

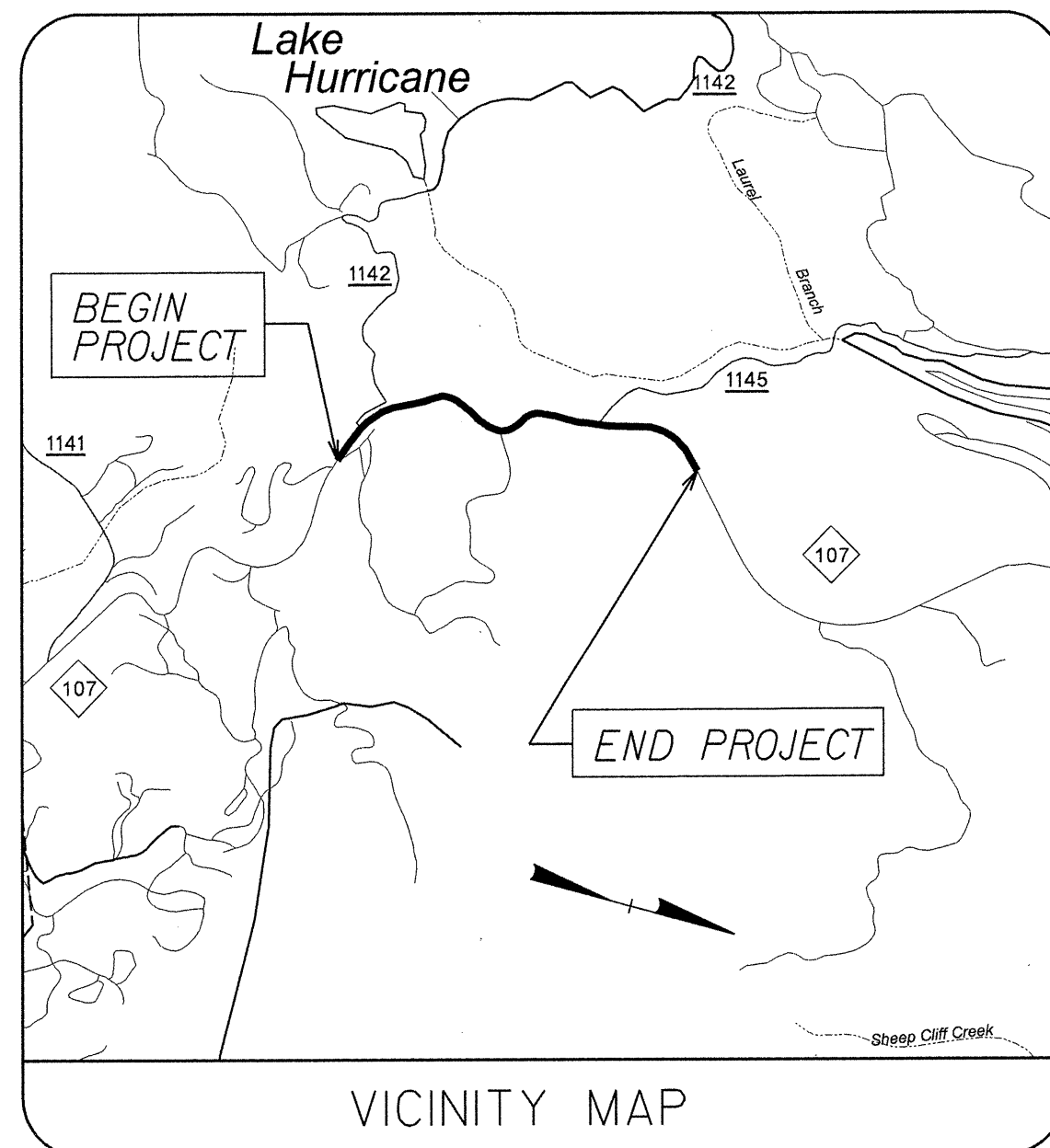
06/08/09

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

|                 |                             |             |              |
|-----------------|-----------------------------|-------------|--------------|
| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
| N.C.            | R-5202                      | 1           |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 42803.1.ST1     | STM-0107(11)                | P.E.        |              |
| 42803.3.ST1     | STM-0107(11)                | CONST.      |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |

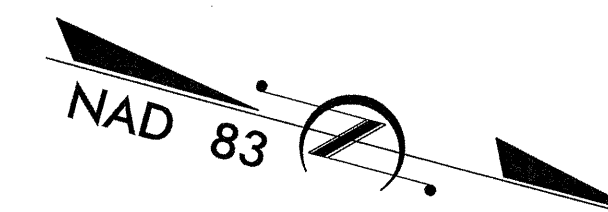
PROJECT: R-5202



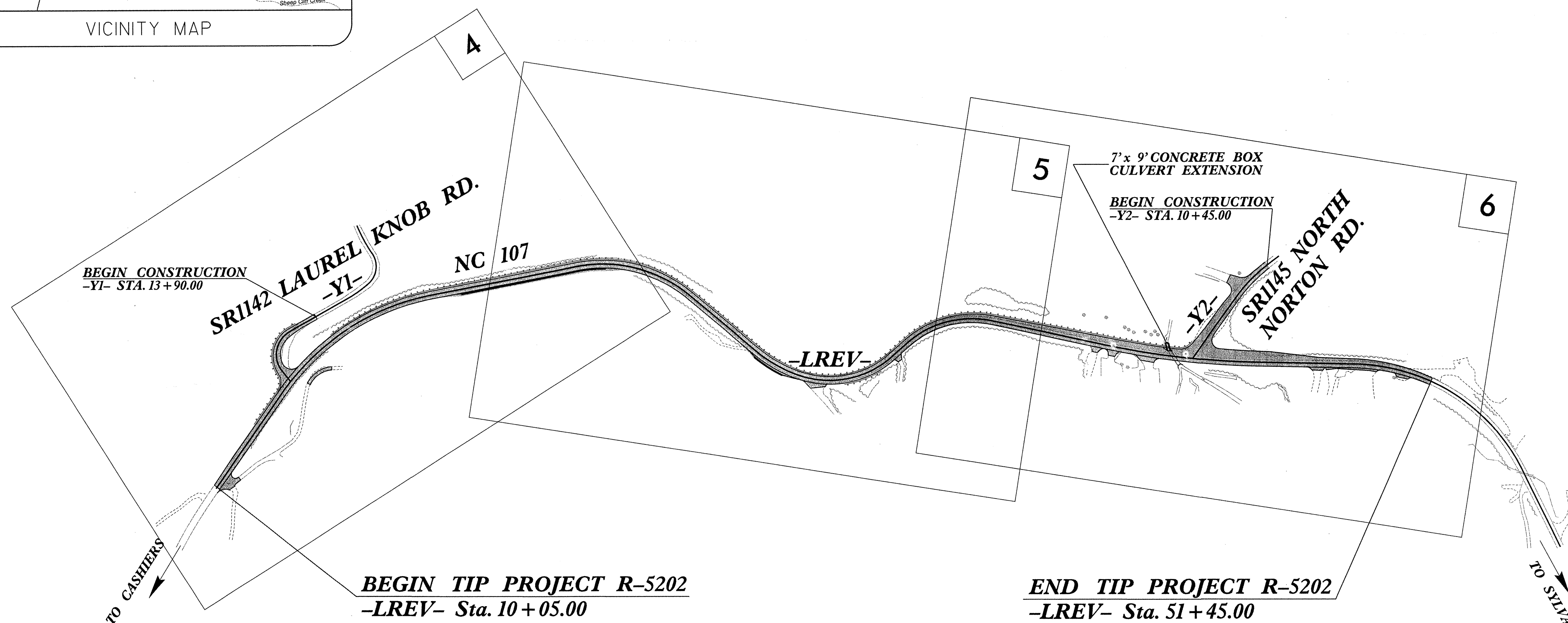
**JACKSON COUNTY**

LOCATION: NC 107 FROM JUST SOUTH OF SR 1142 (LAUREL KNOB ROAD) TO JUST NORTH OF SR 1145 (NORTH NORTON ROAD)

TYPE OF WORK: GRADING, PAVING, CULVERT EXTENSION, DRAINAGE

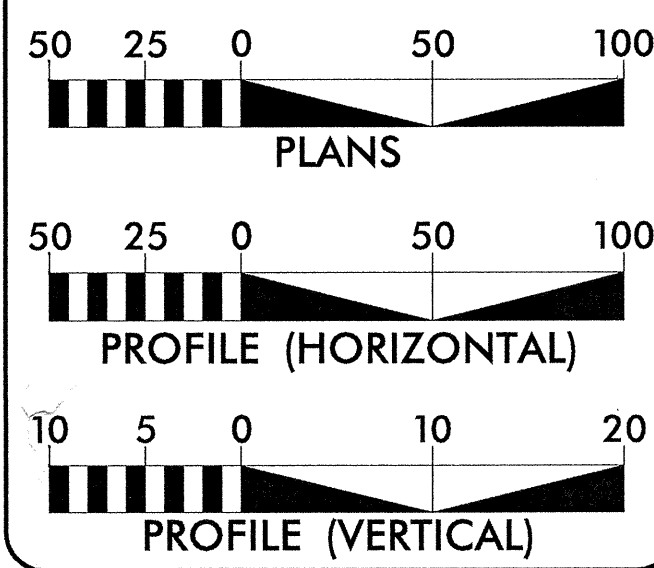


CONTRACT: C202251



DESIGN EXCEPTION REQUIRED FOR HORIZONTAL ALIGNMENT, VERTICAL ALIGNMENT, SHOULDER WIDTH, AND STOPPING SIGHT DISTANCE.

GRAPHIC SCALES



DESIGN DATA

ADT 2005 = 6700  
V = 50 MPH

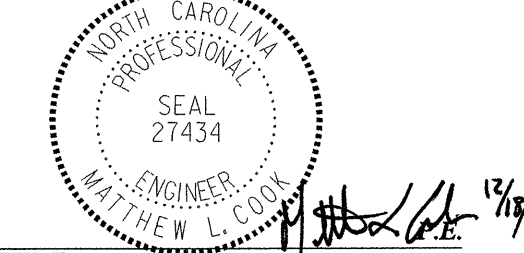
PROJECT LENGTH

Length Roadway  
 TIP Project R-5202 ..... 0.784 Mi.  
 TOTAL LENGTH  
 TIP Project R-5202 ..... 0.784 Mi.

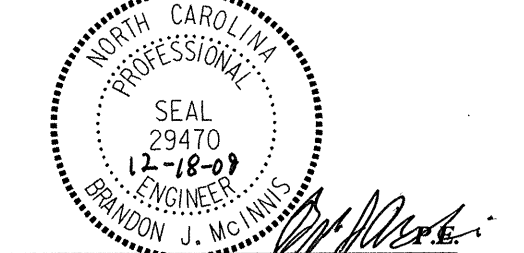
PLANS PREPARED BY :  
**RK&K** RUMMEL, KLEPPER & KAHL, LLP  
 900 RIDGEFIELD DRIVE, SUITE 350  
 RALEIGH, NORTH CAROLINA 27609  
 NC LICENSE NO. F-0112  
 FOR  
 DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS  
 ROW DATE: April 16, 2007  
 LETTING DATE: February 16, 2010  
 B. Keith Skinner, P.E.  
 PROJECT ENGINEER  
 Brandon J. McInnis, P.E.  
 PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

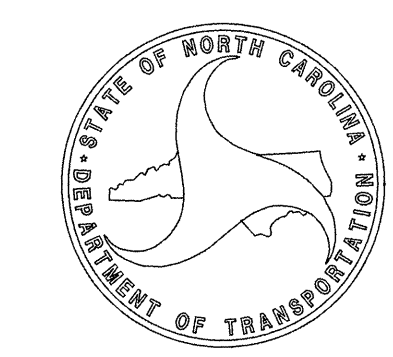


SIGNATURE: [Signature] 1/3/09  
ROADWAY DESIGN ENGINEER

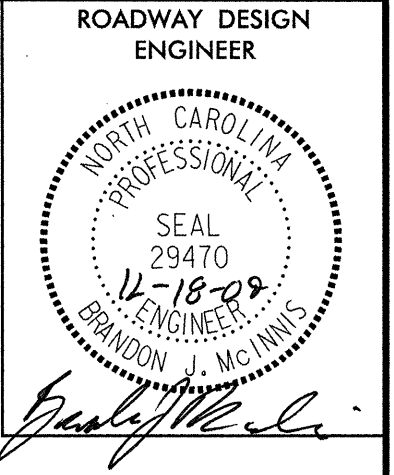


SIGNATURE: [Signature]

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA



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jbeuchaine



# INDEX of SHEETS, GENERAL NOTES, and LIST of STANDARDS

| SHEET NUMBER      | SHEET   |
|-------------------|---|
| 1                 | TITLE SHEET   |
| 1-A               | INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS   |
| 1-B               | CONVENTIONAL SYMBOLS  |
| 2 THRU 2-A        | PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS  |
| 2-B               | <b>SOIL NAIL SLOPE STABILIZATION DETAIL</b>   |
| 2-C               | ANCHORAGE FOR FRAMES DETAIL   |
| 2-D THRU 2-E      | METHOD OF PIPE INSTALLATION DETAILS   |
| 3                 | SUMMARY OF QUANTITIES   |
| 3-A THRU 3-C      | EARTHWORK BALANCE CARD, ASPHALT PAVEMENT REMOVAL & BREAKUP SUMMARIES, GUARDRAIL SUMMARY, AND DRAINAGE SUMMARY |
| 3-D               | RIGHT OF WAY AREA DATA SHEET  |
| 3-E               | PARCEL INDEX SHEET  |
| 4 THRU 6          | PLAN SHEETS   |
| 7 THRU 9          | PROFILE SHEETS  |
| TCP-1 THRU TCP-11 | TRAFFIC CONTROL PLANS   |
| PM-1 THRU PM-3    | PAVEMENT MARKING PLANS  |
| EC-1 THRU EC-8    | EROSION CONTROL PLANS   |
| UO-1 THRU UO-4    | UTILITIES BY OTHERS PLANS   |
| S-1 THRU S-7      | STRUCTURE PLANS   |
| X-0 THRU X-35     | CROSS-SECTIONS  |

**GENERAL NOTES:**

2006 SPECIFICATIONS  
EFFECTIVE: 07-18-06  
REVISED: 07-30-08

**GRADING AND SURFACING OR RESURFACING AND WIDENING:**

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

**CLEARING:**

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

**SUPERELEVATION:**

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

**SHOULDER CONSTRUCTION:**

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

**SIDE ROADS:**

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

**GUARDRAIL:**

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

**TEMPORARY SHORING:**

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

**SUBSURFACE PLANS:**

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

**UTILITIES:**

UTILITY OWNERS ON THIS PROJECT ARE VERISON AND DUKE ENERGY

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

**RIGHT-OF-WAY MARKERS:**

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

2006 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 July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

| STD.NO.   | TITLE   |
|---|---|
| <b>DIVISION 2 - EARTHWORK</b>                     |   |
| 200.02  | Method of Clearing - Method II  |
| 225.02  | Guide for Grading Subgrade - Secondary and Local                              |
| 225.04  | Method of Obtaining Superlevation - Two Lane Pavement                         |
| <b>DIVISION 3 - PIPE CULVERTS</b>                 |   |
| 310.10  | Driveway Pipe Construction  |
| <b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b> |   |
| 560.01  | Method of Shoulder Construction - High Side of Superelevated Curve - Method I |
| <b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>   |   |
| 654.01  | Pavement Repairs  |
| <b>DIVISION 8 - INCIDENTALS</b>                   |   |
| 840.00  | Concrete Base Pad for Drainage Structures                                     |
| 840.18  | Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe                       |
| 840.24  | Frames and Narrow Slot Sag Grates   |
| 840.27  | Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe                          |
| 840.29  | Frames and Narrow Slot Flat Grates  |
| 840.45  | Precast Drainage Structure  |
| 840.66  | Drainage Structure Steps  |
| 840.71  | Concrete and Brick Pipe Plug  |
| 840.72  | Pipe Collar   |
| 846.01  | Concrete Curb, Gutter and Curb & Gutter                                       |
| 846.04  | Drop Inlet Installation in Shoulder Berm Gutter                               |
| 862.01  | Guardrail Placement   |
| 862.02  | Guardrail Installation  |
| 876.01  | Rip Rap in Channels   |
| 876.02  | Guide for Rip Rap at Pipe Outlets   |
| 876.04  | Drainage Ditches with Class 'B' Rip Rap                                       |

**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

**FOR**  
**DIVISION OF HIGHWAYS**

3/15/06

Note: Not to Scale

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

### BOUNDARIES AND PROPERTY:

|                                     |         |
|-------------------------------------|---------|
| State Line                          | -----   |
| County Line                         | -----   |
| Township Line                       | -----   |
| City Line                           | -----   |
| Reservation Line                    | -----   |
| Property Line                       | -----   |
| Existing Iron Pin                   | ○ EIP   |
| Property Corner                     | ✕       |
| Property Monument                   | □ EDM   |
| Parcel/Sequence Number              | ⑫③      |
| Existing Fence Line                 | -x-x-x- |
| Proposed Woven Wire Fence           | ○       |
| Proposed Chain Link Fence           | □       |
| Proposed Barbed Wire Fence          | ◇       |
| Existing Wetland Boundary           | -WLB-   |
| Proposed Wetland Boundary           | -WLB-   |
| Existing Endangered Animal Boundary | -EAB-   |
| Existing Endangered Plant Boundary  | -EPB-   |

### BUILDINGS AND OTHER CULTURE:

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

### HYDROLOGY:

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

### RAILROADS:

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

### RIGHT OF WAY:

|  |         |
|--|---------|
| Baseline Control Point                                     | ◆       |
| Existing Right of Way Marker                               | △       |
| Existing Right of Way Line                                 | -----   |
| Proposed Right of Way Line                                 | ○ R/W   |
| Proposed Right of Way Line with Iron Pin and Cap Marker    | ○ R/W ▲ |
| Proposed Right of Way Line with Concrete or Granite Marker | ○ R/W ● |
| Existing Control of Access                                 | ○ CA    |
| Proposed Control of Access                                 | ○ CA    |
| Existing Easement Line                                     | -E-     |
| Proposed Temporary Construction Easement                   | -E-     |
| Proposed Temporary Drainage Easement                       | -TDE-   |
| Proposed Permanent Drainage Easement                       | -PDE-   |
| Proposed Permanent Utility Easement                        | -PUE-   |

### ROADS AND RELATED FEATURES:

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

### VEGETATION:

|              |            |
|--------------|------------|
| Single Tree  | ○          |
| Single Shrub | ○          |
| Hedge        | -----      |
| Woods Line   | -----      |
| Orchard      | ○          |
| Vineyard     | □ Vineyard |

