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09.08/2015

See Sheet 1A For Index of Sheets  
See Sheet 1B For Conventional Symbols  
See Sheet 1C-1 Thru 1C-7 For Survey Control Sheets

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | R-2514D                     | 1           |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 34442.1.5       |                             | PE          |              |
| 34442.2.S5      |                             | RW          |              |
| 34442.2.SU5     |                             | UTILITIES   |              |
| 34442.3.S6      |                             | CONST.      |              |

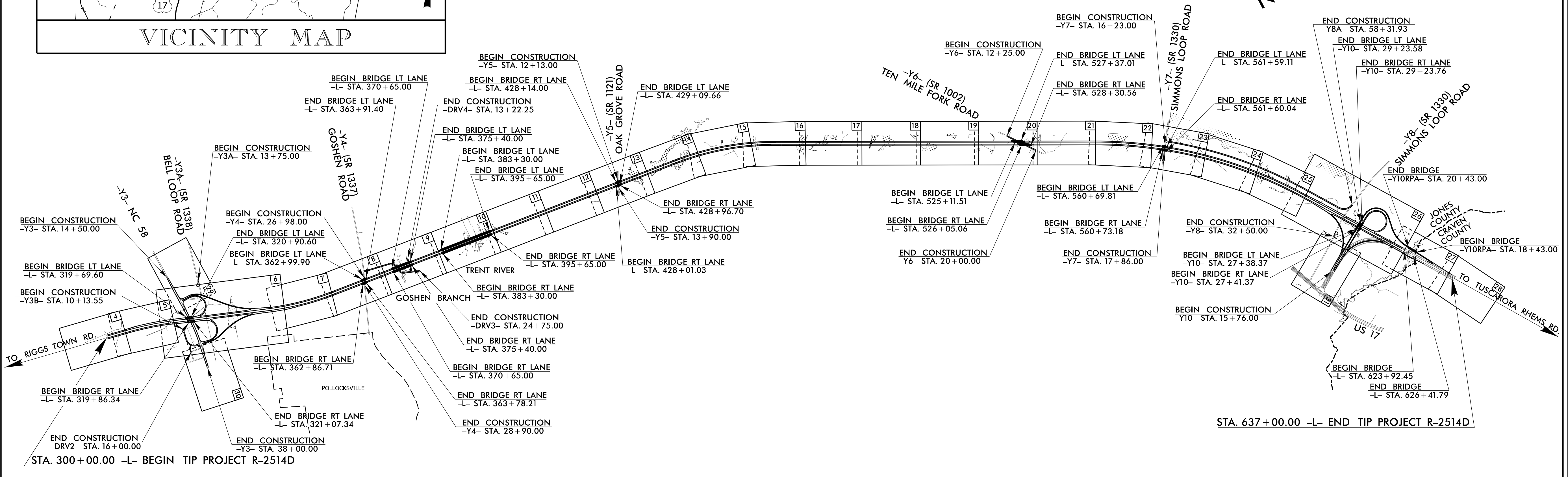
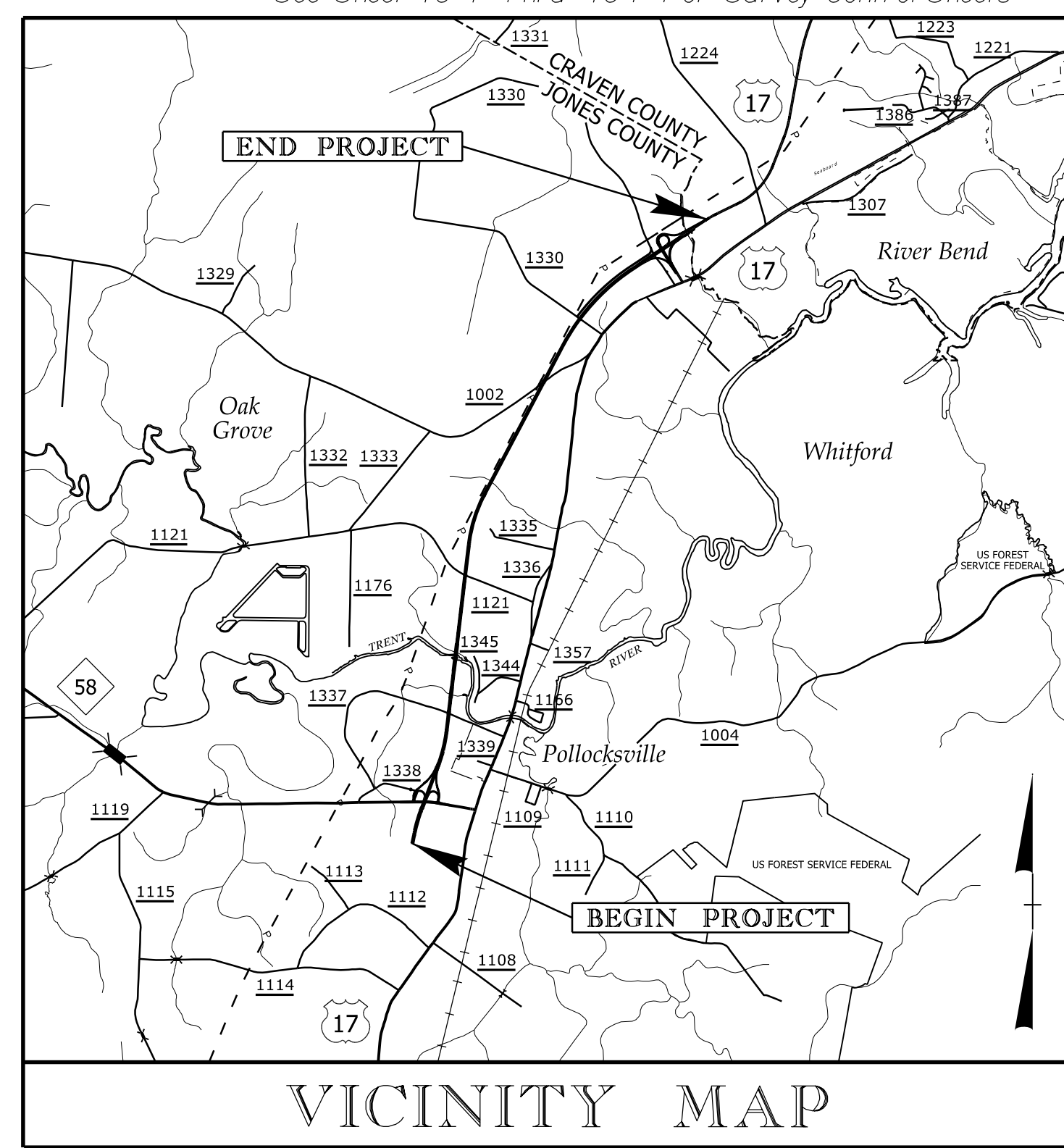
## JONES & CRAVEN COUNTIES

LOCATION: US 17 FROM SOUTH OF NC 58 TO THE US 17 NEW BERN BYPASS

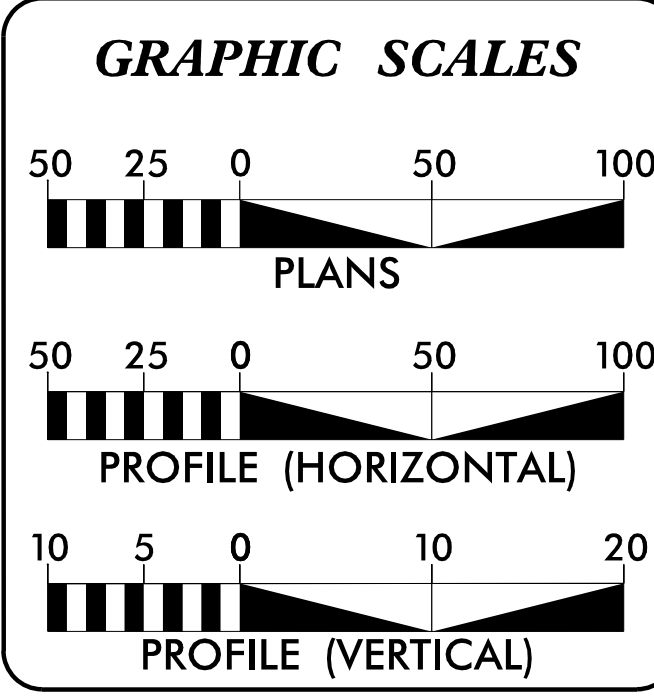
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES AND CULVERT

TIP PROJECT: R-2514D

CONTRACT: C203592



THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.



**DESIGN DATA**

|                |        |
|----------------|--------|
| ADT 2015 =     | 10,600 |
| ADT 2035 =     | 15,700 |
| K =            | 7 %    |
| D =            | 65 %   |
| T =            | 7 % *  |
| V =            | 70 MPH |
| * TTST =       | 4 %    |
| DUAL =         | 3 %    |
| FUNC CLASS =   | FREWAY |
| STATEWIDE TIER |        |

**PROJECT LENGTH**

|   |               |
|---|---------------|
| LENGTH OF ROADWAY, TIP PROJECT R-2514D    | = 5.984 Miles |
| LENGTH OF STRUCTURES, TIP PROJECT R-2514D | = 0.399 Miles |
| TOTAL LENGTH OF TIP PROJECT R-2514D       | = 6.383 Miles |

NOTE: -L- NBL USED TO DETERMINE LENGTH OF PROJECT

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 27, 2013

LETTING DATE: JUNE 16, 2015

JAMES A. SPEER, P.E.  
PROJECT ENGINEER

DANIEL W. GARDNER, JR., P.E.  
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

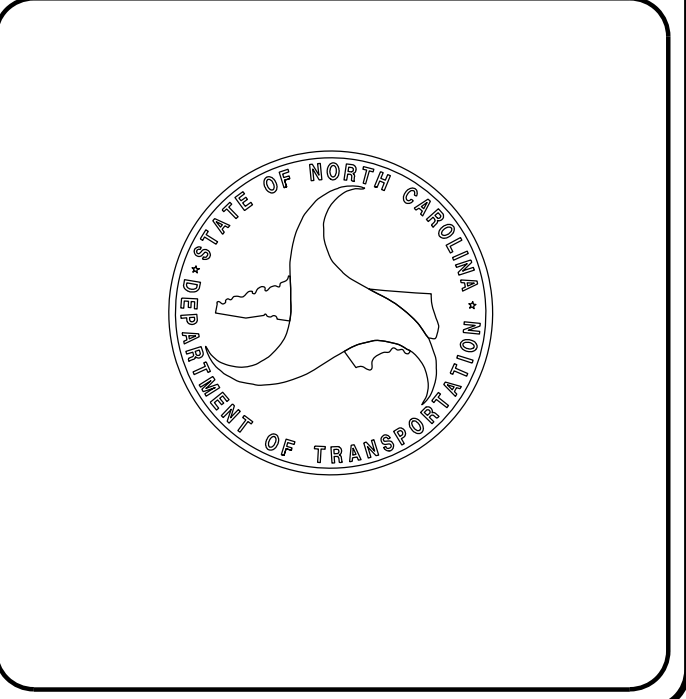
3/20/2015

DocuSigned by: Jonathan Lyle Moore  
SIGNATURE: [Signature]

ROADWAY DESIGN ENGINEER

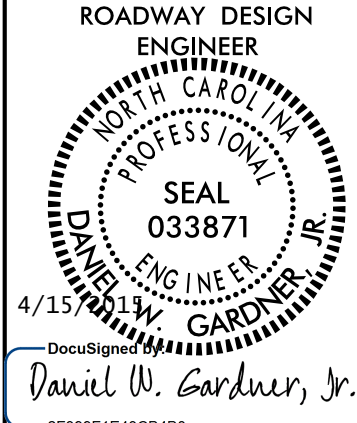
3/19/2015

DocuSigned by: Daniel W. Gardner, Jr.  
SIGNATURE: [Signature]



3/16/2015 P:\9522-01\Cadd\R2514D\_Roadway\Proj\R2514D\_Rdy\_Tsh.dgn TnuTfmom





EFF. 01-17-2012  
REV. 10-30-2012

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>                     |   |
| 200.03  | Method of Clearing - Method III   |
| 225.01  | Guide for Grading Subgrade - Interstate and Freeway   |
| 225.02  | Guide for Grading Subgrade - Secondary and Local  |
| 225.03  | Deceleration and Acceleration Lanes   |
| 225.04  | Method of Obtaining Superlevation - Two Lane Pavement   |
| 225.05  | Method of Obtaining Superlevation - Divided Highways  |
| 225.09  | Guide for Shoulder and Ditch Transition at Grade Separations  |
| <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 - High Side of Superelevated Curve - Method I   |
| 560.02  | Method of Shoulder Construction - High Side of Superelevated Curve - Method II (Sheet 2 of 3 is no longer applicable) |
| <b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>   |   |
| 610.01  | Guide for Paving Shoulders Under Bridges - Method I   |
| 610.03  | Guide for Paving Shoulders Under Bridges - Method III   |
| 654.01  | Pavement Repairs  |
| 665.01  | Asphalt Shoulders - Milled Rumble Strips  |
| <b>DIVISION 8 - INCIDENTALS</b>                   |   |
| 815.02  | Subsurface Drain  |
| 838.01  | Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew                                      |
| 838.11  | Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew   |
| 838.21  | Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew   |
| 838.27  | Reinforced Concrete Endwall - for Single 60" Pipe 90 Skew   |
| 838.45  | Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40   |
| 838.51  | Reinforced Brick Endwall - for Single 54" Pipe 90 Skew  |
| 838.57  | Reinforced Brick Endwall - for Single 60" Pipe 90 Skew  |
| 838.75  | Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70  |
| 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  |
| 840.04  | Concrete Open Throat Catch Basin - 12" thru 48" Pipe  |
| 840.05  | Brick Open Throat Catch Basin - 12" thru 48" Pipe   |
| 840.14  | Concrete Drop Inlet - 12" thru 30" Pipe   |
| 840.15  | Brick Drop Inlet - 12" thru 30" Pipe  |
| 840.16  | Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15   |
| 840.17  | Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe   |
| 840.18  | Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe   |
| 840.19  | Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe   |
| 840.20  | Frames and Wide Slot Flat Grates  |
| 840.22  | Frames and Wide Slot Sag Grates   |
| 840.25  | Anchorage for Frames - Brick or Concrete or Precast   |
| 840.26  | Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe  |
| 840.27  | Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe  |
| 840.28  | Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe  |
| 840.31  | Concrete Junction Box - 12" thru 66" Pipe   |
| 840.32  | Brick Junction Box - 12" thru 66" Pipe  |
| 840.34  | Traffic Bearing Junction Box - for Use with Pipes 42" and Under   |
| 840.36  | Traffic Bearing Grated Drop Inlet - for Steel (840.37) Double Frame and Grates  |
| 840.37  | Steel Grate and Frame   |
| 840.45  | Precast Drainage Structure  |
| 840.46  | Traffic Bearing Precast Drainage Structure  |
| 840.54  | Manhole Frame and Cover   |
| 840.66  | Drainage Structure Steps  |
| 840.71  | Concrete and Brick Pipe Plug  |
| 840.72  | Pipe Collar   |
| 846.01  | Concrete Curb, Gutter and Curb & Gutter   |
| 846.04  | Drop Inlet Installation in Shoulder Berm Gutter   |
| 848.01  | Concrete Sidewalk   |
| 848.02  | Driveway Turnout - Radius Type  |
| 848.05  | Curb Ramp - Proposed Curb & Gutter  |
| 848.06  | Curb Ramp - Existing Curb & Gutter  |
| 852.01  | Concrete Islands  |
| 852.06  | Method for Placement of Drop Inlets in Concrete Islands   |
| 857.01  | Precast Reinforced Concrete Barrier - 41" Single Faced  |
| 862.01  | Guardrail Placement   |
| 862.02  | Guardrail Installation  |
| 862.04  | Anchoring End of Guardrail - B-77 and B-83 Anchor Units   |
| 865.01  | Cable Guiderail   |
| 866.02  | Woven Wire Fence - with Wood Post   |
| 876.01  | Rip Rap in Channels   |
| 876.02  | Guide for Rip Rap at Pipe Outlets   |
| 876.04  | Drainage Ditches with Class 'B' Rip Rap   |

| SHEET NUMBER         | SHEET  |
|----------------------|--|
| 1                    | TITLE SHEET  |
| 1A                   | INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS  |
| 1B                   | CONVENTIONAL PLAN SHEET SYMBOLS  |
| 1C-1 THRU 1C-8       | SURVEY CONTROL SHEETS  |
| 1D-1 THRU 1D-2       | CENTERLINE COORDINATE LIST   |
| 2A-1 THRU 2A-5       | PAVEMENT SCHEDULE AND TYPICAL SECTIONS   |
| 2B-1 THRU 2B-3       | SHEAR POINT DIAGRAMS   |
| 2C-1                 | GUARDRAIL ANCHOR UNIT, TYPE B-77 DETAIL  |
| 2C-2                 | SPECIAL 3GI DETAIL   |
| 2C-3                 | COAL COMBUSTION PRODUCT PLACEMENT DETAIL   |
| 2D-1                 | REINFORCED CONCRETE ENDWALL DETAIL   |
| 2D-2                 | DETAIL TO CONVERT EXISTING D1, CB, OTCB OR GI TO JUNCTION BOX  |
| 2G-1                 | DETAIL OF UNDERCUT AT BENT #2 OF DUAL BRIDGES ON US 17 OVER TRENT RIVER  |
| 2G-2                 | DETAIL FOR GEOTEXTILE FOR EMBANKMENT STABILIZATION AND STAGE CONSTRUCTION AT -Y6- BRIDGE                                     |
| 2G-3                 | DETAIL FOR GEOTEXTILE FOR EMBANKMENT STABILIZATION AND STAGE CONSTRUCTION AT -Y7- BRIDGE                                     |
| 2G-4                 | BRIDGE APPROACHES AT -Y3- GEOTEXTILE FOR EMBANKMENT STABILIZATION DETAILS  |
| 2G-5                 | BRIDGE APPROACHES AT -Y5- GEOTEXTILE FOR EMBANKMENT STABILIZATION DETAILS  |
| 2G-6                 | BRIDGE APPROACHES AT -Y10- GEOTEXTILE FOR EMBANKMENT STABILIZATION DETAILS   |
| 2G-7                 | DETAIL STANDARD EMBANKMENT MONITORING  |
| 3B-1                 | EARTHWORK SUMMARY  |
| 3B-2 THRU 3B-3       | GUARDRAIL SUMMARY, CABLE GUIDERAIL SUMMARY, WOVEN WIRE FENCE SUMMARY   |
| 3B-4                 | SHOULDER BERM GUTTER SUMMARY, SUMMARY OF REMOVAL EXISTING ASPHALT PAVEMENT, PRECAST REINFORCED CONCRETE BARRIER SINGLE FACED |
| 3D-1 THRU 3D-7       | DRAINAGE SUMMARIES   |
| 3G-1                 | GEOTECHNICAL SUMMARIES   |
| 3P-1                 | PARCEL INDEX SHEET   |
| 4 THRU 31            | PLAN SHEETS  |
| 32 THRU 61           | PROFILE SHEETS   |
| TMP-1 THRU TMP-16    | TRANSPORTATION MANAGEMENT PLANS  |
| PMP-1 THRU PMP-16    | PAVEMENT MARKING PLANS   |
| EC-1 THRU EC-59      | EROSION CONTROL PLANS  |
| RF-1                 | REFORESTATION PLANS  |
| SIGN-1 THRU SIGN-25  | SIGNING PLANS  |
| UO-1 THRU UO-14      | UTILITIES BY OTHERS  |
| X-1                  | CROSS-SECTION INDEX  |
| X-1A THRU X-1F       | CROSS-SECTION EARTHWORK VOLUME SHEETS  |
| X-2 THRU X-239       | CROSS-SECTIONS   |
| S1-001 THRU S1-024   | STRUCTURE PLANS  |
| S2-001 THRU S2-024   | STRUCTURE PLANS  |
| S3-001 THRU S3-023   | STRUCTURE PLANS  |
| S4-001 THRU S4-023   | STRUCTURE PLANS  |
| S5-001 THRU S5-034   | STRUCTURE PLANS  |
| S6-001 THRU S6-034   | STRUCTURE PLANS  |
| S7-001 THRU S7-068   | STRUCTURE PLANS  |
| S8-001 THRU S8-068   | STRUCTURE PLANS  |
| S9-001 THRU S9-024   | STRUCTURE PLANS  |
| S10-001 THRU S10-024 | STRUCTURE PLANS  |
| S11-001 THRU S11-038 | STRUCTURE PLANS  |
| S12-001 THRU S12-038 | STRUCTURE PLANS  |
| S13-001 THRU S13-021 | STRUCTURE PLANS  |
| S14-001 THRU S14-021 | STRUCTURE PLANS  |
| S15-001 THRU S15-029 | STRUCTURE PLANS  |
| S16-001 THRU S16-029 | STRUCTURE PLANS  |
| S17-001 THRU S17-032 | STRUCTURE PLANS  |
| S18-001 THRU S18-039 | STRUCTURE PLANS  |
| C19-001 THRU C19-008 | CULVERT PLANS  |

**GENERAL NOTES:**  
2012 SPECIFICATIONS  
EFFECTIVE: 01-17-2012  
REVISED: 07-30-2012

**GRADING AND SURFACING OR RESURFACING AND WIDENING:**  
THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED 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 III.

**SUPERELEVATION:**  
ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 AND NO. 225.05 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 AND STD. NO. 560.02

**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.

**SUBSURFACE DRAINS:**  
SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

**DRIVEWAYS:**  
DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3' RADIUS OR RADIUS AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

**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: Duke Energy Progress-Power (Dist. & Trans.) Jones-Onslow EMC - Power, Jones Co. Regional Water System - Water, Town of Pollocksville - Water and Sewer (SSFM), Time Warner - CATV, Centurylink - Telephone and Fiber Optic Piedmont Natural Gas - Natural Gas

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

**RIGHT-OF-WAY MARKERS:**  
ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

**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.

8/17/09  
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STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

**Note: Not to Scale**

\*S.U.E. = *Subsurface Utility Engineering*

**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 |
| Known Soil Contamination: Area or Site     | ☠ ☠       |
| Potential Soil Contamination: Area or Site | ☠ ?       |

**BUILDINGS AND OTHER CULTURE:**

|                               |     |
|-------------------------------|-----|
| Gas Pump Vent or U/G Tank Cap | ○   |
| Sign                          | Ⓢ   |
| 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 | Ⓜ     |
| 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                | ----- 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         | Ⓜ       |
| Existing Metal Guardrail   | -----   |
| Proposed Guardrail         | -----   |
| Existing Cable Guiderail   | -----   |
| Proposed Cable Guiderail   | -----   |
| Equality Symbol            | ⊕       |
| Pavement Removal           | ⊠       |
| Single Tree                | ⊗       |
| Single Shrub               | ⊗       |
| Hedge                      | -----   |
| Woods Line                 | -----   |

**VEGETATION:**

|          |   |
|----------|---|
| 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                              | -----   |

**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                        | ●       |
| Recorded U/G Power Line             | ----- P |
| Designated U/G Power Line (S.U.E.*) | ----- P |

**TELEPHONE:**

|   |            |
|---|------------|
| Existing Telephone Pole                     | ●          |
| Proposed Telephone Pole                     | ○          |
| Telephone Manhole                           | Ⓢ          |
| Telephone Booth                             | ⊠          |
| Telephone Pedestal                          | ⊠          |
| Telephone Cell Tower                        | ⊠          |
| U/G Telephone Cable Hand Hole               | Ⓜ          |
| Recorded U/G Telephone Cable                | ----- T    |
| Designated U/G Telephone Cable (S.U.E.*)    | ----- T    |
| Recorded U/G Telephone Conduit              | ----- TC   |
| Designated U/G Telephone Conduit (S.U.E.*)  | ----- TC   |
| Recorded U/G Fiber Optics Cable             | ----- T FO |
| Designated U/G Fiber Optics Cable (S.U.E.*) | ----- T FO |

**WATER:**

|                                     |                 |
|-------------------------------------|-----------------|
| Water Manhole                       | Ⓢ               |
| Water Meter                         | ⊠               |
| Water Valve                         | ⊗               |
| Water Hydrant                       | ⊗               |
| Recorded U/G Water Line             | -----           |
| Designated U/G Water Line (S.U.E.*) | -----           |
| Above Ground Water Line             | ----- A/G Water |

**TV:**

|  |             |
|--|-------------|
| TV Satellite Dish                          | ⊠           |
| TV Pedestal                                | ⊠           |
| TV Tower                                   | ⊗           |
| U/G TV Cable Hand Hole                     | Ⓜ           |
| Recorded U/G TV Cable                      | ----- TV    |
| Designated U/G TV Cable (S.U.E.*)          | ----- TV    |
| Recorded U/G Fiber Optic Cable             | ----- TV FO |
| Designated U/G Fiber Optic Cable (S.U.E.*) | ----- TV FO |

**GAS:**

|                                   |               |
|-----------------------------------|---------------|
| Gas Valve                         | ◇             |
| Gas Meter                         | ⊠             |
| Recorded U/G Gas Line             | ----- G       |
| Designated U/G Gas Line (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 |
| Recorded SS Forced Main Line             | ----- FSS                |
| Designated SS Forced Main Line (S.U.E.*) | ----- FSS                |

**MISCELLANEOUS:**

|  |            |
|--|------------|
| Utility Pole                           | ●          |
| Utility Pole with Base                 | ⊠          |
| Utility Located Object                 | ○          |
| Utility Traffic Signal Box             | ⊠          |
| Utility Unknown U/G Line               | ----- 7UTL |
| U/G Tank; Water, Gas, Oil              | ⊠          |
| Underground Storage Tank, Approx. Loc. | ⊠          |
| A/G Tank; Water, Gas, Oil              | ⊠          |
| Geoenvironmental Boring                | ⊗          |
| U/G Test Hole (S.U.E.*)                | ⊗          |
| Abandoned According to Utility Records | AATUR      |
| End of Information                     | E.O.I.     |

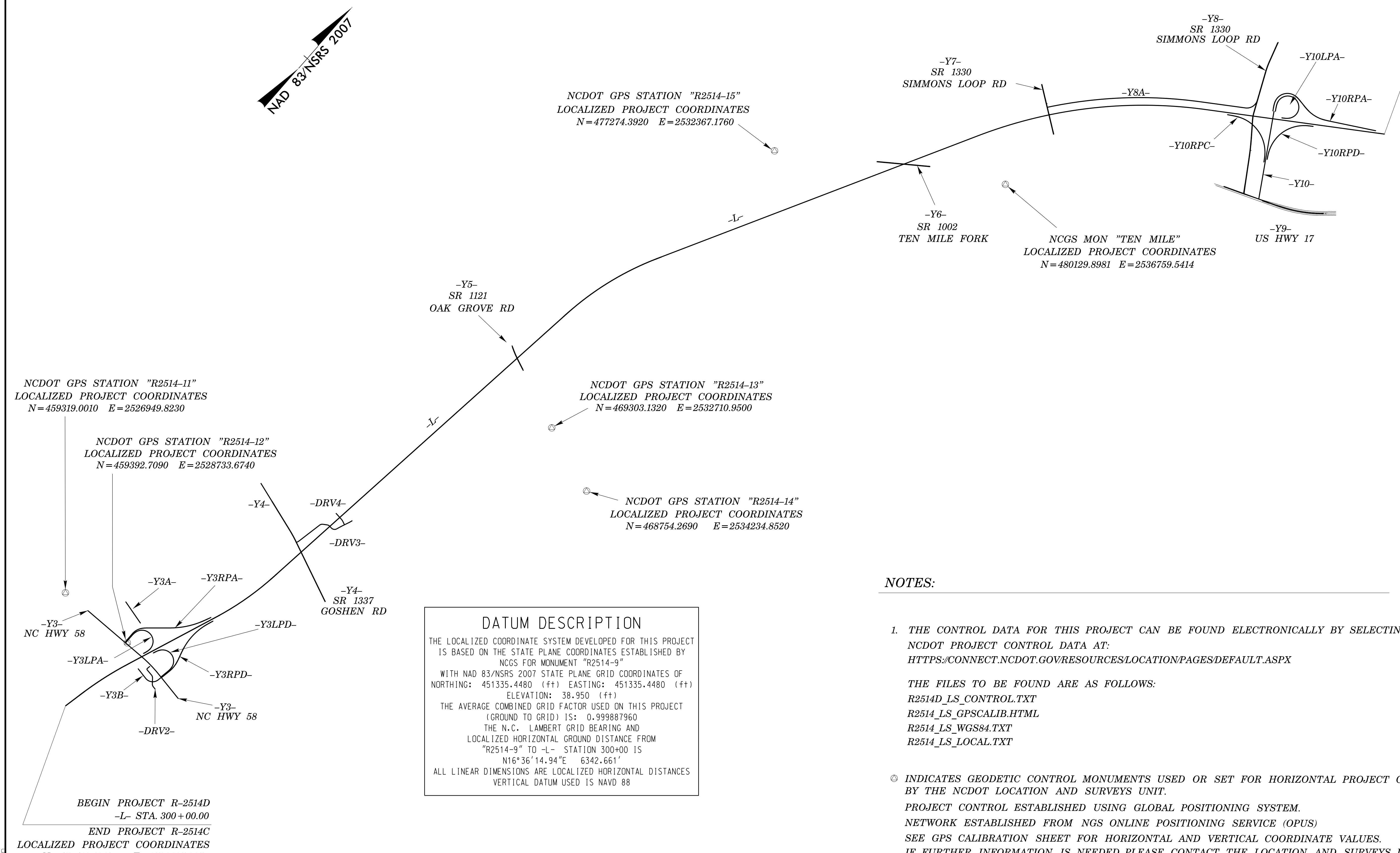


6/2/09

# SURVEY CONTROL SHEET R-2514D

|                       |           |
|-----------------------|-----------|
| PROJECT REFERENCE NO. | SHEET NO. |
| R-2514D               | 1C-1      |
| Location and Surveys  |           |

END PROJECT R-2514D  
 -L- STA. 637+00.00  
 LOCALIZED PROJECT COORDINATES  
 N=486586.7773 E=2542407.4559



BEGIN PROJECT R-2514D  
 -L- STA. 300+00.00  
 END PROJECT R-2514C  
 LOCALIZED PROJECT COORDINATES  
 N=457413.6319 E=2528625.2357

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "R2514-9" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 451335.4480 (ft) EASTING: 451335.4480 (ft) ELEVATION: 38.950 (ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999887960

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2514-9" TO -L- STATION 300+00 IS N16°36'14.94"E 6342.661'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

### NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING NCDOT PROJECT CONTROL DATA AT:  
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX](https://connect.ncdot.gov/resources/location/pages/default.aspx)  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 R2514D\_LS\_CONTROL.TXT  
 R2514\_LS\_GPSCALIB.HTML  
 R2514\_LS\_WGS84.TXT  
 R2514\_LS\_LOCAL.TXT
- ⊙ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.  
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.  
 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)  
 SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.  
 IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

NOTE: DRAWING NOT TO SCALE

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# SURVEY CONTROL SHEET R-2514D

## GPS Calibration Report

Project : *R2514 calibrated*

|                   |                                |             |                             |
|-------------------|--------------------------------|-------------|-----------------------------|
| TIP Number        | R-2514                         | Date & Time | 2:01:53 PM 8/21/2008        |
| User name         | breigner                       | Zone        | North Carolina 3200         |
| Coordinate System | US State Plane 1983(at ground) | Geoid Model | Geoid03 (Comus) NC Sub Grid |
| Horizontal Datum  | NAD 1983 (Comus)               |             |                             |
| Vertical Datum    | NAVD 88                        |             |                             |
| Coordinate Units  | US survey feet                 |             |                             |
| Distance Units    | US survey feet                 |             |                             |
| Height Units      | US survey feet                 |             |                             |

### LOCAL SITE INFORMATION

|                   |                  |
|-------------------|------------------|
| Localized around  | R2514-9          |
| Latitude          | 34°58'38.28832"N |
| Longitude         | 77°14'28.40172"W |
| Site Scale Factor | 1.0001120526     |
| Height            | -82.978sft       |

The North Carolina Department of Transportation uses a **Localized Coordinate System** which is very similar to North Carolina Zone200 from which it is derived.  
**Please take care in utilizing these coordinates to eliminate confusion of the two systems.**  
 This file is to aid in the use of Real Time Kinematic (RTK) GPS during construction layout.

### Datum Transformation Parameters

Datum Transformation computation not requested

### Updated Default Projection (Transverse Mercator) Definition

Updated default projection not requested

### Horizontal Adjustment Parameters

|  |                |
|--|----------------|
| Northing coordinate of rotation center | 448950.369sft  |
| Easting coordinate of rotation center  | 2529467.657sft |
| Rotation about the center point        | 0°00'00"       |
| Translation north                      | 0.013sft       |
| Translation east                       | 0.036sft       |
| Scale factor                           | 1.00000000     |

### Vertical Adjustment Parameters

|                                     |                |
|-------------------------------------|----------------|
| Northing coordinate of origin point | 407827.968sft  |
| Easting coordinate of origin point  | 2519418.699sft |
| Vertical separation at origin       | -0.080sft      |
| Slope north                         | 1.441ppm       |
| Slope east                          | -1.370ppm      |

### Geoid Model Definition

Geoid03 (Comus) NC Sub Grid

### Residual Differences Between GPS (WGS84) And Local Coordinates

| Summary           |               |                        |              |
|-------------------|---------------|------------------------|--------------|
|                   | Maximum error | Root Mean Square error | Point        |
| Horizontal        | 0.044sft      | 0.006                  | R2514-11_GPS |
| Vertical          | 0.067sft      | 0.006                  | R2514-8_GPS  |
| Three-dimensional | 0.067sft      | 0.008                  | R2514-8_GPS  |

| Point Residuals   |                  |                                   |                |                   |                  |
|-------------------|------------------|-----------------------------------|----------------|-------------------|------------------|
| WGS84 Coordinates |                  | Calculated point FOR DISPLAY ONLY |                | Local Coordinates |                  |
| Point             | R2514-1_GPS      | Northing                          | 407827.968sft  | Point R2514-1     |                  |
| Latitude          | 34°51'29.31483"N | Easting                           | 2519418.699sft | Northing          | 407827.974sft    |
| Longitude         | 77°16'06.35983"W | Elevation                         | 43.564sft      | Easting           | 2519418.713sft   |
| Height            | -78.235sft       | Horz error                        | 0.015sft       | Elevation         | 43.599sft        |
|                   |                  | Vert error                        | 0.035sft       | Utilized          | Horz and Vert    |
|                   |                  | 3D error                          | 0.038sft       | Quality           | Control quality  |
| Point             | R2514-2_GPS      | Northing                          | 408945.433sft  | Point R2514-2     |                  |
| Latitude          | 34°51'40.14315"N | Easting                           | 2520708.019sft | Northing          | 408945.434sft    |
| Longitude         | 77°15'50.65691"W | Elevation                         | 43.503sft      | Easting           | 2520708.029sft   |
| Height            | -78.318sft       | Horz error                        | 0.010sft       | Elevation         | 43.506sft        |
|                   |                  | Vert error                        | 0.003sft       | Utilized          | Horz and Vert    |
|                   |                  | 3D error                          | 0.011sft       | Quality           | Adjusted quality |
| Point             | R2514-3_GPS      | Northing                          | 418524.531sft  | Point R2514-3     |                  |
| Latitude          | 34°53'14.34116"N | Easting                           | 2523780.188sft | Northing          | 418524.533sft    |
| Longitude         | 77°15'11.77526"W | Elevation                         | 41.639sft      | Easting           | 2523780.196sft   |
| Height            | -80.263sft       | Horz error                        | 0.008sft       | Elevation         | 41.637sft        |
|                   |                  | Vert error                        | 0.002sft       | Utilized          | Horz and Vert    |
|                   |                  | 3D error                          | 0.008sft       | Quality           | Adjusted quality |
| Point             | R2514-4_GPS      | Northing                          | 417924.703sft  | Point R2514-4     |                  |
| Latitude          | 34°53'08.13703"N | Easting                           | 2525342.246sft | Northing          | 417924.702sft    |
| Longitude         | 77°14'53.15509"W | Elevation                         | 39.040sft      | Easting           | 2525342.253sft   |
| Height            | -82.883sft       | Horz error                        | 0.007sft       | Elevation         | 39.040sft        |
|                   |                  | Vert error                        | 0.000sft       | Utilized          | Horz and Vert    |
|                   |                  | 3D error                          | 0.007sft       | Quality           | Adjusted quality |
| Point             | R2514-5_GPS      | Northing                          | 430538.609sft  | Point R2514-5     |                  |
| Latitude          | 34°55'12.87095"N | Easting                           | 2525393.067sft | Northing          | 430538.608sft    |
| Longitude         | 77°14'49.87198"W | Elevation                         | 36.480sft      | Easting           | 2525393.069sft   |
| Height            | -85.455sft       | Horz error                        | 0.002sft       | Elevation         | 36.480sft        |
|                   |                  | Vert error                        | 0.000sft       | Utilized          | Horz and Vert    |
|                   |                  | 3D error                          | 0.002sft       | Quality           | Adjusted quality |
| Point             | R2514-6_GPS      | Northing                          | 429038.515sft  | Point R2514-6     |                  |
| Latitude          | 34°54'57.80480"N | Easting                           | 2526715.834sft | Northing          | 429038.512sft    |

|           |                  |            |                |                |                  |
|-----------|------------------|------------|----------------|----------------|------------------|
| Longitude | 77°14'34.30907"W | Elevation  | 35.502sft      | Easting        | 2526715.836sft   |
| Height    | -86.455sft       | Horz error | 0.004sft       | Elevation      | 35.502sft        |
|           |                  | Vert error | 0.000sft       | Utilized       | Horz and Vert    |
|           |                  | 3D error   | 0.004sft       | Quality        | Adjusted quality |
| Point     | R2514-7_GPS      | Northing   | 438055.893sft  | Point R2514-7  |                  |
| Latitude  | 34°56'26.77905"N | Easting    | 2527863.322sft | Northing       | 438055.890sft    |
| Longitude | 77°14'18.61136"W | Elevation  | 41.766sft      | Easting        | 2527863.319sft   |
| Height    | -80.199sft       | Horz error | 0.004sft       | Elevation      | 41.764sft        |
|           |                  | Vert error | 0.001sft       | Utilized       | Horz and Vert    |
|           |                  | 3D error   | 0.004sft       | Quality        | Adjusted quality |
| Point     | R2514-8_GPS      | Northing   | 439750.202sft  | Point R2514-8  |                  |
| Latitude  | 34°56'43.65198"N | Easting    | 2527193.599sft | Northing       | 439750.198sft    |
| Longitude | 77°14'26.29372"W | Elevation  | 40.123sft      | Easting        | 2527193.598sft   |
| Height    | -81.825sft       | Horz error | 0.004sft       | Elevation      | 40.056sft        |
|           |                  | Vert error | 0.067sft       | Utilized       | Horz and Vert    |
|           |                  | 3D error   | 0.067sft       | Quality        | Control quality  |
| Point     | R2514-9_GPS      | Northing   | 451335.456sft  | Point R2514-9  |                  |
| Latitude  | 34°58'38.28827"N | Easting    | 2526812.792sft | Northing       | 451335.448sft    |
| Longitude | 77°14'28.40192"W | Elevation  | 38.949sft      | Easting        | 2526812.771sft   |
| Height    | -82.951sft       | Horz error | 0.023sft       | Elevation      | 38.950sft        |
|           |                  | Vert error | 0.001sft       | Utilized       | Horz and Vert    |
|           |                  | 3D error   | 0.023sft       | Quality        | Adjusted quality |
| Point     | R2514-10_GPS     | Northing   | 450596.123sft  | Point R2514-10 |                  |
| Latitude  | 34°58'30.78091"N | Easting    | 2527929.733sft | Northing       | 450596.117sft    |
| Longitude | 77°14'15.13979"W | Elevation  | 37.739sft      | Easting        | 2527929.718sft   |
| Height    | -84.186sft       | Horz error | 0.017sft       | Elevation      | 37.738sft        |
|           |                  | Vert error | 0.001sft       | Utilized       | Horz and Vert    |
|           |                  | 3D error   | 0.017sft       | Quality        | Adjusted quality |
| Point     | R2514-11_GPS     | Northing   | 459392.719sft  | Point R2514-11 |                  |
| Latitude  | 34°59'57.63114"N | Easting    | 2528733.702sft | Northing       | 459392.709sft    |
| Longitude | 77°14'03.60057"W | Elevation  | 30.746sft      | Easting        | 2528733.674sft   |
| Height    | -91.132sft       | Horz error | 0.030sft       | Elevation      | 30.745sft        |
|           |                  | Vert error | 0.000sft       | Utilized       | Horz and Vert    |
|           |                  | 3D error   | 0.030sft       | Quality        | Adjusted quality |
| Point     | R2514-12_GPS     | Northing   | 459319.015sft  | Point R2514-12 |                  |
| Latitude  | 34°59'57.21553"N | Easting    | 2526949.865sft | Northing       | 459319.001sft    |
| Longitude | 77°14'25.05454"W | Elevation  | 25.752sft      | Easting        | 2526949.823sft   |
| Height    | -96.095sft       | Horz error | 0.044sft       | Elevation      | 25.768sft        |
|           |                  | Vert error | 0.016sft       | Utilized       | Horz and Vert    |
|           |                  | 3D error   | 0.047sft       | Quality        | Control quality  |
| Point     | R2514-13_GPS     | Northing   | 469303.134sft  | Point R2514-13 |                  |
| Latitude  | 35°01'34.93473"N | Easting    | 2532710.956sft | Northing       | 469303.132sft    |
| Longitude | 77°13'13.66659"W | Elevation  | 37.360sft      | Easting        | 2532710.950sft   |
| Height    | -84.483sft       | Horz error | 0.007sft       | Elevation      | 37.359sft        |
|           |                  | Vert error | 0.001sft       | Utilized       | Horz and Vert    |
|           |                  | 3D error   | 0.007sft       | Quality        | Adjusted quality |
| Point     | R2514-14_GPS     | Northing   | 468754.272sft  | Point R2514-14 |                  |
| Latitude  | 35°01'29.23639"N | Easting    | 2534234.861sft | Northing       | 468754.269sft    |

### DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "R2514-9"  
 WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF  
 NORTHING: 451335.4480 (ft) EASTING: 451335.4480 (ft)  
 ELEVATION: 38.950 (ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999887960  
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2514-9" TO -L- STATION 300+00 IS  
 N16°36'14.94"E 6342.661'  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE



6/2/99

# SURVEY CONTROL SHEET R-2514D

|           |                  |            |               |                |                  |
|-----------|------------------|------------|---------------|----------------|------------------|
| Longitude | 77°12'55.46485"W | Elevation  | 27.784sf      | Easting        | 2534234.852sf    |
| Height    | -94.092sf        | Horz error | 0.010sf       | Elevation      | 27.782sf         |
|           |                  | Vert error | 0.002sf       | Utilized       | Horz and Vert    |
|           |                  | 3D error   | 0.010sf       | Quality        | Adjusted quality |
| Point     | R2514-15 GPS     | Northing   | 477274.384sf  | Point R2514-15 |                  |
| Latitude  | 35°02'53.82459"N | Easting    | 2532367.167sf | Northing       | 477274.392sf     |
| Longitude | 77°13'16.08227"W | Elevation  | 37.069sf      | Easting        | 2532367.176sf    |
| Height    | -84.670sf        | Horz error | 0.012sf       | Elevation      | 37.071sf         |
|           |                  | Vert error | 0.002sf       | Utilized       | Horz and Vert    |
|           |                  | 3D error   | 0.012sf       | Quality        | Adjusted quality |
| Point     | R2514-16 GPS     | Northing   | 478923.276sf  | Point R2514-16 |                  |
| Latitude  | 35°03'09.71350"N | Easting    | 2534716.028sf | Northing       | 478923.284sf     |
| Longitude | 77°12'47.47979"W | Elevation  | 34.233sf      | Easting        | 2534716.038sf    |
| Height    | -87.520sf        | Horz error | 0.013sf       | Elevation      | 34.234sf         |
|           |                  | Vert error | 0.001sf       | Utilized       | Horz and Vert    |
|           |                  | 3D error   | 0.013sf       | Quality        | Adjusted quality |
| Point     | R2514-17 GPS     | Northing   | 488782.056sf  | Point R2514-17 |                  |
| Latitude  | 35°04'45.44499"N | Easting    | 2544527.004sf | Northing       | 488782.073sf     |
| Longitude | 77°10'47.32099"W | Elevation  | 35.852sf      | Easting        | 2544527.040sf    |
| Height    | -85.910sf        | Horz error | 0.039sf       | Elevation      | 35.869sf         |
|           |                  | Vert error | 0.017sf       | Utilized       | Horz and Vert    |
|           |                  | 3D error   | 0.043sf       | Quality        | Control quality  |
| Point     | R2514-18 GPS     | Northing   | 486820.575sf  | Point R2514-18 |                  |
| Latitude  | 35°04'25.95814"N | Easting    | 2545021.401sf | Northing       | 486820.591sf     |
| Longitude | 77°10'41.80660"W | Elevation  | 35.889sf      | Easting        | 2545021.430sf    |
| Height    | -85.910sf        | Horz error | 0.033sf       | Elevation      | 35.889sf         |
|           |                  | Vert error | 0.000sf       | Utilized       | Horz and Vert    |
|           |                  | 3D error   | 0.033sf       | Quality        | Adjusted quality |

### DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "R2514-9"  
 WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF  
 NORTHING: 451335.4480 (ft) EASTING: 451335.4480 (ft)  
 ELEVATION: 38.950 (ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999887960  
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2514-9" TO L- STATION 300+00 IS  
 N16°36'14.94"E 6342.661'  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

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 6/2/99

SURVEY CONTROL SHEET R-2514D

PROJECT REFERENCE NO. R-2514D SHEET NO. IC-4
Location and Surveys

Table with columns: POINT, DESC., NORTH, EAST, ELEVATION, L STATION, OFFSET. Contains data for points BL-24 through BL-81.

Table with columns: POINT, DESC., NORTH, EAST, ELEVATION, Y6 STATION, OFFSET. Contains data for points GPS15, GPS16, BY7-90, 1003, 1004, 91.

Table with columns: POINT, DESC., NORTH, EAST, ELEVATION, Y8 STATION, OFFSET. Contains data for points BY8-92, 1005, 1006, 93, 94.

Table with columns: POINT, DESC., NORTH, EAST, ELEVATION, Y9 STATION, OFFSET. Contains data for points BY9-95, 96, 1007, 97.

Table with columns: POINT, DESC., NORTH, EAST, ELEVATION, Y10 STATION, OFFSET. Contains data for points BY10-98, 99, 100, 101, 102, 1008.

Table with columns: POINT, DESC., NORTH, EAST, ELEVATION, Y3 STATION, OFFSET. Contains data for points GPS11, GPS12, 999, 33, BY4-83, 84, 1000, 85, BY5-86, 1001, GPS13, GPS14.

Table with columns: POINT, DESC., NORTH, EAST, ELEVATION, Y6 STATION, OFFSET. Contains data for benchmark points BM22 through BM32.

Table with columns: POINT, DESC., NORTH, EAST, ELEVATION, Y3 STATION, OFFSET. Contains data for points GPS11, GPS12, 999, 33.

Table with columns: POINT, DESC., NORTH, EAST, ELEVATION, Y4 STATION, OFFSET. Contains data for points BY4-83, 84, 1000, 85.

Table with columns: POINT, DESC., NORTH, EAST, ELEVATION, Y5 STATION, OFFSET. Contains data for points BY5-86, 1001, GPS13, GPS14.

NOTES:

- 1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING NCDOT PROJECT CONTROL DATA AT: HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX
THE FILES TO BE FOUND ARE AS FOLLOWS: R2514D\_LS\_CONTROL.TXT, R2514\_LS\_GPSCALIB.HTM, R2514\_LS\_WGSS4.TXT, R2514\_LS\_LOCAL.TXT
INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT. PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS). SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "R2514-9" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 451335.4480 (ft) EASTING: 451335.4480 (ft) ELEVATION: 38.950 (ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999887960 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GRID DISTANCE FROM "R2514-9" TO -L- STATION 300+00 IS N16°36'14.94"E 6342.661' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

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# SURVEY CONTROL SHEET R-2514D

## FINAL ROW MONUMENTS CONTINUED

ROW MARKER IRON PIN AND CAP-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| Y3A   | 13+85.00 | 30.00  | 459937.5517 | 2528468.3317 |
| Y3A   | 14+34.00 | 90.00  | 459867.4621 | 2528501.3234 |
| Y3A   | 14+95.00 | 90.00  | 459852.6732 | 2528560.5035 |
| Y3A   | 15+25.00 | 50.00  | 459884.2066 | 2528599.3062 |
| Y3A   | 15+25.00 | 30.00  | 459903.6099 | 2528604.1550 |

ROW MARKER IRON PIN AND CAP-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| Y3RPD | 12+40.00 | -90.00 | 460776.9921 | 2529868.0935 |
| Y3RPD | 18+79.45 | -90.00 | 460185.9184 | 2529846.9883 |
| Y3RPD | 21+19.45 | -90.00 | 459961.7541 | 2529906.5768 |
| Y3RPD | 23+29.45 | -90.00 | 459743.5495 | 2529958.4159 |
| Y3RPD | 25+23.61 | -90.00 | 459523.3755 | 2529953.5555 |

ROW MARKER IRON PIN AND CAP-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| DRV3  | 10+30.71 | -30.00 | 463627.6430 | 2530083.6879 |
| DRV3  | 10+84.81 | -30.00 | 463674.3266 | 2530097.2803 |
| DRV3  | 16+50.72 | -30.00 | 464229.7084 | 2530205.9149 |
| DRV3  | 17+31.97 | -30.00 | 464314.5416 | 2530263.8807 |
| DRV3  | 21+39.78 | 30.00  | 464462.4435 | 2530628.9644 |
| DRV3  | 23+02.41 | 30.00  | 464612.1653 | 2530687.9620 |
| DRV3  | 23+02.41 | 22.00  | 464615.3058 | 2530680.6042 |
| DRV3  | 23+62.46 | -30.00 | 464690.9402 | 2530656.3510 |
| DRV3  | 23+62.46 | 22.00  | 464670.5355 | 2530704.1770 |
| DRV3  | 24+75.00 | 22.00  | 464779.4022 | 2530742.3454 |
| DRV3  | 24+75.00 | -30.00 | 464793.3229 | 2530692.2434 |

ROW MARKER IRON PIN AND CAP-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| Y3B   | 10+00.00 | 60.00  | 459055.8954 | 2529290.5679 |
| Y3B   | 10+15.00 | -60.00 | 459171.1134 | 2529327.3078 |
| Y3B   | 10+75.00 | 60.00  | 459042.1492 | 2529364.2975 |
| Y3B   | 10+75.00 | -60.00 | 459160.1164 | 2529386.2914 |
| Y3B   | 11+15.00 | 35.00  | 459059.3944 | 2529408.2019 |
| Y3B   | 11+25.00 | -25.00 | 459116.5452 | 2529429.0295 |
| Y3B   | 12+74.19 | 35.00  | 459030.2173 | 2529564.6970 |
| Y3B   | 12+74.19 | -25.00 | 459089.2033 | 2529575.6944 |
| Y3B   | 14+00.00 | -25.00 | 459103.2583 | 2529683.0538 |
| Y3B   | 14+15.00 | 35.00  | 459057.2659 | 2529724.4775 |
| Y3B   | 14+80.00 | 30.00  | 459108.5296 | 2529779.7585 |
| Y3B   | 15+00.00 | -30.00 | 459161.6212 | 2529745.5247 |
| Y3B   | 15+90.93 | 30.00  | 459222.0007 | 2529834.3971 |
| Y3B   | 15+90.93 | -30.00 | 459232.2361 | 2529775.2765 |

ROW MARKER IRON PIN AND CAP-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| Y7    | 14+75.00 | -30.00 | 482101.6930 | 2536295.8649 |

ROW MARKER IRON PIN AND CAP-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| Y8    | 32+50.00 | -30.00 | 484563.4113 | 2540248.2492 |

ROW MARKER IRON PIN AND CAP-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| Y8A   | 10+60.00 | -30.00 | 482111.4868 | 2536335.4988 |
| Y8A   | 23+00.00 | -30.00 | 483054.8219 | 2537144.8055 |
| Y8A   | 33+00.00 | -30.00 | 483738.0167 | 2537878.5737 |
| Y8A   | 44+58.37 | -30.00 | 484433.1532 | 2538808.7076 |
| Y8A   | 45+50.00 | -55.00 | 484504.5270 | 2538871.3794 |
| Y8A   | 53+90.00 | -55.00 | 484967.5935 | 2539572.2141 |
| Y8A   | 54+75.59 | -30.00 | 484993.9183 | 2539657.4055 |
| Y8A   | 58+19.34 | -29.60 | 485260.8745 | 2539740.1357 |

ROW MARKER IRON PIN AND CAP-E

| ALIGN  | STATION  | OFFSET | NORTH       | EAST         |
|--------|----------|--------|-------------|--------------|
| Y10RPA | 15+00.00 | 90.00  | 486348.6634 | 2541734.7733 |
| Y10RPA | 15+00.00 | 33.04  | 486299.0650 | 2541762.7824 |
| Y10RPA | 18+30.00 | 90.00  | 486186.3934 | 2541447.4260 |
| Y10RPA | 19+80.00 | 90.00  | 486112.6344 | 2541316.8136 |
| Y10RPA | 20+51.14 | 90.00  | 486077.6542 | 2541254.8708 |
| Y10RPA | 22+51.14 | 90.00  | 485992.2365 | 2541087.3784 |
| Y10RPA | 25+74.00 | 90.00  | 485944.4204 | 2540808.9592 |
| Y10RPA | 27+74.00 | 90.00  | 485969.0612 | 2540622.5653 |
| Y10RPA | 28+63.47 | 90.00  | 485984.5419 | 2540534.4478 |
| Y10RPA | 30+63.47 | 105.00 | 486012.0779 | 2540303.5855 |
| Y10RPA | 35+51.39 | 105.00 | 485525.8023 | 2539972.2055 |
| Y10RPA | 37+51.39 | 135.00 | 485297.5497 | 2540043.8695 |

ROW MARKER IRON PIN AND CAP-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| Y3RPA | 10+60.90 | 90.00  | 461042.0453 | 2529664.3571 |
| Y3RPA | 12+70.90 | 90.00  | 460856.4938 | 2529577.7287 |
| Y3RPA | 18+48.13 | 90.00  | 460416.3171 | 2529254.0319 |
| Y3RPA | 20+58.13 | 90.00  | 460278.3236 | 2529102.7320 |
| Y3RPA | 24+39.02 | 90.00  | 460027.0415 | 2528816.4882 |
| Y3RPA | 26+39.02 | 90.00  | 459862.4628 | 2528663.2459 |
| Y3RPA | 28+41.08 | 90.00  | 459621.4285 | 2528594.9865 |
| Y3RPA | 29+80.00 | 90.00  | 459482.5240 | 2528596.7504 |

ROW MARKER IRON PIN AND CAP-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| DRV2  | 14+61.36 | 25.00  | 459054.9107 | 2529744.1638 |
| DRV2  | 14+61.36 | -25.00 | 459086.5586 | 2529782.8731 |
| DRV2  | 15+32.51 | 25.00  | 459010.9151 | 2529819.3126 |
| DRV2  | 15+32.51 | -25.00 | 459060.1612 | 2529827.9624 |
| DRV2  | 16+00.00 | 25.00  | 458999.2395 | 2529885.7856 |
| DRV2  | 16+00.00 | -25.00 | 459048.4857 | 2529894.4354 |

ROW MARKER IRON PIN AND CAP-E

| ALIGN  | STATION  | OFFSET | NORTH       | EAST         |
|--------|----------|--------|-------------|--------------|
| Y10RPC | 10+79.68 | 85.00  | 484558.0919 | 2539582.9962 |
| Y10RPC | 12+79.68 | 110.00 | 484624.6797 | 2539759.9828 |
| Y10RPC | 16+61.20 | 110.00 | 484682.3027 | 2540082.2391 |
| Y10RPC | 17+33.48 | 90.00  | 484695.8638 | 2540147.3655 |
| Y10RPC | 18+70.00 | 90.00  | 484668.5331 | 2540265.6415 |
| Y10RPC | 23+41.37 | 90.00  | 484435.6091 | 2540607.7544 |
| Y10RPC | 25+41.37 | 84.56  | 484282.9442 | 2540719.5034 |

### DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "R2514-9" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 451335.4480 (ft) EASTING: 451335.4480 (ft) ELEVATION: 38.950 (ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999887960

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2514-9" TO -L- STATION 300+00 IS  
N16°36'14.94"E 6342.661'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
VERTICAL DATUM USED IS NAVD 88



# SURVEY CONTROL SHEET R-2514D

## FINAL PERMANENT EASEMENT MONUMENTS

ROW MARKER PERMANENT EASEMENT-E

| ALIGN | STATION   | OFFSET  | NORTH       | EAST         |
|-------|-----------|---------|-------------|--------------|
| L     | 362+46.00 | 155.00  | 463383.7296 | 2530466.4332 |
| L     | 427+21.02 | 150.00  | 469813.5572 | 2531230.1508 |
| L     | 432+00.00 | -200.00 | 470330.6973 | 2530939.4876 |
| L     | 432+00.00 | 155.00  | 470288.5535 | 2531291.9771 |
| L     | 432+00.00 | 195.00  | 470283.8049 | 2531331.6943 |

ROW MARKER PERMANENT EASEMENT-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| Y3    | 16+00.00 | -40.00 | 459398.3467 | 2528190.7868 |
| Y3    | 16+00.00 | -75.00 | 459433.3439 | 2528190.3425 |
| Y3    | 18+38.00 | 75.00  | 459286.3773 | 2528430.2275 |
| Y3    | 18+53.00 | 88.00  | 459273.5687 | 2528445.3913 |
| Y3    | 18+68.00 | 40.00  | 459321.7553 | 2528459.7807 |
| Y3    | 18+95.00 | 40.00  | 459322.0980 | 2528486.7786 |
| Y3    | 19+58.00 | -75.00 | 459437.8885 | 2528548.3136 |
| Y3    | 32+77.92 | 45.00  | 459257.7815 | 2529856.7528 |
| Y3    | 33+28.00 | -76.00 | 459368.4654 | 2529926.7361 |
| Y3    | 33+75.00 | -65.00 | 459349.6089 | 2529971.1706 |
| Y3    | 34+05.00 | 60.00  | 459221.3235 | 2529979.4071 |
| Y3    | 34+05.00 | 45.00  | 459236.1036 | 2529981.9659 |
| Y3    | 34+30.00 | -65.00 | 459340.2265 | 2530025.3644 |
| Y3    | 34+31.51 | 60.00  | 459216.8015 | 2530005.5263 |
| Y3    | 34+31.70 | 45.00  | 459231.5486 | 2530008.2757 |
| Y3    | 34+92.00 | -56.00 | 459320.7818 | 2530084.9203 |
| Y3    | 34+98.00 | -63.00 | 459326.6556 | 2530092.0265 |
| Y3    | 35+07.00 | -54.00 | 459316.2522 | 2530099.3593 |
| Y3    | 35+30.00 | -50.00 | 459308.3873 | 2530121.3398 |
| Y3    | 37+50.00 | 45.00  | 459177.2499 | 2530321.9089 |
| Y3    | 38+00.00 | 50.00  | 459163.7937 | 2530370.3231 |
| Y3    | 38+00.00 | -50.00 | 459262.3279 | 2530387.3821 |
| Y3    | 38+00.00 | -30.00 | 459242.6211 | 2530383.9703 |

ROW MARKER PERMANENT EASEMENT-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| Y3RPA | 29+70.00 | 107.00 | 459492.3074 | 2528579.6248 |

ROW MARKER PERMANENT EASEMENT-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| Y4    | 23+74.21 | -51.00 | 463701.9160 | 2529951.0805 |
| Y4    | 23+77.06 | -30.00 | 463681.1962 | 2529946.6066 |
| Y4    | 25+00.00 | -51.00 | 463655.8942 | 2530070.2949 |
| Y4    | 25+57.00 | 30.00  | 463559.0901 | 2530091.9897 |
| Y4    | 32+70.00 | 30.00  | 463283.0151 | 2530749.3721 |
| Y4    | 32+70.00 | 46.00  | 463268.2632 | 2530743.1768 |

ROW MARKER PERMANENT EASEMENT-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| Y5    | 10+28.00 | -65.00 | 470142.3030 | 2530883.2526 |
| Y5    | 10+28.00 | -30.00 | 470112.1660 | 2530865.4548 |
| Y5    | 10+65.00 | -67.00 | 470126.1380 | 2530915.2164 |
| Y5    | 11+15.00 | 30.00  | 470017.2797 | 2530911.9589 |
| Y5    | 11+27.00 | 58.00  | 469986.7928 | 2530909.7162 |
| Y5    | 11+40.00 | 30.00  | 470005.4909 | 2530934.4343 |
| Y5    | 11+48.00 | 51.00  | 469983.0814 | 2530932.0969 |
| Y5    | 14+84.44 | 30.00  | 469868.0442 | 2531253.2271 |
| Y5    | 14+90.00 | -63.00 | 469952.3415 | 2531292.8996 |
| Y5    | 15+75.68 | -63.00 | 469920.5517 | 2531372.4601 |
| Y5    | 15+76.25 | -30.00 | 469889.6954 | 2531360.7463 |

ROW MARKER PERMANENT EASEMENT-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| Y8    | 32+35.80 | -45.00 | 484583.8432 | 2540251.6296 |
| Y8    | 33+05.00 | -45.00 | 484528.0327 | 2540293.3418 |
| Y8    | 33+05.00 | -65.00 | 484539.9205 | 2540309.4253 |
| Y8    | 33+25.00 | -65.00 | 484523.6576 | 2540321.4069 |
| Y8    | 33+25.00 | -45.00 | 484511.8194 | 2540305.2869 |
| Y8    | 35+43.00 | -45.00 | 484332.7489 | 2540432.2259 |
| Y8    | 35+43.00 | -30.00 | 484324.2806 | 2540419.8450 |

ROW MARKER PERMANENT EASEMENT-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| DRV3  | 16+50.72 | -78.00 | 464238.9228 | 2530158.8076 |
| DRV3  | 21+75.00 | 30.00  | 464495.1406 | 2530641.0258 |
| DRV3  | 21+95.00 | 65.00  | 464501.1066 | 2530680.7296 |
| DRV3  | 22+55.00 | 30.00  | 464568.8591 | 2530669.8955 |

### DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "R2514-9"

WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF  
 NORTHING: 451335.4480 (ft) EASTING: 451335.4480 (ft)  
 ELEVATION: 38.950 (ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999887960

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 N16°36'14.94"E 6342.661'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE







STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CENTERLINE COORDINATE LIST

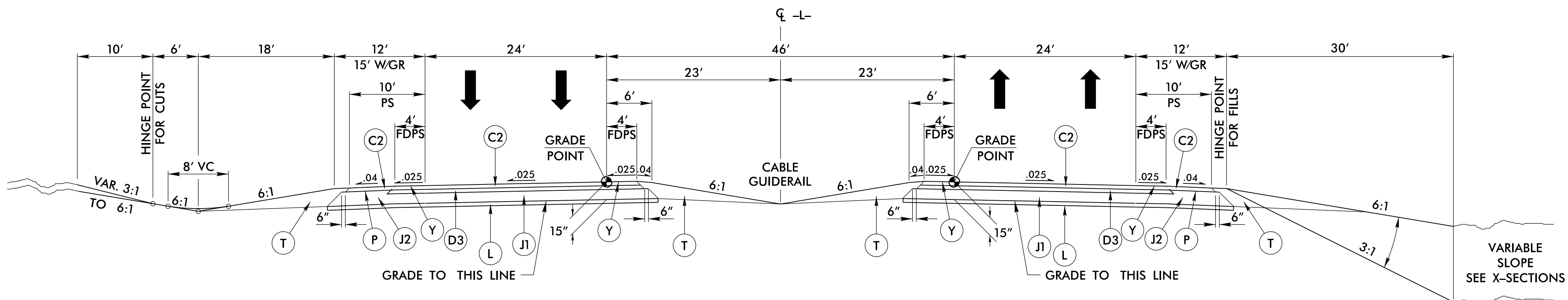
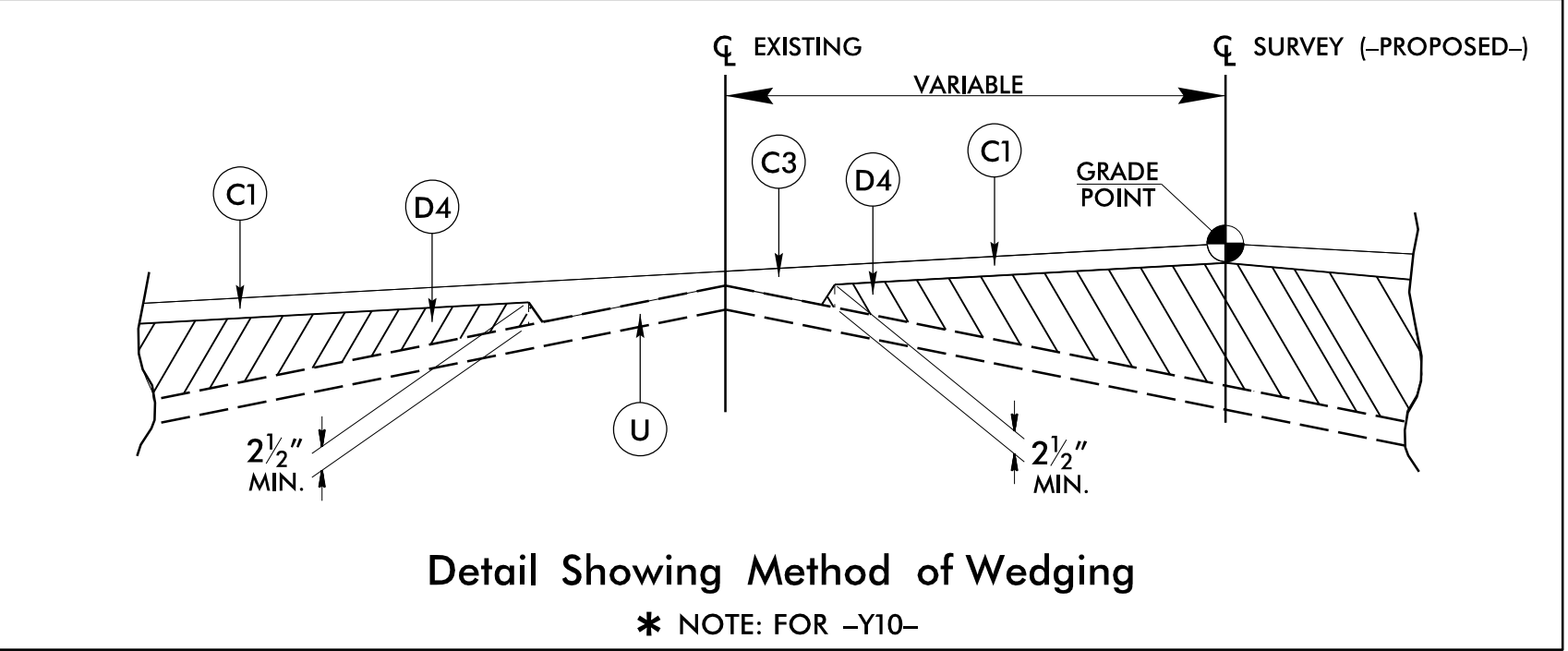
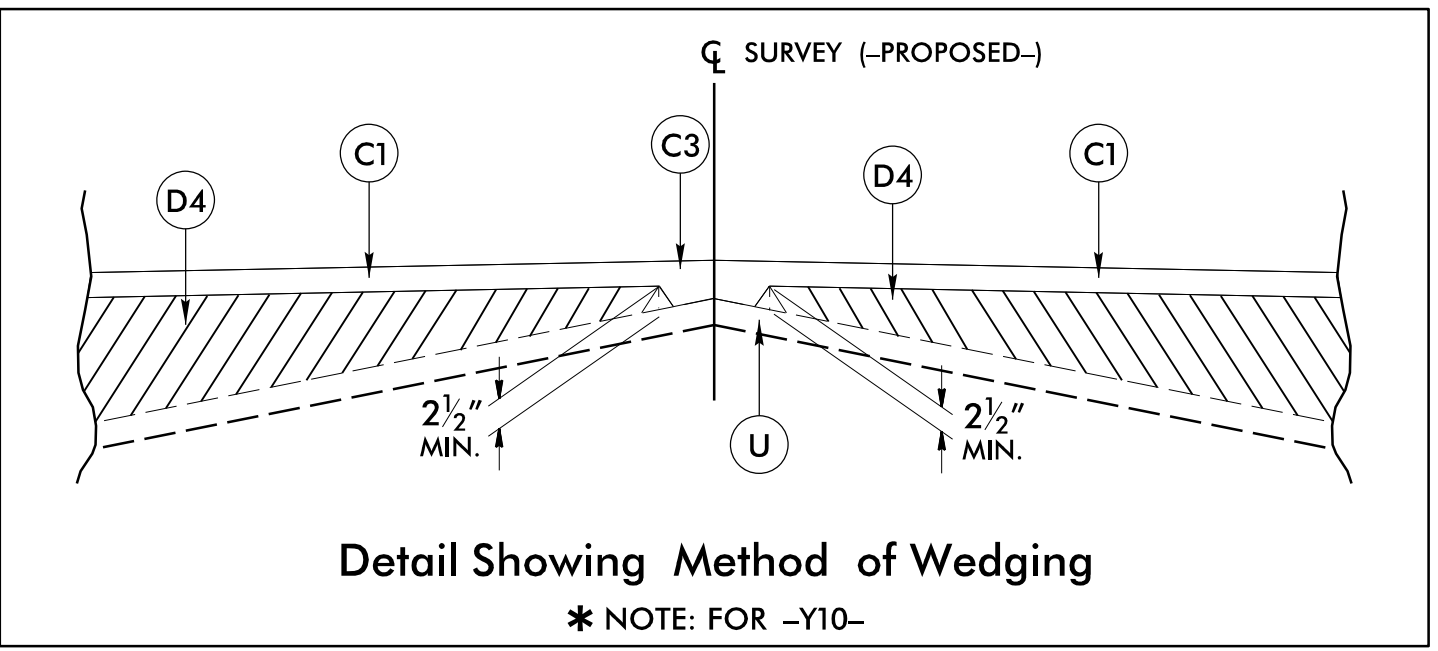
Table with 5 columns (Point #, Chain, Station, Northing (Y), Easting (X)) containing coordinate data for points 411 to 574 across the page.



|   |  |
|---|--|
| PROJECT REFERENCE NO.<br><b>R-2514D</b>                                       | SHEET NO.<br><b>2A-1</b>   |
| ROADWAY DESIGN ENGINEER<br>SEAL 033871<br>DANIEL W. GARDNER, JR.<br>3/19/2015 | PAVEMENT DESIGN ENGINEER<br>SEAL 031484<br>VLADIMIR MITCHEV<br>3/19/2015 |

| PAVEMENT SCHEDULE<br>( FINAL PAVEMENT DESIGN ) |  |    |  |
|--|--|----|--|
| 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   | L  | 3" CLASS IV AGGREGATE STABILIZATION                  |
| C2   | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS   | P  | PRIME COAT AT THE RATE OF 0.35 GAL PER SQ. YD.       |
| C3   | 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" OR GREATER THAN 2" IN DEPTH.       | R1 | 2'-6" CONCRETE CURB AND GUTTER                       |
| D1   | PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.   | R2 | 5" MONOLITHIC CONCRETE ISLAND (KEYED IN)             |
| D2   | PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.   | S  | 4" CONCRETE SIDEWALK                                 |
| D3   | PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.   | T  | EARTH MATERIAL                                       |
| D4   | 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" OR GREATER THAN 4" IN DEPTH. | U  | EXISTING PAVEMENT                                    |
| E1   | PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.   | V  | PROPOSED ASPHALT PAVEMENT MILLING (VAR. 0" TO 3")    |
| E2   | PROP. APPROX. 4 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.   | W  | VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL) |
| J1   | PROP. 8" AGGREGATE BASE COURSE   | Y  | PROPOSED MILLED RUMBLE STRIPS (SEE STD. 665.01)      |
| J2   | PROP. VAR. DEPTH AGGREGATE BASE COURSE   |    |  |

NOTES: 1) PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.  
2) MILL EXISTING PAVEMENT AT END OF GRADE TIE-IN LOCATIONS.



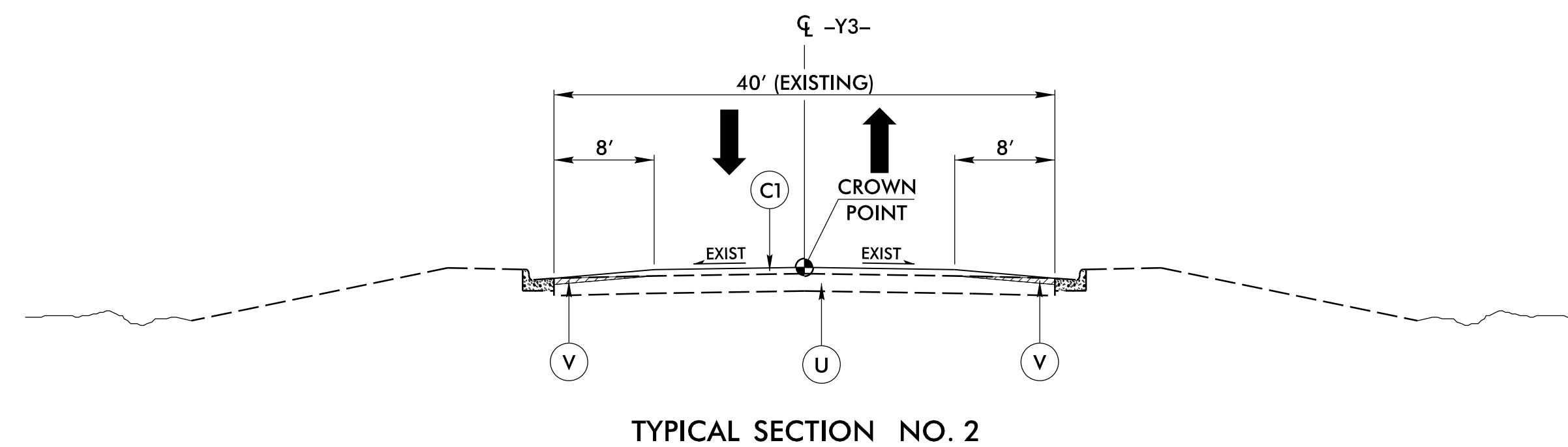
TYPICAL SECTION NO. 1

- USE TYPICAL SECTION NO. 1 FOR:
- L- STA. 300+00.00 TO -L- STA. 319+69.60 LT LANE (BEGIN BRIDGE)
  - L- STA. 300+00.00 TO -L- STA. 319+86.34 RT LANE (BEGIN BRIDGE)
  - L- STA. 320+90.60 LT LANE (END BRIDGE) TO -L- STA. 362+99.90 LT LANE (BEGIN BRIDGE)
  - L- STA. 321+07.34 RT LANE (END BRIDGE) TO -L- STA. 362+86.71 RT LANE (BEGIN BRIDGE)
  - L- STA. 363+91.40 LT LANE (END BRIDGE) TO -L- STA. 370+65.00 LT LANE (BEGIN BRIDGE)
  - L- STA. 363+78.21 RT LANE (END BRIDGE) TO -L- STA. 370+65.00 RT LANE (BEGIN BRIDGE)
  - L- STA. 375+40.00 LT LANE (END BRIDGE) TO -L- STA. 383+30.00 LT LANE (BEGIN BRIDGE)
  - L- STA. 375+40.00 RT LANE (END BRIDGE) TO -L- STA. 383+30.00 RT LANE (BEGIN BRIDGE)
  - L- STA. 395+65.00 LT LANE (END BRIDGE) TO -L- STA. 428+14.00 LT LANE (BEGIN BRIDGE)
  - L- STA. 395+65.00 RT LANE (END BRIDGE) TO -L- STA. 428+01.03 RT LANE (BEGIN BRIDGE)
  - L- STA. 429+09.66 LT LANE (END BRIDGE) TO -L- STA. 525+11.51 LT LANE (BEGIN BRIDGE)
  - L- STA. 428+96.70 RT LANE (END BRIDGE) TO -L- STA. 526+05.06 RT LANE (BEGIN BRIDGE)
  - L- STA. 527+37.01 LT LANE (END BRIDGE) TO -L- STA. 560+69.81 LT LANE (BEGIN BRIDGE)
  - L- STA. 528+30.56 RT LANE (END BRIDGE) TO -L- STA. 560+73.18 RT LANE (BEGIN BRIDGE)
  - L- STA. 561+59.11 LT LANE (END BRIDGE) TO -L- STA. 623+35.00
  - L- STA. 561+60.04 RT LANE (END BRIDGE) TO -L- STA. 623+35.00

- NOTES:
- 1) END CONSTRUCTION OF ACCELERATION LANE -L- STA. 629+75.72 RT.
  - 2) USE 2:1 REINFORCED SOIL SLOPES -L- STA. 527+00.00 TO STA. 532+00.00 LT.
  - 3) USE 3:1 FILL SLOPE IN WETLAND AREAS
- L- STA. 303+00.00 (LT) TO -L- STA. 304+00.00 (LT)
  - L- STA. 431+50.00 (LT) TO -L- STA. 433+50.00 (LT)
  - L- STA. 432+50.00 (RT) TO -L- STA. 434+50.00 (RT)
  - L- STA. 436+50.00 (RT) TO -L- STA. 438+00.00 (RT)
  - L- STA. 437+00.00 (LT) TO -L- STA. 441+50.00 (LT)
  - L- STA. 442+00.00 (RT) TO -L- STA. 445+50.00 (RT)
  - L- STA. 444+50.00 (LT) TO -L- STA. 447+00.00 (LT)
  - L- STA. 455+00.00 (LT) TO -L- STA. 455+50.00 (LT)
  - L- STA. 457+50.00 (LT) TO -L- STA. 459+00.00 (LT)
  - L- STA. 462+50.00 (LT) TO -L- STA. 463+00.00 (LT)
  - L- STA. 463+00.00 (RT) TO -L- STA. 464+00.00 (RT)
  - L- STA. 472+50.00 (RT) TO -L- STA. 474+50.00 (RT)
  - L- STA. 473+50.00 (LT) TO -L- STA. 475+00.00 (LT)
  - L- STA. 476+00.00 (RT) TO -L- STA. 477+00.00 (RT)
  - L- STA. 479+00.00 (LT) TO -L- STA. 480+00.00 (LT)
  - L- STA. 482+00.00 (LT) TO -L- STA. 482+50.00 (LT)
  - L- STA. 490+00.00 (RT) TO -L- STA. 491+00.00 (RT)
  - L- STA. 490+50.00 (LT) TO -L- STA. 492+00.00 (LT)
  - L- STA. 493+00.00 (RT) TO -L- STA. 495+50.00 (RT)
  - L- STA. 493+50.00 (LT) TO -L- STA. 496+00.00 (LT)
  - L- STA. 503+50.00 (RT) TO -L- STA. 506+50.00 (RT)
  - L- STA. 520+00.00 (LT) TO -L- STA. 520+50.00 (LT)
  - L- STA. 520+00.00 (RT) TO -L- STA. 520+50.00 (RT)
  - L- STA. 527+50.00 (LT) TO -L- STA. 528+50.00 (LT)
  - L- STA. 529+50.00 (LT) TO -L- STA. 531+50.00 (LT)
  - L- STA. 531+00.00 (RT) TO -L- STA. 531+50.00 (RT)
  - L- STA. 535+00.00 (RT) TO -L- STA. 536+00.00 (RT)
  - L- STA. 536+25.00 (LT) TO -L- STA. 537+00.00 (LT)
  - L- STA. 548+00.00 (LT) TO -L- STA. 551+50.00 (LT)
  - L- STA. 548+50.00 (RT) TO -L- STA. 553+00.00 (RT)
  - L- STA. 562+00.00 (LT) TO -L- STA. 563+50.00 (LT)
  - L- STA. 584+00.00 (LT) TO -L- STA. 588+50.00 (LT)
  - L- STA. 584+50.00 (RT) TO -L- STA. 586+50.00 (RT)
  - L- STA. 591+00.00 (LT) TO -L- STA. 592+50.00 (LT)
  - L- STA. 591+50.00 (RT) TO -L- STA. 593+00.00 (RT)
  - L- STA. 610+00.00 (LT) TO -L- STA. 612+00.00 (LT)
  - L- STA. 626+25.00 (RT) TO -L- STA. 627+75.00 (RT)

NOTE: USE MILLED RUMBLE STRIPS FOR MEDIAN AND OUTSIDE ASPHALT PAVED SHOULDERS. SEE STD. 665.01

|   |  |
|---|--|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>2A-2  |
| ROADWAY DESIGN ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 033871<br>3/19/19 | PAVEMENT DESIGN ENGINEER<br>VLADIMIR G. MITCHELL<br>SEAL 031484<br>3/19/19 |



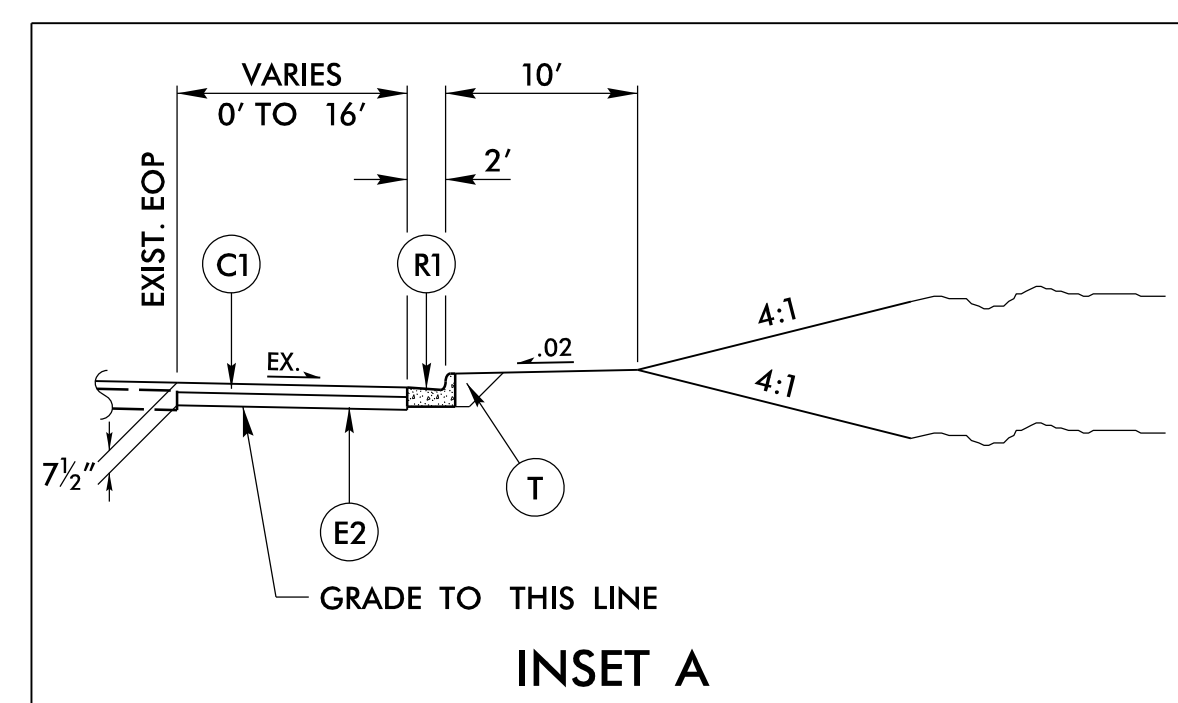
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 FOR:

-Y3- STA. 18+50.00 TO -Y3- STA. 34+50.00

NOTES:

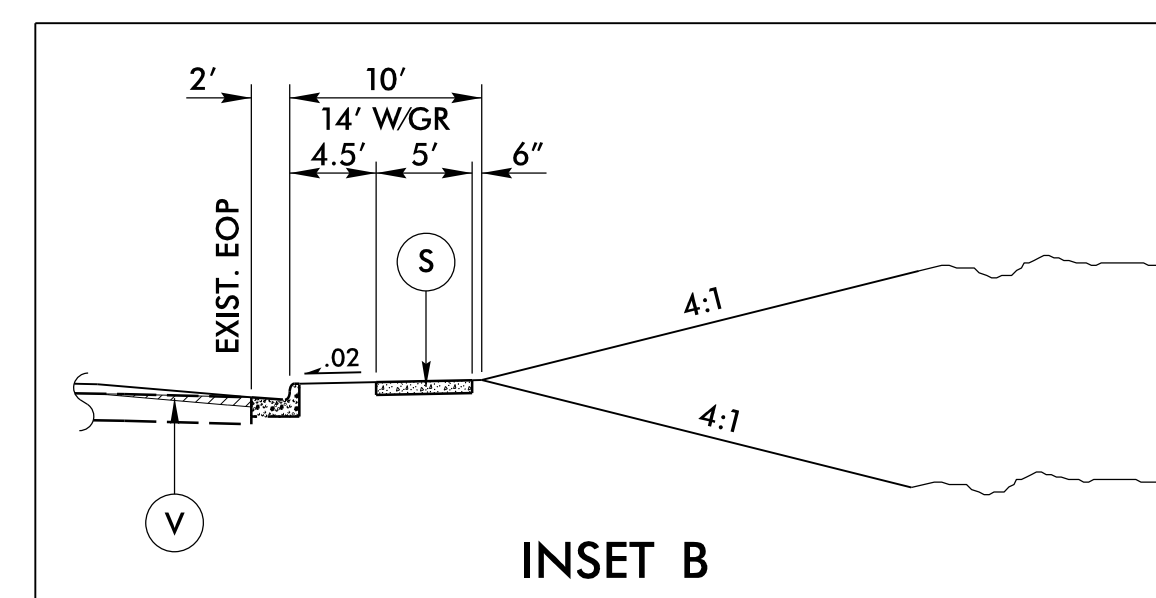
- 1) TRANSITION EOT WIDTH FROM 25' TO 40'  
-Y3- STA. 14+50.00 TO -Y3- STA. 18+50.00
- 2) TRANSITION EOT WIDTH FROM 40' TO 26'  
-Y3- STA. 34+50.00 TO -Y3- STA. 38+00.00



INSET A

USE WITH TYPICAL SECTION NO. 2:

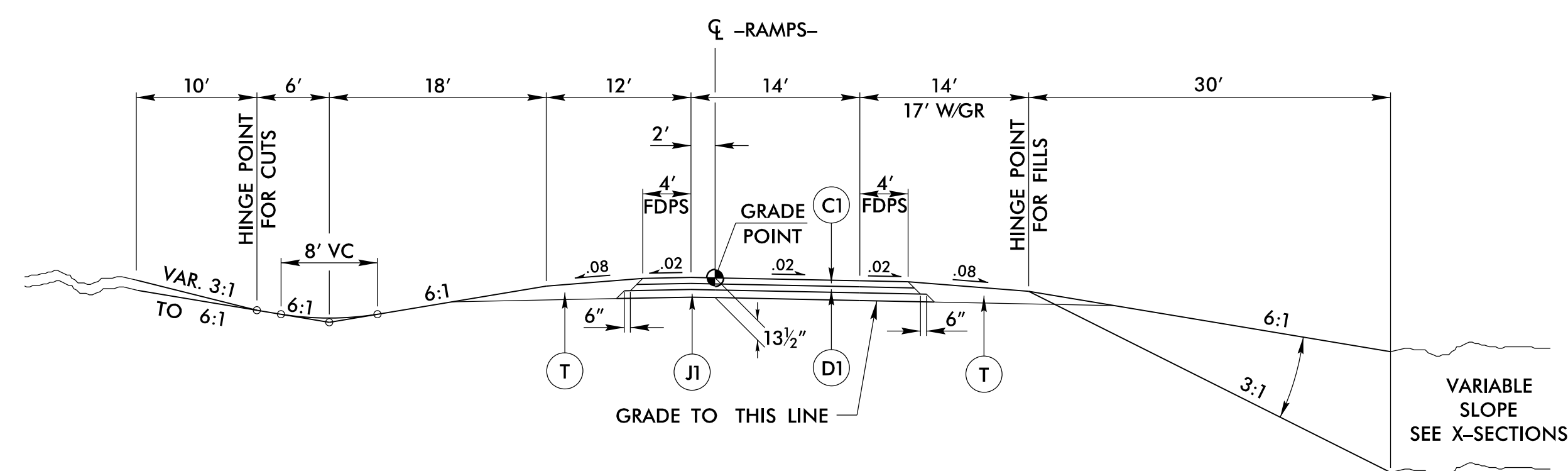
- Y3- STA. 19+34.00 (LT) TO -Y3- STA. 19+94.00 (LT)
- Y3- STA. 22+02.00 (LT) TO -Y3- STA. 24+02.00 (LT)
- Y3- STA. 30+65.00 (LT) TO -Y3- STA. 31+25.00 (LT)
- Y3- STA. 33+34.00 (LT) TO -Y3- STA. 35+34.00 (LT)



INSET B

USE WITH TYPICAL SECTION NO. 2:

-Y3- STA. 27+60.00 (RT) TO -Y3- STA. 38+00.00 (RT)



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 FOR:

- Y3RPA- STA. 10+00.00 TO -Y3RPA- STA. 30+00.02
- Y3RPD- STA. 10+00.00 TO -Y3RPD- STA. 26+40.83
- Y1ORPA- STA. 10+00.00 TO -Y1ORPA- STA. 18+43.00 (BEGIN BRIDGE)
- Y1ORPA- STA. 20+43.00 (END BRIDGE) TO -Y1ORPA- STA. 38+02.02
- Y1ORPC- STA. 10+00.00 TO -Y1ORPC- STA. 25+41.37
- Y1ORPD- STA. 10+00.00 TO -Y1ORPD- STA. 24+45.24

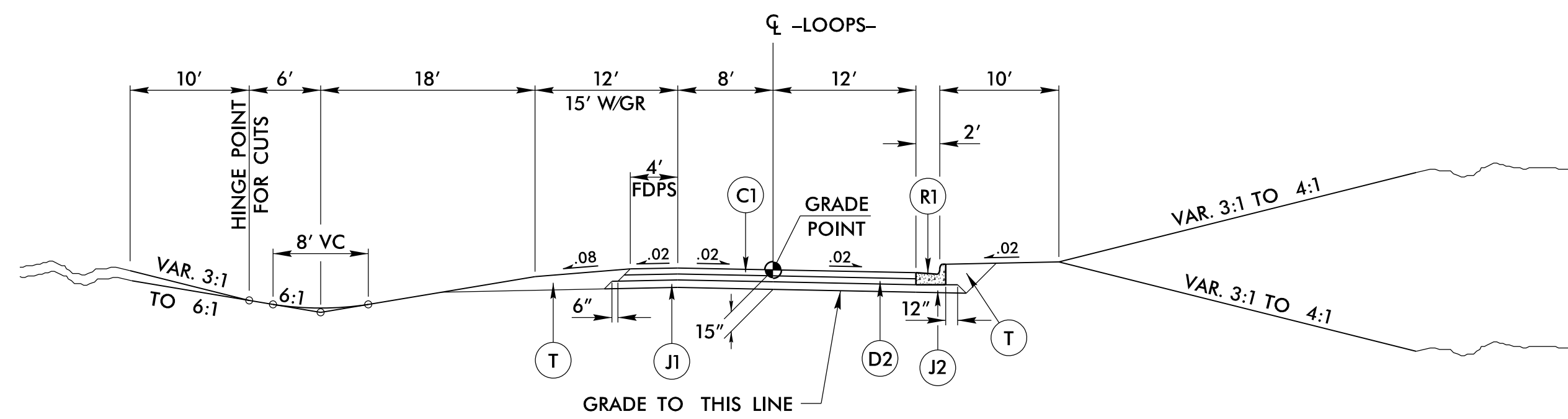
NOTE:

- 1) USE 3:1 FILL SLOPE IN WETLAND AREAS  
-Y3RPA- STA. 17+00.00 (RT) TO -Y3RPA- STA. 18+50.00 (RT)
- Y3RPD- STA. 17+50.00 (LT) TO -Y3RPD- STA. 19+50.00 (LT)
- Y1ORPA- STA. 26+00.00 (RT) TO -Y1ORPA- STA. 26+50.00 (RT)
- Y1ORPA- STA. 37+50.00 (RT) TO -Y1ORPA- STA. 38+02.02 (RT)
- Y1ORPD- STA. 10+00.00 (LT) TO -Y1ORPA- STA. 10+75.00 (LT)

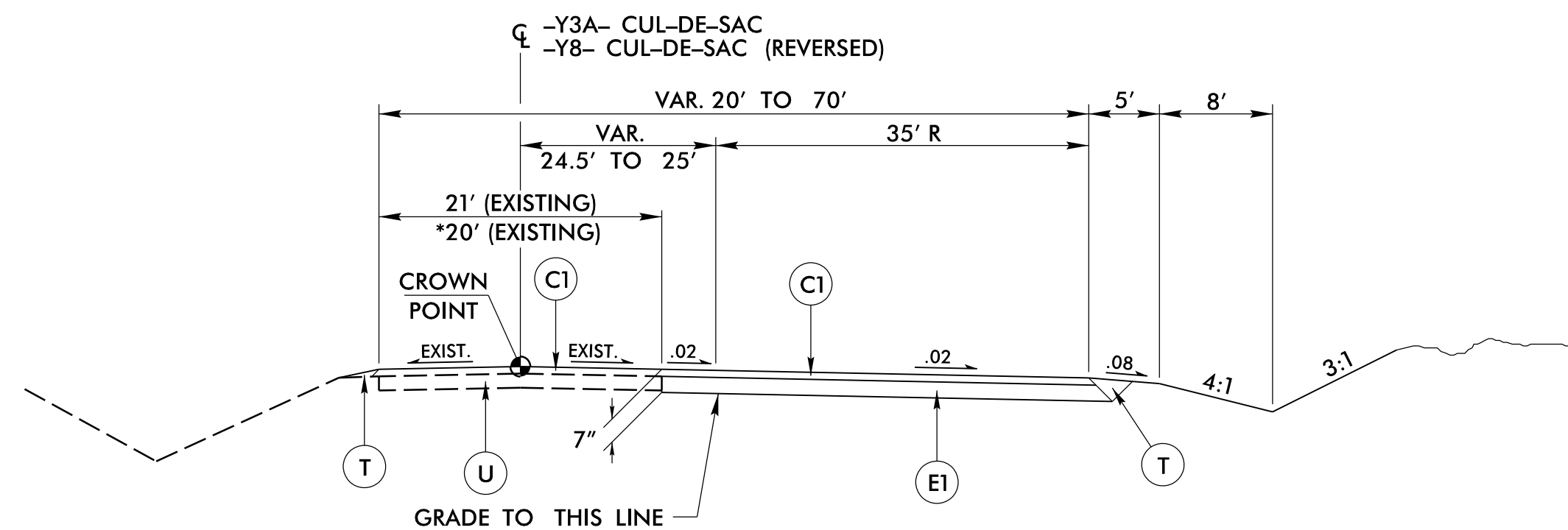
PAVEMENT SCHEDULE

|    |                       |
|----|-----------------------|
| C1 | 3" S9.5B              |
| C2 | 3" S9.5C              |
| C3 | VAR. S9.5B            |
| D1 | 2 1/2" I19.0B         |
| D2 | 4" I19.0B             |
| D3 | 4" I19.0C             |
| D4 | VAR. I19.0B           |
| E1 | 4" B25.0B             |
| E2 | 4 1/2" B25.0B         |
| J1 | 8" ABC                |
| J2 | VAR. ABC              |
| L  | 3" CL IV AGG. STAB.   |
| P  | .35 PRIME COAT        |
| R1 | 2'-6" CURB AND GUTTER |
| R2 | 5" MONOLITHIC ISLAND  |
| S  | 4" SIDEWALK           |
| T  | EARTH MATERIAL        |
| U  | EX. PAVEMENT          |
| V  | MILLING               |
| W  | WEDGING               |
| Y  | RUMBLE STRIPS         |

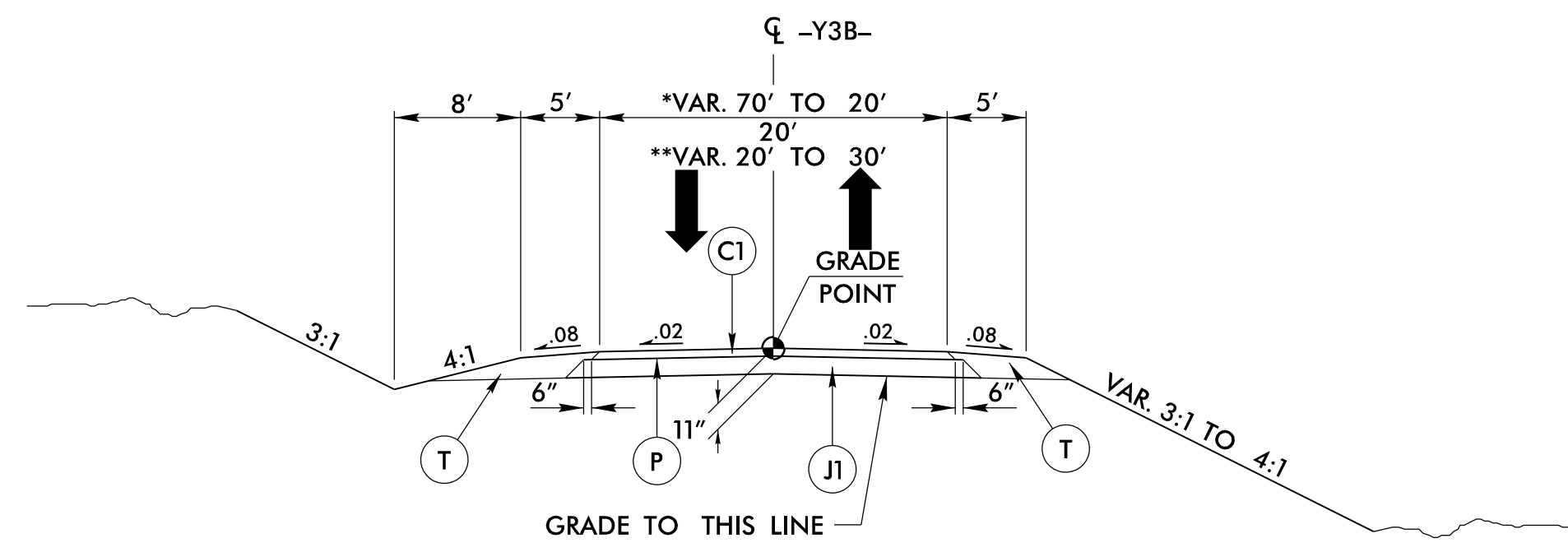




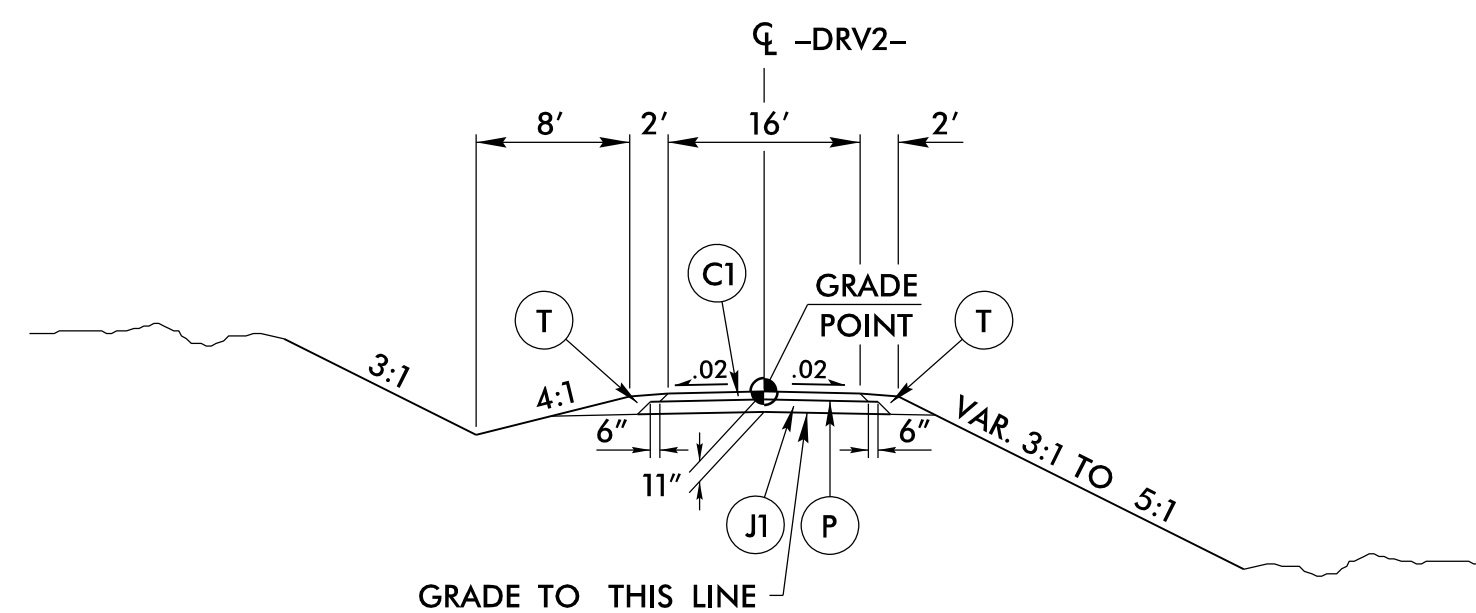
TYPICAL SECTION NO. 4



TYPICAL SECTION NO. 5



TYPICAL SECTION NO. 6



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 4 FOR:  
 -Y3LPA- STA. 10+00.00 TO -Y3LPA- STA. 21+37.85  
 -Y3LPD- STA. 10+00.00 TO -Y3LPD- STA. 19+93.14  
 -Y10LPA- STA. 10+00.00 TO -Y10LPA- STA. 24+13.14

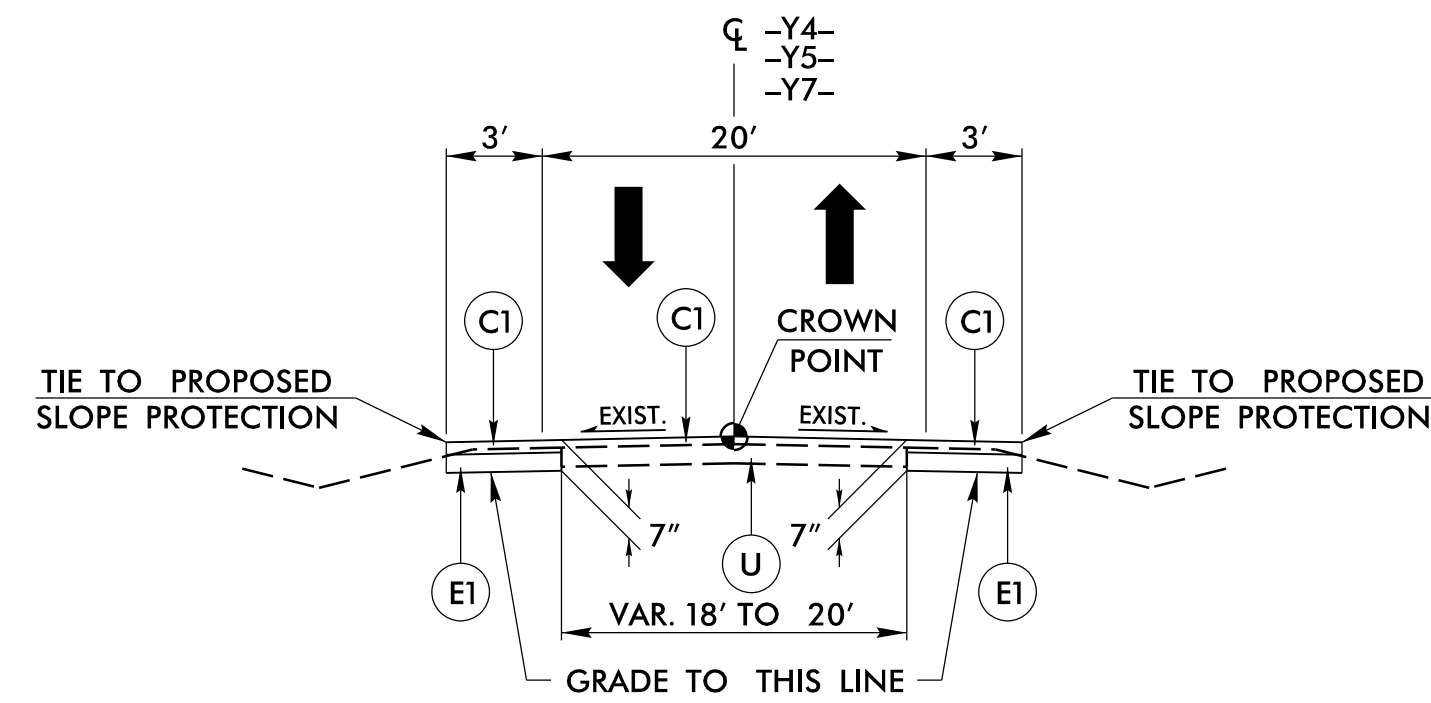
USE TYPICAL SECTION NO. 5 FOR:  
 -Y3A- STA. 13+75.00 TO -Y3A- STA. 15+00.00  
 \*-Y8- STA. 31+25.00 TO -Y8- STA. 32+50.00

NOTE:  
 1) MILLING WILL BE REQUIRED TO HANDLE PAVEMENT TIE-IN.

