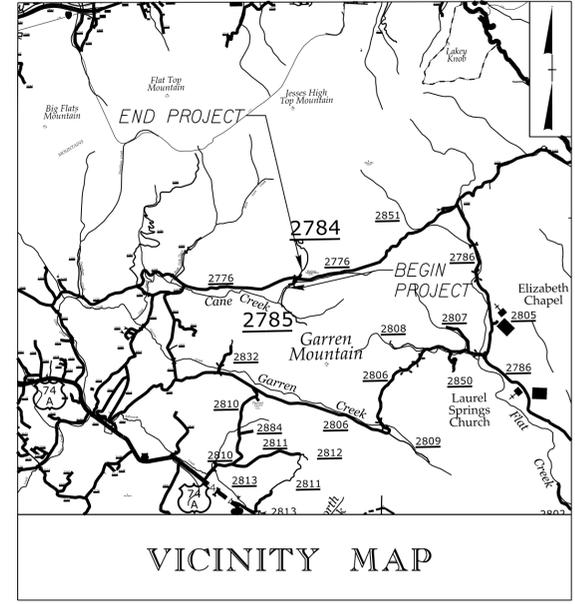


09.08/2015

**PROJECT: 17BP.13.R.38**

**CONTRACT:**

See Sheet 1-A For Index of Sheets  
See Sheet 1-B For Conventional symbols  
See Sheet 1-C For Survey Control Sheet

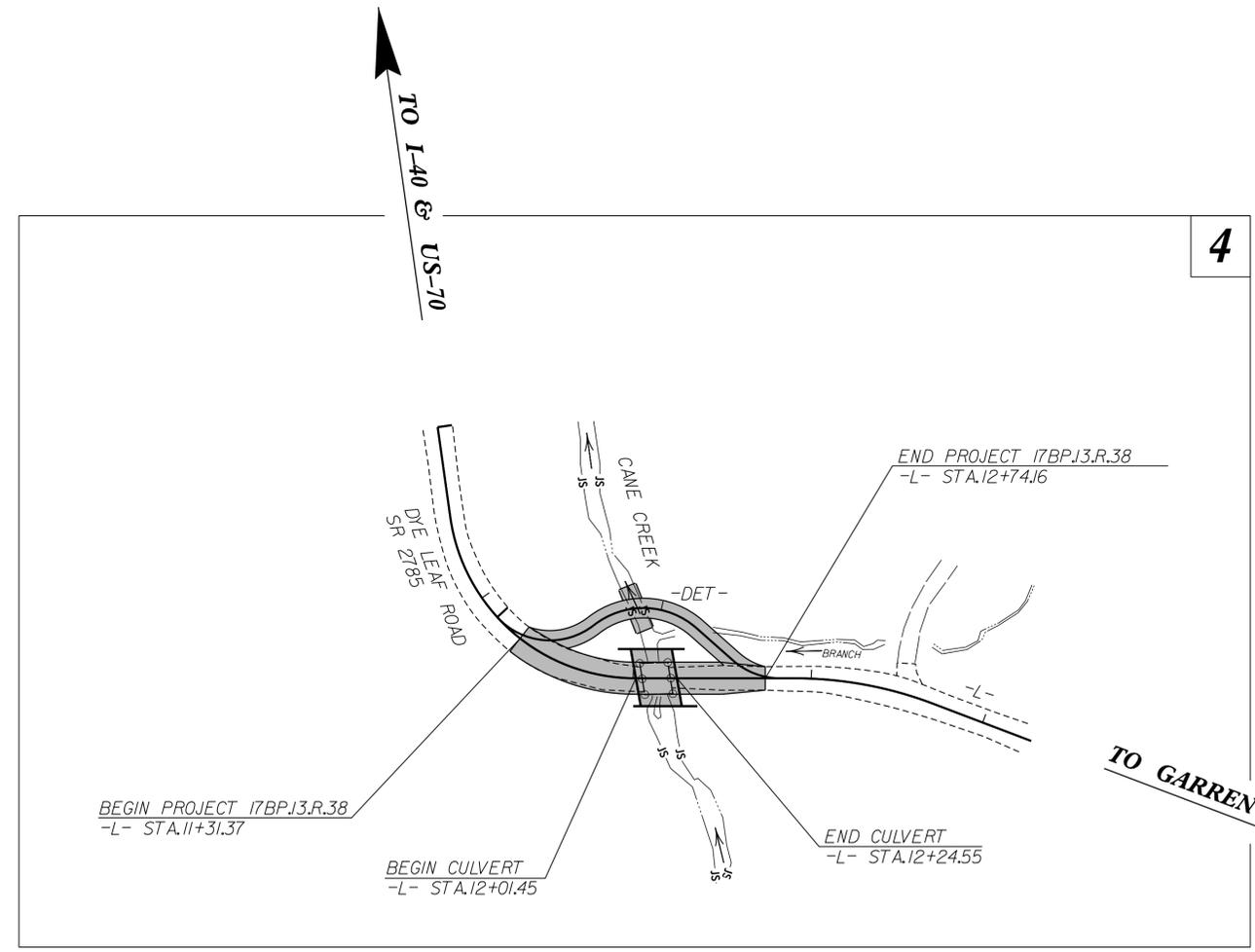
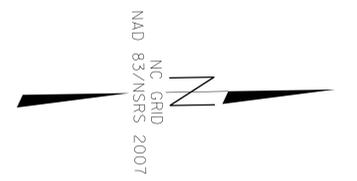


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**BUNCOMBE COUNTY**

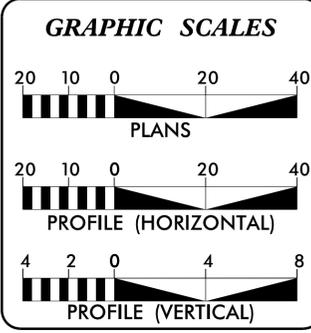
**LOCATION: BRIDGE NO. 100592 OVER FORK OF CANE CREEK  
ON SR 2785 (DYE LEAF ROAD)**

**TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE & PAVING**

| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | 17BP.13.R.38                | 1           |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 17BP.13.R.38    | NA                          | PE          |              |
| 17BP.13.R.38    | NA                          | RW & UTIL   |              |
| 17BP.13.R.38    | NA                          | CONST.      |              |



DESIGN EXCEPTION REQUIRED FOR MIN. HOR. CURVE RADIUS & MIN. HOR. SSD



**DESIGN DATA**  
ADT 2010 = 230

T = 6 % \*  
V = 45 MPH  
\* TTST = 3 DUAL 3  
FUNC CLASS =  
LOCAL  
SUB-REGIONAL TIER

**PROJECT LENGTH**

LENGTH OF ROADWAY PROJECT 17BP.13.R.38 = 0.023 MI  
LENGTH OF STRUCTURE PROJECT 17BP.13.R.38 = 0.004 MI  
TOTAL LENGTH OF PROJECT 17BP.13.R.38 = 0.027 MI

Prepared in the Office of:  
**SEPI**  
ENGINEERING & CONSTRUCTION  
FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION  
2012 STANDARD SPECIFICATIONS

**BEN CRAWFORD, PE**  
PROJECT ENGINEER

**MATTHEW COPPLE, PE**  
PROJECT DESIGN ENGINEER

**TROY WILSON, PLS**  
NCDOT CONTACT

**RIGHT OF WAY DATE:**  
NOVEMBER 7, 2013

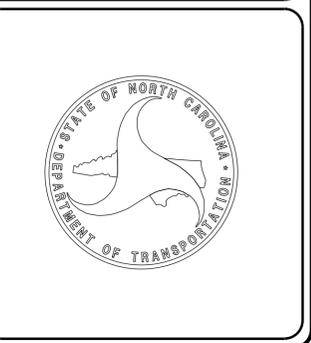
**LETTING DATE:**  
AUGUST 1, 2014

**HYDRAULICS ENGINEER**  
8/24/2015

DocuSigned by:  
*Brian Marzocchi*  
SIGNATURE:

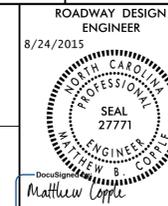
**ROADWAY DESIGN ENGINEER**  
8/24/2015

DocuSigned by:  
*Matthew Copple*  
SIGNATURE:





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Fax: 919-789-9591  
License: C-2197



| SHEET NUMBER     | INDEX OF SHEETS SHEET   |
|------------------|---|
| 1                | TITLE SHEET   |
| 1-A              | INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS |
| 1-B              | CONVENTIONAL SYMBOLS  |
| 1-C              | SURVEY CONTROL  |
| 2                | PAVEMENT SCHEDULE AND TYPICAL SECTIONS                        |
| 2-A              | DETOUR DETAIL   |
| 3-A              | SUMMARY OF GUARDRAIL, EARTHWORK                               |
| 3-B              | SUMMARY OF DRAINAGE QUANTITIES                                |
| 4                | PLAN SHEET  |
| 5                | PROFILE SHEET   |
| TMP-1 THRU TMP-5 | TRAFFIC CONTROL PLANS   |
| PMP-1 THRU PMP-2 | PAVEMENT MARKING PLANS  |
| EC-1 THRU EC-7   | EROSION CONTROL PLANS   |
| UO-1 THRU UO-3   | UTILITIES PLANS   |
| X-1 THRU X-6     | CROSS-SECTIONS  |
| S-1 THRU S-4     | STRUCTURE PLANS   |

**GENERAL NOTES:** 2012 SPECIFICATIONS  
EFFECTIVE: 01-17-12  
REVISED: 07/30/12

**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.

**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.

**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  
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.  
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

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

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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

| STD. NO.                                   | TITLE   |
|--|---|
| DIVISION 2 - EARTHWORK                     |   |
| 200.02                                     | Method of Clearing - Method II  |
| 225.02                                     | Guide for Grading Subgrade - Secondary and Local                              |
| 225.04                                     | Method of Obtaining Superelevation - Two Lane Pavement                        |
| DIVISION 3 - PIPE CULVERTS                 |   |
| 300.01                                     | Method of Pipe Installation   |
| 310.10                                     | Driveway Pipe Construction  |
| DIVISION 5 - SUBGRADE, BASES AND SHOULDERS |   |
| 560.01                                     | Method of Shoulder Construction - High Side of Superelevated Curve - Method I |
| DIVISION 8 - INCIDENTALS                   |   |
| 806.01                                     | Concrete Right-of-Way Marker  |
| 840.22                                     | Frames and Wide Slot Sag Grates   |
| 840.72                                     | Pipe Collar   |
| 862.01                                     | Guardrail Placement   |
| 862.02                                     | Guardrail Installation  |
| 876.02                                     | Guide for Rip Rap at Pipe Outlets   |
| 876.04                                     | Drainage Ditches with Class 'B' Rip Rap                                       |

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 boundary symbols: 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, Known Soil Contamination: Area or Site, Potential Soil Contamination: Area or Site.

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

Table listing hydrology symbols: 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 railroad symbols: Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

Table listing orchard and vineyard symbols: Orchard, Vineyard.

EXISTING STRUCTURES:

Table listing existing structures symbols: 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 utility symbols: 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 water symbols: 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 TV symbols: 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 gas symbols: 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 sanitary sewer symbols: 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:

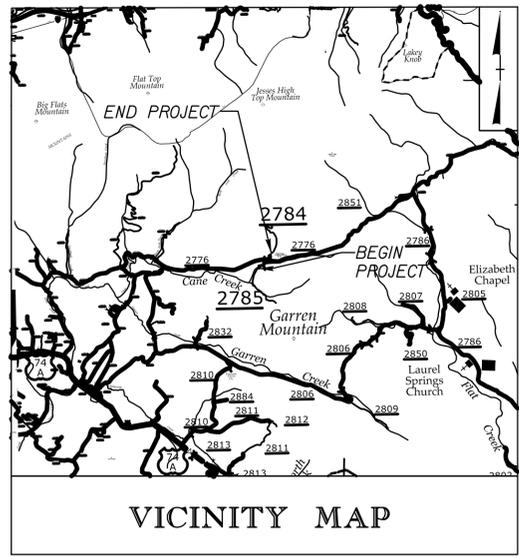
Table listing miscellaneous symbols: Utility Pole, Utility Pole with Base, Utility Located Object, Utility Traffic Signal Box, Utility Unknown U/G Line, U/G Tank; Water, Gas, Oil, Underground Storage Tank, Approx. Loc., A/G Tank; Water, Gas, Oil, Geoenvironmental Boring, U/G Test Hole (S.U.E.\*), Abandoned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

6/2/09

# SURVEY CONTROL SHEET 10-0592



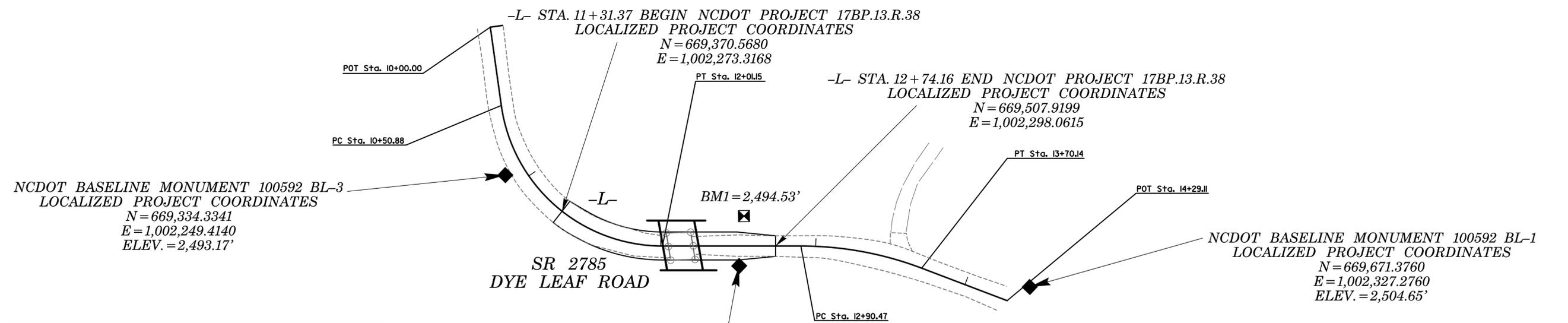
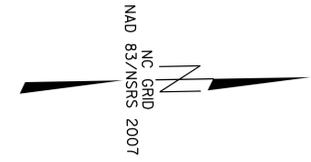
|  |                  |
|--|------------------|
| PROJECT REFERENCE NO.<br><i>17BP.13.R.38</i> | SHEET NO.<br>1-C |
| Location and Surveys                         |                  |



| BL POINT | DESC. | NORTH       | EAST         | ELEVATION | EL STATION           | OFFSET    |
|----------|-------|-------------|--------------|-----------|----------------------|-----------|
| 1        | BL-1  | 669671.3760 | 1002327.2760 | 2504.65   | OUT OF PROJECT LIMIT |           |
| 2        | BL-2  | 669484.2504 | 1002310.4560 | 2496.66   | 12+50.71             | 12.81' RT |
| 3        | BL-3  | 669334.3341 | 1002249.4140 | 2493.17   | 10+91.85             | 12.51' RT |

\*\*\*\*\*  
 BM1 ELEVATION = 2494.53'  
 N 669487.85 E 1002278.49  
 BL STATION 6+53.15 30.96' LEFT  
 8" SPIKE SET IN BASE OF 12" WILD CHERRY ON WEST SIDE OF ROAD  
 \*\*\*\*\*

| TYPE | STATION  | FINAL -L-   |              |
|------|----------|-------------|--------------|
|      |          | NORTH       | EAST         |
| POT  | 10+00.00 | 669326.3357 | 1002154.1007 |
| PC   | 10+50.88 | 669332.5362 | 1002204.5995 |
| PT   | 12+01.15 | 669434.9211 | 1002296.7873 |
| PC   | 12+90.47 | 669524.2221 | 1002298.3460 |
| PT   | 13+70.14 | 669601.9052 | 1002313.9744 |
| POT  | 14+29.11 | 669656.6748 | 1002335.8252 |



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "10-0592 BL-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 669671.3760(±) EASTING: 1002327.2760(±) ELEVATION: 2504.65(±±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99977039

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "10-0592 BL-1" TO -L- STATION 10+00.00 IS  
 S26°39'07"W 386.06'

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

**NOTES:**

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/)

THE FILES TO BE FOUND ARE AS FOLLOWS:  
 100592\_LS\_CONTROL\_130920.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.  
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.  
 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

