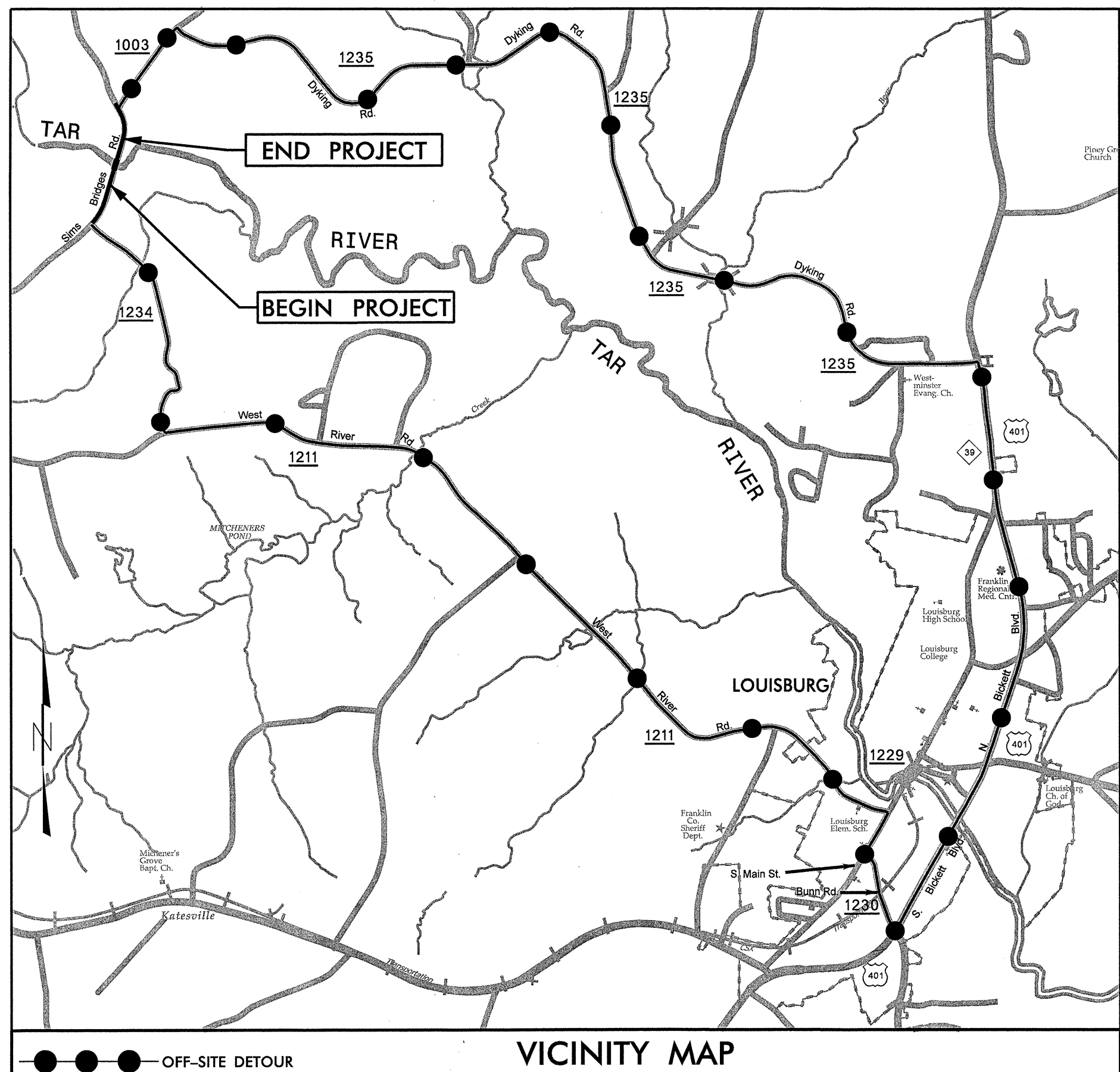


09/28/09

TIP PROJECT: B-4514

CONTRACT: C202747



See Sheet 1-A For Index of Sheets
 See Sheet 1-B For Conventional Symbols

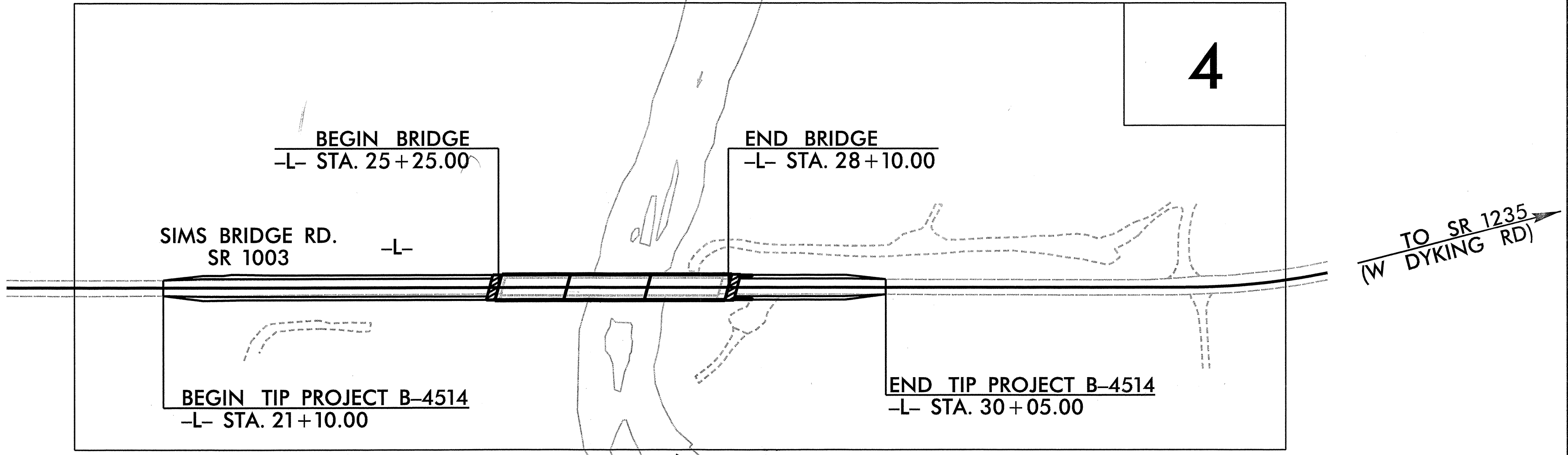
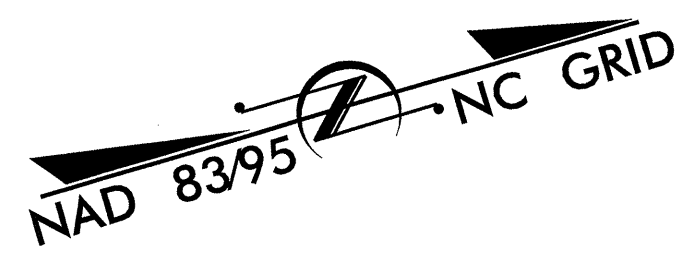
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

FRANKLIN COUNTY

