

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4077	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33439.1.1	BRSTP-130(2)	PE	
33439.2.1	BRSTP-130(2)	RW & UTIL	
33439.3.1	BRSTP-130(6)	CONST	

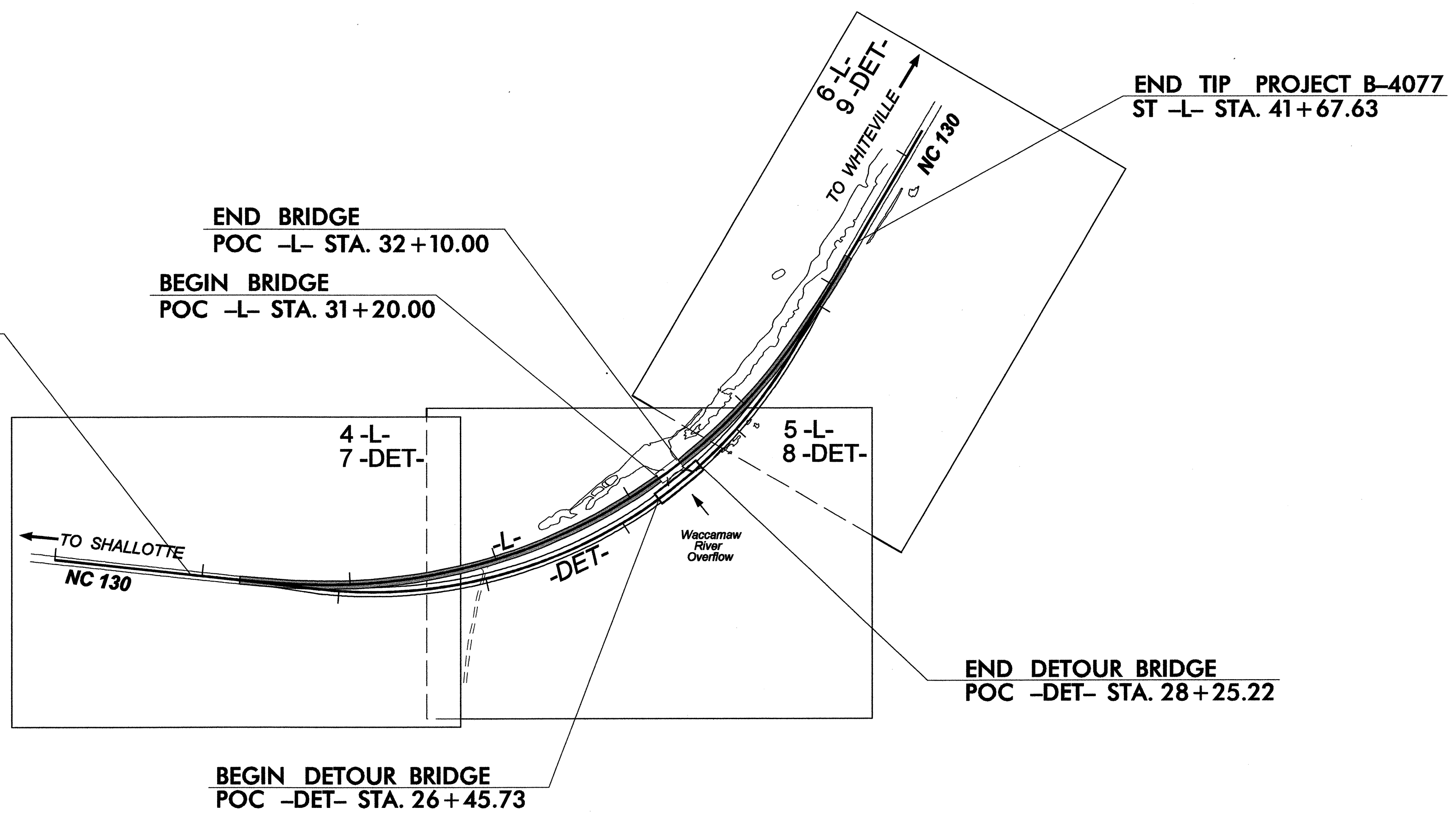
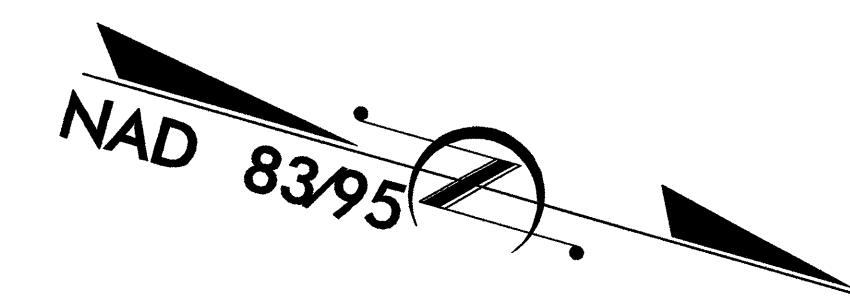
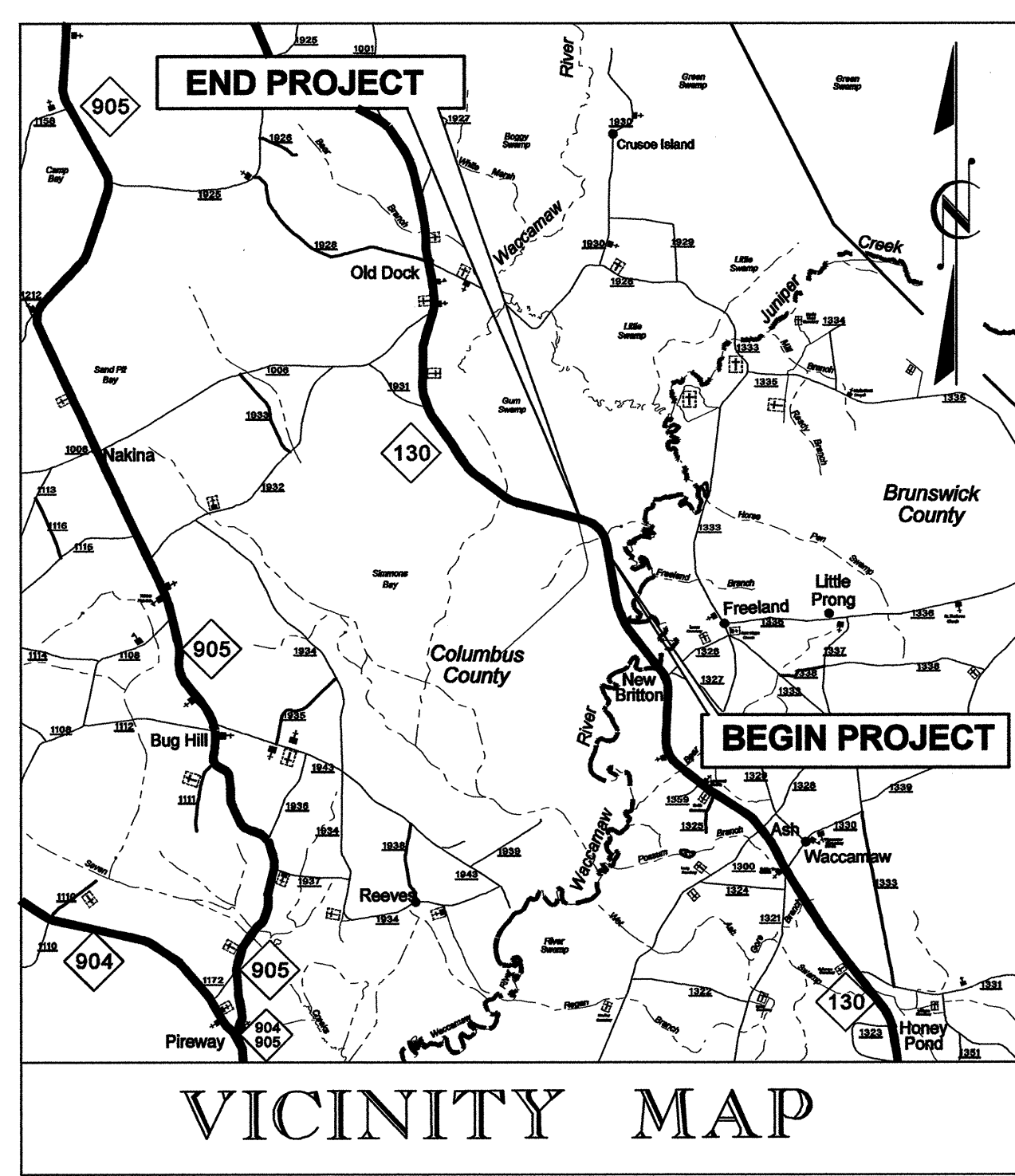
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**COLUMBUS COUNTY**

**LOCATION: BRIDGE NO. 25 ON NC 130 OVER  
WACCAMAW RIVER OVERFLOW**

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

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

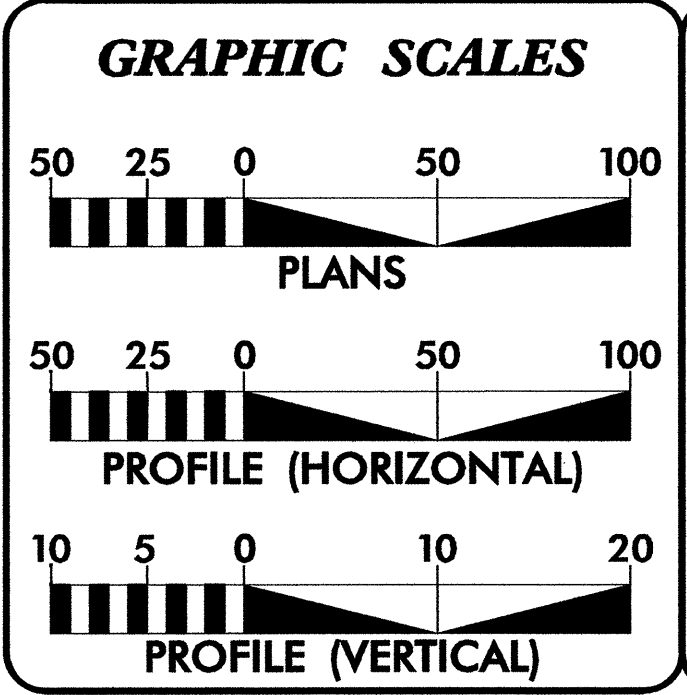


TIP PROJECT: B-4077

CONTRACT: C201962

\*\* DESIGN EXCEPTION REQUIRED FOR HORIZONTAL STOPPING SIGHT DISTANCE.

NCDOT CONTACT:  
CATHY S. HOUSER, PE  
ROADWAY DESIGN



**DESIGN DATA**

ADT 2008 =	5000
ADT 2028 =	9000
DHV =	13 %
D =	60 %
T =	7 % *
** V =	60 MPH
FUNC CLASS:	RURAL MINOR ARTERIAL
* TTST 4%	DUAL 3%

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4077	=	0.495 mi.
LENGTH REPLACEMENT STRUCTURE TIP PROJECT B-4077	=	0.017 mi.
TOTAL LENGTH OF TIP PROJECT B-4077	=	0.512 mi.

Prepared In the Office of:  
**QKA, INC.**  
300 EAST MAIN STREET  
SUITE 302-H  
JOHNSON CITY, TN 37601

2006 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
MAY 16, 2006

**LETTING DATE:**  
SEPTEMBER 16, 2008

**ALBERT H. ZIMMERMAN, PE**  
PROJECT ENGINEER

**BRIAN P. JOHNSON, PE**  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

**ROADWAY DESIGN ENGINEER**

Albert H. Zimmerman, PE  
SIGNATURE: 7-4-08

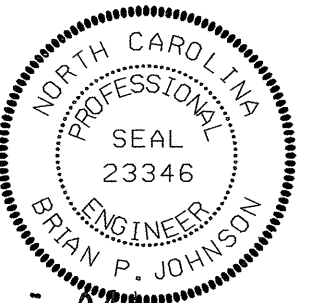
Brian P. Johnson, PE  
SIGNATURE: 7-1-08

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

STATE HIGHWAY DESIGN ENGINEER

7/1/2008  
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Johnson

# SURVEY CONTROL SHEET B-4077

PROJECT REFERENCE NO. <b>B-4077</b>	SHEET NO. <b>1-C</b>
ROADWAY DESIGN ENGINEER	
 Brian P. Johnson 7-1-08	

## NOTES

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT.  
IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

## CONTROL DATA

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	-BL-1	133273.4450	2133595.9280	34.25	OUTSIDE PROJECT LIMITS	
2	-BL-2	134017.6760	2133467.9460	34.55	16+75.96	15.83 RT
3	-BL-3	134722.5610	2133215.2820	35.64	24+22.53	19.66 RT
4	-BL-4	135250.1980	2132747.4100	35.70	31+25.52	16.51 RT
5	-BL-5	135587.4360	2132094.4760	35.25	38+58.74	15.47 RT

