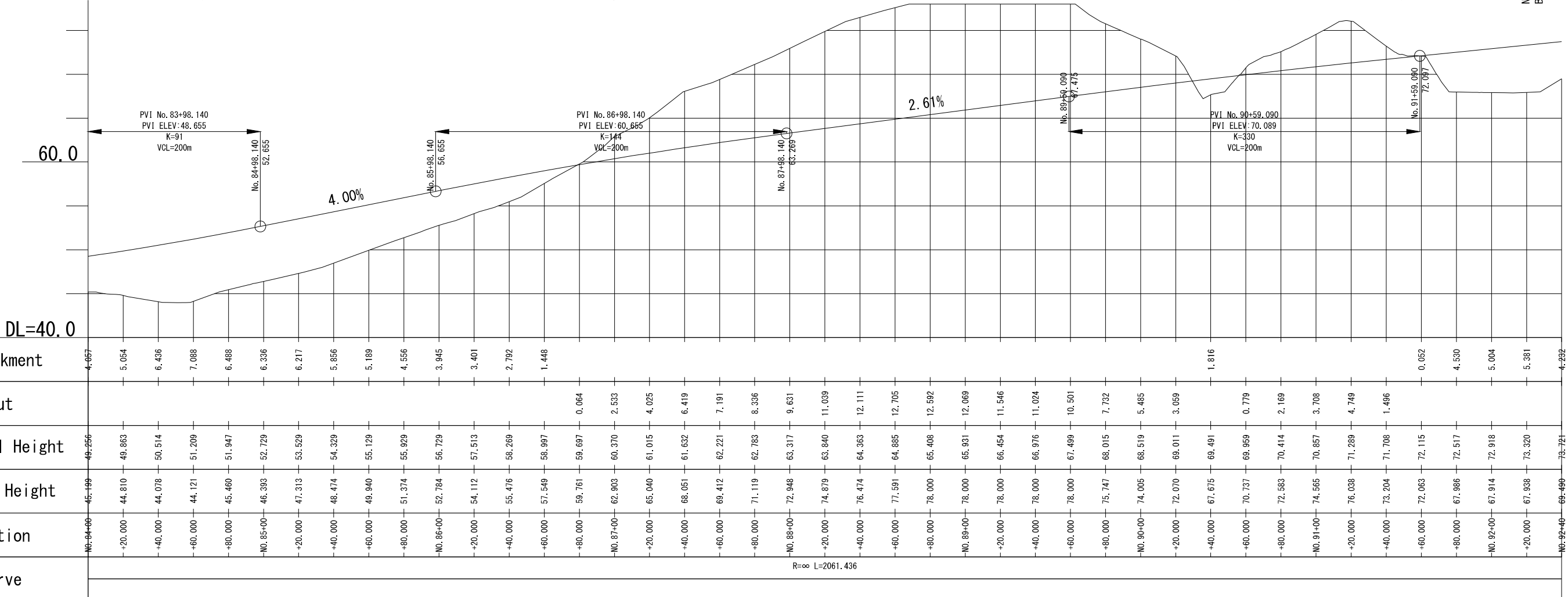


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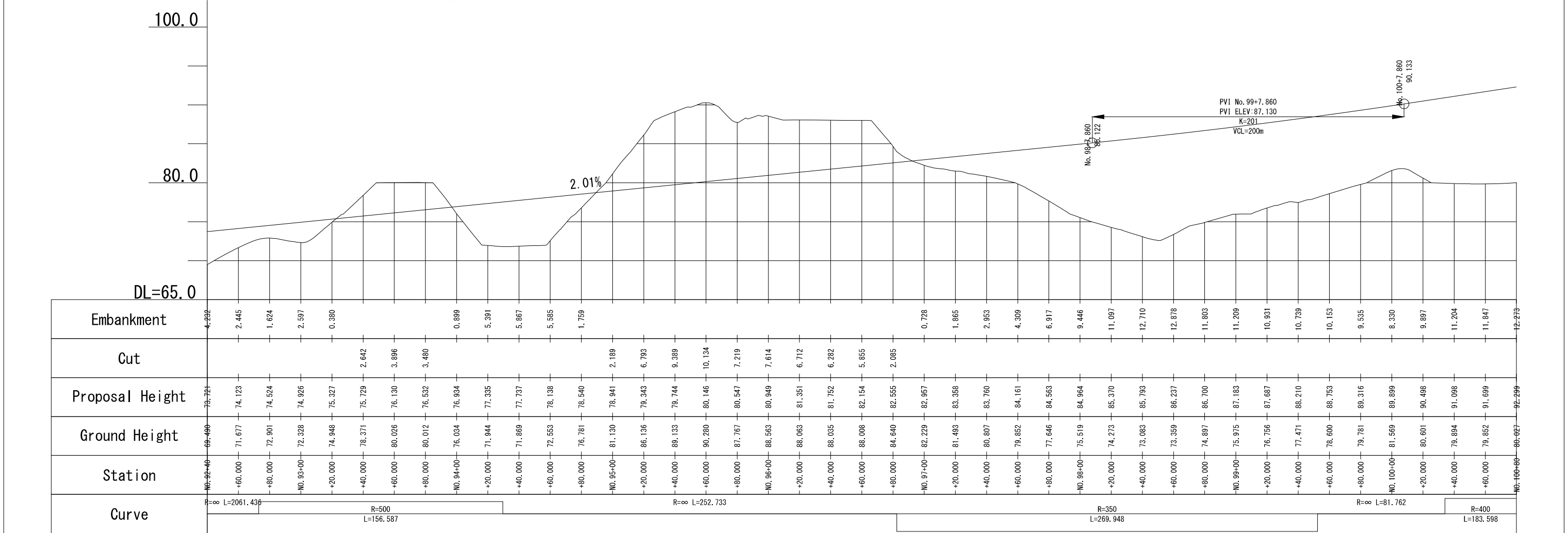
BC=NO. 92+73.063 R=∞ L=2061.436  
EC=NO. 93+00



| Station   | Ground Height | Proposal Height | Cut    | Embankment |
|-----------|---------------|-----------------|--------|------------|
| NO. 84+00 | 45.199        | 49.256          |        | 4.657      |
| -20.000   | 44.810        | 49.863          |        | 5.054      |
| -40.000   | 44.078        | 50.514          |        | 6.436      |
| -60.000   | 44.121        | 51.209          |        | 7.088      |
| -80.000   | 45.460        | 51.947          |        | 6.488      |
| NO. 85+00 | 46.393        | 52.729          |        | 6.336      |
| -20.000   | 47.313        | 53.529          |        | 6.217      |
| -40.000   | 48.474        | 54.329          |        | 5.856      |
| -60.000   | 49.940        | 55.129          |        | 5.189      |
| -80.000   | 51.374        | 55.929          |        | 4.556      |
| NO. 86+00 | 52.784        | 56.729          |        | 3.945      |
| -20.000   | 54.112        | 57.513          |        | 3.401      |
| -40.000   | 55.476        | 58.269          |        | 2.792      |
| -60.000   | 57.549        | 58.997          |        | 1.448      |
| -80.000   | 59.761        | 59.697          | 0.064  |            |
| NO. 87+00 | 62.903        | 60.370          | 2.533  |            |
| -20.000   | 65.040        | 61.015          | 4.025  |            |
| -40.000   | 68.051        | 61.632          | 6.419  |            |
| -60.000   | 69.412        | 62.221          | 7.191  |            |
| -80.000   | 71.119        | 62.783          | 8.336  |            |
| NO. 88+00 | 72.948        | 63.317          | 9.631  |            |
| -20.000   | 74.879        | 63.840          | 11.039 |            |
| -40.000   | 76.474        | 64.363          | 12.111 |            |
| -60.000   | 77.591        | 64.885          | 12.705 |            |
| -80.000   | 78.000        | 65.408          | 12.592 |            |
| NO. 89+00 | 78.000        | 65.931          | 12.069 |            |
| -20.000   | 78.000        | 66.454          | 11.546 |            |
| -40.000   | 78.000        | 66.976          | 11.024 |            |
| -60.000   | 78.000        | 67.499          | 10.501 |            |
| -80.000   | 75.747        | 68.015          | 7.782  |            |
| NO. 90+00 | 74.005        | 68.519          | 5.485  |            |
| -20.000   | 72.070        | 69.011          | 3.059  |            |
| -40.000   | 67.675        | 69.491          | 1.816  |            |
| -60.000   | 70.737        | 69.959          | 0.779  |            |
| -80.000   | 72.583        | 70.414          | 2.169  |            |
| NO. 91+00 | 74.565        | 70.857          | 3.708  |            |
| -20.000   | 76.038        | 71.289          | 4.749  |            |
| -40.000   | 73.204        | 71.708          | 1.496  |            |
| -60.000   | 72.065        | 72.115          | 0.052  |            |
| -80.000   | 67.986        | 72.517          | 4.530  |            |
| NO. 92+00 | 67.914        | 72.918          | 5.004  |            |
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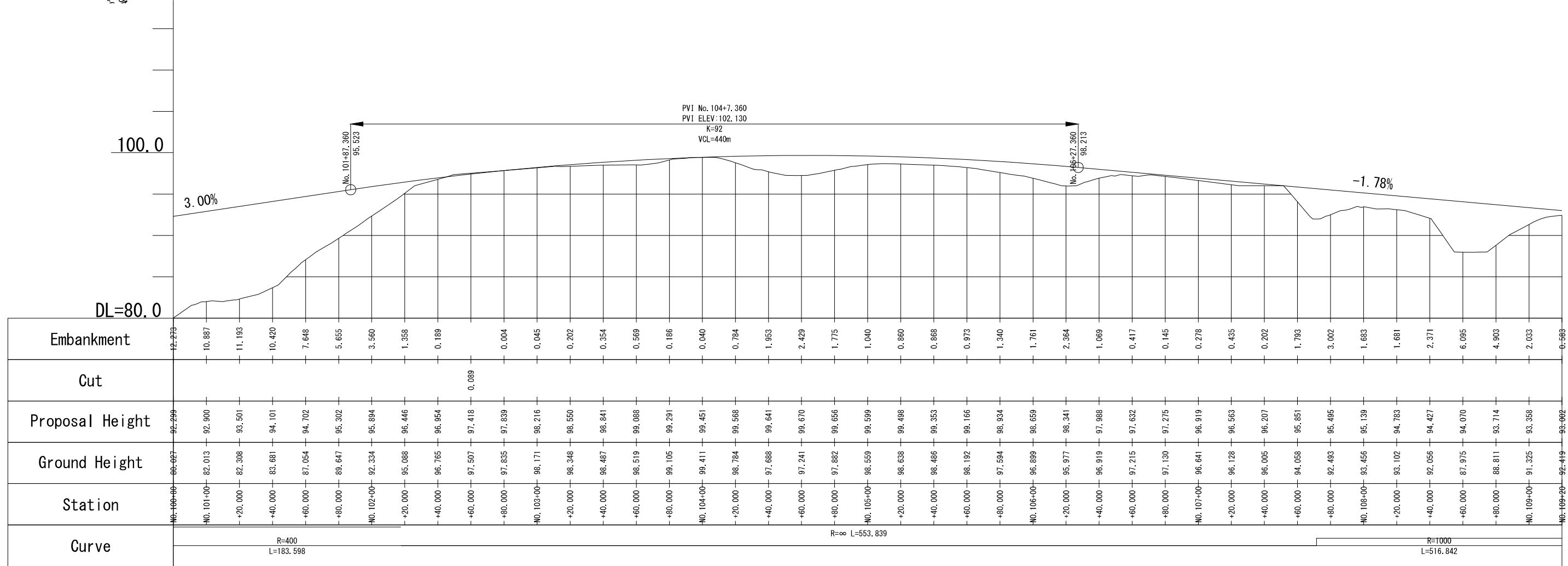
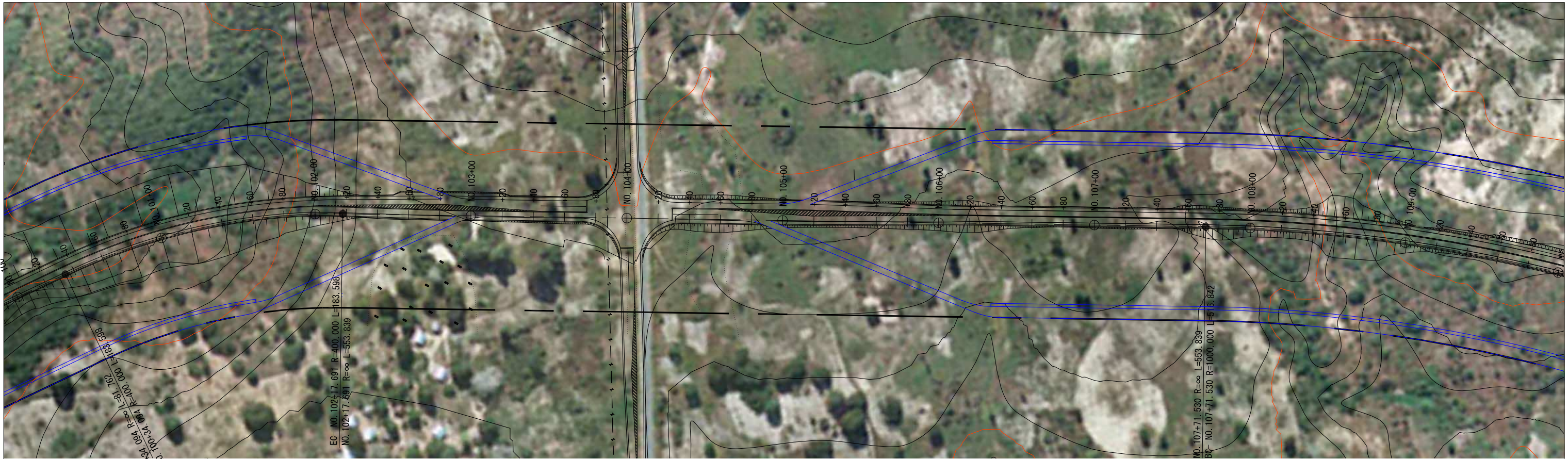
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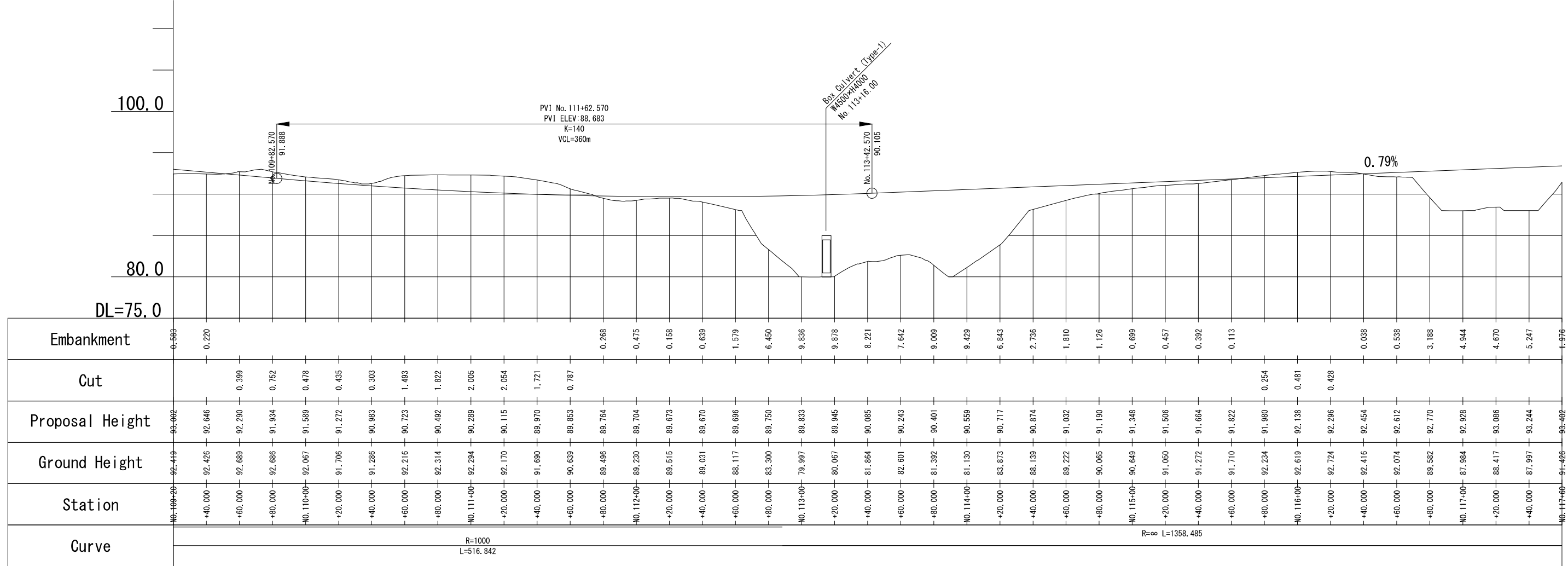
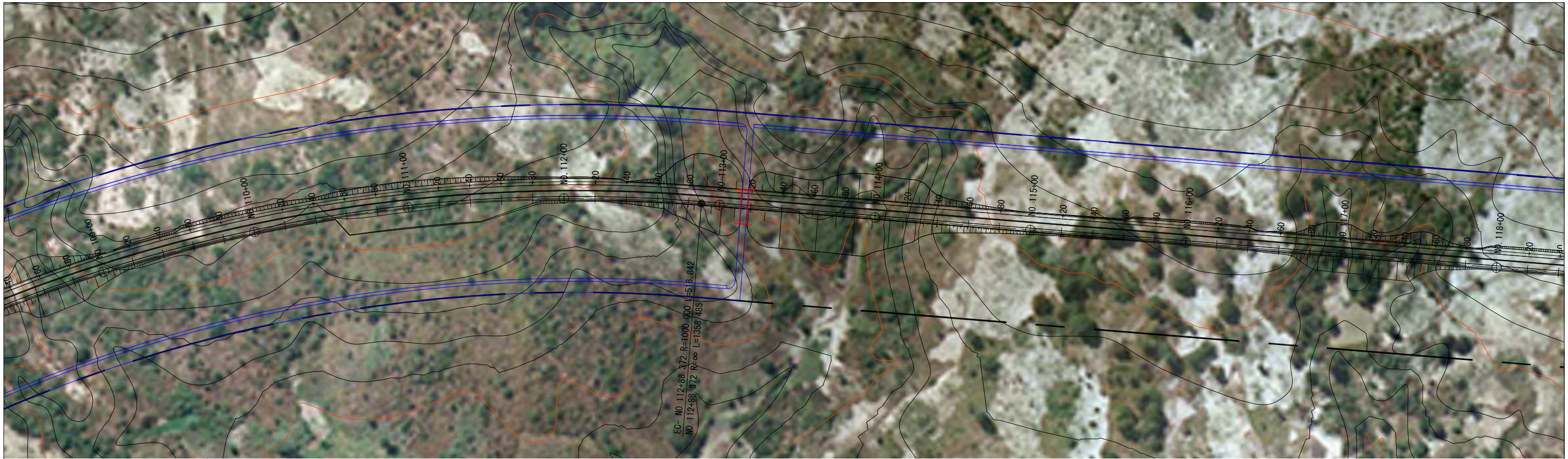
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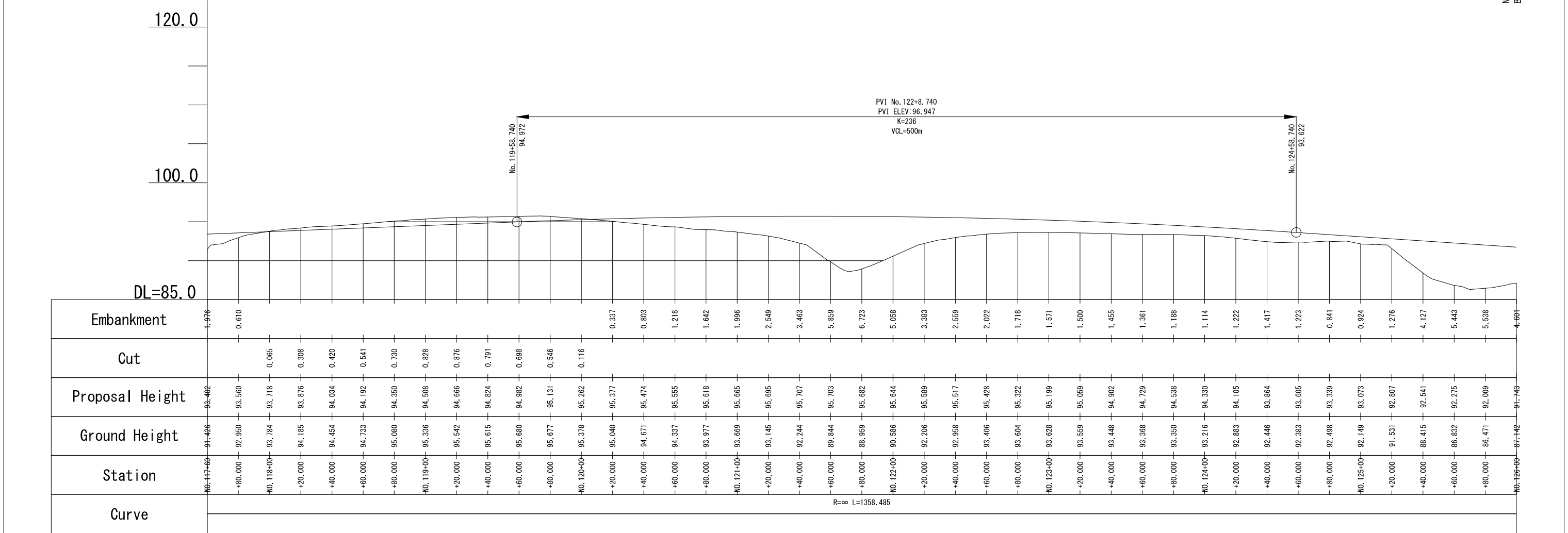
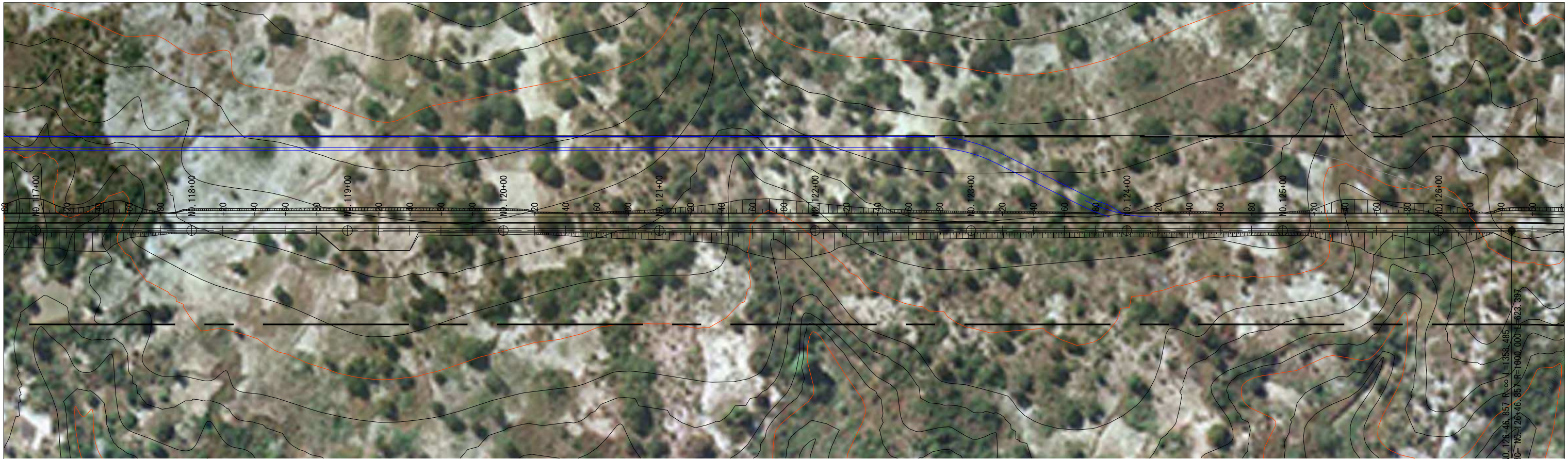
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|--|--|-------------|------------|-------------|--|---|-----------|-------------|----------|
| Japan International Cooperation Agency<br>National Road Administration (ANE) | Oriental Consultants Global Co., Ltd.<br>Eight-Japan Engineering Consultants Inc.<br>Kokusai Kogyo Co., Ltd. | PREPARED BY | CHECKED BY | APPROVED BY | PROJECT TITLE:<br><b>Preparatory Survey for Nacala Corridor<br/>         Road Network Upgrading Project<br/>         (Nacala Port Access Road)</b> | DRAWING TITLE: <b>Basic Option (Initial Stage)<br/>Plan and Profile</b> |           |             |          |
|  |  | NAME        |            |             |  | SCALE   | SHEET NO. | DRAWING NO. | REV. NO. |
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|  |  | DATE        |            |             |  |   |           |             |          |





