

HMA Pavement - Grade and New  
HSIPX-017-1(021)--3L-77

POLK COUNTY

LETTING DATE  
03/19/2024



REVISIONS

|                               |                         |
|-------------------------------|-------------------------|
| TOTAL                         | 54                      |
| PROJECT IDENTIFICATION NUMBER |                         |
| PROJECT NUMBER                | 22-77-017-010           |
| R.O.W. PROJECT NUMBER         | HSIPX-017-1(021)--3L-77 |
|                               | STPN-017-1(022)--2J-77  |

| INDEX OF SHEETS |  |
|-----------------|--|
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| <b>A Sheets</b> | <b>Title Sheets</b>                              |
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| A.2             | Location Map Sheet                               |
| <b>B Sheets</b> | <b>Typical Cross Sections and Details</b>        |
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| <b>D Sheets</b> | <b>Mainline Plan and Profile Sheets</b>          |
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| X.12 - 18       | Roundabout                                       |

PLANS OF PROPOSED IMPROVEMENT ON THE  
**PRIMARY ROAD SYSTEM**  
**Polk COUNTY**  
HMA Pavement - Grade and New  
State St Intersection in Granger

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.  
Value Engineering Saves. Refer to Article 1105.14 of the Specifications.



Project Location Map  
on Sheet A.2

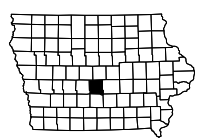
| DESIGN DATA RURAL |              |      |        |
|-------------------|--------------|------|--------|
| 2023              | AADT         | 6600 | V.P.D. |
| 2043              | AADT         | 9500 | V.P.D. |
| 2043              | DHV          | 980  | V.P.H. |
|                   | TRUCKS       | 6    | %      |
|                   | Total        |      |        |
|                   | Design ESALs | --   |        |

| INDEX OF SEALS |  |  |
|----------------|--|--|
|                |  |  |
|                |  |  |
|                |  |  |
|                |  |  |
|                |  |  |
|                |  |  |
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|                |  |  |
|                |  |  |

**PRELIMINARY PLANS**

Subject to change by final design.

**Revised Concept – Roundabout  
D5 PLAN – Date: 03-15-2022**



141

2

R-26W

R-25W

6

City of Granger

END CONSTRUCTION  
STA 39+50.00  
M.P. 0.8

F31

T-80N

F31

17

BEGIN CONSTRUCTION  
STA 31+00.00  
M.P. 0.6

11

12

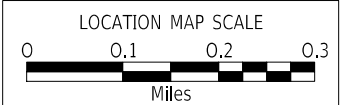
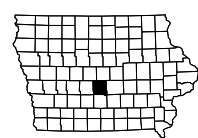
7

NW 106 AVE

WILLOW ST

200TH ST

141

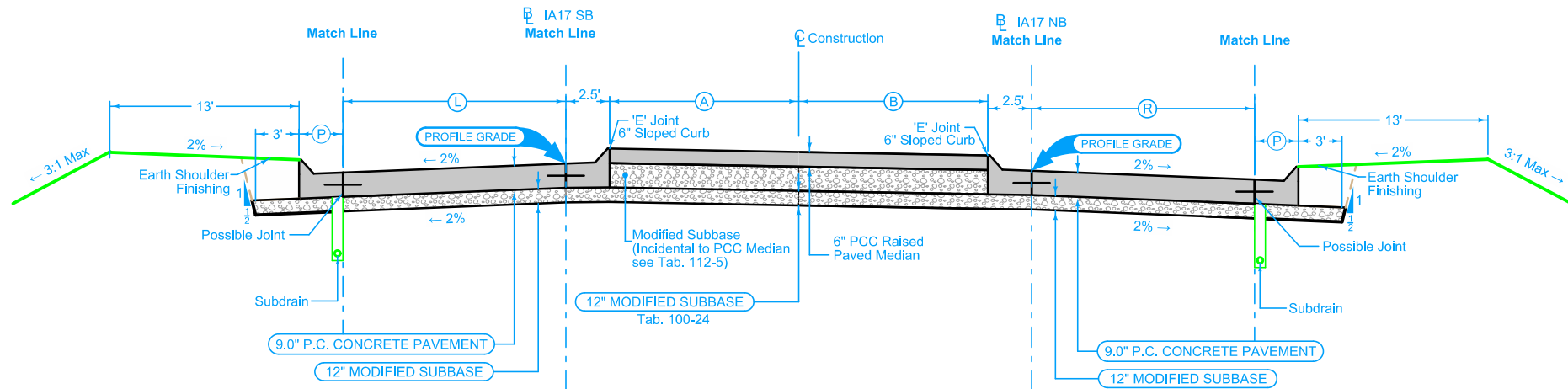


### Curbed Shoulder

Shoulder Jointing:  
 Longitudinal joint not required when distance from back of curb to nearest joint is less than 15':

Single pour: L-2  
 Staged: KT-2  
 Transverse: CD refer to L sheets for spacing

| 2_Curb_04-21-20    |            |                      |           |
|--------------------|------------|----------------------|-----------|
| STATION TO STATION | (P) Feet   | Curb Type See PV-102 |           |
| 1158+50.00         | 1159+72.71 | 2.5                  | 6" Sloped |
| 1160+94.98         | 1162+37.11 | 2.5                  | 6" Sloped |



Mainline Jointing:  
 Transverse joints: CD at 17' spacing  
 Longitudinal joint: L-2

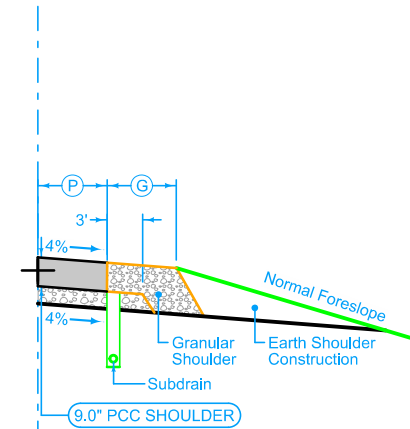
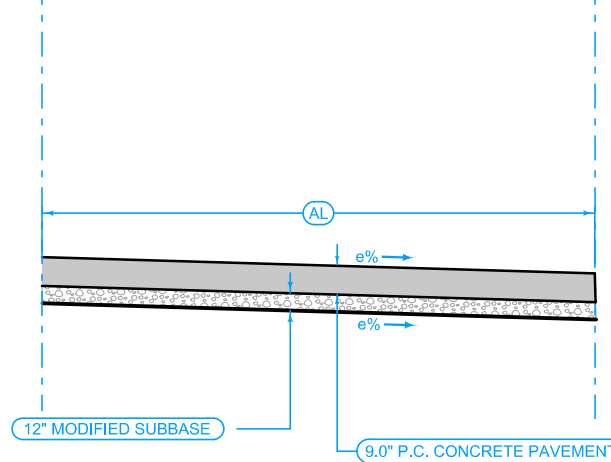
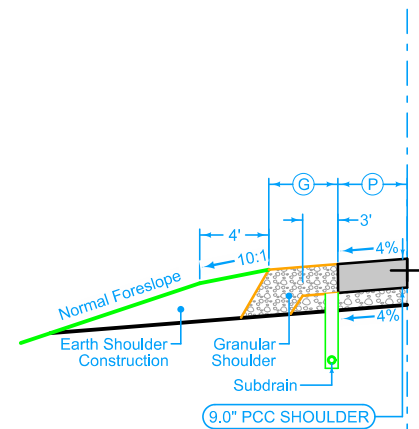
| BEGIN STATION | END STATION | (L) Feet |
|---------------|-------------|----------|
| 432+74.50     | 434+51.76   | Vari.    |
| 435+73.35     | 437+38.71   | Vari.    |

Median

| 4DP_Raised_Out_04-21-20 |             |          |          |
|-------------------------|-------------|----------|----------|
| BEGIN STATION           | END STATION | (A) Feet | (B) Feet |
| 32+56.00                | 34+48.09    | Vari.    | Vari.    |
| 35+72.34                | 37+97.00    | Vari.    | Vari.    |

Mainline Jointing:  
 Transverse joints: CD at 17' spacing  
 Longitudinal joint: L-2

| BEGIN STATION | END STATION | (R) Feet |
|---------------|-------------|----------|
| 332+65.45     | 334+49.06   | Vari.    |
| 335+72.00     | 336+75.15   | Vari.    |



### Full Depth PCC Combination Shoulder

Shoulder Jointing:  
 Longitudinal joint: BT-2, L-2 or KT-2  
 Transverse joints: C at 17' spacing

| 2_C_FullPCC_04-20-21 |           |          |   |
|----------------------|-----------|----------|---|
| STATION TO STATION   | (P) Feet  | (G) Feet |   |
| 431+00.00            | 432+74.50 | 6        | 4 |
| 437+38.71            | 439+50.00 | 6        | 4 |

Median Jointing:  
 Transverse joints: CD at 17' spacing  
 Longitudinal joint: L-2

| STATION TO STATION | (AL) Feet |
|--------------------|-----------|
| 31+00.00           | 32+56.00  |
| 37+97.00           | 39+50.00  |

### Full Depth PCC Combination Shoulder

Shoulder Jointing:  
 Longitudinal joint: BT-2, L-2 or KT-2  
 Transverse joints: C at 17' spacing

| 2_C_FullPCC_04-20-21 |           |          |   |
|----------------------|-----------|----------|---|
| STATION TO STATION   | (P) Feet  | (G) Feet |   |
| 331+00.00            | 332+65.45 | 6        | 4 |
| 336+75.15            | 339+50.00 | 6        | 4 |

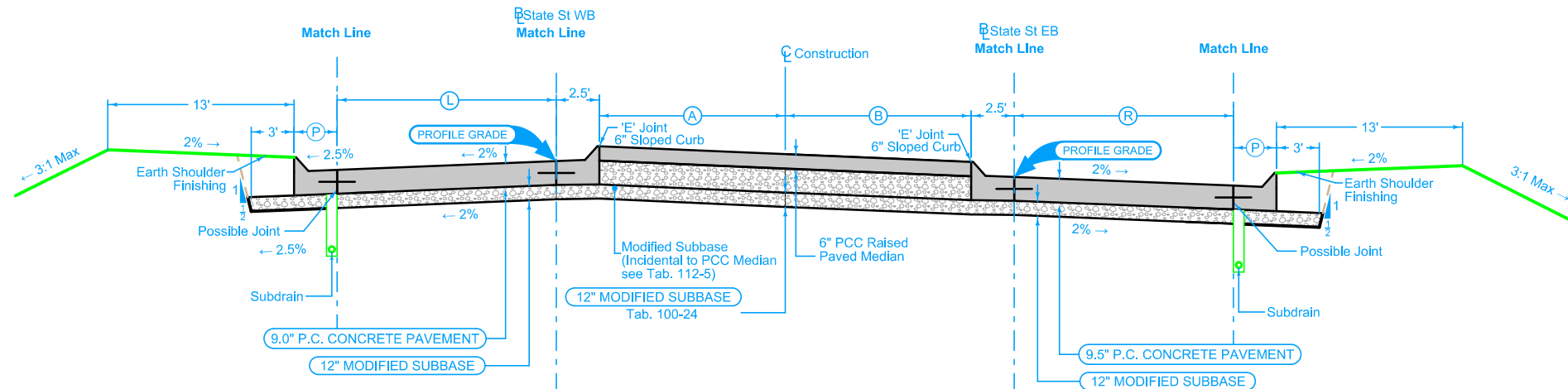
See Tab 100-24 or 100-25 for pavement quantities.  
 See Tab 112-9 for shoulder quantities.

### Curbed Shoulder

Shoulder Jointing:  
Longitudinal joint not required when distance from back of curb to nearest joint is less than 15':

Single pour: L-2  
Staged : KT-2  
Transverse: CD refer to L sheets for spacing

| STATION TO STATION |            | (P)<br>Feet | Curb Type<br>See PV-102 |
|--------------------|------------|-------------|-------------------------|
| 2133+43.00         | 2134+35.27 | 2.5         | 6" Sloped               |
|                    |            |             |                         |
|                    |            |             |                         |



### Curbed Shoulder

Shoulder Jointing:  
Longitudinal joint not required when distance from back of curb to nearest joint is less than 15':

Single pour: L-2  
Staged : KT-2  
Transverse: CD refer to L sheets for spacing

| STATION TO STATION |            | (P)<br>Feet | Curb Type<br>See PV-102 |
|--------------------|------------|-------------|-------------------------|
| 1133+43.10         | 1134+32.54 | 2.5         | 6" Sloped               |
|                    |            |             |                         |
|                    |            |             |                         |

Shoulder Jointing:  
Transverse joints: CD at 17' spacing  
Longitudinal joint: L-2

| BEGIN STATION | END STATION | (L)<br>Feet |
|---------------|-------------|-------------|
| 2132+35.00    | 2134+35.27  | Vari.       |
|               |             |             |
|               |             |             |

Median

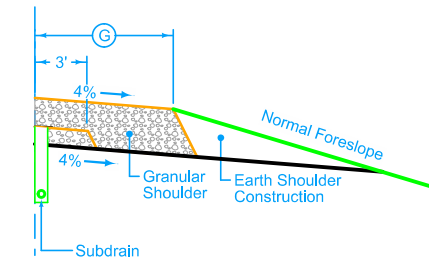
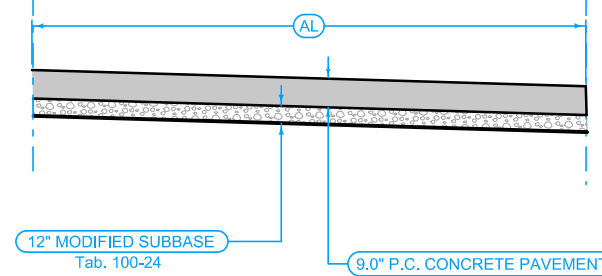
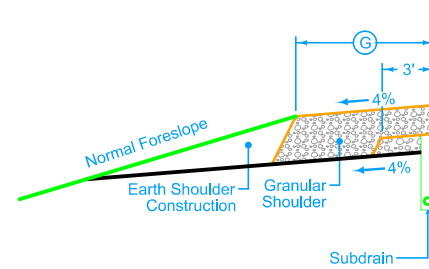
| 4DP_Raised_Out_04-21-20 |             |             |             |
|-------------------------|-------------|-------------|-------------|
| BEGIN STATION           | END STATION | (A)<br>Feet | (B)<br>Feet |
| 133+88.00               | 134+34.57   | Vari.       | Vari.       |
|                         |             |             |             |
|                         |             |             |             |

Shoulder Jointing:  
Transverse joints: CD at 17' spacing  
Longitudinal joint: L-2

| BEGIN STATION | END STATION | (R)<br>Feet |
|---------------|-------------|-------------|
| 1132+35.00    | 1134+32.54  | Vari.       |
|               |             |             |
|               |             |             |

### Granular Shoulder

| STATION TO STATION |            | (G)<br>Feet |
|--------------------|------------|-------------|
| 2132+35.00         | 2133+43.00 | 5           |
|                    |            |             |
|                    |            |             |



Median Jointing:  
Transverse joints: CD at 17' spacing  
Longitudinal joint: L-2

| STATION TO STATION |           | (AL)<br>Feet |
|--------------------|-----------|--------------|
| 132+35.00          | 133+88.00 | Vari.        |
|                    |           |              |
|                    |           |              |

### Granular Shoulder

| STATION TO STATION |            | (G)<br>Feet |
|--------------------|------------|-------------|
| 1132+35.00         | 1133+43.10 | 5           |
|                    |            |             |
|                    |            |             |

See Tab 100-24 or 100-25 for pavement quantities.  
See Tab 112-9 for shoulder quantities.

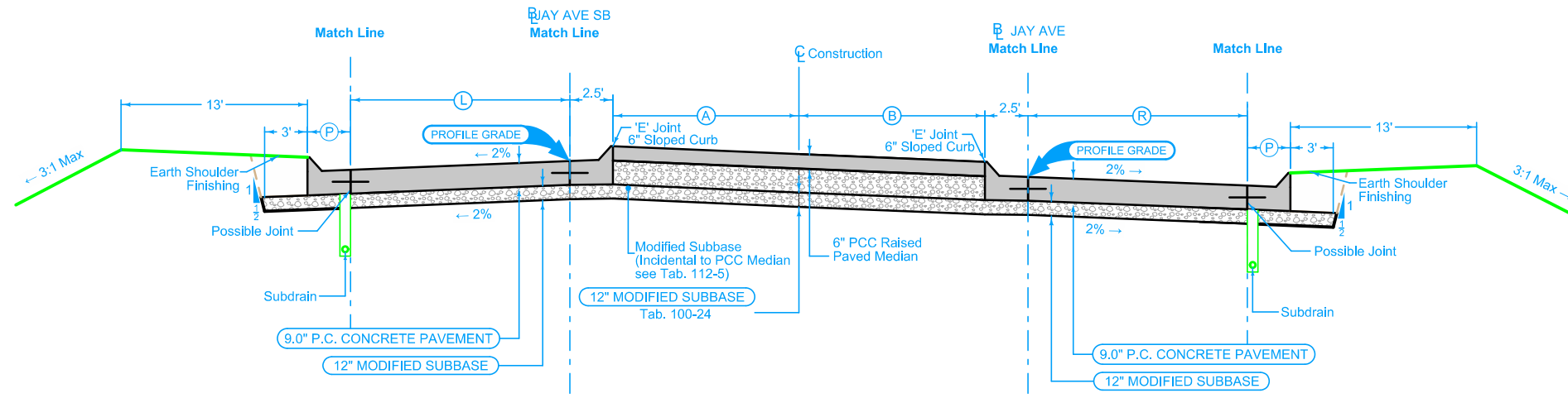
State Street

### Curbed Shoulder

Shoulder Jointing:  
 Longitudinal joint not required when distance from back of curb to nearest joint is less than 15':

Single pour: L-2  
 Staged : KT-2  
 Transverse: CD refer to L sheets for spacing

| STATION TO STATION |            | (P)<br>Feet | Curb Type<br>See PV-102 |
|--------------------|------------|-------------|-------------------------|
| 2235+80.86         | 2236+60.88 | 2.5         | 6" Sloped               |
|                    |            |             |                         |
|                    |            |             |                         |
|                    |            |             |                         |



### Curbed Shoulder

Shoulder Jointing:  
 Longitudinal joint not required when distance from back of curb to nearest joint is less than 15':

Single pour: L-2  
 Staged : KT-2  
 Transverse: CD refer to L sheets for spacing

| STATION TO STATION |            | (P)<br>Feet | Curb Type<br>See PV-102 |
|--------------------|------------|-------------|-------------------------|
| 1235+56.96         | 2057+34.00 | 2.5         | 6" Sloped               |
|                    |            |             |                         |
|                    |            |             |                         |
|                    |            |             |                         |

Shoulder Jointing:  
 Transverse joints: CD at 17' spacing  
 Longitudinal joint: L-2

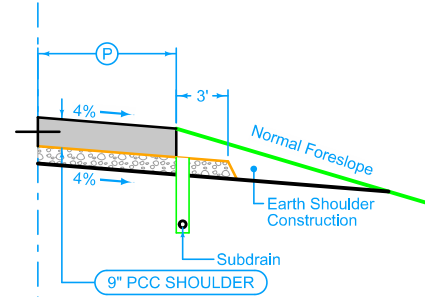
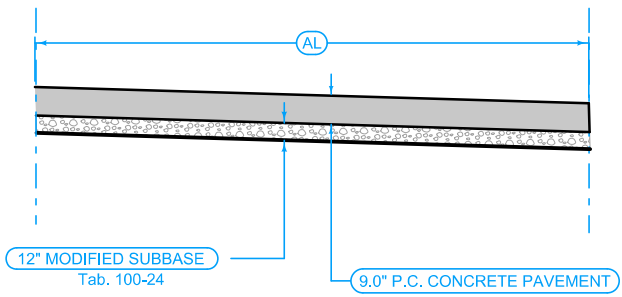
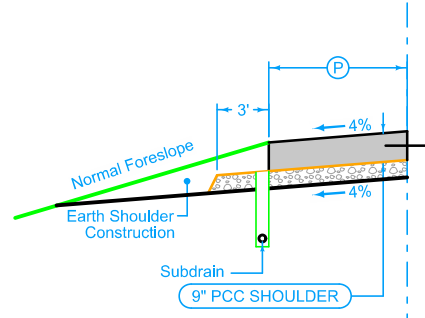
| BEGIN STATION | END STATION | (L)<br>Feet |
|---------------|-------------|-------------|
| 2057+34.00    | 2237+97.20  | Vari.       |
|               |             |             |
|               |             |             |

Median

| 4DP_Raised_Out_04-21-20 |             |             |             |
|-------------------------|-------------|-------------|-------------|
| BEGIN STATION           | END STATION | (A)<br>Feet | (B)<br>Feet |
| 235+59.06               | 236+30.00   | Vari.       | Vari.       |
|                         |             |             |             |
|                         |             |             |             |

Shoulder Jointing:  
 Transverse joints: CD at 17' spacing  
 Longitudinal joint: L-2

| BEGIN STATION | END STATION | (R)<br>Feet |
|---------------|-------------|-------------|
| 1235+56.96    | 1236+19.66  | Vari.       |
|               |             |             |
|               |             |             |



### Full Depth PCC Shoulder

Shoulder Jointing:  
 Longitudinal joint: BT-2, L-2 or KT-2  
 Transverse joints: C at 17' spacing

| STATION TO STATION |            | (P)<br>Feet |
|--------------------|------------|-------------|
| 2236+60.88         | 2237+97.20 | 3           |
|                    |            |             |
|                    |            |             |

Median Jointing:  
 Transverse joints: CD at 17' spacing  
 Longitudinal joint: L-2

| STATION TO STATION |           | (AL)<br>Feet |
|--------------------|-----------|--------------|
| 236+30.00          | 237+97.20 | Vari.        |
|                    |           |              |
|                    |           |              |

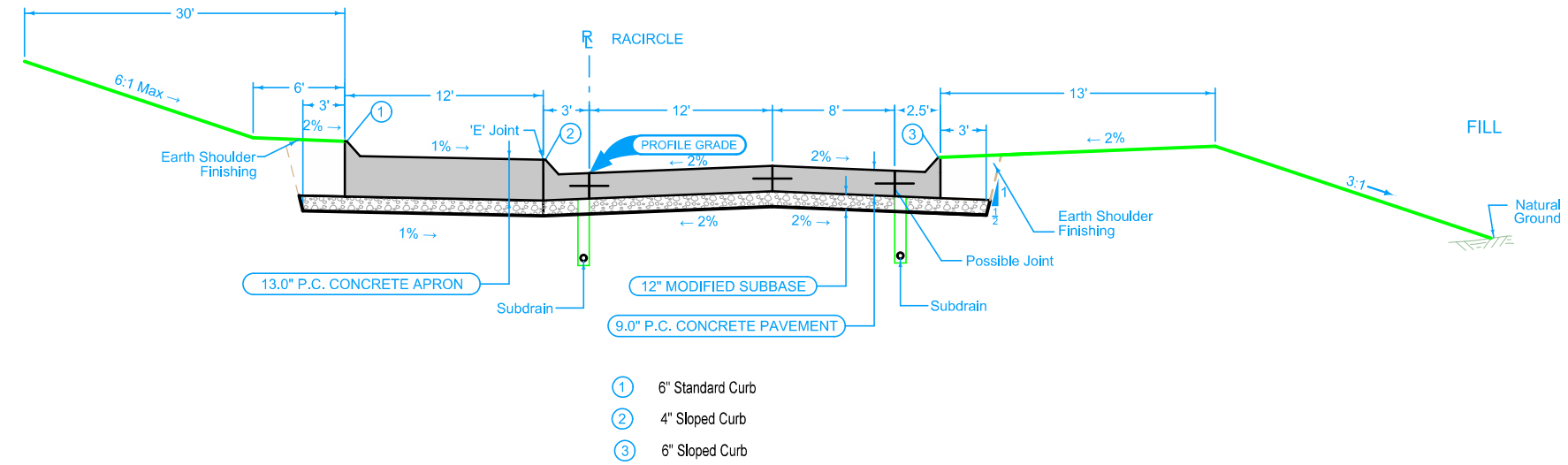
### Full Depth PCC Shoulder

Shoulder Jointing:  
 Longitudinal joint: BT-2, L-2 or KT-2  
 Transverse joints: C at 17' spacing

| STATION TO STATION |            | (P)<br>Feet |
|--------------------|------------|-------------|
| 1236+19.66         | 1237+97.20 | 3           |
|                    |            |             |
|                    |            |             |

See Tab 100-24 or 100-25 for pavement quantities.  
 See Tab 112-9 for shoulder quantities.

## 110th Avenue



| LOCATION            |                    |         |
|---------------------|--------------------|---------|
| ROAD IDENTIFICATION | STATION TO STATION |         |
| CIRC                | 0+00.00            | 2+82.74 |
|                     |                    |         |
|                     |                    |         |
|                     |                    |         |
|                     |                    |         |

Note: See 'L' Sheets for Jointing Layout

See Tab 100-24 or 100-25 for pavement quantities.  
See Tab 112-9 for shoulder quantities.

**Roundabout**

### SURVEY SYMBOLS

|  |  |  |                                   |
|--|--|--|-----------------------------------|
|  | AST, Above Ground Storage Tank         |  | PR, Electric Riser Pole           |
|  | BB, Billboard                          |  | PRO, Profile Shot                 |
|  | BBB, Bottom of Bridge Beam             |  | PT, Curve Point                   |
|  | BCL, Bridge Centerline                 |  | REF, Reference Tie Point          |
|  | BD, Bridge Deck                        |  | RET, Retaining Walls              |
|  | BIN, Grain Bin                         |  | RIP, Rip-Rap                      |
|  | BL, Topo Breakline                     |  | ROC, Rock Outcropping             |
|  | BLD, Building or Foundation            |  | ROW, Right of Way Mark            |
|  | BLS, Bridge Low Steel                  |  | RR, Centerline of Railroad Tracks |
|  | BM, Bench Mark                         |  | RRB, Railroad Signal Box          |
|  | BNK, Stream Bank                       |  | RRF, Railroad Frog                |
|  | BRG, Bridge                            |  | RRR, Railroad Rail                |
|  | C, Centerline BL of Road -ML or SR     |  | RRS, Railroad Signal              |
|  | CAV, Cave                              |  | RRW, Railroad Switch              |
|  | CEL, Cell Phone Tower                  |  | RT, Radio Tower                   |
|  | CIS, Cistern                           |  | S, Soil Sampling Site -Wetlands   |
|  | CON, Concrete or A/C Slab              |  | SBR, Size of Bridge               |
|  | CP, Control Point                      |  | SC, Spiral Point                  |
|  | CRP, Corporation Line                  |  | SCR, Section Corner               |
|  | CS, Curve Point                        |  | SEP, Septic Tank                  |
|  | CU, Back of Curb                       |  | SF, Silt Fence -Wetlands          |
|  | CUL, Culvert                           |  | SG, Staff Gauge -Wetlands         |
|  | D, Centerline Draw or Stream -Down     |  | SH, Paved Shoulder                |
|  | DAB, Drainage Area Boundary            |  | SHR, Shrub                        |
|  | DIK, Centerline of Dike or Dam         |  | SI, Sign                          |
|  | DTM, Photogrammetry Elv Control Check  |  | SL, Speed Limit Sign              |
|  | DU, Centerline Draw or Stream -Up      |  | SLN, Section Line                 |
|  | EB, Electrical Box                     |  | SLO, Silo                         |
|  | EG, Edge of Gravel Road                |  | SNK, Sink Hole                    |
|  | ENP, Edge Paved Entrance and Park Lot  |  | SNP, Unpaved Shoulder             |
|  | ENT, Centerline BL of Entrance         |  | SP, Stream Profile                |
|  | ENU, Edge Unpaved Entrance and Parking |  | STP, Stump                        |
|  | EP, Edge of Paved Roads -ML or SR      |  | SWK, Sidewalk                     |
|  | EW, Edge of Water                      |  | SWP, Swamp or Marsh               |
|  | FCL, Chain Link and Security Fence     |  | TA, Tower Anchor                  |
|  | FENO, FENO Monument                    |  | TBO, Telephone Booth              |
|  | FHD, Fire Hydrants                     |  | TCB, Traffic Signal Box           |
|  | FLG, Flag Poles                        |  | TDC, Tree Deciduous               |
|  | FP, Filler Pipe                        |  | TDL, Traffic Detection Loop       |
|  | FW, Wire Fence                         |  | TER, Terrace                      |
|  | FWD, Wood Fence                        |  | TEV, Evergreen Tree               |
|  | GDC, Guard Rail Cable                  |  | TFR, Tree Fruit                   |
|  | GDL, Guard Rail Steel                  |  | TGP, Telegraph Pole               |
|  | GP, Guard Post -Less Than 4 Posts      |  | TIL, Tile Line                    |
|  | GPR, Guard Post -4 or More Posts       |  | TLNL, Tree Line Left              |
|  | GR, Ground Shot                        |  | TLNR, Tree Line Right             |
|  | GRV, Grave                             |  | TOP, Top of Bridge Pier           |
|  | GU, Gutter In Front of Curb            |  | TPA, Telephone Pole Co. 1         |
|  | GV, Gas Valve                          |  | TPB, Telephone Pole Co. 2         |
|  | HDG, Hedge Row                         |  | TPC, Telephone Pole Co. 3         |
|  | HS, Hydric Soil -Wetlands              |  | TR, Telephone Riser Pole          |
|  | HT, Electrical Highline Tower          |  | TRL, Trail                        |
|  | IN, Storm Sewer Intake                 |  | TS, Spiral Point                  |
|  | INB, Storm Sewer Beehive Intake        |  | TSB, Telephone Switch Box         |
|  | LC, Lot Corner                         |  | TSG, Traffic Signal               |
|  | LIN, Miscellaneous Line                |  | TSL, Traffic Signal and Luminaire |
|  | LP, L.P. Tank                          |  | TV, Satellite TV Dish             |
|  | LUM, Luminaire                         |  | TVP, TV Pedestal                  |
|  | MH, Utility Access -Manhole            |  | TW, Top of Water                  |
|  | MIS, Miscellaneous                     |  | UB, Utility Box                   |
|  | MM, Mile Marker Post                   |  | UE, Utility Elevation             |
|  | OUT, Tile Outlet                       |  | UPH, Utility Pot Hole - Quality A |
|  | PC, Curve Point                        |  | UST, Underground Tank             |
|  | PCP, Photo Control Point               |  | UV, Underground Utility Vault     |
|  | PCT, Photo Control Target              |  | VS, Channel Cross Section         |
|  | PI, Tangent Point                      |  | WC, Wild Card -Misc. Field Shot   |
|  | PIP, Pipe Culvert                      |  | WEL, Well                         |
|  | PL, Location of Photo -Wetlands        |  | WHD, Water Hydrant                |
|  | PLG, Location of General Photo         |  | WHU, RV Water Hook Up             |
|  | POC, Curve Point                       |  | WM, Wind Mill                     |
|  | POST, Spiral Point                     |  | WND, Wind Turbine                 |
|  |  |  | WV, Water Valve                   |