### EXISTING STRUCTURES:

|  |         |
|--|---------|
| MAJOR:                                   |         |
| Bridge, Tunnel or Box Culvert            | -----   |
| 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           | □ PH |
| H-Frame Pole                        | ●    |
| Recorded U/G Power Line             | -P-  |
| Designated U/G Power Line (S.U.E.*) | -P-- |

### TELEPHONE:

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

### WATER:

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

### TV:

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

### GAS:

|                                   |           |
|-----------------------------------|-----------|
| Gas Valve                         | ◇         |
| Gas Meter                         | ⊞         |
| Recorded U/G Gas Line             | -G-       |
| Designated U/G Gas Line (S.U.E.*) | -G--      |
| Above Ground Gas Line             | -A/G Gas- |

### SANITARY SEWER:

|  |                      |
|--|----------------------|
| Sanitary Sewer Manhole                   | ⊞                    |
| Sanitary Sewer Cleanout                  | ⊞                    |
| U/G Sanitary Sewer Line                  | -SS-                 |
| Above Ground Sanitary Sewer              | -A/G Sanitary Sewer- |
| Recorded SS Forced Main Line             | -FSS-                |
| Designated SS Forced Main Line (S.U.E.*) | -FSS--               |

### MISCELLANEOUS:

|  |        |
|--|--------|
| Utility Pole                           | ●      |
| Utility Pole with Base                 | □      |
| Utility Located Object                 | ○      |
| Utility Traffic Signal Box             | ⊞      |
| Utility Unknown U/G Line               | -?UL-  |
| U/G Tank; Water, Gas, Oil              | □      |
| A/G Tank; Water, Gas, Oil              | □      |
| U/G Test Hole (S.U.E.*)                | ⊞      |
| Abandoned According to Utility Records | AATUR  |
| End of Information                     | E.O.I. |

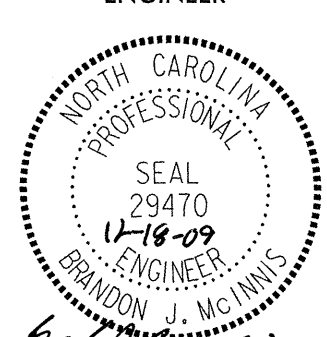
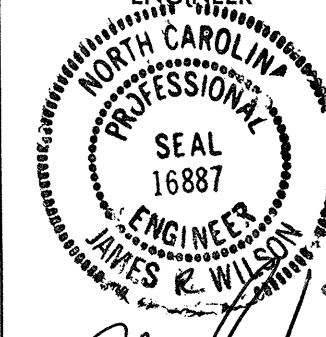
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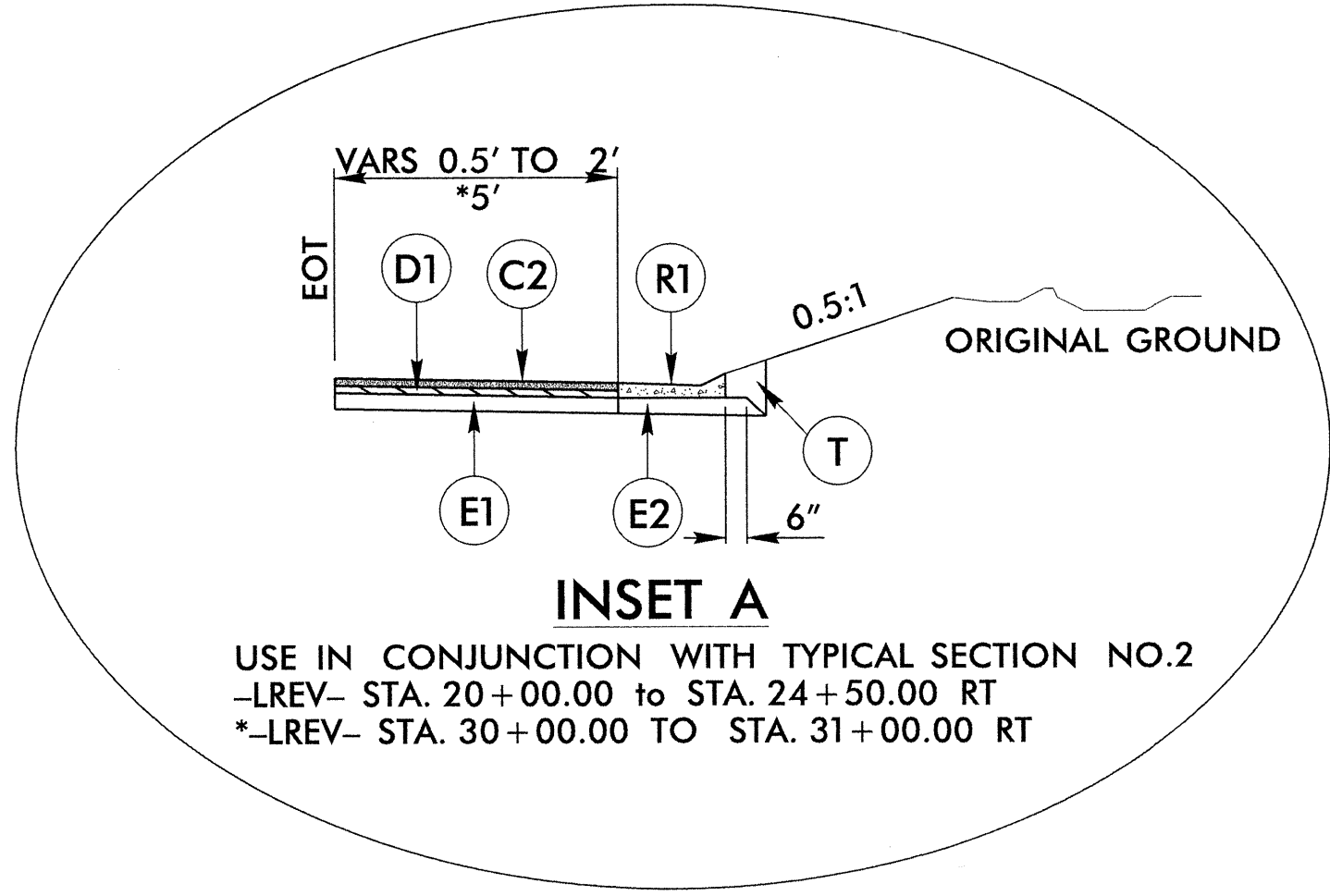
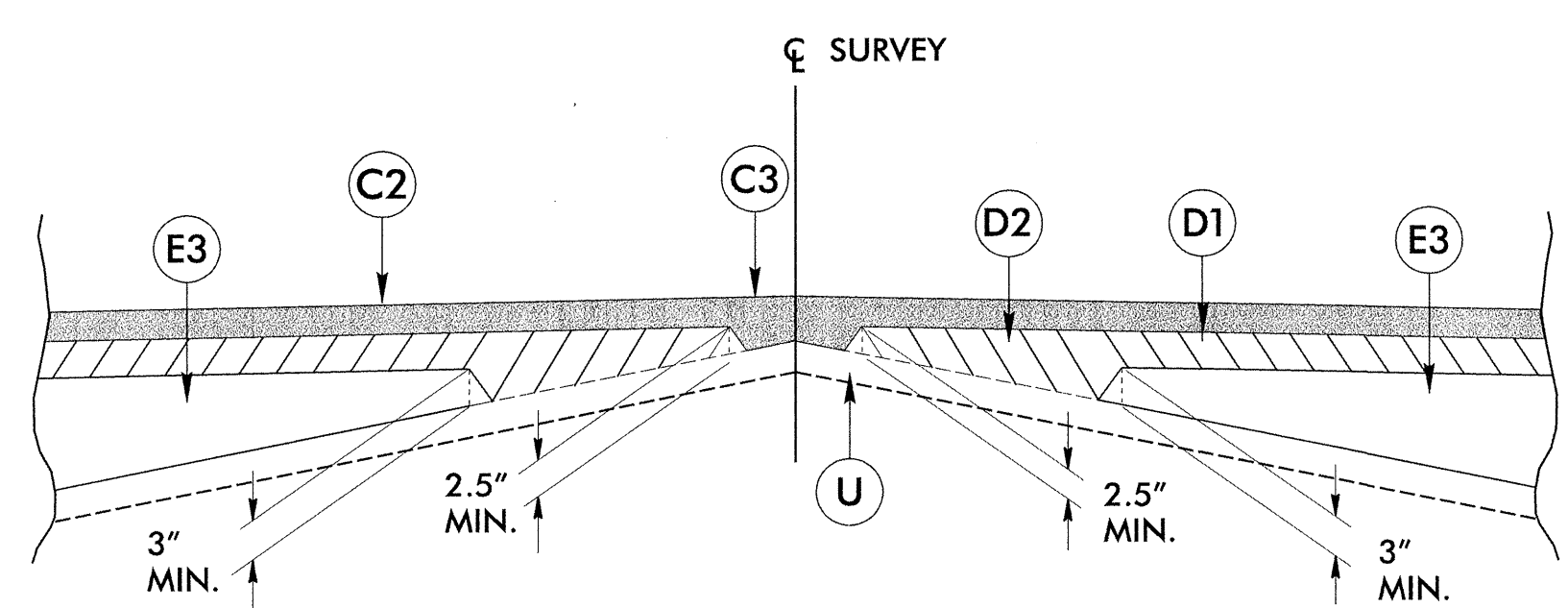
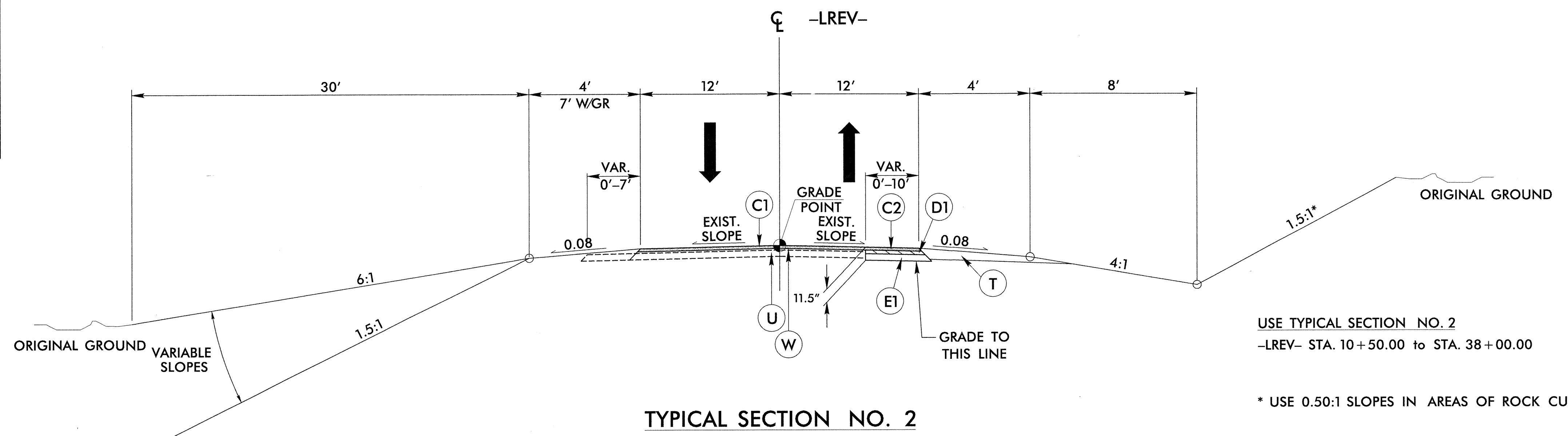
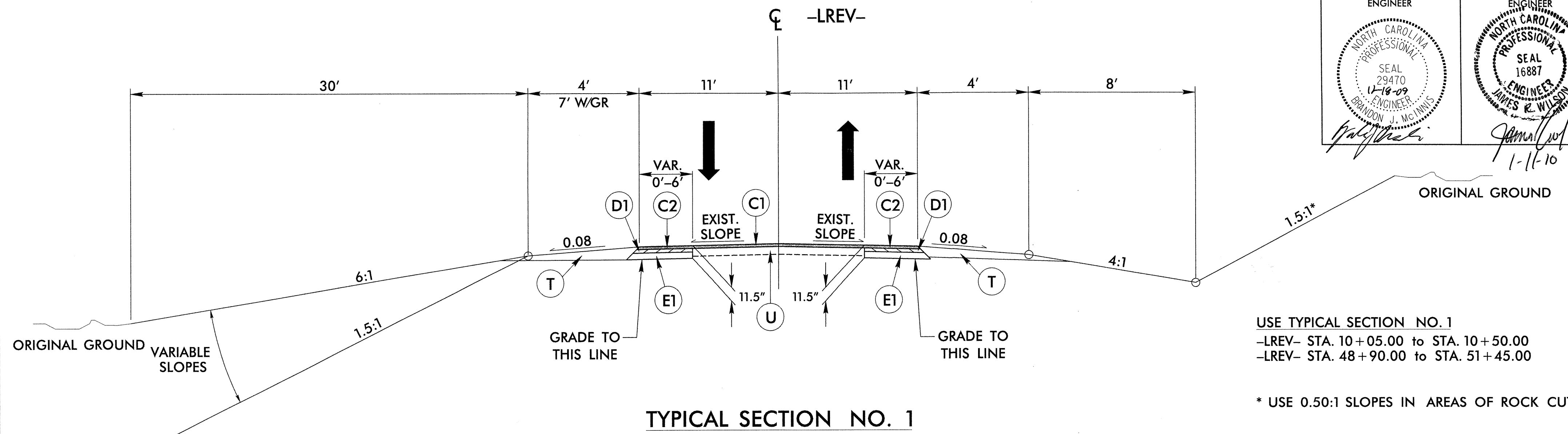
PAVEMENT SCHEDULE

|    |  |
|----|--|
| C1 | PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.  |
| 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.   |
| 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 TO EXCEED 2" IN DEPTH.                                       |
| D1 | PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.   |
| D2 | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH. |
| E1 | PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.   |
| E2 | PROP. APPROX. 6.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 370.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.  |
| E3 | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.         |
| R1 | SHOULDER BERM GUTTER.  |
| T  | EARTH MATERIAL.  |
| U  | EXISTING PAVEMENT.   |
| V  | PAVEMENT REMOVAL.  |
| W  | WEDGING DETAIL.  |

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

PROJECT REFERENCE NO. R-5202 SHEET NO. 2

ROADWAY DESIGN ENGINEER  
  
 ENGINEER DESIGN  




PLANS PREPARED BY:

**RK&K**


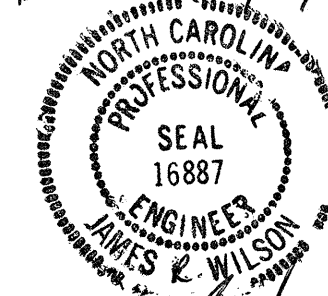
RUMMEL, KLEPPER & KAHL, LLP  
 900 RIDGEFIELD DRIVE SUITE 350  
 RALEIGH, NORTH CAROLINA 27609-3960  
 NC LICENSE NO. F-0112 • (919) 878-9560

FOR  
**DIVISION OF HIGHWAYS**

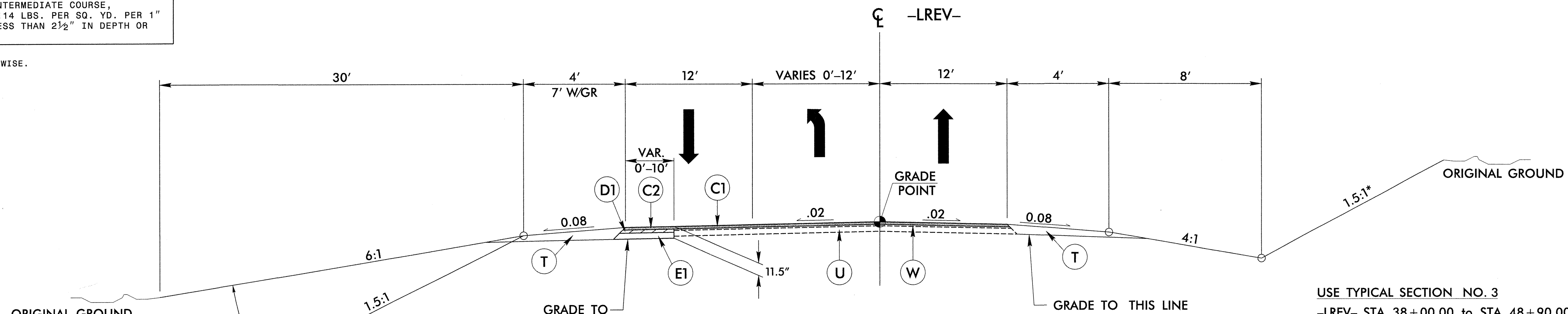
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 mal4029r\_rdy

PAVEMENT SCHEDULE

|    |   |    |   |   |                               |
|----|---|----|---|---|-------------------------------|
| C1 | PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.   | E1 | PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.  | T | EARTH MATERIAL.               |
| 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.  | E2 | PROP. APPROX. 6.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 370.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.   | U | EXISTING PAVEMENT.            |
| 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 TO EXCEED 2" IN DEPTH.                                    | E3 | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH. | V | PAVEMENT REMOVAL.             |
| D1 | PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.  | R1 | SHOULDER BERM GUTTER.   | W | WEDGING DETAIL. (SEE SHEET 2) |
| D2 | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH. |    |   |   |                               |

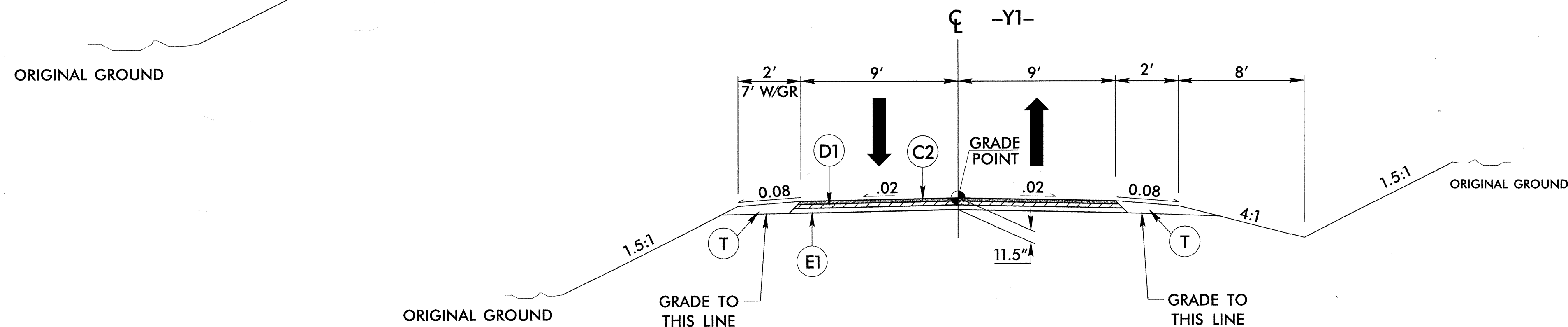
|   |   |
|---|---|
| PROJECT REFERENCE NO.<br>R-5202   | SHEET NO.<br>2-A  |
| ROADWAY DESIGN ENGINEER<br><i>[Signature]</i>                                       | PAVEMENT DESIGN ENGINEER<br><i>[Signature]</i>                                      |
|  |  |

