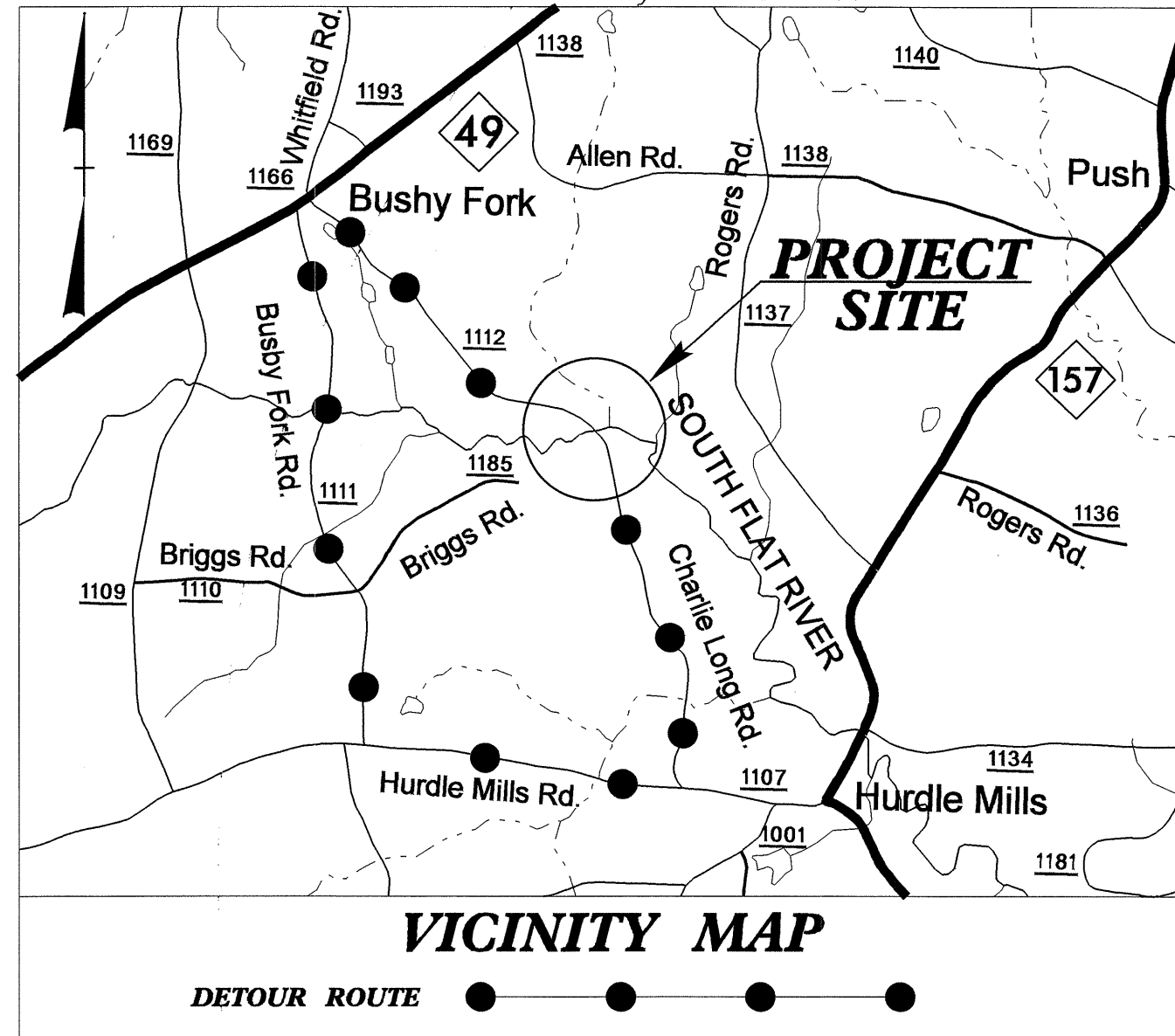


09/28/09

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



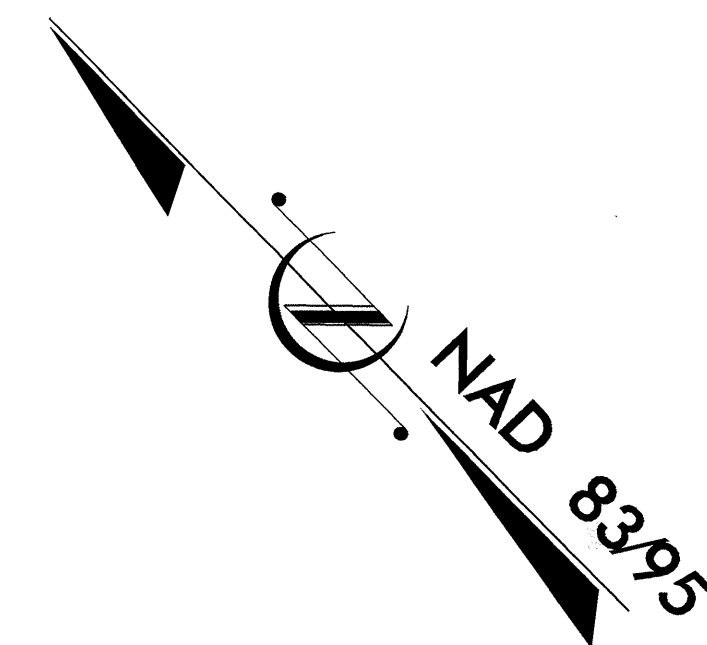
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**PERSON COUNTY**

**LOCATION: BRIDGE NO. 43 OVER SOUTH FLAT RIVER  
ON SR 1112 (CHARLIE LONG ROAD)**

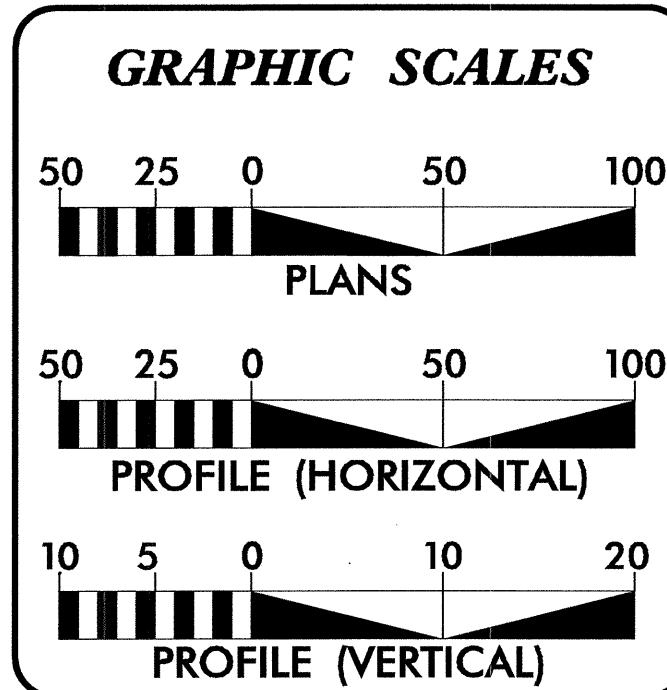
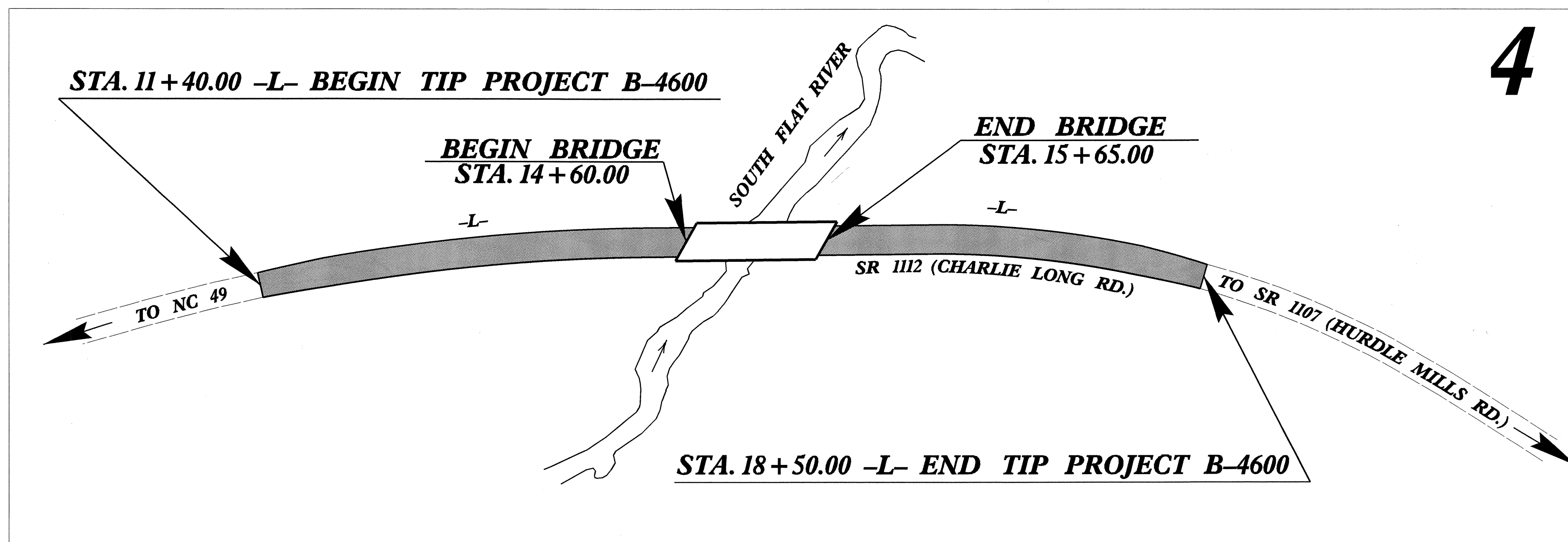
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, GUARDRAIL,  
AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4600	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33792.1.1	BRZ-1112(7)	P.E.	
33792.2.1	BRZ-1112(7)	RW, UTIL.	
33792.3.1	BRZ-1112(7)	CONST.	



**TIP PROJECT: B-4600**

**CONTRACT: C202338**



**DESIGN DATA**

ADT 2010 = 819  
ADT 2030 = 1300  
DHV = 13 %  
D = 60 %  
T = 3 % \*  
V = 60 MPH  
\* TTST 1% DUAL 2%  
FUNC CLASS=RURAL LOCAL  
SUB REGIONAL TIER

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT B-4600 = 0.114 MILES  
LENGTH OF STRUCTURE TIP PROJECT B-4600 = 0.020 MILES  
TOTAL LENGTH OF TIP PROJECT B-4600 = 0.134 MILES

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

2006 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
MARCH 20, 2009

**LETTING DATE:**  
MARCH 16, 2010

**BRENDA MOORE, P.E.**  
PROJECT ENGINEER

**JOYCE DREW**  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

**ROADWAY DESIGN ENGINEER**

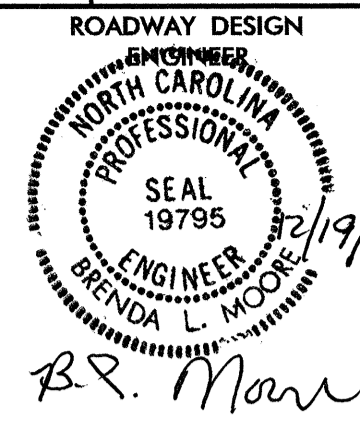
SIGNATURE: *[Signature]* 12/18/09

SIGNATURE: *B.R. Moore*

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

*Art McMillan* P.E.  
STATE HIGHWAY DESIGN ENGINEER

04-DEC-2009 11:02  
r:\p09\dw\proj\p09\_b4600\_rdy\_tsh.dgn  
\$\$\$\$\$USERNAME\$\$\$\$\$



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

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-A	ANCHORAGE FOR FRAMES DETAIL
2-B THRU 2-C	METHOD OF PIPE INSTALLATION DETAIL
2-D	BRIDGE APPROACH FILLS - SUB REGIONAL TIER
3	SUMMARY OF QUANTITIES
3-A	GUARDRAIL SUMMARY, EARTHWORK SUMMARY DRAINAGE SUMMARY, AND SUMMARY OF ASPHALT PAVEMENT BREAK-UP/REMOVAL
4	PLAN SHEET
5	PROFILE SHEET
TCP-1 THRU TCP-4	TRAFFIC CONTROL PLANS
SD-1	SPECIAL SIGN DESIGN
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UD-1 THRU UD-2	UTILITY PLANS BY OTHERS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-7	CROSS-SECTIONS
S-1 THRU S-25	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.