### UTILITY LEGEND

|  |      |                                      |
|--|------|--------------------------------------|
|  | FO   | F01D, CenturyLink - Quality D        |
|  | E1   | EL1D, MidAmerican Energy - Quality D |
|  | TV2  | TV1D, Mediacom - Quality D           |
|  | TV2D | TV2D, CenturyLink - Quality D        |
|  | GL1D | GL1D, Black Hills Energy - Quality D |
|  | TL1D | TL1D, CenturyLink - Quality D        |
|  | SA1D | SA1D, City of Granger - Quality D    |
|  | ST1D | ST1D, City of Granger - Quality D    |
|  | WL1D | WL1D, Xenia Water - Quality D        |
|  | PPA  | PPA, MidAmerican Energy              |

### PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

| LINEWORK      |       | Design Color No. |  |
|---------------|-------|------------------|--|
| Green         | (2)   |                  | Existing Topographic Features and Labels                               |
| Blue          | (1)   |                  | Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation    |
| Magenta       | (5)   |                  | Existing Utilities   |
| SHADING       |       | Design Color No. |  |
| Lavender      | (9)   |                  | Temporary Pavement Shading   |
| Yellow        | (4)   |                  | Proposed Pavement Shading  |
| Orange        | (6)   |                  | Proposed Granular Shading  |
| Orange        | (70)  |                  | Proposed Shoulder Granular Shading                                     |
| Yellow        | (68)  |                  | Proposed Shoulder Paved Full Depth Shading                             |
| Yellow        | (132) |                  | Proposed Shoulder Paved Partial Depth Shading                          |
| Gray, Dark    | (112) |                  | Proposed Grade and Pave Shading "In conjunction with a paving project" |
| Brown, Light  | (236) |                  | Grading Shading  |
| Orange, Light | (134) |                  | Proposed Granular Entrance Shading                                     |
| Yellow        | (220) |                  | Proposed Paved Entrance Shading  |
| Tan           | (8)   |                  | Proposed Sidewalk Shading  |
| Blue, Light   | (230) |                  | Proposed Sidewalk Landing Shading                                      |
| Pink          | (11)  |                  | Proposed Sidewalk Ramp Shading   |
| Green, Light  | (225) |                  | Existing Pavement Shading  |
| Red           | (3)   |                  | Proposed Structure Shading   |
| Red           | (3)   |                  | Delineates Restricted Areas  |

### PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

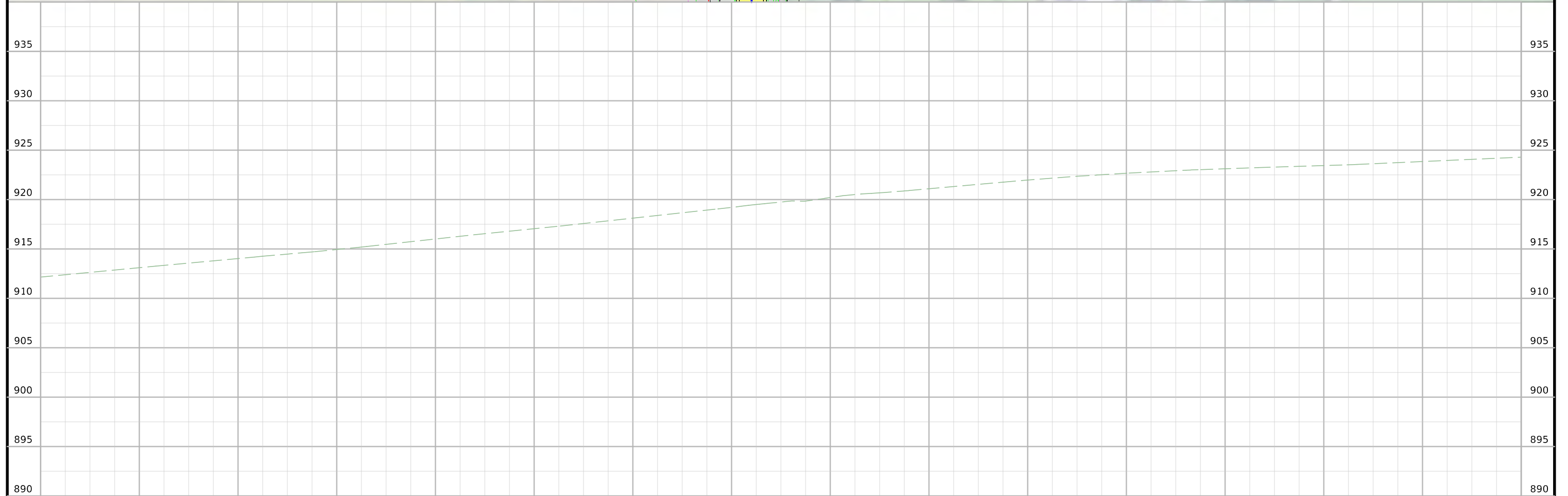
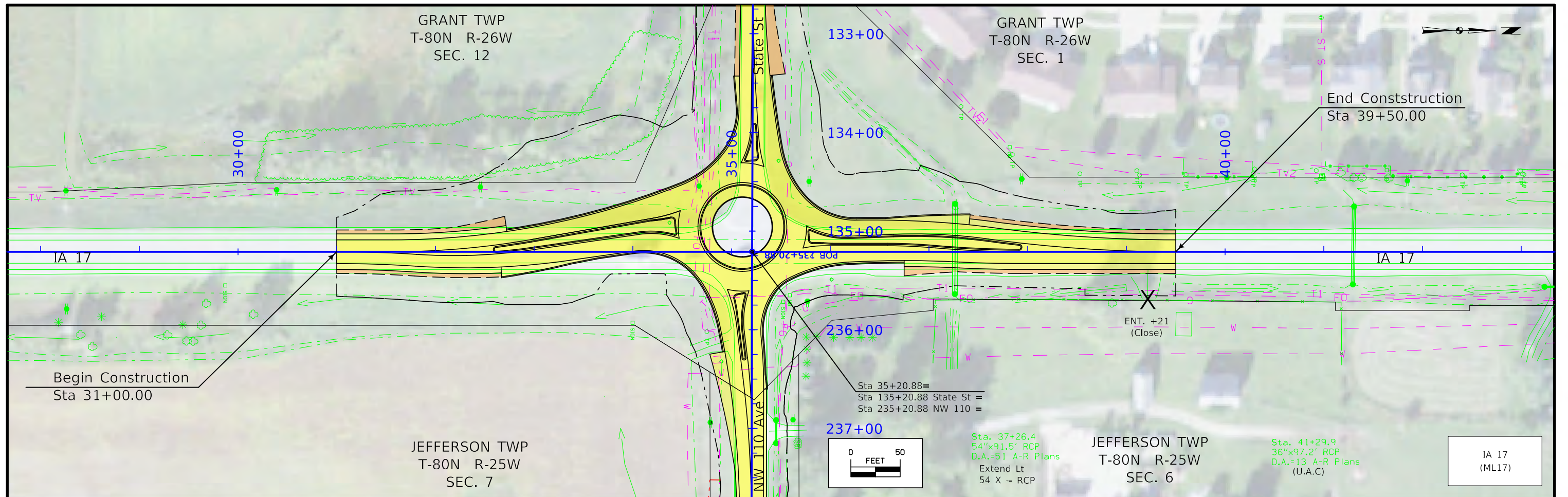
| LINEWORK    |       | Design Color No. |                                 |
|-------------|-------|------------------|---------------------------------|
| Green       | (10)  |                  | Existing Ground Line Profile    |
| Blue        | (1)   |                  | Proposed Profile and Annotation |
| Magenta     | (5)   |                  | Existing Utilities              |
| Blue, Light | (230) |                  | Proposed Ditch Grades, Left     |
| Black       | (0)   |                  | Proposed Ditch Grades, Median   |
| Rust        | (14)  |                  | Proposed Ditch Grades, Right    |

| Reference Point |                             |
|-----------------|-----------------------------|
|                 | Station                     |
|                 | Section Corner              |
|                 | Ground Line Intercept       |
|                 | Saw Cut                     |
|                 | Guardrail                   |
|                 | Trench Drain                |
|                 | HighTension Cable Guardrail |
|                 | Sheet Pile                  |
|                 | Pavement Removal            |
|                 | Clearing & Grubbing Area    |

| RIGHT-OF-WAY LEGEND |                                    |
|---------------------|------------------------------------|
|                     | Proposed Right-of-Way              |
|                     | Existing Right of Way              |
|                     | Existing and Proposed Right-of-Way |
|                     | Easement and Existing Right-of-Way |
|                     | Easement (Temporary)               |
|                     | Easement                           |
|                     | Access Control                     |
|                     | Property Line                      |

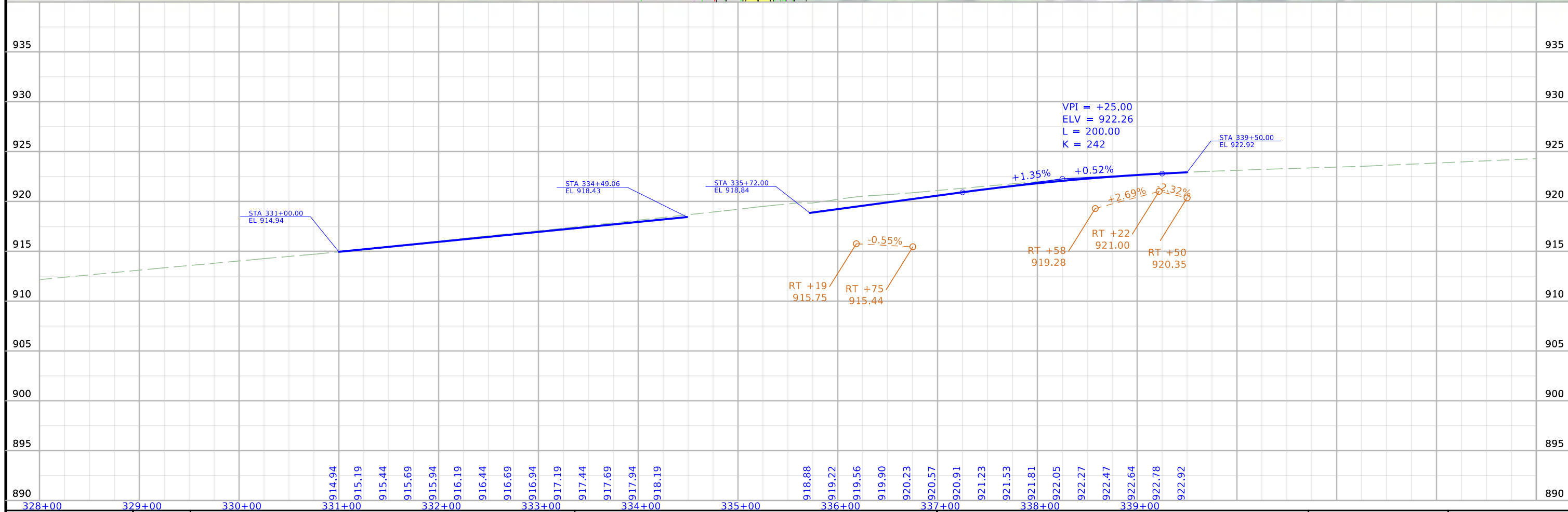
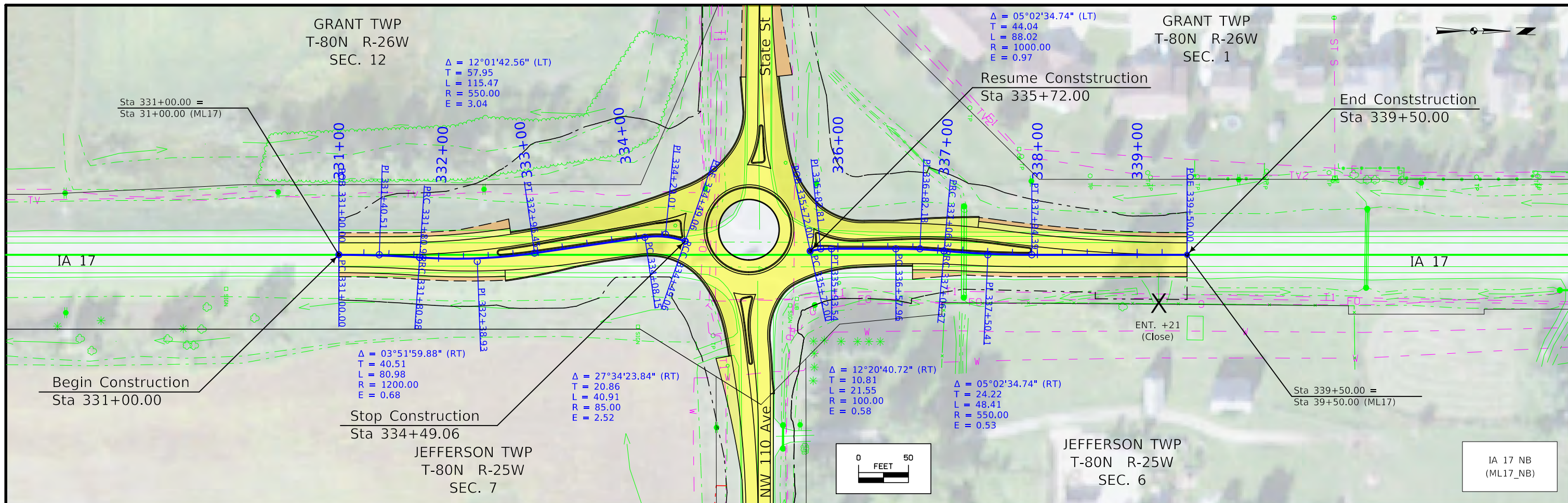
## PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES D, E, F, & K)

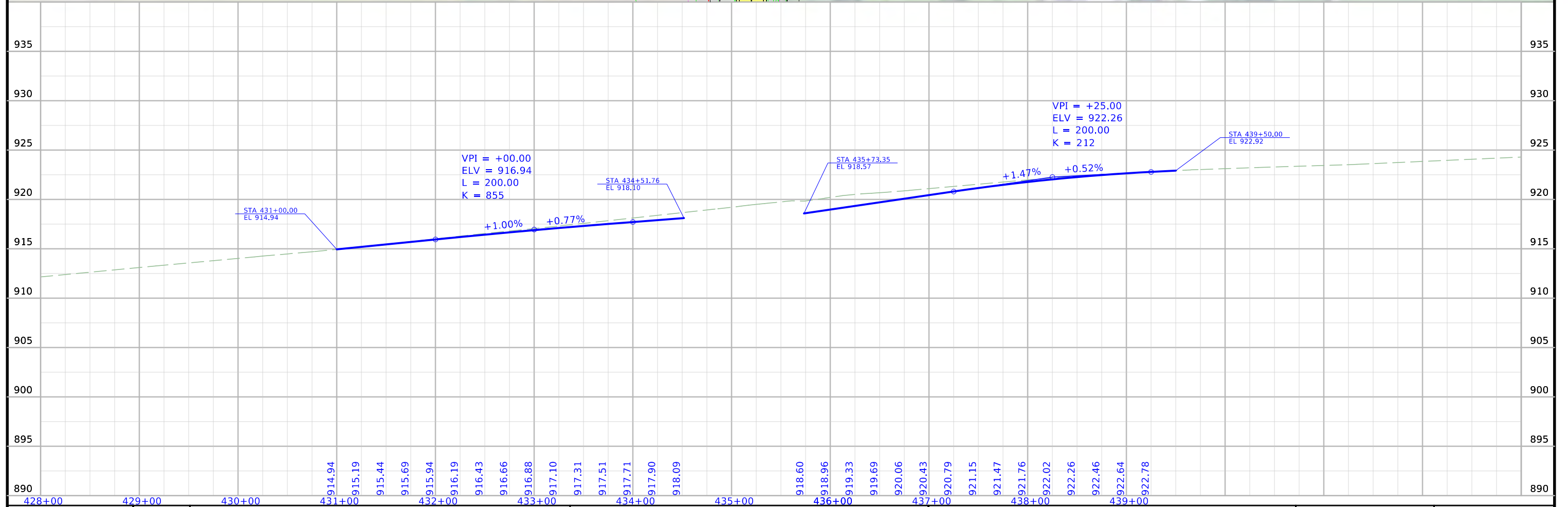
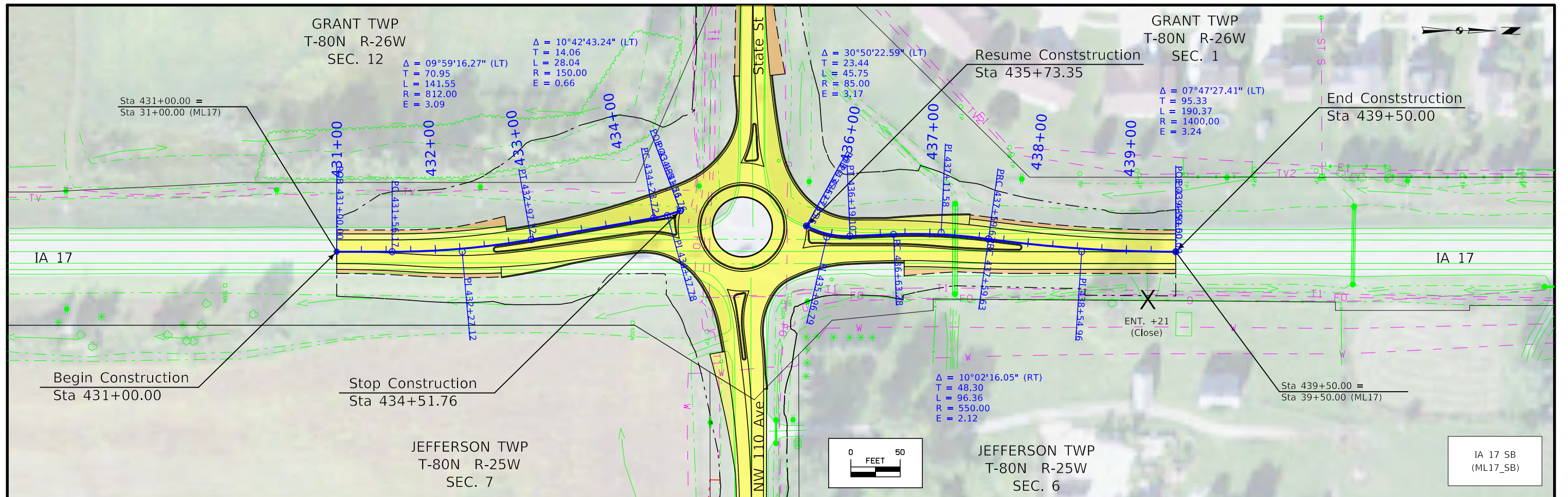


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|----------|---------|------------------------------|-------------|--|------------------|
| FILE NO. | ENGLISH | DESIGN TEAM Schrock / Dudley | Polk COUNTY | PROJECT NUMBER HSIPX-017-1(021)--3L-77 | SHEET NUMBER D.2 |
|----------|---------|------------------------------|-------------|--|------------------|

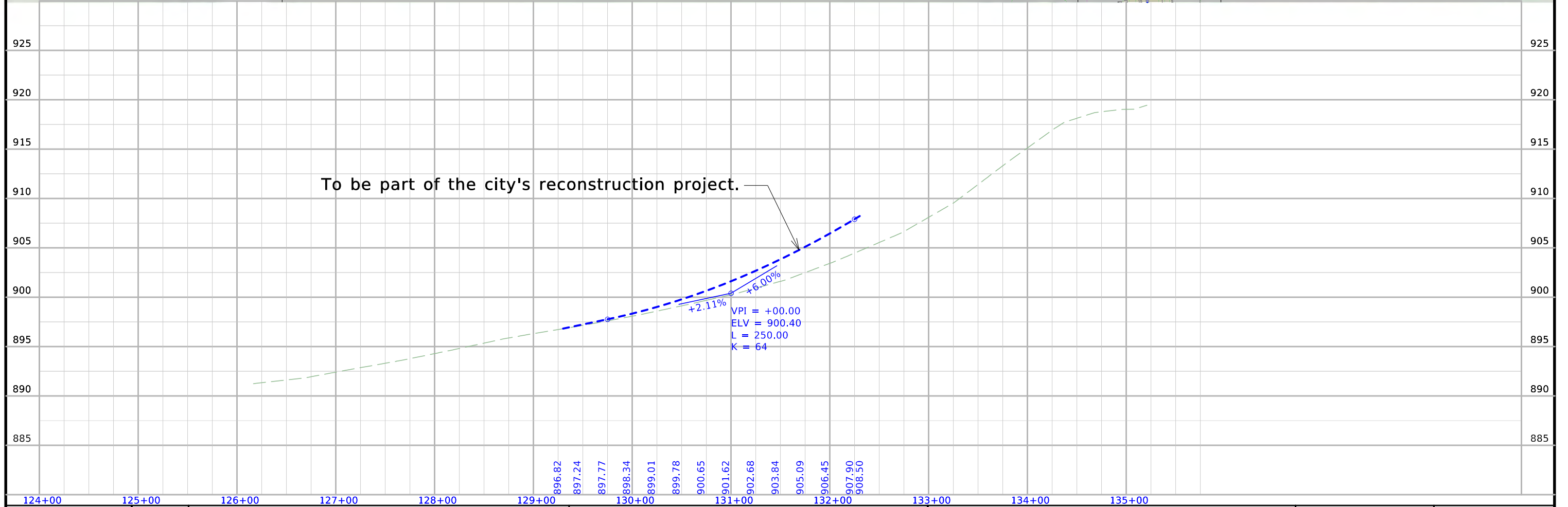
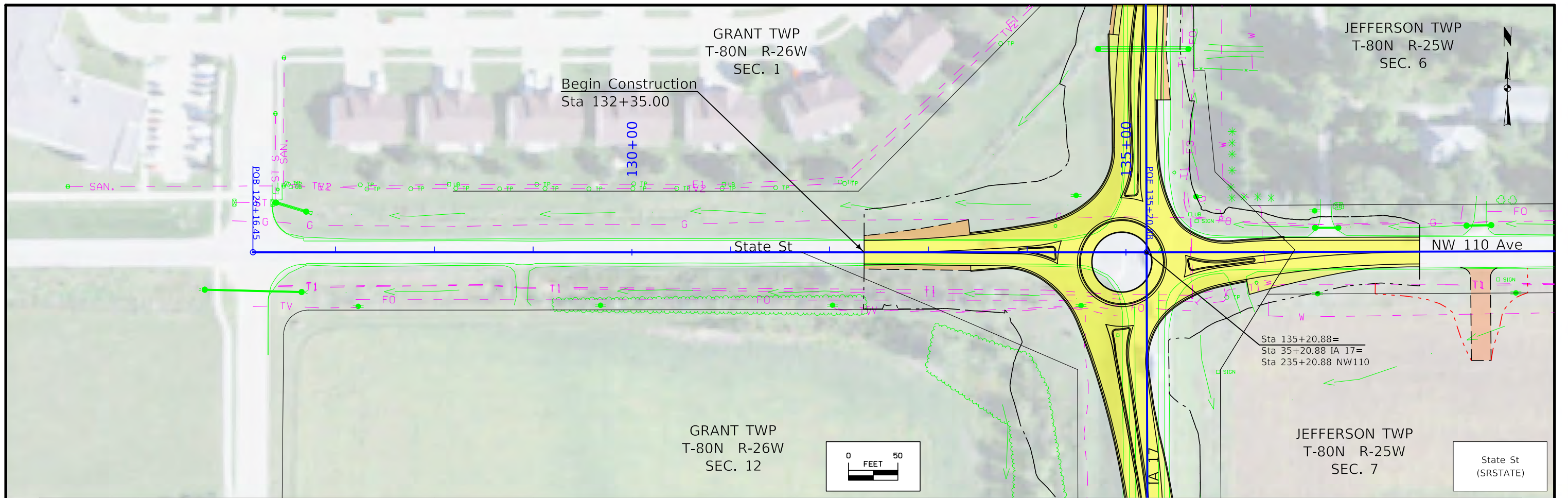


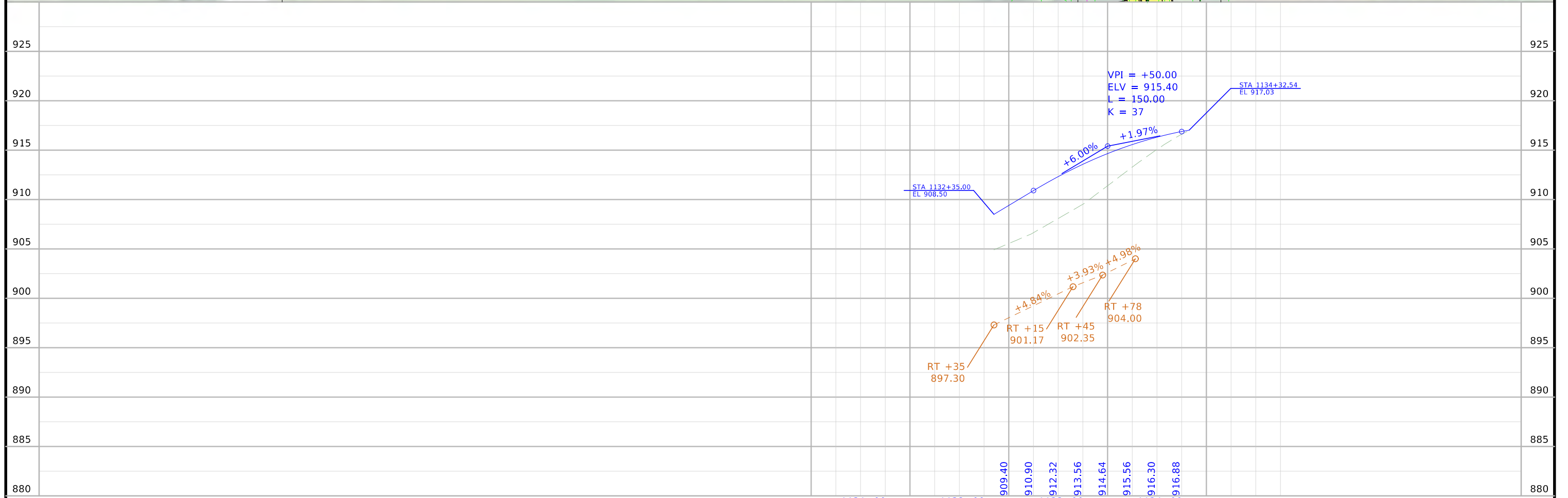
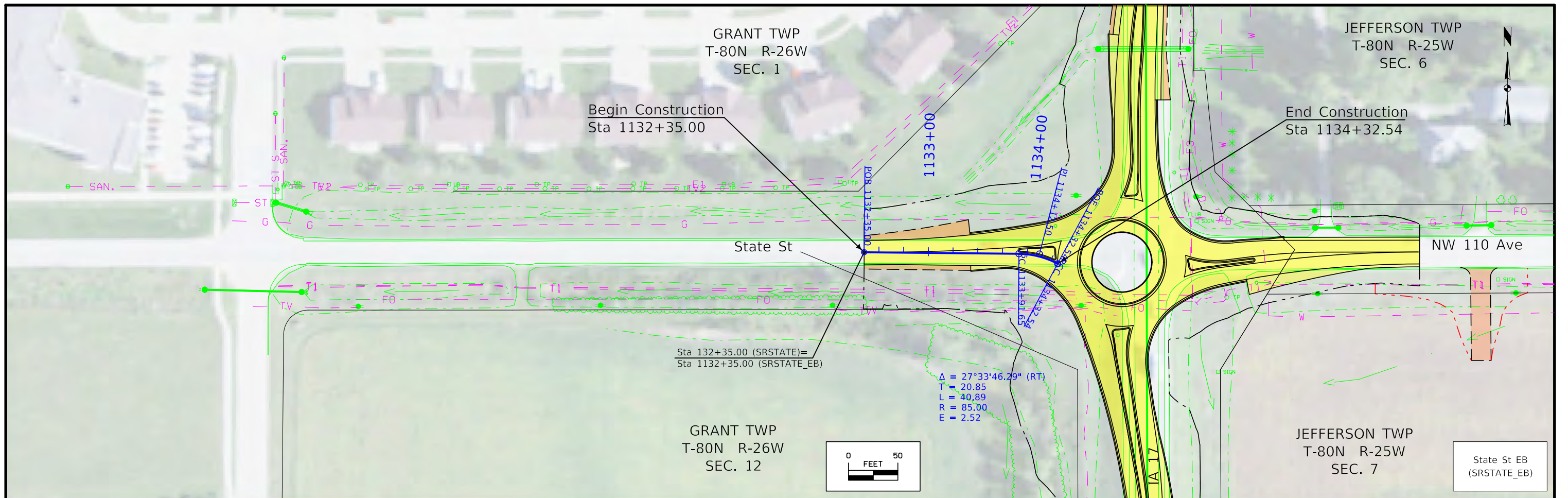


|          |         |             |                  |             |                |                         |              |     |
|----------|---------|-------------|------------------|-------------|----------------|-------------------------|--------------|-----|
| FILE NO. | ENGLISH | DESIGN TEAM | Schrock / Dudley | Polk COUNTY | PROJECT NUMBER | HSIPX-017-1(021)--3L-77 | SHEET NUMBER | D.3 |
|----------|---------|-------------|------------------|-------------|----------------|-------------------------|--------------|-----|