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



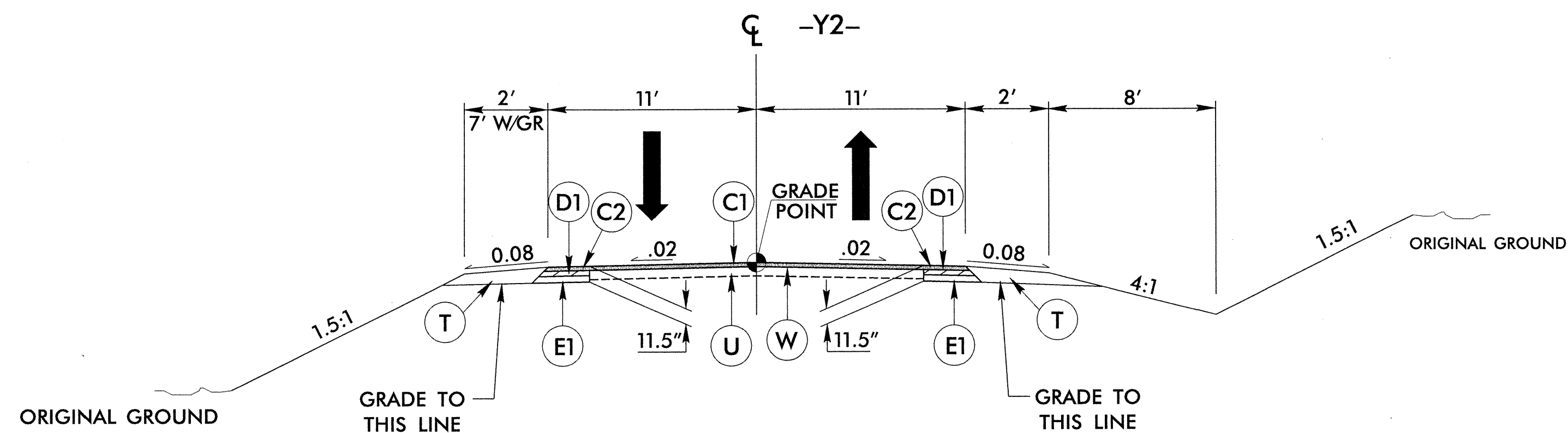
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3  
-LREV- STA. 38+00.00 to STA. 48+90.00  
\* USE 0.50:1 SLOPES IN AREAS OF ROCK CUTS  
NOTE: SEE PLANS FOR LENGTH OF TAPER & TURN LANES



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4  
-Y1- STA. 13+90.00 to STA. 16+49.81




TYPICAL SECTION NO. 5


USE TYPICAL SECTION NO. 5  
-Y2- STA. 10+45.00 to STA. 13+83.93

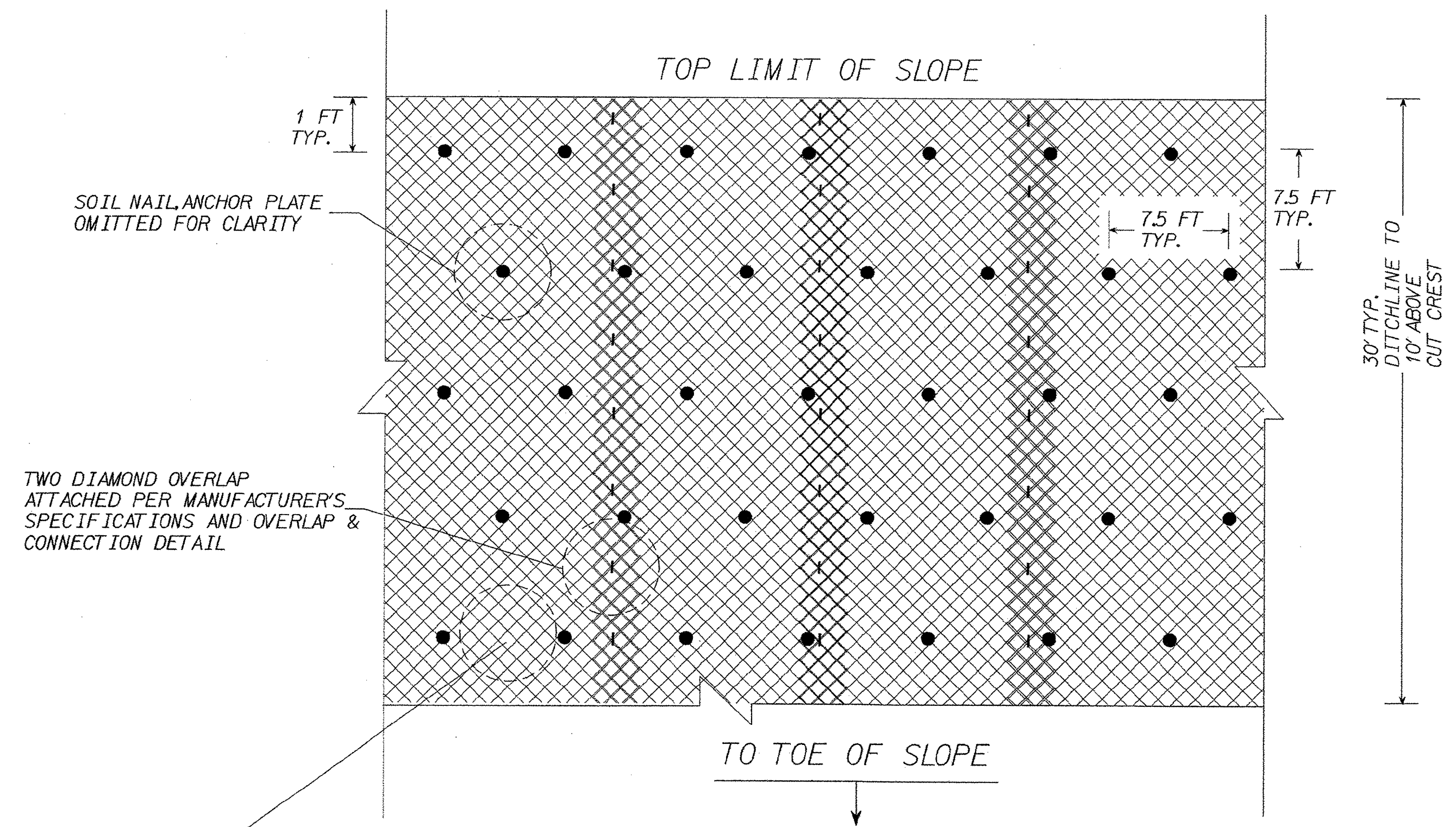
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PLANS PREPARED BY:

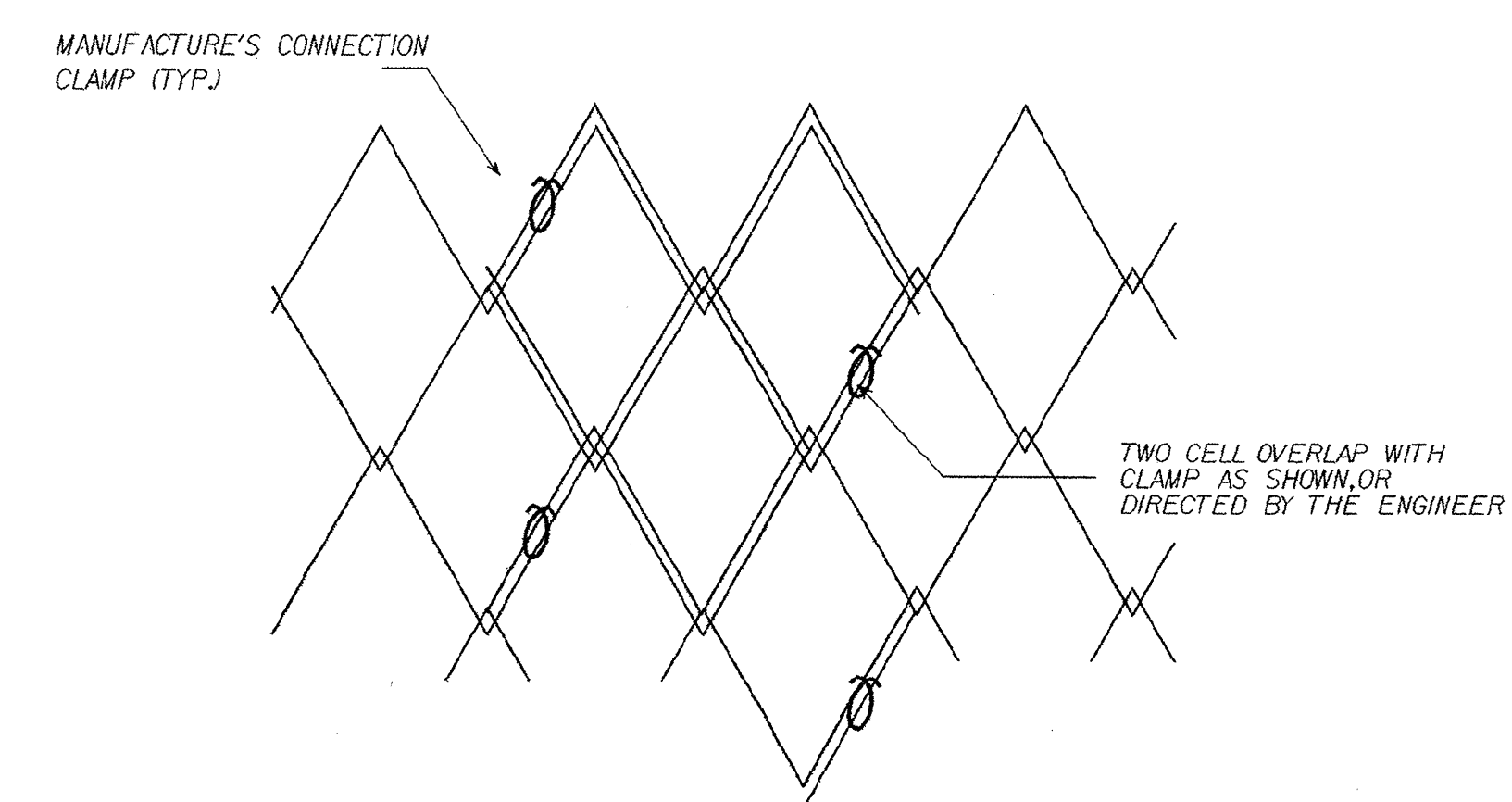


RUMMEL, KLEPPER & KAHL, LLP  
900 RIDGEFIELD DRIVE SUITE 350  
RALEIGH, NORTH CAROLINA 27609-3960  
NC LICENSE NO. F-0112 • (919) 878-9560  
FOR  
DIVISION OF HIGHWAYS

|  |  |
|--|--|
| GEOTECHNICAL<br>ENGINEER<br><br><br>She Clerk 1/12/10<br>SIGNATURE DATE | ENGINEER<br><br><br><br>SIGNATURE DATE |
|--|--|



MESH: DIAMOND TWISTED WIRE, 3 MM DIAMETER  
 MIN. TENSILE STRENGTH = 256,000 PSI  
 MIN. LONGITUDINAL TENSILE = 21,700 PSI  
 MIN. HORIZONTAL TENSILE = 8,600 PSI  
 GALVANIZED 95% ZINC/5% ALUMINUM, 0.49 OZ/FT  
 MESH OPENINGS = 3.25" X 5.4"

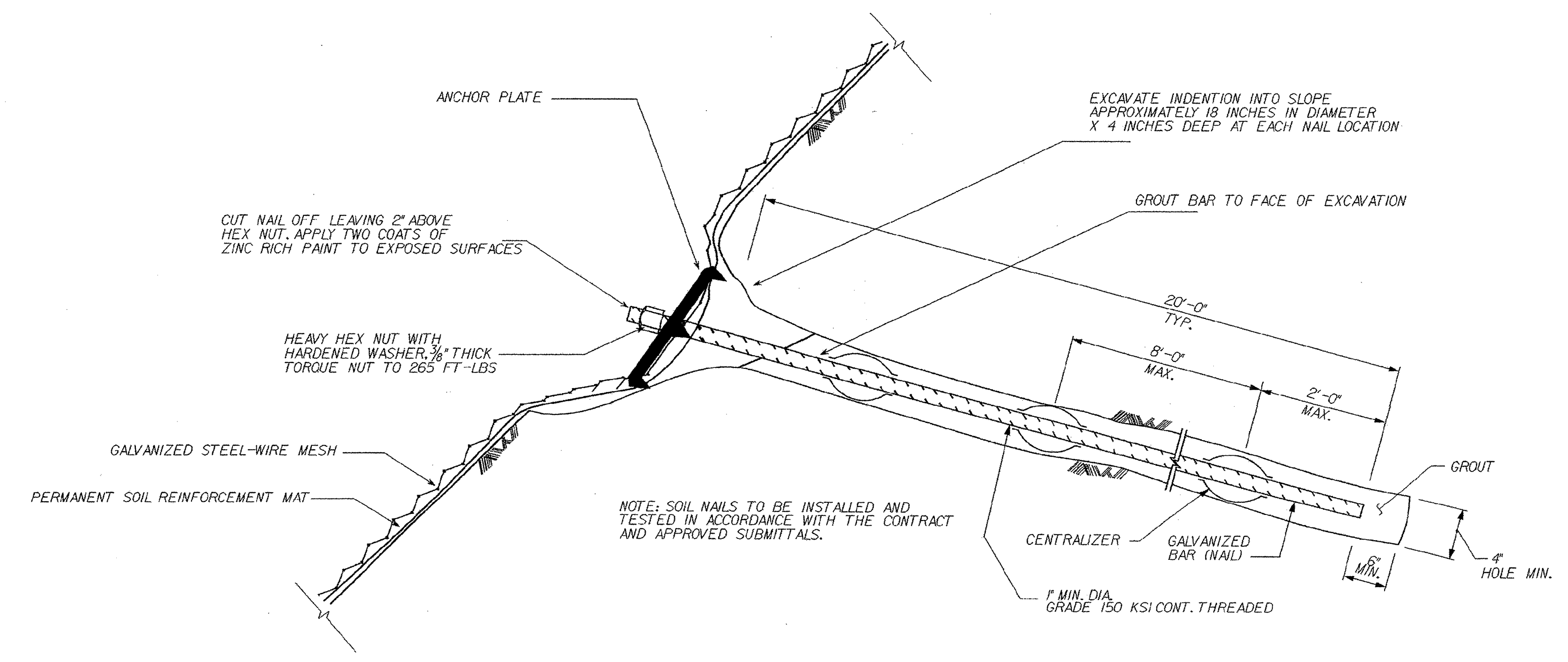


MESH OVERLAP & CONNECTION DETAIL

NOTES:

- 1) WIRE MESH SHALL BE INSTALLED ON 0.5:1 (H:V) ROCK/WEATHERED ROCK CUT SLOPES AT THE FOLLOWING LOCATIONS OR AS DIRECTED BY THE ENGINEER.  
 20+00 to 23+00 -L-  
 30+00 to 31+00 -L-
- 2) SOIL NAIL LENGTH = 20 FT (TYP)
- 3) DESIGN TEST LOAD (DTL) = 40 KIPS
- 4) INSTALL NAILS INTO SLOPE WITH AN INCLINATION OF 15 DEGREES (+/- 2) TO THE HORIZONTAL

| TOTAL BILL OF MATERIAL           |                |
|----------------------------------|----------------|
| SOIL NAIL SLOPE STABILIZATION    | 1,400 SQ. YDS. |
| PERMANENT SOIL REINFORCEMENT MAT | 1,400 SQ. YDS. |
| SUPPLEMENTAL SOIL NAILS (20 FT)  | 20 EACH        |



TYPICAL SECTION

PROJECT NO.: R-5202  
 JACKSON COUNTY  
 STATION: 30 - 31+00 AND 20 - 23+00  
 SHEET 1 OF 1

**GEOTECHNICAL ENGINEERING UNIT**  
 EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SOIL NAIL SLOPE STABILIZATION**

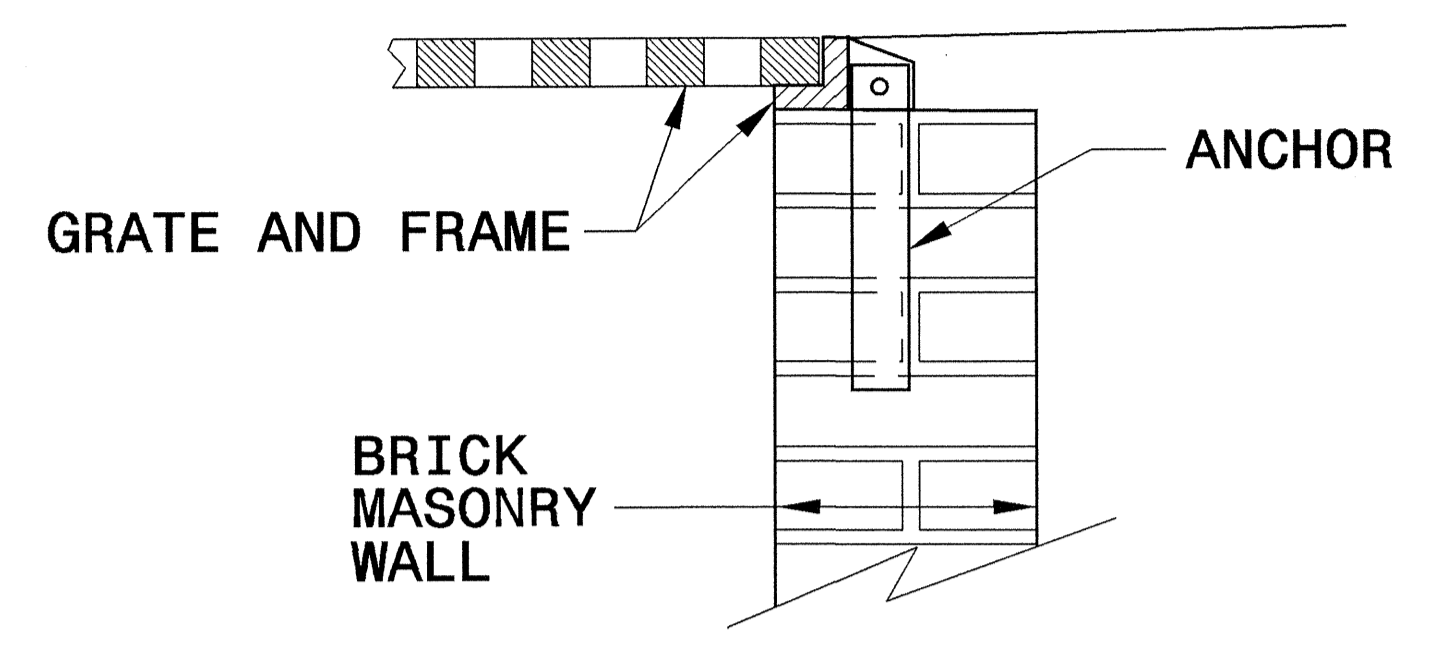
PREPARED BY: JCK DATE: 1/10  
 REVIEWED BY: SCC DATE: 1/10

