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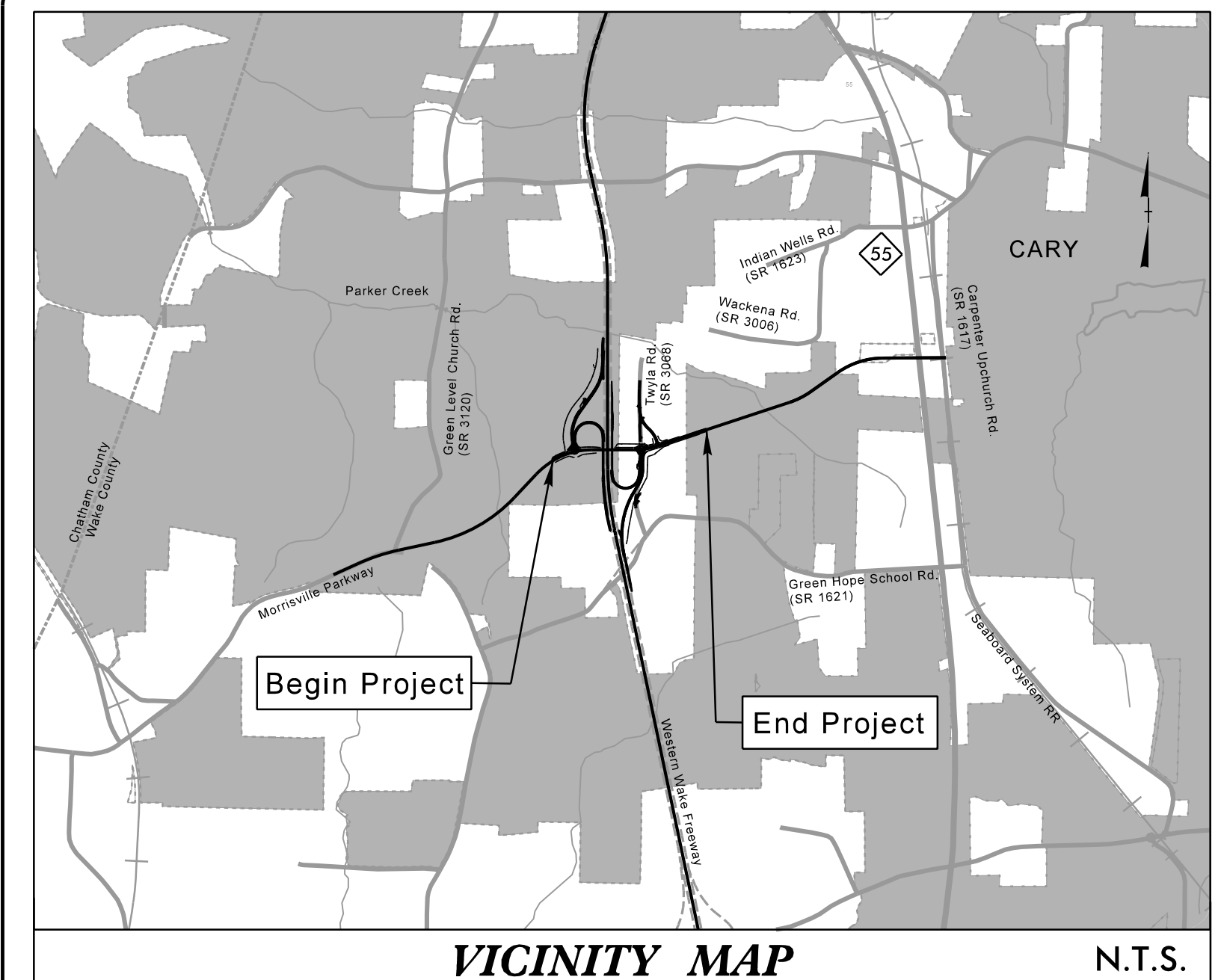
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09_08/19

TIP PROJECT: U-5315 A&B

CONTRACT: C203991



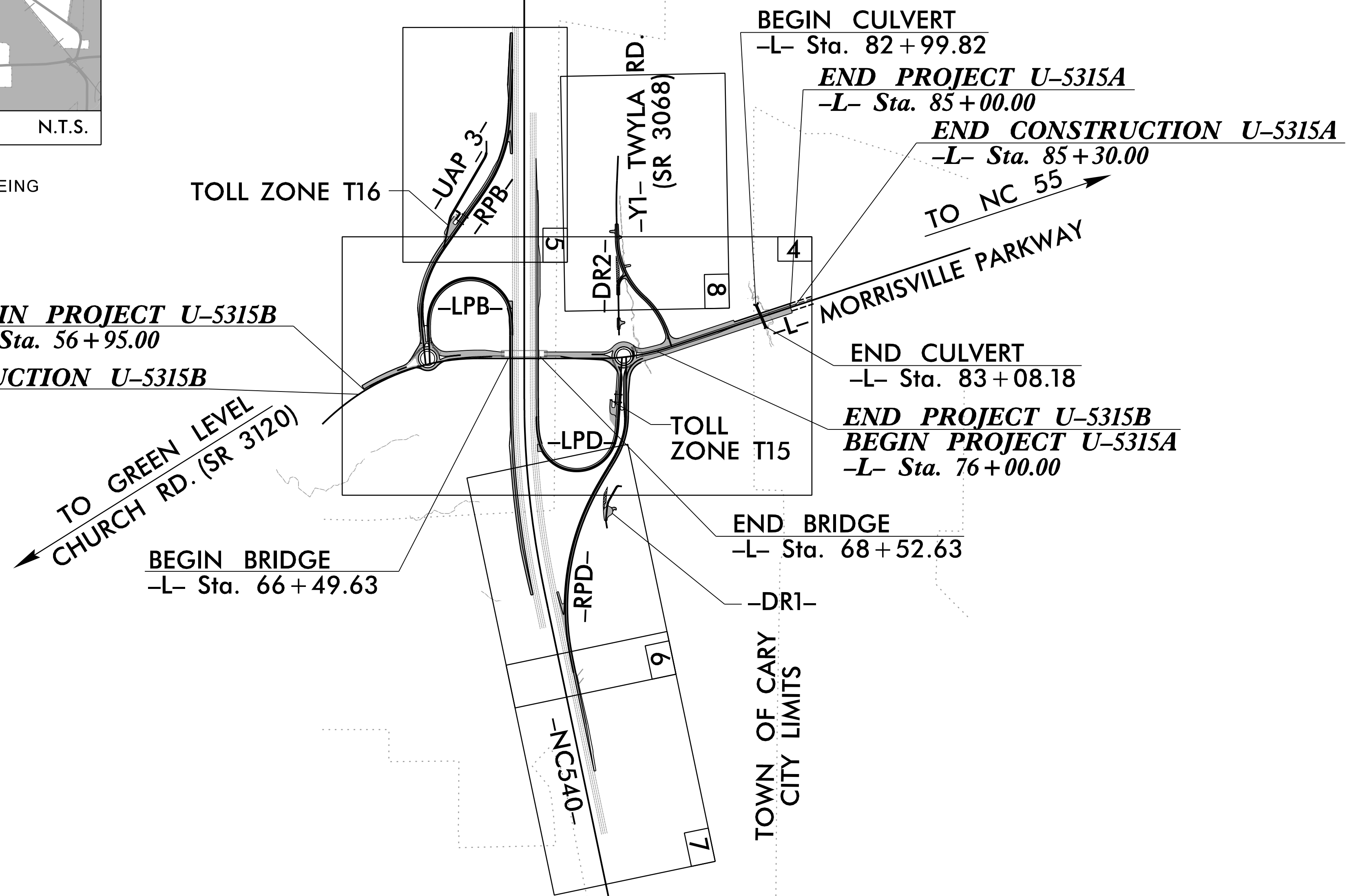
VICINITY MAP N.T.S.

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

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

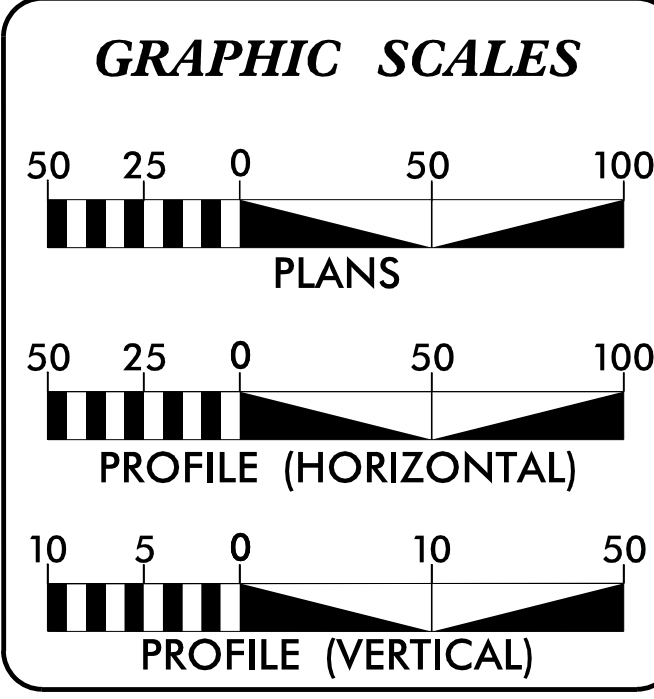
WAKE COUNTY

**LOCATION: MORRISVILLE PARKWAY EXTENSION AND NC 540 INTERCHANGE
 FROM WEST OF HIGHCROFT DRIVE TO EAST OF MILLS PARK DRIVE IN CARY**
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT,
 SIGNING, AND TOLL INFRASTRUCTURE**



| STATE | STATE PROJECT REFERENCE NO. | | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|----------------|-----------------|--------------|
| N.C. | U-5315A/U-5315B | | 1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | | |
| U-5315A | 45429.1.F2 | STPDA-0503(19) | PE | |
| U-5315A | 45429.2.2 | STPDA-0540(38) | R/W, UTILITIES | |
| U-5315B | 45429.1.F3 | STPDA-0503(19) | PE | |
| U-5315B | 45429.2.3 | STPDA-0540(39) | R/W, UTILITIES | |
| U-5315A&B | 45429.3.3 | STPDA-0540(39) | CONST. | |
| U-5315B | 45429.5.TA1 | | TURNPIKE CONST. | |
| U-5315B | 45429.5.TA3 | | TURNPIKE ROW | |

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

| | |
|------------|--------|
| ADT 2017 = | 11,850 |
| ADT 2037 = | 23,005 |
| K = | 12 % |
| D = | 60 % |
| T = | 4 % * |
| V = | 50 MPH |

* (TTST 1% + DUALS 3%)

FUNC. CLASS = MAJOR THOROUGHFARE / URBAN ARTERIAL

PROJECT LENGTH

| | |
|--------------------------------|----------|
| LENGTH OF PROJECT U-5315B..... | 0.322 mi |
| LENGTH OF PROJECT U-5315A..... | 0.170 mi |
| TOTAL LENGTH..... | 0.492 mi |

PREPARED IN THE OFFICE OF:
RK&K RUMMEL, KLEPPER & KAHL, LLP
 900 RIDGEFIELD DRIVE, SUITE 350
 RALEIGH, NORTH CAROLINA 27609
 NC LICENSE NO. F-0112
 DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
 NOVEMBER 20, 2015

LETTING DATE:
 DECEMBER 19, 2017

NCDOT CONTACT: MOHAMMED E. MAHJOUB
 SPECIAL DESIGN PROJECT ENGINEER
 ROADWAY DESIGN UNIT

B. KEITH SKINNER, P.E.
 PROJECT ENGINEER

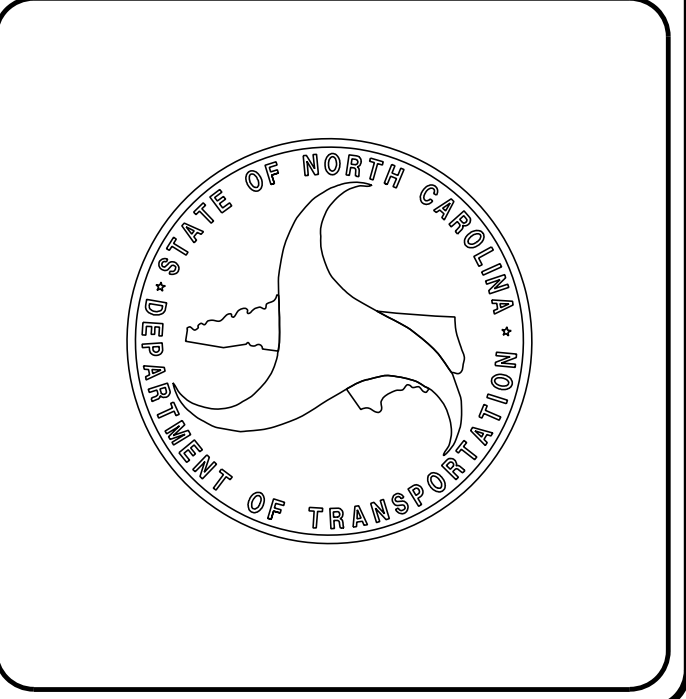
STEPHEN ROBERTS, P.E.
 PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

DocuSigned by: Jeffrey W. Meador 11/15/2017
 SIGNATURE: P.E.

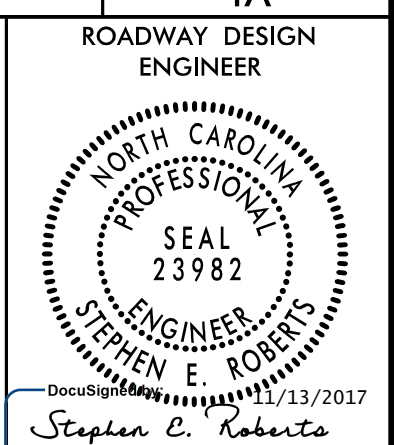
ROADWAY DESIGN ENGINEER

DocuSigned by: Stephen C. Roberts 11/16/2017
 SIGNATURE: P.E.



11/10/2017
 R:\Roadway\Proj\U5315_Rdy_1.tsh.dgn
 jminson

INDEX of SHEETS, GENERAL NOTES, and LIST of STANDARDS



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

| SHEET NUMBER | SHEET |
|---------------------|---|
| 1 | TITLE SHEET |
| 1A | INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS |
| 1B | CONVENTIONAL SYMBOLS |
| 1C | SURVEY CONTROL SHEET |
| 1D | CENTERLINE COORDINATE LIST |
| 2A-1 THRU 2A-4 | PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS |
| 2B-1 | CROSS SECTION LAYOUT |
| 2B-2 THRU 2B-3 | ROUNDBOUT INTERSECTION DETAILS |
| 2B-4 | GRADING DETAIL |
| 2C-1 THRU 2C-10 | STANDARD DETAILS |
| 2D-1 | DRAINAGE DITCH DETAILS |
| 3B-1 THRU 3B-2 | ROADWAY SUMMARIES |
| 3D-1 THRU 3D-4 | DRAINAGE SUMMARIES |
| 3G-1 | GEOTECHNICAL SUMMARIES |
| 3P-1 | RIGHT-OF-WAY AREA DATA SHEET |
| 3P-2 | PARCEL INDEX |
| 4 THRU 8 | PLAN SHEETS |
| 9 THRU 16 | PROFILE SHEETS |
| TMP-1 THRU TMP-26 | TRAFFIC MANAGEMENT PLANS |
| PMP-1 THRU PMP-8 | PAVEMENT MARKING PLANS |
| EC-1 THRU EC-13 | EROSION CONTROL PLANS |
| RF-1 | REFORESTATION PLAN |
| SIGN-1 THRU SIGN-32 | SIGNING PLANS/OVERHEAD SIGNS |
| ES-1 THRU ES-9 | LIGHTING PLANS |
| ITS-1 THRU ITS-15 | ITS PLANS |
| AET-1 THRU AET-6 | AET PLANS |
| GAN-1 THRU GAN-5 | GANTRY PLANS |
| UC-1 THRU UC-10 | UTILITY CONSTRUCTION PLANS |
| UO-1 THRU UO-6 | UTILITIES BY OTHER PLANS |
| X-0 THRU X-67 | CROSS SECTIONS |
| CU-1 THRU CU-7 | CULVERT PLANS |

LIST OF STANDARDS

EFF. 01-17-2012
REV. 05-24-2017

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 |
|---|--|
| DIVISION 2 - EARTHWORK | |
| 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 Super-elevation - Two Lane Pavement |
| 225.05 | Method of Obtaining Super-elevation - Divided Highway |
| 225.06 | Method of Grading Sight Distance at Intersections |
| 225.07 | Grading for False Cut at Grade Separations |
| 225.09 | Guide for Shoulder and Ditch Transition at Grade Separations |
| 240.01 | Guide for Berm Ditch Construction |
| DIVISION 3 - PIPE CULVERTS | |
| 300.01 | Method of Pipe Installation |
| DIVISION 5 - SUBGRADE, BASES AND SHOULDERS | |
| 560.01 | Method of Shoulder Construction - High Side of Super-elevated Curve - Method I |
| 560.02 | Method of Shoulder Construction - High Side of Super-elevated Curve - Method II (Sheet 2 of 3 is no longer applicable) |
| DIVISION 6 - ASPHALT BASES AND PAVEMENTS | |
| 610.01 | Guide for Paving Shoulders Under Bridges - Method I (Beg. March 2017 Letting use detail in lieu of Standard) |
| DIVISION 7 - CONCRETE PAVEMENTS AND SHOULDERS | |
| 700.01 | Concrete Pavement Joints - Construction and Contraction Joints |
| 700.03 | Dowel Assembly |
| 700.04 | Concrete Pavement Header Board |
| 700.05 | Tying Proposed Pavement to Existing |
| 710.01 | Concrete Pavement - Station Marking |
| 720.01 | Concrete Shoulders - Stamped or Rolled Rumble Strips, Milled Rumble Strips |
| DIVISION 8 - INCIDENTALS | |
| 806.01 | Concrete Right-of-Way Marker |
| 806.03 | Concrete Control of Access Marker |
| 815.03 | Pipe Underdrain and Blind Drain |
| 816.01 | Concrete Pads - for Shoulder Drain Installation |
| 816.02 | Aggregate Shoulder 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 |
| 838.80 | 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 |
| 840.14 | 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 |
| 840.24 | Frames and Narrow 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 |
| 840.29 | Frames and Narrow Slot Flat Grates |
| 840.31 | Concrete Junction Box - 12" thru 66" Pipe |
| 840.32 | Brick Junction Box - 12" thru 66" Pipe |
| 840.35 | Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates |
| 840.45 | Precast Drainage Structure |
| 840.46 | Traffic Bearing Precast Drainage Structure |
| 840.52 | Precast Manhole - 4', 5' and 6' Diameter |
| 840.54 | Manhole Frame and Cover |
| 846.01 | Concrete Curb, Gutter, and Curb & Gutter |
| 848.04 | Street Turnout |
| 848.05 | Curb Ramp - Proposed Curb & Gutter |
| 850.01 | Concrete Paved Ditches |
| 850.10 | Guide for Berm Drainage Outlet - 15" and 18" Pipe |
| 852.01 | Concrete Islands |
| 852.06 | Method for Placement of Drop Inlets in Concrete Islands |
| 857.01 | Precast Reinforced Concrete Barrier - 41" Single Faced |
| 862.04 | Anchoring End of Guardrail - B-77 and B-83 Anchor Units |
| 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 |

GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS EFFECTIVE: 01-17-2012
REVISED: 05-24-2017

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

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

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

SHOULDER CONSTRUCTION:
ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.02

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.

BERM DITCHES:
BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

UNDERDRAINS:
UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

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

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

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE AT&T TELECOMMUNICATIONS, DUKE ENERGY, TOWN OF CARY, AND SPECTRUM COMMUNICATIONS. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

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

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.

PLANS PREPARED BY :



RUMMEL, KLEPPER & KAHL, LLP
900 RIDGFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

8/17/09

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CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

| | |
|---|-------------|
| Secondary Horiz and Vert Control Point | ◆ |
| Primary Horiz Control Point | ○ |
| Primary Horiz and Vert Control Point | ◆ |
| Exist Permanent Easement Pin and Cap | ◇ |
| New Permanent Easement Pin and Cap | ◆ |
| Vertical Benchmark | ▲ |
| Existing Right of Way Marker | △ |
| Existing Right of Way Line | ----- |
| New Right of Way Line | ----- R/W |
| New Right of Way Line with Pin and Cap | ----- R/W ▲ |
| New Right of Way Line with Concrete or Granite R/W Marker | ----- R/W ▲ |
| New Control of Access Line with Concrete C/A Marker | ----- C/A |
| Existing Control of Access | ----- C/A |
| New Control of Access | ----- C/A |
| Existing Easement Line | ----- E |
| New Temporary Construction Easement | ----- E |
| New Temporary Drainage Easement | ----- TDE |
| New Permanent Drainage Easement | ----- PDE |
| New Permanent Drainage / Utility Easement | ----- DUE |
| New Permanent Utility Easement | ----- PUE |
| New Temporary Utility Easement | ----- TUE |
| New Aerial Utility Easement | ----- AUE |

ROADS AND RELATED FEATURES:

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

VEGETATION:

| | |
|--------------|---|
| Single Tree | ○ |
| Single Shrub | ○ |

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

| | |
|------------|----------------|
| Hedge | ----- |
| Woods Line | ----- |
| Orchard | ----- |
| Vineyard | ----- Vineyard |

EXISTING STRUCTURES:

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

UTILITIES:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

SURVEY CONTROL SHEET U-5315A&B

| | | | |
|-------|-----------------------------|-----------|--------------|
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| N.C. | U-5315A&B | 1C | |

DATUM DESCRIPTION

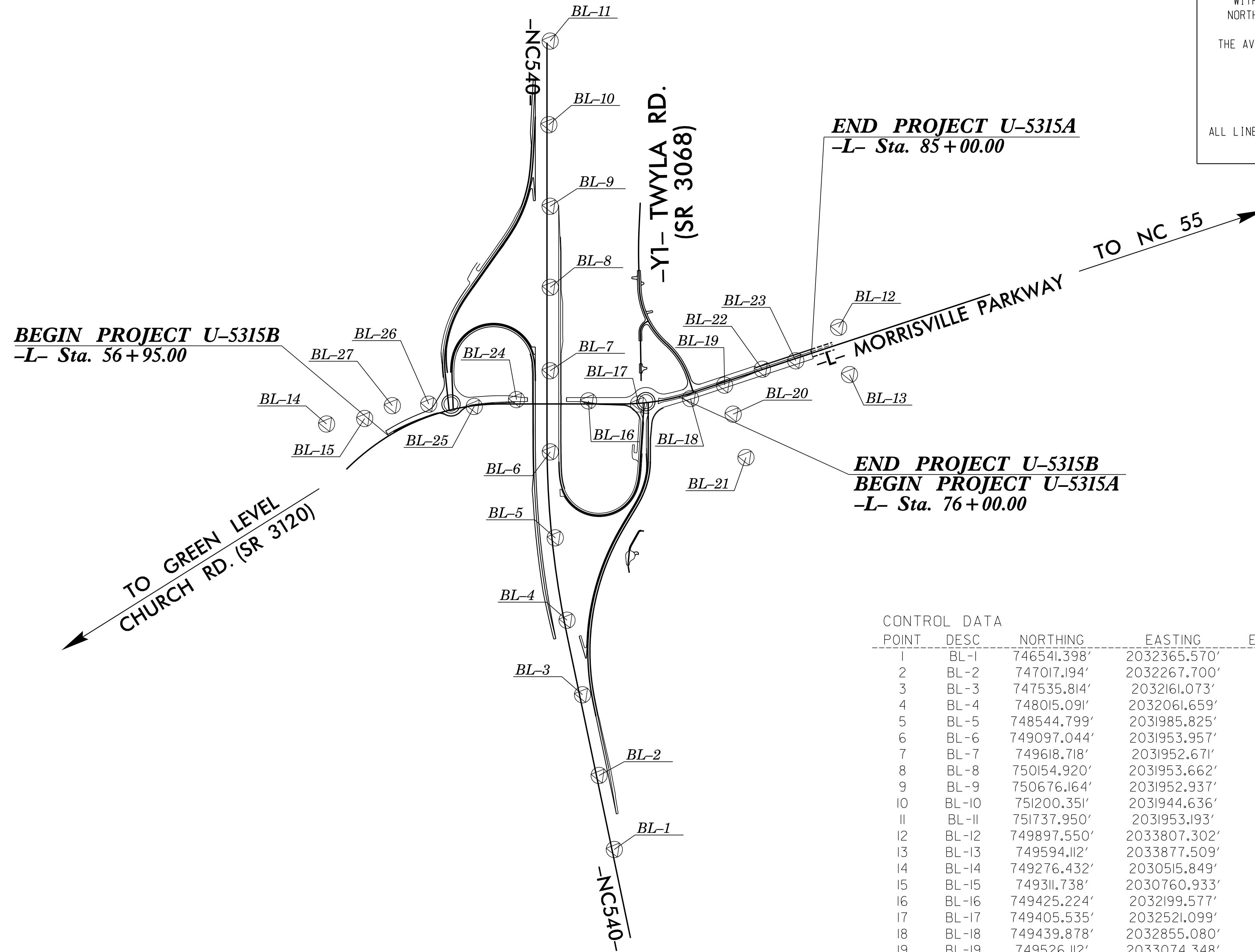
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "SPILLWAY" WITH NAD 1983-95 STATE PLANE GRID COORDINATES OF NORTHING: 706605.49(±) EASTING: 2090739.25(±) ELEVATION: NOT PROVIDED THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989338 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "SPILLWAY" TO -L- STATION IS NA

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



TIP PROJECT: U-5315 A&B

CONTRACT: C203991



| CONTROL DATA | | | | | | |
|--------------|-------|-------------|--------------|-----------|-------------|-----------|
| POINT | DESC | NORTHING | EASTING | ELEVATION | -L- STATION | OFFSET |
| 1 | BL-1 | 746541.398' | 2032365.570' | 346.04' | 71+83.86 | 2863.93' |
| 2 | BL-2 | 747017.194' | 2032267.700' | 349.54' | 70+85.99 | 2388.14' |
| 3 | BL-3 | 747535.814' | 2032161.073' | 353.19' | 69+79.36 | 1869.52' |
| 4 | BL-4 | 748015.091' | 2032061.659' | 353.05' | 68+79.95 | 1390.24' |
| 5 | BL-5 | 748544.799' | 2031985.825' | 349.31' | 68+04.12 | 860.53' |
| 6 | BL-6 | 749097.044' | 2031953.957' | 344.74' | 67+72.25 | 308.29' |
| 7 | BL-7 | 749618.718' | 2031952.671' | 340.28' | 67+70.96 | -213.39' |
| 8 | BL-8 | 750154.920' | 2031953.662' | 335.65' | 67+71.95 | -749.59' |
| 9 | BL-9 | 750676.164' | 2031952.937' | 326.00' | 67+71.23 | -1270.83' |
| 10 | BL-10 | 751200.351' | 2031944.636' | 312.95' | 67+62.93 | -1795.02' |
| 11 | BL-11 | 751737.950' | 2031953.193' | 305.72' | 67+71.48 | -2332.62' |
| 12 | BL-12 | 749897.550' | 2033807.302' | 334.96' | 87+17.52 | -103.43' |
| 13 | BL-13 | 749594.112' | 2033877.509' | 330.36' | 86+89.00 | 206.71' |
| 14 | BL-14 | 749276.432' | 2030515.849' | 326.67' | 54+43.84 | -299.73' |
| 15 | BL-15 | 749311.738' | 2030760.933' | 333.99' | 56+30.25 | -177.44' |
| 16 | BL-16 | 749425.224' | 2032199.577' | 349.95' | 70+17.87 | -19.89' |
| 17 | BL-17 | 749405.535' | 2032521.099' | 328.12' | 73+39.22 | 3.60' |
| 18 | BL-18 | 749439.878' | 2032855.080' | 327.68' | 76+70.29 | 32.60' |
| 19 | BL-19 | 749526.112' | 2033074.348' | 342.38' | 79+05.04 | 19.34' |
| 20 | BL-20 | 749339.811' | 2033129.454' | 343.75' | 78+98.93 | 213.52' |
| 21 | BL-21 | 749060.780' | 2033211.899' | 349.41' | 78+89.68 | 504.33' |
| 22 | BL-22 | 749628.555' | 2033316.983' | 320.81' | 81+67.57 | -1.82' |
| 23 | BL-23 | 749682.774' | 2033532.267' | 308.95' | 83+88.99 | 14.23' |
| 24 | BL-24 | 749433.281' | 2031736.948' | 364.79' | 65+55.24 | -27.95' |
| 25 | BL-25 | 749389.323' | 2031465.015' | 369.13' | 62+82.19 | 5.38' |
| 26 | BL-26 | 749404.092' | 2031172.352' | 356.27' | 60+06.81 | -74.98' |
| 27 | BL-27 | 749394.199' | 2030938.338' | 332.42' | 58+04.50 | -157.40' |

NOTES:

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

⊗ INDICATES CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL

NOTE: DRAWING NOT TO SCALE

10/31/2017 R:\LocationSurveys\U5315_Rdy_1c.dgn jminson

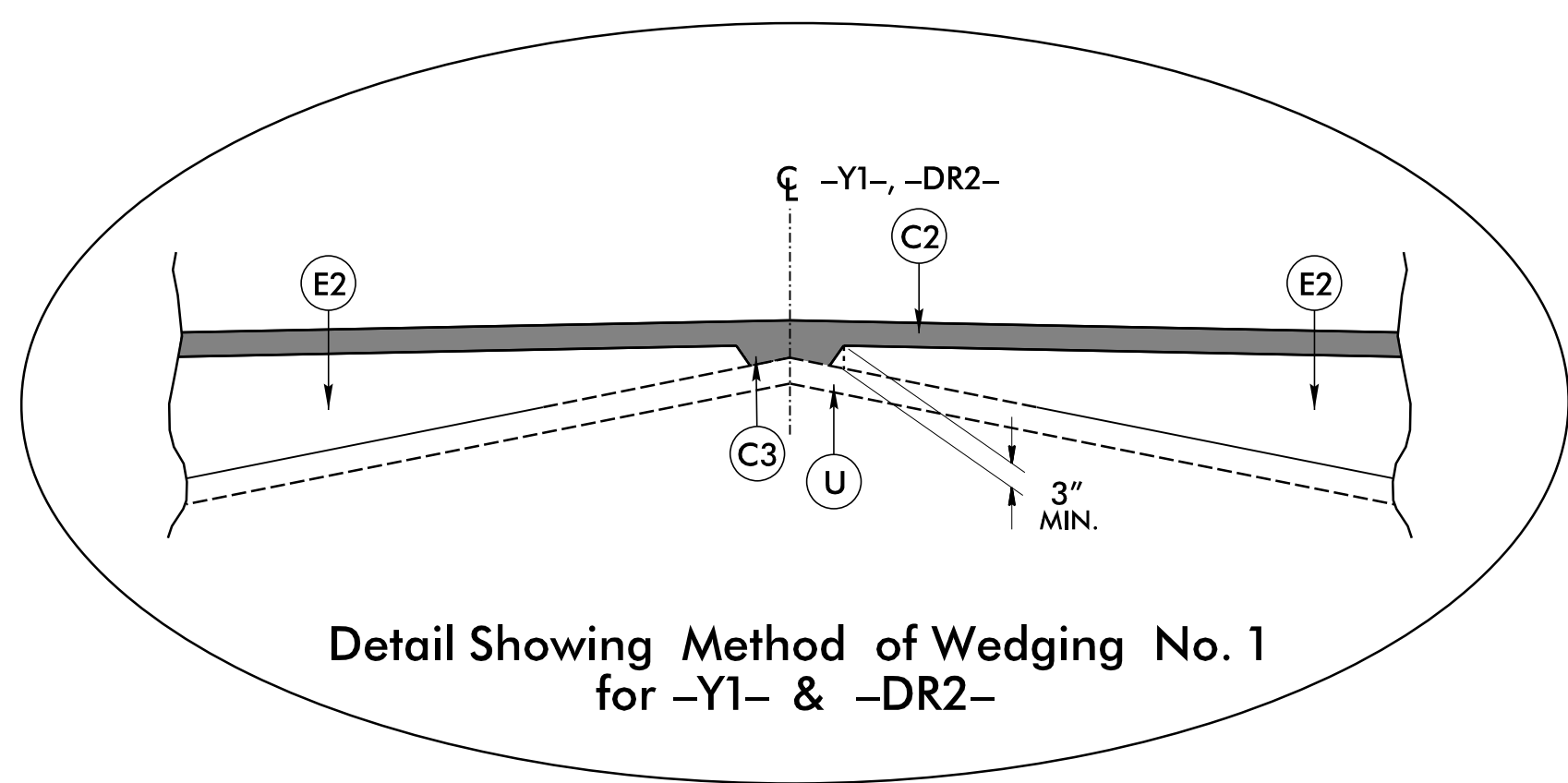
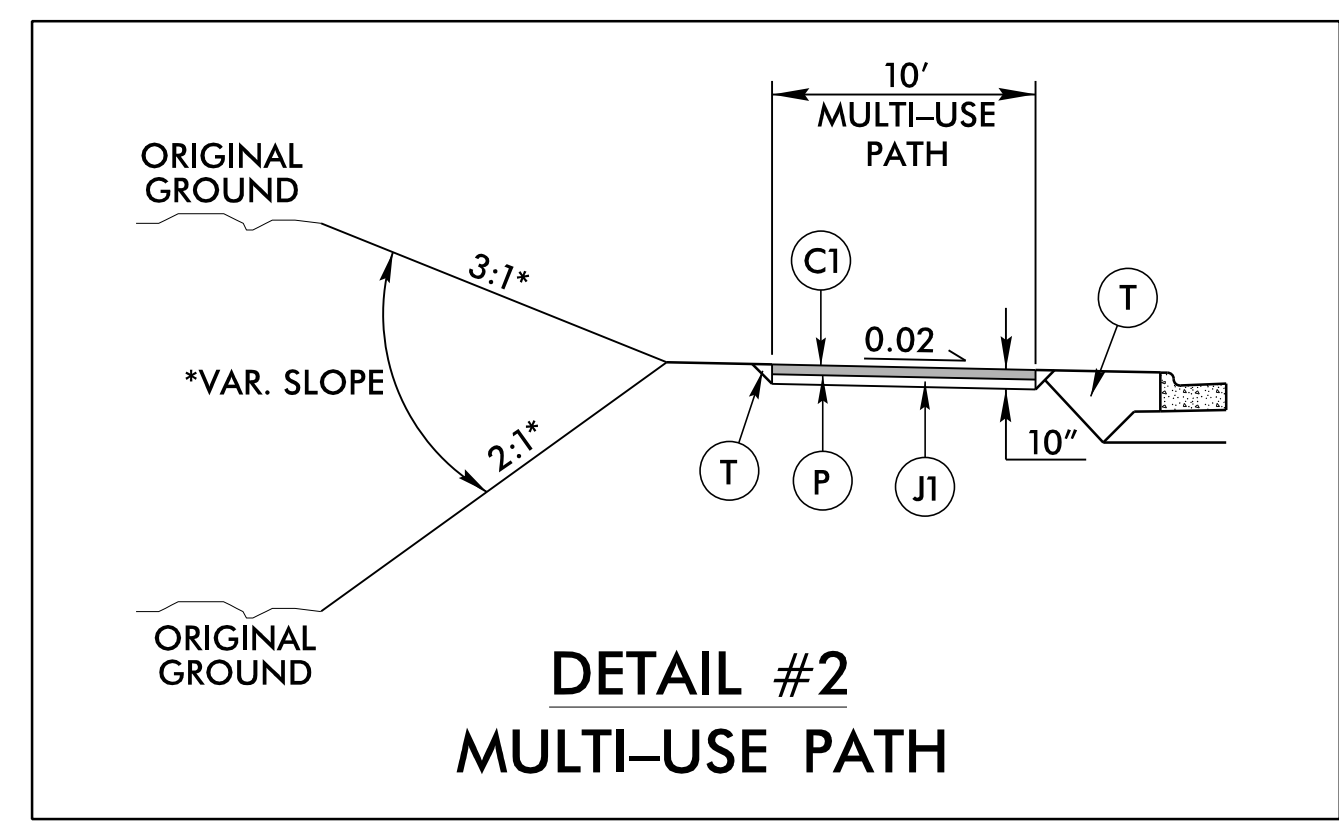
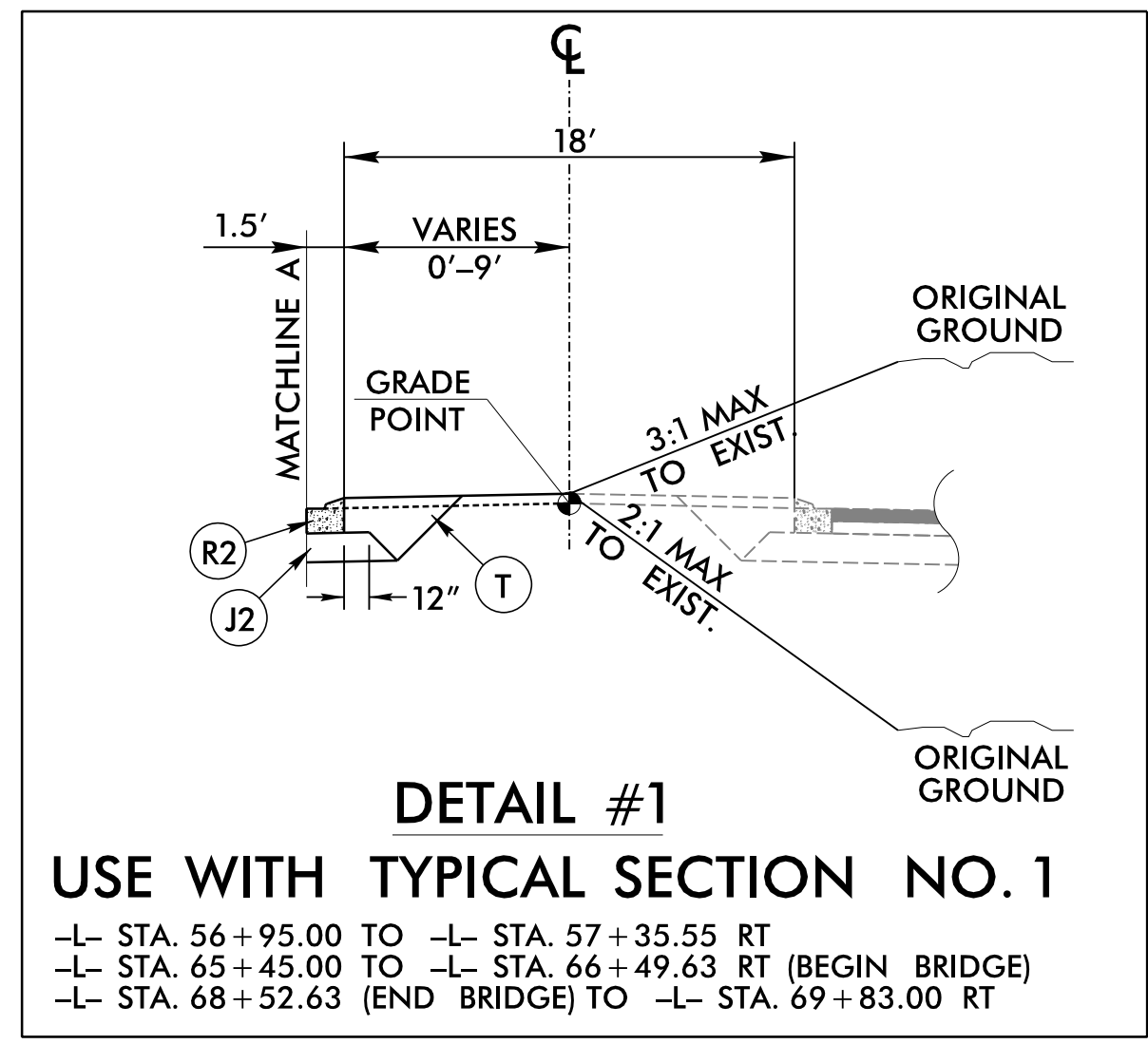
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PAVEMENT SCHEDULE

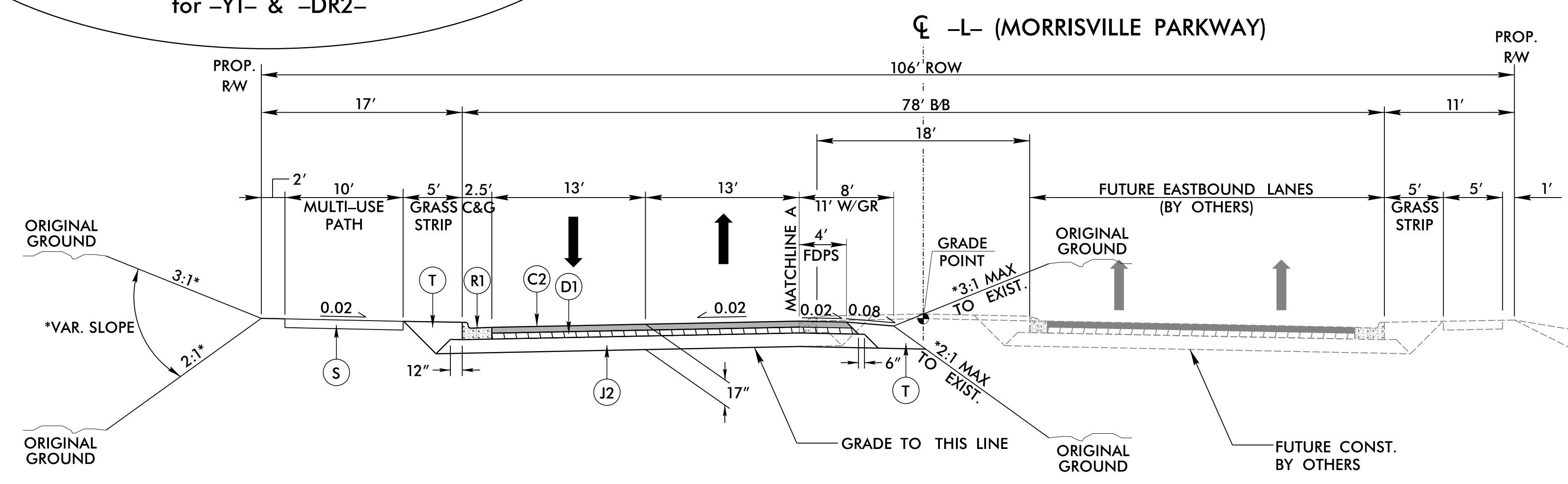
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| PROJECT REFERENCE NO. U-5315 A&B | SHEET NO. 2A-1 |
| ROADWAY DESIGN ENGINEER STEPHEN E. ROBERTS SEAL 23982 NORTH CAROLINA PROFESSIONAL ENGINEER | PAVEMENT DESIGN ENGINEER JEREMY R. HAMM SEAL 039779 NORTH CAROLINA PROFESSIONAL ENGINEER |
| DocuSigned by: Stephen E. Roberts 12/7/2017 | DocuSigned by: Jeremy R. Hamm 12/8/2017 |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| | | | | | |
|----|--|----|--|---|--------------------|
| A1 | 13 1/2" PORTLAND CEMENT CONCRETE PAVEMENT WITH DOWELS | E2 | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT GREATER THAN 3" IN DEPTH OR LESS THAN 5-1/2" IN DEPTH. | U | EXISTING PAVEMENT. |
| A2 | 11" PORTLAND CEMENT CONCRETE PAVEMENT | J1 | PROP. 8" AGGREGATE BASE COURSE. | V | RUMBLE STRIPS. |
| C1 | PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD. | J2 | PROP. 10" AGGREGATE BASE COURSE. | | |
| C2 | 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 | J3 | PROP. VAR. DEPTH AGGREGATE BASE COURSE. | | |
| 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 GREATER THAN 2" IN DEPTH. | N | GEOTEXTILE FOR PAVEMENT STABILIZATION | | |
| C4 | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 330 LBS. PER SQ. YD. IN EACH OF TWO LAYERS | P | PRIME COAT AT THE RATE OF 0.35 GAL. PER SQ. YARD | | |
| C5 | PROP. APPROX. 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 275 LBS. PER SQ. YD. | R1 | 2'-6" CONCRETE CURB AND GUTTER. | | |
| C6 | PROP. APPROX. 3 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT A RATE OF 168 LBS. PER SQ. YD. FOR THE FIRST LIFT AND A RATE OF 224 LBS. PER SQ. YD. FOR THE FINAL LIFT. | R2 | 1'-6" MOUNTABLE CONCRETE CURB AND GUTTER. | | |
| D1 | PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. | R3 | SHOULDER BERM GUTTER | | |
| D2 | PROP. APPROX. 3 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. | S | 10' MULTI-USE PATH | | |
| E1 | PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD. | T | EARTH MATERIAL. | | |



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



USE TYPICAL SECTION NO. 1
-L- STA. 56+95.00 TO 60+74.77 (BEGIN ROUNDABOUT)
-L- STA. 62+04.40 (END ROUNDABOUT) TO 66+49.63 (BEGIN BRIDGE)
-L- STA. 68+52.63 (END BRIDGE) TO 73+12.97 (BEGIN ROUNDABOUT)

NOTES:
SEE PLANS FOR LOCATION OF CONCRETE ISLANDS, AUXILIARY LANES, AND TAPERS.
*4:1 MAX INSIDE INTERCHANGE

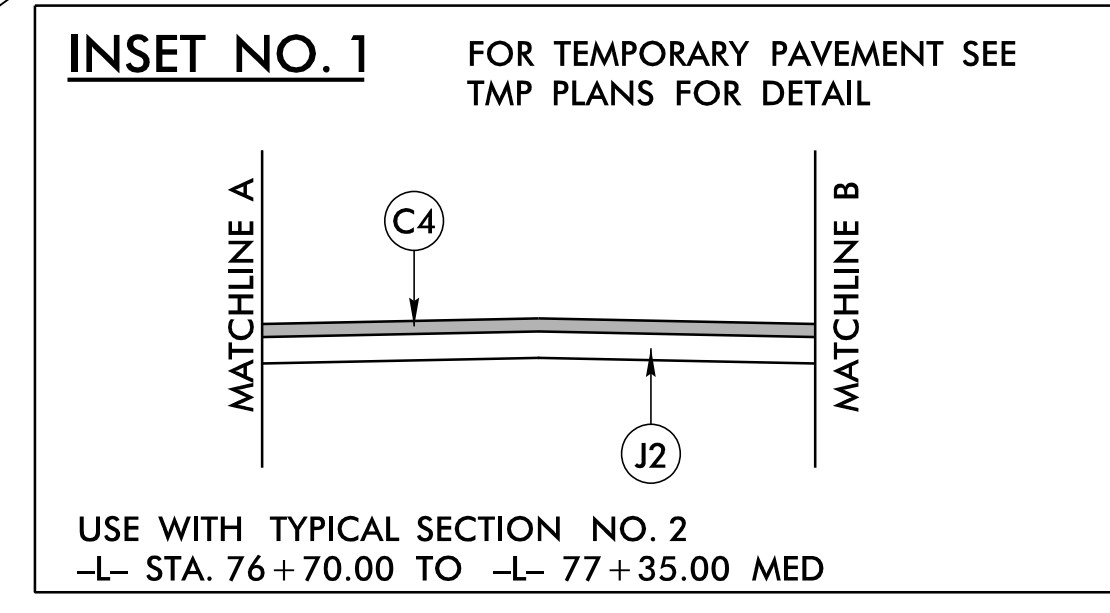
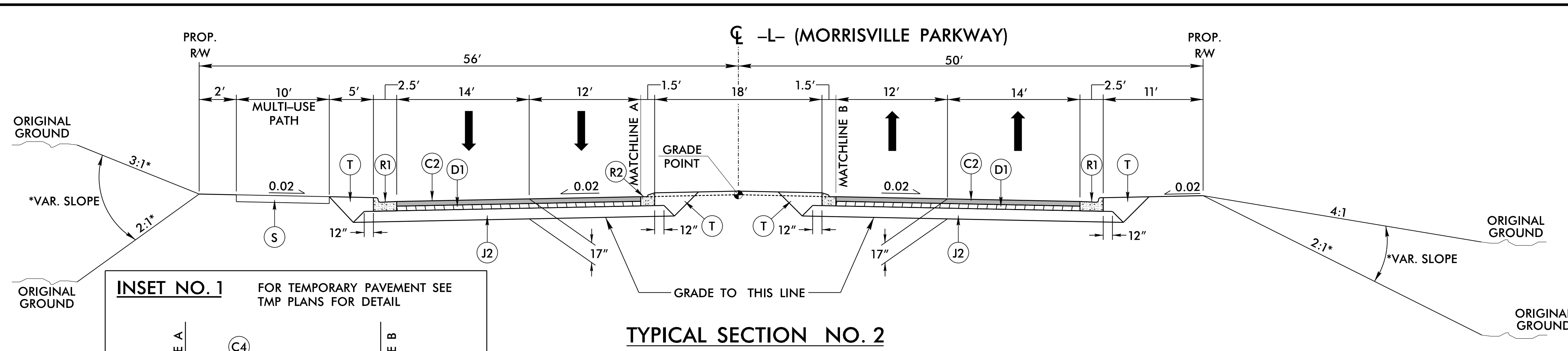
PLANS PREPARED BY :

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

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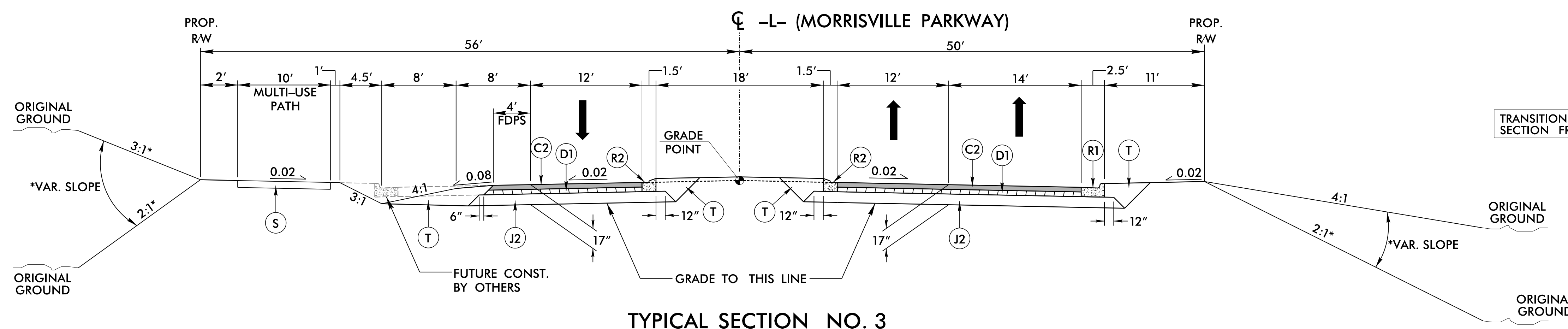
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| PAVEMENT SCHEDULE | |
|-------------------|------------------------|
| C1 | 2" TYPE S9.5B |
| C2 | 3" TYPE S9.5B |
| C4 | 3" TYPE SF9.5A |
| D1 | 4" TYPE I19.0B |
| E1 | 3" TYPE B25.0B |
| J1 | 8" ABC |
| J2 | 10" ABC |
| J3 | VAR. DEPTH ABC |
| R1 | 2'-6" CONC. C&G |
| R2 | 1'-6" MOUNT. CONC. C&G |
| S | 10' MULTI-USE PATH |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |



TYPICAL SECTION NO. 2

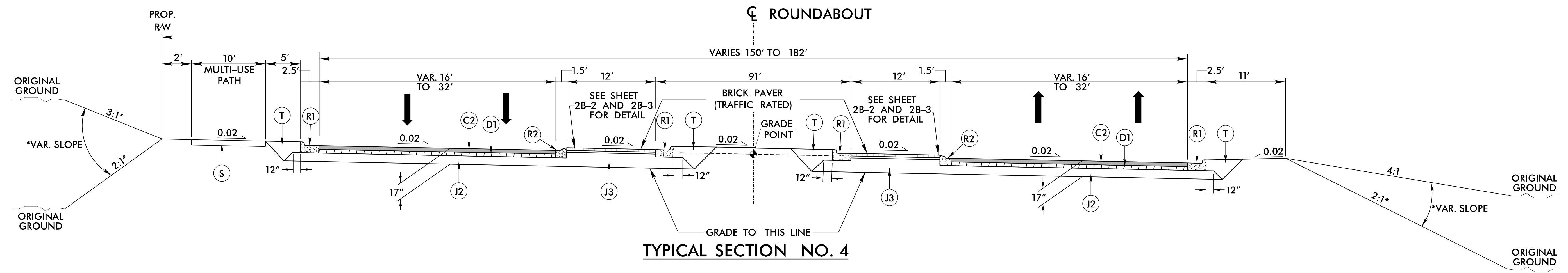
USE TYPICAL SECTION NO. 2
-L- STA. 74+69.81 (END ROUNDABOUT) TO 81+30.00 LT



TYPICAL SECTION NO. 3

TRANSITION FROM CURB AND GUTTER TO DITCH SECTION FROM 81+30.00 TO 81+80.00 (LT.)