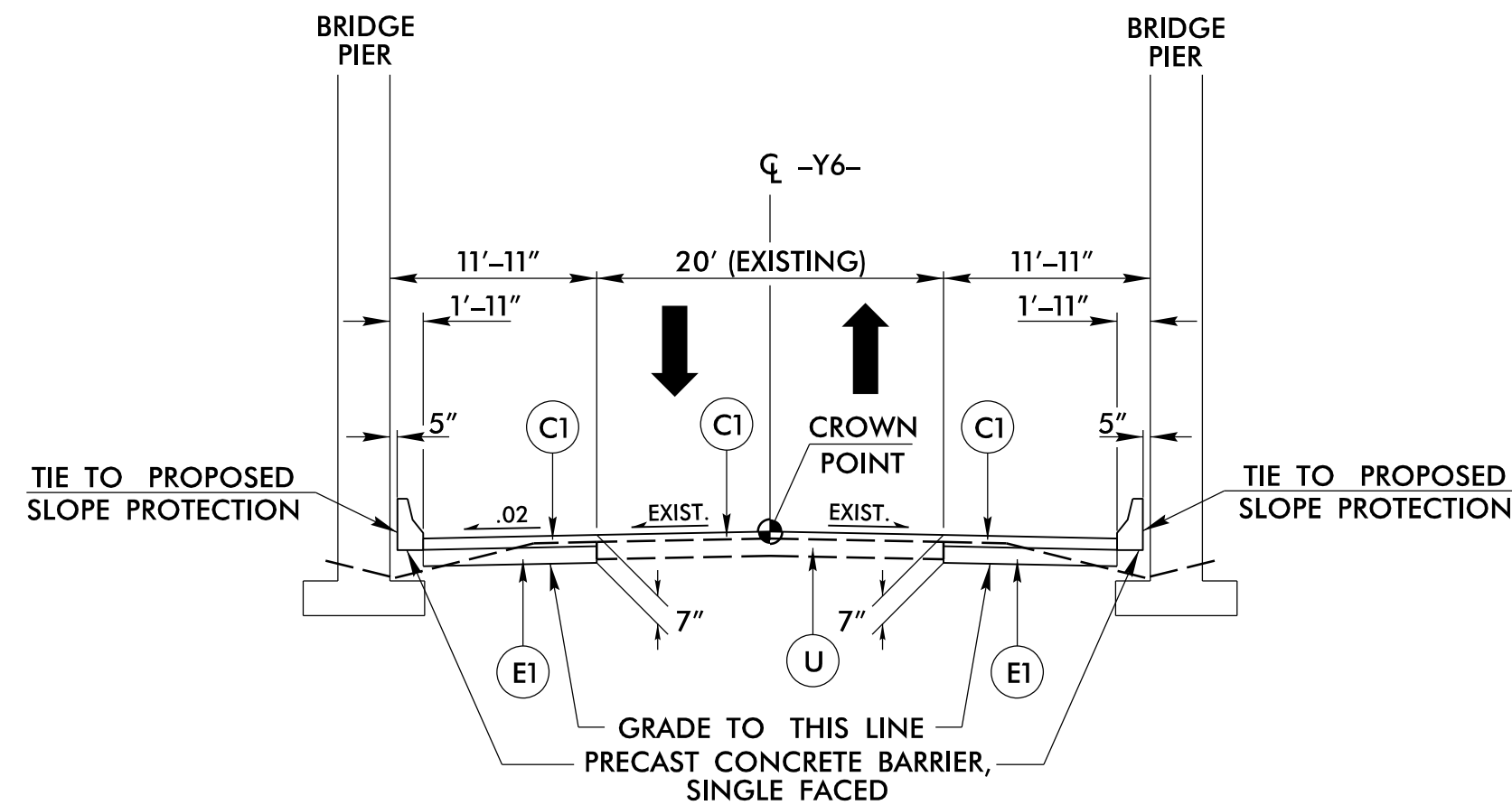
USE TYPICAL SECTION NO. 6 FOR:  
 \*-Y3B- STA. 10+13.55 TO -Y3B- STA. 10+99.78  
 -Y3B- STA. 10+99.78 TO -Y3B- STA. 15+50.00  
 \*\*Y3B- STA. 15+50.00 TO -Y3B- STA. 16+25.00

USE TYPICAL SECTION NO. 7 FOR:  
 -DRV2- STA. 14+39.11 TO -DRV2- STA. 16+00.00

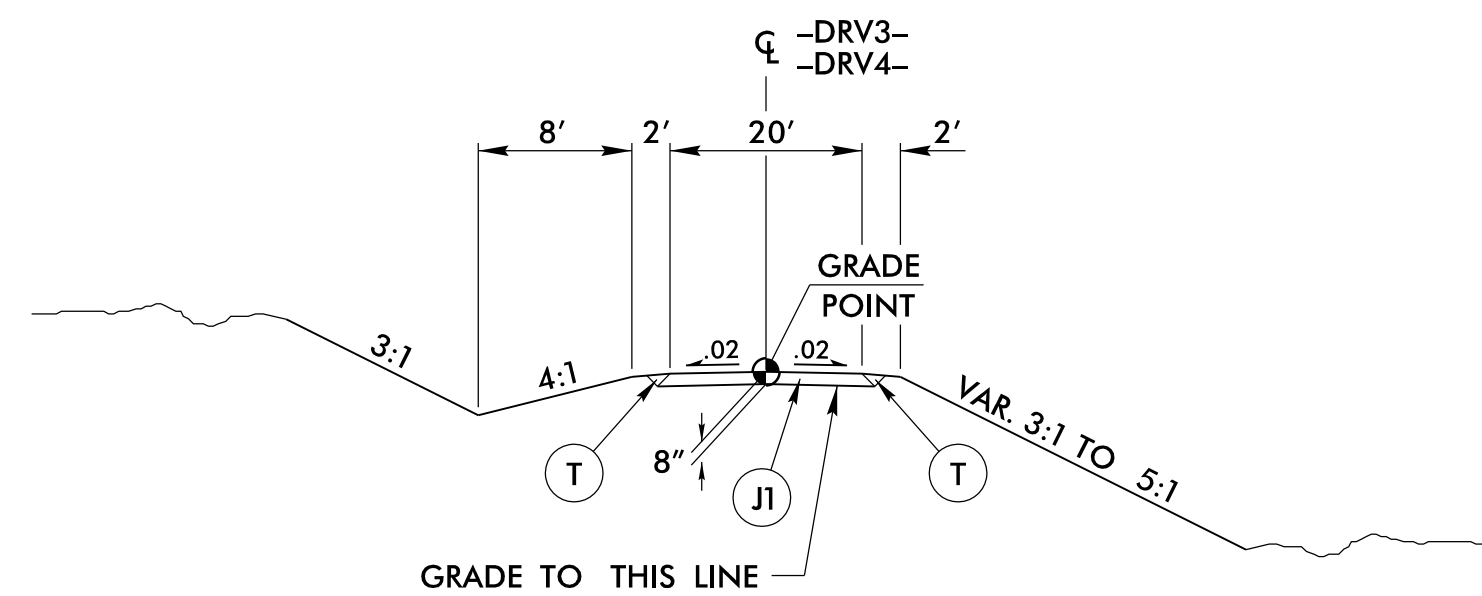
| PROJECT REFERENCE NO.   |                       | SHEET NO.   |  |
|---|-----------------------|---|--|
| R-2514D   |                       | 2A-3  |  |
| ROADWAY DESIGN ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 033871<br>3/19/2015 |                       | PAVEMENT DESIGN ENGINEER<br>VLADIMIR G. MITCHEL<br>SEAL 031484<br>3/19/2015 |  |
| <b>PAVEMENT SCHEDULE</b>  |                       |   |  |
| C1  | 3" S9.5B              |   |  |
| C2  | 3" S9.5C              |   |  |
| C3  | VAR. S9.5B            |   |  |
| D1  | 2 1/2" I19.0B         |   |  |
| D2  | 4" I19.0B             |   |  |
| D3  | 4" I19.0C             |   |  |
| D4  | VAR. I19.0B           |   |  |
| E1  | 4" B25.0B             |   |  |
| E2  | 4 1/2" B25.0B         |   |  |
| J1  | 8" ABC                |   |  |
| J2  | VAR. ABC              |   |  |
| L   | 3" CL IV AGG. STAB.   |   |  |
| P   | .35 PRIME COAT        |   |  |
| R1  | 2'-6" CURB AND GUTTER |   |  |
| R2  | 5" MONOLITHIC ISLAND  |   |  |
| S   | 4" SIDEWALK           |   |  |
| T   | EARTH MATERIAL        |   |  |
| U   | EX. PAVEMENT          |   |  |
| V   | MILLING               |   |  |
| W   | WEDGING               |   |  |
| Y   | RUMBLE STRIPS         |   |  |



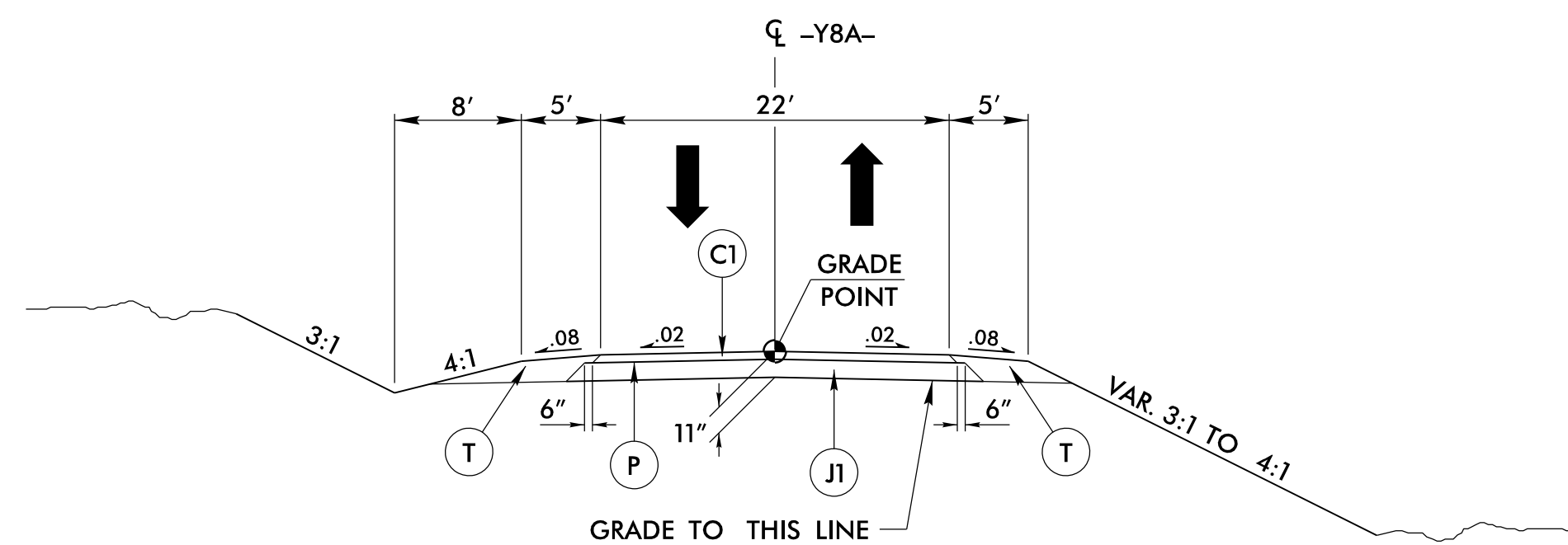
TYPICAL SECTION NO. 8



TYPICAL SECTION NO. 9



TYPICAL SECTION NO. 10



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 8 FOR:

- Y4- STA. 26+98.00 TO -Y4- STA. 28+90.00
- Y5- STA. 12+13.00 TO -Y5- STA. 13+90.00
- Y7- STA. 16+23.00 TO -Y7- STA. 17+86.00

USE TYPICAL SECTION NO. 9 FOR:

- Y6- STA. 15+20.00 TO -Y6- STA. 17+75.00 LT.
- Y6- STA. 14+40.00 TO -Y6- STA. 16+96.00 RT.

NOTE:

1) WIDEN SHOULDERS TO ACCOMMODATE PROPOSED GUARDRAIL (SEE X-SECTIONS).

- Y6- STA. 12+25.00 TO -Y6- STA. 15+20.00 LT.
- Y6- STA. 12+25.00 TO -Y6- STA. 14+40.00 RT.
- Y6- STA. 17+75.00 TO -Y6- STA. 20+00.00 LT.
- Y6- STA. 16+96.00 TO -Y6- STA. 20+00.00 RT.

USE TYPICAL SECTION NO. 10 FOR:

- DRV3- STA. 10+08.39 TO -DRV3- STA. 24+25.00
- DRV4- STA. 10+10.00 TO -DRV4- STA. 13+22.25

NOTE:

- 1) TRANSITION FROM 20' TO EXISTING
- DRV3- STA. 24+25.00 TO -DRV3- STA. 24+75.00

USE TYPICAL SECTION NO. 11 FOR:

- Y8A- STA. 10+09.81 TO -Y8A- STA. 57+81.93

NOTES:

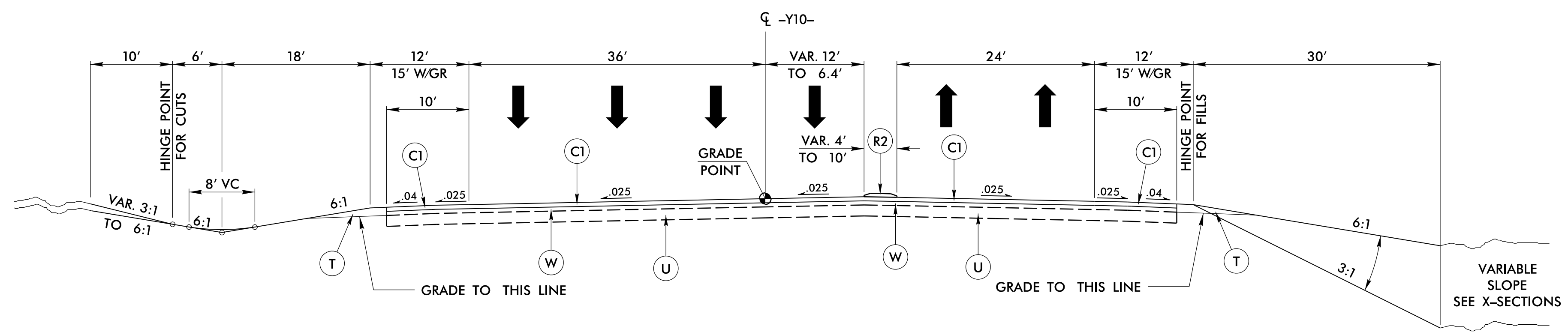
- 1) TRANSITION FROM TYPICAL NO. 11 TO EXISTING
- Y8A- STA. 57+81.93 TO -Y8A- STA. 58+31.93
- 2) USE 3:1 FILL SLOPE IN WETLAND AREAS
- Y8A- STA. 10+50.00 (LT) TO -Y8A- STA. 14+00.00 (LT)
- Y8A- STA. 11+00.00 (RT) TO -Y8A- STA. 12+50.00 (RT)
- Y8A- STA. 33+00.00 (LT) TO -Y8A- STA. 35+50.00 (LT)
- Y8A- STA. 33+50.00 (RT) TO -Y8A- STA. 35+50.00 (RT)
- Y8A- STA. 40+50.00 (LT) TO -Y8A- STA. 41+50.00 (LT)
- Y8A- STA. 40+50.00 (RT) TO -Y8A- STA. 41+50.00 (RT)

|   |  |
|---|--|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>2A-4  |
| ROADWAY DESIGN ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 033871<br>3/19/2015 | PAVEMENT DESIGN ENGINEER<br>VLADIMIR G. MITCHELL<br>SEAL 031484<br>3/19/2015 |

| PAVEMENT SCHEDULE |                       |
|-------------------|-----------------------|
| C1                | 3" S9.5B              |
| C2                | 3" S9.5C              |
| C3                | VAR. S9.5B            |
| D1                | 2 1/2" I19.0B         |
| D2                | 4" I19.0B             |
| D3                | 4" I19.0C             |
| D4                | VAR. I19.0B           |
| E1                | 4" B25.0B             |
| E2                | 4 1/2" B25.0B         |
| J1                | 8" ABC                |
| J2                | VAR. ABC              |
| L                 | 3" CL IV AGG. STAB.   |
| P                 | .35 PRIME COAT        |
| R1                | 2'-6" CURB AND GUTTER |
| R2                | 5" MONOLITHIC ISLAND  |
| S                 | 4" SIDEWALK           |
| T                 | EARTH MATERIAL        |
| U                 | EX. PAVEMENT          |
| V                 | MILLING               |
| W                 | WEDGING               |
| Y                 | RUMBLE STRIPS         |

6/2/99

|   |  |
|---|--|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>2A-5  |
| ROADWAY DESIGN ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 033871<br>3/19/2015 | PAVEMENT DESIGN ENGINEER<br>VLADIMIR G. MITCHELL<br>SEAL 031484<br>3/19/2015 |

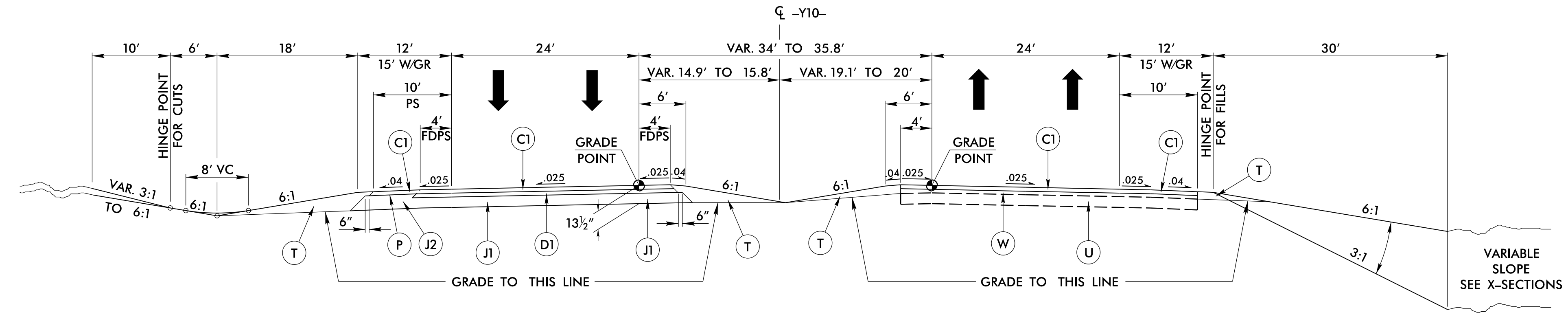


TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12 FOR:  
-Y10- STA. 15+76.00 TO -Y10- STA. 16+16.39

NOTES:  
1) MILL EXISTING PAVEMENT AS DIRECTED BY ENGINEER

-Y10- STA. 16+16.39 TO -Y10- STA. 17+00.00

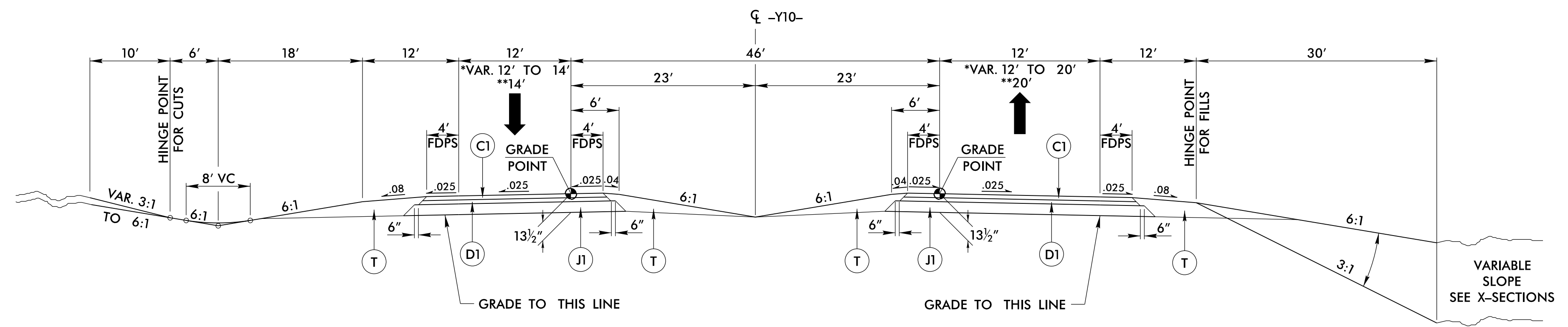


TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13 FOR:  
-Y10- STA. 17+00.00 TO -Y10- STA. 18+33.89

NOTES:  
1) MILL EXISTING PAVEMENT AS DIRECTED BY ENGINEER

-Y10- STA. 18+33.89 TO -Y10- STA. 23+06.00



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14 FOR:  
-Y10- STA. 23+06.00 TO -Y10- STA. 24+70.00  
\*-Y10- STA. 24+70.00 TO -Y10- STA. 26+00.00  
\*\*-Y10- STA. 26+00.00 TO -Y10- STA. 27+38.37 LT LANE (BEGIN BRIDGE)  
\*\*-Y10- STA. 26+00.00 TO -Y10- STA. 27+41.37 RT LANE (BEGIN BRIDGE)  
\*\*-Y10- STA. 29+23.58 LT LANE (END BRIDGE) TO -Y10- STA. 30+00.00  
\*\*-Y10- STA. 29+23.76 RT LANE (END BRIDGE) TO -Y10- STA. 30+00.00

NOTE:  
1) USE 3:1 FILL SLOPE IN WETLAND AREAS  
-Y10- STA. 29+44.42 (LT) TO -Y10- STA. 30+00.00 (LT)

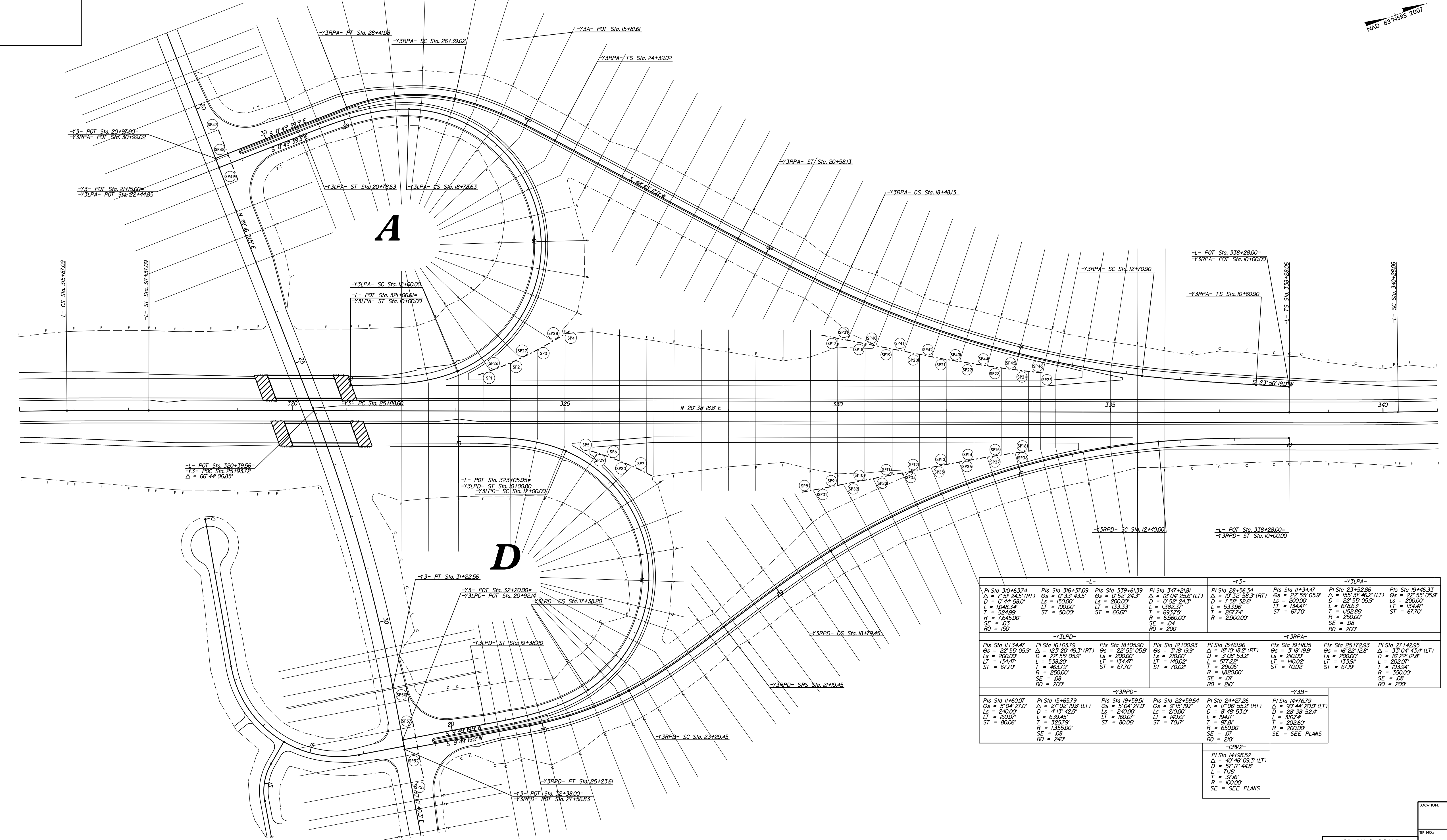
| PAVEMENT SCHEDULE |                       |
|-------------------|-----------------------|
| C1                | 3" S9.5B              |
| C2                | 3" S9.5C              |
| C3                | VAR. S9.5B            |
| D1                | 2 1/2" I19.0B         |
| D2                | 4" I19.0B             |
| D3                | 4" I19.0C             |
| D4                | VAR. I19.0B           |
| E1                | 4" B25.0B             |
| E2                | 4 1/2" B25.0B         |
| J1                | 8" ABC                |
| J2                | VAR. ABC              |
| L                 | 3" CL IV AGG. STAB.   |
| P                 | .35 PRIME COAT        |
| R1                | 2'-6" CURB AND GUTTER |
| R2                | 5" MONOLITHIC ISLAND  |
| S                 | 4" SIDEWALK           |
| T                 | EARTH MATERIAL        |
| U                 | EX. PAVEMENT          |
| V                 | MILLING               |
| W                 | WEDGING               |
| Y                 | RUMBLE STRIPS         |

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 10/11/2015



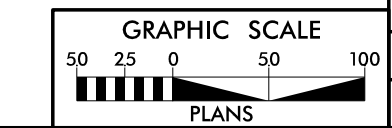
| REV | REVISION   |
|-----|--|
| 1   | REVISED PARCEL OWNER NAME PARCELS 22, 48, 52 & 53. |

| PROJECT REFERENCE NO. | SHEET NO. |
|-----------------------|-----------|
| R-25(4)               | 2/27      |



HAD 8/16/05 2007

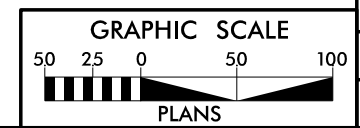
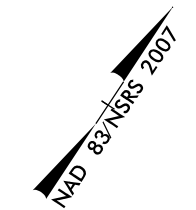
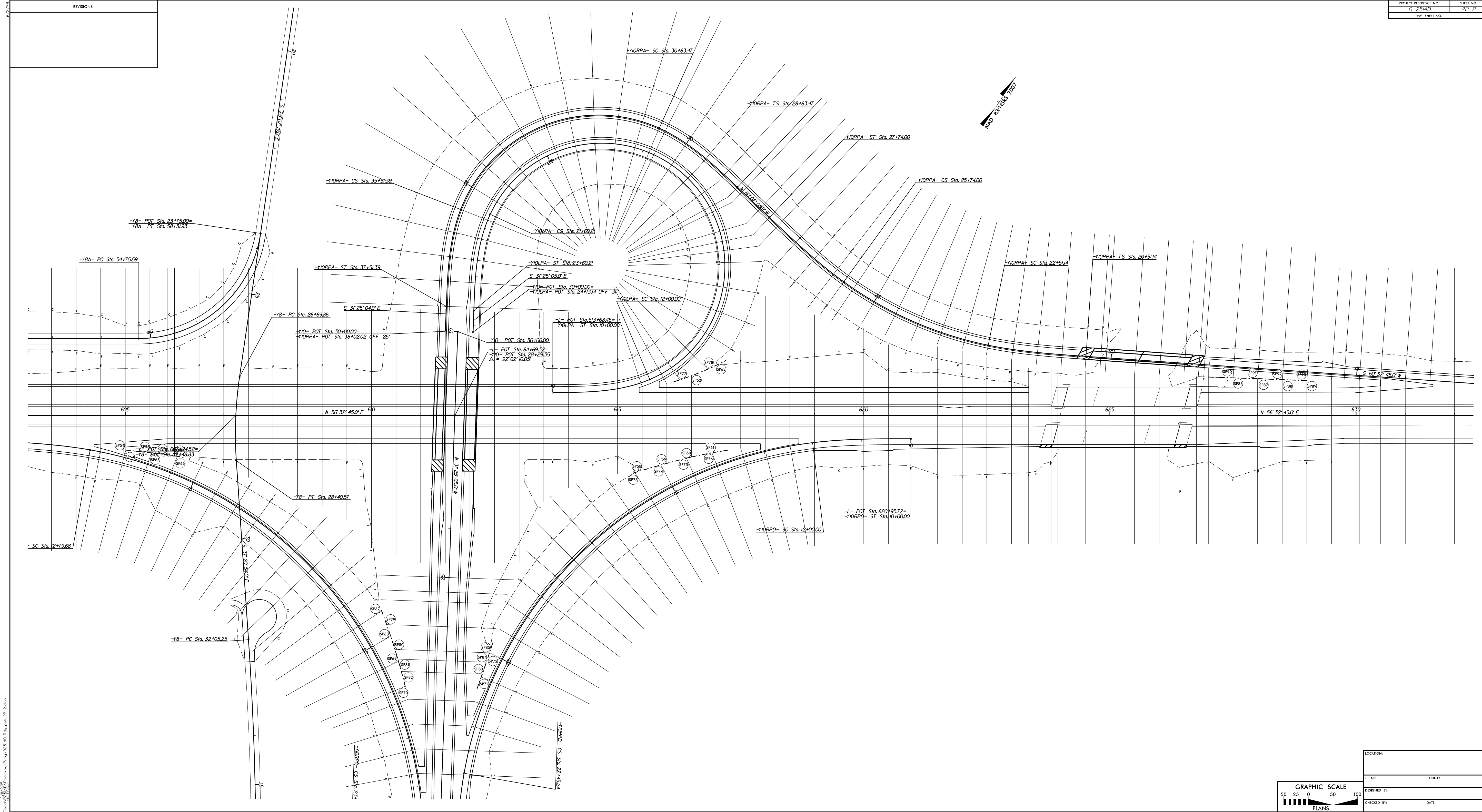
| -L-  |  |   | -Y3-  |   |   | -Y3LPA-   |  |   |
|--|--|---|---|---|---|---|--|---|
| PI Sta 310+63.74<br>Δ = 7° 51' 24.5" (RT)<br>D = 1744' 58.00"<br>L = 1048.34'<br>R = 524.95'<br>SE = 0.3<br>RO = 150'      | PI Sta 316+37.09<br>Δ = 0° 33' 43.5" (RT)<br>D = 1800.00'<br>L = 1000.00'<br>ST = 5000'<br>R = 1800.00'                          | PI Sta 319+61.39<br>Δ = 15° 04' 25.8" (LT)<br>D = 1744' 58.00"<br>L = 133.33'<br>T = 683.74'<br>R = 6360.00'<br>SE = 0.4<br>RO = 200' | PI Sta 347+21.81<br>Δ = 15° 04' 25.8" (LT)<br>D = 1744' 58.00"<br>L = 133.33'<br>T = 683.74'<br>R = 6360.00'<br>SE = 0.4<br>RO = 200' | PI Sta 28+56.34<br>Δ = 17° 32' 58.3" (RT)<br>D = 1582' 52.3"<br>L = 533.96'<br>T = 267.74'<br>R = 2500.00'                          | PI Sta 11+34.47<br>Δ = 22° 55' 05.5" (LT)<br>D = 2000.00'<br>L = 134.47'<br>ST = 67.70'<br>R = 67.70'                               | PI Sta 11+34.47<br>Δ = 22° 55' 05.5" (LT)<br>D = 2000.00'<br>L = 134.47'<br>ST = 67.70'<br>R = 67.70'                               | PI Sta 23+52.86<br>Δ = 155° 31' 46.2" (LT)<br>D = 2265' 05.3"<br>L = 678.63'<br>T = 134.47'<br>R = 2500.00'<br>SE = 0.8<br>RO = 200' | PI Sta 19+46.33<br>Δ = 22° 55' 05.5" (LT)<br>D = 2000.00'<br>L = 134.47'<br>ST = 67.70'<br>R = 67.70' |
| -Y3LPD-  |  |   | -Y3RPA-   |   |   |   |  |   |
| PI Sta 11+34.47<br>Δ = 22° 55' 05.5" (LT)<br>D = 2000.00'<br>L = 134.47'<br>ST = 67.70'<br>R = 67.70'                      | PI Sta 16+63.79<br>Δ = 27° 02' 19.8" (LT)<br>D = 2000.00'<br>L = 538.20'<br>T = 463.79'<br>R = 2500.00'<br>SE = 0.8<br>RO = 200' | PI Sta 18+05.90<br>Δ = 22° 55' 05.5" (LT)<br>D = 2000.00'<br>L = 134.47'<br>ST = 67.70'<br>R = 67.70'                                 | PI Sta 12+00.93<br>Δ = 15° 04' 25.8" (LT)<br>D = 2000.00'<br>L = 140.02'<br>T = 70.02'<br>R = 70.02'                                  | PI Sta 15+61.96<br>Δ = 15° 10' 18.2" (RT)<br>D = 3788' 53.2"<br>L = 577.22'<br>T = 291.06'<br>R = 1820.00'<br>SE = 0.7<br>RO = 210' | PI Sta 19+18.15<br>Δ = 15° 10' 18.2" (RT)<br>D = 3788' 53.2"<br>L = 577.22'<br>T = 291.06'<br>R = 1820.00'<br>SE = 0.7<br>RO = 210' | PI Sta 25+17.93<br>Δ = 15° 10' 18.2" (LT)<br>D = 3788' 53.2"<br>L = 577.22'<br>T = 291.06'<br>R = 1820.00'<br>SE = 0.7<br>RO = 210' | PI Sta 27+42.95<br>Δ = 33° 04' 43.4" (LT)<br>D = 1822' 12.5"<br>L = 202.07'<br>T = 131.54'<br>R = 3500.00'<br>SE = 0.8<br>RO = 200'  |   |
| -Y3RPD-  |  |   | -Y3B-   |   |   |   |  |   |
| PI Sta 11+60.07<br>Δ = 9° 04' 27.0" (LT)<br>D = 2400.00'<br>L = 160.00'<br>ST = 800.00'<br>R = 800.00'                     | PI Sta 15+65.79<br>Δ = 27° 02' 19.8" (LT)<br>D = 2400.00'<br>L = 639.45'<br>T = 325.79'<br>R = 1355.00'                          | PI Sta 19+59.51<br>Δ = 31° 04' 27.0" (LT)<br>D = 2400.00'<br>L = 160.00'<br>ST = 800.00'<br>R = 800.00'                               | PI Sta 22+59.64<br>Δ = 9° 15' 19.7" (LT)<br>D = 2400.00'<br>L = 160.00'<br>ST = 70.71'<br>R = 70.71'                                  | PI Sta 24+27.26<br>Δ = 17° 08' 55.2" (RT)<br>D = 1708' 53.2"<br>L = 194.71'<br>T = 57.81'<br>R = 6500.00'<br>SE = 0.7<br>RO = 210'  | PI Sta 14+76.79<br>Δ = 9° 14' 20.0" (LT)<br>D = 2638' 52.4"<br>L = 366.74'<br>T = 37.81'<br>R = 2000.00'<br>SE = SEE PLANS          |   |  |   |
| -DRV2-   |  |   |   |   |   |   |  |   |
| PI Sta 14+88.52<br>Δ = 42° 46' 08.5" (LT)<br>D = 57' 17" 44.8"<br>L = 71.6"<br>T = 37.16"<br>R = 100.00'<br>SE = SEE PLANS |  |   |   |   |   |   |  |   |



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| TR NO.:      | COUNTY:     |
| DESIGNED BY: | CHECKED BY: |
| CHECKED BY:  | DATE:       |

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| REVISIONS |
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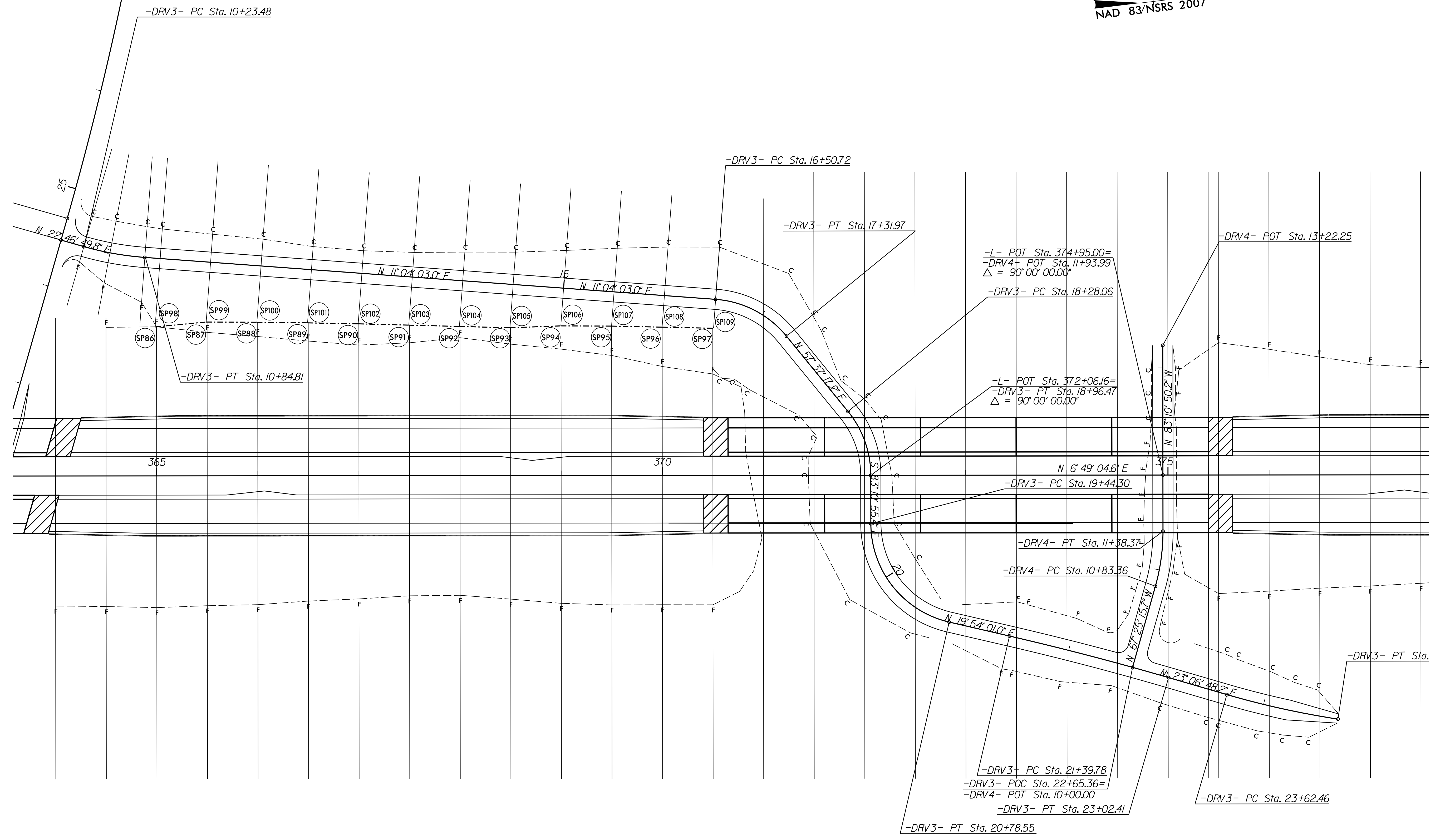


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NAD 83/NSRS 2007

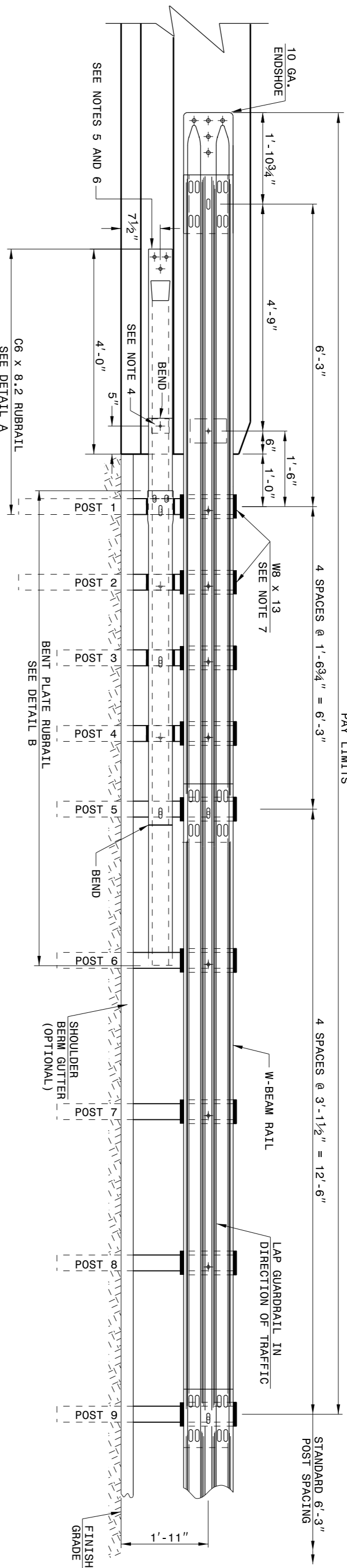


REVISIONS

8/17/99  
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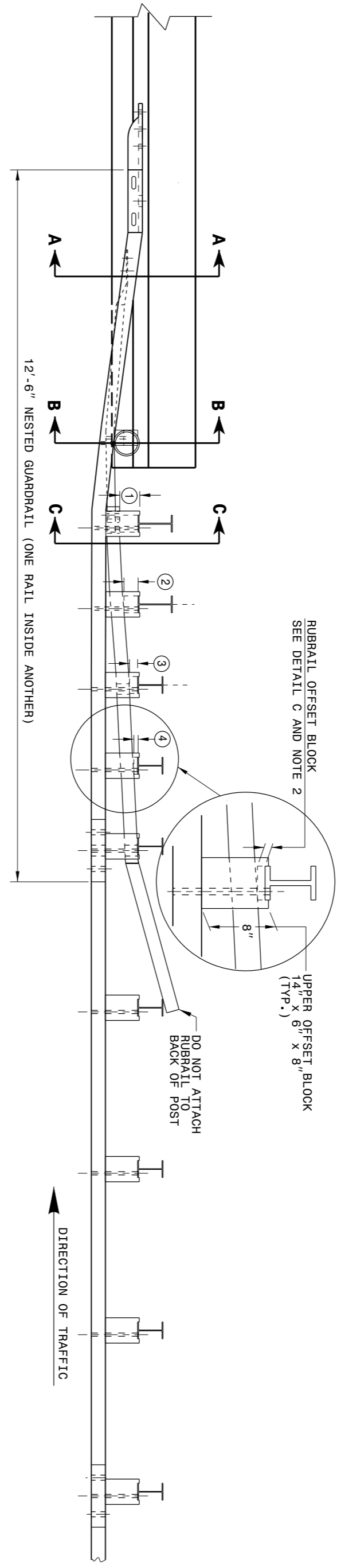
| -DRV3-                 |                        |                        |                       |                       | -DRV4-                 |  |
|------------------------|------------------------|------------------------|-----------------------|-----------------------|------------------------|--|
| PI Sta 16+93.74        | PI Sta 18+63.66        | PI Sta 20+23.73        | PI Sta 22+21.2        | PI Sta 24+18.81       | PI Sta 11+11.04        |  |
| Δ = 46° 33' 14.2" (RT) | Δ = 39° 11' 47.4" (RT) | Δ = 76° 55' 03.6" (LT) | Δ = 3° 12' 47.2" (RT) | Δ = 7° 35' 08.3" (LT) | Δ = 15° 45' 34.5" (LT) |  |
| D = 57° 17' 44.8"      | D = 57° 17' 44.8"      | D = 57° 17' 44.8"      | D = 1° 58' 32.6"      | D = 6° 44' 26.4"      | D = 28° 38' 52.4"      |  |
| L = 81.25'             | L = 68.4'              | L = 134.25'            | L = 162.63'           | L = 112.54'           | L = 55.01'             |  |
| T = 43.02'             | T = 35.60'             | T = 79.43'             | T = 81.34'            | T = 56.35'            | T = 27.68'             |  |
| R = 100.00'            | R = 100.00'            | R = 100.00'            | R = 2,900.00'         | R = 850.00'           | R = 200.00'            |  |

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



ELEVATION

- GENERAL NOTES:**
- POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBERRAIL.
  - BLOCKOUTS TO BE FABRICATED FROM 1/2" THICK PLATE. UPPER OFFSET BLOCKOUTS AND RUBERRAIL (SEE CHART FOR POST 1) WITH A 5/8" X 4 1/2" BUTTWHOLE BOLT. RUBERRAIL IS FLARED TO BACK OF POST 6 AND NOT SECURED.
  - STEEL SPACER TUBE IS A SCHEDULE 40 GALVANIZED PIPE 6" INSIDE DIAMETER X 9' LONG. ATTACH TUBE TO GUARDRAIL ONLY WITH 3/8" X 1 1/4" LONG BUTTWHOLE BOLT AND RECTANGULAR PLATE WASHER.
  - SEE DETAIL D FOR SLOPED RUBERRAIL BLOCKOUT. BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE 3/8" X 3" LAG BOLT WITH FLAT WASHER.
  - TYPE OF F-BARRIER OR BRIDGE RAIL.
  - ANCHORAGE:
    - AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR RUBERRAIL USING THREE 5/8" X 6" CHEMICALLY ANCHORED BOLTS WITH WASHERS. MAXIMUM PROJECTION FOR BOLTS IS 1 1/2".
    - AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD DOWN PLATE (SEE STD. DWG. 862.04).
  - THIS RAIL THE BEAM END SHOE BEHIND THE NESTED GUARDRAIL (SEE DETAIL A) OR THE W-BEAM END SHOE AND RUBERRAIL AS DETAILED ON THE STRUCTURE PLANS.
  - (C) AT NEW BRIDGE RAIL, ANCHOR THE W-BEAM END SHOE AND RUBERRAIL AS DETAILED ON THE STRUCTURE PLANS.
  - POSTS 1 AND 2 ARE W8 X 13, 7'-6" LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W8 X 8.5.



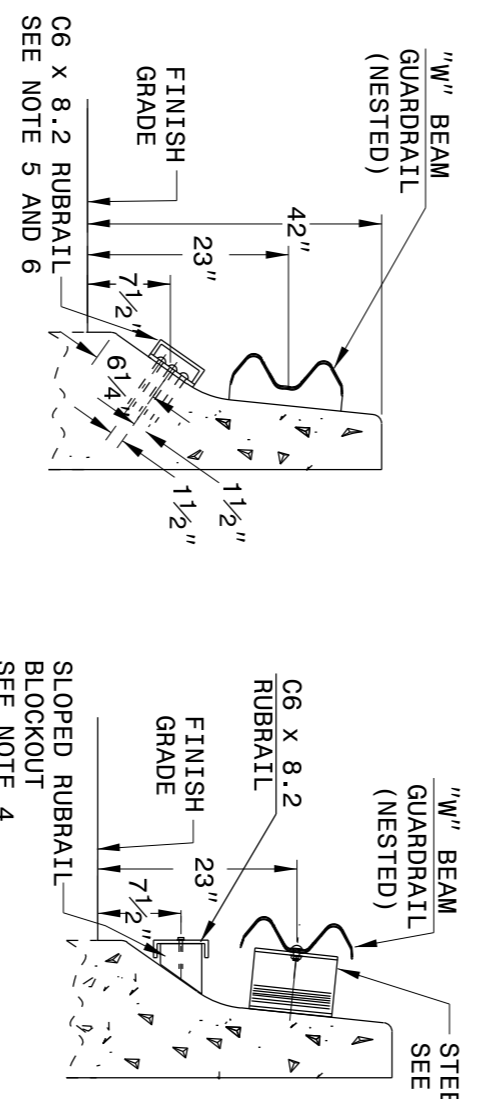
PLAN

ENGLISH DETAIL DRAWING FOR  
GUARDRAIL ANCHOR UNIT TYPE B-77  
FOR F-SHAPE BARRIER

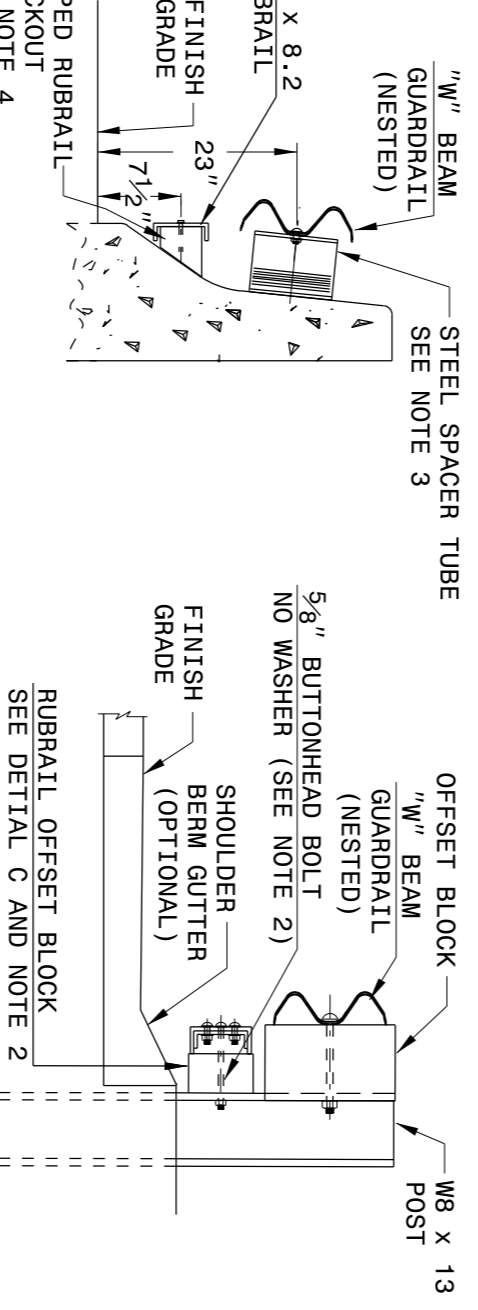
ENGLISH DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNIT**  
GUARDRAIL ANCHOR UNIT TYPE B-77  
FOR F-SHAPE BARRIER

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RALEIGH, N.C.

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

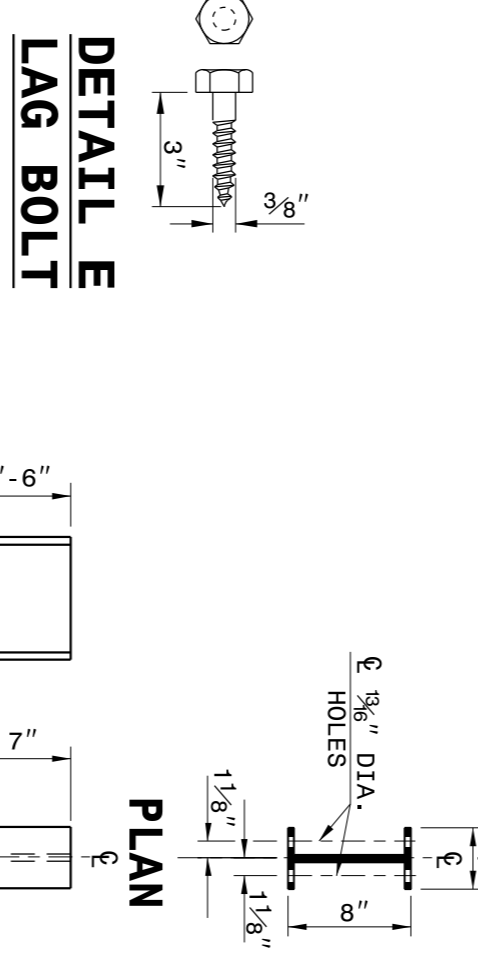


SECTION A-A



SECTION B-B

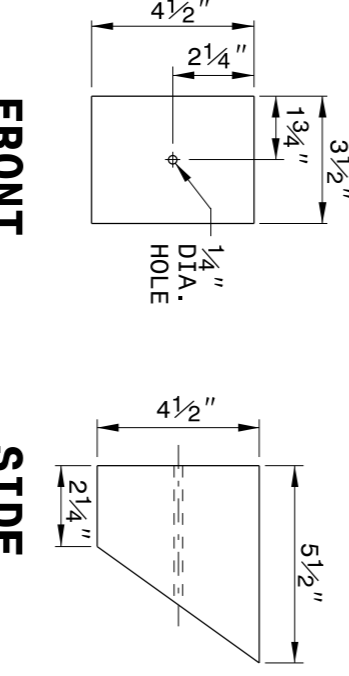
SECTION C-C



DETAIL E  
LAG BOLT

| RUBERRAIL BLOCKS 7" HIGH X 4" WIDE | POST THICKNESS | BOLT LENGTH |
|------------------------------------|----------------|-------------|
| 1                                  | 4 1/4"         | 9"          |
| 2                                  | 3 1/4"         | 5"*         |
| 3                                  | 2"             | 6"          |
| 4                                  | 1"             | 3"*         |

\* BOLTS FOR POSTS 4 AND 2 ARE USED TO ATTACH BLOCK TO POST. RUBERRAIL NOT ATTACHED TO BLOCK.



FRONT

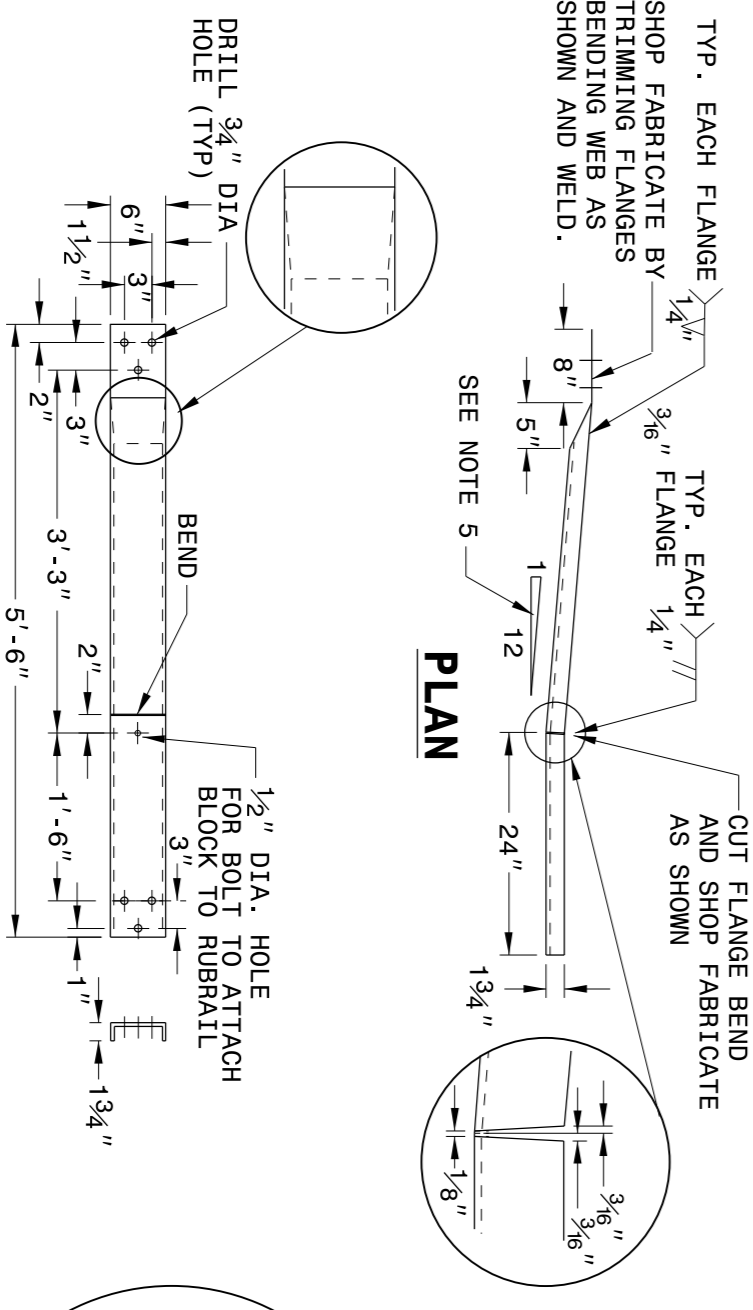
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FRONT

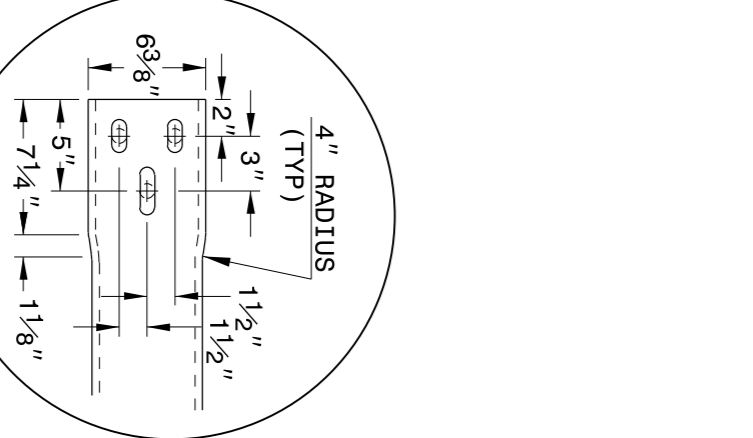
DETAIL D  
SLOPED RUBERRAIL BLOCKOUT

DETAIL F  
W8 X 13 X 7'-6"

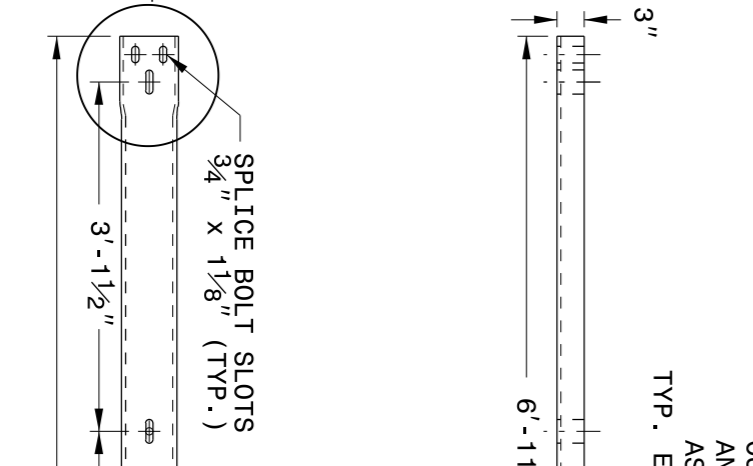
ENGLISH DETAIL DRAWING FOR  
STRUCTURE ANCHOR UNIT  
FOR F-SHAPE BARRIER



DETAIL C  
RUBERRAIL BLOCKOUT



ELEVATION  
DETAIL B  
BENT PLATE RUBERRAIL



ELEVATION  
DETAIL A

ENGLISH DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNIT**  
GUARDRAIL ANCHOR UNIT TYPE B-77  
FOR F-SHAPE BARRIER

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NORTH CAROLINA  
PROFESSIONAL  
SEAL  
022966  
ENGINEER  
JOEL S. HOWERTON  
3/23/2015  
DocuSigned by:  
Joel Howerton

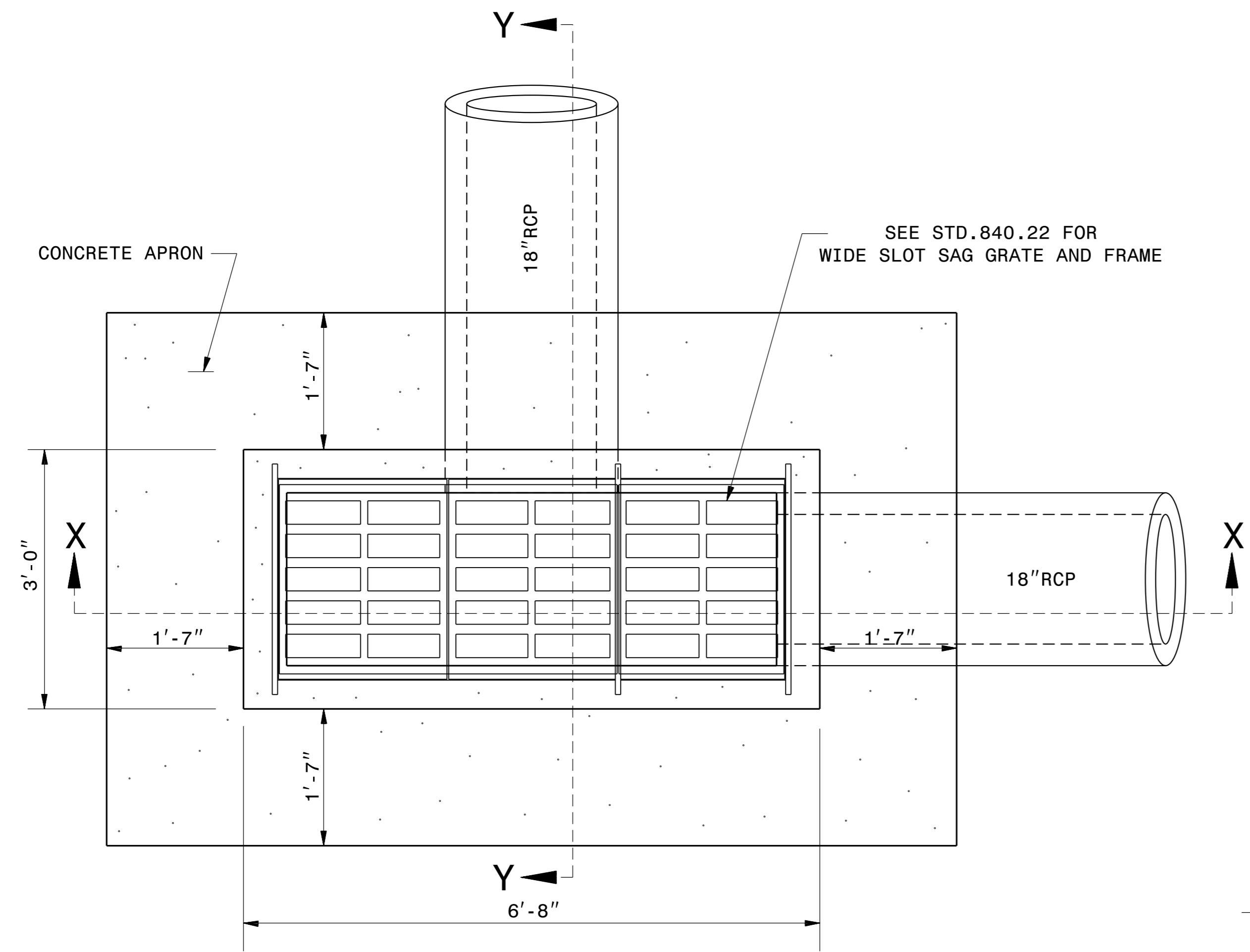
**CONTRACT STANDARDS  
AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

**SEE TITLE BLOCK**

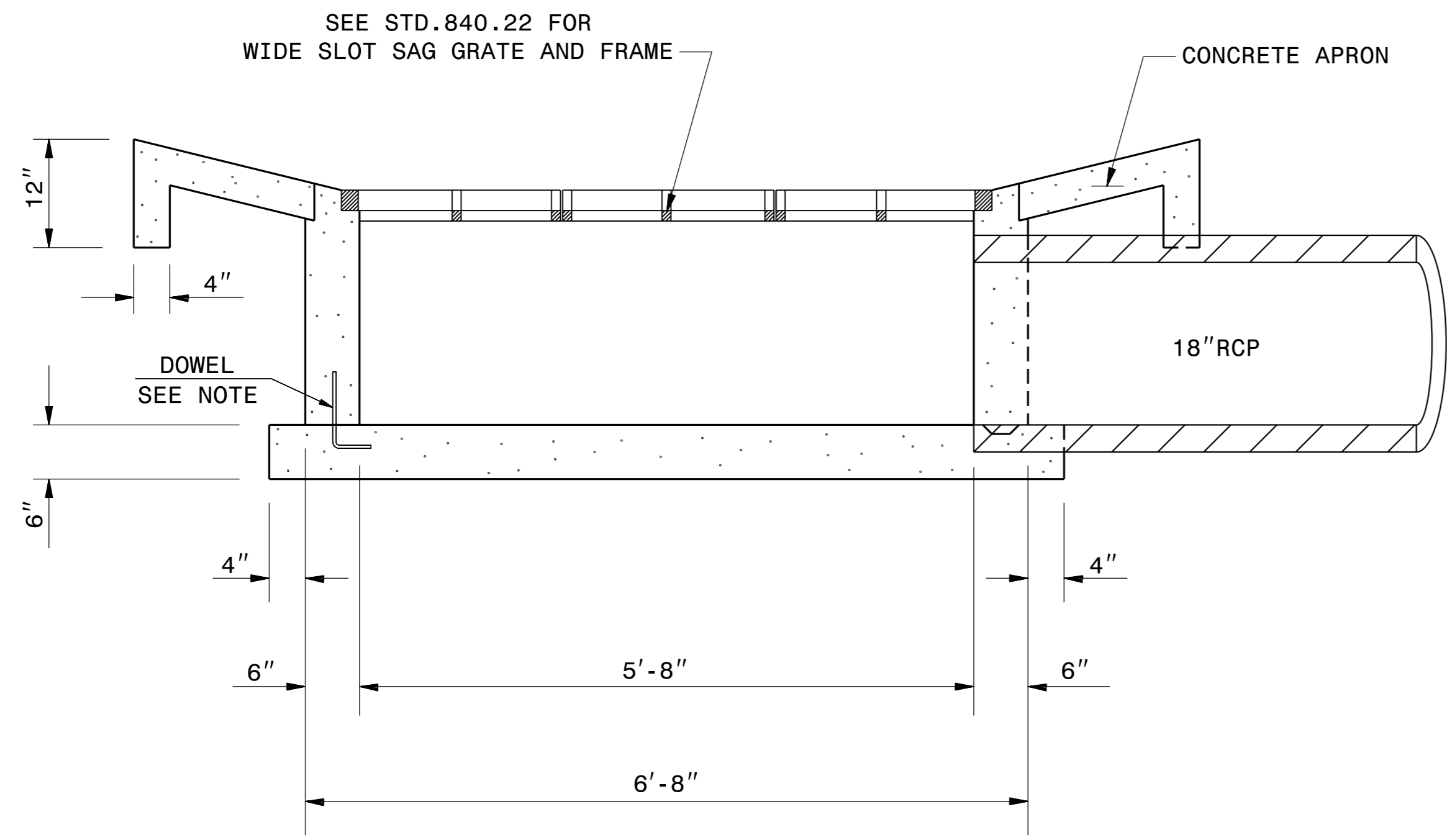
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| MODIFIED BY:             | DATE:          |
| CHECKED BY:              | DATE:          |
| FILE SPEC.:              |                |



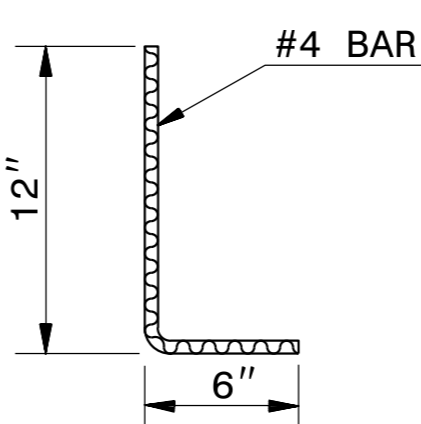
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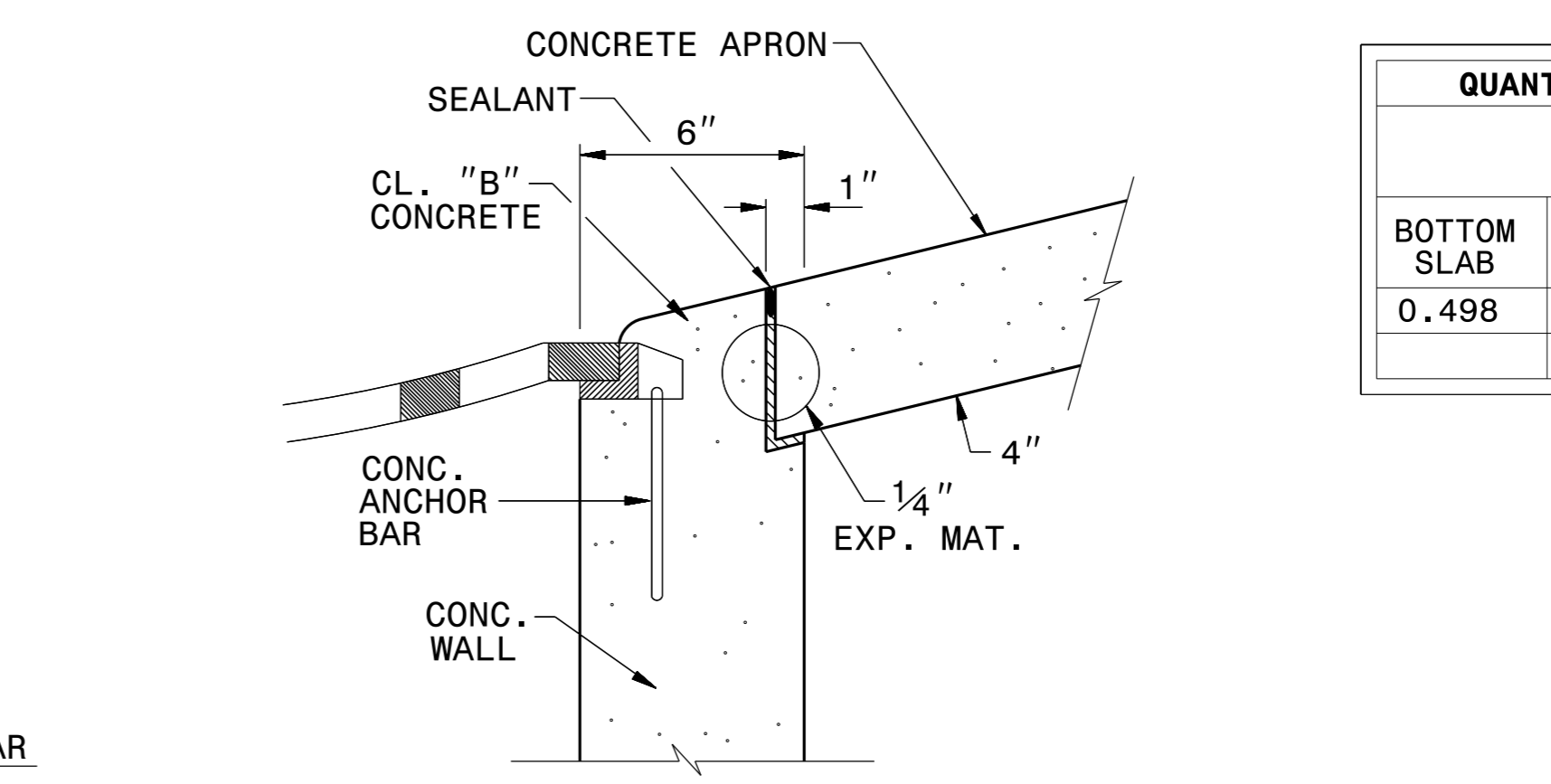
**PLAN 3GI**



**SECTION X-X**

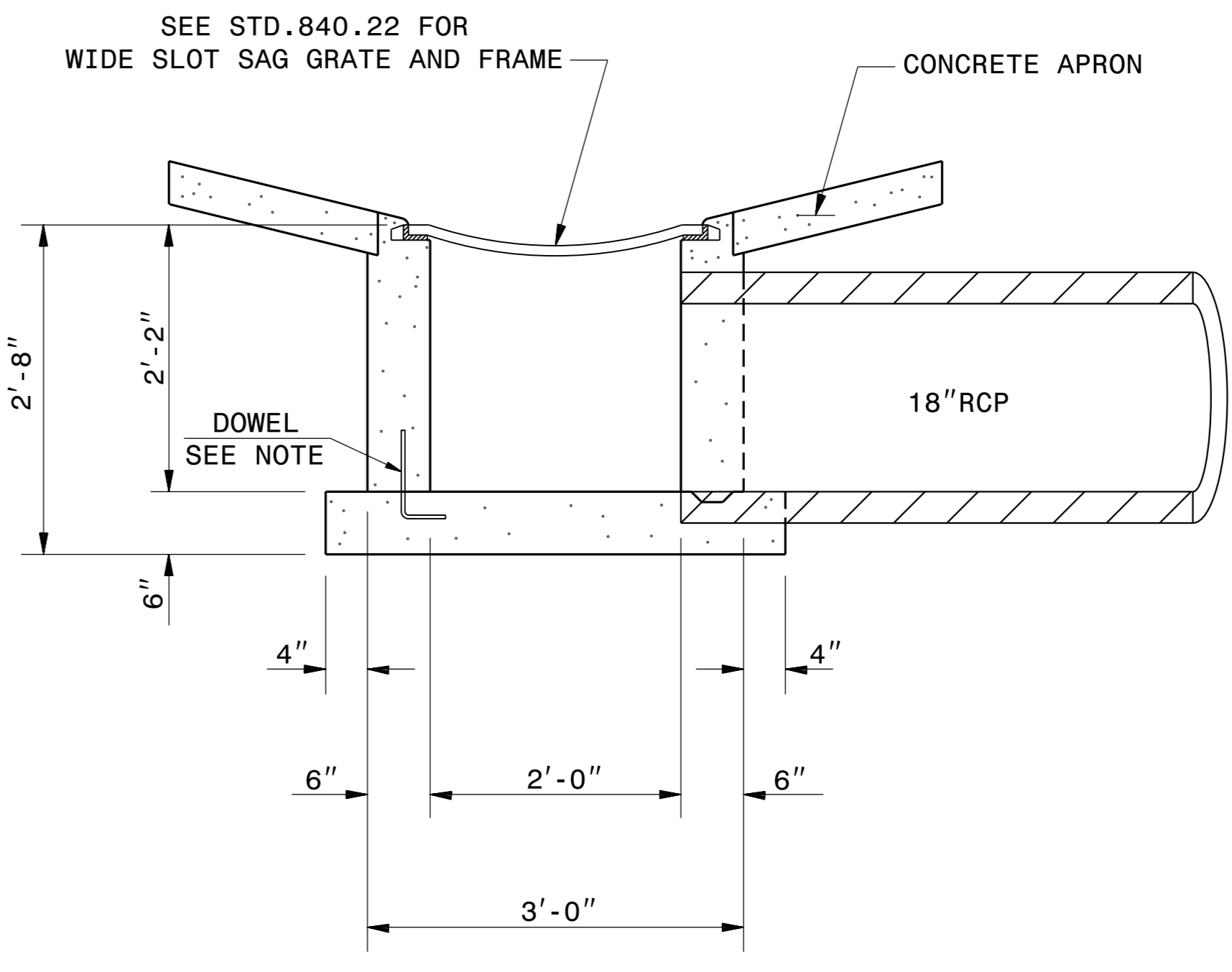


**DOWEL**



**DETAIL**

(APRON SUPPORT NOTCH)



**SECTION X-X**

NOTE: SEE STD. 840.25 FOR FRAME AND ANCHORAGE

**GENERAL NOTES:**  
 USE CLASS "B" CONCRETE THROUGHOUT.  
 PROVIDE ALL GRATED DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.  
 OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.  
 USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.  
 IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.  
 USE STANDARD FRAME AND GRATE 840.22 WITH WIDE SLOT SAG GRATE.  
 SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES.  
 CHAMFER ALL EXPOSED CORNERS 1".

| QUANTITIES FOR CONCRETE GRATED DROP INLET |       |                                |       |                         |         |
|---|-------|--------------------------------|-------|-------------------------|---------|
|   |       | CUBIC YARDS OF CONCRETE IN BOX |       | DEDUCTIONS FOR ONE PIPE |         |
| BOTTOM SLAB                               | BOX   | APRON                          | TOTAL | 18"C.S.                 | 18"R.C. |
| 0.498                                     | 0.696 | 0.603                          | 1.797 | 0.033                   | 0.049   |



3/23/2015  
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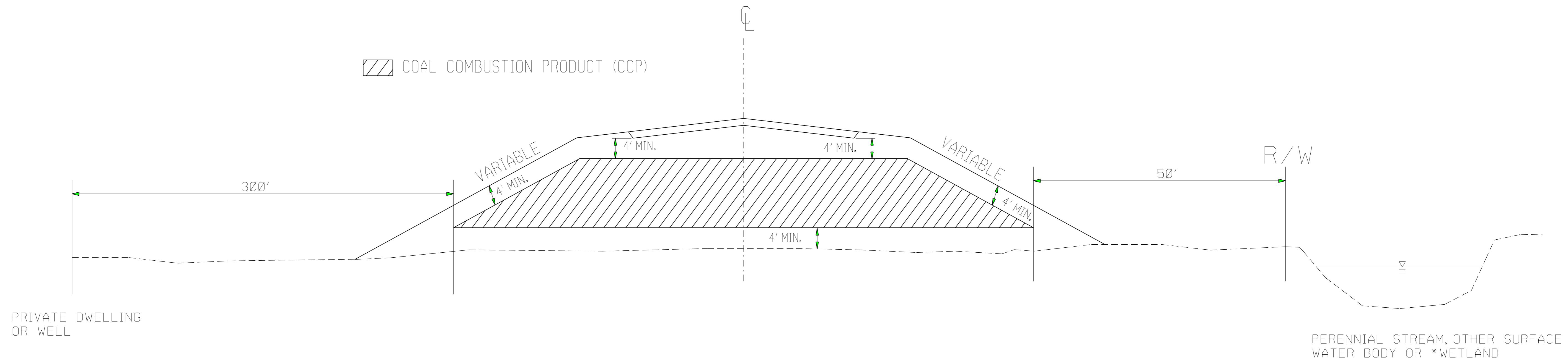
**CONTRACT STANDARDS & DEVELOPMENT UNIT**  
**STANDARDS AND SPECIAL DESIGN**  
 Office 919-707-6900 FAX 919-250-4119

**CONCRETE GRATED DROP INLET**  
**TRIPLE GRATE AND FRAME**

ORIGINAL BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 MODIFIED BY: nbritt DATE: 03/17/2015  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 FILE SPEC.: detail/nbritt/english/rural/r2514d conc grated di.dgn

\$\$\$\$\$  
 C:\TIME\$\$\$\$\$  
 USER: JHOWERTON  
 \$\$\$

# COAL COMBUSTION PRODUCT PLACEMENT



PLACE CCP IN HATCHED AREA IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS

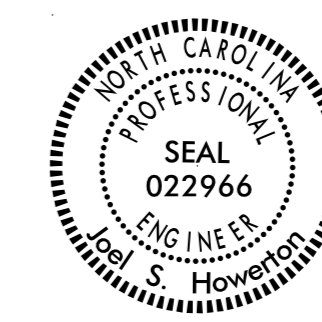
PLACE CCP A MINIMUM OF 5' ABOVE SEASONAL HIGH GROUND WATER

PLACE AT LOCATIONS AS APPROVED BY THE ENGINEER

PLACE SOIL BORROW MATERIAL ON THE OUTSIDE OF CCP AS EACH LIFT OF CCP IS PLACED

\*(OBTAIN PERMISSION FROM ARMY CORPS OF ENGINEERS)

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3/27/2015

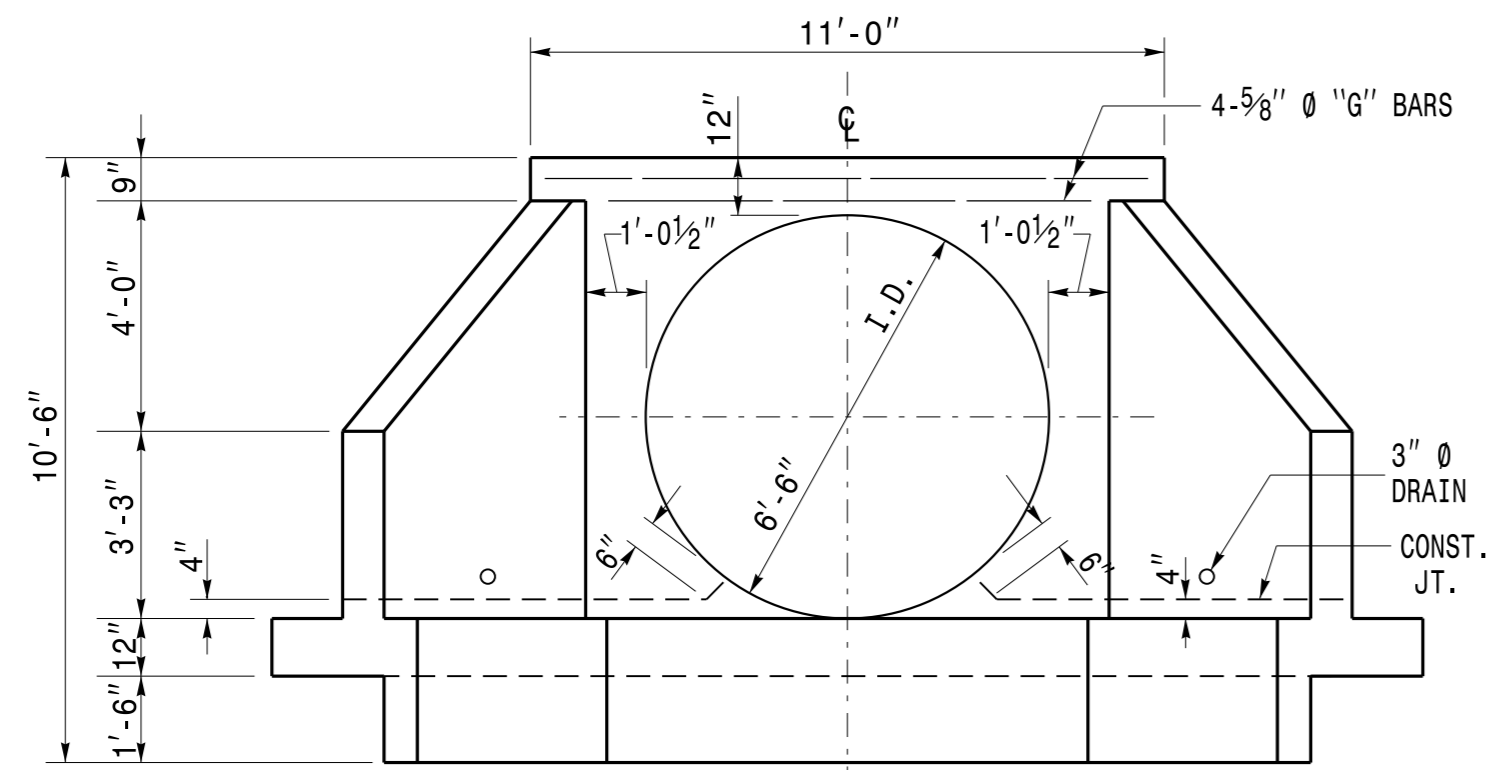
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Joel Howerton  
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**CONTRACT STANDARDS AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

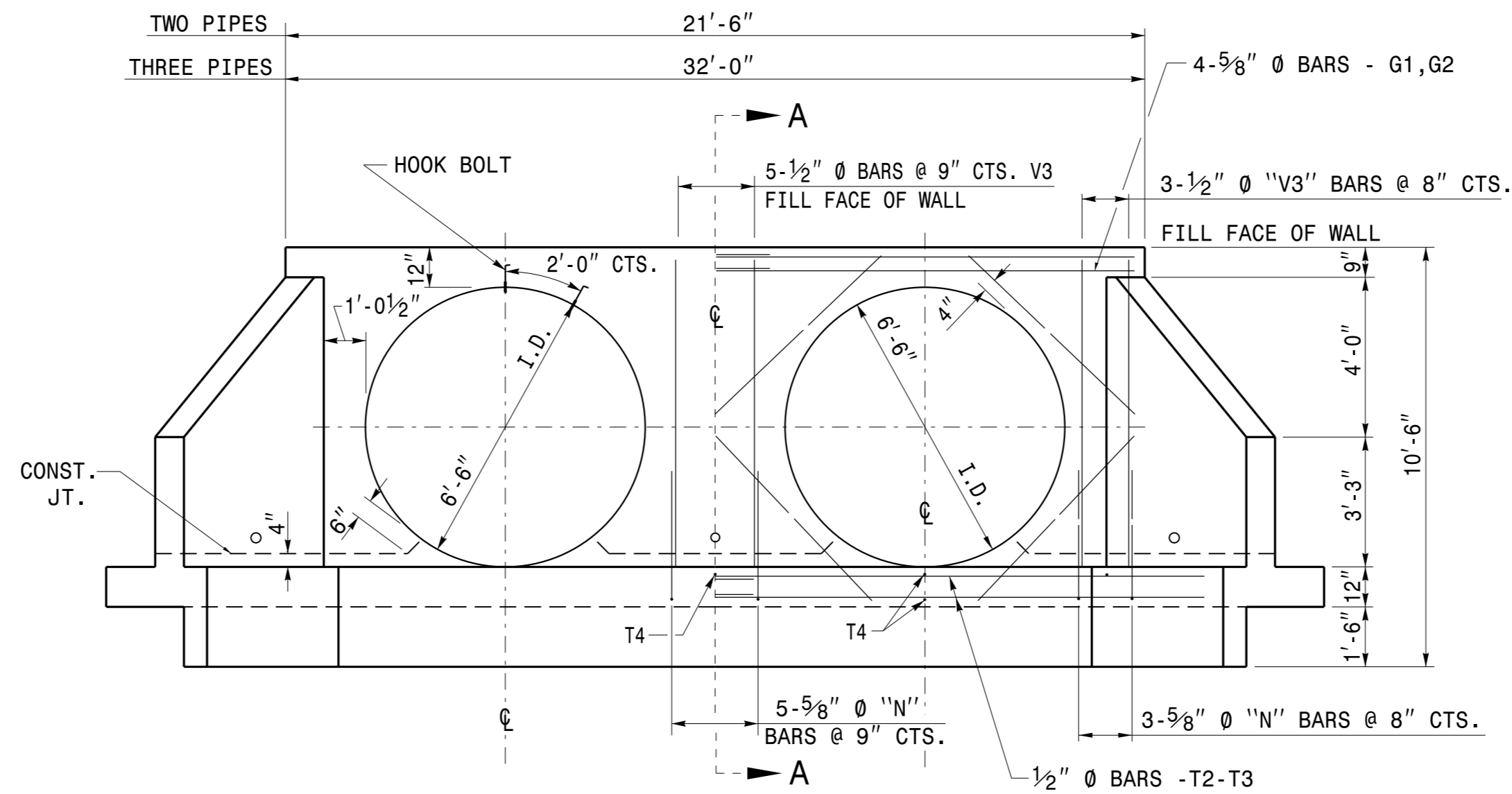
## COAL COMBUSTION PRODUCT PLACEMENT DETAIL

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 MODIFIED BY: DATE:  
 CHECKED BY: DATE:  
 FILE SPEC.: joel/coal combustion material detail.dgn

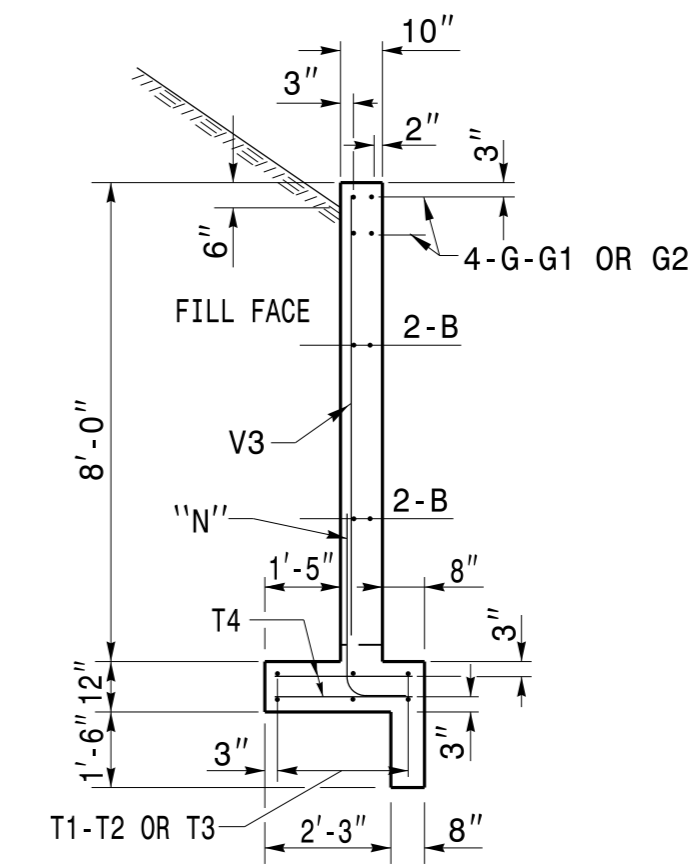




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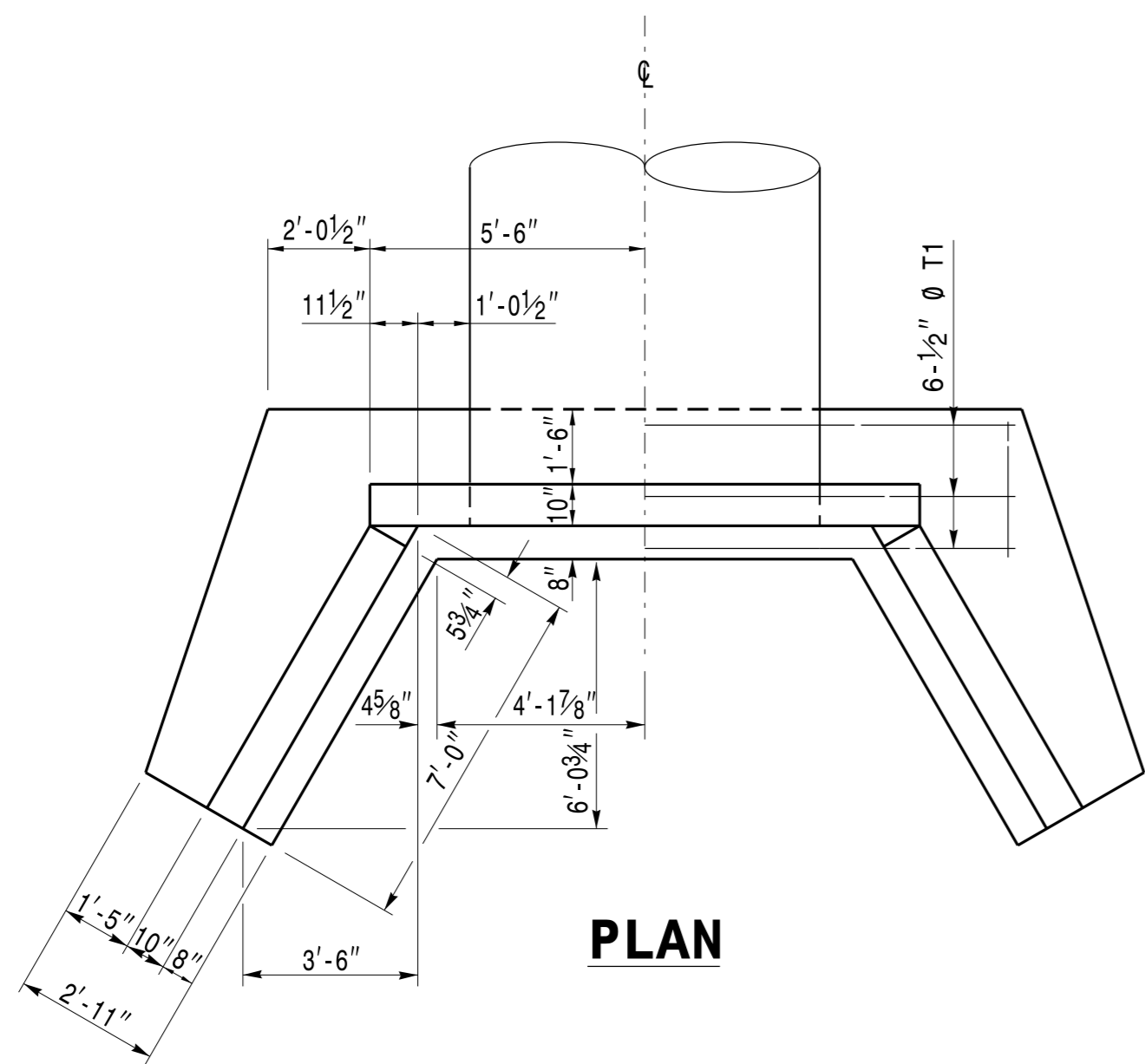
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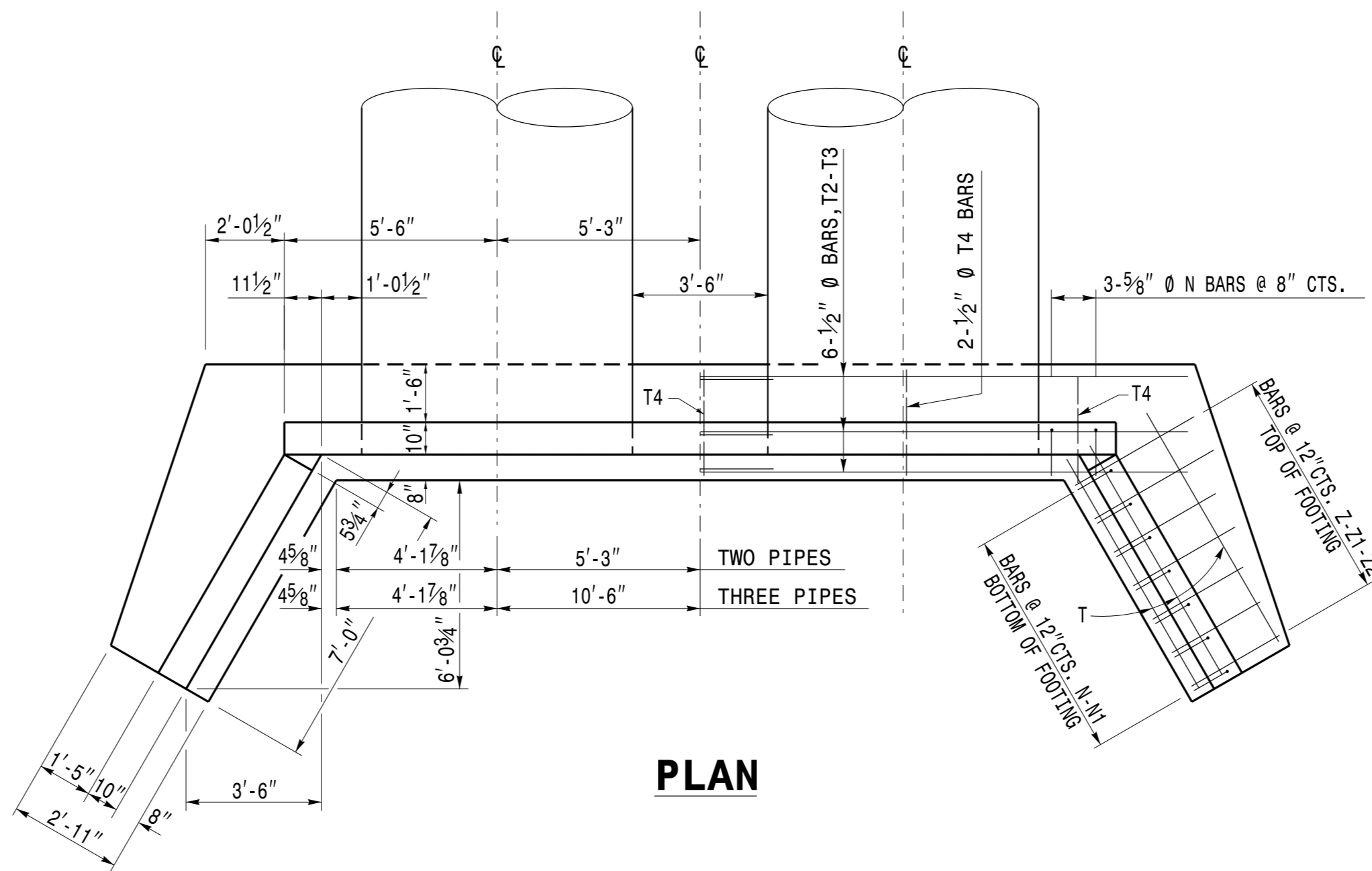
**SECTION A-A  
FOR ALL ENDWALLS**

**NOTES:**

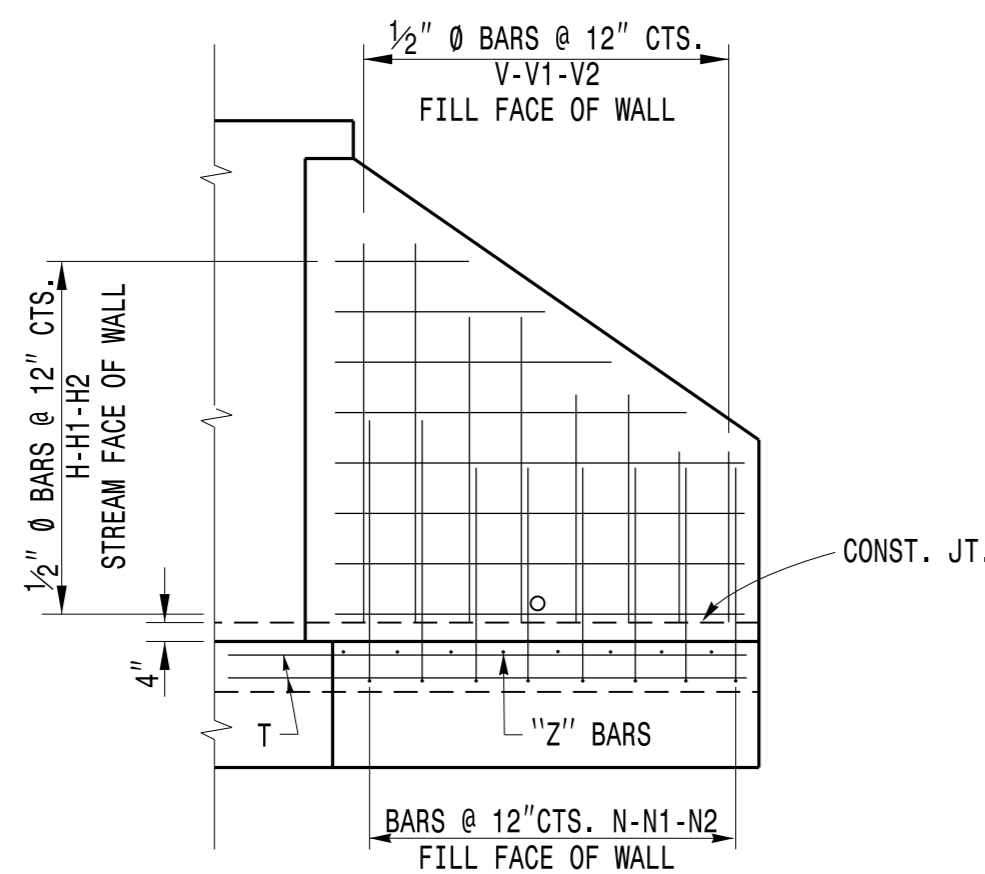
- USE CLASS 'A' CONCRETE.
- USE ASTM A615-GRADE 60 REINFORCING STEEL.
- USE DEFORMED BARS FOR ALL REINFORCING STEEL. WHERE SPLICING OF REINFORCEMENT IS NECESSARY, BARS ARE TO BE LAPPED 45 DIAMETERS. ALL DIMENSIONS RELATIVE TO REINFORCEMENT ARE TO CENTERS OF BARS.
- THE FOOTING, CURTAIN WALL AND 4" OF WALL ARE TO BE POURED IN ONE OPERATION ALLOWING NO TIME FOR INITIAL SET TO TAKE PLACE BETWEEN THEM. POUR THE REMAINING WALL IN ONE OPERATION.
- CHAMFER ALL EXPOSED CORNERS 1".
- PLACE 3" DIAMETER DRAINS IN WALL AS SHOWN 6" ABOVE NORMAL FLOW LINE.



