

TIP PROJECT: R-2904

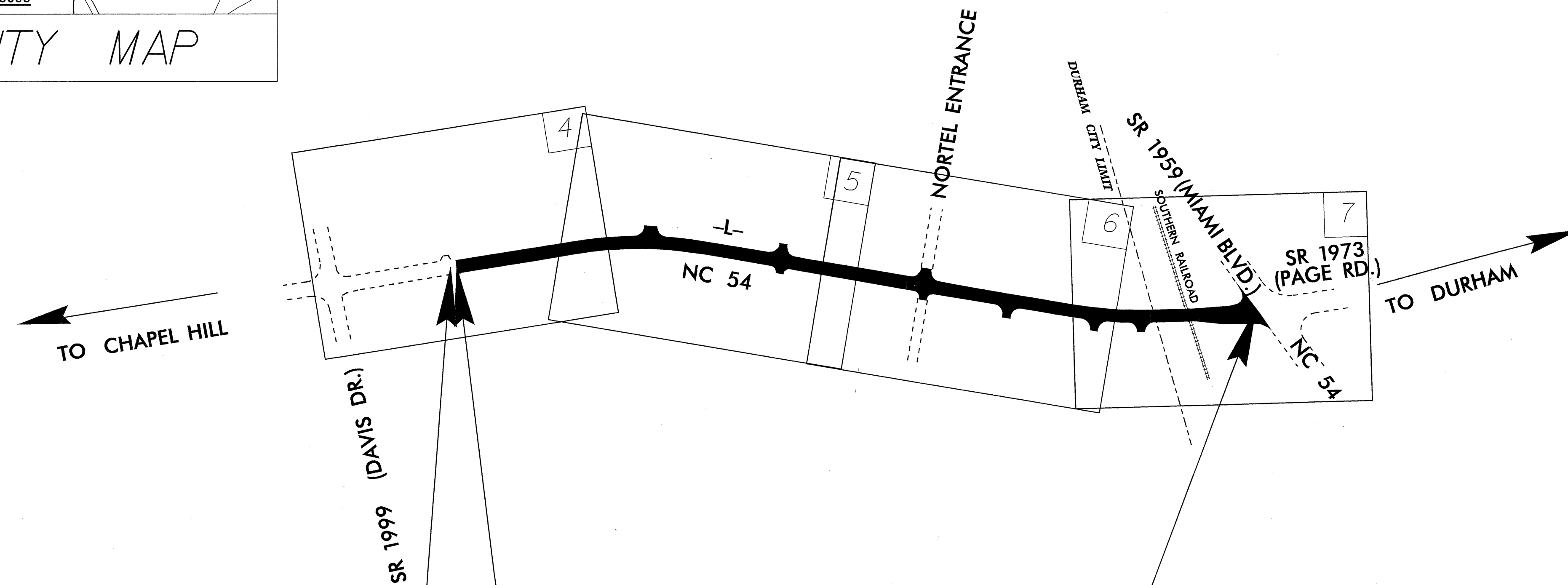
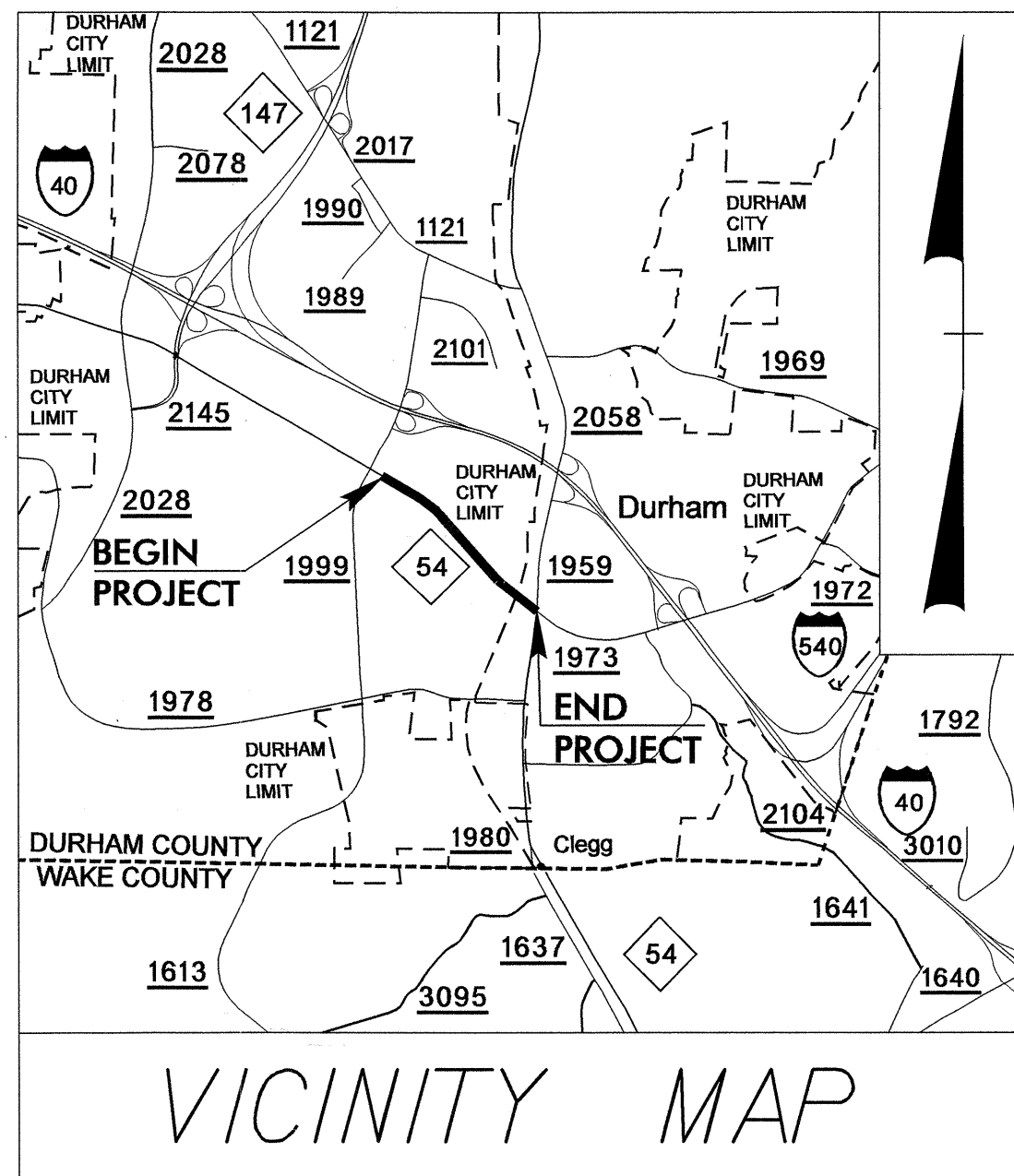
CONTRACT: C200840

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**DURHAM COUNTY**

**LOCATION: NC 54 FROM SR 1999 (DAVIS DRIVE) TO SR 1959 (MIAMI BLVD.) (MIAMI BLVD.)**

**TYPE OF WORK: GRADING, PAVING, DRAINAGE, GUARDRAIL, SIGNALS, AND SIGNING**

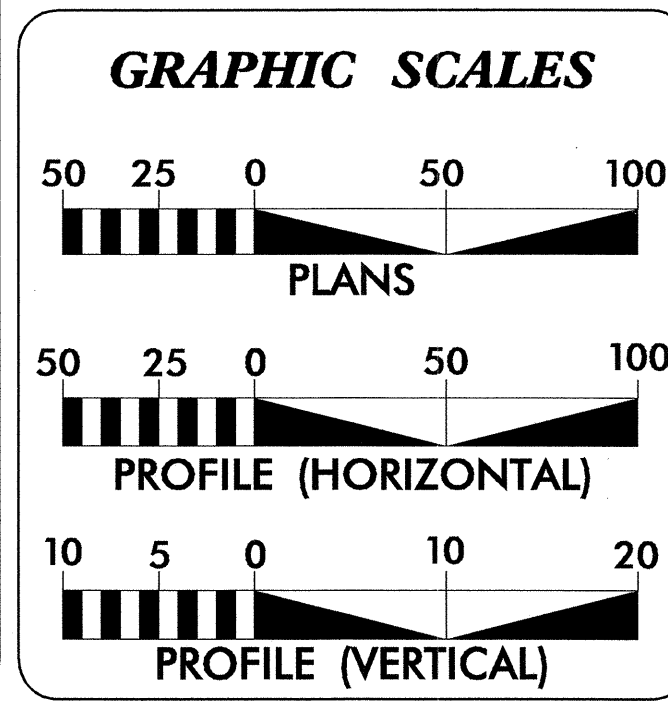
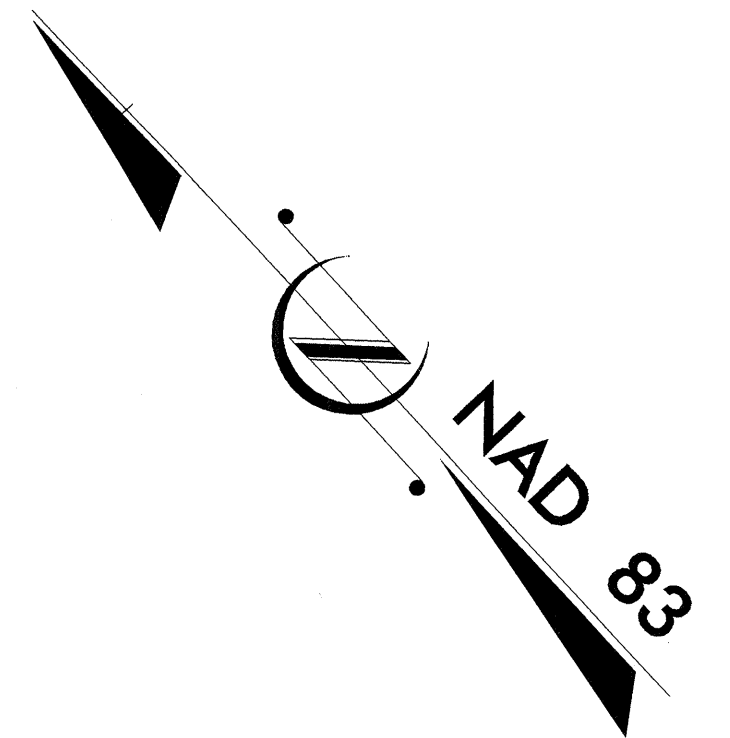


STA. 16+07.65 -L- BEGIN CONST. R-2904

STA. 16+40.63 -L- BEGIN TIP PROJECT R-2904

STA. 57+38.87 -L- END TIP PROJECT R-2904

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2904	1	
STATE PROJECT NO.	F.A. PROJECT NO.	DESCRIPTION	
34512.1.1	STP-54(2)	P.E.	
34512.2.2	STP-54(2)	R /W, UTIL.	
34512.3.1	STP-54(5)	CONST.	