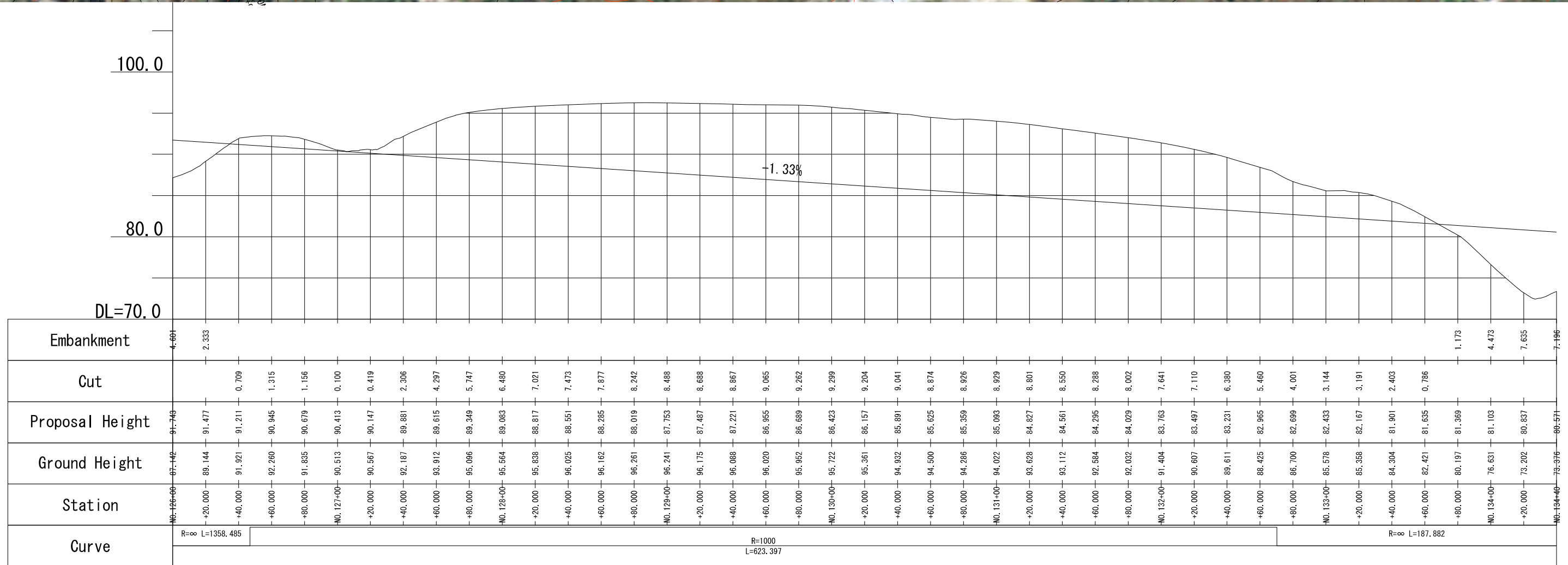
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| Japan International Cooperation Agency<br>National Road Administration (ANE) | Oriental Consultants Global Co., Ltd.<br>Eight-Japan Engineering Consultants Inc.<br>Kokusai Kogyo Co., Ltd. | PREPARED BY | CHECKED BY | APPROVED BY | PROJECT TITLE:<br><b>Preparatory Survey for Nacala Corridor<br/>         Road Network Upgrading Project<br/>         (Nacala Port Access Road)</b> | DRAWING TITLE: <b>Basic Option (Initial Stage)<br/>Plan and Profile</b> |           |             |          |
|  |  | NAME        |            |             |  | SCALE   | SHEET NO. | DRAWING NO. | REV. NO. |
|  |  | SIGNATURE   |            |             |  | 1/2500  |           | B-15        |          |
|  |  | DATE        |            |             |  |   |           |             |          |





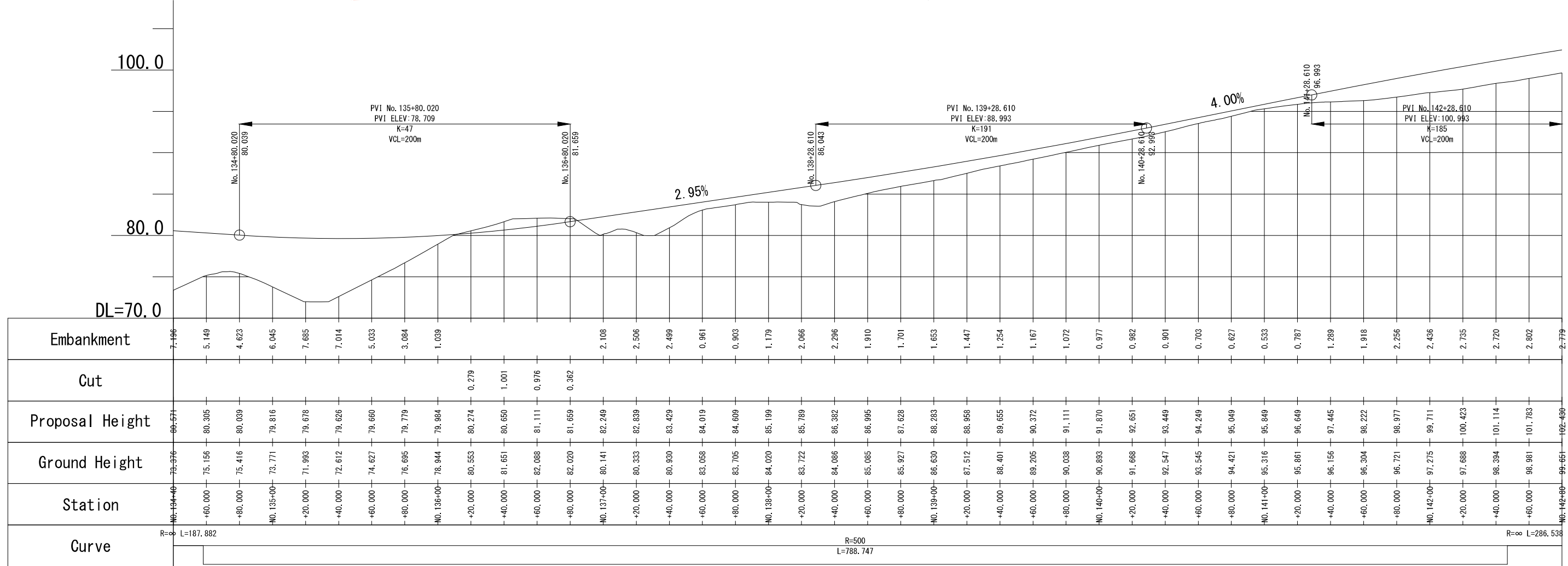
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| Japan International Cooperation Agency<br>National Road Administration (ANE) | Oriental Consultants Global Co., Ltd.<br>Eight-Japan Engineering Consultants Inc.<br>Kokusai Kogyo Co., Ltd. | PREPARED BY | CHECKED BY | APPROVED BY | PROJECT TITLE:<br><b>Preparatory Survey for Nacala Corridor<br/>         Road Network Upgrading Project<br/>         (Nacala Port Access Road)</b> | DRAWING TITLE: <b>Basic Option (Initial Stage)<br/>Plan and Profile</b> |           |             |          |
|  |  | NAME        |            |             |  | SCALE   | SHEET NO. | DRAWING NO. | REV. NO. |
|  |  | SIGNATURE   |            |             |  | 1/2500  |           | B-16        |          |
|  |  | DATE        |            |             |  |   |           |             |          |