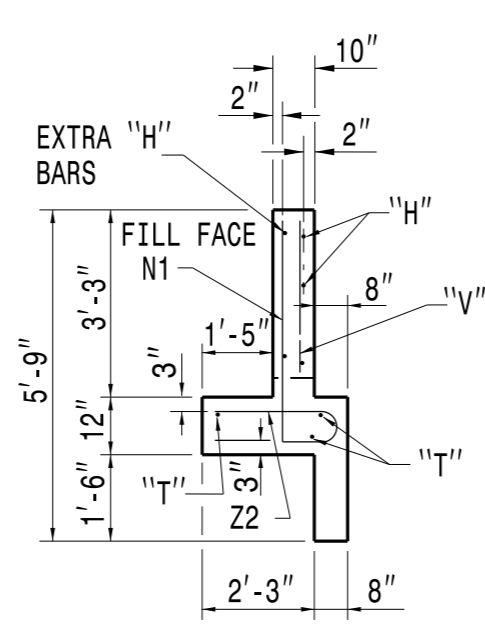
**PLAN**



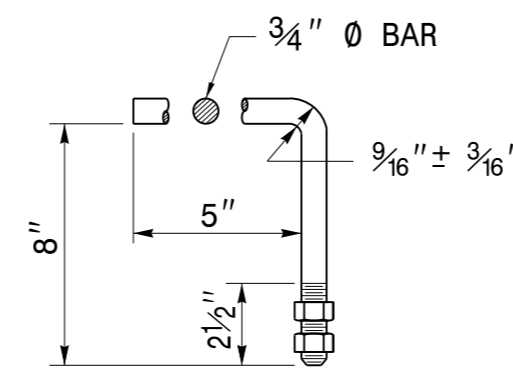
**PLAN**



**ELEVATION OF WING  
SHOWING REINFORCEMENT**

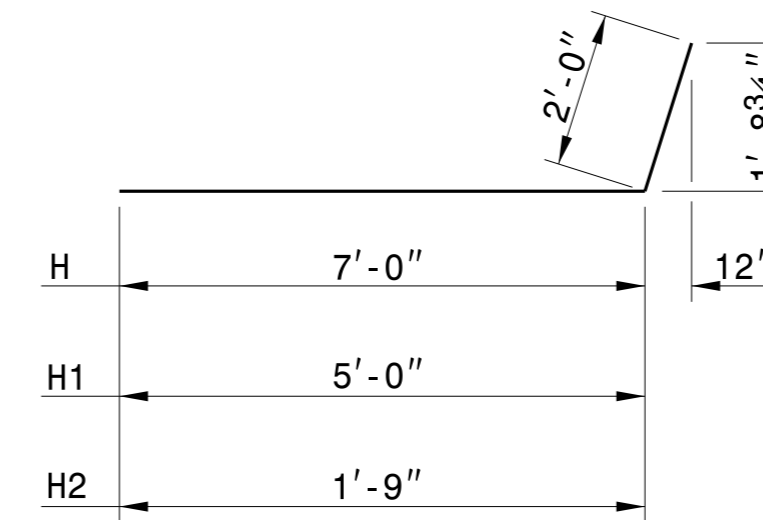


**END OF WING**

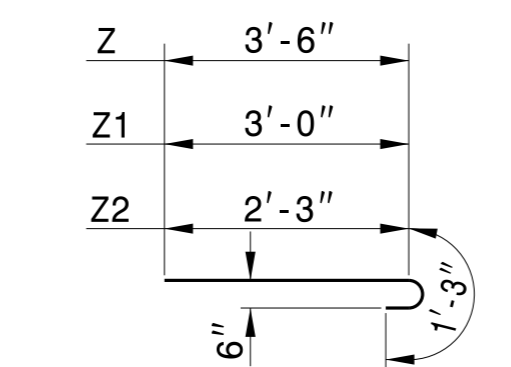


**HOOK BOLT**

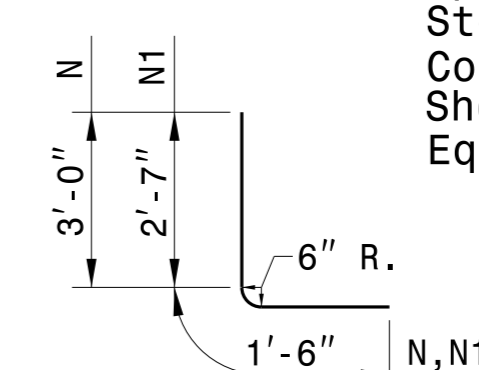
HOOK BOLTS (CONSTRUCT ANCHORS AT 2'-0" CTS. ALONG THE CIRCUMFERENCE OF THE 6'-6" CSP. EMBED THE HOOK BOLTS IN THE CONCRETE ENDWALL 8" IN DEPTH. THE GALVANIZED 3/4" DIA. HOOK BOLTS MUST MEET ASTM A-307 OR ASTM A-836. BOTH BOLTS AND NUTS MUST BE IN ACCORDANCE WITH ASTM A-153 FOR GALVANIZING.



**BARS H-H1-H2**



**BARS Z-Z1-Z2**



**BARS N-N1**

| BILL OF MATERIAL FOR ONE ENDWALL |        |         |         |        |      |        |      |        |
|----------------------------------|--------|---------|---------|--------|------|--------|------|--------|
| REINFORCING STEEL                | 1 PIPE | 2 PIPES | 3 PIPES |        |      |        |      |        |
| BAR                              | SIZE   | LENGTH  | NO.     | WEIGHT | NO.  | WEIGHT | NO.  | WEIGHT |
| B                                | #4     | 6'-0"   | 8       | 32     | 16   | 64     | 24   | 96     |
| G                                | #5     | 10'-9"  | 4       | 45     | -    | -      | -    | -      |
| G1                               | #5     | 11'-9"  | -       | -      | 8    | 98     | -    | -      |
| G2                               | #5     | 17'-0"  | -       | -      | -    | -      | 8    | 142    |
| H                                | #4     | 9'-0"   | 10      | 60     | 10   | 60     | 10   | 60     |
| H1                               | #4     | 7'-0"   | 6       | 28     | 6    | 28     | 6    | 28     |
| H2                               | #4     | 3'-9"   | 4       | 10     | 4    | 10     | 4    | 10     |
| N                                | #5     | 4'-6"   | 10      | 47     | 15   | 70     | 20   | 94     |
| N1                               | #4     | 4'-1"   | 10      | 27     | 10   | 27     | 10   | 27     |
| T                                | #4     | 6'-6"   | 6       | 26     | 6    | 26     | 6    | 26     |
| T1                               | #4     | 15'-0"  | 6       | 60     | -    | -      | -    | -      |
| T2                               | #4     | 13'-9"  | -       | -      | 12   | 110    | -    | -      |
| T3                               | #4     | 19'-0"  | -       | -      | -    | -      | 12   | 152    |
| T4                               | #4     | 2'-9"   | 4       | 7      | 7    | 13     | 10   | 18     |
| V                                | #4     | 5'-9"   | 6       | 23     | 6    | 23     | 6    | 23     |
| V1                               | #4     | 4'-6"   | 6       | 18     | 6    | 18     | 6    | 18     |
| V2                               | #4     | 2'-9"   | 8       | 15     | 8    | 15     | 8    | 15     |
| V3                               | #4     | 7'-6"   | 6       | 30     | 11   | 55     | 16   | 80     |
| Z                                | #5     | 4'-9"   | 4       | 20     | 4    | 20     | 4    | 20     |
| Z1                               | #4     | 4'-3"   | 4       | 11     | 4    | 11     | 4    | 11     |
| Z2                               | #4     | 3'-6"   | 6       | 14     | 6    | 14     | 6    | 14     |
| TOTAL REINF. STEEL (lbs.)        |        |         |         | 473    | 662  |        | 834  |        |
| CLASS "A" CONC. (cu. yds.)       |        |         |         | 7.9    | 10.8 |        | 13.8 |        |

**DESIGN DATA**

Specifications A.A.S.H.T.O.  
Steel in tension 20,000 LBS. PER SQ. IN.  
Concrete in compression 1,200 LBS. PER SQ. IN.  
Shear Class "A" Concrete SEE A.A.S.H.T.O.  
Equiv. fluid pressure of earth 30 LBS. PER CU. FT.



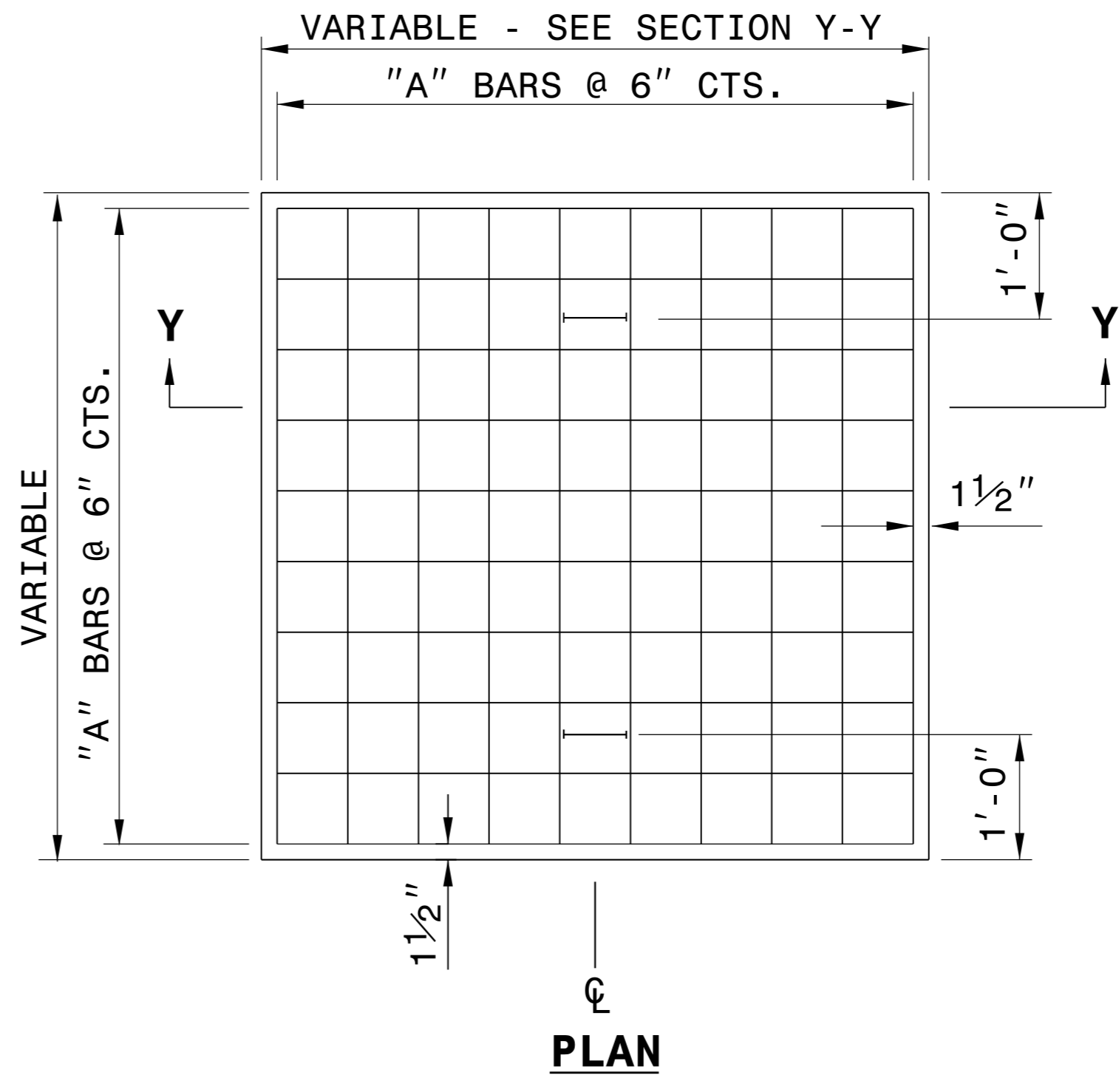
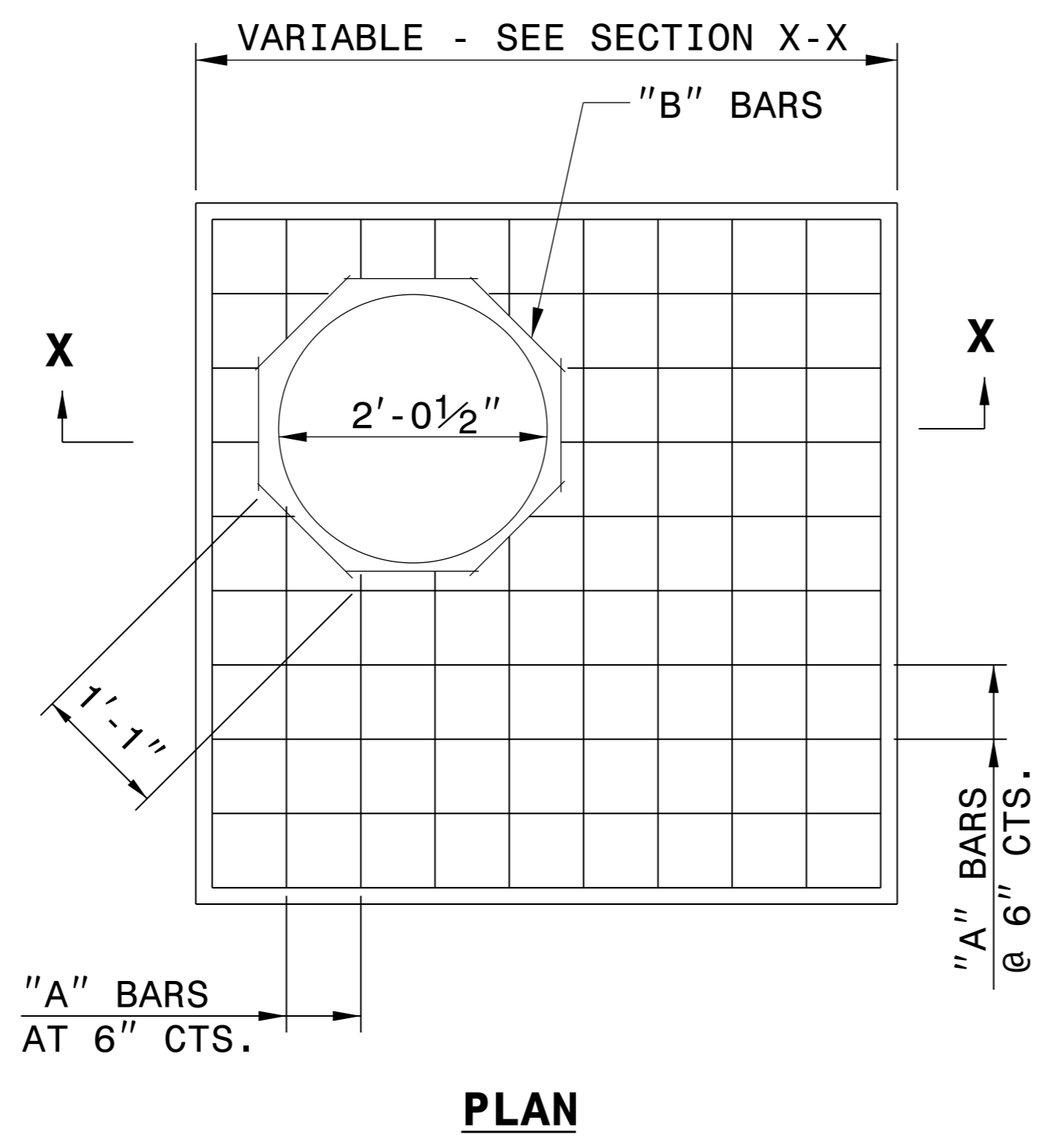
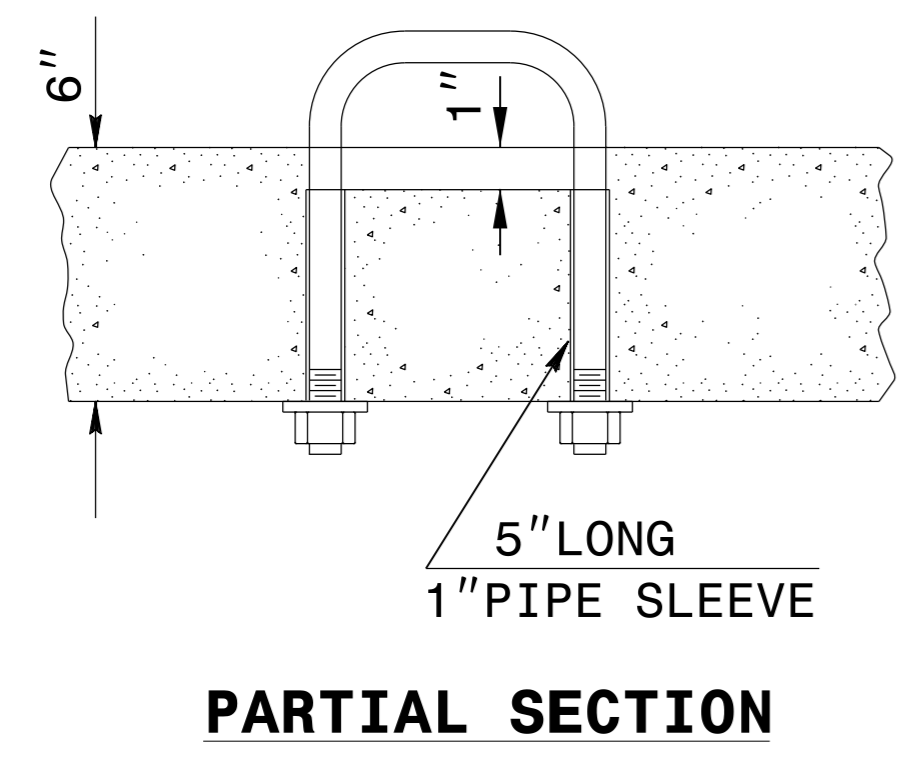
3/23/2015  
DocuSigned by:  
Joel Howerton  
879F3D17DCD45F...

CONTRACT STANDARDS & DEVELOPMENT UNIT  
STANDARDS AND SPECIAL DESIGN  
Office 919-707-6950 FAX 919-250-4119

**DETAIL OF REINFORCED  
CONCRETE ENDWALL FOR  
78" DIAMETER PIPE - 90° SKEW**

ORIGINAL BY: R.S.WICKER DATE: 6-46  
MODIFIED BY: R.E.D.&T.S.S. DATE: 6-96 & 5-00  
CHECKED BY: DATE:  
FILE SPEC.: w:details/stand/endwip84sk90.dgn

\$\$\$\$\$C:\TIME\$\$\$\$\$  
\$\$\$\$\$CON\$\$\$\$\$  
\$\$\$\$\$USERNAME\$\$\$\$\$

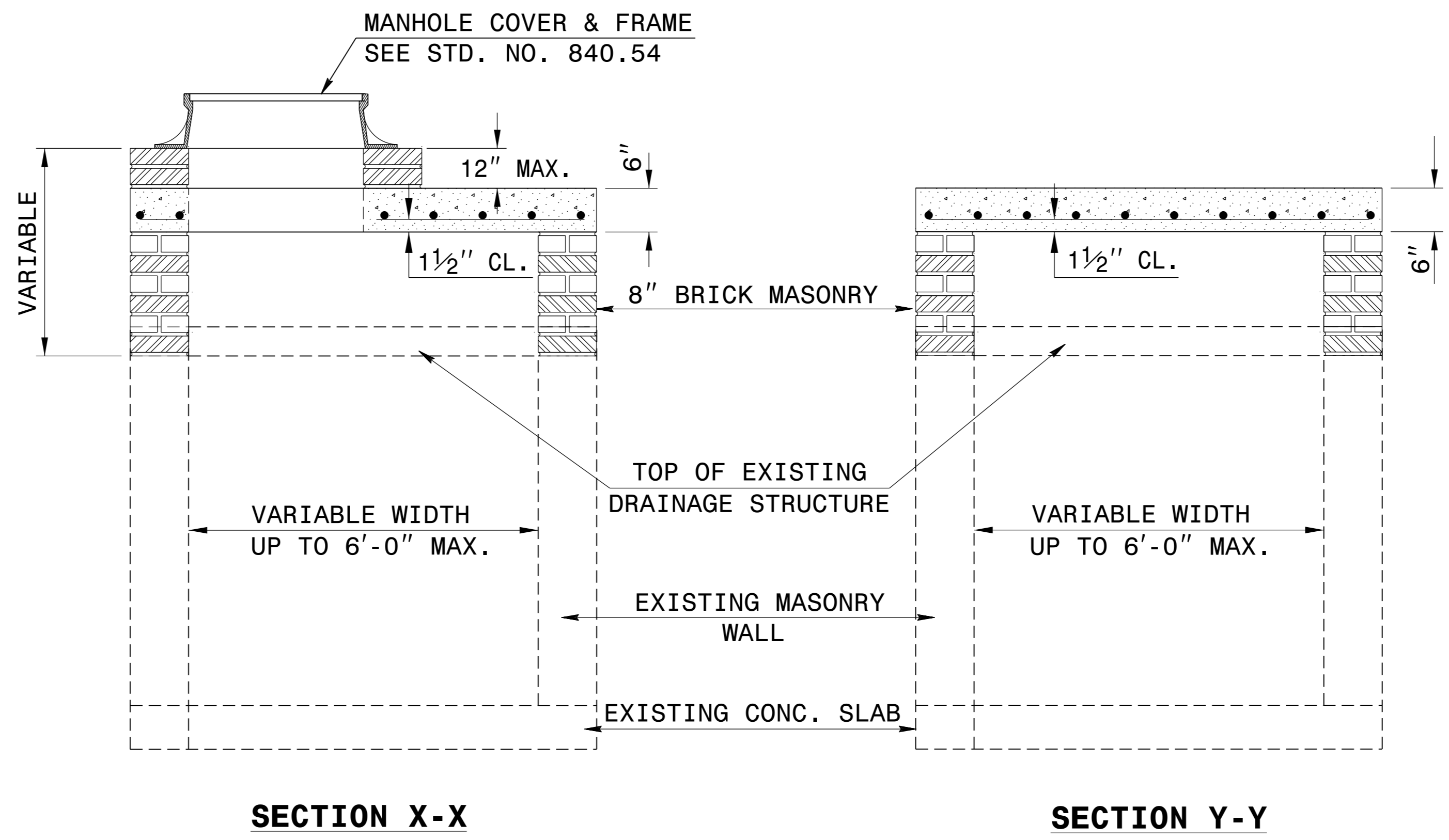
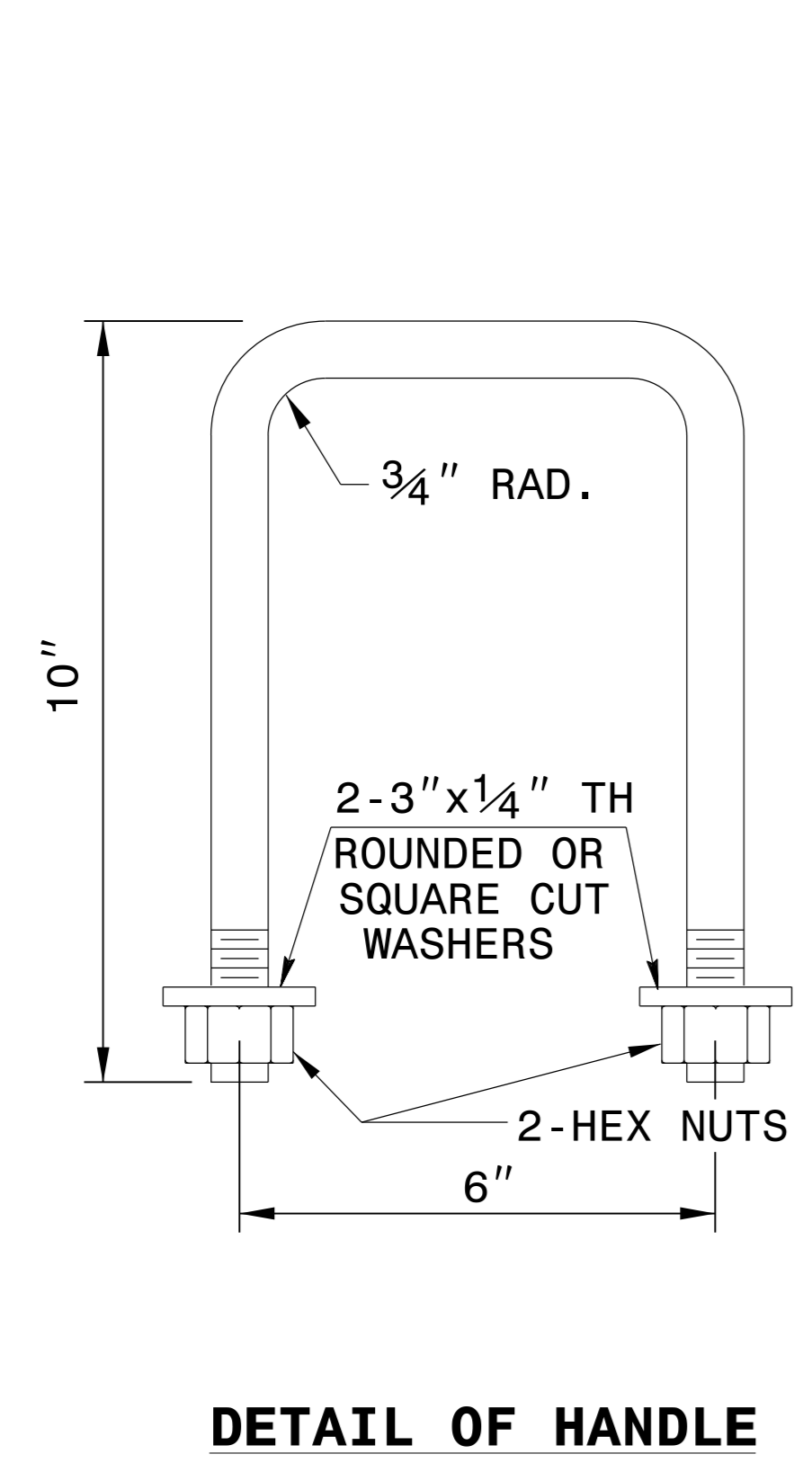


**GENERAL NOTES:**

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

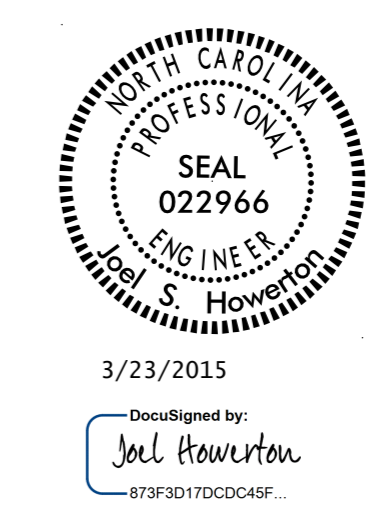
THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.



| <b>BILL OF MATERIALS</b>      |      |      |        |                   |
|-------------------------------|------|------|--------|-------------------|
| REINFORCING STEEL             |      |      |        |                   |
| CODE                          | SIZE | QTY. | LENGTH | REINF. STEEL LBS. |
| A                             | #4   | 20   | 4'-6"  | 60.12             |
| B                             | #4   | 8    | 1'-1"  | 5.79              |
| <b>TOTAL</b>                  |      |      |        | <b>65.91 *</b>    |
| MASONRY                       |      |      |        | CU YDS            |
| TOP SLAB CONCRETE CLASS "B"   |      |      |        | .4326 *           |
| BRICK MASONRY PER FT HT (MIN) |      |      |        | .4111             |

**\* NOTE:**  
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.



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

**DETAIL TO CONVERT EXISTING DI, CB, OTCB or GI TO JUNCTION BOX (MANHOLE OPTIONAL)**

ORIGINAL BY: T.S.S.      DATE: NOV. 1997  
 MODIFIED BY: T.S.S.      DATE: FEB. 2000  
 CHECKED BY:      DATE:        
 FILE SPEC.: ds174:/usr/details/stand/boxtojb.dgn

3/23/2015  
 873F3D17DCD45F



GEOTECHNICAL ENGINEER

ENGINEER



DocuSigned by:  
Shihai Zhang 2/12/2015

2450674181835 SIGNATURE DATE

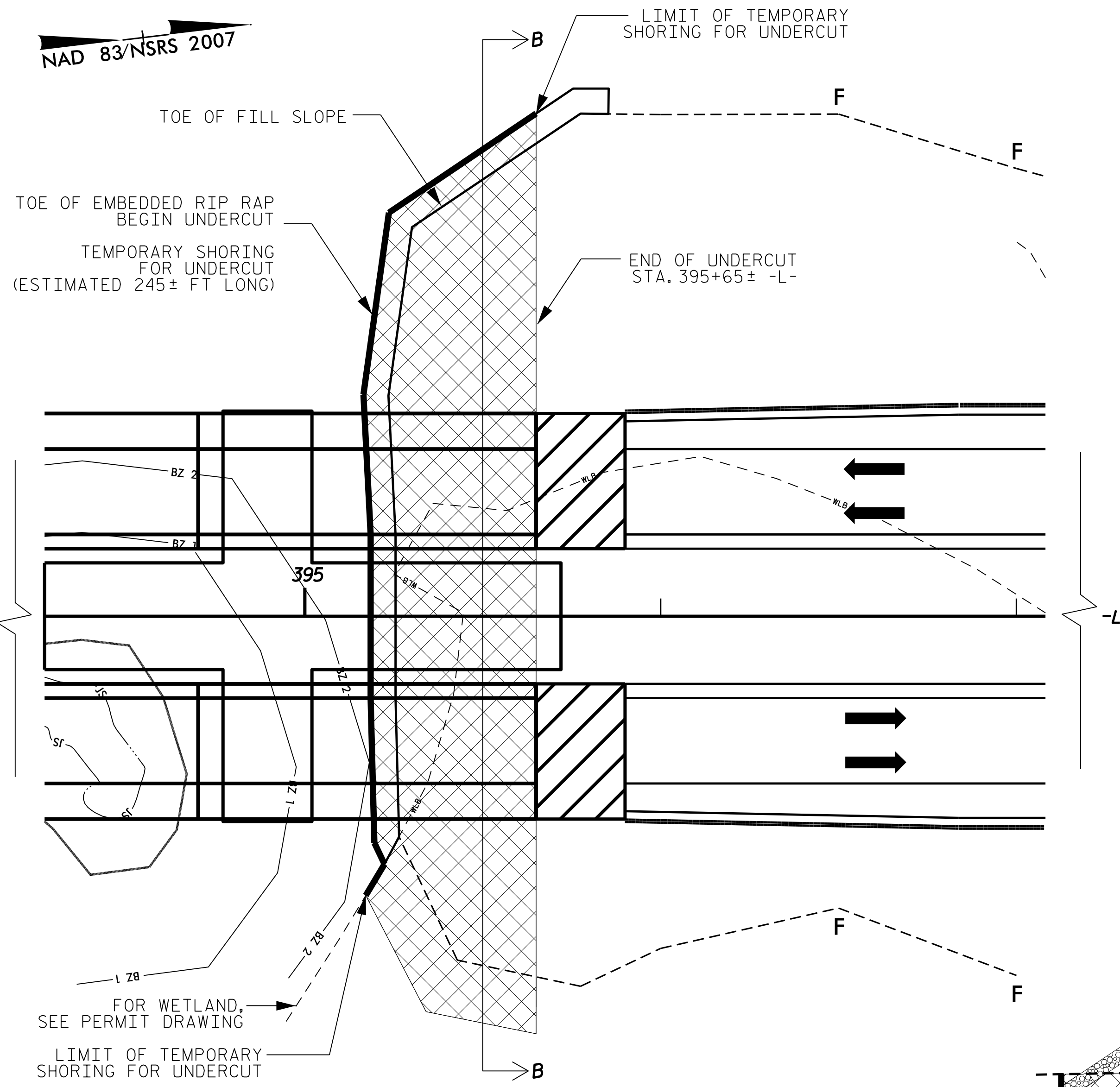
SIGNATURE DATE

ESTIMATED QUANTITIES

|                                |                  |
|--------------------------------|------------------|
| UNDERCUT EXCAVATION            | 1,500 CUBIC YARD |
| SELECT GRANULAR MATERIAL       | 1,500 CUBIC YARD |
| TEMPORARY SHORING FOR UNDERCUT | LUMP SUM         |
| AT STATION 395+18± -L-         |                  |

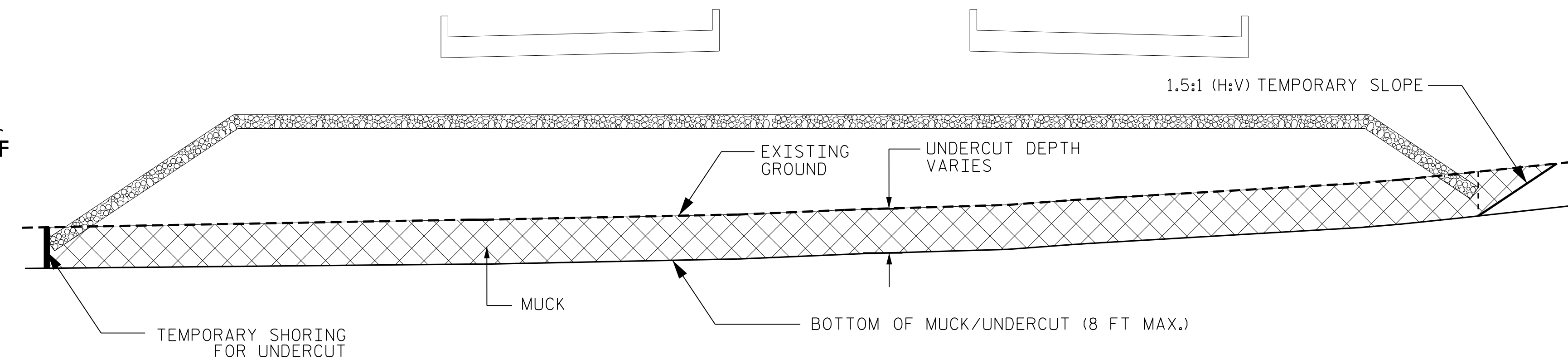
NOTES

1. FOR UNDERCUT, SEE SECTION 225 OF THE STANDARD SPECIFICATIONS.
2. UNDERCUT ORGANIC MATERIAL/MUCK AS SHOWN IN THIS PLAN AND AS DIRECTED BY THE ENGINEER. DEPTH OF UNDERCUT VARIES FROM LOCATION TO LOCATION.
3. TEMPORARY SHORING FOR UNDERCUT WILL BE REQUIRED WITHIN WETLAND AS SHOWN IN THIS PLAN. FOR TEMPORARY SHORING FOR UNDERCUT, SEE TEMPORARY SHORING FOR UNDERCUT AT STATION 395+18± -L- SPECIAL PROVISION.
4. DESIGN TEMPORARY SHORING FOR UNDERCUT FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:  
 UNIT WEIGHT = 80 LB/CF (MUCK)  
 FRICTION ANGLE = 11 DEGREES (MUCK)  
 COHESION = 150 LB/SF (MUCK)  
 UNIT WEIGHT = 120 LB/CF (COASTAL PLAIN SOIL)  
 FRICTION ANGLE = 30 DEGREES (COASTAL PLAIN SOIL)  
 COHESION = 0 LB/SF (COASTAL PLAIN SOIL)  
 GROUNDWATER ELEVATION = 0 FT
5. FOR SELECT GRANULAR MATERIAL, SEE SECTION 265 OF THE STANDARD SPECIFICATIONS.



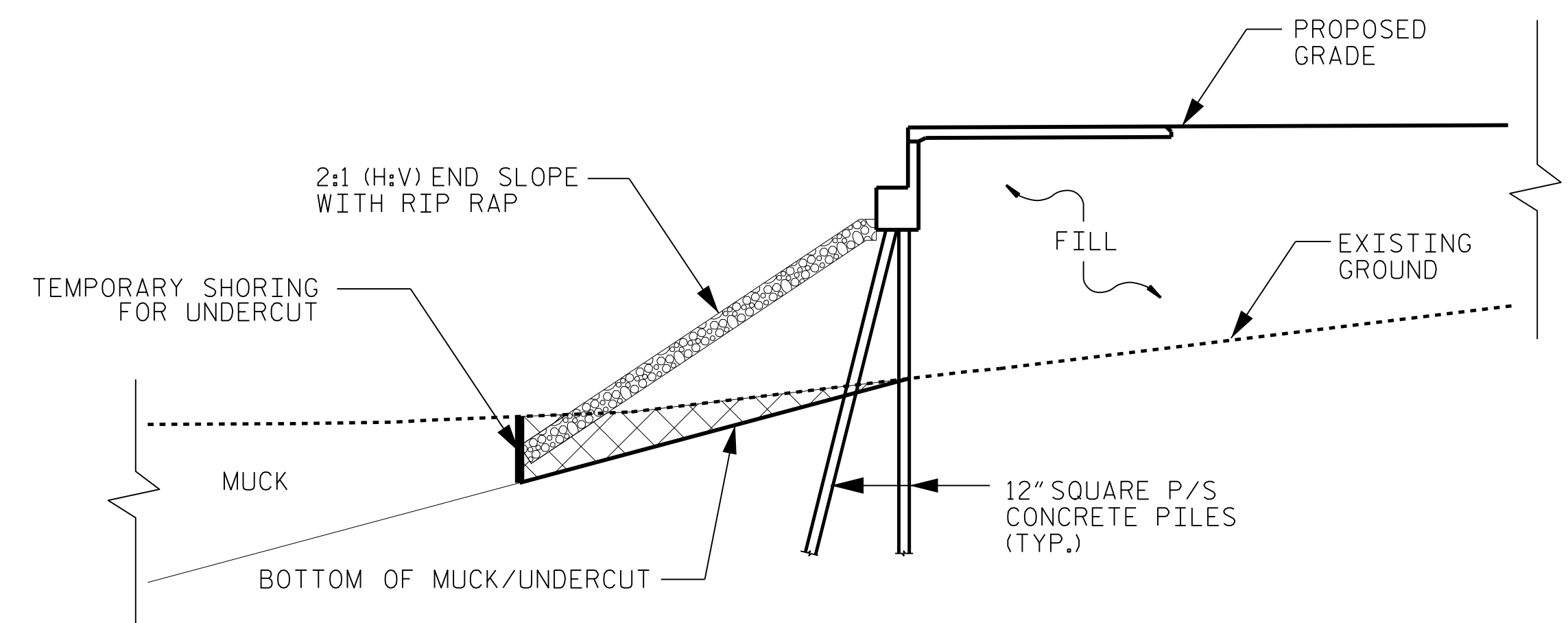
PLAN VIEW FOR LIMITS OF UNDERCUT AT END BENT NO. 2

N.T.S.



CROSS SECTION B-B

N.T.S.



TYPICAL SECTION OF UNDERCUT

THROUGH END BENT NO. 2, N.T.S.

|                       |               |
|-----------------------|---------------|
| PREPARED BY: S. ZHANG | DATE: 02/2015 |
| REVIEWED BY: J. BATTS | DATE: 02/2015 |

**GEOTECHNICAL ENGINEERING UNIT**


EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE  
 CONTRACT OFFICE

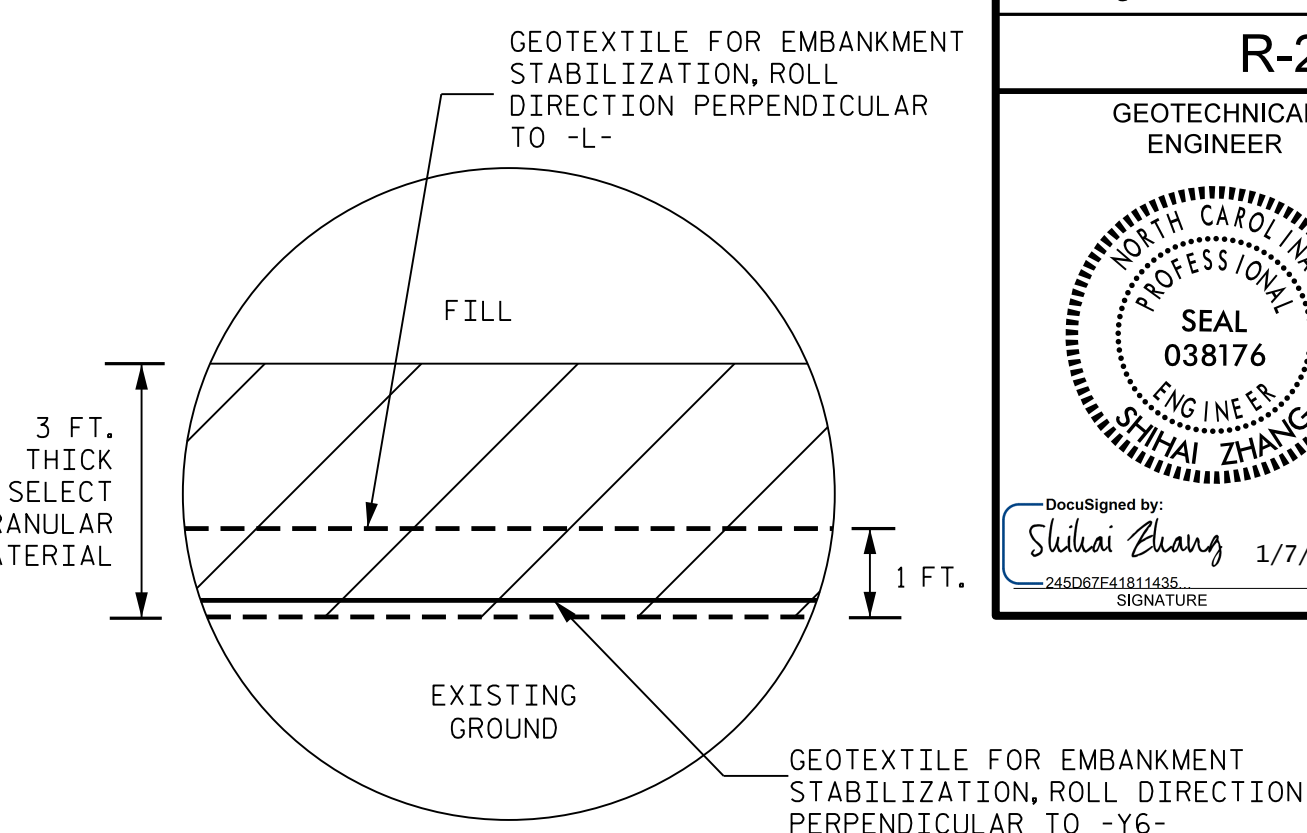
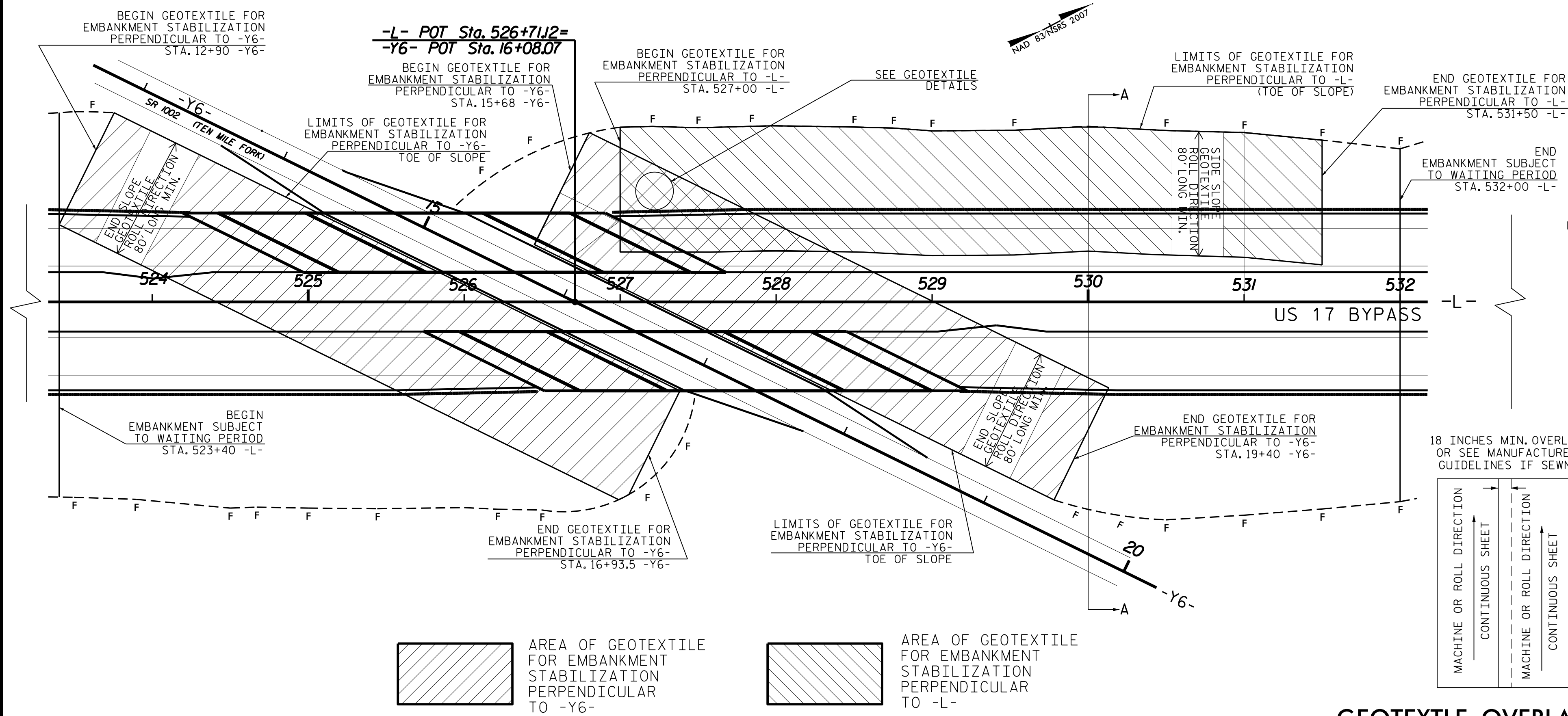
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

UNDERCUT FOR  
 END BENT NO. 2 OF  
 DUAL BRIDGES ON US 17  
 OVER TRENT RIVER

| REVISIONS |    |      |     |    |      |
|-----------|----|------|-----|----|------|
| NO.       | BY | DATE | NO. | BY | DATE |
| 1         |    |      | 3   |    |      |
| 2         |    |      | 4   |    |      |



|  |                                     |
|--|-------------------------------------|
| GEOTECHNICAL ENGINEER<br><br>Shikai Zhang<br>1/7/2015<br>DATE | ENGINEER<br>_____<br>SIGNATURE DATE |
|--|-------------------------------------|



| QUANTITIES                              |            |
|---|------------|
| GEOTEXTILE FOR EMBANKMENT STABILIZATION | 10,900 SY* |
| SELECT GRANULAR MATERIAL                | 10,400 CY  |

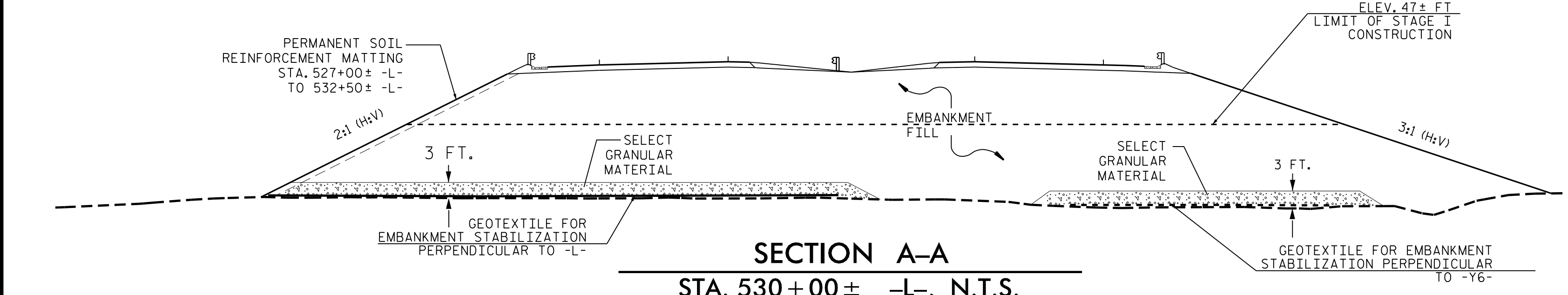
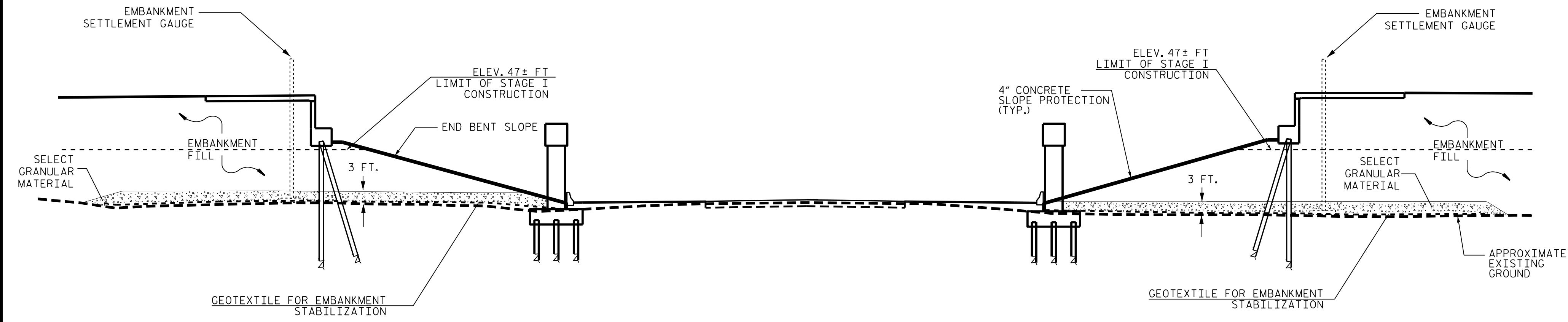
\* GEOTEXTILE FOR EMBANKMENT STABILIZATION ESTIMATED QUANTITY DOES NOT INCLUDE OVERLAPS OR WASTE.

**NOTES**

- DO NOT GRUB, ONLY CLEAR THE AREA WITHIN THE LIMITS OF THE GEOTEXTILE FOR EMBANKMENT STABILIZATION.
- FOR EMBANKMENT SETTLEMENT GAUGE, SEE "STANDARD EMBANKMENT MONITORING" - STANDARD DETAIL NO. 1804.01.
- PLACE THE GEOTEXTILE WITHOUT ANY WRINKLES OR CREASES.
- GEOTEXTILE FOR EMBANKMENT STABILIZATION SHEETS MUST HAVE A CONTINUOUS LENGTH OF 80 FT. MINIMUM. NO SEAMS OR JOINTS ARE ALLOWED IN THE MACHINE DIRECTION OF GEOTEXTILE.
- THE TERMS ROLL AND MACHINE DIRECTION ARE USED INTERCHANGEABLY.
- FOR GEOTEXTILE FOR EMBANKMENT STABILIZATION, SEE GEOTEXTILE FOR EMBANKMENT STABILIZATION SPECIAL PROVISION.
- PERMANENT SOIL REINFORCEMENT MATTINGS ARE REQUIRED FOR SLOPES STEEPER THAN 3:1 (H:V) FROM STA. 527+00± -L- TO 532+50± -L-. FOR PERMANENT SOIL REINFORCEMENT MATTING, SEE PERMANENT SOIL REINFORCEMENT MAT PROVISION.
- FOR SELECT GRANULAR MATERIAL, SEE SECTION 265 OF THE STANDARD SPECIFICATIONS.

**CONSTRUCTION SEQUENCE**

- PLACE GEOTEXTILE FOR EMBANKMENT STABILIZATION.
- PLACE EMBANKMENT SETTLEMENT GAUGES.
- PLACE AND COMPACT SELECT GRANULAR MATERIAL.
- CONSTRUCT THE EMBANKMENT TO ELEVATION 47.0 FT FROM STA. 523+40 -L- TO STA. 532+00 -L-.
- OBSERVE A TWO MONTHS WAITING PERIOD.
- CONSTRUCT THE EMBANKMENT TO FINISHED GRADE FROM STA. 523+40 -L- TO STA. 532+00 -L-.
- OBSERVE ANOTHER TWO MONTHS WAITING PERIOD BEFORE BEGINNING END BENT CONSTRUCTION OR PAVING.



**GEOTECHNICAL ENGINEERING UNIT**

EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE  
 CONTRACT OFFICE

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**DETAILS FOR GEOTEXTILE FOR EMBANKMENT STABILIZATION AND STAGE CONSTRUCTION AT -Y6- BRIDGE APPROACHES**

| REVISIONS |    |      |     |    |      |
|-----------|----|------|-----|----|------|
| NO.       | BY | DATE | NO. | BY | DATE |
| 1         |    |      | 3   |    |      |
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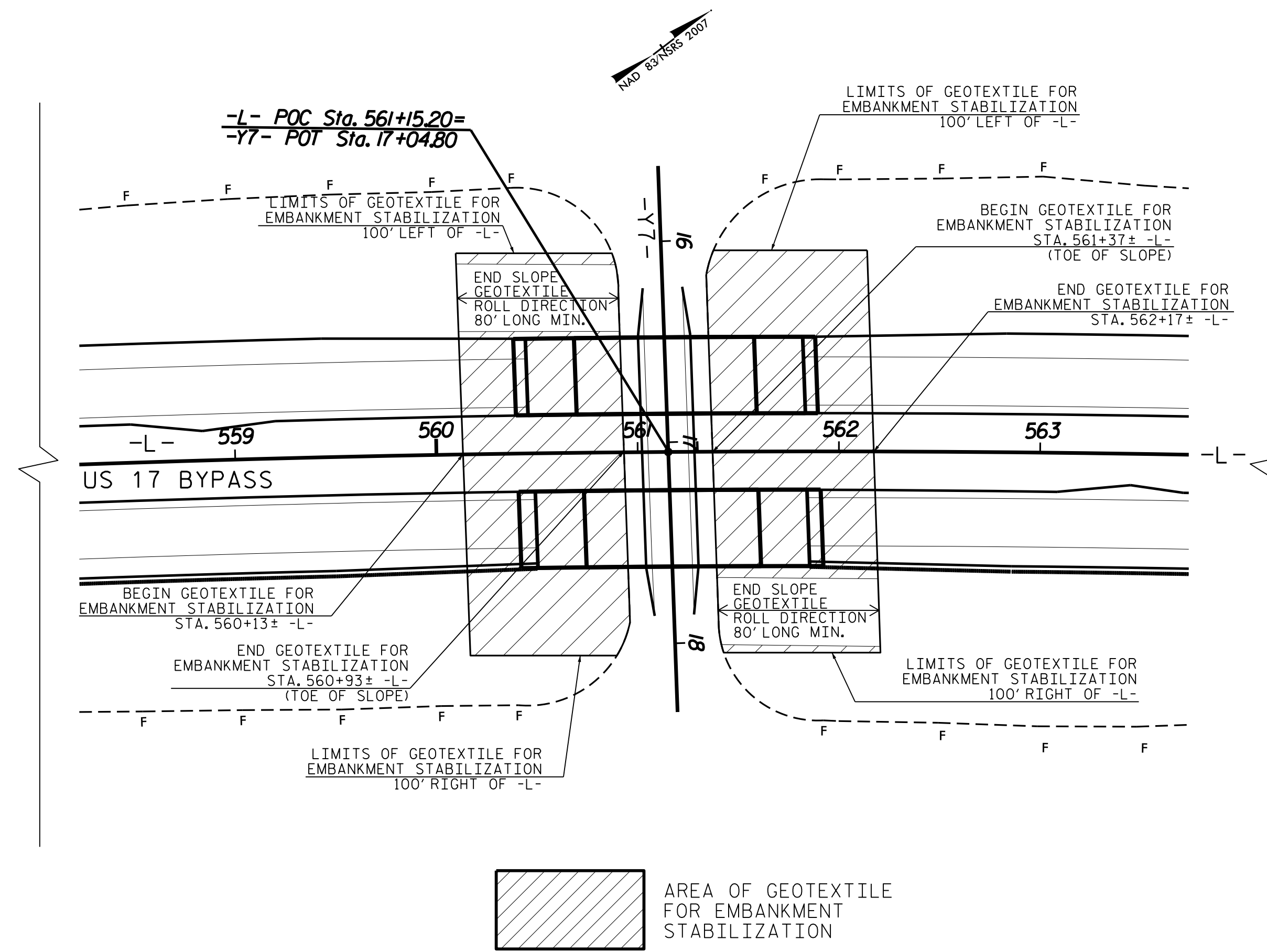


GEOTECHNICAL ENGINEER

ENGINEER



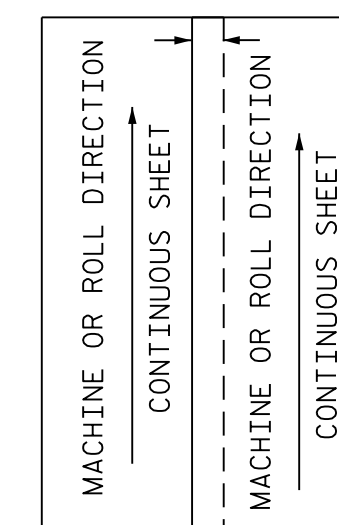
DocuSigned by:  
Shihai Zhang 1/7/2015



PLAN VIEW FOR LIMITS OF GEOTEXTILE

N.T.S.

18 INCHES MIN. OVERLAP OR SEE MANUFACTURER GUIDELINES IF SEWN.



GEOTEXTILE OVERLAP DETAIL

N.T.S.

QUANTITIES

|   |           |
|---|-----------|
| GEOTEXTILE FOR EMBANKMENT STABILIZATION | 3,550 SY# |
| SELECT GRANULAR MATERIAL                | 3,550 CY  |

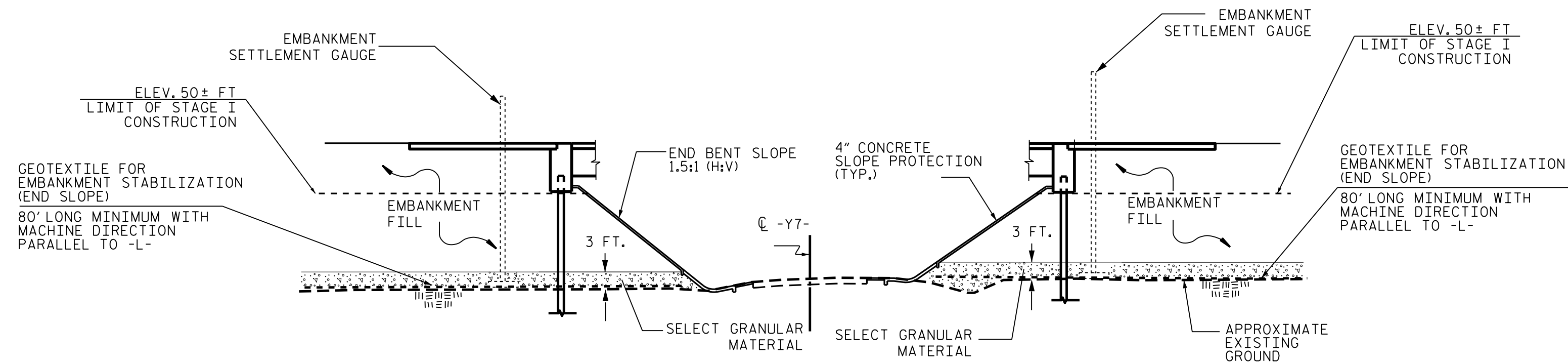
\* GEOTEXTILE FOR EMBANKMENT STABILIZATION ESTIMATED QUANTITY DOES NOT INCLUDE OVERLAPS OR WASTE.

NOTES

- DO NOT GRUB, ONLY CLEAR THE AREA WITHIN THE LIMITS OF THE GEOTEXTILE FOR EMBANKMENT STABILIZATION.
- FOR EMBANKMENT SETTLEMENT GAUGE, SEE "STANDARD EMBANKMENT MONITORING" - STANDARD DETAIL NO. 1804.01.
- PLACE THE GEOTEXTILE WITHOUT ANY WRINKLES OR CREASES.
- GEOTEXTILE FOR EMBANKMENT STABILIZATION SHEETS MUST HAVE A CONTINUOUS LENGTH OF 80 FT. MINIMUM PARALLEL TO -L-. NO SEAMS OR JOINTS ARE ALLOWED IN THE MACHINE DIRECTION OF GEOTEXTILE.
- THE TERMS ROLL AND MACHINE DIRECTION ARE USED INTERCHANGEABLY.
- FOR GEOTEXTILE FOR EMBANKMENT STABILIZATION, SEE GEOTEXTILE FOR EMBANKMENT STABILIZATION SPECIAL PROVISION.
- FOR SELECT GRANULAR MATERIAL, SEE SECTION 265 OF THE STANDARD SPECIFICATIONS.

CONSTRUCTION SEQUENCE

- PLACE GEOTEXTILE FOR EMBANKMENT STABILIZATION.
- PLACE EMBANKMENT SETTLEMENT GAUGES.
- PLACE AND COMPACT SELECT GRANULAR MATERIAL.
- CONSTRUCT THE EMBANKMENT TO ELEVATION 50.0 FT.
- OBSERVE A TWO MONTHS WAITING PERIOD.
- CONSTRUCT THE EMBANKMENT TO FINISHED GRADE.
- OBSERVE ANOTHER TWO MONTHS WAITING PERIOD BEFORE BEGINNING END BENT CONSTRUCTION.



TYPICAL SECTION THROUGH 23' LR/RT OF -L-, N.T.S.

PREPARED BY: S. ZHANG DATE: 01/2015  
REVIEWED BY: J. BATTS DATE: 01/2015

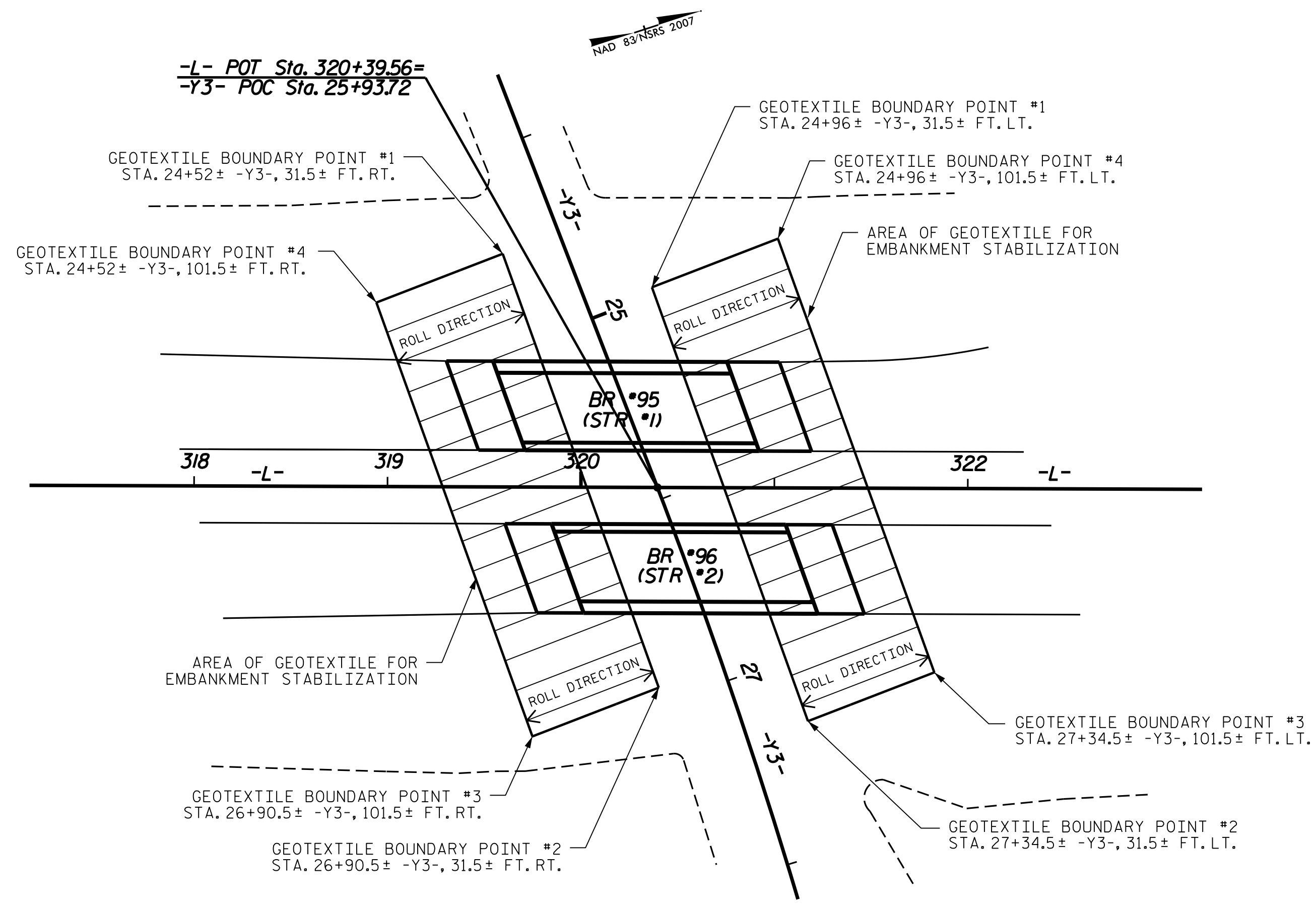
**GEOTECHNICAL ENGINEERING UNIT**

EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE  
 CONTRACT OFFICE

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

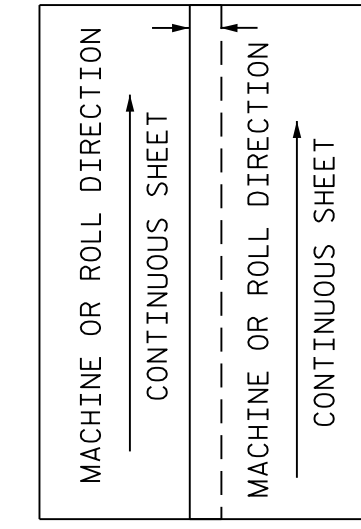
DETAILS FOR GEOTEXTILE FOR EMBANKMENT STABILIZATION AND STAGE CONSTRUCTION AT -Y7- BRIDGE APPROACHES

| REVISIONS |    |      |     |    |      |
|-----------|----|------|-----|----|------|
| NO.       | BY | DATE | NO. | BY | DATE |
| 1         |    |      | 3   |    |      |
| 2         |    |      | 4   |    |      |



**BR# 95&96 END BENT 1 & END BENT 2**  
**LOCATION PLAN FOR GEOTEXTILE FOR EMBANKMENT STABILIZATION**  
 (NOT TO SCALE)

18 INCHES MIN. OVERLAP OR SEE MANUFACTURER GUIDELINES IF SEWN.



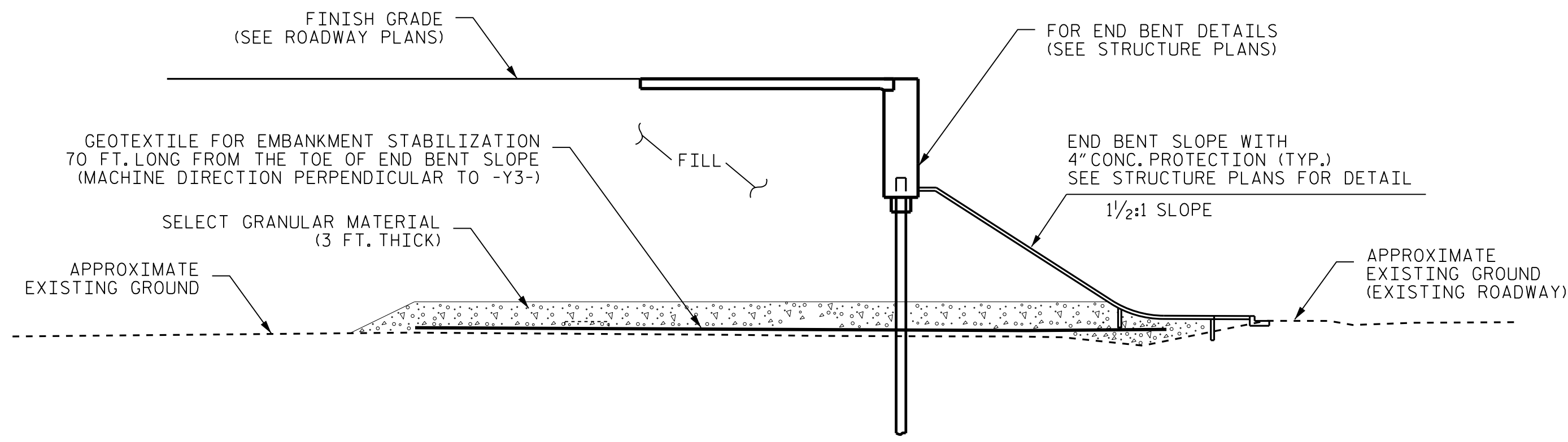
**GEOTEXTILE OVERLAP DETAIL**  
 (NOT TO SCALE)

**NOTES:**

- FOR GEOTEXTILE, SEE GEOTEXTILE FOR EMBANKMENT STABILIZATION SPECIAL PROVISION.
- DO NOT GURB, ONLY CLEAR THE AREA WITHIN THE LIMITS OF THE GEOTEXTILE FOR EMBANKMENT STABILIZATION.
- PLACE GEOTEXTILE WITHOUT ANY WRINKLES OR CREASES.
- NO SEAMS OR JOINTS ARE ALLOWED IN THE GEOTEXTILE MACHINE/ROLL DIRECTION.
- THE TERM ROLL DIRECTION AND MACHINE DIRECTION ARE USED INTERCHANGABLY.
- THE MINIMUM OVERLAP BETWEEN ADJACENT GEOTEXTILE OF THE SAME MACHINE/ROLL DIRECTION IS 18" UNLESS SEWING IS USED TO ACHIEVE THE REQUIRED SEAM STRENGTH.
- GEOTEXTILE FOR EMBANKMENT STABILIZATION WITH MACHINE/ROLL DIRECTION PERPENDICULAR TO -Y3- MUST HAVE A CONTINUOUS LENGTH OF 70 FEET FROM THE TOE OF THE END SLOPES.
- FOR SELECT GRANULAR MATERIAL, SEE SECTION 265 OF THE STANDARD SPECIFICATIONS.

**CONSTRUCTION SEQUENCE:**

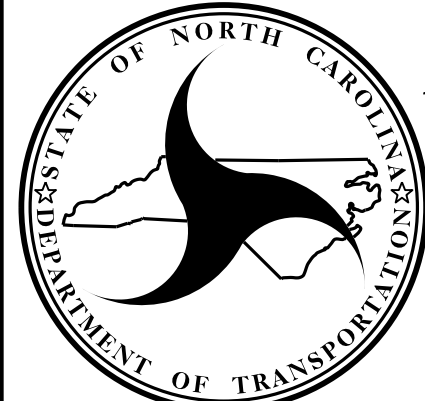
- PLACE GEOTEXTILE FOR EMBANKMENT STABILIZATION.
- PLACE AND COMPACT SELECT GRANULAR MATERIAL.
- CONSTRUCT THE EMBANKMENT TO FINISHED GRADE.
- OBSERVE A TWO MONTHS WAITING PERIOD BEFORE BEGINNING END BENT CONSTRUCTION.



**BR# 95&96 END BENT 1 & END BENT 2**  
**TYPICAL SECTION PERPENDICULAR TO -Y3-**  
 (NOT TO SCALE)

**ESTIMATED QUANTITIES**

|   |          |
|---|----------|
| GEOTEXTILE FOR EMBANKMENT STABILIZATION | 3,710 SY |
| SELECT GRANULAR MATERIAL                | 3,710 CY |

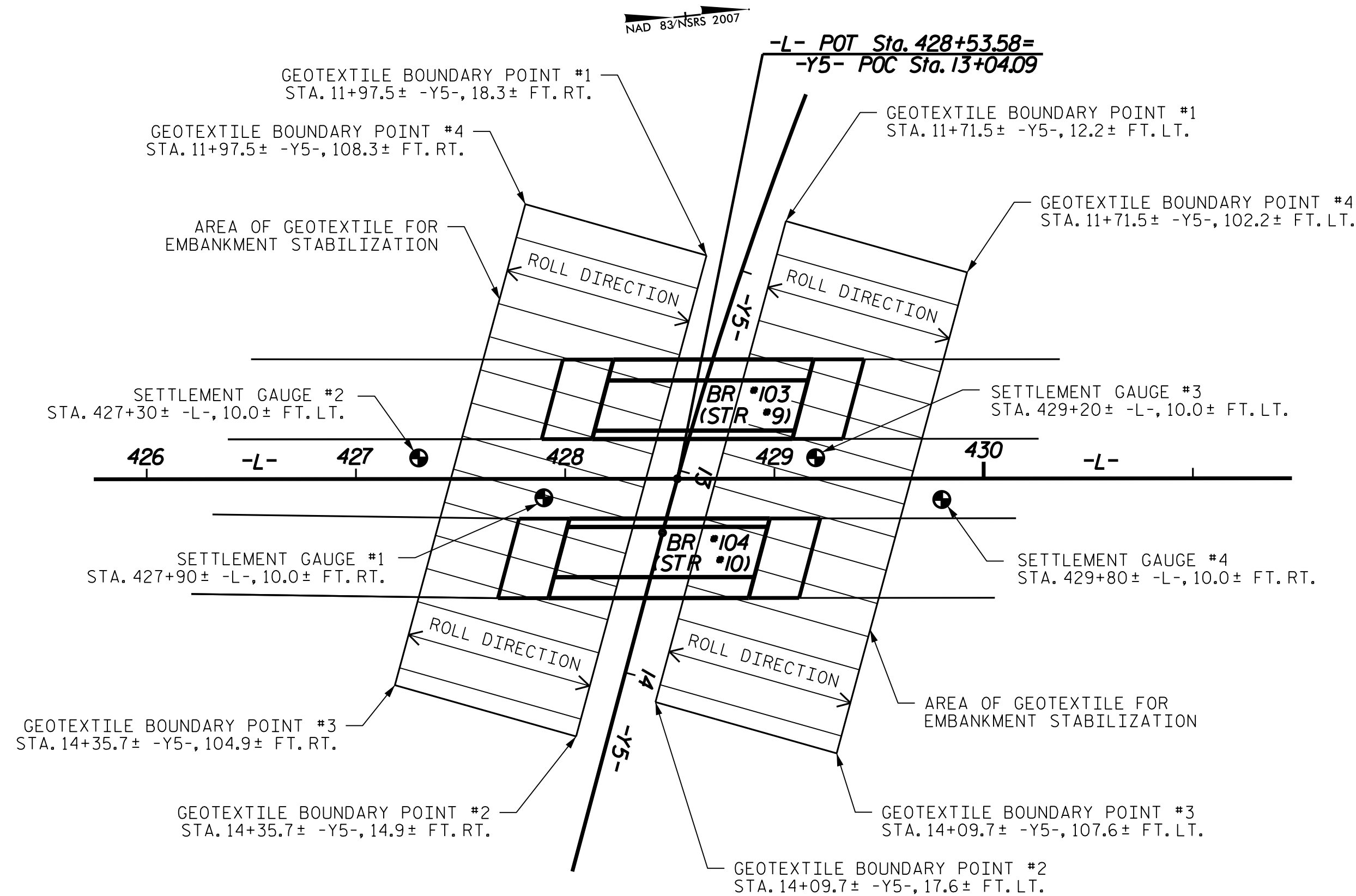


**NORTH CAROLINA**  
**DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
  
**GEOTECHNICAL**  
**ENGINEERING UNIT**

**BRIDGE APPROACHES AT -Y3-**  
**GEOTEXTILE FOR**  
**EMBANKMENT STABILIZATION**  
**DETAILS**

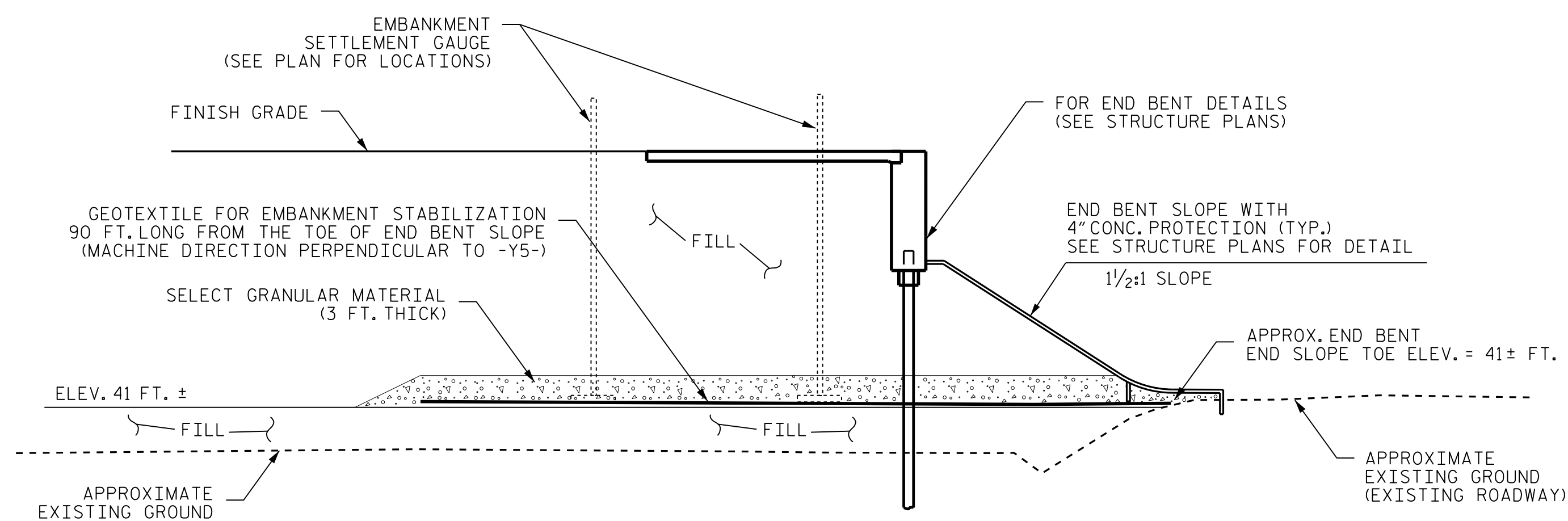
| REVISIONS |    |      |     |    |      |
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| 2         |    |      | 4   |    |      |





**BR# 103&104 END BENT 1 & END BENT 2  
LOCATION PLAN FOR GEOTEXTILE FOR EMBANKMENT STABILIZATION**

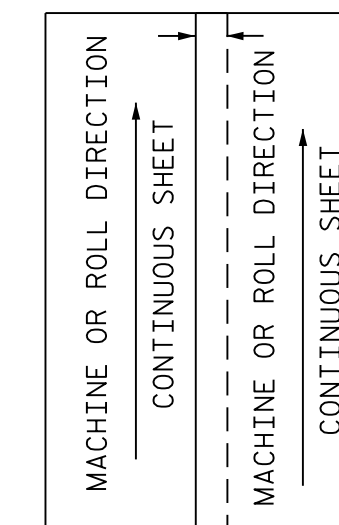
(NOT TO SCALE)



**BR# 103&104 END BENT 1 & END BENT 2  
TYPICAL SECTION PERPENDICULAR TO -Y5-**

(NOT TO SCALE)

18 INCHES MIN. OVERLAP  
OR SEE MANUFACTURER  
GUIDELINES IF SEWN.



**GEOTEXTILE OVERLAP DETAIL**

(NOT TO SCALE)

**NOTES:**

- FOR GEOTEXTILE, SEE GEOTEXTILE FOR EMBANKMENT STABILIZATION SPECIAL PROVISION.
- DO NOT GURB, ONLY CLEAR THE AREA WITHIN THE LIMITS OF THE GEOTEXTILE FOR EMBANKMENT STABILIZATION.
- PLACE GEOTEXTILE WITHOUT ANY WRINKLES OR CREASES.
- NO SEAMS OR JOINTS ARE ALLOWED IN THE GEOTEXTILE MACHINE/ROLL DIRECTION.
- THE TERM ROLL DIRECTION AND MACHINE DIRECTION ARE USED INTERCHANGABLY.
- THE MINIMUM OVERLAP BETWEEN ADJACENT GEOTEXTILE OF THE SAME MACHINE/ROLL DIRECTION IS 18" UNLESS SEWING IS USED TO ACHIEVE THE REQUIRED SEAM STRENGTH.
- GEOTEXTILE FOR EMBANKMENT STABILIZATION WITH MACHINE/ROLL DIRECTION PERPENDICULAR TO -Y5- MUST HAVE A CONTINUOUS LENGTH OF 90 FEET FROM THE TOE OF END SLOPES.
- FOR SELECT GRANULAR MATERIAL, SEE SECTION 265 OF THE STANDARD SPECIFICATIONS.
- FOR EMBANKMENT SETTLEMENT GAUGE, SEE "STANDARD EMBANKMENT MONITORING"- STANDARD DETAIL NO. 1804.01.

**CONSTRUCTION SEQUENCE:**

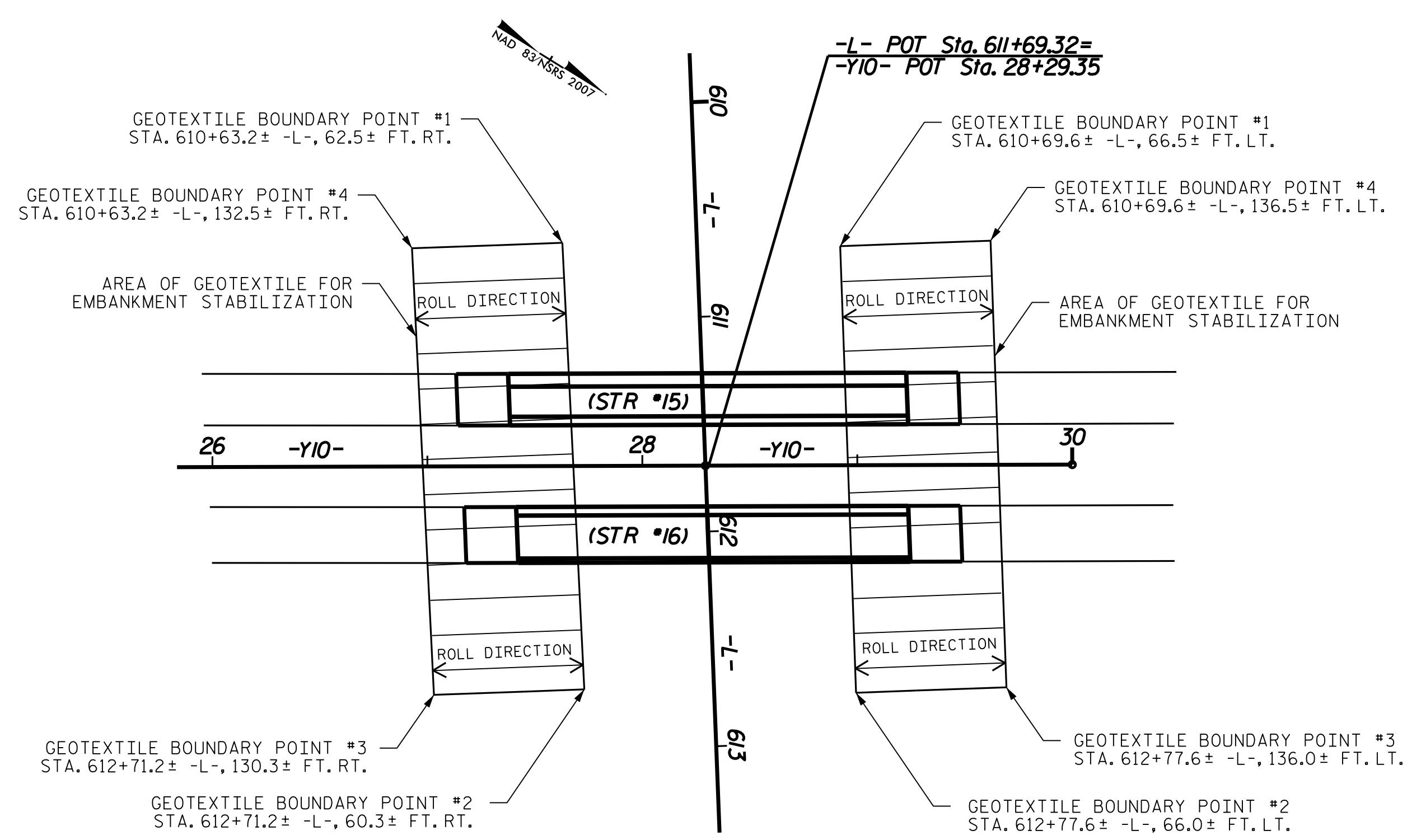
- PLACE FILL FOR EMBANKMENT UP TO ELEV. 41 FT. OR UP TO THE TOE OF END BENT END SLOPE ELEVATION.
- PLACE GEOTEXTILE FOR EMBANKMENT STABILIZATION.
- PLACE EMBANKMENT SETTLEMENT GAUGES.
- PLACE AND COMPACT SELECT GRANULAR MATERIAL.
- CONSTRUCT THE EMBANKMENT TO FINISHED GRADE.
- OBSERVE A FIVE MONTHS WAITING PERIOD BEFORE BEGINNING END BENT CONSTRUCTION.

