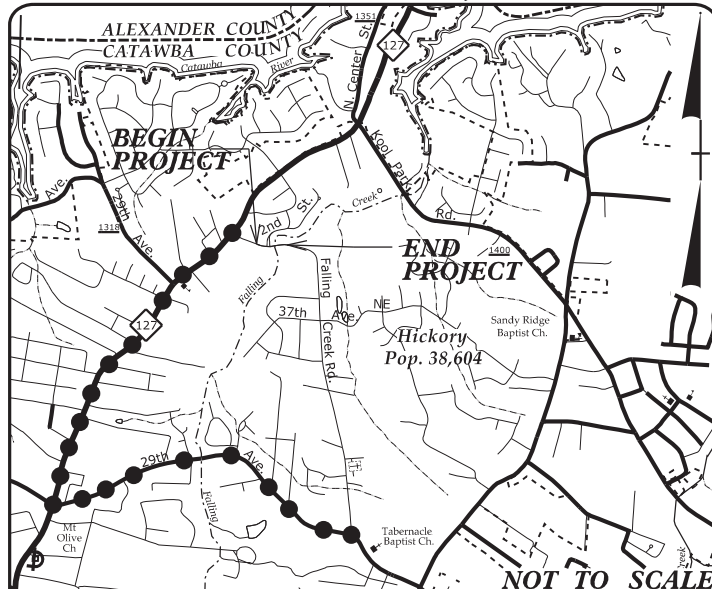


09/08/19

TIP PROJECT: B-5549

CONTRACT: 7500017050

See Sheet 1-A For Index of Sheets  
See Sheet 1-B for Conventional Symbols



VICINITY MAP

●●●●● OFFSITE DETOUR

# CITY OF HICKORY CATAWBA COUNTY

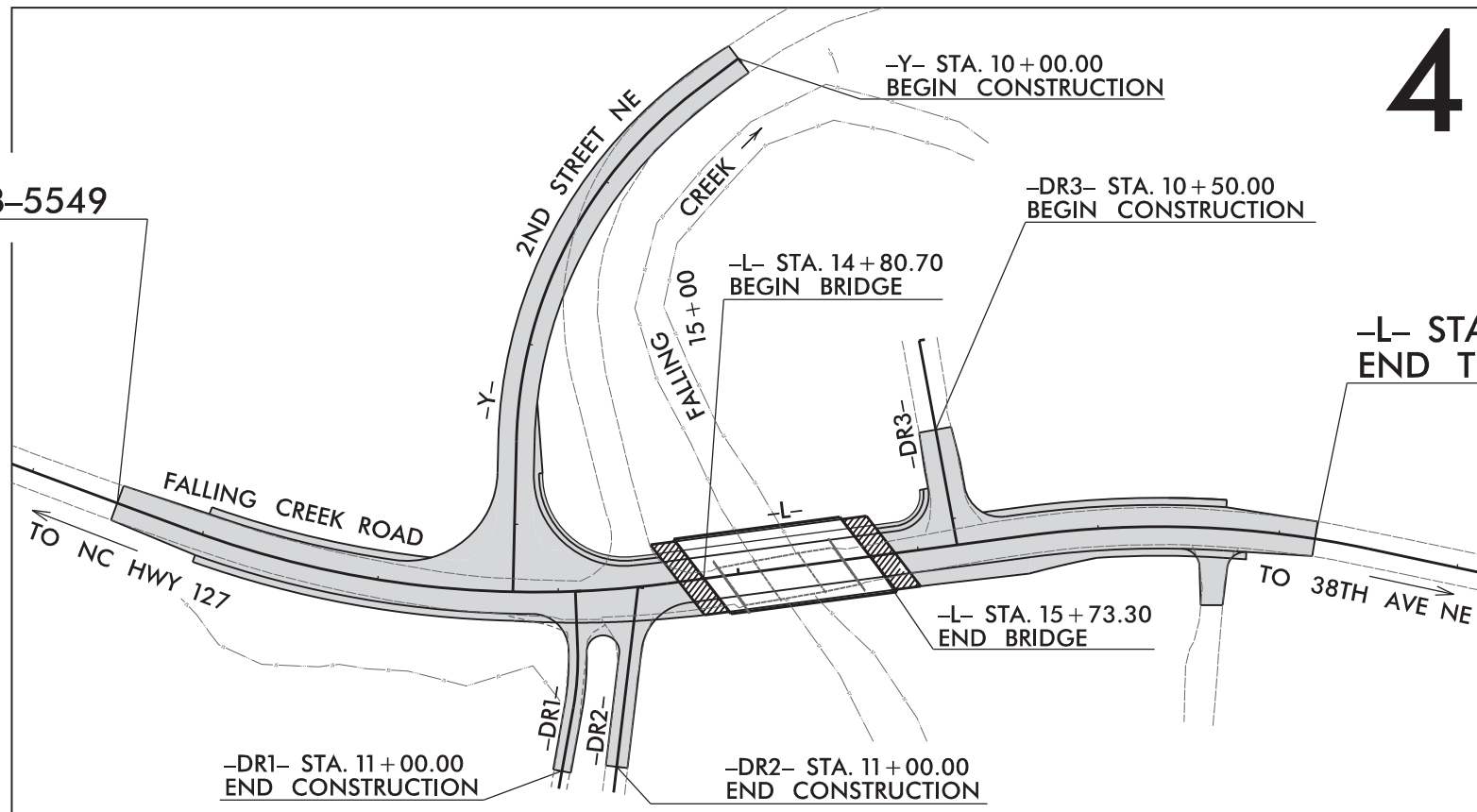
LOCATION: BRIDGE #170327 OVER FALLING CREEK ON  
FALLING CREEK ROAD

TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

|                 |                             |             |              |
|-----------------|-----------------------------|-------------|--------------|
| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
| N.C.            | B-5549                      | 1           |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 55047.1.1       | BRSTP-1216(21)              | PE          |              |
| 55047.2.1       | BRSTP-1216(21)              | RW & UTIL   |              |
| 55047.3.1       | BRSTP-1216(21)              | CONST       |              |
|                 |                             |             |              |
|                 |                             |             |              |



-L- STA. 11+50.00  
BEGIN TIP PROJECT B-5549



-L- STA. 18+20.00  
END TIP PROJECT B-5549

DESIGN EXCEPTION REQUIRED FOR VERTICAL CURVATURE AND VERTICAL SSD.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

### GRAPHIC SCALES



### DESIGN DATA

ADT 2016 = 3,420  
 ADT 2036 = 5,000  
 K = 7 %  
 D = 50 %  
 T = 3 % \*  
 \* (TTST 2% + DUAL 1%)  
 V = 40 MPH  
 FUNC CLASS =  
 RURAL LOCAL  
 REGIONAL TIER

### PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5549 = 0.109 MILES  
 LENGTH STRUCTURE TIP PROJECT B-5549 = 0.018 MILES  
 TOTAL LENGTH TIP PROJECT B-5549 = 0.127 MILES

PLANS PREPARED BY:  
**TGS ENGINEERS**  
 804-C N. LAFAYETTE ST  
 SHELBY, NC 28150  
 PH (704) 476-0003  
 CORP. LICENSE NO.: C-0275  
 2012 STANDARD SPECIFICATIONS

PLANS PREPARED FOR:  
**CITY OF HICKORY**  
 76 N CENTER ST  
 HICKORY, NC 28601  
 (828) 323-7400

RIGHT OF WAY DATE:  
 September 12, 2014

LEONARD G. FLETCHER, P.E.  
 PROJECT ENGINEER

LETTING DATE:

JIMMY L. TERRY, P.E.  
 PROJECT DESIGN ENGINEER

HYDRAULIC ENGINEER

SIGNATURE:

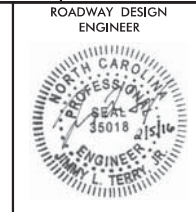
ROADWAY DESIGN ENGINEER

SIGNATURE:



MAYOR:  
 RUDY WRIGHT  
 76 N CENTER ST  
 HICKORY, NC 28601  
 (828) 323-7400

CITY MANAGER:  
 MICK W. BERRY  
 76 N CENTER ST  
 HICKORY, NC 28601  
 (828) 323-74012



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

# INDEX OF SHEETS

| SHEET NUMBER       | SHEET  |
|--------------------|--|
| 1                  | TITLE SHEET  |
| 1A                 | INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS              |
| 1B                 | CONVENTIONAL SYMBOLS   |
| 1C-1               | SURVEY CONTROL SHEETS  |
| 2A-1               | PAVEMENT SCHEDULE AND TYPICAL SECTIONS                             |
| 2B-1               | STRUCTURE ANCHOR UNIT - TYPE III                                   |
| 2C-1               | CONCRETE FLUME DETAIL  |
| 2D-1               | DRAINAGE DETAILS   |
| 3B-1               | EARTHWORK SUMMARY, PAVEMENT REMOVAL SUMMARY, AND GUARDRAIL SUMMARY |
| 3D-1               | DRAINAGE SUMMARY   |
| 4                  | PLAN SHEET   |
| 5 THRU 6           | PROFILE SHEETS   |
| TMP-1 THRU TMP-3   | TRAFFIC MANAGEMENT PLANS   |
| PMP-1 THRU PMP-2   | PAVEMENT MARKING PLANS   |
| EC-1 THRU EC-5     | EROSION CONTROL PLANS  |
| SIGN-1 THRU SIGN-3 | SIGNING PLANS  |
| UC-1 THRU UC-5     | UTILITIES CONSTRUCTION PLANS                                       |
| UO-1 THRU UO-4     | UTILITIES BY OTHERS PLANS  |
| X-SUM              | CROSS-SECTION SUMMARY SHEET  |
| X-1 THRU X-16      | CROSS-SECTIONS   |
| S-1 THRU S-26      | STRUCTURE PLANS  |

# GENERAL NOTES

**GENERAL NOTES:** 2012 SPECIFICATIONS  
EFFECTIVE: 01-17-2012  
REVISED: 10-31-2014

**GRADE LINE:**  
**GRADING AND SURFACING:** THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

**CLEARING:** CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

**SUPERELEVATION:** ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

**SHOULDER CONSTRUCTION:** ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01

**SIDE ROADS:** THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

**STREET TURNOUT:** STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

**GUARDRAIL:** THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

**TEMPORARY SHORING:** SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

**END BENTS:** THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

**UTILITIES:** UTILITY OWNERS ON THIS PROJECT ARE PIEDMONT NATURAL GAS, DUKE ENERGY, CENTURY LINK, CHARTER COMMUNICATIONS, AND CITY OF HICKORY  
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

**CURB RAMPS**  
CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS.  
CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05 and/or 848.06.

# STANDARD DRAWINGS

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

| STD.NO.   | TITLE   |
|---|---|
| <b>DIVISION 2 - EARTHWORK</b>                     |   |
| 200.02  | Method of Clearing - Method II  |
| 225.02  | Guide for Grading Subgrade - Secondary and Local                                    |
| 225.04  | Method of Obtaining Superelevation - Two Lane Pavement                              |
| 225.06  | Method of Grading Sight Distance at Intersections                                   |
| <b>DIVISION 3 - PIPE CULVERTS</b>                 |   |
| 300.01  | Method of Pipe Installation   |
| 310.10  | Driveway Pipe Construction  |
| <b>DIVISION 4 - MAJOR STRUCTURES</b>              |   |
| 422.10  | Reinforced Bridge Approach Fills  |
| <b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b> |   |
| 560.01  | Method of Shoulder Construction<br>- High Side of Superelevated Curve - Method I    |
| <b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>   |   |
| 654.01  | Pavement Repairs  |
| <b>DIVISION 8 - INCIDENTALS</b>                   |   |
| 838.01  | Concrete Endwall for Single and Double Pipe Culverts<br>- 15" thru 48" Pipe 90 Skew |
| 838.11  | Brick Endwall for Single and Double Pipe Culverts<br>- 15" thru 48" Pipe 90 Skew    |
| 838.80  | Precast Endwalls - 12" thru 72" Pipe 90 Skew  |
| 840.00  | Concrete Base Pad for Drainage Structures   |
| 840.01  | Brick Catch Basin - 12" thru 54" Pipe   |
| 840.02  | Concrete Catch Basin - 12" thru 54" Pipe  |
| 840.03  | Frame, Grates and Hood - for Use on Standard Catch Basin                            |
| 840.19  | Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe                             |
| 840.25  | Anchorage for Frames - Brick or Concrete or Precast                                 |
| 840.28  | Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe                                |
| 840.29  | Frames and Narrow Slot Flat Grates  |
| 840.45  | Precast Drainage Structure  |
| 840.66  | Drainage Structure Steps  |
| 840.71  | Concrete and Brick Pipe Plug  |
| 840.72  | Pipe Collar   |
| 846.01  | Concrete Curb, Gutter and Curb & Gutter   |
| 848.01  | Concrete Sidewalk   |
| 848.04  | Street Turnout  |
| 848.05  | Curb Ramp - Proposed Curb & Gutter  |
| 862.01  | Guardrail Placement   |
| 862.02  | Guardrail Installation  |
| 876.01  | Rip Rap in Channels   |
| 876.02  | Guide for Rip Rap at Pipe Outlets   |
| 876.04  | Drainage Ditches with Class 'B' Rip Rap   |

8/17/99  
8:17:59 AM  
B-5549\_Rdy\_tsh.dgn 3/11/2016 7:04:50 AM TGS

# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

*Note: Not to Scale* \*S.U.E. = *Subsurface Utility Engineering*

04/06/15

**BOUNDARIES AND PROPERTY:**

|                                       |           |
|---------------------------------------|-----------|
| State Line                            | -----     |
| County Line                           | -----     |
| Township Line                         | -----     |
| City Line                             | -----     |
| Reservation Line                      | -----     |
| Property Line                         | -----     |
| Existing Iron Pin                     | ○ EIP     |
| Property Corner                       | -----     |
| Property Monument                     | □ EDM     |
| Parcel/Sequence Number                | ⑫③        |
| Existing Fence Line                   | -x-x-x-   |
| Proposed Woven Wire Fence             | ○         |
| Proposed Chain Link Fence             | □         |
| Proposed Barbed Wire Fence            | ◇         |
| Existing Wetland Boundary             | ----- WLB |
| Proposed Wetland Boundary             | ----- WLB |
| Existing Endangered Animal Boundary   | ----- EAB |
| Existing Endangered Plant Boundary    | ----- EPB |
| Existing Historic Property Boundary   | ----- HPB |
| Known Contamination Area: Soil        | -----     |
| Potential Contamination Area: Soil    | -----     |
| Known Contamination Area: Water       | -----     |
| Potential Contamination Area: Water   | -----     |
| Contaminated Site: Known or Potential | ☠ ☡       |

**BUILDINGS AND OTHER CULTURE:**

|                               |   |
|-------------------------------|---|
| Gas Pump Vent or U/G Tank Cap | ○ |
| Sign                          | ○ |
| Well                          | ○ |
| Small Mine                    | ✕ |
| Foundation                    | □ |
| Area Outline                  | □ |
| Cemetery                      | ⊕ |
| Building                      | □ |
| School                        | ⚐ |
| Church                        | ⚐ |
| Dam                           | ▬ |

**HYDROLOGY:**

|                                    |            |
|------------------------------------|------------|
| Stream or Body of Water            | -----      |
| Hydro, Pool or Reservoir           | -----      |
| Jurisdictional Stream              | ----- JS   |
| Buffer Zone 1                      | ----- BZ 1 |
| Buffer Zone 2                      | ----- BZ 2 |
| Flow Arrow                         | ←          |
| Disappearing Stream                | -----      |
| Spring                             | ○          |
| Wetland                            | -----      |
| Proposed Lateral, Tail, Head Ditch | -----      |
| False Sump                         | -----      |

**RAILROADS:**

|                    |       |
|--------------------|-------|
| Standard Gauge     | ----- |
| RR Signal Milepost | ○     |
| Switch             | □     |
| RR Abandoned       | ----- |
| RR Dismantled      | ----- |

**RIGHT OF WAY:**

|   |           |
|---|-----------|
| Baseline Control Point  | ◆         |
| Existing Right of Way Marker                                  | △         |
| Existing Right of Way Line                                    | -----     |
| Proposed Right of Way Line                                    | -----     |
| Proposed Right of Way Line with Iron Pin and Cap Marker       | -----     |
| Proposed Right of Way Line with Concrete or Granite RW Marker | -----     |
| Proposed Control of Access Line with Concrete CA Marker       | -----     |
| Existing Control of Access                                    | -----     |
| Proposed Control of Access                                    | -----     |
| Existing Easement Line  | ----- E   |
| Proposed Temporary Construction Easement                      | ----- E   |
| Proposed Temporary Drainage Easement                          | ----- TDE |
| Proposed Permanent Drainage Easement                          | ----- PDE |
| Proposed Permanent Drainage / Utility Easement                | -----     |
| Proposed Permanent Utility Easement                           | ----- PUE |
| Proposed Temporary Utility Easement                           | ----- TUE |
| Proposed Aerial Utility Easement                              | ----- AUE |
| Proposed Permanent Easement with Iron Pin and Cap Marker      | -----     |

**ROADS AND RELATED FEATURES:**

|                            |         |
|----------------------------|---------|
| Existing Edge of Pavement  | -----   |
| Existing Curb              | -----   |
| Proposed Slope Stakes Cut  | ----- C |
| Proposed Slope Stakes Fill | ----- F |
| Proposed Curb Ramp         | -----   |
| Existing Metal Guardrail   | -----   |
| Proposed Guardrail         | -----   |
| Existing Cable Guiderail   | -----   |
| Proposed Cable Guiderail   | -----   |
| Equality Symbol            | ⊕       |
| Pavement Removal           | -----   |

**VEGETATION:**

|              |       |
|--------------|-------|
| Single Tree  | ○     |
| Single Shrub | ○     |
| Hedge        | ----- |
| Woods Line   | ----- |

|          |       |
|----------|-------|
| Orchard  | ----- |
| Vineyard | ----- |

**EXISTING STRUCTURES:**

|  |               |
|--|---------------|
| MAJOR:                                   |               |
| Bridge, Tunnel or Box Culvert            | ----- CONC    |
| Bridge Wing Wall, Head Wall and End Wall | ----- CONC WW |
| MINOR:                                   |               |
| Head and End Wall                        | ----- CONC HW |
| Pipe Culvert                             | -----         |
| Footbridge                               | -----         |
| Drainage Box: Catch Basin, DI or JB      | □ CB          |
| Paved Ditch Gutter                       | -----         |
| Storm Sewer Manhole                      | ⊕             |
| Storm Sewer                              | ----- S       |

**UTILITIES:**

|                                |         |
|--------------------------------|---------|
| POWER:                         |         |
| Existing Power Pole            | ●       |
| Proposed Power Pole            | ○       |
| Existing Joint Use Pole        | ●       |
| Proposed Joint Use Pole        | ○       |
| Power Manhole                  | ⊕       |
| Power Line Tower               | ⊠       |
| Power Transformer              | ⊠       |
| U/G Power Cable Hand Hole      | □       |
| H-Frame Pole                   | ●       |
| U/G Power Line LOS B (S.U.E.*) | ----- P |
| U/G Power Line LOS C (S.U.E.*) | ----- P |
| U/G Power Line LOS D (S.U.E.*) | ----- P |

**TELEPHONE:**

|  |            |
|--|------------|
| Existing Telephone Pole                | ●          |
| Proposed Telephone Pole                | ○          |
| Telephone Manhole                      | ⊕          |
| Telephone Pedestal                     | ⊠          |
| Telephone Cell Tower                   | ⊠          |
| U/G Telephone Cable Hand Hole          | □          |
| U/G Telephone Cable LOS B (S.U.E.*)    | ----- T    |
| U/G Telephone Cable LOS C (S.U.E.*)    | ----- T    |
| U/G Telephone Cable LOS D (S.U.E.*)    | ----- T    |
| U/G Telephone Conduit LOS B (S.U.E.*)  | ----- TC   |
| U/G Telephone Conduit LOS C (S.U.E.*)  | ----- TC   |
| U/G Telephone Conduit LOS D (S.U.E.*)  | ----- TC   |
| U/G Fiber Optics Cable LOS B (S.U.E.*) | ----- T FO |
| U/G Fiber Optics Cable LOS C (S.U.E.*) | ----- T FO |
| U/G Fiber Optics Cable LOS D (S.U.E.*) | ----- T FO |

**WATER:**

|                                |                 |
|--------------------------------|-----------------|
| Water Manhole                  | ⊕               |
| Water Meter                    | ○               |
| Water Valve                    | ⊗               |
| Water Hydrant                  | ⊕               |
| U/G Water Line LOS B (S.U.E.*) | ----- W         |
| U/G Water Line LOS C (S.U.E.*) | ----- W         |
| U/G Water Line LOS D (S.U.E.*) | ----- W         |
| Above Ground Water Line        | ----- A/G Water |

**TV:**

|                                       |             |
|---------------------------------------|-------------|
| TV Pedestal                           | ⊠           |
| TV Tower                              | ⊗           |
| U/G TV Cable Hand Hole                | □           |
| U/G TV Cable LOS B (S.U.E.*)          | ----- TV    |
| U/G TV Cable LOS C (S.U.E.*)          | ----- TV    |
| U/G TV Cable LOS D (S.U.E.*)          | ----- TV    |
| U/G Fiber Optic Cable LOS B (S.U.E.*) | ----- TV FO |
| U/G Fiber Optic Cable LOS C (S.U.E.*) | ----- TV FO |
| U/G Fiber Optic Cable LOS D (S.U.E.*) | ----- TV FO |

**GAS:**

|                              |               |
|------------------------------|---------------|
| Gas Valve                    | ◇             |
| Gas Meter                    | ⊕             |
| U/G Gas Line LOS B (S.U.E.*) | ----- G       |
| U/G Gas Line LOS C (S.U.E.*) | ----- G       |
| U/G Gas Line LOS D (S.U.E.*) | ----- G       |
| Above Ground Gas Line        | ----- A/G Gas |

**SANITARY SEWER:**

|                                     |                          |
|-------------------------------------|--------------------------|
| Sanitary Sewer Manhole              | ⊕                        |
| Sanitary Sewer Cleanout             | ⊕                        |
| U/G Sanitary Sewer Line             | ----- SS                 |
| Above Ground Sanitary Sewer         | ----- A/G Sanitary Sewer |
| SS Forced Main Line LOS B (S.U.E.*) | ----- FSS                |
| SS Forced Main Line LOS C (S.U.E.*) | ----- FSS                |
| SS Forced Main Line LOS D (S.U.E.*) | ----- FSS                |

**MISCELLANEOUS:**

|  |            |
|--|------------|
| Utility Pole                             | ●          |
| Utility Pole with Base                   | ⊠          |
| Utility Located Object                   | ○          |
| Utility Traffic Signal Box               | ⊠          |
| Utility Unknown U/G Line LOS B (S.U.E.*) | ----- TUTL |
| U/G Tank; Water, Gas, Oil                | □          |
| Underground Storage Tank, Approx. Loc.   | ⊠          |
| A/G Tank; Water, Gas, Oil                | □          |
| Geoenvironmental Boring                  | ⊕          |
| U/G Test Hole LOS A (S.U.E.*)            | ⊕          |
| Abandoned According to Utility Records   | AATUR      |
| End of Information                       | E.O.I.     |



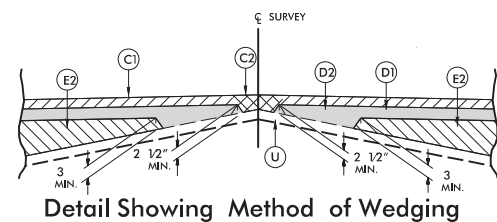
8/17/99

PAVEMENT SCHEDULE

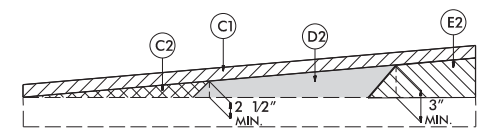
|    |  |
|----|--|
| C1 | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.  |
| C2 | PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1 1/2" IN DEPTH OR GREATER THAN 2" IN DEPTH.       |
| D1 | PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.   |
| D2 | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH. |
| E1 | PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.   |
| E2 | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.         |
| J  | PROP. 8" AGGREGATE BASE COURSE   |
| P  | PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.   |
| R  | PROP. 2'-6" C&G  |
| S  | 4" CONCRETE SIDEWALK   |
| T  | EARTH MATERIAL   |
| U  | EXISTING PAVEMENT  |
| V  | MILLING EXISTING PAVEMENT (SEE MILLING DETAILS THIS SHEET)   |
| W  | VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAILS THIS SHEET)   |
| Y1 | REINFORCED CONCRETE OVERLAY  |
| Y2 | 6" JOINTED CONCRETE WITH 4x4 W3xW3 WIRE REINFORCEMENT  |

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

WEDGING DETAIL FOR -L-:

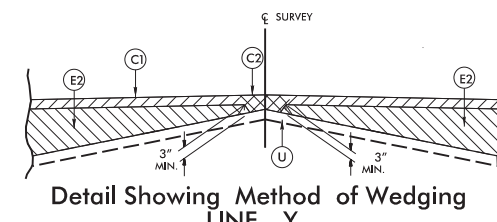


Detail Showing Method of Wedging

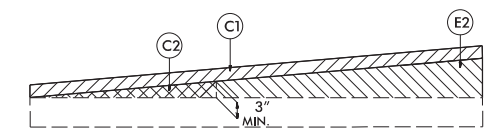


Wedging Detail For Resurfacing

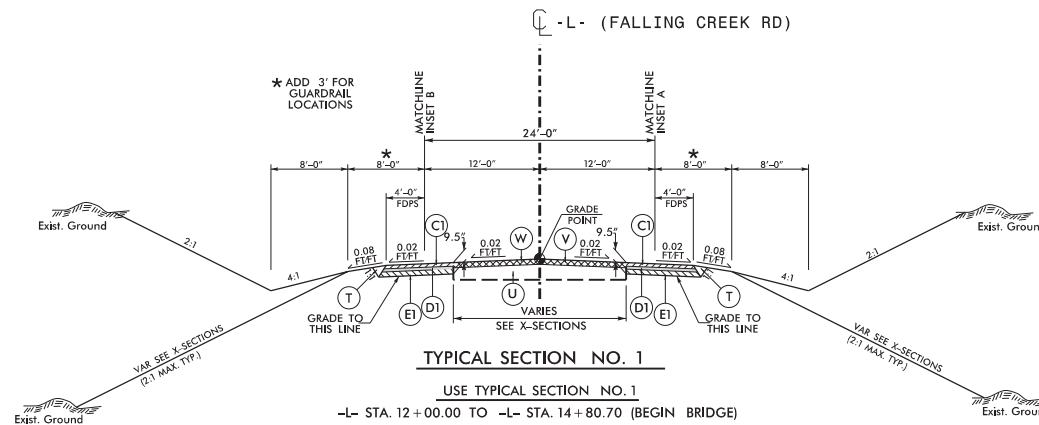
WEDGING DETAIL FOR -Y-:



Detail Showing Method of Wedging LINE -Y-



Wedging Detail For Resurfacing



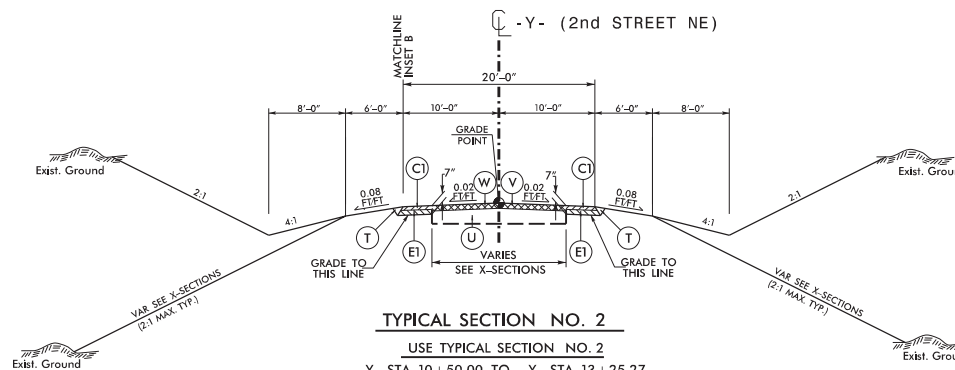
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1  
 -L- STA. 12+00.00 TO -L- STA. 14+80.70 (BEGIN BRIDGE)  
 -L- STA. 15+73.30 (END BRIDGE) TO -L- STA. 17+70.00

NOTE: USE FULL DEPTH PAVEMENT FOR:  
 -L- STA. 14+00.00 TO -L- STA. 14+80.70 (BEGIN BRIDGE)  
 -L- STA. 15+73.30 (END BRIDGE) TO -L- STA. 16+00.00

NOTE: TRANSITION BETWEEN EXISTING AND TYP. SECT. NO. 1 AS FOLLOWS:

-L- STA. 11+50.00 TO -L- STA. 12+00.00  
 -L- STA. 17+70.00 TO -L- STA. 18+20.00



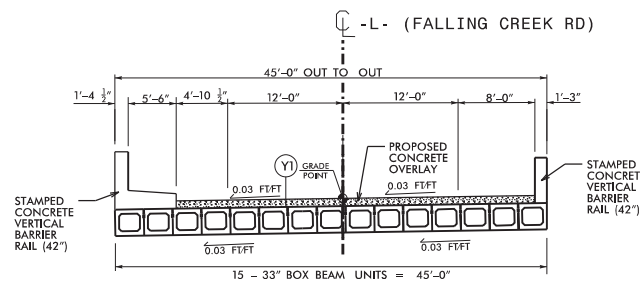
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2  
 -Y- STA. 10+50.00 TO -Y- STA. 13+25.27

NOTE: USE FULL DEPTH PAVEMENT FOR:  
 -Y- STA. 11+50.00 TO -Y- STA. 13+25.27

NOTE: TRANSITION BETWEEN EXISTING AND TYP. SECT. NO. 2 AS FOLLOWS:

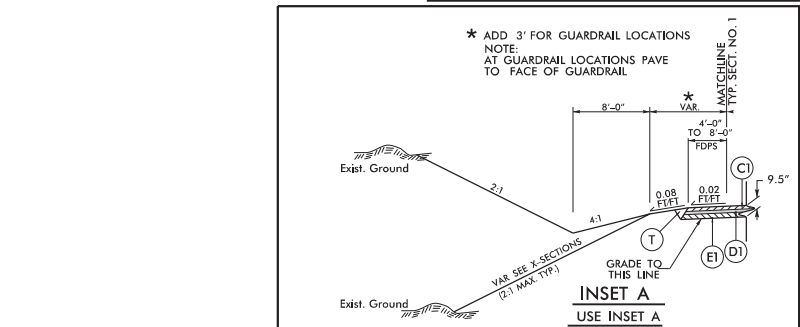
-Y- STA. 10+00.00 TO -Y- STA. 10+50.00



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

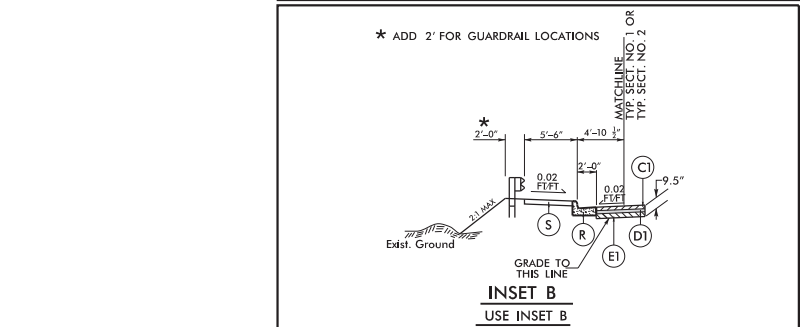
-L- STA. 14+80.70 (BEGIN BRIDGE) TO -L- STA. 15+73.30 (END BRIDGE)



\* ADD 3' FOR GUARDRAIL LOCATIONS  
 NOTE:  
 AT GUARDRAIL LOCATIONS PAVE TO FACE OF GUARDRAIL

INSET A  
USE INSET A

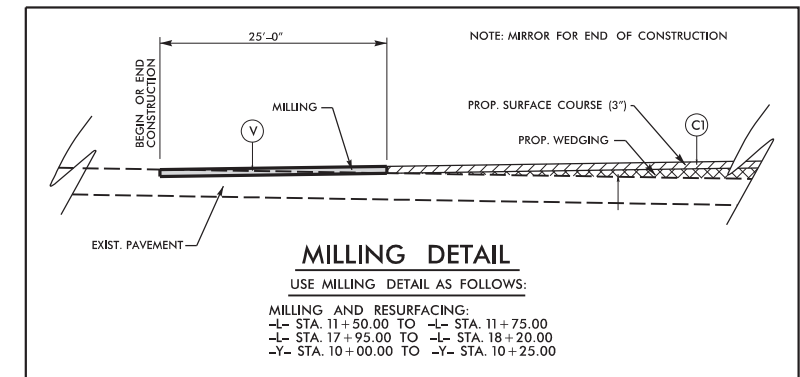
-L- STA. 13+76.08 TO -L- STA. 14+78.40 RT (BEGIN APPROACH SLAB)  
 -L- STA. 15+98.85 (END APPROACH SLAB) TO -L- STA. 16+98.48 RT



\* ADD 2' FOR GUARDRAIL LOCATIONS  
 NOTE:  
 AT GUARDRAIL LOCATIONS PAVE TO FACE OF GUARDRAIL

INSET B  
USE INSET B

-Y- STA. 12+71.56 LT TO -L- STA. 14+53.63 LT (BEGIN APPROACH SLAB)  
 -L- STA. 15+74.23 LT (END APPROACH SLAB) TO -DR3- STA. 10+81.10 RT

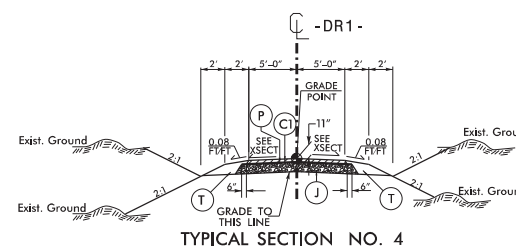


NOTE: MIRROR FOR END OF CONSTRUCTION

MILLING DETAIL

USE MILLING DETAIL AS FOLLOWS:

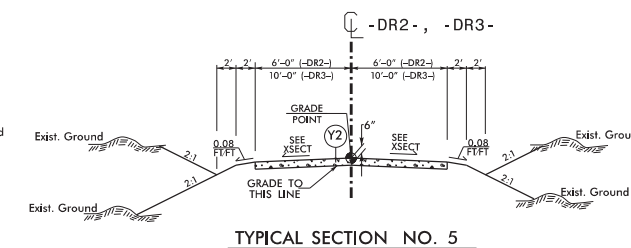
MILLING AND RESURFACING:  
 -L- STA. 11+50.00 TO -L- STA. 11+75.00  
 -L- STA. 17+95.00 TO -L- STA. 18+20.00  
 -Y- STA. 10+00.00 TO -Y- STA. 10+25.00



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

-DR1- STA. 10+12.00 TO -DR1- STA. 11+00.00



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

-DR2- STA. 10+12.29 TO -DR2- STA. 11+00.00  
 -DR3- STA. 10+50.00 TO -DR3- STA. 11+02.67

REVISIONS

Y:\TIME\ED\CON\5549\216\216.dgn

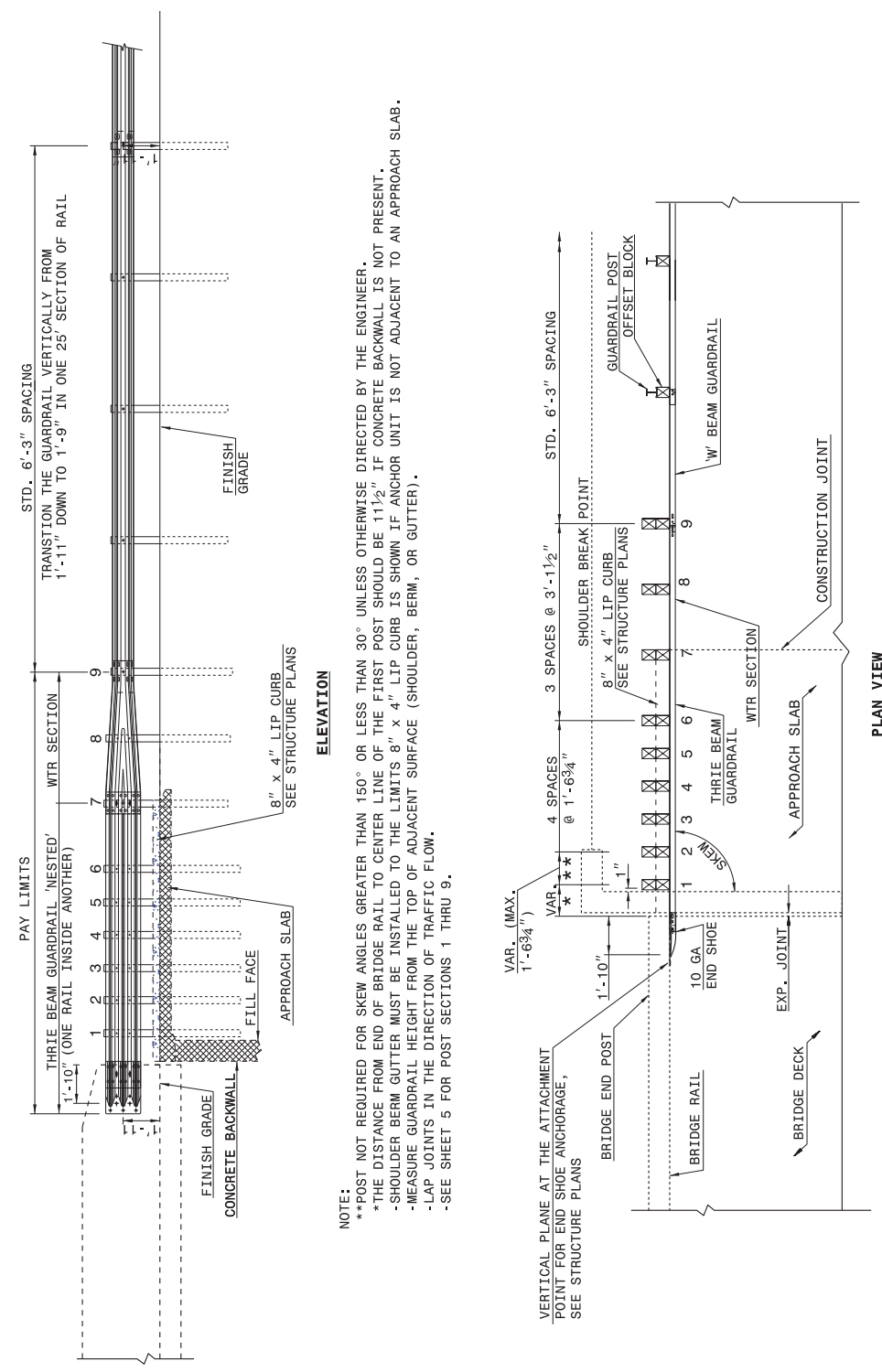
PROJECT REFERENCE NO. B-5549 SHEET NO. 2A-1  
 RW SHEET NO.  
 ROADWAY DESIGN ENGINEER PAVEMENT DESIGN ENGINEER  
 TGS ENGINEERS  
 804-C N. LAFAYETTE ST  
 SHELBY, NC 28150  
 PH (704) 476-0003  
 CORP. LICENSE NO.: C-0275

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO  
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7  
**862d03**



**NOTE:**  
 \*\*POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.  
 \*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.  
 --SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.  
 --MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).  
 --LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.  
 --SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.

**GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO  
RAIL ON BRIDGE - SUB REGIONAL TIER**

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

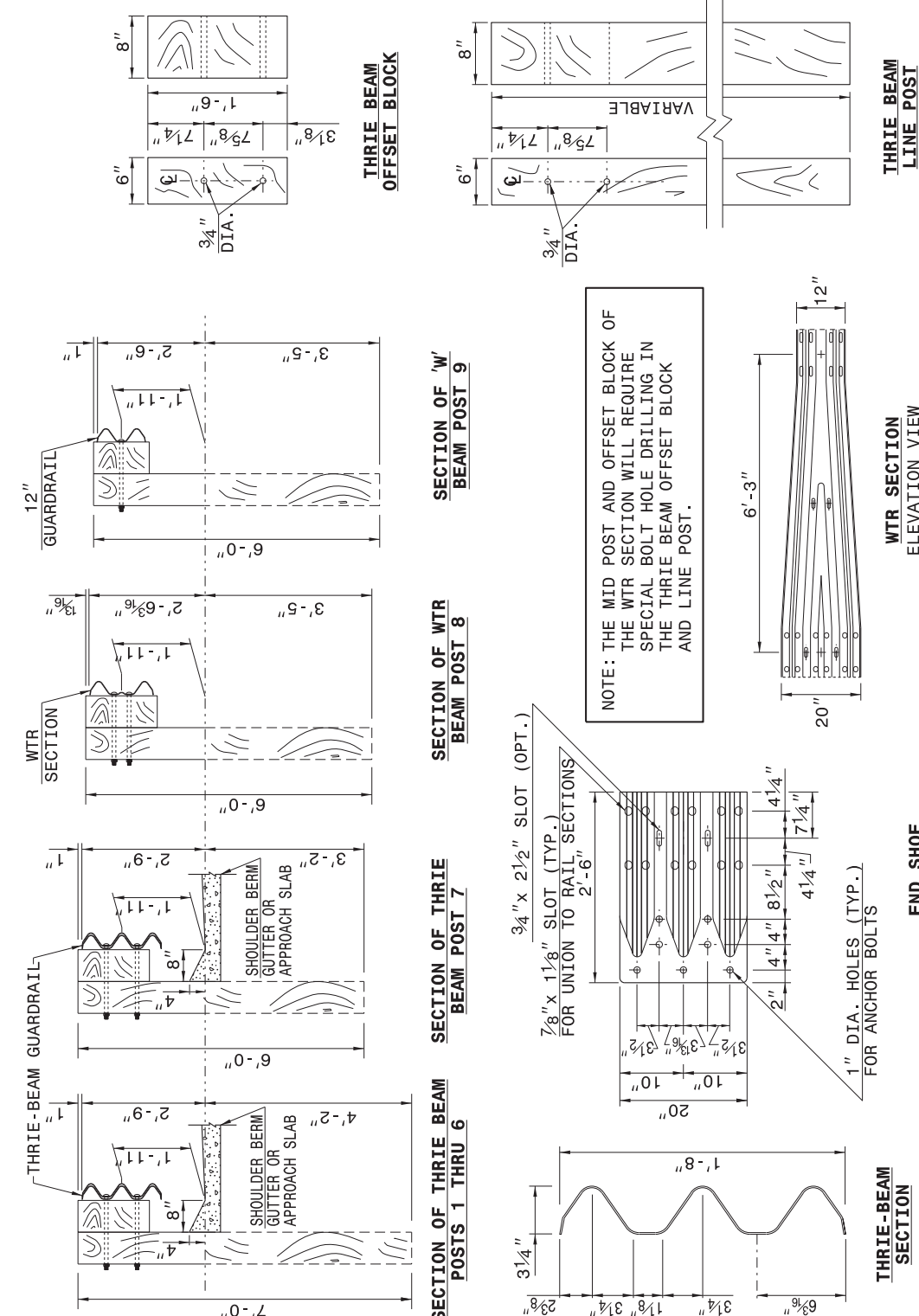
ENGLISH DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO  
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7  
**862d03**

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7  
**862d03**



**NOTE:** THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7  
**862d03**

**CONTRACT STANDARDS  
AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

**SEE TITLE BLOCK**

ORIGINAL BY: J. HOWERTON DATE: 06-22-12  
 MODIFIED BY: DATE:  
 CHECKED BY: DATE:  
 FILE SPEC.:

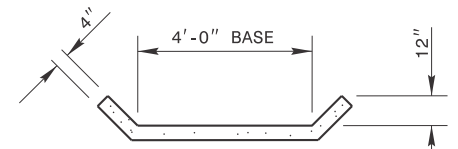
\$\$\$\$SYTIME\$\$\$\$  
 \$\$\$USERNAME\$\$\$

**GENERAL NOTES:**

WIDTH AND SHAPE OF PROPOSED CONCRETE FLUME AND ETC. SHALL BE AS SHOWN OR AS DIRECTED BY THE ENGINEER.

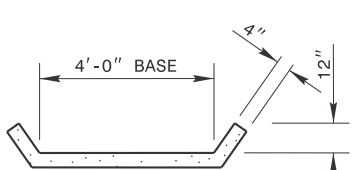
REINFORCING BARS ARE TO BE ASTM A615, GRADE 60.

THE FOLLOWING SHALL BE CONSTRUCTED IN ACCORDANCE WITH N.C. ROADWAY SPECIFICATIONS, CONCRETE CURB AND GUTTER-SECTION 846, CONCRETE FLUME COVER (TO BE CONSTRUCTED UNDER SIDEWALK SPECIFICATIONS) SECTION 848, CONCRETE PAVED DITCH- SECTION 850.



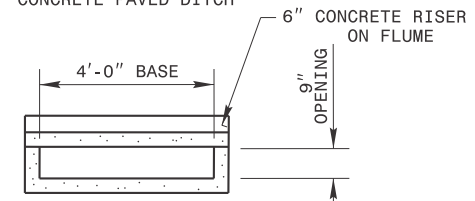
**SECTION D-D**

CONCRETE PAVED DITCH



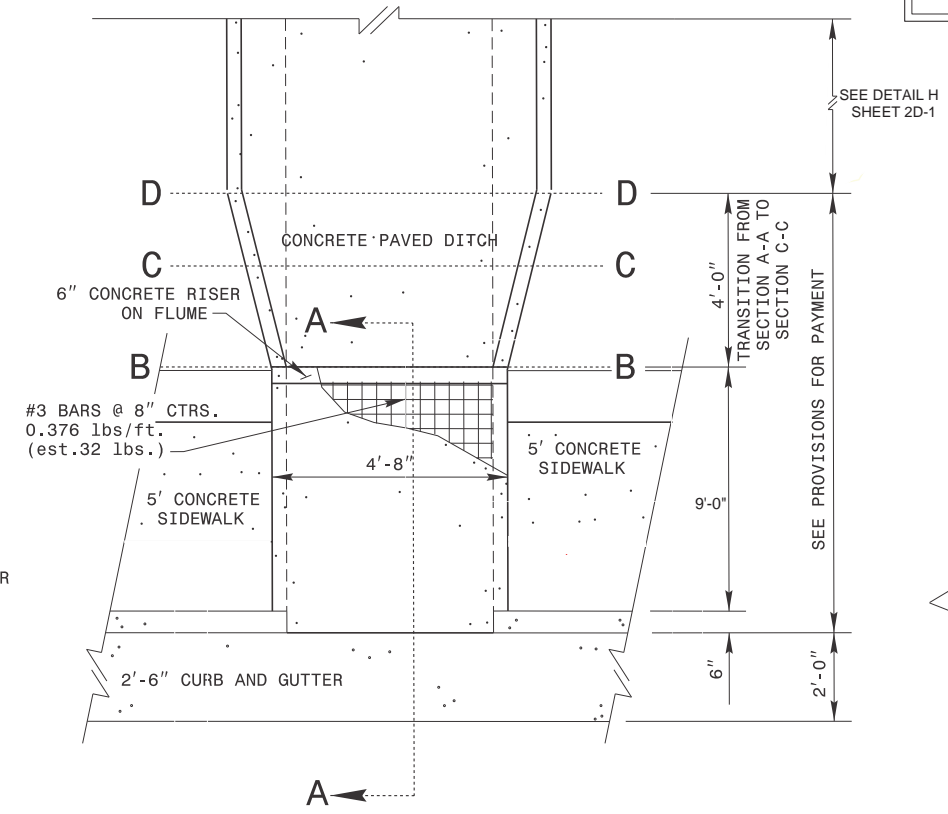
**SECTION C-C**

CONCRETE PAVED DITCH

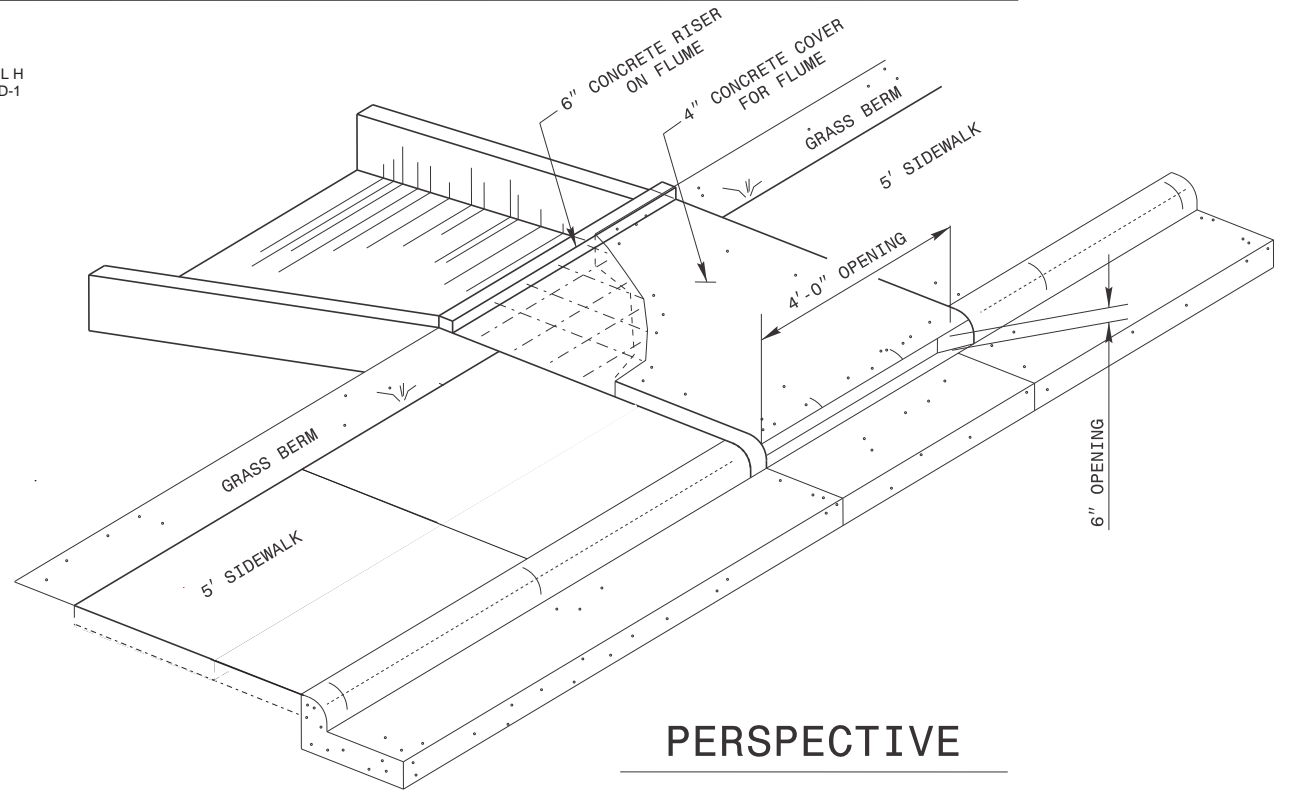


**SECTION B-B**

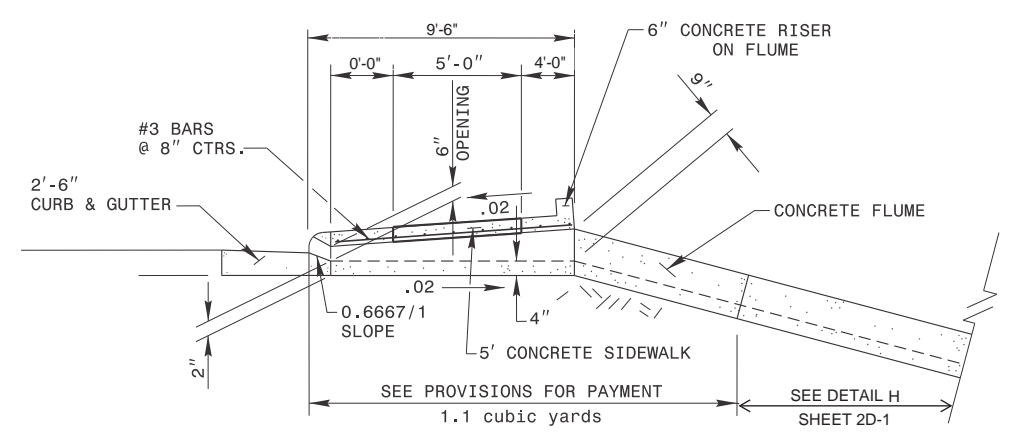
CONCRETE PAVED FLUME



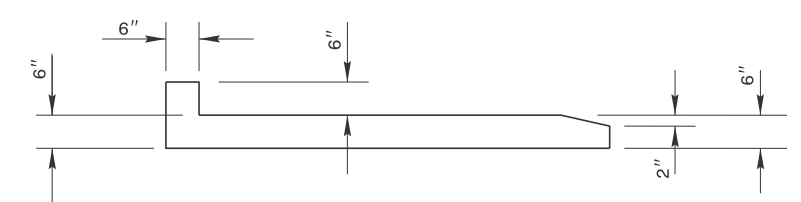
**PLAN**



**PERSPECTIVE**



**ELEVATION**



**SECTION A-A**

CONTRACT STANDARDS & DEVELOPMENT UNIT  
STANDARDS AND SPECIAL DESIGN

**CONCRETE FLUME DETAIL**

ORIGINAL BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 MODIFIED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 FILE SPEC.: \_\_\_\_\_





COMPUTED BY: SGM DATE: 10/28/2015  
 CHECKED BY: JLT DATE: 11/23/2015

PROJECT NO. B-5549 SHEET NO. 3B-1

**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

**SUMMARY OF EARTHWORK**

IN CUBIC YARDS

| Station                 | Station        | Uncl. Excav. | Embank. +% | Borrow | Waste |
|-------------------------|----------------|--------------|------------|--------|-------|
| -L- 11+50.00            | -L- 14+80.70   | 514          | 309        |        | 205   |
| -Y- 10+00.00            | -Y- 13+25.27   | 1,059        | 451        |        | 608   |
| -DR1- 10+12.00          | -DR1- 11+00.00 | 4            | 29         | 25     |       |
| -DR2- 10+12.29          | -DR2- 11+00.00 | 0            | 69         | 69     |       |
| <b>SUBTOTAL 1:</b>      |                | 1,577        | 858        | 94     | 813   |
| BRIDGE                  |                |              |            |        |       |
| -L- 15+73.30            | -L- 18+20.00   | 378          | 166        |        | 212   |
| -DR3- 10+50.00          | -DR3- 11+02.67 | 9            | 2          |        | 7     |
| <b>SUBTOTAL 2:</b>      |                | 387          | 168        | 0      | 219   |
| <b>TOTALS:</b>          |                | 1,964        | 1,026      | 94     | 1,032 |
| Waste in Lieu of Borrow |                |              |            | -94    | -94   |
| <b>GRAND TOTALS:</b>    |                | 1,964        | 1,026      | 0      | 938   |
| <b>SAY</b>              |                | <b>2,200</b> |            |        |       |

Shoulder Borrow: 10 Cubic Yards

**PAVEMENT REMOVAL SUMMARY**

IN SQUARE YARDS

| SURVEY LINE   | Station | Station | LOCATION LT/RT/CL | ASPHALT REMOVAL | ASPHALT BREAKUP | CONCRETE REMOVAL | CONCRETE BREAKUP |
|---------------|---------|---------|-------------------|-----------------|-----------------|------------------|------------------|
| -L-           | 14+40   | 14+67   | CL                |                 | 70.86           |                  |                  |
| -L-           | 14+67   | 14+91   | CL                | 56.1            |                 |                  |                  |
| -L-           | 15+58   | 16+00   | CL                | 86.81           |                 |                  |                  |
| -Y-           | 10+72   | 13+28   | LT/RT/CL          | 432.98          |                 |                  |                  |
| <b>TOTAL:</b> |         |         |                   | 575.89          | 70.86           |                  |                  |
| <b>SAY:</b>   |         |         |                   | <b>580</b>      | <b>80</b>       |                  |                  |

Approximate quantities only. Unclassified Excavation, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement and Removal of Existing Pavement will be paid for at the lump sum price for "Grading".

