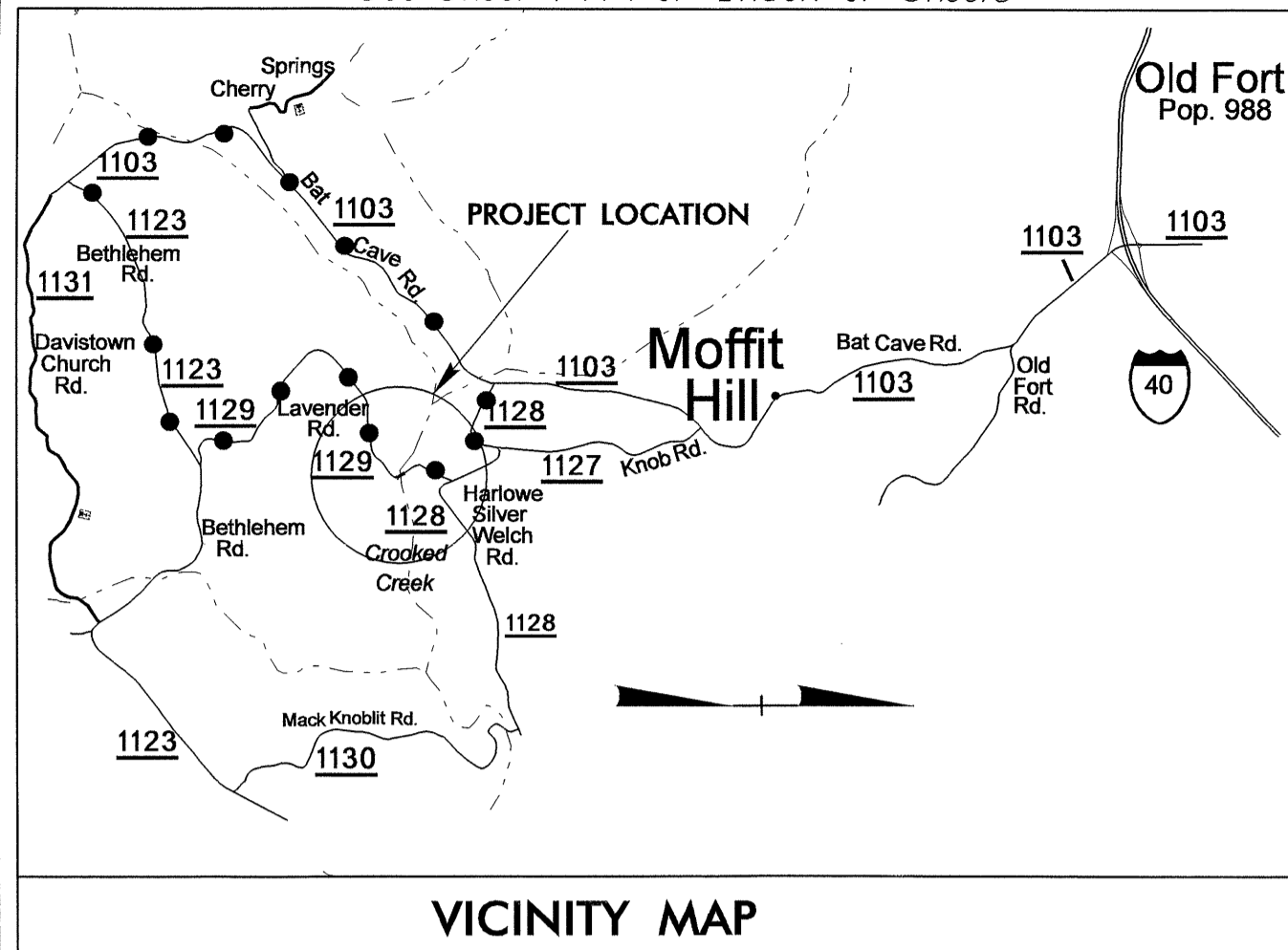


09/08/09

See Sheet 1-A For Index of Sheets



VICINITY MAP

●●●● OFF SITE DETOUR ROUTE

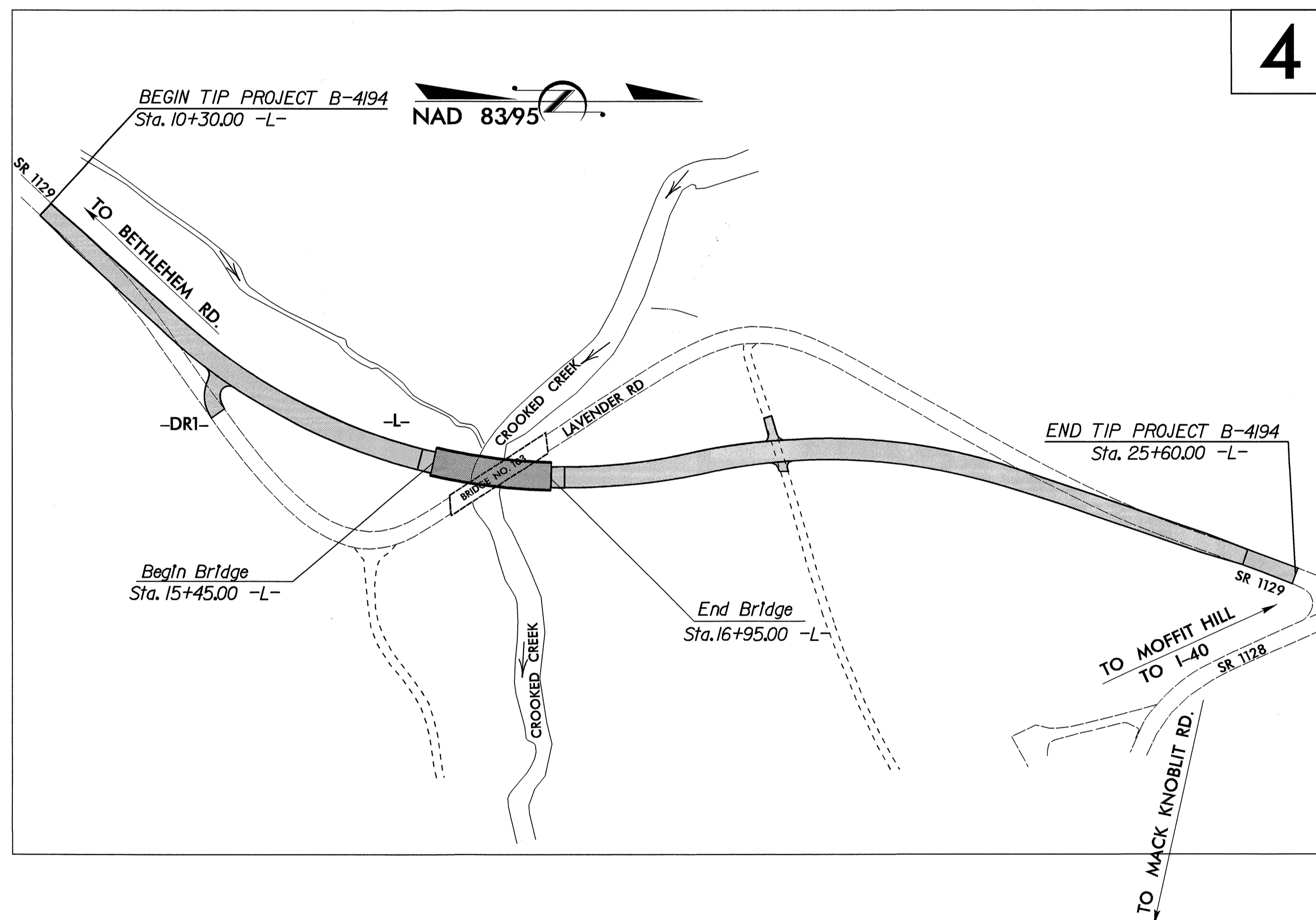
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**McDOWELL COUNTY**