**ESTIMATED QUANTITIES**

|   |          |
|---|----------|
| GEOTEXTILE FOR EMBANKMENT STABILIZATION | 4,765 SY |
| SELECT GRANULAR MATERIAL                | 4,765 CY |

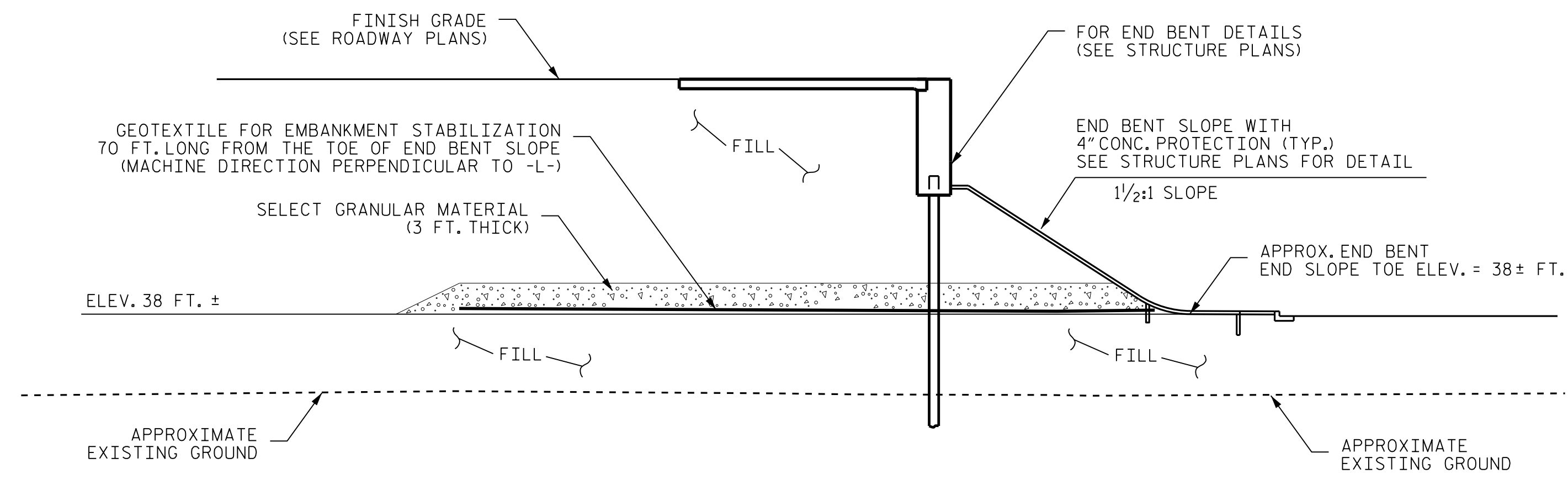
| REVISIONS |    |      |     |    |      |
|-----------|----|------|-----|----|------|
| NO.       | BY | DATE | NO. | BY | DATE |
| 1         | -  | -    | 3   | -  | -    |
| 2         | -  | -    | 4   | -  | -    |





**BRIDGE ON -Y10- OVER -L-, END BENT 1 & END BENT 2  
LOCATION PLAN FOR GEOTEXTILE FOR EMBANKMENT STABILIZATION**

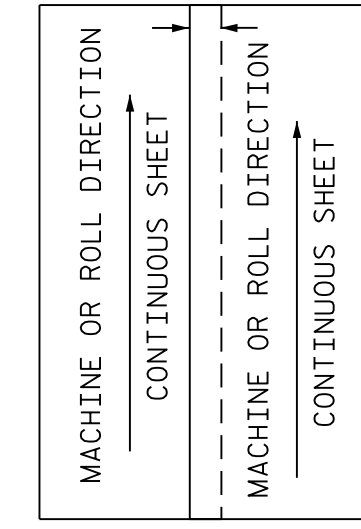
(NOT TO SCALE)



**BRIDGE ON -Y10- OVER -L-, END BENT 1 & END BENT 2  
TYPICAL SECTION PERPENDICULAR TO -L-**

(NOT TO SCALE)

18 INCHES MIN. OVERLAP  
OR SEE MANUFACTURER  
GUIDELINES IF SEWN.



**GEOTEXTILE OVERLAP DETAIL**

(NOT TO SCALE)

**NOTES:**

- FOR GEOTEXTILE, SEE GEOTEXTILE FOR EMBANKMENT STABILIZATION SPECIAL PROVISION.
- DO NOT GURB, ONLY CLEAR THE AREA WITHIN THE LIMITS OF THE GEOTEXTILE FOR EMBANKMENT STABILIZATION.
- PLACE GEOTEXTILE WITHOUT ANY WRINKLES OR CREASES.
- NO SEAMS OR JOINTS ARE ALLOWED IN THE GEOTEXTILE MACHINE/ROLL DIRECTION.
- THE TERM ROLL DIRECTION AND MACHINE DIRECTION ARE USED INTERCHANGABLY.
- THE MINIMUM OVERLAP BETWEEN ADJACENT GEOTEXTILE OF THE SAME MACHINE/ROLL DIRECTION IS 18" UNLESS SEWING IS USED TO ACHIEVE THE REQUIRED SEAM STRENGTH.
- GEOTEXTILE FOR EMBANKMENT STABILIZATION WITH MACHINE/ROLL DIRECTION PERPENDICULAR TO -L- MUST HAVE A CONTINUOUS LENGTH OF 70 FEET FROM THE TOE OF END SLOPES.
- FOR SELECT GRANULAR MATERIAL, SEE SECTION 265 OF THE STANDARD SPECIFICATIONS.

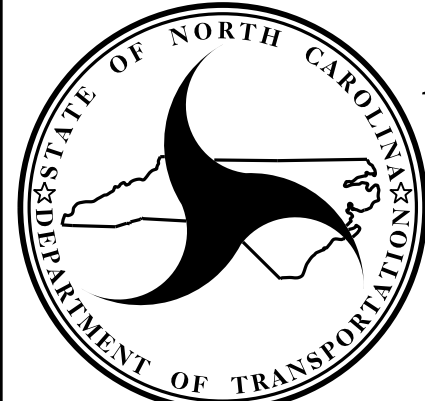
**CONSTRUCTION SEQUENCE:**

- PLACE FILL FOR EMBANKMENT UP TO ELEV. 38 FT. OR UP TO THE TOE OF END BENT END SLOPE ELEVATION.
- PLACE GEOTEXTILE FOR EMBANKMENT STABILIZATION.
- PLACE AND COMPACT SELECT GRANULAR MATERIAL.
- CONSTRUCT THE EMBANKMENT TO FINISHED GRADE.
- OBSERVE A TWO MONTHS WAITING PERIOD BEFORE BEGINNING END BENT CONSTRUCTION.

**ESTIMATED QUANTITIES**

|   |          |
|---|----------|
| GEOTEXTILE FOR EMBANKMENT STABILIZATION | 3,240 SY |
| SELECT GRANULAR MATERIAL                | 3,240 CY |


PREPARED BY: THEIN T. ZAN      DATE: 02/2015  
 REVIEWED BY: JAMES R. BATTS      DATE: 02/2015



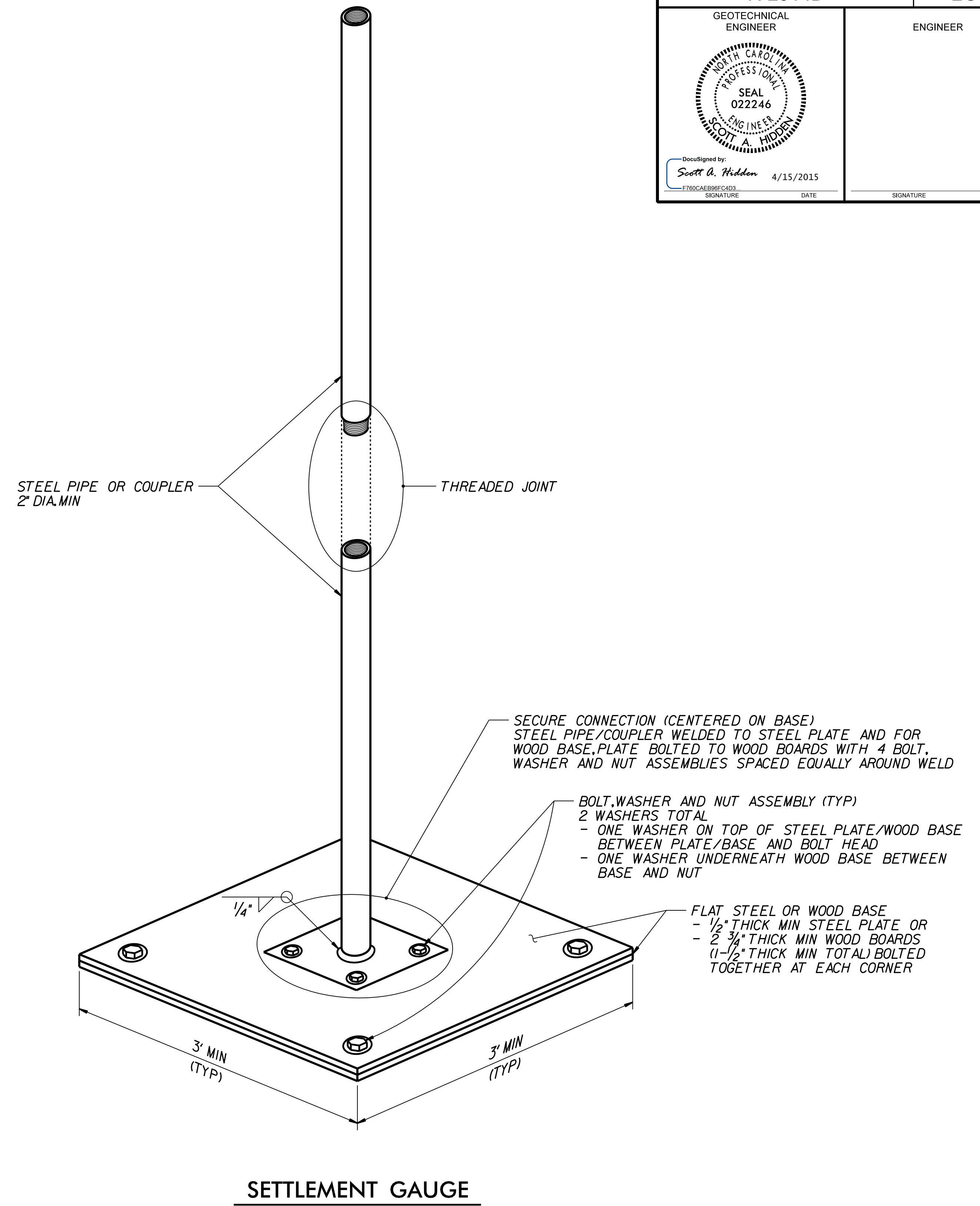
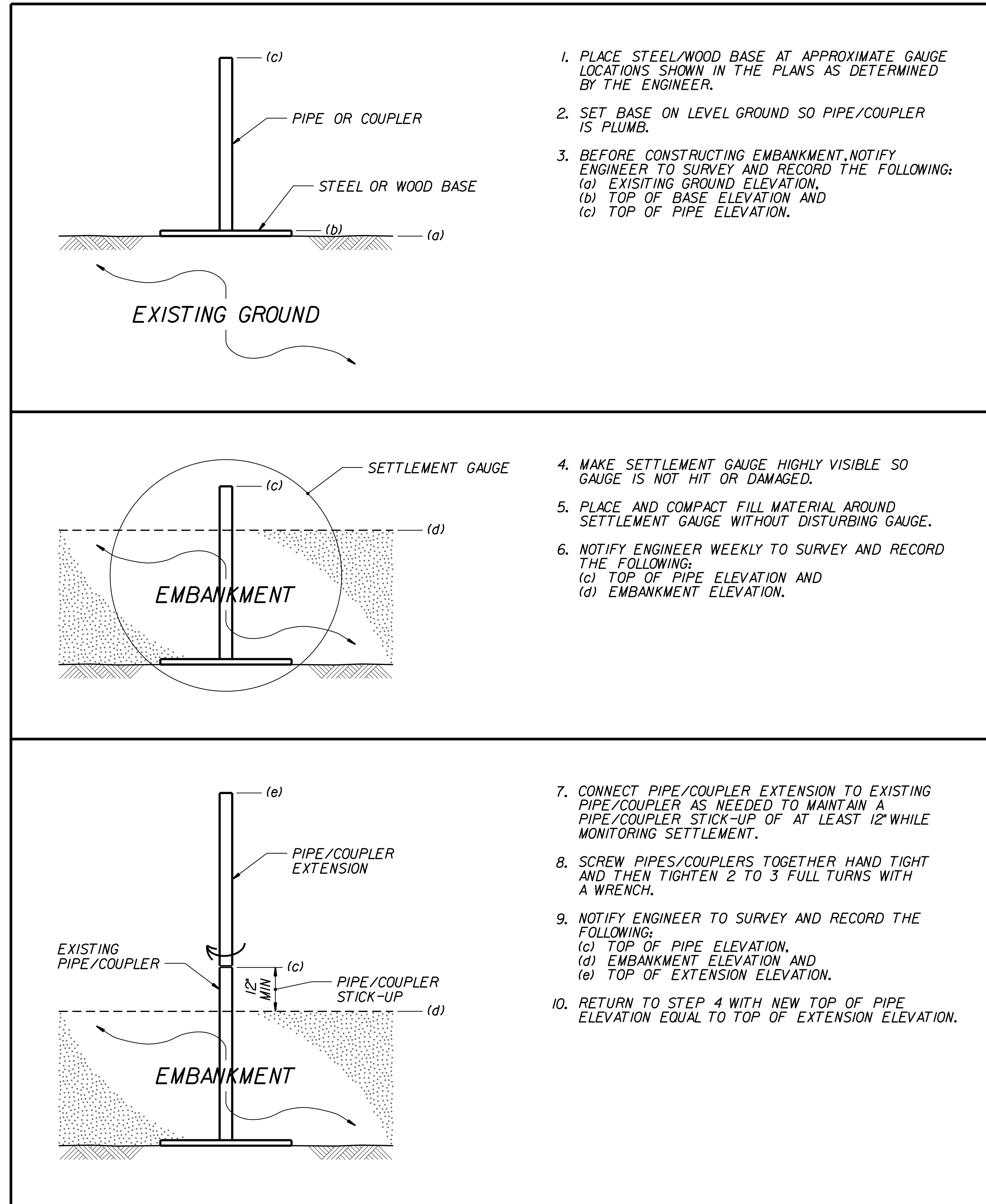
**NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS**  
  
**GEOTECHNICAL  
ENGINEERING UNIT**

**BRIDGE APPROACHES ON -Y10-  
GEOTEXTILE FOR  
EMBANKMENT STABILIZATION  
DETAILS**

| REVISIONS |    |      |     |    |      |
|-----------|----|------|-----|----|------|
| NO.       | BY | DATE | NO. | BY | DATE |
| 1         | -  | -    | 3   | -  | -    |
| 2         | -  | -    | 4   | -  | -    |

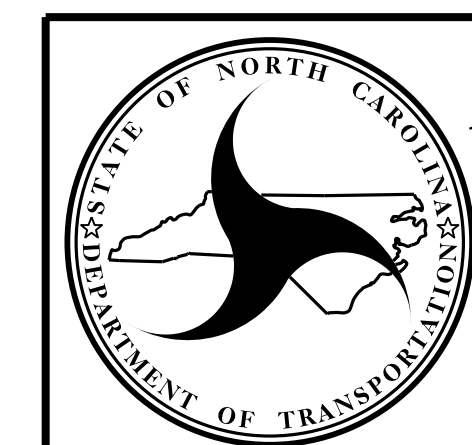
|   |  |                          |  |
|---|--|--------------------------|--|
| <b>PROJECT REFERENCE NO.</b><br>R-2514D   |  | <b>SHEET NO.</b><br>2G-7 |  |
| GEOTECHNICAL ENGINEER   |  | ENGINEER                 |  |
|  |  |                          |  |
| DocuSigned by:<br><i>Scott A. Hildon</i> 4/15/2015                                  |  |                          |  |
| F790CA8B8F6C4D3 SIGNATURE   |  | DATE                     |  |

## EMBANKMENT MONITORING SEQUENCE



**NOTES:**

1. SEE ROADWAY SUMMARY SHEETS FOR APPROXIMATE SETTLEMENT GAUGE LOCATIONS.
2. FOR STANDARD EMBANKMENT MONITORING, SEE EMBANKMENT SETTLEMENT GAUGES PROVISION.
3. INSTALL SETTLEMENT GAUGES AFTER CLEARING AND GRUBBING GAUGE LOCATIONS AND BEFORE CONSTRUCTING EMBANKMENTS WITH EMBANKMENT MONITORING.



NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

**GEOTECHNICAL  
ENGINEERING UNIT**

STANDARD DETAIL NO. 1804.01

STANDARD  
EMBANKMENT MONITORING



# DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA SUMMARY OF EARTHWORK IN CUBIC YARDS

| LOCATION                |                         | UNCLASSIFIED EXCAVATION | UNDERCUT | EMBANKMENT + % | BORROW    | TOTAL WASTE |
|-------------------------|-------------------------|-------------------------|----------|----------------|-----------|-------------|
| STATION                 | STATION                 |                         |          |                |           |             |
| SUMMARY NO. 1           |                         |                         |          |                |           |             |
| -L- 300+00.00           | -L- 319+86.34 (BB)      |                         |          | 208,893        | 208,893   |             |
| -Y3- 14+50.00           | -Y3- 38+00.00           | 982                     | 900      | 1,561          | 579       | 900         |
| -Y3B- 10+13.55          | -Y3B- 16+25.00          | 1,619                   | 2,500    | 3,273          | 1,654     | 2,500       |
| -DRV2- 14+25.29         | -DRV2- 16+00.00         | 337                     | 500      | 628            | 291       | 500         |
| TOTAL SUMMARY NO. 1     |                         | 2,938                   | 3,900    | 214,355        | 211,417   | 3,900       |
| SUMMARY NO. 2           |                         |                         |          |                |           |             |
| -L- 321+07.34 (EB)      | -L- 350+00.00           | 553                     | 9,200    | 230,985        | 230,432   | 9,200       |
| -Y3A- 13+75.00          | -Y3A- 15+00.00          | 119                     | 600      | 773            | 654       | 600         |
| -Y3LPA- 11+98.42        | -Y3LPA- 15+98.94        |                         |          | 32,041         | 32,041    |             |
| -Y3RPA- 14+26.44        | -Y3RPA- 30+00.02        | 3                       | 2,500    | 32,543         | 32,540    | 2,500       |
| -Y3LPD- 11+94.78        | -Y3LPD- 15+74.22        | 18                      | 300      | 12,474         | 12,456    | 300         |
| -Y3RPD- 14+53.73        | -Y3RPD- 26+57.83        | 4,770                   | 8,100    | 27,154         | 26,570    | 12,286      |
| TOTAL SUMMARY NO. 2     |                         | 5,463                   | 20,700   | 335,970        | 334,693   | 24,886      |
| SUMMARY NO. 3           |                         |                         |          |                |           |             |
| -L- 350+00.00           | -L- 362+86.71 (BB)      | 2,003                   |          | 117,920        | 115,917   |             |
| -Y4- 26+97.21           | -Y4-28+89.97            | 12                      |          |                |           | 12          |
| TOTAL SUMMARY NO. 3     |                         | 2,015                   |          | 117,920        | 115,917   | 12          |
| SUMMARY NO. 4           |                         |                         |          |                |           |             |
| -L- 363+78.21 (EB)      | -L- 370+65.00 (BB)      |                         |          | 146,020        | 146,020   |             |
| -DRV3- 10+08.39         | -DRV3- 24+75.00         | 9,359                   |          | 1,381          |           | 7,978       |
| -DRV4- 10+19.86         | -DRV4- 13+22.25         | 44                      |          | 186            | 142       |             |
| TOTAL SUMMARY NO. 4     |                         | 9,403                   |          | 147,587        | 146,162   | 7,978       |
| SUMMARY NO. 5           |                         |                         |          |                |           |             |
| -L- STA. 375+40.00 (EB) | -L- STA. 383+30.00 (BB) |                         |          | 85,874         | 85,874    |             |
| TOTAL SUMMARY NO. 5     |                         |                         |          | 85,874         | 85,874    |             |
| SUMMARY NO. 6           |                         |                         |          |                |           |             |
| -L- 395+65.00 (EB)      | -L- 428+01.03 (BB)      | 3,254                   | 5,000    | 256,135        | 252,881   | 5,000       |
| -Y5- 12+13.89           | -Y5- 13+91.71           | 14                      |          |                |           | 14          |
| TOTAL SUMMARY NO. 6     |                         | 3,268                   | 5,000    | 256,135        | 252,881   | 5,014       |
| SUMMARY NO. 7           |                         |                         |          |                |           |             |
| -L- STA. 428+96.70 (EB) | -L- STA. 450+00.00      | 24                      | 2,800    | 286,035        | 286,011   | 2,800       |
| TOTAL SUMMARY NO. 7     |                         | 24                      | 2,800    | 286,035        | 286,011   | 2,800       |
| SUMMARY NO. 8           |                         |                         |          |                |           |             |
| -L- STA. 450+00.00      | -L- STA. 480+00.00      |                         | 2,000    | 128,543        | 128,543   | 2,000       |
| TOTAL SUMMARY NO. 8     |                         |                         | 2,000    | 128,543        | 128,543   | 2,000       |
| SHEET TOTALS            |                         |                         |          |                |           |             |
|                         |                         | 23,111                  | 34,400   | 1,572,419      | 1,561,498 | 49,040      |

| LOCATION   |                         | UNCLASSIFIED EXCAVATION | UNDERCUT | EMBANKMENT + % | BORROW    | TOTAL WASTE |
|--|-------------------------|-------------------------|----------|----------------|-----------|-------------|
| STATION  | STATION                 |                         |          |                |           |             |
| SUMMARY NO. 9                                      |                         |                         |          |                |           |             |
| -L- STA. 480+00.00                                 | -L- STA. 510+00.00      |                         | 600      | 101,686        | 101,686   | 600         |
| TOTAL SUMMARY NO. 9                                |                         |                         | 600      | 101,686        | 101,686   | 600         |
| SUMMARY NO. 10                                     |                         |                         |          |                |           |             |
| -L- STA. 510+00.00                                 | -L- STA. 526+05.06 (BB) |                         |          | 134,175        |           | 134,175     |
| -Y6- STA. 13+89.66                                 | -Y6- STA. 18+28.01      | 64                      |          | 1              |           | 63          |
| TOTAL SUMMARY NO. 10                               |                         | 64                      |          | 134,176        |           | 134,175     |
| SUMMARY NO. 11                                     |                         |                         |          |                |           |             |
| -L- STA. 528+30.56 (EB)                            | -L- STA. 560+73.18 (BB) |                         | 300      | 298,616        | 298,616   | 300         |
| TOTAL SUMMARY NO. 11                               |                         |                         | 300      | 298,616        | 298,616   | 300         |
| SUMMARY NO. 12                                     |                         |                         |          |                |           |             |
| -L- STA. 561+60.04 (EB)                            | -L- STA. 591+00.00      |                         | 800      | 228,571        | 228,571   | 800         |
| -Y8A- STA. 10+09.81                                | -Y8A- STA. 58+31.93     | 1,214                   | 2,500    | 29,861         | 28,814    | 2,667       |
| TOTAL SUMMARY NO. 12                               |                         | 1,214                   | 3,300    | 258,432        | 257,385   | 3,467       |
| SUMMARY NO. 13                                     |                         |                         |          |                |           |             |
| -L- 591+00.00                                      | -L- 623+92.45 (BB)      |                         |          | 10,431         |           | 111,978     |
| -Y8- 31+25.00                                      | -Y8- 32+50              | 138                     | 400      | 550            | 453       | 441         |
| -Y10- 15+76.00                                     | -Y10- 27+41.37 (BB)     | 791                     |          |                |           | 115,499     |
| -Y10- 29+23.76 (EB)                                | -Y10- 30+00.00          |                         |          | 23,720         |           | 23,720      |
| -Y10RPA- 20+43.00 (EB)                             | -Y10RPA- 38+02.02       |                         |          | 171,514        |           | 171,514     |
| -Y10LPA- 12+26.18                                  | -Y10LPA- 15+24.57       |                         |          | 12,009         |           | 12,009      |
| -Y10RPC- 13+01.08                                  | -Y10RPC- 21+25.99       | 1,202                   | 100      | 17,883         | 16,681    | 100         |
| -Y10RPD- 13+43.68                                  | -Y10RPD- 21+00.26       |                         |          | 10,653         |           | 566         |
| TOTAL SUMMARY NO. 13                               |                         |                         | 23,215   | 500            | 453,719   | 440,632     |
| SUMMARY NO. 14                                     |                         |                         |          |                |           |             |
| -L- 626+41.79 (EB)                                 | -L- 636+95.00           |                         | 467      |                |           | 4,020       |
| -Y10RPA- 15+50.44                                  | -Y10RPA- 18+43.00 (BB)  |                         |          | 2,913          |           | 2,913       |
| TOTAL SUMMARY NO. 14                               |                         |                         | 467      | 6,933          |           | 6,466       |
| SHEET TOTALS                                       |                         |                         |          |                |           |             |
|  |                         | 24,960                  | 4,700    | 1,254,312      | 1,239,710 | 15,105      |
| SUMMARY TOTALS                                     |                         |                         |          |                |           |             |
|  |                         | 48,071                  | 39,100   | 2,825,981      | 2,800,458 | 61,649      |
| MATERIAL FOR SHOULDER CONSTRUCTION                 |                         |                         |          | 64,125         | 64,125    |             |
| UNDERCUT CONTINGENCY                               |                         |                         | 8,000    | 10,000         | 10,000    | 8,000       |
| GRADE POINT UNDERCUT                               |                         |                         | 2,000    | 2,500          | 2,500     | 2,000       |
| SELECT GRANULAR MAT'L USED TO BACKFILL UNDERCUT    |                         |                         |          | -61,375        | -61,375   |             |
| CLASS IV AGGREGATE STABILIZATION IN LIEU OF BORROW |                         |                         |          | -29,438        | -29,438   |             |
| WASTE IN LIEU OF BORROW                            |                         |                         |          |                | -18,155   | -18,155     |
| PROJECT TOTALS                                     |                         | 48,071                  | 49,100   | 2,811,793      | 2,768,116 | 53,494      |
| +5% TO REPLACE TOPSOIL IN BORROW PIT               |                         |                         |          |                | 138,406   |             |
| GRAND TOTALS                                       |                         |                         |          |                |           |             |
|  |                         | 48,071                  | 49,100   |                | 2,906,522 |             |
| SAY  |                         | 49,000                  | 49,100   |                | 2,925,000 |             |

APPROXIMATE DDE = 21,000 CY  
 SHALLOW UNDERCUT = 1,000 CY  
 SELECT GRANULAR MATERIAL = 95,765 CY  
 GEOTEXTILE FOR SOIL STABILIZATION = 85,850 SY  
 CLASS IV SUBGRADE STABILIZATION = 1,900 TONS  
 CLASS IV AGGREGATE STABILIZATION = 56,300 TONS  
 -L-, -Y10RPD- & -DRV3- PAVEMENT STRUCTURE VOLUME = 163,116 CY

**NOTE:** Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

6/4/09  
 7/30/2015  
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COMPUTED BY: YBB DATE: 5/24/14  
 CHECKED BY: DWG DATE: 1/23/15

PROJECT REFERENCE NO. R-2514D  
 SHEET NO. 3B-2

## STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS SUMMARY OF QUANTITIES GUARDRAIL SUMMARY

"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

| SURVEY LINE | BEG. STA. | END STA.  | LOCATION | LENGTH   |             |              | WARRANT POINT      |                    | "N" DIST. FROM E.O.L. | TOTAL SHOULDER WIDTH | FLARE LENGTH |              | W        |       | ANCHORS |      |   |   |   |   |   |   | IMPACT ATTENUATOR TYPE 350 |    |           | SINGLE FACED CONC BARRIER | REMOVE EXISTING GUARDRAIL | REMARKS |   |    |  |  |  |  |  |  |  |  |  |
|-------------|-----------|-----------|----------|----------|-------------|--------------|--------------------|--------------------|-----------------------|----------------------|--------------|--------------|----------|-------|---------|------|---|---|---|---|---|---|----------------------------|----|-----------|---------------------------|---------------------------|---------|---|----|--|--|--|--|--|--|--|--|--|
|             |           |           |          | STRAIGHT | SHOP CURVED | DOUBLE FACED | APPROACH END       | TRAILING END       |                       |                      | APPROACH END | TRAILING END | GRAU 350 | M-350 | CAT-1   | B-77 | T | U | V | W | X | Y | Z                          | AA | PERMITTED |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
|             |           |           |          |          |             |              |                    |                    |                       |                      |              |              |          |       |         |      |   |   |   |   |   |   |                            |    | NO.       |                           |                           |         | G | NG |  |  |  |  |  |  |  |  |  |
| -L-         | 300+50.00 | 303+00.00 | RT       | 250.00   |             |              | 302+00.00 (STREAM) | 303+00.00 (STREAM) | 12                    | 15                   | 50           |              |          |       | 1       |      | 1 |   |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 310+89.13 | 320+01.63 | RT       | 912.50   |             |              | 312+40.00          | 320+01.63 (BRIDGE) | 12                    | 15                   | 50           |              |          |       | 6       |      |   | 1 |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 312+04.31 | 319+54.31 | LT       | 750.00   |             |              | 319+54.31 (BRIDGE) | 312+00.00          | 12                    | 15                   |              |              |          |       | 6       |      |   |   |   |   | 1 | 1 |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 317+47.38 | 319+84.88 | MED RT   | 237.50   |             |              |                    | 319+84.88 (BRIDGE) | 4                     | 7                    | 37.5         |              |          |       | 12      |      |   |   |   |   | 1 | 1 |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 317+71.06 | 319+71.06 | MED LT   | 200.00   |             |              |                    |                    | 4                     | 7                    |              | 37.5         |          |       |         |      |   |   |   |   | 1 | 1 |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 320+75.31 | 323+00.31 | LT       | 225.00   |             |              |                    |                    | 6                     | 9                    | 50           |              |          |       | 9       |      |   |   |   | 1 |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 320+92.06 | 323+29.56 | MED LT   | 237.50   |             |              |                    |                    | 4                     | 7                    | 37.5         |              |          |       | 12      |      |   |   |   |   | 1 | 1 |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 321+05.88 | 323+05.88 | MED RT   | 200.00   |             |              | 321+05.88 (BRIDGE) |                    | 4                     | 7                    |              | 37.5         |          |       |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 321+22.63 | 321+97.63 | RT       | 75.00    |             |              | 321+22.63 (BRIDGE) |                    | 6                     | 9                    |              |              |          |       |         |      |   |   |   |   | 1 | 1 |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 337+08.00 | 338+96.00 | MED LT   | 188.00   |             |              | 338+00.00          |                    | 16                    |                      |              |              | 4.7      | 4.7   |         |      |   |   |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 337+08.00 | 338+96.00 | MED RT   | 188.00   |             |              | 338+00.00          |                    | 18                    |                      |              |              | 4.7      | 4.7   |         |      |   |   |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 354+76.98 | 362+76.98 | RT       | 800.00   |             |              | 356+26.98          | 362+76.98 (BRIDGE) | 12                    | 15                   | 50           |              |          |       | 2       |      |   | 1 |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 356+47.13 | 363+09.63 | LT       | 662.50   |             |              | 363+09.63 (BRIDGE) | 356+47.13          | 12                    | 15                   |              |              |          |       | 2       |      |   |   |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 360+49.22 | 362+87.85 | MED RT   | 237.50   |             |              |                    | 362+87.85          | 4                     | 7                    | 37.5         |              |          |       | 12      |      |   |   |   | 1 |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 360+72.63 | 362+98.76 | MED LT   | 225.00   |             |              | 362+98.76          |                    | 4                     | 7                    |              | 37.5         |          |       |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 363+68.48 | 370+65.00 | RT       | 696.52   |             |              | 363+68.48 (BRIDGE) | 370+65.00 (BRIDGE) | 12                    | 15                   |              |              |          |       | 2       | 2    |   |   |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 364+01.13 | 370+65.00 | LT       | 663.87   |             |              | 370+65.00 (BRIDGE) | 364+01.13 (BRIDGE) | 12                    | 15                   |              |              |          |       | 2       | 2    |   |   |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 363+79.35 | 366+04.35 | MED RT   | 225.00   |             |              | 363+79.35 (BRIDGE) |                    | 4                     | 7                    | 37.5         |              |          |       |         |      |   | 1 |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 363+90.26 | 366+27.76 | MED LT   | 237.50   |             |              |                    | 363+90.29 (BRIDGE) | 4                     | 7                    |              | 37.5         |          | 12    |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 368+40.00 | 370+65.00 | MED RT   | 225.00   |             |              |                    | 370+65.00 (BRIDGE) | 4                     | 7                    | 37.5         |              |          | 11    |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 368+65.00 | 370+65.00 | MED LT   | 200.00   |             |              | 370+65.00 (BRIDGE) |                    | 4                     | 7                    |              | 37.5         |          |       |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 375+40.00 | 383+30.00 | RT       | 790.00   |             |              | 375+40.00 (BRIDGE) | 383+30.00          | 12                    | 15                   |              |              |          |       | 2       | 2    |   |   |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 375+40.00 | 377+40.00 | MED RT   | 200.00   |             |              | 375+40.00 (BRIDGE) |                    | 4                     | 7                    | 37.5         |              |          |       |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 375+40.00 | 377+65.00 | MED LT   | 225.00   |             |              |                    | 375+40.00 (BRIDGE) | 4                     | 7                    |              | 37.5         |          | 11    |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 375+40.00 | 383+30.00 | LT       | 790.00   |             |              | 383+30.00 (BRIDGE) | 375+40.00 (BRIDGE) | 12                    | 15                   |              |              |          |       | 2       | 2    |   |   |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 381+05.00 | 383+30.00 | MED RT   | 225.00   |             |              |                    | 383+30.00 (BRIDGE) | 4                     | 7                    | 37.5         |              |          | 11    |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 381+30.00 | 383+30.00 | MED LT   | 200.00   |             |              | 383+30.00 (BRIDGE) |                    | 4                     | 7                    |              | 37.5         |          |       |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 395+65.00 | 403+65.00 | RT       | 800.00   |             |              | 395+65.00 (BRIDGE) | 403+65.00 (BRIDGE) | 12                    | 15                   |              |              |          |       | 2       |      |   |   |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 395+65.00 | 397+65.00 | MED RT   | 200.00   |             |              | 395+65.00 (BRIDGE) |                    | 4                     | 7                    | 37.5         |              |          |       |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 395+65.00 | 397+90.00 | MED LT   | 225.00   |             |              |                    | 395+65.00 (BRIDGE) | 4                     | 7                    |              | 37.5         |          | 11    |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 395+65.00 | 399+77.50 | LT       | 412.50   |             |              |                    | 395+65.00 (BRIDGE) | 12                    | 15                   | 50           |              |          |       | 2       |      |   | 1 |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 419+16.94 | 427+91.94 | RT       | 875.00   |             |              | 420+66.94          | 427+91.94 (BRIDGE) | 12                    | 15                   | 50           |              |          |       | 2       |      |   | 1 |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 420+23.09 | 428+23.09 | LT       | 800.00   |             |              | 428+23.09 (BRIDGE) |                    | 12                    | 15                   |              |              |          |       | 2       |      |   |   |   | 1 |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 425+64.60 | 428+02.10 | MED RT   | 237.50   |             |              |                    | 428+02.10 (BRIDGE) | 4                     | 7                    | 37.5         |              |          |       | 12      |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 425+87.93 | 428+12.93 | MED LT   | 225.00   |             |              | 428+12.93          |                    | 4                     | 7                    |              | 37.5         |          |       |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 428+87.61 | 442+37.61 | RT       | 1350.00  |             |              | 428+87.61 (BRIDGE) | 442+37.61          | 12                    | 15                   |              |              |          |       | 2       |      |   |   |   | 1 |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 428+97.77 | 431+22.77 | MED RT   | 225.00   |             |              | 428+97.77 (BRIDGE) |                    | 4                     | 7                    | 37.5         |              |          |       |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 429+08.59 | 431+46.09 | MED LT   | 237.50   |             |              |                    | 429+08.59 (BRIDGE) | 4                     | 7                    |              | 37.5         |          | 12    |         |      |   |   |   | 1 |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 429+18.75 | 442+93.75 | LT       | 1375.00  |             |              | 441+43.75          | 429+18.75 (BRIDGE) | 12                    | 15                   | 50           |              |          |       | 2       |      |   | 1 |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 517+49.21 | 526+74.21 | RT       | 925.00   |             |              | 518+99.21          | 526+74.21 (BRIDGE) | 12                    | 15                   | 50           |              |          |       | 2       |      |   | 1 |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 519+04.86 | 524+42.36 | LT       | 537.50   |             |              | 524+42.36 (BRIDGE) | 519+04.86          | 12                    | 15                   |              |              |          |       | 2       |      |   |   |   | 1 |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 523+71.92 | 525+96.92 | MED RT   | 225.00   |             |              |                    | 525+96.92 (BRIDGE) | 4                     | 7                    | 37.5         |              |          | 11    |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 524+00.90 | 525+19.65 | MED LT   | 118.75   |             |              | 525+19.65 (BRIDGE) |                    | 4                     | 7                    |              | 37.5         |          |       |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 526+67.86 | 536+05.36 | LT       | 937.50   |             |              | 534+55.36          | 526+67.86 (BRIDGE) | 12                    | 15                   | 50           |              |          |       | 2       |      |   | 1 |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 527+45.15 | 529+70.15 | MED LT   | 225.00   |             |              |                    | 527+45.15          | 4                     | 7                    | 37.5         |              |          | 11    |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 528+22.42 | 529+41.17 | MED RT   | 118.75   |             |              | 528+22.42 (BRIDGE) |                    | 4                     | 7                    |              | 37.5         |          |       |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 528+99.71 | 536+12.21 | RT       | 712.50   |             |              | 528+99.71 (BRIDGE) | 536+12.21          | 12                    | 15                   |              |              |          |       | 2       |      |   |   |   | 1 |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 552+49.02 | 560+74.02 | RT       | 825.00   |             |              | 553+99.02          | 560+74.02 (BRIDGE) | 12                    | 15                   | 50           |              |          |       | 2       |      |   | 1 |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 553+68.99 | 560+68.99 | LT       | 700.00   |             |              | 560+68.99 (BRIDGE) | 553+68.99          | 12                    | 15                   |              |              |          |       | 2       |      |   |   |   | 1 |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 558+60.58 | 560+73.08 | MED RT   | 212.50   |             |              | 560+73.08 (BRIDGE) |                    | 4                     | 7                    | 37.5         |              |          | 10    |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 558+44.91 | 560+69.91 | MED LT   | 225.00   |             |              |                    | 560+69.91 (BRIDGE) | 4                     | 7                    |              | 37.5         |          |       |         |      |   |   | 1 |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |
| -L-         | 561+58.00 | 571+08.00 | LT       | 950.00   |             |              | 569+58.00          | 561+58.00 (BRIDGE  |                       |                      |              |              |          |       |         |      |   |   |   |   |   |   |                            |    |           |                           |                           |         |   |    |  |  |  |  |  |  |  |  |  |



STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
**SUMMARY OF QUANTITIES**

**SHOULDER BERM  
 GUTTER SUMMARY**

| SURVEY LINE | LOC. | STATION     | STATION         | LENGTH   |          |
|-------------|------|-------------|-----------------|----------|----------|
| -L-         | LT   | 317 + 37.00 | 319 + 30.20     | 193.20   |          |
| -L-         | LT   | 321 + 02.42 | -Y3LPA- 11 + 26 | 126.60   |          |
| -L-         | LT   | 356 + 61.00 | 362 + 83.73     | 622.73   |          |
| -L-         | LT   | 364 + 25.63 | 370 + 41.00     | 615.37   |          |
| -L-         | LT   | 375 + 64.00 | 383 + 04.95     | 740.95   |          |
| -L-         | LT   | 395 + 90.00 | 399 + 20.00     | 330.00   |          |
| -L-         | LT   | 420 + 42.00 | 427 + 98.35     | 756.35   |          |
| -L-         | LT   | 429 + 42.29 | 442 + 24.00     | 1,281.71 |          |
| -L-         | LT   | 519 + 30.00 | 524 + 24.40     | 494.40   |          |
| -L-         | LT   | 526 + 95.00 | 535 + 32.00     | 837.00   |          |
| -L-         | RT   | 311 + 54.00 | 319 + 76.71     | 822.71   |          |
| -L-         | RT   | 321 + 45.89 | 321 + 80.00     | 34.11    |          |
| -L-         | RT   | 356 + 12.00 | 362 + 52.37     | 640.37   |          |
| -L-         | RT   | 363 + 94.37 | 370 + 41.00     | 646.63   |          |
| -L-         | RT   | 375 + 64.00 | 383 + 04.95     | 740.95   |          |
| -L-         | RT   | 395 + 90.00 | 403 + 55.00     | 765.00   |          |
| -L-         | RT   | 419 + 95.00 | 427 + 68.41     | 773.41   |          |
| -L-         | RT   | 429 + 12.35 | 442 + 14.00     | 1,301.65 |          |
| -L-         | RT   | 518 + 15.00 | 526 + 47.07     | 832.07   |          |
| -L-         | RT   | 529 + 17.66 | 536 + 50.00     | 732.34   |          |
| -L-         | RT   | 553 + 15.00 | 560 + 49.67     | 734.67   |          |
| -L-         | RT   | 561 + 85.38 | 569 + 06.00     | 720.62   |          |
| -L-         | RT   | 620 + 60.00 | 623 + 57.80     | 297.80   |          |
| -L-         | RT   | 626 + 55.30 | 628 + 05.00     | 149.70   |          |
| -Y10-       | LT   | 26 + 80.00  | 27 + 13.57      | 33.57    |          |
| -Y10-       | LT   | 29 + 47.11  | 30 + 00.00      | 52.89    |          |
| -Y10-       | RT   | 26 + 42.00  | 27 + 17.90      | 75.90    |          |
| -Y10RPA-    | RT   | 15 + 72.00  | 18 + 11.76      | 239.76   |          |
| -Y10RPA-    | RT   | 37 + 51.38  | 38 + 02.02      | 50.64    |          |
|             |      |             |                 | TOTAL:   | 15643.10 |
|             |      |             |                 | SAY:     | 15700    |

**SUMMARY OF REMOVAL  
 EXISTING ASPHALT PAVEMENT**

| SURVEY LINE      | STATION | STATION | LOCATION LT/RT/CL | SY     |          |
|------------------|---------|---------|-------------------|--------|----------|
| -Y3A- TO -Y3RPA- | 14 + 86 | 25 + 68 | LT/RT             | 348.67 |          |
| -Y3LPA-          | 17 + 51 | 20 + 90 | LT/RT             | 607.78 |          |
| -Y8-             | 29 + 93 | 31 + 13 | LT/RT             | 237.89 |          |
| -Y10-            | 17 + 00 | 18 + 34 | LT                | 606.44 |          |
|                  |         |         |                   | TOTAL: | 1,800.78 |
|                  |         |         |                   | SAY:   | 1,810    |

**PRECAST REINFORCED  
 CONCRETE BARRIER, SINGLE FACED**

| SURVEY LINE | LOCATION LT/RT/CL | STATION     | STATION     | LENGTH |        |
|-------------|-------------------|-------------|-------------|--------|--------|
| -L-         | RT                | 611 + 19.00 | 612 + 19.00 | 100.00 |        |
| -L-         | LT                | 611 + 19.00 | 612 + 19.00 | 100.00 |        |
| -Y6-        | RT                | 14 + 40.00  | 16 + 96.00  | 256.00 |        |
| -Y6-        | LT                | 15 + 20.00  | 17 + 75.00  | 255.00 |        |
|             |                   |             |             | TOTAL: | 711.00 |
|             |                   |             |             | SAY:   | 720    |

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

Table with columns for Station, Structure No., Top Elevation, Invert Elevation, Slope Critical, Pipe Size, R.C. Pipe Class, Endwalls, Quantities, Frame, Grates, and Hood, and Remarks. Includes a summary row at the bottom labeled 'SHEET 2 TOTALS'.

RD24821















STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
**SUMMARY OF QUANTITIES**

**SUMMARY OF SUBSURFACE DRAINAGE**

| LINE                  | STATION | STATION | LOCATION LTR/CL | DRAIN TYPE* UD/BD/SD | LF    |
|-----------------------|---------|---------|-----------------|----------------------|-------|
|                       |         |         |                 |                      |       |
|                       |         |         |                 |                      |       |
|                       |         |         |                 |                      |       |
|                       |         |         |                 |                      |       |
|                       |         |         |                 |                      |       |
|                       |         |         |                 |                      |       |
|                       |         |         |                 |                      |       |
|                       |         |         |                 |                      |       |
|                       |         |         |                 |                      |       |
|                       |         |         |                 |                      |       |
|                       |         |         |                 |                      |       |
|                       |         |         |                 |                      |       |
| SUBTOTAL:             |         |         |                 |                      |       |
| CONTINGENCY (GEOTECH) |         |         |                 | SD                   | 1,000 |
|                       |         |         |                 | TOTAL LF:            | 1,000 |

\*UD = UNDERDRAIN  
 \*BD = BLIND DRAIN  
 \*SD = SUBSURFACE DRAIN

**SUMMARY OF EMBANKMENT WAITING PERIODS**

| SURVEY LINE | STATION | STATION | MONTHS                                |
|-------------|---------|---------|---------------------------------------|
| -L-         | 523+40± | 532+00± | 2 MONTHS STAGE 1;<br>2 MONTHS STAGE 2 |
|             |         |         |                                       |
|             |         |         |                                       |

**SUMMARY OF BRIDGE WAITING PERIODS**

| BRIDGE DESCRIPTION                                  | END BENT No. | MONTHS                                |
|---|--------------|---------------------------------------|
| BRIDGE No. 95 ON US 17 BYPASS OVER -Y3-             | EB1 & EB2    | 2 MONTHS                              |
| BRIDGE No. 96 ON US 17 BYPASS OVER -Y3-             | EB1 & EB2    | 2 MONTHS                              |
| BRIDGE No. 103 ON US 17 OVER -Y5-                   | EB1 & EB2    | 5 MONTHS                              |
| BRIDGE No. 104 ON US 17 OVER -Y5-                   | EB1 & EB2    | 5 MONTHS                              |
| BRIDGE No. 105 ON US 17 OVER -Y6-                   | EB1 & EB2    |                                       |
| BRIDGE No. 106 ON US 17 OVER -Y6-                   | EB1 & EB2    | 2 MONTHS STAGE 1;<br>2 MONTHS STAGE 2 |
| BRIDGE No. 107 ON US 17 OVER -Y7-                   | EB1 & EB2    | 2 MONTHS STAGE 2                      |
| BRIDGE No. 108 ON US 17 OVER -Y7-                   | EB1 & EB2    |                                       |
| LEFT LANE BRIDGE ON US 17 CONNECTOR -Y10- OVER -L-  | EB1 & EB2    | 2 MONTHS                              |
| RIGHT LANE BRIDGE ON US 17 CONNECTOR -Y10- OVER -L- | EB1 & EB2    | 2 MONTHS                              |

**SUMMARY OF AGGREGATE SUBGRADE /STABILIZATION**

| LINE                  | STATION | STATION | AGGREGATE TYPE* ASU/AST | AGGREGATE THICKNESS INCHES | SHALLOW UNDERCUT CY | CLASS IV SUBGRADE STABILIZATION TONS | GEOTEXTILE FOR SOIL STABILIZATION SY | STABILIZER AGGREGATE TONS | CLASS IV AGGREGATE STABILIZATION TONS |
|-----------------------|---------|---------|-------------------------|----------------------------|---------------------|--------------------------------------|--------------------------------------|---------------------------|---------------------------------------|
|                       |         |         |                         |                            |                     |                                      |                                      |                           |                                       |
|                       |         |         |                         |                            |                     |                                      |                                      |                           |                                       |
|                       |         |         |                         |                            |                     |                                      |                                      |                           |                                       |
| CONTINGENCY (GEOTECH) |         |         | ASU                     | 12                         | 1,000               | 1,900                                | 3,300                                |                           |                                       |
|                       |         |         |                         | TOTAL :                    | 1,000               | 1,900                                | 3,300*                               |                           |                                       |

ASU = AGGREGATE SUBGRADE AST = AGGREGATE STABILIZATION  
 \*TOTAL SQUARE YARDS OF GEOTEXTILE FOR SOIL STABILIZATION IS ONLY THE ESTIMATED QUANTITY FOR ASU/AST AND MAY ONLY REPRESENT A PORTION OF THE GEOTEXTILE QUANTITY SHOWN IN THE ITEM SHEETS OF THE PROPOSAL.

**SUMMARY OF EMBANKMENT SETTLEMENT GAUGES**

| GAUGE No. | LINE | APPROX. STATION      | APPROX. OFFSET |
|-----------|------|----------------------|----------------|
| 1         | -L-  | 427+30               | 10 FT (LT)     |
| 2         | -L-  | 427+90               | 10 FT (RT)     |
| 3         | -L-  | 429+20               | 10 FT (LT)     |
| 4         | -L-  | 429+80               | 10 FT (RT)     |
| 5         | -L-  | 523+75±              | 60 FT (LT)     |
| 6         | -L-  | 524+50±              | 10 FT (LT)     |
| 7         | -L-  | 525+00±              | 10 FT (RT)     |
| 8         | -L-  | 527+50               | 60 FT (LT)     |
| 9         | -L-  | 528+50±              | 10 FT (LT)     |
| 10        | -L-  | 529+00±              | 10 FT (RT)     |
| 11        | -L-  | 529+00±              | 60 FT (LT)     |
| 12        | -L-  | 529+50±              | 10 FT (LT)     |
| 13        | -L-  | 529+75               | 60 FT (RT)     |
| 14        | -L-  | 530+00±              | 60 FT (LT)     |
| 15        | -L-  | 530+50±              | 10 FT (RT)     |
| 16        | -L-  | 531+00±              | 60 FT (LT)     |
| 17        | -L-  | 531+50±              | 10 FT (LT)     |
| 18        | -L-  | 532+00±              | 60 FT (LT)     |
| 19        | -L-  | 560+50±              | 10 FT (LT)     |
| 20        | -L-  | 560+00±              | 50 FT (RT)     |
| 21        | -L-  | 561+80±              | 10 FT (RT)     |
| 22        | -L-  | 562+50±              | 50 FT (LT)     |
|           |      | TOTAL GAUGES (EACH): | 22             |

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## STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

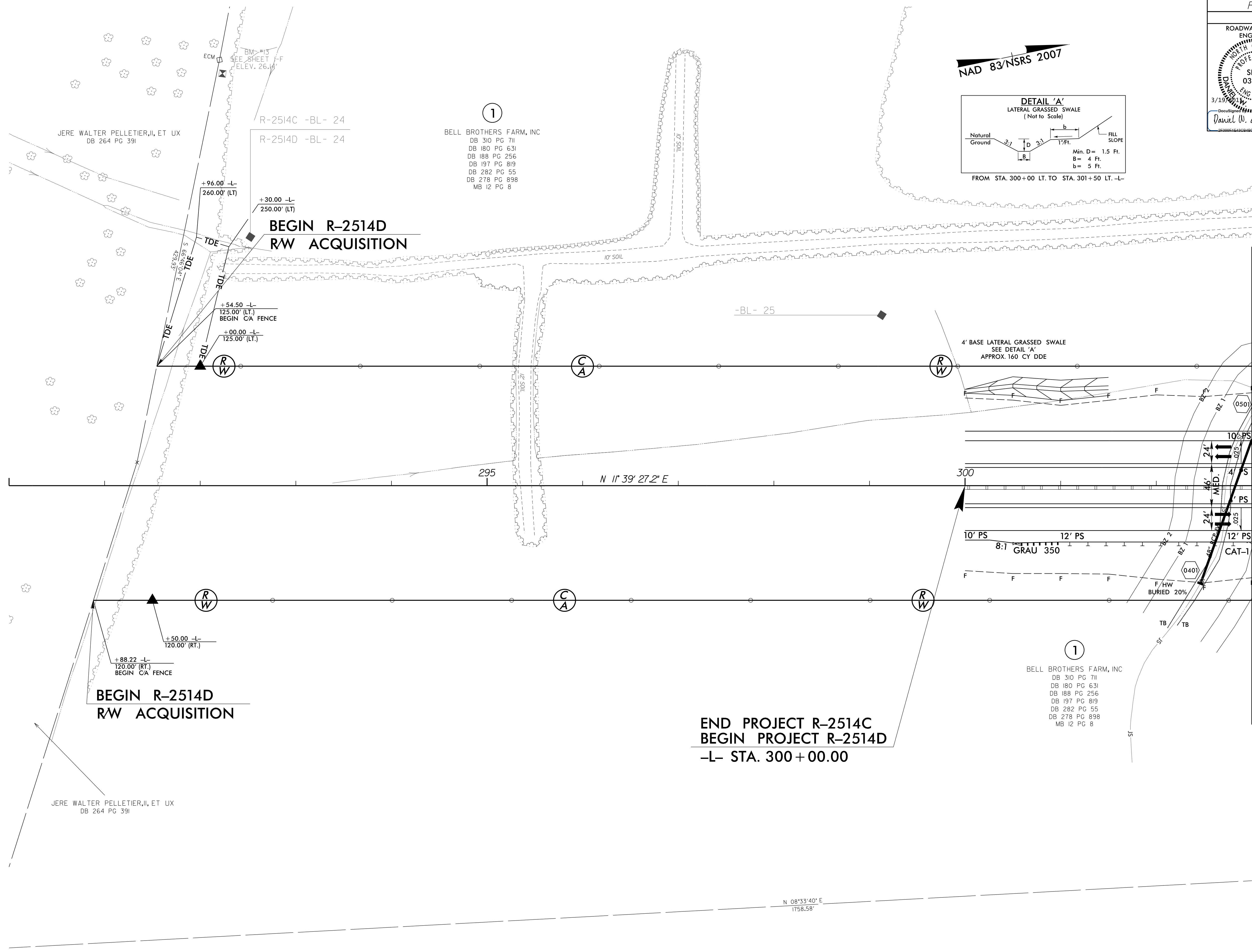
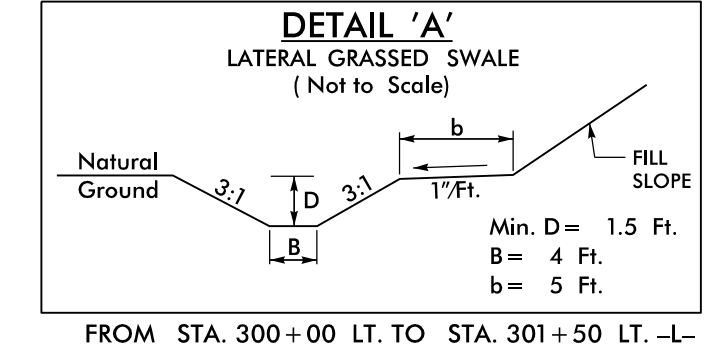
### PARCEL INDEX SHEET

| PARCEL No. | SHEET No.       | PROPERTY OWNER NAME                 |
|------------|-----------------|-------------------------------------|
| 1          | 4, 5, 6, 6A, 29 | BELL BROTHERS FARM, INC             |
| 2          | 6, 6A           | JOHN RAY EUBANKS                    |
| 3          | 6A              | MOULTRY L. SPENCER, ET AL           |
| 4          | 6A              | BRITT A. EMANUEL                    |
| 6          | 6A              | ROSA B. STRAYHORN                   |
| 7          | 6A              | MARY F. BENDER                      |
| 8          | 6A              | GERTRUDE ISLER                      |
| 9          | 6A              | JANIE MAE SHACK, JAMAR STRAYHORN    |
| 10         | 6A              | JANIE SHACK                         |
| 11         | 6A              | JANIE MAE SHACK, JAMAR STRAYHORN    |
| 12         | 6A              | YVASNE SIMMONS, JANIE SHACK         |
| 13         | 6A              | KETSHIA SIMMONS, JANIE SHACK        |
| 15         | 6A              | JESSIE CLARK C/O JANIE SHACK        |
| 16         | 6A              | UNKNOWN                             |
| 18         | 6A              | UNKNOWN                             |
| 19         | 6A              | JONNIE F. BROWN, JR.                |
| 20         | 6A              | UNKNOWN                             |
| 21         | 6A              | UNKNOWN                             |
| 22         | 6A, 30          | MILTON GARDNER                      |
| 23         | 30              | BRUCE L. FREEMAN                    |
| 24         | 30              | ROBERT M. JONES, ET UX              |
| 25         | 30              | UNKNOWN                             |
| 26         | 6, 6A           | LONNIE D. SPENCER, ET UX            |
| 27         | 6, 6A           | MCARTHUR CHERRY, ET AL              |
| 28         | 6, 6A           | DEWARD E. DUDLEY, ET UX             |
| 29         | 6A              | COUNTY OF JONES                     |
| 30         | 6A              | JOHN MARSHALL, ET UX                |
| 31         | 6, 6A           | ELIZABETH FRANKLIN                  |
| 32         | 6, 6A           | JOHN MARSHALL HEIRS                 |
| 33         | 6A              | JOHN L. SIMMONS, ET UX              |
| 34         | 6, 6A           | ROBERT S. OLLISON, ET UX            |
| 35         | 6               | UNKNOWN                             |
| 36         | 6, 6A           | WILLIAM A. HILL                     |
| 37         | 6               | UNKNOWN                             |
| 38         | 30              | SARAH W. RUCKER C/O AGNES CONTRERAS |
| 39         | 30              | GUY BROWN                           |
| 40         | 30              | BARBARA STRAYHORN                   |
| 41         | 6               | DAISY M. ENGLISH, ET VIR            |
| 42         | 6               | LESSA E. BRIMMER                    |
| 43         | 6               | HATTIE M. WILLIAMS, ET AL           |
| 44         | 6               | DORA B. MORRIS C/O HATTIE WILLIAMS  |
| 45         | 6               | LESSA EVETTE BRIMMER                |
| 46         | 6               | JOANN COLEMAN, ET AL                |
| 47         | 6               | JOE SPENCER ESTATE                  |
| 48         | 6               | NELLIE B. FRANKS                    |
| 49         | 6               | CHRISTOPHER LEROY FRANKS, JR.       |
| 50         | 6               | ROBERT L. MORRIS                    |
| 51         | 6               | WILHEMINA SPENCER                   |
| 52         | 6               | BANK OF AMERICA                     |
| 53         | 6, 30           | CAROLINA EAST HEALTHCARE SYSTEMS    |
| 54         | 6, 7, 8, 9, 10  | RICHARD H. PARKER, SR., ET UX       |
| 55         | 9               | 1ST CEMETERY                        |
| 56         | 10, 11          | STACIA ANN HARRIS                   |
| 57         | 11, 12          | C. E. WILLIE, SR. HEIRS             |
| 58         | 12, 13          | VELMA J. BRYAN, ET AL               |
| 59         | 13              | NATHANIEL SIMMONS HEIRS             |
| 60         | 13              | CREIGHTON R. BARBER, ET AL          |
| 61         | 13              | KENNETH L. MURPHY                   |
| 62         | 13              | FLORENCE STRAYHORN                  |
| 63         | 13              | EARL MURPHY, ET UX                  |

| PARCEL No. | SHEET No.      | PROPERTY OWNER NAME                                  |
|------------|----------------|--|
| 64         | 13             | JOHN A. MURPHY, ET UX                                |
| 65         | 13             | WILLIAM MURPHY, ET UX                                |
| 66         | 13, 14         | CHARLES D. GREEN                                     |
| 67         | 14             | C. N. NOBLE, PER DEED                                |
| 68         | 15             | TERRY LLOYD, ET UX                                   |
| 69         | 15             | CLAUDIA H. HADDOCK, ET AL                            |
| 70         | 15, 16         | FOSCUE PLANTATION HOUSE RESTORATION                  |
| 71         | 16, 17, 18, 19 | FOSCUE FAMILY LIMITED PARTNERSHIP                    |
| 72         | 17, 18         | STEPHEN P. CLARY                                     |
| 73         | 19, 20         | A. FOSTER BORDEAUX, TRUSTEE                          |
| 74         | 20             | MELBA J. METTS                                       |
| 75         | 20             | BRENDA S. HUGHES                                     |
| 76         | 20             | ROGER A. HUGHES                                      |
| 77         | 20             | CHARLES F. WALKER                                    |
| 78         | 20             | JON A. THOMAS  |
| 79         | 21             | WEYERHAEUSER COMPANY, FORMERLY BATE LUMBER CO.       |
| 80         | 21, 22         | PROGRESS ENGERGY, FORMERLY CP&L COMPANY              |
| 81         | 22             | JACKIE W. MIRAYA                                     |
| 82         | 22, 23         | WILLIAM T. BLAND                                     |
| 83         | 22             | RUTHIE M. BLAND                                      |
| 84         | 23             | ANGELA REAVES  |
| 85         | 23             | ESTATE OF CLENNIE L. BROWN & SEYMOUR C. BROWN        |
| 86         | 23             | FAMILY OUTREACH WORD OF DELIVERANCE MINISTRIES, INC. |
| 87         | 23             | PARSHEE J. FLEMING                                   |
| 88         | 23, 24         | JOSEPH L. MEADOWS                                    |
| 89         | 24             | PARSHEE J. FLEMING                                   |
| 90         | 24, 25         | JANIE MAE SHACK                                      |
| 91         | 25, 26         | JOHN K. AVOLIS, ET UX                                |
| 92         | 26             | LUTHER J. COX, III, & RUTH C. YOST                   |
| 93         | 26             | ALLIE R. HERRING, JR.                                |
| 94         | -              | **NOT USED**   |
| 95         | 26             | TERRI McDAVID  |
| 96         | 26             | BETTY MURPHY   |
| 97         | 26, 27, 31     | AARON L. MALLARD, ET UX                              |
| 98         | 27, 28         | MACON AND JOYCE DUNCAN                               |
| 99         | 6A             | MOULTRY L. SPENCER, ET AL                            |
| 100        | 6A             | JANIE MAE SHACK, JAMAR STRAYHORN                     |
| 101        | 30             | LEE MORRIS   |

|   |  |
|---|--|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>4   |
| RW SHEET NO.  |  |
| ROADWAY DESIGN ENGINEER<br>SEAL 033871<br>3/19/2015<br>Daniel W. Gardner, Jr. | HYDRAULICS ENGINEER<br>SEAL 039745<br>3/20/2015<br>Jonathan Kyle Moore |

NAD 83/NSRS 2007



MATCHLINE -L- STA. 303 + 00.00 SEE SHEET 5

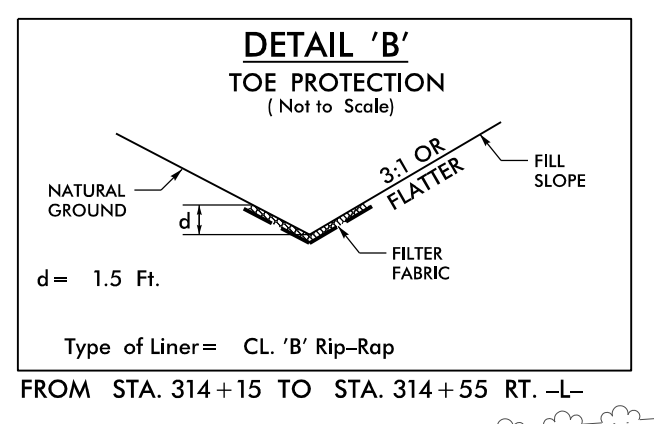
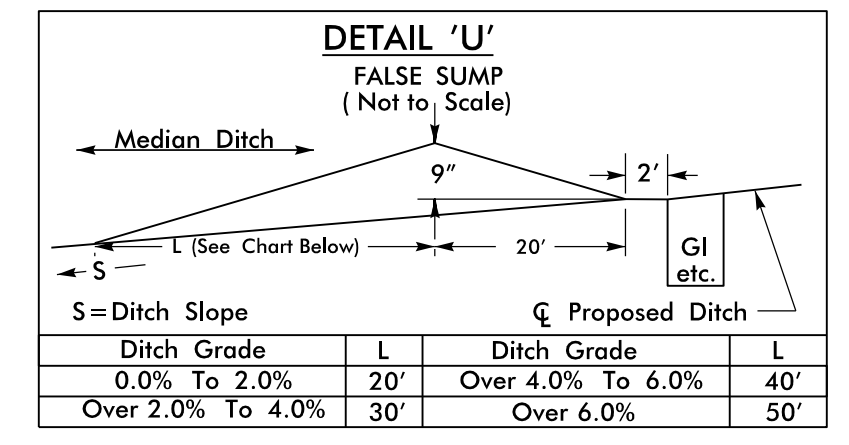
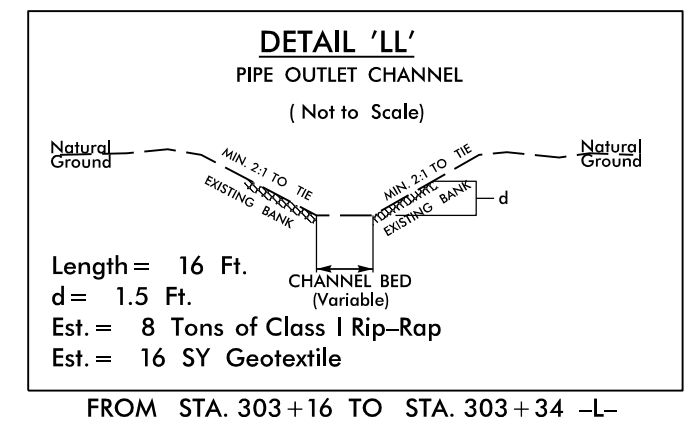
REVISIONS

3/15/2015  
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8/17/99

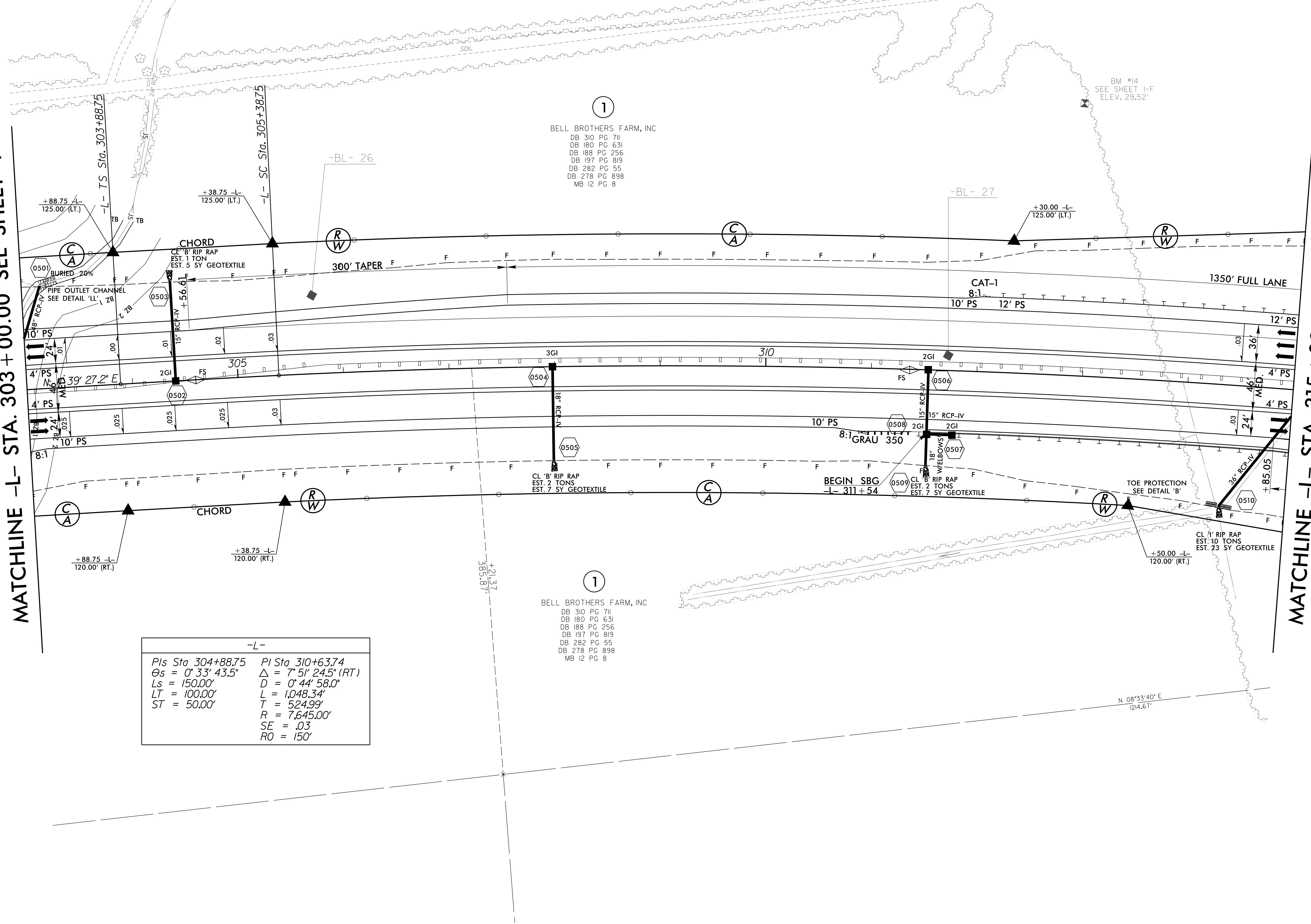


NAD 83/NSRS 2007



MATCHLINE -L- STA. 303 + 00.00 SEE SHEET 4

MATCHLINE -L- STA. 315 + 00.00 SEE SHEET 6



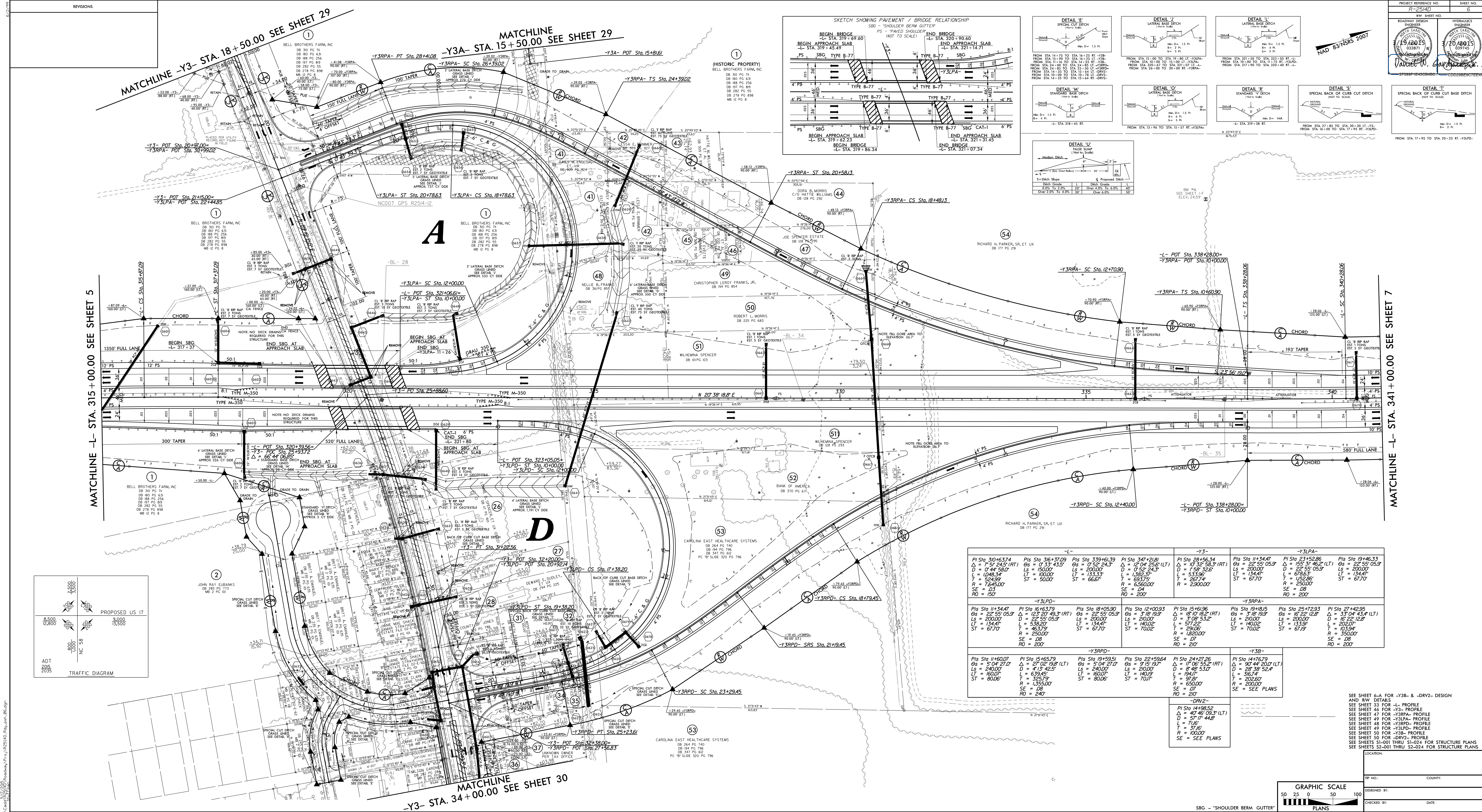
-L-

|                                 |                                    |
|---------------------------------|------------------------------------|
| Pls Sta 304+88.75               | Pl Sta 310+63.74                   |
| $\theta_s = 0^\circ 33' 43.5''$ | $\Delta = 7^\circ 51' 24.5''$ (RT) |
| $L_s = 150.00'$                 | $D = 0^\circ 44' 58.0''$           |
| $LT = 100.00'$                  | $L = 1,048.34'$                    |
| $ST = 50.00'$                   | $T = 524.99'$                      |
|                                 | $R = 7,645.00'$                    |
|                                 | $SE = .03$                         |
|                                 | $RO = 150'$                        |

REVISIONS

8/17/99  
3/15/2015  
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REVISIONS

|     |             |
|-----|-------------|
| NO. | DESCRIPTION |
|     |             |

PROJECT REFERENCE NO. **P-2547** SHEET NO. **2**

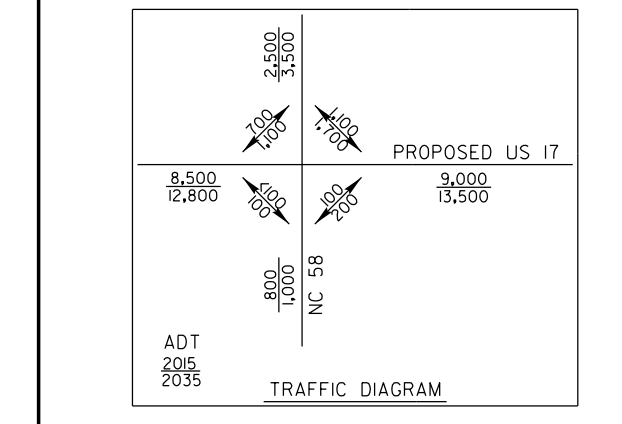
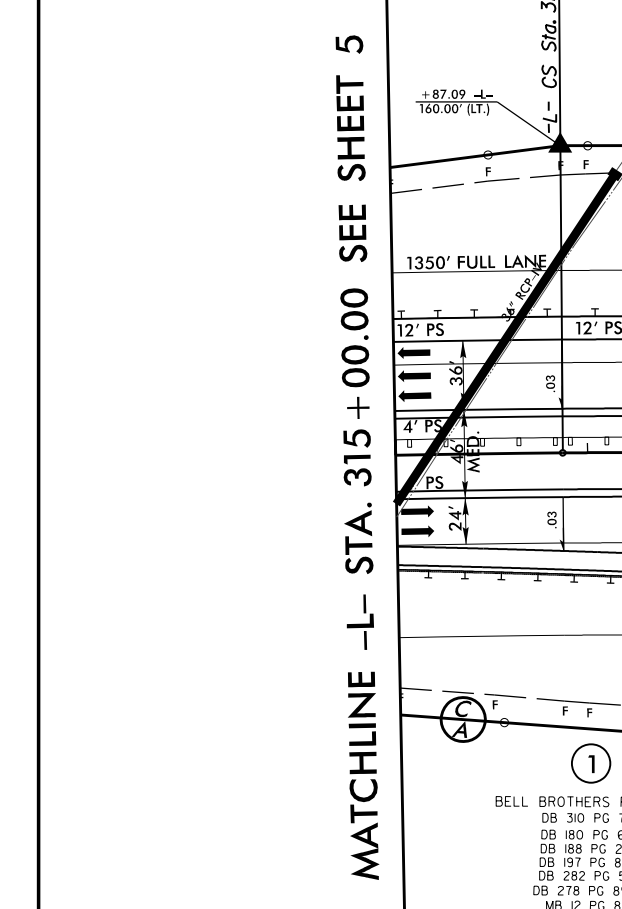
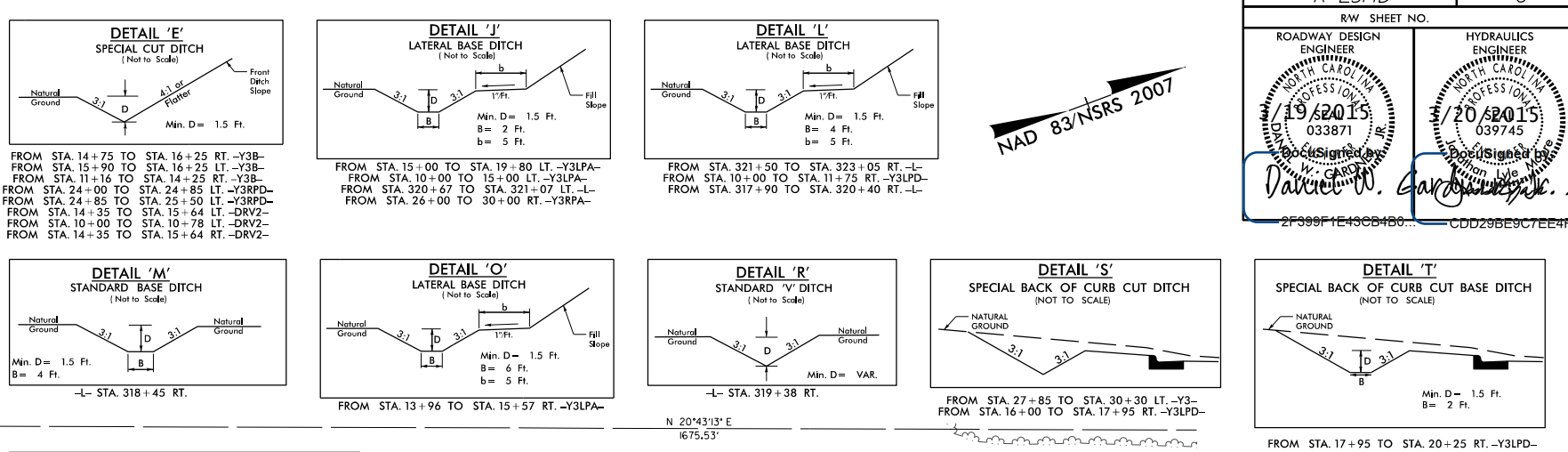
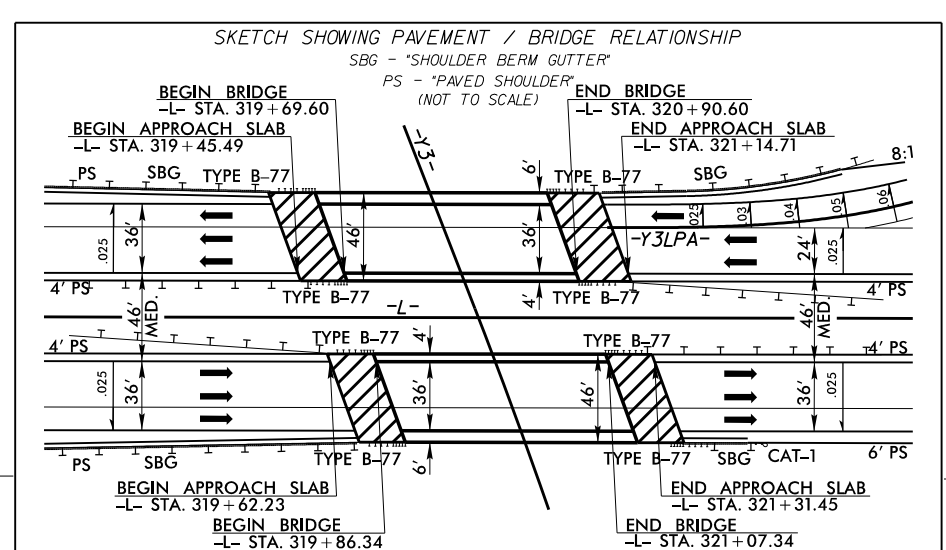
R/W SHEET NO. **2**

ROADWAY DESIGN ENGINEER

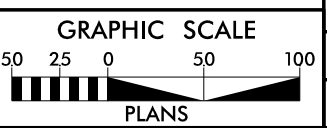
DATE: **10/20/15**

SCALE: **AS SHOWN**

PROJECT LOCATION: **WAD 83/16RS 2007**



|  |   |  |  |   |  |  |  |   |   |   |   |   |  |   |  |  |   |   |
|--|---|--|--|---|--|--|--|---|---|---|---|---|--|---|--|--|---|---|
| PI Sta 310+63.74<br>$\Delta = 7^{\circ} 57' 24.5" (RT)$<br>$D = 0^{\circ} 44' 58.0"$<br>$L = 1048.34'$<br>$T = 524.95'$<br>$ST = 725.00'$<br>$SE = 03'$<br>$RO = 150'$ | PI Sta 316+37.09<br>$\Delta = 0^{\circ} 33' 43.5"$<br>$D = 150.00'$<br>$L = 133.33'$<br>$T = 66.67'$<br>$ST = 500.00'$<br>$SE = 08'$<br>$RO = 200'$ | PI Sta 319+61.39<br>$\Delta = 0^{\circ} 52' 24.3" (RT)$<br>$D = 200.00'$<br>$L = 133.33'$<br>$T = 66.67'$<br>$ST = 500.00'$<br>$SE = 04'$<br>$RO = 200'$ | PI Sta 341+20.81<br>$\Delta = 15^{\circ} 04' 25.6" (LT)$<br>$D = 0^{\circ} 52' 24.3" (RT)$<br>$L = 138.27'$<br>$T = 69.14'$<br>$ST = 636.00'$<br>$SE = 04'$<br>$RO = 200'$ | PI Sta 28+56.34<br>$\Delta = 17^{\circ} 32' 58.3" (RT)$<br>$D = 152^{\circ} 32' 32.8"$<br>$L = 533.96'$<br>$T = 263.74'$<br>$ST = 230.00'$<br>$SE = 08'$<br>$RO = 200'$ | PI Sta 11+34.47<br>$\Delta = 22^{\circ} 55' 05.5"$<br>$D = 22^{\circ} 55' 05.5"$<br>$L = 134.47'$<br>$T = 134.47'$<br>$ST = 67.70'$<br>$SE = 08'$<br>$RO = 200'$ | PI Sta 23+52.86<br>$\Delta = 155^{\circ} 31' 46.2" (LT)$<br>$D = 22^{\circ} 55' 05.5"$<br>$L = 678.63'$<br>$T = 134.47'$<br>$ST = 67.70'$<br>$SE = 08'$<br>$RO = 200'$ | PI Sta 19+46.33<br>$\Delta = 22^{\circ} 55' 05.5"$<br>$D = 22^{\circ} 55' 05.5"$<br>$L = 134.47'$<br>$T = 134.47'$<br>$ST = 67.70'$<br>$SE = 08'$<br>$RO = 200'$ | PI Sta 15+61.96<br>$\Delta = 15^{\circ} 04' 25.6" (LT)$<br>$D = 0^{\circ} 52' 24.3" (RT)$<br>$L = 138.27'$<br>$T = 69.14'$<br>$ST = 636.00'$<br>$SE = 04'$<br>$RO = 200'$ | PI Sta 15+16.96<br>$\Delta = 15^{\circ} 04' 25.6" (LT)$<br>$D = 0^{\circ} 52' 24.3" (RT)$<br>$L = 138.27'$<br>$T = 69.14'$<br>$ST = 636.00'$<br>$SE = 04'$<br>$RO = 200'$ | PI Sta 19+18.15<br>$\Delta = 15^{\circ} 04' 25.6" (LT)$<br>$D = 0^{\circ} 52' 24.3" (RT)$<br>$L = 138.27'$<br>$T = 69.14'$<br>$ST = 636.00'$<br>$SE = 04'$<br>$RO = 200'$ | PI Sta 25+12.93<br>$\Delta = 15^{\circ} 04' 25.6" (LT)$<br>$D = 0^{\circ} 52' 24.3" (RT)$<br>$L = 138.27'$<br>$T = 69.14'$<br>$ST = 636.00'$<br>$SE = 04'$<br>$RO = 200'$ | PI Sta 27+42.95<br>$\Delta = 33^{\circ} 04' 43.4" (LT)$<br>$D = 15^{\circ} 04' 25.6" (LT)$<br>$L = 202.07'$<br>$T = 101.04'$<br>$ST = 202.07'$<br>$SE = 08'$<br>$RO = 200'$ | PI Sta 11+60.07<br>$\Delta = 9^{\circ} 04' 27.0"$<br>$D = 180.00'$<br>$L = 60.00'$<br>$T = 30.00'$<br>$ST = 60.00'$<br>$SE = 07'$<br>$RO = 240'$ | PI Sta 15+65.79<br>$\Delta = 27^{\circ} 02' 38.8" (LT)$<br>$D = 150.00'$<br>$L = 63.94'$<br>$T = 31.97'$<br>$ST = 135.00'$<br>$SE = 08'$<br>$RO = 240'$ | PI Sta 19+59.51<br>$\Delta = 9^{\circ} 04' 27.0"$<br>$D = 180.00'$<br>$L = 60.00'$<br>$T = 30.00'$<br>$ST = 60.00'$<br>$SE = 07'$<br>$RO = 240'$ | PI Sta 22+59.64<br>$\Delta = 9^{\circ} 04' 27.0"$<br>$D = 180.00'$<br>$L = 60.00'$<br>$T = 30.00'$<br>$ST = 60.00'$<br>$SE = 07'$<br>$RO = 240'$ | PI Sta 24+27.26<br>$\Delta = 17^{\circ} 05' 52.2" (RT)$<br>$D = 15^{\circ} 04' 25.6" (LT)$<br>$L = 194.71'$<br>$T = 97.36'$<br>$ST = 60.00'$<br>$SE = 07'$<br>$RO = 210'$ | PI Sta 14+76.79<br>$\Delta = 90^{\circ} 44' 20.0" (LT)$<br>$D = 26^{\circ} 38' 52.4"$<br>$L = 36.74'$<br>$T = 18.37'$<br>$ST = 36.74'$<br>$SE = 07'$<br>$RO = 210'$ |
|--|---|--|--|---|--|--|--|---|---|---|---|---|--|---|--|--|---|---|



SEE SHEET 6-A FOR -Y3B- & -DRV2- DESIGN AND RW DETAILS

SEE SHEET 33 FOR -L- PROFILE

SEE SHEET 46 FOR -Y3- PROFILE

SEE SHEET 47 FOR -Y3PA- PROFILE

SEE SHEET 48 FOR -Y3PD- PROFILE

SEE SHEET 49 FOR -Y3LA- PROFILE

SEE SHEET 50 FOR -Y3B- PROFILE

SEE SHEET 51 FOR -Y3PD- PROFILE

SEE SHEET 52 FOR -Y3LA- PROFILE

SEE SHEET 53 FOR -DRV2- PROFILE

SEE SHEETS 54-61 THRU 51-024 FOR STRUCTURE PLANS

SEE SHEETS 52-001 THRU 52-024 FOR STRUCTURE PLANS

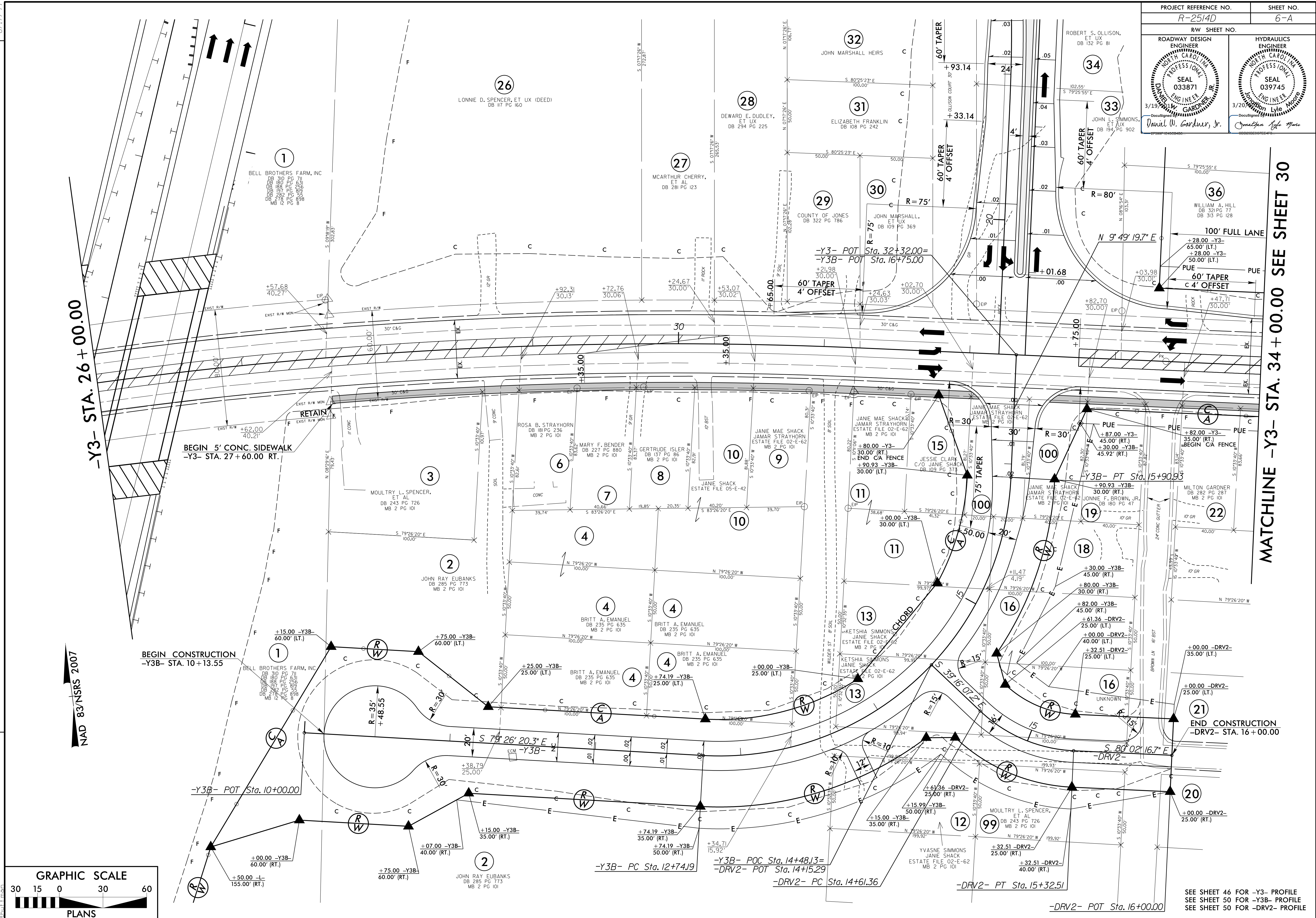
LOCATION:

TR NO. COUNTY:

DESIGNED BY: DATE:

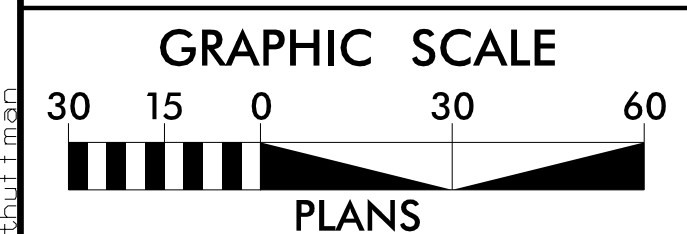
CHECKED BY: DATE:





-Y3- STA. 26+00.00

NAD 83/NSRS 2007



MATCHLINE -Y3- STA. 34+00.00 SEE SHEET 30

SEE SHEET 46 FOR -Y3- PROFILE  
SEE SHEET 50 FOR -Y3B- PROFILE  
SEE SHEET 50 FOR -DRV2- PROFILE

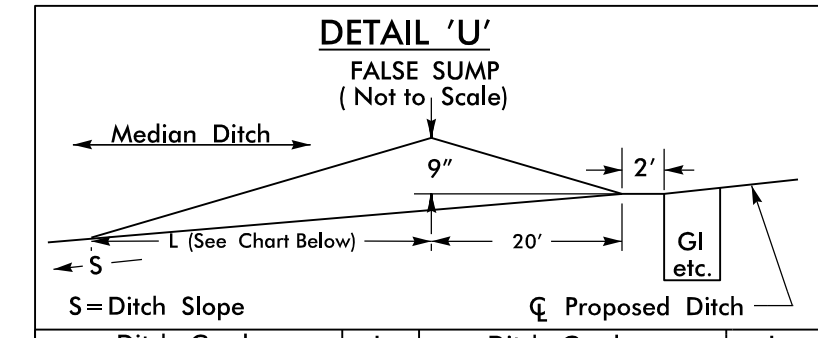
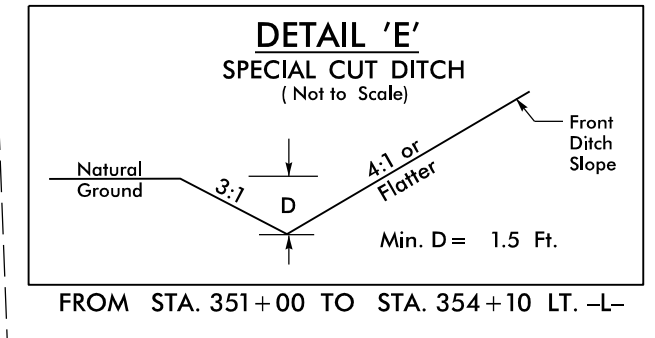
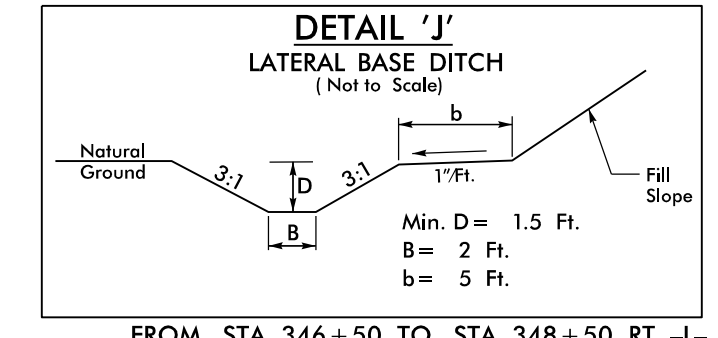
REVISIONS

8/17/99  
 3/15/2015  
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 3/15/2015



NAD 83/NSRS 2007

-L-  
 PI Sta 347+21.81  
 $\Delta = 12^{\circ}04'25.6''$  (LT)  
 $D = 0^{\circ}52'24.3''$   
 $L = 1,382.37'$   
 $T = 693.75'$   
 $R = 6,560.00'$   
 $SE = .04$   
 $RO = 200'$



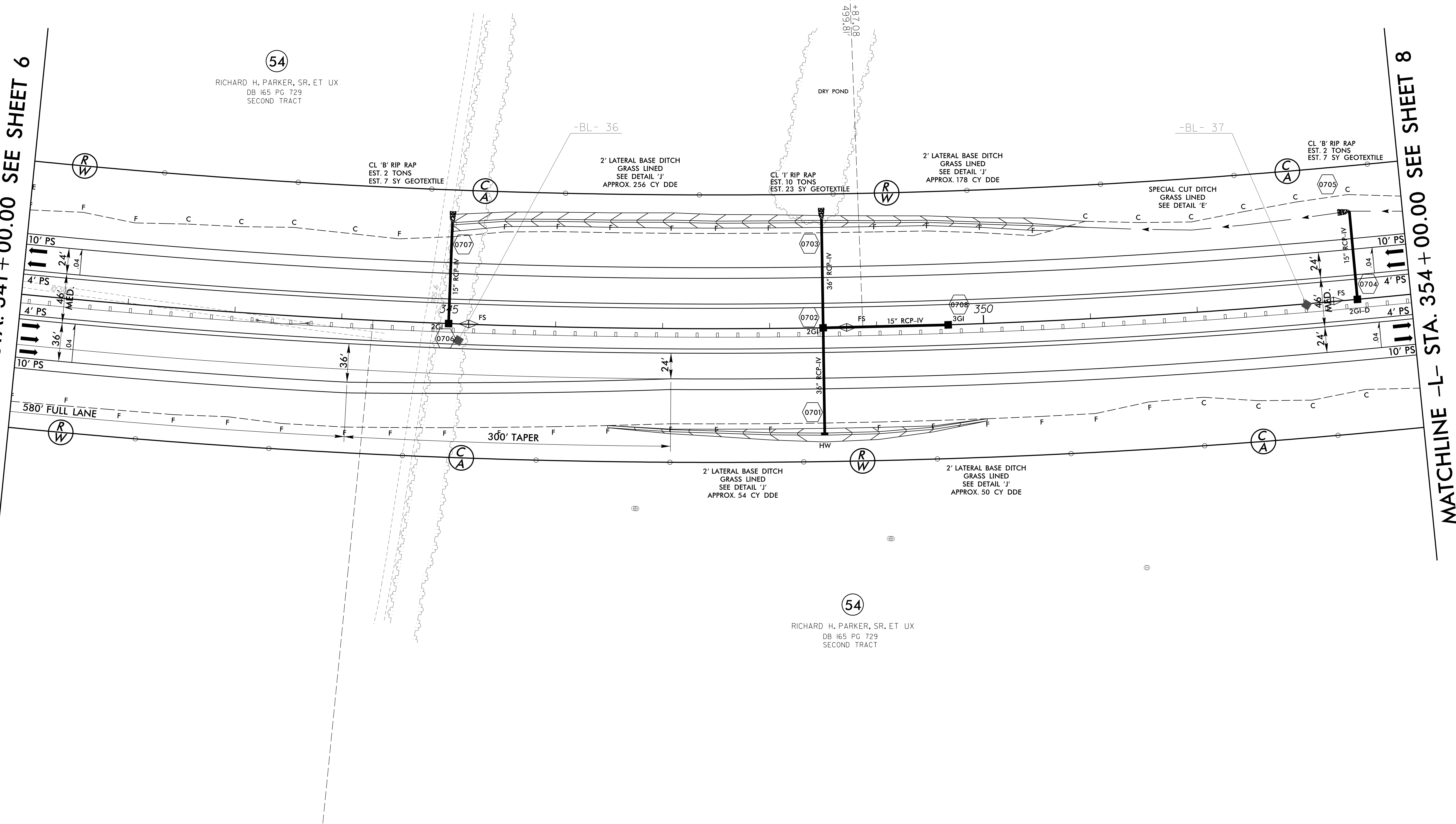
| Ditch Grade       | L   | Ditch Grade       | L   |
|-------------------|-----|-------------------|-----|
| 0.0% To 2.0%      | 20' | Over 4.0% To 6.0% | 40' |
| Over 2.0% To 4.0% | 30' | Over 6.0%         | 50' |

FROM STA. 346+50 TO STA. 348+50 RT. -L-  
 FROM STA. 348+50 TO STA. 350+00 RT. -L-  
 FROM STA. 348+50 TO STA. 351+00 LT. -L-  
 FROM STA. 345+00 TO STA. 348+50 LT. -L-

FROM STA. 351+00 TO STA. 354+10 LT. -L-

MATCHLINE -L- STA. 341+00.00 SEE SHEET 6

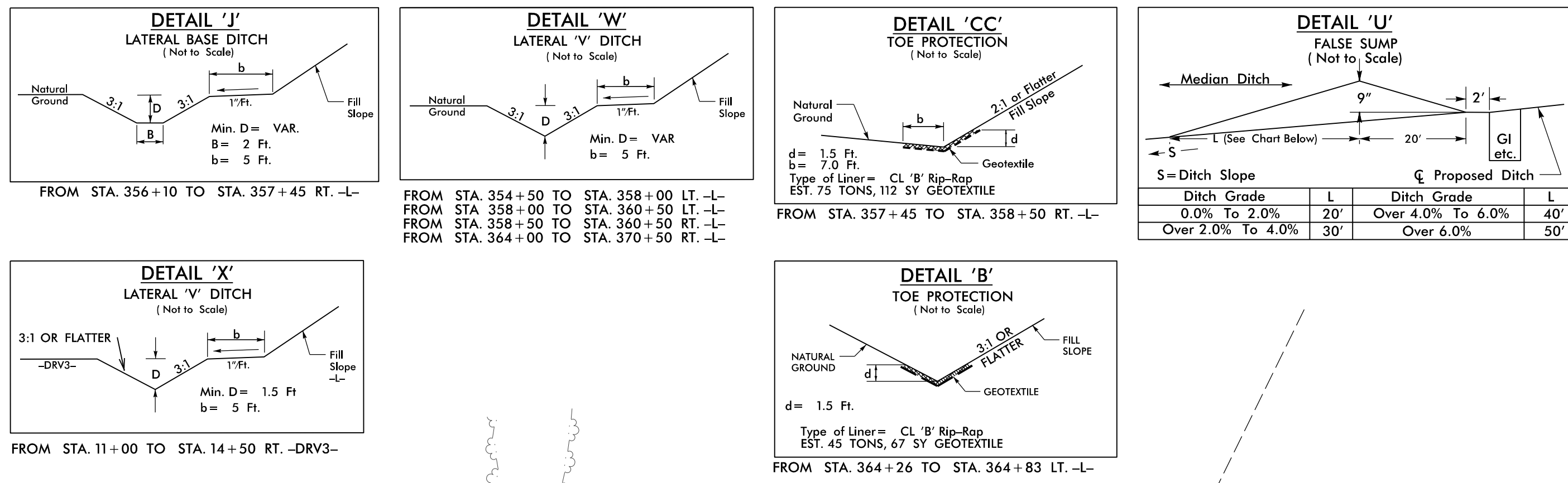
MATCHLINE -L- STA. 354+00.00 SEE SHEET 8



REVISIONS

8/17/99  
 3/15/2015  
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 Daniel W. Gardner, Jr.  
 Daniel W. Gardner, Jr.