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL  
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.  
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.  
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.  
 G = GATING IMPACT ATTENUATOR TYPE 350  
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

**GUARDRAIL SUMMARY**

| LINE                          | BEG. STA.      | END STA.       | LOC. | LENGTH     |             |              | WARRANT POINT |            | "N" DIST. FROM E.O.L. | TOTAL SHLDR WIDTH | FLAIR LENGTH |            | W         |            | ANCHORS |                |      | IMP. ATTN. TYPE 350 |   |    | REMOVE EXISTING GUARDRAIL | REMARKS      |
|-------------------------------|----------------|----------------|------|------------|-------------|--------------|---------------|------------|-----------------------|-------------------|--------------|------------|-----------|------------|---------|----------------|------|---------------------|---|----|---------------------------|--------------|
|                               |                |                |      | STRAIGHT   | SHOP CURVED | DOUBLE FACED | APPR. END     | TRAIL. END |                       |                   | APPR. END    | TRAIL. END | APPR. END | TRAIL. END | III     | GRAU 350 (TL3) | AT-1 | EA                  | G | NG |                           |              |
| -L-                           | -Y- 12+71.56   | 14+67.78       | LT   | 25.00      | 68.75       |              |               | 14+67.78   | 7.5'                  | 9.5' Berm         |              |            |           |            |         | 1              |      | 1                   |   |    |                           | Radius = 40' |
| -L-                           | -DR2- 10+29.73 | 14+92.25       | RT   | 25.00      | 25.00       |              |               | 14+92.25   | 8'                    | 11'               |              |            |           |            |         | 1              |      | 1                   |   |    |                           | Radius = 20' |
| -L-                           | 15+80.38       | -DR3- 10+81.10 | LT   | 25.00      | 25.00       |              |               | 15+60.38   | 7.5'                  | 9.5' Berm         |              |            |           |            |         | 1              |      | 1                   |   |    |                           | Radius = 20' |
| -L-                           | 15+84.85       | 16+59.85       | RT   | 75.00      |             |              |               | 15+84.85   | 8'                    | 11"               | 50'          |            | 1'        |            |         | 1              | 1    |                     |   |    |                           |              |
| <b>SUB-TOTALS:</b>            |                |                |      | 150.00     | 118.75      |              |               |            |                       |                   |              |            |           |            |         | 4              | 1    | 3                   |   |    |                           |              |
| <b>LESS ANCHOR DEDUCTIONS</b> |                |                |      |            |             |              |               |            |                       |                   |              |            |           |            |         |                |      |                     |   |    |                           |              |
| TYPE III                      |                |                |      | 4@18.75 ft | 75          |              |               |            |                       |                   |              |            |           |            |         |                |      |                     |   |    |                           |              |
| GRAU-350 (TL-3)               |                |                |      | 1@50.00 ft | 50          |              |               |            |                       |                   |              |            |           |            |         |                |      |                     |   |    |                           |              |
| AT-1                          |                |                |      | 3@6.25 ft  | 18.75       |              |               |            |                       |                   |              |            |           |            |         |                |      |                     |   |    |                           |              |
| <b>ANCHOR TOTALS</b>          |                |                |      | 125        | 18.75       |              |               |            |                       |                   |              |            |           |            |         |                |      |                     |   |    |                           |              |
| <b>GRAND TOTALS</b>           |                |                |      | 25.00      | 100.00      |              |               |            |                       |                   |              |            |           |            |         | 4              | 1    | 3                   |   |    |                           |              |
| <b>SAY</b>                    |                |                |      | 37.50      | 112.50      |              |               |            |                       |                   |              |            |           |            |         |                |      |                     |   |    |                           |              |

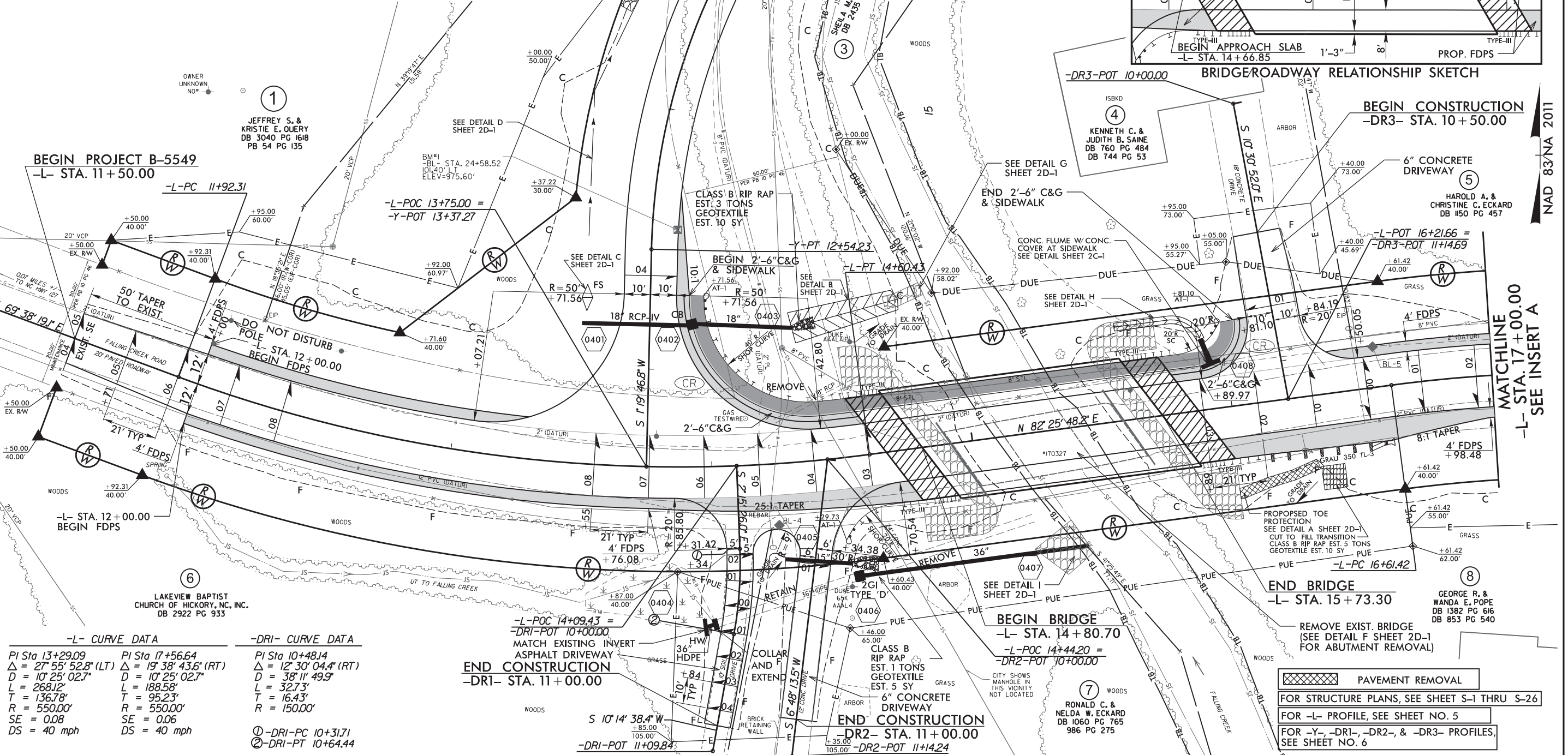
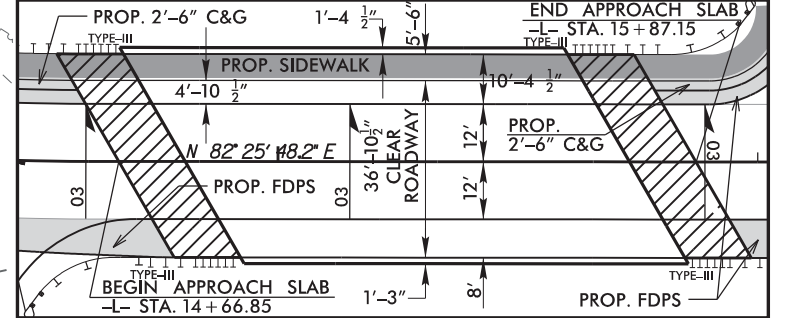
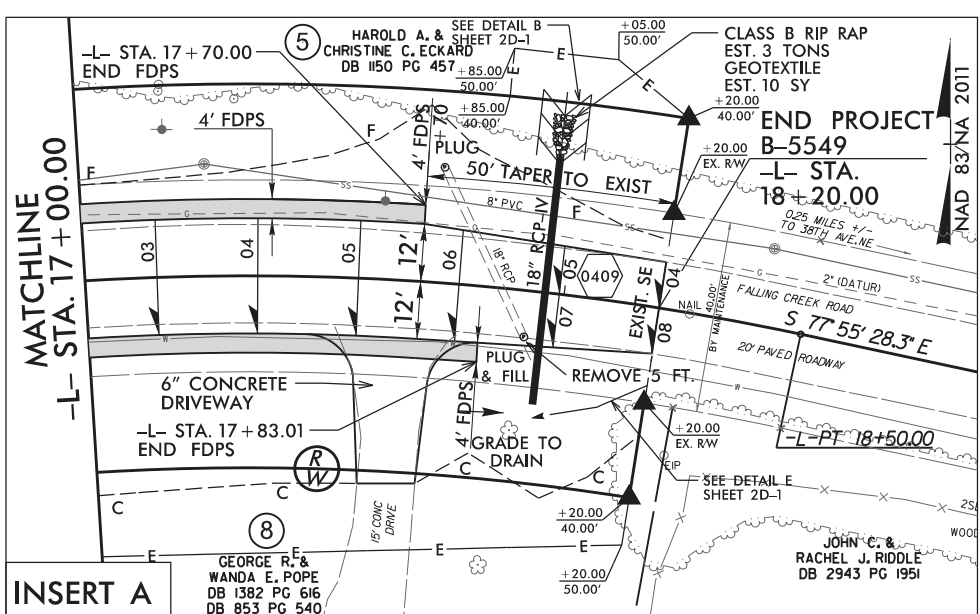
ADDITIONAL GUARDRAIL POSTS = 5 EA



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
804-C N. LAFAYETTE ST  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO. 1 C-0275

**-Y- CURVE DATA**  
 PI Sta 11+50.33  
 $\Delta = 51^{\circ} 21' 50.3" (LT)$   
 $D = 22^{\circ} 55' 05.9"$   
 $L = 224.12'$   
 $T = 120.22'$   
 $R = 250.00'$   
 $SE = 0.04$   
 $DS = 30 \text{ mph}$



**-L- CURVE DATA**  
 PI Sta 13+29.09  $\Delta = 27^{\circ} 55' 52.8" (LT)$   $D = 10^{\circ} 25' 02.7"$   $L = 268.12'$   $T = 136.78'$   $R = 550.00'$   $SE = 0.08$   $DS = 40 \text{ mph}$   
 PI Sta 17+56.64  $\Delta = 19^{\circ} 38' 43.6" (RT)$   $D = 10^{\circ} 25' 02.7"$   $L = 188.58'$   $T = 95.23'$   $R = 550.00'$   $SE = 0.06$   $DS = 40 \text{ mph}$   
**-DRI- CURVE DATA**  
 PI Sta 10+48.14  $\Delta = 12^{\circ} 30' 04.4" (RT)$   $D = 38^{\circ} 11' 49.9"$   $L = 32.73'$   $T = 16.43'$   $R = 150.00'$   
 ① -DRI-PC 10+31.71  
 ② -DRI-PT 10+64.44

**END CONSTRUCTION**  
 -DRI- STA. 11+00.00

**BEGIN BRIDGE**  
 -L- STA. 14+80.70

**END CONSTRUCTION**  
 -DR2- STA. 11+00.00

**END BRIDGE**  
 -L- STA. 15+73.30

REMOVE EXIST. BRIDGE (SEE DETAIL F SHEET 2D-1 FOR ABUTMENT REMOVAL)

PAVEMENT REMOVAL

FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-26

FOR -L- PROFILE, SEE SHEET NO. 5

FOR -Y-, -DRI-, -DR2-, & -DR3- PROFILES, SEE SHEET NO. 6

8/17/99

REVISIONS

SYTIME

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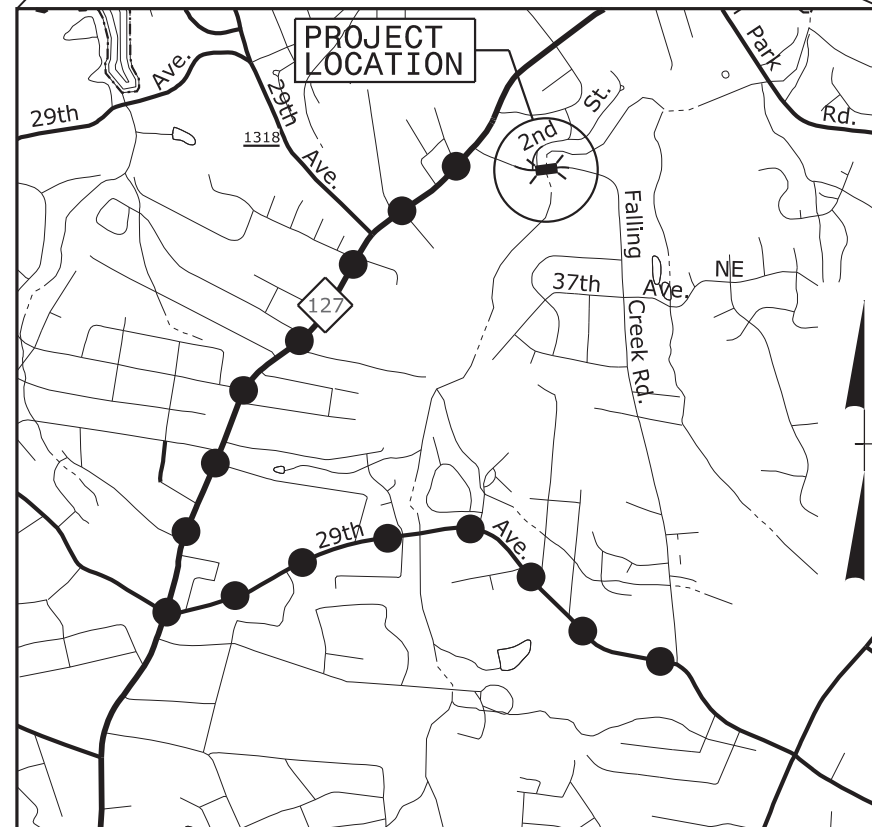




STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

**CATAWBA COUNTY**



VICINITY MAP

●●●●● OFFSITE DETOUR

**INDEX OF SHEETS**

| SHEET NO. | TITLE   |
|-----------|---|
| TMP-1     | TITLE SHEET, AND INDEX OF SHEETS  |
| TMP-1A    | LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND                   |
| TMP-1B    | TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES AND GENERAL NOTES) |
| TMP-1C    | SPECIAL SIGN DESIGN   |
| TMP-2     | OVERVIEW AND PHASING  |
| TMP-3     | OFFSITE DETOUR LOCATION AND BARRICADE PLACEMENT                           |

SHEET NO.  
TMP-1

**PROJECT: B-5549**

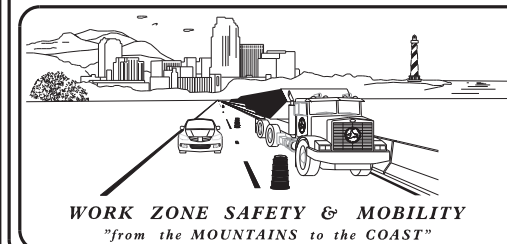
**CONTRACT: 7500017050**

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

APPROVED: \_\_\_\_\_  
DATE: \_\_\_\_\_



SEAL



PLAN PREPARED FOR N.C.D.O.T. BY:

|  |  |
|--|--|
| <br><b>TGS ENGINEERS</b><br>804-C N. LAFAYETTE ST.<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 | JIMMY L. TERRY, PE PROJECT ENGINEER<br>TUCKER B. ENNIS DESIGN TECHNICIAN |
|--|--|



\$\$\$\$\$SYTIME\$\$\$\$\$  
\$\$\$\$\$DGN\$\$\$\$\$  
\$\$\$\$\$USERNAME\$\$\$\$\$

# ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

| STD. NO. | TITLE  |
|----------|--|
| 1101.01  | WORK ZONE ADVANCE WARNING SIGNS                          |
| 1101.03  | TEMPORARY ROAD CLOSURES                                  |
| 1101.05  | WORK ZONE VEHICLE ACCESSES                               |
| 1101.11  | TRAFFIC CONTROL DESIGN TABLES                            |
| 1110.01  | STATIONARY WORK ZONE SIGNS                               |
| 1130.01  | DRUM   |
| 1145.01  | BARRICADES   |
| 1205.01  | PAVEMENT MARKINGS - LINE TYPES AND OFFSETS               |
| 1205.02  | PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS     |
| 1205.04  | PAVEMENT MARKINGS - INTERSECTIONS                        |
| 1205.12  | PAVEMENT MARKINGS - BRIDGES                              |
| 1250.01  | RAISED PAVEMENT MARKERS - INSTALLATION SPACING           |
| 1251.01  | RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY        |
| 1261.01  | GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING |
| 1261.02  | GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING   |
| 1262.01  | GUARDRAIL END DELINEATION                                |

# LEGEND

## GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)

- WORK AREA
- REMOVAL
- USER DEFINED (IF NEEDED)
- USER DEFINED (IF NEEDED)

## SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

## PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

## TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

## TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

## PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

## PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

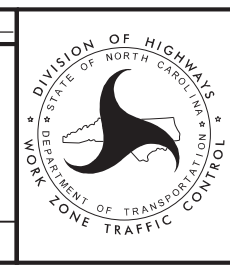
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 \$\$\$DGN\$\$\$\$  
 \$\$\$USERNAM\$\$\$\$

**TGS ENGINEERS**  
 804-C N. LAFAYETTE ST.  
 SHELBY, NC 28150  
 PH (704) 476 0003  
 CORP. LICENSE NO. 1C-0275

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

SEAL

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



ROADWAY STANDARD  
DRAWINGS & LEGEND

**GENERAL NOTES**

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

- A) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

- B) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- C) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.  
  
 PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.
- D) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.  
  
 COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.
- E) PROVIDE PERMANENT SIGNING.
- F) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN

TRAFFIC CONTROL DEVICES

- G) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

- H) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE.
- I) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

MISCELLANEOUS

- J) ALL CURB RAMP LOCATIONS SHALL BE DERIVED FROM STATIONING SHOWN ON PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER IN COORDINATION WITH THE SIGNING AND DELINEATION UNIT.

**LOCAL NOTES**

ACCESS TO ALL DRIVEWAYS MUST BE PROVIDED AT ALL TIMES WITHIN THE PROJECT LIMITS.

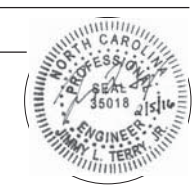
**MANAGEMENT STRATEGIES**

DURING CONSTRUCTION OF PROPOSED STRUCTURE, FALLING CREEK ROAD WILL BE CLOSED TO THROUGH TRAFFIC. FALLING CREEK ROAD TRAFFIC WILL BE MAINTAINED ON THE FOLLOWING OFFSITE DETOUR: FROM HWY 127 TO 29TH AVE. NE AND BACK TO FALLING CREEK ROAD.

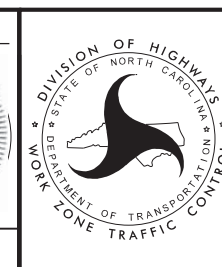
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 \$\$\$\$\$\$DGN\$\$\$\$\$  
 \$\$\$\$\$\$USERNAM\$\$\$\$\$

TGS ENGINEERS  
 804-C N. LAFAYETTE ST.  
 SHELBY, NC 28150  
 PH: (704) 476-0003  
 CORP. LICENSE NO.: C-0275

APPROVED: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 SEAL



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**TRANSPORTATION OPERATIONS PLAN**





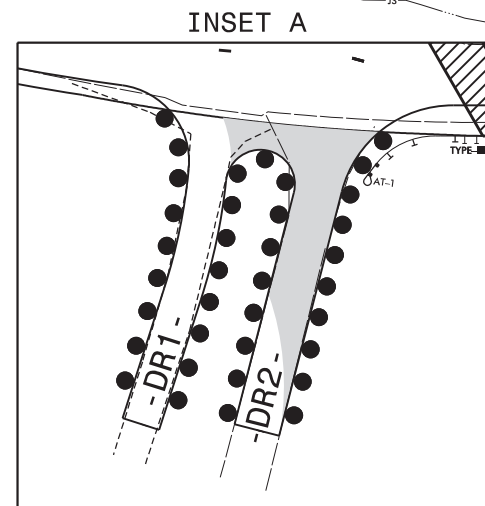
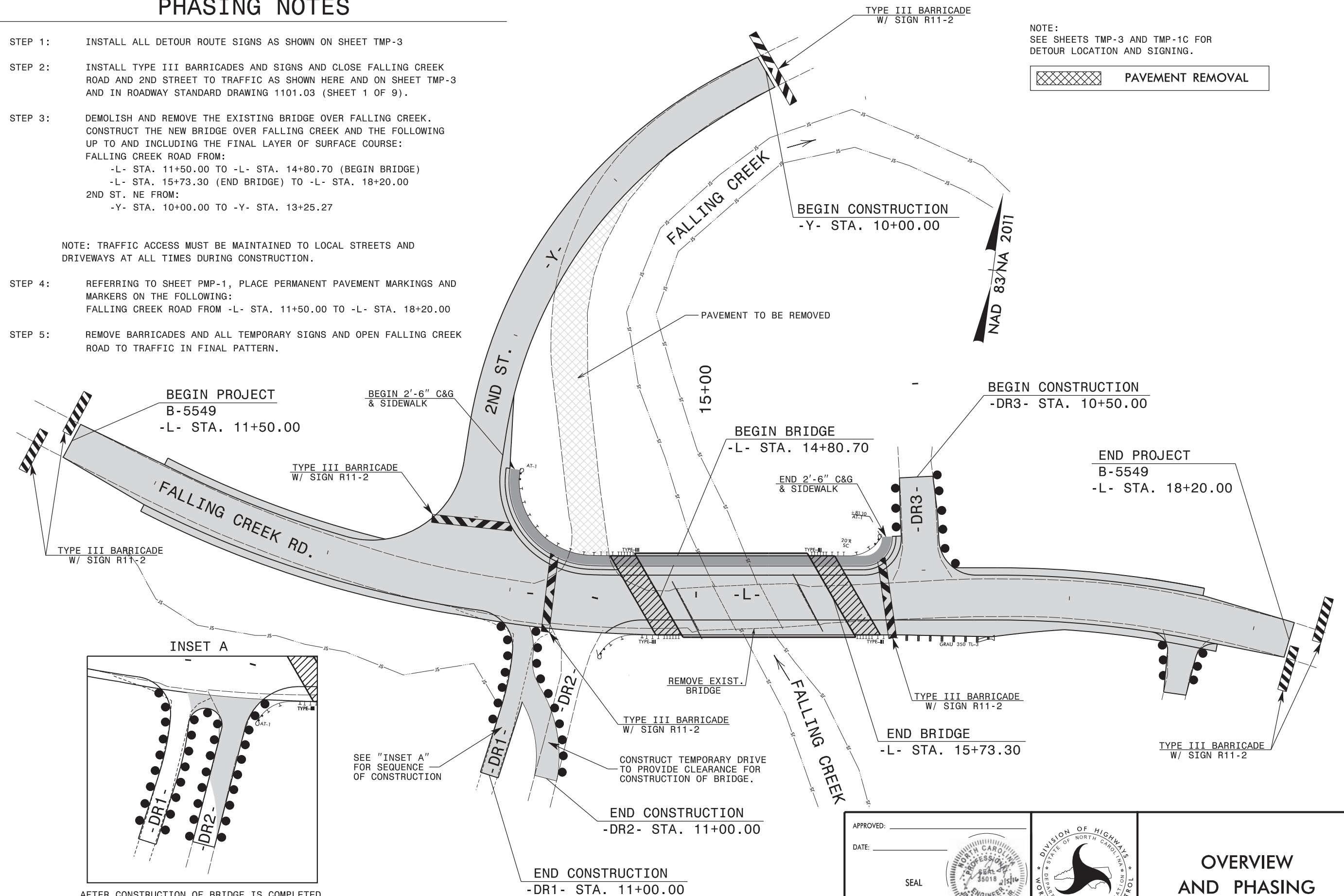
# PHASING NOTES

- STEP 1: INSTALL ALL DETOUR ROUTE SIGNS AS SHOWN ON SHEET TMP-3
- STEP 2: INSTALL TYPE III BARRICADES AND SIGNS AND CLOSE FALLING CREEK ROAD AND 2ND STREET TO TRAFFIC AS SHOWN HERE AND ON SHEET TMP-3 AND IN ROADWAY STANDARD DRAWING 1101.03 (SHEET 1 OF 9).
- STEP 3: DEMOLISH AND REMOVE THE EXISTING BRIDGE OVER FALLING CREEK. CONSTRUCT THE NEW BRIDGE OVER FALLING CREEK AND THE FOLLOWING UP TO AND INCLUDING THE FINAL LAYER OF SURFACE COURSE:  
 FALLING CREEK ROAD FROM:  
 -L- STA. 11+50.00 TO -L- STA. 14+80.70 (BEGIN BRIDGE)  
 -L- STA. 15+73.30 (END BRIDGE) TO -L- STA. 18+20.00  
 2ND ST. NE FROM:  
 -Y- STA. 10+00.00 TO -Y- STA. 13+25.27

NOTE: TRAFFIC ACCESS MUST BE MAINTAINED TO LOCAL STREETS AND DRIVEWAYS AT ALL TIMES DURING CONSTRUCTION.

- STEP 4: REFERRING TO SHEET PMP-1, PLACE PERMANENT PAVEMENT MARKINGS AND MARKERS ON THE FOLLOWING:  
 FALLING CREEK ROAD FROM -L- STA. 11+50.00 TO -L- STA. 18+20.00
- STEP 5: REMOVE BARRICADES AND ALL TEMPORARY SIGNS AND OPEN FALLING CREEK ROAD TO TRAFFIC IN FINAL PATTERN.

NOTE:  
SEE SHEETS TMP-3 AND TMP-1C FOR  
DETOUR LOCATION AND SIGNING.



AFTER CONSTRUCTION OF BRIDGE IS COMPLETED, CONSTRUCT -DR1- AND -DR2- AS SHOWN ABOVE.

SEE "INSET A" FOR SEQUENCE OF CONSTRUCTION

CONSTRUCT TEMPORARY DRIVE TO PROVIDE CLEARANCE FOR CONSTRUCTION OF BRIDGE.

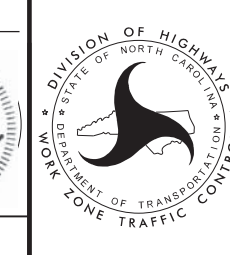
REMOVE EXIST. BRIDGE

END CONSTRUCTION  
-DR2- STA. 11+00.00

END CONSTRUCTION  
-DR1- STA. 11+00.00

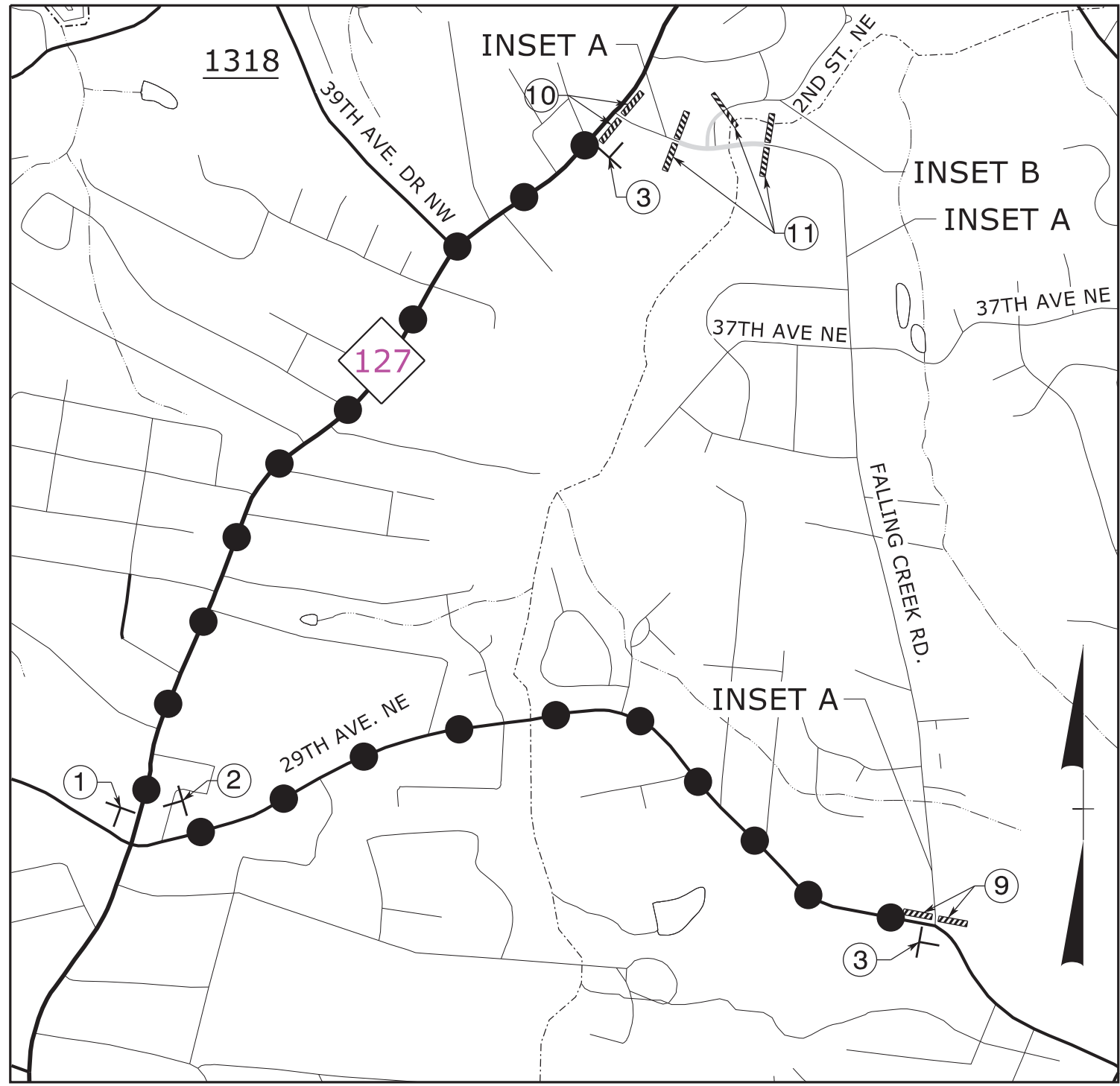
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UNLESS ALL SIGNATURES COMPLETED

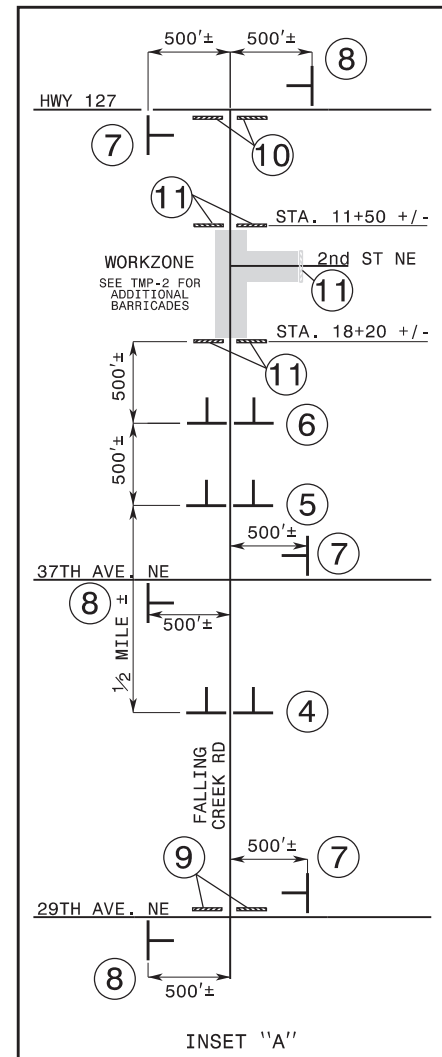


## OVERVIEW AND PHASING

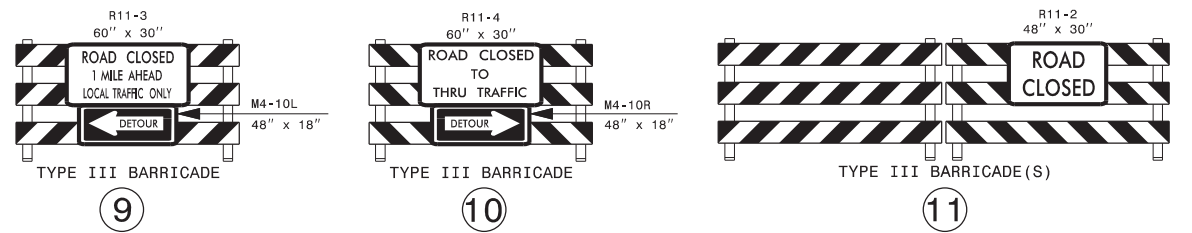
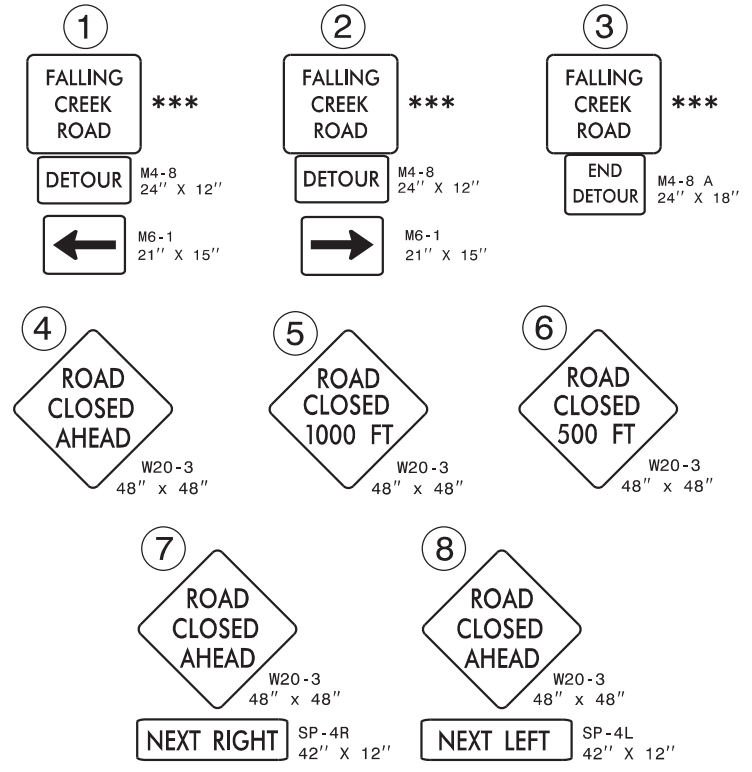
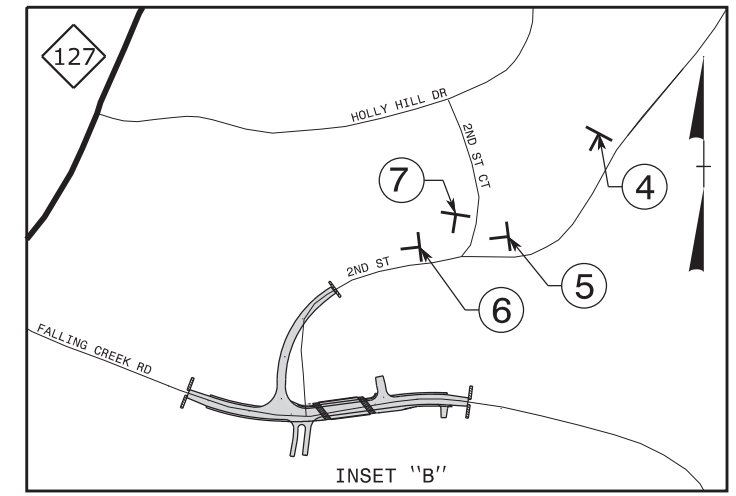
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CONSTRUCTION AREA  
 DETOUR ROUTE



REFER TO ROADWAY STANDARD DRAWING 1101.03, SHEETS 1 and 2 OF 9 FOR APPLICABLE NOTES.

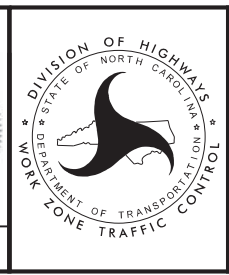


\*\*\* SEE SHEET TMP-1C FOR SIGN DESIGN

\$\$\$\$\$SYSTEMTIME\$\$\$\$\$  
 \$\$\$USERNAME\$\$\$\$\$

TGS ENGINEERS  
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 DATE: \_\_\_\_\_  
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OFFSITE DETOUR ROUTE  
 AND BARRICADE PLACEMENT

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**STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN  
CATAWBA COUNTY**

**LOCATION: BRIDGE #170327 OVER FALLING CREEK  
ON FALLING CREEK ROAD**

**T.I.P.: B-5549**

**CONTRACT: 7500017050**

**ROADWAY STANDARD DRAWING**

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

| STD. NO. | TITLE  |
|----------|--|
| 1205.01  | PAVEMENT MARKINGS - LINE TYPES AND OFFSETS               |
| 1205.02  | PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS      |
| 1205.04  | PAVEMENT MARKINGS - INTERSECTIONS                        |
| 1205.12  | PAVEMENT MARKINGS - BRIDGES                              |
| 1250.01  | RAISED PAVEMENT MARKERS - INSTALLATION SPACING           |
| 1251.01  | RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY        |
| 1261.01  | GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING |
| 1261.02  | GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING   |
| 1262.01  | GUARDRAIL END DELINEATION                                |

**GENERAL NOTES**

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

| ROAD NAME        | MARKING       | MARKER           |
|------------------|---------------|------------------|
| FALLING CREEK RD | THERMOPLASTIC | PERMANENT RAISED |
- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.
- E) REMOVE ALL RESIDUE AND SURFACE LAITANCE BY ACCEPTABLE METHODS ON CONCRETE BRIDGE DECKS PRIOR TO PLACING COLD APPLIED PAVEMENT MARKING MATERIAL.
- F) SEE ROADWAY PLANS FOR ALTERNATE CURB RAMP DESIGNS WHEN INDICATED ON PAVEMENT MARKING DETAIL SHEETS.

**INDEX**

| SHEET NO. | DESCRIPTION   |
|-----------|---|
| PMP-1     | PAVEMENT MARKING PLAN TITLE, INDEX OF SHEETS, LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND GENERAL NOTES |
| PMP-2     | FINAL PAVEMENT MARKING PLAN & FINAL PAVEMENT MARKING SCHEDULE   |

PLAN PREPARED FOR N.C.D.O.T. BY:

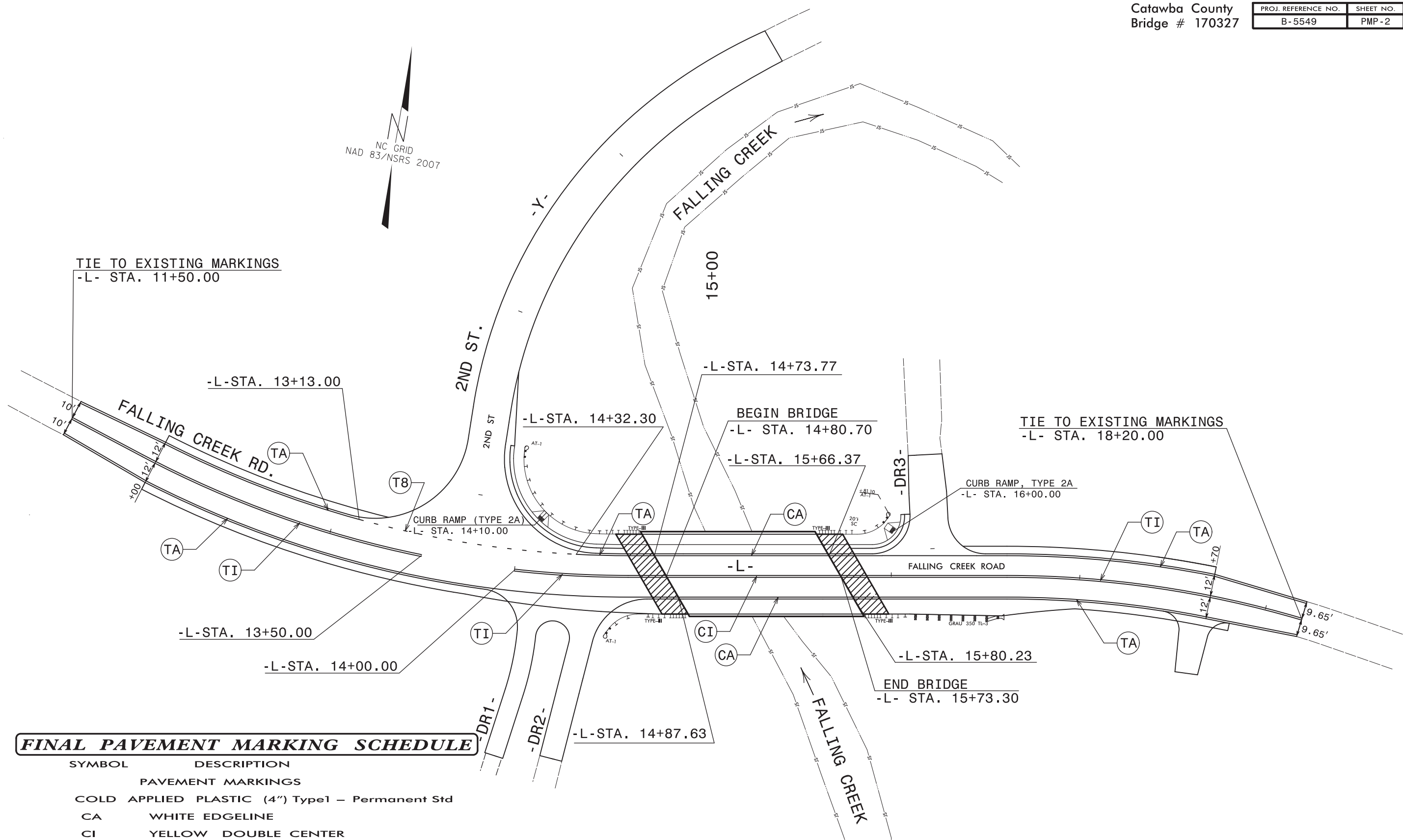
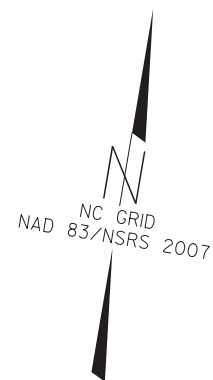


**TGS ENGINEERS**  
804-C N. LAFAYETTE ST  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

JIMMY L. TERRY, PE PROJECT ENGINEER  
SANDRA MELVIN DESIGN TECHNICIAN



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**FINAL PAVEMENT MARKING SCHEDULE**

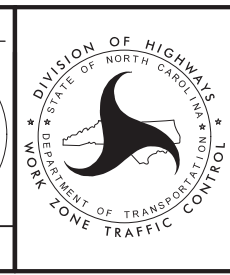
| SYMBOL  | DESCRIPTION                   |
|---|-------------------------------|
| <b>PAVEMENT MARKINGS</b>                        |                               |
| COLD APPLIED PLASTIC (4") Type1 - Permanent Std |                               |
| CA  | WHITE EDGELINE                |
| CI  | YELLOW DOUBLE CENTER          |
| THERMOPLASTIC (4", 120 MILS)                    |                               |
| T8  | 2 FT.- 6 FT.SP WHITE MINISKIP |
| TI  | YELLOW DOUBLE CENTER          |
| THERMOPLASTIC (4", 90 MILS)                     |                               |
| TA  | WHITE EDGELINE                |
| <b>PAVEMENT MARKINGS</b>                        |                               |
| PERMANENT RAISED PAVEMENT MARKERS               |                               |
| MA  | YELLOW & YELLOW               |

\$\$\$\$\$ SYSTEM TIME\$\$\$\$\$  
 \$\$\$ DATE\$\$\$\$\$  
 \$\$\$ USER NAME\$\$\$\$\$

APPROVED: \_\_\_\_\_  
 DATE: \_\_\_\_\_

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**PAVEMENT  
 MARKING  
 PLAN**

TGS ENGINEERS  
 804-C N. LAFAYETTE ST.  
 SHELBY, NC 28150  
 PH (704) 476 0003  
 CORP. LICENSE NO. 1-C-0275

| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | B-5549                      | EC-1        |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 55047.1.1       | BRSTP-1216(21)              | PE          |              |
| 55047.2.1       | BRSTP-1216(21)              | RW & UTIL   |              |
| 55047.3.1       | BRSTP-1216(21)              | CONST       |              |

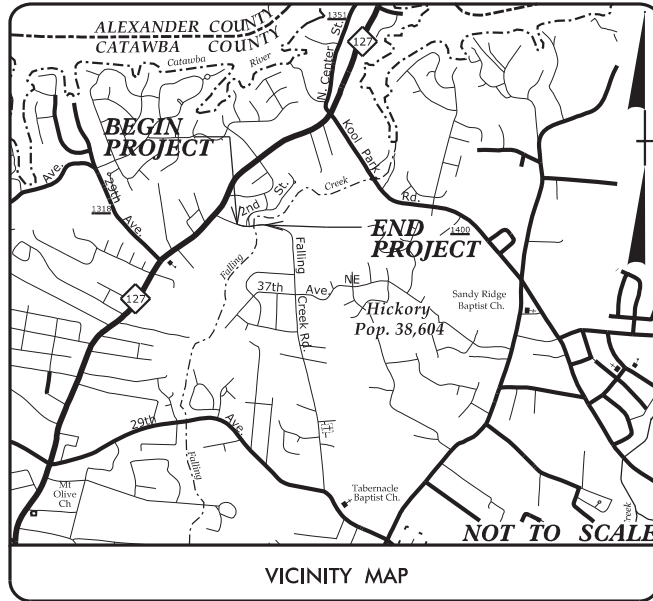
**EROSION AND SEDIMENT CONTROL MEASURES**

| Std. #  | Description  | Symbol           |
|---------|--|------------------|
| 1630.03 | Temporary Silt Ditch   | ---TS---         |
| 1630.05 | Temporary Diversion  | ---TD---         |
| 1605.01 | Temporary Silt Fence   | ---SIF---        |
| 1606.01 | Special Sediment Control Fence   | ---SCF---        |
| 1622.01 | Temporary Berms and Slope Drains                                       | ---B&SD---       |
| 1630.02 | Silt Basin Type B  | ---SB(B)---      |
| 1633.01 | Temporary Rock Silt Check Type-A                                       | ---TRSC(A)---    |
|         | Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM) | ---TRSC(A)PAM--- |
| 1633.02 | Temporary Rock Silt Check Type-B                                       | ---TRSC(B)---    |
|         | Wattle/Coir Fiber Wattle   | ---W&CFF---      |
|         | Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)                     | ---W&CFFPAM---   |
| 1634.01 | Temporary Rock Sediment Dam Type-A                                     | ---TRSD(A)---    |
| 1634.02 | Temporary Rock Sediment Dam Type-B                                     | ---TRSD(B)---    |
| 1635.01 | Rock Pipe Inlet Sediment Trap Type-A                                   | ---RPIST(A)---   |
| 1635.02 | Rock Pipe Inlet Sediment Trap Type-B                                   | ---RPIST(B)---   |
| 1630.04 | Stilling Basin   | ---SB---         |
| 1630.06 | Special Stilling Basin   | ---SSB---        |
|         | Rock Inlet Sediment Trap:  |                  |
| 1632.01 | Type A   | ---RIST(A)---    |
| 1632.02 | Type B   | ---RIST(B)---    |
| 1632.03 | Type C   | ---RIST(C)---    |
|         | Skimmer Basin  | ---SB(S)---      |
|         | Tiered Skimmer Basin   | ---TSB---        |
|         | Infiltration Basin   | ---IB---         |



**TIP PROJECT: B-5549**

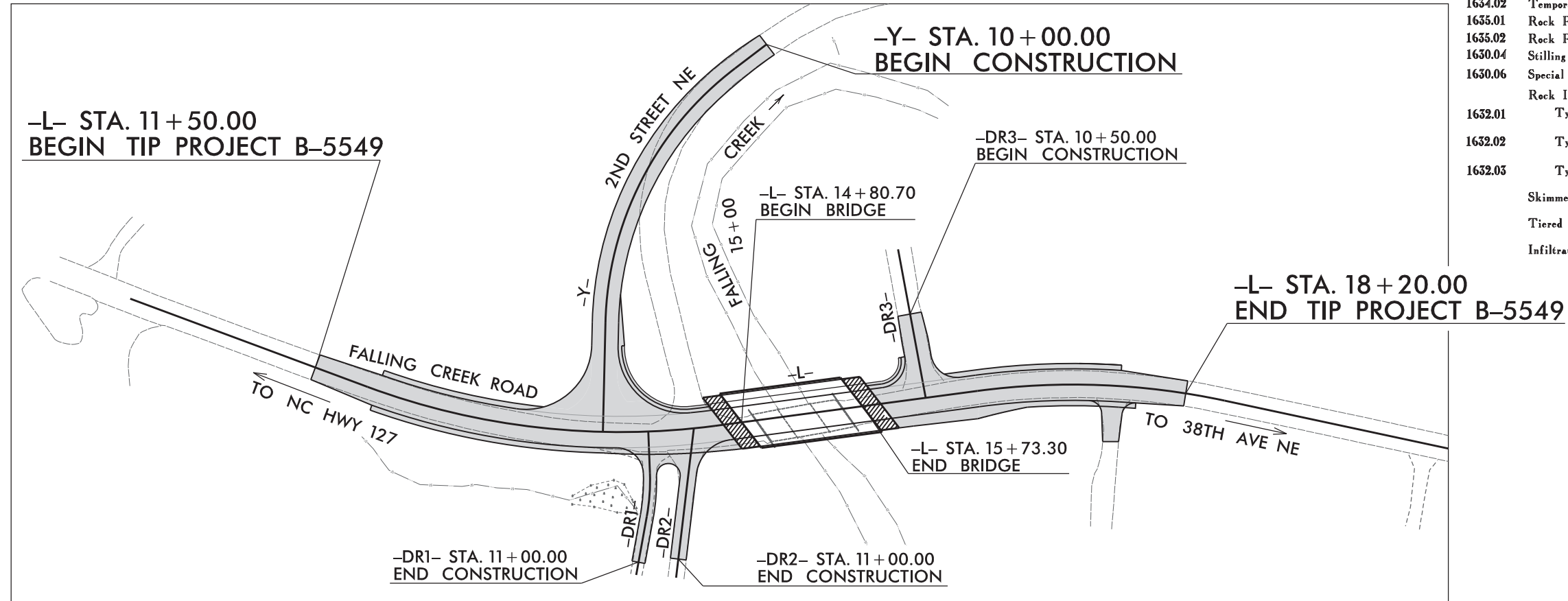
**CONTRACT: 7500017050**



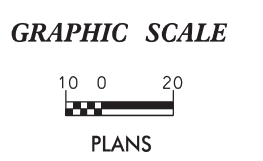
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
PLAN FOR PROPOSED  
HIGHWAY EROSION CONTROL

CATAWBA COUNTY  
LOCATION: BRIDGE #170327 OVER FALLING CREEK  
ON FALLING CREEK ROAD

TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE



THIS PROJECT CONTAINS  
EROSION CONTROL PLANS  
FOR CLEARING AND  
GRUBBING PHASE OF  
CONSTRUCTION.



ROADSIDE ENVIRONMENTAL UNIT  
DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY  
WITH THE REGULATIONS SET FORTH BY THE  
NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011  
ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND  
NATURAL RESOURCES DIVISION OF WATER QUALITY.

