

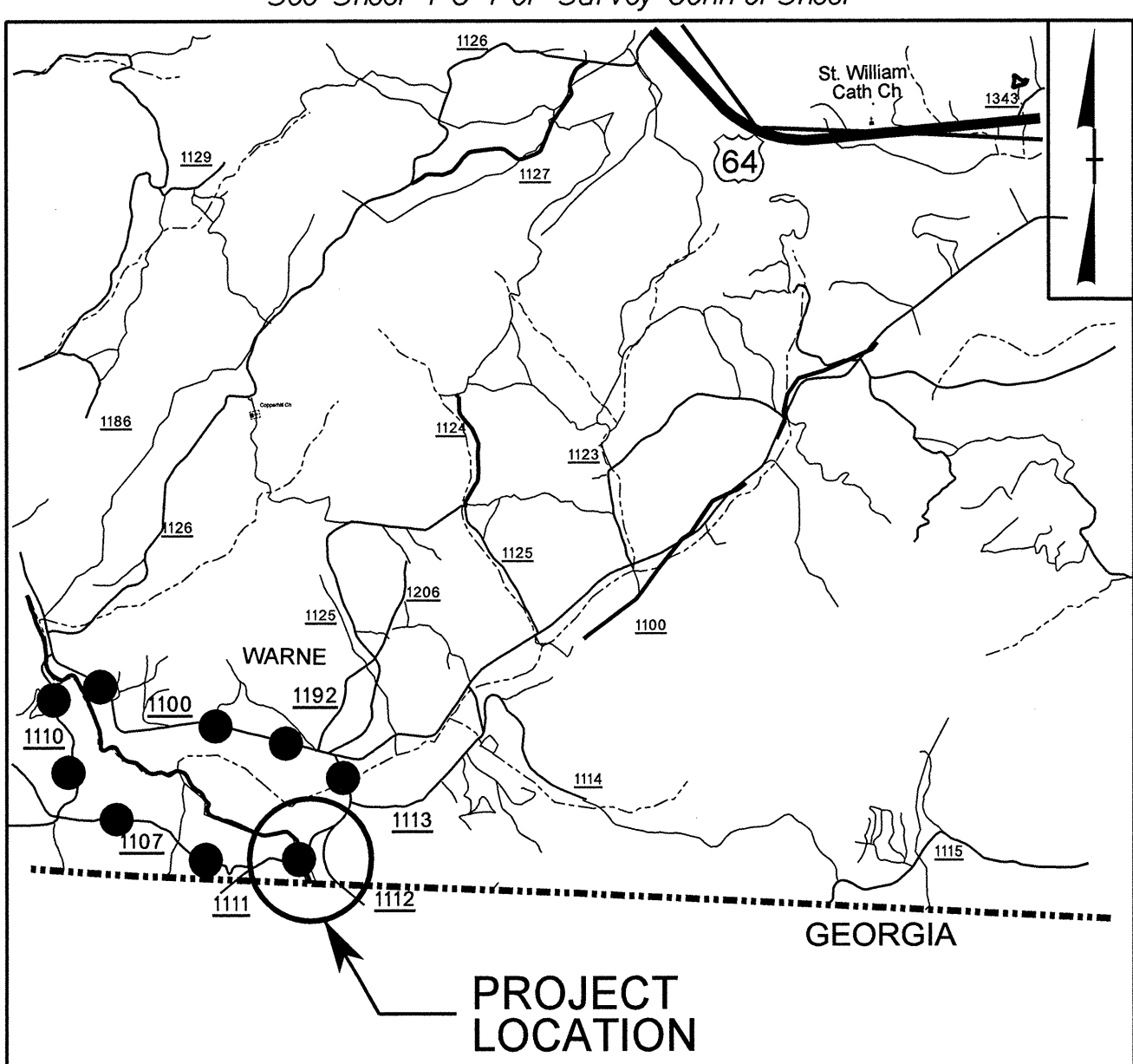
09/08/09

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
CLAY COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4467	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33716.1.1	BRZ-1111(7)	PE	
33716.2.1	BRZ-1111(7)	RW & UTIL.	
33716.3.1	BRZ-1111(7)	CONST.	

TIP PROJECT: B-4467

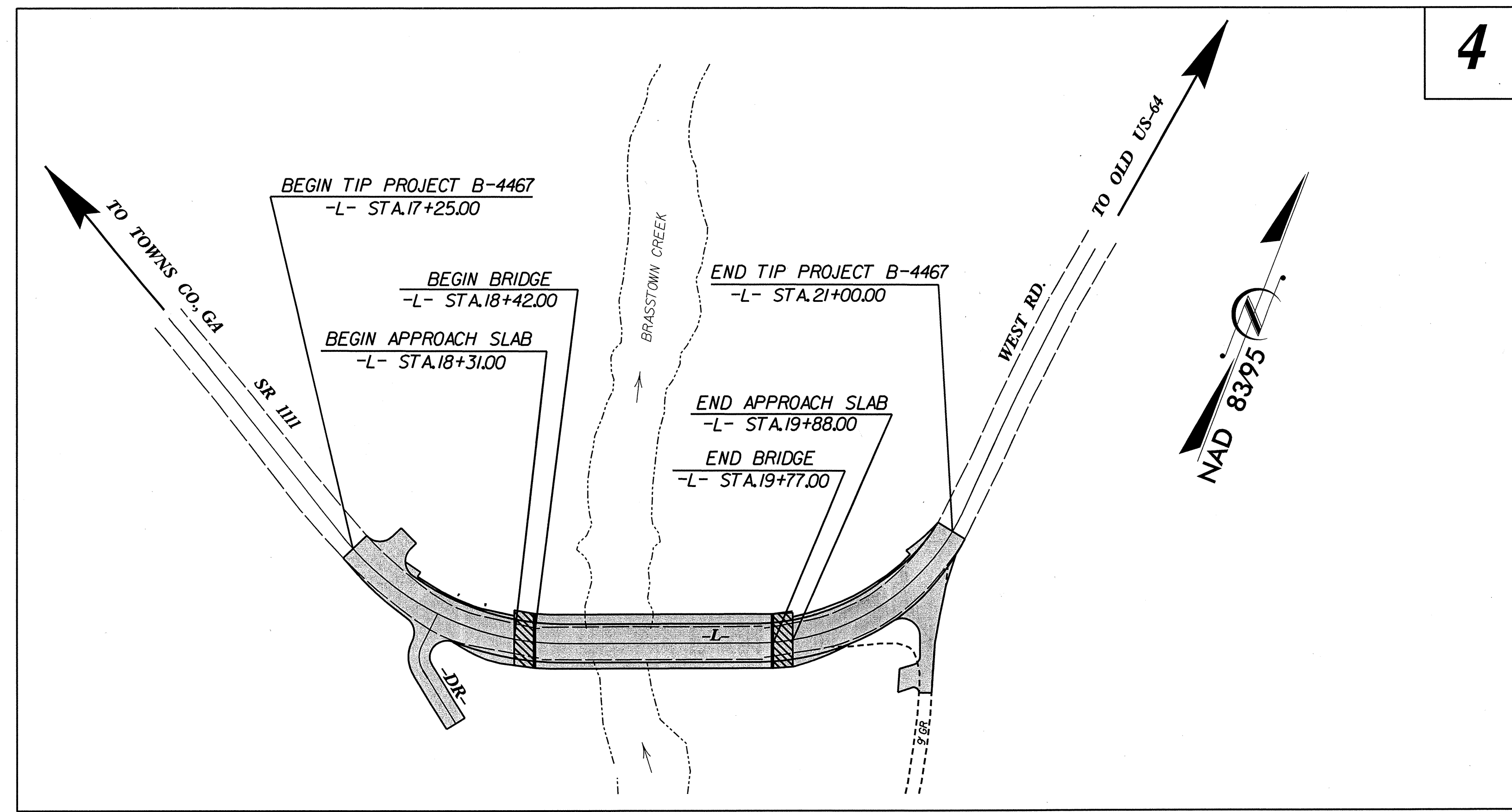


VICINITY MAP

OFF-SITE DETOUR ROUTE ●●●●●

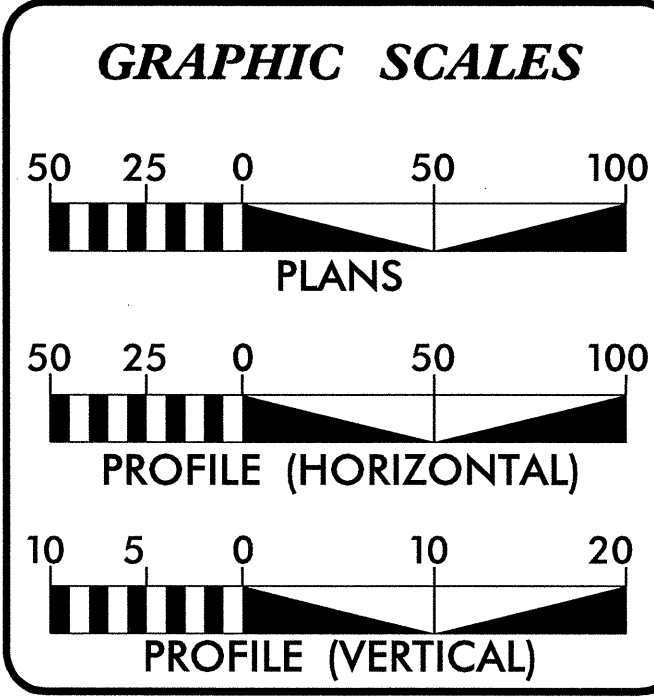
**LOCATION: BRIDGE # 3 OVER BRASSTOWN CREEK
ON SR 1111 (WEST ROAD)**

