

09/08/09

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

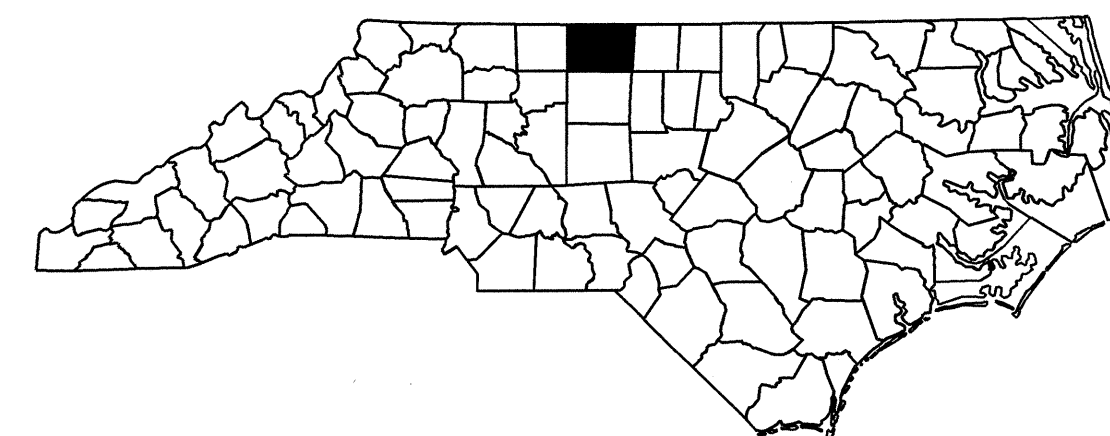
STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

**ROCKINGHAM COUNTY**

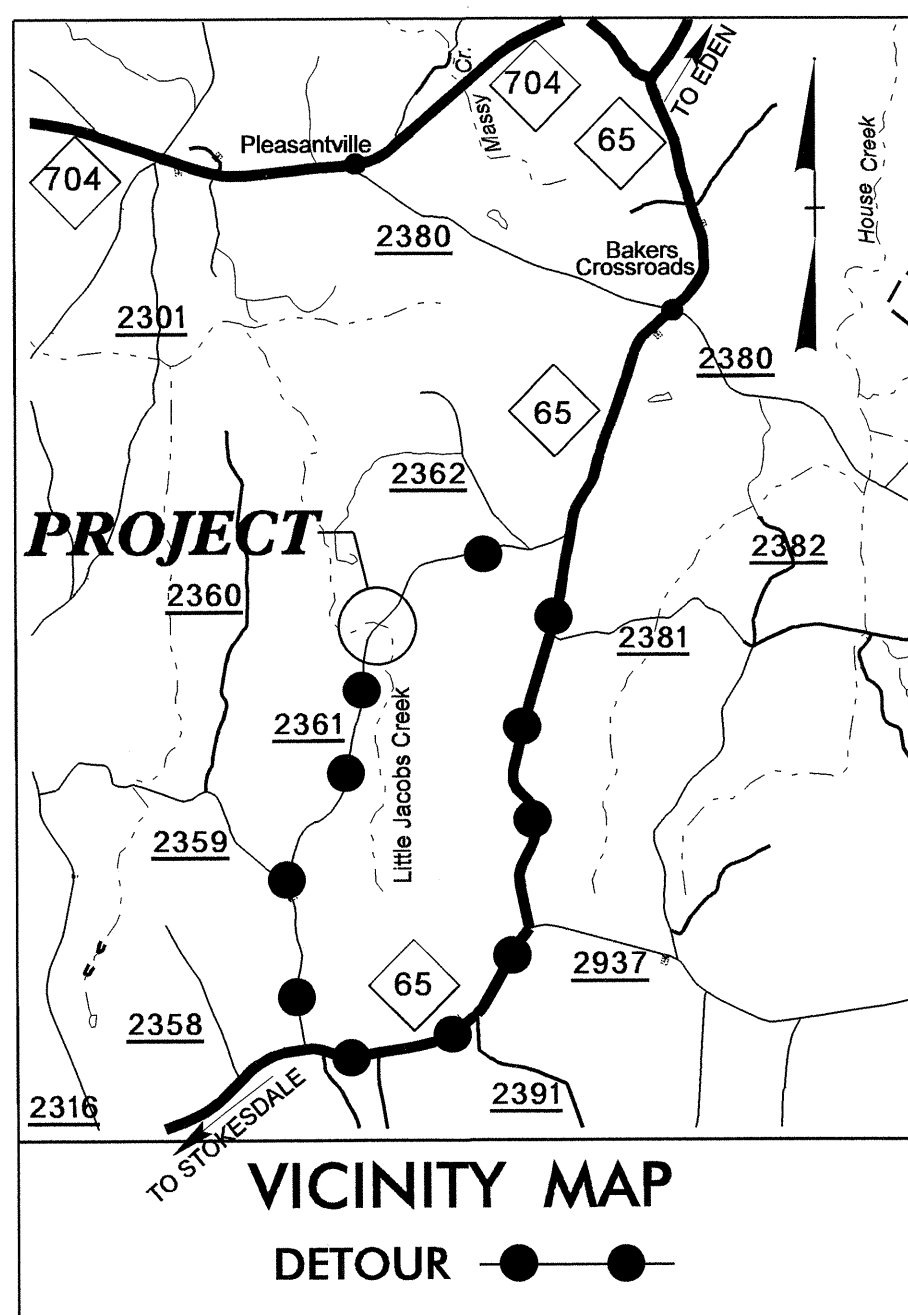
**LOCATION: BRIDGE NUMBER 32 ON SR 2361 (NEW LEBANON CHURCH ROAD) OVER LITTLE JACOB'S CREEK**