Plans Prepared By:  
**TGS ENGINEERS**  
804-C N. LAFAYETTE ST.  
SHELBY, NC 28150  
PH (704) 476-0003

2012 STANDARD SPECIFICATIONS

LETTING DATE:  
April 19, 2016

PLANS PREPARED FOR:  
**CITY OF HICKORY**  
76 N. CENTER ST  
HICKORY, NC 28601  
(828) 323-7400

ANDREW H. COCHRANE, EI  
PROJECT ENGINEER  
LEVEL III CERTIFICATION  
NUMBER 3015

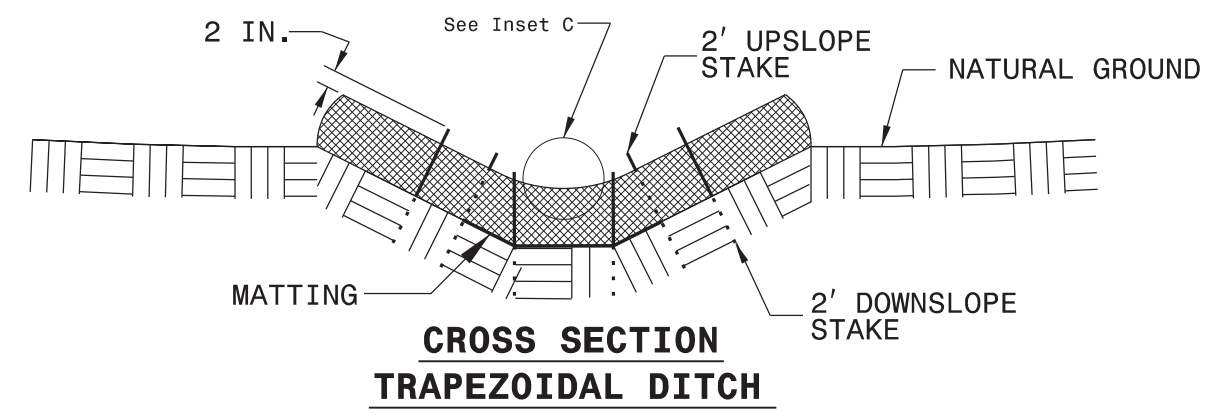
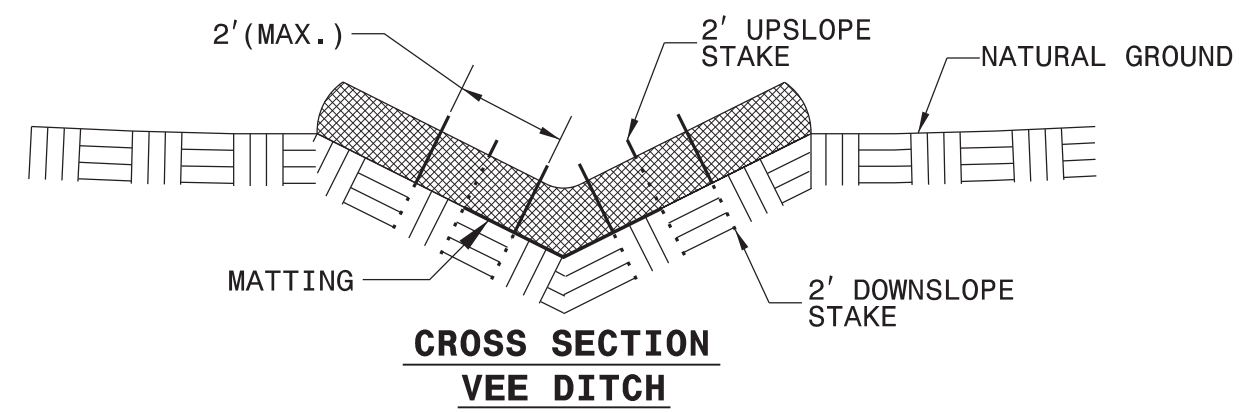
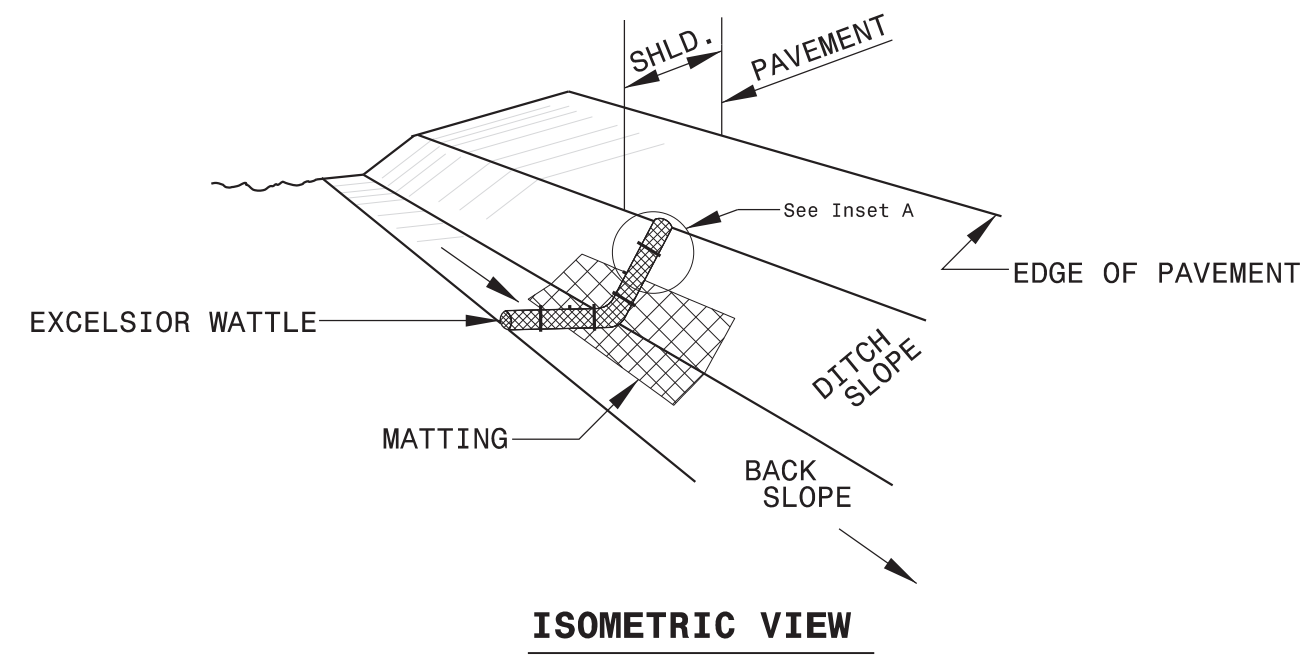
Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

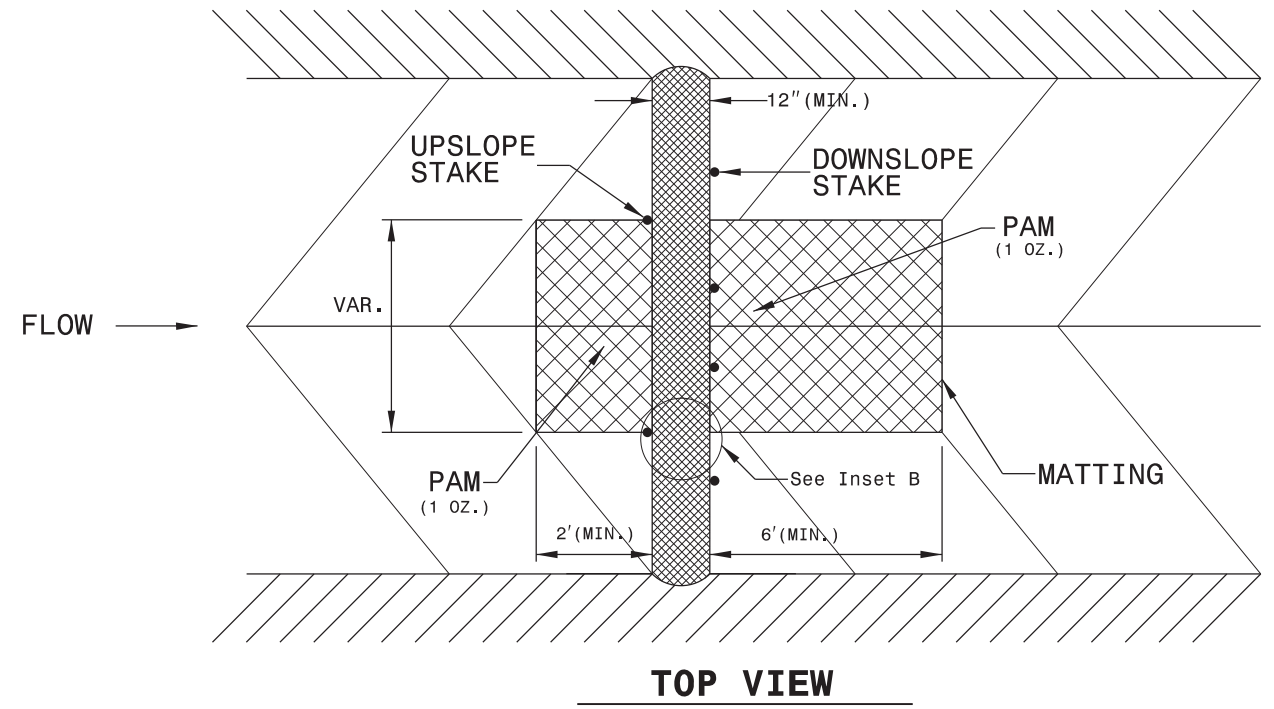
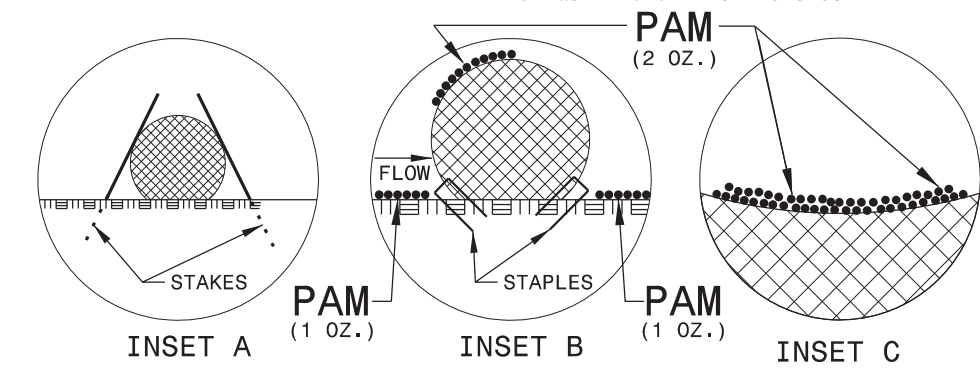
|  |  |
|--|--|
| 1604.01 Railroad Erosion Control Detail  | 1632.01 Rock Inlet Sediment Trap Type A      |
| 1605.01 Temporary Silt Fence             | 1632.02 Rock Inlet Sediment Trap Type B      |
| 1606.01 Special Sediment Control Fence   | 1632.03 Rock Inlet Sediment Trap Type C      |
| 1607.01 Gravel Construction Entrance     | 1633.01 Temporary Rock Silt Check Type A     |
| 1622.01 Temporary Berms and Slope Drains | 1633.02 Temporary Rock Silt Check Type B     |
| 1630.01 Riser Basin                      | 1634.01 Temporary Rock Sediment Dam Type A   |
| 1630.02 Silt Basin Type B                | 1634.02 Temporary Rock Sediment Dam Type B   |
| 1630.03 Temporary Silt Ditch             | 1635.01 Rock Pipe Inlet Sediment Trap Type A |
| 1630.04 Stilling Basin                   | 1635.02 Rock Pipe Inlet Sediment Trap Type B |
| 1630.05 Temporary Diversion              | 1640.01 Coir Fiber Baffle                    |
| 1630.06 Special Stilling Basin           | 1645.01 Temporary Stream Crossing            |
| 1631.01 Matting Installation             |  |

|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>B-5549 | SHEET NO.<br>EC-2   |
| RW SHEET NO.                    |                     |
| ROADWAY DESIGN ENGINEER         | HYDRAULICS ENGINEER |

# WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL

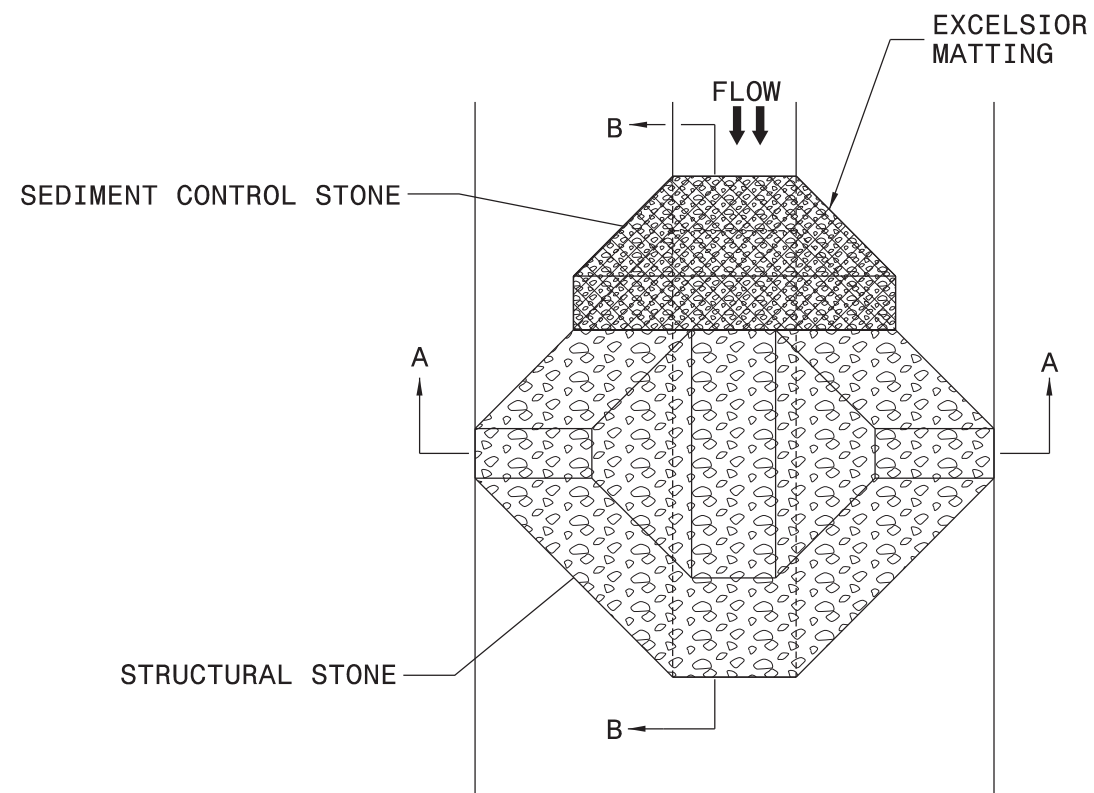


- NOTES:
- USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.
  - USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
  - ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
  - INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
  - PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
  - INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
  - INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.
  - PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.
  - INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>B-5549 | SHEET NO.<br>EC-2A  |
| RW SHEET NO.                    |                     |
| ROADWAY DESIGN ENGINEER         | HYDRAULICS ENGINEER |

# TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN

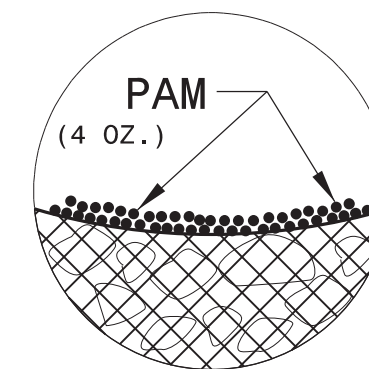
## NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

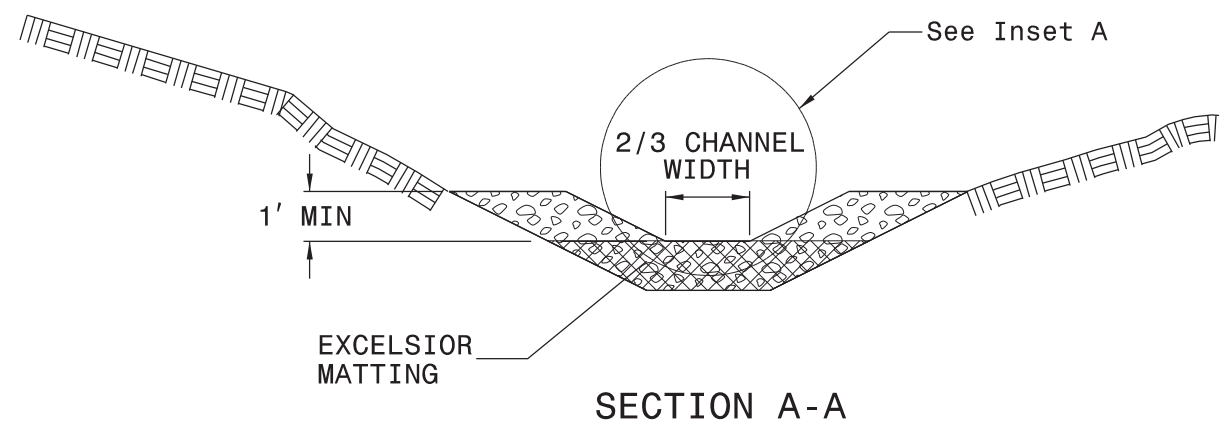
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

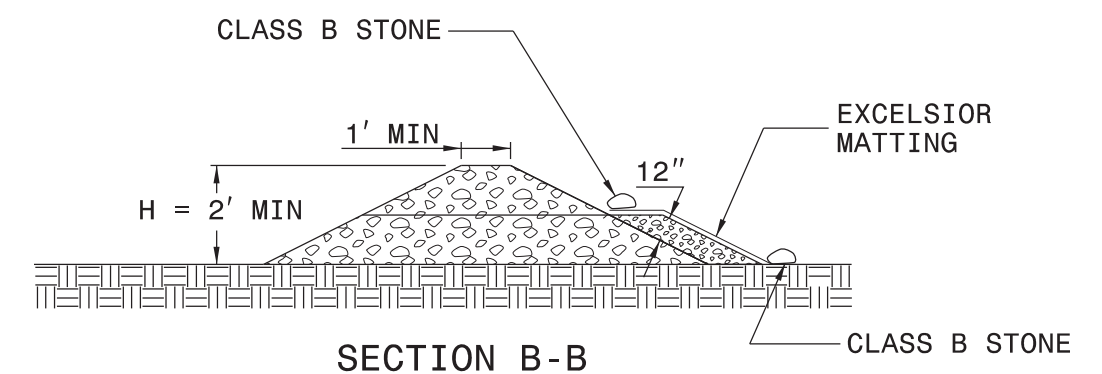
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

NOT TO SCALE



DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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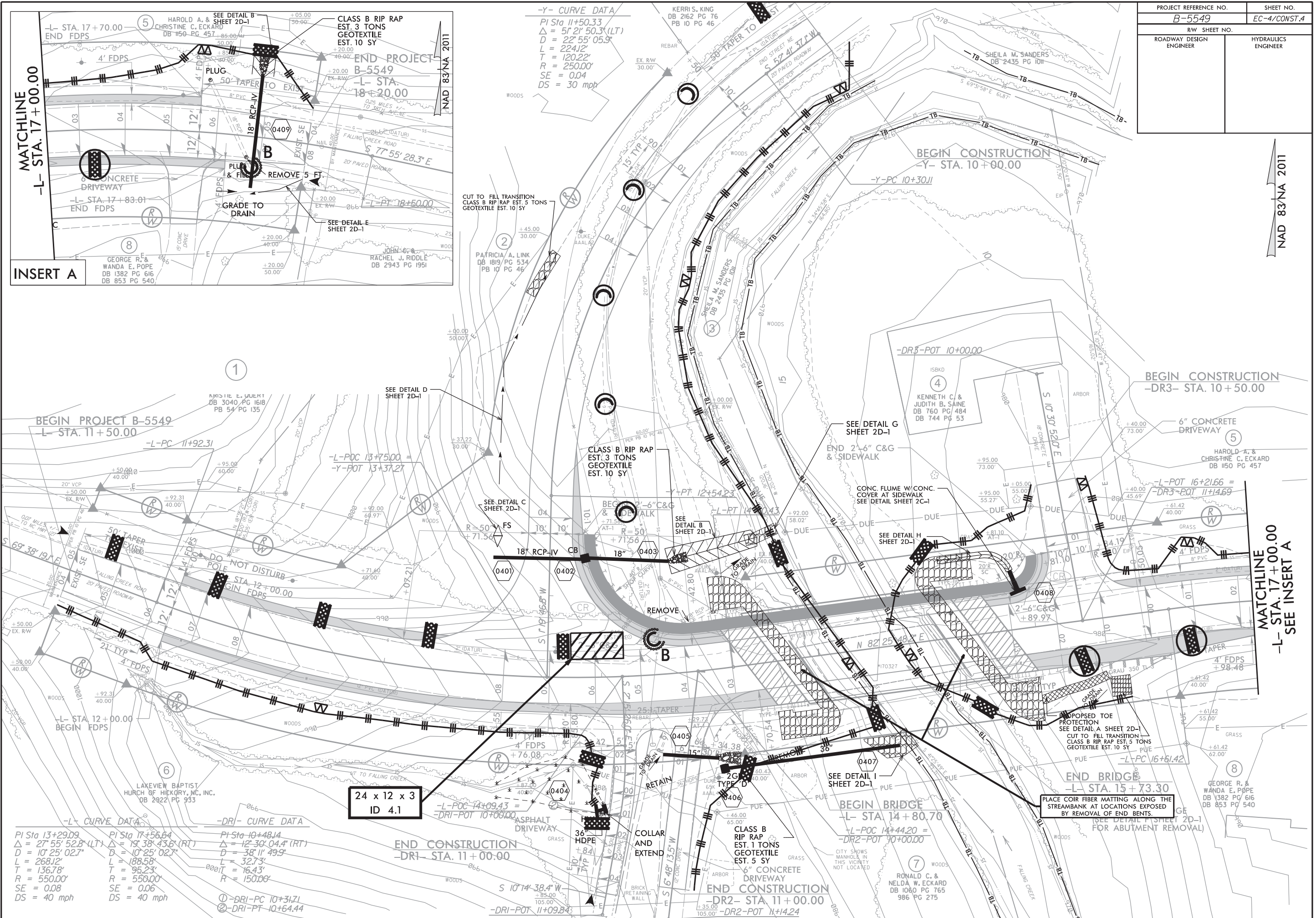
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|  |                          |
|--|--------------------------|
| PROJECT REFERENCE NO.<br><i>B-5549</i> | SHEET NO.<br><i>EC-3</i> |
| ROADWAY DESIGN<br>ENGINEER             | HYDRAULICS<br>ENGINEER   |

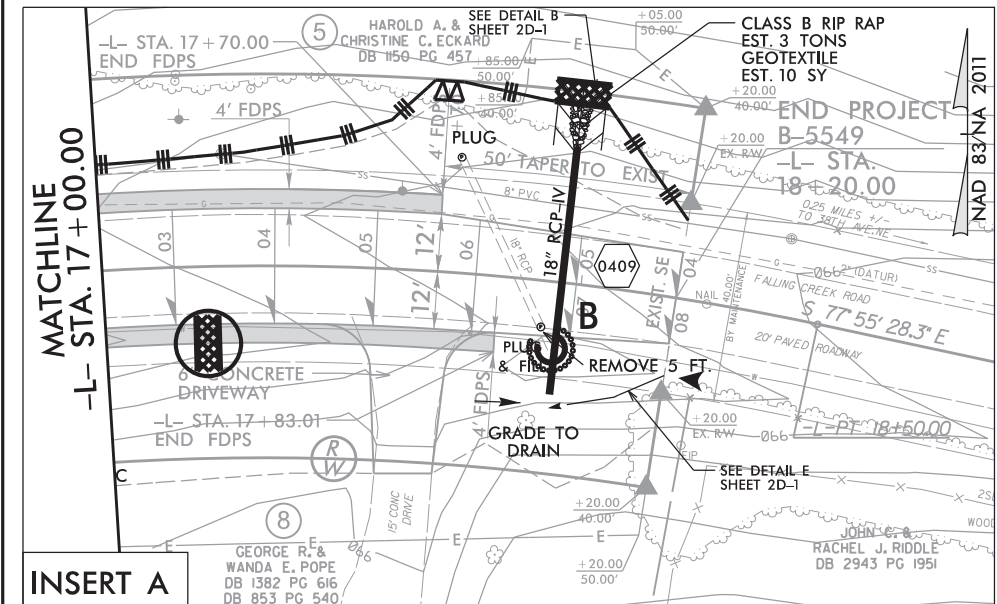
# ***SOIL STABILIZATION TIMEFRAMES***

| <i>SITE DESCRIPTION</i>                      | <i>STABILIZATION TIME</i> | <i>TIMEFRAME EXCEPTIONS</i>  |
|--|---------------------------|--|
| PERIMETER DIKES, SWALES, DITCHES AND SLOPES  | 7 DAYS                    | NONE   |
| HIGH QUALITY WATER (HQW) ZONES               | 7 DAYS                    | NONE   |
| SLOPES STEEPER THAN 3:1                      | 7 DAYS                    | IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED. |
| SLOPES 3:1 OR FLATTER                        | 14 DAYS                   | 7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.  |
| ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1 | 14 DAYS                   | NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.   |

|                         |                     |
|-------------------------|---------------------|
| PROJECT REFERENCE NO.   | SHEET NO.           |
| B-5549                  | EC-4/CONST.4        |
| RW SHEET NO.            |                     |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |



**INSERT A**



**-Y- CURVE DATA**  
 PI Sta 11+50.33  
 $\Delta = 51' 21'' 50.3'' (LT)$   
 $D = 22' 55'' 05.9''$   
 $L = 224.12'$   
 $T = 120.22'$   
 $R = 250.00'$   
 $SE = 0.04$   
 $DS = 30 \text{ mph}$

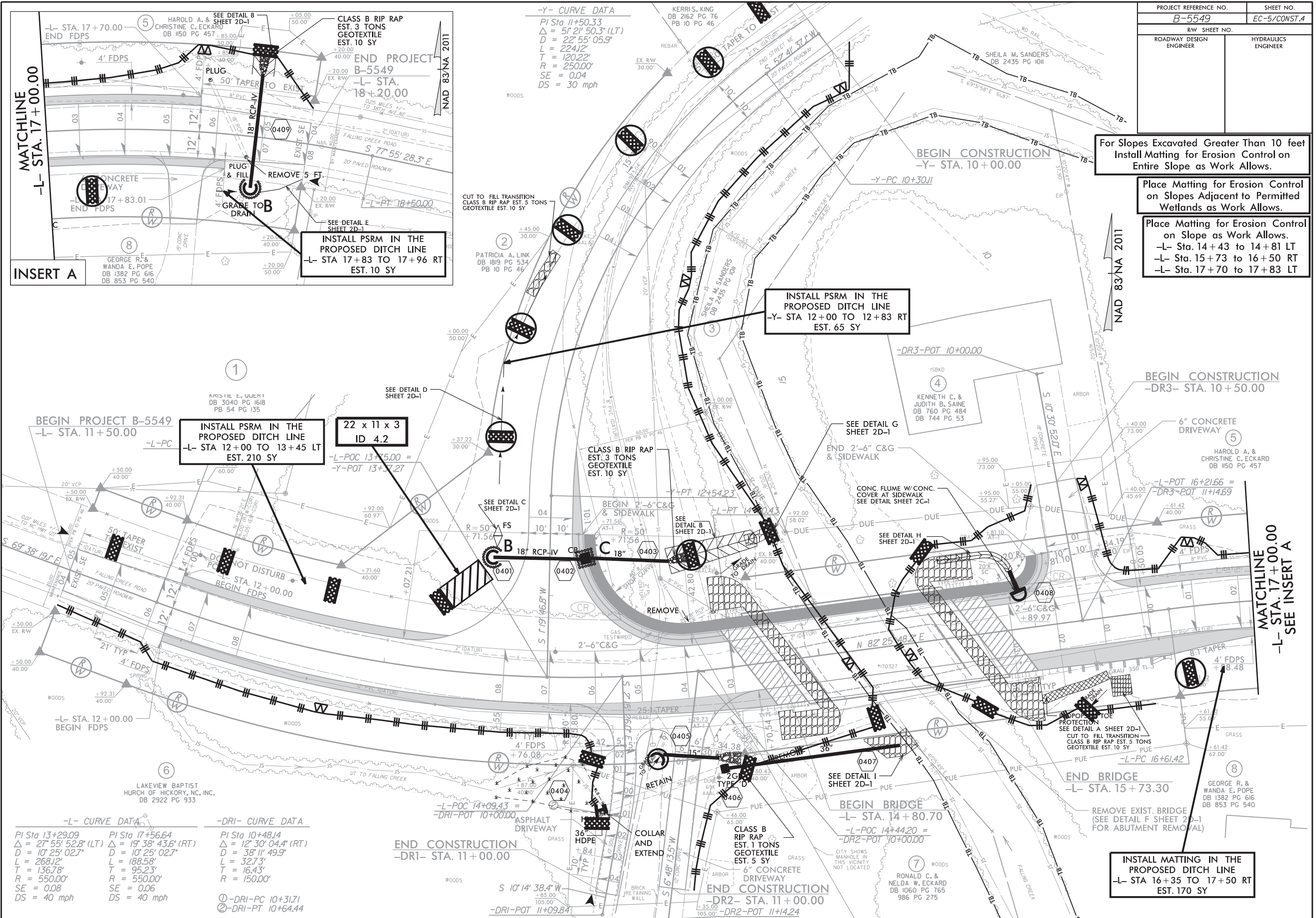
**-L- CURVE DATA**  
 PI Sta 13+29.09  $\Delta = 27' 55'' 52.8'' (LT)$   $D = 10' 25'' 02.7''$   $L = 268.12'$   $T = 136.78'$   $R = 550.00'$   $SE = 0.08$   $DS = 40 \text{ mph}$   
 PI Sta 17+56.64  $\Delta = 19' 38'' 43.6'' (RT)$   $D = 10' 25'' 02.7''$   $L = 188.58'$   $T = 95.23'$   $R = 550.00'$   $SE = 0.06$   $DS = 40 \text{ mph}$   
**-DR- CURVE DATA**  
 PI Sta 10+48.14  $\Delta = 12' 30'' 04.4'' (RT)$   $D = 38' 11'' 49.9''$   $L = 32.73'$   $T = 16.43'$   $R = 150.00'$

**24 x 12 x 3  
ID 4.1**

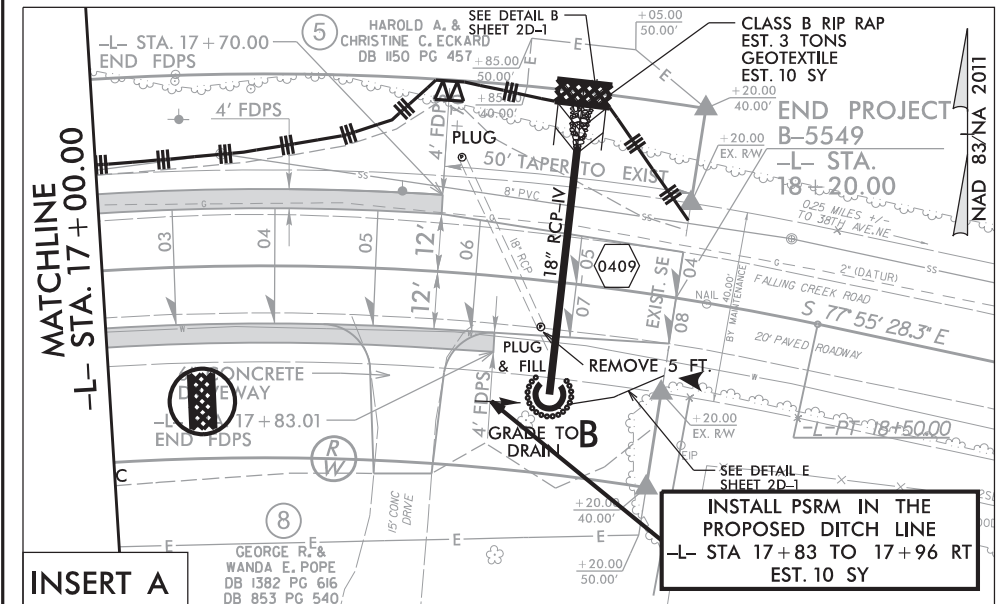
NAD 83/NA 2011

MATCHLINE  
-L- STA. 17+00.00  
SEE INSERT A

|                         |                     |
|-------------------------|---------------------|
| PROJECT REFERENCE NO.   | SHEET NO.           |
| B-5549                  | EC-5/CONST.4        |
| RW SHEET NO.            |                     |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |



INSERT A



-Y- CURVE DATA  
 PI Sta 11+50.33  
 $\Delta = 51' 21'' 50.3''$  (LT)  
 $D = 22' 55'' 05.9''$   
 $L = 224.12'$   
 $T = 120.22'$   
 $R = 250.00'$   
 $SE = 0.04$   
 $DS = 30$  mph

For Slopes Excavated Greater Than 10 feet  
 Install Matting for Erosion Control on  
 Entire Slope as Work Allows.

Place Matting for Erosion Control  
 on Slopes Adjacent to Permitted  
 Wetlands as Work Allows.

Place Matting for Erosion Control  
 on Slope as Work Allows.  
 -L- Sta. 14+43 to 14+81 LT  
 -L- Sta. 15+73 to 16+50 RT  
 -L- Sta. 17+70 to 17+83 LT

INSTALL PSRM IN THE  
 PROPOSED DITCH LINE  
 -Y- STA 12+00 TO 12+83 RT  
 EST. 65 SY

INSTALL PSRM IN THE  
 PROPOSED DITCH LINE  
 -L- STA 12+00 TO 13+45 LT  
 EST. 210 SY

22 x 11 x 3  
 ID 4.2

BEGIN PROJECT B-5549  
 -L- STA. 11+50.00

BEGIN CONSTRUCTION  
 -DR3- STA. 10+50.00

-L- CURVE DATA  
 PI Sta 13+29.09  $\Delta = 27' 55'' 52.8''$  (LT)  
 $D = 10' 25'' 02.7''$   
 $L = 268.12'$   
 $T = 136.78'$   
 $R = 550.00'$   
 $SE = 0.08$   
 $DS = 40$  mph

PI Sta 17+56.64  $\Delta = 19' 38'' 43.6''$  (RT)  
 $D = 10' 25'' 02.7''$   
 $L = 188.58'$   
 $T = 95.23'$   
 $R = 550.00'$   
 $SE = 0.06$   
 $DS = 40$  mph

-DRI- CURVE DATA  
 PI Sta 10+48.14  $\Delta = 12' 30'' 04.4''$  (RT)  
 $D = 38' 11'' 49.9''$   
 $L = 32.73'$   
 $T = 16.43'$   
 $R = 150.00'$

① -DRI-PC 10+31.71  
 ② -DRI-PT 10+64.44

END CONSTRUCTION  
 -DRI- STA. 11+00.00

END CONSTRUCTION  
 -DR2- STA. 11+00.00

INSTALL MATTING IN THE  
 PROPOSED DITCH LINE  
 -L- STA 16+35 TO 17+50 RT  
 EST. 170 SY

MATCHLINE  
 -L- STA. 17+00.00  
 - SEE INSERT A


T.I.P.: B-5549

CONTRACT: 7500017050

# CITY OF HICKORY

## SIGNING PLAN CATAWBA COUNTY

LOCATION: BRIDGE #170327 OVER FALLING CREEK  
ON FALLING CREEK ROAD

|   |                     |
|---|---------------------|
| PROJECT REFERENCE NO.<br>B-5549   | SHEET NO.<br>SIGN-1 |
| APPROVED: _____   |                     |
| DATE: _____   |                     |
| SEAL  |                     |
|  |                     |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                    |                     |

### ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

| STD. NO. | TITLE  |
|----------|--|
| 904.10   | ORIENTATION OF GROUND MOUNTED SIGNS                          |
| 904.50   | MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS |

### GENERAL NOTES

- . SIGNS FURNISHED BY CONTRACTOR
- . IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
- . WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER
- . ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
- . WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
- . THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
- . SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

### SUMMARY OF QUANTITIES

| ITEM NO.   |           | ITEM DESCRIPTION                                     | QUANTITY | UNIT |
|------------|-----------|--|----------|------|
| DESC. NO.  | SECT. NO. |  |          |      |
| 4025000000 | 901       | CONTRACTOR FURNISHED, TYPE E SIGN                    | 30       | S.F. |
| 4072000000 | 903       | SUPPORTS, 3 LB STEEL U-CHANNEL                       | 140      | L.F. |
| 4102000000 | 904       | SIGN ERECTION, TYPE E                                | 5        | EA.  |
| 4116100000 | 904       | SIGN ERECTION, RELOCATE SIGN TYPE E (GROUND MOUNTED) | 1        | EA.  |
| 4155000000 | 907       | DISPOSAL OF SIGN SYSTEM, U-CHANNEL                   | 9        | EA.  |
| 4192000000 | 907       | DISPOSAL OF SUPPORT, U-CHANNEL                       | 1        | EA.  |
| 4237000000 | 907       | STOCKPILE SIGN, D, E OR F                            | 2        | EA.  |

### INDEX

| SHEET NO. | DESCRIPTION                              |
|-----------|--|
| SIGN-1    | TITLE SHEET                              |
| SIGN-2    | TYPE E SIGNS                             |
| SIGN-3    | EXISTING AND PROPOSED SIGNING PLAN SHEET |

PLANS PREPARED FOR:

**CITY OF HICKORY**  
76 N CENTER ST  
HICKORY, NC 28601  
(828) 323-7400

PLANS PREPARED BY:



**TGS ENGINEERS**  
804-C N. LAFAYETTE ST  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

JIMMY L. TERRY, PE PROJECT ENGINEER

SANDRA G. MELVIN DESIGN TECHNICIAN



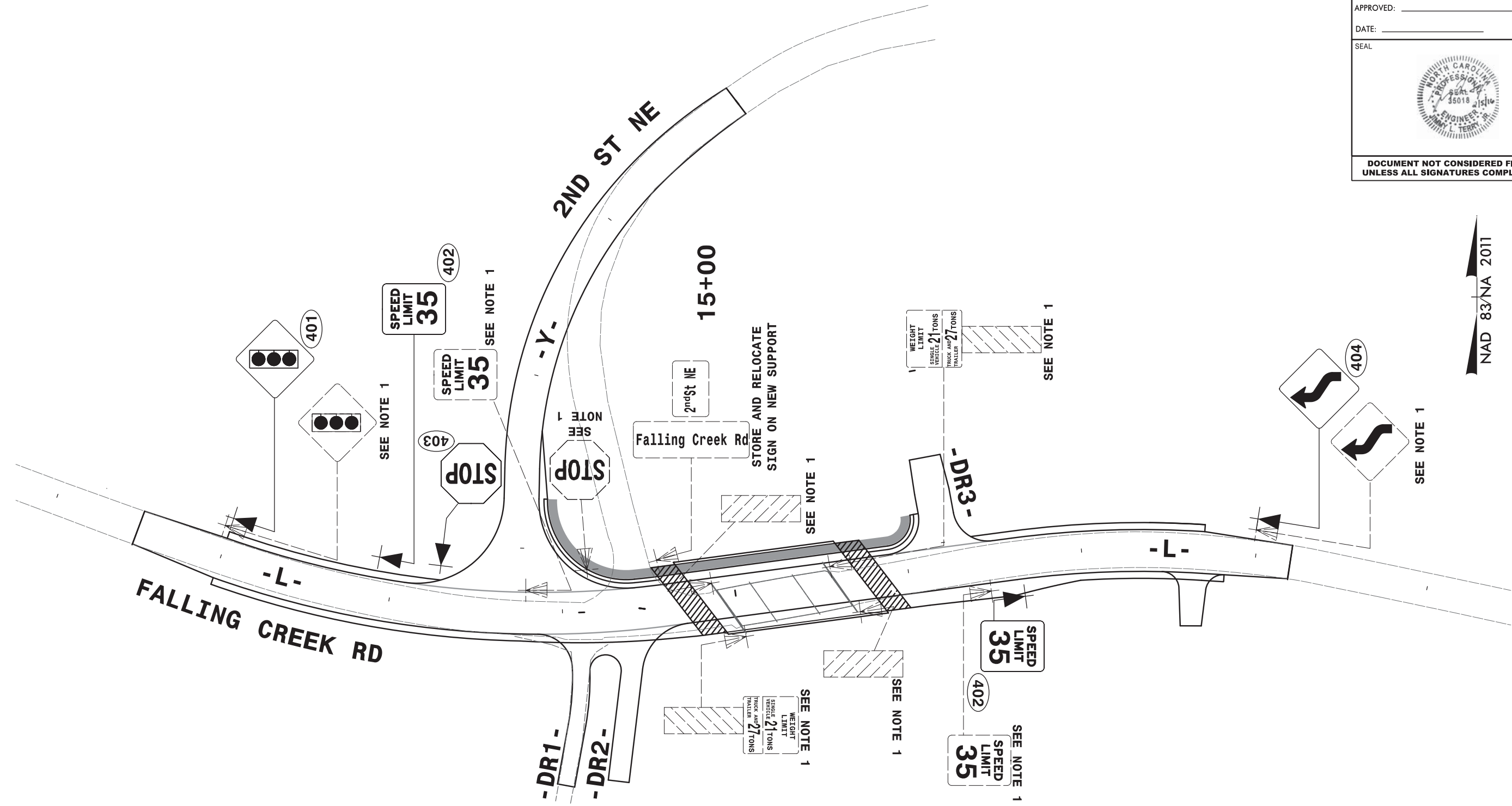
APPROVED: \_\_\_\_\_

DATE: \_\_\_\_\_

SEAL



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



**PROJECT NOTES**

1 - DISPOSAL OF SIGN SYSTEM, U-CHANNEL

**EXISTING AND PROPOSED  
SIGNING PLAN SHEET**

\$\$\$SYTIME\$\$\$  
\$\$\$CDN\$\$\$  
\$\$\$USERNAME\$\$\$  
\$\$\$

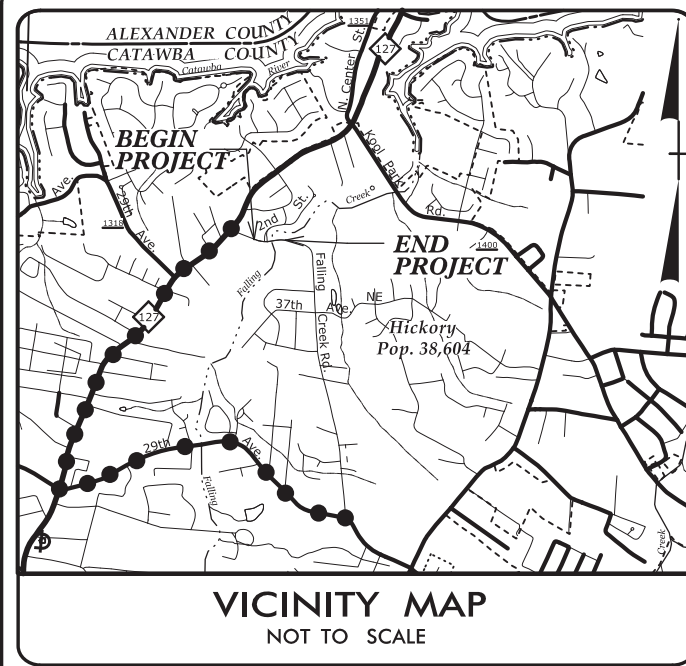
09, 02B/99

TIP PROJECT: B-5549

CONTRACT: 7500017050

\$\$\$ SYSTEM TIME \$\$\$  
\$\$\$ DGN \$\$\$  
\$\$\$ USERNAME \$\$\$

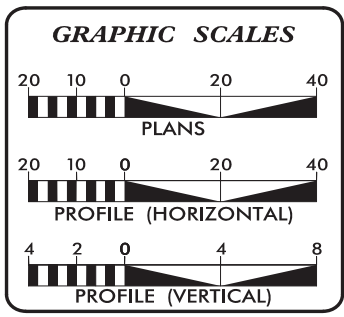
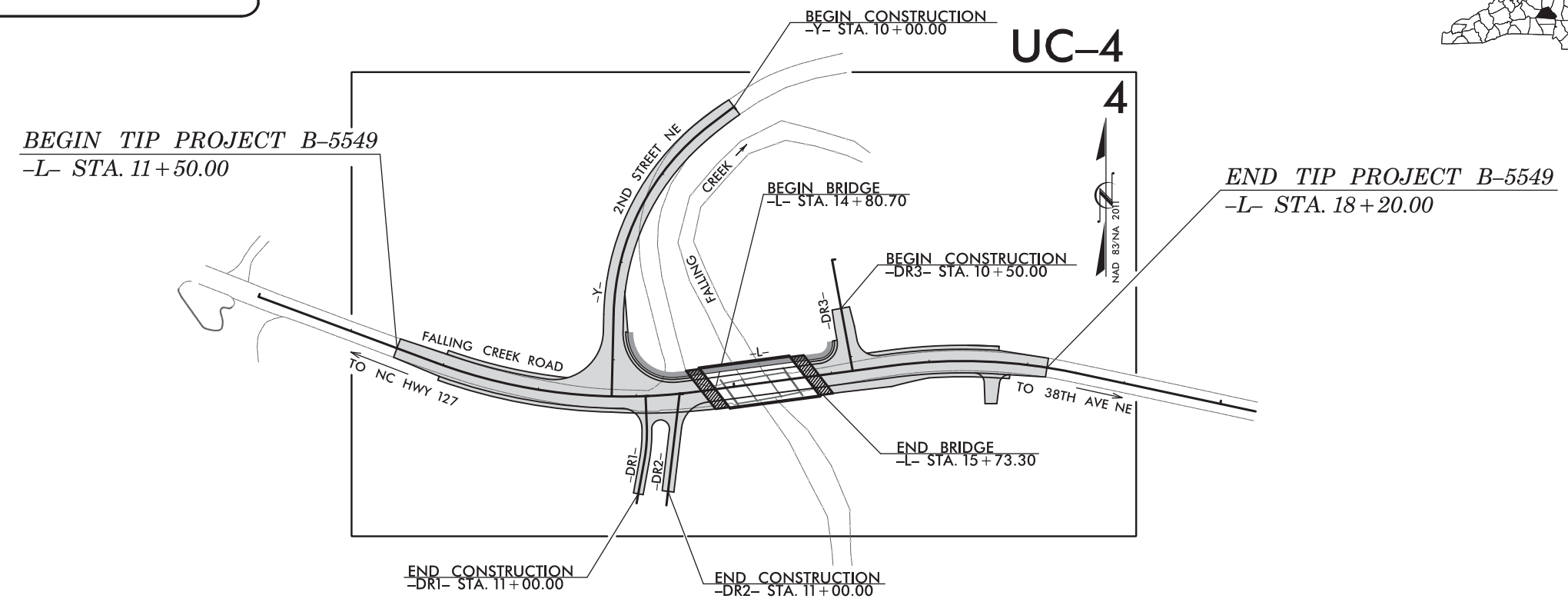
|            |           |
|------------|-----------|
| T.I.P. NO. | SHEET NO. |
| B-5549     | UC-1      |



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# UTILITY CONSTRUCTION PLANS CATAWBA COUNTY

LOCATION: FALLING CREEK RD AT 2ND ST INTERSECTION  
TYPE OF WORK: UTILITY RELOCATIONS



| SHEET NO.        | DESCRIPTION                |
|------------------|----------------------------|
| UC-1             | TITLE SHEET                |
| UC-2             | UTILITY SYMBOLOGY          |
| UC-3             | NOTES                      |
| UC-3A THRU UC-3C | DETAILS                    |
| UC-4             | UTILITY CONSTRUCTION SHEET |
| UC-5             | PROFILE SHEET              |

**WATER AND SEWER OWNERS ON PROJECT**

(1) WATER : CITY OF HICKORY  
(2) SANITARY SEWER : CITY OF HICKORY



PREPARED IN THE OFFICE OF:  
DIVISION OF HIGHWAYS  
UTILITIES UNIT  
UTILITIES ENGINEERING

1555 MAIL SERVICES CENTER  
RALEIGH NC 27699-1555  
PHONE (919) 707-6690  
FAX (919) 250-4151

Roger Worthington, P.E. UTILITIES SECTION ENGINEER  
Carl Barclay, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER  
Xxxxx Xxxxx UTILITIES PROJECT DESIGNER

TCS ENGINEERS  
804-C N. LAFAYETTE ST  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# UTILITIES PLAN SHEET SYMBOLS

## PROPOSED WATER SYMBOLS

|                                 |        |
|---------------------------------|--------|
| Water Line (Sized as Shown)     |        |
| 11¼ Degree Bend                 |        |
| 22½ Degree Bend                 |        |
| 45 Degree Bend                  |        |
| 90 Degree Bend                  |        |
| Plug                            |        |
| Tee                             |        |
| Cross                           |        |
| Reducer                         |        |
| Gate Valve                      |        |
| Butterfly Valve                 |        |
| Tapping Valve                   |        |
| Line Stop                       |        |
| Line Stop with Bypass           |        |
| Blow Off                        |        |
| Fire Hydrant                    |        |
| Relocate Fire Hydrant           |        |
| Remove Fire Hydrant             | REM FH |
| Water Meter                     |        |
| Relocate Water Meter            |        |
| Remove Water Meter              | REM WM |
| Water Pump Station              |        |
| RPZ Backflow Preventer          |        |
| DCV Backflow Preventer          |        |
| Relocate RPZ Backflow Preventer |        |
| Relocate DCV Backflow Preventer |        |

## PROPOSED SEWER SYMBOLS

|  |  |
|--|--|
| Gravity Sewer Line (Sized as Shown)    |  |
| Force Main Sewer Line (Sized as Shown) |  |
| Manhole (Sized per Note)               |  |
| Sewer Pump Station                     |  |

## PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

|  |  |
|--|--|
| Power Pole                             |  |
| Telephone Pole                         |  |
| Joint Use Pole                         |  |
| Telephone Pedestal                     |  |
| Utility Line by Others (Type as Shown) |  |
| Trenchless Installation                |  |
| Encasement by Open Cut                 |  |
| Encasement                             |  |

|                   |  |
|-------------------|--|
| Thrust Block      |  |
| Air Release Valve |  |
| Utility Vault     |  |
| Concrete Pier     |  |
| Steel Pier        |  |
| Plan Note         |  |
| Pay Item Note     |  |

## EXISTING UTILITIES SYMBOLS

|  |        |   |  |
|--|--------|---|--|
| Power Pole                             |        | *Underground Power Line                   |  |
| Telephone Pole                         |        | *Underground Telephone Cable              |  |
| Joint Use Pole                         |        | *Underground Telephone Conduit            |  |
| Utility Pole                           |        | *Underground Fiber Optics Telephone Cable |  |
| Utility Pole with Base                 |        | *Underground TV Cable                     |  |
| H-Frame Pole                           |        | *Underground Fiber Optics TV Cable        |  |
| Power Transmission Line Tower          |        | *Underground Gas Pipeline                 |  |
| Water Manhole                          |        | Aboveground Gas Pipeline                  |  |
| Power Manhole                          |        | *Underground Water Line                   |  |
| Telephone Manhole                      |        | Aboveground Water Line                    |  |
| Sanitary Sewer Manhole                 |        | *Underground Gravity Sanitary Sewer Line  |  |
| Hand Hole for Cable                    |        | Aboveground Gravity Sanitary Sewer Line   |  |
| Power Transformer                      |        | *Underground SS Forced Main Line          |  |
| Telephone Pedestal                     |        | Underground Unknown Utility Line          |  |
| CATV Pedestal                          |        | SUE Test Hole                             |  |
| Gas Valve                              |        | Water Meter                               |  |
| Gas Meter                              |        | Water Valve                               |  |
| Located Miscellaneous Utility Object   |        | Fire Hydrant                              |  |
| Abandoned According to Utility Records | AATUR  | Sanitary Sewer Cleanout                   |  |
| End of Information                     | E.O.I. |   |  |

\*For Existing Utilities  
Utility Line Drawn from Record   
(Type as Shown)  
Designated Utility Line   
(Type as Shown)

5/14/99  
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REV: 2/1/2012







5/14/99

# UTILITY DETAILS

TGS ENGINEERS  
804-C N. LAFAYETTE ST  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

|  |           |
|--|-----------|
| PROJECT REFERENCE NO.  | SHEET NO. |
| B-5549   | UC-3B     |
| DESIGNED BY: JLT   |           |
| DRAWN BY: SGM  |           |
| CHECKED BY: BCH  |           |
| APPROVED BY:   |           |
| REVISED:   |           |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION                          |           |
| UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 |           |
| UTILITY CONSTRUCTION PLANS ONLY                                      |           |

## UTILITY CONSTRUCTION

**TRENCH DETAIL CLASS D FLAT SUBGRADE**

NOTES:

- TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
- NO ROCKS OR BOULDERS 2" OR LARGER TO BE USED IN INITIAL BACKFILL.
- ALL BACKFILL MATERIAL SHALL BE SUITABLE MATERIAL.
- BACKFILL SHALL BE COMPACTED IN 6" LAYERS IN TRAFFIC AREAS, 12" LAYERS IN NON-TRAFFIC AREAS USING VIBRATORY EQUIPMENT.
- ALL BACKFILL TO A HEIGHT OF 12" OVER PIPE TO BE COMPACTED BY MANUAL MEASURES.

| DEPTH OF BEDDING MATERIAL BELOW PIPE | D (IN.) | S (MIN.) |
|--------------------------------------|---------|----------|
| 27" & SMALLER                        | 6"      | 6"       |
| 30" - 60"                            | 12"     | 12"      |
| 60" & LARGER                         | 18"     | 18"      |

CITY OF HICKORY

| NO. | DATE | REVISIONS | DESCRIPTION | DATE   |
|-----|------|-----------|-------------|--------|
|     |      |           |             | 2-1-07 |

SEWER LINE TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS

DATE: 2-1-07  
SHEET: 1 OF 1  
STD. NO. 602

**SANITARY SEWER MANHOLE DETAIL**

NOTES:

- ON NEW INSTALLATION, A MAXIMUM OF 2 GRADE RINGS SHALL BE USED.
- CONCRETE SHALL BE 4000 PSI AS PER ASTM C-478.
- STEEL REINFORCING SHALL MEET ASTM A-305, A-15, A-160 OR LATEST STANDARDS.
- MANHOLES OVER 3'-6" IN DEPTH SHALL BE PROVIDED WITH STEPS 1'-3" ON CENTER. STEPS SHALL BE IN ACCORDANCE WITH STANDARD NO. 603.
- INVERT SHALL HAVE 0.2% OF FALL UNLESS OTHERWISE SPECIFIED.