**DESIGN DATA**

ADT 2005	=	17,800
ADT 2025	=	37,700
DHV	=	10 %
D	=	60 %
T	=	5 % *
V	=	50 MPH
* (TTST 2 % + DUAL 3 %)		

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT R-2904	=	0.776 MILES
TOTAL LENGTH TIP PROJECT R-2904	=	0.776 MILES

Prepared In the Office of:

**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh, NC 27610

2006 STANDARD SPECIFICATIONS

<b>RIGHT OF WAY DATE:</b> NOVEMBER 26, 2003	<b>BRENDA MOORE, PE</b> PROJECT ENGINEER
<b>LETTING DATE:</b> DECEMBER 19, 2006	<b>THAD F. DUNCAN, PE</b> PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

SEAL 16600  
5-17-06  
SIGNATURE: *RC Amy* P.E.

**ROADWAY DESIGN**

SEAL 25477  
5-16-06  
SIGNATURE: *Thad F. Duncan* P.E.

**DIVISION OF HIGHWAYS**  
STATE OF NORTH CAROLINA

*cut m. miller* P.E.  
STATE DESIGN ENGINEER

**DEPARTMENT OF TRANSPORTATION**  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED  
DIVISION ADMINISTRATOR

DATE

TIP PROJECT: R-2904

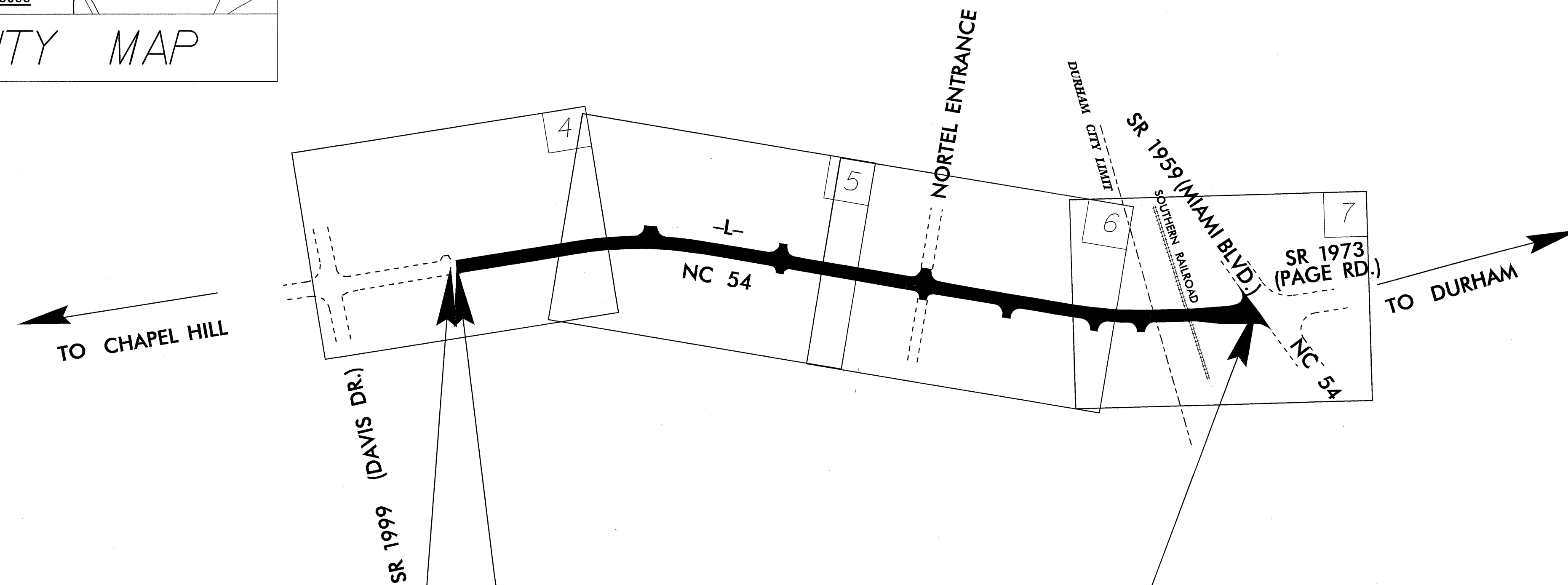
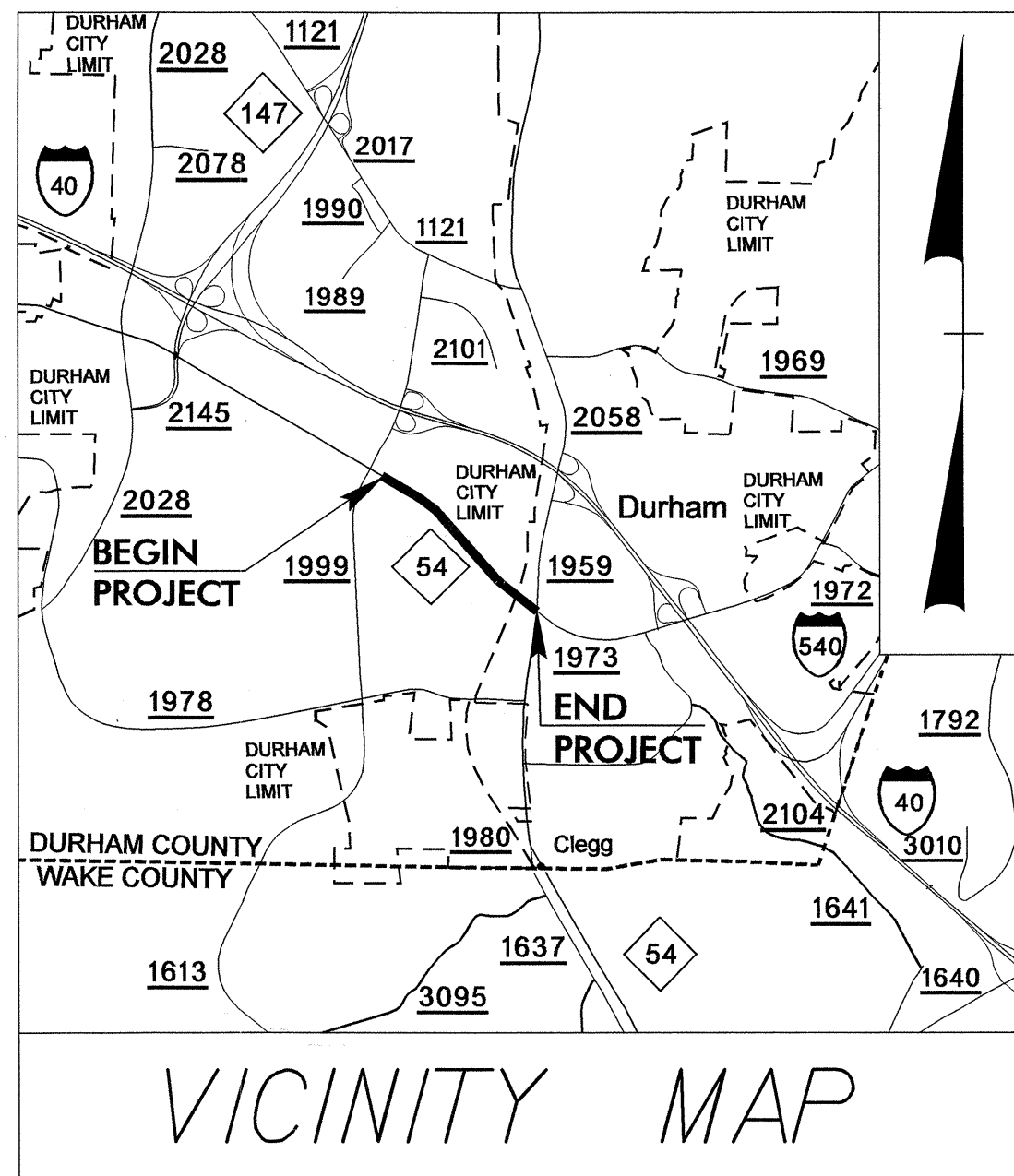
CONTRACT: C200840

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**DURHAM COUNTY**

**LOCATION: NC 54 FROM SR 1999 (DAVIS DRIVE) TO SR 1959 (MIAMI BLVD.)**

**TYPE OF WORK: GRADING, PAVING, DRAINAGE, GUARDRAIL, SIGNALS, AND SIGNING**

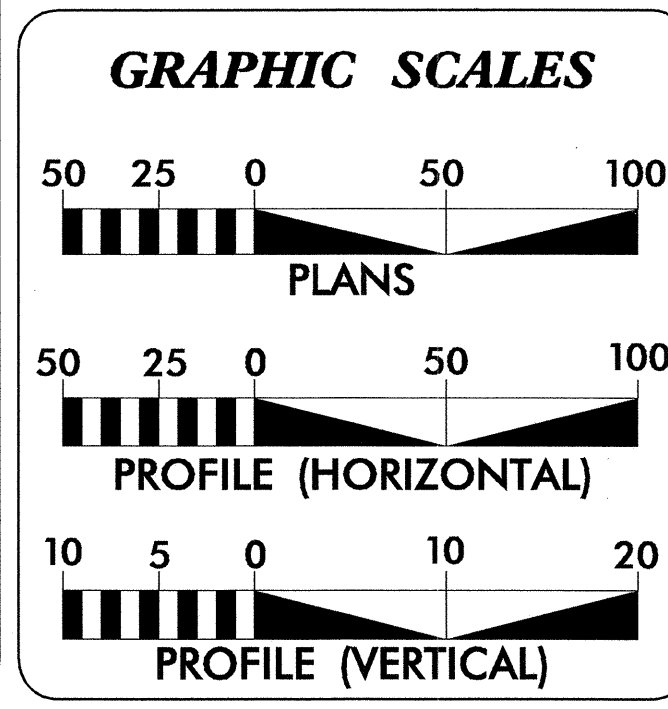
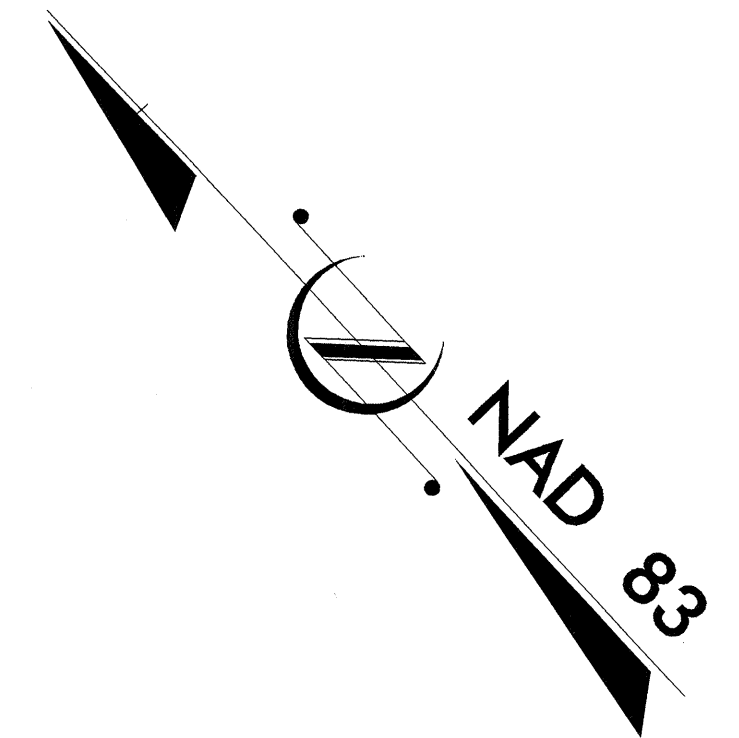


STA. 16+07.65 -L- BEGIN CONST. R-2904

STA. 16+40.63 -L- BEGIN TIP PROJECT R-2904

STA. 57+38.87 -L- END TIP PROJECT R-2904

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2904	1	
STATE PROJECT NO.	F.A. PROJECT NO.	DESCRIPTION	
34512.1.1	STP-54(2)	P.E.	
34512.2.2	STP-54(2)	R /W, UTIL.	
34512.3.1	STP-54(5)	CONST.	