USE TYPICAL SECTION NO. 3
-L- STA. 81+30.00 TO 85+00.00 LT



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
-L- STA. 60+74.77 TO 62+04.40
-L- STA. 73+12.97 TO 74+69.81

NOTES:
SEE PLANS FOR LOCATION OF CONCRETE ISLANDS, AUXILIARY LANES, AND TAPERS.
* 4:1 MAX INSIDE INTERCHANGE

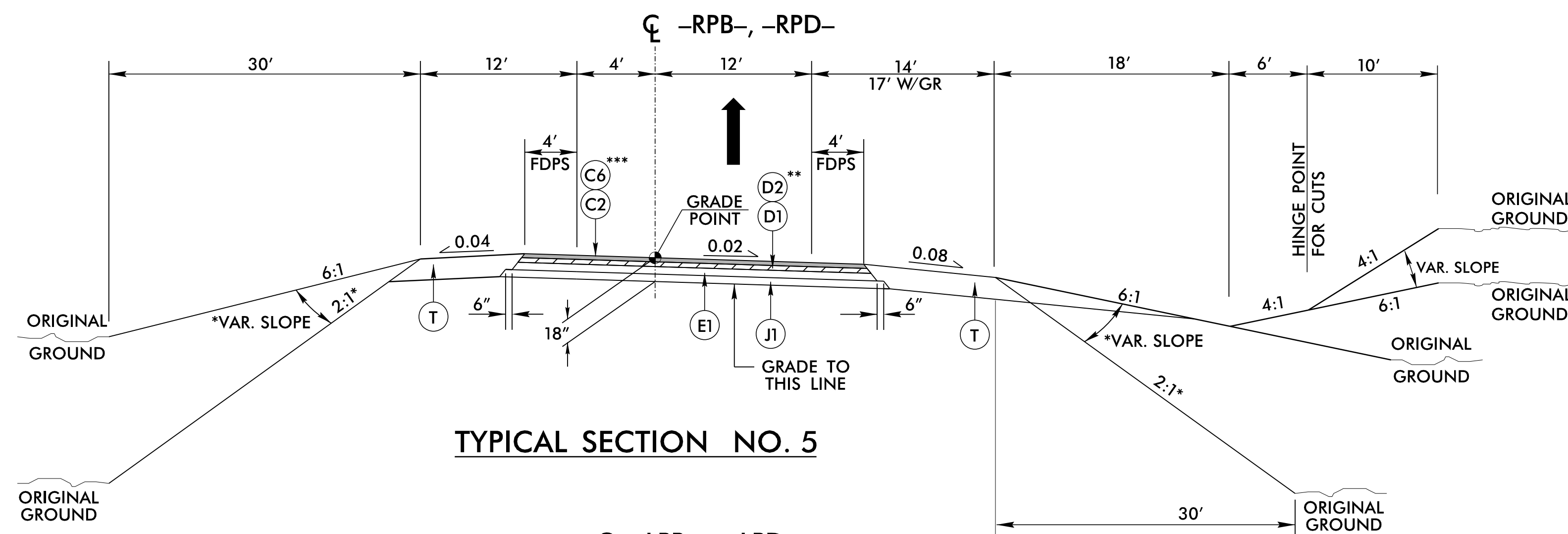
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| PROJECT REFERENCE NO. U-5315 A&B | SHEET NO. 2A-2 |
| ROADWAY DESIGN ENGINEER <i>Stephen E. Roberts</i> | PAVEMENT DESIGN ENGINEER <i>Jeremy R. Hamm</i> |
| | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

PLANS PREPARED BY :

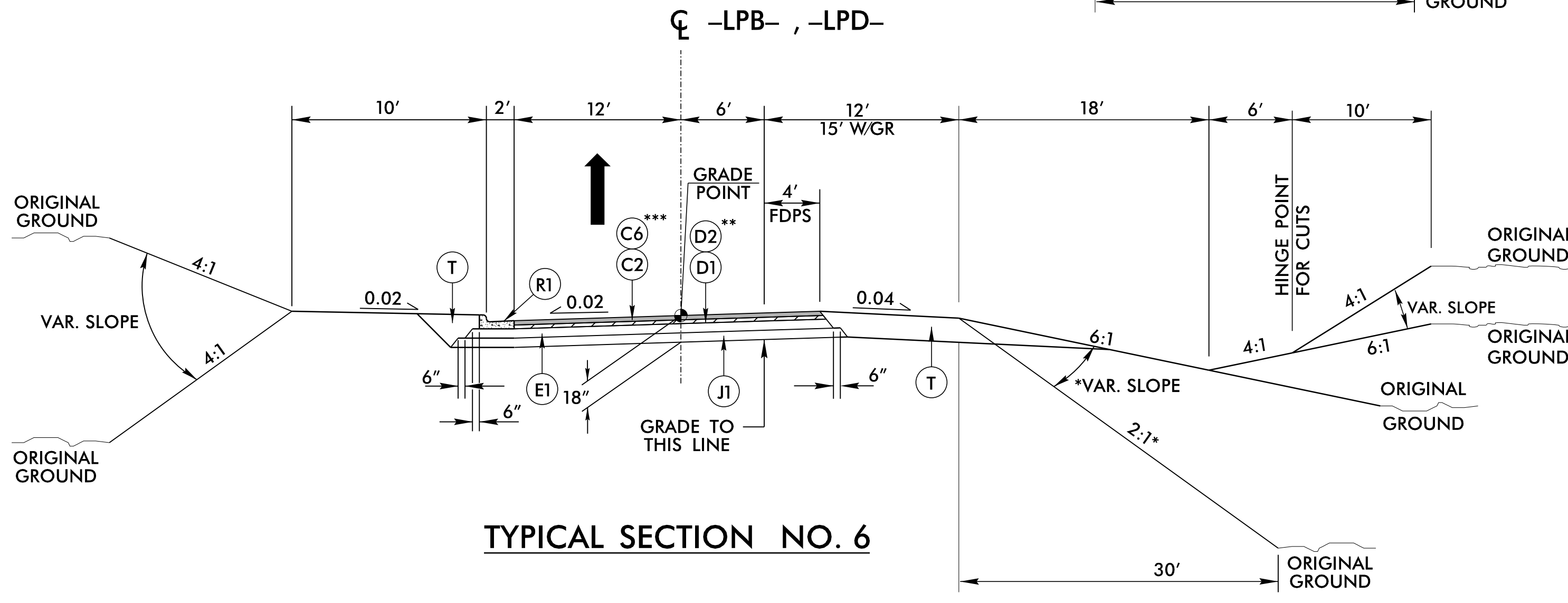
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

6/2/2017

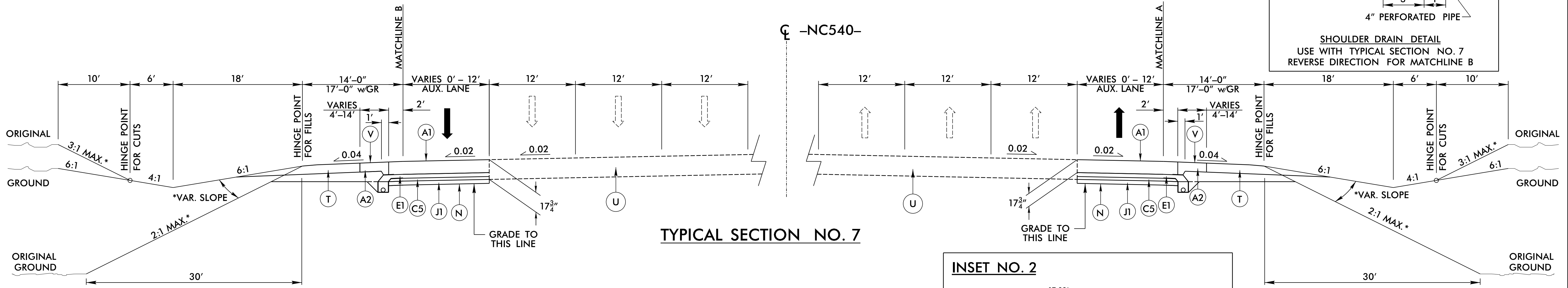
| PAVEMENT SCHEDULE | |
|-------------------|---------------------------------------|
| A1 | 13 1/2" PCCP |
| A2 | 11" PCCP |
| C1 | 2" TYPE S9.5B |
| C2 | 3" TYPE S9.5B |
| C5 | 1 1/4" TYPE SF9.5A |
| C6 | 3 1/2" TYPE S9.5B |
| D1 | 4" TYPE I19.0B |
| D2 | 3 1/2" TYPE I19.0B |
| E1 | 3" TYPE B25.0B |
| J1 | 8" ABC |
| J2 | 10" ABC |
| J3 | VAR. ABC |
| N | GEOTEXTILE FOR PAVEMENT STABILIZATION |
| R1 | 2'-6" CONC. C&G |
| R2 | 1'-6" MOUNT. CONC. C&G |
| R3 | SBG |
| S | 10' MULTI-USE PATH |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |
| V | RUMBLE STRIPS |



TYPICAL SECTION NO. 5



TYPICAL SECTION NO. 6



TYPICAL SECTION NO. 7

| | | |
|---|--|---|
| PAVEMENT DESIGN ENGINEER FOR -NC540- PAVEMENT DESIGN Dec: Clark S. Morrison 12/9/2017 | PROJECT REFERENCE NO. U-5315 A&B | SHEET NO. 2A-3 |
| | ROADWAY DESIGN ENGINEER FOR ALL OTHER PAVEMENT DESIGNS Dec: Stephen E. Roberts 12/7/2017 | PAVEMENT DESIGN ENGINEER FOR ALL OTHER PAVEMENT DESIGNS Dec: Jeremy R. Hamm 12/8/2017 |
| | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

USE TYPICAL SECTION NO. 5
 -RPB- STA. 14+64.50 TO 29+25.25
 -RPD- STA. 14+47.30 TO 30+33.64

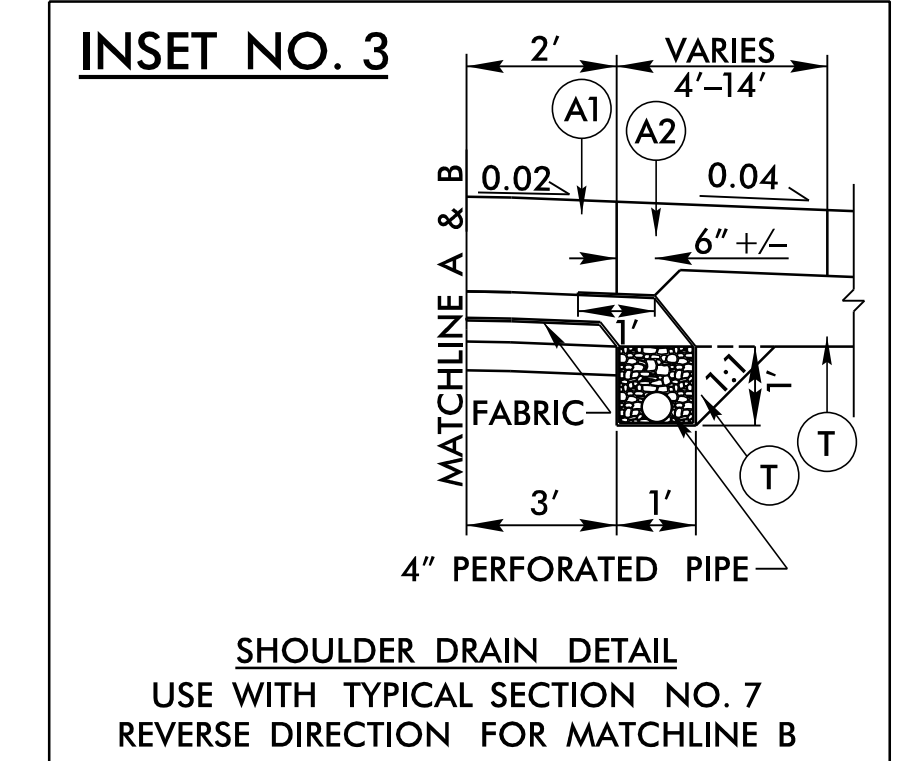
USE -NC540- PAVEMENT DESIGN
 -RPB- STA. 10+00.00 TO 14+64.50
 -RPD- STA. 10+00.00 TO 14+47.30

** FOR -RPB- STA 19+00.00 TO 22+00.00, USE 3.5" I19.0B.
 *** FOR -RPB- STA 19+00.00 TO 22+00.00, USE 3.5" S9.5B. FINAL SURFACE LIFT SHALL BE 2.0" THICK IN THIS AREA.

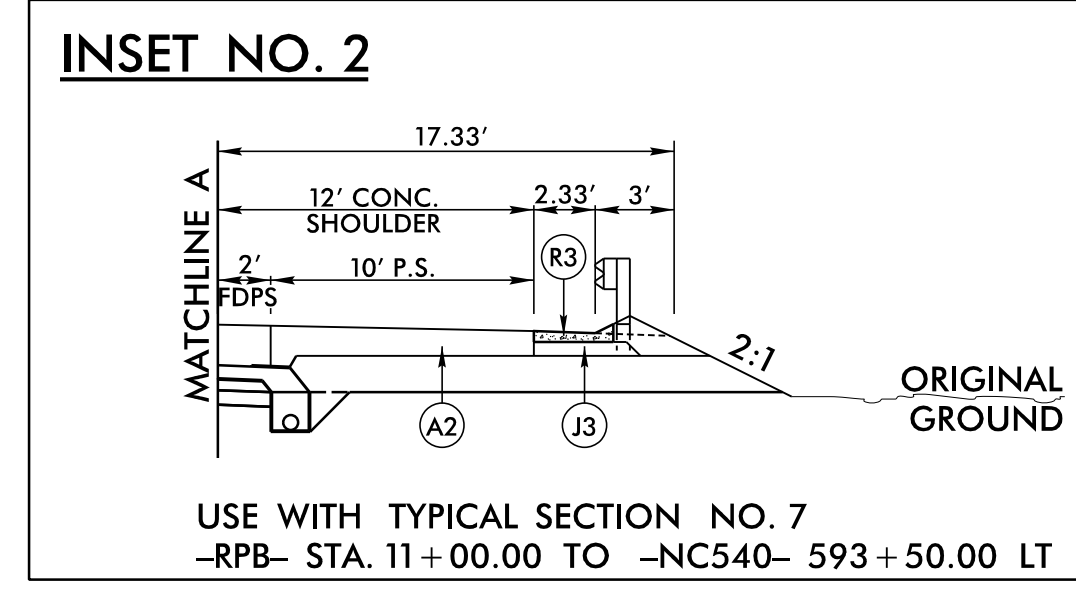
USE TYPICAL SECTION NO. 6
 -LPB- STA. 12+19.55 TO 20+97.64
 -LPD- STA. 12+24.51 TO 22+88.66

USE -NC540- PAVEMENT DESIGN
 -LPB- STA. 10+00.00 TO 12+19.55
 -LPD- STA. 10+00.00 TO 12+24.51

** FOR -LPD- STA 19+75.00 TO 22+88.66, USE 3.5" I19.0B.
 *** FOR -LPD- STA 19+75.00 TO 22+88.66, USE 3.5" S9.5B. FINAL SURFACE LIFT SHALL BE 2.0" THICK IN THIS AREA.



SHOULDER DRAIN DETAIL
 USE WITH TYPICAL SECTION NO. 7
 REVERSE DIRECTION FOR MATCHLINE B



USE WITH TYPICAL SECTION NO. 7
 -RPB- STA. 11+00.00 TO -NC540- 593+50.00 LT

USE TYPICAL SECTION NO. 7
 -NC540- STA. 545+66.00 TO 557+34.64 RT.
 -NC540- STA. 557+49.14 TO 576+17.62 LT.
 -NC540- STA. 566+51.94 TO 585+29.12 RT.
 -NC540- STA. 585+58.35 TO 593+31.25 LT.

PLANS PREPARED BY :



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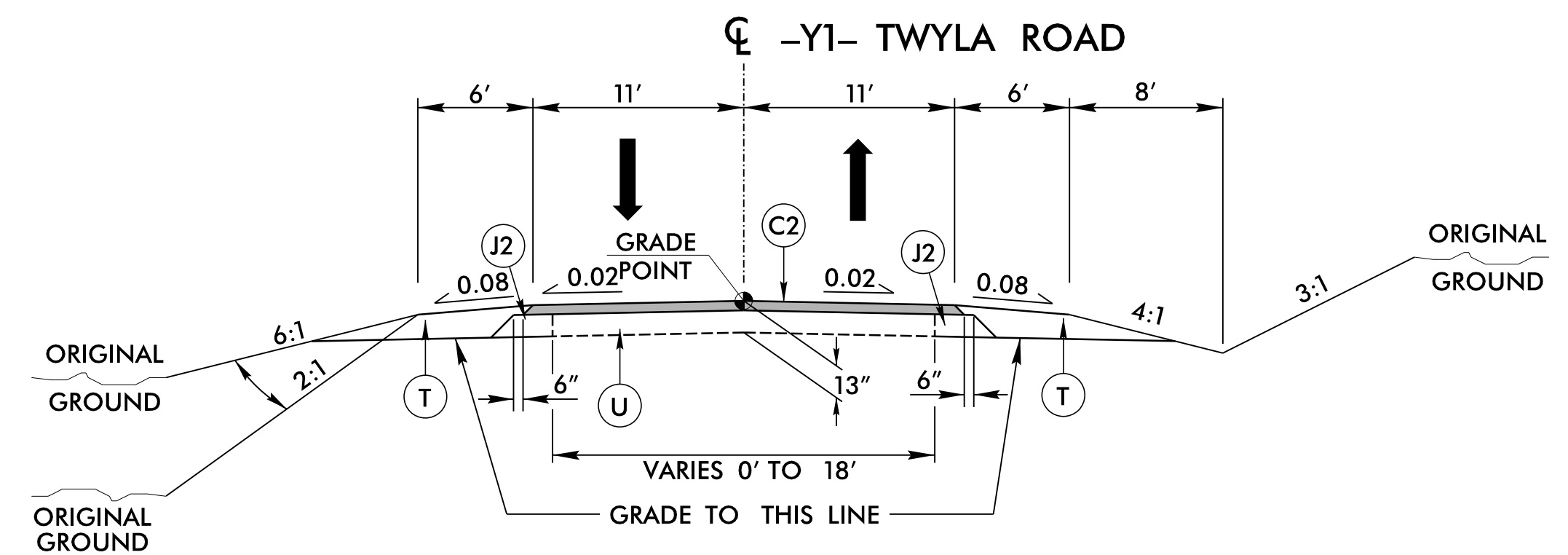
NOTES:
 SEE PLANS FOR LOCATION OF CONCRETE ISLANDS, AUXILIARY LANES, AND TAPERS.
 *4:1 MAX INSIDE INTERCHANGE

12/7/2017
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6/2/2017

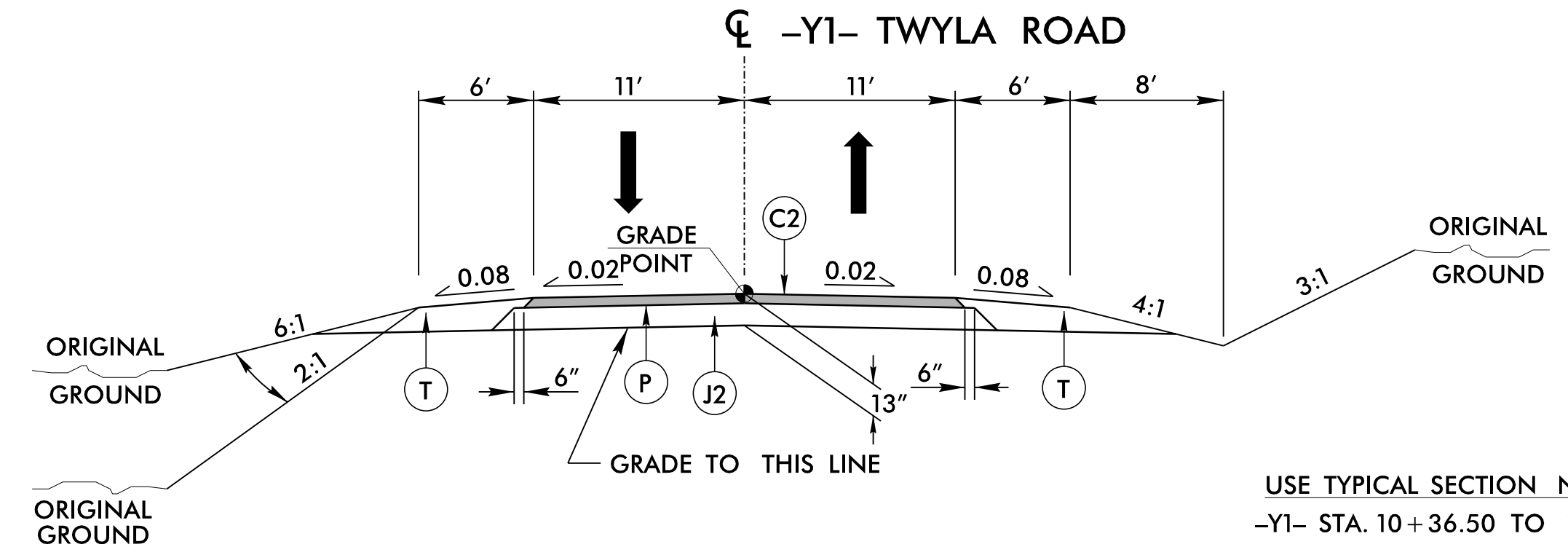
| PAVEMENT SCHEDULE | |
|-------------------|------------------------|
| A1 | 1 1/2" PCCP |
| A2 | 11" PCCP |
| C1 | 2" TYPE S9.5B |
| C2 | 3" TYPE S9.5B |
| D1 | 4" TYPE I19.0B |
| E1 | 3" TYPE B25.0B |
| J1 | 8" ABC |
| J2 | 10" ABC |
| R1 | 2'-6" CONC. C&G |
| R2 | 1'-6" MOUNT. CONC. C&G |
| R3 | SBG |
| S | 10' MULTI-USE PATH |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |

| | |
|--|---|
| PROJECT REFERENCE NO. U-5315 A&B | SHEET NO. 2A-4 |
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| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



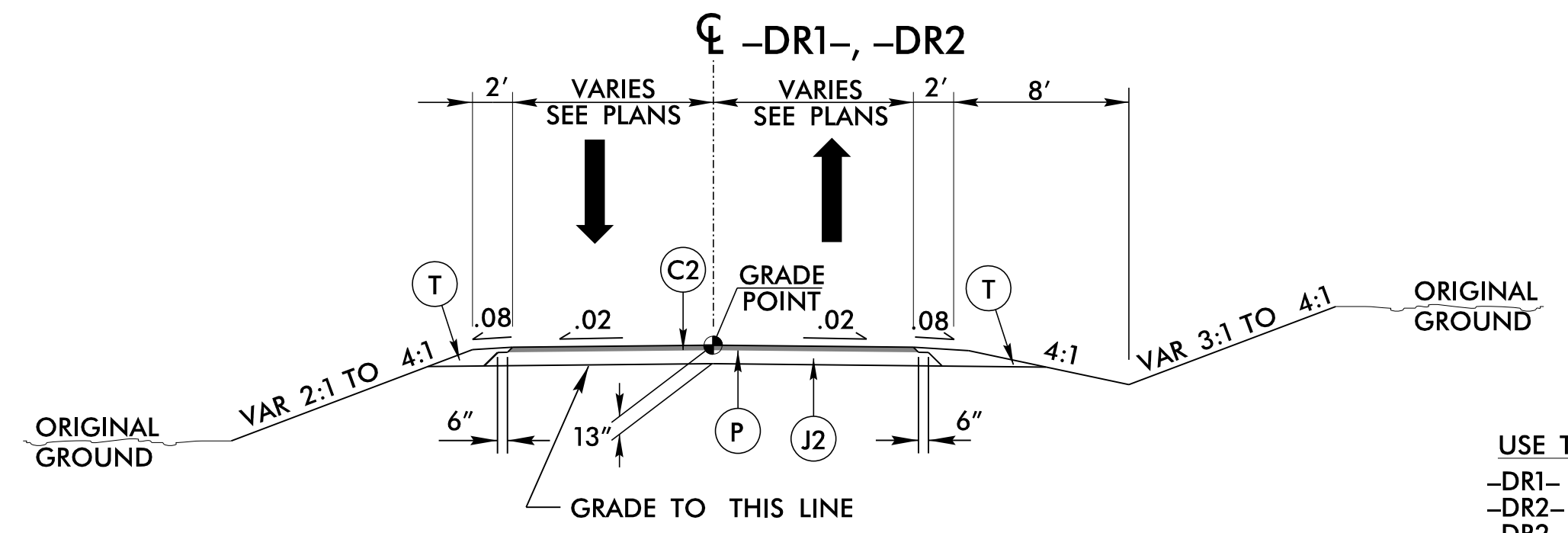
TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8
-Y1- STA. 16+42.17 TO 18+85.00



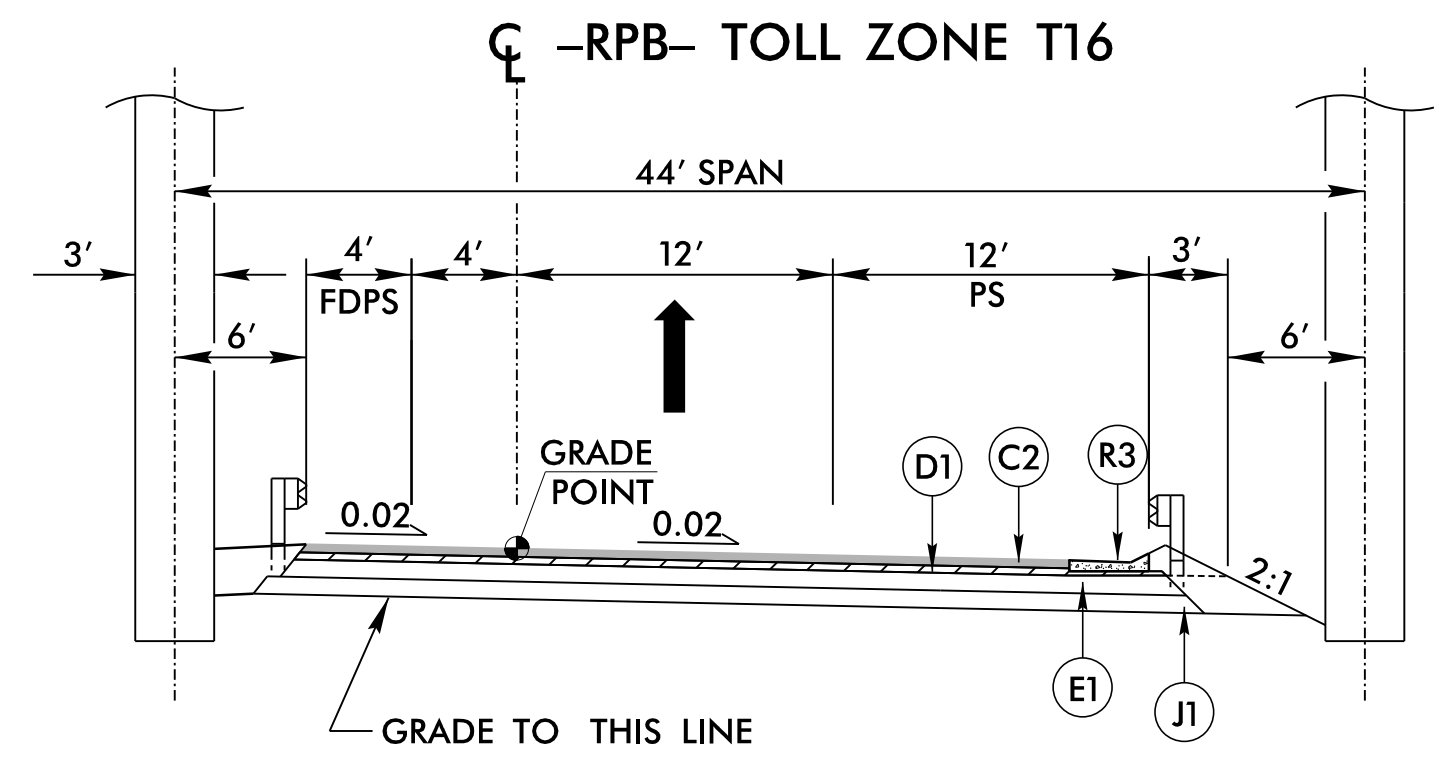
TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9
-Y1- STA. 10+36.50 TO 16+42.17



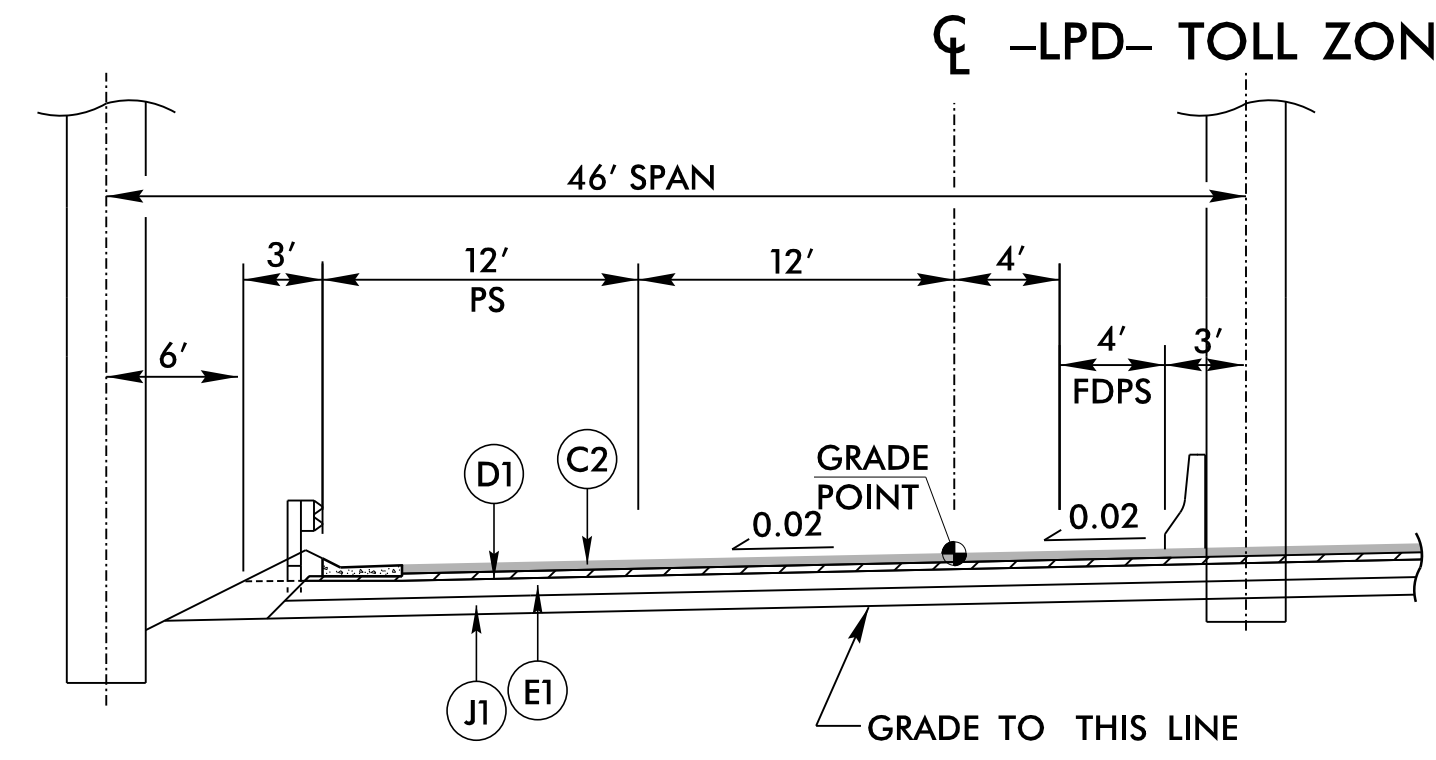
TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10
-DR1- STA. 10+50.00 TO 12+95.46
-DR2- STA. 10+11.00 TO 11+50.00
-DR2- STA. 12+96.74 TO 13+56.74



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11
-RPB- STA. 19+91.00 TO 20+85.00
NOTE: USE 3'-1.5" GUARDRAIL POST SPACING




TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12
-LPD- STA. 20+44.63 TO 21+39.50
NOTE: USE 3'-1.5" GUARDRAIL POST SPACING

NOTES:
SEE PLANS FOR LOCATION OF CONCRETE ISLANDS, AUXILIARY LANES, AND TAPERS.
*4:1 MAX INSIDE INTERCHANGE

PLANS PREPARED BY :

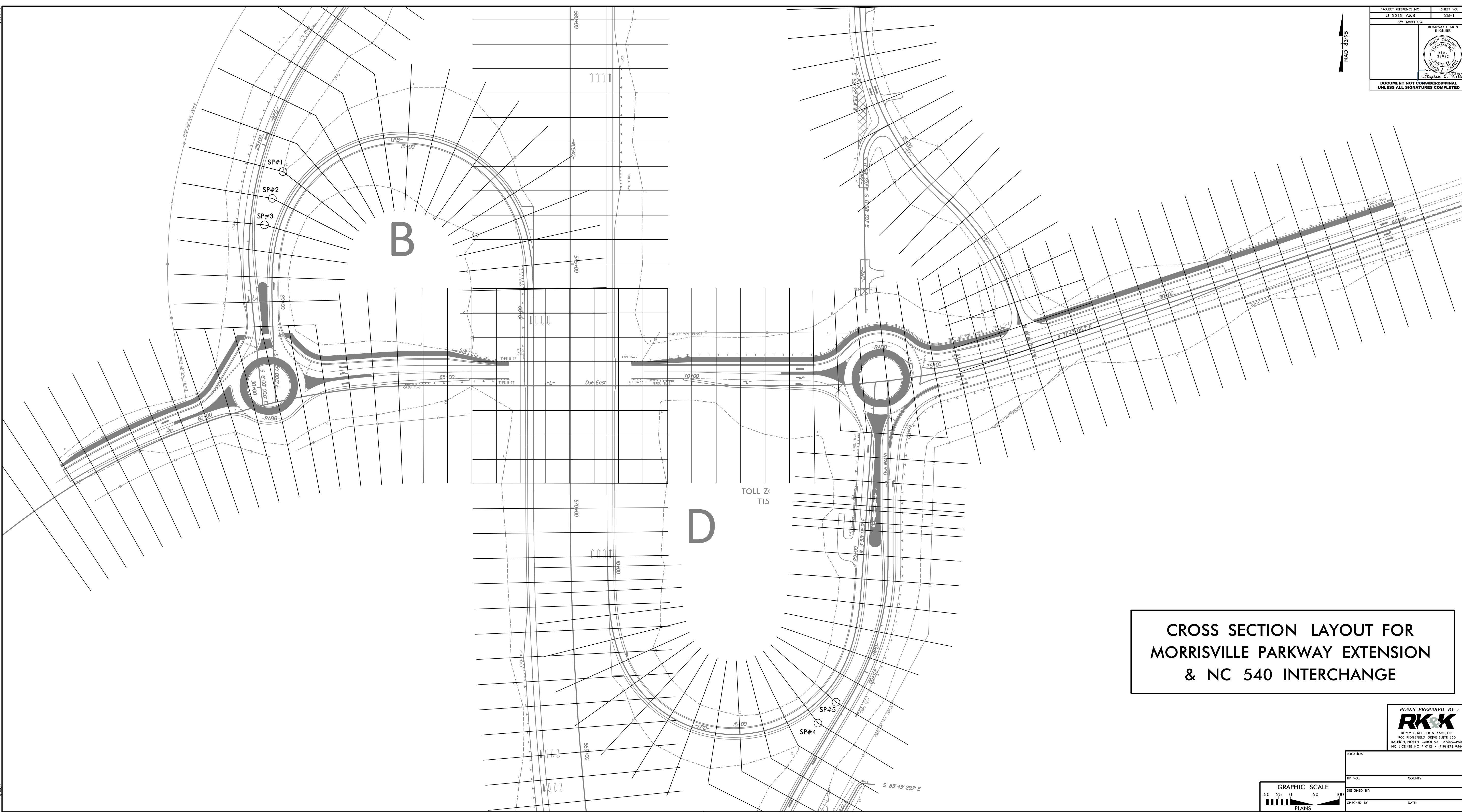


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NC LICENSE NO. F-0112 • (919) 878-9560

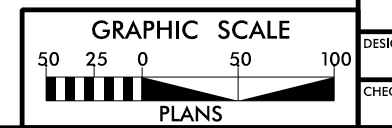
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| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | |
| | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



CROSS SECTION LAYOUT FOR
MORRISVILLE PARKWAY EXTENSION
& NC 540 INTERCHANGE



PLANS PREPARED BY:
RK&K
ROBERT K. KELLY & KAREN L. KELLY, L.P.
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-9740
NC LICENSE NO. E-0112 - (919) 878-9540

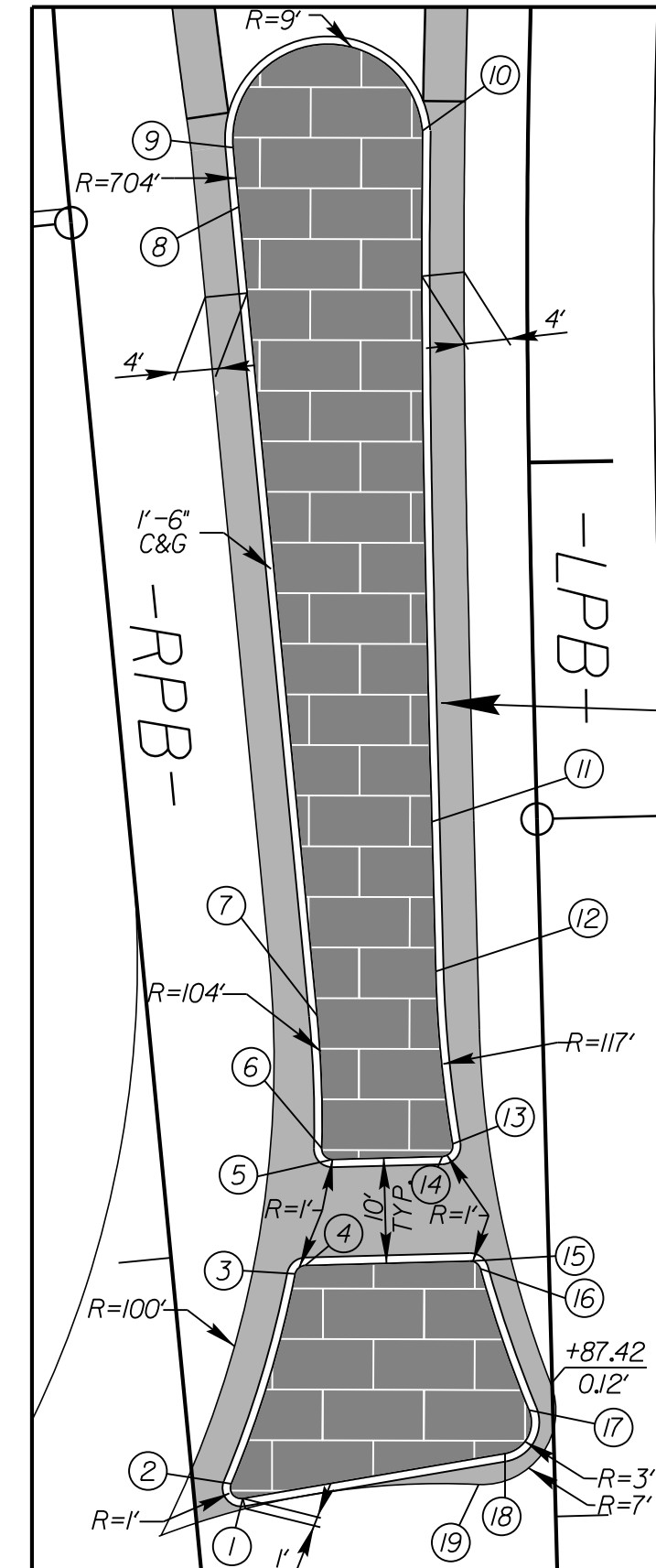
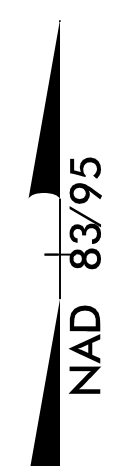
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| TRP NO.: | COUNTY: |
| DESIGNED BY: | |
| CHECKED BY: | DATE: |