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

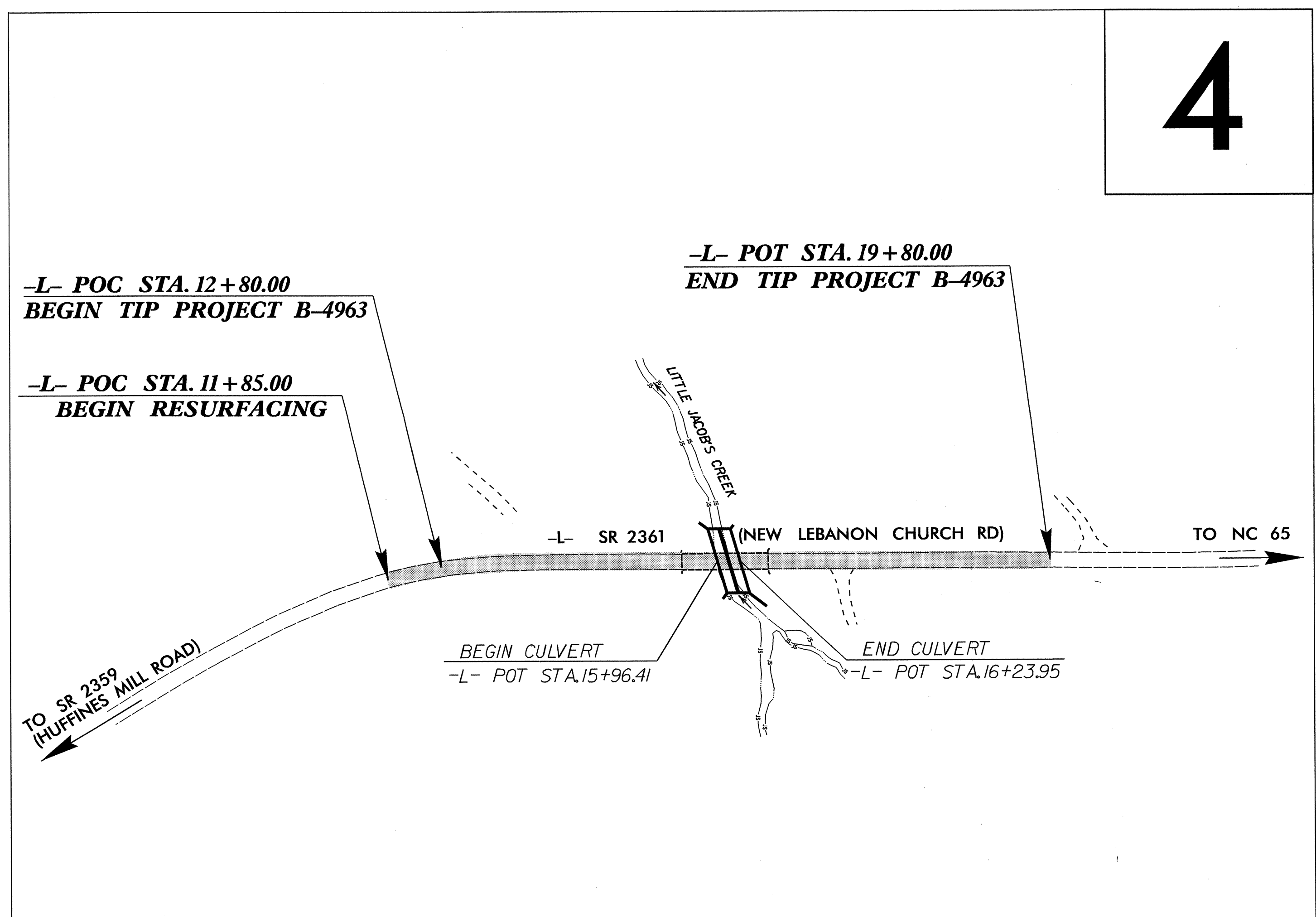
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4963	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40241.1.1	BRZ-2361 (1)	P.E.	
40241.2.1	BRZ-2361 (1)	RW, UTIL.	
40241.3.1	BRZ-2361 (1)	CONST.	



