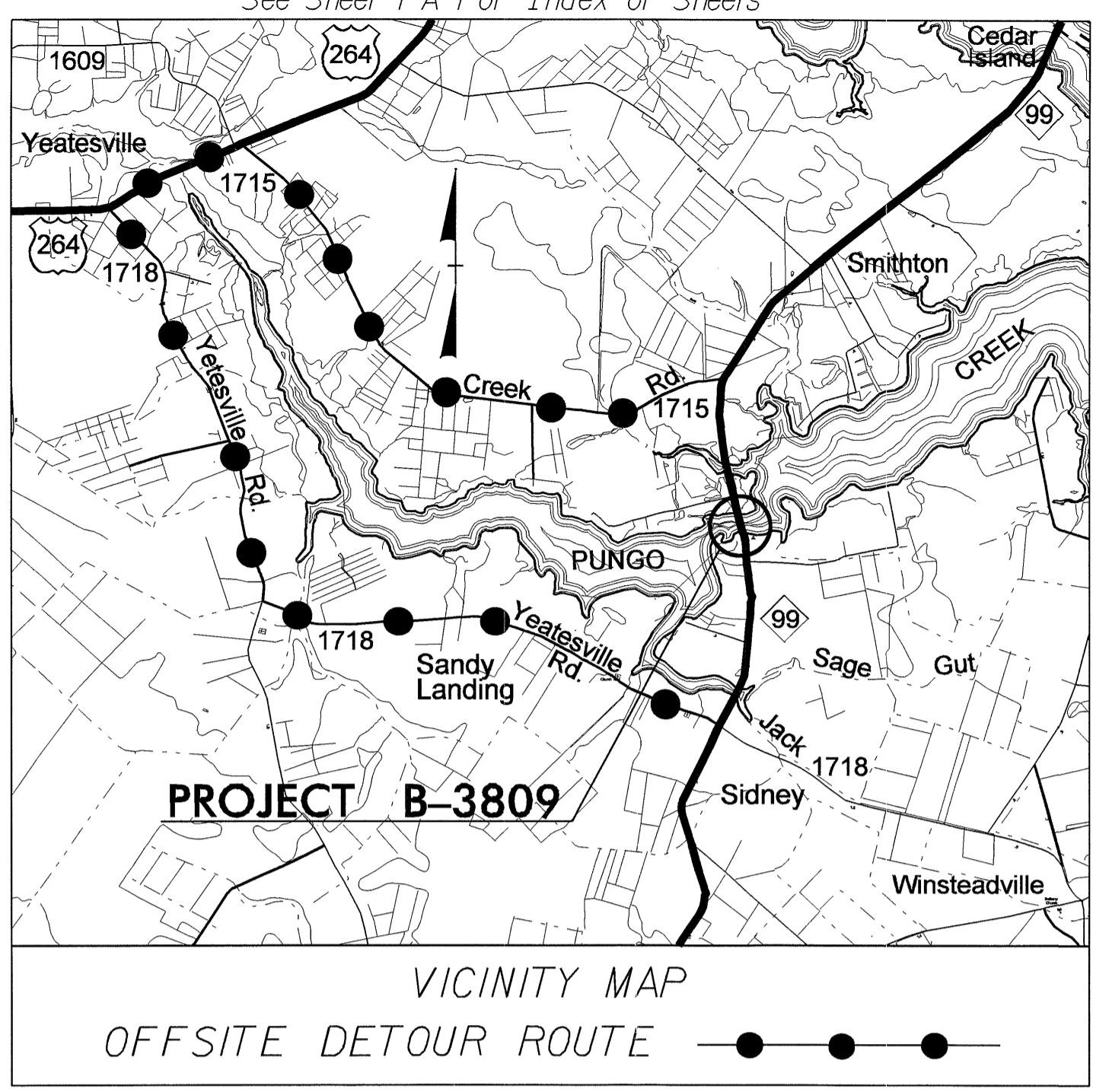


09/08/99

See Sheet 1-A For Index of Sheets



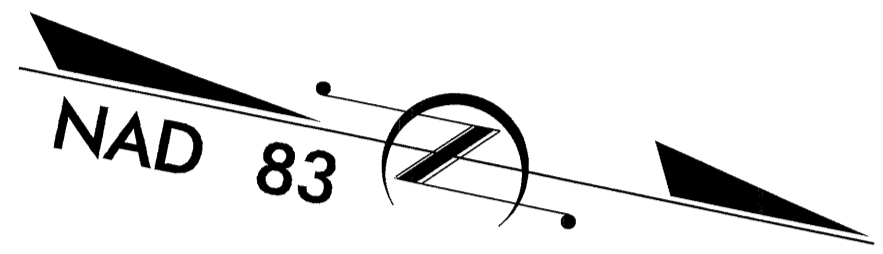
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# BEAUFORT COUNTY

LOCATION: BRIDGE 64 OVER PUNGO CREEK ON NC 99

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

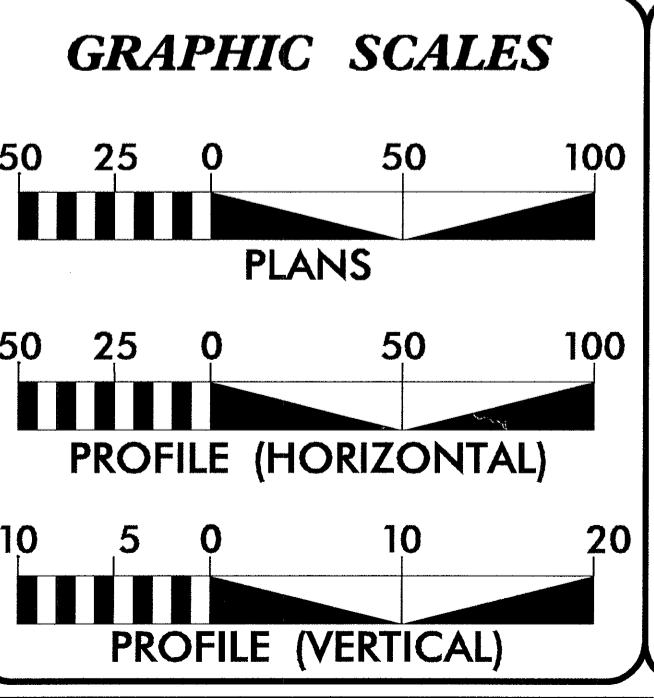
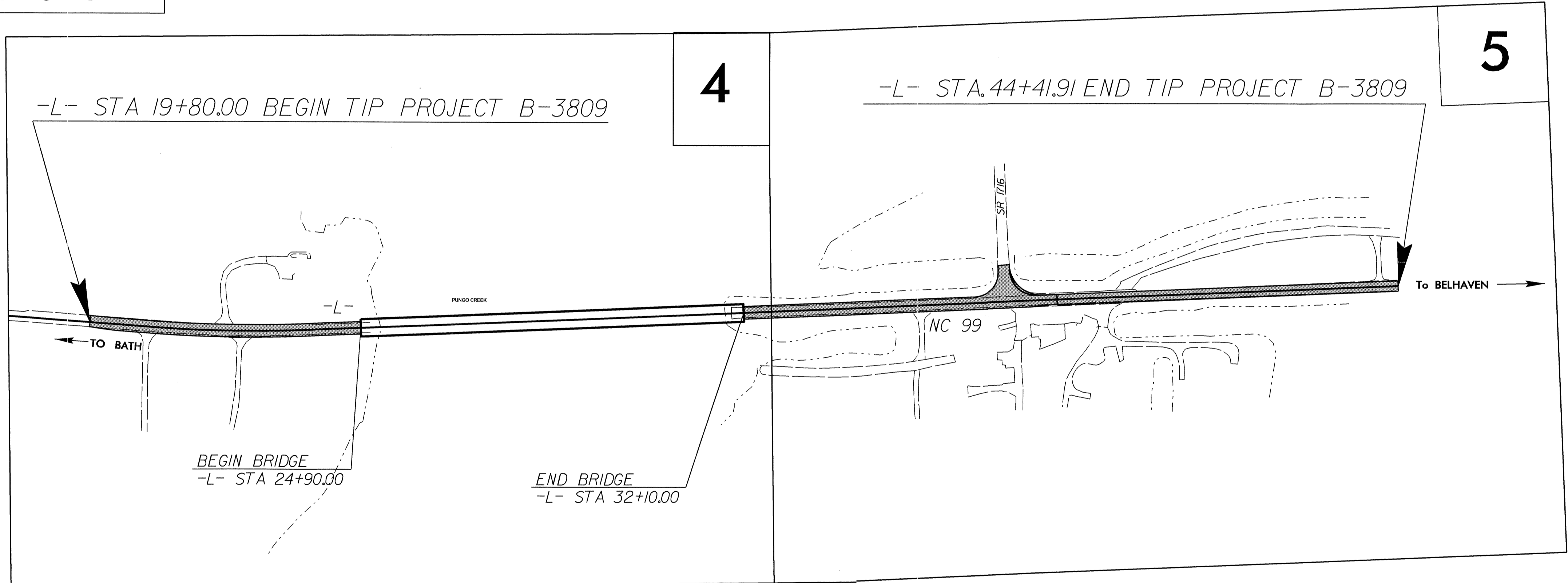
| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.    | TOTAL SHEETS |
|-----------------|-----------------------------|--------------|--------------|
| N.C.            | B-3809                      | 1            |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION  |              |
| 33264.1.1       | BRSTP - 0099 (2)            | PE           |              |
| 33264.2.1       | BRSTP - 0099 (2)            | ROW/UTIL     |              |
| 33264.3.1       | BRSTP - 0099 (6)            | CONSTRUCTION |              |



TIP PROJECT: B-3809

CONTRACT: C202325

CONTRACT: C202325



**DESIGN DATA**

|            |        |
|------------|--------|
| ADT 2009 = | 3,600  |
| ADT 2035 = | 6,080  |
| DHV =      | 10 %   |
| D =        | 60 %   |
| T =        | 9 % *  |
| V =        | 60 MPH |
| * TTST 3   | DUAL 6 |

**PROJECT LENGTH**

|  |   |             |
|--|---|-------------|
| LENGTH OF ROADWAY TIP PROJECT B-3809   | = | 0.330 MILES |
| LENGTH OF STRUCTURE TIP PROJECT B-3809 | = | 0.136 MILES |
| TOTAL LENGTH OF STATE PROJECT B-3809   | = | 0.466 MILES |

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
FEBRUARY 23, 2009

LETTING DATE:  
FEBRUARY 16, 2010

TED S. WALLS  
PROJECT ENGINEER

ALLISON K. WHITE  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

*Paul A. [Signature]*

SEAL 19880  
PAUL A. [Signature]

SIGNATURE:

**ROADWAY DESIGN ENGINEER**

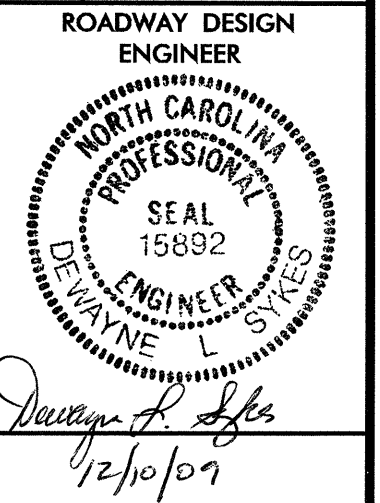
*[Signature]*

SEAL 15892  
[Signature]