**DESIGN DATA**

ADT 2005	=	17,800
ADT 2025	=	37,700
DHV	=	10 %
D	=	60 %
T	=	5 % *
V	=	50 MPH
* (TTST 2 % + DUAL 3 %)		

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT R-2904	=	0.776 MILES
TOTAL LENGTH TIP PROJECT R-2904	=	0.776 MILES

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

2006 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
NOVEMBER 26, 2003

**LETTING DATE:**  
DECEMBER 19, 2006

**BRENDA MOORE, PE**  
PROJECT ENGINEER

**THAD F. DUNCAN, PE**  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

SEAL 16600

5-17-06

*RC Amy* P.E.

SIGNATURE:

**ROADWAY DESIGN**

SEAL 25477

5-16-06

*Thad F. Duncan* P.E.

SIGNATURE:

**DIVISION OF HIGHWAYS**  
STATE OF NORTH CAROLINA

*cut m. miller* P.E.

STATE DESIGN ENGINEER

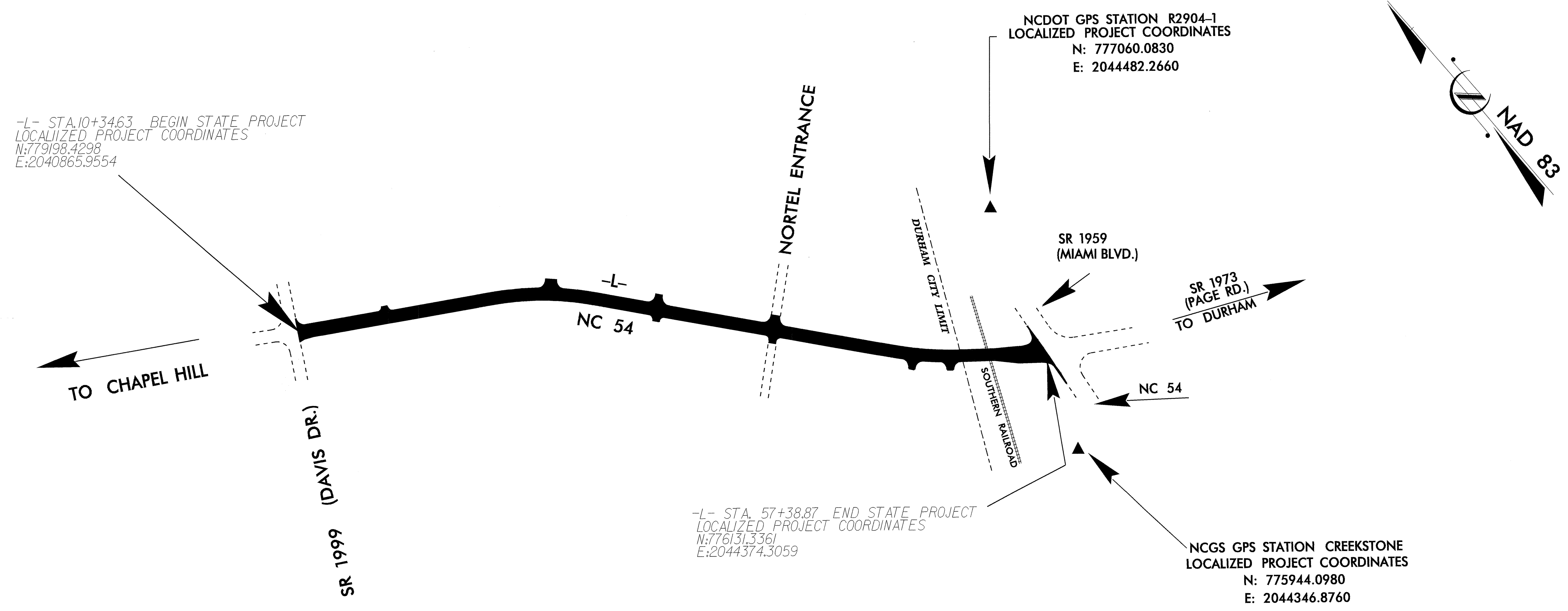
**DEPARTMENT OF TRANSPORTATION**  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR

DATE

# SURVEY CONTROL SHEET R-2904



### BASELINE DATA

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
227	U4026	BY11-227	779423.0170	2040411.5000	309.28	OUTSIDE PROJECT LIMITS	
134	U4026	BL-134	779140.0310	2040835.4140	320.06	10+37.84	65.82 RT
229	U4026	BY11-229	778903.6490	2041293.1200	316.43	15+52.23	38.09 RT
301	R2904	BL-301	778353.8950	2042195.6120	312.14	26+15.05	23.74 RT
302	R2904	BL-302	777874.8250	2042621.4750	338.19	32+60.35	36.11 RT
303	R2904	BL-303	777270.9610	2043151.4750	360.42	40+63.80	31.25 RT
304	R2904	BL-304	776753.1320	2043623.1990	368.08	47+63.99	14.17 RT
305	R2904	BL-305	776370.4430	2044036.8420	403.13	53+25.70	18.58 RT
306	R2904	BL-306	776215.7950	2044348.3380	410.33	56+66.50	50.70 LT
660	NCGS	CREEKSTONE	775944.0980	2044346.8760	412.36	58+32.23	164.61 RT

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2000-26" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 765141.403(ft) EASTING: 2040223.344(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991540 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2000-26" TO -L- STATION 10+00.00 IS N 2°29'34.2"E 14,087.88' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

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:  
R2904\_LS\_CONTROL\_031124.TXT

▲ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.  
PROJECT CONTROL ESTABLISHED UTILIZING GLOBAL POSITIONING SYSTEM.  
NETWORK ESTABLISHED FROM EXISTING NCGS MONUMENTATION.

**BENCHMARK DATA**

.....  
1 ELEVATION = 323.73  
N 778939 E 2040984  
L STATION 12+68 164 RIGHT  
BM \* 1 R/R SPIKE IN BASE OF 24' OAK TREE  
.....  
2 ELEVATION = 310.31  
N 777798 E 2042449  
L STATION 32+05 216 RIGHT  
BM \* 2 R/R SPIKE IN BASE OF 15' PINE TREE  
.....  
3 ELEVATION = 405.13  
N 776239 E 2044030  
L STATION 54+02 127 RIGHT  
BM \* 3 R/R SPIKE IN BASE OF 15' PINE TREE  
.....

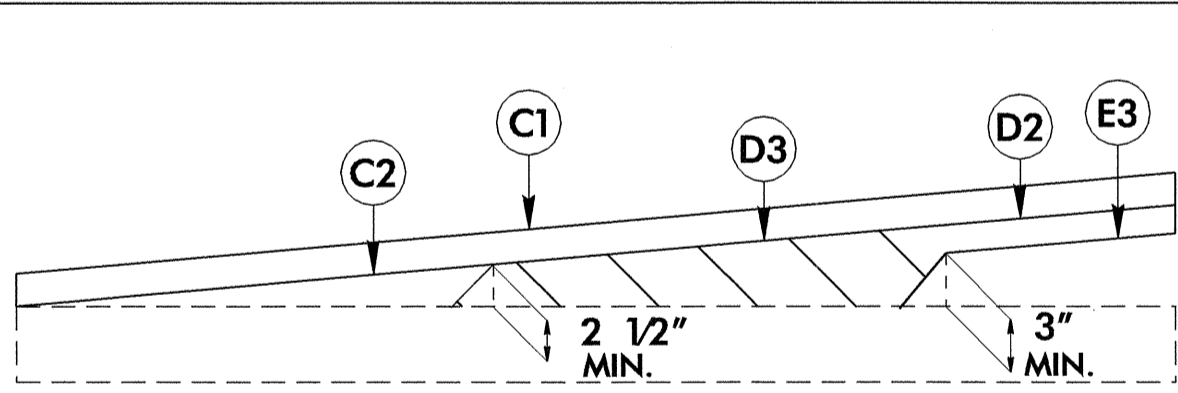
NOTE: DRAWING NOT TO SCALE

# PAVEMENT SCHEDULE

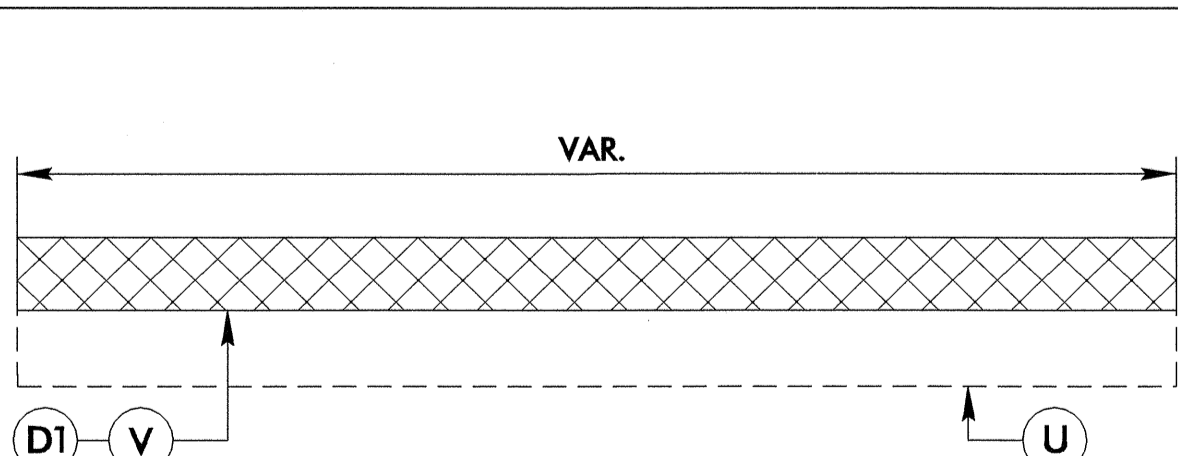
(FINAL PAVEMENT DESIGN)

