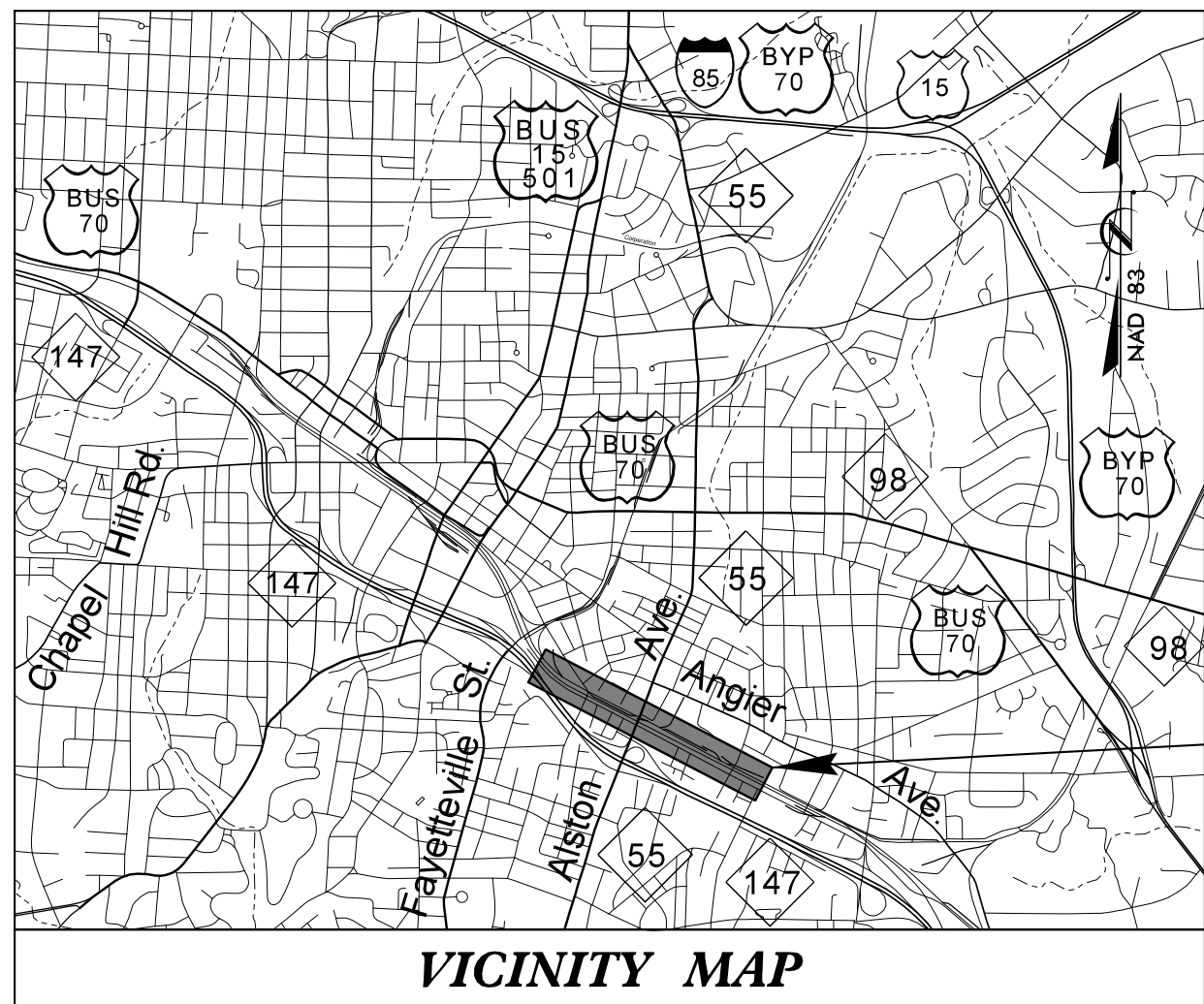
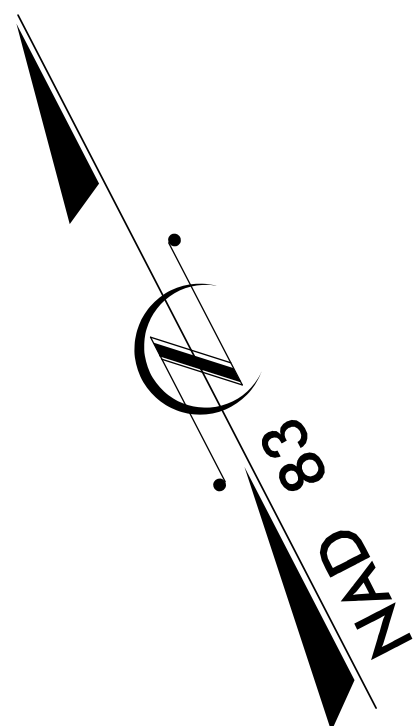


**TIP PROJECT: U-3308**



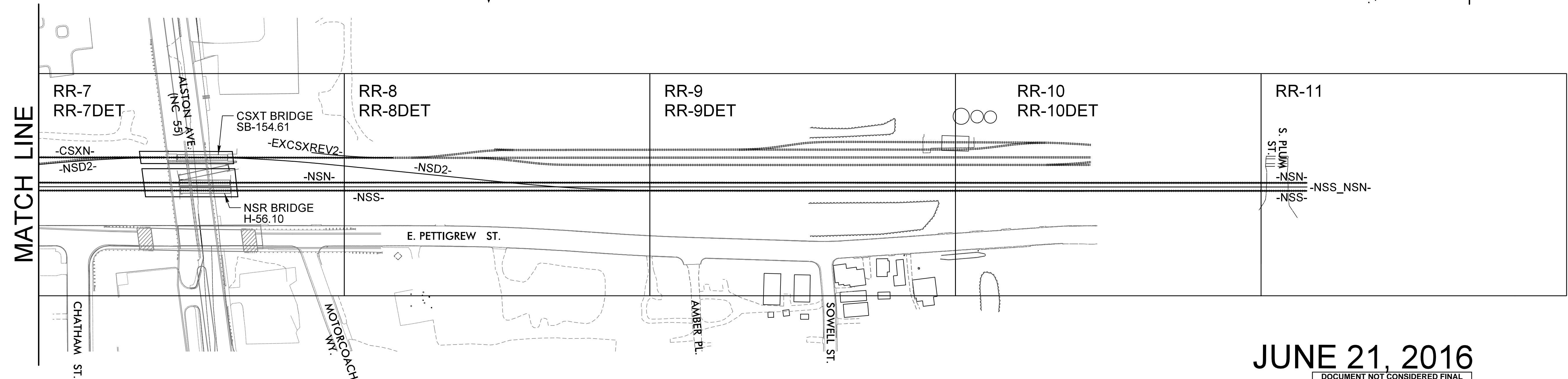
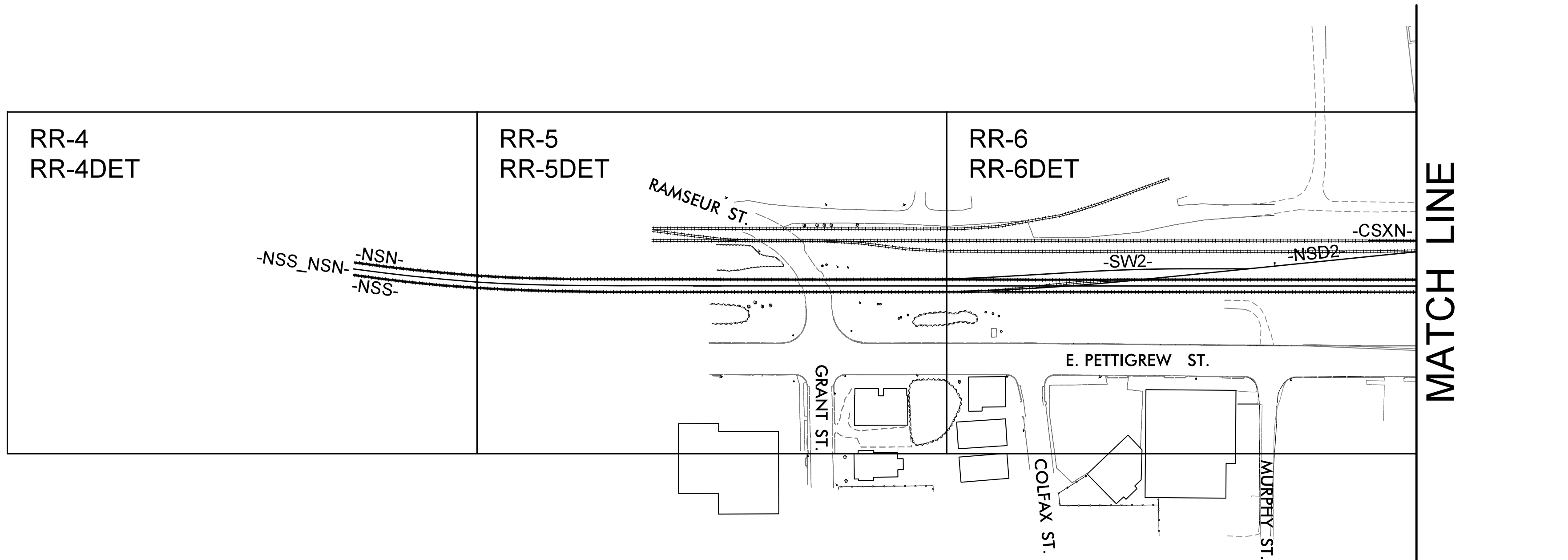
PROJECT LOCATION



# DURHAM COUNTY

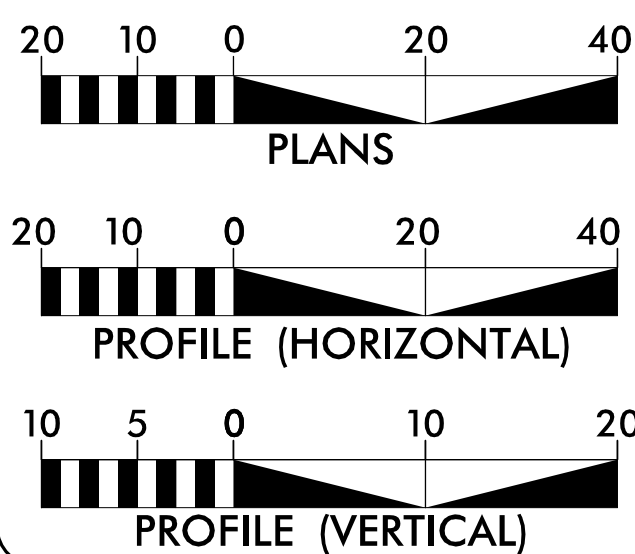
**TYPE OF WORK: Grading, Track, Drainage**

|                 |                             |             |              |
|-----------------|-----------------------------|-------------|--------------|
| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
| N.C.            | U-3308                      | RR-1        |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 34915.1.1       | STP-55 (20)                 | PE          |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |



**CONTRACT:**

**GRAPHIC SCALES**



**RAILROAD GRADING AND TRACK PLANS FOR PROPOSED DETOUR AND FINAL ALIGNMENTS TO ENABLE REPLACEMENT OF NORFOLK SOUTHERN RAILWAY BRIDGE AT MP H-56.10 AND CSX TRANSPORTATION BRIDGE AT MP SB-154.61 FOR WIDENING OF ALSTON AVENUE (NC HWY 55)**

**JUNE 21, 2016**

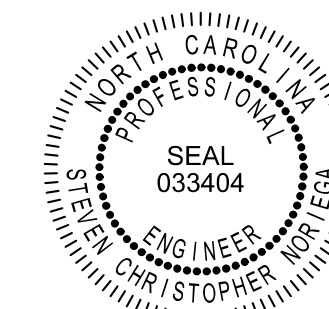
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared In the Office of:  
**STV Engineers, Inc.**  
 900 W Trade Street, Suite 715  
 Charlotte, NC 28202  
 NC License Number F-0991

**KEVIN G. BAILEY, P.E.**  
 PROJECT ENGINEER

**MARK A. JULIS, E.I.T.**  
 PROJECT DESIGN ENGINEER

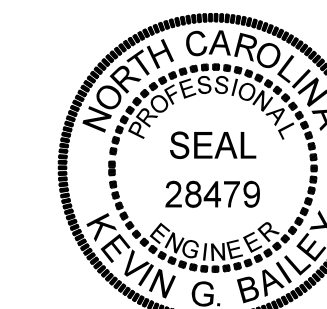
**HYDRAULICS ENGINEER**



DocuSigned by:  
 Steven Christopher Noriega  
 SIGNATURE:

P.E.  
 4/20/2016

**TRACK DESIGN ENGINEER**



DocuSigned by:  
 Kevin G. Bailey  
 SIGNATURE:

P.E.  
 4/20/2016

INDEX OF SHEETS

| SHEET NO.               | DESCRIPTION   |
|-------------------------|---|
| RR-1                    | TITLE SHEET   |
| RR-1A                   | GENERAL NOTES, INDEX OF SHEETS, TRACKWORK QUANTITIES, AND CONSTRUCTION SEQUENCE |
| RR-2DET                 | CONSTRUCTION SEQUENCE   |
| RR-2                    | TYPICAL SECTIONS - DETOUR   |
| RR-3 THRU RR-3B         | TYPICAL SECTIONS - FINAL  |
| RR-3C                   | ROUTE GEOMETRY - DETOUR AND FINAL   |
| RR-4DET THRU RR-10DET   | DRAINAGE SUMMARY  |
| RR-4 THRU RR-11         | TRACK PLANS - DETOUR  |
| RR-12 THRU RR-26        | TRACK PLANS - FINAL   |
| RR-27 THRU RR-30        | TRACK PROFILES - DETOUR AND FINAL   |
| X-RR                    | JUNCTION BOX DETAILS  |
| X-RRSUM                 | CROSS SECTIONS COVER SHEET  |
| X-RR1DET THRU X-RR12DET | CROSS SECTION SUMMARY OF QUANTITIES   |
| X-RR1 THRU X-RR12       | CROSS SECTIONS - DETOUR   |
|                         | CROSS SECTIONS - FINAL  |

GENERAL NOTES

- All construction methods and materials shall be in conformance with the following standards unless otherwise noted:
  - Construction within NCR Corridor: Norfolk Southern Standard Specifications for Materials and Construction, Issued April 2014
  - Construction within CSXT Right of Way: CSXT Specifications, Issued January 30, 2009

Copies of applicable referenced specifications must be obtained by the Contractor and maintained on job site at all times.
- Temporary drainage during construction shall be provided by the Contractor to relieve areas that may cause damage to roadways as directed by the local jurisdiction.
- Lineal foot measurements shown on the plans are horizontal measurements, not slope measurements.
- No geotechnical or geological information is shown on these plans.
- The utility locations shown on these plans are approximate. This plan does not guarantee the existence, non-existence, size, type, location alignment or depth of any or all underground utilities or other facilities. Utility owners shall be notified 72 hours in advance of any excavation in the proximity of their utilities. The Contractor shall be responsible for repairing at his expense any existing utilities damaged during construction.
- When materials which are unsuitable for subgrade, or other purposes, are found within the limits of construction, the Contractor shall be required to excavate such material below the grade shown on the plans, and the areas so excavated shall be backfilled with approved suitable materials. The extent of undercutting and backfilling shall be determined by the Project Engineer.
- Clearing and grubbing operations and disposal of all debris therefrom shall be performed by the Contractor.
- All waste material resulting from the project shall be removed from the site by the Contractor and disposed of in a legal disposal site approved by the Railroad.
- All excavation shall be unclassified. No separate payment will be made for rock excavation.
- The Contractor shall maintain all erosion control devices as per the approved erosion control plan.
- All manholes, catch basins, utility valves and meter pits shall be adjusted or rebuilt to grade as required.
- Subgrade soil for all concrete structures, regardless of the type or location, shall be firm, dense and thoroughly compacted and consolidated; shall be free from muck and mud; and shall be sufficiently stable to remain firm and intact under the feet of the workmen or machinery engaged in subgrade surfacing, laying reinforcing steel, and depositing concrete thereon. In all cases where subsoil is mucky or works into mud or muck during such operation, a seal course of either concrete or rock shall be placed below subgrade to provide a firm base for working and for placing the floor slab.
- The Contractor is responsible for keeping all public and private roadways adjacent to the project free of mud, dirt and debris from the construction.
- The Contractor is responsible for the preservation of all survey control monuments.
- All disturbed/graded areas that will be seeded shall receive surface roughening. Payment for this work shall be included in the unit bid price for Seeding and Mulching.
- Construction staging areas and vehicle maintenance areas shall be constructed by the Contractor in a manner to minimize the runoff of pollutants. No measurement or payment will be made for this work.
- All pipe and culvert structures shall be designed to carry Cooper's E-80 loading with diesel impact. RCP under CSXT owned track shall be ASTM C-76, Class V, with "O" ring joints. Corrugated metal pipe under CSXT owned track shall be steel, fiber bonded, and asphalt coated with minimum 24" wide connecting bands. The minimum recommended diameter of pipe under CSXT owned tracks is 24".
- The contractor shall only remove out of service track at locations detailed in the plans. Any active tracks that require removal shall be removed by Railroad forces. Contractor payment for track removal shall only include the actual number of track feet which is acceptably removed by the contractor, measured along the center line of the track prior to the track being removed. Ownership of salvaged material shall be in accordance with the project special provisions.

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|   |                     |
|---|---------------------|
| PROJECT REFERENCE NO.<br>U-3308                               | SHEET NO.<br>RR-1A  |
| RW SHEET NO.  |                     |
| RAIL DESIGN ENGINEER  | HYDRAULICS ENGINEER |
|   |                     |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED |                     |

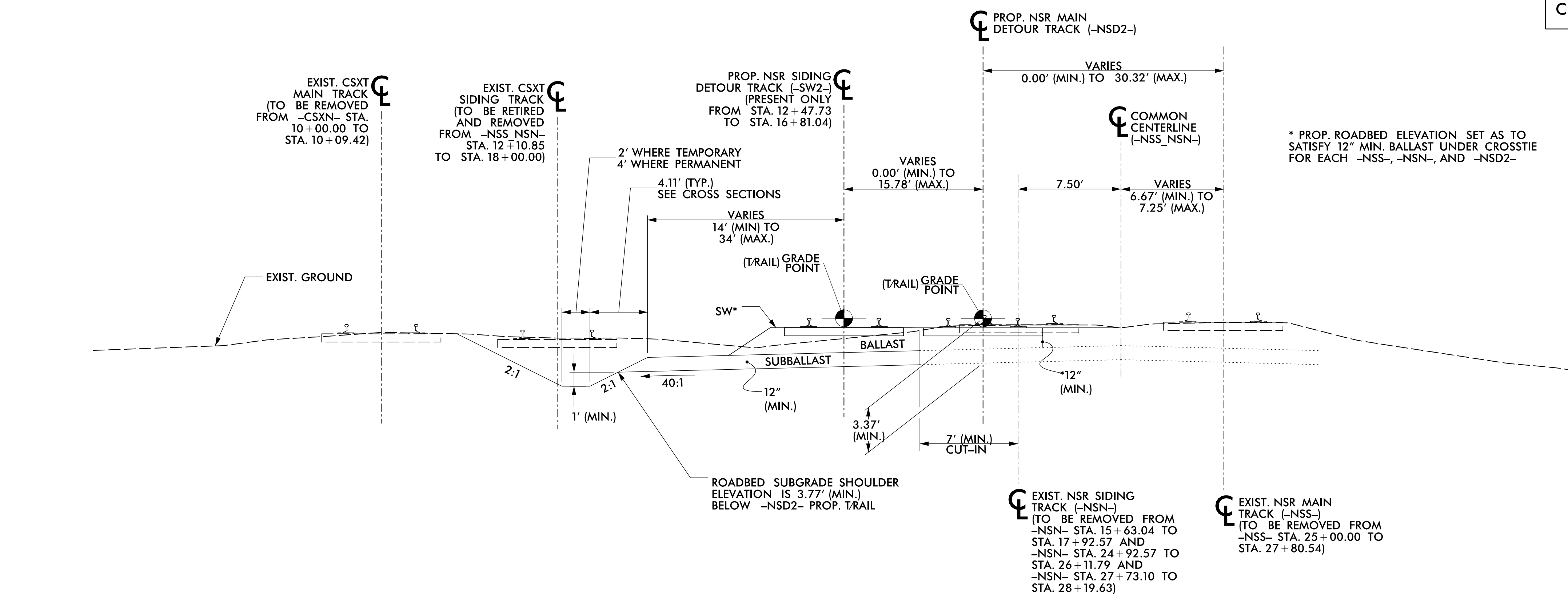
| GRADING AND TRACKWORK QUANTITIES                                    |              |          |        |       |       |
|---|--------------|----------|--------|-------|-------|
| Trackwork Item / Description  | Performed By | Quantity |        |       |       |
|   |              | Units    | Detour | Final | Total |
| Retire and Remove Exist. No. 10 Crossover                           | NS Forces    | LS       | 1      | -     | 1     |
| Cut and Throw Exist. Live Track                                     |              | TF       | 815    | 983   | 1,798 |
| Line and Resurface Exist. Track                                     |              | TF       | 143    | 1,394 | 1,537 |
| Shift/Realign Exist. Track  |              | TF       | -      | 227   | 227   |
| Construct 136RE Track   |              | TF       | 1,088  | 2,433 | 3,521 |
| Construct 136RE No. 10 Turnout                                      |              | EA       | 1      | -     | 1     |
| Remove Exist. 136RE No. 10 Turnout                                  |              | EA       | -      | 1     | 1     |
| Railroad Track to Be Removed  |              | TF       | 2,433  | 376   | 2,809 |
| Cut and Throw Exist. Live Track                                     |              | TF       | 146    | 646   | 792   |
| Construct 136RE Track   |              | TF       | -      | 48    | 48    |
| Construct Bumping Post  | CSXT Forces  | EA       | 1      | -     | 1     |
| Railroad Track to Be Removed  |              | TF       | -      | 146   | 146   |
| Remove Exist. Bumping Post  |              | EA       | -      | 1     | 1     |
| Clearing and Grubbing   | Contractor   | LS       | 1      | -     | 1     |
| Unclassified Excavation   |              | CY       | 2,882  | 5,873 | 8,755 |
| Ballast   |              | TN       | 3,500  | -     | 3,500 |
| Sub-Ballast   |              | TN       | 2,012  | 2,510 | 4,522 |
| Railroad Track to Be Removed  |              | TF       | 1,144  | 48    | 1,192 |
| <b>FOR DRAINAGE ITEMS SEE DRAINAGE SUMMARY TABLE ON SHEET RR-3C</b> |              |          |        |       |       |

CONSTRUCTION SEQUENCE

- NCDOT Contractor to construct embankment east of Alston Avenue north of the CSXT mainline.
- CSXT Forces shall cut and throw mainline track (-CSXN-) from -CSXN- station 15+47.36 to station 16+93.26, and install bumping post at the end of the CSXT detour track (-EXCSXREV2-). Once this detour track is operational, the CSXT mainline west of -CSXN- station 15+47.36 will be out of service.
- NCDOT Contractor to remove the out of service CSXT mainline between -CSXN- station 10+00.00 and 15+47.36.
- NCDOT Contractor to complete grading and drainage along NSR Detour track including the CSXT bridge with temporary span over existing Alston Avenue.
- NS Forces to construct NSR Detour Track (-NSD2-) from -NSD2- station 14+92.33 to station 24+08.66.
- During an outage, NS forces to remove #10 crossover west of Alston Avenue and replace with track panels for -NSS- and -NSN-. -NSS- and -NSN- shall remain in service after this step.
- NSN- to be placed out of service west of -NSN- station 36+00.00.
- Once -NSN- is placed out of service, NS Forces to cut and throw -NSN- to -SW2- from -NSN- station 12+40.29 to station 13+95.00, and line track along -NSD2- from 12+28.00 to station 13+81.33. NS Forces to construct #10 RHTO along -NSD2- from station 13+81.33 to station 14+92.33. NS Forces to construct -SW2- from station 11+55.00 to station 13+22.75. NS Forces to shift -NSN- track from station 25+87.08 to station 27+34.03 to the -NSD2- alignment.
- NS Forces shall remove out of service -NSN- track from -NSN- station 15+63.04 to station 25+87.08 and from station 27+34.03 to station 28+19.63.
- During an outage, NS Forces shall cut and throw existing main track from -NSS- station 11+90.00 to station 14+18.00, and from -NSS- station 27+41.21 to station 30+26.20. After this cutover is completed the NS detour track and the connection to the siding track will be complete and ready for service.
- After train traffic has been relocated onto -NSD2- the existing -NSS- will be out of service between -NSS- station 14+18.00 and station 27+41.21, and NS Forces shall remove out of service -NSS- from -NSS- station 14+18.00 to station 27+41.21.
- While -NSS- and -NSN- are out of service contractor to complete grading and drainage along mainline and siding including the new NSR bridge.
- Upon completion of grading and drainage work, NS Forces shall construct track along -NSS- from -NSS- station 14+18.00 to station 27+41.21, and -NSN- from -NSN- station 15+63.04 to station 25+87.08.
- During an outage, NS forces shall cut and throw -NSD2- to -NSS- from -NSS- station 11+90.00 to station 14+18.00 and -NSS- Station 27+41.21 and 30+26.20. NS forces to line and surface -NSS- from 30+26.20 to 36+00.00. -NSS- to be in service upon the completion of this work. -NSD2- and SW2- will be out of service after the cut and throws have been completed.
- NS Forces to remove out of service -NSD2- from station 12+28.00 to station 13+81.33 and remove #10 RHTO from station 13+81.33 to station 14+92.33. NS Forces shall cut and throw -SW2- to -NSN- from -NSN- station 12+40.29 to station 15+63.04 and from station 25+87.08 to station 27+34.03. Prior to placing -NSN- back in service NS Forces shall construct track from -NSN- station 27+34.03 to station 28+19.63, and line and surface from -NSN- station 12+00.00 to station 12+40.29 and from -NSN- station 28+19.63 to 36+00.00.
- NSN- can now be placed back in service west of -NSN- station 36+00.00.
- NS Forces shall remove out of service -NSD2- from -NSD2- station 14+92.33 to station 16+04.89 and from station 22+98.79 to station 24+08.66.
- NCDOT Contractor to remove track from station 13+22.12 to station 13+69.69. Upon completion of the final CSXT bridge span over Alston Ave., during an outage CSXT forces shall remove the bumping post on the CSXT (-EXCSXREV2-) and remove track from -EXCSXREV2- station 20+71.96 to station 22+18.20. CSXT to construct track from station 13+22.19 to station 13+69.69. CSXT shall shift the remaining portion of -NSD2- to the -CSXN- alignment from -CSXN- station 10+00.00 to station 16+93.26. After completion of this the CSXT mainline can be placed in service.

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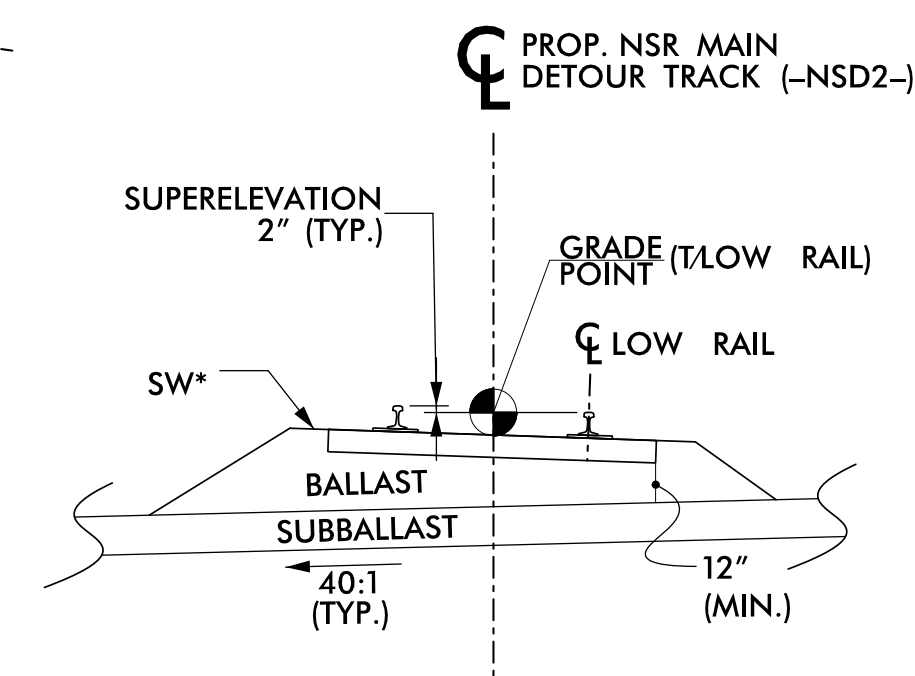
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| PROJECT REFERENCE NO.<br>U-3308                                  |  | SHEET NO.<br>RR-2DET |  |
| RW SHEET NO.   |  |                      |  |
| RAIL DESIGN ENGINEER   |  | HYDRAULICS ENGINEER  |  |
|  |  |                      |  |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED |  |                      |  |



**SHOULDER WIDTH (SW)**

|                            |     |
|----------------------------|-----|
| NS SW (INSIDE OF CURVE)    | 6"  |
| NS SW (OUTSIDE OF CURVE)   | 12" |
| NS SW (TANGENT BOTH SIDES) | 6"  |
| CSXT SW                    | 12" |

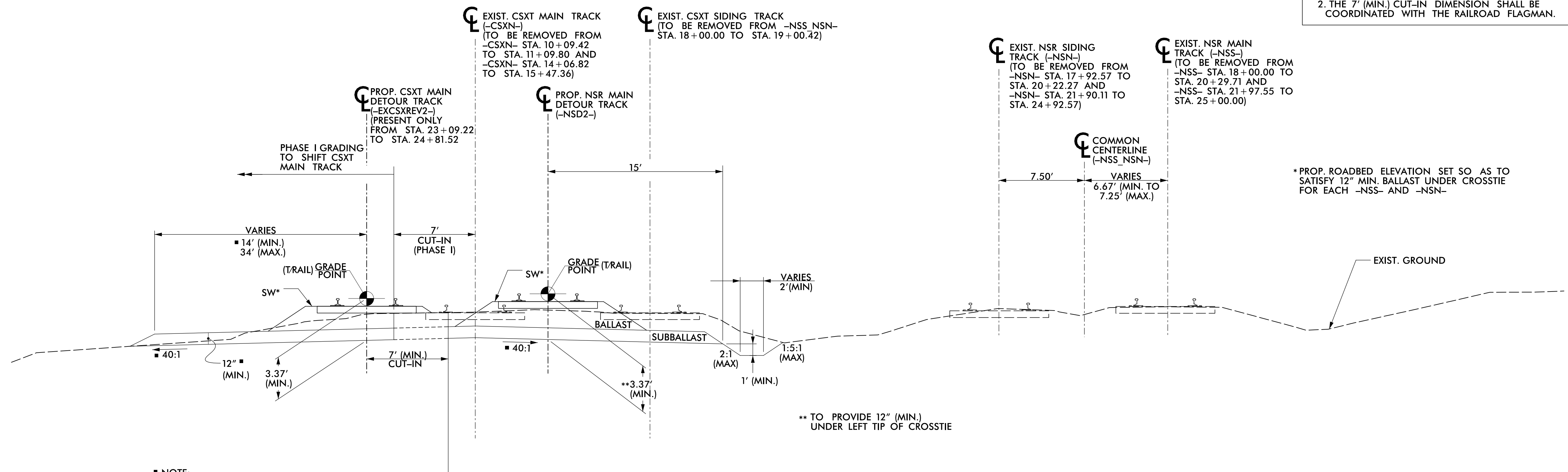
**TYPICAL SECTION RR-1DET**  
 -NSS\_NSN- STA. 11+90.00 TO STA. 18+00.00 (BK)  
 -NSS\_NSN- STA. 25+00.00(AH) TO STA. 30+26.00



**SUPERELEVATED TRACK DETAIL**  
 (SEE TYPICAL SECTIONS FOR ROADBED DETAILS)

**NOTE:**

- ALL PROP. TRACK CONSTRUCTION SHALL EMPLOY 136 RE CONTINUOUSLY WELDED RAIL (CWR)
- THE 7' (MIN.) CUT-IN DIMENSION SHALL BE COORDINATED WITH THE RAILROAD FLAGMAN.



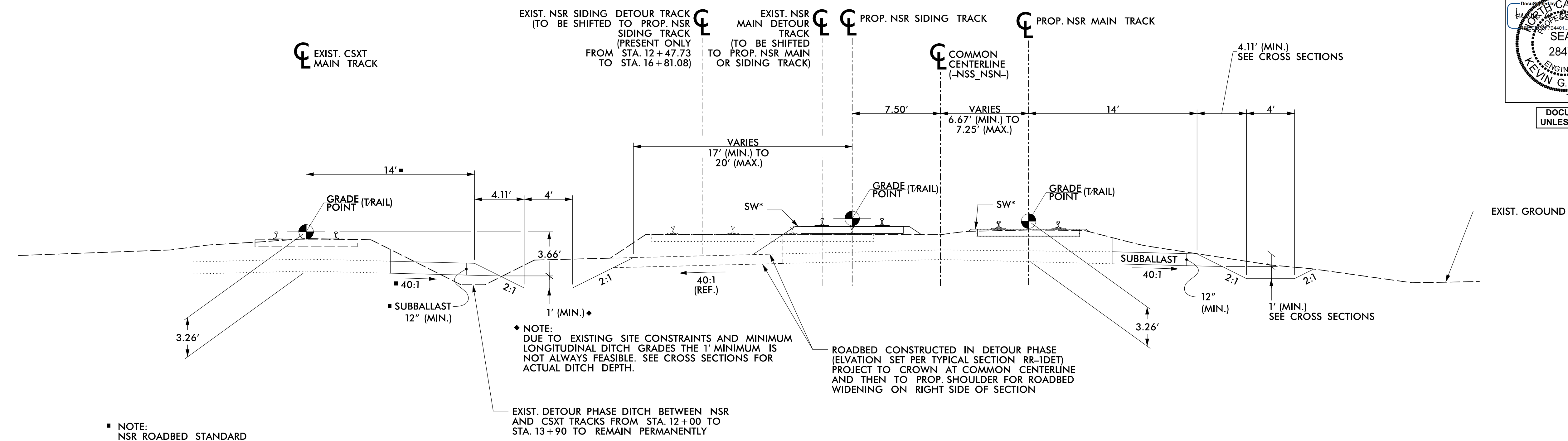
**NOTE:**  
 NSR ROADBED STANDARD USED FOR CONSISTENCY SINCE SATISFIES CSXT ROADBED STANDARDS

**TYPICAL SECTION RR-2DET**  
 STA. 18+00.00(AH) TO BRIDGE ABUTMENT #1  
 BRIDGE ABUTMENT #2 TO STA. 25+00.00(BK)

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|  |  |                     |  |
|--|--|---------------------|--|
| PROJECT REFERENCE NO.<br>U-3308                                  |  | SHEET NO.<br>RR-2   |  |
| RW SHEET NO.   |  |                     |  |
| RAIL DESIGN ENGINEER   |  | HYDRAULICS ENGINEER |  |
|  |  |                     |  |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED |  |                     |  |



NOTE:  
NSR ROADBED STANDARD  
USED FOR CONSISTENCY SINCE  
SATISFIES CSXT ROADBED STANDARDS

NOTE:  
DUE TO EXISTING SITE CONSTRAINTS AND MINIMUM  
LONGITUDINAL DITCH GRADES THE 1' MINIMUM IS  
NOT ALWAYS FEASIBLE. SEE CROSS SECTIONS FOR  
ACTUAL DITCH DEPTH.

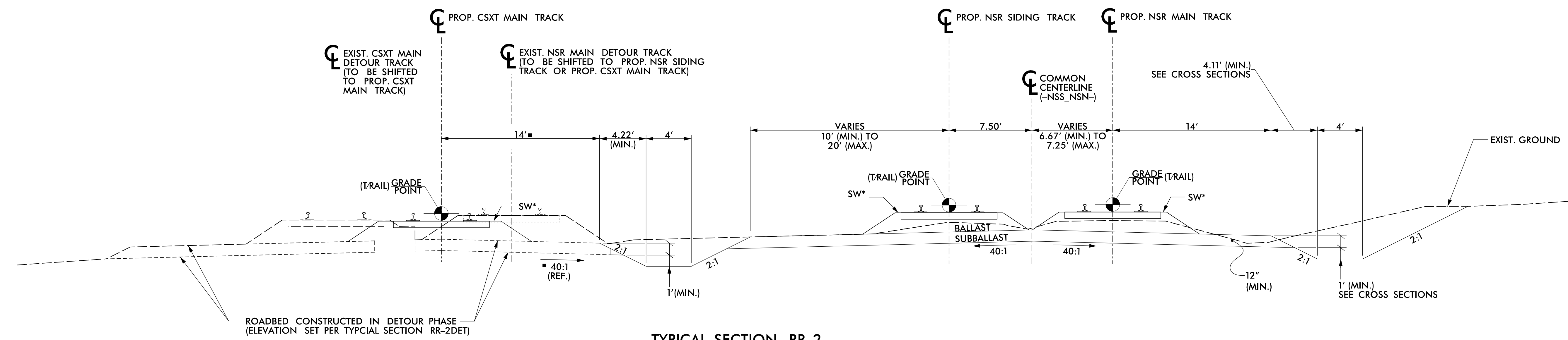
ROADBED CONSTRUCTED IN DETOUR PHASE  
(ELEVATION SET PER TYPICAL SECTION RR-IDET)  
PROJECT TO CROWN AT COMMON CENTERLINE  
AND THEN TO PROP. SHOULDER FOR ROADBED  
WIDENING ON RIGHT SIDE OF SECTION

**TYPICAL SECTION RR-1**  
-NSS\_NSN- STA. 11+90.00 TO STA. 18+00.00 (BK)  
-NSS\_NSN- STA. 25+00.00(AH) TO STA. 30+26.00

SHOULDER WIDTH (SW)

|                            |     |
|----------------------------|-----|
| NS SW (INSIDE OF CURVE)    | 6"  |
| NS SW (OUTSIDE OF CURVE)   | 12" |
| NS SW (TANGENT BOTH SIDES) | 6"  |
| CSXT SW                    | 12" |

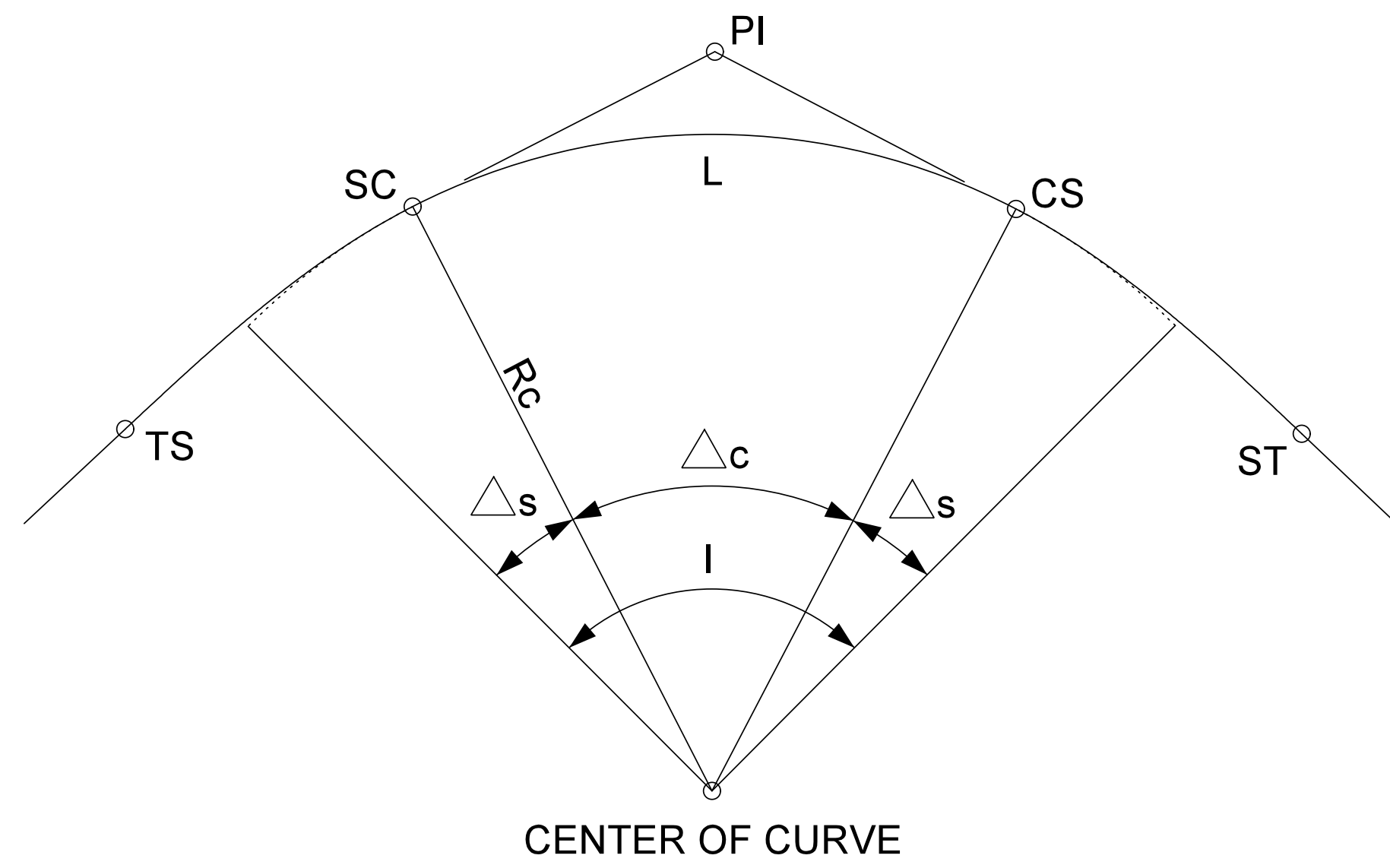
NOTE:  
1. ALL PROP. TRACK CONSTRUCTION SHALL EMPLOY  
136 RE CONTINUOUSLY WELDED RAIL (CWR)



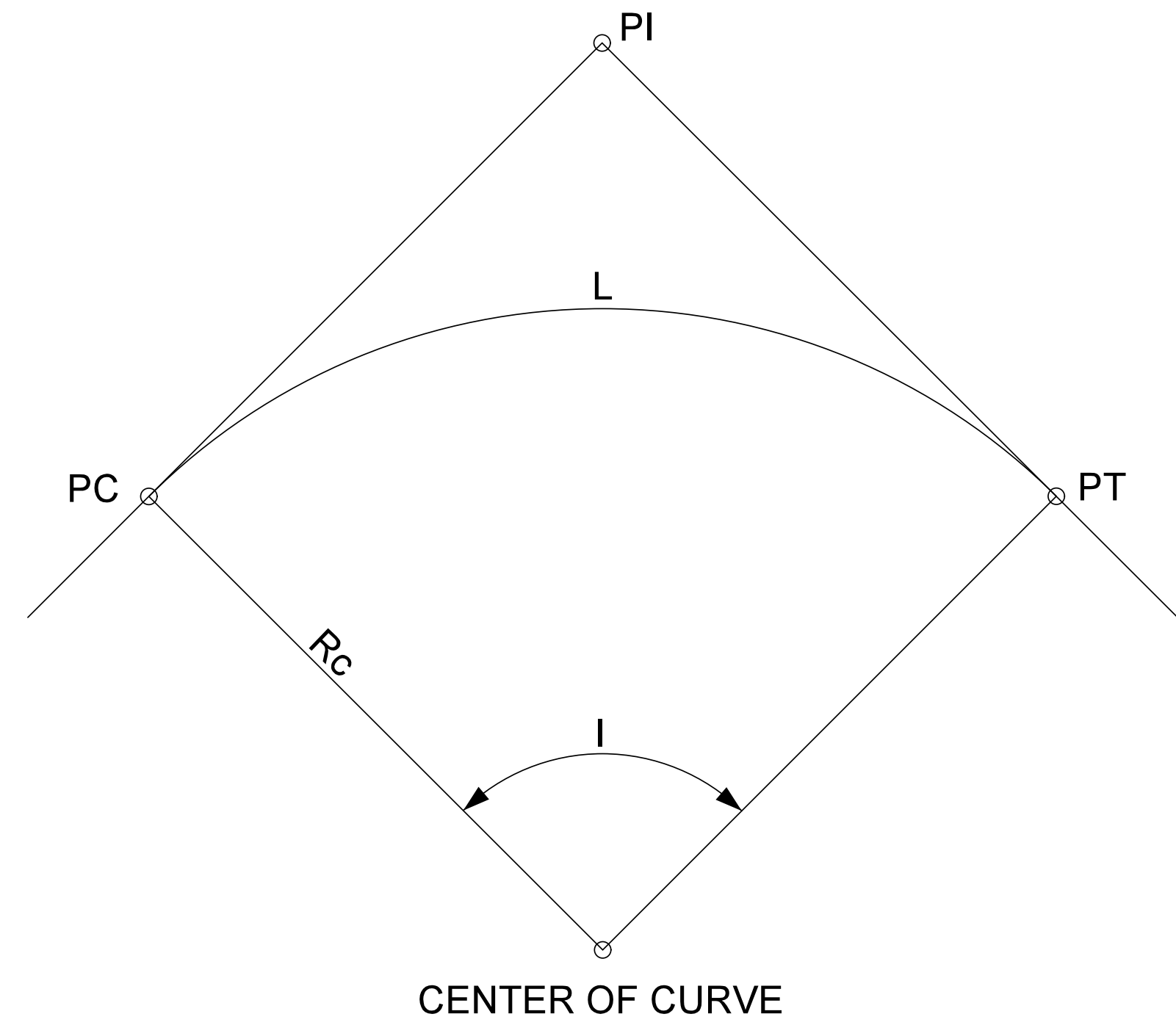
**TYPICAL SECTION RR-2**  
STA. 18+00.00(AH) TO BRIDGE ABUTMENT #1  
BRIDGE ABUTMENT #2 TO STA. 25+00.00(BK)

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|  |  |                          |  |
|--|--|--------------------------|--|
| PROJECT REFERENCE NO.<br><i>U-3308</i>                           |  | SHEET NO.<br><i>RR-3</i> |  |
| RW SHEET NO.   |  |                          |  |
| RAIL DESIGN ENGINEER   |  | HYDRAULICS ENGINEER      |  |
|  |  |                          |  |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED |  |                          |  |

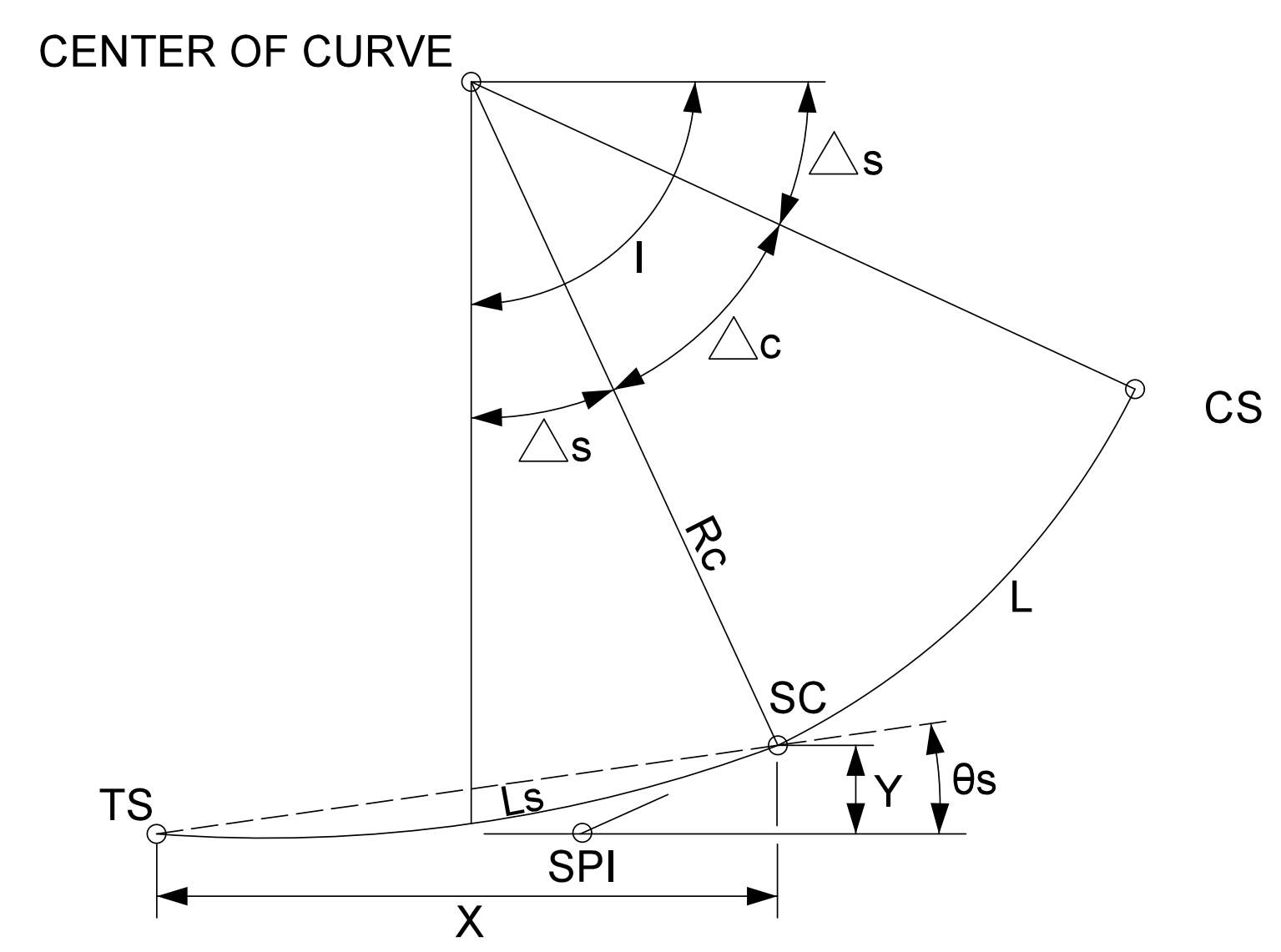


**FIGURE A**  
CIRCULAR CURVE WITH SPIRAL TRANSITION

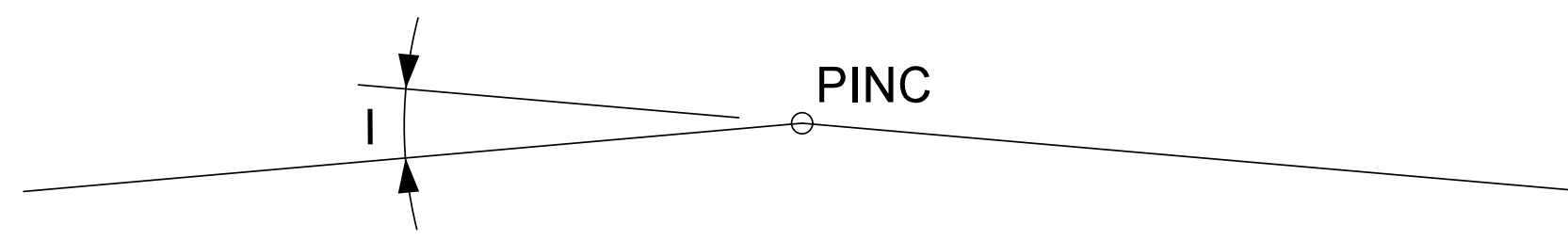


**FIGURE B**  
SIMPLE CIRCULAR CURVE

- △c CURVE ANGLE
- △s SPIRAL ANGLE
- θs SPIRAL DEFLECTION
- CS CURVE TO SPIRAL
- Dc DEGREE OF CURVATURE (CHORD DEFINITION)
- I TOTAL INTERSECTION ANGLE
- L LENGTH OF CURVE (CHORD DEFINITION)
- Ls LENGTH OF SPIRAL
- PC POINT OF (CIRCULAR CURVATURE)
- PI POINT OF INTERSECTION (CURVE)
- PINC POINT OF INTERSECTION, NO CURVE
- PT POINT OF TANGENCY
- Rc RADIUS OF CIRCULAR CURVE
- SC SPIRAL TO CURVE
- SPI POINT OF INTERSECTION (SPIRAL)
- ST SPIRAL TO TANGENT
- TS TANGENT TO SPIRAL
- X SPIRAL TANGENT LENGTH TO OFFSET
- Y SPIRAL TANGENT OFFSET