**LOCATION: BRIDGE NO. 103 OVER CROOKED CREEK  
ON SR 1129**

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

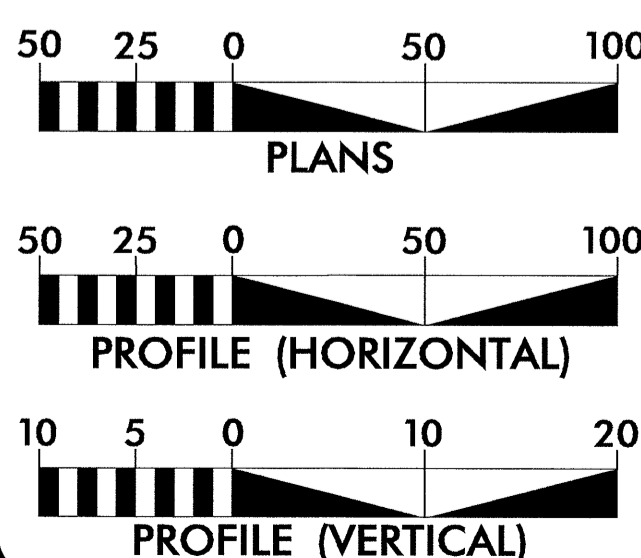
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4194	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
33541.1.1	BRZ-1129 (9)	P.E.	
33541.2.1	BRZ-1129 (9)	RW & UTILITIES	
33541.3.1	BRZ-1129 (9)	CONSTRUCTION	



4

\*\*DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED (45mph)  
AND HORIZONTAL STOPPING SIGHT DISTANCE

**GRAPHIC SCALES**



**DESIGN DATA**

ADT 2006 = 605 VPD  
ADT 2030 = 1105 VPD  
DHV = 12 %  
D = 65 %  
T = 3 % \*  
\*\* V = 45 MPH  
\* TTST 1 % \* DUAL 2 %

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4194 = 0.262 MI.  
LENGTH STRUCTURE TIP PROJECT B-4194 = 0.028 MI.  
TOTAL LENGTH TIP PROJECT B-4194 = 0.290 MI.

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
February 5, 2007

LETTING DATE:  
July 15, 2008

**JAMES A. SPEER, PE**  
PROJECT ENGINEER

**JOHN C. LANSFORD, PE**  
PROJECT DESIGN ENGINEER

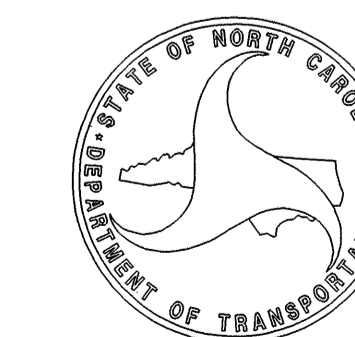
**HYDRAULICS ENGINEER**

*S.R. Morgan* 4/16/08  
SIGNATURE: STEVEN R. MORGAN  
P.E.

**ROADWAY DESIGN ENGINEER**

*J.C. Lansford*  
SIGNATURE: JOHN C. LANSFORD  
P.E.

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

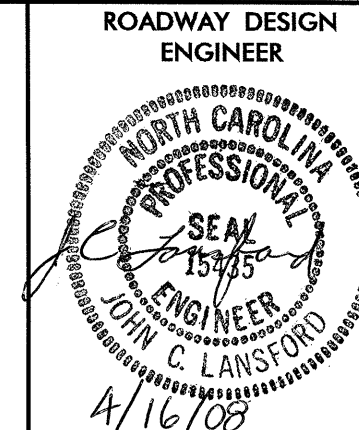


*Art McMillan*  
STATE HIGHWAY DESIGN ENGINEER

TIP PROJECT: B-4194

CONTRACT: C201871

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



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

**2006 ROADWAY ENGLISH STANDARD DRAWINGS**

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO.	TITLE
<b>DIVISION 2 - EARTHWORK</b>	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superlevation - Two Lane Pavement
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation - Method 'A'
310.10	Driveway Pipe Construction
<b>DIVISION 4 - MAJOR STRUCTURES</b>	
422.10	Reinforced Bridge Approach Fills
<b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b>	
560.01	Method of Shoulder Construction - High Side of Super-elevated Curve - Method I
<b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>	
654.01	Pavement Repairs
<b>DIVISION 8 - INCIDENTALS</b>	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
816.04	Markers for Drainage Structure and Concrete Pad
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.66	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

**GENERAL NOTES:** 2006 SPECIFICATIONS  
EFFECTIVE: 07-18-06  
REVISED: 07-18-06

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

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

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

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

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

**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.

**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 Duke Energy and Verizon South  
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.

**INDEX OF SHEETS**

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-A	PAVEMENT SCHEDULE, TYPICAL SECTIONS, DETAIL OF PROPOSED EARTH BERM, CURB AND GUTTER DETAIL, WEDGING DETAIL
2-B	DETAIL OF ANCHORAGE FOR FRAMES
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF EARTHWORK, PAVEMENT REMOVAL SUMMARY
3-B	LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER), GUARDRAIL SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TCP-1 THRU TCP-5	TRAFFIC CONTROL PLANS
SD-1	SPECIAL SIGN DESIGN SHEET
PM-1	PAVEMENT MARKING PLAN
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLAN
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X	CROSS-SECTION SUMMARY
X-1 THRU X-23	CROSS-SECTIONS
S-1 THRU S-35	STRUCTURE PLANS

8/17/08

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Note: Not to Scale

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

### BOUNDARIES AND PROPERTY:

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

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	⊙
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	○
Swamp Marsh	⊗
Proposed Lateral, Tail, Head Ditch	← FLD
False Sump	◇

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	⊙ MILEPOST 35
Switch	⊙ SWITCH
RR Abandoned	-----
RR Dismantled	-----

### RIGHT OF WAY:

Baseline Control Point	◇
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	⊙
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-

### ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-C-
Proposed Slope Stakes Fill	-F-
Proposed Wheel Chair Ramp	⊙
Proposed Wheel Chair Ramp Curb Cut	⊙
Curb Cut for Future Wheel Chair Ramp	⊙
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	-A/G Water-
Designated U/G Water Line (S.U.E.*)	-A/G Water-
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	-A/G Gas-
Designated U/G Gas Line (S.U.E.*)	-A/G Gas-
Above Ground Gas Line	-A/G Gas-