**DIVISION OF HIGHWAYS**  
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

09-DEC-2009 07:31  
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\$\$\$\$\$USERNAME\$\$\$\$\$



| SHEET NUMBER       | SHEET  |
|--------------------|--|
| 1                  | TITLE SHEET  |
| 1-A                | INDEX OF SHEETS, GENERAL NOTES, AND A LIST OF STANDARDS          |
| 1-B                | CONVENTIONAL SYMBOLS   |
| 1-C                | SURVEY CONTROL SHEETS  |
| 2                  | PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS         |
| 2- A1-A2           | METHOD OF PIPE INSTALLATION DETAILS                              |
| 2- B               | ANCHORAGE OF FRAMES DETAIL                                       |
| 2- C               | ROCK PLATING DETAILS   |
| 3                  | SUMMARY OF QUANTITIES  |
| 3-A                | SUMMARY OF DRAINAGE QUANTITIES AND SUMMARY OF GUARDRAIL          |
| 3-B                | EARTHWORK SUMMARY, BREAKING OF EXISTING ASPHALT PAVEMENT SUMMARY |
| 3-C                | PARCEL INDEX SHEET   |
| 4 THRU 5           | PLAN SHEET   |
| 6                  | PROFILE SHEET  |
| TCP-1 THRU TCP-3   | TRAFFIC CONTROL PLANS  |
| PMP-1 THRU PMP-2   | PAVEMENT MARKING PLANS   |
| EC-1 THRU EC- 7    | EROSION CONTROL PLANS  |
| SIGN-1 THRU SIGN-5 | SIGNING PLANS  |
| RF-1               | REFORESTATION  |
| UC-1 THRU UC-2     | UTILITIES CONSTRUCTION PLANS                                     |
| UO-1 THRU UO-3     | UTILITIES BY OTHERS PLANS  |
| X-1 THRU X-11      | CROSS-SECTION PLANS  |
| X-1A               | CROSS-SECTION VOLUME SHEET                                       |
| S-1 THRU S-39      | STRUCTURE PLANS  |

**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 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. 560.01.

**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.

**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.

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

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

**UTILITIES:**  
UTILITY OWNERS ON THIS PROJECT ARE  
TRI COUNTY COMMUNICATIONS  
BEAUFORT COUNTY WATER DEPARTMENT  
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 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   |
|--|---|
| DIVISION 2 - EARTHWORK                     |   |
| 200.03                                     | Method of Clearing - Method III   |
| 225.02                                     | Guide for Grading Subgrade - Secondary and Local                              |
| 225.04                                     | Method of Obtaining Superelevation - Two Lane Pavement                        |
| DIVISION 4 - MAJOR STRUCTURES              |   |
| 422.10                                     | Reinforced Bridge Approach Fills  |
| DIVISION 5 - SUBGRADE, BASES AND SHOULDERS |   |
| 560.01                                     | Method of Shoulder Construction - High Side of Superelevated Curve - Method I |
| DIVISION 6 - ASPHALT BASES AND PAVEMENTS   |   |
| 654.01                                     | Pavement Repairs  |
| DIVISION 8 - INCIDENTALS                   |   |
| 840.29                                     | Frames and Narrow Slot Flat Grates  |
| 840.35                                     | Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates     |
| 840.46                                     | Traffic Bearing Precast Drainage Structure                                    |
| 840.66                                     | Drainage Structure Steps  |
| 846.04                                     | Drop Inlet Installation in Shoulder Berm Gutter                               |
| 848.04                                     | Street Turnout  |
| 862.01                                     | Guardrail Placement   |
| 862.02                                     | Guardrail Installation  |
| 862.03                                     | Structure Anchor Units  |
| 876.01                                     | Rip Rap in Channels   |
| 876.02                                     | Guide for Rip Rap at Pipe Outlets   |

EFF. 07-18-06  
REV. 01-02-07

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:

Table listing symbols for boundaries and property: State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin, Property Corner, Property Monument, Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary.

BUILDINGS AND OTHER CULTURE:

Table listing symbols for buildings and other culture: Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam.

HYDROLOGY:

Table listing symbols for hydrology: Stream or Body of Water, Hydro, Pool or Reservoir, Jurisdictional Stream, Buffer Zone 1, Buffer Zone 2, Flow Arrow, Disappearing Stream, Spring, Wetland, Proposed Lateral, Tail, Head Ditch, False Sump.

RAILROADS:

Table listing symbols for railroads: Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

RIGHT OF WAY:

Table listing symbols for right of way: Baseline Control Point, Existing Right of Way Marker, Existing Right of Way Line, Proposed Right of Way Line, Proposed Right of Way Line with Iron Pin and Cap Marker, Proposed Right of Way Line with Concrete or Granite Marker, Existing Control of Access, Proposed Control of Access, Existing Easement Line, Proposed Temporary Construction Easement, Proposed Temporary Drainage Easement, Proposed Permanent Drainage Easement, Proposed Permanent Utility Easement.

ROADS AND RELATED FEATURES:

Table listing symbols for roads and related features: Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Wheel Chair Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Equality Symbol, Pavement Removal.

VEGETATION:

Table listing symbols for vegetation: Single Tree, Single Shrub, Hedge, Woods Line, Orchard, Vineyard.

EXISTING STRUCTURES:

Table listing symbols for existing structures: MAJOR: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall; MINOR: Head and End Wall, Pipe Culvert, Footbridge, Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer.

UTILITIES:

Table listing symbols for utilities: POWER: Existing Power Pole, Proposed Power Pole, Existing Joint Use Pole, Proposed Joint Use Pole, Power Manhole, Power Line Tower, Power Transformer, U/G Power Cable Hand Hole, H-Frame Pole, Recorded U/G Power Line, Designated U/G Power Line (S.U.E.\*); TELEPHONE: Existing Telephone Pole, Proposed Telephone Pole, Telephone Manhole, Telephone Booth, Telephone Pedestal, Telephone Cell Tower, U/G Telephone Cable Hand Hole, Recorded U/G Telephone Cable, Designated U/G Telephone Cable (S.U.E.\*), Recorded U/G Telephone Conduit, Designated U/G Telephone Conduit (S.U.E.\*), Recorded U/G Fiber Optics Cable, Designated U/G Fiber Optics Cable (S.U.E.\*).

WATER:

Table listing symbols for water: Water Manhole, Water Meter, Water Valve, Water Hydrant, Recorded U/G Water Line, Designated U/G Water Line (S.U.E.\*), Above Ground Water Line.

TV:

Table listing symbols for TV: TV Satellite Dish, TV Pedestal, TV Tower, U/G TV Cable Hand Hole, Recorded U/G TV Cable, Designated U/G TV Cable (S.U.E.\*), Recorded U/G Fiber Optic Cable, Designated U/G Fiber Optic Cable (S.U.E.\*).

GAS:

Table listing symbols for gas: Gas Valve, Gas Meter, Recorded U/G Gas Line, Designated U/G Gas Line (S.U.E.\*), Above Ground Gas Line.

SANITARY SEWER:

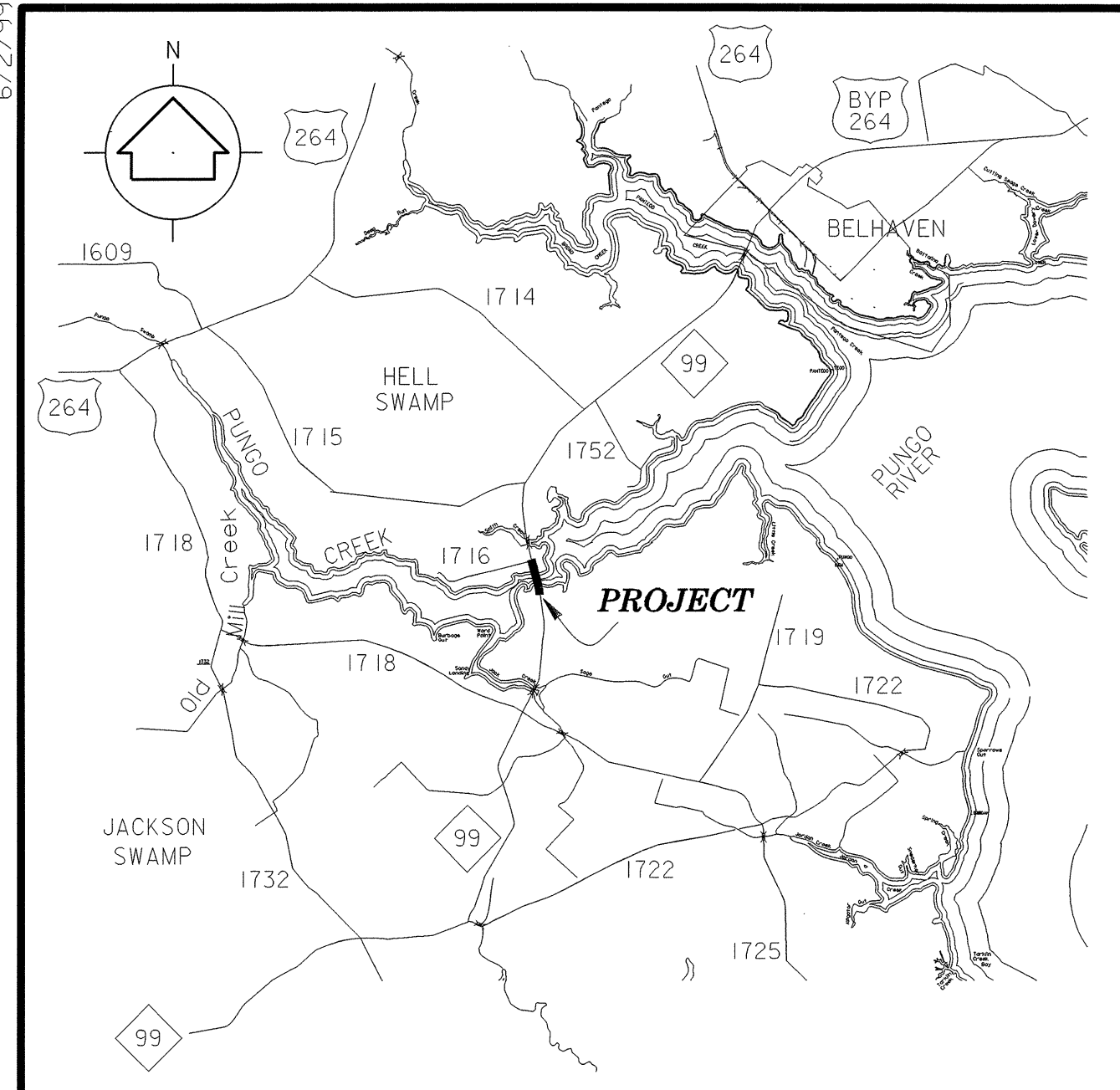
Table listing symbols for sanitary sewer: Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, Recorded SS Forced Main Line, Designated SS Forced Main Line (S.U.E.\*).

MISCELLANEOUS:

Table listing symbols for miscellaneous: Utility Pole, Utility Pole with Base, Utility Located Object, Utility Traffic Signal Box, Utility Unknown U/G Line, U/G Tank; Water, Gas, Oil, A/G Tank; Water, Gas, Oil, U/G Test Hole (S.U.E.\*), Abandoned According to Utility Records, End of Information.