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE



4

CONTRACT: C202430



DESIGN DATA

ADT 2011	=	1416
ADT 2031	=	2031
DHV	=	10 %
D	=	60 %
T	=	6 % *
V	=	40 MPH
FUNC. CLASS	=	RURAL LOCAL
		* TTST 1% DUAL 5%
		SUB REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4467	=	0.045 MI
LENGTH OF STRUCTURE TIP PROJECT B-4467	=	0.026 MI
TOTAL LENGTH OF TIP PROJECT B-4467	=	0.071 MI

DESIGN EXCEPTIONS REQUIRED:

- DESIGN SPEED
- VERTICAL CURVES
- HORIZONTAL CURVES

Prepared in the Office of:

SEPI
ENGINEERING & CONSTRUCTION
FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 19, 2009

LETTING DATE:
APRIL 19, 2011

STEVE SCOTT, PE
PROJECT ENGINEER

AGNIESZKA NAU, PE
ROADWAY PROJECT DESIGN ENGINEER

RON E. MCCOLLUM, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER

Professional Engineer Seals for Dennis K. Hoyt and Steven L. Scott.

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

Professional Engineer Seal for Art McMillan.

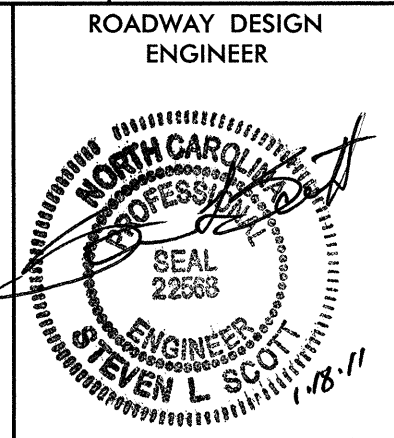
Art McMillan
STATE HIGHWAY DESIGN ENGINEER

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

8/17/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. SHEET NO.
B-4467 1-A



INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS
2A	ANCHORAGE FOR FRAME & GRATE DETAIL
2B	METHOD OF PIPE INSTALLATION DETAIL
2C	METHOD OF PIPE INSTALLATION DETAIL
2D	BRIDGE APPROACH FILLS DETAIL
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF DRAINAGE QUANTITIES
3B	SUMMARY OF EARTHWORK, GUARDRAIL AND PAVEMENT REMOVAL SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-3	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-4	EROSION CONTROL PLANS
RF-1	REFORESTATION PLAN
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1	CROSS SECTION SUMMARY
X-2 THRU X-5	CROSS-SECTIONS
S-1 THRU S-22	STRUCTURE PLANS

GENERAL NOTES:

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

**GRADE LINE:
GRADING AND SURFACING:**

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED 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 11.

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.

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: TELEPHONE - FRONTIER COMMUNICATION
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

2006 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
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 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.20	Frames and Wide 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
866.04	Barbed Wire Fence with Wood Posts (2 - 7 Strands)

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

SYSTEMS

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	○ EP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	123
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-WLB-
Proposed Wetland Boundary	-WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
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 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	XXXX
VEGETATION:	
Single Tree	⊕
Single Shrub	⊕
Hedge	-----
Woods Line	-----
Orchard	⊕
Vineyard	□ 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-

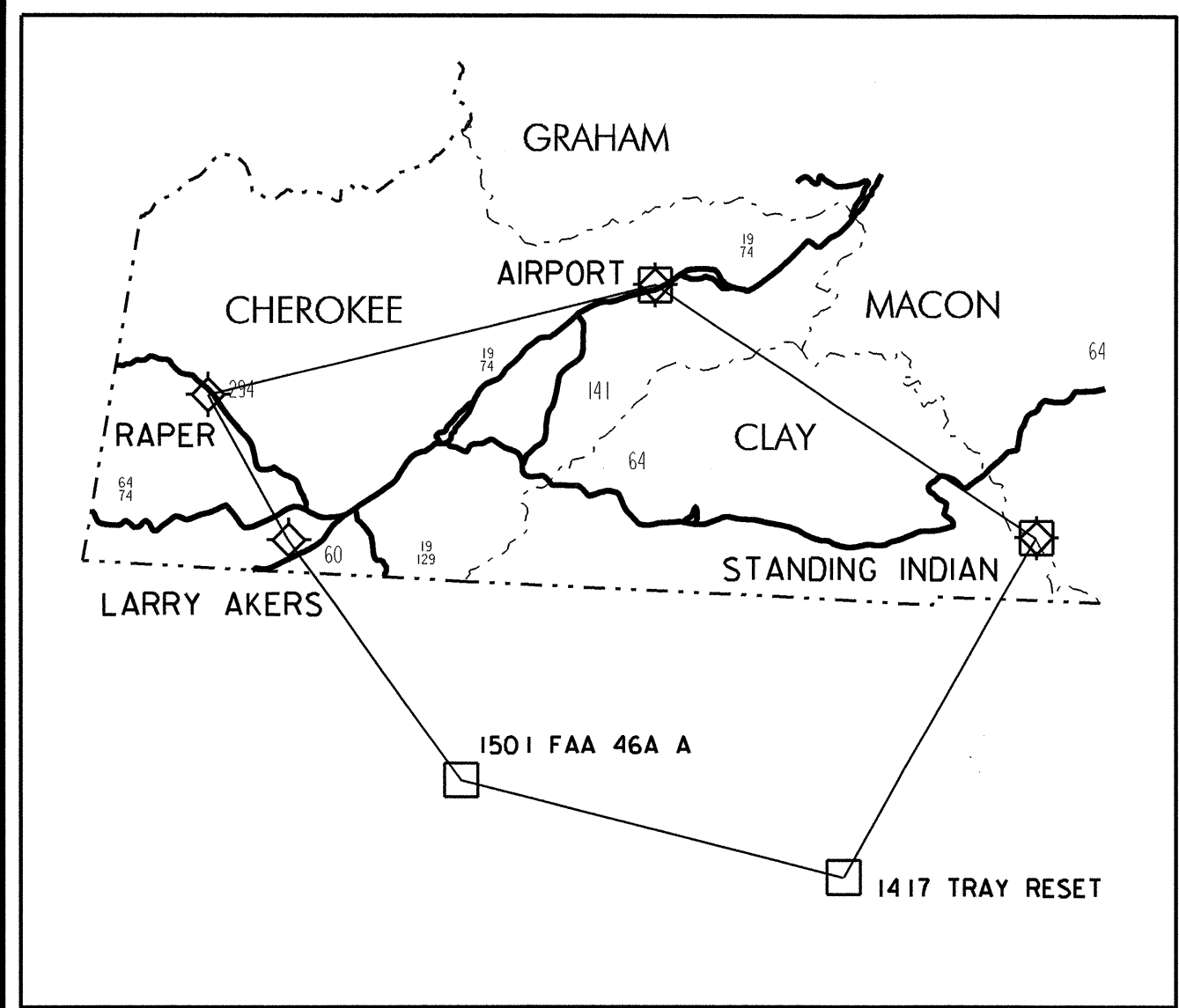
SANITARY SEWER:

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	-UTL-
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-4467