**FIGURE C**  
SPIRAL TRANSITION CURVE



**FIGURE D**  
DEFLECTION BETWEEN TANGENTS

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-3A  |
| RW SHEET NO.                    |                     |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TRACK GEOMETRY DATA

-NSS- = PROPOSED NSR MAIN TRACK = BEST-FIT ALIGNMENT OF SURVEYED EXISTING TRACK

| FEATURE NAME | DESC. | STATION  | NORTHING   | EASTING      | BEARING  | DISTANCE | Rc (ft) | Dc | L (ft) | I                  | Δc | Δs | Θs | Ls (ft) | X (ft) | Y (ft) | V (MPH) | E (in) | Ea (in) | Eu (in) |  |
|--------------|-------|----------|------------|--------------|--|----------|---------|----|--------|--------------------|----|----|----|---------|--------|--------|---------|--------|---------|---------|--|
| POT          |       | 11+00.00 | 813,620.47 | 2,031,771.55 | *** APPROXIMATE ST OF CURVE WEST OF GRANT ST *** |          |         |    |        |                    |    |    |    |         |        |        |         |        |         |         |  |
|              |       |          |            |              | S 62° 40' 35.49" E                               | 1,946.93 |         |    |        |                    |    |    |    |         |        |        |         |        |         |         |  |
| PINC         |       | 30+46.93 | 812,726.81 | 2,033,501.26 |  |          |         |    |        | 0° 01' 19.07" (RT) |    |    |    |         |        |        |         |        |         |         |  |
|              |       |          |            |              | S 62° 39' 16.42" E                               | 692.38   |         |    |        |                    |    |    |    |         |        |        |         |        |         |         |  |
| PINC         |       | 37+39.31 | 812,408.76 | 2,034,116.27 |  |          |         |    |        | 0° 00' 47.81" (LT) |    |    |    |         |        |        |         |        |         |         |  |
|              |       |          |            |              | S 62° 40' 04.23" E                               | 389.92   |         |    |        |                    |    |    |    |         |        |        |         |        |         |         |  |
| POT          |       | 41+29.23 | 812,229.73 | 2,034,462.66 | *** END SURVEY ***                               |          |         |    |        |                    |    |    |    |         |        |        |         |        |         |         |  |

TRACK GEOMETRY DATA

-NSD2- = PROPOSED NSR MAIN TRACK DETOUR TRACK

| FEATURE NAME | DESC. | STATION  | NORTHING   | EASTING      | BEARING   | DISTANCE | Rc (ft)  | Dc            | L (ft) | I                   | Δc                   | Δs | Θs | Ls (ft) | X (ft) | Y (ft) | Vf<br>Vp (MPH) | Ef<br>Ep (in) | Ea (in) | Eu,f<br>Eu,p (in) |      |  |
|--------------|-------|----------|------------|--------------|---|----------|----------|---------------|--------|---------------------|----------------------|----|----|---------|--------|--------|----------------|---------------|---------|-------------------|------|--|
| POT          |       | 11+00.00 | 813,620.47 | 2,031,771.55 | *** APPROXIMATE ST OF CURVE WEST OF GRANT ST ***        |          |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
|              |       |          |            |              | S 62° 40' 35.49" E                                      | 90.00    |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
|              |       |          |            |              | *** EQUATION: STA 11+90.00 (BK) = STA 10+00.00 (AH) *** |          |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
| 4            | TS    | 10+00.00 | 813,579.16 | 2,031,851.50 |   |          |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
|              | SC    | 11+24.00 | 813,523.14 | 2,031,962.13 |   |          |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
|              | PI    | 11+90.69 | 813,493.98 | 2,032,022.11 |   |          | 2,546.64 | 2° 15' 00.00" | 133.33 | 5° 47' 23.35" (LT)  | 3° 00' 00.00" (LT)   |    |    |         |        |        | 50             | 3.94          | 2.00    | 1.94              |      |  |
|              | CS    | 12+57.33 | 813,468.00 | 2,032,083.52 |   |          |          |               |        |                     |                      |    |    |         |        |        |                | 55            | 4.76    |                   | 2.76 |  |
|              | ST    | 13+81.33 | 813,421.56 | 2,032,198.49 |   |          |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
|              |       |          |            |              | S 68° 27' 58.9" E                                       | 79.75    |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
| 1            | P/TO  | 14+61.08 | 813,392.29 | 2,032,272.68 |   |          |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
| NO. 10 RH    | PS    | 14+92.33 | 813,380.81 | 2,032,301.74 |   |          |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
|              |       |          |            |              | S 68° 27' 58.9" E                                       | 109.00   |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
| 5            | TS    | 16+01.33 | 813,340.81 | 2,032,403.14 |   |          |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
|              | SC    | 17+25.33 | 813,294.36 | 2,032,518.11 |   |          |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
|              | PI    | 19+21.06 | 813,218.11 | 2,032,698.37 |   |          | 2,546.64 | 2° 15' 00.00" | 390.66 | 11° 34' 46.74" (RT) | 8° 47' 23.3885" (RT) |    |    |         |        |        | 50             | 3.94          | 2.00    | 1.94              |      |  |
|              | CS    | 21+15.99 | 813,115.21 | 2,032,864.86 |   |          |          |               |        |                     |                      |    |    |         |        |        |                | 55            | 4.76    |                   | 2.76 |  |
|              | ST    | 22+39.99 | 813,048.31 | 2,032,969.27 |   |          |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
|              |       |          |            |              | S 56° 53' 12.10" E                                      | 220.00   |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
| 6            | TS    | 24+59.99 | 812,928.13 | 2,033,153.53 |   |          |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
|              | SC    | 25+83.99 | 812,861.23 | 2,033,257.94 |   |          |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
|              | PI    | 26+50.68 | 812,826.17 | 2,033,314.67 |   |          | 2,546.64 | 2° 15' 00.00" | 133.33 | 5° 47' 23.35" (LT)  | 3° 00' 00.00" (LT)   |    |    |         |        |        | 50             | 3.94          | 2.00    | 1.94              |      |  |
|              | CS    | 27+17.33 | 812,794.13 | 2,033,373.15 |   |          |          |               |        |                     |                      |    |    |         |        |        |                | 55            | 4.76    |                   | 2.76 |  |
|              | ST    | 28+41.33 | 812,736.32 | 2,033,482.85 |   |          |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
|              |       |          |            |              | S 62° 40' 35.49" E                                      | 20.73    |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
| POT          |       | 30+46.93 | 812,726.81 | 2,033,501.26 | *** EQUATION: STA 28+41.33 (BK) = 30+26.20 (AH) ***     |          |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |
|              |       |          |            |              | S 62° 40' 35.49" E                                      | 20.73    |          |               |        |                     |                      |    |    |         |        |        |                |               |         |                   |      |  |

SEE DWG. NO. RR-3 FOR ABBREVIATIONS AND NOMENCLATURE

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-3B  |
| RW SHEET NO.                    |                     |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

| TRACK GEOMETRY DATA   |       |          |            |              |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|---|-------|----------|------------|--------------|---|----------|----------|---------------|--------|--------------------|--------------------|----|----|---------|--------|--------|----------------|---------------|---------|-------------------|-----|--|
| -NSN- = PROPOSED NSR SIDING TRACK = BEST-FIT ALIGNMENT OF SURVEYED EXISTING TRACK |       |          |            |              |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
| FEATURE NAME  | DESC. | STATION  | NORTHING   | EASTING      | BEARING   | DISTANCE | Rc (ft)  | Dc            | L (ft) | I                  | Δc                 | Δs | Θs | Ls (ft) | X (ft) | Y (ft) | Vf<br>Vp (MPH) | Ef<br>Ep (in) | Ea (in) | Eu,f<br>Eu,p (in) |     |  |
|   | POT   | 10+25.00 | 813,664.62 | 2,031,718.31 |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   |       |          |            |              | S 62° 39' 48.33" E                                      | 2,116.59 |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   | PINC  | 31+41.59 | 812,692.65 | 2,033,598.53 |   |          |          |               |        | 0°00' 02.57" (LT)  |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   |       |          |            |              | S 62° 39' 50.90" E                                      | 980.47   |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   | POT   | 41+22.06 | 812,242.41 | 2,034,469.51 |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
| TRACK GEOMETRY DATA   |       |          |            |              |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
| -SW2- = PROPOSED NSR SIDING DETOUR TRACK  |       |          |            |              |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
| FEATURE NAME  | DESC. | STATION  | NORTHING   | EASTING      | BEARING   | DISTANCE | Rc (ft)  | Dc            | L (ft) | I                  | Δc                 | Δs | Θs | Ls (ft) | X (ft) | Y (ft) | Vf<br>Vp (MPH) | Ef<br>Ep (in) | Ea (in) | Eu,f<br>Eu,p (in) |     |  |
|   | POT   | 10+25.00 | 813,664.62 | 2,031,718.31 |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   |       |          |            |              | S 62° 39' 48.33" E                                      | 215.29   |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   | PC    | 10+00.00 | 813,565.75 | 2,031,909.56 | *** EQUATION: STA 12+40.29 (BK) = STA 10+00.0 (AH) ***  |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
| 14  | PI    | 10+56.36 | 813,539.87 | 2,031,959.63 |   |          | 1,910.08 | 3° 00' 00.00" | 112.68 | 3° 22' 49.38" (LT) | 3° 22' 49.38" (LT) |    |    |         |        |        | 10             | 0.21          | 0.00    | 0.21              |     |  |
|   |       |          |            |              |   |          |          |               |        |                    |                    |    |    |         |        |        |                | N/A           | N/A     | N/A               | N/A |  |
|   | PT    | 11+12.68 | 813,516.99 | 2,032,011.14 |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   |       |          |            |              | S 66° 02' 37.71" E                                      | 100.00   |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   | PC    | 12+12.68 | 813,476.38 | 2,032,102.52 |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
| 13  | PI    | 12+67.74 | 813,454.03 | 2,032,152.84 |   |          | 1,910.08 | 3° 00' 00.00" | 110.07 | 3° 18' 07.76" (RT) | 3° 18' 07.76" (RT) |    |    |         |        |        | 10             | 0.21          | 0.00    | 0.21              |     |  |
|   |       |          |            |              |   |          |          |               |        |                    |                    |    |    |         |        |        |                | N/A           | N/A     | N/A               | N/A |  |
|   | PT    | 13+22.75 | 813,428.81 | 2,032,201.78 |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   |       |          |            |              | S 62° 44' 29.9" E                                       | 79.75    |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   | P/TO  | 14+02.50 | 813,392.29 | 2,032,272.68 | *** EQUATION: STA 14+02.50 (BK) = STA 14+61.08 (AH) *** |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   |       |          |            |              | S 68° 27' 58.9" E                                       | 89.83    |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
| NO. 10 RH   | PS    | 14+92.33 | 813,380.81 | 2,032,301.74 |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |

| TRACK GEOMETRY DATA   |       |          |            |              |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|---|-------|----------|------------|--------------|---|----------|----------|---------------|--------|--------------------|--------------------|----|----|---------|--------|--------|----------------|---------------|---------|-------------------|-----|--|
| -RCSXN- = PROPOSED CSX MAIN TRACK = BEST-FIT ALIGNMENT OF SURVEYED EXISTING TRACK |       |          |            |              |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
| FEATURE NAME  | DESC. | STATION  | NORTHING   | EASTING      | BEARING   | DISTANCE | Rc (ft)  | Dc            | L (ft) | I                  | Δc                 | Δs | Θs | Ls (ft) | X (ft) | Y (ft) | Vf<br>Vp (MPH) | Ef<br>Ep (in) | Ea (in) | Eu,f<br>Eu,p (in) |     |  |
|   | POT   | 06+50.00 | 813,517.40 | 2,032,101.74 |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   |       |          |            |              | S 62° 42' 33.26" E                                      | 350.00   |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   | PINC  | 10+00.00 | 813,356.92 | 2,032,412.78 |   |          |          |               |        | 0° 07'05.37" (RT)  |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   |       |          |            |              | S 62° 35' 27.89" E                                      | 692.30   |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   | PINC  | 16+92.30 | 813,038.23 | 2,033,027.36 |   |          |          |               |        | 0° 06'28.18" (LT)  |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   |       |          |            |              | S 62° 41' 56.07" E                                      | 127.69   |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   | POT   | 18+19.99 | 812,979.66 | 2,033,140.84 |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
| TRACK GEOMETRY DATA   |       |          |            |              |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
| -EXCSXREV2- = PROPOSED CSX MAIN DETOUR TRACK                                      |       |          |            |              |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
| FEATURE NAME  | DESC. | STATION  | NORTHING   | EASTING      | BEARING   | DISTANCE | Rc (ft)  | Dc            | L (ft) | I                  | Δc                 | Δs | Θs | Ls (ft) | X (ft) | Y (ft) | Vf<br>Vp (MPH) | Ef<br>Ep (in) | Ea (in) | Eu,f<br>Eu,p (in) |     |  |
|   | POT   | 20+71.96 | 813,113.20 | 2,032,902.97 |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   |       |          |            |              | S 55° 43' 43.46" E                                      | 9.00     |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   | PC    | 20+80.96 | 813,108.13 | 2,032,910.41 |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
| EXCSXREV2   | PI    | 21+49.69 | 813,069.43 | 2,032,967.20 |   |          | 1,146.28 | 5° 00' 00.00" | 137.25 | 6° 51' 44.43" (LT) | 6° 51' 44.43" (LT) |    |    |         |        |        | 10             | 0.35          | 0.00    | 0.35              |     |  |
|   |       |          |            |              |   |          |          |               |        |                    |                    |    |    |         |        |        |                | N/A           | N/A     | N/A               | N/A |  |
|   | PT    | 22+18.20 | 813,037.79 | 2,033,028.21 | *** EQUATION: STA 22+18.20 (BK) = STA 16+92.30 (AH) *** |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   |       |          |            |              | S 62° 35' 27.89" E                                      | 0.00     |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |
|   | POT   | 16+92.30 | 813,038.23 | 2,033,027.36 |   |          |          |               |        |                    |                    |    |    |         |        |        |                |               |         |                   |     |  |

SEE DWG. NO. RR-3 FOR ABBREVIATIONS AND NOMENCLATURE

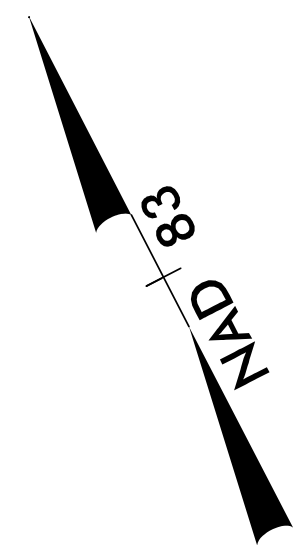




8/17/99

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

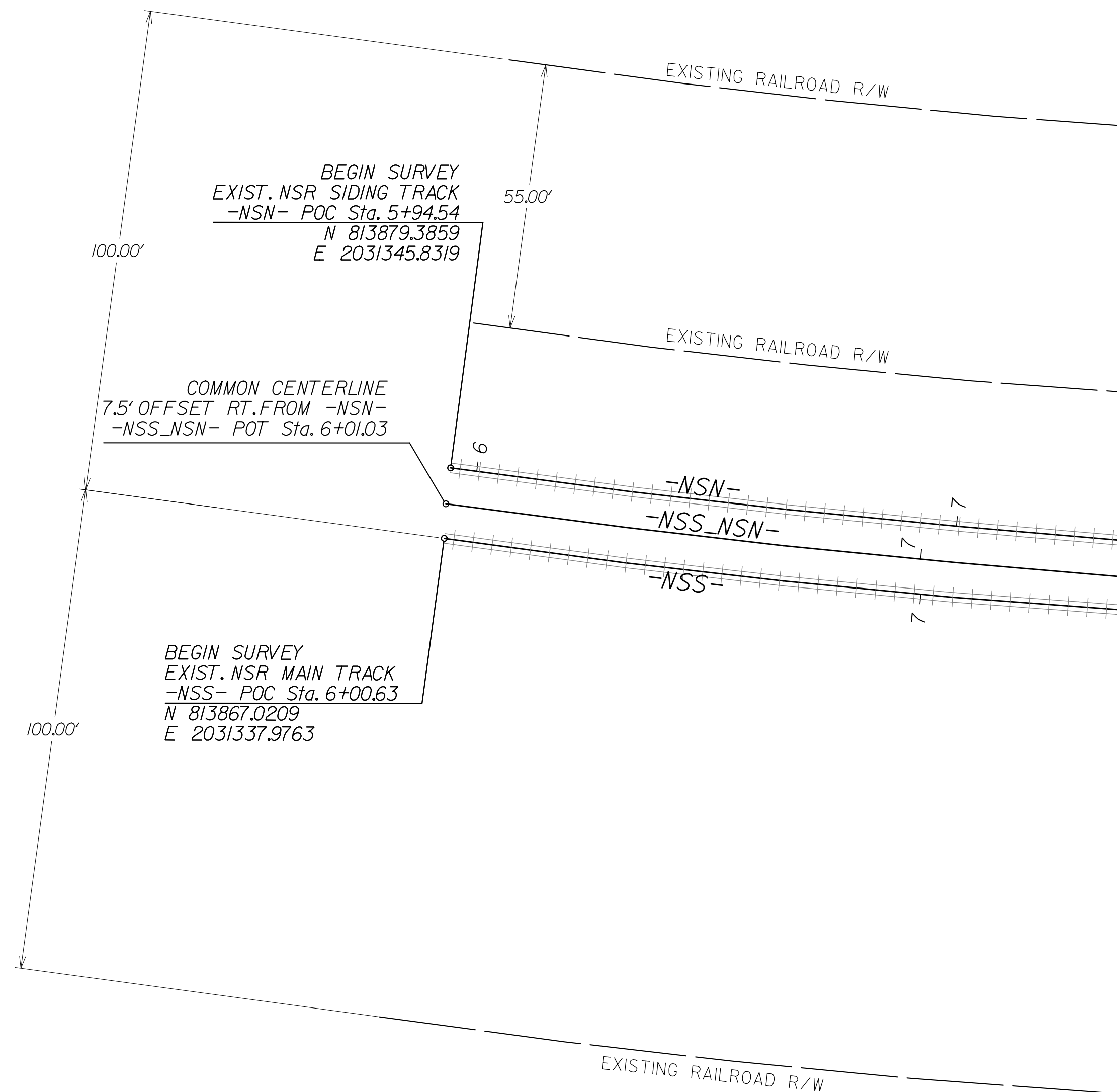
|   |  |   |  |
|---|--|---|--|
| PROJECT REFERENCE NO.<br>U-3308                                     |  | SHEET NO.<br>RR-4DET  |  |
| RW SHEET NO.  |  |   |  |
| RAIL DESIGN ENGINEER<br>KEVIN G. BAILEY<br>SEAL 28479<br>11/11/2015 |  | HYDRAULICS ENGINEER<br>CHRISTOPHER K. KIRK<br>SEAL 033404<br>11/11/2015 |  |



# DETOUR TRACK PLANS

FOR -NSD2- PROFILE SEE SHEETS RR-22 THROUGH RR-24  
FOR -SW2- PROFILE SEE SHEETS RR-25 THROUGH RR-26

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



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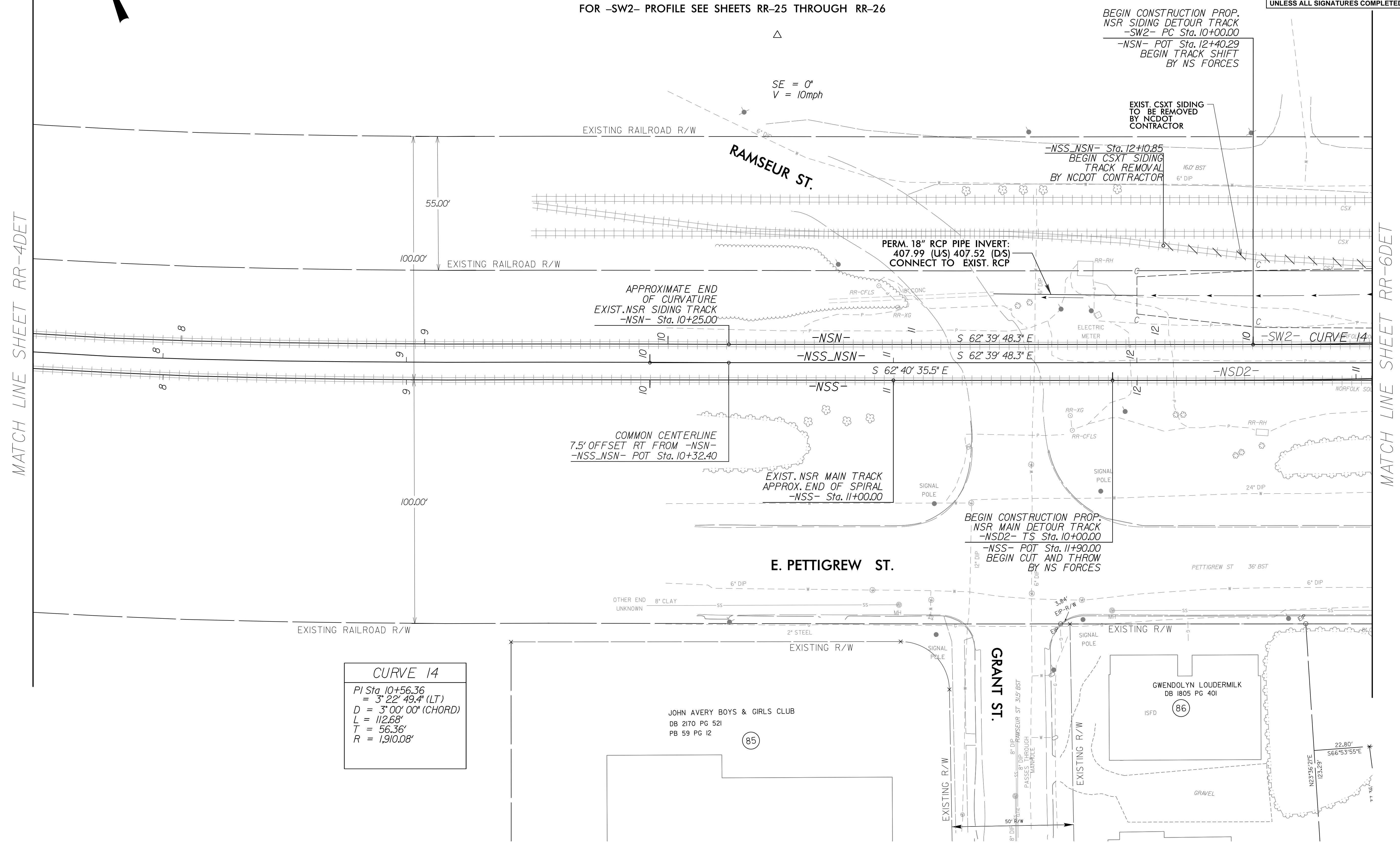
NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |  |                      |  |
|---------------------------------|--|----------------------|--|
| PROJECT REFERENCE NO.<br>U-3308 |  | SHEET NO.<br>RR-5DET |  |
| RW SHEET NO.                    |  | HYDRAULICS ENGINEER  |  |
| RAIL DESIGN ENGINEER            |  | SEAL<br>033404       |  |
|                                 |  |                      |  |

# DETOUR TRACK PLANS

FOR -NSD2- PROFILE SEE SHEETS RR-22 THROUGH RR-24  
FOR -SW2- PROFILE SEE SHEETS RR-25 THROUGH RR-26

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



MATCH LINE SHEET RR-4DET

MATCH LINE SHEET RR-6DET

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8/17/99

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                      |
|---------------------------------|----------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-6DET |
| RW SHEET NO.                    |                      |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER  |
|                                 |                      |

# DETOUR TRACK PLANS

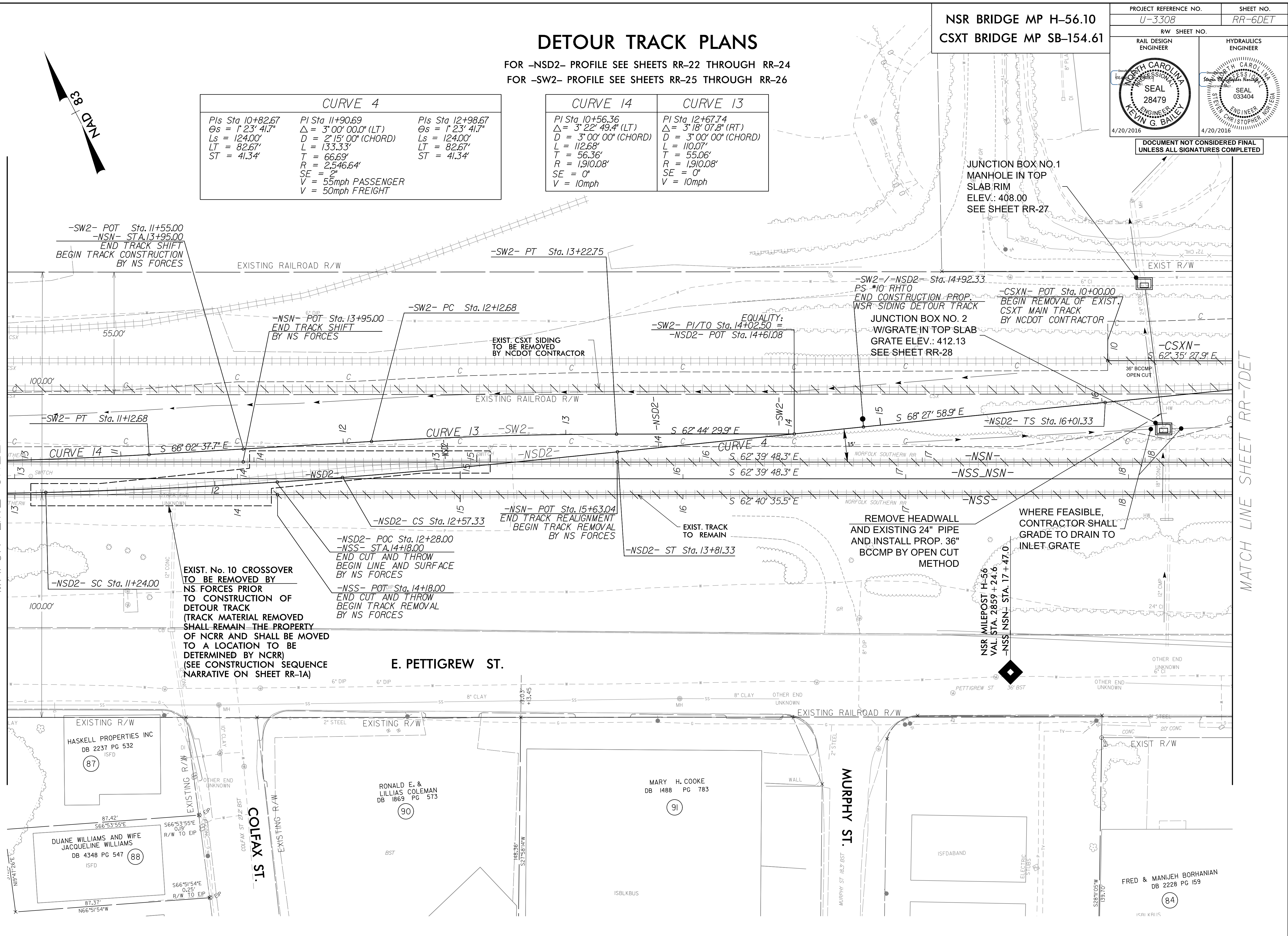
FOR -NSD2- PROFILE SEE SHEETS RR-22 THROUGH RR-24  
FOR -SW2- PROFILE SEE SHEETS RR-25 THROUGH RR-26

| CURVE 4                         |                                    |                                 |
|---------------------------------|------------------------------------|---------------------------------|
| Pls Sta. 10+82.67               | Pls Sta. 11+90.69                  | Pls Sta. 12+98.67               |
| $\Theta_s = 1^{\circ}23'41.7''$ | $\Delta = 3^{\circ}00'00.0''$ (LT) | $\Theta_s = 1^{\circ}23'41.7''$ |
| Ls = 124.00'                    | D = 2^{\circ}15'00" (CHORD)        | Ls = 124.00'                    |
| LT = 82.67'                     | L = 133.33'                        | LT = 82.67'                     |
| ST = 41.34'                     | T = 66.69'                         | ST = 41.34'                     |
|                                 | R = 2,546.64'                      |                                 |
|                                 | SE = 2"                            |                                 |
|                                 | V = 55mph PASSENGER                |                                 |
|                                 | V = 50mph FREIGHT                  |                                 |

| CURVE 14                           | CURVE 13                           |
|------------------------------------|------------------------------------|
| Pls Sta. 10+56.36                  | Pls Sta. 12+67.74                  |
| $\Delta = 3^{\circ}22'49.4''$ (LT) | $\Delta = 3^{\circ}18'07.8''$ (RT) |
| D = 3^{\circ}00'00" (CHORD)        | D = 3^{\circ}00'00" (CHORD)        |
| L = 112.68'                        | L = 110.07'                        |
| T = 56.36'                         | T = 55.06'                         |
| R = 1,910.08'                      | R = 1,910.08'                      |
| SE = 0"                            | SE = 0"                            |
| V = 10mph                          | V = 10mph                          |

MATCH LINE SHEET RR-5DET

MATCH LINE SHEET RR-7DET



-SW2- POT Sta. 11+55.00  
-NSN- STA. 13+95.00  
END TRACK SHIFT  
BEGIN TRACK CONSTRUCTION  
BY NS FORCES

-SW2- PT Sta. 11+12.68

-NSN- POT Sta. 13+95.00  
END TRACK SHIFT  
BY NS FORCES

-SW2- PT Sta. 13+22.75

-SW2- PC Sta. 12+12.68

EQUALITY:  
-SW2- PI/TO Sta. 14+02.50 =  
-NSD2- POT Sta. 14+61.08

-SW2- / -NSD2- Sta. 14+92.33  
PS \*10 RHTO  
END CONSTRUCTION PROP.  
NSR SIDING DETOUR TRACK  
JUNCTION BOX NO. 2  
W/GRATE IN TOP SLAB  
GRATE ELEV.: 412.13  
SEE SHEET RR-28

-CSXN- POT Sta. 10+00.00  
BEGIN REMOVAL OF EXIST.  
CSXT MAIN TRACK  
BY NCDOT CONTRACTOR

-CSXN-  
62°35'27.9" E

-NSD2- TS Sta. 16+01.33

-NSD2- CS Sta. 12+57.33  
-NSN- POT Sta. 15+63.04  
END TRACK REALIGNMENT  
BEGIN TRACK REMOVAL  
BY NS FORCES

-NSD2- SC Sta. 11+24.00

EXIST. No. 10 CROSSOVER  
TO BE REMOVED BY  
NS FORCES PRIOR  
TO CONSTRUCTION OF  
DETOUR TRACK  
(TRACK MATERIAL REMOVED  
SHALL REMAIN THE PROPERTY  
OF NCR AND SHALL BE MOVED  
TO A LOCATION TO BE  
DETERMINED BY NCR)  
(SEE CONSTRUCTION SEQUENCE  
NARRATIVE ON SHEET RR-1A)

-NSD2- POC Sta. 12+28.00  
-NSS- STA. 14+18.00  
END CUT AND THROW  
BEGIN LINE AND SURFACE  
BY NS FORCES

-NSS- POT Sta. 14+18.00  
END CUT AND THROW  
BEGIN TRACK REMOVAL  
BY NS FORCES

EXIST. TRACK  
TO REMAIN  
-NSD2- ST Sta. 13+81.33

REMOVE HEADWALL  
AND EXISTING 24" PIPE  
AND INSTALL PROP. 36"  
BCCMP BY OPEN CUT  
METHOD

WHERE FEASIBLE,  
CONTRACTOR SHALL  
GRADE TO DRAIN TO  
INLET GRATE

NSR MILEPOST H-56  
VAL. STA. 2859 + 24.6  
-NSS- NSN STA. 17 + 47.0

E. PETTIGREW ST.

EXISTING R/W  
HASKELL PROPERTIES INC  
DB 2237 PG 532  
ISFD (87)

DUANE WILLIAMS AND WIFE  
JACQUELINE WILLIAMS  
DB 4348 PG 547  
ISFD (88)

RONALD E. &  
LILLIAS COLEMAN  
DB 1869 PG 573  
(90)

MARY H. COOKE  
DB 1488 PG 783  
(91)

MURPHY ST.

ISFDABAND

FRED & MANJEH BORHANIAN  
DB 2228 PG 159  
(84)

P:\16\2016\513251\station\track\RAWA\_u3308\_r.dwg\_ps.RR-6A.dgn

|  |  |
|--|--|
| PROJECT REFERENCE NO.<br>U-3308                                      | SHEET NO.<br>RR-7DET   |
| RW SHEET NO.   |  |
| RAIL DESIGN ENGINEER<br>SEAL<br>28479<br>ENGINEER<br>KEVIN G. BAILEY | HYDRAULICS ENGINEER<br>SEAL<br>033404<br>ENGINEER<br>CHRISTOPHER |
| 4/20/2016  | 4/20/2016  |

# DETOUR TRACK PLANS

FOR -NSD2- PROFILE SEE SHEETS RR-22 THROUGH RR-24  
FOR -EXCSX- PROFILE SEE SHEET RR-20

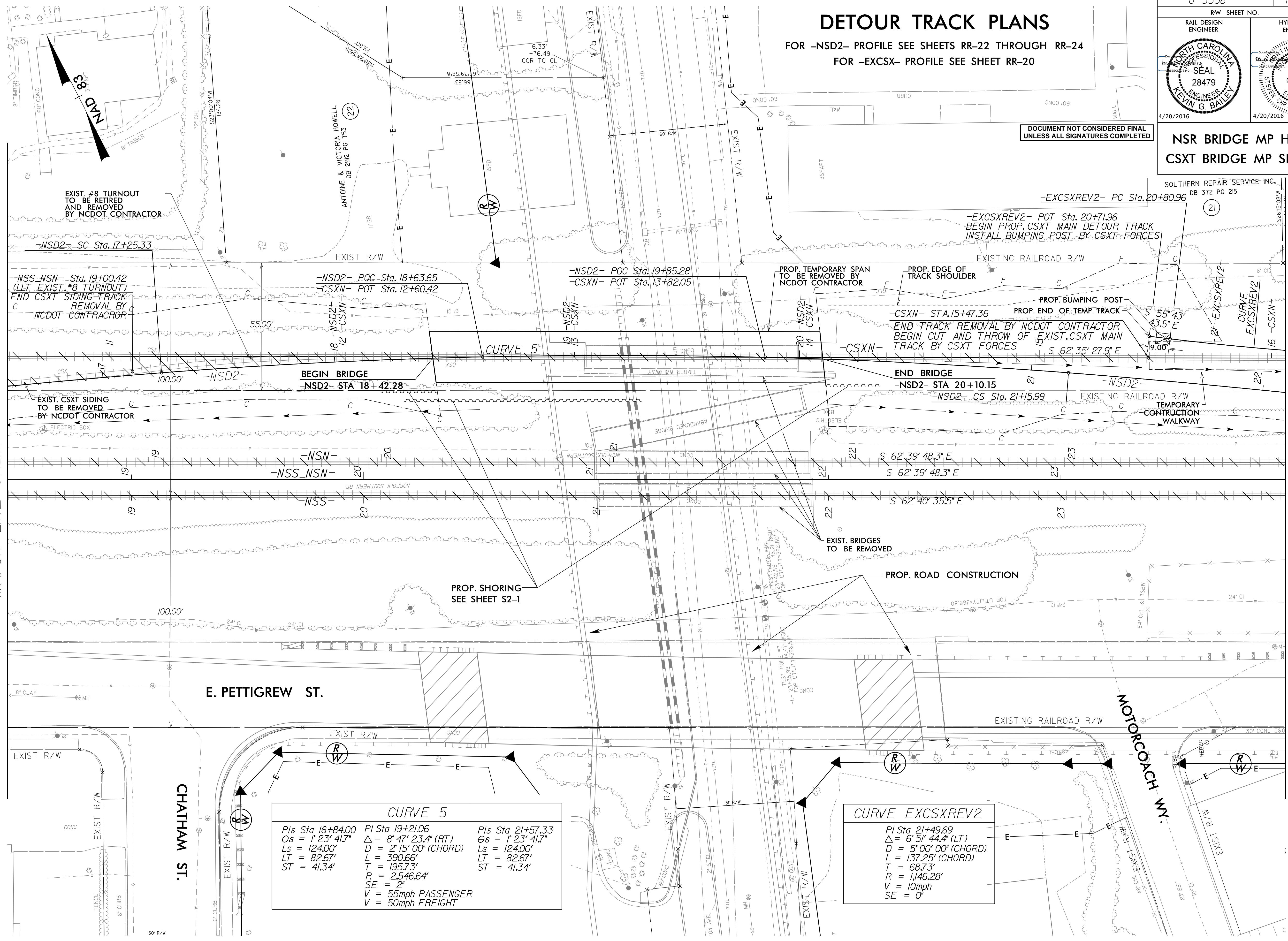
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

SOUTHERN REPAIR SERVICE INC.  
DB 372 PG 215

MATCH LINE SHEET RR-6DET

MATCH LINE SHEET RR-8DET



| CURVE 5           |                        |                   |
|-------------------|------------------------|-------------------|
| PIs Sta 16+84.00  | PI Sta 19+21.06        | PIs Sta 21+57.33  |
| Θs = 1° 23' 41.7" | Δ = 8° 47' 23.4" (RT)  | Θs = 1° 23' 41.7" |
| Ls = 124.00'      | D = 2' 15' 00" (CHORD) | Ls = 124.00'      |
| LT = 82.67'       | L = 390.66'            | LT = 82.67'       |
| ST = 41.34'       | T = 195.73'            | ST = 41.34'       |
|                   | R = 2,546.64'          |                   |
|                   | SE = 2'                |                   |
|                   | V = 55mph PASSENGER    |                   |
|                   | V = 50mph FREIGHT      |                   |

| CURVE EXCSXREV2        |                       |
|------------------------|-----------------------|
| PI Sta. 21+49.69       | Δ = 6° 51' 44.4" (LT) |
| D = 5' 00' 00" (CHORD) | L = 137.25' (CHORD)   |
| T = 68.73'             | R = 1,146.28'         |
| V = 10mph              | SE = 0°               |

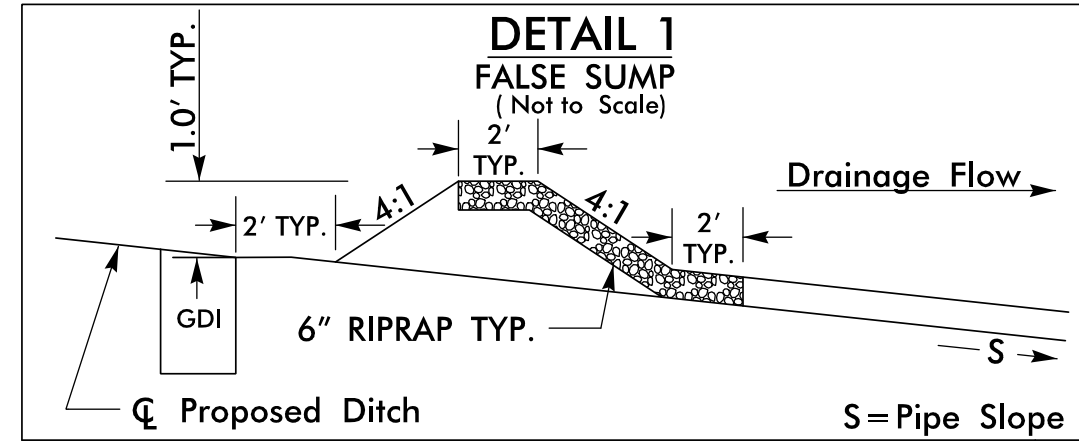
8/17/99

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                      |
|---------------------------------|----------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-8DET |
| RW SHEET NO.                    |                      |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER  |
|                                 |                      |

# DETOUR TRACK PLANS

FOR -NSD2- PROFILE SEE SHEETS RR-22 THROUGH RR-24  
FOR -EXCSX- PROFILE SEE SHEET RR-20



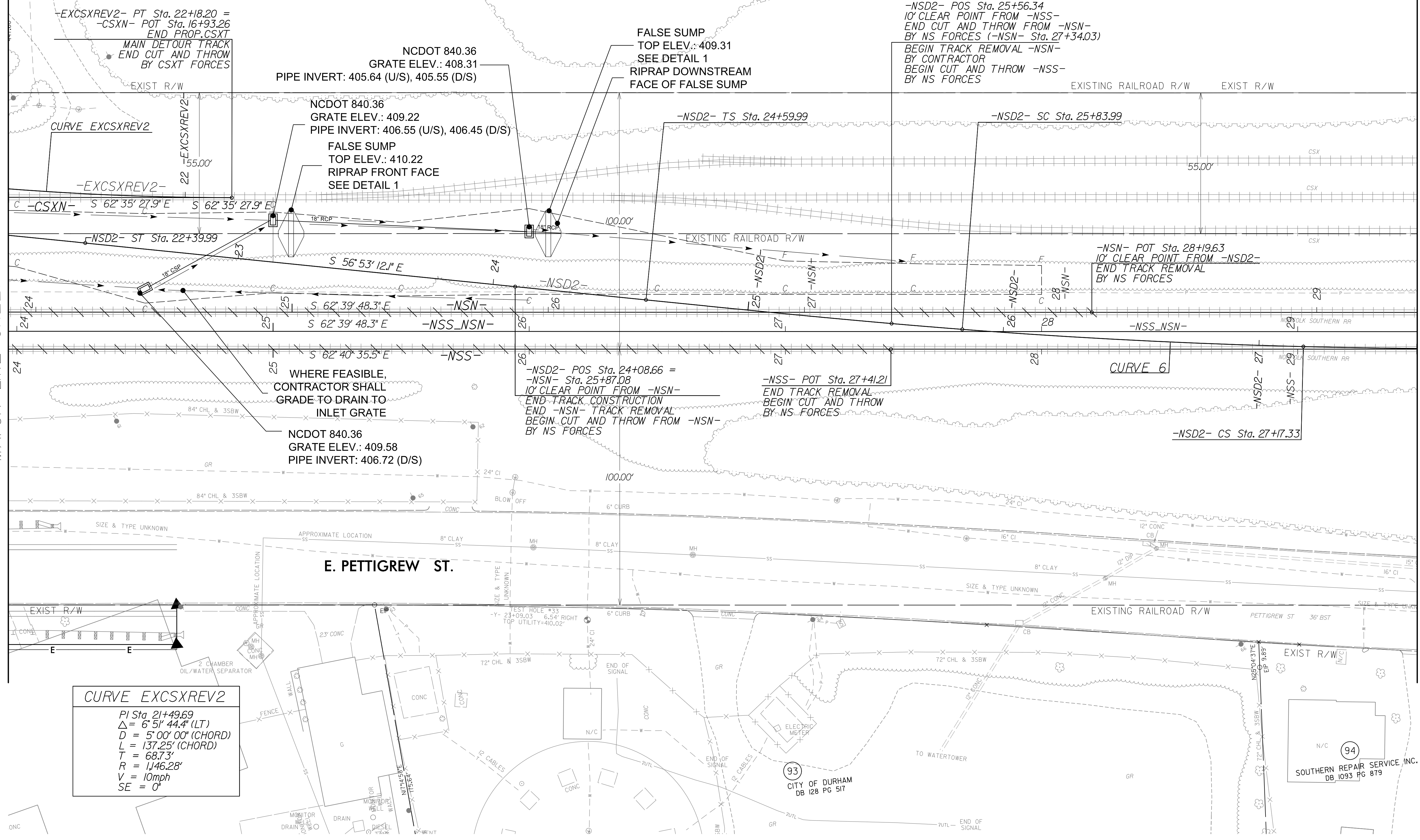
| CURVE 6                         |                                    |                                 |
|---------------------------------|------------------------------------|---------------------------------|
| PIs Sta. 25+42.66               | PI Sta. 26+50.68                   | PIs Sta. 27+58.66               |
| $\theta_s = 1^\circ 23' 41.7''$ | $\Delta = 3^\circ 00' 00.0''$ (LT) | $\theta_s = 1^\circ 23' 41.7''$ |
| $L_s = 124.00'$                 | $D = 2^\circ 15' 00''$ (CHORD)     | $L_s = 124.00'$                 |
| $LT = 82.67'$                   | $L = 133.33'$                      | $LT = 82.67'$                   |
| $ST = 41.34'$                   | $T = 66.69'$                       | $ST = 41.34'$                   |
|                                 | $R = 2,546.64'$                    |                                 |
|                                 | $V = 55\text{mph PASSENGER}$       |                                 |
|                                 | $V = 50\text{mph FREIGHT}$         |                                 |
|                                 | $SE = 2''$                         |                                 |

FROM -NSS\_NSN- STA. 25+05 TO STA. 25+15  
FROM -NSS\_NSN- STA. 26+05 TO STA. 26+15

-NSD2- POS Sta. 25+56.34  
10' CLEAR POINT FROM -NSS-  
END CUT AND THROW FROM -NSN-  
BY NS FORCES (-NSN- Sta. 27+34.03)  
BEGIN TRACK REMOVAL -NSN-  
BY CONTRACTOR  
BEGIN CUT AND THROW -NSS-  
BY NS FORCES

MATCH LINE SHEET RR-7DET

MATCH LINE SHEET RR-9DET



| CURVE EXCSXREV2                    |  |
|------------------------------------|--|
| PI Sta. 21+49.69                   |  |
| $\Delta = 6^\circ 51' 44.4''$ (LT) |  |
| $D = 5^\circ 00' 00''$ (CHORD)     |  |
| $L = 137.25'$ (CHORD)              |  |
| $T = 68.73'$                       |  |
| $R = 1,146.28'$                    |  |
| $V = 10\text{mph}$                 |  |
| $SE = 0''$                         |  |

94  
SOUTHERN REPAIR SERVICE, INC.  
DB 1093 PG 879

93  
CITY OF DURHAM  
DB 128 PG 517

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NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                      |
|---------------------------------|----------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-9DET |
| RW SHEET NO.                    |                      |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER  |
|                                 |                      |

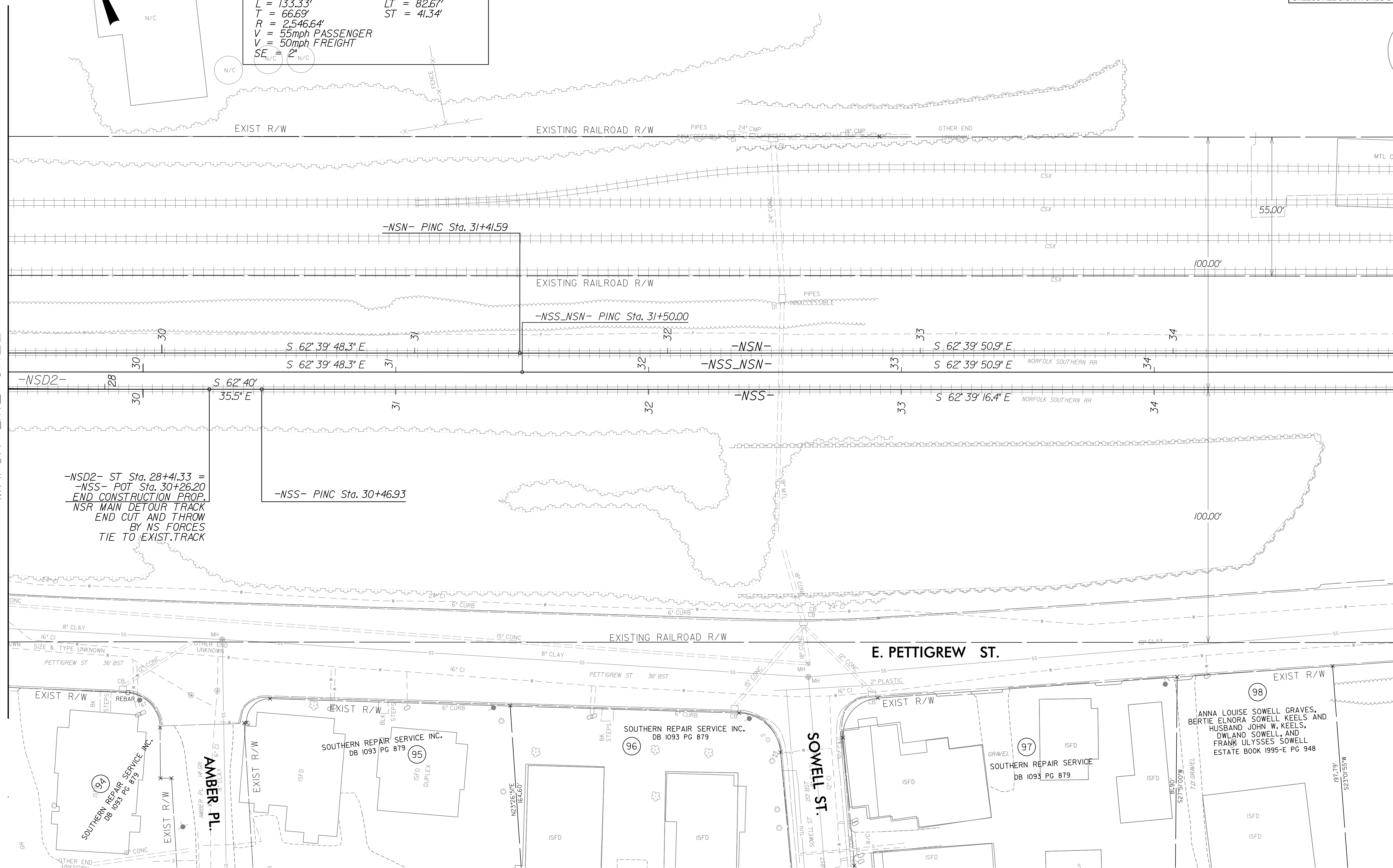
# DETOUR TRACK PLANS

FOR -NSD2- PROFILE SEE SHEETS RR-22 THROUGH RR-24

| CURVE 6                            |                                 |
|------------------------------------|---------------------------------|
| PI Sta. 26+50.68                   | PIs Sta. 27+58.66               |
| $\Delta = 3^{\circ}00'00.0''$ (LT) | $\Theta_s = 1^{\circ}23'41.7''$ |
| $D = 2^{\circ}15'00''$ (CHORD)     | $L_s = 124.00'$                 |
| $L = 133.33'$                      | $LT = 82.67'$                   |
| $T = 66.69'$                       | $ST = 41.34'$                   |
| $R = 2546.64'$                     |                                 |
| $V = 55\text{mph}$ PASSENGER       |                                 |
| $V = 50\text{mph}$ FREIGHT         |                                 |
| $SE_{N/C} = 2''$                   |                                 |

MATCH LINE SHEET RR-8DET

MATCH LINE SHEET RR-10DET



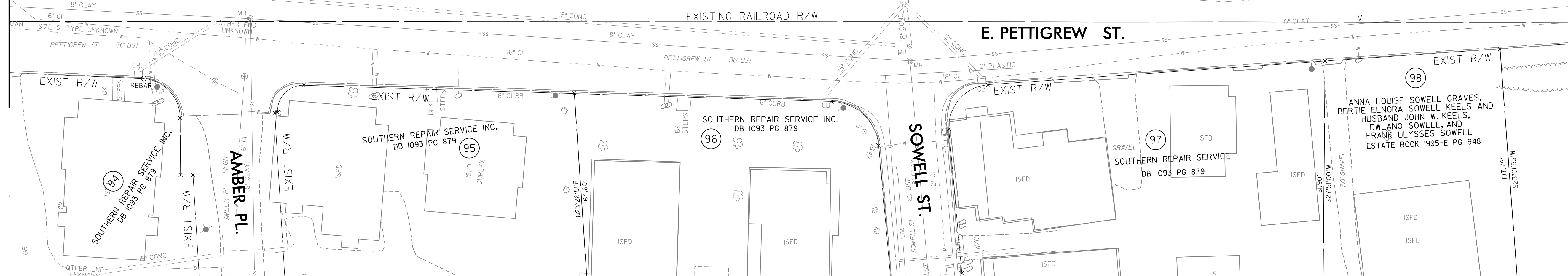
-NSD2- ST Sta. 28+41.33 =  
-NSS- POT Sta. 30+26.20  
END CONSTRUCTION PROP.  
NSR MAIN DETOUR TRACK  
END CUT AND THROW  
BY NS FORCES  
TIE TO EXIST. TRACK