# SURVEY CONTROL SHEET B-3809



VICINITY MAP

| BL POINT | DESC. | NORTH       | EAST         | ELEVATION | L STATION              | OFFSET   |
|----------|-------|-------------|--------------|-----------|------------------------|----------|
| 1        | BL-1  | 642874.0930 | 2693066.4600 | 8.35      | OUTSIDE PROJECT LIMITS |          |
| 2        | BY-7  | 643328.9480 | 2693013.9760 | 6.78      | OUTSIDE PROJECT LIMITS |          |
| 3        | BL-2  | 643863.2150 | 2692932.7140 | 6.00      | 20+03.16               | 13.98 RT |
| 4        | BL-3  | 644329.0540 | 2692815.8260 | 10.06     | 24+83.16               | 15.23 LT |
| 5        | BL-4  | 645017.9720 | 2692643.8370 | 10.39     | 31+93.22               | 16.18 LT |
| 6        | BL-5  | 645505.9300 | 2692554.5150 | 4.22      | 36+88.32               | 14.68 RT |
|          | BL-6  | 646221.2030 | 2692375.0900 | 6.14      | 44+25.76               | 12.86 RT |

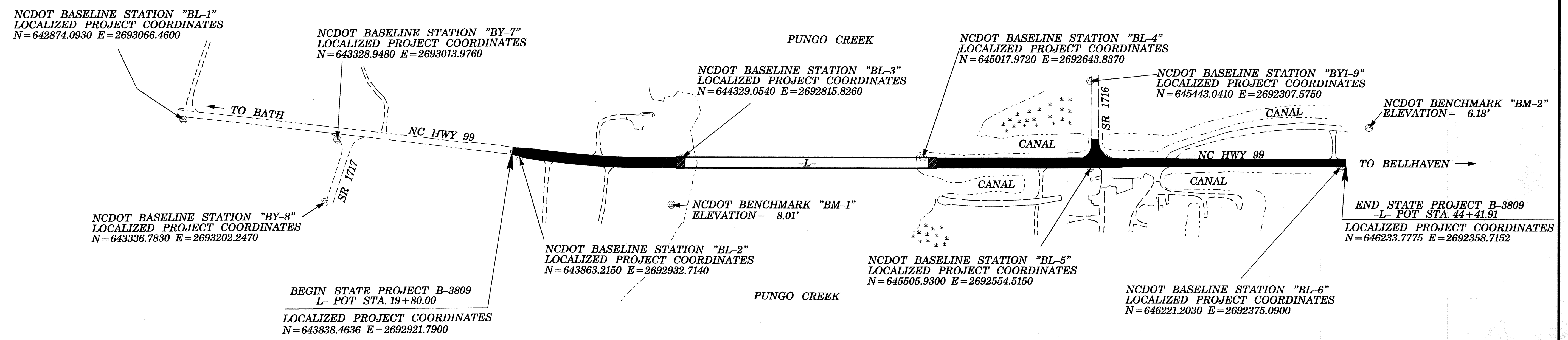
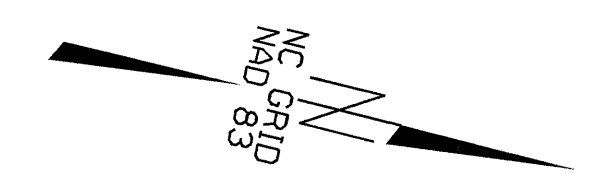
  

| BY POINT | DESC. | NORTH       | EAST         | ELEVATION | L STATION              | OFFSET |
|----------|-------|-------------|--------------|-----------|------------------------|--------|
| 7        | BY-7  | 643328.9480 | 2693013.9760 | 6.78      | OUTSIDE PROJECT LIMITS |        |
| 8        | BY-8  | 643336.7830 | 2693202.2470 | 6.76      | OUTSIDE PROJECT LIMITS |        |

| BY1 POINT | DESC. | NORTH       | EAST         | ELEVATION | L STATION | OFFSET    |
|-----------|-------|-------------|--------------|-----------|-----------|-----------|
| 9         | BY1-9 | 645443.0410 | 2692307.5750 | 3.18      | 36+86.78  | 240.13 LT |
| 5         | BL-5  | 645505.9300 | 2692554.5150 | 4.22      | 36+88.32  | 14.68 RT  |

\*\*\*\*\*  
 BM1 ELEVATION = 8.01  
 N 644332 E 2692958  
 L STATION 24+51 124 RIGHT  
 NCGS MON. 'DAVIS RESET 1984'  
 \*\*\*\*\*  
 BM2 ELEVATION = 6.18  
 N 646275 E 2692242  
 L STATION 44+42  
 N 70° 36' 11.0" W DIST 123.70  
 RR SPIKE SET IN 12" PINE TREE  
 \*\*\*\*\*



**DATUM DESCRIPTION**  
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "DAVIS AZ MARK" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 647740.4532(FT) EASTING: 2694481.9798(FT) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998874 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "DAVIS AZ MARK" TO -L- STATION 19+80.00 IS S21°47'37.5"W 4202.35 (FT) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

**NOTES:**


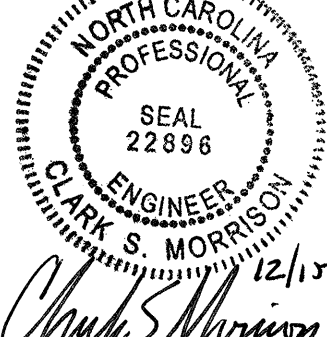
- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.NCDOT.ORG/DOH/RECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/DOH/RECONSTRUCT/HIGHWAY/LOCATION/PROJECT/)  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 B3809\_LS\_CONTROL\_080403.TXT  
 SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.  
 © INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

NOTE: DRAWING NOT TO SCALE

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6/2/09

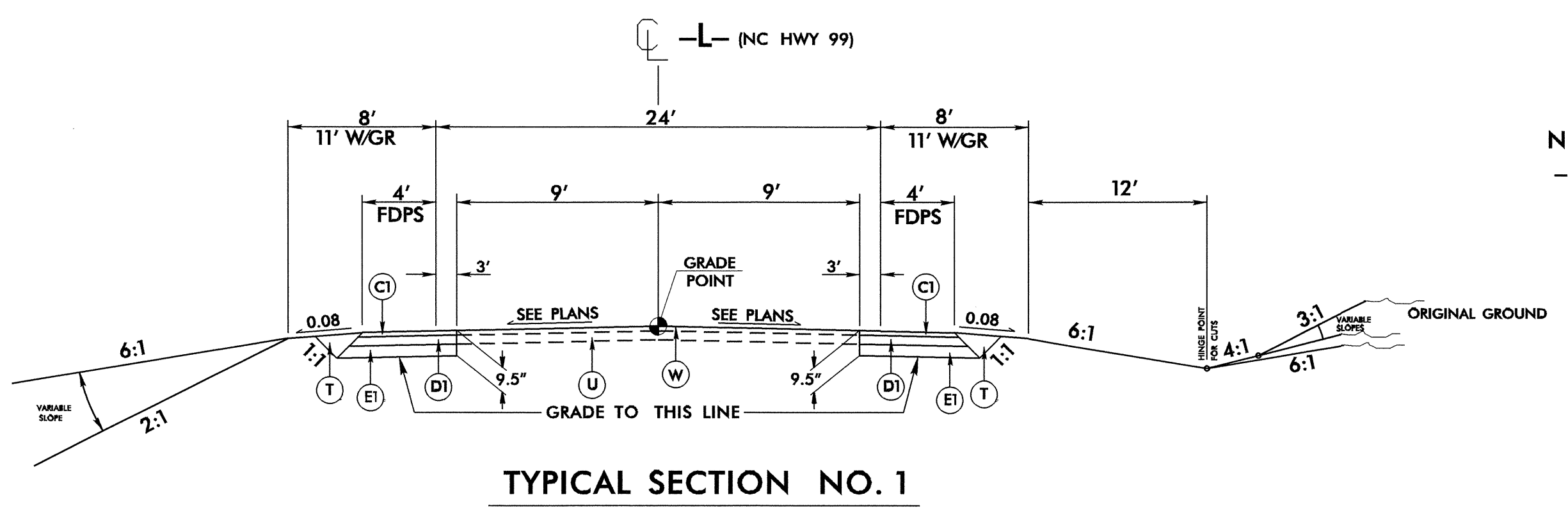
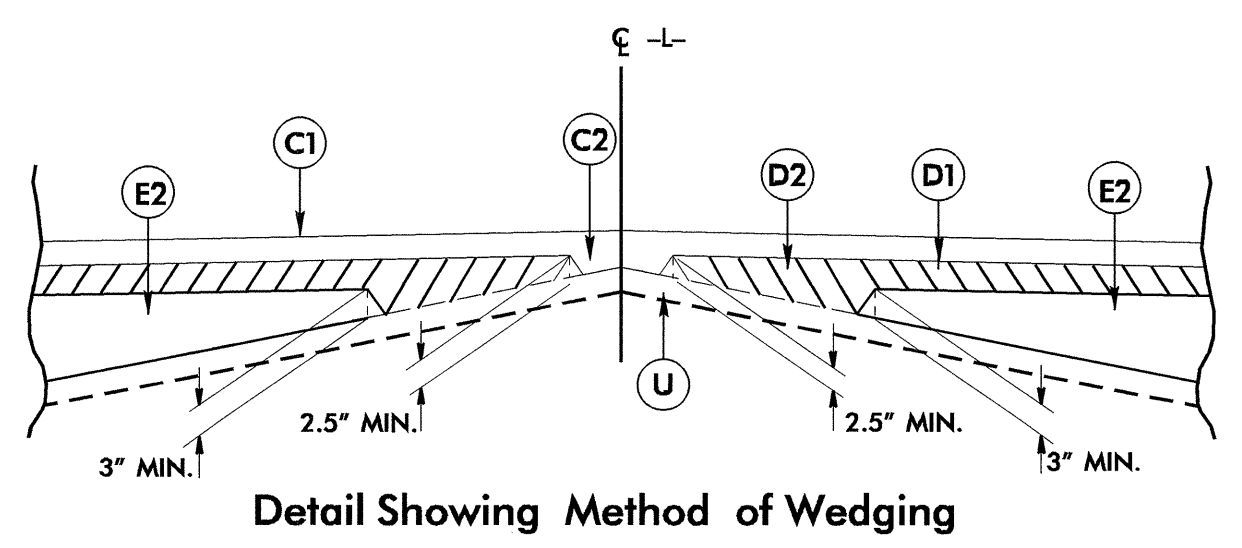
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|  |   |
|--|---|
| PROJECT REFERENCE NO.<br>B-3809  | SHEET NO.<br>2  |
| ROADWAY DESIGN ENGINEER<br> | PAVEMENT DESIGN ENGINEER<br> |

*DeWayne L. Sykes* 12/10/09  
*Clark S. Morrison* 12/10/09

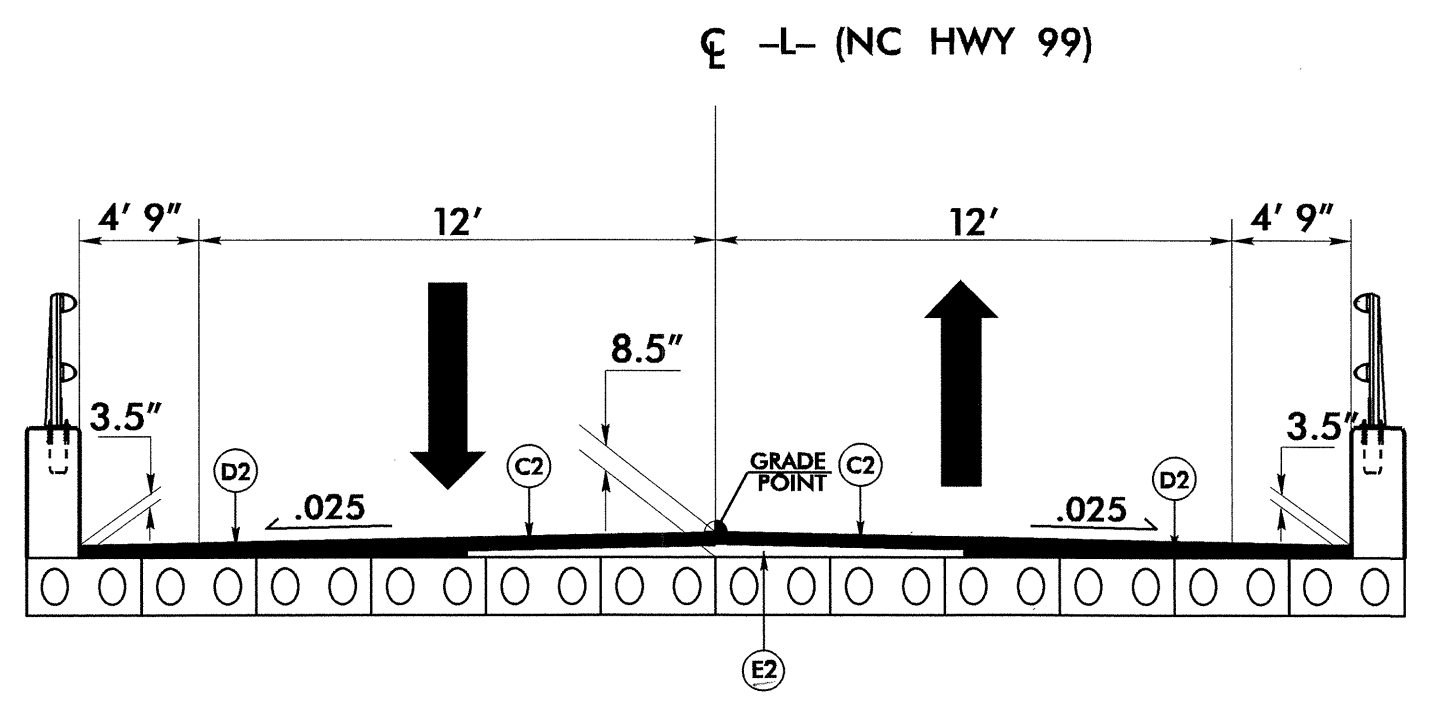
| PAVEMENT SCHEDULE |   |
|-------------------|---|
| C1                | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS  |
| C2                | PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.                                    |
| D1                | PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.   |
| D2                | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH. |
| E1                | PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.  |
| E2                | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.         |
| T                 | EARTH MATERIAL.   |
| U                 | EXISTING PAVEMENT.  |
| W                 | VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)   |