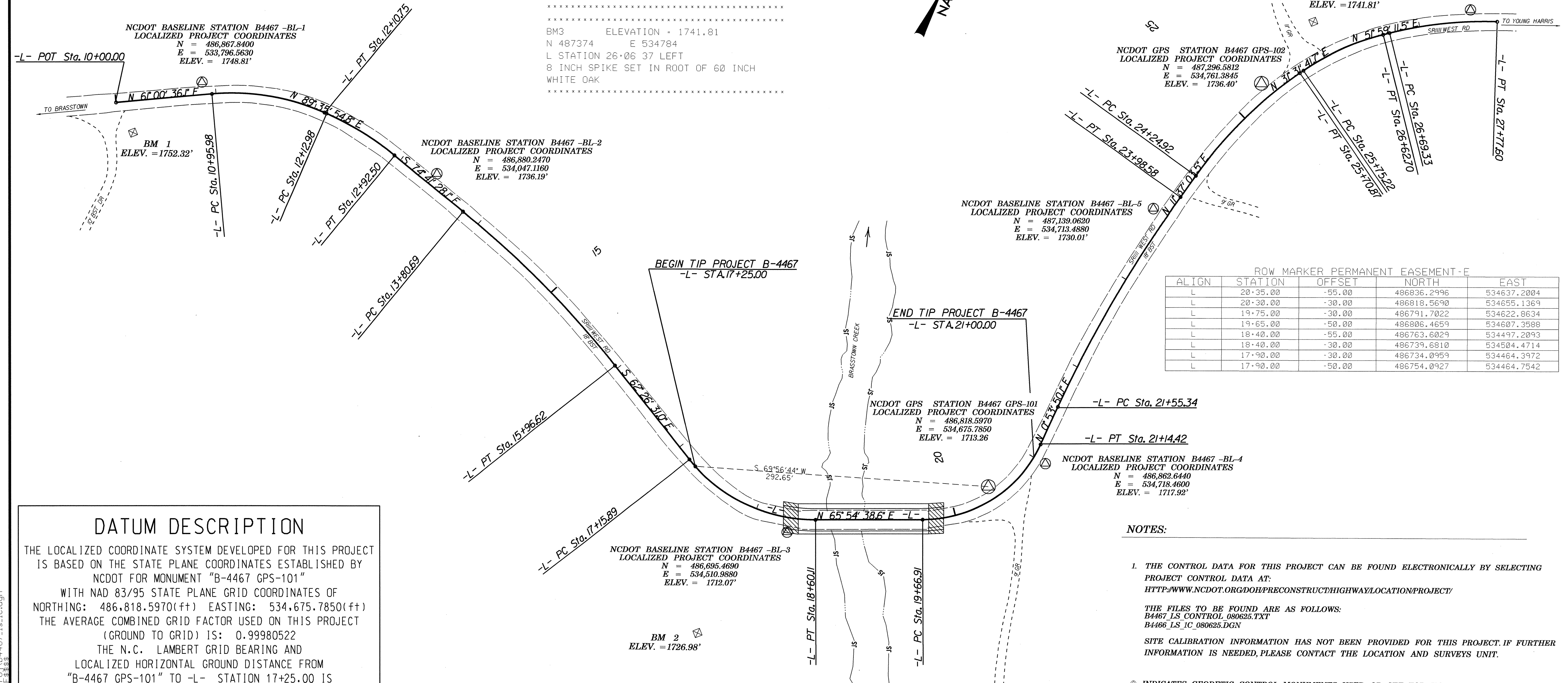
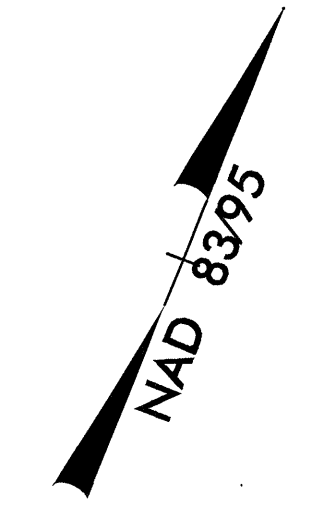
BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	486867.8400	533796.5630	1748.81	10+87.09	12.86 LT
2	BL-2	486880.2470	534047.1160	1736.19	13+36.50	12.88 LT
3	BL-3	486895.4690	534510.9880	1712.07	18+33.93	14.32 RT
4	BL-4	486862.6440	534718.4600	1717.92	21+00.39	13.10 RT
5	BL-5	487139.0620	534713.4880	1730.01	23+73.74	15.55 LT
6	BL-6	487448.4110	534921.8460	1743.24	27+51.37	12.11 LT

TYPE	STATION	NORTH	EAST
POT	10+00.00	486814.3820	533726.6227
PC	10+95.98	486860.9014	533810.5805
PT	12+10.75	486889.7137	533920.4400
PC	12+12.98	486889.7293	533922.6735
PT	12+92.50	486879.4463	534001.2718
PC	13+80.69	486856.1601	534086.3400
PT	15+96.62	486777.4062	534286.9514
PC	17+15.89	486722.2285	534392.6849
PT	18+60.11	486718.0096	534532.0140
PC	19+66.91	486761.5988	534629.5077
PT	21+14.42	486878.2414	534706.4310
PC	21+55.34	486919.1571	534707.0718
PT	23+98.58	487160.5934	534733.5452
PC	24+24.92	487186.3938	534738.8495
PT	25+70.87	487321.4404	534792.2445
PC	25+75.22	487325.1461	534794.5179
PT	26+62.70	487390.0581	534852.4691
PC	26+69.33	487394.1414	534857.6930
PT	27+77.60	487448.2005	534951.0981

 BM1 ELEVATION = 1752.32
 N 486794 E 533754
 L STATION 10+14 31 RIGHT
 8 INCH SPIKE SET ROOT OF 36 INCH WHITE OAK

 BM2 ELEVATION = 1726.98
 N 486566 E 534471
 L STATION 17+95 138 RIGHT
 8 INCH SPIKE SET IN ROOT OF 48 INCH SYCAMORE TREE

 BM3 ELEVATION = 1741.81
 N 487374 E 534784
 L STATION 26+06 37 LEFT
 8 INCH SPIKE SET IN ROOT OF 60 INCH WHITE OAK



ALIGN	STATION	OFFSET	NORTH	EAST
L	20+35.00	-55.00	486836.2996	534637.2004
L	20+30.00	-30.00	486818.5690	534655.1369
L	19+75.00	-30.00	486791.7022	534622.8634
L	19+65.00	-50.00	486806.4659	534607.3588
L	18+40.00	-55.00	486763.6029	534497.2093
L	18+40.00	-30.00	486739.6810	534504.4714
L	17+90.00	-30.00	486734.0959	534464.3972
L	17+90.00	-50.00	486754.0927	534464.7542

DATUM DESCRIPTION
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-4467 GPS-101"
 WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
 NORTHING: 486,818.5970(ft) EASTING: 534,675.7850(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99980522
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-4467 GPS-101" TO -L- STATION 17+25.00 IS
 S 69°56'44" W 292.65'
 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.NCDOT.ORG/DOH/PRECONSTRUCTHIGHWAYLOCATIONPROJECT/](http://www.ncdot.org/DOH/PRECONSTRUCTHIGHWAYLOCATIONPROJECT/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 B4467_LS_CONTROL_080625.TXT
 B4466_LS_1C_080625.DGN
 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 EXISTING HARN MONUMENTATION

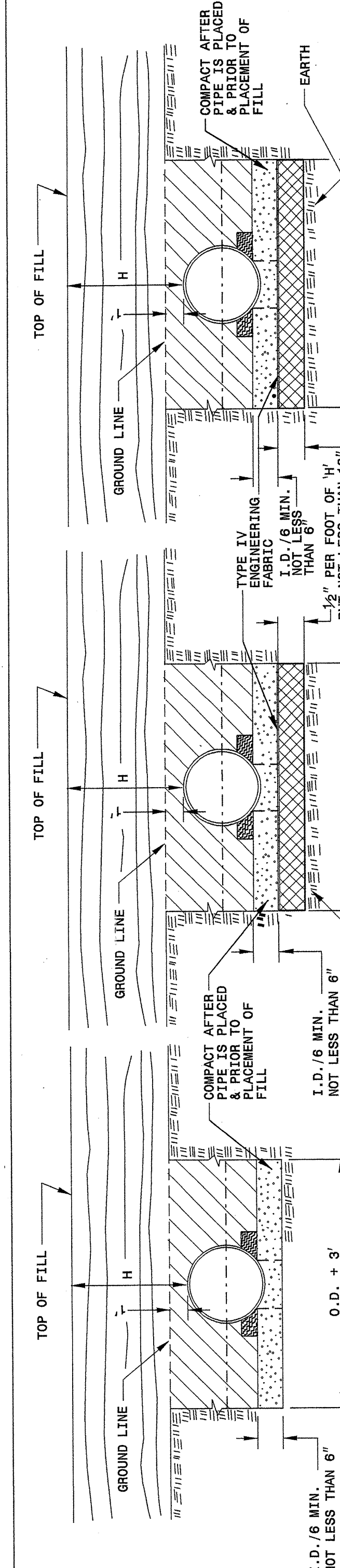
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6/2/99
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30-JUL-2009 08:48
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 Jhowerton