MANHOLE DIAMETER VS. PIPE DIAMETER:

|       |                    |
|-------|--------------------|
| 4'-0" | = 27" PIPE MAXIMUM |
| 5'-0" | = 36" PIPE MAXIMUM |
| 6'-0" | = ABOVE 36" PIPE   |

CITY OF HICKORY

| NO. | DATE | REVISIONS | DESCRIPTION | DATE   |
|-----|------|-----------|-------------|--------|
|     |      |           |             | 2-1-07 |

SANITARY SEWER MANHOLE DETAIL

DATE: 2-1-07  
SHEET: 1 OF 1  
STD. NO. 603

**RESIDENTIAL SEWER TAP**

NOTES:

- 4" CLEANOUT TO REMAIN VISIBLE.
- PLUMBER SHALL CONNECT TO 4" LINE BY REMOVING GLUE CAP AND COUPLING PIPE TOGETHER. IN NO CASE SHOULD PLUMBER TIE TO CITY CLEANOUT.

CITY OF HICKORY

| NO. | DATE | REVISIONS | DESCRIPTION | DATE   |
|-----|------|-----------|-------------|--------|
|     |      |           |             | 2-1-07 |

RESIDENTIAL SEWER TAP

DATE: 2-1-07  
SHEET: 1 OF 1  
STD. NO. 607

**SANITARY SEWER DROP MANHOLE DETAIL**

NOTES:

- ON NEW INSTALLATION, A MAXIMUM OF 2 GRADE RINGS SHALL BE USED.
- CONCRETE SHALL BE 4000 PSI AS PER ASTM C-478.
- STEEL REINFORCING SHALL MEET ASTM C-185 FOR 4" DIAMETER, OR ASTM C-478 FOR 5" DIAMETER.
- MANHOLES OVER 3'-6" IN DEPTH SHALL BE PROVIDED WITH STEPS 1'-3" ON CENTER. STEPS SHALL BE IN ACCORDANCE WITH STANDARD NO. 603.
- INVERT SHALL HAVE 0.2% OF FALL UNLESS OTHERWISE SPECIFIED.

MANHOLE DIAMETER VS. PIPE DIAMETER:

|       |                    |
|-------|--------------------|
| 4'-0" | = 27" PIPE MAXIMUM |
| 5'-0" | = 36" PIPE MAXIMUM |
| 6'-0" | = ABOVE 36" PIPE   |

CITY OF HICKORY

| NO. | DATE | REVISIONS | DESCRIPTION | DATE   |
|-----|------|-----------|-------------|--------|
|     |      |           |             | 2-1-07 |

SANITARY SEWER DROP MANHOLE

DATE: 2-1-07  
SHEET: 1 OF 1  
STD. NO. 604

**STANDARD & SHORT MANHOLE RING & COVER**

NOTES:

- ALL COVERS TO BE SUPPORTED W/4-1/2" VENT HOLES IN COVER.
- ALL RINGS TO BE SUPPORTED W/4-1/2" DIA ANCHOR HOLES.
- RING & COVER TO BE USF 669/KL OR EQUAL.
- SHORT R/C TO BE USF 686/KH OR EQUAL.
- BOLT DOWN/WATER TIGHT R/C TO BE USF 668-KL-8WT OR EQUAL.

|       | A      | B      | C      | D  | E     | F      | G      | H      |
|-------|--------|--------|--------|----|-------|--------|--------|--------|
| STD   | 23 1/2 | 23 1/2 | 23 1/2 | 1' | 7 1/2 | 22'    | 25'    | 33 1/2 |
| SHORT | 25'    | 23 1/2 | 23 1/2 | 1' | 4"    | 22 1/2 | 23 1/2 | 33 1/2 |

CITY OF HICKORY

| NO. | DATE | REVISIONS | DESCRIPTION | DATE   |
|-----|------|-----------|-------------|--------|
|     |      |           |             | 2-1-07 |

STANDARD & SHORT MANHOLE RING & COVER

DATE: 2-1-07  
SHEET: 1 OF 1  
STD. NO. 605

**MANHOLE STEP FOR PRECAST CONCRETE MANHOLE**

NOTES:

- STEPS TO BE EPOXY GROUTED IN PLACE.
- CENTERLINE OF THREAD TO BE LEVEL & PLUMB 1/2" ALL IN IN SECTION.

|       | A      | B      | C      | D  | E     | F      | G      | H      |
|-------|--------|--------|--------|----|-------|--------|--------|--------|
| STD   | 23 1/2 | 23 1/2 | 23 1/2 | 1' | 7 1/2 | 22'    | 25'    | 33 1/2 |
| SHORT | 25'    | 23 1/2 | 23 1/2 | 1' | 4"    | 22 1/2 | 23 1/2 | 33 1/2 |

CITY OF HICKORY

| NO. | DATE | REVISIONS | DESCRIPTION | DATE   |
|-----|------|-----------|-------------|--------|
|     |      |           |             | 2-1-07 |

MANHOLE STEP FOR PRECAST CONCRETE MANHOLE

DATE: 2-1-07  
SHEET: 1 OF 1  
STD. NO. 606

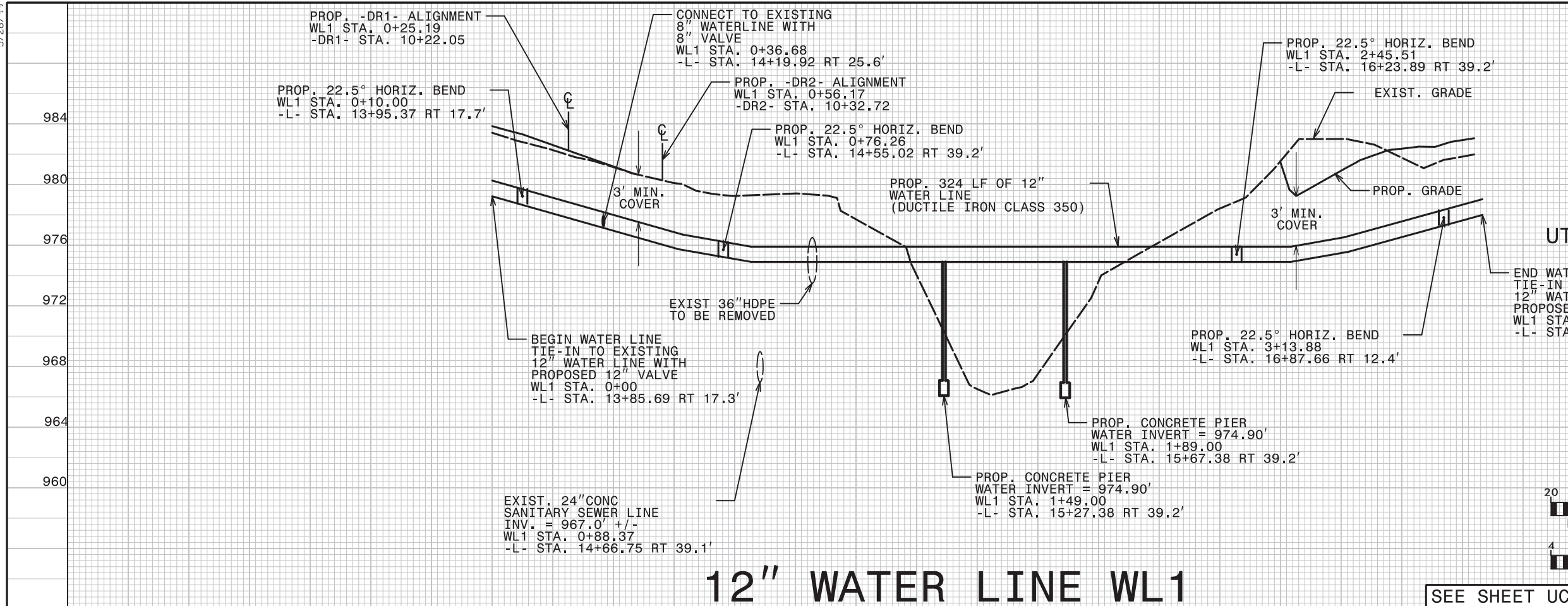
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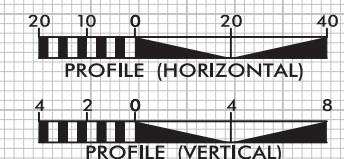


5/28/99

|  |                   |
|--|-------------------|
| PROJECT REFERENCE NO.<br>B-5549  | SHEET NO.<br>UC-5 |
| DESIGNED BY: JLT   |                   |
| DRAWN BY: SGM  |                   |
| CHECKED BY: BCH  |                   |
| APPROVED BY:   |                   |
| REVISED:   |                   |
| NORTH CAROLINA<br>DEPARTMENT OF<br>TRANSPORTATION  |                   |
| UTILITIES ENGINEERING SEC.<br>PHONE: (919) 707-6690<br>FAX: (919) 250-4151                                   |                   |
| TGS ENGINEERS<br>804-C N. LAFAYETTE ST<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |                   |

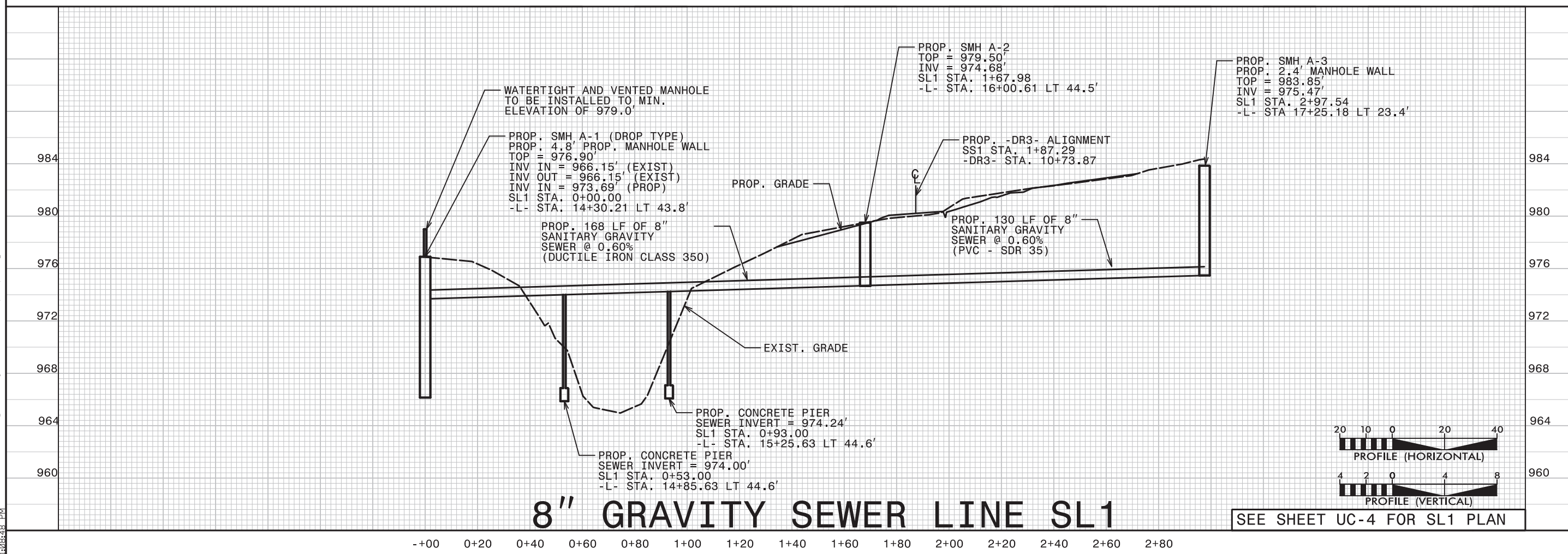


# 12" WATER LINE WL1

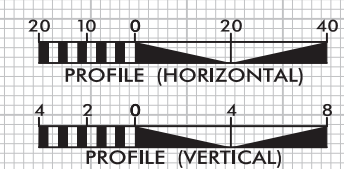


SEE SHEET UC-4 FOR WL1 PLAN

+00 0+20 0+40 0+60 0+80 1+00 1+20 1+40 1+60 1+80 2+00 2+20 2+40 2+60 2+80 3+00 3+20



# 8" GRAVITY SEWER LINE SL1



SEE SHEET UC-4 FOR SL1 PLAN

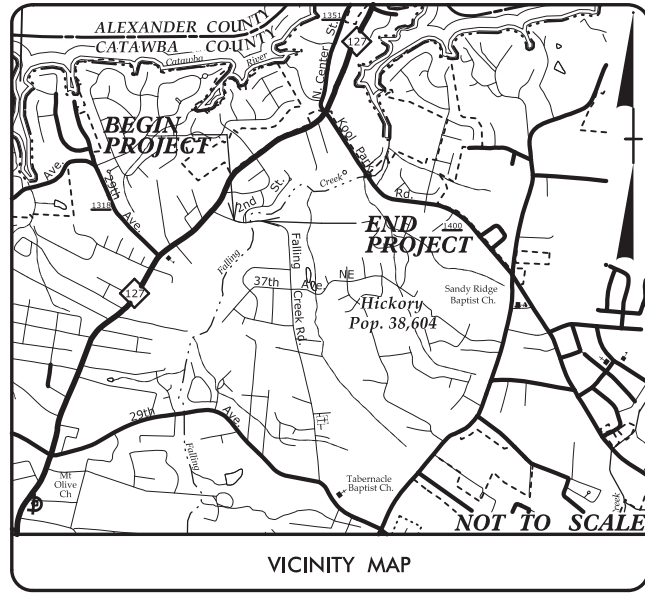
+00 0+20 0+40 0+60 0+80 1+00 1+20 1+40 1+60 1+80 2+00 2+20 2+40 2+60 2+80

8/25/2005 B-5549\Utilities\Rdy\_Ut\Proj\B5549\_Ut\_UC5\_pf1\_psh.dgn 1:08:48 PM

09/20/99

TIP PROJECT: B-5549

CONTRACT: 7500017050



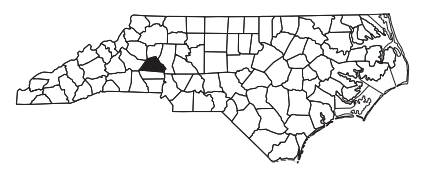
VICINITY MAP

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

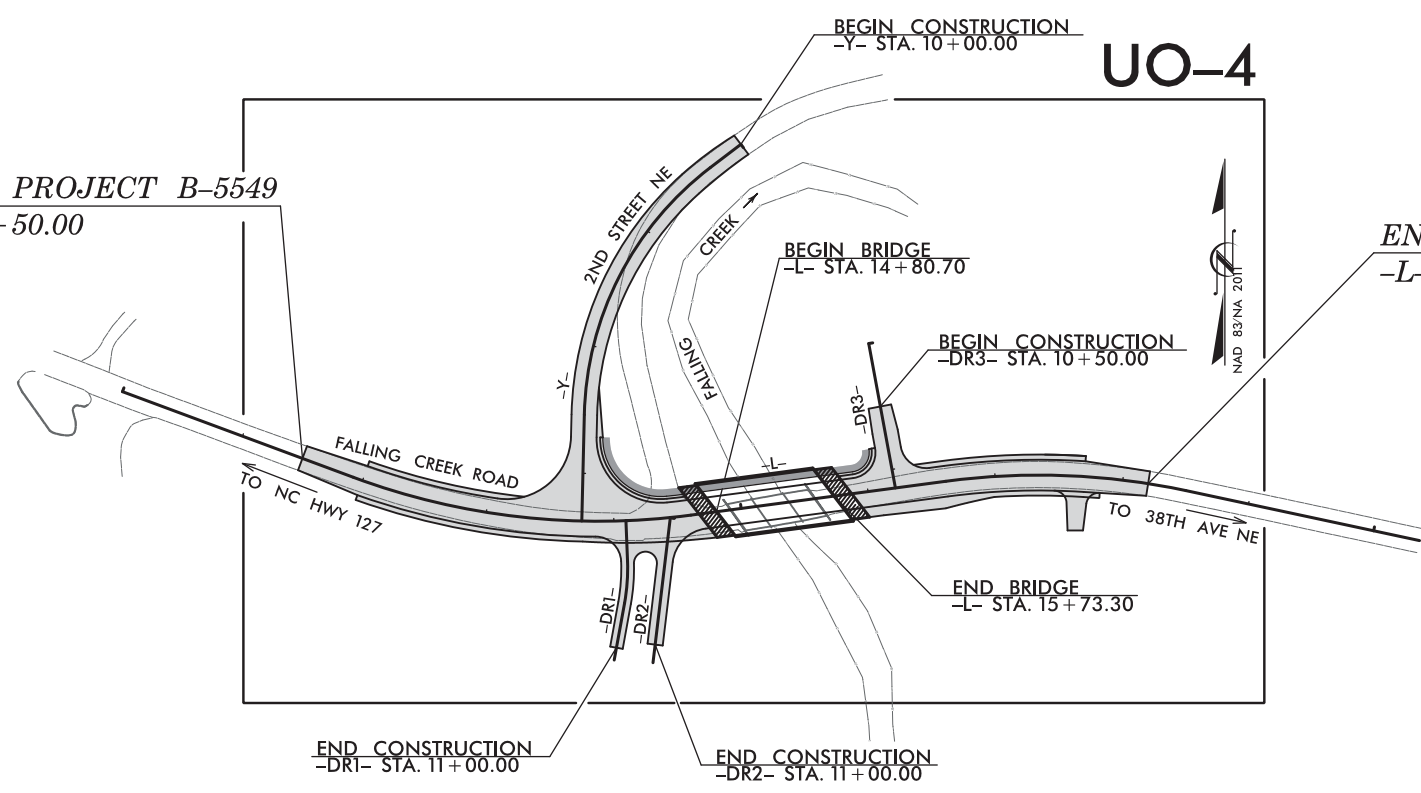
**UTILITIES BY OTHERS PLANS  
CATAWBA COUNTY**

LOCATION: FALLING CREEK RD AT 2ND ST INTERSECTION  
TYPE OF WORK: UTILITY RELOCATIONS

|            |           |
|------------|-----------|
| T.I.P. NO. | SHEET NO. |
| B-5549     | UO-1      |

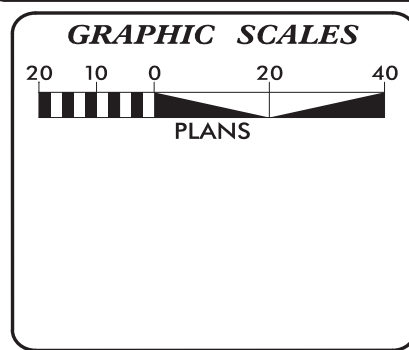


BEGIN TIP PROJECT B-5549  
-L- STA. 11+50.00



UO-4

END TIP PROJECT B-5549  
-L- STA. 18+20.00



| SHEET NO. | DESCRIPTION                     |
|-----------|---------------------------------|
| UO-1      | TITLE SHEET                     |
| UO-2      | GENERAL NOTES                   |
| UO-3      | CONVENTIONAL PLAN SHEET SYMBOLS |
| UO-4      | UTILITIES BY OTHERS PLAN SHEETS |

| UTILITY OWNERS ON PROJECT                        |
|--|
| (A) DUKE ENERGY CORPORATION (DISTRIBUTION)       |
| (B) PIEDMONT NATURAL GAS, INC (GAS DISTRIBUTION) |
| (C) CENTURY LINK, INC (COMMUNICATIONS)           |
| (D) CHARTER COMMUNICATIONS, INC (COMMUNICATIONS) |

**TGS ENGINEERS**  
804-C N. LAFAYETTE ST  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

PREPARED IN THE OFFICE OF:  
**DIVISION OF HIGHWAYS  
UTILITIES UNIT  
UTILITIES ENGINEERING**

1555 MAIL SERVICES CENTER  
RALEIGH, NC 27699-1555  
PHONE (919) 707-6690  
FAX (919) 250-4151

**Roger Worthington, P.E.** UTILITIES SECTION ENGINEER  
**Carl Barclay, P.E.** UTILITIES SQUAD LEADER PROJECT ENGINEER

\$\$\$\$\$ SYSTEM \$\$\$\$\$\$  
\$\$\$\$\$ DGN \$\$\$\$\$\$  
\$\$\$\$\$ USERNAME \$\$\$\$\$\$







# INDEX OF SHEETS

| SHEET# | SHEET   |
|--------|---|
| UO-1   | TITLE SHEET                                       |
| UO-2   | INDEX OF SHEETS, STANDARD DRAWINGS, GENERAL NOTES |
| UO-3   | CONVENTIONAL PLAN SHEET SYMBOLS                   |
| UO-4   | UBO PLAN SHEETS                                   |

# UTILITY CONTACTS

| UTILITY                     | CONTACT NAME    | CONTACT PHONE# |
|-----------------------------|-----------------|----------------|
| DUKE ENERGY                 | FRED LILES      | 828-323-2773   |
| PIEDMONT NATURAL GAS        | BRADLEY MCCLAIN | 828-234-0762   |
| CENTURY LINK, INC           | KENT CARLSON    | 828-328-0345   |
| CHARTER COMMUNICATIONS, INC | JODY MCCARTY    | 828-217-0971   |

# LEGEND

|   |   |
|---|---|
|    | PROPOSED OVERHEAD POWER LINE                        |
|  | PROPOSED OVERHEAD POWER, TELEPHONE, & CABLE TV LINE |
|  | PROPOSED POWER POLE                                 |
|  | PROPOSED JOINT USE POLE                             |
|  | REMOVE EXISTING UTILITY POLE                        |
|  | PROPOSED GAS LINE SHORT STOP                        |



# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

*Note: Not to Scale*      \*S.U.E. = *Subsurface Utility Engineering*

04/06/15

### BOUNDARIES AND PROPERTY:

|                                       |         |
|---------------------------------------|---------|
| State Line                            | _____   |
| County Line                           | _____   |
| Township Line                         | _____   |
| City Line                             | _____   |
| Reservation Line                      | _____   |
| Property Line                         | _____   |
| Existing Iron Pin                     | ○ EIP   |
| Property Corner                       | _____   |
| Property Monument                     | □ ECM   |
| Parcel/Sequence Number                | ①23     |
| Existing Fence Line                   | -x-x-x- |
| Proposed Woven Wire Fence             | ○       |
| Proposed Chain Link Fence             | □       |
| Proposed Barbed Wire Fence            | ◇       |
| Existing Wetland Boundary             | -WLB-   |
| Proposed Wetland Boundary             | -WLB-   |
| Existing Endangered Animal Boundary   | -EAB-   |
| Existing Endangered Plant Boundary    | -EPB-   |
| Existing Historic Property Boundary   | -HPB-   |
| Known Contamination Area: Soil        | ☠ ☠     |
| Potential Contamination Area: Soil    | ☠ ☠     |
| Known Contamination Area: Water       | ☠ ☠     |
| Potential Contamination Area: Water   | ☠ ☠     |
| Contaminated Site: Known or Potential | ☠ ☠     |

### BUILDINGS AND OTHER CULTURE:

|                               |       |
|-------------------------------|-------|
| Gas Pump Vent or U/G Tank Cap | ○     |
| Sign                          | ○ S   |
| Well                          | ○ W   |
| Small Mine                    | ⋈     |
| Foundation                    | □     |
| Area Outline                  | □     |
| Cemetery                      | □     |
| Building                      | □     |
| School                        | □     |
| Church                        | □     |
| Dam                           | _____ |

### HYDROLOGY:

|                                    |        |
|------------------------------------|--------|
| Stream or Body of Water            | _____  |
| Hydro, Pool or Reservoir           | _____  |
| Jurisdictional Stream              | -JS-   |
| Buffer Zone 1                      | -BZ 1- |
| Buffer Zone 2                      | -BZ 2- |
| Flow Arrow                         | ←      |
| Disappearing Stream                | →      |
| Spring                             | ○      |
| Wetland                            | _____  |
| Proposed Lateral, Tail, Head Ditch | _____  |
| False Sump                         | _____  |

### RAILROADS:

|                    |               |
|--------------------|---------------|
| Standard Gauge     | _____         |
| RR Signal Milepost | ○ MILEPOST 35 |
| Switch             | □ SWITCH      |
| RR Abandoned       | _____         |
| RR Dismantled      | _____         |

### RIGHT OF WAY:

|   |         |
|---|---------|
| Baseline Control Point  | ◆       |
| Existing Right of Way Marker                                  | △       |
| Existing Right of Way Line                                    | _____   |
| Proposed Right of Way Line                                    | ○ R/W   |
| Proposed Right of Way Line with Iron Pin and Cap Marker       | ○ R/W ▲ |
| Proposed Right of Way Line with Concrete or Granite RW Marker | ○ R/W ▲ |
| Proposed Control of Access Line with Concrete C/A Marker      | ○ C/A   |
| Existing Control of Access                                    | ○ C/A   |
| Proposed Control of Access                                    | ○ C/A   |
| Existing Easement Line  | -E-     |
| Proposed Temporary Construction Easement                      | -E-     |
| Proposed Temporary Drainage Easement                          | -TDE-   |
| Proposed Permanent Drainage Easement                          | -PDE-   |
| Proposed Permanent Drainage / Utility Easement                | -DUE-   |
| Proposed Permanent Utility Easement                           | -PUE-   |
| Proposed Temporary Utility Easement                           | -TUE-   |
| Proposed Aerial Utility Easement                              | -AUE-   |
| Proposed Permanent Easement with Iron Pin and Cap Marker      | ◆       |

### ROADS AND RELATED FEATURES:

|                            |       |
|----------------------------|-------|
| Existing Edge of Pavement  | _____ |
| Existing Curb              | _____ |
| Proposed Slope Stakes Cut  | -C-   |
| Proposed Slope Stakes Fill | -F-   |
| Proposed Curb Ramp         | ○ CR  |
| Existing Metal Guardrail   | _____ |
| Proposed Guardrail         | _____ |
| Existing Cable Guiderail   | _____ |
| Proposed Cable Guiderail   | _____ |
| Equality Symbol            | ⊕     |
| Pavement Removal           | _____ |

### VEGETATION:

|              |       |
|--------------|-------|
| Single Tree  | ☀     |
| Single Shrub | ☀     |
| Hedge        | _____ |
| Woods Line   | _____ |

|          |            |
|----------|------------|
| Orchard  | ☀ ☀ ☀ ☀    |
| Vineyard | □ Vineyard |

### EXISTING STRUCTURES:

|  |         |
|--|---------|
| MAJOR:                                   |         |
| Bridge, Tunnel or Box Culvert            | CONC    |
| Bridge Wing Wall, Head Wall and End Wall | CONC WW |
| MINOR:                                   |         |
| Head and End Wall                        | CONC HW |
| Pipe Culvert                             | _____   |
| Footbridge                               | _____   |
| Drainage Box: Catch Basin, DI or JB      | □ CB    |
| Paved Ditch Gutter                       | _____   |
| Storm Sewer Manhole                      | ⊙       |
| Storm Sewer                              | -S-     |

### UTILITIES:

|                                |       |
|--------------------------------|-------|
| POWER:                         |       |
| Existing Power Pole            | ●     |
| Proposed Power Pole            | ○     |
| Existing Joint Use Pole        | ●     |
| Proposed Joint Use Pole        | ○     |
| Power Manhole                  | ⊙     |
| Power Line Tower               | ⊠     |
| Power Transformer              | ⊠     |
| U/G Power Cable Hand Hole      | _____ |
| H-Frame Pole                   | ●     |
| U/G Power Line LOS B (S.U.E.*) | -P-   |
| U/G Power Line LOS C (S.U.E.*) | -P-   |
| U/G Power Line LOS D (S.U.E.*) | -P-   |

### TELEPHONE:

|  |        |
|--|--------|
| Existing Telephone Pole                | ●      |
| Proposed Telephone Pole                | ○      |
| Telephone Manhole                      | ⊙      |
| Telephone Pedestal                     | ⊠      |
| Telephone Cell Tower                   | ⊠      |
| U/G Telephone Cable Hand Hole          | _____  |
| U/G Telephone Cable LOS B (S.U.E.*)    | -T-    |
| U/G Telephone Cable LOS C (S.U.E.*)    | -T-    |
| U/G Telephone Cable LOS D (S.U.E.*)    | -T-    |
| U/G Telephone Conduit LOS B (S.U.E.*)  | -TC-   |
| U/G Telephone Conduit LOS C (S.U.E.*)  | -TC-   |
| U/G Telephone Conduit LOS D (S.U.E.*)  | -TC-   |
| U/G Fiber Optics Cable LOS B (S.U.E.*) | -T FO- |
| U/G Fiber Optics Cable LOS C (S.U.E.*) | -T FO- |
| U/G Fiber Optics Cable LOS D (S.U.E.*) | -T FO- |

### WATER:

|                                |             |
|--------------------------------|-------------|
| Water Manhole                  | ⊙           |
| Water Meter                    | ○           |
| Water Valve                    | ⊗           |
| Water Hydrant                  | ⊕           |
| U/G Water Line LOS B (S.U.E.*) | -W-         |
| U/G Water Line LOS C (S.U.E.*) | -W-         |
| U/G Water Line LOS D (S.U.E.*) | -W-         |
| Above Ground Water Line        | -A/G Water- |

### TV:

|                                       |         |
|---------------------------------------|---------|
| TV Pedestal                           | ⊠       |
| TV Tower                              | ⊗       |
| U/G TV Cable Hand Hole                | _____   |
| U/G TV Cable LOS B (S.U.E.*)          | -TV-    |
| U/G TV Cable LOS C (S.U.E.*)          | -TV-    |
| U/G TV Cable LOS D (S.U.E.*)          | -TV-    |
| U/G Fiber Optic Cable LOS B (S.U.E.*) | -TV FO- |
| U/G Fiber Optic Cable LOS C (S.U.E.*) | -TV FO- |
| U/G Fiber Optic Cable LOS D (S.U.E.*) | -TV FO- |

### GAS:

|                              |           |
|------------------------------|-----------|
| Gas Valve                    | ◇         |
| Gas Meter                    | ⊕         |
| U/G Gas Line LOS B (S.U.E.*) | -G-       |
| U/G Gas Line LOS C (S.U.E.*) | -G-       |
| U/G Gas Line LOS D (S.U.E.*) | -G-       |
| Above Ground Gas Line        | -A/G Gas- |

### SANITARY SEWER:

|                                     |                      |
|-------------------------------------|----------------------|
| Sanitary Sewer Manhole              | ⊙                    |
| Sanitary Sewer Cleanout             | ⊕                    |
| U/G Sanitary Sewer Line             | -SS-                 |
| Above Ground Sanitary Sewer         | -A/G Sanitary Sewer- |
| SS Forced Main Line LOS B (S.U.E.*) | -FSS-                |
| SS Forced Main Line LOS C (S.U.E.*) | -FSS-                |
| SS Forced Main Line LOS D (S.U.E.*) | -FSS-                |

### MISCELLANEOUS:

|  |        |
|--|--------|
| Utility Pole                             | ●      |
| Utility Pole with Base                   | ⊠      |
| Utility Located Object                   | ○      |
| Utility Traffic Signal Box               | ⊠      |
| Utility Unknown U/G Line LOS B (S.U.E.*) | -ZUTL- |
| U/G Tank; Water, Gas, Oil                | □      |
| Underground Storage Tank, Approx. Loc.   | ⊠      |
| A/G Tank; Water, Gas, Oil                | □      |
| Geoenvironmental Boring                  | ⊕      |
| U/G Test Hole LOS A (S.U.E.*)            | ⊕      |
| Abandoned According to Utility Records   | AATUR  |
| End of Information                       | E.O.I. |



## STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

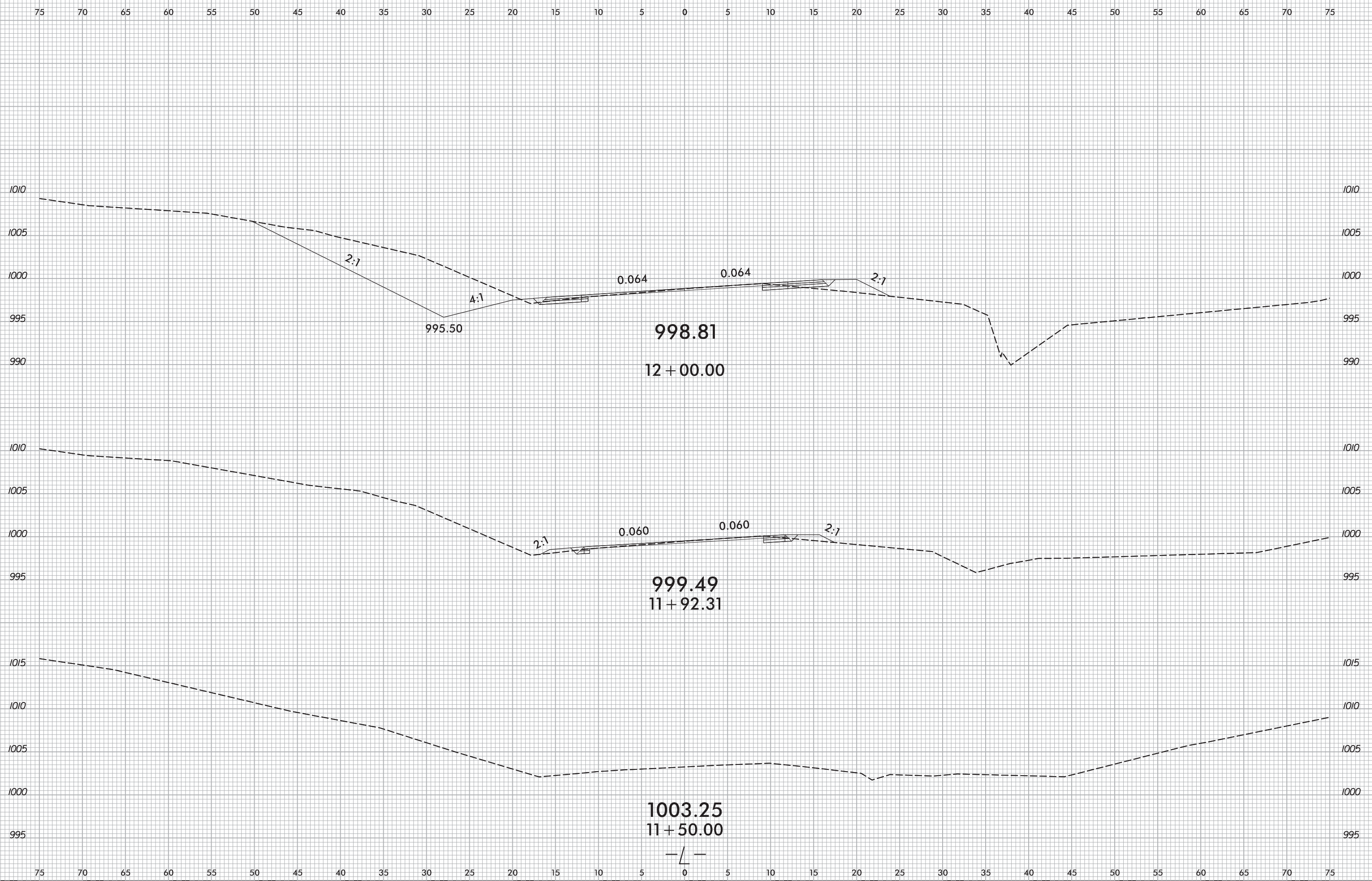
|                            |                  |
|----------------------------|------------------|
| <b>PROJ. REFERENCE NO.</b> | <b>SHEET NO.</b> |
| B-5549                     | X-SUM            |

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

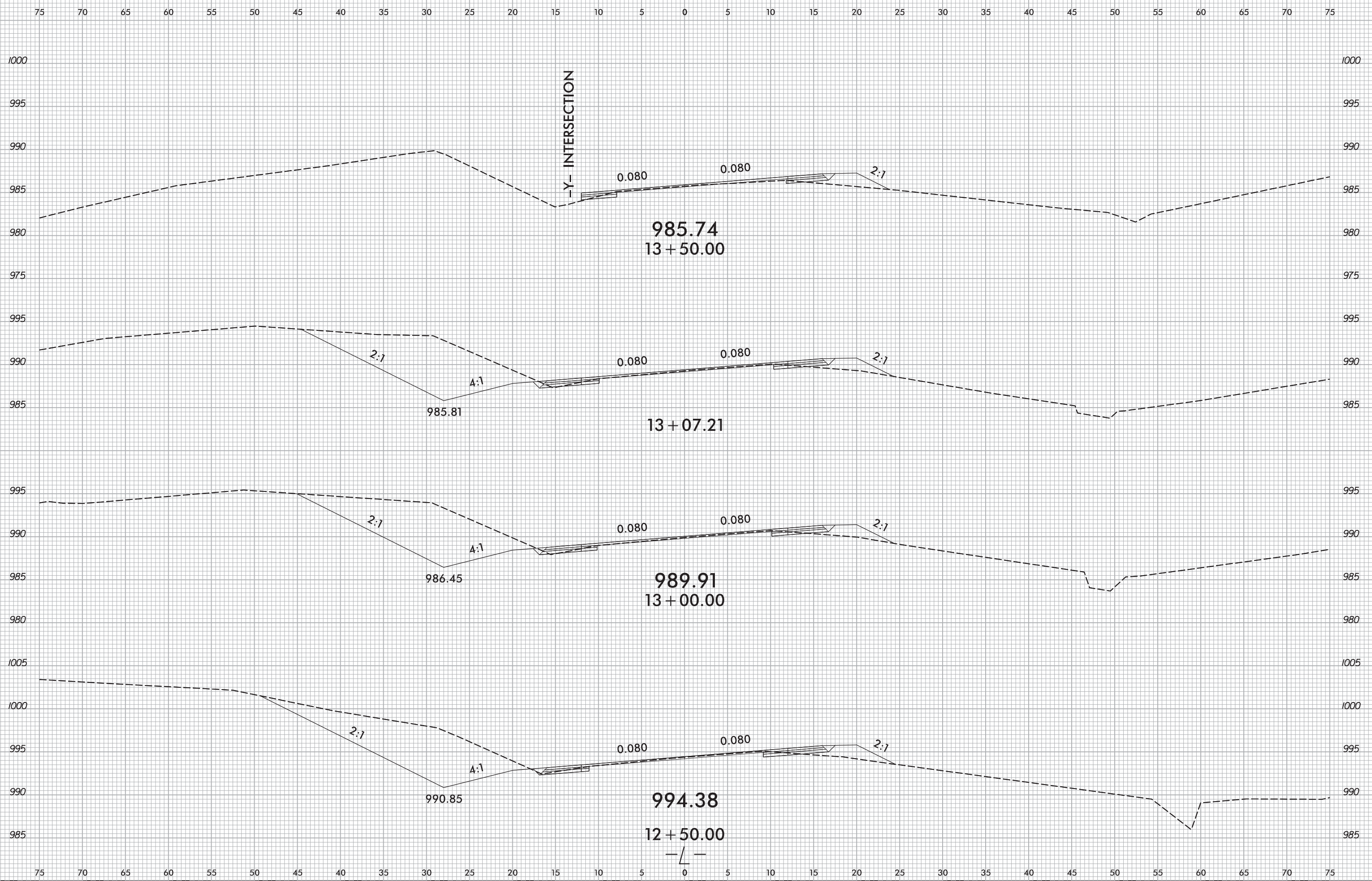
### CROSS-SECTION SUMMARY

| Station        | Uncl. Exc.<br>(cu. yd.) | Embt<br>(cu. yd.) | Station        | Uncl. Exc.<br>(cu. yd.) | Embt<br>(cu. yd.) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------|-------------------------|-------------------|----------------|-------------------------|-------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| L              |                         |                   | Dr1            |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11+50.00       | 0                       | 0                 | 10+12.00       | 0                       | 0                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11+92.31       | 2                       | 3                 | 10+33.64       | 0                       | 8                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12+00.00       | 15                      | 2                 | 10+50.00       | 0                       | 7                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12+50.00       | 195                     | 16                | 10+64.44       | 1                       | 6                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13+00.00       | 192                     | 16                | 10+75.00       | 1                       | 3                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13+07.21       | 27                      | 2                 | 11+00.00       | 2                       | 1                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13+50.00       | 81                      | 13                |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13+76.08       | 2                       | 8                 | <b>Station</b> | <b>Uncl. Exc.</b>       | <b>Embt</b>       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13+85.80       | 0                       | 3                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14+00.00       | 0                       | 3                 | <b>Dr2</b>     | <b>(cu. yd.)</b>        | <b>(cu. yd.)</b>  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14+42.80       | 0                       | 81                | 10+12.29       | 0                       | 0                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14+50.00       | 0                       | 27                | 10+37.71       | 0                       | 34                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14+53.35       | 0                       | 13                | 10+50.00       | 0                       | 14                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14+60.43       | 0                       | 26                | 10+75.00       | 0                       | 12                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14+66.70       | 0                       | 25                | 11+00.00       | 0                       | 0                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14+70.54       | 0                       | 14                |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14+80.70       | 0                       | 17                | <b>Station</b> | <b>Uncl. Exc.</b>       | <b>Embt</b>       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                |                         |                   | <b>Dr3</b>     | <b>(cu. yd.)</b>        | <b>(cu. yd.)</b>  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Station</b> | <b>Uncl. Exc.</b>       | <b>Embt</b>       | 10+50.00       | 0                       | 0                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>L</b>       | <b>(cu. yd.)</b>        | <b>(cu. yd.)</b>  | 10+75.00       | 3                       | 0                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15+73.30       | 0                       | 0                 | 10+81.00       | 2                       | 0                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15+87.30       | 1                       | 24                | 11+02.67       | 4                       | 2                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15+89.91       | 0                       | 8                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16+00.00       | 0                       | 25                |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16+50.00       | 59                      | 54                |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16+58.67       | 25                      | 1                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16+61.42       | 9                       | 0                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16+98.48       | 126                     | 3                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17+00.00       | 5                       | 0                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17+50.00       | 95                      | 5                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17+70.00       | 6                       | 7                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17+83.01       | 7                       | 5                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18+00.00       | 25                      | 7                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18+20.00       | 20                      | 5                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                |                         |                   |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Station</b> | <b>Uncl. Exc.</b>       | <b>Embt</b>       |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Y</b>       | <b>(cu. yd.)</b>        | <b>(cu. yd.)</b>  |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10+00.00       | 0                       | 0                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10+30.11       | 2                       | 1                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10+50.00       | 3                       | 1                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11+00.00       | 13                      | 11                |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11+50.00       | 30                      | 33                |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12+00.00       | 60                      | 94                |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12+50.00       | 123                     | 163               |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12+54.23       | 15                      | 15                |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12+71.56       | 107                     | 42                |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13+00.00       | 333                     | 25                |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13+20.00       | 373                     | 7                 |                |                         |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Approximate quantities only. Unclassified Excavation, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement and Removal of Existing Pavement will be paid for at the lump sum price for "Grading".

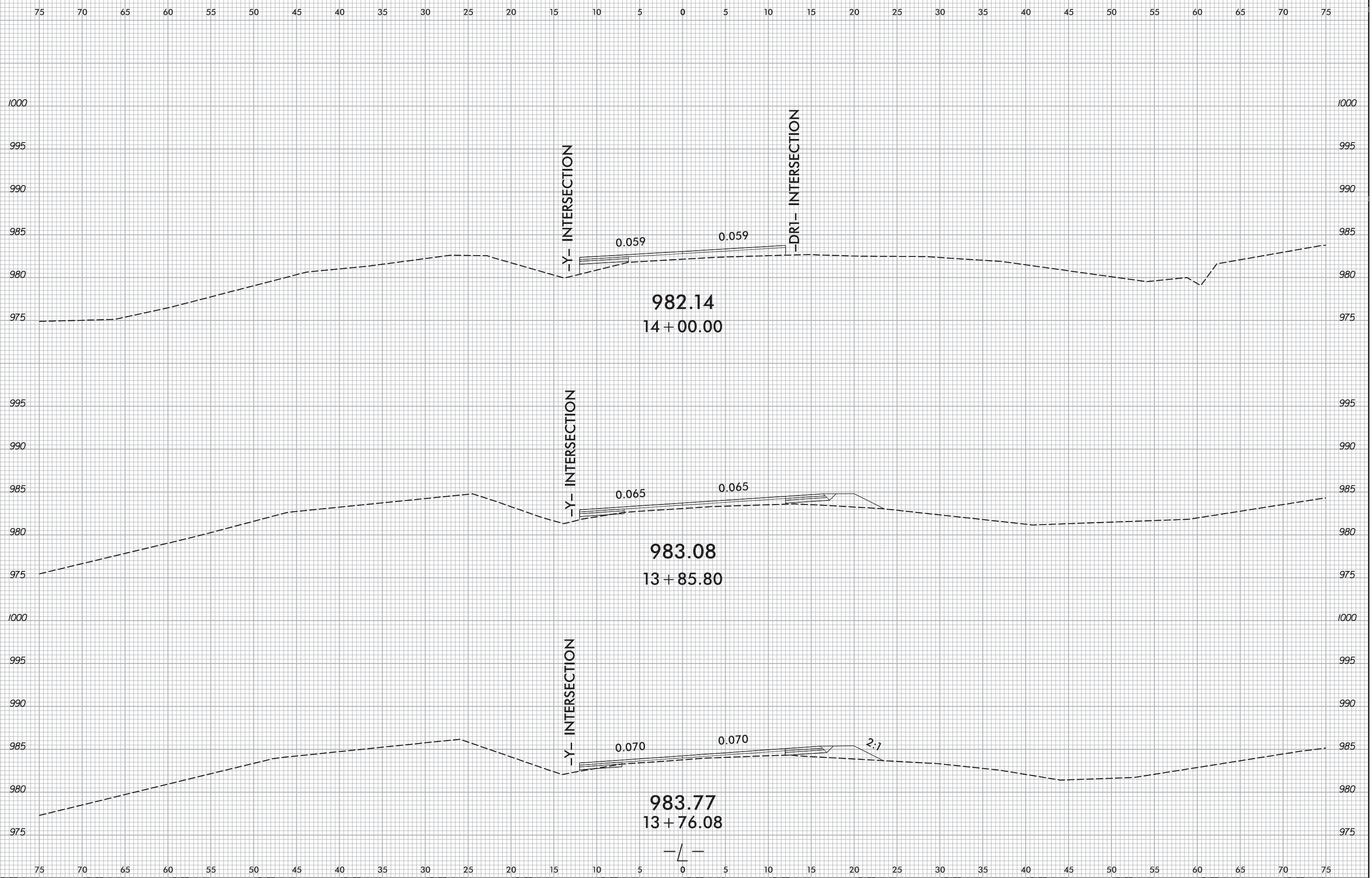


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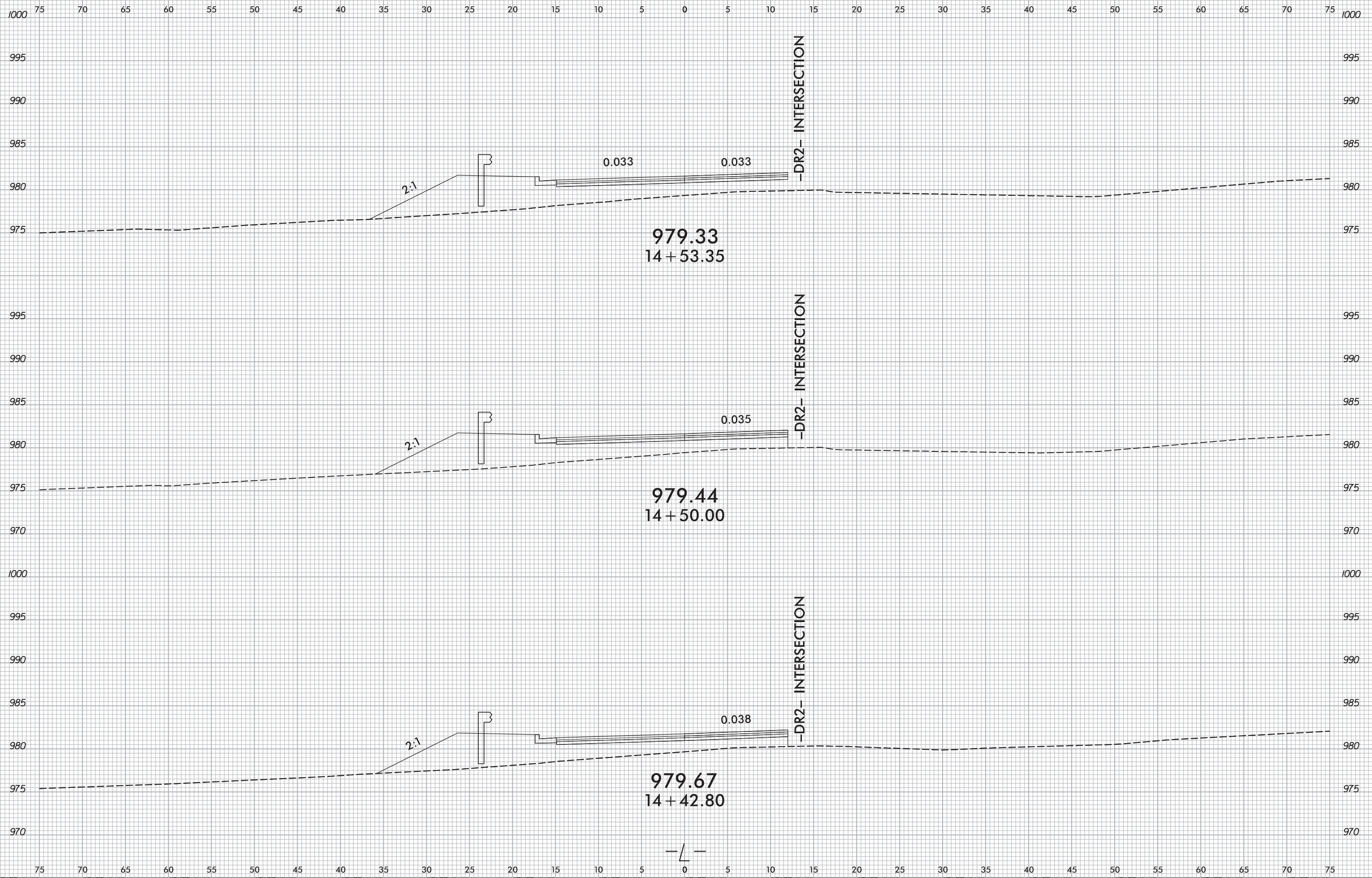


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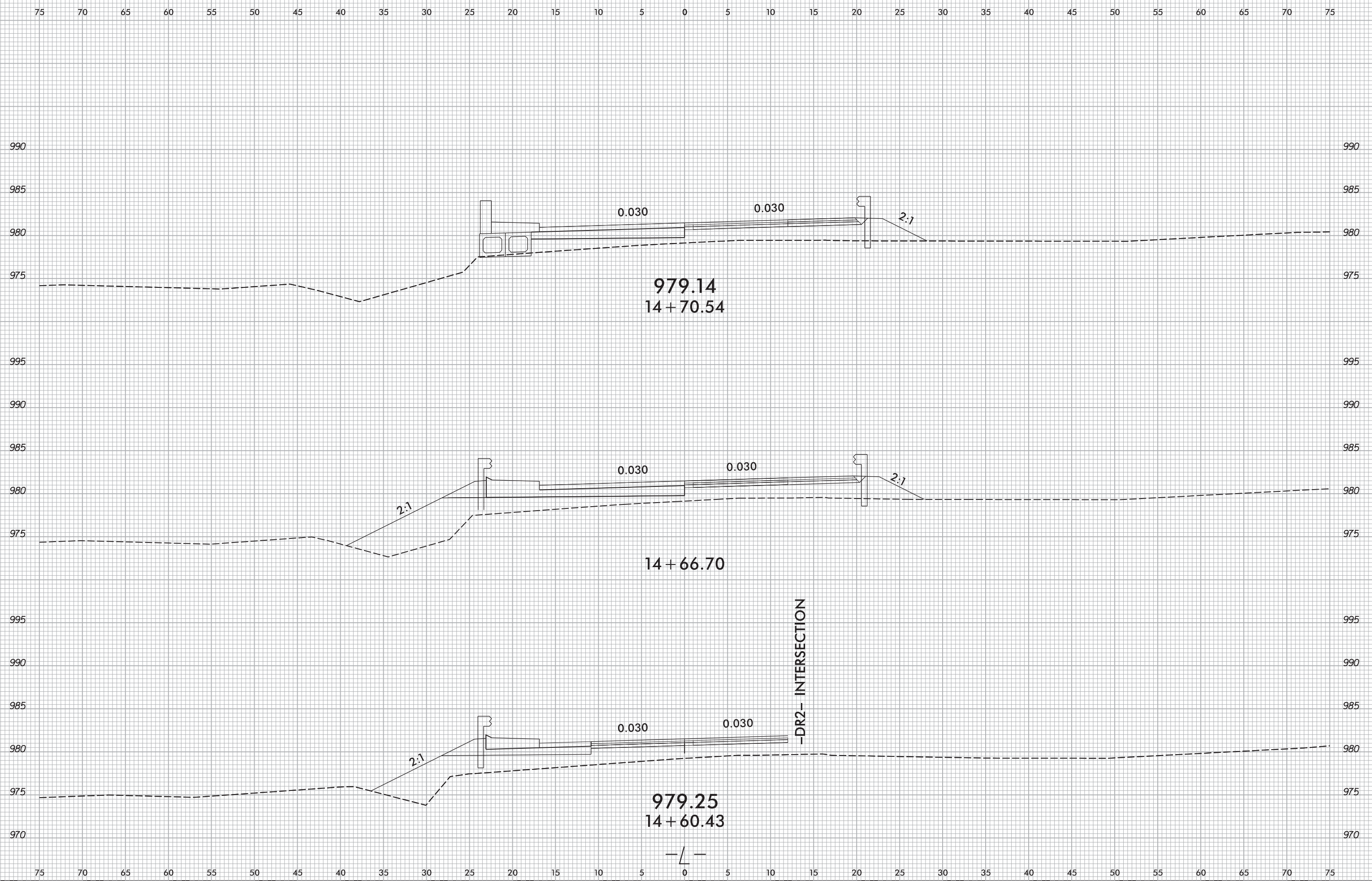