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

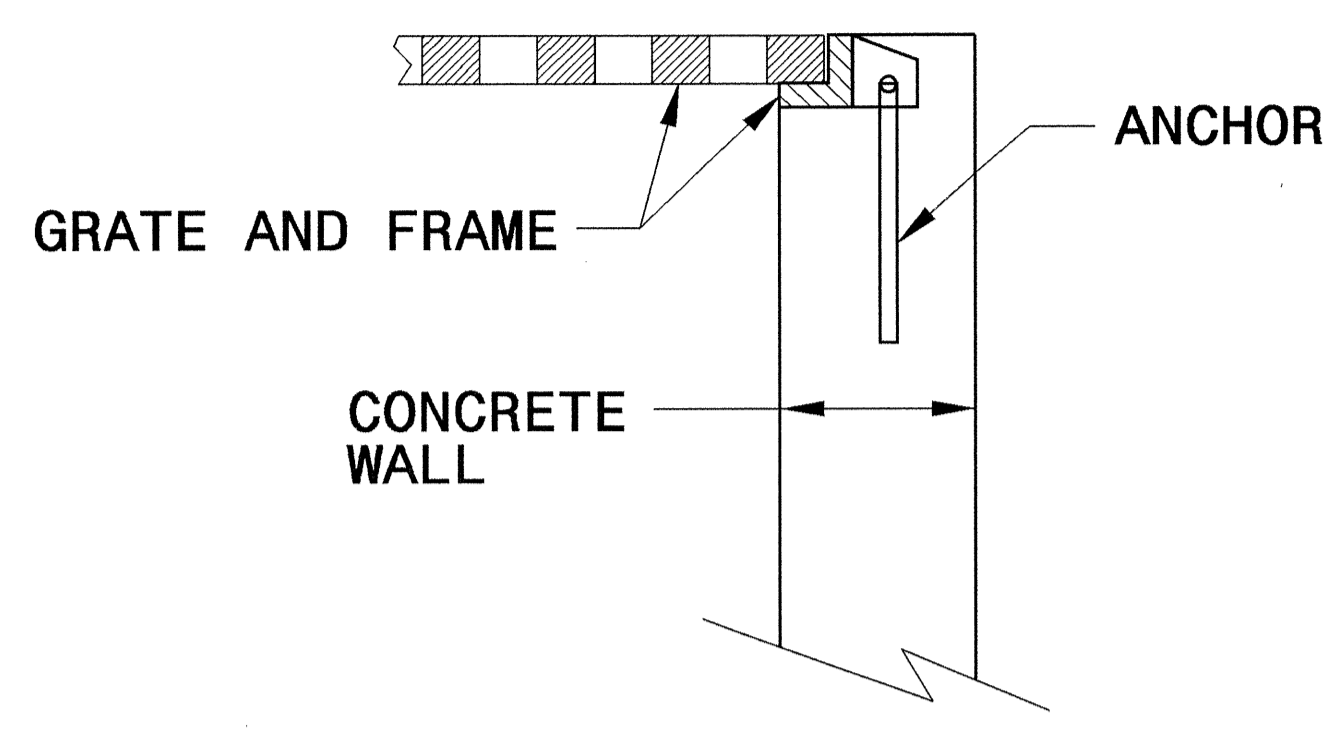
STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**ANCHORAGE FOR FRAMES**  
 BRICK/CONCRETE/PRECAST CONCRETE

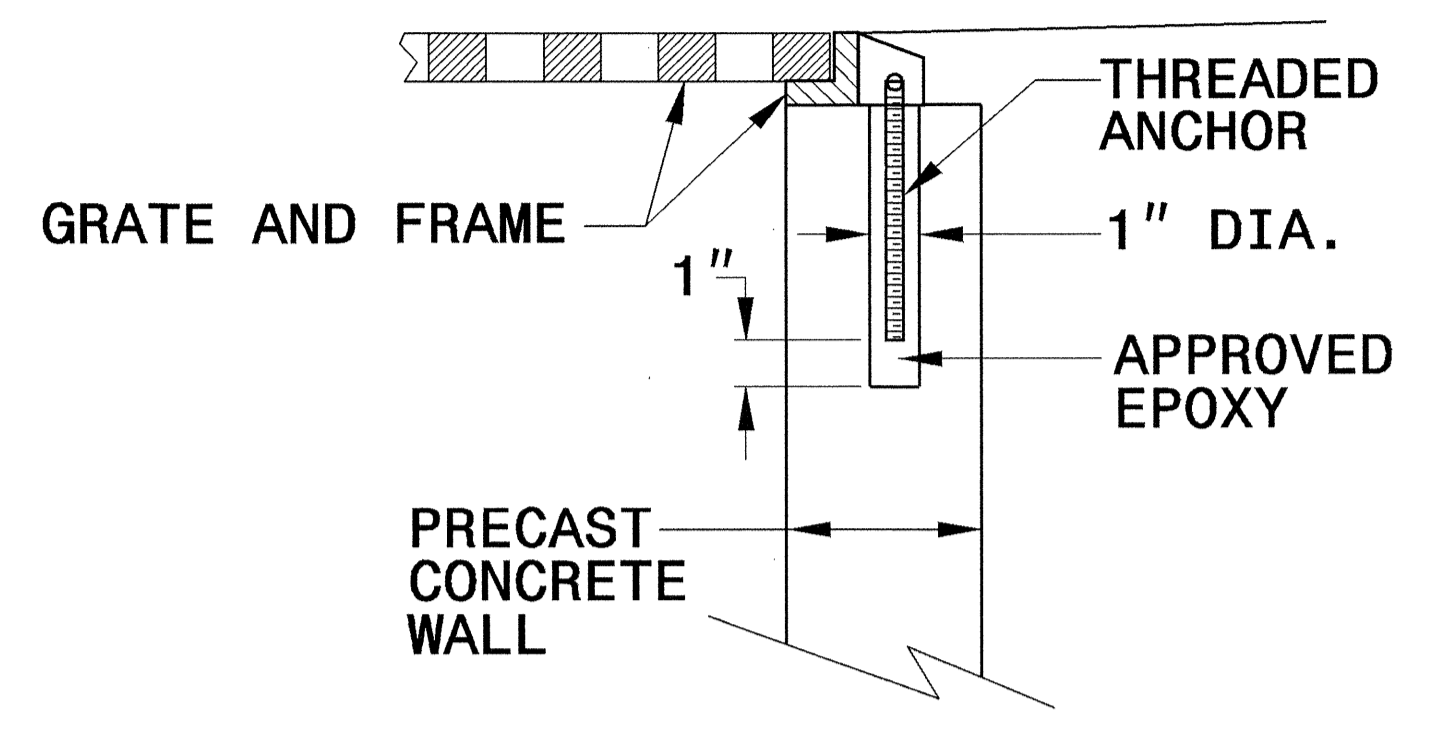
SHEET 1 OF 1  
**840D25**



**BRICK MASONRY CONSTRUCTION**



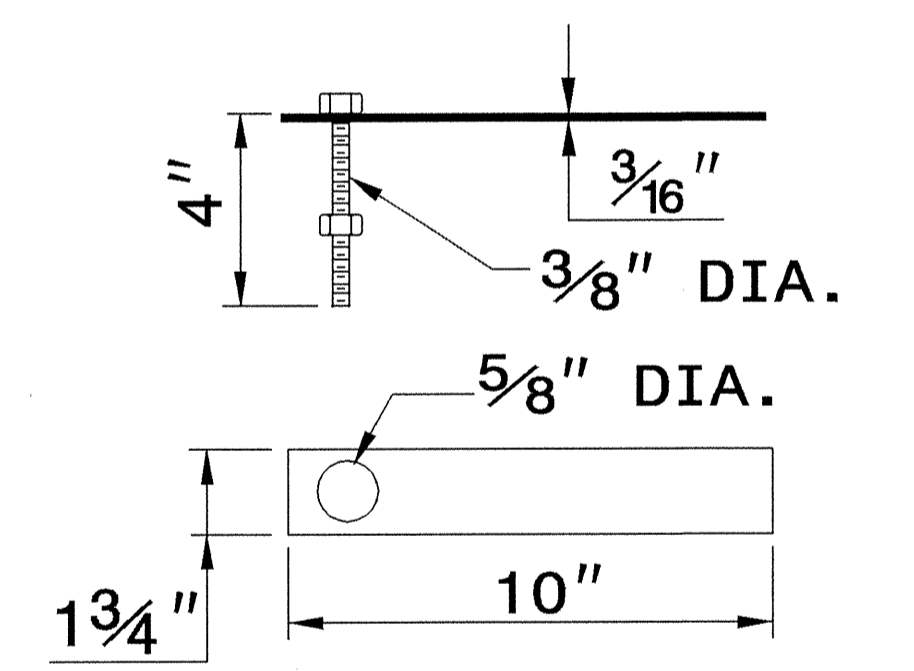
**CONCRETE CONSTRUCTION**



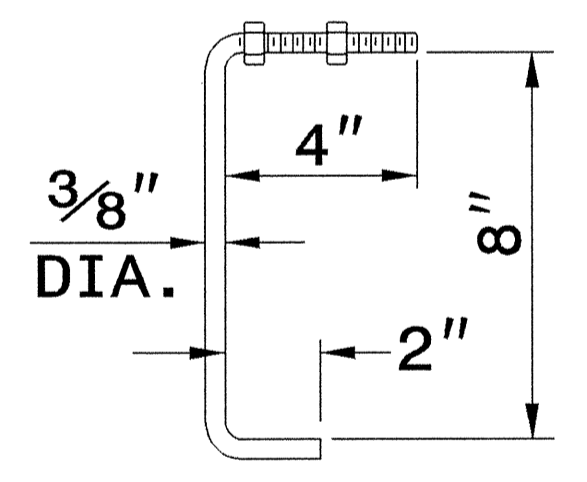
**PRECAST CONCRETE CONSTRUCTION**

**DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET**

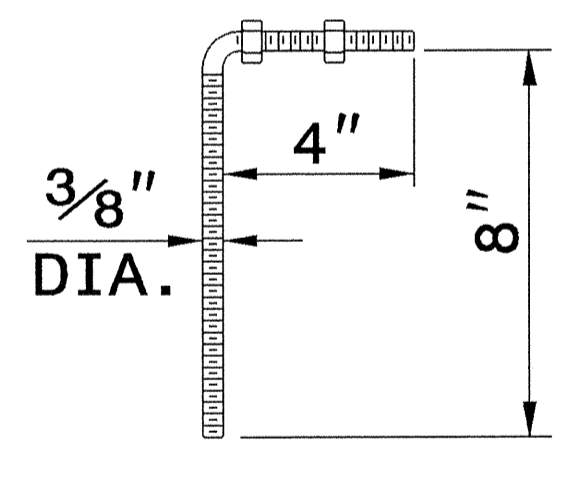
NOTE:  
 CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



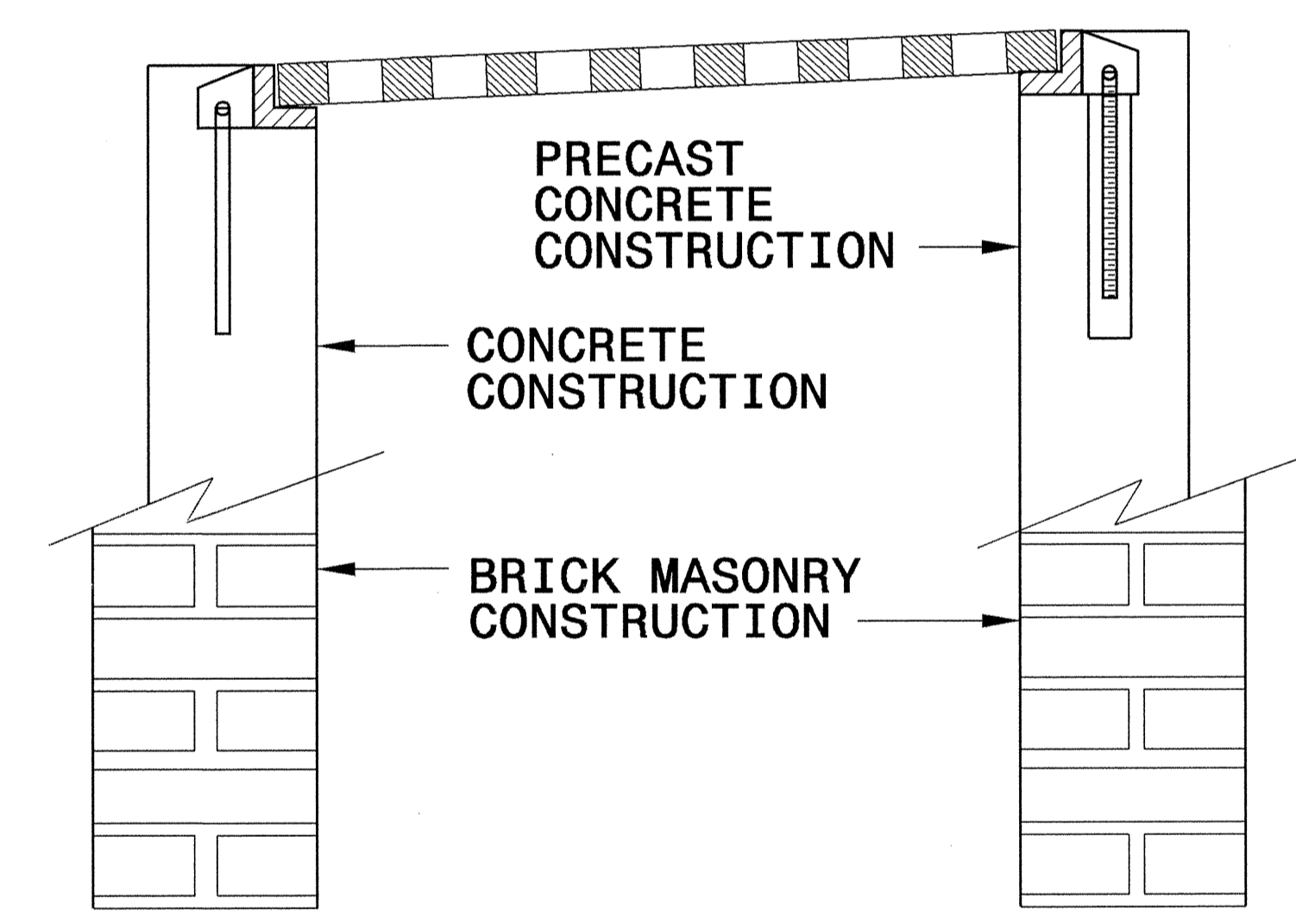
**MASONRY ANCHOR**  
 3/8" DIA. BOLT WITH PLATE



**CONCRETE ANCHOR**  
 3/8" DIA. BENT BAR



**PRECAST CONCRETE ANCHOR**  
 3/8" DIA. BENT BAR



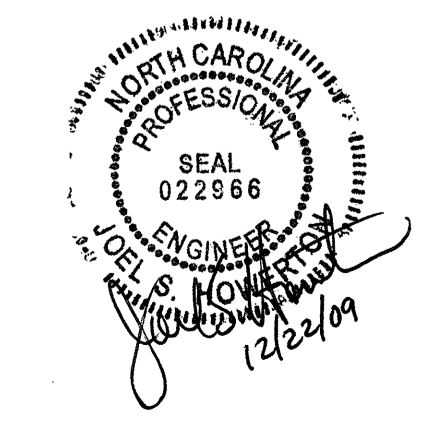
**FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS**

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

ENGLISH DETAIL DRAWING FOR  
**ANCHORAGE FOR FRAMES**  
 BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1  
**840D25**

27-SEP-2006 08:59  
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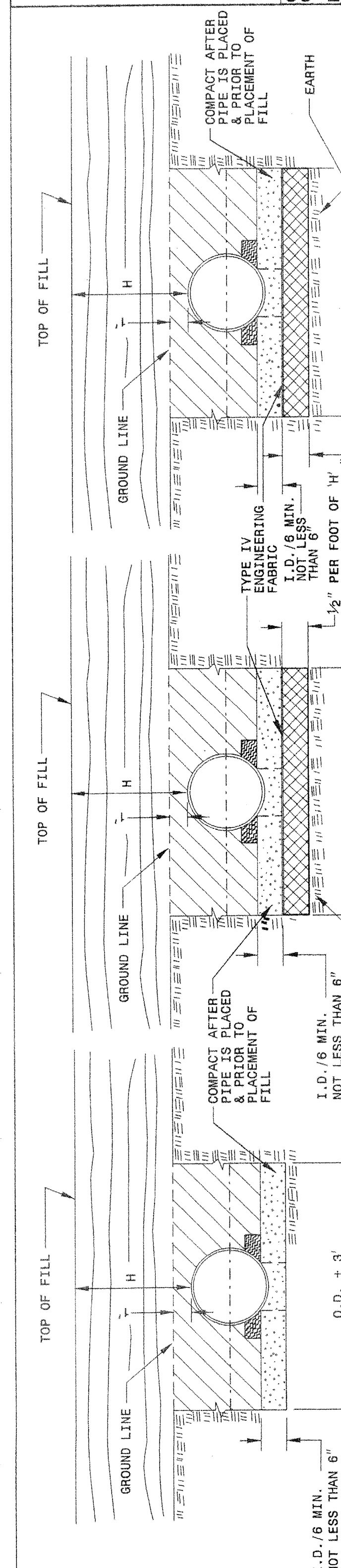
**PROJECT SERVICES UNIT**  
**STANDARDS AND SPECIAL DESIGN**  
 Office 919-250-4128 FAX 919-250-4119