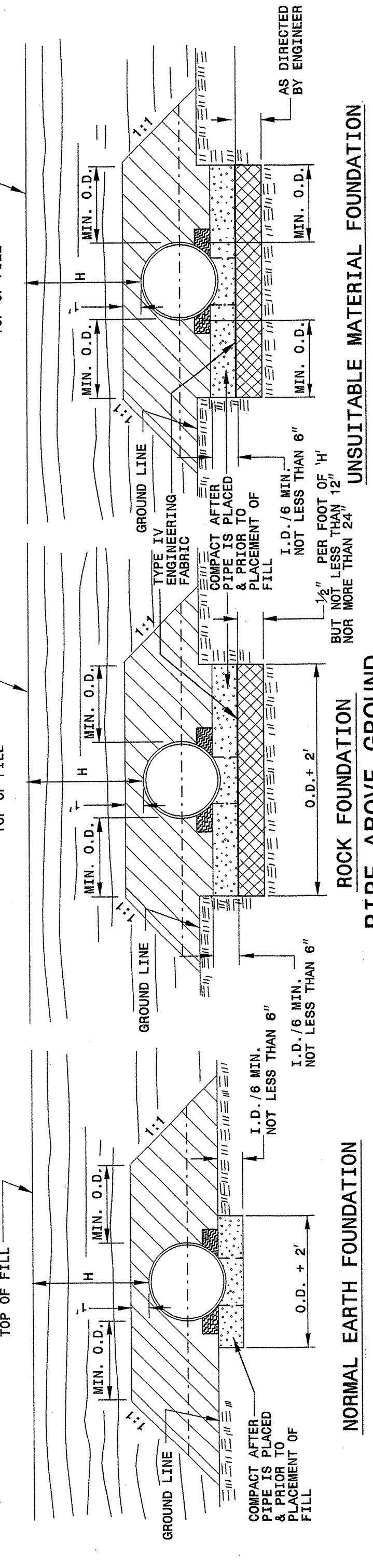
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STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.



7-06
 STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE



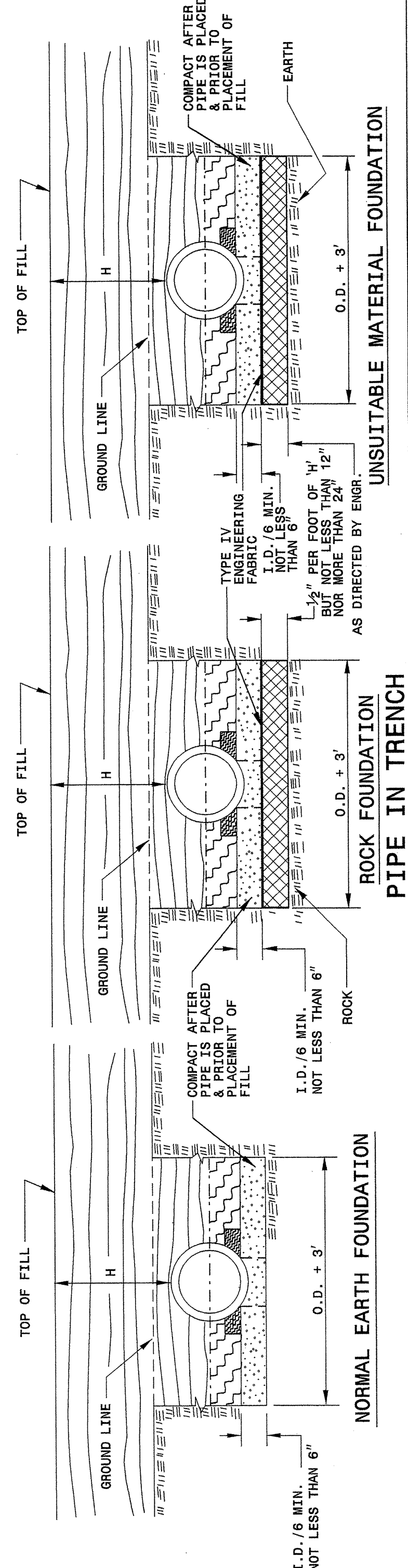
7-06
 STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

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

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SHEET 1 OF 3
 300D01

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



7-06
 STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

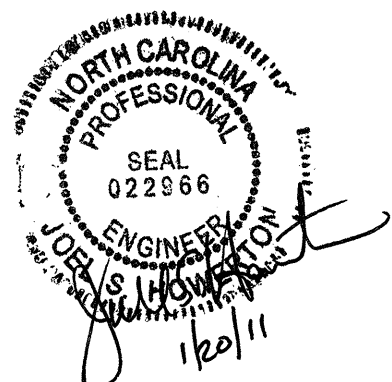
GENERAL NOTES:
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DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SHEET 2 OF 3
 300D01

ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 RIGID PIPE

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



SEE PLATE FOR TITLE

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

PROJECT REFERENCE NO. 8-447
 SHEET NO. 28

PS237501 7/30/2009 0300d01 jhowerton PS-Oce860-34tdbna

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

FLEXIBLE PIPE

Round Corrugated Steel Pipe
 2 2/3 x 1/2 corrugation **

Diameter (Inches)	Minimum cover (Inches)	Maximum Height of Cover (feet)			
		(Ga) 16	14	12	10
12	12	204	256		8
15	12	182	204		
18	12	135	169	239	
21	12	115	145	204	
24	12	100	126	178	
30	12	79	100	142	
36	12	65	83	117	152
42	12	55	70	100	130
48	12	48	61	87	113
54	12		54	77	100
60	12		69		90
66	12				81
72	12				74
78	12				81
84	12				69

Round Corrugated Aluminum Pipe
 2 2/3 x 1/2 corrugation **

Diameter (Inches)	Minimum cover (Inches)	Maximum Height of Cover (feet)			
		(Ga) 16	14	12	10
12	12	123	155	218	281
15	12	98	123	174	224
18	12	81	102	144	187
21	12	69	87	123	160
24	12	60	76	108	139
27	12		67	95	123
30	12		60	85	111
36	12		50	71	92
42	12		60	60	78
48	12		52	52	68
54	12		46		50
60	12				62
66	12				51
72	12				41

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

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

- CSP - AASHTO M36
- CAAP - AASHTO M196
- HDPE - AASHTO M294
- PVC - ASTM F949 or AASHTO M304

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

RIGID PIPE

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

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

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

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

- RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

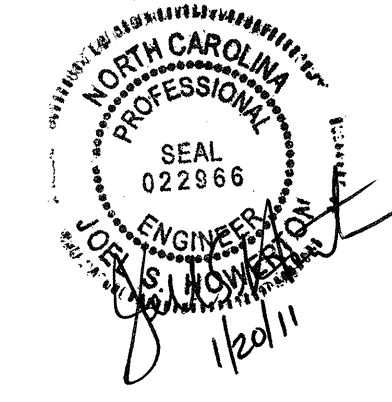
STATE OF
 NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