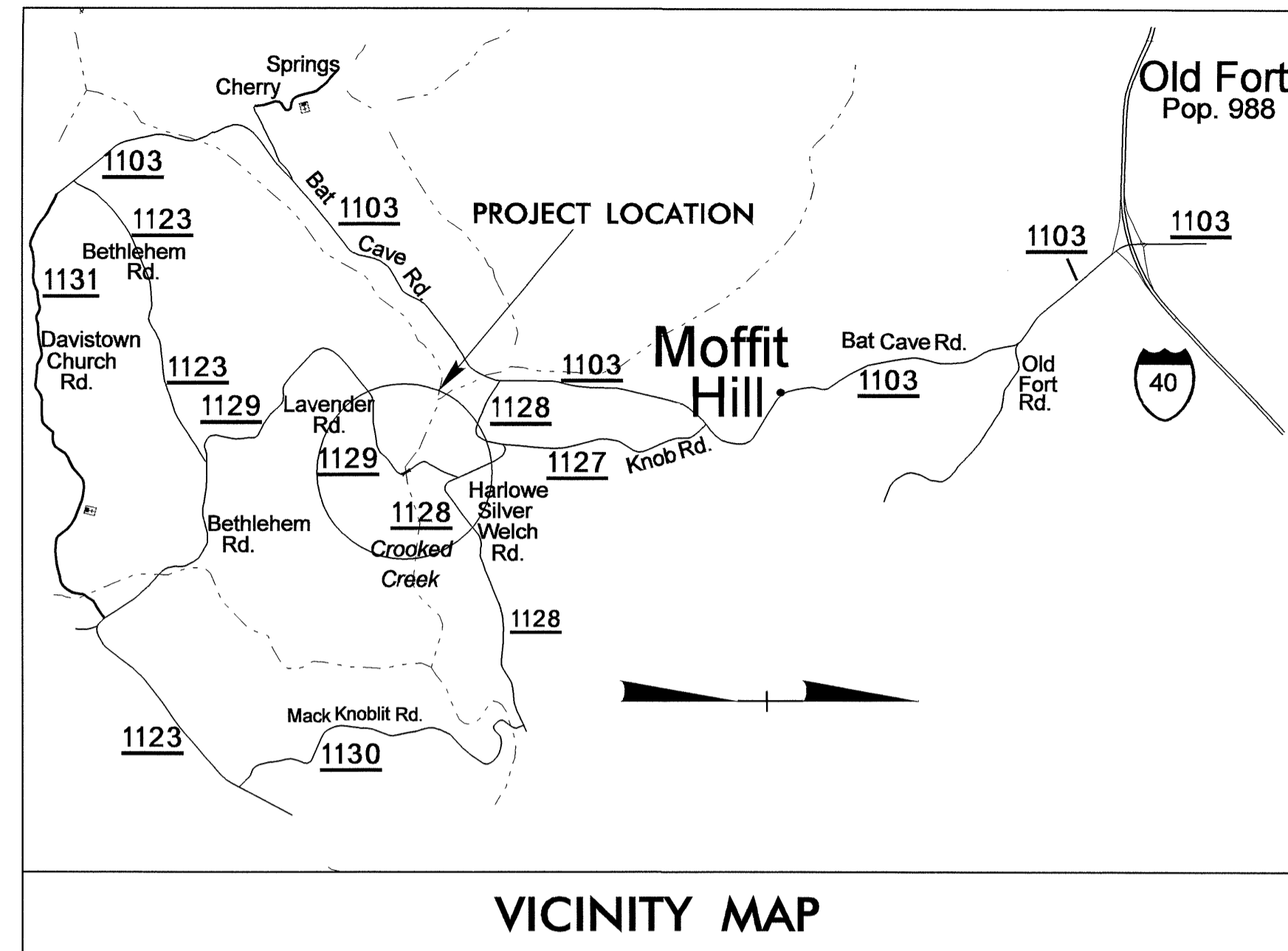
### SANITARY SEWER:

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	-UTIL-
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 B-4194



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4194-1"

WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF  
 NORTHING: 681800.5130(ft) EASTING: 1058754.4015(ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99982802

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4194-1" TO -L- STATION 10+00.00 IS  
 N 67°42'02" E 247.49'

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

**NOTES:**

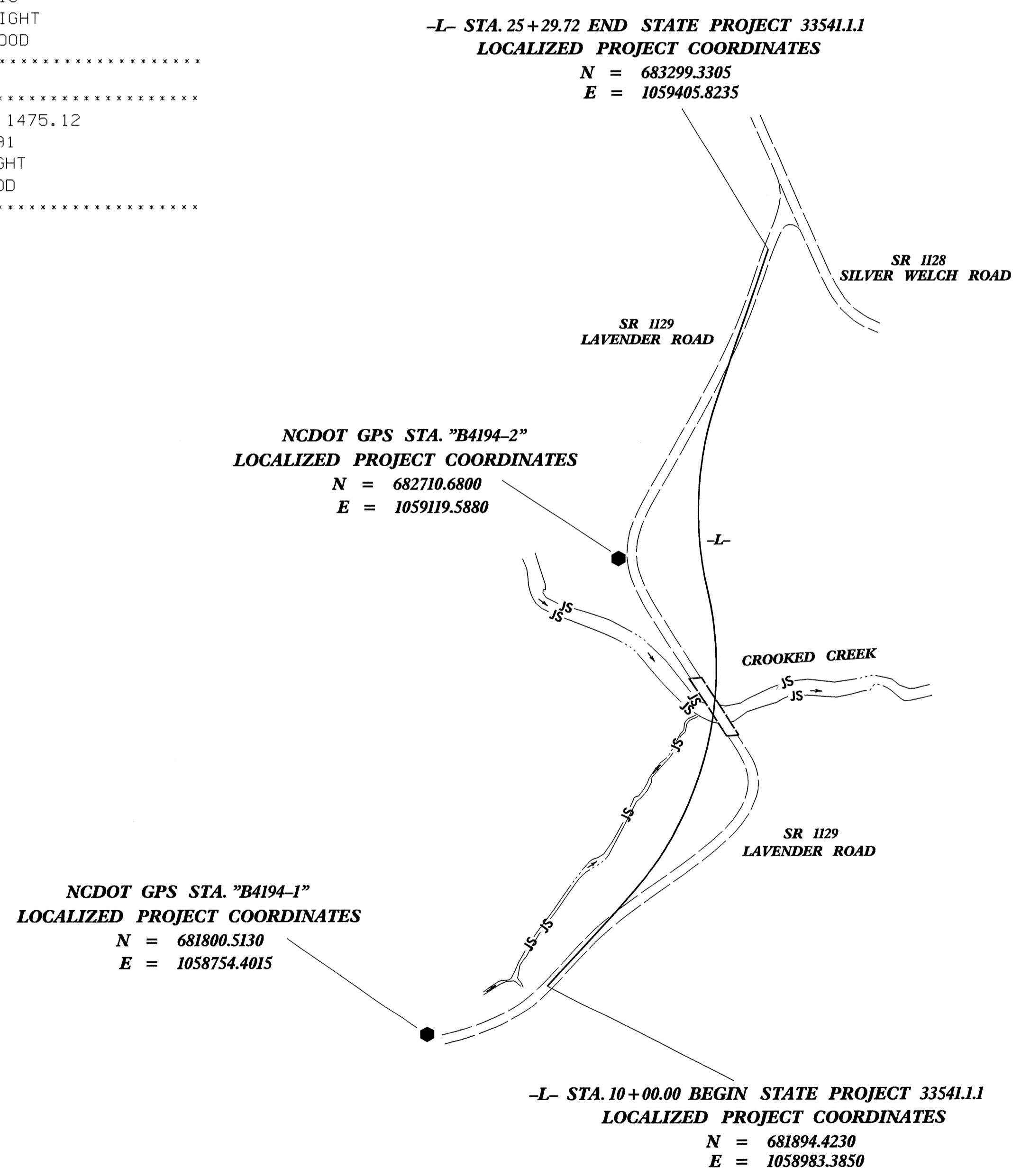
1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/)  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 B4194\_LS\_CONTROL\_060621.TXT
- 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)

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
GPS1		B4194-1	681800.5130	1058754.4015	1462.44	OUTSIDE PROJECT LIMITS	
1		BL-1	682024.6230	1059089.0690	1458.88	11+67.38	10.29 LT
2		BL-2	682364.7620	1059363.1310	1447.13	15+84.78	70.05 RT
GPS2		B4194-2	682710.6800	1059119.5880	1449.11	19+37.98	157.67 LT
4		BL-4	683334.7610	1059436.0150	1480.71	OUTSIDE PROJECT LIMITS	

\*\*\*\*\*  
 BM1 ELEVATION = 1461.68  
 N 681830 E 1058964  
 L STATION 10+00  
 S 16° 26' 28.0" W DIST 67.08  
 NAIL SET IN 20" GUM TREE  
 \*\*\*\*\*

\*\*\*\*\*  
 BM2 ELEVATION = 1459.42  
 N 682265 E 1059416  
 L STATION 15+12 146 RIGHT  
 NAIL SET IN 14" HARDWOOD  
 \*\*\*\*\*