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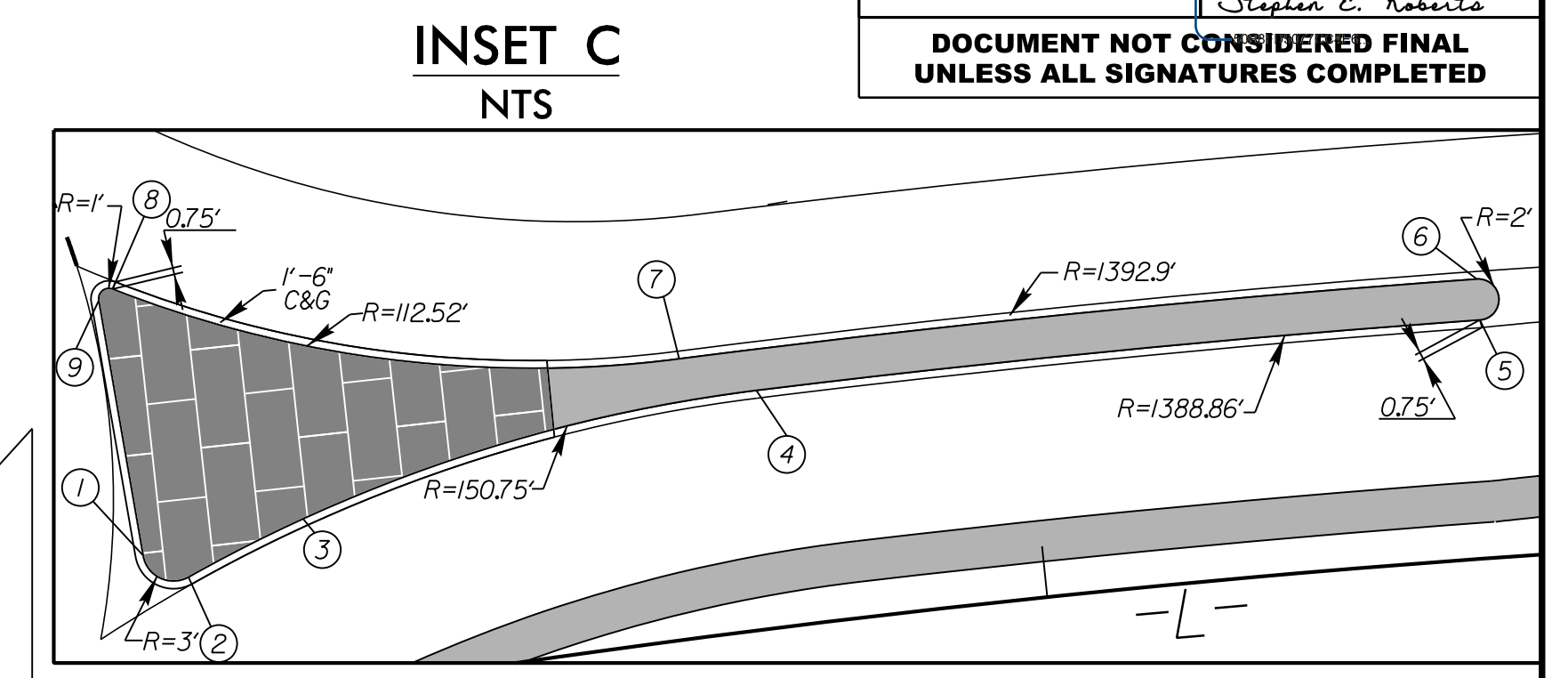
5/14/99

ROUNDBABOUT INTERSECTION DETAIL

| | |
|---|--------------------------|
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| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | |
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| <p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> | |

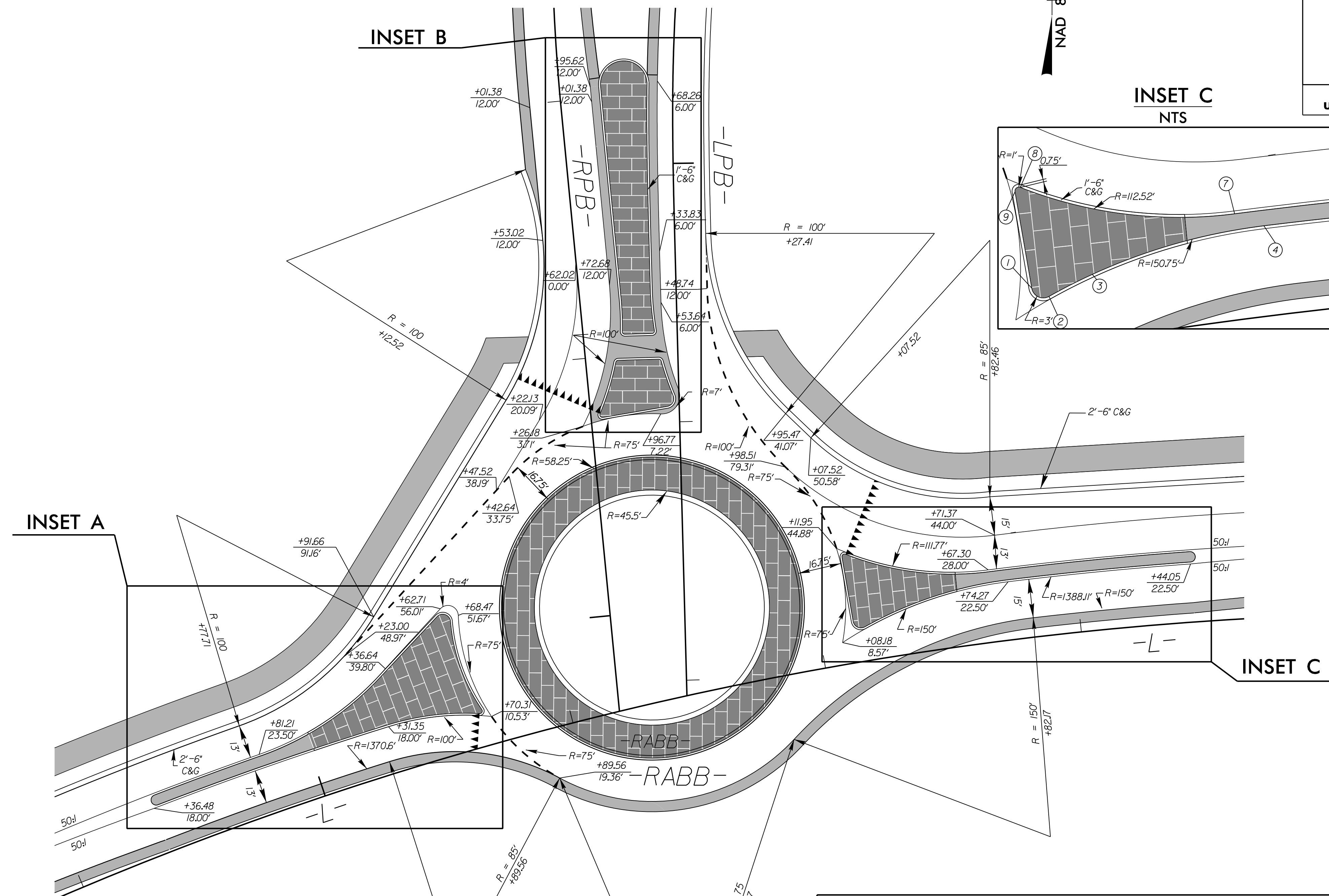


INSET B
NTS



INSET C
NTS

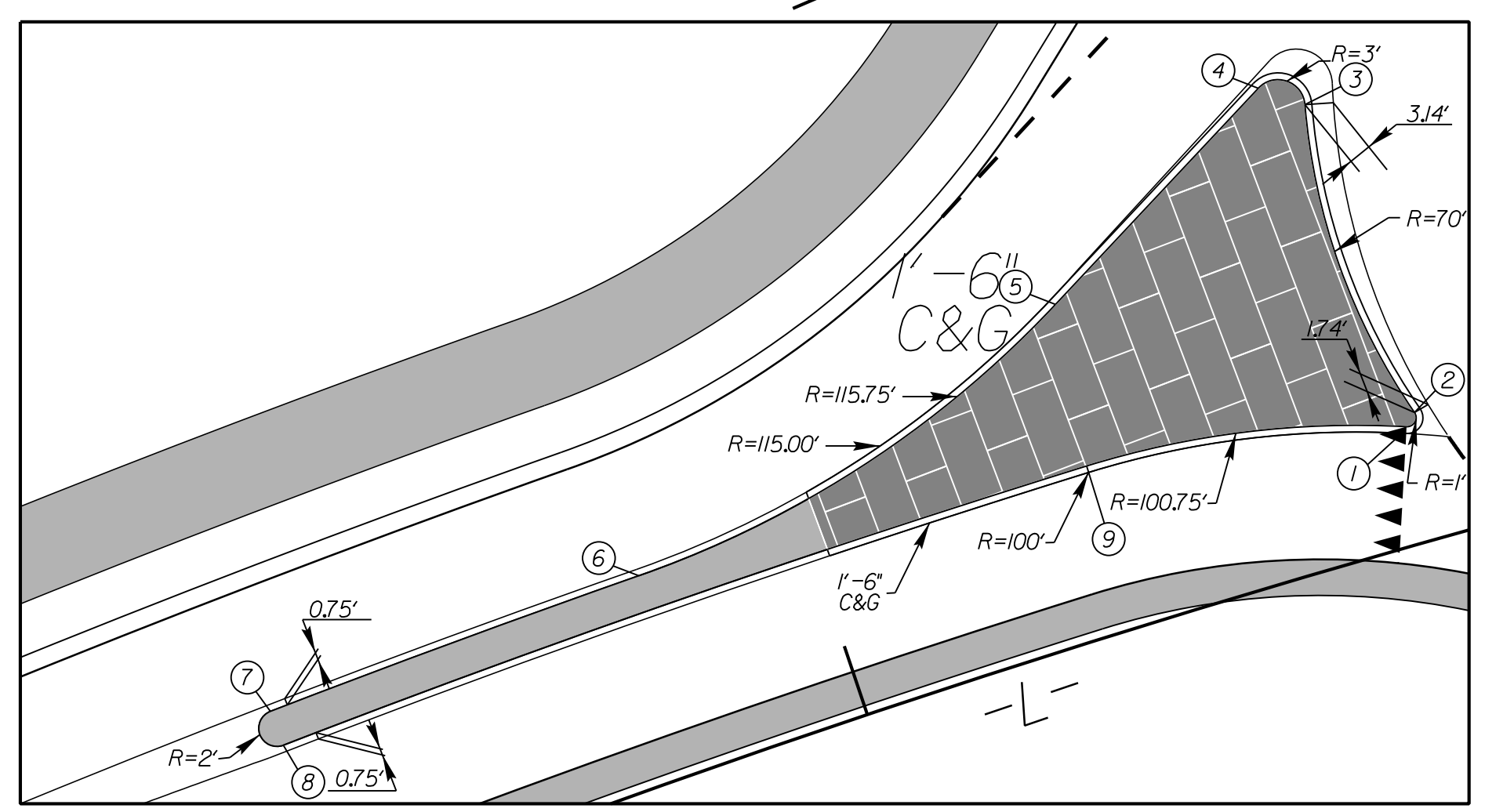
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| 2 | +21.89 | -- | 3.62' | LT |
| 3 | +02.66 | -- | 11.59' | LT |
| 4 | +01.95 | -- | 12.61' | LT |
| 5 | +92.17 | -- | 16.16' | LT |
| 6 | +91.06 | -- | 15.24' | LT |
| 7 | +78.49 | -- | 16.00' | LT |
| 8 | +01.38 | -- | 16.00' | LT |
| 9 | +95.62 | -- | 16.00' | LT |
| 10 | -- | +68.67 | 10.00' | RT |
| 11 | -- | +33.83 | 10.00' | RT |
| 12 | -- | +48.01 | 10.00' | RT |
| 13 | -- | +64.43 | 8.84' | RT |
| 14 | -- | +65.57 | 9.83' | RT |
| 15 | -- | +75.57 | 7.49' | RT |
| 16 | -- | +76.33 | 6.52' | RT |
| 17 | -- | +89.85 | 2.62' | RT |
| 18 | -- | +93.90 | 4.63' | RT |
| 19 | -- | +96.77 | 7.22' | RT |



INSET A

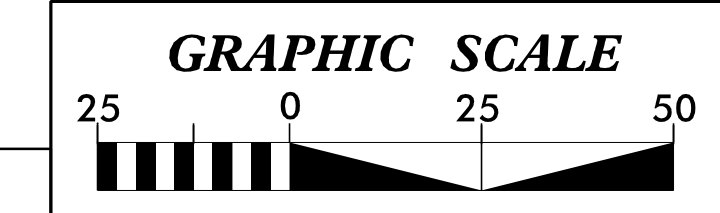
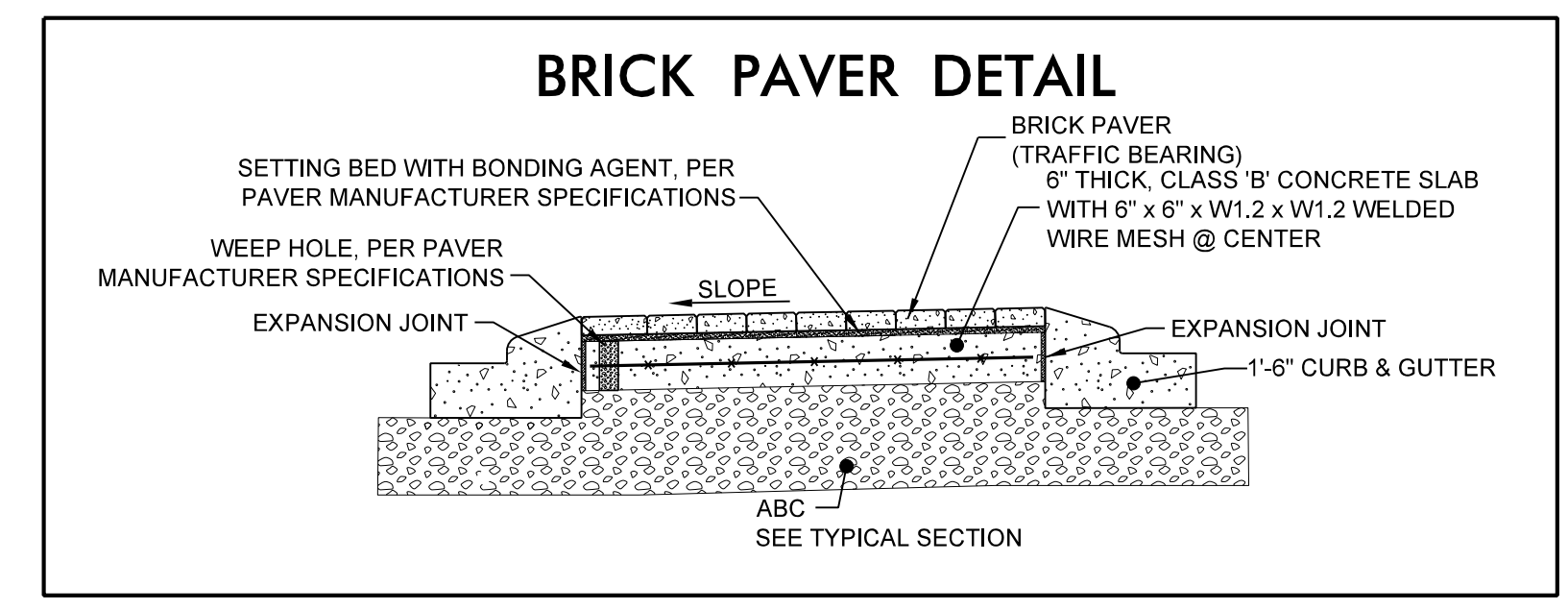
INSET C

| POINT NUMBER | -L- STATION | OFFSET | LT / RT |
|--------------|-------------|--------|---------|
| 1 | +13.58 | 13.95' | LT |
| 2 | +17.56 | 16.83' | LT |
| 3 | +29.38 | 16.99' | LT |
| 4 | +74.27 | 23.25' | LT |
| 5 | +44.05 | 23.25' | LT |
| 6 | +44.05 | 27.25' | LT |
| 7 | +67.30 | 27.25' | LT |
| 8 | +14.92 | 42.08' | LT |
| 9 | +13.45 | 41.22' | LT |



INSET A
NTS

| POINT NUMBER | -L- STATION | OFFSET | LT / RT |
|--------------|-------------|--------|---------|
| 1 | +66.16 | 12.87' | LT |
| 2 | +67.42 | 14.14' | LT |
| 3 | +65.06 | 50.27' | LT |
| 4 | +60.74 | 53.43' | LT |
| 5 | +33.31 | 36.87' | LT |
| 6 | +81.21 | 22.75' | LT |
| 7 | +38.44 | 22.75' | LT |
| 8 | +38.44 | 18.75' | LT |



FOR PLAN SEE SHT. 4
FOR -L- PROFILE SEE SHT. 9
FOR -RPB- PROFILE SEE SHT. 11
FOR -LPB- PROFILE SEE SHT. 11
FOR -RABB- PROFILE SEE SHT. 16

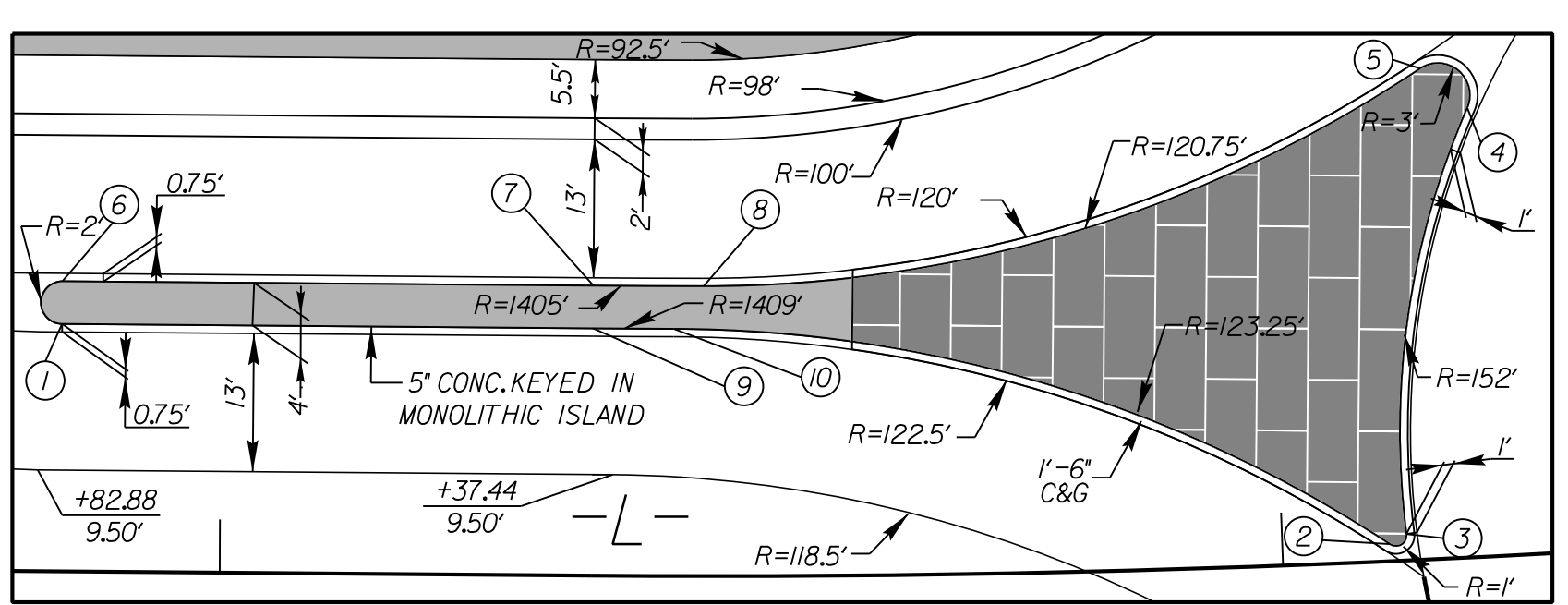
PLANS PREPARED BY :

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

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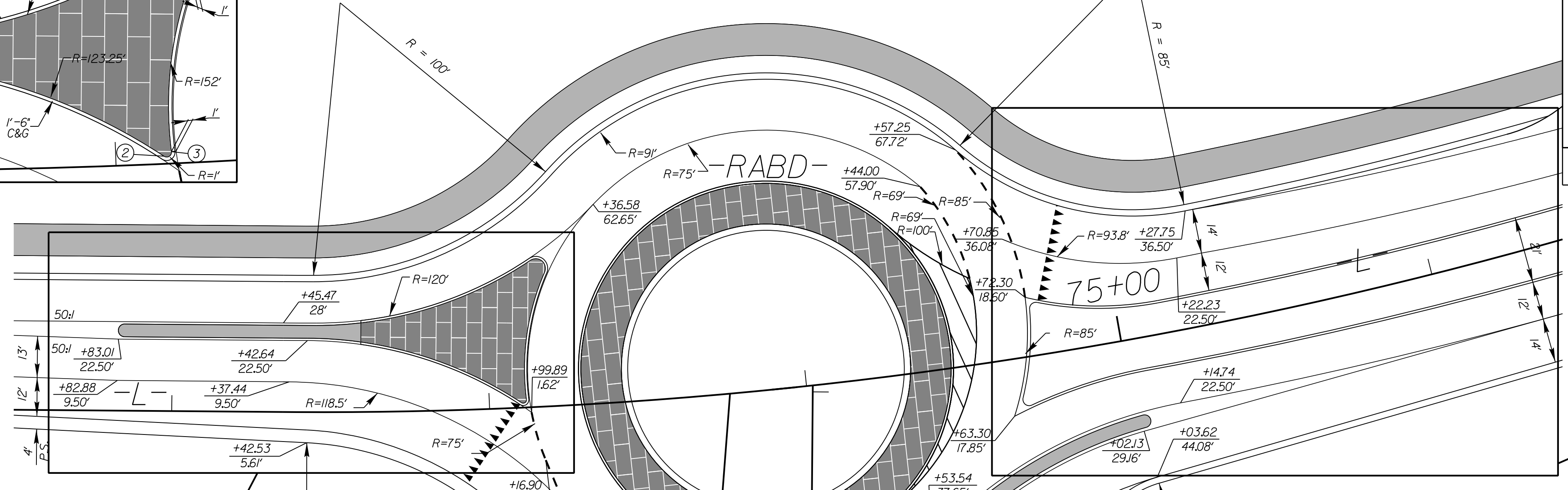
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ROUNDBABOUT INTERSECTION DETAIL



INSET A NTS

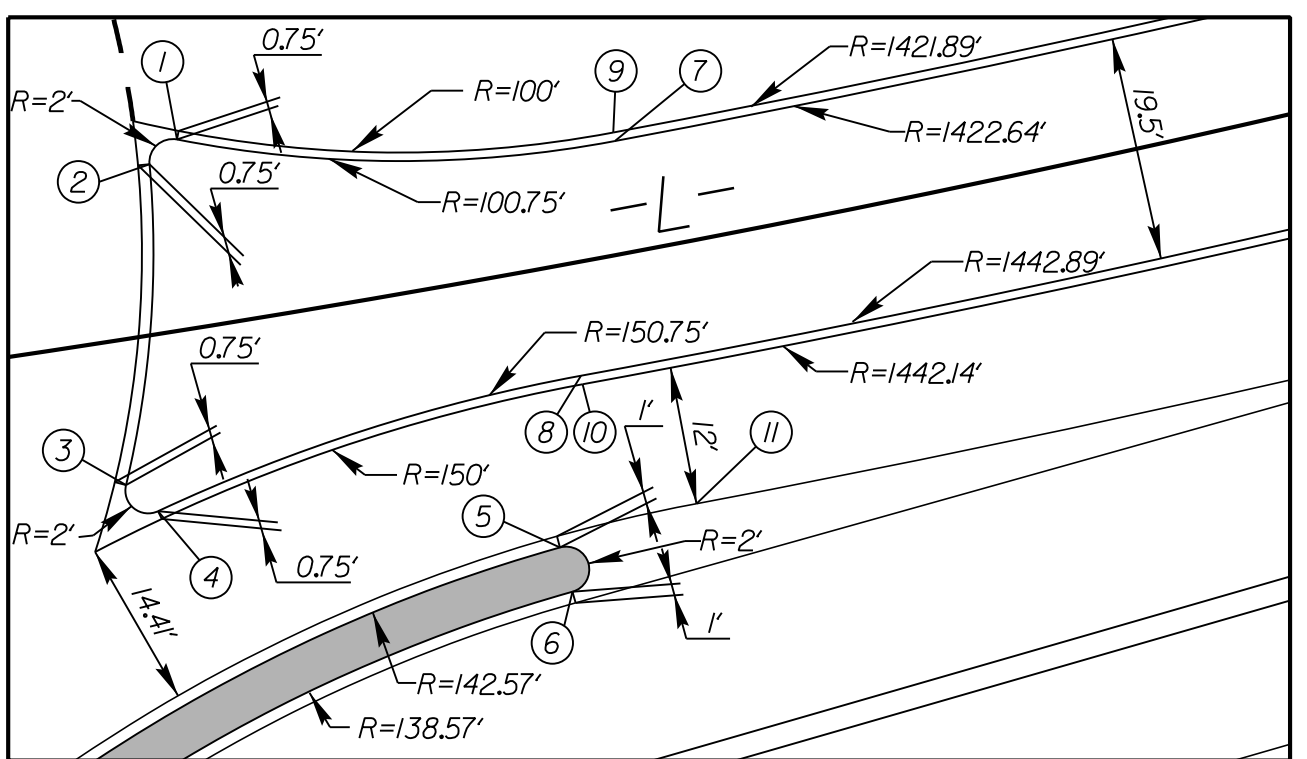
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|--------------|-------------|--------|---------|
| 1 | +85.00 | 23.25' | LT |
| 2 | +10.13 | 1.61' | LT |
| 3 | +11.72 | 2.50' | LT |
| 4 | +19.46 | 42.24' | LT |
| 5 | +15.09 | 46.14' | LT |
| 6 | +85.00 | 27.25' | LT |
| 7 | +45.47 | 27.25' | LT |
| 8 | +45.47 | 27.25' | LT |
| 9 | +85.00 | 23.25' | LT |
| 10 | +42.64 | 23.25' | LT |



INSET A

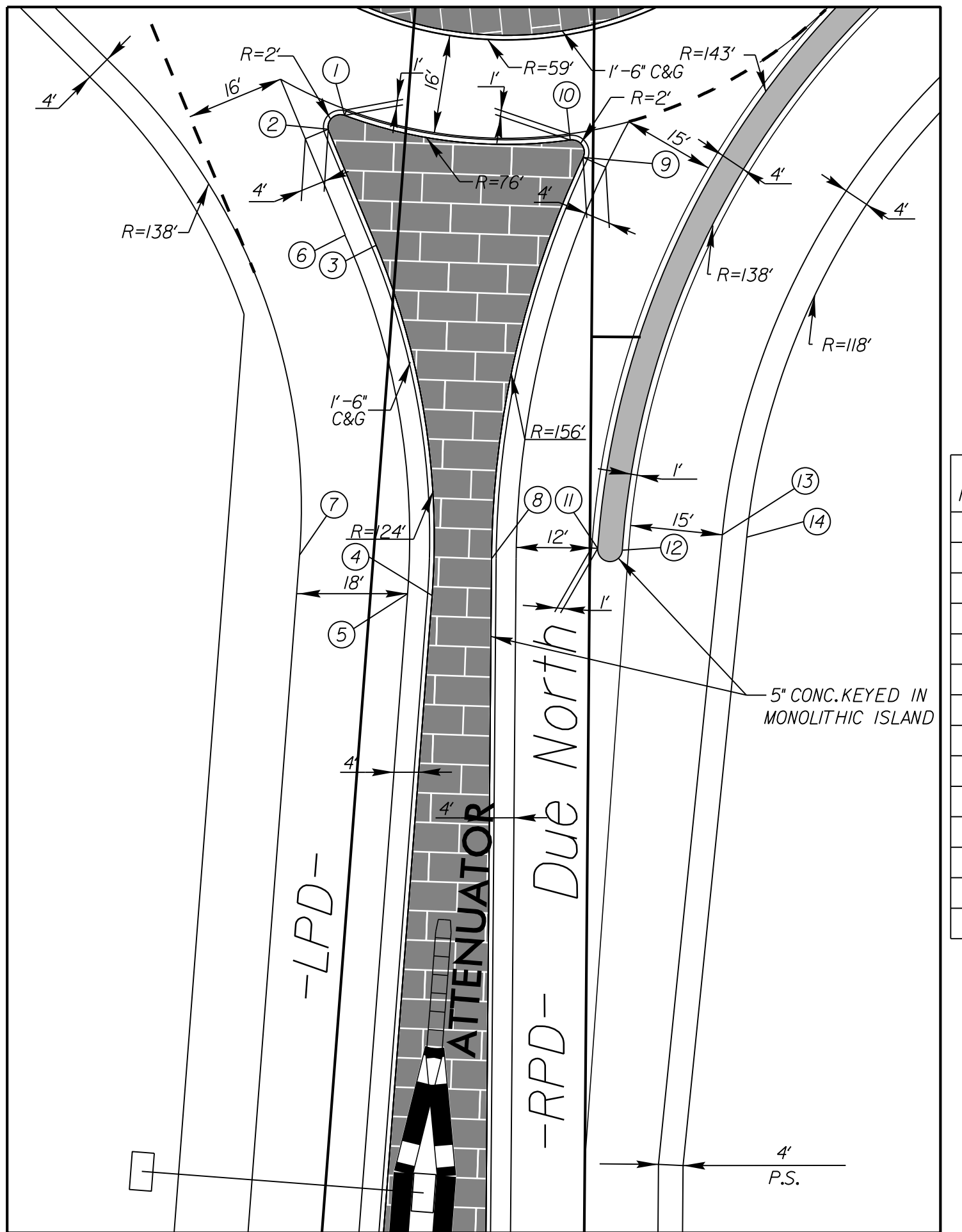
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INSET C



INSET C NTS

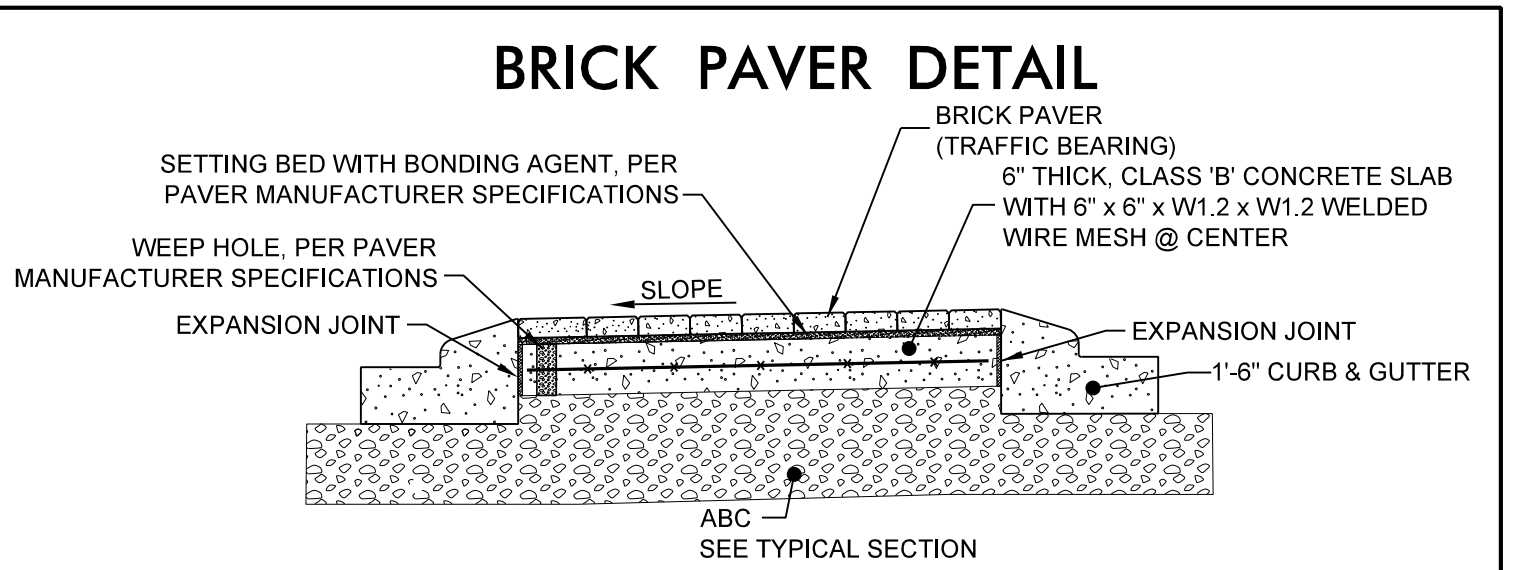
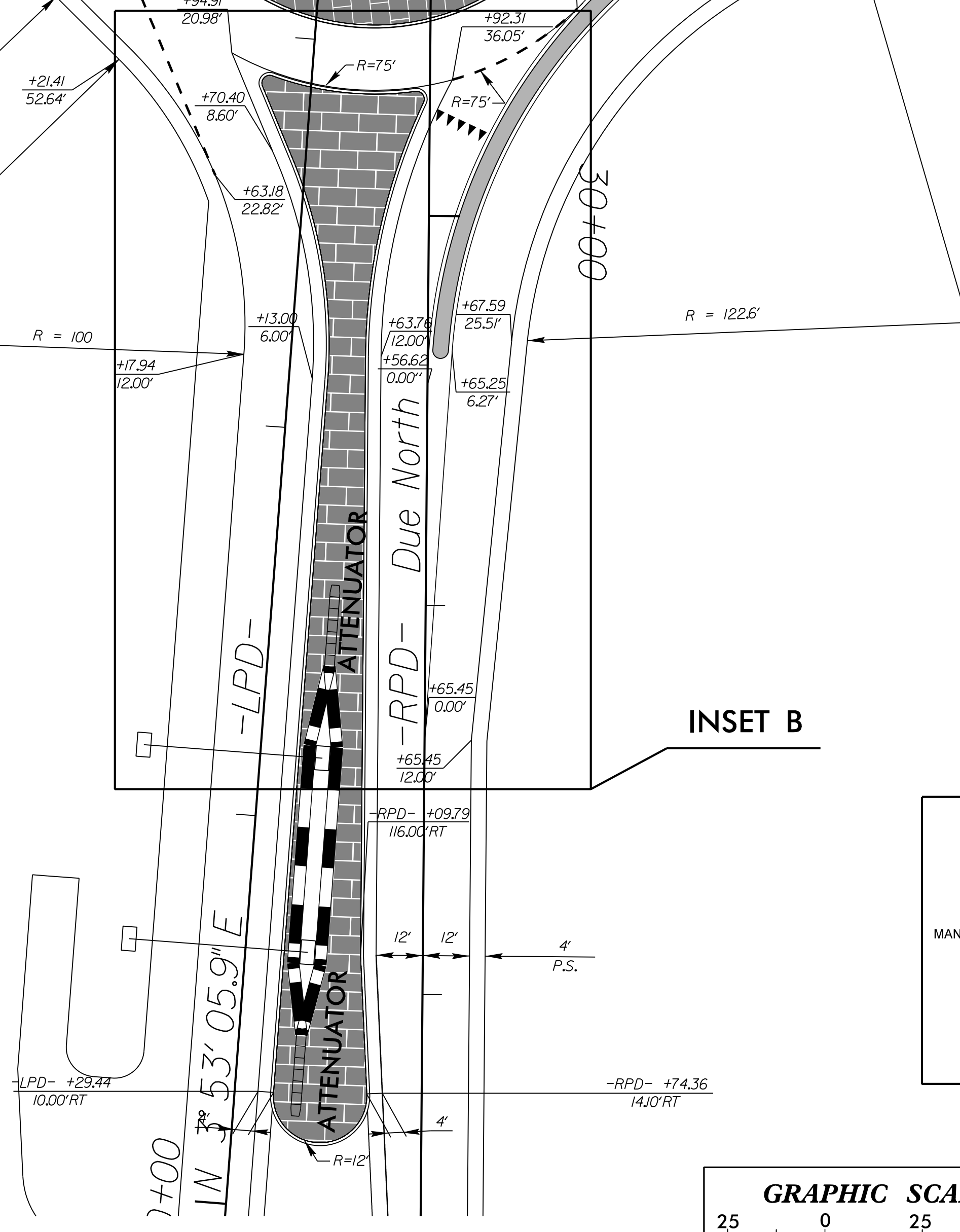
| POINT NUMBER | -L- STATION | OFFSET | LT / RT |
|--------------|-------------|---------|---------|
| 1 | +75.85 | 16.43' | LT |
| 2 | +73.13 | 14.69' | LT |
| 3 | +66.79 | 12.50' | RT |
| 4 | +69.17 | 15.18' | RT |
| 5 | +02.60 | 24.09' | RT |
| 6 | +02.97 | 28.07' | RT |
| 7 | +13.62 | 167.34' | LT |
| 8 | +73.31 | 146.72' | RT |
| 9 | +13.62 | 10.50' | LT |
| 10 | +07.00 | 10.50' | RT |
| 11 | +14.74 | 22.50' | RT |



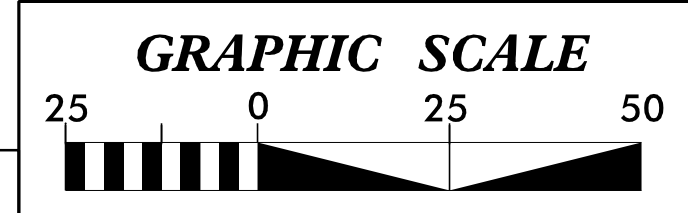
INSET B

| POINT NUMBER | -LPD- STATION | -RPD- STATION | OFFSET | LT / RT |
|--------------|---------------|---------------|--------|---------|
| 1 | +89.80 | -- | 10.13' | LT |
| 2 | +86.97 | -- | 12.47' | RT |
| 3 | +69.14 | -- | 3.42' | RT |
| 4 | +13.04 | -- | 10.00' | RT |
| 5 | +13.00 | -- | 6.00' | RT |
| 6 | +70.40 | -- | 8.60' | RT |
| 7 | +17.94 | -- | 12.00' | RT |
| 8 | -- | +63.76 | 16.00' | RT |
| 9 | -- | +29.16 | 1.63' | RT |
| 10 | -- | +31.98 | 3.74' | LT |
| 11 | -- | +65.56 | 1.28' | LT |
| 12 | -- | +65.31 | 5.27' | LT |
| 13 | -- | +67.96 | 21.53' | LT |
| 14 | -- | +67.59 | 25.51' | LT |

INSET B



PLANS PREPARED BY :



FOR PLAN SEE SH. 4
 FOR -L- PROFILE SEE SH. 9
 FOR -RPB- PROFILE SEE SH. 11
 FOR -LPB- PROFILE SEE SH. 11
 FOR -RABB- PROFILE SEE SH. 16

BRICK PAVERS

5/14/2017

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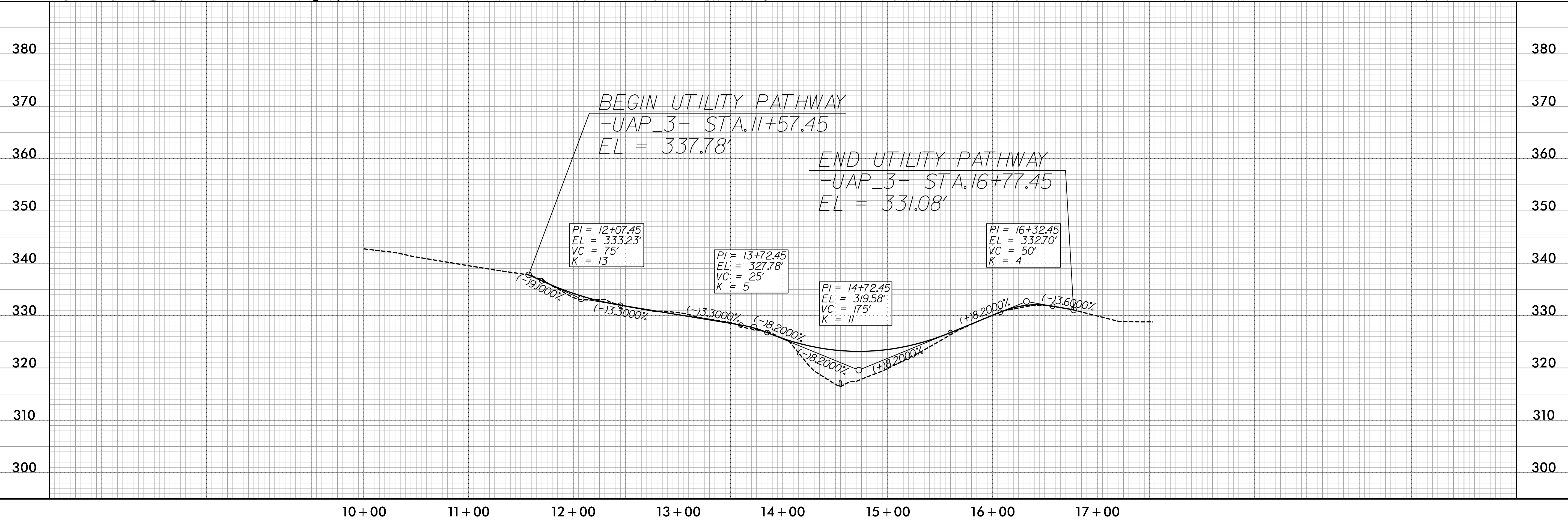
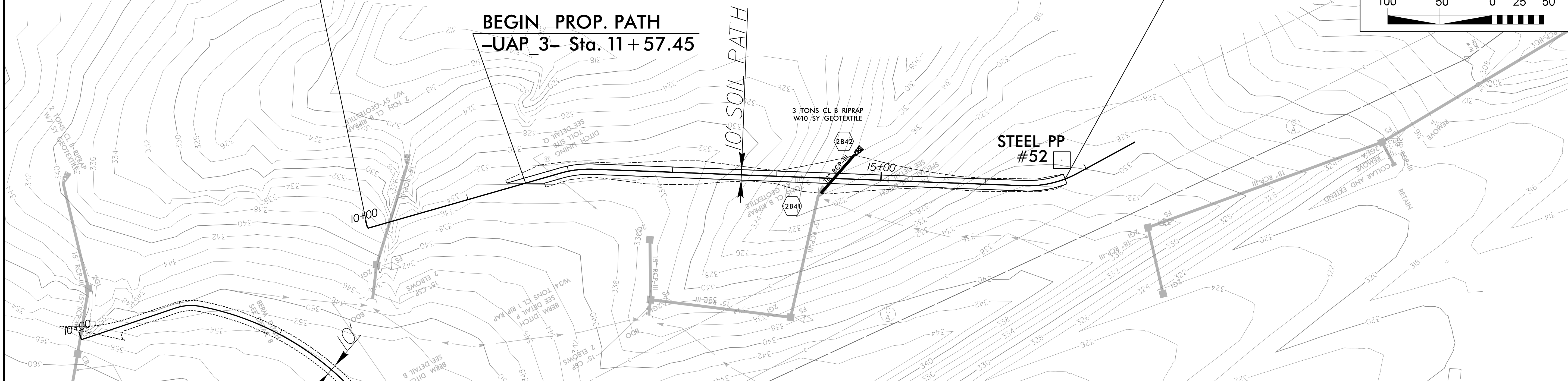
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| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | |
| | |
| <p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> | |
| | |

-UAP 3- Sta. 10+00.00
-RPB- Sta. 22+62.64

END PROP. PATH
-UAP_3- Sta. 16+90.92

BEGIN PROP. PATH
-UAP_3- Sta. 11+57.45

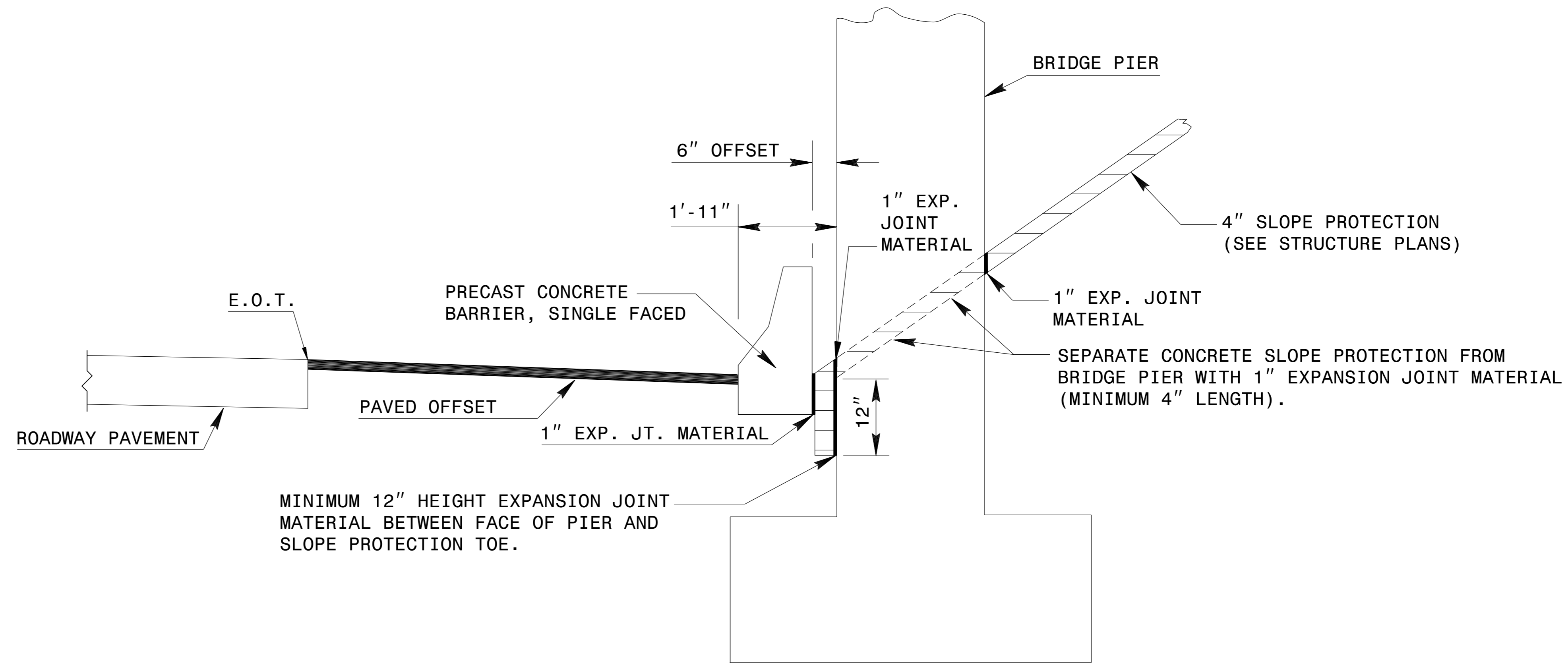


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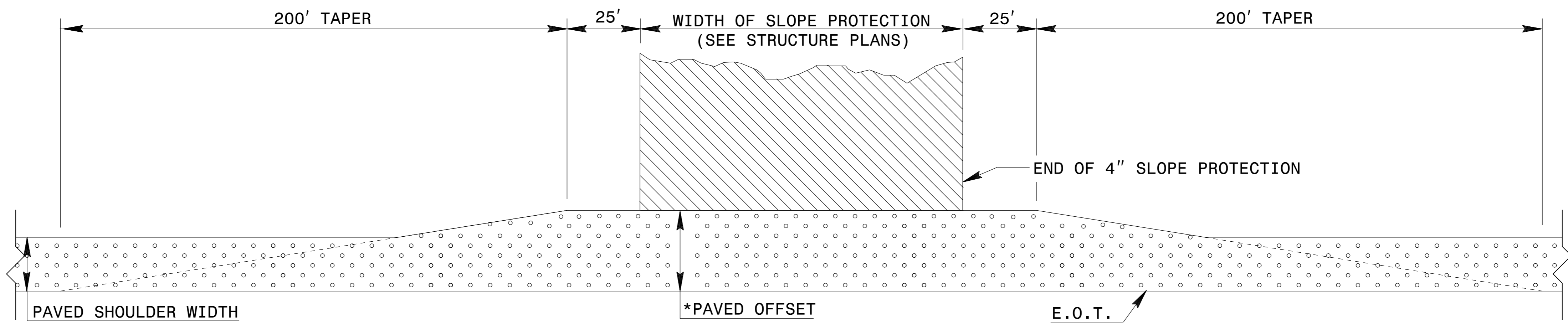
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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR GUIDE FOR PAVING SHOULDERS UNDER BRIDGES METHOD I



ELEVATION



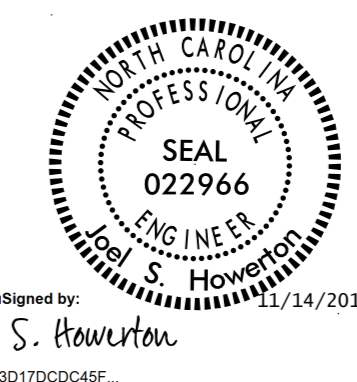
PLAN

NOTES:
 PAVE THE FULL WIDTH OF THE SHOULDER AND OFFSET AS SHOWN WITH SHOULDER PAVEMENT MATERIAL AS SHOWN ON PLANS.
 *PAVED OFFSET BASED ON BRIDGE POLICY (SEE STRUCTURE PLANS).
 PROTECT SLOPE WITH REINFORCED CONCRETE PAVING. CONCRETE BLOCK PAVING WILL NOT BE PERMITTED.