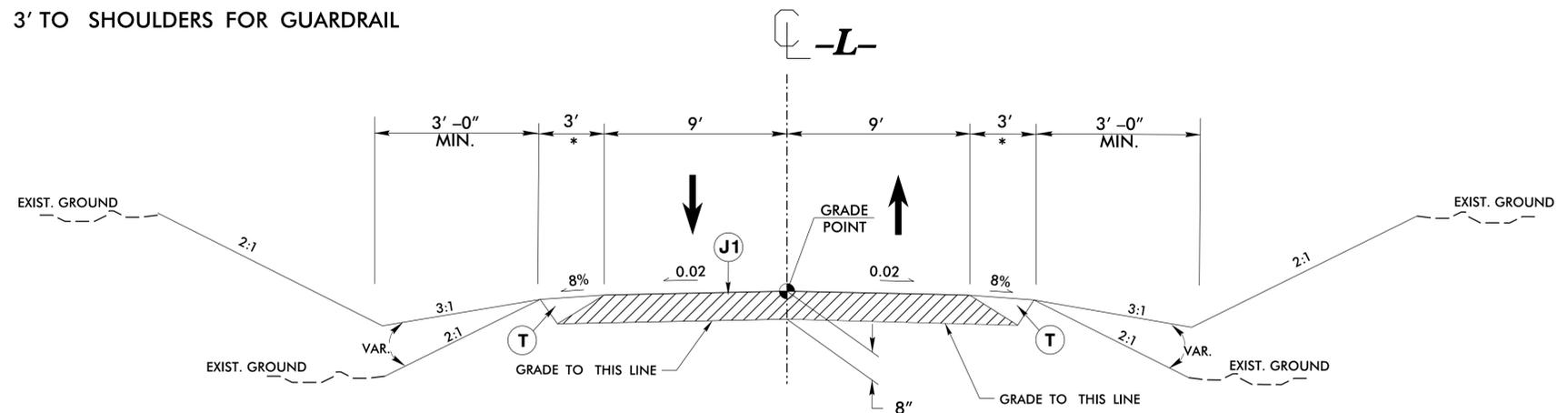
NOTE: DRAWING NOT TO SCALE

5/14/09

\* ADD 3' TO SHOULDERS FOR GUARDRAIL

**SEPI** ENGINEERING & CONSTRUCTION  
 1025 Wade Avenue  
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 Tel: 919-789-9977  
 Fax: 919-789-9591  
 License: C-2197

|   |  |
|---|--|
| PROJECT REFERENCE NO.<br><b>17BPJ3.R.38</b>                 | SHEET NO.<br><b>2</b>  |
| RW SHEET NO.  |  |
| ROADWAY DESIGN ENGINEER<br>8/24/2015<br><i>Matthew Lipp</i> | PAVEMENT DESIGN ENGINEER<br>8/26/2015<br><i>Clark Morrison</i> |

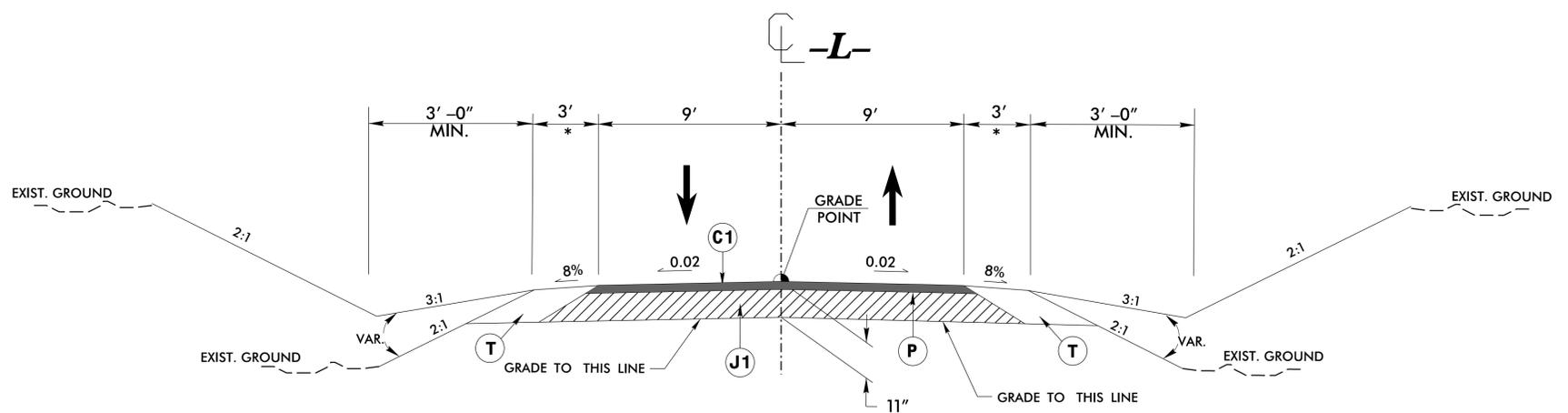


**TYPICAL SECTION NO. 1**

-L- STA. 11+31.37 TO -L- STA. 11+63.00  
 -L- STA. 12+63.00 TO -L- STA. 12+74.16

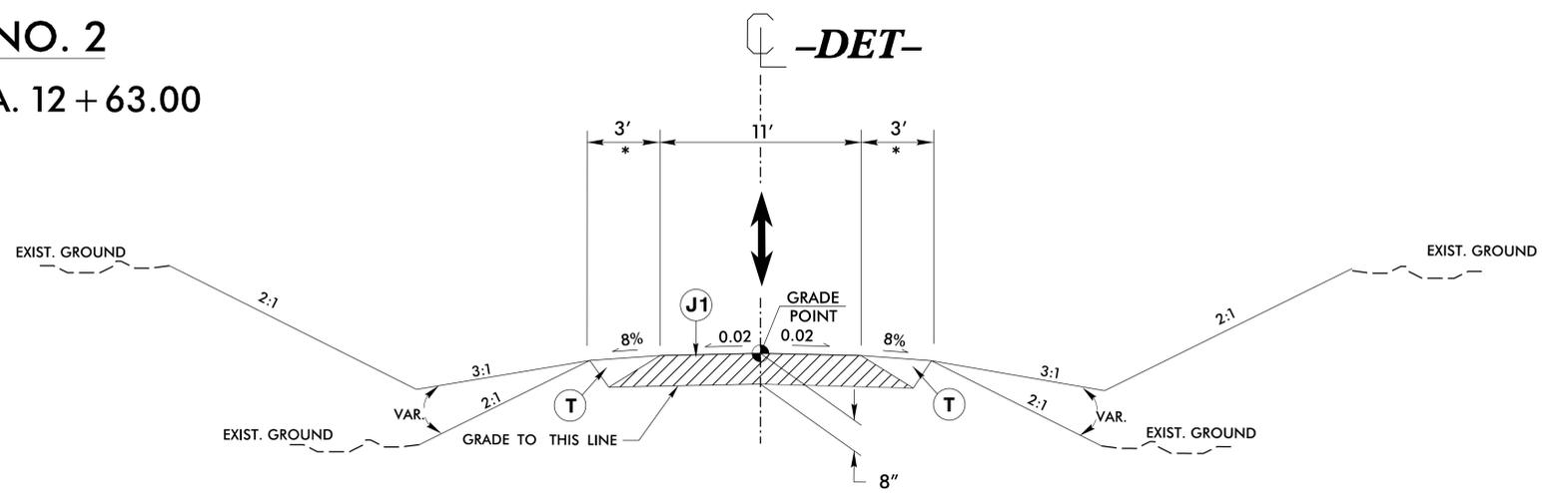
|    |   |
|----|---|
| C1 | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS. |
| J1 | PROP. 8" AGGREGATE BASE COURSE.   |
| P  | PRIME COAT AT THE RATE OF 0.35 GAL. PER SQ. YD.   |
| T  | EARTH MATERIAL.   |

\* NOTE: ALL SLOPES ARE 1:1 UNLESS OTHERWISE NOTED \*



**TYPICAL SECTION NO. 2**

-L- STA. 11+63.00 TO -L- STA. 12+63.00



**TYPICAL SECTION NO. 3**

-DET- STA. 10+33.46 TO -DET- STA. 11+55.01

8/24/2015 10:05:02 - Rdy - typ.dgn  
 USER: MFC/CL



12/06/07

COMPUTED BY: CJT DATE: 11/26/2013  
 CHECKED BY: MBC DATE: 12/1/2014

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS



PROJECT REFERENCE NO. SHEET NO.  
 17BP13.R.38 3-A

**SUMMARY OF EARTHWORK**

| STATION                                   | STATION          | UNCL. EXCAV. | EMBANK. +% | BORROW | WASTE |
|---|------------------|--------------|------------|--------|-------|
| -L- 11 + 40.86                            | -L- 12 + 67.30   | 99           | 61         |        | 38    |
| -DET- 10 + 34.42                          | -DET- 11 + 53.53 | 2            | 365        | 363    |       |
| SUBTOTALS:                                |                  | 101          | 426        | 363    | 38    |
| DETOUR REMOVAL                            |                  |              |            |        |       |
| -DET- 10 + 34.42                          | -DET- 11 + 53.53 | 317          |            |        | 317   |
| -DET- 10 + 34.42(ABC)                     | -DET- 11 + 53.53 | 32           |            |        | 32    |
| SUBTOTALS:                                |                  | 349          |            |        | 349   |
| MATERIAL FOR SHOULDER CONSTRUCTION        |                  |              |            | 41     |       |
| WASTE IN LIEU OF BORROW                   |                  |              |            | -38    | -38   |
| PROJECT TOTALS:                           |                  | 450          | 467        | 366    | 349   |
| EST. 5% TO REPLACE TOP SOIL ON BORROW PIT |                  |              |            | 18     |       |
| GRAND TOTALS:                             |                  | 450          | 467        | 384    | 349   |
| SAY:                                      |                  | 460          |            | 390    |       |

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, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading"

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

**GUARDRAIL SUMMARY**

| SURVEY LINE            | BEGINNING STATION | END STATION | LOCATION | LENGTH   |             |              | WARRENT POINT |              | "N" DIST. FROM E.O.L. | TOTAL SHOULDER WIDTH | FLARE LENGTH |              | W            |              | ANCHORS   |      |          | REMARKS |
|------------------------|-------------------|-------------|----------|----------|-------------|--------------|---------------|--------------|-----------------------|----------------------|--------------|--------------|--------------|--------------|-----------|------|----------|---------|
|                        |                   |             |          | STRAIGHT | SHOP CURVED | DOUBLE FACED | APPROACH END  | TRAILING END |                       |                      | APPROACH END | TRAILING END | APPROACH END | TRAILING END | GRAU-TL-2 | AT-1 | TYPE III |         |
| -L-                    | 11 + 67.64        | 12 + 64.40  | RT       | 100.00'  |             |              | 12 + 04.21    | 12 + 27.31   | 3'                    | 6'                   |              |              |              |              | 1         | 1    |          |         |
| -L-                    | 12 + 48.50        | 11 + 41.21  | LT       | 100.00'  |             |              | 12 + 21.67    | 11 + 98.09   | 3'                    | 6'                   |              |              |              |              | 2         |      |          |         |
| SUBTOTAL               |                   |             |          | 200.00'  |             |              |               |              |                       |                      |              |              |              |              |           |      |          |         |
| LESS ANCHOR DEDUCTIONS |                   |             |          |          |             |              |               |              |                       |                      |              |              |              |              |           |      |          |         |
| GRAU-TL-2, 3 @ 25' =   |                   |             |          | -75.00'  |             |              |               |              |                       |                      |              |              |              |              |           |      |          |         |
| AT-1, 1 @ 6.25' =      |                   |             |          | -6.25'   |             |              |               |              |                       |                      |              |              |              |              |           |      |          |         |
| TOTAL                  |                   |             |          | 118.75'  |             |              |               |              |                       |                      |              |              |              |              |           |      |          |         |
| SAY                    |                   |             |          | 118.75'  |             |              |               |              |                       |                      |              |              |              |              | 3         | 1    |          |         |

ADDITIONAL GUARDRAIL POSTS - 5 EA

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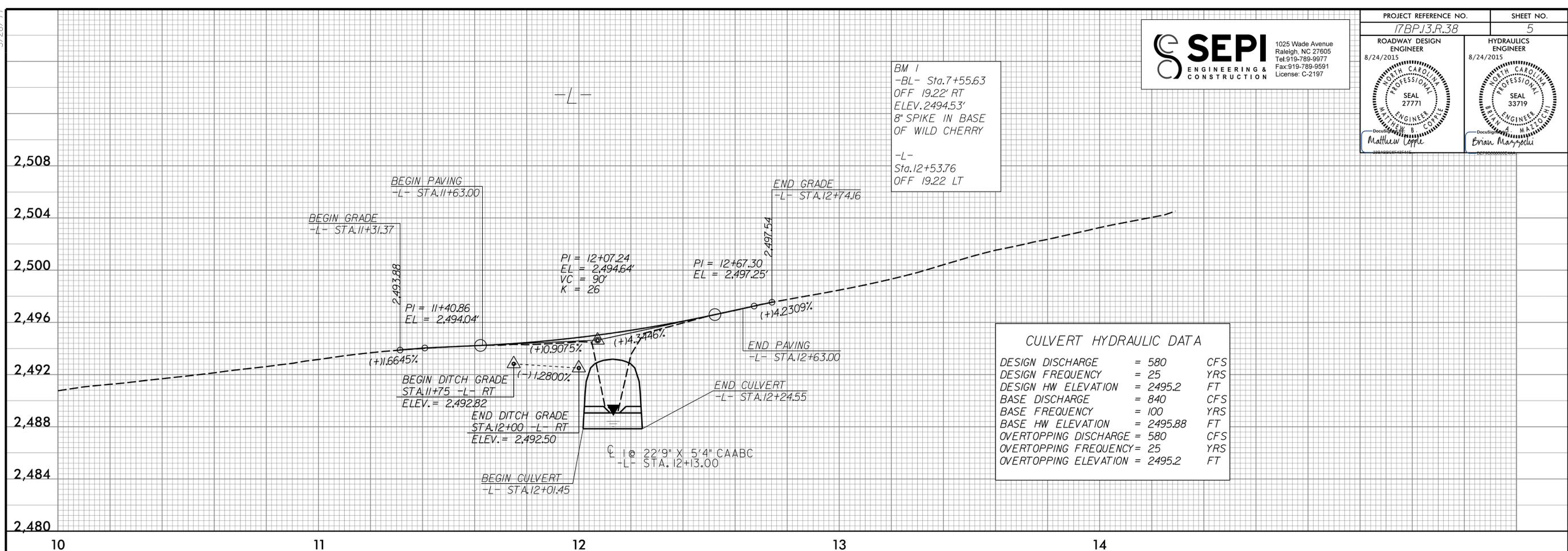


5/28/19



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Fax: 919-789-9991  
License: C-2197

|   |   |
|---|---|
| PROJECT REFERENCE NO.<br><b>17BP13.R.38</b>                   | SHEET NO.<br><b>5</b>                                     |
| ROADWAY DESIGN ENGINEER<br>8/24/2015<br><b>Matthew Copple</b> | HYDRAULICS ENGINEER<br>8/24/2015<br><b>Ernan Magrochi</b> |