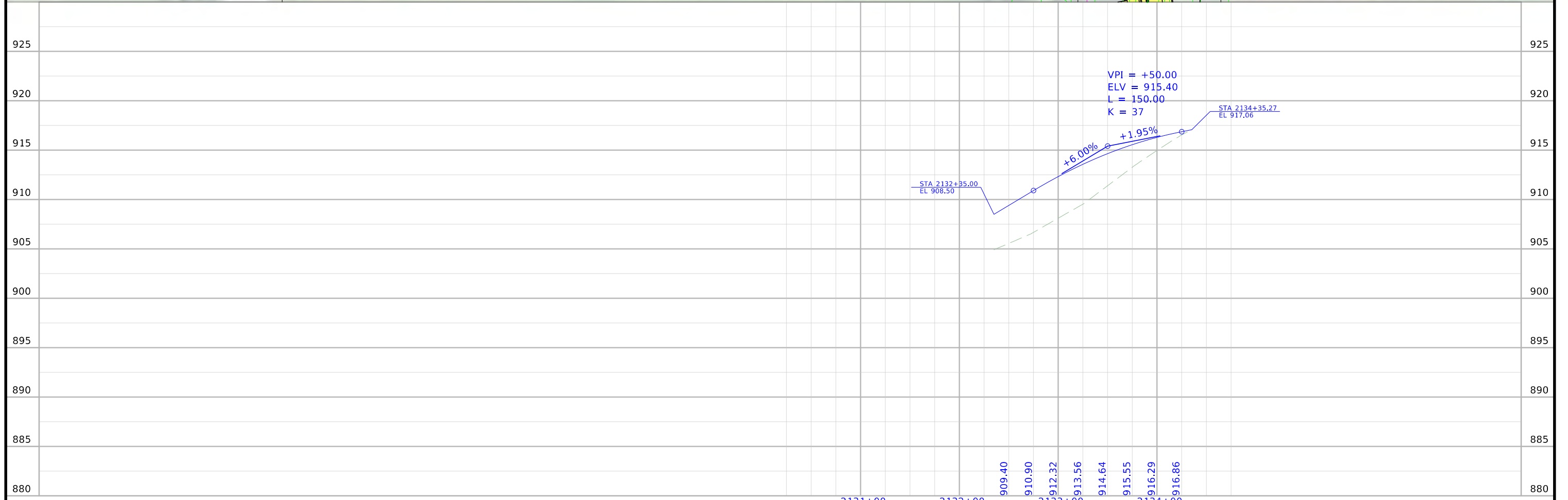
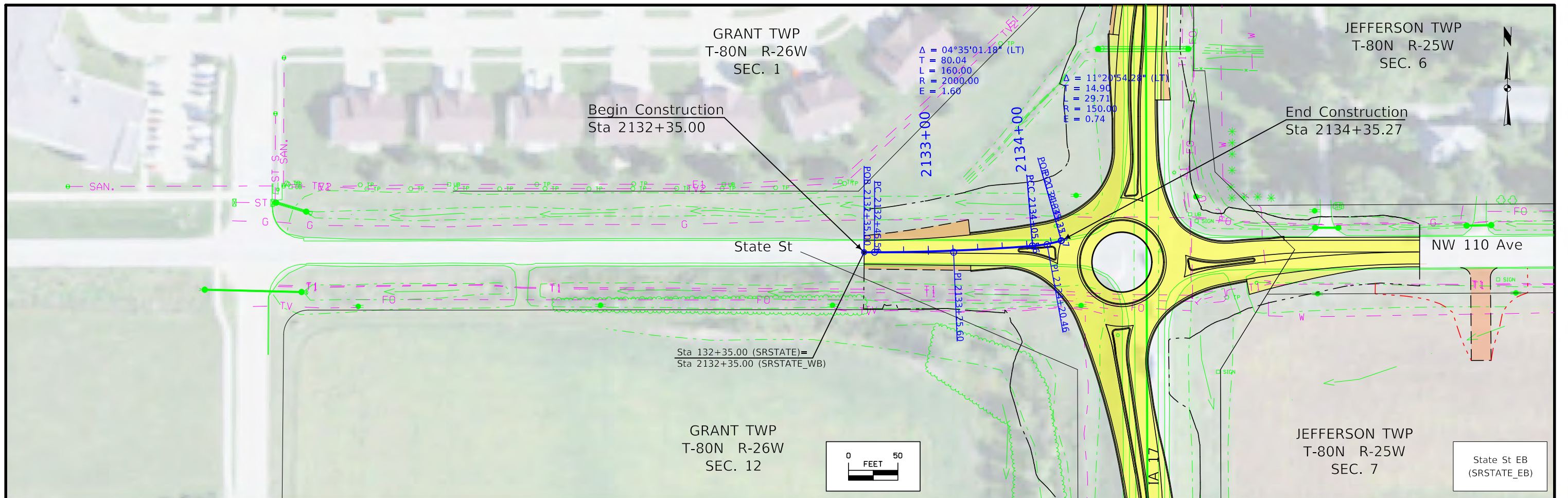


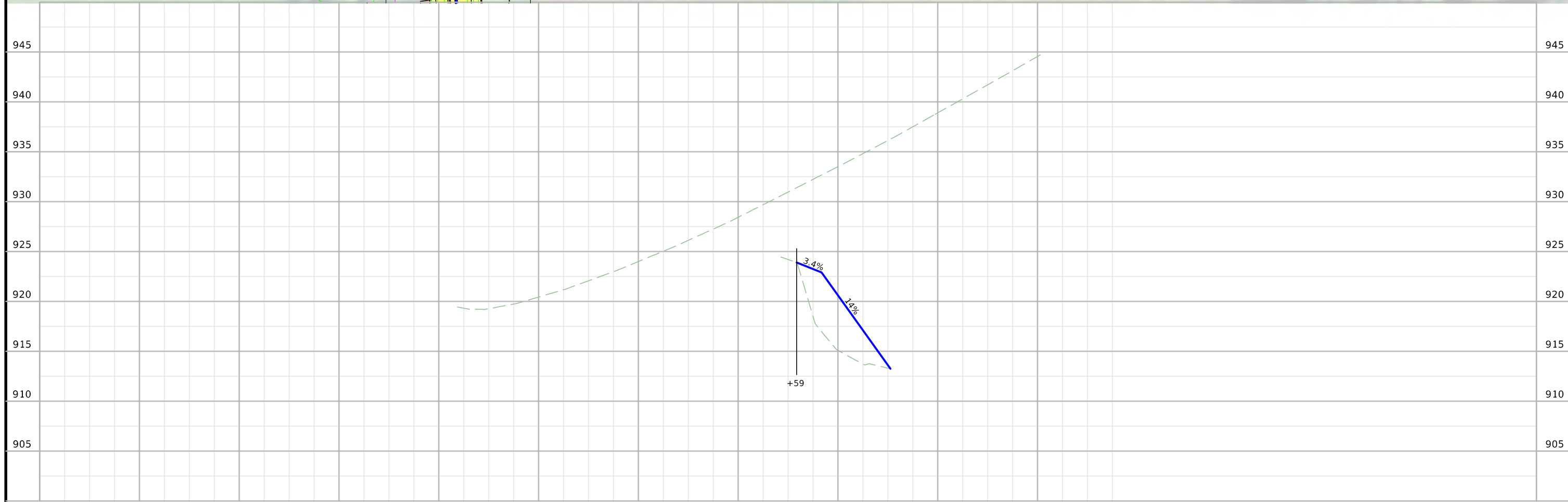
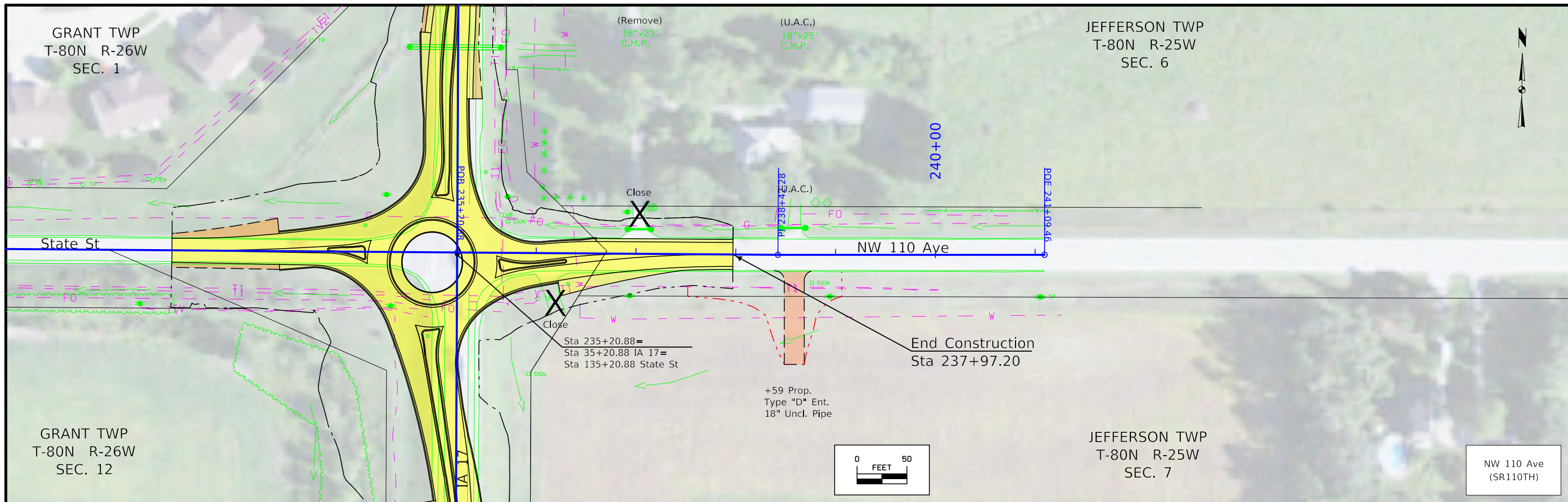
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| FILE NO. | ENGLISH | DESIGN TEAM Schrock / Dudley | Polk COUNTY | PROJECT NUMBER HSI PX-017-1(021)--3L-77 | SHEET NUMBER D.4 |
|----------|---------|------------------------------|-------------|---|------------------|



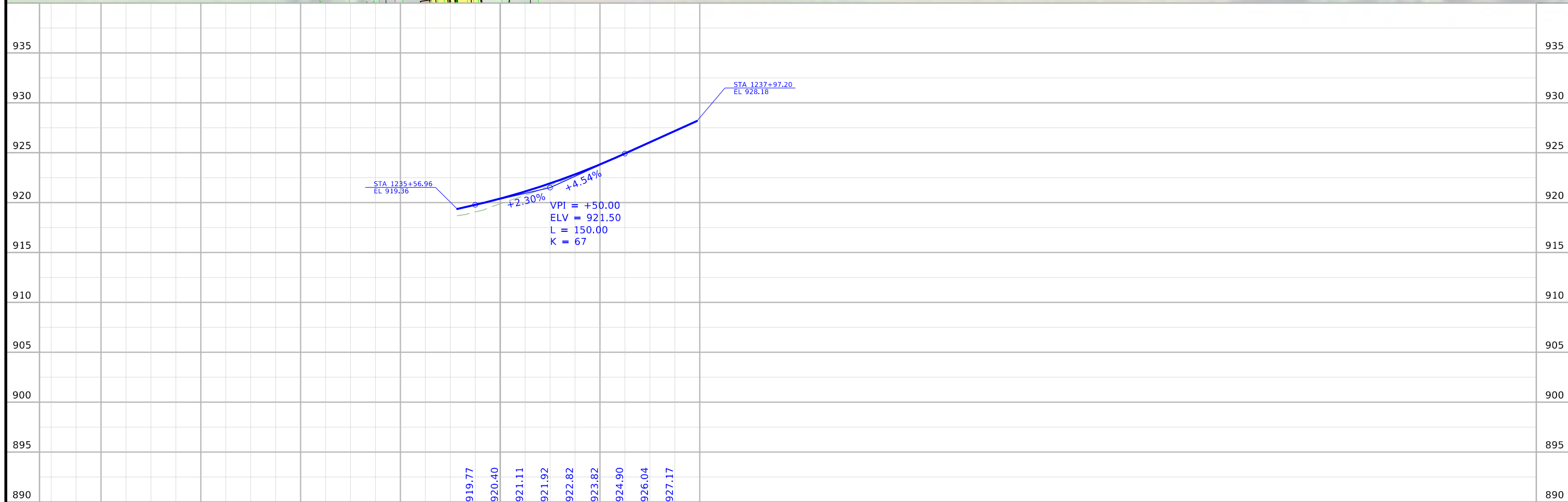
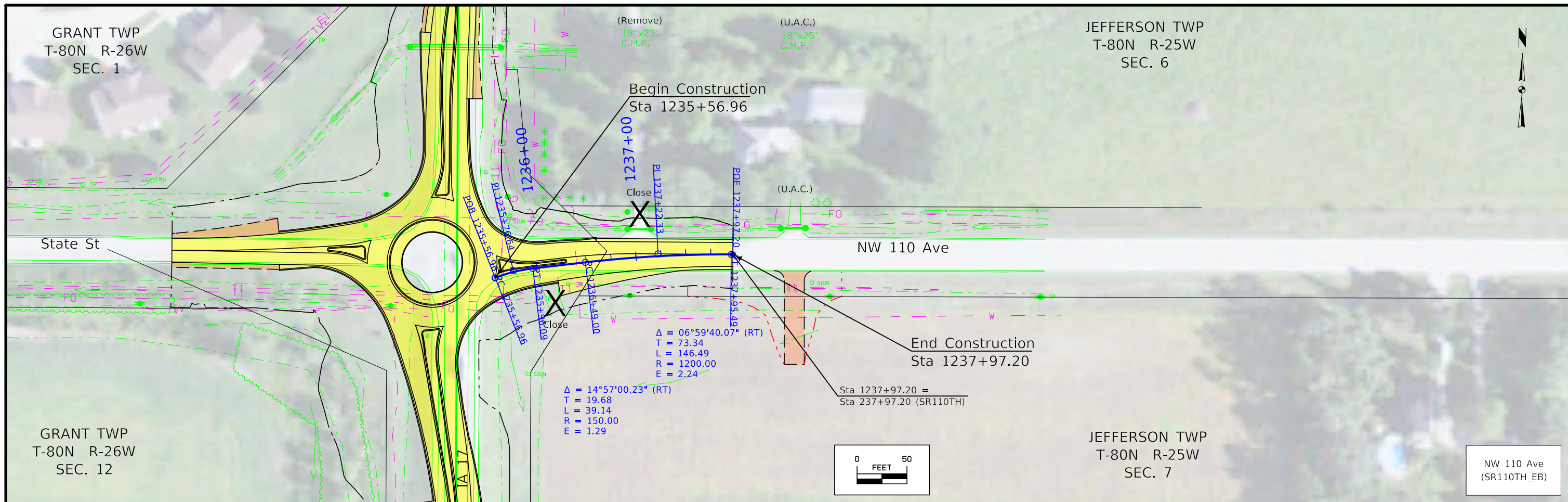


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|----------|---------|------------------------------|-------------|---|------------------|
| FILE NO. | ENGLISH | DESIGN TEAM Schrock / Dudley | Polk COUNTY | PROJECT NUMBER HSI PX-017-1(021)--3L-77 | SHEET NUMBER E.2 |
|----------|---------|------------------------------|-------------|---|------------------|

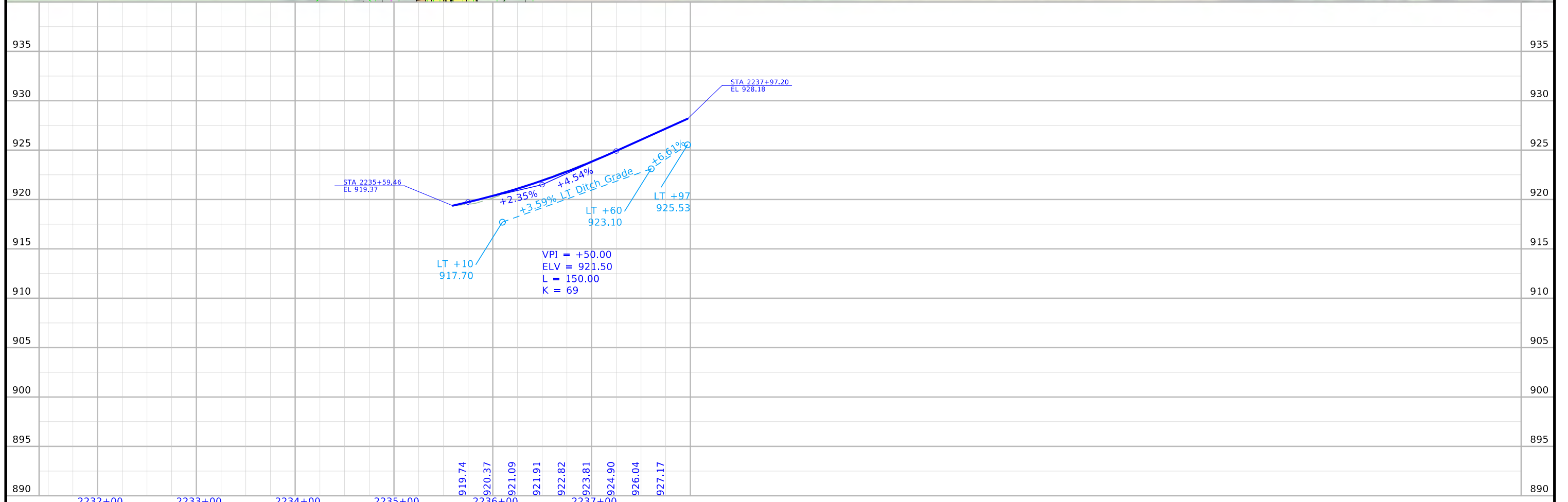
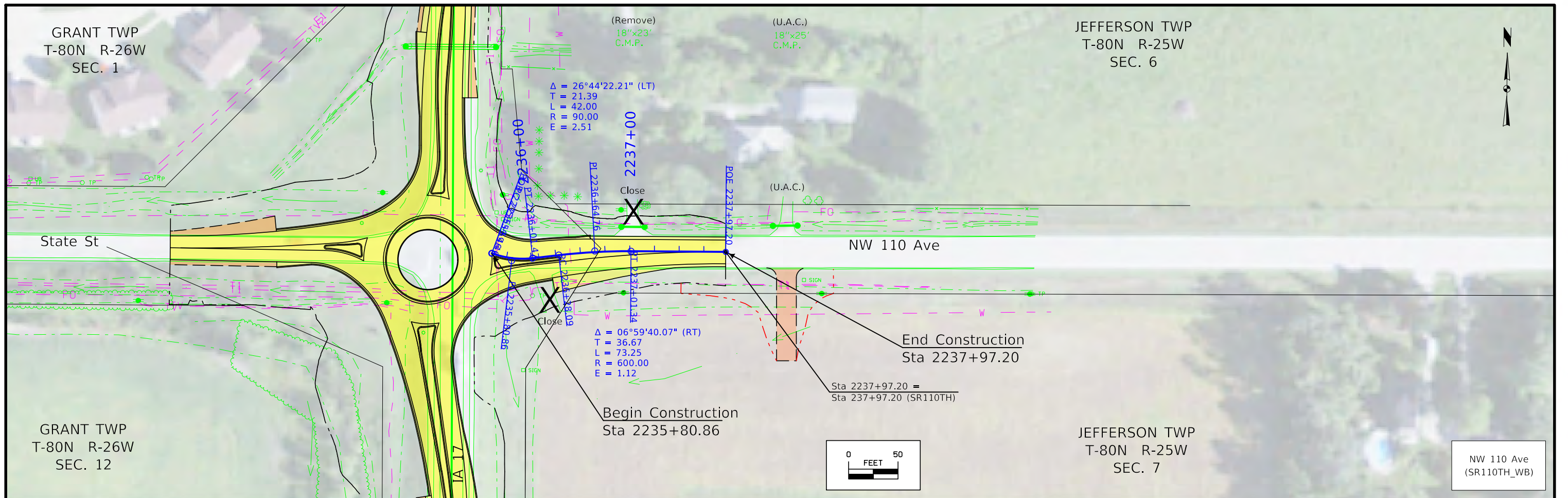




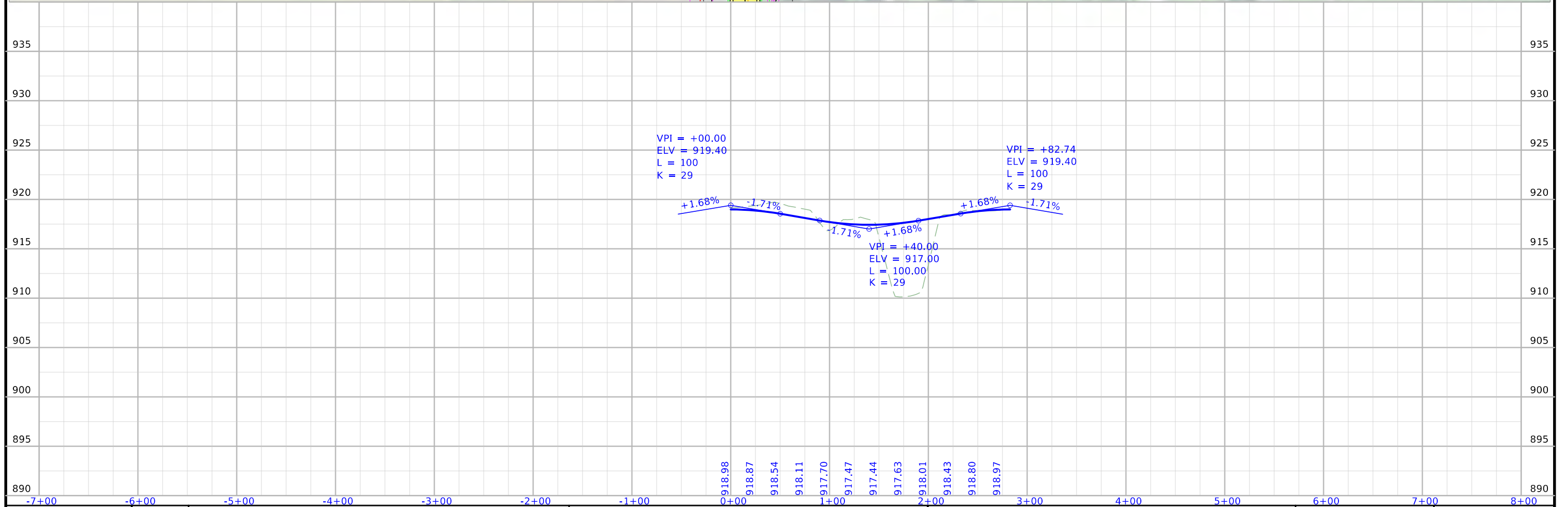
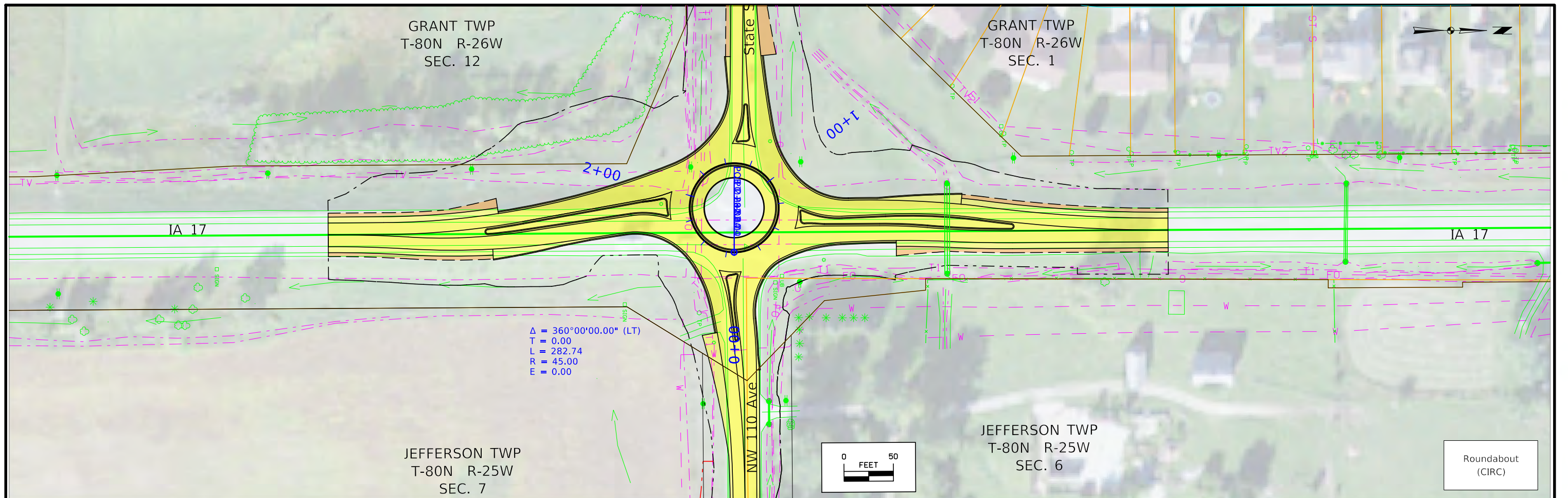
|          |         |             |                  |        |        |        |             |                |                         |        |              |     |
|----------|---------|-------------|------------------|--------|--------|--------|-------------|----------------|-------------------------|--------|--------------|-----|
| 231+00   | 232+00  | 233+00      | 234+00           | 235+00 | 236+00 | 237+00 | 238+00      | 239+00         | 240+00                  | 241+00 |              |     |
| FILE NO. | ENGLISH | DESIGN TEAM | Schrock / Dudley |        |        |        | Polk COUNTY | PROJECT NUMBER | HSIPX-017-1(021)--3L-77 |        | SHEET NUMBER | E.4 |



|          |         |                  |             |                         |              |
|----------|---------|------------------|-------------|-------------------------|--------------|
| FILE NO. | ENGLISH | DESIGN TEAM      | Polk COUNTY | PROJECT NUMBER          | SHEET NUMBER |
|          |         | Schrock / Dudley |             | HSIPX-017-1(021)--3L-77 | E.5          |







|          |         |             |                  |             |                |                         |              |     |
|----------|---------|-------------|------------------|-------------|----------------|-------------------------|--------------|-----|
| FILE NO. | ENGLISH | DESIGN TEAM | Schrock / Dudley | Polk COUNTY | PROJECT NUMBER | HSIPX-017-1(021)--3L-77 | SHEET NUMBER | E.7 |
|----------|---------|-------------|------------------|-------------|----------------|-------------------------|--------------|-----|

## Survey Information

### SURVEY INDEX

**County: Polk**  
**PIN: 22-77-017-010**  
**Project Number: HSIPX-017-1(21)--3L-77**  
**Location: State St Intersection in Granger**  
**Type of Work: Undecided**  
**Project Directory: 7701701022**

### Survey Personnel

Clayton Henningsen – Survey Party Chief  
Jason Arn – Survey Party Chief  
Robert Fredrickson – Assistant Survey Party Chief

### Date(s) of Survey

Begin Date                    02/08/2021  
End Date                      03/14/2022

### General Information

Measurement units for this survey are US survey feet. This survey is for IA Hwy 17 intersection with State St in Granger.

### Project Control

Nearby Iowa Real Time Network reference stations were utilized to obtain horizontal and vertical control on primary project control points. Two five-minute observations were taken with appropriate time spans between and used in a weighted average to obtain final coordinate values. For additional details of the control survey, contact the Preliminary Survey department.

**PROJECT DATUM: NAD83(2011) EPOCH 2010.00**  
**VERTICAL DATUM: NAVD88**  
**COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 8**

### Alignments Information

Alignment provided for this survey by the district 1 office.

Chain Ia17 is a retrace of as-built plans for project F-1104(1) and NHS-141-6(33)--19-25. Stationing was held at the intersection of Ia141 and Ia17 (P.O.T. 461+18.01 (Ia141) = P.O.T. 2461+18.01 (Ia17)(Proj. NHS-141-6(33)--19-25) and was ran ahead with an equation at 2464+05.39 (BK) = 0+00.00 (AH).

Starting at...

P.O.T. 2461+18.01 (Proj. NHS-141-6(33)--19-25) = P.O.T. 2461+18.01 (This survey)

Found ½" re-rod (flush)

Eq. P.O.T. 2464+05.39 (BK) (this survey) = P.O.T. 0+00.00 (AH) (Proj. F-1104(1))

Nothing found or set

P.I. 84+90.20 (Proj. F-1104(1)) = P.I. 84+90.2 (This survey)

Found ½" iron pin (flush)

...End of chain

## CONTROL POINT VICINITY MAP

This map is a guide to the vicinity of the primary project control points. Primary control is for use with RTK base stations and for RTN validation. Future surveys will use primary project control to establish temporary control as needed for construction or other surveying applications.