SHEET 1 OF 1
610D01

SHEET 1 OF 1
610D01

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SEE TITLE PLATE

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| MODIFIED BY: J. Howerton | DATE: 12/02/15 |
| CHECKED BY: | DATE: |
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

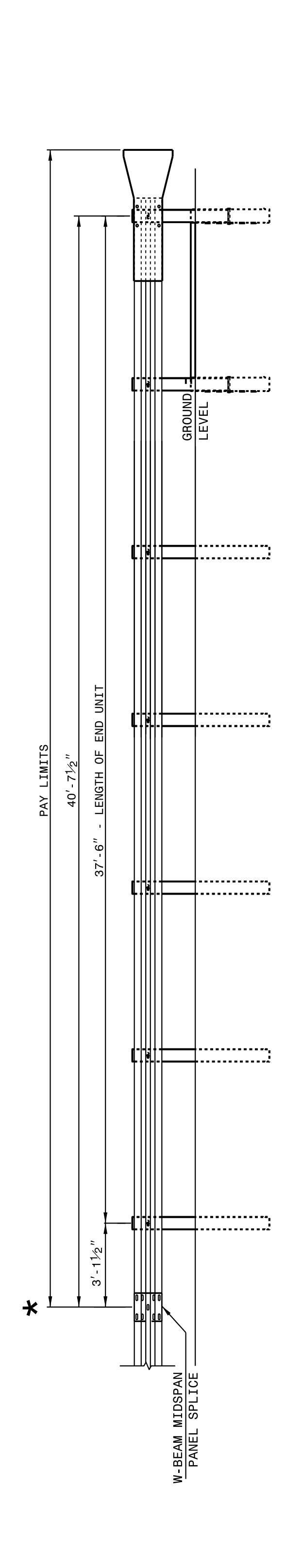
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ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

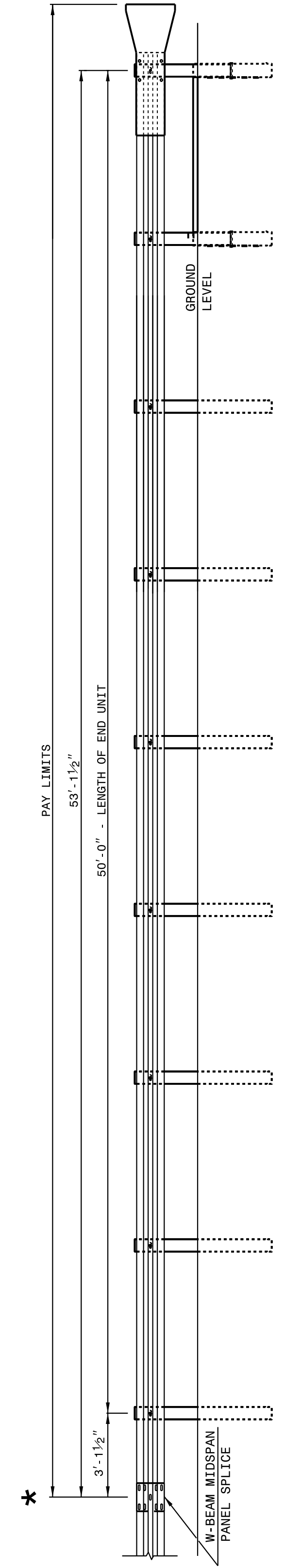
SHEET 2 OF 8
862D02

SHEET 2 OF 8
862D02



**FLARED AND TANGENT
ELEVATION VIEW**

*** WHEN INSTALLING GUARDRAIL END UNITS THAT ARE 2'-1" MOUNTING HEIGHT TO EXISTING GUARDRAIL, REMOVE THE EXISTING GUARDRAIL TO TRANSITION FROM THE EXISTING HEIGHT TO THE PROPOSED 2'-1" HEIGHT. SEE 862.02, SHEET 4 OF 8 FOR TRANSITION DETAILS.**



**FLARED AND TANGENT
ELEVATION VIEW**

APPROACH END UNITS

STATE OF
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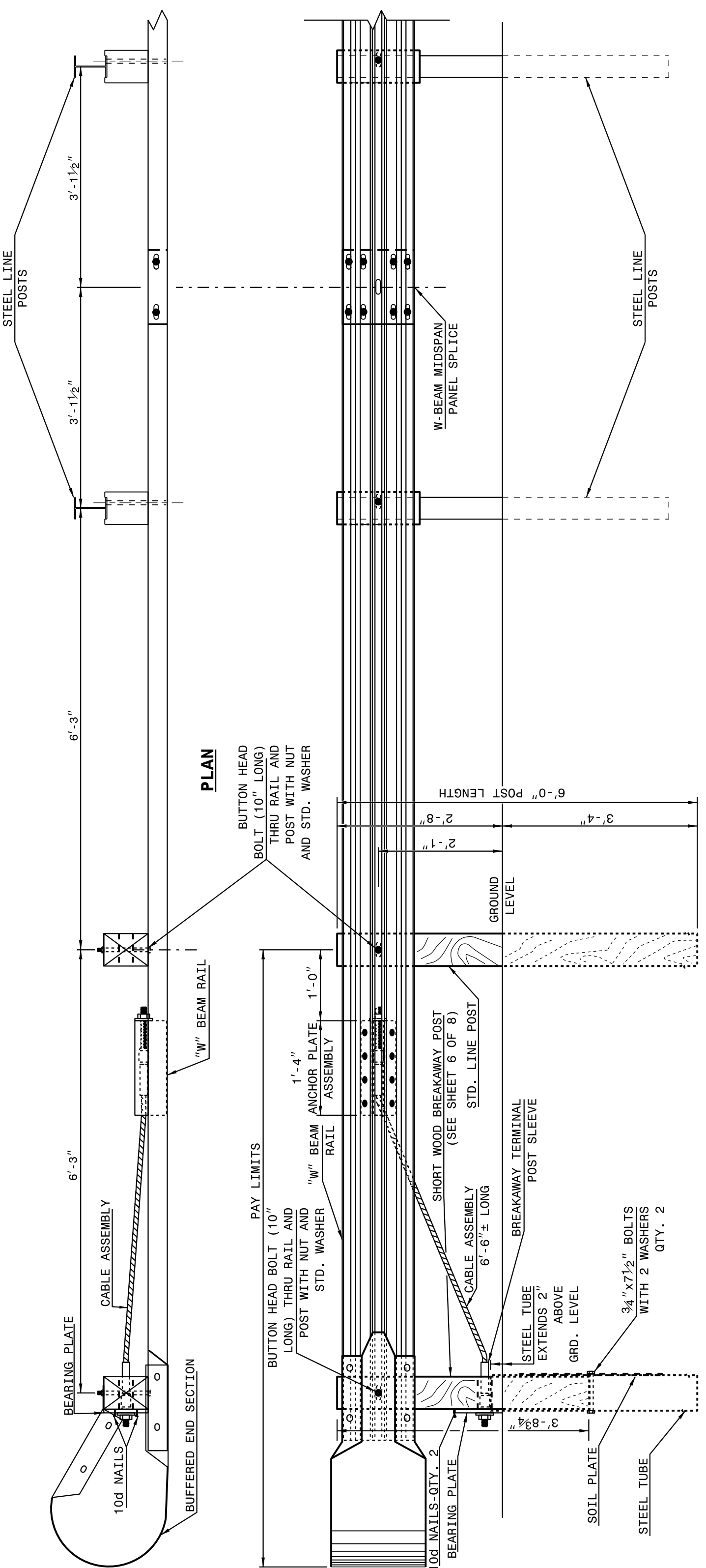
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 8
862D02

SHEET 1 OF 8
862D02



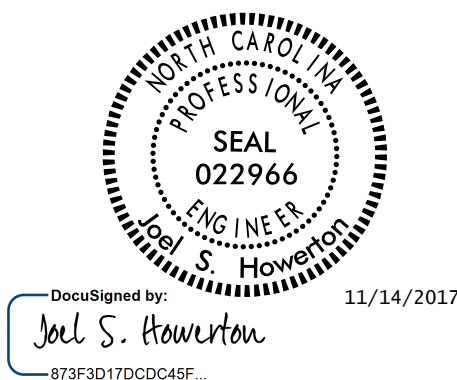
ELEVATION

**TRAILING END UNIT ASSEMBLY
C.A.T. - 1 SYSTEM**

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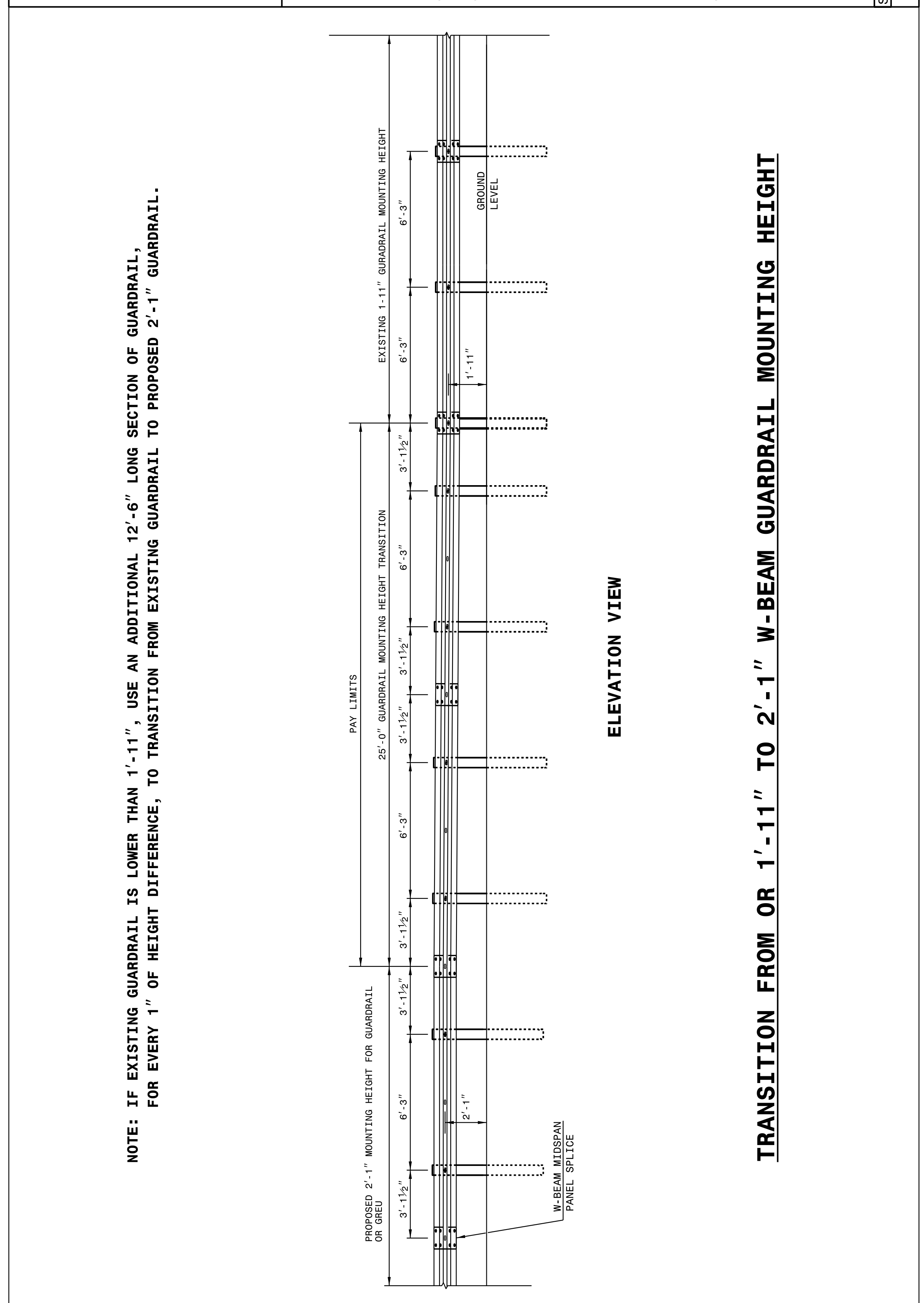
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 4 OF 8
862D02



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RALEIGH, N.C.

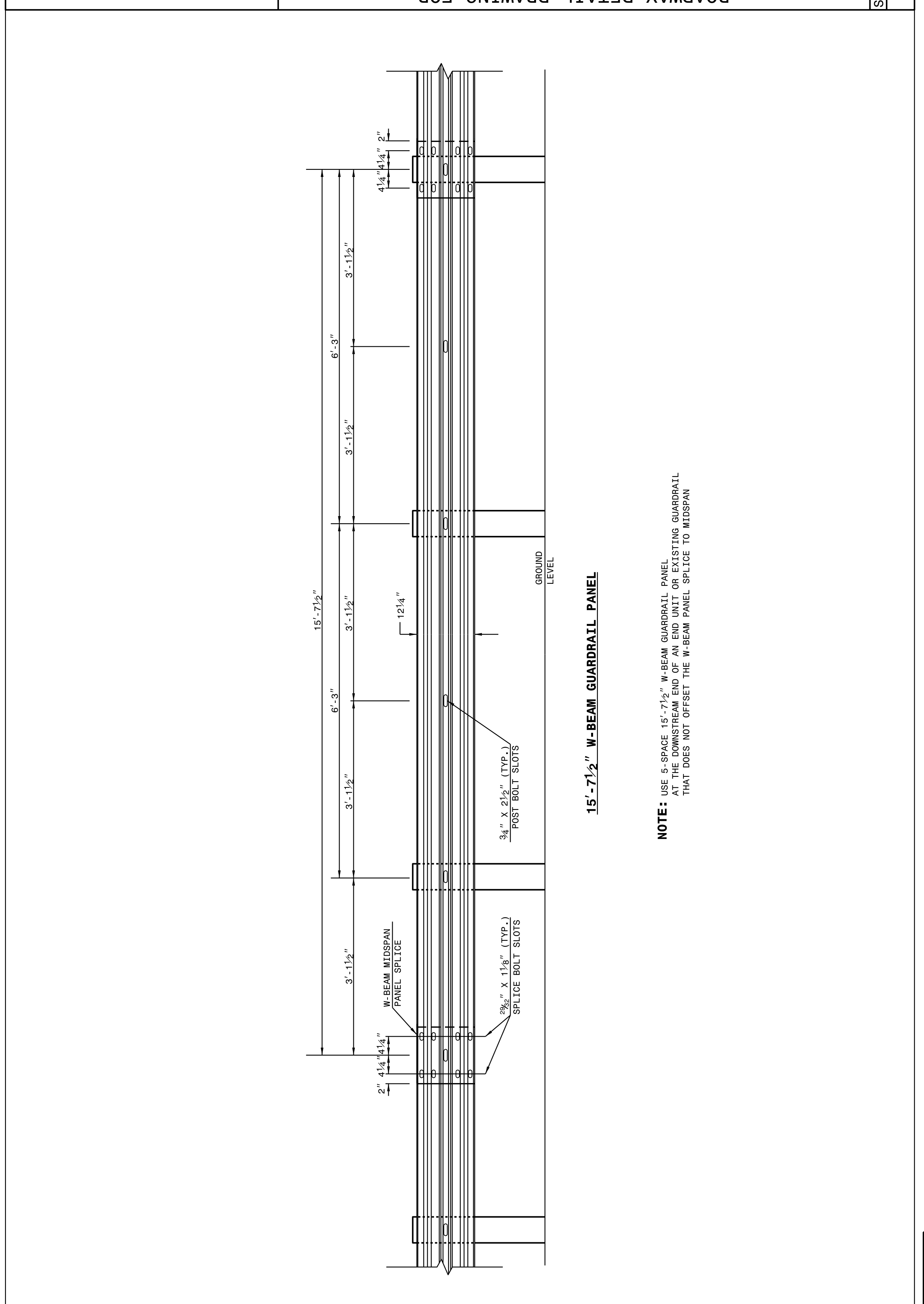
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 4 OF 8
862D02

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

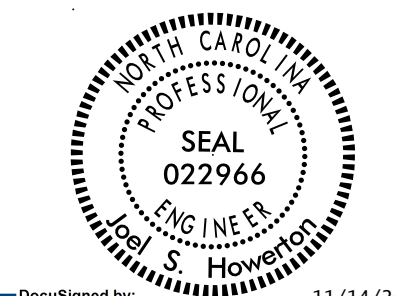
SHEET 3 OF 8
862D02



STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 3 OF 8
862D02



DocuSigned by:
Joel S. Howerton
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| STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. | ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION | SHEET 6 OF 8 862D02 |
| | | |
| SYSTEM PARTS | | |
| ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION | | |
| SHEET 6 OF 8 862D02 | | |

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| STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. | ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION | SHEET 5 OF 8 862D02 |
| | | |
| TYPICAL GUARDRAIL AND GUARDRAIL POST ALTERNATIVES | | |
| ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION | | |
| SHEET 5 OF 8 862D02 | | |

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| PROJECT REFERENCE NO. U-5315A&B | SHEET NO. 2C-4 |
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| STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. | ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION |
| STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. | ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION |
| SHEET 8 OF 8 862D02 | SHEET 8 OF 8 862D02 |

SECTION X-X

TYPICAL END SHOE

BUFFERED END SECTION

SYSTEM PARTS - GENERAL USE

| | |
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| STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. | ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION |
| STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. | ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION |
| SHEET 7 OF 8 862D02 | SHEET 7 OF 8 862D02 |

SOIL PLATE

BEARING PLATE

DETAIL OF STANDARD WASHER

DETAIL OF STANDARD HEX BOLT AND NUT

ANCHOR PLATE ASSEMBLY

SWAGED CABLE

DETAIL OF BUTTON HEAD BOLT AND NUT

ANCHOR PLATE

| | |
|---|---|
| STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. | ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION |
| STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. | ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION |
| SHEET 8 OF 8 862D02 | SHEET 7 OF 8 862D02 |

SYSTEM PARTS

SYSTEM PARTS

ANCHOR PLATE ASSEMBLY

SWAGED CABLE

DETAIL OF BUTTON HEAD BOLT AND NUT

ANCHOR PLATE

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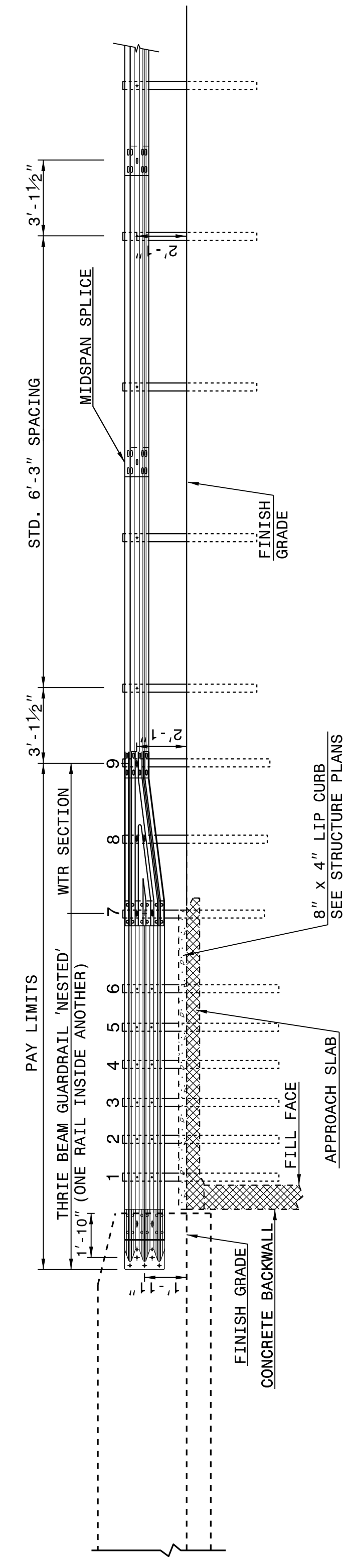
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
 GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
 RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03

STATE OF NORTH CAROLINA
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 RALEIGH, N.C.

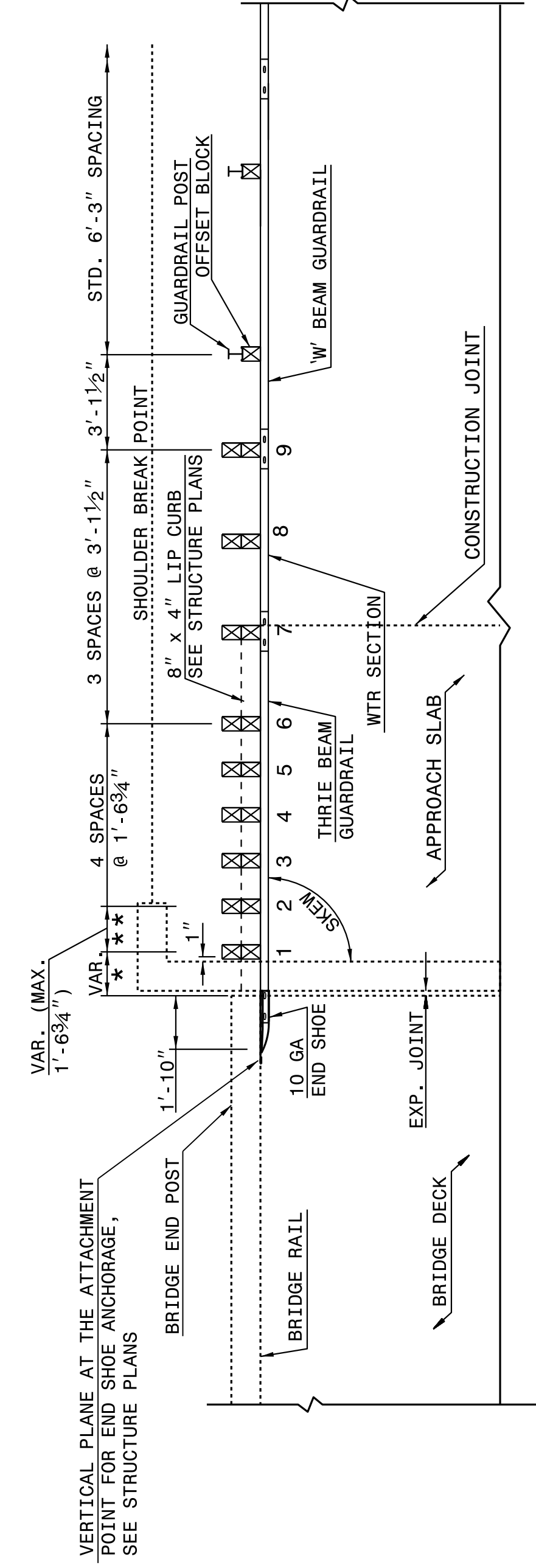
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
 GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
 RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03



ELEVATION

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



PLAN VIEW

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

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

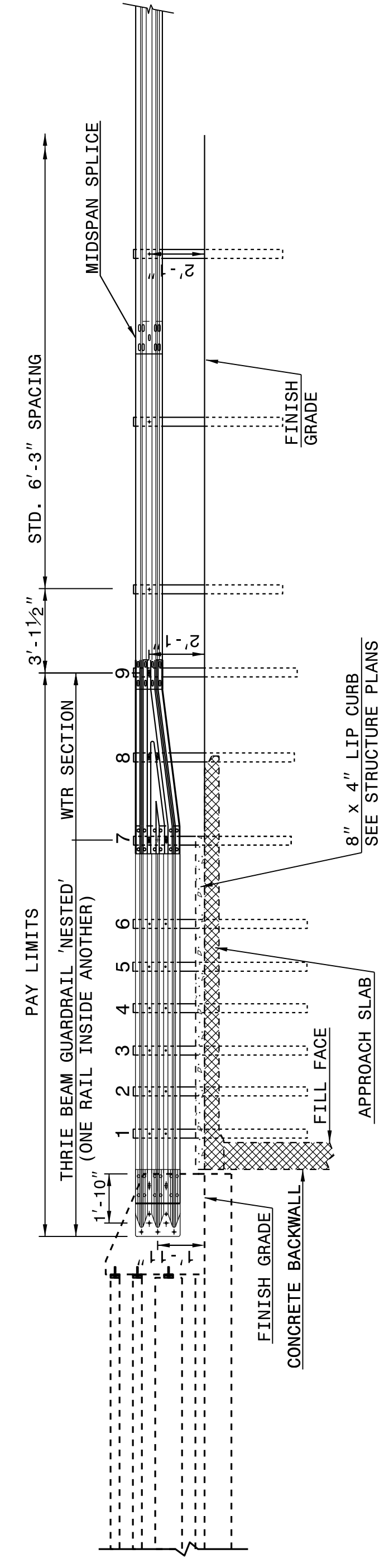
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
 GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03

STATE OF NORTH CAROLINA
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 RALEIGH, N.C.

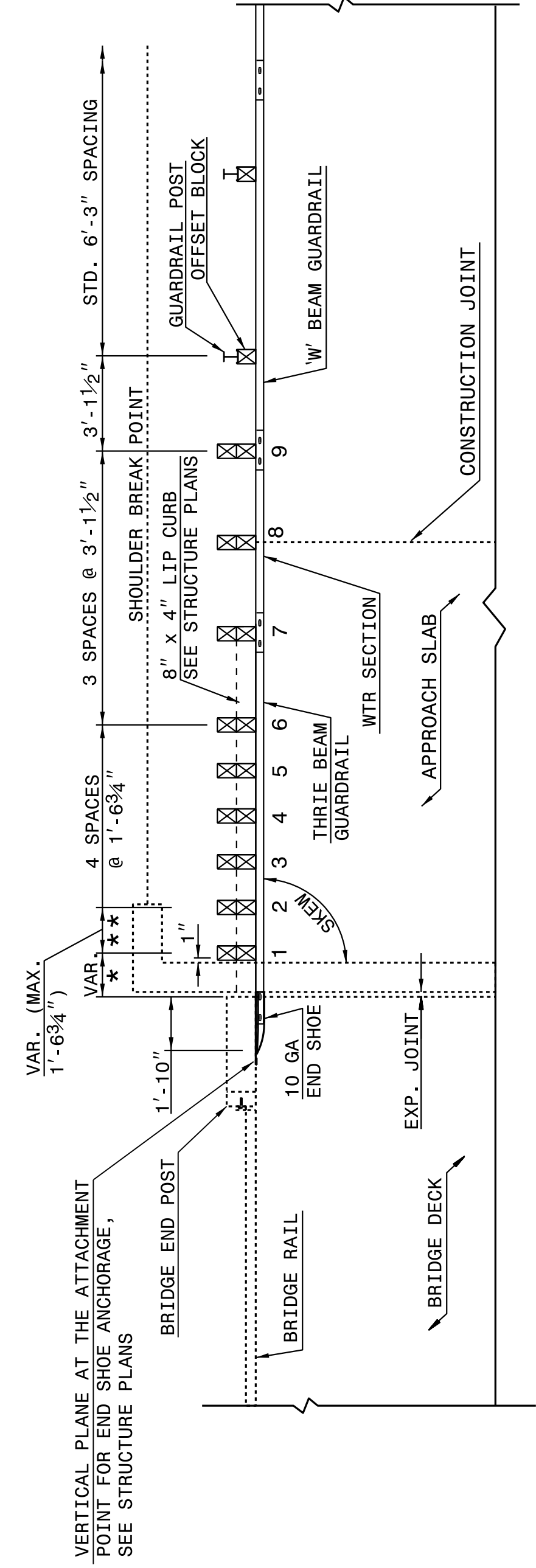
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
 GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03



ELEVATION

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



PLAN VIEW

**GUARDRAIL ANCHOR UNIT, TYPE III
 FOR ATTACHMENT TO RAIL ON BRIDGE**

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**CONTRACT STANDARDS
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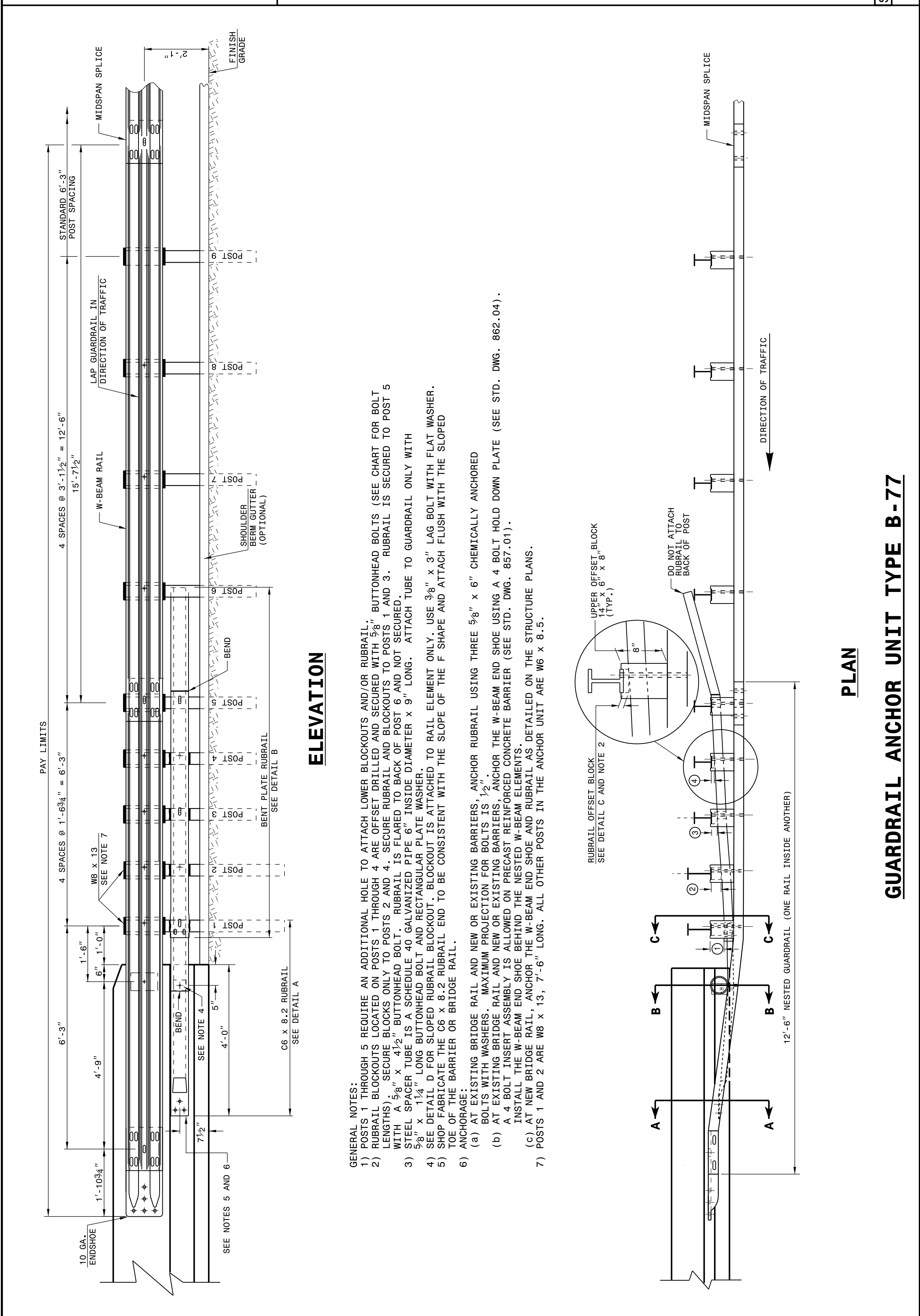


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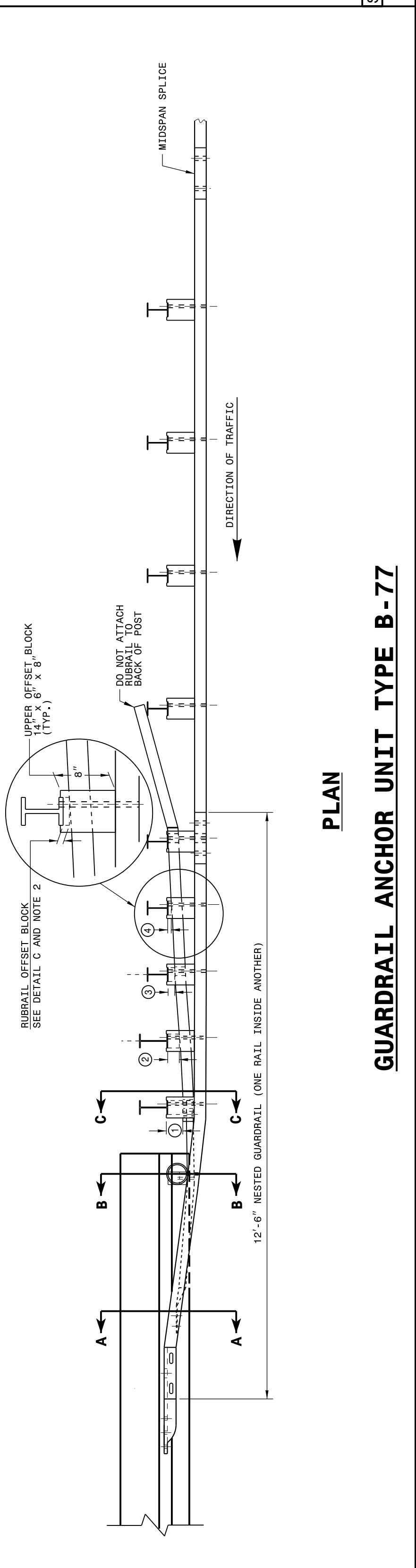
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 FOR F-SHAPE BARRIER
 SHEET 4 OF 7
862D03



ELEVATION

- GENERAL NOTES:
- POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL. RUBRAIL BLOCKOUTS LOCATED ON POSTS 1 THROUGH 4 ARE OFFSET DRILLED AND SECURED WITH 3/8" BUTTONHEAD BOLTS (SEE CHART FOR BOLT LENGTHS). SECURE RUBRAIL BLOCKOUTS TO POSTS 1 AND 4, SECURE RUBRAIL AND BLOCKOUTS TO POSTS 2 AND 3. RUBRAIL IS SECURED TO POST 5 WITH 3/8" BUTTONHEAD BOLTS. RUBRAIL IS NOT TO BE ATTACHED TO POST 6.
 - SECURE RUBRAIL BLOCKOUTS TO POSTS 1 AND 4 WITH 3/8" BUTTONHEAD BOLTS. RUBRAIL IS NOT TO BE ATTACHED TO POST 5.
 - STEEL SPACER TUBE IS A SCHEDULE 40 GALVANIZED PIPE 6" INSIDE DIAMETER X 9" LONG. ATTACH TUBE TO GUARDRAIL ONLY WITH 5/8" X 1 1/4" LONG BUTTONHEAD BOLT AND RECTANGULAR PLATE WASHER.
 - SEE DETAIL D FOR SLOPED RUBRAIL BLOCKOUT. BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE 3/8" X 3" LAG BOLT WITH FLAT WASHER.
 - SHOP FABRICATE THE C6 X 8.2 RUBRAIL END TO BE CONSISTENT WITH THE SLOPE OF THE F SHAPE AND ATTACH FLUSH WITH THE SLOPED END OF THE BARRIER OR BRIDGE RAIL.
 - ANCHORAGE:
 - AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR RUBRAIL USING THREE 5/8" X 6" CHEMICALLY ANCHORED BOLTS WITH WASHERS. MAXIMUM PROJECTION FOR BOLTS IS 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).
 - AT NEW BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR THE W-BEAM END SHOE AND RUBRAIL 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 W6 X 8.5.

PLAN



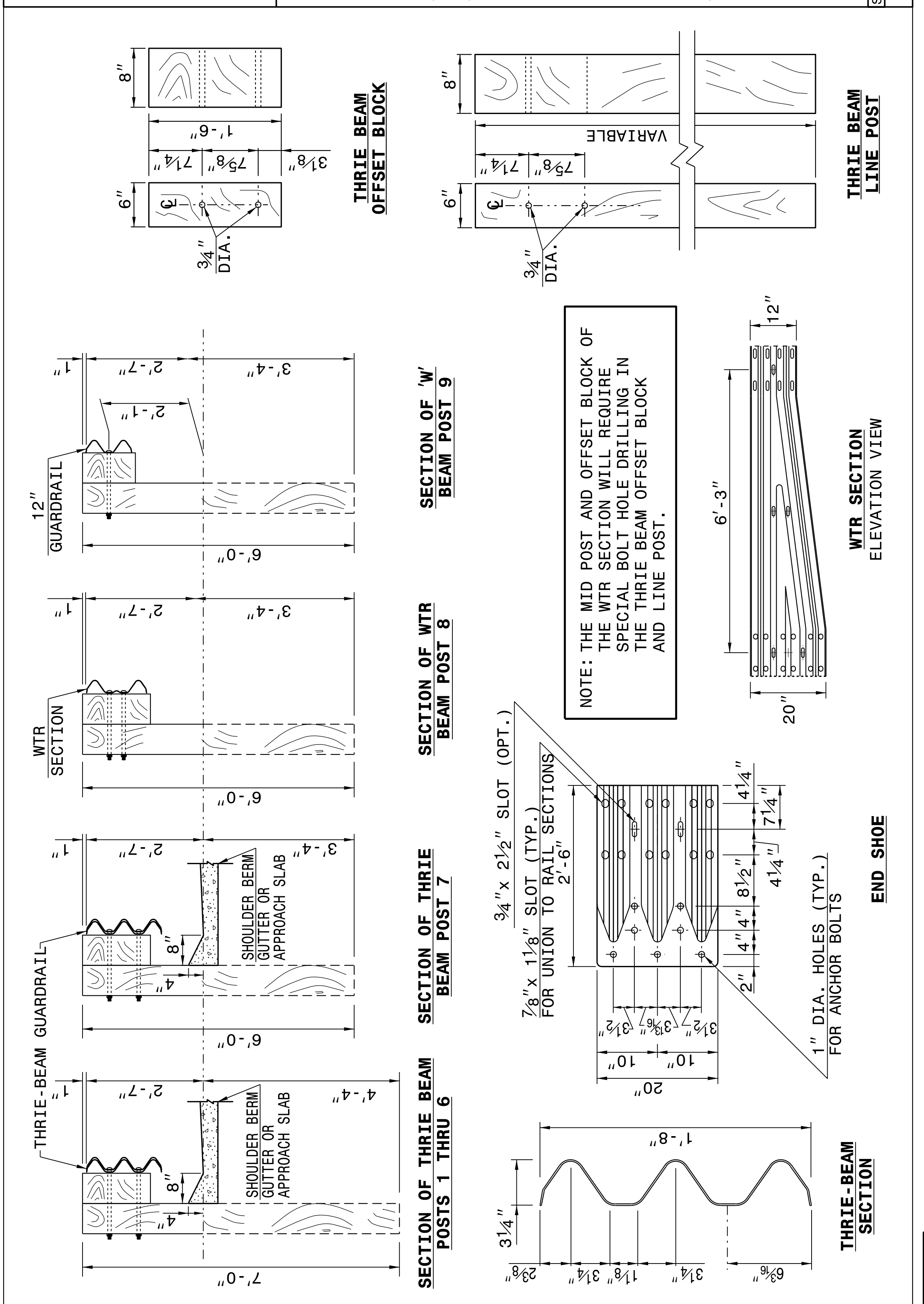
SHEET 4 OF 7
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ROADWAY DETAIL DRAWING FOR
 GUARDRAIL ANCHOR UNIT
 GUARDRAIL ANCHOR UNIT TYPE B-77
 FOR F-SHAPE BARRIER
 SHEET 4 OF 7
862D03

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ROADWAY DETAIL DRAWING FOR
 STRUCTURE ANCHOR UNITS
 GUARDRAIL ANCHOR UNIT, TYPE III
 SHEET 3 OF 7
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NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.

