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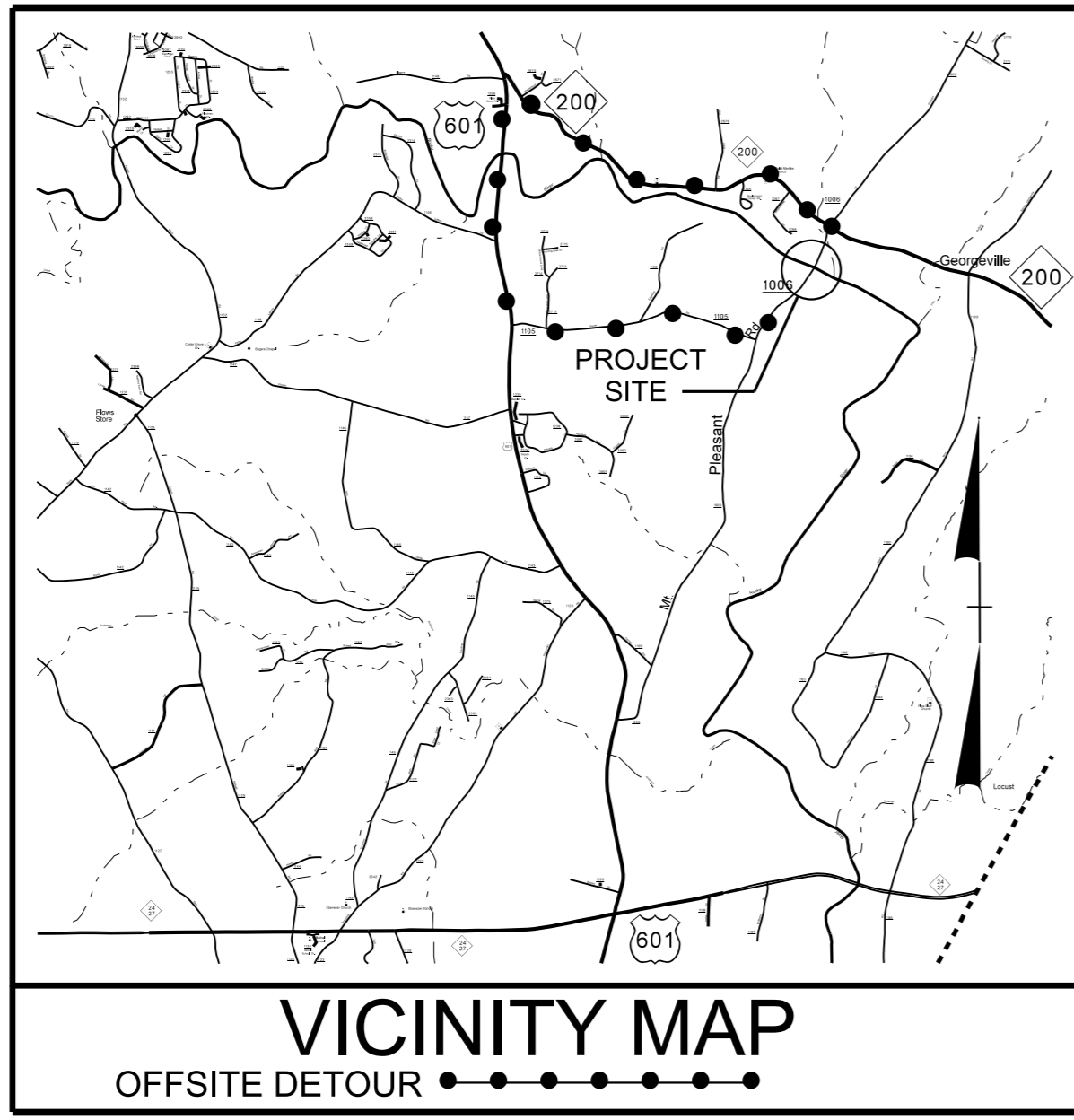
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09/08/99

18-MAR-2015 11:02
 R:\Roadway\Proj\B-4972_rdy_tsh.dgn
 \$\$\$USERNAME\$\$\$

TIP PROJECT: B-4972
CONTRACT: C203588

See Sheet 1-A For Index of Sheets

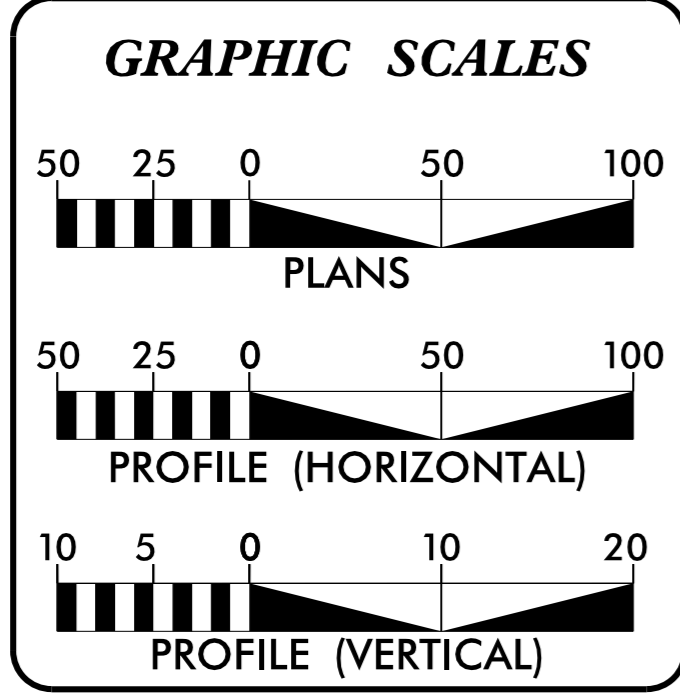
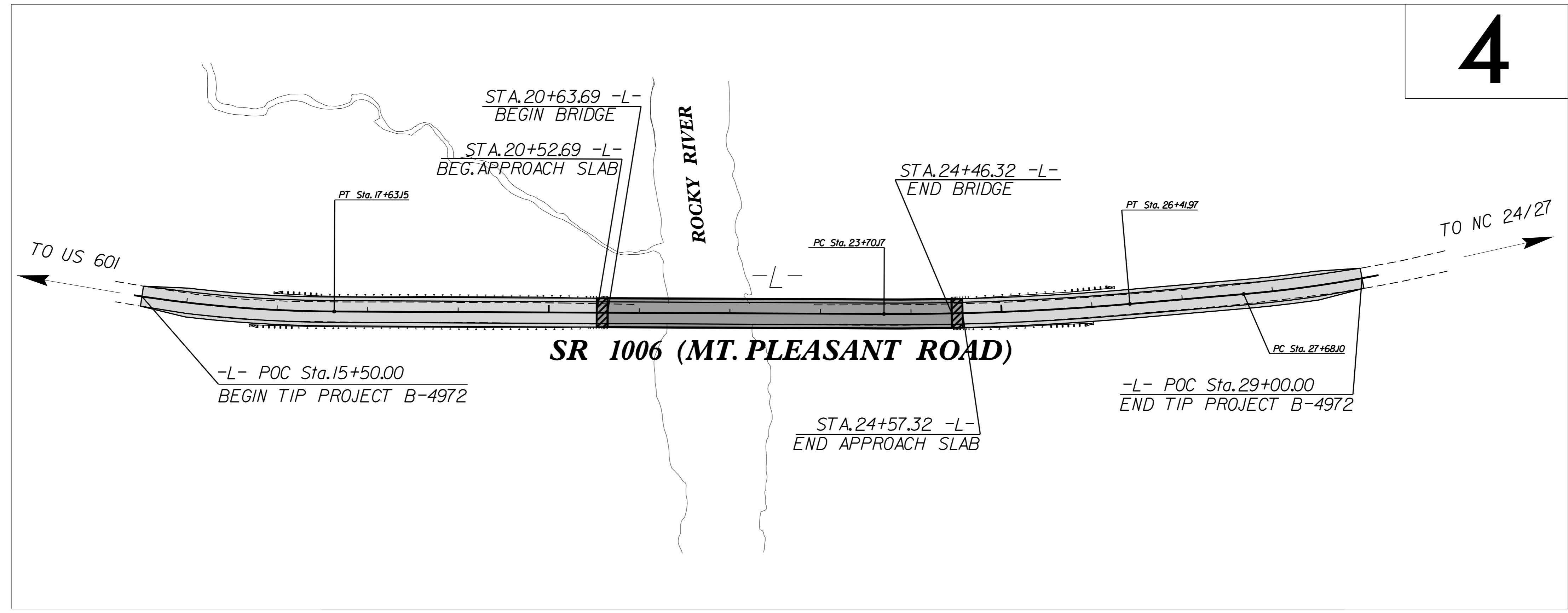
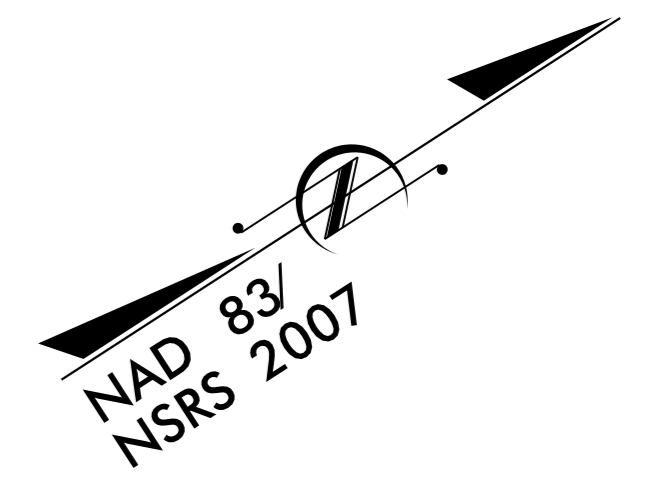


STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
CABARRUS COUNTY

**LOCATION: BRIDGE NO. 227 OVER ROCKY RIVER
 ON SR 1006 (MOUNT PLEASANT ROAD)**

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4972	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40096.1.1	BRSTP-1006 (32)	PE	
40096.2.FD1	BRSTP-1006 (32)	RW, UTILITIES	
40096.3.FD1	BRSTP-1006 (32)	CONST	



DESIGN DATA

ADT 2015 =	4,724
ADT 2035 =	10,800
K =	10 %
D =	55 %
*T =	13 %
V =	55 MPH
(RURAL LOCAL)	
SUB-REGIONAL TIER	
* TTST 3% + DUAL 10%	

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4972 =	0.184 MI
LENGTH OF STRUCTURE TIP PROJECT B-4972 =	0.072 MI
TOTAL LENGTH OF TIP PROJECT B-4972 =	0.256 MI