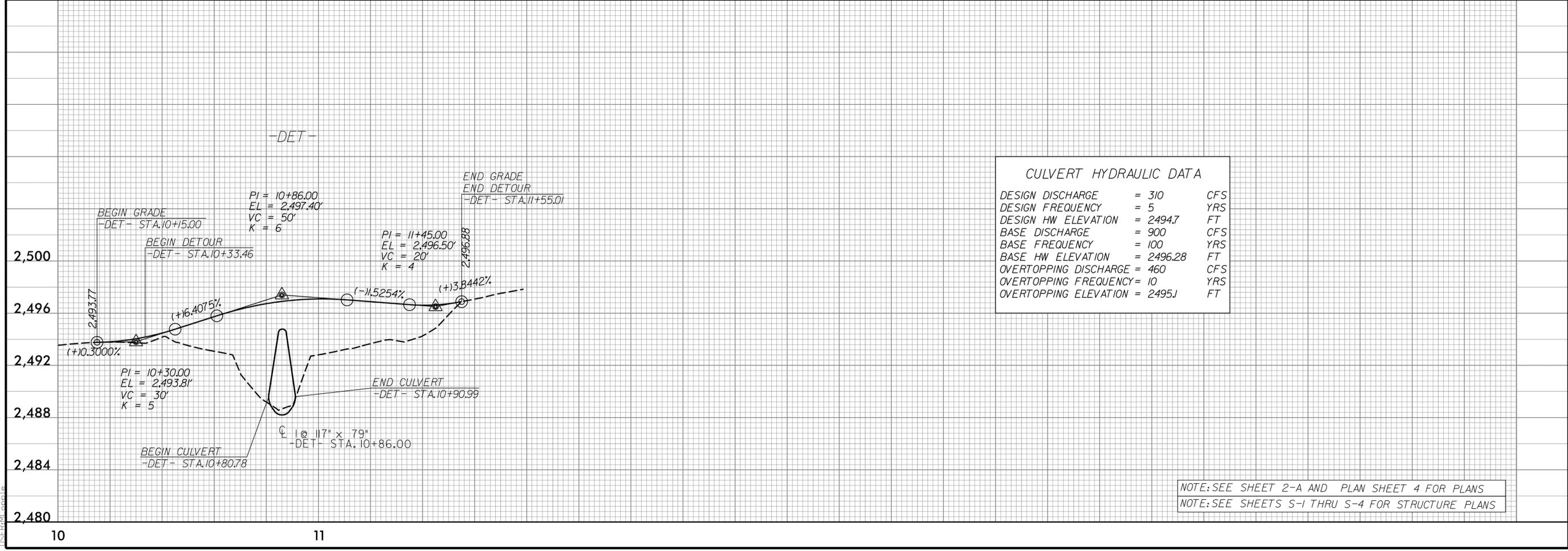


BM 1  
-BL- Sta.7+55.63  
OFF 19.22' RT  
ELEV. 2494.53'  
8" SPIKE IN BASE  
OF WILD CHERRY

-L-  
Sta.12+53.76  
OFF 19.22' LT

**CULVERT HYDRAULIC DATA**

|                       |           |     |
|-----------------------|-----------|-----|
| DESIGN DISCHARGE      | = 580     | CFS |
| DESIGN FREQUENCY      | = 25      | YRS |
| DESIGN HW ELEVATION   | = 2495.2  | FT  |
| BASE DISCHARGE        | = 840     | CFS |
| BASE FREQUENCY        | = 100     | YRS |
| BASE HW ELEVATION     | = 2495.88 | FT  |
| OVERTOPPING DISCHARGE | = 580     | CFS |
| OVERTOPPING FREQUENCY | = 25      | YRS |
| OVERTOPPING ELEVATION | = 2495.2  | FT  |



**CULVERT HYDRAULIC DATA**

|                       |           |     |
|-----------------------|-----------|-----|
| DESIGN DISCHARGE      | = 310     | CFS |
| DESIGN FREQUENCY      | = 5       | YRS |
| DESIGN HW ELEVATION   | = 2494.7  | FT  |
| BASE DISCHARGE        | = 900     | CFS |
| BASE FREQUENCY        | = 100     | YRS |
| BASE HW ELEVATION     | = 2496.28 | FT  |
| OVERTOPPING DISCHARGE | = 460     | CFS |
| OVERTOPPING FREQUENCY | = 10      | YRS |
| OVERTOPPING ELEVATION | = 2495.1  | FT  |

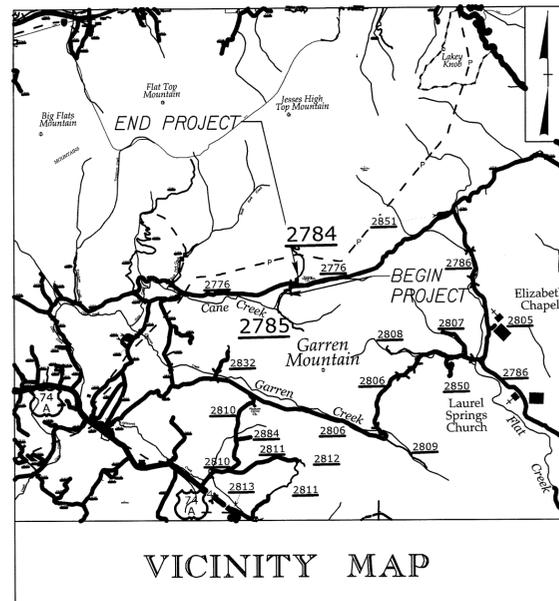
NOTE: SEE SHEET 2-A AND PLAN SHEET 4 FOR PLANS  
NOTE: SEE SHEETS S-1 THRU S-4 FOR STRUCTURE PLANS

8/24/2015 10:05:52 Rdu-pfl\_5.dgn  
11:51:30 copple

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

**BUNCOMBE COUNTY**



VICINITY MAP

**LOCATION: BRIDGE NO. 100592 OVER FORK OF CANE CREEK ON SR 2785 (DYE LEAF ROAD)**

**TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE & PAVING**

**INDEX OF SHEETS**

| SHEET NO. | TITLE   |
|-----------|---|
| TMP-1     | TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS                            |
| TMP-1A    | LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND                  |
| TMP-1B    | TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES AND GENERAL NOTES) |
| TMP-2     | PHASING   |
| TMP-3     | PHASE I DETAIL  |
| TMP-4     | PHASE II DETAIL   |
| TMP-5     | PHASE III DETAIL  |

SHEET NO.  
TMP-1

**BR-100592**

**PROJECT: 17BP.13.R.38**

\$\$\$\$\$SYSTEM\$\$\$\$\$  
\$\$\$\$\$DCN\$\$\$\$\$  
\$\$\$\$\$USERNAME\$\$\$\$\$



**N.C.D.O.T. WORK ZONE TRAFFIC CONTROL**  
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561  
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)  
PHONE: (919) 713-2800 FAX: (919) 771-2745

J. S. BOURNE, P.E. STATE TRAFFIC MANAGEMENT ENGINEER  
J. W. WOOLARD, P.E. TRAFFIC CONTROL PROJECT ENGINEER  
TRAFFIC CONTROL PROJECT DESIGN ENGINEER  
TRAFFIC CONTROL DESIGN ENGINEER



Prepared in the Office of:  
**SEPI** ENGINEERING & CONSTRUCTION  
1025 Wade Avenue  
Raleigh, NC 27605  
Tel: 919-798-9977  
Fax: 919-798-9591  
License: C-2197

APPROVED: *[Signature]*  
DATE: 8-20-14

SEAL  
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037026 STEVEN D. MILLER

# ROADWAY STANDARD DRAWINGS

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

| STD. NO. | TITLE   |
|----------|---|
| 1101.01  | WORK ZONE ADVANCE WARNING SIGNS                     |
| 1101.02  | TEMPORARY LANE CLOSURES                             |
| 1101.03  | TEMPORARY ROAD CLOSURES                             |
| 1101.04  | TEMPORARY SHOULDER CLOSURES                         |
| 1101.05  | WORK ZONE VEHICLE ACCESSES                          |
| 1101.11  | TRAFFIC CONTROL DESIGN TABLES                       |
| 1110.01  | STATIONARY WORK ZONE SIGNS                          |
| 1110.02  | PORTABLE WORK ZONE SIGNS                            |
| 1130.01  | DRUM  |
| 1135.01  | CONES   |
| 1145.01  | BARRICADES - TYPE III                               |
| 1150.01  | FLAGGING DEVICES                                    |
| 1165.01  | WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION   |
| 1180.01  | SKINNY - DRUM                                       |
| 1205.01  | PAVEMENT MARKINGS - LINE TYPES AND OFFSETS          |
| 1205.02  | PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS |
| 1205.12  | PAVEMENT MARKINGS - BRIDGES                         |
| 1250.01  | RAISED PAVEMENT MARKERS - INSTALLATION SPACING      |
| 1251.01  | RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY   |
| 1253.01  | RAISED PAVEMENT MARKERS - SNOWPLOWABLE              |

# LEGEND

## GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.



WORK AREA



REMOVAL



USER DEFINED (IF NEEDED)



USER DEFINED (IF NEEDED)

## TRAFFIC CONTROL DEVICES

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

## TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

## SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

## PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

## PAVEMENT MARKERS

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

## PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

## TEMPORARY PAVEMENT MARKING SCHEDULE

TEMPORARY PAVEMENT MARKINGS

PAINT (4")

- PA WHITE EDGELINE
- PI YELLOW DOUBLE CENTER

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

|           |               |  |   |
|-----------|---------------|--|---|
| APPROVED: | DATE: 4-20-14 |  | <b>ROADWAY STANDARD DRAWINGS &amp; LEGEND</b> |
|           |               |  |   |

## MANAGEMENT STRATEGIES

- A ONE-LANE ONSITE DETOUR WILL BE CONSTRUCTED TO MAINTAIN TRAFFIC DURING CONSTRUCTION
- LANE CLOSURES WILL BE USED TO MAINTAIN TRAFFIC DURING TIE-IN OPERATIONS
- DRIVEWAY ACCESS WITHIN PROJECT LIMITS WILL BE MAINTAINED

## GENERAL NOTES

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

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

### LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

### PAVEMENT EDGE DROP OFF REQUIREMENTS

- F) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

- G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 350 FT IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

### TRAFFIC PATTERN ALTERATIONS

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

### SIGNING

- I) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- J) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.
- K) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.
- L) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- M) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 350 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

### TRAFFIC CONTROL DEVICES

- N) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUM), 1135 (CONES) AND 1180 (SKINNY-DRUM) FOR ADDITIONAL REQUIREMENTS.
- O) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

### PAVEMENT MARKINGS AND MARKERS

- P) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

| ROAD NAME              | MARKING | MARKER |
|------------------------|---------|--------|
| DYE LEAF RD. (SR 2785) | PAINT   | NONE   |

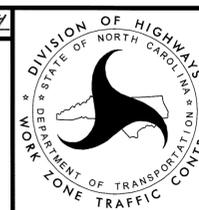
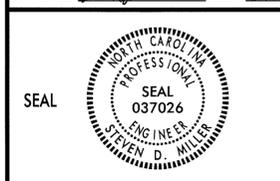
- Q) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- R) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

### MISCELLANEOUS

- S) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) 700 FT AND 350 FT RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

\$\$\$SYTIME\$\$\$  
 \$\$\$ADON\$\$\$  
 \$\$\$SERNAME\$\$\$

APPROVED: *[Signature]* DATE: 8-20-14



**TRANSPORTATION  
OPERATIONS  
PLAN**

## PHASING

MAINTAIN DRIVEWAY ACCESS THROUGHOUT THE ENTIRE PROJECT.  
ENSURE THAT RUNOFF DRAINS AND THAT PONDING IS PREVENTED.

### PHASE I

- STEP 1: USING ROADWAY STANDARD DRAWING (RSD) 1101.01 SHEET 3 OF 3, INSTALL ADVANCE WARNING SIGNS ON SR 2785 (DYE LEAF ROAD).
- STEP 2: USING RSD 1101.02 SHEET 1 OF 15, BEGIN CONSTRUCTION OF -DET- UP TO THE EDGE AND ELEVATION OF THE EXISTING ROADWAY AS SHOWN ON TMP-3.
- STEP 3: USING RSD 1101.02 SHEET 1 OF 15, PERFORM THE FOLLOWING IN A CONTINUOUS MANNER:
- CONSTRUCT A TIE IN FROM THE EXISTING ROADWAY TO THE -DET- ALIGNMENT AS SHOWN ON TMP-4.
  - COMPLETE -DET- CONSTRUCTION.
  - PLACE TRAFFIC CONTROL DEVICES AS SHOWN ON TMP-4.
  - SHIFT TRAFFIC TO A ONE-LANE, TWO-WAY PATTERN ON THE -DET- ALIGNMENT.

### PHASE II

- STEP 1: WHILE MAINTAINING TRAFFIC ON THE -DET- ALIGNMENT, USE RSD 1101.02 SHEET 1 OF 15, TO REMOVE THE EXISTING STRUCTURE AND CONSTRUCT THE PROPOSED STRUCTURE. CONSTRUCT -L- AS SHOWN ON TMP-4 UP TO BUT NOT INCLUDING THE FINAL SURFACE LAYER. DO NOT INSTALL THE GUARDRAIL LEFT OF -L-.
- STEP 2: USING RSD 1101.02 SHEET 1 OF 15, PERFORM THE FOLLOWING IN A CONTINUOUS MANNER:
- CONSTRUCT A TIE IN FROM THE -DET- ALIGNMENT TO THE -L- ALIGNMENT AS SHOWN ON TMP-5.
  - PLACE TEMPORARY PAVEMENT MARKINGS AS SHOWN ON TMP-5.
  - PLACE TRAFFIC CONTROL DEVICES AS SHOWN ON TMP-5 AND SHIFT TRAFFIC TO A ONE-LANE, TWO-WAY PATTERN ON THE RIGHT SIDE OF -L- ALIGNMENT.
  - INSTALL GUARDRAIL LEFT OF -L-.
  - PLACE TRAFFIC IN A TWO-LANE, TWO-WAY PATTERN ON -L-.

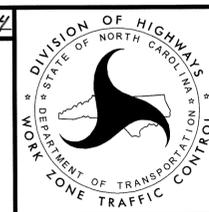
### PHASE III

- STEP 1: REMOVE -DET- AS SHOWN ON TMP-5.
- STEP 2: USING RSD 1101.02 SHEET 1 OF 15, CONSTRUCT FINAL SURFACE LAYER AND PLACE FINAL PAVEMENT MARKINGS ACCORDING TO THE PAVEMENT MARKING PLANS.
- STEP 3: REMOVE ALL TRAFFIC CONTROL DEVICES AND OPEN SR 2785 (DYE LEAF ROAD) TO TRAFFIC.