HORIZ. DATUM: NAD83(2011) EPOCH 2010.00 - Ia. RCS Zone 08

VERT. DATUM: NAVD88 - Geoid Model g2012bu3

Coordinate listing from next sheet will be used with IaRTN for monument recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2010.00  
 1a. Regional Coordinate System Zone 08

VERT. DATUM: NAVD88  
 Geoid Model g2012bu3  
 Project Control Marks are Bench Marks

| Point Name | Northing    | Easting      | Elevation | Feature Definition-Description  |
|------------|-------------|--------------|-----------|---|
| G154       | 7554373.223 | 18473172.865 | 952.929   | CP G154 PLACED 5/8"X6' ALUM ROD WITH CAP WEST SIDE IOWA HIGHWAY 17 0.5 MILE NORTH OF 190TH ST (NW 110TH AVE. POLK CO) IN SECT. 1 T80N R26W NEAR ADDRESS 1833 HIGHWAY 17. HIGHWAY 17 STATIONING IS ABOUT 73+00 |
| 25141146   | 7549080.736 | 18470771.664 | 878.916   | CP 25141146 FROM INTERSECTION OF HWY 141 AND HWY 17 AT GRANGER GO 0.6MI NW ALONG HWY 141 FENO TYPE MONUMENT IN NORTH DITCH 55FT SW OF A LUM 89FT S OF FIRE HYD 20FT NE MM 146                                 |
| 77141147   | 7545812.749 | 18474873.445 | 867.452   | CP 77141147 FROM INTERSECTION OF HWY 141 AND HWY 17 AT GRANGER GO 0.3MI SE ALONG HWY 141 FENO TYPE MONUMENT IN SOUTH DITCH 16FT SOUTH MM 147  |

**NOTE:**

The first two digits in the control point name refer to the county number.  
 The next 3 digits refer to the highway number.  
 The next 3 digits refer to the highway milepost.  
 The last digit refers to the distance from the referenced milepost to the nearest tenth of a mile.



**To:** Nikki Cuva/Jeff Larson  
Right of Way Design Bureau

**Final Draft Revised:** May 19<sup>th</sup>, 2023

Kyle Schrock/Jason Holst  
Design Bureau

**District 1:** Tony Gustafson  
Allison Smyth

**Project Details:**

PIN: 22-77-017-010  
Project #: HSIPX-017-1(021)--3L-77  
ROW #: NHSN-150-2(22)—2R-06

**TAS:** Jan Laaser-Webb  
Traffic & Safety Bureau

**From:** Leilah Armstrong  
Traffic & Safety Bureau

**POLK COUNTY**  
Intersection of IA 17 and State St/NW 110<sup>th</sup> Ave

**SUBJECT:** Access Review

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**PROJECT LOCATION AND DESCRIPTION:**

This project is the proposed roundabout on IA 17 east of Granger at the intersection of IA 17 and State St./NW 110<sup>th</sup> Ave.

**ACCESS CATEGORY CLASSIFICATION:**

IA 17 is a Category Municipal 1000 and access locations must meet a minimum of 1,000 foot spacing in accordance with 761 IAC 112.5(3)(f).

Access rights were previously acquired as a part of Project F-1104 along IA 17 when it was previously designated as IA 60. Additional access rights along IA 17 are not needed for this project as described in the Functional Area Analysis below.

**ADMINISTRATIVE RULES:**

In accordance with Chapter 112.5(5)(g) *Interchange and intersection access control*, “Where a free-flow turning movement from a roadway or ramp merges onto another roadway, an analysis shall be completed to determine the functional area and the preferred placement of the first access connection. The functional area of the merge lane of the roadway and the functional area of the first access connection shall not overlap. Access rights shall be acquired along the identified functional area length.”

In accordance with chapter 112.5(5)(i) *Interchange and intersection access control*, “When acquiring access rights as a part of a highway project, the department may acquire access rights along intersecting public roadways to protect the operation of the intersection at the highway. Acquisition of access rights should extend a distance of 150 feet from the near edge of the highway traveled way. If the interesting public roadway AADT is predicted to exceed 3,000 within 20 years, the department should acquire access

rights for a distance of 300 feet from the near edge of the highway traveled way. The department may lengthen or shorten the distance of access rights required after considering the intersection functional area, traffic volumes, traffic operations, acquisition costs and other factors.”

## **FUNCTIONAL AREA ANALYSIS:**

### **IA 17 South leg Upstream**

The upstream functional distance can be calculated by using Table 11 in the Access Management Manual and adding the values for d1, d2, and d3. For a posted speed of 55 mph d1 is 120 feet for a non-complex urban area, d2 is 455 feet for no turn lane, and d3 is estimated to be 0 feet. The upstream functional distance comes to 575 feet.

### **IA 17 South leg Downstream**

Ideally downstream functional distance should be equivalent to the decision sight distance based on design speed and avoidance maneuver type. In Table 12 of the Access Management Manual for 55 mph and avoidance maneuver Type C that distance is 865 feet.

Since this distance is the furthest extent of the functional area for the south leg of IA 17 then 865 feet of access rights are needed along IA 17 from the radius of the roundabout in accordance with Chapter 112.5(5)(g) *Interchange and intersection access control*. Since access rights were previously acquired additional access rights are not needed.

### **IA 17 North leg Upstream**

The upstream functional distance can be calculated by using Table 11 in the Access Management Manual and adding the values for d1, d2, and d3. For a posted speed of 55-mph d1 is 120 feet for a non-complex urban area, d2 is 455 feet for no turn lane, and d3 is estimated to be 0 feet. The upstream functional distance comes to 575 feet.

### **IA 17 North leg Downstream**

Ideally downstream functional distance should be equivalent to the decision sight distance based on design speed and avoidance maneuver type. In Table 12 of the Access Management Manual for 55 mph and avoidance maneuver Type C that distance is 865 feet.

If the decision sight distance cannot be met, then the minimum downstream functional distance shall be equal to the stopping sight distance for the posted speed limit. Table 9 of the Access Management Manual shows the preferred and minimum stopping sight distances. For a posted speed limit of 55-mph the preferred is 535 feet and the minimum is 495 feet.

There is an existing residential entrance at approximately 771 feet north of the proposed roundabout radius at Sta. 43+43. This would fall within the ideal downstream functional distance. Since the existing residential entrance cannot be moved (and is outside the construction limits). The furthest extent of the functional area of IA 17 to the north of the roundabout will be considered 771 feet.

Since this distance is the furthest extent of the functional area for the north leg of IA 17 then 771 feet of access rights are needed along IA 17 from the radius of the roundabout in accordance with Chapter 112.5(5)(g) *Interchange and intersection access control*. Since access rights were previously acquired additional access rights are not needed.

## **ACCESS CONTROL LIMITS:**

No access will be allowed on IA 17 from approximately Sta. 25+83 to Sta. 34+48 (the radius of the roundabout) and from Sta. 35+72 (the radius of the roundabout) to Sta. 43+43.

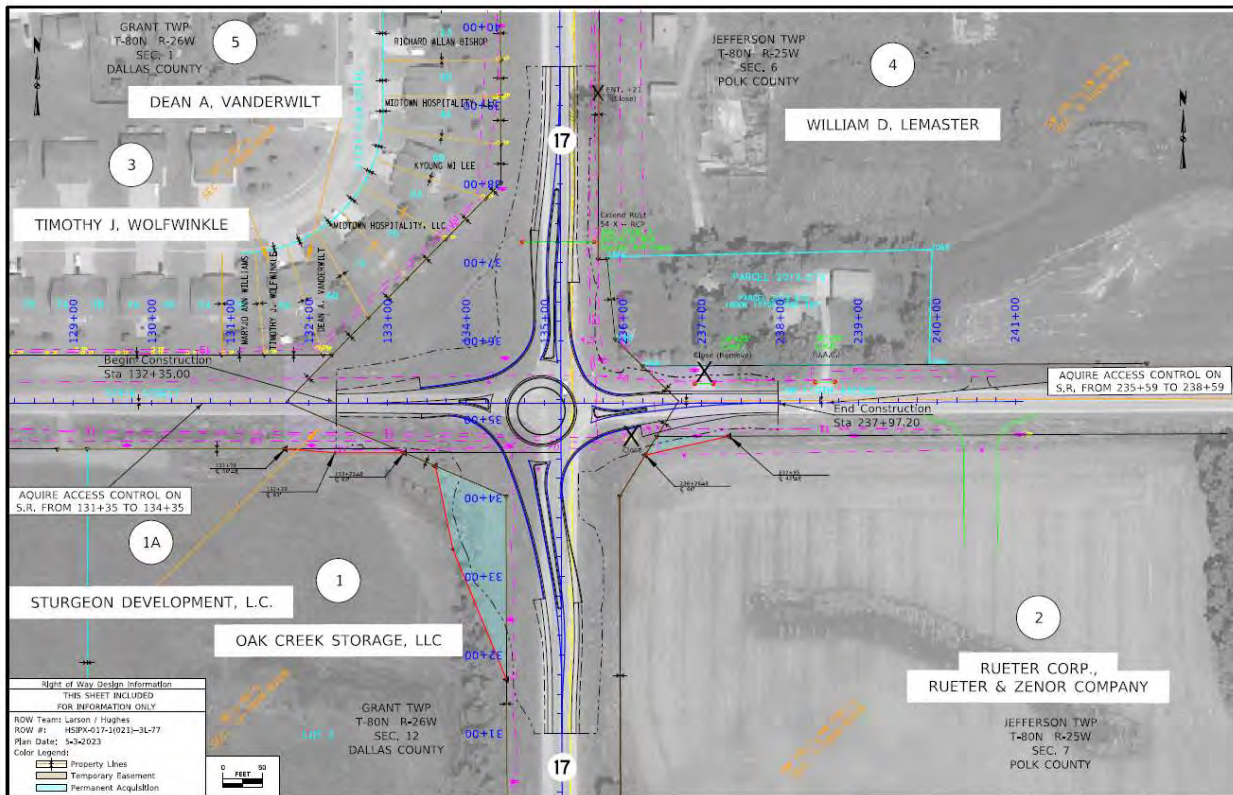
No access will be allowed on State St. from Sta. 131+35 to Sta. 134+35 (the radius of the roundabout).

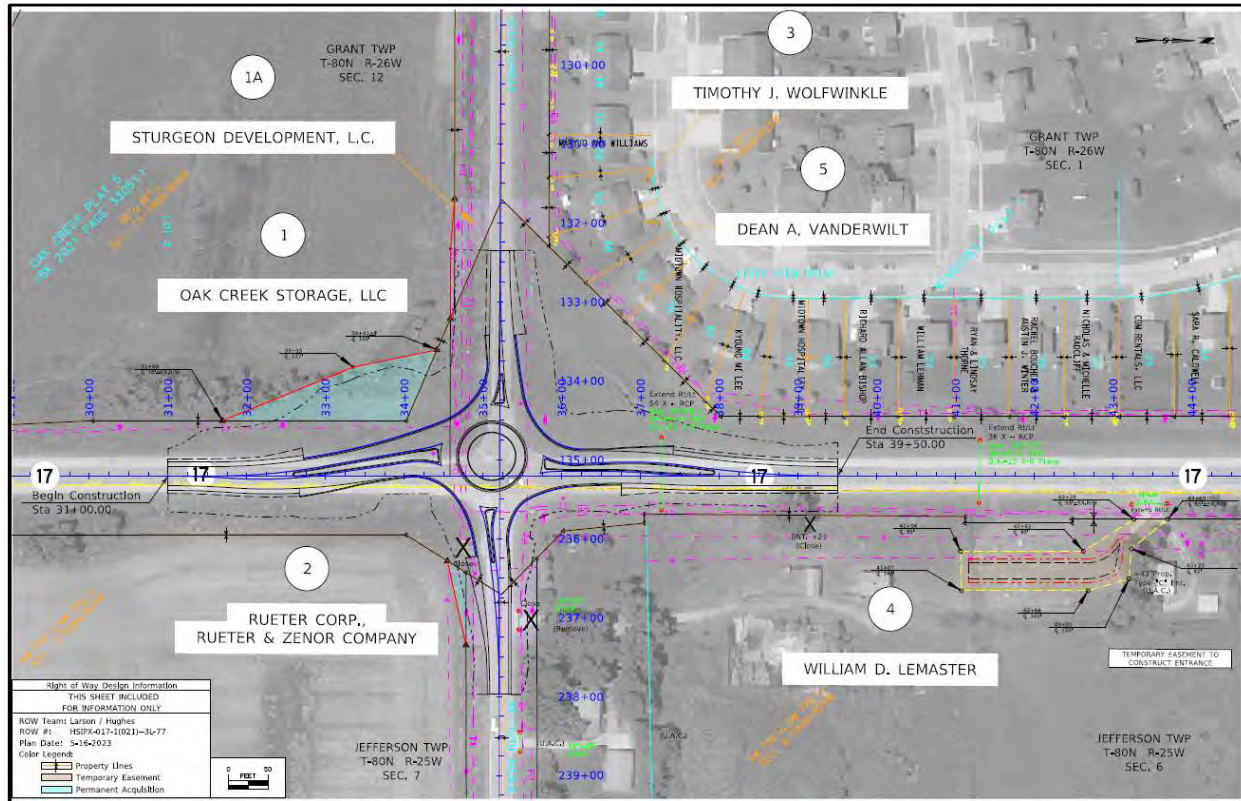
No access will be allowed on NW 110<sup>th</sup> Ave. from Sta. 235+59 (the radius of the roundabout) to Sta. 238+59.

**ACCESS LOCATION DETAILS:**

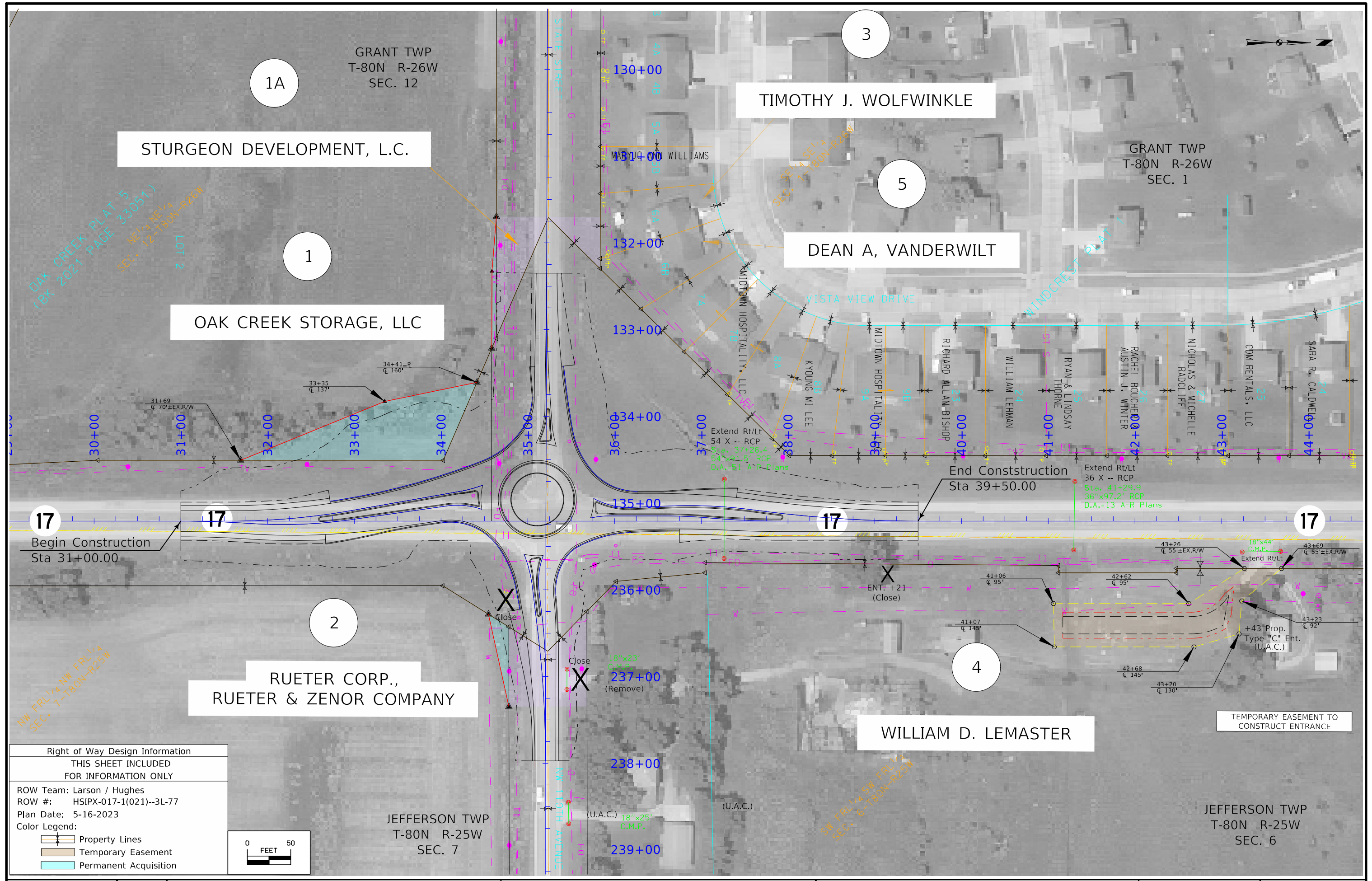
| Location  | Access                                       | Comments   |
|-----------|--|--|
| 31+00     | <b>ML IA 17</b>                              | Begin Construction   |
| 39+22 RT  | Type C Entrance                              | <b>Close</b>   |
| 43+43 RT  | Type C Entrance                              | UAC/Proposed – Extending to compensate for closure of entrance at 237+02 |
| 39+50     | <b>ML IA 17</b>                              | End Construction   |
| 132+35    | <b>SR State St./NW 110<sup>th</sup> Ave.</b> | Begin Construction   |
| 236+11 RT | Type C Entrance                              | <b>Close</b>   |
| 237+02 LT | Type C Entrance                              | <b>Close – access obtained from entrance at 43+43</b>                    |
| 238+59 LT | Type C Entrance                              | UAC  |
| 240+54 RT | Type A Entrance                              | Proposed – Future by Others  |
| 237+97    | <b>SR State St./NW 110<sup>th</sup> Ave.</b> | End Construction   |

**ACCESS CONTROL DIAGRAM:**









1A

GRANT TWP  
T-80N R-26W  
SEC. 12

3

TIMOTHY J. WOLFWINKLE

GRANT TWP  
T-80N R-26W  
SEC. 1

5

DEAN A, VANDERWILT

1

OAK CREEK STORAGE, LLC

OAK CREEK PLAT 5  
(BX 2021 PAGE 33051)  
SEC. 12-180N-R26W  
2.101

WINDCREST PLAT 1

17

Begin Construction  
Sta 31+00.00

17

17

17

2

RUETER CORP.,  
RUETER & ZENOR COMPANY

NW FRL 1/4 NW FRL 1/4  
SEC. 7-180N-R25W

4

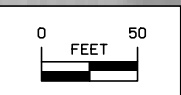
WILLIAM D. LEMASTER

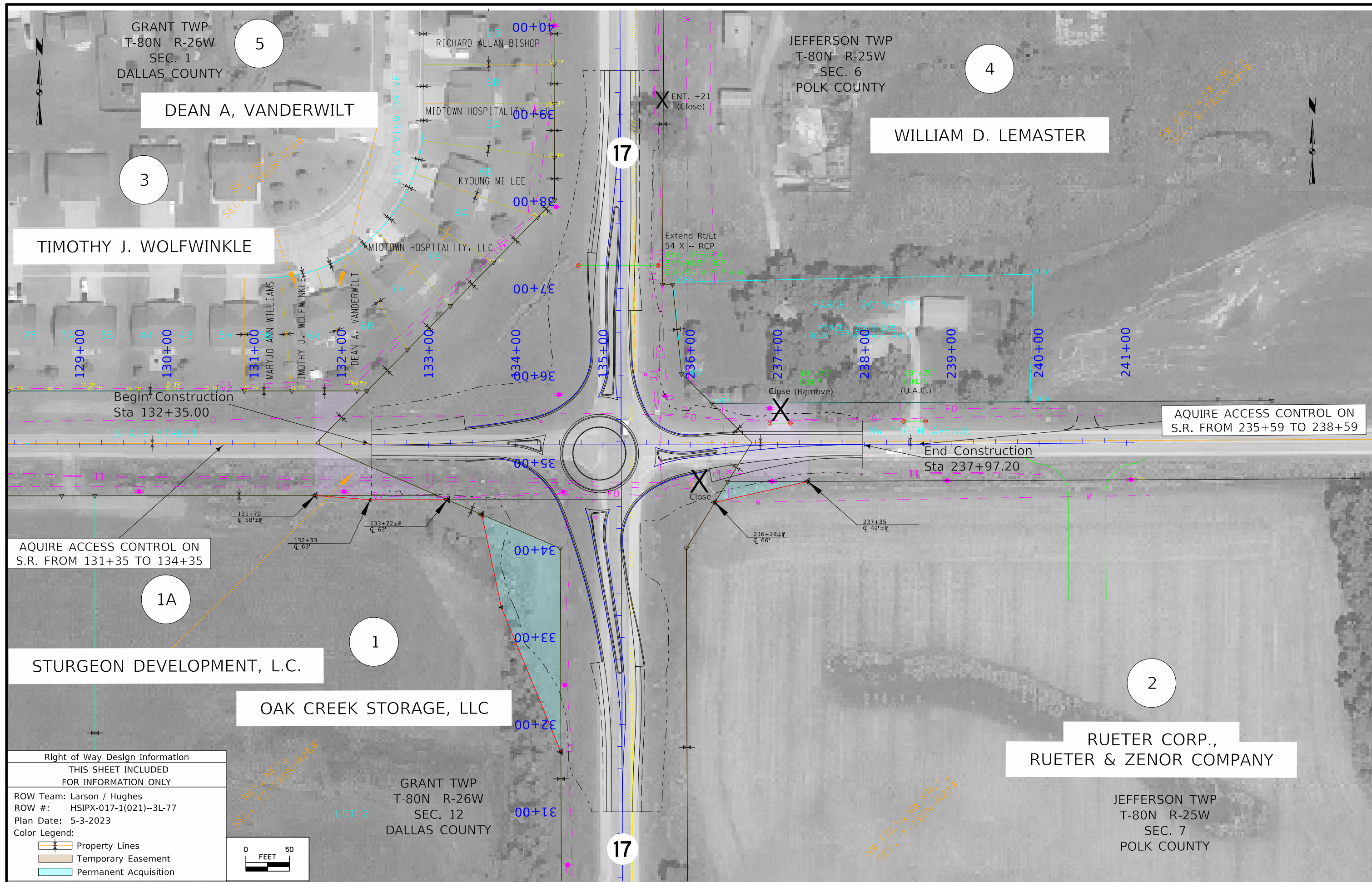
TEMPORARY EASEMENT TO  
CONSTRUCT ENTRANCE

JEFFERSON TWP  
T-80N R-25W  
SEC. 7

JEFFERSON TWP  
T-80N R-25W  
SEC. 6

|  |                       |
|--|-----------------------|
| Right of Way Design Information          |                       |
| THIS SHEET INCLUDED FOR INFORMATION ONLY |                       |
| ROW Team: Larson / Hughes                |                       |
| ROW #: HSIPX-017-1(021)--3L-77           |                       |
| Plan Date: 5-16-2023                     |                       |
| Color Legend:                            |                       |
|  | Property Lines        |
|  | Temporary Easement    |
|  | Permanent Acquisition |





GRANT TWP  
T-80N R-26W  
SEC. 1  
DALLAS COUNTY

JEFFERSON TWP  
T-80N R-25W  
SEC. 6  
POLK COUNTY

DEAN A. VANDERWILT

WILLIAM D. LEMASTER

TIMOTHY J. WOLFWINKLE

AQUIRE ACCESS CONTROL ON  
S.R. FROM 131+35 TO 134+35

AQUIRE ACCESS CONTROL ON  
S.R. FROM 235+59 TO 238+59

STURGEON DEVELOPMENT, L.C.

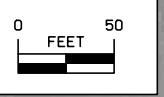
OAK CREEK STORAGE, LLC

RUETER CORP.,  
RUETER & ZENOR COMPANY

GRANT TWP  
T-80N R-26W  
SEC. 12  
DALLAS COUNTY

JEFFERSON TWP  
T-80N R-25W  
SEC. 7  
POLK COUNTY

| Right of Way Design Information          |                       |
|--|-----------------------|
| THIS SHEET INCLUDED FOR INFORMATION ONLY |                       |
| ROW Team: Larson / Hughes                |                       |
| ROW #: HSIPX-017-1(021)--3L-77           |                       |
| Plan Date: 5-3-2023                      |                       |
| Color Legend:                            |                       |
|  | Property Lines        |
|  | Temporary Easement    |
|  | Permanent Acquisition |



511 TRAVEL RESTRICTIONS

| Route | Direction | County | Location Description                         | Feature Crossed | Object Type            | Maint. Bridge No., Structure ID, or FHWA No. | Type of Restriction | Existing Measurement | Construction Measurement | Construction Measurement as Signed | Projected As Built Measurement | Remarks |
|-------|-----------|--------|--|-----------------|------------------------|--|---------------------|----------------------|--------------------------|------------------------------------|--------------------------------|---------|
| IA 17 | Both      | Polk   | Intersection of IA 17 and State St/110th Ave |                 | Traffic Control Device |  | Horizontal          | N/A                  | 12'                      | 11'                                | N/A                            |         |

108-26A  
08-01-08

### STAGING NOTES

\*\*\*\*\*Stage 1\*\*\*\*\*

Traffic Control:

- Maintain traffic on existing configuration

Construction:

- Shoulder strengthen/pave IA 17 NB shoulder.

\*\*\*\*\*Stage 2\*\*\*\*\*

Traffic Control:

- Close State Street
- Shift traffic east to strengthened shoulder

Construction:

- Construct west half of the roundabout and SB lane
- Reconstruct State St connection to IA 17

\*\*\*\*\*Stage 3\*\*\*\*\*

Traffic Control

- Reopen State St
- Shift IA 17 west to new pavement
- Close 110th Ave

Construction:

- Construct east half of the roundabout and NB lane
- Reconstruct 110th Ave connection to IA 17

\*\*\*\*\*Stage 4\*\*\*\*\*

Traffic Control

- Reopen 110th Ave
- Reopen IA 17 to two lanes and full open roundabout

108-23A  
08-01-08

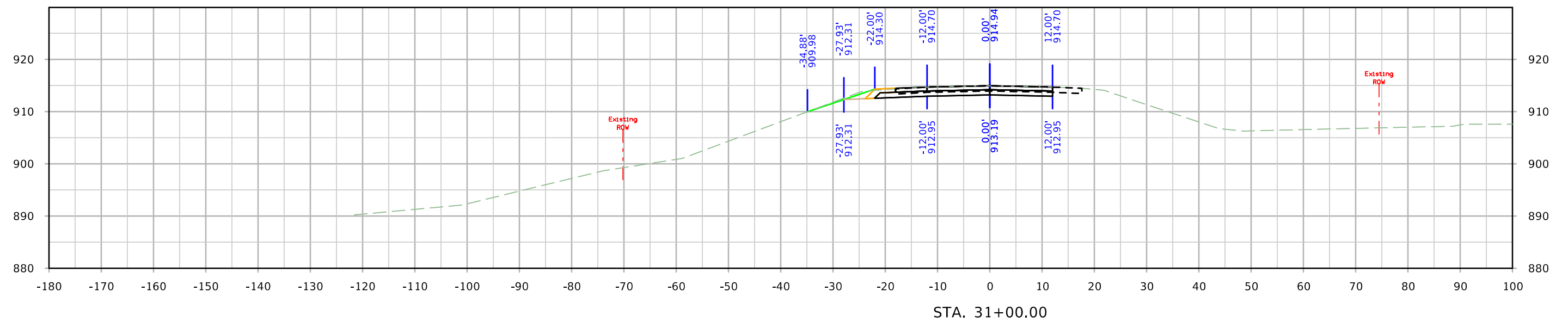
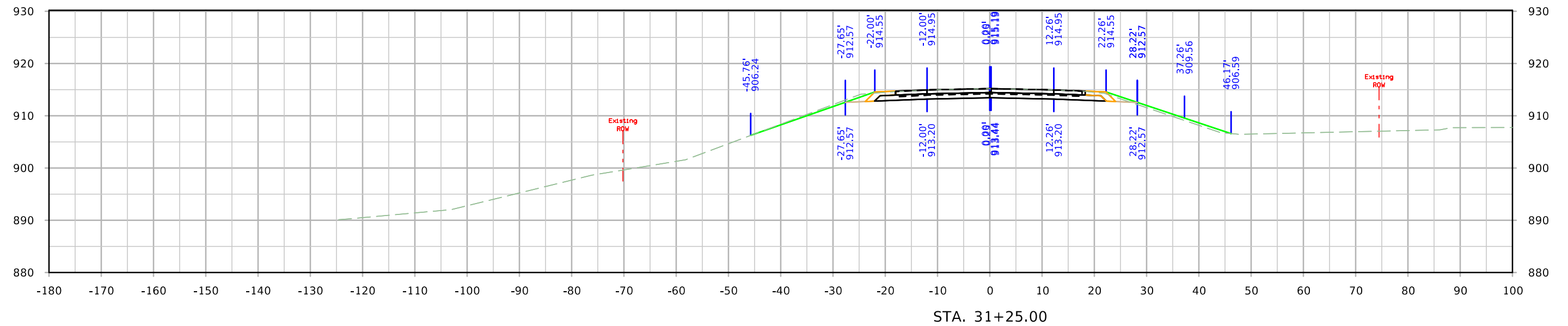
### TRAFFIC CONTROL PLAN

IA 17  
Route shall remain open to at least a single lane of traffic during construction.