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

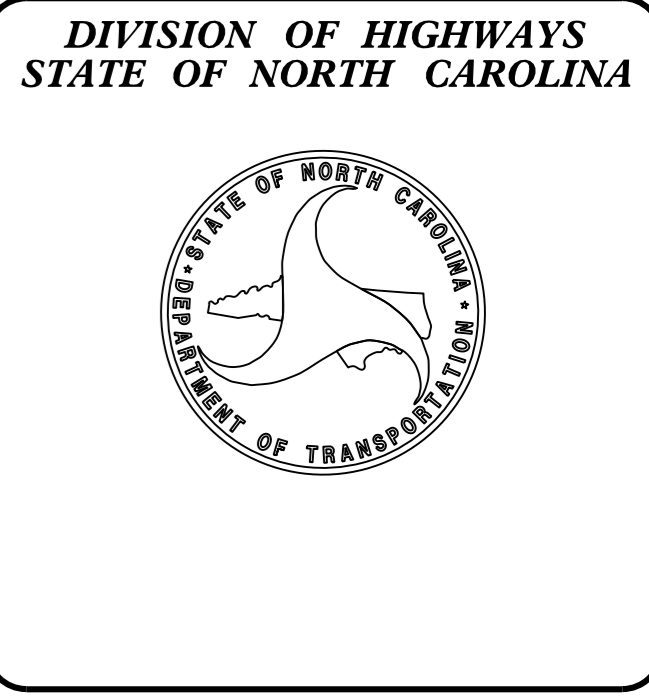
2012 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: JUNE 25, 2014	G. E. BREW PE PROJECT ENGINEER
LETTING DATE: JUNE 16, 2015	W. T. BEST PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

DocuSigned by:
 James Byrd
 SIGNATURE: 3/18/2015

ROADWAY DESIGN ENGINEER

DocuSigned by:
 Gregory Brew
 SIGNATURE: 3/23/2015



INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C	SURVEY CONTROL SHEET
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAIL
2G-1 THRU 2G-3	ROCK PLATED REINFORCED SOIL SLOPE (RPRSS)
3B-1	SUMMARY OF GUARDRAIL, SUMMARY OF EARTHWORK, SUMMARY OF ASPHALT PAVEMENT REMOVAL, AND SUMMARY OF BREAKING OF EXISTING ASPHALT PAVEMENT
3D-1	SUMMARY OF DRAINAGE QUANTITIES
3G-1	SUMMARY OF GEOTECHNICAL QUANTITIES
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-2	TRAFFIC MANAGEMENT PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A THRU X-14	CROSS-SECTIONS
S-1 THRU S-31	STRUCTURE PLANS

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	
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	Frame 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
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

GENERAL NOTES

2012 SPECIFICATIONS

EFFECTIVE: 01/17/12
REVISED: 10/31/14

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.

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:

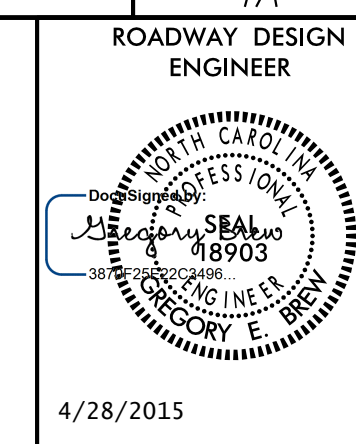
THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE UNION POWER COOPERATIVE, WINDSTREAM COMMUNICATIONS, AND MCNC. 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.



04/16/11

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ IFP
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	○
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	○ CSX TRANSPORTATION 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	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	○ R/W ▲
Proposed Right of Way Line with Concrete or Granite R/W Marker	○ R/W ▲
Proposed Control of Access Line with Concrete CA 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	----- ?UTL
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

L			
TYPE	STATION	NORTH	EAST
PC	10+00.00	571527.9409	1558180.2262
PT	13+30.89	571752.2250	1558423.1750
PC	14+21.19	571817.7492	1558485.3098
PT	17+63.15	572091.2070	1558689.3095
PC	23+70.17	572617.0770	1558992.5148
PT	26+41.97	572858.3637	1559117.4328
PC	27+68.10	572972.8825	1559170.2894
PT	31+70.96	573357.7616	1559284.5306
POT	32+86.92	573472.5118	1559301.2471

Y			
TYPE	STATION	NORTH	EAST
POT	10+00.00	573011.3016	1559078.3015
POT	11+00.00	572961.6565	1559165.1080

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1		B4972-1	571335.9990	1557960.2960	557.63	OUTSIDE PROJECT LIMITS	
2		B4972-2	571806.8390	1558502.1960	539.90	14+24.84	19.76 RT
3		BL-3	572354.2425	1558862.7082	500.61	20+77.63	18.83 RT
4		BL-4	572558.9429	1558978.6030	500.80	23+12.86	16.99 RT
5		BL-5	572951.2524	1559136.7779	508.73	27+34.41	21.36 LT
6		BL-6	573248.0211	1559284.9108	498.96	30+63.87	20.35 RT
7		BL-7	573485.0086	1559322.2005	494.71	OUTSIDE PROJECT LIMITS	

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4972-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 571806.839(fft) EASTING: 1558502.196(fft) ELEVATION: 539.90(fft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998530

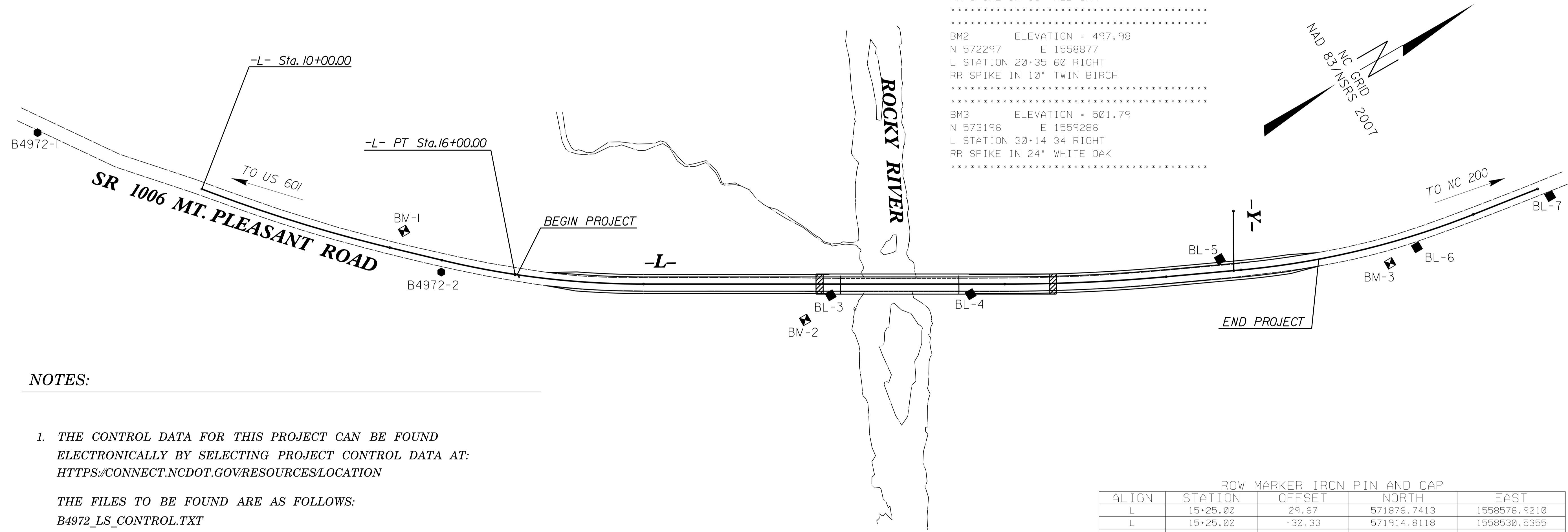
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4972-2" TO -L- PT STATION 15+46.50 IS N 31°49'02" E 124.02'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

BM1 ELEVATION = 543.53
 N 571787 E 1558411
 L STATION 13+48 33 LEFT
 RR SPIKE IN 15" RED OAK

BM2 ELEVATION = 497.98
 N 572297 E 1558877
 L STATION 20+35 60 RIGHT
 RR SPIKE IN 10" TWIN BIRCH

BM3 ELEVATION = 501.79
 N 573196 E 1559286
 L STATION 30+14 34 RIGHT
 RR SPIKE IN 24" WHITE OAK



NOTES:

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: [HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION](https://connect.ncdot.gov/resources/location)
 - SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
 - PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM, UTILIZING THE NCGS RTN SYSTEM (VRS).
- MONUMENTS USED OR SET FOR PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT:
- INDICATES GEODETIC CONTROL MONUMENTS FOR HORIZONTAL CONTROL
 - INDICATES BASELINE MONUMENTS FOR HORIZONTAL PROJECT CONTROL
 - ⊠ INDICATES BENCHMARKS FOR VERTICAL CONTROL

ROW MARKER IRON PIN AND CAP				
ALIGN	STATION	OFFSET	NORTH	EAST
L	15+25.00	29.67	571876.7413	1558576.9210
L	15+25.00	-30.33	571914.8118	1558530.5355
L	15+25.00	63.00	571855.5985	1558602.6816
L	15+25.00	-50.00	571927.2882	1558515.3341
L	17+63.15	63.00	572059.7386	1558743.8874
L	17+63.15	-50.00	572116.1820	1558645.9938
L	18+75.00	-75.00	572225.5666	1558680.2047
L	23+70.17	-75.00	572654.5394	1558927.5412
L	23+70.17	63.00	572585.6086	1559047.0927
L	24+85.00	-75.00	572752.5781	1558981.5951
L	25+77.00	-55.00	572823.8000	1559040.1435
L	26+41.97	63.00	572831.9623	1559174.6340
L	26+41.97	-55.00	572881.4125	1559067.4954
L	27+27.64	-55.00	572959.1954	1559103.3964
L	27+68.10	63.00	572946.4811	1559227.4905
L	29+50.00	63.00	573123.7562	1559295.7304
L	29+50.00	30.96	573133.3001	1559265.1475

NOTE: DRAWING NOT TO SCALE

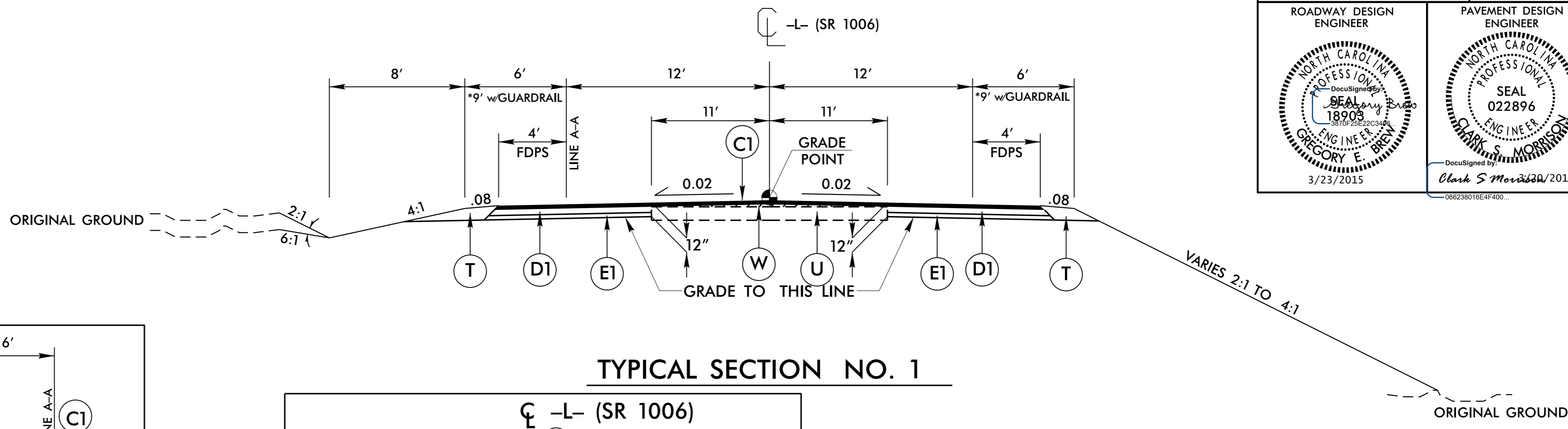
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6/2/99