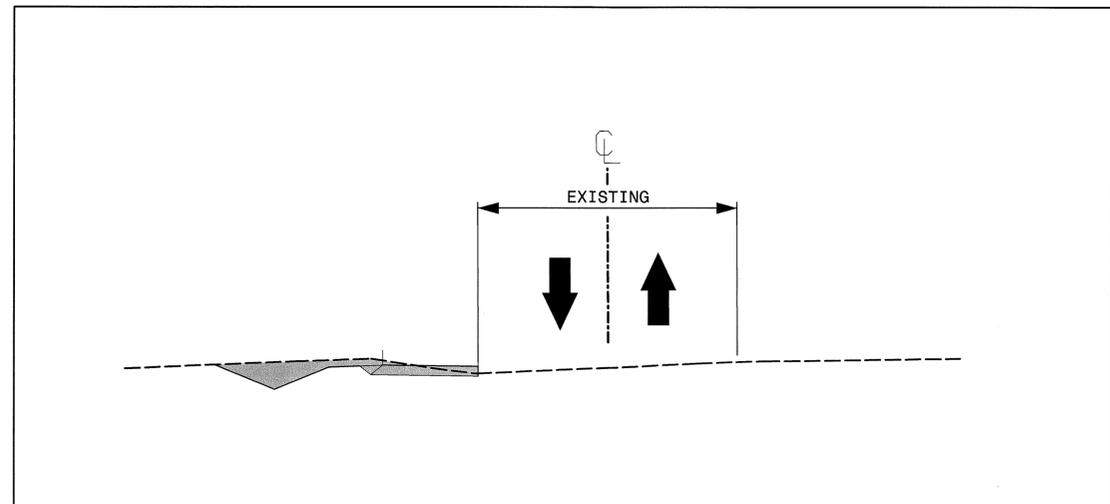
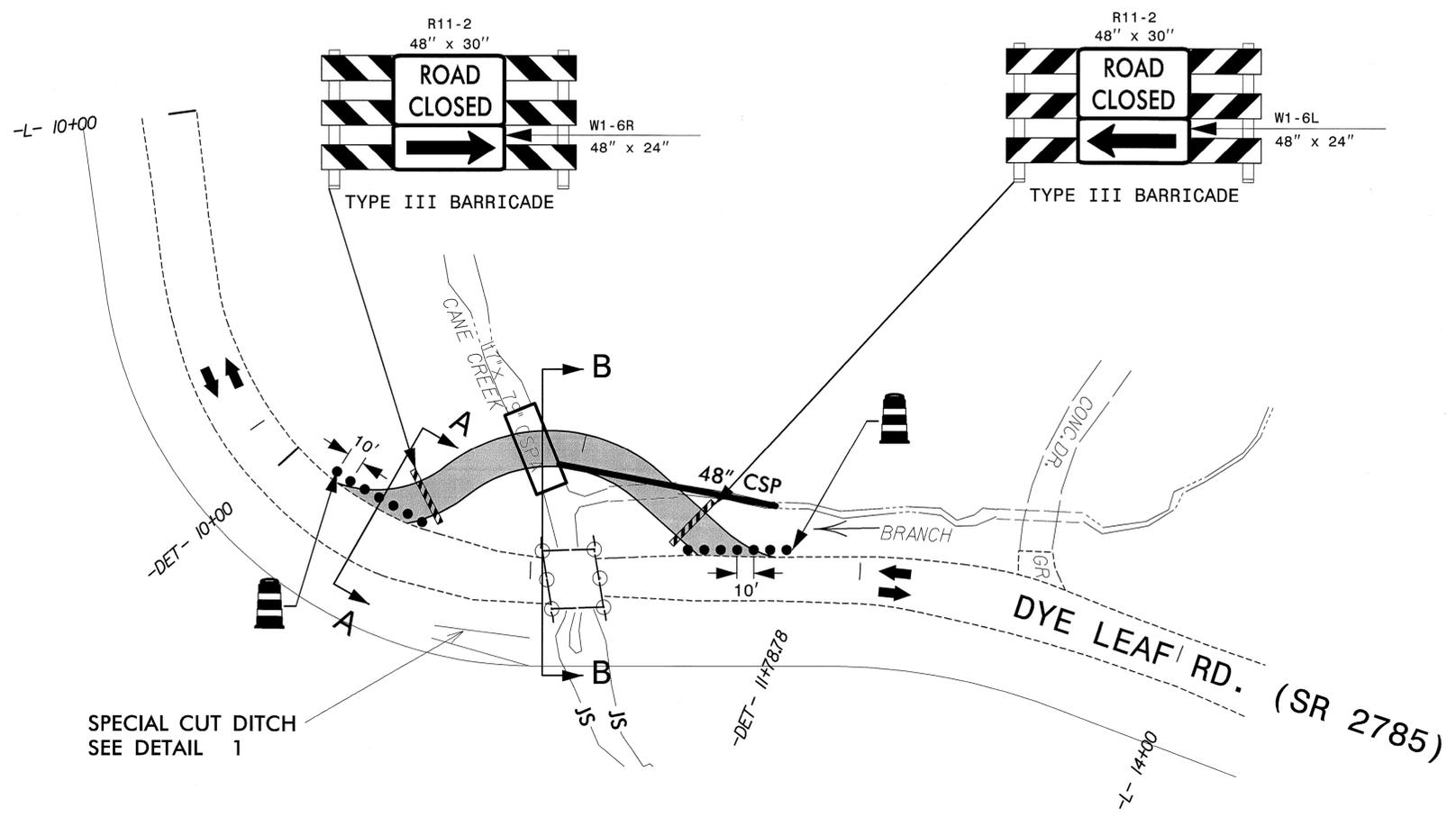
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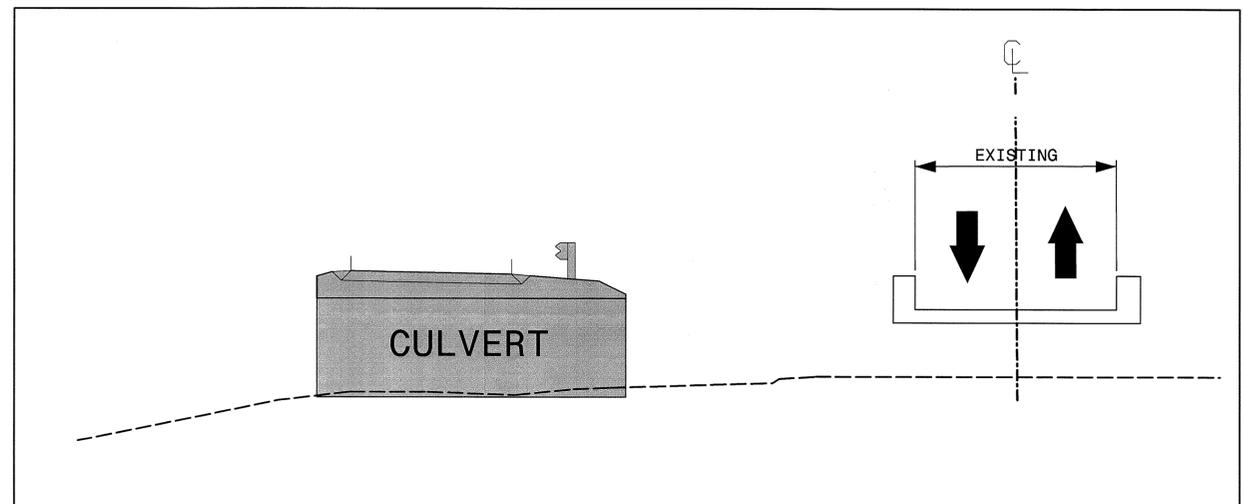
SEAL

**PHASING**



A-A -L- 11+46.67



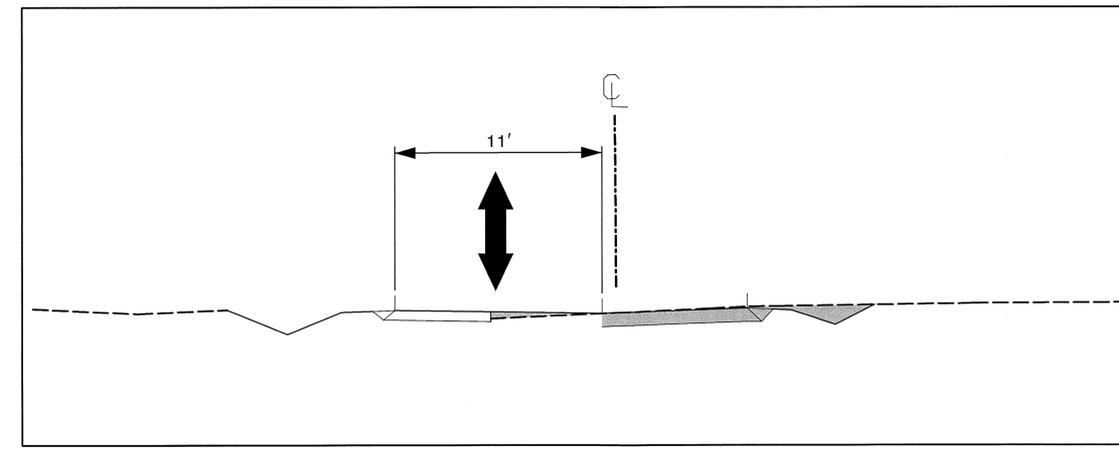
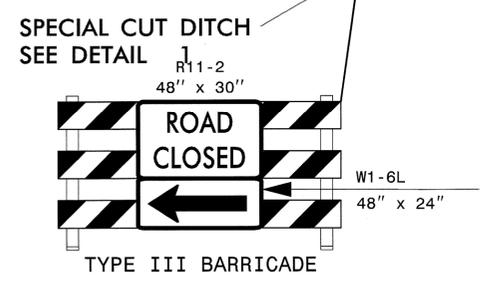
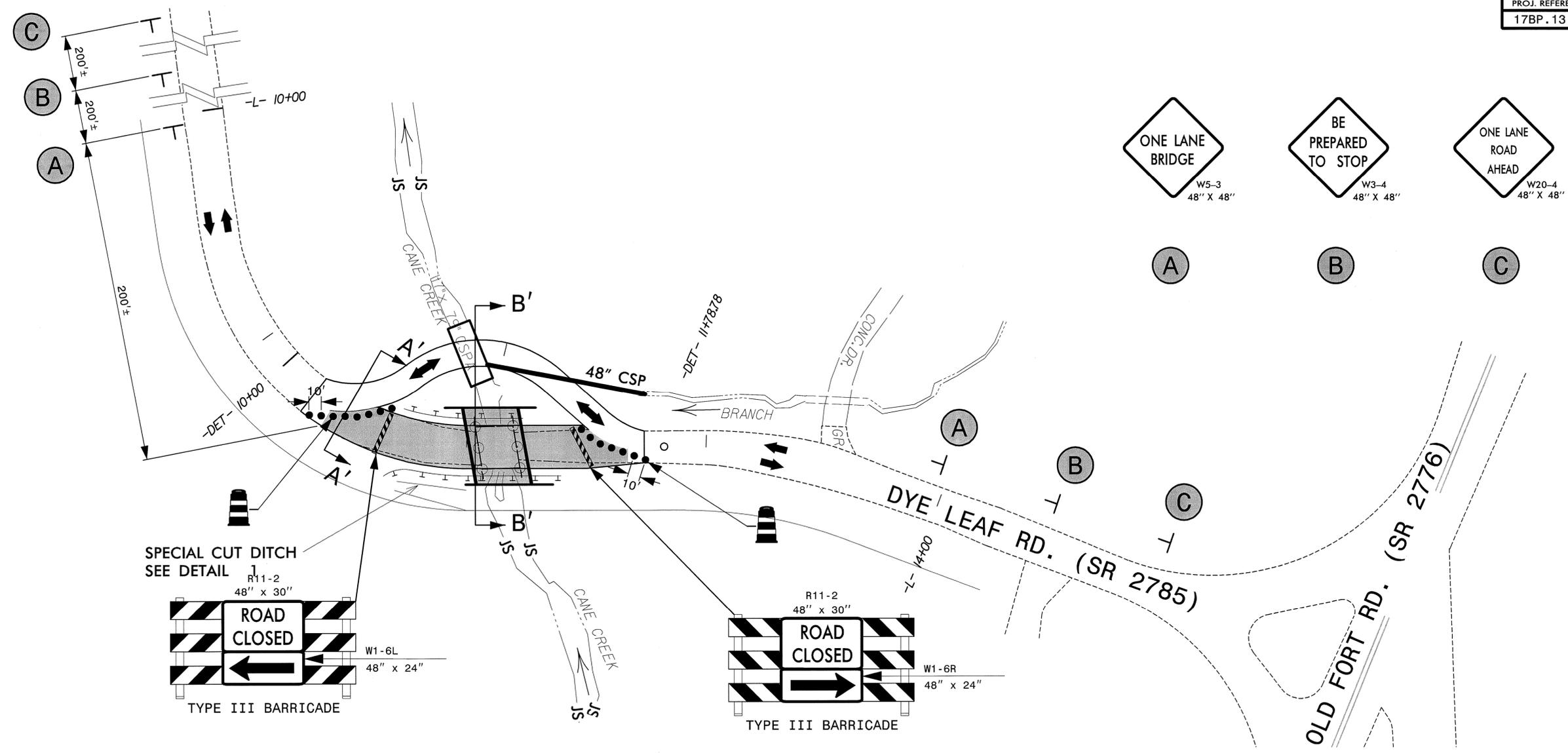
B-B -L- 12+03.62

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\$\$\$\$\$USERNAME\$\$\$\$\$

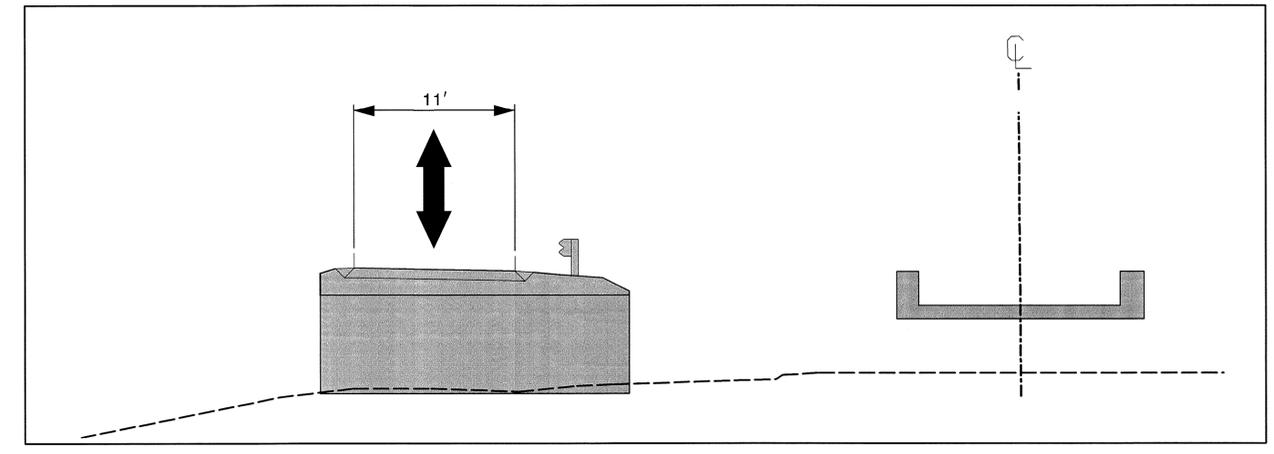
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 SEAL  
 PROFESSIONAL ENGINEER  
 SEVEN D. MILLER  
 037026



PHASE I  
DETAIL



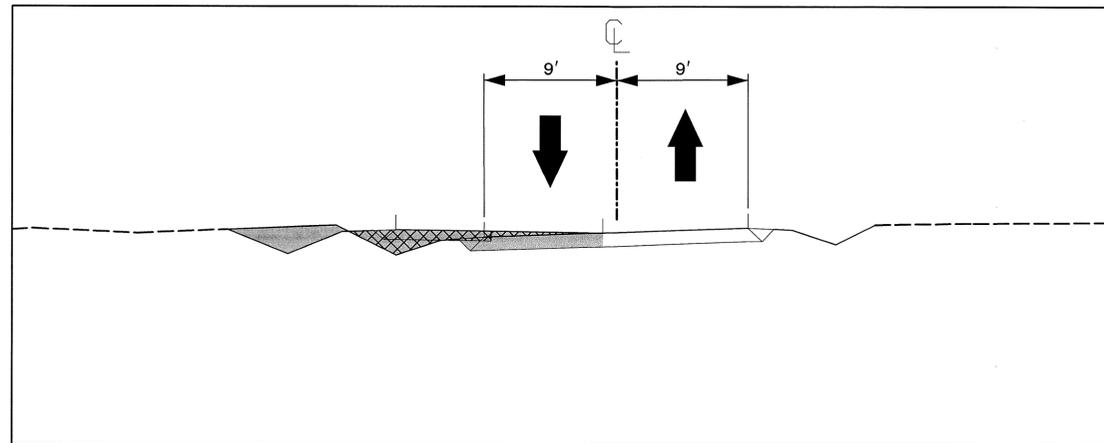
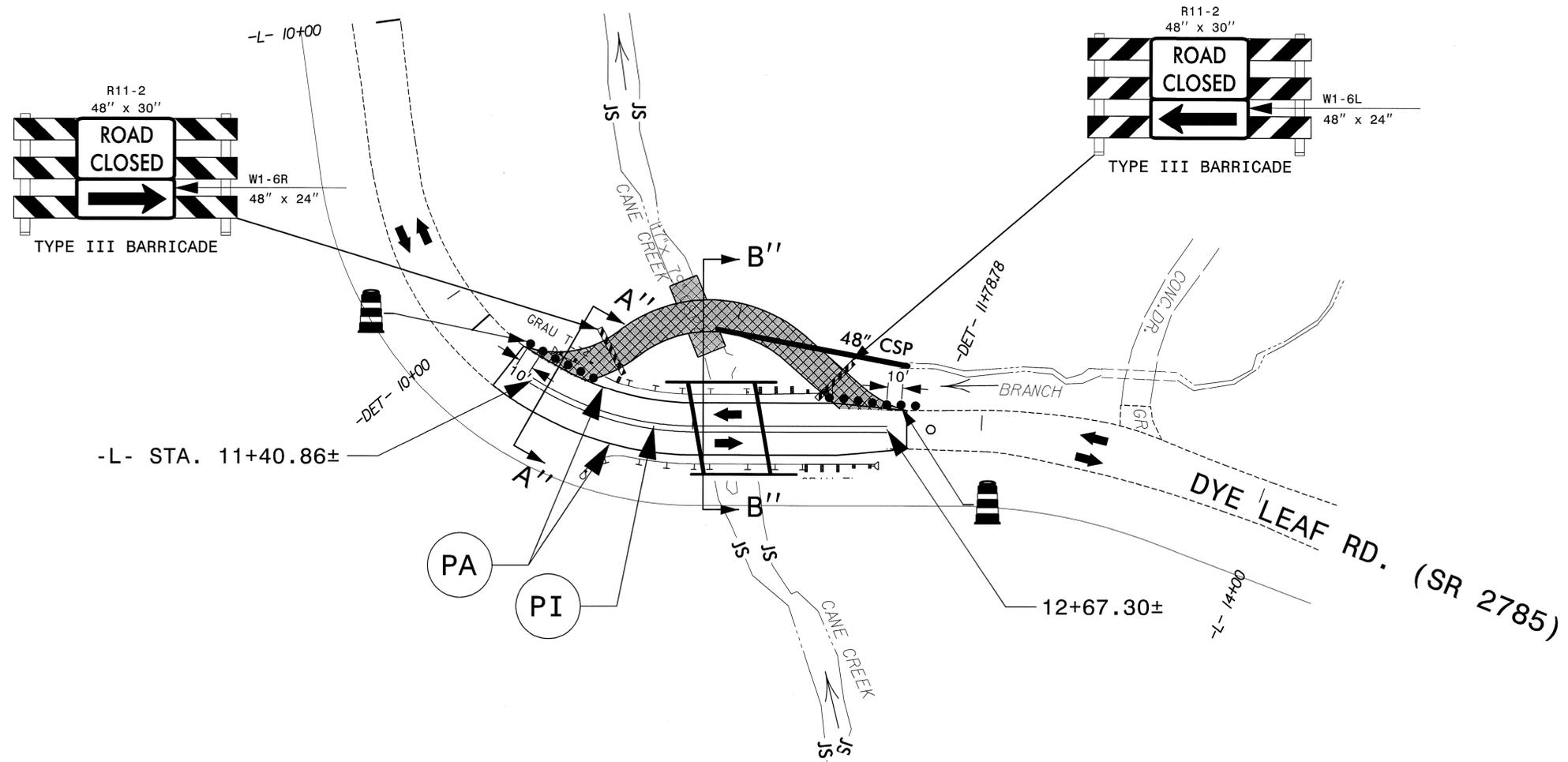
A'-A' -L- 11+46.67