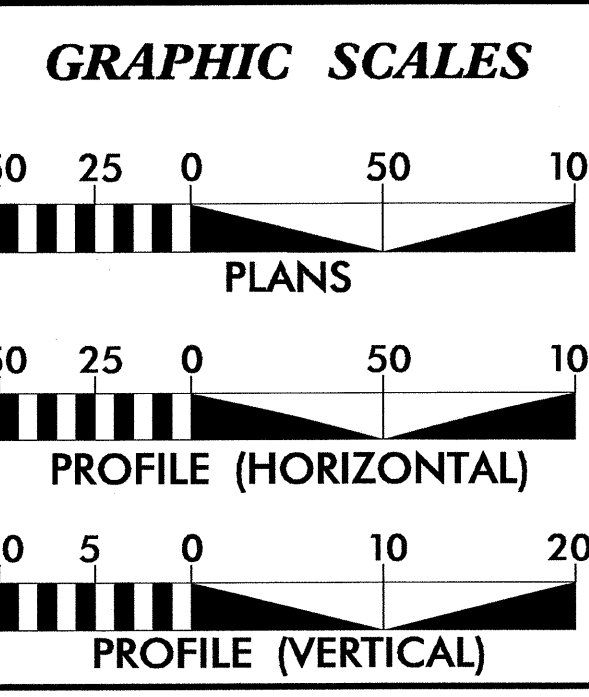
**TIP PROJECT: B-4963**



4



**CONTRACT: C203152**



**DESIGN DATA**

ADT 2013 =	356
ADT 2035 =	620
DHV =	15 %
D =	55 %
T =	6 % *
V =	55 MPH
* TTST =	1 DUAL 5
FUNC CLASS =	RURAL LOCAL
SUB REGIONAL TIER	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4963 =	0.128 MILES
LENGTH STRUCTURES TIP PROJECT B-4963 =	0.005 MILES
TOTAL LENGTH OF TIP PROJECT B-4963 =	0.133 MILES

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

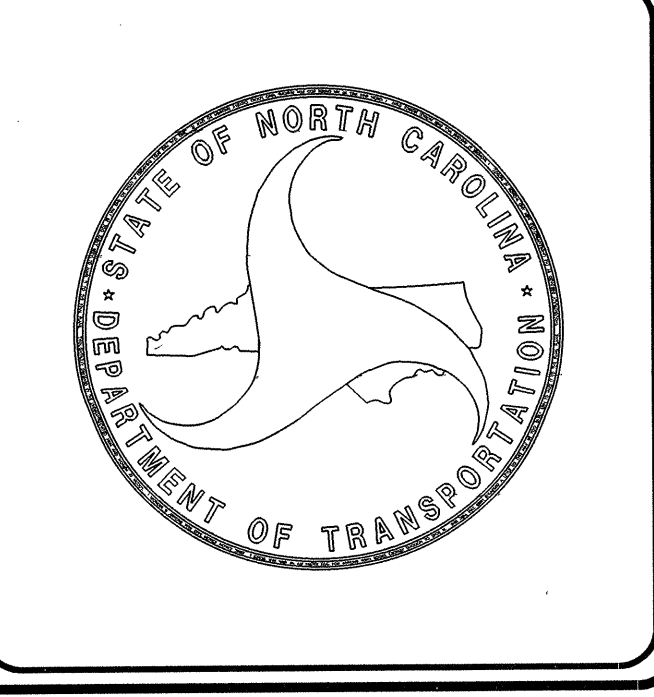
2012 STANDARD SPECIFICATIONS	RIGHT OF WAY DATE:	JASON MOORE, P.E.
	APRIL 20, 2012	PROJECT ENGINEER
	LETTING DATE:	BRYAN KEY, P.E.
	MAY 21, 2013	PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

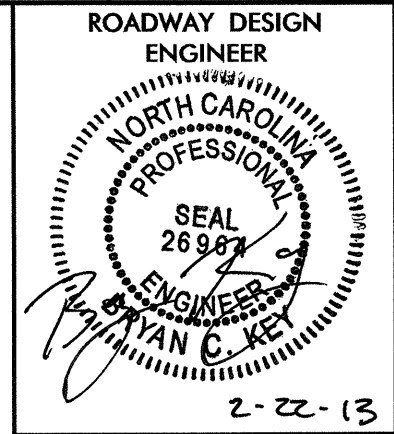
*Amor A. Billings* 2/21/13  
 SIGNATURE: AMOR A. BILLINGS

**ROADWAY DESIGN ENGINEER**

*Bryan C. Key* 2-22-13  
 SIGNATURE: BRYAN C. KEY



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



SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF DRAINAGE QUANTITIES, SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, PAVEMENT REMOVAL SUMMARY, AND SHOULDER BERM GUTTER SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-3	TRANSPORTATION MANAGEMENT PLANS
SD-1	SPECIAL SIGN DESIGN PLANS
PM-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-2	SIGNING PLANS
X-0	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-5	CROSS-SECTIONS
C-1 THRU C-7	STRUCTURE PLANS

**GENERAL NOTES:**

**2012 SPECIFICATIONS**  
EFFECTIVE: 01-17-2012  
REVISED: 07-30-2012

**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.

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

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

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

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

**ROCK**  
ROCK IS ANTICIPATED BETWEEN -L- STA 13+50 TO 14+00 AND -L- STA. 15+96 TO 16+24. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

EFF. 01-17-2012  
REV. 10-30-2012

2012 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 January, 2012 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 Superelevation - Two Lane Pavement
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
<b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b>	
560.01	Method of Shoulder Construction - High Side of Superelevated 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
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
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
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