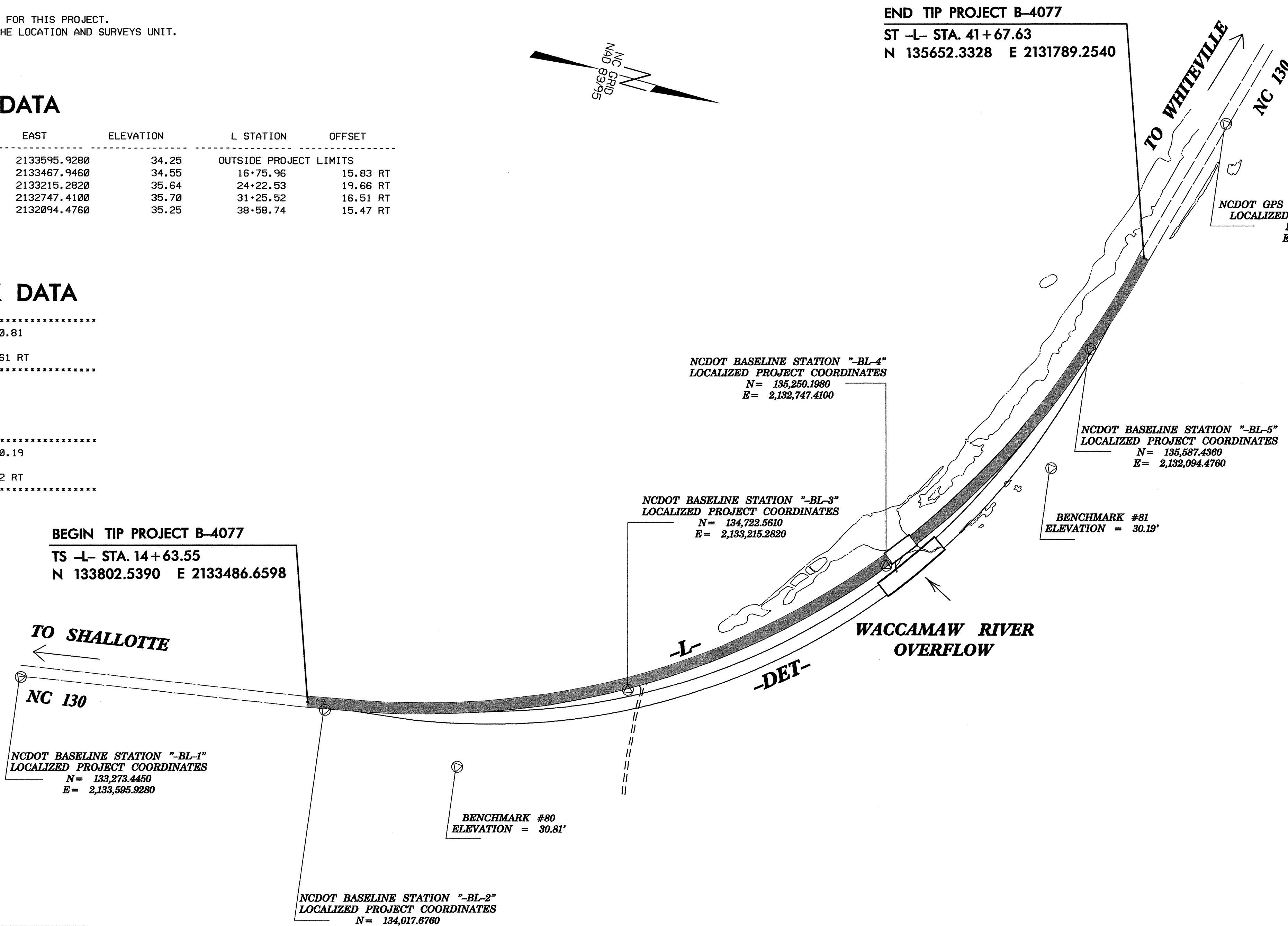
## BENCHMARK DATA

\*\*\*\*\*  
 BM80 ELEVATION = 30.81  
 N 134386 E 2133492  
 L STATION 20+16.87 131.61 RT  
 \*\*\*\*\*

\*\*\*\*\*  
 BM81 ELEVATION = 30.19  
 N 135595 E 2132342  
 L STATION 36+35.05 108.22 RT  
 \*\*\*\*\*

**BEGIN TIP PROJECT B-4077**  
**TS -L- STA. 14 + 63.55**  
**N 133802.5390 E 2133486.6598**

**END TIP PROJECT B-4077**  
**ST -L- STA. 41 + 67.63**  
**N 135652.3328 E 2131789.2540**



## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-4077-2" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 135756.283605(ft) EASTING: 2131468.89978(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.00006900 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-4077-2" TO -L- STATION 14+63.55 IS 2,809.09' S 46°0' 7.40" E ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

⊙ 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.