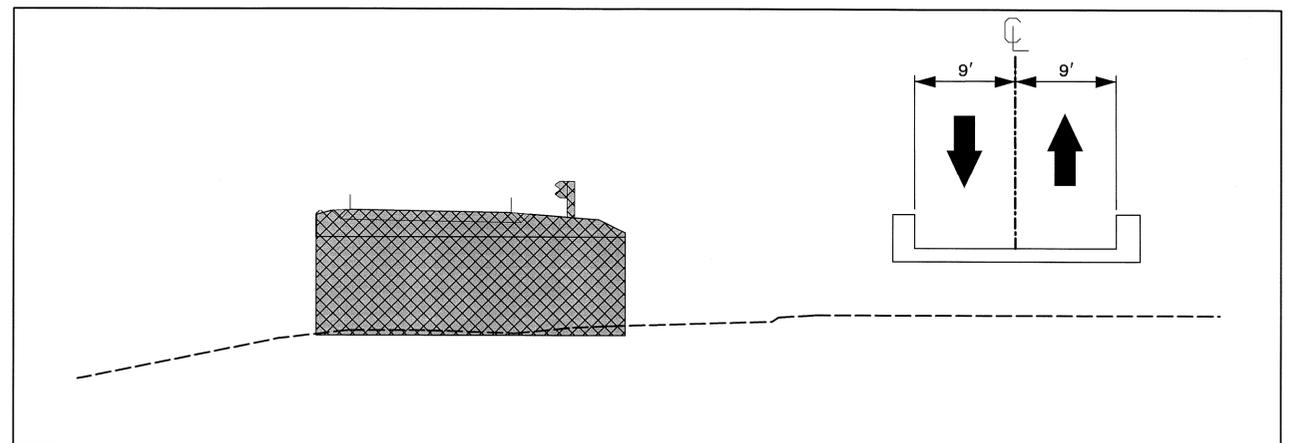
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\$\$\$\$\$SYTIME\$\$\$\$\$  
 \$\$\$CDON\$\$\$\$\$  
 \$\$\$USERNAME\$\$\$\$\$

|                              |               |  |                            |
|------------------------------|---------------|--|----------------------------|
| APPROVED: <i>[Signature]</i> | DATE: 8-30-14 |  | <p>PHASE II<br/>DETAIL</p> |
|                              |               |  |                            |



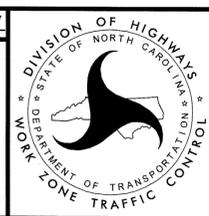
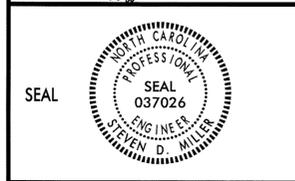
A''-A'' -L- 11+46.67



B''-B'' -L- 12+03.62

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

APPROVED: *[Signature]* DATE: 8-20-19



**PHASE III  
 DETAIL**

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

|   |           |
|---|-----------|
| NO.   | SHEET NO. |
| 17BP.13.R.38  | PMP - 1   |
| APPROVED: <i>Steve Miller</i>   |           |
| DATE: 8-21-14   |           |
| SEAL  |           |
|  |           |

PAVEMENT MARKING PLAN  
BUNCOMBE COUNTY

LOCATION: BRIDGE NO.100592 OVER FORK OF CANE CREEK  
ON SR 2785 (DYE LEAF ROAD)

ROADWAY STANDARD DRAWING

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

| STD. NO. | TITLE  |
|----------|--|
| 1205.01  | PAVEMENT MARKINGS - LINE TYPES AND OFFSETS               |
| 1205.02  | PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS      |
| 1205.12  | PAVEMENT MARKINGS - BRIDGES                              |
| 1261.01  | GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING |
| 1261.02  | GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING   |
| 1262.01  | GUARDRAIL END DELINEATION                                |

GENERAL NOTES

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

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

| ROAD NAME               | MARKING | MARKER |
|-------------------------|---------|--------|
| DYE LEAF ROAD (SR 2785) | PAINT   | NONE   |

- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.  
C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

INDEX

| SHEET NO. | DESCRIPTION                          |
|-----------|--------------------------------------|
| PMP-1     | PAVEMENT MARKING PLAN TITLE SHEET    |
| PMP-2     | PAVEMENT MARKING DETAIL AND SCHEDULE |

17BP.13.R.38

CONTRACT:

N.C.D.O.T. SIGNING AND DELINEATION UNIT

KELVIN L. JORDAN SIGNING & DELINEATION REGIONAL ENGINEER  
SIGNING & DELINEATION PROJECT DESIGN ENGINEER/TECHNICIAN

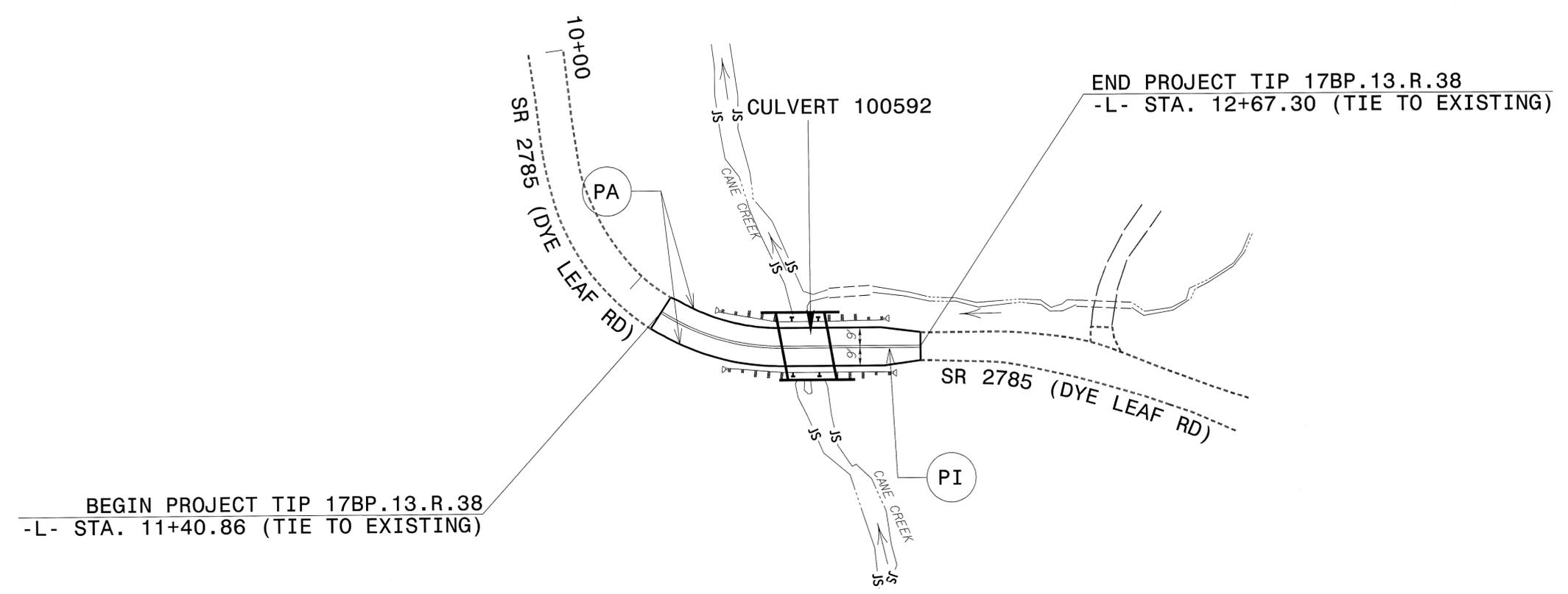


PLAN PREPARED BY: SEPI ENGINEERING & CONSTRUCTION

RICHARD DRAYTON PROJECT DESIGN ENGINEER  
STEVE MILLER, PE TRANSPORTATION ENGINEER



SYSTEMS CONNECTIONS  
SUBMITTALS



| <b>PAVEMENT MARKING SCHEDULE</b> |                                    |
|----------------------------------|------------------------------------|
| SYMBOL                           | DESCRIPTION                        |
| PI                               | PAINT (4")<br>YELLOW DOUBLE CENTER |
| PA                               | PAINT (4")<br>WHITE EDGELINE       |

**PAVEMENT MARKING DETAIL AND SCHEDULE**

09/08/99

PROJECT: 17BP.13.R.38

CONTRACT:

### EROSION AND SEDIMENT CONTROL MEASURES

| Std. #  | Description  | Symbol |
|---------|--|--------|
| 1630.03 | Temporary Silt Ditch   |        |
| 1630.05 | Temporary Diversion  |        |
| 1605.01 | Temporary Silt Fence   |        |
| 1606.01 | Special Sediment Control Fence   |        |
| 1622.01 | Temporary Berms and Slope Drains                                       |        |
| 1630.02 | Silt Basin Type B  |        |
| 1633.01 | Temporary Rock Silt Check Type-A                                       |        |
|         | Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM) |        |
| 1633.02 | Temporary Rock Silt Check Type-B                                       |        |
|         | Wattle / Coir Fiber Wattle   |        |
|         | Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)                   |        |
| 1634.01 | Temporary Rock Sediment Dam Type-A                                     |        |
| 1634.02 | Temporary Rock Sediment Dam Type-B                                     |        |
| 1635.01 | Rock Pipe Inlet Sediment Trap Type-A                                   |        |
| 1635.02 | Rock Pipe Inlet Sediment Trap Type-B                                   |        |
| 1630.04 | Stilling Basin   |        |
| 1630.06 | Special Stilling Basin   |        |
|         | Rock Inlet Sediment Trap:  |        |
| 1632.01 | Type A   |        |
| 1632.02 | Type B   |        |
| 1632.05 | Type C   |        |
|         | Skimmer Basin  |        |
|         | Tiered Skimmer Basin   |        |
|         | Infiltration Basin   |        |

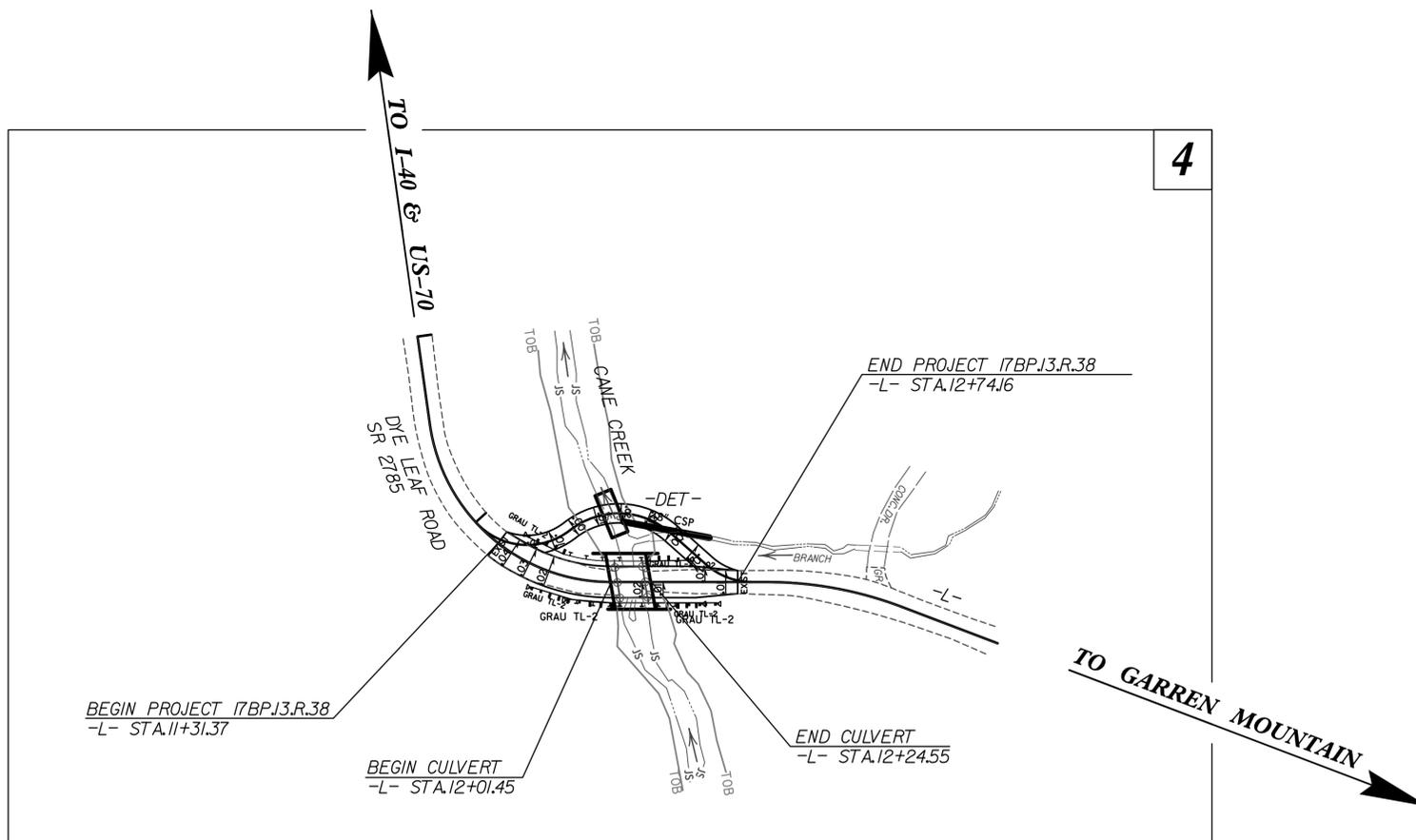
# STATE OF NORTH CAROLINA

## DIVISION OF HIGHWAYS

### PLAN FOR PROPOSED HIGHWAY EROSION CONTROL

## BUNCOMBE COUNTY

#### BRIDGE NO. 592 ON SR 2785 (DYR LEAF ROAD) OVER CANE CREEK



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

#### GRAPHIC SCALES



PLANS

ROADSIDE ENVIRONMENTAL UNIT  
DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

DAVID S. WEBB, PE  
LEVEL III DESIGNER OF EROSION AND SEDIMENT CONTROL PLANS  
3244  
LEVEL III CERTIFICATION NO.