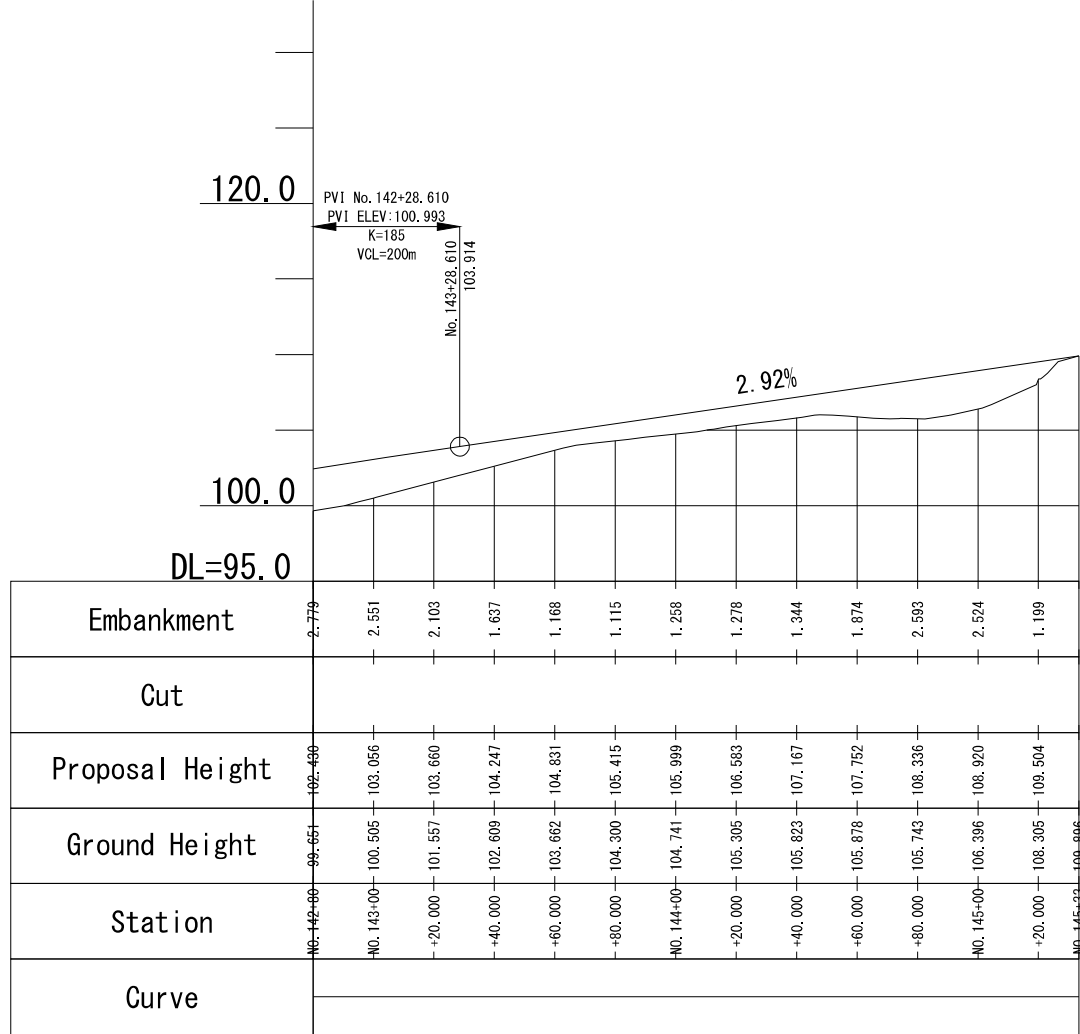
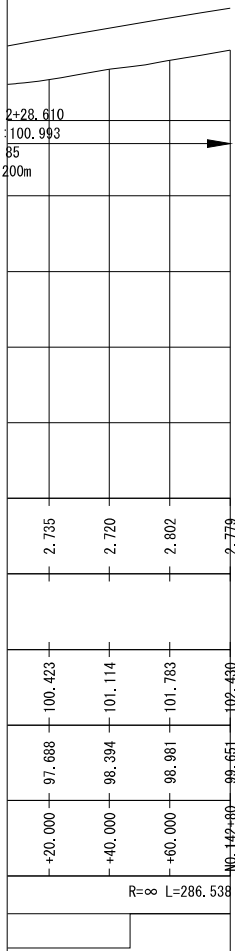
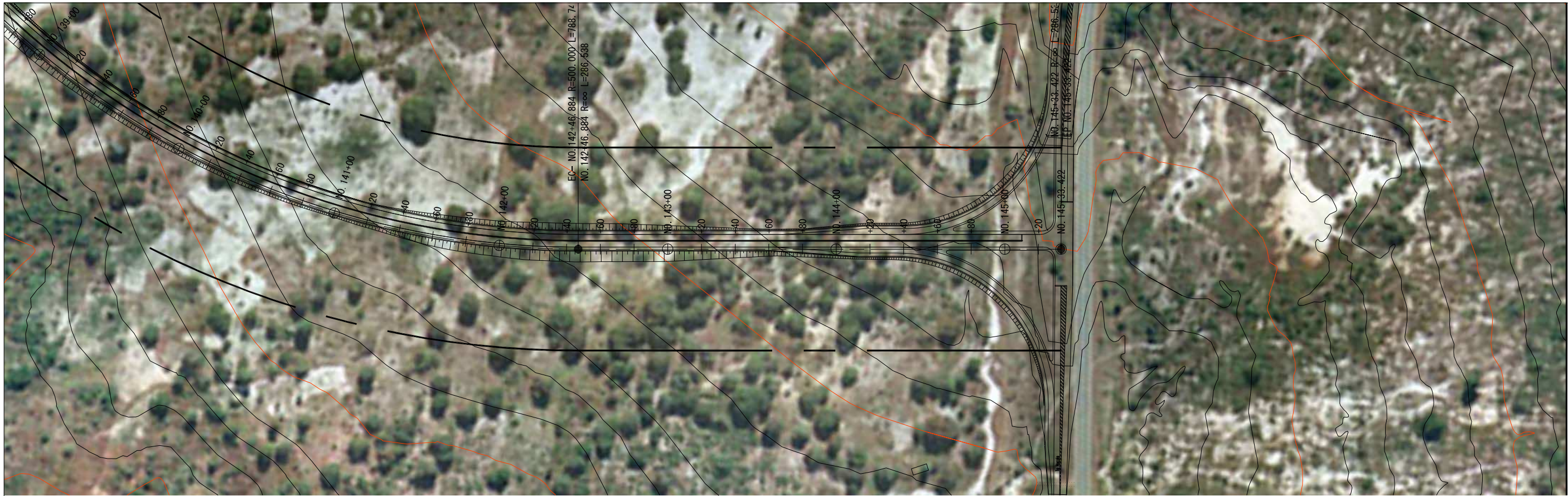
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|  | Japan International Cooperation Agency |  | Oriental Consultants Global Co., Ltd.    |  | PREPARED BY<br>CHECKED BY<br>APPROVED BY | PROJECT TITLE:<br><b>Preparatory Survey for Nacala Corridor<br/>         Road Network Upgrading Project<br/>         (Nacala Port Access Road)</b> | DRAWING TITLE: <b>Basic Option (Initial Stage)<br/>Plan and Profile</b> |           |             |          |
|  | National Road Administration (ANE)     |  | Eight-Japan Engineering Consultants Inc. |  |  |  | SCALE   | SHEET NO. | DRAWING NO. | REV. NO. |
|  |  |  | Kokusai Kogyo Co., Ltd.                  |  |  |  | 1/2500  |           | B-17        |          |





|  |  |             |            |             |  |   |           |             |          |
|--|--|-------------|------------|-------------|--|---|-----------|-------------|----------|
| Japan International Cooperation Agency<br>National Road Administration (ANE) | Oriental Consultants Global Co., Ltd.<br>Eight-Japan Engineering Consultants Inc.<br>Kokusai Kogyo Co., Ltd. | PREPARED BY | CHECKED BY | APPROVED BY | PROJECT TITLE:<br><b>Preparatory Survey for Nacala Corridor<br/>         Road Network Upgrading Project<br/>         (Nacala Port Access Road)</b> | DRAWING TITLE: <b>Basic Option (Initial Stage)<br/>Plan and Profile</b> |           |             |          |
|  |  | NAME        |            |             |  | SCALE   | SHEET NO. | DRAWING NO. | REV. NO. |
|  |  | SIGNATURE   |            |             |  | 1/2500  |           | B-18        |          |
|  |  | DATE        |            |             |  |   |           |             |          |





Japan International Cooperation Agency  
 National Road Administration (ANE)

Oriental Consultants Global Co., Ltd.  
 Eight-Japan Engineering Consultants Inc.  
 Kokusai Kogyo Co., Ltd.

|             |            |             |
|-------------|------------|-------------|
| PREPARED BY | CHECKED BY | APPROVED BY |
| NAME        |            |             |
| SIGNATURE   |            |             |
| DATE        |            |             |

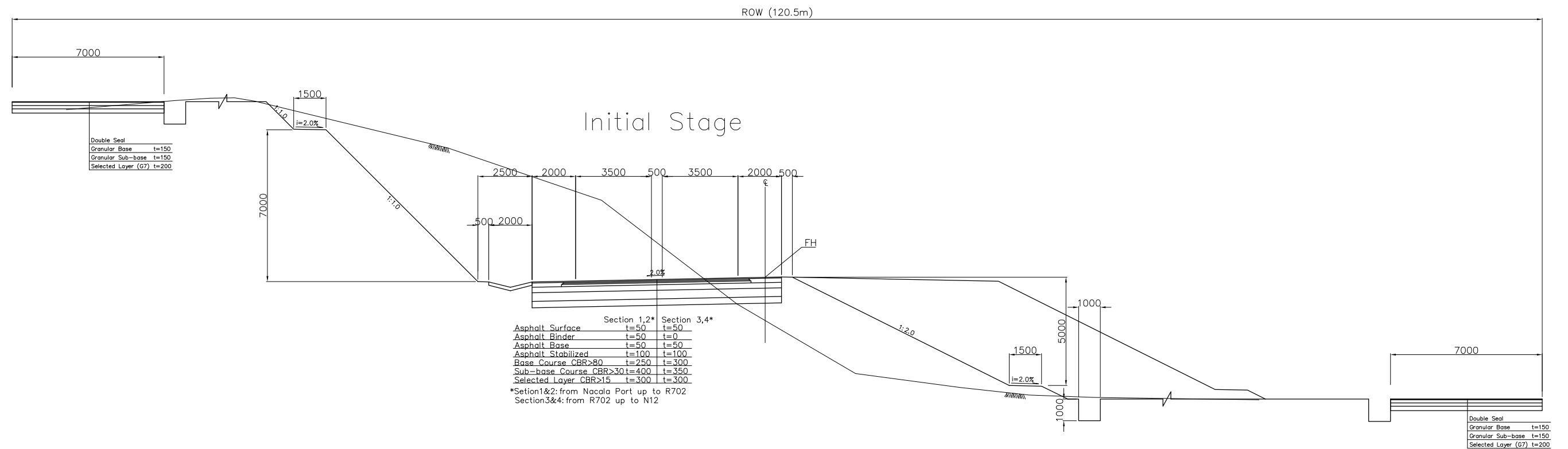
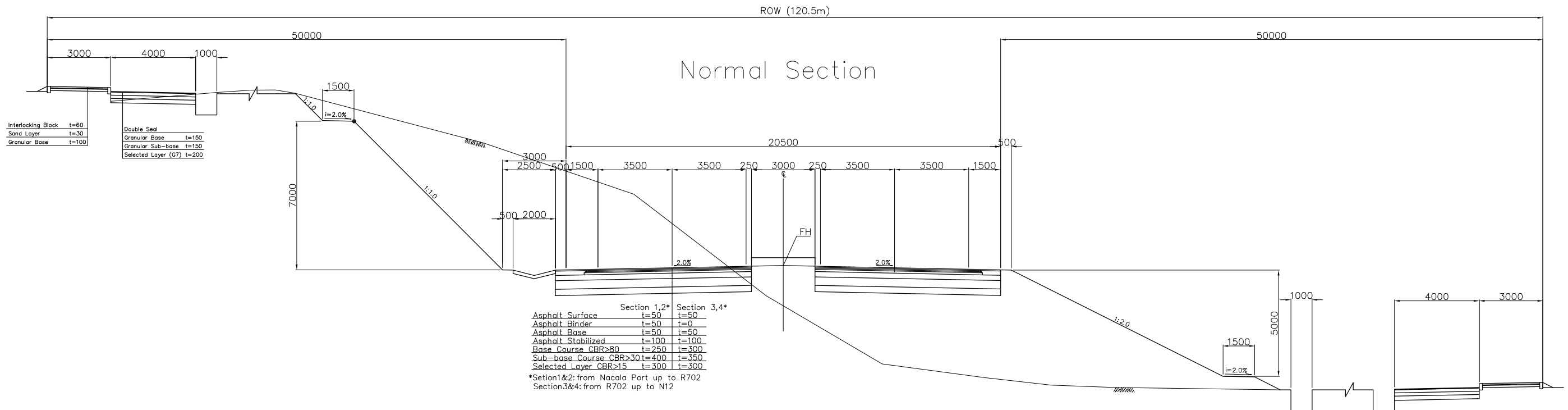
PROJECT TITLE:  
**Preparatory Survey for Nacala Corridor  
 Road Network Upgrading Project  
 (Nacala Port Access Road)**

DRAWING TITLE: **Basic Option (Initial Stage)  
 Plan and Profile**

|        |           |             |          |
|--------|-----------|-------------|----------|
| SCALE  | SHEET NO. | DRAWING NO. | REV. NO. |
| 1/2500 |           | B-19        |          |

# NACALA PORT ACCESS ROAD

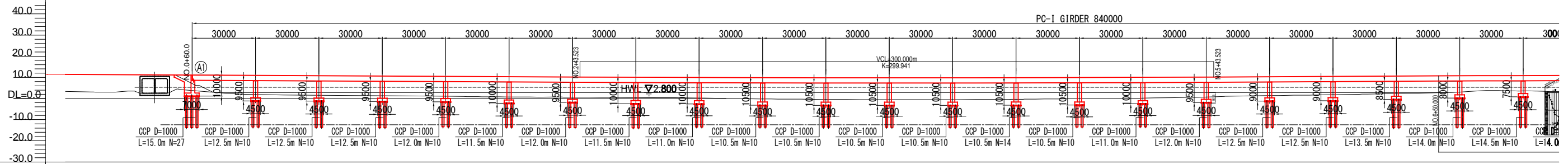
## Typical Cross Section



|  |                                       |  |             |            |             |  |  |       |           |             |
|--|---------------------------------------|--|-------------|------------|-------------|--|--|-------|-----------|-------------|
| Japan International Cooperation Agency | Oriental Consultants Global Co., Ltd. | Eight-Japan Engineering Consultants Inc. | PREPARED BY | CHECKED BY | APPROVED BY | PROJECT TITLE:<br><b>Preparatory Survey for Nacala Corridor<br/>         Road Network Upgrading Project<br/>         (NACALA PORT ACCESS ROAD)</b> | DRAWING TITLE: <b>Basic Option (Initial Stage)</b><br><b>Typical Cross Section</b> |       |           |             |
|  |                                       |  | NAME        |            |             |  |  | SCALE | SHEET NO. | DRAWING NO. |
| National Road Administration (ANE)     |                                       | Kokusai Kogyo Co., Ltd.                  | SIGNATURE   |            |             |  | 1/200  |       | B-20      |             |
|  |                                       |  | DATE        |            |             |  |  |       |           |             |