**SEE PLATE FOR TITLE**

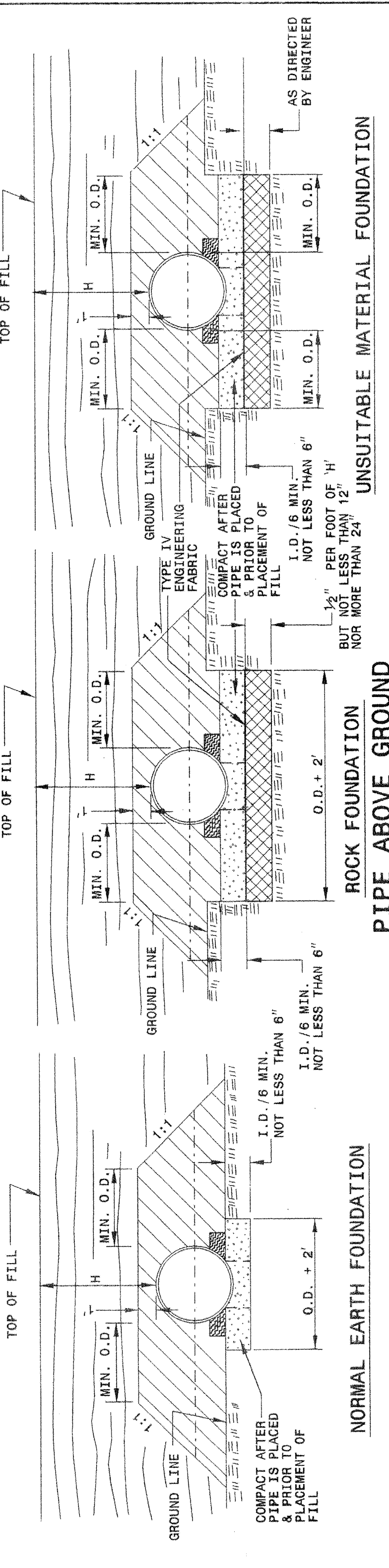
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 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 FILE SPEC.: \_\_\_\_\_

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



ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 FLEXIBLE PIPE



GENERAL NOTES:  
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.  
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.  
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.  
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

SPRINGLINE OF PIPE  
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.  
 APPROVED SUITABLE LOCAL MATERIAL.  
 UNDISTURBED EARTH MATERIAL  
 SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

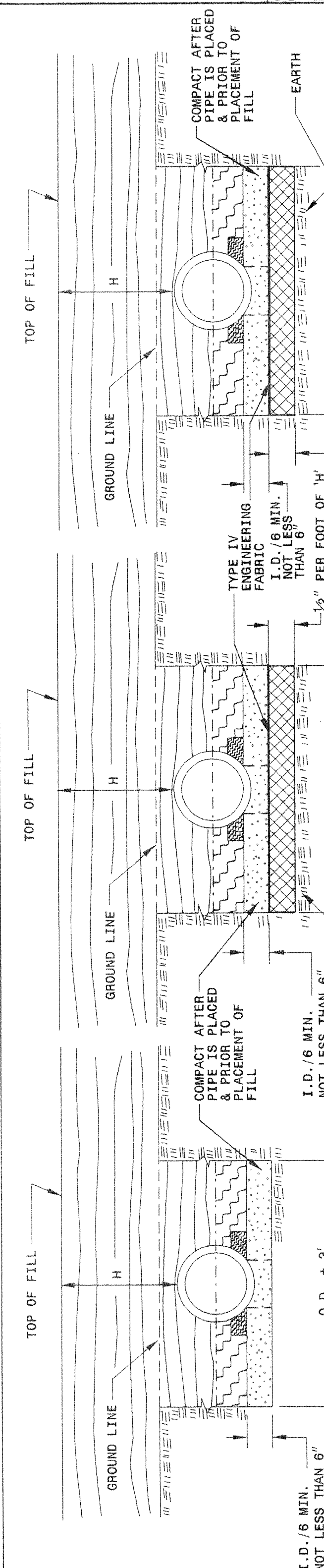
SHEET 1 OF 3  
**300D01**

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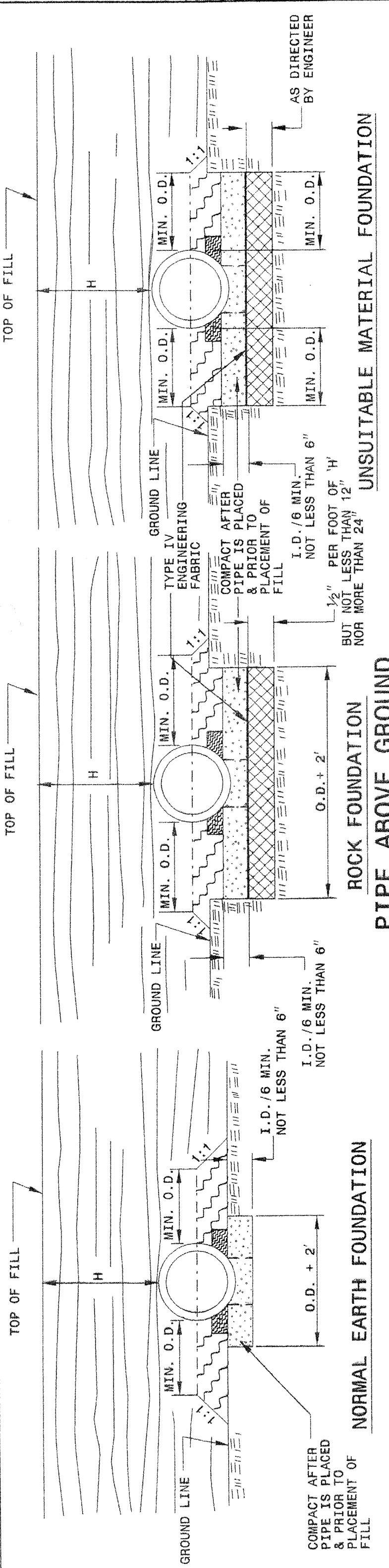
ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 FLEXIBLE PIPE

SHEET 1 OF 3  
**300D01**

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



ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 RIGID PIPE



GENERAL NOTES:  
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.  
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.  
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.  
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

SPRINGLINE OF PIPE  
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.  
 APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.  
 UNDISTURBED EARTH MATERIAL  
 SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

SHEET 2 OF 3  
**300D01**

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 DIVISION OF HIGHWAYS  
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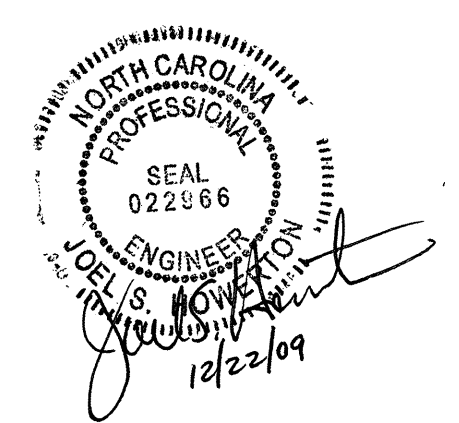
ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 RIGID PIPE

SHEET 2 OF 3  
**300D01**

PROJECT SERVICES UNIT  
 STANDARDS AND SPECIAL DESIGN  
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**SEE PLATE FOR TITLE**

ORIGINAL BY: K Kempf DATE: 5-15-09  
 MODIFIED BY: *[Signature]* DATE:   
 CHECKED BY: *[Signature]* DATE: 7/20/09  
 FILE SPEC: *[Signature]*/stds/stdstodetails/30001/0300d01.dgn





30-Jul-2009 09:49  
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 jhewerton

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 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

**7-06**  
 ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 FILL HEIGHT TABLES

SHEET 3 OF 3  
**300D01**

**FLEXIBLE PIPE**

| Round Corrugated Steel Pipe<br>2 2/3 x 1/2 corrugation ** |                        |         |                                |
|---|------------------------|---------|--------------------------------|
| Diameter (inches)   | Minimum cover (inches) | (Ga) 16 | Maximum Height of Cover (feet) |
|   |                        |         | 14 12 10 8                     |
| 12  | 12                     | 204     | 256                            |
| 15  | 12                     | 162     | 204                            |
| 18  | 12                     | 135     | 169                            |
| 21  | 12                     | 115     | 145                            |
| 24  | 12                     | 100     | 126                            |
| 30  | 12                     | 79      | 100                            |
| 36  | 12                     | 65      | 83                             |
| 42  | 12                     | 55      | 70                             |
| 48  | 12                     | 48      | 61                             |
| 54  | 12                     | 54      | 77                             |
| 60  | 12                     |         | 89                             |
| 66  | 12                     |         | 90                             |
| 72  | 12                     |         | 111                            |
| 78  | 12                     |         | 81                             |
| 84  | 12                     |         | 74                             |
|   |                        |         | 100                            |
|   |                        |         | 123                            |
|   |                        |         | 139                            |
|   |                        |         | 152                            |
|   |                        |         | 160                            |

| Round Corrugated Aluminum Pipe<br>2 2/3 x 1/2 corrugation ** |                        |         |                                |
|--|------------------------|---------|--------------------------------|
| Diameter (inches)  | Minimum cover (inches) | (Ga) 16 | Maximum Height of Cover (feet) |
|  |                        |         | 14 12 10 8                     |
| 12   | 12                     | 123     | 155                            |
| 15   | 12                     | 98      | 123                            |
| 18   | 12                     | 81      | 102                            |
| 21   | 12                     | 69      | 87                             |
| 24   | 12                     | 60      | 76                             |
| 27   | 12                     | 67      | 95                             |
| 30   | 12                     | 60      | 85                             |
| 36   | 12                     | 50      | 71                             |
| 42   | 12                     | 60      | 78                             |
| 48   | 12                     | 52      | 68                             |
| 54   | 12                     | 46      | 50                             |
| 60   | 12                     |         | 50                             |
| 66   | 12                     |         | 62                             |
| 72   | 12                     |         | 51                             |
|  |                        |         | 139                            |
|  |                        |         | 151                            |
|  |                        |         | 136                            |
|  |                        |         | 113                            |
|  |                        |         | 96                             |
|  |                        |         | 84                             |
|  |                        |         | 74                             |
|  |                        |         | 50                             |
|  |                        |         | 41                             |

\*\* FOR DIFFERENT CORRUGATIONS AND ARCH PIPES REFER TO ROADWAY DESIGN MANUAL OR MANUFACTURERS SPECIFICATION.

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

- CSP - AASHTO M36
- CAAP - AASHTO M196
- HDPE - AASHTO M294
- PVC - ASTM F849 or AASHTO M304

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS  
 1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

**RIGID PIPE**

- RCP - \* (Minimum fill) 1' for Class IV & CLASS V  
2' for Class III & Class II
- \* (Maximum fill) 10' - Class II pipe  
20' - Class III pipe  
30' - Class IV pipe  
40' - Class V pipe

(For fills > 40' & < 80' use LRFD Direct Design Method)

\* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

- RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS  
 1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

STATE OF  
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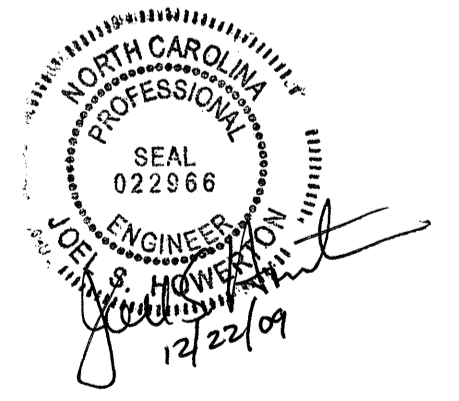
**7-06**  
 ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 FILL HEIGHT TABLES

SHEET 3 OF 3  
**300D01**

**PROJECT SERVICES UNIT**  
**STANDARDS AND SPECIAL DESIGN**  
 Office 919-250-4128 FAX 919-250-4119

**SEE PLATE FOR TITLE**

ORIGINAL BY: kkempf DATE: 5-15-09  
 MODIFIED BY: DATE:   
 CHECKED BY: DATE: 7/30/09  
 FILE SPEC:



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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202251

| ItemNumber  | Sec # | Quantity | Unit | Description  | ItemNumber   | Sec # | Quantity | Unit | Description                                   | ItemNumber   | Sec # | Quantity       | Unit | Description  |
|-------------|-------|----------|------|--|--------------|-------|----------|------|---|--------------|-------|----------------|------|--|
| 000010000-N | 800   | Lump Sum |      | MOBILIZATION   | 1489000000-E | 610   | 2,550    | TON  | ASPHALT CONC BASE COURSE, TYPE B25.0B         | 4516000000-N | 1180  | 40             | EA   | SKINNY DRUM  |
| 000040000-N | 801   | Lump Sum |      | CONSTRUCTION SURVEYING   | 1498000000-E | 610   | 2,400    | TON  | ASPHALT CONC INTERMEDIATE COURSE, TYPE 119.0B | 4650000000-N | 1251  | 300            | EA   | TEMPORARY RAISED PAVEMENT MARKERS                                      |
| 002200000-E | 225   | 17,000   | CY   | UNCLASSIFIED EXCAVATION  | 1519000000-E | 610   | 2,720    | TON  | ASPHALT CONC SURFACE COURSE, TYPE S9.5B       | 4810000000-E | 1205  | 40,300         | LF   | PAINT PAVEMENT MARKING LINES (4")                                      |
| 005000000-E | 226   | 1        | ACR  | SUPPLEMENTARY CLEARING & GRUB-BING                                 | 1560000000-E | 620   | 390      | TON  | ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22  | 4835000000-E | 1205  | 24             | LF   | PAINT PAVEMENT MARKING LINES (24")                                     |
| 006300000-N | SP    | Lump Sum |      | GRADING  | 1693000000-E | 654   | 200      | TON  | ASPHALT PLANT MIX, PAVEMENT REPAIR            | 4847000000-E | 1205  | 20,150         | LF   | POLYUREA PAVEMENT MARKING LINES (4", *****)<br>(STANDARD GLASS BEADS)  |
| 009800000-E | SP    | 5,200    | SY   | PRE-SPLITTING OF ROCK  | 2253000000-E | 840   | 3.23     | CY   | PIPE COLLARS                                  | 4847140000-E | 1205  | 24             | LF   | POLYUREA PAVEMENT MARKING LINES (24", *****)<br>(STANDARD GLASS BEADS) |
| 013400000-E | 240   | 120      | CY   | DRAINAGE DITCH EXCAVATION  | 2366000000-N | 840   | 2        | EA   | FRAME WITH TWO GRATES, STD 840.24             | 4847220000-N | 1205  | 12             | EA   | POLYUREA PAVEMENT MARKING SYMBOL (*****)<br>(STANDARD GLASS BEADS)     |
| 024100000-E | SP    | 610      | SY   | GENERIC GRADING ITEM WIRE MESH                                     | 3030000000-E | 862   | 3,150    | LF   | STEEL BM GUARDRAIL                            | 4850000000-E | 1205  | 400            | LF   | REMOVAL OF PAVEMENT MARKING LINES (4")                                 |
| 025700000-E | SP    | 2,300    | LF   | GENERIC GRADING ITEM ROCK ANCHORS FOR WIRE MESH                    | 3045000000-E | 862   | 125      | LF   | STEEL BM GUARDRAIL, SHOP CURVED               | 4905000000-N | 1253  | 200            | EA   | SNOWPLOWABLE PAVEMENT MARKERS  |
| 032000000-E | SP    | 330      | SY   | FOUNDATION CONDITIONING FABRIC                                     | 3150000000-N | 862   | 10       | EA   | ADDITIONAL GUARDRAIL POSTS                    | 6000000000-E | 1605  | 6,010          | LF   | TEMPORARY SILT FENCE   |
| 033000000-E | SP    | 110      | TON  | GENERIC DRAINAGE ITEM FOUNDATION CONDITIONING MATERIAL, MINOR STRS | 3195000000-N | 862   | 1        | EA   | GUARDRAIL ANCHOR UNITS, TYPE AT-1             | 6006000000-E | 1610  | 450            | TON  | STONE FOR EROSION CONTROL, CLASS A                                     |
| 034300000-E | 310   | 96       | LF   | 15" SIDE DRAIN PIPE  | 3270000000-N | SP    | 5        | EA   | GUARDRAIL ANCHOR UNITS, TYPE 350              | 6009000000-E | 1610  | 1,810          | TON  | STONE FOR EROSION CONTROL, CLASS B                                     |
| 034400000-E | 310   | 116      | LF   | 18" SIDE DRAIN PIPE  | 3360000000-E | 863   | 3,265.5  | LF   | REMOVE EXISTING GUARDRAIL                     | 6012000000-E | 1610  | 1,010          | TON  | SEDIMENT CONTROL STONE   |
| 036600000-E | 310   | 440      | LF   | 15" RC PIPE CULVERTS, CLASS III                                    | 3649000000-E | 876   | 560      | TON  | RIP RAP, CLASS B                              | 6015000000-E | 1615  | 5.5            | ACR  | TEMPORARY MULCHING   |
| 037200000-E | 310   | 60       | LF   | 18" RC PIPE CULVERTS, CLASS III                                    | 3656000000-E | 876   | 1,415    | SY   | FILTER FABRIC FOR DRAINAGE                    | 6018000000-E | 1620  | 150            | LB   | SEED FOR TEMPORARY SEEDING   |
| 037800000-E | 310   | 88       | LF   | 24" RC PIPE CULVERTS, CLASS III                                    | 4400000000-E | 1110  | 149      | SF   | WORK ZONE SIGNS (STATIONARY)                  | 6021000000-E | 1620  | 0.5            | TON  | FERTILIZER FOR TEMPORARY SEEDING                                       |
| 070800000-E | 310   | 36       | LF   | 15" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK                 | 4405000000-E | 1110  | 117      | SF   | WORK ZONE SIGNS (PORTABLE)                    | 6024000000-E | 1622  | 200            | LF   | TEMPORARY SLOPE DRAINS   |
| 071400000-E | 310   | 72       | LF   | 18" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK                 | 4420000000-N | 1120  | 2        | EA   | CHANGEABLE MESSAGE SIGN                       | 6027000000-N | 1622  | 5              | EA   | INLET PROTECTION AT TEMPORARY SLOPE DRAINS                             |
| 072000000-E | 310   | 8        | LF   | 24" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK                 | 4430000000-N | 1130  | 40       | EA   | DRUMS   | 6029000000-E | SP    | 500            | LF   | SAFETY FENCE   |
| 072600000-E | 310   | 60       | LF   | 30" BIT COAT CS PIPE CULVERTS, TYPE B 0.079" THICK                 | 4435000000-N | 1135  | 40       | EA   | CONES   | 6030000000-E | 1630  | 2,760          | CY   | SILT EXCAVATION  |
| 080600000-E | 310   | 2        | EA   | 15" BIT COAT CS PIPE ELBOWS, TYPE B 0.064" THICK                   | 4455000000-N | 1150  | 200      | MD   | FLAGGER                                       | 6036000000-E | 1631  | 21,605         | SY   | MATting FOR EROSION CONTROL  |
| 099500000-E | 340   | 233      | LF   | PIPE REMOVAL   | 4480000000-N | 1165  | 1        | EA   | TMIA  | 6038000000-E | SP    | 4,425<br>3,855 | SY   | PERMANENT SOIL REINFORCEMENT MAT                                       |
| 122000000-E | 545   | 435      | TON  | INCIDENTAL STONE BASE  | 4510000000-N | SP    | 16       | HR   | LAW ENFORCEMENT                               | 6042000000-E | 1632  | 1,880          | LF   | 1/4" HARDWARE CLOTH  |
| 133000000-E | 607   | 250      | SY   | INCIDENTAL MILLING   |              |       |          |      |   | 6045000000-E | SP    | 90             | LF   | *** TEMPORARY PIPE (18")   |
|             |       |          |      |  |              |       |          |      |   | 6069000000-E | 1638  | 60             | CY   | STILLING BASINS  |
|             |       |          |      |  |              |       |          |      |   | 6070000000-E | SP    | 3              | EA   | STILLING BASINS  |
|             |       |          |      |  |              |       |          |      |   | 6071020000-E | SP    | 100            | LB   | POLYACRYLAMIDE (PAM)   |
|             |       |          |      |  |              |       |          |      |   | 6071030000-E | SP    | 515            | LF   | COIR FIBER BAFFLES   |
|             |       |          |      |  |              |       |          |      |   | 6084000000-E | 1660  | 5              | ACR  | SEEDING & MULCHING   |
|             |       |          |      |  |              |       |          |      |   | 6087000000-E | 1660  | 3              | ACR  | MOWING   |
|             |       |          |      |  |              |       |          |      |   | 6090000000-E | 1661  | 50             | LB   | SEED FOR REPAIR SEEDING  |
|             |       |          |      |  |              |       |          |      |   | 6093000000-E | 1661  | 0.25           | TON  | FERTILIZER FOR REPAIR SEEDING  |
|             |       |          |      |  |              |       |          |      |   | 6096000000-E | 1662  | 125            | LB   | SEED FOR SUPPLEMENTAL SEEDING  |
|             |       |          |      |  |              |       |          |      |   | 6108000000-E | 1665  | 3.25           | TON  | FERTILIZER TOPDRESSING   |
|             |       |          |      |  |              |       |          |      |   | 6111000000-E | SP    | 28             | LF   | IMPERVIOUS DIKE  |
|             |       |          |      |  |              |       |          |      |   | 6114000000-N | SP    | 10             | HR   | SPECIALIZED HAND MOWING  |
|             |       |          |      |  |              |       |          |      |   | 6117000000-N | SP    | 12             | EA   | RESPONSE FOR EROSION CONTROL   |
|             |       |          |      |  |              |       |          |      |   | 8126000000-N | 414   | Lump Sum       |      | CULVERT EXCAVATION, STA ***** (43+40)                                  |
|             |       |          |      |  |              |       |          |      |   | 8133000000-E | 414   | 20             | TON  | FOUNDATION CONDITIONING MATERIAL, BOX CULVERT                          |
|             |       |          |      |  |              |       |          |      |   | 8196000000-E | 420   | 37.8           | CY   | CLASS A CONCRETE (CULVERT)   |
|             |       |          |      |  |              |       |          |      |   | 8245000000-E | 425   | 5,066          | LB   | REINFORCING STEEL (CULVERT)  |