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

Prepared in the Office of:



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Raleigh, NC 27605  
Tel: 919-789-9977  
Fax: 919-789-9591  
License: C-2197

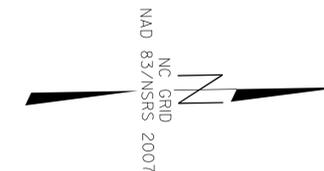
2012 STANDARD SPECIFICATIONS

#### Roadway Standard Drawings

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

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

| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | 17BP.13.R.38                | 1           |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
|                 |                             |             |              |
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\$\$\$\$\$ SYSTEM TIME\$\$\$\$\$  
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\$\$\$\$\$ USERNAME\$\$\$\$\$

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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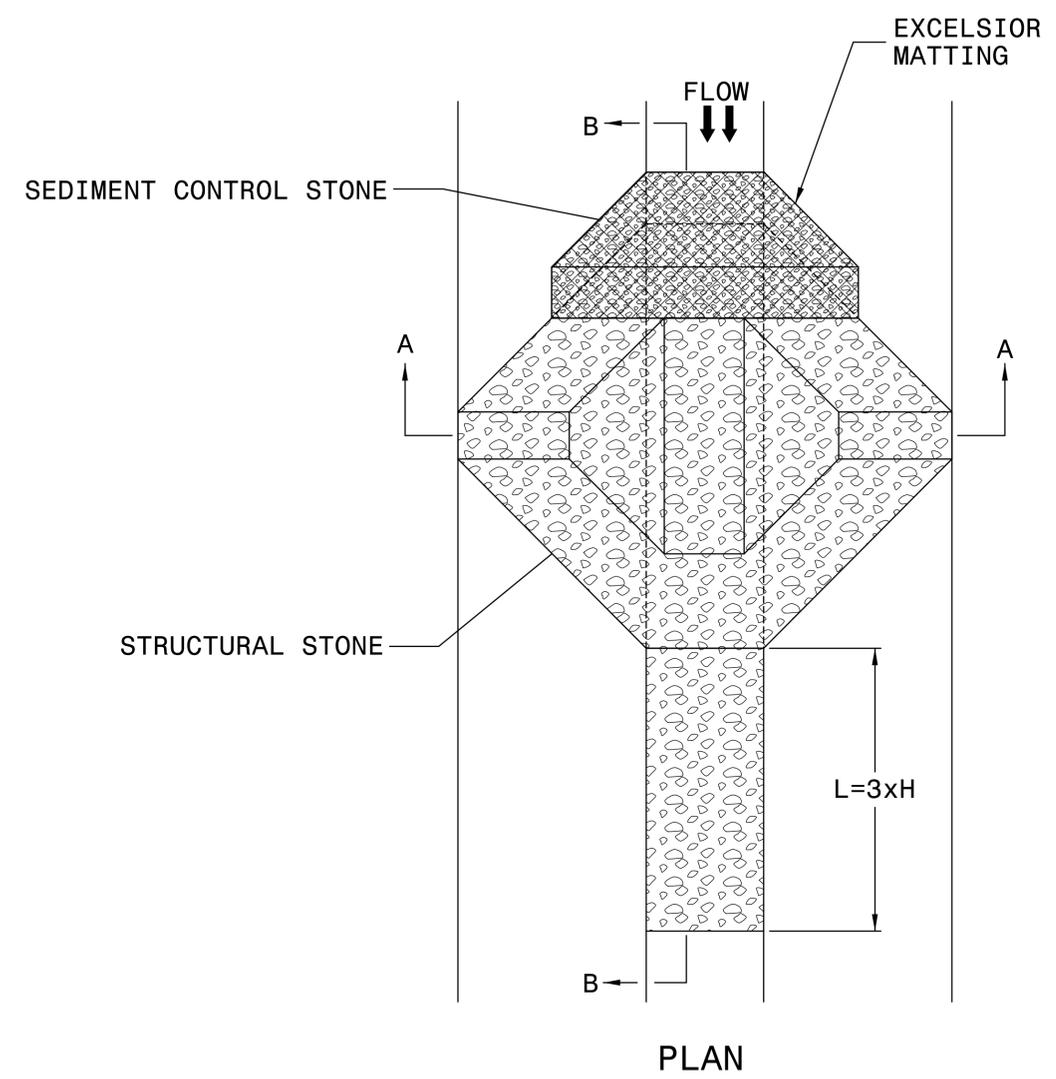
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| <i>17BP13.R.38</i>         | <i>EC-02</i>           |
| ROADWAY DESIGN<br>ENGINEER | HYDRAULICS<br>ENGINEER |

# ***SOIL STABILIZATION TIMEFRAMES***

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

|                                      |                        |
|--------------------------------------|------------------------|
| PROJECT REFERENCE NO.<br>17BP13.R.38 | SHEET NO.<br>EC-2A     |
| RW SHEET NO.                         |                        |
| ROADWAY DESIGN<br>ENGINEER           | HYDRAULICS<br>ENGINEER |

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

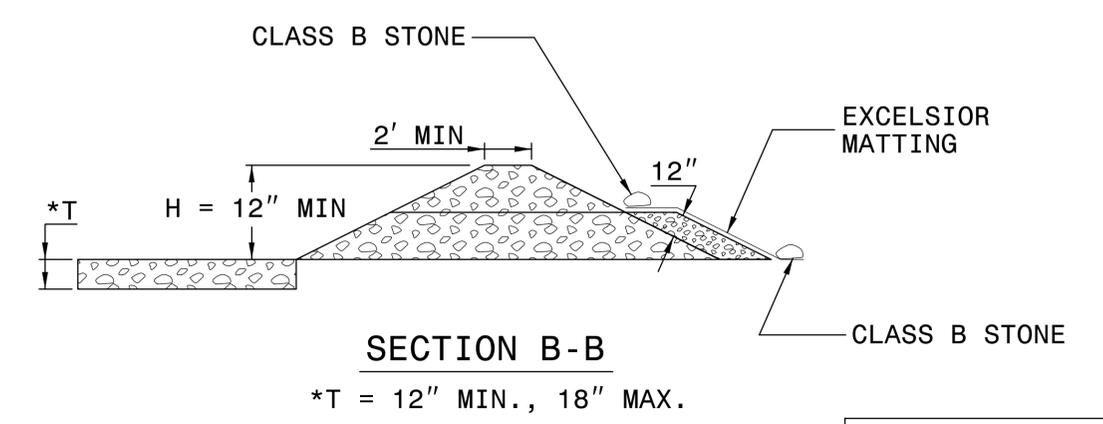
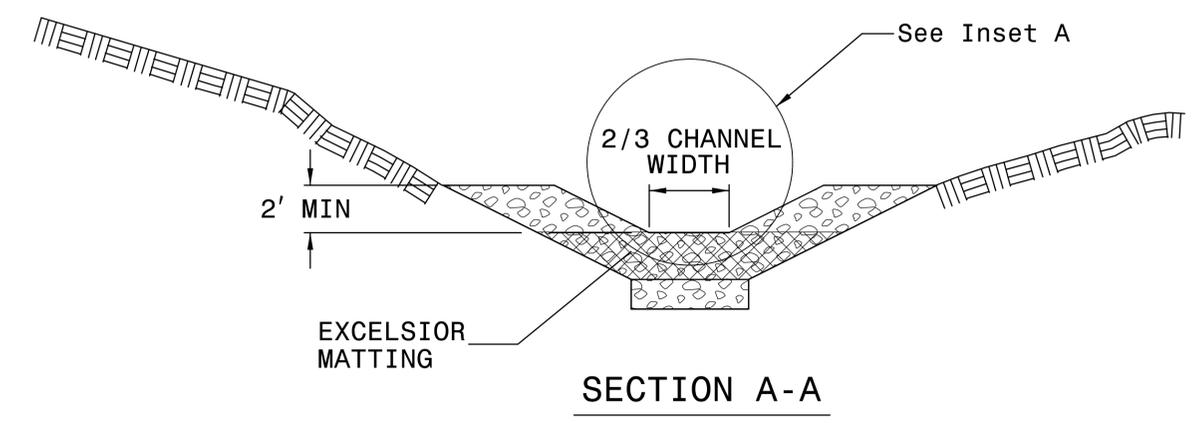
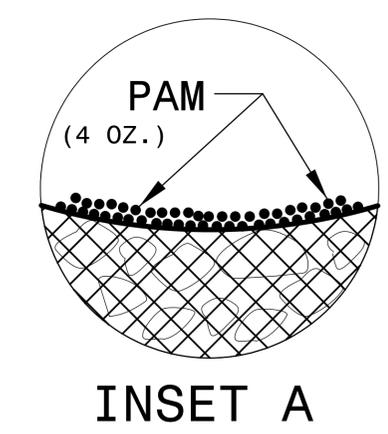


## NOTES

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

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

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



NOT TO SCALE





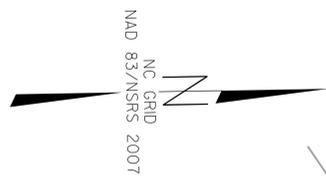
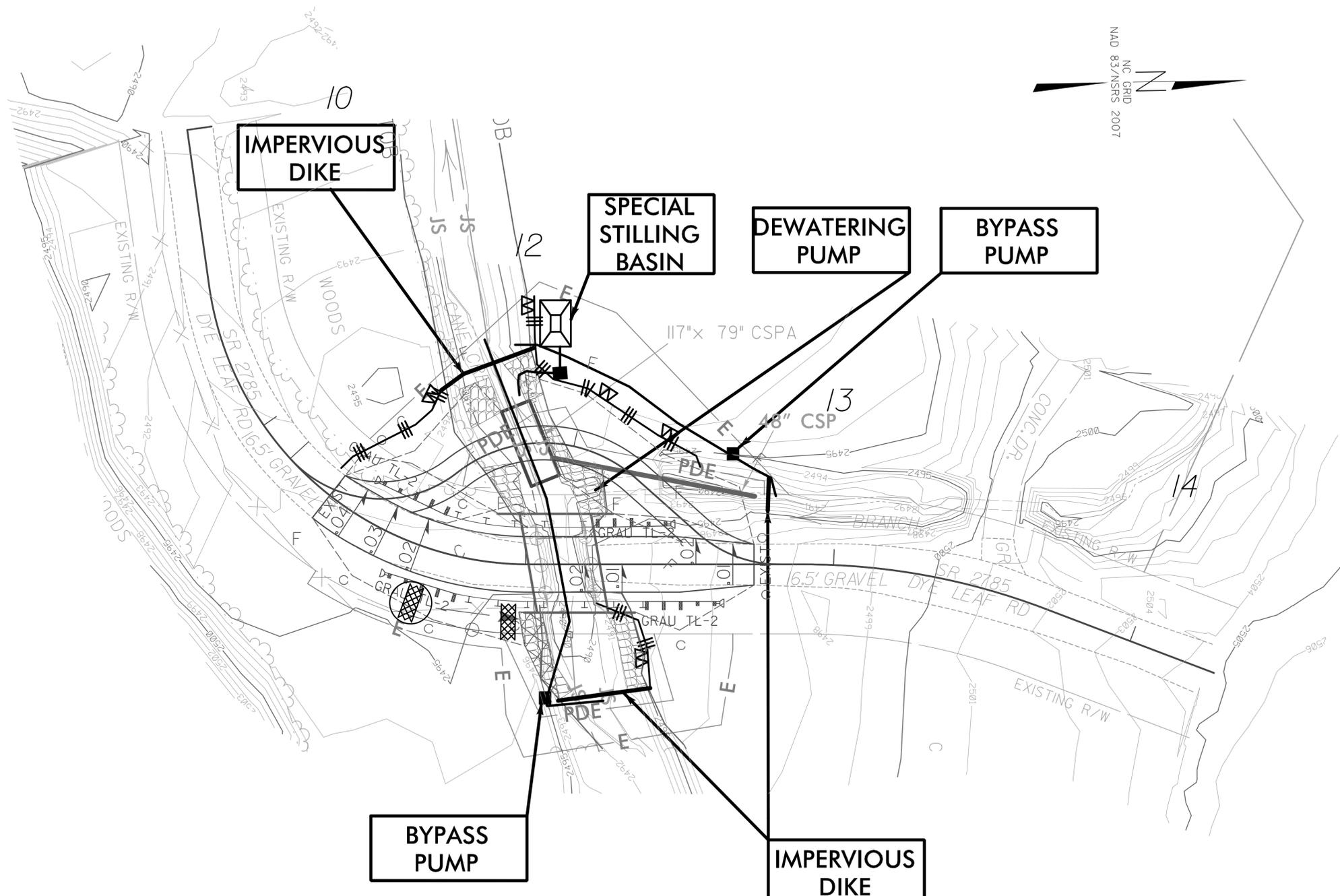
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**CLEARING AND GRUBBING  
EROSION CONTROL FOR  
CONSTRUCTION SHEET 4**

**NOTE:**  
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B  
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT  
DRAINAGE OUTLETS.



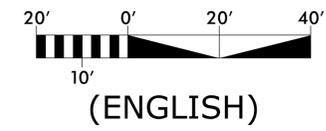
|   |                                 |
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| PROJECT REFERENCE NO.<br><b>17BP13.R.38</b> | SHEET NO.<br><b>EC5/CONST.4</b> |
| RW SHEET NO.                                |                                 |
| ROADWAY DESIGN<br>ENGINEER                  | HYDRAULICS<br>ENGINEER          |



**CONSTRUCTION SEQUENCE (STA.12+13 -L-)**

1. INSTALL PERIMETER EROSION CONTROL MEASURES INCLUDING SPECIAL STILLING BASIN, DEWATERING AND BYPASS PUMPS.
2. INSTALL IMPERVIOUS DIKES AND BEGIN BYPASS OF CREEK.
3. DEWATER WORK AREA THROUGH SPECIAL STILLING BASIN.
4. INSTALL TEMPORARY 117" x 79" CSPA AND 48" CSP BUILDDETOUR ROADWAY.
5. REROUTE TRAFFIC PER APPROVED TRAFFIC CONTROL PLANS.
6. REMOVE EXISTING BRIDGE AND HEADWALLS.
7. INSTALL CULVERT AND HEADWALLS. BACKFILL, STABILIZE BANKS, FILL SLOPES AND DISTURBED DITCHES.
8. ENSURE DISTURBED LAND IS STABILIZED.
9. REMOVE TEMPORARY EROSION CONTROL DEVICES.

- NOTES:**
1. CULVERT CONSTRUCTION SHALL BE PERFORMED IN ONLY DRY OR ISOLATED SECTIONS OF CHANNEL.
  2. IMPERVIOUS DIKES ARE TO BE USED TO ISOLATE WORK FROM STREAM FLOW AS NECESSARY.
  3. ALL GRADED AREAS SHALL BE STABILIZED WITHIN 24 HOURS.
  4. MAINTENANCE OF STREAM FLOW OPERATIONS SHALL BE INCIDENTAL TO THE WORK. THIS INCLUDES IMPERVIOUS DIKES, DIVERSION PIPES, PUMPS AND HOSES.
  5. PUMPS AND HOSES SHALL BE OF SUFFICIENT SIZE TO DEWATER THE WORK AREA.
  6. THE CONTRACTOR SHALL NOT PUMP SEDIMENT-LADEN WATER DIRECTLY INTO STREAM. FOR DE-WATERING OF CULVERT SITES, THE CONTRACTOR SHALL FILTER SEDIMENT-LADEN WATER THROUGH SPECIAL STILLING BASIN.



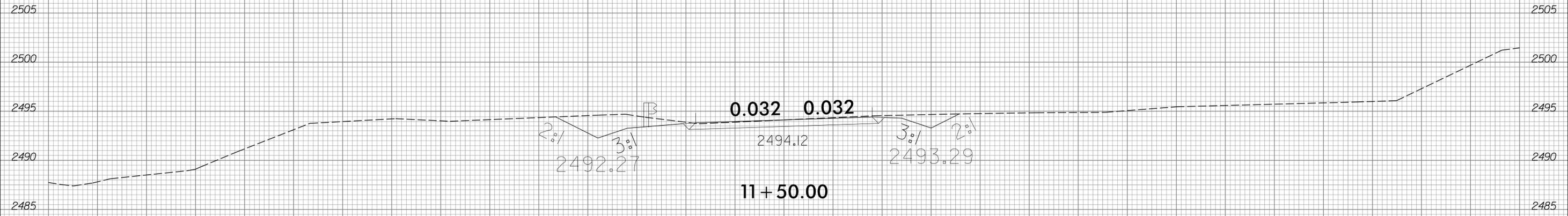
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8/23/99