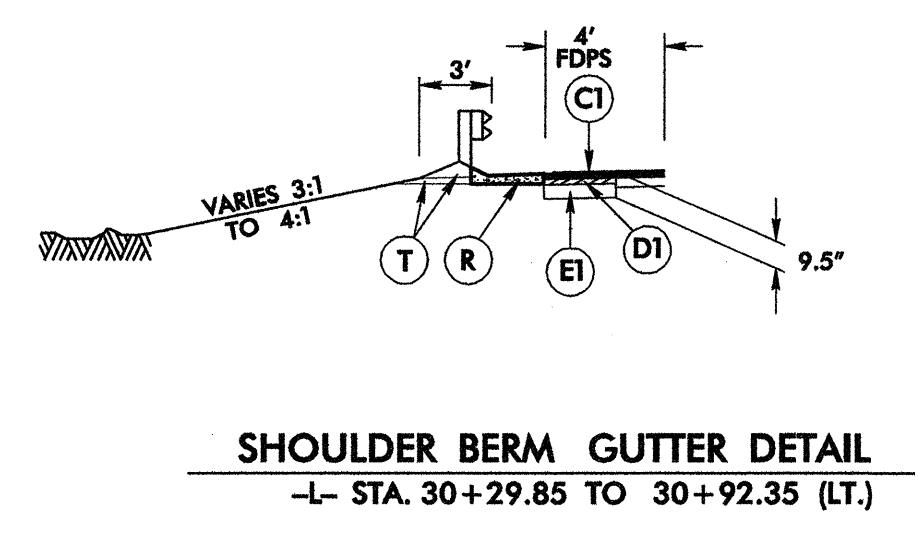
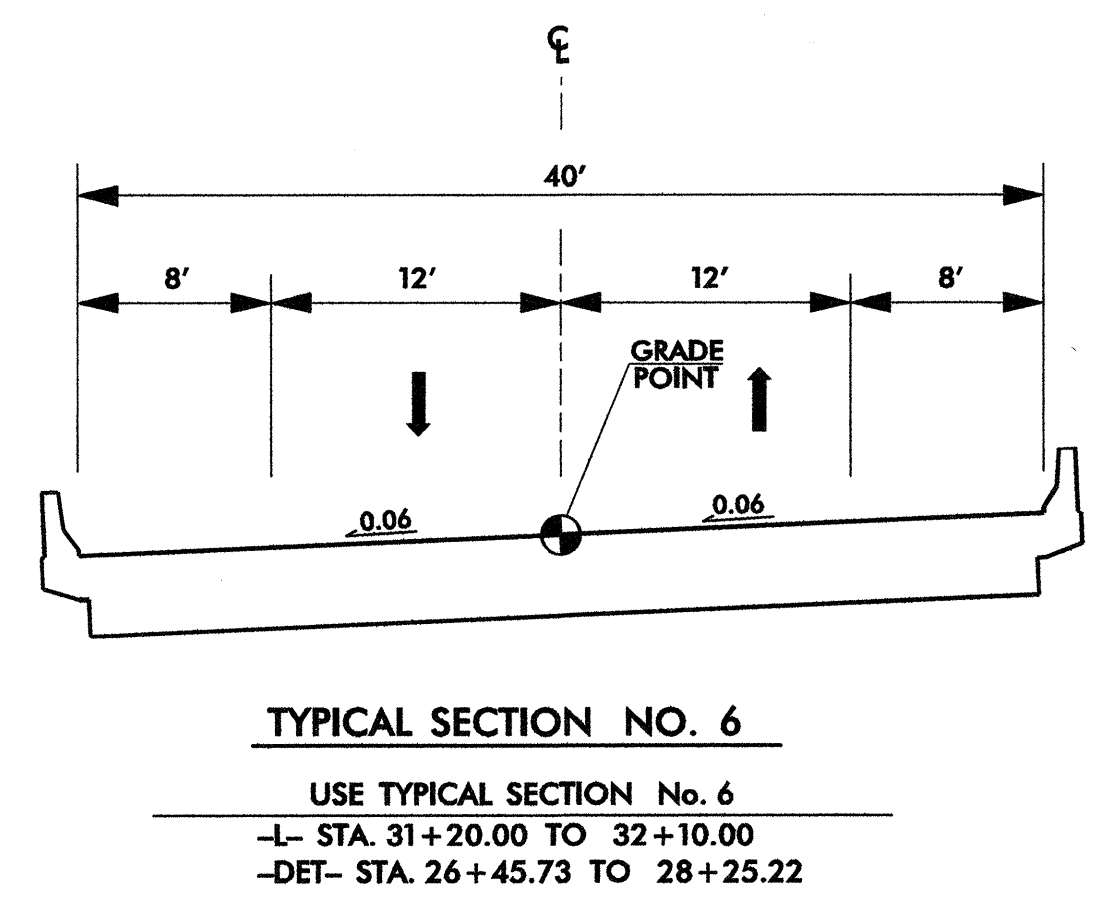
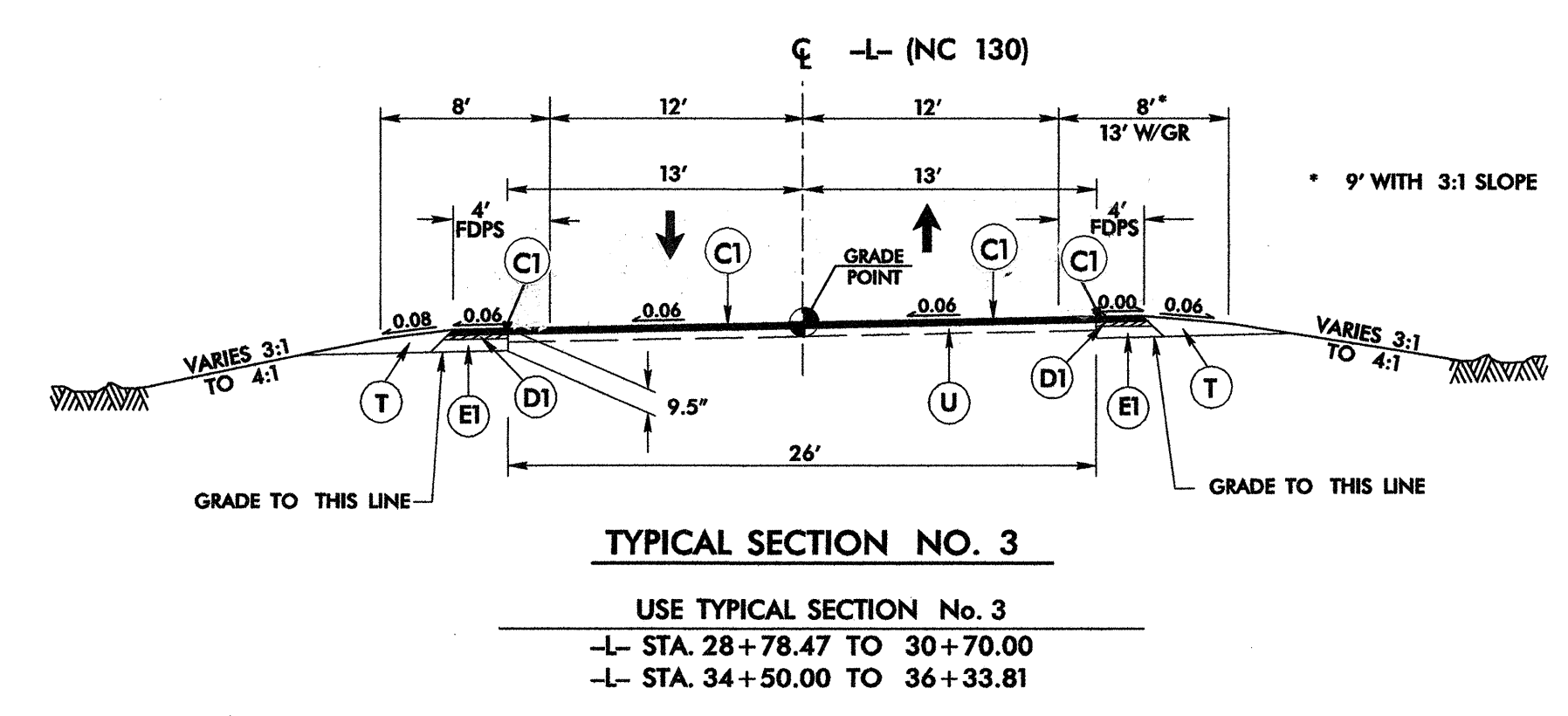
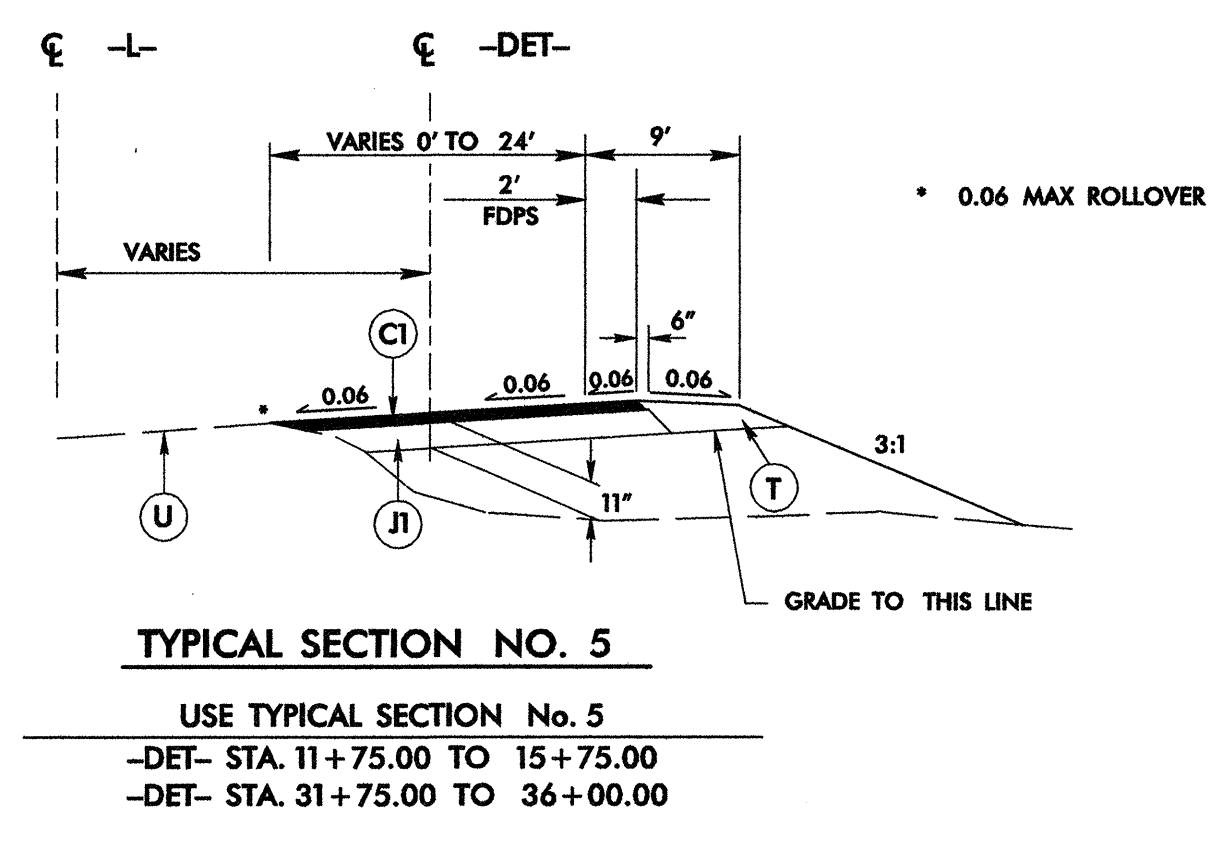
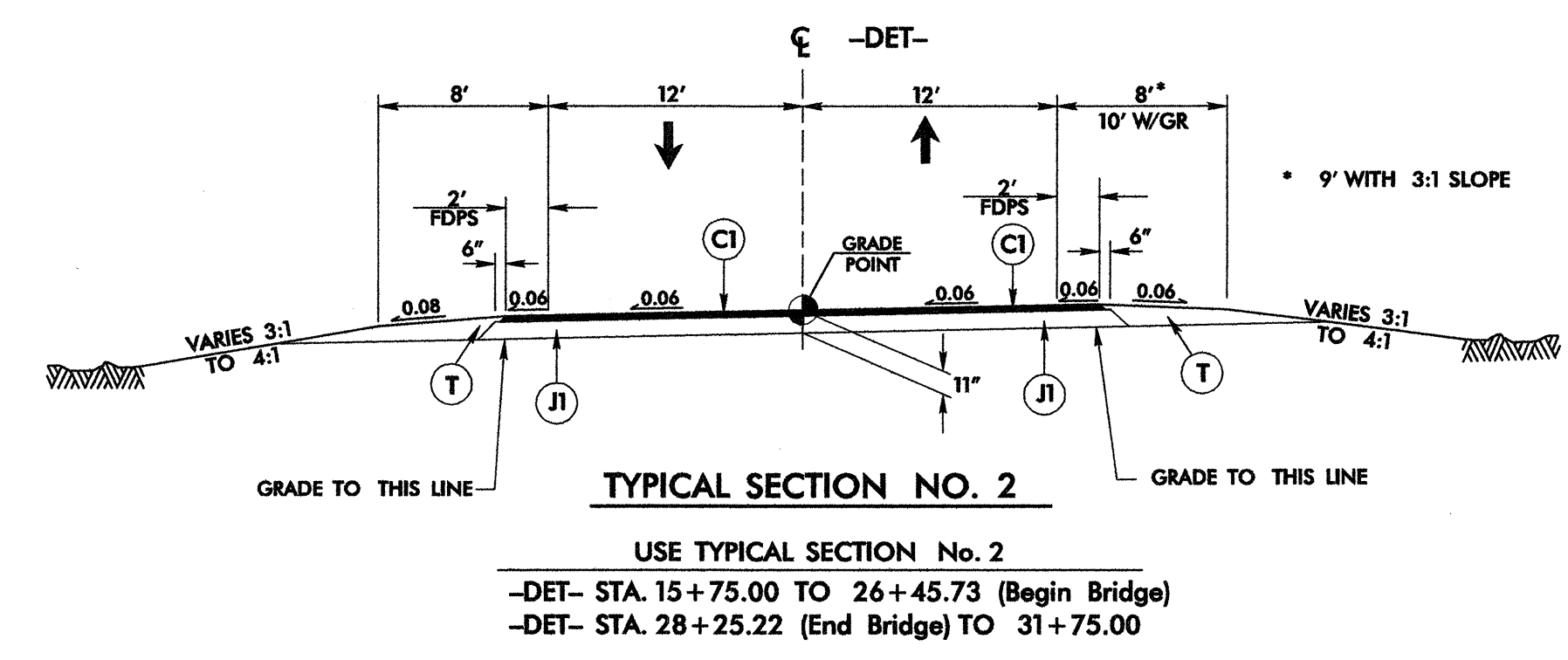
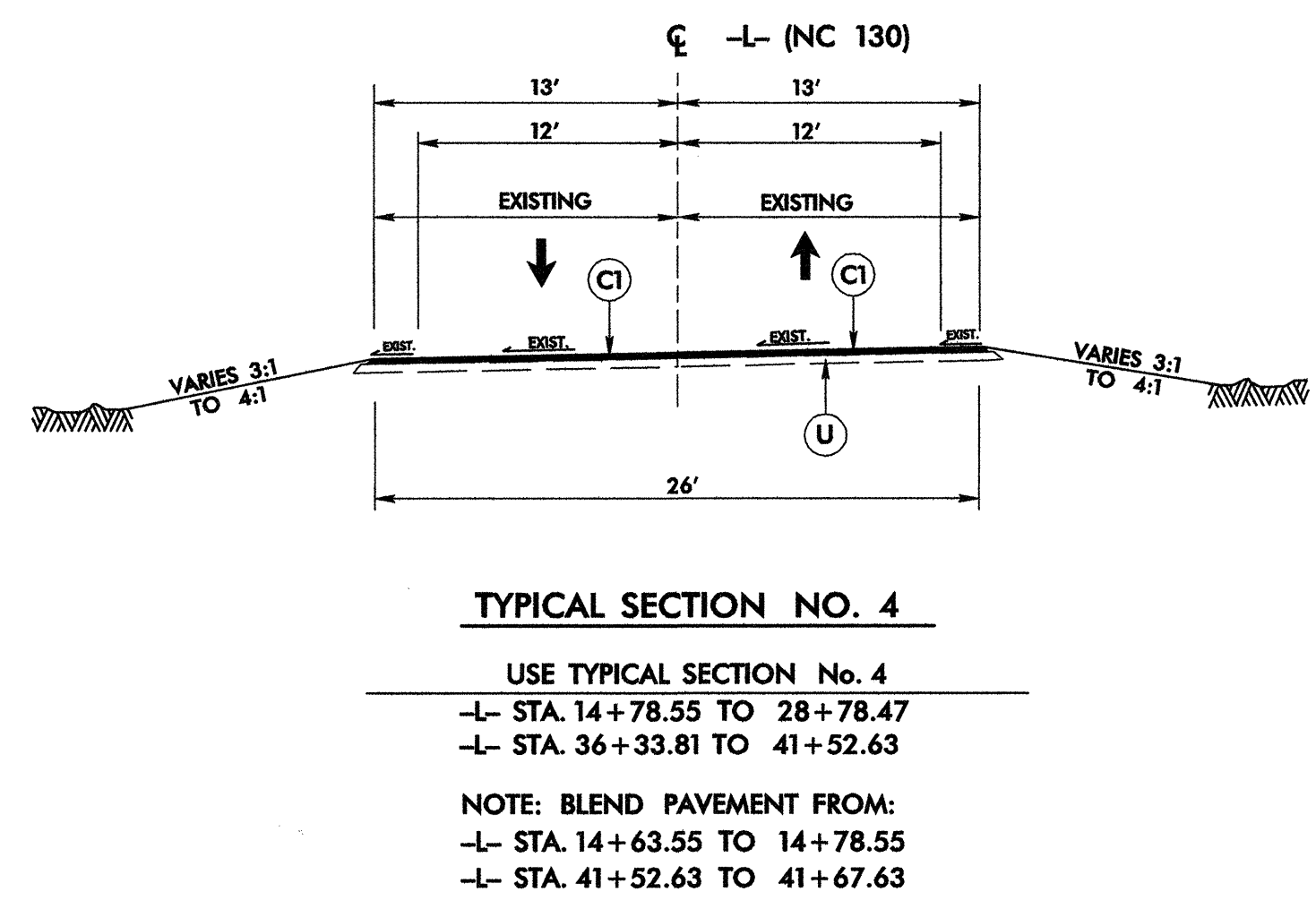
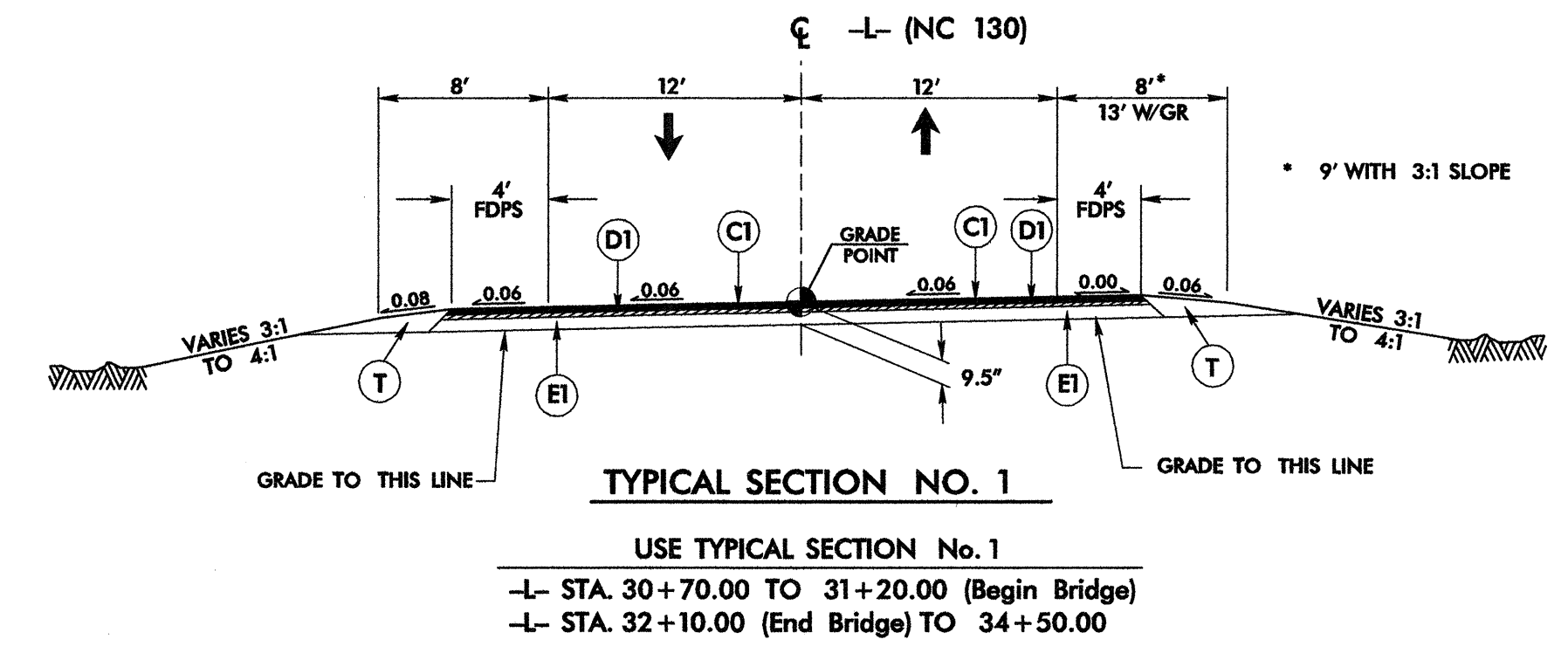
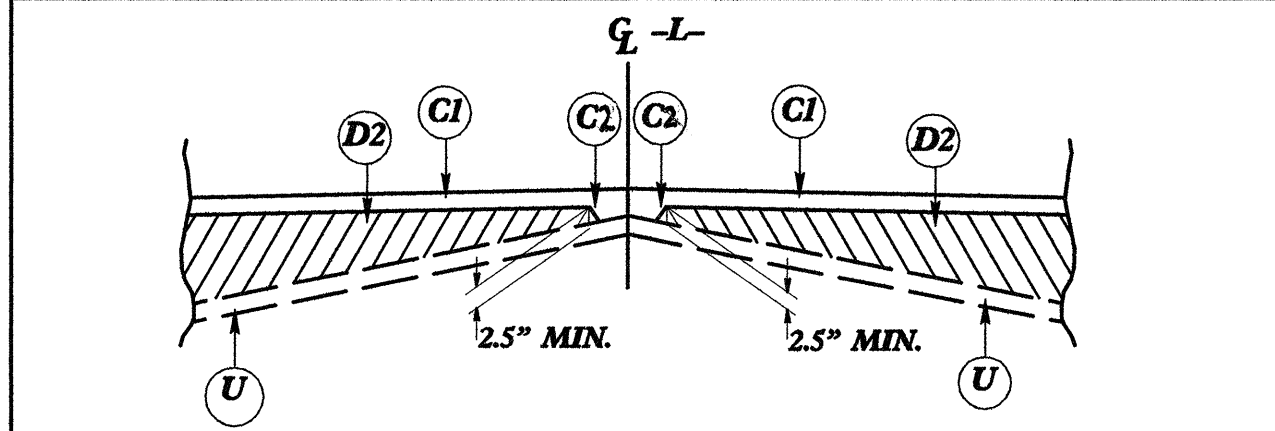
NOTE: DRAWING NOT TO SCALE