5/28/99

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DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA

**SUMMARY OF EARTHWORK**  
 IN CUBIC YARDS

Note: Approximate quantities only. Shoulder Borrow, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

| R-5202 Earthwork Summary             |          |          |                 |          |            |        |        |
|--------------------------------------|----------|----------|-----------------|----------|------------|--------|--------|
| PROJECT:                             |          | R-5202   | JACKSON         |          | CBH        | SHEET  | SHEETS |
| LINE                                 | STATION  | STATION  | EXCAVATION      |          | EMBANKMENT | BORROW | WASTE  |
|                                      |          |          | UNCLASS. EXCAV. | UNDERCUT | EMB. +%    |        |        |
| SUMMARY                              |          |          |                 |          |            |        |        |
| -LREV-                               | 10+05.00 | 51+45.00 | 16,716          |          | 2,882      |        | 13,834 |
| -Y1-                                 | 13+90.00 | 16+51.89 | 29              |          | 2,792      | 2,763  |        |
| -Y2-                                 | 10+45.00 | 13+83.93 | 406             |          | 21         |        | 385    |
| SUMMARY SUBTOTALS:                   |          |          | 17,151          |          | 5,695      | 2,763  | 14,219 |
| PROJECT SUBTOTALS:                   |          |          | 17,151          |          | 5,695      | 2,763  | 14,219 |
| LOSS DUE TO CLEARING & GRUBBING      |          |          | -200            |          |            | 200    |        |
| EARTH WASTE IN LIEU OF BORROW        |          |          |                 |          |            | -2,963 | -2,963 |
| ROCK WASTE IN LIEU OF BORROW         |          |          |                 |          |            |        |        |
| PROJECT SUBTOTALS:                   |          |          | 16,951          |          | 5,695      |        | 11,256 |
| ADJUST FOR ROCK SWELL                |          |          |                 |          |            |        | 2,475  |
| APPLY EARTH SHRINKAGE TO WASTED ROCK |          |          |                 |          |            |        | 1,856  |
| PROJECT TOTALS:                      |          |          | 16,951          |          | 5,695      |        | 15,586 |
| GRAND TOTALS:                        |          |          | 16,951          |          |            |        | 15,586 |
| SAY:                                 |          |          | 17,000          |          |            |        |        |

DDE = 120 CY  
 SHOULDER BORROW = 1,750 CY

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

**PAVEMENT BREAKUP**  
 IN SQUARE YARDS

| LINE          | BEGIN STATION | END STATION | LOCATION | SQUARE YARDS |
|---------------|---------------|-------------|----------|--------------|
| -Y1-          | 15+00.00      | 16+31.81    | LT       | 78.92        |
| PROJECT TOTAL |               |             |          | 78.92        |
| SAY           |               |             |          | 80           |

**PAVEMENT REMOVAL**  
 IN SQUARE YARDS

| LINE          | BEGIN STATION | END STATION | LOCATION | SQUARE YARDS |
|---------------|---------------|-------------|----------|--------------|
| -LREV-        | 14+62.43      | 34+98.99    | LT       | 1003.73      |
| -Y1-          | 14+11.49      | 16+07.51    | LT       | 157.56       |
| -Y1-          | 16+39.31      | 16+62.15    | RT       | 2.54         |
| PROJECT TOTAL |               |             |          | 1,163.83     |
| SAY           |               |             |          | 1,200        |

5/9/06  
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STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
**RIGHT OF WAY AREA DATA**

| PARCEL NO. | PROPERTY OWNERS NAMES                        | TOTAL ACREAGE | AREA TAKEN | AREA REMAINING LT. | AREA REMAINING RT. | CONST. EASE. | TEMP. DRAIN. EASE. | PERM. DRAIN. EASE. |
|------------|--|---------------|------------|--------------------|--------------------|--------------|--------------------|--------------------|
| 1          | AIKEN STORAGE CO., D/B/A, B & H SELF-STORAGE | 7.13 AC       |            |                    |                    | 2542.94 SF   |                    |                    |
| 2          | DEBORAH K. JAHN                              | 5.80 AC       |            |                    |                    | 1327.04 SF   |                    |                    |
| 3          | JOHN N. MORGAN and wife, KIMBERLY N. MORGAN  | 5.09 AC       | 0.10 AC    | 4.98 AC            |                    | 4114.34 SF   |                    | 450.02 SF          |
| 4          | RAYMOND FORRESTER and wife, BONITA FORRESTER | 2.61 AC       | 0.14 AC    |                    | 2.47 AC            | 0.36 AC      | 206.25 SF          | 486.88 SF          |
| 6          | McCAMY CAPITAL, LLC.                         | 5.81 AC       | 3998.72 SF | 5.72 AC            |                    | 1991.71 SF   |                    |                    |
| 7          | FRANK L. FLAUTT, Jr., TRUSTEE                | 5.68 AC       | 0.16 AC    | 5.52 AC            |                    | 1.86 AC      |                    | 704.41 SF          |
| 8          | WILLIAM C. BLAKE, JR.                        | 1.75 AC       |            |                    |                    | 0.18 AC      |                    | 140.00 SF          |
| 9          | TIMOTHY S. HOUSTON                           | 1.45 AC       | 2157.83 SF |                    | 1.40 AC            | 0.13 AC      |                    |                    |
| 10         | PETER T. AFFATATO & WIFE YOLANDE AFFATATO    | 1.12 AC       |            |                    |                    | 0.12 AC      |                    | 187.05 SF          |
| 11         | CASTELLINI MANAGEMENT CO., LP                | 3.62 AC       |            |                    |                    | 1220.25 SF   |                    | 246.96 SF          |
| 12         | CAROLYN G. ALEXANDER and MARTHA R. GIBSON    | UTD           | 2502.98 SF |                    | UTD                | 0.16 AC      |                    | 150.00 SF          |
| 13         | JACKSON COUNTY BOARD OF EDUCATION            | 32.00 AC      | 0.28 AC    | 30.63 AC           |                    | 0.65 AC      | 951.31 SF          | 3882.13 SF         |
| 15         | MARCUS MORGAN and wife, LISA MORGAN          | 2.62 AC       |            |                    |                    | 0.15 AC      | 576.19 SF          | 302.65 SF          |
| 16         | ELISE TERRELL                                | 50.00 AC      |            |                    |                    | 0.42 AC      |                    | 564.80 SF          |
| 17         | HATTLER'S PLANTATION, LLC.                   | 2.86 AC       | 1238.77 SF |                    | 2.83 AC            | 2544.55 SF   |                    |                    |
| 19         | VANESSA K. PATRICK                           | 2.92 AC       | 3170.00 SF |                    | 2.85 AC            |              |                    |                    |
| 20         | KATHERINE HENRY and ANN ROBINSON             | UTD           | 0.48 AC    | UTD                |                    | 0.33 AC      |                    |                    |
| 21         | LBM INDUSTRIES                               | 4.04 AC       |            |                    |                    | 940.14 SF    |                    |                    |

UTD = UNABLE TO DETERMINE



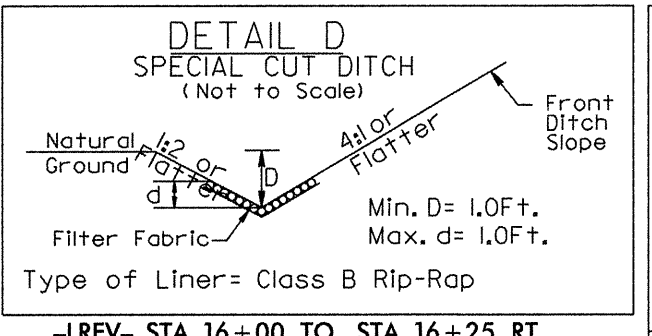
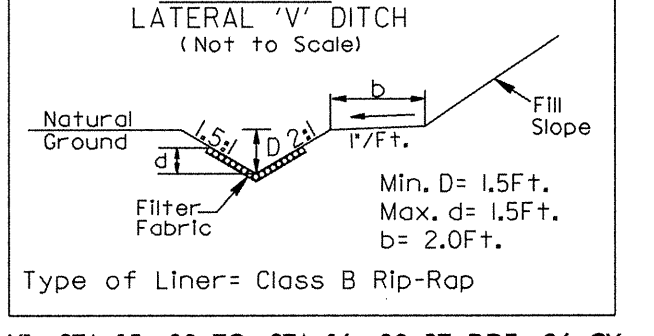
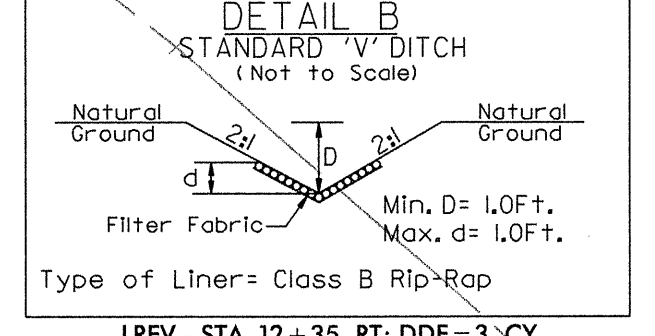
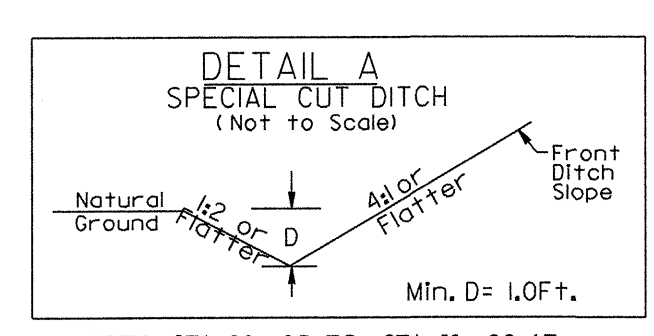
**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2224A-A5"

WITH NAD 1983 STATE PLANE GROUND COORDINATES OF NORTHING: 531164.0779(ft) EASTING: 770135.6022(ft) ALL LINEAR DISTANCES ARE LOCALIZED HORIZONTAL DISTANCES. THE VERTICAL DATUM IS BASED ON NCOS (TVA) MONUMENT "LHT-1655" (ELEV. 3638.10') (NAVD 88) THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2224A-A5" TO -LREV- STATION 10+05.00 IS S 3° 17' 30.2" W 6.037.07'

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

| -LREV-           |                                     |                   |                                     | -YI-              |                                     |                   |                                     |
|------------------|-------------------------------------|-------------------|-------------------------------------|-------------------|-------------------------------------|-------------------|-------------------------------------|
| PI Sta 16+50.01  | $\Delta = 43^\circ 58' 09.1''$ (RT) | PI Sta 25+60.52   | $\Delta = 51^\circ 24' 09.9''$ (RT) | PI Sta 10+49.47   | $\Delta = 10^\circ 34' 00.3''$ (LT) | PI Sta 11+59.57   | $\Delta = 82^\circ 02' 49.1''$ (RT) |
| D = 7' 47' 43.2" |                                     | D = 13' 48' 22.4" |                                     | D = 10' 42' 34.2" |                                     | D = 8' 51' 04.0"  |                                     |
| L = 564.04'      |                                     | L = 372.32'       |                                     | L = 98.67'        |                                     | L = 100.24'       |                                     |
| T = 296.73'      |                                     | T = 199.74'       |                                     | T = 49.47'        |                                     | T = 60.90'        |                                     |
| R = 735.00'      |                                     | R = 415.00'       |                                     | R = 535.00'       |                                     | R = 70.00'        |                                     |
| Se = 0.06        |                                     | Se = 0.08         |                                     |                   |                                     |                   |                                     |
| Ro = 110'        |                                     |                   |                                     |                   |                                     |                   |                                     |
|                  |                                     |                   |                                     |                   |                                     | PI Sta 12+35.33   | $\Delta = 11^\circ 52' 57.5''$ (RT) |
|                  |                                     |                   |                                     |                   |                                     | D = 16' 22' 12.8" |                                     |
|                  |                                     |                   |                                     |                   |                                     | L = 136.89'       |                                     |
|                  |                                     |                   |                                     |                   |                                     | T = 36.42'        |                                     |
|                  |                                     |                   |                                     |                   |                                     | R = 80.00'        |                                     |
|                  |                                     |                   |                                     |                   |                                     | Se = 0.08         |                                     |
|                  |                                     |                   |                                     |                   |                                     | Ro = 130          |                                     |

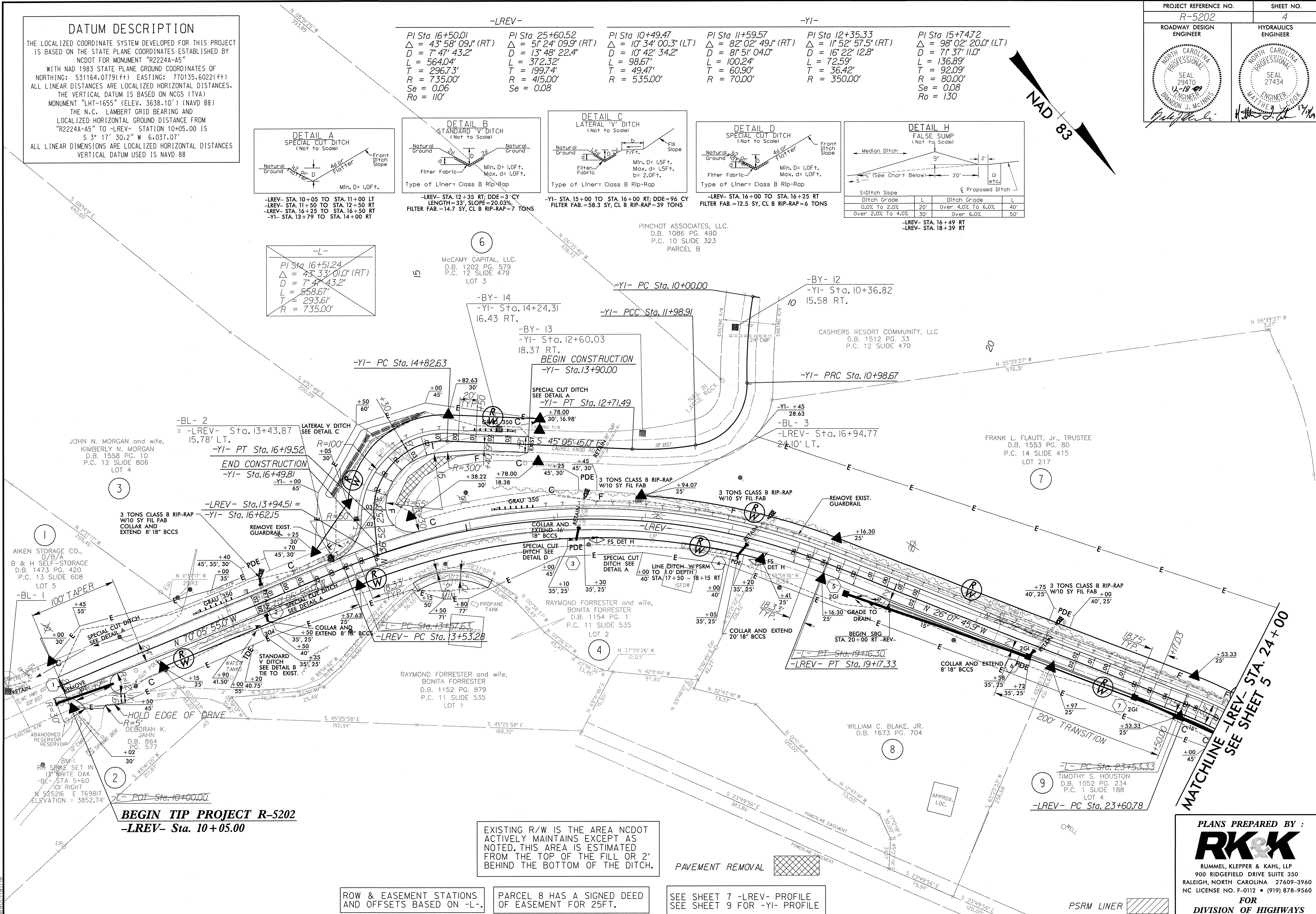


DETAIL H: FALSE SUMP (Not to Scale)

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

-L-

PI Sta 16+51.24  
 $\Delta = 43^\circ 33' 01.0''$  (RT)  
 D = 7' 47' 43.2"  
 L = 558.67'  
 T = 293.61'  
 R = 735.00'



EXISTING R/W IS THE AREA NCDOT ACTIVELY MAINTAINS EXCEPT AS NOTED. THIS AREA IS ESTIMATED FROM THE TOP OF THE FILL OR 2' BEHIND THE BOTTOM OF THE DITCH.