**Note: Not to Scale**

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

**BOUNDARIES AND PROPERTY:**

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-----
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
Known Soil Contamination: Area or Site	☠-----
Potential Soil Contamination: Area or Site	??-----

**BUILDINGS AND OTHER CULTURE:**

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○
Small Mine	⋈
Foundation	□
Area Outline	□
Cemetery	+
Building	□
School	□
Church	□
Dam	□

**HYDROLOGY:**

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

**RAILROADS:**

Standard Gauge	-----
RR Signal Milepost	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

**RIGHT OF WAY:**

Baseline Control Point	◇
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite RW Marker	-----
Proposed Control of Access Line with Concrete C/A 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 Drainage / Utility Easement	----- DUE
Proposed Permanent Utility Easement	----- PUE
Proposed Temporary Utility Easement	----- TUE
Proposed Aerial Utility Easement	----- AUE
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 Curb 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	----- S
Storm Sewer	----- S

**UTILITIES:**

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

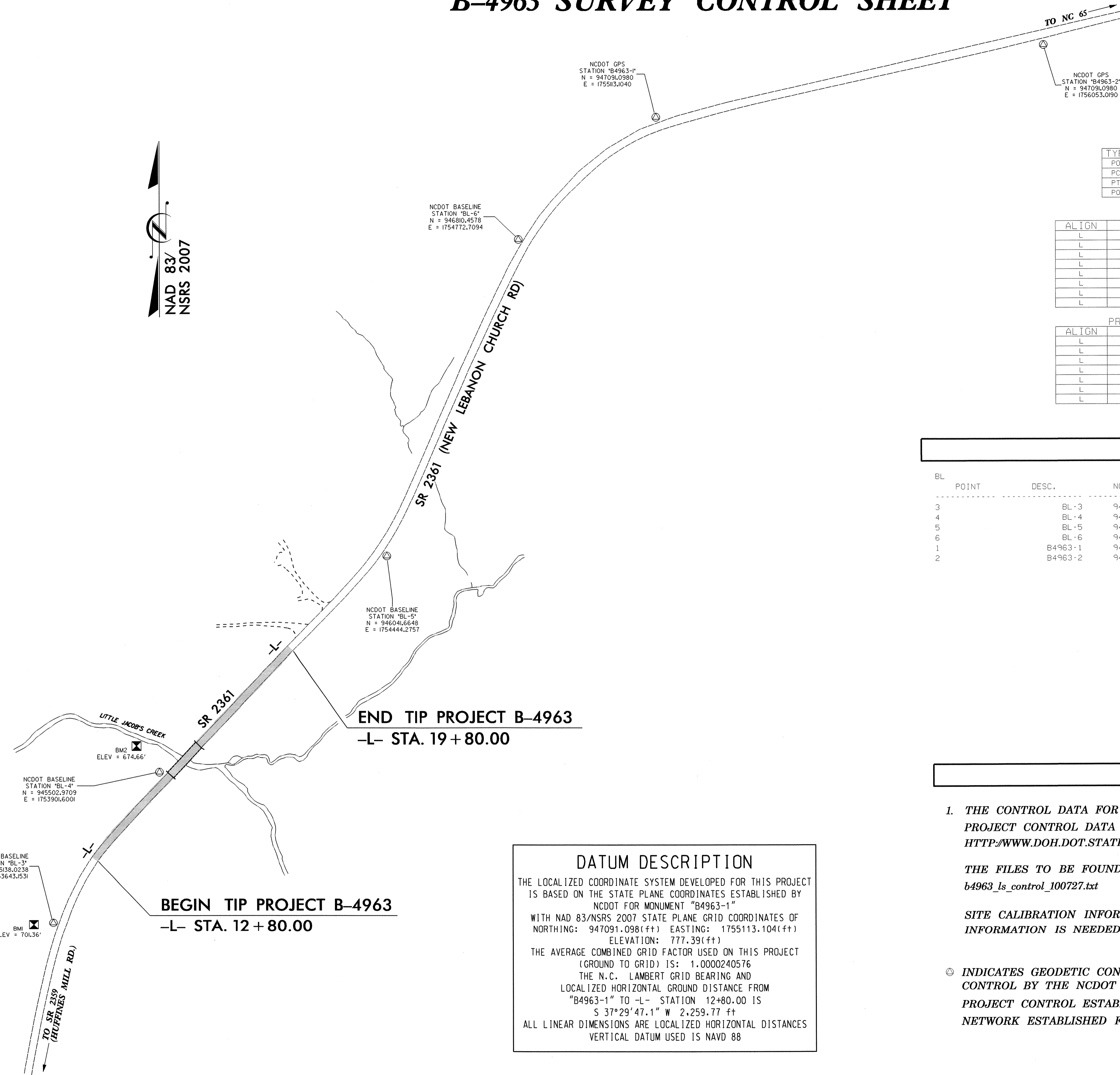
**MISCELLANEOUS:**

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	-----
Underground Storage Tank, Approx. Loc.	----- UST
A/G Tank; Water, Gas, Oil	-----
Geoenvironmental Boring	-----
U/G Test Hole (S.U.E.*)	-----
Abandoned According to Utility Records	----- AATUR
End of Information	----- E.O.I.