PROJECT REFERENCE NO. B-4972	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER GREGORY E. MORRISON 3/23/2015	PAVEMENT DESIGN ENGINEER SEAL 022896 GREGORY E. MORRISON 3/23/2015

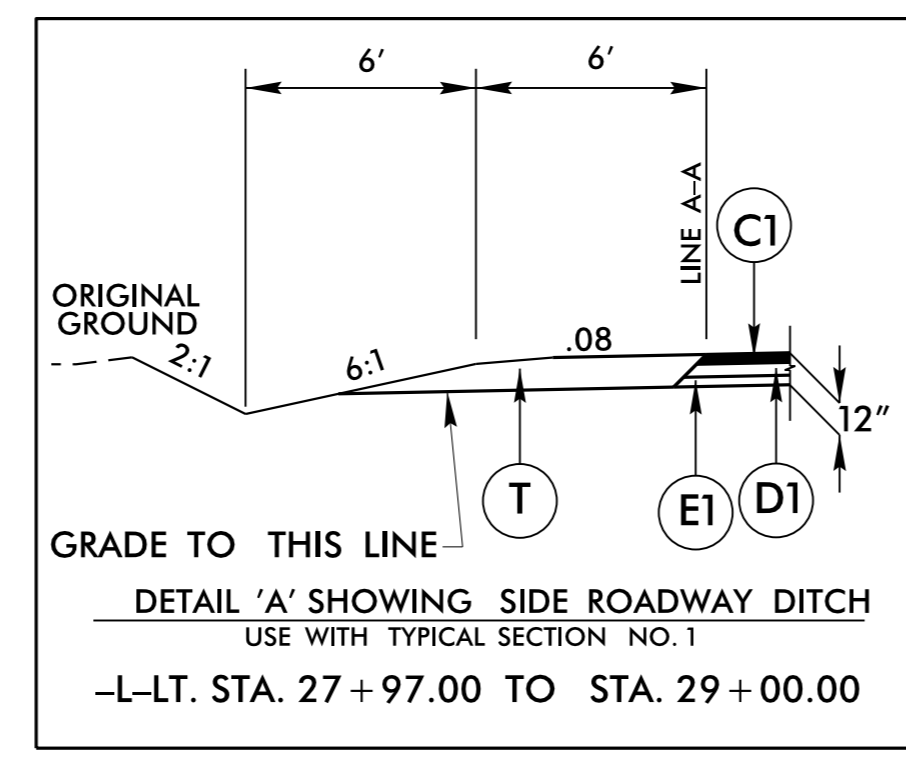
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
D1	PROP. APPROX. 3-1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, 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. 5 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 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	CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	1 1/2" MILLING OF EXIST PAVEMENT
V2	INCIDENTAL MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT. (WEDGING)

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

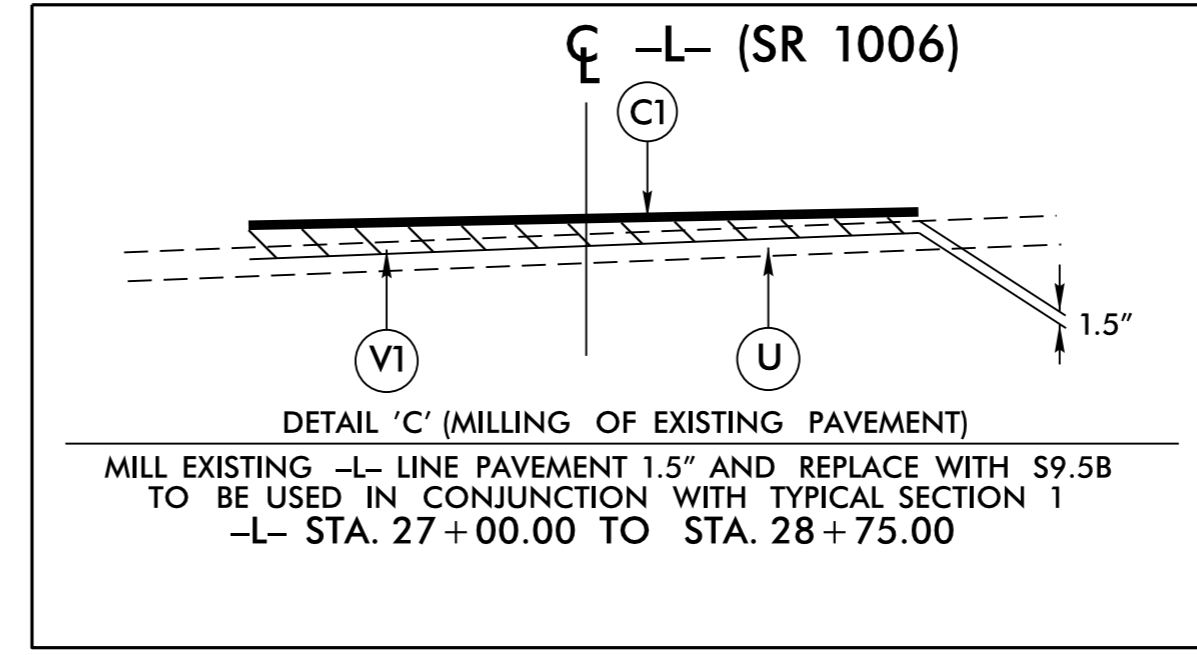


TYPICAL SECTION NO. 1

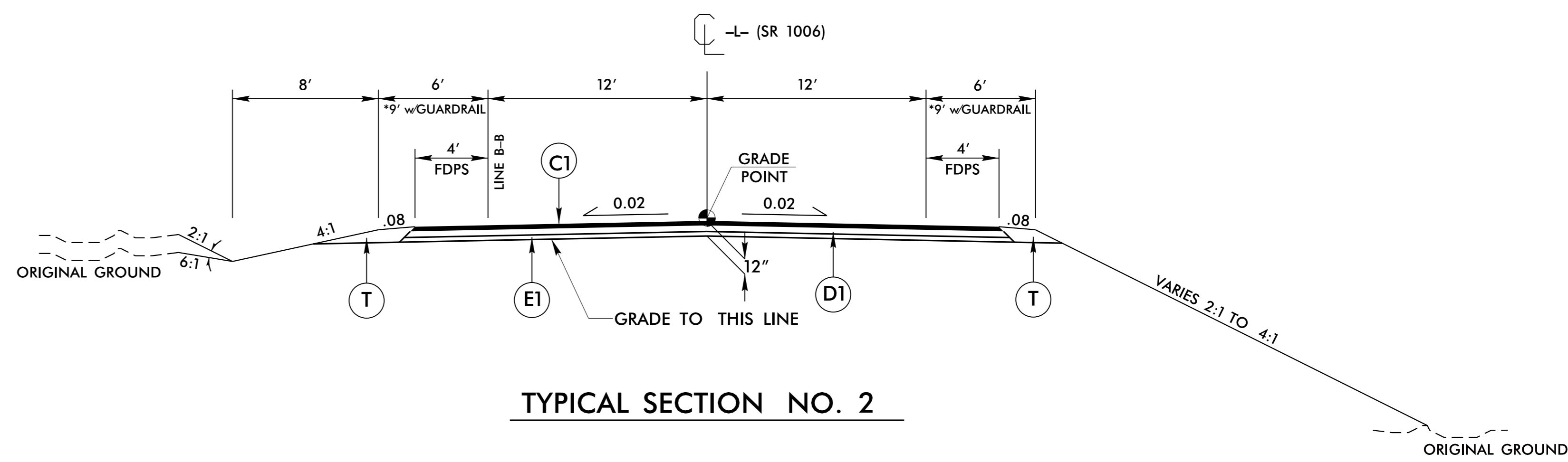
USE TYPICAL SECTION NO. 1
 -L- STA. 15+50.00 TO STA. 15+75.00, TRANSITION FROM EXISTING TO TYP. SEC. NO. 1
 -L- STA. 27+00.00 TO STA. 28+75.00
 -L- STA. 28+75.00 TO STA. 29+00.00, TRANSITION FROM TYP. SEC. NO. 1 TO EXISTING



DETAIL 'A' SHOWING SIDE ROADWAY DITCH
 USE WITH TYPICAL SECTION NO. 1
 -L-LT. STA. 27+97.00 TO STA. 29+00.00

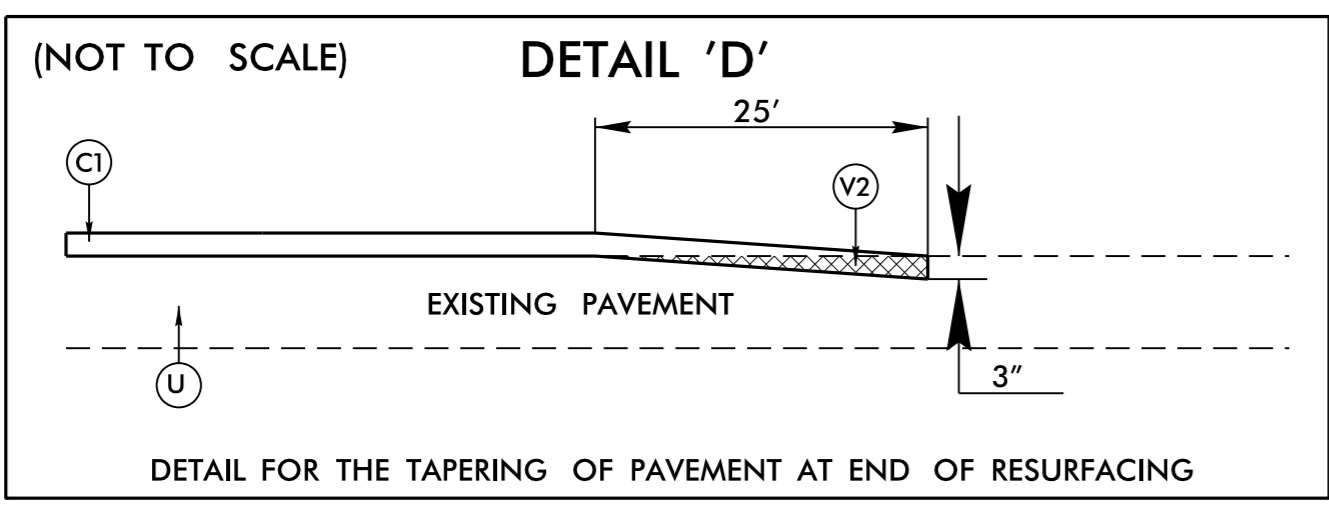


DETAIL 'C' (MILLING OF EXISTING PAVEMENT)
 MILL EXISTING -L- LINE PAVEMENT 1.5" AND REPLACE WITH S9.5B TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 1
 -L- STA. 27+00.00 TO STA. 28+75.00

