

09/08/09

See Sheet 1-A For Index of Sheets

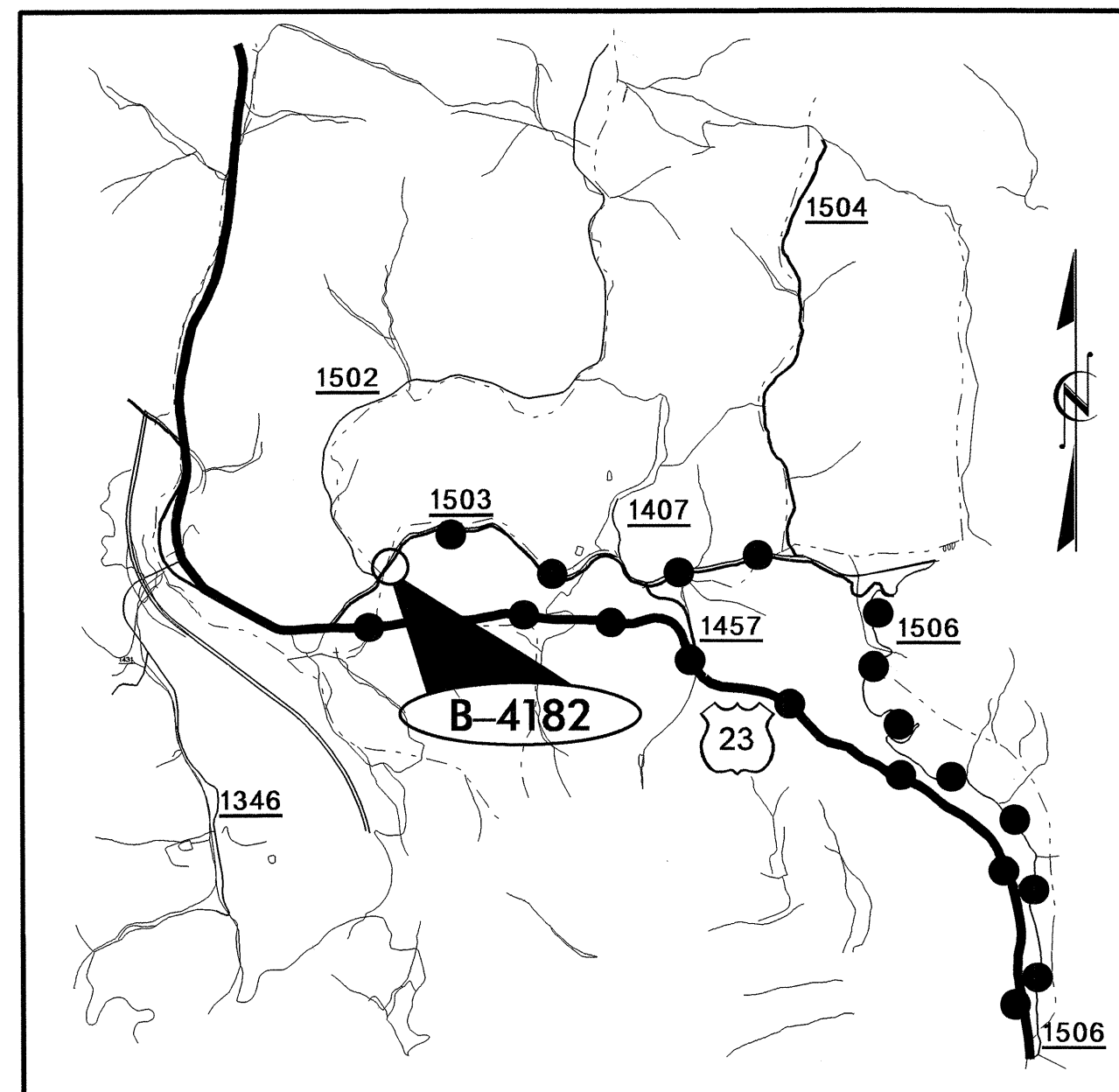
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MADISON COUNTY

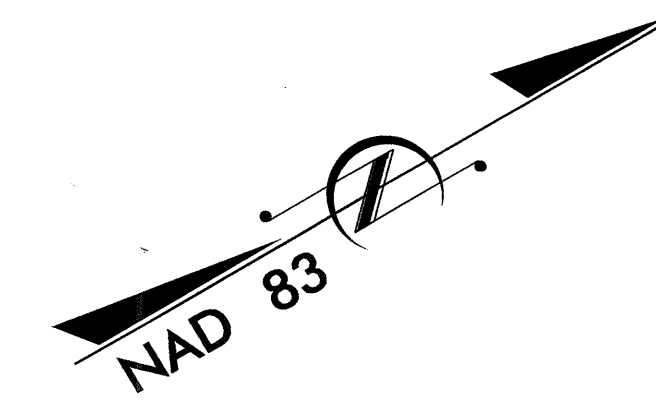
LOCATION: BRIDGE 246 OVER LAUREL CREEK ON SR 1503
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4182	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33529.1.1	BRZ-1503(6)	PE	
33529.2.1	BRZ-1503(6)	RW, UTIL	
17BP.13.R.105		CONST.	