SHEET 3 OF 7
862D03

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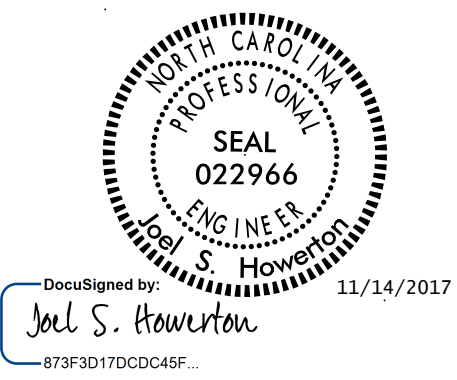
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 STRUCTURE ANCHOR UNITS
 GUARDRAIL ANCHOR UNIT, TYPE III
 SHEET 3 OF 7
862D03

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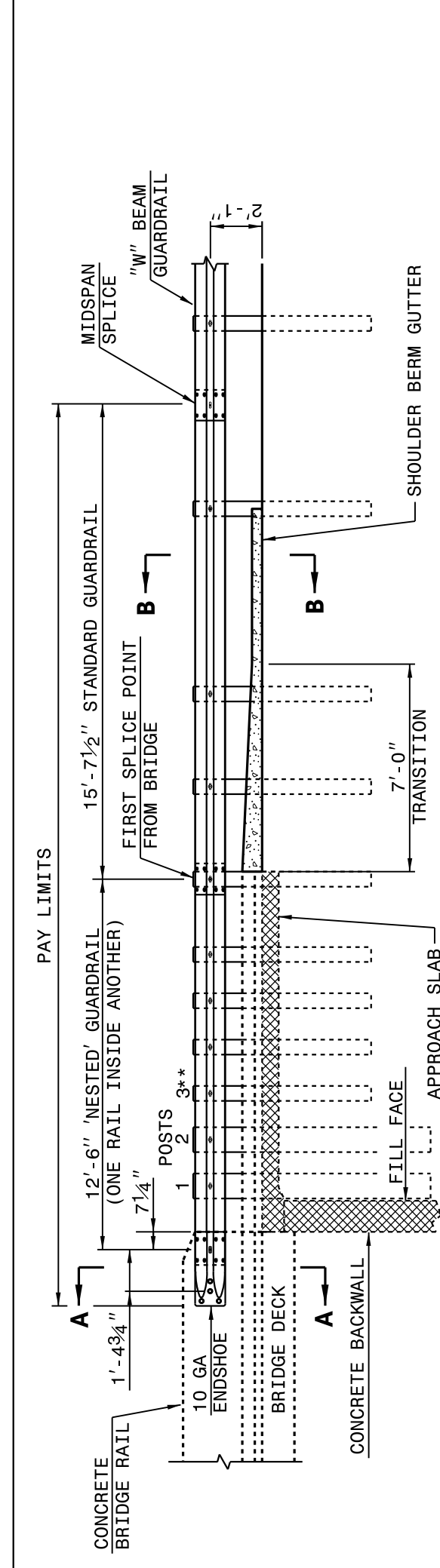
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STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT TYPE B-83

SHEET 6 OF 7
862D03

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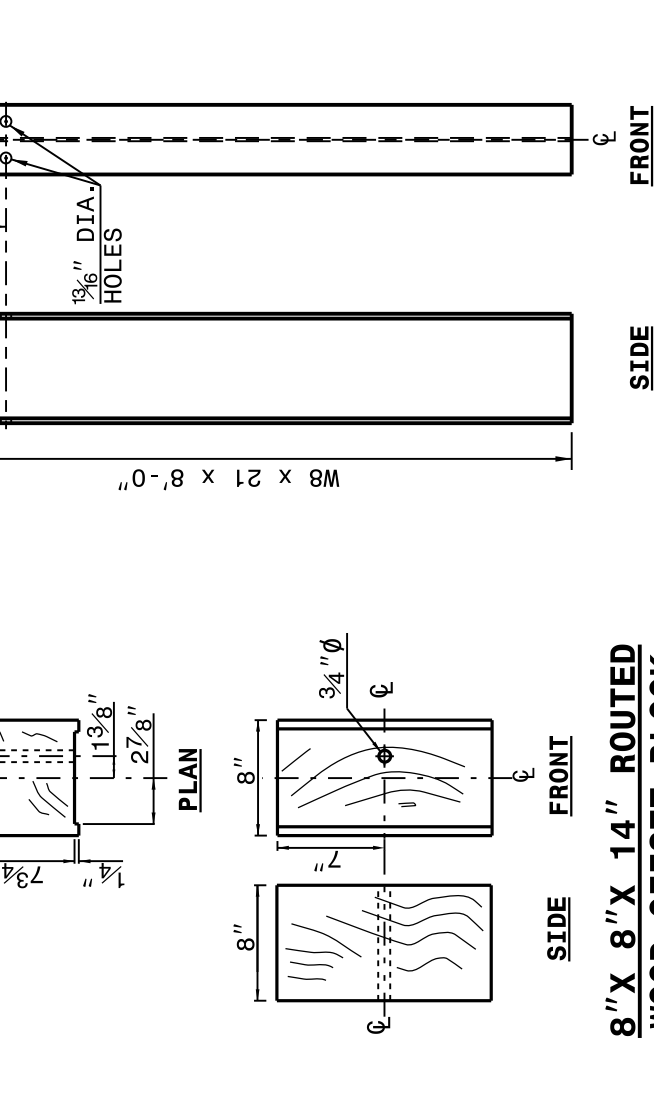
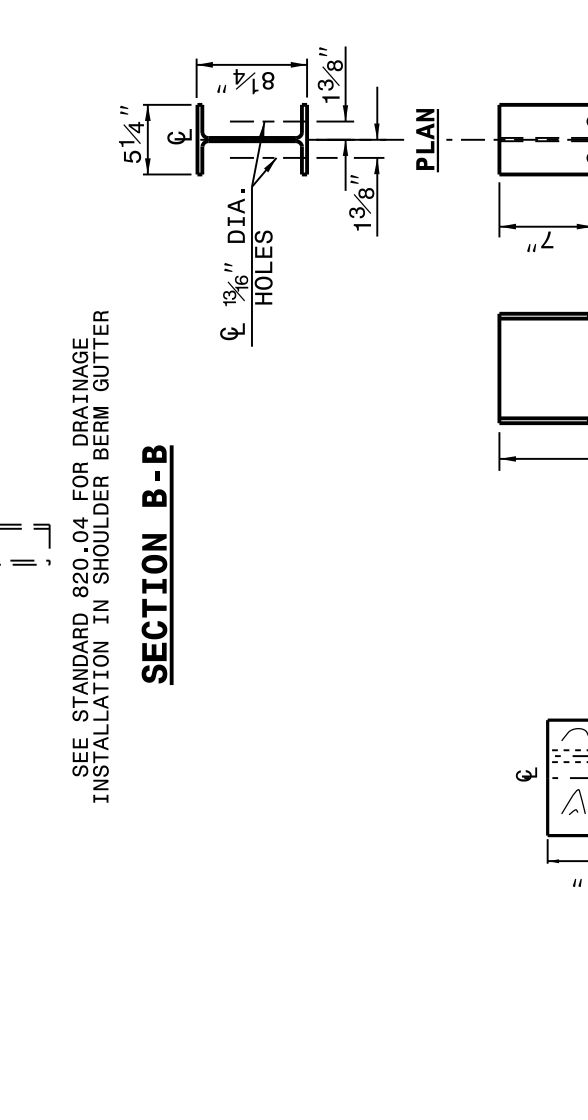
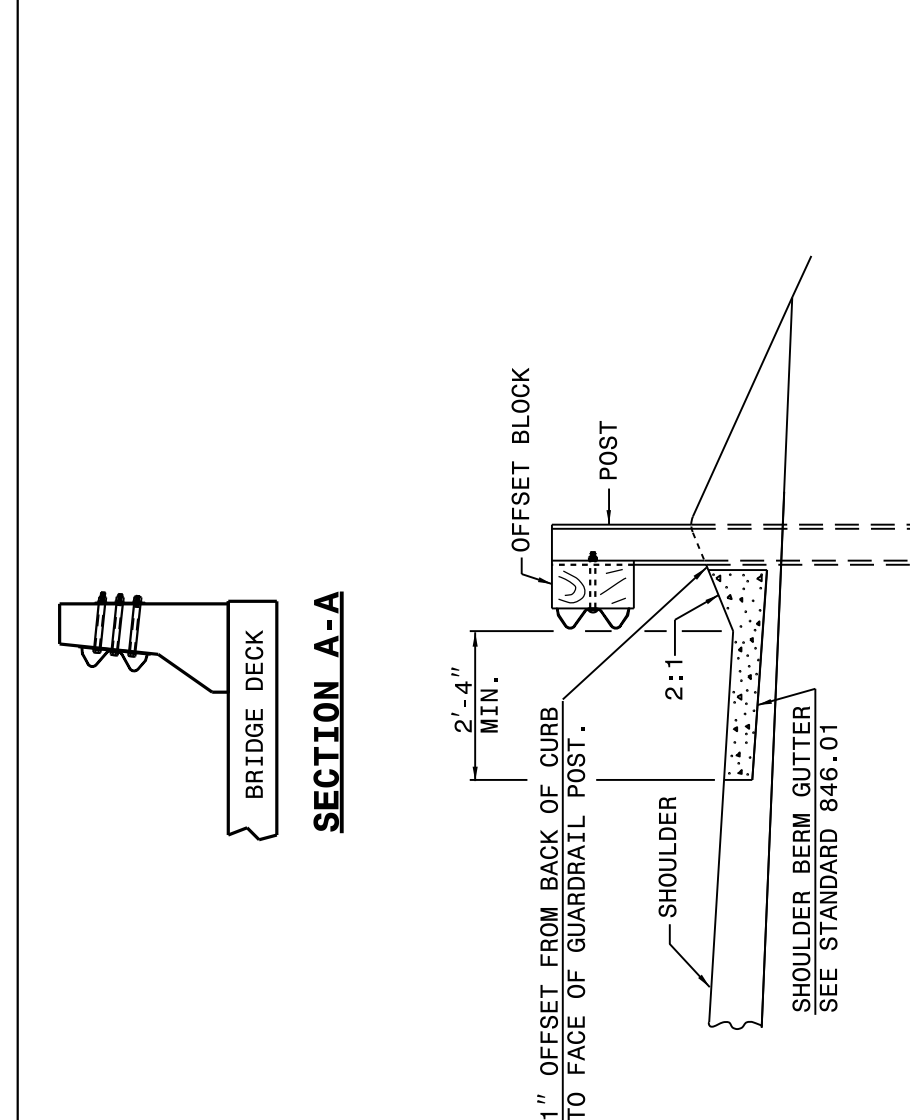
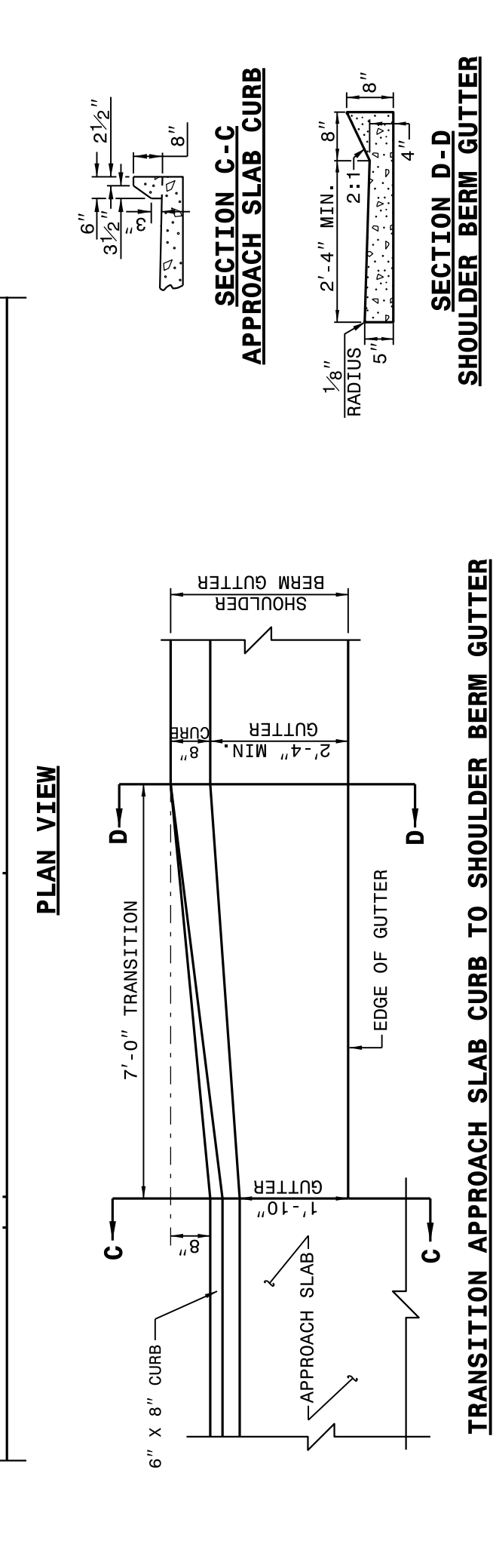
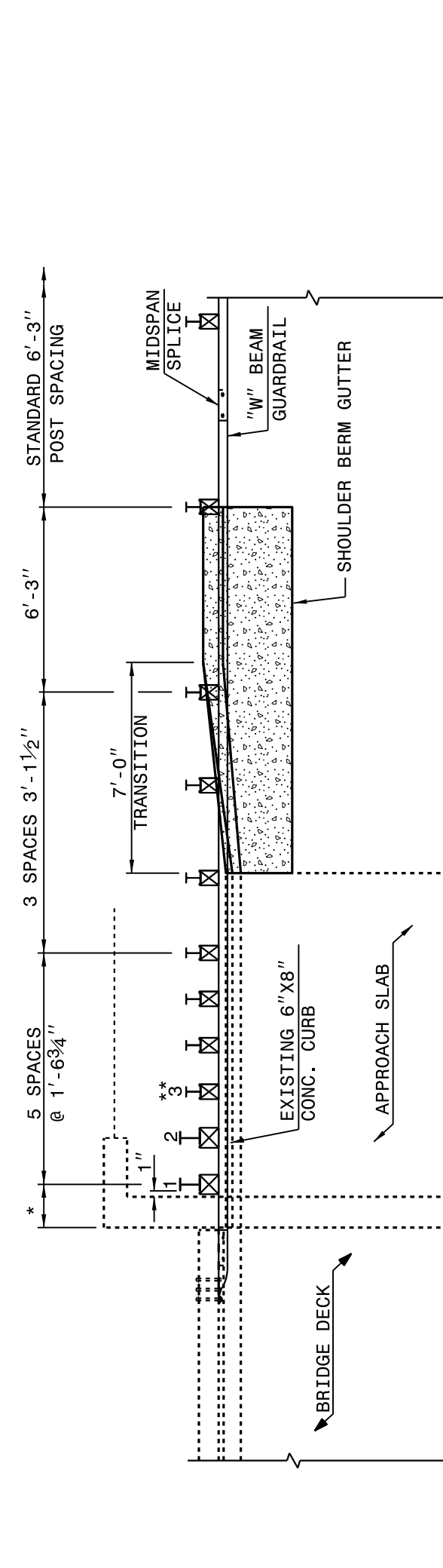
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT TYPE B-83

SHEET 6 OF 7
862D03



ELEVATION VIEW

NOTE:
 **ELIMINATE POST 3 AND SHIFT POSTS 1 & 2 ON SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 *MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 -USE NO WOOD POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
 -POSTS 1 AND 2 ARE TO BE 21' X 8" LONG STEEL POST AND 8" X 8" X 14" WOOD ROUTED OFFSET BLOCK.
 -SHOULDER BERM GUTTER IS REQUIRED IF NO CURBING EXISTS THROUGH ANCHOR UNIT PAY LIMITS.
 -ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD DOWN PLATE AS SHOWN IN STANDARD 862.04



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GUARDRAIL ANCHOR UNIT TYPE B-83

SHEET 6 OF 7
862D03

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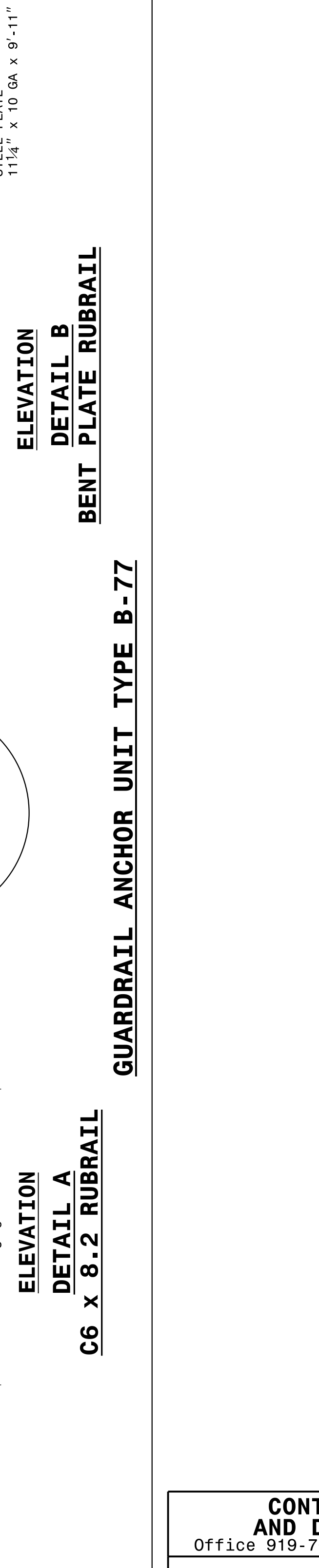
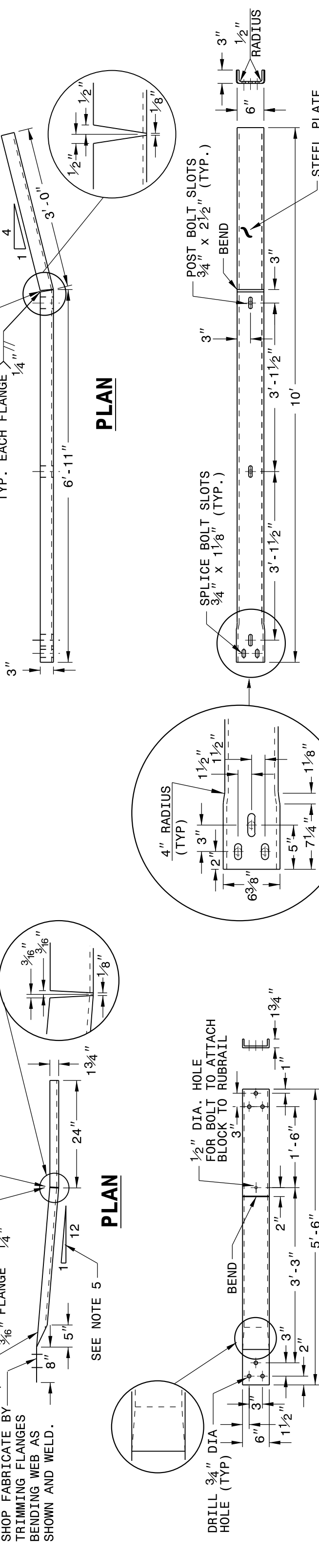
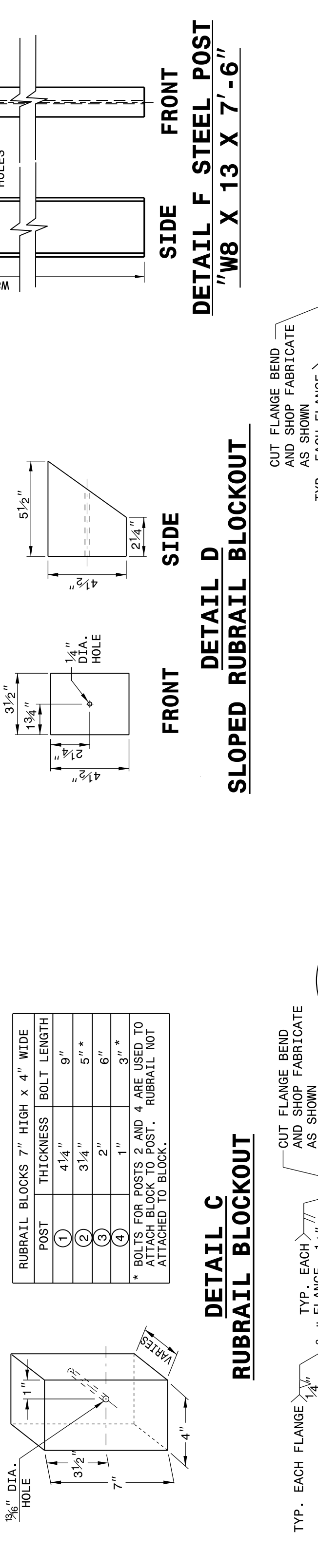
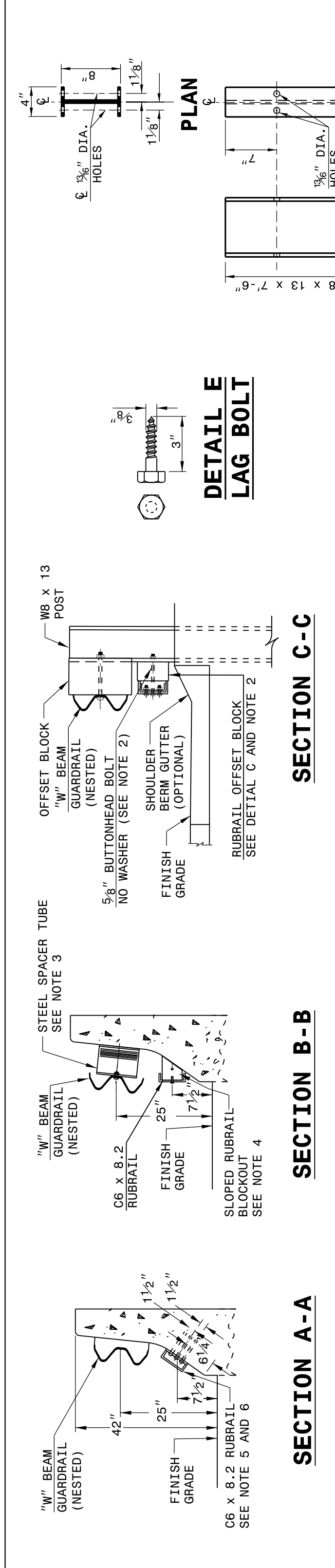
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

SHEET 5 OF 7
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ROADWAY DETAIL DRAWING FOR
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GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

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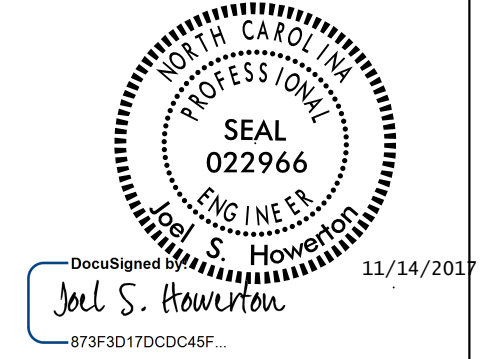
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GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

SHEET 5 OF 7
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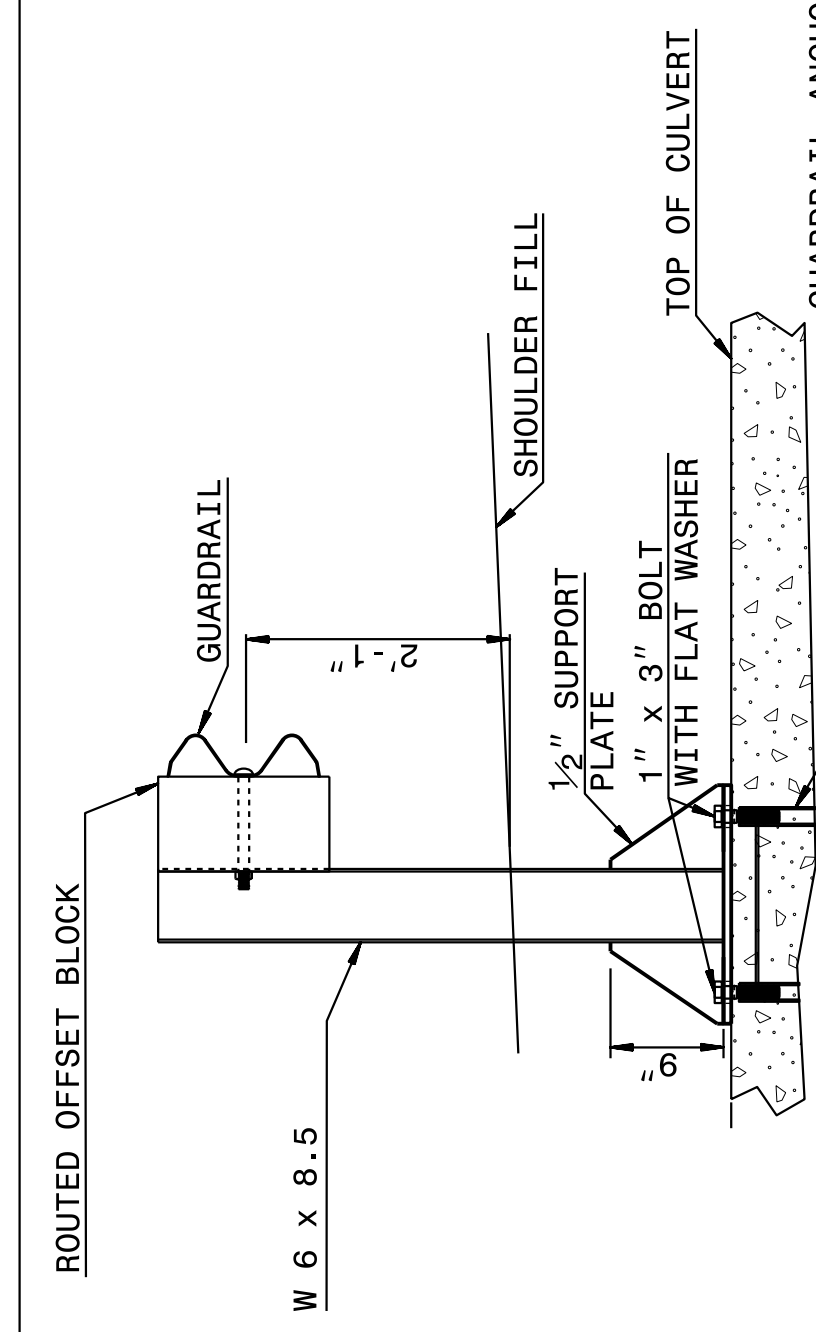
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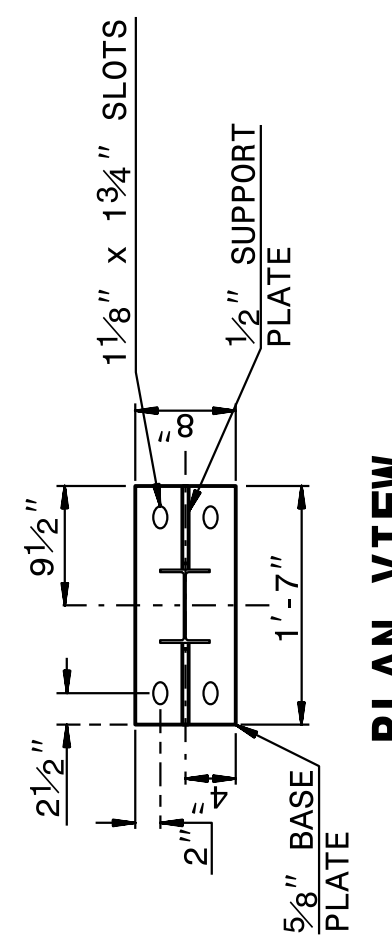
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ROADWAY DETAIL DRAWING FOR
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 ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

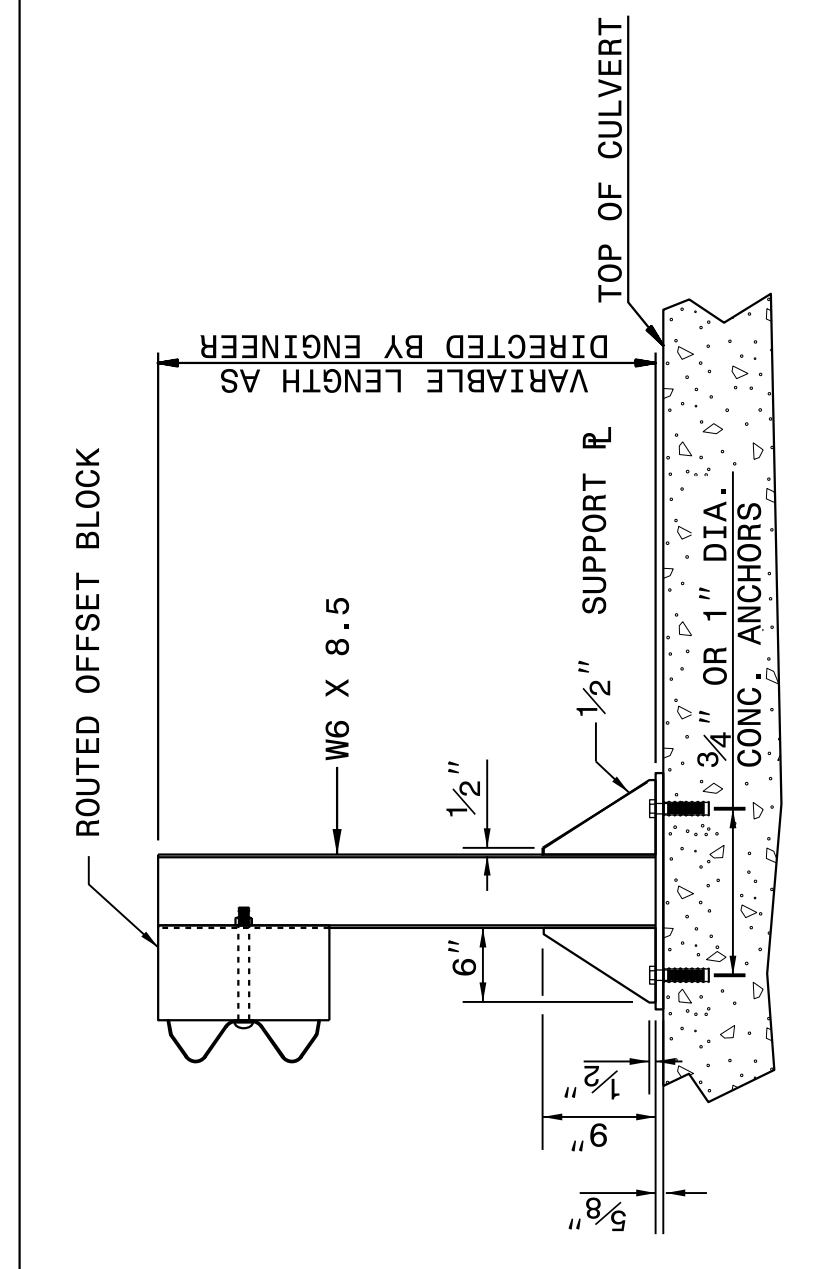
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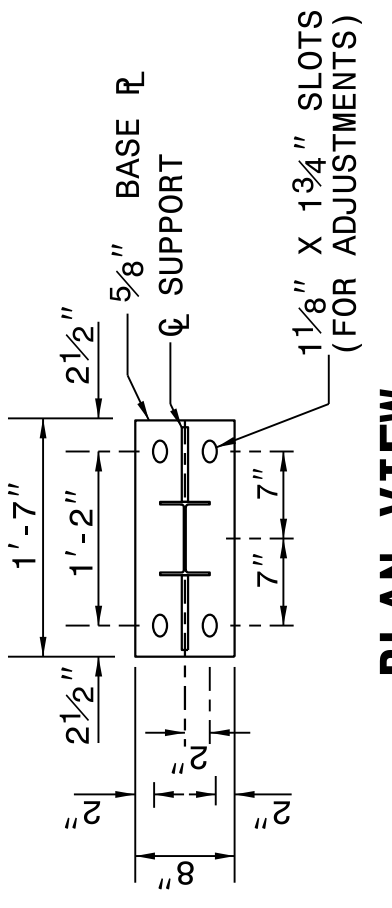
ELEVATION VIEW



PLAN VIEW



ELEVATION VIEW



PLAN VIEW

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
 ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

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NOTES FOR:
 -USE FULL LENGTH 1/4" BUTT WELDS AT ALL LOCATIONS OF CONTACT BETWEEN THE BASE PLATE, SUPPORT PLATES AND STEEL POST.
 -USE POST AND POST BASE PLATES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION TO CONFORM TO A.S.T.M. A-123.

NEW STRUCTURES:
 -ATTACH POST TO INSERT ASSEMBLY UNITS (USING ANCHOR BOLTS SUPPLIED WITH INSERTS) WHICH HAVE BEEN CAST INTO THE STRUCTURE DURING CONSTRUCTION.

EXISTING STRUCTURES:
 -USE CONCRETE ANCHORS CONSISTING OF A STUD BOLT WITH NUT AND WASHER. USE STUDS THREADED ON ONE END AND HAVING AN EXPANDED WEDGE ASSEMBLY POSITIONED AROUND A TAPERED AREA AT THE OTHER END. USE ANCHORS WHICH PROVIDE A MINIMUM SAFE HOLDING POWER OF 2875 LBS. FOR A 3/4" OR 1" DIAMETER BOLT. CALCULATE HOLDING POWER BASED ON 1/4 THE ACTUAL HOLDING POWER OF THE ANCHOR IN 3500 PSI CONCRETE AS DETERMINED BY AN APPROVED COMMERCIAL TESTING LABORATORY.

-USE ANCHORS GALVANIZED IN ACCORDANCE WITH A.S.T.M. A-153. SIZE HOLES FOR THE CONCRETE ANCHORS IN ACCORDANCE WITH THE ANCHOR MANUFACTURER'S RECOMMENDATIONS. DRILL HOLES WITH A CARBIDE OR DIAMOND TIPPED MASONRY BIT POWERED BY A ROTARY OR ROTARY IMPACT DRILL. NO OTHER IMPACT TOOLS WILL BE PERMITTED. DRILL HOLES VERTICALLY. FURNISH DOCUMENTATION OF HOLE SIZE RECOMMENDED FOR THE SPECIFIED ANCHOR TO THE ENGINEER BEFORE DRILLING HOLES. THOROUGHLY CLEAN HOLES FOR ANCHORS OF ALL CONCRETE CHIPS, DUST, GREASE, OIL, ETC. BEFORE ANCHORS ARE INSTALLED. REPAIR ALL DAMAGE CAUSED BY THIS WORK TO THE SATISFACTION OF THE ENGINEER.

ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

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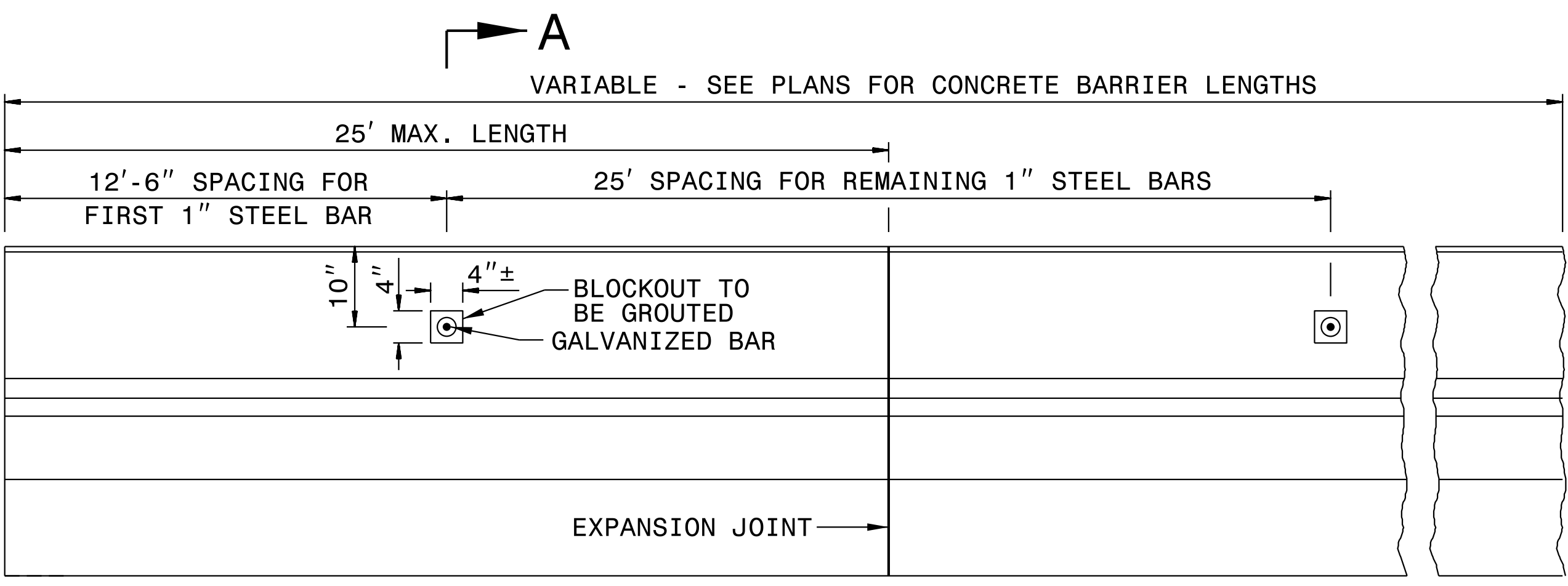
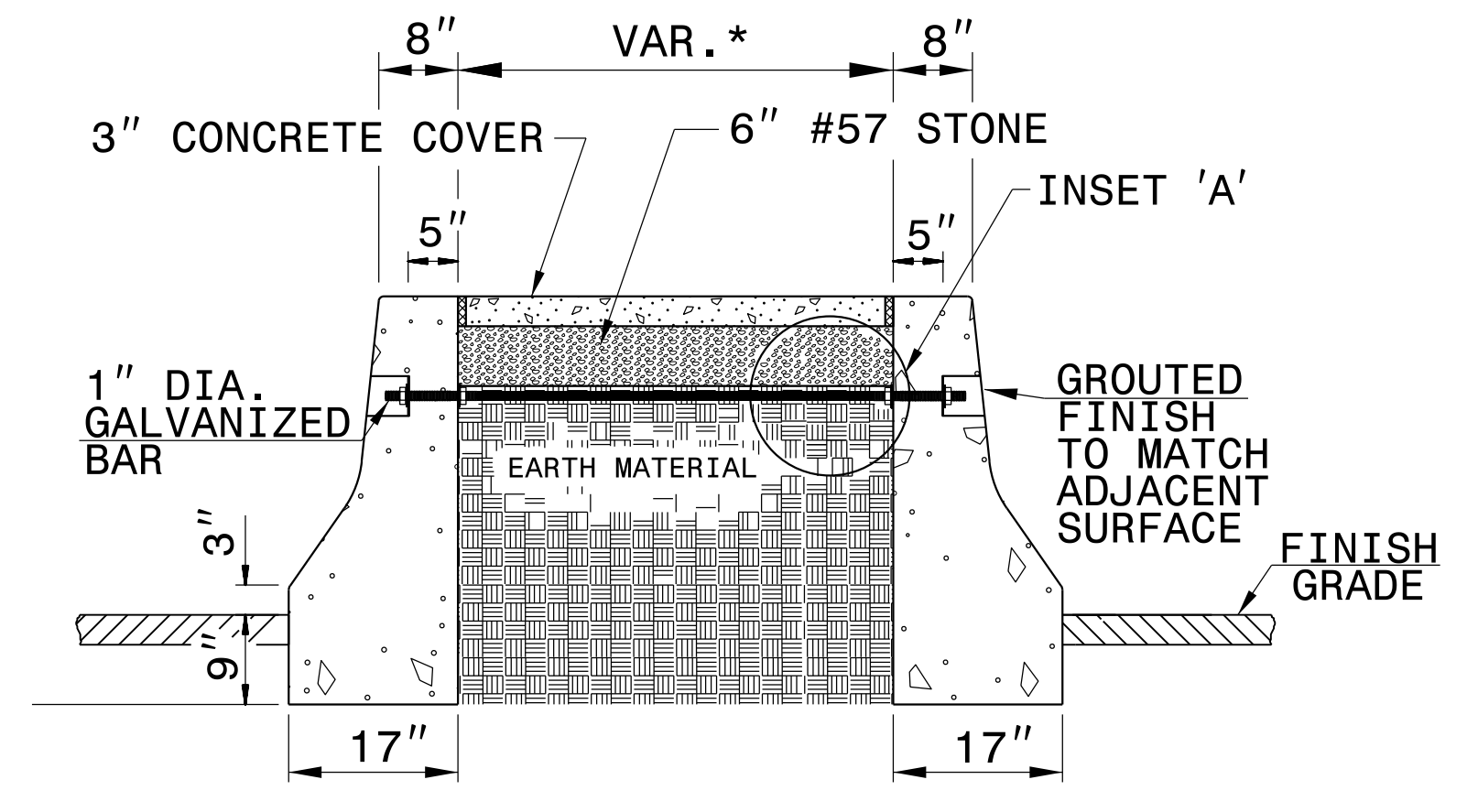
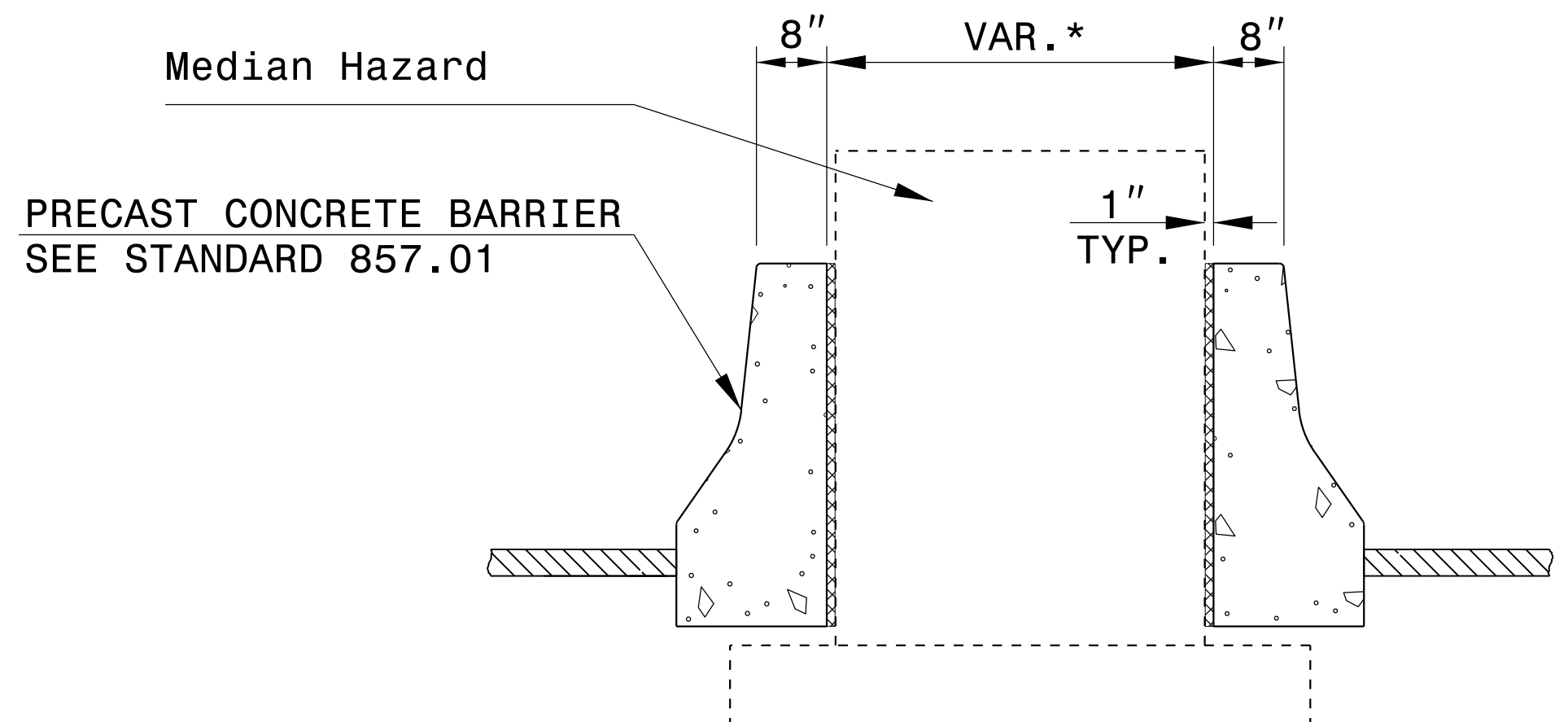
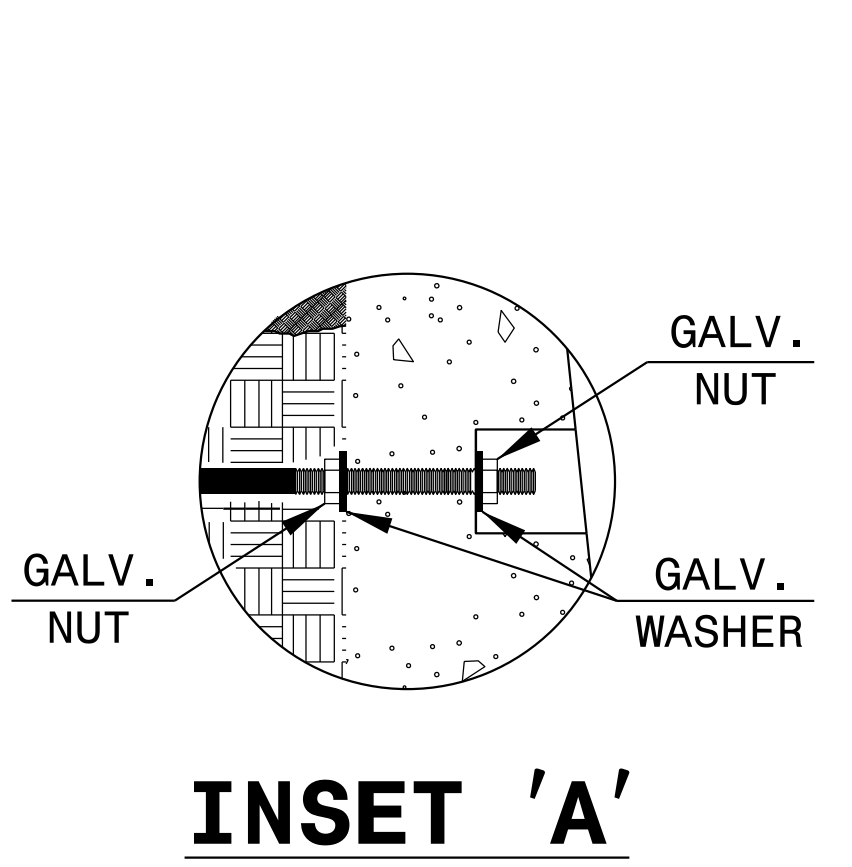
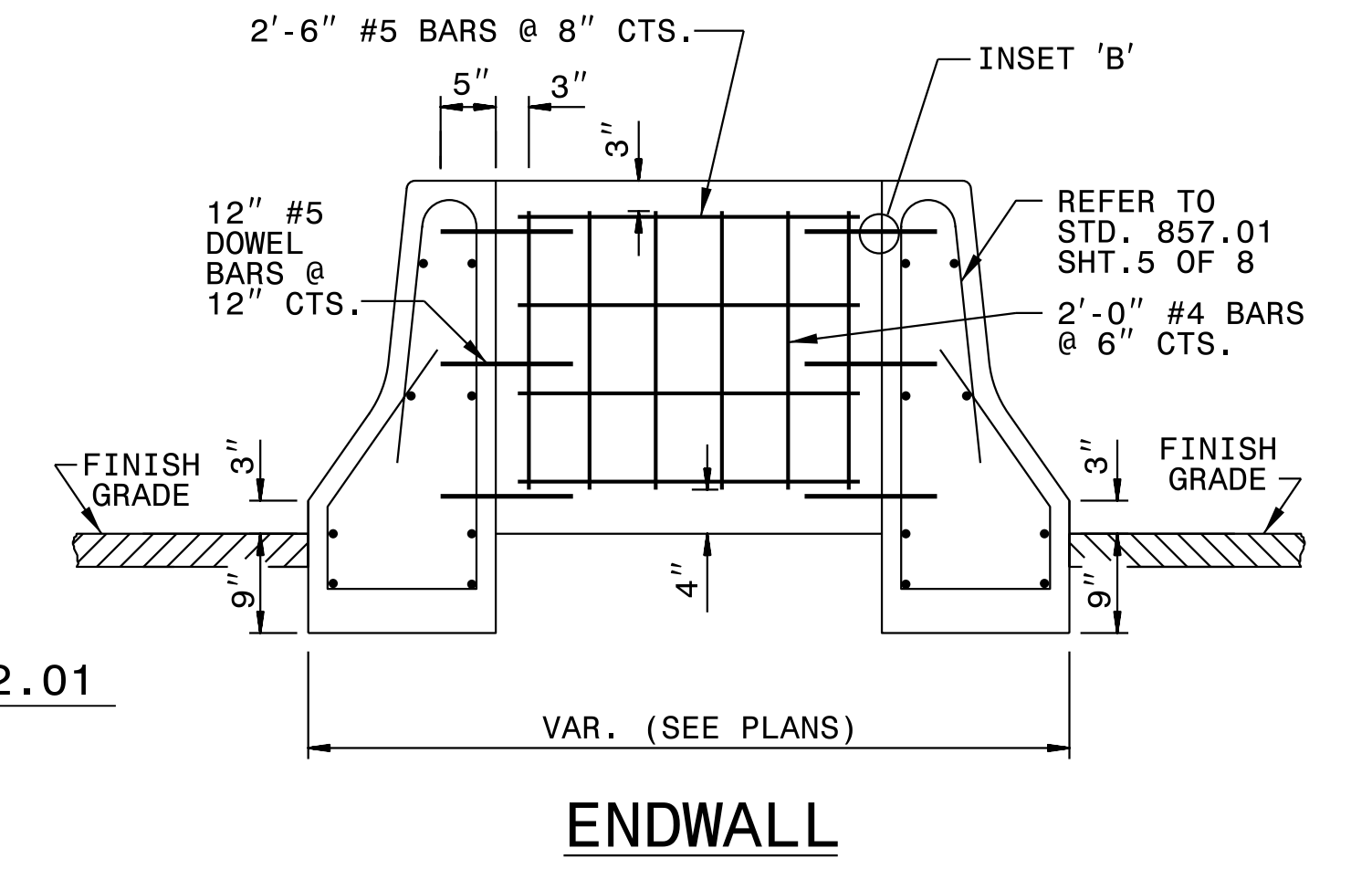
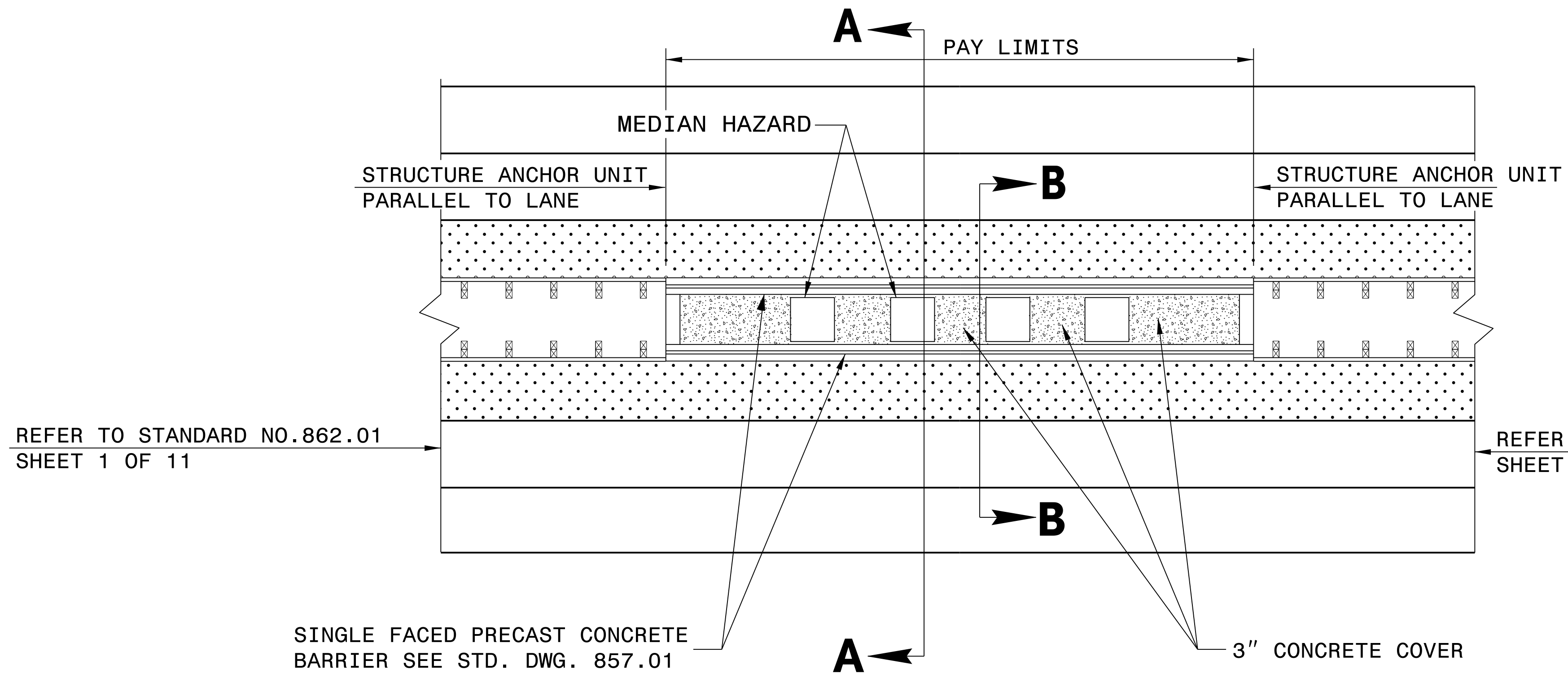
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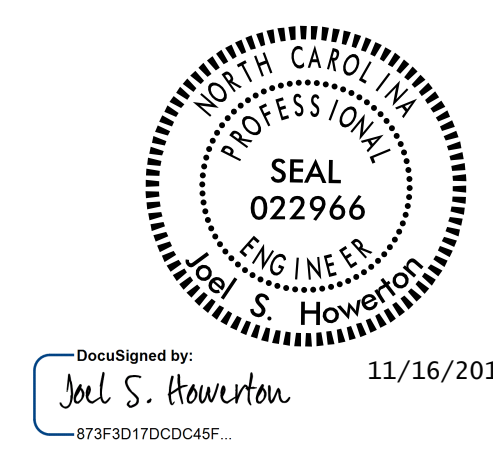