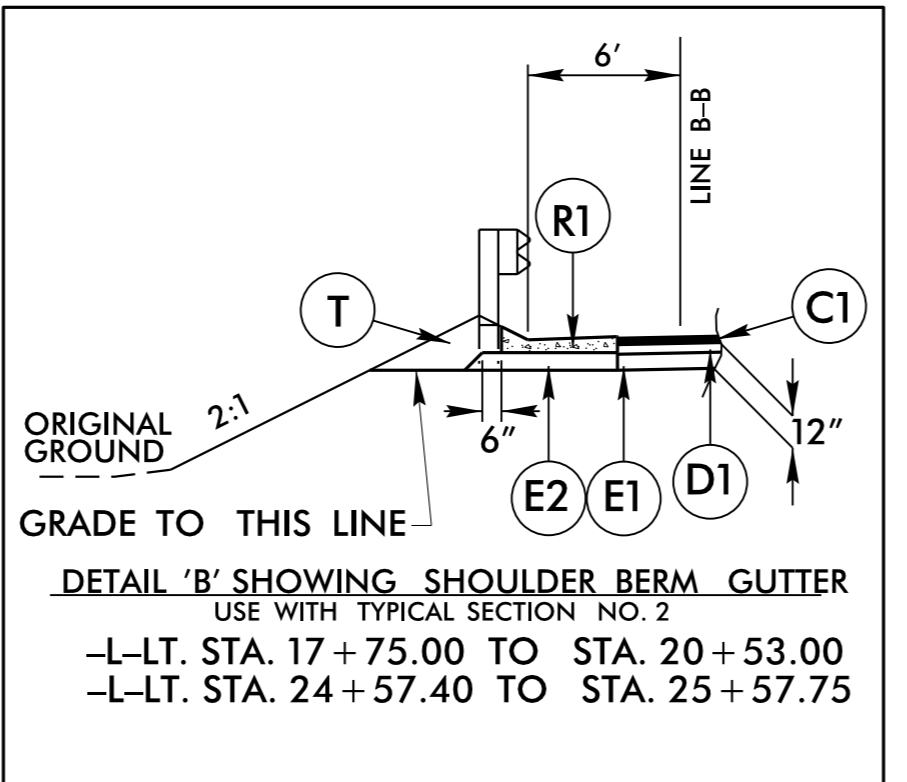


TYPICAL SECTION NO. 2

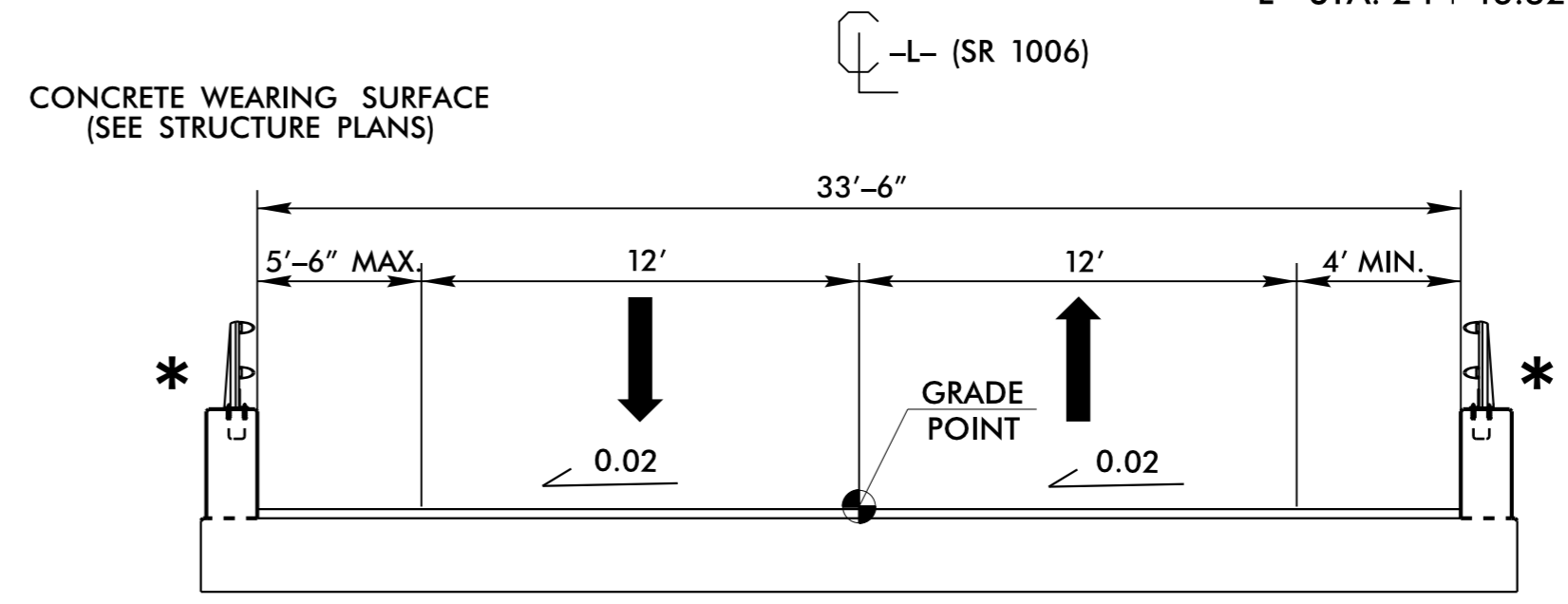
USE TYPICAL SECTION NO. 2
 -L- STA. 15+75.00 TO STA. 20+63.69 (BEGIN BRIDGE)
 -L- STA. 24+46.32 (END BRIDGE) TO STA. 27+00.00



DETAIL FOR THE TAPERING OF PAVEMENT AT END OF RESURFACING
 FROM STA. 15+50.00 TO STA. 15+75.00
 FROM STA. 28+75.00 TO STA. 29+00.00

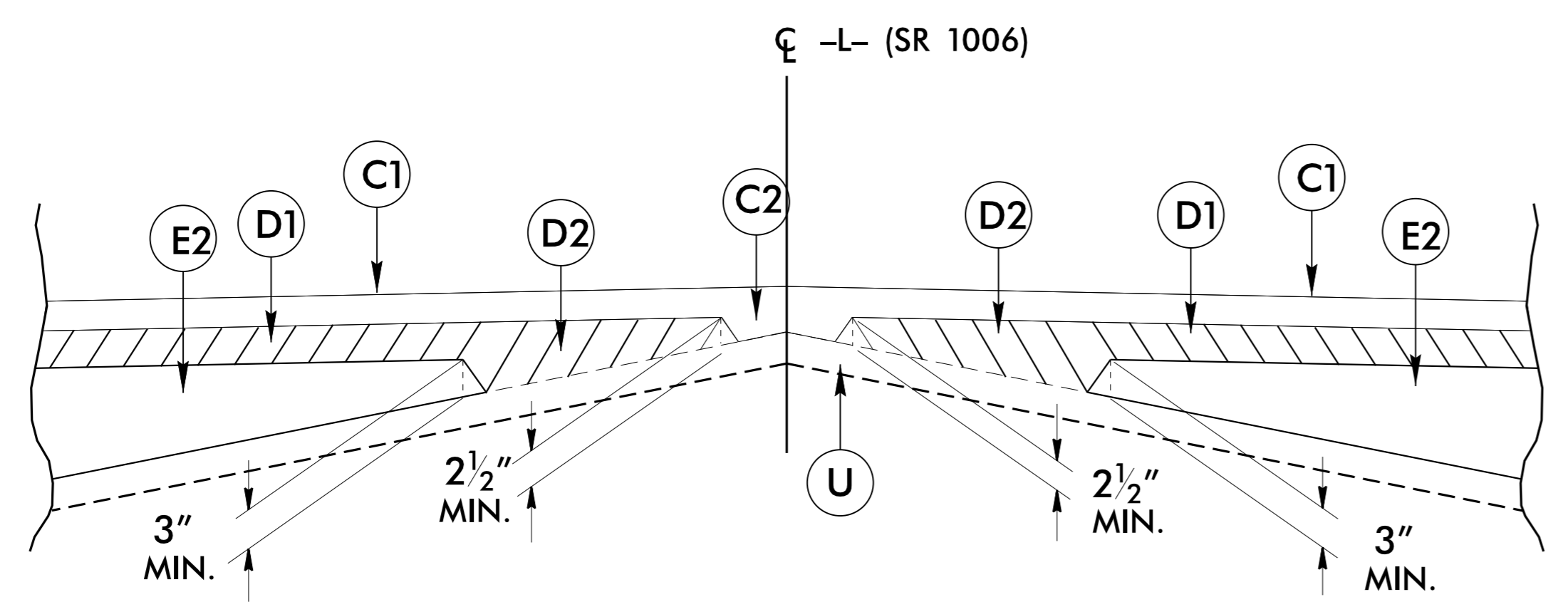


DETAIL 'B' SHOWING SHOULDER BERM GUTTER
 USE WITH TYPICAL SECTION NO. 2
 -L-LT. STA. 17+75.00 TO STA. 20+53.00
 -L-LT. STA. 24+57.40 TO STA. 25+57.75