TIP PROJECT: B-4182

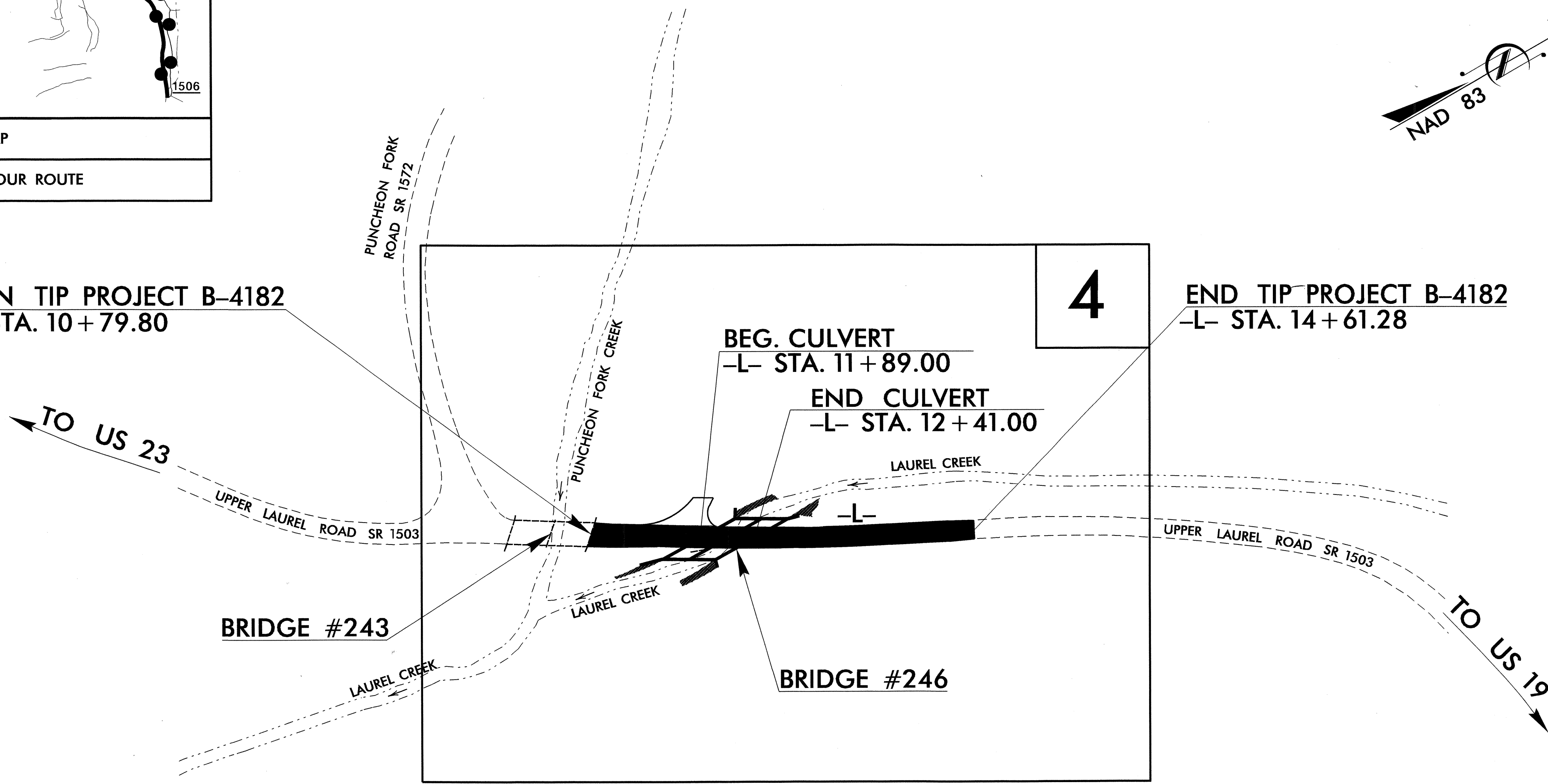


VICINITY MAP
● ● ● ● ● DETOUR ROUTE



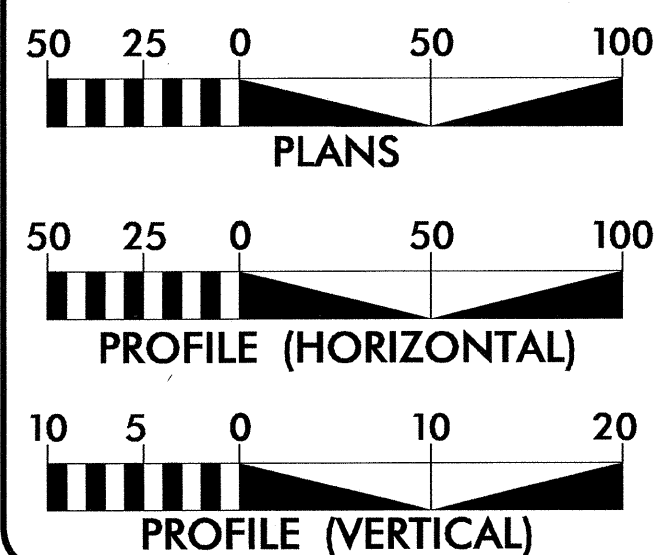
BEGIN TIP PROJECT B-4182
-L- STA. 10+79.80

END TIP PROJECT B-4182
-L- STA. 14+61.28



CONTRACT: C203080

GRAPHIC SCALES



DESIGN DATA

ADT 2013 = 643
 ADT 2030 = 865
 DHV = 10 %
 D = 60 %
 T = 5 % *
 V = 30 MPH
 * TTST 1 DUAL 4
 FUNC. CLASS LOCAL
 SUB REGIONAL TIER
 DESIGN GUIDELINES WERE USED ON THIS PROJECT.

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT B-4182 = 0.062 mi
 LENGTH STRUCTURE F.A. PROJECT B-4182 = 0.010 mi.
 TOTAL LENGTH STATE PROJECT B-4182 = 0.072 mi

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
 JANUARY 13, 2012

LETTING DATE:
 MARCH 19, 2013

JIMMY GOODNIGHT, PE
 PROJECT ENGINEER

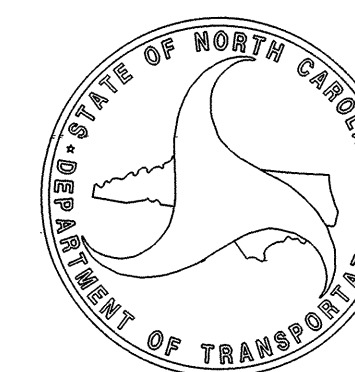
MARK HUSSEY
 PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

Signature: *Stephen R. Norman* 12/29/12
 SEAL 22100
 NORTH CAROLINA PROFESSIONAL ENGINEER
 STEPHEN R. NORMAN

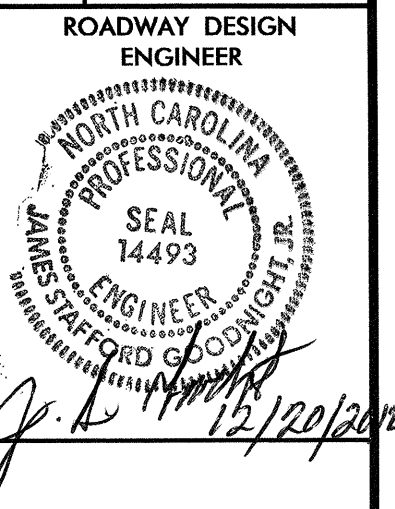
ROADWAY DESIGN ENGINEER

Signature: *Jimmy Goodnight* 12/29/12
 SEAL 14493
 NORTH CAROLINA PROFESSIONAL ENGINEER
 JIMMY GOODNIGHT