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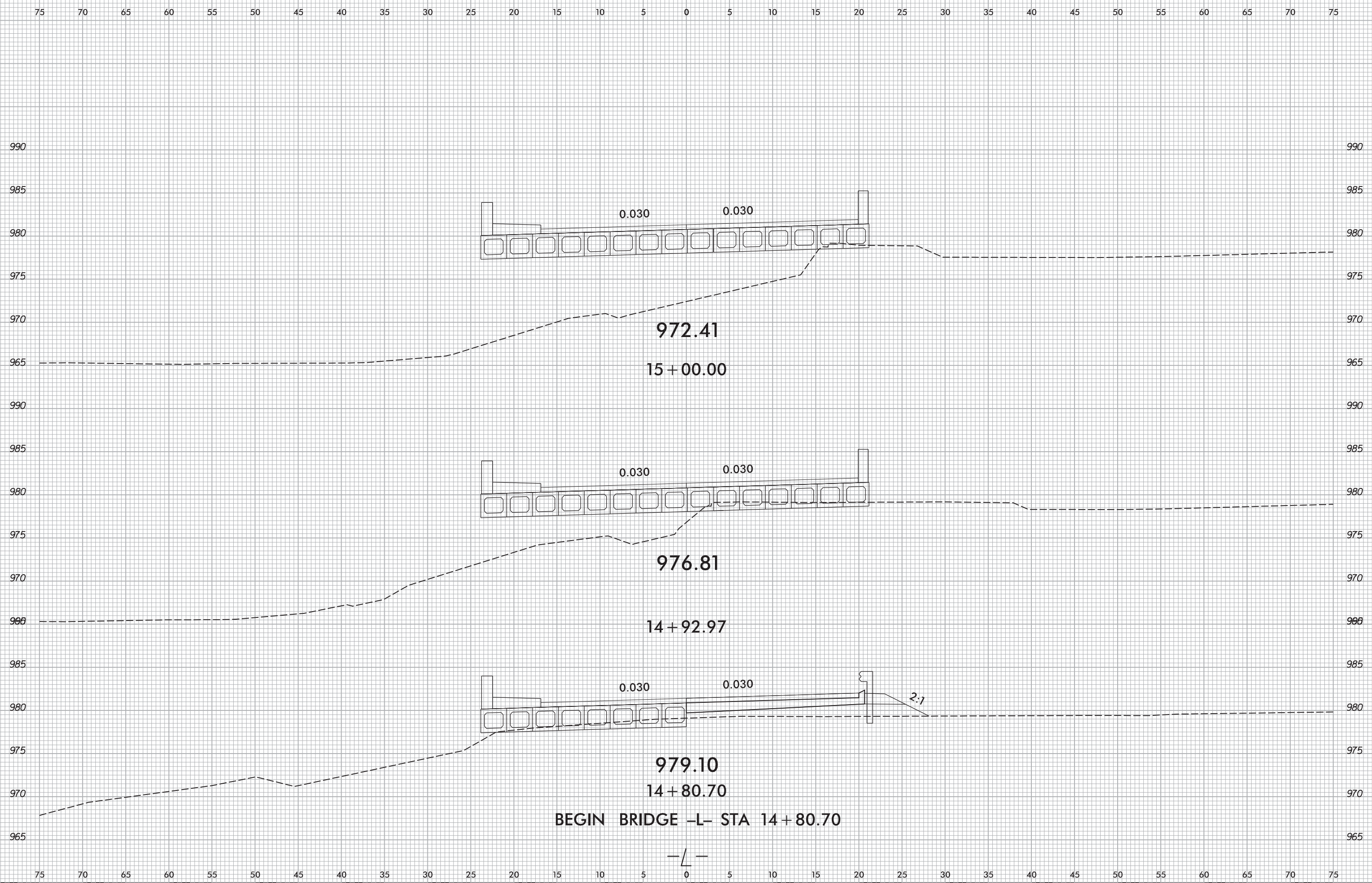


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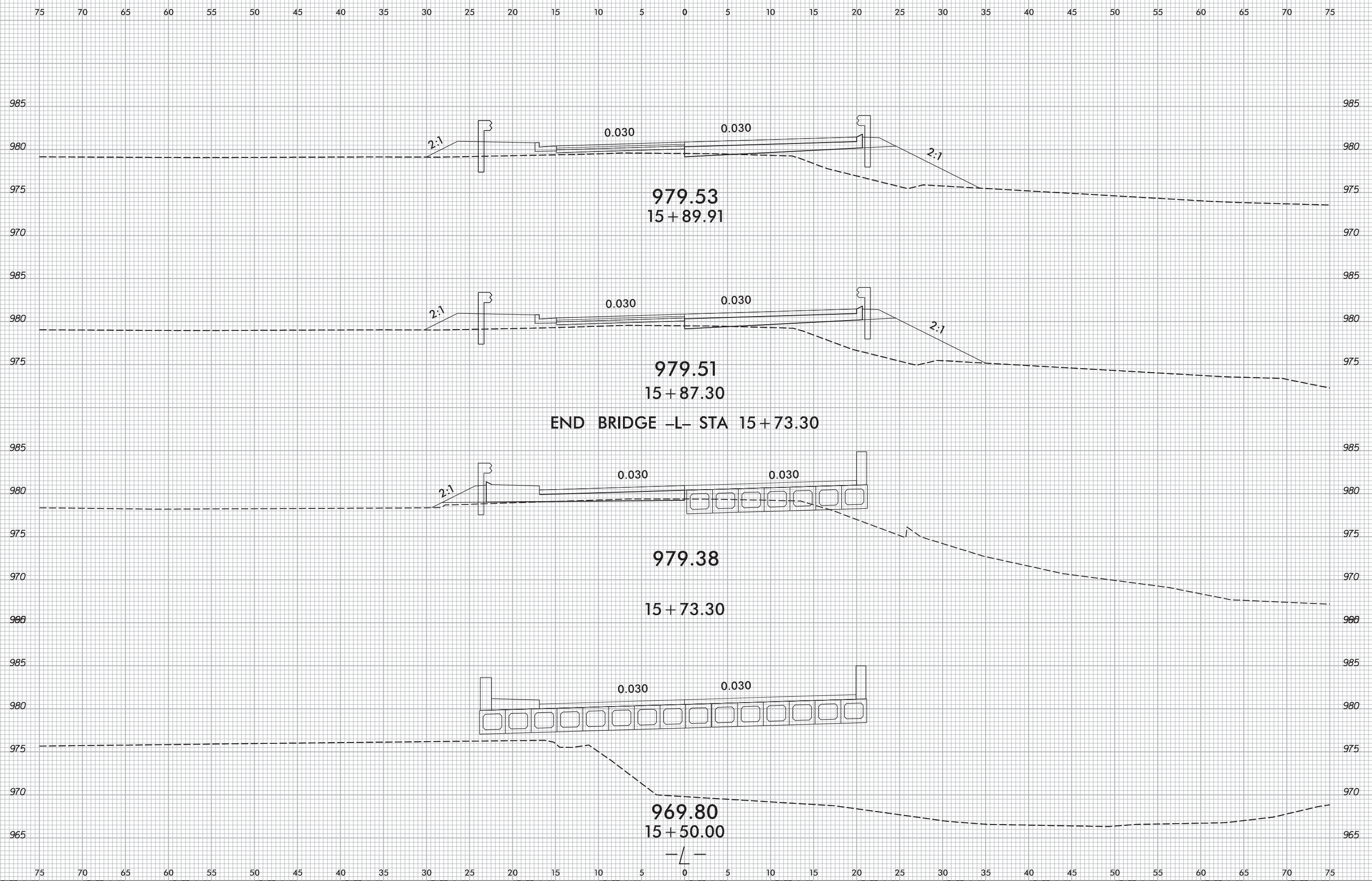
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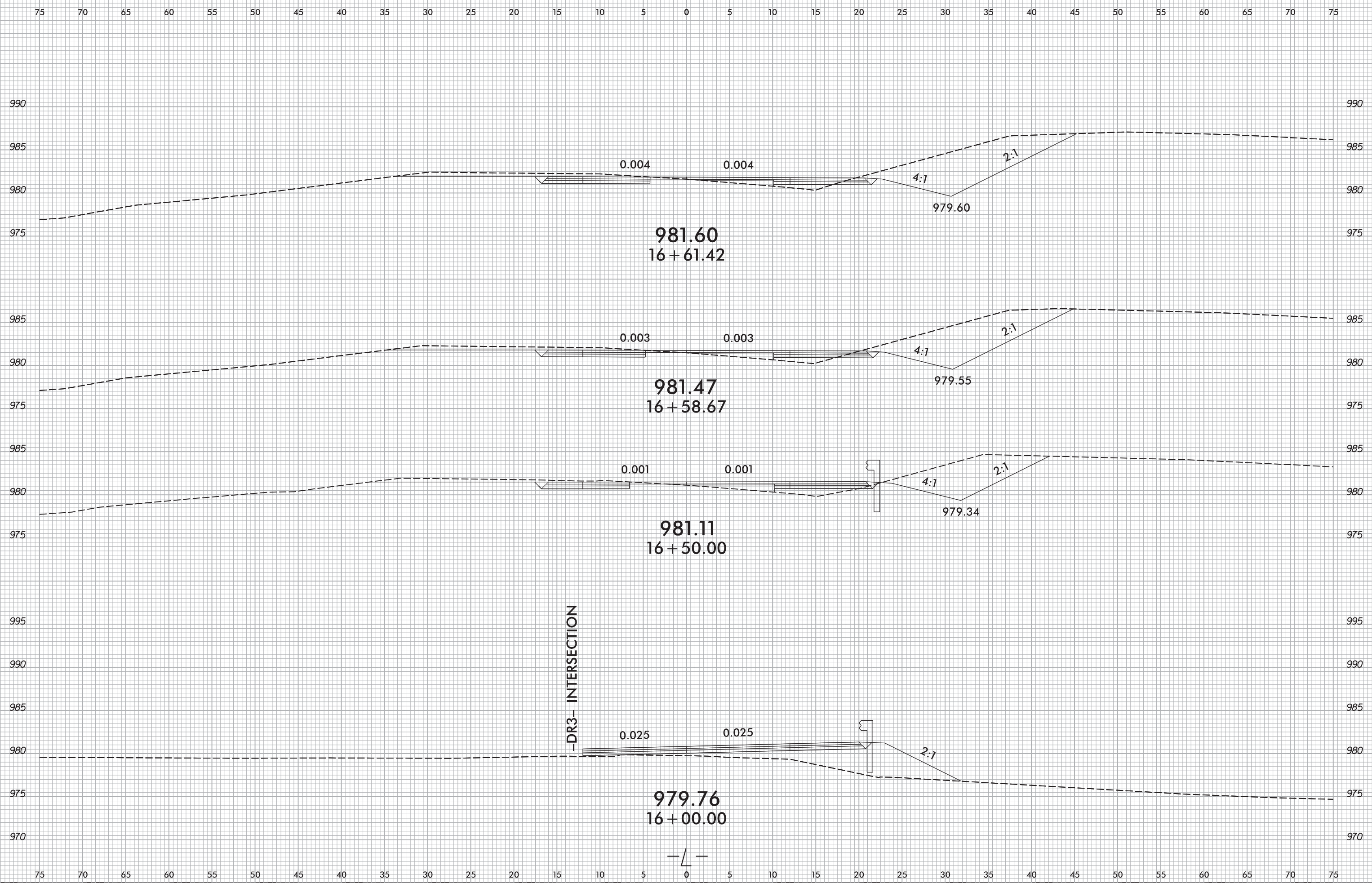




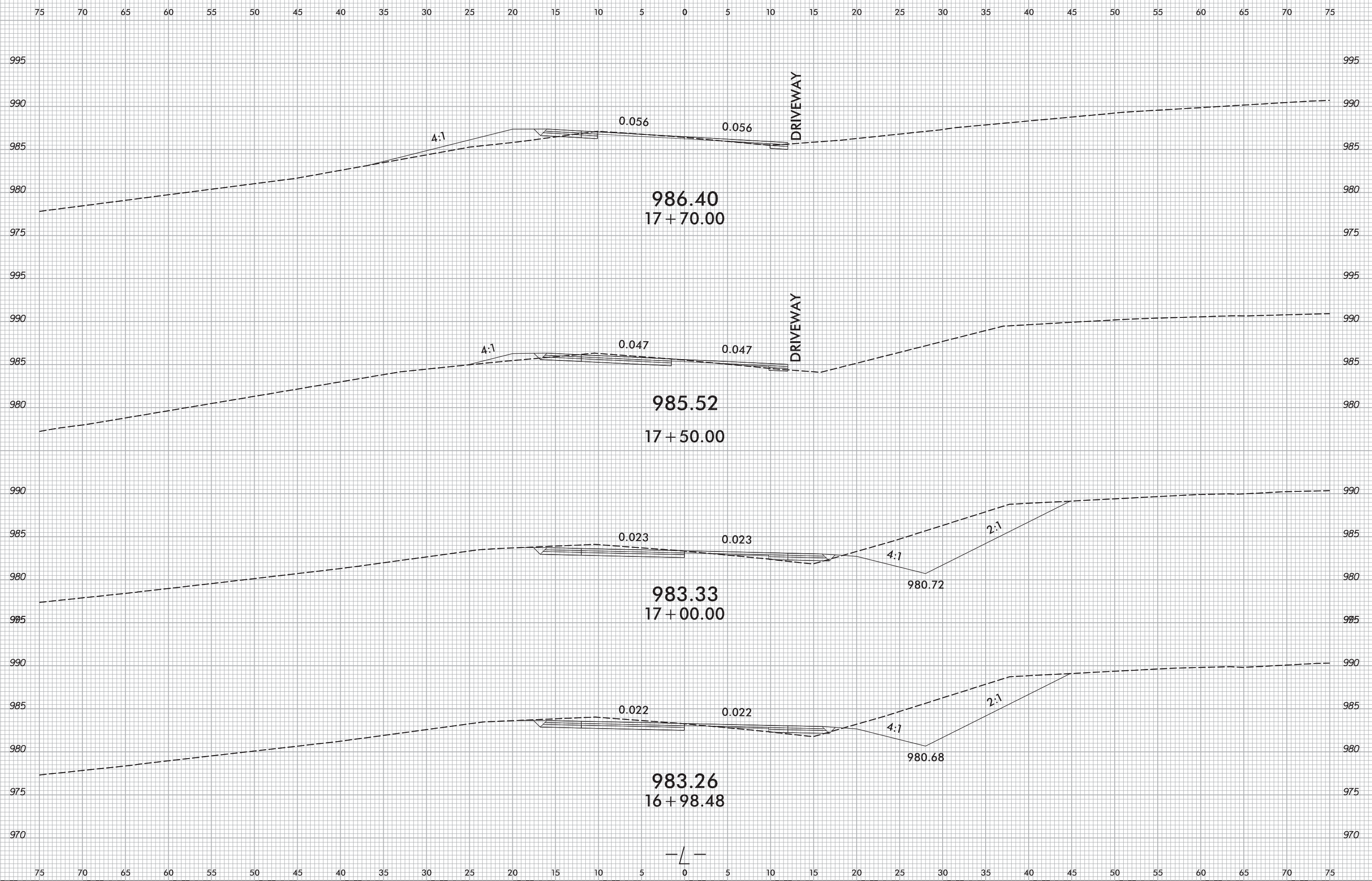
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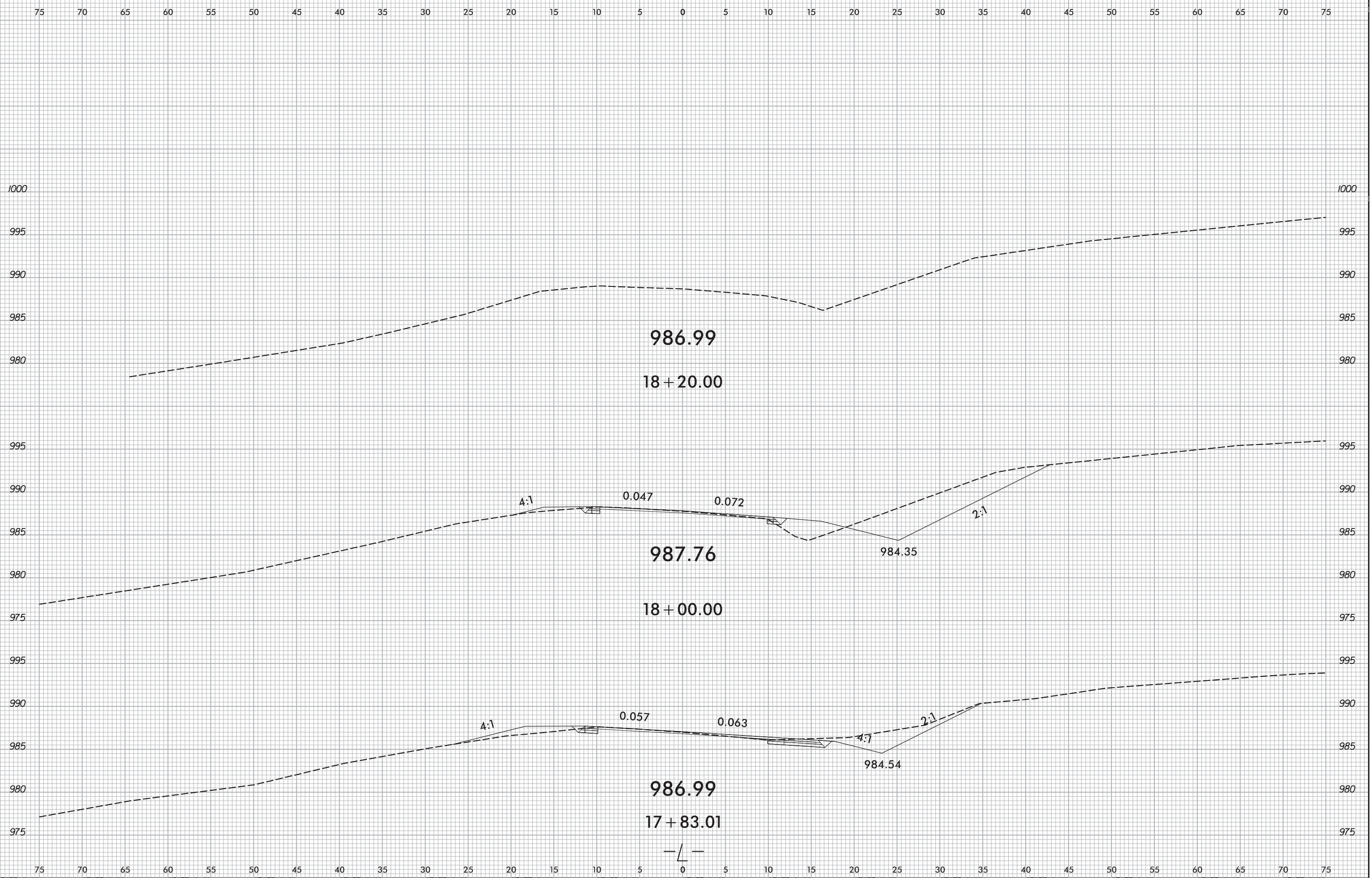


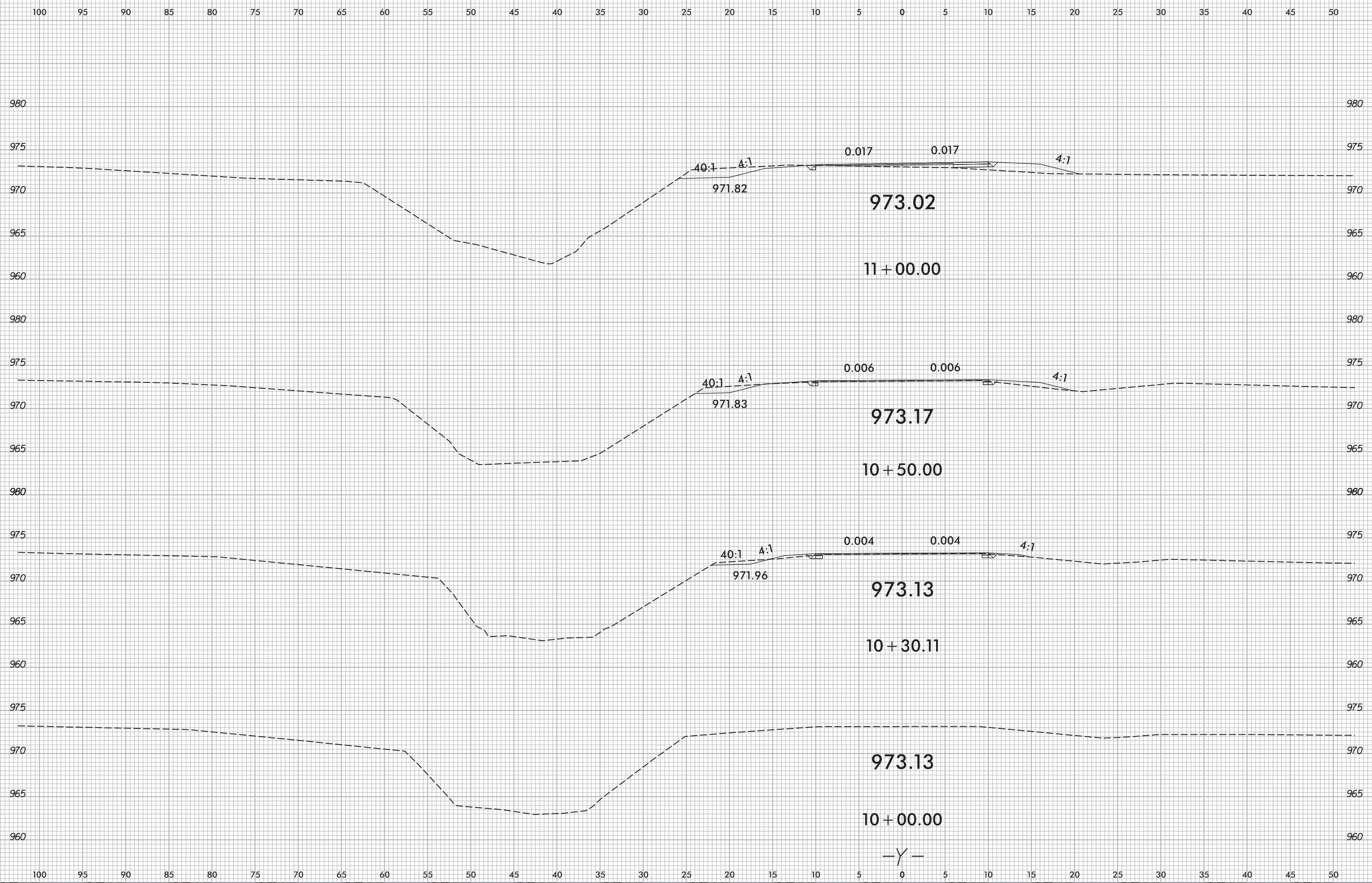
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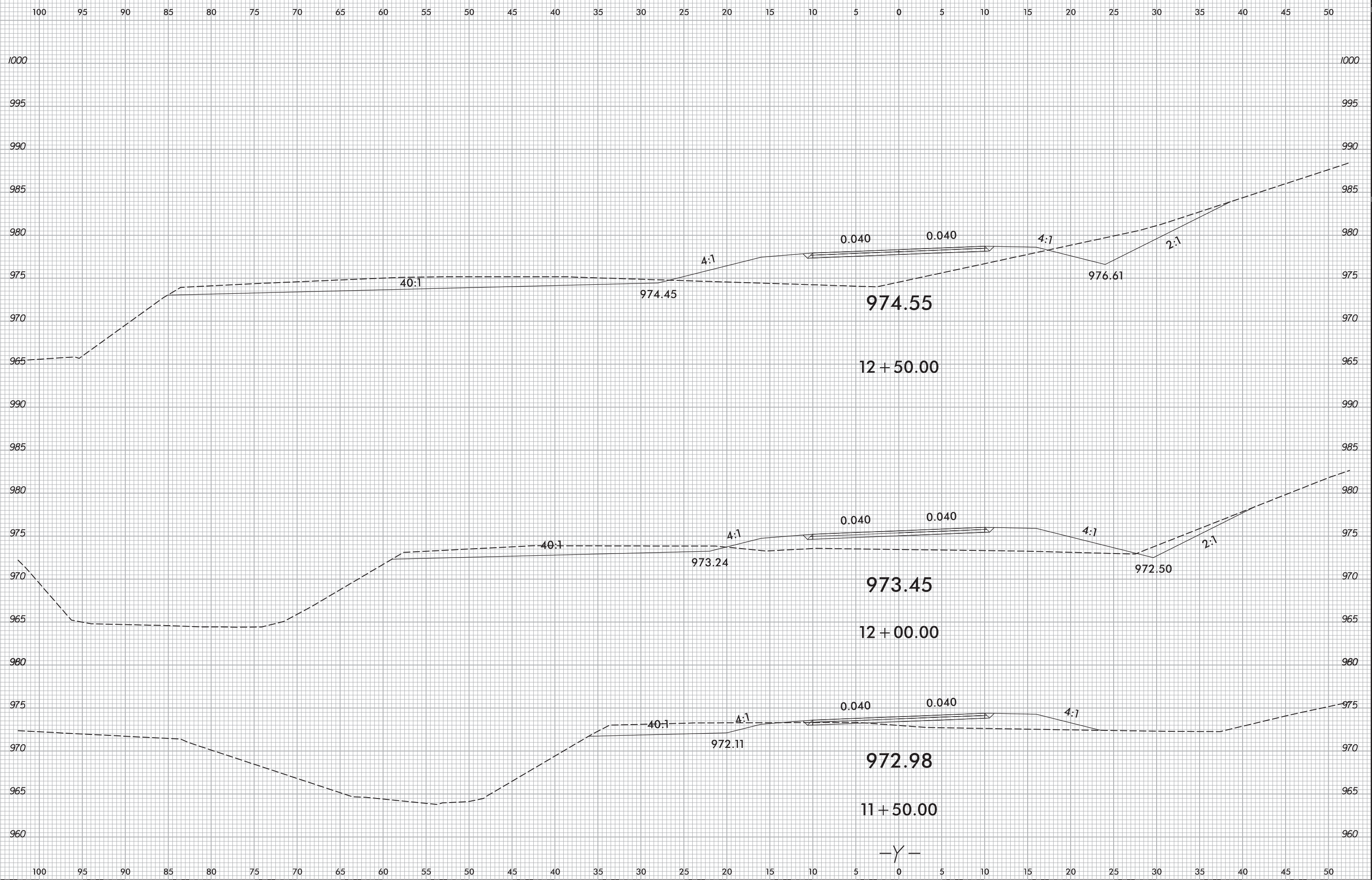




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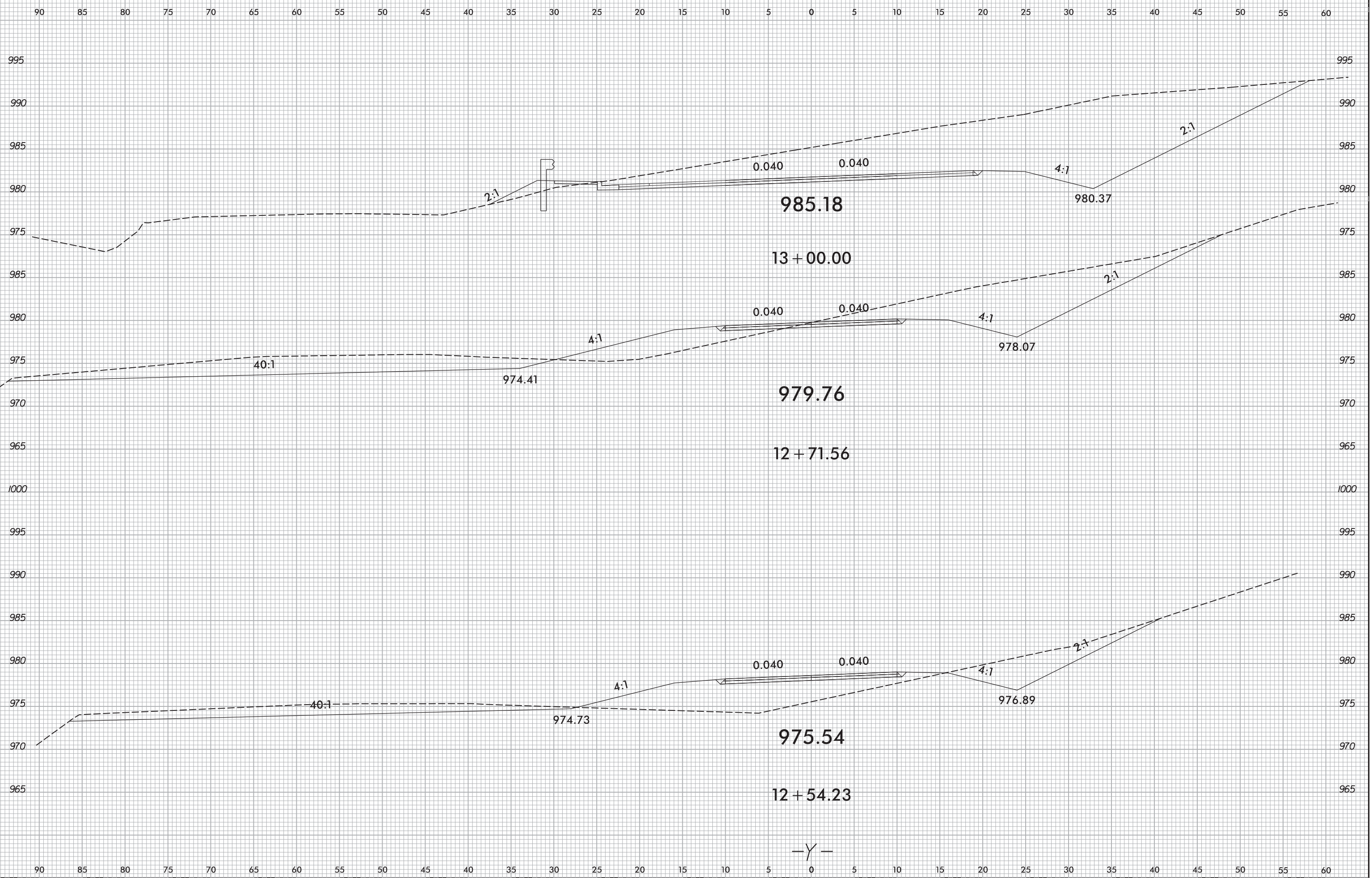
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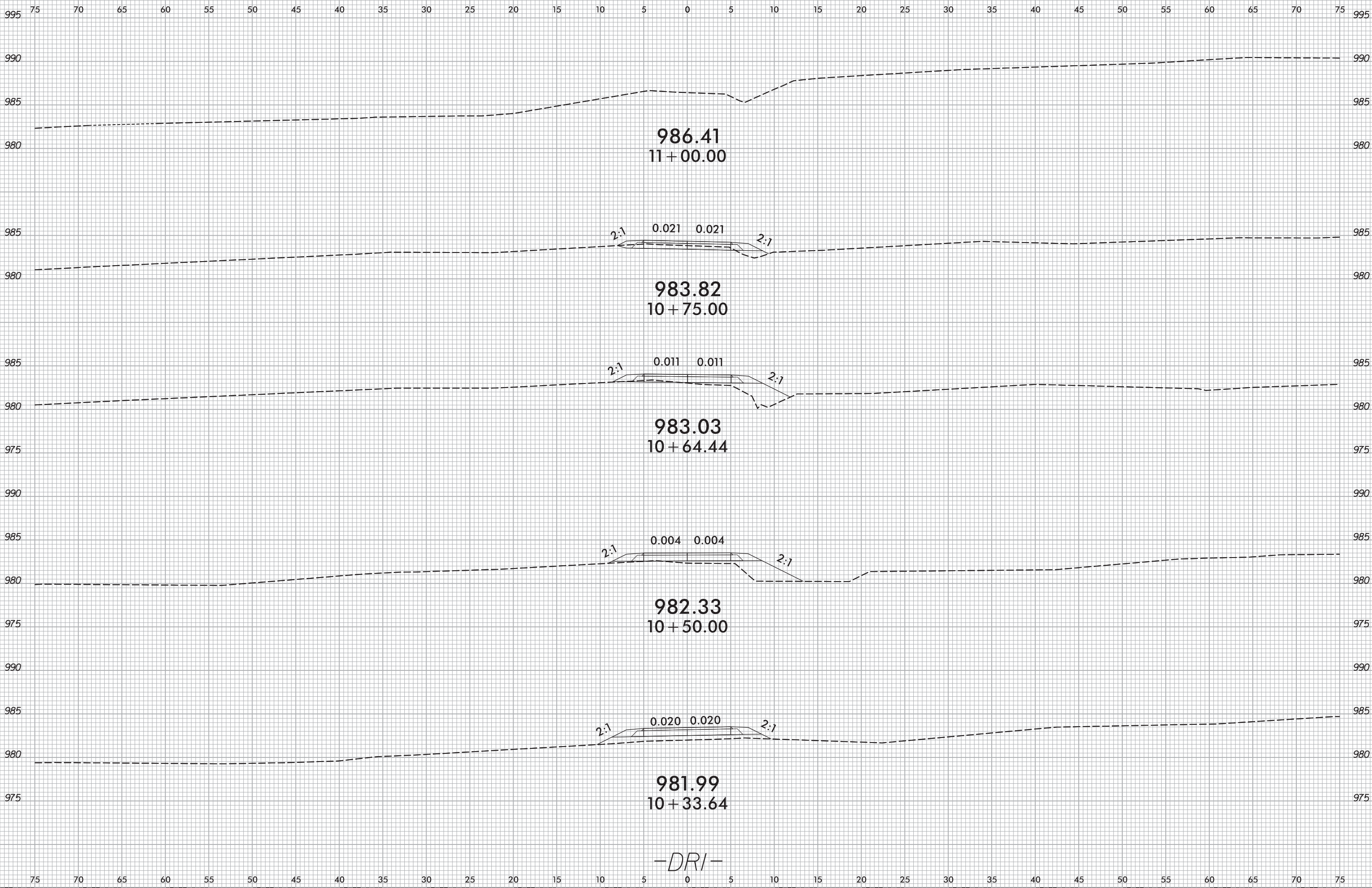


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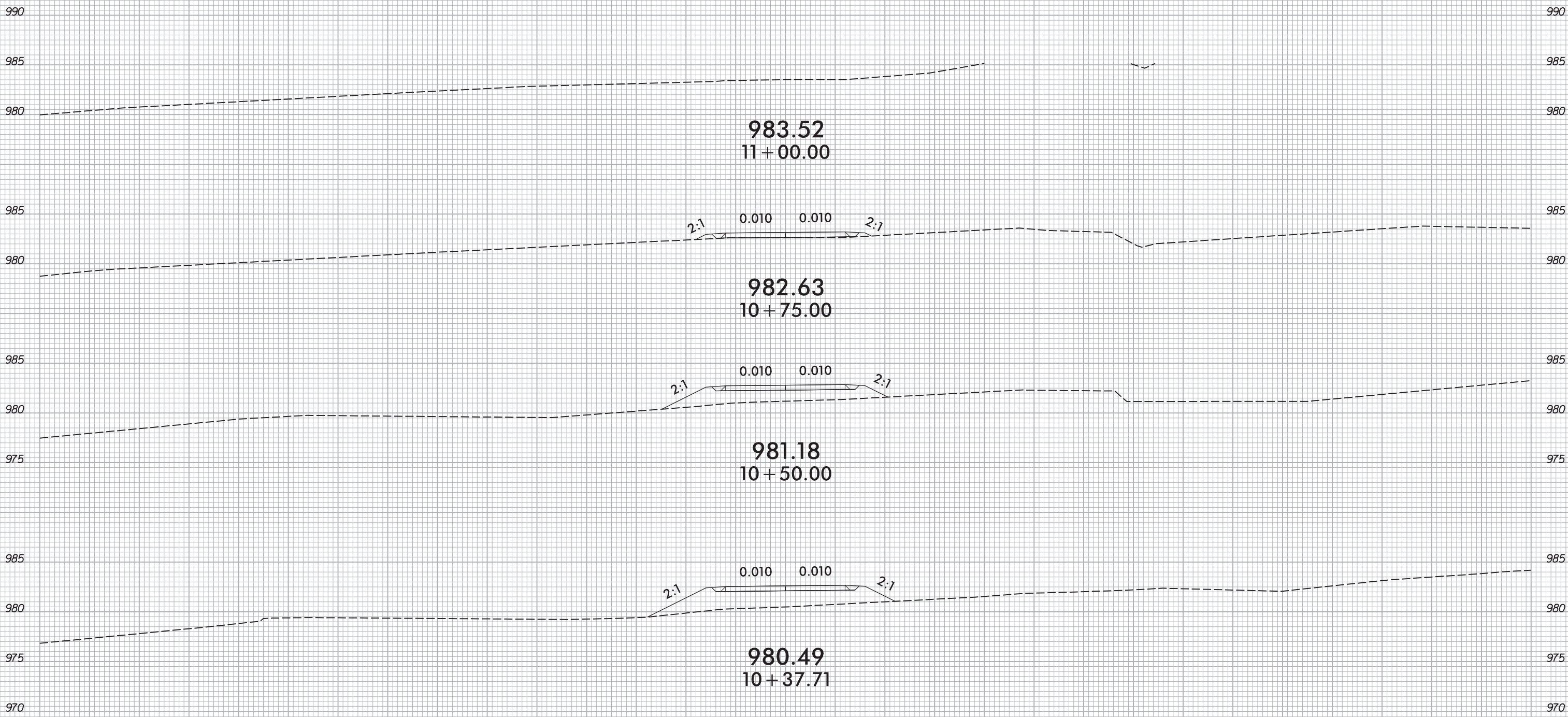
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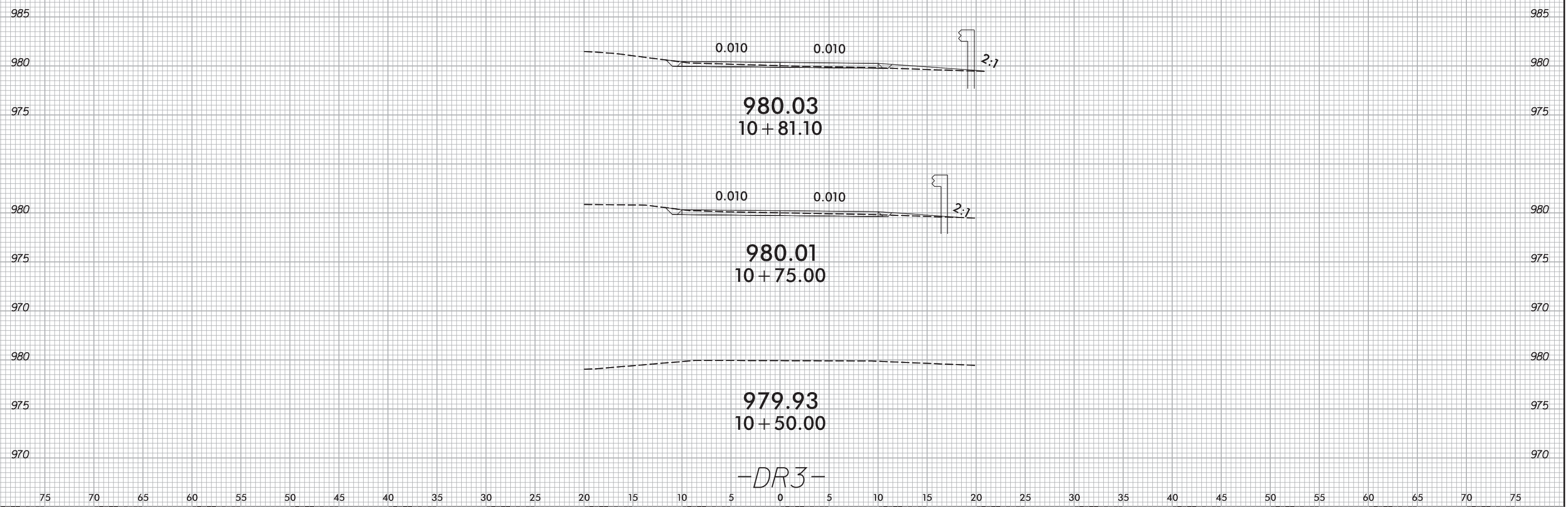
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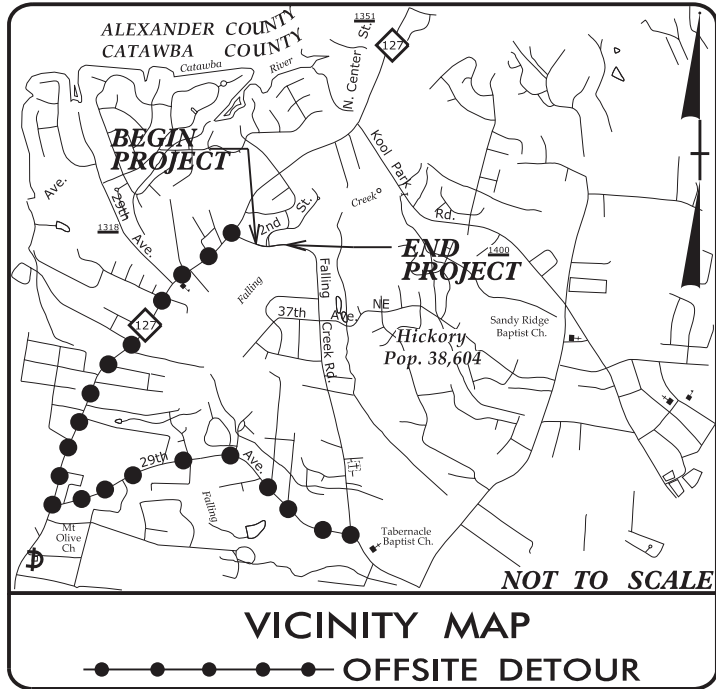
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**TIP PROJECT: B-5549**

**CONTRACT: 7500017050**

| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | B-5549                      | S-1         | 26           |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 55047.1.1       | BRSTP-1216(21)              | PE          |              |
| 55047.2.1       | BRSTP-1216(21)              | RW & UTIL   |              |
| 55047.3.1       | BRSTP-1216(21)              | CONST.      |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |

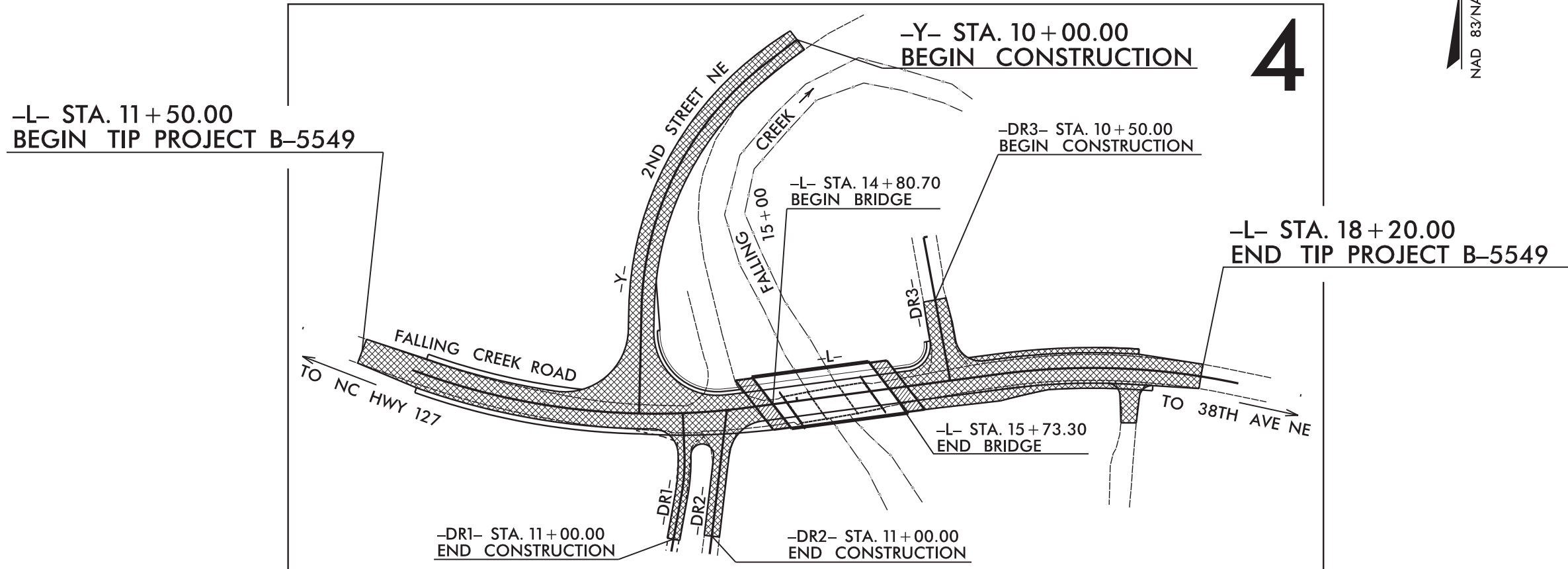


# CITY OF HICKORY CATAWBA COUNTY

**LOCATION: BRIDGE #170327 OVER FALLING CREEK ON  
FALLING CREEK ROAD**

**TYPE OF WORK: STRUCTURE**

## STRUCTURE



**DESIGN DATA**

|                       |             |
|-----------------------|-------------|
| ADT 2016 =            | 3,420       |
| ADT 2036 =            | 5,000       |
| DHV =                 | 7 %         |
| D =                   | 50 %        |
| T =                   | 3 % *       |
| * (TTST 2% + DUAL 1%) |             |
| V =                   | 40 MPH      |
| FUNC CLASS =          | RURAL LOCAL |
| REGIONAL TIER         |             |

**PROJECT LENGTH**

|  |                    |
|--|--------------------|
| LENGTH ROADWAY TIP PROJECT B-5549 =      | 0.109 MILES        |
| LENGTH STRUCTURE TIP PROJECT B-5549 =    | 0.018 MILES        |
| <b>TOTAL LENGTH TIP PROJECT B-5549 =</b> | <b>0.127 MILES</b> |

**PLANS PREPARED BY:**  
**TGS ENGINEERS**  
 804-C N. LAFAYETTE ST  
 SHELBY, NC 28150  
 PH (704) 476-0003  
 CORP. LICENSE NO.: C-0275  
 2012 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
 September 12, 2014

**LETTING DATE:**

**PLANS PREPARED FOR:**  
**CITY OF HICKORY**  
 76 N CENTER ST  
 HICKORY, NC 28601  
 (828) 323-7400

**LEONARD G. FLETCHER, P.E.**  
 PROJECT ENGINEER

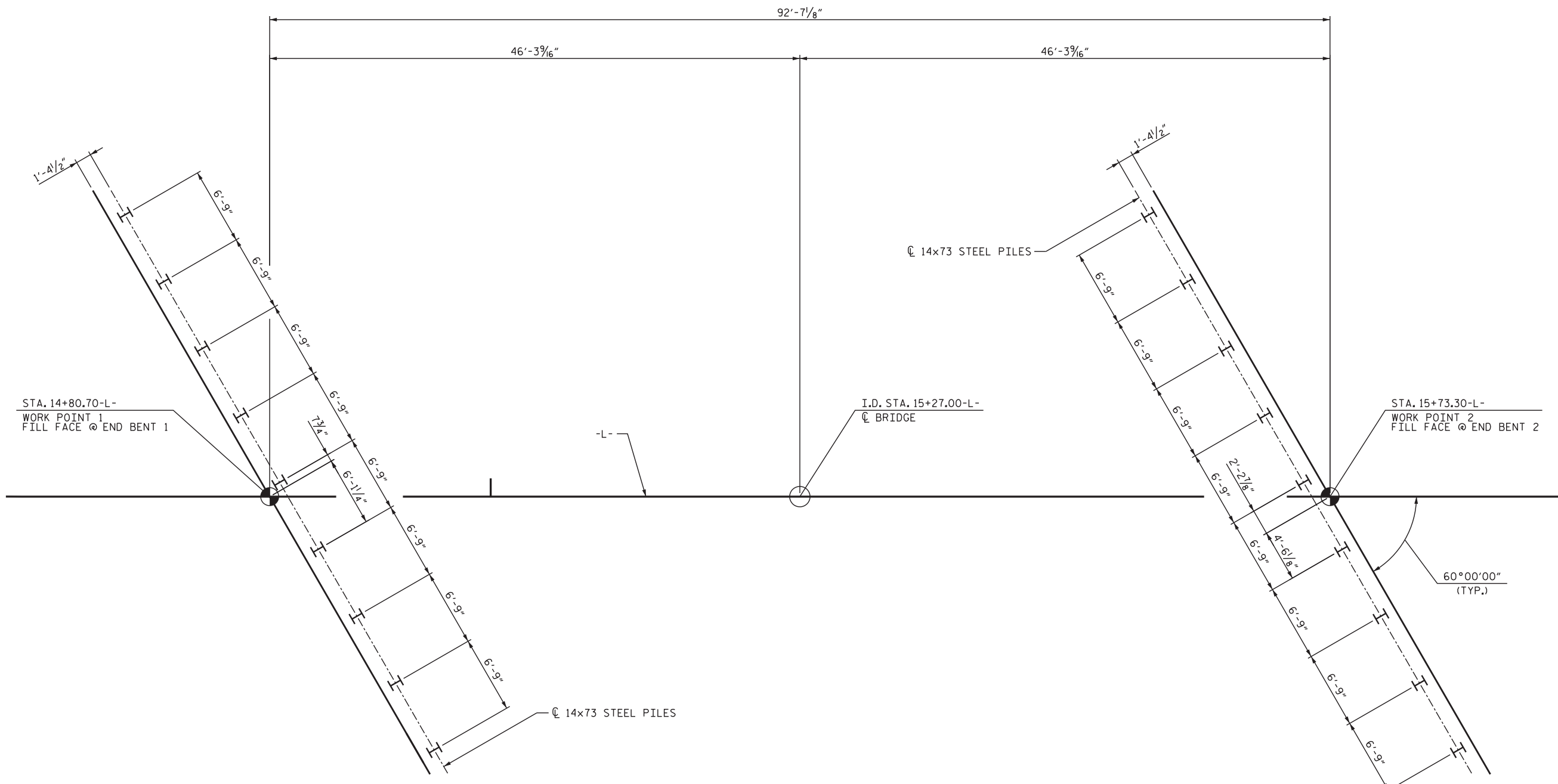
**RAY D. ELLIOTT, P.E.**  
 PROJECT DESIGN ENGINEER

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

**MAYOR:**  
 RUDY WRIGHT  
 76 N CENTER ST  
 HICKORY, NC 28601  
 (828) 323-7400

**CITY MANAGER:**  
 MICK W. BERRY  
 76 N CENTER ST  
 HICKORY, NC 28601  
 (828) 323-74012





**NOTES:**

- PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 113 TONS PER PILE.
- PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 113 TONS PER PILE.
- ⚠️ DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 190 TONS PER PILE
- ⚠️ DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 190 TONS PER PILE.
- ⚠️ CONCRETE OR GROUT IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT NO.1 AND END BENT NO.2.
- ⚠️ FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
- ⚠️ DRILLED IN PILES ARE REQUIRED FOR END BENT NO.1. EXCAVATE HOLES AT PILE LOCATIONS TO A MINIMUM DEPTH OF 10 FEET BELOW THE BOTTOM OF CAP ELEVATION. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- ⚠️ DRILLED IN PILES ARE REQUIRED FOR END BENT NO.2. EXCAVATE HOLES AT PILE LOCATIONS TO A MINIMUM DEPTH OF 10 FEET BELOW THE BOTTOM OF CAP ELEVATION. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

**FOUNDATION LAYOUT**

ALL END BENT PILES ARE HP 14x73 STEEL PILES, DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF THE PILES, ORIENT PILES AS SHOWN.