\*\*\*\*\*  
 BM3 ELEVATION = 1475.12  
 N 683146 E 1059391  
 L STATION 23+79 36 RIGHT  
 NAIL SET IN 8" HARDWOOD  
 \*\*\*\*\*



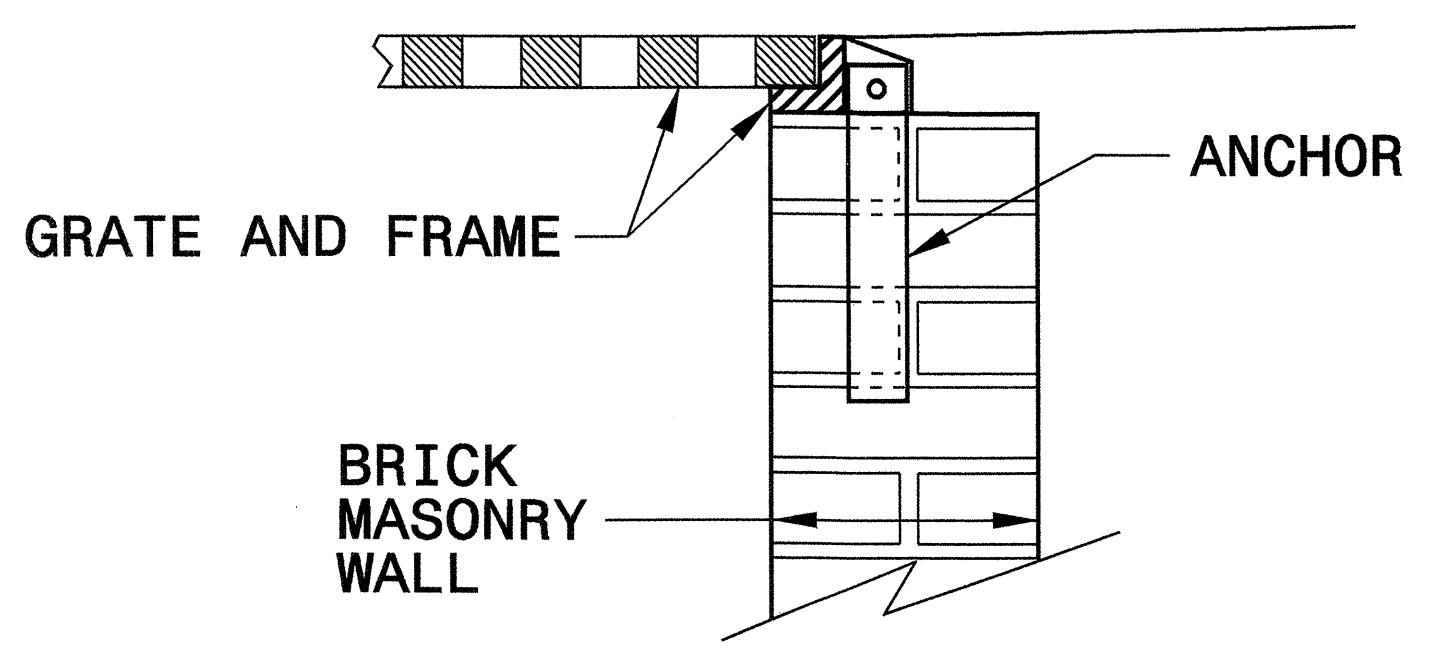
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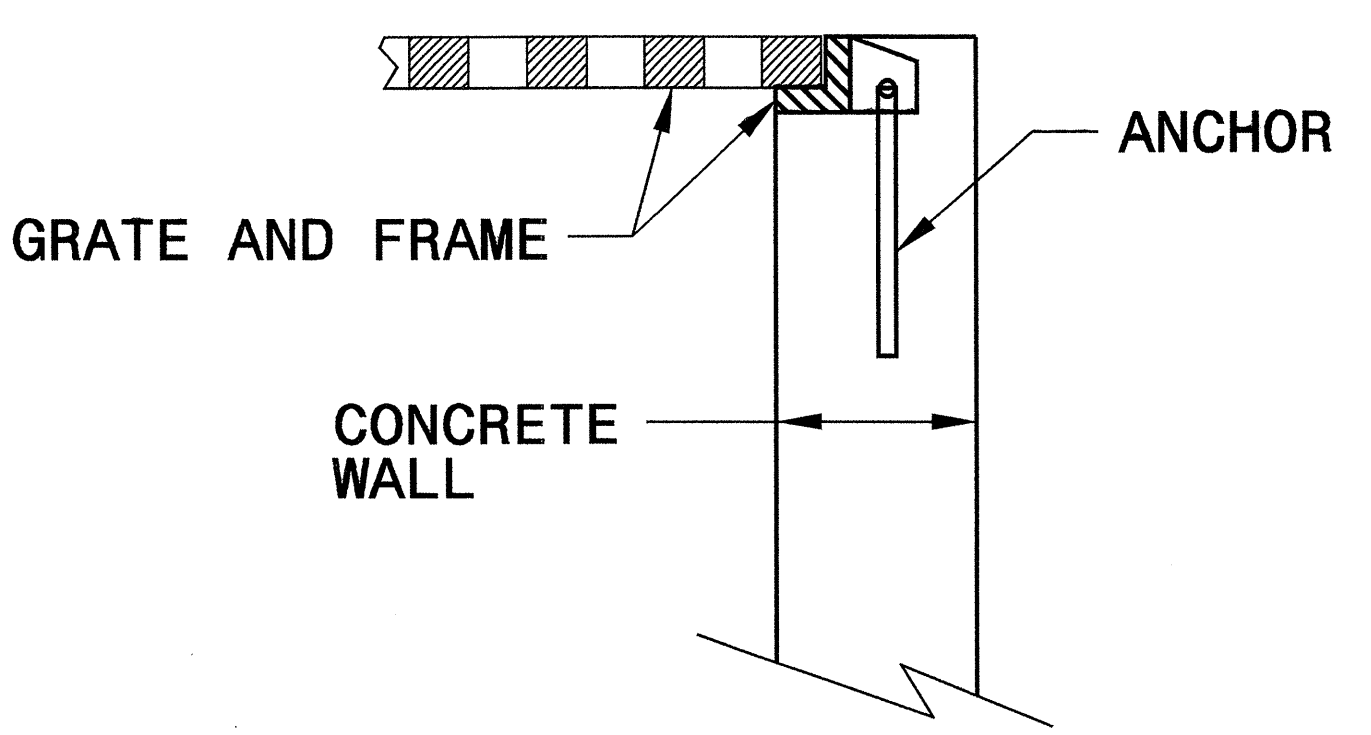
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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