LOCATION: BRIDGE NO. 36 OVER TAR RIVER
 ON SR 1003 (SIMS BRIDGE RD.)

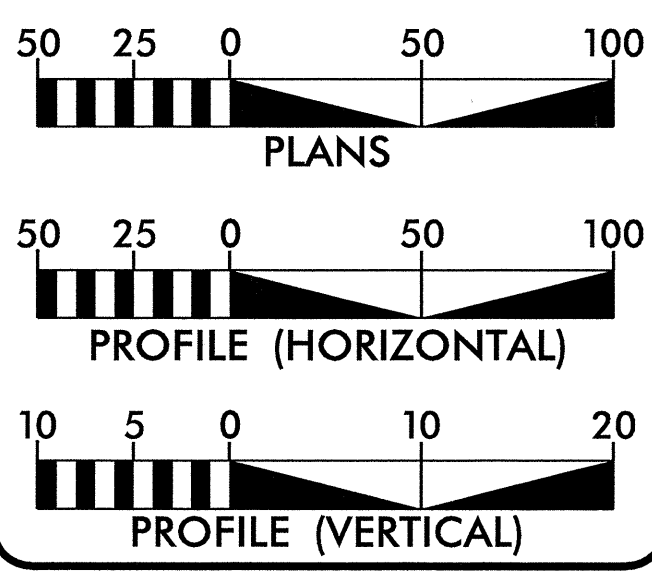
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4514	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33739.1.1	BRSTP-1003(30)	P.E.	
33739.2.1	BRSTP-1003(30)	RW & UTILITIES	
33739.3.1	BRSTP-1003(30)	CONST	



