

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4162	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33510.1.1	BRZ-1432(2)	PE	
33510.2.1	BRZ-1432(2)	UTIL. & RAW	
33510.3.1	BRZ-1432(2)	CONST.	

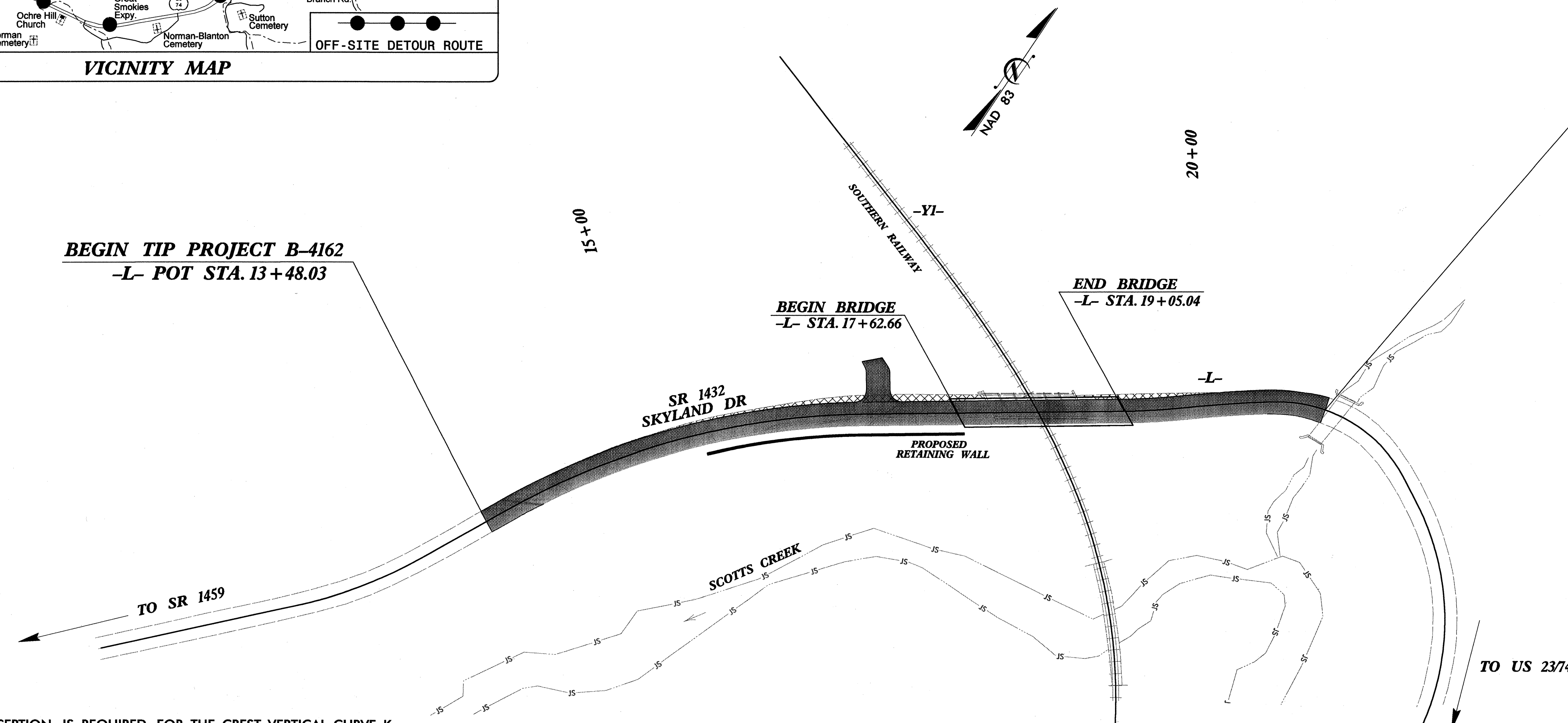
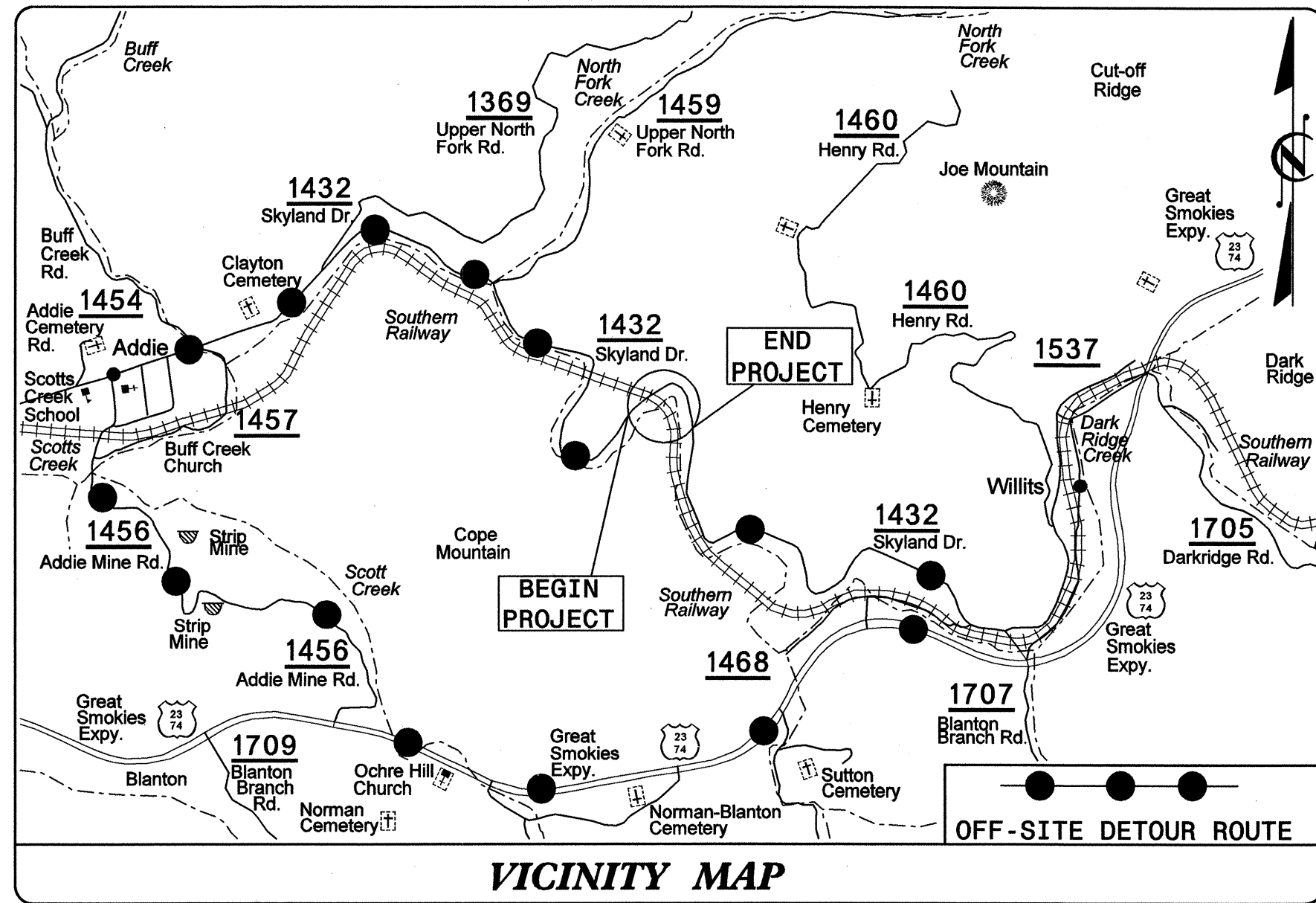
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JACKSON COUNTY