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

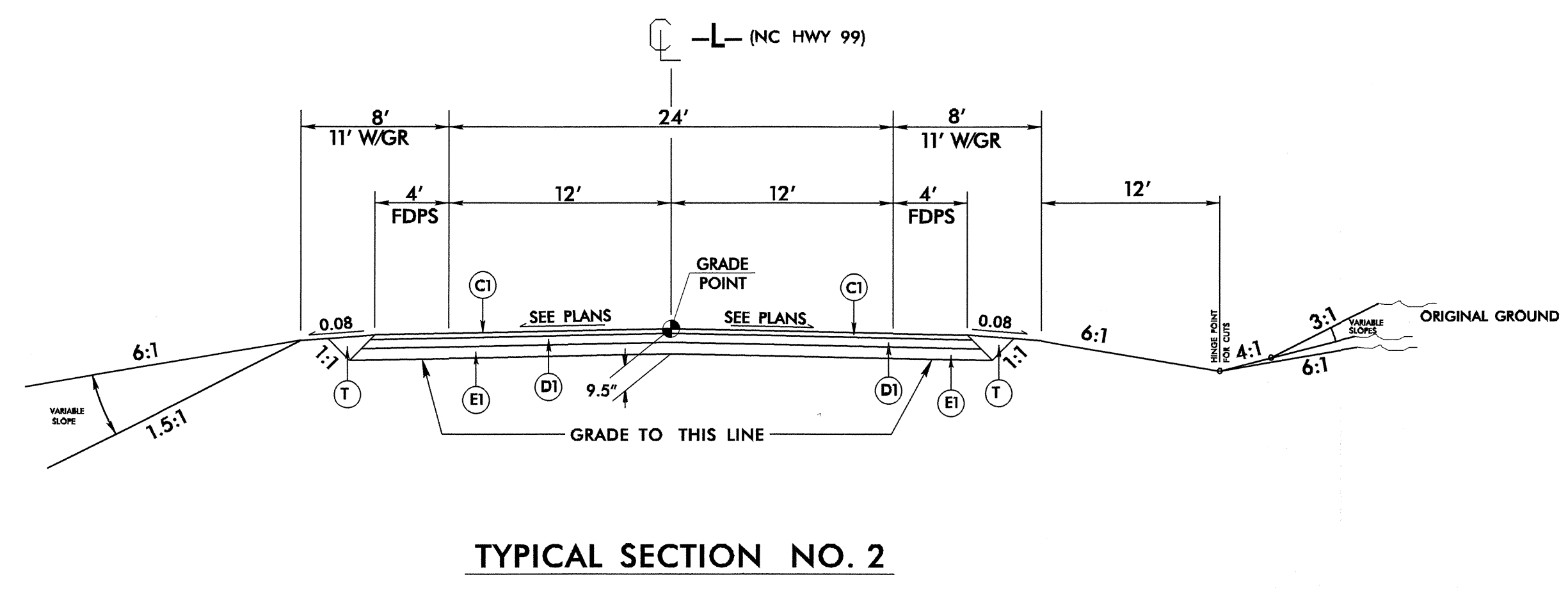


NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1  
 -L- STA 19+80.00 To 20+30.00

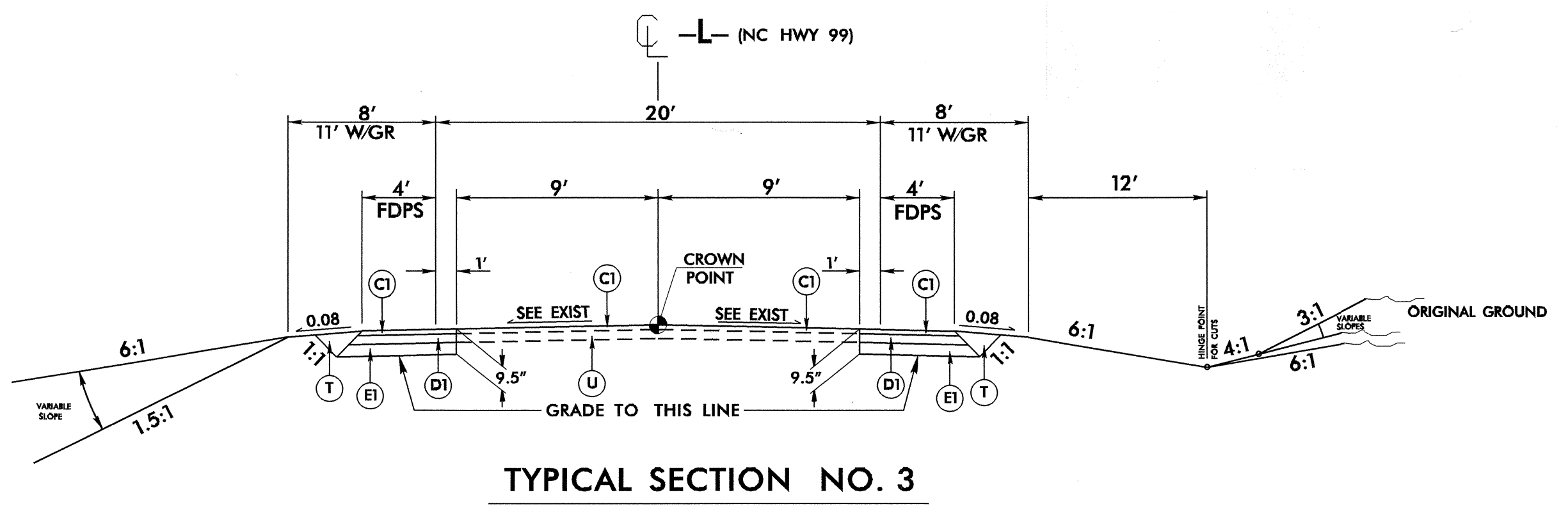
USE TYPICAL SECTION NO. 1 AS FOLLOWS  
 -L- STA 20+30.00 To 22+50.00  
 -L- STA 36+00.00 To 37+50.00



TYPICAL SECTION ON STRUCTURE  
 -L- STA 24+90.00 TO 32+10.00



USE TYPICAL SECTION NO. 2 AS FOLLOWS  
 -L- STA 22+50.00 To 24+90.00 (BEGIN BRIDGE)  
 -L- STA 32+10.00 (END BRIDGE) To 36+00.00



NOTE: 50' TRANSITION FROM 24' PAVEMENT WIDTH TO 20' PAVEMENT WIDTH -L- STA 37+50.00 TO 38+00.00

USE TYPICAL SECTION NO. 3 AS FOLLOWS  
 -L- STA 38+00.00 To 44+41.91



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

**7-06**

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

**FLEXIBLE PIPE**

SHEET 1 OF 3  
**300D01**

**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. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.
- DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.
- 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.

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

**7-06**

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

**RIGID PIPE**

SHEET 2 OF 3  
**300D01**

**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. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.
- DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.
- 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.

**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: 7/29/09  
 FILE SPEC: /enr/ward/stds/stdstodetails/30001/0300d01.dgn



30-JUL-2009 08:49  
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STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

7-06

ENGLISH DETAIL DRAWING FOR  
METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

FLEXIBLE PIPE

| Diameter (inches) | Round Corrugated Steel Pipe<br>2 2/3 x 1/2 corrugation ** |         |     |     |     |
|-------------------|---|---------|-----|-----|-----|
|                   | Minimum cover (inches)                                    | (Ga) 16 | 14  | 12  | 10  |
| 12                | 12  | 204     | 256 | 12  | 8   |
| 15                | 12  | 162     | 204 |     |     |
| 18                | 12  | 135     | 169 | 239 |     |
| 21                | 12  | 115     | 145 | 204 |     |
| 24                | 12  | 100     | 126 | 178 |     |
| 30                | 12  | 79      | 100 | 142 |     |
| 36                | 12  | 65      | 83  | 117 | 152 |
| 42                | 12  | 55      | 70  | 100 | 130 |
| 48                | 12  | 48      | 61  | 87  | 113 |
| 54                | 12  | 44      | 54  | 77  | 100 |
| 60                | 12  |         |     | 69  | 90  |
| 66                | 12  |         |     |     | 81  |
| 72                | 12  |         |     |     | 74  |
| 78                | 12  |         |     |     | 81  |
| 84                | 12  |         |     |     | 69  |

| Diameter (inches) | Round Corrugated Aluminum Pipe<br>2 2/3 x 1/2 corrugation ** |         |     |     |     |
|-------------------|--|---------|-----|-----|-----|
|                   | Minimum cover (inches)                                       | (Ga) 16 | 14  | 12  | 10  |
| 12                | 12   | 123     | 155 | 216 | 281 |
| 15                | 12   | 98      | 123 | 174 | 224 |
| 18                | 12   | 81      | 102 | 144 | 187 |
| 21                | 12   | 69      | 87  | 123 | 160 |
| 24                | 12   | 60      | 76  | 108 | 139 |
| 27                | 12   | 67      | 95  | 123 | 151 |
| 30                | 12   | 60      | 85  | 111 | 136 |
| 36                | 12   | 50      | 71  | 92  | 113 |
| 42                | 12   | 42      | 60  | 78  | 96  |
| 48                | 12   | 48      | 52  | 68  | 84  |
| 54                | 12   |         | 46  | 50  | 74  |
| 60                | 12   |         |     | 50  | 62  |
| 66                | 12   |         |     |     | 51  |
| 72                | 12   |         |     |     | 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 F949 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 NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

7-06

ENGLISH DETAIL DRAWING FOR  
METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