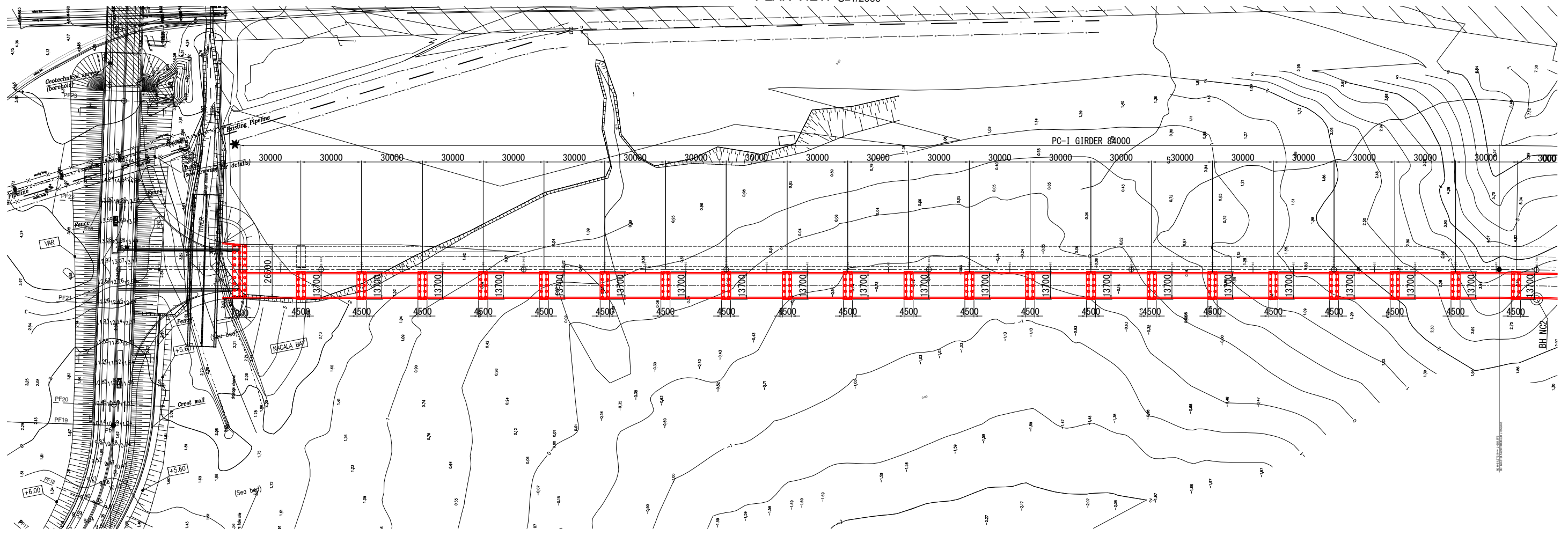


SIDE VIEW S=1/2000 GENERAL VIEW (NACALA PORT ACCESS BRIDGE)



|                 |                            |         |                                  |         |         |                  |         |         |         |                  |         |         |         |                  |         |         |         |         |         |                                  |                  |         |         |         |                  |         |         |         |                  |         |         |         |         |         |         |         |                  |  |  |  |
|-----------------|----------------------------|---------|----------------------------------|---------|---------|------------------|---------|---------|---------|------------------|---------|---------|---------|------------------|---------|---------|---------|---------|---------|----------------------------------|------------------|---------|---------|---------|------------------|---------|---------|---------|------------------|---------|---------|---------|---------|---------|---------|---------|------------------|--|--|--|
| GRADIENT        | 11.400                     |         | $i = -0.500\%$<br>$L = 393.523m$ |         |         |                  |         |         |         |                  |         |         |         |                  |         |         |         | 9.432   |         | $i = -0.500\%$<br>$L = 406.477m$ |                  |         |         |         |                  |         |         |         |                  |         |         |         |         |         |         |         |                  |  |  |  |
| PROPOSED HEIGHT | 11.400                     | 11.300  | 11.200                           | 11.100  | 11.000  | 10.900           | 10.800  | 10.700  | 10.600  | 10.500           | 10.400  | 10.300  | 10.200  | 10.104           | 10.022  | 9.953   | 9.897   | 9.855   | 9.826   | 9.810                            | 9.808            | 9.819   | 9.843   | 9.881   | 9.932            | 9.996   | 10.074  | 10.165  | 10.265           | 10.365  | 10.465  | 10.565  | 10.665  | 10.762  | 10.838  | 10.843  | 10.892           |  |  |  |
| GROUND HEIGHT   | 3.374                      | 2.984   | 2.513                            | 3.778   | 2.203   | 1.693            | 1.494   | 1.338   | 1.234   | 1.046            | 0.800   | 0.668   | 0.637   | 0.484            | 0.397   | 0.198   | -0.100  | -0.297  | -0.501  | -0.532                           | -0.567           | -0.575  | -0.472  | -0.283  | -0.166           | -0.018  | 0.328   | 0.674   | 1.210            | 1.518   | 1.761   | 2.147   | 2.497   | 3.027   | 3.726   | 3.681   | 3.385            |  |  |  |
| DISTANCE        | 0.000                      | 20.000  | 20.000                           | 20.000  | 20.000  | 20.000           | 20.000  | 20.000  | 20.000  | 20.000           | 20.000  | 20.000  | 20.000  | 20.000           | 20.000  | 20.000  | 20.000  | 20.000  | 20.000  | 20.000                           | 20.000           | 20.000  | 20.000  | 20.000  | 20.000           | 20.000  | 20.000  | 20.000  | 20.000           | 20.000  | 20.000  | 20.000  | 20.000  | 20.000  | 1.572   | 18.428  |                  |  |  |  |
| STATION         | NO. 0<br>+0.000            | +20.000 | +40.000                          | +60.000 | +80.000 | NO. 1<br>+20.000 | +40.000 | +60.000 | +80.000 | NO. 2<br>+20.000 | +40.000 | +60.000 | +80.000 | NO. 3<br>+20.000 | +40.000 | +60.000 | +80.000 | +40.000 | +60.000 | +80.000                          | NO. 4<br>+20.000 | +40.000 | +60.000 | +80.000 | NO. 5<br>+20.000 | +40.000 | +60.000 | +80.000 | NO. 6<br>+20.000 | +40.000 | +60.000 | +80.000 | +20.000 | +40.000 | +60.000 | +80.000 | NO. 7<br>+18.428 |  |  |  |
| CURVE ELEMENT   | $R = \infty$ $L = 681.572$ |         |                                  |         |         |                  |         |         |         |                  |         |         |         |                  |         |         |         |         |         |                                  |                  |         |         |         |                  |         |         |         |                  |         |         |         |         |         |         |         |                  |  |  |  |

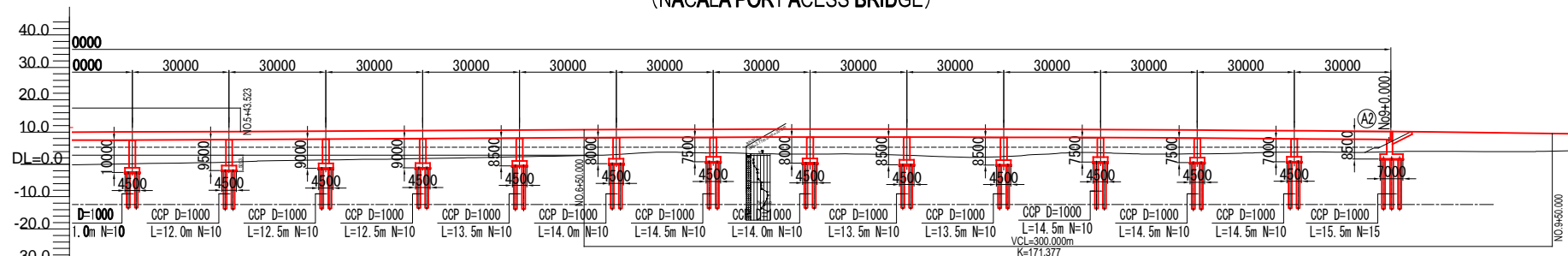
PLAN VIEW S=1/2000



|  |   |             |            |             |   |  |       |           |             |
|--|---|-------------|------------|-------------|---|--|-------|-----------|-------------|
| <p>Japan International Cooperation Agency<br/>National Road Administration (ANE)</p> | <p>Oriental Consultants Global Co., Ltd.<br/>Eight-Japan Engineering Consultants Inc.<br/>Kokusai Kogyo Co., Ltd.</p> | PREPARED BY | CHECKED BY | APPROVED BY | <p>PROJECT TITLE:<br/>Preparatory Survey for Nacala Corridor<br/>Road Network Upgrading Project<br/>(Nacala Port Access Road)</p> | DRAWING TITLE: Basic Option (Initial Stage)    |       |           |             |
|  |   | NAME        |            |             |   | GENERAL VIEW - 1/2 (NACALA PORT ACCESS BRIDGE) | SCALE | SHEET NO. | DRAWING NO. |
|  |   | SIGNATURE   |            |             |   |  |       | B-21      |             |
|  |   | DATE        |            |             |   |  |       |           |             |

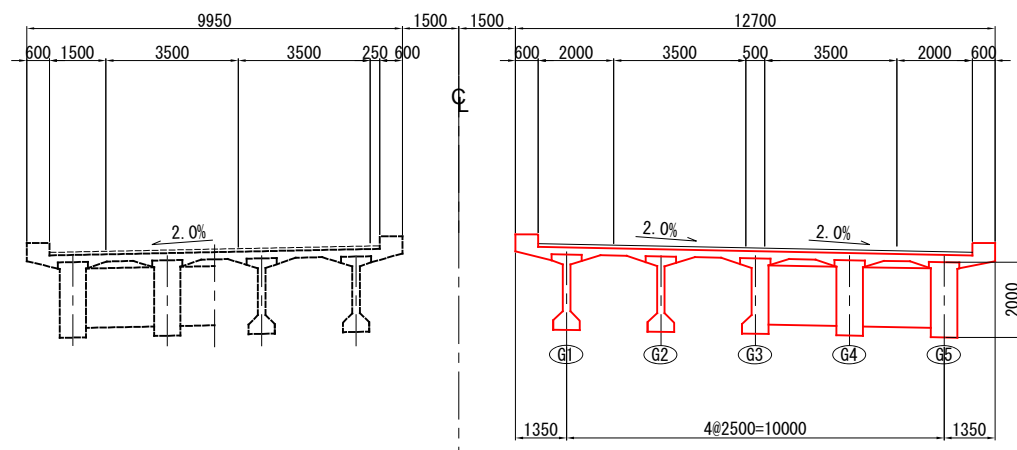
SIDE VIEW S=1/2000

**GENERAL VIEW**  
(NACALA PORT ACCESS BRIDGE)



|                 |                        |         |         |         |         |        |         |         |         |         |        |                         |         |         |         |         |        |         |         |         |         |        |         |         |  |  |
|-----------------|------------------------|---------|---------|---------|---------|--------|---------|---------|---------|---------|--------|-------------------------|---------|---------|---------|---------|--------|---------|---------|---------|---------|--------|---------|---------|--|--|
| GRADIENT        | i=0.500%<br>L=406.477m |         |         |         |         |        |         |         |         |         | 11.465 | i=-1.250%<br>L=600.076m |         |         |         |         |        |         |         |         |         |        |         |         |  |  |
| PROPOSED HEIGHT | 9.996                  | 10.074  | 10.165  | 10.265  | 10.365  | 10.465 | 10.565  | 10.665  | 10.762  | 10.838  | 10.843 | 10.892                  | 10.922  | 10.928  | 10.912  | 10.872  | 10.808 | 10.722  | 10.612  | 10.478  | 10.321  | 10.141 | 9.938   | 9.711   |  |  |
| GROUND HEIGHT   | -0.018                 | 0.328   | 0.674   | 1.210   | 1.518   | 1.761  | 2.147   | 2.497   | 3.027   | 3.726   | 3.661  | 3.385                   | 3.152   | 3.096   | 2.435   | 2.409   | 3.608  | 3.262   | 3.244   | 3.639   | 3.808   | 3.914  | 4.004   | 3.979   |  |  |
| DISTANCE        | 20.000                 | 20.000  | 20.000  | 20.000  | 20.000  | 20.000 | 20.000  | 20.000  | 20.000  | 20.000  | 1.572  | 18.428                  | 20.000  | 20.000  | 20.000  | 20.000  | 20.000 | 20.000  | 20.000  | 20.000  | 20.000  | 20.000 | 20.000  | 20.000  |  |  |
| STATION         | No. 5                  | +20.000 | +40.000 | +60.000 | +80.000 | No. 6  | +20.000 | +40.000 | +60.000 | +80.000 | 1.572  | No. 7                   | +20.000 | +40.000 | +60.000 | +80.000 | No. 8  | +20.000 | +40.000 | +60.000 | +80.000 | No. 9  | +20.000 | +40.000 |  |  |
| CURVE ELEMENT   | R=1000<br>L=653.346    |         |         |         |         |        |         |         |         |         |        |                         |         |         |         |         |        |         |         |         |         |        |         |         |  |  |