ELEVATION

GENERAL NOTES:

- *THIS DIMENSION MAY VARY DEPENDING ON THE WIDTH OF THE PIER.
- INSET FIRST 1" DIA. GALVANIZED BAR 12'-6" AND SPACE THE REMAINING 1" BARS AT 25'-0".
- USE AN APPROVED BONDING SYSTEM IN ACCORDANCE WITH SECTION 1081-1, TYPE 3A OF THE STANDARD SPECIFICATIONS.
- USE CLASS B CONCRETE FOR THE CONCRETE COVER
- SEAL ALL EXPANSION JOINTS WITH JOINT FILLER (SEE SECTION 1028 OF THE SPECIFICATIONS).
- PLACE A 1" BAR BETWEEN EACH SET OF PIERS

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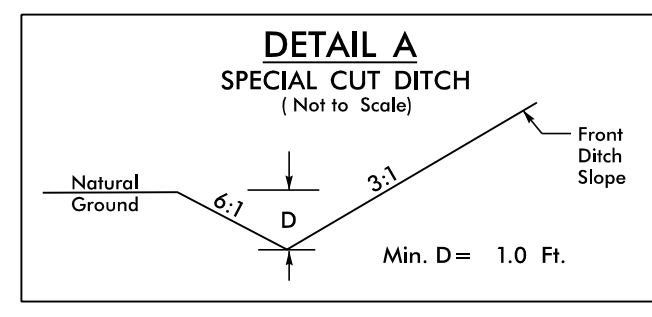
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DETAIL OF MEDIAN HAZARD PROTECTION

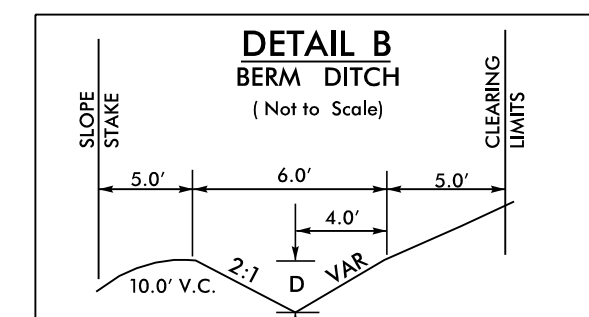
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6/2/2017

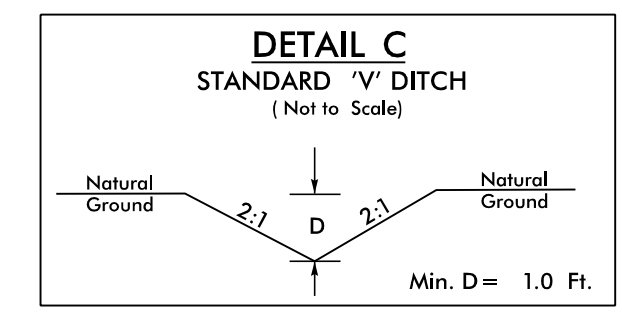
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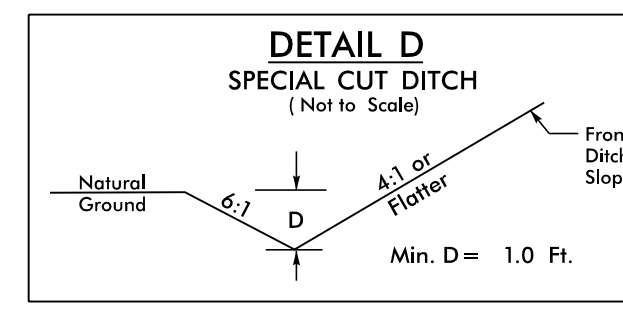
-RPB- STA. 16+00 TO STA. 18+37 RT



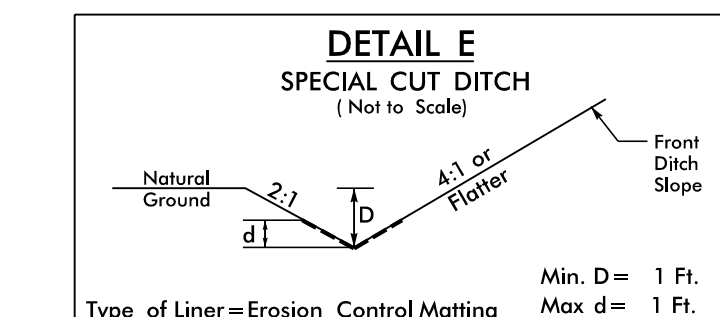
-LPB- STA. 10+00 TO STA. 11+60 LT.
-LPB- STA. 13+50 TO STA. 14+50 LT.
-LPB- STA. 16+50 TO STA. 19+50 LT.
-RPB- STA. 22+50 TO STA. 24+00 LT.
-RPD- STA. 14+00 TO STA. 19+35 RT.
-NC540- STA. 573+20 - 573+98 LT.



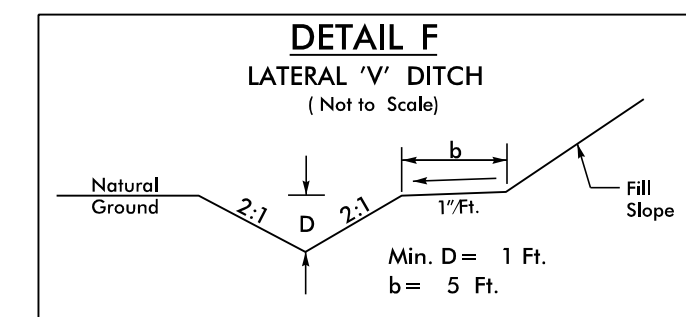
-L- STA. 59+00 RT. L=120' S=2.58%
BEG. EL.=347.1 END EL.=344.0
-LPD- STA. 14+28 RT. L=44' S=0.75%
BEG. EL.=342.3 END EL.=342.0
-RPD- STA. 22+50 RT. L=58' S=1.55%
BEG. EL.=353.0 END EL.=352.1
-LPD- STA. 14+28 RT. L=44' S=0.75%
BEG. EL.=342.3 END EL.=342.0
-RPD- STA. 19+47 LT. L=100' S=-5.40%
BEG. EL.=347.7 END EL.=342.3 (CL B RIPRAP)



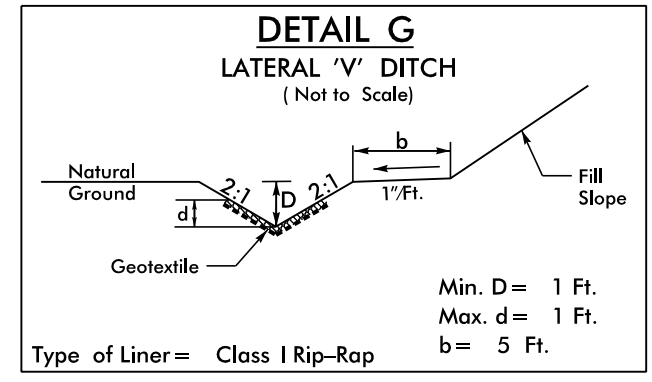
-LPD- STA. 13+00 TO STA. 14+50 RT.
-NC540- STA. 566+00 TO STA. 569+00 LT.
-NC540- STA. 570+50 TO STA. 572+50 LT.
-NC540- STA. 567+39 TO STA. 572+00 RT.
-NC540- STA. 573+50 TO STA. 577+00 RT.
-RPD- STA. 10+75 TO STA. 18+00 RT.



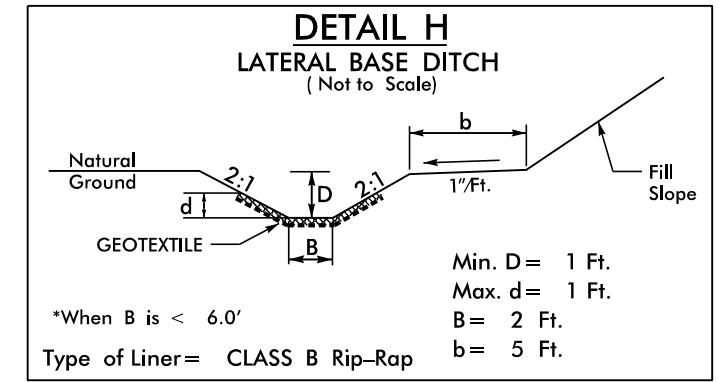
-NC540- STA. 569+00 TO STA. 570+50 LT
-NC540- STA. 580+00 TO STA. 585+00 RT



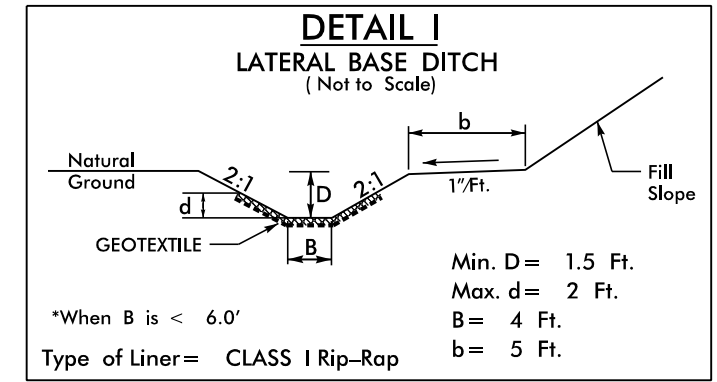
-L- STA. 72+00 TO STA. 72+64 RT.
-NC540- STA. 559+00 TO STA. 562+00 LT.



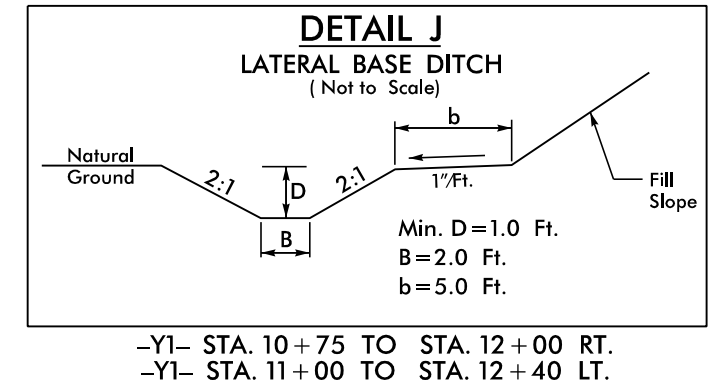
-LPD- STA. 19+50 TO STA. 22+00 RT.
-LPD- STA. 21+38 TO STA. 22+25 LT.
-NC540- STA. 562+00 TO STA. 563+50 LT.



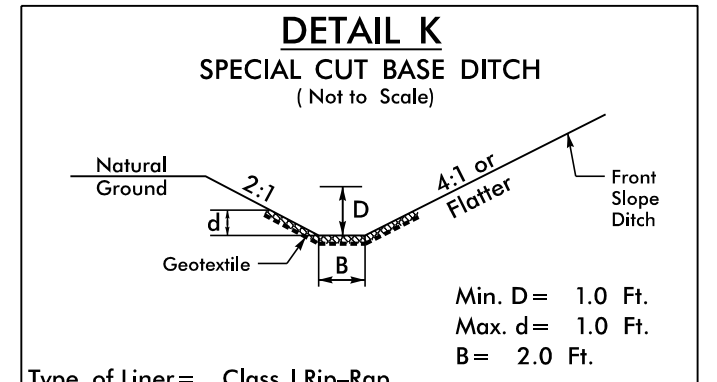
-L- STA. 70+50 TO STA. 72+00 RT.
-NC540- STA. 578+23 TO STA. 579+50 RT.
-Y1- STA. 15+00 TO STA. 15+50 RT.



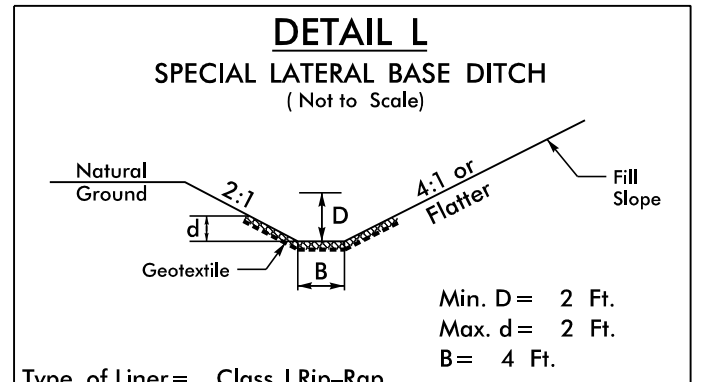
-Y1- STA. 12+40 TO STA. 14+75 LT.
-Y1- STA. 16+25 TO STA. 17+00 RT.
-NC540- STA. 563+50 TO STA. 566+00 LT.
-NC540- STA. 577+00 TO STA. 578+23 RT.



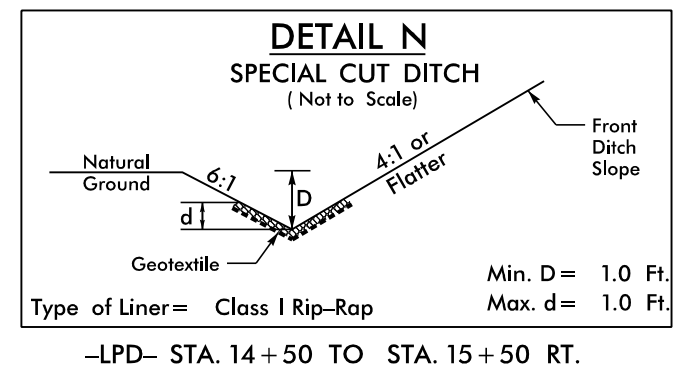
-Y1- STA. 10+75 TO STA. 12+00 RT.
-Y1- STA. 11+00 TO STA. 12+40 LT.



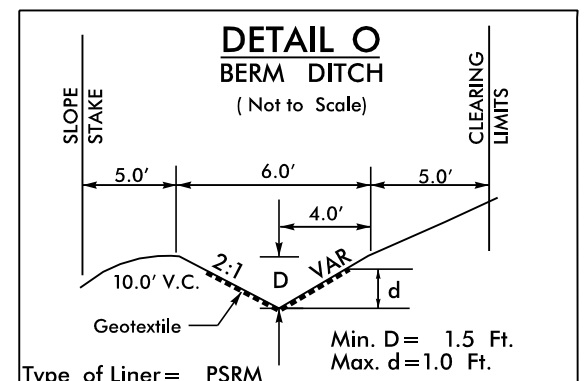
-Y1- STA. 12+00 TO STA. 15+00 RT.



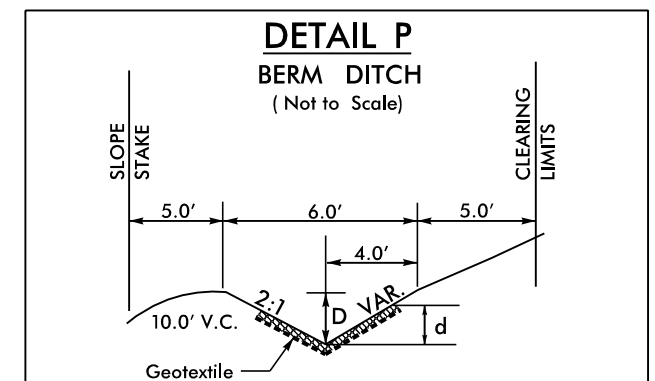
-Y1- STA. 17+00 TO STA. 19+00 LT.



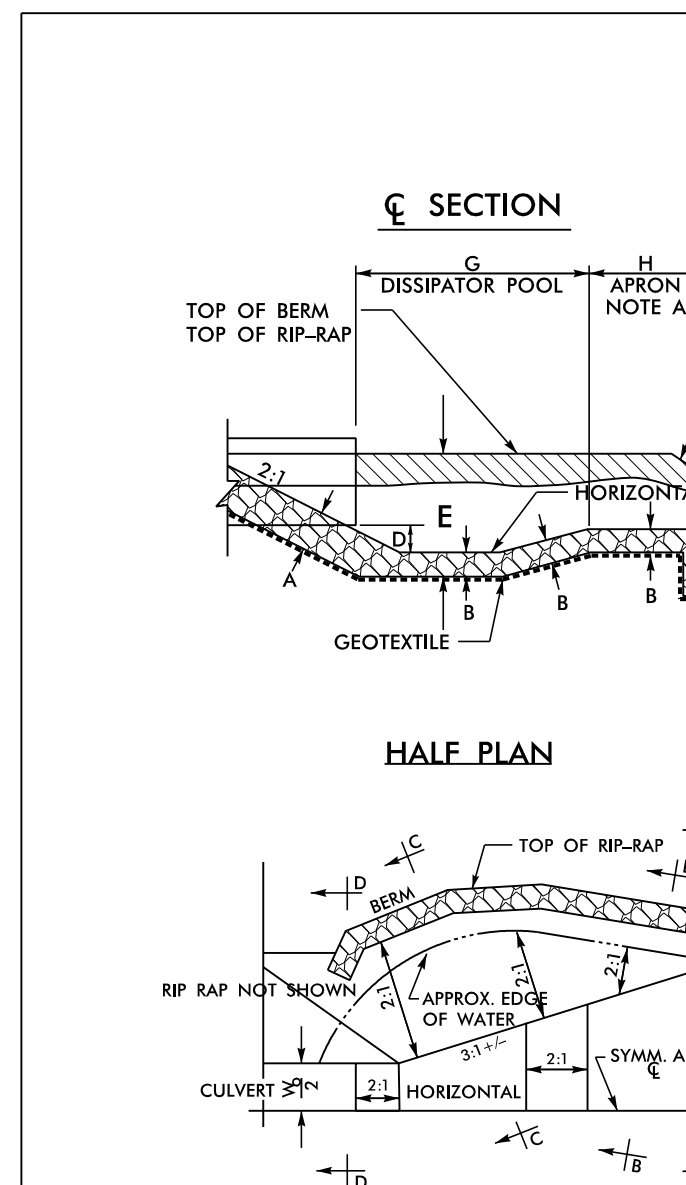
-LPD- STA. 14+50 TO STA. 15+50 RT.



-LPB- STA. 14+50 TO STA. 16+50 LT.
-LPB- STA. 19+50 TO STA. 20+50 LT.
-RPD- STA. 11+00 TO STA. 12+50 RT.
-RPD- STA. 20+25 TO STA. 22+92 RT.



-LPB- STA. 11+60 TO STA. 13+50 LT.
-RPB- STA. 18+50 TO STA. 22+50 LT.
-RPD- STA. 12+50 TO STA. 14+00 RT.
-RPD- STA. 19+35 TO STA. 20+25 RT.

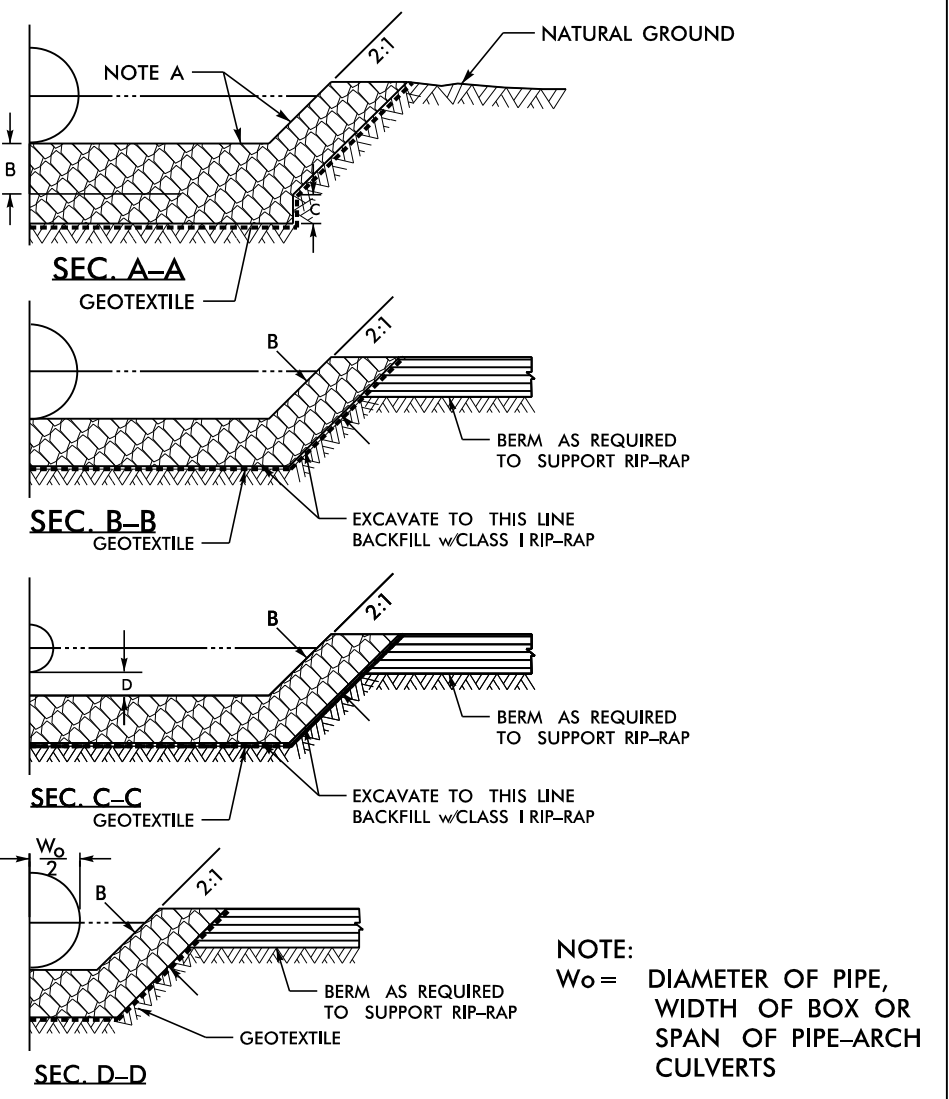


*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A-A SUCH THAT Q_{des} (CROSS SECTIONAL AREA AT SEC. A-A) = SPECIFIED VELOCITY.
*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP-RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM. AT SEC. A-A, PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

| RIP RAP BASIN # | |
|-----------------|------|
| DIM. | |
| A | 3.0 |
| B | 2.25 |
| C | 2.0 |
| D | 1.5 |
| E | 7.0 |
| F | 6.5 |
| G | 11.0 |
| H | 6.0 |

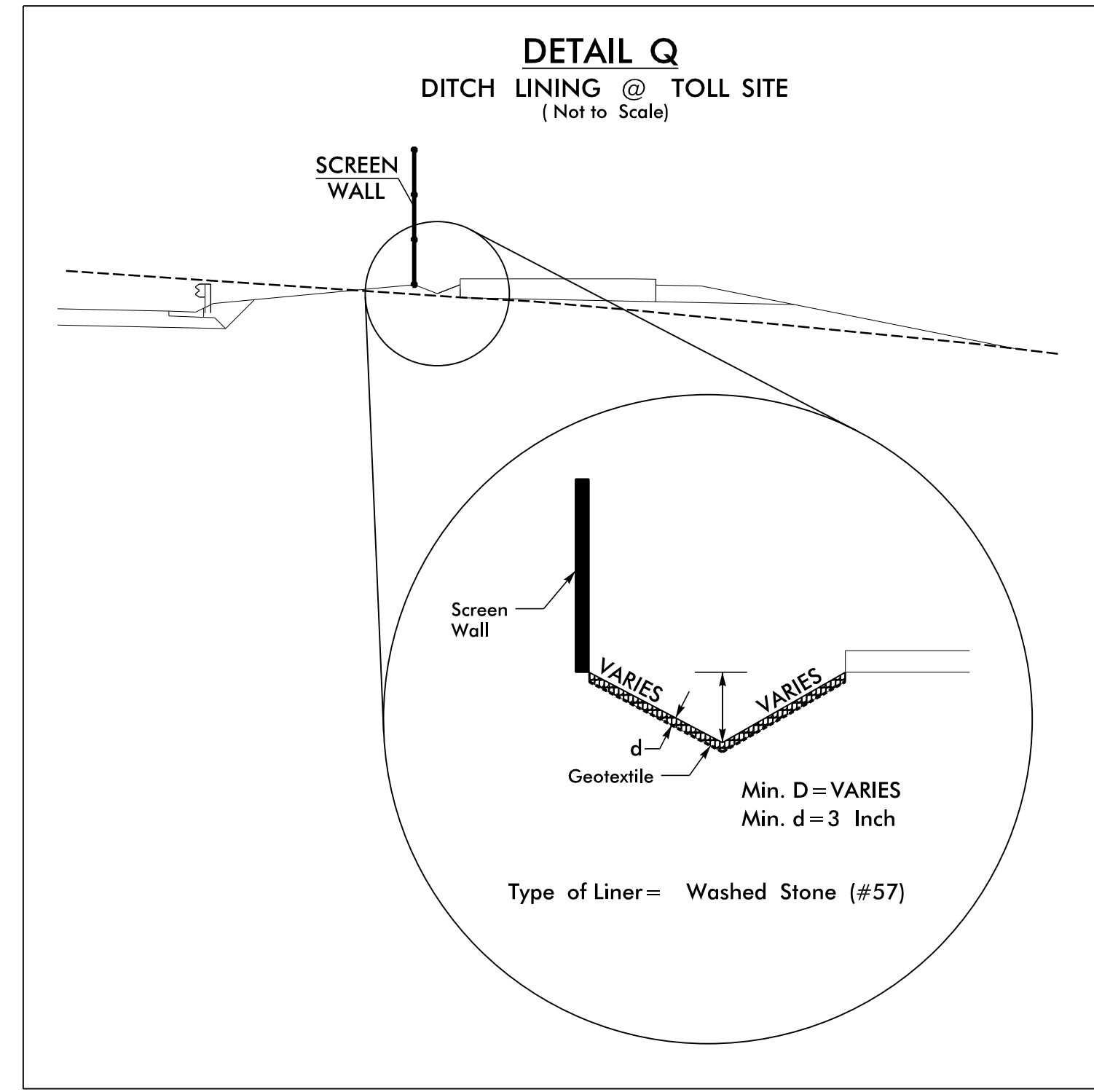
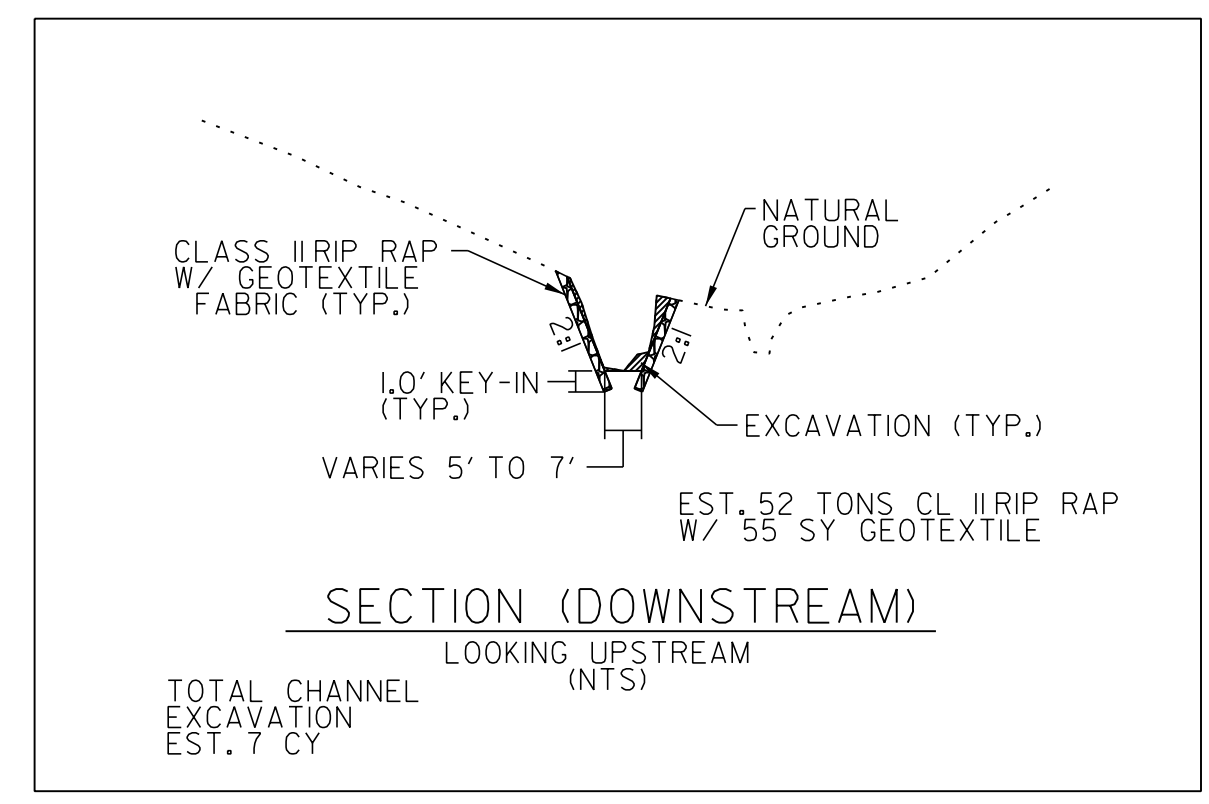
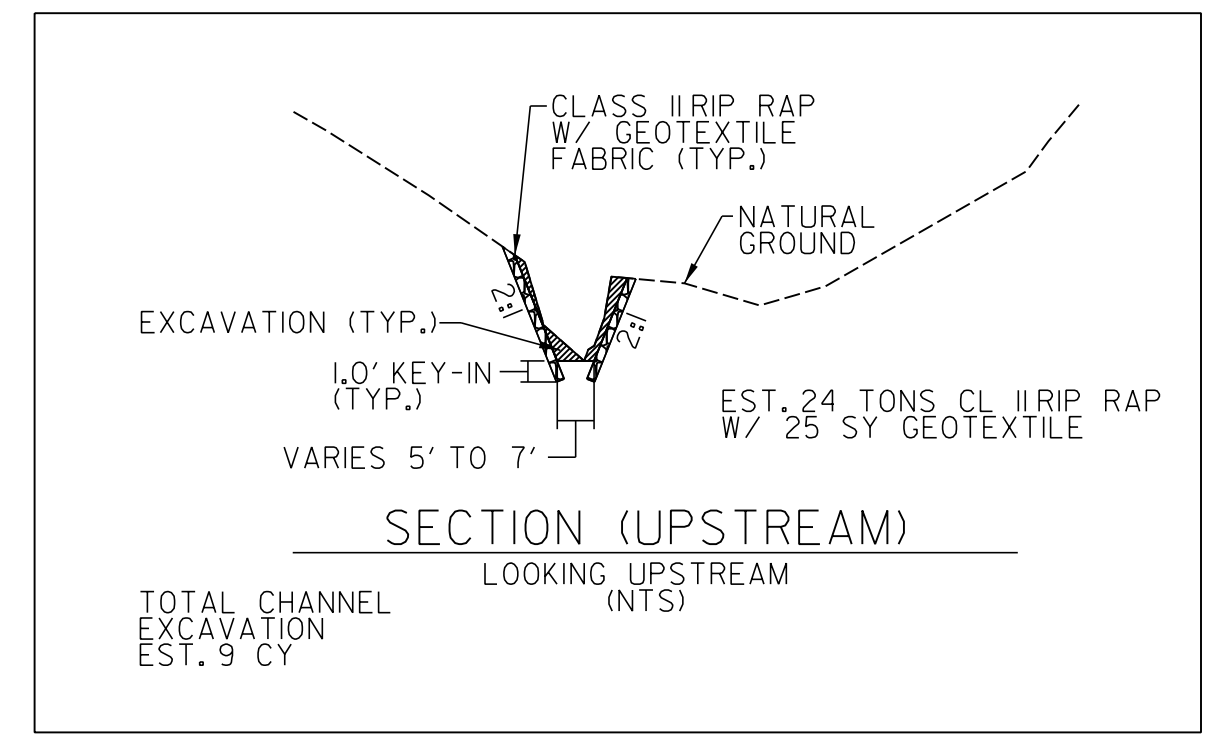
*ALL DIMENSIONS APPROXIMATE IN FEET
USE CLASS I RIP RAP FOR BASIN

| BASIN # | LOCATION (AT OUTLET) |
|---------|----------------------|
| 1 | -L- 74+75 LT. |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |



NOTE:
W_o = DIAMETER OF PIPE, WIDTH OF BOX OR SPAN OF PIPE-ARCH CULVERTS

CULVERT INLET/OUTLET DETAILS



-RPB- STA. 20+19.00 TO STA. 20+64 RT
*SEE AET SPECIAL PROVISIONS FOR MEASUREMENT AND PAYMENT OF DITCH DETAIL "Q"

PLANS PREPARED BY :

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK IN CUBIC YARDS

| CHAIN | BEGINNING STATION | ENDING STATION | UNCL. EXCA. C.Y. | UNDERCUT C.Y. | UNSUITABLE C.Y. | EMBANK. % C.Y. | BORROW C.Y. | WASTE C.Y. |
|--|-------------------|----------------|------------------|---------------|-----------------|----------------|----------------|----------------|
| SUMMARY 1 | | | | | | | | |
| -L- | 56+95.00 | 66+25.63 | 19,018 | 100 | 5,400 | 1,781 | | 17,337 |
| -RPB- | 10+00.00 | 26+63.50 | 29,857 | | | 12,295 | | 17,562 |
| -LPB- | 10+00.00 | 21+00.00 | 45,116 | | 4,050 | 595 | | 44,521 |
| -NC540- LT | 557+49.00 | 573+98.00 | 2,944 | | | 2,326 | | 618 |
| -NC540- LT | 591+00.00 | 593+31.25 | 259 | | | 1,548 | 1,289 | |
| SUBTOTAL | | | 97,194 | 100 | 9,450 | 18,545 | 1,289 | 80,038 |
| SUMMARY 2 | | | | | | | | |
| -L- | 68+76.63 | 85+00.00 | 20,001 | | | 139,375 | 119,374 | |
| -RPD- | 10+00.00 | 24+16.00 | 24,737 | 150 | 8,200 | 2,593 | | 22,294 |
| -LPD- | 10+00.00 | 22+50.00 | 9,363 | 150 | 450 | 35,431 | 26,518 | 600 |
| -NC540- RT | 545+66.00 | 552+06.00 | 606 | | | 22 | | 584 |
| -NC540- RT | 568+79.00 | 585+29.00 | 9,580 | | | 1,553 | | 8,027 |
| -Y1- | 10+36.50 | 18+85.00 | 1,380 | | | 6,295 | 4,915 | |
| SUBTOTAL | | | 65,667 | 300 | 8,650 | 185,269 | 150,808 | 31,505 |
| -DR1- | 11+00.00 | 12+50.00 | 204 | | | 12 | | 192 |
| -DR2- | 10+50.00 | 13+00.00 | 6 | | | 571 | 565 | |
| -UPA 3- | 11+50.00 | 16+75.00 | 191 | | | 541 | 350 | |
| SUBTOTAL | | | 401 | | | 1,124 | 915 | 192 |
| SHEET TOTALS | | | 163,226 | 400 | 18,100 | 204,938 | 153,012 | 111,736 |
| LOSS DUE TO CLEARING AND GRUBBING | | | -1,300 | | | | 1,300 | |
| ADDITIONAL UNDERCUT CONTINGENCY SHOULDER MATERIAL | | | | 2,000 | | 2,400 | 2,400 | 2,000 |
| EARTH WASTE IN LIEU OF BORROW | | | | | | | -93,236 | -93,236 |
| PROJECT TOTAL | | | 161,962 | 2,400 | 18,100 | 218,606 | 74,744 | 20,500 |
| EST. 5% TO REPLACE TOP SOIL IN BORROW | | | | | | | 3,737 | |
| GRAND TOTAL | | | 161,962 | | | | 78,482 | |
| SAY | | | 161,970 | | | | 78,490 | |

EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL UNIT.

SUMMARY OF SHOULDER BERM GUTTER

| LINE | SIDE | Station | Station | LENGTH (FT) |
|---------------|------|-----------|-----------|-------------|
| LPD | LT | 20+45.00 | 21+40.00 | 95.0 |
| RPB | RT | 19+91.00 | 20+86.00 | 95.0 |
| NC540 | LT | 589+94.00 | 593+31.00 | 337.0 |
| TOTAL: | | | | 527 |
| SAY: | | | | 527 |

BREAKING OF EXISTING ASPHALT PAVEMENT SUMMARY

| LINE | STATION | STATION | LOCATION | LENGTH OR AREA | WIDTH | SQUARE YARDS |
|--------------|---------|---------|----------|----------------|-------|-----------------|
| NC540 | 574+50 | 565+76 | RT | 15043.26 | | 1671.47 |
| TOTAL | | | | | | 1,671.47 |
| SAY | | | | | | 1,680 |

SUMMARY OF 2'-6" CURB AND GUTTER

| LINE | SIDE | Station | Station | LENGTH (FT) |
|---------------|------|----------|----------|--------------|
| L | LT | 56+95.00 | 61+30.00 | 548 |
| LPB | LT | 11+84.00 | 20+97.00 | 881 |
| L | LT | 62+04.00 | 66+26.00 | 458 |
| L | LT | 68+77.00 | 76+49.00 | 788 |
| L | LT | 77+48.00 | 81+30.00 | 382 |
| L | RT | 74+92.00 | 85+00.00 | 1,014 |
| LPD | LT | 11+83.00 | 19+79.00 | 759 |
| RABB | | | | 273 |
| RABD | | | | 273 |
| TOTAL: | | | | 5,377 |
| SAY: | | | | 5,380 |

SUMMARY OF 1'-6" CURB AND GUTTER

| LINE | STATION | STATION | SIDE | GROSS LENGTH | DEDUCTIONS | | NET LENGTH |
|--------------|----------|----------|------|--------------|------------|--------|--------------|
| | | | | | DRIVES | OTHERS | |
| L | 65+45.00 | 66+26.00 | LT | 81 | | | 81 |
| L | 68+77.00 | 69+83.00 | LT | 106 | | | 106 |
| L | 74+71.00 | 85+00.00 | LT | 1,042 | | | 1,042 |
| L | 74+71.00 | 85+00.00 | RT | 1,051 | | | 1,051 |
| L | 56+95.00 | 57+35.45 | LT | 41 | | | 41 |
| RABB | | | | 366 | | | 366 |
| RABD | | | | 366 | | | 366 |
| L | 60+01.60 | 60+65.06 | CL | 180 | | | 180 |
| L | 62+11.95 | 62+54.72 | CL | 115 | | | 115 |
| LPB | 19+60.79 | 21+00.00 | RT | 320 | | | 320 |
| L | 72+59.67 | 73+19.46 | CL | 163 | | | 163 |
| LPD | 20+17.48 | 22+89.80 | LT | 604 | | | 604 |
| TOTAL | | | | | | | 4,434 |
| SAY | | | | | | | 4,440 |

ASPHALT PAVEMENT REMOVAL SUMMARY

| LINE | STATION | STATION | LOCATION | LENGTH OR AREA | WIDTH | SQUARE YARDS |
|----------------------------|---------|---------|----------|----------------|-------|-----------------|
| Y1 | 15+38 | 16+83 | LT | 2005.77 | | 222.86 |
| NC540 | 565+76 | 574+50 | RT | 5770.04 | | 641.12 |
| Temporary Pavement Removal | | | | | | |
| L | 76+70 | 77+35 | CL | 1370.00 | | 152.22 |
| TOTAL | | | | | | 1,016.20 |
| SAY | | | | | | 1,020 |

CONCRETE PAVEMENT REMOVAL SUMMARY

| LINE | STATION | STATION | LOCATION | LENGTH OR AREA | WIDTH | SQUARE YARDS |
|--------------|---------|---------|----------|----------------|-------|-----------------|
| NC540 | 545+66 | 557+34 | RT | 14644.70 | | 1627.19 |
| NC540 | 557+49 | 576+17 | LT | 25021.20 | | 2780.13 |
| NC540 | 566+99 | 585+29 | RT | 21587.88 | | 2398.65 |
| NC540 | 585+58 | 593+31 | LT | 9049.26 | | 1005.47 |
| TOTAL | | | | | | 7,811.45 |
| SAY | | | | | | 7,820 |

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF UNDERDRAINS

| LINE | Station | Station | Location LT/RT/CL | Drain Type* UD/BD/SD | LF |
|-------------|---------|---------|----------------------|-------------------------|------|
| | | | | | |
| | | | | | |
| | | | | | |
| CONTINGENCY | | | | UD | 1500 |
| | | | | TOTAL LF: | 1500 |
| | | | | | |

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

SPECIAL USAGE OF UNCLASSIFIED EXCAVATION IN CUBIC YARDS

| LINE | Station | Station | CY |
|-------|---------|------------------|--------|
| -L- | 60+00 | 62+00 | 1,000 |
| -LPB- | 14+00 | 17+50 | 6,250 |
| -RPB- | 16+00 | 17+50 | 1,100 |
| -LPD- | 14+00 | 15+79 | 250 |
| -RPD- | 18+75 | 23+60 | 2,600 |
| | | TOTAL CY: | 11,200 |
| | | | |

NOTE:
UNCLASSIFIED EXCAVATION IN THE FOLLOWING AREAS
IS ANTICIPATED TO BE UNSUITABLE WITHIN 3 FEET OF SUBGRADE
AND SHOULD BE UTILIZED IN DEEPER FILLS OR OUTSIDE OF
ROADWAY EMBANKMENTS AT THE DISCRETION OF THE ENGINEER.