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

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

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

**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 EMBARO  
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

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

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 Super-elevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Super-elevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
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
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

8/17/09

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I:\CONTRACTS\2009\B-4600\_r.dwg\_tsh.dgn  
Brenda L. Moore

Note: Not to Scale

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

**BOUNDARIES AND PROPERTY:**

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	⊙
Property Corner	⊙
Property Monument	⊙
Parcel/Sequence Number	(23)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	-o-o-o-
Proposed Chain Link Fence	-□-□-□-
Proposed Barbed Wire Fence	-◇-◇-◇-
Existing Wetland Boundary	-WLB-
Proposed Wetland Boundary	-WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-

**BUILDINGS AND OTHER CULTURE:**

Gas Pump Vent or U/G Tank Cap	○
Sign	⊙
Well	⊙
Small Mine	⊙
Foundation	▭
Area Outline	▭
Cemetery	⊕
Building	▭
School	▭
Church	⊕
Dam	▭

**HYDROLOGY:**

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

**RAILROADS:**

Standard Gauge	-----
RR Signal Milepost	⊙
Switch	⊙
RR Abandoned	-----
RR Dismantled	-----

**RIGHT OF WAY:**

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite Marker	-----
Existing Control of Access	⊙
Proposed Control of Access	⊙
Existing Easement Line	E
Proposed Temporary Construction Easement	E
Proposed Temporary Drainage Easement	TDE
Proposed Permanent Drainage Easement	PDE
Proposed Permanent Utility Easement	PUE
Proposed Temporary Utility Easement	TUE
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

**ROADS AND RELATED FEATURES:**

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

**VEGETATION:**

Single Tree	⊙
Single Shrub	⊙
Hedge	-----
Woods Line	-----
Orchard	-----
Vineyard	-----

**EXISTING STRUCTURES:**

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

**UTILITIES:**

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊙
Power Line Tower	⊗
Power Transformer	⊗
U/G Power Cable Hand Hole	⊕
H-Frame Pole	●
Recorded U/G Power Line	P
Designated U/G Power Line (S.U.E.*)	P

**TELEPHONE:**

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

**WATER:**

Water Manhole	⊙
Water Meter	⊙
Water Valve	⊙
Water Hydrant	⊙
Recorded U/G Water Line	W
Designated U/G Water Line (S.U.E.*)	W
Above Ground Water Line	A/G Water

**TV:**

TV Satellite Dish	⊕
TV Pedestal	⊕
TV Tower	⊕
U/G TV Cable Hand Hole	⊕
Recorded U/G TV Cable	TV
Designated U/G TV Cable (S.U.E.*)	TV
Recorded U/G Fiber Optic Cable	TV FO
Designated U/G Fiber Optic Cable (S.U.E.*)	TV FO

**GAS:**

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

**SANITARY SEWER:**

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

**MISCELLANEOUS:**

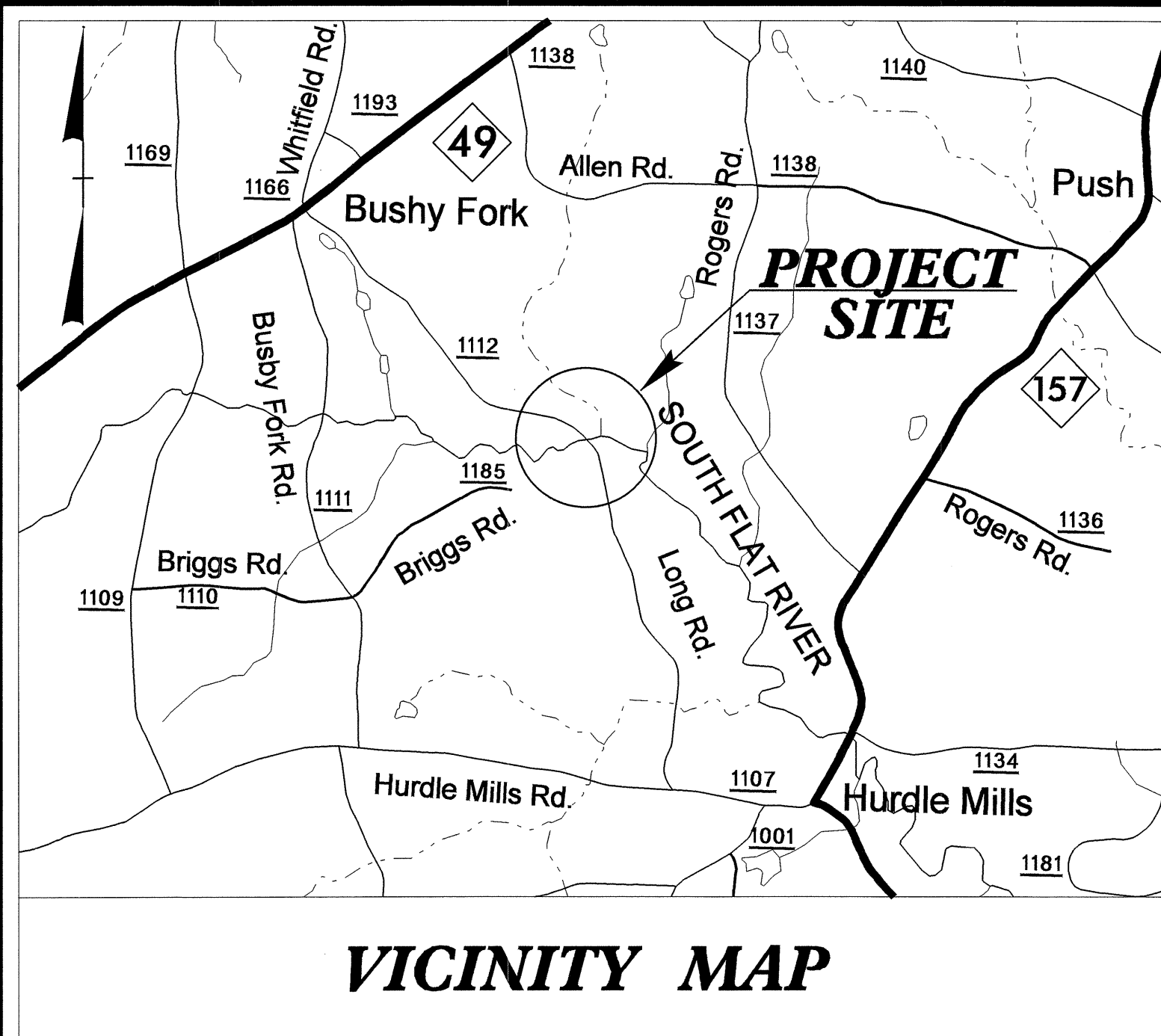
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line	U/L
U/G Tank; Water, Gas, Oil	▭
A/G Tank; Water, Gas, Oil	▭
U/G Test Hole (S.U.E.*)	⊙
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.



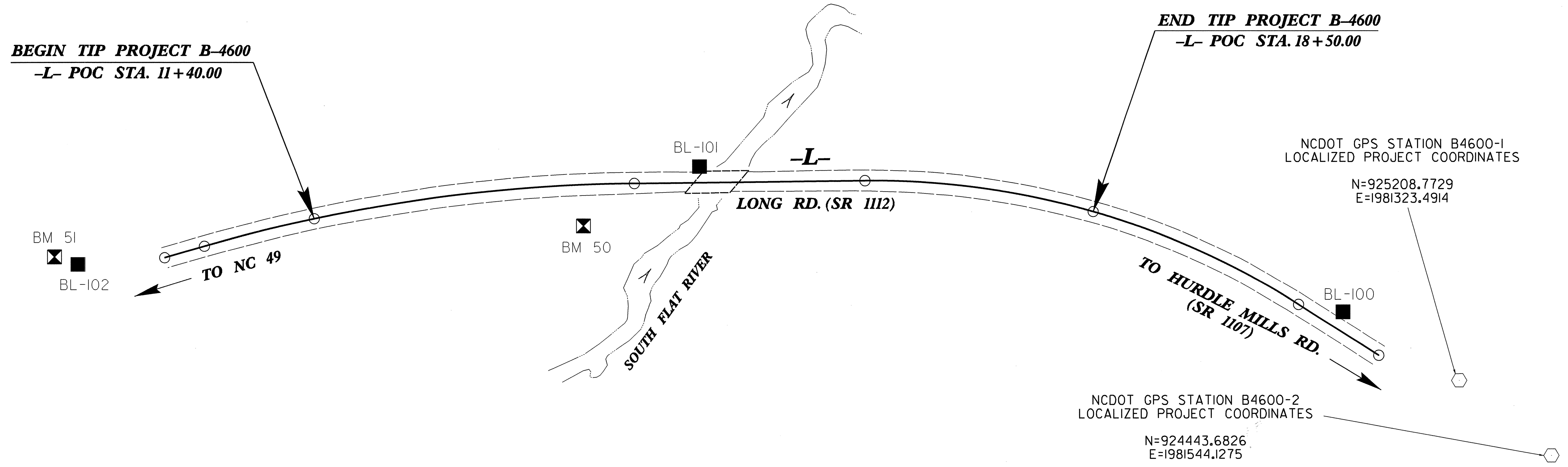
# SURVEY CONTROL SHEET B-4600

# PERSON COUNTY

**LOCATION: BRIDGE NO. 43 OVER SOUTH FLAT RIVER  
ON SR 1112 (LONG ROAD)**



**VICINITY MAP**



**CONTROL DATA**

BASELINE POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
100	BL-100	925725.2307	1981255.1547	599.26	20+92.23	15.95 LT
101	BL-101	926226.4714	1980930.5876	591.26	14+91.16	14.49 LT
102	BL-102	926556.4561	1980466.2101	611.65	OUTSIDE PROJECT LIMITS	

**BENCHMARK DATA**

```

*****
50      ELEVATION = 590.97
N 926261      E 1980818
L STATION 13+84 37 RIGHT
R\N SPIKE SET IN 30" OAK
*****
51      ELEVATION = 613.56
N 926576      E 1980456
L STATION 10+00
N 45° 10' 24.4" W DIST 99.81
R\N SPIKE SET IN 12" GUM
*****

```

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4600-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 925208.7729(ft) EASTING: 1981323.4914(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.00001303 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4600-1" TO -L- STATION 11+40.00 IS N 28°49'08.4" W 1401.12'

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

**NOTE: DRAWING NOT TO SCALE**

**NOTES:**

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATIONPROJECT/B4600\\_ls\\_control\\_081105.txt](http://www.ncdot.org/doh/preconstruct/highway/locationproject/B4600_ls_control_081105.txt)
  2. 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)