PROJECT NO. B-5549  
CATAWBA COUNTY

STATION: 15+27.00-L-

SHEET 2 OF 3 REPLACES BR. NO. 170327

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 BRIDGE OVER FALLING CREEK  
 ON FALLING CREEK ROAD  
 BETWEEN NC-127 AND  
 29TH AVENUE NE

1/29/2016

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
 804-C N. LAFAYETTE ST  
 SHELBY, NC 28150  
 PH (704) 476-0003  
 CORP. LICENSE NO.: C-0275

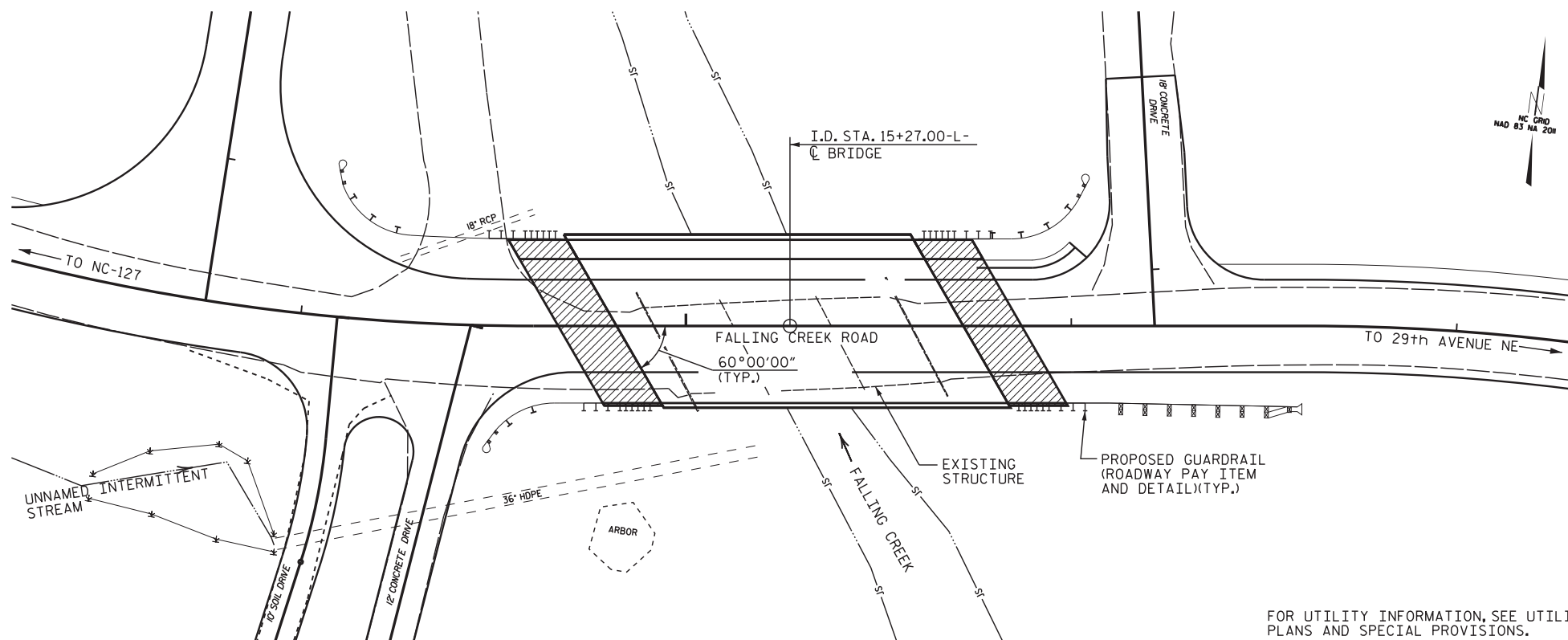
| REVISIONS |     |          |     |     |       |
|-----------|-----|----------|-----|-----|-------|
| NO.       | BY: | DATE:    | NO. | BY: | DATE: |
| 1         | RTJ | 01/28/16 | 3   |     |       |
| 2         |     |          | 4   |     |       |

SHEET NO. S-3  
 TOTAL SHEETS 26

DRAWN BY : JLA DATE : 3/15  
 CHECKED BY : RDE DATE : 3/15

⚠️ REVISED AND ADDED NOTES. CHECKED BY: RDE

BENCH MARK: RR SPIKE IN 28" WHITE OAK TREE, STA. 13+87-L-, 91' LT. ELEV. = 975.60' (NAVD 88)



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.  
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET, S-30.  
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.  
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.  
 REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO WATER, THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.  
 THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR THE DISTANCE OF 30 FT. EACH SIDE OF THE CENTERLINE OF THE BRIDGE AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION, SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.  
 THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE CITY FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.  
 ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITIES ON ROADWAY PLANS.  
 THE EXISTING STRUCTURE CONSISTING OF 3 SPAN (1 @ 19'-6", 1 @ 25'-0", 1 @ 21'-0") STEEL PLANK DECK ON STEEL BEAMS, TIMBER CAPS AND TIMBER POSTS SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING THE CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.  
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.  
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.  
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.  
 FOR CRANE SAFTY, SEE SPECIAL PROVISIONS.  
 INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 15+27.00-L-".  
 THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH BAR SIZE USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.  
 THE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES"  
 FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.  
 THIS BRIDGE INVOLVES FEMA REGULATED STREAM CROSSING.

PROJECT NO. B-5549  
CATAWBA COUNTY  
 STATION: 15+27.00-L-

SHEET 3 OF 3 REPLACES BR. NO. 170327

|  |     |   |     |              |       |
|--|-----|---|-----|--------------|-------|
|  |     | STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH<br><br>GENERAL DRAWING<br>BRIDGE OVER FALLING CREEK<br>ON FALLING CREEK ROAD<br>BETWEEN NC-127 AND<br>29TH AVENUE NE |     | SHEET NO.    |       |
|  |     |   |     | S-4          |       |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED   |     |   |     | TOTAL SHEETS |       |
| TGS ENGINEERS<br>804-C N. LAFAYETTE ST<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |     |   |     | 26           |       |
| REVISIONS  |     |   |     |              |       |
| NO.  | BY: | DATE:   | NO. | BY:          | DATE: |
| 1  |     |   | 3   |              |       |
| 2  |     |   | 4   |              |       |

DRAWN BY : JLA DATE : 3/15  
 CHECKED BY : RDE DATE : 3/15

**TOTAL BILL OF MATERIAL**

| ITEM           | REMOVAL OF EXISTING STRUCTURE AT STA. 15+27.00-L- | UNCLASSIFIED STRUCTURE EXCAVATION | PILE EXCAVATION IN SOIL | PILE EXCAVATION NOT IN SOIL | CLASS "A" CONCRETE (BRIDGE) | CLASS "AA" CONCRETE (BRIDGE) | BRIDGE APPROACH SLABS | REINFORCING STEEL | EPOXY-COATED REINFORCING STEEL | HP14x73 STEEL PILES | VERTICAL CONCRETE BARRIER RAIL | RIP RAP, CLASS II | GEOTEXTILE | ELASTOMERIC BEARINGS | 3'-0" x 2'-9" PRESTRESSED CONCRETE BOX BEAMS | CONCRETE WEARING SURFACE | FOAM JOINT SEALS |          |
|----------------|---|-----------------------------------|-------------------------|-----------------------------|-----------------------------|------------------------------|-----------------------|-------------------|--------------------------------|---------------------|--------------------------------|-------------------|------------|----------------------|--|--------------------------|------------------|----------|
|                | LUMP SUM  | LUMP SUM                          | LIN. FT.                | LIN. FT.                    | C.Y.                        | C.Y.                         | LUMP SUM              | LBS.              | LBS.                           | NO.                 | LIN. FT.                       | TON               | S.Y.       | LUMP SUM             | NO.  | LIN. FT.                 | S.F.             | LUMP SUM |
| SUPERSTRUCTURE |   |                                   |                         |                             |                             | 22.3                         |                       |                   | 1,638                          |                     | 180.0                          |                   |            |                      | 15   | 1,350                    | 3,319            |          |
| END BENT 1     |   |                                   | 54                      | 36                          | 36.4                        |                              |                       | 5,016             |                                | 9                   | 108                            | 70                | 80         |                      |  |                          |                  |          |
| END BENT 2     |   |                                   | 6                       | 84                          | 36.4                        |                              |                       | 5,016             |                                | 9                   | 108                            | 70                | 80         |                      |  |                          |                  |          |
| <b>TOTALS</b>  | LUMP SUM  | LUMP SUM                          | 60                      | 120                         | 72.8                        | 22.3                         | LUMP SUM              | 10,032            | 1,638                          | 18                  | 216                            | 140               | 160        | LUMP SUM             | 15   | 1,350                    | 3,319            | LUMP SUM |

PROJECT NO. B-5549  
CATAWBA COUNTY  
STATION: 15+27.00-L-

REPLACES BR. NO. 170327



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**BILL OF MATERIAL**

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



TGS ENGINEERS  
804-C N. LAFAYETTE ST  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.       |
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| NO.       | BY: | DATE: | NO. | BY: | DATE: |                 |
| 1         |     |       | 3   |     |       | S-5             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 26 |

DRAWN BY : JLA      DATE : 3/15  
CHECKED BY : RDE      DATE : 3/15



LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

| LEVEL                    | VEHICLE    | WEIGHT (W)<br>(TONS) | CONTROLLING<br>LOAD RATING | MINIMUM<br>RATING FACTORS<br>(RF) | TONS = W X RF | STRENGTH I LIMIT STATE |                              |               |      |                 |   |                              |               |      |                 | SERVICE III LIMIT STATE                   |                     |                              |               |      |                 | COMMENT NUMBER |   |  |
|--------------------------|------------|----------------------|----------------------------|-----------------------------------|---------------|------------------------|------------------------------|---------------|------|-----------------|---|------------------------------|---------------|------|-----------------|---|---------------------|------------------------------|---------------|------|-----------------|----------------|---|--|
|                          |            |                      |                            |                                   |               | MOMENT                 |                              |               |      |                 | SHEAR                                     |                              |               |      |                 | MOMENT                                    |                     |                              |               |      |                 |                |   |  |
|                          |            |                      |                            |                                   |               | LIVELOAD<br>FACTORS    | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (ft) | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (ft) | LIVELOAD<br>FACTORS | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION |                | DISTANCE FROM<br>LEFT END OF<br>SPAN (ft) |  |
| DESIGN<br>LOAD<br>RATING | HL-93(InV) | N/A                  | <b>1</b>                   | 1.22                              | --            | 1.75                   | 0.253                        | 1.54          | A    | ER              | 44.134                                    | 0.623                        | <b>1.22</b>   | A    | ER              | <b>0.000</b>                              | 0.80                | 0.253                        | 1.29          | A    | ER              | 44.134         |   |  |
|                          | HL-93(OPr) | N/A                  | --                         | 1.58                              | --            | 1.35                   | 0.253                        | 2.00          | A    | ER              | 44.134                                    | 0.623                        | 1.58          | A    | ER              | 0.000                                     | N/A                 | --                           | --            | --   | --              | --             |   |  |
|                          | HS-20(InV) | 36.000               | <b>2</b>                   | 1.62                              | 58.32         | 1.75                   | 0.253                        | 2.10          | A    | ER              | 44.134                                    | 0.623                        | <b>1.62</b>   | A    | ER              | <b>0.000</b>                              | 0.80                | 0.253                        | 1.75          | A    | ER              | 44.134         |   |  |
|                          | HS-20(OPr) | 36.000               | --                         | 2.10                              | 75.60         | 1.35                   | 0.253                        | 2.72          | A    | ER              | 44.134                                    | 0.623                        | 2.10          | A    | ER              | 0.000                                     | N/A                 | --                           | --            | --   | --              | --             |   |  |
| LEGAL<br>LOAD<br>RATING  | SV         | SNSH                 | 13,500                     | --                                | 4.08          | 55.08                  | 1.4                          | 0.253         | 6.12 | A               | ER  | 44.134                       | 0.623         | 6.47 | A               | ER  | 0.000               | 0.80                         | 0.253         | 4.08 | A               | ER             | 44.134                                    |  |
|                          |            | SNGARBS2             | 20,000                     | --                                | 2.98          | 59.60                  | 1.4                          | 0.253         | 4.47 | A               | ER  | 44.134                       | 0.623         | 3.91 | A               | ER  | 0.000               | 0.80                         | 0.253         | 2.98 | A               | ER             | 44.134                                    |  |
|                          |            | SNAGRIS2             | 22,000                     | --                                | 2.80          | 61.60                  | 1.4                          | 0.253         | 4.20 | A               | ER  | 44.134                       | 0.623         | 3.46 | A               | ER  | 0.000               | 0.80                         | 0.253         | 2.80 | A               | ER             | 44.134                                    |  |
|                          |            | SNCOTTS3             | 27,250                     | --                                | 2.03          | 55.32                  | 1.4                          | 0.253         | 3.04 | A               | ER  | 44.134                       | 0.623         | 2.47 | A               | ER  | 0.000               | 0.80                         | 0.253         | 2.03 | A               | ER             | 44.134                                    |  |
|                          |            | SNAGGRS4             | 34,925                     | --                                | 1.67          | 58.32                  | 1.4                          | 0.253         | 2.51 | A               | ER  | 44.134                       | 0.623         | 2.02 | A               | ER  | 0.000               | 0.80                         | 0.253         | 1.67 | A               | ER             | 44.134                                    |  |
|                          |            | SNS5A                | 35,550                     | --                                | 1.64          | 58.30                  | 1.4                          | 0.253         | 2.45 | A               | ER  | 44.134                       | 0.623         | 2.03 | A               | ER  | 0.000               | 0.80                         | 0.253         | 1.64 | A               | ER             | 44.134                                    |  |
|                          |            | SNS6A                | 39,950                     | --                                | 1.49          | 59.52                  | 1.4                          | 0.253         | 2.24 | A               | ER  | 44.134                       | 0.623         | 1.84 | A               | ER  | 0.000               | 0.80                         | 0.253         | 1.49 | A               | ER             | 44.134                                    |  |
|                          | TTST       | SNS7B                | 42,000                     | --                                | 1.42          | 59.64                  | 1.4                          | 0.253         | 2.13 | A               | ER  | 44.134                       | 0.623         | 1.79 | A               | ER  | 0.000               | 0.80                         | 0.253         | 1.42 | A               | ER             | 44.134                                    |  |
|                          |            | TNAGRIT3             | 33,000                     | --                                | 1.82          | 60.06                  | 1.4                          | 0.253         | 2.73 | A               | ER  | 44.134                       | 0.623         | 2.19 | A               | ER  | 0.000               | 0.80                         | 0.253         | 1.82 | A               | ER             | 44.134                                    |  |
|                          |            | TNT4A                | 33,075                     | --                                | 1.82          | 60.19                  | 1.4                          | 0.253         | 2.73 | A               | ER  | 44.134                       | 0.623         | 2.15 | A               | ER  | 0.000               | 0.80                         | 0.253         | 1.82 | A               | ER             | 44.134                                    |  |
|                          |            | TNT6A                | 41,600                     | --                                | 1.48          | 61.56                  | 1.4                          | 0.253         | 2.22 | A               | ER  | 44.134                       | 0.623         | 1.87 | A               | ER  | 0.000               | 0.80                         | 0.253         | 1.48 | A               | ER             | 44.134                                    |  |
|                          |            | TNT7A                | 42,000                     | --                                | 1.49          | 62.58                  | 1.4                          | 0.253         | 2.23 | A               | ER  | 44.134                       | 0.623         | 1.84 | A               | ER  | 0.000               | 0.80                         | 0.253         | 1.49 | A               | ER             | 44.134                                    |  |
|                          |            | TNT7B                | 42,000                     | --                                | 1.53          | 64.26                  | 1.4                          | 0.253         | 2.29 | A               | ER  | 44.134                       | 0.623         | 1.76 | A               | ER  | 0.000               | 0.80                         | 0.253         | 1.53 | A               | ER             | 44.134                                    |  |
|                          |            | TNAGRIT4             | 43,000                     | --                                | 1.46          | 62.78                  | 1.4                          | 0.253         | 2.19 | A               | ER  | 44.134                       | 0.623         | 1.70 | A               | ER  | 0.000               | 0.80                         | 0.253         | 1.46 | A               | ER             | 44.134                                    |  |
| TNAGT5A                  | 45,000     | --                   | 1.38                       | 62.10                             | 1.4           | 0.253                  | 2.07                         | A             | ER   | 44.134          | 0.623                                     | 1.67                         | A             | ER   | 0.000           | 0.80                                      | 0.253               | 1.38                         | A             | ER   | 44.134          |                |   |  |
| TNAGT5B                  | 45,000     | <b>3</b>             | 1.37                       | 61.65                             | 1.4           | 0.253                  | 2.05                         | A             | ER   | 44.134          | 0.623                                     | 1.62                         | A             | ER   | 0.000           | 0.80                                      | 0.253               | <b>1.37</b>                  | A             | ER   | <b>44.134</b>   |                |   |  |

LOAD FACTORS:

|                                     |             |               |               |
|-------------------------------------|-------------|---------------|---------------|
| DESIGN<br>LOAD<br>RATING<br>FACTORS | LIMIT STATE | $\gamma_{DC}$ | $\gamma_{DW}$ |
|                                     | STRENGTH I  | 1.25          | 1.50          |
|                                     | SERVICE III | 1.00          | 1.00          |

NOTES:

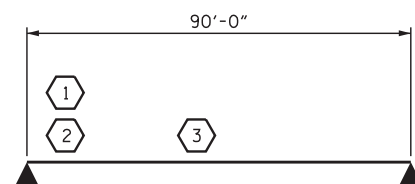
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

|  |                            |
|--|----------------------------|
| #  | CONTROLLING LOAD RATING    |
| 1  | DESIGN LOAD RATING (HL-93) |
| 2  | DESIGN LOAD RATING (HS-20) |
| 3  | LEGAL LOAD RATING **       |
| ** SEE CHART FOR VEHICLE TYPE  |                            |
| GIRDER LOCATION  |                            |
| I - INTERIOR GIRDER<br>EL - EXTERIOR LEFT GIRDER<br>ER - EXTERIOR RIGHT GIRDER |                            |



LRFR SUMMARY  
(SPAN A)

PROJECT NO. B-5549  
CATAWBA COUNTY  
 STATION: 15+27.00-L-

REPLACES BR. NO. 170327



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

LRFR SUMMARY FOR  
 90' BOX BEAM UNIT  
 60° SKEW  
 (NON-INTERSTATE TRAFFIC)

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
 804-C N. LAFAYETTE ST  
 SHELBY, NC 28150  
 PH (704) 476-0003  
 CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.       |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                 |
| 1         |     |       | 3   |     |       | S-6             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 26 |

ASSEMBLED BY : JLA DATE : 3/15  
 CHECKED BY : RDE DATE : 3/15

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT. THE 2 1/2" Ø DOWEL HOLES AT EXPANSION ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH JOINT SEALER MATERIAL TO 1/2" ABOVE THE TOP OF DOWELS AND THEN FILLED WITH GROUT.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

ALL REINFORCING STEEL IN VERTICAL BARRIER RAILS AND CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE VERTICAL BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN VERTICAL BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF VERTICAL BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

GROOVED CONTRACTION JOINTS, 1/4" IN DEPTH, SHALL BE TOOLED IN THE TOP OF WEARING SURFACE AT INTERIOR BENTS WITH CONTINUOUS CONCRETE WEARING SURFACE IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS.

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2" AT END BENT NO. 1 AND END BENT NO. 2.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE RAIL. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

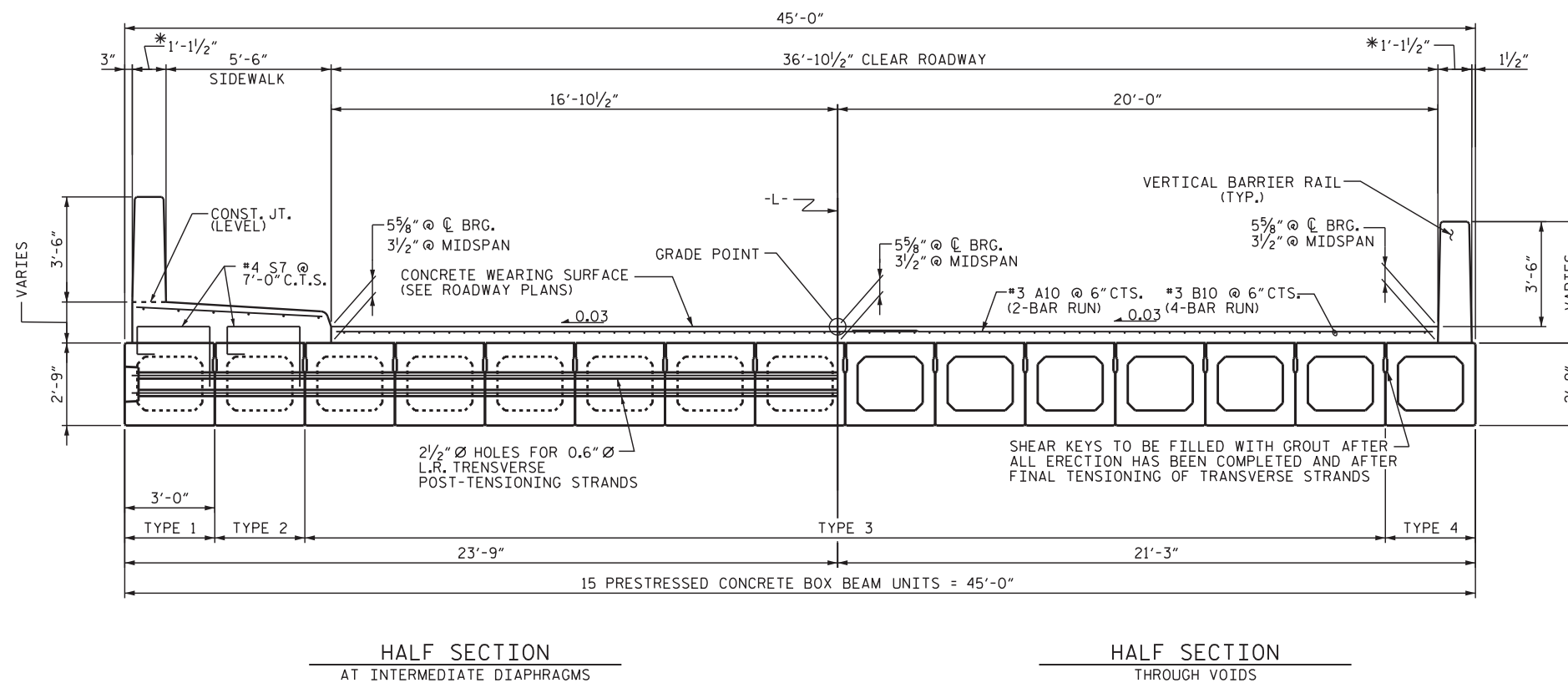
THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

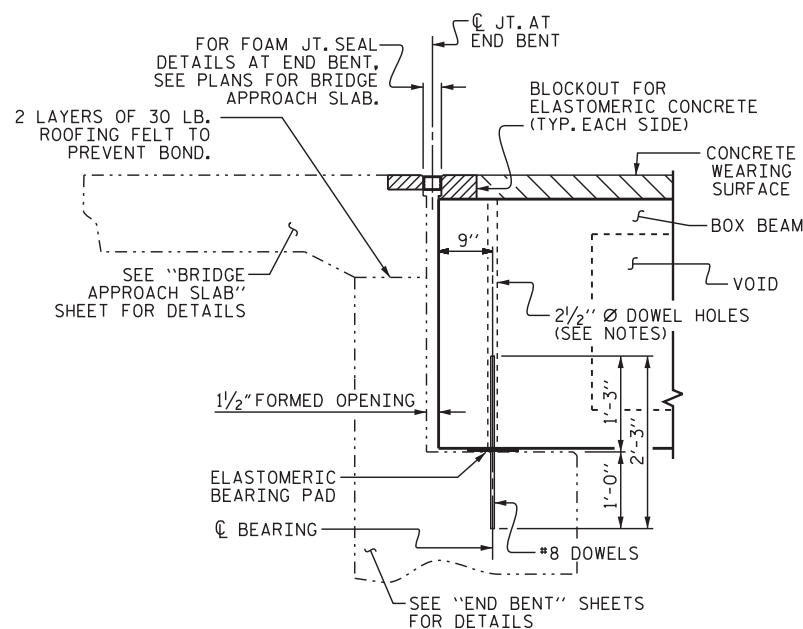


TYPICAL SECTION

THE MAXIMUM BARRIER RAIL HEIGHT AND CONCRETE THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND CONCRETE THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND CONCRETE THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

\* RAIL WIDTH INCLUDES 1/2" MAX. FORM LINER RELIEF ALONG INSIDE FACE ONLY.

FIXED END



SECTION AT END BENT

PROJECT NO. B-5549

CATAWBA COUNTY

STATION: 15+27.00-L-

SHEET 1 OF 6 REPLACES BR. NO. 170327

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3'-0" X 2'-9"  
PRESTRESSED CONCRETE  
BOX BEAM UNIT

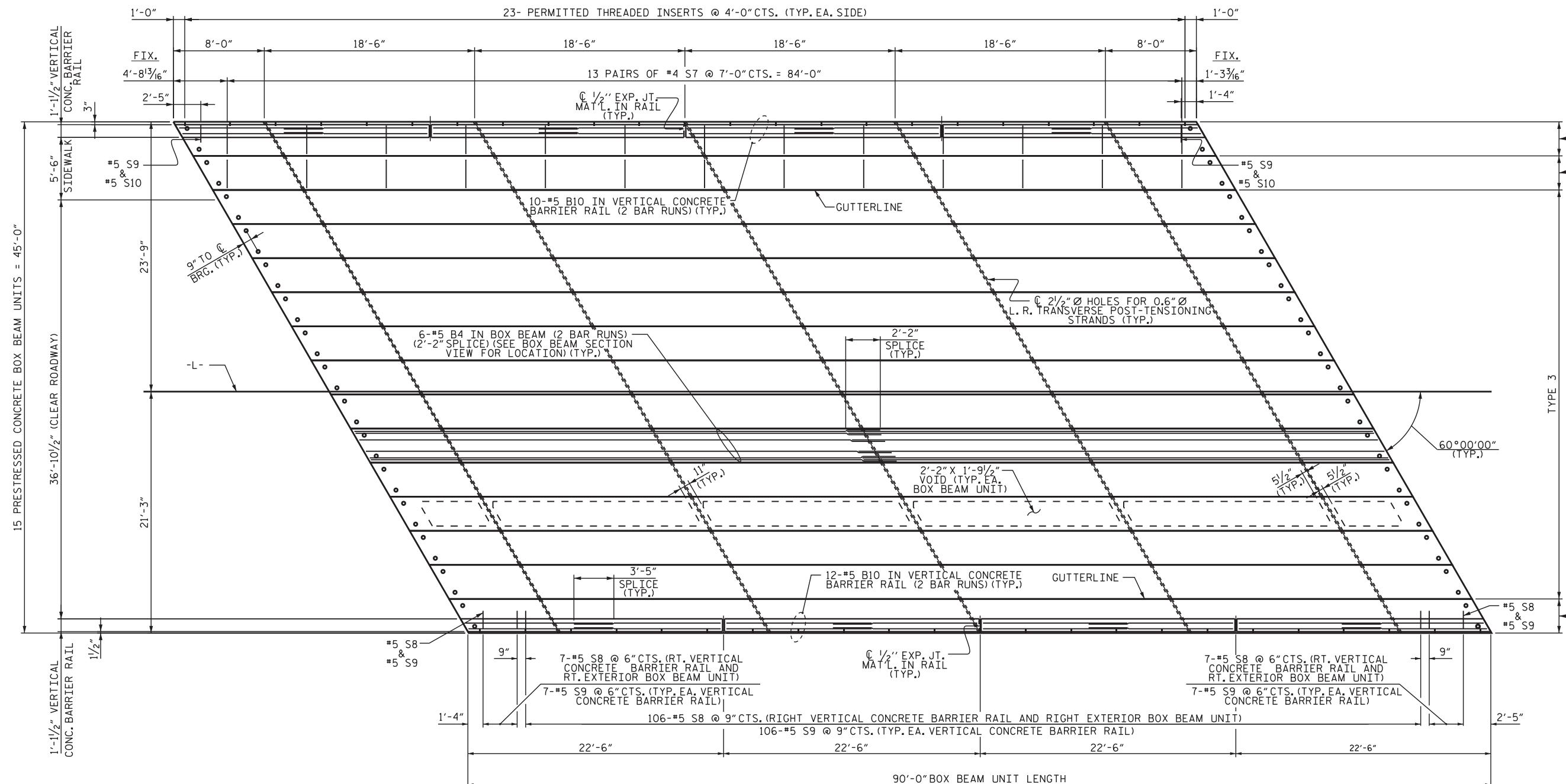
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
804-C N. LAFAYETTE ST  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

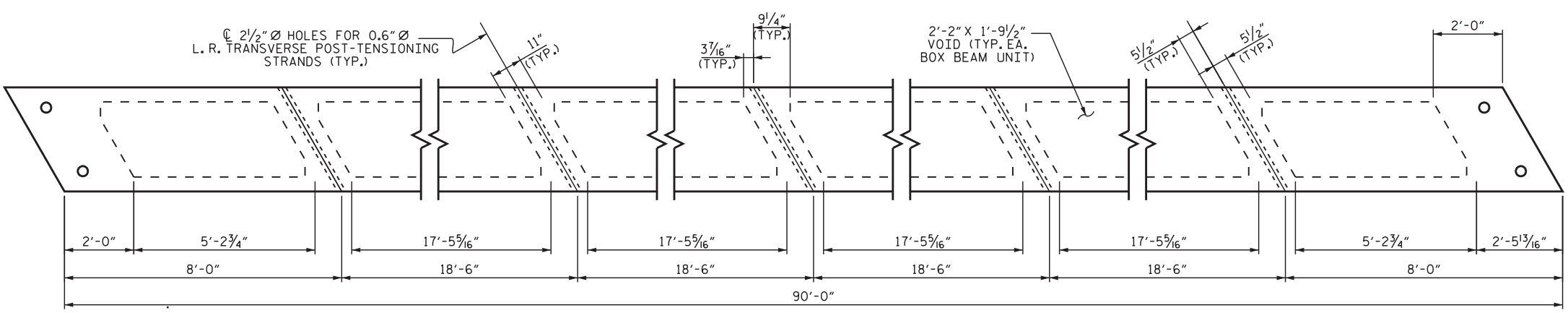
| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-7          |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 26           |

|                |     |        |         |
|----------------|-----|--------|---------|
| ASSEMBLED BY : | JLA | DATE : | 3/15    |
| CHECKED BY :   | RDE | DATE : | 3/15    |
| DRAWN BY :     | TLA | 5/05   | MAA/GM  |
| CHECKED BY :   | GM  | 6/05   | MAA/GM  |
|                |     |        | RWW/TMG |

\*\*\*\*\*SYSTEM\*\*\*\*\*  
\*\*\*\*\*DCN\*\*\*\*\*  
\*\*\*\*\*USERNAME\*\*\*\*\*



PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. B-5549  
 CATAWBA COUNTY  
 STATION: 15+27.00-L-  
 SHEET 2 OF 6 REPLACES BR. NO. 170327

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
 804-C N. LAFAYETTE ST  
 SHELBY, NC 28150  
 PH (704) 476-0003  
 CORP. LICENSE NO.: C-0275

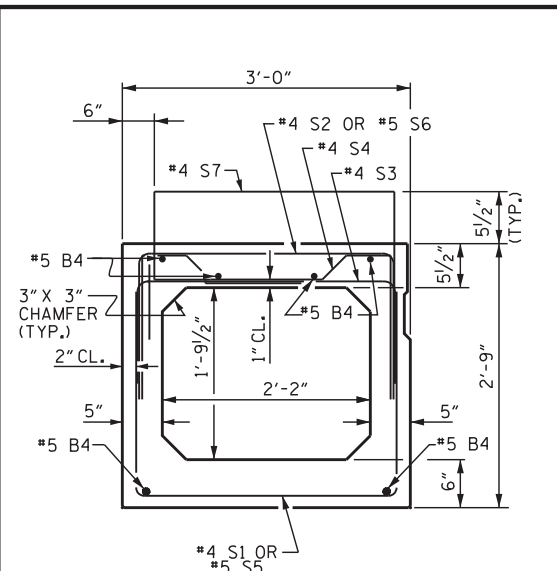
12/29/2015

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

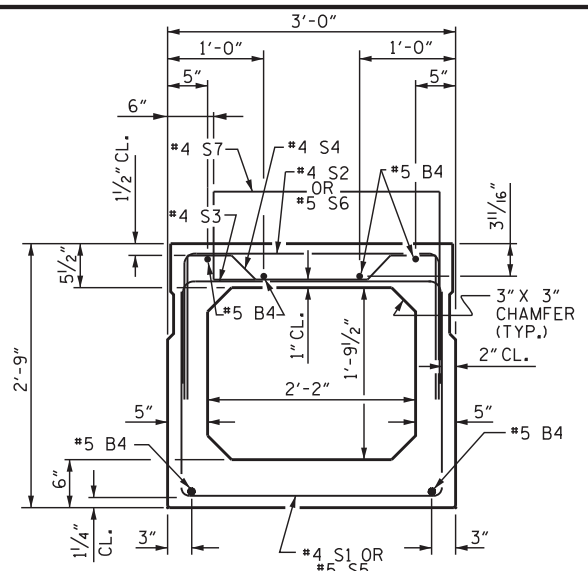
PLAN OF 90' UNIT  
 36'-10 1/2" CLEAR ROADWAY  
 60° SKEW

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-8          |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 26           |

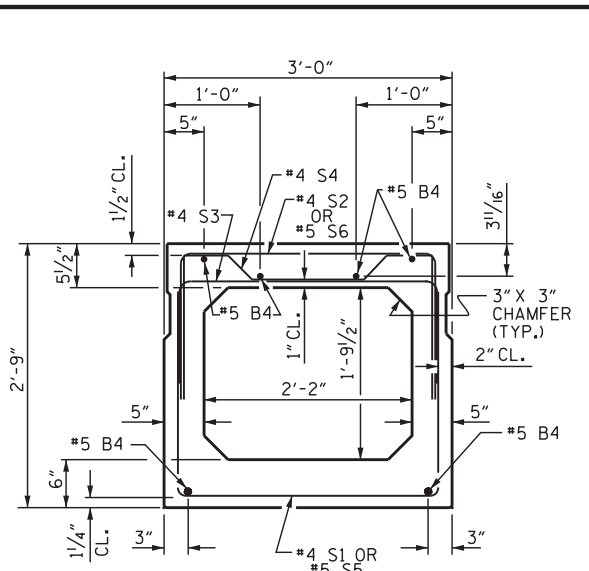
ASSEMBLED BY : JLA DATE : 3/15  
 CHECKED BY : RDE DATE : 3/15  
 DRAWN BY : DGE 8/11  
 CHECKED BY : TMG 11/11



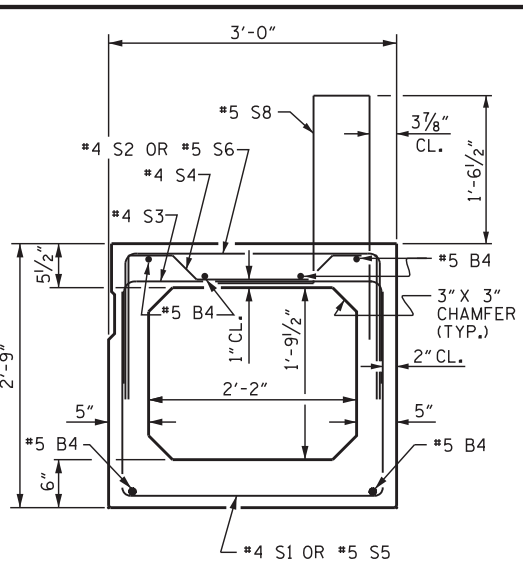
**EXTERIOR BOX BEAM SECTION**  
(STRAND LAYOUT NOT SHOWN)  
(TYPE 1)



**INTERIOR BOX BEAM SECTION**  
(STRAND LAYOUT NOT SHOWN)  
(TYPE 2)

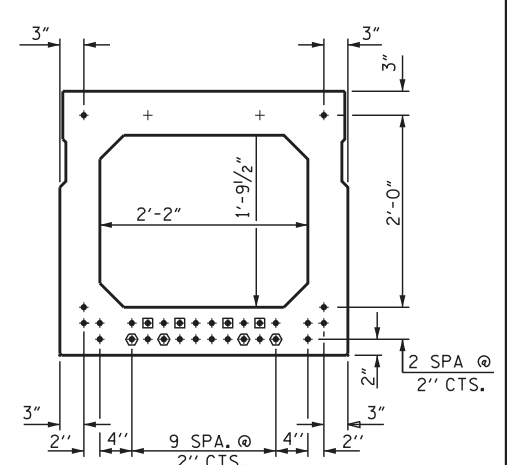


**INTERIOR BOX BEAM SECTION**  
(STRAND LAYOUT NOT SHOWN)  
(TYPE 3)



**EXTERIOR BOX BEAM SECTION**  
(STRAND LAYOUT NOT SHOWN)  
(TYPE 4)

**0.6" Ø LOW RELAXATION STRAND LAYOUT**

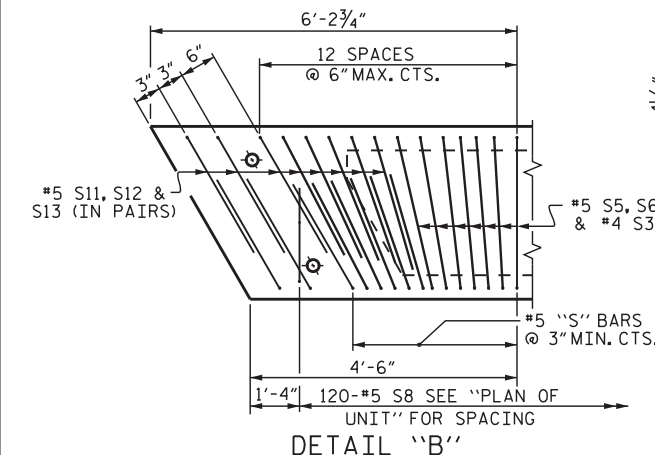


**TYPICAL STRAND LOCATION**  
(30 STRANDS REQUIRED)

**DEBONDING LEGEND**

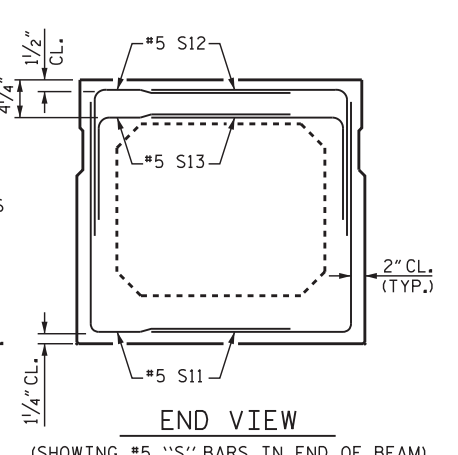
- FULLY BONDED STRANDS
- ◻ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◻ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.



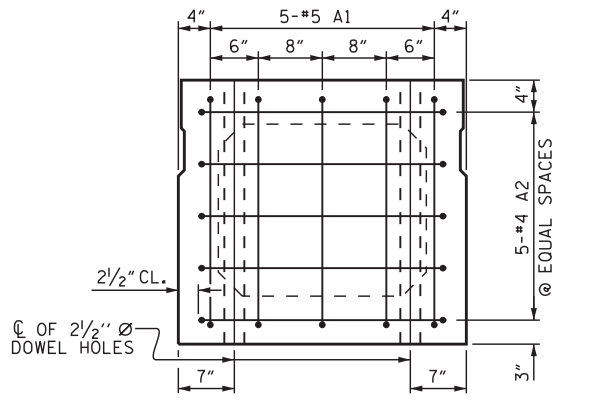
**DETAIL "B"**

RIGHT EXTERIOR UNIT SHOWN, OTHER UNITS SIMILAR EXCEPT OMIT #5 S8 BARS. "B" BARS AND "A" BARS NOT SHOWN.



**END VIEW**

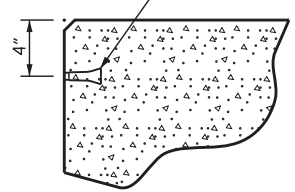
(SHOWING #5 "S" BARS IN END OF BEAM)



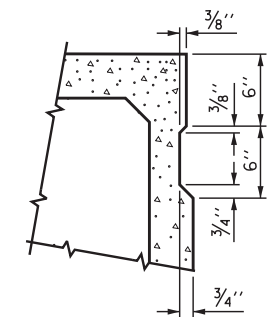
**END ELEVATION**

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)

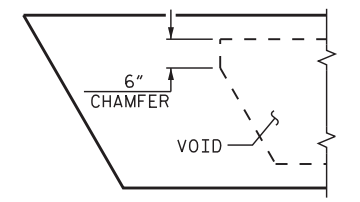
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



**THREADED INSERT DETAIL**

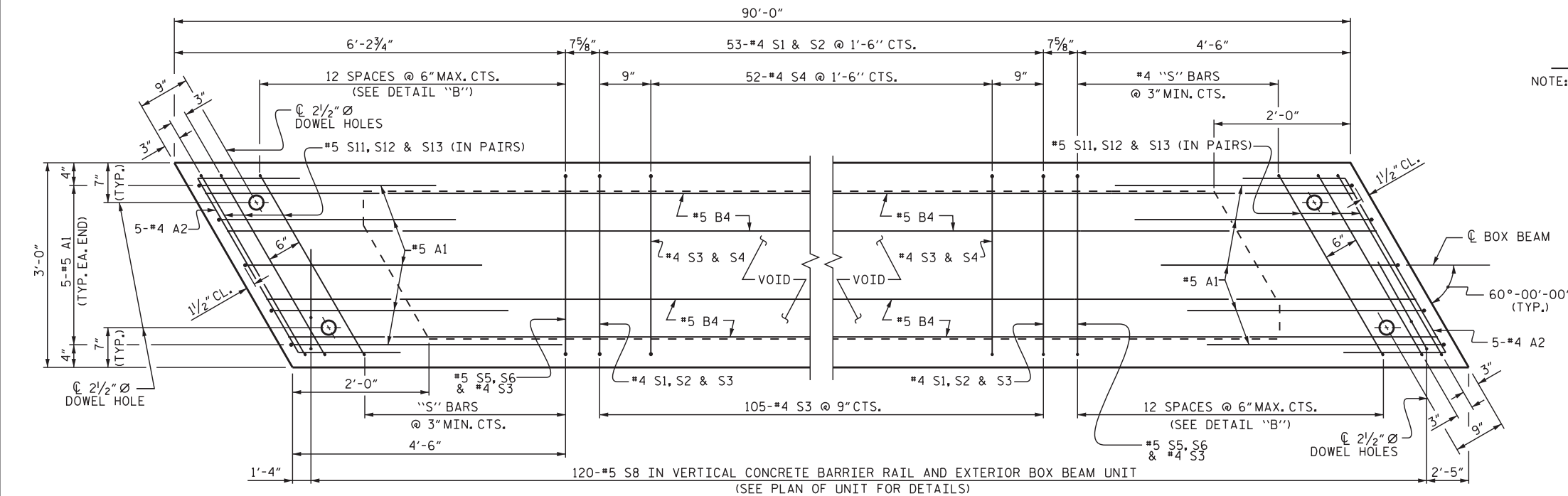


**SHEAR KEY DETAIL**  
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.



**CHAMFER DETAIL**  
SHOWING 6" VOID CHAMFER

| GRADE 270 STRANDS                     |        |
|---------------------------------------|--------|
| AREA ( SQUARE INCHES )                | 0.217  |
| ULTIMATE STRENGTH ( LBS. PER STRAND ) | 58,600 |
| APPLIED PRESTRESS ( LBS. PER STRAND ) | 43,950 |



**PLAN OF BOX BEAM**

EXTERIOR UNIT TYPE 4 SHOWN, EXTERIOR UNIT TYPE 1 AND INTERIOR UNIT TYPE 2 SIMILAR EXCEPT OMIT #5 S8 BARS AND ADD #4 S7 BARS, INTERIOR UNIT TYPE 3 SIMILAR EXCEPT OMIT #5 S8 BARS. FOR LOCATION OF DIAPHRAGMS, SEE PLAN OF UNIT. FOR REINFORCING STEEL IN DIAPHRAGMS, SEE DIAPHRAGM DETAILS.

|                |           |        |      |
|----------------|-----------|--------|------|
| ASSEMBLED BY : | JLA       | DATE : | 3/15 |
| CHECKED BY :   | RDE       | DATE : | 3/15 |
| DRAWN BY :     | DGE 11/11 |        |      |
| CHECKED BY :   | TMG 11/11 |        |      |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
804-C N. LAFAYETTE ST  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
3'-0" X 2'-9"  
PRESTRESSED CONCRETE  
BOX BEAM UNIT

| REVISIONS |     |       |     |     |       | SHEET NO.       |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-9             |
| 1         |     |       | 3   |     |       | TOTAL SHEETS 26 |
| 2         |     |       | 4   |     |       |                 |

PROJECT NO. B-5549  
CATAWBA COUNTY  
STATION: 15+27.00-L-  
SHEET 3 OF 6 REPLACES BR. NO. 170327

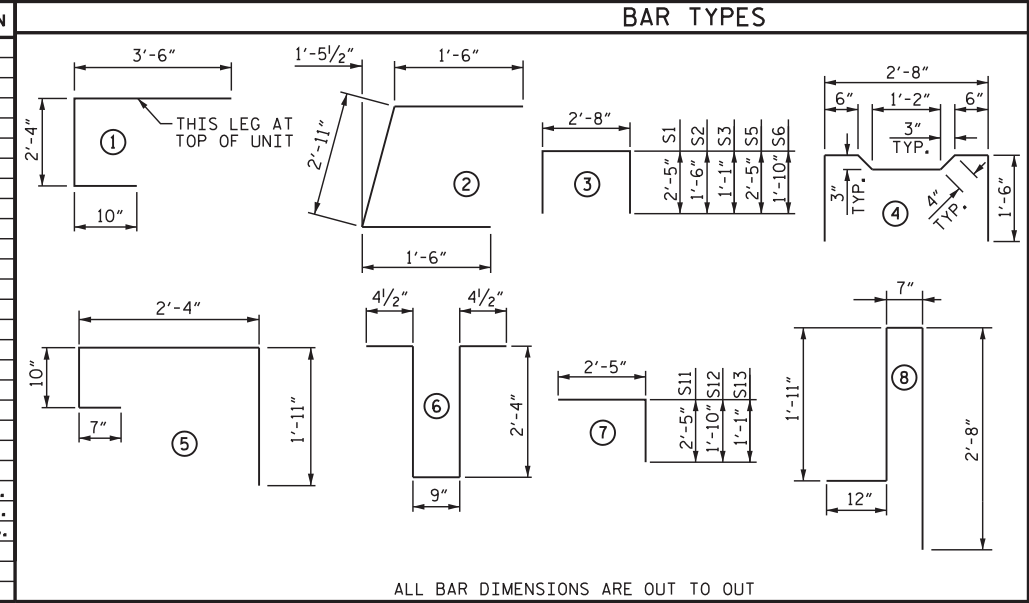


**BOX BEAM UNITS REQUIRED**

|               | NUMBER | LENGTH | TOTAL LENGTH |
|---------------|--------|--------|--------------|
| EXTERIOR B.B. | 2      | 90'-0" | 180'-0"      |
| INTERIOR B.B. | 13     | 90'-0" | 1170'-0"     |
| TOTAL         | 15     |        | 1350'-0"     |

**BILL OF MATERIAL FOR ONE BOX BEAM SECTION**

|                             |        |      |      | EXTERIOR UNIT 1 |          |
|-----------------------------|--------|------|------|-----------------|----------|
| BAR                         | NUMBER | SIZE | TYPE | LENGTH          | WEIGHT   |
| A1                          | 10     | #5   | 1    | 6'-8"           | 70       |
| A2                          | 40     | #4   | 2    | 5'-11"          | 158      |
| B4                          | 12     | #5   | STR  | 45'-11"         | 575      |
| K1                          | 15     | #4   | 6    | 6'-2"           | 62       |
| K2                          | 10     | #4   | STR  | 2'-10"          | 19       |
| S1                          | 53     | #4   | 3    | 7'-6"           | 266      |
| S2                          | 53     | #4   | 3    | 5'-8"           | 201      |
| S3                          | 119    | #4   | 3    | 4'-10"          | 384      |
| S4                          | 52     | #4   | 4    | 5'-10"          | 203      |
| S5                          | 14     | #5   | 3    | 7'-6"           | 110      |
| S6                          | 14     | #5   | 3    | 6'-4"           | 92       |
| S11                         | 32     | #5   | 7    | 4'-10"          | 161      |
| S12                         | 32     | #5   | 7    | 4'-3"           | 142      |
| S13                         | 32     | #5   | 7    | 3'-6"           | 117      |
| * S7                        | 13     | #4   | 5    | 5'-8"           | 49       |
| REINFORCING STEEL           |        |      |      | 2560            | LBS.     |
| * EPOXY COATED REINF. STEEL |        |      |      | 49              | LBS.     |
| 8000 P.S.I. CONCRETE        |        |      |      | 16.1            | CU. YDS. |
| 0.6" Ø L.R. STRANDS         |        |      |      | No.             | 30       |



**BILL OF MATERIAL FOR ONE BOX BEAM SECTION**

|                             |        |      |      | INTERIOR UNIT 2 |          |
|-----------------------------|--------|------|------|-----------------|----------|
| BAR                         | NUMBER | SIZE | TYPE | LENGTH          | WEIGHT   |
| A1                          | 10     | #5   | 1    | 6'-8"           | 70       |
| A2                          | 40     | #4   | 2    | 5'-11"          | 158      |
| B4                          | 12     | #5   | STR  | 45'-11"         | 575      |
| K1                          | 15     | #4   | 6    | 6'-2"           | 62       |
| K2                          | 10     | #4   | STR  | 2'-10"          | 19       |
| S1                          | 53     | #4   | 3    | 7'-6"           | 266      |
| S2                          | 53     | #4   | 3    | 5'-8"           | 201      |
| S3                          | 119    | #4   | 3    | 4'-10"          | 384      |
| S4                          | 52     | #4   | 4    | 5'-10"          | 203      |
| S5                          | 14     | #5   | 3    | 7'-6"           | 110      |
| S6                          | 14     | #5   | 3    | 6'-4"           | 92       |
| S11                         | 32     | #5   | 7    | 4'-10"          | 161      |
| S12                         | 32     | #5   | 7    | 4'-3"           | 142      |
| S13                         | 32     | #5   | 7    | 3'-6"           | 117      |
| * S7                        | 13     | #4   | 5    | 5'-8"           | 49       |
| REINFORCING STEEL           |        |      |      | 2560            | LBS.     |
| * EPOXY COATED REINF. STEEL |        |      |      | 49              | LBS.     |
| 8000 P.S.I. CONCRETE        |        |      |      | 16.0            | CU. YDS. |
| 0.6" Ø L.R. STRANDS         |        |      |      | No.             | 30       |

**BILL OF MATERIAL FOR ONE BOX BEAM SECTION**

|                             |        |      |      | INTERIOR UNIT 3 |          |
|-----------------------------|--------|------|------|-----------------|----------|
| BAR                         | NUMBER | SIZE | TYPE | LENGTH          | WEIGHT   |
| A1                          | 10     | #5   | 1    | 6'-8"           | 70       |
| A2                          | 40     | #4   | 2    | 5'-11"          | 158      |
| B4                          | 12     | #5   | STR  | 45'-11"         | 575      |
| K1                          | 15     | #4   | 6    | 6'-2"           | 62       |
| K2                          | 10     | #4   | STR  | 2'-10"          | 19       |
| S1                          | 53     | #4   | 3    | 7'-6"           | 266      |
| S2                          | 53     | #4   | 3    | 5'-8"           | 201      |
| S3                          | 119    | #4   | 3    | 4'-10"          | 384      |
| S4                          | 52     | #4   | 4    | 5'-10"          | 203      |
| S5                          | 14     | #5   | 3    | 7'-6"           | 110      |
| S6                          | 14     | #5   | 3    | 6'-4"           | 92       |
| S11                         | 32     | #5   | 7    | 4'-10"          | 161      |
| S12                         | 32     | #5   | 7    | 4'-3"           | 142      |
| S13                         | 32     | #5   | 7    | 3'-6"           | 117      |
| REINFORCING STEEL           |        |      |      | 2560            | LBS.     |
| * EPOXY COATED REINF. STEEL |        |      |      | 772             | LBS.     |
| 8000 P.S.I. CONCRETE        |        |      |      | 16.0            | CU. YDS. |
| 0.6" Ø L.R. STRANDS         |        |      |      | No.             | 30       |

**BILL OF MATERIAL FOR ONE BOX BEAM SECTION**

|                             |        |      |      | EXTERIOR UNIT 4 |          |
|-----------------------------|--------|------|------|-----------------|----------|
| BAR                         | NUMBER | SIZE | TYPE | LENGTH          | WEIGHT   |
| A1                          | 10     | #5   | 1    | 6'-8"           | 70       |
| A2                          | 40     | #4   | 2    | 5'-11"          | 158      |
| B4                          | 12     | #5   | STR  | 45'-11"         | 575      |
| K1                          | 15     | #4   | 6    | 6'-2"           | 62       |
| K2                          | 10     | #4   | STR  | 2'-10"          | 19       |
| S1                          | 53     | #4   | 3    | 7'-6"           | 266      |
| S2                          | 53     | #4   | 3    | 5'-8"           | 201      |
| S3                          | 119    | #4   | 3    | 4'-10"          | 384      |
| S4                          | 52     | #4   | 4    | 5'-10"          | 203      |
| S5                          | 14     | #5   | 3    | 7'-6"           | 110      |
| S6                          | 14     | #5   | 3    | 6'-4"           | 92       |
| S11                         | 32     | #5   | 7    | 4'-10"          | 161      |
| S12                         | 32     | #5   | 7    | 4'-3"           | 142      |
| S13                         | 32     | #5   | 7    | 3'-6"           | 117      |
| * S8                        | 120    | #5   | 8    | 6'-2"           | 772      |
| REINFORCING STEEL           |        |      |      | 2560            | LBS.     |
| * EPOXY COATED REINF. STEEL |        |      |      | 772             | LBS.     |
| 8000 P.S.I. CONCRETE        |        |      |      | 16.1            | CU. YDS. |
| 0.6" Ø L.R. STRANDS         |        |      |      | No.             | 30       |

PROJECT NO. B-5549  
 CATAWBA COUNTY  
 STATION: 15+27.00-L-  
 SHEET 5 OF 6 REPLACES BR. NO. 170327

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 2'-9"  
 PRESTRESSED CONCRETE  
 BOX BEAM UNIT

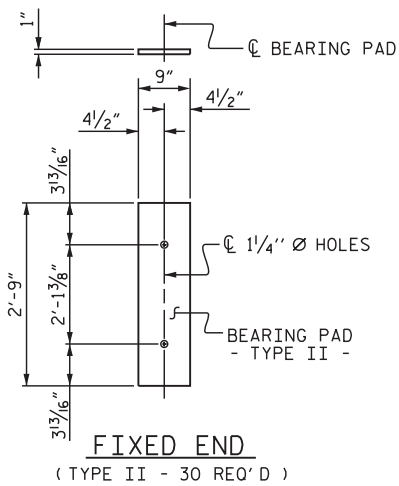
12/23/2015

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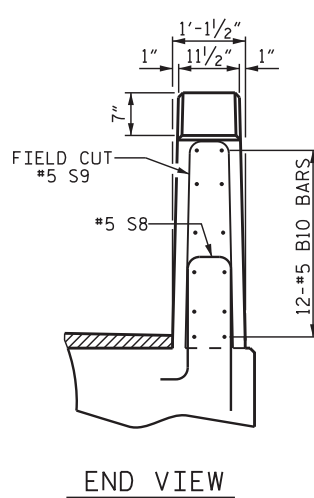
TGS ENGINEERS  
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 SHELBY, NC 28150  
 PH (704) 476-0003  
 CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.       |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                 |
| 1         |     |       | 3   |     |       | S-11            |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 26 |