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.
E2	PROP. APPROX. 5 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YARD.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, 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.
R1	1'-6" CONCRETE CURB AND GUTTER.
R2	2'-6" CONCRETE CURB AND GUTTER.
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING ASPHALT PAVEMENT 2 1/2" DEPTH.
W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE STANDARD WEDGING DETAIL)

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

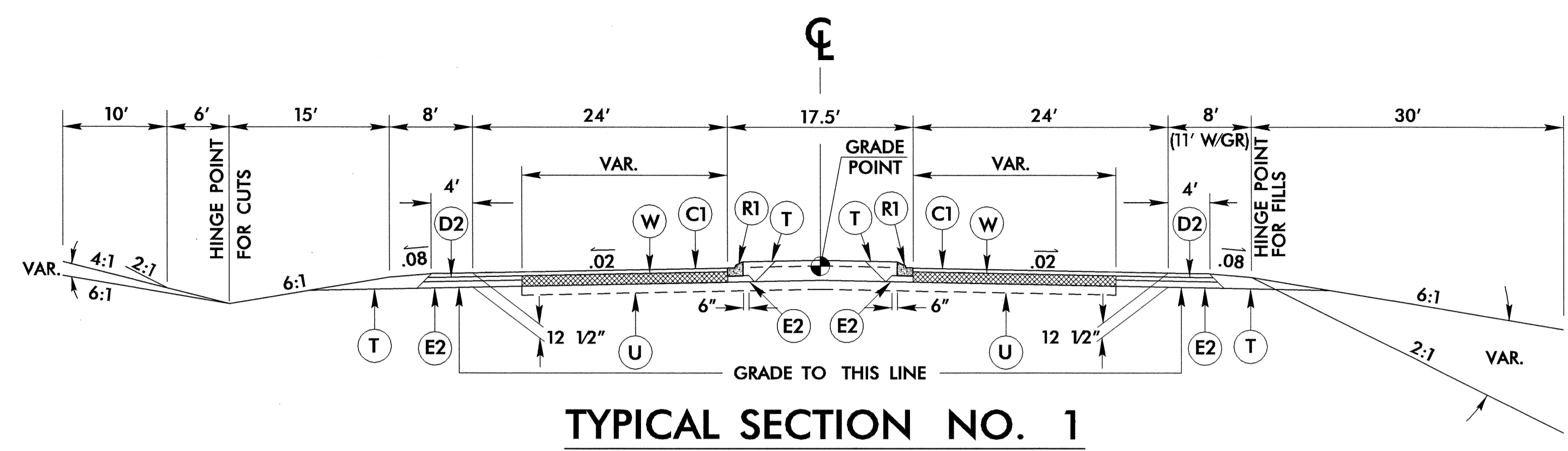


DETAIL SHOWING METHOD OF WEDGING  
USE WITH TYPICAL SECTION NO. 1



DETAIL SHOWING MILLING

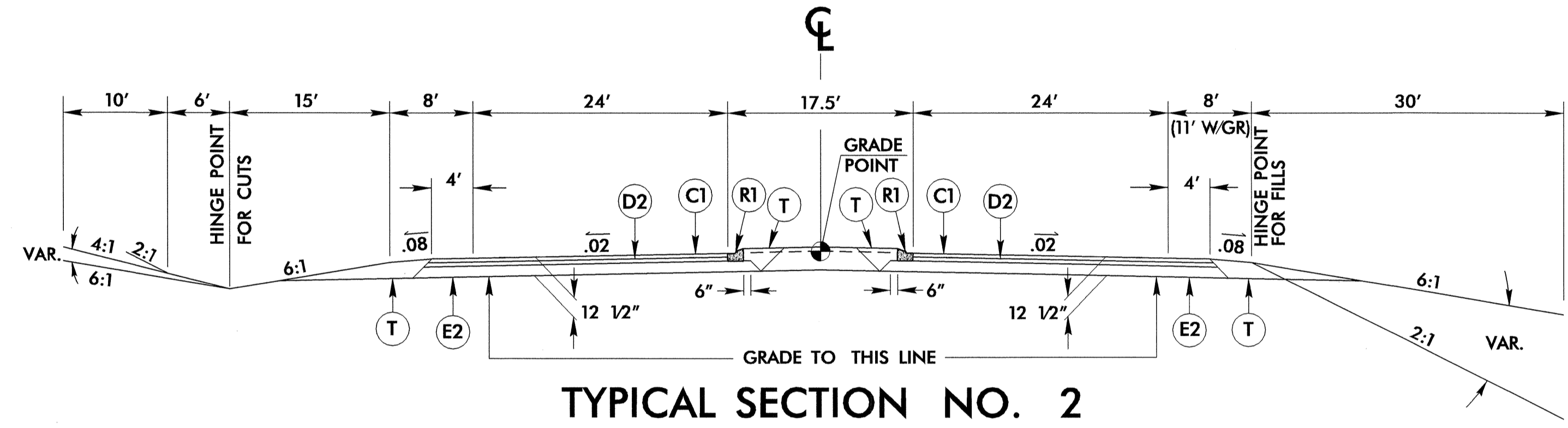
STATIONS	AVG. WIDTH
-L- STA. 19+50 TO STA. 22+30	20'
-L- STA. 22+30 TO STA. 26+50	33'



TYPICAL SECTION NO. 1

## TYPICAL SECTION NO. 1

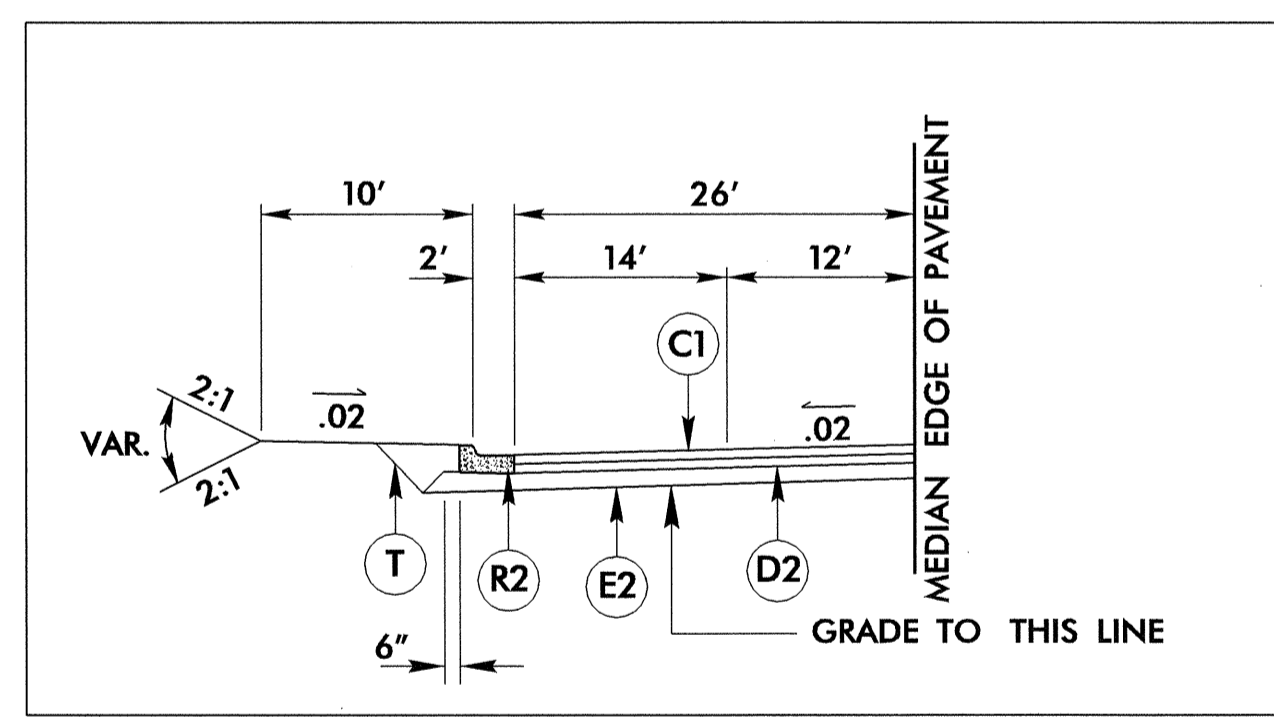
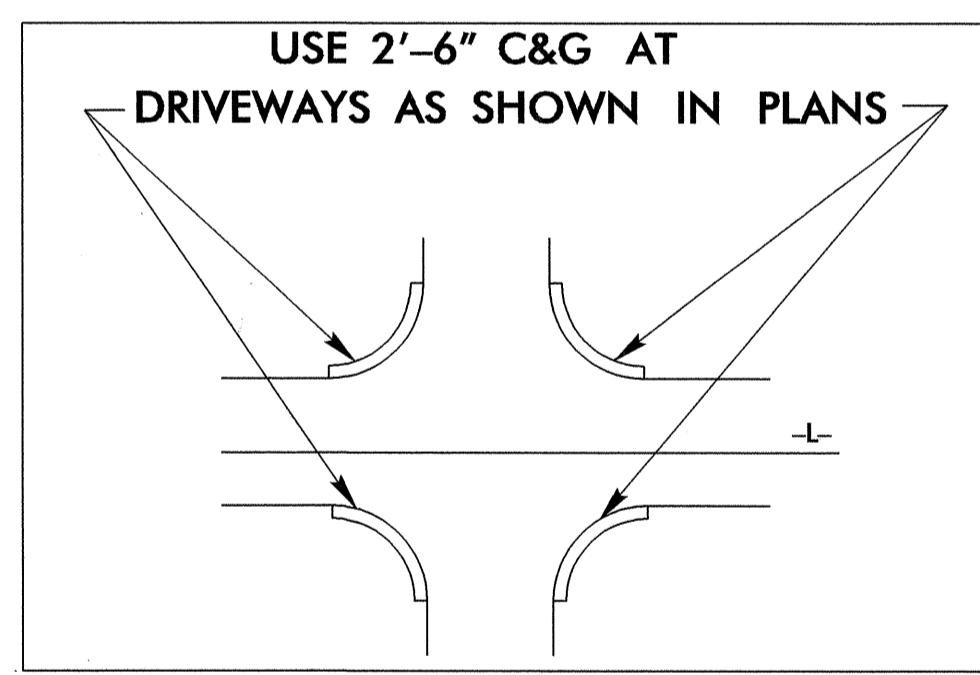
-L- STA. 16+40.63 TO STA. 47+00.00