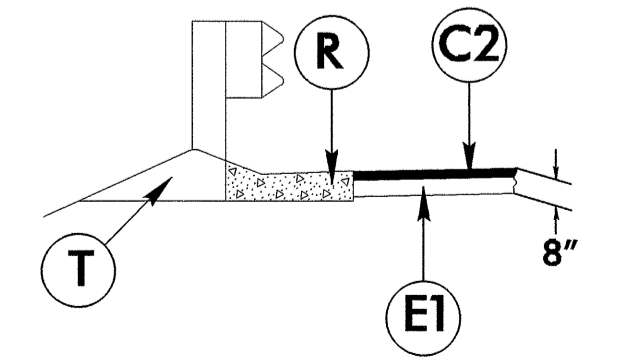
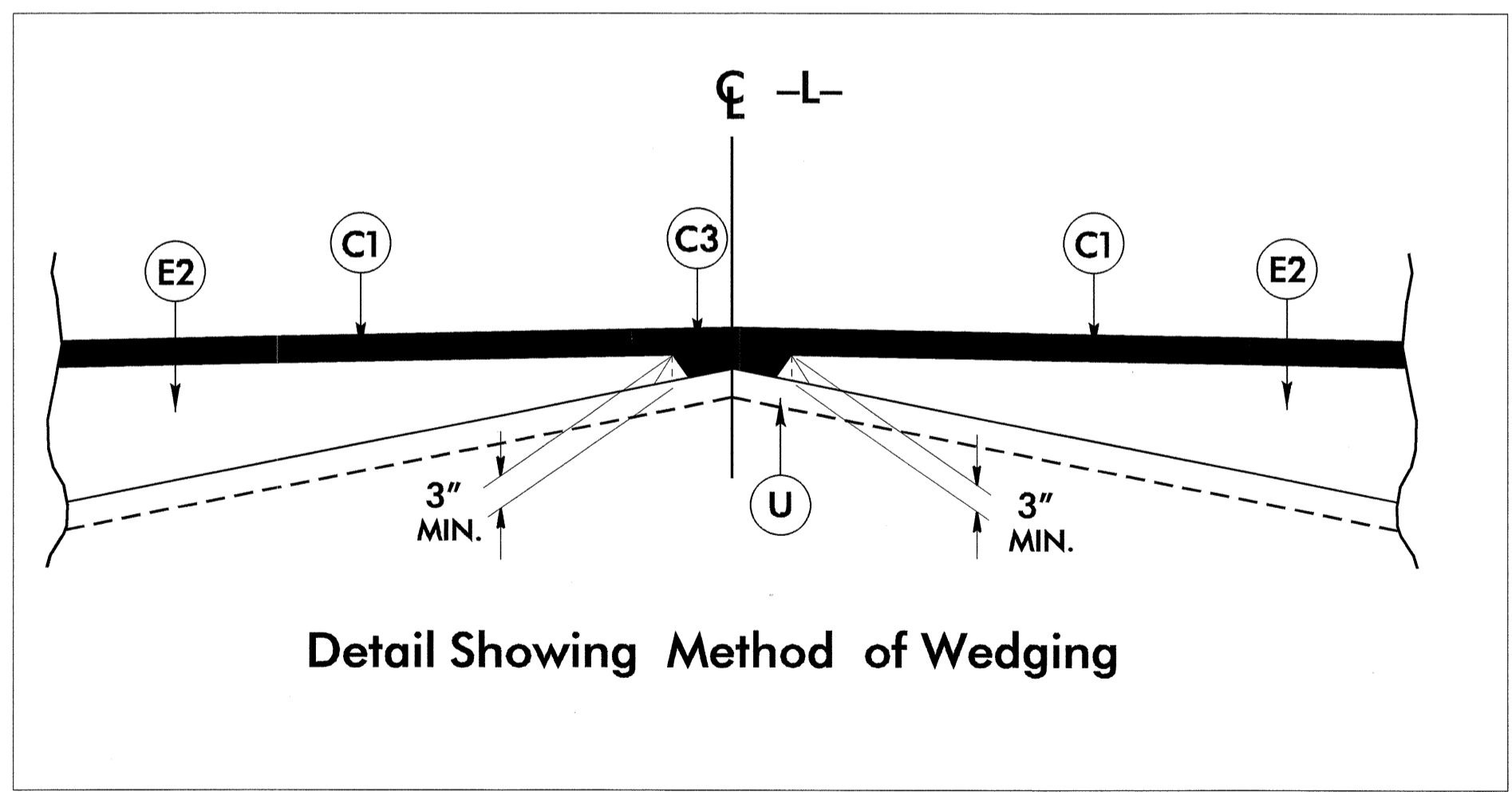
6/22/99  
22-OCT-2009 07:07:46000.ls\_1c\_081105.dgn

6/2/99

PROJECT REFERENCE NO. B-4600	SHEET NO. 2
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 19795 BRENDA L. MOORE	PAVEMENT DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 22883 CLARK S. MORRISON

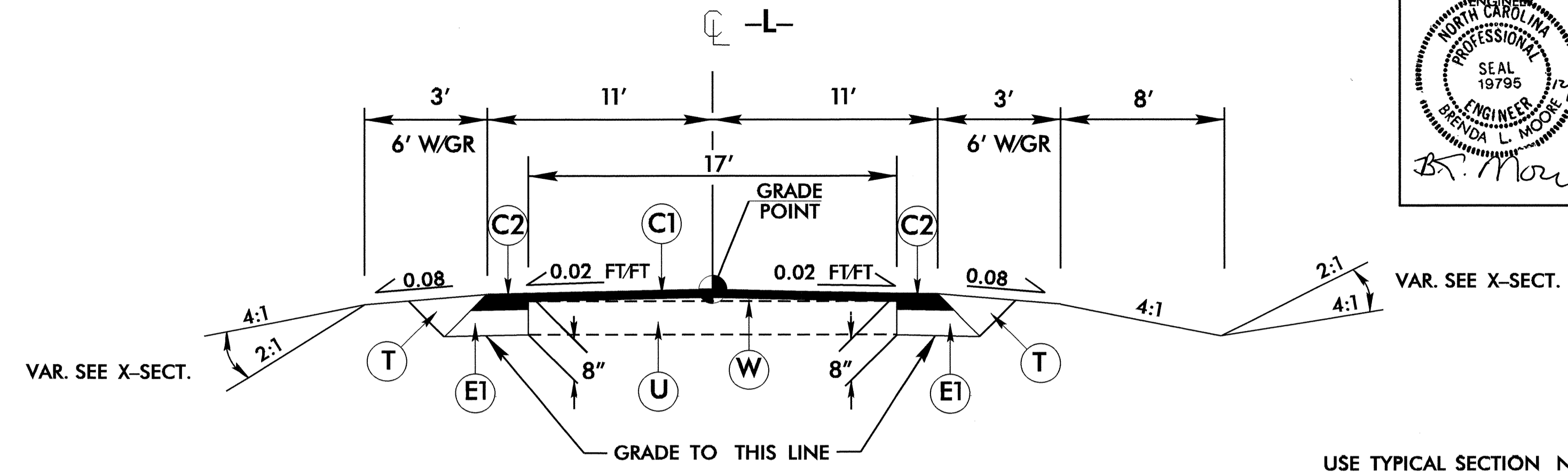
FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
E1	PROP. APPROX. 5 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 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 5 1/2" IN DEPTH.
R	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL THIS SHEET).

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



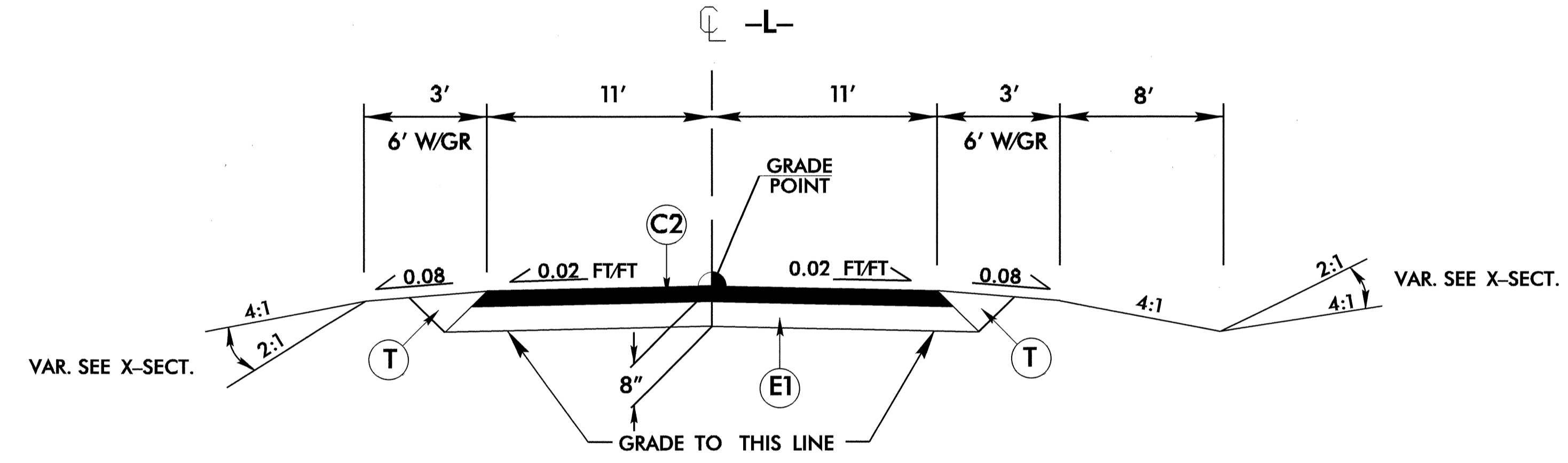
SHOULDER BERM GUTTER DETAIL

USE SHOULDER BERM GUTTER  
-L- STA. 15+67.82 TO -L- STA. 15+80.00 (RT)



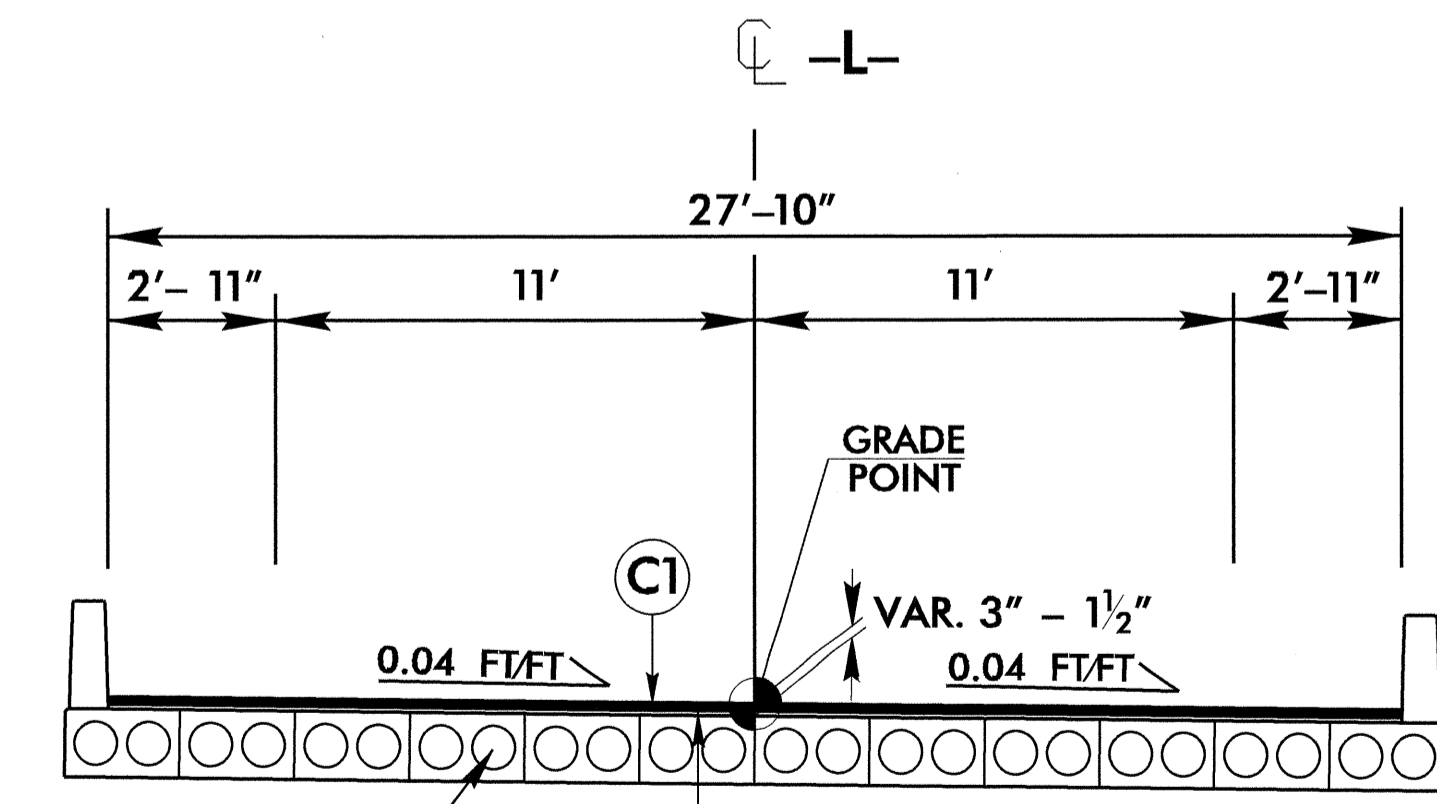
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1  
TRANSITION FROM EXIST. STA. 11+40.00 TO STA. 11+90.00  
-L- STA. 11+90.00 TO STA. 12+50.00  
-L- STA. 17+00.00 TO STA. 18+00.00  
TRANSITION TO EXIST. STA. 18+00.00 TO STA. 18+50.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2  
-L- STA. 12+50.00 TO STA. 14+60.00 (BEGIN BRIDGE)  
-L- STA. 15+65.00 (END BRIDGE) TO STA. 17+00.00