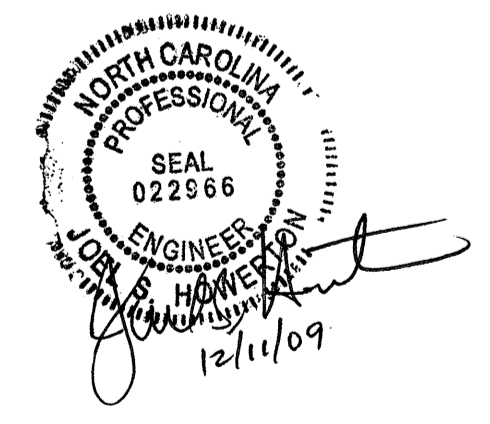
SHEET 3 OF 3  
300D01

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  
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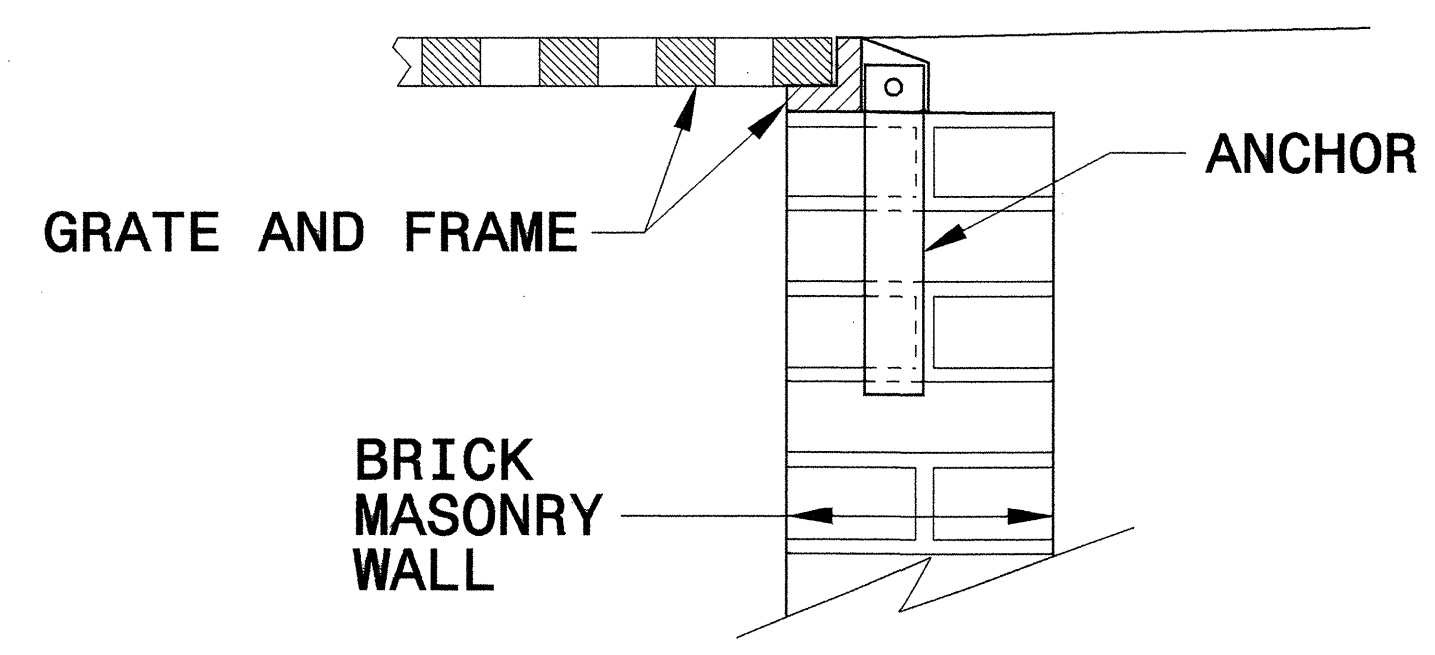




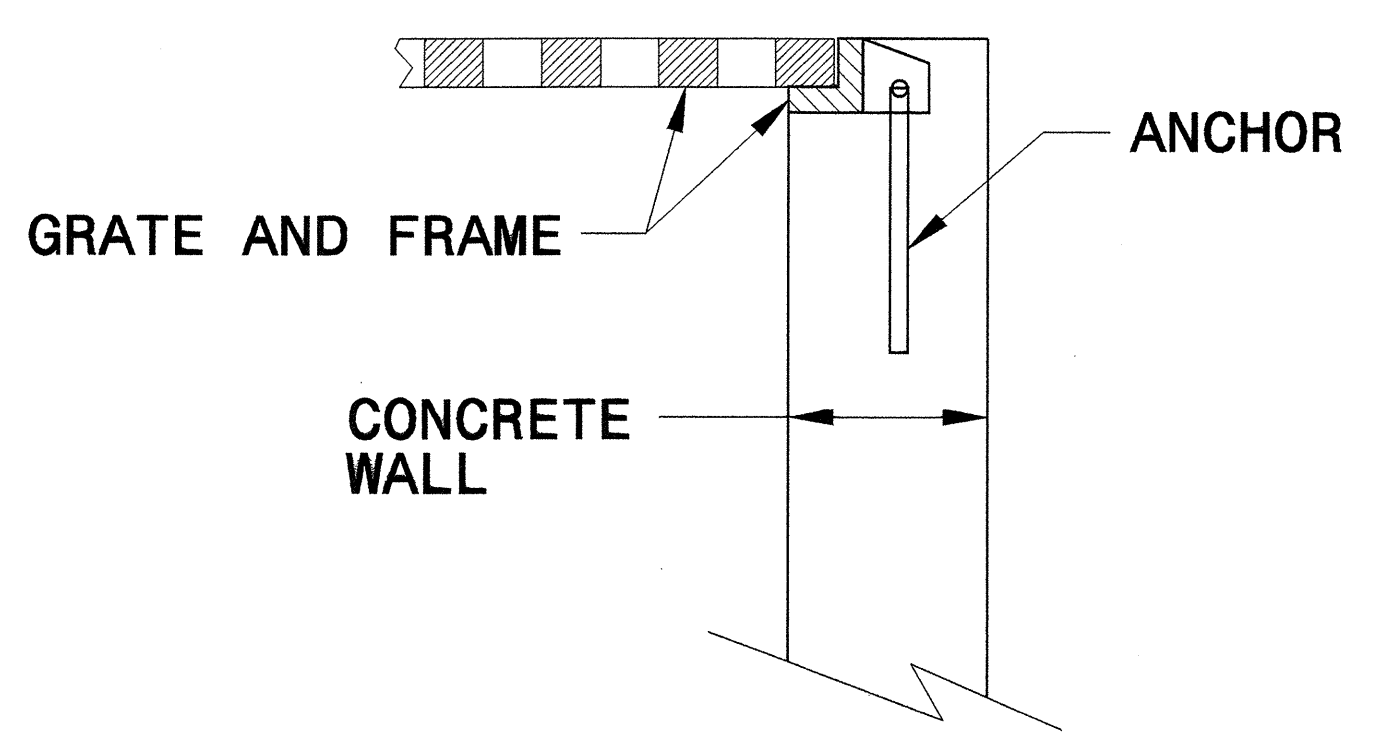
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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