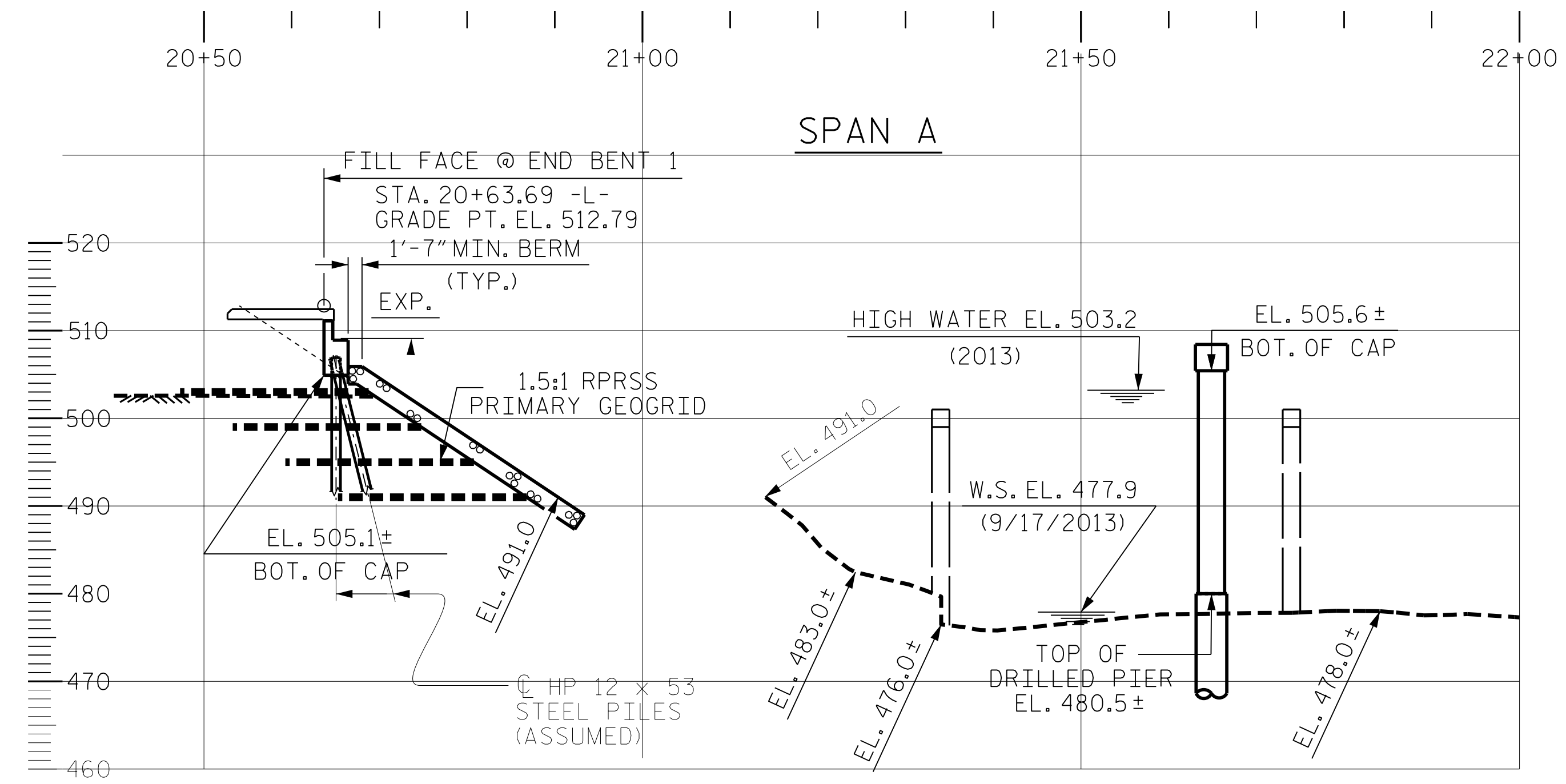
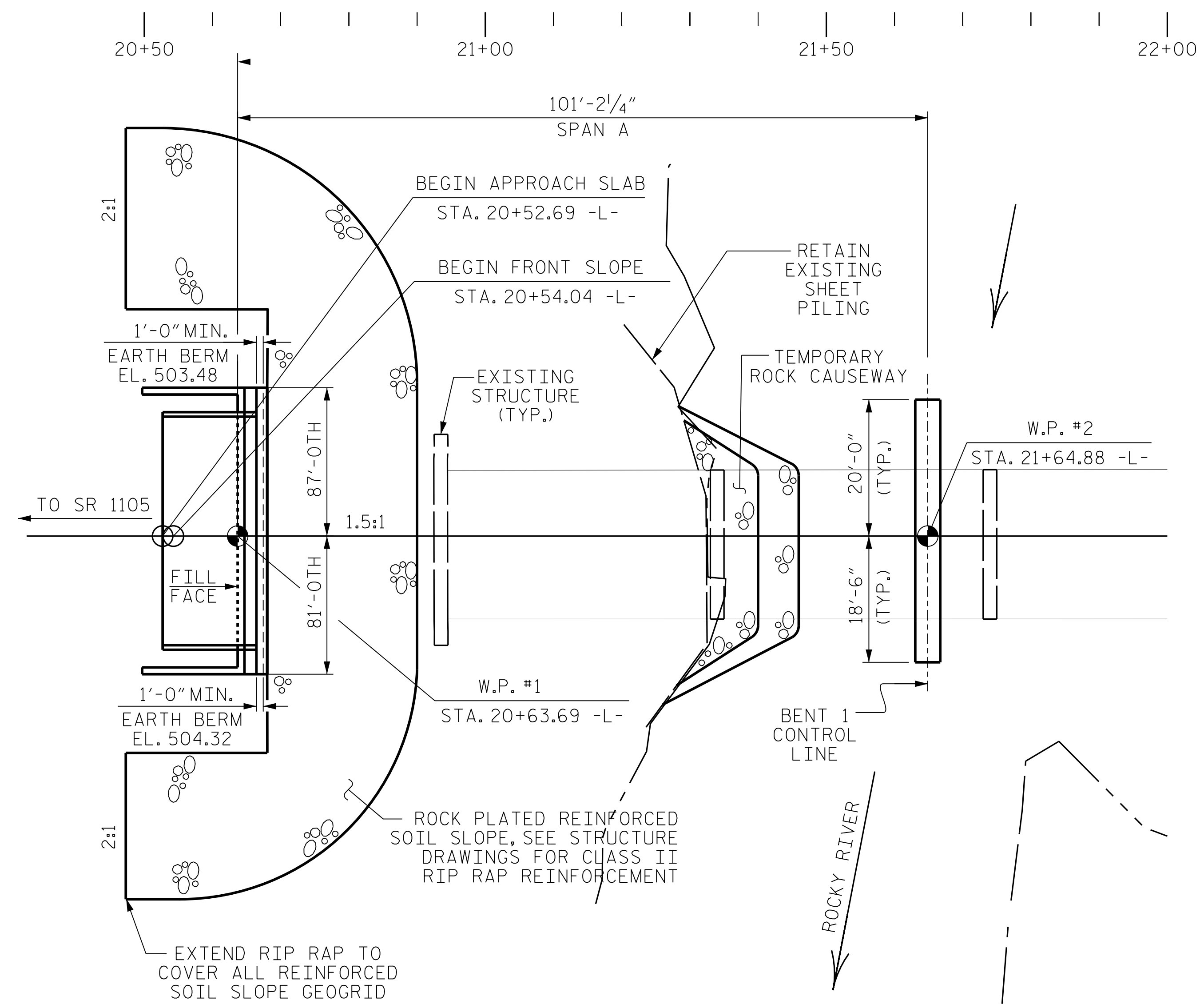
TYPICAL SECTION NO. 3

*BICYCLE SAFETY RAIL
 USE TYPICAL SECTION NO. 3
 -L- STA. 20+63.69 (BEGIN BRIDGE) TO STA. 24+46.32 (END BRIDGE)



Detail Showing Method of Wedging

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* SECONDARY GEOGRID NOT SHOWN FOR CLARITY.
 ** SEE SHEET 2 OF 3 FOR TYPICALS FOR ROCK PLATED REINFORCED SOIL SLOPE.

PREPARED BY: MHS DATE: 11/6/14
 REVIEWED BY: SCC DATE: 11/16/14

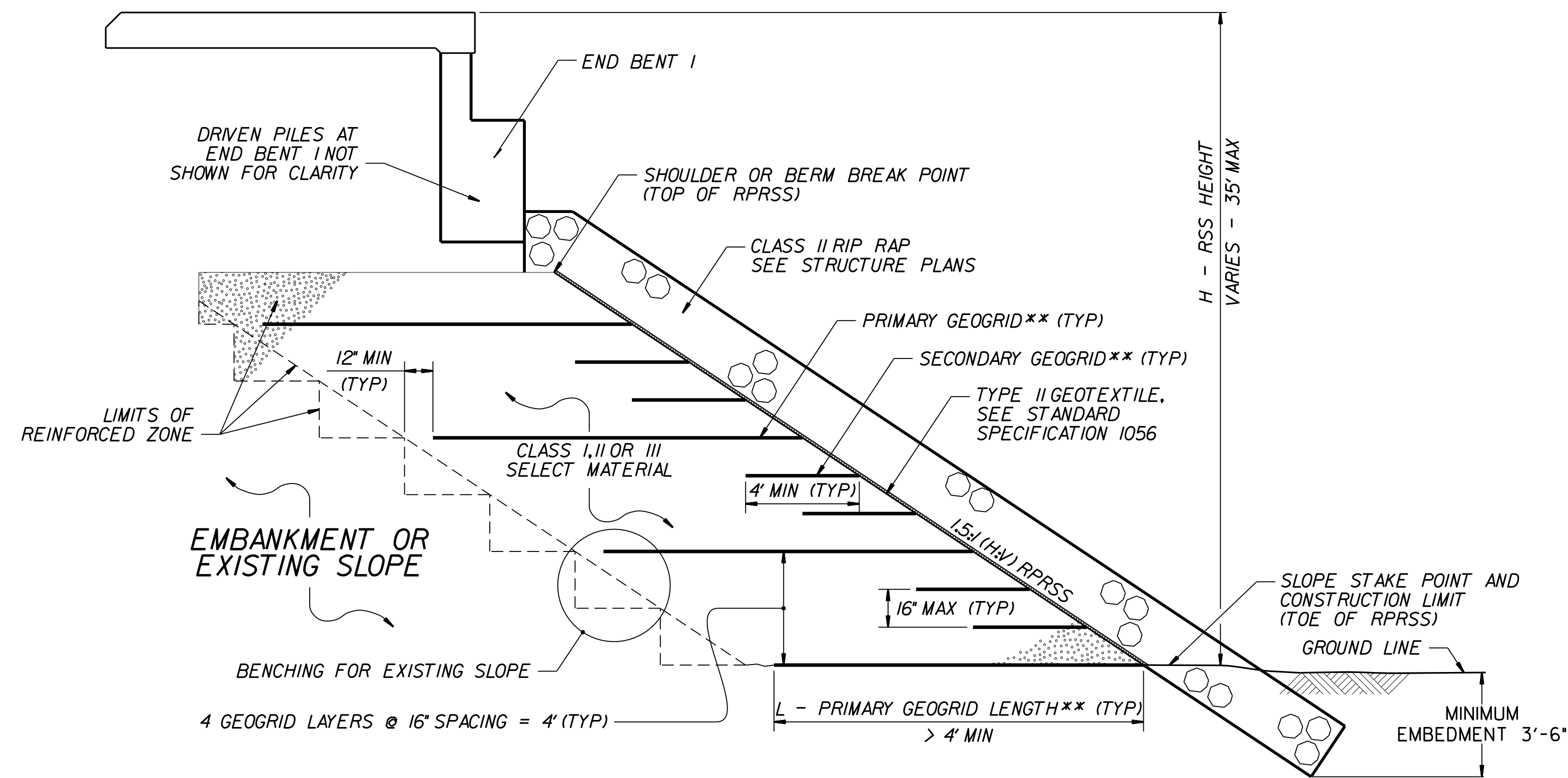
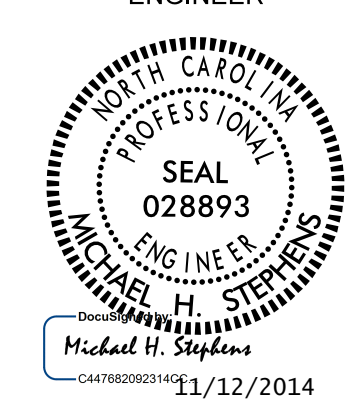
GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