PROPOSED CORED SLAB BRIDGE  
(STRUCTURE PAY ITEM)

TYPICAL SECTION ON STRUCTURE

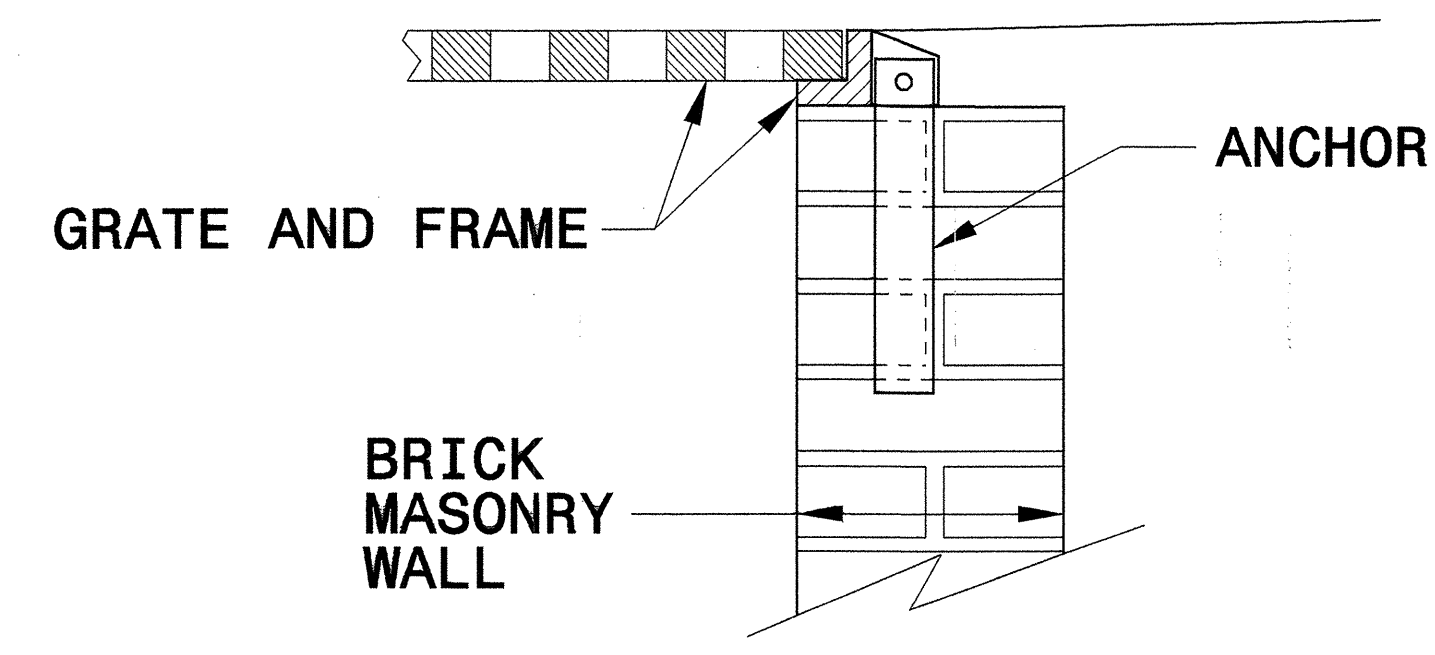
USE TYPICAL SECTION NO. 3  
-L- STA. 14+60.00 (BEGIN BRIDGE) TO  
-L- STA. 15+65.00 (END BRIDGE)  
\*OVERLAY CORED SLAB BRIDGE AS DIRECTED BY THE ENGINEER

17 DEC 2009 12:41 N:\b4600\_rdy\_tup.dgn

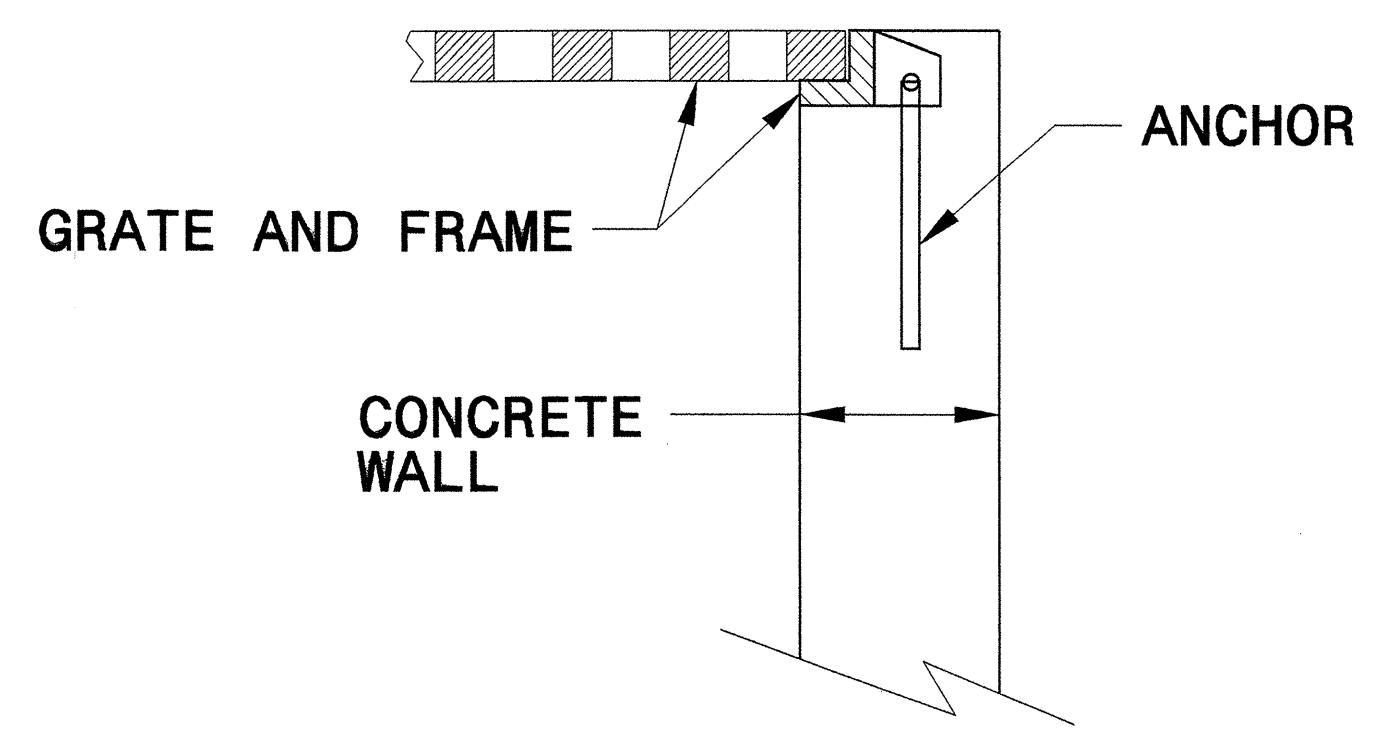
STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