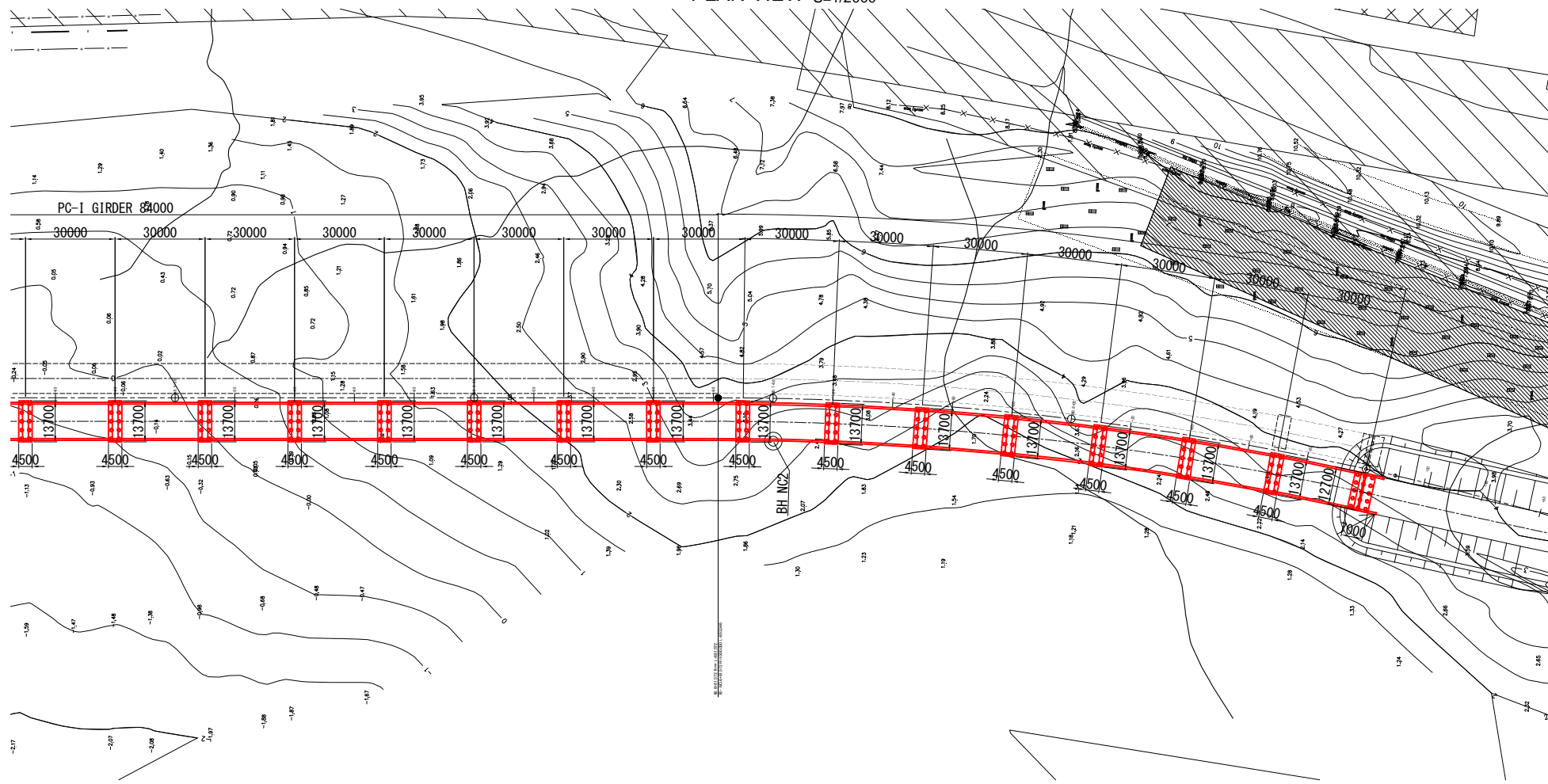
SUPERSTRUCTURE CROSS SECTION S=1/200



**DESIGN CONDITION**

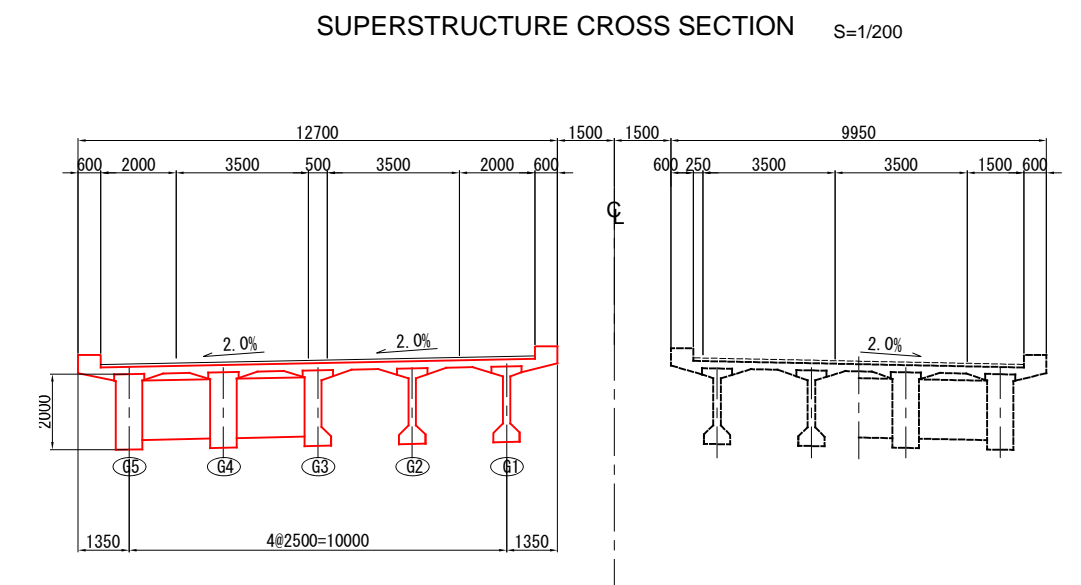
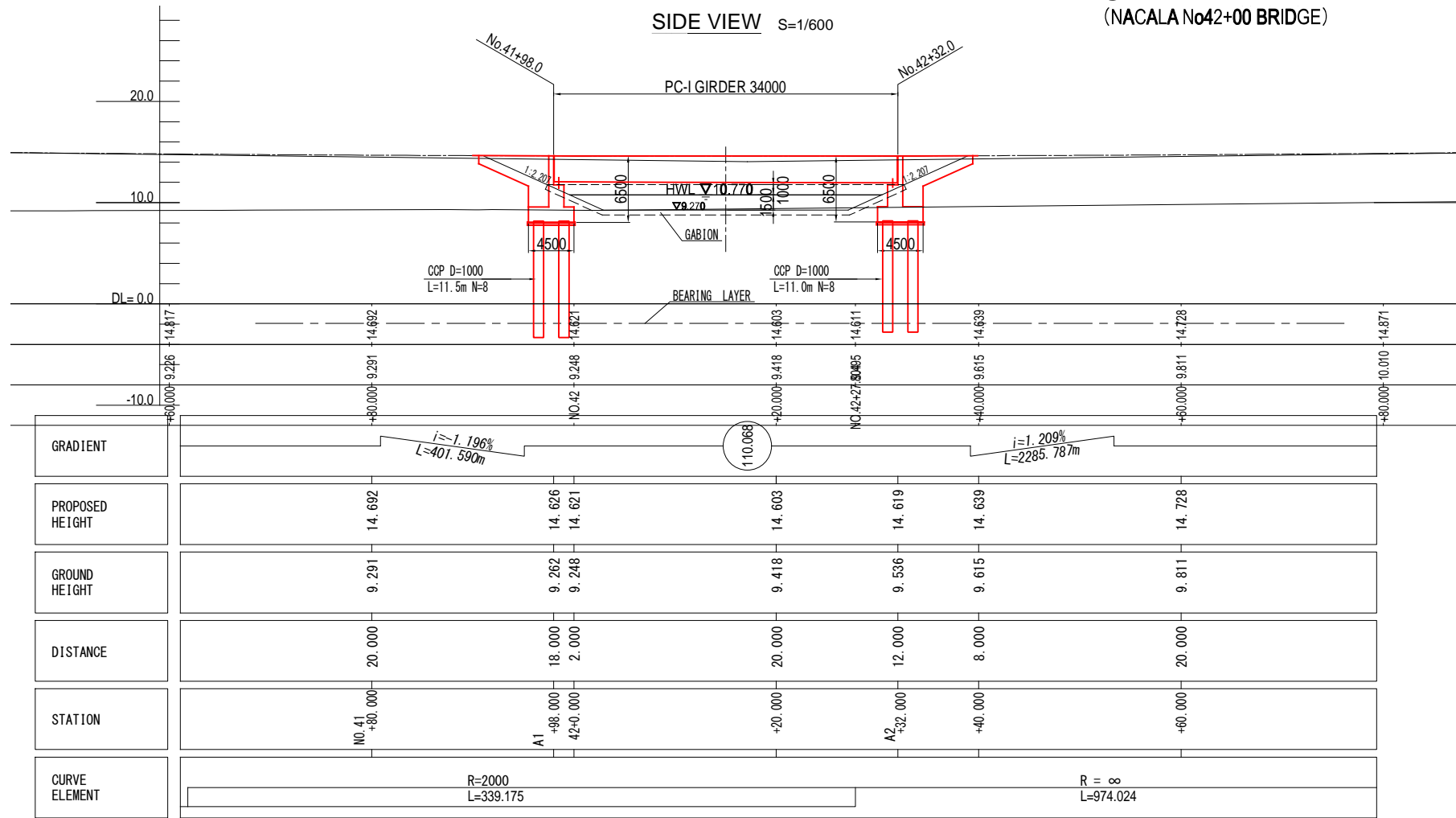
|                      |                                     |
|----------------------|-------------------------------------|
| TOTAL BRIDGE LENGTH  | 4@30.0+4x5@30.0+4@30.0=840.000m     |
| GIRDER LENGTH        | 4@29.8m+4x5@+29.8m+4@29.8m          |
| SPAN                 | 4@29.0m+4x5@+29.0m+4@29.0m          |
| WIDTH                | 20.200m                             |
| ANGLE OF SKEW        | 90°00'00"                           |
| RADIUS OF CURVATURE  | R=∞~1000                            |
| LONGITUDINAL SLOPE   | -0.500% 0.500% -1.250%              |
| COMPRESSIVE STRENGTH | Main Girder:σck=40N/mm <sup>2</sup> |
|                      | Floor Slab :σck=30N/mm <sup>2</sup> |

PLAN VIEW S=1/2000



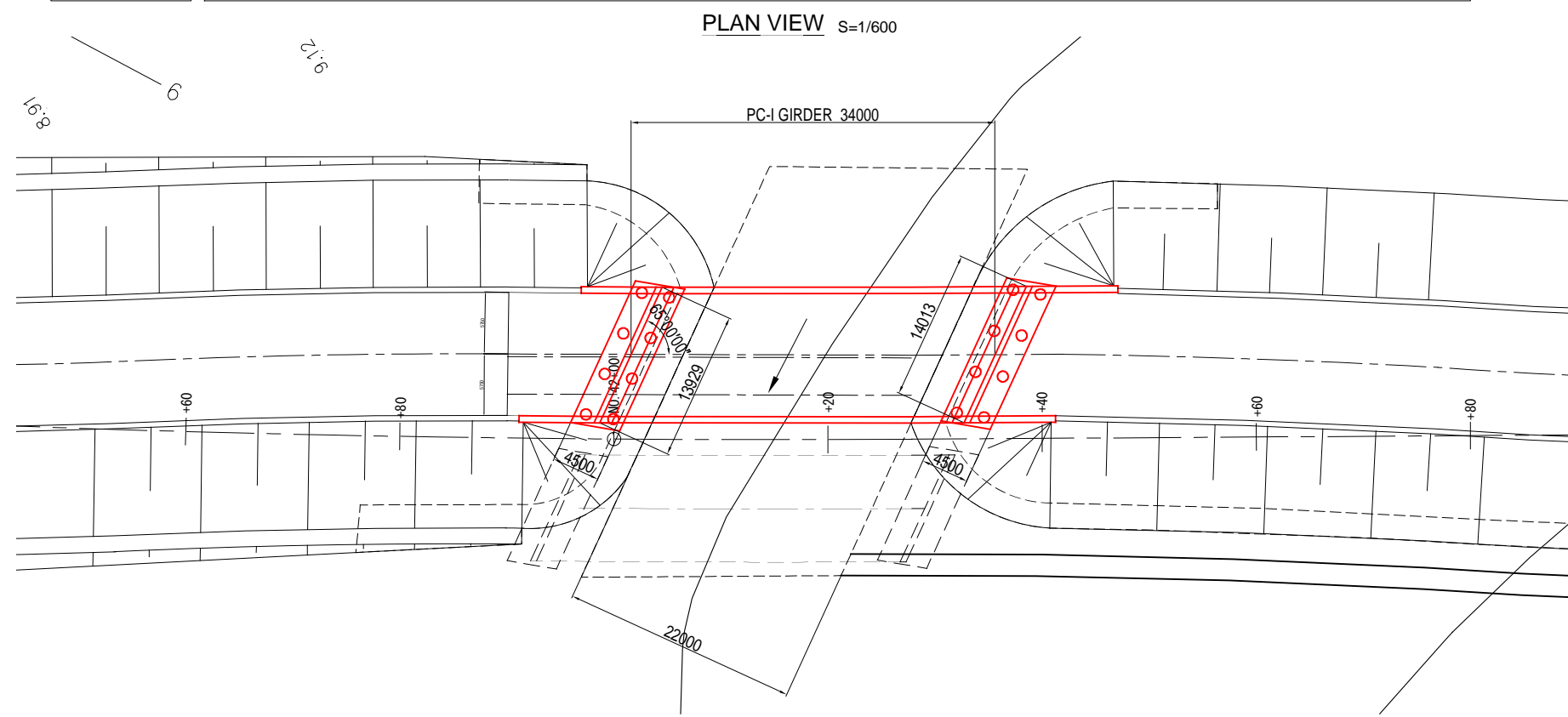


# GENERAL VIEW (NACALA No42+00 BRIDGE)



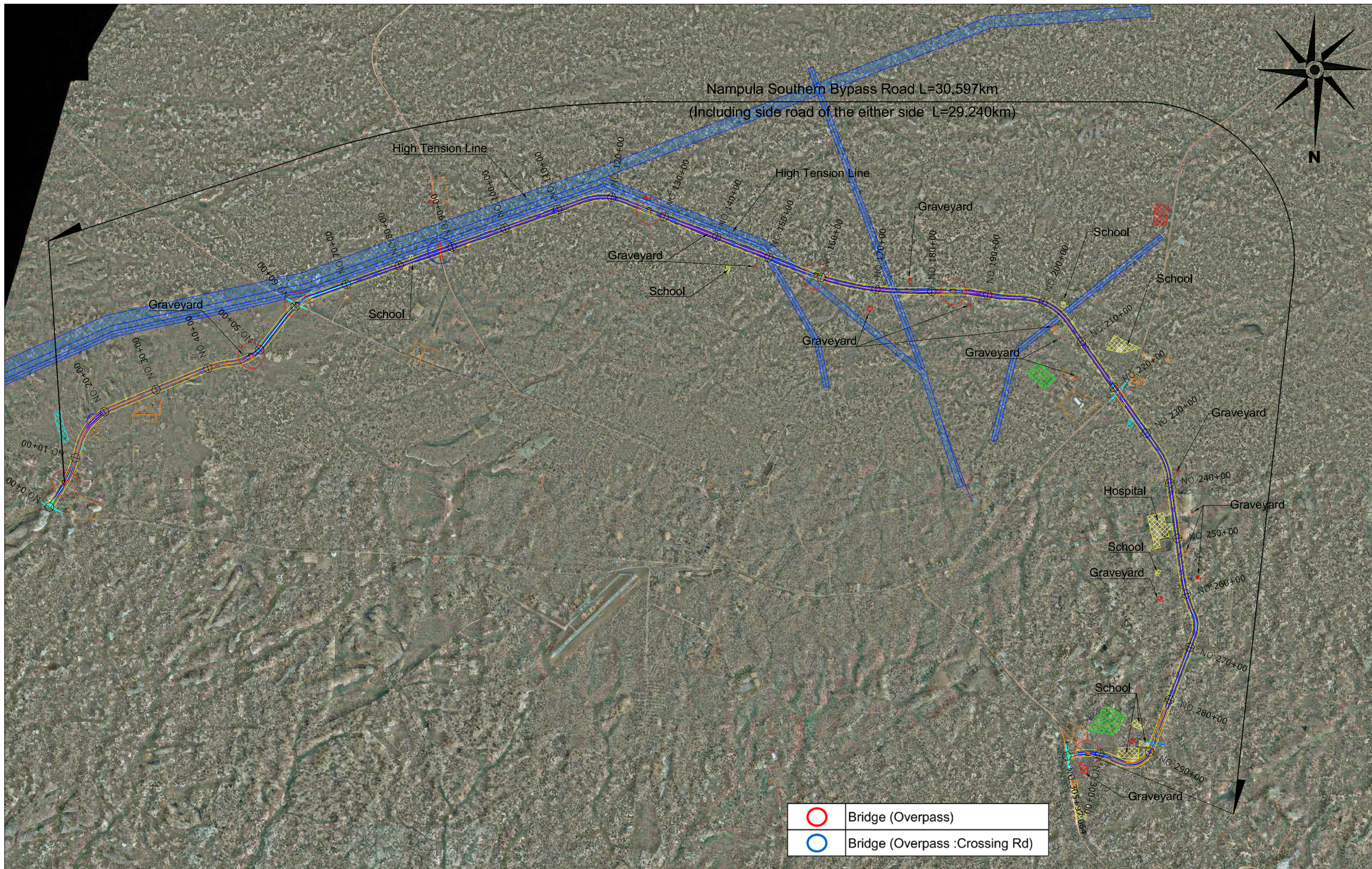
### DESIGN CONDITION

|                      |   |
|----------------------|---|
| TOTAL BRIDGE LENGTH  | 34.000m   |
| GIRDER LENGTH        | 33.800m   |
| SPAN                 | 33.000m   |
| WIDTH                | 12.700m   |
| ANGLE OF SKEW        | 65°00'00"   |
| RADIUS OF CURVATURE  | R=2000 - ∞  |
| LONGITUDINAL SLOPE   | -1.196% 1.209%  |
| COMPRESSIVE STRENGTH | Main Girder: $\sigma_{ck}=40N/mm^2$<br>Floor Slab: $\sigma_{ck}=30N/mm^2$ |



**( C ) NAMPULA SOUTHERN BYPASS ROAD**





Nampula Southern Bypass Road L=30.597km  
 (Including side road of the either side L=29.240km)

|  |                                 |
|--|---------------------------------|
|  | Bridge (Overpass)               |
|  | Bridge (Overpass : Crossing Rd) |

|  |  |
|--|--|
|  | Japan International Cooperation Agency |
|  | National Road Administration (ANE)     |

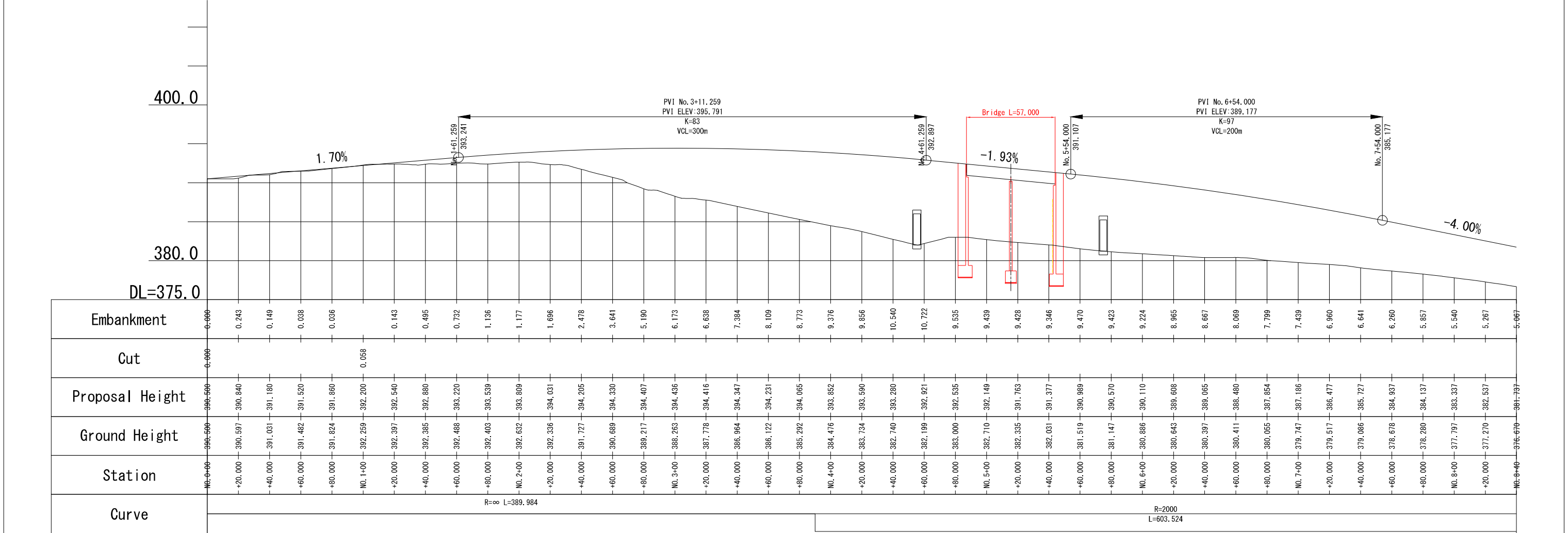
|  |  |
|--|--|
|  | Oriental Consultants Global Co., Ltd.    |
|  | Eight-Japan Engineering Consultants Inc. |
|  | Kokusai Kogyo Co., Ltd.                  |

|             |            |             |
|-------------|------------|-------------|
| PREPARED BY | CHECKED BY | APPROVED BY |
| NAME        |            |             |
| SIGNATURE   |            |             |
| DATE        |            |             |