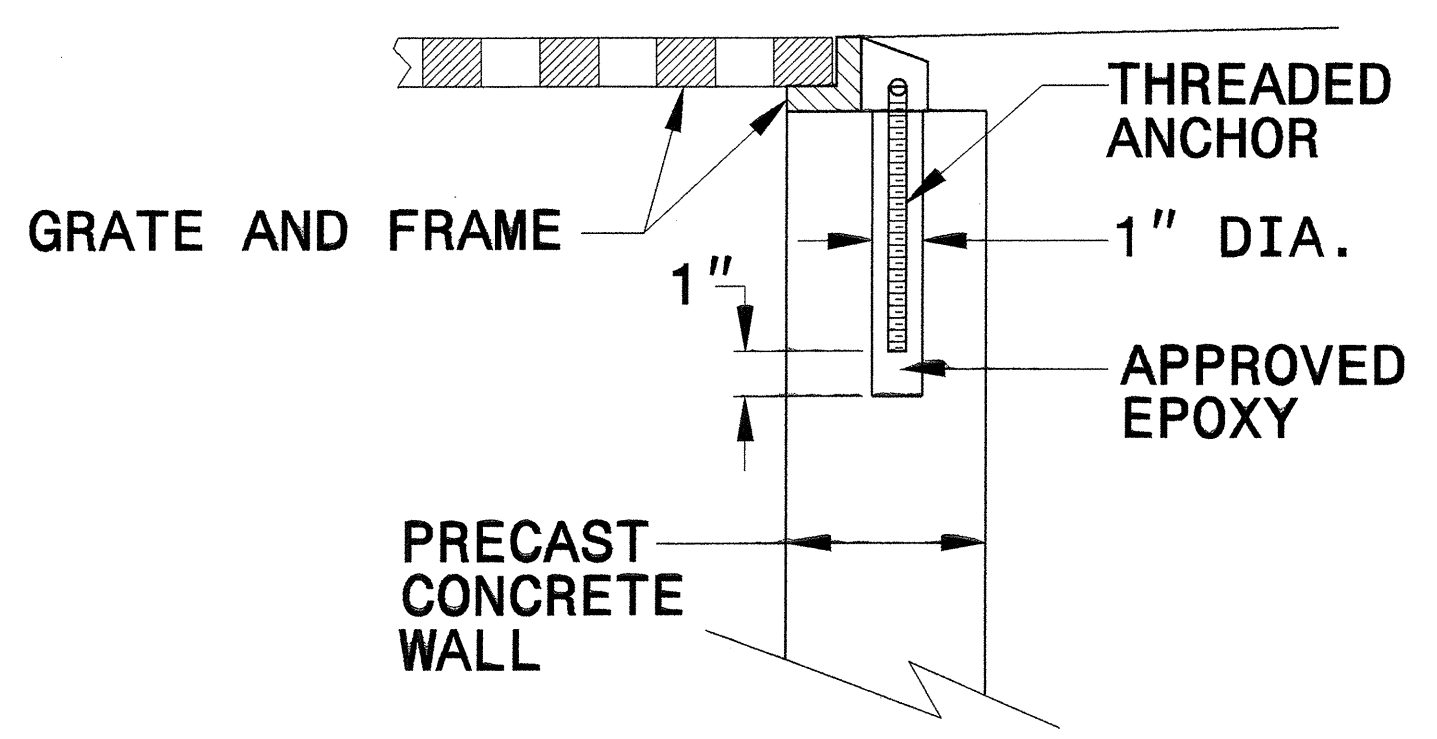
SHEET 1 OF 1  
**840D25**



**BRICK MASONRY CONSTRUCTION**



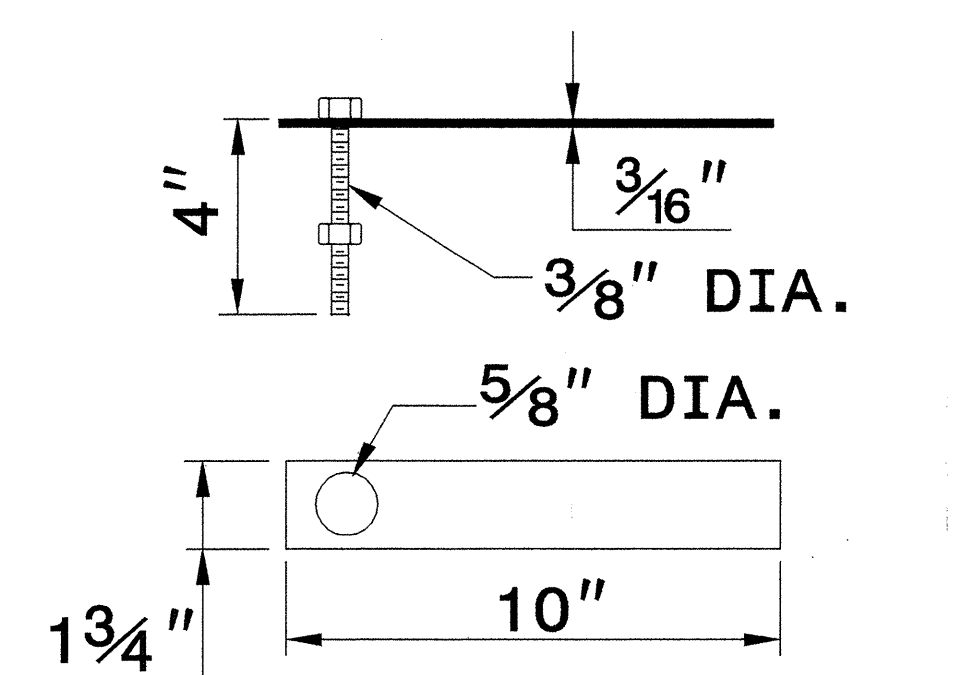
**CONCRETE CONSTRUCTION**



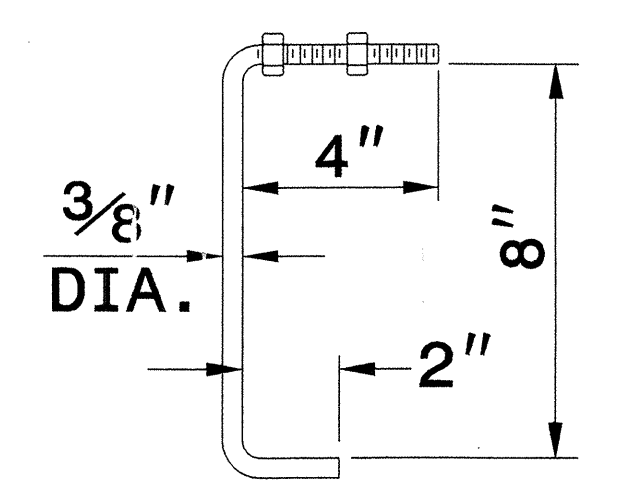
**PRECAST CONCRETE CONSTRUCTION**

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

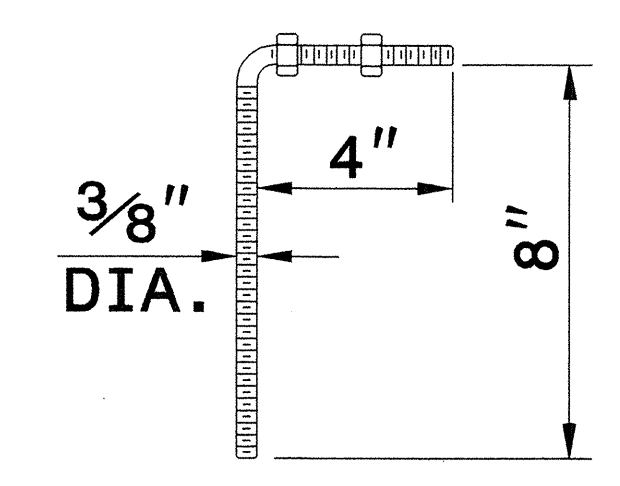
NOTE:  
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



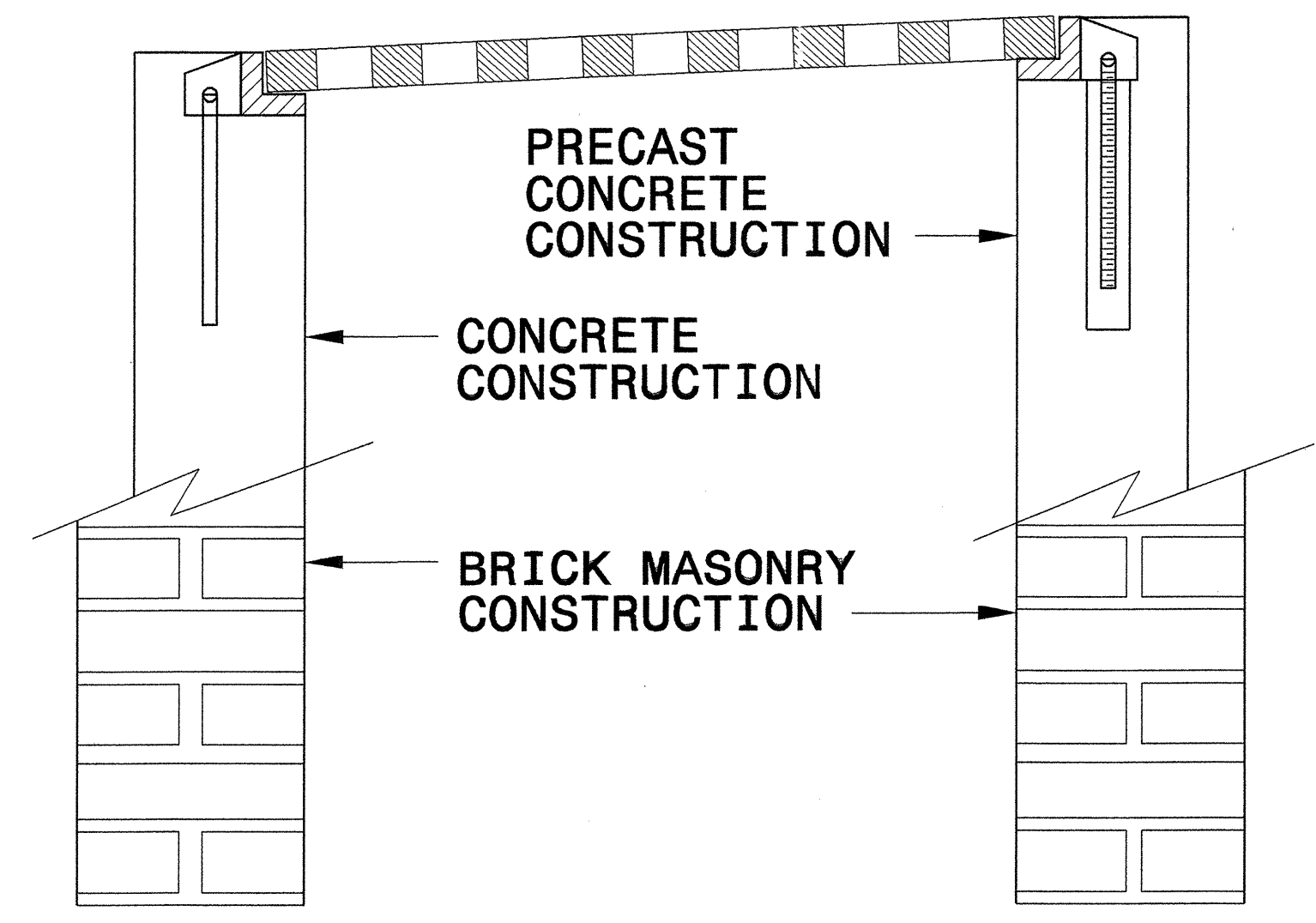
**MASONRY ANCHOR**  
3/8" DIA. BOLT WITH PLATE



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



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



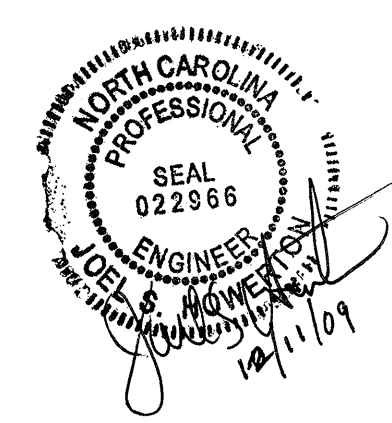
**FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS**

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**

\*\*\*\*\*  
SYSTEMS  
\*\*\*\*\*



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

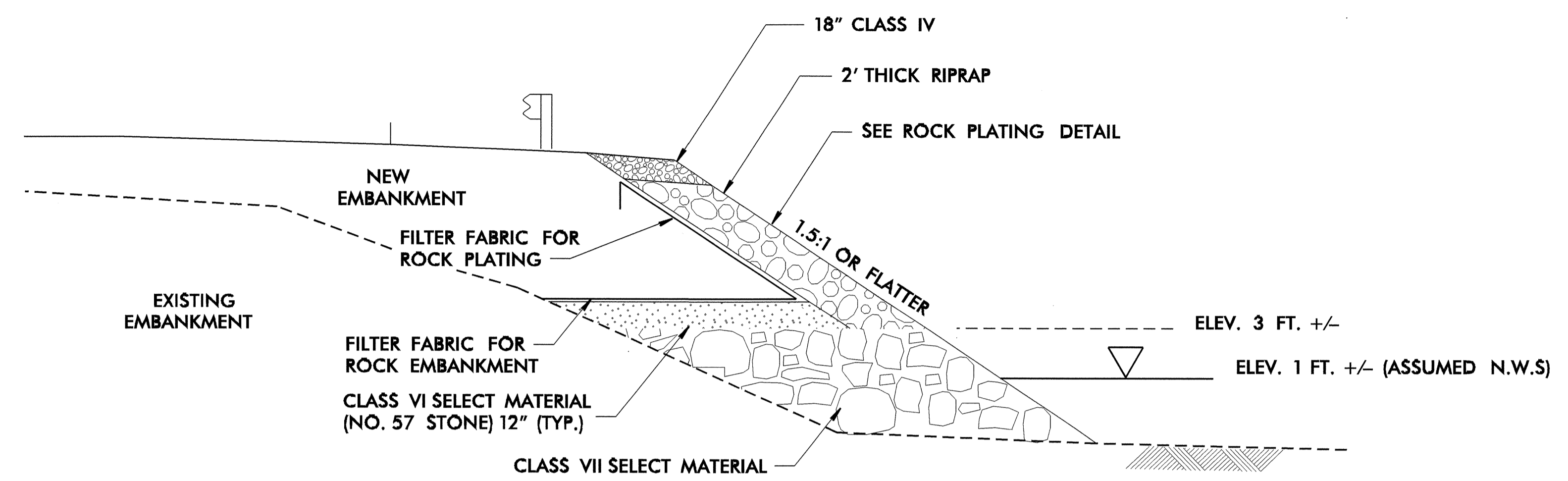
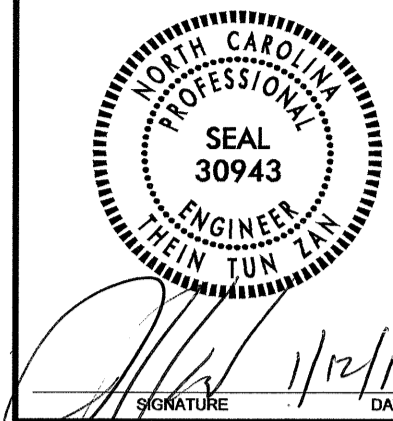
**SEE PLATE FOR TITLE**

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06  
MODIFIED BY: E. E. WARD DATE: 9/25/06  
CHECKED BY: [Signature] DATE: 11/13/06  
FILE SPEC.:



GEOTECHNICAL ENGINEER

ENGINEER



**ROCK EMBANKMENT/ROCK PLATING DETAIL**

N.T.S.