TYPICAL SECTION NO. 2

## TYPICAL SECTION NO. 2

-L- STA. 47+00.00 TO STA. 51+25.00

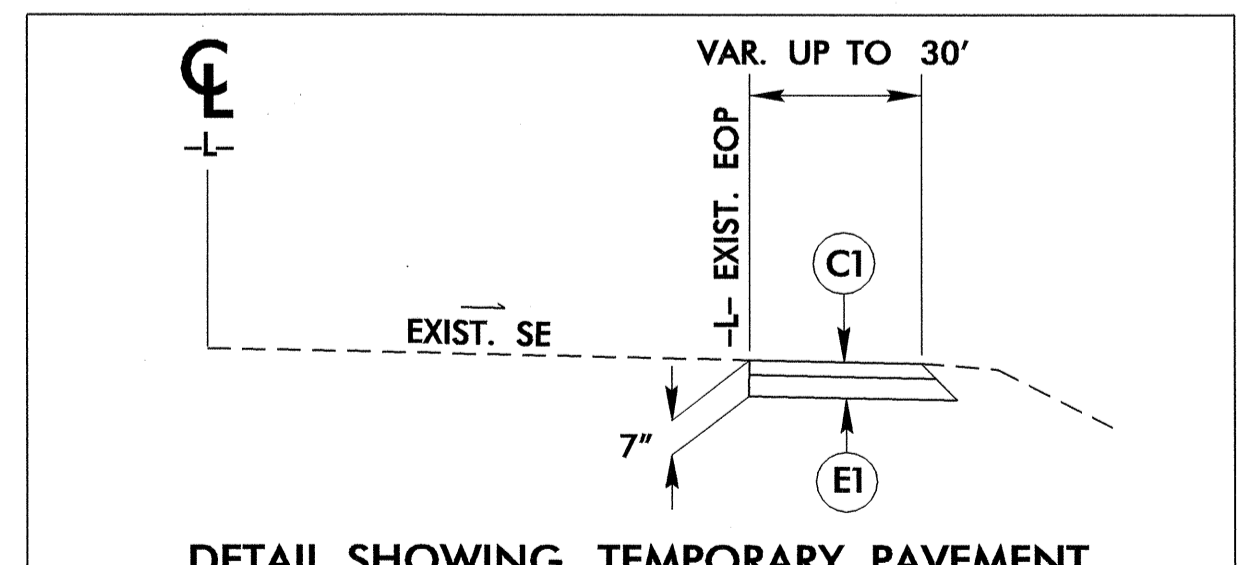


INSET NO. 1

## INSET NO. 1

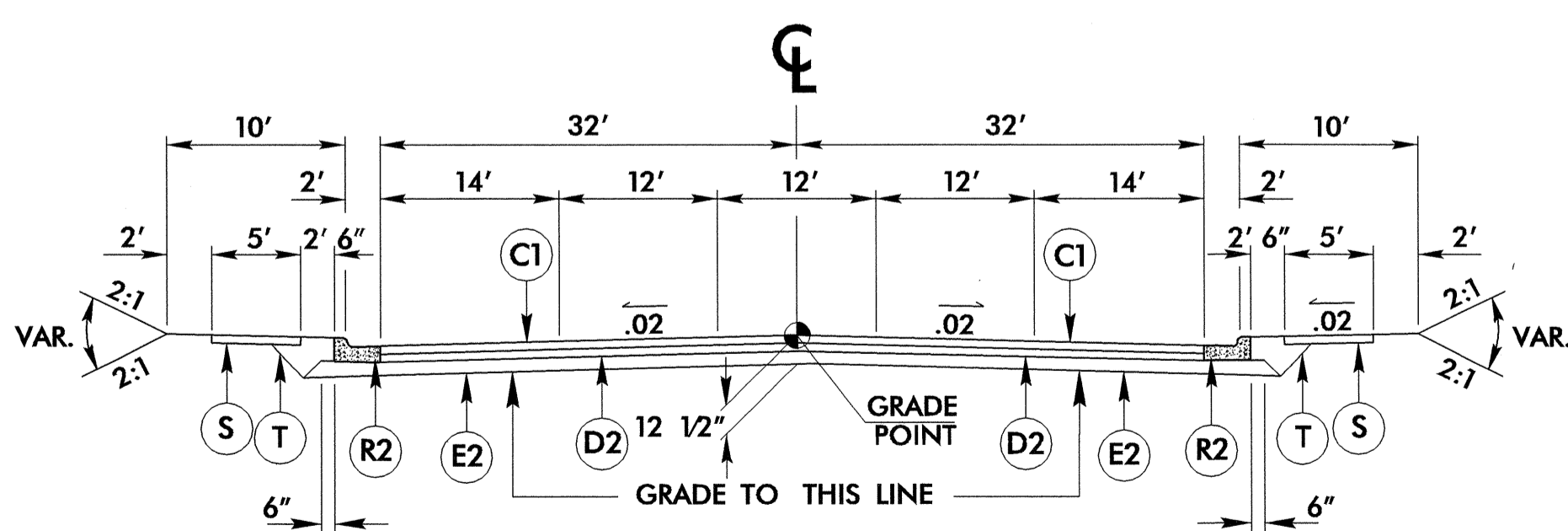
-L- STA. 33+13.27 LT TO 52+00.00 LT  
-L- STA. 49+81.76 RT TO 52+00.00 RT

TRANSITION FROM TYPICAL SECTION NO. 2 TO TYPICAL SECTION NO. 3  
-L- STA. 51+25.00 TO STA. 52+00.00



DETAIL SHOWING TEMPORARY PAVEMENT

STATIONS	LOCATION
-L- STA. 20+00 TO STA. 31+00	RT
-L- STA. 36+00 TO STA. 37+50	RT
-L- STA. 40+50 TO STA. 43+00	RT
-L- STA. 46+00 TO STA. 57+38.87	RT

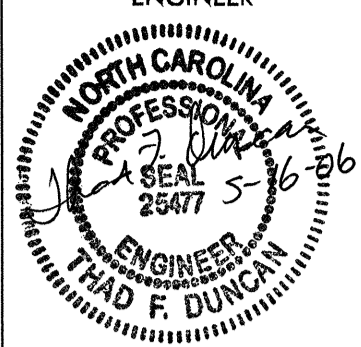


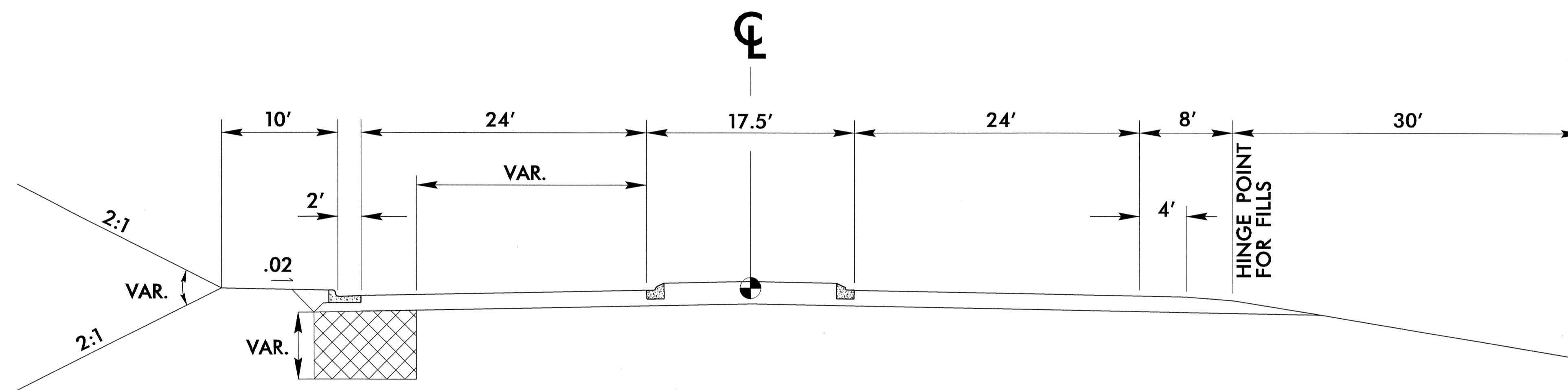
TYPICAL SECTION NO. 3

## TYPICAL SECTION NO. 3

-L- STA. 52+00.00 TO STA. 57+38.87

16-MAY-2006 14:51:16:PTO V=2904\_top...  
\$\$\$\$\$USERNAME\$\$\$\$\$

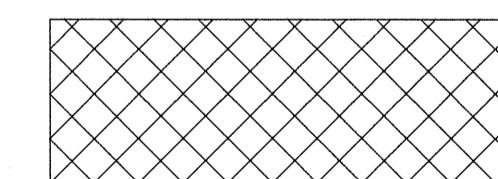
PROJECT REFERENCE NO. R-2904	SHEET NO. 2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
	