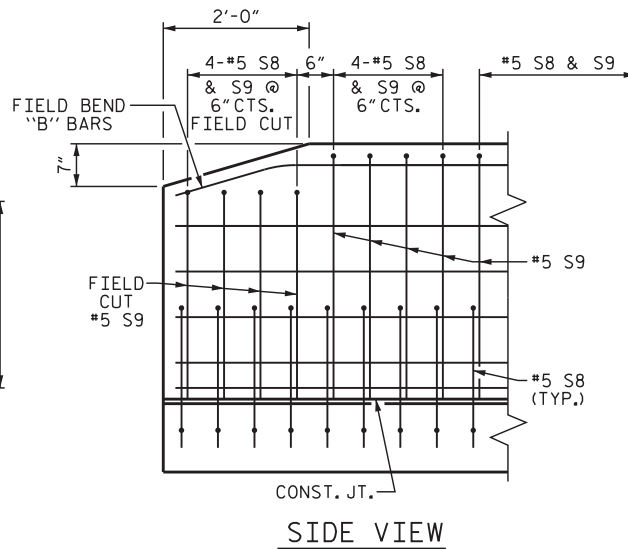
|                |           |        |      |
|----------------|-----------|--------|------|
| ASSEMBLED BY : | JLA       | DATE : | 3/15 |
| CHECKED BY :   | RDE       | DATE : | 3/15 |
| DRAWN BY :     | DGE 11/11 |        |      |
| CHECKED BY :   | TMG 11/11 |        |      |



**FIXED END**  
(TYPE II - 30 REQ'D)



**END VIEW**

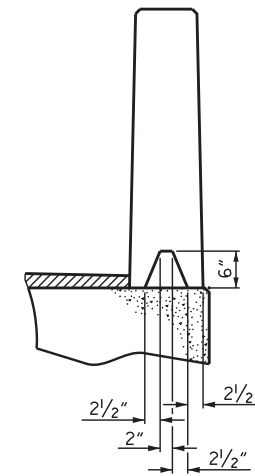


**SIDE VIEW**

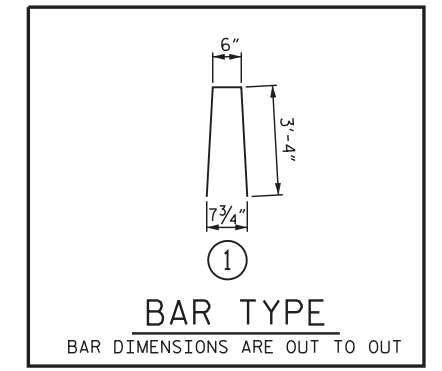
| BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL |                                 |      |      |         |        |
|---|---------------------------------|------|------|---------|--------|
| BAR   | BARS PER PAIR OF EXTERIOR UNITS | SIZE | TYPE | LENGTH  | WEIGHT |
|   | 90' UNIT                        |      |      |         |        |
| *B10  | 176                             | #5   | STR  | 13'-0"  | 2386   |
| *S9   | 240                             | #5   | 1    | 7'-2"   | 1794   |
| *EPOXY COATED REINFORCING STEEL                     |                                 |      |      | LBS.    | 4180   |
| CLASS AA CONCRETE                                   |                                 |      |      | CU.YDS. | 25.6   |
| TOTAL VERTICAL CONCRETE BARRIER RAIL                |                                 |      |      | LN. FT. | 180.0  |

| GUTTERLINE CONCRETE THICKNESS & RAIL HEIGHT |                                       |                          |
|---|---------------------------------------|--------------------------|
|   | CONCRETE OVERLAY THICKNESS @ MID-SPAN | * RAIL HEIGHT @ MID-SPAN |
| 90' UNITS                                   | 3/2"                                  | 3'-9 1/2"                |

\* RIGHT RAIL ONLY

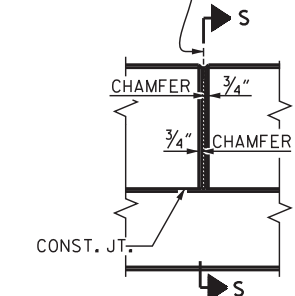


**SECTION S-S**  
AT DAM IN OPEN JOINT  
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

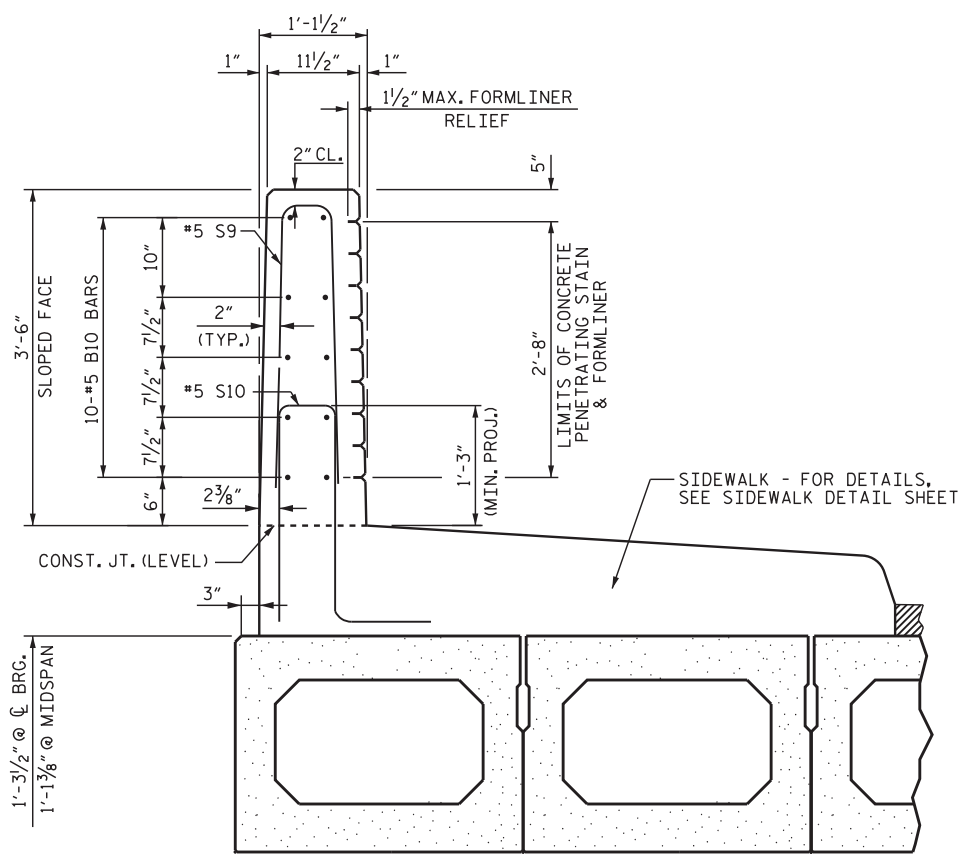


**BAR TYPE**  
BAR DIMENSIONS ARE OUT TO OUT

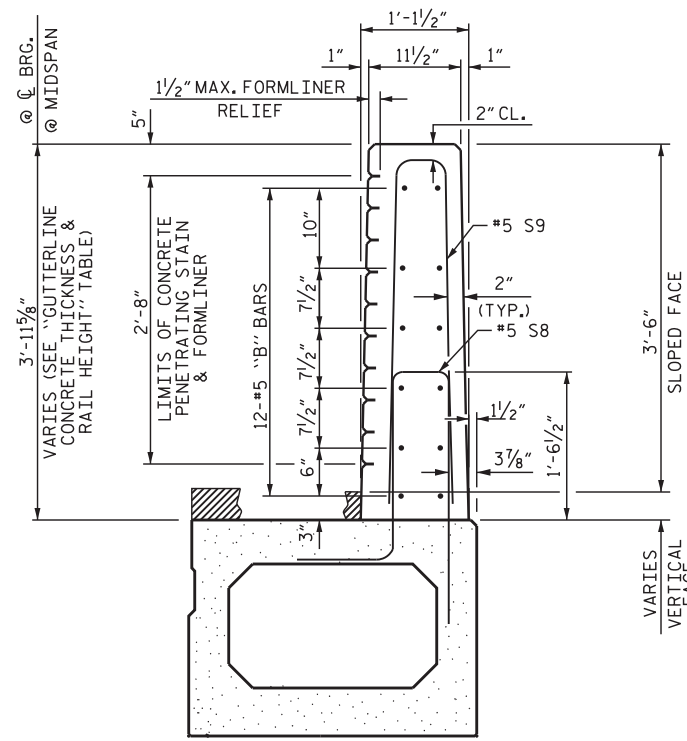
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.  
(NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED)



**ELEVATION AT EXPANSION JOINTS**



**SECTION THRU RAIL**



**SECTION THRU RAIL**

**VERTICAL CONCRETE BARRIER RAIL DETAILS**

|                        |             |
|------------------------|-------------|
| ASSEMBLED BY : RTJ     | DATE : 3/15 |
| CHECKED BY : RDE       | DATE : 3/15 |
| DRAWN BY : DGE 10/11   |             |
| CHECKED BY : TMC 11/11 |             |

\*\*\*\*\*SYSTEM\*\*\*\*\*  
\*\*\*\*\*DCN\*\*\*\*\*  
\*\*\*\*\*USERNAME\*\*\*\*\*

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CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

3'-0" X 2'-9"  
PRESTRESSED CONCRETE  
BOX BEAM UNIT

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-12         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 26           |

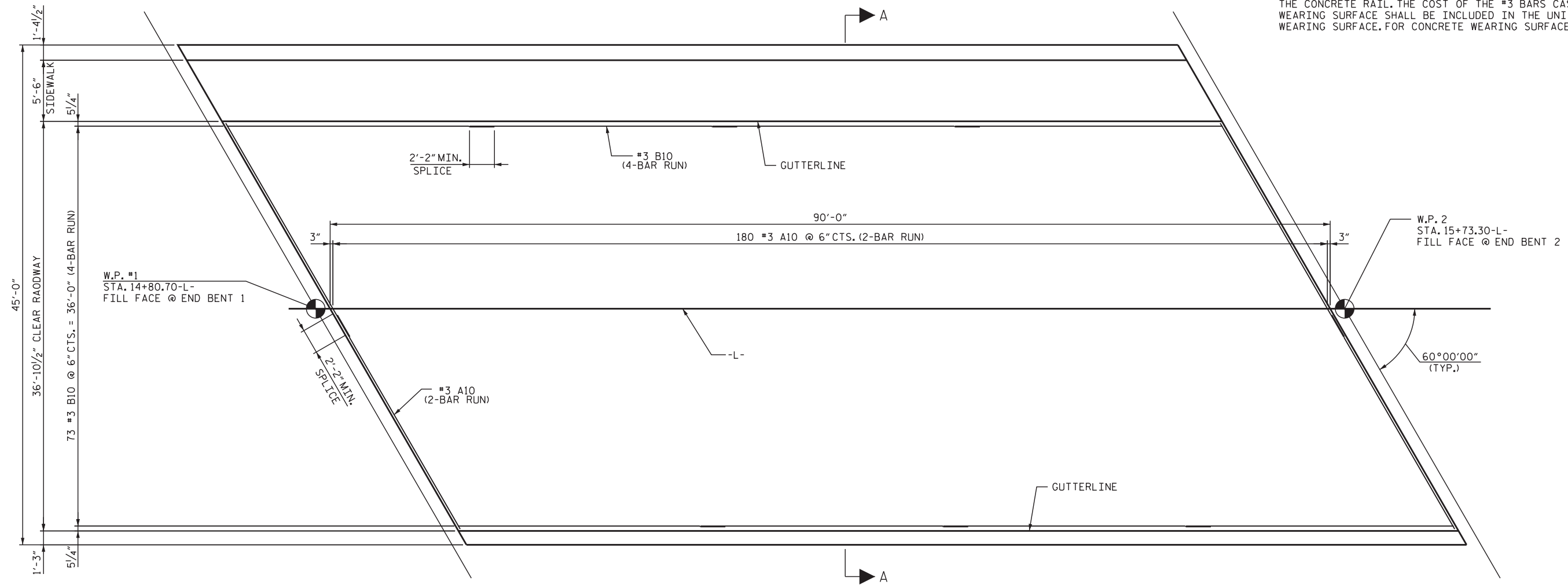
STD. NO. 33PCBB8\_60&120S

PROJECT NO. B-5549  
CATAWBA COUNTY  
STATION: 15+27.00-L-  
SHEET 6 OF 6 REPLACES BR. NO. 170327

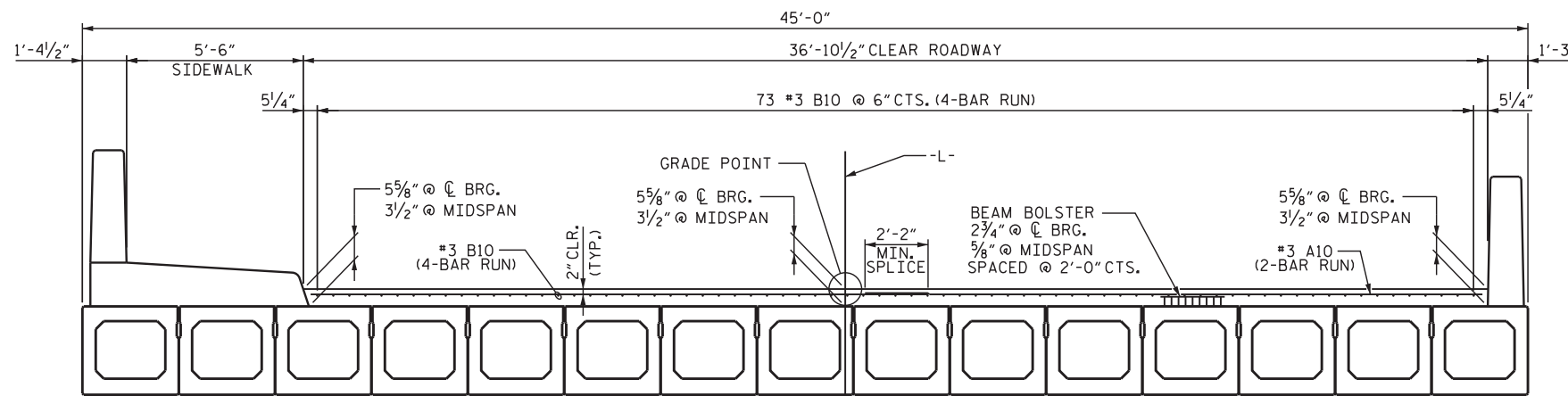




NOTE :  
 PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE RAIL. THE COST OF THE #3 BARS CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.



PLAN OF CONCRETE OVERLAY



SECTION A-A

| BILL OF MATERIAL FOR CONCRETE OVERLAY |        |      |      |        |          |
|---------------------------------------|--------|------|------|--------|----------|
| BAR                                   | NUMBER | SIZE | TYPE | LENGTH | WEIGHT   |
| * A10                                 | 360    | #3   | STR  | 22'-3" | 3012     |
| * B10                                 | 292    | #3   | STR  | 24'-1" | 2644     |
| * EPOXY COATED REINF. STEEL           |        |      |      | 5656   | LBS.     |
| CLASS AA CONCRETE                     |        |      |      | 46.8   | CU. YDS. |

PROJECT NO. B-5549  
 CATAWBA COUNTY  
 STATION: 15+27.00-L-

REPLACES BR. NO. 170327



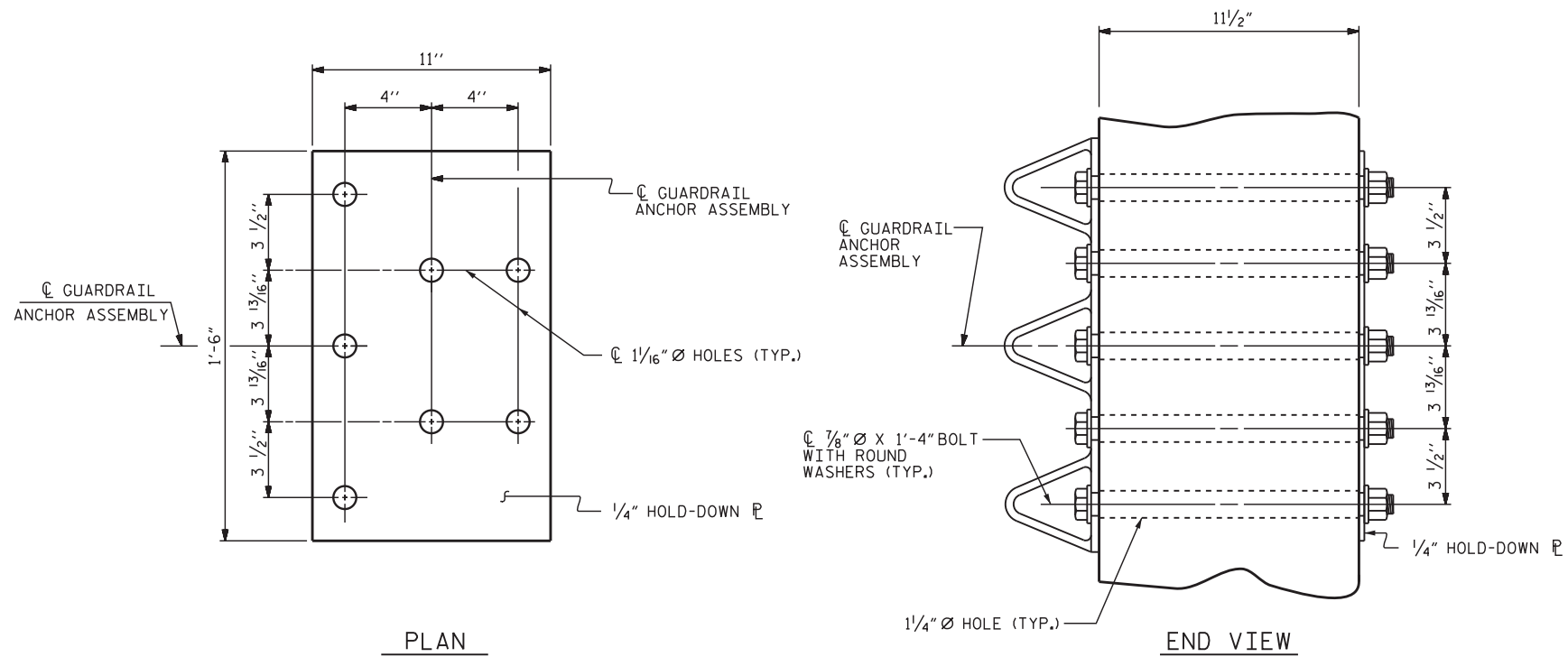
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

CONCRETE OVERLAY  
 DETAILS

ASSEMBLED BY : JLA DATE : 3/15  
 CHECKED BY : RDE DATE : 3/15

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 CORP. LICENSE NO.: C-0275

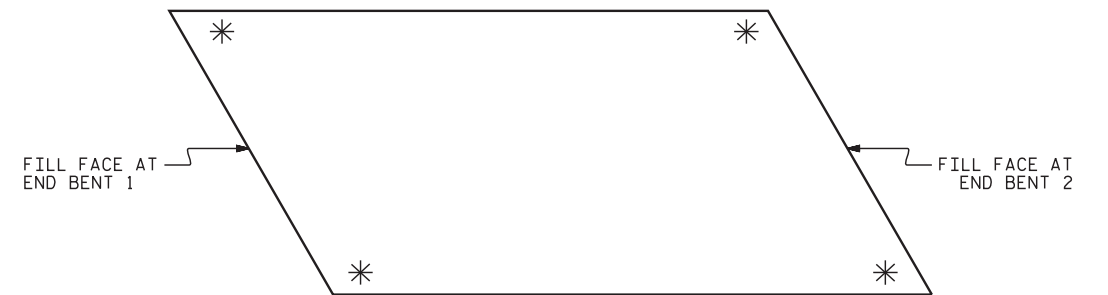
| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-14         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 26           |



**GUARDRAIL ANCHOR ASSEMBLY DETAILS**

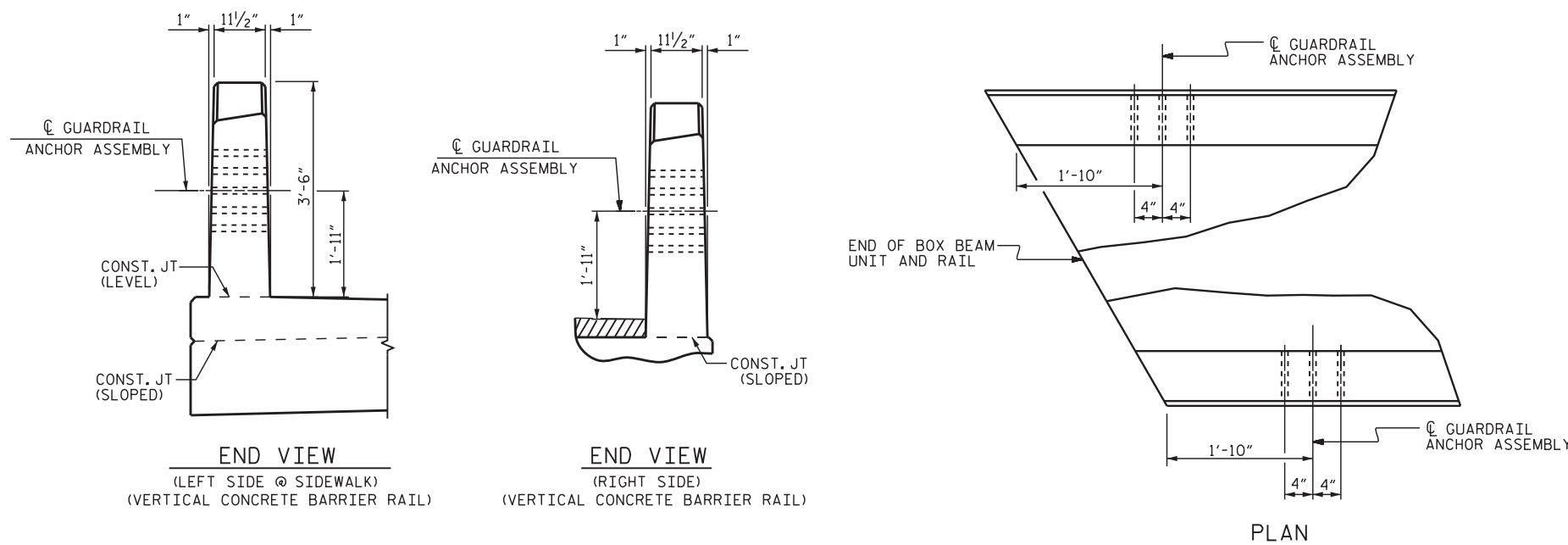
**NOTES**

- THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.
- THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36, AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
- BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.
- AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.
- THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.
- THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.
- THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



**SKETCH SHOWING POINTS OF ATTACHMENT**

\* LOCATION OF GUARDRAIL ATTACHMENT



**LOCATION OF GUARDRAIL ANCHOR AT END OF RAIL**

PROJECT NO. B-5549  
CATAWBA COUNTY  
 STATION: 15+27.00-L-

REPLACES BR. NO. 170327



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**STANDARD  
 GUARDRAIL ANCHORAGE  
 DETAILS**

|                |     |              |        |
|----------------|-----|--------------|--------|
| ASSEMBLED BY : | NMW | DATE :       | 3/15   |
| CHECKED BY :   | RDE | DATE :       | 3/15   |
| DRAWN BY :     | MAA | REV. 10/1/11 | MAA/GM |
| CHECKED BY :   | GM  | REV. 12/5/11 | MAA/GM |
|                |     | REV. 6/13    | MAA/GM |

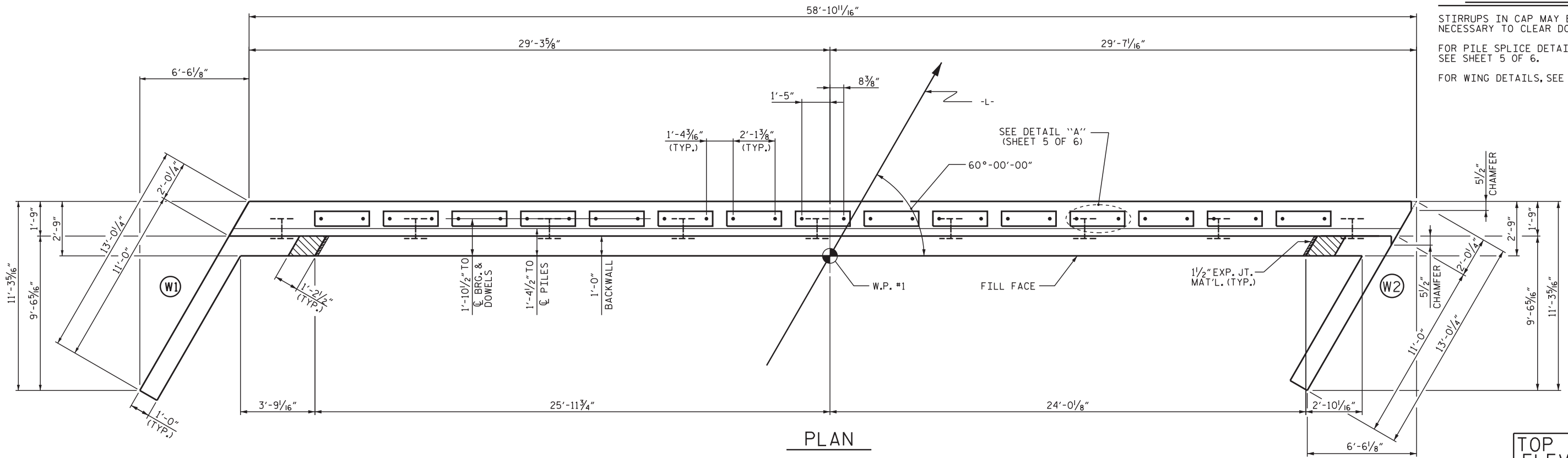
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| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | TOTAL SHEETS |
| 1         |     |       | 3   |     |       | S-15         |
| 2         |     |       | 4   |     |       | 26           |

**NOTES**

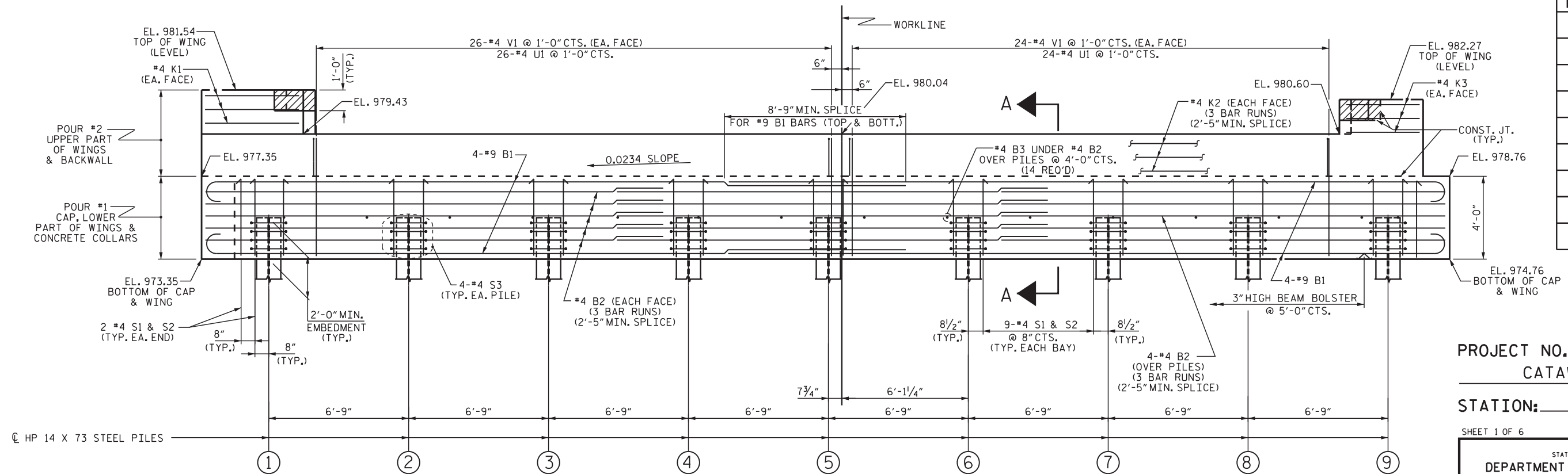
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.  
 FOR PILE SPICE DETAILS, SEE SHEET 5 OF 6.  
 FOR WING DETAILS, SEE SHEET 2 OF 6.



**PLAN**

**TOP OF PILE ELEVATIONS**

|   |        |
|---|--------|
| ① | 975.42 |
| ② | 975.58 |
| ③ | 975.74 |
| ④ | 975.90 |
| ⑤ | 976.06 |
| ⑥ | 976.22 |
| ⑦ | 976.37 |
| ⑧ | 976.53 |
| ⑨ | 976.69 |



**ELEVATION**

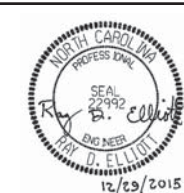
WINGS NOT SHOWN FOR CLARITY.  
 FOR SECTION A-A, SEE SHEET 5 OF 6.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 5 OF 6.

PROJECT NO. B-5549  
 CATAWBA COUNTY  
 STATION: 15+27.00-L-

SHEET 1 OF 6 REPLACES BR. NO. 170327

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT #1

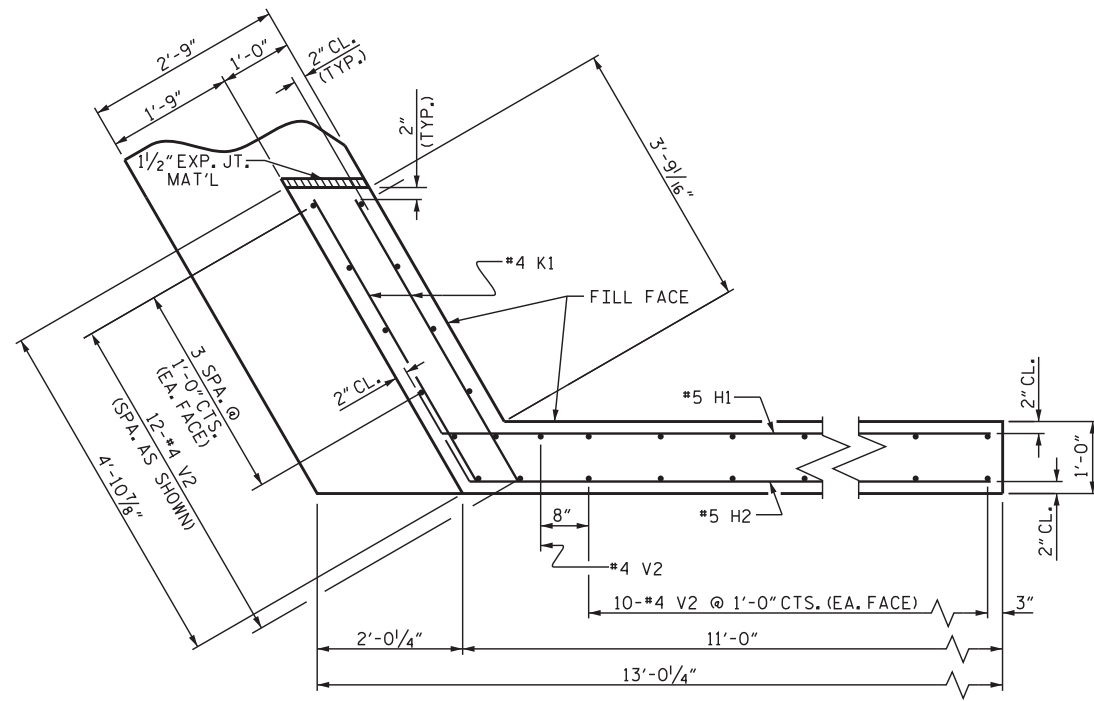


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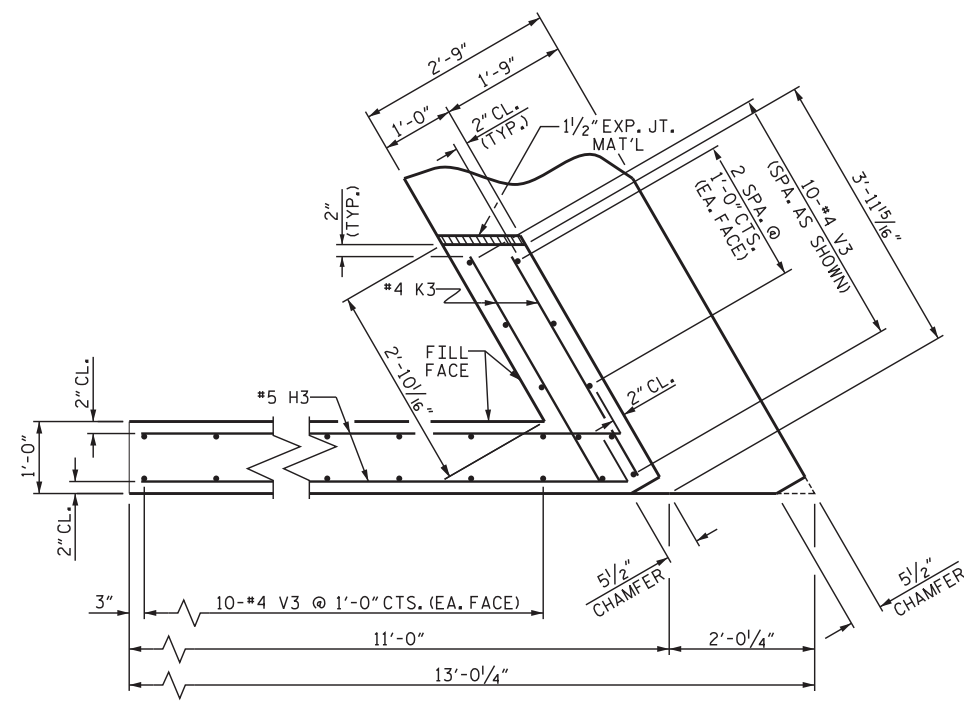
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| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 26           |

DRAWN BY : NMW DATE : 3/15  
 CHECKED BY : RDE DATE : 3/15

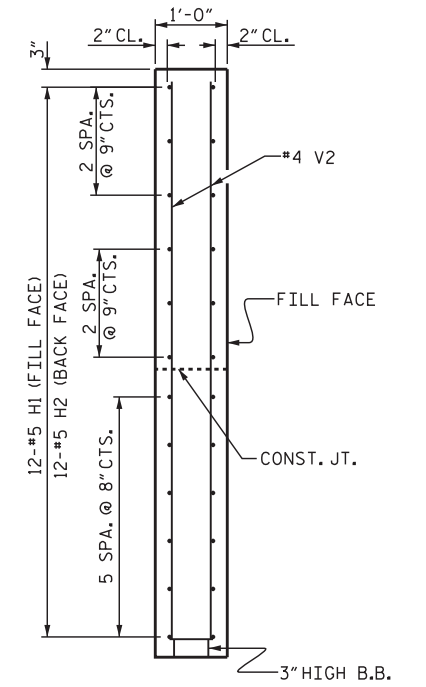
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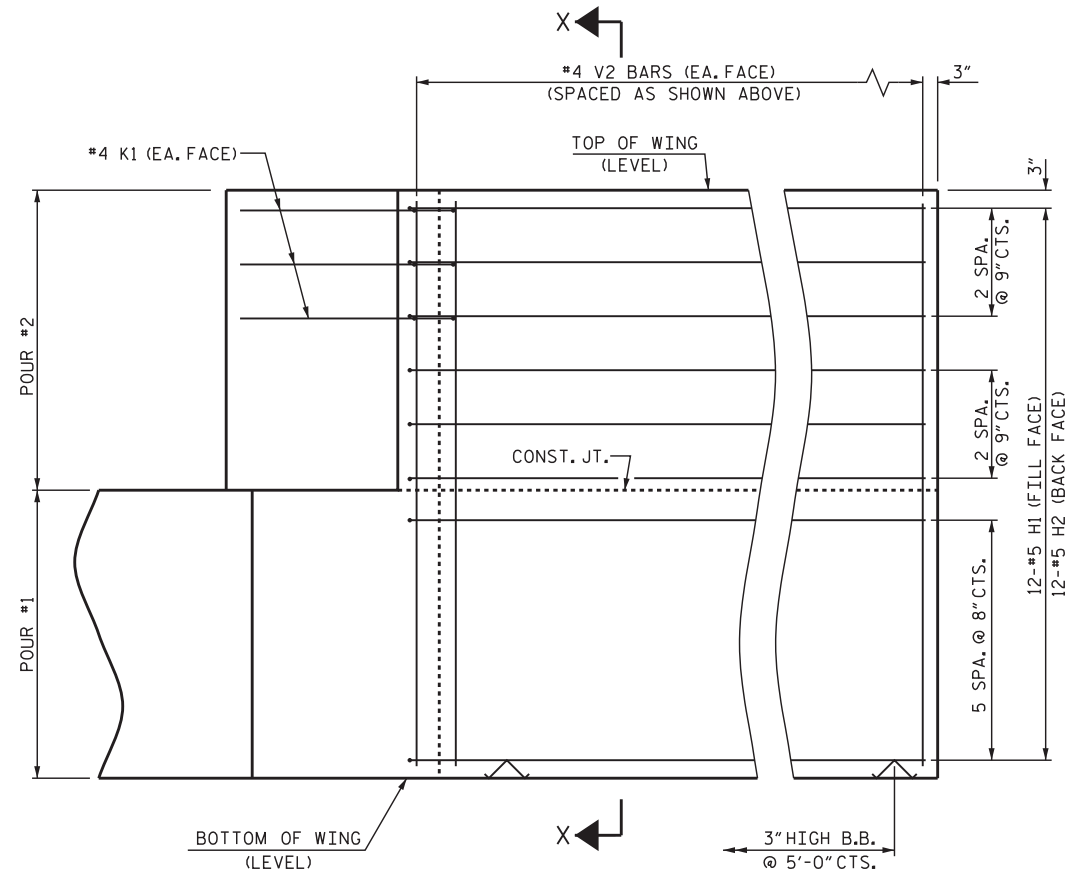
PLAN OF WING (W1)



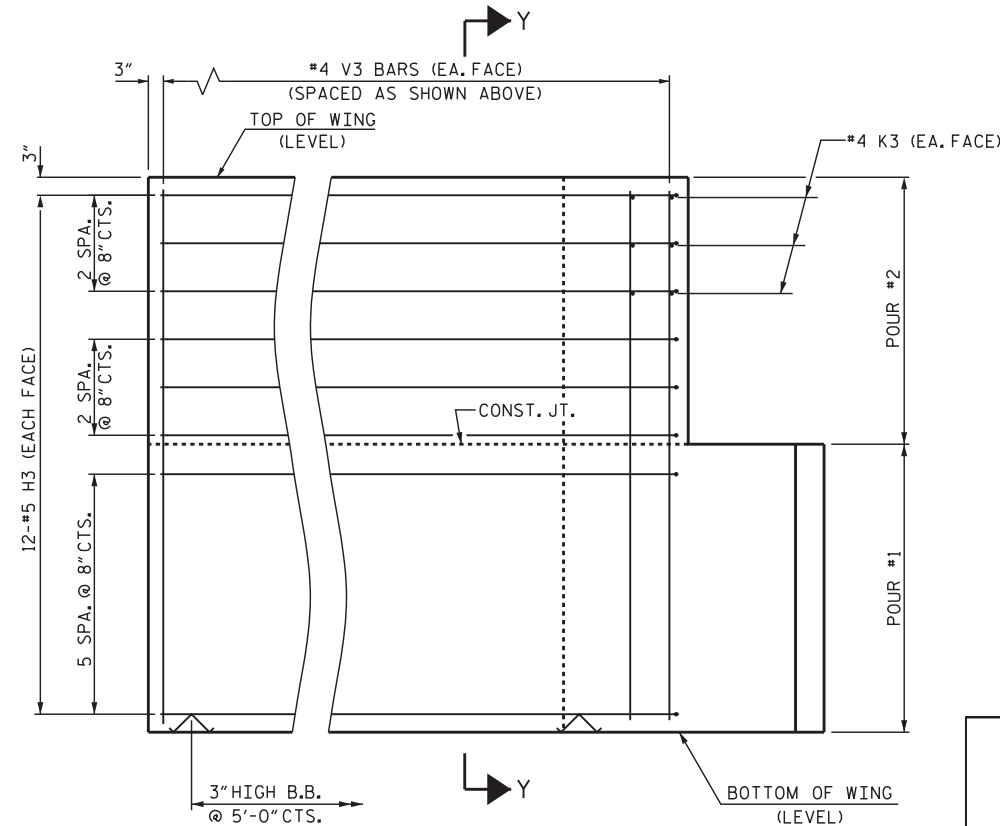
PLAN OF WING (W2)



SECTION X-X

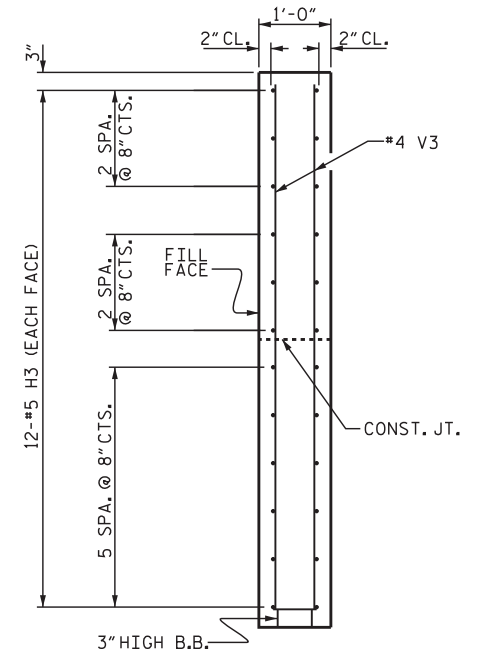


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS



SECTION Y-Y

PROJECT NO. B-5549

CATAWBA COUNTY

STATION: 15+27.00-L-

SHEET 2 OF 6 REPLACES BR. NO. 170327



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

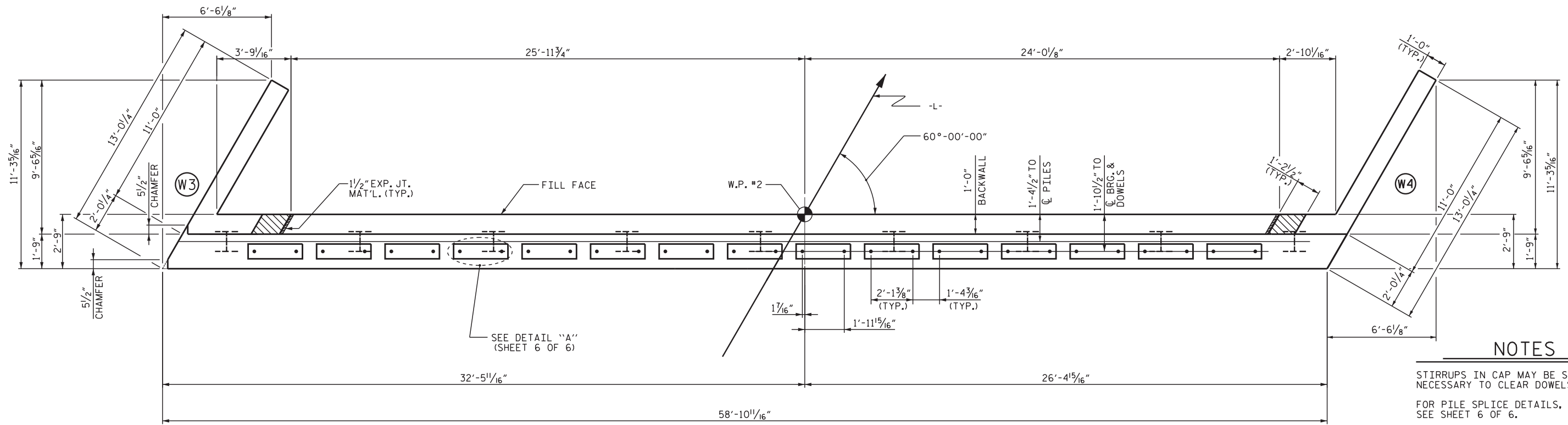
SUBSTRUCTURE  
END BENT #1  
WING DETAILS

DRAWN BY : NMW DATE : 3/15  
CHECKED BY : RDE DATE : 3/15

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SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

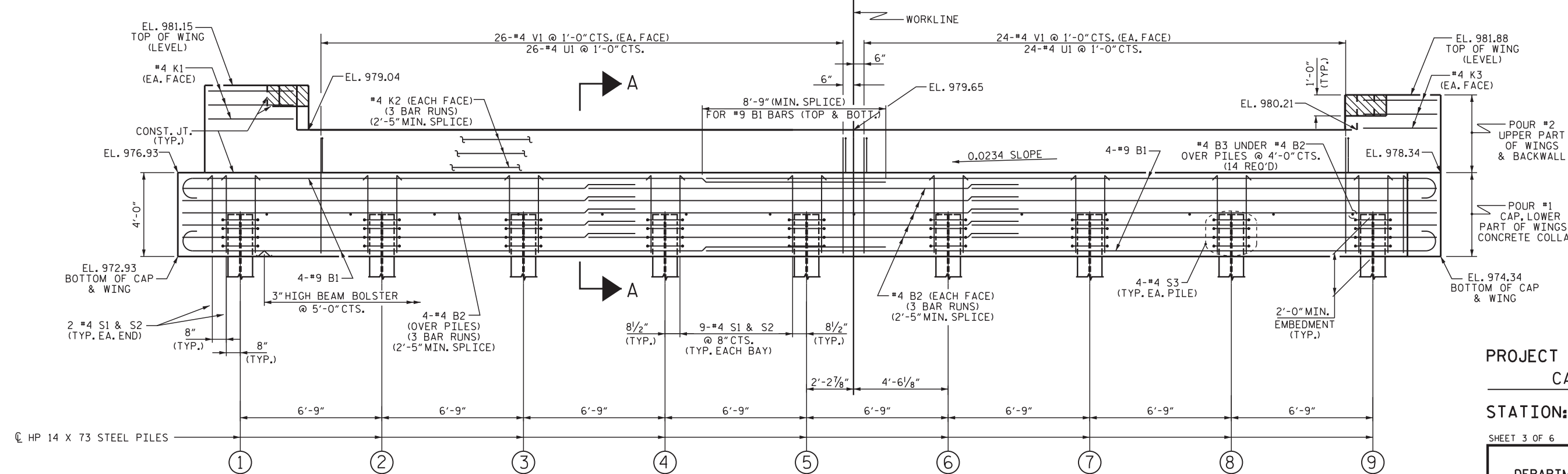
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|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-17         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 26           |



**NOTES**

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.  
 FOR PILE SPLICE DETAILS, SEE SHEET 6 OF 6.  
 FOR WING DETAILS, SEE SHEET 4 OF 6.

**PLAN**



| TOP OF PILE ELEVATIONS |        |
|------------------------|--------|
| ①                      | 975.00 |
| ②                      | 975.16 |
| ③                      | 975.32 |
| ④                      | 975.47 |
| ⑤                      | 975.63 |
| ⑥                      | 975.79 |
| ⑦                      | 975.95 |
| ⑧                      | 976.11 |
| ⑨                      | 976.26 |

**ELEVATION**

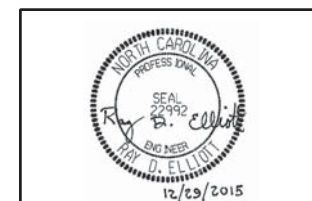
WINGS NOT SHOWN FOR CLARITY.  
 FOR SECTION A-A, SEE SHEET 6 OF 6.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 6 OF 6.