# B-4963 SURVEY CONTROL SHEET

12-01/2005  
11-MAR-2015 14:51 \\b4963-1s-1c.dgn  
8333112810.MPF 0.8333



TYPE	STATION	NORTH	EAST
POT	10+00.00	945041.7815	1753629.3306
PC	10+54.46	945094.3447	1753643.5862
PT	13+90.15	945383.7354	1753806.7902
POT	21+60.11	945940.6851	1754338.4309

PRELIMINARY NEW R/W MONUMENTS				
ALIGN	STATION	OFFSET	NORTH	EAST
L	15+50.00	-30.00	945520.0780	1753895.4635
L	15+50.00	-70.00	945547.6972	1753866.5294
L	16+45.00	-70.00	945616.4156	1753932.1251
L	16+45.00	-30.00	945588.7964	1753961.0591
L	16+75.00	30.00	945569.0681	1754025.1746
L	16+75.00	75.00	945537.9964	1754057.7254
L	15+80.00	70.00	945472.7305	1753988.5130
L	15+80.00	30.00	945500.3497	1753959.5790

PRELIMINARY PERMANENT DRAINAGE EASEMENTS				
ALIGN	STATION	OFFSET	NORTH	EAST
L	17+25.50	74.98	945574.5410	1754092.5749
L	15+15.03	70.00	945425.7352	1753943.6532
L	15+15.00	30.00	945453.3319	1753914.6977
L	16+45.00	-55.00	945606.0584	1753942.9753
L	18+90.00	-30.00	945766.0174	1754130.2268
L	13+68.00	29.99	945347.4810	1753814.1231
L	18+95.00	30.00	945728.2864	1754177.0802

### BASELINE DATA

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3	BL-3		945138.0238	1753643.1531	708.22	10+95.73	13.14 LT
4	BL-4		945502.9709	1753901.6001	677.74	15+41.86	13.75 LT
5	BL-5		946041.6648	1754444.2757	718.60		OUTSIDE PROJECT LIMITS
6	BL-6		946810.4578	1754772.7094	747.87		OUTSIDE PROJECT LIMITS
1	B4963-1		947091.0980	1755113.1040	777.39		OUTSIDE PROJECT LIMITS
2	B4963-2		947284.0610	1756053.0190	810.56		OUTSIDE PROJECT LIMITS

### BENCHMARK DATA

.....  
 BM1 ELEVATION = 701.36  
 N 945137 E 1753588  
 L STATION 10+79.00 66 LEFT  
 R/R SPIKE IN BASE OF 36" CLUSTER MAPLE  
 .....  
 BM2 ELEVATION = 674.66  
 N 945574 E 1753839  
 L STATION 15+49.00 108 LEFT  
 R/R SPIKE IN BASE OF 12" PINE  
 .....

### 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/LOCATIONPROJECT/](http://www.doh.dot.state.nc.us/preconstruct/highway/locationproject/)  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 b4963\_ls\_control\_100727.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)

**DATUM DESCRIPTION**  
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4963-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 947091.098(ft) EASTING: 1755113.104(ft) ELEVATION: 777.39(ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000240576  
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4963-1" TO -L- STATION 12+80.00 IS  
 S 37°29'47.1" W 2,259.77 ft  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