NCDOT CONTACT: K. ZAK HAMIDI, PE
 ROADWAY DESIGN - ENGINEERING COORDINATION

GRAPHIC SCALES



DESIGN DATA

ADT 2012 = 2040
 ADT 2032 = 3900
 DHV = 10%
 D = 70%
 T = 5% *
 *(TTST 3% + DUAL 2%)
 V = 60 MPH
 CLASS = RURAL
 MINOR COLLECTOR
 SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT B-4514 = 0.116 mi.
 LENGTH STRUCTURE PROJECT B-4514 = 0.054 mi.
 TOTAL LENGTH STATE PROJECT B-4514 = 0.170 mi.



424 Fayetteville Street Mall
 Suite 400
 Raleigh, NC 27601
 T 919.380.8750
 F 919.380.8752
 www.stewart-eng.com
 PERM NO.: C-19951

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
 NOVEMBER 19, 2009

LETTING DATE:
 JANUARY 17, 2012

Prepared in the Office of:
 STEWART ENGINEERING
 For
 NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION

BEN CRAWFORD, PE
 PROJECT ENGINEER

JONATHAN HEFNER, PE
 PROJECT DESIGN ENGINEER

K. ZAK HAMIDI, PE
 NCDOT CONTACT

HYDRAULICS ENGINEER

HENRY WELLS, PE
 SEAL 9334
 SIGNATURE: [Signature] 10/21/11

ROADWAY DESIGN ENGINEER

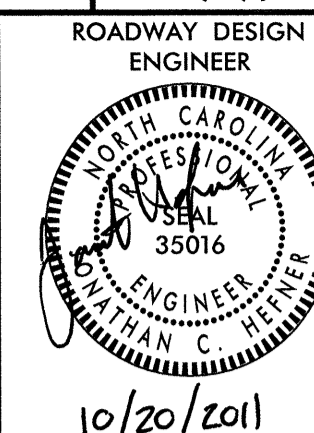
JONATHAN HEFNER, PE
 SEAL 35016
 SIGNATURE: [Signature] 10/20/2011 PE

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

ART McMillan, PE
 SEAL 35016
 SIGNATURE: [Signature] 10/20/2011 PE

ART McMillan, PE
 STATE HIGHWAY DESIGN ENGINEER

10/20/2011
 R:\Roadway\Proj\PLANS\SHEETS\dgn
 USER:jhefner



INDEX OF SHEETS

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, TYPICAL SECTIONS, AND WEDGING DETAILS
3	SUMMARY OF QUANTITIES
3-A	EARTHWORK, DRAINAGE, GUARDRAIL, SHOULDER BERM GUTTER, AND ASPHALT PAVEMENT REMOVAL SUMMARIES
4	PLAN & PROFILE SHEET
TMP-1 THRU TMP-2	TRANSPORTATION MANAGEMENT PLANS
SD-1	SPECIAL SIGN DESIGN PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL SHEET
SIGN-1 THRU SIGN-2	SIGNING PLANS
X-1	CROSS SECTION SUMMARY AND INDEX
X-2 THRU X-3	CROSS-SECTIONS
S-1 THRU S-27	STRUCTURE PLANS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 08/31/11

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 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 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

Wake Electric

RIGHT-OF-WAY MARKERS:

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

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 Superlevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
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 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete
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
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units

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	○
Property Corner	-----
Property Monument	□
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	-MLB-
Proposed Wetland Boundary	MLB
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 Marker	-----
Existing Control of Access	⊙
Proposed Control of Access	⊙
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage / Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Aerial Utility Easement	-----
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----
Proposed Slope Stakes Fill	-----
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	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊙
Storm Sewer	-----

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	-----
Designated U/G Power Line (S.U.E.*)	-----

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	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

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	-----

TV:

TV Satellite Dish	⊕
TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	□
Recorded U/G TV Cable	-----
Designated U/G TV Cable (S.U.E.*)	-----
Recorded U/G Fiber Optic Cable	-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----

GAS:

Gas Valve	◇
Gas Meter	⊕
Recorded U/G Gas Line	-----
Designated U/G Gas Line (S.U.E.*)	-----
Above Ground Gas Line	-----