PROJECT TITLE:  
**Preparatory Survey for Nacala Corridor  
 Road Network Upgrading Project  
 (Nampula Southern Bypass Road)**

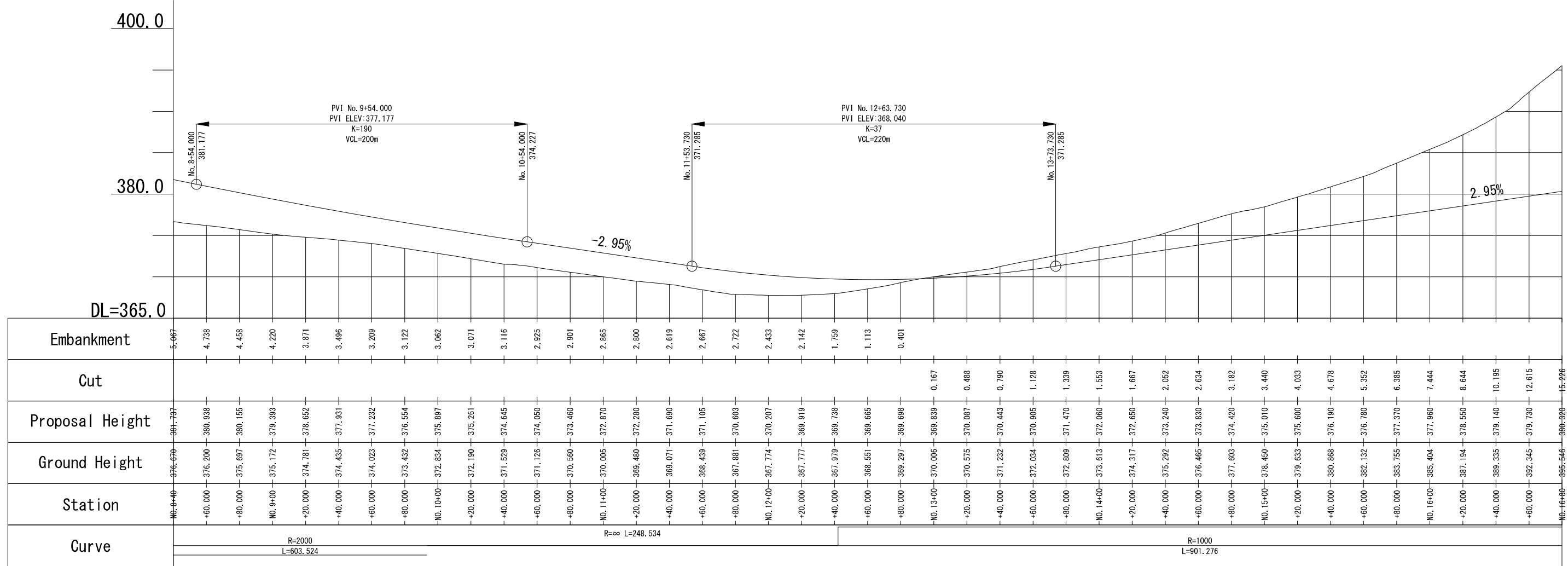
|  |           |             |          |
|--|-----------|-------------|----------|
| DRAWING TITLE: <b>Basic Option (Initial Stage)<br/>ROUTE MAP</b> |           |             |          |
| SCALE  | SHEET NO. | DRAWING NO. | REV. NO. |
| —  |           | C-1         |          |



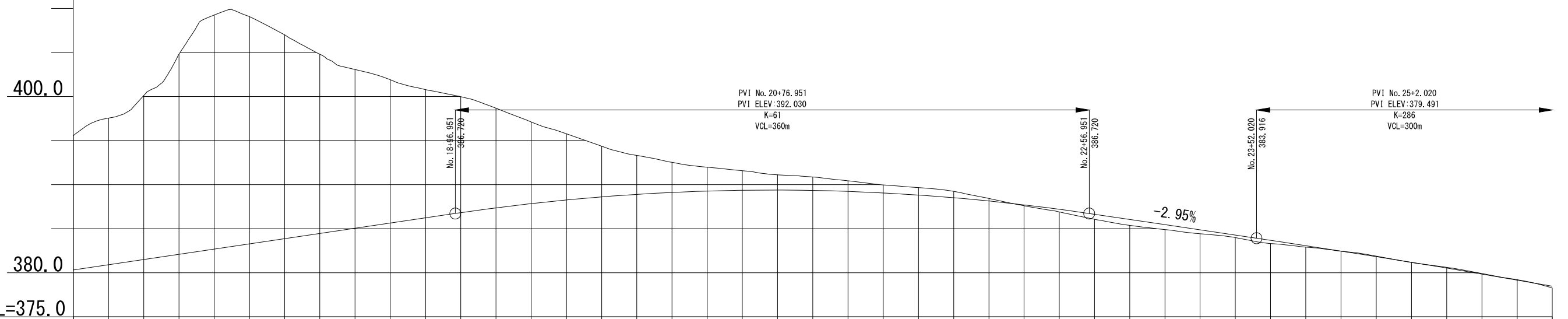
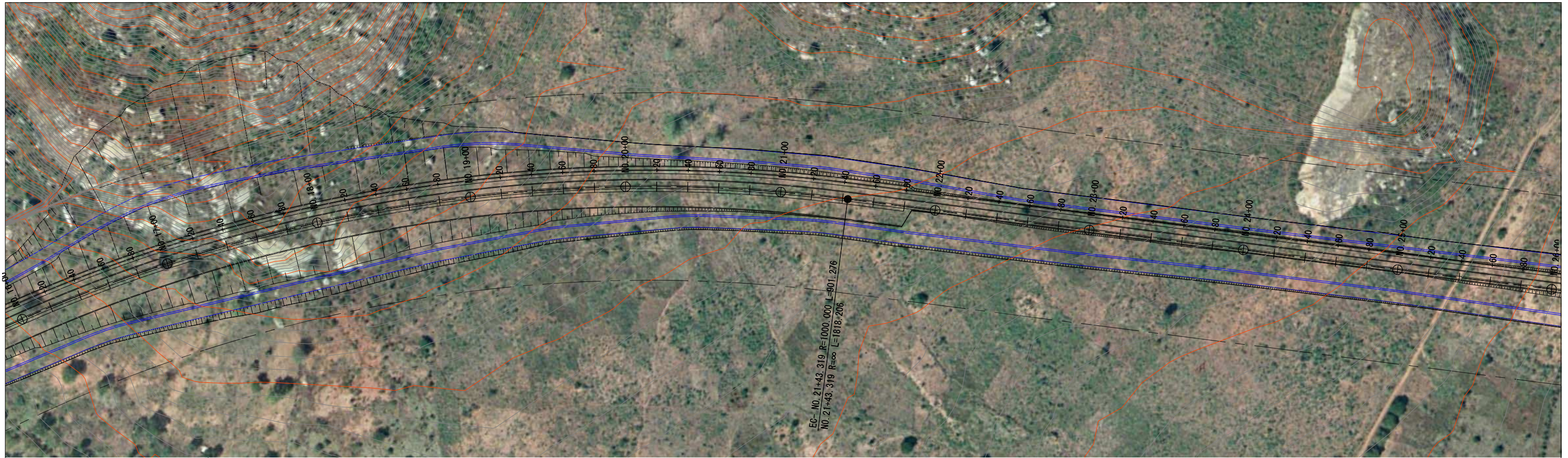


|  |  |             |            |             |   |   |           |                 |          |
|--|--|-------------|------------|-------------|---|---|-----------|-----------------|----------|
| Japan International Cooperation Agency<br>National Road Administration (ANE) | Oriental Consultants Global Co., Ltd.<br>Eight-Japan Engineering Consultants Inc.<br>Kokusai Kogyo Co., Ltd. | PREPARED BY | CHECKED BY | APPROVED BY | PROJECT TITLE:<br><b>Preparatory Survey for Nacala Corridor<br/>         Road Network Upgrading Project<br/>         (Nampula Southern Bypass Road)</b> | DRAWING TITLE: <b>Basic Option (Initial Stage)<br/>Plan and Profile</b> |           |                 |          |
|  |  | NAME        |            |             |   | SCALE: 1/2500   | SHEET NO. | DRAWING NO. C-2 | REV. NO. |
|  |  | SIGNATURE   |            |             |   |   |           |                 |          |
|  |  | DATE        |            |             |   |   |           |                 |          |





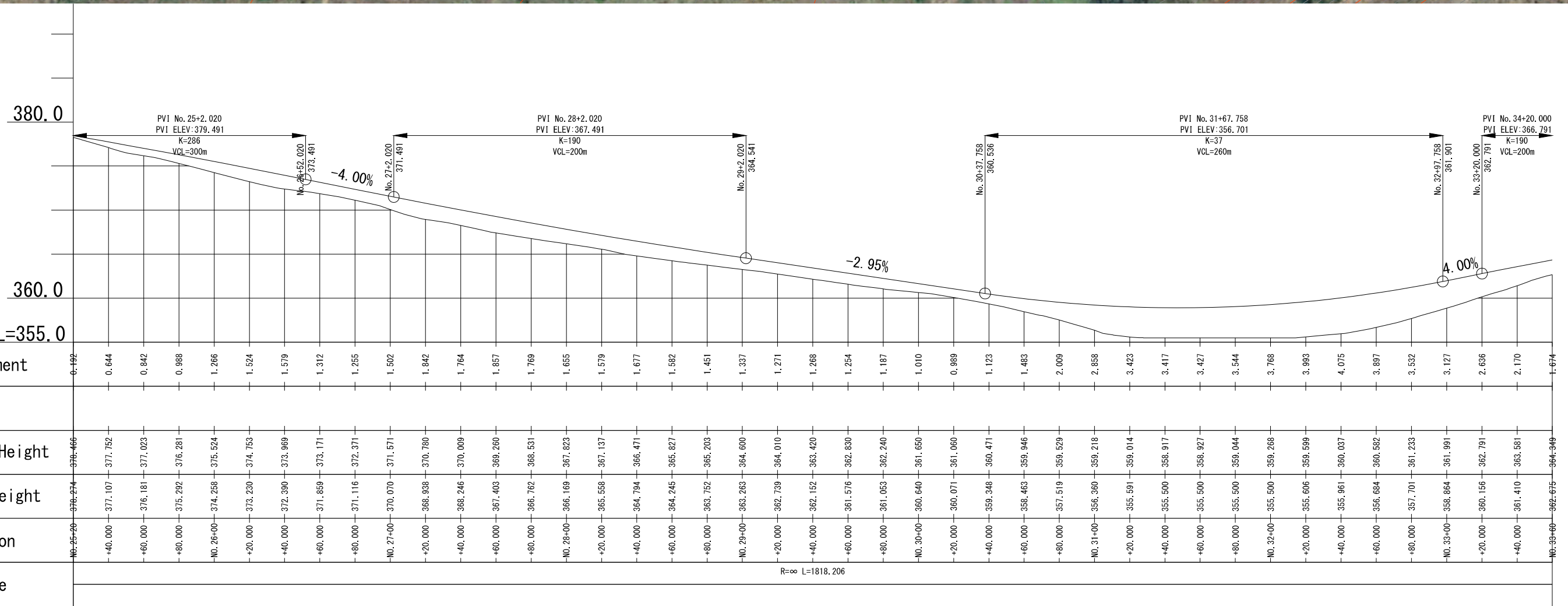




| Station   | Ground Height | Proposal Height | Cut    | Embankment |
|-----------|---------------|-----------------|--------|------------|
| NO. 16+00 | 395.546       | 396.320         | 15.226 |            |
| NO. 17+00 | 397.555       | 380.910         | 16.644 |            |
| +20.000   | 400.113       | 381.500         | 18.613 |            |
| +40.000   | 404.786       | 382.090         | 22.696 |            |
| +60.000   | 409.246       | 382.680         | 26.566 |            |
| +80.000   | 409.062       | 383.270         | 25.791 |            |
| NO. 18+00 | 407.002       | 383.860         | 23.141 |            |
| +20.000   | 404.804       | 384.450         | 20.354 |            |
| +40.000   | 403.068       | 385.040         | 18.028 |            |
| +60.000   | 401.917       | 385.630         | 16.287 |            |
| +80.000   | 400.793       | 386.220         | 14.573 |            |
| NO. 19+00 | 399.989       | 386.809         | 13.180 |            |
| +20.000   | 398.679       | 387.357         | 11.322 |            |
| +40.000   | 397.123       | 387.838         | 9.285  |            |
| +60.000   | 395.780       | 388.254         | 7.526  |            |
| +80.000   | 394.362       | 388.605         | 5.757  |            |
| NO. 20+00 | 393.304       | 388.890         | 4.414  |            |
| +20.000   | 392.521       | 389.109         | 3.412  |            |
| +40.000   | 391.980       | 389.263         | 2.716  |            |
| +60.000   | 391.568       | 389.352         | 2.216  |            |
| +80.000   | 391.110       | 389.374         | 1.735  |            |
| NO. 21+00 | 390.862       | 389.332         | 1.530  |            |
| +20.000   | 390.442       | 389.223         | 1.219  |            |
| +40.000   | 389.968       | 389.049         | 0.918  |            |
| +60.000   | 389.645       | 388.810         | 0.835  |            |
| +80.000   | 389.226       | 388.505         | 0.721  |            |
| NO. 22+00 | 388.427       | 388.134         | 0.283  |            |
| +20.000   | 387.602       | 387.698         | 0.096  |            |
| +40.000   | 386.897       | 387.197         | 0.300  |            |
| +60.000   | 386.066       | 386.630         | 0.564  |            |
| +80.000   | 385.367       | 386.040         | 0.673  |            |
| NO. 23+00 | 384.890       | 385.450         | 0.560  |            |
| +20.000   | 384.426       | 384.860         | 0.435  |            |
| +40.000   | 383.969       | 384.270         | 0.281  |            |
| +60.000   | 383.309       | 383.679         | 0.370  |            |
| +80.000   | 382.914       | 383.077         | 0.163  |            |
| NO. 24+00 | 382.451       | 382.460         | 0.009  |            |
| +20.000   | 381.890       | 381.829         | 0.060  |            |
| +40.000   | 381.191       | 381.185         | 0.006  |            |
| +60.000   | 380.607       | 380.526         | 0.081  |            |
| +80.000   | 379.910       | 379.854         | 0.056  |            |
| NO. 25+00 | 379.215       | 379.167         | 0.048  |            |
| NO. 25+20 | 376.274       | 376.466         | 0.192  |            |