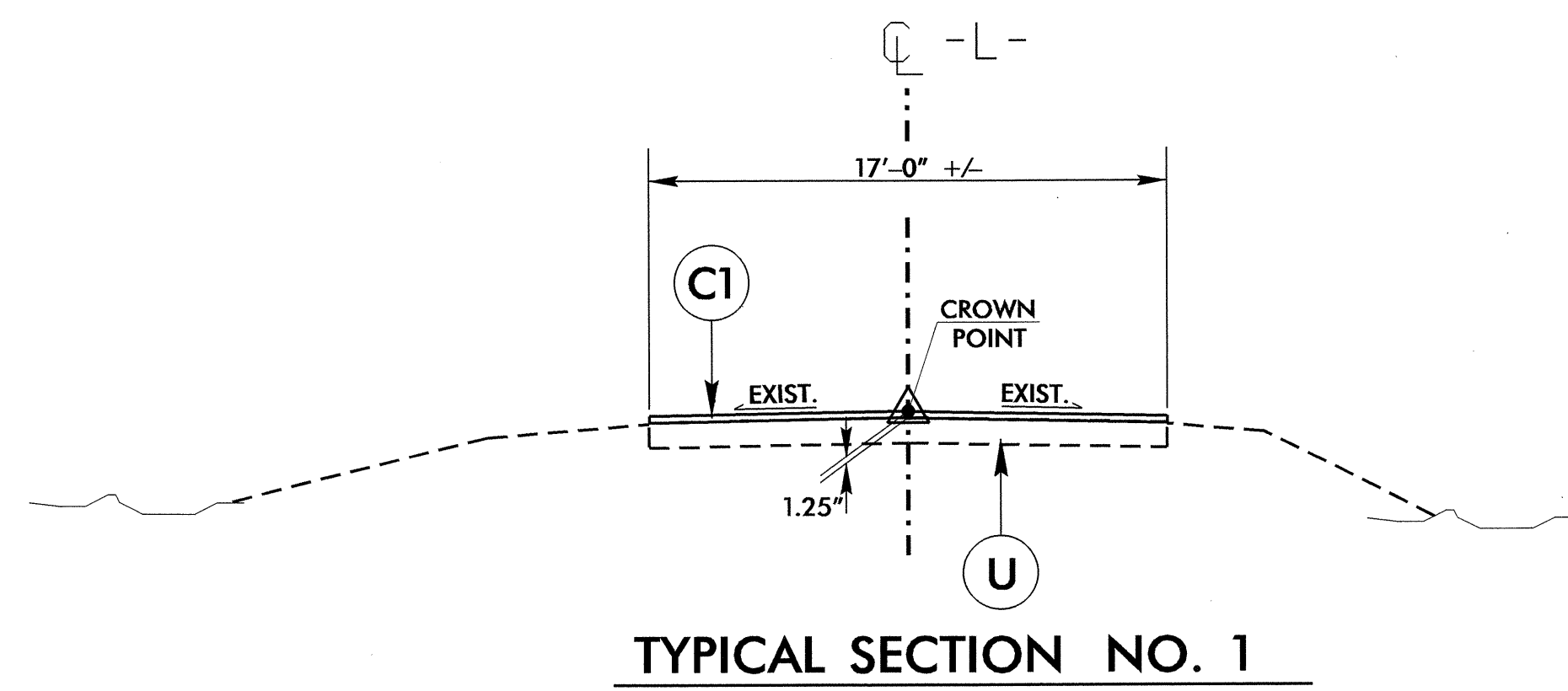
NOTE: DRAWING NOT TO SCALE

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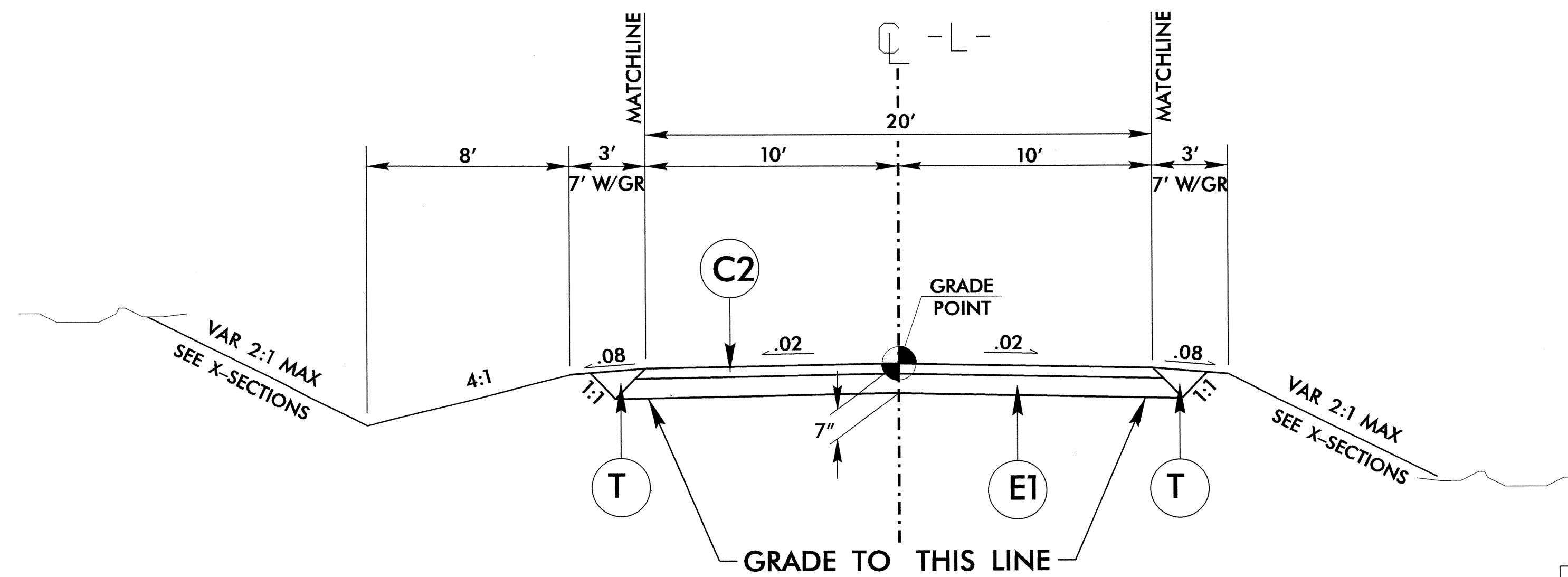
PROJECT REFERENCE NO. B-4963	SHEET NO. 2
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 26964 WILLIAM C. KEY	PAVEMENT DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 22888 CLARK S. MORRISON 3-1-13

PAVEMENT SCHEDULE FINAL PAVEMENT DESIGN			
C1	PROP. APPROX. 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.	R1	3'-0" SHOULDER BERM GUTTER
C2	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	T	EARTH MATERIAL.
E1	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
E2	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	V	VARIABLE DEPTH MILLING