UNDERCUT DETAIL NO. 1

UNDERCUT DETAIL NO. 1

-L- STA. 33+25 TO 35+75



DENOTES UNDERCUT

10-APR-2006 07:57  
 R:\PROJ\2904.txd  
 \$\$\$USERNAME\$\$\$

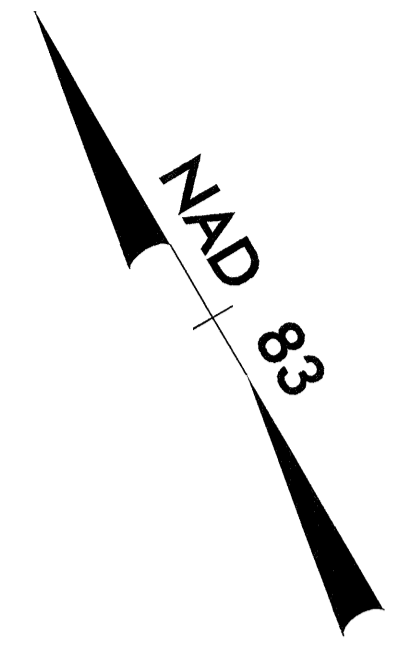










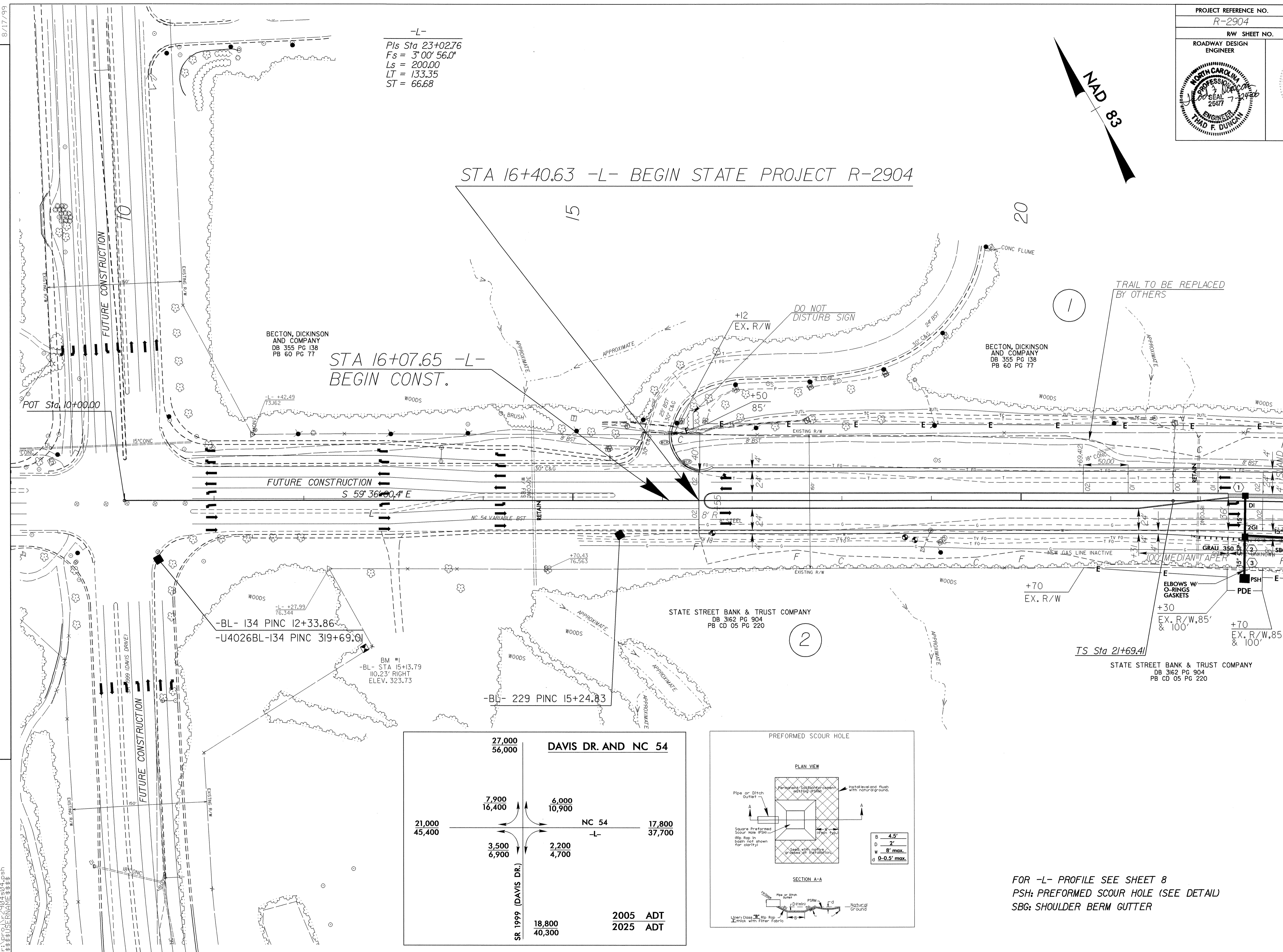


-L-  
Pls Sta 23+02.76  
Fs = 3' 00" 56.0"  
Ls = 200.00  
LT = 133.35  
ST = 66.68

STA 16+40.63 -L- BEGIN STATE PROJECT R-2904

STA 16+07.65 -L- BEGIN CONST.

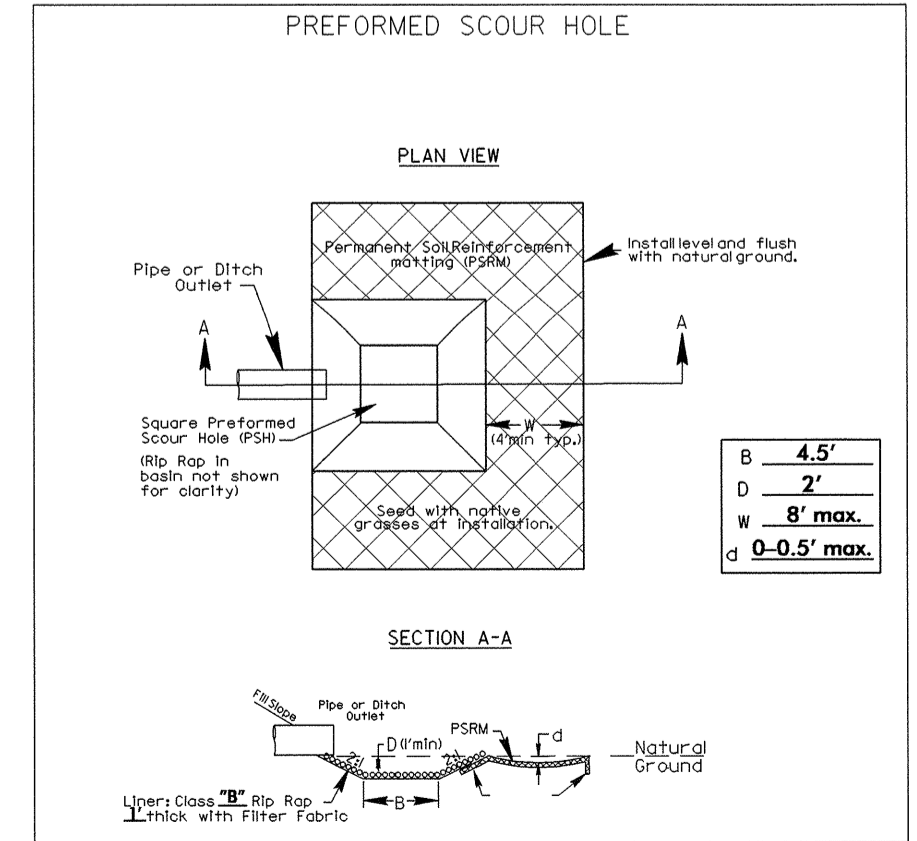
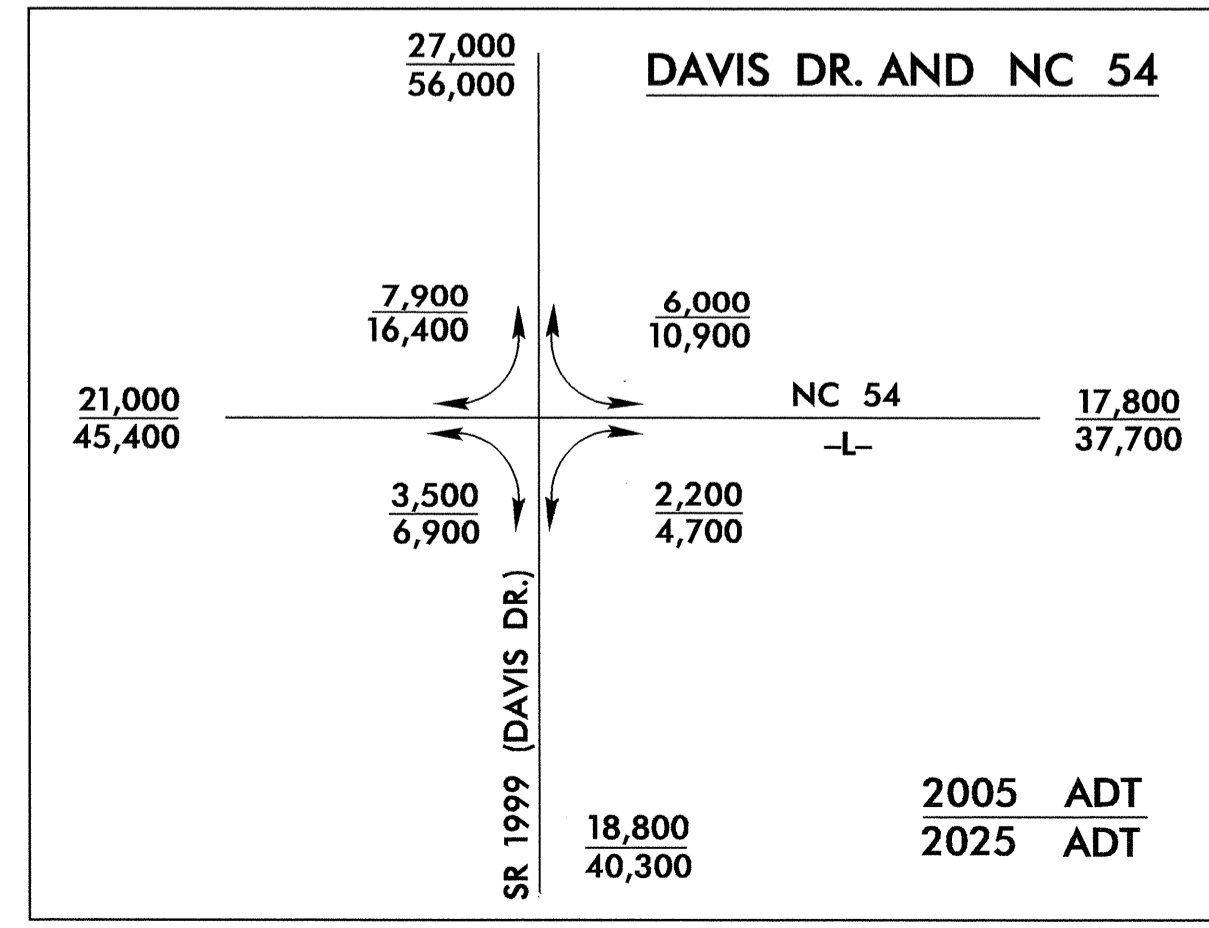
MATCH TO SHEET 5 STA. 23+00