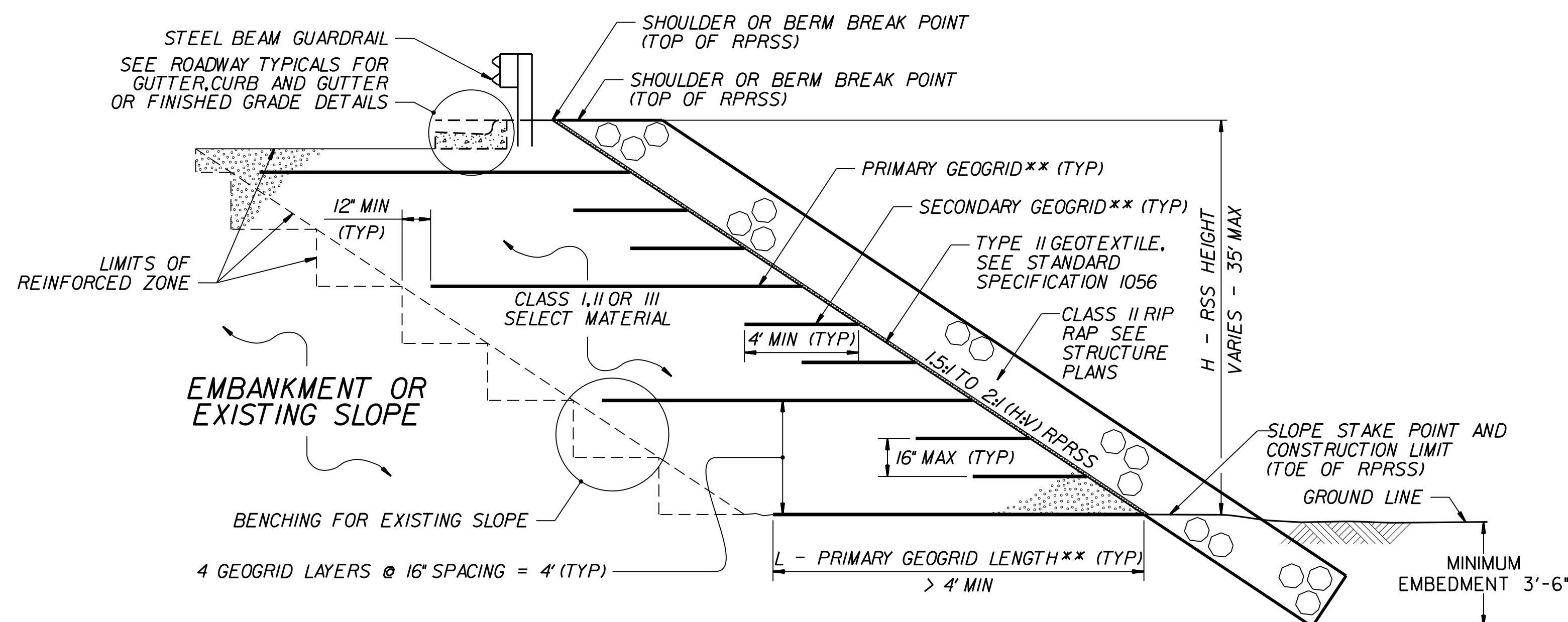
**PLAN AND SECTION VIEWS
 ROCK PLATED REINFORCED SOIL SLOPE (RPRSS)**

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		



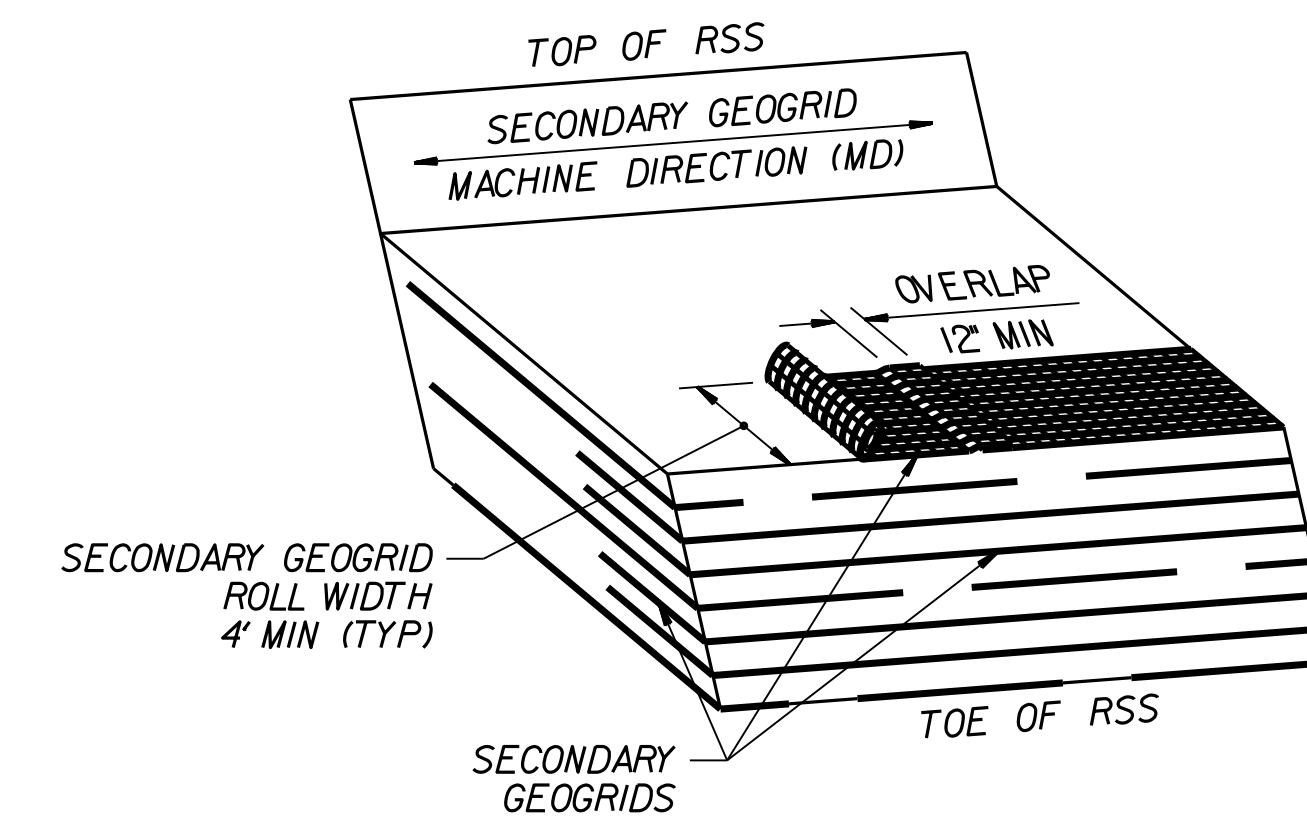
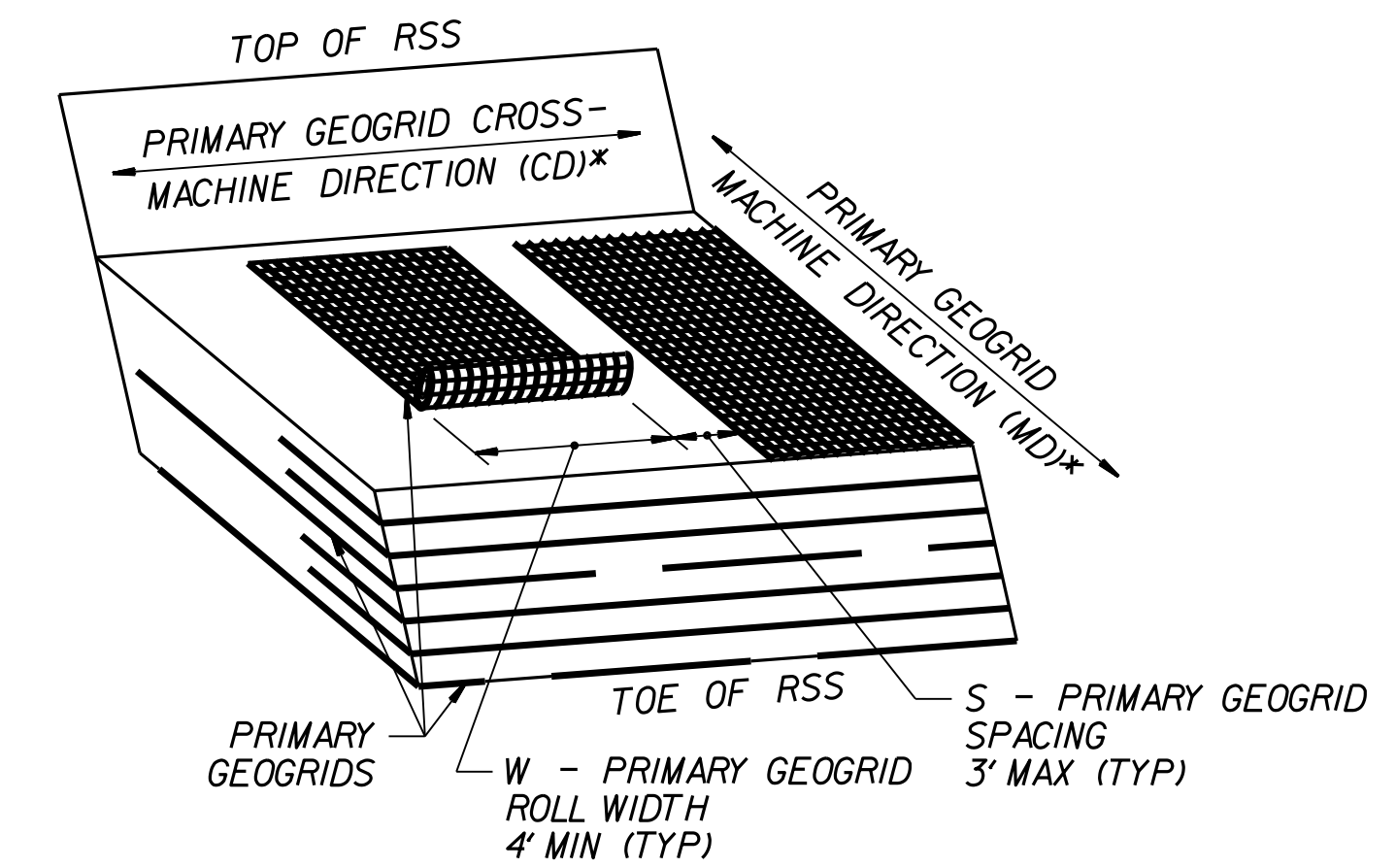
EBI END SLOPE RPRS WITH SELECT MATERIAL THAT DOES NOT MEET ARTICLE 1019-2 OF THE STANDARD SPECIFICATIONS

**SEE TABLES ON SHEET 2 AND GEOGRID PLACEMENT DETAILS.



TRANSITION SLOPE 1.5:1 TO 2:1 RPRS WITH SELECT MATERIAL THAT DOES NOT MEET ARTICLE 1019-2 OF THE STANDARD SPECIFICATIONS

**SEE TABLES ON SHEET 2 AND GEOGRID PLACEMENT DETAILS.

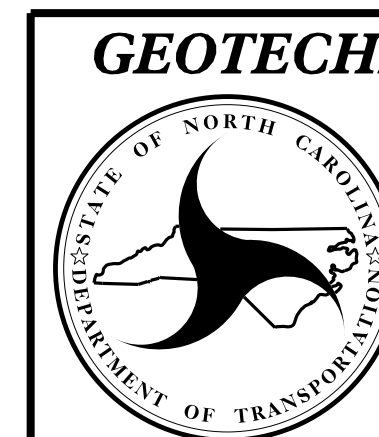


GEOGRID PLACEMENT DETAILS

(% COVERAGE = $\frac{W}{W+S} \times 100 \geq 75\%$)

*SEE NOTES 8 AND 9 ON SHEET 2.

PREPARED BY: MHS	DATE: 11/6/14
REVIEWED BY: SCC	DATE: 11/16/14



GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN AND SECTION VIEWS
ROCK PLATED
REINFORCED SOIL
SLOPE (RPRS)

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

GEOGRID TYPE, DIRECTION	H (FT)	0 - < 10		10 - 20		> 20 - 35	
	SELECT MATERIAL CLASS	I	II OR III	I	II OR III	I	II OR III
PRIMARY GEOGRID, MD (SUBSTITUTE SECONDARY GEOGRID FOR PRIMARY GEOGRID FOR 2:1 (H:V) OR FLATTER RPRSS)	1.5:1 TO 1.75:1 (H:V) RPRSS	500	500	800	500	1100	700
	> 1.75:1 TO < 2:1 (H:V) RPRSS	500	500	600	500	800	500
SECONDARY GEOGRID, CD	1:1 (H:V) OR FLATTER RPRSS	185					

LTDS – MINIMUM REQUIRED LONG-TERM DESIGN STRENGTH (LB/FT)
 (LTDS IS BASED ON 100% COVERAGE FOR PRIMARY GEOGRID.
 SEE NOTE 9 FOR LESS THAN 100% COVERAGE.)