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

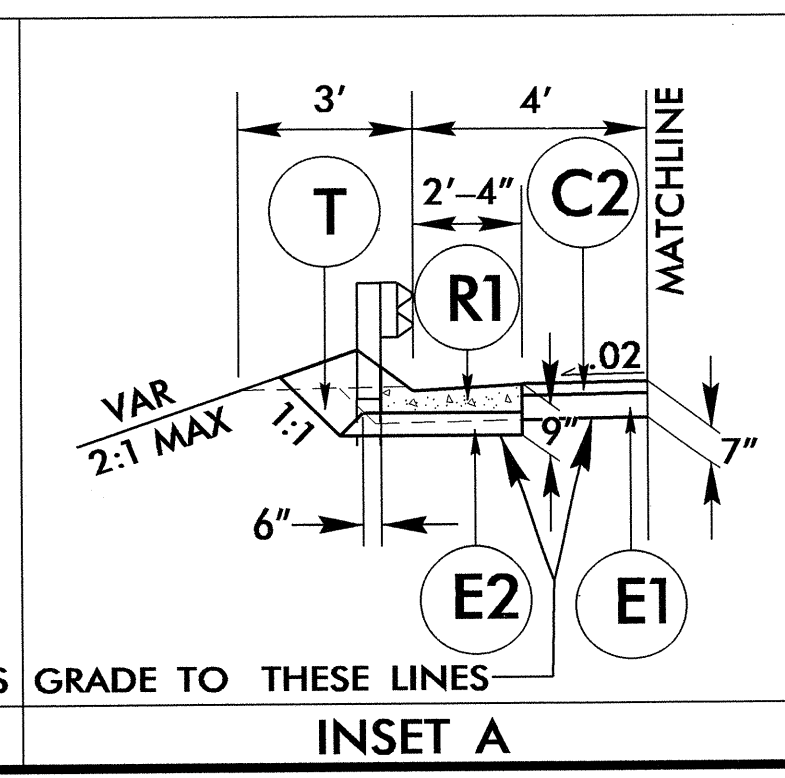
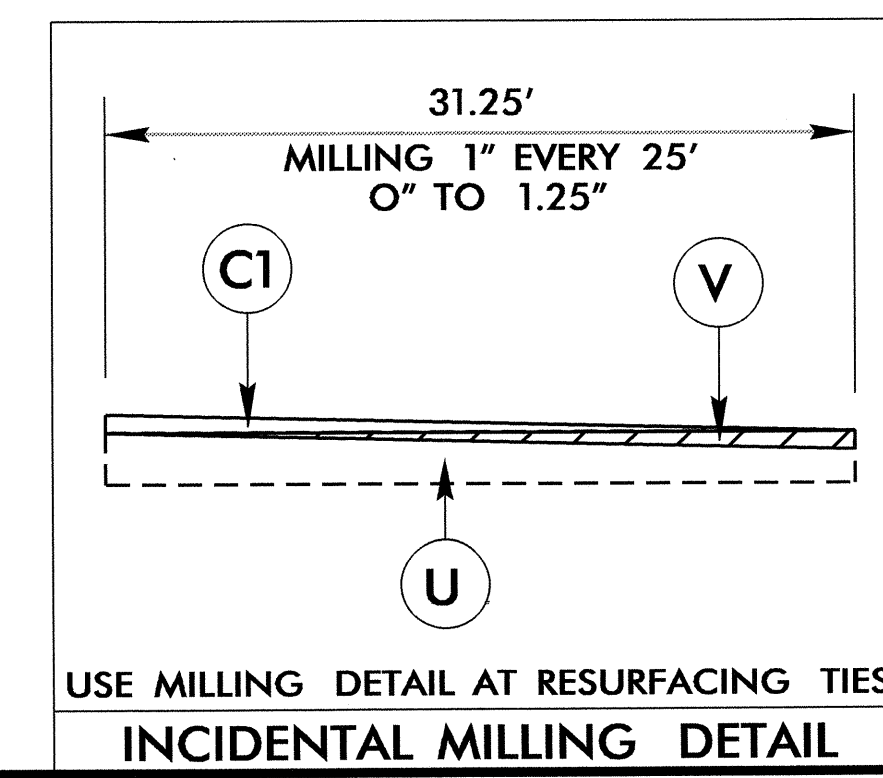


USE TYPICAL SECTION NO. 1  
-L- 11+85.00 to -L- 12+80.00



USE TYPICAL SECTION NO. 2  
-L- 12+80.00 to -L- 19+80.00  
USE INSET A  
-L- 14+78.00 to -L- 17+50.00 LT  
-L- 14+18.00 to -L- 16+68.00 RT