LOCATION: BRIDGE NO. 320 OVER SOUTHERN RAILWAY ON SR 1432 (SKYLAND DRIVE)

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

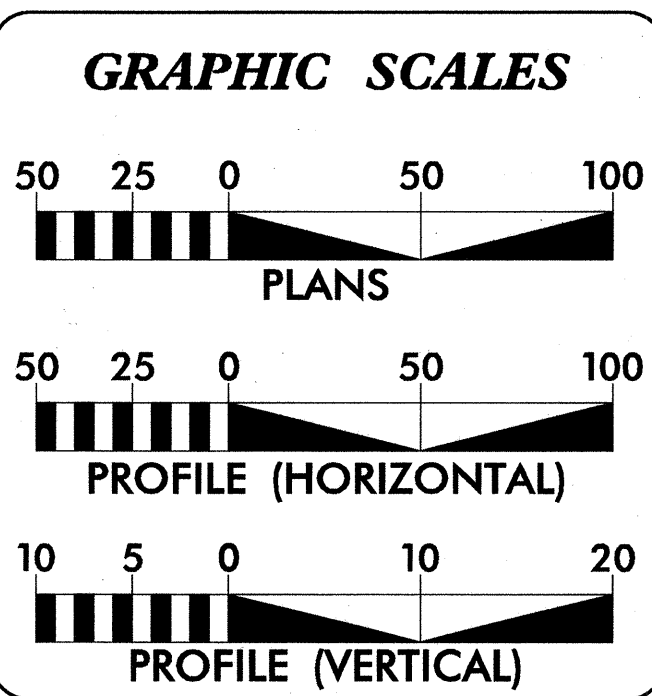
See Sheet 1-A For Index of Sheets



NOTE: A DESIGN EXCEPTION IS REQUIRED FOR THE CREST VERTICAL CURVE K AND VERTICAL SSD.

TIP PROJECT: B-4162

CONTRACT: C202843



DESIGN DATA

ADT 2012 =	315
ADT 2035 =	400
DHV =	14 %
D =	60 %
T =	9 % *
V =	35 MPH
* TTST 1%	DUAL 8%
CLASSIFICATION =	RURAL LOCAL
SUBREGIONAL TIER DESIGN	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4162 =	0.111 MILES
LENGTH STRUCTURE TIP PROJECT B-4162 =	0.027 MILES
TOTAL LENGTH TIP PROJECT B-4162 =	0.138 MILES

Prepared for the North Carolina Department of Transportation in the Office of:

WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD
SUITE 164
RALEIGH, N.C. 27606
LICENSE NO. E-40377
BUS. 919 851 8077
FAX 919 851 8107

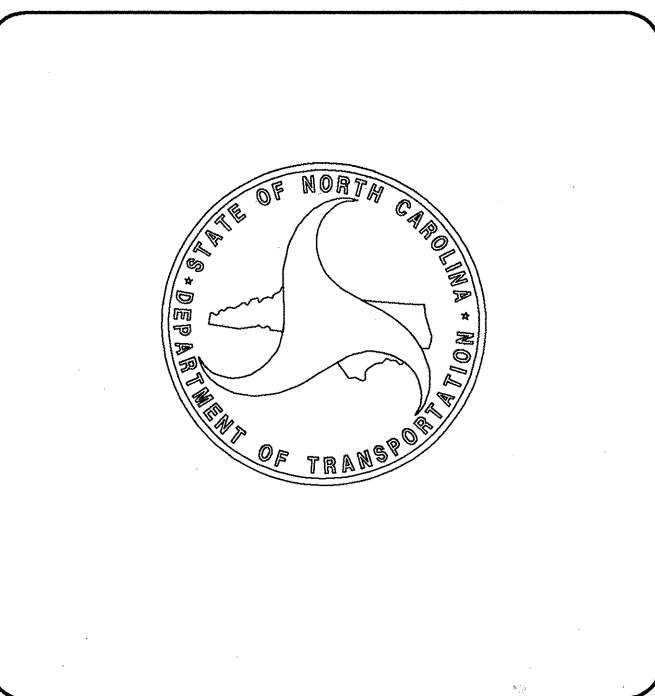
2012 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	EDWARD G. WETHERILL, PE PROJECT ENGINEER
JUNE 18, 2010	
LETTING DATE:	BOB A. MAY, PE PROJECT DESIGN ENGINEER
JULY 17, 2012	
NCDOT CONTACT:	MS. BRENDA L. MOORE, PE ROADWAY DESIGN: ENGINEERING COORDINATION SECTION ENGINEER

HYDRAULICS ENGINEER

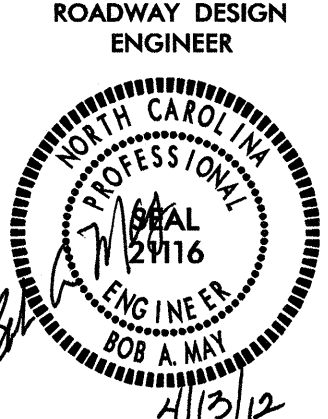
James C. Davis
SEAL 18462
ENGINEER

ROADWAY DESIGN ENGINEER

Bob A. May
SEAL 21116
ENGINEER



6/14/22 AM P:\2009\B-4162\Roadway\Proj\B4162_Rdy_tsh.dgn 4/16/2012



GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 11/01/11

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 II.

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.

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.

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 Duke Energy, Frontier Communications

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.

LIST OF STANDARDS

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	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.11	Reinforced Bridge Approach Fills - Sub Regional Tier
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
840.29	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
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
850.01	Concrete Paved Ditches
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

INDEX OF SHEETS

Sheet Number	Sheet
1	Title Sheet
1-A	Index of Sheets, General Notes and list of Standards
1-B	Conventional Symbols
1-C	Survey Control Sheets
2	Typical Sections, Pavement Schedule and Miscellaneous Details not covered by Roadway Standards
3 Thru 3-A	Summary of Quantities, Summary of Drainage, Summary of Guardrail, Summary of Earthwork and Summary of Pavement Removal
4 Thru 5	Plan and Profile Sheets
TMP-1 Thru TMP-3	Traffic Control Plans
PM-1 Thru PM-2	Pavement Marking Plans
EC-1 Thru EC-5	Erosion Control Plans
SIGN-1 Thru SIGN-2	Signing Plans
UO-1 Thru UO-2	Utilities by Others Plans
X-1A	Cross-Section Summary Sheet
X-1 Thru X-26	Cross-Sections
S-1 Thru S-24	Structure Plans
W-1 Thru W-3	Retaining Wall Plans

8/17/09
4:13:20 PM
2:01:54 PM
B-4162\Roadway\Proj\B-4162-Rdy_tsh.dgn

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	○ 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---
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	▭
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 CA Marker	○ CA
Existing Control of Access	○ CA
Proposed Control of Access	○ CA
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	---T---
Proposed Guardrail	---T---
Existing Cable Guiderail	---T---
Proposed Cable Guiderail	---T---
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	○ 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	⊗
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	○ T
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	---TFO---
Designated U/G Fiber Optics Cable (S.U.E.*)	---TFO---

WATER:

Water Manhole	○ W
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	▭
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.