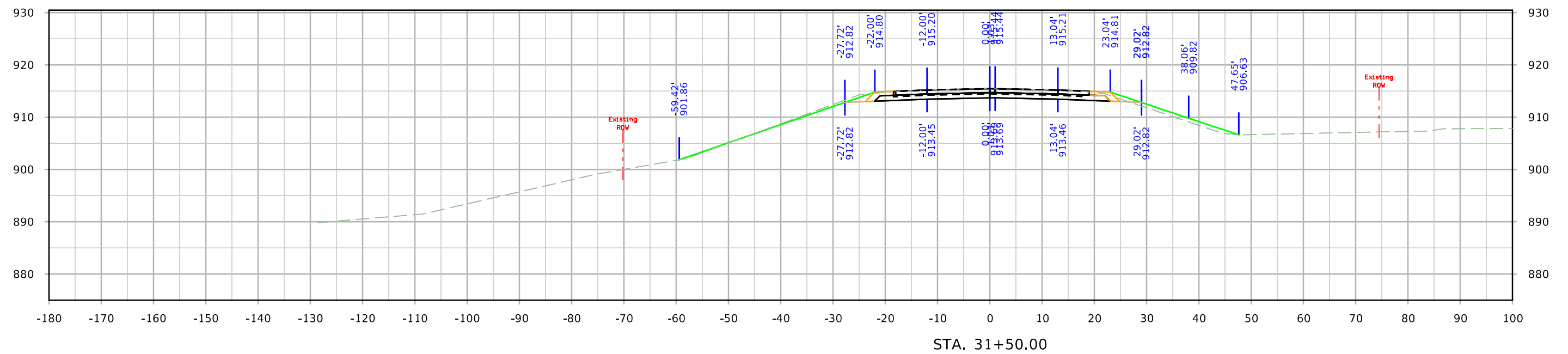
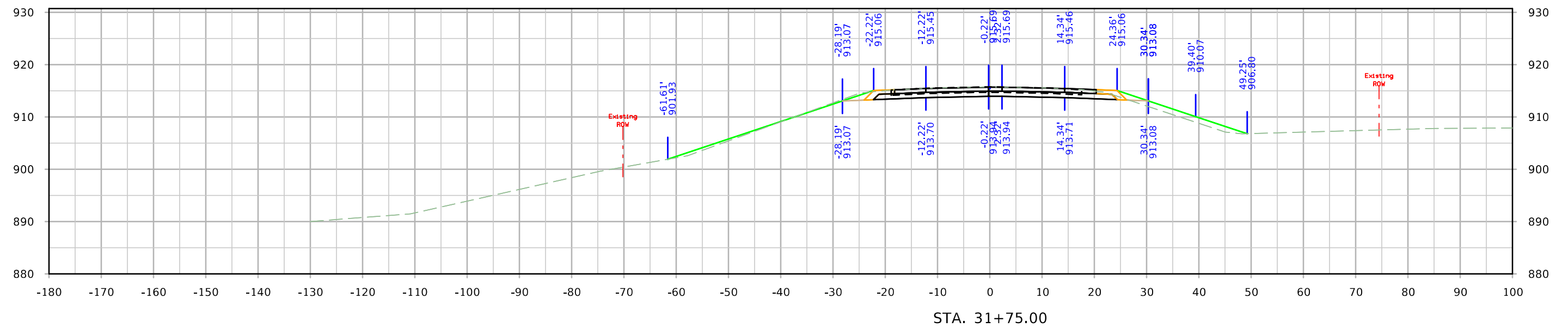
State Street  
Route shall remain open excepted for required closure as showing in the staging plan

NW 110th Ave  
Route shall remain open excepted for required closure as showing in the staging plan

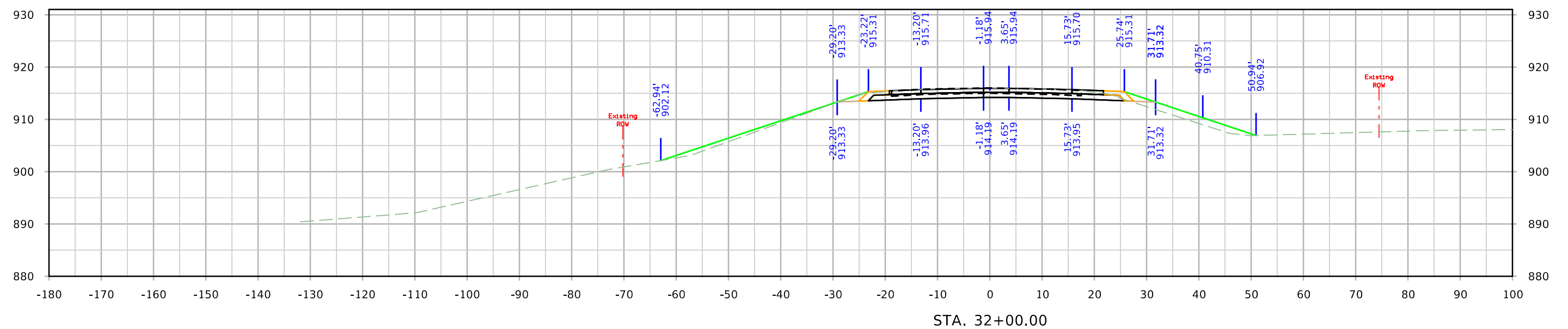
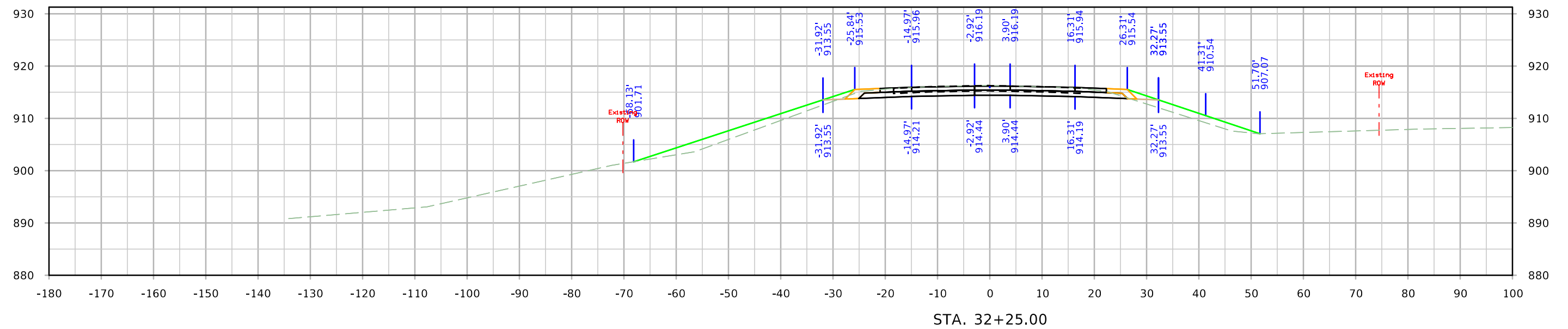
# ML - IA17



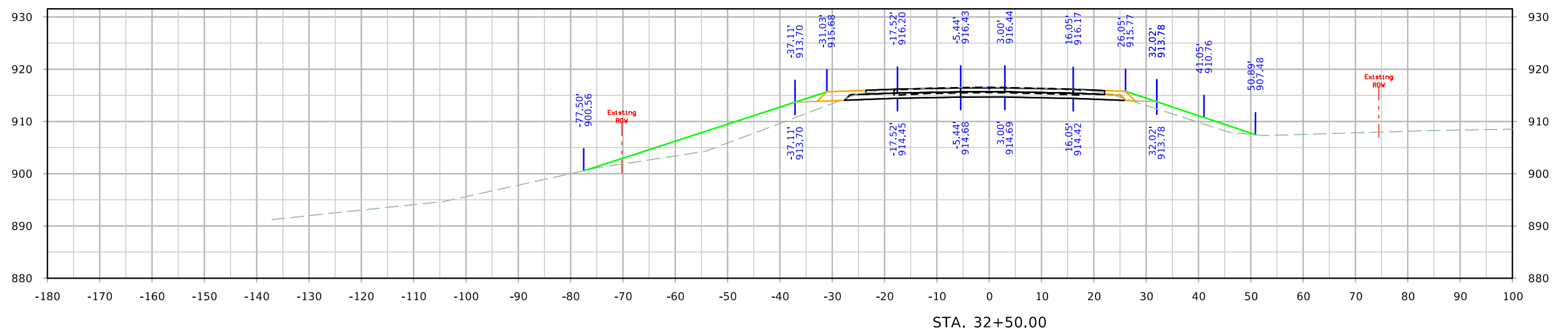
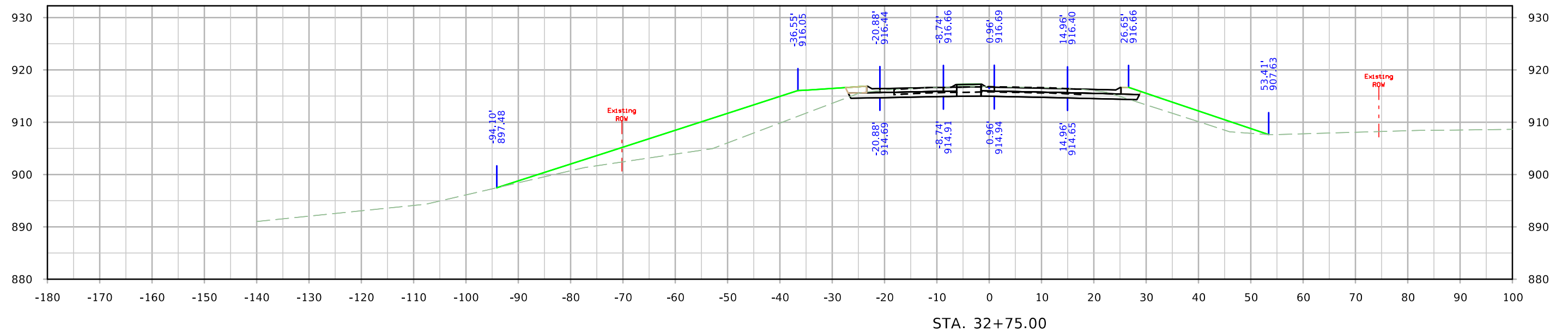
# ML - IA17



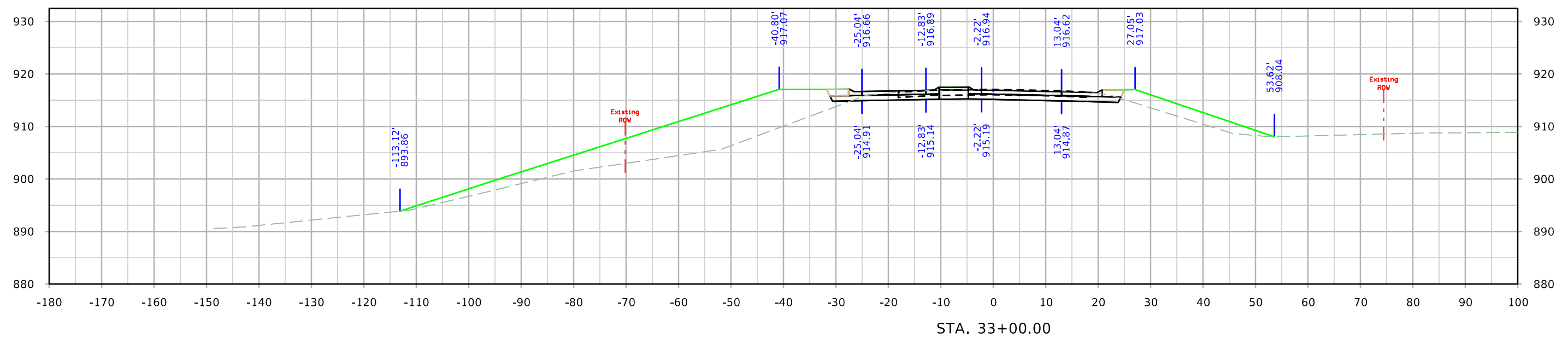
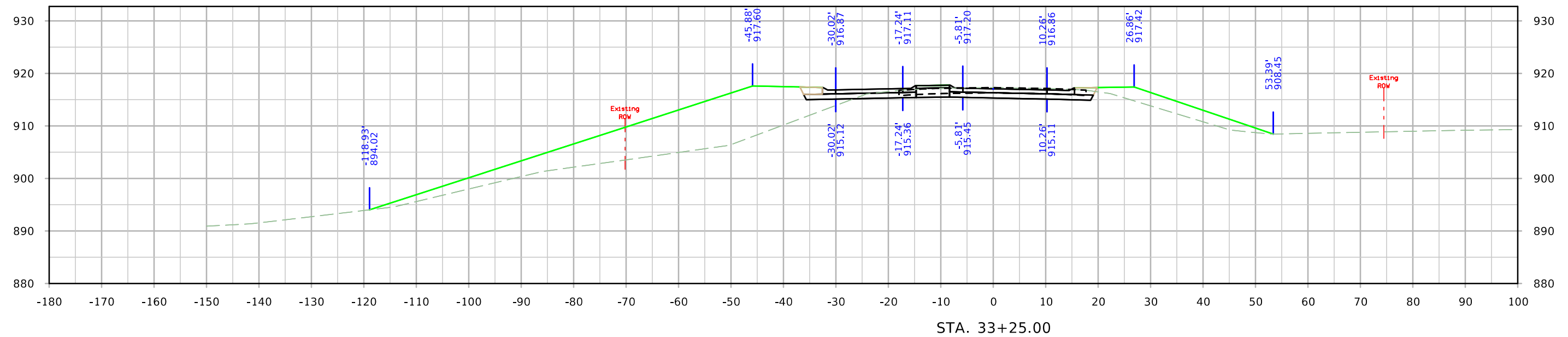
# ML - IA17



# ML - IA17

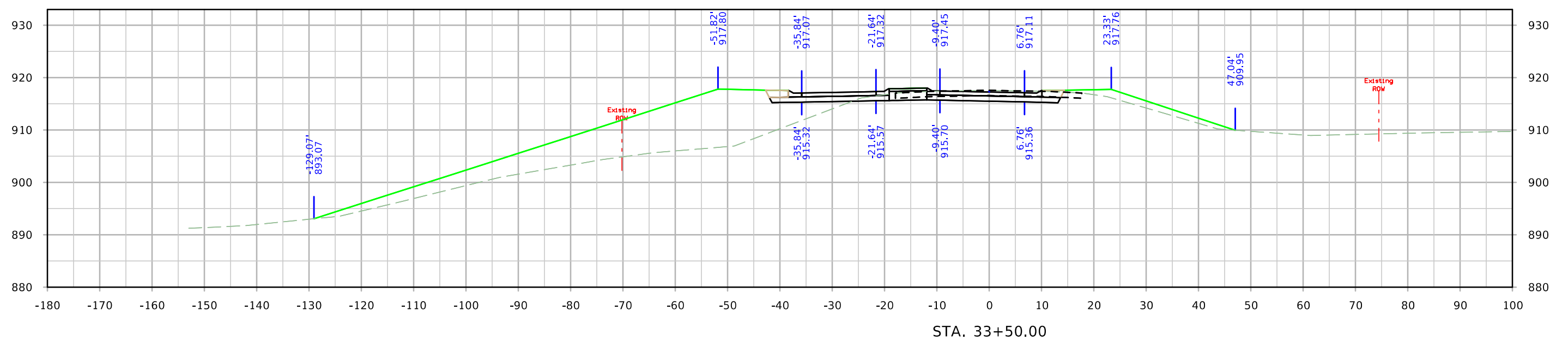
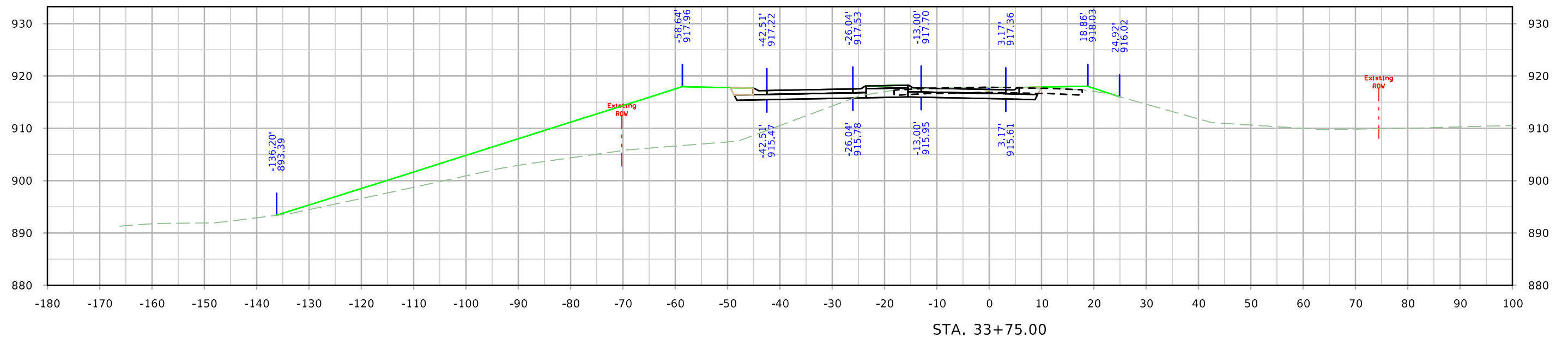


# ML - IA17

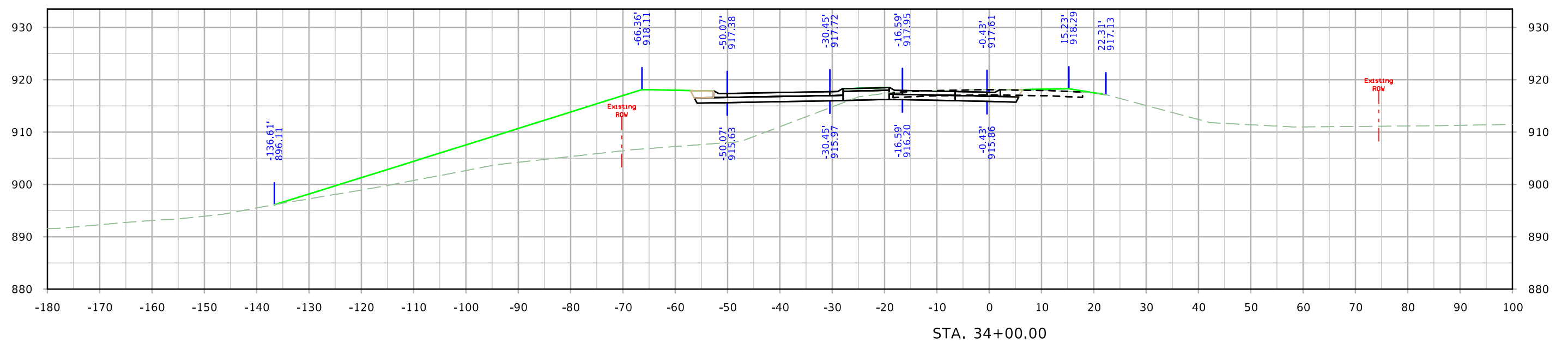
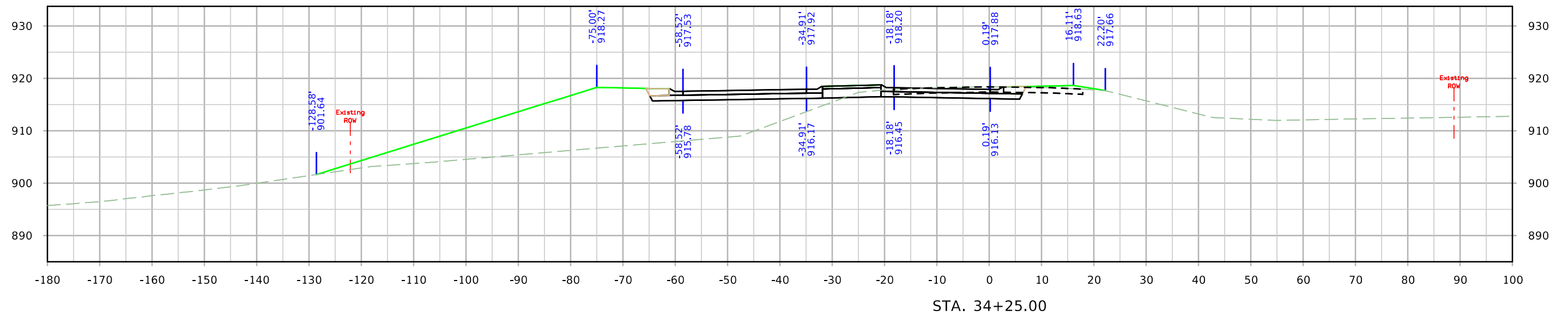




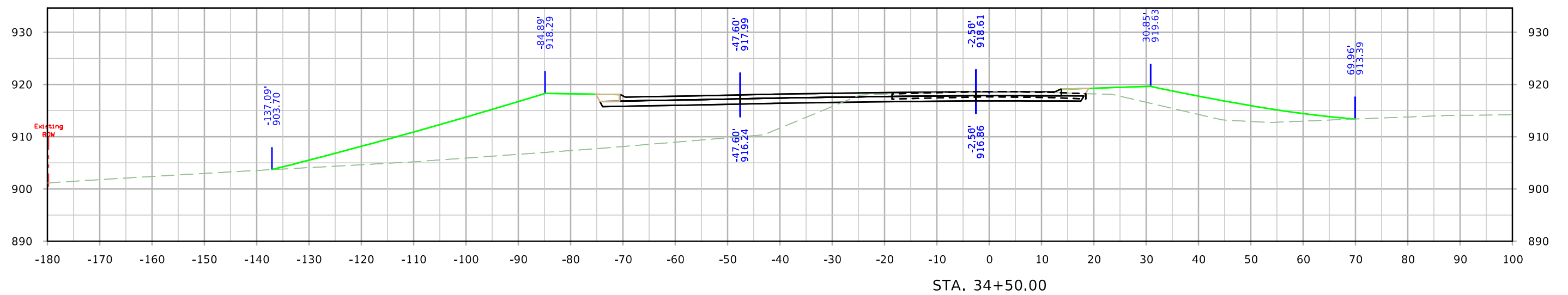
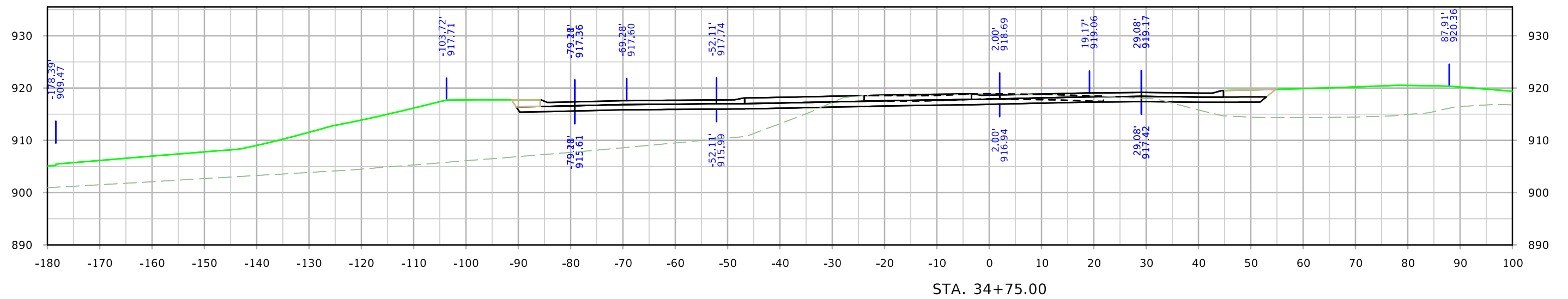
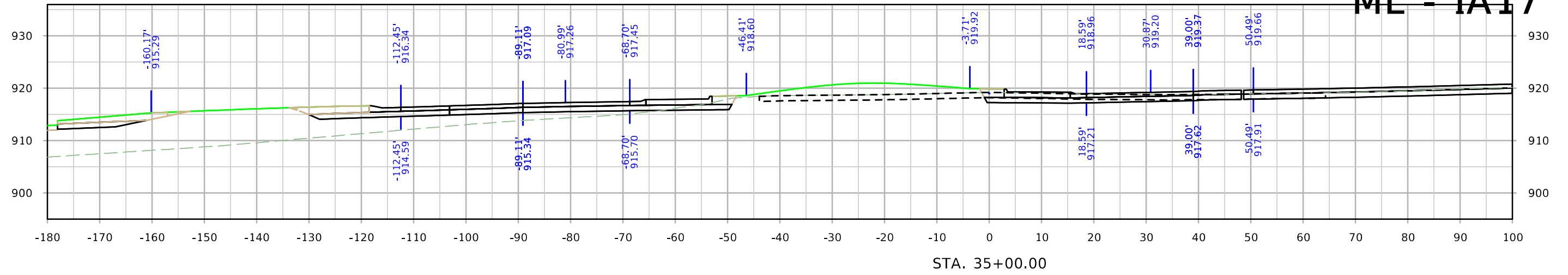
# ML - IA17



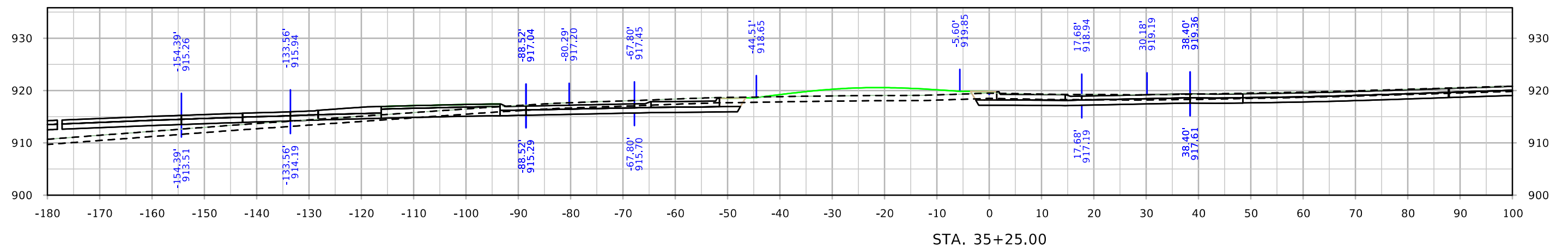
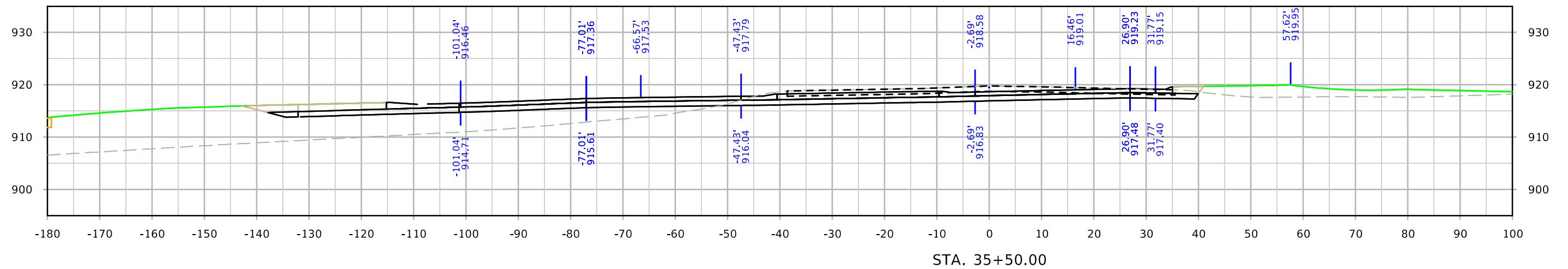
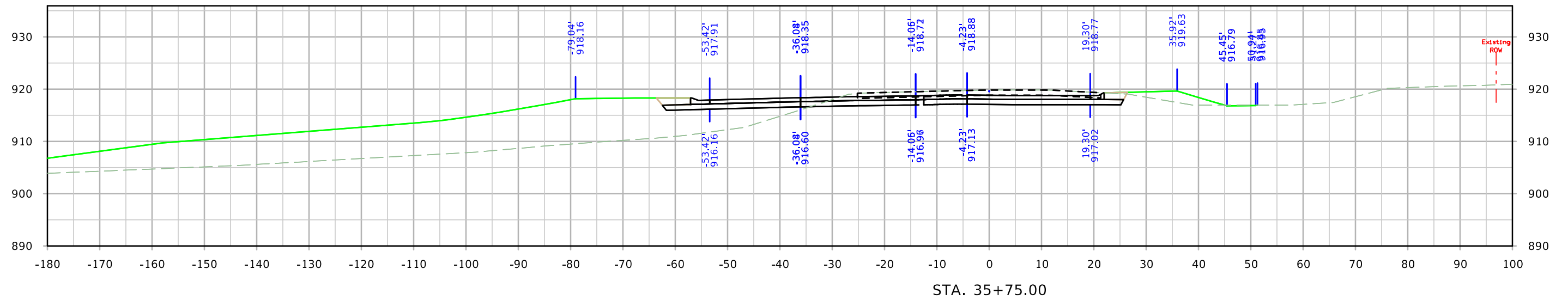
# ML - IA17