NOTES:

- SEE ROADWAY PLANS AND SUMMARY SHEETS FOR ROCK PLATED REINFORCED SOIL SLOPE (RP-RSS) LOCATIONS.
- FOR ROCK PLATED REINFORCED SOIL SLOPES, SEE ROCK PLATED REINFORCED SOIL SLOPES PROVISION.
- RPRSS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
 UNIT WEIGHT, $\gamma = 120$ LB/CF
 FRICTION ANGLE, $\phi = 30$ DEGREES
 COHESION, $c = 0$ LB/SF
- DO NOT USE STANDARD RSS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE TOE OF RSS.
- DO NOT USE STANDARD RSS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW RSS.
- GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR LONG-TERM DESIGN STRENGTHS FOR A 75-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM:
connect.ncdot.gov/resources/Materials/Pages/SoilsLaboratory.aspx
 DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SELECT MATERIAL AS FOLLOWS:

MATERIAL TYPE	SELECT MATERIAL
BORROW	CLASS I SELECT MATERIAL
FINE AGGREGATE	CLASS II OR III SELECT MATERIAL

IF THE WEBSITE DOES NOT LIST A LONG-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID IN THE MD, DO NOT USE THE GEOGRID FOR PRIMARY GEOGRID. IF THE WEBSITE DOES NOT LIST A LONG-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID IN THE CD, USE A LONG-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 7 FOR THE SECONDARY GEOGRID.

- DO NOT OVERLAP PRIMARY GEOGRIDS IN THE MD SO OVERLAPS ARE PARALLEL TO THE TOE OF RSS. POLYOLEFIN (e.g., HDPE OR PP) GEOGRIDS MAY BE SPLICED ONCE PER PRIMARY GEOGRID LENGTH IN ACCORDANCE WITH THE GEOGRID MANUFACTURER'S INSTRUCTIONS. USE POLYOLEFIN GEOGRID PIECES AT LEAST 4' LONG. DO NOT SPLICE POLYESTER TYPE (PET) GEOGRIDS.
- FOR PRIMARY GEOGRIDS WITH 100% COVERAGE, PLACE PRIMARY GEOGRIDS SO GEOGRIDS ARE ADJACENT TO EACH OTHER IN THE CD. FOR PRIMARY GEOGRIDS WITH 75% TO LESS THAN 100% COVERAGE,

MINIMUM REQUIRED LONG-TERM DESIGN STRENGTH = LTDS BASED ON 100% COVERAGE $\times (W + S) / W$

SEE TABLE FOR LTDS BASED ON 100% COVERAGE AND GEOGRID PLACEMENT DETAILS FOR PRIMARY GEOGRID ROLL WIDTH (W) AND SPACING (S). FOR PRIMARY GEOGRIDS WITH LESS THAN 100% COVERAGE, STAGGER PRIMARY GEOGRIDS SO GEOGRIDS ARE CENTERED OVER GAPS IN THE PRIMARY GEOGRID LAYER BELOW. DO NOT USE LESS THAN 75% COVERAGE FOR PRIMARY GEOGRIDS.

- DO NOT PLACE PRIMARY GEOGRIDS UNTIL EXCAVATION DIMENSIONS AND IN-SITU MATERIAL ARE APPROVED.

H (FT)	0 - < 10		10 - 20		> 20 - 35	
SELECT MATERIAL CLASS	I	II OR III	I	II OR III	I	II OR III
1.5:1 TO 1.75:1 (H:V) RPRSS	1.20	1.05	1.10	1.00	1.00	0.95
> 1.75:1 TO < 2:1 (H:V) RPRSS	1.15	0.80	1.05	0.75	0.95	0.70

L / H RATIO (L > 4' MIN)
 (IF L ≤ 4', USE SECONDARY GEOGRID
 INSTEAD OF PRIMARY GEOGRID.)

COMPUTED BY: WTB DATE: 3/4/15
 CHECKED BY: WAS DATE: 3/5/15

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA
GUARDRAIL SUMMARY

PROJECT REFERENCE NO. SHEET NO.
B-4972 **3B-1**

"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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS							IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS			
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	TYPE III	CAT-1	VI MOD	BIC	G					NG		
-L-	16+94.94	20+63.69	Lt.	368.75				17+60.00	5.5'	9'		50'		1'			1													
-L-	16+69.94	20+63.69	Rt.	393.75				17+20.00	4'	9'		50'		1'			1													
-L-	24+46.32	26+14.58	Lt.	168.75				25+80.00	4'	9'		150'		3'			1													
-L-	24+46.32	26+02.75	Rt.	156.25					5.5'	9'				1'			1													
			Sub-Totals	1087.5													4													
			Deduction for Guard Anchor Units	-275																										
			Total	812.5				SAY '5' ADDITIONAL GUARDRAIL POST																						
			Say	825																										

PAVEMENT REMOVAL SUMMARY							
in Square Yards							
SURVEY LINE	BEG. STA.	END STA.	LOCATION	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	16+35.00	20+50.00	Centerline		1029		
-L-	20+50.00	20+94.50	Centerline	108			
-L-	22+93.00	25+00.00	Centerline	516			
-L-	25+00.00	26+75.00	Centerline		433		
			Total	624	1462		
			Say	630	1470		

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement, and Breaking of Existing Asphalt Pavement will be paid for at the contract lump sum price for "Grading."

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS SUMMARY OF EARTHWORK							
in Cubic Yards							
CHAIN	BEGINNING STATION	ENDING STATION	UNCL. EXCA. C.Y.	UNDERCUT C.Y.	EMBANK. +% C.Y.	BORROW C.Y.	WASTE C.Y.
SUMMARY 1							
-L-	15+50.00	21+00.00	513		11,534	11,021	
-L-	22+50.00	29+00.00	4,560		4,063		497
SUBTOTAL			5,073		15,598	11,021	497
SHEET TOTALS			5,073		15,598	11,021	497
LOSS DUE TO CLEARING AND GRUBBING			-110			110	
MATERIAL FOR SHOULDER CONSTRUCTION					312	312	
EARTH WASTE IN LIEU OF BORROW						-497	-497
PROJECT TOTAL			4,963		15,910	10,947	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT						547	
GRAND TOTAL			4,963			11,494	
SAY			5,500			12,000	
DRAINAGE DITCH EXCAVATION = 470C.Y.							
ESTIMATED UNDERCUT = 500 C.Y.							
ESTIMATED SHALLOW UNDERCUT = 100 C.Y.							

Note: 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.

COMPUTED BY: _____ DATE: _____
 CHECKED BY: _____ DATE: _____

(4-21-15)

PROJECT NO. B-4972	SHEET NO. 3G-1
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**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
			CONTINGENCY	ASU	100	190	300		
			TOTAL CY/TONS/SY:		100	190	300*	0	0

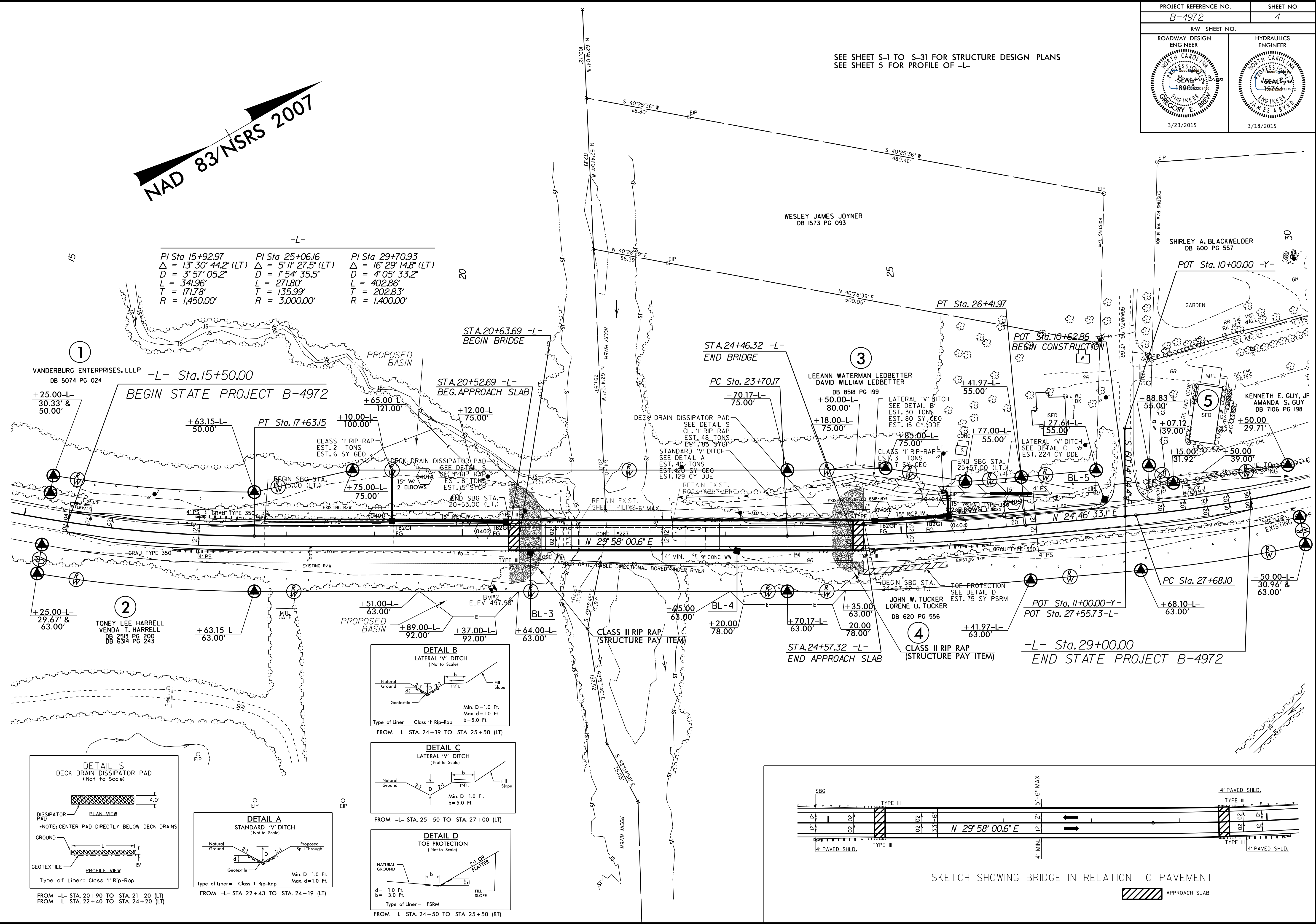
ASU = Aggregate Subgrade, AST = Aggregate Stabilization

*Total square yards of Geotextile for Soil Stabilization is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.