**ROCK EMBANKMENT/ ROCK PLATING**

USE ROCK EMBANKMENT/ROCK PLATING AT FOLLOWING LOCATIONS:

| LOCATION NO. | APPROX.BEGIN STA. | APPROX.END STA. | OFFSET |
|--------------|-------------------|-----------------|--------|
| 1            | 32+10 +/- -L-     | 35+25 +/- -L-   | LEFT   |
| 2            | 32+10 +/- -L-     | 32+75 +/- -L-   | RIGHT  |

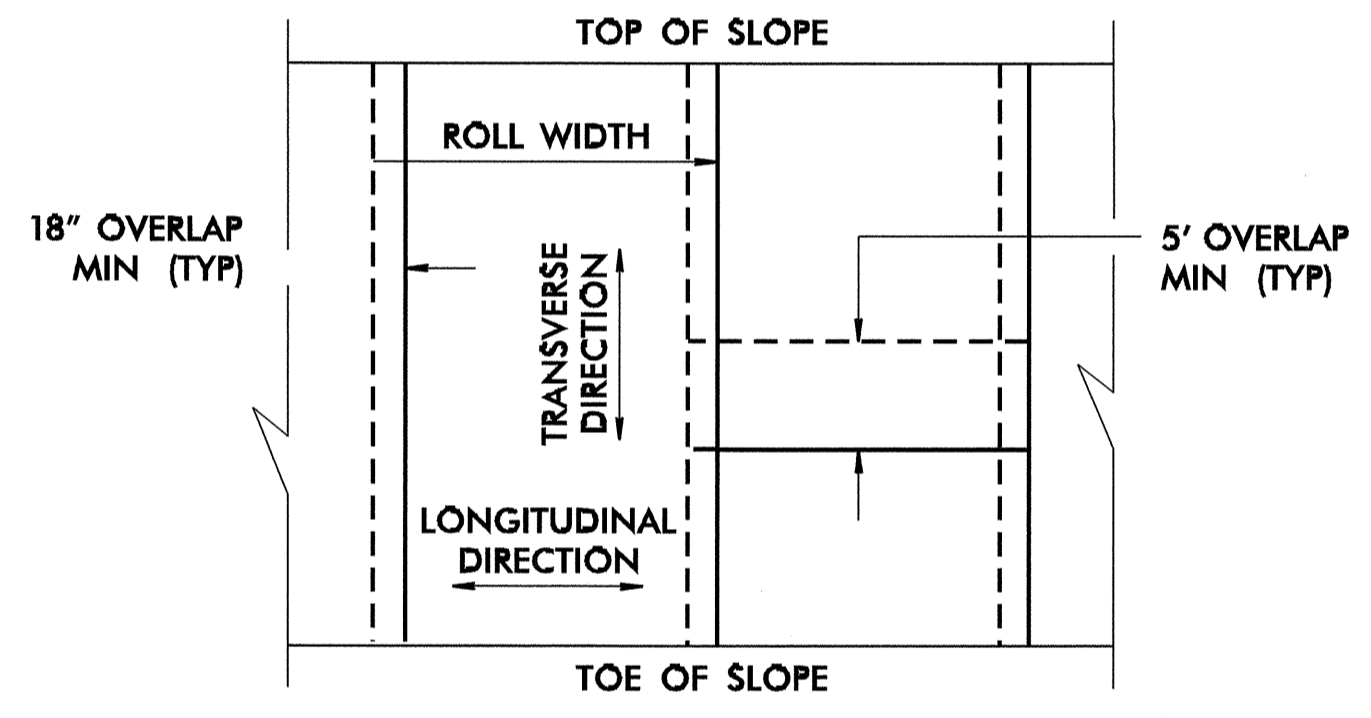
CONSTRUCT ROCK EMBANKMENT TO THE ELEVATION SHOWN IN THE ROCK EMBANKMENT/ROCK PLATING DETAILS OR 2 FT.ABOVE THE NORMAL WATER SURFACE AND ACCORDING TO THE ROCK EMBANKMENT SPECIAL PROVISION.

CLASS VII SELECT MATERIAL SHALL MEET THE GRADATION REQUIREMENTS AS INDICATED IN SECTION 1016 OF THE STANDARD SPECIFICATIONS WITH THE EXCEPTION THAT THE MAXIMUM DIAMETER OF THE ROCK DOES NOT EXCEED TWO FEET.

CONSTRUCT ROCK PLATING ABOVE ROCK EMBANKMENT FROM ELEVATION SHOWN IN THE ROCK EMBANKMENT/ ROCK PLATING DETAIL OR 2 FT.ABOVE THE NORMAL WATER SURFACE TO THE SHOULDER HINGE POINT AND ACCORDING TO THE ROCK PLATING SPECIAL PROVISION.

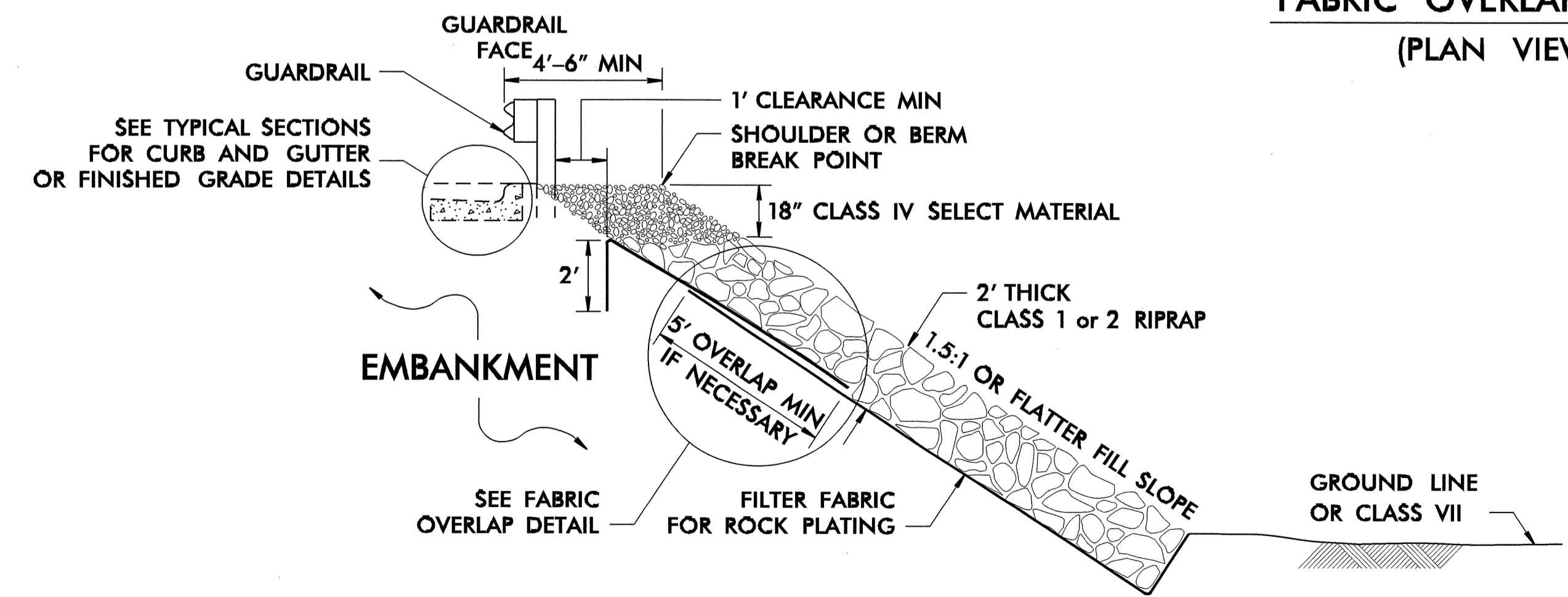
FOR ROCK EMBANKMENT,SEE ROCK EMBANKMENTS SPECIAL PROVISION.

| ESTIMATED MATERIAL QUANTITIES FOR ROCK EMBANKMENT |          |
|---|----------|
| SELECT MATERIAL,CLASS VII =                       | 650 TONS |
| SELECT MATERIAL,CLASS VI =                        | 350 TONS |
| FILTER FABRIC FOR ROCK EMBANKMENT =               | 360 SY   |



**FABRIC OVERLAP DETAIL**

(PLAN VIEW)



**ROCK PLATING DETAIL**

N.T.S.

**ROCK PLATING**

USE ROCK PLATING AT FOLLOWING LOCATIONS:

| LOCATION NO. | APPROX.BEGIN STA. | APPROX.END STA. | OFFSET |
|--------------|-------------------|-----------------|--------|
| 1            | 35+25 +/- -L-     | 36+25 +/- -L-   | LEFT   |
| 2            | 40+25 +/- -L-     | 44+25 +/- -L-   | RIGHT  |

EXTEND ROCK PLATING TO 2.5:1 (H:V) SLOPE.

SEE ROCK EMBANKMENT/ROCK PLATING TABLE FOR ADDITIONAL ROCK PLATING LOCATIONS.

USE ROCK PLATING AT LOCATIONS WHERE THE ROADWAY SIDE SLOPE IS STEEPER THAN 2.5:1 (H:V) AS SHOWN IN THE ROCK PLATING DETAIL AND ACCORDING TO THE ROCK PLATING SPECIAL PROVISION.

FOR ROCK PLATING,SEE ROCK PLATING SPECIAL PROVISION.

|                                   |        |
|-----------------------------------|--------|
| ESTIMATED ROCK PLATING QUANTITY = | 900 SY |
|-----------------------------------|--------|

PROJECT NO.: B-3809

BEAUFORT COUNTY

STATION: SEE TABLE

SHEET 1 OF 1

**ROCK EMBANKMENT & ROCK PLATING DETAILS**

**REVISIONS**

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

**GEOTECHNICAL ENGINEERING UNIT**  
 EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE  
**STATE OF NORTH CAROLINA**  
**DEPARTMENT OF TRANSPORTATION**  
**RALEIGH**

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

Table with 5 columns: ItemNumber, Sec #, Quantity, Unit, Description. Contains items 000010000-N through 151900000-E.

Table with 5 columns: ItemNumber, Sec #, Quantity, Unit, Description. Contains items 156000000-E through 441000000-E.

Table with 5 columns: ItemNumber, Sec #, Quantity, Unit, Description. Contains items 443000000-N through 612300000-E.





12/06/07

COMPUTED BY: AKW DATE: 11-3-2009  
 CHECKED BY: WAD DATE: 11-5-2009

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. SHEET NO.  
 B-3809 3B

**SUMMARY OF EARTHWORK**

| STATION              | STATION          | UNCL. EXCAV. | EMBANK. +% | BORROW | WASTE |
|----------------------|------------------|--------------|------------|--------|-------|
| -L- STA 19+80.00     | -L- STA 24+90.00 | 47           | 2692       | 2645   |       |
| -L- STA 32+10.00     | -L- STA 44+41.91 | 100          | 5006       | 4906   |       |
|                      |                  |              |            |        |       |
|                      |                  |              |            |        |       |
|                      |                  |              |            |        |       |
| SUBTOTALS:           |                  | 147          | 7698       | 7551   |       |
|                      |                  |              |            |        |       |
|                      |                  |              |            |        |       |
|                      |                  |              |            |        |       |
|                      |                  |              |            |        |       |
| PROJECT TOTAL        |                  | 147          |            | 7551   |       |
|                      |                  |              |            |        |       |
| 5% TO REPLACE BORROW |                  |              |            | 378    |       |
|                      |                  |              |            |        |       |
| GRAND TOTAL          |                  | 147          |            | 7929   |       |
| SAY                  |                  | 150          |            | 7950   |       |

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.