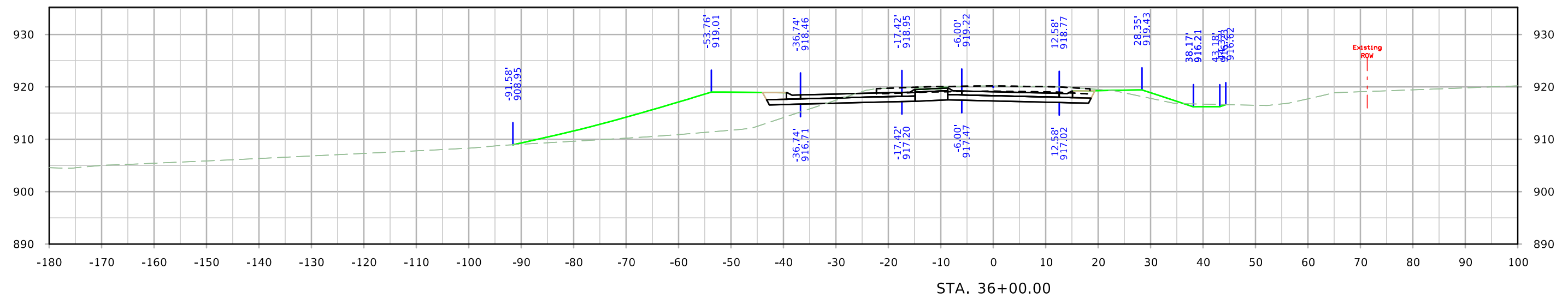
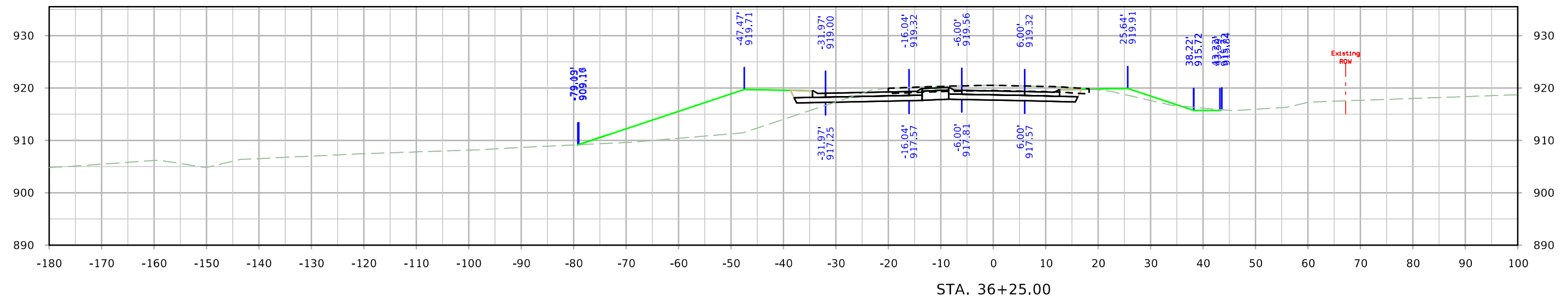
# ML - IA17



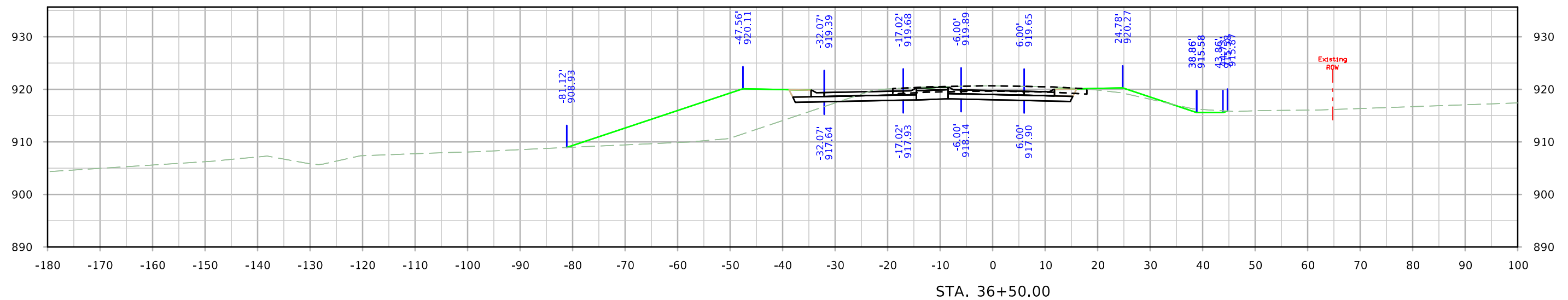
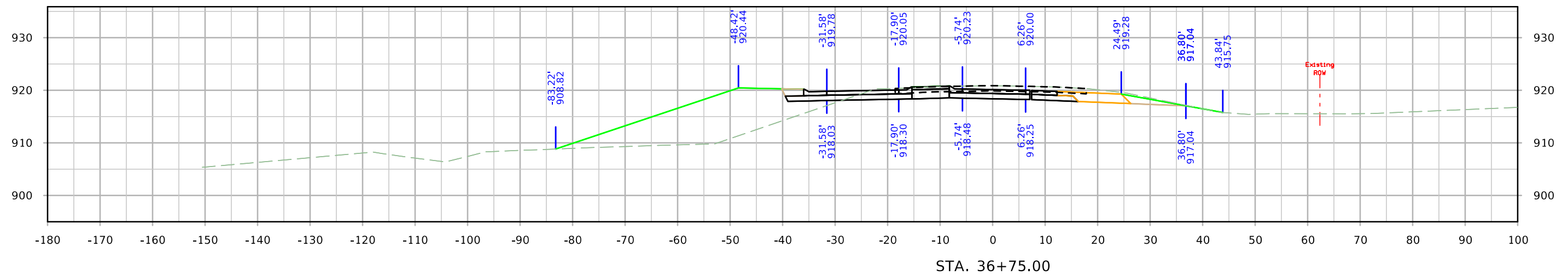
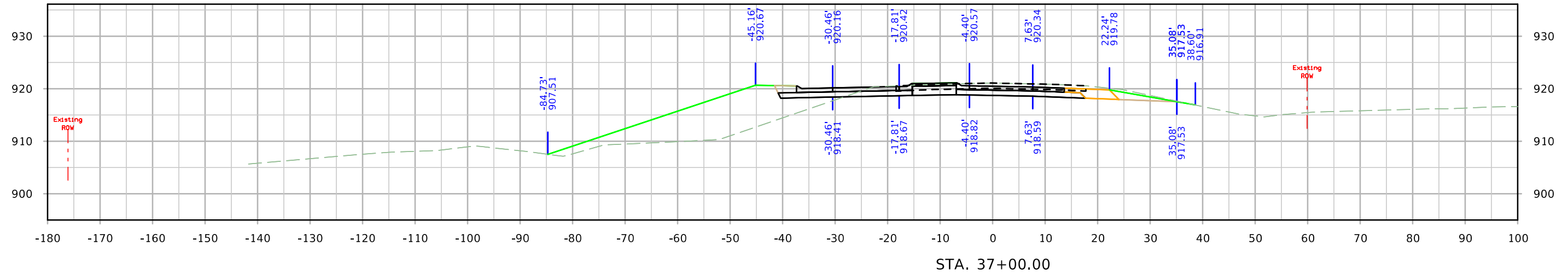
# ML - IA17



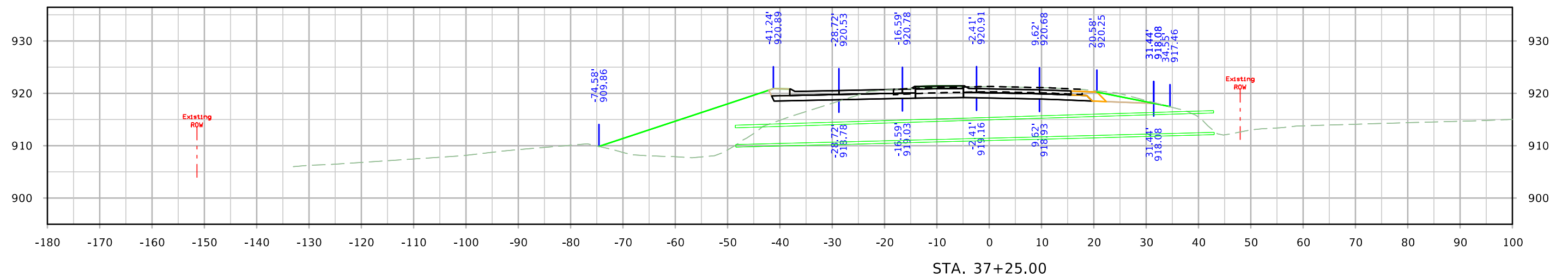
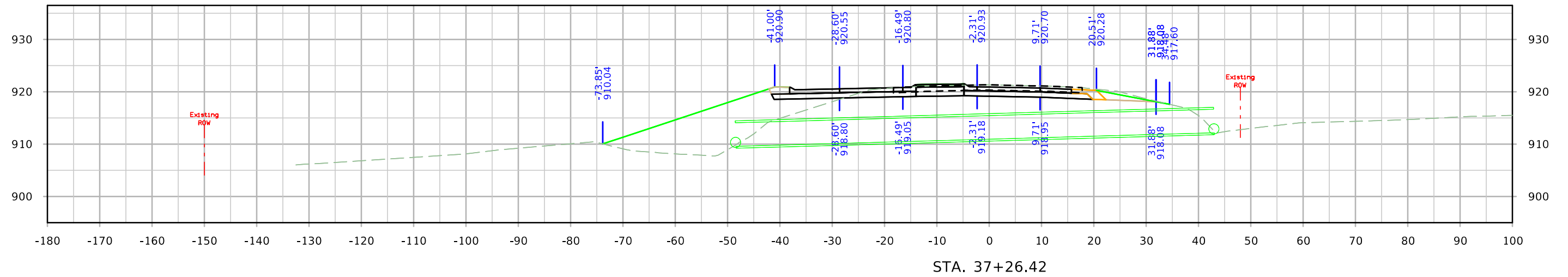
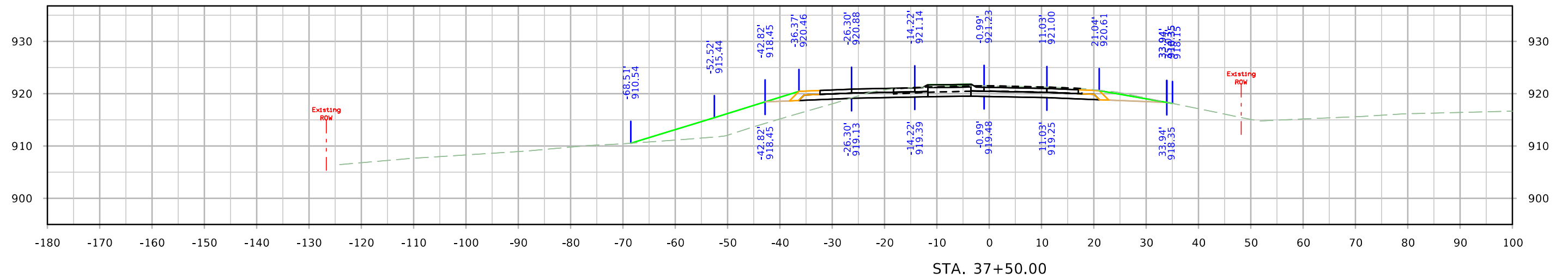
# ML - IA17



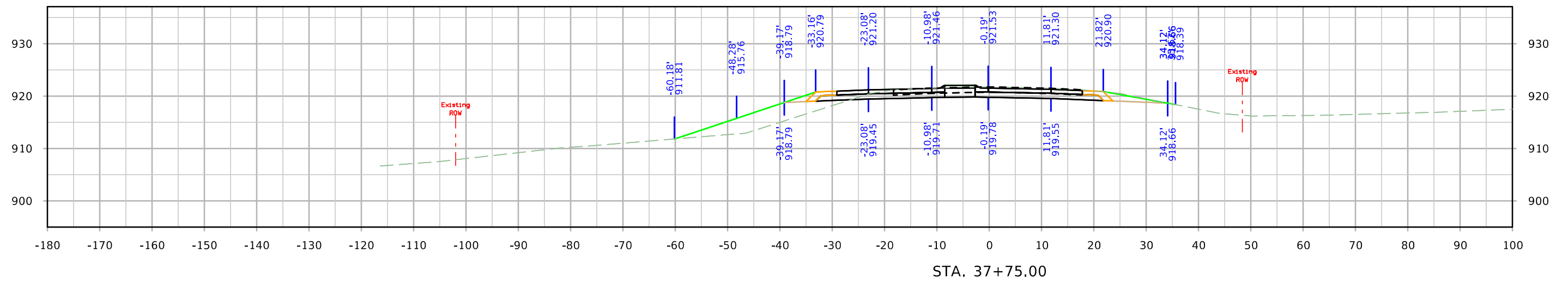
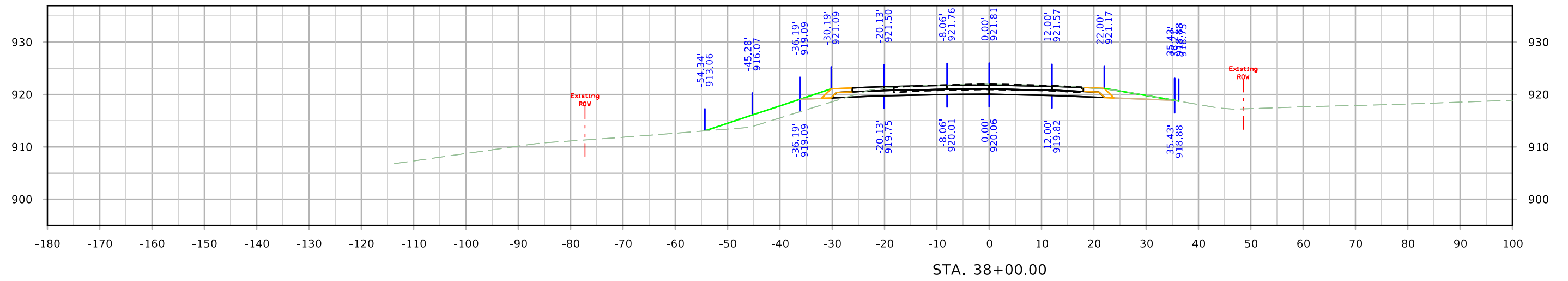
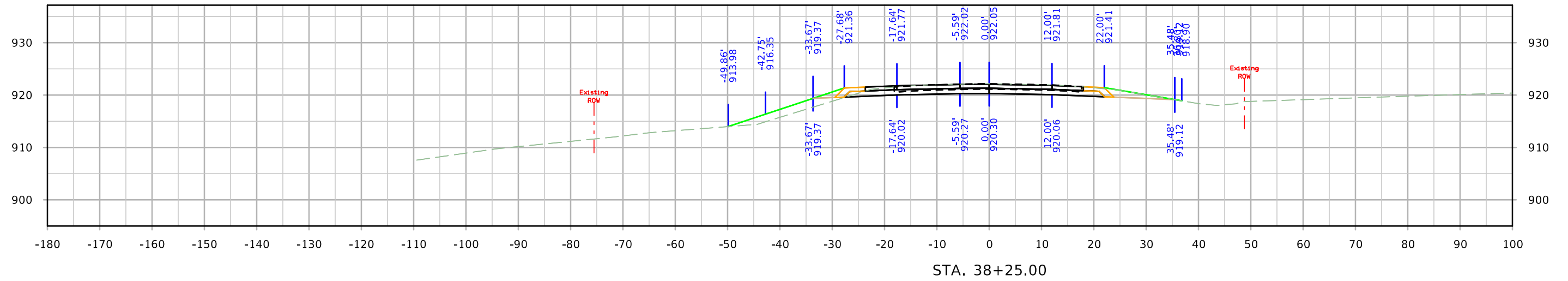
# ML - IA17



# ML - IA17

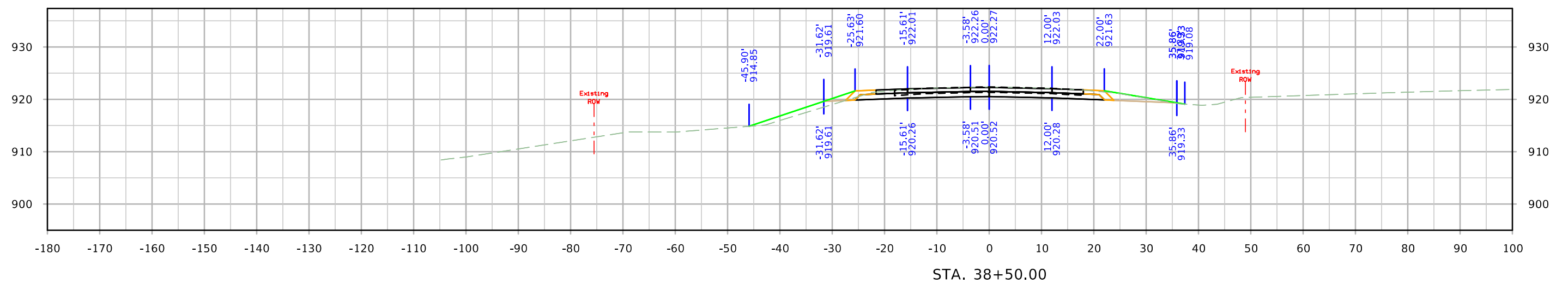
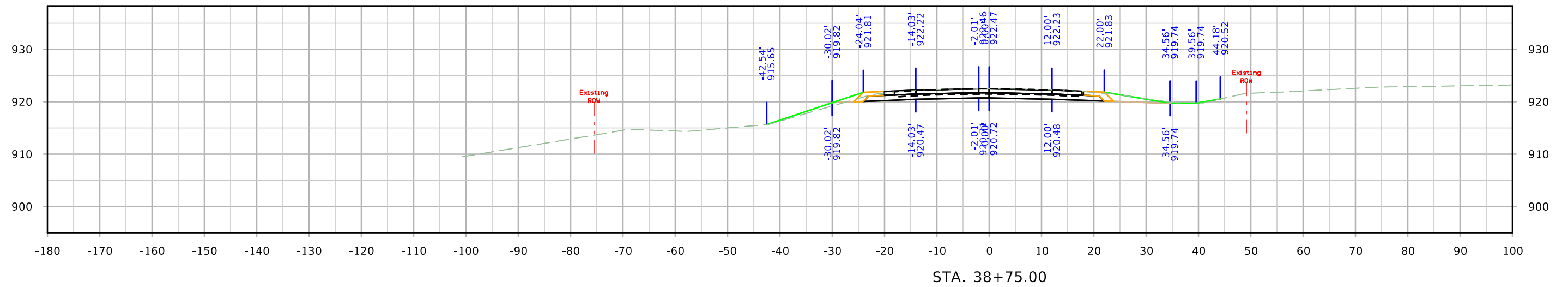
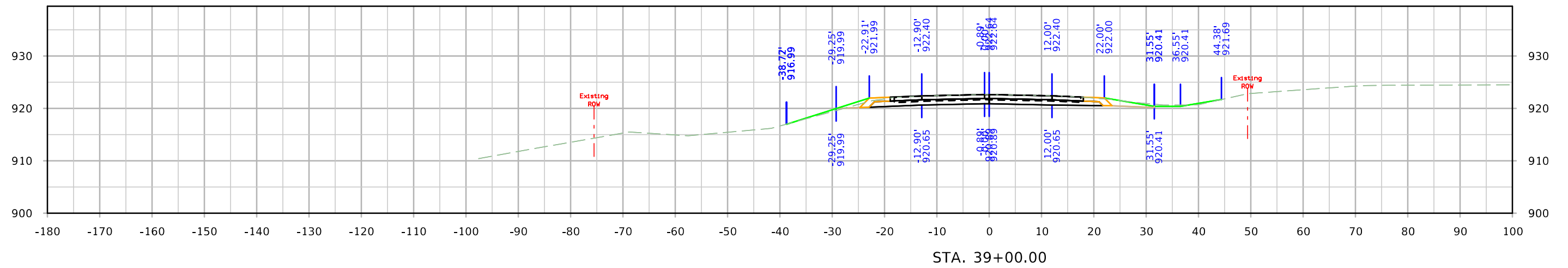


# ML - IA17

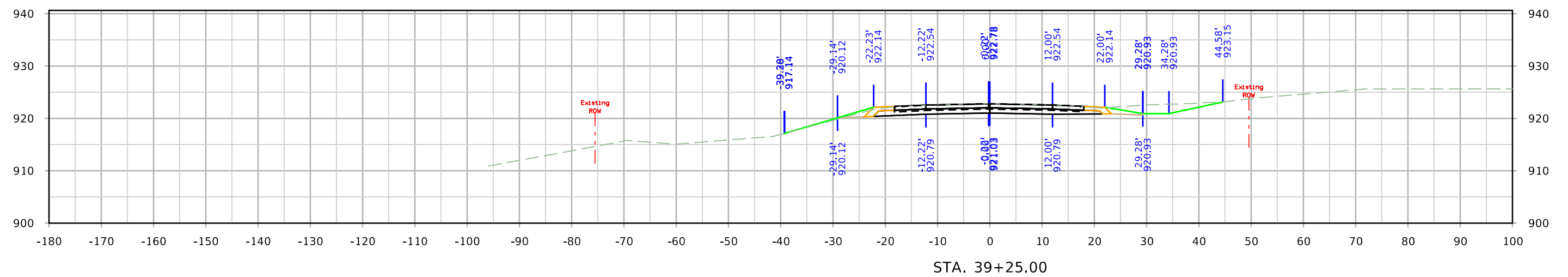
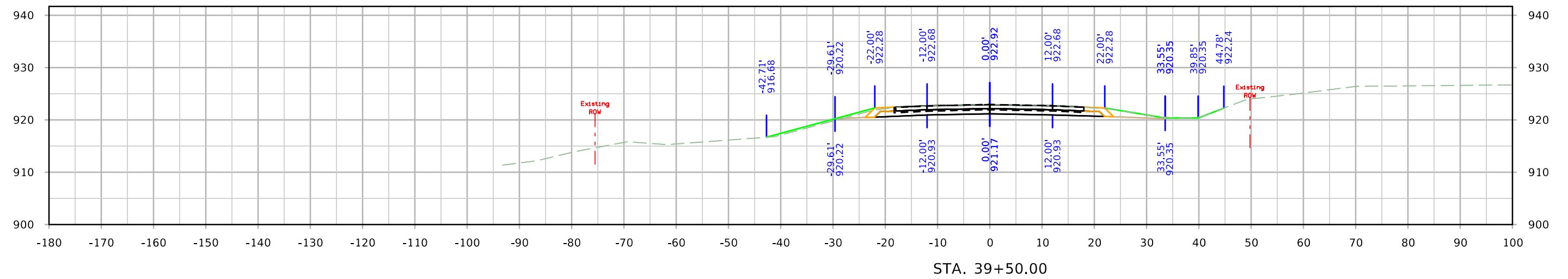




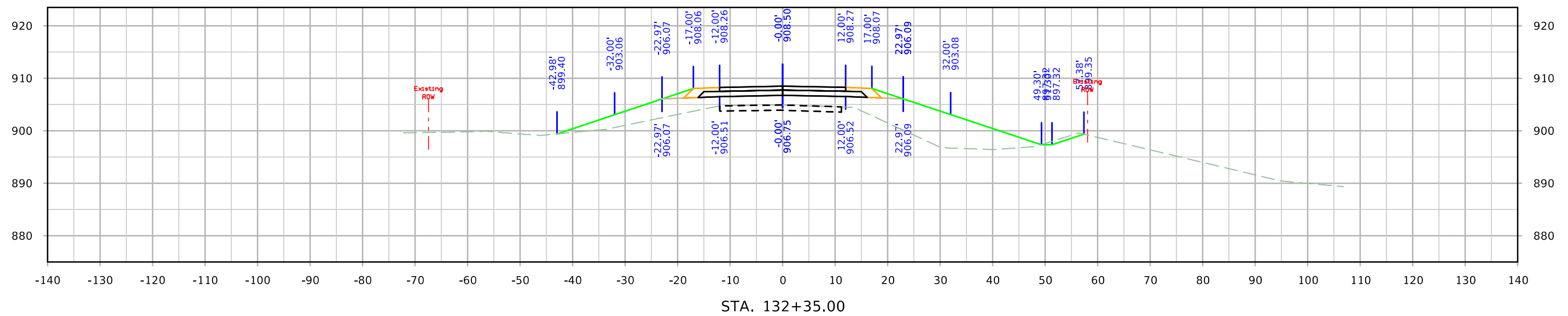
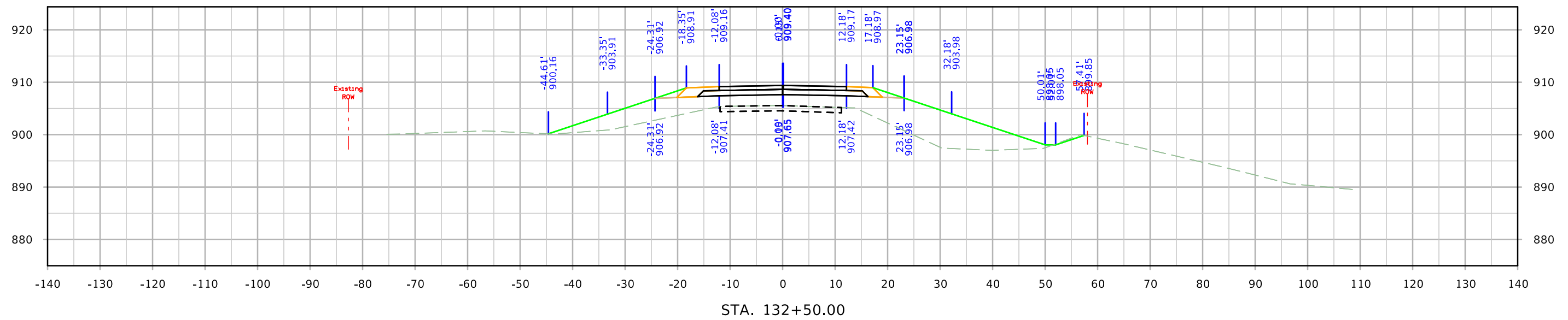
# ML - IA17



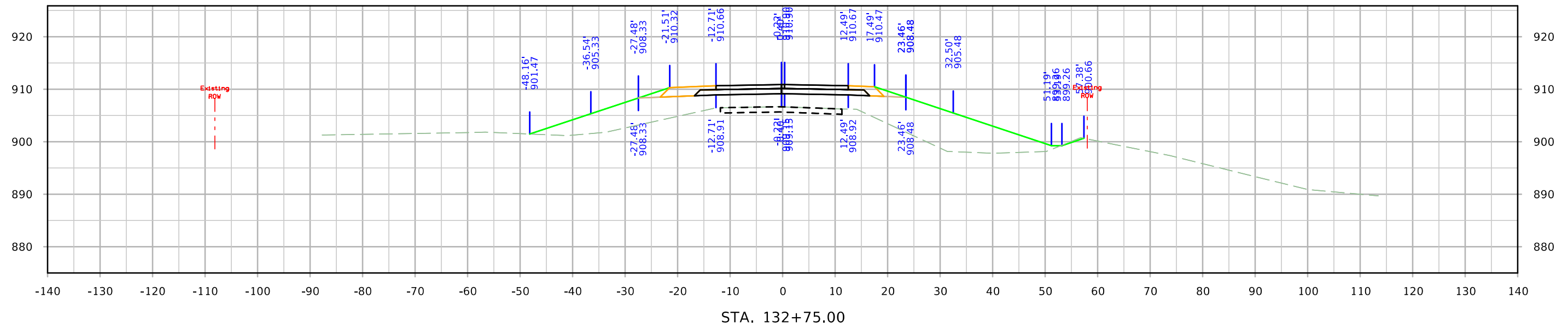
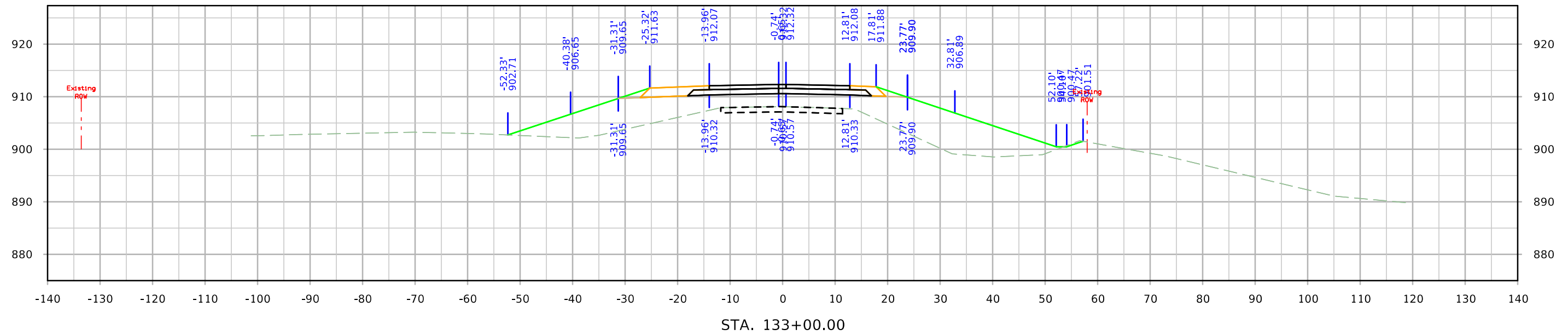
# ML - IA17