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

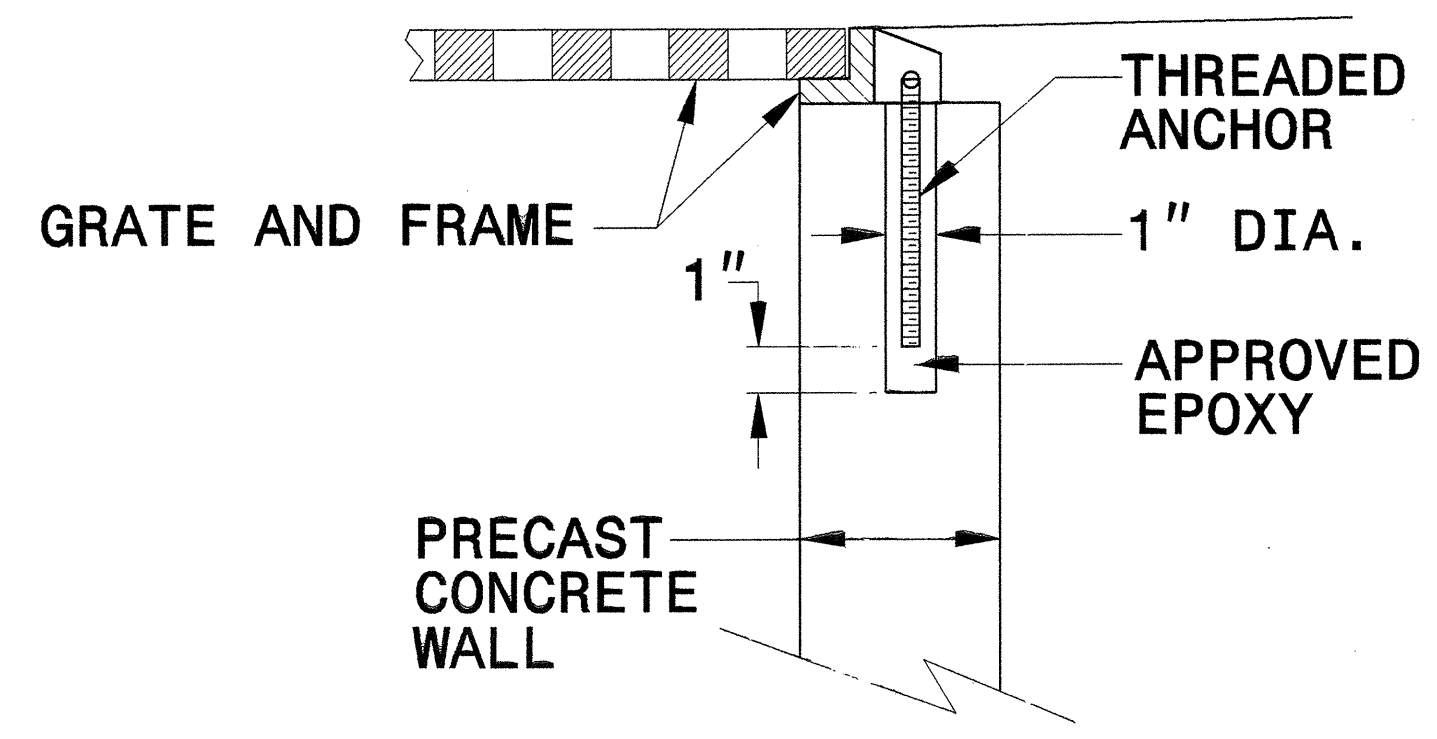
SHEET 1 OF 1  
**840D25**



**BRICK MASONRY CONSTRUCTION**



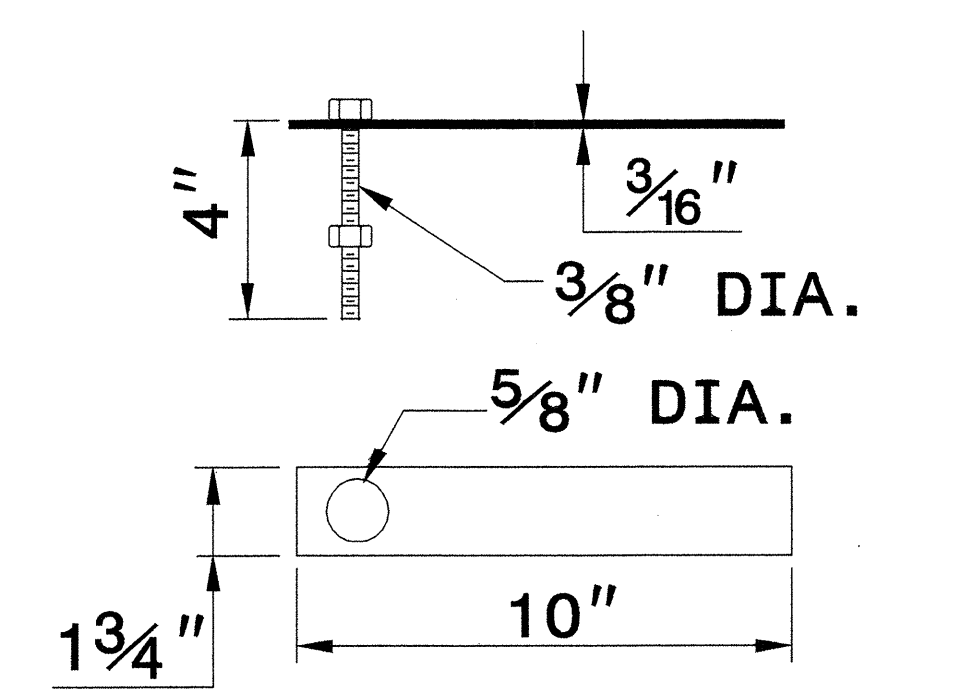
**CONCRETE CONSTRUCTION**



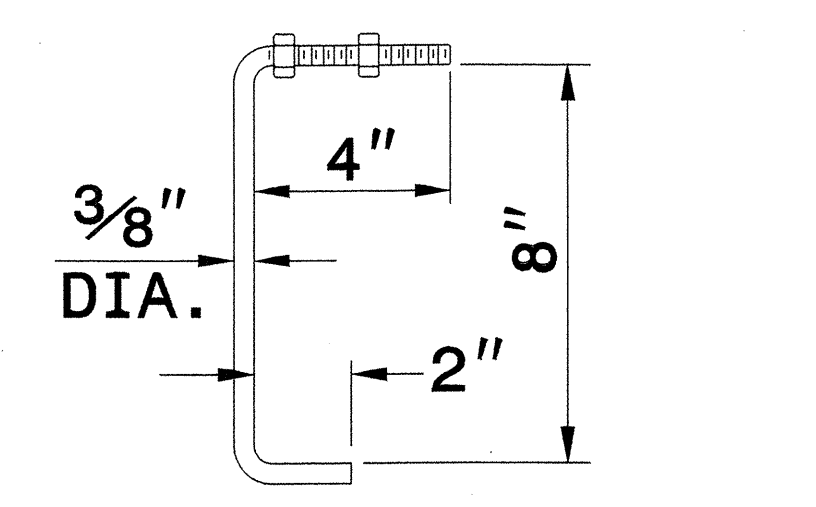
**PRECAST CONCRETE CONSTRUCTION**

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

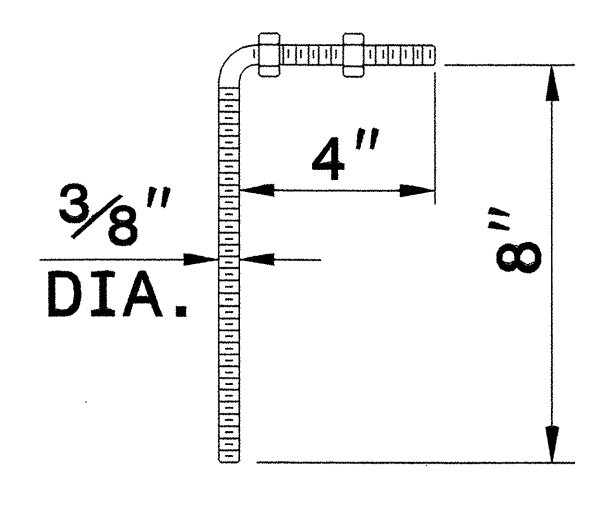
NOTE:  
 CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



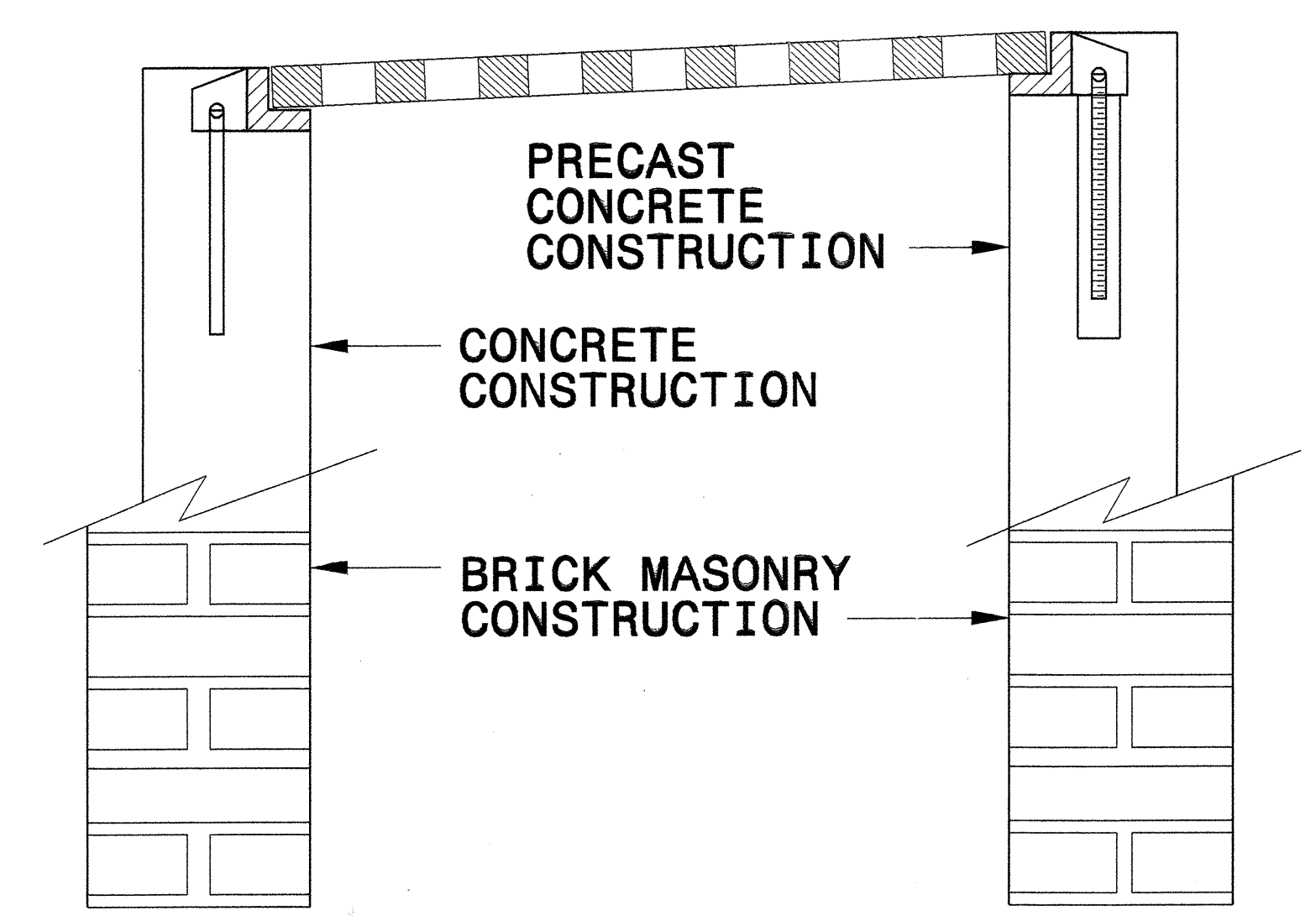
**MASONRY ANCHOR**  
 3/8" DIA. BOLT WITH PLATE



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



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



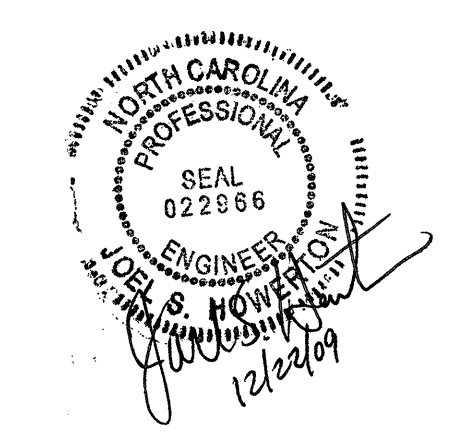
**FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS**

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 DESIGN  
 USER NAME



**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: <i>[Signature]</i>	DATE: 11/13/06
FILE SPEC.: <i>[Signature]</i>	



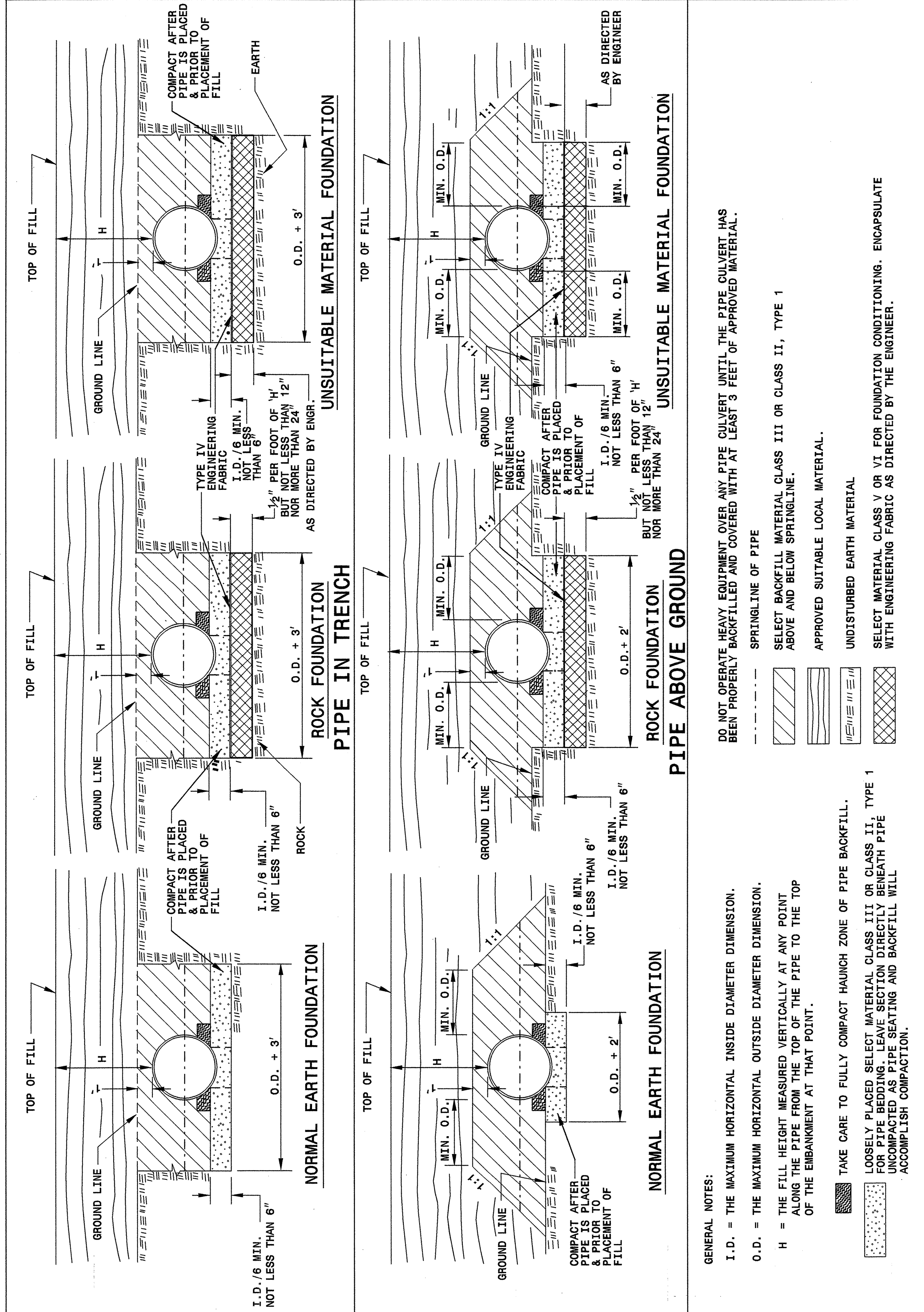
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