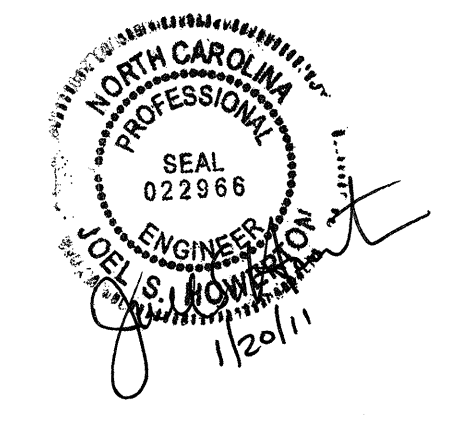
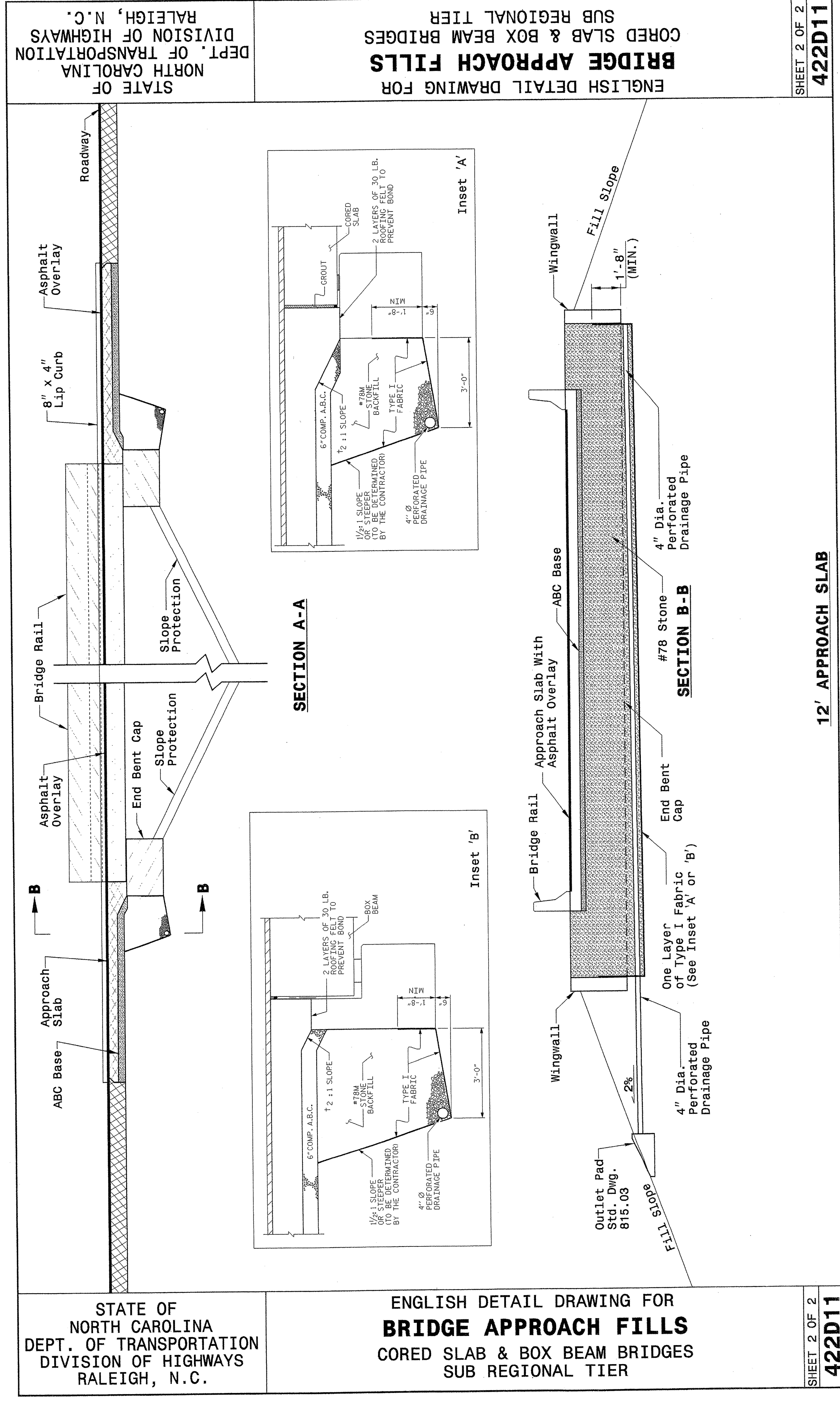
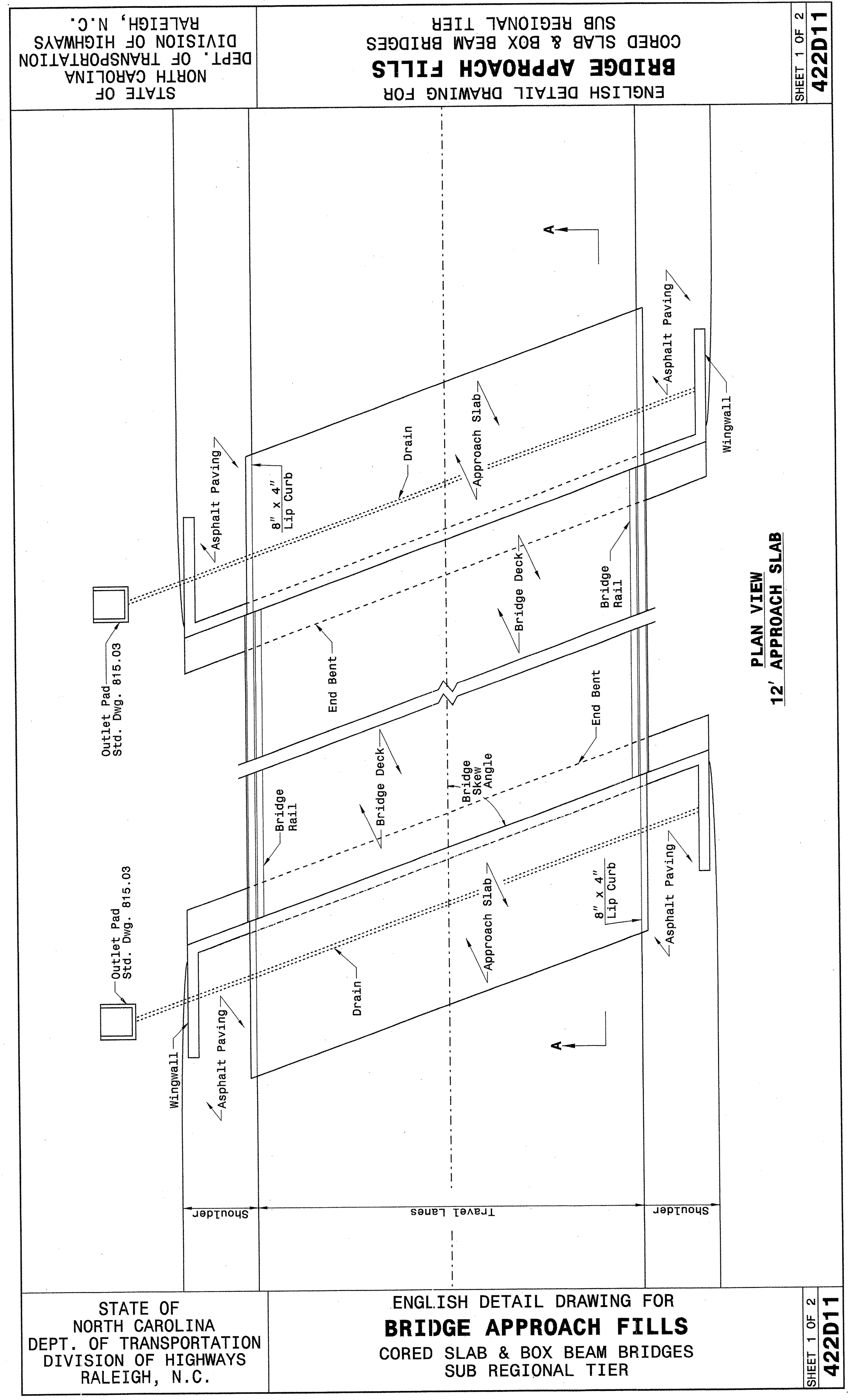


**PROJECT SERVICES UNIT
 STANDARDS AND SPECIAL DESIGN**
 Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: KKempf DATE: 5-15-09
 MODIFIED BY: [Signature] DATE:
 CHECKED BY: [Signature] DATE: 7/30/09
 FILE SPEC: c:\projects\contracts\special_details\stds\06\stds to special_details\300001\0300d01.dgn

PROJECT REFERENCE NO. B-4467	SHEET NO. 2D
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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: *Joel S. Howerton* DATE: *2/16/09*
 CHECKED BY: *Joel S. Howerton* DATE: *2/16/09*
 FILE SPEC.: *kempf/english/bridge approach fills.dgn*

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202430

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0030000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ***** (19+09.50 - L-)
0038000000-E	SP	35	CY	SHALLOW UNDERCUT
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0057000000-E	226	100	CY	UNDERCUT EXCAVATION
0080000000-E	SP	65	TON	CLASS IV SUBGRADE STABILIZATION
0195000000-E	SP	100	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	200	SY	FABRIC FOR SOIL STABILIZATION
0318000000-E	SP	7.5	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0320000000-E	SP	35	SY	FOUNDATION CONDITIONING FABRIC
0335200000-E	SP	24	LF	15" DRAINAGE PIPE
0335300000-E	SP	32	LF	18" DRAINAGE PIPE
0448200000-E	SP	12	LF	15" RC PIPE CULVERTS, CLASS IV
0995000000-E	340	14	LF	PIPE REMOVAL
1121000000-E	320	60	TON	AGGREGATE BASE COURSE
1220000000-E	545	50	TON	INCIDENTAL STONE BASE
1489000000-E	610	192	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1525000000-E	610	200	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1560000000-E	620	22	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
2022000000-E	SP	23	CY	SUBDRAIN EXCAVATION
2033000000-E	SP	17	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	SP	100	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	SP	1	EA	SUBDRAIN PIPE OUTLETS
2077000000-E	SP	6	LF	6" OUTLET PIPE (SUBDRAINS)
2286000000-N	840	3	EA	MASONRY DRAINAGE STRUCTURES
2364200000-N	840	3	EA	FRAME WITH TWO GRATES, STD 840.20
2556000000-E	846	162	LF	SHOULDER BERM GUTTER
3030000000-E	862	150	LF	STEEL BM GUARDRAIL
3045000000-E	862	12.5	LF	STEEL BM GUARDRAIL, SHOP CURVED
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3165000000-N	SP	3	EA	GUARDRAIL ANCHOR UNITS, TYPE ***** (350, TL-2)
3195000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3559000000-E	866	90	LF	** STRAND BARBED WIRE FENCE WITH POSTS (1)
3559000000-E	866	90	LF	** STRAND BARBED WIRE FENCE WITH POSTS (4)
3564000000-E	866	2	EA	SINGLE GATES, *** HIGH, *** WIDE, *** OPENING (48", 10', 10')
3569000000-E	867	640	LF	BARBED WIRE FENCE RESET
3580000000-E	866	206	LF	GENERIC FENCING ITEM TEMPORARY 1 STRAND BARBED WIRE FENCE
3580000000-E	866	210	LF	GENERIC FENCING ITEM TEMPORARY 3 STRAND BARBED WIRE FENCE
3580000000-E	866	140	LF	GENERIC FENCING ITEM TEMPORARY 4 STRAND BARBED WIRE FENCE
3656000000-E	876	475	SY	FILTER FABRIC FOR DRAINAGE
3659000000-N	SP	2	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4400000000-E	1110	448	SF	WORK ZONE SIGNS (STATIONARY)
4410000000-E	1110	116	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	20	EA	DRUMS
4445000000-E	1145	128	LF	BARRICADES (TYPE III)