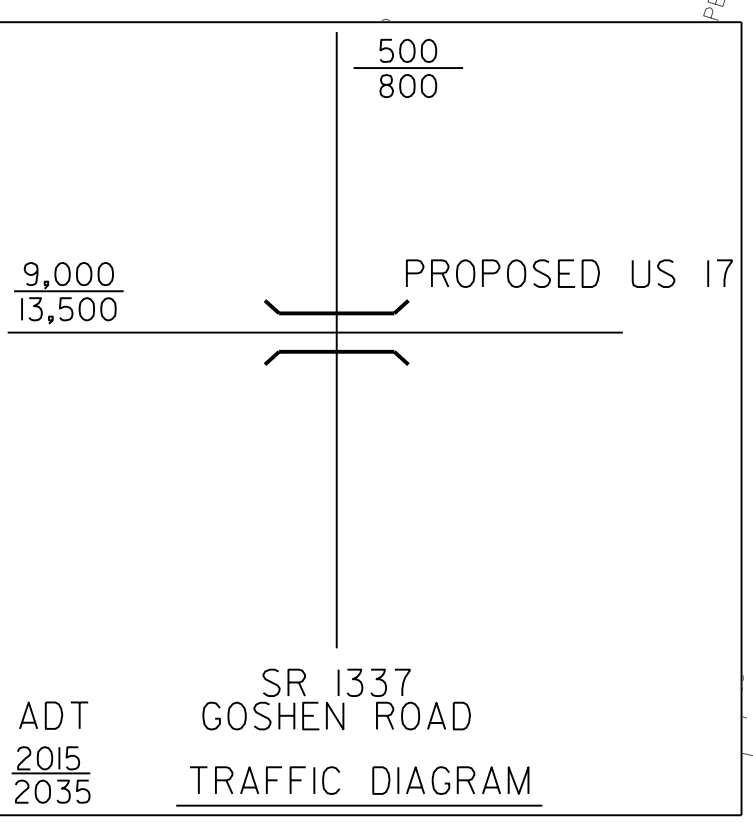
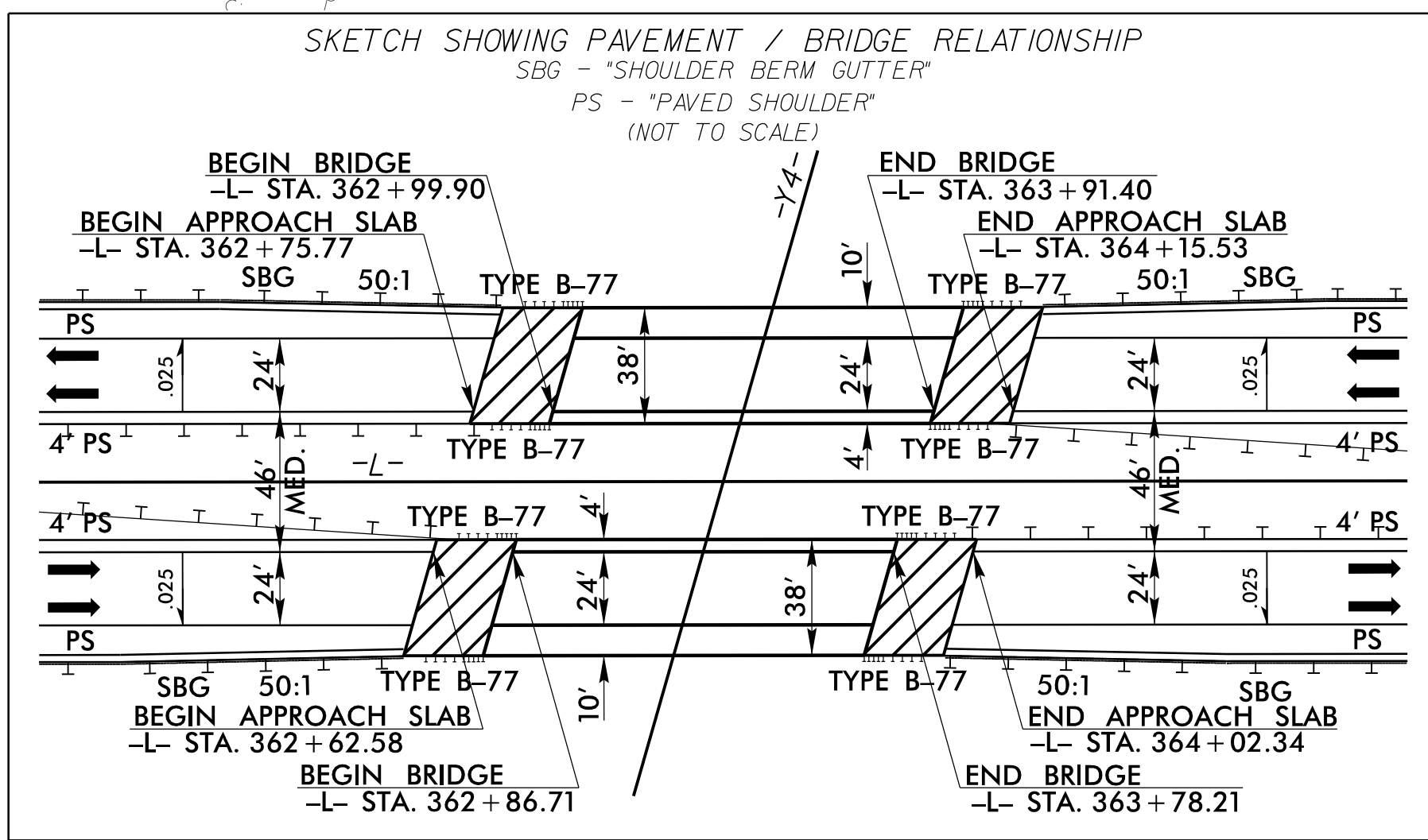
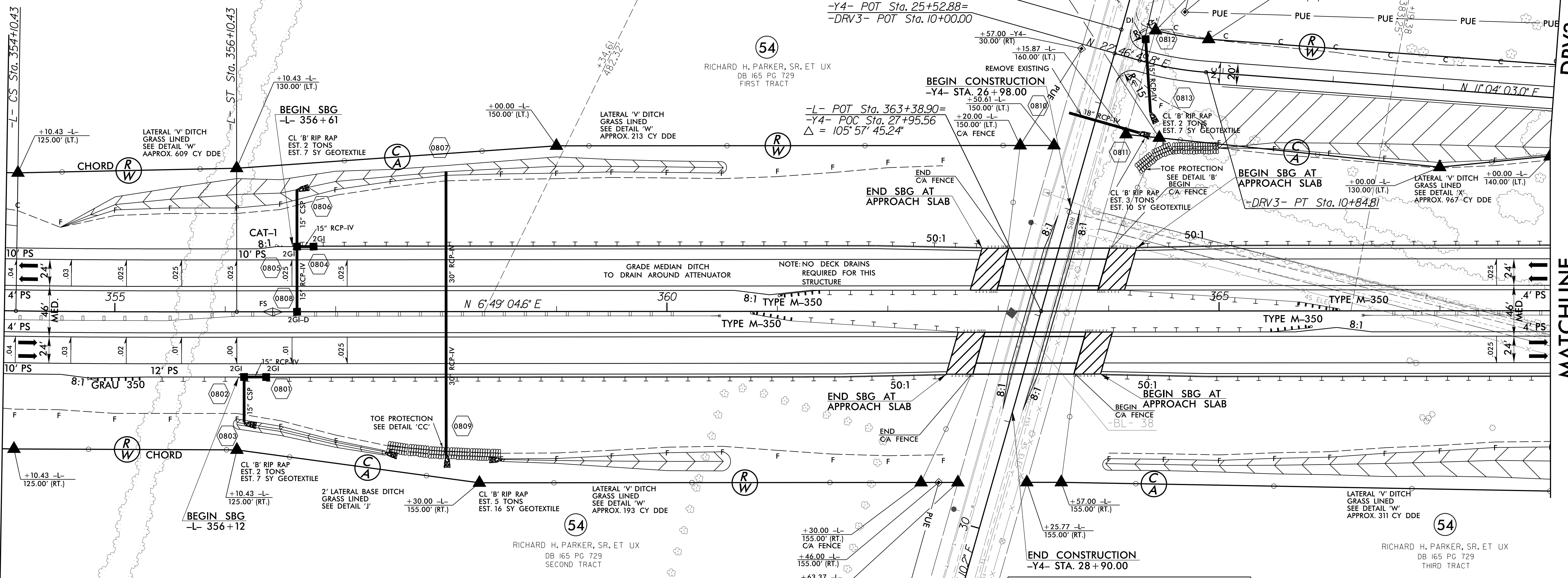


| Ditch Grade       | L   | Ditch Grade       | L   |
|-------------------|-----|-------------------|-----|
| 0.0% To 2.0%      | 20' | Over 4.0% To 6.0% | 40' |
| Over 2.0% To 4.0% | 30' | Over 6.0%         | 50' |

NAD 83/NSRS 2007  
**54**

MATCHLINE -L- STA. 354 + 00.00 SEE SHEET 7

MATCHLINE -DRV3- STA. 14 + 00.00 SEE SHEET 9

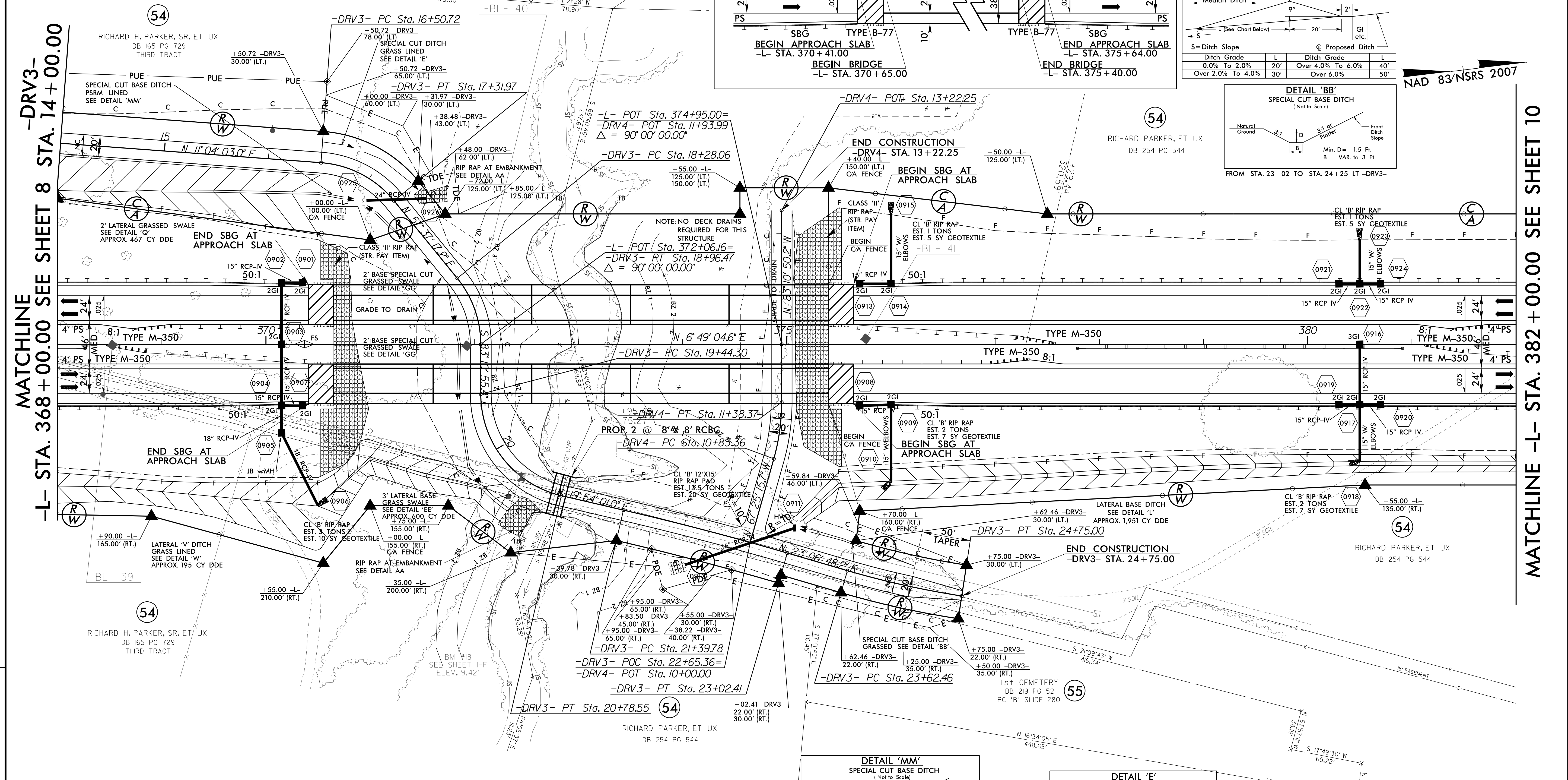
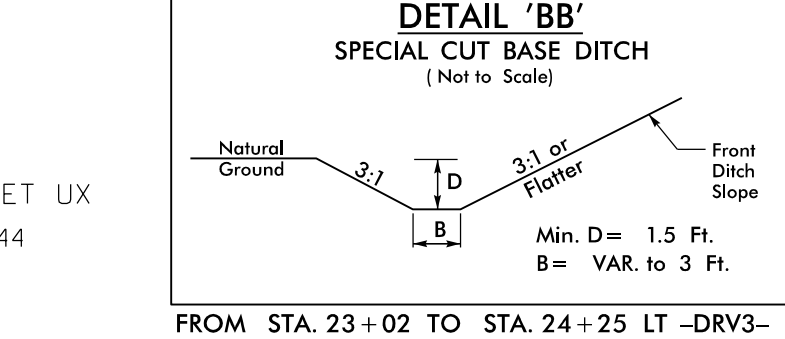
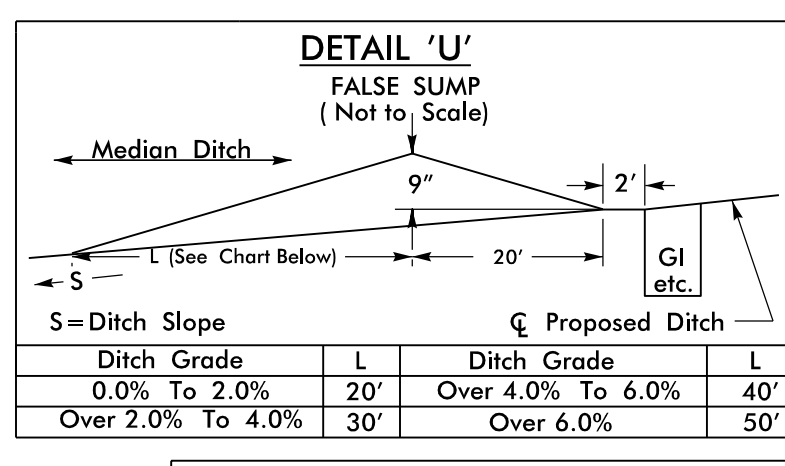
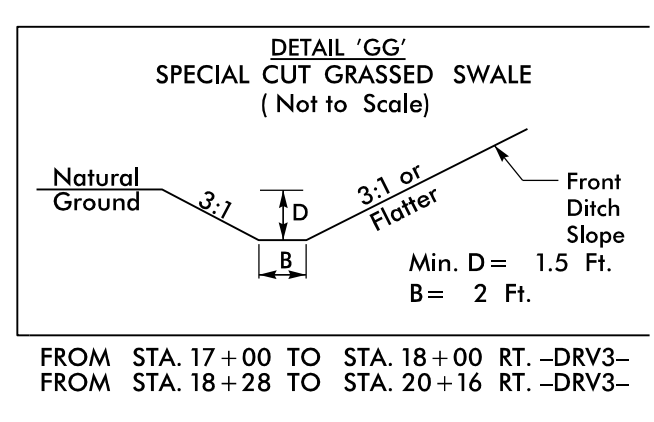
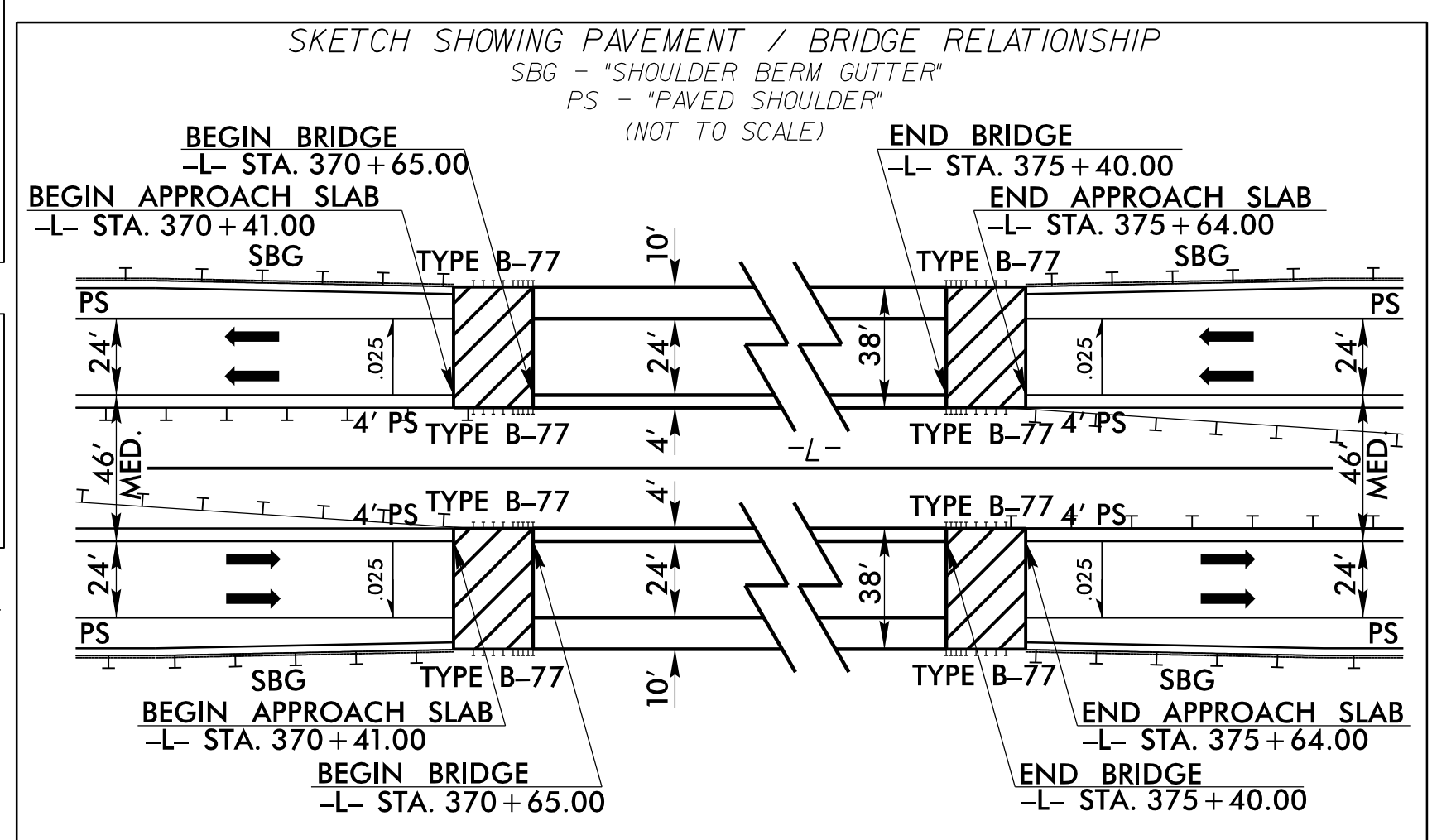
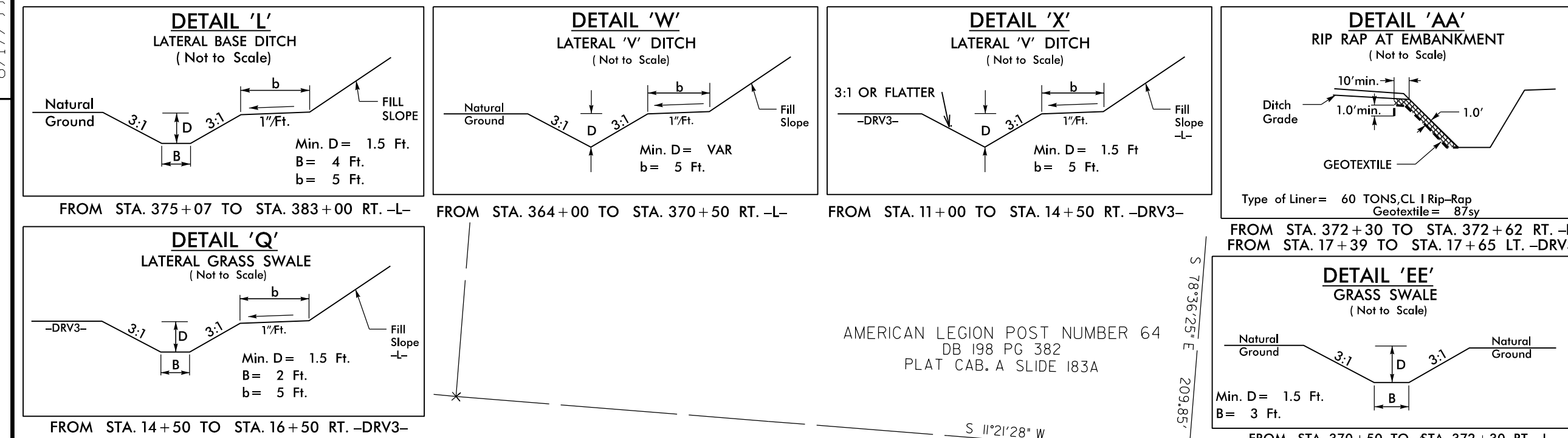


| -L-                            | -L-                        |
|--------------------------------|----------------------------|
| PI Sta 347+21.81               | PIs Sta 354+77.10          |
| $\Delta = 12' 04' 25.6''$ (LT) | $\Theta_s = 0' 52' 24.3''$ |
| $D = 0' 52' 24.3''$            | $L_s = 200.00'$            |
| $L = 1,382.37'$                | $LT = 133.33'$             |
| $T = 693.75'$                  | $ST = 66.67'$              |
| $R = 6,560.00'$                |                            |
| $SE = .04$                     |                            |
| $RO = 200'$                    |                            |

| -Y4-                          | -DRV3-                        |
|-------------------------------|-------------------------------|
| PI Sta 23+71.52               | PI Sta 10+54.26               |
| $\Delta = 5' 41' 48.8''$ (RT) | $\Delta = 1' 42' 46.8''$ (LT) |
| $D = 1' 47' 25.8''$           | $D = 19' 05' 54.9''$          |
| $L = 318.17'$                 | $L = 61.33'$                  |
| $T = 159.22'$                 | $T = 30.77'$                  |
| $R = 3,200.00'$               | $R = 300.00'$                 |

SEE SHEET 34 FOR -L- PROFILE  
SEE SHEET 51 FOR -Y4- PROFILE  
SEE SHEET 51 FOR -DRV3- PROFILE  
SEE SHEETS S3-001 THRU S3-023 FOR STRUCTURE PLANS  
SEE SHEETS S4-001 THRU S4-023 FOR STRUCTURE PLANS

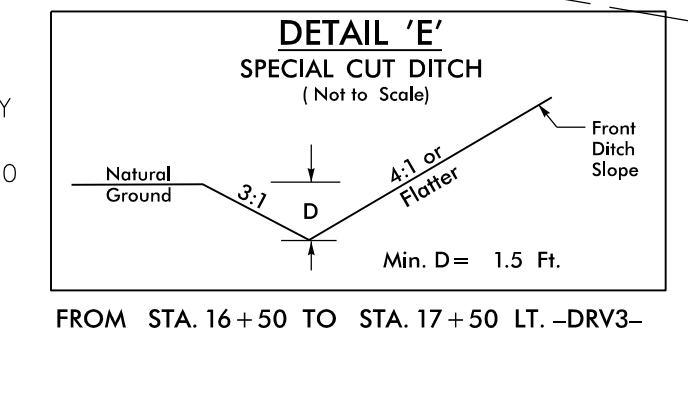
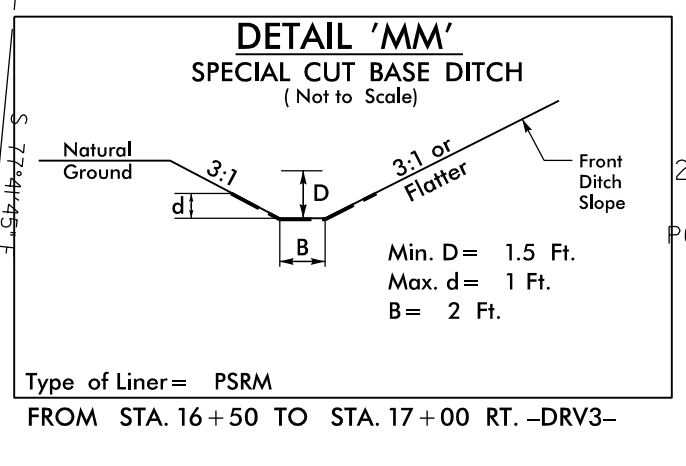




MATCHLINE -L- STA. 368 + 00.00 SEE SHEET 8 STA. 14 + 00.00

MATCHLINE -L- STA. 382 + 00.00 SEE SHEET 10

| -DRV3-                        |                               |                               | -DRV4-                       |                              |                               |
|-------------------------------|-------------------------------|-------------------------------|------------------------------|------------------------------|-------------------------------|
| PI Sta 16+93.74               | PI Sta 18+63.66               | PI Sta 20+23.73               | PI Sta 22+21.12              | PI Sta 24+18.81              | PI Sta 11+11.04               |
| $\Delta = 46' 33" 14.2" (RT)$ | $\Delta = 39' 11" 47.4" (RT)$ | $\Delta = 76' 55" 03.6" (LT)$ | $\Delta = 3' 12" 47.2" (RT)$ | $\Delta = 7' 35" 08.3" (LT)$ | $\Delta = 15' 45" 34.5" (LT)$ |
| D = 57' 17" 44.8"             | D = 57' 17" 44.8"             | D = 57' 17" 44.8"             | D = 1' 58" 32.6"             | D = 6' 44" 26.4"             | D = 28' 38" 52.4"             |
| L = 81.25'                    | L = 68.41'                    | L = 134.25'                   | L = 162.63'                  | L = 112.54'                  | L = 55.01'                    |
| T = 43.02'                    | T = 35.60'                    | T = 79.43'                    | T = 81.34'                   | T = 56.35'                   | T = 27.68'                    |
| R = 100.00'                   | R = 100.00'                   | R = 100.00'                   | R = 2,900.00'                | R = 850.00'                  | R = 200.00'                   |



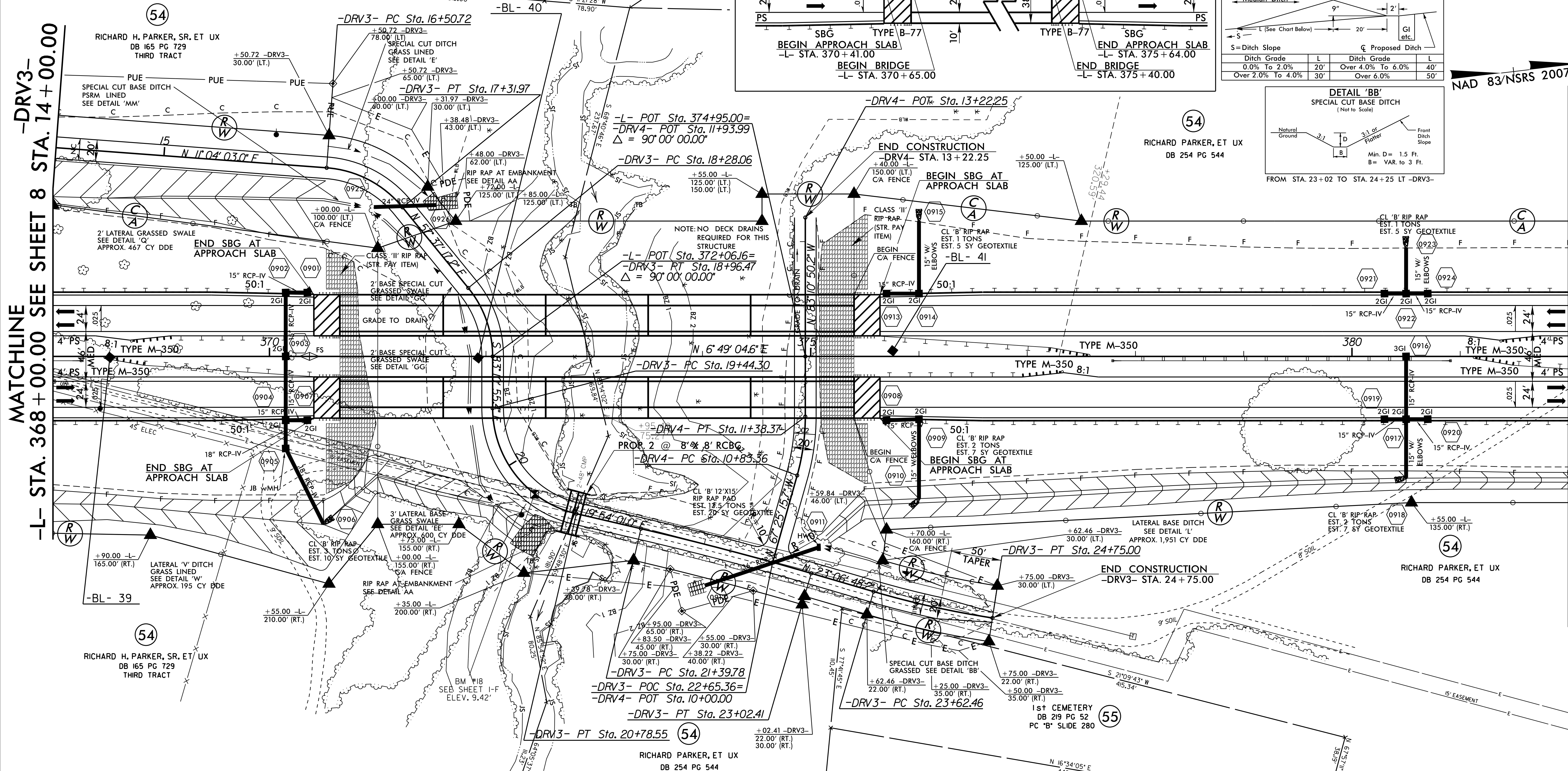
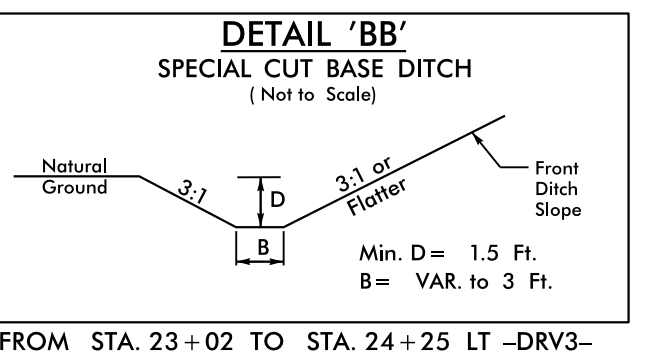
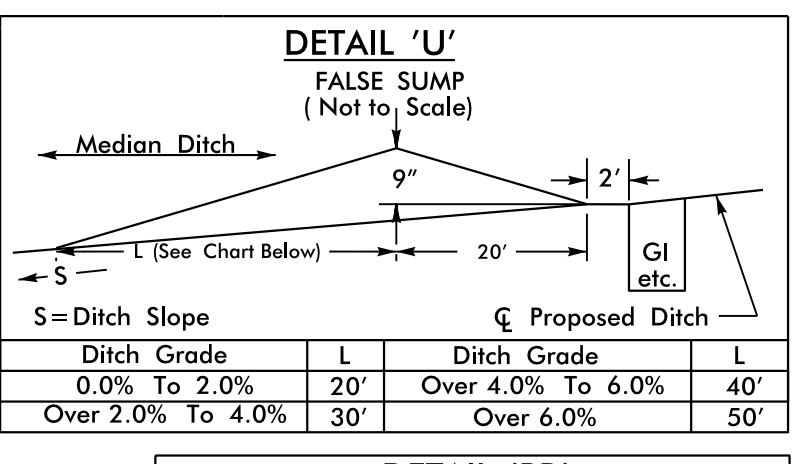
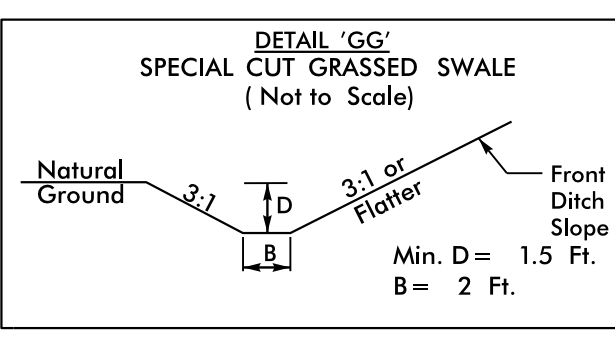
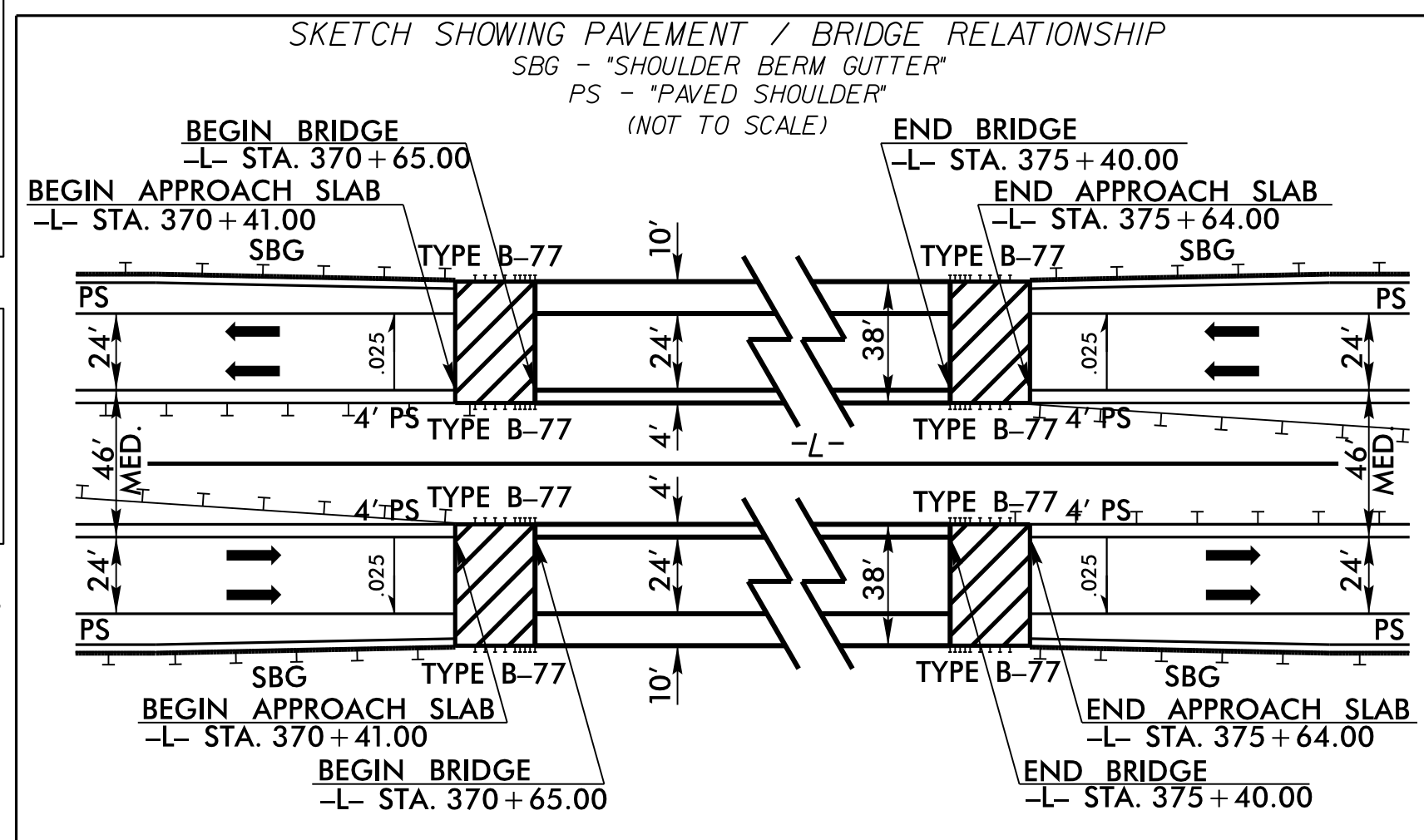
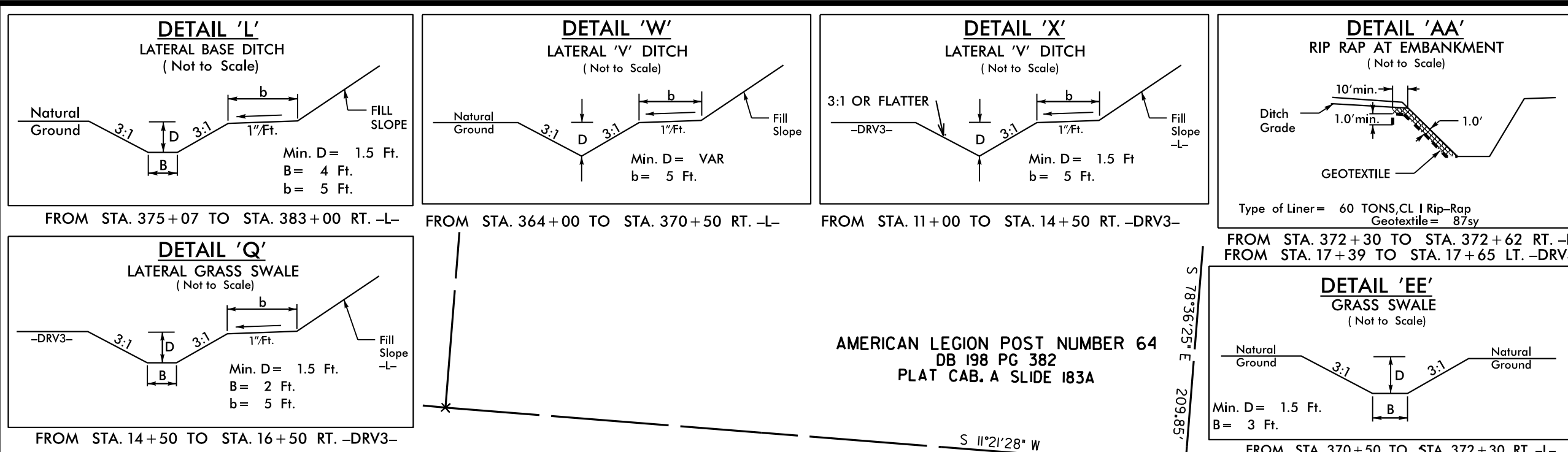
SEE SHEET 35 FOR -L- PROFILE  
 SEE SHEET 52 FOR -DRV3- PROFILE  
 SEE SHEET 52 FOR -DRV4- PROFILE  
 SEE SHEETS C19-001 THRU C19-008 FOR CULVERT PLANS  
 SEE SHEETS S5-001 THRU S5-034 FOR STRUCTURE PLANS  
 SEE SHEETS S6-001 THRU S6-034 FOR STRUCTURE PLANS

SBG - "SHOULDER BERM GUTTER"

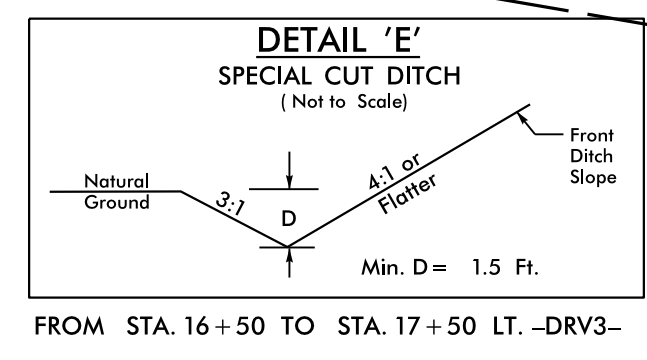
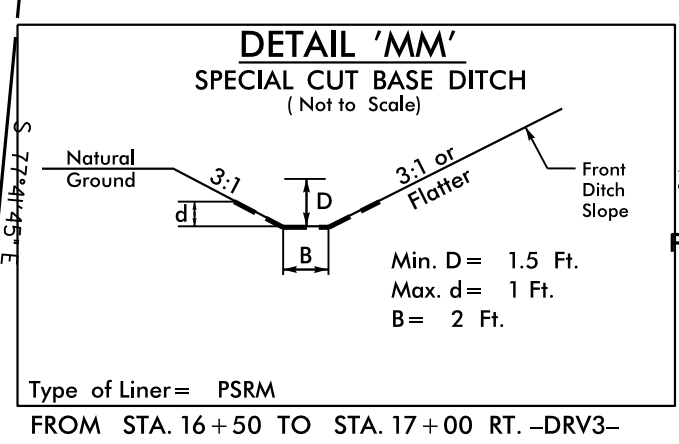
REVISIONS

8/17/99  
 3/16/2015  
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| -DRV3-                                |                                       |                                       | -DRV4-                               |                                      |                                       |
|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|
| PI Sta 16+93.74                       | PI Sta 18+63.66                       | PI Sta 20+23.73                       | PI Sta 22+21.12                      | PI Sta 24+18.81                      | PI Sta 11+11.04                       |
| $\Delta = 46^{\circ} 33' 14.2''$ (RT) | $\Delta = 39^{\circ} 11' 47.4''$ (RT) | $\Delta = 76^{\circ} 55' 03.6''$ (LT) | $\Delta = 3^{\circ} 12' 47.2''$ (RT) | $\Delta = 7^{\circ} 35' 08.3''$ (LT) | $\Delta = 15^{\circ} 45' 34.5''$ (LT) |
| D = 57' 17" 44.8"                     | D = 57' 17" 44.8"                     | D = 57' 17" 44.8"                     | D = 1' 58" 32.6"                     | D = 6' 44" 26.4"                     | D = 28' 38" 52.4"                     |
| L = 81.25'                            | L = 68.4'                             | L = 134.25'                           | L = 162.63'                          | L = 112.54'                          | L = 55.0'                             |
| T = 43.02'                            | T = 35.60'                            | T = 79.43'                            | T = 81.34'                           | T = 56.35'                           | T = 27.68'                            |
| R = 100.00'                           | R = 100.00'                           | R = 100.00'                           | R = 2,900.00'                        | R = 850.00'                          | R = 200.00'                           |



SEE SHEET 35 FOR -L- PROFILE  
 SEE SHEET 52 FOR -DRV3- PROFILE  
 SEE SHEET 52 FOR -DRV4- PROFILE  
 SEE SHEETS C19-001 THRU C19-008 FOR CULVERT PLANS  
 SEE SHEETS S5-001 THRU S5-034 FOR STRUCTURE PLANS  
 SEE SHEETS S6-001 THRU S6-034 FOR STRUCTURE PLANS

SBG - "SHOULDER BERM GUTTER"

R/W REVISION ON A LET PROJECT 6-29-15 (DWG) - REVISED THE TDE TO PDE AT -DRV3- STA. 17+50.00 LT. ON PARCEL 54 (RICHARD H. PARKER, SR. ET UX).

8/17/19

26 JUN 2015 06:55 P2514D\_RdL\_psh\_09.dgn

MATCHLINE -L- STA. 382 + 00.00 SEE SHEET 10

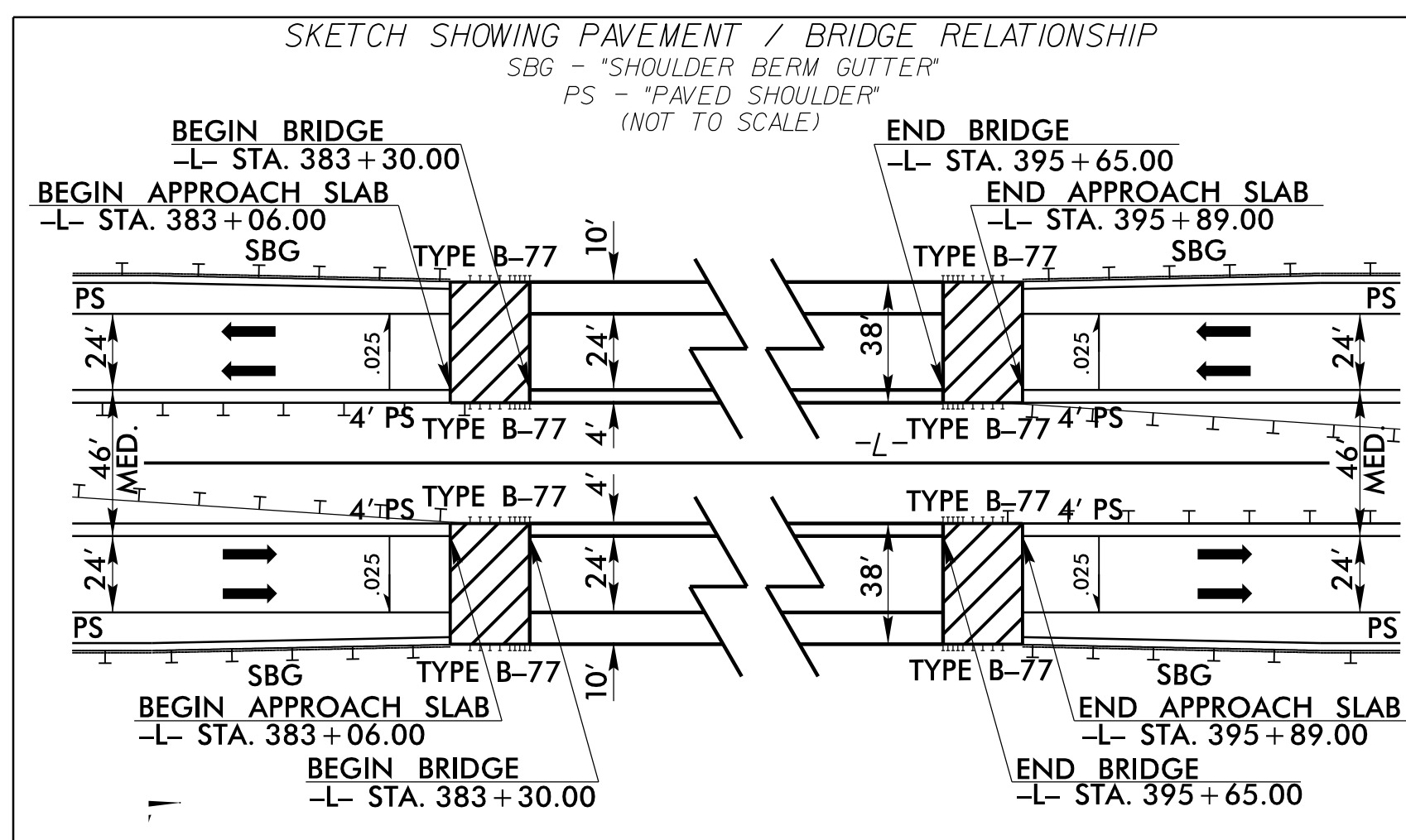
MATCHLINE -DRV3- STA. 14 + 00.00

NAD 83/NSRS 2007



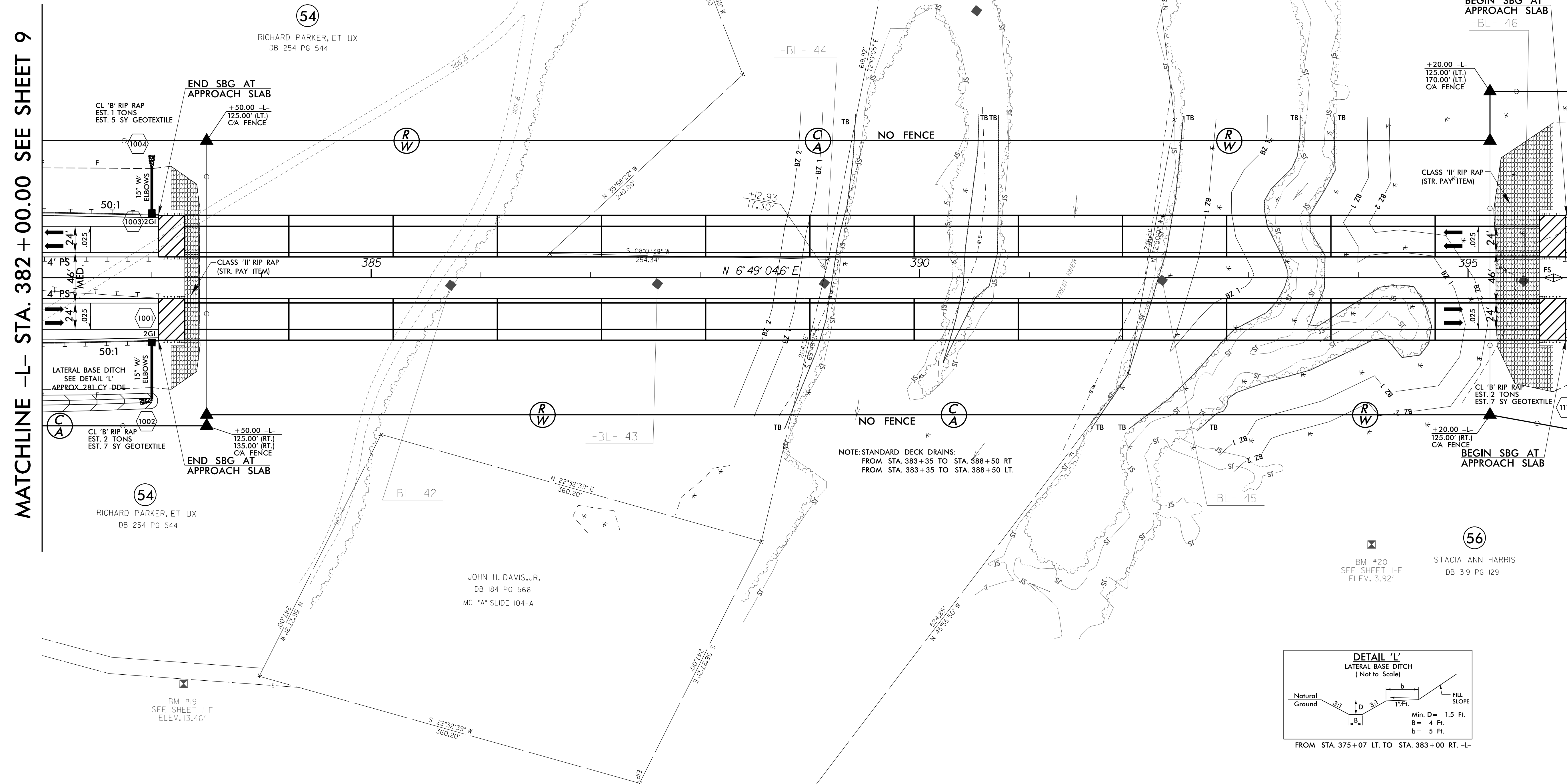
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|---|--|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>10  |
| RW SHEET NO.  |  |
| ROADWAY DESIGN ENGINEER<br>SEAL 033871<br>3/19/2015<br>Daniel W. Gardner, Jr. | HYDRAULICS ENGINEER<br>SEAL 039745<br>3/20/2015<br>Jonathan Kyle Moore |

NAD 83/NSRS 2007



MATCHLINE -L- STA. 382 + 00.00 SEE SHEET 9

MATCHLINE -L- STA. 396 + 00.00 SEE SHEET 11



REVISIONS

56  
STACIA ANN HARRIS  
DB 319 PG 129

54  
RICHARD PARKER, ET UX  
DB 254 PG 544

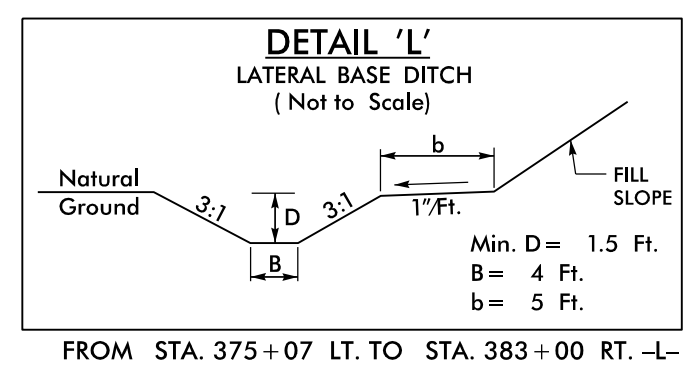
54  
RICHARD PARKER, ET UX  
DB 254 PG 544

54  
RICHARD PARKER, ET UX  
DB 254 PG 544

JOHN H. DAVIS, JR.  
DB 184 PG 566  
MC 'A' SLIDE 104-A

56  
STACIA ANN HARRIS  
DB 319 PG 129

NOTE: STANDARD DECK DRAINS:  
FROM STA. 383+35 TO STA. 388+50 RT  
FROM STA. 383+35 TO STA. 388+50 LT.



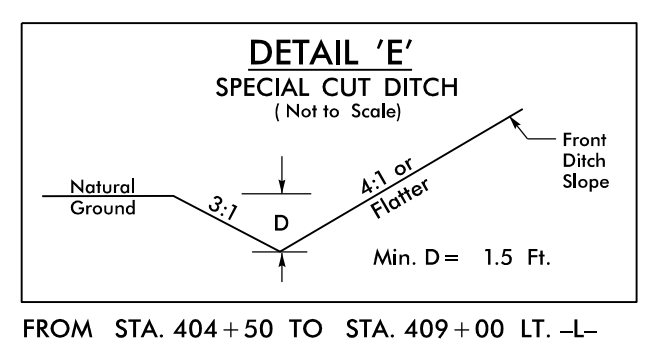
SEE SHEET 35 FOR -L- PROFILE  
SEE SHEETS S7-001 THRU S7-068 FOR STRUCTURE PLANS  
SEE SHEETS S8-001 THRU S8-068 FOR STRUCTURE PLANS

SBG - "SHOULDER BERM GUTTER"

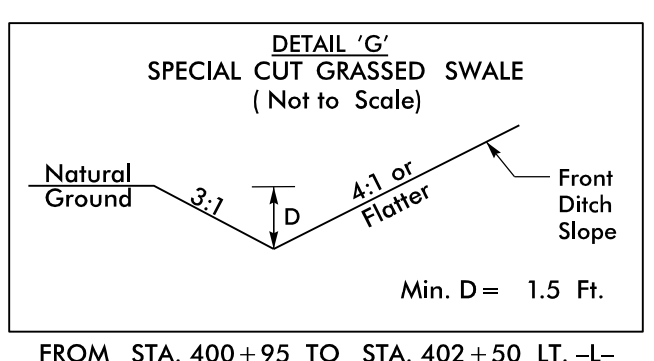
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3/16/2015  
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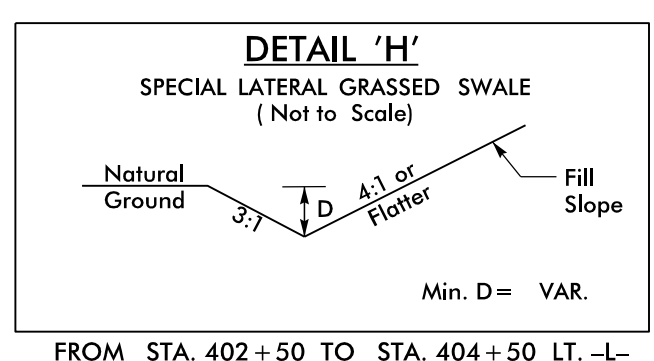
NAD 83/NSRS 2007



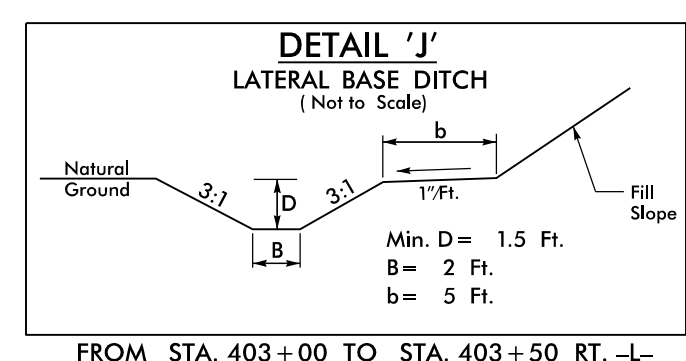
FROM STA. 404+50 TO STA. 409+00 LT. -L-



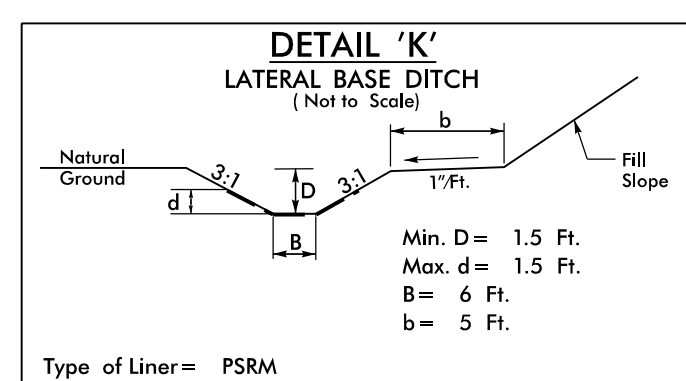
FROM STA. 400+95 TO STA. 402+50 LT. -L-  
FROM STA. 404+50 TO STA. 408+50 RT. -L-  
FROM STA. 399+70 TO STA. 400+95 LT. -L-



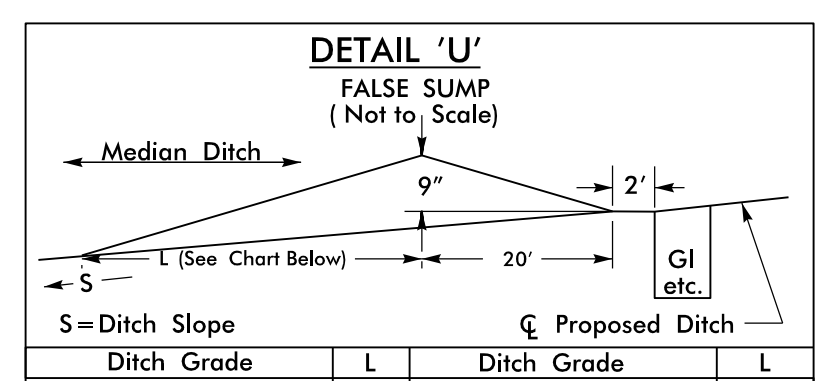
FROM STA. 402+50 TO STA. 404+50 LT. -L-



FROM STA. 403+00 TO STA. 403+50 RT. -L-

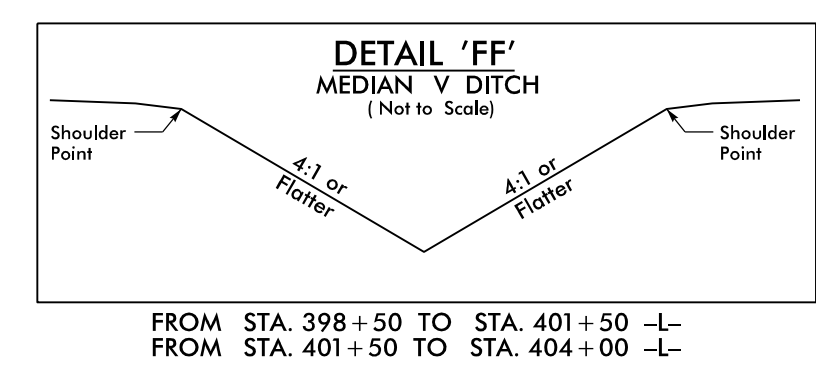


Type of Liner = PSRM  
FROM STA. 398+50 TO STA. 399+18 RT. -L-  
FROM STA. 399+18 TO STA. 403+00 RT. -L-  
STACIA ANN HARRIS  
DB 319 PG 129



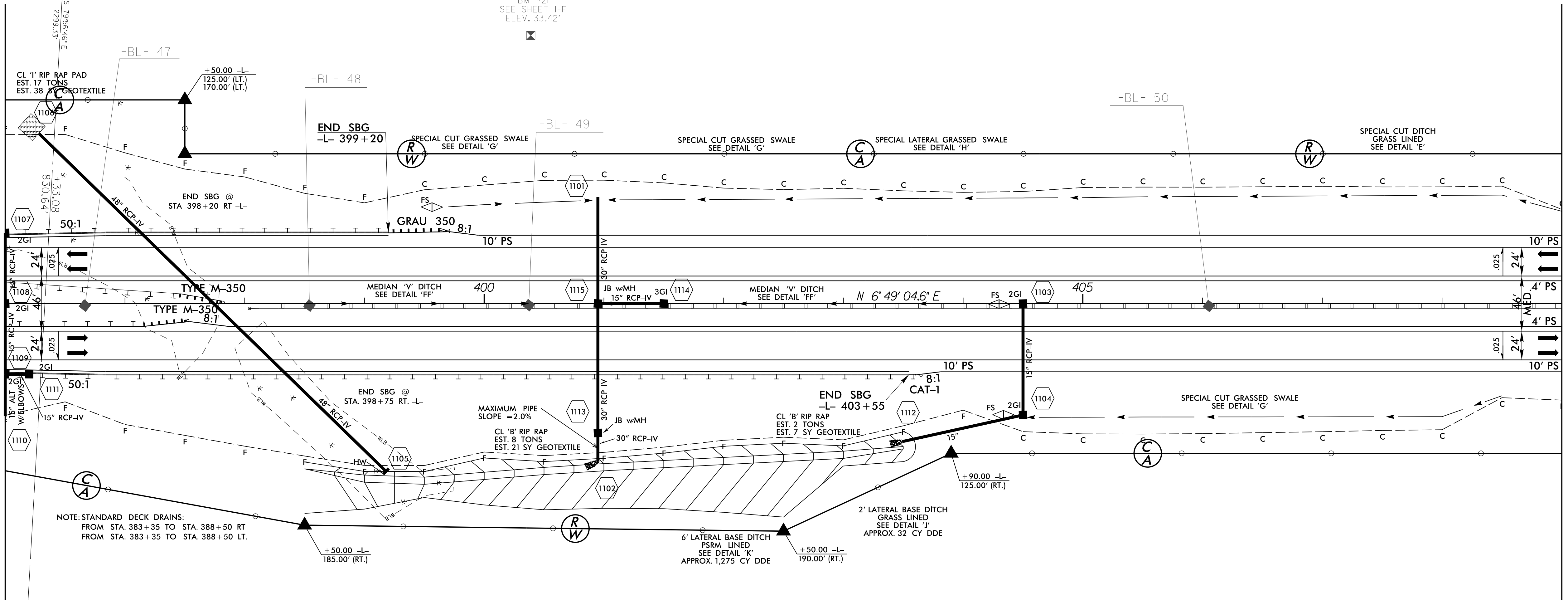
| Ditch Grade       | L   | Ditch Grade       | L   |
|-------------------|-----|-------------------|-----|
| 0.0% To 2.0%      | 20' | Over 4.0% To 6.0% | 40' |
| Over 2.0% To 4.0% | 30' | Over 6.0%         | 50' |

57  
C. E. WILLIE, SR, HEIRS  
DB 110 PG 221  
MB 6 PG 26



FROM STA. 398+50 TO STA. 401+50 -L-  
FROM STA. 401+50 TO STA. 404+00 -L-

MATCHLINE -L- STA. 396 + 00.00 SEE SHEET 10



NOTE: STANDARD DECK DRAINS:  
FROM STA. 383+35 TO STA. 388+50 RT  
FROM STA. 383+35 TO STA. 388+50 LT.

57  
C. E. WILLIE, SR, HEIRS  
DB 110 PG 221  
MB 6 PG 26

MATCHLINE -L- STA. 409 + 00.00 SEE SHEET 12

SBG - "SHOULDER BERM GUTTER"

SEE SHEET 36 FOR -L- PROFILE

REVISIONS

8/17/99  
3/16/2015  
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|                                  |  |                     |  |
|----------------------------------|--|---------------------|--|
| PROJECT REFERENCE NO.<br>R-2514D |  | SHEET NO.<br>12     |  |
| RW SHEET NO.                     |  | HYDRAULICS ENGINEER |  |
| ROADWAY DESIGN ENGINEER          |  | SEAL 039745         |  |
|                                  |  |                     |  |
| Daniel W. Gardner, Jr.           |  | Matthew Kyle Moore  |  |

NAD 83/NSRS 2007

NATHANIEL SIMMONS HEIRS  
C/O KATHERINE S. WAY  
DB 153 PG 44

HERMAN C. SIMMONS  
DB 212 PG 140

HERMAN C. SIMMONS  
DB 212 PG 140

58  
VELMA J. BRYAN, ET AL  
DB 291 PG 186  
TRACT TWO

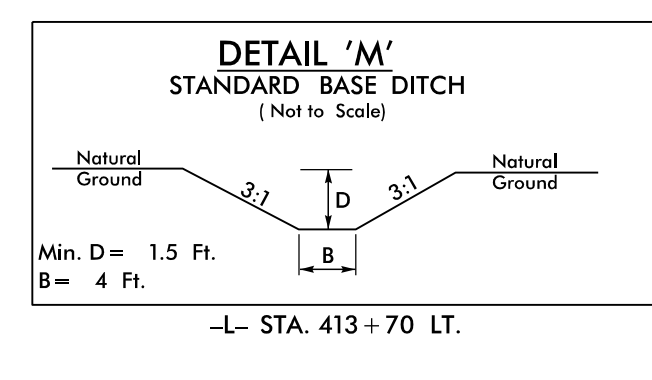
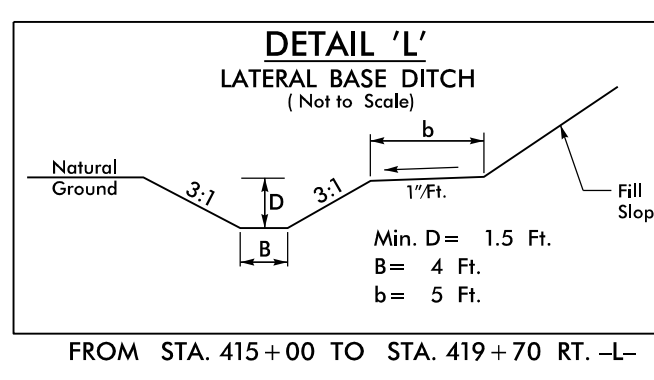
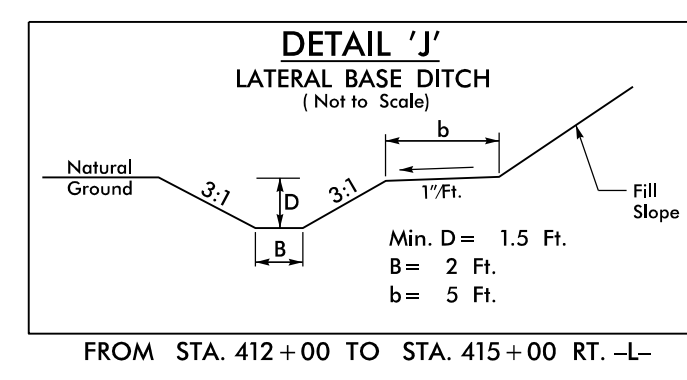
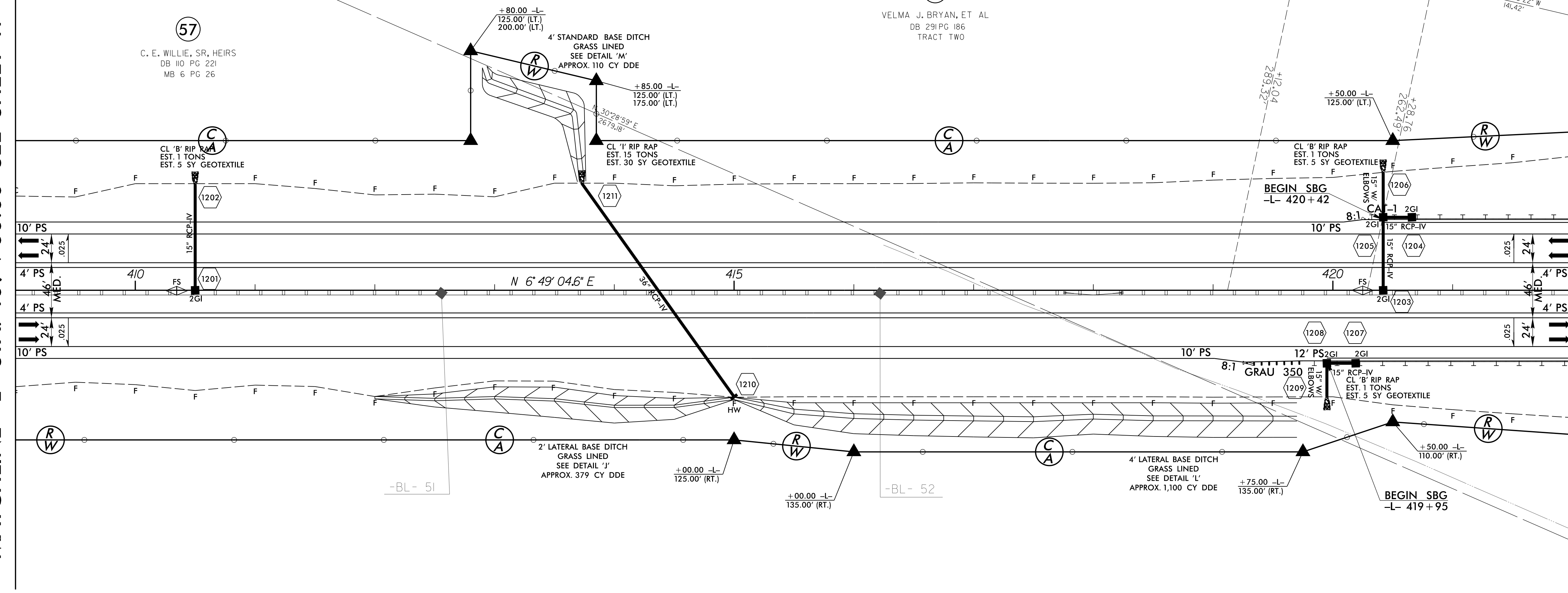
57  
C. E. WILLIE, SR, HEIRS  
DB 110 PG 221  
MB 6 PG 26

57  
C. E. WILLIE, SR, HEIRS  
DB 110 PG 221  
MB 6 PG 26

KATIE BROWN  
DB 172 PG 899

MATCHLINE -L- STA. 409 + 00.00 SEE SHEET 11

MATCHLINE -L- STA. 422 + 00.00 SEE SHEET 13

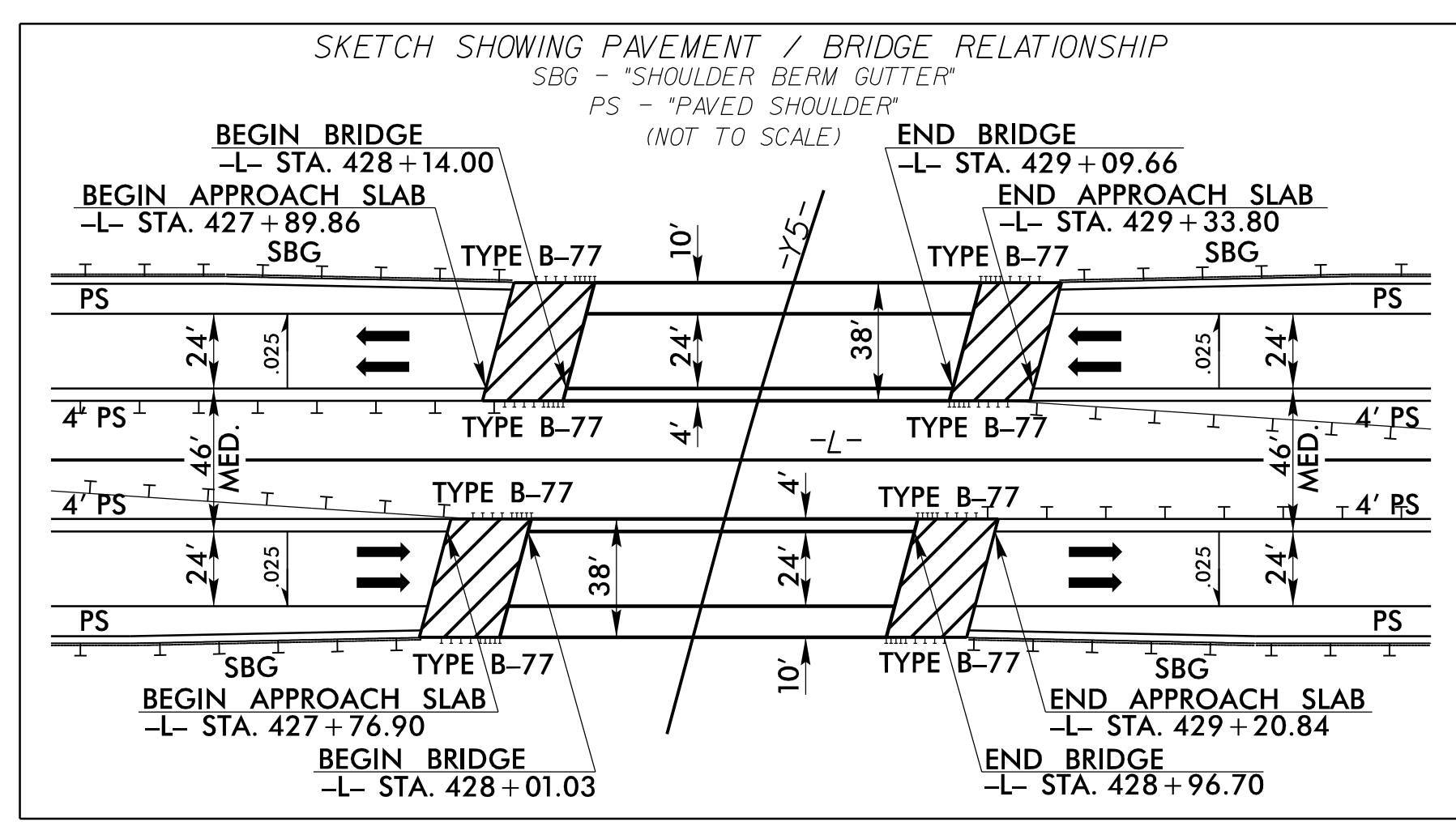


SEE SHEET 36 FOR -L- PROFILE

REVISIONS

8/17/99  
 3/15/2015  
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 12:11:11 PM



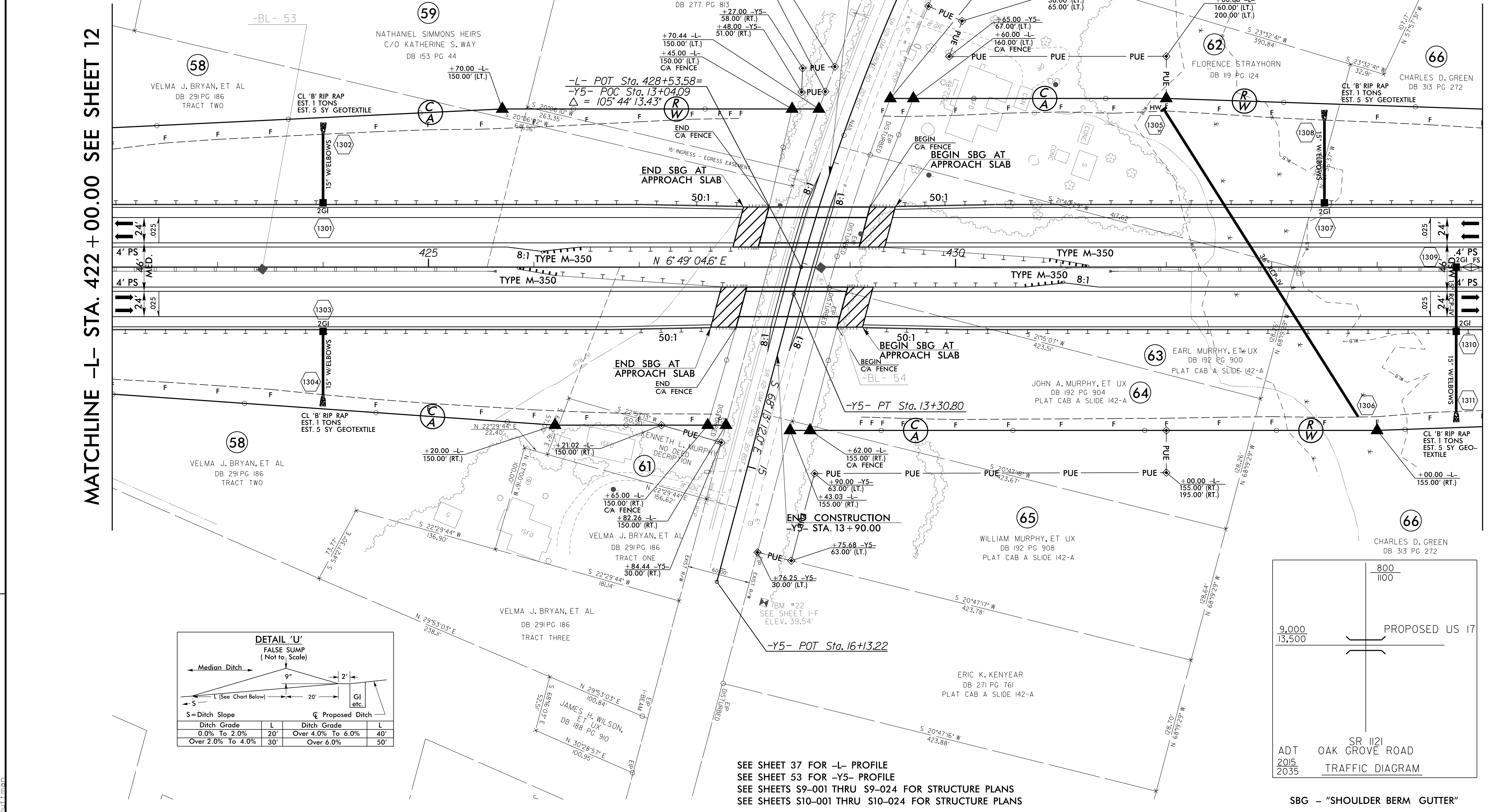


-Y5-  
 $PI Sta. 11+65.79$   
 $\Delta = 9^{\circ} 35' 48.1'' (LT)$   
 $D = 2^{\circ} 54' 03.8''$   
 $L = 330.80'$   
 $T = 165.79'$   
 $R = 1,975.00'$

NAD 83/NSRS 2007

MATCHLINE -L- STA. 422 + 00.00 SEE SHEET 12

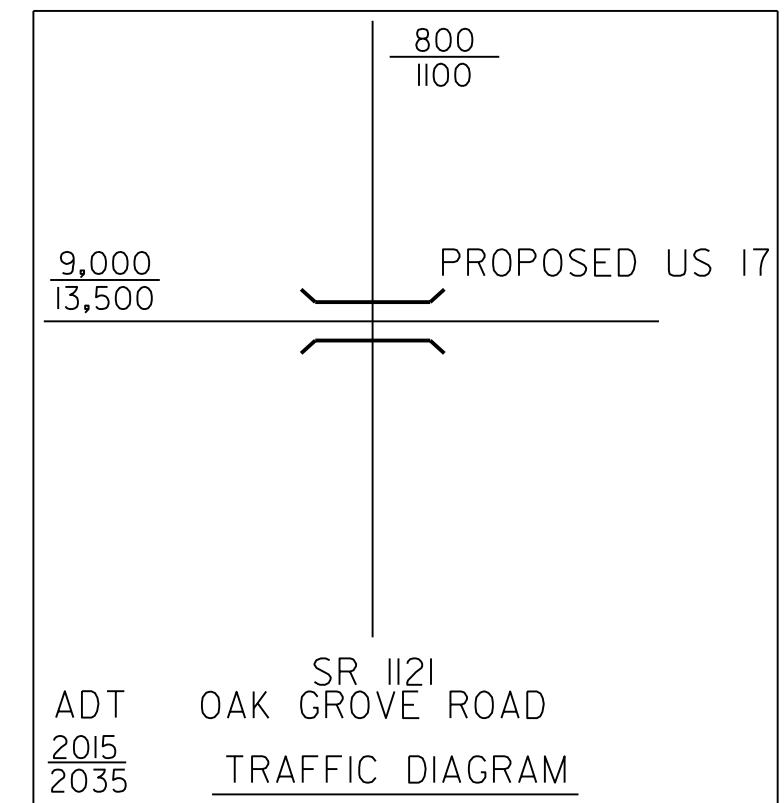
MATCHLINE -L- STA. 435 + 00.00 SEE SHEET 14



**DETAIL 'U'**  
FALSE SUMP  
(Not to Scale)

| S = Ditch Slope   | L   | Proposed Ditch    | L   |
|-------------------|-----|-------------------|-----|
| 0.0% To 2.0%      | 20' | Over 4.0% To 6.0% | 40' |
| Over 2.0% To 4.0% | 30' | Over 6.0%         | 50' |

SEE SHEET 37 FOR -L- PROFILE  
 SEE SHEET 53 FOR -Y5- PROFILE  
 SEE SHEETS S9-001 THRU S9-024 FOR STRUCTURE PLANS  
 SEE SHEETS S10-001 THRU S10-024 FOR STRUCTURE PLANS



SBG - "SHOULDER BERM GUTTER"

REVISIONS

8/17/09  
 3/16/2015  
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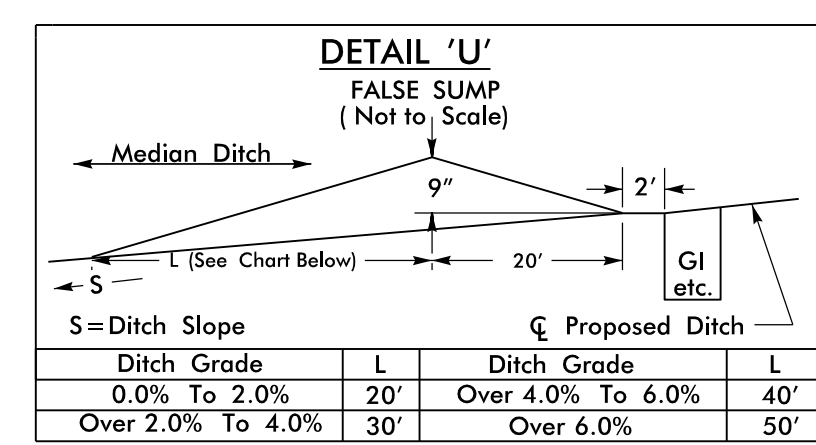
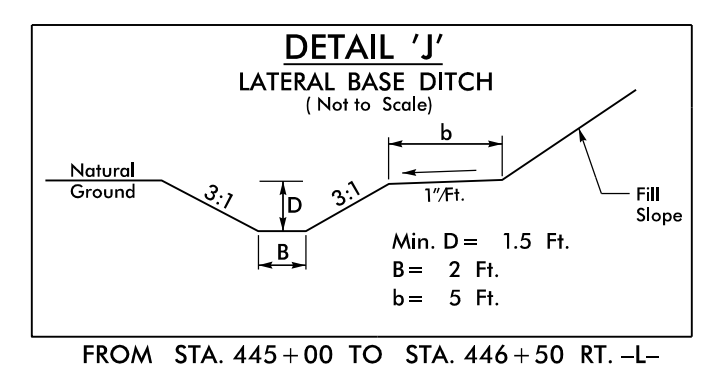
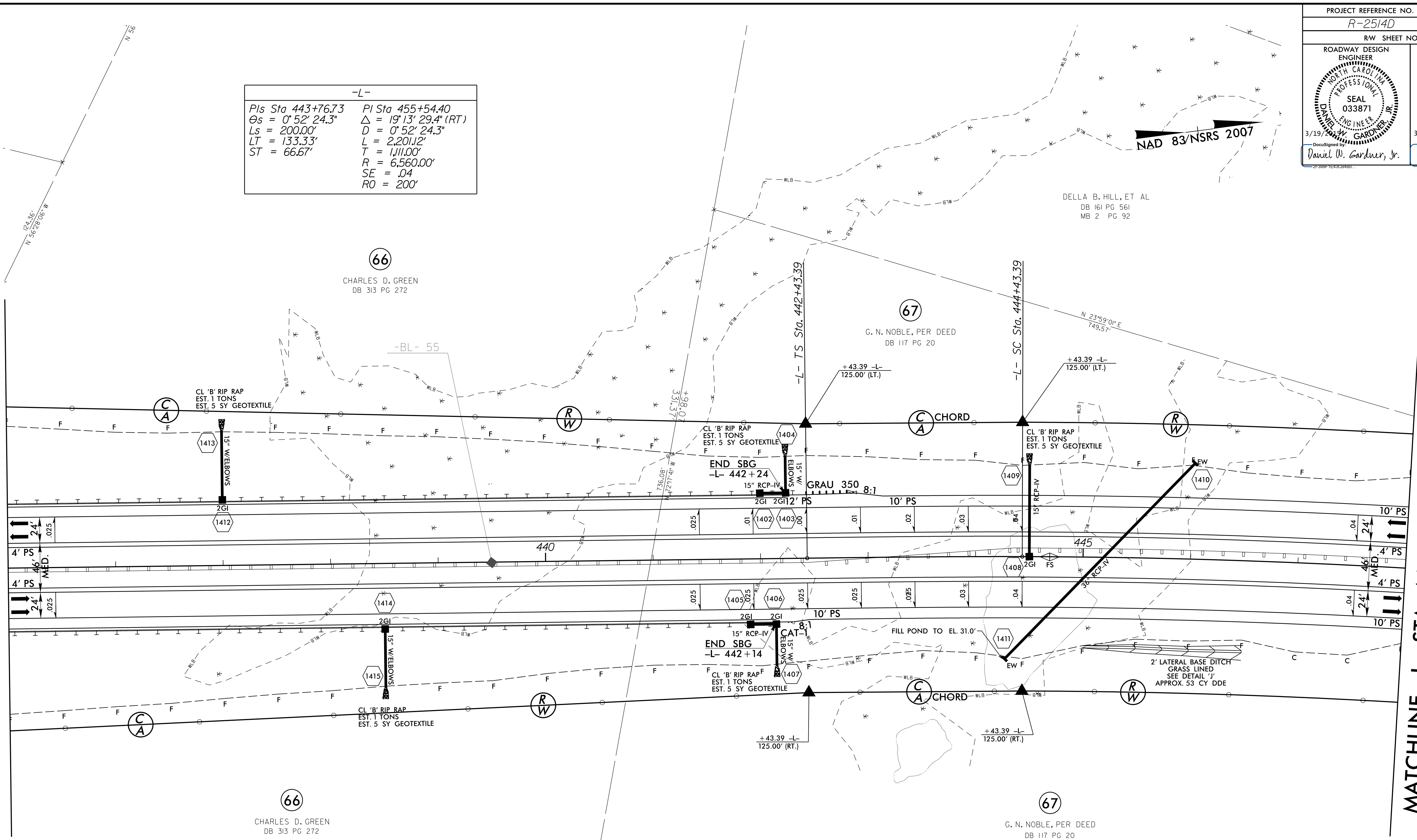


-L-

|  |   |
|--|---|
| PI Sta 443+76.73<br>θs = 0° 52' 24.3"<br>Ls = 200.00'<br>LT = 133.33'<br>ST = 66.67' | PI Sta 455+54.40<br>Δ = 19° 13' 29.4" (RT)<br>D = 0° 52' 24.3"<br>L = 2.20112'<br>T = 1,111.00'<br>R = 6,560.00'<br>SE = .04<br>RO = 200' |
|--|---|

MATCHLINE -L- STA. 435 + 00.00 SEE SHEET 13

MATCHLINE -L- STA. 448 + 00.00 SEE SHEET 15



SBG - "SHOULDER BERM GUTTER"