13-DEC-2012 09:54
 R:\Roadway\Proj\B4182_rdy_tsh.dgn
 \$\$\$USERNAME\$\$\$

8/17/99



INDEX OF SHEETS, GENERAL NOTES & 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 THRU 1-D	SURVEY CONTROL SHEETS
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF DRAINAGE, GUARDRAIL, EARTHWORK, SUBSURFACE DRAINAGE, AND ASPHALT PAVEMENT REMOVAL
4	PLAN/PROFILE SHEET
TMP-1 THRU TMP-4	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
RF-1	REFORESTATION PLAN
SIGN-1 THRU SIGN-2	SIGNING PLANS
X-1	EARTHWORK VOLUME SHEET
X-2 THRU X-9	CROSS-SECTIONS
C-1 THRU C-10	CULVERT PLANS

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 07-30-12

GRADING AND SURFACING OR RESURFACING AND WIDENING:
THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED 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 III.

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.

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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

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:
RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS AND BY CONTRACT IN ACCORDANCE WITH DESIGNATED SYMBOLS.

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
	DIVISION 2 - EARTHWORK
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
	DIVISION 3 - PIPE CULVERTS
300.01	Method of Pipe Installation
	DIVISION 5 - SUBGRADE, BASES AND SHOULDERS
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
	DIVISION 6 - ASPHALT BASES AND PAVEMENTS
654.01	Pavement Repairs
	DIVISION 8 - INCIDENTALS
806.01	Concrete Right-of-Way Markers
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
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
876.01	Rip Rap in Channels
876.03	Drainage Ditches with Class 'A' Rip Rap

EFF. 01-17-12

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

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	◻ ECM
Parcel/Sequence Number	⑩③
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-
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	○ 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	→ FLOW
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	○ RW
Proposed Right of Way Line with Iron Pin and Cap Marker	○ RW ▲
Proposed Right of Way Line with Concrete or Granite RW Marker	▲ RW
Proposed Control of Access Line with Concrete C/A Marker	▲ C/A
Existing Control of Access	○ C/A
Proposed Control of Access	○ C/A
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	○ CR
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	◻ 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	-UTIL-
U/G Tank; Water, Gas, Oil	◻
Underground Storage Tank, Approx. Loc.	⊕
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.

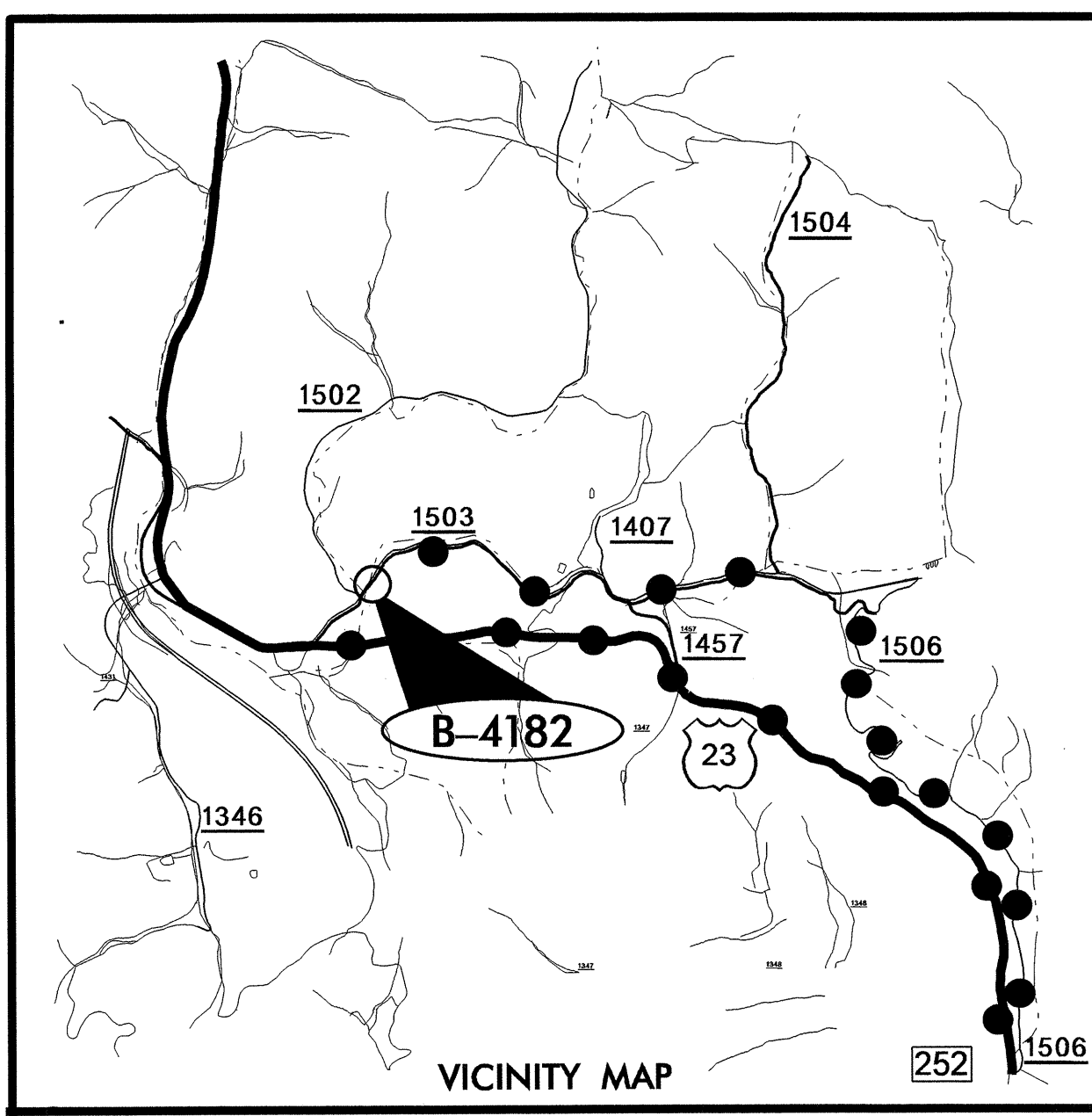
SURVEY CONTROL SHEET B-4182

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4182-2"

WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
 NORTHING: 804519.2980(ft) EASTING: 950634.9788(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999812074
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4182-2" TO -L- STATION 10+00.00 IS
 N 33-50-09 E 237.90'
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
GPS1	B4182-1		803774.2100	949857.2840	2983.14	OUTSIDE PROJECT LIMITS	
2	BL-2		804299.3860	950234.5210	3004.82	OUTSIDE PROJECT LIMITS	
GPS2	B4182-2		804519.2980	950634.9788	3006.29	OUTSIDE PROJECT LIMITS	
4	BL-4		804959.9300	950913.1210	2997.85	12+83.48	17.66 LT
5	BL-5		805406.7840	951228.8220	3021.28	OUTSIDE PROJECT LIMITS	

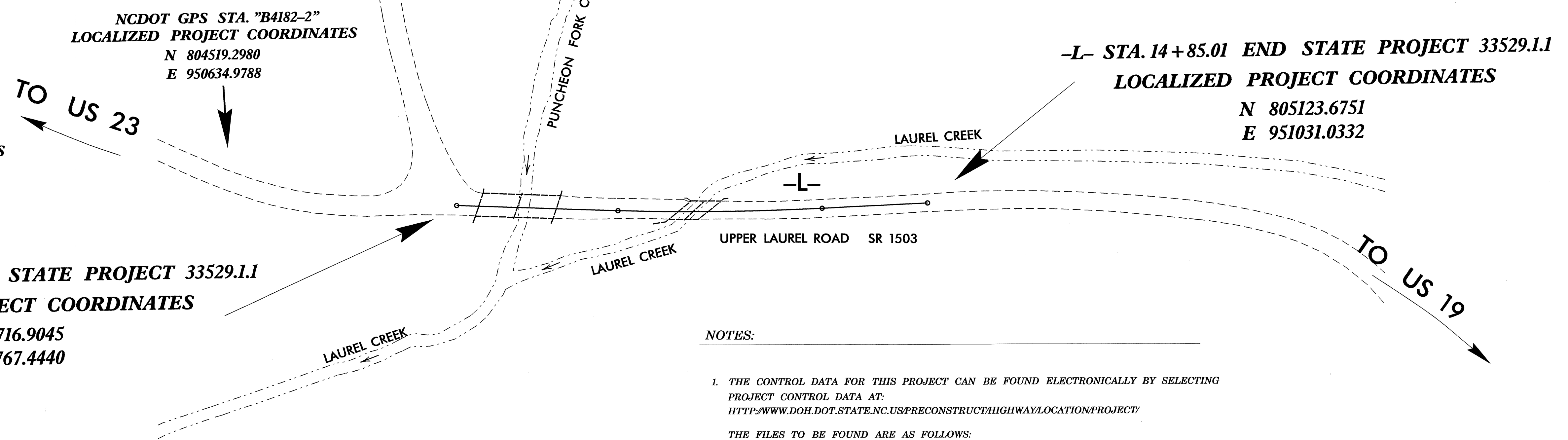
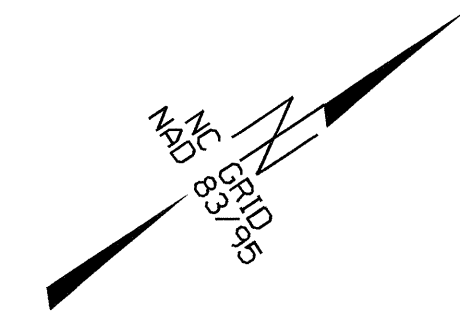


● —●—● —●—● —●—● —●—● —●—●
 DETOUR ROUTE

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    .....
    BM1 ELEVATION = 2997.79
    N 804703 E 950778
    L STATION 10+00
    S 37° 12' 18.0" E DIST 17.46
    .....

    .....
    BM2 ELEVATION = 3007.98
    N 805104 E 950987
    L STATION 14+46 28 LEFT
    .....
    