SURVEY CONTROL SHEET B-4162

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1		627507.1980	765480.7730	2494.22	11+36.44	14.58 RT
2	BL-2		627769.0520	765647.2740	2507.25	14+45.92	14.32 RT
3	BL-3		627980.1880	765816.2280	2511.58	17+16.03	19.57 LT
4	BL-4		628090.0730	766026.1740	2511.20	19+50.37	11.29 RT
5	BL-5		628182.4870	766176.3410	2508.76	21+27.04	13.77 LT
6	BL-6		628003.2330	766350.7540	2506.33	23+74.74	12.61 LT

BY1	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
7	BY1-7		628164.4240	765517.6360	2474.38	16+13.71	346.92 LT
8	BY1-8		628057.6050	765881.7850	2485.96	18+13.96	46.02 LT
9	BY1-9		627957.8680	766001.9560	2484.94	18+56.17	104.34 RT

 BM1 ELEVATION = 2489.25
 N 627452 E 765356
 L STATION 10+11 38 LEFT
 8 INCH SPIKE IN BASE OF 18 INCH POPLAR

 BM2 ELEVATION = 2522.16
 N 628025 E 765738
 L STATION 16+78 100 LEFT
 8 INCH SPIKE IN BASE OF 18 INCH POPLAR

 BM3 ELEVATION = 2501.64
 N 627830 E 766324
 L STATION 25+41 40 RIGHT
 8 INCH SPIKE IN BASE OF 30 INCH POPLAR

 BM4 ELEVATION = 2484.70
 N 628206 E 765506
 BY1 STATION 5+00
 N 15° 13' 32.4" W DIST 42.67
 8 INCH SPIKE IN BASE OF 18 INCH POPLAR

 BM5 ELEVATION = 2488.26
 N 627869 E 766095
 BY1 STATION 10+36
 S 46° 36' 48.5" E DIST 128.66
 CHISLED X IN ROCK

NCDOT MONUMENT (B4162-GPS-102)
 LOCALIZED PROJECT COORDINATES
 N = 627724.0240
 E = 764926.313
 ELEV. = 2445.409

NCDOT BASELINE STATION B4162-BL2
 LOCALIZED PROJECT COORDINATES
 N = 627769.0520
 E = 765647.2740
 ELEV. = 2507.25

BEGIN TIP PROJECT B-4162
 -L- POT STA. 13+48.03

BM1
 ELEV. = 2489.25

NCDOT BASELINE STATION B4162-BL1
 LOCALIZED PROJECT COORDINATES
 N = 627507.1980
 E = 765480.7730
 ELEV. = 2494.22

NCDOT BASELINE STATION B4162-BY1-9
 LOCALIZED PROJECT COORDINATES
 N = 627957.8680
 E = 766001.9560
 ELEV. = 2484.94

NCDOT MONUMENT (B4162-GPS-101)
 LOCALIZED PROJECT COORDINATES
 N = 628255.4140
 E = 765328.2010
 ELEV. = 2460.73

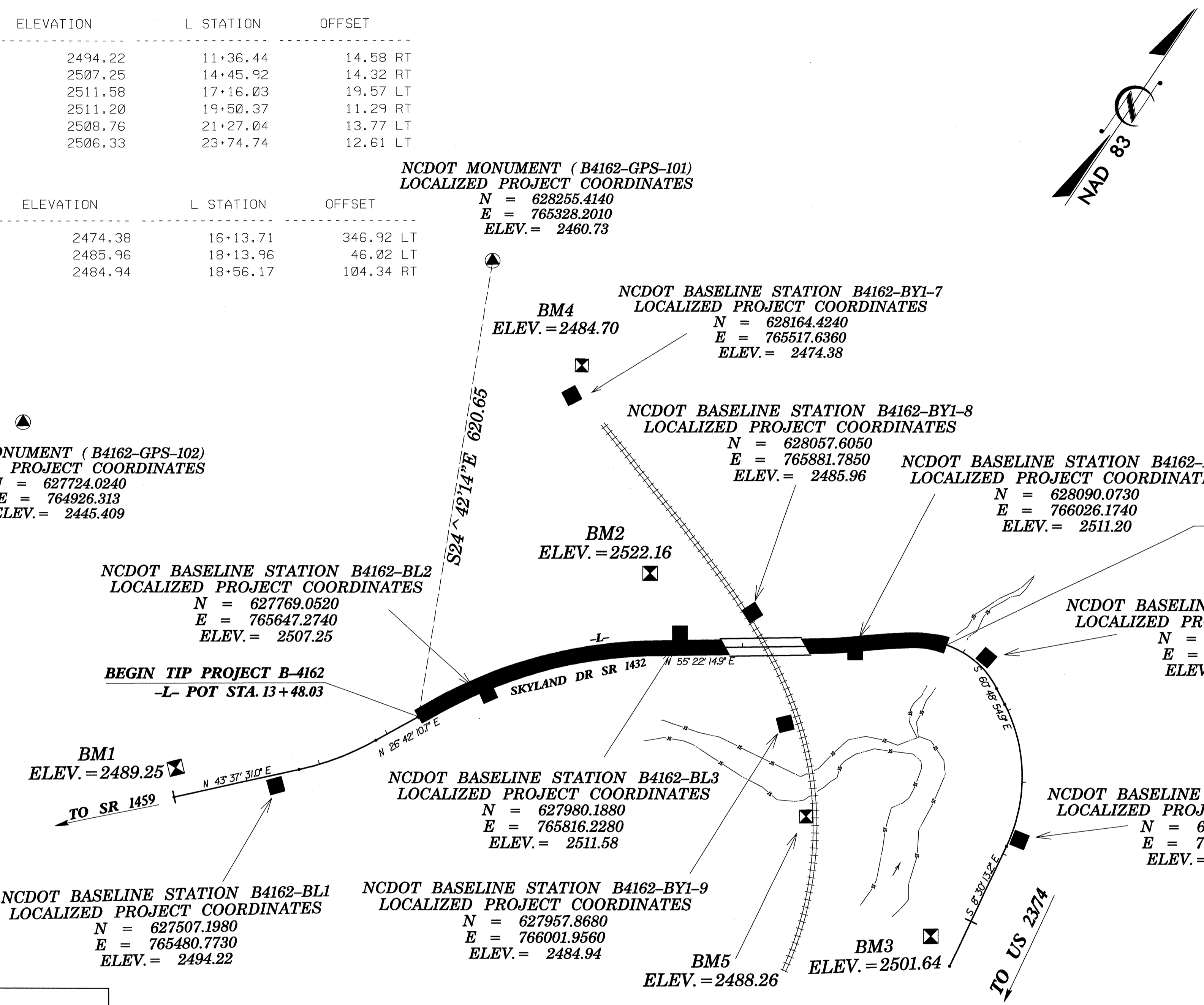
NCDOT BASELINE STATION B4162-BY1-7
 LOCALIZED PROJECT COORDINATES
 N = 628164.4240
 E = 765517.6360
 ELEV. = 2474.38

NCDOT BASELINE STATION B4162-BY1-8
 LOCALIZED PROJECT COORDINATES
 N = 628057.6050
 E = 765881.7850
 ELEV. = 2485.96

NCDOT BASELINE STATION B4162-BL4
 LOCALIZED PROJECT COORDINATES
 N = 628090.0730
 E = 766026.1740
 ELEV. = 2511.20

NCDOT BASELINE STATION B4162-BL5
 LOCALIZED PROJECT COORDINATES
 N = 628182.4870
 E = 766176.3410
 ELEV. = 2508.76

NCDOT BASELINE STATION B4162-BL6
 LOCALIZED PROJECT COORDINATES
 N = 628003.2330
 E = 766350.7540
 ELEV. = 2506.33



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4162 GPS 101" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 628255.4140(ft) EASTING: 765328.2010(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99975883 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS 101" TO -L- STATION 13+48.03 IS S 24° 42' 14" E 620.65 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88