SANITARY SEWER:

Sanitary Sewer Manhole	⊙
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

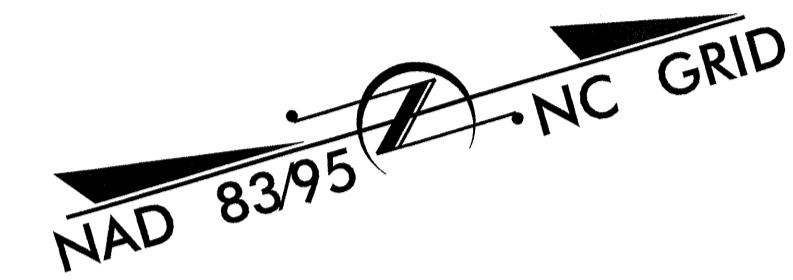
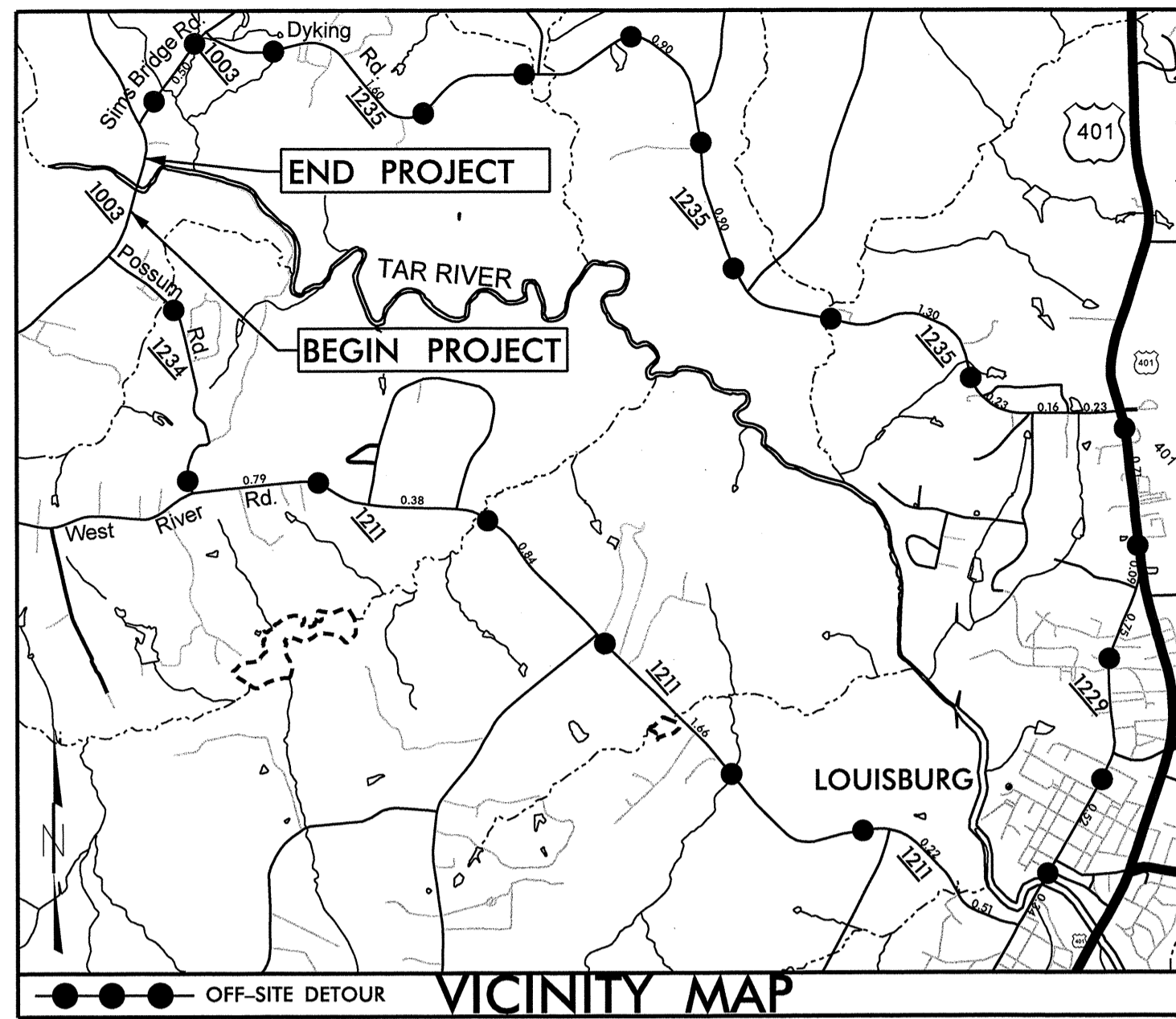
MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line	-----
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-4514