ItemNumber	Sec #	Quantity	Unit	Description
4810000000-E	1205	3,012	LF	PAINT PAVEMENT MARKING LINES (4")
6000000000-E	1605	435	LF	TEMPORARY SILT FENCE
6006000000-E	1610	225	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	65	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	50	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	0.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	1.25	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	240	LF	SAFETY FENCE
6030000000-E	1630	100	CY	SILT EXCAVATION
6036000000-E	1631	2,500	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	10	SY	COIR FIBER MAT
6038000000-E	SP	27	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	175	LF	1/4" HARDWARE CLOTH
6071010000-E	SP	25	LF	WATTLE
6071020000-E	SP	25	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	55	LF	COIR FIBER BAFFLES
6071050000-E	SP	1	EA	*** SKIMMER (1-1/2")
6084000000-E	1660	0.5	ACR	SEEDING & MULCHING
6087000000-E	1660	0.5	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	0.25	TON	FERTILIZER TOPDRESSING
6114500000-N	SP	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	18	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.25	ACR	REFORESTATION

6/21/00

5/14/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. B-4467	SHEET NO. 3B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 22883 STEVEN L. SCOTT 1.12.13	

**SUMMARY OF EARTHWORK
IN CUBIC YARDS**

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L- STA. 17+25.00 TO BRIDGE	207		16		191
-DR- 10+00.00 TO -DR- STA. 10+70.00	42		7		35
SUBTOTAL	249		23		226
BRIDGE TO -L- STA. 21+00.00	81		114	33	
SUBTOTAL	81		114	33	
PROJECT TOTAL	330		137	33	226
LOSS DUE TO CLEAR & GRUB.	-10				-10
WASTE IN LEU OF BORROW				-33	-33
GRAND TOTAL	320				183
SAY	325				185

**SUMMARY OF PAVEMENT REMOVAL
IN SQUARE YARDS**

LOCATION	ASPHALT REMOVAL	ASPHALT BREAK UP	CONCRETE REMOVAL	CONCRETE BREAK UP
-L- STA. 17+25.00 TO 18+31.00	259			
-L- STA. 19+88.00 TO 21+00.00	274			
TOTAL	533			
SAY	540			

EST. UNDERCUT = 100 CY (CONTINGENCY FROM GEOTECHNICAL REPORT)
 EST. SHALLOW UNDERCUT = 35 CY (CONTINGENCY FROM GEOTECHNICAL REPORT)
 EST. FABRIC FOR SOIL STABILIZATION = 100 SY (CONTINGENCY FROM GEOTECHNICAL REPORT)
 EST. CLASS IV SUBGRADE STABILIZATION = 65 TON (CONTINGENCY FROM GEOTECHNICAL REPORT)
 EST. 6" PERFORATED SUBDRAIN PIPE = 100 LF (CONTINGENCY FROM GEOTECHNICAL REPORT)
 EST. SELECT GRANULAR FILL = 100 CY (CONTINGENCY FROM GEOTECHNICAL REPORT)

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."

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

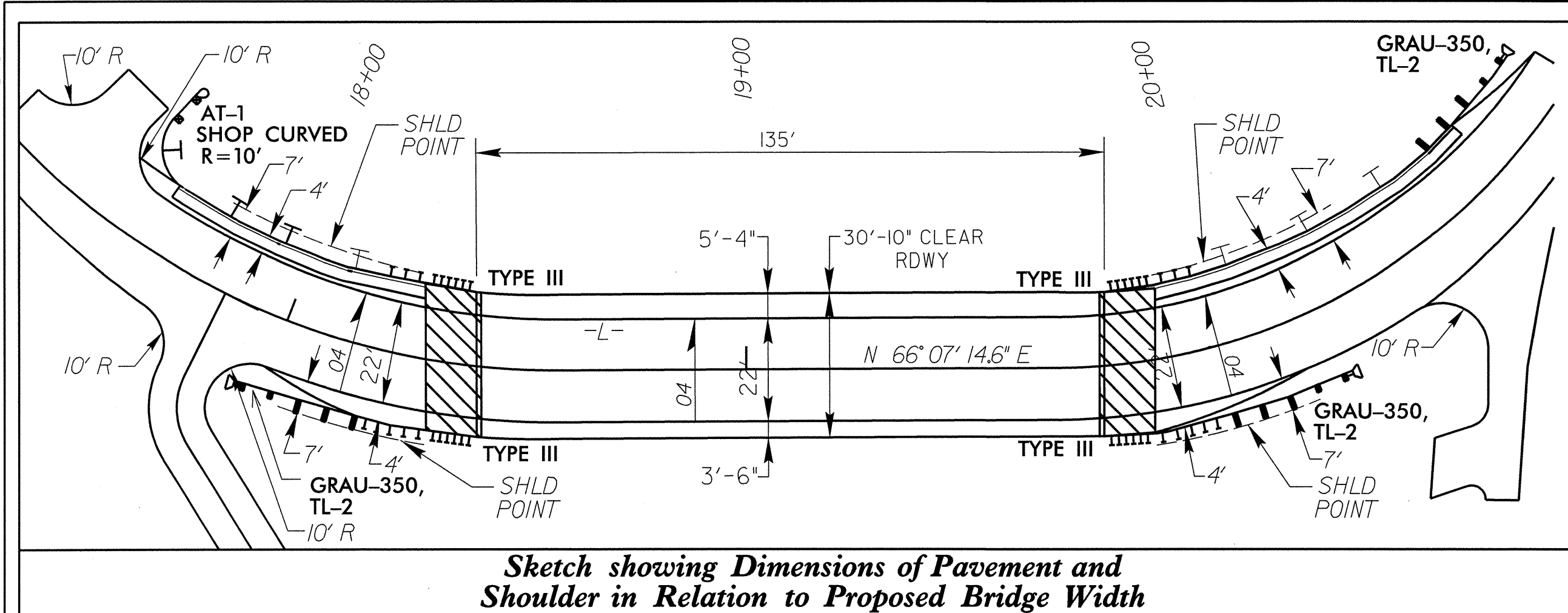
GUARDRAIL SUMMARY

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-350 TL-2	AT-1	TYPE III	
-L-	17+53.50	18+42.00	LT	75.00'	12.50'			18+42.00	4'	7'						1	1	
-L-	17+92.00	18+42.00	RT	50.00'			18+42.00		4'	7'					1		1	
-L-	19+77.00	21+00.00	LT	125.00'			19+77.00		4'	7'					1		1	
-L-	19+77.00	20+27.00	RT	50.00'				19+77.00	4'	7'					1		1	
SUBTOTAL				300.00'	12.50'													
LESS ANCHOR DEDUCTIONS																		
GRAU-350, TL-2 3 @ 25' =				-75.00'														
AT-1 1 @ 6.25' =				-6.25'														
TYPE III 4 @ 18.75' =				-75.00'														
TOTAL				143.75'			ADDITIONAL GUARDRAIL POSTS = 5 EA.							3	1	4		
SAY				150.0'	12.50'													