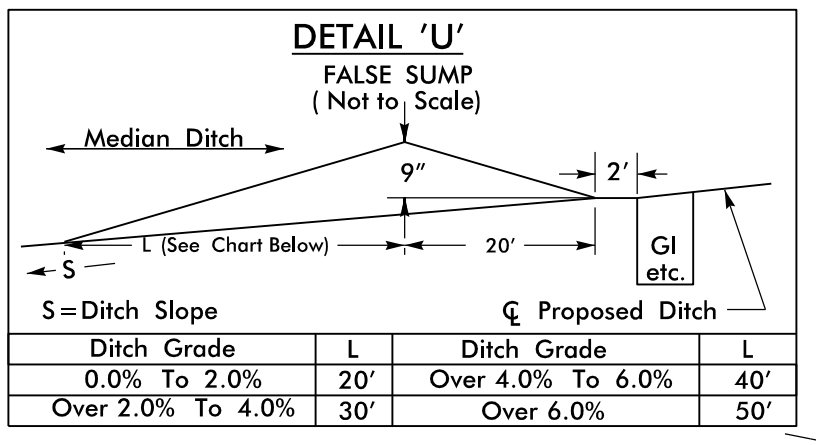
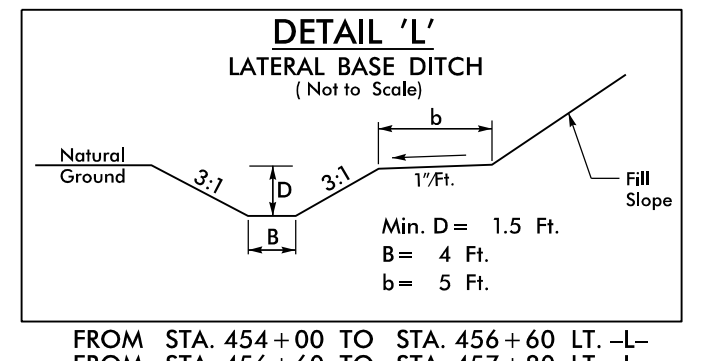
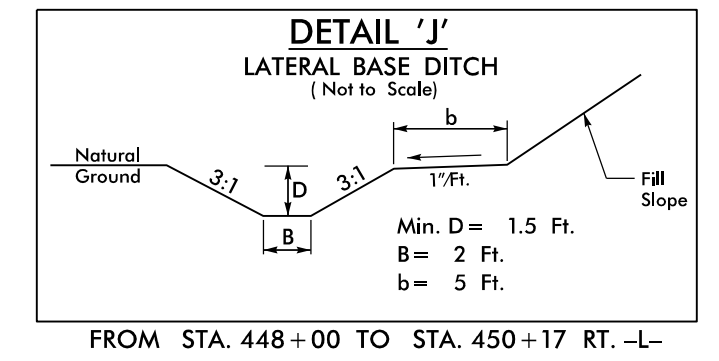
SEE SHEET 37 FOR -L- PROFILE

REVISIONS

8/17/99  
3/15/2015  
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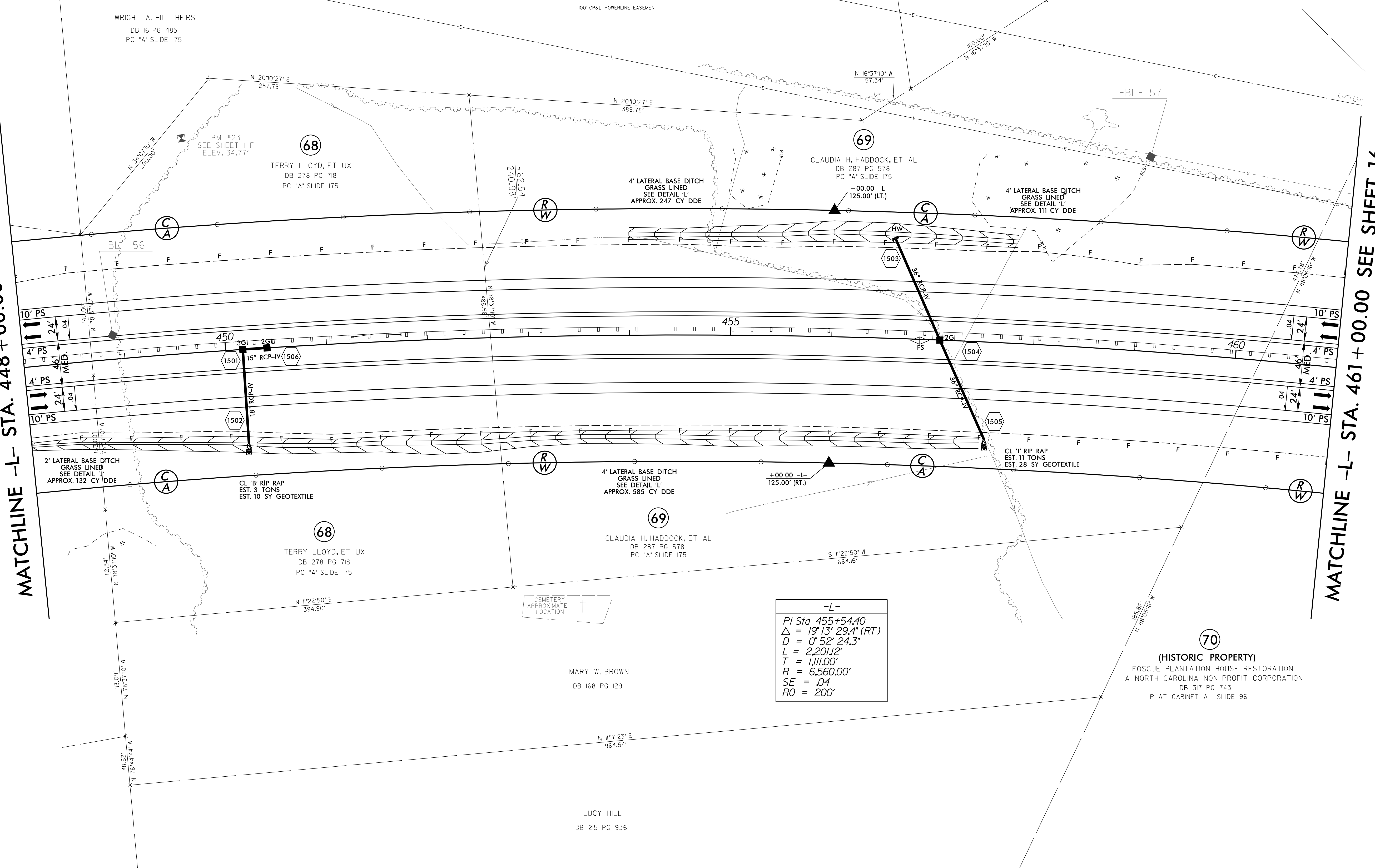
NAD 83/NSRS 2007



WRIGHT A. HILL HEIRS  
DB 161 PG 485  
PC \*A\* SLIDE 175

MATCHLINE -L- STA. 448 + 00.00 SEE SHEET 14

MATCHLINE -L- STA. 467 + 00.00 SEE SHEET 16



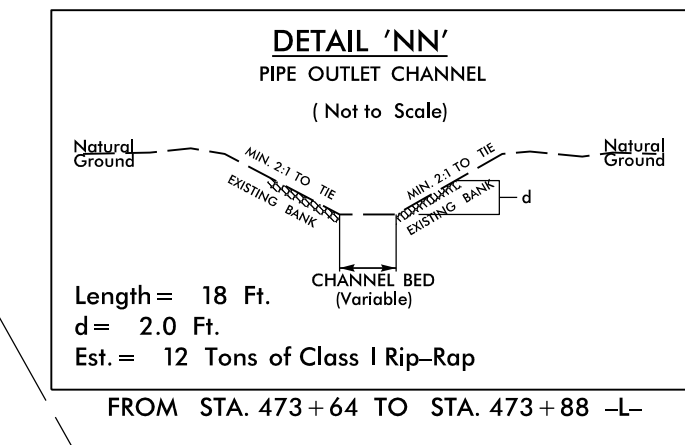
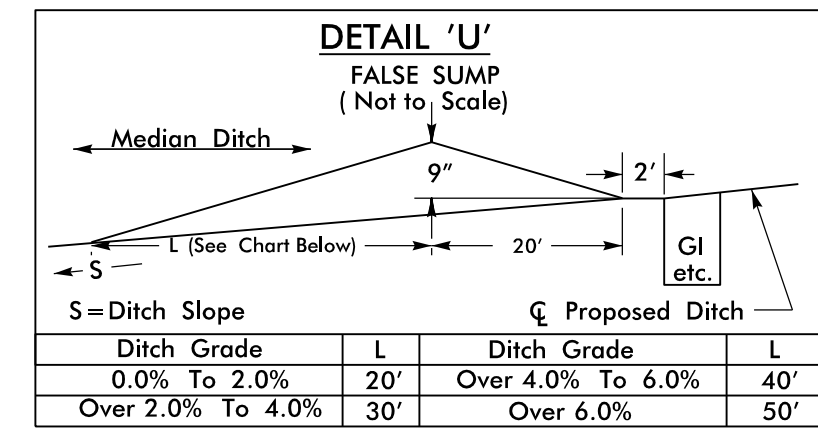
-L-  
PI Sta 455+54.40  
Δ = 19' 13" 29.4" (RT)  
D = 0' 52" 24.3"  
L = 2,201.12'  
T = 1,111.00'  
R = 6,560.00'  
SE = .04  
RO = 200'

(70)  
**(HISTORIC PROPERTY)**  
FOSCUE PLANTATION HOUSE RESTORATION  
A NORTH CAROLINA NON-PROFIT CORPORATION  
DB 317 PG 743  
PLAT CABINET A SLIDE 96

REVISIONS

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NAD 83/NSRS 2007

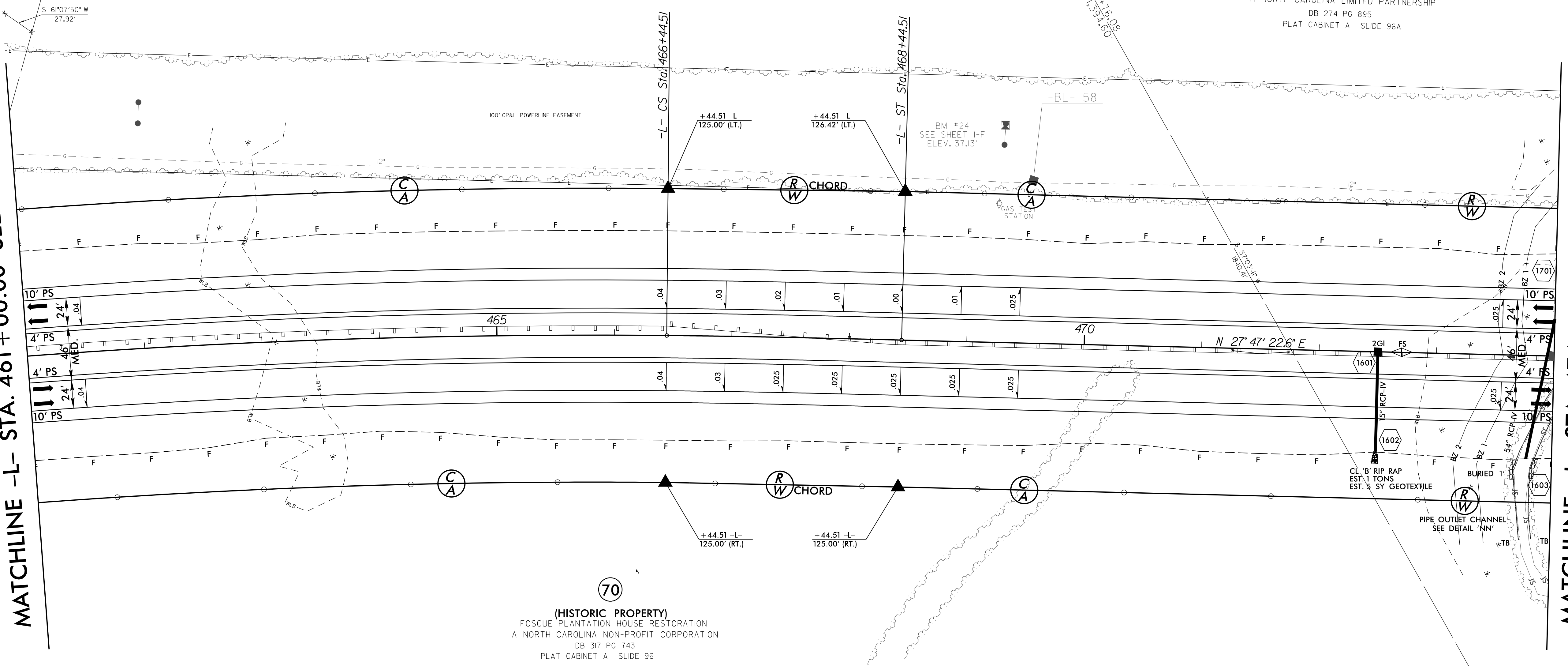


**70**  
**(HISTORIC PROPERTY)**  
FOSCUE PLANTATION HOUSE RESTORATION  
A NORTH CAROLINA NON-PROFIT CORPORATION  
DB 317 PG 743  
PLAT CABINET A SLIDE 96

**71**  
**(HISTORIC PROPERTY)**  
FOSCUE FAMILY LIMITED PARTNERSHIP,  
A NORTH CAROLINA LIMITED PARTNERSHIP  
DB 274 PG 895  
PLAT CABINET A SLIDE 96A

MATCHLINE -L- STA. 461 + 00.00 SEE SHEET 15

MATCHLINE -L- STA. 474 + 00.00 SEE SHEET 17



-L-

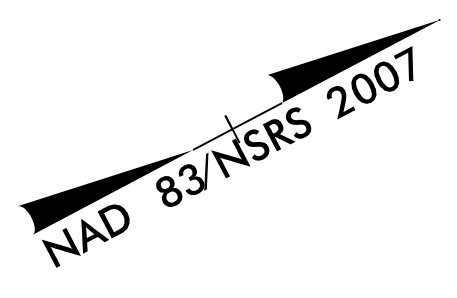
|                                |                            |
|--------------------------------|----------------------------|
| PI Sta 455+54.40               | PIs Sta 467+11.18          |
| $\Delta = 19' 13' 29.4''$ (RT) | $\Theta_s = 0' 52' 24.3''$ |
| $D = 0' 52' 24.3''$            | $L_s = 200.00'$            |
| $L = 2,201.12'$                | $LT = 133.33'$             |
| $T = 1,111.00'$                | $ST = 66.67'$              |
| $R = 6,560.00'$                |                            |
| $SE = .04$                     |                            |
| $RO = 200'$                    |                            |

**70**  
**(HISTORIC PROPERTY)**  
FOSCUE PLANTATION HOUSE RESTORATION  
A NORTH CAROLINA NON-PROFIT CORPORATION  
DB 317 PG 743  
PLAT CABINET A SLIDE 96

REVISIONS

8/17/99  
3/15/2015  
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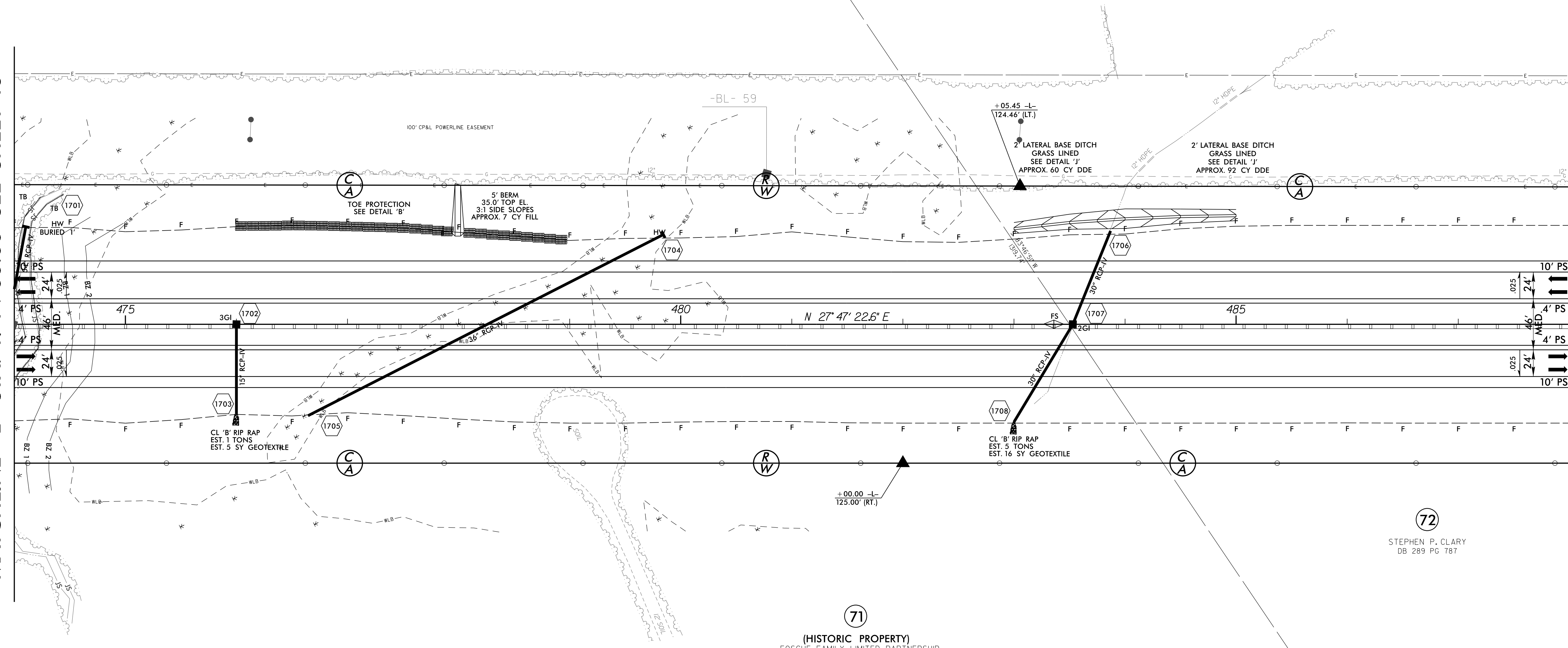


(71)  
 (HISTORIC PROPERTY)  
 FOSCUE FAMILY LIMITED PARTNERSHIP,  
 A NORTH CAROLINA LIMITED PARTNERSHIP  
 DB 274 PG 895  
 PLAT CABINET A SLIDE 96A

(72)  
 STEPHEN P. CLARY  
 DB 289 PG 787

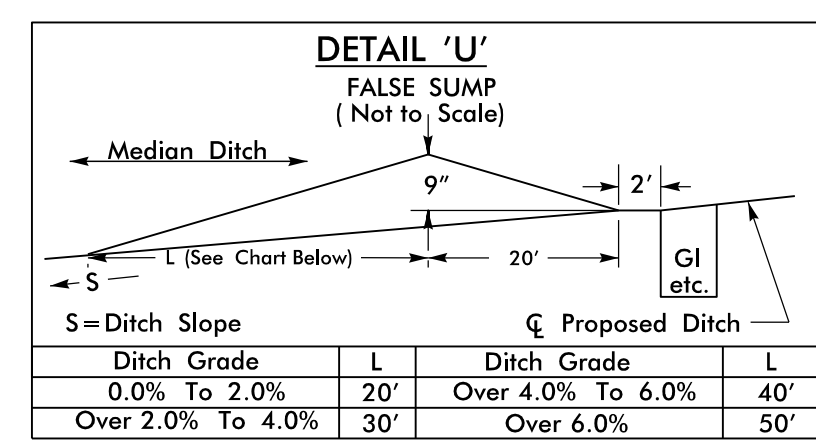
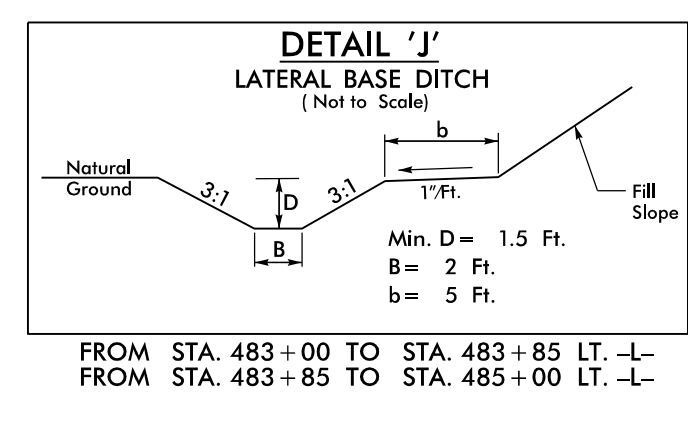
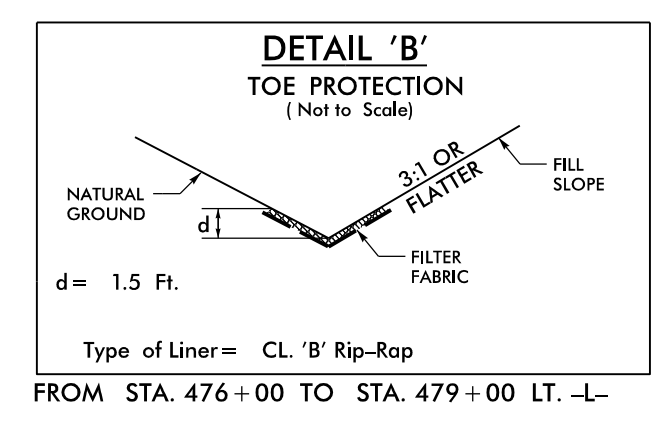
MATCHLINE -L- STA. 474 + 00.00 SEE SHEET 16

MATCHLINE -L- STA. 488 + 00.00 SEE SHEET 18



(71)  
 (HISTORIC PROPERTY)  
 FOSCUE FAMILY LIMITED PARTNERSHIP,  
 A NORTH CAROLINA LIMITED PARTNERSHIP  
 DB 274 PG 895  
 PLAT CABINET A SLIDE 96A

(72)  
 STEPHEN P. CLARY  
 DB 289 PG 787



|  |  |
|--|--|
| PROJECT REFERENCE NO.<br><i>R-2514D</i>                                      | SHEET NO.<br>18  |
| RW SHEET NO.   |  |
| ROADWAY DESIGN ENGINEER<br>SEAL 033871<br>3/19/2015<br>Daniel W. Gardner Jr. | HYDRAULICS ENGINEER<br>SEAL 039745<br>3/20/2015<br>Jonathan Kyle Moore |

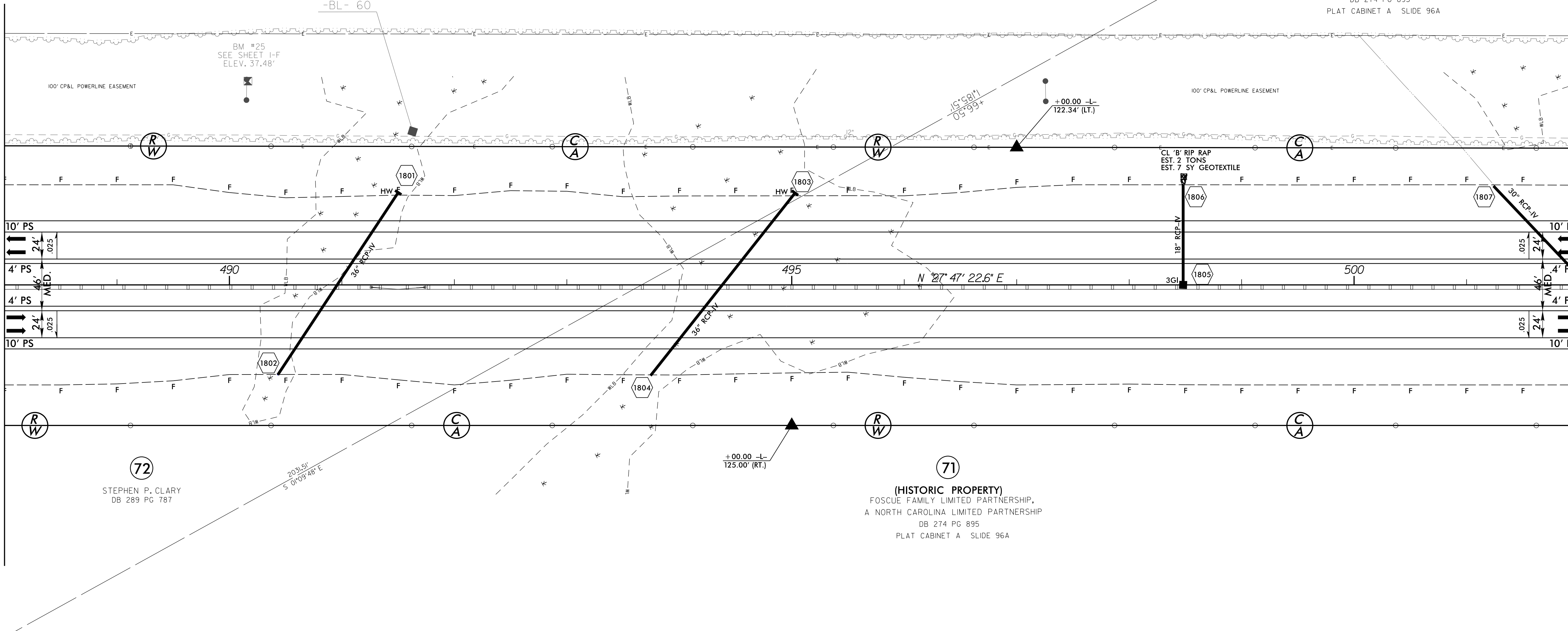
NAD 83/NSRS 2007

72  
STEPHEN P. CLARY  
DB 289 PG 787

71  
(HISTORIC PROPERTY)  
FOSCUE FAMILY LIMITED PARTNERSHIP,  
A NORTH CAROLINA LIMITED PARTNERSHIP  
DB 274 PG 895  
PLAT CABINET A SLIDE 96A

MATCHLINE -L- STA. 488 + 00.00 SEE SHEET 17

MATCHLINE -L- STA. 502 + 00.00 SEE SHEET 19



72  
STEPHEN P. CLARY  
DB 289 PG 787

71  
(HISTORIC PROPERTY)  
FOSCUE FAMILY LIMITED PARTNERSHIP,  
A NORTH CAROLINA LIMITED PARTNERSHIP  
DB 274 PG 895  
PLAT CABINET A SLIDE 96A

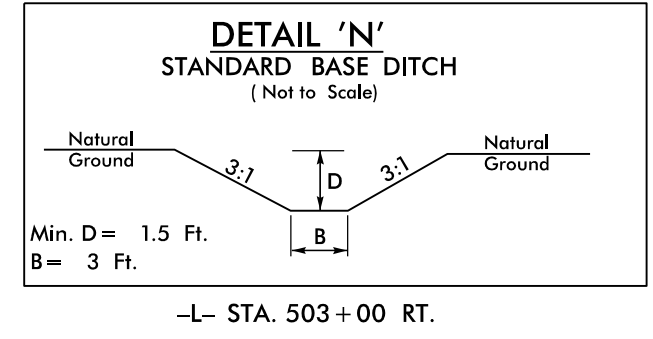
REVISIONS  
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 3/15/2015  
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|  |   |
|--|---|
| PROJECT REFERENCE NO.<br>R-2514D                                 | SHEET NO.<br>19   |
| RW SHEET NO.   |   |
| ROADWAY DESIGN ENGINEER<br>SEAL 033871<br>Daniel W. Gardner, Jr. | HYDRAULICS ENGINEER<br>SEAL 039745<br>Jonathan Kyle Moore |

NAD 83/NSRS 2007

71  
(HISTORIC PROPERTY)  
FOSCUE FAMILY LIMITED PARTNERSHIP,  
A NORTH CAROLINA LIMITED PARTNERSHIP  
DB 274 PG 895  
PLAT CABINET A SLIDE 96A

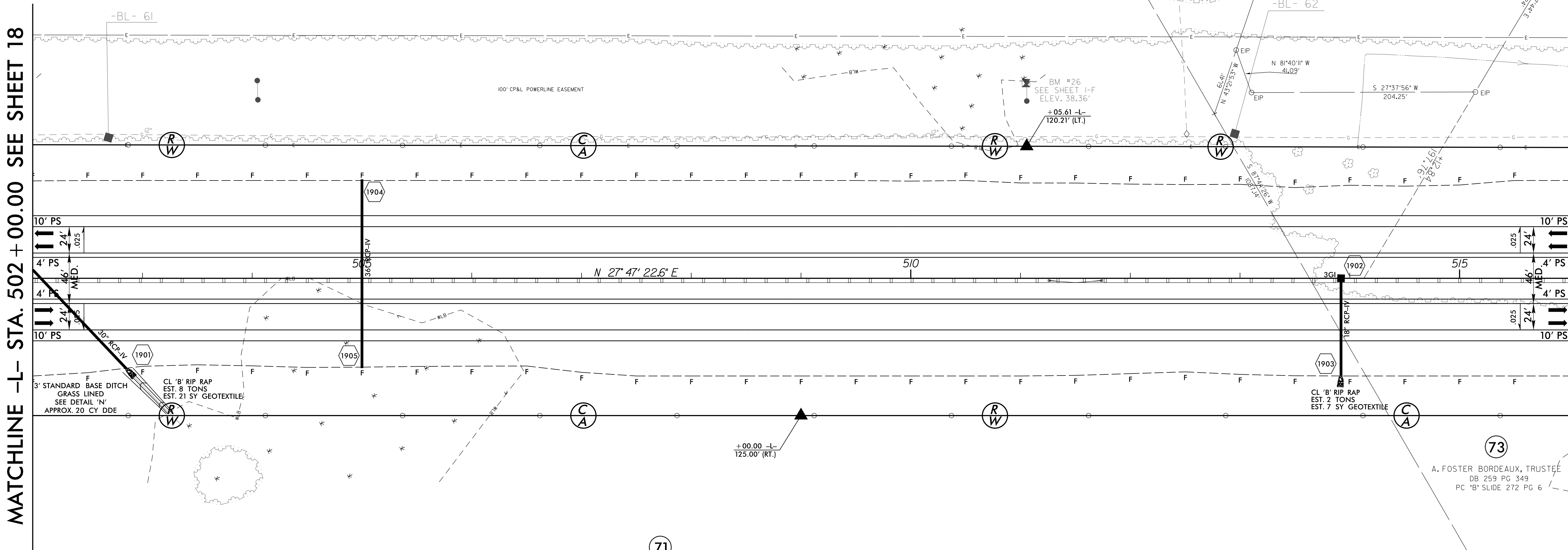


ANTHONY W. FOTHERGILL, ET UX  
PC 'B' SLIDE 272 PG 6

PHILLIP M. EDWARDS  
DB 249 PG 016

MATCHLINE -L- STA. 502 + 00.00 SEE SHEET 18

MATCHLINE -L- STA. 516 + 00.00 SEE SHEET 20



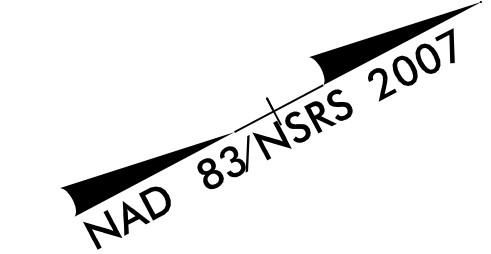
71  
(HISTORIC PROPERTY)  
FOSCUE FAMILY LIMITED PARTNERSHIP,  
A NORTH CAROLINA LIMITED PARTNERSHIP  
DB 274 PG 895  
PLAT CABINET A SLIDE 96A

73  
A. FOSTER BORDEAUX, TRUSTEE  
DB 259 PG 349  
PC 'B' SLIDE 272 PG 6

REVISIONS

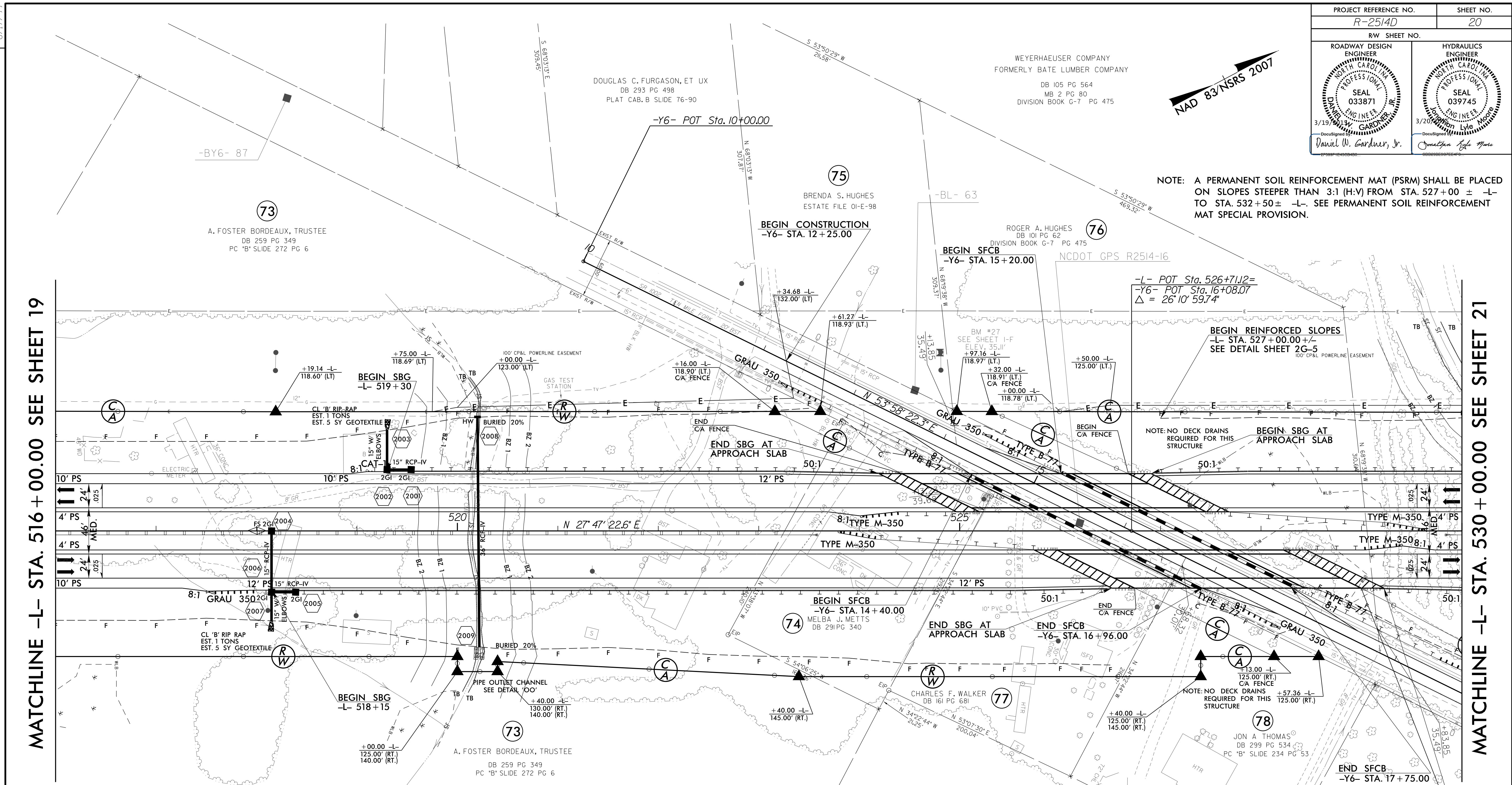
8/17/99  
3/15/2015  
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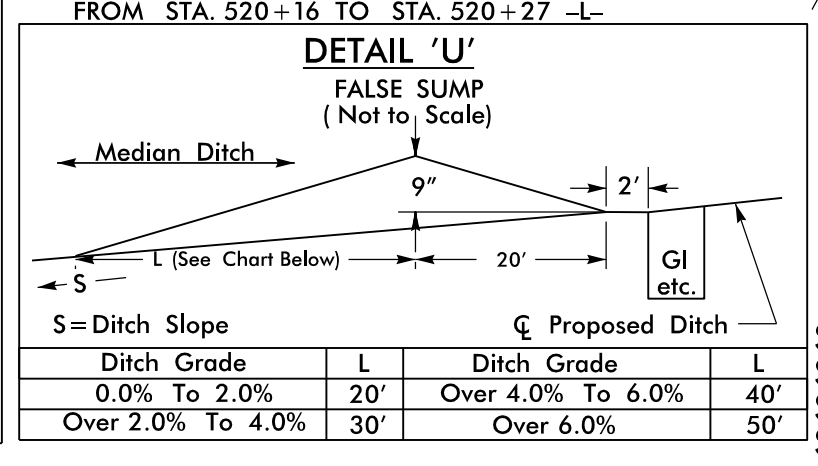
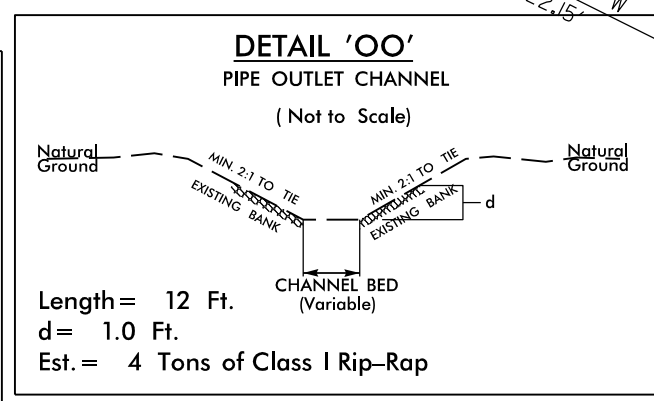
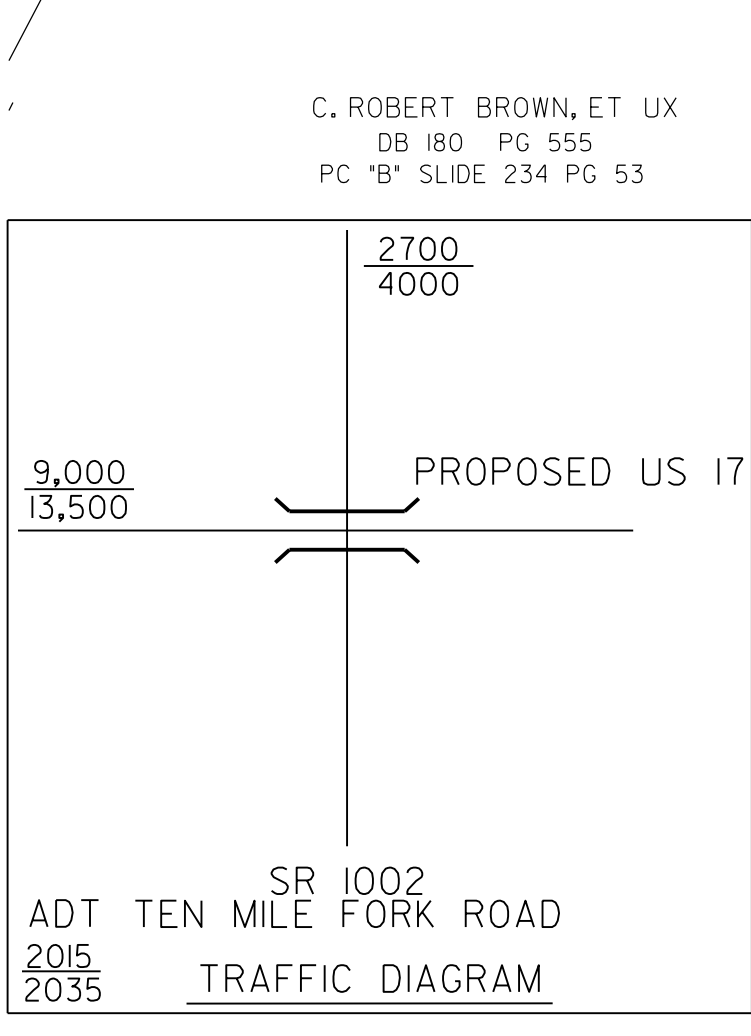
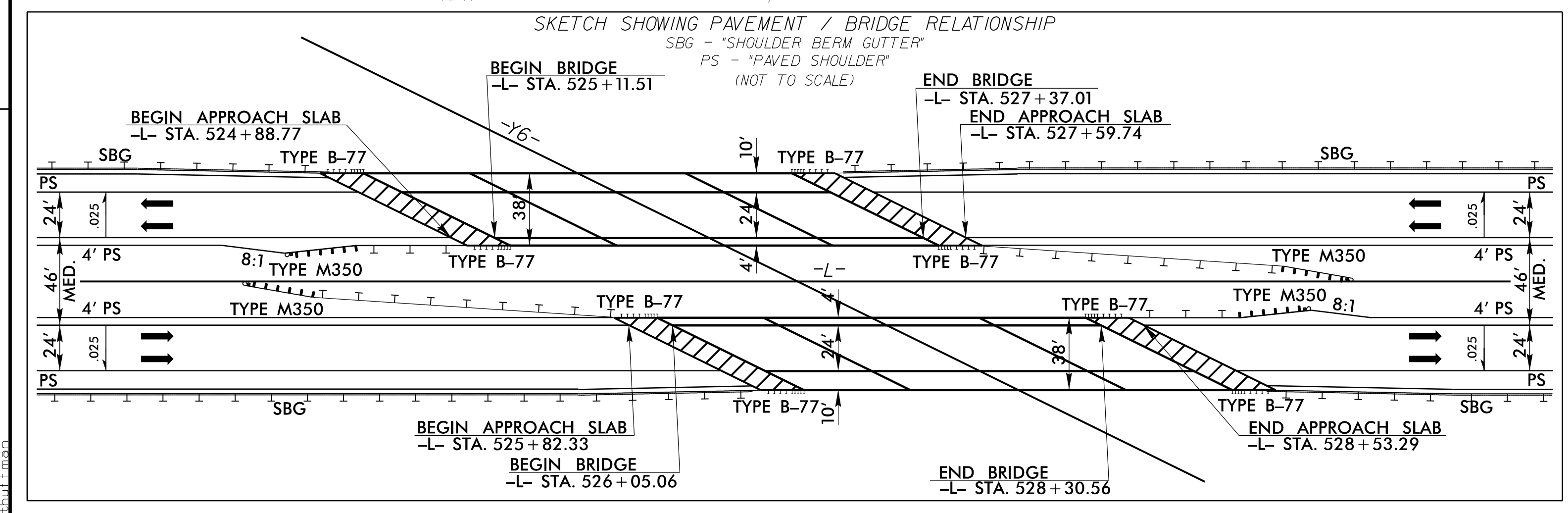
WEYERHAEUSER COMPANY  
FORMERLY BATE LUMBER COMPANY  
DB 105 PG 564  
MB 2 PG 80  
DIVISION BOOK G-7 PG 475

NOTE: A PERMANENT SOIL REINFORCEMENT MAT (PSRM) SHALL BE PLACED ON SLOPES STEEPER THAN 3:1 (H:V) FROM STA. 527+00 ± -L- TO STA. 532+50 ± -L-. SEE PERMANENT SOIL REINFORCEMENT MAT SPECIAL PROVISION.



MATCHLINE -L- STA. 516 + 00.00 SEE SHEET 19

MATCHLINE -L- STA. 530 + 00.00 SEE SHEET 21



C. ROBERT BROWN, ET UX  
DB 186 PG 906  
PC 'B' SLIDE 234 PG 53

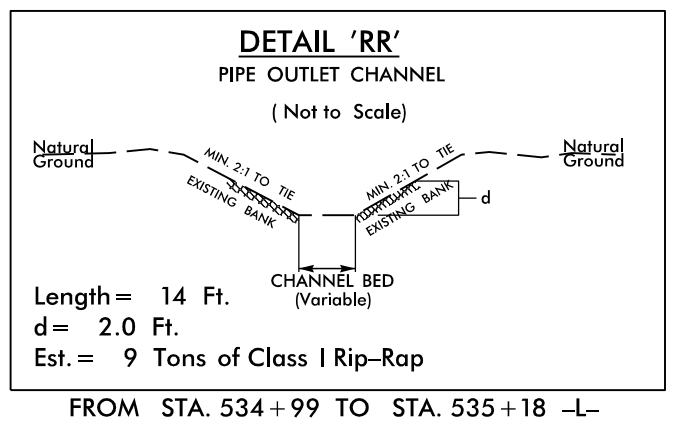
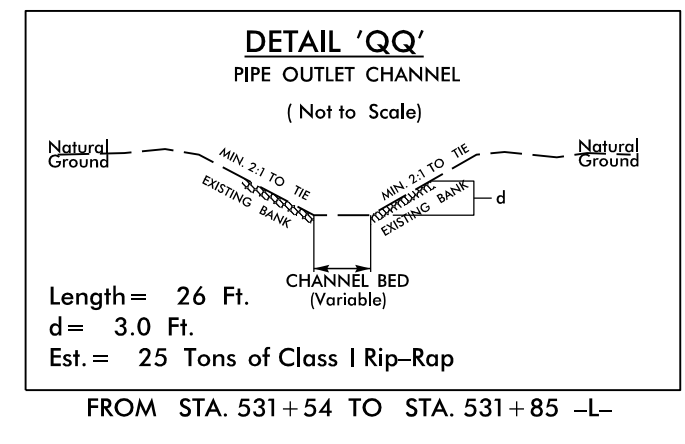
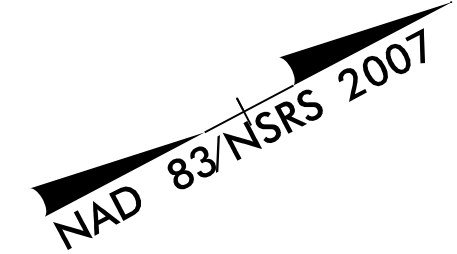
SBG - "SHOULDER BERM GUTTER"  
SFCB - "SINGLE FACED CONCRETE BARRIER"

SEE SHEET 40 FOR -L- PROFILE  
SEE SHEET 53 FOR -Y6- PROFILE  
SEE SHEETS S11-001 THRU S11-038 FOR STRUCTURE PLANS  
SEE SHEETS S12-001 THRU S12-038 FOR STRUCTURE PLANS

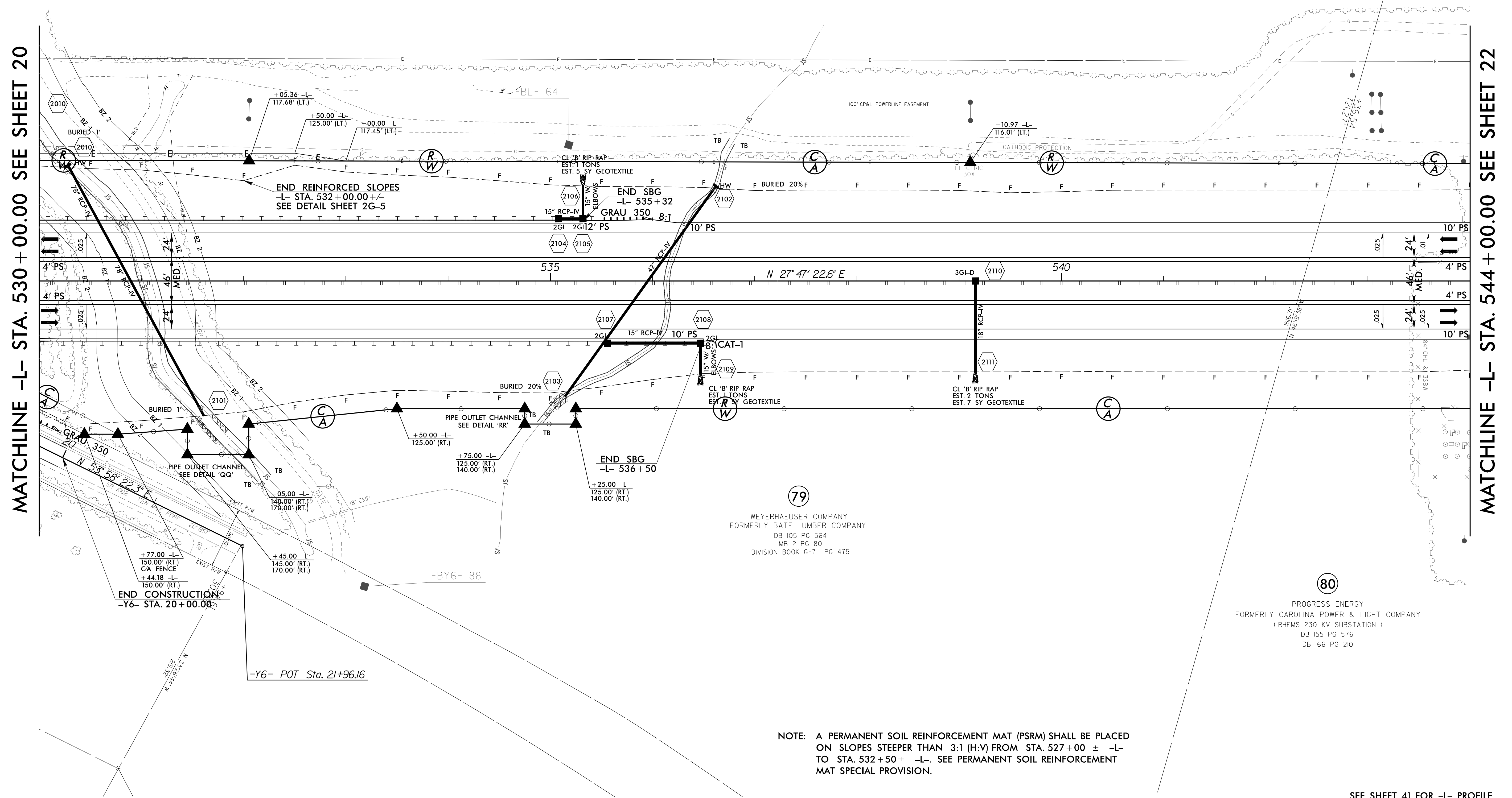
REVISIONS

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**79**  
WEYERHAEUSER COMPANY  
FORMERLY BATE LUMBER COMPANY  
DB 105 PG 564  
MB 2 PG 80  
DIVISION BOOK G-7 PG 475



**79**  
WEYERHAEUSER COMPANY  
FORMERLY BATE LUMBER COMPANY  
DB 105 PG 564  
MB 2 PG 80  
DIVISION BOOK G-7 PG 475

**80**  
PROGRESS ENERGY  
FORMERLY CAROLINA POWER & LIGHT COMPANY  
(RHMS 230 KV SUBSTATION)  
DB 155 PG 576  
DB 166 PG 210

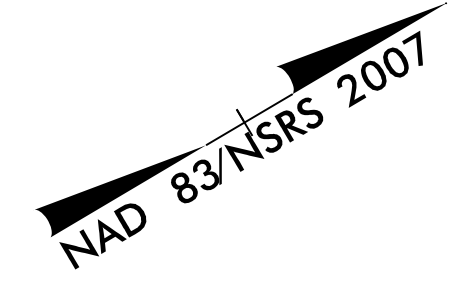
NOTE: A PERMANENT SOIL REINFORCEMENT MAT (PSRM) SHALL BE PLACED ON SLOPES STEEPER THAN 3:1 (H:V) FROM STA. 527+00 ± -L- TO STA. 532+50 ± -L-. SEE PERMANENT SOIL REINFORCEMENT MAT SPECIAL PROVISION.

SEE SHEET 41 FOR -L- PROFILE SBG - "SHOULDER BERM GUTTER"

REVISIONS

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 11/11/2015





-L-  
 PI Sta 571+12.36  
 $\Delta = 28' 45" 22.4" (RT)$   
 $D = 0' 33' 17.1"$   
 $L = 5,183.63'$   
 $T = 2,647.63'$   
 $R = 10,328.19'$   
 $SE = .025$   
 $RO = 90'$

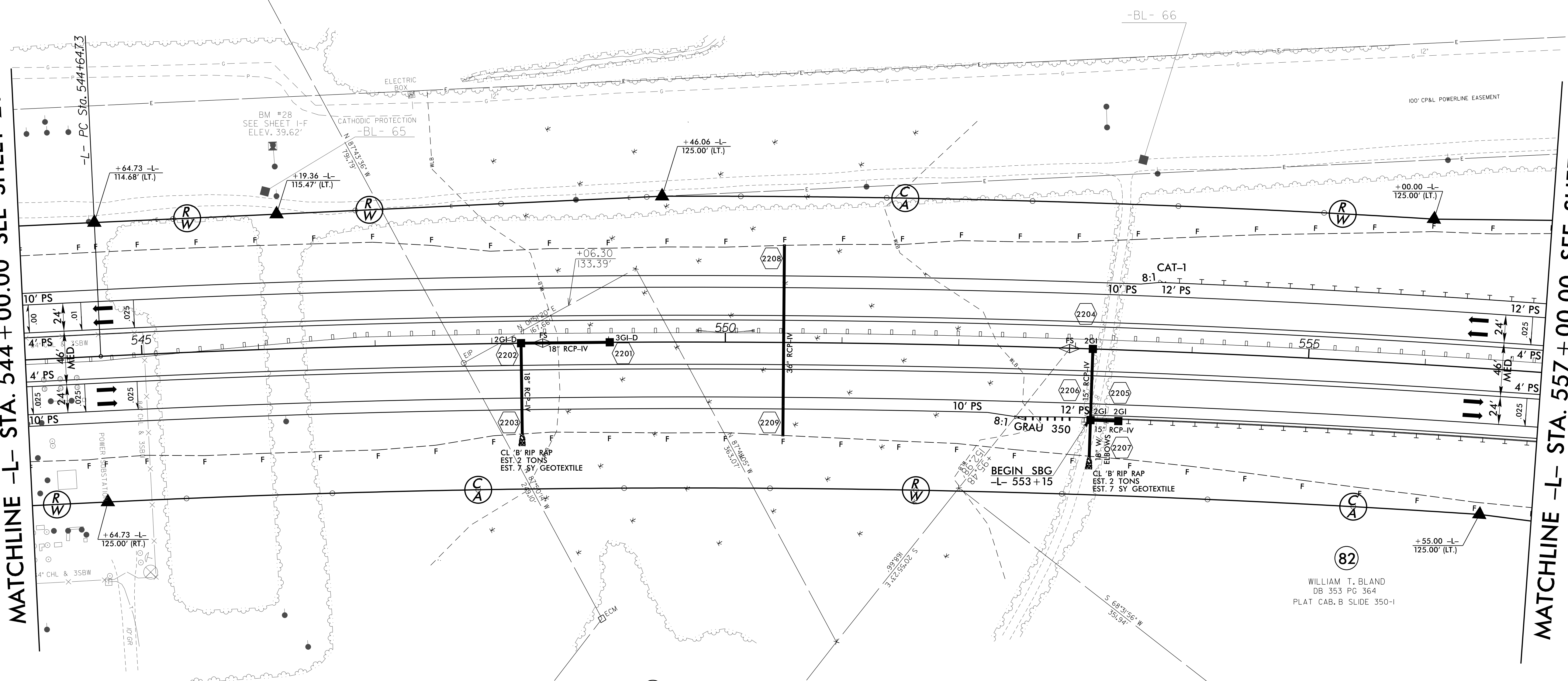
DETAIL 'U'  
FALSE SUMP  
(Not to Scale)

| Ditch Grade       | L   | Ditch Grade       | L   |
|-------------------|-----|-------------------|-----|
| 0.0% To 2.0%      | 20' | Over 4.0% To 6.0% | 40' |
| Over 2.0% To 4.0% | 30' | Over 6.0%         | 50' |

82  
 WILLIAM T. BLAND  
 DB 353 PG 364  
 PLAT CAB. B SLIDE 350-1

MATCHLINE -L- STA. 544 + 00.00 SEE SHEET 21

MATCHLINE -L- STA. 557 + 00.00 SEE SHEET 23



80  
 PROGRESS ENERGY  
 FORMERLY CAROLINA POWER & LIGHT COMPANY  
 (RHEMS 230 KV SUBSTATION )  
 DB 155 PG 576  
 DB 166 PG 210

80  
 PROGRESS ENERGY  
 FORMERLY CAROLINA POWER & LIGHT COMPANY  
 (RHEMS 230 KV SUBSTATION )  
 DB 155 PG 576  
 DB 166 PG 210

81  
 JACKIE W. MIRAYA  
 DB 240 PG 479  
 MB 13 PG 56

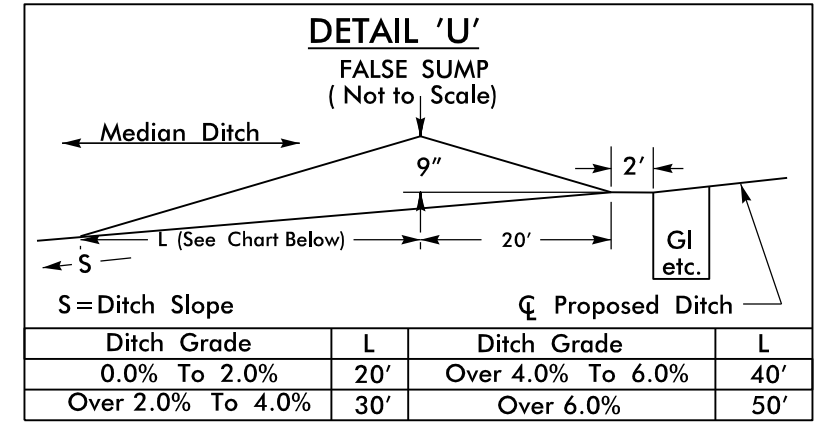
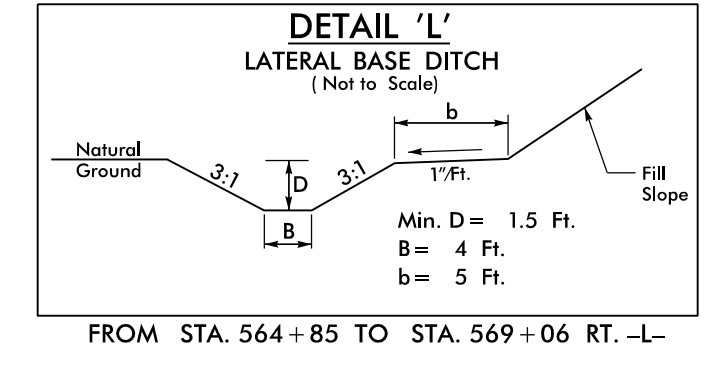
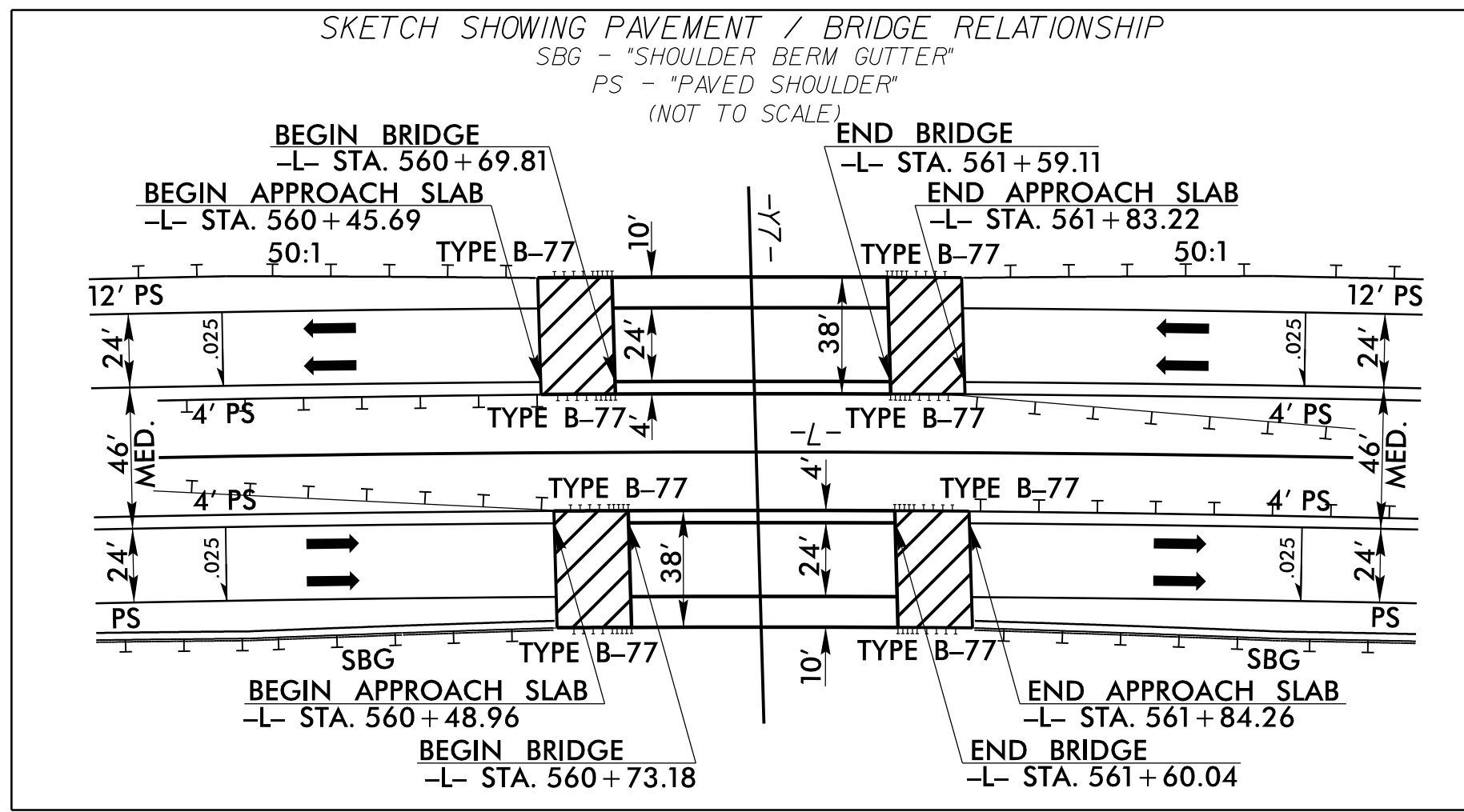
83  
 RUTHIE M. BLAND  
 DB 193 PG 271

82  
 WILLIAM T. BLAND  
 DB 353 PG 364  
 PLAT CAB. B SLIDE 350-1

REVISIONS

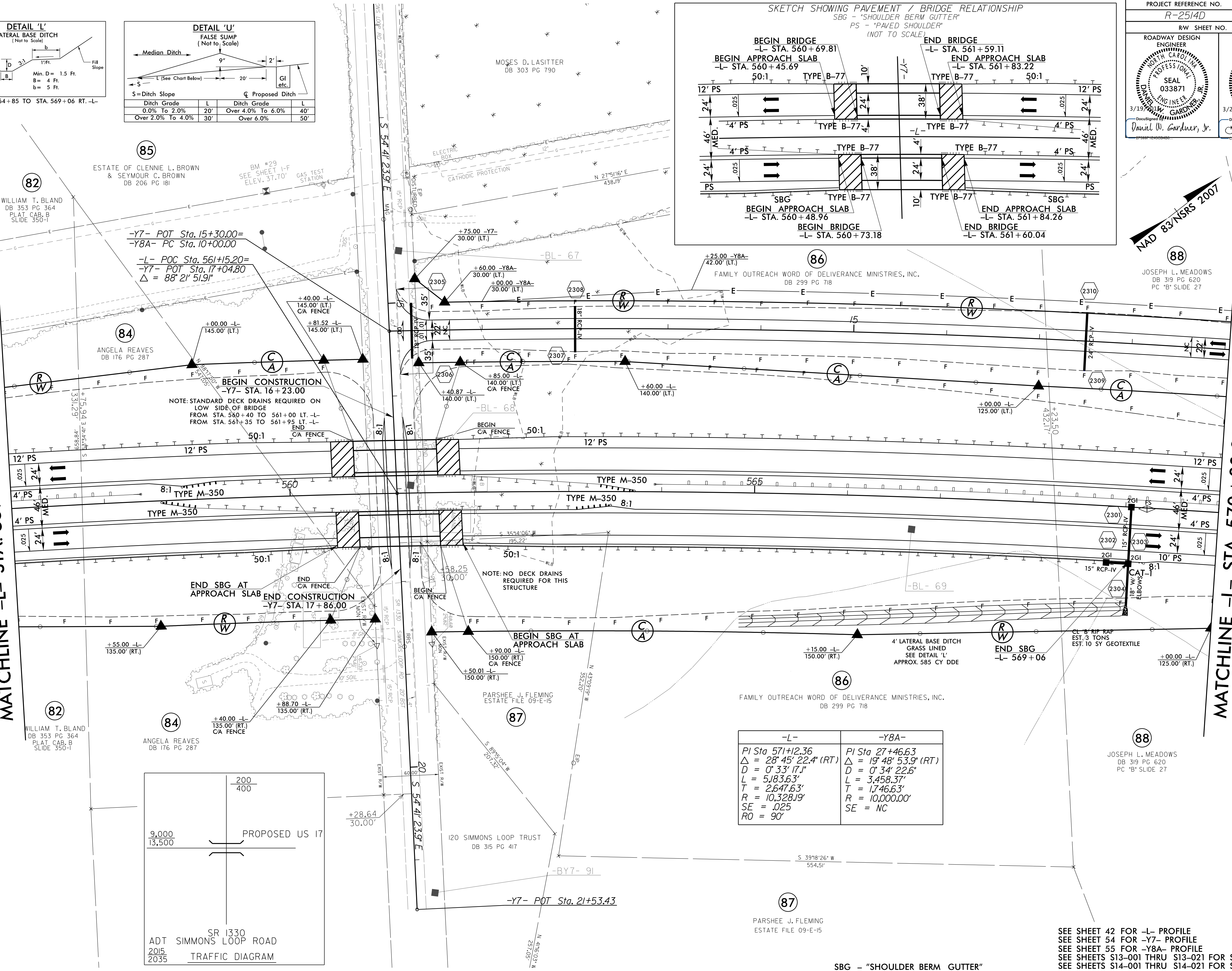
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 1501





MATCHLINE -L- STA. 557 + 00.00 SEE SHEET 22

MATCHLINE -L- STA. 570 + 00.00 SEE SHEET 24



| -L-                                | -Y8A-                              |
|------------------------------------|------------------------------------|
| PI Sta 571+12.36                   | PI Sta 27+46.63                    |
| $\Delta = 28^\circ 45' 22.4" (RT)$ | $\Delta = 19^\circ 48' 53.9" (RT)$ |
| $D = 0' 33' 17.1"$                 | $D = 0' 34' 22.6"$                 |
| $L = 5,183.63'$                    | $L = 3,458.37'$                    |
| $T = 2,647.63'$                    | $T = 1,746.63'$                    |
| $R = 10,328.19'$                   | $R = 10,000.00'$                   |
| $SE = .025$                        | $SE = NC$                          |
| $RO = 90'$                         |                                    |

REVISIONS

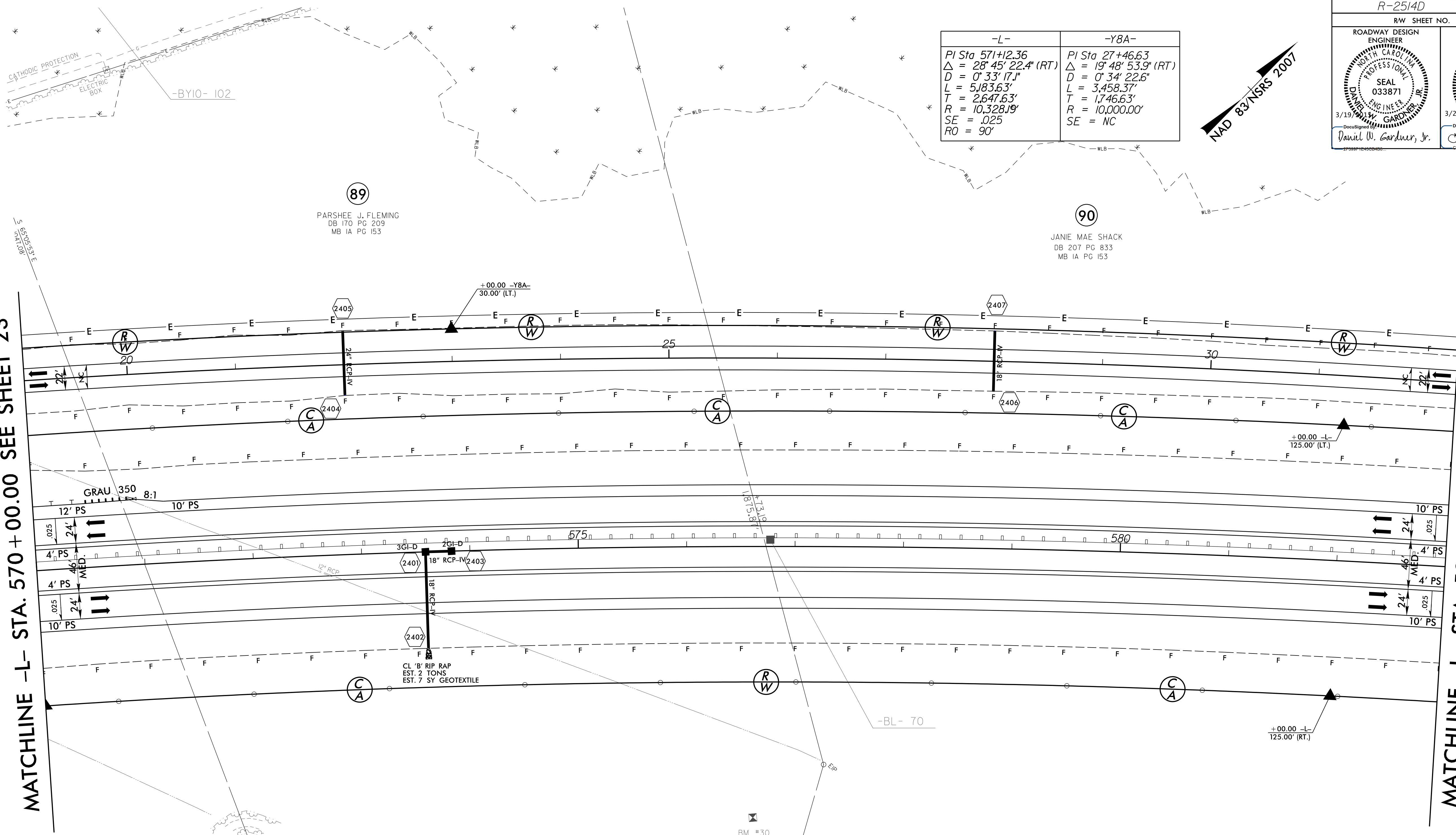
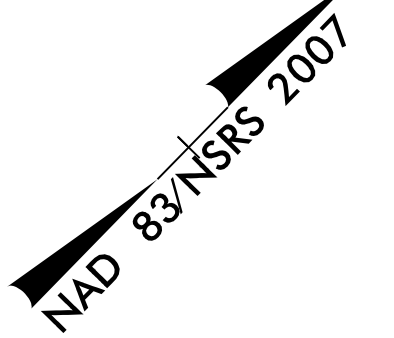
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SEE SHEET 42 FOR -L- PROFILE  
SEE SHEET 54 FOR -Y7- PROFILE  
SEE SHEET 55 FOR -Y8A- PROFILE  
SEE SHEETS S13-001 THRU S13-021 FOR STRUCTURE PLANS  
SEE SHEETS S14-001 THRU S14-021 FOR STRUCTURE PLANS

SBG - "SHOULDER BERM GUTTER"



| -L-                                   | -Y8A-                                 |
|---------------------------------------|---------------------------------------|
| PI Sta 571+12.36                      | PI Sta 27+46.63                       |
| $\Delta = 28^{\circ} 45' 22.4''$ (RT) | $\Delta = 19^{\circ} 48' 53.9''$ (RT) |
| D = 0' 33' 17.1"                      | D = 0' 34' 22.6"                      |
| L = 5,183.63'                         | L = 3,458.37'                         |
| T = 2,647.63'                         | T = 1,746.63'                         |
| R = 10,328.19'                        | R = 10,000.00'                        |
| SE = .025                             | SE = NC                               |
| RO = 90°                              |                                       |



MATCHLINE -L- STA. 570 + 00.00 SEE SHEET 23

MATCHLINE -L- STA. 583 + 00.00 SEE SHEET 25

REVISIONS

8/17/99  
3/15/2015  
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DWG: 24

88  
JOSEPH L. MEADOWS  
DB 319 PG 620  
PC 'B' SLIDE 27

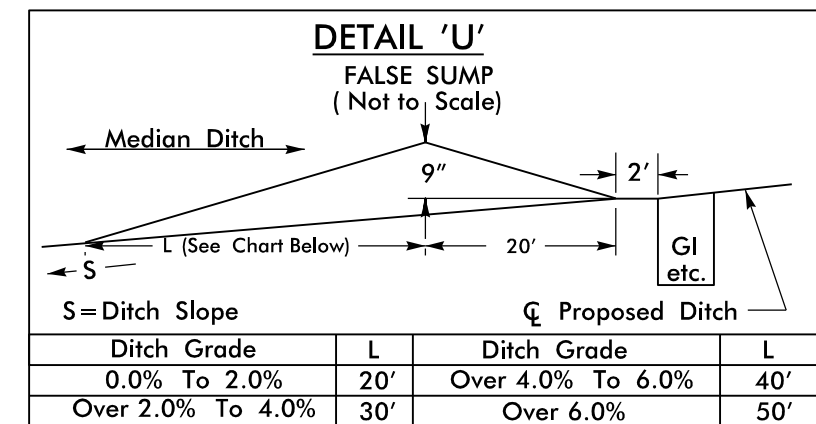
89  
PARSHEE J. FLEMING  
DB 170 PG 209  
MB IA PG 153

89  
PARSHEE J. FLEMING  
DB 170 PG 209  
MB IA PG 153

90  
JANIE MAE SHACK  
DB 207 PG 833  
MB IA PG 153

90  
JANIE MAE SHACK  
DB 207 PG 833  
MB IA PG 153

BM #30  
SEE SHEET I-F  
ELEV. 37.77'





| -L-                                  | -Y8A-                                |
|--------------------------------------|--------------------------------------|
| PI Sta 571+12.36                     | PI Sta 27+46.63                      |
| $\Delta = 28^{\circ} 45' 22.4" (RT)$ | $\Delta = 19^{\circ} 48' 53.9" (RT)$ |
| $D = 0^{\circ} 33' 17.1"$            | $D = 0^{\circ} 34' 22.6"$            |
| $L = 5,183.63'$                      | $L = 3,458.37'$                      |
| $T = 2,647.63'$                      | $T = 1,746.63'$                      |
| $R = 10,328.19'$                     | $R = 10,000.00'$                     |
| $SE = .025$                          | $SE = NC$                            |
| $RO = 90^{\circ}$                    |                                      |

NAD 83/NTS 2007

91  
JOHN K. AVOLIS, ET UX  
DB 312 PG 104  
PLAT BOOK 3 PG 35

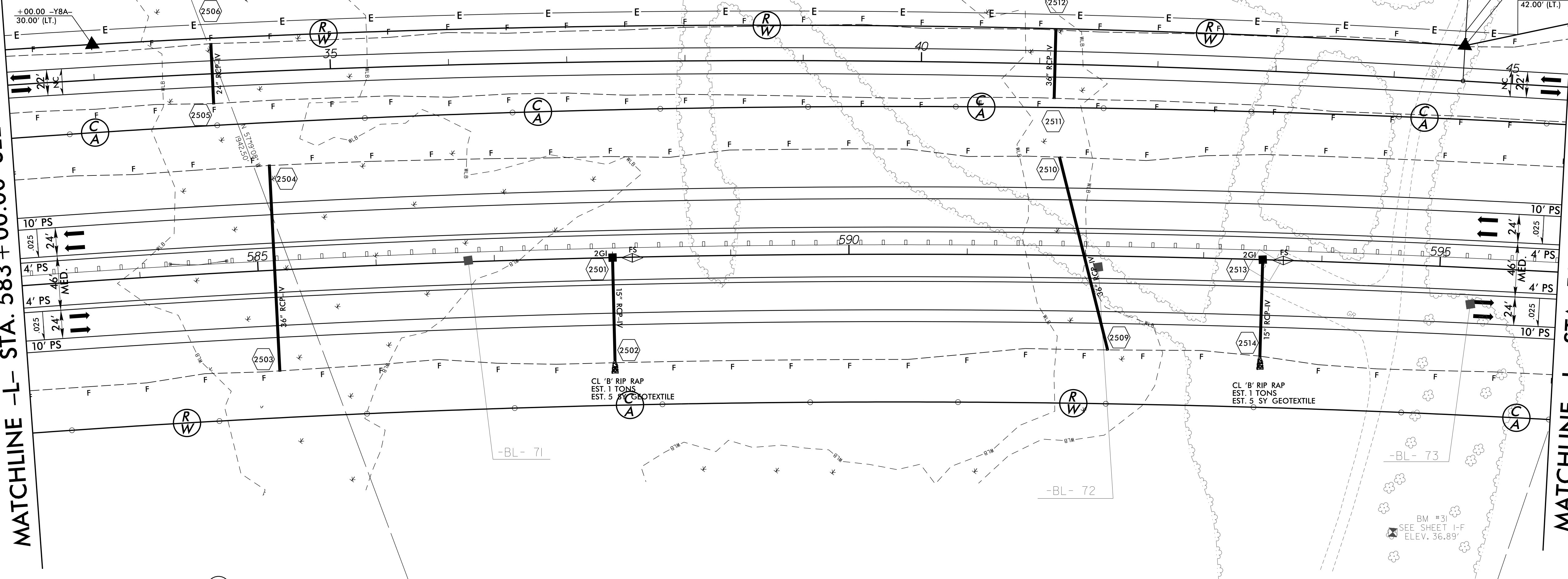
90  
JANIE MAE SHACK  
DB 207 PG 833  
MB IA PG 153

90  
JANIE MAE SHACK  
DB 207 PG 833  
MB IA PG 153

91  
JOHN K. AVOLIS, ET UX  
DB 312 PG 104  
PLAT BOOK 3 PG 35

MATCHLINE -L- STA. 583 + 00.00 SEE SHEET 24

MATCHLINE -L- STA. 596 + 00.00 SEE SHEET 26



**DETAIL 'U'**  
FALSE SUMP  
(Not to Scale)

| Ditch Grade       | L   | Ditch Grade       | L   |
|-------------------|-----|-------------------|-----|
| 0.0% To 2.0%      | 20' | Over 4.0% To 6.0% | 40' |
| Over 2.0% To 4.0% | 30' | Over 6.0%         | 50' |

SEE SHEET 43 FOR -L- PROFILE  
SEE SHEET 55 AND 56 FOR -Y8A- PROFILE

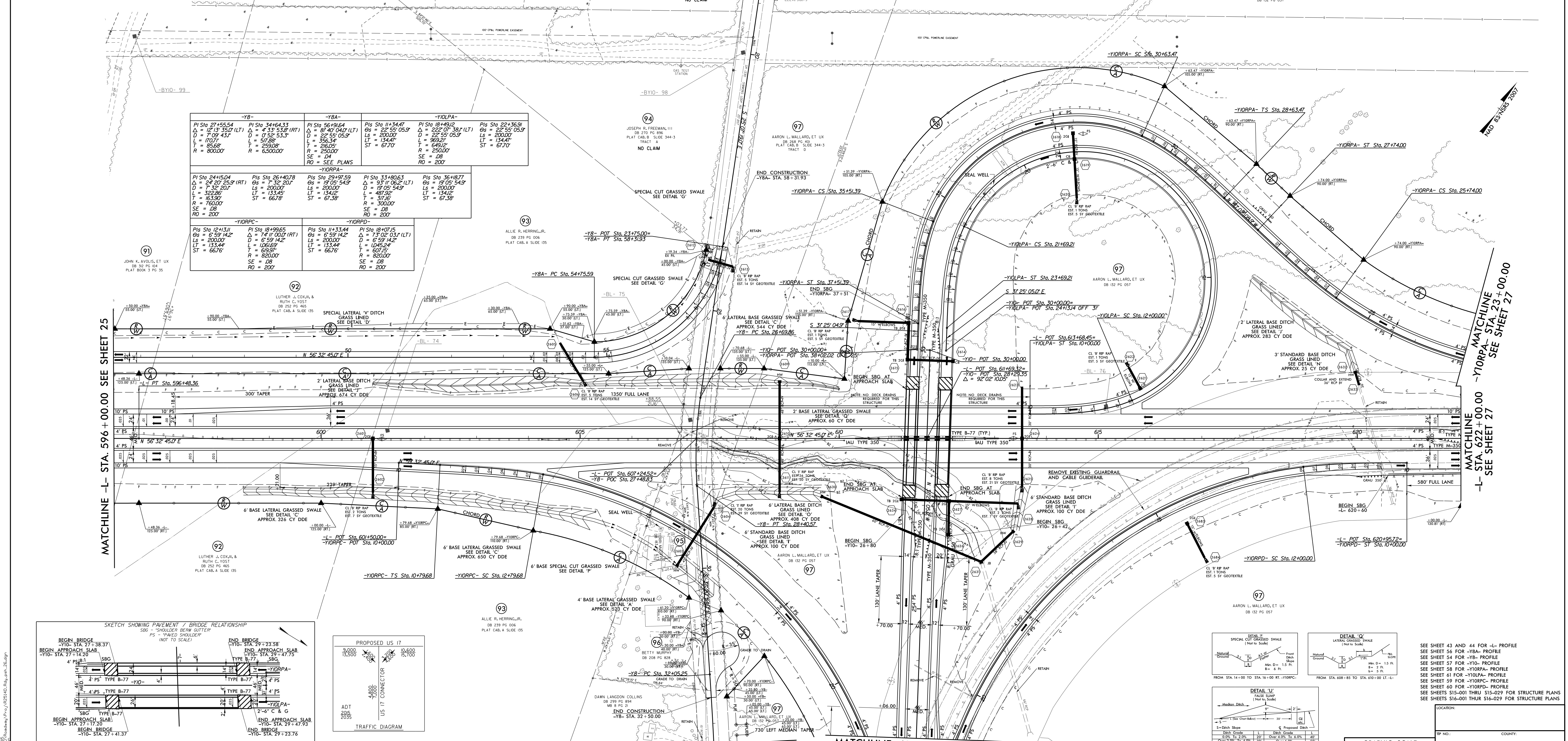
REVISIONS

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 3/15/2015  
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 Daniel W. Gardner, Jr.

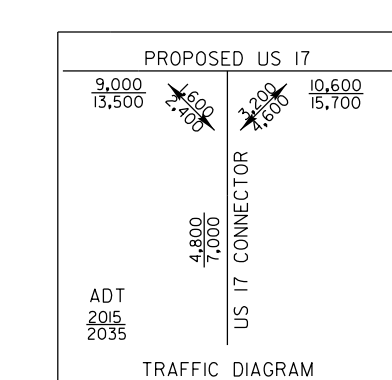
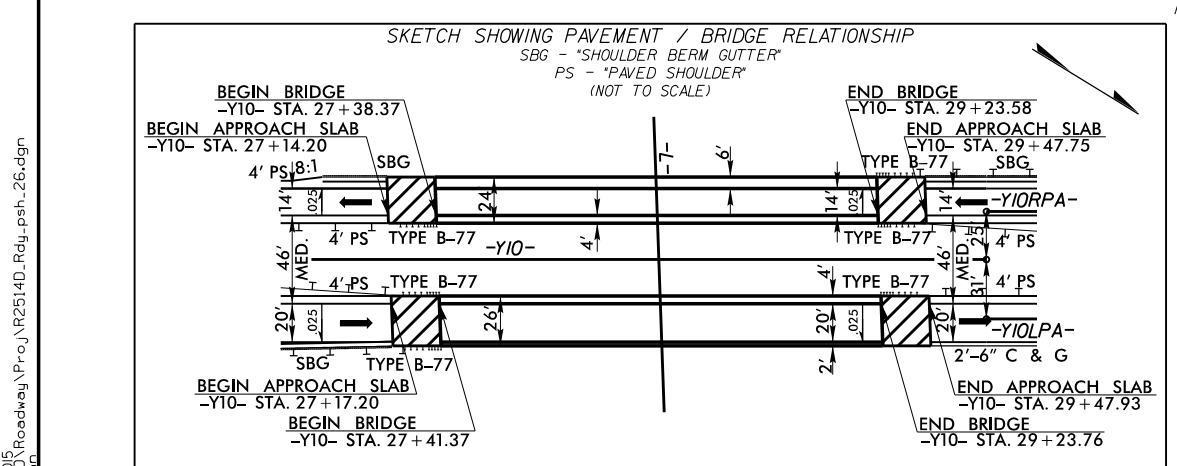


REVISIONS

|   |   |   |   |   |  |   |  |
|---|---|---|---|---|--|---|--|
| <br>DETAIL A<br>LATERAL GRASSED SWALE<br>(Not to Scale) | <br>DETAIL B<br>LATERAL GRASSED SWALE<br>(Not to Scale) | <br>DETAIL C<br>SPECIAL LATERAL Y DITCH<br>(Not to Scale) | <br>DETAIL D<br>SPECIAL CUT GRASSED SWALE<br>(Not to Scale) | <br>DETAIL E<br>STANDARD BASE DITCH<br>(Not to Scale) | <br>DETAIL F<br>LATERAL BASE DITCH<br>(Not to Scale) | <br>DETAIL G<br>STANDARD BASE DITCH<br>(Not to Scale) | <br>DETAIL H<br>LATERAL BASE DITCH<br>(Not to Scale) |
|---|---|---|---|---|--|---|--|



|  |  |   |  |  |   |   |
|--|--|---|--|--|---|---|
| -YB-<br>PIS Sta 27+55.54<br>$\Delta = 12' 13' 35.07$ (LT)<br>$D = 7' 59' 43.1$<br>$L = 102.81$<br>$T = 85.68$<br>$R = 820.00$<br>SE = 08<br>RO = 200 | -YBA-<br>PIS Sta 34+64.33<br>$\Delta = 4' 31' 53.8$ (RT)<br>$D = 0' 56' 53.3$<br>$L = 57.88$<br>$T = 259.08$<br>$R = 6500.00$<br>SE = 04<br>RO = 200 | -YBP-<br>PIS Sta 56+99.64<br>$\Delta = 8' 40' 04.07$ (LT)<br>$D = 22' 55' 05.9$<br>$L = 326.27$<br>$T = 269.08$<br>$R = 2500.00$<br>SE = 08<br>RO = 200 | -YBP-<br>PIS Sta 23+97.59<br>$\Delta = 19' 05' 54.9$<br>$D = 200.00$<br>$L = 134.42$<br>$T = 67.38$<br>$R = 200.00$<br>SE = 08<br>RO = 200 | -YBPA-<br>PIS Sta 11+34.47<br>$\Delta = 81' 40' 04.07$ (LT)<br>$D = 22' 55' 05.9$<br>$L = 134.42$<br>$T = 67.38$<br>$R = 2500.00$<br>SE = 08<br>RO = 200 | -YBPA-<br>PIS Sta 18+49.12<br>$\Delta = 222' 07' 38.1$ (LT)<br>$D = 22' 55' 05.9$<br>$L = 969.27$<br>$T = 649.08$<br>$R = 2500.00$<br>SE = 08<br>RO = 200 | -YBPA-<br>PIS Sta 22+36.91<br>$\Delta = 22' 55' 05.9$<br>$D = 200.00$<br>$L = 134.42$<br>$T = 67.38$<br>$R = 200.00$<br>SE = 08<br>RO = 200 |
|--|--|---|--|--|---|---|



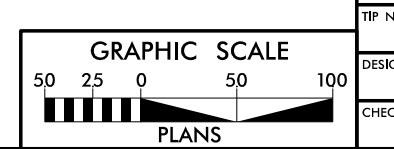
MATCHLINE -YB- STA. 33+40.00 SEE SHEET 31

MATCHLINE -Y10- STA. 22+50.00 SEE SHEET 31

MATCHLINE -Y10RPA- STA. 23+00.00 SEE SHEET 27

MATCHLINE -Y10RPA- STA. 27+00.00 SEE SHEET 27

SEE SHEET 43 AND 44 FOR -L- PROFILE  
 SEE SHEET 56 FOR -YBA- PROFILE  
 SEE SHEET 54 FOR -YBP- PROFILE  
 SEE SHEET 57 FOR -Y10- PROFILE  
 SEE SHEET 58 FOR -Y10RPA- PROFILE  
 SEE SHEET 61 FOR -Y10RPA- PROFILE  
 SEE SHEET 59 FOR -Y10RPA- PROFILE  
 SEE SHEET 60 FOR -Y10RPA- PROFILE  
 SEE SHEETS 515-001 THRU 515-029 FOR STRUCTURE PLANS  
 SEE SHEETS 516-001 THRU 516-029 FOR STRUCTURE PLANS



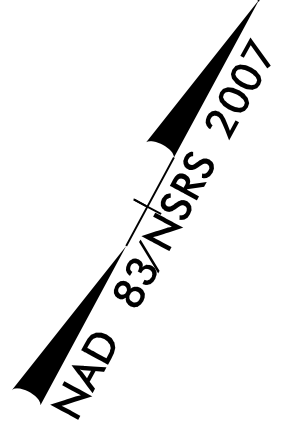
GRAPHIC SCALE  
 0 25 50 100  
 PLANS SECTION

TP NO.: \_\_\_\_\_ COUNTY: \_\_\_\_\_  
 DESIGNED BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

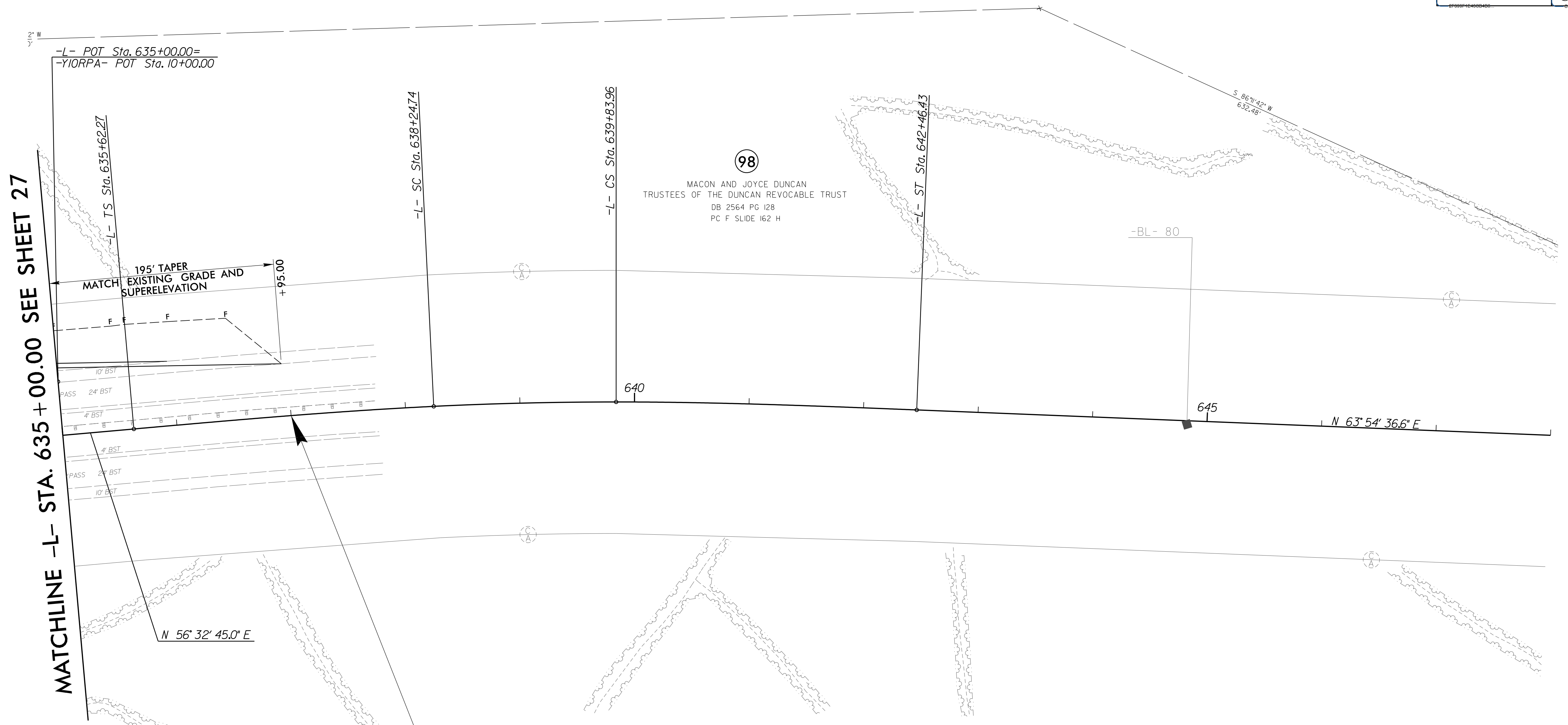








WEYERHAEUSER COMPANY



MATCHLINE -L- STA. 635 + 00.00 SEE SHEET 27

END PROJECT R-2514D  
-L- STA. 637 + 00.00

| -L-   |   |   |
|---|---|---|
| PIs Sta 637+37.26<br>θs = 2° 17' 30.6"<br>Ls = 262.47'<br>LT = 174.99'<br>ST = 87.50' | PI Sta 639+04.37<br>Δ = 2° 46' 50.4" (RT)<br>D = 1° 44' 47.0"<br>L = 159.22'<br>T = 79.63'<br>R = 3,280.83' | PIs Sta 640+71.46<br>θs = 2° 17' 30.6"<br>Ls = 262.47'<br>LT = 174.99'<br>ST = 87.50' |

MACON AND JOYCE DUNCAN TRUSTEES OF THE DUNCAN REVOCABLE TRUST  
DB 2564 PG 128  
PC F SLIDE 162 H

REVISIONS

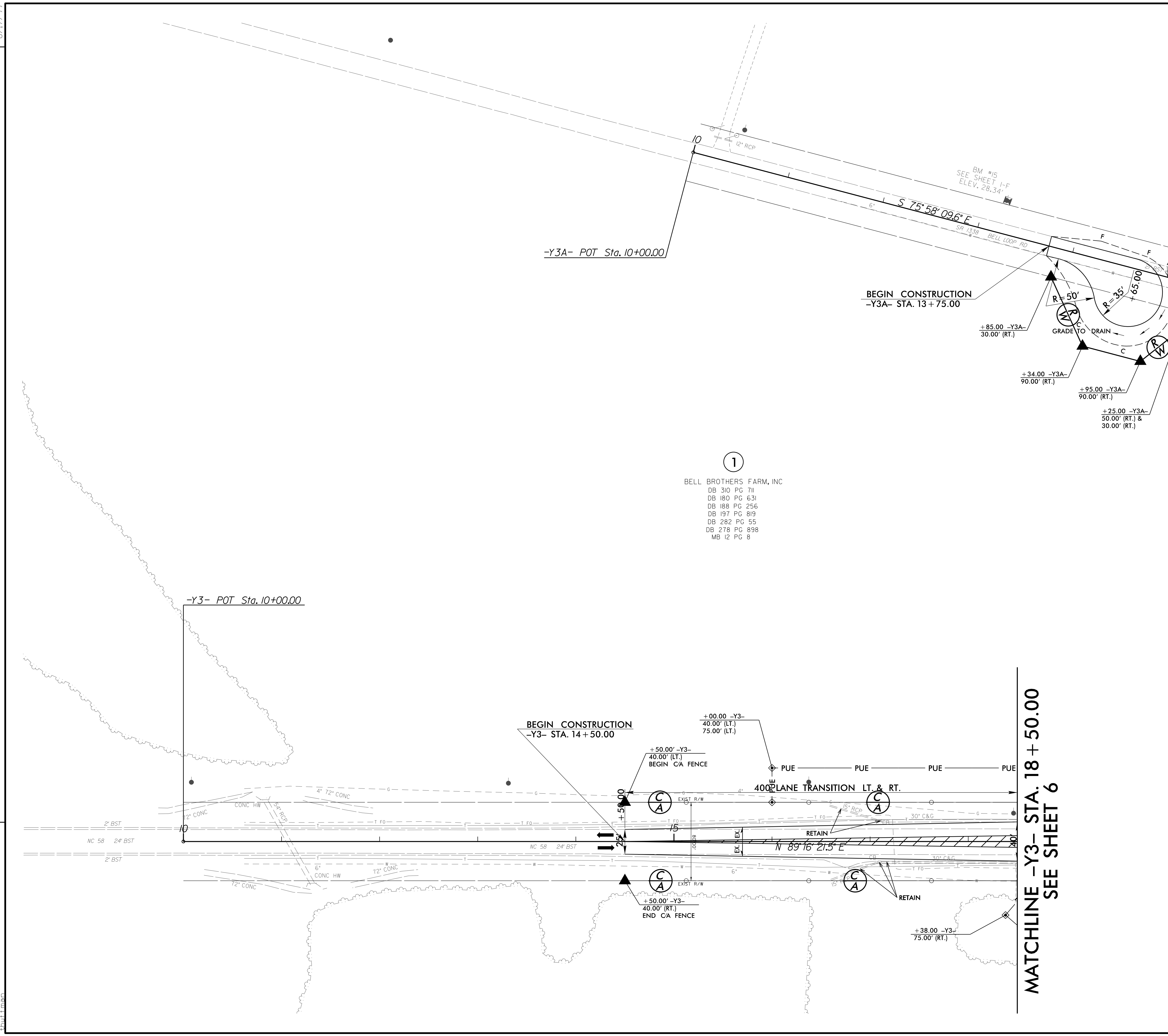
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DWG: 28



|   |  |
|---|--|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>29  |
| RW SHEET NO.  |  |
| ROADWAY DESIGN ENGINEER<br>SEAL 033871<br>3/19/2015<br>Daniel W. Gardner, Jr. | HYDRAULICS ENGINEER<br>SEAL 039745<br>3/20/2015<br>Jonathan Lyle Moore |