7-06

ENGLISH DETAIL DRAWING FOR  
METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 3  
300D01



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

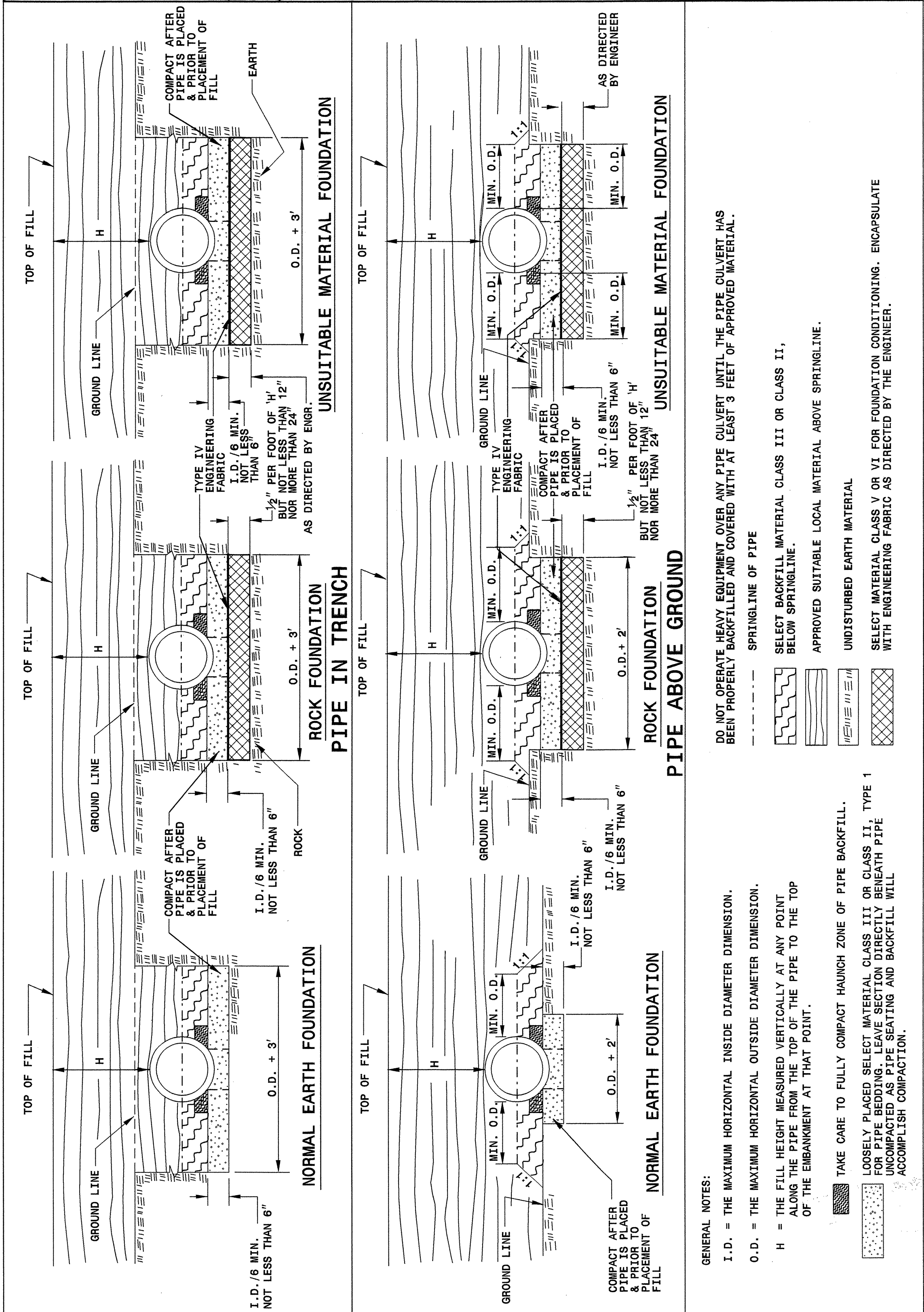
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

7-06

ENGLISH DETAIL DRAWING FOR  
METHOD OF PIPE INSTALLATION

RIGID PIPE

SHEET 2 OF 3  
300D01



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

7-06

ENGLISH DETAIL DRAWING FOR  
METHOD OF PIPE INSTALLATION

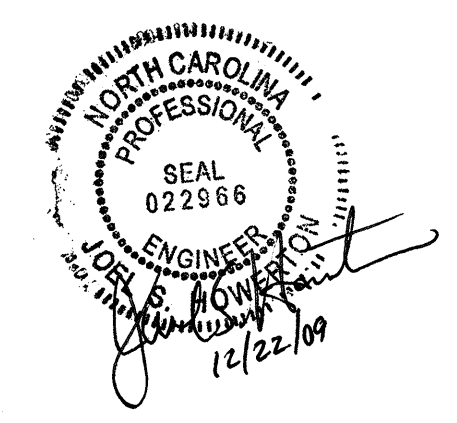
RIGID PIPE

SHEET 2 OF 3  
300D01

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: 7/20/09  
 FILE SPEC: /stds/stdsdetails/30001/0300d01.dgn



30-JUL-2009 08:48  
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 Jhower

5/14/99

STATE OF  
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 DIVISION OF HIGHWAYS  
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7-06

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

FILL HEIGHT TABLES

SHEET 3 OF 3  
**300D01**

**FLEXIBLE PIPE**

Round Corrugated Steel Pipe 2 2/3 x 1/2 corrugation **		
Diameter (Inches)	Minimum cover (Inches)	Maximum Height of Cover (feet)
12	12	14 12 10 8
15	12	204 256
18	12	162 204
21	12	135 169 239
24	12	115 145 204
30	12	100 126 178
36	12	79 100 142
42	12	65 83 117 152
48	12	55 70 100 130 160
54	12	48 61 87 113 139
60	12	54 77 100 123
66	12	69 90 111
72	12	81 100
78	12	74 91
84	12	81 81
		69

Round Corrugated Aluminum Pipe 2 2/3 x 1/2 corrugation **		
Diameter (Inches)	Minimum cover (Inches)	Maximum Height of Cover (feet)
12	12	14 12 10 8
15	12	123 155 218 281 344
18	12	98 123 174 224 275
21	12	81 102 144 187 228
24	12	69 87 123 160 195
27	12	60 76 108 139 171
30	12	67 95 123 151
36	12	60 85 111 136
42	12	50 71 92 113
48	12	60 78 96
54	12	52 68 84
60	12	46 50 74
66	12	50 62
72	12	51 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  
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 RALEIGH, N.C.

7-06

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

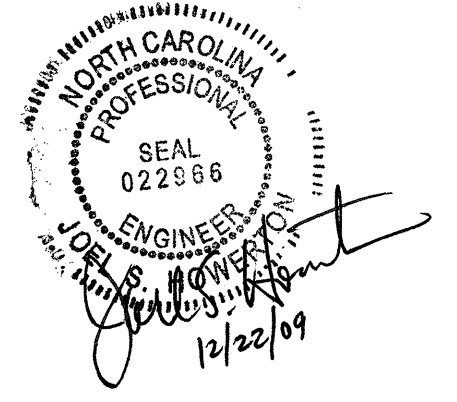
FILL HEIGHT TABLES

SHEET 3 OF 3  
**300D01**

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

**SEE PLATE FOR TITLE**

ORIGINAL BY: KKempf DATE: 5-15-09  
 MODIFIED BY: *John S. Hunt* DATE: 7/30/09  
 CHECKED BY: *John S. Hunt* DATE: 7/30/09  
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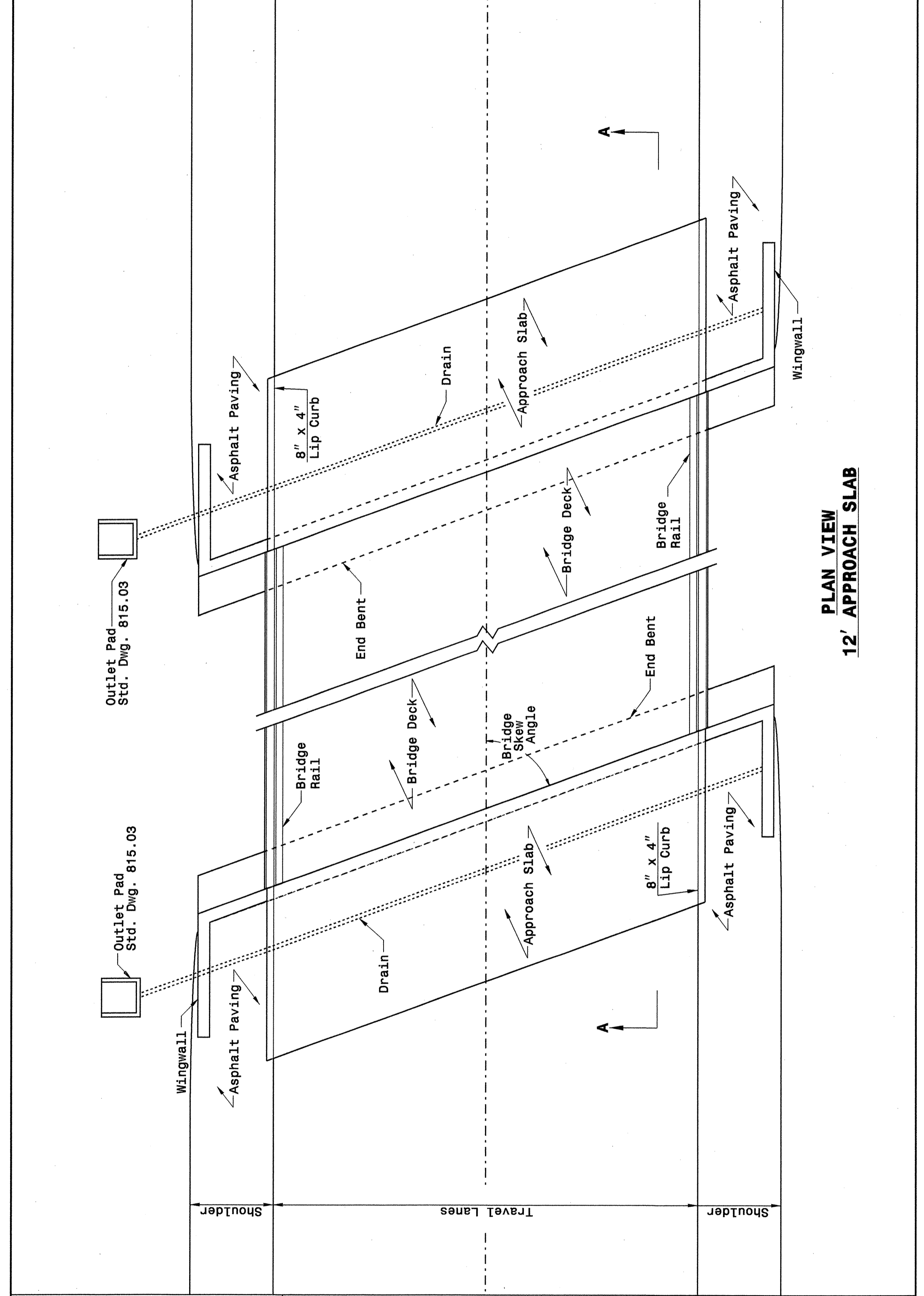




STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
CORED SLAB & BOX BEAM BRIDGES  
SUB REGIONAL TIER

SHEET 1 OF 2  
**422D11**



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

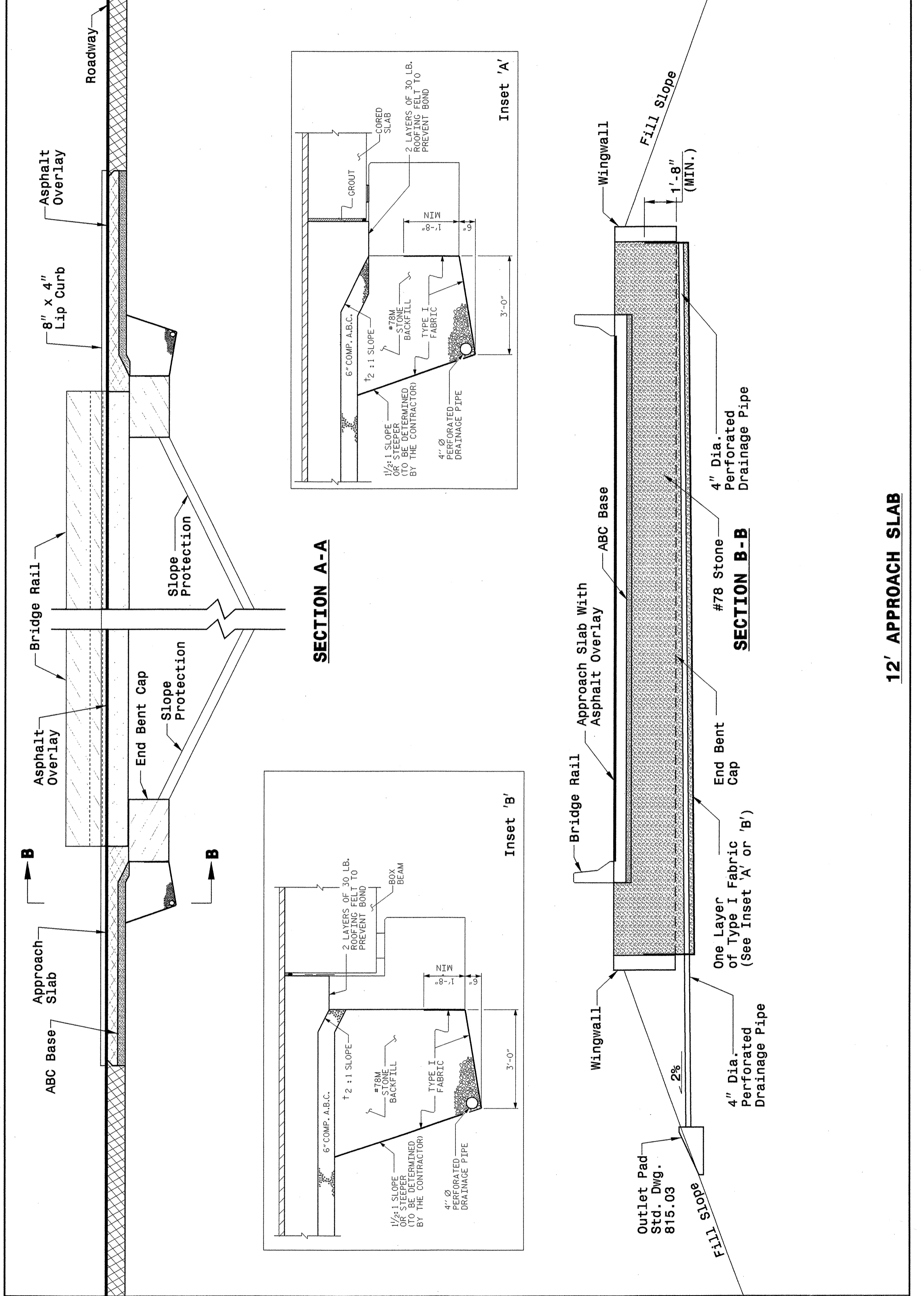
ENGLISH DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
CORED SLAB & BOX BEAM BRIDGES  
SUB REGIONAL TIER

SHEET 1 OF 2  
**422D11**

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

ENGLISH DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
CORED SLAB & BOX BEAM BRIDGES  
SUB REGIONAL TIER

SHEET 2 OF 2  
**422D11**



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

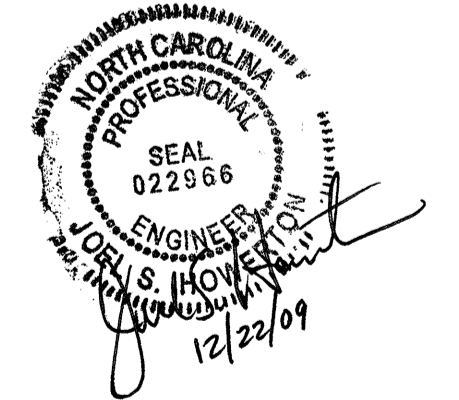
ENGLISH DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
CORED SLAB & BOX BEAM BRIDGES  
SUB REGIONAL TIER

SHEET 2 OF 2  
**422D11**

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

**BRIDGE APPROACH FILLS**  
CORED SLAB & BOX BEAM BRIDGES  
SUB REGIONAL TIER

ORIGINAL BY: K. A. Kempf DATE: 6-10-08  
MODIFIED BY: *[Signature]* DATE: *[Blank]*  
CHECKED BY: *[Signature]* DATE: 2/16/09  
FILE SPEC.: kkempf/english/bridge approach fills.dgn



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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202338

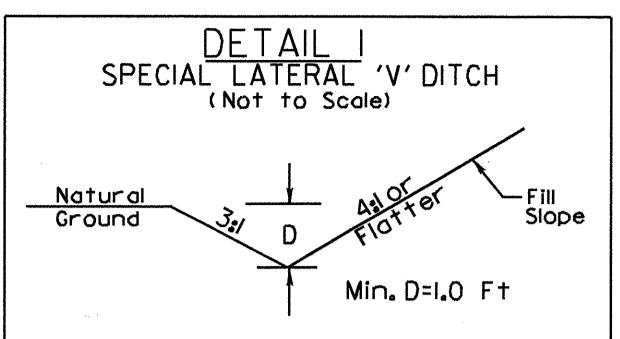
ItemNumber	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION
003000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ***** (15+12.50)
004300000-N	226	Lump Sum		GRADING
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
005700000-E	226	200	CY	UNDERCUT EXCAVATION
019600000-E	270	200	SY	FABRIC FOR SOIL STABILIZATION
023400000-E	SP	200	CY	GENERIC GRADING ITEM SELECT GRANULAR MATERIAL
032000000-E	SP	30	SY	FOUNDATION CONDITIONING FABRIC
033000000-E	SP	10	TON	GENERIC DRAINAGE ITEM FOUNDATION CONDITIONING MATERIAL, MINOR STRS
033520000-E	SP	16	LF	15" DRAINAGE PIPE
098600000-E	SP	68	LF	GENERIC PIPE ITEM 15" SIDE DRAIN PIPE
122000000-E	545	200	TON	INCIDENTAL STONE BASE
148900000-E	610	380	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
152500000-E	610	280	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
156000000-E	620	35	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
200000000-N	806	7	EA	RIGHT OF WAY MARKERS
202200000-E	815	33.6	CY	SUBDRAIN EXCAVATION
203300000-E	815	16.8	CY	SUBDRAIN FINE AGGREGATE
204400000-E	815	100	LF	6" PERFORATED SUBDRAIN PIPE
205500000-E	815	3	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
206600000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
207700000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
228600000-N	840	1	EA	MASONRY DRAINAGE STRUCTURES
236700000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.29

ItemNumber	Sec #	Quantity	Unit	Description
255600000-E	846	13	LF	SHOULDER BERM GUTTER
303000000-E	862	25	LF	STEEL BM GUARDRAIL
315000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
327000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
331700000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
336000000-E	863	410	LF	REMOVE EXISTING GUARDRAIL
363500000-E	876	65	TON	RIP RAP, CLASS II
364900000-E	876	40	TON	RIP RAP, CLASS B
365600000-E	876	1,380	SY	FILTER FABRIC FOR DRAINAGE
440000000-E	1110	283	SF	WORK ZONE SIGNS (STATIONARY)
441000000-E	1110	94	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
444500000-E	1145	80	LF	BARRICADES (TYPE III)
481000000-E	1205	4,260	LF	PAINT PAVEMENT MARKING LINES (4")
490000000-N	1251	9	EA	PERMANENT RAISED PAVEMENT MARKERS
600000000-E	1605	1,100	LF	TEMPORARY SILT FENCE
600600000-E	1610	340	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	65	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	225	TON	SEDIMENT CONTROL STONE
601500000-E	1615	2	ACR	TEMPORARY MULCHING
601800000-E	1620	100	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	1.25	TON	FERTILIZER FOR TEMPORARY SEEDING
602400000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
602700000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
602900000-E	SP	950	LF	SAFETY FENCE
603000000-E	1630	200	CY	SILT EXCAVATION

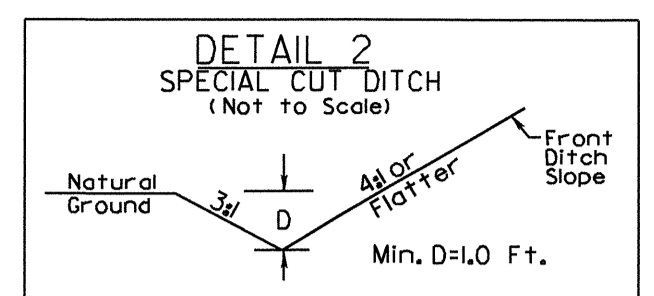
ItemNumber	Sec #	Quantity	Unit	Description
603600000-E	1631	8,000	SY	MATting FOR EROSION CONTROL
603700000-E	SP	625	SY	COIR FIBER MAT
603800000-E	SP	200	SY	PERMANENT SOIL REINFORCEMENT MAT
604200000-E	1632	150	LF	1/4" HARDWARE CLOTH
607000000-N	SP	8	EA	SPECIAL STILLING BASINS
607102000-E	SP	25	LB	POLYACRYLAMIDE (PAM)
607103000-E	SP	150	LF	COIR FIBER BAFFLES
607105000-E	SP	2	EA	*** SKIMMER (1-1/2")
608400000-E	1660	5	ACR	SEEDING & MULCHING
608700000-E	1660	1	ACR	MOWING
609000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
609300000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
609600000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
610800000-E	1665	1	TON	FERTILIZER TOPDRESSING
611450000-N	SP	10	MHR	SPECIALIZED HAND MOWING
611700000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL
612300000-E	1670	0.1	ACR	REFORESTATION