NOTE: USE FULL DEPTH PAVED SHOULDER (FDPS) AT ALL GUARDRAIL (GR) LOCATIONS



USE MILLING DETAIL AT RESURFACING TIES

GRADE TO THESE LINES

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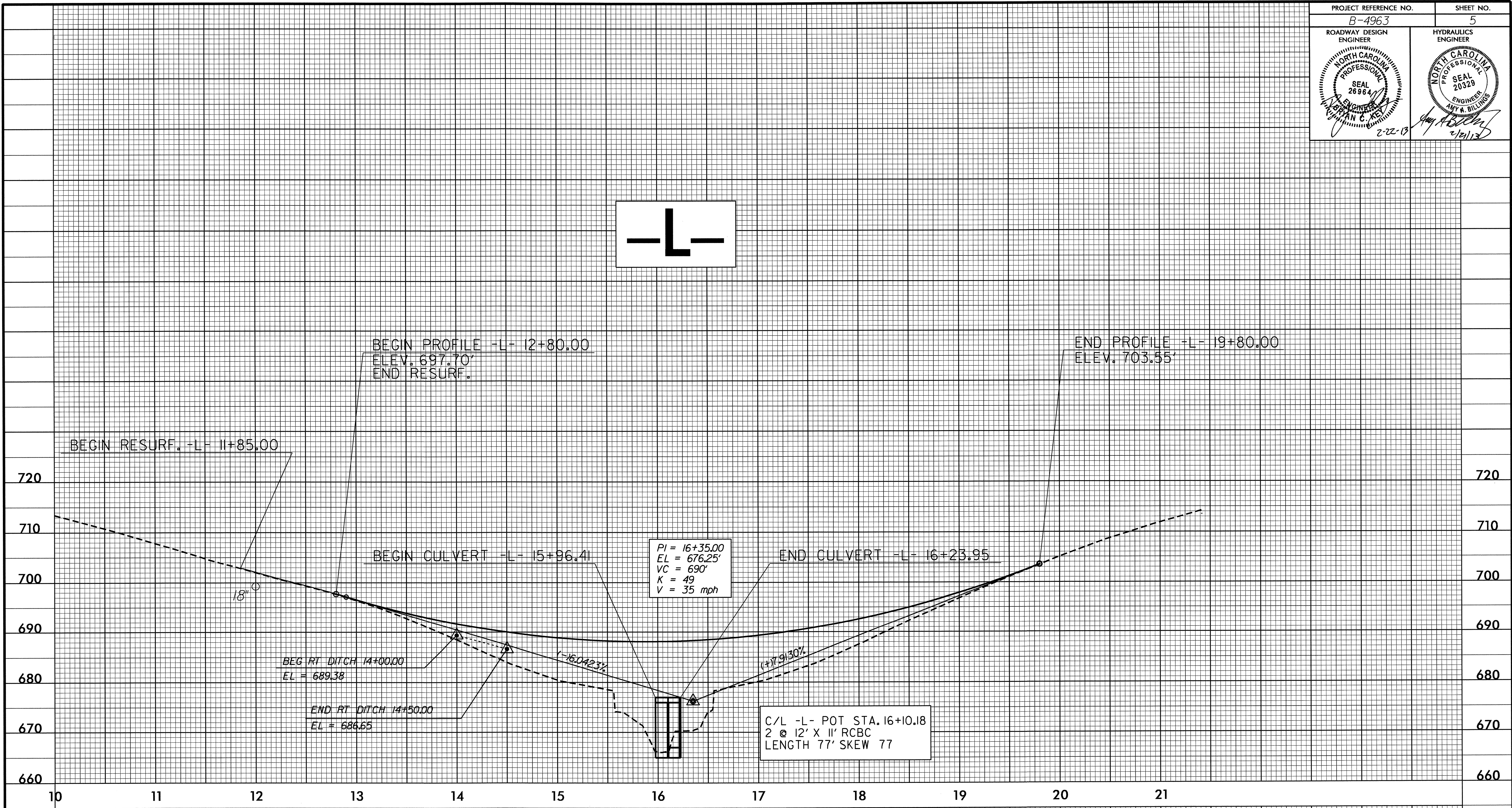
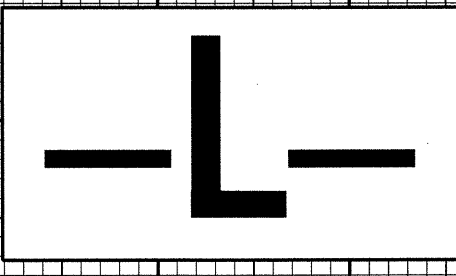












PIPE HYDRAULIC DATA	
DRAINAGE STRUCTURE NO. 0404	
DRAINAGE AREA	= 7 AC
DESIGN FREQUENCY	= 25 YRS
DESIGN DISCHARGE	= 5.32 CFS
DESIGN HW ELEVATION	= 670.0 FT
100 YEAR DISCHARGE	= 8.47 CFS
100 YEAR HW ELEVATION	= 700.46 FT
OVERTOPPING FREQUENCY	= 500 YRS
OVERTOPPING DISCHARGE	= 12.6 CFS
OVERTOPPING ELEVATION	= 701.34 FT

CULVERT HYDRAULIC DATA	
DESIGN DISCHARGE	= 890 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 674.87 FT
BASE DISCHARGE	= 1270 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 676.03 FT
OVERTOPPING DISCHARGE	= 1740+ CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= 688.07 FT

RIGHT DITCH -----

SEE SHEET 4 FOR -L- PLAN VIEW

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