-NSS- PINC Sta. 30+46.93

S 62° 39' 48.3" E  
S 62° 39' 48.3" E

-NSN-  
-NSS-NSN-  
S 62° 39' 50.9" E  
S 62° 39' 50.9" E

-NSN-  
-NSS-  
S 62° 39' 16.4" E  
NORFOLK SOUTHERN RR



SOUTHERN REPAIR SERVICE INC.  
DB 1093 PG 879

SOUTHERN REPAIR SERVICE INC.  
DB 1093 PG 879

SOUTHERN REPAIR SERVICE INC.  
DB 1093 PG 879

SOUTHERN REPAIR SERVICE  
DB 1093 PG 879

ANNA LOUISE SOWELL GRAVES,  
BERTIE ELNORA SOWELL KEELS AND  
HUSBAND JOHN W. KEELS,  
DWLANO SOWELL, AND  
FRANK ULYSSES SOWELL  
ESTATE BOOK 1995-E PG 948

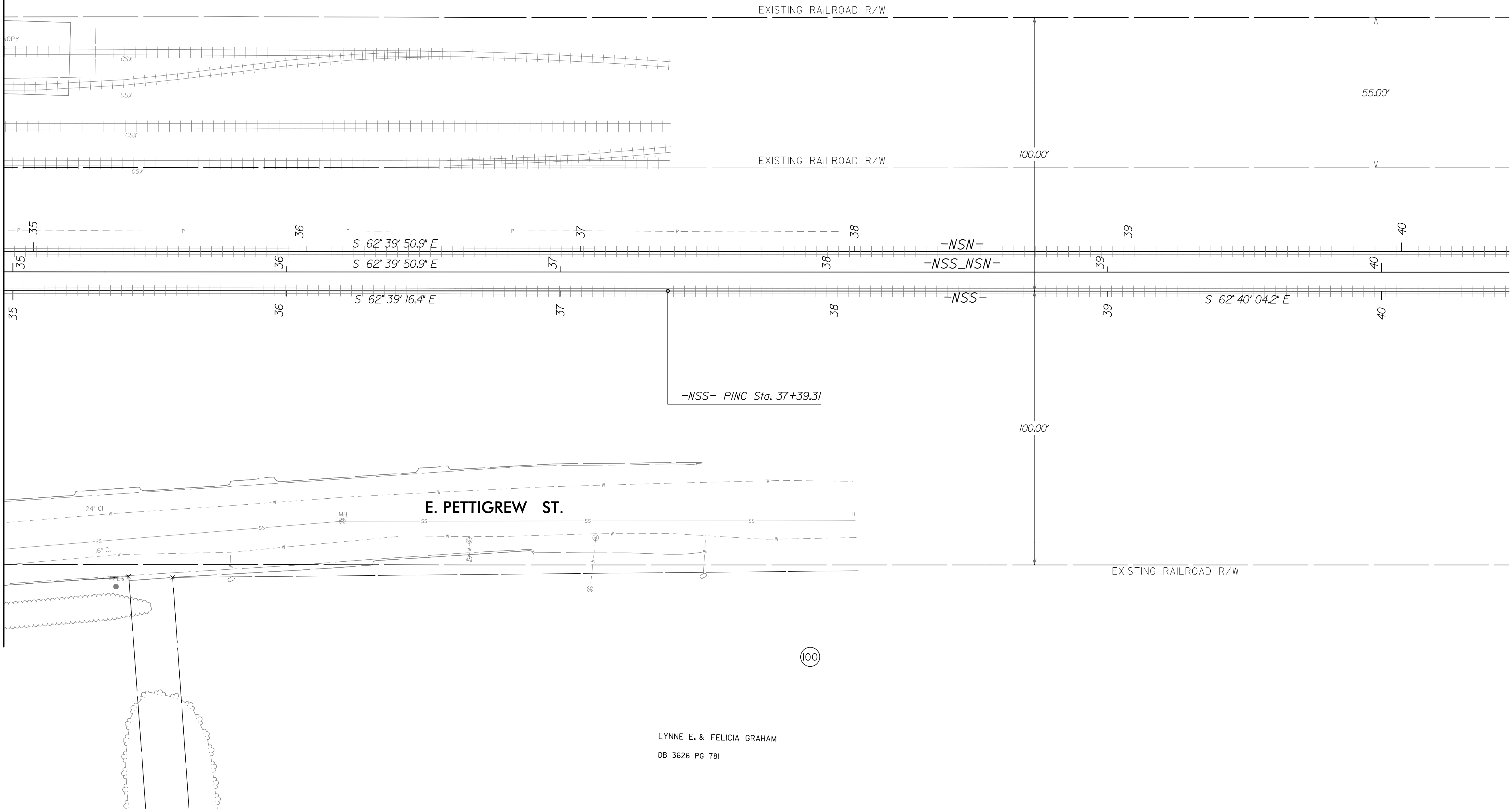
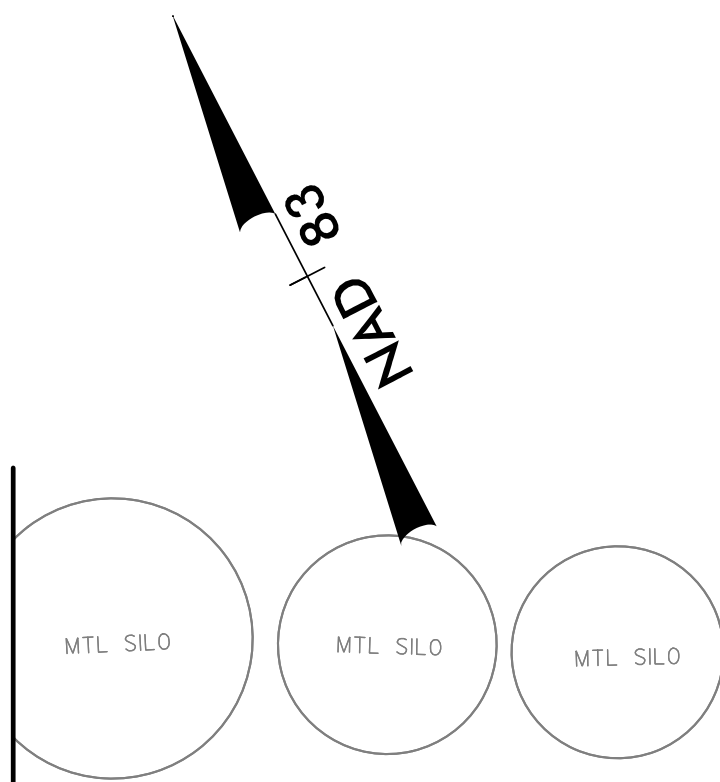
NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|  |  |
|--|--|
| PROJECT REFERENCE NO.<br>U-3308  | SHEET NO.<br>RR-10DET  |
| RW SHEET NO.   |  |
| RAIL DESIGN ENGINEER<br>SEAL<br>28479<br>ENGINEER<br>KEVIN G. BAILEY<br>12/11/2015 | HYDRAULICS ENGINEER<br>SEAL<br>033404<br>ENGINEER<br>CHRISTOPHER<br>12/11/2015 |

# DETOUR TRACK PLANS

FOR -NSD2- PROFILE SEE SHEETS RR-22 THROUGH RR-24

MATCH LINE SHEET RR-9DET

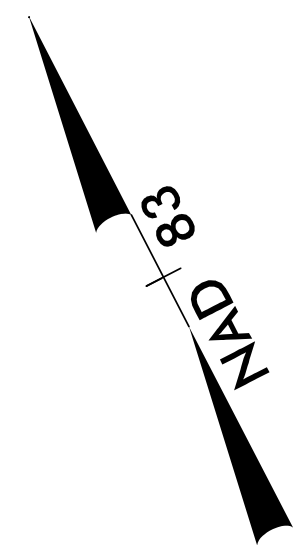


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UNLESS ALL SIGNATURES COMPLETED

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NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

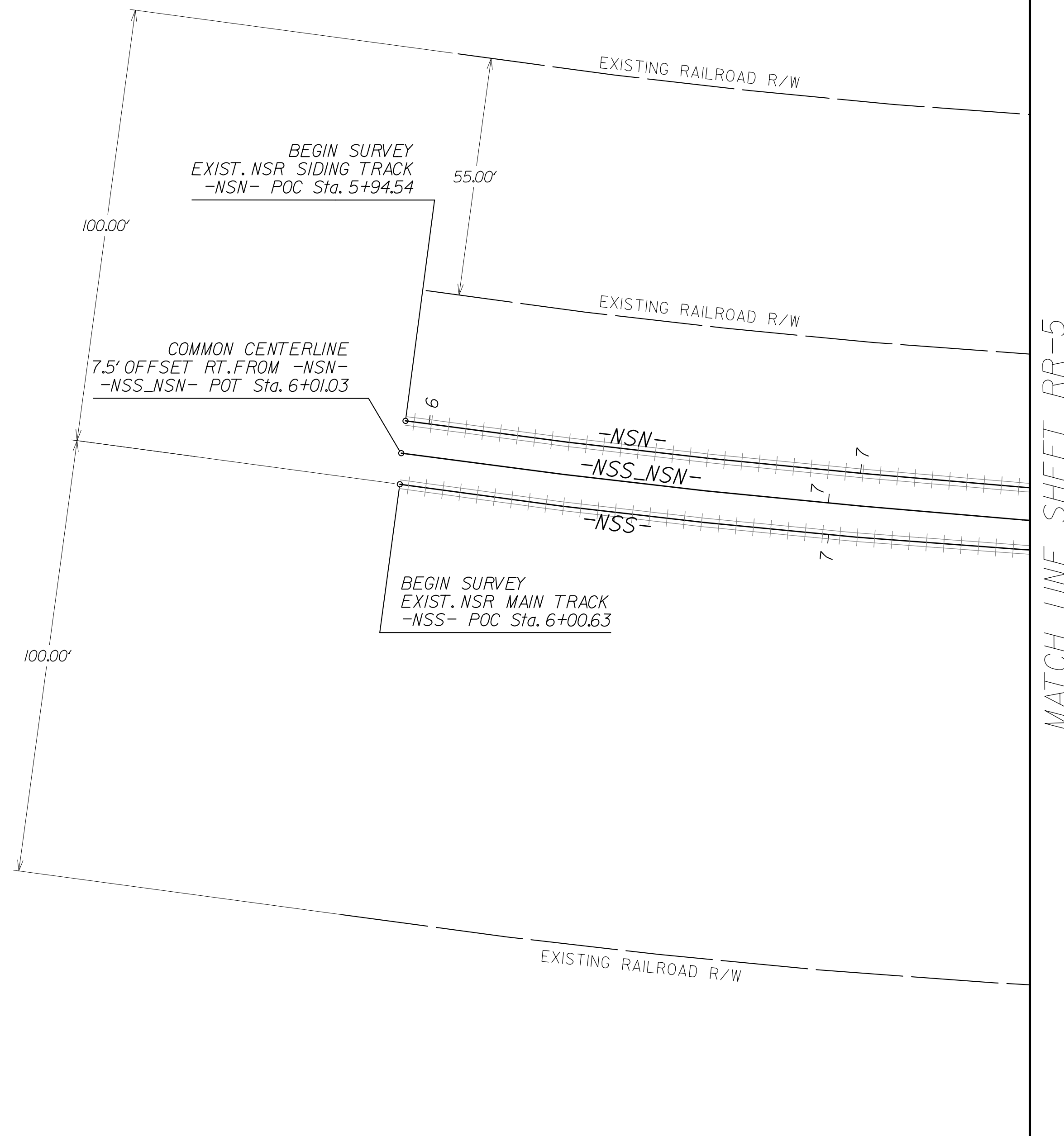
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| PROJECT REFERENCE NO.<br>U-3308                                      | SHEET NO.<br>RR-4  |
| RW SHEET NO.   |  |
| RAIL DESIGN ENGINEER<br>SEAL<br>28479<br>KIM G. BAILEY<br>12/11/2015 | HYDRAULICS ENGINEER<br>SEAL<br>033404<br>CHRISTOPHER<br>12/11/2015 |



# FINAL TRACK PLANS

FOR -NSS- PROFILE SEE SHEETS RR-12 THROUGH RR-15  
FOR -NSN- PROFILE SEE SHEETS RR-16 THROUGH RR-19

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



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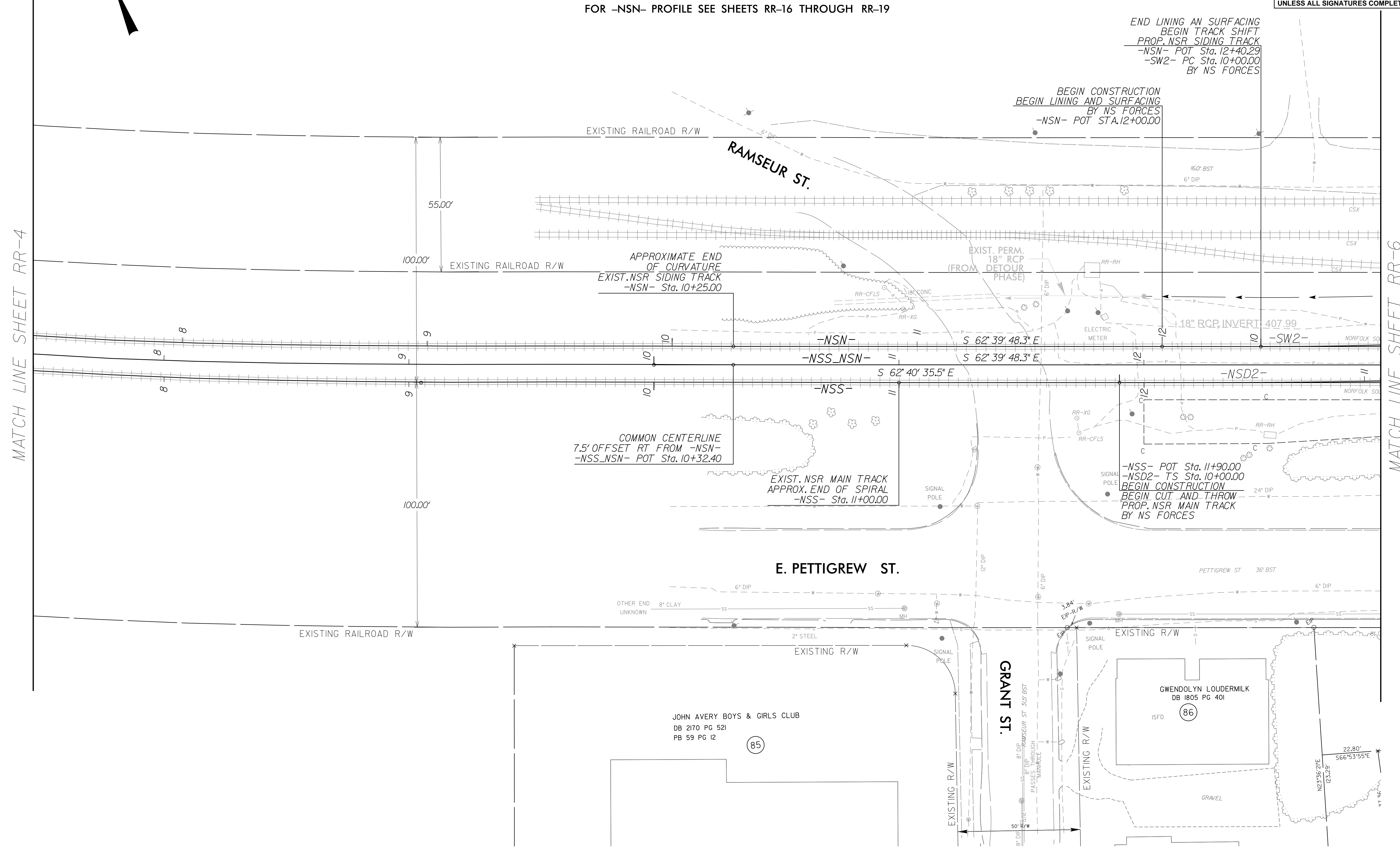
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CSXT BRIDGE MP SB-154.61

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-5   |
| RW SHEET NO.                    |                     |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

# FINAL TRACK PLANS

FOR -NSS- PROFILE SEE SHEETS RR-12 THROUGH RR-15  
FOR -NSN- PROFILE SEE SHEETS RR-16 THROUGH RR-19

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



MATCH LINE SHEET RR-4

MATCH LINE SHEET RR-6

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tedmondson

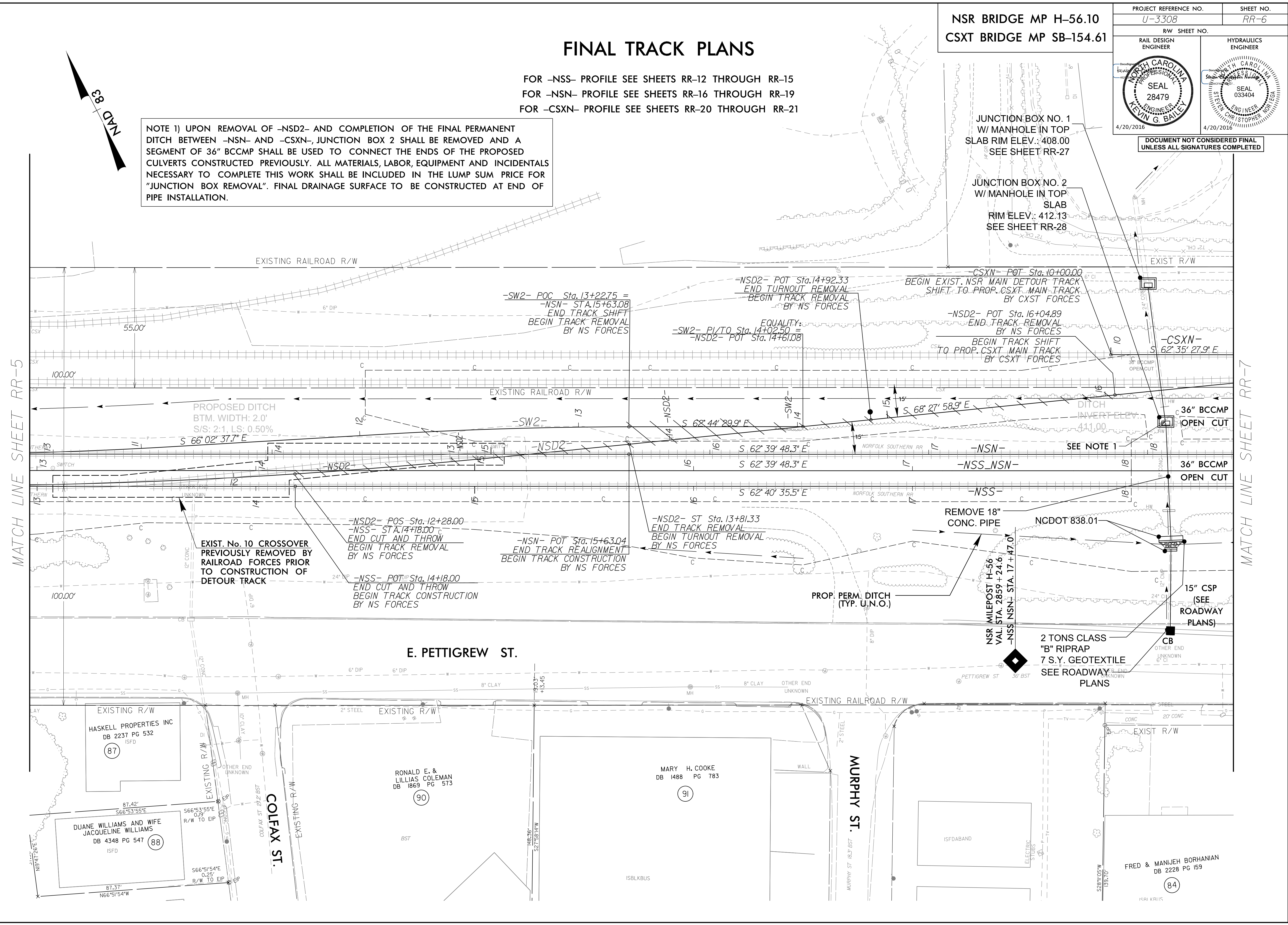
NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-6   |
| RW SHEET NO.                    |                     |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

# FINAL TRACK PLANS

FOR -NSS- PROFILE SEE SHEETS RR-12 THROUGH RR-15  
FOR -NSN- PROFILE SEE SHEETS RR-16 THROUGH RR-19  
FOR -CSXN- PROFILE SEE SHEETS RR-20 THROUGH RR-21

NOTE 1) UPON REMOVAL OF -NSD2- AND COMPLETION OF THE FINAL PERMANENT DITCH BETWEEN -NSN- AND -CSXN-, JUNCTION BOX 2 SHALL BE REMOVED AND A SEGMENT OF 36" BCCMP SHALL BE USED TO CONNECT THE ENDS OF THE PROPOSED CULVERTS CONSTRUCTED PREVIOUSLY. ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "JUNCTION BOX REMOVAL". FINAL DRAINAGE SURFACE TO BE CONSTRUCTED AT END OF PIPE INSTALLATION.



MATCH LINE SHEET RR-5

MATCH LINE SHEET RR-7

E. PETTIGREW ST.

COLFAX ST.

MURPHY ST.

HASKELL PROPERTIES INC  
DB 2237 PG 532  
ISFD

DUANE WILLIAMS AND WIFE  
JACQUELINE WILLIAMS  
DB 4348 PG 547  
ISFD

RONALD E. &  
LILLIAS COLEMAN  
DB 1869 PG 573

MARY H. COOKE  
DB 1488 PG 783

FRED & MANJEH BORHANIAN  
DB 2228 PG 159

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 2016/08/16 5:32:51 PM

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-7   |
| RW SHEET NO.                    |                     |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

# FINAL TRACK PLANS

FOR -NSS- PROFILE SEE SHEETS RR-12 THROUGH RR-15  
 FOR -NSN- PROFILE SEE SHEETS RR-16 THROUGH RR-19  
 FOR -CSXN- PROFILE SEE SHEETS RR-20 THROUGH RR-21

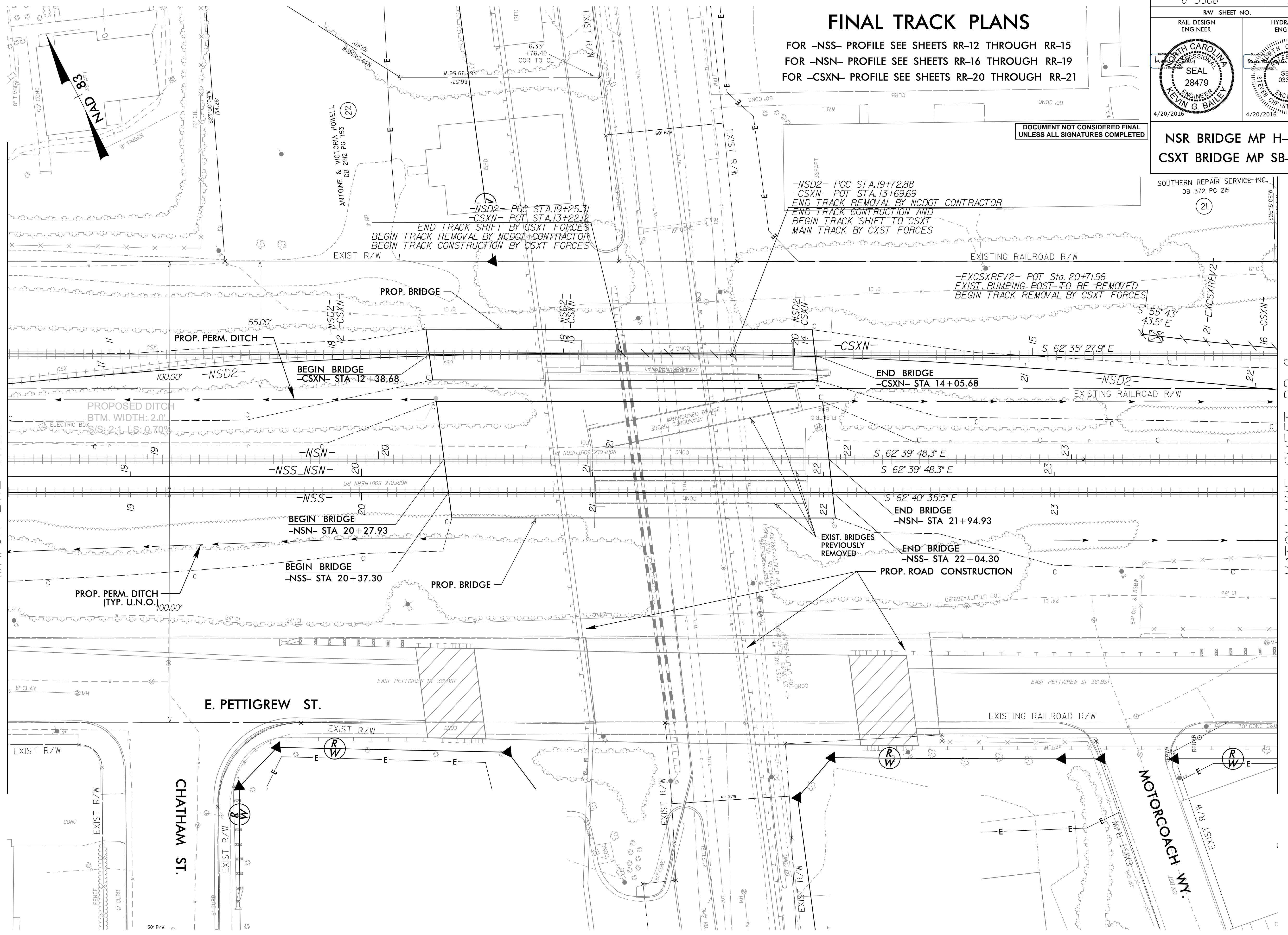
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 UNLESS ALL SIGNATURES COMPLETED

NSR BRIDGE MP H-56.10  
 CSXT BRIDGE MP SB-154.61

SOUTHERN REPAIR SERVICE-INC.  
 DB 372 PG 215

MATCH LINE SHEET RR-6

MATCH LINE SHEET RR-8



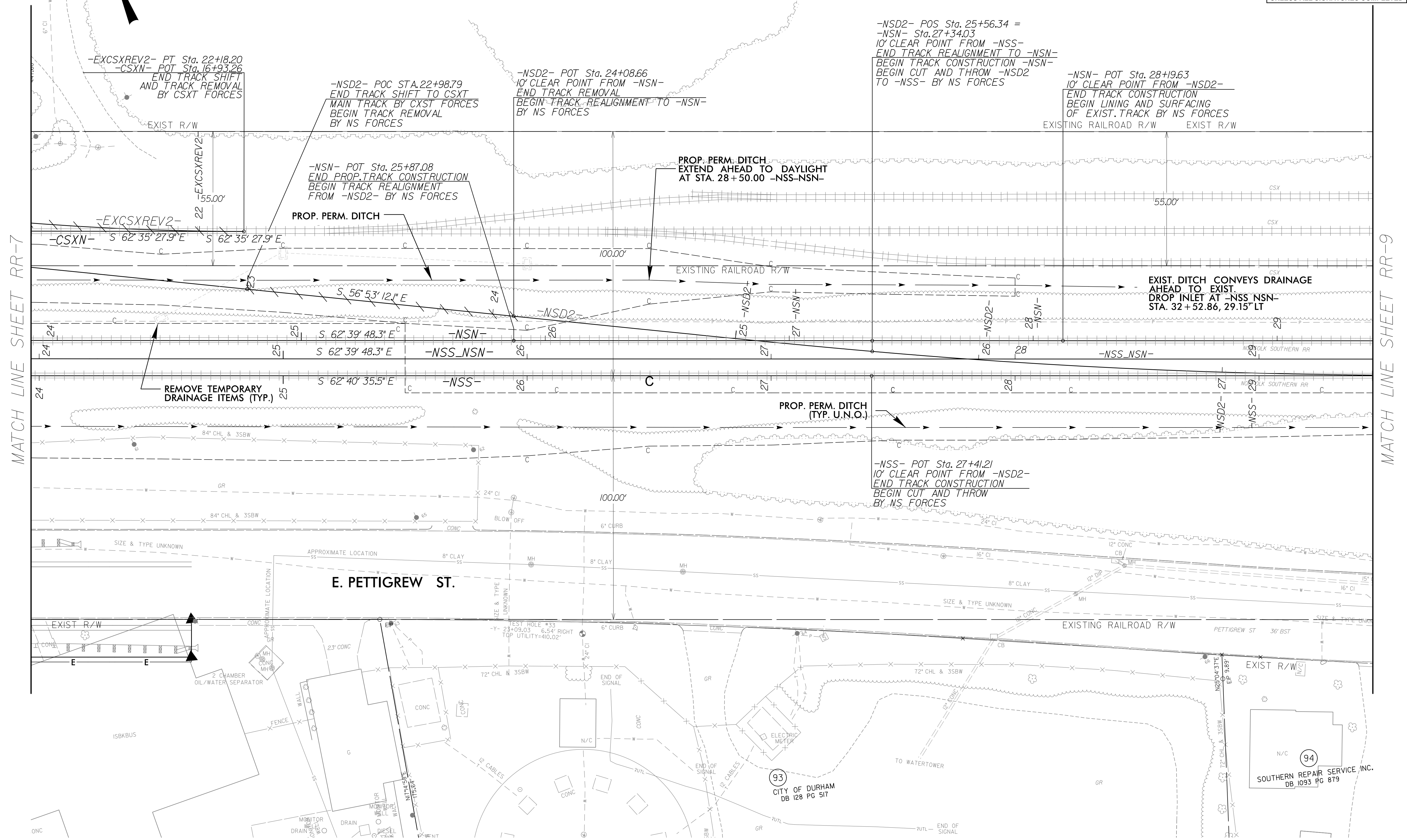
NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-8   |
| RW SHEET NO.                    |                     |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

# FINAL TRACK PLANS

FOR -NSS- PROFILE SEE SHEETS RR-12 THROUGH RR-15  
FOR -NSN- PROFILE SEE SHEETS RR-16 THROUGH RR-19  
FOR -CSXN- PROFILE SEE SHEETS RR-20 THROUGH RR-21



MATCH LINE SHEET RR-7

MATCH LINE SHEET RR-9

N/C 94  
SOUTHERN REPAIR SERVICE, INC.  
DB 1093 PG 879

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-9   |
| RW SHEET NO.                    |                     |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

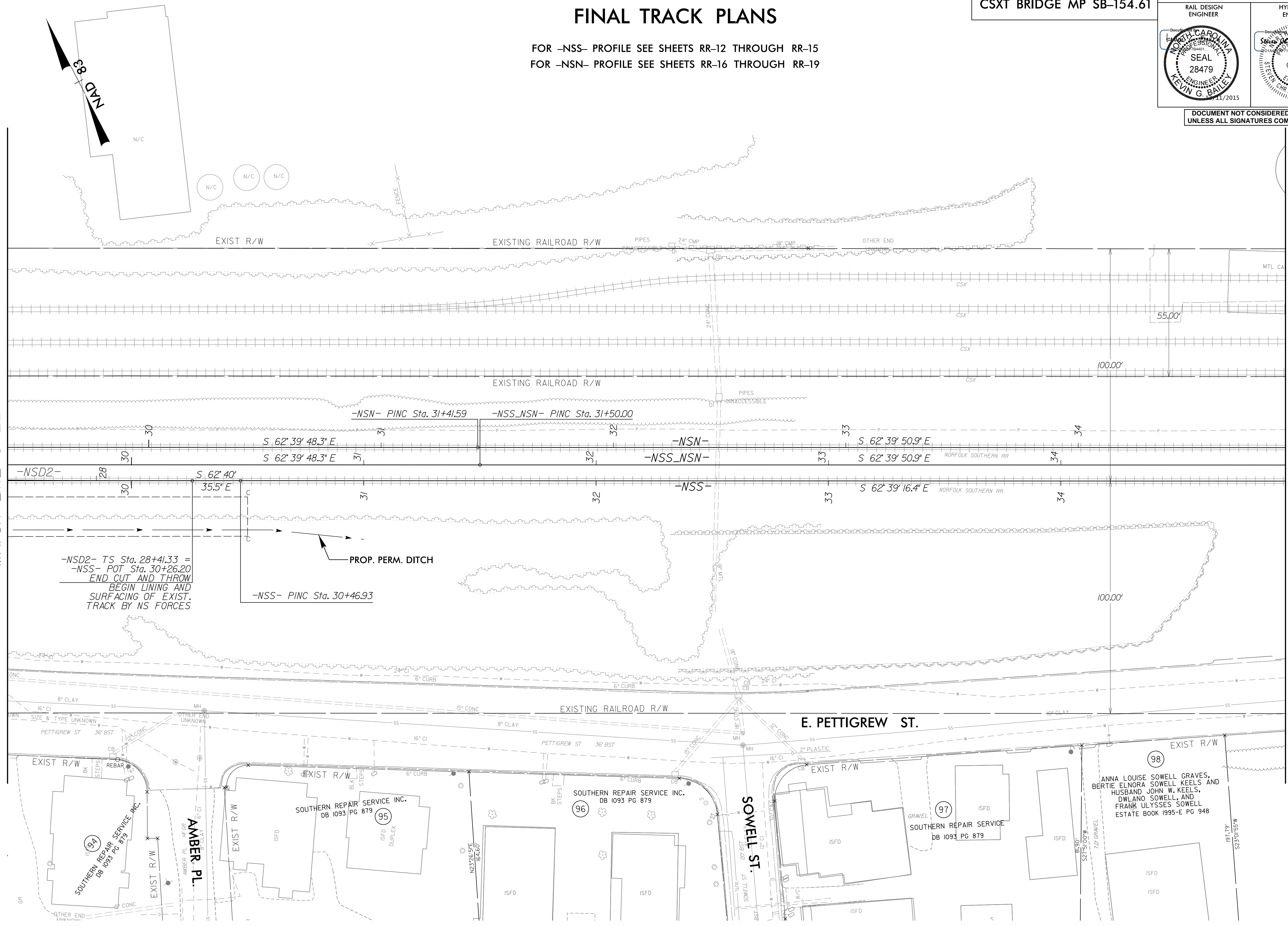
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UNLESS ALL SIGNATURES COMPLETED

# FINAL TRACK PLANS

FOR -NSS- PROFILE SEE SHEETS RR-12 THROUGH RR-15  
FOR -NSN- PROFILE SEE SHEETS RR-16 THROUGH RR-19

MATCH LINE SHEET RR-8

MATCH LINE SHEET RR-10



NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|  |  |
|--|--|
| PROJECT REFERENCE NO.<br>U-3308  | SHEET NO.<br>RR-10   |
| RW SHEET NO.   |  |
| RAIL DESIGN ENGINEER<br>SEAL<br>28479<br>ENGINEER<br>KEVIN G. BAILEY<br>11/11/2015 | HYDRAULICS ENGINEER<br>SEAL<br>033404<br>ENGINEER<br>CHRISTOPHER<br>11/11/2015 |

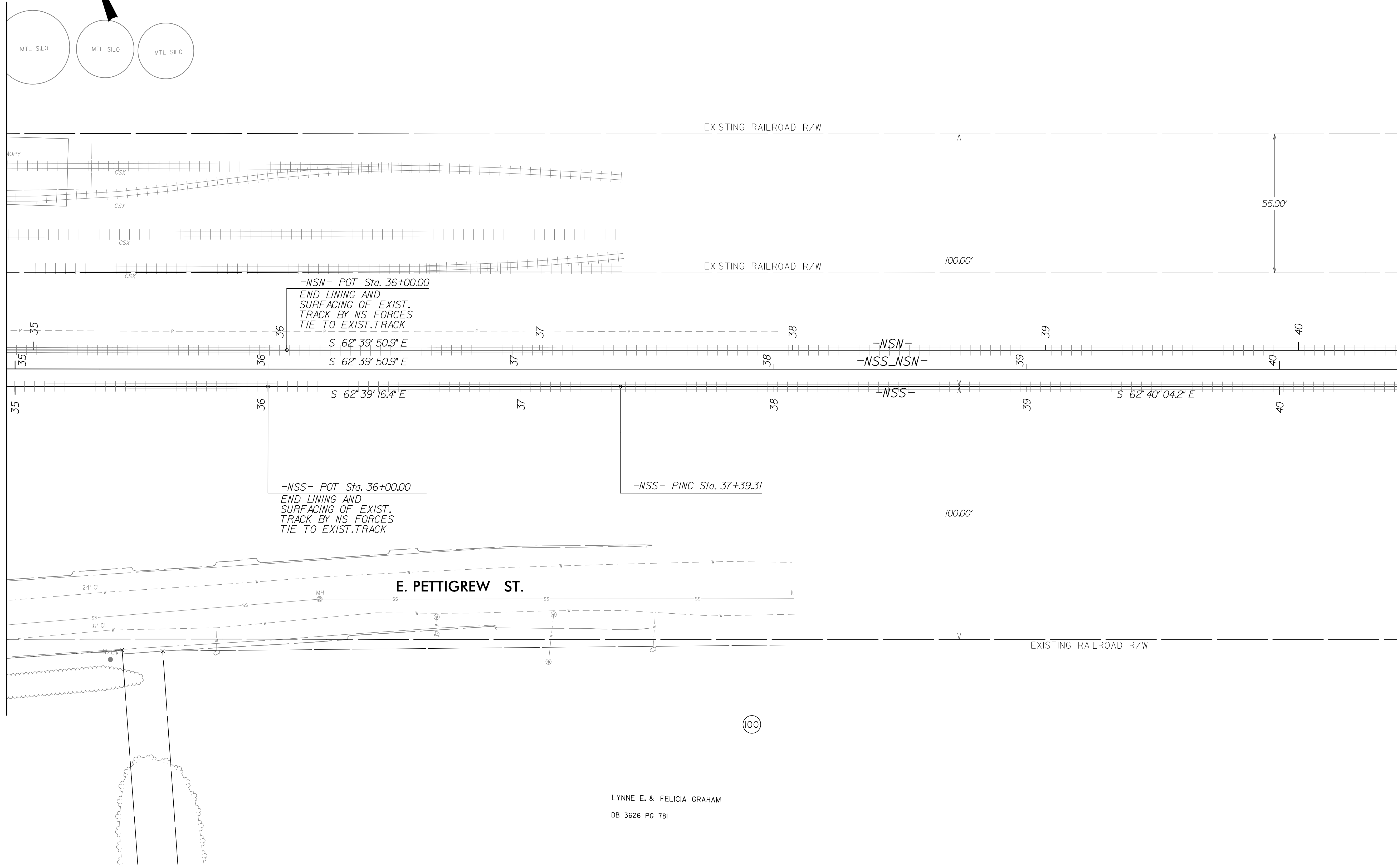
# FINAL TRACK PLANS

FOR -NSS- PROFILE SEE SHEETS RR-12 THROUGH RR-15  
FOR -NSN- PROFILE SEE SHEETS RR-16 THROUGH RR-19

DOCUMENT NOT CONSIDERED FINAL  
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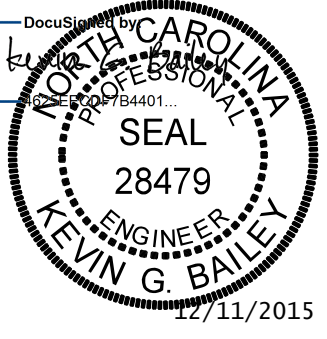
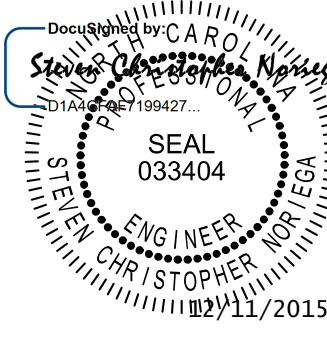
MATCH LINE SHEET RR-9

MATCH LINE SHEET RR-11



8/17/99

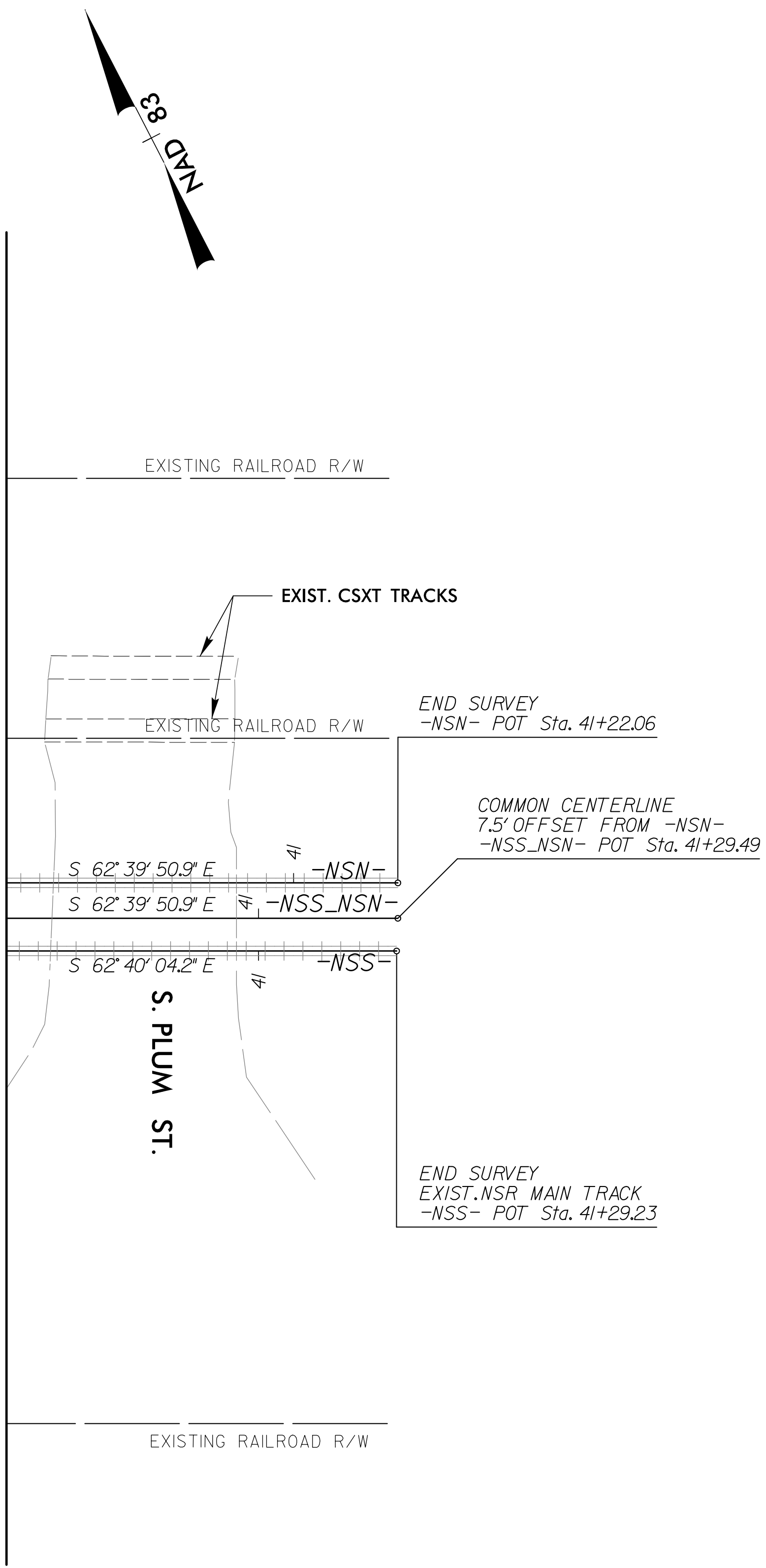
NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|   |  |
|---|--|
| PROJECT REFERENCE NO.<br>U-3308   | SHEET NO.<br>RR-11   |
| RW SHEET NO.  |  |
| RAIL DESIGN ENGINEER<br> | HYDRAULICS ENGINEER<br> |

# FINAL TRACK PLANS

FOR -NSS- PROFILE SEE SHEETS RR-12 THROUGH RR-15  
FOR -NSN- PROFILE SEE SHEETS RR-16 THROUGH RR-19

MATCH LINE SHEET RR-10



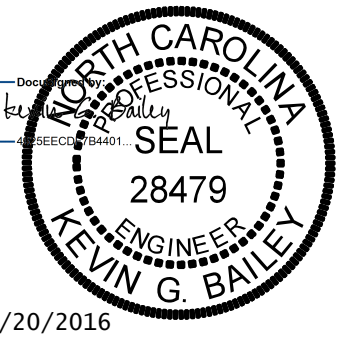
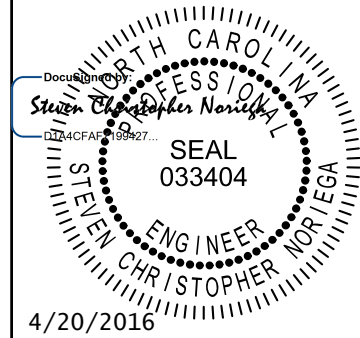
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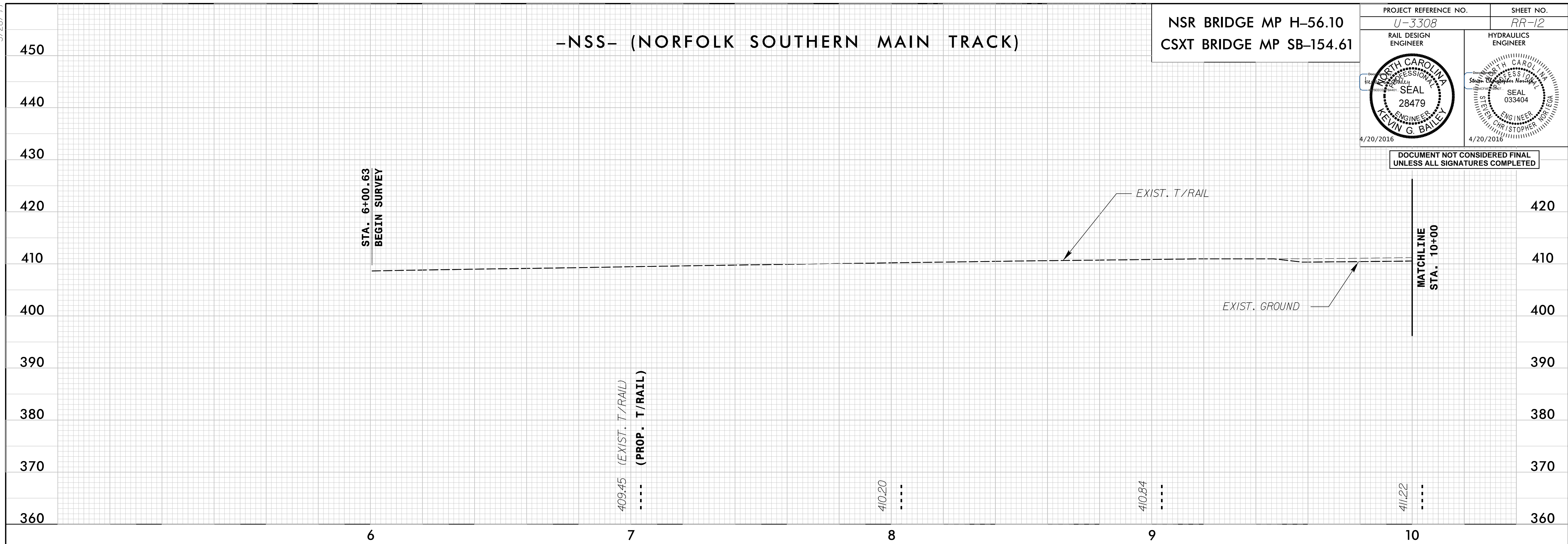
5/28/16

# -NSS- (NORFOLK SOUTHERN MAIN TRACK)

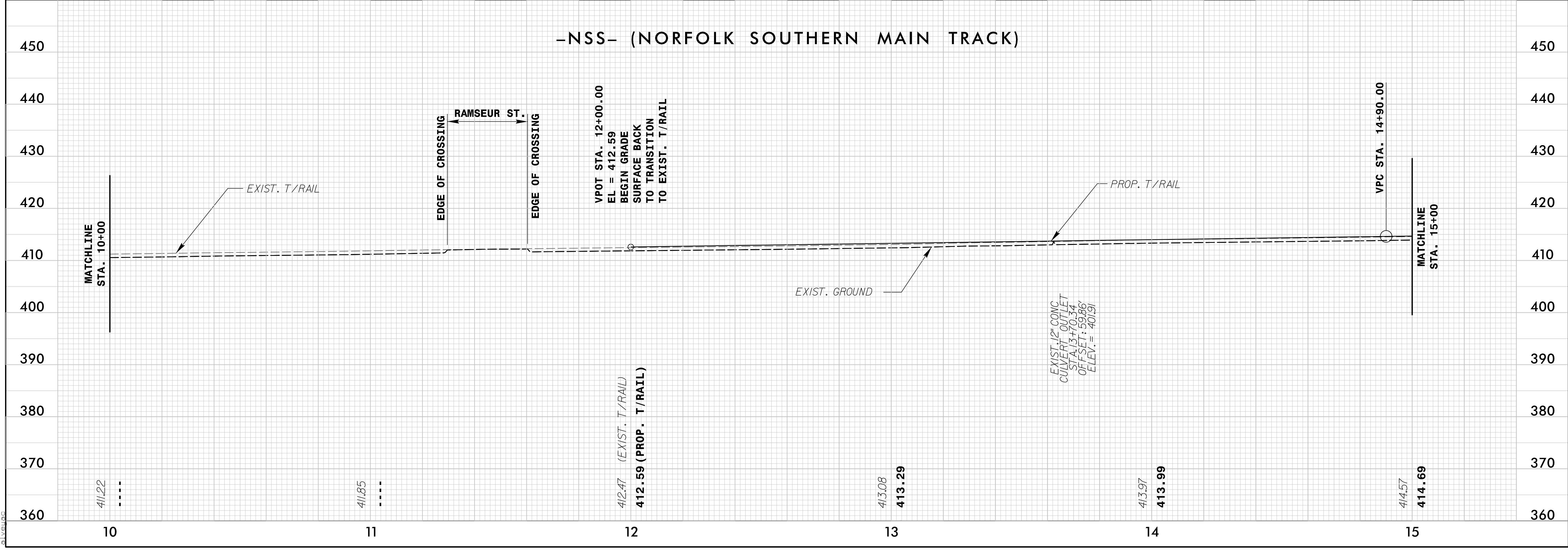
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CSXT BRIDGE MP SB-154.61

|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>U-3308   | SHEET NO.<br>RR-12  |
| RAIL DESIGN ENGINEER  | HYDRAULICS ENGINEER   |
|  |  |
| 4/20/2016   | 4/20/2016   |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