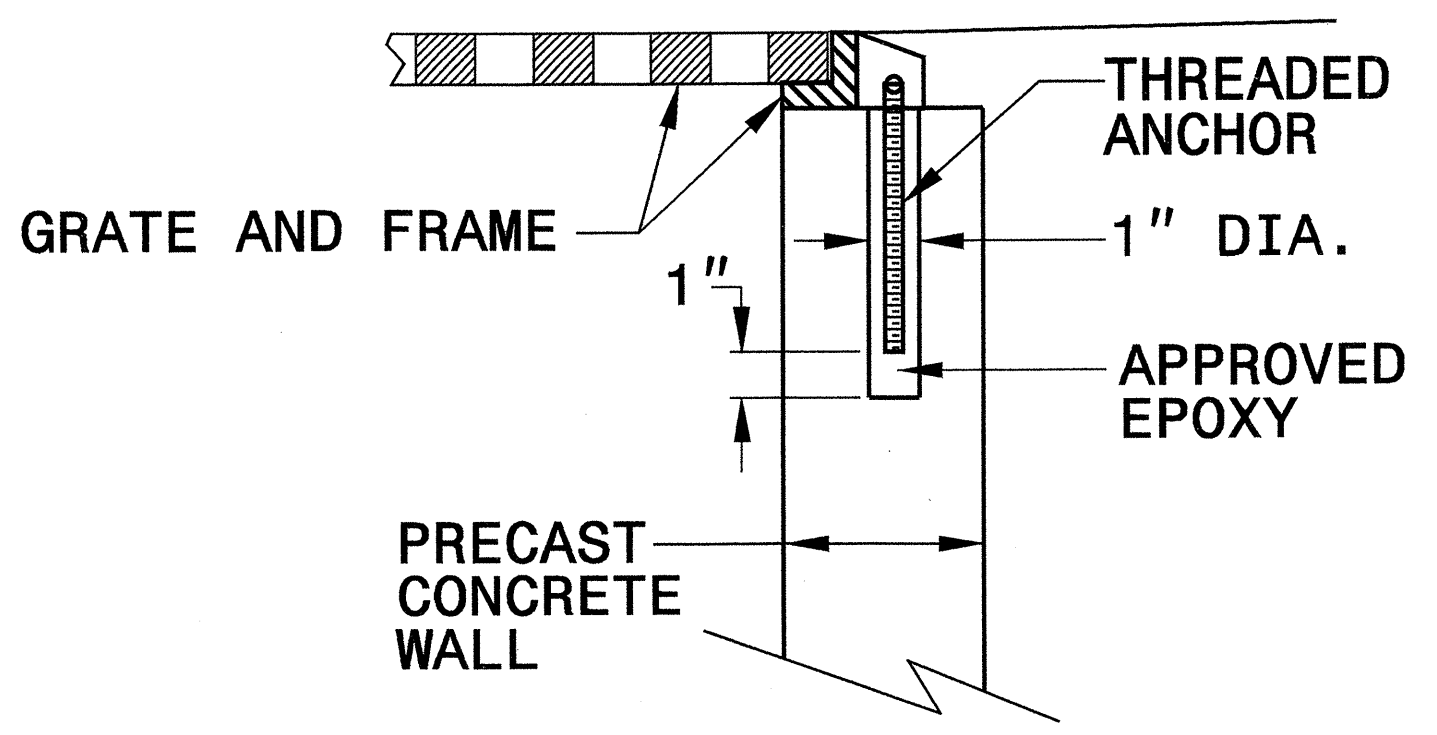
SHEET 1 OF 1  
**840D25**



**BRICK MASONRY CONSTRUCTION**



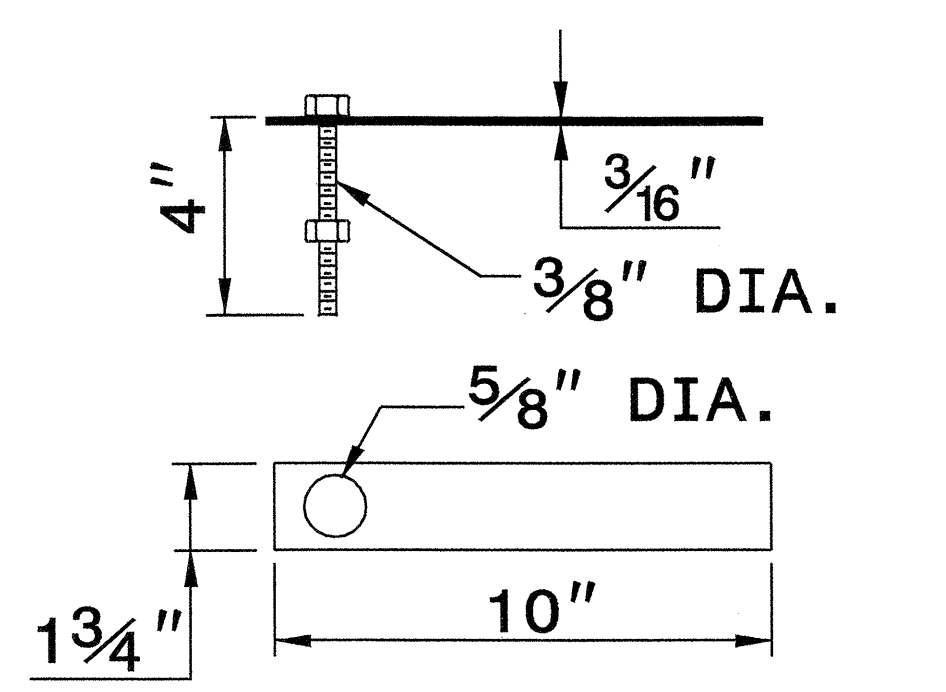
**CONCRETE CONSTRUCTION**



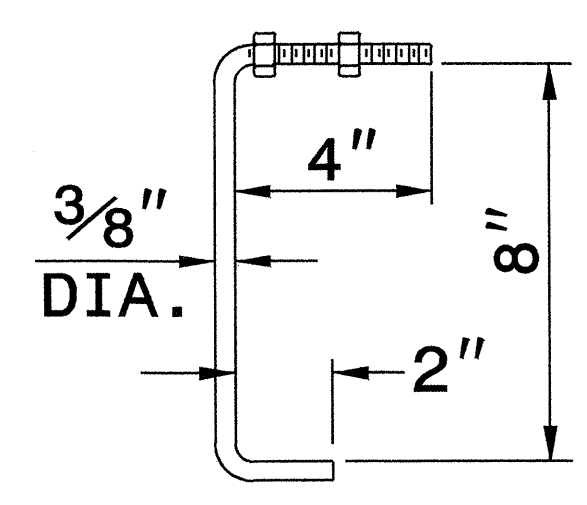
**PRECAST CONCRETE CONSTRUCTION**

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

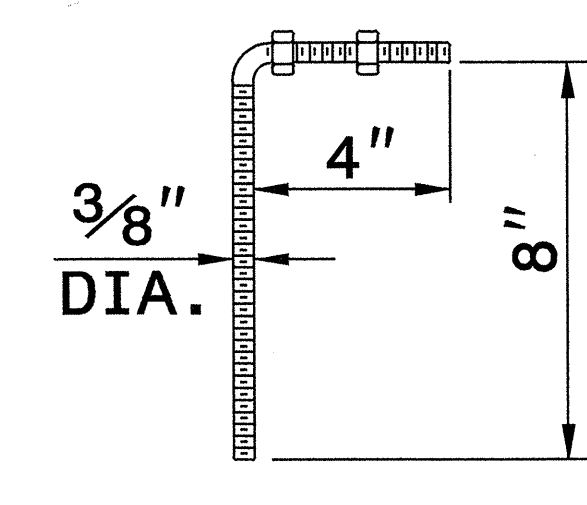
NOTE:  
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