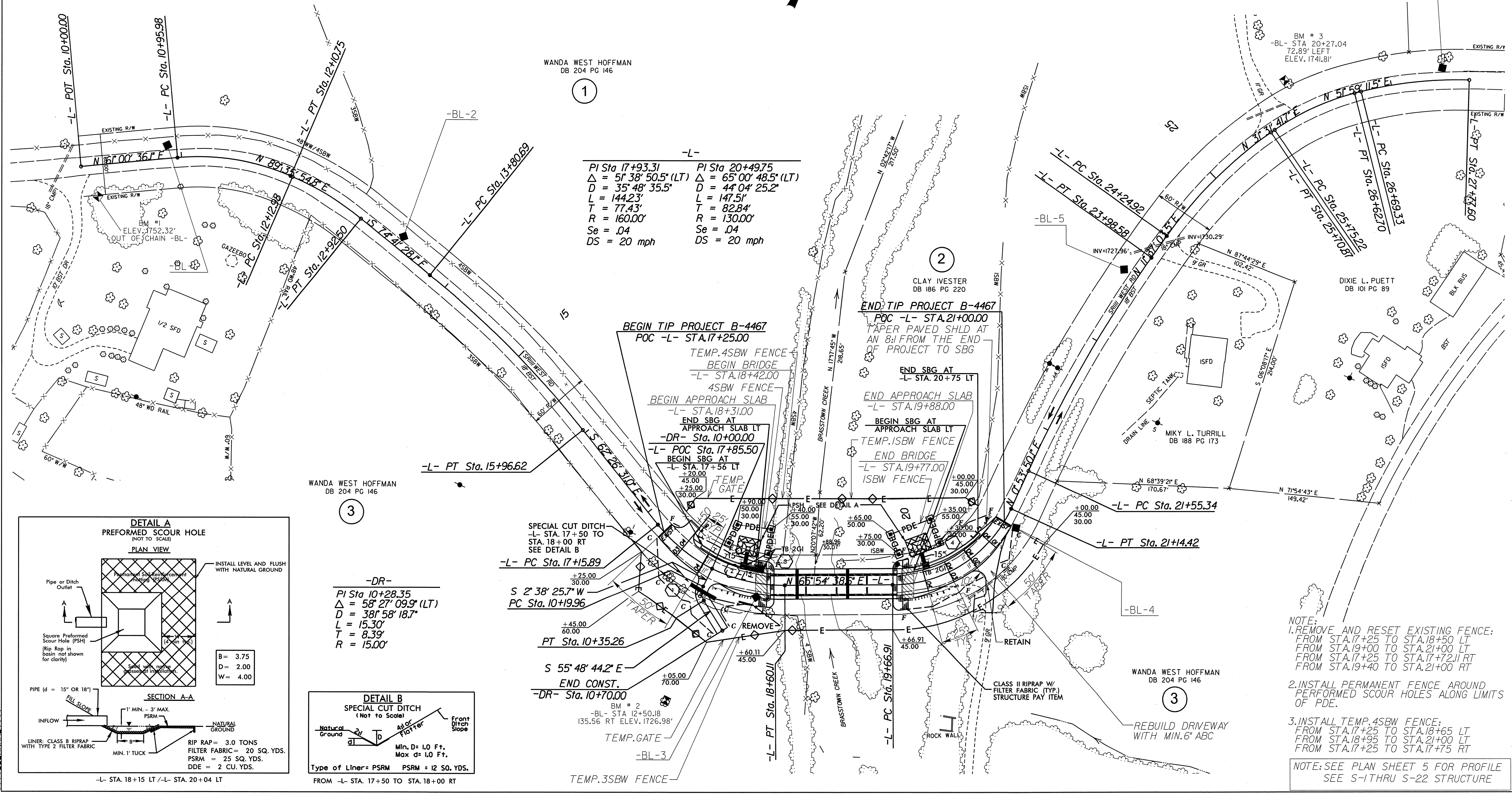
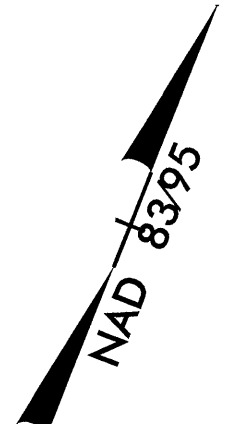
STIMULEX CONDITIONAL

5/14/99

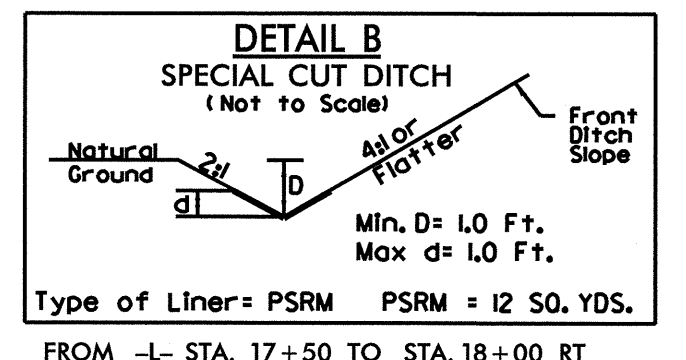
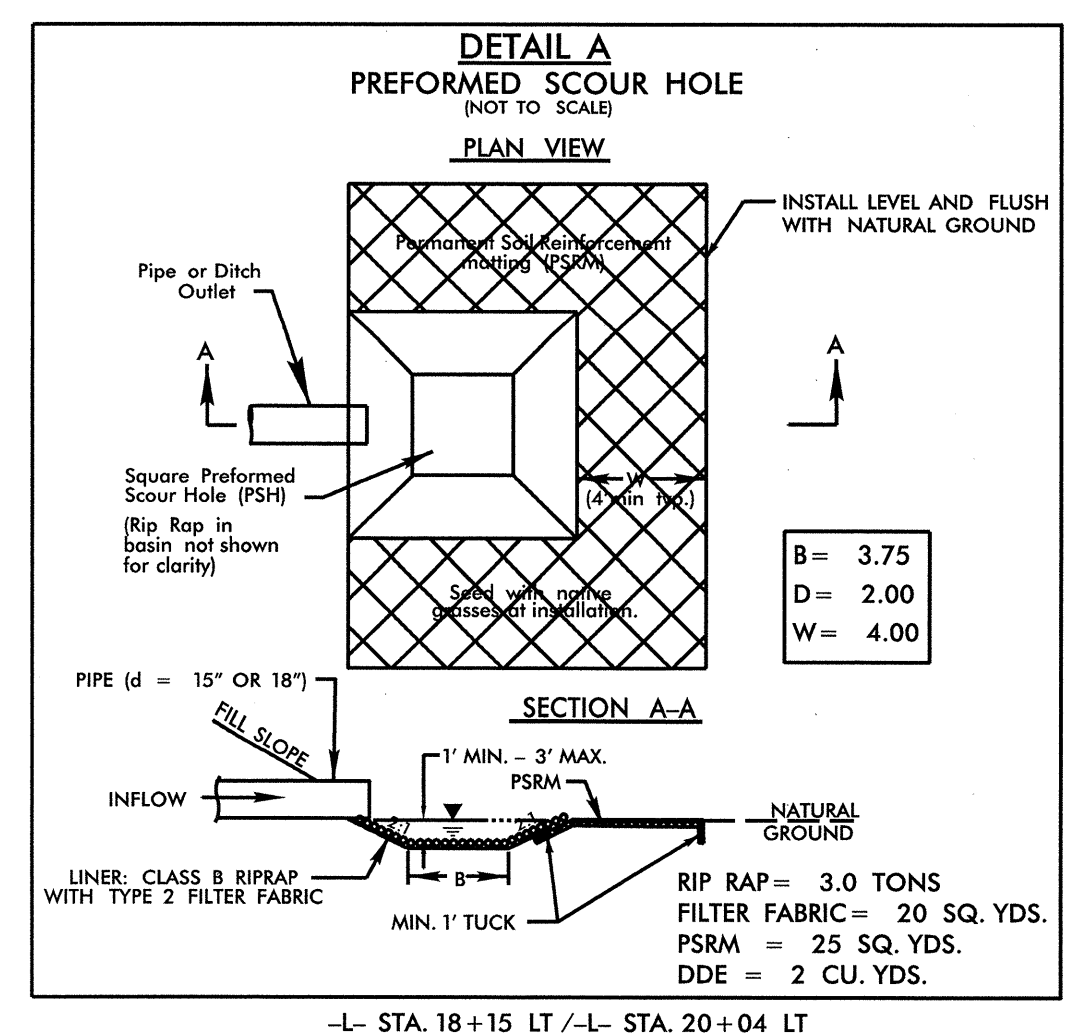
PROJECT REFERENCE NO. B-4467	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER SEVEN L. SCOTT 22388 3-4-11	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL ENGINEER DENNIS K. HOYLE 22388 3-4-11



Sketch showing Dimensions of Pavement and Shoulder in Relation to Proposed Bridge Width