# -NSS- (NORFOLK SOUTHERN MAIN TRACK)



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5/28/19

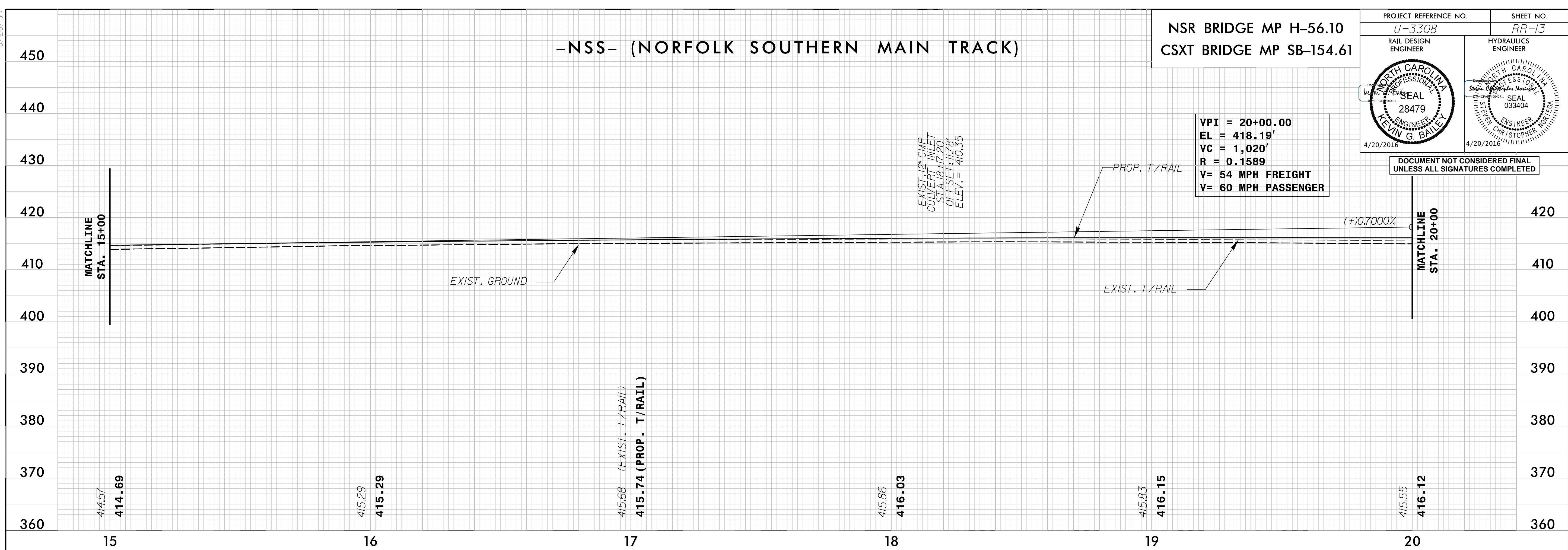
### -NSS- (NORFOLK SOUTHERN MAIN TRACK)

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-13  |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

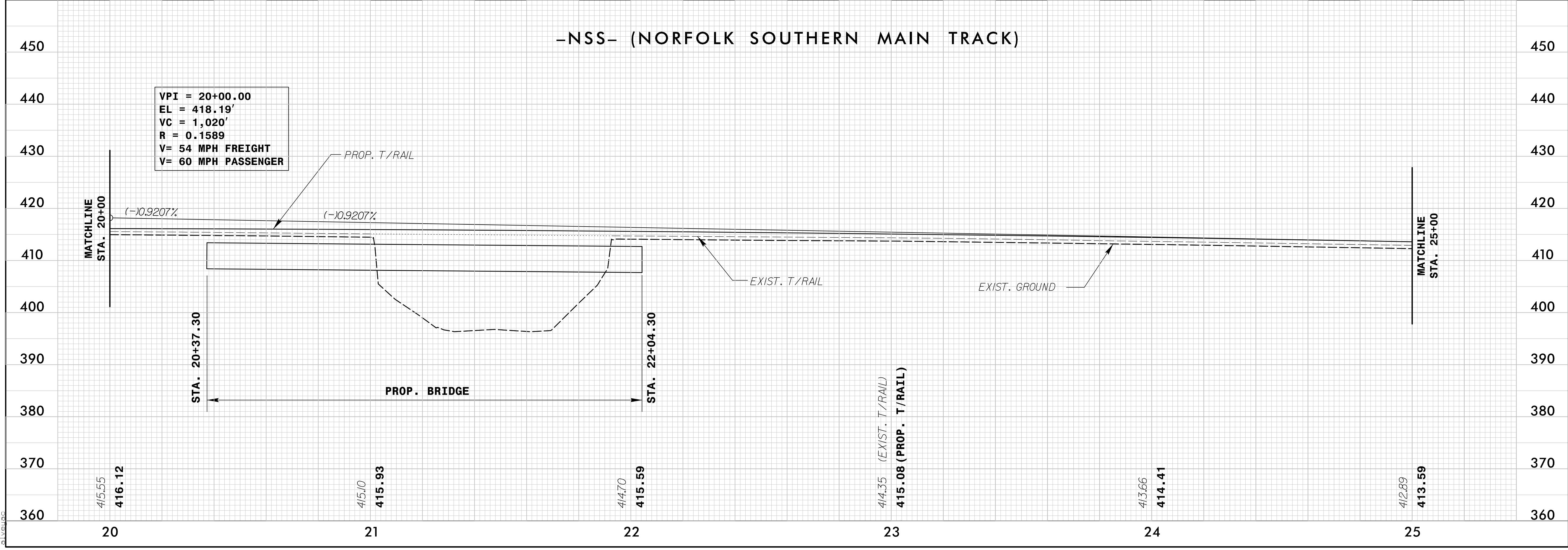
VPI = 20+00.00  
 EL = 418.19'  
 VC = 1,020'  
 R = 0.1589  
 V = 54 MPH FREIGHT  
 V = 60 MPH PASSENGER

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



### -NSS- (NORFOLK SOUTHERN MAIN TRACK)

VPI = 20+00.00  
 EL = 418.19'  
 VC = 1,020'  
 R = 0.1589  
 V = 54 MPH FREIGHT  
 V = 60 MPH PASSENGER



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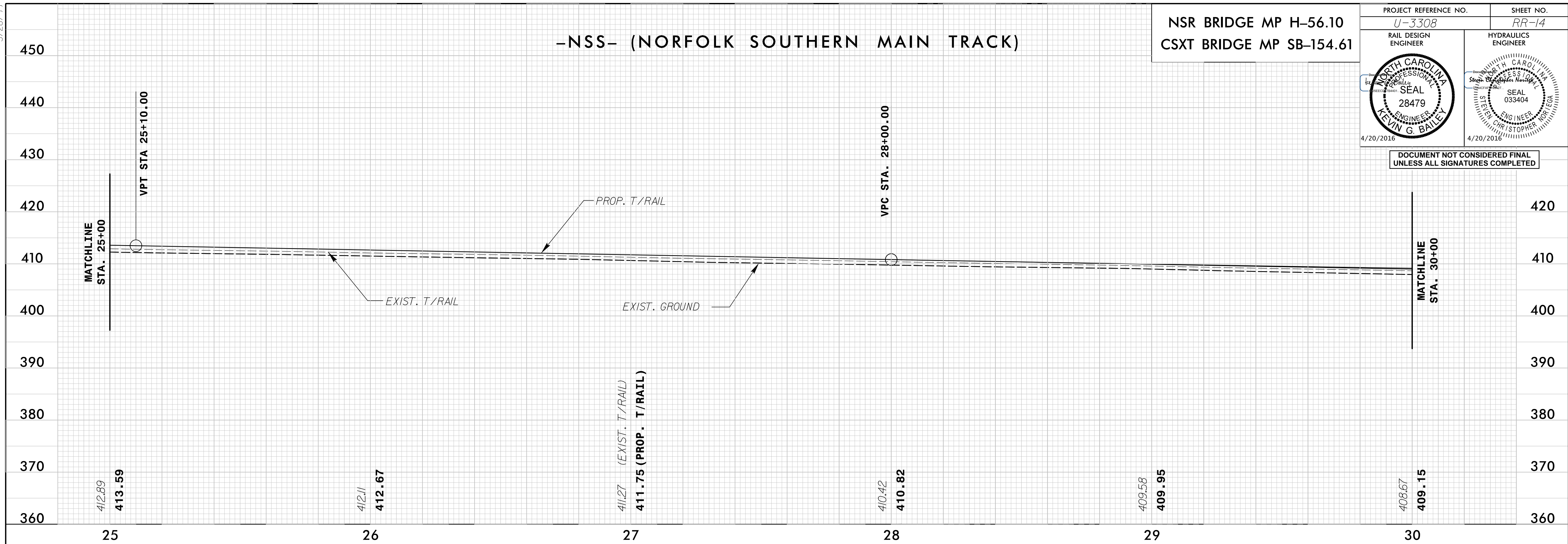
5/28/16

### -NSS- (NORFOLK SOUTHERN MAIN TRACK)

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

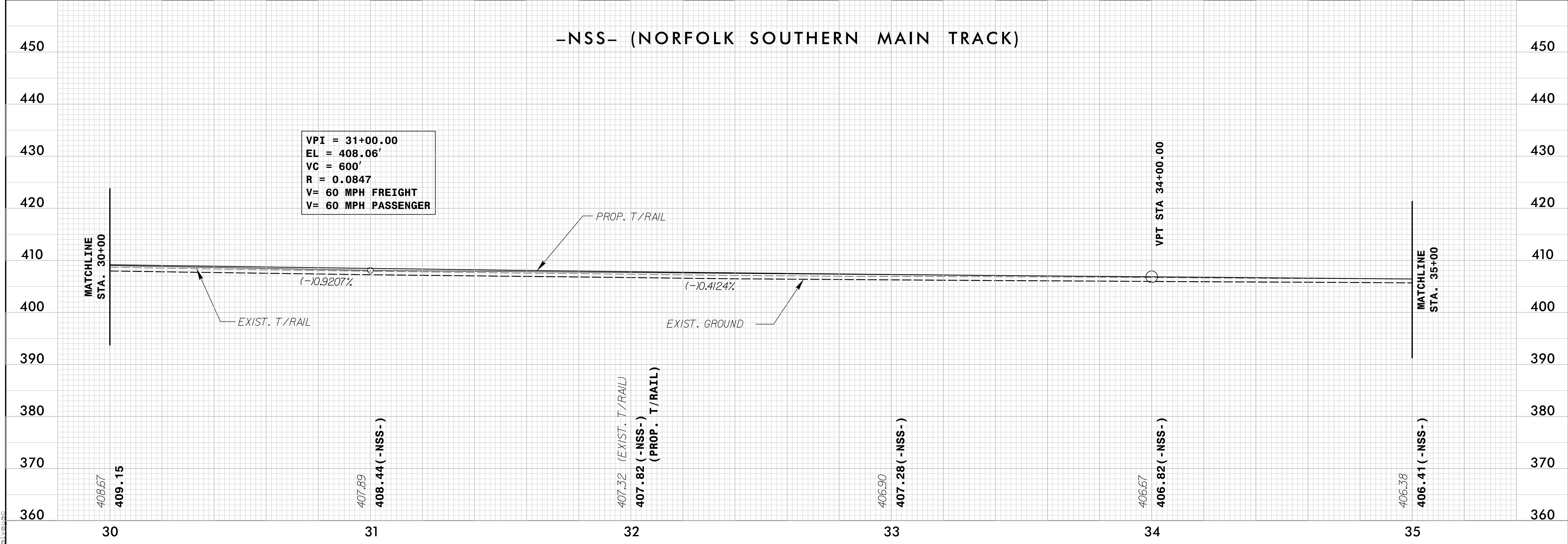
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|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-14  |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



### -NSS- (NORFOLK SOUTHERN MAIN TRACK)

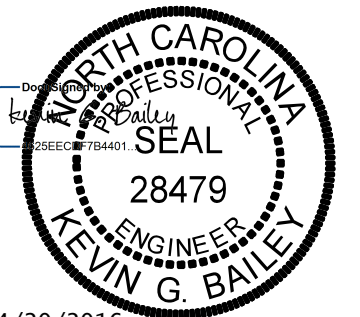
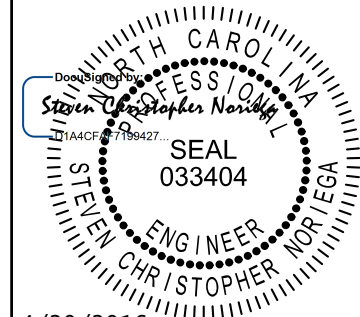
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 EL = 408.06'  
 VC = 600'  
 R = 0.0847  
 V = 60 MPH FREIGHT  
 V = 60 MPH PASSENGER



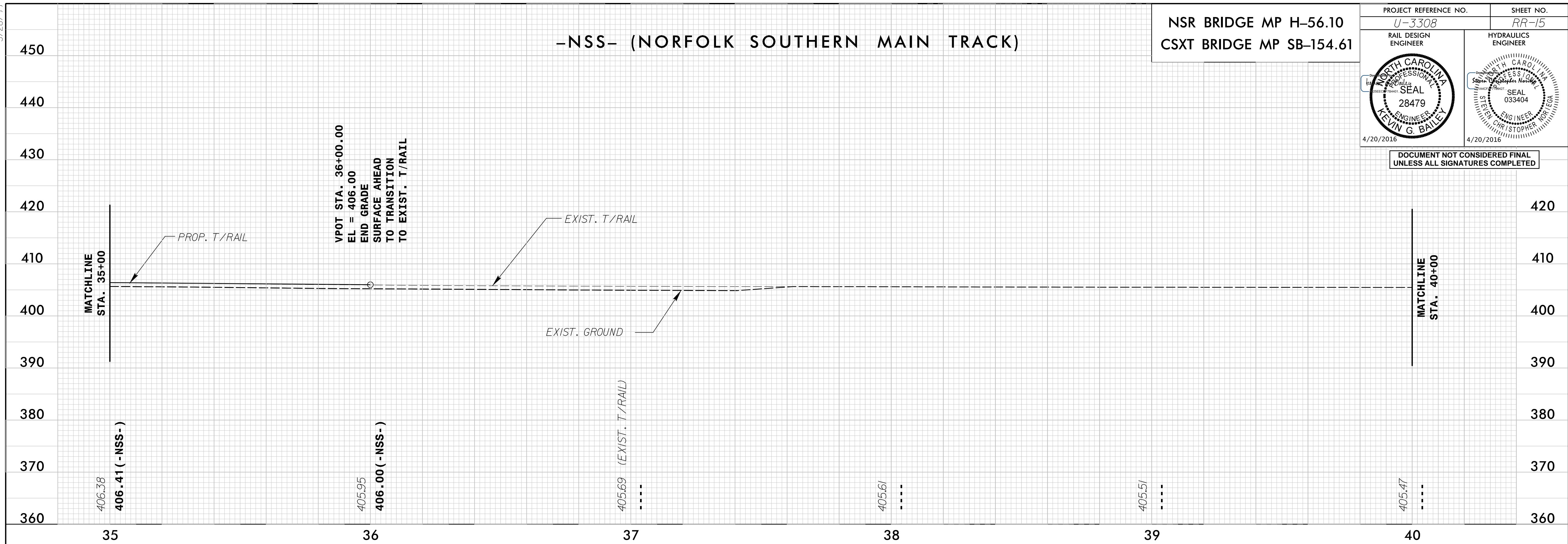
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5/28/99

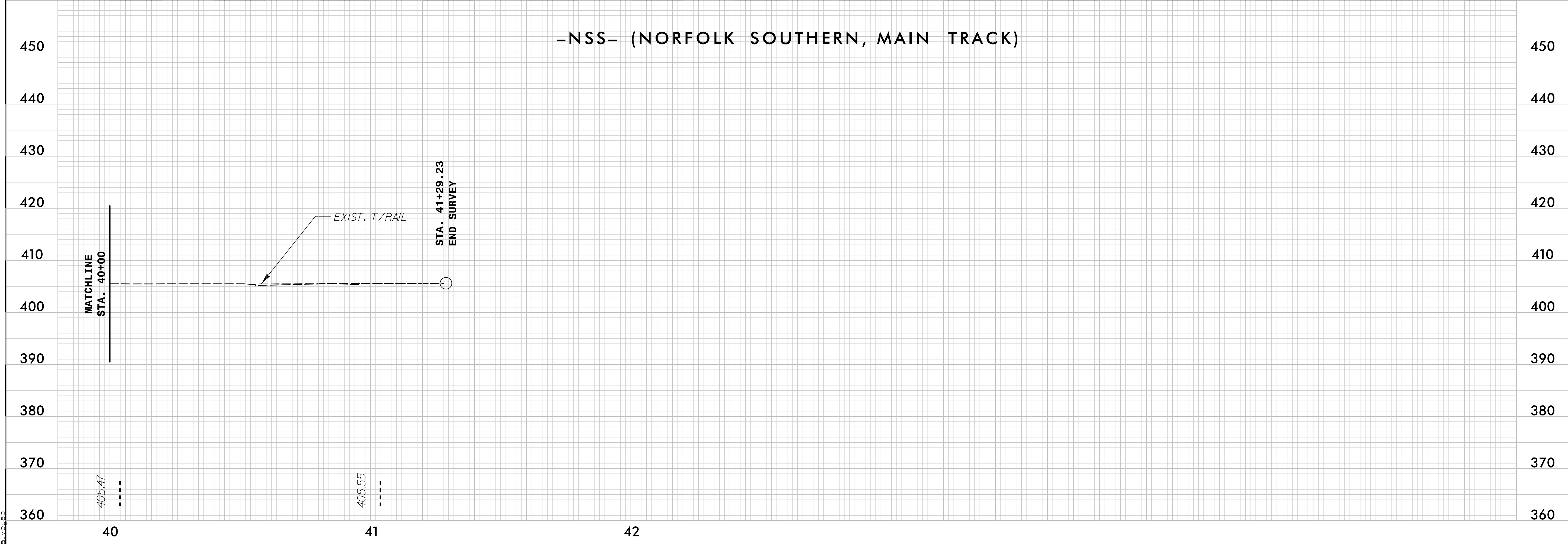
NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>U-3308   | SHEET NO.<br>RR-15  |
| RAIL DESIGN ENGINEER  | HYDRAULICS ENGINEER   |
|  |  |
| 4/20/2016   | 4/20/2016   |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



-NSS- (NORFOLK SOUTHERN, MAIN TRACK)



4/19/2016 11:56:00 AM C:\Users\j2513251\station\track\RAA\_u3308\_rdy.pfl\_sht.dgn

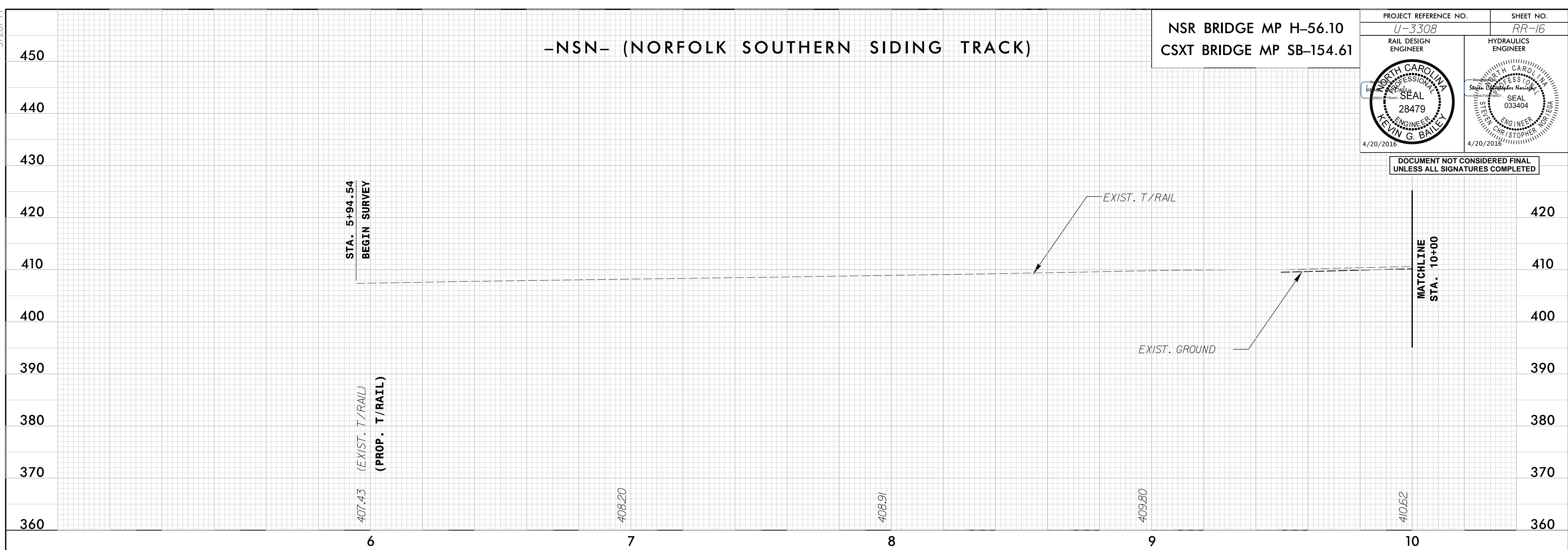
5/28/99

### -NSN- (NORFOLK SOUTHERN SIDING TRACK)

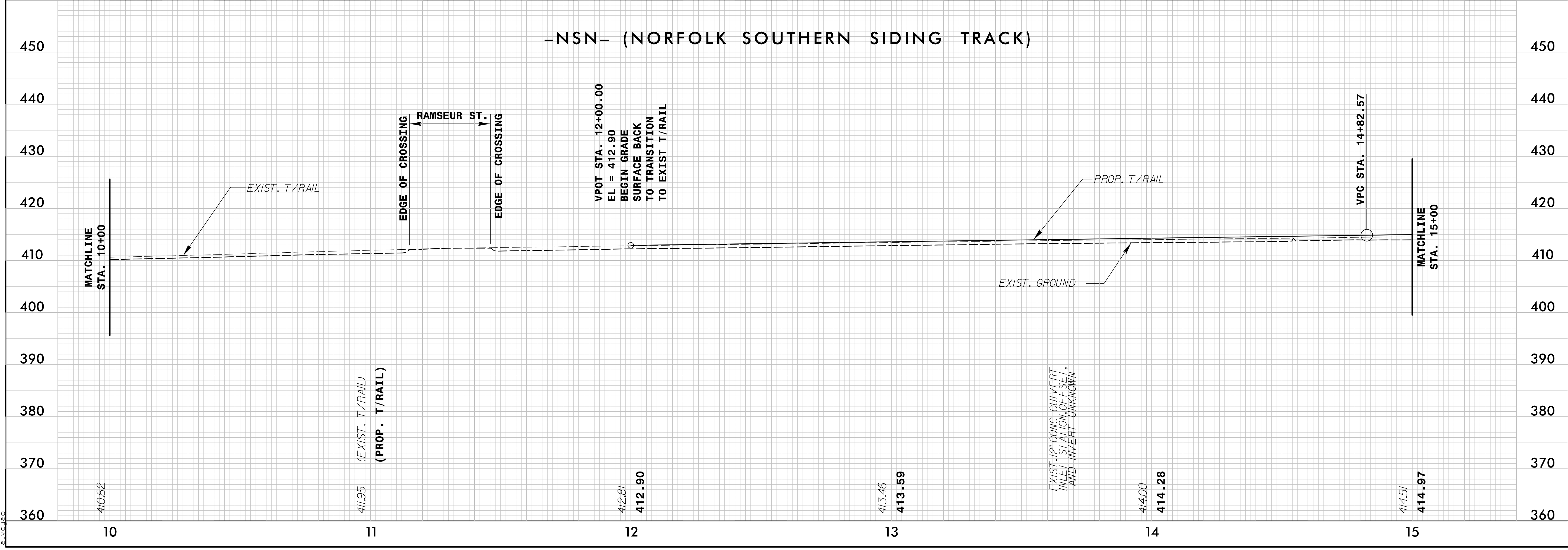
NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-16  |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



### -NSN- (NORFOLK SOUTHERN SIDING TRACK)



4/19/2016 1:18:00 PM C:\Users\j2513251\station\track\RAA\_u3308\_rdy.pfl\_sht.dgn

5/28/19

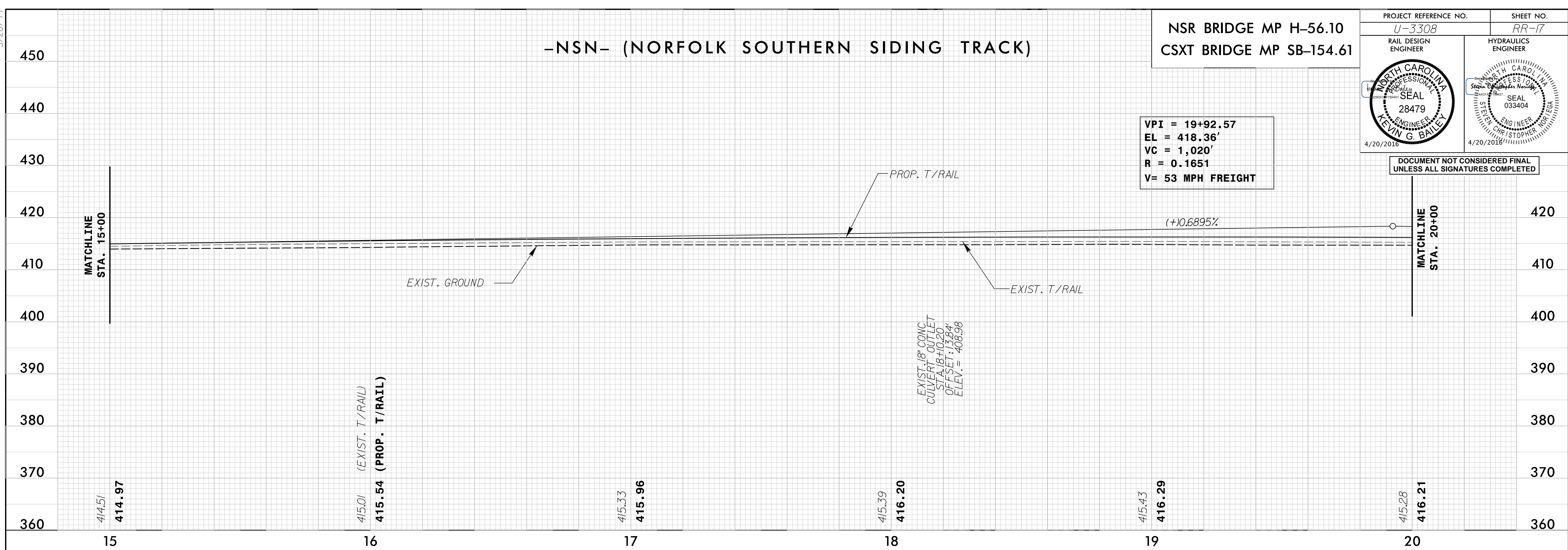
### -NSN- (NORFOLK SOUTHERN SIDING TRACK)

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

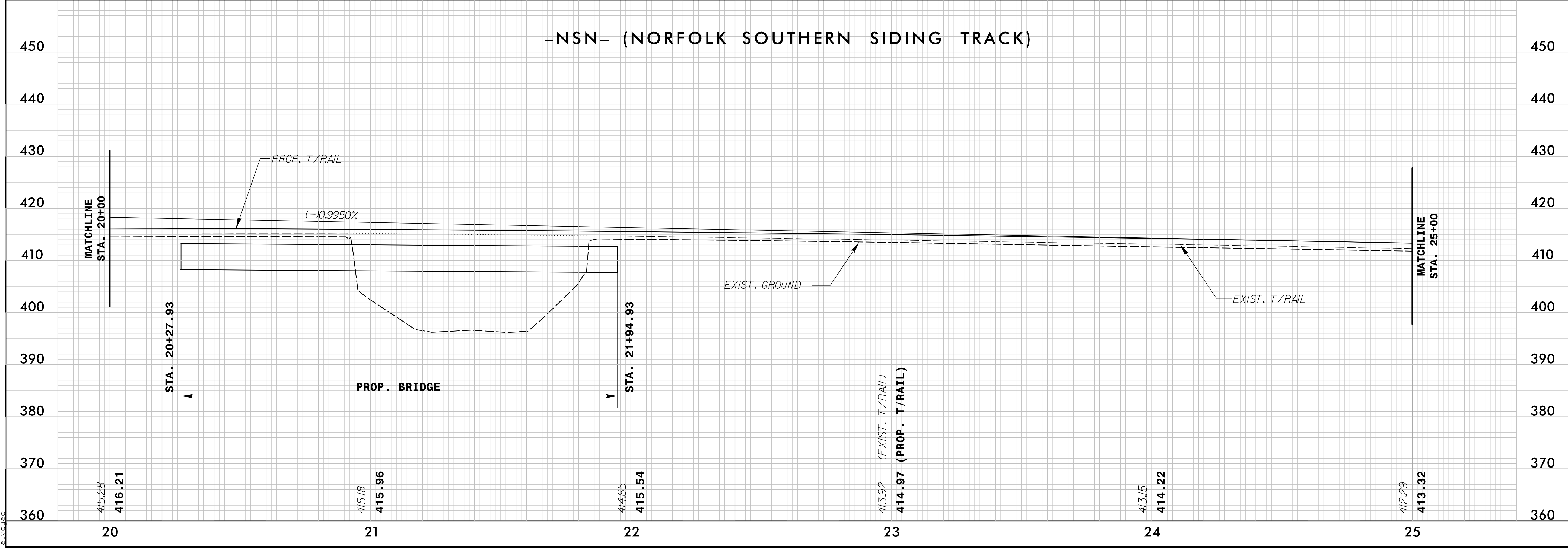
|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-17  |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

VPI = 19+92.57  
EL = 418.36'  
VC = 1,020'  
R = 0.1651  
V = 53 MPH FREIGHT

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



### -NSN- (NORFOLK SOUTHERN SIDING TRACK)



4/19/2019 11:18:00 AM C:\Users\j3251\station\track\FWA\_u3308\_rdy.pfl\_sht.dgn

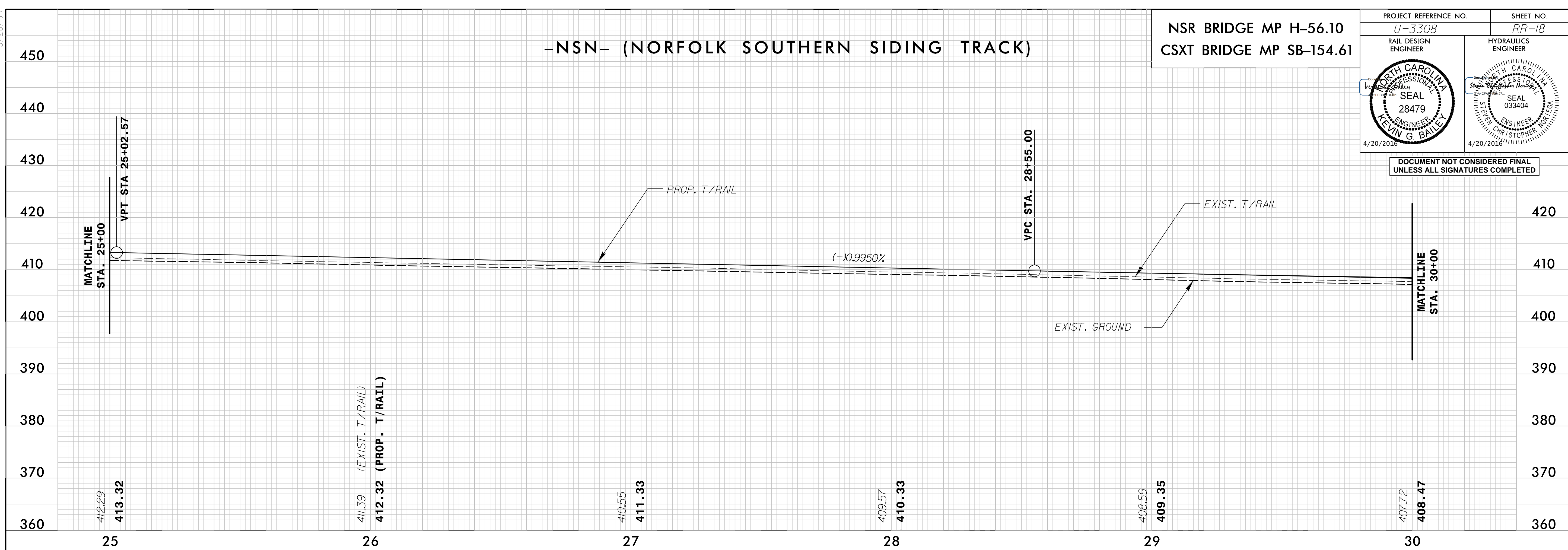
5/28/19

### -NSN- (NORFOLK SOUTHERN SIDING TRACK)

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

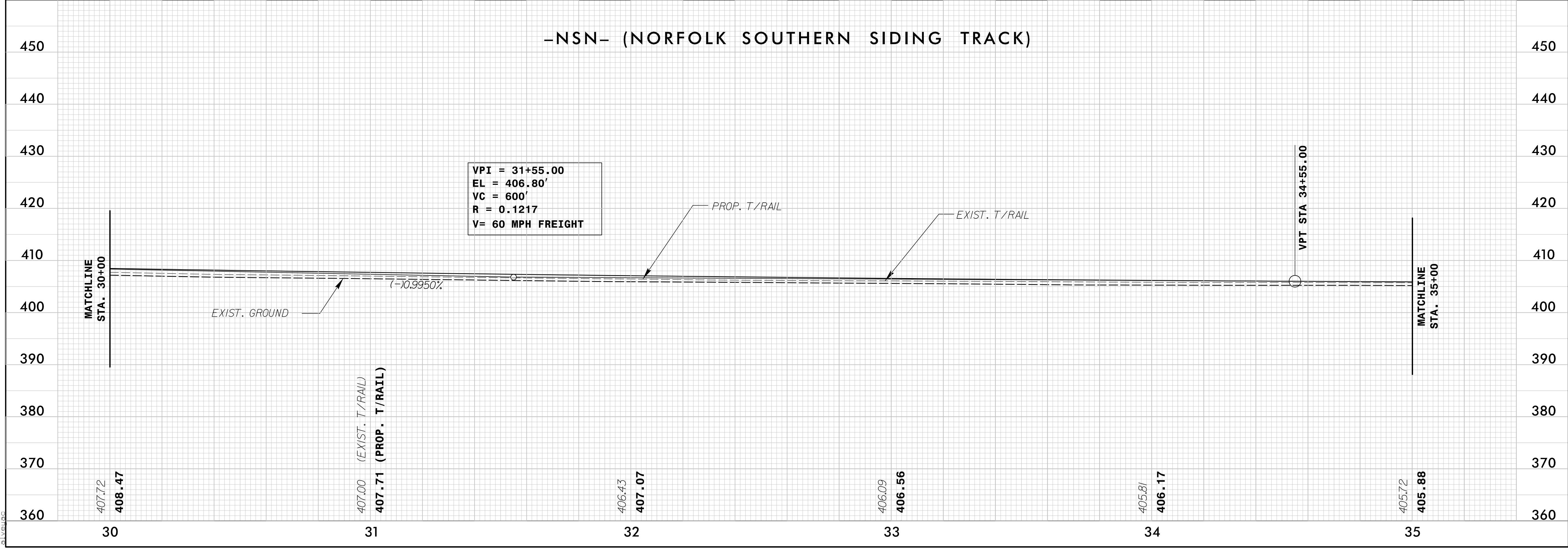
|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-18  |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



### -NSN- (NORFOLK SOUTHERN SIDING TRACK)

VPI = 31+55.00  
 EL = 406.80'  
 VC = 600'  
 R = 0.1217  
 V = 60 MPH FREIGHT



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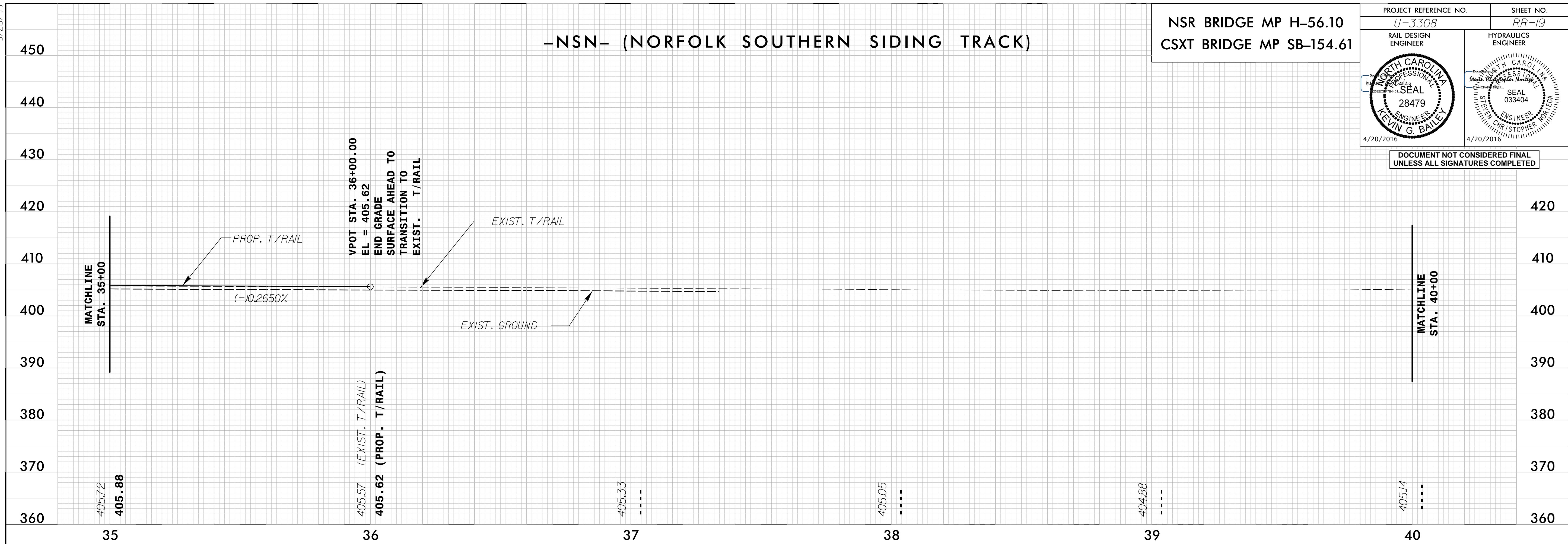
5/28/99

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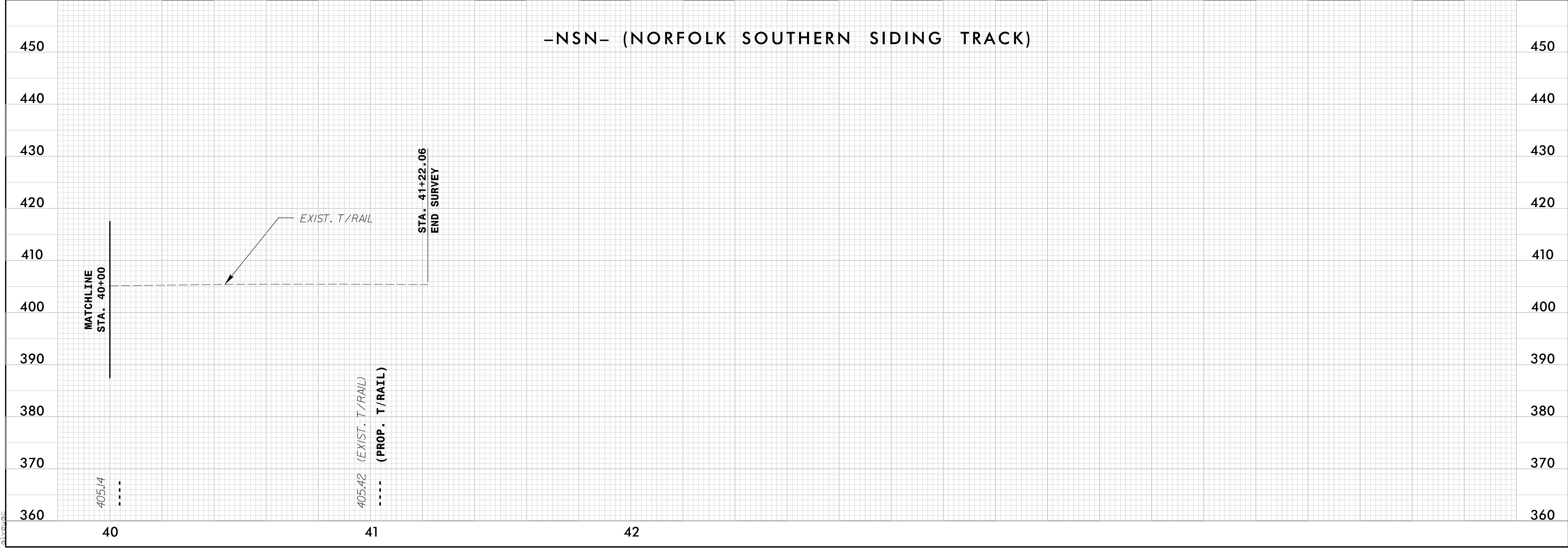
NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-19  |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



### -NSN- (NORFOLK SOUTHERN SIDING TRACK)



4/19/2016 11:18:00 AM C:\Users\j3251\station\track\RAA\_u3308\_rdy.pfl\_sht.dgn

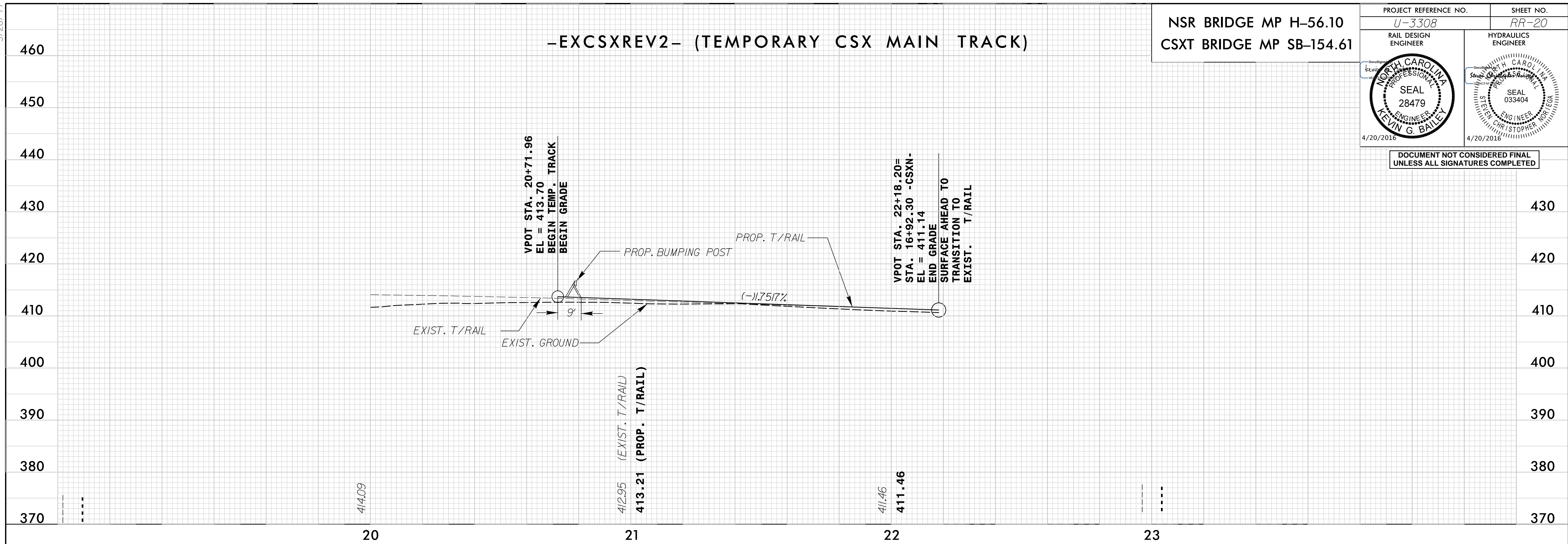
5/28/16

### -EXCSXREV2- (TEMPORARY CSX MAIN TRACK)

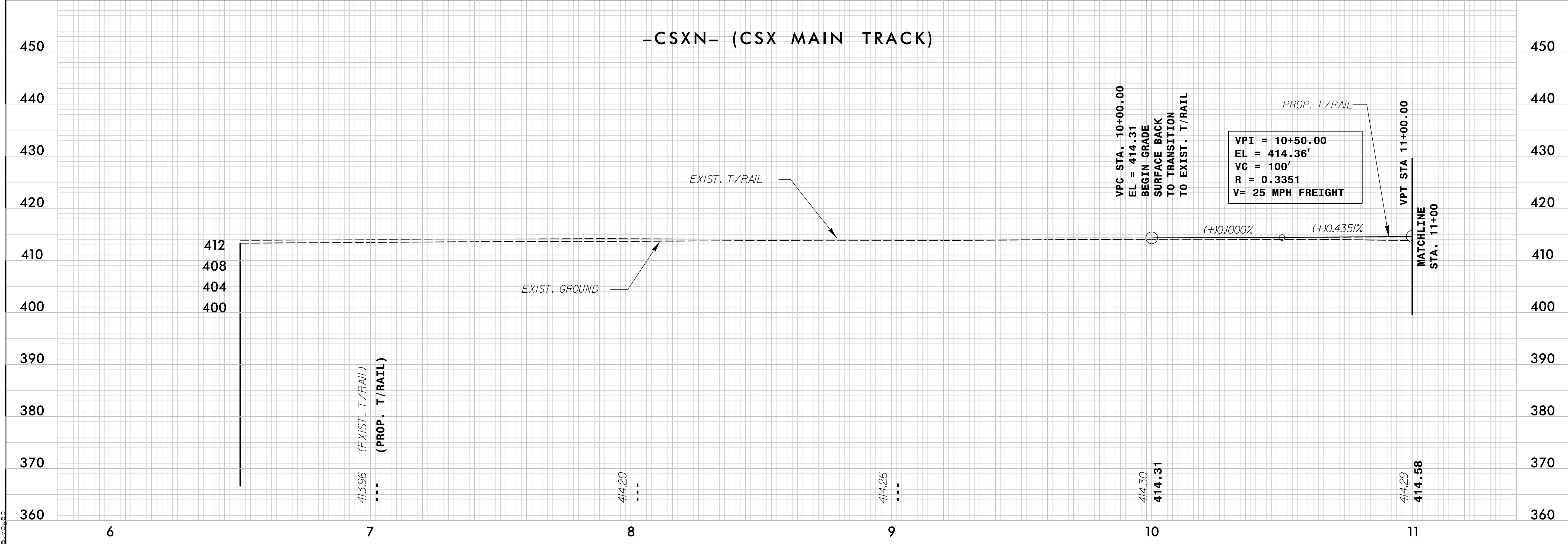
NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-20  |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



### -CSXN- (CSX MAIN TRACK)



4/19/2016 11:53:25 AM \\station\track\FWA\_u3308\_rdy.pfl\_sht.dgn

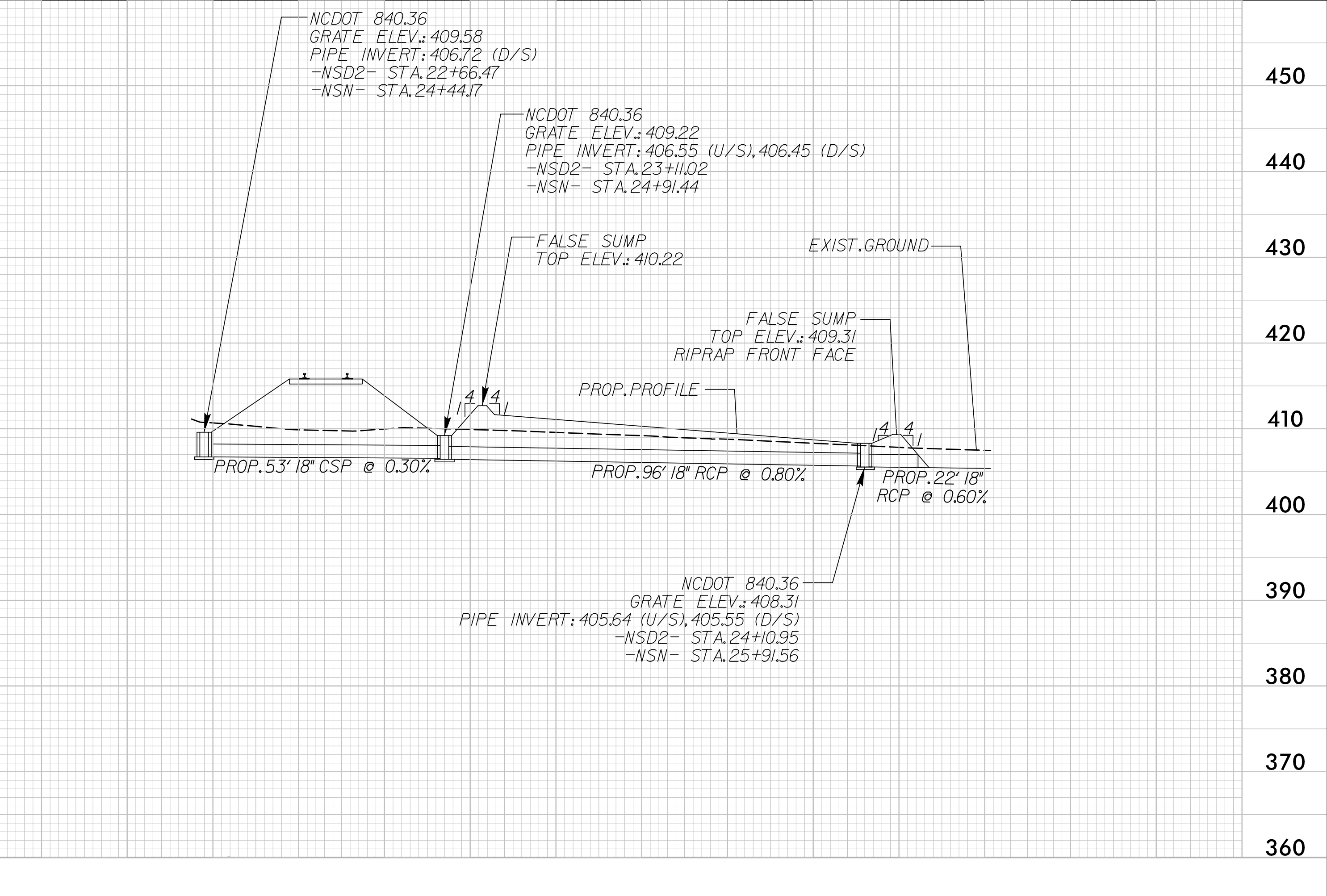
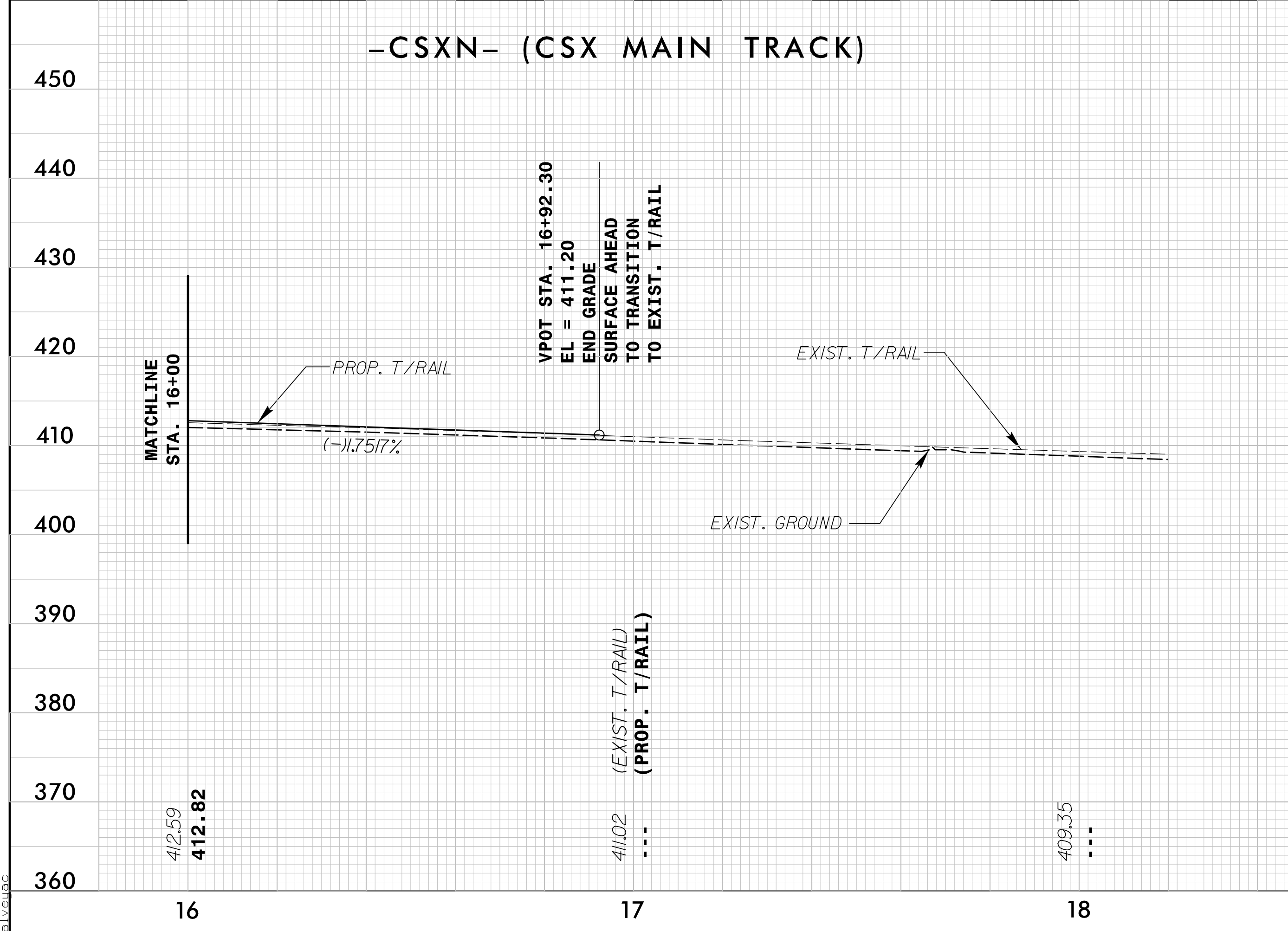
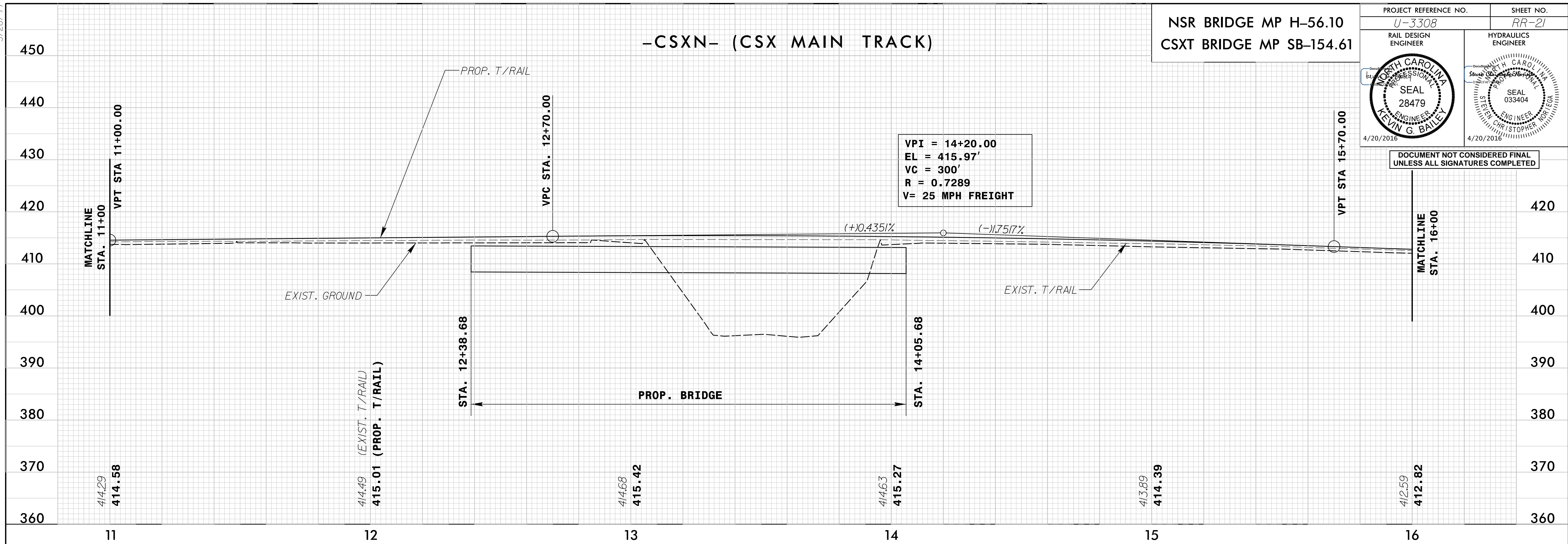