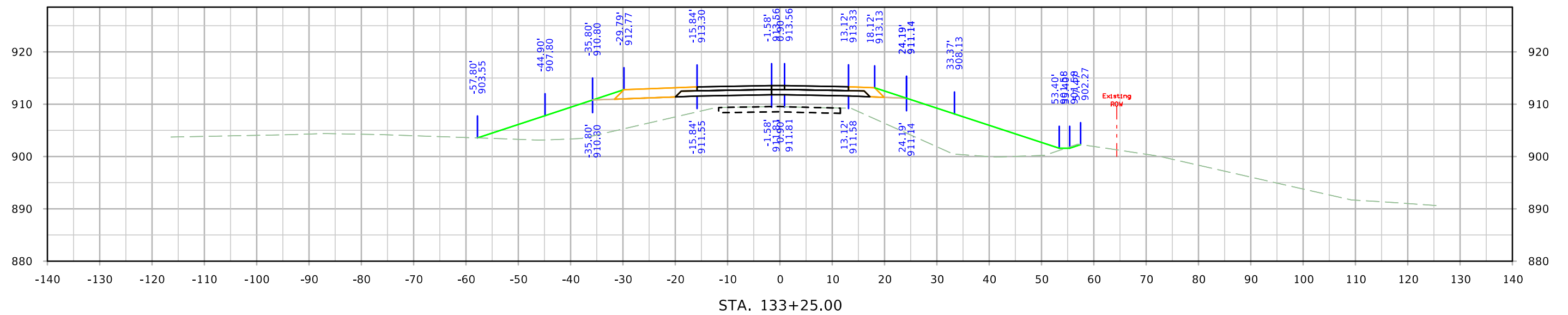
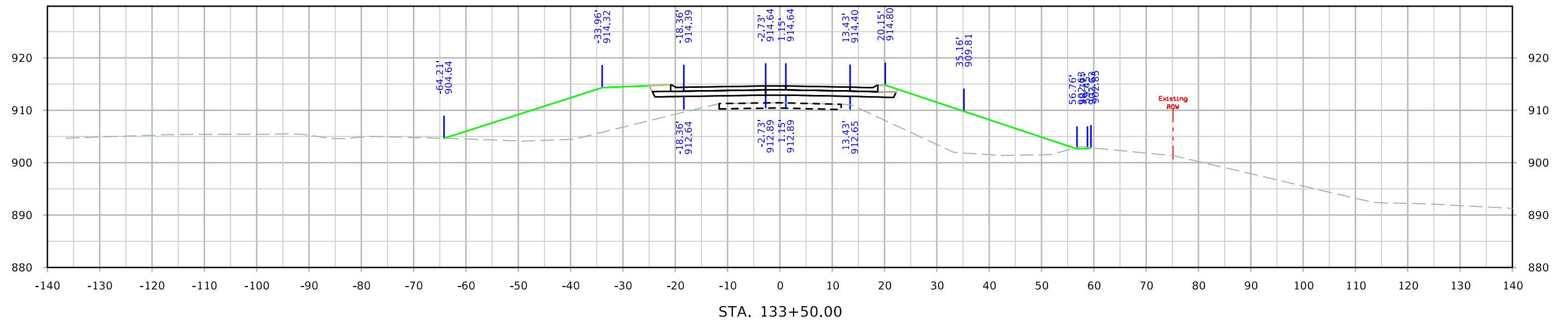
# State St



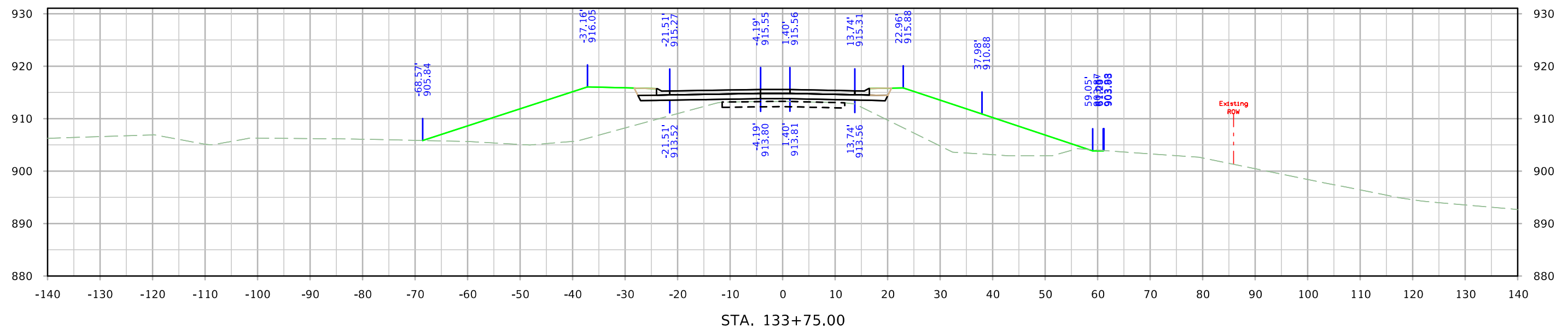
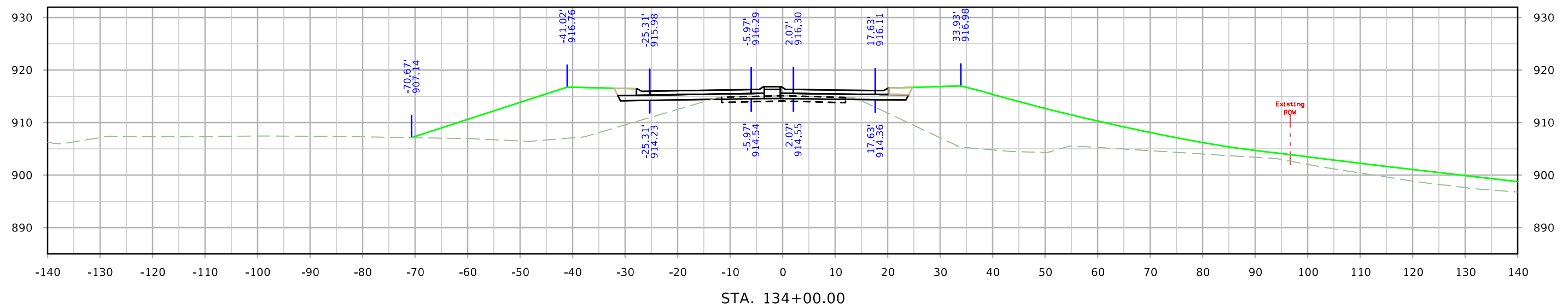
# State St



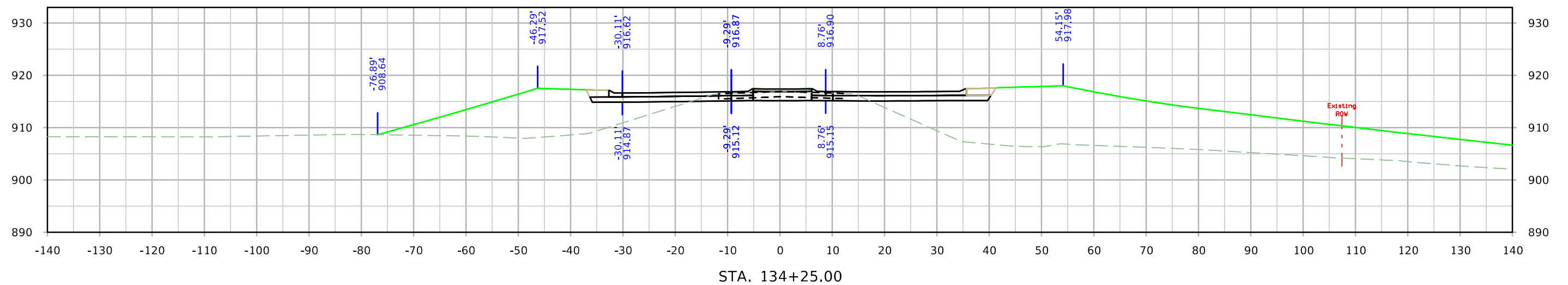
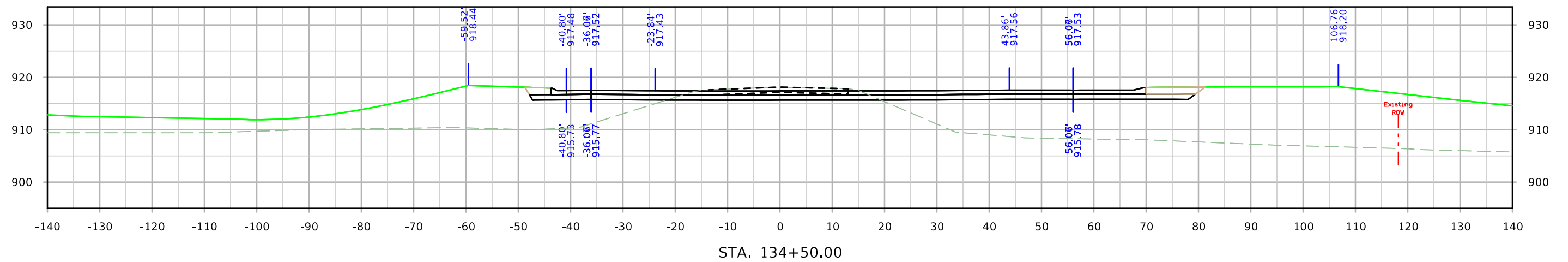
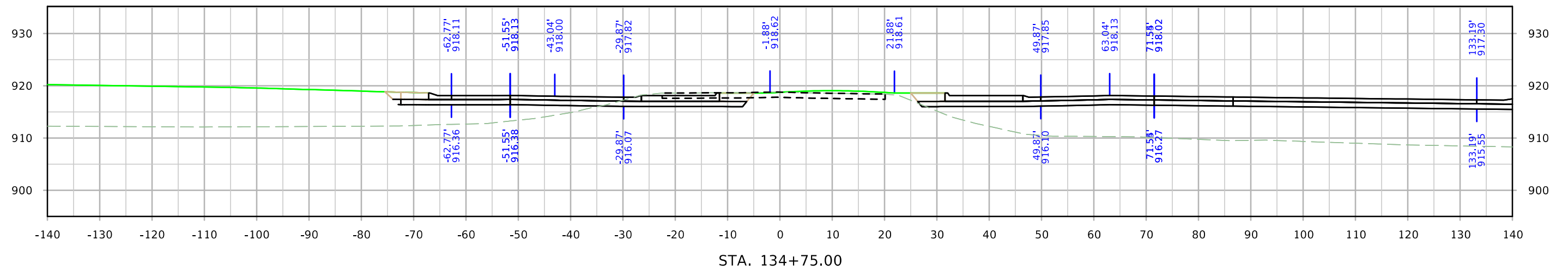
# State St



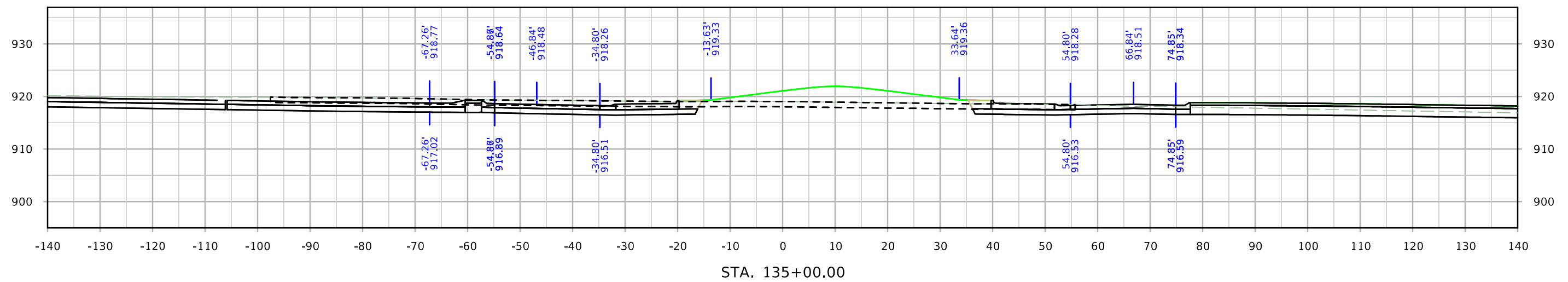
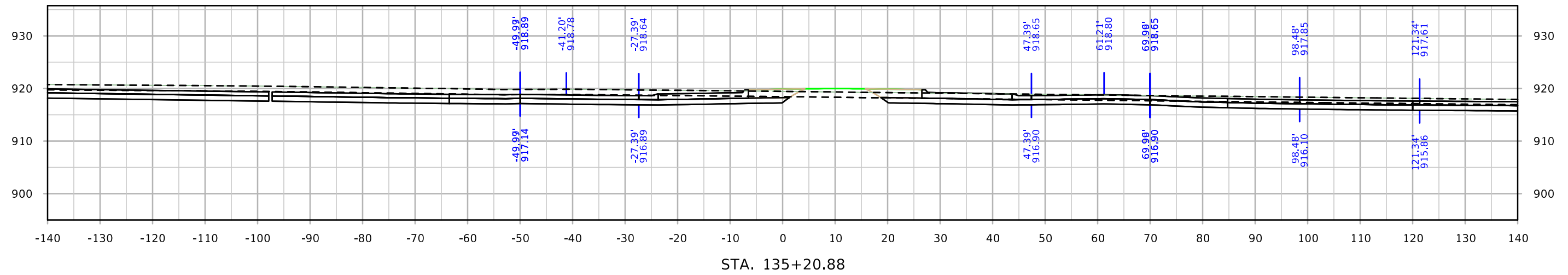
# State St



# State St

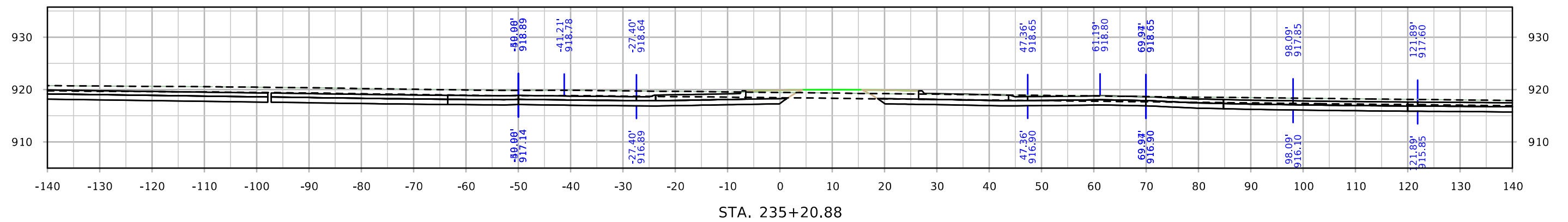
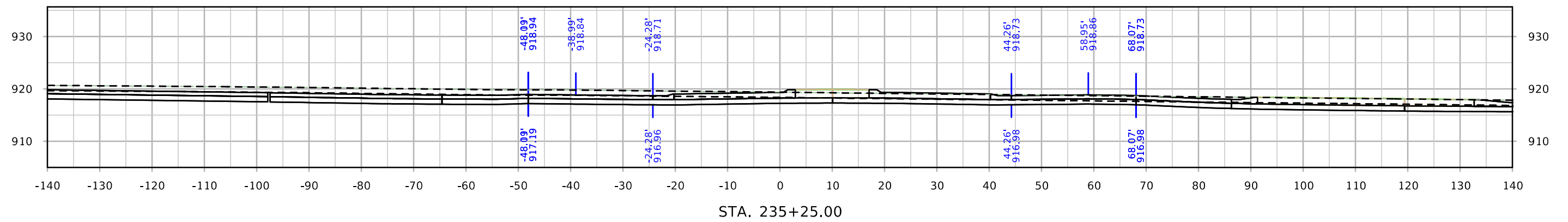
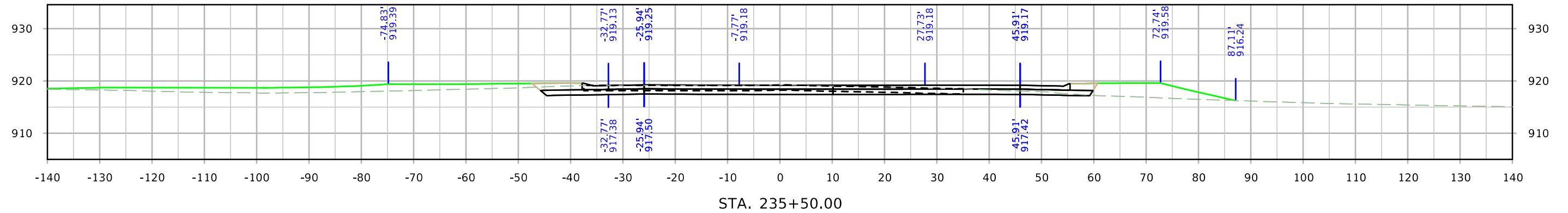


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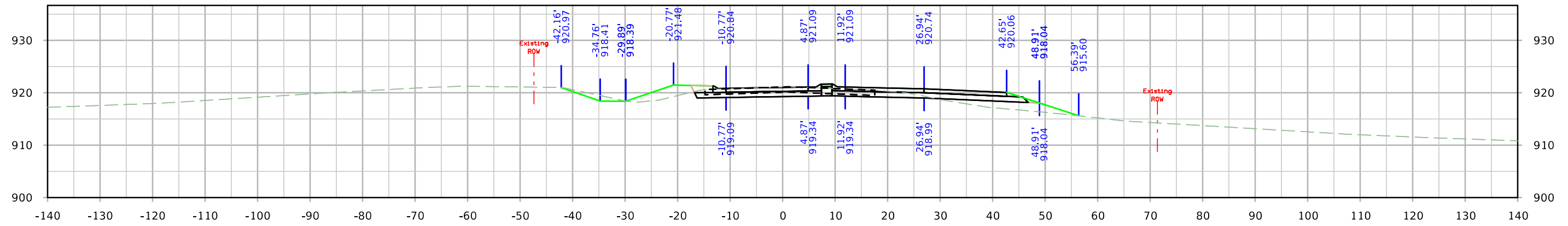




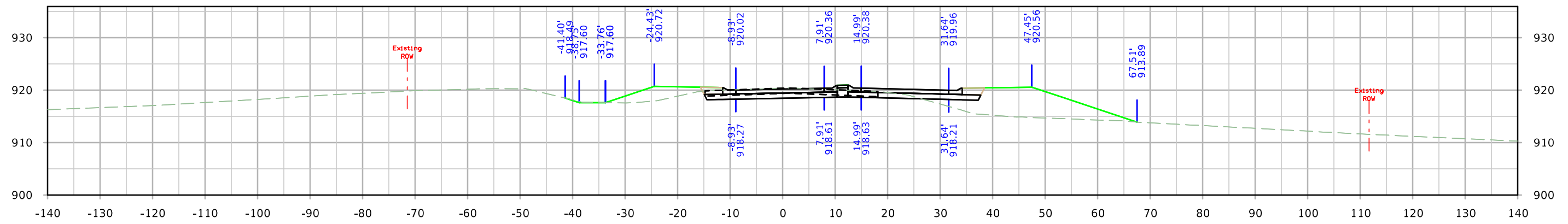
# NW 110th



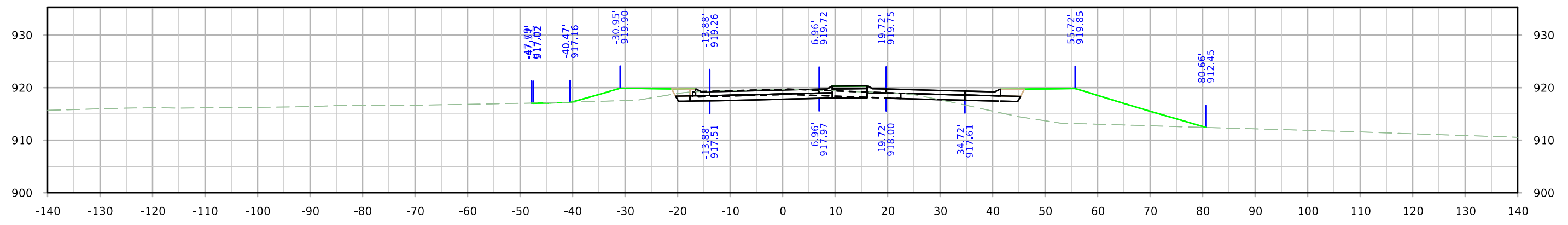
# NW 110th



STA. 236+25.00

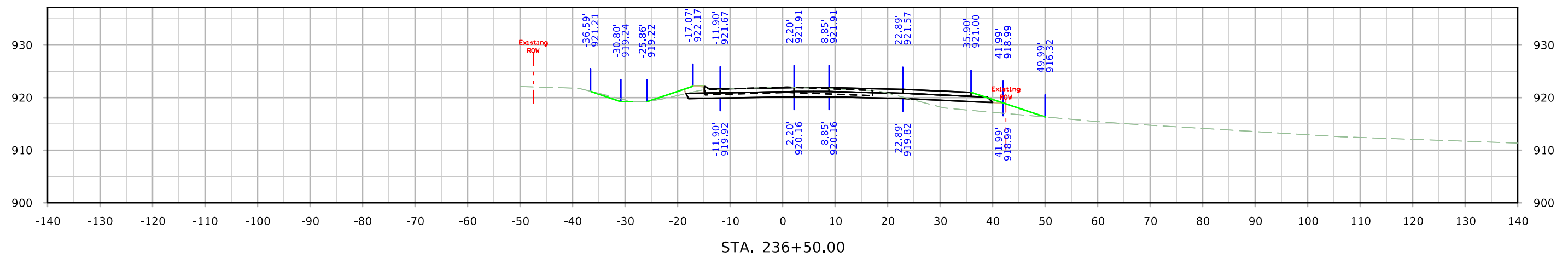
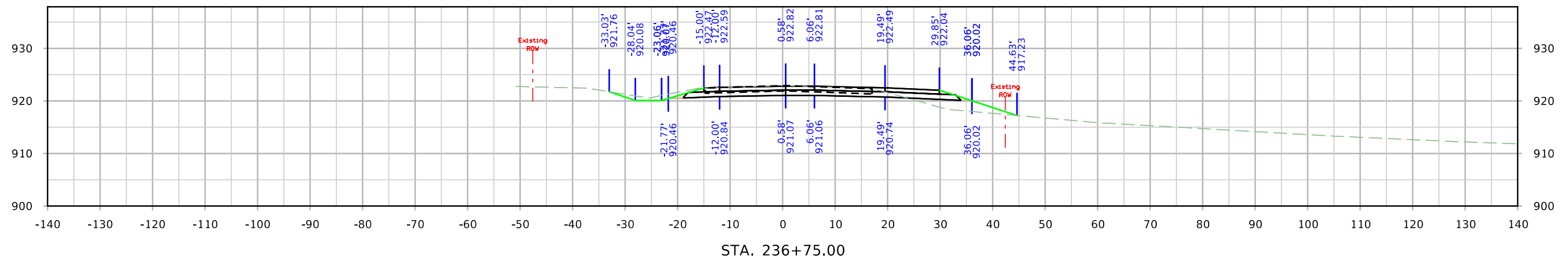
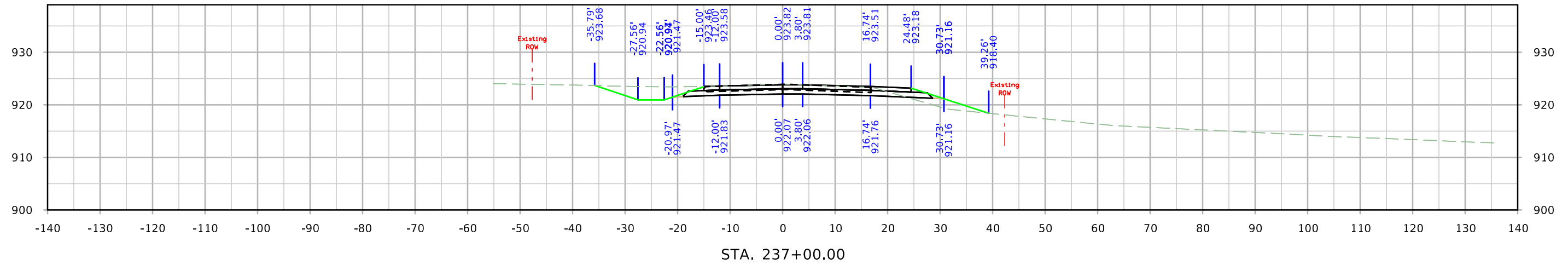


STA. 236+00.00

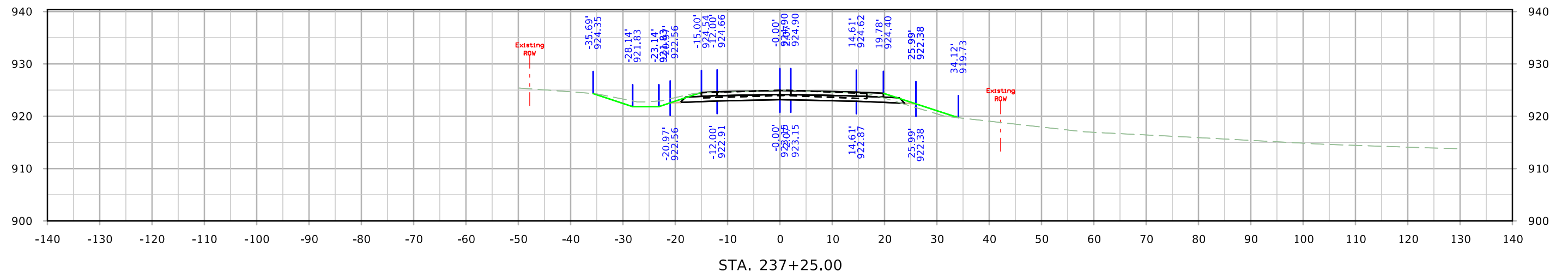
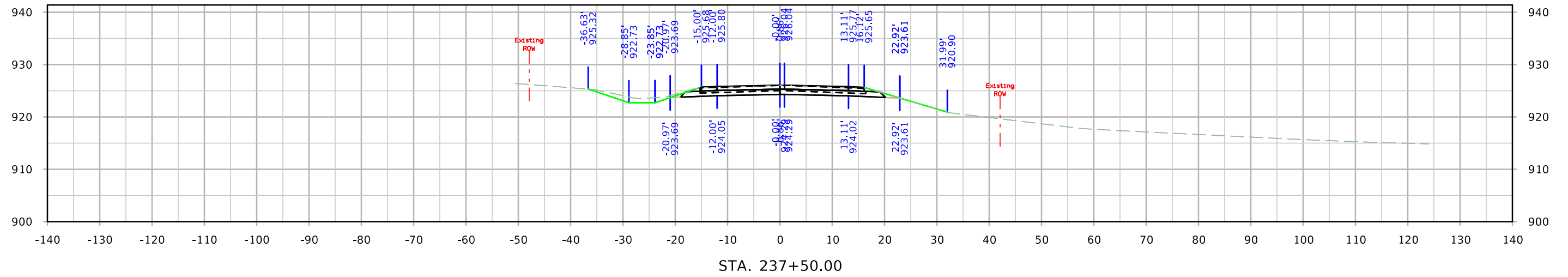
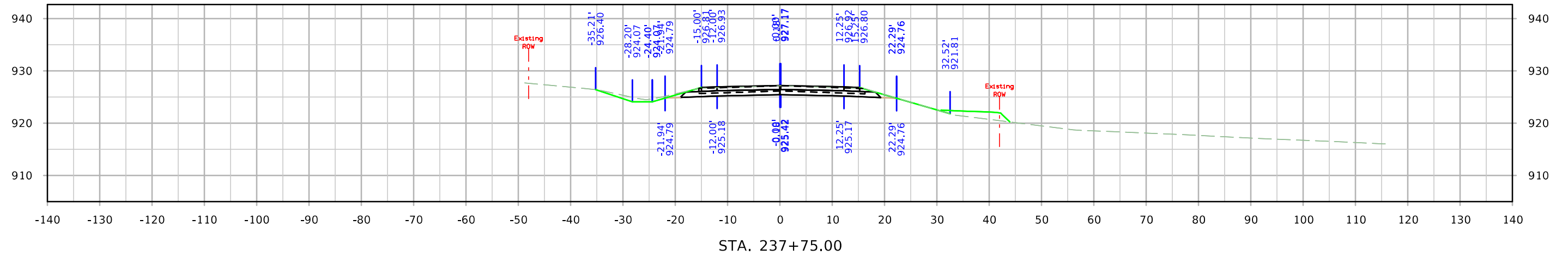