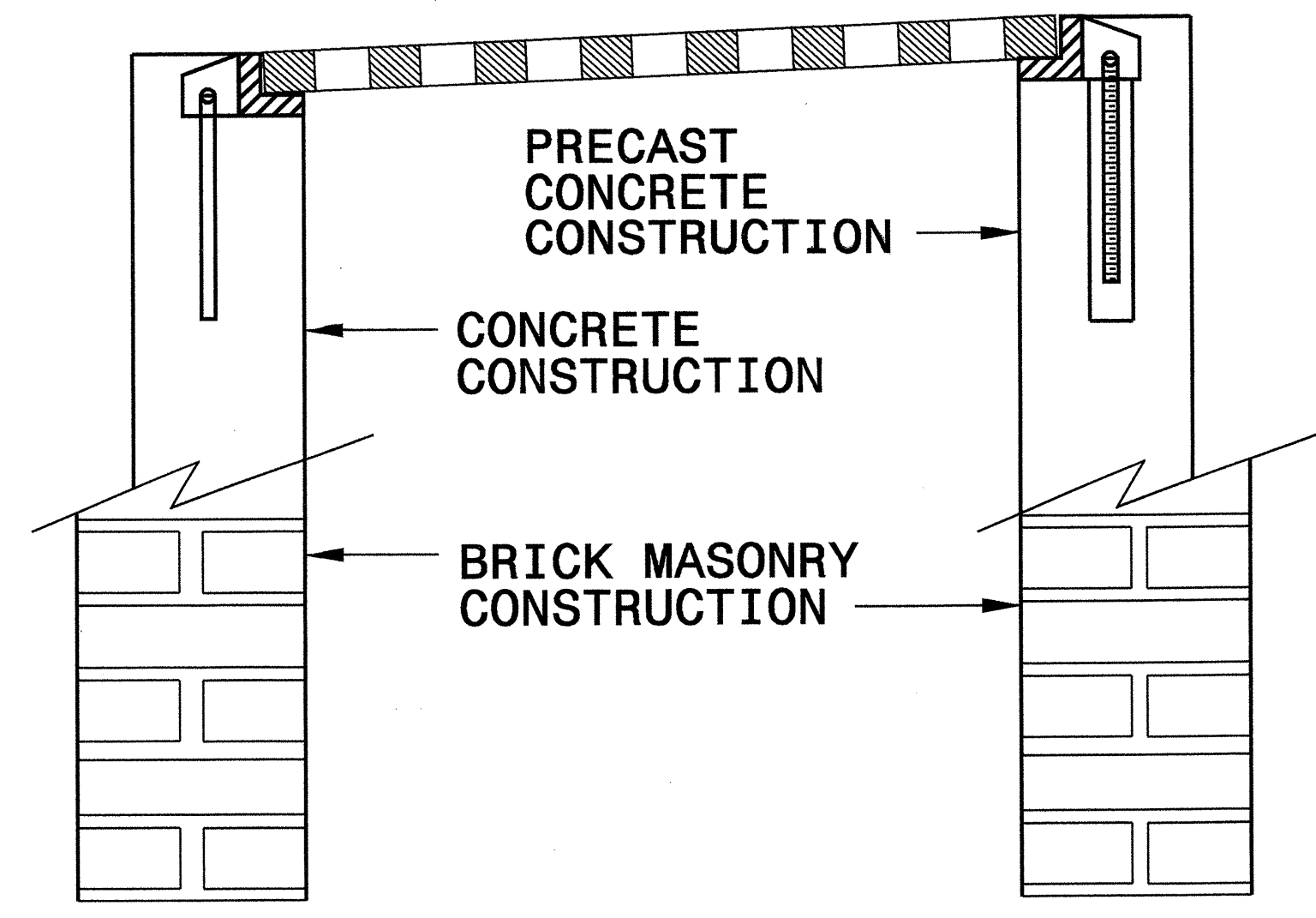
**MASONRY ANCHOR**  
3/8" DIA. BOLT WITH PLATE



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



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



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

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

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

SHEET 1 OF 1  
**840D25**

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 jhower-ton At 10:52:22am



**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: DATE:  
 FILE SPEC.:

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201871

ItemNumber	Sec #	Quantity	Unit	Description
000010000-N	800	Lump Sum		MOBILIZATION
002900000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL STATION ***** (16+00.00)
004300000-N	226	Lump Sum		GRADING
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
005700000-E	226	50	CY	UNDERCUT EXCAVATION
008000000-E	SP	250	TON	CLASS IV SUBGRADE STABILIZATION
013400000-E	240	250	CY	DRAINAGE DITCH EXCAVATION
019500000-E	265	1,000	CY	SELECT GRANULAR MATERIAL
019600000-E	270	1,000	SY	FABRIC FOR SOIL STABILIZATION
031800000-E	300	51	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
034300000-E	310	32	LF	15" SIDE DRAIN PIPE
034400000-E	310	24	LF	18" SIDE DRAIN PIPE
037800000-E	310	80	LF	24" RC PIPE CULVERTS, CLASS III
122000000-E	545	25	TON	INCIDENTAL STONE BASE
148900000-E	610	805	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
152500000-E	610	485	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
156000000-E	620	67	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
169300000-E	654	25	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
200000000-N	806	25	EA	RIGHT OF WAY MARKERS
202200000-E	815	115	CY	SUBDRAIN EXCAVATION
203300000-E	815	85	CY	SUBDRAIN FINE AGGREGATE
204400000-E	815	500	LF	6" PERFORATED SUBDRAIN PIPE
205500000-E	815	15	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
206600000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET

ItemNumber	Sec #	Quantity	Unit	Description
207700000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
228600000-N	840	5	EA	MASONRY DRAINAGE STRUCTURES
236600000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.24
236700000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.29
237400000-N	840	2	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
254900000-E	846	130	LF	2'-6" CONCRETE CURB & GUTTER
255600000-E	846	110	LF	SHOULDER BERM GUTTER
303000000-E	862	325	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
364900000-E	876	285	TON	RIP RAP, CLASS B
365600000-E	876	1,100	SY	FILTER FABRIC FOR DRAINAGE
440000000-E	1110	215	SF	WORK ZONE SIGNS (STATIONARY)
440500000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)
441000000-E	1110	126	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
443000000-N	1130	46	EA	DRUMS
443500000-N	1135	25	EA	CONES
444500000-E	1145	96	LF	BARRICADES (TYPE III)
445500000-N	1150	40	MD	FLAGGER
481000000-E	1205	16,660	LF	PAINT PAVEMENT MARKING LINES (4")
600000000-E	1605	1,725	LF	TEMPORARY SILT FENCE
600600000-E	1610	165	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	190	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	180	TON	SEDIMENT CONTROL STONE

ItemNumber	Sec #	Quantity	Unit	Description
601500000-E	1615	7.5	ACR	TEMPORARY MULCHING
601800000-E	1620	300	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	2	TON	FERTILIZER FOR TEMPORARY SEEDING
602400000-E	1622	100	LF	TEMPORARY SLOPE DRAINS
602700000-N	1622	3	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
602900000-E	SP	300	LF	SAFETY FENCE
603000000-E	1630	675	CY	SILT EXCAVATION
603600000-E	1631	1,350	SY	MATTING FOR EROSION CONTROL
603700000-E	SP	25	SY	COIR FIBER MAT
603800000-E	SP	800	SY	PERMANENT SOIL REINFORCEMENT MAT
604200000-E	1632	450	LF	1/4" HARDWARE CLOTH
607103000-E	SP	200	LF	COIR FIBER BAFFLES
607105000-E	SP	1	EA	*** SKIMMER (1-1/2")
607105000-E	SP	2	EA	*** SKIMMER (2")
608400000-E	1660	8	ACR	SEEDING & MULCHING
608700000-E	1660	4.5	ACR	MOWING
609000000-E	1661	100	LB	SEED FOR REPAIR SEEDING
609300000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
609600000-E	1662	200	LB	SEED FOR SUPPLEMENTAL SEEDING
610800000-E	1665	5.5	TON	FERTILIZER TOPDRESSING
611400000-N	SP	2	HR	SPECIALIZED HAND MOWING
611700000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL
612300000-E	1670	0.5	ACR	REFORESTATION

***** BEGIN SCHEDULE AA *****				
***** (3 ALTERNATES) *****				
036600000-E	310	340	LF	15" RC PIPE CULVERTS, CLASS III
AA1				
*** OR ***				
036600000-E	310	104	LF	15" RC PIPE CULVERTS, CLASS III
AA2				
053600000-E	SP	236	LF	*** HDPE PIPE CULVERTS (15")
AA2				
*** OR ***				
036600000-E	310	104	LF	15" RC PIPE CULVERTS, CLASS III
AA3				
054000000-E	SP	236	LF	*** ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, **** THICK (15", 0.064")
AA3				
***** END SCHEDULE AA *****				

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### PAVEMENT REMOVAL SUMMARY IN SQUARE YARDS

LINE	STATION	STATION	LOCATION	SQUARE YARDS
-L-	10+30	12+95	CL/RT	559
-L-	15+25	15+88	RT	181
-L-	16+89	25+60	LT/CL	1876
	<b>TOTAL</b>			<b>2616</b>
	<b>SAY</b>			<b>2625</b>