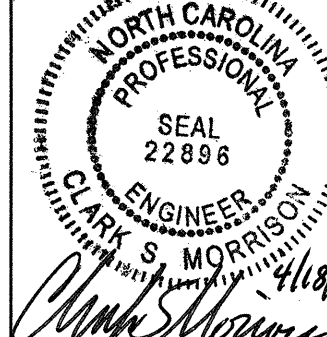

NOTES:

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 B4162_LS_CONTROL.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: GEOID99 (CONUS)
 NOTE: DRAWING NOT TO SCALE

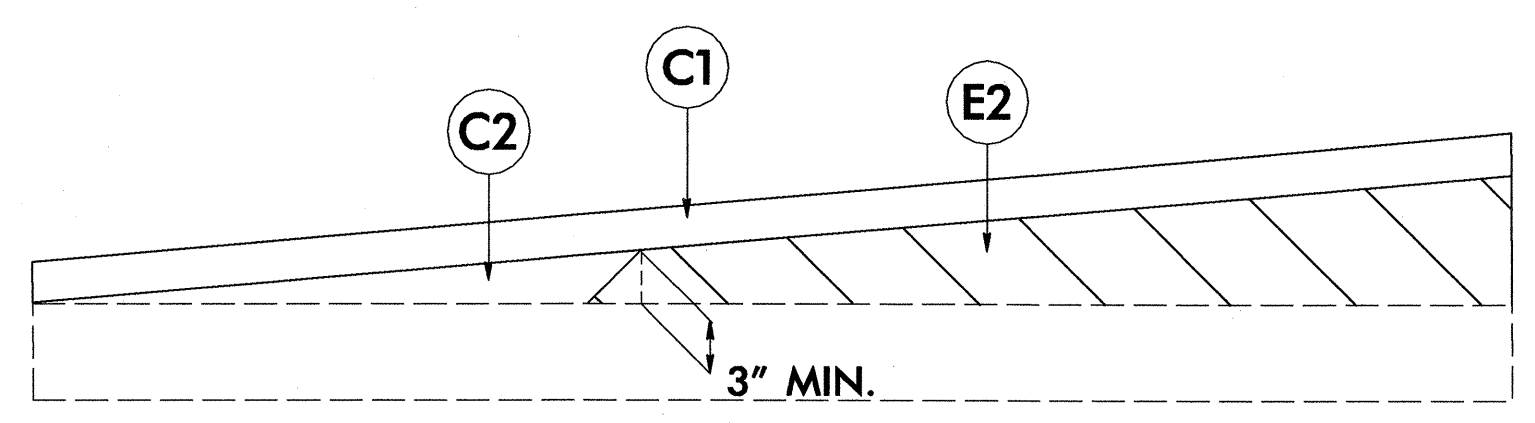
6/2/99
 R:\0268\PM\4162\Roadway\Proj\B4162_1s_1c.dgn
 4/13/2012 10:26:28 AM

PROJECT REFERENCE NO. B-4162	SHEET NO. 2
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 
 559 Jones Franklin Rd., Suite 164 Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107	
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION	

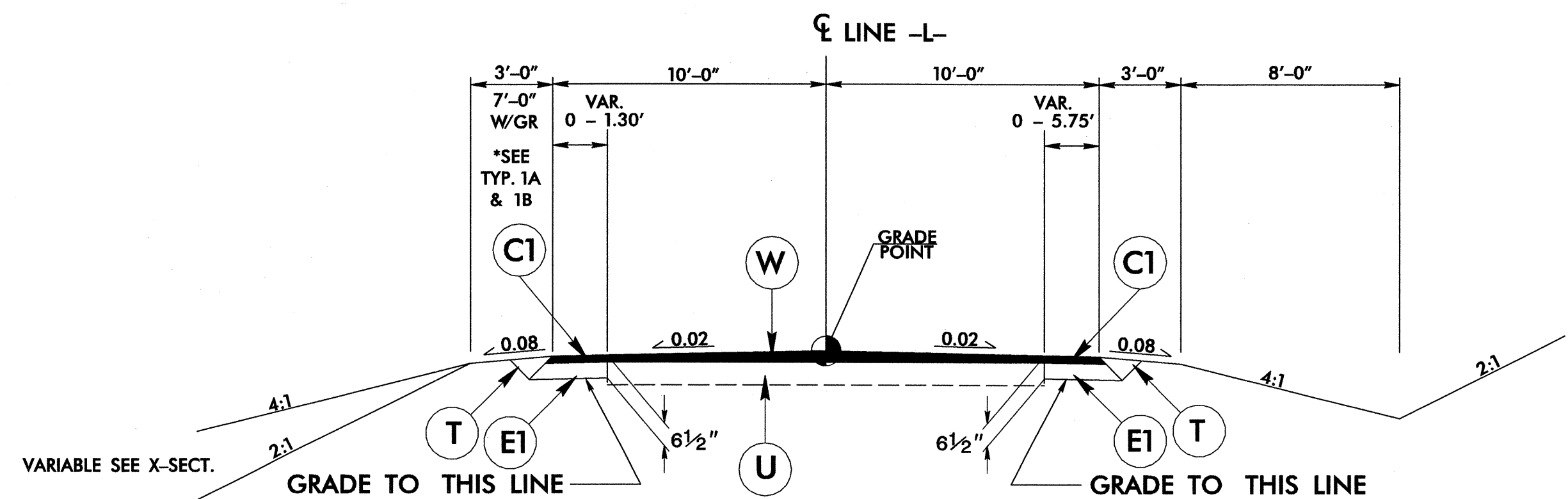
PAVEMENT SCHEDULE
FINAL PAVEMENT DESIGN

C1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. 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 1 1/2" IN DEPTH.
E1	PROP. 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.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)