STA. 235+75.00

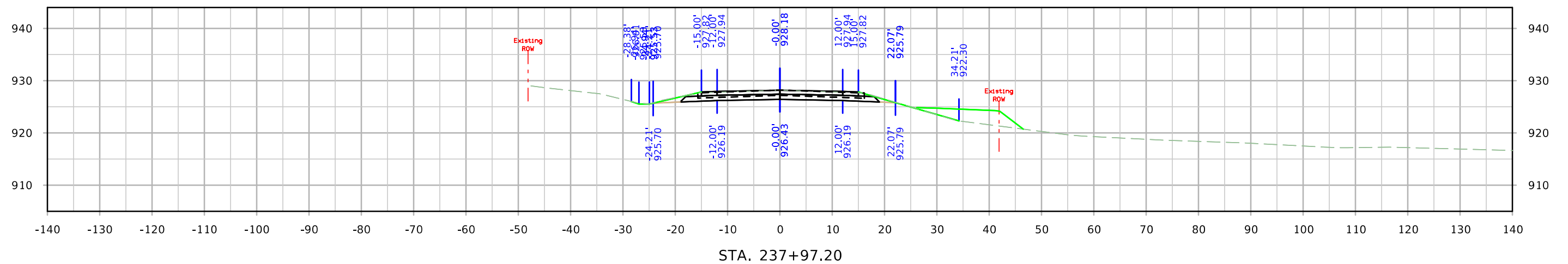
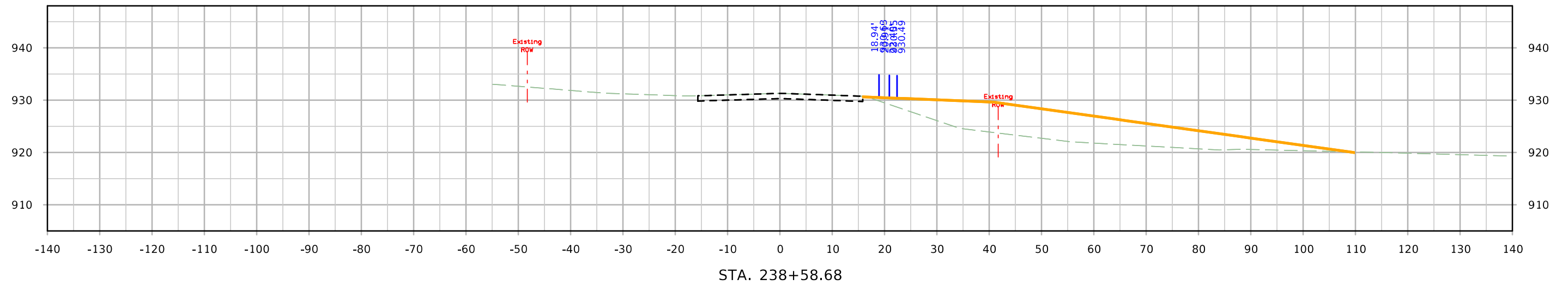
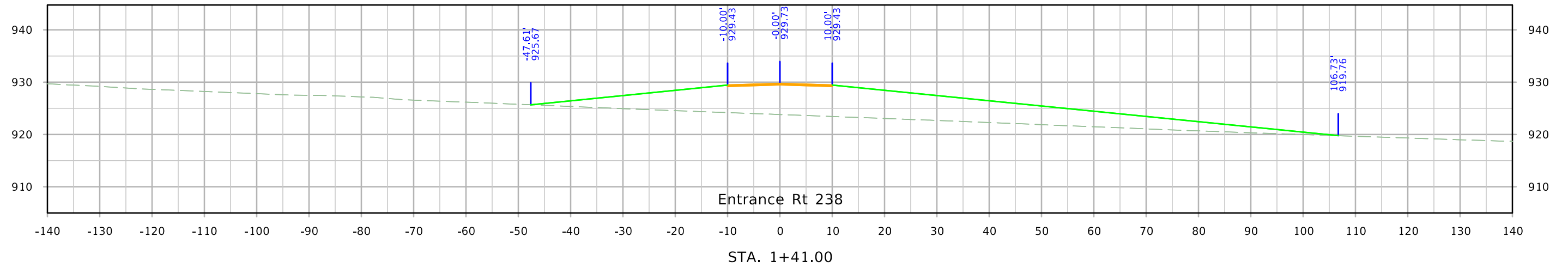
# NW 110th



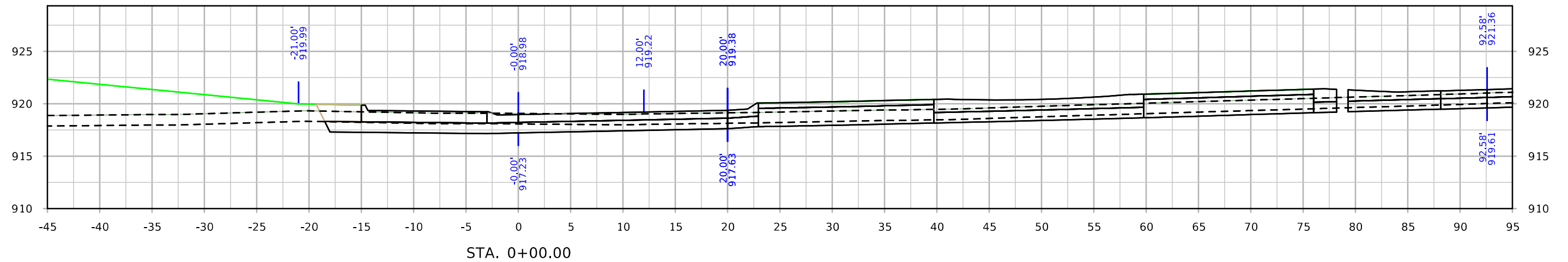
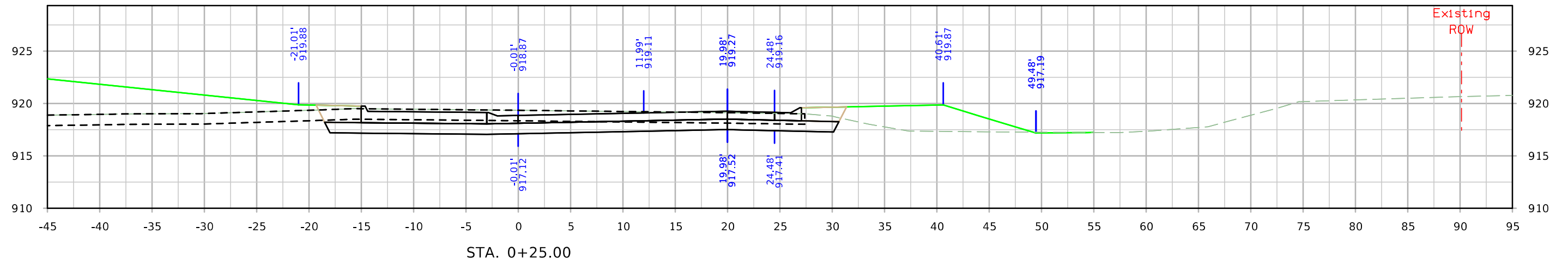
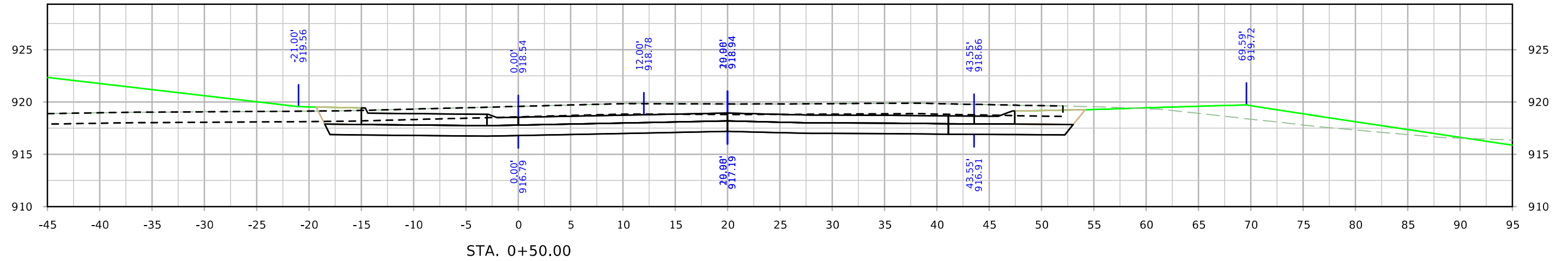
# NW 110th



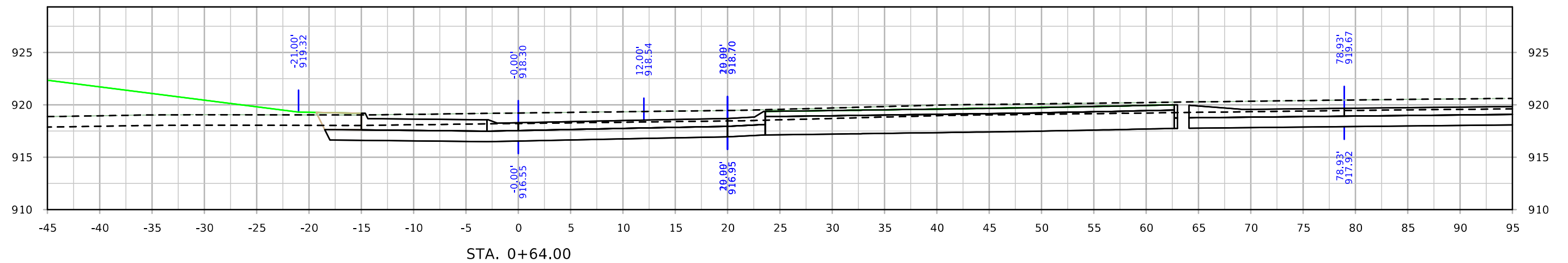
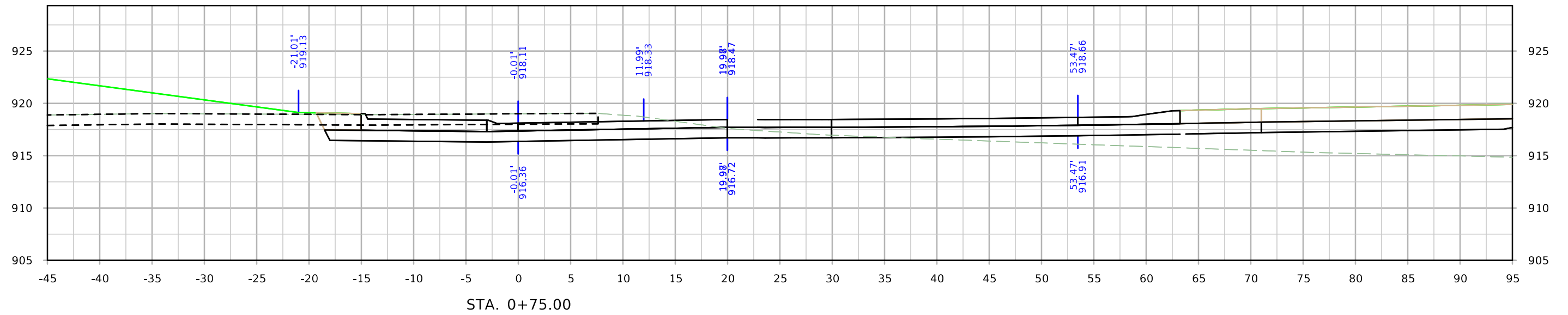
# NW 110th

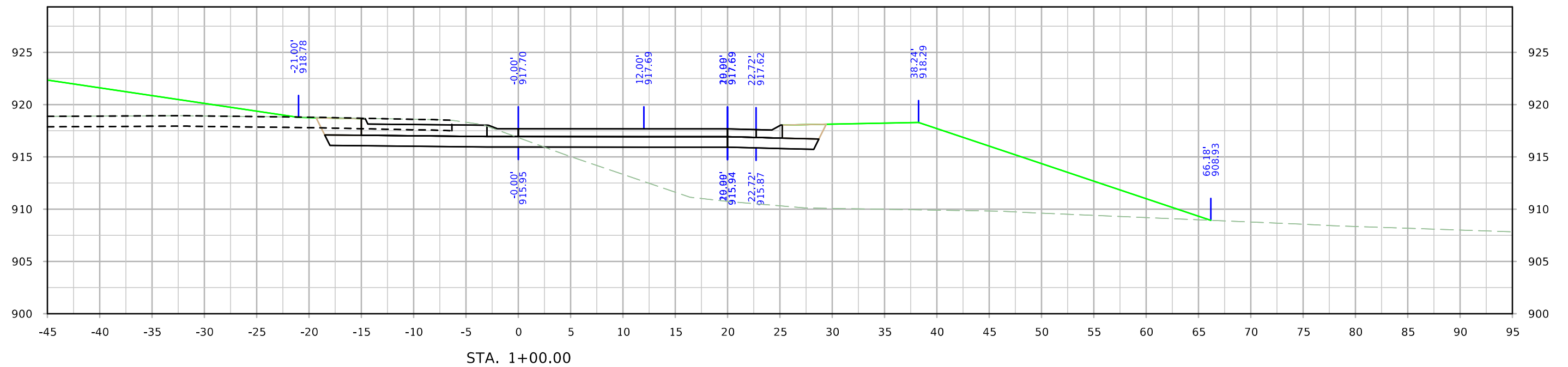
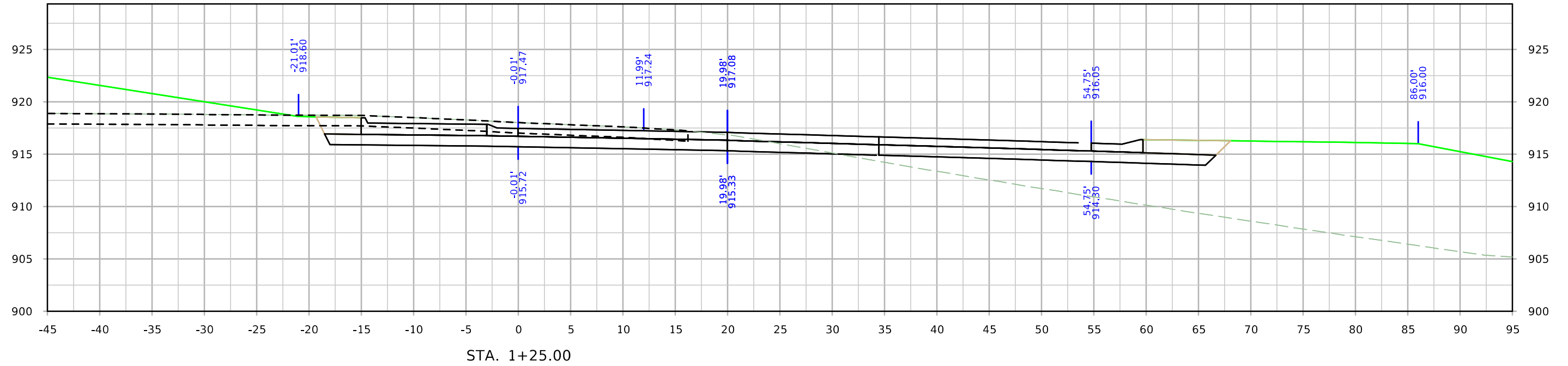


# CIRC



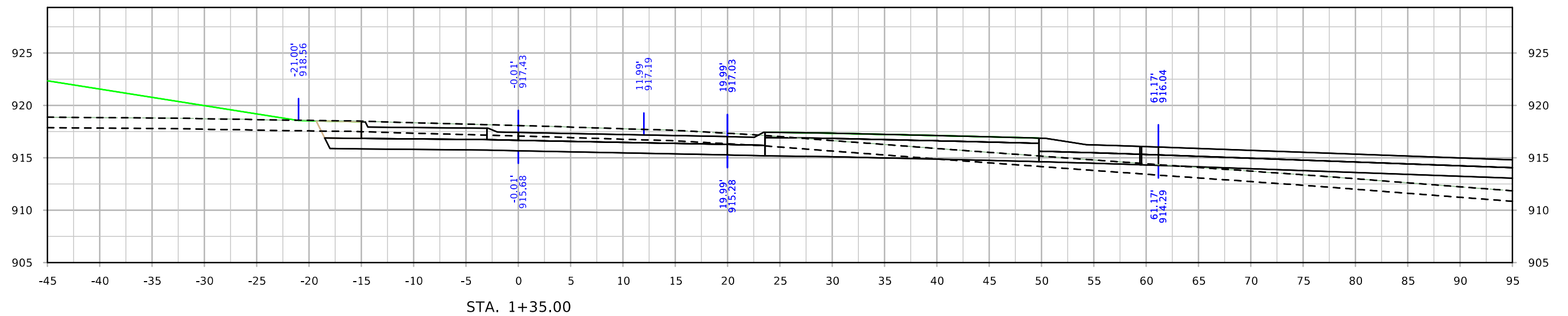
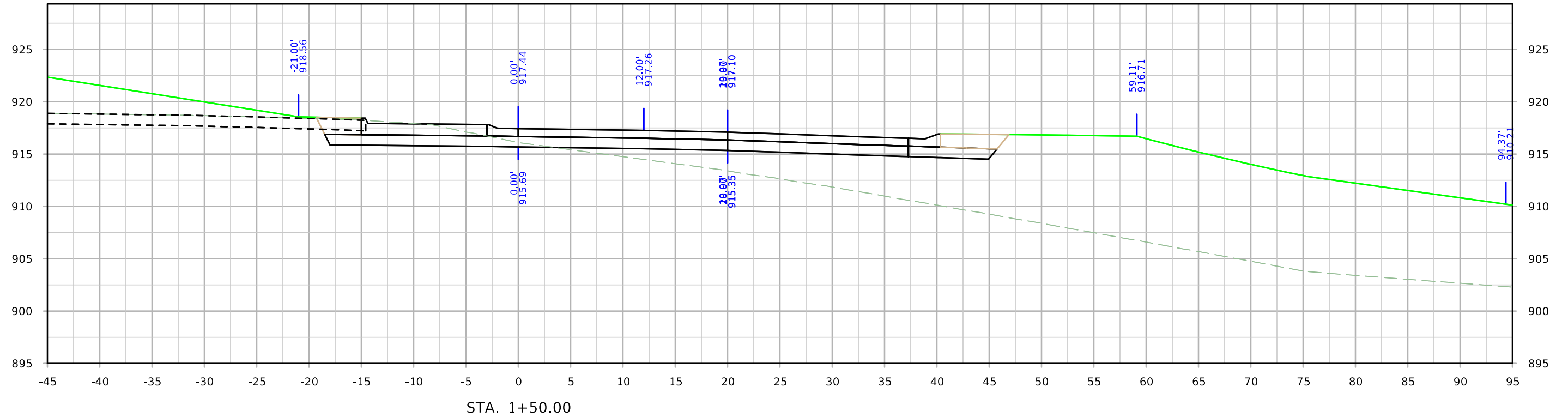
# CIRC



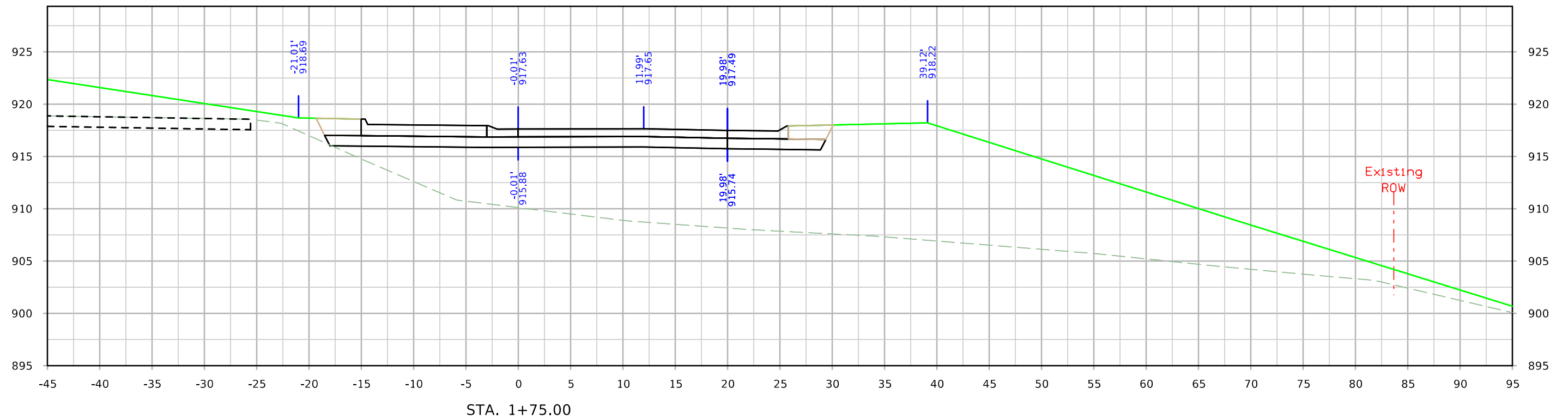
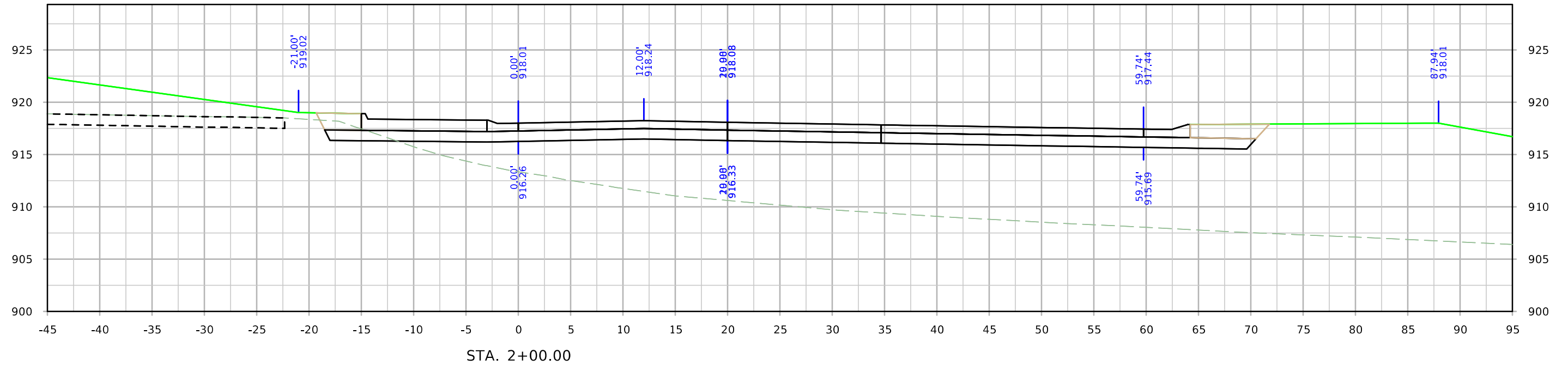




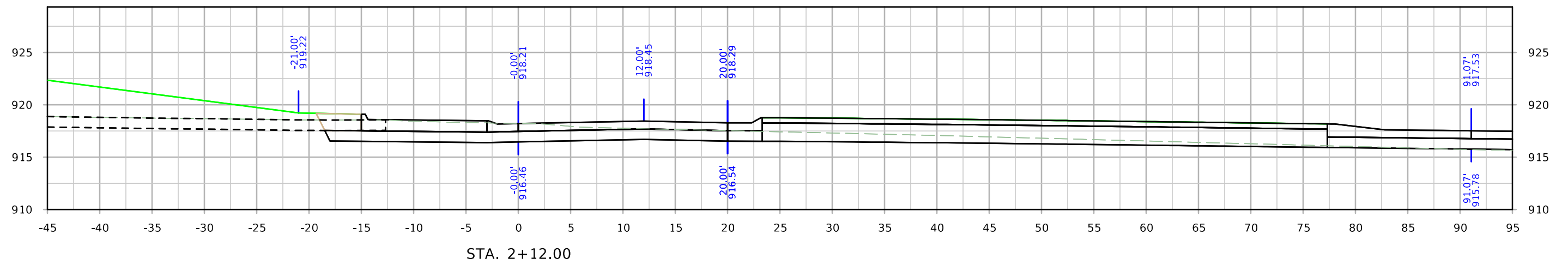
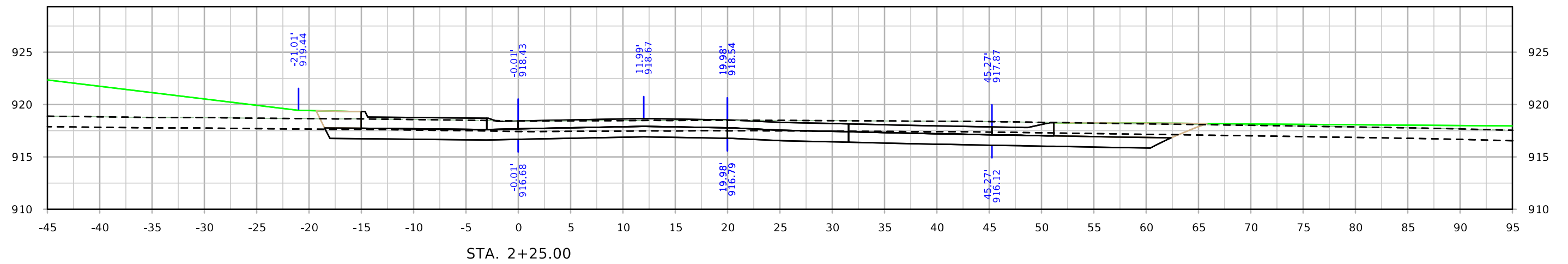
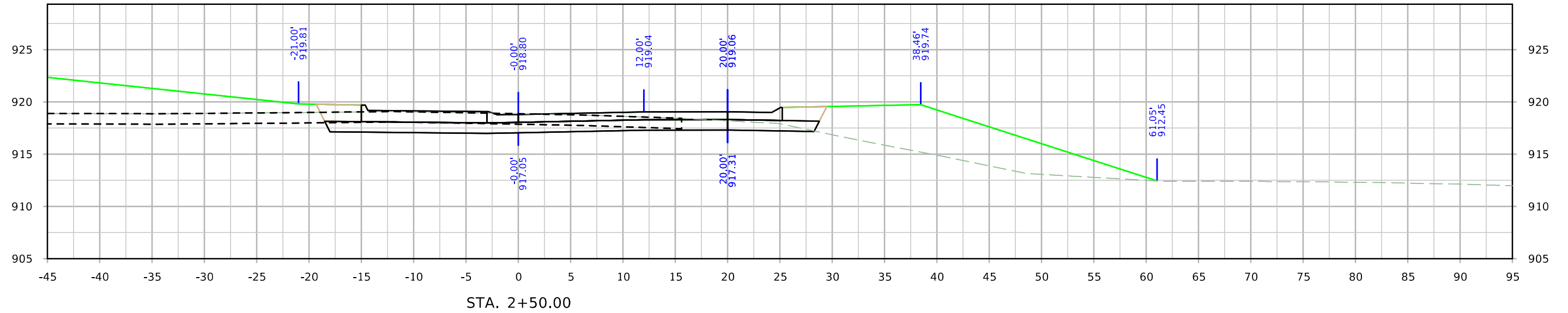
# CIRC



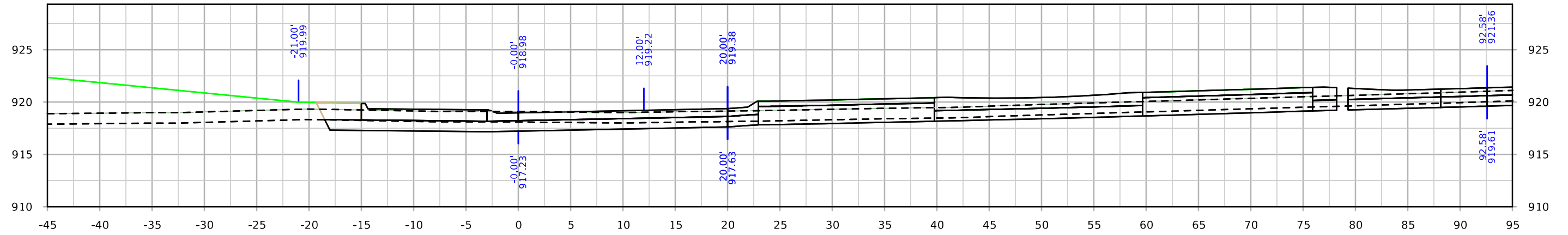
# CIRC



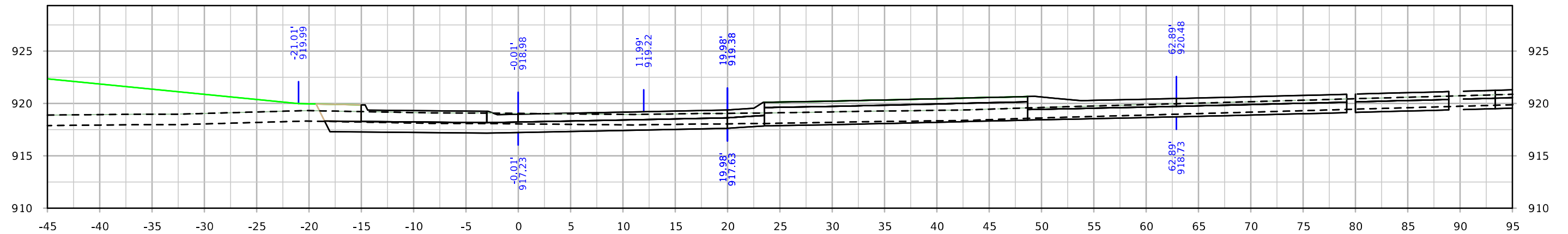
# CIRC



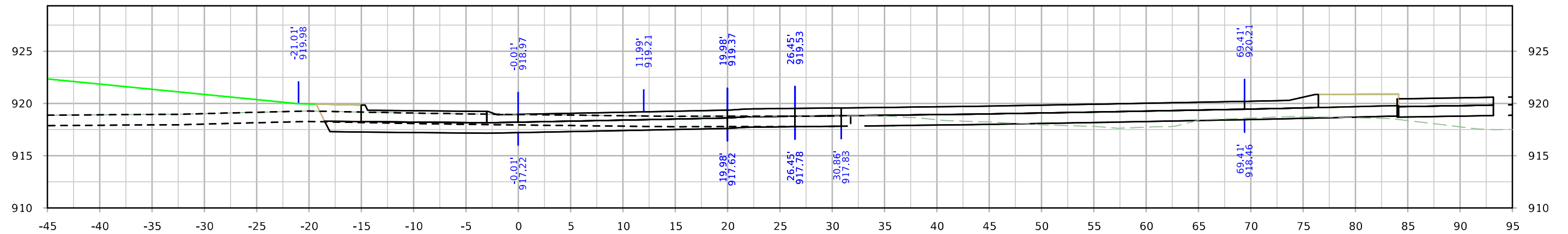
# CIRC



STA. 2+82.74



STA. 2+81.00



STA. 2+75.00