PROJECT NO. B-5549  
 CATAWBA COUNTY  
 STATION: 15+27.00-L-

SHEET 3 OF 6 REPLACES BR. NO. 170327

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT #2

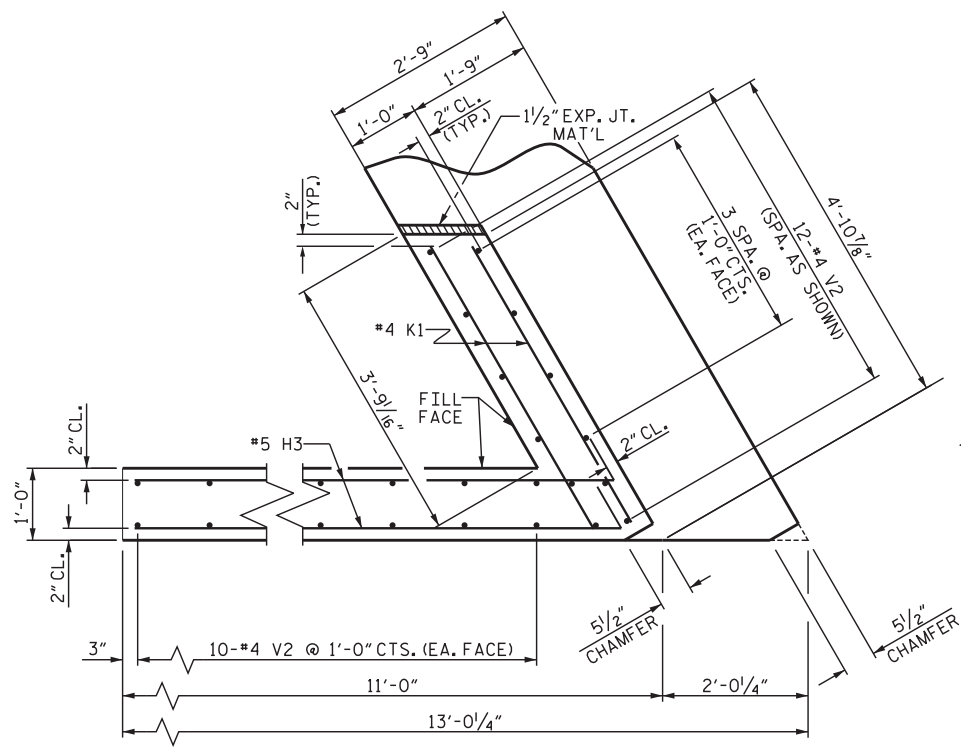


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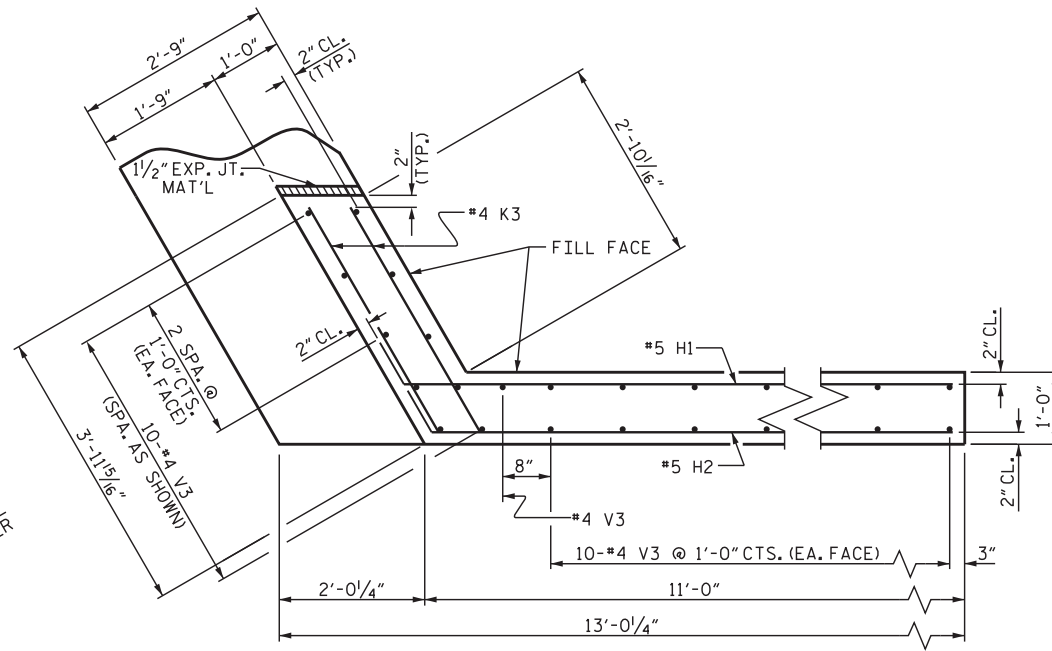
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| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-18         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 26           |

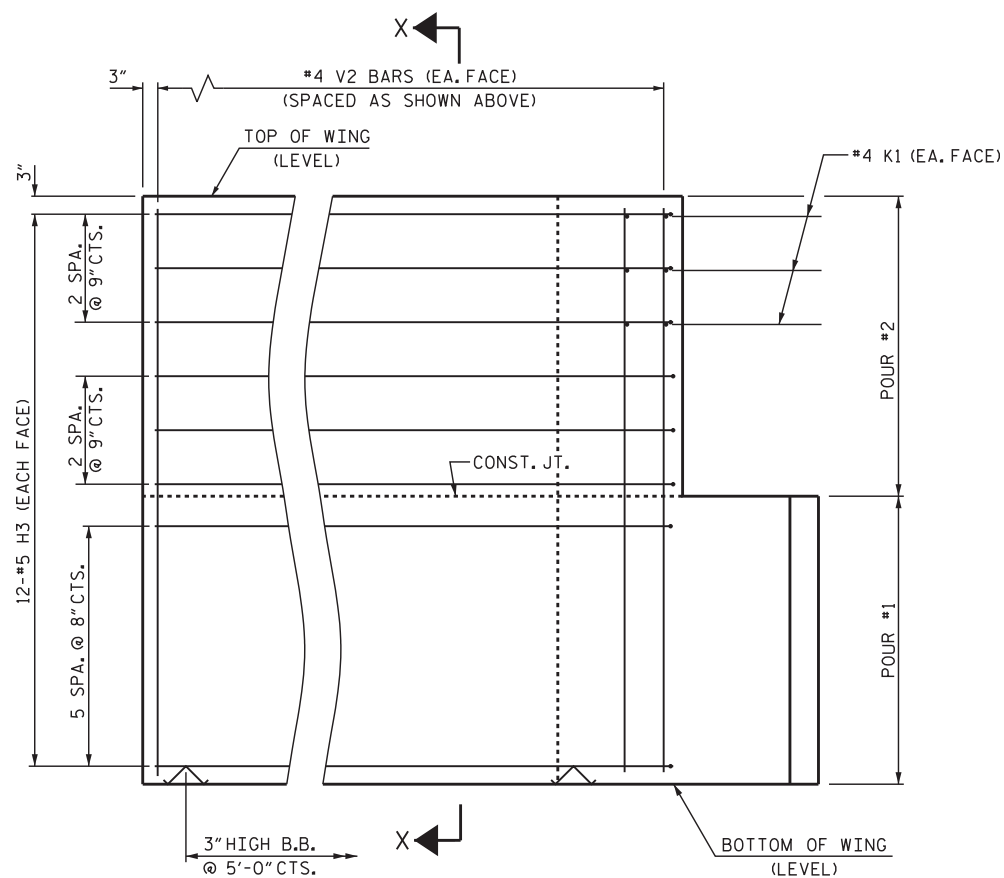
DRAWN BY : NMW DATE : 3/15  
 CHECKED BY : RDE DATE : 3/15



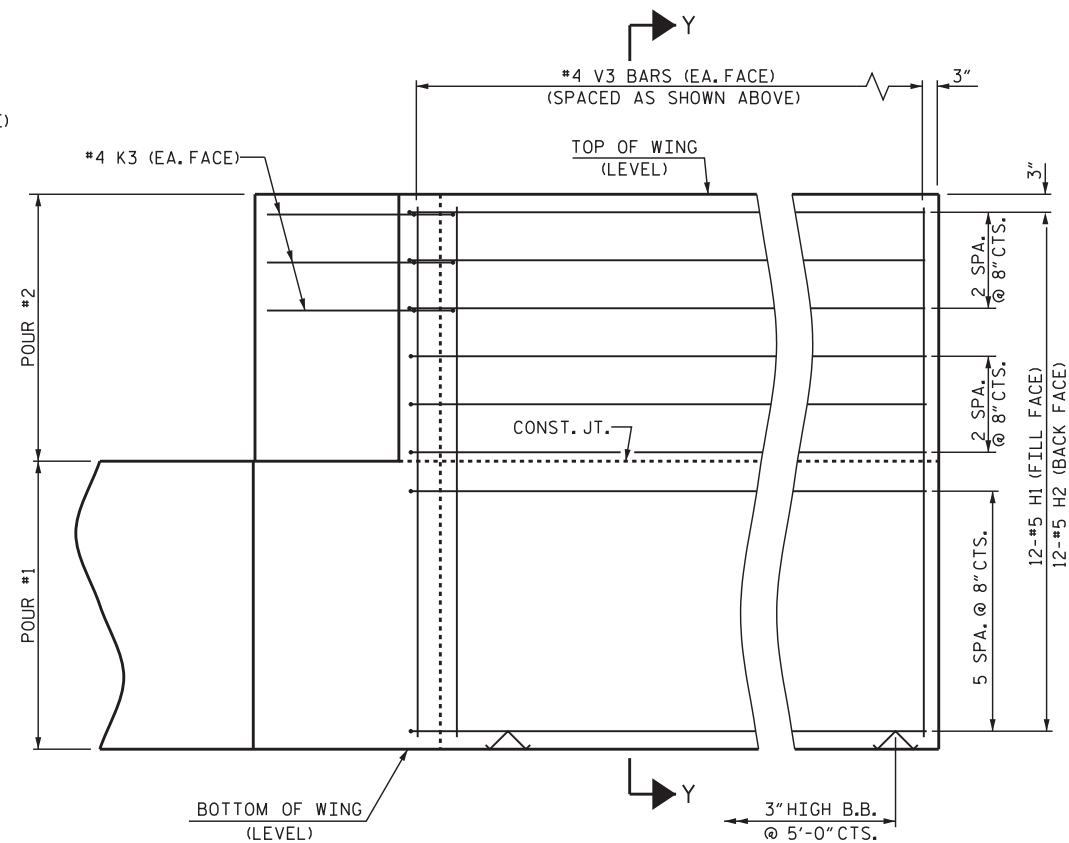
PLAN OF WING (W3)



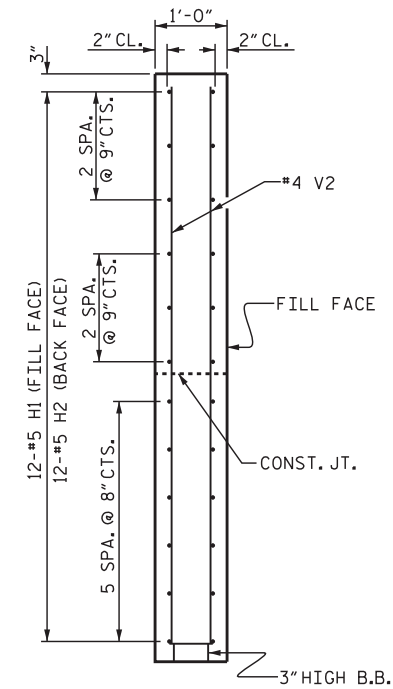
PLAN OF WING (W4)



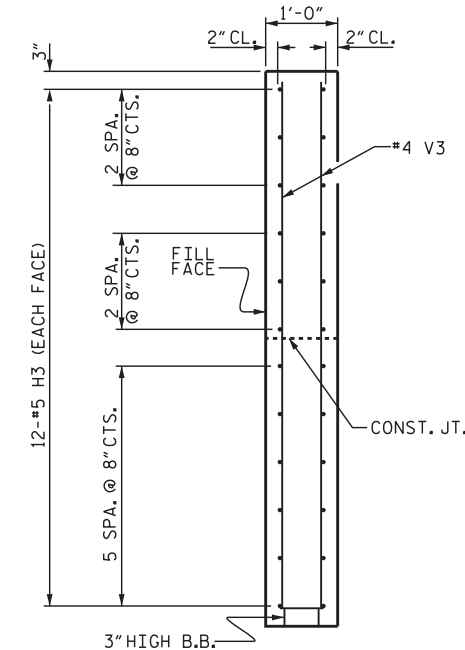
ELEVATION OF WING (W3)



ELEVATION OF WING (W4)



SECTION X-X



SECTION Y-Y

PROJECT NO. B-5549  
 CATAWBA COUNTY  
 STATION: 15+27.00-L-

SHEET 4 OF 6 REPLACES BR. NO. 170327



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 UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
 804-C N. LAFAYETTE ST  
 SHELBY, NC 28150  
 PH (704) 476-0003  
 CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

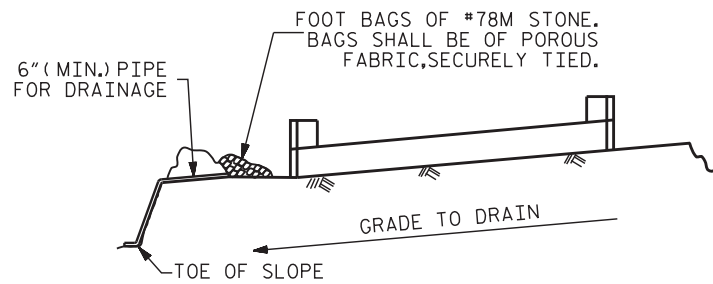
SUBSTRUCTURE  
 END BENT #2  
 WING DETAILS

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-19         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 26           |

DRAWN BY : NMW DATE : 3/15  
 CHECKED BY : RDE DATE : 3/15

WING DETAILS



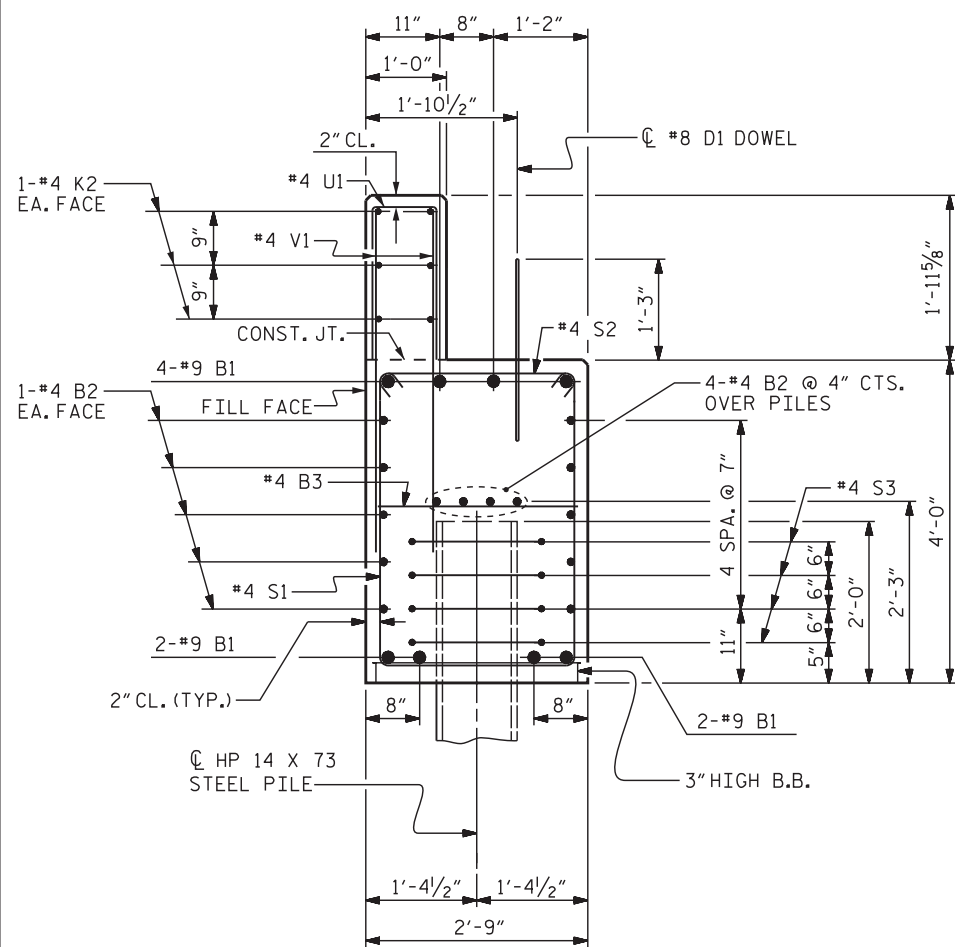


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

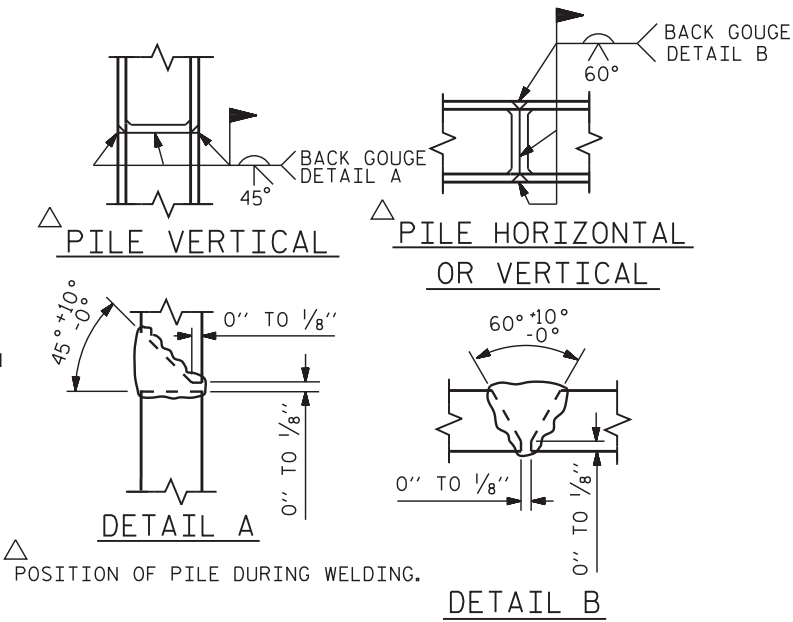
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

### TEMPORARY DRAINAGE AT END BENT

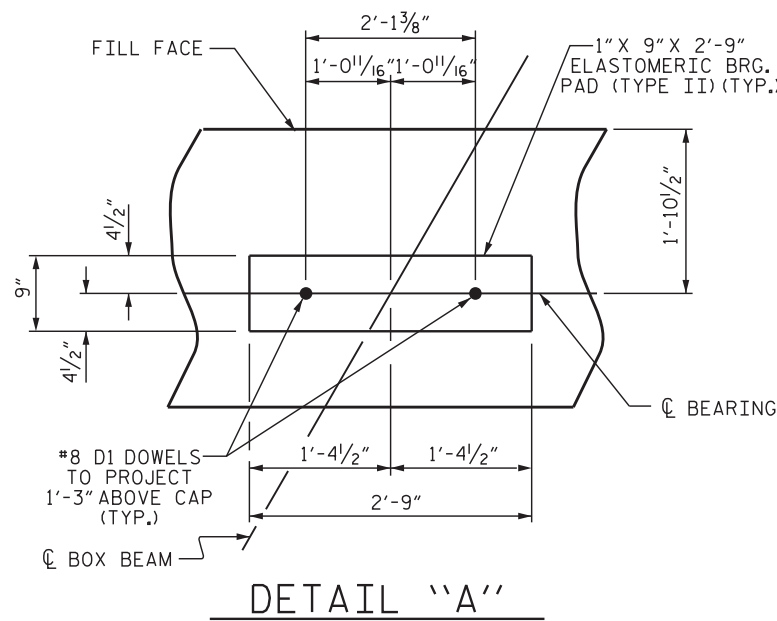


### SECTION A-A

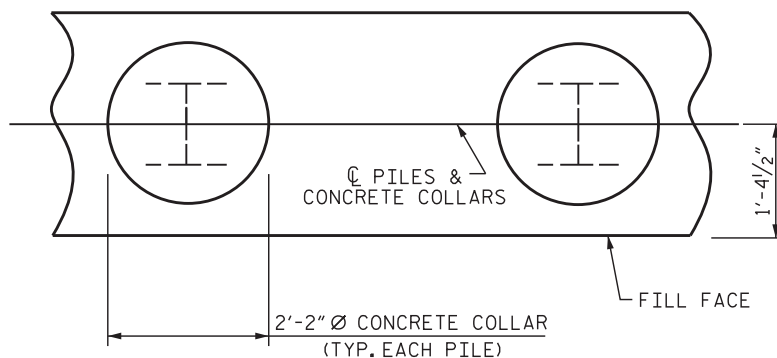
(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")



### PILE SPLICE DETAILS

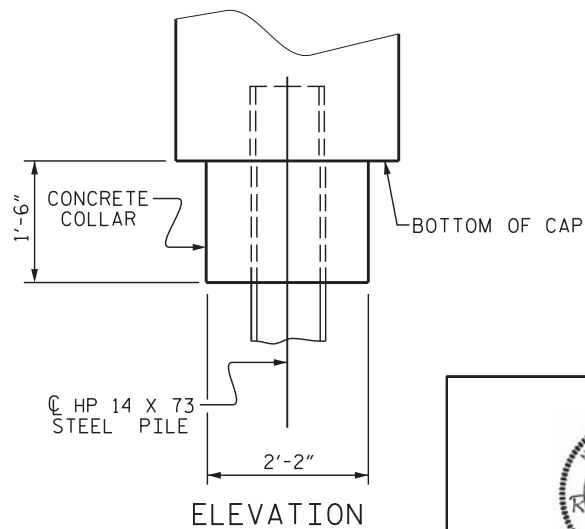
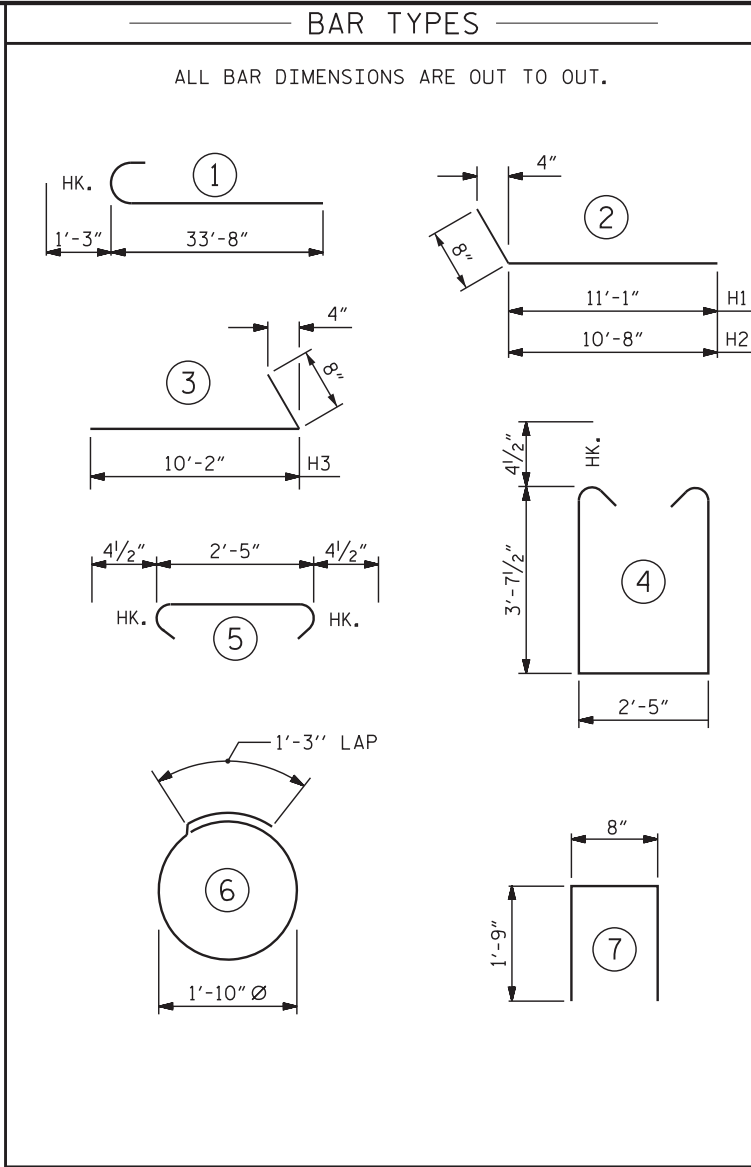


### DETAIL "A"



### PLAN

### CORROSION PROTECTION FOR STEEL PILES DETAIL



### ELEVATION

### BILL OF MATERIAL

#### FOR END BENT #2

| BAR | NO. | SIZE | TYPE | LENGTH  | WEIGHT |
|-----|-----|------|------|---------|--------|
| B1  | 16  | #9   | 1    | 34'-11" | 1,899  |
| B2  | 42  | #4   | STR  | 21'-2"  | 594    |
| B3  | 14  | #4   | STR  | 2'-5"   | 23     |
| D1  | 30  | #8   | STR  | 2'-3"   | 180    |
| H1  | 12  | #5   | 2    | 11'-9"  | 147    |
| H2  | 12  | #5   | 2    | 11'-4"  | 142    |
| H3  | 24  | #5   | 3    | 10'-10" | 271    |
| K1  | 6   | #4   | STR  | 4'-6"   | 18     |
| K2  | 18  | #4   | STR  | 21'-2"  | 255    |
| K3  | 6   | #4   | STR  | 3'-4"   | 13     |
| S1  | 76  | #4   | 4    | 10'-5"  | 529    |
| S2  | 76  | #4   | 5    | 3'-2"   | 161    |
| S3  | 32  | #4   | 6    | 7'-0"   | 150    |
| U1  | 50  | #4   | 7    | 4'-2"   | 139    |
| V1  | 50  | #4   | STR  | 5'-6"   | 184    |
| V2  | 32  | #4   | STR  | 7'-8"   | 164    |
| V3  | 31  | #4   | STR  | 7'-1"   | 147    |

REINFORCING STEEL 5016 LBS.

#### CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

|                               |                                    |           |
|-------------------------------|------------------------------------|-----------|
| POUR #1                       | CAP, LOWER PART OF WINGS & COLLARS | 28.6 C.Y. |
| POUR #2                       | BACKWALL & UPPER PART OF WINGS     | 7.8 C.Y.  |
| TOTAL CLASS A CONCRETE        |                                    | 36.4 C.Y. |
| HP 14 X 73 STEEL PILES        | 108.0 L.F.                         |           |
| PILE EXCAVATION (IN SOIL)     | 6 L.F.                             |           |
| PILE EXCAVATION (NOT IN SOIL) | 84 L.F.                            |           |

PROJECT NO. B-5549

CATAWBA COUNTY

STATION: 15+27.00-L-

SHEET 6 OF 6 REPLACES BR. NO. 170327



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

### SUBSTRUCTURE END BENT #2 DETAILS

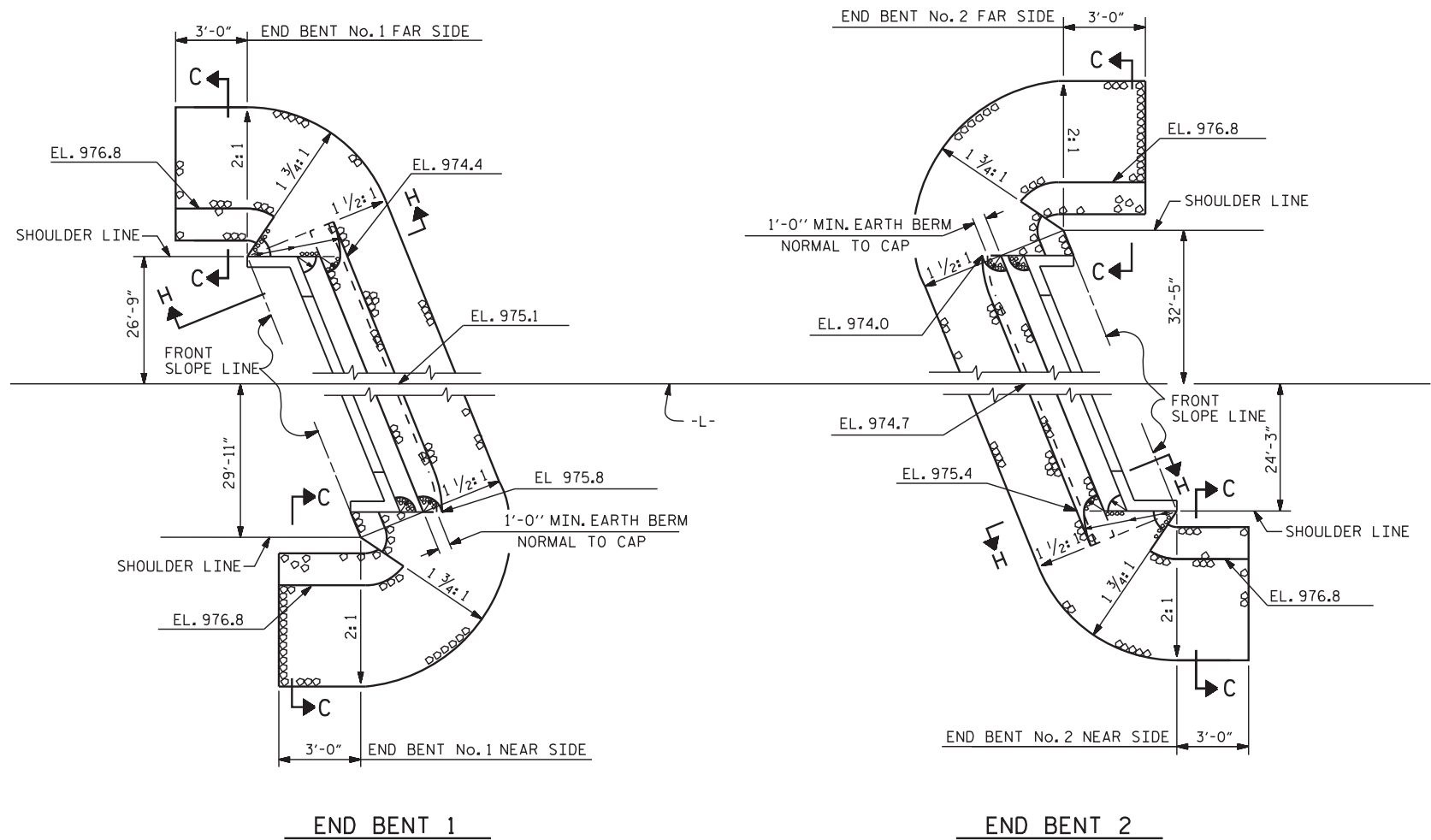
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TGS ENGINEERS  
804-C N. LAFAYETTE ST  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.       |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-21            |
| 1         |     |       | 3   |     |       | TOTAL SHEETS 26 |
| 2         |     |       | 4   |     |       |                 |

DRAWN BY: NMW DATE: 3/15  
CHECKED BY: RDE DATE: 3/15



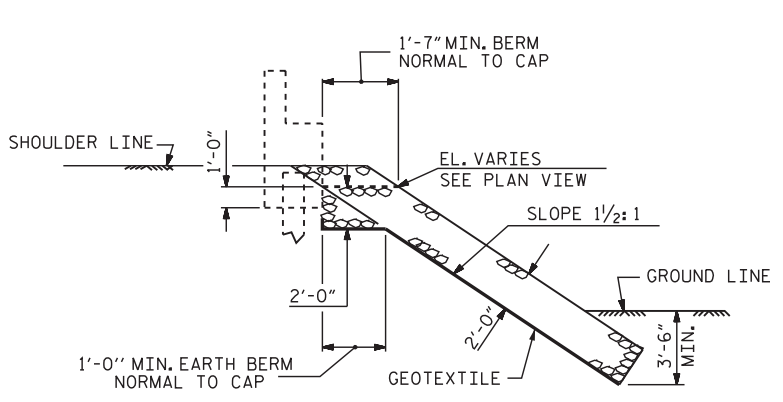


NOTES :  
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

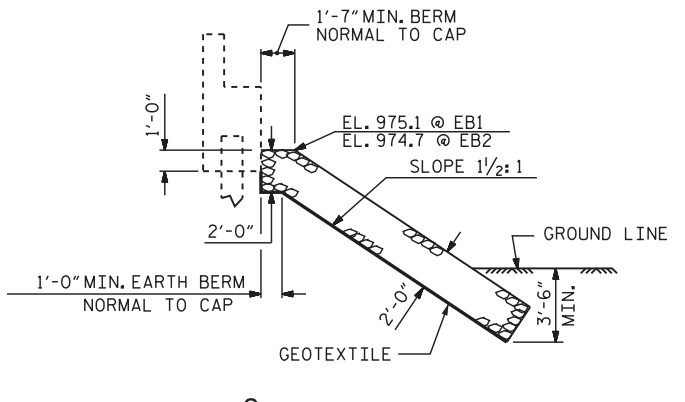
END BENT 1                      END BENT 2

SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP

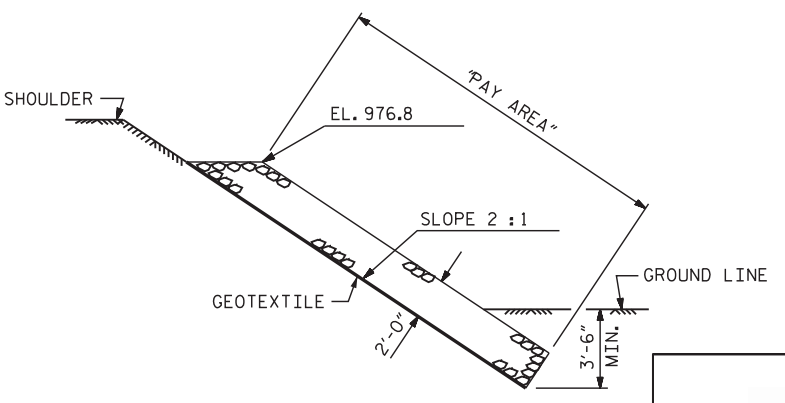
| ESTIMATED QUANTITIES         |                                      |                            |
|------------------------------|--------------------------------------|----------------------------|
| BRIDGE @<br>STA. 15+27.00-L- | RIP RAP<br>CLASS II<br>(2'-0" THICK) | GEOTEXTILE<br>FOR DRAINAGE |
|                              | TONS                                 | SQUARE YARDS               |
| END BENT 1                   | 70                                   | 80                         |
| END BENT 2                   | 70                                   | 80                         |



SECTION H-H



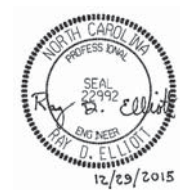
SECTION C-C  
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-5549  
CATAWBA COUNTY  
STATION: 15+27.00-L-

REPLACES BR. NO. 170327



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
= RIP RAP DETAILS =

|                       |                       |
|-----------------------|-----------------------|
| ASSEMBLED BY : NMW    | DATE : 3/15           |
| CHECKED BY : RDE      | DATE : 3/15           |
| DRAWN BY : REK 1/84   | REV. 8/16/99 RWW/LES  |
| CHECKED BY : RDU 1/84 | REV. 10/17/00 RWW/LES |
|                       | REV. 5/1/06R TLA/GM   |

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PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | TOTAL SHEETS |
| 1         |     |       | 3   |     |       | S-22         |
| 2         |     |       | 4   |     |       | 26           |

BILL OF MATERIAL

FOR ONE APPROACH SLAB  
(2 REQ'D)

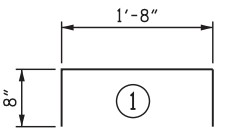
| BAR  | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|------|-----|------|------|--------|--------|
| * A1 | 32  | #4   | STR  | 25'-8" | 549    |
| A2   | 32  | #4   | STR  | 25'-7" | 547    |
| * B1 | 85  | #5   | STR  | 14'-1" | 1,249  |
| B2   | 85  | #6   | STR  | 14'-7" | 1,862  |
| * B3 | 4   | #4   | STR  | 14'-7" | 39     |
| * G1 | 15  | #4   | STR  | 5'-9"  | 58     |
| * U5 | 6   | #4   | 1    | 3'-0"  | 12     |

REINFORCING STEEL 2,409 LBS.  
\* EPOXY COATED REINFORCING STEEL 1,907 LBS.  
CLASS AA CONCRETE

POUR #1 - SLAB 28.4 C. Y.  
POUR #2 - SIDEWALK 2.0 C. Y.

TOTAL 30.4 C. Y.

BAR TYPES



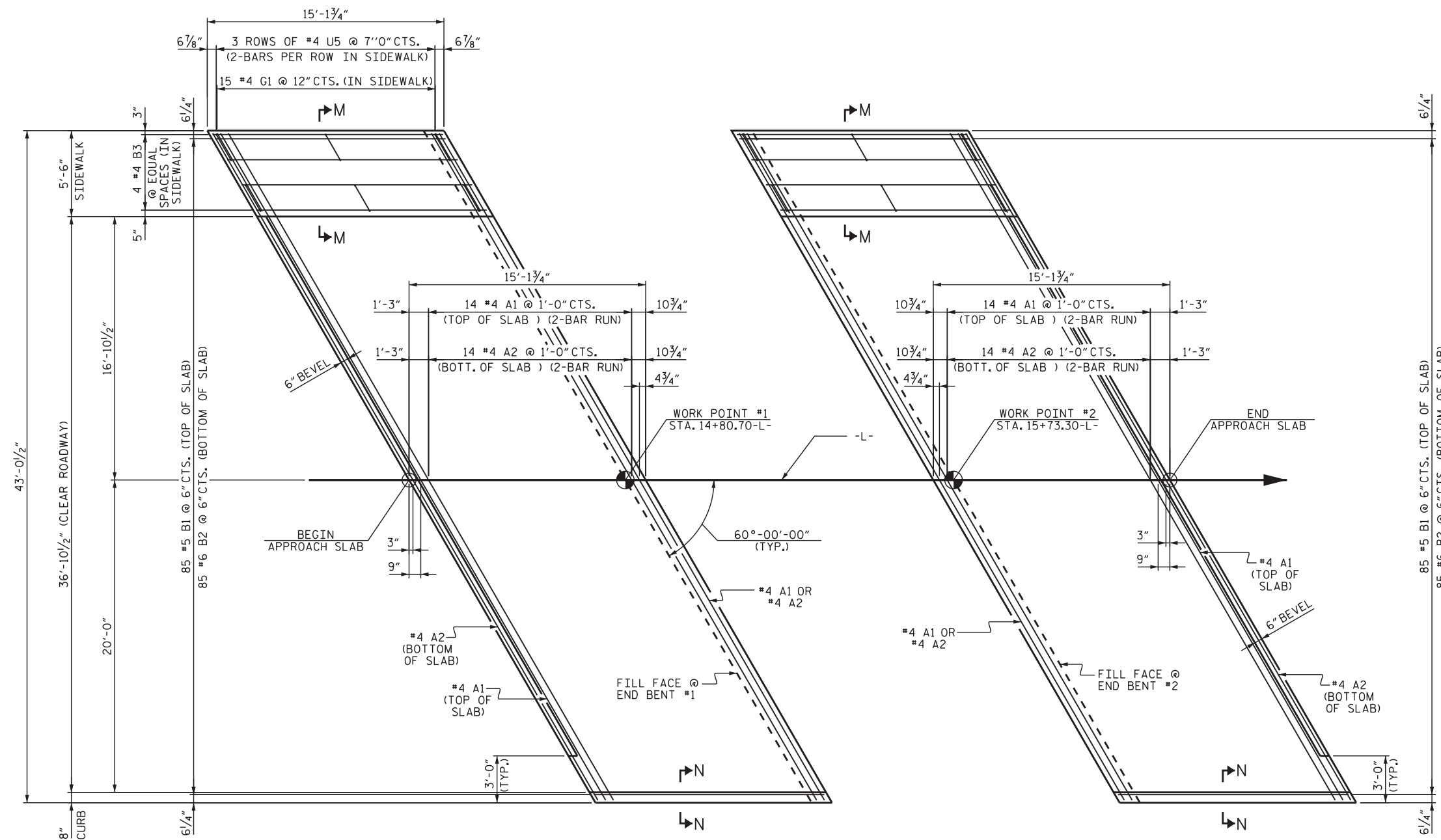
ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, AND #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

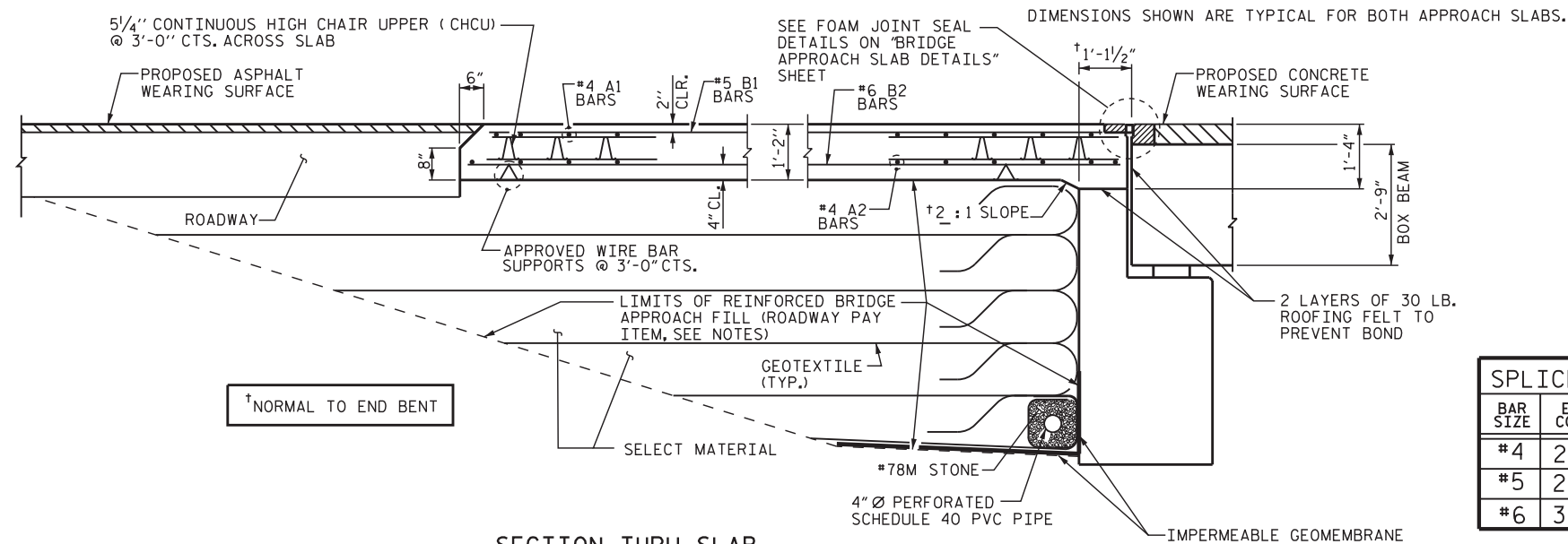
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



PLAN @ END BENT #1

PLAN @ END BENT #2



SECTION THRU SLAB

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS.

| SPLICE LENGTHS |              |          |
|----------------|--------------|----------|
| BAR SIZE       | EPOXY COATED | UNCOATED |
| #4             | 2'-0"        | 1'-9"    |
| #5             | 2'-6"        | 2'-2"    |
| #6             | 3'-10"       | 2'-7"    |

PROJECT NO. B-5549

CATAWBA COUNTY

STATION: 15+27.00-L-

SHEET 1 OF 3 REPLACES BR. NO. 170327



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

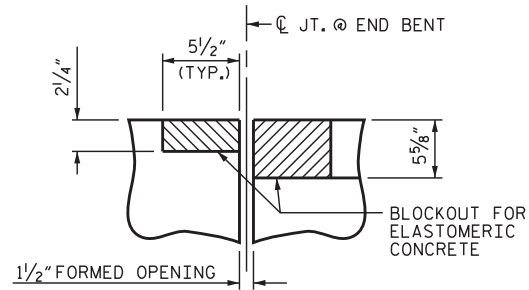
BRIDGE APPROACH SLAB  
FOR PRESTRESSED CONCRETE  
BOX BEAM UNIT

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

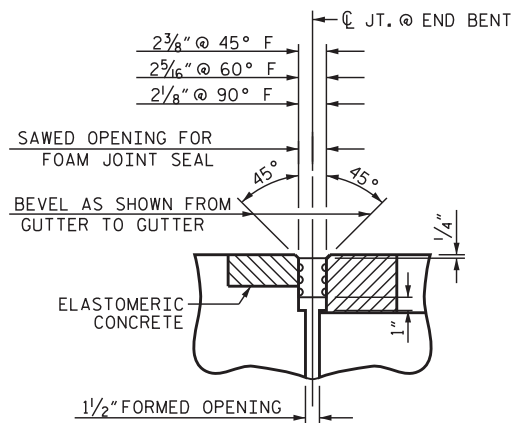
TGS ENGINEERS  
804-C N. LAFAYETTE ST  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.       |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-23            |
| 1         |     |       | 3   |     |       | TOTAL SHEETS 26 |
| 2         |     |       | 4   |     |       |                 |

DRAWN BY : NMW DATE : 3/15  
CHECKED BY : RDE DATE : 3/15



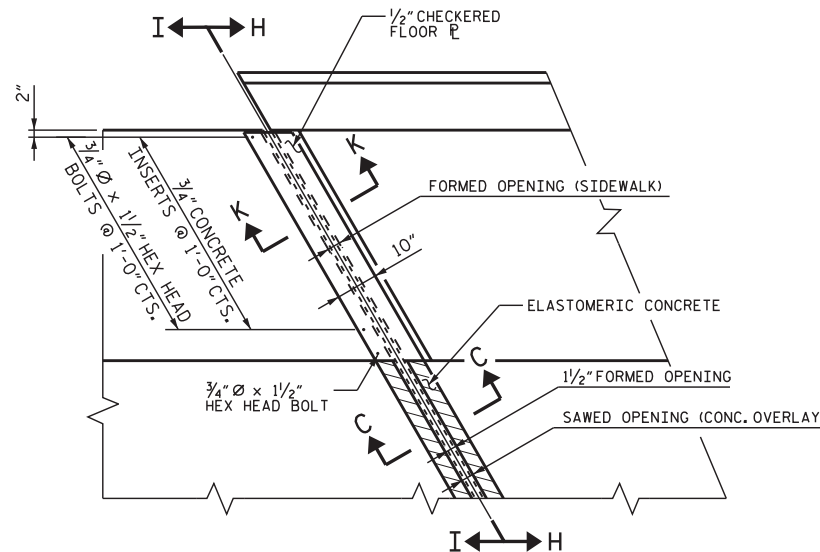
SECTION C-C  
FOAM JOINT SEAL  
(PRE-SAWED ELASTOMERIC  
CONCRETE DIMENSIONS)



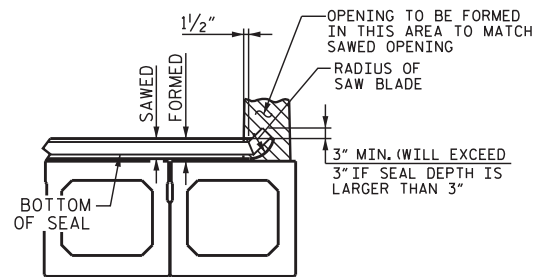
SECTION C-C  
FOAM JOINT SEAL  
(EXPANSION)

| ELASTOMERIC CONCRETE |                                  |
|----------------------|----------------------------------|
| END BENT NO.         | ELASTOMERIC CONCRETE * (CU. FT.) |
| 1                    | 15                               |
| 2                    | 15                               |
| TOTAL                | 30                               |

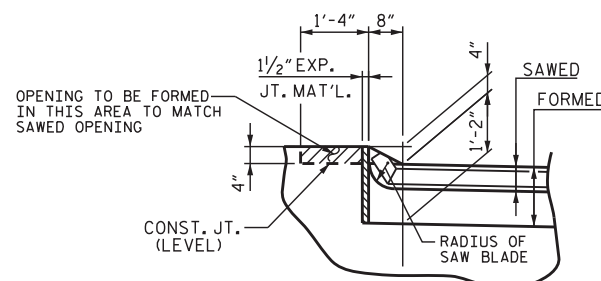
\* BASED ON THE MINIMUM BLOCKOUT SHOWN.



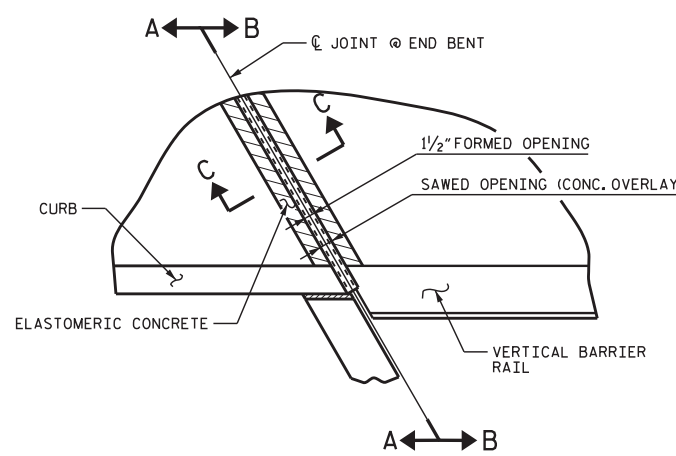
PLAN VIEW



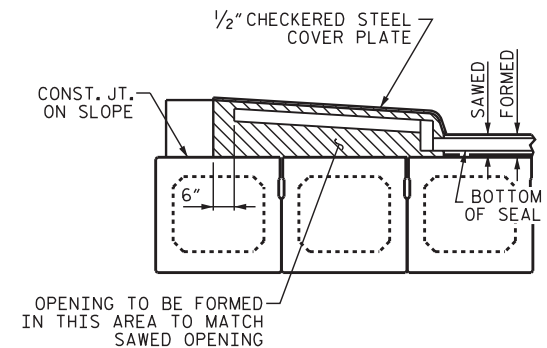
SECTION B-B



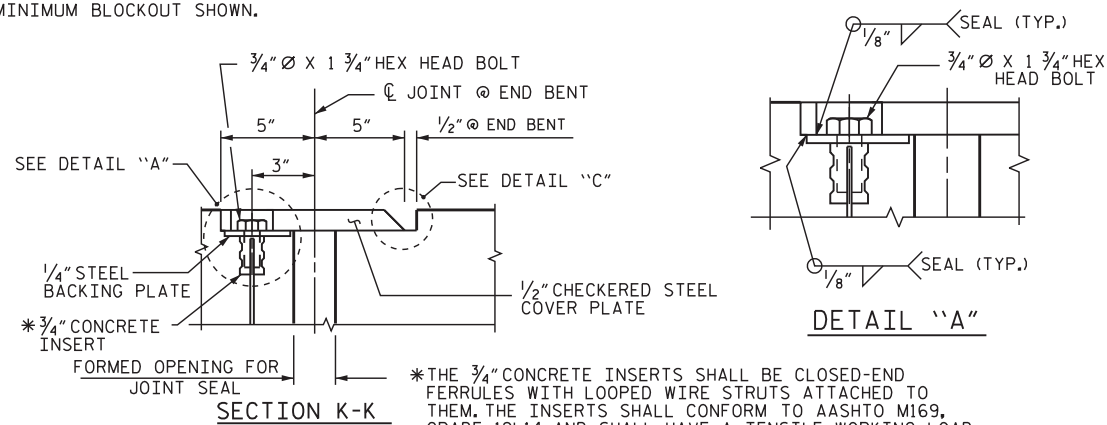
SECTION A-A



SECTION H-H

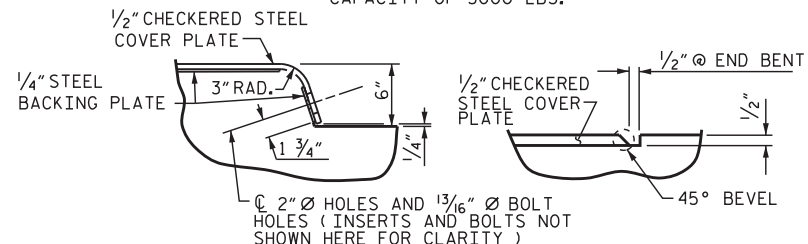


SECTION I-I



SECTION K-K

\*THE 3/4" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.



DETAIL "B"      DETAIL "C"  
JOINT SEAL DETAILS @ END BENT

THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE 3/4" DIAMETER HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "FOAM JOINT SEALS".

PROJECT NO. B-5549  
CATAWBA COUNTY  
STATION: 15+27.00-L-

SHEET 2 OF 3      REPLACES BR. NO. 170327

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
BRIDGE APPROACH  
SLAB DETAILS

12/23/2015

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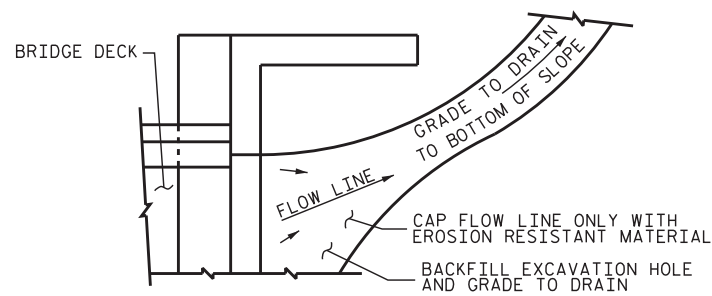
TGS ENGINEERS  
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SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-24         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 26           |

|                        |              |        |
|------------------------|--------------|--------|
| ASSEMBLED BY : RTJ     | DATE : 3/15  | MAA/GM |
| CHECKED BY : RDE       | DATE : 3/15  | MAA/GM |
| DRAWN BY : FCJ 11/88   | REV. 10/1/11 | MAA/GM |
| CHECKED BY : ARB 11/88 | REV. 7/12    | MAA/GM |
|                        | REV. 6/13    | MAA/GM |

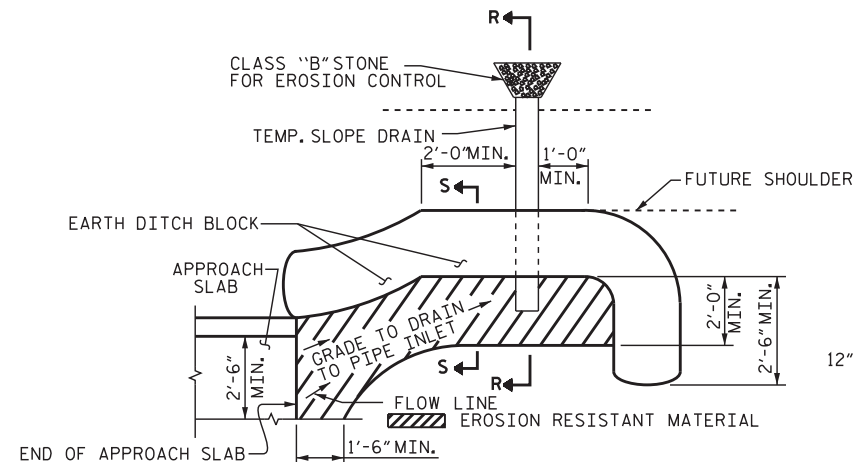
\*\*\*\*\*SYTIME\*\*\*\*\*  
\*\*\*\*\*DCN\*\*\*\*\*  
\*\*\*\*\*USER\*\*\*\*\*

STD. NO. BAS4



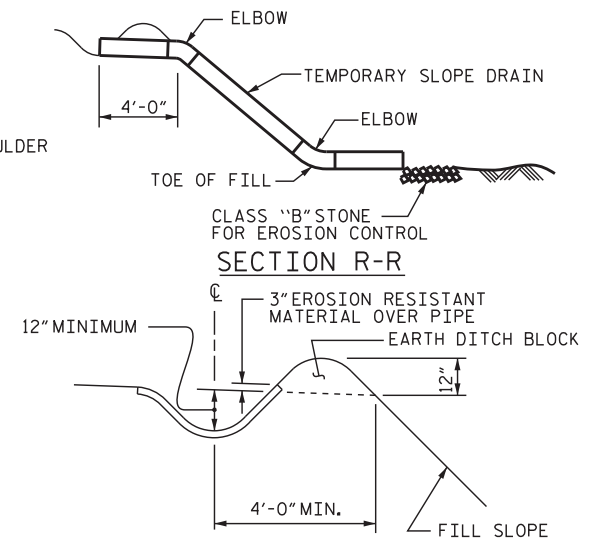
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL



NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

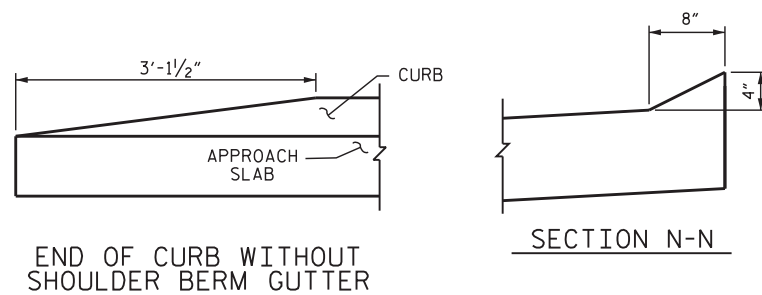
PLAN VIEW



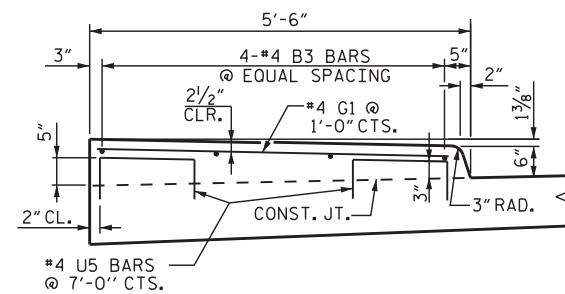
SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



CURB DETAILS



SECTION M-M

SIDEWALK DETAILS

PROJECT NO. B-5549

CATAWBA COUNTY

STATION: 15+27.00-L-

SHEET 3 OF 3 REPLACES BR. NO. 170327



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BRIDGE APPROACH  
SLAB DETAILS

DRAWN BY : NMW DATE : 3/15  
CHECKED BY : RDE DATE : 3/15

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
804-C N. LAFAYETTE ST  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |    |      |     |    |      | SHEET NO.    |
|-----------|----|------|-----|----|------|--------------|
| NO.       | BY | DATE | NO. | BY | DATE | TOTAL SHEETS |
| 1         |    |      | 3   |    |      | 26           |
| 2         |    |      | 4   |    |      |              |

## STANDARD NOTES

### DESIGN DATA:

|  |       |                         |
|--|-------|-------------------------|
| SPECIFICATIONS                               | ----- | A.A.S.H.T.O. (CURRENT)  |
| LIVE LOAD                                    | ----- | SEE PLANS               |
| IMPACT ALLOWANCE                             | ----- | SEE A.A.S.H.T.O.        |
| STRESS IN EXTREME FIBER OF                   |       |                         |
| STRUCTURAL STEEL - AASHTO M270 GRADE 36      | -     | 20,000 LBS. PER SQ. IN. |
| - AASHTO M270 GRADE 50W                      | -     | 27,000 LBS. PER SQ. IN. |
| - AASHTO M270 GRADE 50                       | -     | 27,000 LBS. PER SQ. IN. |
| REINFORCING STEEL IN TENSION                 |       |                         |
| GRADE 60                                     | --    | 24,000 LBS. PER SQ. IN. |
| CONCRETE IN COMPRESSION                      | ----- | 1,200 LBS. PER SQ. IN.  |
| CONCRETE IN SHEAR                            | ----- | SEE A.A.S.H.T.O.        |
| STRUCTURAL TIMBER - TREATED OR               |       |                         |
| UNTREATED - EXTREME FIBER STRESS             | ----- | 1,800 LBS. PER SQ. IN.  |
| COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER | ----- | 375 LBS. PER SQ. IN.    |
| EQUIVALENT FLUID PRESSURE OF EARTH           | ----- | 30 LBS. PER CU. FT.     |
|  |       | (MINIMUM)               |

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

### CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

### DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

### ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

PROJECT NO. B-5549  
CATAWBA COUNTY  
STATION: 15+27.00-L-

REPLACES BR. NO. 170327



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

## STANDARD NOTES

|                |             |              |             |
|----------------|-------------|--------------|-------------|
| ASSEMBLED BY : | NMW         | DATE :       | 3/15        |
| CHECKED BY :   | RDE         | DATE :       | 3/15        |
| REV. 6-16-95   | EEM (R) RW  | REV. 5-7-03  | RWW (R) JTE |
| REV. 8-16-99   | RWW (R) LES | REV. 5-1-06  | TLA (R) GM  |
|                |             | REV. 10-1-11 | MAA (R) GM  |

|  |  |  |  |  |  |           |     |       |           |     |       |              |
|--|--|--|--|--|--|-----------|-----|-------|-----------|-----|-------|--------------|
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED   |  |  |  |  |  | REVISIONS |     |       | SHEET NO. |     |       |              |
| TGS ENGINEERS<br>804-C N. LAFAYETTE ST<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |  |  |  |  |  | NO.       | BY: | DATE: | NO.       | BY: | DATE: | S-26         |
|  |  |  |  |  |  | 1         |     |       | 3         |     |       | TOTAL SHEETS |
|  |  |  |  |  |  | 2         |     |       | 4         |     |       | 26           |