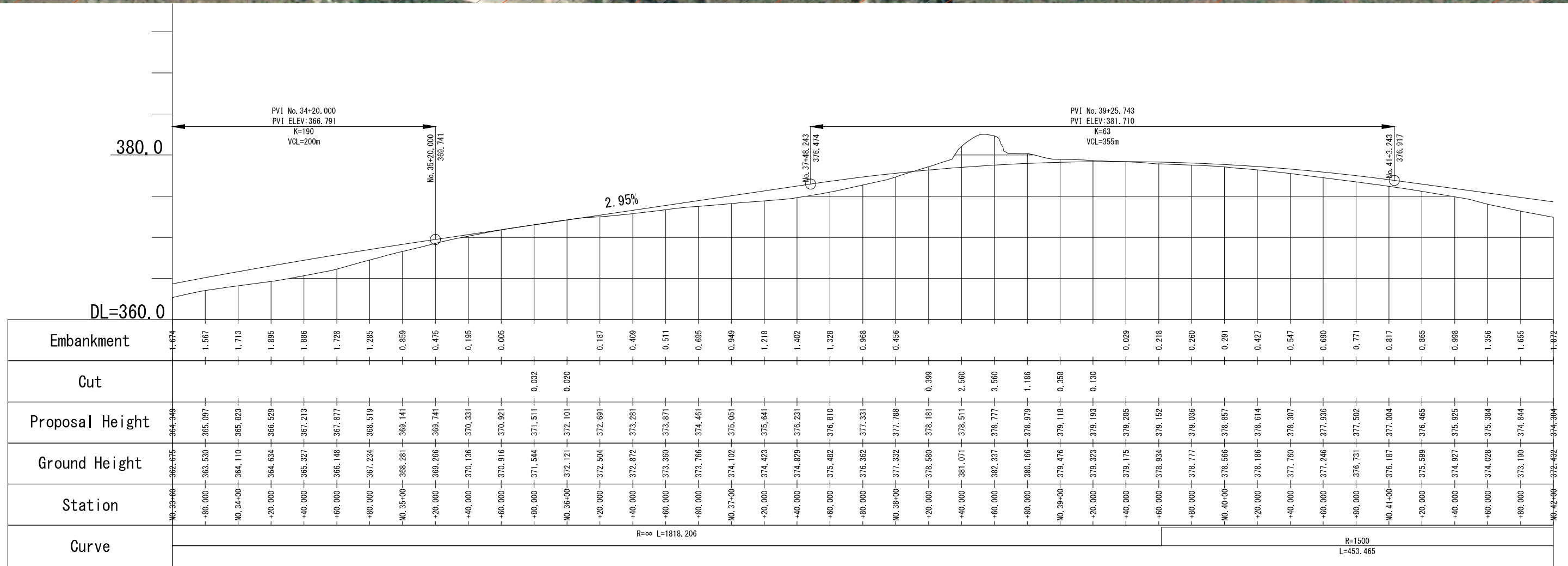
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|  | Japan International Cooperation Agency<br>Oriental Consultants Global Co., Ltd.<br>Eight-Japan Engineering Consultants Inc.<br>Kokusai Kogyo Co., Ltd. | PREPARED BY<br>CHECKED BY<br>APPROVED BY | PROJECT TITLE:<br><b>Preparatory Survey for Nacala Corridor<br/>         Road Network Upgrading Project<br/>         (Nampula Southern Bypass Road)</b> | DRAWING TITLE:<br><b>Basic Option (Initial Stage)<br/>         Plan and Profile</b> |
|  | National Road Administration (ANE)   | NAME<br>SIGNATURE<br>DATE                | SCALE: 1/2500<br>SHEET NO.:<br>DRAWING NO.: C-4<br>REV. NO.:  |   |





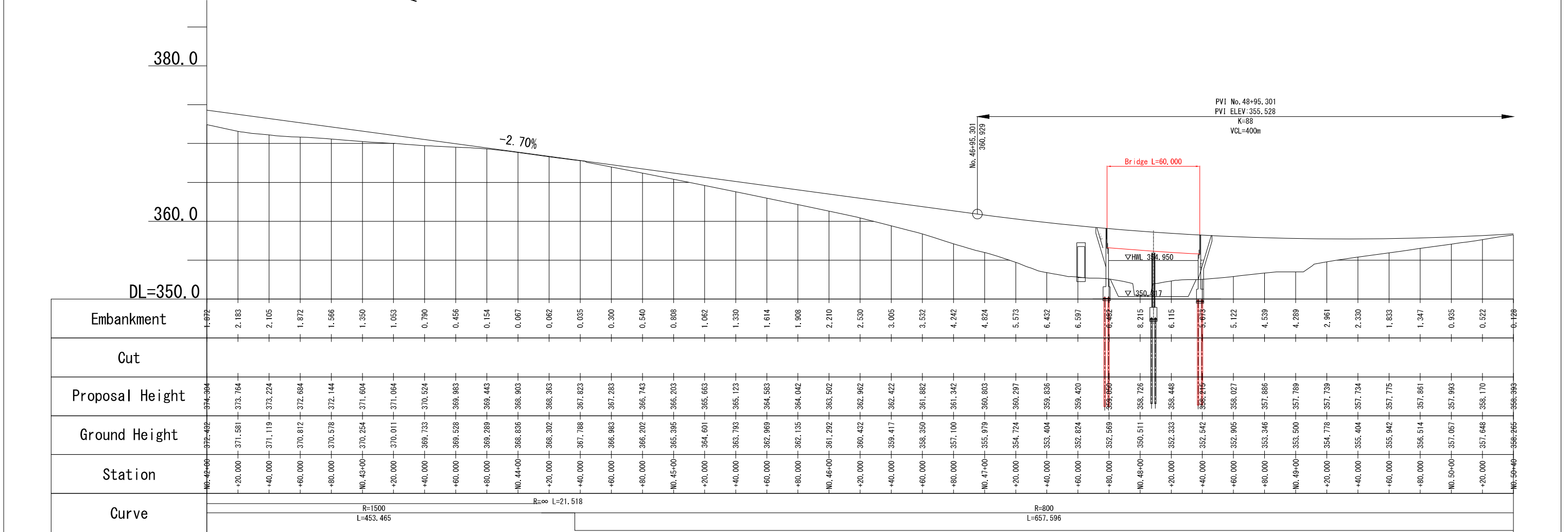
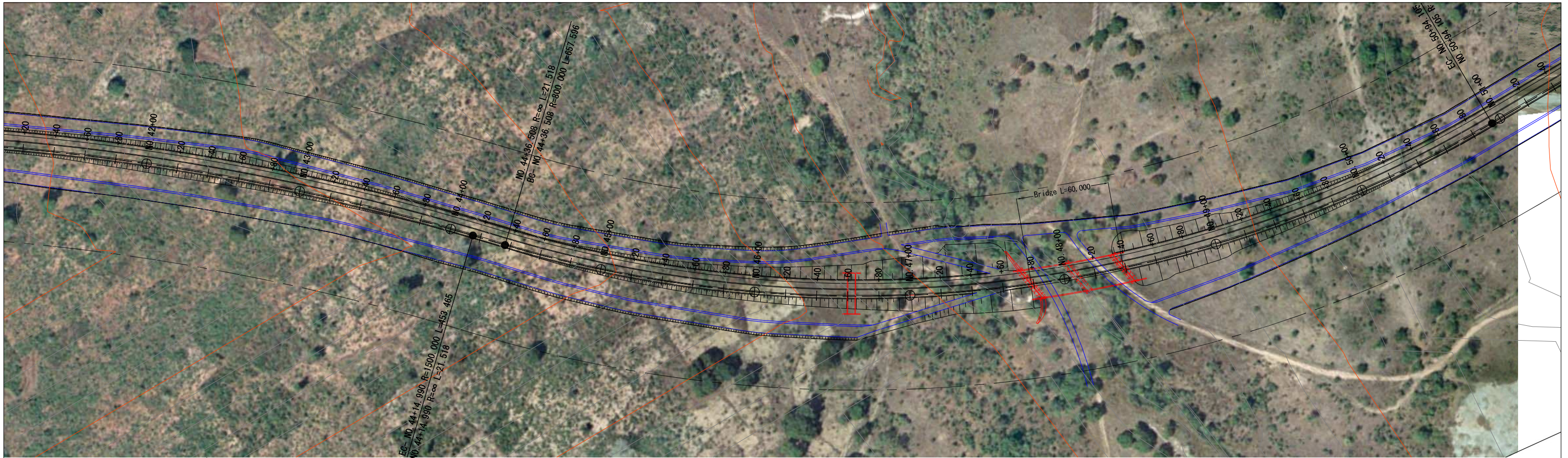
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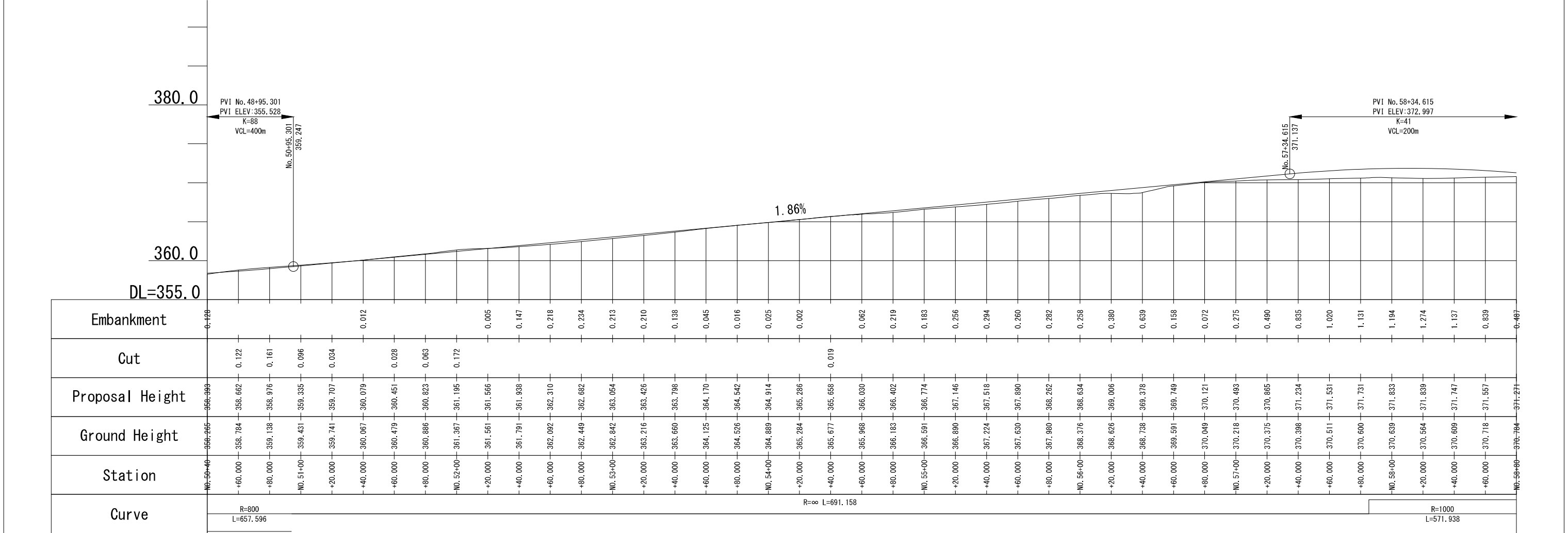
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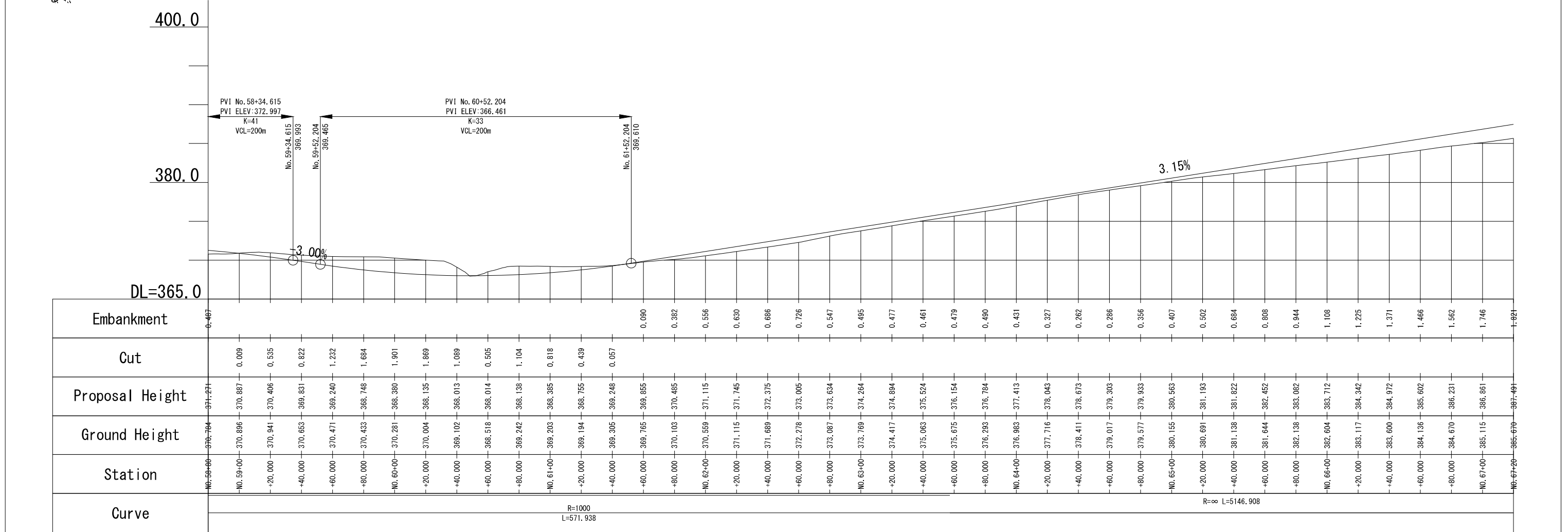
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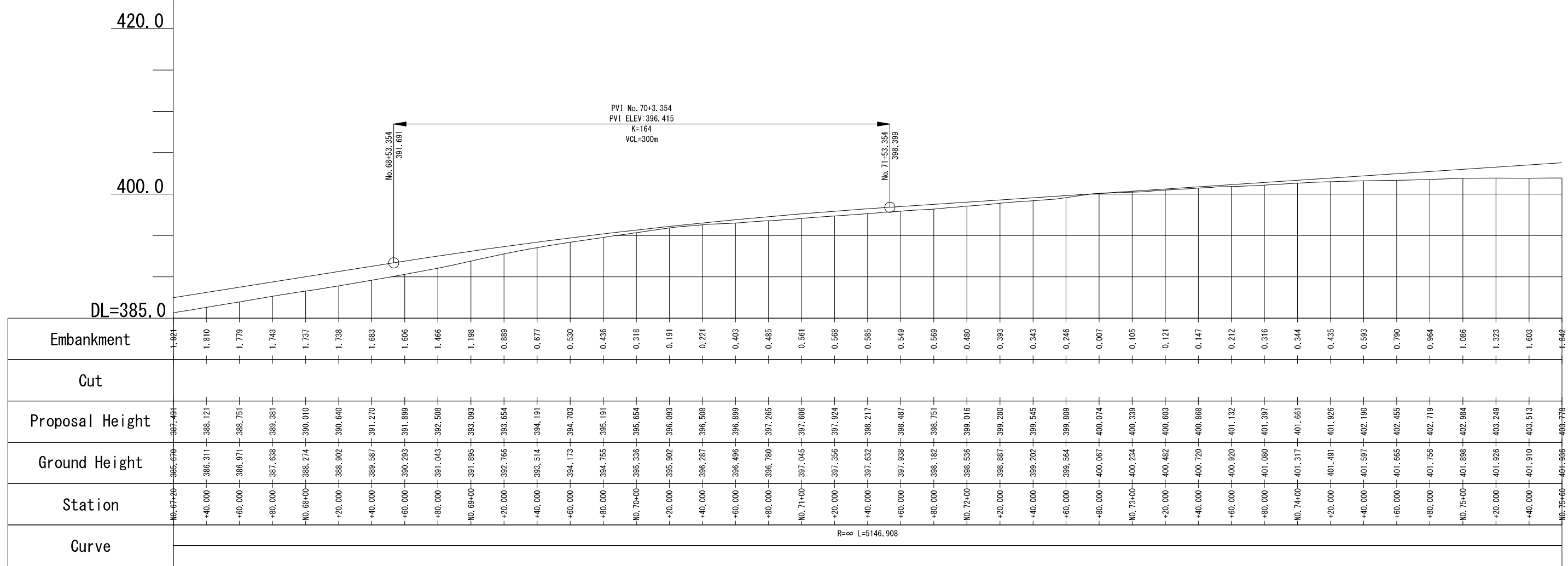
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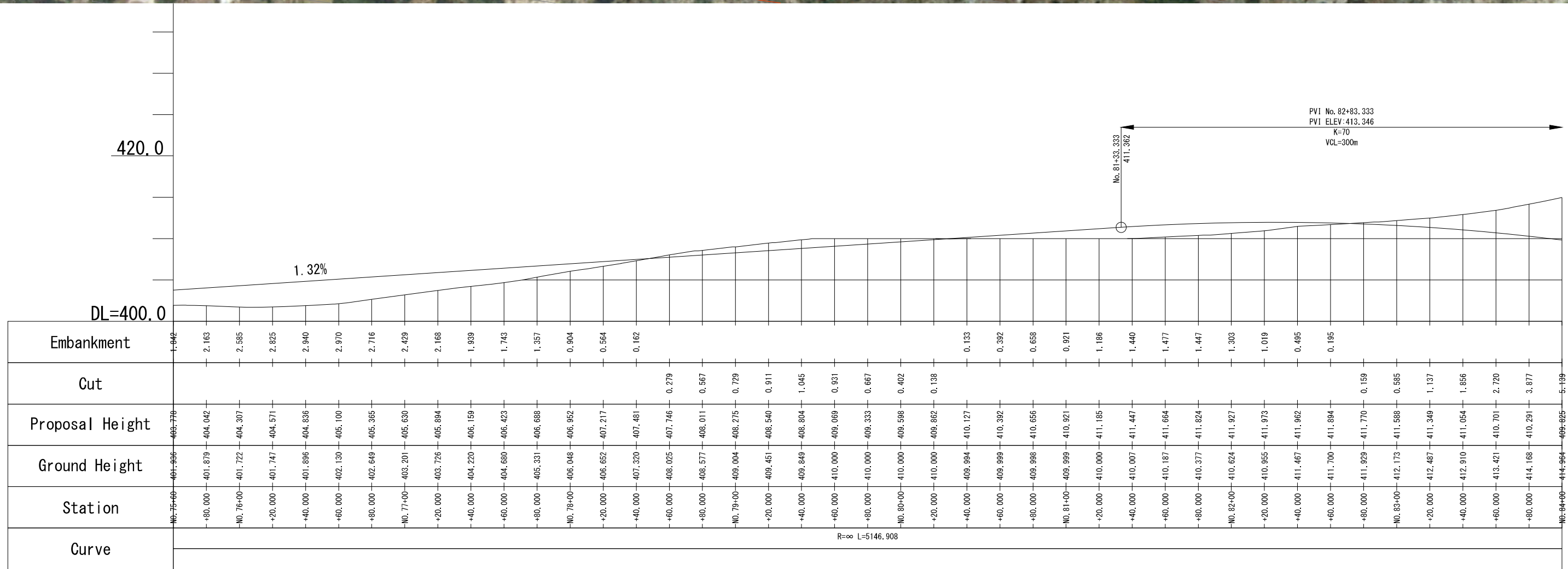
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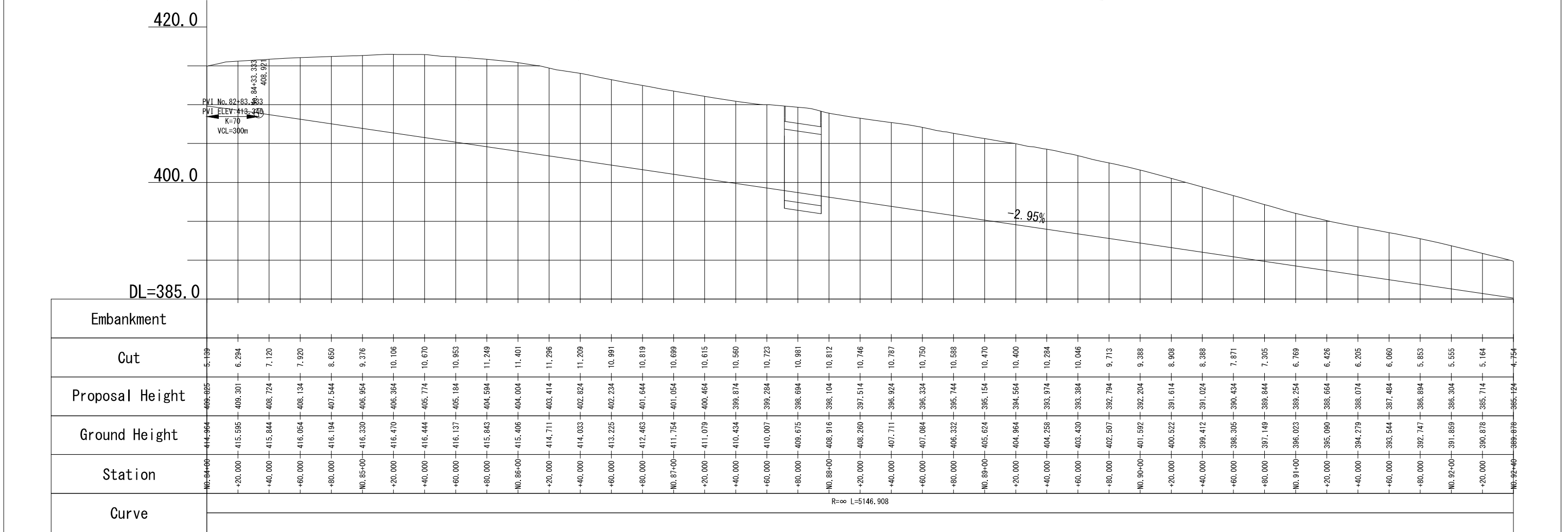
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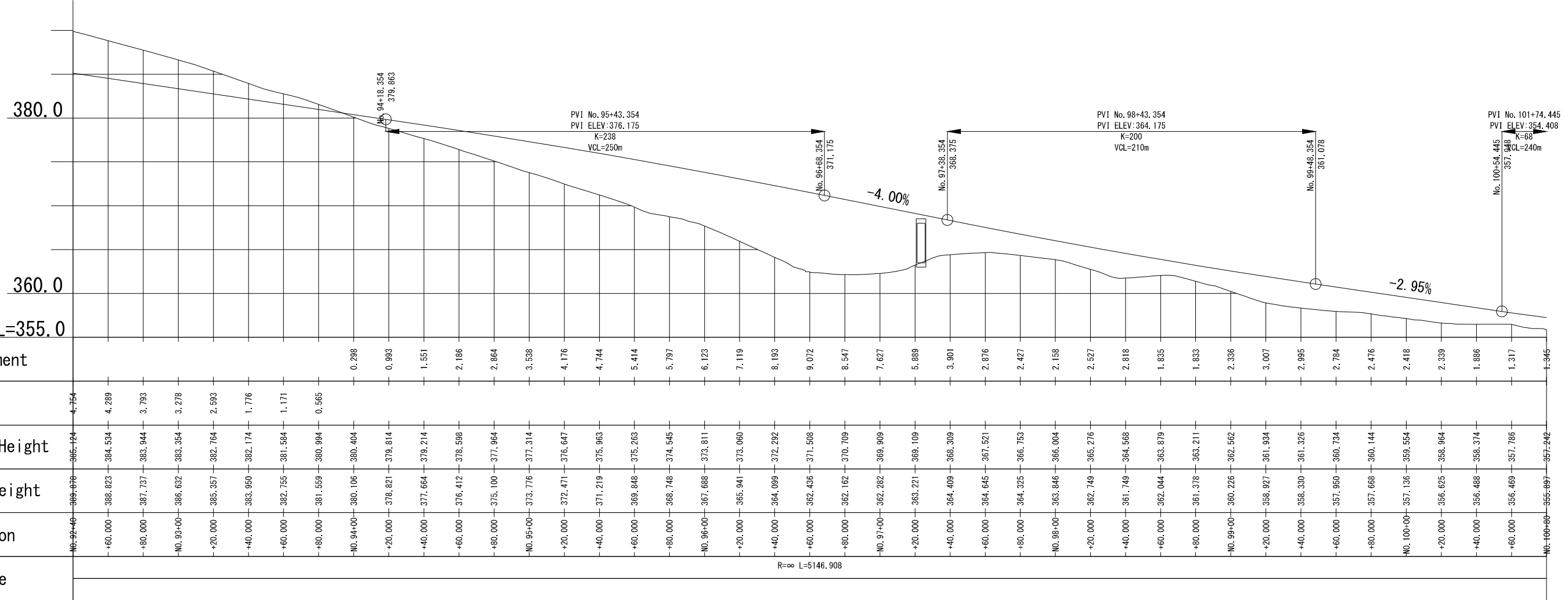
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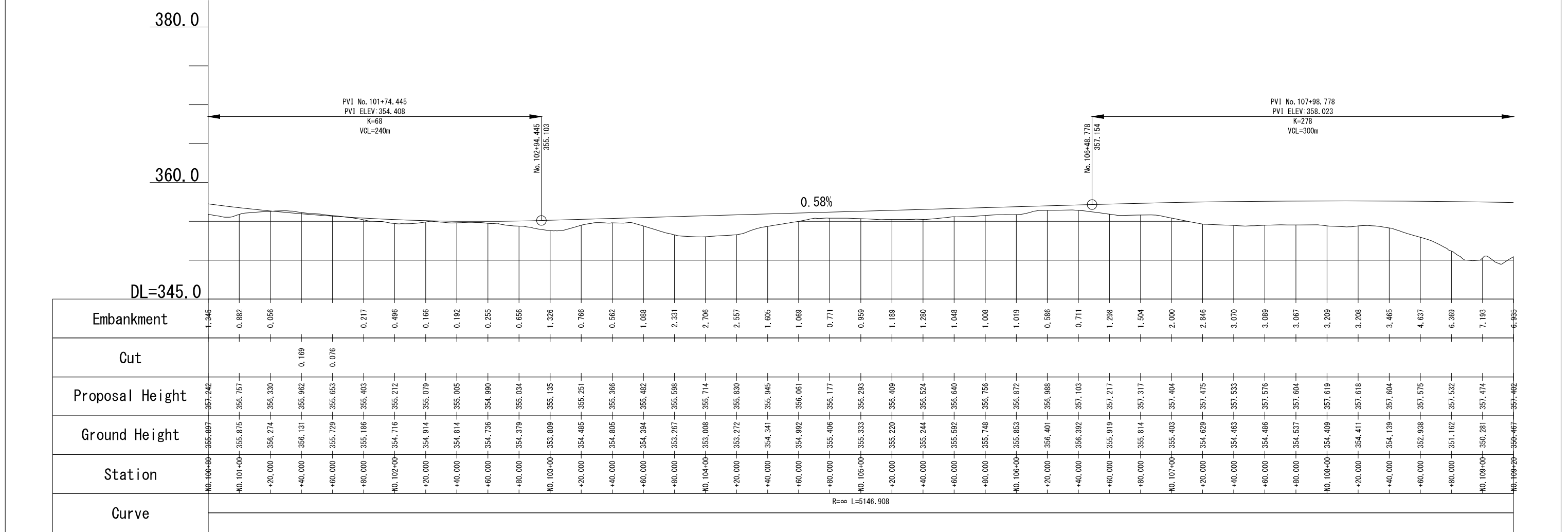
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|  |  | NAME        |            |             |   | SCALE   | SHEET NO. | DRAWING NO. | REV. NO. |
|  |  | SIGNATURE   |            |             |   | 1/2500  |           | C-12        |          |
|  |  | DATE        |            |             |   |   |           |             |          |