```



- NOTES:
- 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:
 B4182_LS_CONTROL_051228.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)

NOTE: DRAWING NOT TO SCALE

SURVEY CONTROL SHEET B-4182



PROJECT REFERENCE NO.	SHEET NO.
B-4182	1 - D
Location and Surveys	

FINAL

(-L- DESIGN ALIGNMENT)

	STATION	NORTH	EAST
POT	10+00.00	804716.9045	950767.4440
PC	11+66.12	804852.8684	950862.8829
PT	13+76.28	805029.7563	950976.2614
POT	14+85.01	805123.6751	951031.0332

(-L- ROW MONUMENTS)

ALIGN	STATION	OFFSET	NORTH	EAST
L	10+80.00	18.50	804771.7544	950828.5483
L	11+00.00	35.00	804778.6444	950853.5439
L	11+90.00	-16.33	804881.7372	950863.0539
L	12+00.00	-35.00	804900.4508	950853.2445
L	12+20.00	35.00	804877.8147	950922.4364
L	12+50.00	15.52	804913.8377	950922.9071
L	13+25.00	-35.00	805003.9725	950920.1074
L	13+25.00	-15.78	804993.9526	950936.5064

(-L- PERMANENT EASEMENTS)

ALIGN	STATION	OFFSET	NORTH	EAST
L	10+65.00	18.50	804759.4771	950819.9304
L	11+35.00	75.00	804784.3102	950906.3917
L	12+40.00	-70.00	804952.4656	950845.9741
L	13+10.00	-70.00	805009.8026	950882.6021

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/)

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● INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

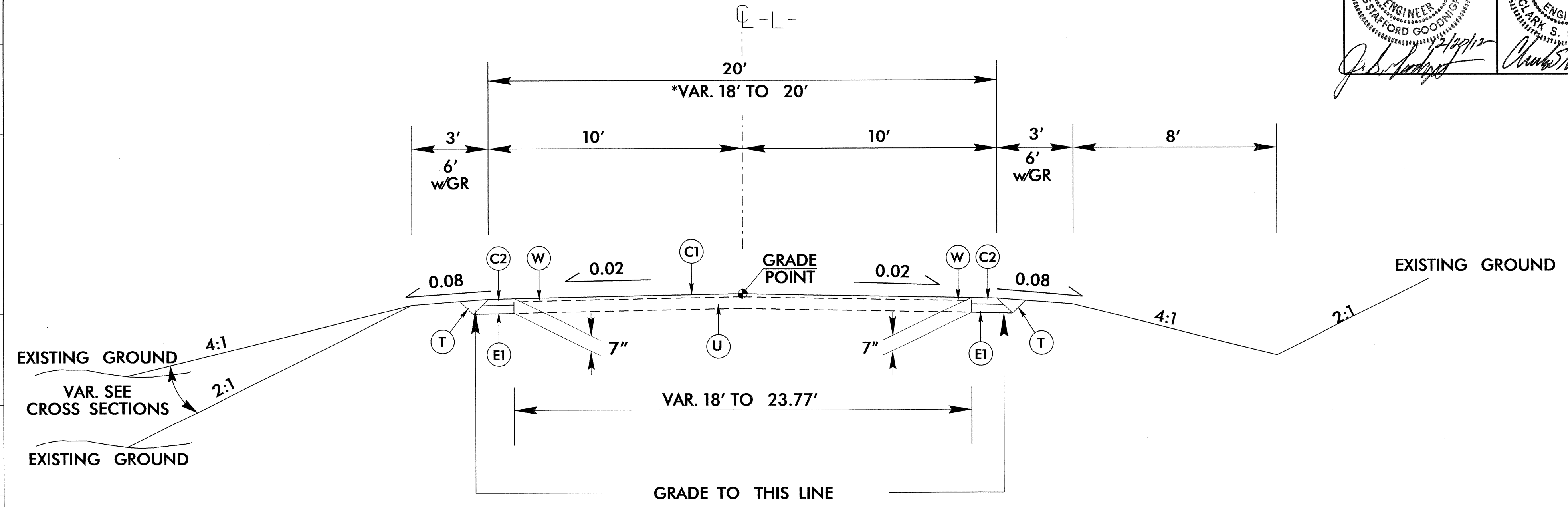
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "B4182-2"
 WITH NAD 83 STATE PLANE GRID COORDINATES OF
 NORTHING: 804519.3063(FT) EASTING: 950634.9885(FT)
 ELEVATION: 3006.29(FT)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999812074
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4182-2" TO -L- STATION 10+00.00 IS
 N 33-50-09.13 E 237.90'
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

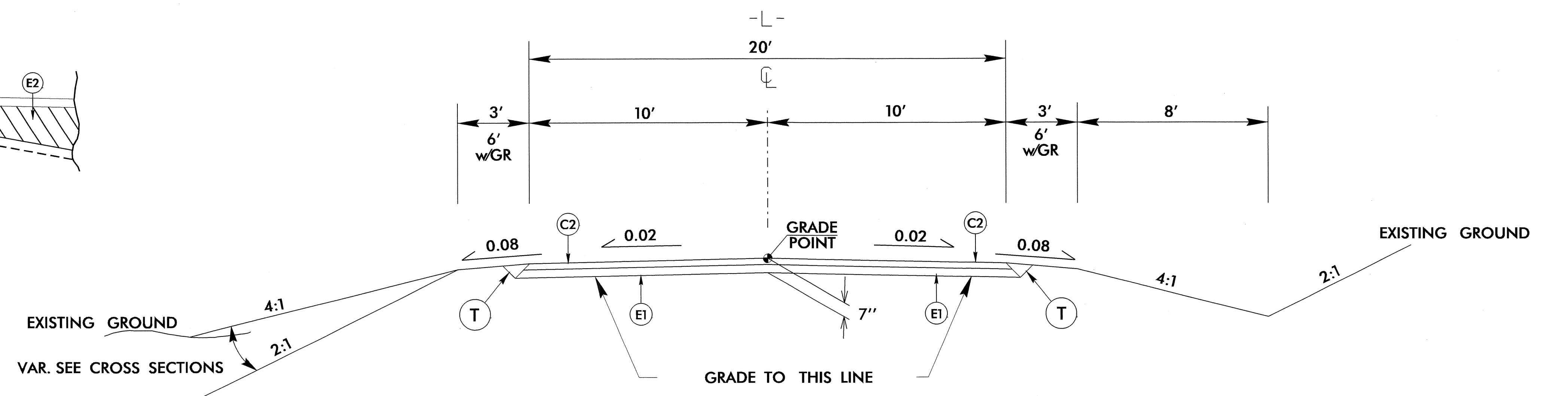
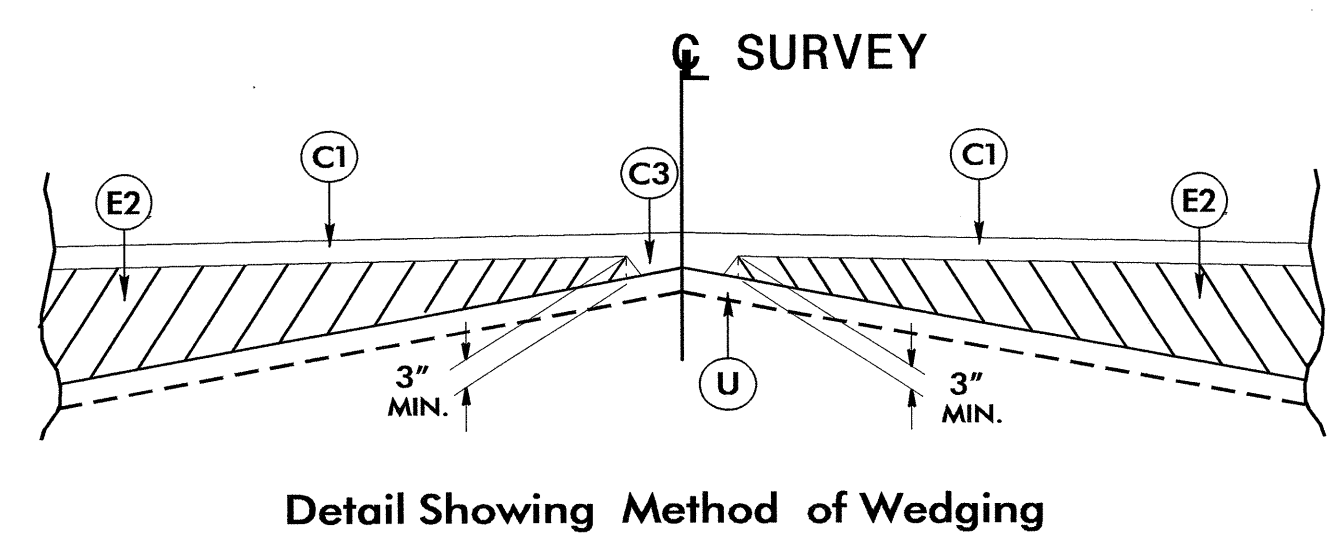
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH AND NOT LESS THAN 1" IN DEPTH.
E1	PRO. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE TYPE B25.0B, 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
T	EARTH MATERIAL.
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO.1 AS FOLLOWS
 -L- 10+79.80 TO 11+56.00
 -L- 12+86.00 TO 14+36.28
 *-L- 14+36.28 TO 14+61.28

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



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO.2 AS FOLLOWS
 -L- 11+56.00 TO 12+86.00

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C203080

ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION	3030000000-E	862	425	LF	STEEL BM GUARDRAIL	6024000000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING	3045000000-E	862	37.5	LF	STEEL BM GUARDRAIL, SHOP CURVED	6029000000-E	SP	600	LF	SAFETY FENCE
0043000000-N	226	Lump Sum		GRADING	3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS	6030000000-E	1630	75	CY	SILT EXCAVATION
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING	3165000000-N	SP	3	EA	GUARDRAIL ANCHOR UNITS, TYPE ***** (350 TL-2)	6036000000-E	1631	725	SY	MATting FOR EROSION CONTROL
0057000000-E	226	600	CY	UNDERCUT EXCAVATION	3195000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1	6037000000-E	SP	375	SY	COIR FIBER MAT
0195000000-E	265	500	CY	SELECT GRANULAR MATERIAL	3317000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77	6038000000-E	SP	75	SY	PERMANENT SOIL REINFORCEMENT MAT
0196000000-E	270	1,100	SY	GEOTEXTILE FOR SOIL STABILIZATION	3628000000-E	876	100	TON	RIP RAP, CLASS I	6042000000-E	1632	50	LF	1/4" HARDWARE CLOTH
0199000000-E	SP	1,200	SF	TEMPORARY SHORING	3642000000-E	876	50	TON	RIP RAP, CLASS A	6070000000-N	1639	5	EA	SPECIAL STILLING BASINS
0318000000-E	300	10	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	3656000000-E	876	570	SY	GEOTEXTILE FOR DRAINAGE	6071012000-E	SP	75	LF	COIR FIBER WATTLE
0320000000-E	300	10	SY	FOUNDATION CONDITIONING GEOTEXTILE	4072000000-E	903	62	LF	SUPPORTS, 3-LB STEEL U-CHANNEL	6071020000-E	SP	25	LB	POLYACRYLAMIDE (PAM)
0594000000-E	310	16	LF	24" CS PIPE CULVERTS, 0.064" THICK	4102000000-N	904	5	EA	SIGN ERECTION, TYPE E	6084000000-E	1660	0.5	ACR	SEEDING & MULCHING
1099700000-E	505	600	TON	CLASS IV SUBGRADE STABILIZATION	4155000000-N	907	9	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	6087000000-E	1660	0.15	ACR	MOWING
1220000000-E	545	100	TON	INCIDENTAL STONE BASE	4400000000-E	1110	391	SF	WORK ZONE SIGNS (STATIONARY)	6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
1330000000-E	607	105	SY	INCIDENTAL MILLING	4410000000-E	1110	106	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)	6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
1489000000-E	610	90	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B	4430000000-N	1130	20	EA	DRUMS	6096000000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
1525000000-E	610	110	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A	4445000000-E	1145	88	LF	BARRICADES (TYPE III)	6108000000-E	1665	0.25	TON	FERTILIZER TOPDRESSING
1575000000-E	620	15	TON	ASPHALT BINDER FOR PLANT MIX	4507000000-E	1170	115	LF	WATER FILLED BARRIER	6111000000-E	SP	375	LF	IMPERVIOUS DIKE