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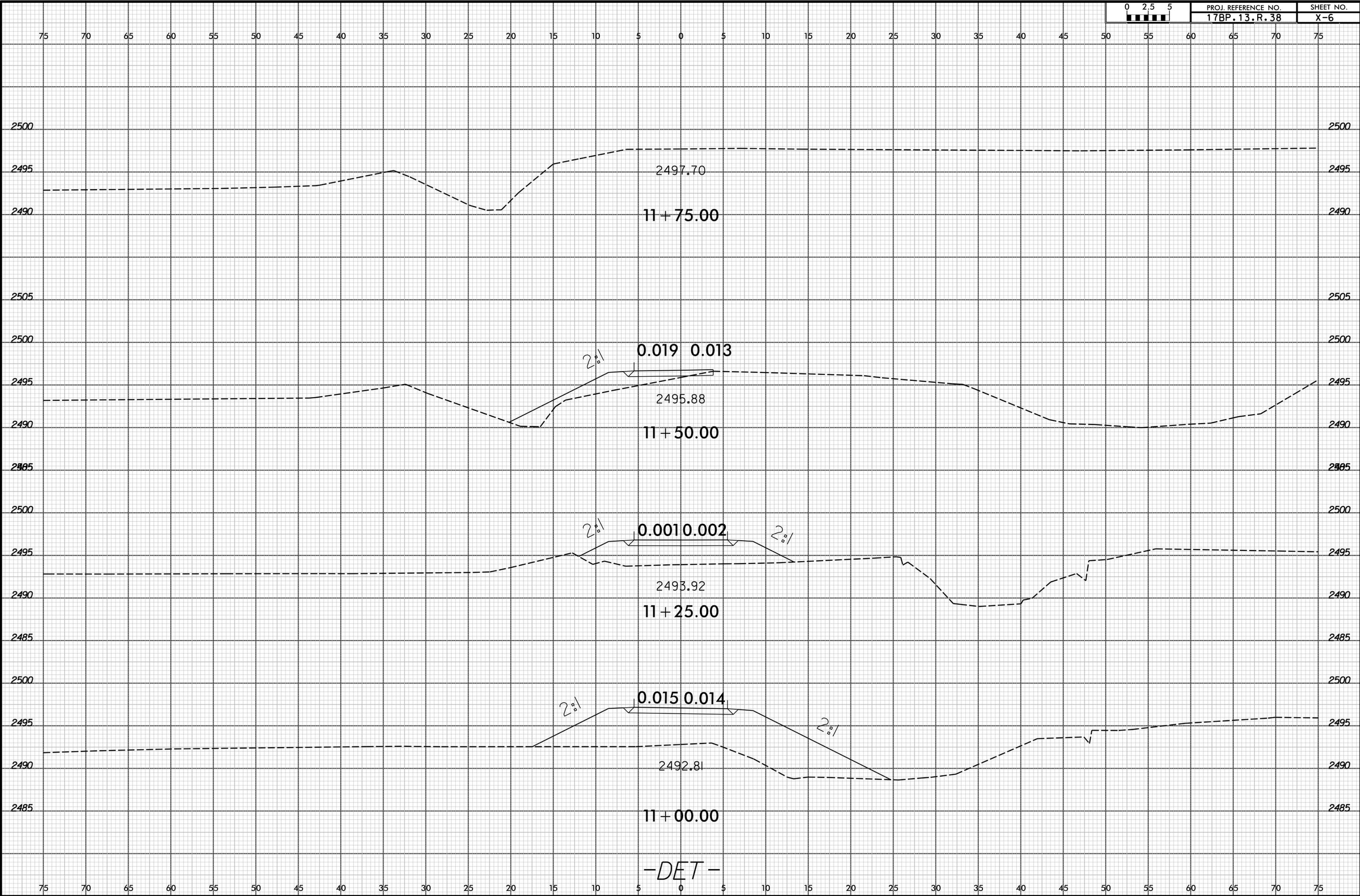


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PROJ. REFERENCE NO.  
17BP.13.R.38

SHEET NO.  
X-6



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**DESCRIPTION OF EXISTING BRIDGE**  
 1 SPAN @ 16'-6" 1/2" ASPHALT WEARING SURFACE ON 4"x8" TIMBER FLOOR ON W10 STEEL I-BEAMS @ VAR. CTS.;  
 END BENTS: TIMBER CAP/TIMBER POST & SILLS  
 18.2' DECK OUT-TO-OUT

**NOTES**

THE QUANTITY OF RIP RAP TO BE PAID FOR WILL BE THE ACTUAL NUMBER OF TONS OF EACH CLASS RIP RAP WHICH HAS BEEN INCORPORATED INTO THE COMPLETED AND ACCEPTED WORK. THE RIP RAP WILL BE MEASURED BY BEING WEIGHED ON TRUCKS ON CERTIFIED PLATFORM SCALES OR OTHER CERTIFIED WEIGHING DEVICES. THE QUANTITY OF RIP RAP WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON. PLAIN RIP RAP CLASS II (2'-0" THICK).

EXISTING BRIDGE SHALL BE REMOVED BY SAVING AND/OR NON-SHATTERING METHODS SUCH THAT DEBRIS WILL NOT FALL INTO THE WATER.

MINIMUM DESIGN FILL IS 1.7'  
 MAXIMUM DESIGN FILL IS < 4.0'

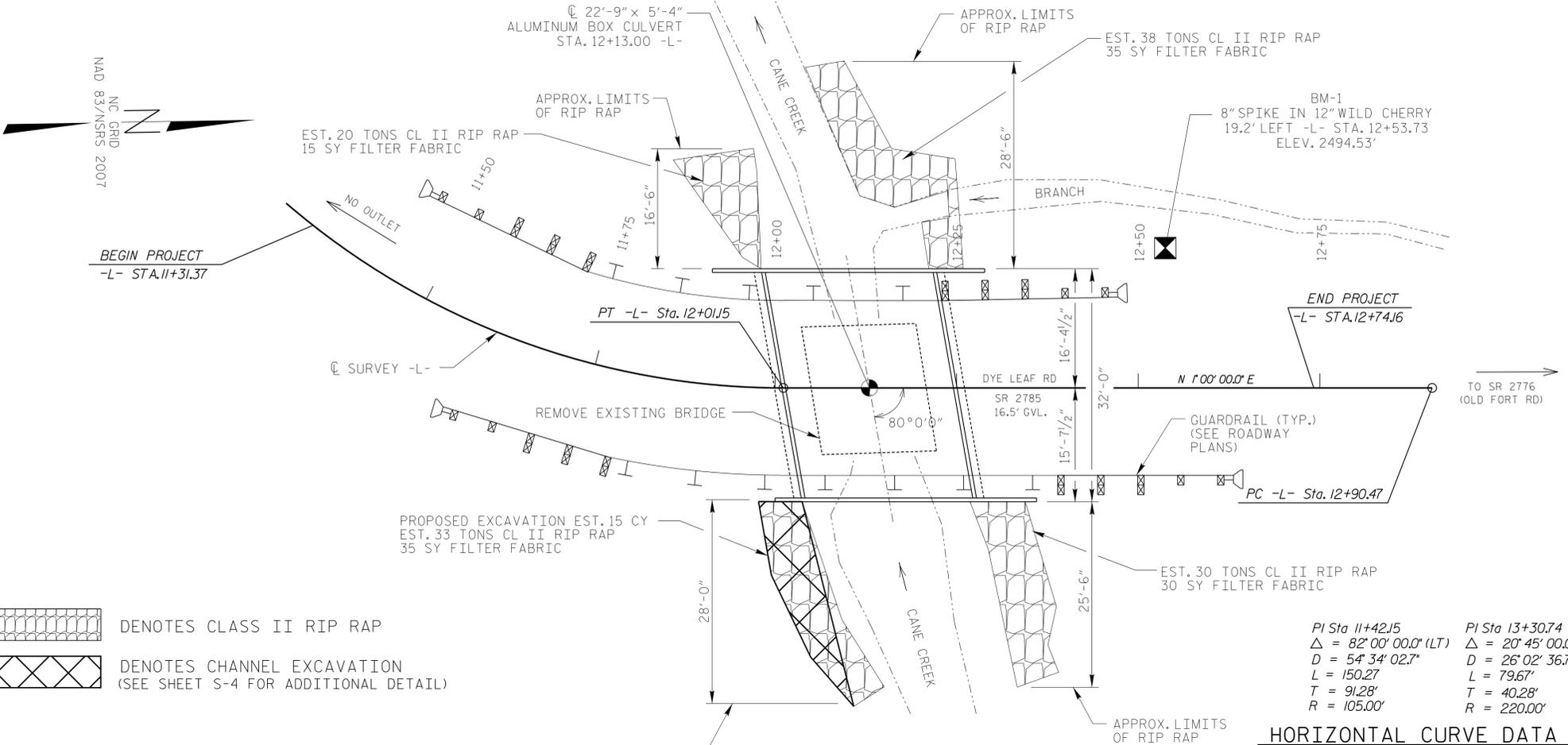
ASSUMED LIVE LOAD - HL-93 OR ALTERNATE.

ALUMINUM BOX CULVERT TO BE DESIGNED BY A NORTH CAROLINA REGISTERED ENGINEER IN ACCORDANCE WITH APPLICABLE PORTIONS OF STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY AASHTO. CONSTRUCTION SHALL MEET THE APPLICABLE SECTIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

NATIVE MATERIAL REMOVED FROM THE CHANNEL TO ALLOW FOR THE INSTALLATION OF THE CULVERT SHALL BE USED FOR BACKFILLING INSIDE THE CULVERT. SELECT BACKFILL AND COIR FIBER MATTING SHALL BE INCLUDED IN THE CONTRACT PRICE BID FOR "EXCAVATION AND EMBANKMENT."

ADT = 360 VPD FOR YEAR 2025.

| TOTAL STRUCTURE QUANTITIES                    |          |
|---|----------|
| ALUMINUM BOX CULVERT                          | LUMP SUM |
| REMOVAL OF EXISTING STRUCTURE, STA. 12+13     | LUMP SUM |
| CULVERT EXCAVATION, STA. 12+13                | LUMP SUM |
| FOUNDATION CONDITIONING MATERIAL, BOX CULVERT | 30 TONS  |
| CHANNEL EXCAVATION                            | 15 CY    |
| RIP RAP, CLASS II (2'-0" THK.)                | 121 TONS |
| GEOTEXTILE FOR DRAINAGE                       | 115 SY   |
| COIR FIBER MAT                                | 35 SY    |
| CLASS AA CONCRETE (GUARDRAIL FOOTING)         | 4.4 CY   |
| REINFORCING STEEL (GUARDRAIL FOOTING)         | 448 LBS  |



**HORIZONTAL CURVE DATA -L-**

|                                     |                                     |
|-------------------------------------|-------------------------------------|
| PI Sta 11+42.15                     | PI Sta 13+30.74                     |
| $\Delta = 82^\circ 00' 00.0\" (LT)$ | $\Delta = 20^\circ 45' 00.0\" (LT)$ |
| $D = 54^\circ 34' 02.7\"$           | $D = 26^\circ 02' 36.7\"$           |
| $L = 150.27'$                       | $L = 79.67'$                        |
| $T = 91.28'$                        | $T = 40.28'$                        |
| $R = 105.00'$                       | $R = 220.00'$                       |

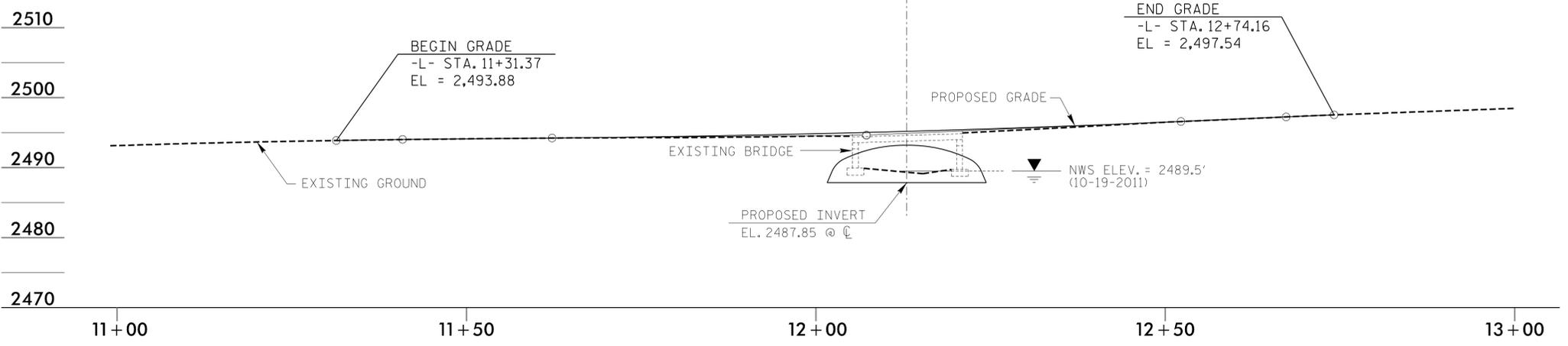
| HYDRAULIC DATA        |               |
|-----------------------|---------------|
| DESIGN DISCHARGE      | = 580 CFS     |
| DESIGN FREQUENCY      | = 25 YRS      |
| DESIGN HW ELEVATION   | = 2495.2 FT   |
| DRAINAGE AREA         | = 1.7 SQ. MI. |
| BASE DISCHARGE (Q100) | = 840 CFS     |
| BASE HW ELEVATION     | = 2495.88 FT  |

| OVERTOPPING FLOOD DATA |             |
|------------------------|-------------|
| OVERTOPPING DISCHARGE  | = 580 CFS   |
| OVERTOPPING FREQUENCY  | = 25 YRS    |
| OVERTOPPING ELEVATION  | = 2495.2 FT |

|               |               |               |               |               |           |
|---------------|---------------|---------------|---------------|---------------|-----------|
| (+1.6645%     | (+10.9075%    | (+10.9075%    | (+4.3446%     | (+4.3446%     | (+4.2309% |
| PI = 11+40.86 | PI = 12+07.24 | PI = 12+67.30 | EL = 2,494.64 | EL = 2,497.25 |           |
| EL = 2,494.04 | L = 90'       |               |               |               |           |

**GRADE DATA -L-**



**PROFILE ALONG CENTERLINE SURVEY -L-**

**V&M**  
**Vaughn & Melton**  
 Consulting Engineers  
 Asheville, North Carolina  
 828-253-2796  
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Professional Engineer Seal  
 DENNIS A. BOULDER  
 038361  
 3-14-2014

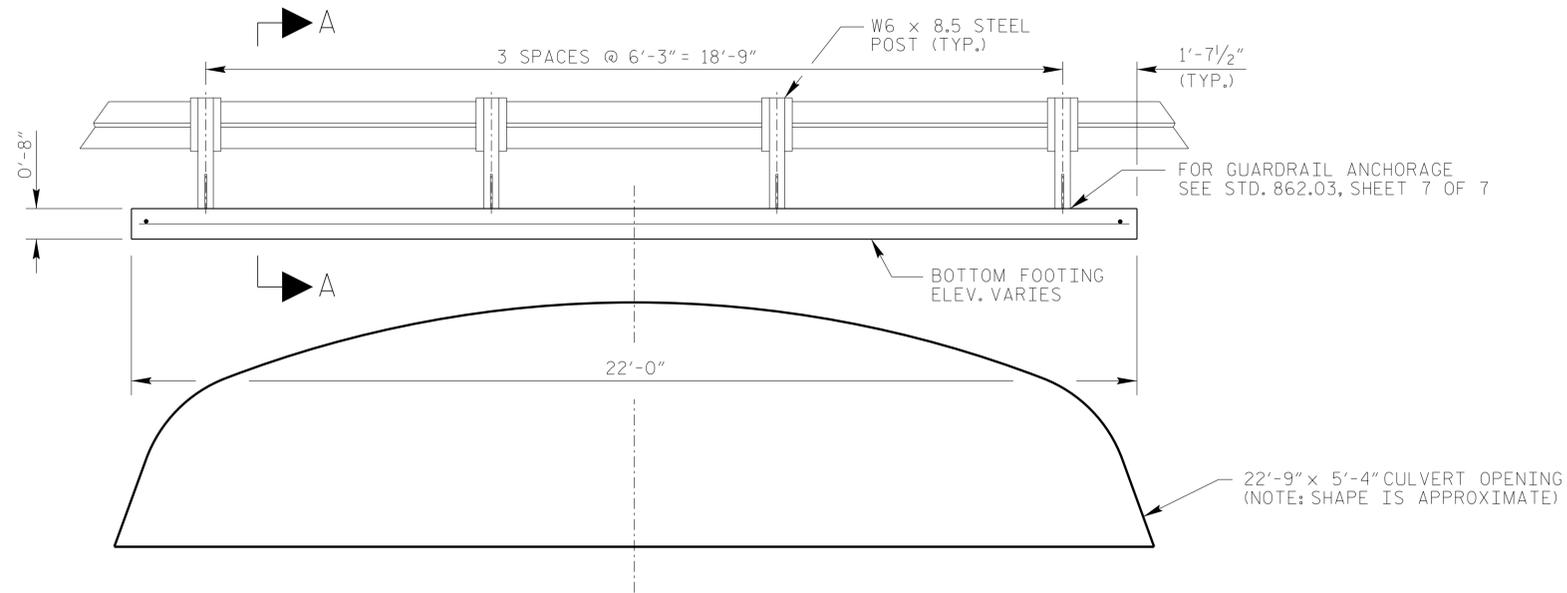
PROJECT NO. 17BP.13.R.38  
 BUNCOMBE COUNTY  
 STATION: 12+13.00 -L-  
 REPLACES BRIDGE NO. 592

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 BRIDGE NO. 592 ON SR 2785  
 OVER CANE CREEK