6/22/08  
 7/1/2008  
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 Johnson

PAVEMENT SCHEDULE			
ITEM	DESCRIPTION	ITEM	DESCRIPTION
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS	R	SHOULDER BERM GUTTER
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH	J1	PROP. APPROX. 8" AGGREGATE BASE COURSE
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	T	EARTH MATERIAL
D2	PROP. VAR DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT NOT LESS THAN 2.5" IN DEPTH OR GREATER THEN 4" IN DEPTH	U	EXISTING PAVEMENT
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)

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

Detail Showing Method of Wedging

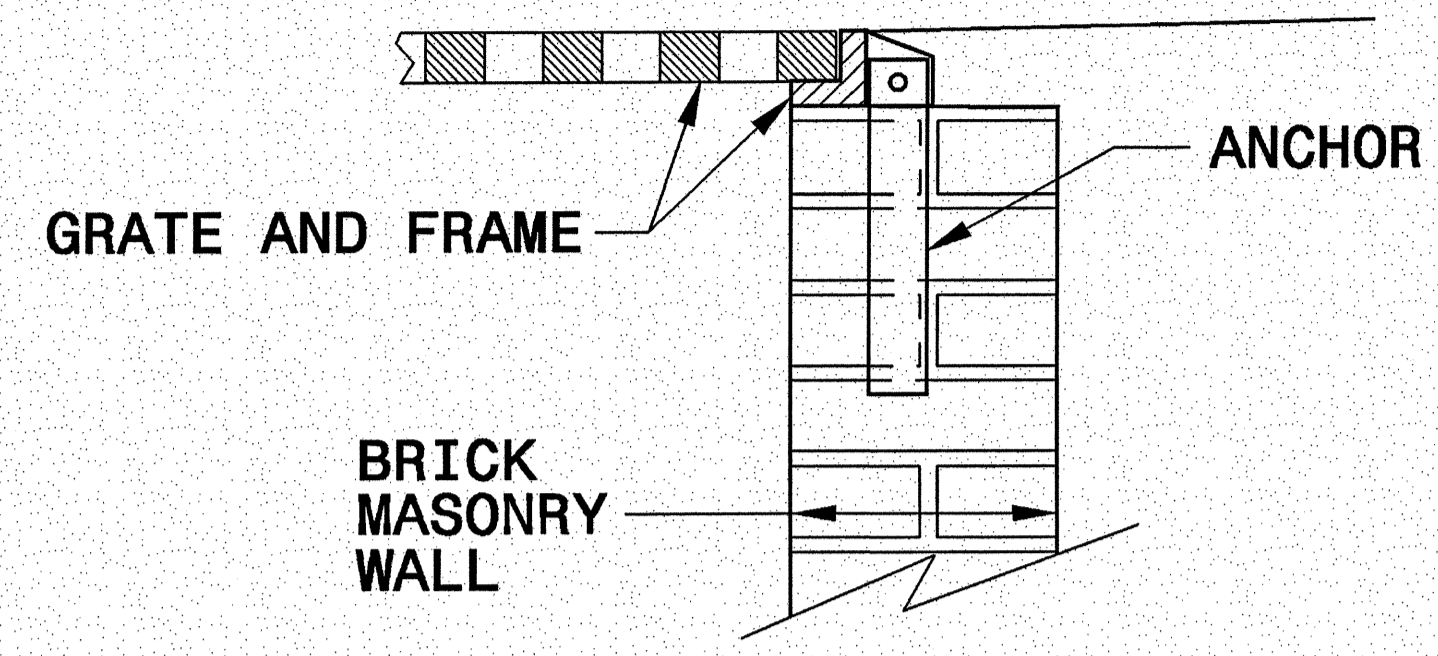


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 7/1/2008  
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 Johnson

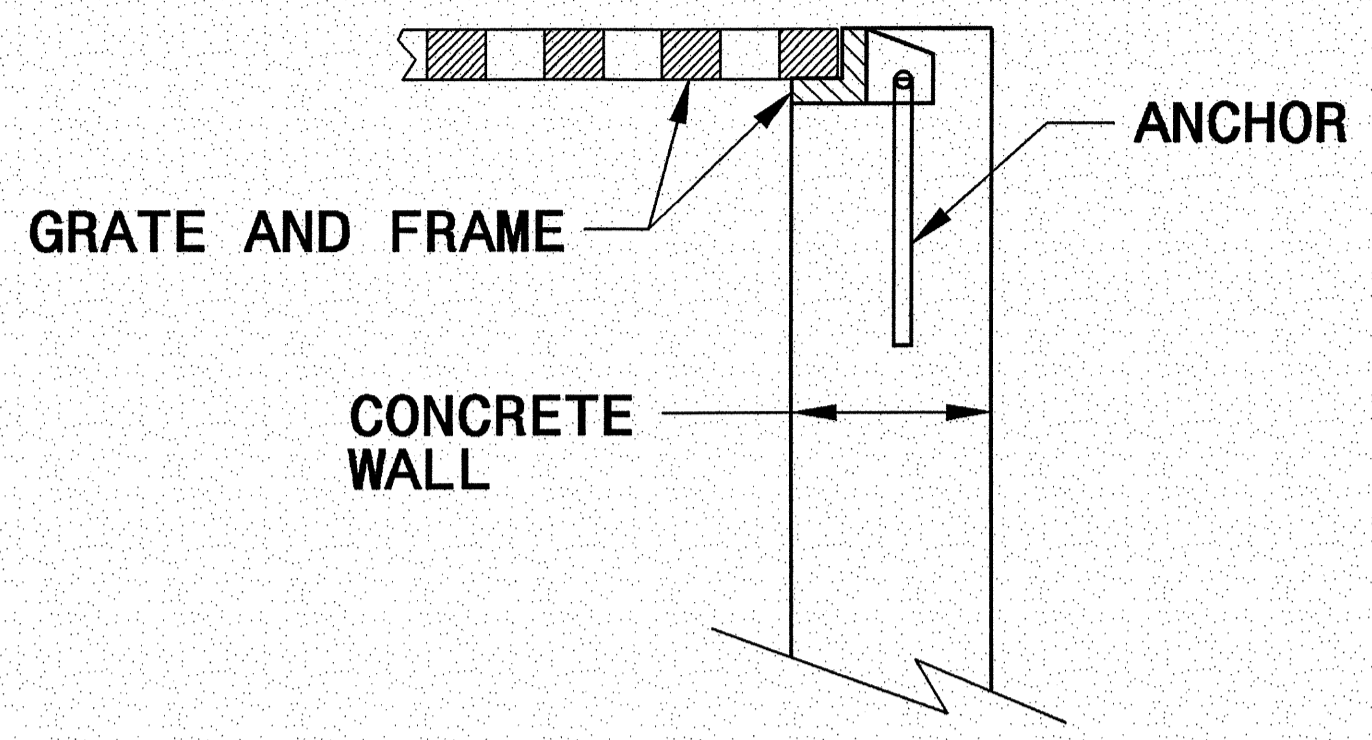
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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

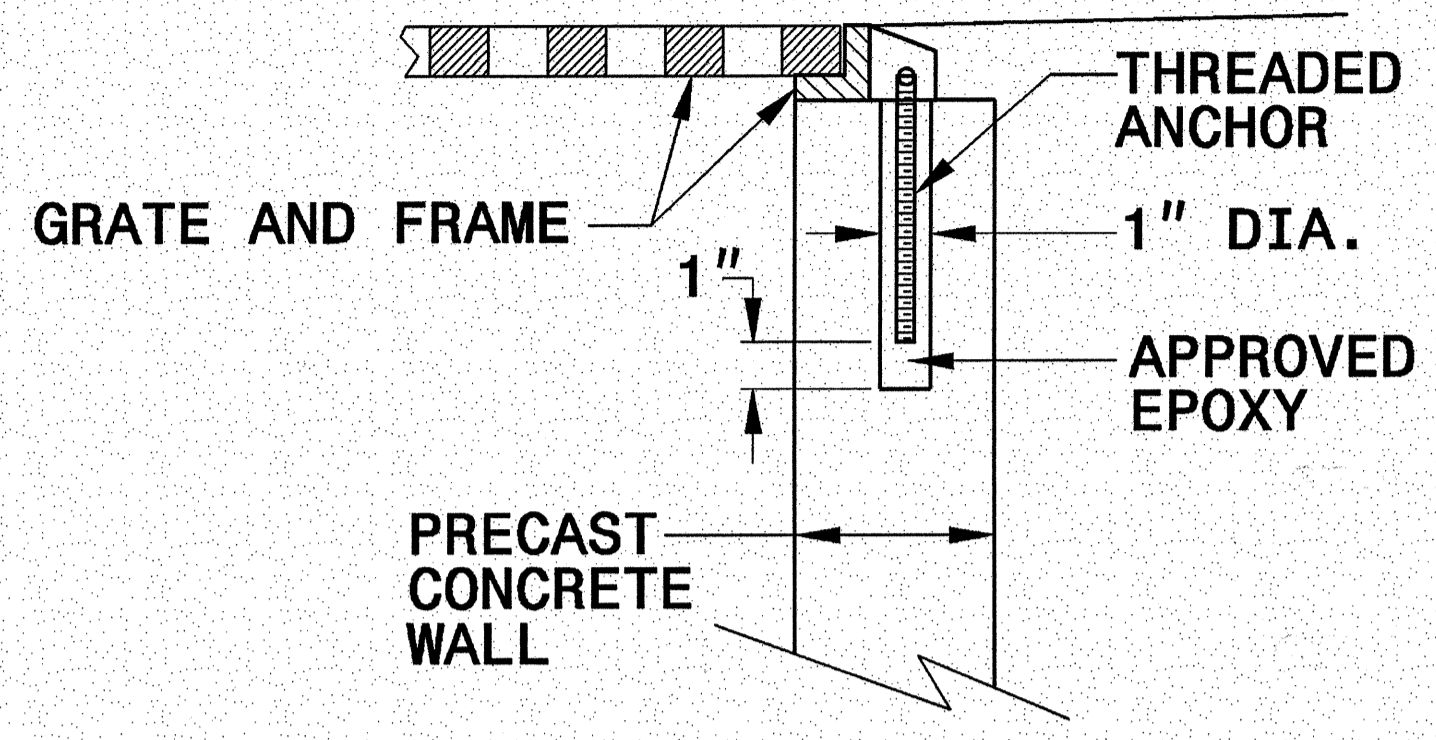
SHEET 1 OF 1  
**840D25**



**BRICK MASONRY CONSTRUCTION**



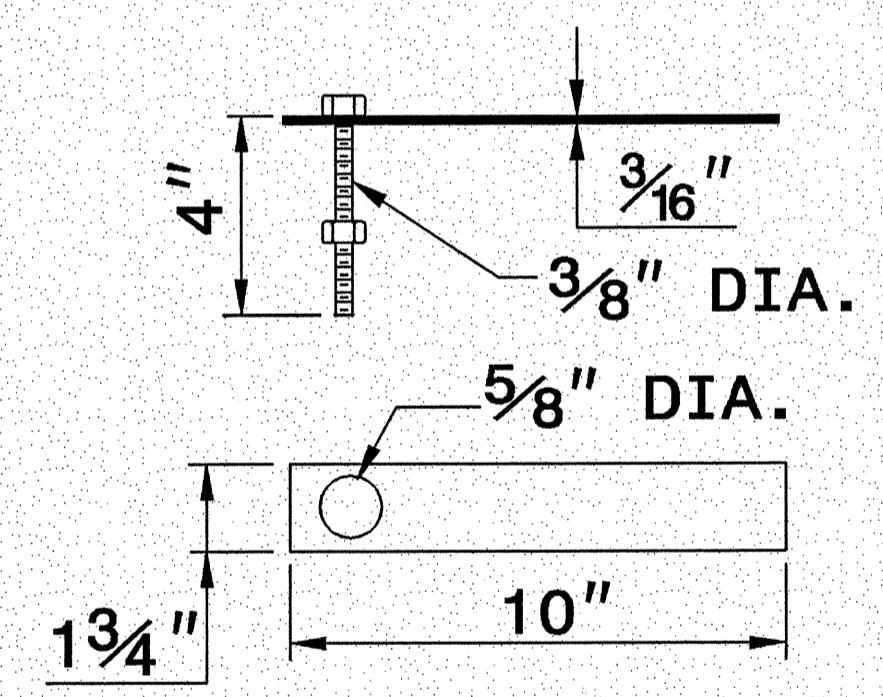
**CONCRETE CONSTRUCTION**



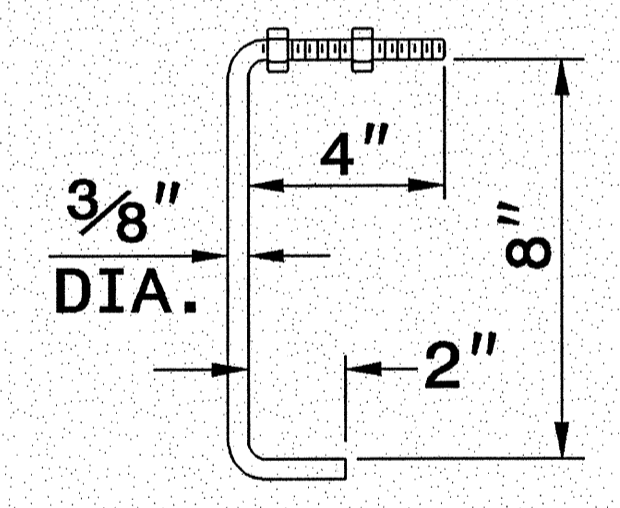
**PRECAST CONCRETE CONSTRUCTION**

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

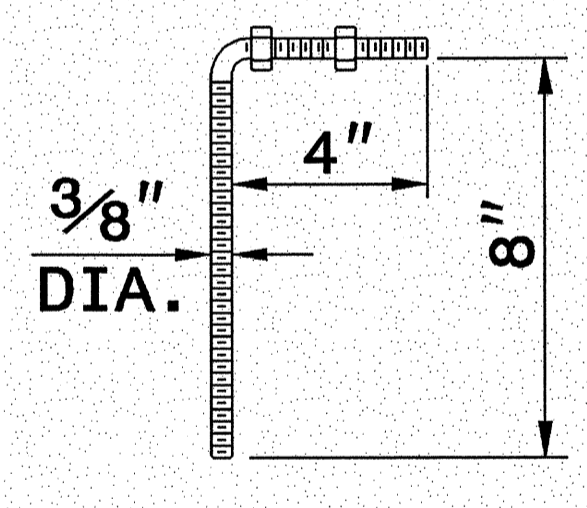
NOTE:  
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