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND BREAKING OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING". BORROW EXCAVATION WILL BE PAID FOR SEPERATELY

**SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT**

| SURVEY LINE | STATION  | STATION  | LOCATION LT/RT/CL | YD <sup>2</sup> |
|-------------|----------|----------|-------------------|-----------------|
| -L-         | 22+50.00 | 24+90.00 | LT & RT           | 480             |
| -L-         | 32+10.00 | 36+00.00 | LT & RT           | 780             |
|             |          |          |                   |                 |
|             |          |          |                   |                 |
|             |          |          |                   |                 |
|             |          |          |                   |                 |
|             |          |          |                   |                 |
|             |          |          |                   |                 |
| TOTAL:      |          |          |                   | 1260            |
| SAY:        |          |          |                   | 1260            |

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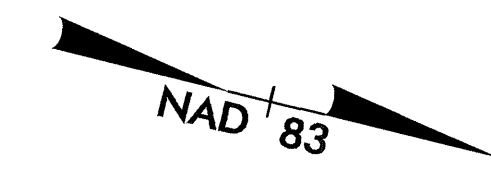


8/17/99

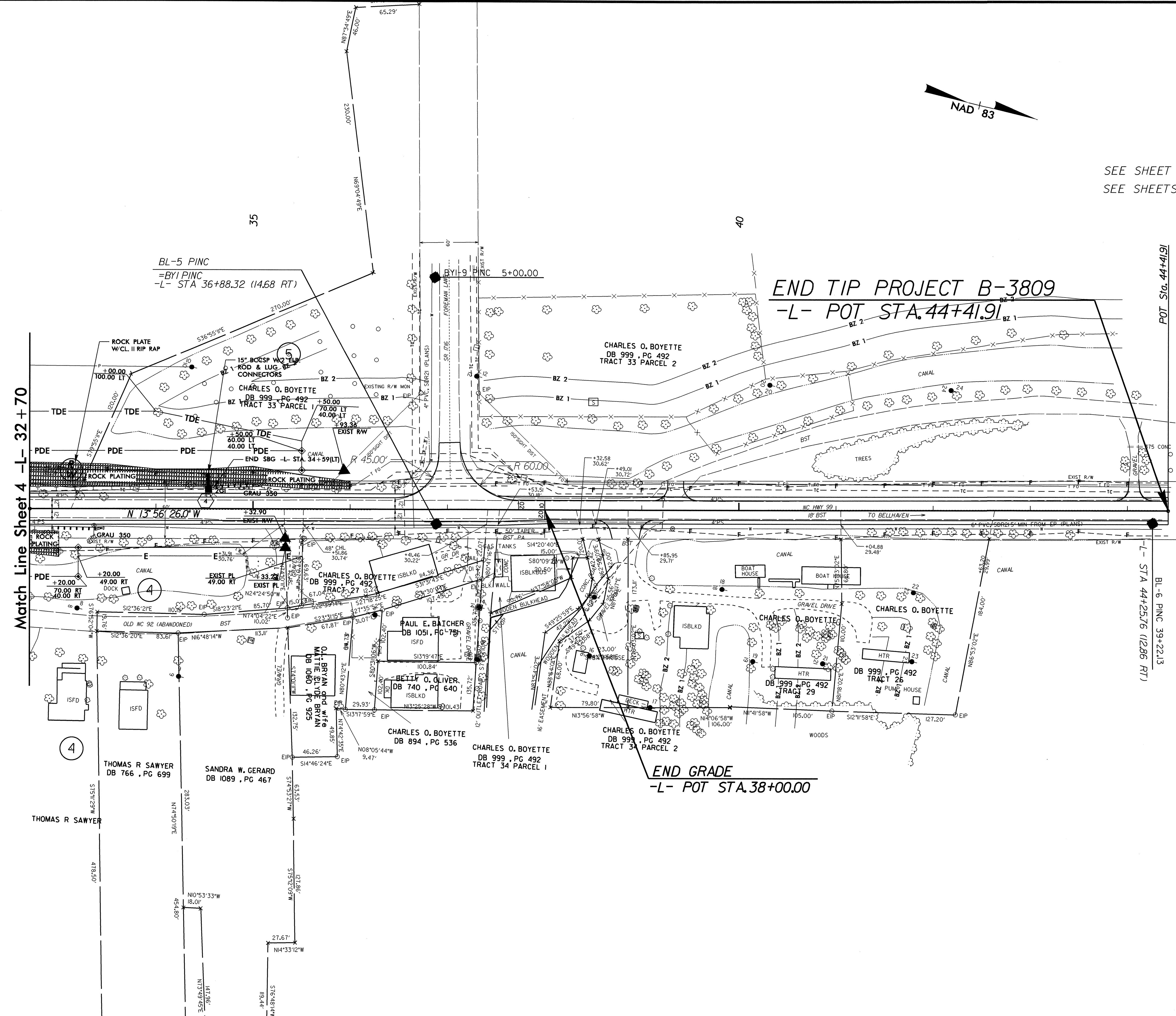
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|   |   |
|---|---|
| PROJECT REFERENCE NO.<br><b>B-3809</b>  | SHEET NO.<br><b>5</b>   |
| RW SHEET NO.  |   |
| ROADWAY DESIGN ENGINEER<br><b>NORTH CAROLINA PROFESSIONAL ENGINEER</b><br>SEAL 15892<br>DEWAYNE L. STINES | HYDRAULICS ENGINEER<br><b>NORTH CAROLINA PROFESSIONAL ENGINEER</b><br>SEAL 19660<br>PAUL A. TRINICK |

*Dewayne L. Stines*



SEE SHEET 6 FOR PROFILE  
SEE SHEETS S-1 THRU S-39 FOR STRUCTURE PLANS



REVISIONS

Match Line Sheet 4 -L- 32+70

END TIP PROJECT B-3809  
-L- POT STA. 44+41.91

END GRADE  
-L- POT STA. 38+00.00

POT Sta. 44+41.91  
BL-6 PINC 39+22.13  
-L- STA 44+25.76 (1286 RT)

HIGH WATER MARK OF CREEK IS TRUE PROPERTY



5/28/99

|  |   |
|--|---|
| PROJECT REFERENCE NO.<br>B-3809                    | SHEET NO.<br>6                              |
| ROADWAY DESIGN ENGINEER<br><i>Dwayne R. Coffey</i> | HYDRAULICS ENGINEER<br><i>Paul Atkinson</i> |
|  |   |

**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE = CFS  
 DESIGN FREQUENCY = YRS  
 DESIGN HW ELEVATION = FT  
 BASE DISCHARGE = CFS  
 BASE FREQUENCY = 100 YRS  
 BASE HW ELEVATION = 8J FT  
 OVERTOPPING DISCHARGE = 4,000 CFS  
 OVERTOPPING FREQUENCY = YRS  
 OVERTOPPING ELEVATION = 5.0 FT

DATE OF SURVEY = 7/24/2008  
 W.S. ELEVATION AT DATE OF SURVEY = 0.98 FT

RIGHT DITCH -----  
 BM 1 "DAVIS RESET 1984"  
 BRASS CAP IN A CONC MON.  
 123.81' RIGHT OF -L- STA 24+51.20  
 EL. = 8.01'

BEGIN GRADE  
 -L- 19+80.00  
 ELEV. = 6.84'

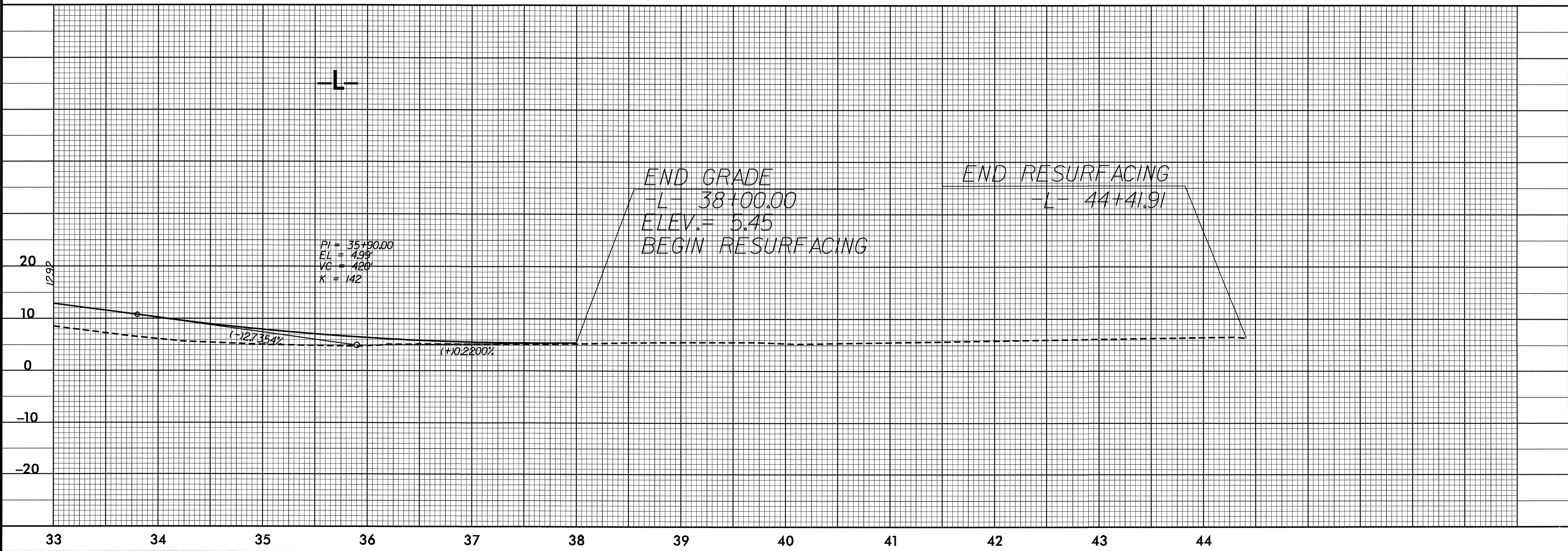
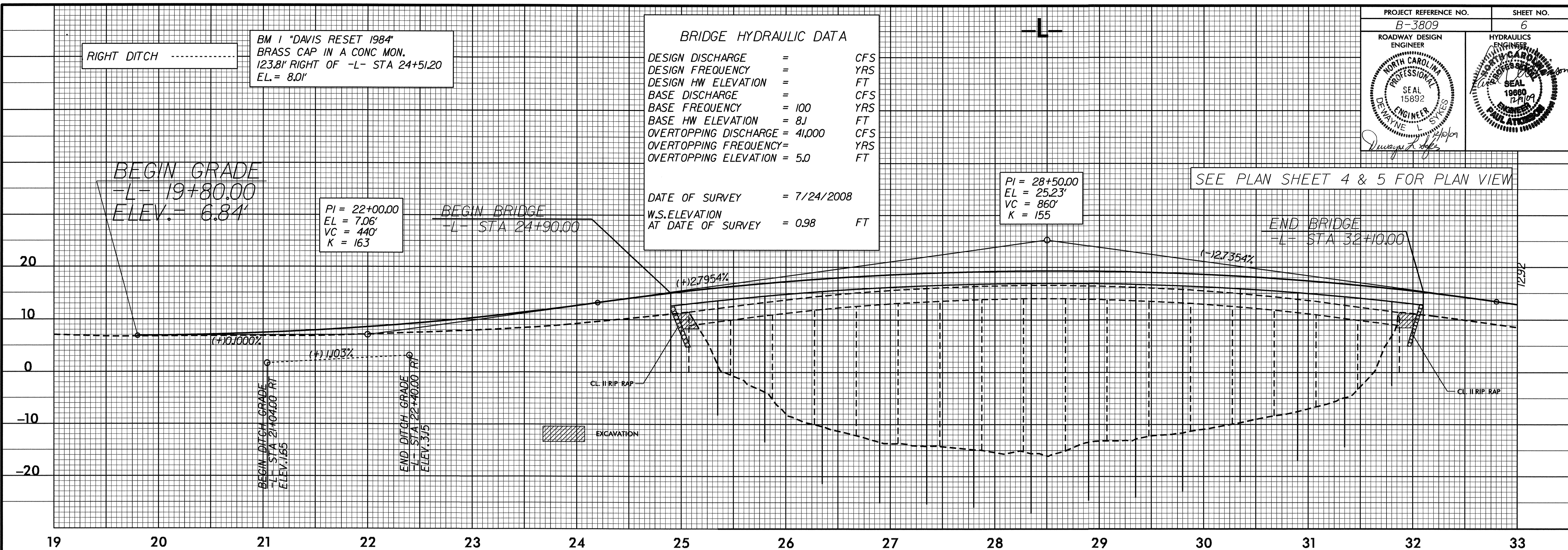
PI = 22+00.00  
 EL = 7.06'  
 VC = 440'  
 K = 163

BEGIN BRIDGE  
 -L- STA 24+90.00

PI = 28+50.00  
 EL = 25.23'  
 VC = 860'  
 K = 155

SEE PLAN SHEET 4 & 5 FOR PLAN VIEW

END BRIDGE  
 -L- STA 32+10.00



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