5/28/19

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-21  |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

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UNLESS ALL SIGNATURES COMPLETED



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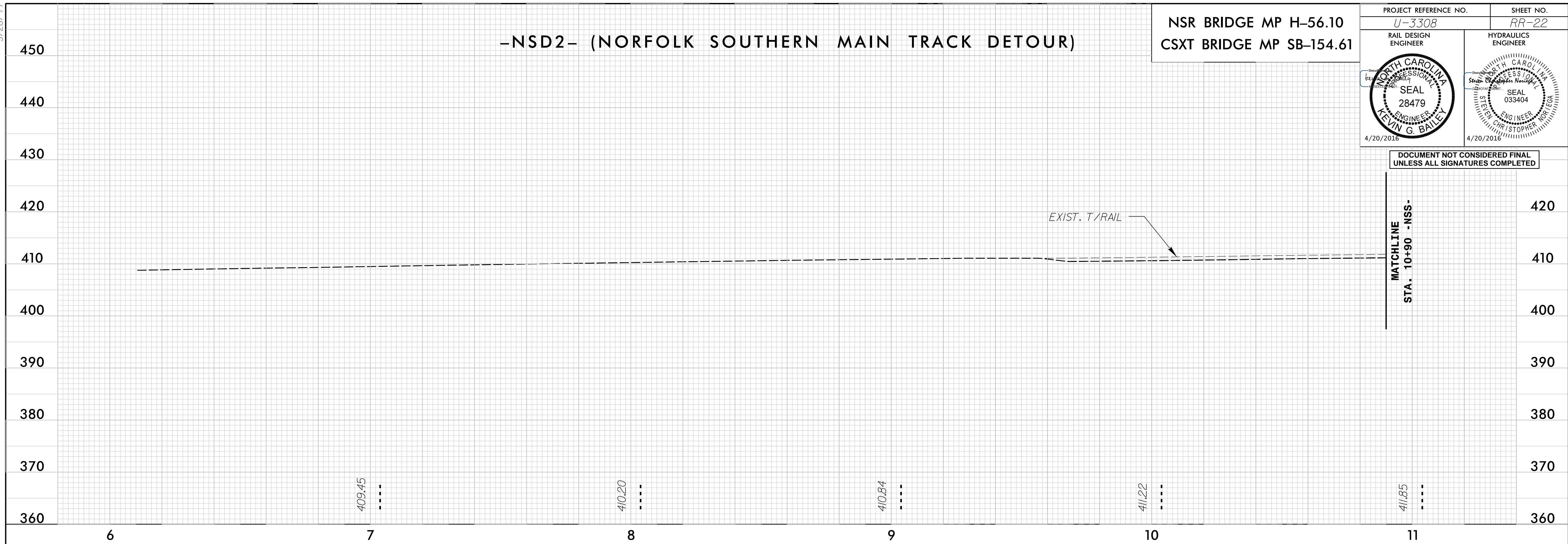
5/28/16

### -NSD2- (NORFOLK SOUTHERN MAIN TRACK DETOUR)

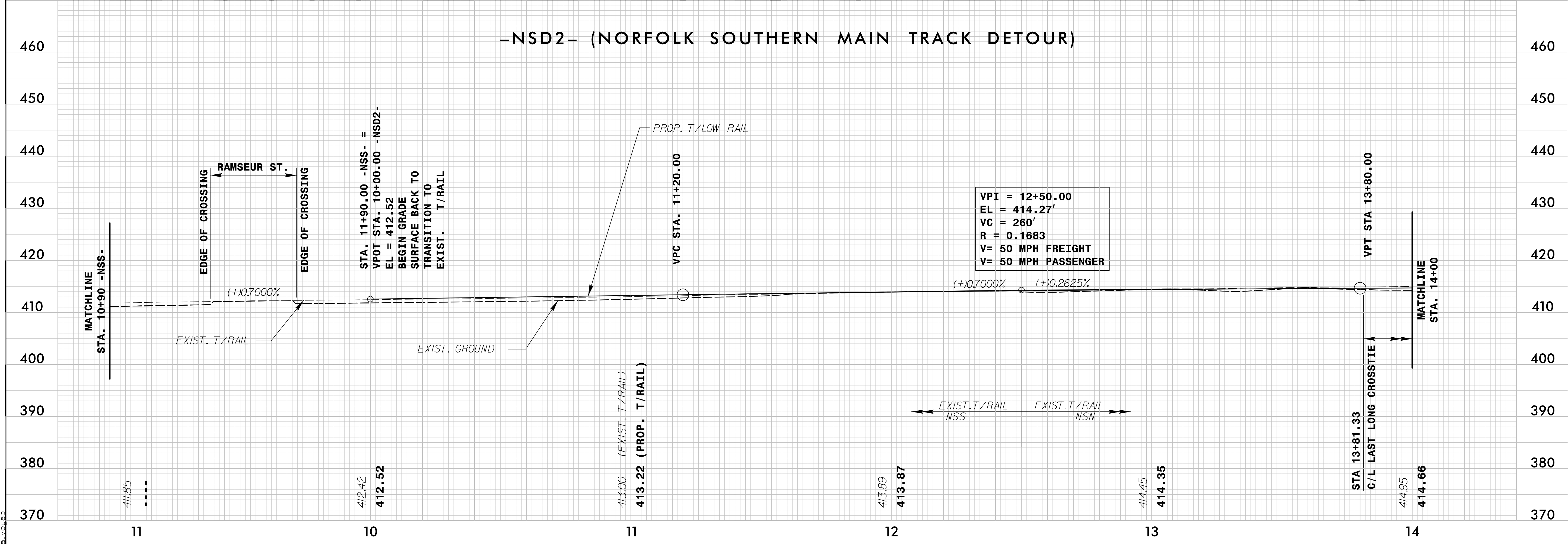
NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-22  |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



### -NSD2- (NORFOLK SOUTHERN MAIN TRACK DETOUR)



4/19/2016 1:18:00 PM C:\Users\jason\Documents\Track\RAA\_u3308\_rdy.pfl\_sht.dgn

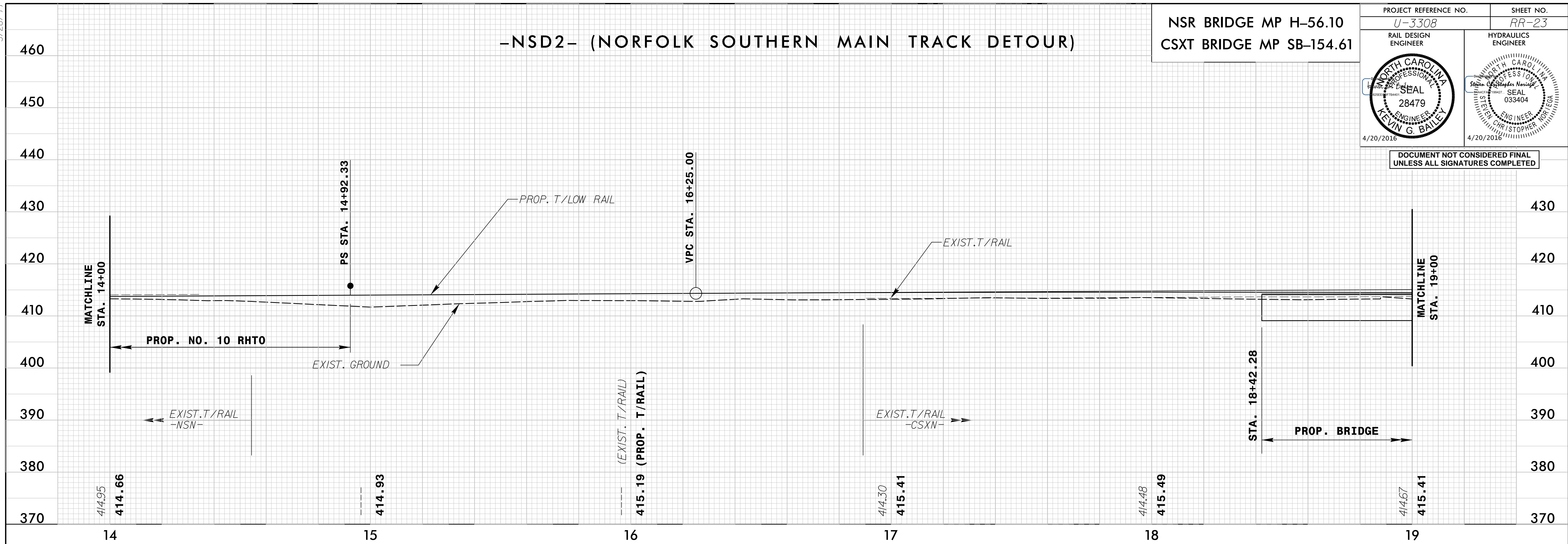
5/28/16

### -NSD2- (NORFOLK SOUTHERN MAIN TRACK DETOUR)

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

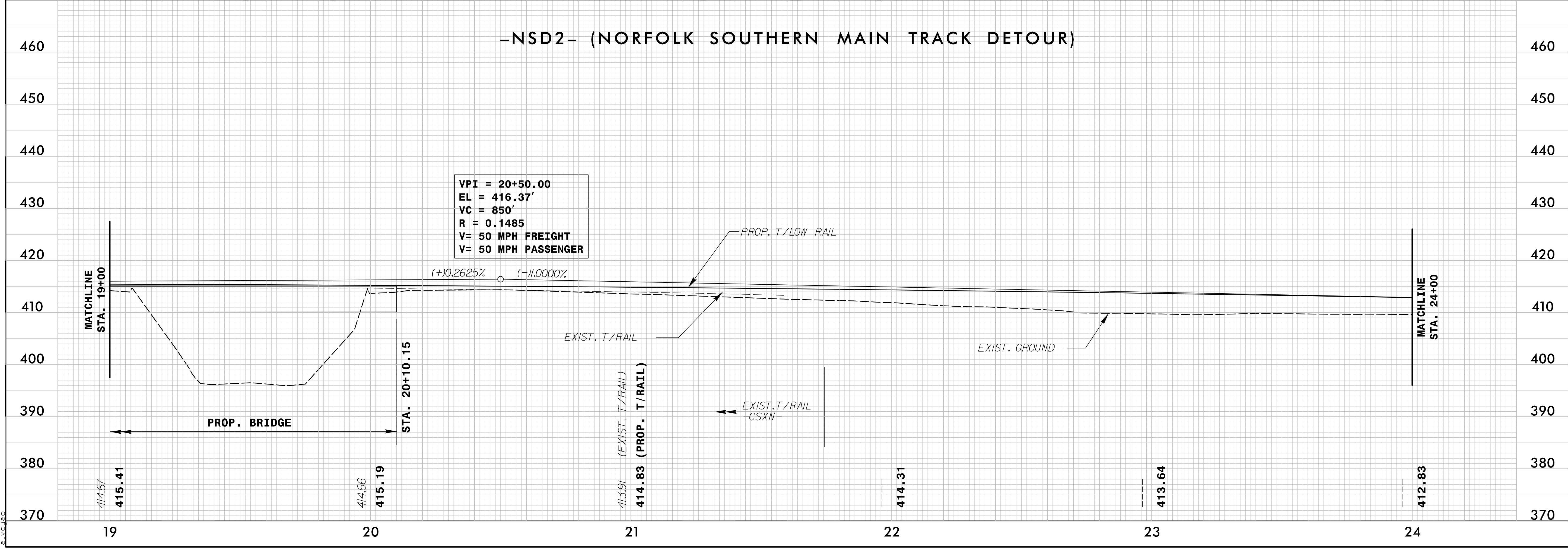
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|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-23  |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

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UNLESS ALL SIGNATURES COMPLETED



### -NSD2- (NORFOLK SOUTHERN MAIN TRACK DETOUR)

VPI = 20+50.00  
 EL = 416.37'  
 VC = 850'  
 R = 0.1485  
 V = 50 MPH FREIGHT  
 V = 50 MPH PASSENGER



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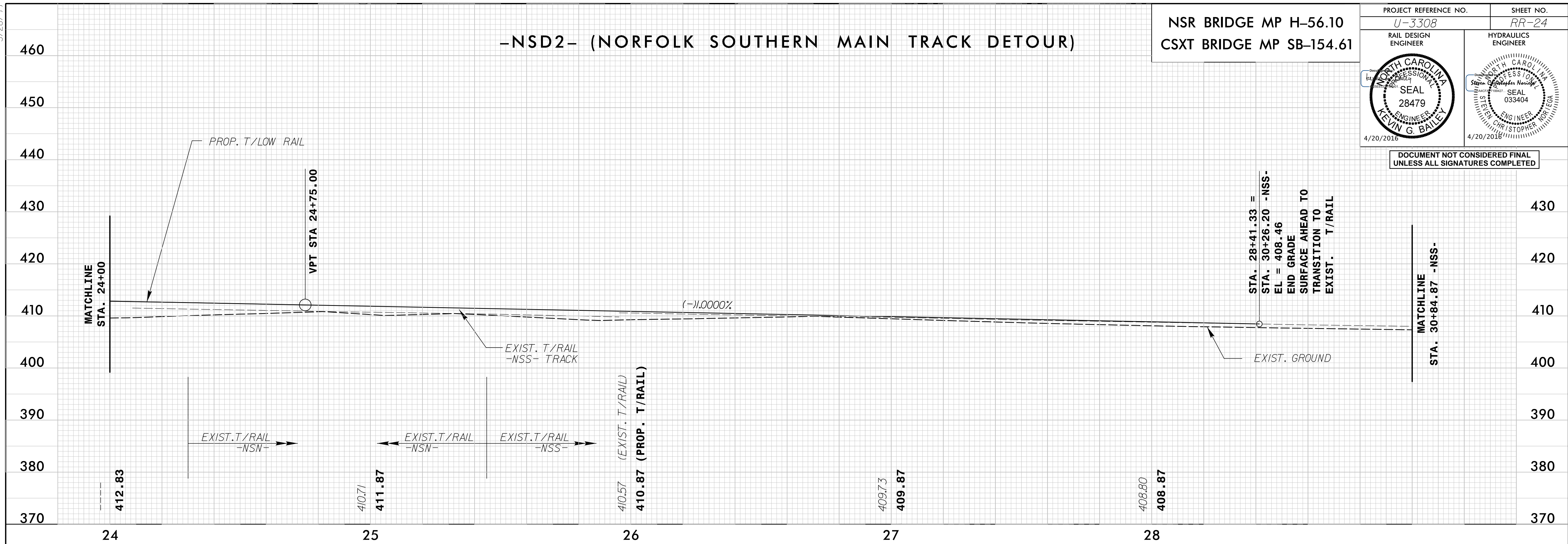
5/28/99

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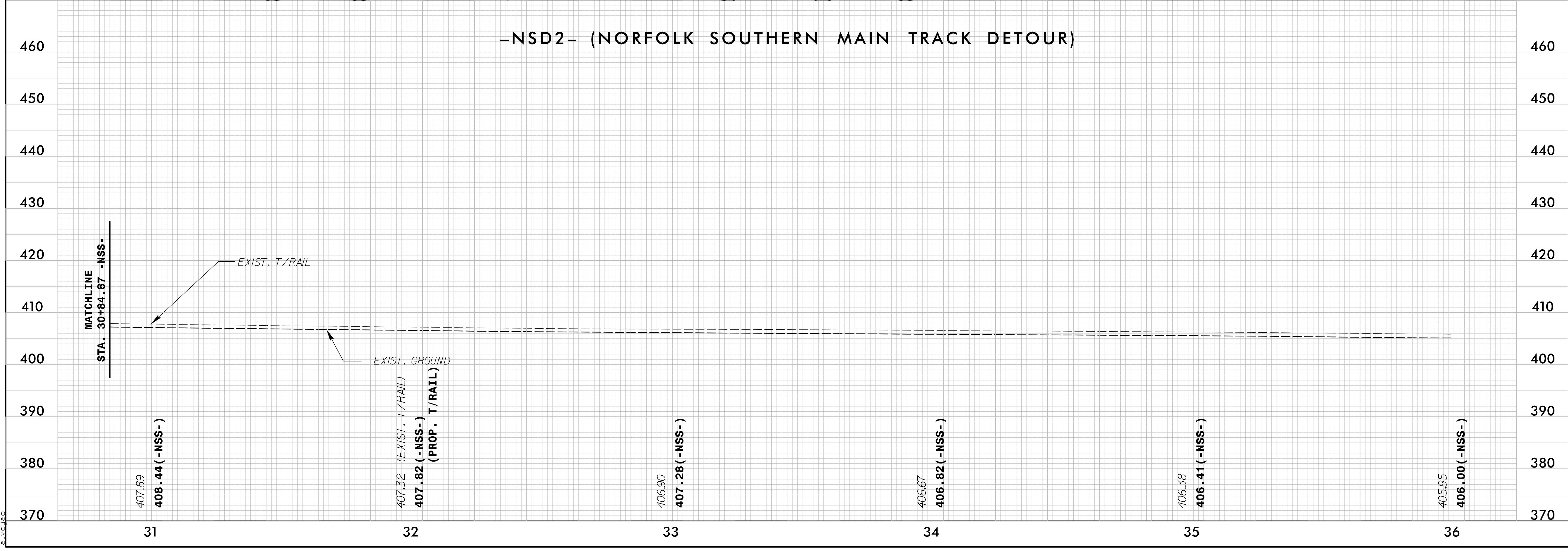
NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>U-3308 | SHEET NO.<br>RR-24  |
| RAIL DESIGN ENGINEER            | HYDRAULICS ENGINEER |
|                                 |                     |

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UNLESS ALL SIGNATURES COMPLETED



### -NSD2- (NORFOLK SOUTHERN MAIN TRACK DETOUR)



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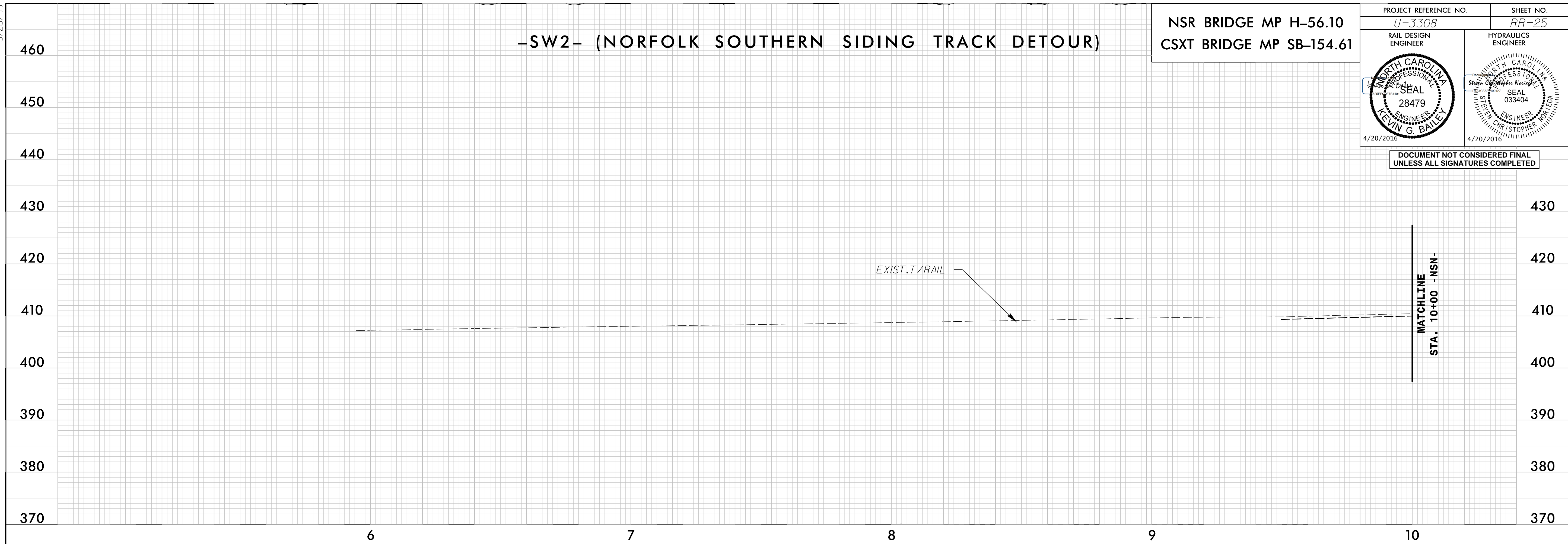
5/28/99

### -SW2- (NORFOLK SOUTHERN SIDING TRACK DETOUR)

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

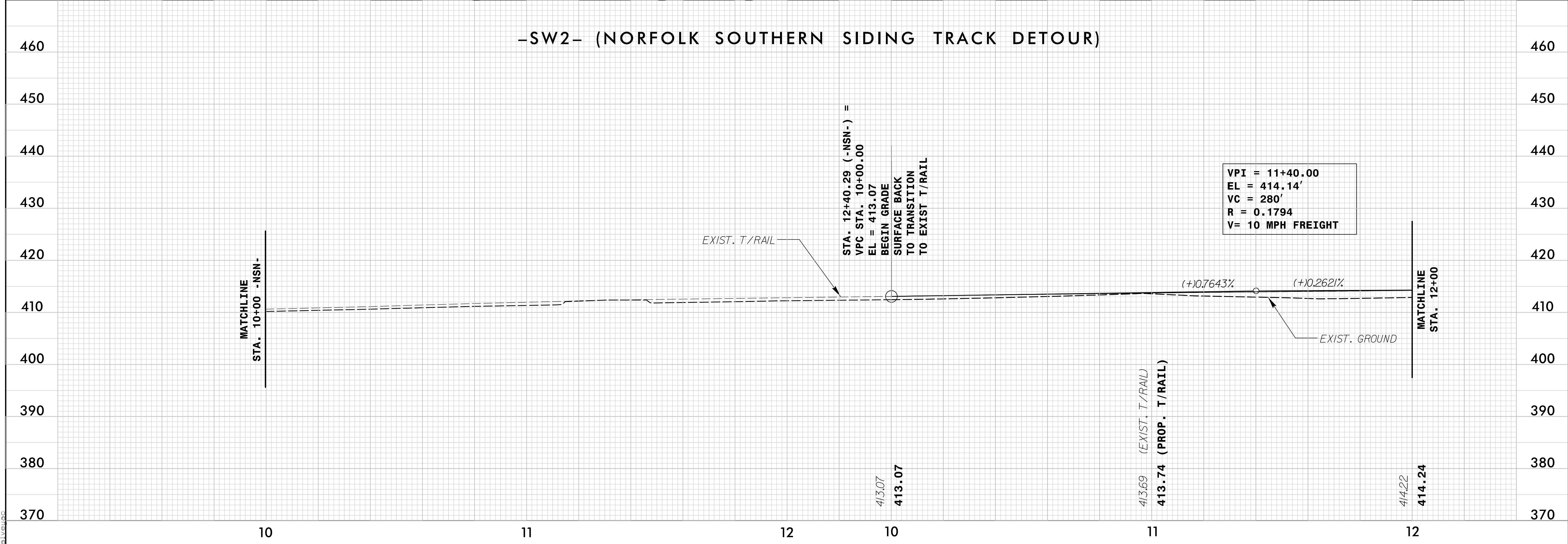
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|--|---------------------------|
| PROJECT REFERENCE NO.<br><i>U-3308</i> | SHEET NO.<br><i>RR-25</i> |
| RAIL DESIGN ENGINEER                   | HYDRAULICS ENGINEER       |
|  |                           |

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UNLESS ALL SIGNATURES COMPLETED



### -SW2- (NORFOLK SOUTHERN SIDING TRACK DETOUR)

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VPI = 11+40.00  
 EL = 414.14'  
 VC = 280'  
 R = 0.1794  
 V = 10 MPH FREIGHT

STA. 12+40.29 (-NSN-) =  
 VPC STA. 10+00.00  
 EL = 413.07  
 BEGIN GRADE  
 SURFACE BACK  
 TO TRANSITION  
 TO EXIST T/RAIL

413.69 (EXIST. T/RAIL)  
 413.74 (PROP. T/RAIL)

414.22  
 414.24

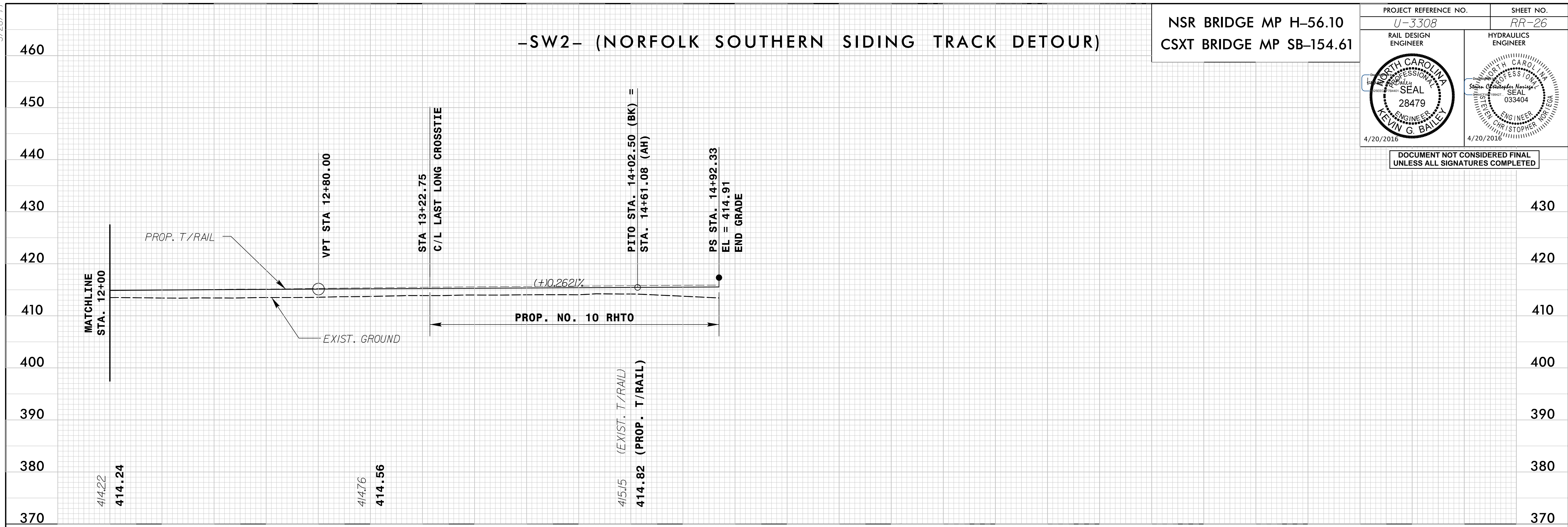
5/28/16

# -SW2- (NORFOLK SOUTHERN SIDING TRACK DETOUR)

NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|  |   |
|--|---|
| PROJECT REFERENCE NO.<br>U-3308                      | SHEET NO.<br>RR-26  |
| RAIL DESIGN ENGINEER<br>KEYVN G. BAILEY<br>4/20/2016 | HYDRAULICS ENGINEER<br>CHRISTOPHER H. HARRIS<br>4/20/2016 |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



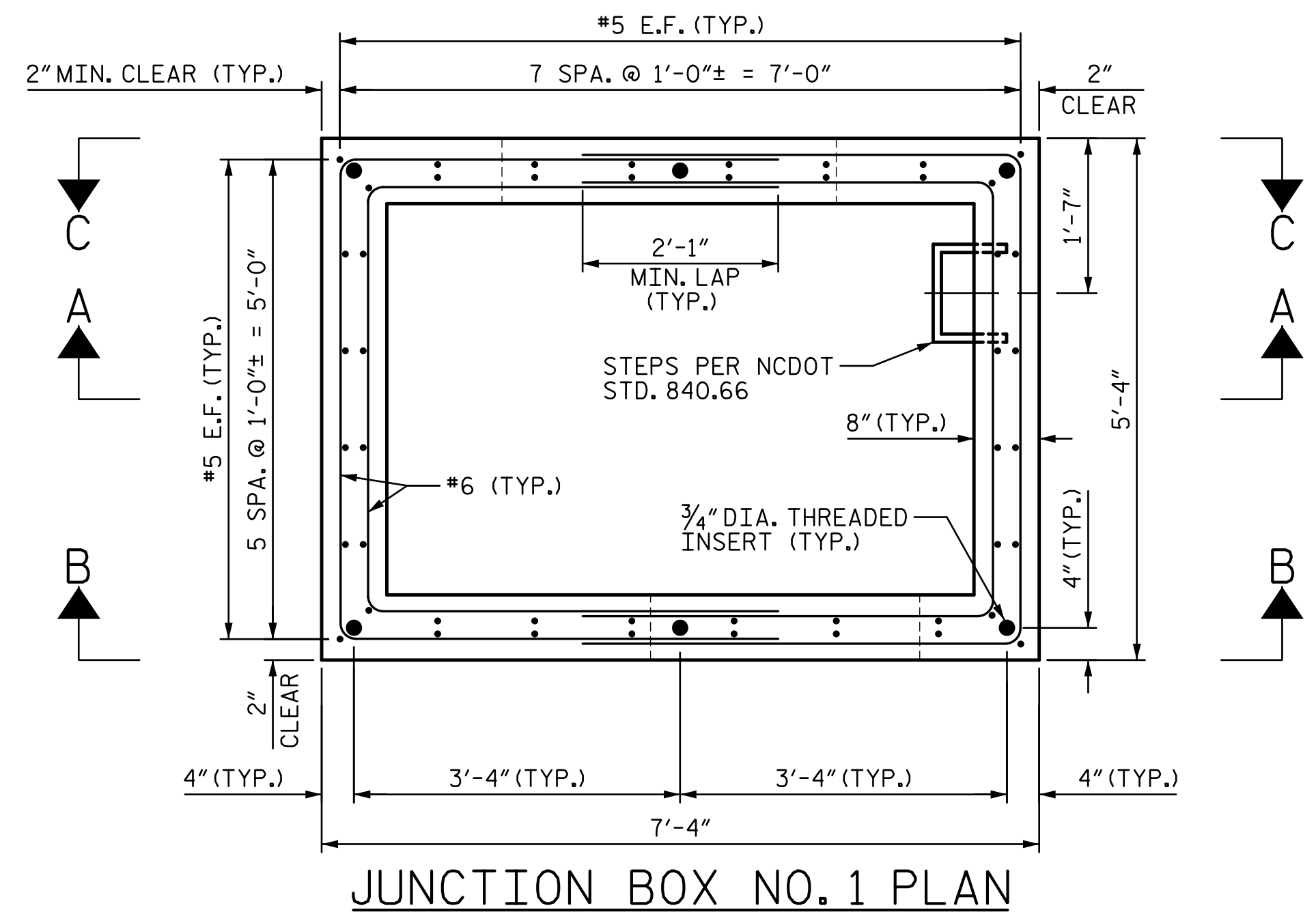
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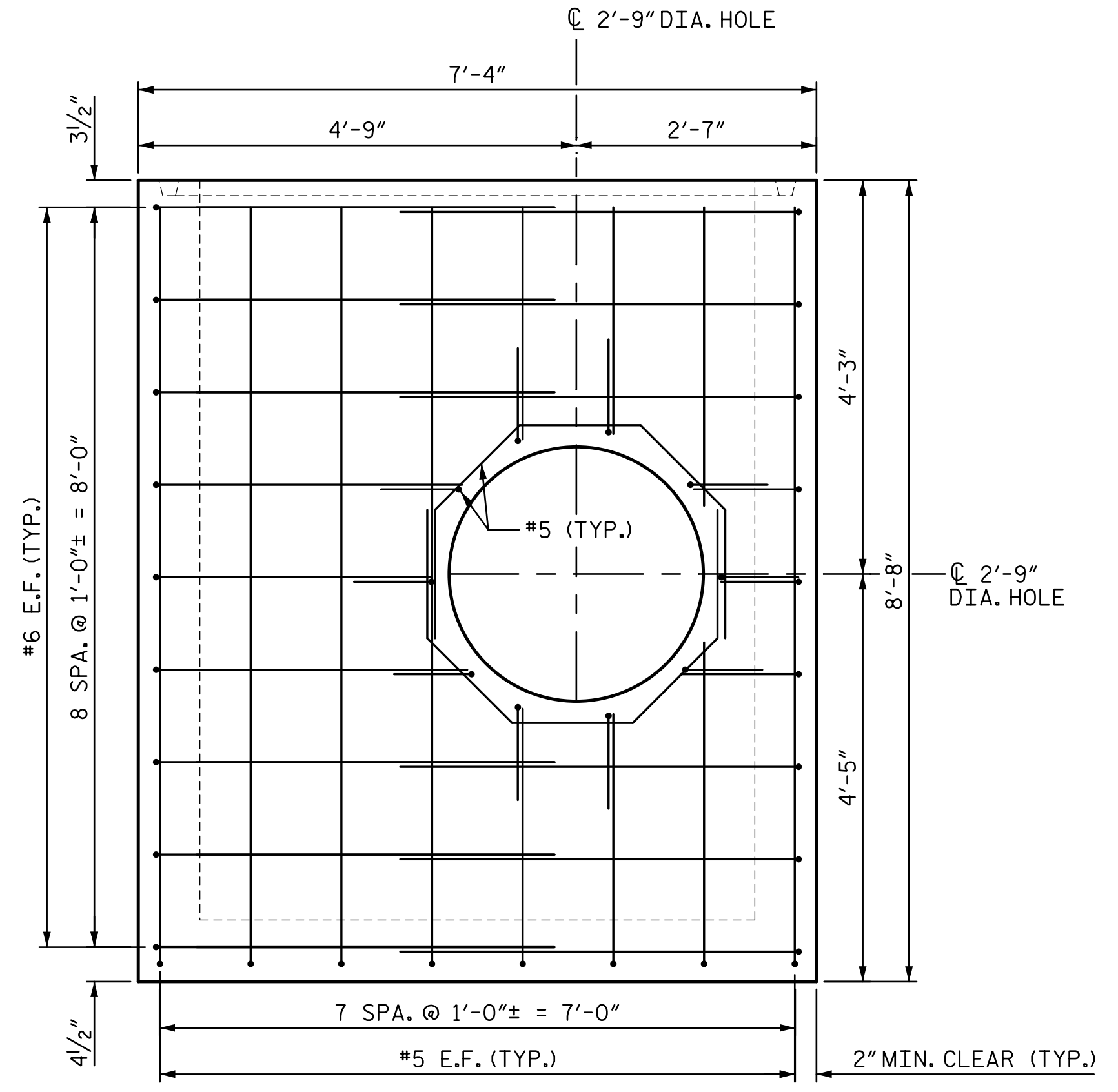
NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|  |                           |
|--|---------------------------|
| PROJECT REFERENCE NO.<br><b>U-3308</b> | SHEET NO.<br><b>RR-27</b> |
| RW SHEET NO.                           |                           |
| STRUCTURES ENGINEER                    |                           |
|  |                           |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



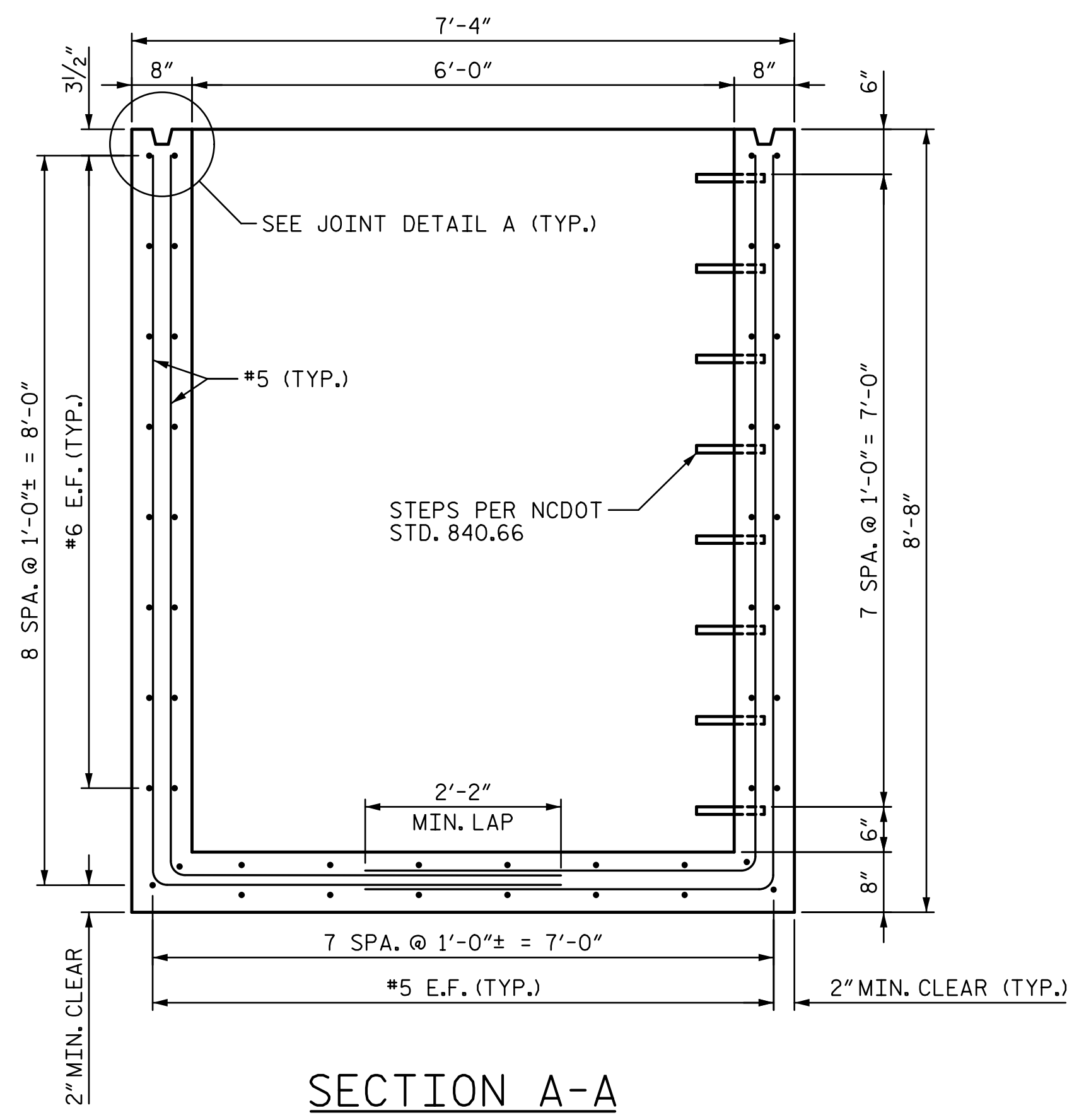
JUNCTION BOX NO. 1 PLAN



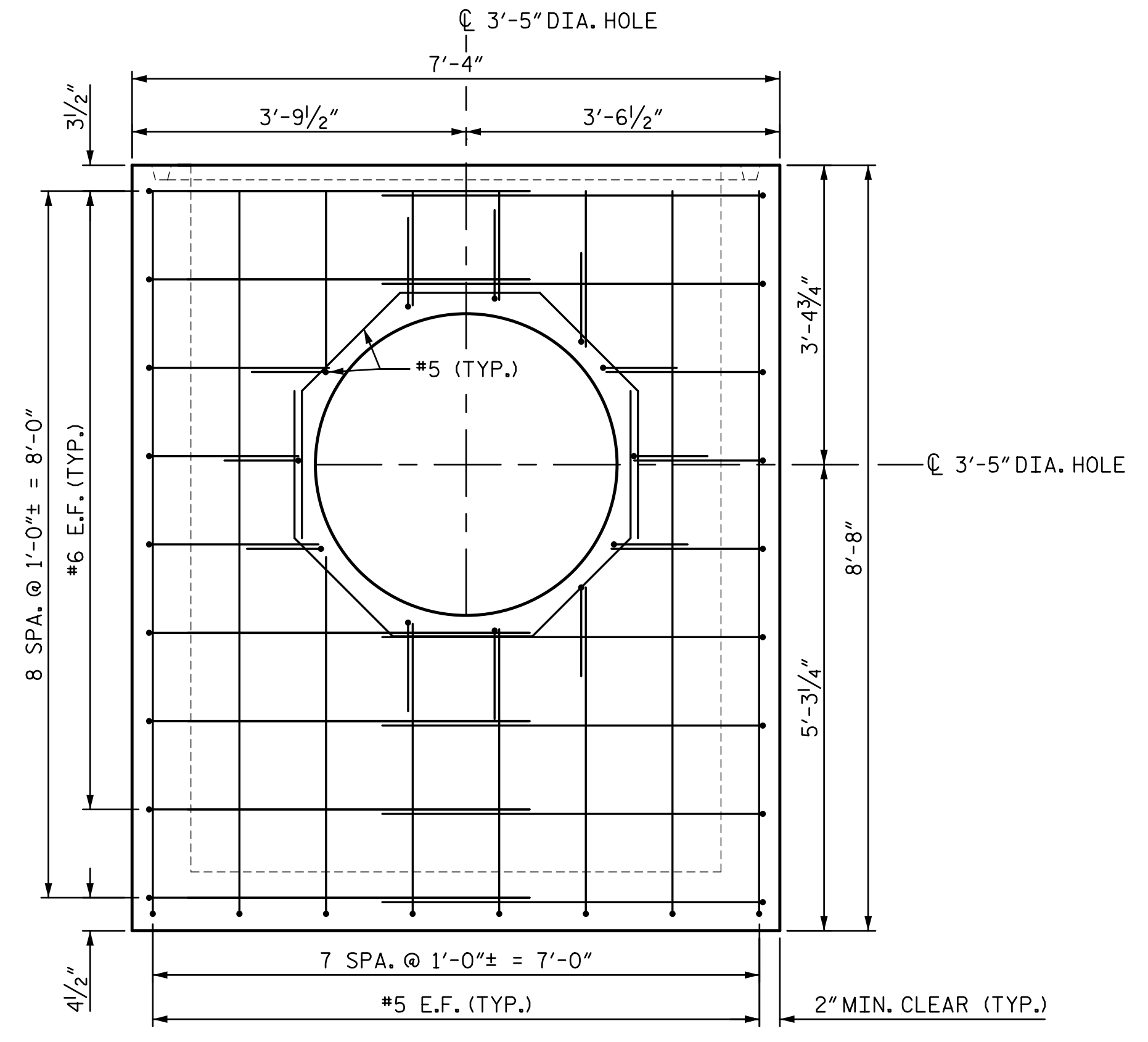
SECTION B-B

NOTES:

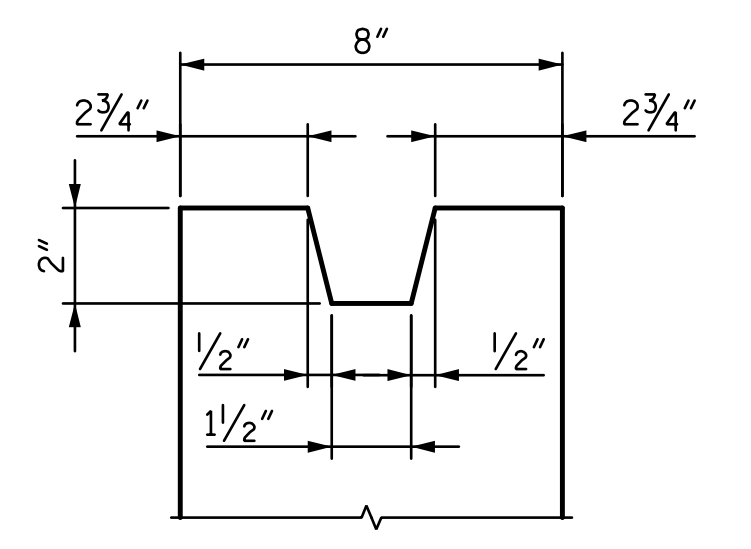
1. E.F. = EACH FACE
2. FOR PERMANENT MANHOLE LID, SEE SHEET RR-29.
3. PRECAST ALL ELEMENTS TO MEET ASTM C913.
4. SEAL JOINTS WITH AN APPROVED SEALANT (SEE SECTION 840 OF NCDOT STANDARD SPECIFICATIONS).
5. ALL REINFORCING STEEL SHALL BE GRADE 60 AND MEET ASTM A615.
6. ALL FASTENERS, INCLUDING 3/4" DIA. THREADED ROD AND HARDWARE, SHALL BE A-36 MATERIAL AND GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
7. USE 5,000 PSI CONCRETE.
8. USE DAYTON SUPERIOR F57 NC THREADED INSERTS FOR 3/4" DIA. THREADED FASTENERS OR EQUIVALENT.
9. MINIMALLY ADJUST REINFORCING STEEL TO PROVIDE ADEQUATE MINIMUM CLEAR COVER TO INSTALLED STEPS, OR INSTALLED THREADED INSERTS.
10. FOR JUNCTION BOX NO. 1, SEE JUNCTION BOXES SPECIAL PROVISION.