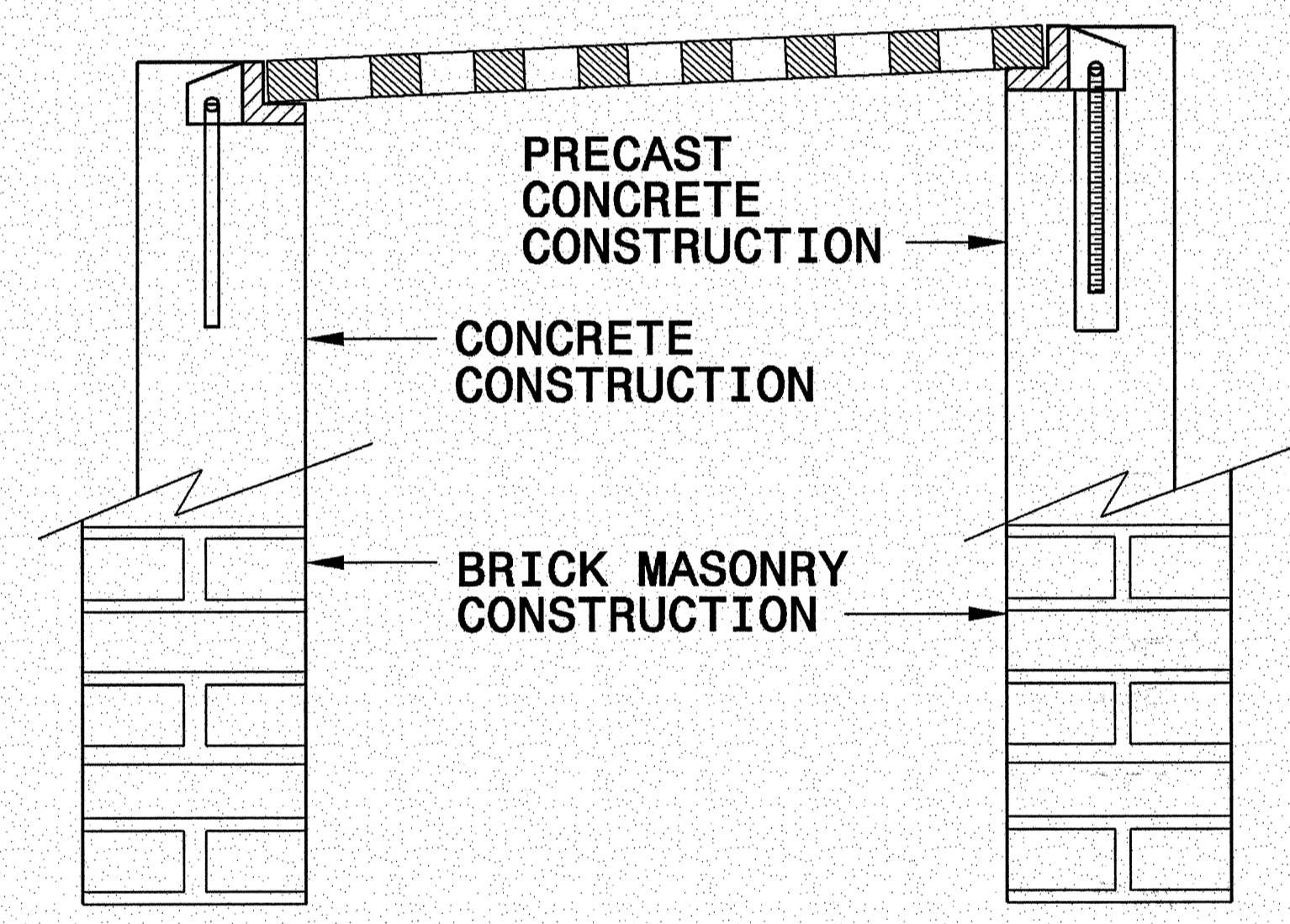
**MASONRY ANCHOR**  
3/8" DIA. BOLT WITH PLATE



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



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

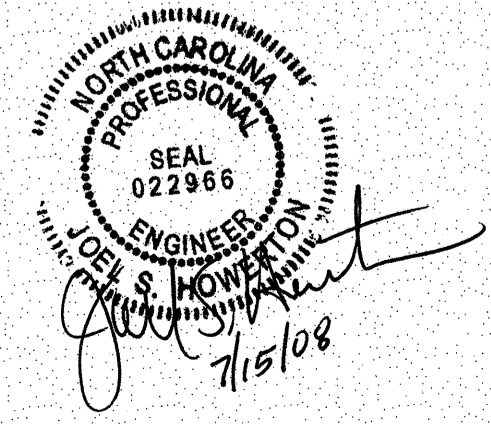


**FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS**

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**



**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.: \_\_\_\_\_

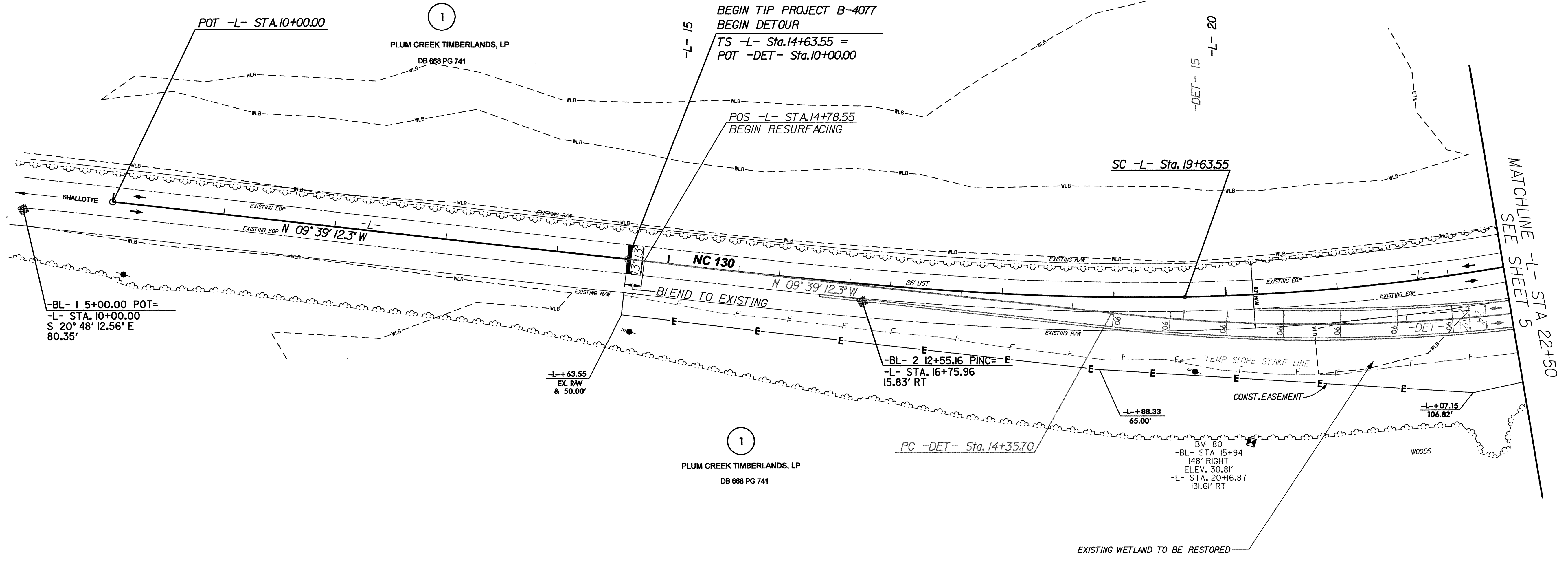
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PROJECT REFERENCE NO. B-4077	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER ALBERT H. JOHNSON NORTH CAROLINA PROFESSIONAL SEAL 23346 7-1-08	HYDRAULICS ENGINEER ALBERT H. JOHNSON NORTH CAROLINA PROFESSIONAL SEAL 16701 7-1-08



-L- SPIRAL DATA  
 Pts Sta 17+97.18  
 $\theta s = 7' 27' 37.4"$   
 $Ls = 500.00'$   
 $Rc = 1,920.00'$   
 $LT = 333.63'$   
 $ST = 166.94'$   
 SE = EX  
 RO = EX



NOTE: PLACE FABRIC FOR SOIL STABILIZATION ON THE EXISTING GROUND IN THE AREAS OF THE WETLANDS LOCATED OUTSIDE THE LIMITS OF THE PERMANENT EMBANKMENT, BENEATH THE DETOUR FILL MATERIAL, OR AT THE DISCRETION OF THE ENGINEER. SEW FABRIC FOR SOIL STABILIZATION, IN ACCORDANCE WITH THE FABRIC MANUFACTURER'S RECOMMENDATIONS, ALONG THE EDGES OF THE FABRIC SUCH THAT DURING THE REMOVAL OF THE TEMPORARY DETOUR FILL MATERIAL AND FABRIC, NO FILL MATERIAL WILL REMAIN IN THE WETLANDS.