RIGHT-OF-WAY AREA DATA SHEET

| SHEET NO. | PARCEL NO. | PROPERTY OWNERS NAME | TOTAL AREA | AREA TAKEN | AREA REMAINING RIGHT | AREA REMAINING LEFT | TEMPORARY CONSTRUCTION EASEMENT | PERMANENT DRAINAGE EASEMENT | TEMPORARY DRAINAGE EASEMENT | DRAINAGE UTILITY EASEMENT | PERMANENT UTILITY EASEMENT |
|--------------|------------|--|------------|------------|----------------------|---------------------|---------------------------------|-----------------------------|-----------------------------|---------------------------|----------------------------|
| 6 | 3 | NCDOT TURNPIKE AUTHORITY | 4.46 | 1.66 | 2.80 | | | | | | |
| 4 & 6 | 5 | CRAIG S. HILLIARD | 1.64 | 1.64 | | | | | | | |
| 4 & 6 | 6 | PATRICIA H. DAVENPORT | 2.11 | 0.37 | 1.74 | | 0.05 | | | | |
| 4 & 6 | 7 | NCDOT TURNPIKE AUTHORITY | 0.45 | 0.45 | | | | | | | |
| 4, 5, 6, & 8 | 8 | NCDOT TURNPIKE AUTHORITY (SARA JANE MILLS HAWES) | 7.01 | 2.66 | | 4.35 | 0.21 | | | | 0.02 |
| 4 | 9 | CLINTON D. ROGERS & SHANNON H. ROGERS | 1.96 | 1.96 | | | | | | | |
| 4 | 10 | JOHN A. WELDON & KRISTEL M. WELDON | 2.00 | 1.05 | 0.95 | | 0.07 | | | | 0.35 |
| 4 | 12 | MILTON H. ROGERS, JR & RITA T. ROGERS | 3.40 | 3.40 | | | | | | | |
| 4 | 13 | RUSSELL STEPHENSON & ELLEN LONGINO STEPHENSON | 3.74 | 2.11 | 1.63 | | | | | | 0.39 |
| 4 | 14 | ANNIE RUTH HILLIARD | 14.19 | 1.38 | 11.59 | 1.22 | 0.47 | 0.02 | | | 0.89 |
| 4 | 15 | SANDRA H. SWINGLE | 1.50 | 0.01 | | 1.49 | | | | 0.12 | 0.16 |
| 4 & 8 | 16 | MICHAEL O. SMITH & VICKI A. SMITH | 3.75 | 1.87 | 0.68 | 1.20 | 0.29 | 0.14 | | | 0.17 |
| 4 & 8 | 17 | LAWRENCE JAMES GILBERT & DEBORAH S. GILBERT | 2.25 | 0.26 | 1.99 | | 0.02 | | | 0.03 | 0.09 |
| 4 | 18 | BARBARA J. HOLLY | 1.50 | 0.12 | | 1.38 | | | | | 0.12 |
| 4 & 8 | 19 | TOWN OF CARY | 2.00 | 0.22 | | 1.78 | | | | 0.16 | 0.07 |
| 4 & 8 | 20 | LAWRENCE JAMES GILBERT & DEBORAH S. GILBERT | 2.61 | 0.07 | 2.54 | | 0.18 | 0.01 | | | |
| 8 | 21 | TALBERT EDWARD KEANRS & ELIZABETH BLAKELY KEARNS | 5.61 | 0.30 | 5.31 | | | 0.001 | | | |
| 5 & 8 | 22 | WINFRED G. OLIVE | 2.50 | | | 2.50 | | | | | 0.11 |
| 4, 5 & 6 | 27 | TOWN OF CARY | 34.95 | 16.03 | 17.88 | 1.04 | 0.10 | 0.08 | | 0.02 | 0.45 |
| 4 | 28 | MDI MANAGEMENT LLC | 13.46 | 0.01 | | 13.45 | 0.01 | | | | |
| 4 | 29 | LENNAR CAROLINAS LLC | 3.44 | 0.02 | 3.42 | | | | | 0.05 | 0.16 |
| 4 | 30 | LENNAR CAROLINAS LLC | 27.53 | 0.02 | 27.51 | | 0.08 | 0.07 | | | |
| 4 | 31 | LENNAR CAROLINAS LLC | 6.51 | 0.02 | 6.49 | | | | | 0.02 | 0.20 |

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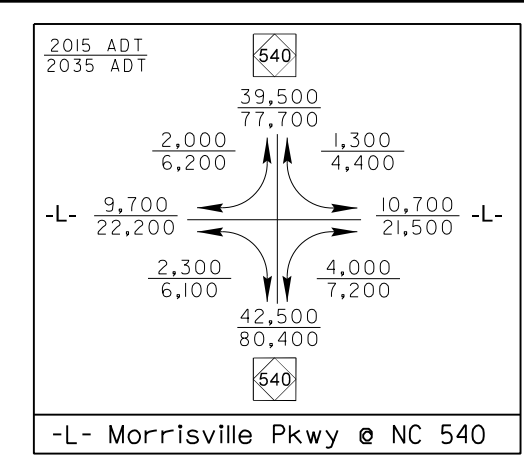
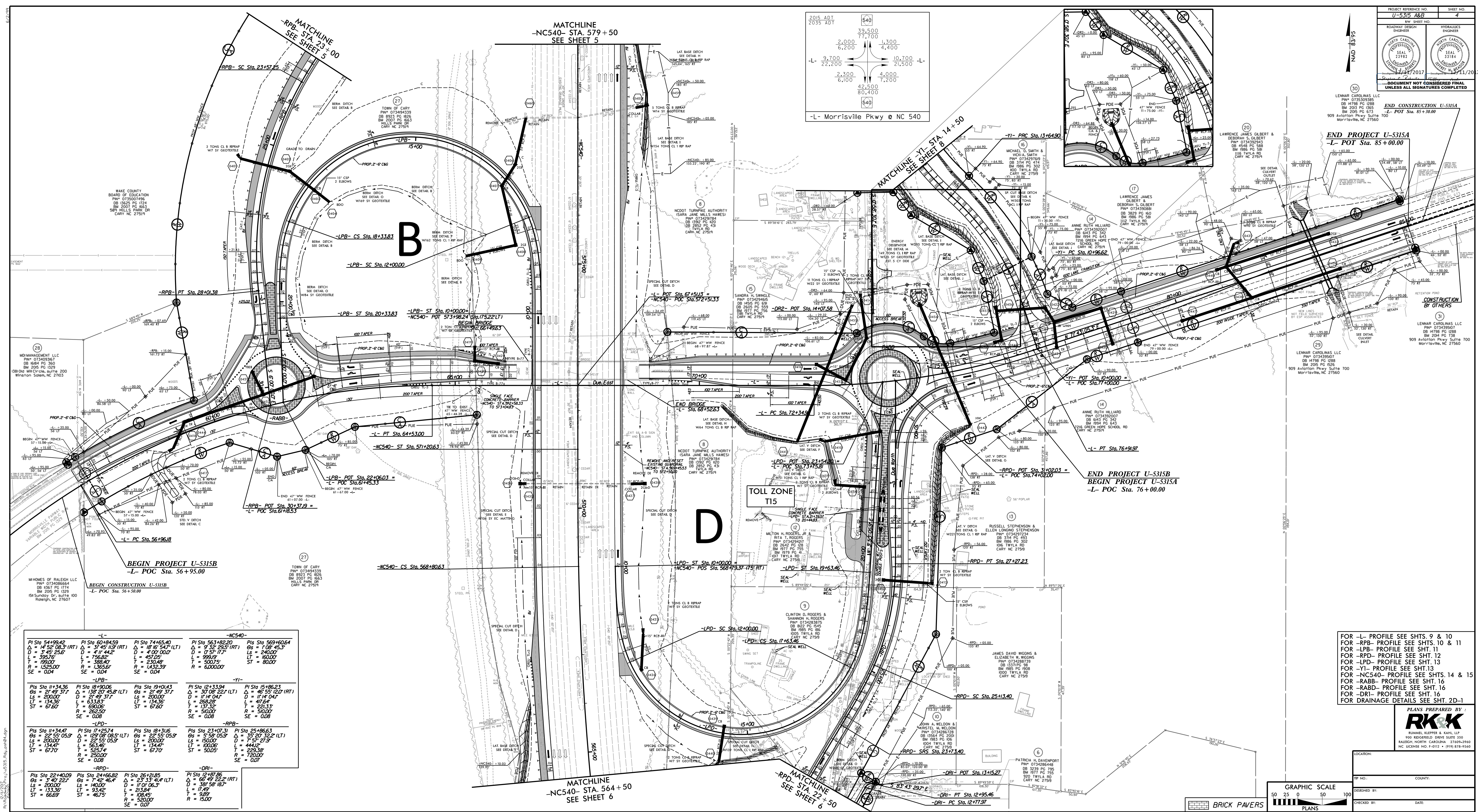
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PARCEL INDEX SHEET

| PARCEL No. | SHEET No. | PROPERTY OWNER NAME |
|------------|--------------|--|
| 3 | 6 | NCDOT TURNPIKE AUTHORITY |
| 5 | 4 & 6 | CRAIG S. HILLIARD |
| 6 | 4 & 6 | PATRICIA H. DAVENPORT |
| 7 | 4 & 6 | NCDOT TURNPIKE AUTHORITY |
| 8 | 4, 5, 6, & 8 | NCDOT TURNPIKE AUTHORITY (SARA JANE MILLS HAWES) |
| 9 | 4 | CLINTON D. ROGERS & SHANNON H. ROGERS |
| 10 | 4 | JOHN A. WELDON & KRISTEL M. WELDON |
| 12 | 4 | MILTON H. ROGERS, JR & RITA T. ROGERS |
| 13 | 4 | RUSSELL STEPHENSON & ELLEN LONGINO STEPHENSON |
| 14 | 4 | ANNIE RUTH HILLIARD |
| 15 | 4 | SANDRA H. SWINGLE |
| 16 | 4 & 8 | MICHAEL O. SMITH & VICKI A. SMITH |
| 17 | 4 & 8 | LAWRENCE JAMES GILBERT & DEBORAH S. GILBERT |
| 18 | 4 | BARBARA J. HOLLY |
| 19 | 4 & 8 | TOWN OF CARY |
| 20 | 4 & 8 | LAWRENCE JAMES GILBERT & DEBORAH S. GILBERT |
| 21 | 8 | TALBERT EDWARD KEARNS & ELIZABETH BLAKELY KEARNS |
| 22 | 5 & 8 | WINFRED G. OLIVE |
| 27 | 4, 5 & 6 | TOWN OF CARY |
| 28 | 4 | MDI MANAGEMENT LLC |
| 29 | 4 | LENNAR CAROLINAS LLC |
| 30 | 4 | LENNAR CAROLINAS LLC |
| 31 | 4 | LENNAR CAROLINAS LLC |

8/17/99

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PROJECT REFERENCE NO. U-5315 28/B SHEET NO. 4

ROADWAY DESIGN ENGINEER

PROFESSIONAL SEAL 13192

PROFESSIONAL SEAL 13194

DATE: 11/17/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| -L- | | -NC540- | |
|---|---|---|--|
| PI Sta 54+99.42 Δ = 14°52'08.33"(RT) D = 3°45'25.6" L = 395.16 T = 199.00 R = 1525.00 SE = 0.04 | PI Sta 60+84.59 Δ = 31°45'10.97"(LT) D = 4°11'44.2" L = 756.82 T = 388.40 R = 1365.62 SE = 0.04 | PI Sta 74+65.40 Δ = 19°16'54.71"(LT) D = 4°00'00.0" L = 451.99 T = 230.48 R = 1432.39 SE = 0.04 | PI Sta 563+82.20 Δ = 5°12'25.91"(RT) D = 0°57'17.7" L = 999.9 T = 500.75 R = 6000.00 |
| PI Sta 11+34.36 Δ = 2°49'37.1" L = 200.00 T = 134.36 ST = 67.50 | PI Sta 18+00.06 Δ = 139°50'49.81"(LT) D = 2°00'00.0" L = 633.83 T = 690.00 R = 262.50 SE = 0.08 | PI Sta 19+01.43 Δ = 57°49'37.1" D = 1°34.36 L = 690.00 T = 262.50 R = 250.00 SE = 0.08 | PI Sta 19+86.21 Δ = 46°55'12.07"(RT) D = 1°14'04.7" L = 251.33 T = 251.33 R = 500.00 SE = 0.08 |
| PI Sta 11+34.47 Δ = 22°55'05.9" D = 2°00'00.0" L = 134.47 T = 67.70 ST = 67.70 | PI Sta 17+25.74 Δ = 129°08'08.51"(LT) D = 2°00'00.0" L = 563.46 T = 525.74 R = 250.00 SE = 0.08 | PI Sta 18+31.66 Δ = 52°59'05.9" D = 1°34.47 L = 690.00 T = 262.50 R = 250.00 SE = 0.08 | PI Sta 25+86.63 Δ = 35°20'32.21"(LT) D = 1°47'27.9" L = 444.2 T = 225.38 R = 720.00 SE = 0.07 |
| PI Sta 22+40.09 Δ = 3°40'22.7" L = 200.00 T = 133.50 ST = 66.69 | PI Sta 24+66.82 Δ = 7°42'46.4" D = 11°07'36.3" L = 403.0 T = 93.42 ST = 46.75 | PI Sta 26+91.85 Δ = 23°33'41.4"(LT) D = 3°58'58.87" L = 17.49 T = 108.45 R = 500.00 SE = 0.07 | PI Sta 12+187.86 Δ = 66°49'22.21"(RT) D = 3°58'58.87" L = 17.49 T = 93.42 R = 15.00 |

FOR -L- PROFILE SEE SHTS. 9 & 10
FOR -RPB- PROFILE SEE SHTS. 10 & 11
FOR -LPB- PROFILE SEE SHT. 11
FOR -RPD- PROFILE SEE SHT. 12
FOR -LPD- PROFILE SEE SHT. 13
FOR -YI- PROFILE SEE SHT. 13
FOR -NC540- PROFILE SEE SHTS. 14 & 15
FOR -RABB- PROFILE SEE SHT. 16
FOR -RABD- PROFILE SEE SHT. 16
FOR -DRI- PROFILE SEE SHT. 16
FOR DRAINAGE DETAILS SEE SHT. 2D-1

PLANS PREPARED BY: **RK&K**

GRAPHIC SCALE: 50 25 0 50 100

BRICK PAVERS

LOCATION: _____

DATE: _____

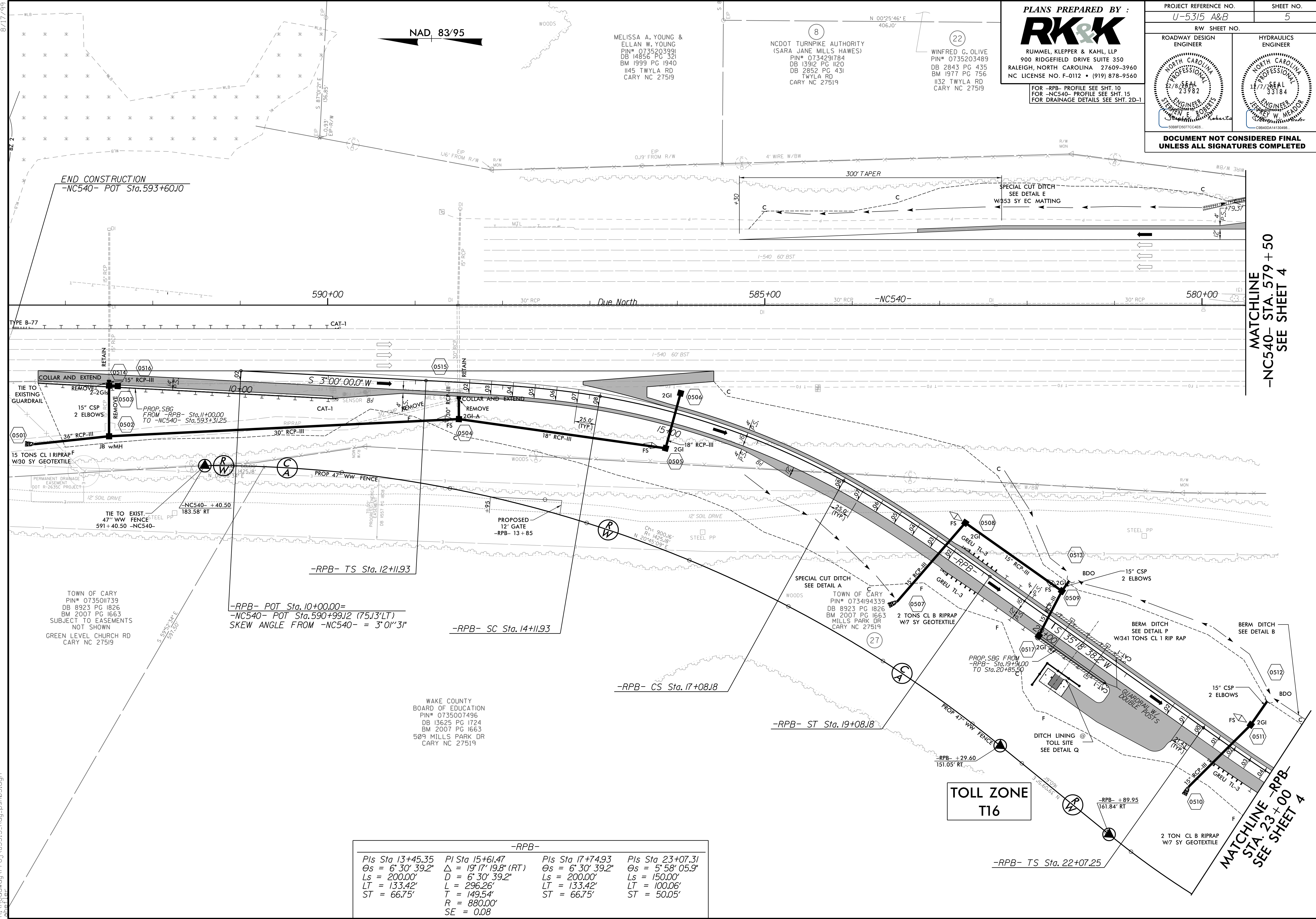
PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

| | | | |
|--|--|---------------------|--|
| PROJECT REFERENCE NO. U-5315 A&B | | SHEET NO. 5 | |
| RW SHEET NO. | | HYDRAULICS ENGINEER | |
| ROADWAY DESIGN ENGINEER | | ENGINEER | |
| | | | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | | | |

MELISSA A. YOUNG & ELLAN W. YOUNG
PIN# 0735203991
DB 14856 PG 321
BM 1999 PG 1940
1145 TWYLA RD
CARY NC 27519

NCDOT TURNPIKE AUTHORITY
(SARA JANE MILLS HAWES)
PIN# 0734291784
DB 13912 PG 1120
DB 2852 PG 431
TWYLA RD
CARY NC 27519

WINFRED G. OLIVE
PIN# 0735203489
DB 2843 PG 435
BM 1977 PG 756
1132 TWYLA RD
CARY NC 27519



MATCHLINE
-NC540- STA. 579 + 50
SEE SHEET 4

MATCHLINE -RPB-
STA. 23 + 00
SEE SHEET 4

| -RPB- | | | |
|-------------------|------------------------|-------------------|-------------------|
| Pls Sta 13+45.35 | PI Sta 15+61.47 | Pls Sta 17+74.93 | Pls Sta 23+07.31 |
| Os = 6' 30' 39.2" | Δ = 19' 17' 19.8" (RT) | Os = 6' 30' 39.2" | Os = 5' 58' 05.9" |
| Ls = 200.00' | D = 6' 30' 39.2" | Ls = 200.00' | Ls = 150.00' |
| LT = 133.42' | L = 296.26' | LT = 133.42' | LT = 100.06' |
| ST = 66.75' | T = 149.54' | ST = 66.75' | ST = 50.05' |
| | R = 880.00' | | |
| | SE = 0.08 | | |

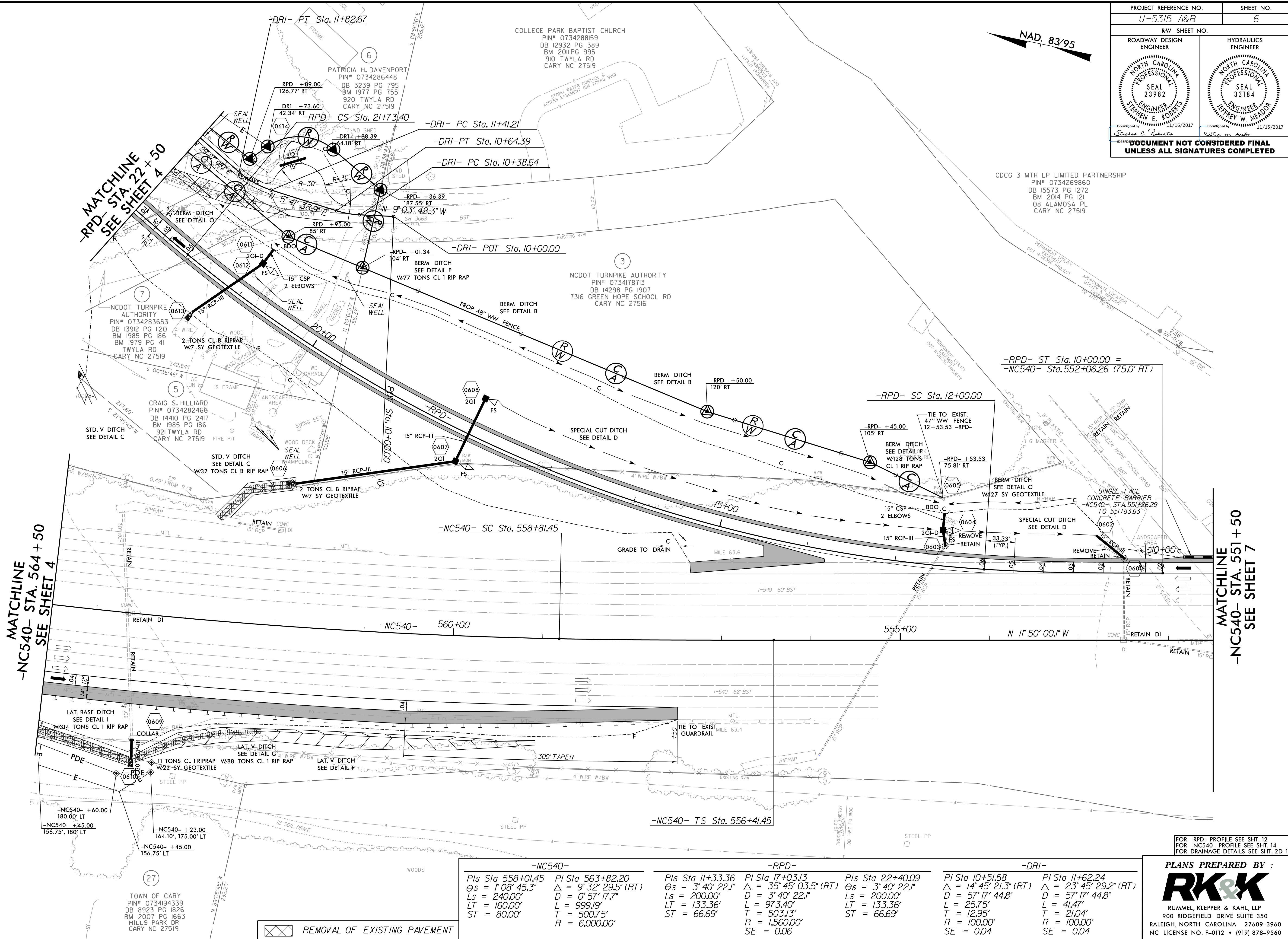
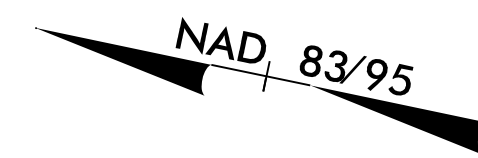
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TOWN OF CARY
PIN# 073501739
DB 8923 PG 1826
BM 2007 PG 1663
SUBJECT TO EASEMENTS
NOT SHOWN
GREEN LEVEL CHURCH RD
CARY NC 27519

-RPB- POT Sta. 10+00.00=
-NC540- POT Sta. 590+99.12 (75.13' LT)
SKEW ANGLE FROM -NC540- = 3° 01' 31"

WAKE COUNTY
BOARD OF EDUCATION
PIN# 0735007496
DB 13625 PG 1724
BM 2007 PG 1663
509 MILLS PARK DR
CARY NC 27519

| | | |
|---|---------------------|----------------|
| PROJECT REFERENCE NO. U-5315 A&B | | SHEET NO. 6 |
| RW SHEET NO. | | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER | |
| | | |
| <small>Designed by: Stephen E. Roberts 11/15/2017 Checked by: Jeffrey W. Meador 11/15/2017</small> | | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | | |



MATCHLINE
-NC540- STA. 564 + 50
SEE SHEET 4

MATCHLINE
-NC540- STA. 551 + 50
SEE SHEET 7

| -NC540- | | -RPD- | | -DRI- | |
|-----------------------------------|--------------------------------------|-----------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| PIs Sta 558+01.45 | PI Sta 563+82.20 | PIs Sta 11+33.36 | PI Sta 17+03.13 | PIs Sta 22+40.09 | PI Sta 10+51.58 |
| $\Theta_s = 1^{\circ} 08' 45.3''$ | $\Delta = 9^{\circ} 32' 29.5''$ (RT) | $\Theta_s = 3^{\circ} 40' 22.1''$ | $\Delta = 35^{\circ} 45' 03.5''$ (RT) | $\Delta = 14^{\circ} 45' 21.3''$ (RT) | PI Sta 11+62.24 |
| $L_s = 240.00'$ | $D = 0^{\circ} 57' 17.7''$ | $\Theta_s = 200.00'$ | $L_s = 200.00'$ | $D = 57^{\circ} 17' 44.8''$ | $\Delta = 23^{\circ} 45' 29.2''$ (RT) |
| $LT = 160.00'$ | $L = 999.19'$ | $LT = 133.36'$ | $L = 973.40'$ | $L = 25.75'$ | $D = 57^{\circ} 17' 44.8''$ |
| $ST = 80.00'$ | $T = 500.75'$ | $LT = 133.36'$ | $T = 503.13'$ | $L = 41.47'$ | $L = 41.47'$ |
| | $R = 6,000.00'$ | $ST = 66.69'$ | $R = 1,560.00'$ | $T = 12.95'$ | $T = 21.04'$ |
| | | | $SE = 0.06$ | $R = 100.00'$ | $R = 100.00'$ |
| | | | | $SE = 0.04$ | $SE = 0.04$ |

REMOVAL OF EXISTING PAVEMENT

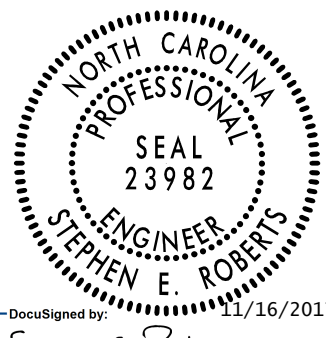
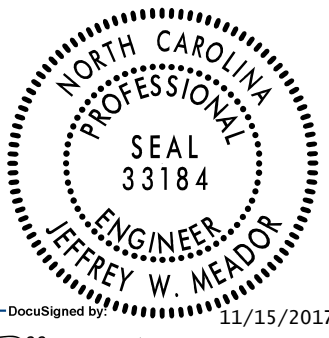
FOR -RPD- PROFILE SEE SHT. 12
 FOR -NC540- PROFILE SEE SHT. 14
 FOR DRAINAGE DETAILS SEE SHT. 2D-1

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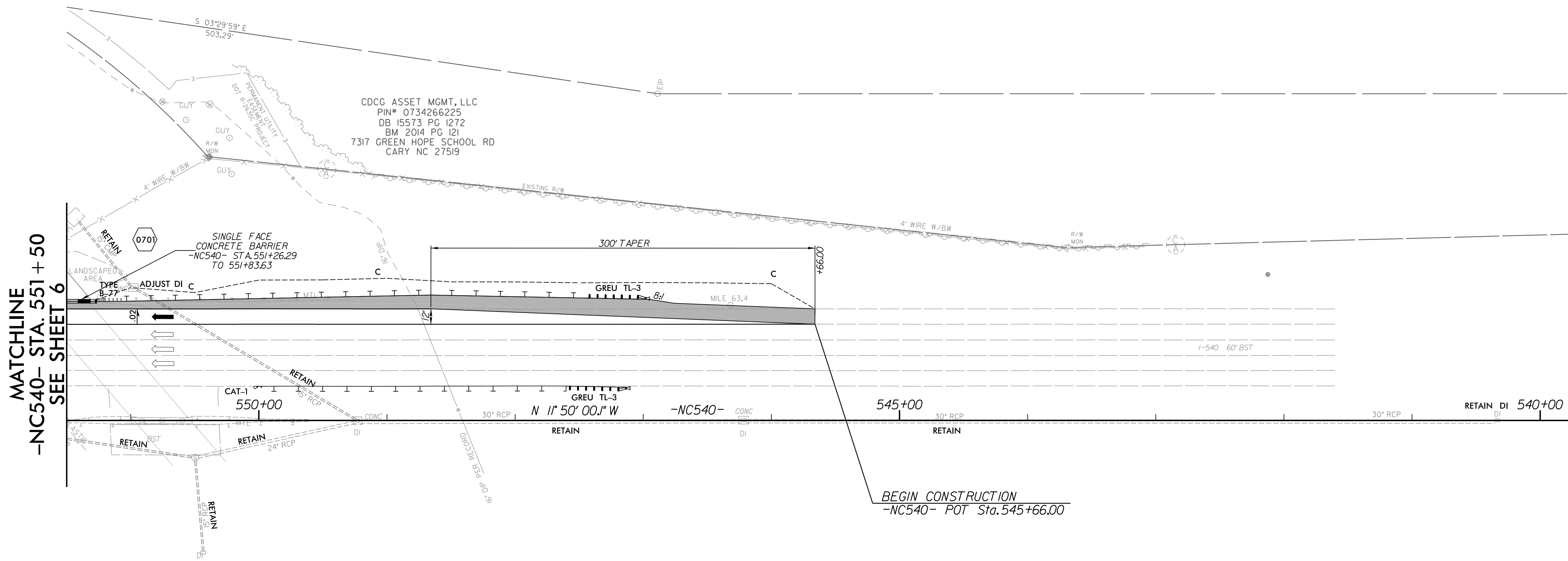
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| PROJECT REFERENCE NO. <i>U-5315 A&B</i> | | SHEET NO. <i>7</i> |
| RW SHEET NO. | | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER | |
|  |  | |
| <i>Stephen E. Roberts</i> | <i>Jeffrey W. Meador</i> | |
| 11/16/2017 | 11/15/2017 | |
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CDCG 3 MTH LP LIMITED PARTNERSHIP
 PIN# 0734269860
 DB 15573 PG 1272
 BM 2014 PG 121
 108 ALAMOSA PL
 CARY NC 27519

CDCG ASSET MGMT, LLC
 PIN# 0734266225
 DB 15573 PG 1272
 BM 2014 PG 121
 7317 GREEN HOPE SCHOOL RD
 CARY NC 27519



MATCHLINE
-NC540- STA. 551 + 50
SEE SHEET 6

BEGIN CONSTRUCTION
-NC540- POT Sta. 545+66.00

FOR -NC540- PROFILE SEE SHT. 14
 FOR DRAINAGE DETAILS SEE SHT. 2D-1

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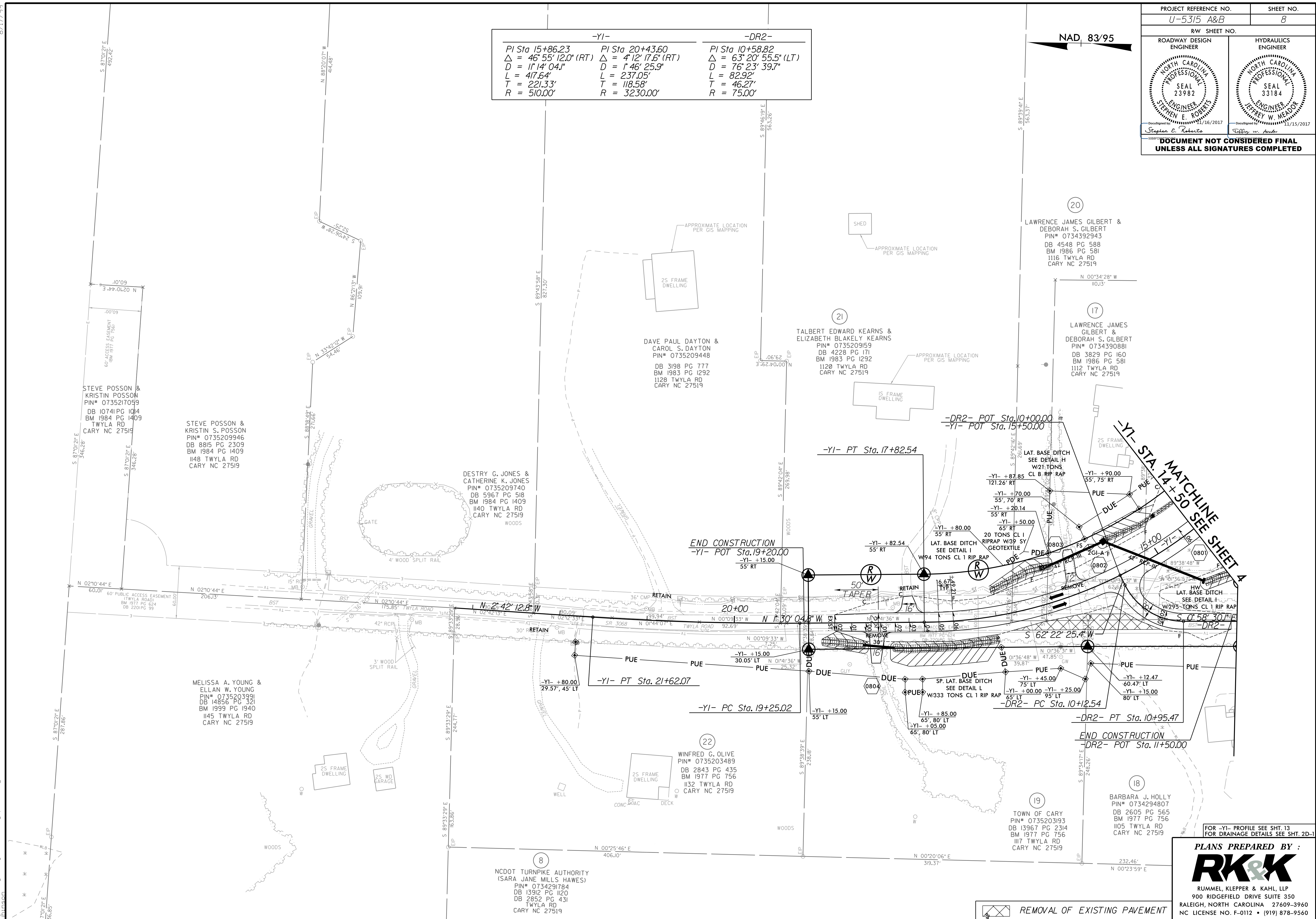
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 11/16/2017

8.17/99

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| PROJECT REFERENCE NO. <i>U-5315 A&B</i> | | SHEET NO. <i>8</i> | |
| RW SHEET NO. | | | |
| ROADWAY DESIGN ENGINEER | | HYDRAULICS ENGINEER | |
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| -Y1- | | -DR2- | |
|------------------------------------|-----------------------------------|------------------------------------|--|
| PI Sta 15+86.23 | PI Sta 20+43.60 | PI Sta 10+58.82 | |
| $\Delta = 46^{\circ}55'12.0"$ (RT) | $\Delta = 4^{\circ}12'17.6"$ (RT) | $\Delta = 63^{\circ}20'55.5"$ (LT) | |
| D = 11' 14" 04.1" | D = 1' 46" 25.9" | D = 76' 23' 39.7" | |
| L = 417.64' | L = 237.05' | L = 82.92' | |
| T = 221.33' | T = 118.58' | T = 46.27' | |
| R = 510.00' | R = 3230.00' | R = 75.00' | |

NAD 83/95



-Y1- STA. 14+50 SEE SHEET A
 -Y1- PT Sta. 17+82.54
 -DR2- POT Sta. 10+00.00
 -Y1- POT Sta. 15+50.00
 END CONSTRUCTION
 -Y1- POT Sta. 19+20.00
 -Y1- PT Sta. 21+62.07
 -Y1- PC Sta. 19+25.02
 -DR2- PT Sta. 10+95.47
 END CONSTRUCTION
 -DR2- POT Sta. 11+50.00

11/10/2017
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FOR -Y1- PROFILE SEE SHT. 13
FOR DRAINAGE DETAILS SEE SHT. 2D-1

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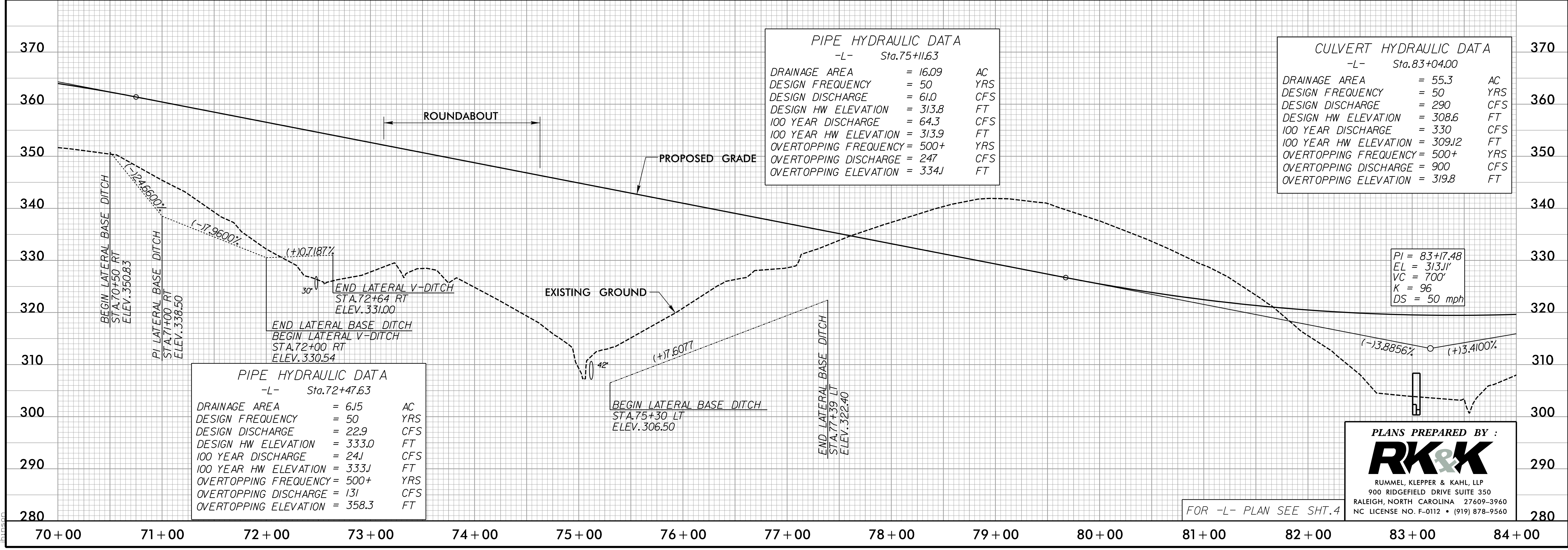
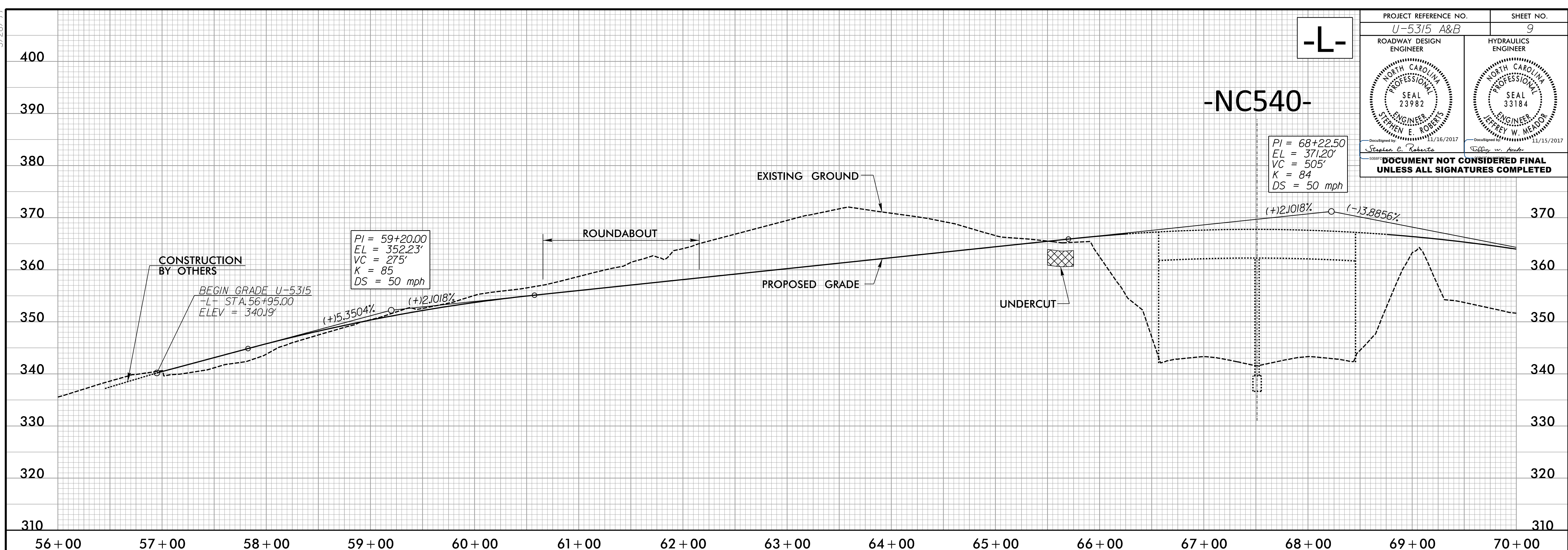
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-L-

-NC540-

| | |
|--|--|
| PROJECT REFERENCE NO. U-5315 A&B | SHEET NO. 9 |
| ROADWAY DESIGN ENGINEER STEPHEN E. ROBERTS | HYDRAULICS ENGINEER JEFFREY W. MEADOR |
| | |
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PI = 68+22.50
 EL = 371.20'
 VC = 505'
 K = 84
 DS = 50 mph



PIPE HYDRAULIC DATA
 -L- Sta. 75+11.63

| | | |
|-----------------------|---------|-----|
| DRAINAGE AREA | = 16.09 | AC |
| DESIGN FREQUENCY | = 50 | YRS |
| DESIGN DISCHARGE | = 61.0 | CFS |
| DESIGN HW ELEVATION | = 313.8 | FT |
| 100 YEAR DISCHARGE | = 64.3 | CFS |
| 100 YEAR HW ELEVATION | = 313.9 | FT |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING DISCHARGE | = 247 | CFS |
| OVERTOPPING ELEVATION | = 334.1 | FT |

CULVERT HYDRAULIC DATA
 -L- Sta. 83+04.00

| | | |
|-----------------------|----------|-----|
| DRAINAGE AREA | = 55.3 | AC |
| DESIGN FREQUENCY | = 50 | YRS |
| DESIGN DISCHARGE | = 290 | CFS |
| DESIGN HW ELEVATION | = 308.6 | FT |
| 100 YEAR DISCHARGE | = 330 | CFS |
| 100 YEAR HW ELEVATION | = 309.12 | FT |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING DISCHARGE | = 900 | CFS |
| OVERTOPPING ELEVATION | = 319.8 | FT |

PIPE HYDRAULIC DATA
 -L- Sta. 72+47.63

| | | |
|-----------------------|---------|-----|
| DRAINAGE AREA | = 6.15 | AC |
| DESIGN FREQUENCY | = 50 | YRS |
| DESIGN DISCHARGE | = 22.9 | CFS |
| DESIGN HW ELEVATION | = 333.0 | FT |
| 100 YEAR DISCHARGE | = 24.1 | CFS |
| 100 YEAR HW ELEVATION | = 333.1 | FT |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING DISCHARGE | = 131 | CFS |
| OVERTOPPING ELEVATION | = 358.3 | FT |

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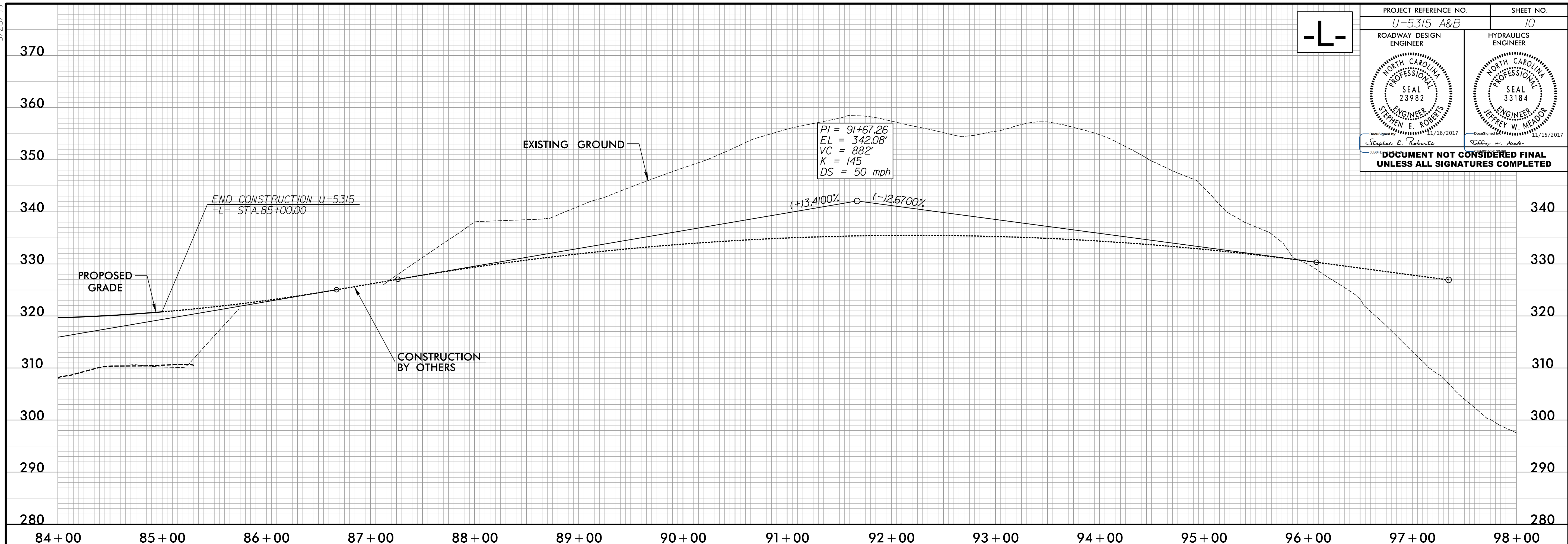
FOR -L- PLAN SEE SHT. 4