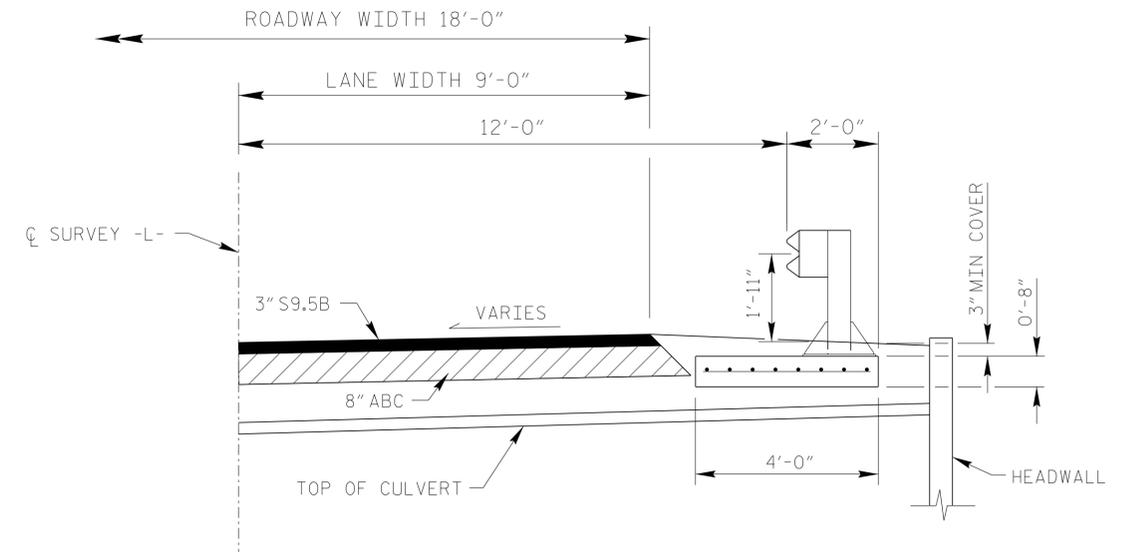
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| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-1          |  |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |  |
| 2         |     |       | 4   |     |       | 4            |  |

DWN. BY: DAB DATE: 3/14  
 CHKD. BY: HLW DATE: 3/14  
 DES. EGR. OF RECORD: DAB DATE: 3/14



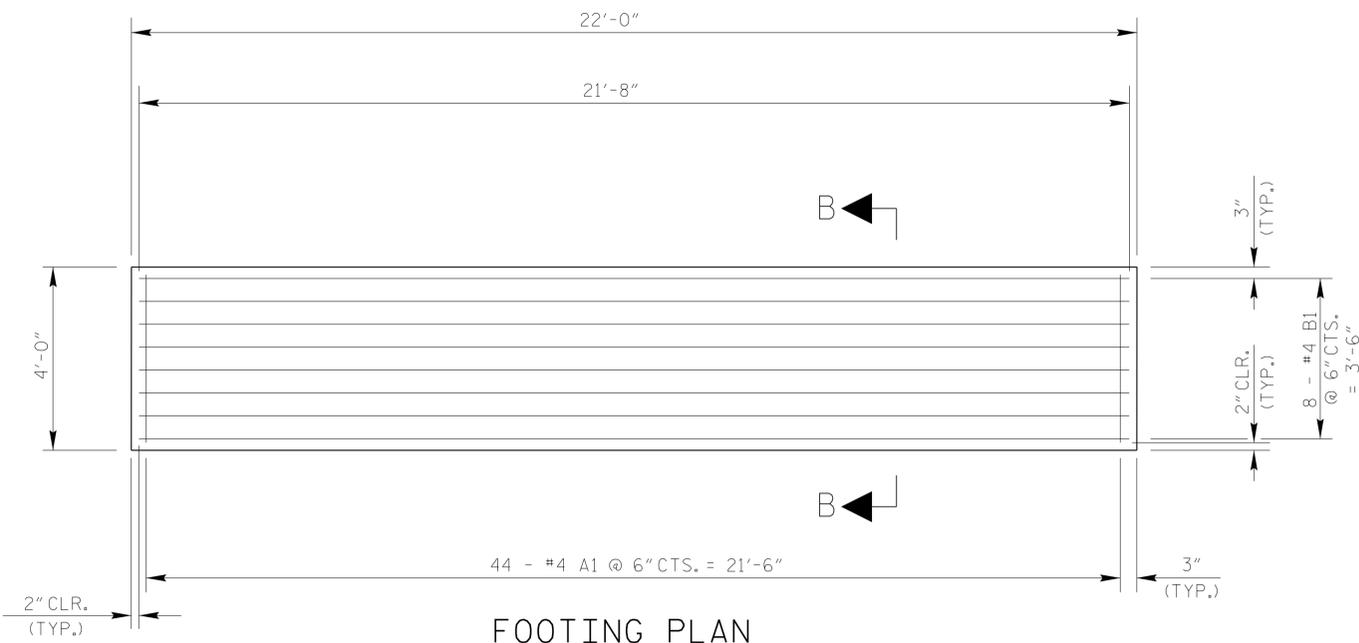


END ELEVATION

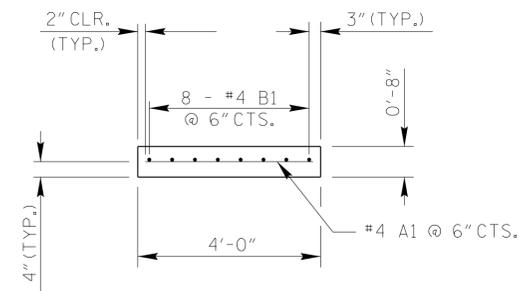


SECTION A-A

NOTE: FOR GUARDRAIL ANCHORAGE TO FOOTING DETAILS SEE NCDOT STD. DWG. 862.03, SHEET 7 OF 7



FOOTING PLAN



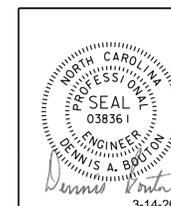
SECTION B-B

| BILL OF MATERIAL             |     |      |      |        |        |
|------------------------------|-----|------|------|--------|--------|
| FOR ONE SLAB (2 REQ'D)       |     |      |      |        |        |
| BAR                          | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| A1                           | 44  | 4    | STR. | 3'-8"  | 108    |
| B1                           | 8   | 4    | STR. | 21'-8" | 116    |
| REINFORCING STEEL LBS. =     |     |      |      |        | 224    |
| CLASS AA CONCRETE CU. YDS. = |     |      |      |        | 2.2    |

**V&M**  
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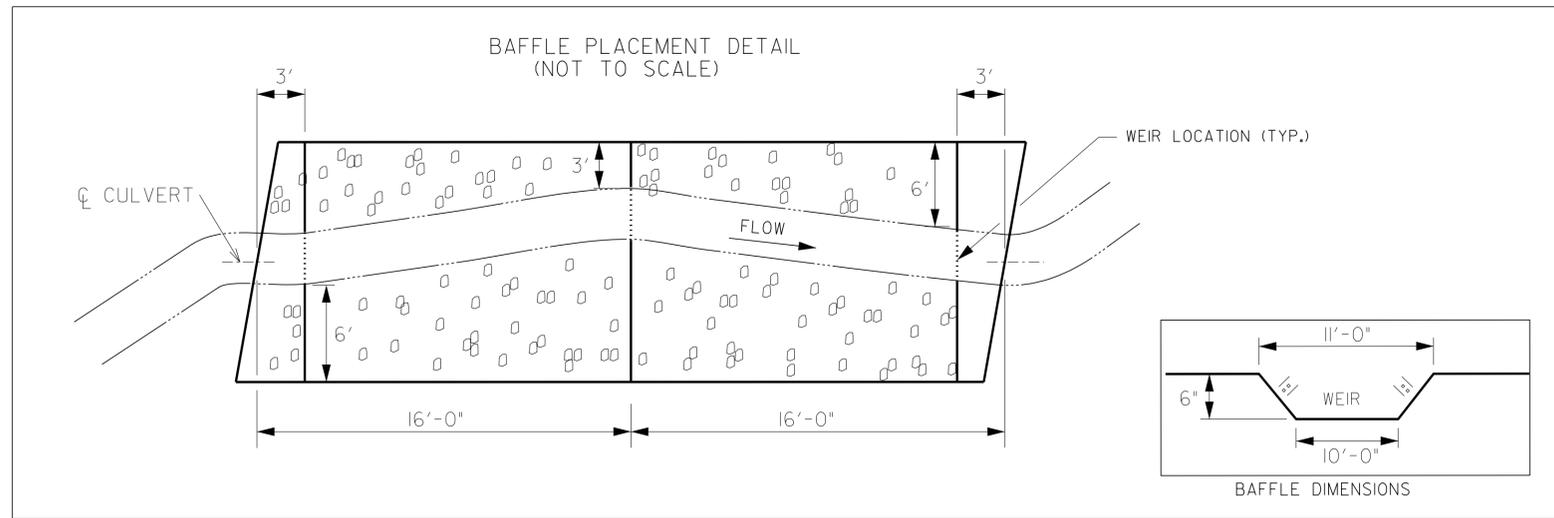
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BUNCOMBE COUNTY  
STATION: 12+13.00 -L-

STATE OF NORTH CAROLINA  
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RALEIGH

GUARDRAIL ASSEMBLY  
DETAILS

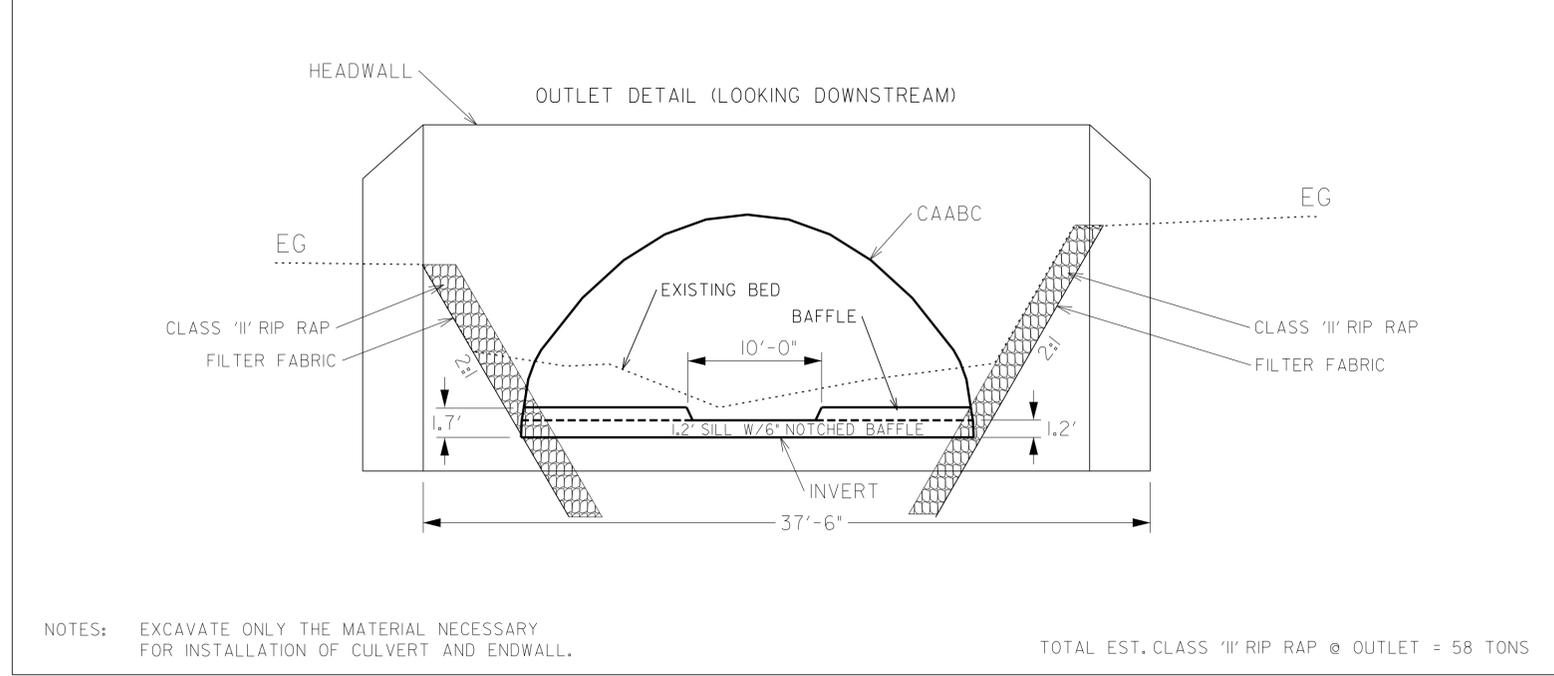
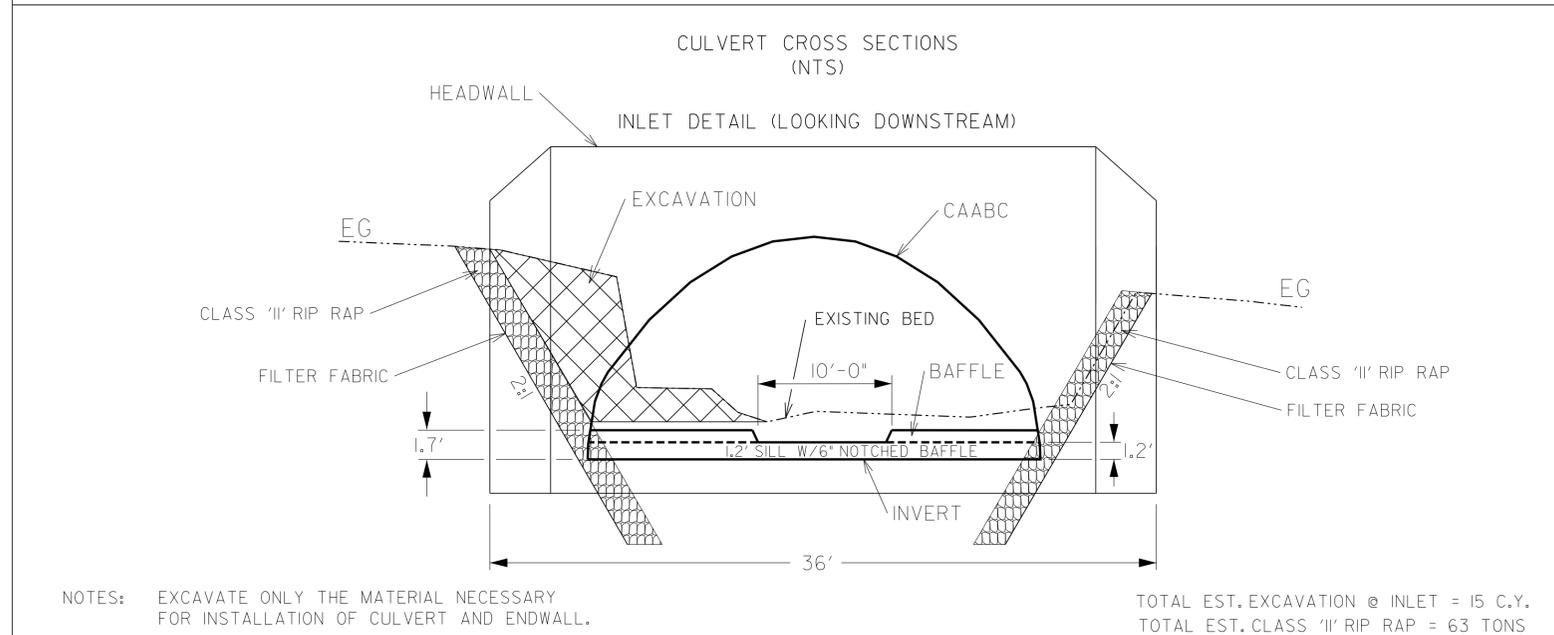
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| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 4            |

DWN. BY: DAB DATE: 3/14  
CHKD. BY: HLW DATE: 3/14  
DES. EGR. OF RECORD: DAB DATE: 3/14



**\*NOTES:**

- 1) BED MATERIAL BETWEEN SILLS/BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. THE MATERIAL SHALL BE NATIVE BED MATERIAL THAT IS EXCAVATED FROM STREAM BED DURING CONSTRUCTION OF CULVERT. MATERIAL LARGER THAN 12 INCHES SHALL NOT BE PLACED WITHIN THE LOW FLOW CHANNEL. CLASS '1' RIP RAP MAY BE USED TO SUPPLEMENT NATIVE BED MATERIAL. BED MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER.
- 2) FILTER FABRIC TO BE USED BENEATH CLASS 'II' RIP RAP IN ALL AREAS.
- 3) COIR FIBER MATTING TO BE USED THROUGH CULVERT INTERNAL CHANNEL



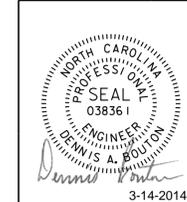
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BUNCOMBE COUNTY  
STATION: 12+13.00 -L-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**SILL/BAFFLE &  
STRUCTURE EXCAVATION  
DETAILS**

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-4          |
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