SECTION A-A

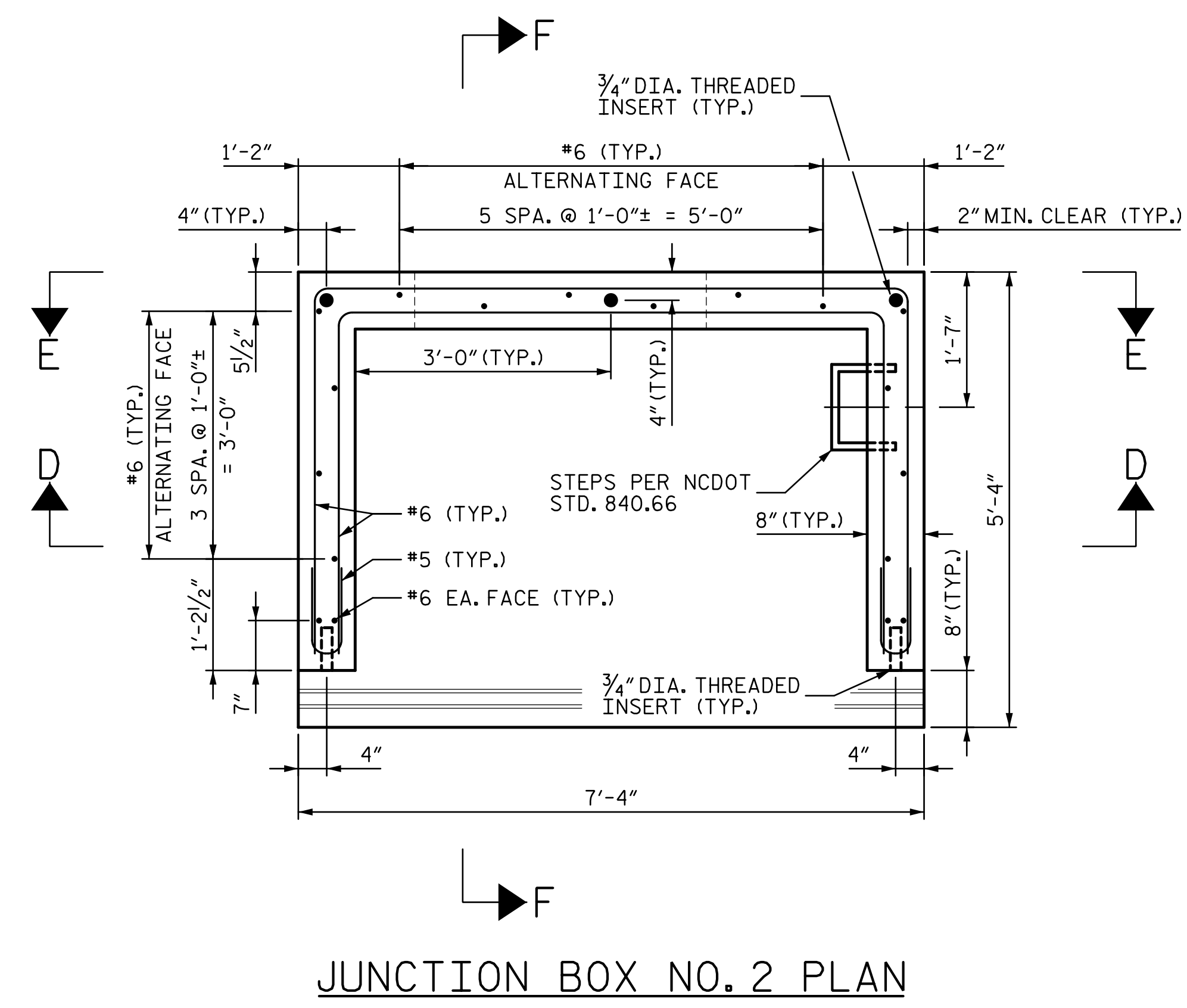


SECTION C-C

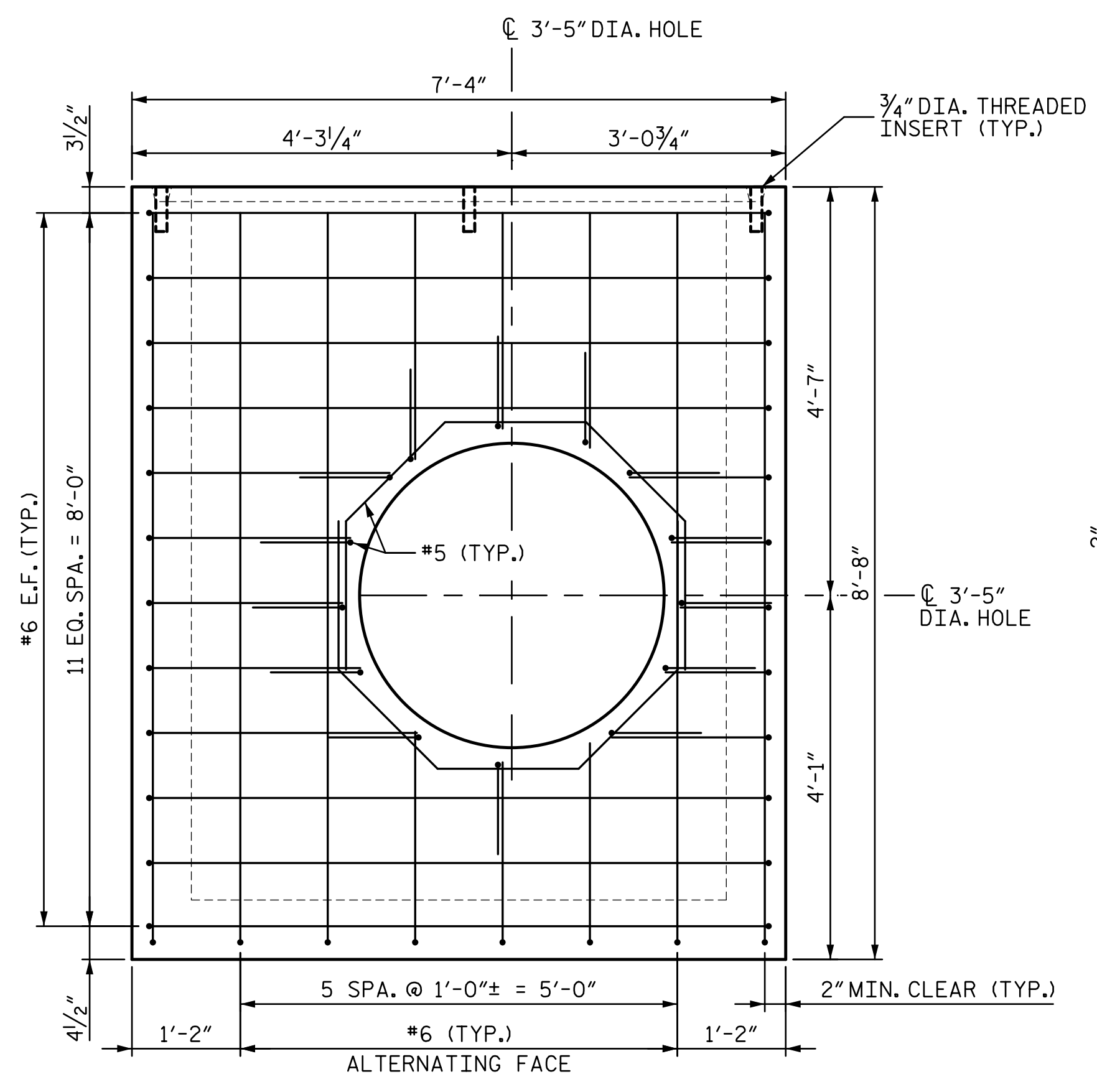


JOINT DETAIL A

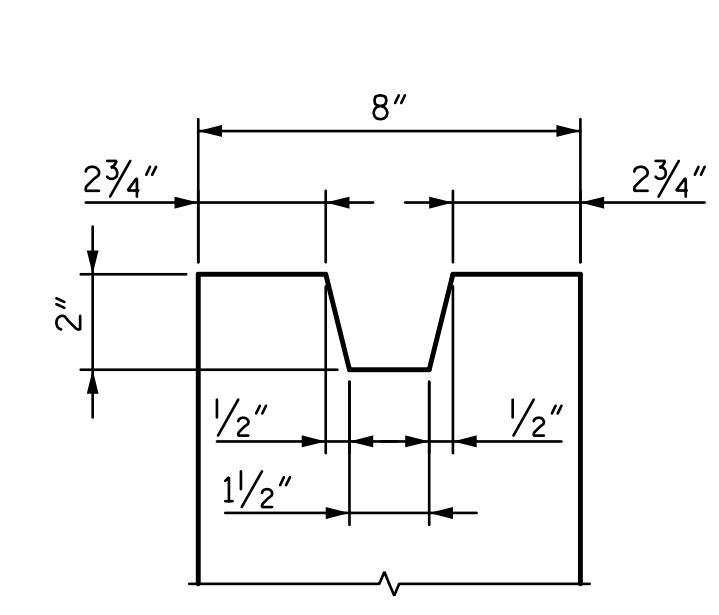
9/15/2015 7:27:51AM i:\PROJ\2513251\ustation\struct\Junction Box\RR-27\_Junction\_Box\_1.dgn chf\khmb



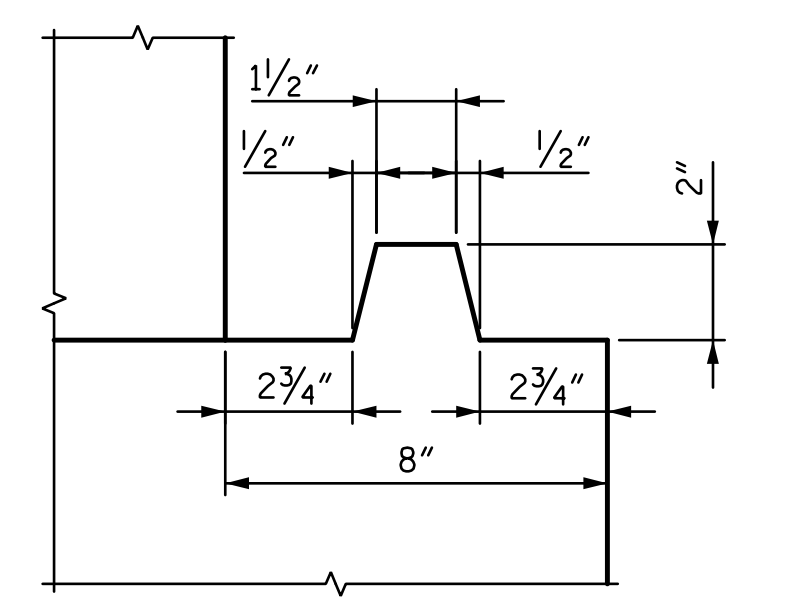
JUNCTION BOX NO. 2 PLAN



SECTION E-E



JOINT DETAIL A



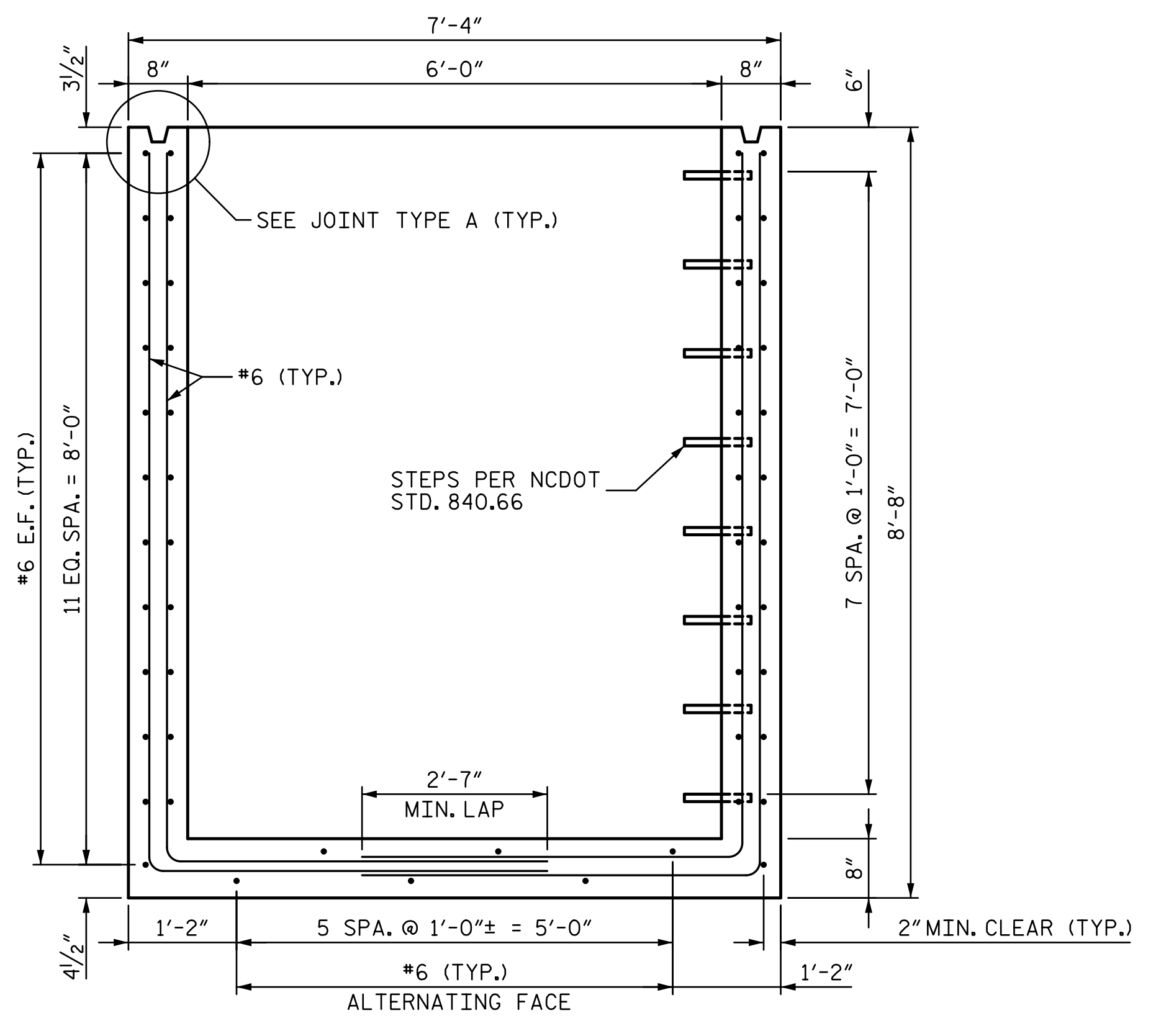
JOINT DETAIL B

NOTES:

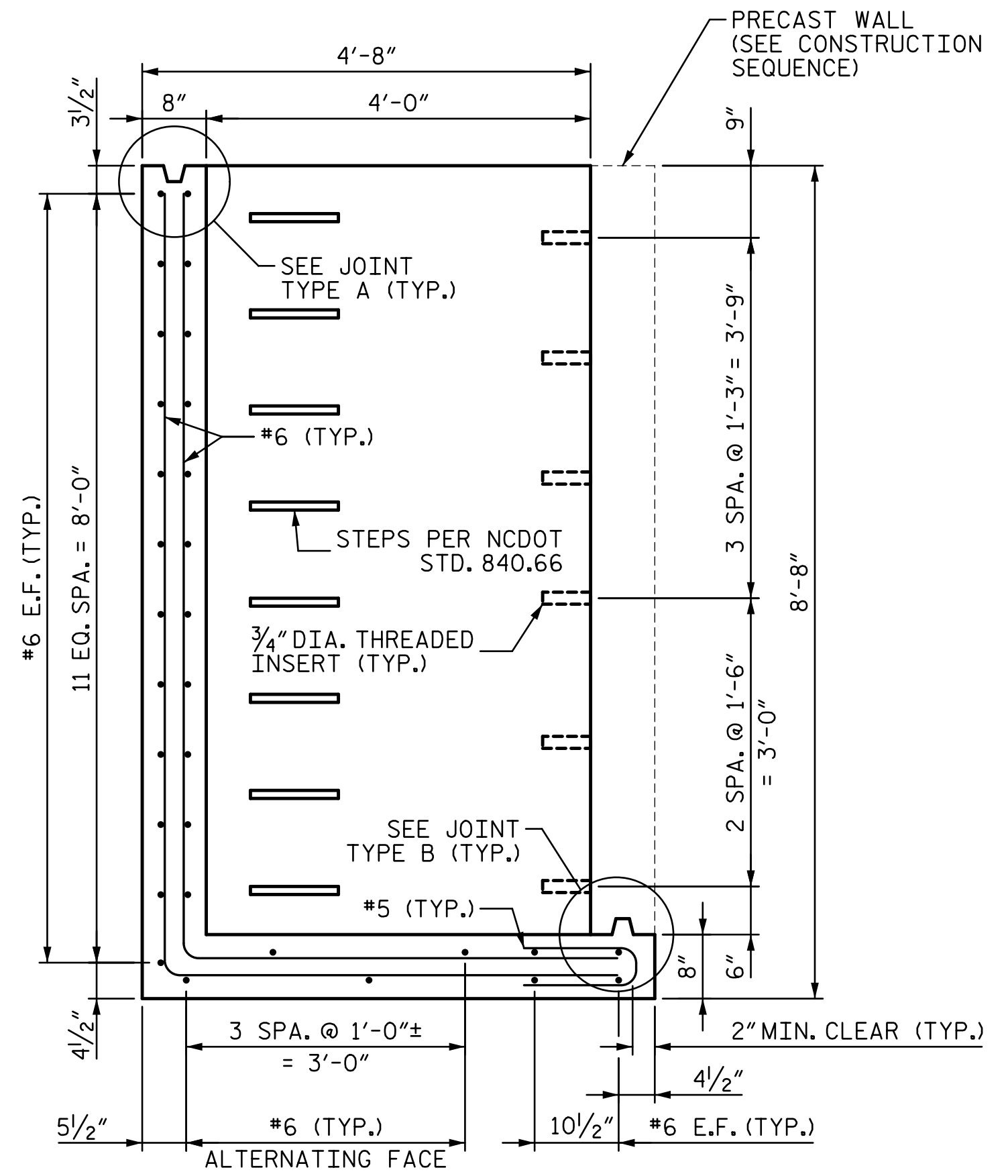
- FOR TEMPORARY GRATE LID AND PERMANENT MANHOLE LID, SEE SHEET RR-29.
- FOR TEMPORARY STEEL PLATE WALL AND PERMANENT PRECAST WALL, SEE SHEET RR-30.
- PRECAST ALL ELEMENTS TO MEET ASTM C913.
- SEAL JOINTS WITH AN APPROVED SEALANT (SEE SECTION 840 OF NCDOT STANDARD SPECIFICATIONS).
- ALL REINFORCING STEEL SHALL BE GRADE 60 AND MEET ASTM A615.
- ALL FASTENERS, INCLUDING 3/4" DIA. THREADED ROD AND HARDWARE, SHALL BE A-36 MATERIAL AND GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- USE 5000 PSI CONCRETE.
- USE DAYTON SUPERIOR F57 NC THREADED INSERTS FOR 3/4" DIA. THREADED FASTENERS OR EQUIVALENT.
- MINIMALLY ADJUST REINFORCING STEEL TO PROVIDE ADEQUATE MINIMUM CLEAR COVER, INSTALL STEPS, OR INSTALL THREADED INSERTS.
- FOR JUNCTION BOX NO. 2, SEE JUNCTION BOXES SPECIAL PROVISION.

CONSTRUCTION SEQUENCE:

- INSTALL JUNCTION BOX PRIOR TO CONSTRUCTION OF DETOUR TRACK (-NSD2-).
- INSTALL TEMPORARY STEEL PLATE WALL AND SECURE USING 3/4" DIA. THREADED ROD AND HARDWARE.
- INSTALL TEMPORARY GRATE LID AND SECURE USING 3/4" DIA. THREADED ROD AND HARDWARE.
- AFTER COMPLETION OF DETOUR (-NSD2-) AND REMOVAL OF EXISTING NSR TRACKS, REMOVE TEMPORARY GRATE LID AND TEMPORARY STEEL PLATE WALL.
- INSTALL PRECAST WALL AND SECURE USING 3/4" DIA. THREADED ROD AND HARDWARE. GROUT HOLE BLOCKOUTS.
- INSTALL MANHOLE LID AND SECURE USING 3/4" DIA. THREADED ROD AND HARDWARE. GROUT AND SEAL HOLE BLOCKOUTS. INSTALL NEENAH R-7516 BALLAST SCREEN WITH NEENAH R-2504, TYPE D GRATE, OR EQUIVALENT.
- REMOVE JUNCTION BOX NO. 2 AFTER COMPLETION OF NSR TRACKS, REMOVAL OF DETOUR (-NSD2-) TRACK, COMPLETION OF CSXT TRACKS, AND COMPLETION OF DITCH GRADING ALONG CSXT TRACK. BACKFILL AND GRADE PER TRACK PLANS.



SECTION D-D



SECTION F-F

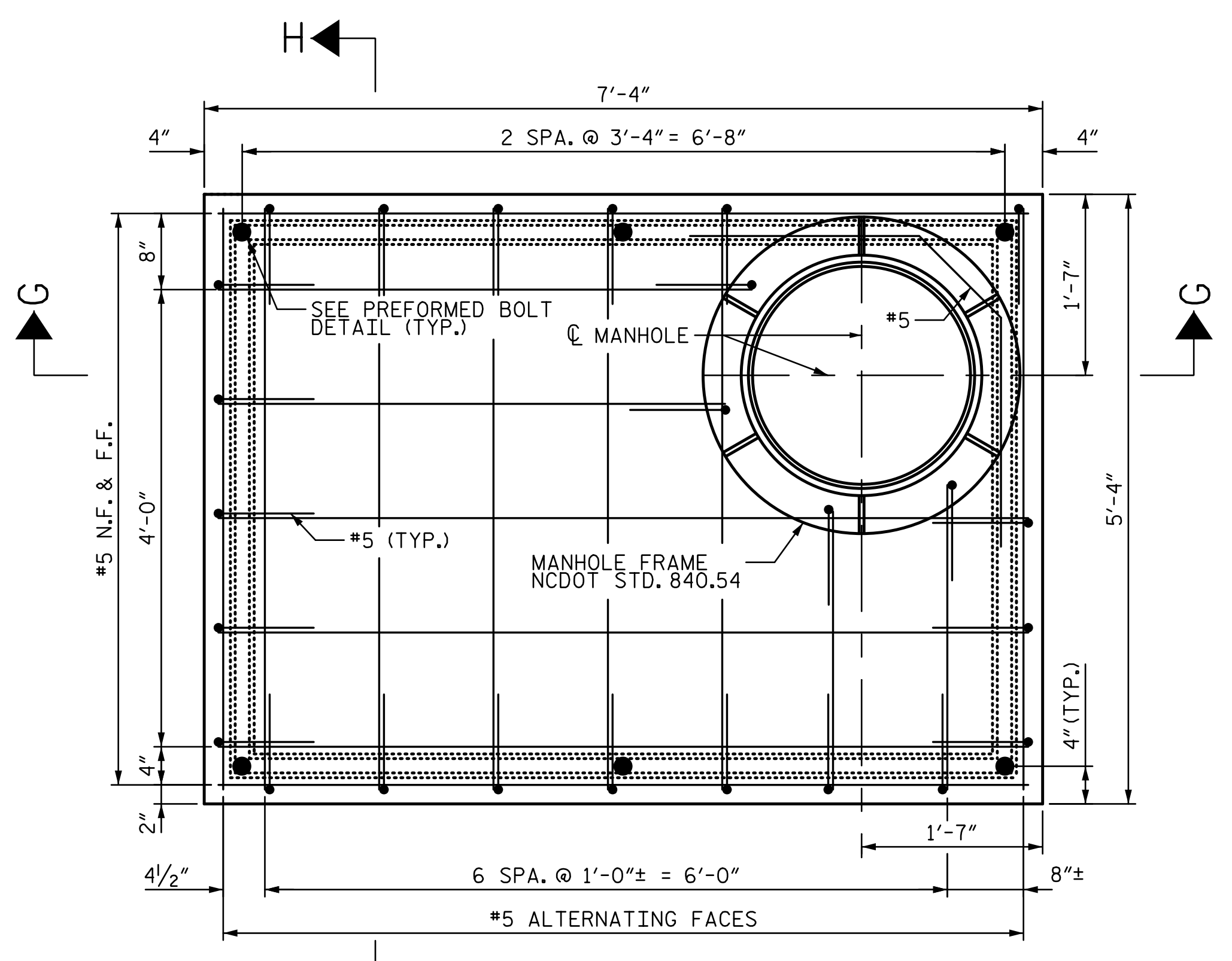
9/15/2015 7:27:37 AM I:\PROJ\251325\Illustration\struct\Junction\_Box\RR-28\_Junction\_Box\_2.dgn chf\khmb



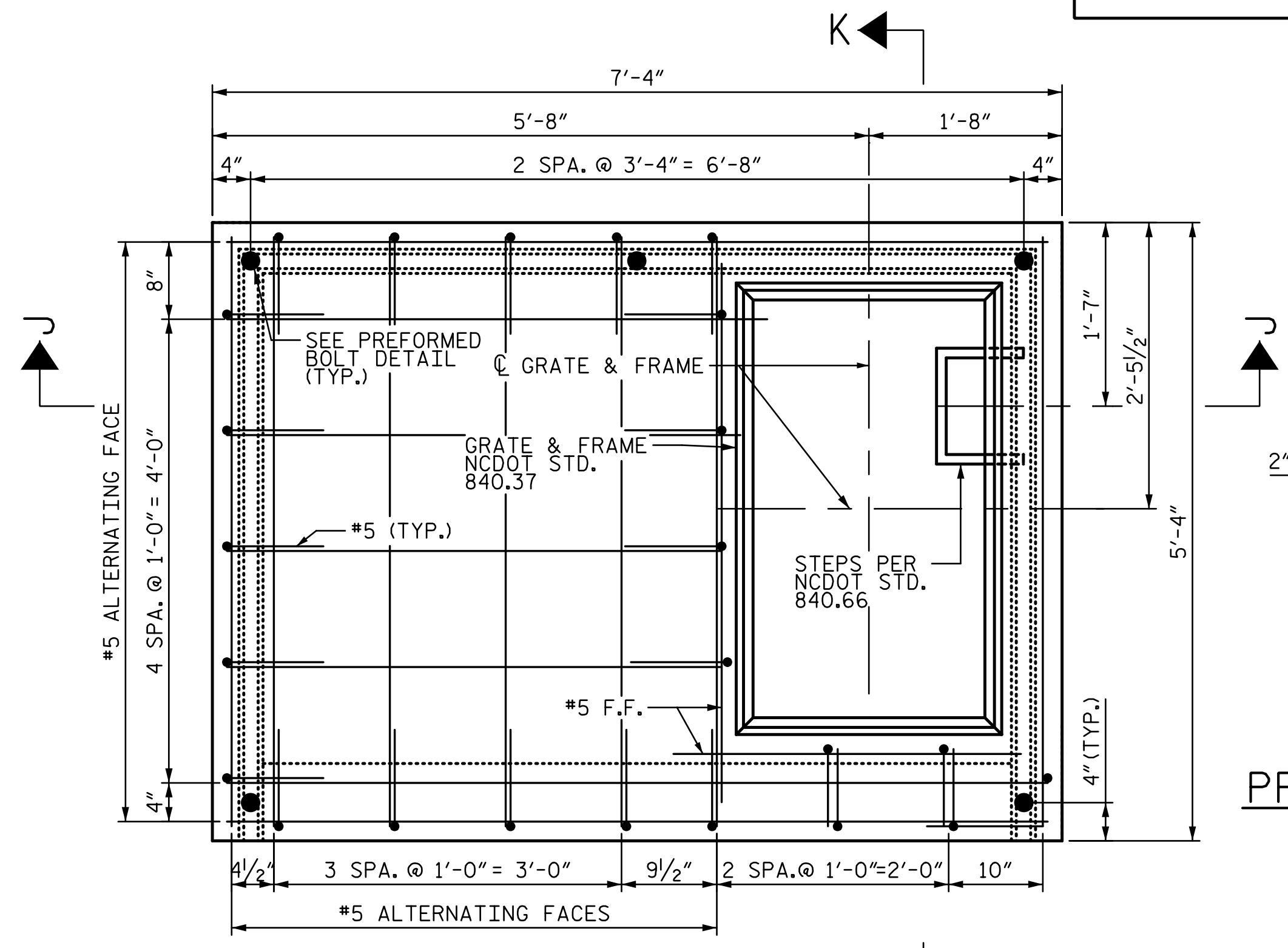
NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|  |                           |
|--|---------------------------|
| PROJECT REFERENCE NO.<br><b>U-3308</b> | SHEET NO.<br><b>RR-29</b> |
| RW SHEET NO.                           |                           |
| STRUCTURES<br>ENGINEER                 |                           |
|  |                           |

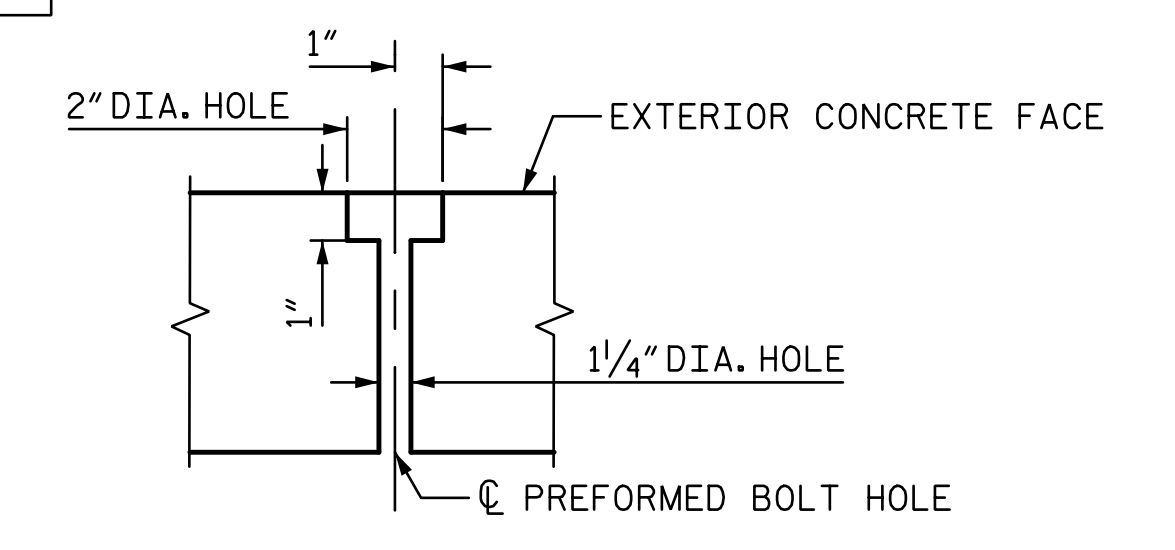
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



**MANHOLE LID - PLAN**  
(QUANTITY 2)

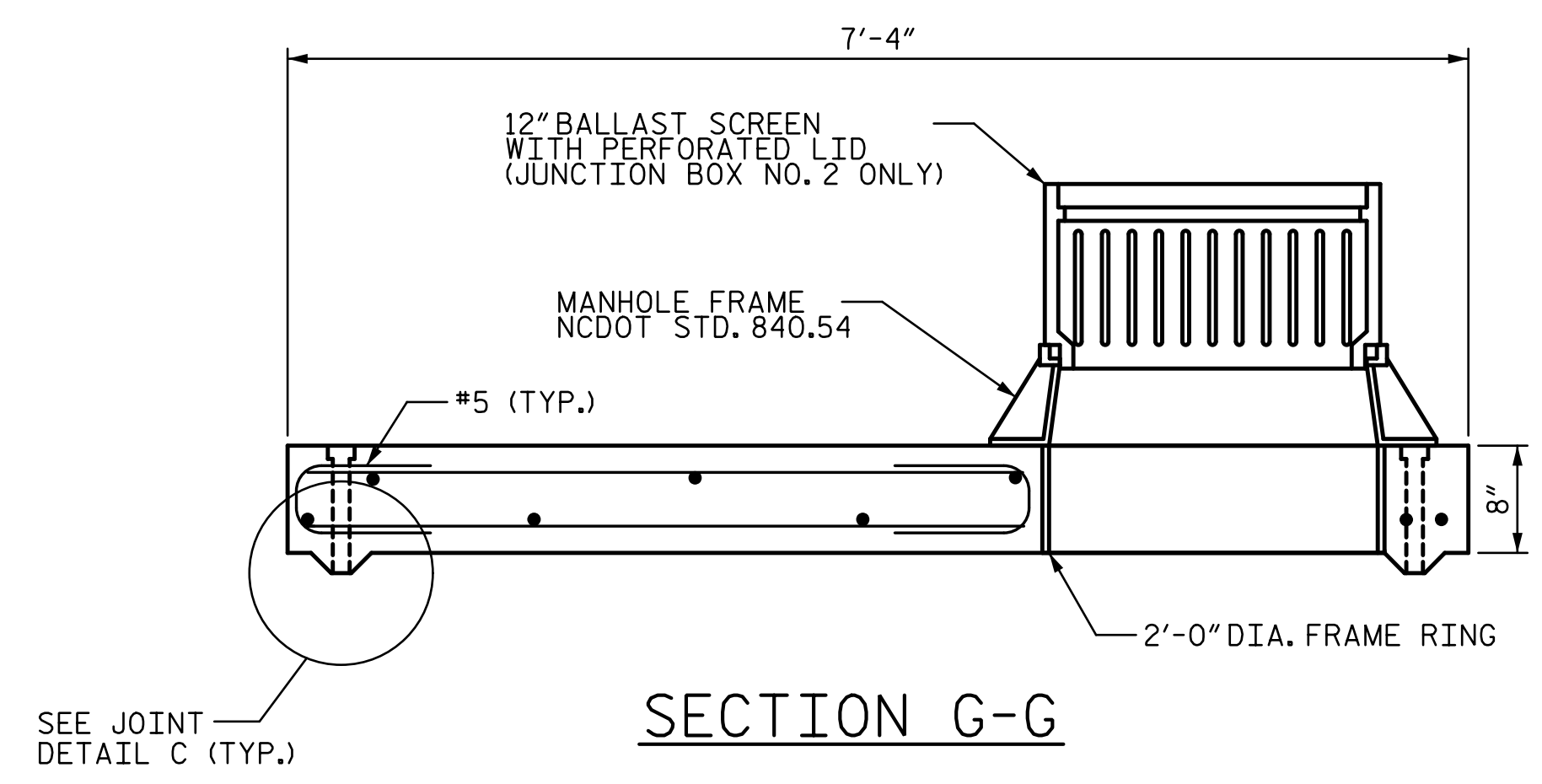


**TEMPORARY GRATE LID - PLAN**  
(QUANTITY 1)

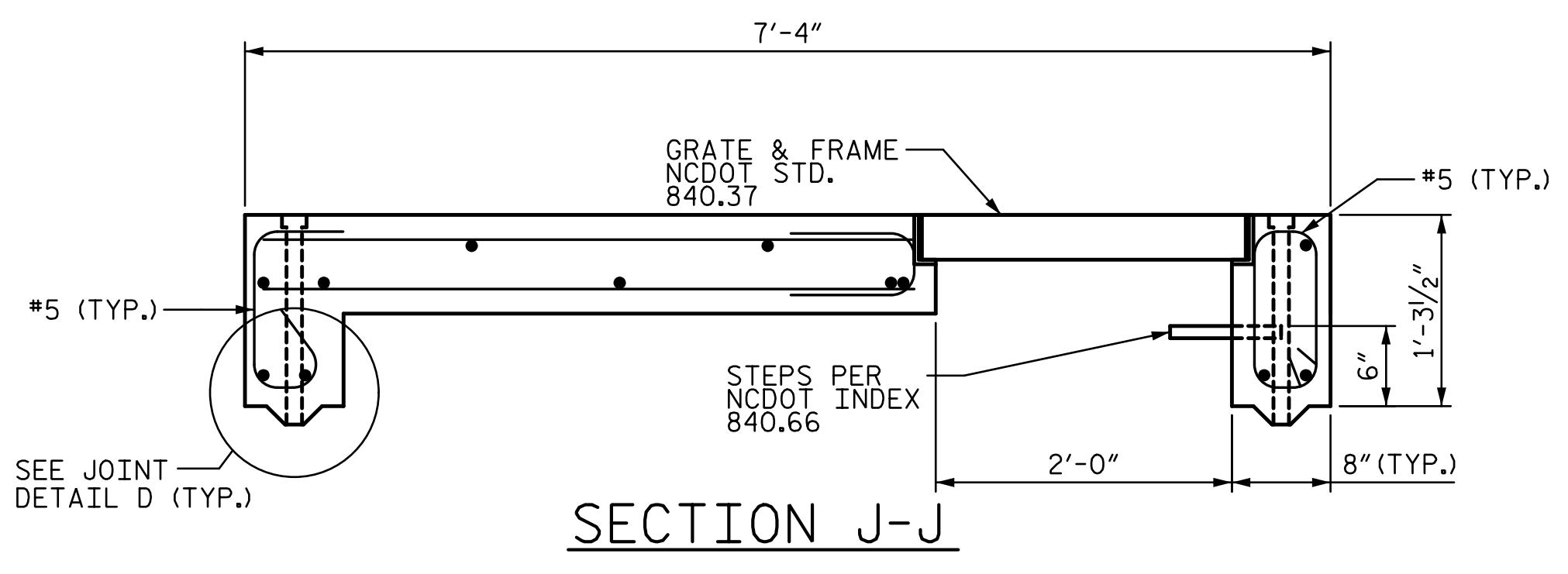


**PREFORMED BOLT DETAIL**

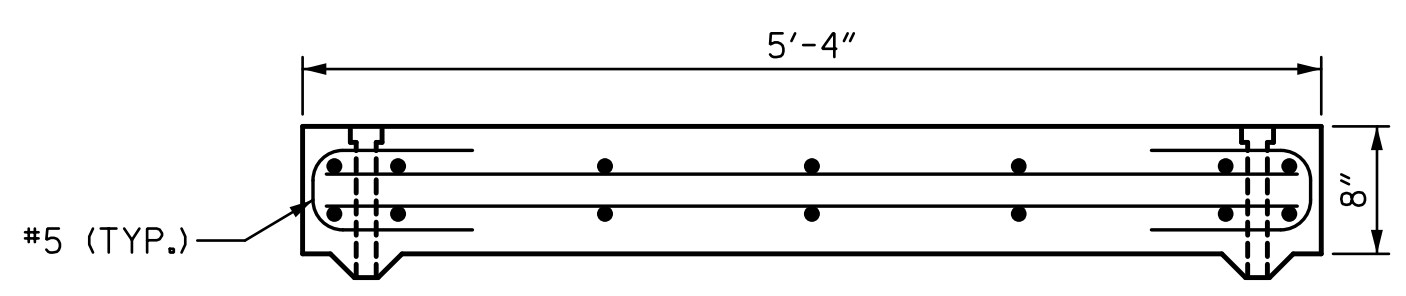
**NOTES:**  
1. CLEAR COVER SHALL BE 1/2" TYPICAL.



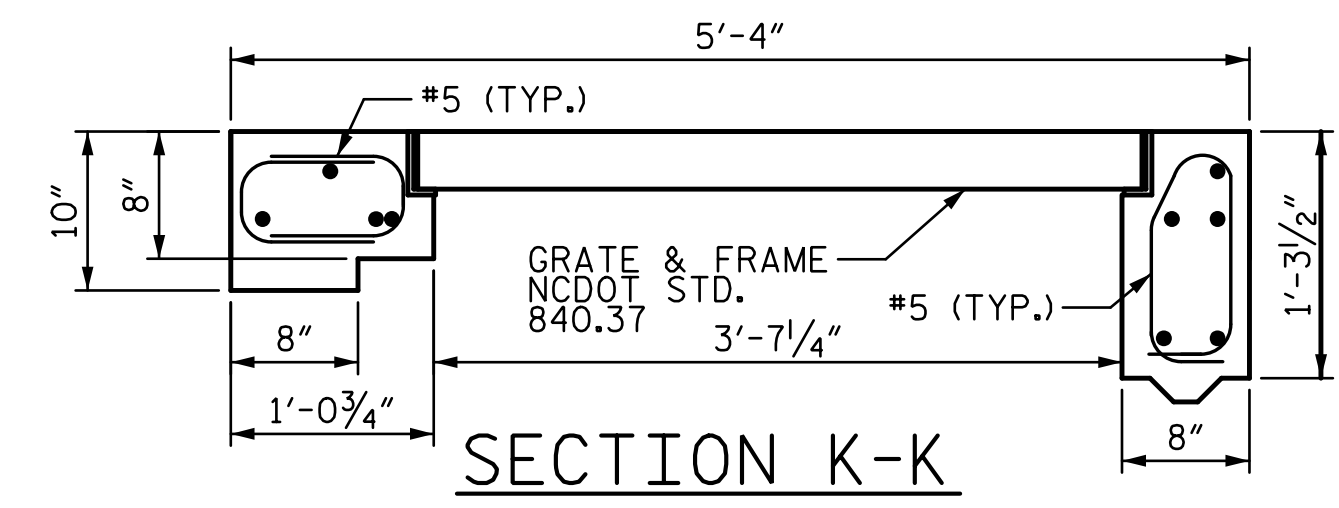
**SECTION G-G**



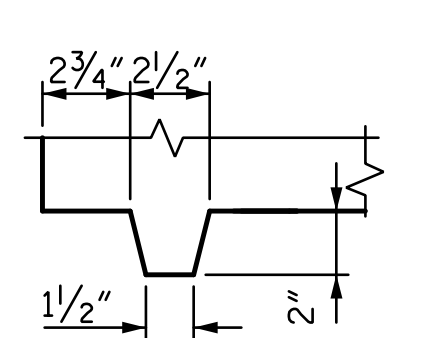
**SECTION J-J**



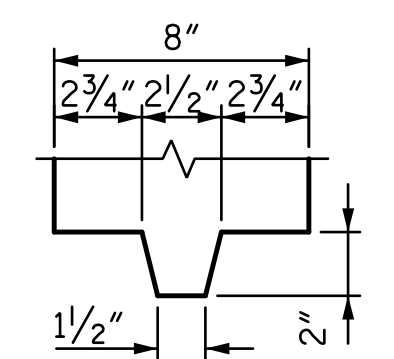
**SECTION H-H**



**SECTION K-K**



**JOINT DETAIL C**



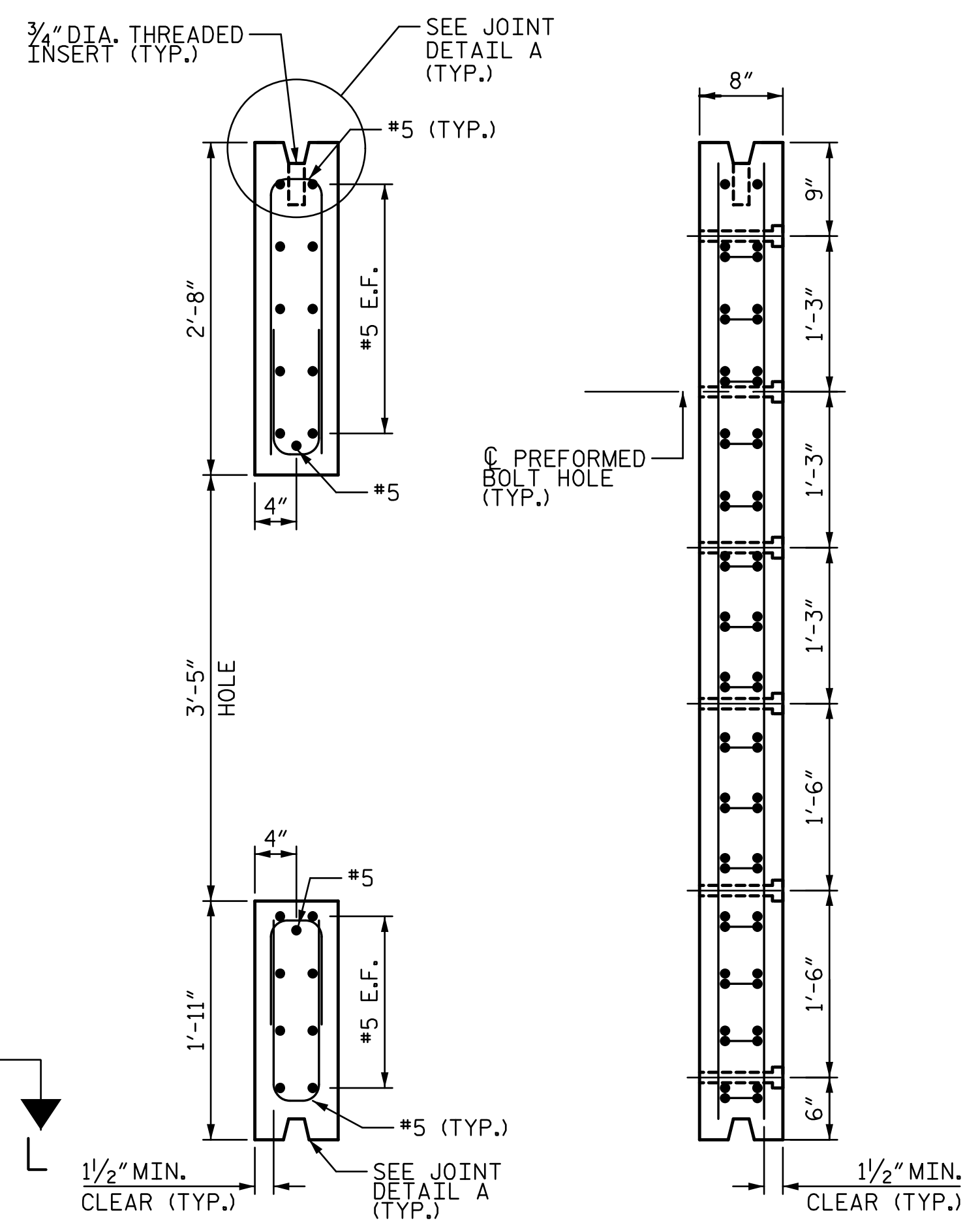
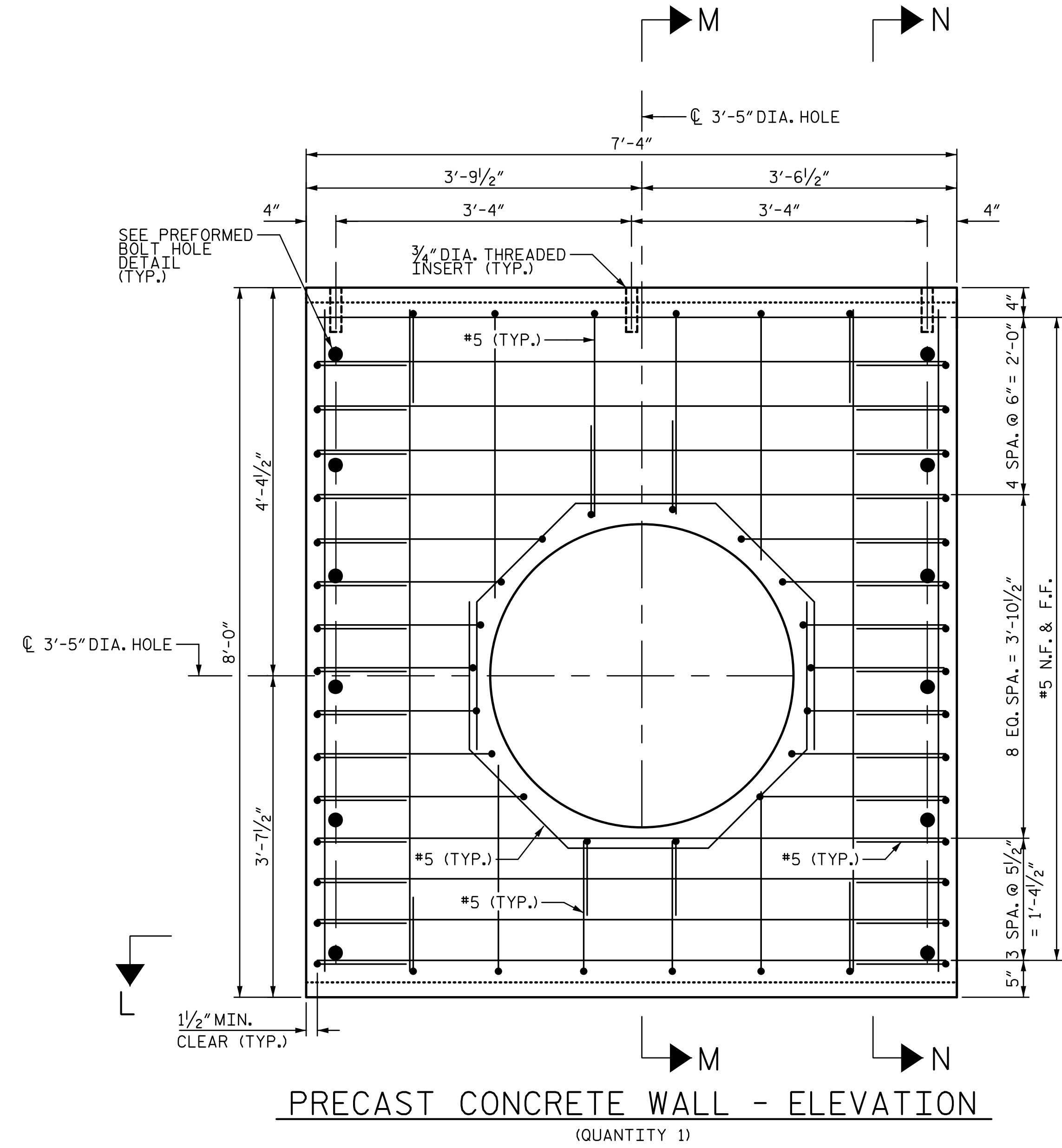
**JOINT DETAIL D**

i:\PROJ\251325\Illustration\struct\Junction Box Lids.dgn 7:27:20 AM 9/15/2015 chf+hmb

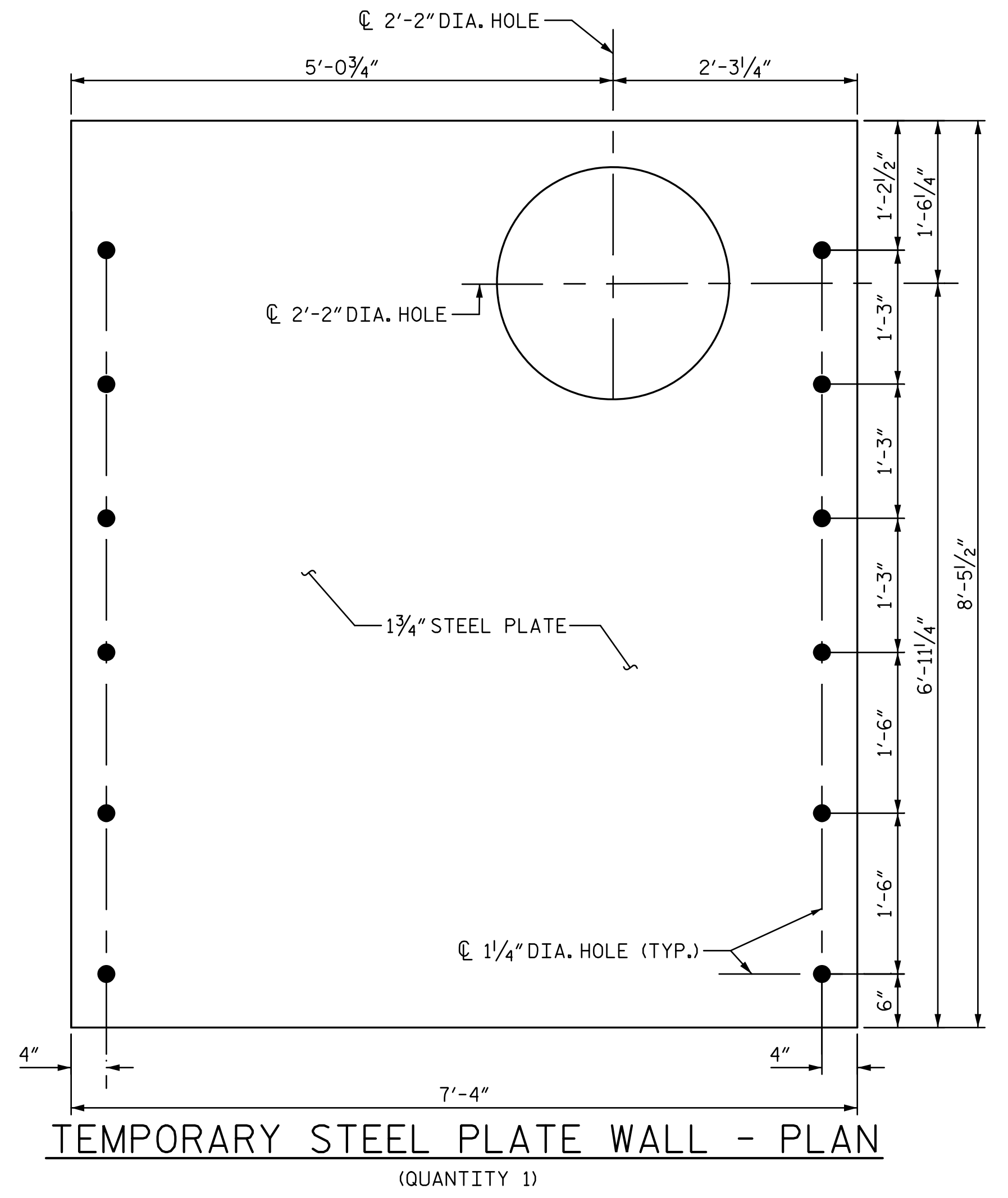
NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|  |                           |
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| PROJECT REFERENCE NO.<br><b>U-3308</b> | SHEET NO.<br><b>RR-30</b> |
| R/W SHEET NO.                          |                           |
| STRUCTURES<br>ENGINEER                 |                           |
|  |                           |

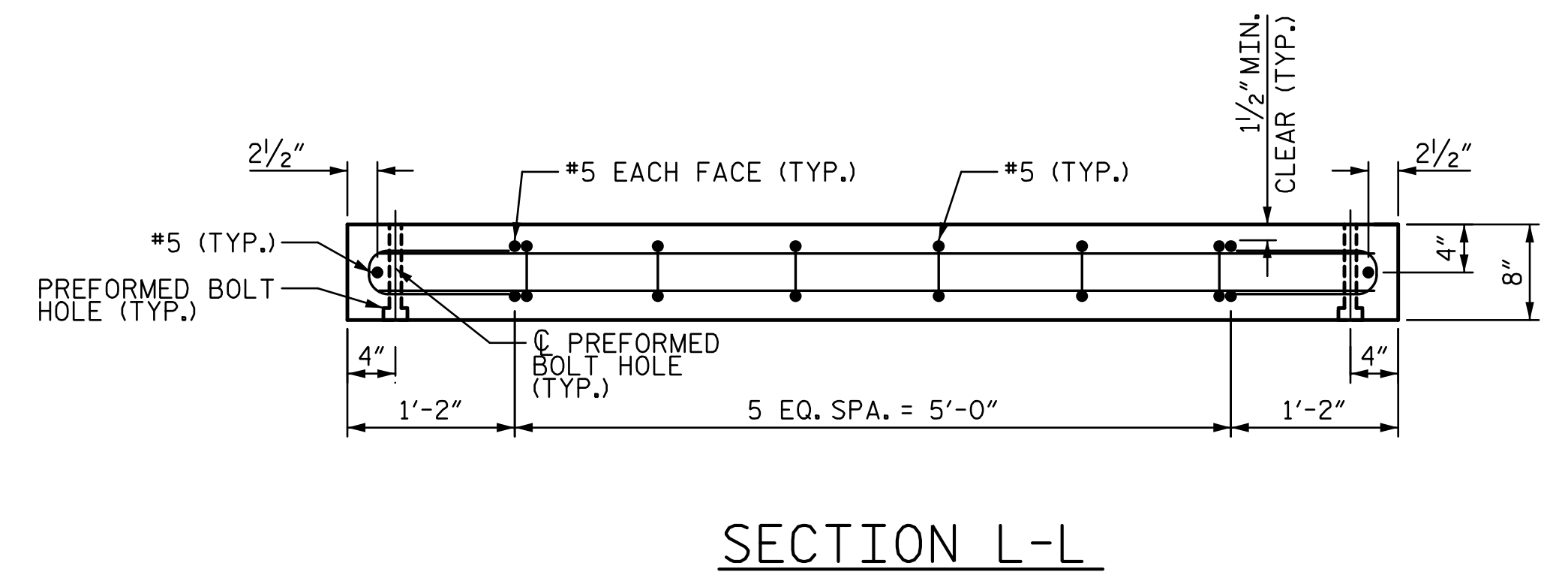
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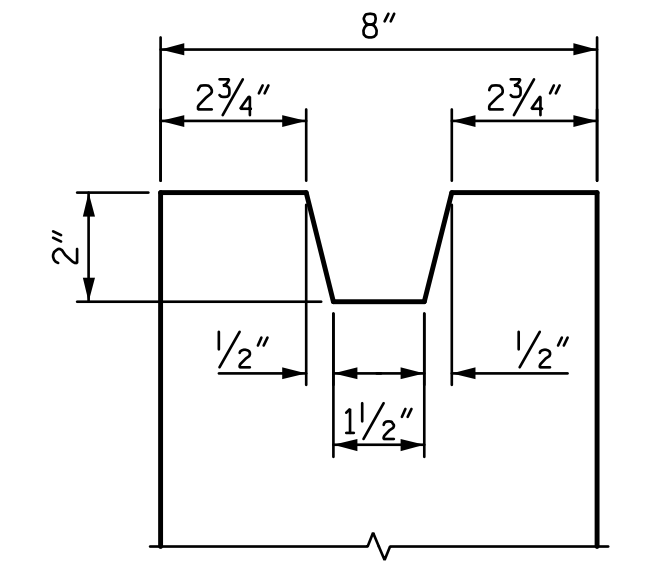
SECTION M-M SECTION N-N



TEMPORARY STEEL PLATE WALL - PLAN (QUANTITY 1)



SECTION L-L



JOINT DETAIL A

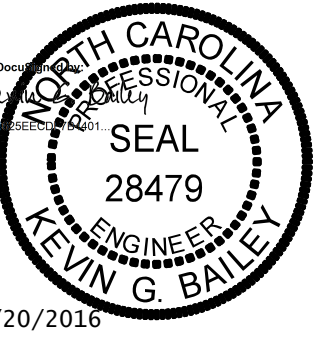
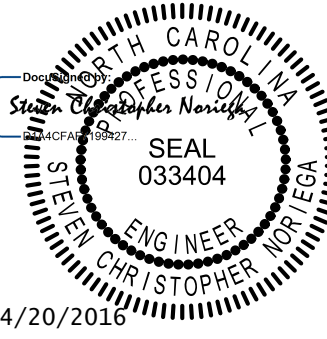
**NOTES:**

1. PRECAST ALL ELEMENTS TO MEET ASTM C913.
2. ALL REINFORCING STEEL SHALL BE GRADE 60 AND MEET ASTM A615.
3. USE 5,000 PSI CONCRETE.
4. USE 3/4" DIA. DAYTON SUPERIOR F57 NC THREADED INSERTS OR EQUIVALENT.
5. ALL FASTENERS SHALL BE GALVANIZED 3/4" DIA. THREADED ROD AND GALVANIZED HARDWARE.
6. MINIMALLY ADJUST REINFORCING STEEL TO PROVIDE ADEQUATE MINIMUM CLEAR COVER, PLACE STEPS, OR INSTALL THREADED INSERTS.
7. FOR JUNCTION BOX NO. 2, SEE SHEET RR-28.
8. FOR PREFORMED BOLT HOLE DETAIL, SEE SHEET RR-29.