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



Wedging Detail For Resurfacing



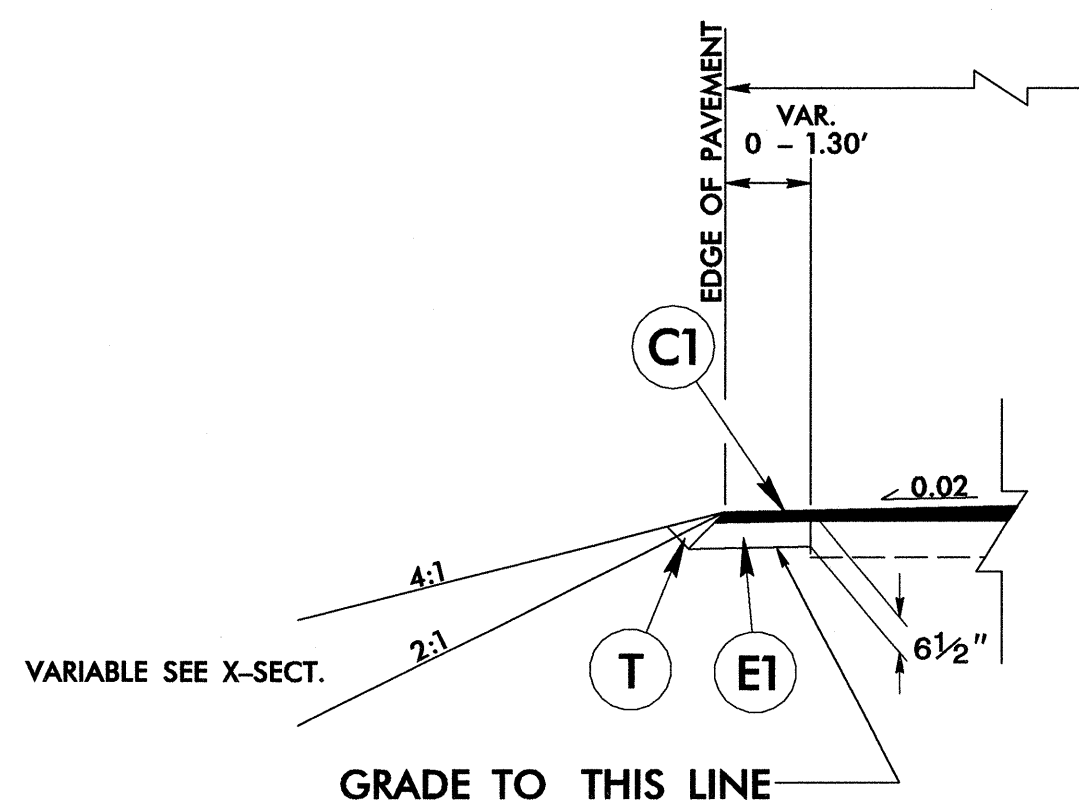
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:

- L- STA. 13+73.03 TO -L- STA. 17+01.50
- L- STA. 19+24.39 TO -L- STA. 20+50.00

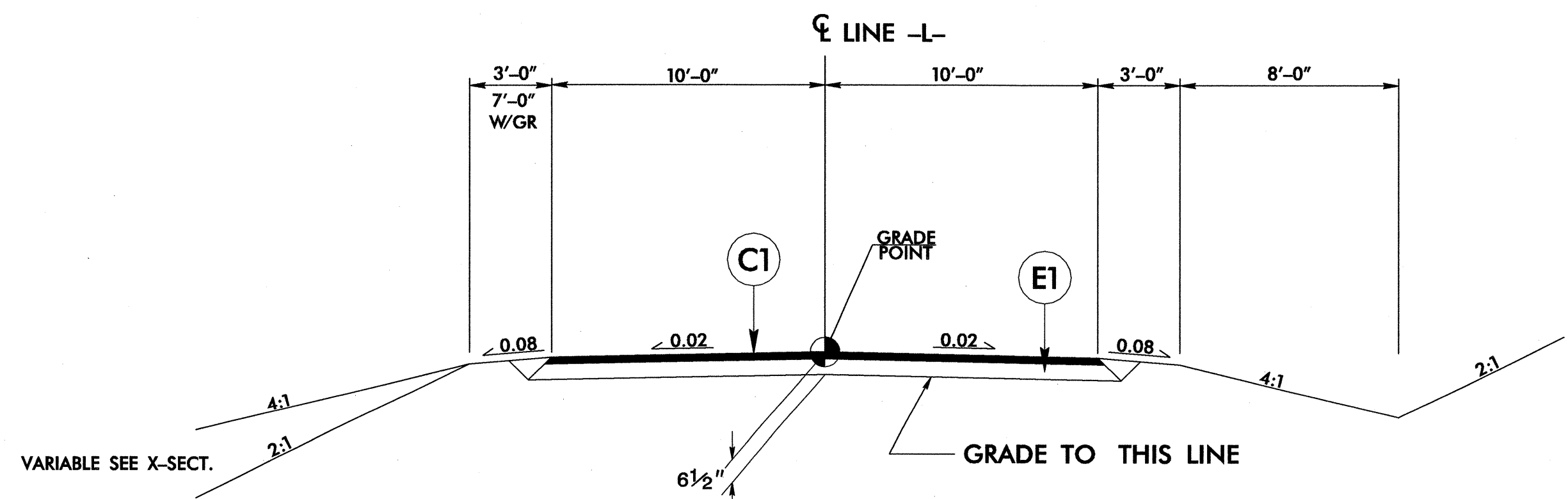
TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1
-L- STA. 13+48.03 TO -L- STA. 13+73.03

TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING
-L- STA. 20+50.00 TO -L- STA. 20+75.00



*** TYPICAL SECTION NO. 1A**

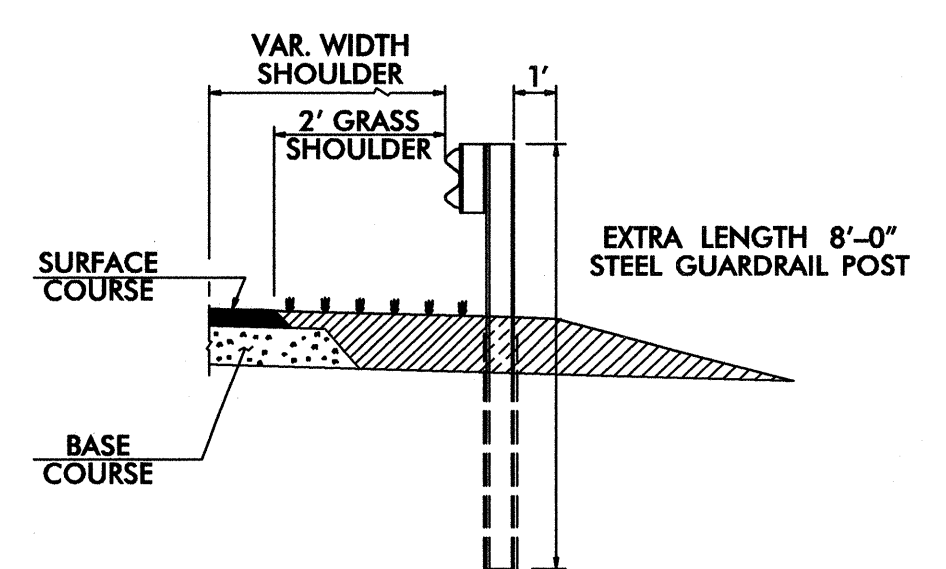
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1 AS FOLLOWS:
-L- STA. 13+73.03 TO -L- STA. 15+00.00 LT.