1693000000-E	654	25	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR	4810000000-E	1205	2,837	LF	PAINT PAVEMENT MARKING LINES (4")	6114500000-N	1667	10	MHR	SPECIALIZED HAND MOWING
2000000000-N	806	7	EA	RIGHT OF WAY MARKERS	6000000000-E	1605	1,125	LF	TEMPORARY SILT FENCE	6117000000-N	SP	18	EA	RESPONSE FOR EROSION CONTROL
2022000000-E	815	112	CY	SUBDRAIN EXCAVATION	6006000000-E	1610	225	TON	STONE FOR EROSION CONTROL, CLASS A	6120000000-E	SP	415	CY	CULVERT DIVERSION CHANNEL
2033000000-E	815	84	CY	SUBDRAIN FINE AGGREGATE	6009000000-E	1610	30	TON	STONE FOR EROSION CONTROL, CLASS B	6123000000-E	1670	0.1	ACR	REFORESTATION
2044000000-E	815	500	LF	6" PERFORATED SUBDRAIN PIPE	6012000000-E	1610	125	TON	SEDIMENT CONTROL STONE					
2070000000-N	815	1	EA	SUBDRAIN PIPE OUTLET	6015000000-E	1615	0.5	ACR	TEMPORARY MULCHING					
2077000000-E	815	6	LF	6" OUTLET PIPE	6018000000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING					
2209000000-E	838	1.4	CY	ENDWALLS	6021000000-E	1620	0.25	TON	FERTILIZER FOR TEMPORARY SEEDING					

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4/04/06

COMPUTED BY: Johnson	DATE: 8/1/2011
CHECKED BY: B. FOWLER	DATE: 11/26/2012

PROJECT REFERENCE NO.	SHEET NO.
B-4182	3-A

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

**STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS**

**SUB-REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)**

STATION	LOCATION (L/RT OR CL)	STRUCTURE NO.	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)								C.S. PIPE				R.C. PIPE (CLASS III)				R.C. PIPE (CLASS IV)				CONTRACTOR DESIGN PIPE	CONTRACTOR DESIGN PIPE	ENDWALLS		FRAME, GRATES AND HOOD STANDARD 840.03	CONCRETE TRANSITIONAL SECTION		CONC. COLLARS CL. #8" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS			
							12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	.064	.064	.064	.064	.079	.109	.15"	.18"			.24"	.30"		.36"	.42"					.48"	.15"	.18"
-L- 12 + 19	RT	1		2995.66	2991.85																																			
TOTAL																																								

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS						IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS		
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	GRAU 350 TYPE TL 2	B-77	AT-1						EA	G	NG						
-L-	10 + 76.00	13 + 50.00	RT	275.00				11 + 50.00	3	6	200		4																
-L-	10 + 83.00	11 + 35.00	LT	56.25				10 + 83.00	3	6		6.25		0.125															
-L-	12 + 00.00	14 + 09.00	LT	193.75	37.5			12 + 75.50	3	6							1												
SUBTOTAL				525.00	37.5												3	2	1										
ANCHOR DEDUCTIONS:																													