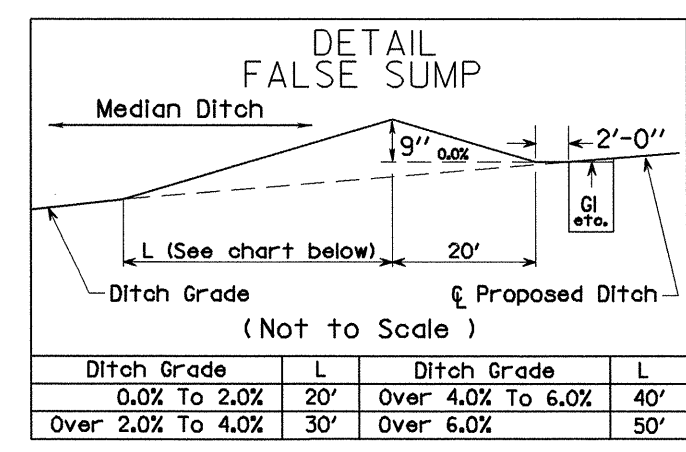
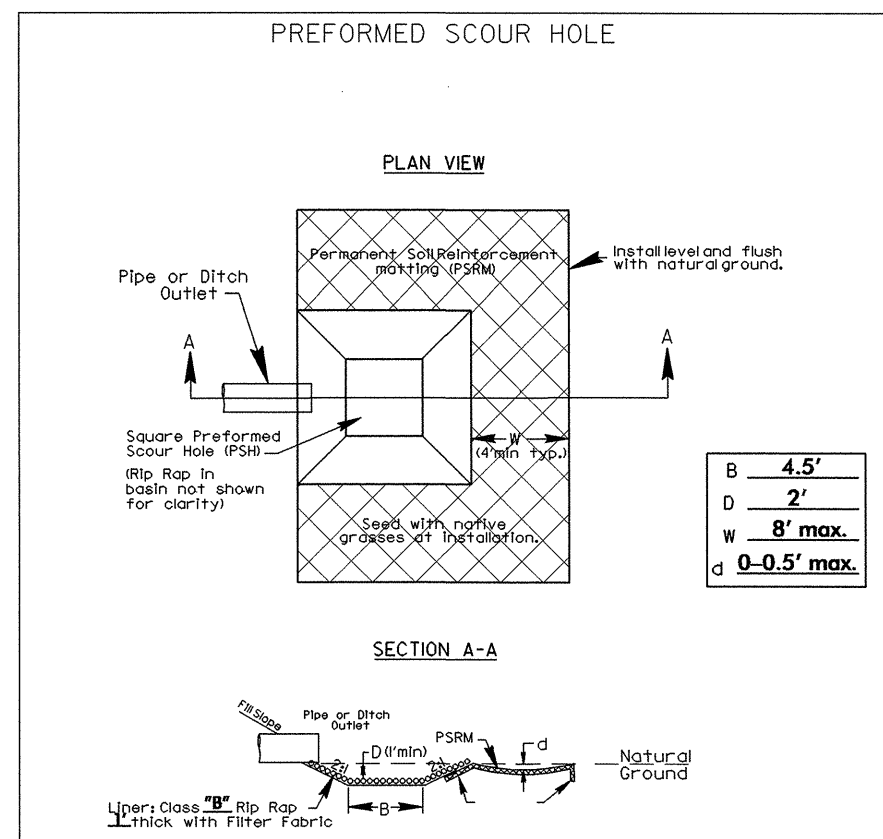
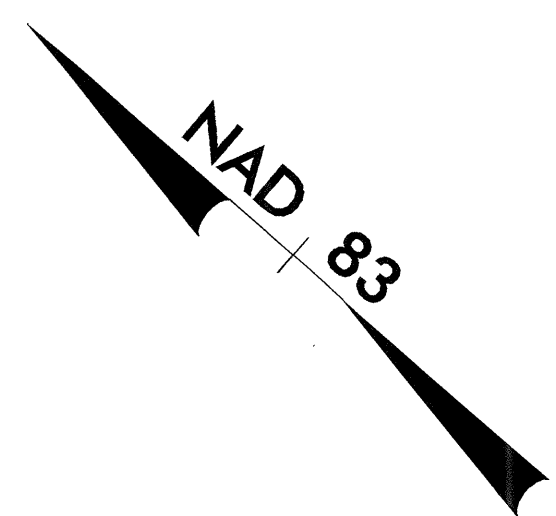
REVISIONS

8/17/99

10-JUL-2006 08:36  
PROJECT: R-2904.s04.psh  
\$\$\$USERNAME\$\$\$



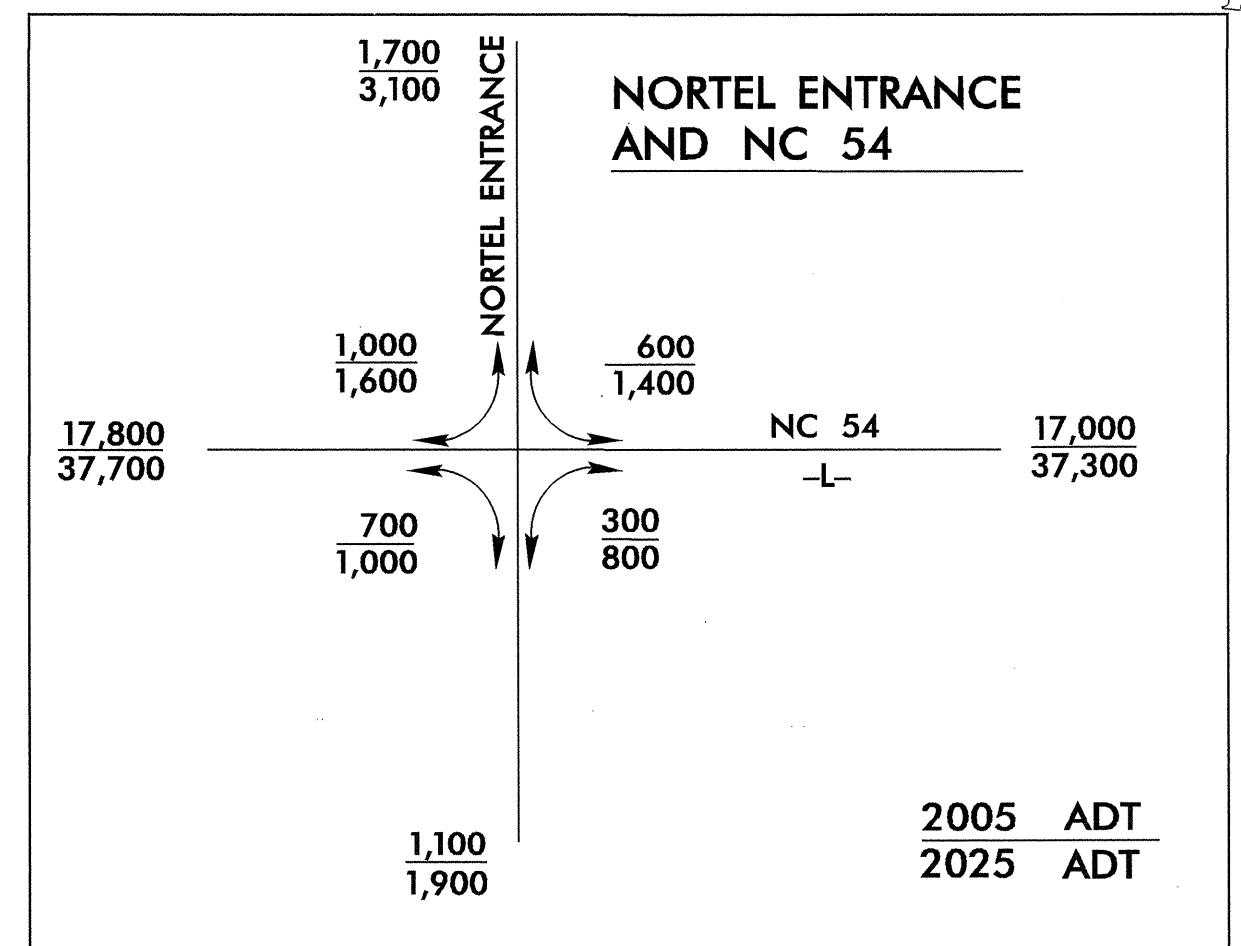
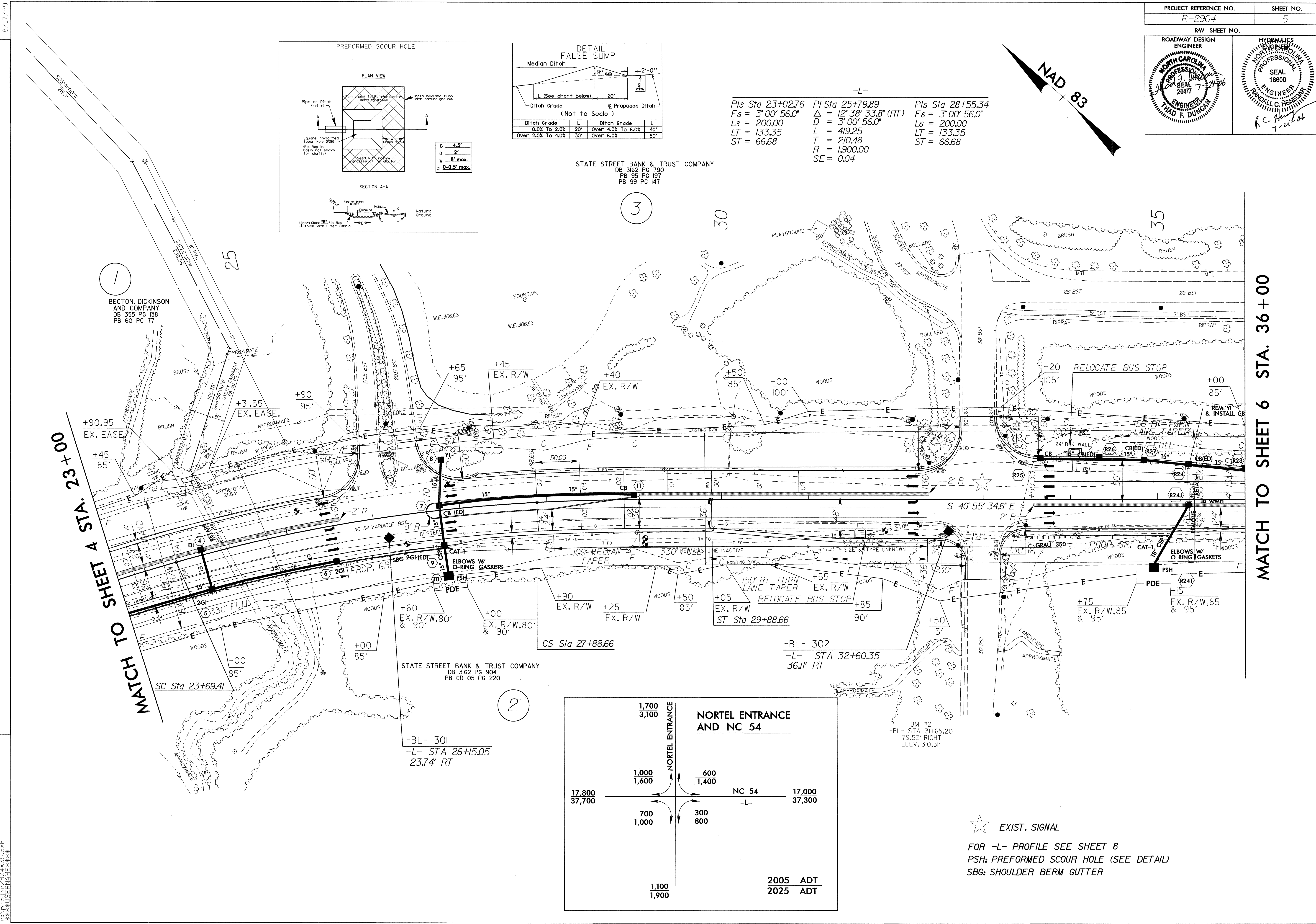
FOR -L- PROFILE SEE SHEET 8  
PSH: PREFORMED SCOUR HOLE (SEE DETAIL)  
SBG: SHOULDER BERM GUTTER