NAD 83/NSRS 2007

MATCHLINE -Y3A- STA. 15 + 50.00  
SEE SHEET 6



MATCHLINE -Y3- STA. 18 + 50.00  
SEE SHEET 6

SEE SHEET 46 FOR -Y3- PROFILE  
SEE SHEET 50 FOR -Y3A- PROFILE

REVISIONS

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3/15/2015  
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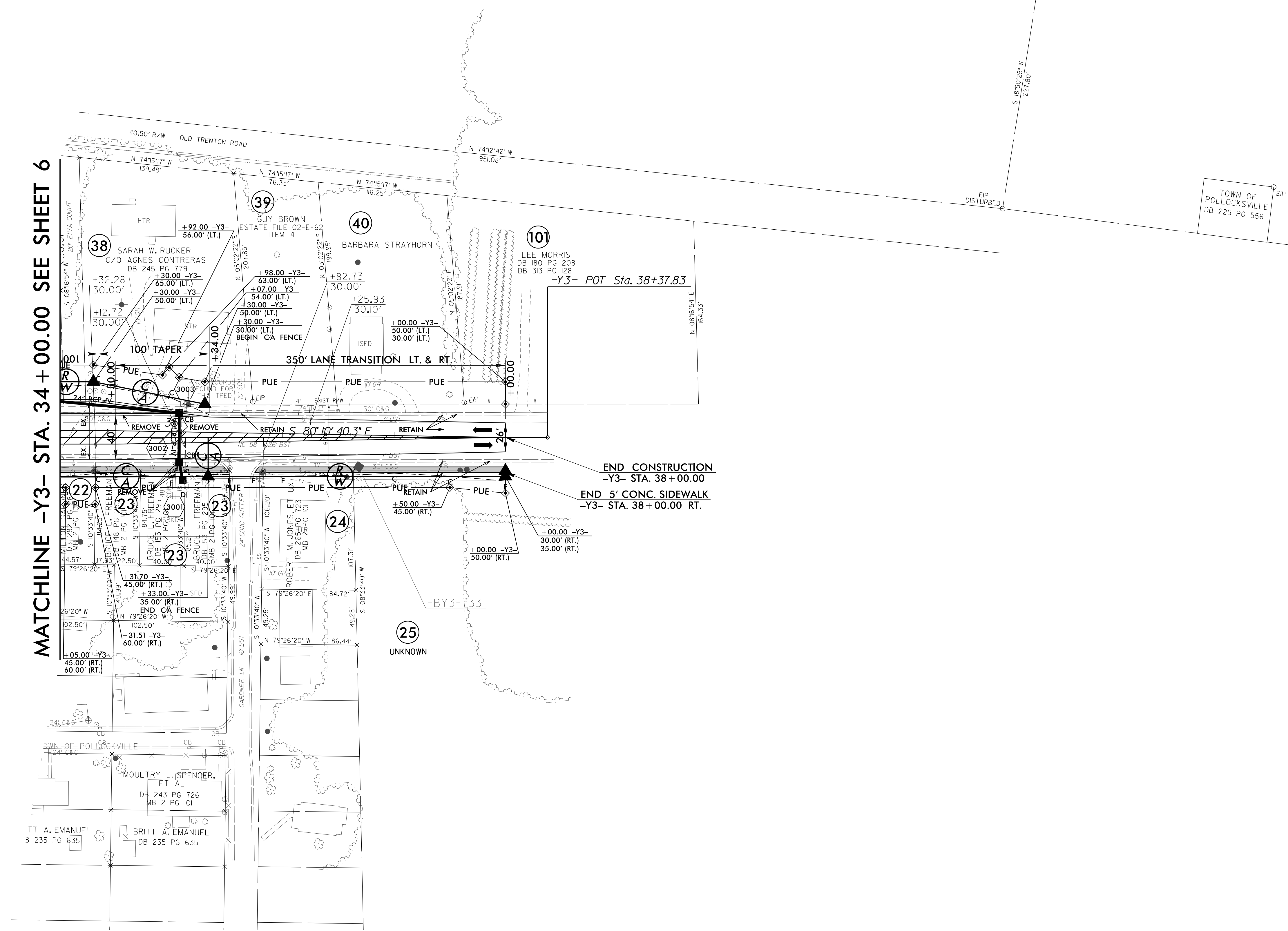
|   |  |
|---|--|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>30  |
| RW SHEET NO.  |  |
| ROADWAY DESIGN ENGINEER<br>SEAL 033871<br>DANIEL W. GARDNER, JR.<br>3/19/2015 | HYDRAULICS ENGINEER<br>SEAL 039745<br>DANIEL LYLE MOORE<br>3/20/2015 |

NAD 83/NSRS 2007

53

CAROLINA EAST HEALTHCARE SYSTEMS  
DB 264 PG 740  
DB 196 PG 796  
DB 347 PG 612  
PC "B" SLIDE 320 PG 796

MATCHLINE -Y3- STA. 34 + 00.00 SEE SHEET 6



REVISIONS

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3/15/2015  
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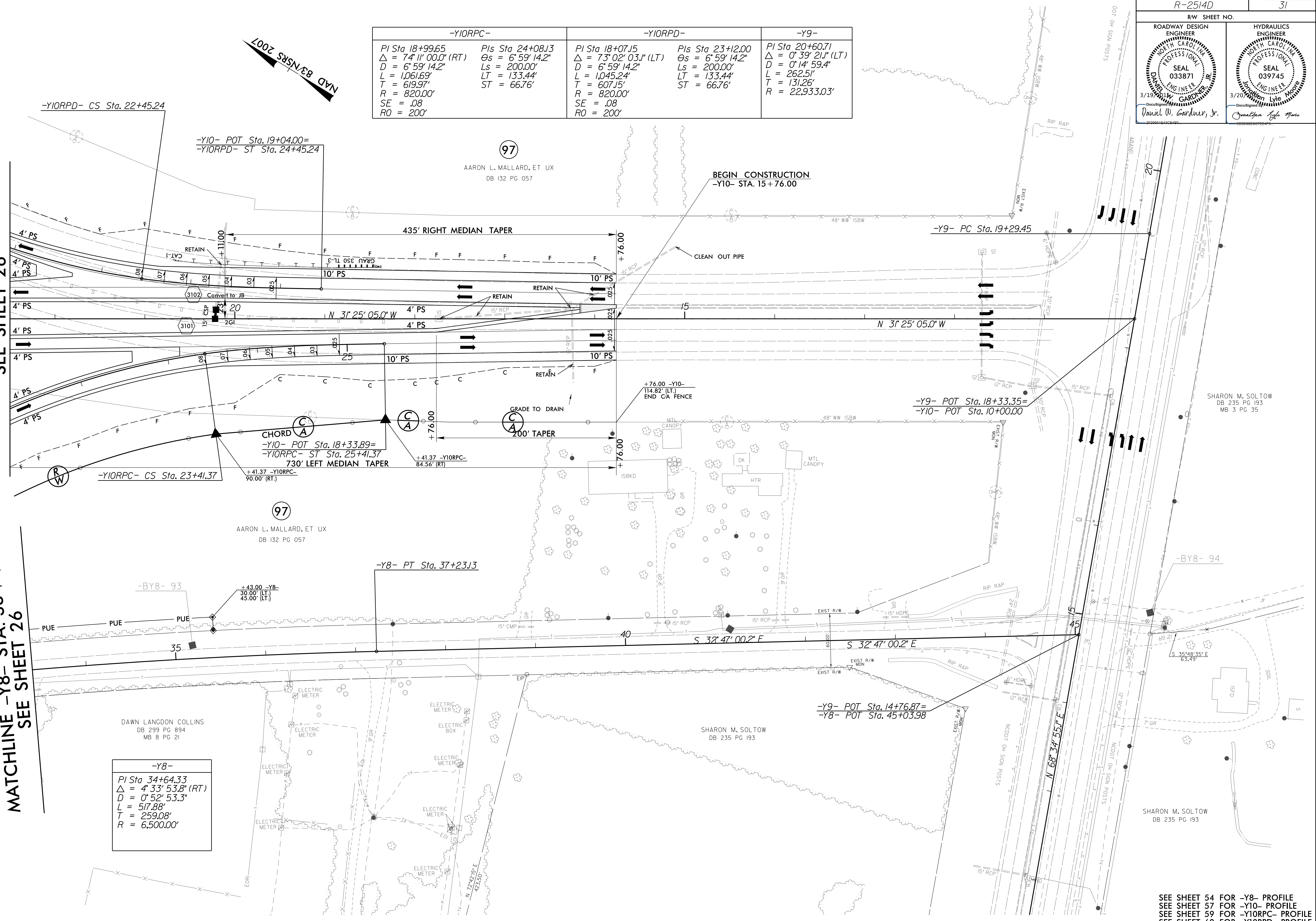
SEE SHEET 46 FOR -Y3- PROFILE



| -Y10RPC-                              |                                   | -Y10RPD-                              |                                   | -Y9-                                 |  |
|---------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------|--------------------------------------|--|
| PI Sta 18+99.65                       | PIs Sta 24+08.13                  | PI Sta 18+07.15                       | PIs Sta 23+12.00                  | PI Sta 20+60.71                      |  |
| $\Delta = 74^{\circ} 11' 00.0''$ (RT) | $\Theta_s = 6^{\circ} 59' 14.2''$ | $\Delta = 73^{\circ} 02' 03.1''$ (LT) | $\Theta_s = 6^{\circ} 59' 14.2''$ | $\Delta = 0^{\circ} 39' 21.1''$ (LT) |  |
| D = 6' 59' 14.2"                      | Ls = 200.00'                      | D = 6' 59' 14.2"                      | Ls = 200.00'                      | D = 0' 14' 59.4"                     |  |
| L = 1,061.69'                         | LT = 133.44'                      | L = 1,045.24'                         | LT = 133.44'                      | L = 262.51'                          |  |
| T = 619.97'                           | ST = 66.76'                       | T = 607.15'                           | ST = 66.76'                       | T = 131.26'                          |  |
| R = 820.00'                           |                                   | R = 820.00'                           |                                   | R = 22,933.03'                       |  |
| SE = .08                              |                                   | SE = .08                              |                                   |                                      |  |
| RO = 200'                             |                                   | RO = 200'                             |                                   |                                      |  |

MATCHLINE -Y10- STA. 22 + 50.00  
SEE SHEET 26

MATCHLINE -Y8- STA. 33 + 40.00  
SEE SHEET 26



| -Y8-                                 |
|--------------------------------------|
| PI Sta 34+64.33                      |
| $\Delta = 4^{\circ} 33' 53.8''$ (RT) |
| D = 0' 52' 53.3"                     |
| L = 517.88'                          |
| T = 259.08'                          |
| R = 6,500.00'                        |

SEE SHEET 54 FOR -Y8- PROFILE  
SEE SHEET 57 FOR -Y10- PROFILE  
SEE SHEET 59 FOR -Y10RPC- PROFILE  
SEE SHEET 60 FOR -Y10RPD- PROFILE

REVISIONS

8/17/99

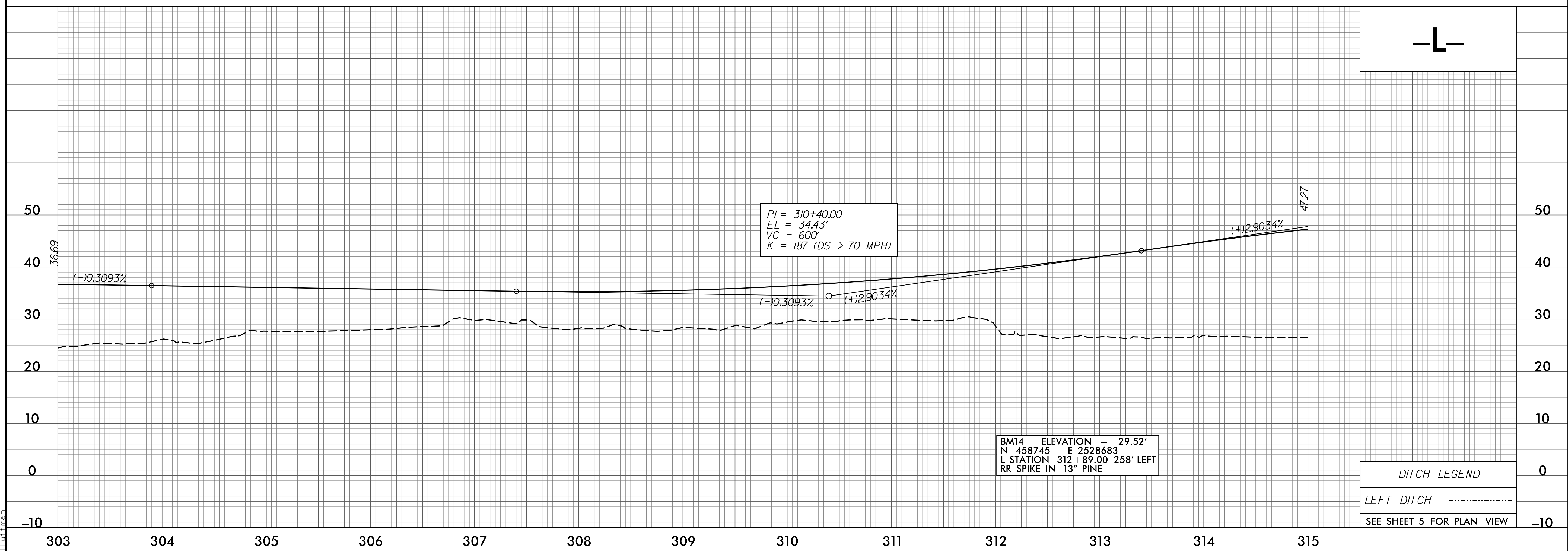
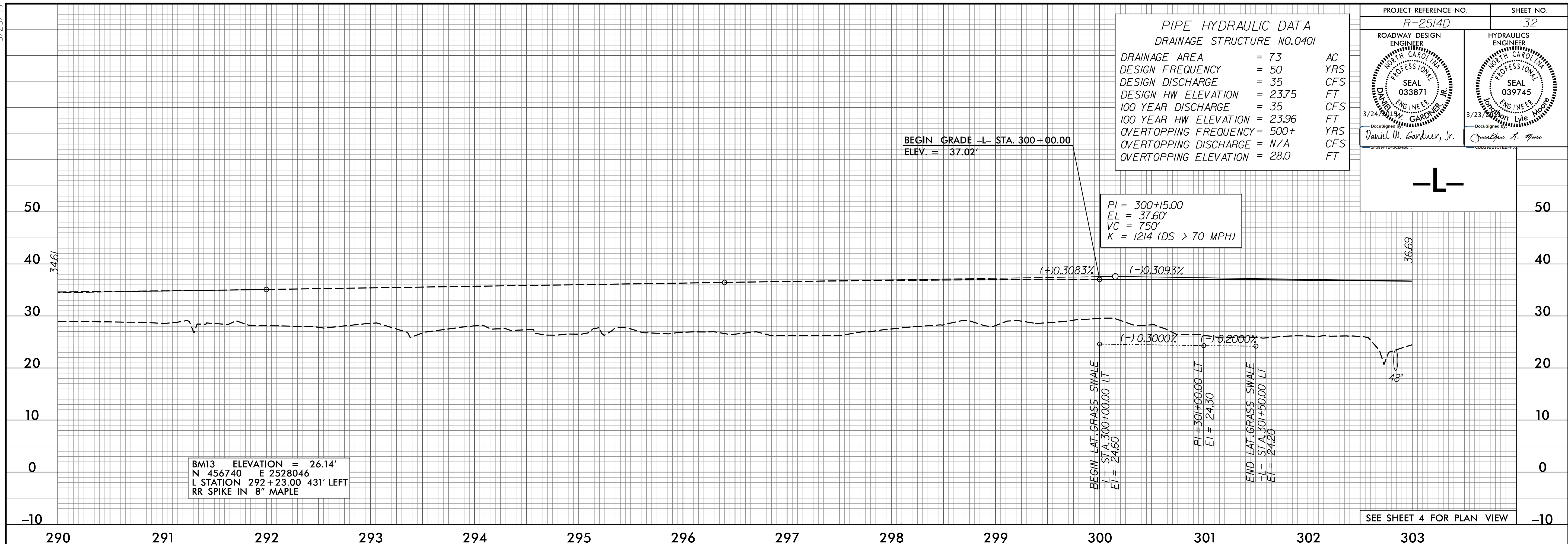
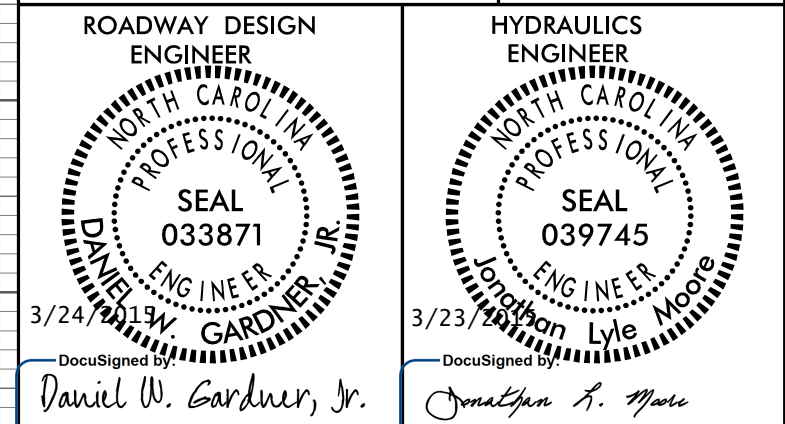
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5/28/99

**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.0401

|                       |         |     |
|-----------------------|---------|-----|
| DRAINAGE AREA         | = 73    | AC  |
| DESIGN FREQUENCY      | = 50    | YRS |
| DESIGN DISCHARGE      | = 35    | CFS |
| DESIGN HW ELEVATION   | = 23.75 | FT  |
| 100 YEAR DISCHARGE    | = 35    | CFS |
| 100 YEAR HW ELEVATION | = 23.96 | FT  |
| OVERTOPPING FREQUENCY | = 500+  | YRS |
| OVERTOPPING DISCHARGE | = N/A   | CFS |
| OVERTOPPING ELEVATION | = 28.0  | FT  |



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5/28/99

**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.0601

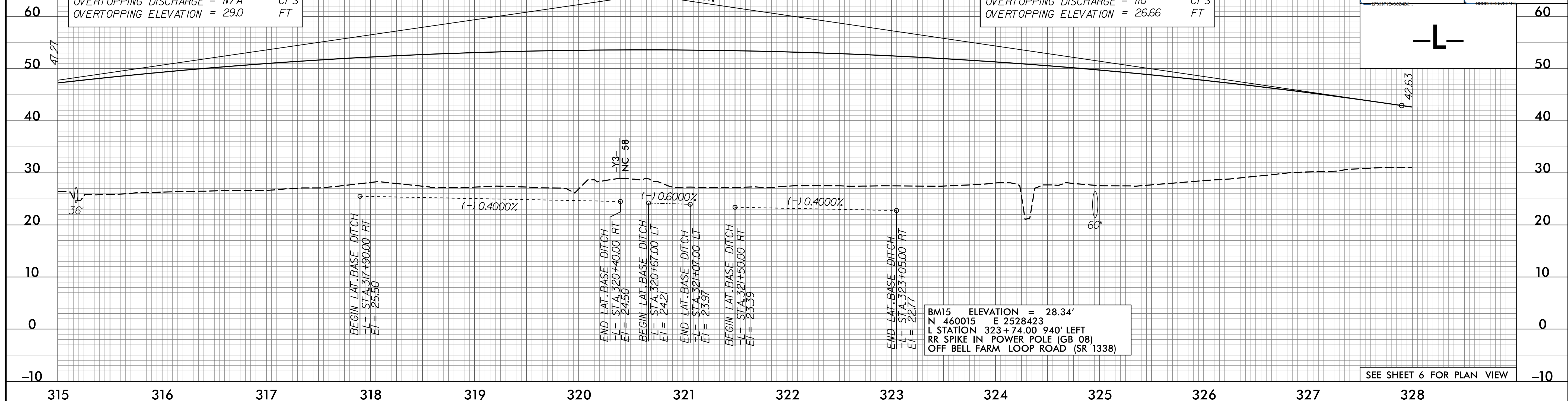
|                       |         |     |
|-----------------------|---------|-----|
| DRAINAGE AREA         | = 8     | AC  |
| DESIGN FREQUENCY      | = 50    | YRS |
| DESIGN DISCHARGE      | = 30    | CFS |
| DESIGN HW ELEVATION   | = 27.86 | FT  |
| 100 YEAR DISCHARGE    | = 33    | CFS |
| 100 YEAR HW ELEVATION | = 28.08 | FT  |
| OVERTOPPING FREQUENCY | = 500+  | YRS |
| OVERTOPPING DISCHARGE | = N/A   | CFS |
| OVERTOPPING ELEVATION | = 29.0  | FT  |

PI = 320+65.00  
EL = 64.19'  
VC = 1,450'  
K = 248 (DS > 70 MPH)

**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.0641

|                       |         |     |
|-----------------------|---------|-----|
| DRAINAGE AREA         | = 48    | AC  |
| DESIGN FREQUENCY      | = 50    | YRS |
| DESIGN DISCHARGE      | = 120   | CFS |
| DESIGN HW ELEVATION   | = 26.85 | FT  |
| 100 YEAR DISCHARGE    | = 140   | CFS |
| 100 YEAR HW ELEVATION | = 27.51 | FT  |
| OVERTOPPING FREQUENCY | = 25    | YRS |
| OVERTOPPING DISCHARGE | = 110   | CFS |
| OVERTOPPING ELEVATION | = 26.66 | FT  |

|                         |                       |                     |                       |
|-------------------------|-----------------------|---------------------|-----------------------|
| PROJECT REFERENCE NO.   | R-2514D               | SHEET NO.           | 33                    |
| ROADWAY DESIGN ENGINEER | DAVID W. GARDNER, JR. | HYDRAULICS ENGINEER | DAVID W. GARDNER, JR. |
| SEAL                    | 033871                | SEAL                | 039745                |
| DATE                    | 3/24/99               | DATE                | 3/23/99               |

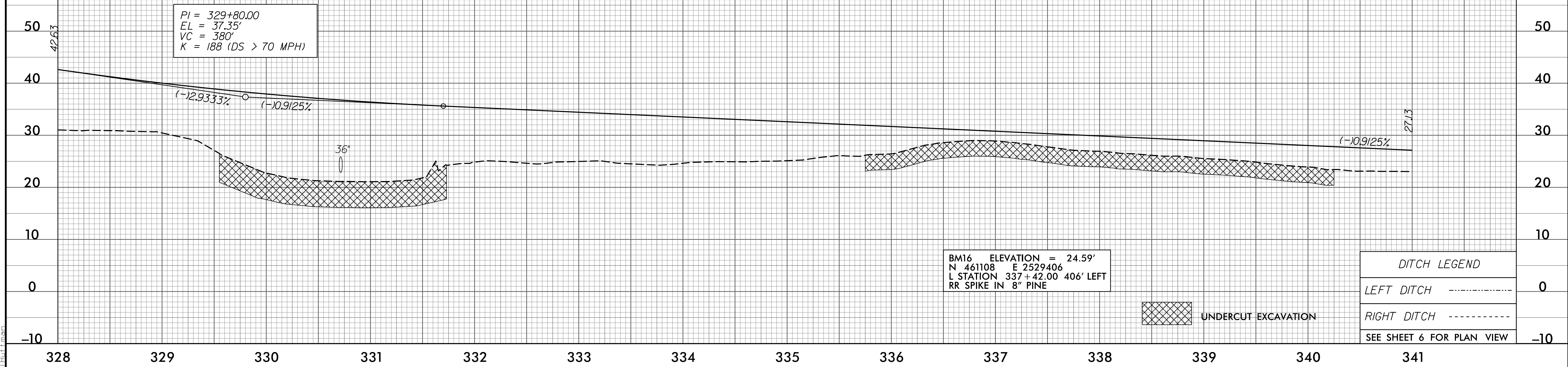


SEE SHEET 6 FOR PLAN VIEW

**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.0665

|                       |         |     |
|-----------------------|---------|-----|
| DRAINAGE AREA         | = 7     | AC  |
| DESIGN FREQUENCY      | = 50    | YRS |
| DESIGN DISCHARGE      | = 18    | CFS |
| DESIGN HW ELEVATION   | = 26.12 | FT  |
| 100 YEAR DISCHARGE    | = 19    | CFS |
| 100 YEAR HW ELEVATION | = 26.19 | FT  |
| OVERTOPPING FREQUENCY | = <2    | YRS |
| OVERTOPPING DISCHARGE | = <10   | CFS |
| OVERTOPPING ELEVATION | = 25.6  | FT  |

PI = 329+80.00  
EL = 37.35'  
VC = 380'  
K = 188 (DS > 70 MPH)



**DITCH LEGEND**

|             |       |
|-------------|-------|
| LEFT DITCH  | ----- |
| RIGHT DITCH | ----- |

SEE SHEET 6 FOR PLAN VIEW

UNDERCUT EXCAVATION

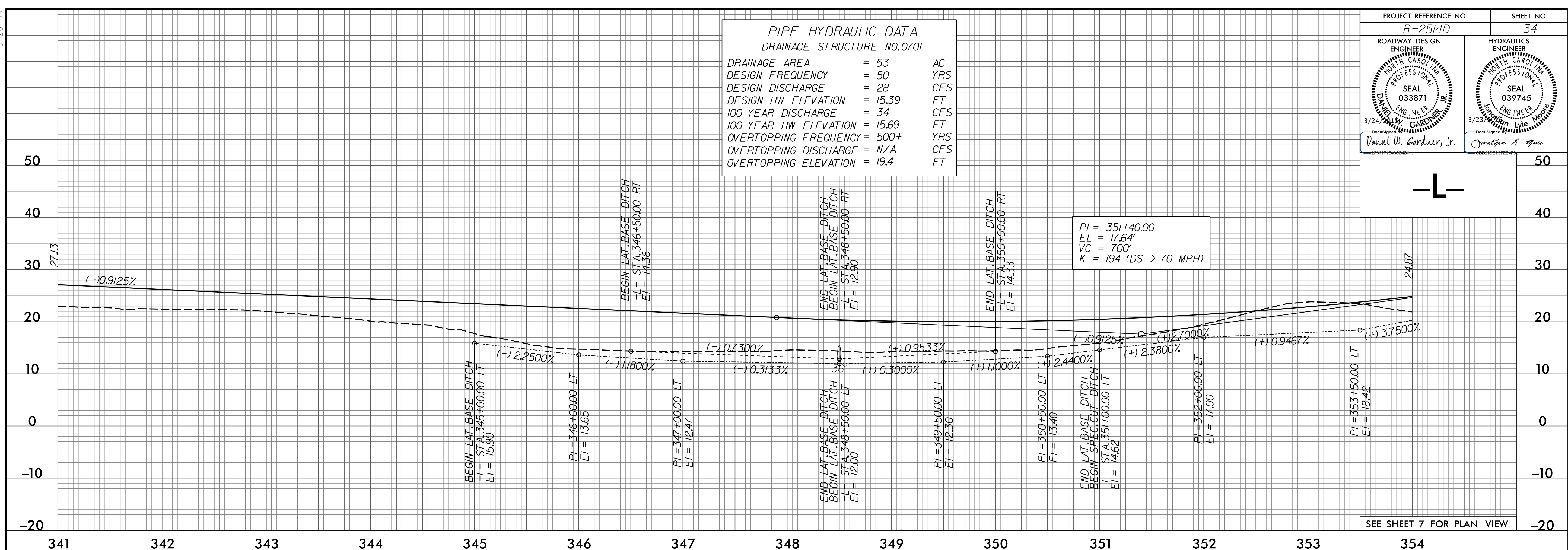
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5/28/99

|  |  |
|--|--|
| PROJECT REFERENCE NO.<br>R-2514D   | SHEET NO.<br>34  |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 033871<br>3/24/99 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 039745<br>3/23/99 |

**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.0701

DRAINAGE AREA = 53 AC  
 DESIGN FREQUENCY = 50 YRS  
 DESIGN DISCHARGE = 28 CFS  
 DESIGN HW ELEVATION = 15.39 FT  
 100 YEAR DISCHARGE = 34 CFS  
 100 YEAR HW ELEVATION = 15.69 FT  
 OVERTOPPING FREQUENCY = 500+ YRS  
 OVERTOPPING DISCHARGE = N/A CFS  
 OVERTOPPING ELEVATION = 19.4 FT



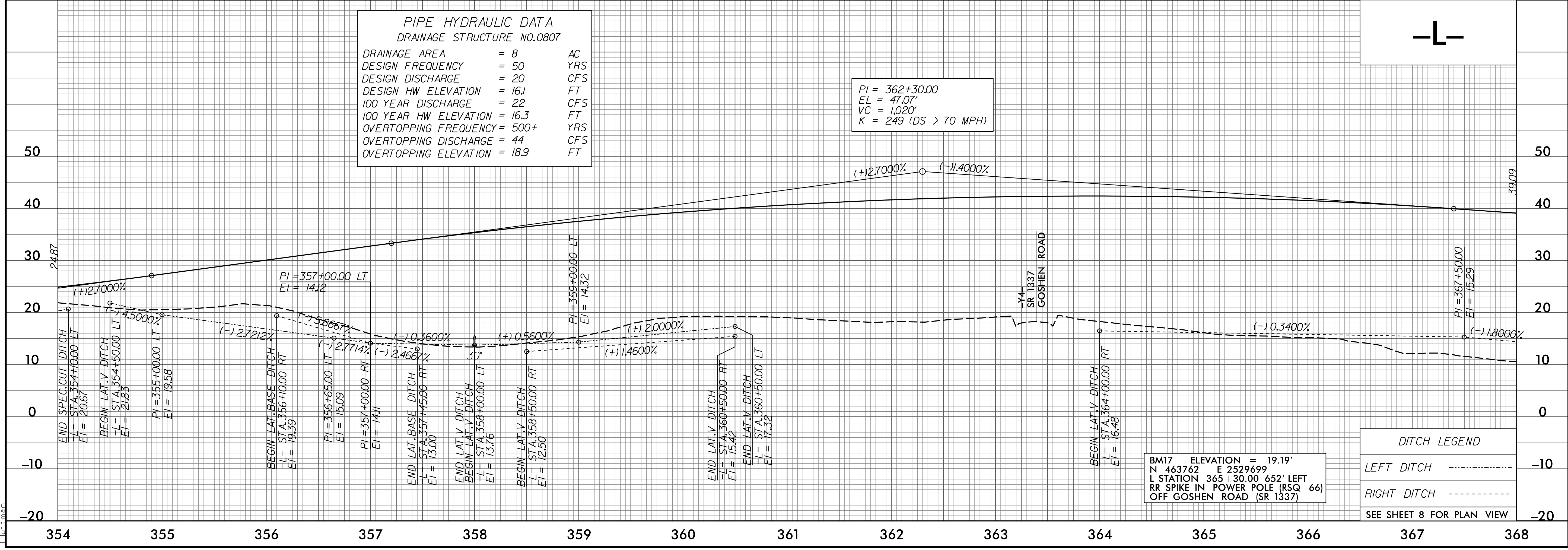
SEE SHEET 7 FOR PLAN VIEW

DITCH LEGEND  
 LEFT DITCH - - - - -  
 RIGHT DITCH - - - - -

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**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.0807

DRAINAGE AREA = 8 AC  
 DESIGN FREQUENCY = 50 YRS  
 DESIGN DISCHARGE = 20 CFS  
 DESIGN HW ELEVATION = 16.1 FT  
 100 YEAR DISCHARGE = 22 CFS  
 100 YEAR HW ELEVATION = 16.3 FT  
 OVERTOPPING FREQUENCY = 500+ YRS  
 OVERTOPPING DISCHARGE = 44 CFS  
 OVERTOPPING ELEVATION = 18.9 FT



SEE SHEET 8 FOR PLAN VIEW

DITCH LEGEND  
 LEFT DITCH - - - - -  
 RIGHT DITCH - - - - -

BM17 ELEVATION = 19.19'  
 N 463762 E 2529699  
 L STATION 365+30.00 652' LEFT  
 RR SPIKE IN POWER POLE (RSQ 66)  
 OFF GOSHEN ROAD (SR 1337)



5/28/99

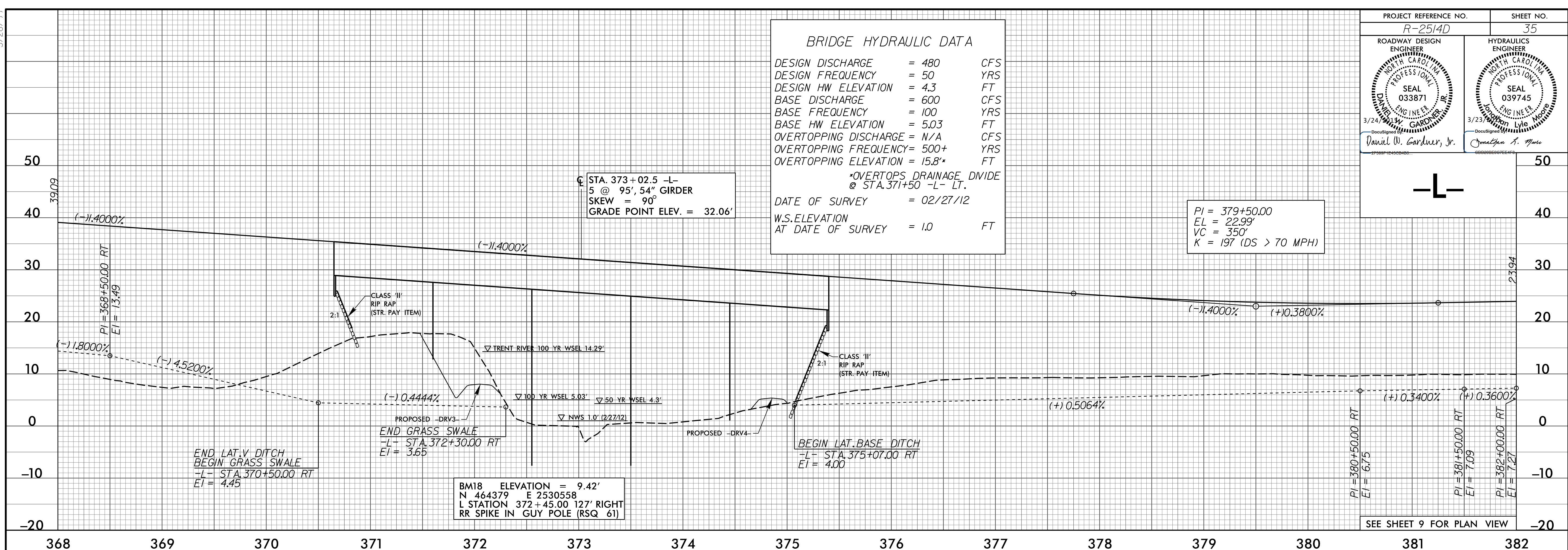
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| PROJECT REFERENCE NO.<br>R-2514D   | SHEET NO.<br>35  |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 033871<br>3/24/99 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 039745<br>3/23/99 |

**BRIDGE HYDRAULIC DATA**

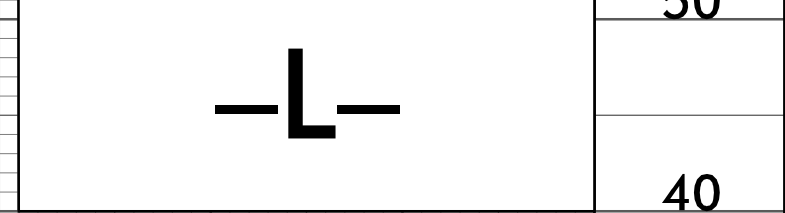
DESIGN DISCHARGE = 480 CFS  
 DESIGN FREQUENCY = 50 YRS  
 DESIGN HW ELEVATION = 4.3 FT  
 BASE DISCHARGE = 600 CFS  
 BASE FREQUENCY = 100 YRS  
 BASE HW ELEVATION = 5.03 FT  
 OVERTOPPING DISCHARGE = N/A CFS  
 OVERTOPPING FREQUENCY = 500+ YRS  
 OVERTOPPING ELEVATION = 15.8' FT

\*OVERTOPS DRAINAGE DIVIDE @ STA. 371+50 -L- LT.

DATE OF SURVEY = 02/27/12  
 W.S. ELEVATION AT DATE OF SURVEY = 1.0 FT



PI = 379+50.00  
 EL = 22.99'  
 VC = 350'  
 K = 197 (DS > 70 MPH)



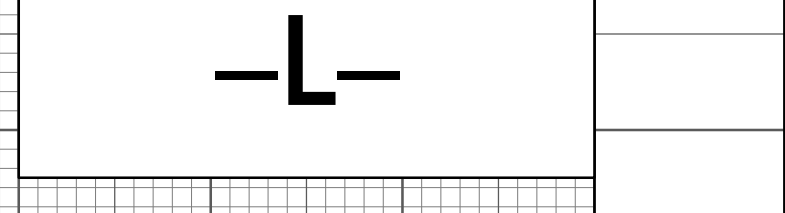
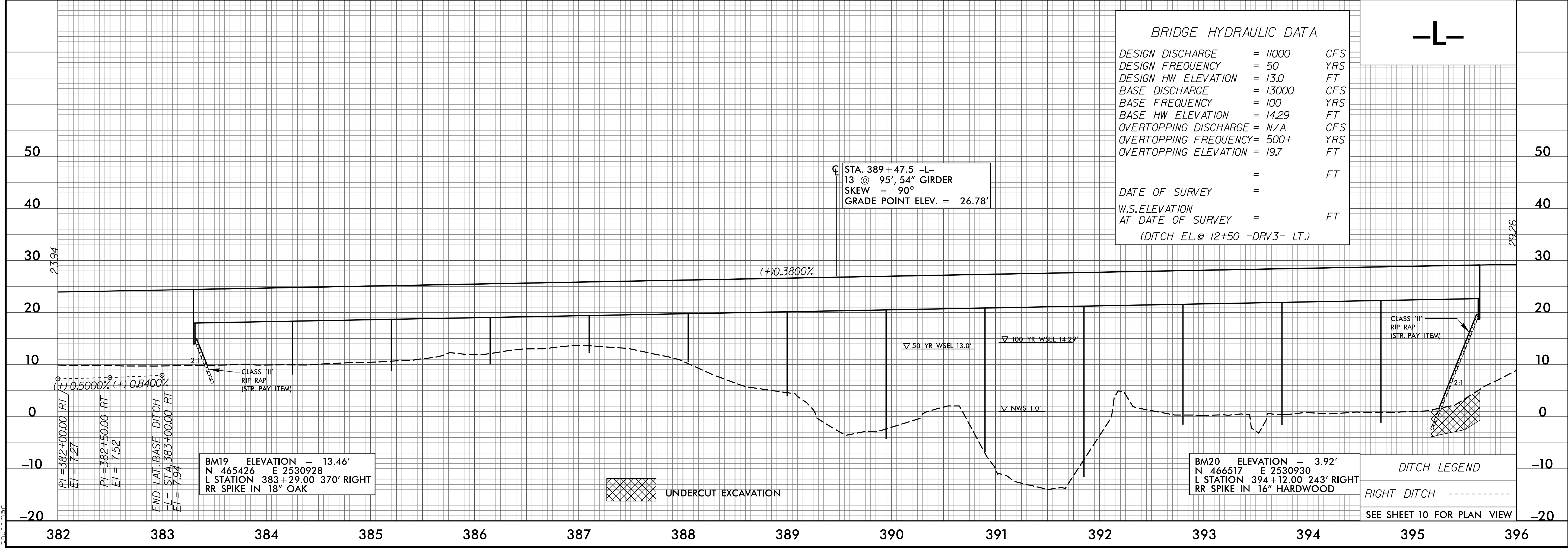
SEE SHEET 9 FOR PLAN VIEW

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 3/28/2015 10:51:01 AM  
 1:10:00 PM  
 1:10:00 PM

**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE = 11000 CFS  
 DESIGN FREQUENCY = 50 YRS  
 DESIGN HW ELEVATION = 13.0 FT  
 BASE DISCHARGE = 13000 CFS  
 BASE FREQUENCY = 100 YRS  
 BASE HW ELEVATION = 14.29 FT  
 OVERTOPPING DISCHARGE = N/A CFS  
 OVERTOPPING FREQUENCY = 500+ YRS  
 OVERTOPPING ELEVATION = 19.7 FT

DATE OF SURVEY = FT  
 W.S. ELEVATION AT DATE OF SURVEY = FT  
 (DITCH EL. @ 12+50 -DRV3- LT.)



**DITCH LEGEND**

RIGHT DITCH - - - - -

SEE SHEET 10 FOR PLAN VIEW

UNDERCUT EXCAVATION



5/28/99

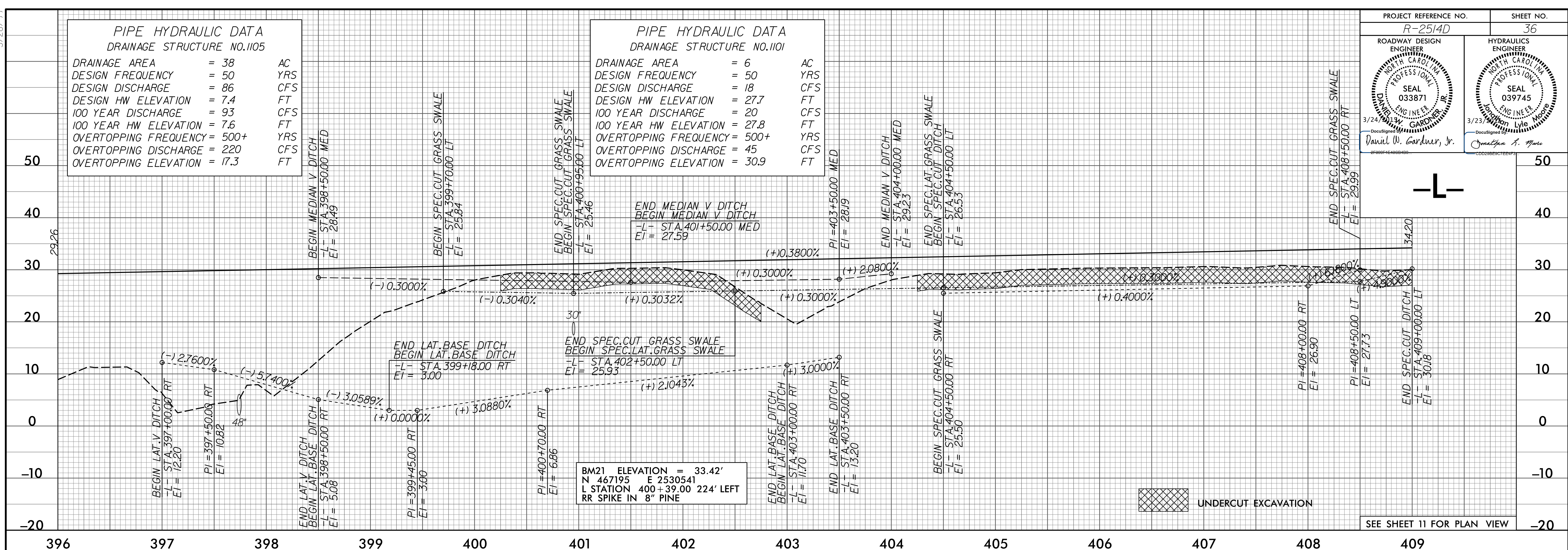
**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.1105

|                       |        |     |
|-----------------------|--------|-----|
| DRAINAGE AREA         | = 38   | AC  |
| DESIGN FREQUENCY      | = 50   | YRS |
| DESIGN DISCHARGE      | = 86   | CFS |
| DESIGN HW ELEVATION   | = 7.4  | FT  |
| 100 YEAR DISCHARGE    | = 93   | CFS |
| 100 YEAR HW ELEVATION | = 7.6  | FT  |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING DISCHARGE | = 220  | CFS |
| OVERTOPPING ELEVATION | = 17.3 | FT  |

**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.1101

|                       |        |     |
|-----------------------|--------|-----|
| DRAINAGE AREA         | = 6    | AC  |
| DESIGN FREQUENCY      | = 50   | YRS |
| DESIGN DISCHARGE      | = 18   | CFS |
| DESIGN HW ELEVATION   | = 27.7 | FT  |
| 100 YEAR DISCHARGE    | = 20   | CFS |
| 100 YEAR HW ELEVATION | = 27.8 | FT  |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING DISCHARGE | = 45   | CFS |
| OVERTOPPING ELEVATION | = 30.9 | FT  |

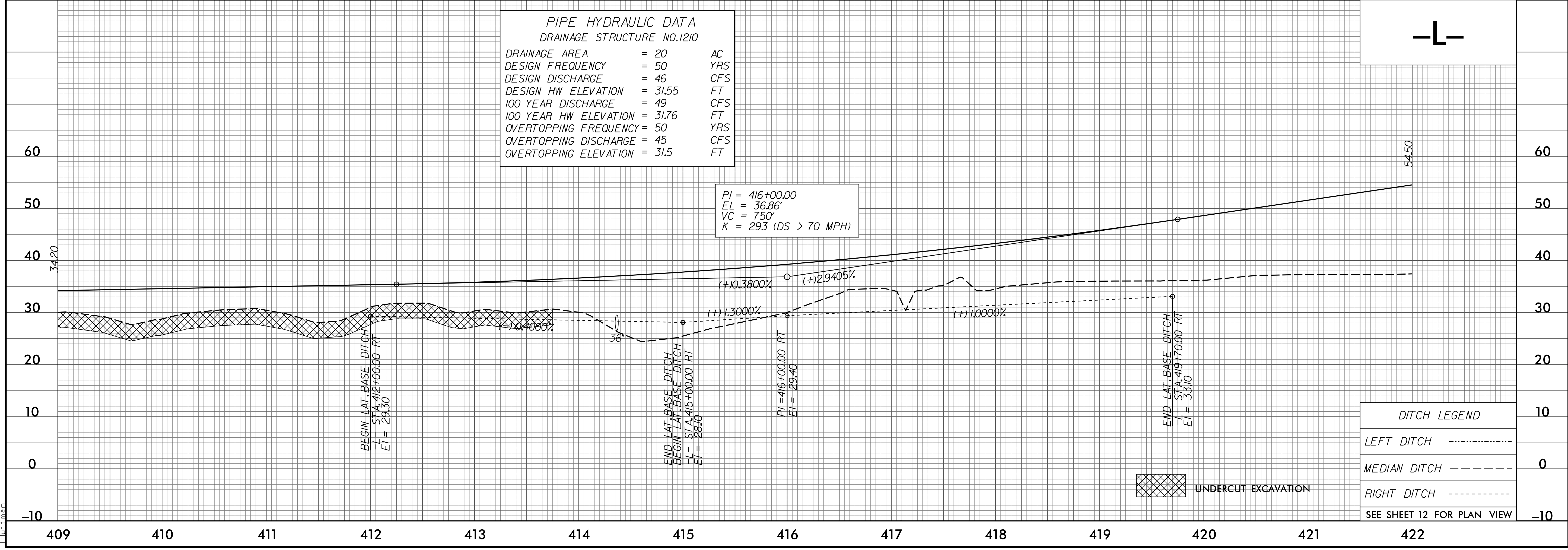
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| PROJECT REFERENCE NO.   | R-2514D                | SHEET NO.           | 36             |
| ROADWAY DESIGN ENGINEER | DANIEL W. GARDNER, JR. | HYDRAULICS ENGINEER | DAVID L. MOORE |
| SEAL                    | 033871                 | SEAL                | 039745         |
| DATE                    | 3/24/99                | DATE                | 3/23/99        |



**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.1210

|                       |         |     |
|-----------------------|---------|-----|
| DRAINAGE AREA         | = 20    | AC  |
| DESIGN FREQUENCY      | = 50    | YRS |
| DESIGN DISCHARGE      | = 46    | CFS |
| DESIGN HW ELEVATION   | = 31.55 | FT  |
| 100 YEAR DISCHARGE    | = 49    | CFS |
| 100 YEAR HW ELEVATION | = 31.76 | FT  |
| OVERTOPPING FREQUENCY | = 50    | YRS |
| OVERTOPPING DISCHARGE | = 45    | CFS |
| OVERTOPPING ELEVATION | = 31.5  | FT  |

PI = 416+00.00  
EL = 36.86'  
VC = 750'  
K = 293 (DS > 70 MPH)



**DITCH LEGEND**

|              |       |    |
|--------------|-------|----|
| LEFT DITCH   | ----- | 10 |
| MEDIAN DITCH | ----- | 0  |
| RIGHT DITCH  | ----- | 10 |

SEE SHEET 12 FOR PLAN VIEW

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 11/11/99 10:52 AM

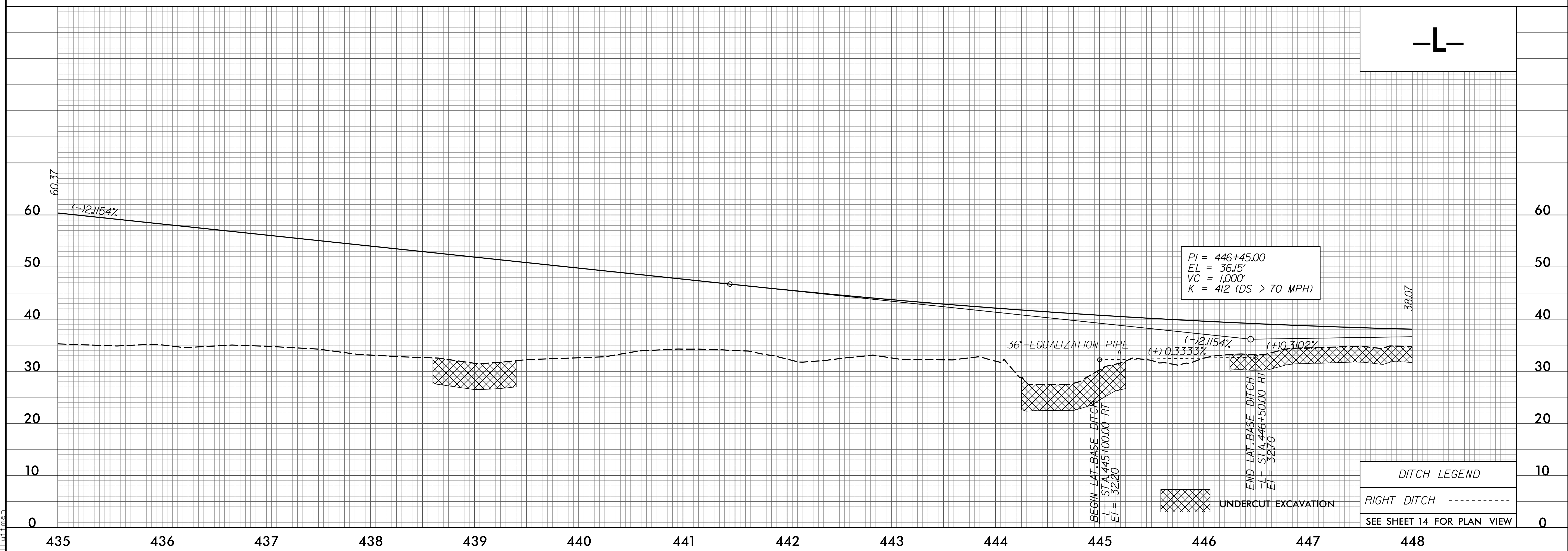
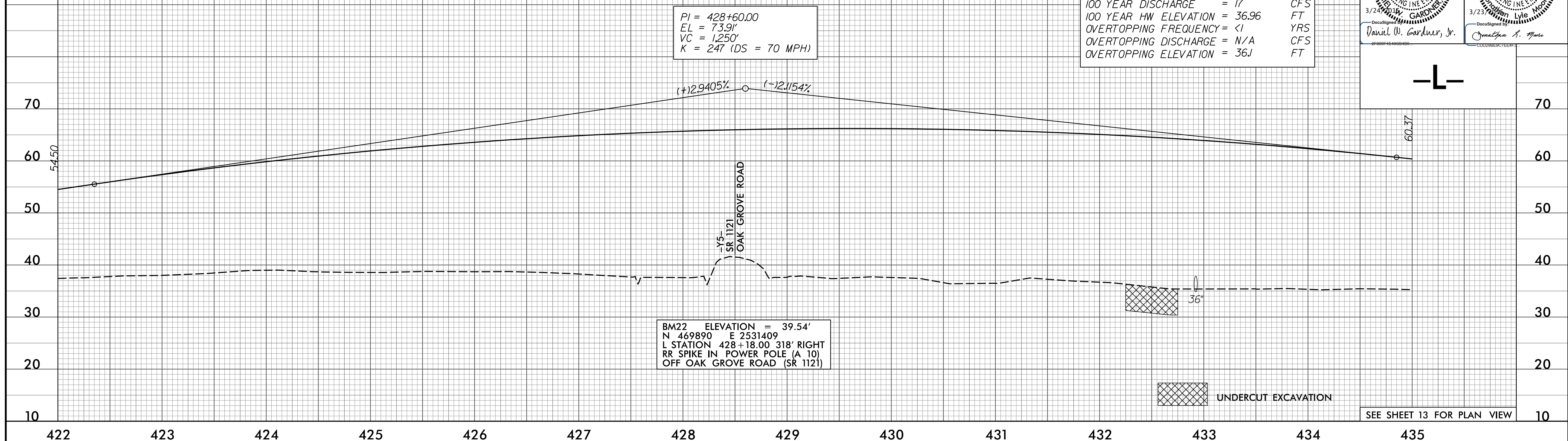


5/28/99

|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>37   |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>033871<br>3/23/99<br>NORTH CAROLINA PROFESSIONAL ENGINEER | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>039745<br>3/23/99<br>NORTH CAROLINA PROFESSIONAL ENGINEER |

**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.1305

DRAINAGE AREA = 8 AC  
 DESIGN FREQUENCY = 50 YRS  
 DESIGN DISCHARGE = 16 CFS  
 DESIGN HW ELEVATION = 36.87 FT  
 100 YEAR DISCHARGE = 17 CFS  
 100 YEAR HW ELEVATION = 36.96 FT  
 OVERTOPPING FREQUENCY = <1 YRS  
 OVERTOPPING DISCHARGE = N/A CFS  
 OVERTOPPING ELEVATION = 36J FT



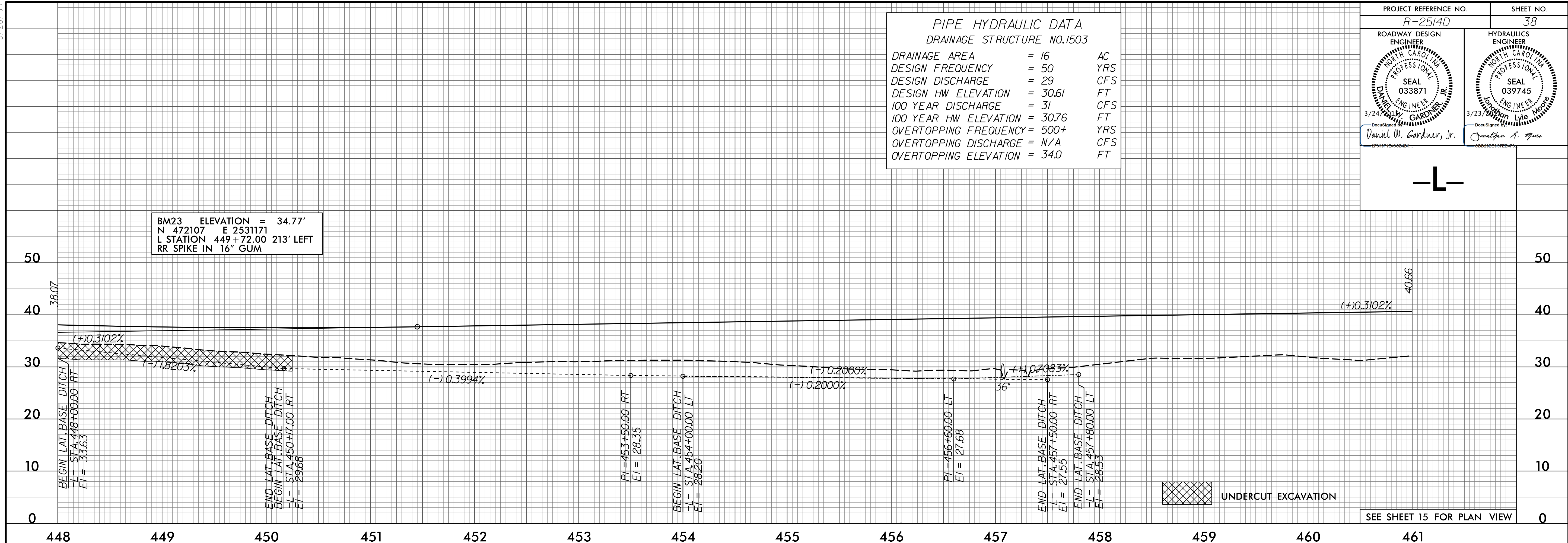
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5/28/99

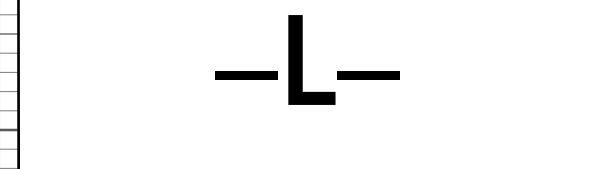
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| PROJECT REFERENCE NO.<br>R-2514D   | SHEET NO.<br>38  |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 033871<br>3/24/99 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 039745<br>3/23/99 |

| PIPE HYDRAULIC DATA<br>DRAINAGE STRUCTURE NO.1503 |         |     |
|---|---------|-----|
| DRAINAGE AREA                                     | = 16    | AC  |
| DESIGN FREQUENCY                                  | = 50    | YRS |
| DESIGN DISCHARGE                                  | = 29    | CFS |
| DESIGN HW ELEVATION                               | = 30.61 | FT  |
| 100 YEAR DISCHARGE                                | = 31    | CFS |
| 100 YEAR HW ELEVATION                             | = 30.76 | FT  |
| OVERTOPPING FREQUENCY                             | = 500+  | YRS |
| OVERTOPPING DISCHARGE                             | = N/A   | CFS |
| OVERTOPPING ELEVATION                             | = 34.0  | FT  |

BM23 ELEVATION = 34.77'  
N 472107 E 2531171  
L STATION 449+72.00 213' LEFT  
RR SPIKE IN 16" GUM

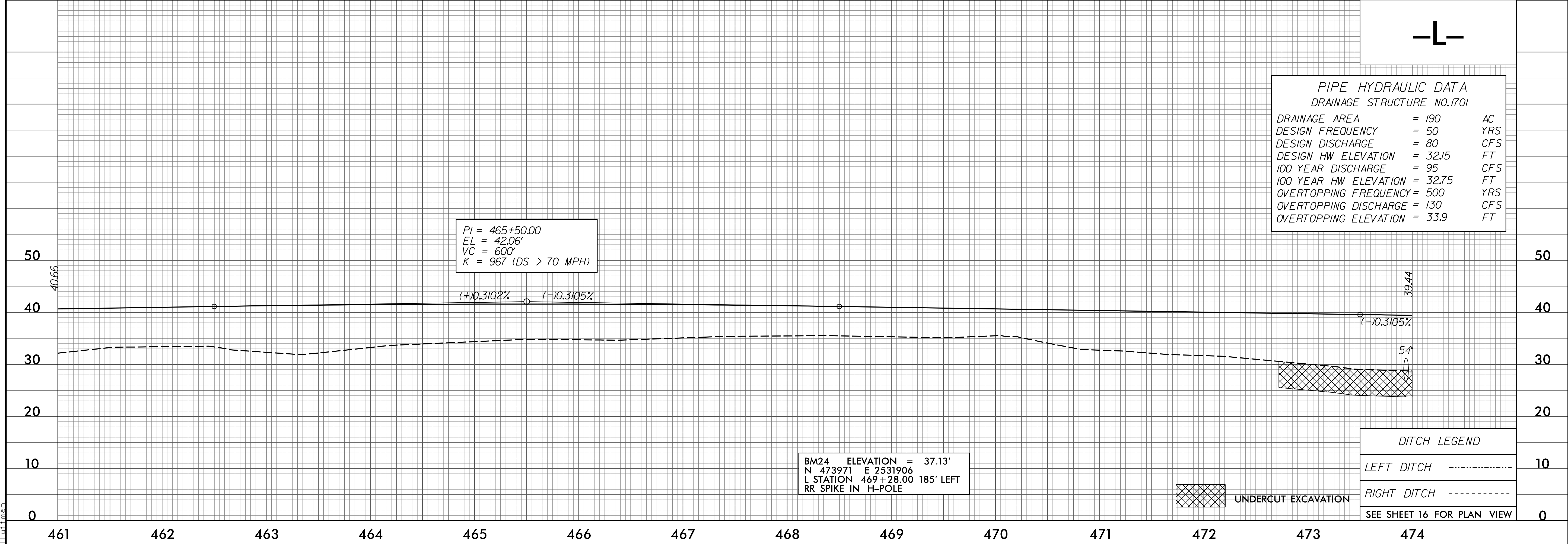


SEE SHEET 15 FOR PLAN VIEW



| PIPE HYDRAULIC DATA<br>DRAINAGE STRUCTURE NO.1701 |         |     |
|---|---------|-----|
| DRAINAGE AREA                                     | = 190   | AC  |
| DESIGN FREQUENCY                                  | = 50    | YRS |
| DESIGN DISCHARGE                                  | = 80    | CFS |
| DESIGN HW ELEVATION                               | = 32.15 | FT  |
| 100 YEAR DISCHARGE                                | = 95    | CFS |
| 100 YEAR HW ELEVATION                             | = 32.75 | FT  |
| OVERTOPPING FREQUENCY                             | = 500   | YRS |
| OVERTOPPING DISCHARGE                             | = 130   | CFS |
| OVERTOPPING ELEVATION                             | = 33.9  | FT  |

PI = 465+50.00  
EL = 42.06'  
VC = 600'  
K = 967 (DS > 70 MPH)



| DITCH LEGEND |       |
|--------------|-------|
| LEFT DITCH   | ----- |
| RIGHT DITCH  | ----- |

SEE SHEET 16 FOR PLAN VIEW

SEE SHEET 16 FOR PLAN VIEW



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5/28/99

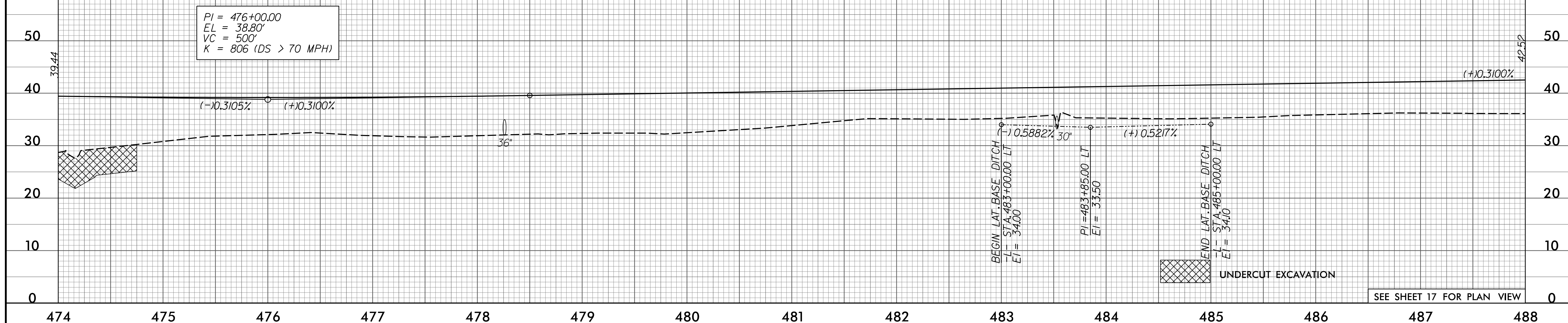
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| PROJECT REFERENCE NO.<br>R-2514D   | SHEET NO.<br>39  |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 033871<br>3/24/99 | HYDRAULICS<br>ENGINEER<br>WILLIAM LYLE MOORE<br>SEAL 039745<br>3/23/99 |

PIPE HYDRAULIC DATA  
DRAINAGE STRUCTURE NO.1704

|                       |         |     |
|-----------------------|---------|-----|
| DRAINAGE AREA         | = 14    | AC  |
| DESIGN FREQUENCY      | = 50    | YRS |
| DESIGN DISCHARGE      | = 27    | CFS |
| DESIGN HW ELEVATION   | = 35.33 | FT  |
| 100 YEAR DISCHARGE    | = 29    | CFS |
| 100 YEAR HW ELEVATION | = 35.42 | FT  |
| OVERTOPPING FREQUENCY | = 10    | YRS |
| OVERTOPPING DISCHARGE | = 22    | CFS |
| OVERTOPPING ELEVATION | = 35.0  | FT  |

PIPE HYDRAULIC DATA  
DRAINAGE STRUCTURE NO.1706

|                       |         |     |
|-----------------------|---------|-----|
| DRAINAGE AREA         | = 8     | AC  |
| DESIGN FREQUENCY      | = 50    | YRS |
| DESIGN DISCHARGE      | = 16    | CFS |
| DESIGN HW ELEVATION   | = 35.50 | FT  |
| 100 YEAR DISCHARGE    | = 17    | CFS |
| 100 YEAR HW ELEVATION | = 35.58 | FT  |
| OVERTOPPING FREQUENCY | = 500+  | YRS |
| OVERTOPPING DISCHARGE | = 23    | CFS |
| OVERTOPPING ELEVATION | = 36J   | FT  |

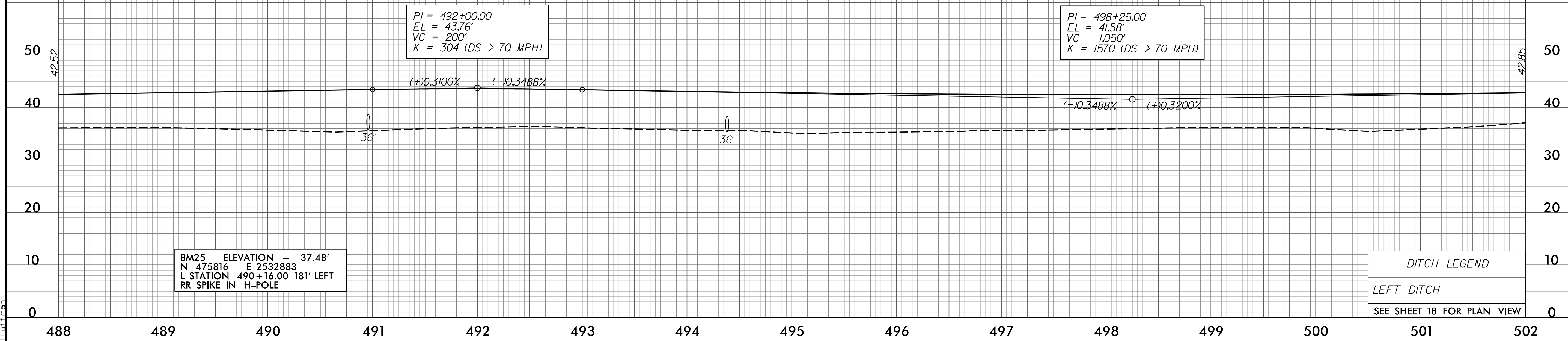


PIPE HYDRAULIC DATA  
DRAINAGE STRUCTURE NO.1801

|                       |        |     |
|-----------------------|--------|-----|
| DRAINAGE AREA         | = 4    | AC  |
| DESIGN FREQUENCY      | = 50   | YRS |
| DESIGN DISCHARGE      | = 8.5  | CFS |
| DESIGN HW ELEVATION   | = 37.2 | FT  |
| 100 YEAR DISCHARGE    | = 9    | CFS |
| 100 YEAR HW ELEVATION | = 37.2 | FT  |
| OVERTOPPING FREQUENCY | = N/A  | YRS |
| OVERTOPPING DISCHARGE | = N/A  | CFS |
| OVERTOPPING ELEVATION | = 36.2 | FT  |

PIPE HYDRAULIC DATA  
DRAINAGE STRUCTURE NO.1803

|                       |         |     |
|-----------------------|---------|-----|
| DRAINAGE AREA         | = 8     | AC  |
| DESIGN FREQUENCY      | = 50    | YRS |
| DESIGN DISCHARGE      | = 18    | CFS |
| DESIGN HW ELEVATION   | = 37.29 | FT  |
| 100 YEAR DISCHARGE    | = 19    | CFS |
| 100 YEAR HW ELEVATION | = 37.35 | FT  |
| OVERTOPPING FREQUENCY | = N/A   | YRS |
| OVERTOPPING DISCHARGE | = N/A   | CFS |
| OVERTOPPING ELEVATION | = 36.2  | FT  |

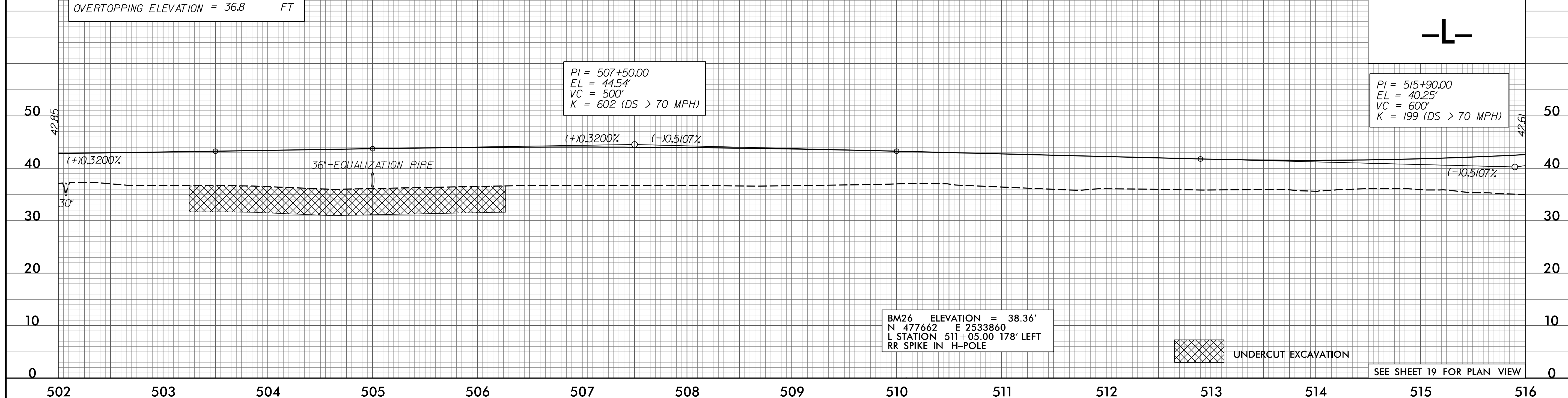


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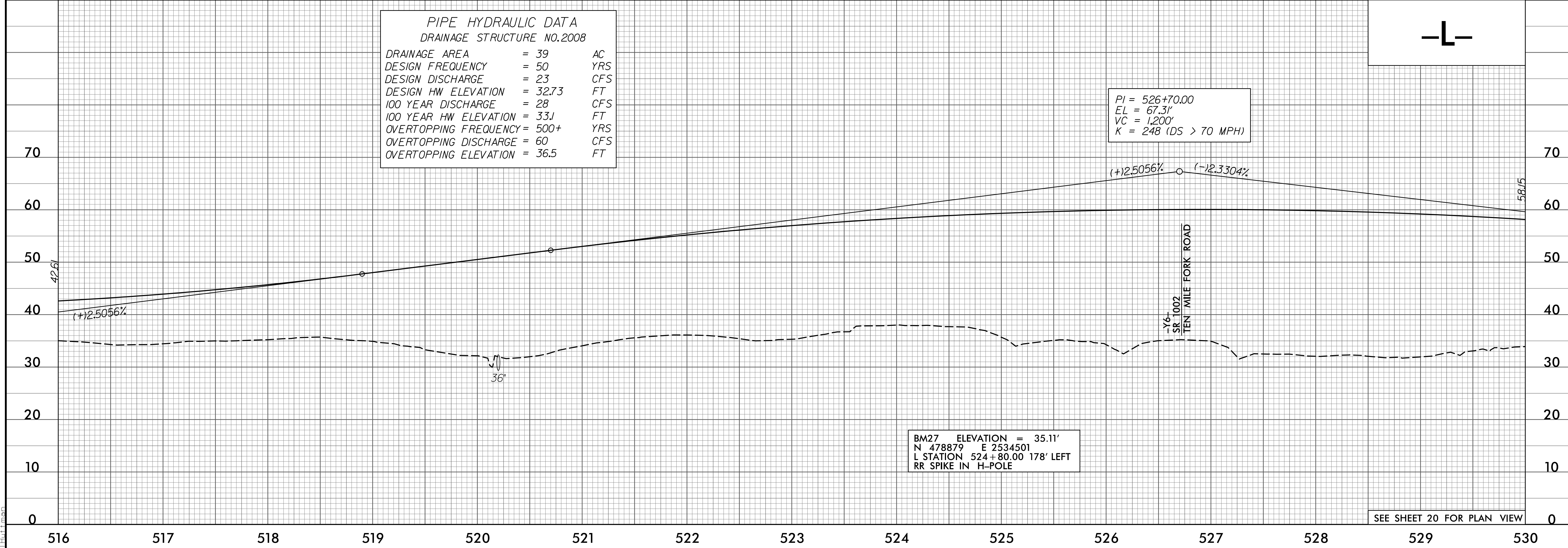
5/28/99

| PIPE HYDRAULIC DATA<br>DRAINAGE STRUCTURE NO.1807 |         |     |
|---|---------|-----|
| DRAINAGE AREA                                     | = 9     | AC  |
| DESIGN FREQUENCY                                  | = 50    | YRS |
| DESIGN DISCHARGE                                  | = 20    | CFS |
| DESIGN HW ELEVATION                               | = 37.33 | FT  |
| 100 YEAR DISCHARGE                                | = 22    | CFS |
| 100 YEAR HW ELEVATION                             | = 37.51 | FT  |
| OVERTOPPING FREQUENCY                             | = 2     | YRS |
| OVERTOPPING DISCHARGE                             | = 13    | CFS |
| OVERTOPPING ELEVATION                             | = 36.8  | FT  |

|  |  |
|--|--|
| PROJECT REFERENCE NO.<br>R-2514D   | SHEET NO.<br>40  |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 033871<br>3/24/2015 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 039745<br>3/23/2015 |



| PIPE HYDRAULIC DATA<br>DRAINAGE STRUCTURE NO.2008 |         |     |
|---|---------|-----|
| DRAINAGE AREA                                     | = 39    | AC  |
| DESIGN FREQUENCY                                  | = 50    | YRS |
| DESIGN DISCHARGE                                  | = 23    | CFS |
| DESIGN HW ELEVATION                               | = 32.73 | FT  |
| 100 YEAR DISCHARGE                                | = 28    | CFS |
| 100 YEAR HW ELEVATION                             | = 33.1  | FT  |
| OVERTOPPING FREQUENCY                             | = 500+  | YRS |
| OVERTOPPING DISCHARGE                             | = 60    | CFS |
| OVERTOPPING ELEVATION                             | = 36.5  | FT  |



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5/28/99

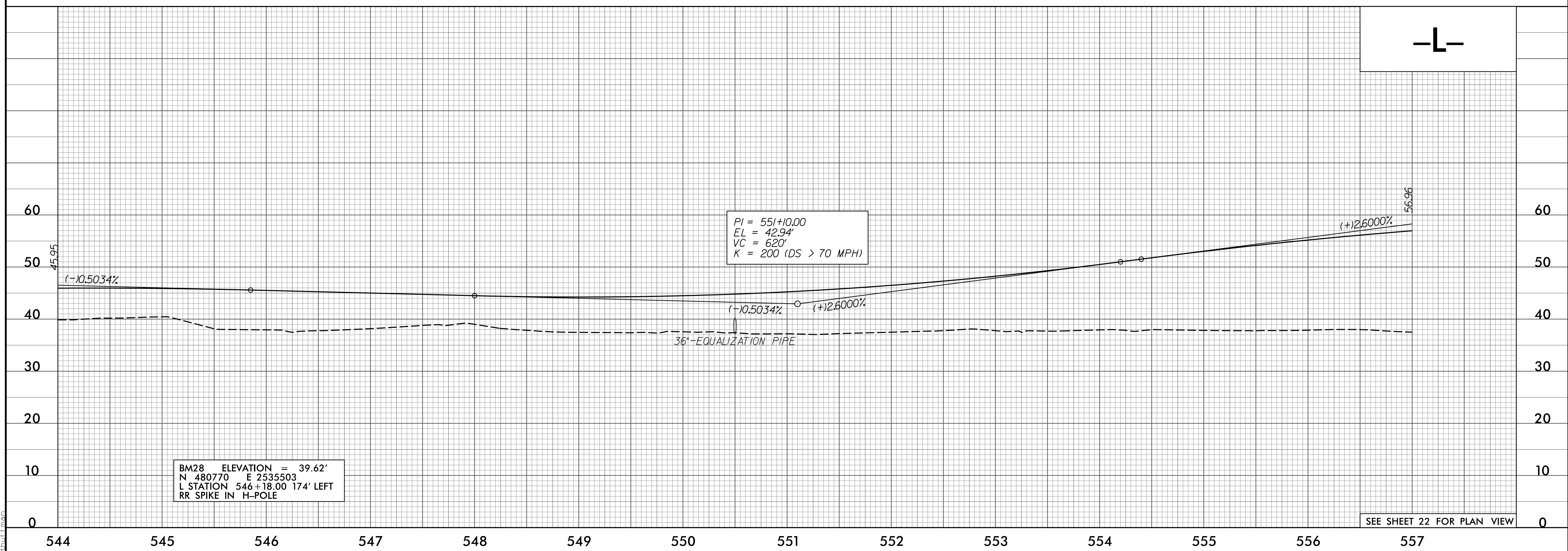
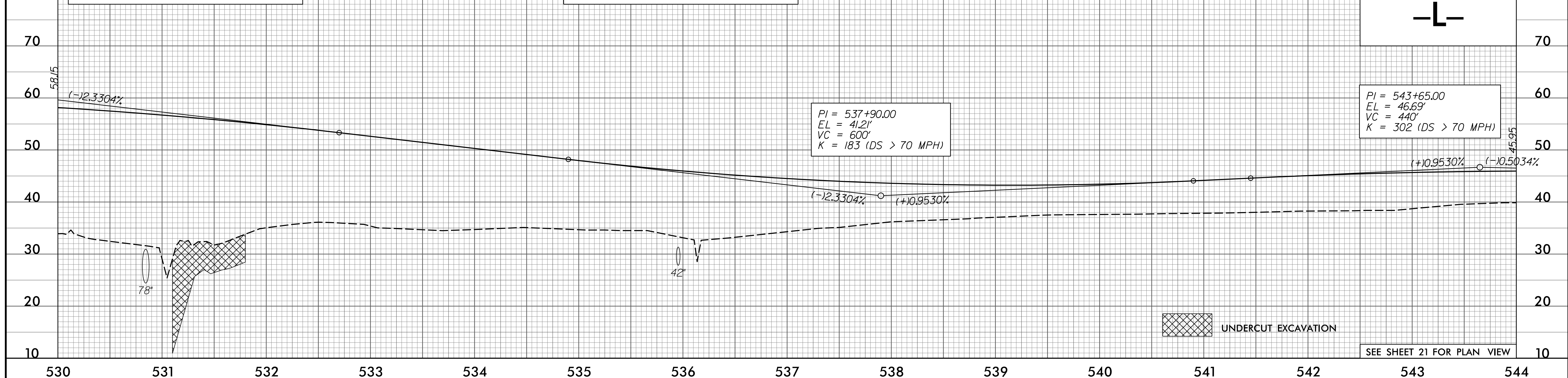
PIPE HYDRAULIC DATA  
DRAINAGE STRUCTURE NO.2101

|                       |         |     |
|-----------------------|---------|-----|
| DRAINAGE AREA         | = 550   | AC  |
| DESIGN FREQUENCY      | = 50    | YRS |
| DESIGN DISCHARGE      | = 190   | CFS |
| DESIGN HW ELEVATION   | = 32.39 | FT  |
| 100 YEAR DISCHARGE    | = 230   | CFS |
| 100 YEAR HW ELEVATION | = 33.04 | FT  |
| OVERTOPPING FREQUENCY | = 200   | YRS |
| OVERTOPPING DISCHARGE | = 290   | CFS |
| OVERTOPPING ELEVATION | = 34.0  | FT  |

PIPE HYDRAULIC DATA  
DRAINAGE STRUCTURE NO.2102

|                       |         |     |
|-----------------------|---------|-----|
| DRAINAGE AREA         | = 56    | AC  |
| DESIGN FREQUENCY      | = 50    | YRS |
| DESIGN DISCHARGE      | = 27    | CFS |
| DESIGN HW ELEVATION   | = 32.0  | FT  |
| 100 YEAR DISCHARGE    | = 33    | CFS |
| 100 YEAR HW ELEVATION | = 32.26 | FT  |
| OVERTOPPING FREQUENCY | = 500+  | YRS |
| OVERTOPPING DISCHARGE | = N/A   | CFS |
| OVERTOPPING ELEVATION | = 36J   | FT  |

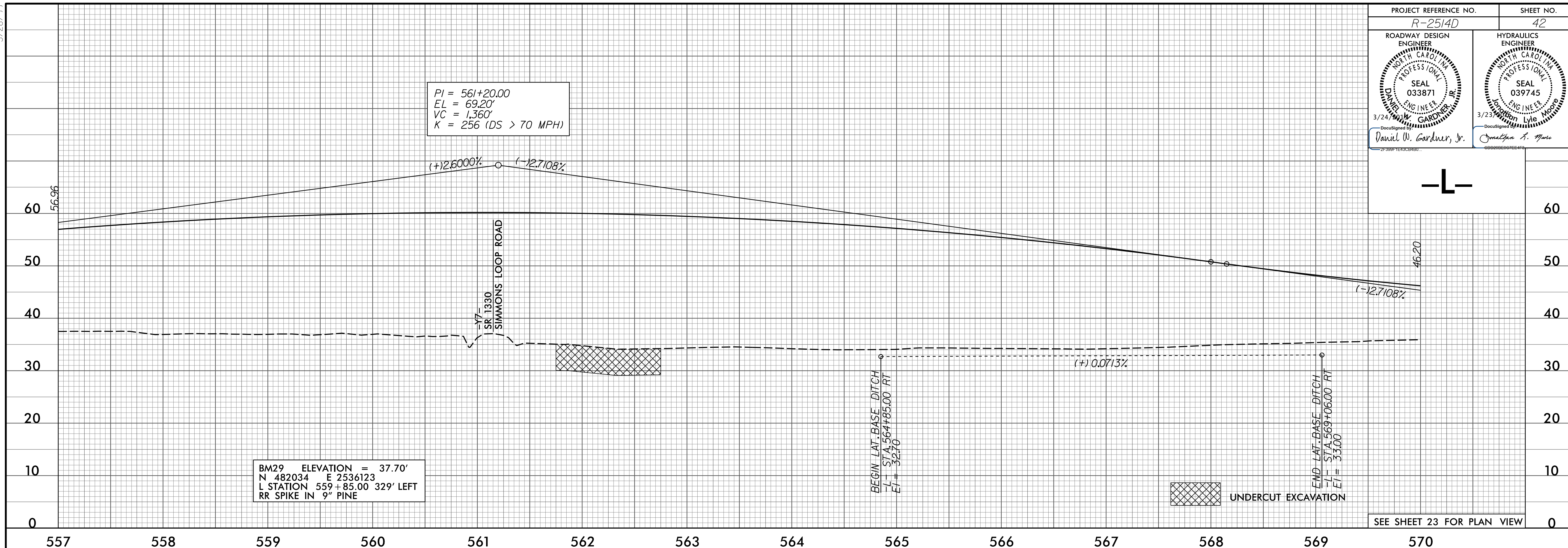
|                         |         |                     |    |
|-------------------------|---------|---------------------|----|
| PROJECT REFERENCE NO.   | R-2514D | SHEET NO.           | 41 |
| ROADWAY DESIGN ENGINEER |         | HYDRAULICS ENGINEER |    |
| Daniel W. Gardner, Jr.  |         | Jonathan Lyle Moore |    |



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5/28/99

|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>42   |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>033871<br>3/24/99 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>039745<br>3/23/99 |



BM29 ELEVATION = 37.70'  
 N 482034 E 2536123  
 L STATION 559+85.00 329' LEFT  
 RR SPIKE IN 9" PINE

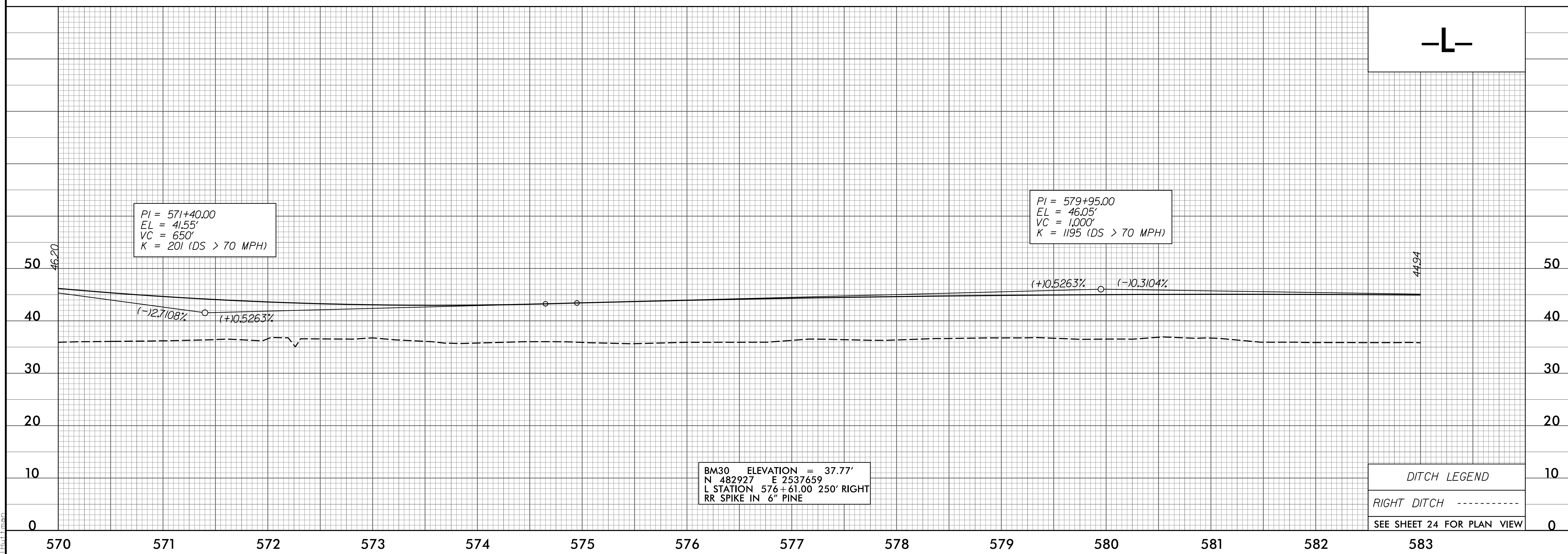
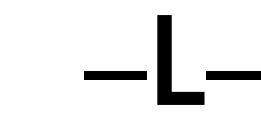
PI = 561+20.00  
 EL = 69.20'  
 VC = 1,360'  
 K = 256 (DS > 70 MPH)

BEGIN LAT-BASE DITCH  
 L STATION 564+85.00 RT  
 ELEV = 32.70

END LAT-BASE DITCH  
 L STATION 569+06.00 RT  
 ELEV = 33.00

UNDERCUT EXCAVATION

SEE SHEET 23 FOR PLAN VIEW



PI = 571+40.00  
 EL = 41.55'  
 VC = 650'  
 K = 201 (DS > 70 MPH)

PI = 579+95.00  
 EL = 46.05'  
 VC = 1,000'  
 K = 1195 (DS > 70 MPH)

BM30 ELEVATION = 37.77'  
 N 482927 E 2537659  
 L STATION 576+61.00 250' RIGHT  
 RR SPIKE IN 6" PINE

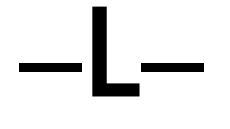
DITCH LEGEND  
 RIGHT DITCH - - - - -  
 SEE SHEET 24 FOR PLAN VIEW

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 3/24/99 10:00 AM  
 Daniel W. Gardner, Jr.