PI Sta 17+93.31 Δ = 51° 38' 50.5" (LT) D = 35° 48' 35.5" L = 144.23' T = 77.43' R = 160.00' Se = .04 DS = 20 mph	PI Sta 20+49.75 Δ = 65° 00' 48.5" (LT) D = 44° 04' 25.2" L = 147.51' T = 82.84' R = 130.00' Se = .04 DS = 20 mph
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NOTE:
1. REMOVE AND RESET EXISTING FENCE:
FROM STA.17+25 TO STA.18+50 LT
FROM STA.19+00 TO STA.21+00 LT
FROM STA.17+25 TO STA.17+72.11 RT
FROM STA.19+40 TO STA.21+00 RT

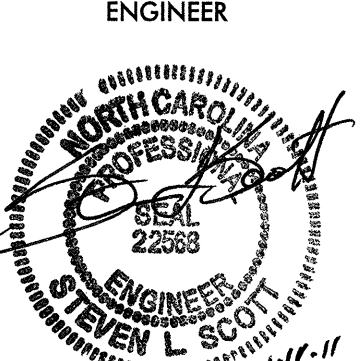
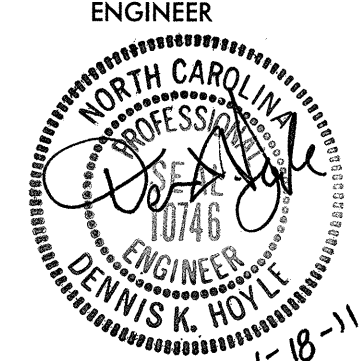
2. INSTALL PERMANENT FENCE AROUND
PREFORMED SCOUR HOLES ALONG LIMITS
OF PDE.

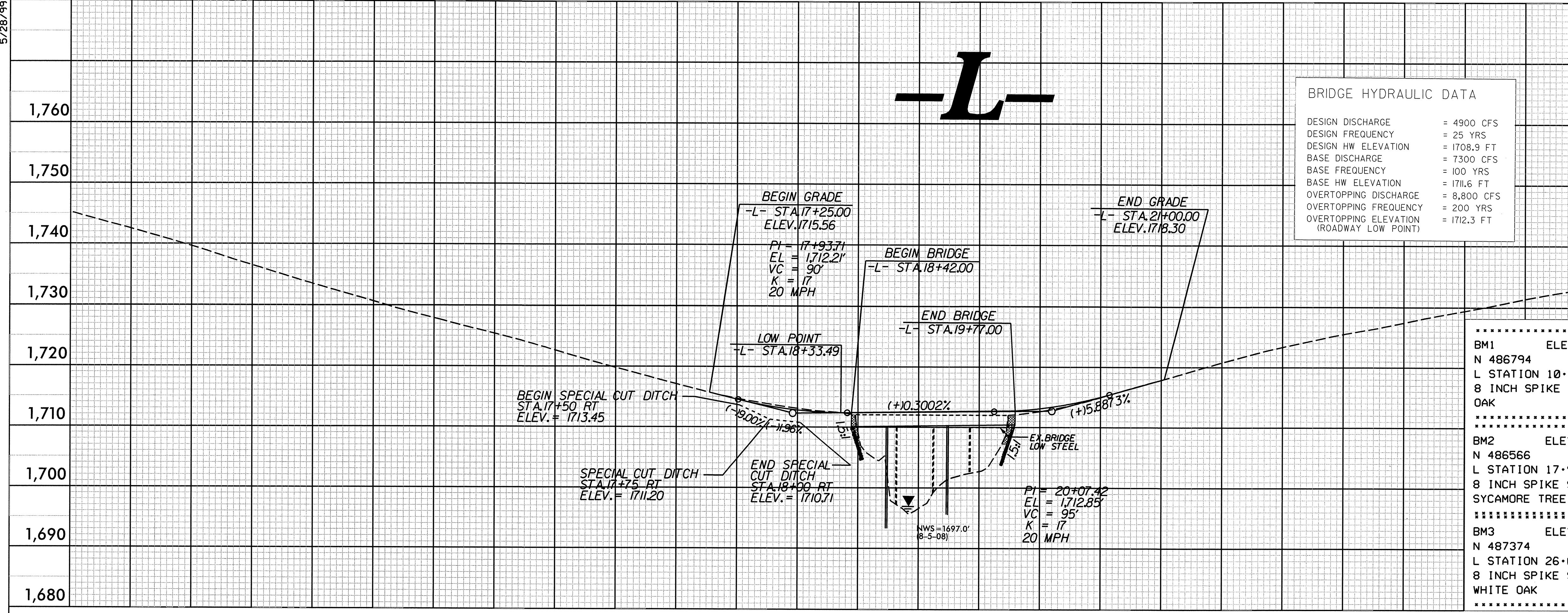
3. INSTALL TEMP. 4SBW FENCE:
FROM STA.17+25 TO STA.18+65 LT
FROM STA.18+95 TO STA.21+00 LT
FROM STA.17+25 TO STA.17+75 RT

NOTE: SEE PLAN SHEET 5 FOR PROFILE
SEE S-1 THRU S-22 STRUCTURE

SYTIMEDESIGN

5/28/99

PROJECT REFERENCE NO. B-4467	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 4900 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 1708.9 FT
BASE DISCHARGE	= 7300 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 1711.6 FT
OVERTOPPING DISCHARGE	= 8,800 CFS
OVERTOPPING FREQUENCY	= 200 YRS
OVERTOPPING ELEVATION (ROADWAY LOW POINT)	= 1712.3 FT

DITCH LEGEND

RIGHT DITCH -----

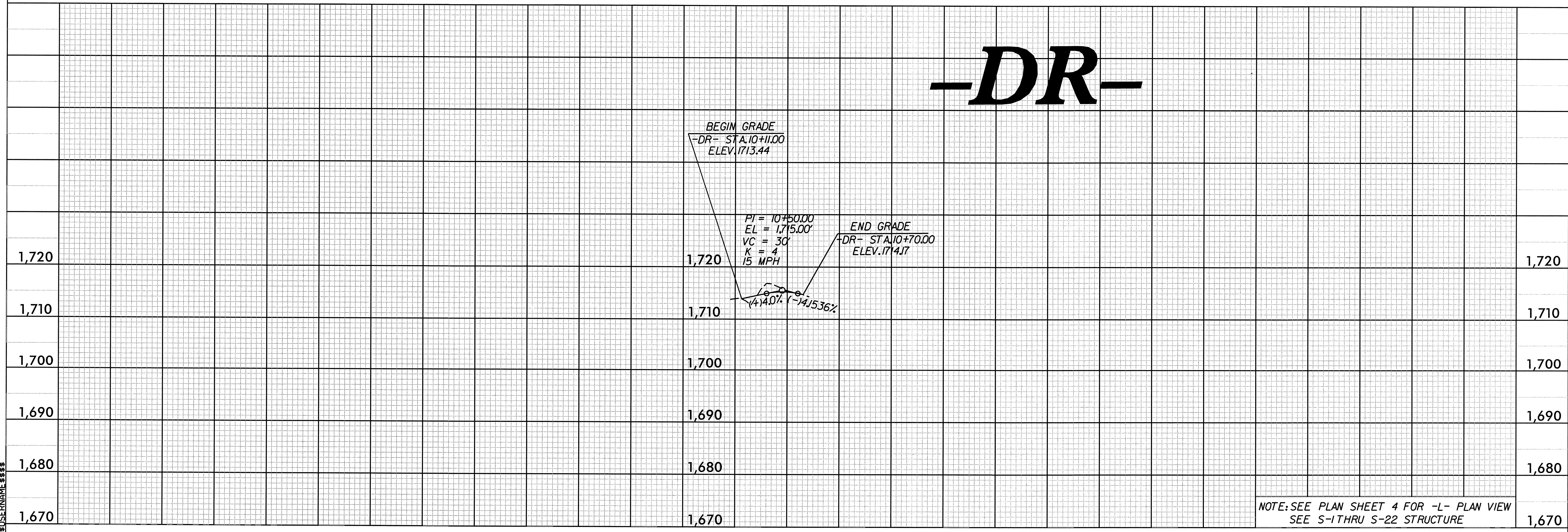
BM1 ELEVATION = 1752.32
N 486794 E 533754
L STATION 10+14 31 RIGHT
8 INCH SPIKE SET ROOT OF 36 INCH WHITE OAK

BM2 ELEVATION = 1726.98
N 486566 E 534471
L STATION 17+95 138 RIGHT
8 INCH SPIKE SET IN ROOT OF 48 INCH SYCAMORE TREE

BM3 ELEVATION = 1741.81
N 487374 E 534784
L STATION 26+06 37 LEFT
8 INCH SPIKE SET IN ROOT OF 60 INCH WHITE OAK

-L-

-DR-



NOTE: SEE PLAN SHEET 4 FOR -L- PLAN VIEW SEE S-1 THRU S-22 STRUCTURE

*****SYTIME*****
*****ADCON*****
*****USEFRAME*****