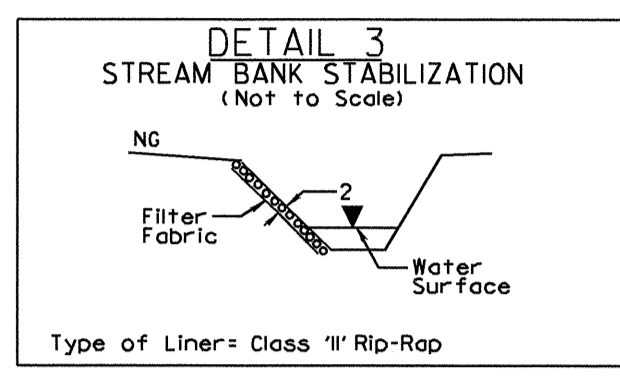




FROM STA. 11+90 TO STA. 14+35 -L- LT  
FROM STA. 15+56 TO STA. 16+00 -L- RT

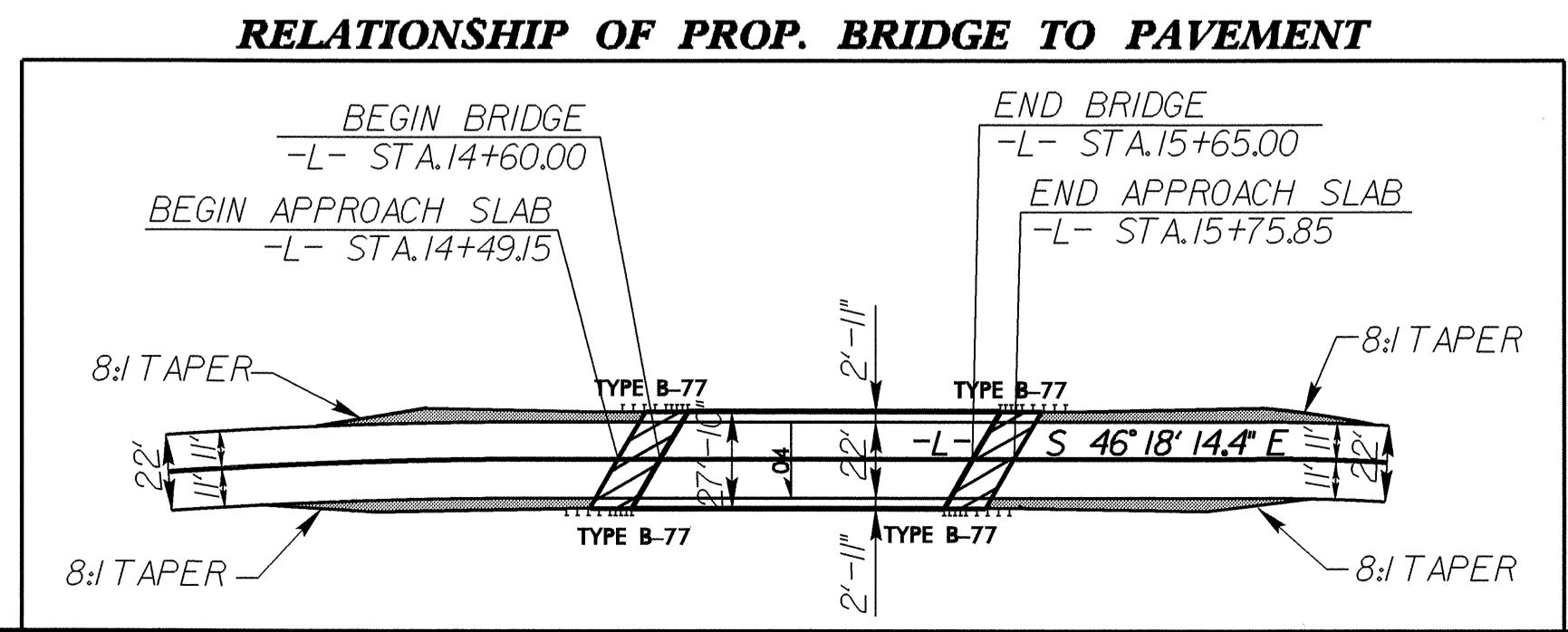
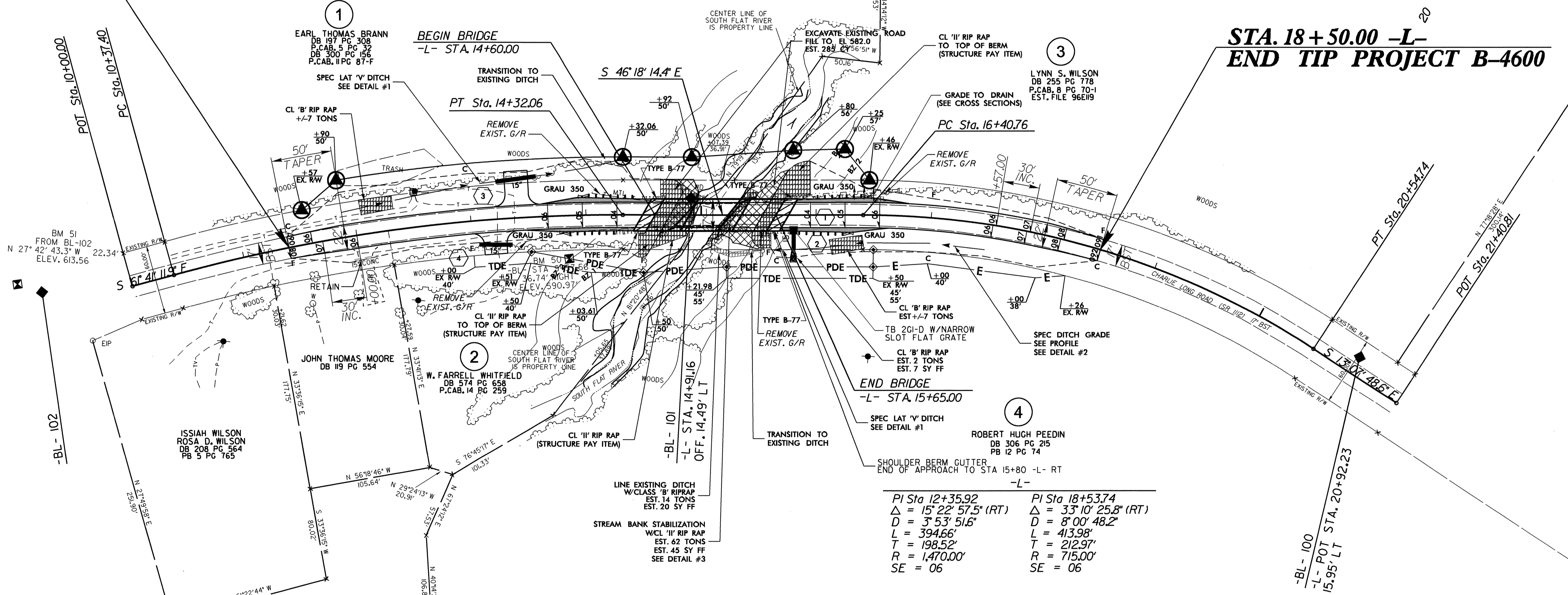


FROM STA. 16+00 TO STA. 17+50 -L- RT



**STA. 11+40.00 -L-  
BEGIN TIP PROJECT B-4600**

**STA. 18+50.00 -L-  
END TIP PROJECT B-4600**



**PAVED SHOULDER**  
FOR -L- PROFILE, SEE SHEET NO. 5  
**BRIDGE APPROACH SLAB**  
FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-25

REVISIONS

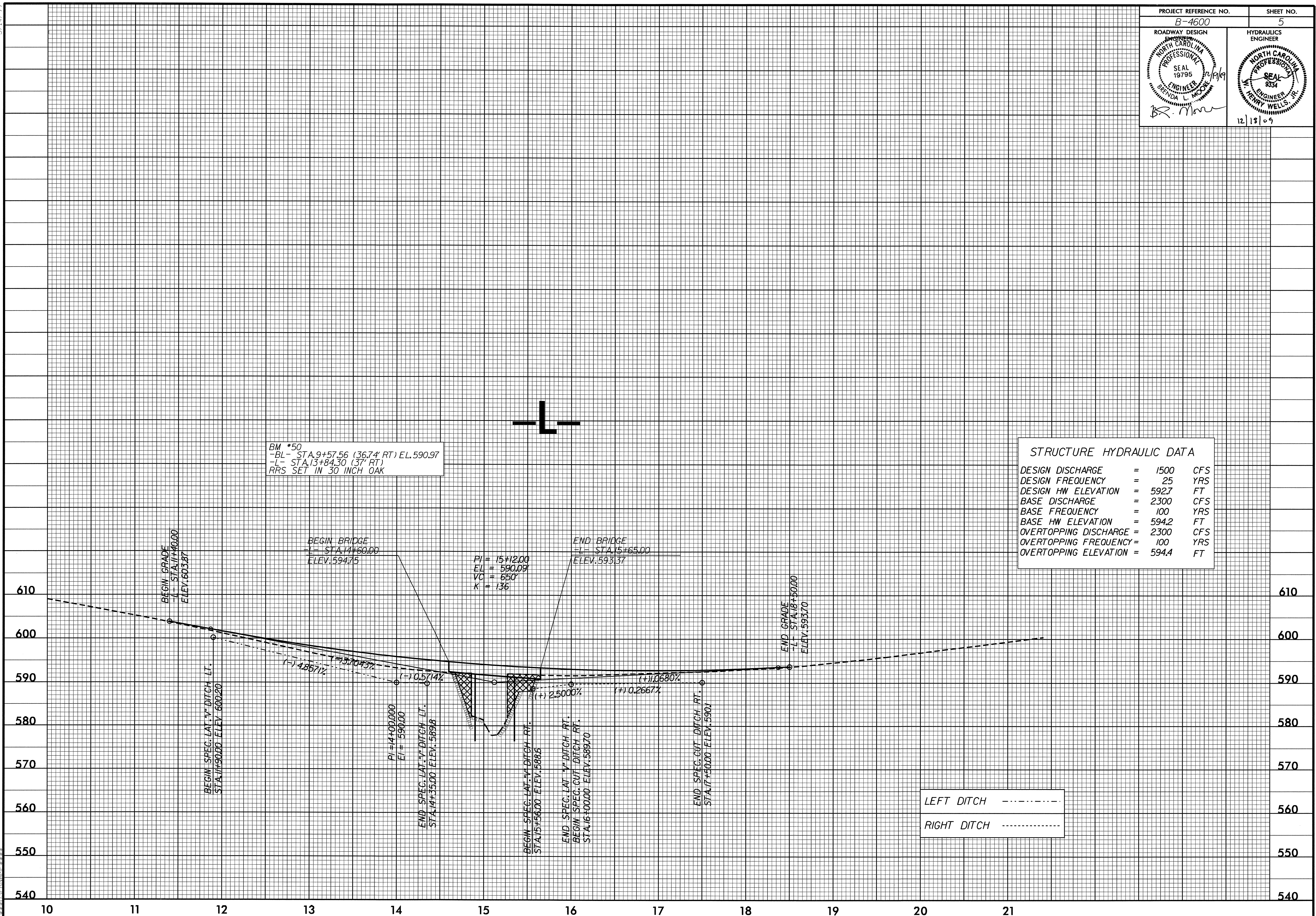
8/17/99

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BRENDA L. MOON



5/14/99

PROJECT REFERENCE NO. B-4600	SHEET NO. 5
ROADWAY DESIGN ENGINEER BRENDAN L. MOORE NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19795	HYDRAULICS ENGINEER TREVY WELLS, JR. NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 9334
<i>B.L. Moore</i>	12/18/09



BM \*50  
 -BL- STA.9+57.56 (36.74' RT) EL.590.97  
 -L- STA.13+84.30 (37' RT)  
 RRS SET IN 30 INCH OAK

STRUCTURE HYDRAULIC DATA	
DESIGN DISCHARGE	= 1500 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 592.7 FT
BASE DISCHARGE	= 2300 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 594.2 FT
OVERTOPPING DISCHARGE	= 2300 CFS
OVERTOPPING FREQUENCY	= 100 YRS
OVERTOPPING ELEVATION	= 594.4 FT

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

17-DEC-2009 12:41  
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 \$\$\$\$LUPRRA09\$