ROW & EASEMENT STATIONS AND OFFSETS BASED ON -L-.

PARCEL 8 HAS A SIGNED DEED OF EASEMENT FOR 25FT.

SEE SHEET 7 -LREV- PROFILE SEE SHEET 9 FOR -YI- PROFILE

PLANS PREPARED BY :

**RK&K**

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

FOR  
 DIVISION OF HIGHWAYS

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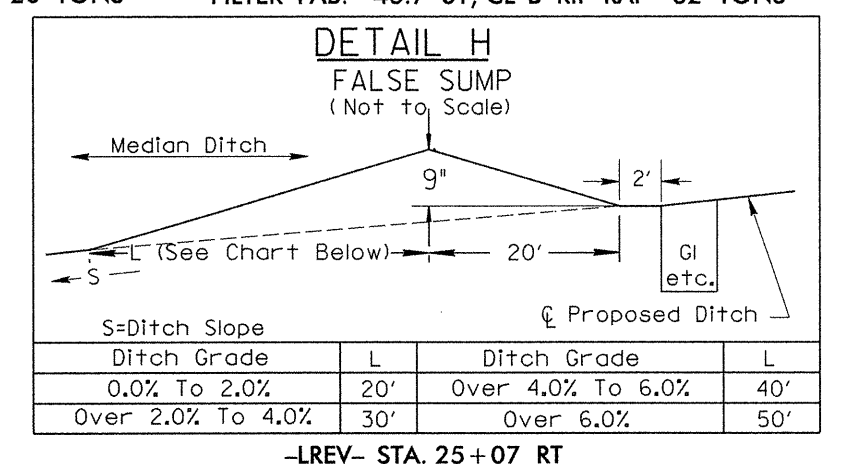
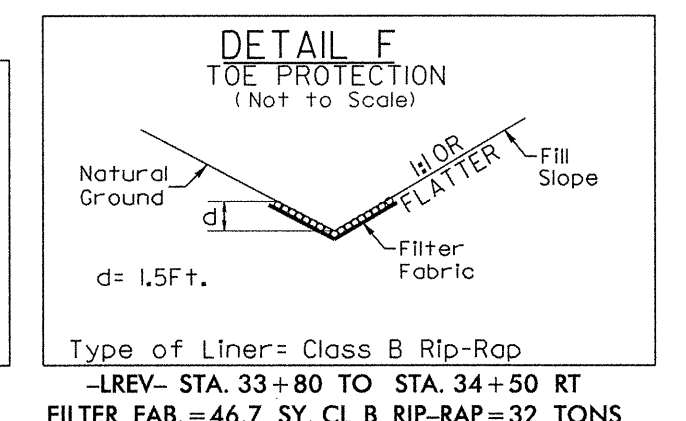
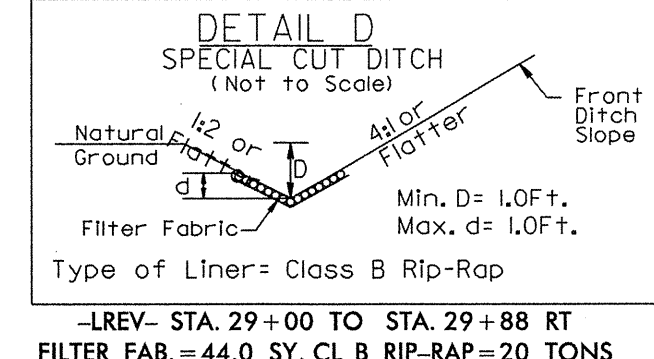
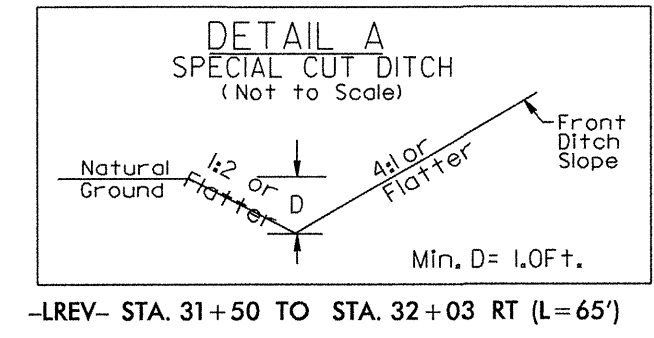
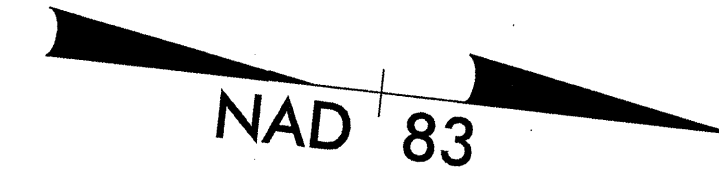
-LREV-

|   |  |   |   |
|---|--|---|---|
| PI Sta 25+60.52<br>Δ = 5° 24' 09.9" (RT)<br>D = 13' 48' 22.4"<br>L = 372.32'<br>T = 199.74'<br>R = 415.00'<br>Se = 0.08<br>Ro = SEE PLANS | PI Sta 30+65.06<br>Δ = 2° 13' 19.3" (LT)<br>D = 13' 28' 52.9"<br>L = 150.00'<br>T = 75.79'<br>R = 425.00'<br>Se = 0.08<br>Ro = SEE PLANS | PI Sta 33+10.43<br>Δ = 6° 58' 22.0" (LT)<br>D = 20' 06' 13.6"<br>L = 308.26'<br>T = 171.15'<br>R = 285.00'<br>Se = 0.12<br>Ro = SEE PLANS | PI Sta 36+58.27<br>Δ = 5° 51' 39.4" (RT)<br>D = 19' 05' 54.9"<br>L = 282.02'<br>T = 152.40'<br>R = 300.00'<br>Se = 0.10<br>Ro = SEE PLANS |
|---|--|---|---|

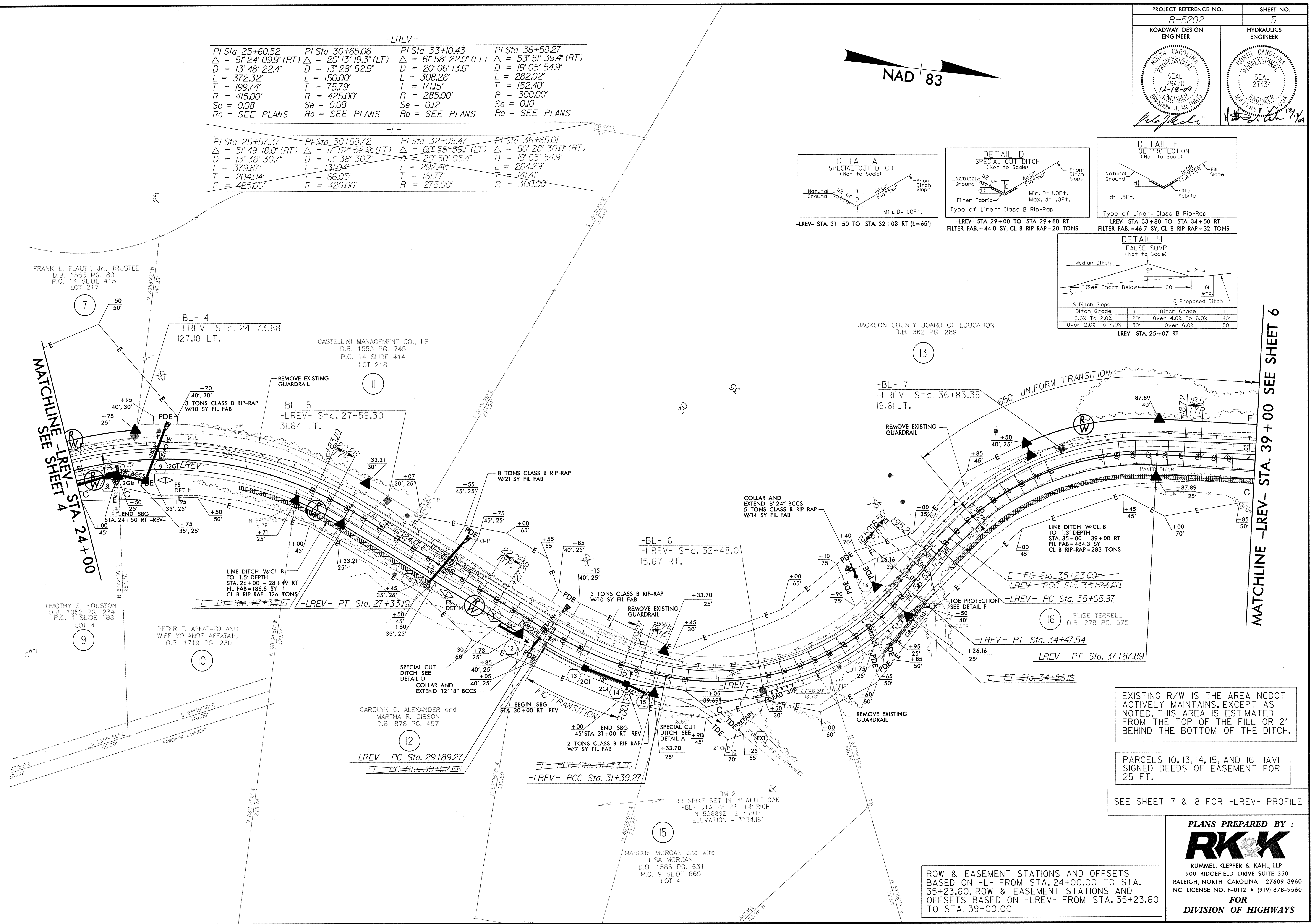
  

-L-

|  |   |  |  |
|--|---|--|--|
| PI Sta 25+57.37<br>Δ = 5° 49' 18.0" (RT)<br>D = 13' 38' 30.7"<br>L = 379.87'<br>T = 204.04'<br>R = 420.00' | PI Sta 30+68.72<br>Δ = 1° 52' 32.9" (LT)<br>D = 13' 38' 30.7"<br>L = 131.04'<br>T = 66.05'<br>R = 420.00' | PI Sta 32+95.47<br>Δ = 6° 55' 59.1" (LT)<br>D = 20' 50' 05.4"<br>L = 292.46'<br>T = 161.77'<br>R = 275.00' | PI Sta 36+65.01<br>Δ = 5° 28' 30.0" (RT)<br>D = 19' 05' 54.9"<br>L = 264.29'<br>T = 141.41'<br>R = 300.00' |
|--|---|--|--|



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EXISTING R/W IS THE AREA NCDOT ACTIVELY MAINTAINS, EXCEPT AS NOTED, THIS AREA IS ESTIMATED FROM THE TOP OF THE FILL OR 2' BEHIND THE BOTTOM OF THE DITCH.

PARCELS 10, 13, 14, 15, AND 16 HAVE SIGNED DEEDS OF EASEMENT FOR 25 FT.

SEE SHEET 7 & 8 FOR -LREV- PROFILE

ROW & EASEMENT STATIONS AND OFFSETS BASED ON -L- FROM STA. 24+00.00 TO STA. 35+23.60. ROW & EASEMENT STATIONS AND OFFSETS BASED ON -LREV- FROM STA. 35+23.60 TO STA. 39+00.00

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  
FOR  
DIVISION OF HIGHWAYS

8/17/99

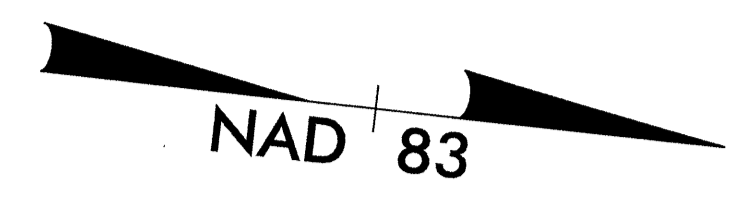
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|--|-----------------------|
| PROJECT REFERENCE NO.<br><b>R-5202</b> | SHEET NO.<br><b>6</b> |
| ROADWAY DESIGN ENGINEER                | HYDRAULICS ENGINEER   |
|  |                       |

**-LREV-**

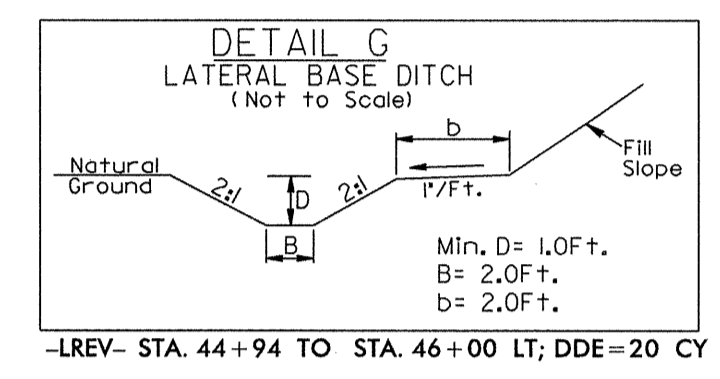
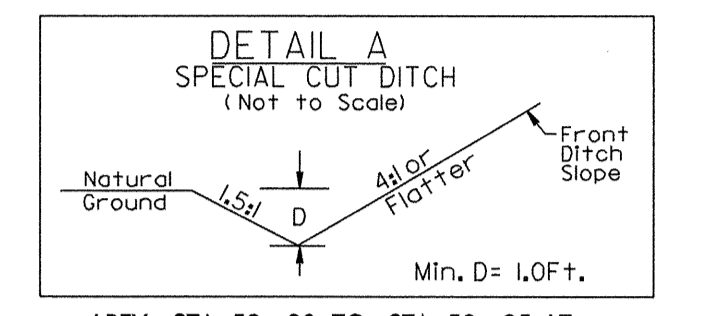
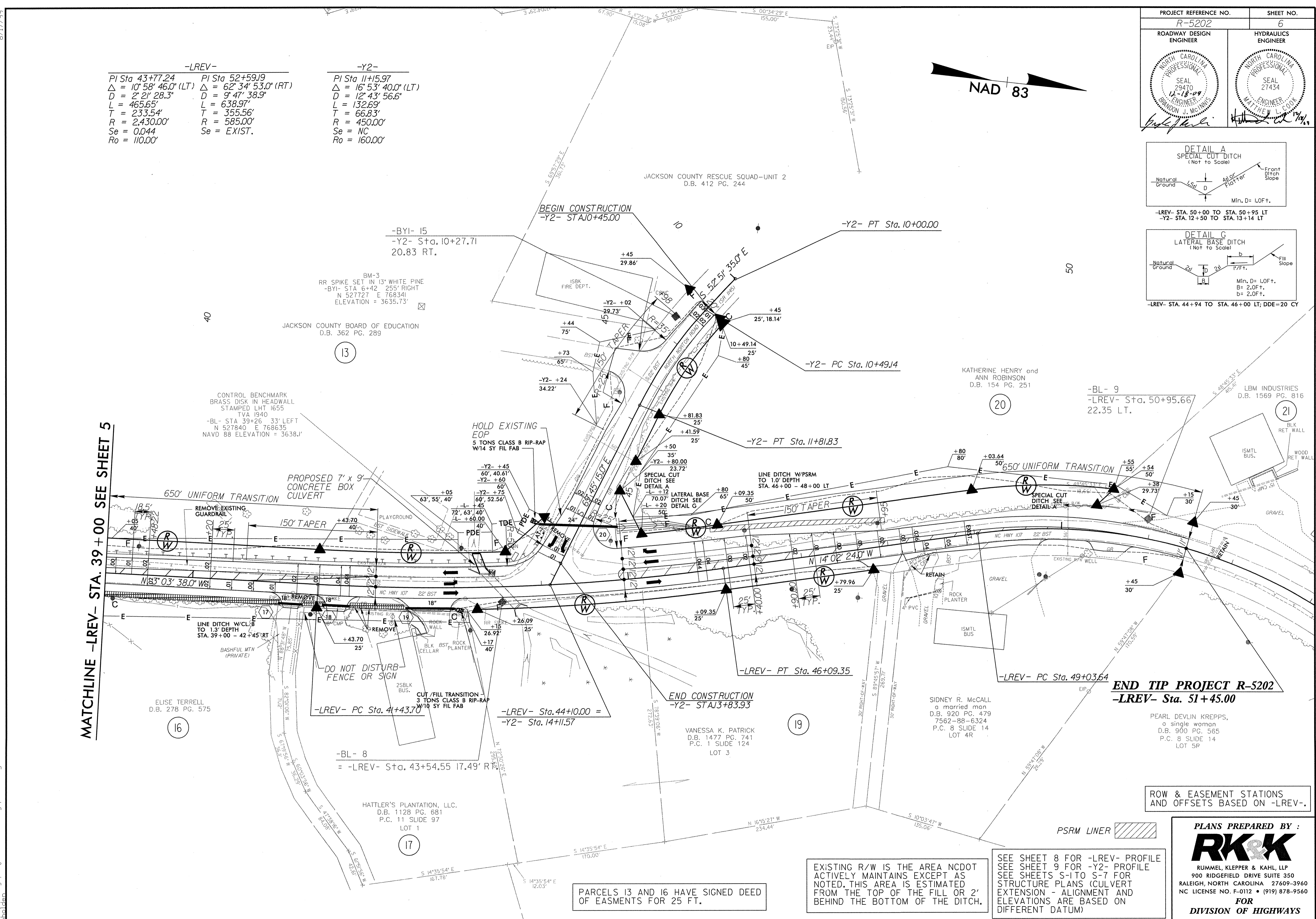
|                                       |                                       |
|---------------------------------------|---------------------------------------|
| PI Sta 43+77.24                       | PI Sta 52+59.19                       |
| $\Delta = 10^{\circ} 58' 46.0''$ (LT) | $\Delta = 62^{\circ} 34' 53.0''$ (RT) |
| D = 2' 21" 28.3"                      | D = 9' 47" 38.9"                      |
| L = 465.65'                           | L = 638.97'                           |
| T = 233.54'                           | T = 355.56'                           |
| R = 2,430.00'                         | R = 585.00'                           |
| Se = 0.044                            | Se = EXIST.                           |
| Ro = 110.00'                          |                                       |

**-Y2-**

|                                       |
|---------------------------------------|
| PI Sta 11+15.97                       |
| $\Delta = 16^{\circ} 53' 40.0''$ (LT) |
| D = 12' 43" 56.6"                     |
| L = 132.69'                           |
| T = 66.83'                            |
| R = 450.00'                           |
| Se = NC                               |
| Ro = 160.00'                          |



MATCHLINE -LREV- STA. 39+00 SEE SHEET 5



-BL- 9  
-LREV- Sta. 50+95.66  
22.35 LT.