GRAU-350 (3 @ 25')				-75.00																									
B-77 (2 @ 18.75')				-37.50																									
AT-1 (1 @ 6.25')				-6.25																									
TOTAL				412.50	31.25																								
SAY				425.00	37.5			ADDITIONAL GUARDRAIL POSTS =	5ea																				

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION L/RT/CL	YD ²
-L-	11 + 56	12 + 06 (Beg. Ex. Bridge)	CL	118.11
-L-	12 + 36 (End. Ex. Bridge)	12 + 86	CL	100.67
TOTAL:				218.78
SAY:				225

SUMMARY OF EARTHWORK

LINE	STATION	STATION	UNCL. EXCAV.	EMBANK. +/-	BORROW	WASTE
-L-	10 + 79.80	14 + 61.28	39	290	251	
EXCAV. PER SURVEY REPORT 11/21/2006			15			15
SUBTOTALS:			54	290	251	15
USE WASTE IN LIEU OF BORROW					-15	-15
PROJECT TOTALS:			54		236	0
5% REPLACE TOPSOIL ON BORROW PIT					12	
GRAND TOTAL:			54		248	
SAY:			60		260	

GEOTECH REC's:

- UNDERDRAINS 500 FT
- GEOTEXTILE FOR SOIL STABILIZATION 500 CY
- UNDERCUT 600 CY
- SELECT GRANULAR MAT., CL II & III 500 CY
- CLASS IV SUBGRADE STABILIZATION 600 TONS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	STATION	STATION	LOCATION L/RT/CL	DRAIN TYPE UDBDSD	LF
CONTINGENCY				UD	500
TOTAL:					500
SAY:					500

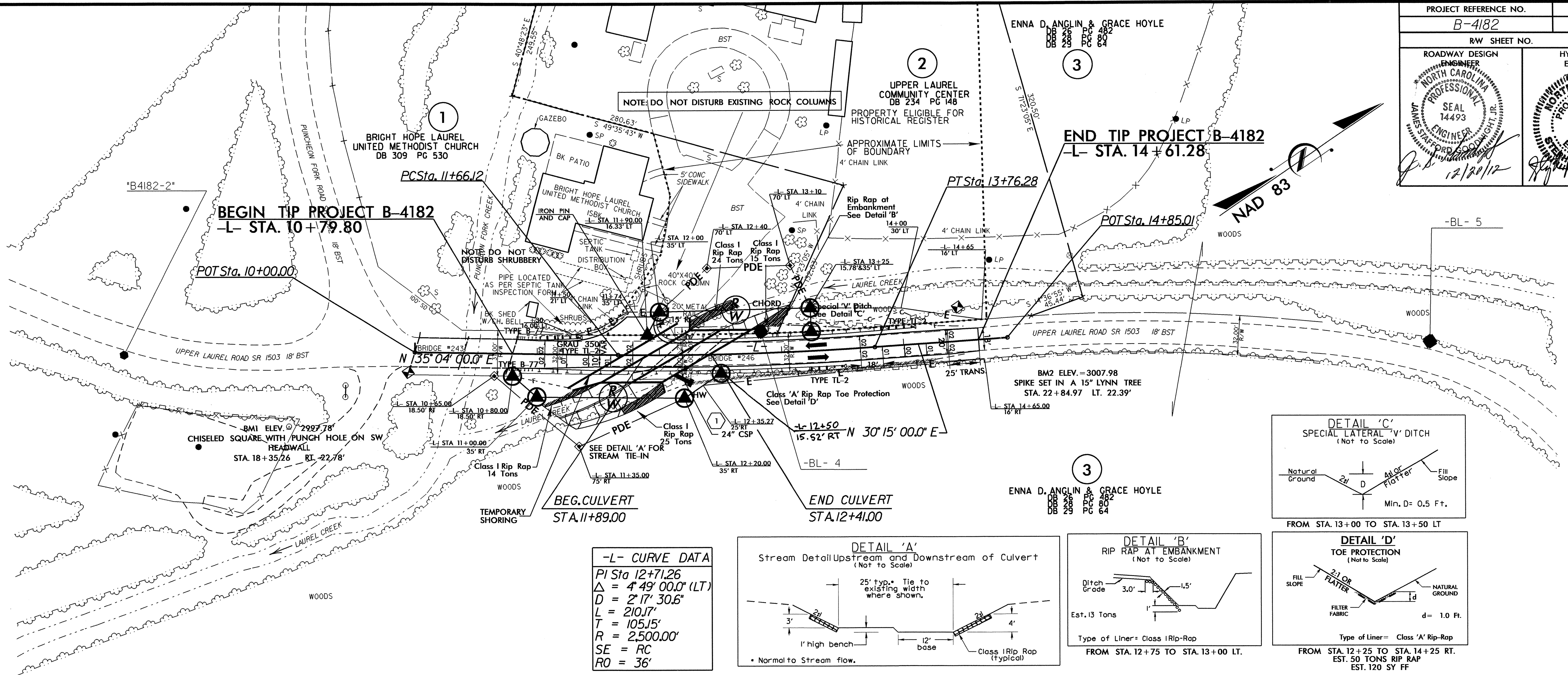
Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

Approximate quantities only. Borrow excavation, unclassified excavation, fine grading, clearing and grubbing and removal of existing pavement will be paid for at lump sum price of grading.

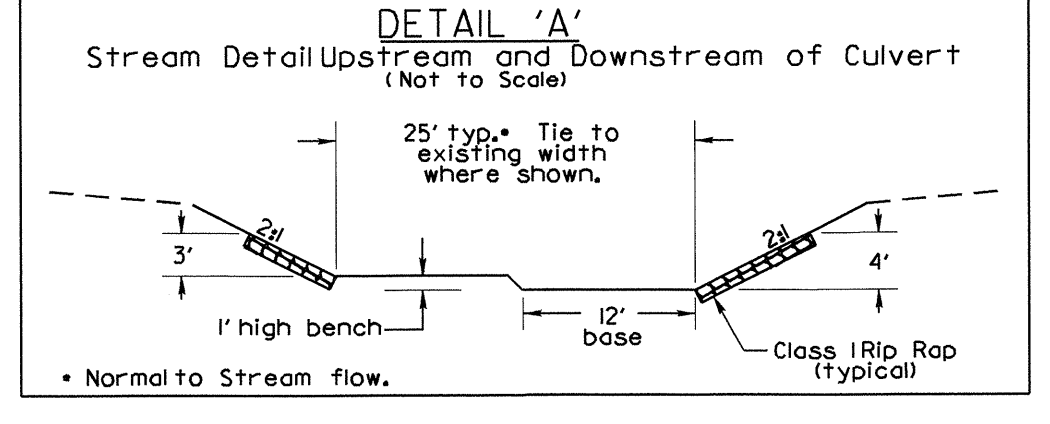
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PROJECT REFERENCE NO. B-4182	SHEET NO. 4
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 14493 JAMES STAFFORD SCOTT 12/20/12	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 22100 12/29/12

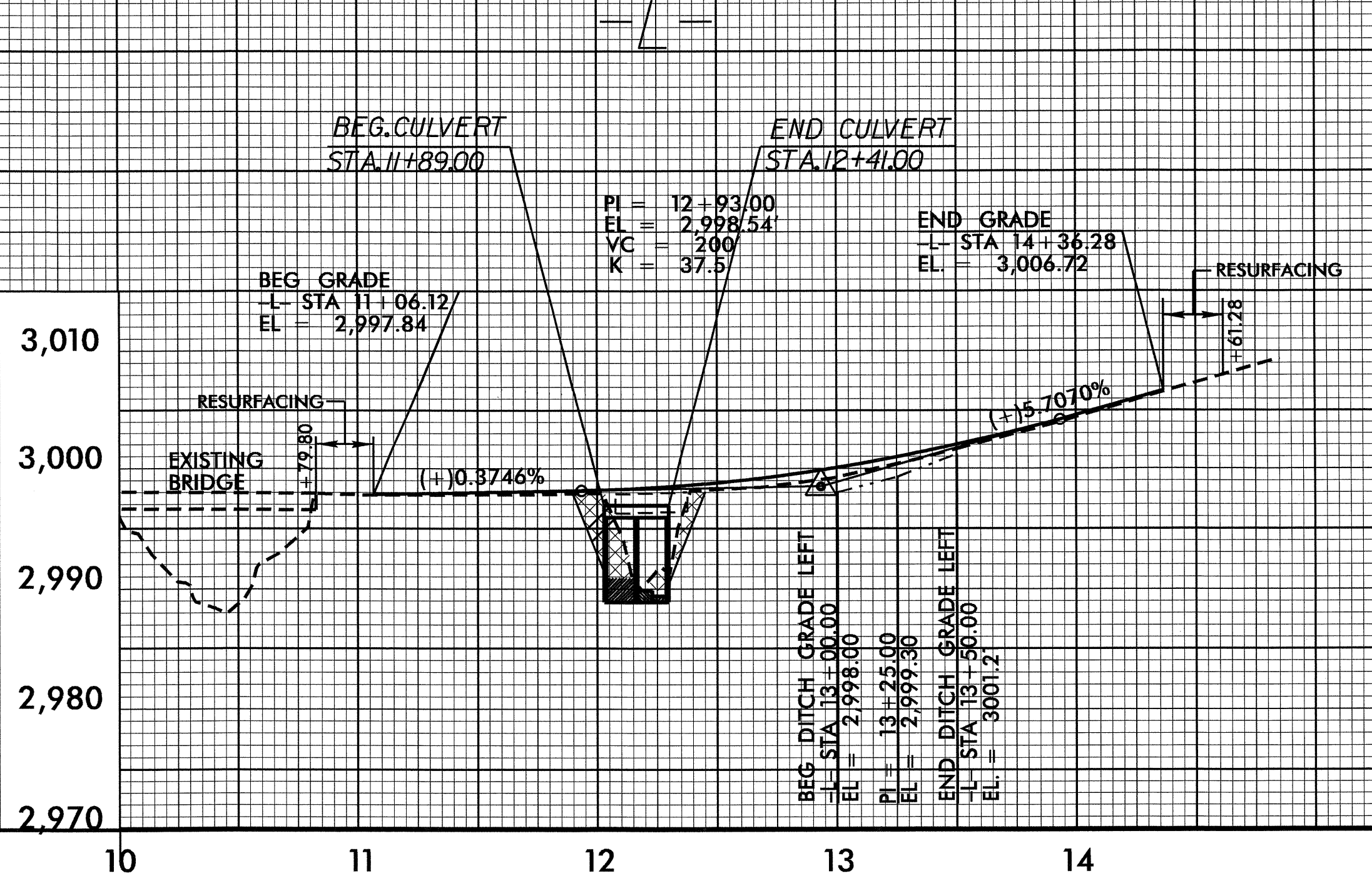


-L- CURVE DATA
 PI Sta 12+71.26
 $\Delta = 4^{\circ} 49' 00.0"$ (LT)
 $D = 2' 17' 30.6"$
 $L = 210.17'$
 $T = 105.15'$
 $R = 2,500.00'$
 $SE = RC$
 $RO = 36'$



BMI ELEV. = 2997.78'
 CHISELED SQUARE WITH PUNCH HOLE ON SW HEADWALL
 BL STA. 18+35.26 RT. 22.78'

BMI ELEV. = 3007.98
 SPIKE SET IN A 15" LYNN TREE
 BL STA. 22+84.97 LT. 22.39'



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1,050	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2,994.80	FT
BASE DISCHARGE	= 1,700	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2,997.40	FT
OVERTOPPING DISCHARGE	= 1,800	CFS
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING ELEVATION	= 2,997.80	FT

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