TYPICAL SECTION NO. 2

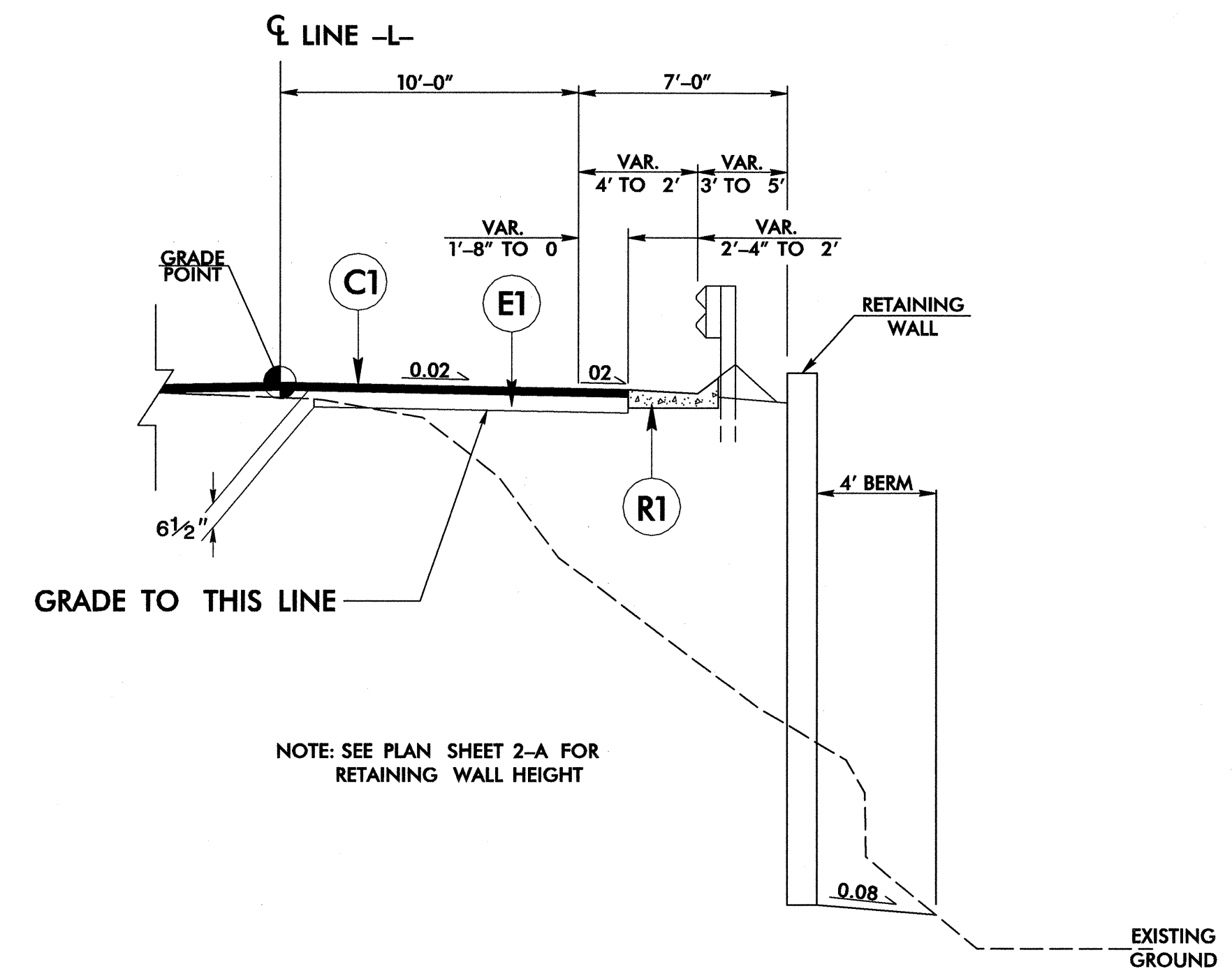
USE TYPICAL SECTION NO. 2 AS FOLLOWS:

- L- STA. 17+01.50 TO -L- STA. 17+62.66 (BEGIN BRIDGE)
- L- STA. 19+05.04 (END BRIDGE) TO -L- STA. 19+24.39



TYPICAL SECTION NO. 1C

USE IN CONJUNCTION WITH TYPICAL SECTION NOS. 1 & 2 AS FOLLOWS:
-L- STA. 19+23.75 TO -L- STA. 20+00.00 RT.



TYPICAL SECTION NO. 1B

SEE PLANS FOR SHOULDER BERM GUTTER & RETAINING WALL LOCATIONS

NOTE: UTILIZE 3'-1 1/2" POST SPACING & 8'-0" STEEL POST FOR GUARDRAIL LOCATION ADJACENT TO RETAINING WALL #1

6/27/99
12:43 PM
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4/13/2012

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202843

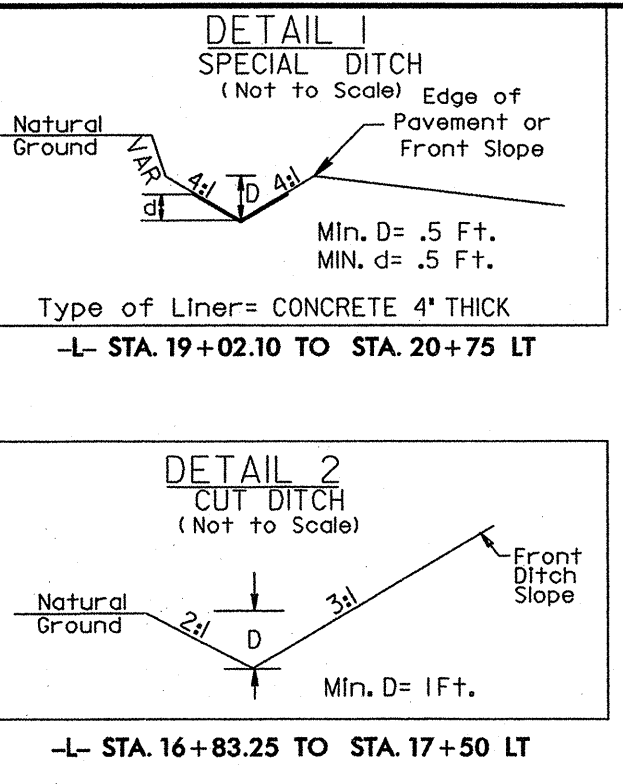
ItemNumber	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION
000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
003000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ***** (18+31.08 -L-)
004300000-N	226	Lump Sum		GRADING
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
005700000-E	226	115	CY	UNDERCUT EXCAVATION
019500000-E	265	100	CY	SELECT GRANULAR MATERIAL
019600000-E	270	200	SY	GEOTEXTILE FOR SOIL STABILIZATION
031800000-E	300	10	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES
032000000-E	300	30	SY	FOUNDATION CONDITIONING GEOTEXTILE
033520000-E	305	24	LF	15" DRAINAGE PIPE
034300000-E	310	40	LF	15" SIDE DRAIN PIPE
099500000-E	340	42	LF	PIPE REMOVAL
109950000-E	505	100	CY	SHALLOW UNDERCUT
109970000-E	505	200	TON	CLASS IV SUBGRADE STABILIZATION
122000000-E	545	100	TON	INCIDENTAL STONE BASE
148900000-E	610	270	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
152500000-E	610	225	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
157500000-E	620	30	TON	ASPHALT BINDER FOR PLANT MIX
202200000-E	815	23	CY	SUBDRAIN EXCAVATION
203300000-E	815	17	CY	SUBDRAIN FINE AGGREGATE
204400000-E	815	100	LF	6" PERFORATED SUBDRAIN PIPE
207000000-N	815	1	EA	SUBDRAIN PIPE OUTLET
207700000-E	815	6	LF	6" OUTLET PIPE
228600000-N	840	2	EA	MASONRY DRAINAGE STRUCTURES

Summary of Quantities - B-4162

ItemNumber	Sec #	Quantity	Unit	Description
236700000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29
255600000-E	846	325	LF	SHOULDER BERM GUTTER
261900000-E	850	80	SY	4" CONCRETE PAVED DITCH
303000000-E	862	350	LF	STEEL BM GUARDRAIL
315000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
331700000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
338900000-N	SP	4	EA	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ***** (TL-2)
343500000-N	SP	90	EA	GENERIC GUARDRAIL ITEM EXTRA LENGTH GUARDRAIL POST, 8" STEEL
365600000-E	876	525	SY	GEOTEXTILE FOR DRAINAGE
407200000-E	903	30	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
410200000-N	904	2	EA	SIGN ERECTION, TYPE E
415500000-N	907	8	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
440000000-E	1110	382	SF	WORK ZONE SIGNS (STATIONARY)
441000000-E	1110	219	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
444500000-E	1145	144	LF	BARRICADES (TYPE III)
481000000-E	1205	5,816	LF	PAINT PAVEMENT MARKING LINES (4")
490500000-N	1253	61	EA	SNOWPLOWABLE PAVEMENT MARKERS
600000000-E	1605	1,150	LF	TEMPORARY SILT FENCE
600600000-E	1610	250	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	150	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	115	TON	SEDIMENT CONTROL STONE
601500000-E	1615	0.5	ACR	TEMPORARY MULCHING
601800000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	0.25	TON	FERTILIZER FOR TEMPORARY SEEDING