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NSR BRIDGE MP H-56.10  
CSXT BRIDGE MP SB-154.61

|   |  |
|---|--|
| PROJECT REFERENCE NO.<br><i>U-3308</i>  | SHEET NO.<br><i>X-RR</i>   |
| R/W SHEET NO.   |  |
| RAIL DESIGN ENGINEER<br> | HYDRAULICS ENGINEER<br> |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

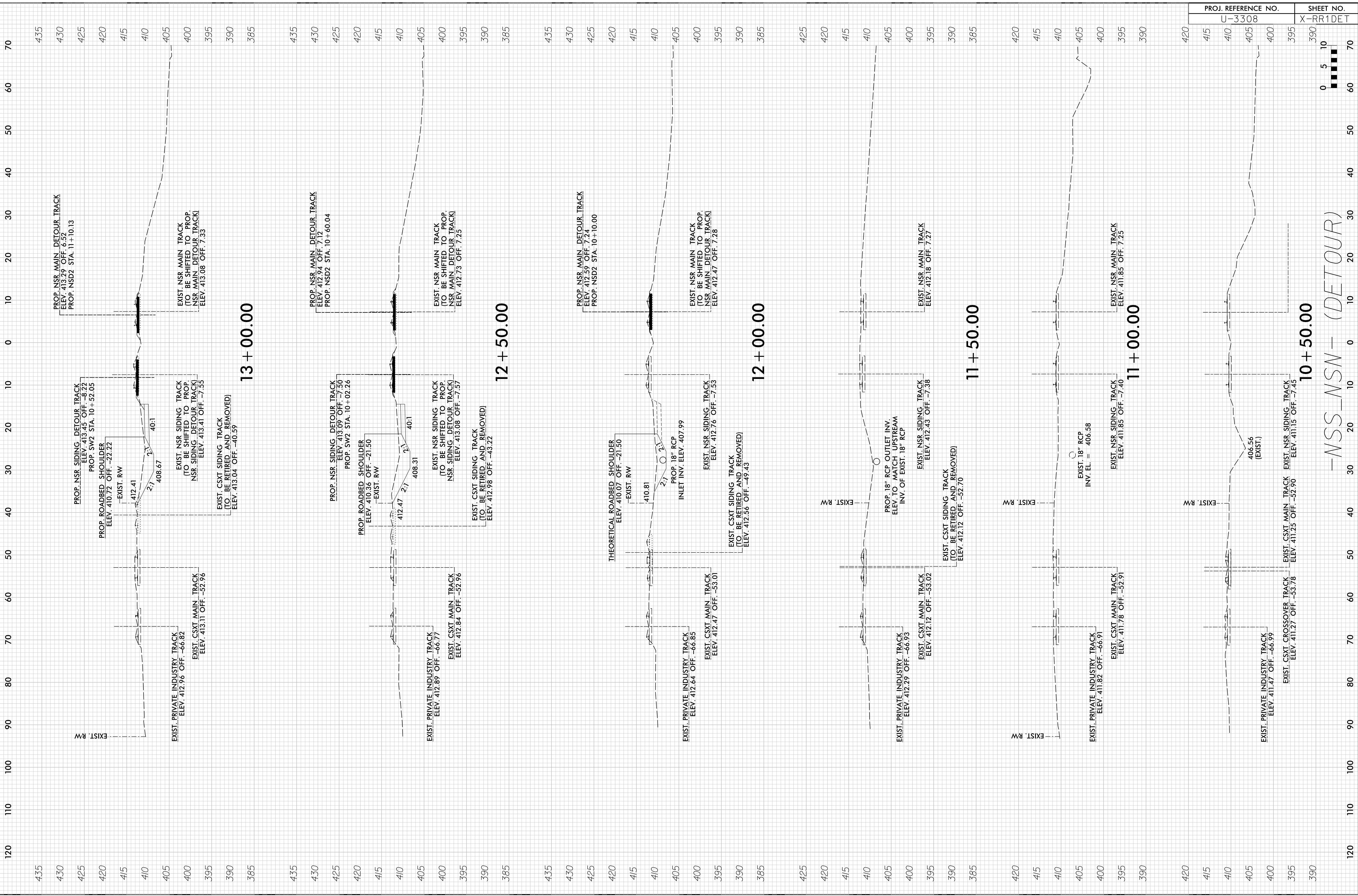
# TIP PROJECT: U-3308

## DURHAM COUNTY TYPE OF WORK: GRADING, TRACK, DRAINAGE

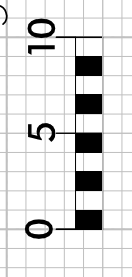
### INDEX OF CROSS SECTION SHEETS

| <u>TITLE</u>               | <u>STATION</u>                  | <u>SHEET NO.</u>           |
|----------------------------|---------------------------------|----------------------------|
| DETOUR CROSS SECTIONS..... | 10+50 TO 37+00 (-NSS_NSN-)..... | X-RR1DET THROUGH X-RR12DET |
| FINAL CROSS SECTIONS.....  | 10+50 TO 37+00 (-NSS_NSN-)..... | X-RR1 THROUGH X-RR12       |

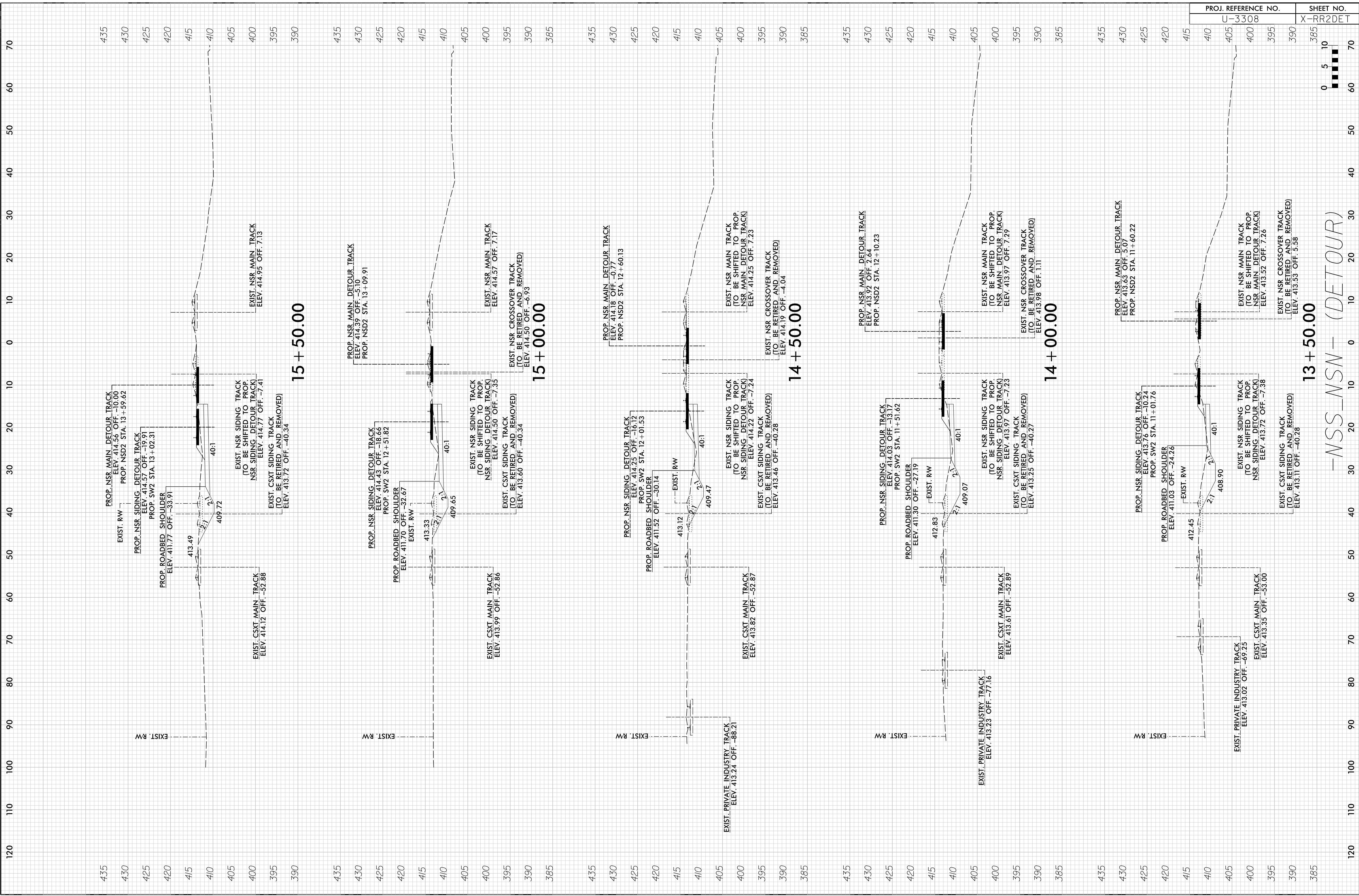




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| U-3308              | X-RR1DET  |

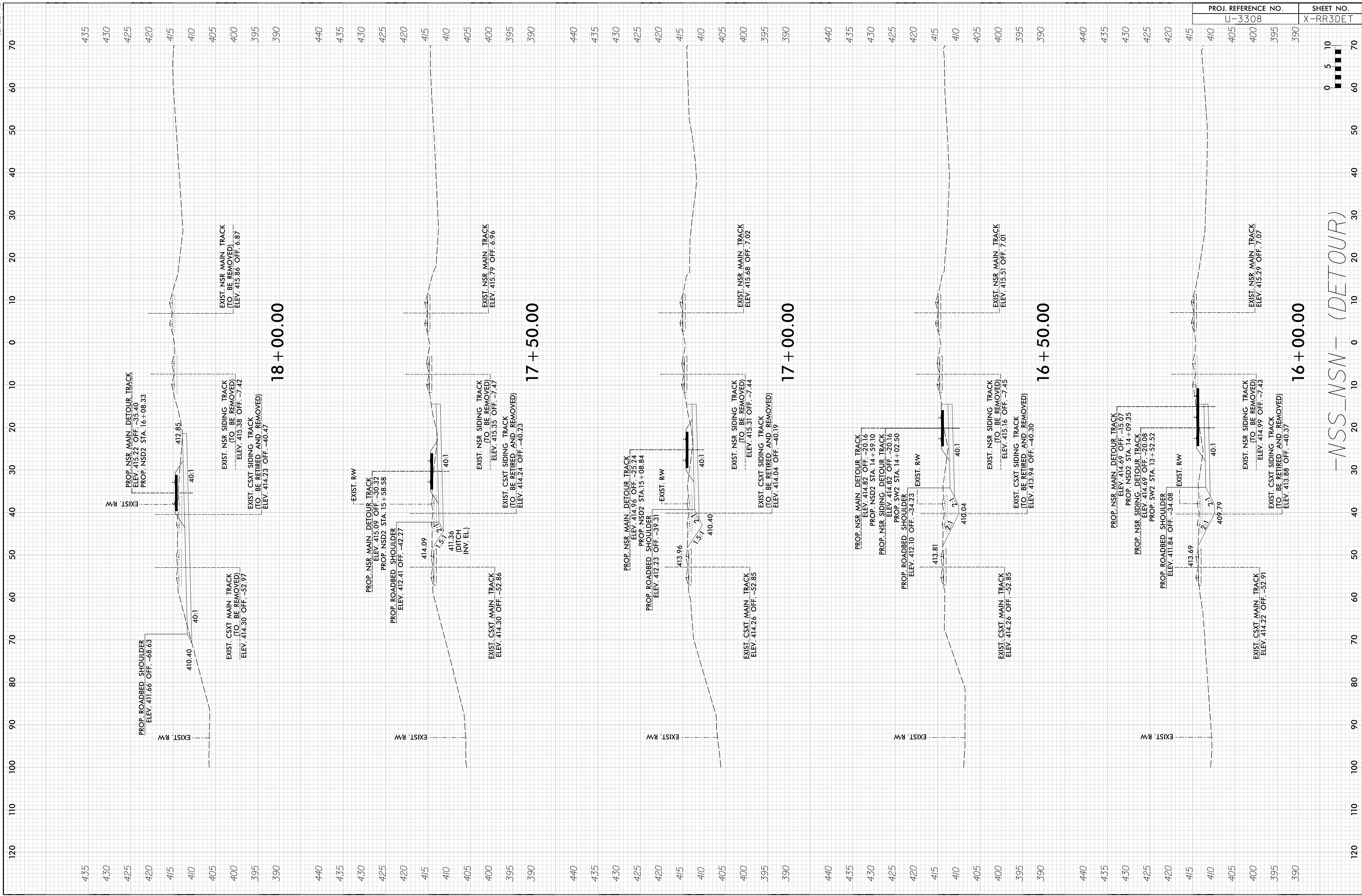


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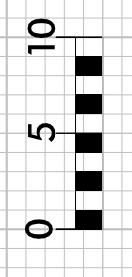
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| U-3308              | X-PR2DET  |

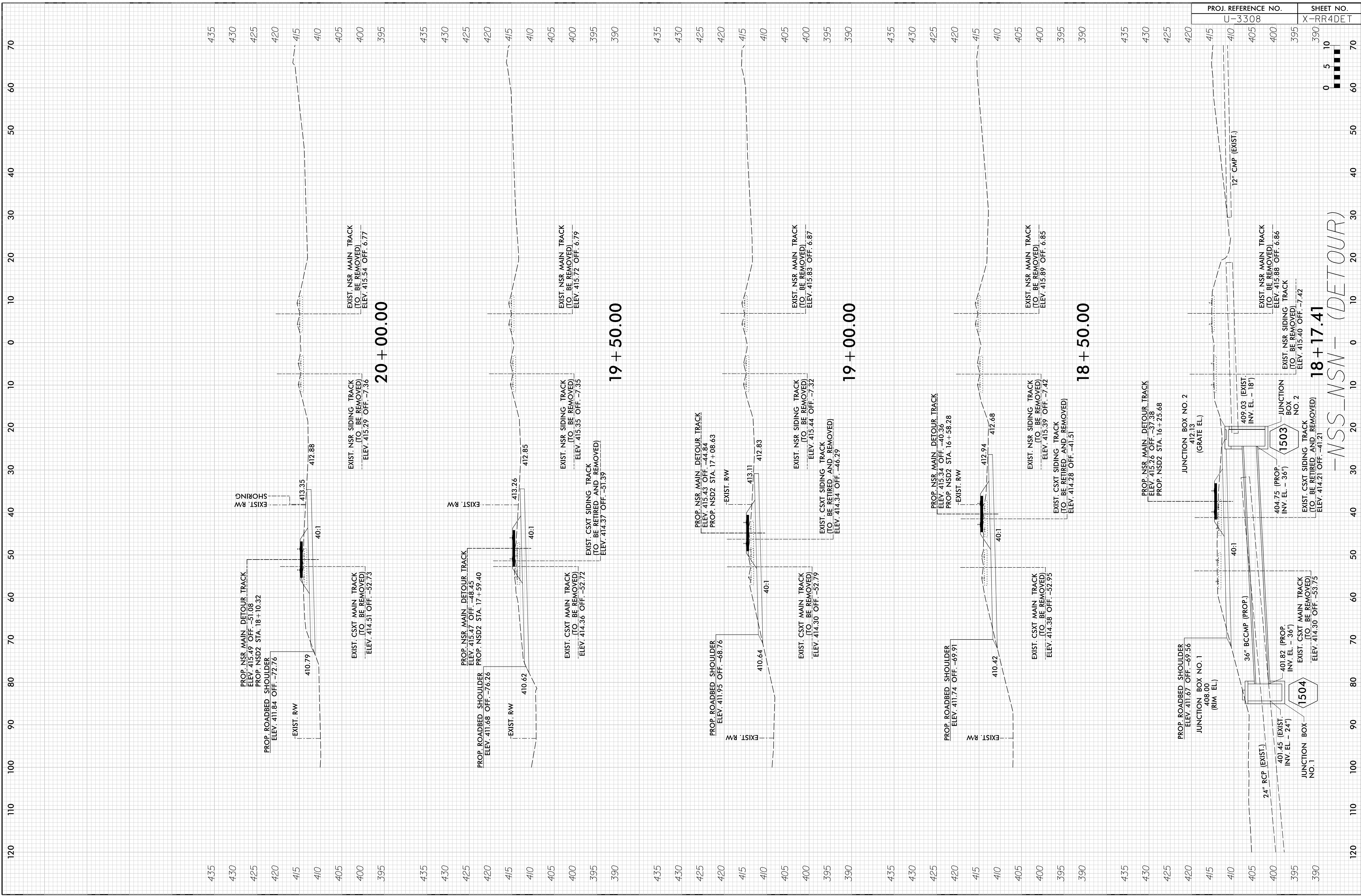
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-NSS-NSN- (DETOUR)

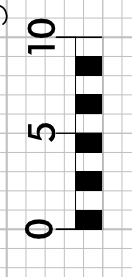
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| U-3308              | X-RR3DET  |





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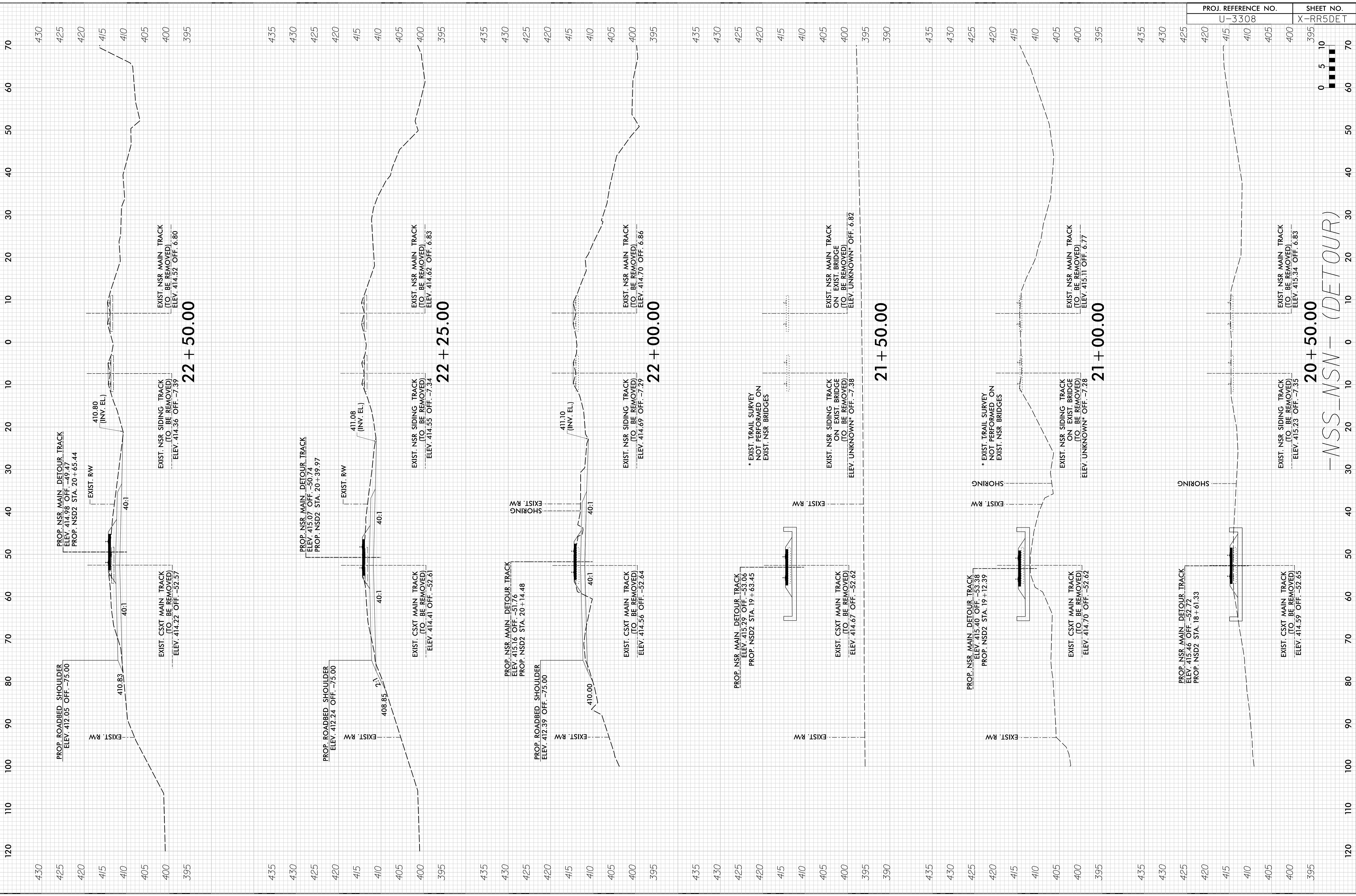
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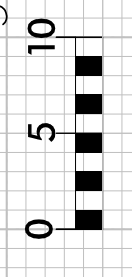


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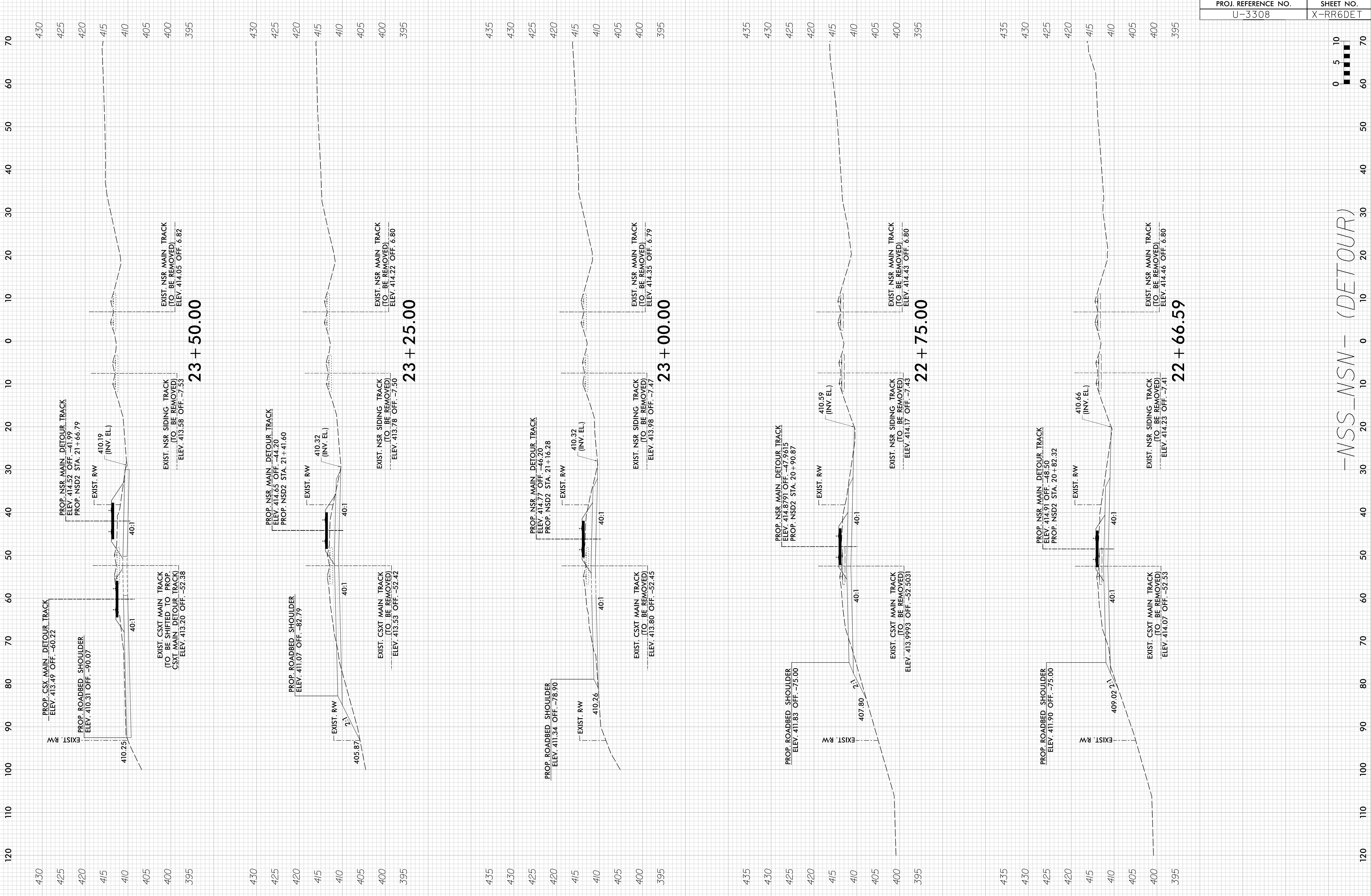
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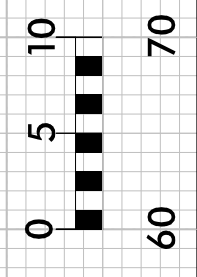
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| U-3308              | X-RR5DET  |



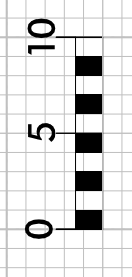
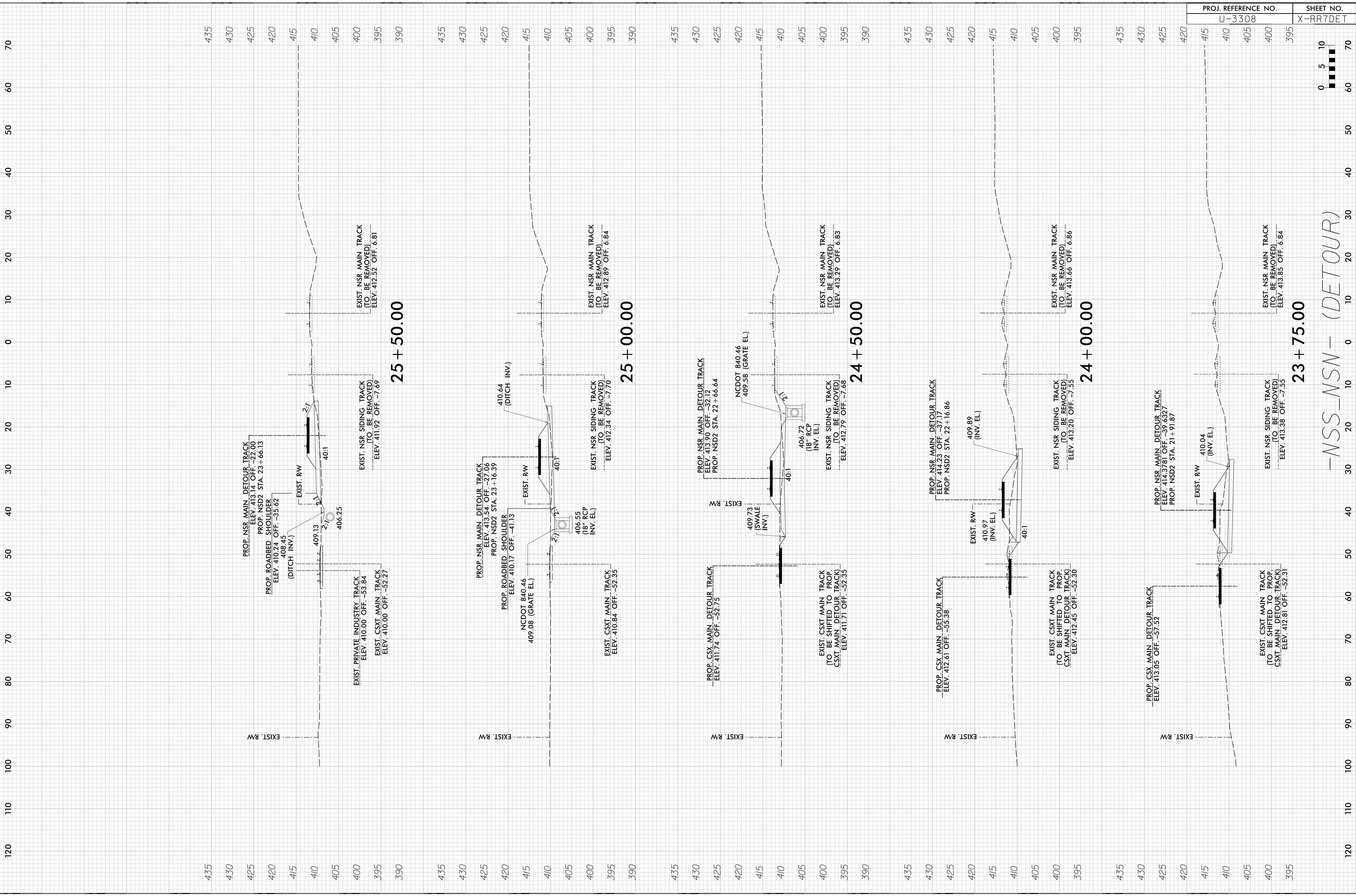
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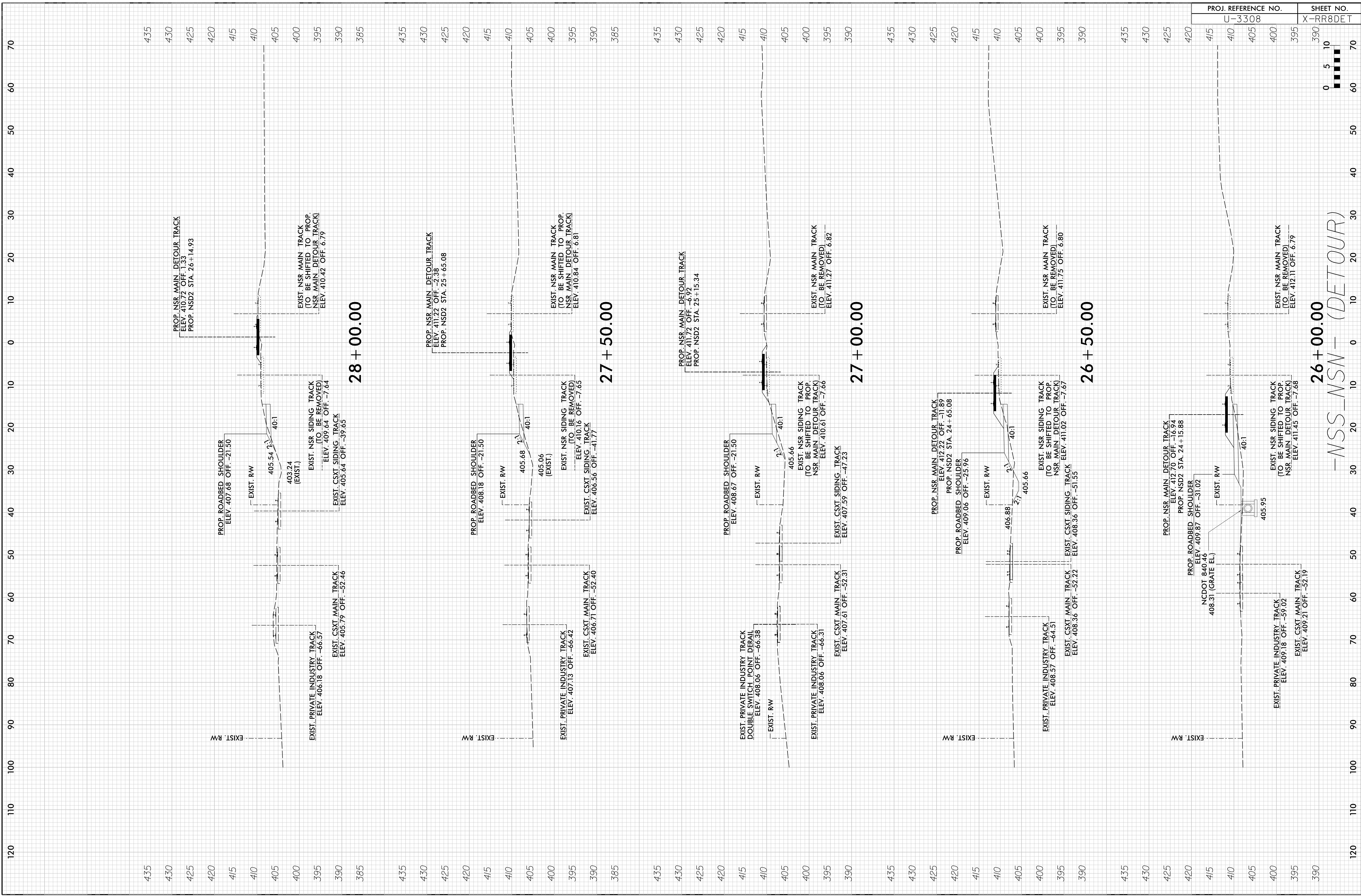
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| U-3308              | X-RR6DET  |



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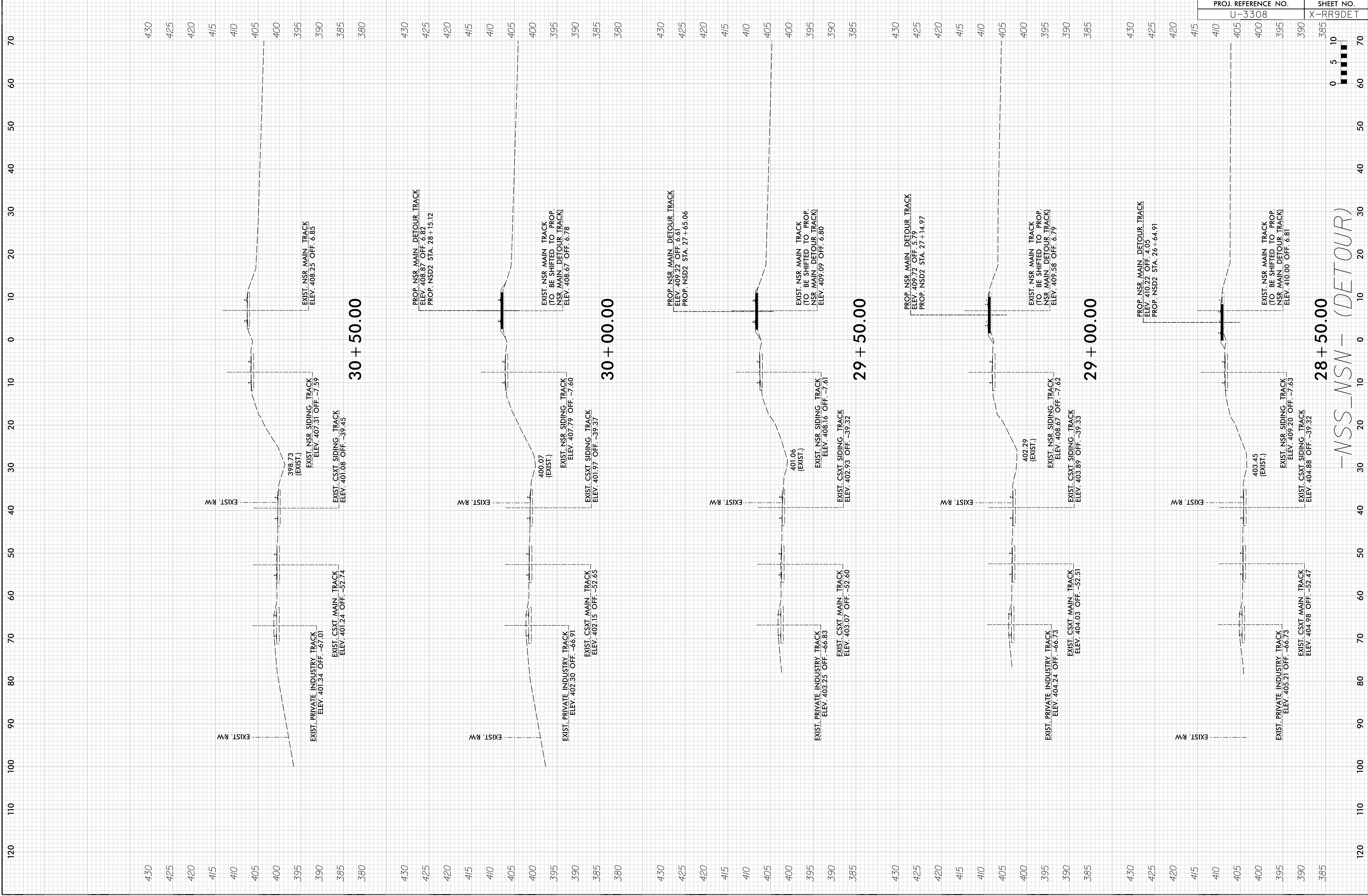


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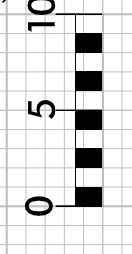
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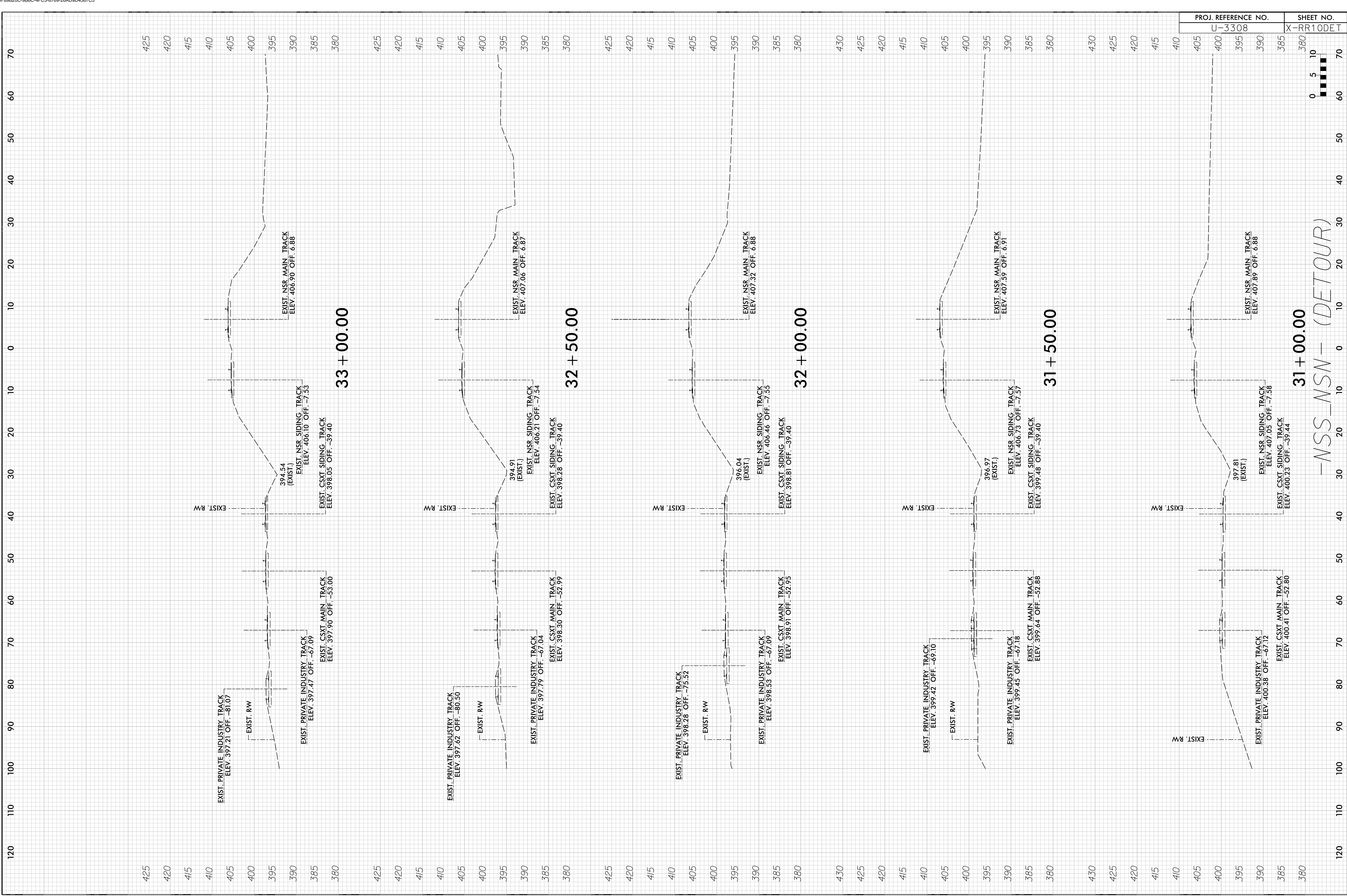
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-NSS-NSN- (DETOUR)



-NSS-NSN- (DETOUR)

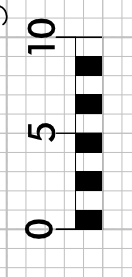
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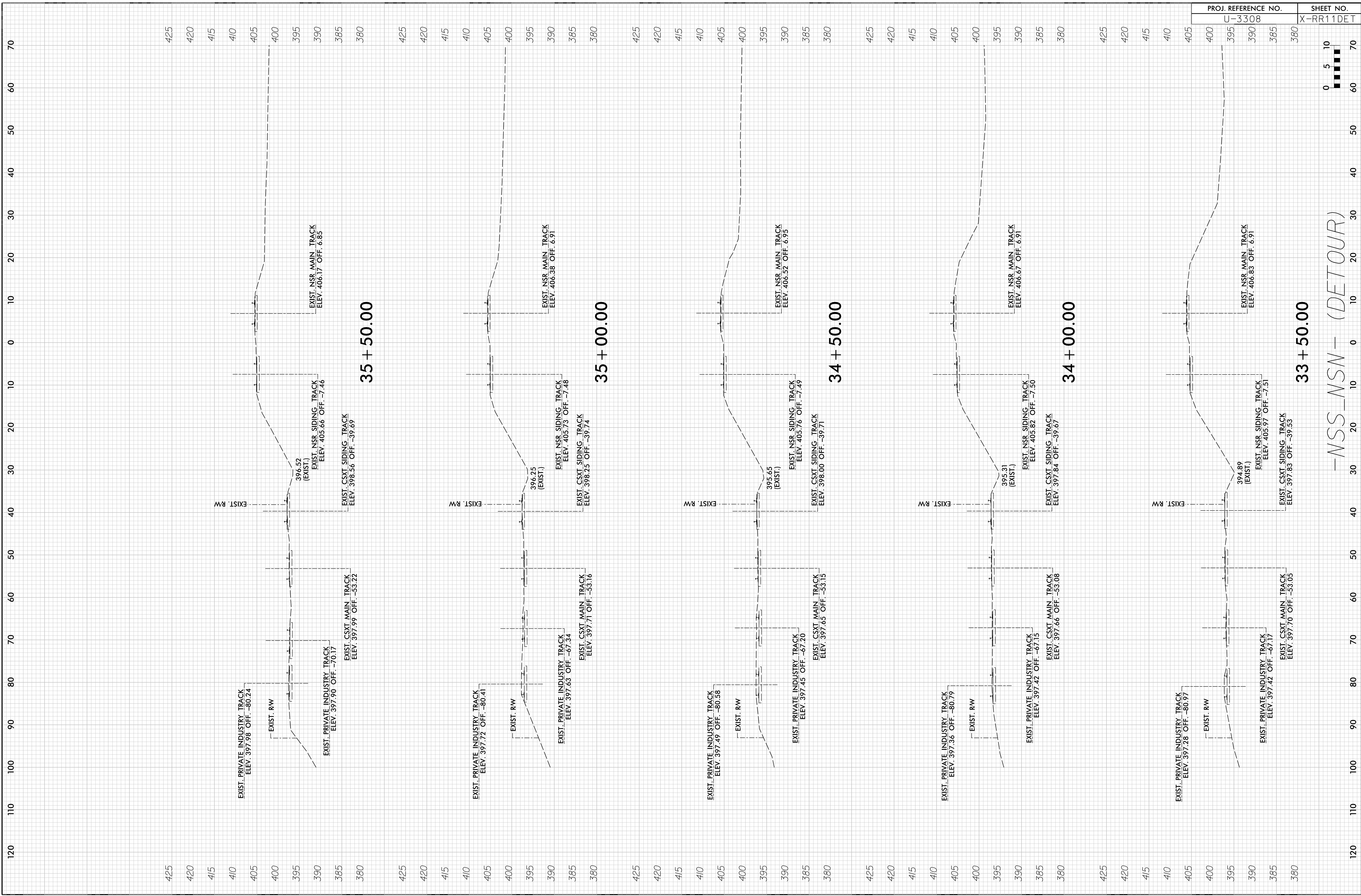


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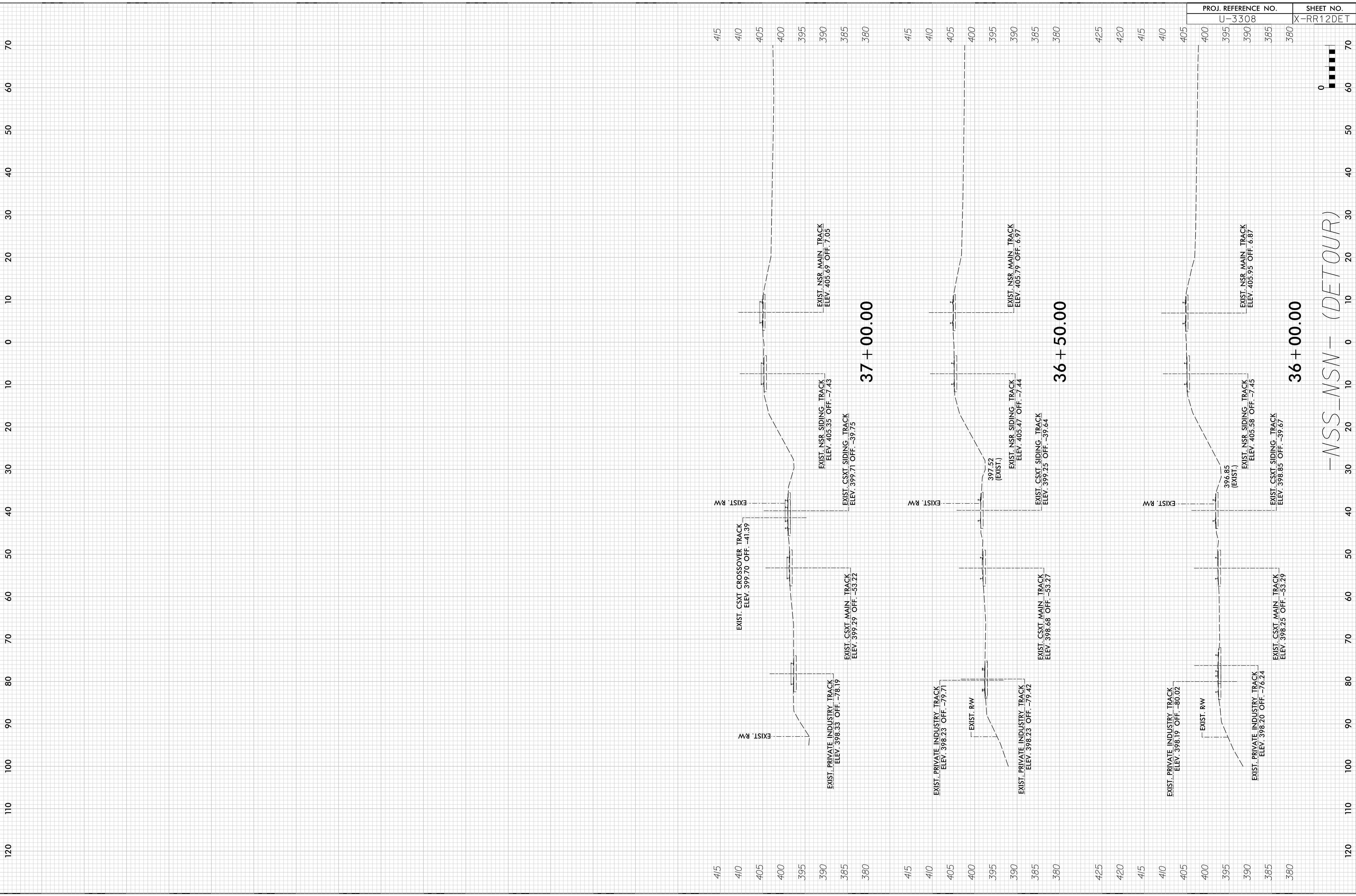