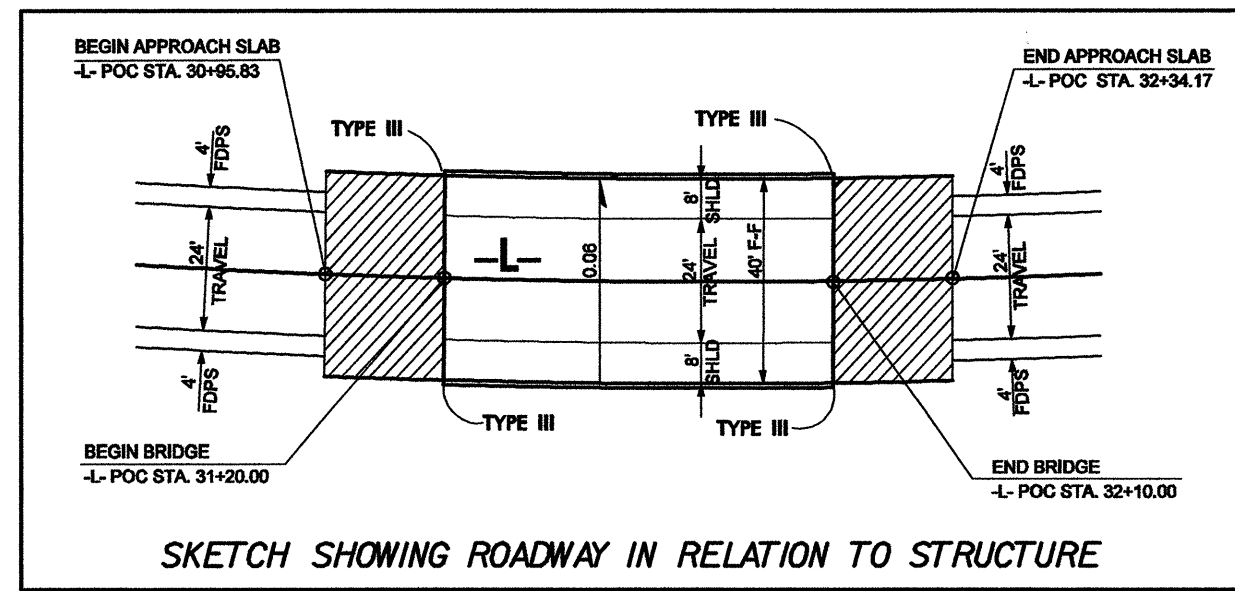
SEE SHEET 10 FOR -L- PROFILE

8/17/09

REVISIONS

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**-L- STRUCTURE**  
NC 130

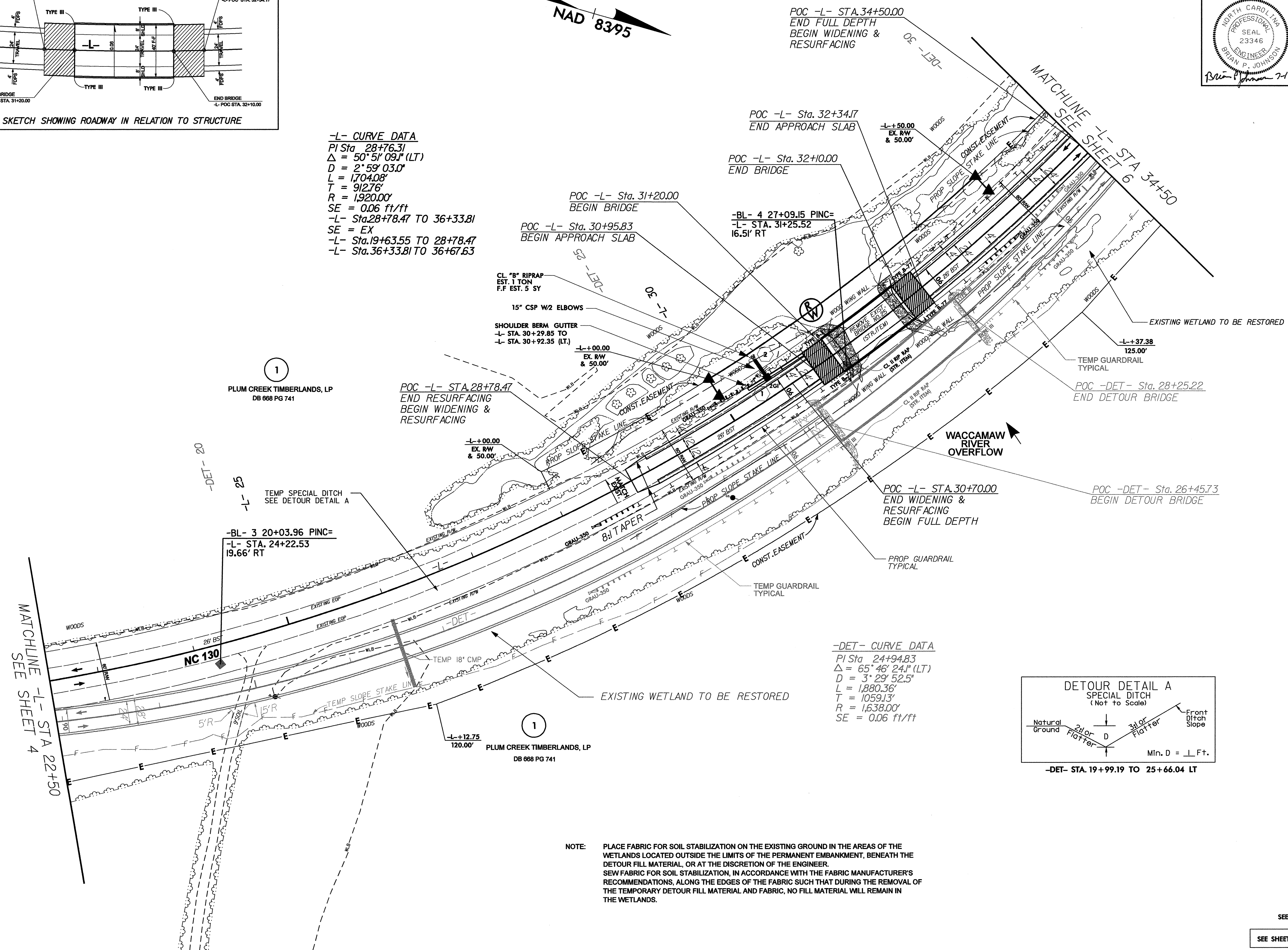


**-L- CURVE DATA**  
 PI Sta 28+76.31  
 $\Delta = 50^{\circ} 51' 09.1''$  (LT)  
 $D = 2^{\circ} 59' 03.0''$   
 $L = 1,704.08'$   
 $T = 912.76'$   
 $R = 1,920.00'$   
 $SE = 0.06$  ft/ft  
 -L- Sta. 28+78.47 TO 36+33.81  
 $SE = EX$   
 -L- Sta. 19+63.55 TO 28+78.47  
 -L- Sta. 36+33.81 TO 36+67.63

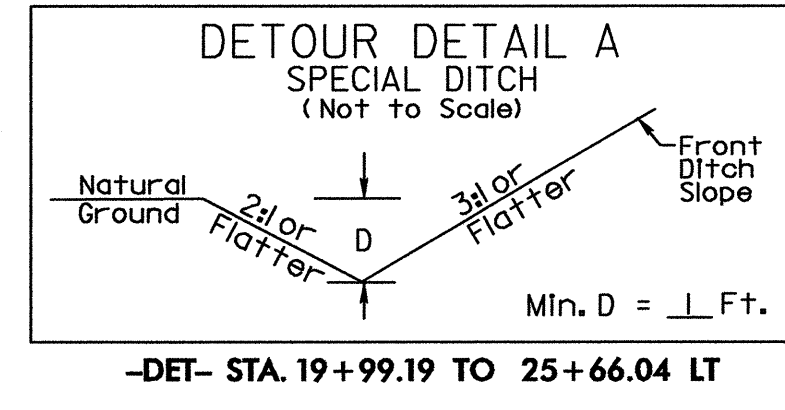


MATCHLINE -L- STA 22+50  
SEE SHEET 4

MATCHLINE SEE SHEET 6  
-L- STA 34+50



**-DET- CURVE DATA**  
 PI Sta 24+94.83  
 $\Delta = 65^{\circ} 46' 24.1''$  (LT)  
 $D = 3^{\circ} 29' 52.5''$   
 $L = 1,880.36'$   
 $T = 1,059.13'$   
 $R = 1,638.00'$   
 $SE = 0.06$  ft/ft



NOTE: PLACE FABRIC FOR SOIL STABILIZATION ON THE EXISTING GROUND IN THE AREAS OF THE WETLANDS LOCATED OUTSIDE THE LIMITS OF THE PERMANENT EMBANKMENT, BENEATH THE DETOUR FILL MATERIAL, OR AT THE DISCRETION OF THE ENGINEER. SEW FABRIC FOR SOIL STABILIZATION, IN ACCORDANCE WITH THE FABRIC MANUFACTURER'S RECOMMENDATIONS, ALONG THE EDGES OF THE FABRIC SUCH THAT DURING THE REMOVAL OF THE TEMPORARY DETOUR FILL MATERIAL AND FABRIC, NO FILL MATERIAL WILL REMAIN IN THE WETLANDS.

REVISIONS

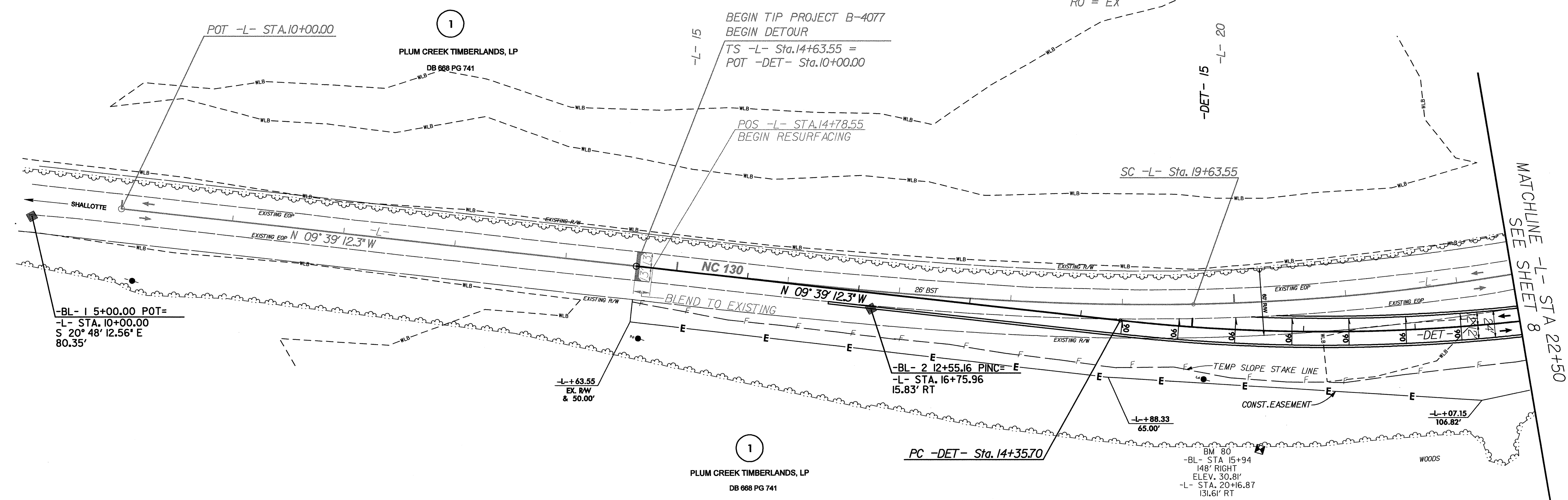
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7/1/2008  
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-L- SPIRAL DATA  
 Pts Sta. 17+97.18  
 $\theta_s = 7^\circ 27' 37.4''$   
 $L_s = 500.00'$   
 $R_c = 1,920.00'$   
 $LT = 333.63'$   
 $ST = 166.94'$   
 SE = EX  
 RO = EX



NOTE: PLACE FABRIC FOR SOIL STABILIZATION ON THE EXISTING GROUND IN THE AREAS OF THE WETLANDS LOCATED OUTSIDE THE LIMITS OF THE PERMANENT EMBANKMENT, BENEATH THE DETOUR FILL MATERIAL, OR AT THE DISCRETION OF THE ENGINEER. SEW FABRIC FOR SOIL STABILIZATION, IN ACCORDANCE WITH THE FABRIC MANUFACTURER'S RECOMMENDATIONS, ALONG THE EDGES OF THE FABRIC SUCH THAT DURING THE REMOVAL OF THE TEMPORARY DETOUR FILL MATERIAL AND FABRIC, NO FILL MATERIAL WILL REMAIN IN THE WETLANDS.