| Station    | Elevation | Ground Height | Proposal Height | Cut | Embankment |
|------------|-----------|---------------|-----------------|-----|------------|
| NO. 92+00  | 380.0     | 380.0         | 380.0           | 0.0 | 0.0        |
| NO. 93+00  | 378.0     | 378.0         | 378.0           | 0.0 | 0.0        |
| NO. 94+00  | 376.0     | 376.0         | 376.0           | 0.0 | 0.0        |
| NO. 95+00  | 374.0     | 374.0         | 374.0           | 0.0 | 0.0        |
| NO. 96+00  | 372.0     | 372.0         | 372.0           | 0.0 | 0.0        |
| NO. 97+00  | 370.0     | 370.0         | 370.0           | 0.0 | 0.0        |
| NO. 98+00  | 368.0     | 368.0         | 368.0           | 0.0 | 0.0        |
| NO. 99+00  | 366.0     | 366.0         | 366.0           | 0.0 | 0.0        |
| NO. 100+00 | 364.0     | 364.0         | 364.0           | 0.0 | 0.0        |
| NO. 101+00 | 362.0     | 362.0         | 362.0           | 0.0 | 0.0        |





 Japan International Cooperation Agency  
 National Road Administration (ANE)

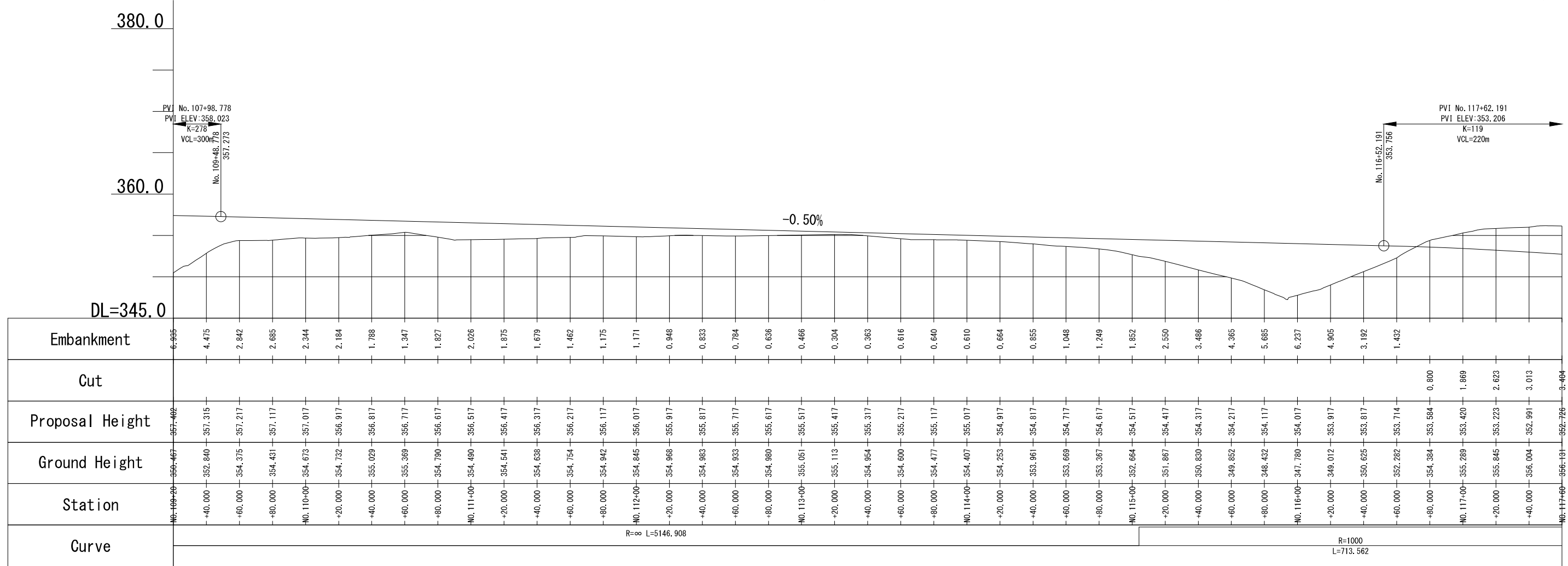
 Oriental Consultants Global Co., Ltd.  
 Eight-Japan Engineering Consultants Inc.  
 Kokusai Kogyo Co., Ltd.

| NAME      | PREPARED BY | CHECKED BY | APPROVED BY |
|-----------|-------------|------------|-------------|
| SIGNATURE |             |            |             |
| DATE      |             |            |             |

PROJECT TITLE:  
**Preparatory Survey for Nacala Corridor  
 Road Network Upgrading Project  
 (Nampula Southern Bypass Road)**

| DRAWING TITLE: Basic Option (Initial Stage) Plan and Profile |           |             |          |
|--|-----------|-------------|----------|
| SCALE  | SHEET NO. | DRAWING NO. | REV. NO. |
| 1/2500   |           | C-14        |          |





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|--|--|-------------|------------|-------------|---|---|-----------|-------------|----------|
| Japan International Cooperation Agency<br>National Road Administration (ANE) | Oriental Consultants Global Co., Ltd.<br>Eight-Japan Engineering Consultants Inc.<br>Kokusai Kogyo Co., Ltd. | PREPARED BY | CHECKED BY | APPROVED BY | PROJECT TITLE:<br><b>Preparatory Survey for Nacala Corridor<br/>         Road Network Upgrading Project<br/>         (Nampula Southern Bypass Road)</b> | DRAWING TITLE: <b>Basic Option (Initial Stage)<br/>Plan and Profile</b> |           |             |          |
|  |  | NAME        |            |             |   | SCALE   | SHEET NO. | DRAWING NO. | REV. NO. |
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