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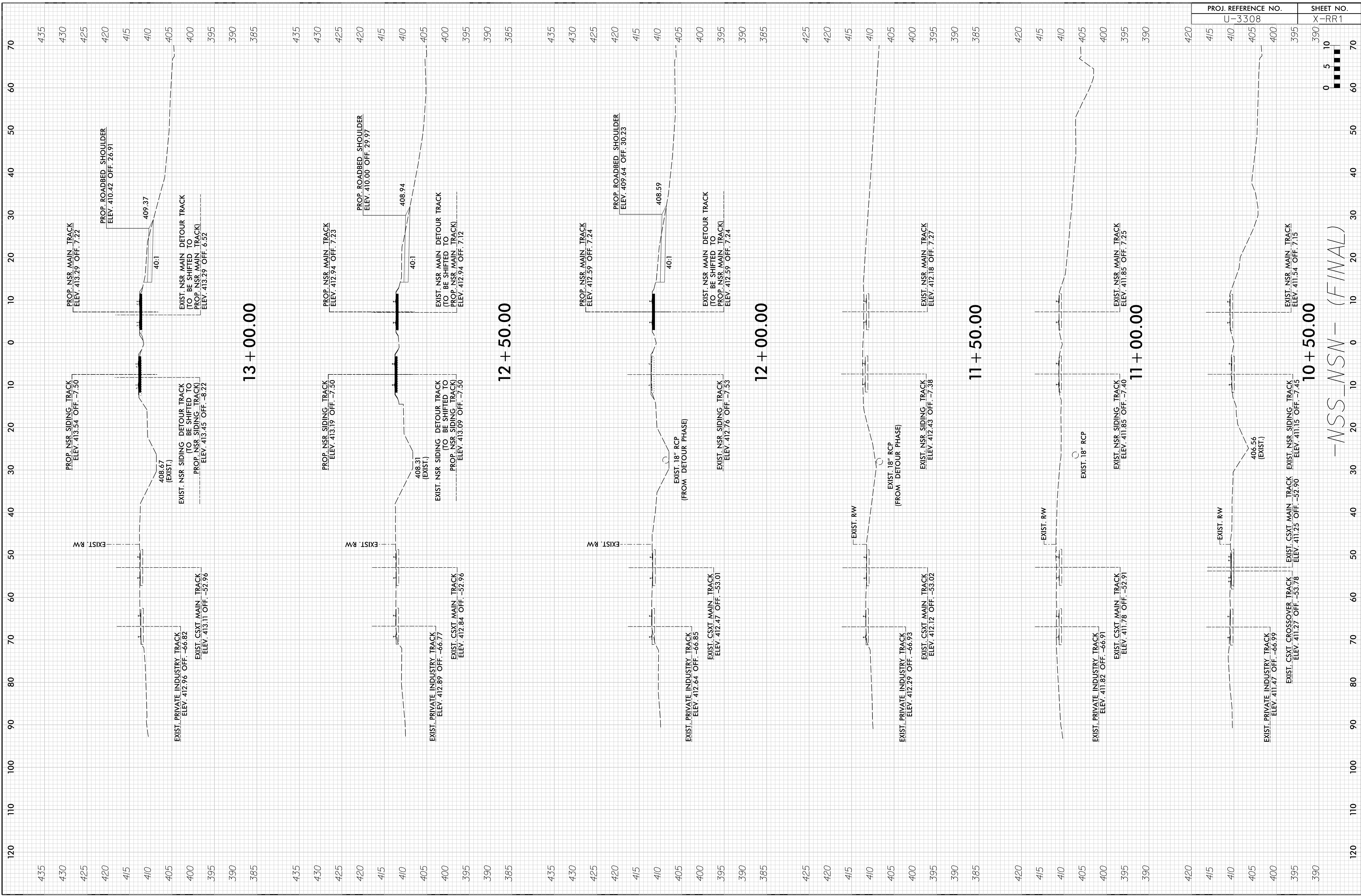
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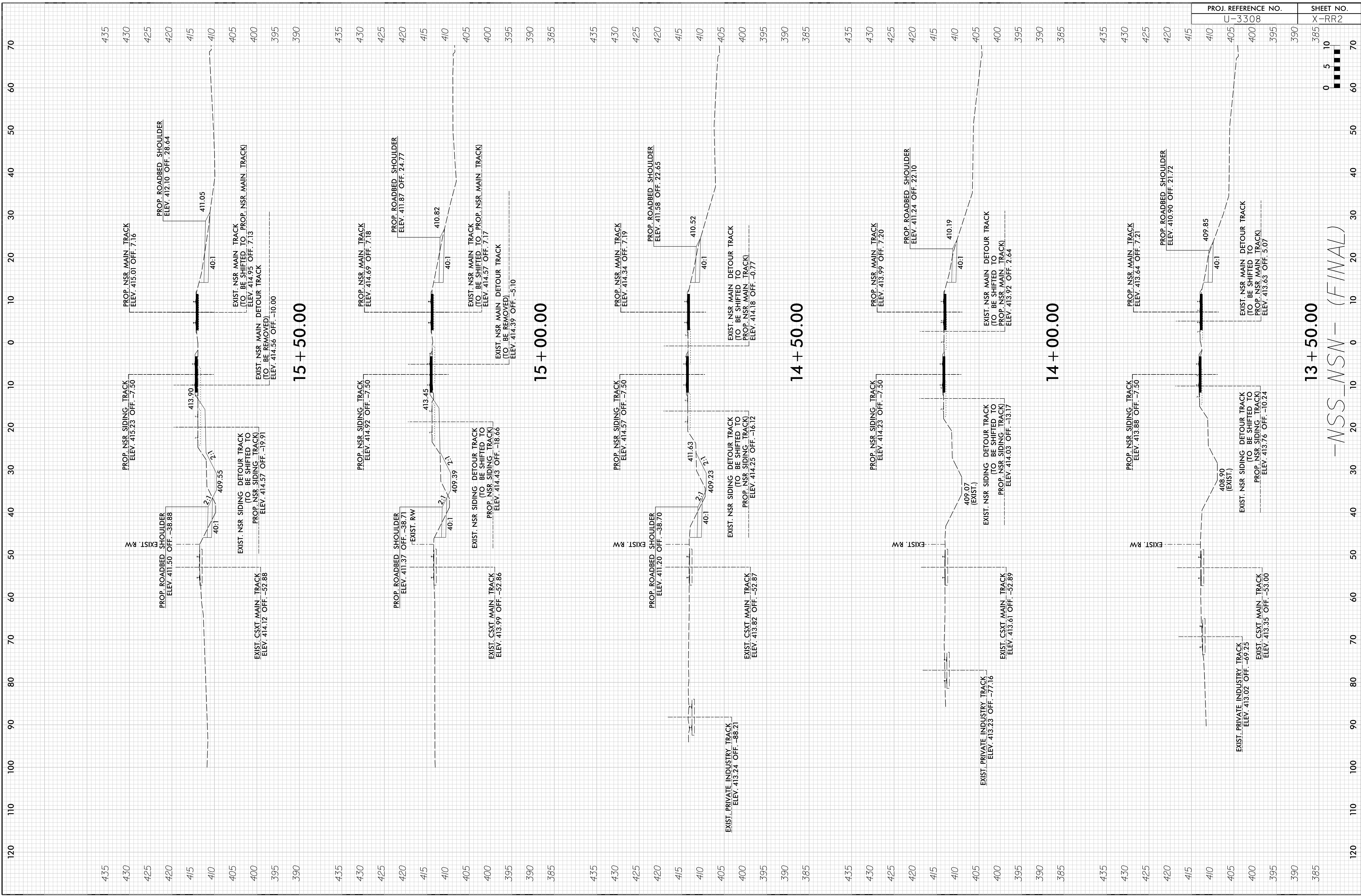
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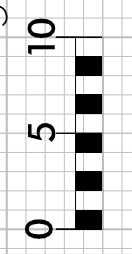


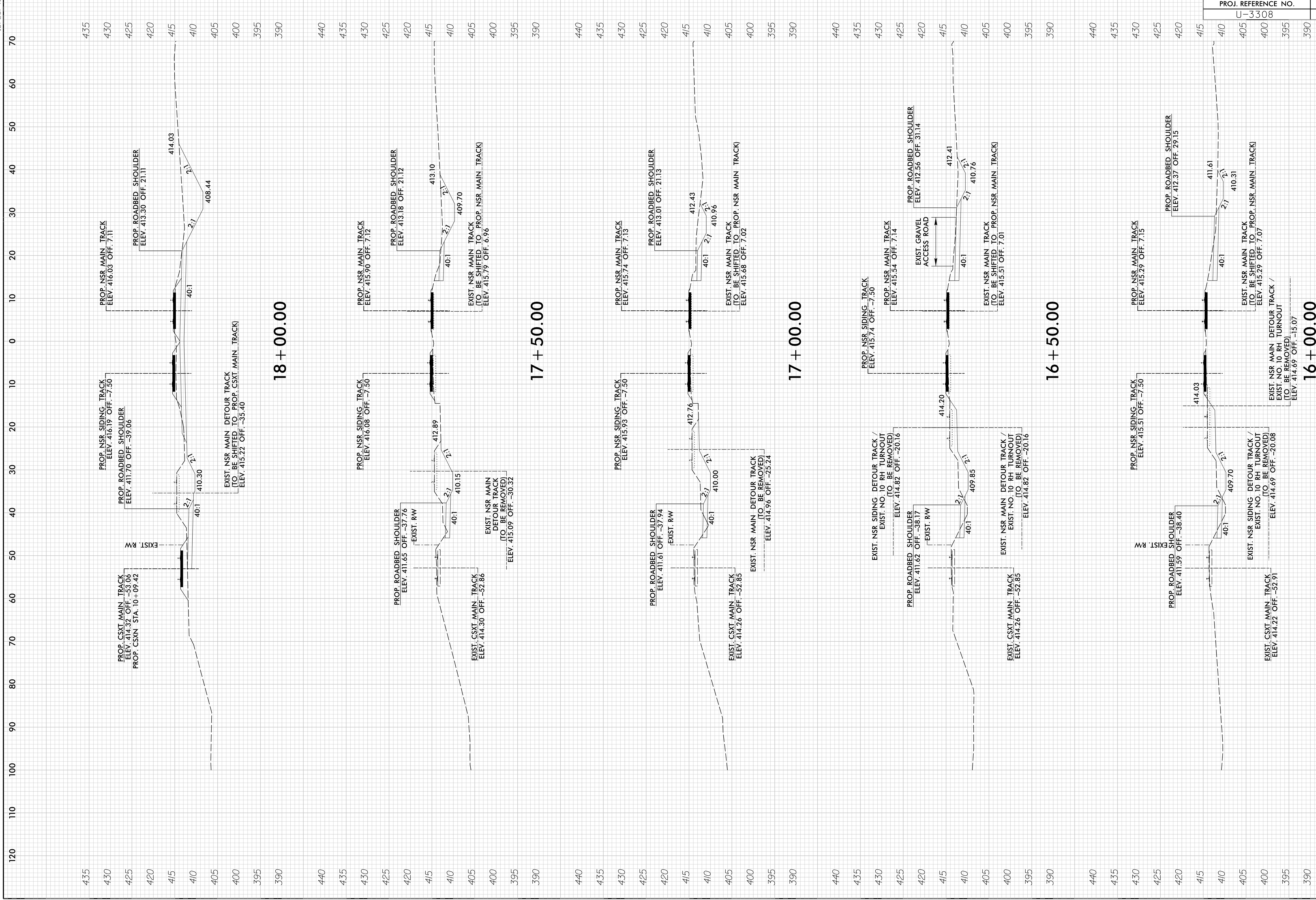
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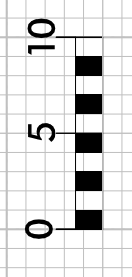
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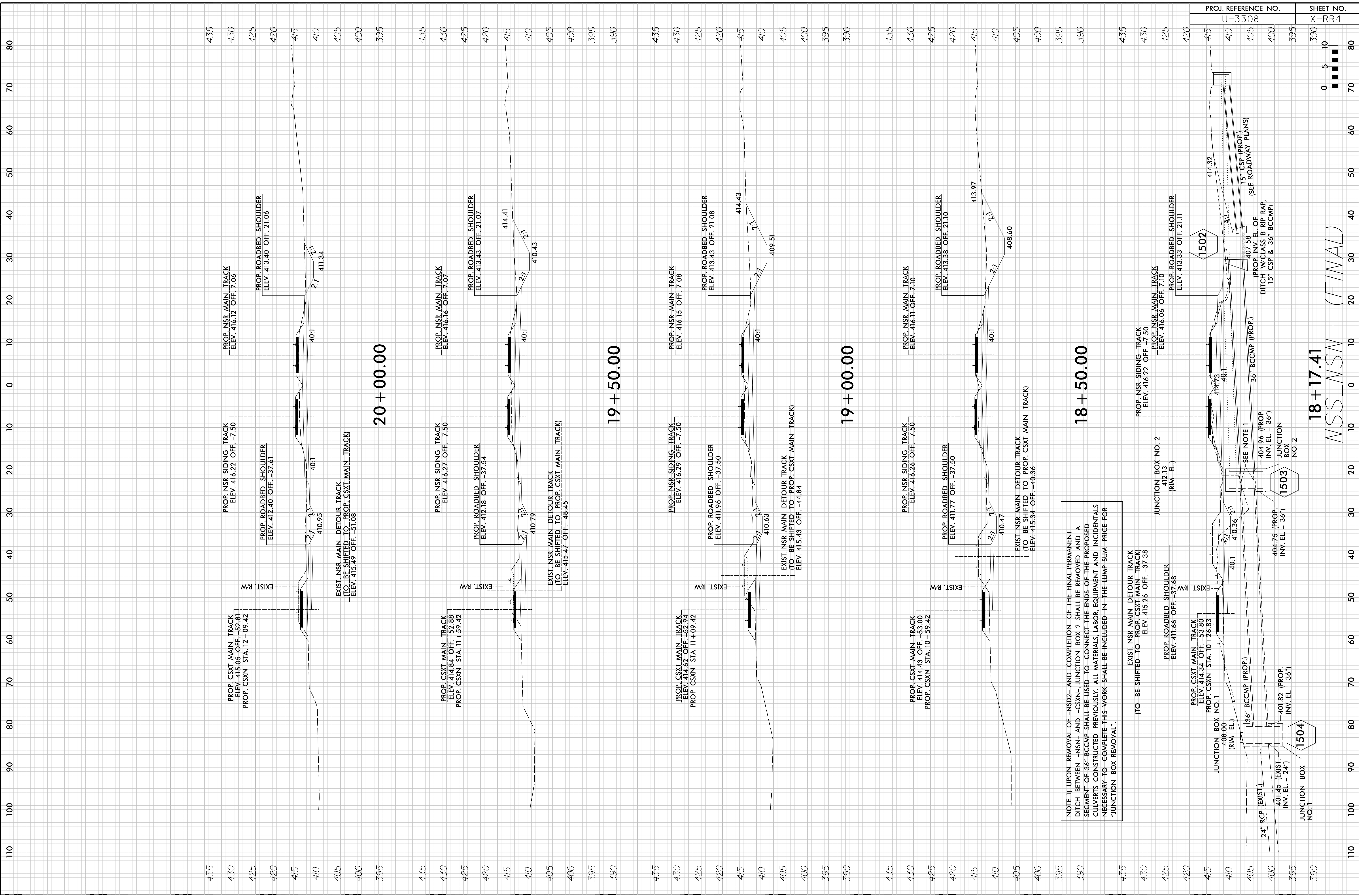




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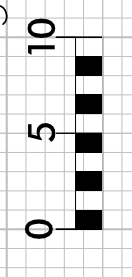
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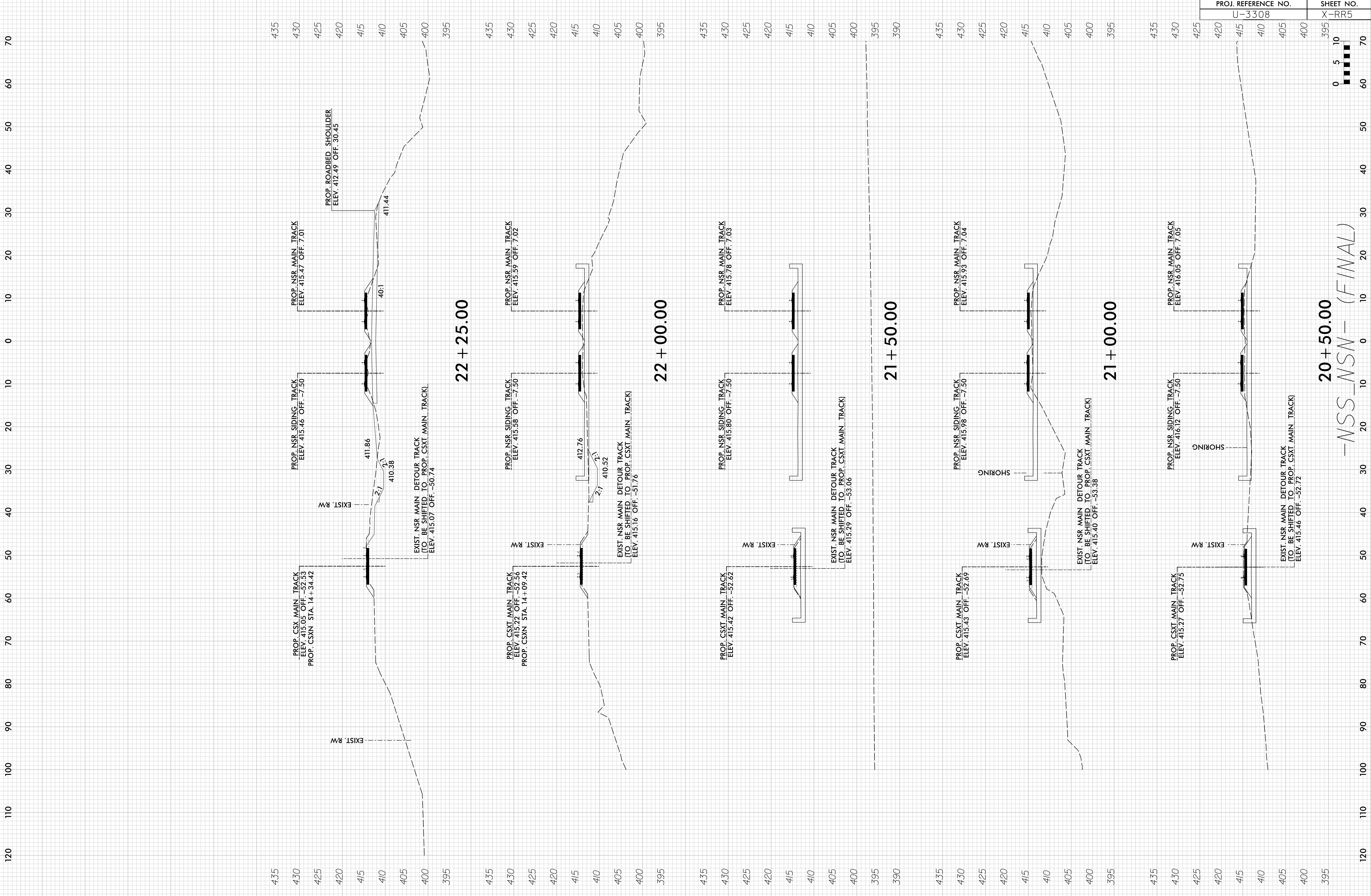


NOTE 1) UPON REMOVAL OF -NSD2- AND COMPLETION OF THE FINAL PERMANENT DITCH BETWEEN -NSN- AND -CSXN-, JUNCTION BOX 2 SHALL BE REMOVED AND A SEGMENT OF 36" BCCMP SHALL BE USED TO CONNECT THE ENDS OF THE PROPOSED CULVERTS CONSTRUCTED PREVIOUSLY. ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "JUNCTION BOX REMOVAL".

|                     |           |
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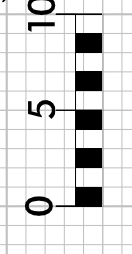
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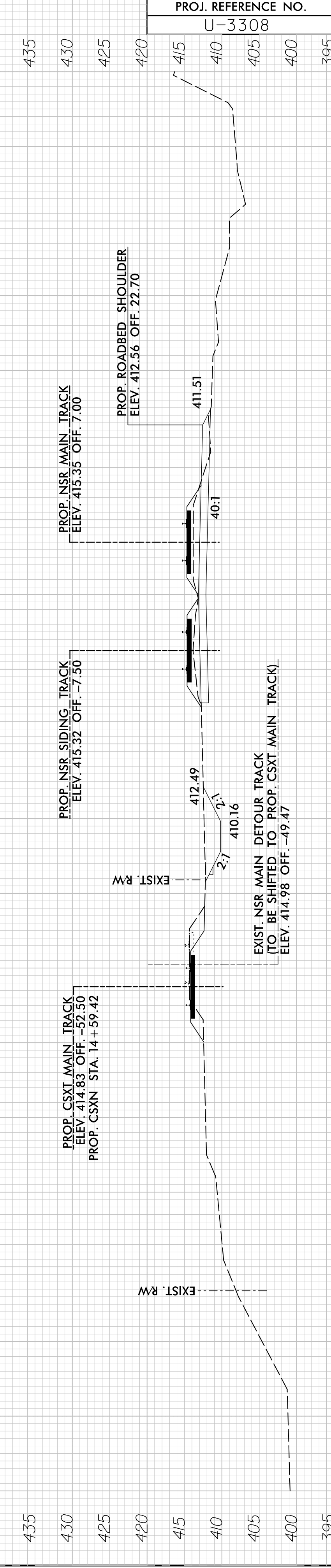
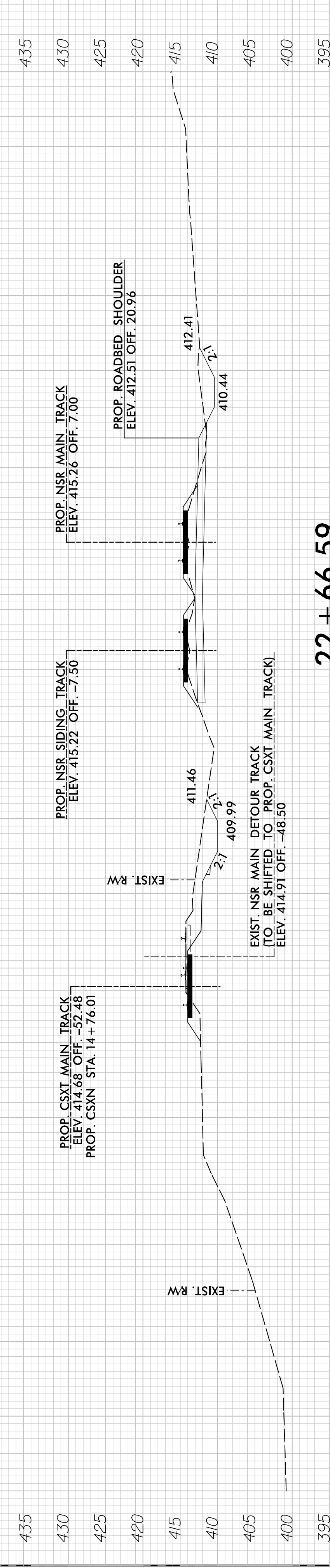
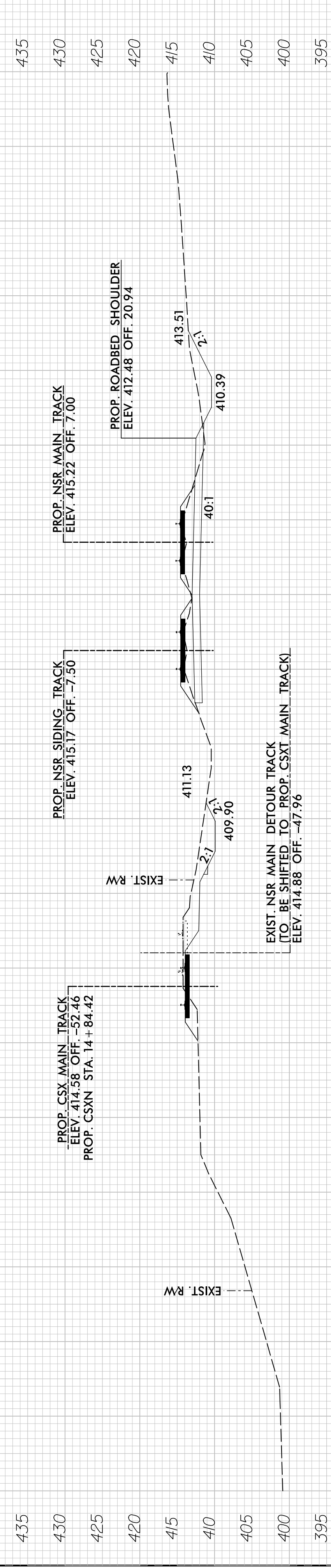
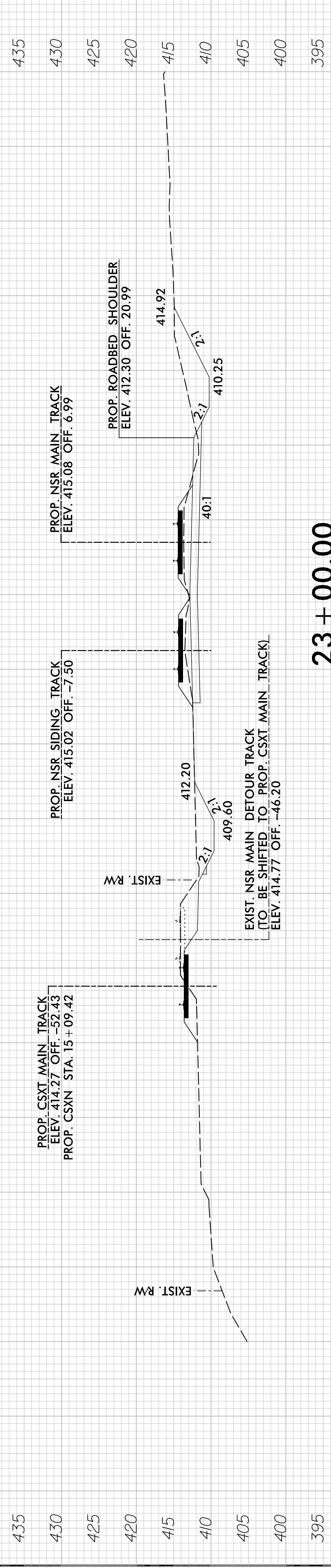
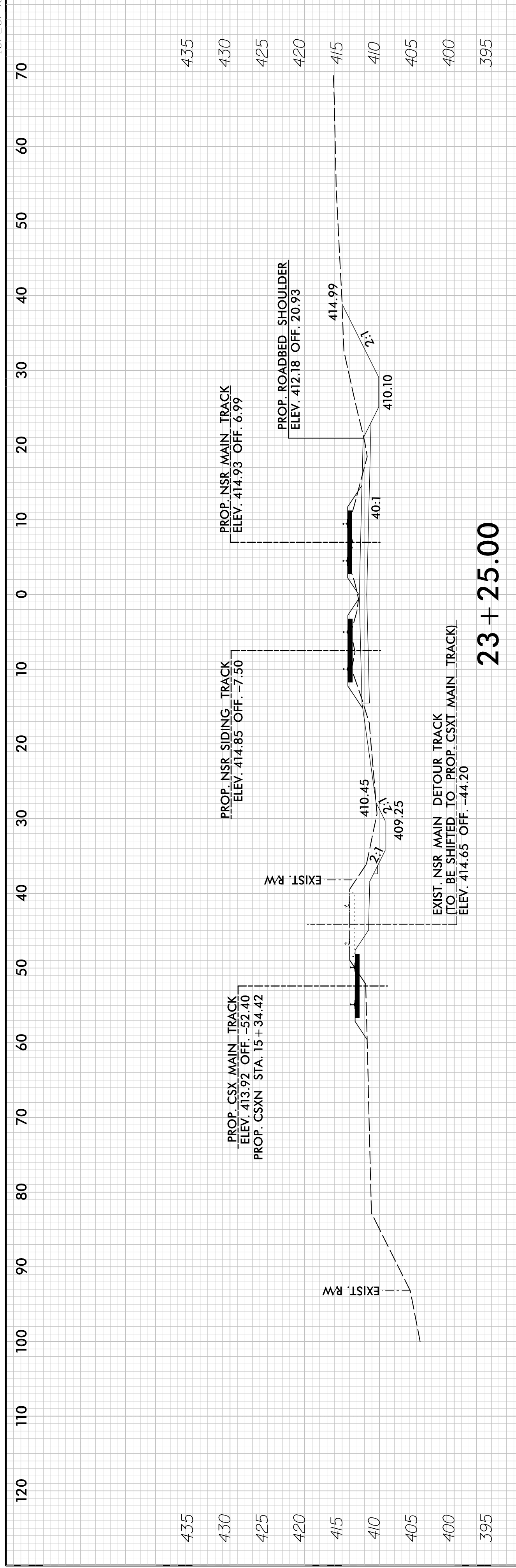




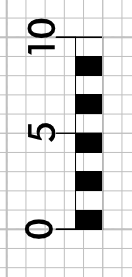
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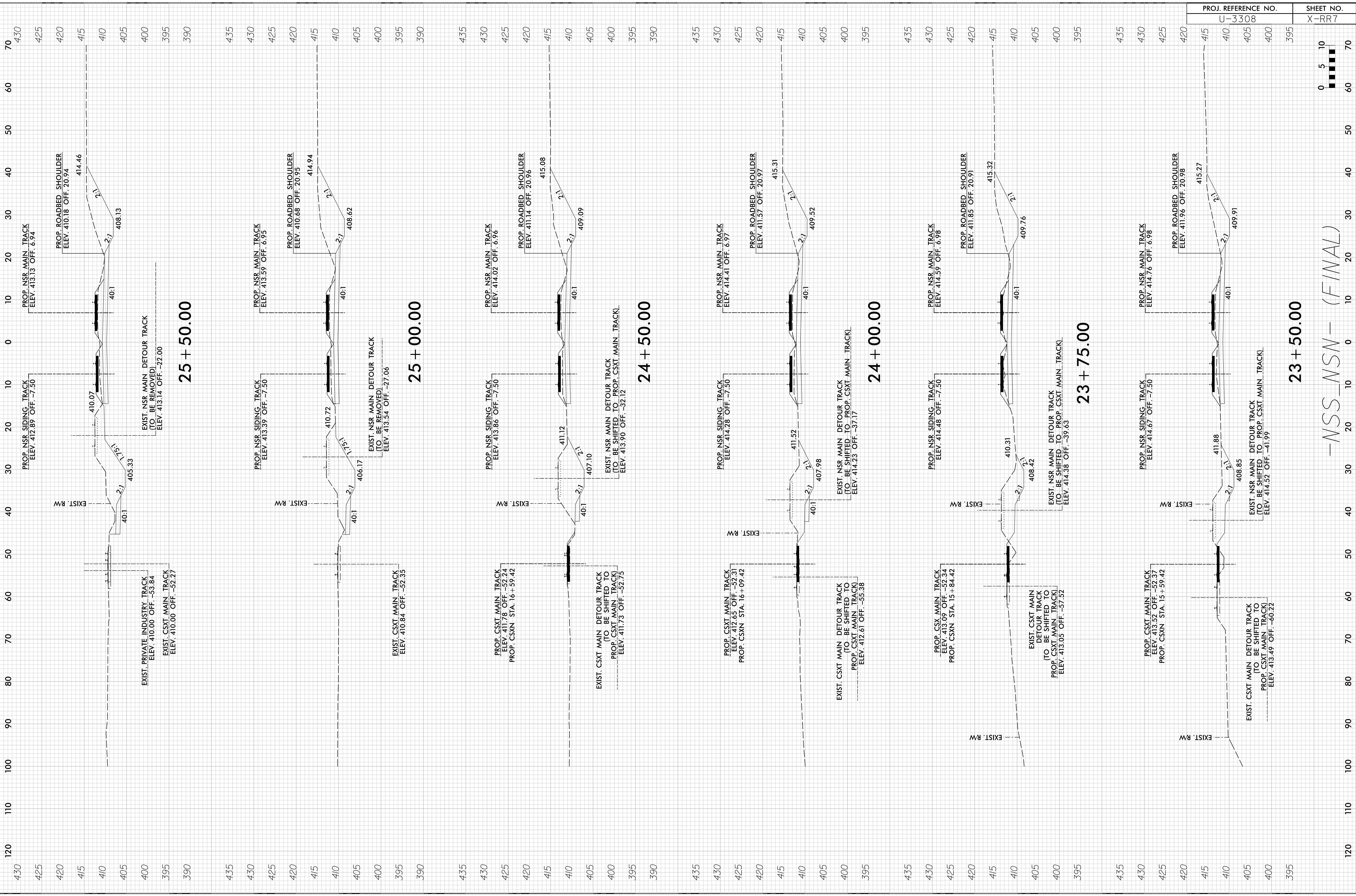
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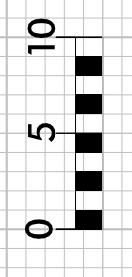
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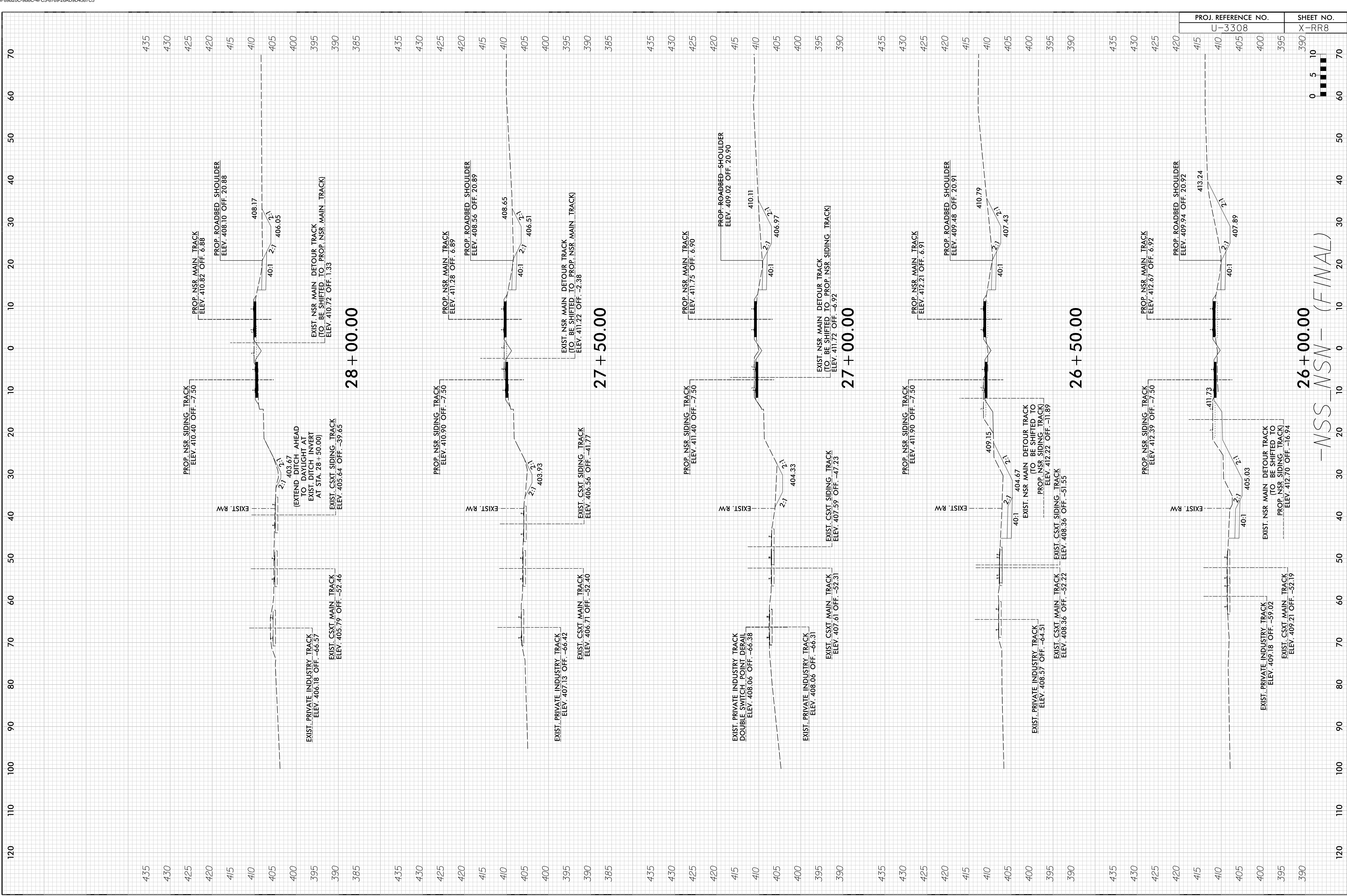
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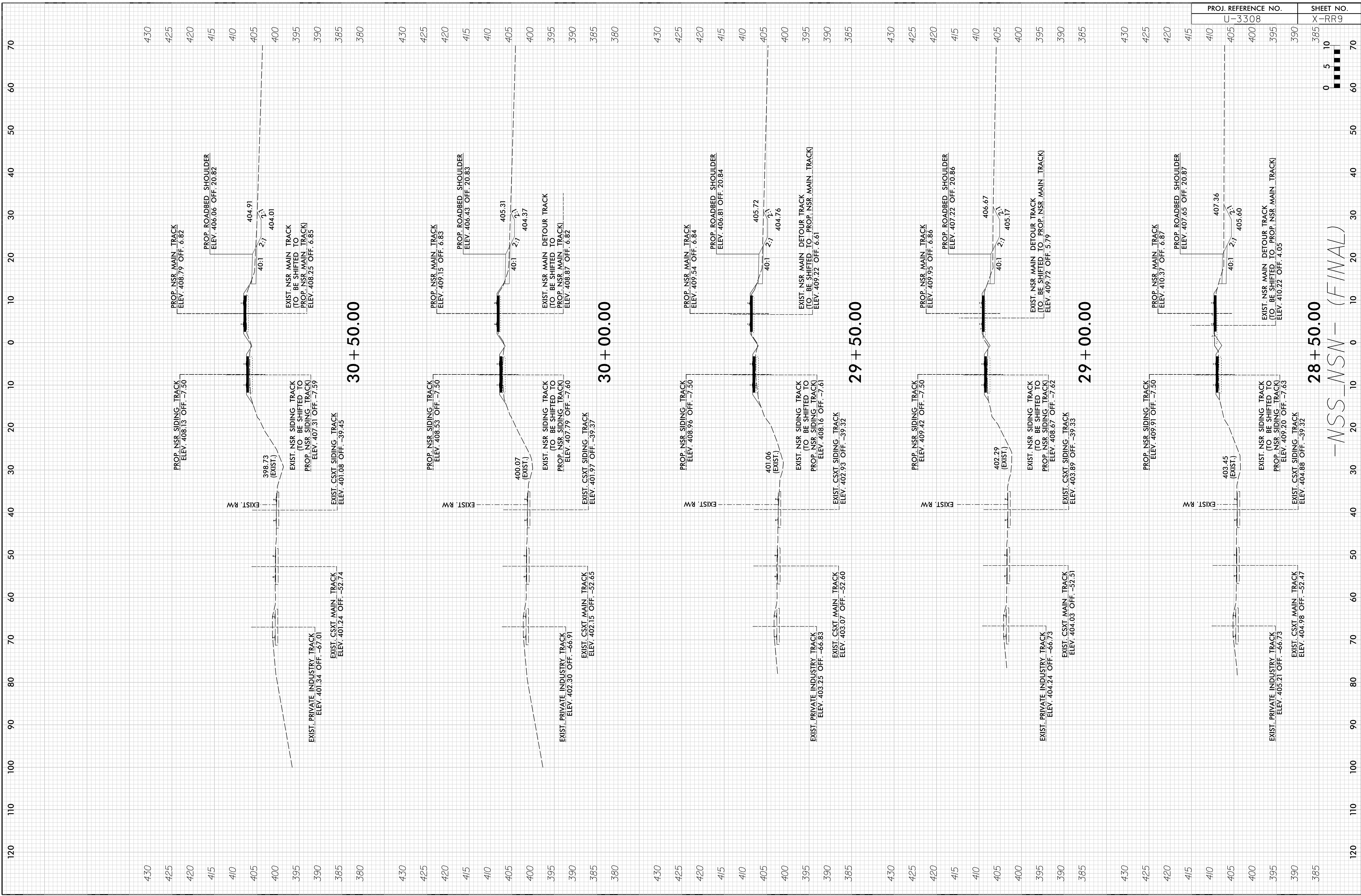
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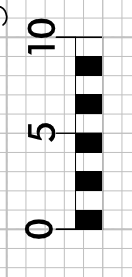
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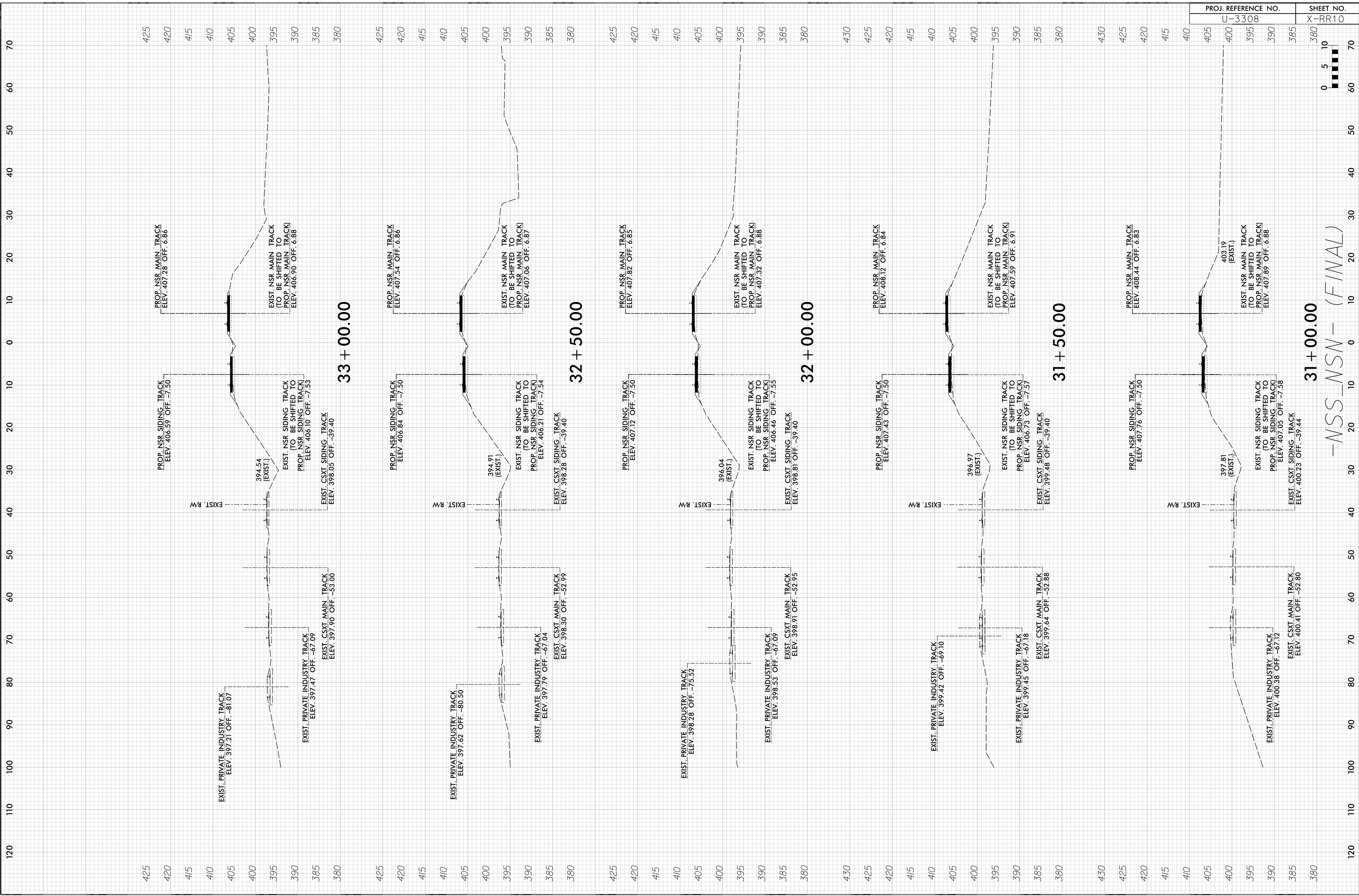




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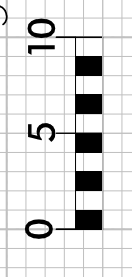
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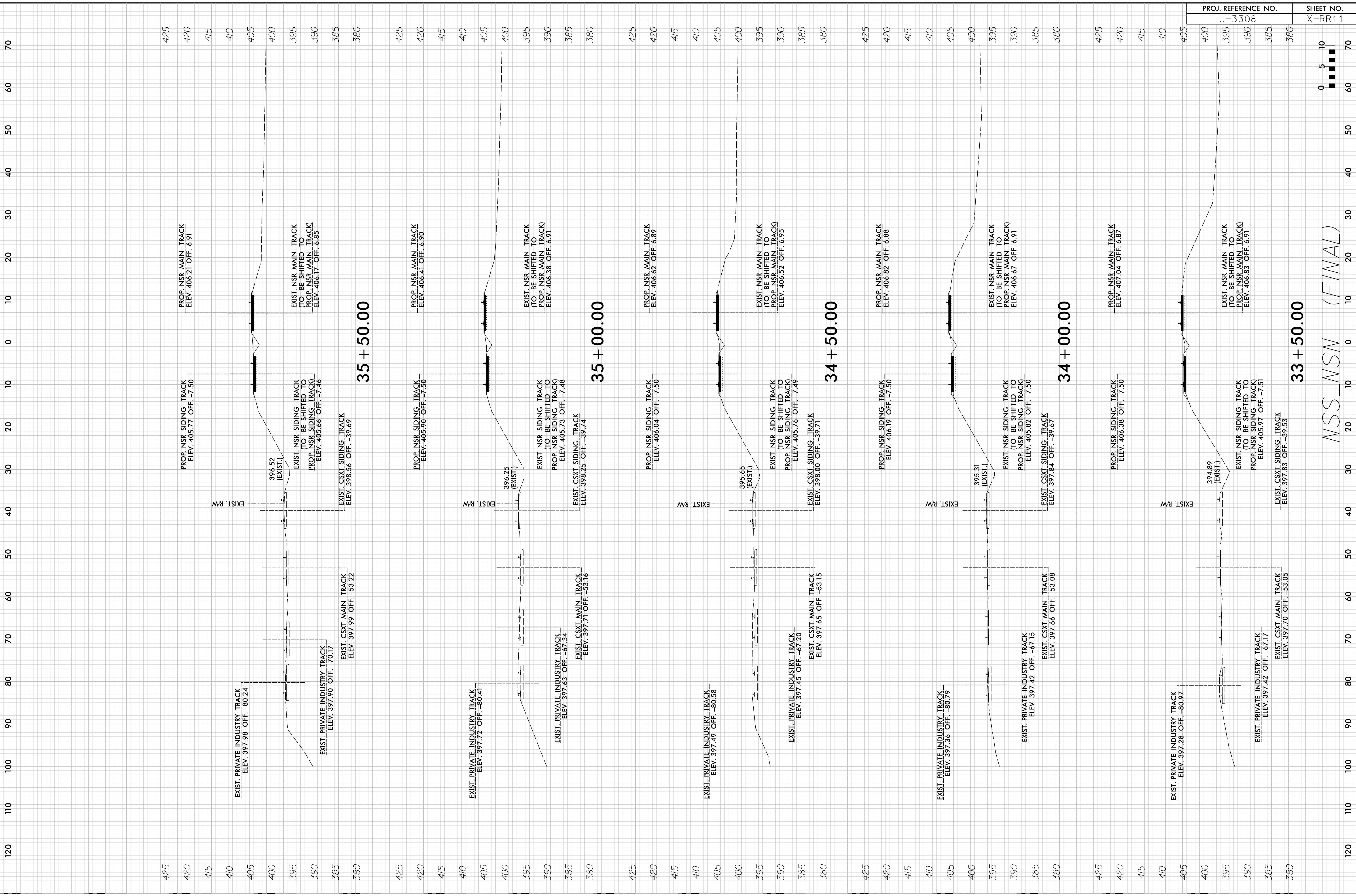




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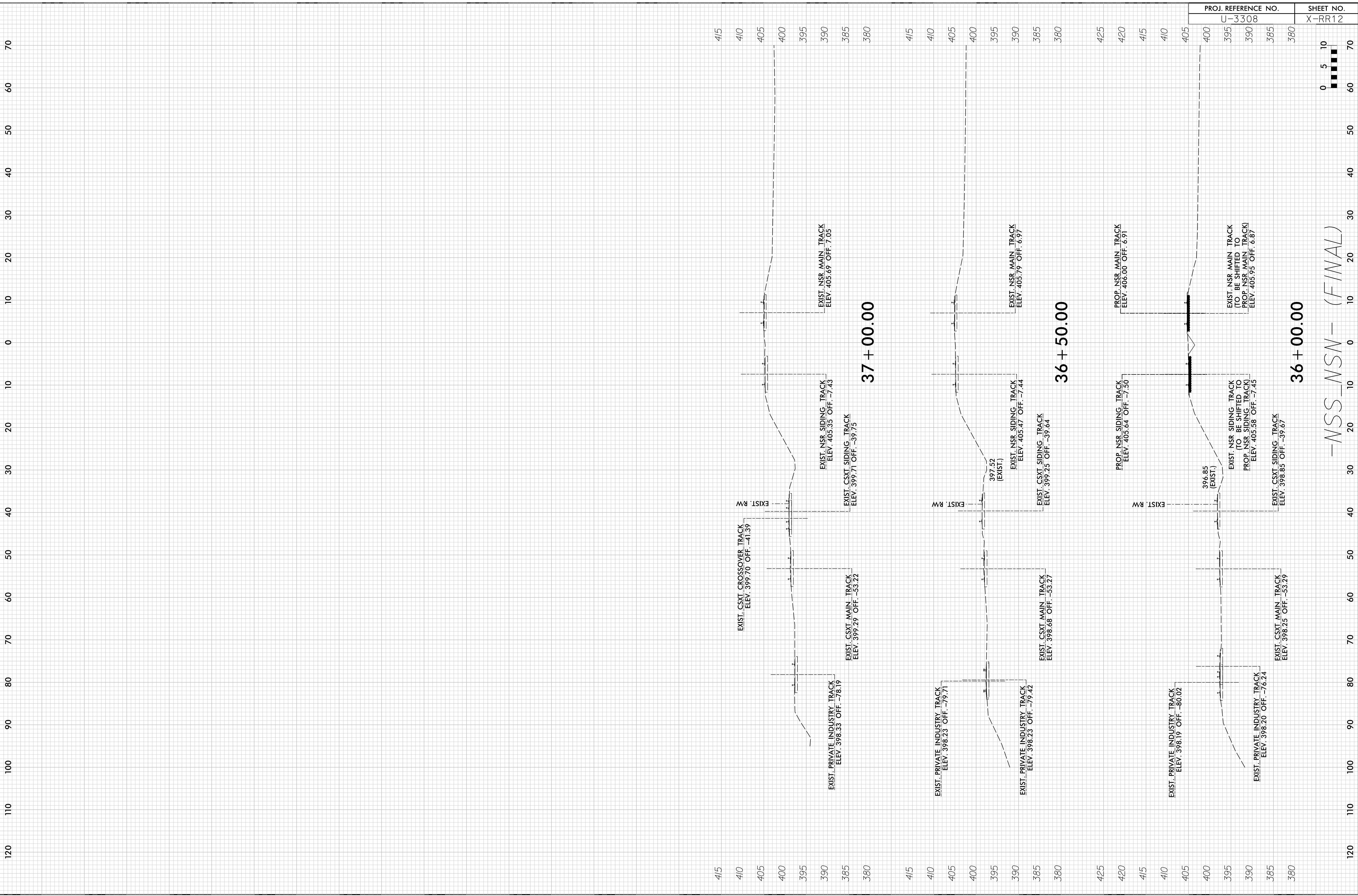
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| PROJ. REFERENCE NO. | U-3308 |
| SHEET NO.           | X-RR12 |