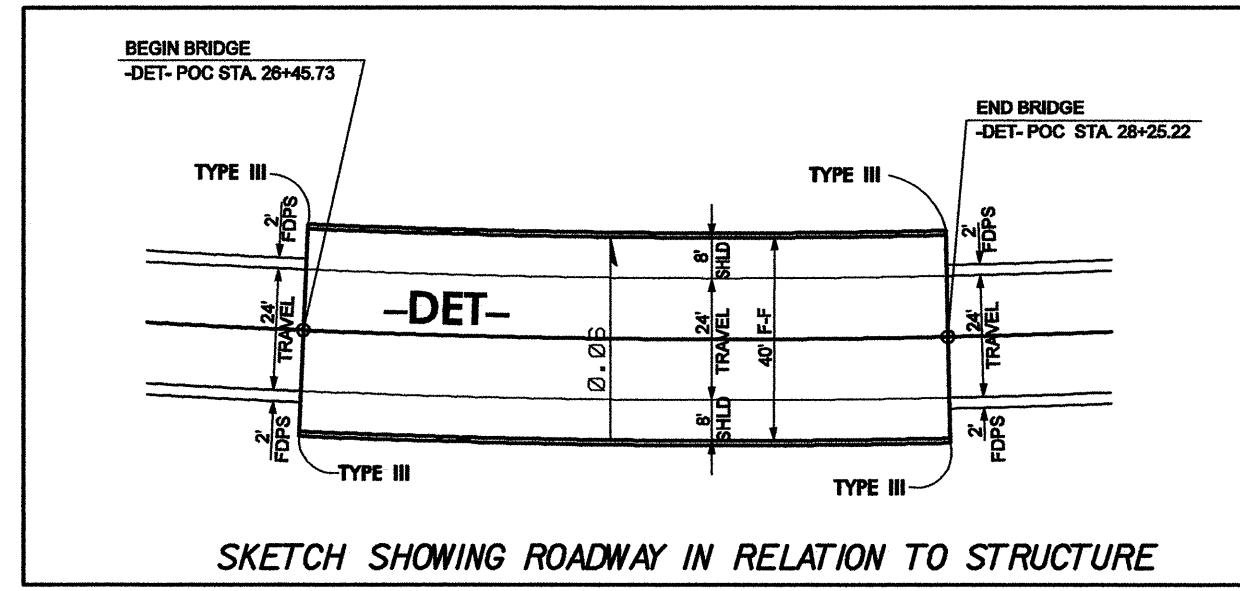
SEE SHEET 11 FOR -DET- PROFILE

REVISIONS

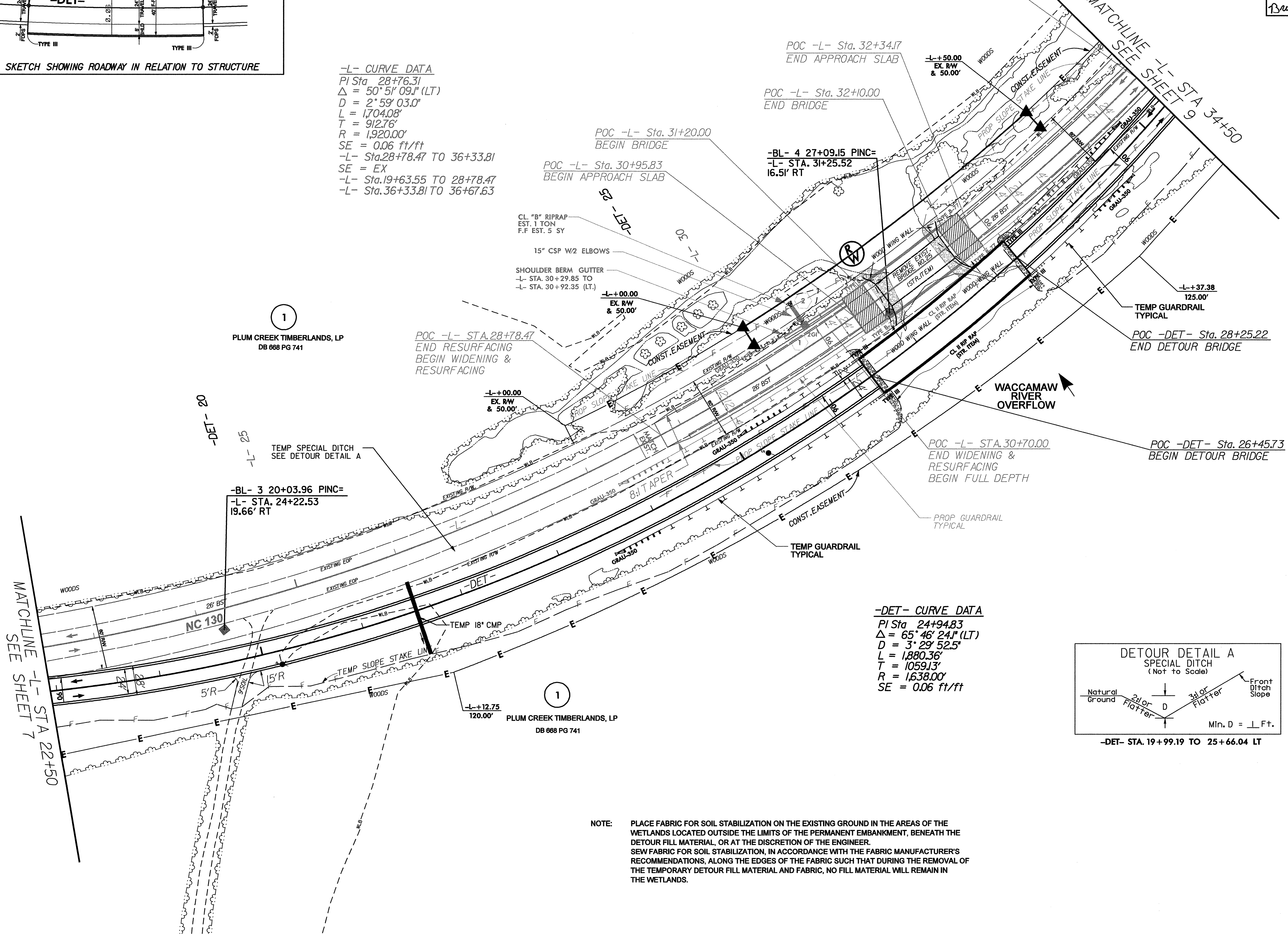
8/17/99

7/1/2008  
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 Johnson

**-DET- STRUCTURE**  
DETOUR ALIGNMENT



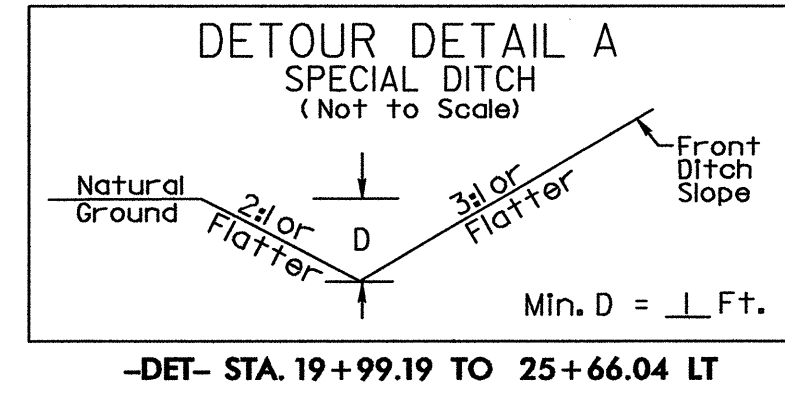
**-L- CURVE DATA**  
 PI Sta 28+76.31  
 $\Delta = 50^\circ 51' 09.1''$  (LT)  
 $D = 2^\circ 59' 03.0''$   
 $L = 1,704.08'$   
 $T = 912.76'$   
 $R = 1,920.00'$   
 $SE = 0.06$  ft/ft  
 -L- Sta. 28+78.47 TO 36+33.81  
 $SE = EX$   
 -L- Sta. 19+63.55 TO 28+78.47  
 -L- Sta. 36+33.81 TO 36+67.63



1  
PLUM CREEK TIMBERLANDS, LP  
DB 668 PG 741

-BL- 3 20+03.96 PINC=  
-L- STA. 24+22.53  
19.66' RT

**-DET- CURVE DATA**  
 PI Sta 24+94.83  
 $\Delta = 65^\circ 46' 24.1''$  (LT)  
 $D = 3^\circ 29' 52.5''$   
 $L = 1,880.36'$   
 $T = 1,059.13'$   
 $R = 1,638.00'$   
 $SE = 0.06$  ft/ft



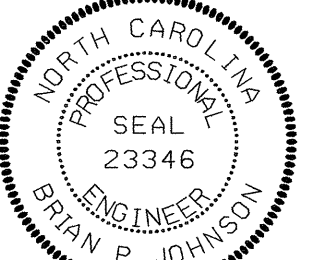

NOTE: PLACE FABRIC FOR SOIL STABILIZATION ON THE EXISTING GROUND IN THE AREAS OF THE WETLANDS LOCATED OUTSIDE THE LIMITS OF THE PERMANENT EMBANKMENT, BENEATH THE DETOUR FILL MATERIAL, OR AT THE DISCRETION OF THE ENGINEER. SEW FABRIC FOR SOIL STABILIZATION, IN ACCORDANCE WITH THE FABRIC MANUFACTURER'S RECOMMENDATIONS, ALONG THE EDGES OF THE FABRIC SUCH THAT DURING THE REMOVAL OF THE TEMPORARY DETOUR FILL MATERIAL AND FABRIC, NO FILL MATERIAL WILL REMAIN IN THE WETLANDS.

SEE SHEET 11,12 FOR -DET- PROFILE

REVISIONS

8/17/99

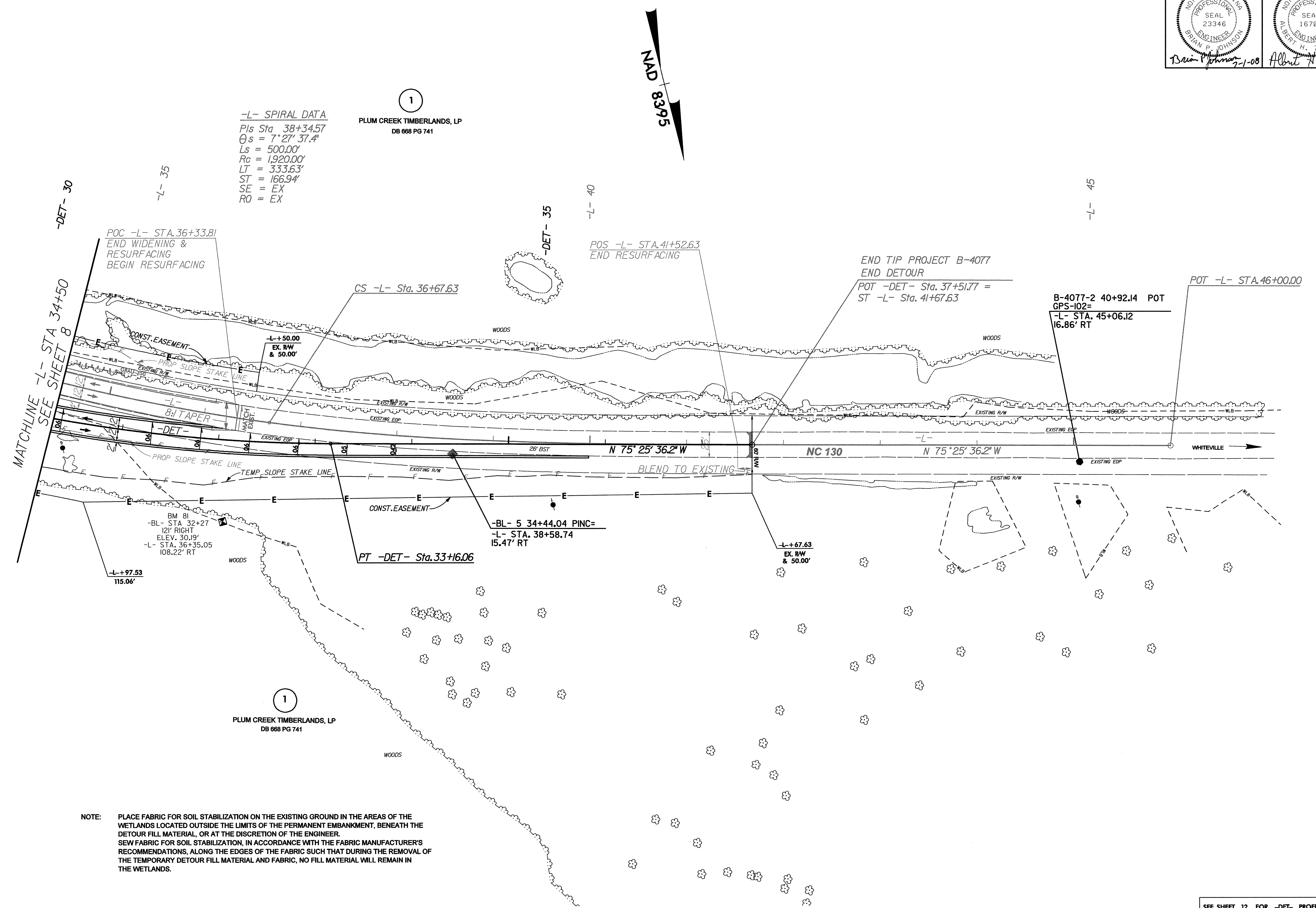
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PROJECT REFERENCE NO. B-4077	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
Brian P. Johnson 7-1-08	Albert H. Zimmerman 7-4-08

-L- SPIRAL DATA  
 PIs Sta 38+34.57  
 $\theta s = 7^{\circ}27'37.4"$   
 $Ls = 500.00'$   
 $Rc = 1,920.00'$   
 $LT = 333.63'$   
 $ST = 166.94'$   
 SE = EX  
 RO = EX

1  
 PLUM CREEK TIMBERLANDS, LP  
 DB 668 PG 741

MAD 8395



NOTE: PLACE FABRIC FOR SOIL STABILIZATION ON THE EXISTING GROUND IN THE AREAS OF THE WETLANDS LOCATED OUTSIDE THE LIMITS OF THE PERMANENT EMBANKMENT, BENEATH THE DETOUR FILL MATERIAL, OR AT THE DISCRETION OF THE ENGINEER. SEW FABRIC FOR SOIL STABILIZATION, IN ACCORDANCE WITH THE FABRIC MANUFACTURER'S RECOMMENDATIONS, ALONG THE EDGES OF THE FABRIC SUCH THAT DURING THE REMOVAL OF THE TEMPORARY DETOUR FILL MATERIAL AND FABRIC, NO FILL MATERIAL WILL REMAIN IN THE WETLANDS.

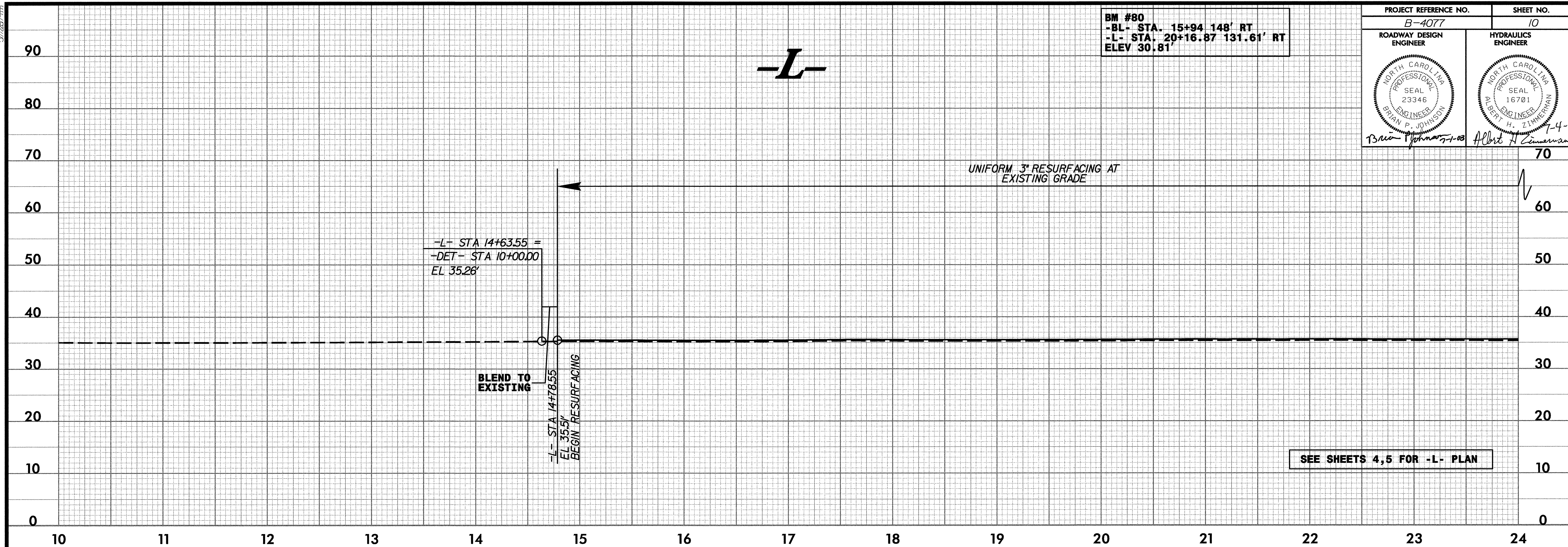
SEE SHEET 12 FOR -DET- PROFILE

REVISIONS

8/17/99

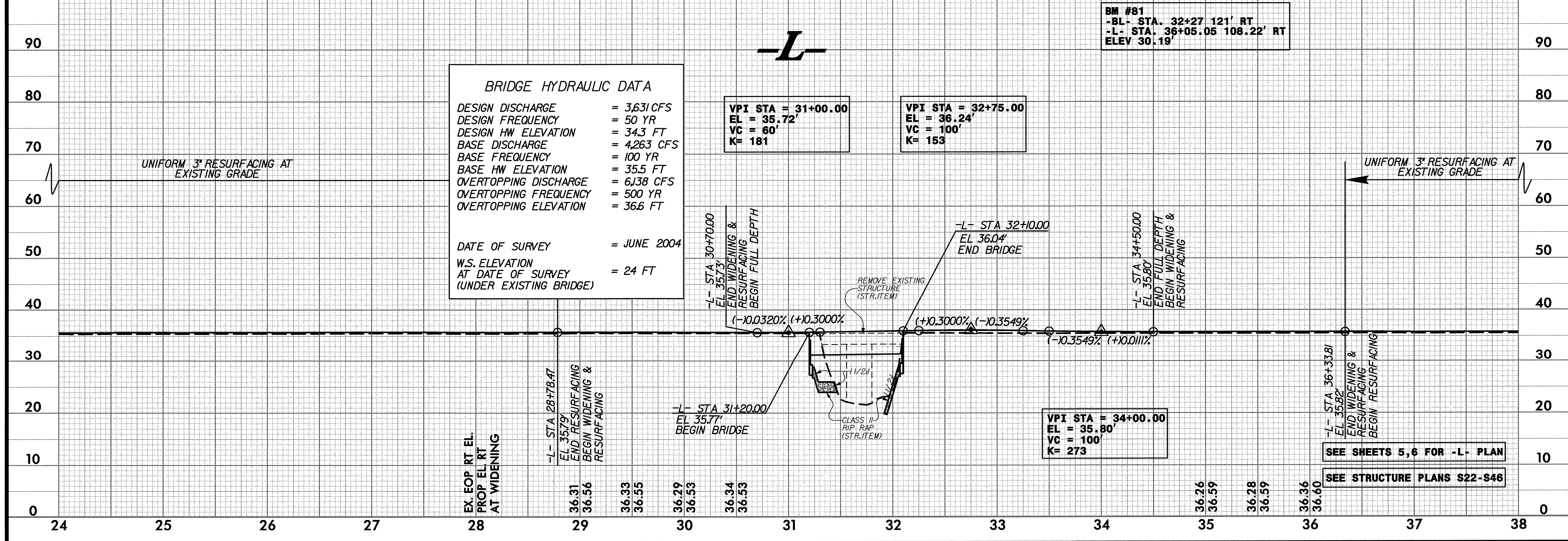
7/1/2008  
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 Johnson