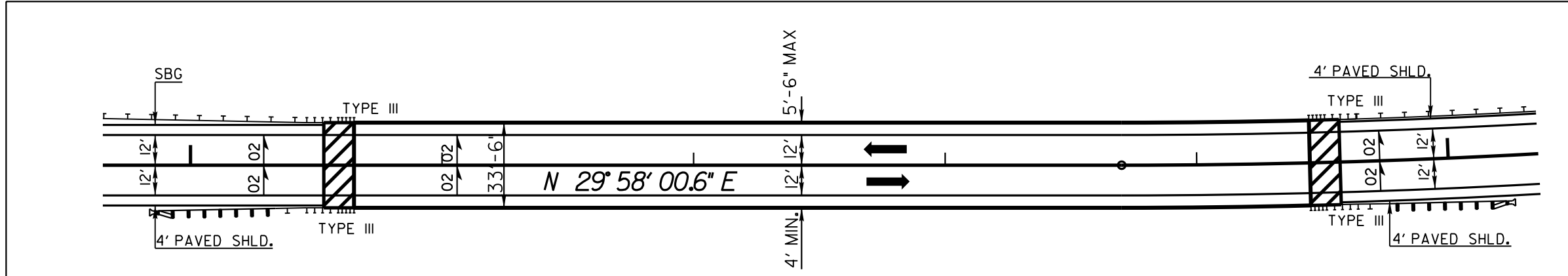
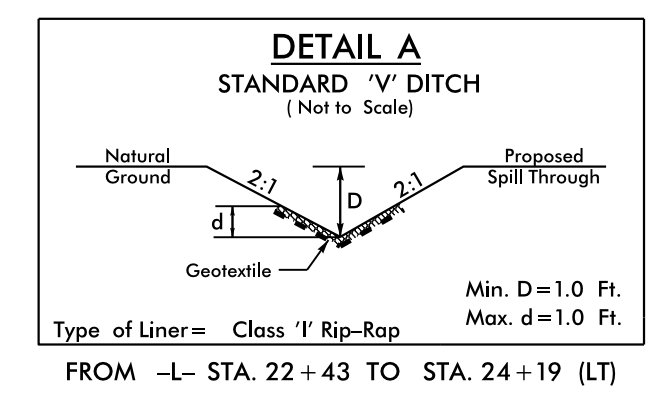
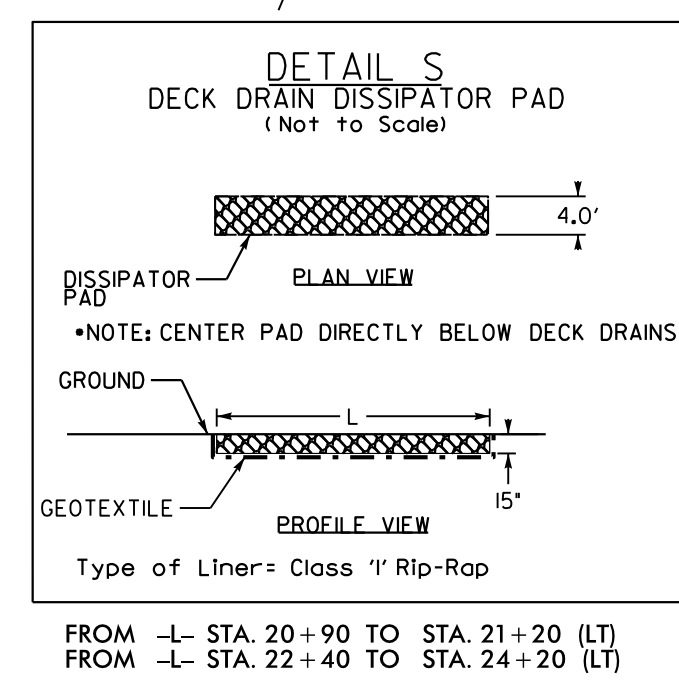
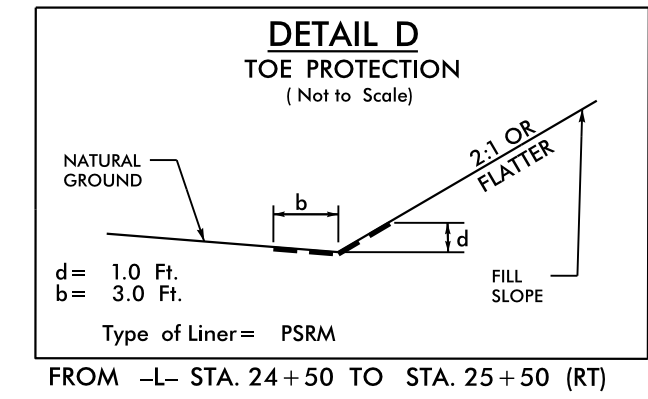
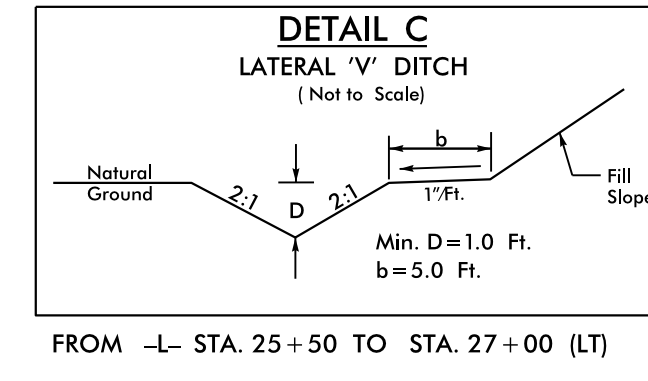
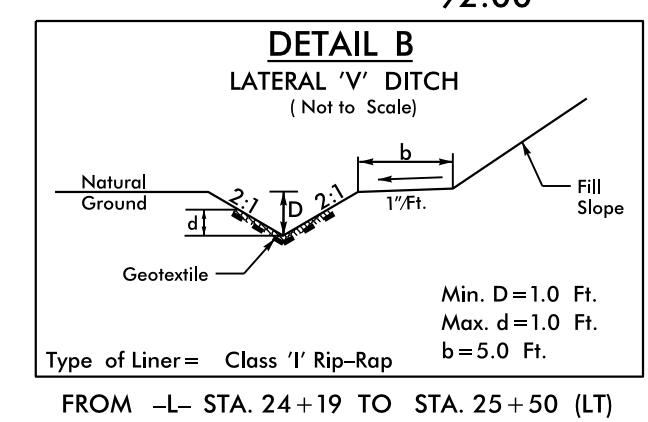
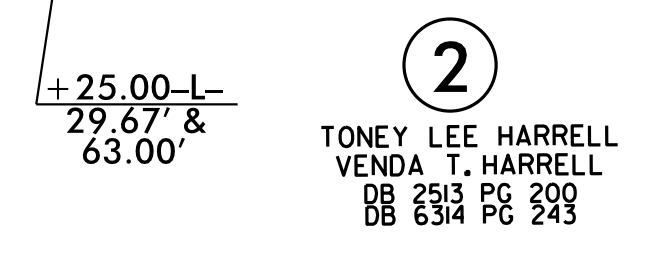
SEE SHEET S-1 TO S-31 FOR STRUCTURE DESIGN PLANS
SEE SHEET 5 FOR PROFILE OF -L-

NAD 83/NSRS 2007

PI Sta 15+92.97 Δ = 13° 30' 44.2" (LT) D = 3° 57' 05.2" L = 341.96' T = 171.78' R = 1,450.00'	PI Sta 25+06.16 Δ = 5° 11' 27.5" (LT) D = 1° 54' 35.5" L = 271.80' T = 135.99' R = 3,000.00'	PI Sta 29+70.93 Δ = 16° 29' 14.8" (LT) D = 4° 05' 33.2" L = 402.86' T = 202.83' R = 1,400.00'
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REVISIONS



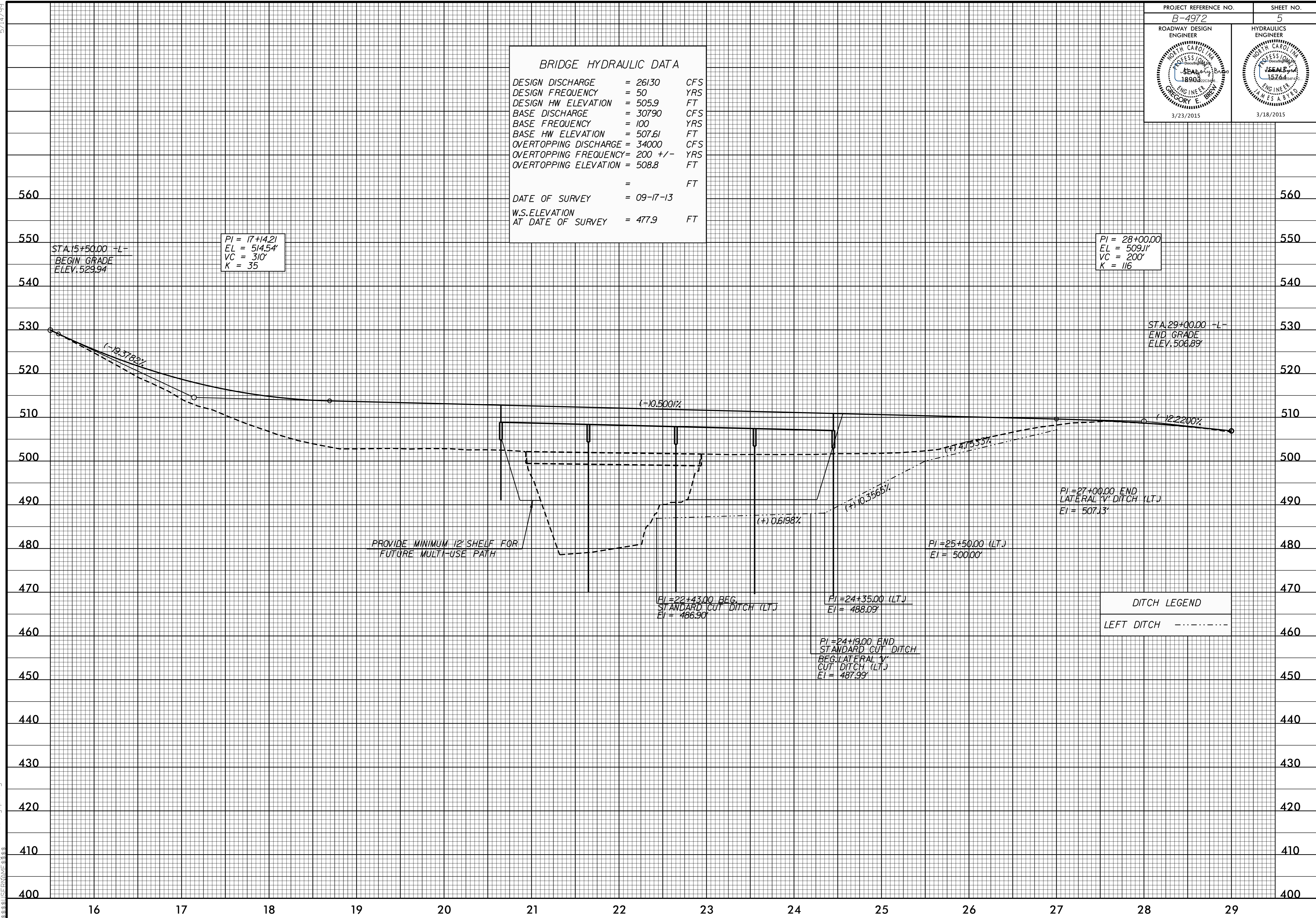
SKETCH SHOWING BRIDGE IN RELATION TO PAVEMENT

APPROACH SLAB

8/17/99

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BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 26130	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 505.9	FT
BASE DISCHARGE	= 30790	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 507.61	FT
OVERTOPPING DISCHARGE	= 34000	CFS
OVERTOPPING FREQUENCY	= 200 +/-	YRS
OVERTOPPING ELEVATION	= 508.8	FT
DATE OF SURVEY	= 09-17-13	FT
W.S. ELEVATION AT DATE OF SURVEY	= 477.9	FT



DITCH LEGEND
LEFT DITCH - - - - -

5/14/99
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DATE PLOTTED: 3/23/2015 10:48:56 AM