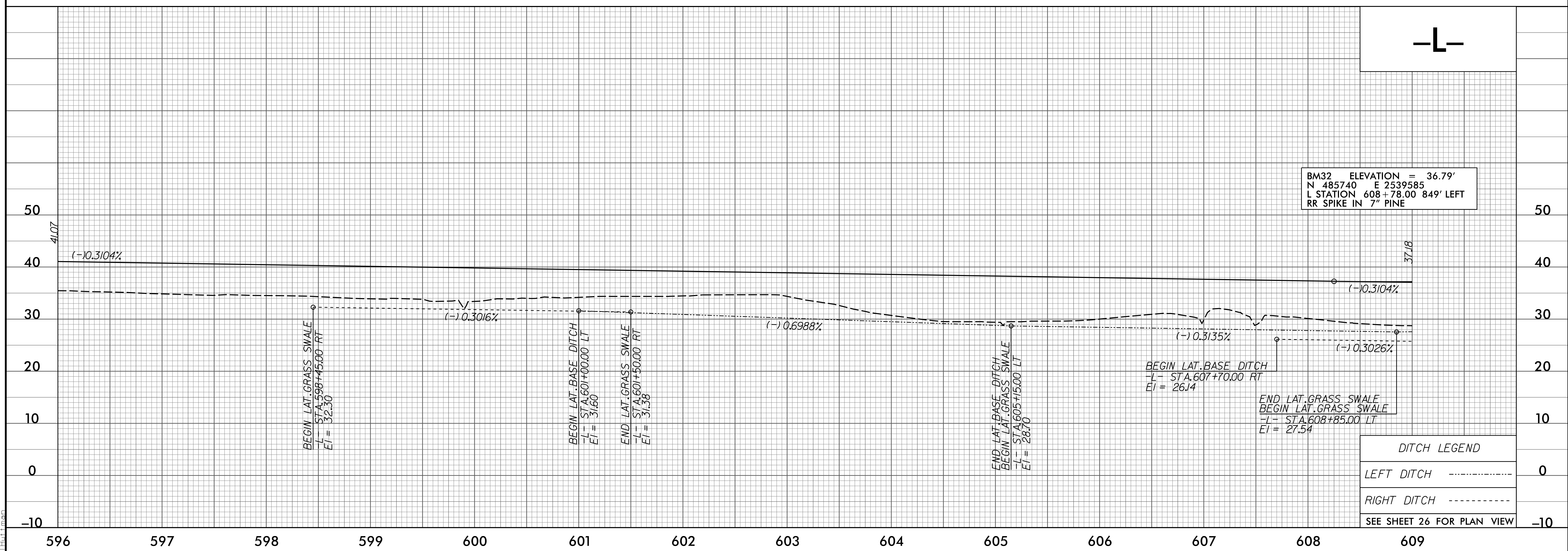


5/28/99

|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>43   |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>033871<br>3/24/99 | HYDRAULICS<br>ENGINEER<br>Lyle Moore<br>SEAL<br>039745<br>3/23/99 |



SEE SHEET 25 FOR PLAN VIEW

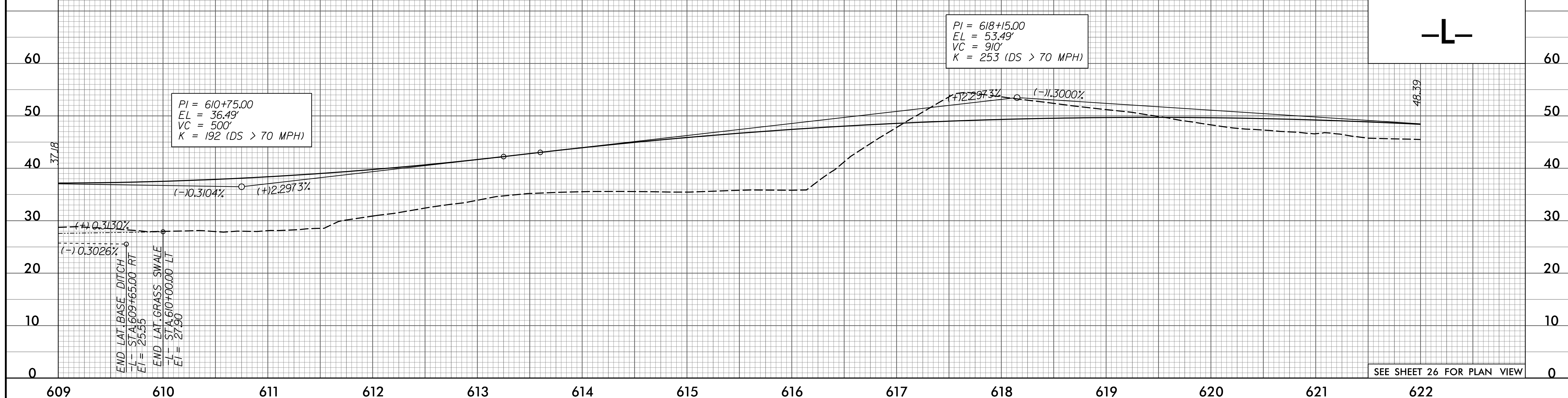


| DITCH LEGEND               |       |
|----------------------------|-------|
| LEFT DITCH                 | ----- |
| RIGHT DITCH                | ----- |
| SEE SHEET 26 FOR PLAN VIEW |       |

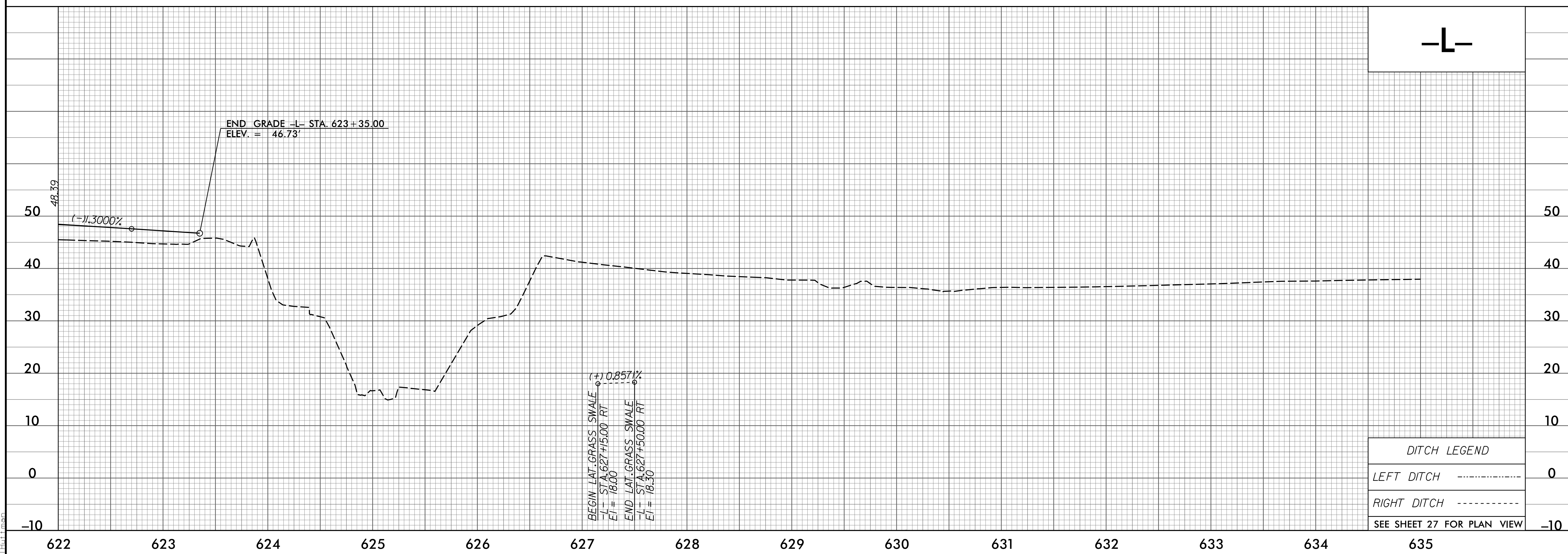
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5/28/99

|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>44   |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>033871<br>3/24/99 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>039745<br>3/23/99 |



SEE SHEET 26 FOR PLAN VIEW



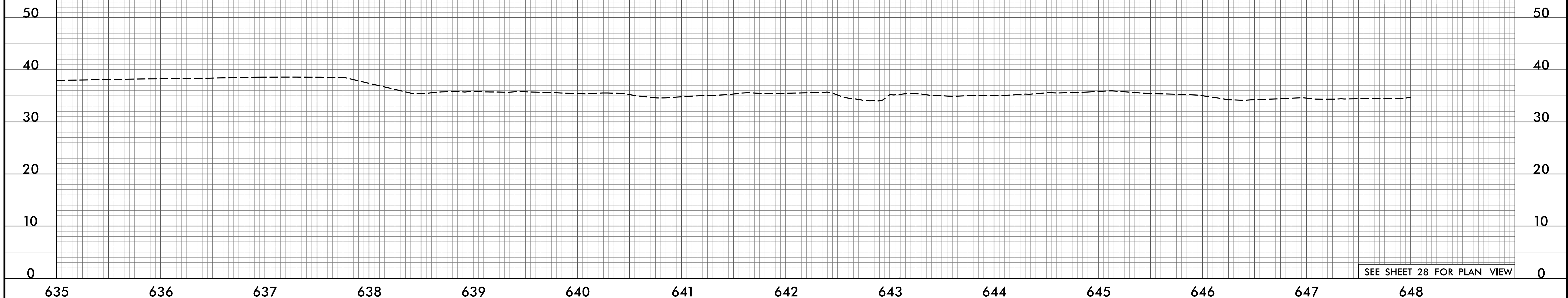
|                            |       |
|----------------------------|-------|
| DITCH LEGEND               |       |
| LEFT DITCH                 | ----- |
| RIGHT DITCH                | ----- |
| SEE SHEET 27 FOR PLAN VIEW |       |

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|   |  |
|---|--|
| PROJECT REFERENCE NO.<br><i>R-2514D</i>   | SHEET NO.<br><i>45</i>   |
| ROADWAY DESIGN<br>ENGINEER<br>NORTH CAROLINA<br>PROFESSIONAL<br>SEAL<br>033871<br>3/24/2015<br>Daniel W. Gardner, Jr. | HYDRAULICS<br>ENGINEER<br>NORTH CAROLINA<br>PROFESSIONAL<br>SEAL<br>039745<br>3/23/2015<br>Jonathan A. Moore |



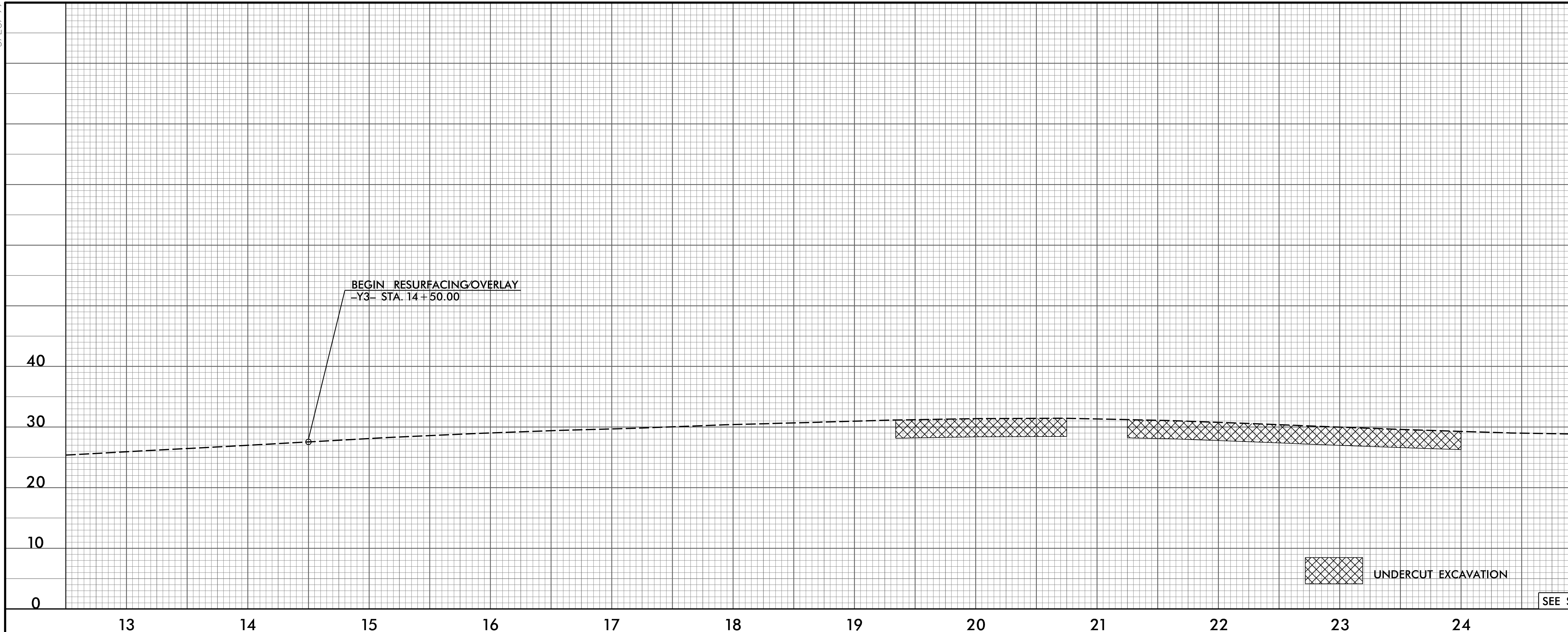
SEE SHEET 28 FOR PLAN VIEW

3/15/2015  
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Thurman

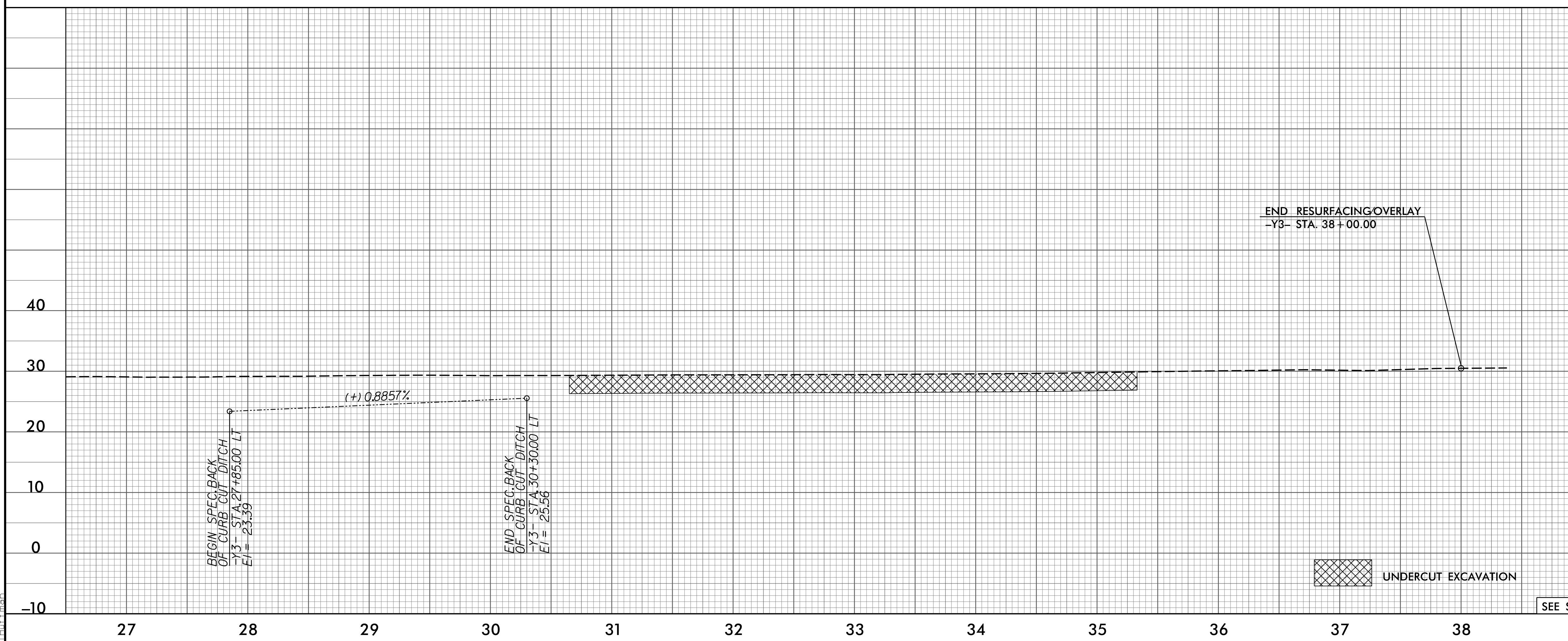
5/28/99

|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>46   |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>NORTH CAROLINA PROFESSIONAL SEAL<br>033871<br>3/24/99 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>NORTH CAROLINA PROFESSIONAL SEAL<br>039745<br>3/23/99 |

-Y3-



-Y3-



|              |       |
|--------------|-------|
| DITCH LEGEND |       |
| LEFT DITCH   | ----- |

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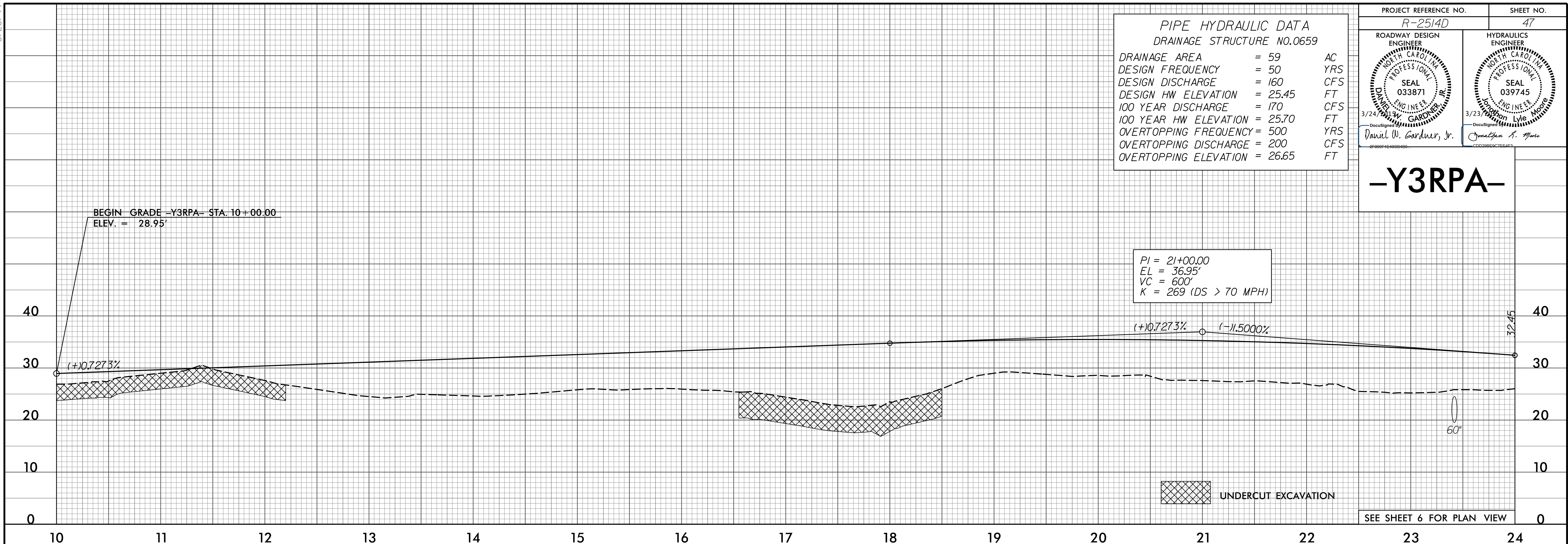
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**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.0659

|                       |         |     |
|-----------------------|---------|-----|
| DRAINAGE AREA         | = 59    | AC  |
| DESIGN FREQUENCY      | = 50    | YRS |
| DESIGN DISCHARGE      | = 160   | CFS |
| DESIGN HW ELEVATION   | = 25.45 | FT  |
| 100 YEAR DISCHARGE    | = 170   | CFS |
| 100 YEAR HW ELEVATION | = 25.70 | FT  |
| OVERTOPPING FREQUENCY | = 500   | YRS |
| OVERTOPPING DISCHARGE | = 200   | CFS |
| OVERTOPPING ELEVATION | = 26.65 | FT  |

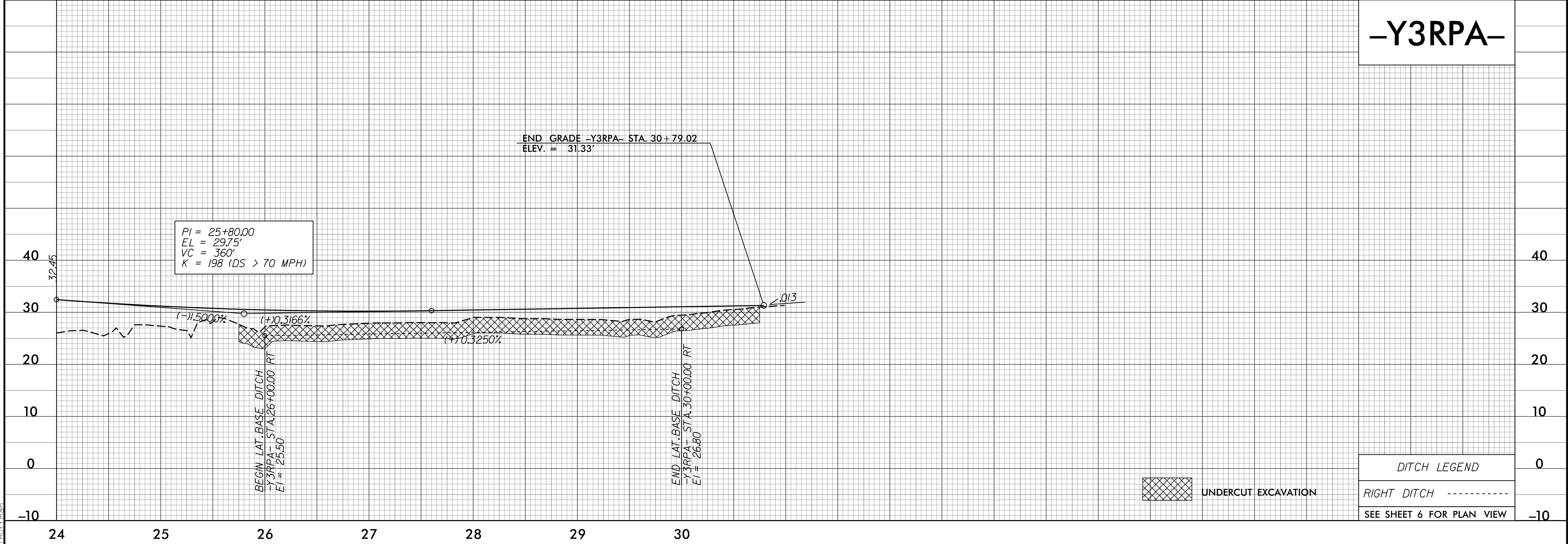
|   |   |
|---|---|
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>033871<br>3/24/2015 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>039745<br>3/23/2015 |
|---|---|

**-Y3RPA-**



SEE SHEET 6 FOR PLAN VIEW

**-Y3RPA-**



DITCH LEGEND

RIGHT DITCH -----

SEE SHEET 6 FOR PLAN VIEW

3/15/2015  
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|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>48   |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>033871<br>3/24/2015 | HYDRAULICS<br>ENGINEER<br>JONATHAN A. MOSE<br>SEAL<br>039745<br>3/23/2015 |

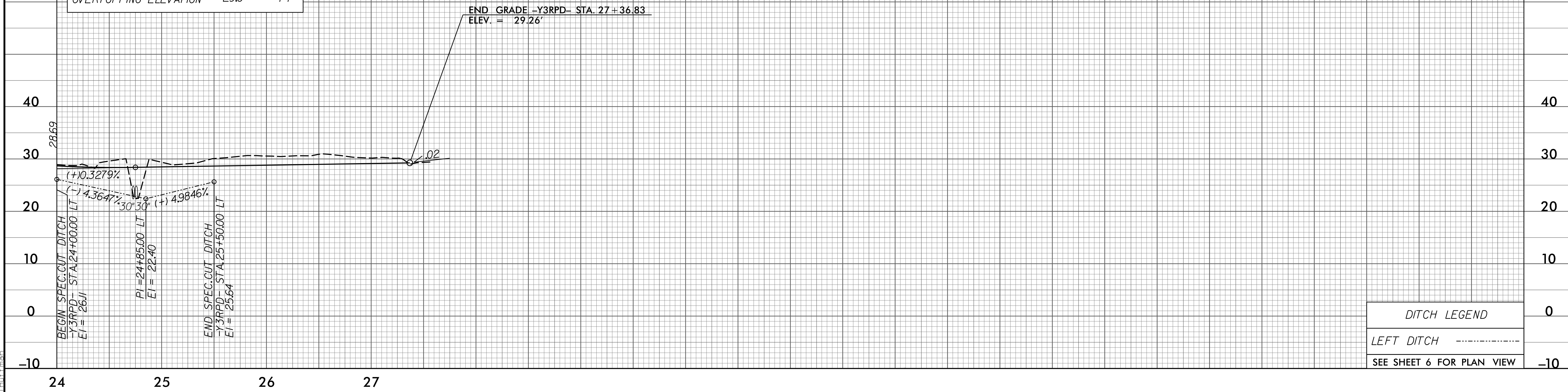
# -Y3RPD-



SEE SHEET 6 FOR PLAN VIEW

# -Y3RPD-

| PIPE HYDRAULIC DATA        |         |     |
|----------------------------|---------|-----|
| DRAINAGE STRUCTURE NO.0622 |         |     |
| DRAINAGE AREA              | = 26    | AC  |
| DESIGN FREQUENCY           | = 50    | YRS |
| DESIGN DISCHARGE           | = 45    | CFS |
| DESIGN HW ELEVATION        | = 27.59 | FT  |
| 100 YEAR DISCHARGE         | = 48    | CFS |
| 100 YEAR HW ELEVATION      | = 28.35 | FT  |
| OVERTOPPING FREQUENCY      | = 200   | YRS |
| OVERTOPPING DISCHARGE      | = N/A   | CFS |
| OVERTOPPING ELEVATION      | = 29.0  | FT  |



DITCH LEGEND

LEFT DITCH

SEE SHEET 6 FOR PLAN VIEW

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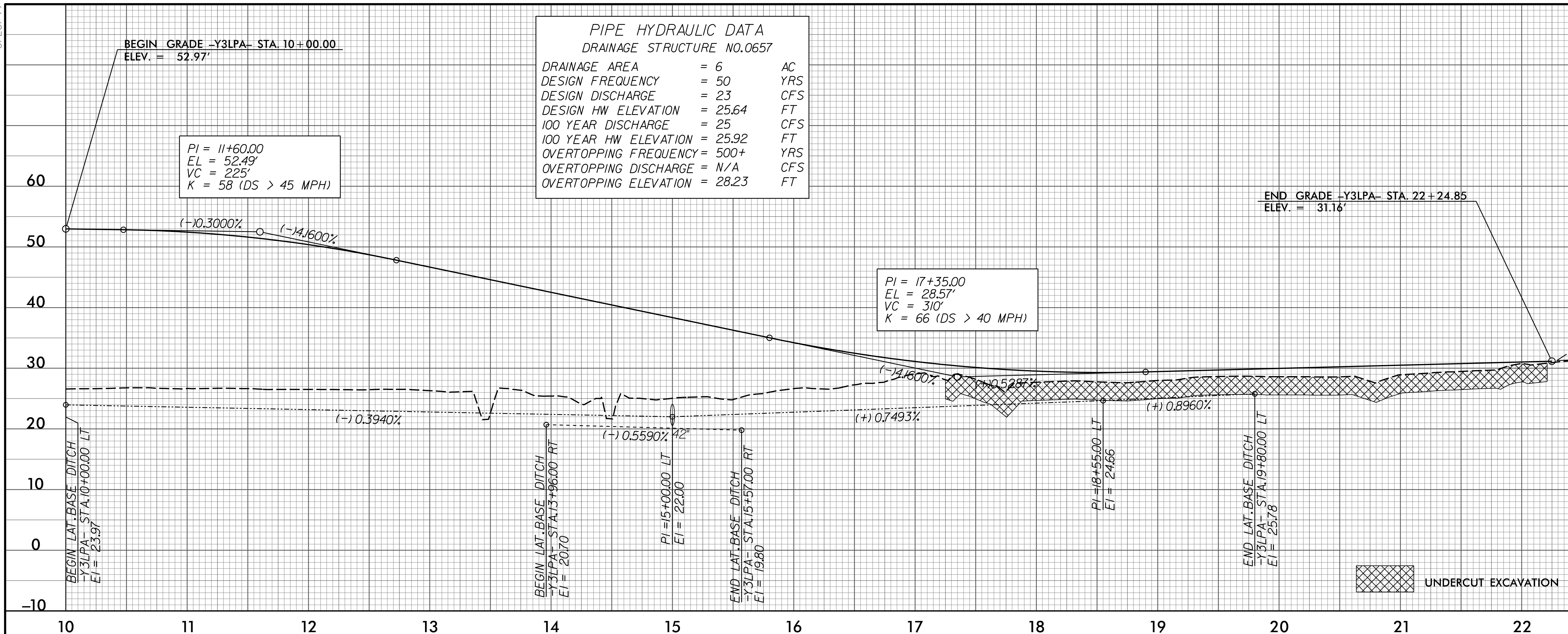


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|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>49   |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>033871<br>3/24/99 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>039745<br>3/23/99 |

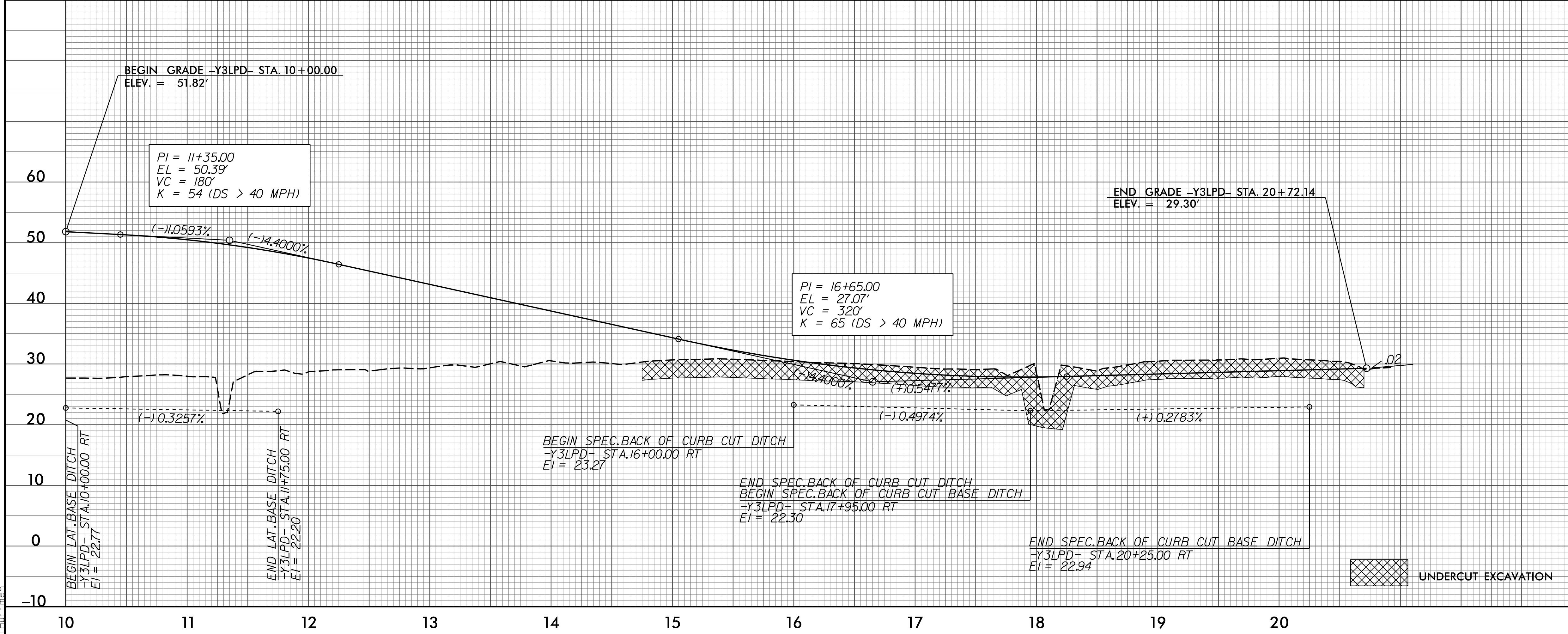
**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.0657

DRAINAGE AREA = 6 AC  
DESIGN FREQUENCY = 50 YRS  
DESIGN DISCHARGE = 23 CFS  
DESIGN HW ELEVATION = 25.64 FT  
100 YEAR DISCHARGE = 25 CFS  
100 YEAR HW ELEVATION = 25.92 FT  
OVERTOPPING FREQUENCY = 500+ YRS  
OVERTOPPING DISCHARGE = N/A CFS  
OVERTOPPING ELEVATION = 28.23 FT



# -Y3LPA-

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# -Y3LPD-

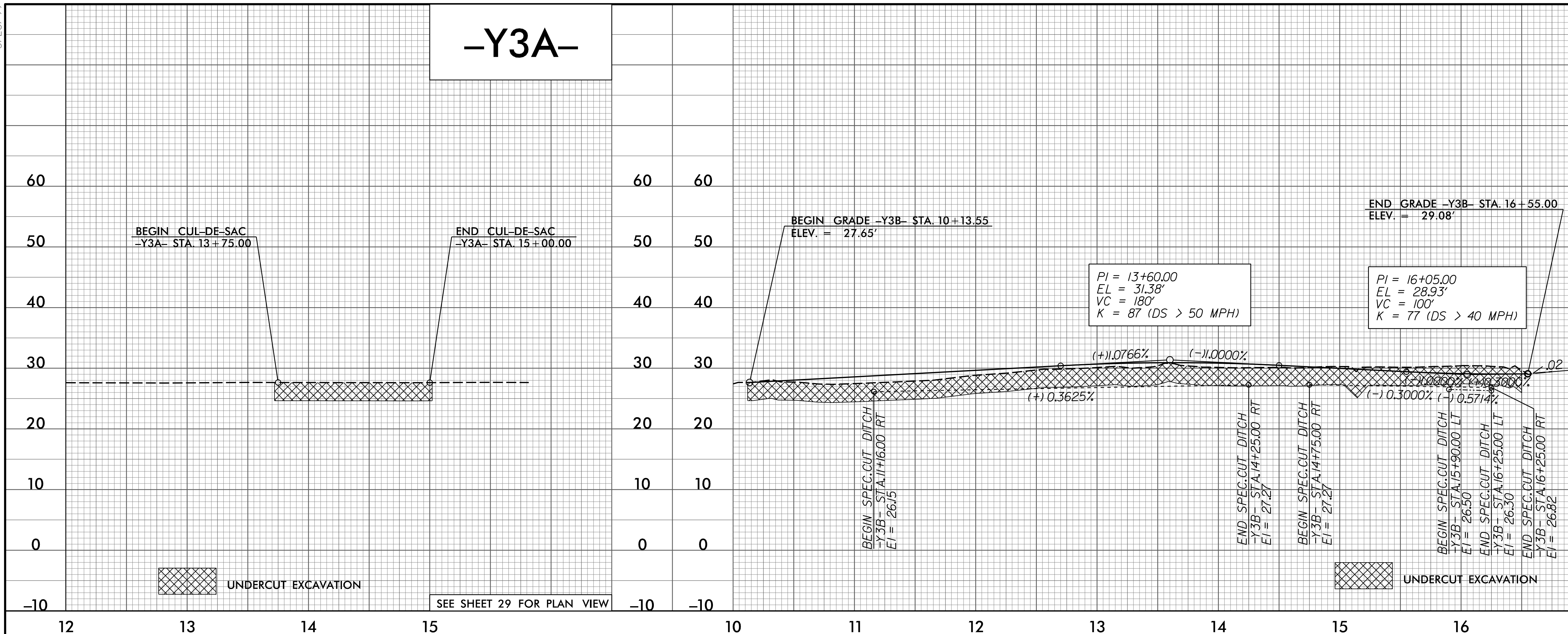
**DITCH LEGEND**

|             |       |   |
|-------------|-------|---|
| LEFT DITCH  | ----- | 0 |
| RIGHT DITCH | ----- | 0 |

SEE SHEET 6 FOR PLAN VIEW

5/28/99

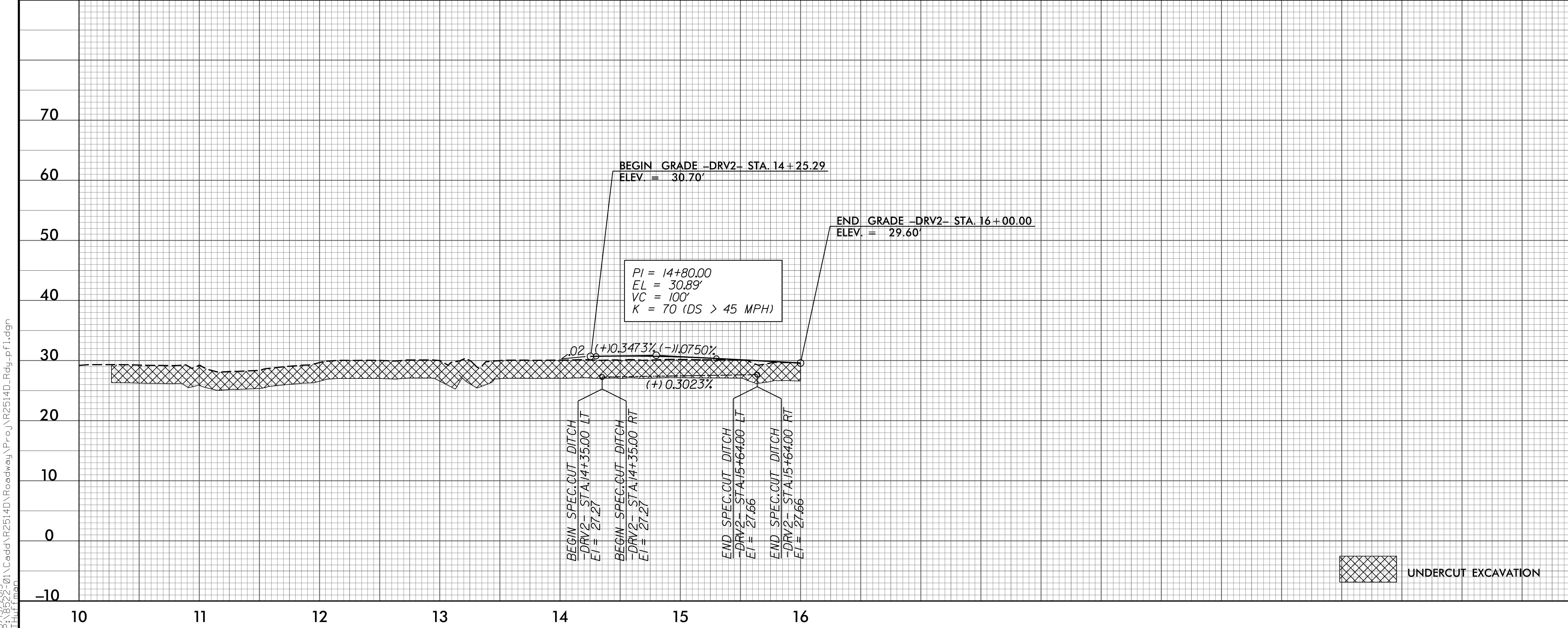
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|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>50   |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>033871<br>3/24/2015 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>039745<br>3/23/2015 |
| DocuSigned by:<br>Daniel W. Gardner, Jr.  |   |



**-Y3B-**

SEE SHEET 29 FOR PLAN VIEW

SEE SHEET 6 FOR PLAN VIEW



**-DRV2-**

SEE SHEET 6 FOR PLAN VIEW

| DITCH LEGEND |       |
|--------------|-------|
| LEFT DITCH   | ----- |
| RIGHT DITCH  | ----- |

SEE SHEET 6 FOR PLAN VIEW

3/15/2015  
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Thurman

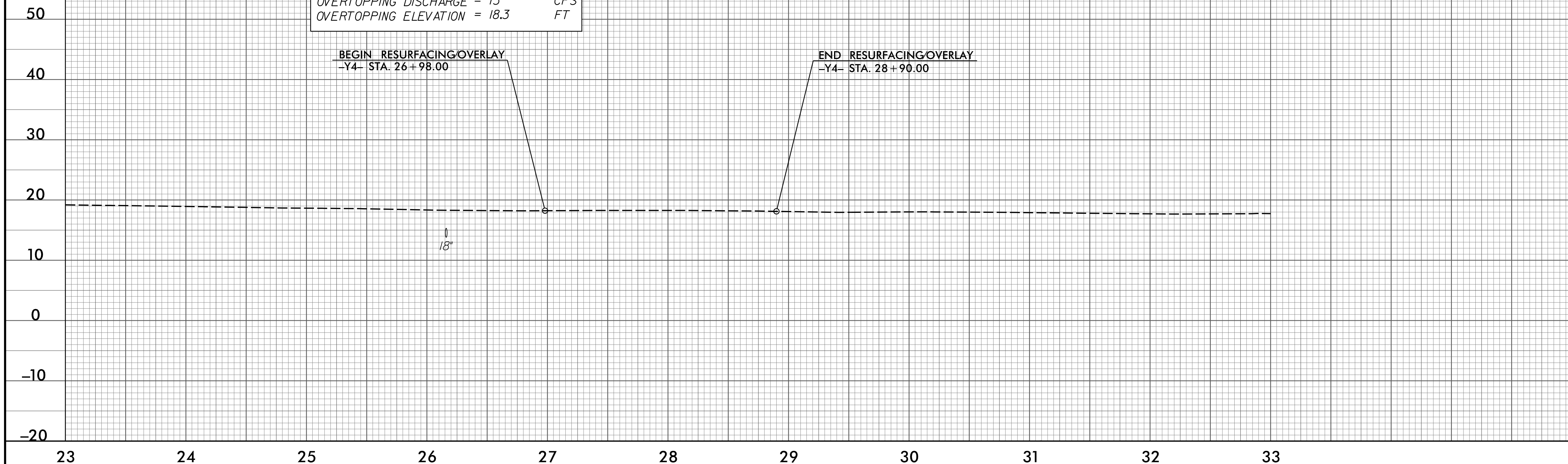


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PIPE HYDRAULIC DATA  
DRAINAGE STRUCTURE NO.0810

|                       |        |     |
|-----------------------|--------|-----|
| DRAINAGE AREA         | = 2    | AC  |
| DESIGN FREQUENCY      | = 25   | YRS |
| DESIGN DISCHARGE      | = 7    | CFS |
| DESIGN HW ELEVATION   | = 15.8 | FT  |
| 100 YEAR DISCHARGE    | = 8    | CFS |
| 100 YEAR HW ELEVATION | = 16.1 | FT  |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING DISCHARGE | = 13   | CFS |
| OVERTOPPING ELEVATION | = 18.3 | FT  |

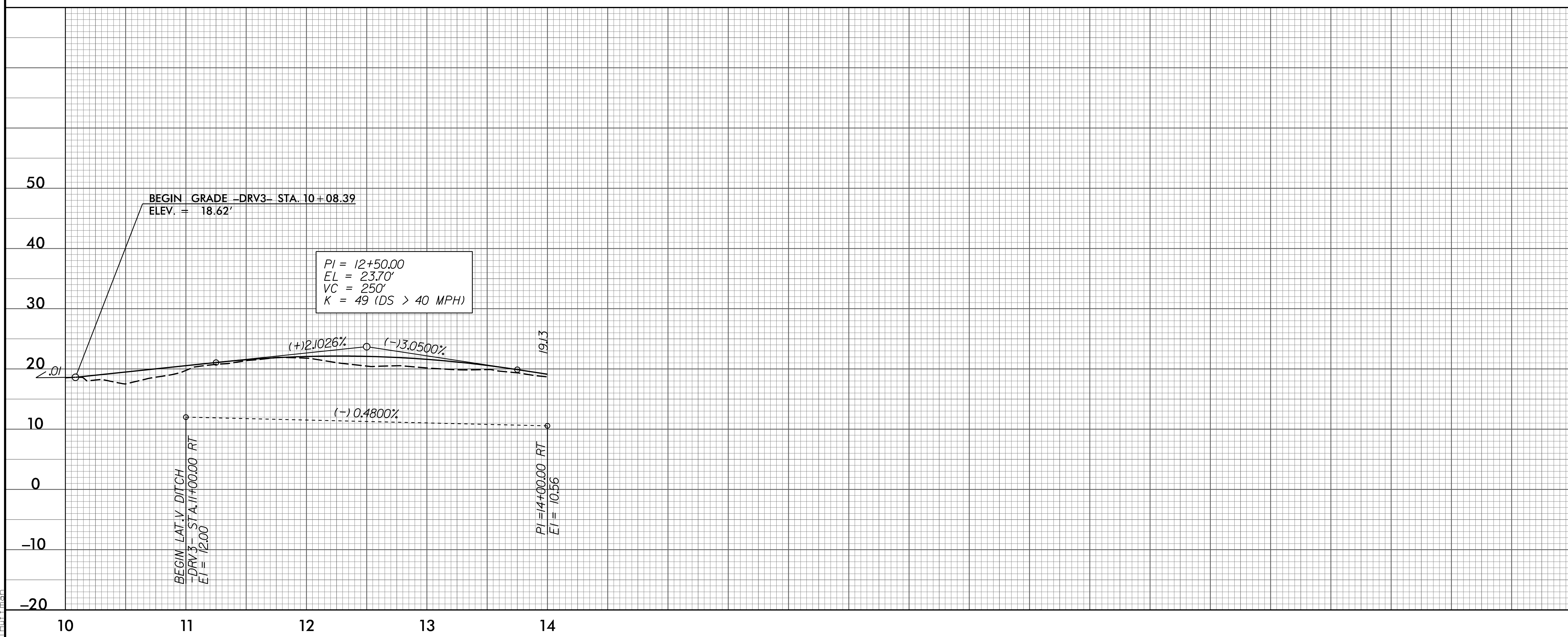
|  |  |
|--|--|
| PROJECT REFERENCE NO.<br>R-2514D   | SHEET NO.<br>51  |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 033871<br>3/24/2015 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 039745<br>3/23/2015 |



**-Y4-**

SEE SHEET 8 FOR PLAN VIEW

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**-DRV3-**

DITCH LEGEND  
RIGHT DITCH - - - - -

SEE SHEET 8 FOR PLAN VIEW

5/28/99

|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>52   |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>033871<br>3/24/05 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>039745<br>3/23/05 |

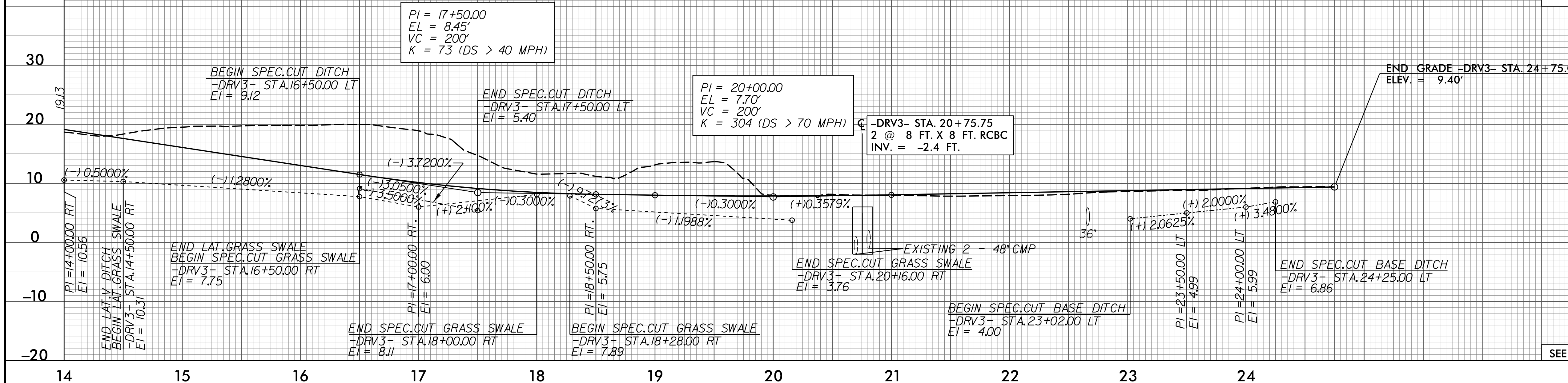
**CULVERT HYDRAULIC DATA**

|                       |        |     |
|-----------------------|--------|-----|
| DESIGN DISCHARGE      | = 280  | CFS |
| DESIGN FREQUENCY      | = 10   | YRS |
| DESIGN HW ELEVATION   | = 2.8  | FT  |
| BASE DISCHARGE        | = 600  | CFS |
| BASE FREQUENCY        | = 100  | YRS |
| BASE HW ELEVATION     | = 4.87 | FT  |
| OVERTOPPING DISCHARGE | = 1100 | CFS |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING ELEVATION | = 7.8  | FT  |

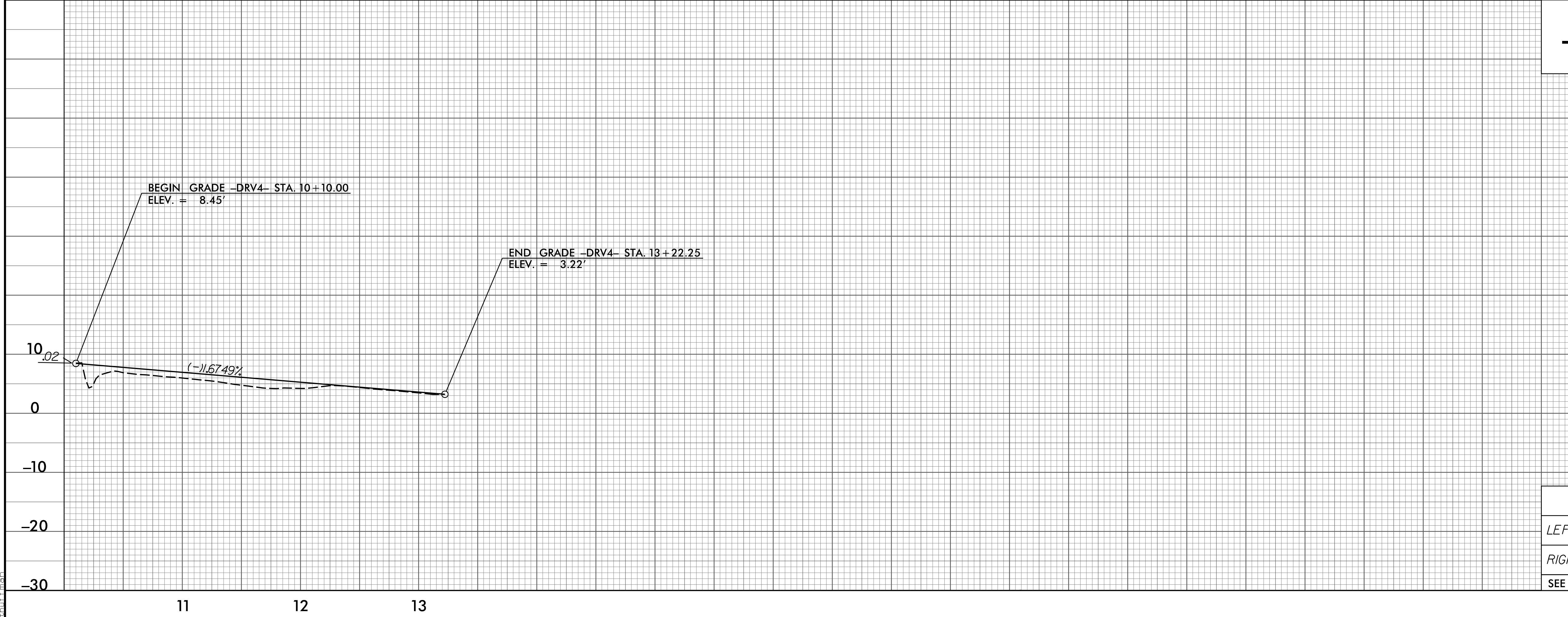
**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.0912

|                       |        |     |
|-----------------------|--------|-----|
| DRAINAGE AREA         | = 9    | AC  |
| DESIGN FREQUENCY      | = 25   | YRS |
| DESIGN DISCHARGE      | = 33   | CFS |
| DESIGN HW ELEVATION   | = 6.9  | FT  |
| 100 YEAR DISCHARGE    | = 38   | CFS |
| 100 YEAR HW ELEVATION | = 12.7 | FT  |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING DISCHARGE | = 60   | CFS |
| OVERTOPPING ELEVATION | = 8.8  | FT  |

# -DRV3-



# -DRV4-



**DITCH LEGEND**

|             |       |     |
|-------------|-------|-----|
| LEFT DITCH  | ----- | -20 |
| RIGHT DITCH | ----- | -30 |

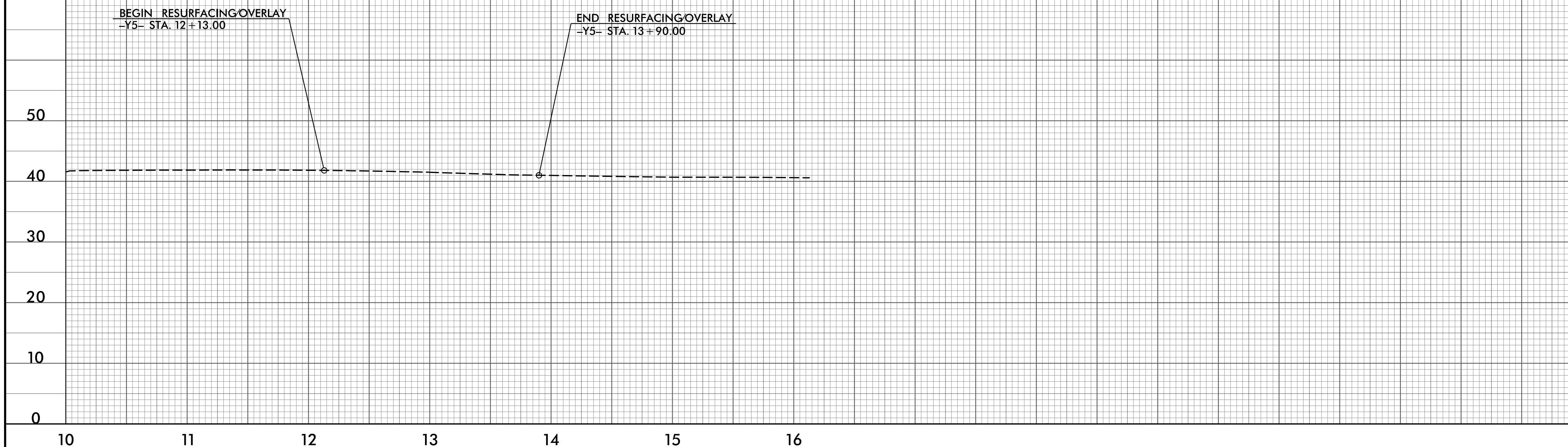
SEE SHEET 9 FOR PLAN VIEW

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|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>53   |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>033871<br>3/24/2015 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>039745<br>3/23/2015 |
| <i>Daniel W. Gardner, Jr.</i>   | <i>Daniel W. Gardner, Jr.</i>   |



**-Y5-**

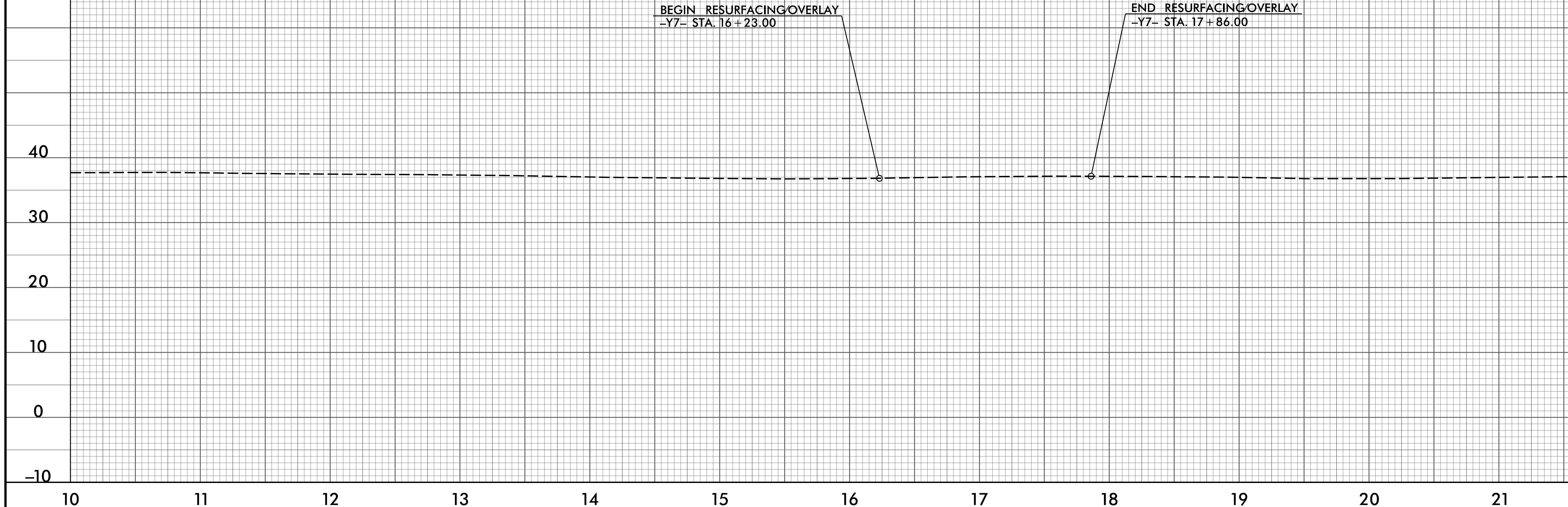
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Thurman



**-Y6-**

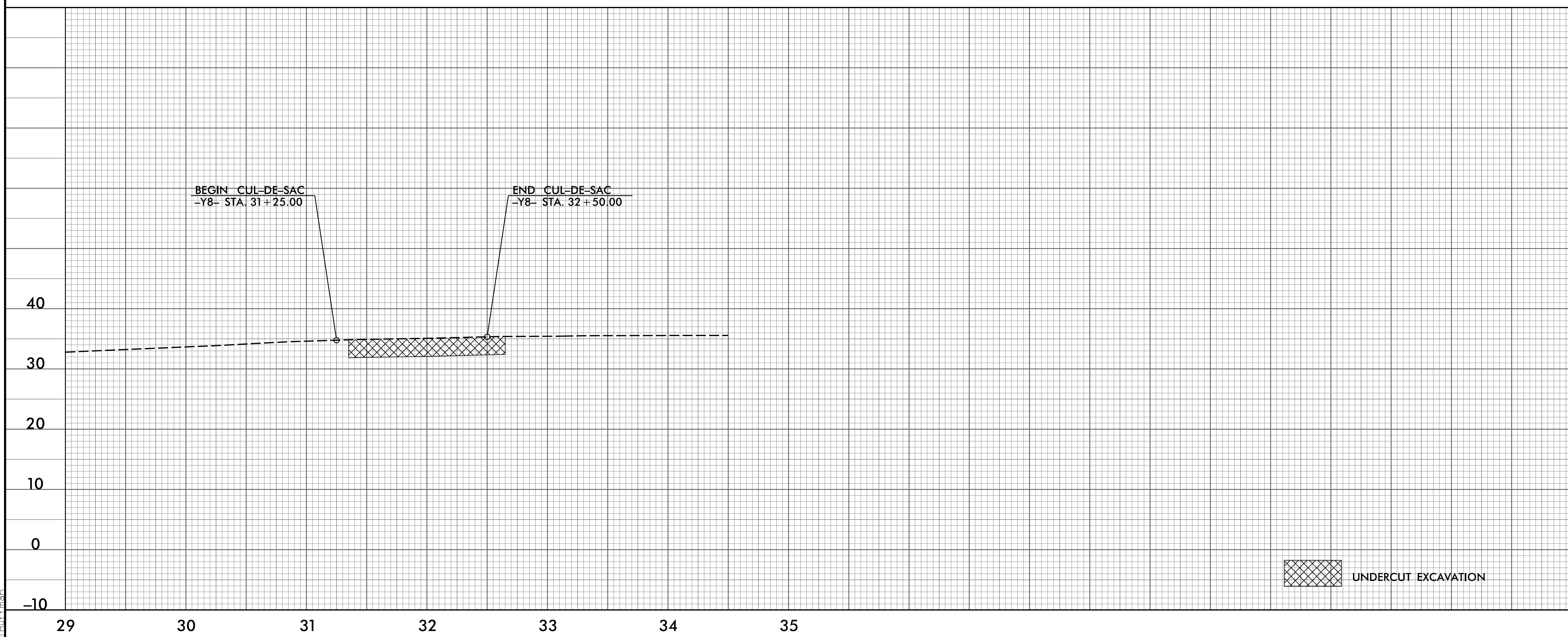
5/28/99

|  |  |
|--|--|
| PROJECT REFERENCE NO.<br><i>R-2514D</i>  | SHEET NO.<br><i>54</i>   |
| ROADWAY DESIGN<br>ENGINEER<br>NORTH CAROLINA<br>PROFESSIONAL SEAL<br>033871<br>3/24/99<br>DANIEL W. GARDNER, JR. | HYDRAULICS<br>ENGINEER<br>NORTH CAROLINA<br>PROFESSIONAL SEAL<br>039745<br>3/23/99<br>DANIEL W. GARDNER, JR. |



**-Y7-**

SEE SHEET 23 FOR PLAN VIEW



**-Y8-**

 UNDERCUT EXCAVATION

SEE SHEET 26 FOR PLAN VIEW

3/15/2015  
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Thurman



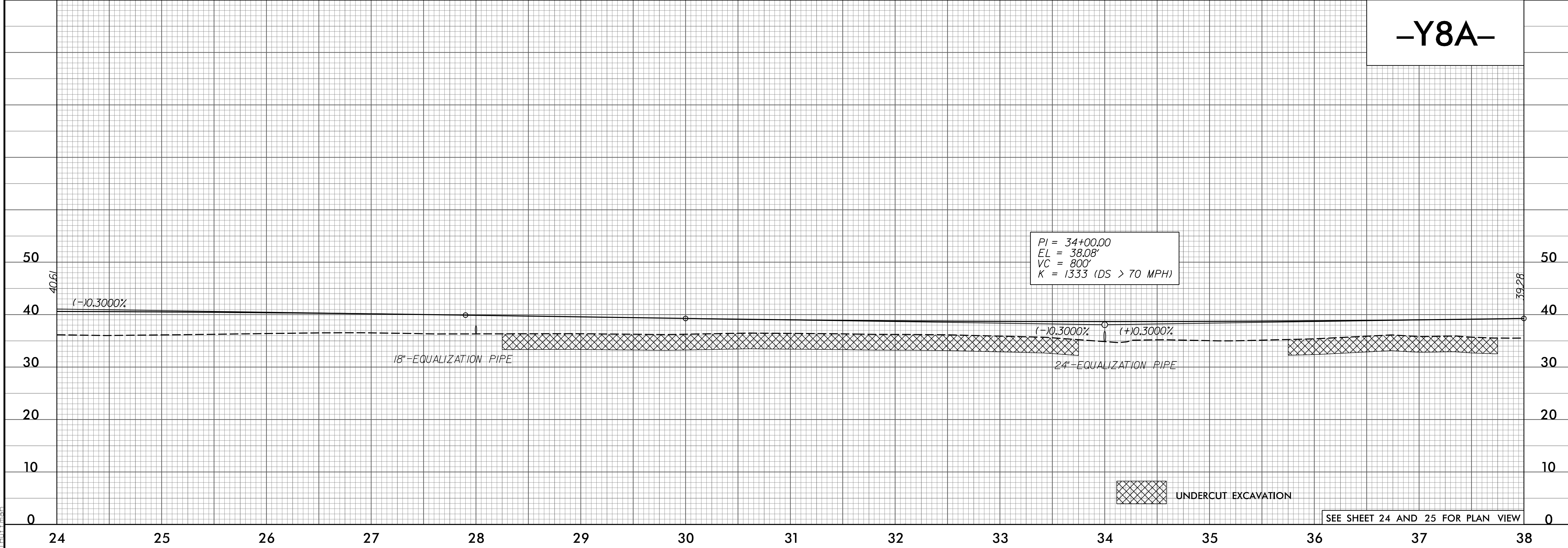
5/28/99

|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>55   |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>033871<br>3/24/2015 | HYDRAULICS<br>ENGINEER<br>JONATHAN S. MOSE<br>SEAL<br>039745<br>3/23/2015 |

# -Y8A-



# -Y8A-

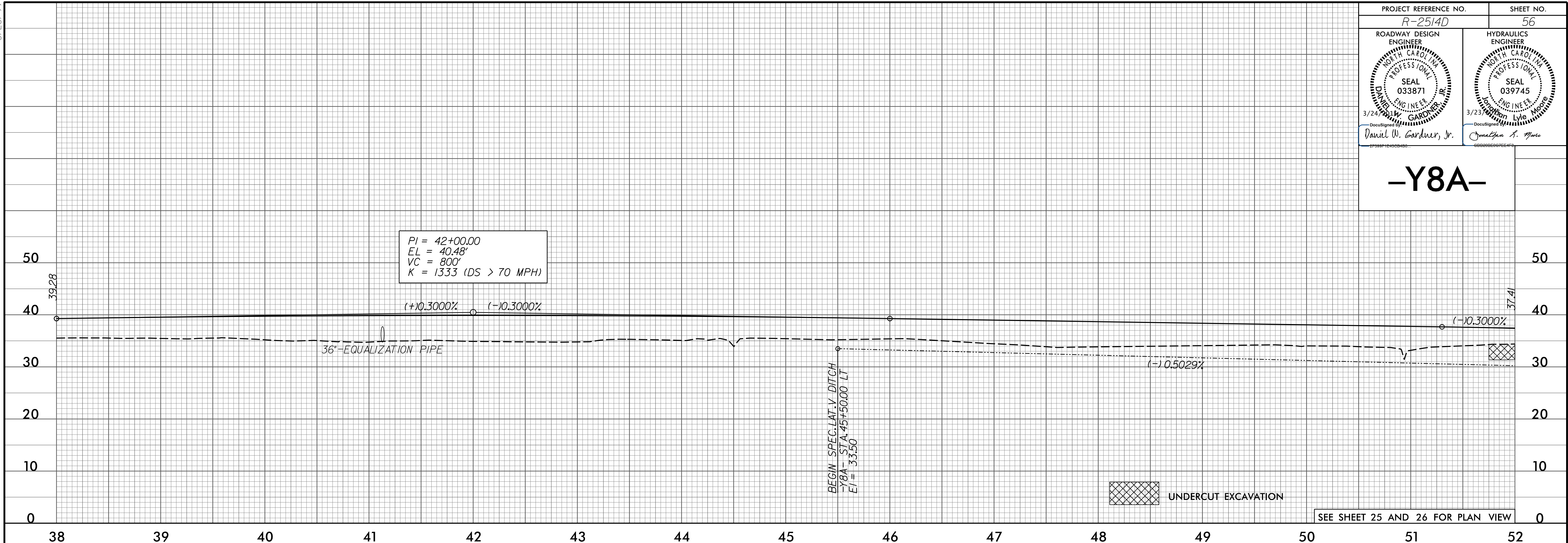


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|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>56   |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>033871<br>3/24/99 | HYDRAULICS<br>ENGINEER<br>JONATHAN S. MARE<br>SEAL<br>039745<br>3/23/99 |

# -Y8A-

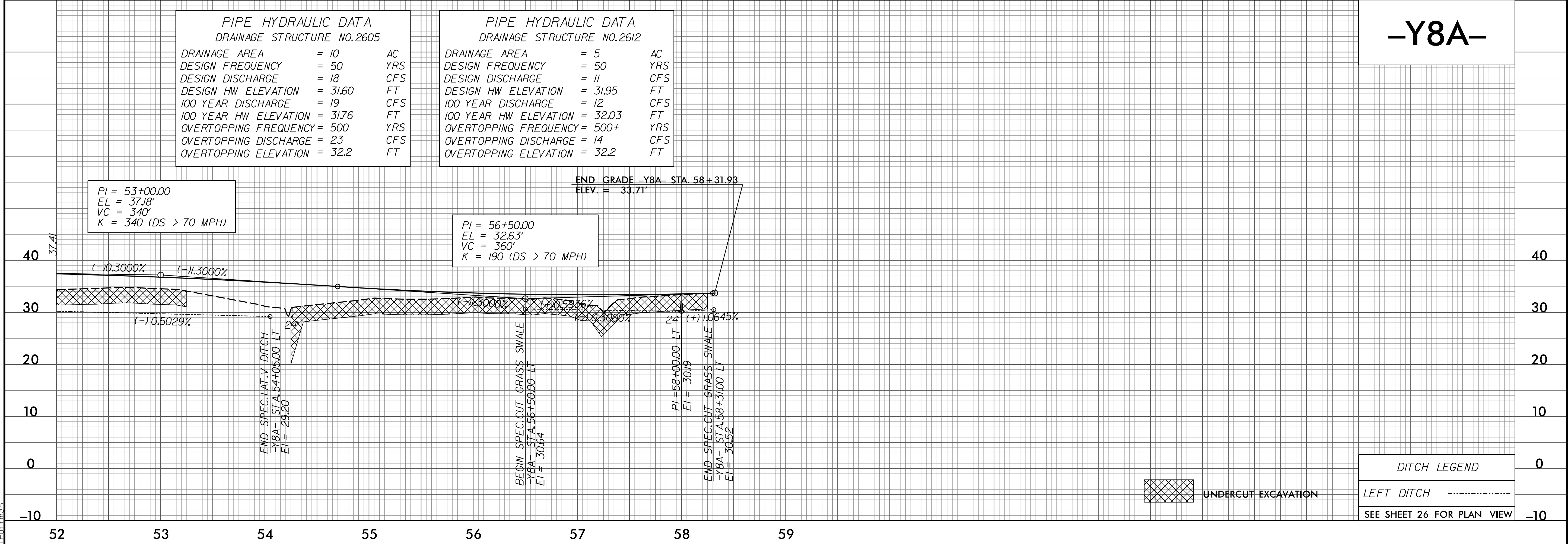


SEE SHEET 25 AND 26 FOR PLAN VIEW

# -Y8A-

| PIPE HYDRAULIC DATA   |         | DRAINAGE STRUCTURE NO.2605 |  |
|-----------------------|---------|----------------------------|--|
| DRAINAGE AREA         | = 10    | AC                         |  |
| DESIGN FREQUENCY      | = 50    | YRS                        |  |
| DESIGN DISCHARGE      | = 18    | CFS                        |  |
| DESIGN HW ELEVATION   | = 31.60 | FT                         |  |
| 100 YEAR DISCHARGE    | = 19    | CFS                        |  |
| 100 YEAR HW ELEVATION | = 31.76 | FT                         |  |
| OVERTOPPING FREQUENCY | = 500   | YRS                        |  |
| OVERTOPPING DISCHARGE | = 23    | CFS                        |  |
| OVERTOPPING ELEVATION | = 32.2  | FT                         |  |

| PIPE HYDRAULIC DATA   |         | DRAINAGE STRUCTURE NO.2612 |  |
|-----------------------|---------|----------------------------|--|
| DRAINAGE AREA         | = 5     | AC                         |  |
| DESIGN FREQUENCY      | = 50    | YRS                        |  |
| DESIGN DISCHARGE      | = 11    | CFS                        |  |
| DESIGN HW ELEVATION   | = 31.95 | FT                         |  |
| 100 YEAR DISCHARGE    | = 12    | CFS                        |  |
| 100 YEAR HW ELEVATION | = 32.03 | FT                         |  |
| OVERTOPPING FREQUENCY | = 500+  | YRS                        |  |
| OVERTOPPING DISCHARGE | = 14    | CFS                        |  |
| OVERTOPPING ELEVATION | = 32.2  | FT                         |  |



| DITCH LEGEND        |        |
|---------------------|--------|
| LEFT DITCH          | -----  |
| UNDERCUT EXCAVATION | XXXXXX |

SEE SHEET 26 FOR PLAN VIEW

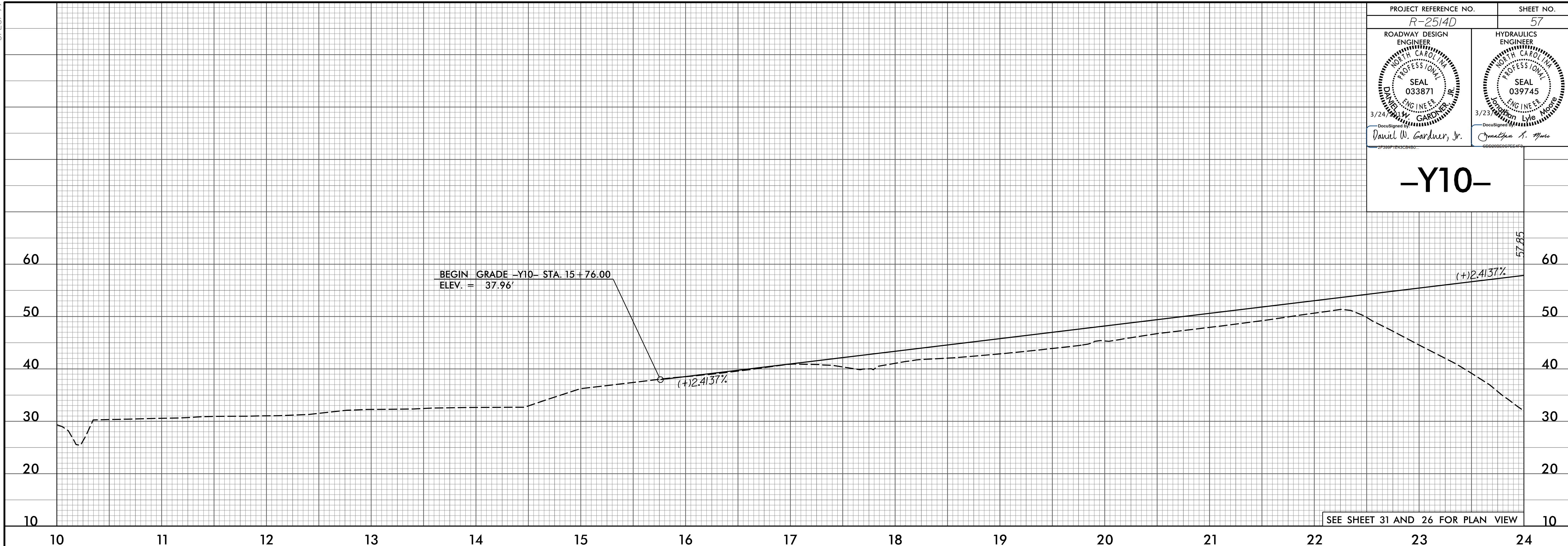
3/15/2015  
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Thurman



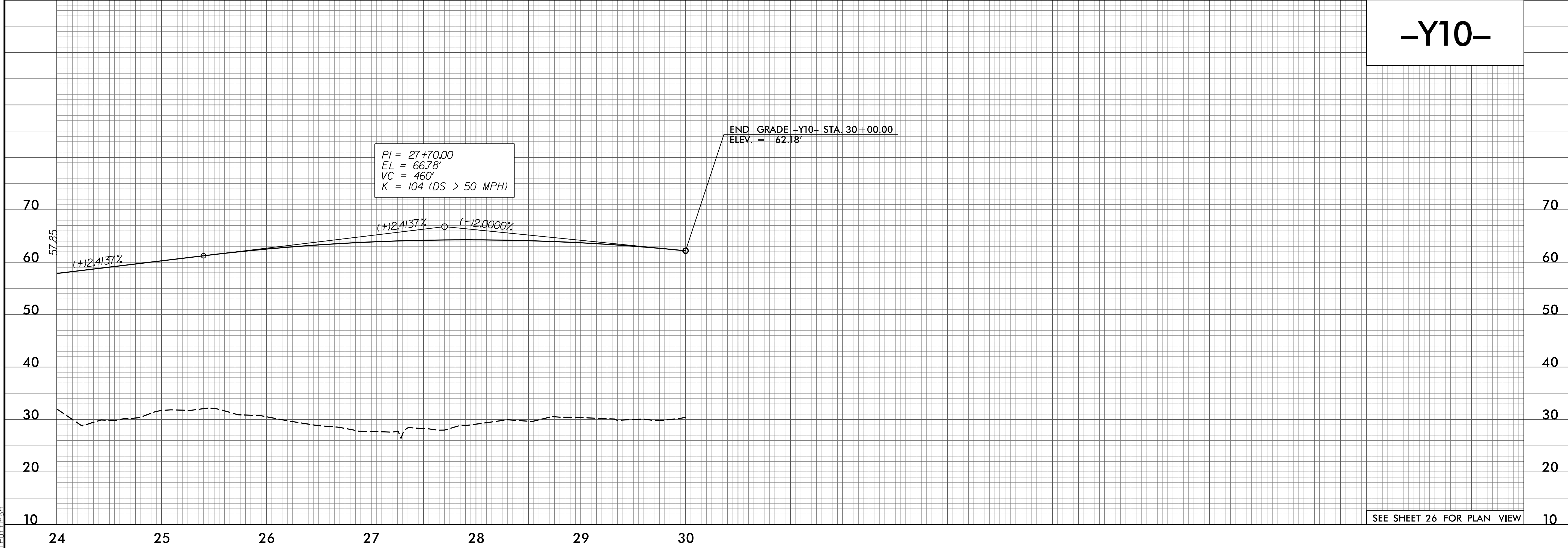
5/28/99

|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>57   |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>033871<br>3/24/99 | HYDRAULICS<br>ENGINEER<br>JONATHAN S. MOSE<br>SEAL<br>039745<br>3/23/99 |

**-Y10-**



**-Y10-**



3/15/2015  
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Thurman

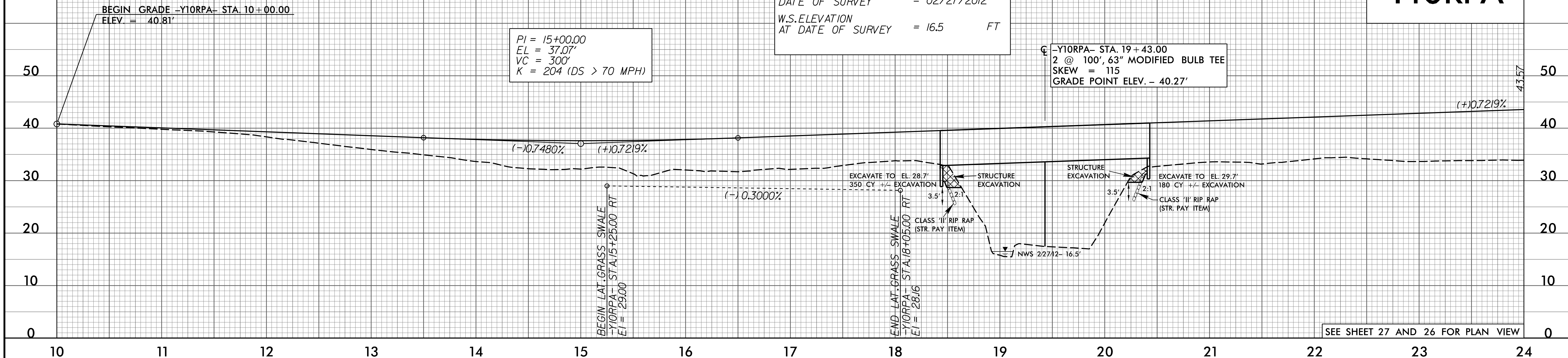
5/28/99

|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>58   |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>033871<br>3/24/2012 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL<br>039745<br>3/23/2012 |

**BRIDGE HYDRAULIC DATA**

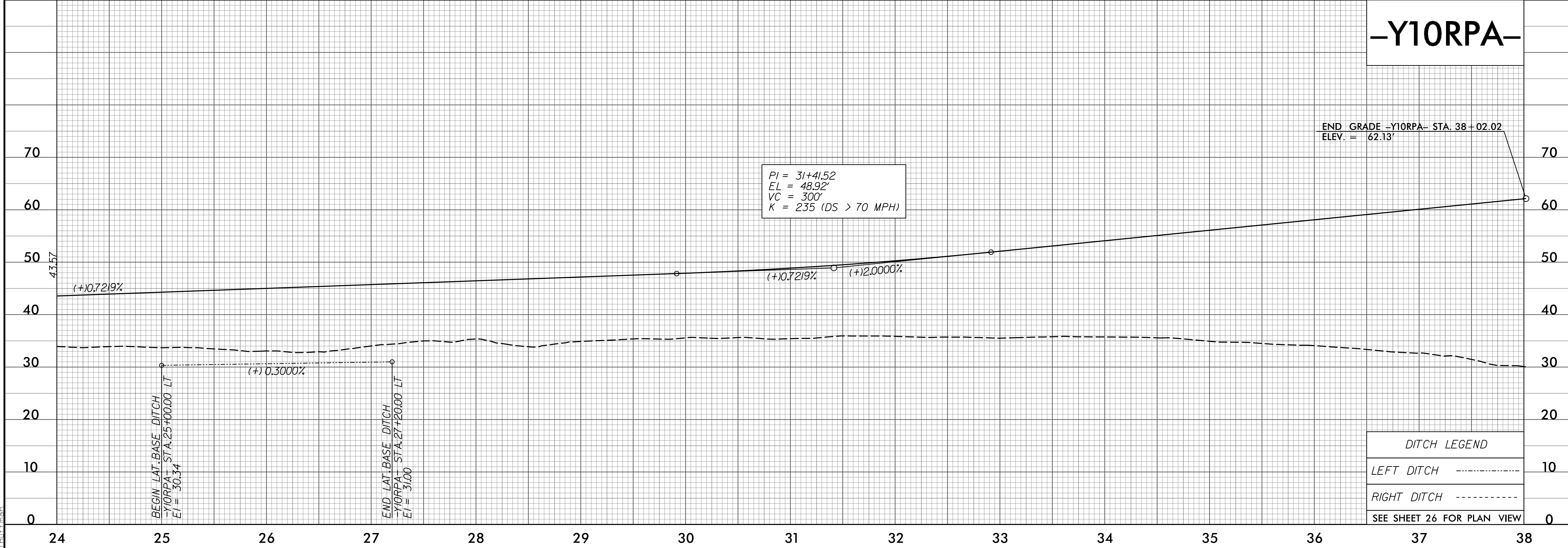
DESIGN DISCHARGE = 390 CFS  
 DESIGN FREQUENCY = 50 YRS  
 DESIGN HW ELEVATION = 21.4 FT  
 BASE DISCHARGE = 480 CFS  
 BASE FREQUENCY = 100 YRS  
 BASE HW ELEVATION = 21.83 FT  
 OVERTOPPING DISCHARGE = N/A CFS  
 OVERTOPPING FREQUENCY = 500+ YRS  
 OVERTOPPING ELEVATION = 33.0 FT

DATE OF SURVEY = 02/27/2012  
 W.S. ELEVATION AT DATE OF SURVEY = 16.5 FT



**-Y1ORPA-**

SEE SHEET 27 AND 26 FOR PLAN VIEW



**-Y1ORPA-**

**DITCH LEGEND**

|             |       |    |
|-------------|-------|----|
| LEFT DITCH  | ----- | 10 |
| RIGHT DITCH | ----- | 10 |

SEE SHEET 26 FOR PLAN VIEW

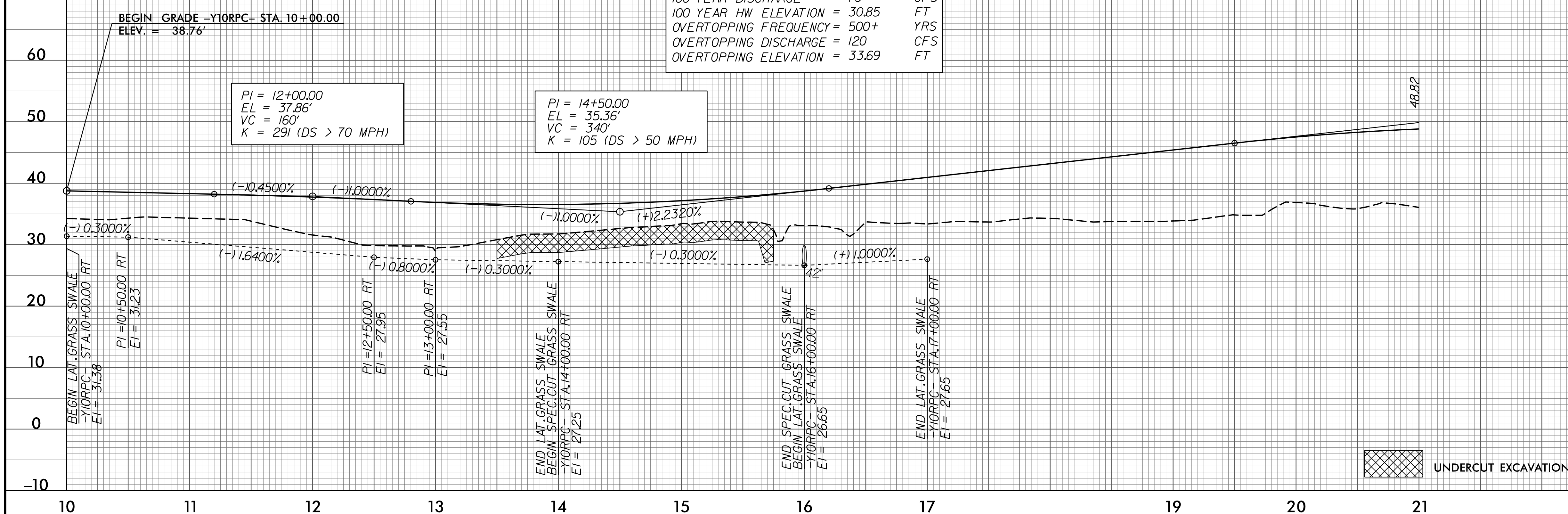
3/15/2015  
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Thurman



5/28/99

| PIPE HYDRAULIC DATA        |            |
|----------------------------|------------|
| DRAINAGE STRUCTURE NO.2603 |            |
| DRAINAGE AREA              | = 43 AC    |
| DESIGN FREQUENCY           | = 50 YRS   |
| DESIGN DISCHARGE           | = 65 CFS   |
| DESIGN HW ELEVATION        | = 30.59 FT |
| 100 YEAR DISCHARGE         | = 70 CFS   |
| 100 YEAR HW ELEVATION      | = 30.85 FT |
| OVERTOPPING FREQUENCY      | = 500+ YRS |
| OVERTOPPING DISCHARGE      | = 120 CFS  |
| OVERTOPPING ELEVATION      | = 33.69 FT |

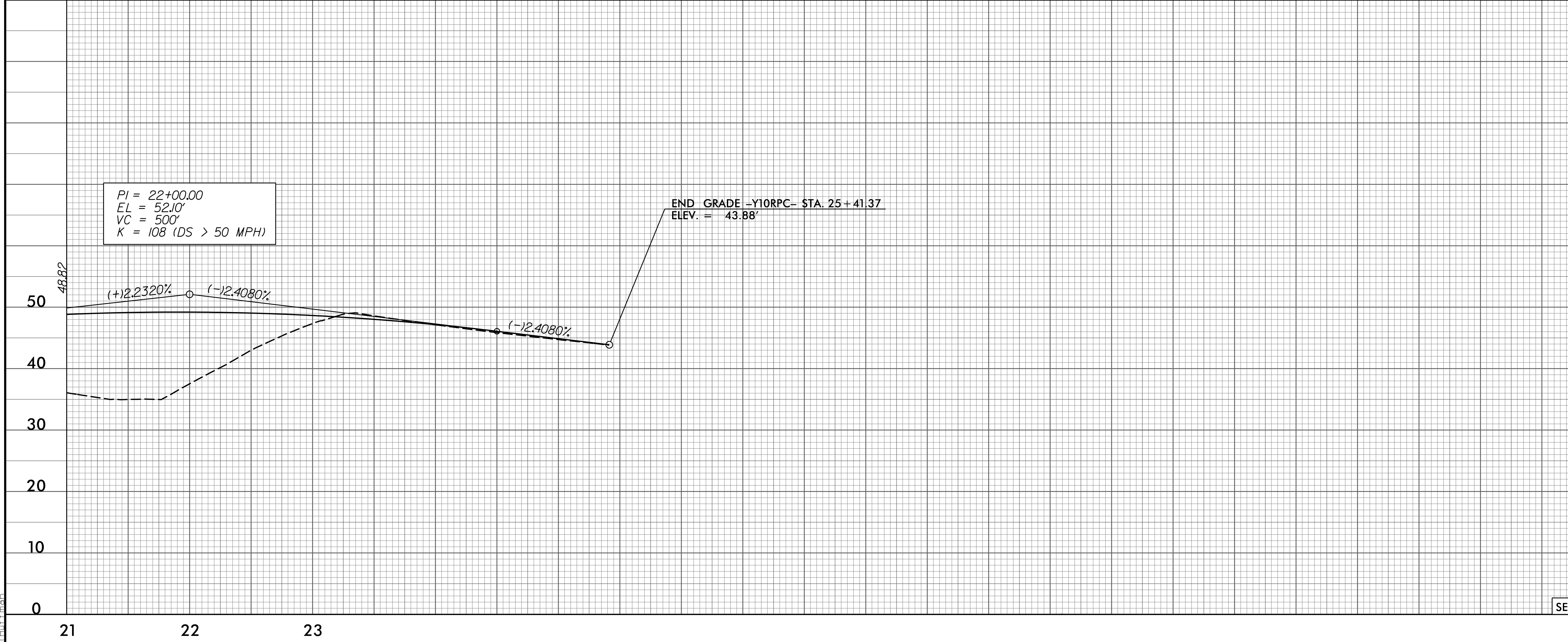
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|--|--|
| PROJECT REFERENCE NO.<br>R-2514D   | SHEET NO.<br>59  |
| ROADWAY DESIGN<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 033871<br>3/24/00 | HYDRAULICS<br>ENGINEER<br>DANIEL W. GARDNER, JR.<br>SEAL 039745<br>3/23/00 |



**-Y10RPC-**

SEE SHEET 26 FOR PLAN VIEW

**-Y10RPC-**



DITCH LEGEND

RIGHT DITCH - - - - -

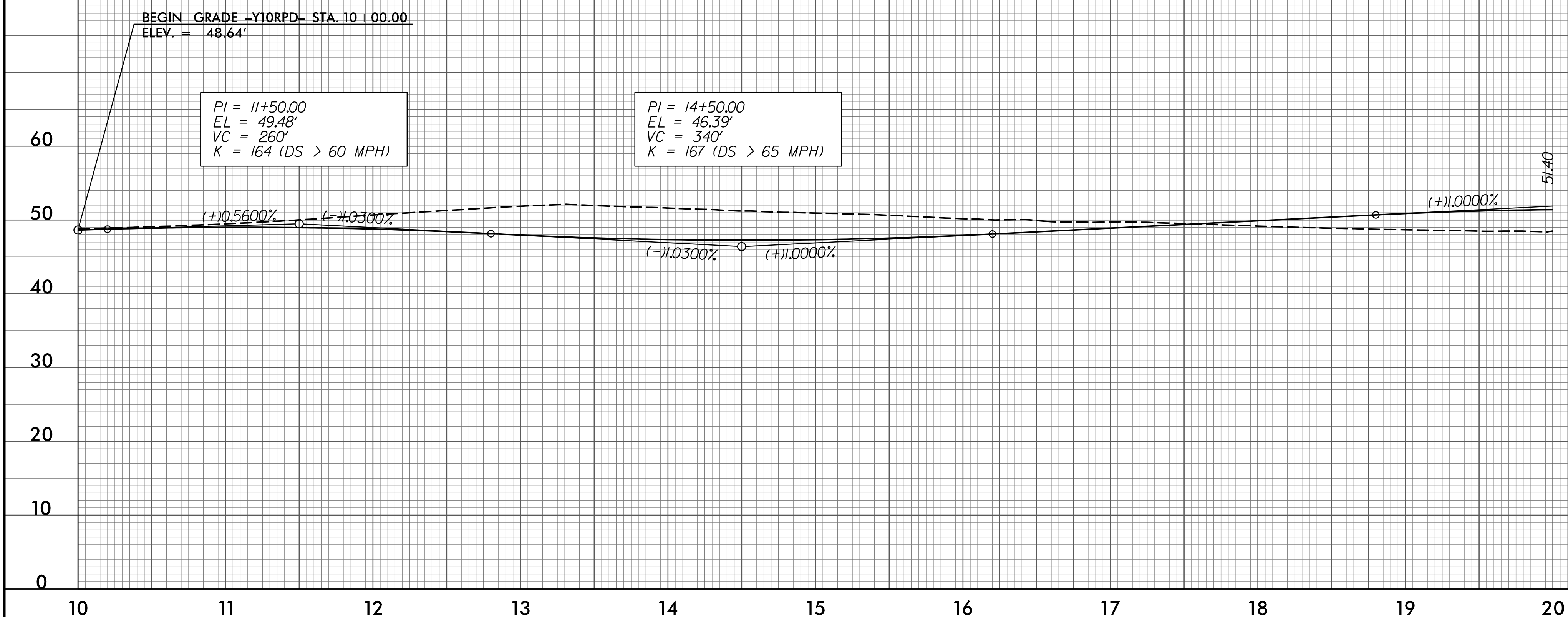
SEE SHEET 26 AND 31 FOR PLAN VIEW

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Thurman

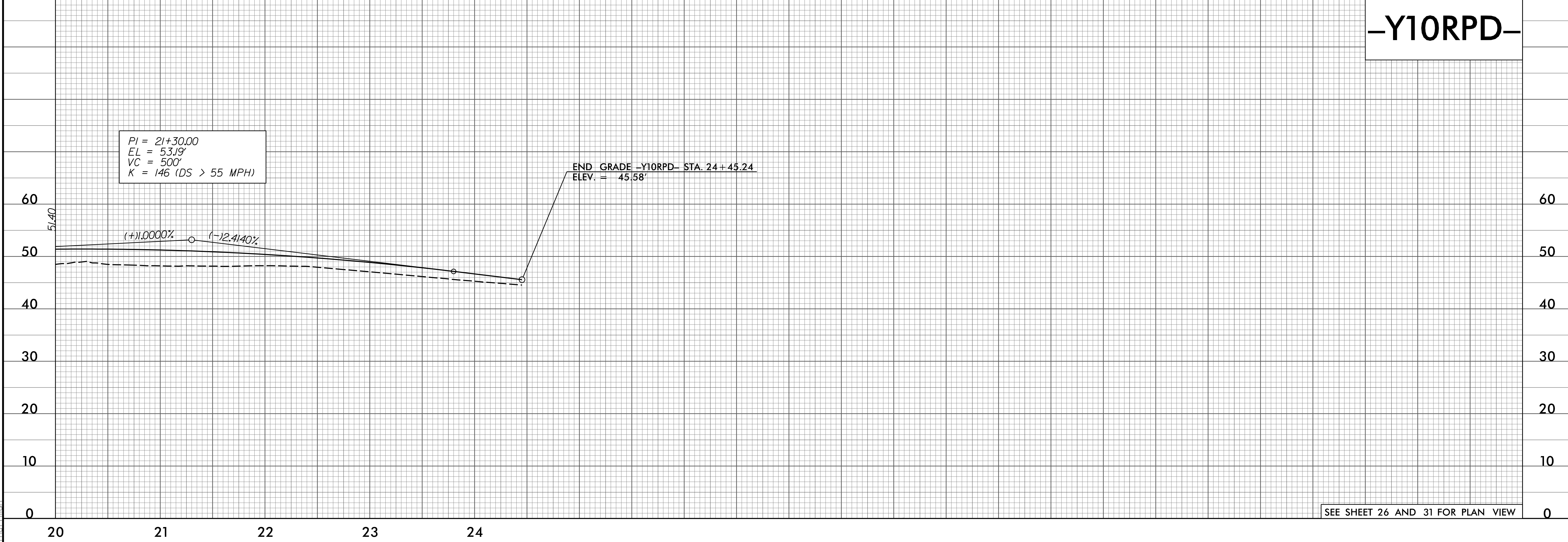
5/28/99

|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-2514D  | SHEET NO.<br>60   |
| ROADWAY DESIGN<br>ENGINEER<br>SEAL<br>033871<br>3/24/99<br>DANIEL W. GARDNER, JR. | HYDRAULICS<br>ENGINEER<br>SEAL<br>039745<br>3/23/99<br>DANIEL W. GARDNER, JR. |

# -Y10RPD-



# -Y10RPD-

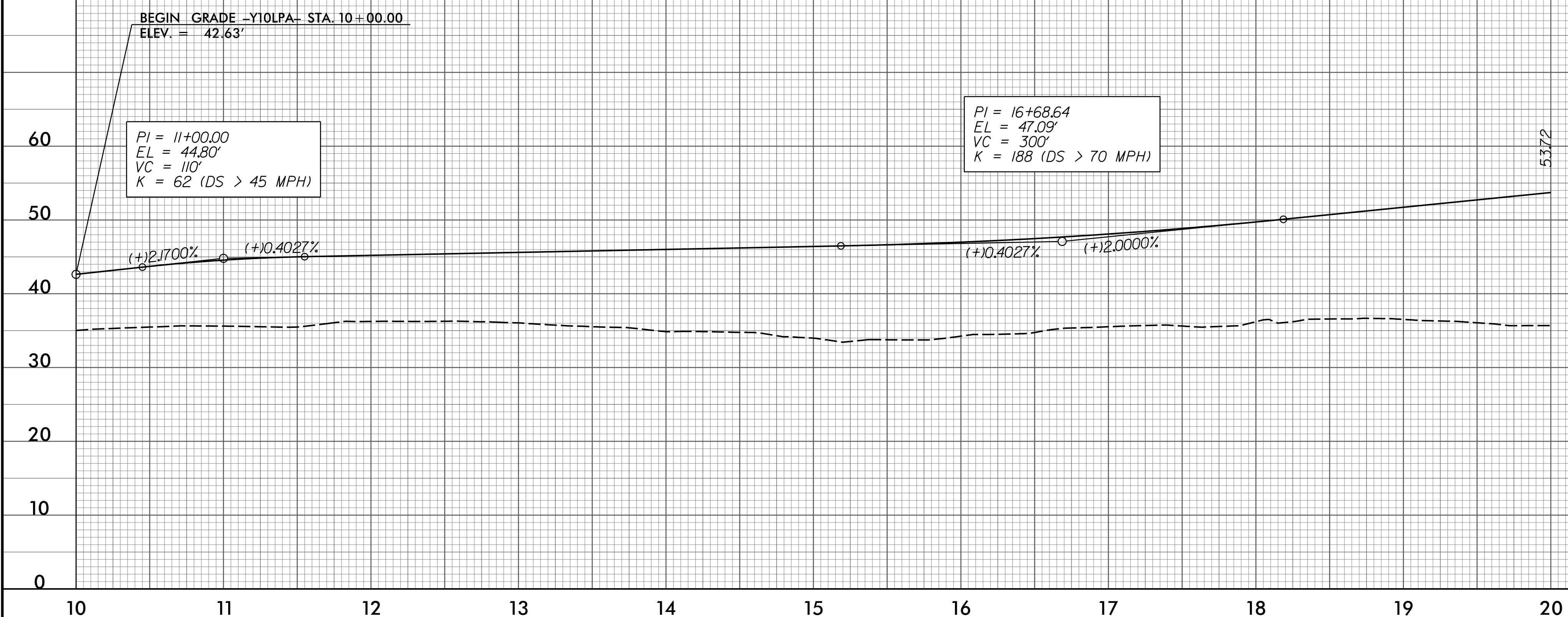


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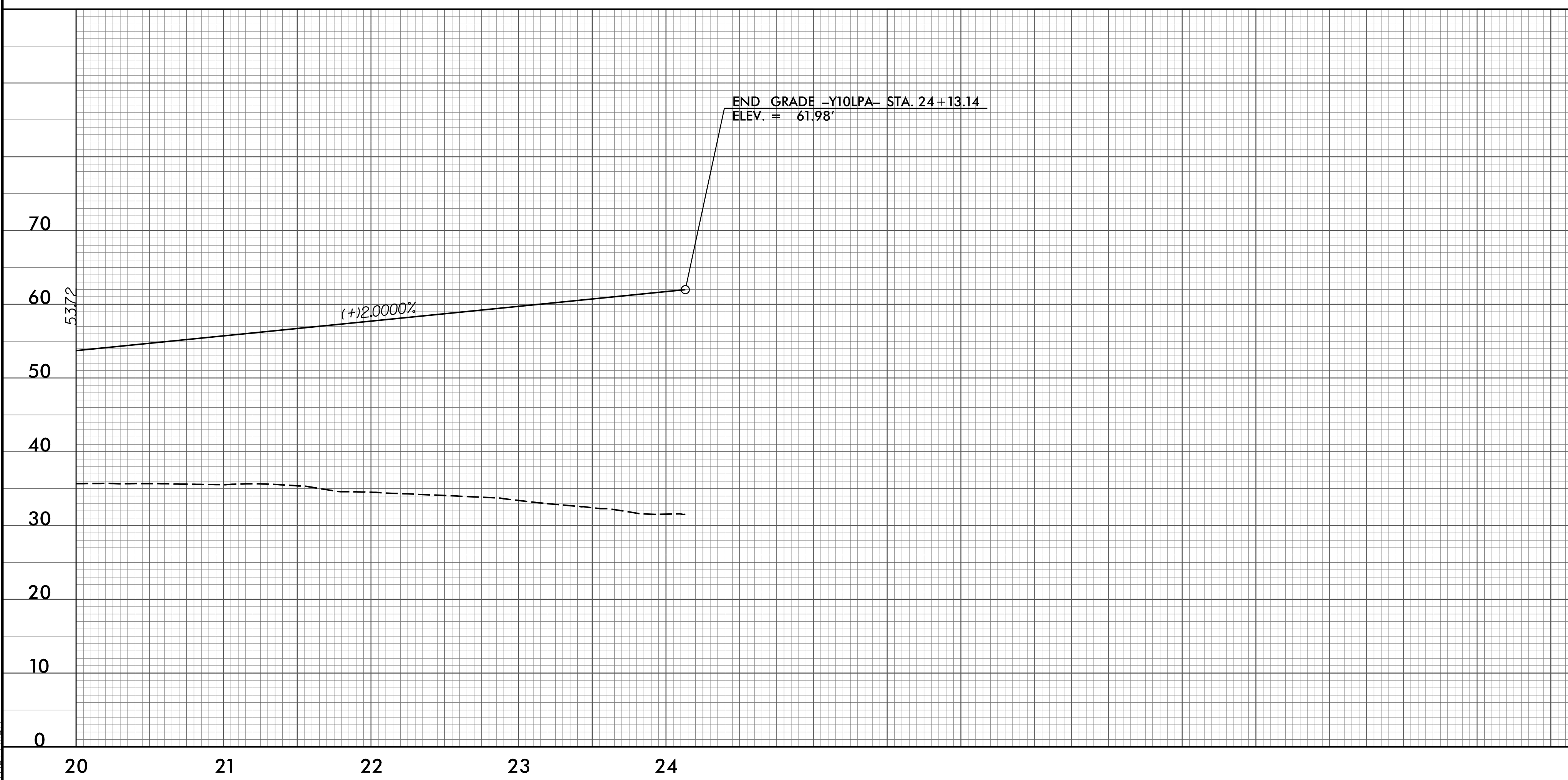
5/28/99

|   |  |
|---|--|
| PROJECT REFERENCE NO.<br><i>R-2514D</i>   | SHEET NO.<br><i>61</i>   |
| ROADWAY DESIGN<br>ENGINEER<br>NORTH CAROLINA<br>PROFESSIONAL<br>SEAL<br>033871<br>3/24/05<br>Daniel W. Gardner, Jr. | HYDRAULICS<br>ENGINEER<br>NORTH CAROLINA<br>PROFESSIONAL<br>SEAL<br>039745<br>3/23/05<br>Jonathan T. Moore |



**-Y10LPA-**

SEE SHEET 26 FOR PLAN VIEW



**-Y10LPA-**

SEE SHEET 26 FOR PLAN VIEW

3/15/2015  
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