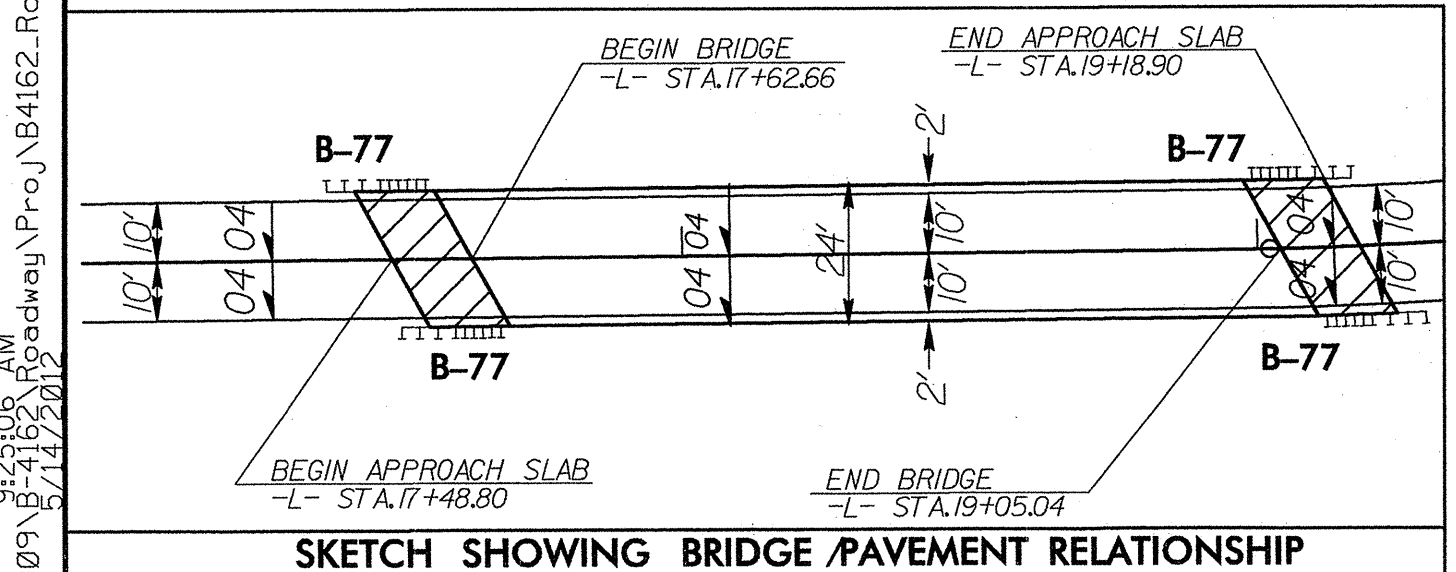
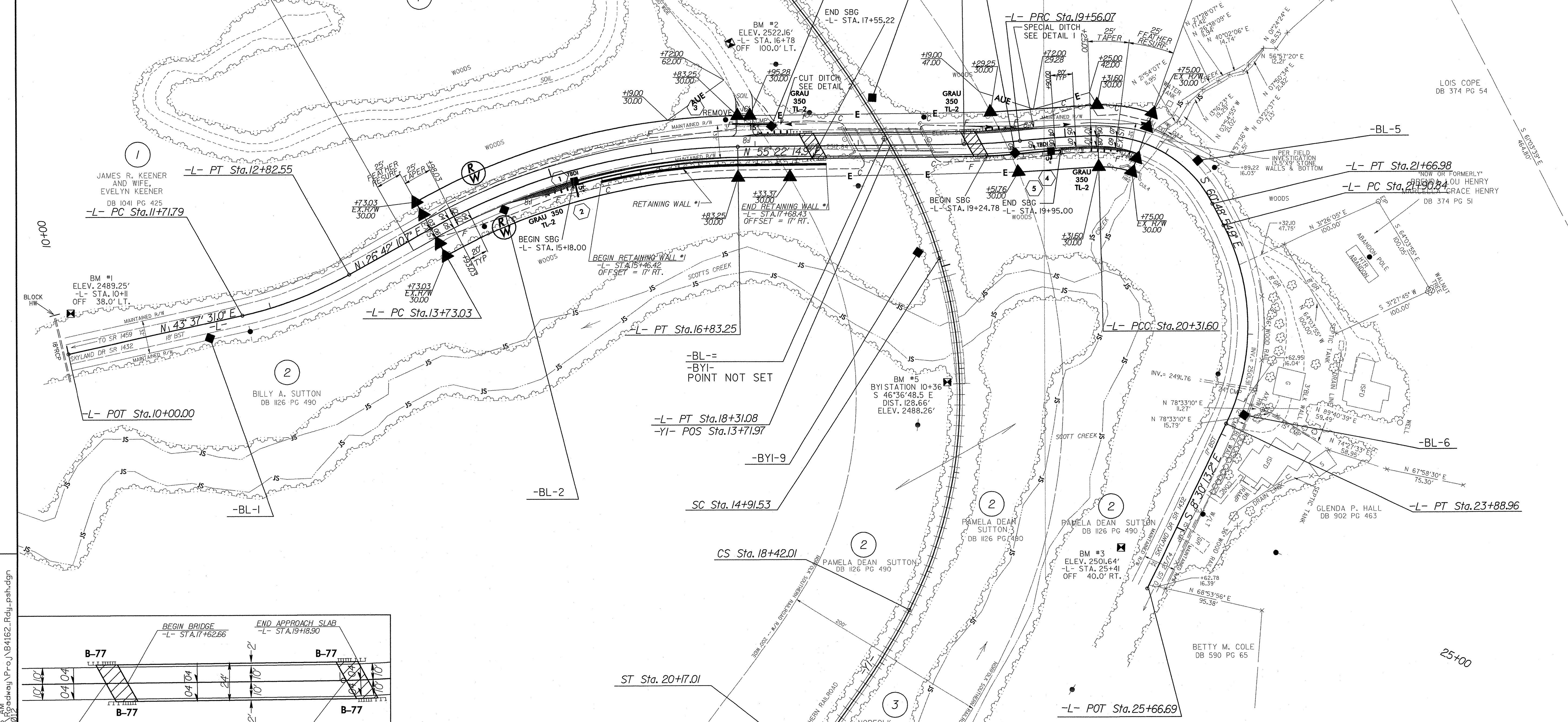
ItemNumber	Sec #	Quantity	Unit	Description
602400000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
602900000-E	SP	100	LF	SAFETY FENCE
603000000-E	1630	90	CY	SILT EXCAVATION
603600000-E	1631	2,000	SY	MATting FOR EROSION CONTROL
604200000-E	1632	355	LF	1/4" HARDWARE CLOTH
607102000-E	SP	50	LB	POLYACRYLAMIDE (PAM)
608400000-E	1660	0.5	ACR	SEEDING & MULCHING
608700000-E	1660	0.25	ACR	MOWING
609000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
609300000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
609600000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
610800000-E	1665	0.5	TON	FERTILIZER TOPDRESSING
611450000-N	1667	10	MHR	SPECIALIZED HAND MOWING
611700000-N	SP	18	EA	RESPONSE FOR EROSION CONTROL