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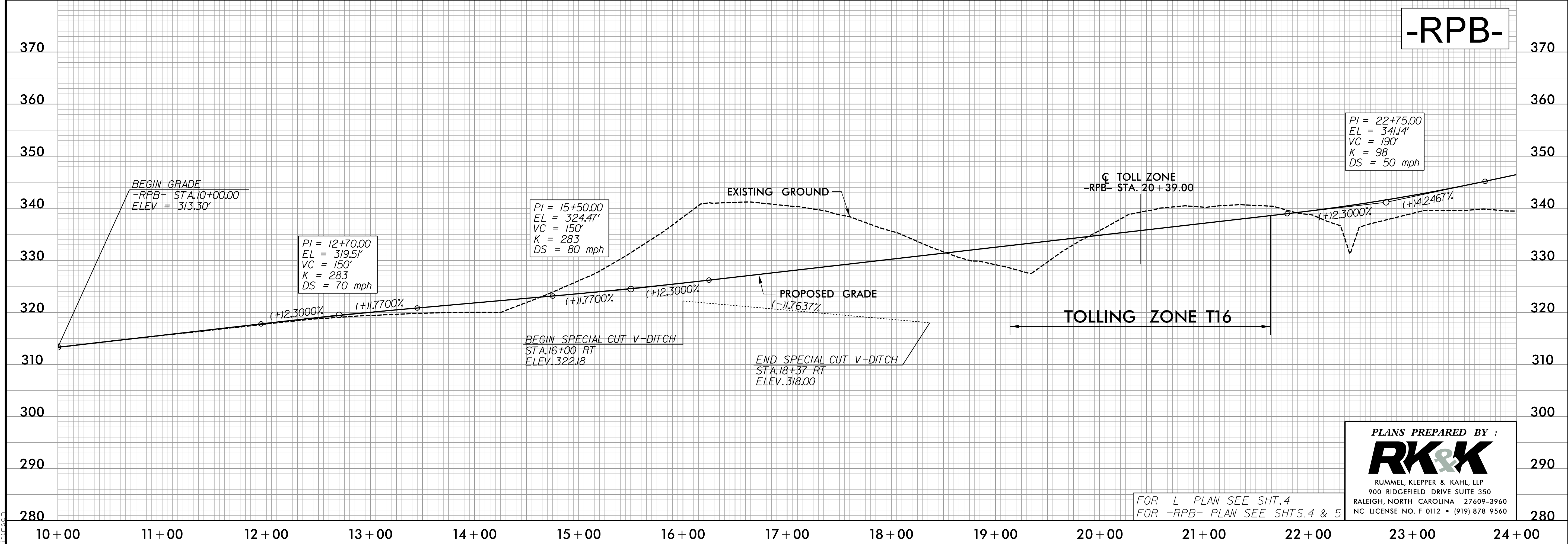
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-L-

| | |
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| PROJECT REFERENCE NO. U-5315 A&B | SHEET NO. 10 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
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| Stephen E. Roberts | Jeffrey W. Meador |
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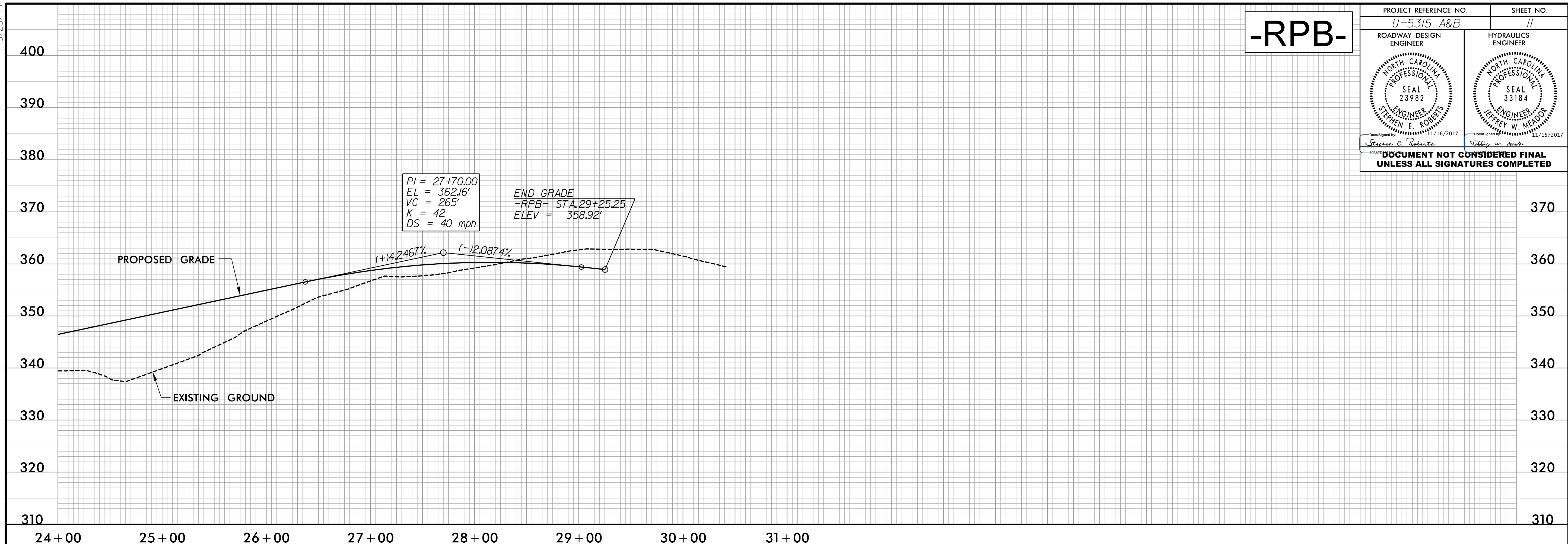
FOR -L- PLAN SEE SHT. 4
FOR -RPB- PLAN SEE SHTS. 4 & 5

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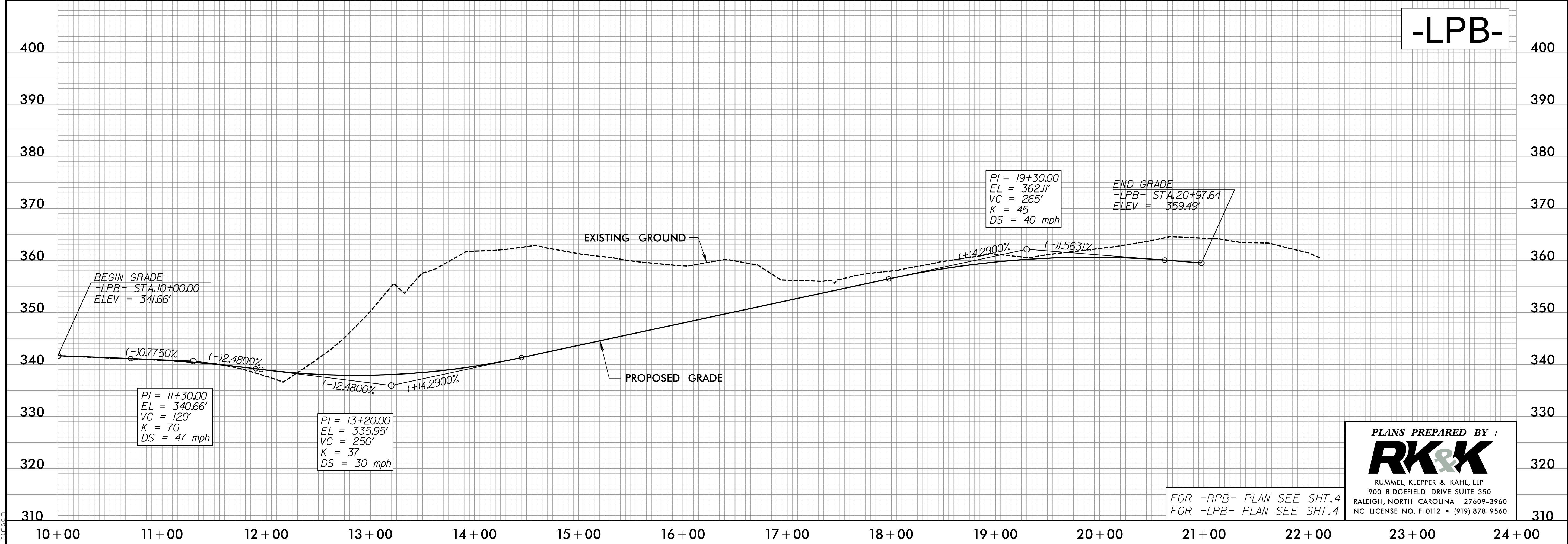
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-RPB-

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| PROJECT REFERENCE NO. U-5315 A&B | SHEET NO. 11 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
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-LPB-



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FOR -RPB- PLAN SEE SHT. 4
FOR -LPB- PLAN SEE SHT. 4

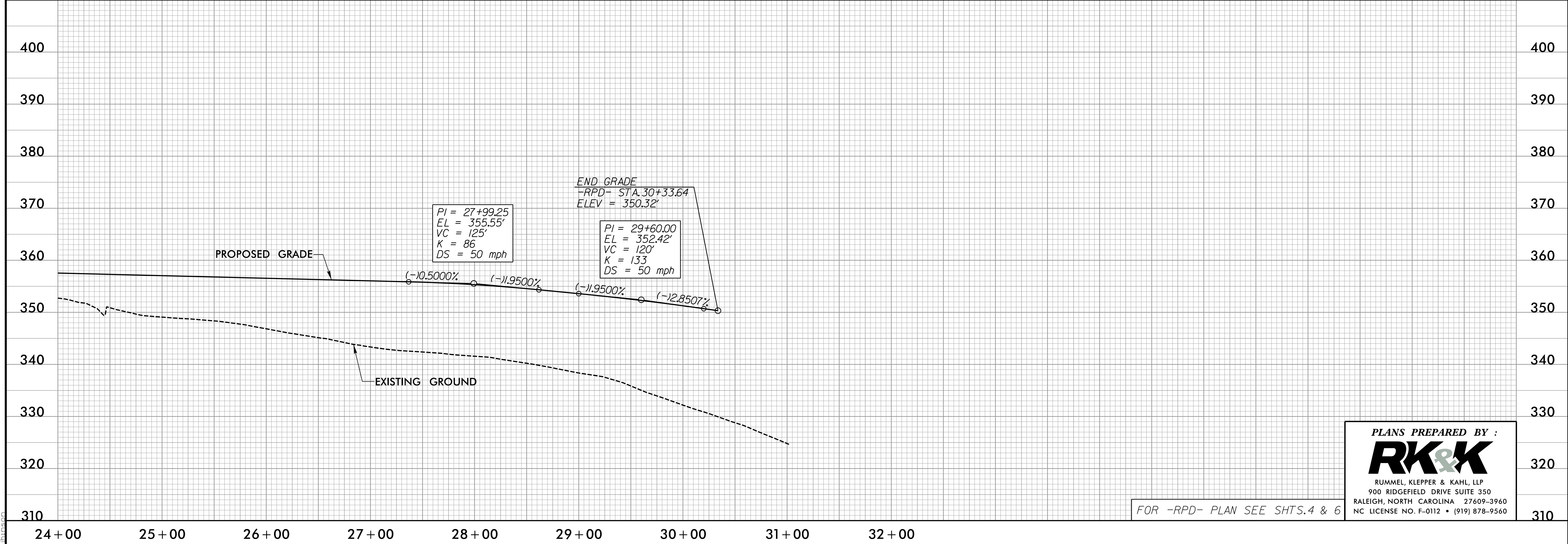
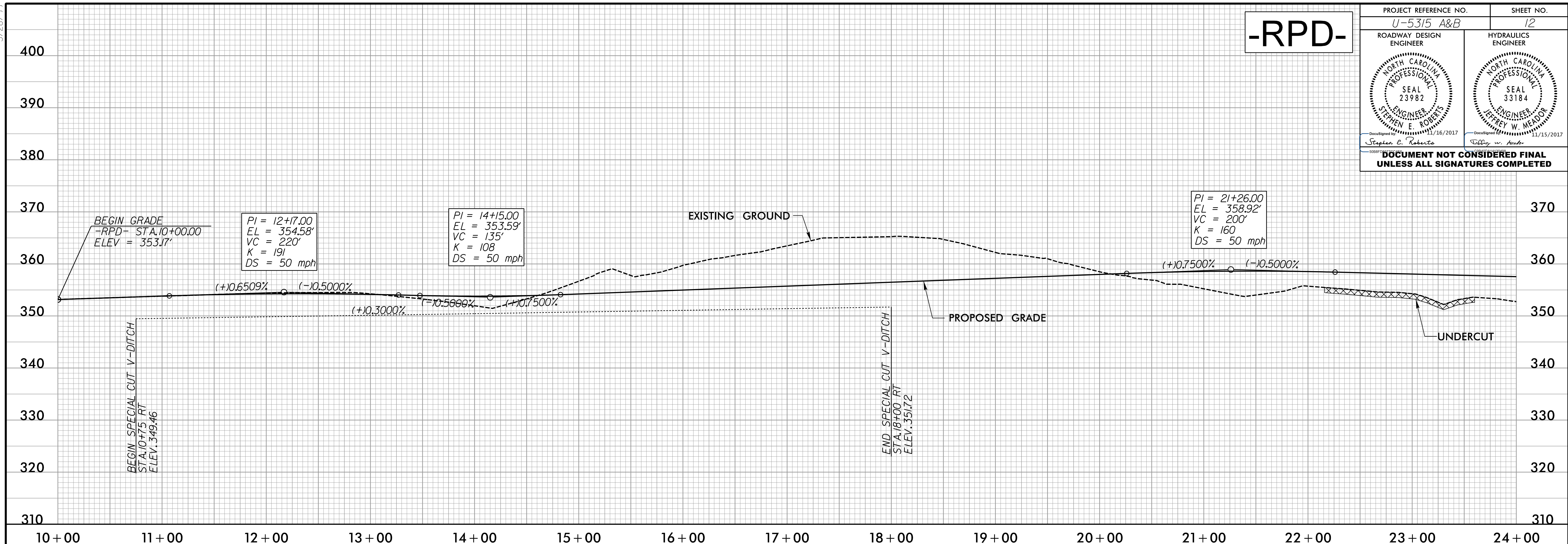
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5/28/17

-RPD-

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| PROJECT REFERENCE NO. U-5315 A&B | SHEET NO. 12 |
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| | |
| Stephen E. Roberts | Jeffrey W. Meador |

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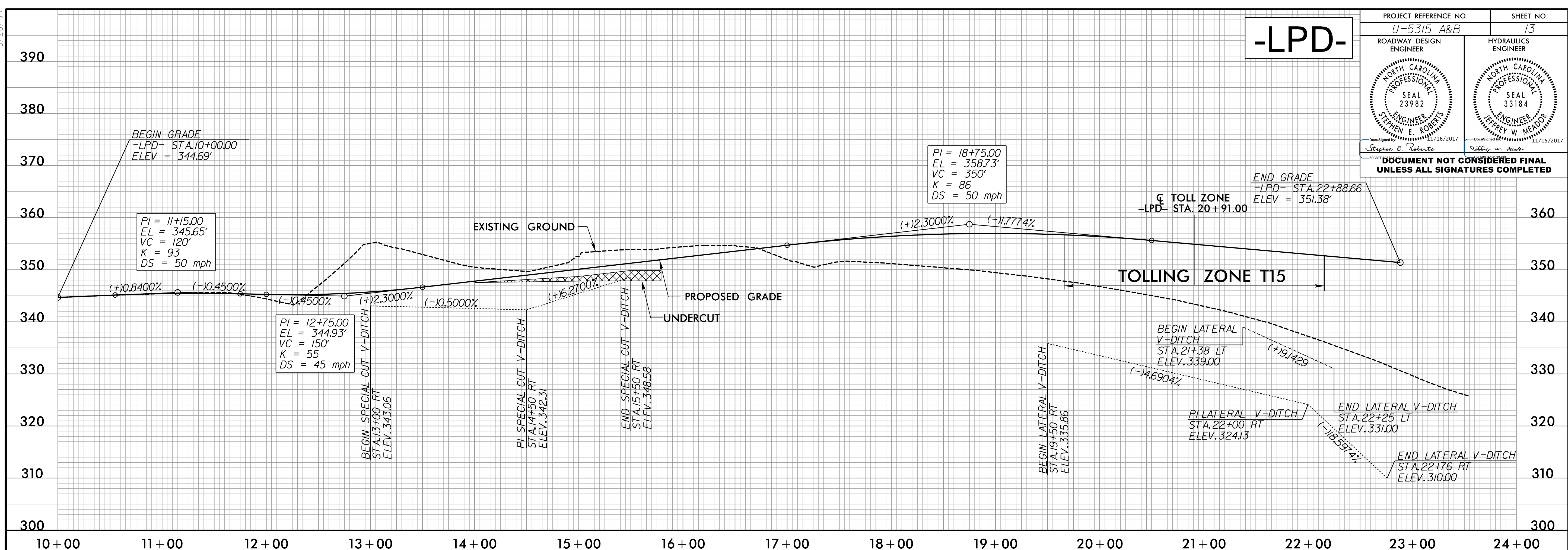
FOR -RPD- PLAN SEE SHTS. 4 & 6

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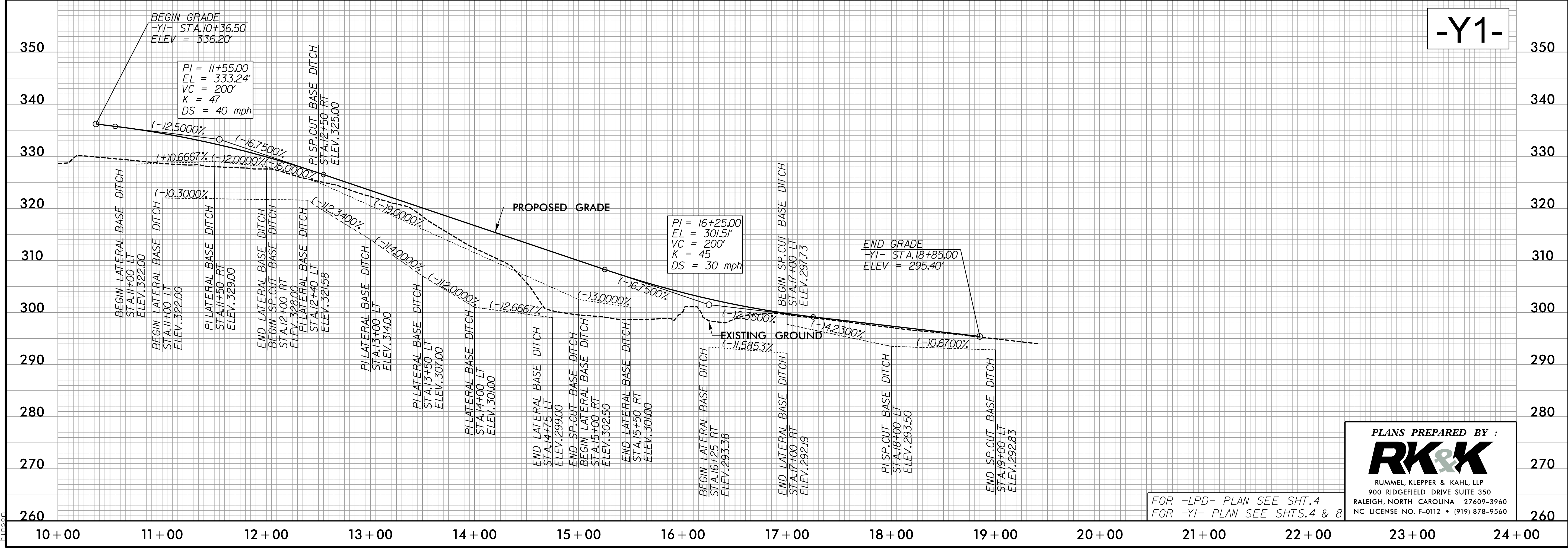
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-LPD-

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-Y1-



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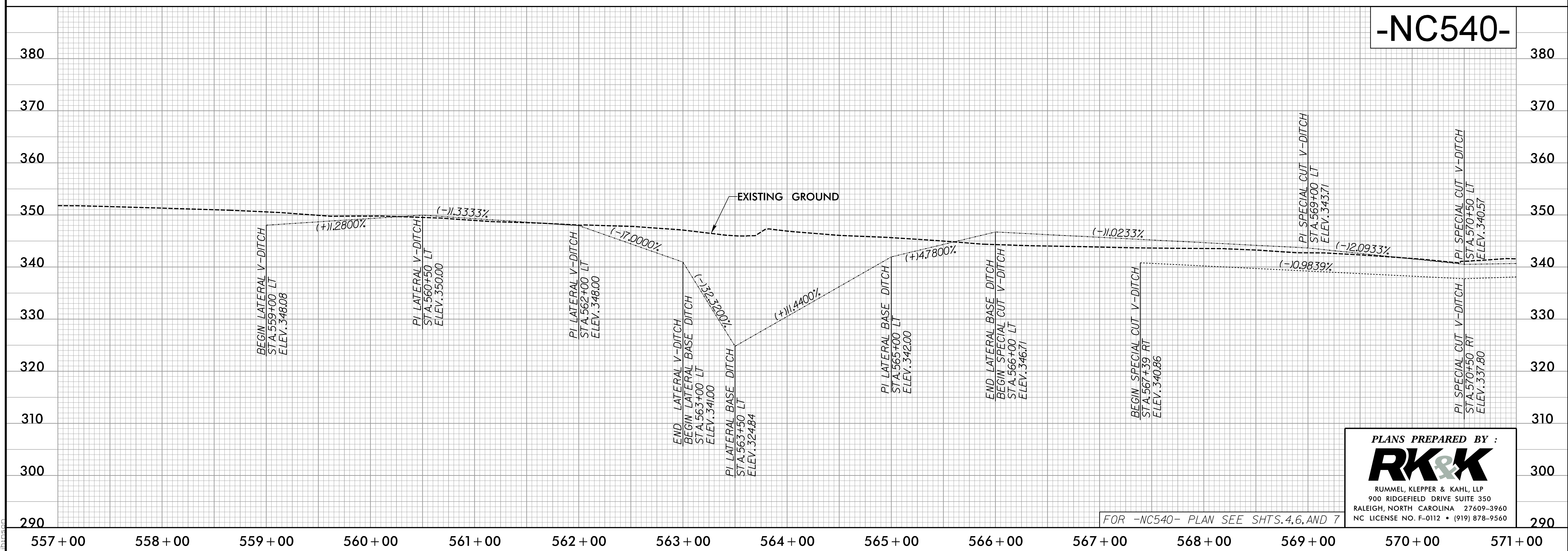
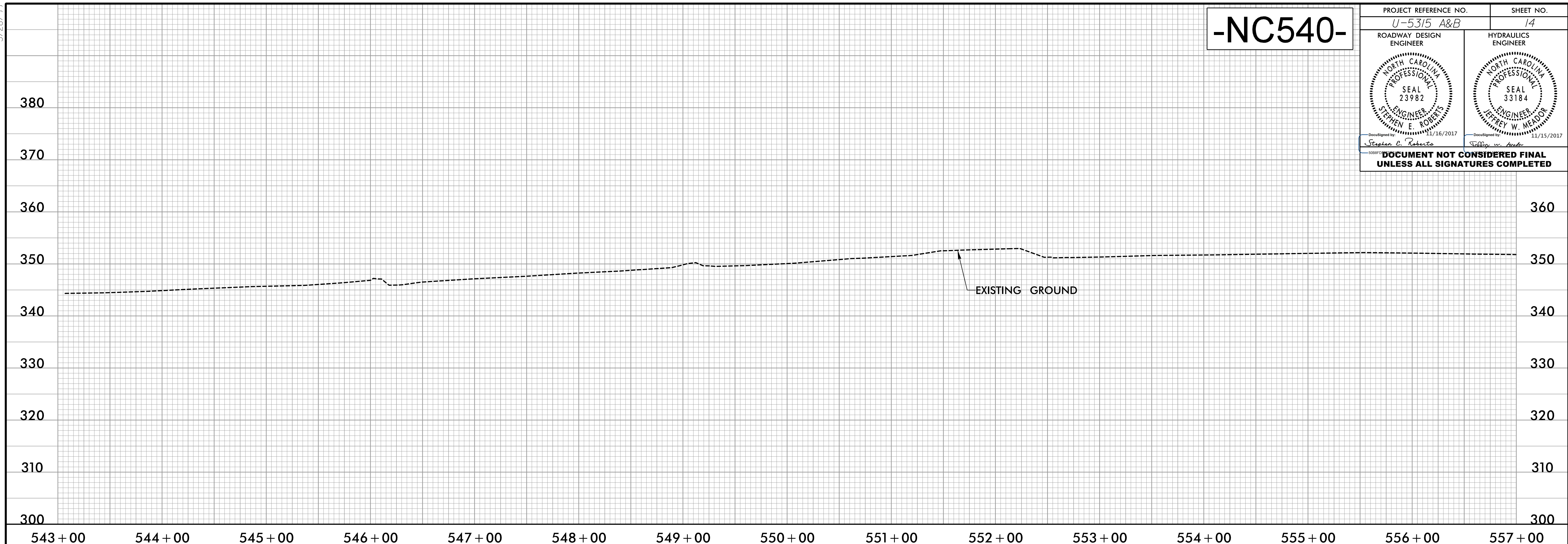
FOR -LPD- PLAN SEE SHTS. 4
FOR -Y1- PLAN SEE SHTS. 4 & 8

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5/28/99

-NC540-

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| PROJECT REFERENCE NO. <i>U-5315 A&B</i> | SHEET NO. <i>14</i> |
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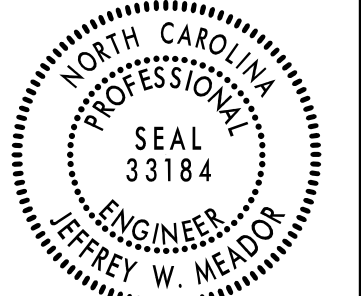
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FOR -NC540- PLAN SEE SHTS. 4,6, AND 7

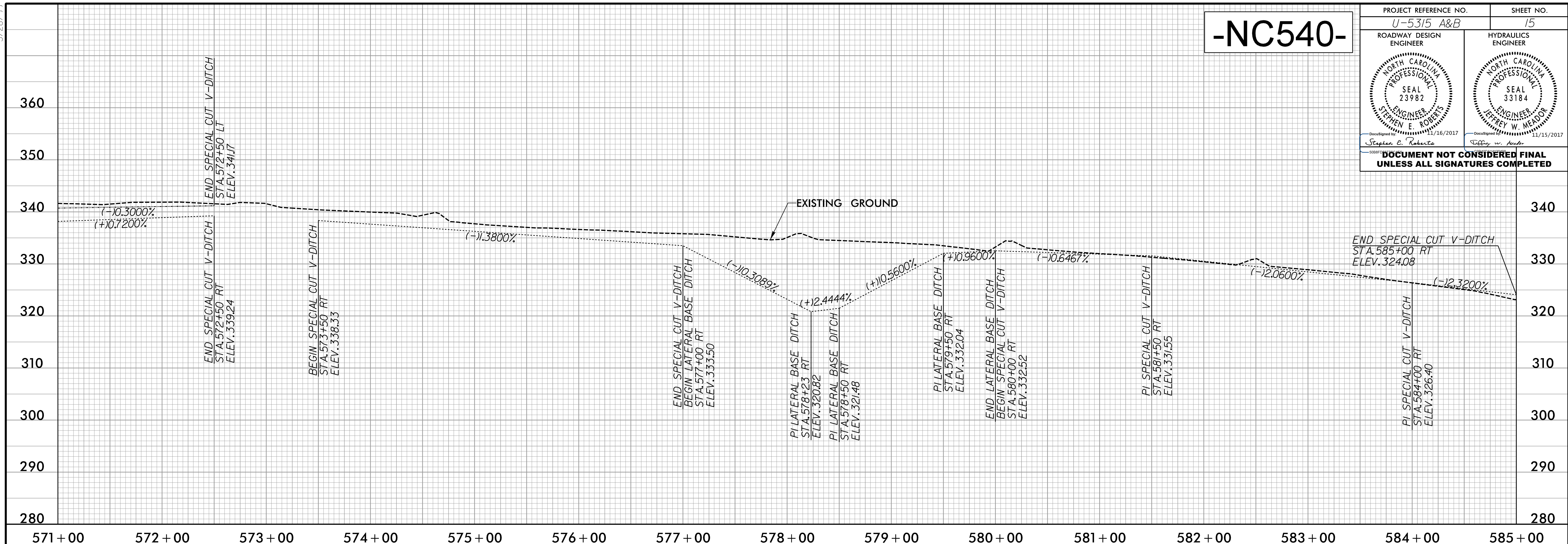
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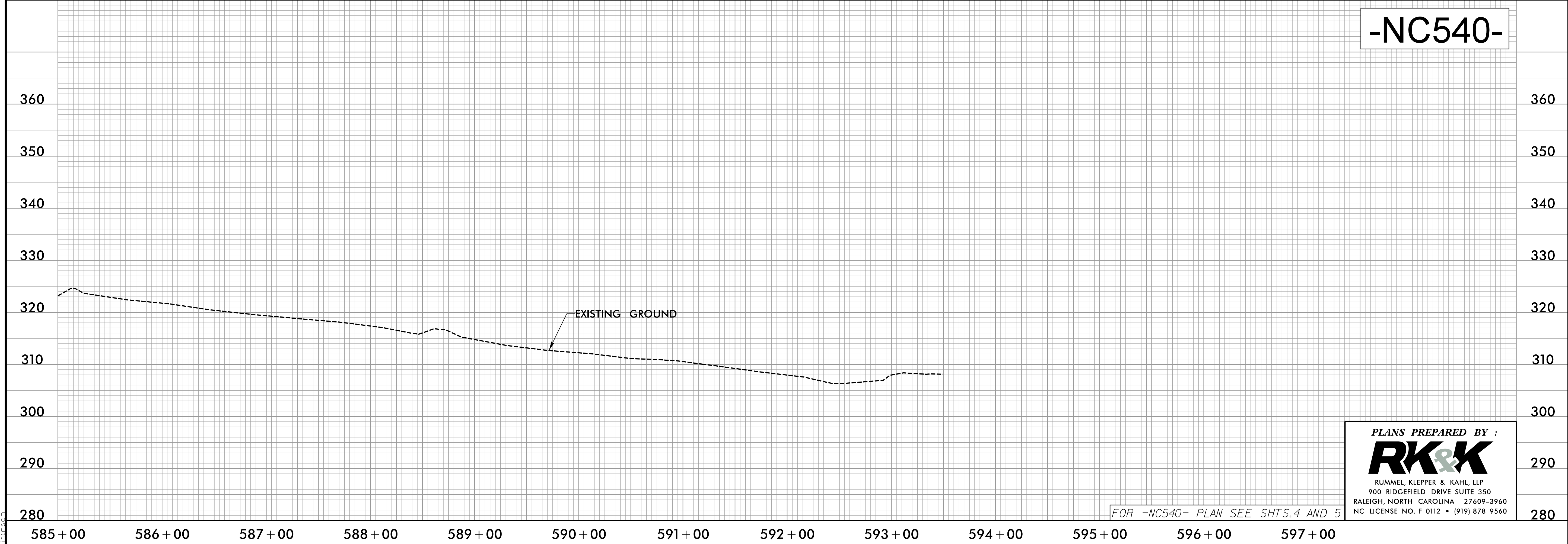
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| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
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FOR -NC540- PLAN SEE SHTS. 4 AND 5

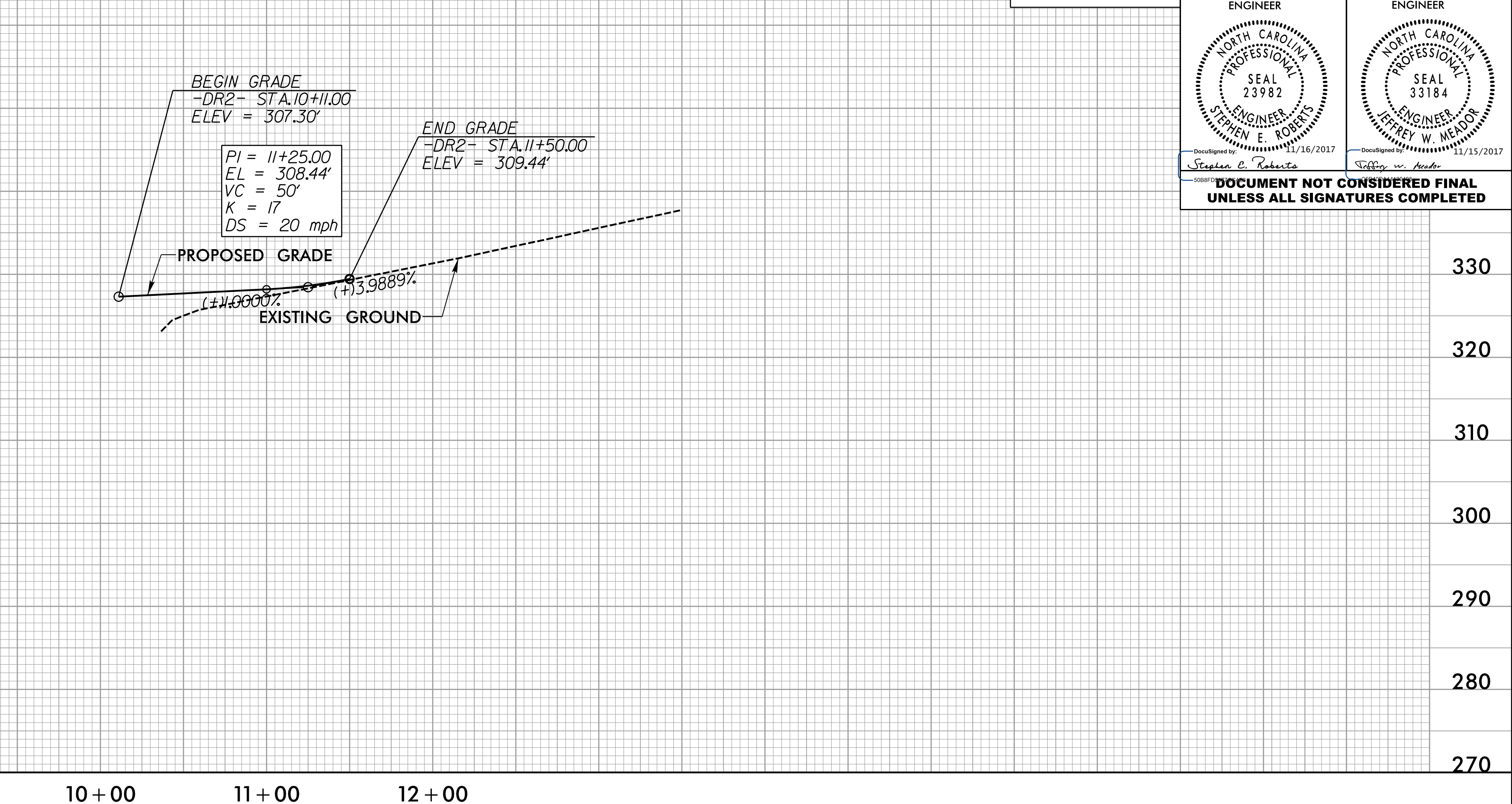
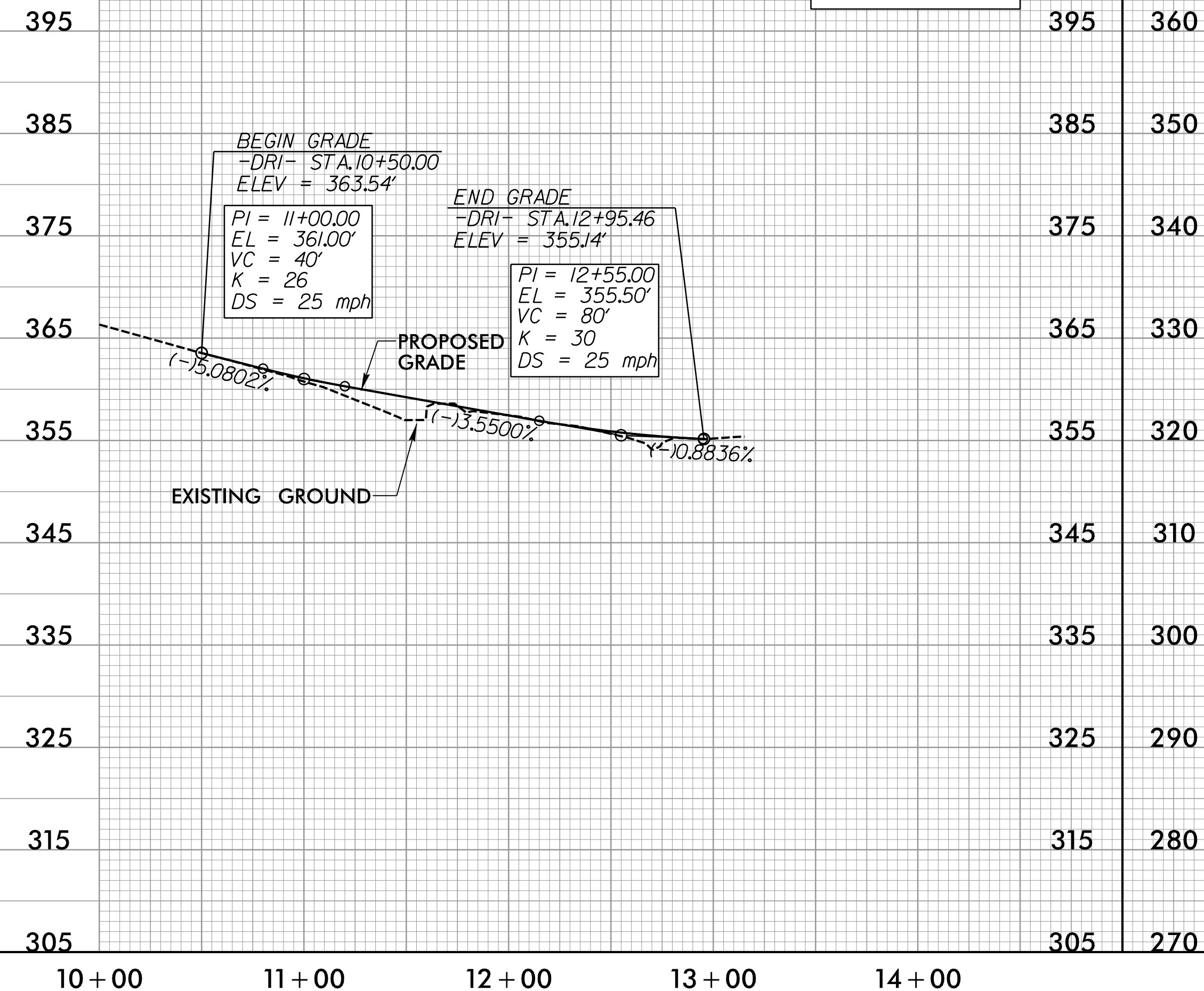
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-DR1-

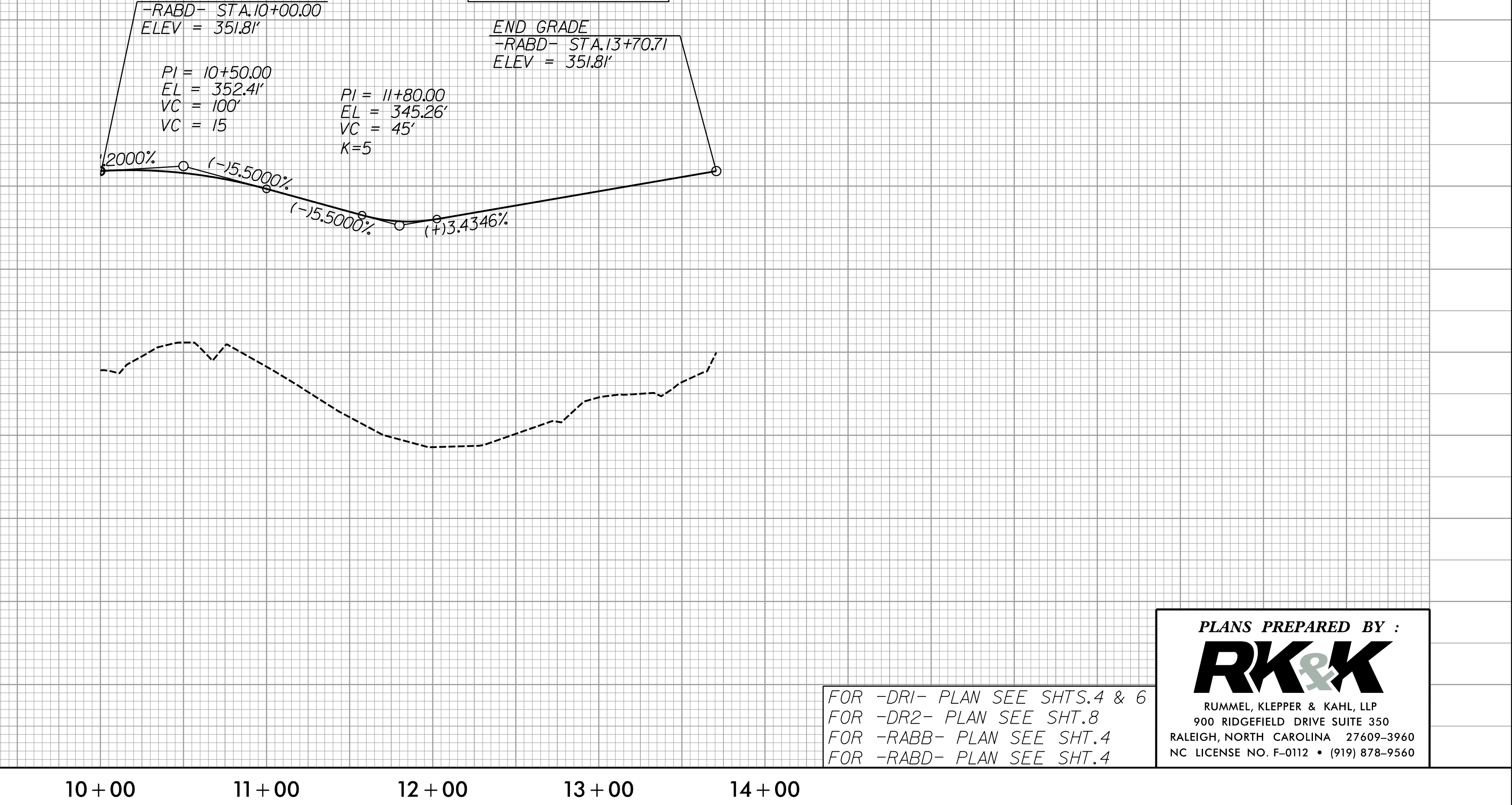
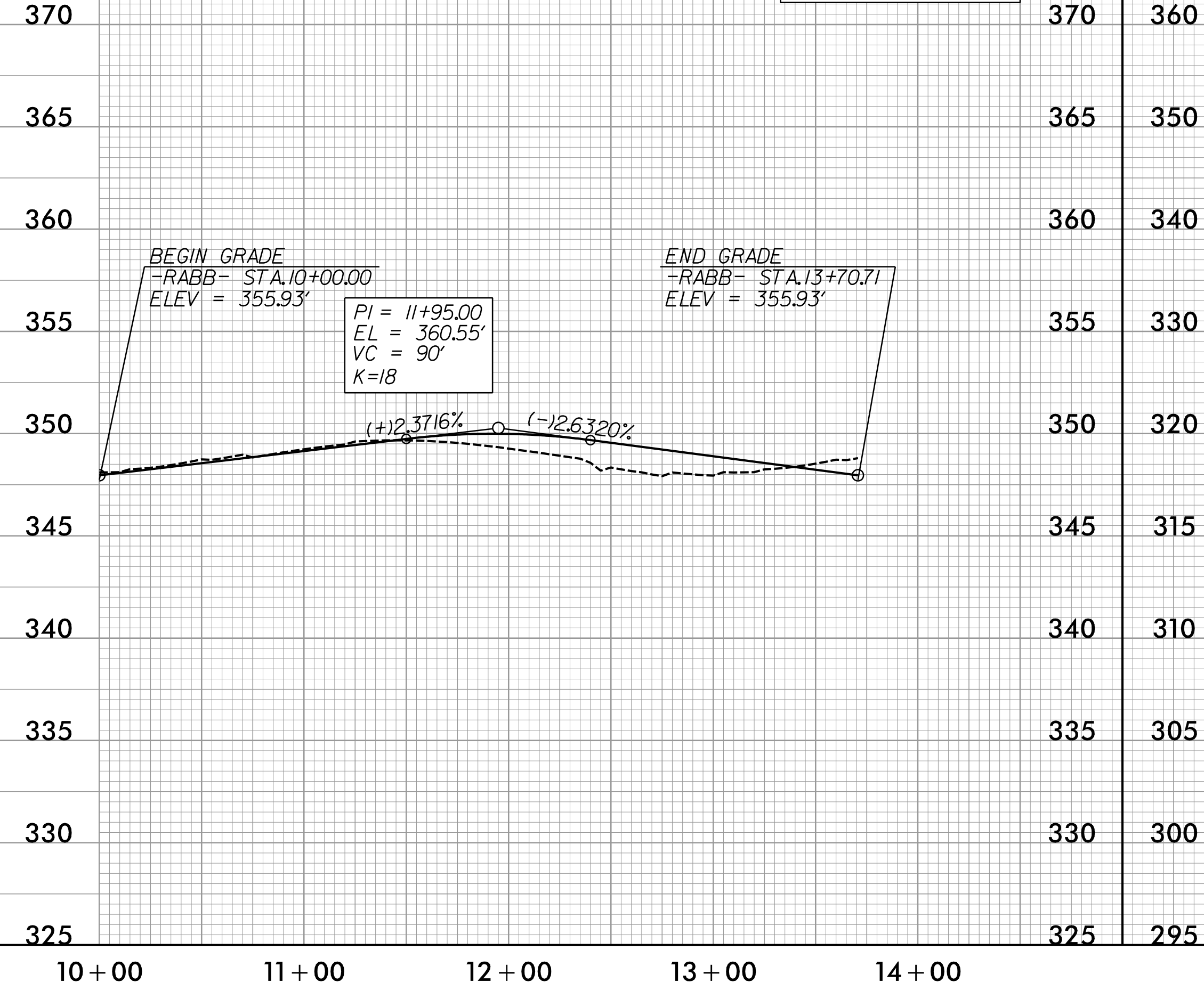
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| | |
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| ROADWAY DESIGN ENGINEER STEPHEN E. ROBERTS | HYDRAULICS ENGINEER JEFFREY W. MEADOR |
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-RABB-

-RABD-



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FOR -DRI- PLAN SEE SHTS. 4 & 6
 FOR -DR2- PLAN SEE SHT. 8
 FOR -RABB- PLAN SEE SHT. 4
 FOR -RABD- PLAN SEE SHT. 4

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