-L-

Pls Sta 23+02.76	PI Sta 25+79.89	Pls Sta 28+55.34
Fs = 3' 00" 56.0"	Δ = 12' 38" 33.8" (RT)	Fs = 3' 00" 56.0"
Ls = 200.00	D = 3' 00" 56.0"	Ls = 200.00
LT = 133.35	L = 419.25	LT = 133.35
ST = 66.68	T = 210.48	ST = 66.68
	R = 1,900.00	
	SE = 0.04	

STATE STREET BANK & TRUST COMPANY  
DB 3162 PG 790  
PB 95 PG 197  
PB 99 PG 147



★ EXIST. SIGNAL

FOR -L- PROFILE SEE SHEET 8

PSH: PREFORMED SCOUR HOLE (SEE DETAIL)

SBG: SHOULDER BERM GUTTER

MATCH TO SHEET 6 STA. 36+00

BECTON, DICKINSON AND COMPANY  
DB 355 PG 158  
PB 60 PG 77

STATE STREET BANK & TRUST COMPANY  
DB 3162 PG 904  
PB CD 05 PG 220

REVISIONS

8/17/99

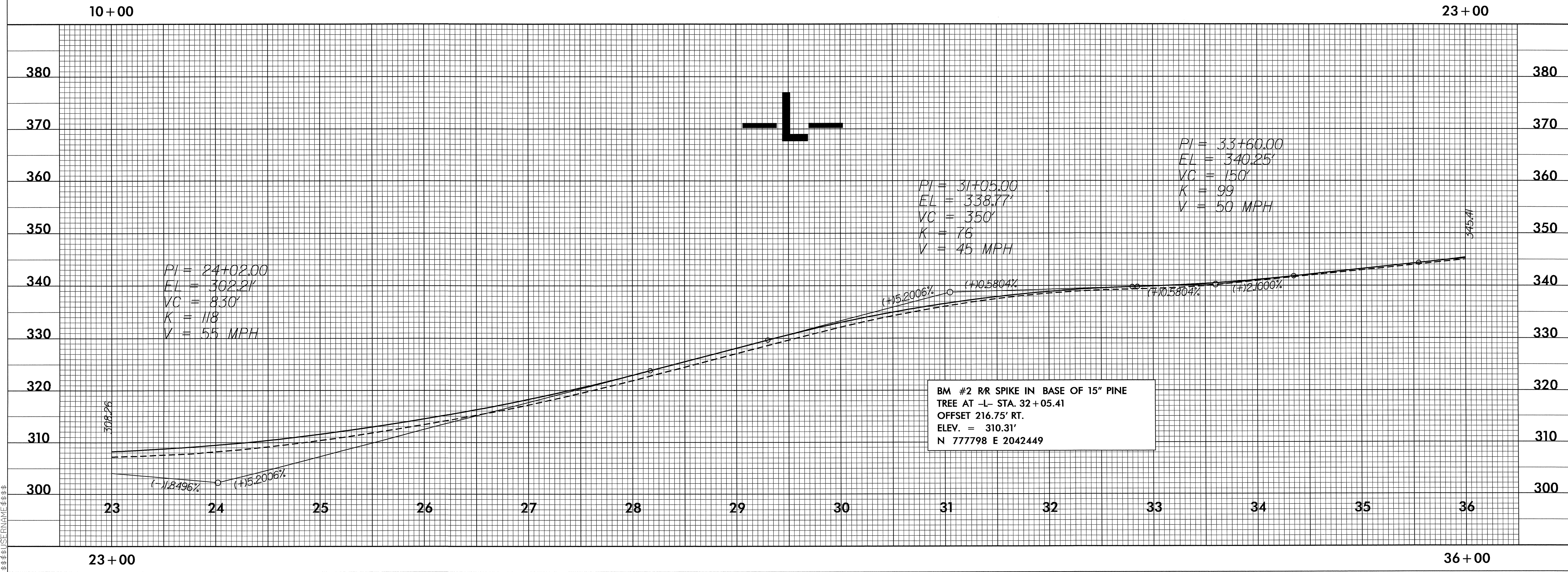
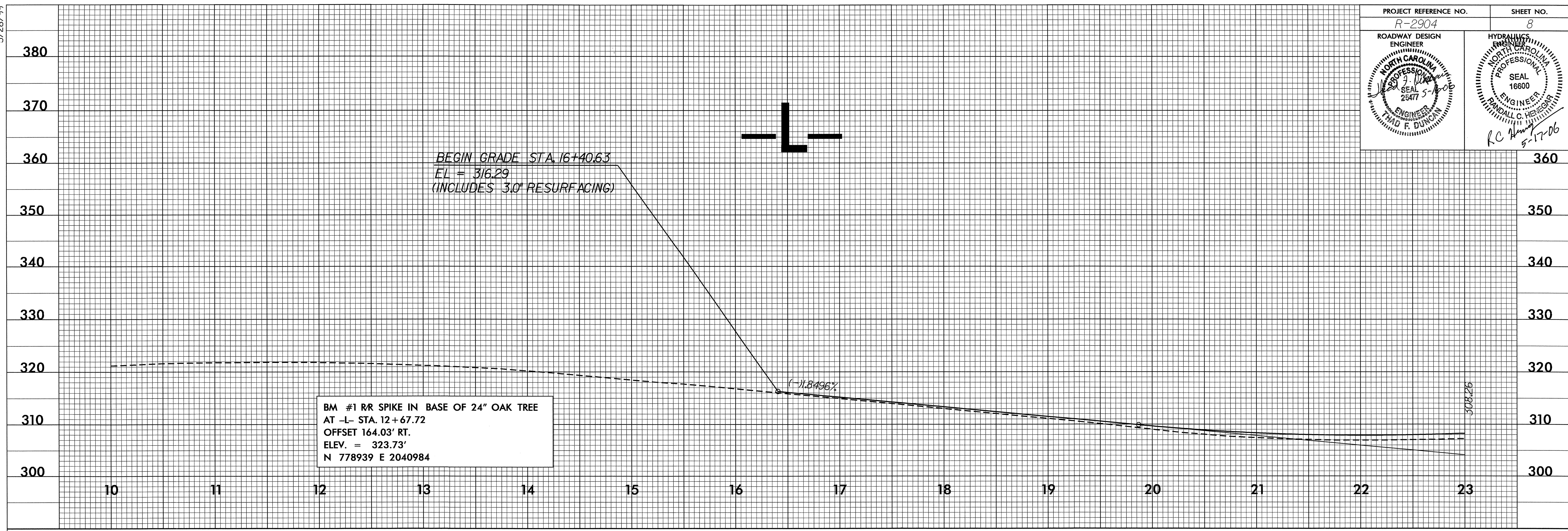
17-JUL-2006 10:03  
r:\proj\2904\04\05\psh  
gsbllell





5/28/99

PROJECT REFERENCE NO. R-2904	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	R.C. H... 5-17-06



04-APR-2006 09:53  
R:\PROJ\2904\PT  
###\$USE ENAME \$\$\$

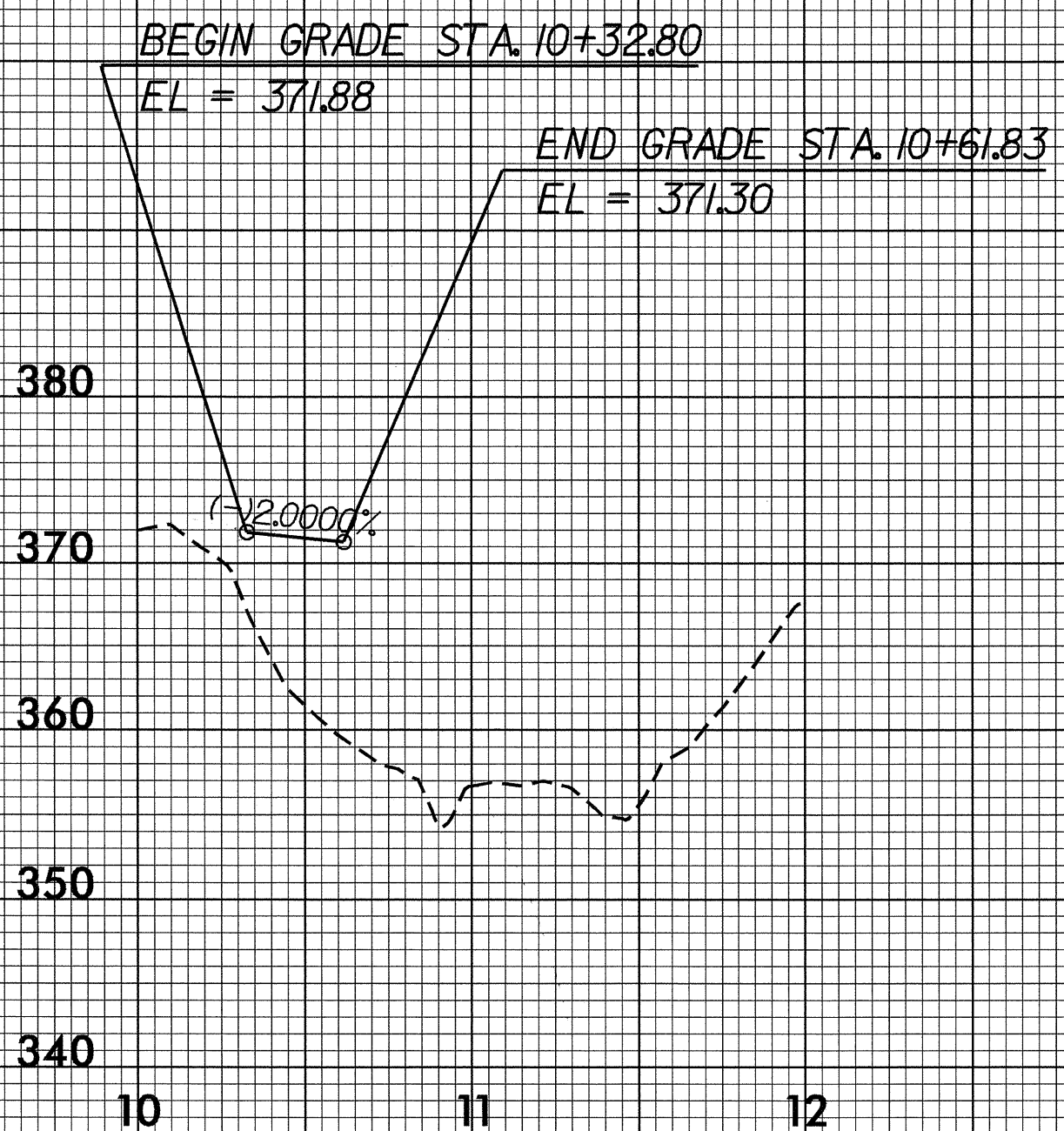


5/28/99

# -DR1-



# -DR2-



# -DR3-



PROJECT REFERENCE NO. R-2904	SHEET NO. 10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
THAD E. DUNCAN	R. G. HEVENER

04-APR-2006 08:53  
RD223228 S10 gsblll RD-Oce34