<p>PI Sta 12+27.58 $\Delta = 16^{\circ}55'20.4"$ (LT) $D = 15'16"43.9"$ $L = 110.76'$ $T = 55.78'$ $R = 375.00'$</p>	<p>PI Sta 15+31.46 $\Delta = 28^{\circ}40'04.2"$ (RT) $D = 9'14"28.5"$ $L = 310.22'$ $T = 158.43'$ $R = 620.00'$ SE = .04 RO = SEE PLANS</p>	<p>PI Sta 19+29.10 $\Delta = 5^{\circ}09'11.8"$ (LT) $D = 9'32"57.5"$ $L = 53.96'$ $T = 27.00'$ $R = 600.00'$ SE = .04 RO = SEE PLANS</p>
<p>PI Sta 19+93.85 $\Delta = 4^{\circ}19'40.8"$ (RT) $D = 5'43"46.5"$ $L = 75.54'$ $T = 37.79'$ $R = 1,000.00'$ SE = .04 RO = SEE PLANS</p>	<p>PI Sta 21+07.52 $\Delta = 64^{\circ}38'21.1"$ (RT) $D = 47'44"47.3"$ $L = 135.38'$ $T = 75.92'$ $R = 120.00'$</p>	<p>PI Sta 22+97.41 $\Delta = 52^{\circ}18'41.6"$ (RT) $D = 26'24"12.9"$ $L = 198.12'$ $T = 106.57'$ $R = 217.00'$</p>



<p>PIs Sta 13+78.21 $\Theta_s = 2^{\circ}15'17.6"$ $L_s = 345.00'$ $LT = 231.68'$ $ST = 116.53'$</p>	<p>PI Sta 16+75.57 $\Delta = 43^{\circ}11'04.5"$ (RT) $D = 12'19"18.0"$ $L = 350.48'$ $T = 184.03'$ $R = 465.00'$</p>	<p>PIs Sta 19+00.54 $\Theta_s = 10^{\circ}46'53.3"$ $L_s = 175.00'$ $LT = 116.88'$ $ST = 58.53'$</p>
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BEGIN TIP PROJECT B-4162
 -L- POT Sta. 13+48.03



ETHERILL ENGINEERING
 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

559 Jones Franklin Rd. Suite 164
 Raleigh, N.C. 27606
 License No. F-0377
 Bus: 919 851 8077
 Fax: 919 851 8107

PROJECT REFERENCE NO. B-4162	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Professional Engineer Seal: JAMES R. KEENER, License No. 21116, State of North Carolina, expires 5/14/12.

Professional Engineer Seal: JAMES C. DIVINE, License No. 18462, State of North Carolina, expires 5/17/12.

SEE SHEET 5 FOR -L- PROFILE
 SEE SHEETS S-1 THRU S-24 FOR STRUCTURE PLANS

REVISIONS

5/14/99
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 5/14/2012

5/14/99

BM #1
8" SPIKE IN BASE OF 18" POPLAR.
ELEV. = 2489.25
-L- STA. 10+11 OFF 38.0' LT.

BM #2
8" SPIKE IN BASE OF 18" POPLAR.
ELEV. = 2522.16
-L- STA. 16+78 OFF 100.0' LT.

BM #3
8" SPIKE IN BASE OF 30" POPLAR.
ELEV. = 2501.64
-L- STA. 25+41 OFF 40.0' RT.

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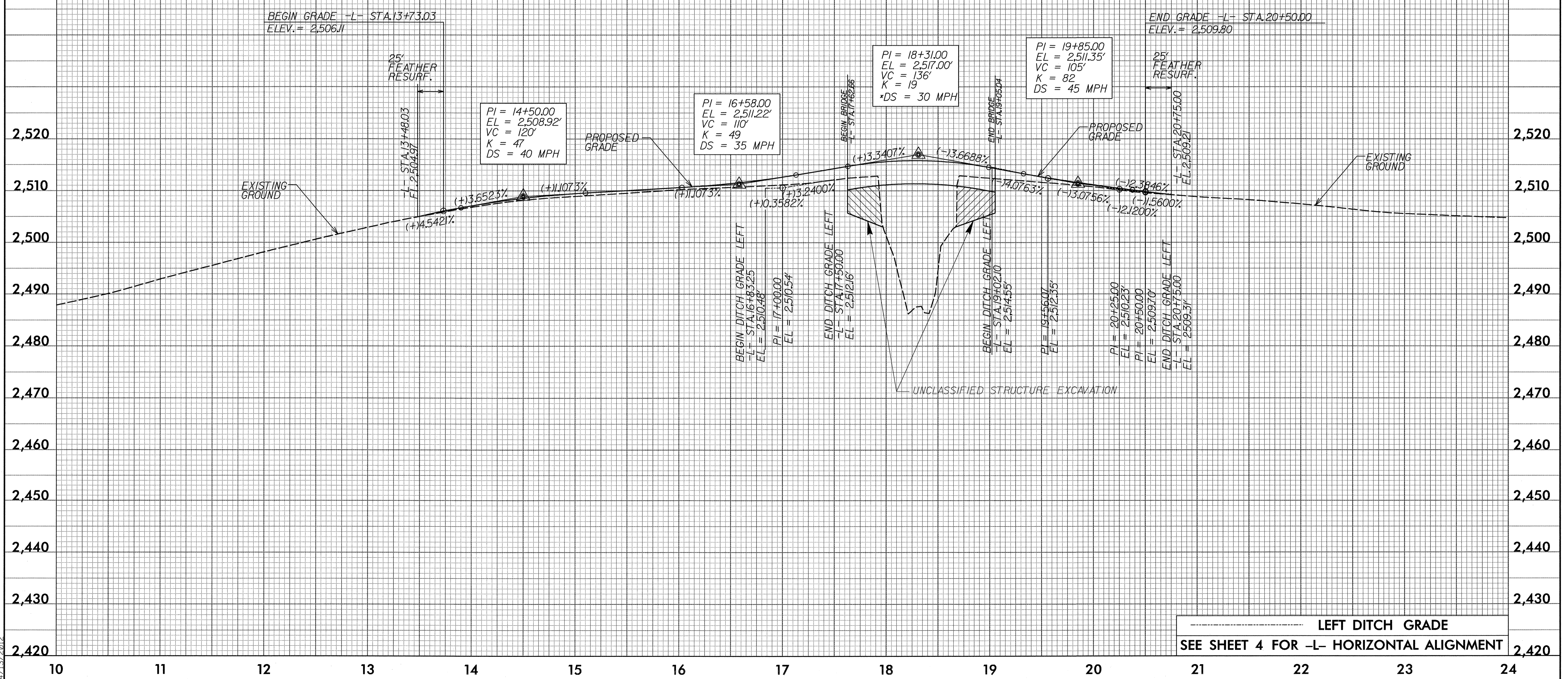
WETHERILL ENGINEERING

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. B-4162	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



* NOTE: A DESIGN EXCEPTION IS REQUIRED FOR THE CREST VERTICAL CURVE K AND VERTICAL SSD.



----- LEFT DITCH GRADE
SEE SHEET 4 FOR -L- HORIZONTAL ALIGNMENT

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5/20/09
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4/13/2012