**END TIP PROJECT R-5202**  
-LREV- Sta. 51+45.00

ROW & EASEMENT STATIONS AND OFFSETS BASED ON -LREV-.

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  
**FOR**  
DIVISION OF HIGHWAYS

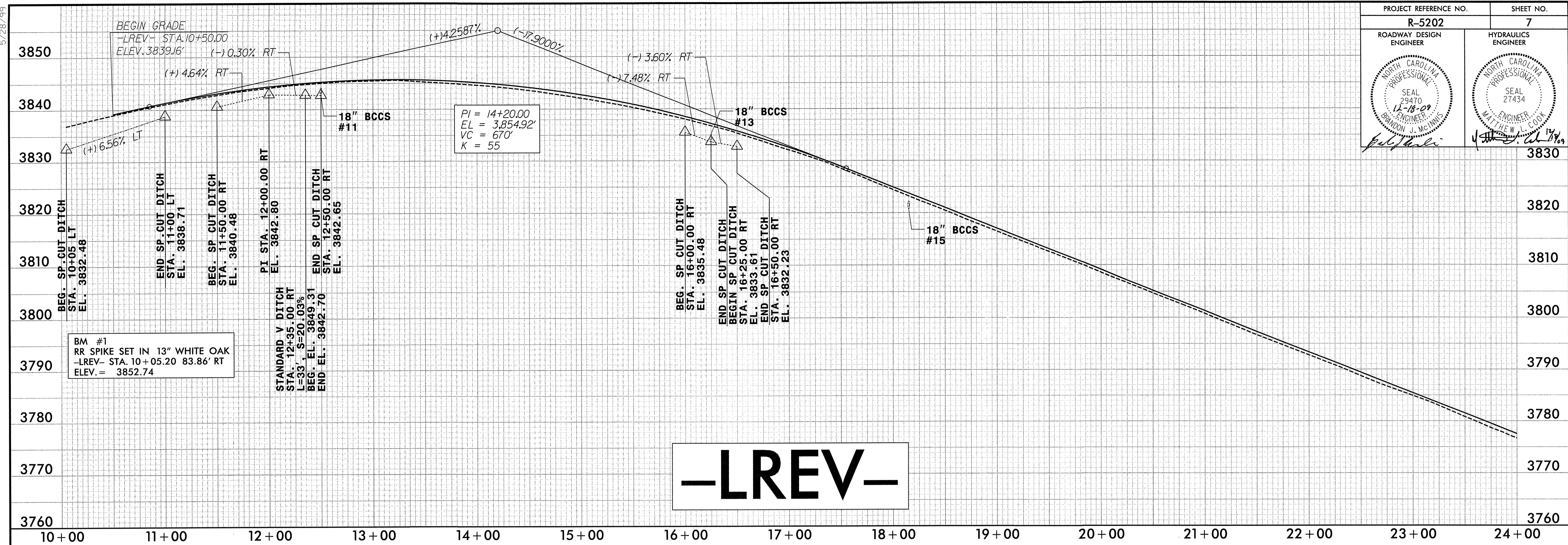
EXISTING R/W IS THE AREA NCDOT ACTIVELY MAINTAINS EXCEPT AS NOTED. THIS AREA IS ESTIMATED FROM THE TOP OF THE FILL OR 2' BEHIND THE BOTTOM OF THE DITCH.

SEE SHEET 8 FOR -LREV- PROFILE  
SEE SHEET 9 FOR -Y2- PROFILE  
SEE SHEETS S-1 TO S-7 FOR STRUCTURE PLANS (CULVERT EXTENSION - ALIGNMENT AND ELEVATIONS ARE BASED ON DIFFERENT DATUM)

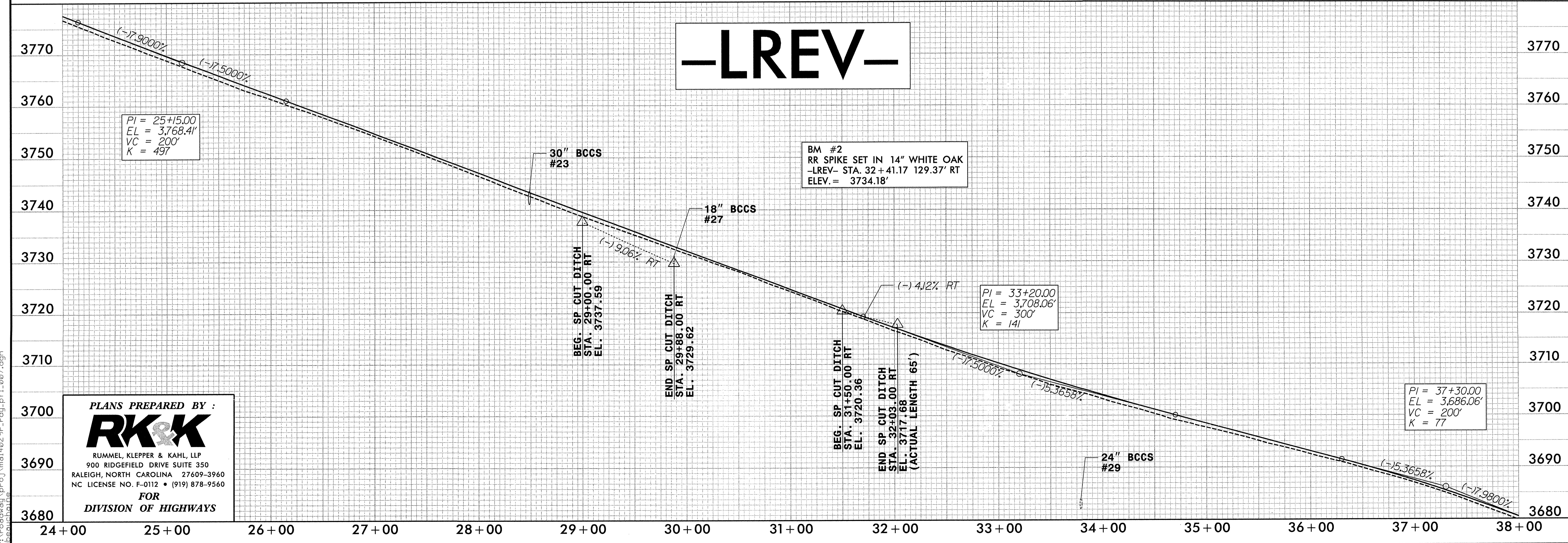
PARCELS 13 AND 16 HAVE SIGNED DEED OF EASEMENTS FOR 25 FT.

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|  |                        |
|--|------------------------|
| PROJECT REFERENCE NO.<br><b>R-5202</b> | SHEET NO.<br><b>7</b>  |
| ROADWAY DESIGN ENGINEER                | HYDRAULICS ENGINEER    |
|  |                        |
| <i>Brandon J. McInnis</i>              | <i>Matthew A. Cook</i> |



**-LREV-**



**-LREV-**

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

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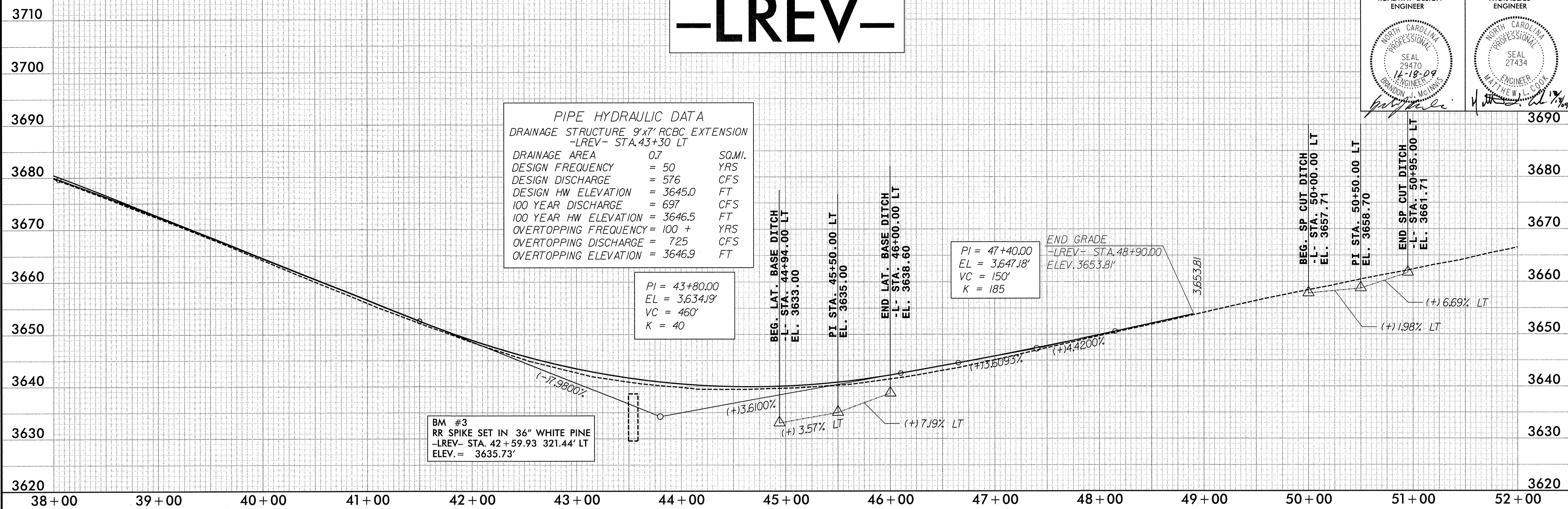
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|  |                       |
|--|-----------------------|
| PROJECT REFERENCE NO.<br><b>R-5202</b> | SHEET NO.<br><b>8</b> |
| ROADWAY DESIGN ENGINEER                | HYDRAULICS ENGINEER   |
|  |                       |

# -LREV-

**PIPE HYDRAULIC DATA**  
 DRAINAGE STRUCTURE 9"x7' RCBC EXTENSION  
 -LREV- STA. 43+30 LT

|                       |          |        |
|-----------------------|----------|--------|
| DRAINAGE AREA         | 0.7      | SQ.MI. |
| DESIGN FREQUENCY      | = 50     | YRS    |
| DESIGN DISCHARGE      | = 576    | CFS    |
| DESIGN HW ELEVATION   | = 3645.0 | FT     |
| 100 YEAR DISCHARGE    | = 697    | CFS    |
| 100 YEAR HW ELEVATION | = 3646.5 | FT     |
| OVERTOPPING FREQUENCY | = 100 +  | YRS    |
| OVERTOPPING DISCHARGE | = 725    | CFS    |
| OVERTOPPING ELEVATION | = 3646.9 | FT     |



**BM #3**  
 RR SPIKE SET IN 36" WHITE PINE  
 -LREV- STA. 42+59.93 321.44' LT  
 ELEV. = 3635.73'

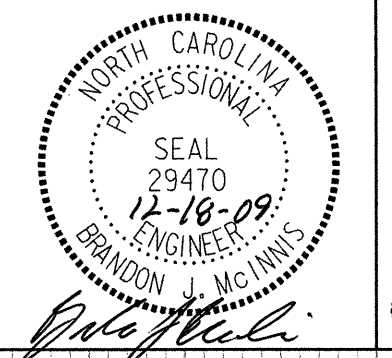
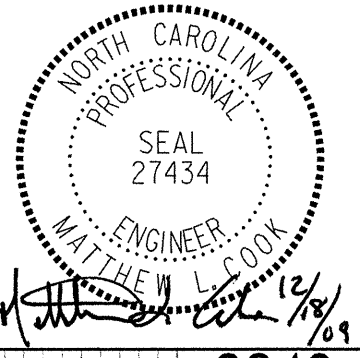
**BM #4**  
 RR SPIKE SET IN 30" HEMLOCK  
 -LREV- STA. 57+24.71 126.91' LT  
 ELEV. = 3711.76'

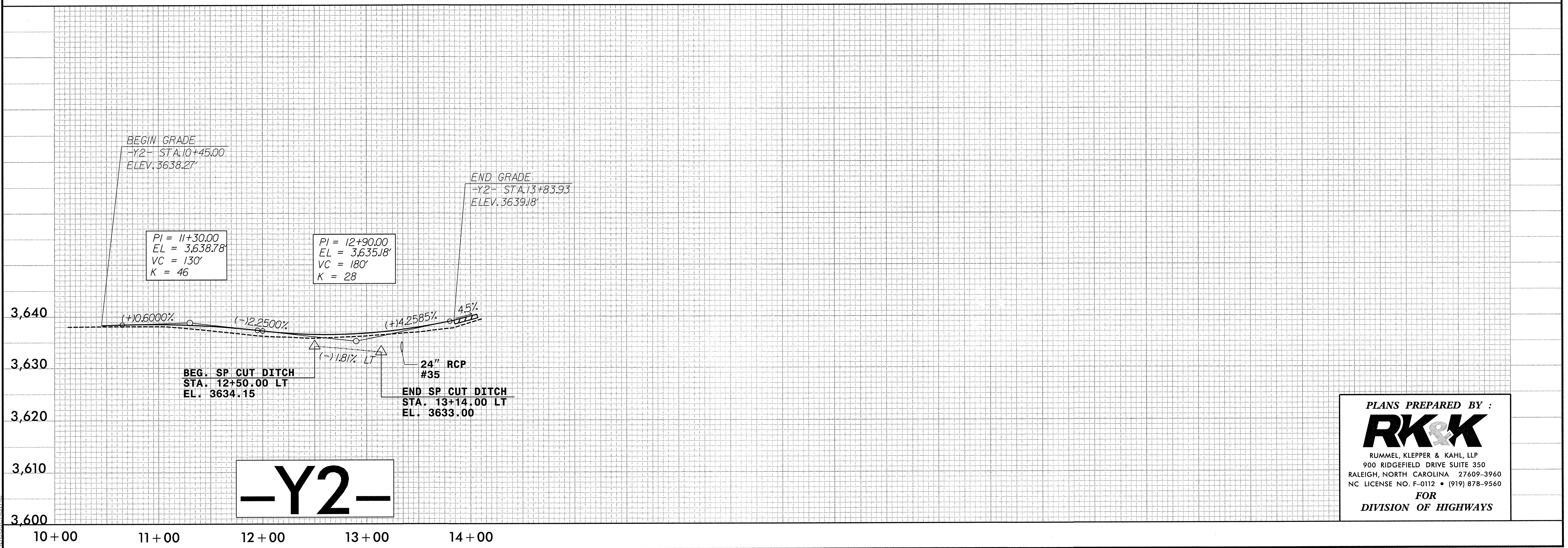
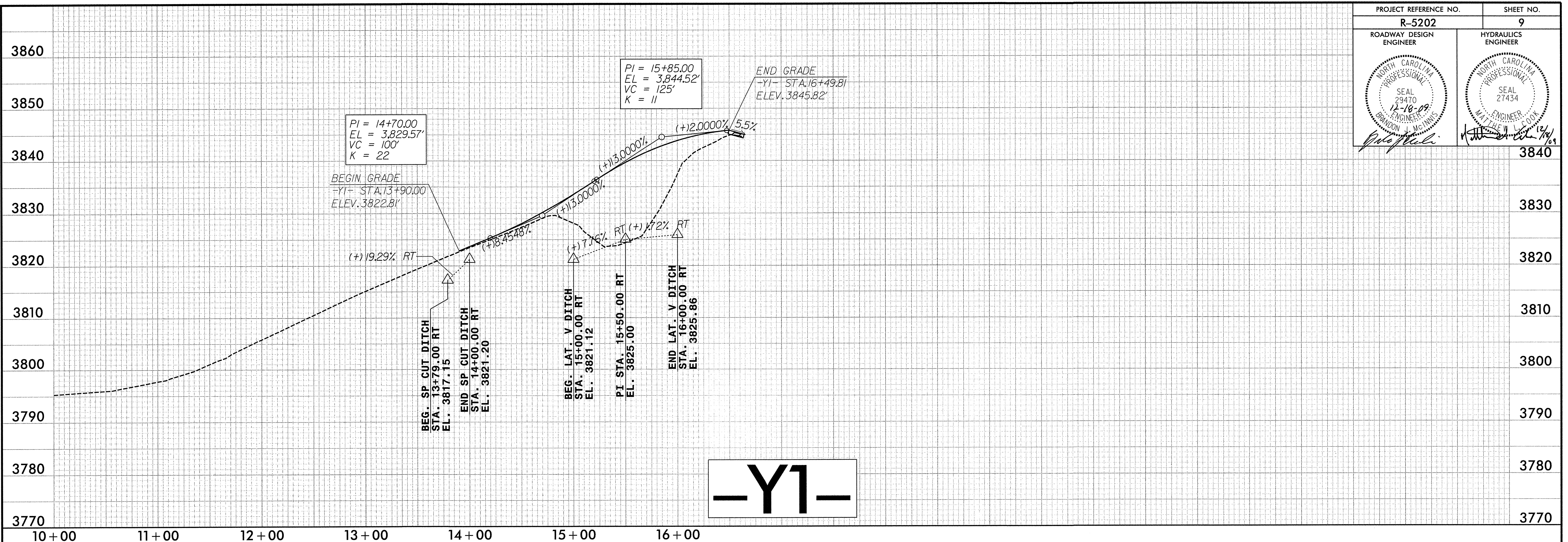
# -LREV-

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 RUMMEL, KLEPPER & KAHL, LLP  
 900 RIDGEFIELD DRIVE SUITE 350  
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| PROJECT REFERENCE NO.<br><b>R-5202</b>  |  | SHEET NO.<br><b>9</b>   |
| ROADWAY DESIGN ENGINEER   |  | HYDRAULICS ENGINEER   |
|  |  |  |



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