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

### SUMMARY OF EARTHWORK

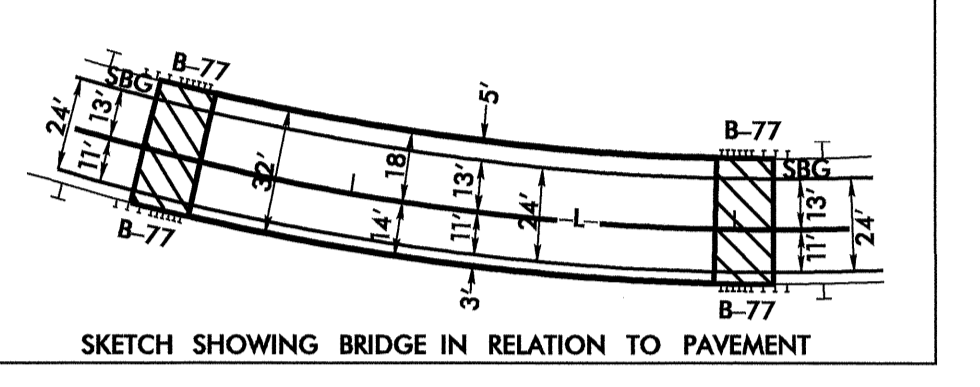
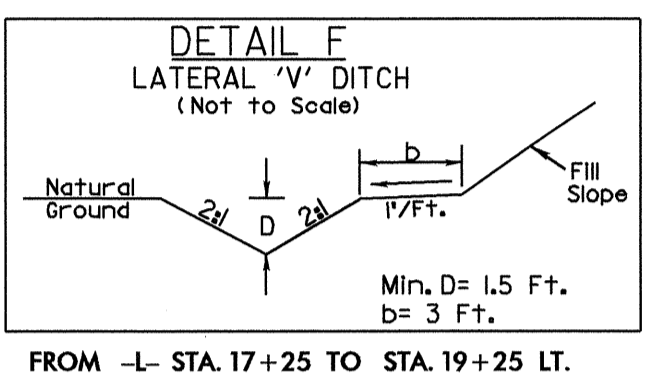
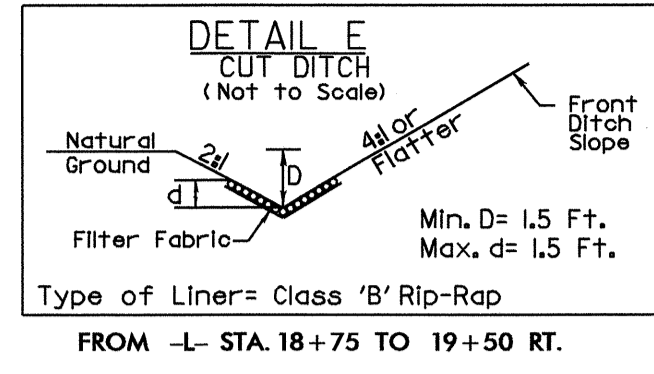
IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
Sta. 10+30 to 15+45 -L-	150		8,250	8,100	
Sta. 10+12 to 10+76.15 -DR1-	1		3	2	
<b>Subtotal</b>	<b>151</b>		<b>8,253</b>	<b>8,102</b>	
Sta. 16+95 to 25+00 -L-	15,963		2,657		13,306
<b>Subtotal</b>	<b>15,963</b>		<b>2,657</b>		<b>13,306</b>
<b>Grading Under Bridge</b>					
Sta. 15+50 to 16+95 -L-	706				706
<b>Total</b>	<b>16,820</b>		<b>10,910</b>	<b>8,102</b>	<b>14,012</b>
<b>Loss Due to Clearing and Grubbing</b>	<b>-750</b>				<b>-750</b>
<b>Waste in Lieu of Borrow</b>				<b>-8,102</b>	<b>-8,102</b>
<b>Grand Total</b>	<b>16,070</b>		<b>10,910</b>	<b>0</b>	<b>5,160</b>
<b>Say</b>	<b>16,100</b>				
<b>Grade Point Undercut</b>		<b>50</b>			
<b>Drainage Ditch Excavation: 250 CY</b>					

NOTE: 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.







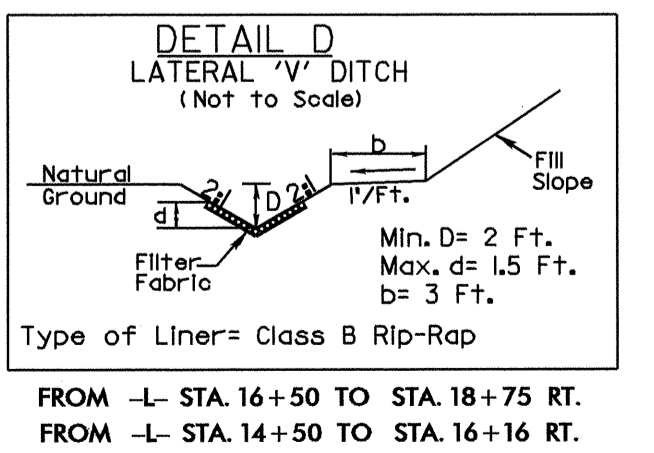
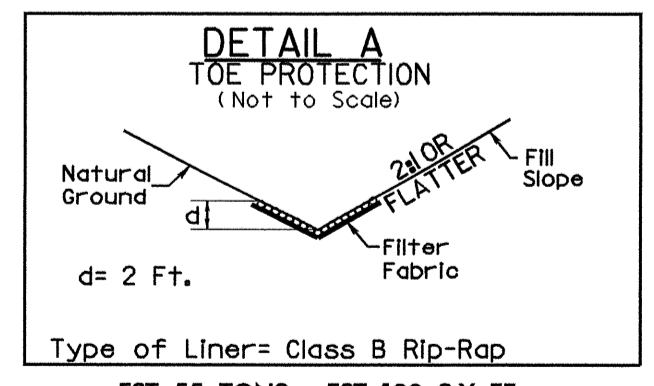
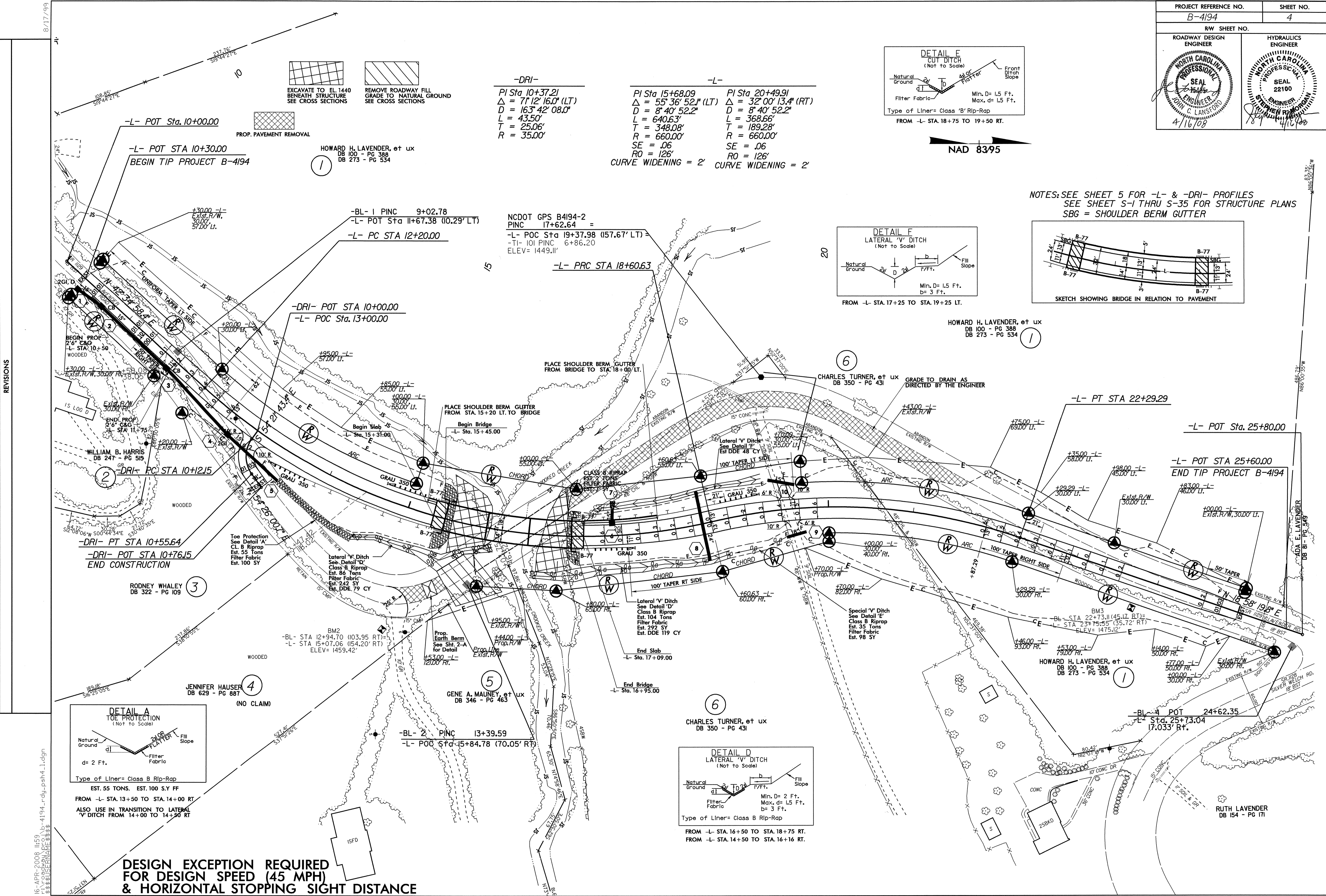
**-DRI-**  
 PI Sta 10+37.21  
 $\Delta = 71' 12'' 16.0''$  (LT)  
 $D = 163' 42'' 08.0''$   
 $L = 43.50'$   
 $T = 25.06'$   
 $R = 35.00'$