BM #80  
-BL- STA. 15+94.148' RT  
-L- STA. 20+16.87 131.61' RT  
ELEV 30.81'



SEE SHEETS 4,5 FOR -L- PLAN

BM #81  
-BL- STA. 32+27.121' RT  
-L- STA. 36+05.05 108.22' RT  
ELEV 30.19'



**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE	= 3,631 CFS
DESIGN FREQUENCY	= 50 YR
DESIGN HW ELEVATION	= 34.3 FT
BASE DISCHARGE	= 4,263 CFS
BASE FREQUENCY	= 100 YR
BASE HW ELEVATION	= 35.5 FT
OVERTOPPING DISCHARGE	= 6,138 CFS
OVERTOPPING FREQUENCY	= 500 YR
OVERTOPPING ELEVATION	= 36.6 FT

DATE OF SURVEY = JUNE 2004  
W.S. ELEVATION AT DATE OF SURVEY (UNDER EXISTING BRIDGE) = 24 FT

VPI STA = 31+00.00  
EL = 35.72'  
VC = 60'  
K = 181

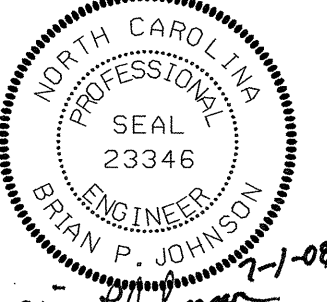
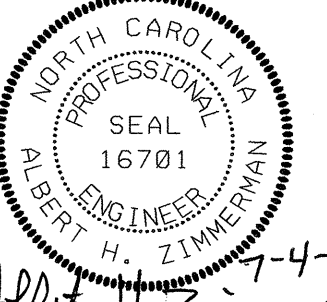
VPI STA = 32+75.00  
EL = 36.24'  
VC = 100'  
K = 153

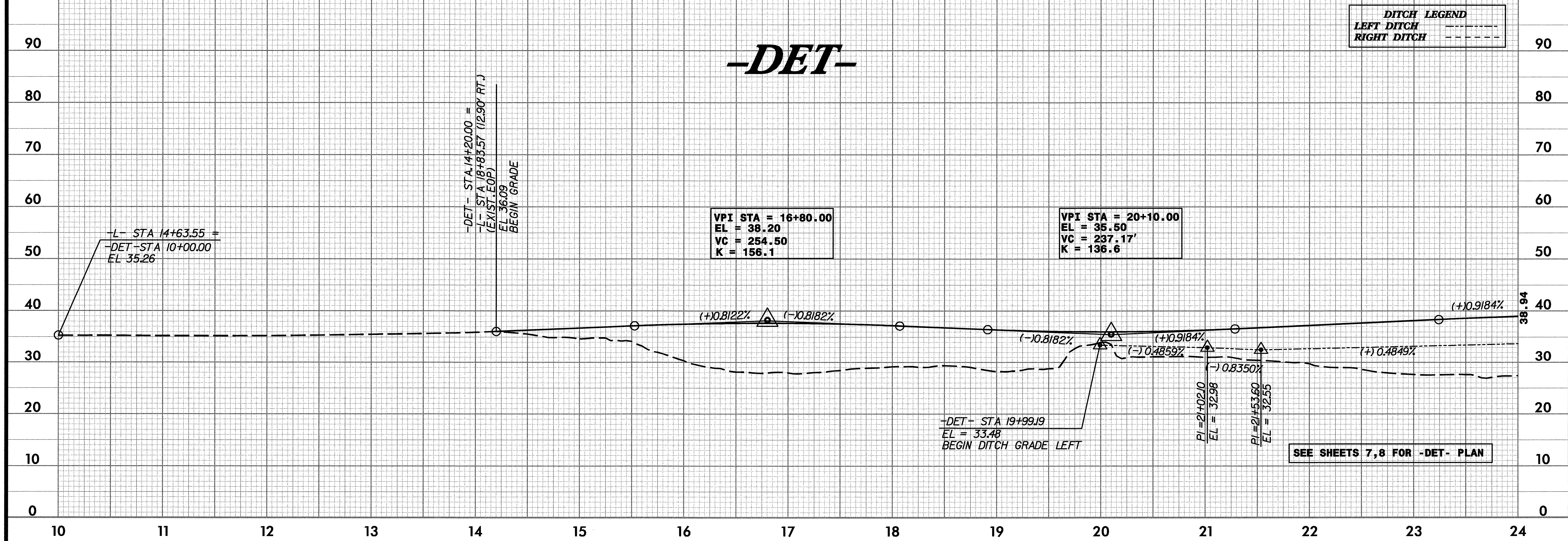
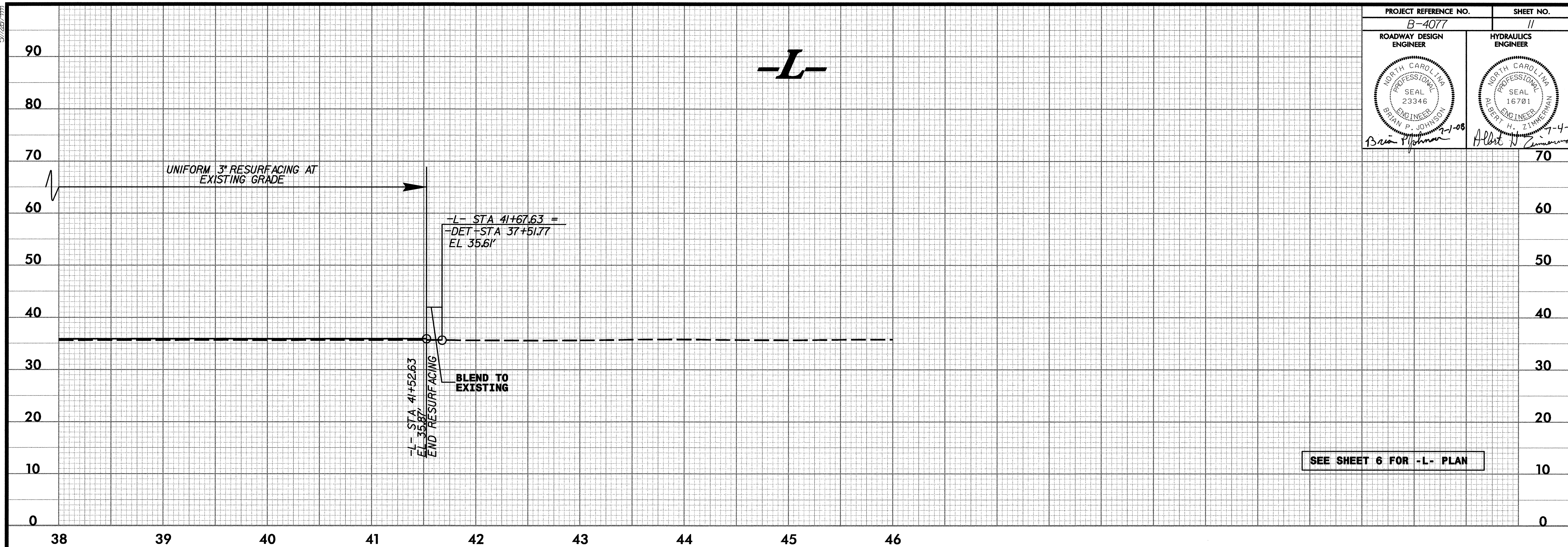
VPI STA = 34+00.00  
EL = 35.80'  
VC = 100'  
K = 273

SEE SHEETS 5,6 FOR -L- PLAN

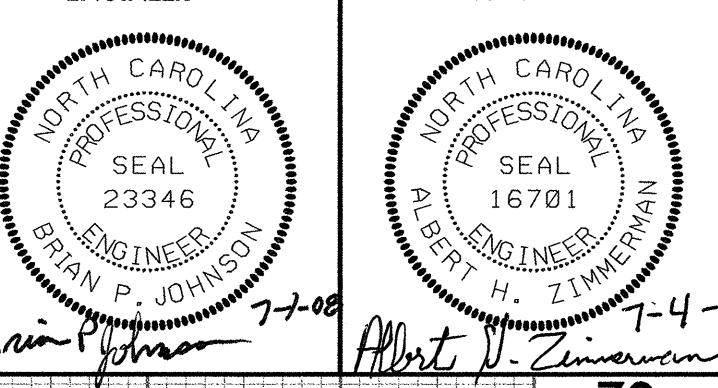
SEE STRUCTURE PLANS S22-S46

5/28/08  
 T:\0465\Projects\Plan\B-4077.dwg  
 1/2/2008  
 P:\0465\Projects\Plan\B-4077.dwg

PROJECT REFERENCE NO. B-4077	SHEET NO. 11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 Brian P. Johnson 7-1-08	 Albert H. Zimmerman 7-4-08



5/28/08  
 Tr:\04953\1\2008\Plan\B-4077.dwg  
 11/11/08



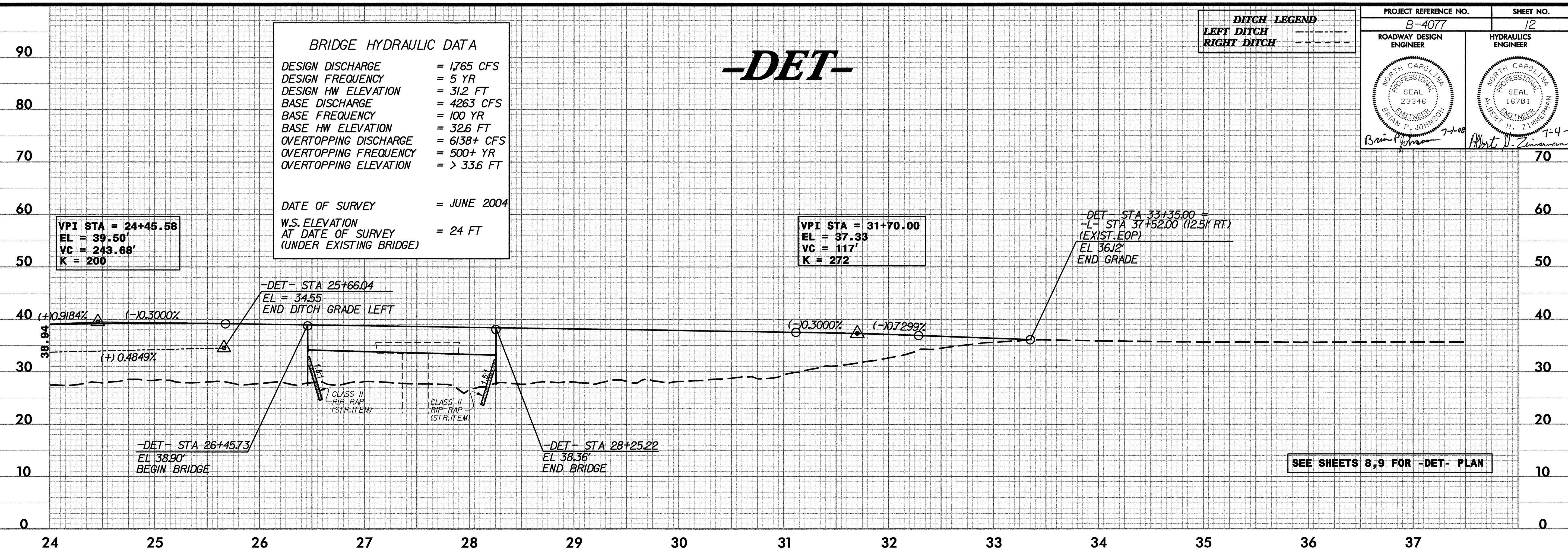
**DITCH LEGEND**  
 LEFT DITCH - - - - -  
 RIGHT DITCH - - - - -

**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE = 1,765 CFS  
 DESIGN FREQUENCY = 5 YR  
 DESIGN HW ELEVATION = 31.2 FT  
 BASE DISCHARGE = 4263 CFS  
 BASE FREQUENCY = 100 YR  
 BASE HW ELEVATION = 32.6 FT  
 OVERTOPPING DISCHARGE = 6138+ CFS  
 OVERTOPPING FREQUENCY = 500+ YR  
 OVERTOPPING ELEVATION = > 33.6 FT

DATE OF SURVEY = JUNE 2004  
 W.S. ELEVATION AT DATE OF SURVEY (UNDER EXISTING BRIDGE) = 24 FT

**-DET-**



5/28/08

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