**-L-**  
 PI Sta 15+68.09  
 $\Delta = 55' 36'' 52.1''$  (LT)  
 $D = 8' 40'' 52.2''$   
 $L = 640.63'$   
 $T = 348.08'$   
 $R = 660.00'$   
 $SE = .06$   
 $RO = 126'$   
 CURVE WIDENING = 2'

PI Sta 20+49.91  
 $\Delta = 32' 00'' 13.4''$  (RT)  
 $D = 8' 40'' 52.2''$   
 $L = 368.66'$   
 $T = 189.28'$   
 $R = 660.00'$   
 $SE = .06$   
 $RO = 126'$   
 CURVE WIDENING = 2'

NAD 83/95

NOTES: SEE SHEET 5 FOR -L- & -DRI- PROFILES  
 SEE SHEET S-1 THRU S-35 FOR STRUCTURE PLANS  
 SBG = SHOULDER BERM GUTTER



**DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED (45 MPH) & HORIZONTAL STOPPING SIGHT DISTANCE**

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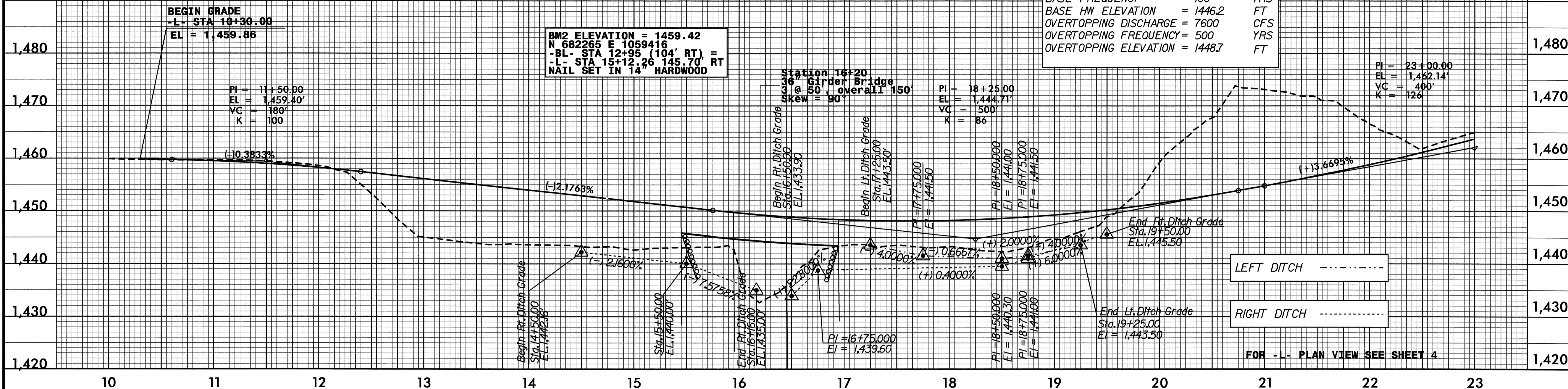
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PROJECT REFERENCE NO. B-4194	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BM1 ELEVATION = 1461.68  
 N 681830 E 1058964  
 -BL- STA 6+91 (92' RT)  
 NAIL SET IN 20" GUM TREE

STRUCTURE HYDRAULIC DATA

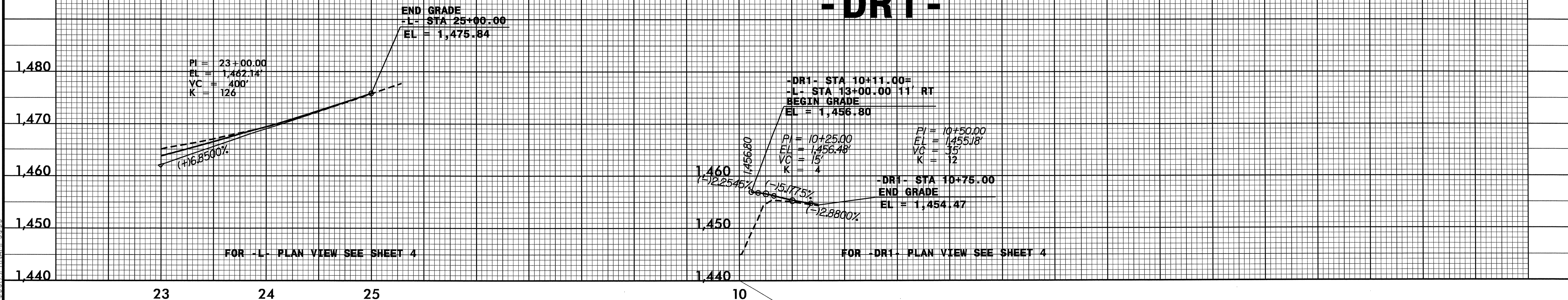
DESIGN DISCHARGE = 3300 CFS  
 DESIGN FREQUENCY = 25 YRS  
 DESIGN HW ELEVATION = 1444.5 FT  
 BASE DISCHARGE = 4900 CFS  
 BASE FREQUENCY = 100 YRS  
 BASE HW ELEVATION = 1446.2 FT  
 OVERTOPPING DISCHARGE = 7600 CFS  
 OVERTOPPING FREQUENCY = 500 YRS  
 OVERTOPPING ELEVATION = 1448.7 FT



-L-

BM3 ELEVATION = 1475.12  
 N 683146 E 1059391  
 -BL- STA 22+73 (45' RT) =  
 -L- STA 23+79.38 (35.72' RT)  
 NAIL SET IN 8" HARDWOOD

-DR1-



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