FRANKLIN COUNTY

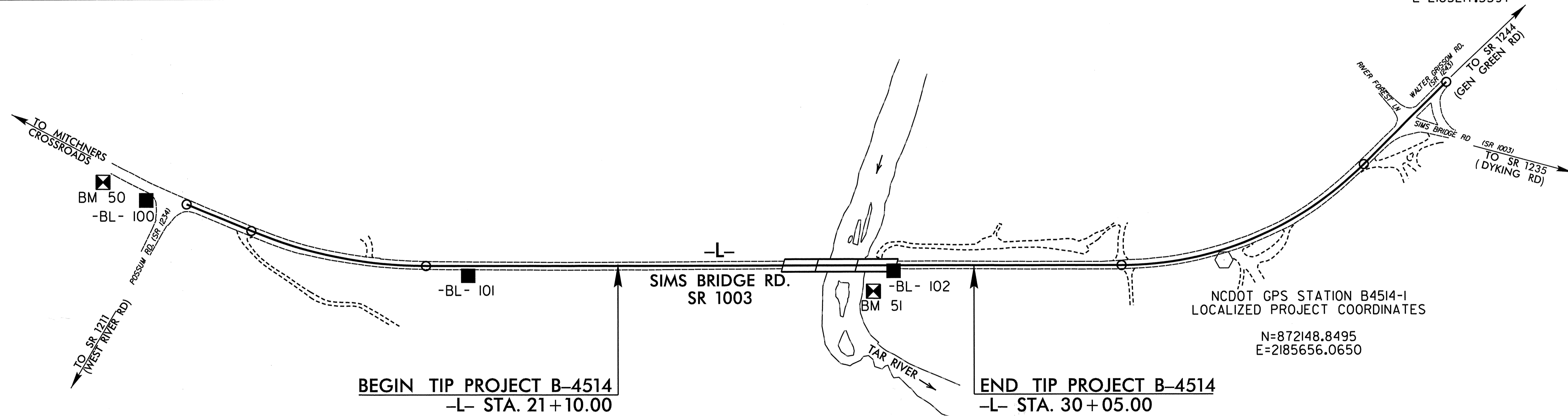
**LOCATION: BRIDGE NO. 36 OVER TAR RIVER
ON SR 1003 (SIMS BRIDGE RD.)
BETWEEN SR 1234 (POSSUM RD.)
AND SR 1235 (DYKING RD.)**



NCDOT GPS STATION B4514-2
LOCALIZED PROJECT COORDINATES

N=873138.2160
E=2185217.5597

BL-99



CONTROL DATA

BASELINE POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
99	BL-99	869173.1949	2184236.7594	273.12	OUTSIDE PROJECT LIMITS	
100	BL-100	869591.4510	2184748.4846	251.29	OUTSIDE PROJECT LIMITS	
101	BL-101	870314.9513	2185157.3290	241.50	17+33.33	24.48 RT
102	BL-102	871343.9788	2185447.6281	222.89	28+02.47	13.71 RT
1	B4514-1	872148.8495	2185656.0650	226.55	36+29.74	25.46 RT
2	B4514-2	873138.2160	2185217.5597	260.41	OUTSIDE PROJECT LIMITS	

BENCHMARK DATA

BM50	ELEVATION = 259.04	BM51	ELEVATION = 207.00
N 869500	E 2184675	N 871281	E 2185483
L STATION 10+00		L STATION 27+52 65 RIGHT	
S 31° 00' 23.0" W DIST 216.07		RRS IN 8 INCH POPLAR	
RRS IN 20 INCH SWEET GUM			

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4514-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
 NORTHING: 872148.8495(ft) EASTING: 2185656.0650(ft)
 ELEVATION: 226.55(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99998788
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4514-1" TO -L- STATION 21+10.00 IS
 S 15°51'29.0" W 1523.53'
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

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/)

B4514_ls_control_090213.txt

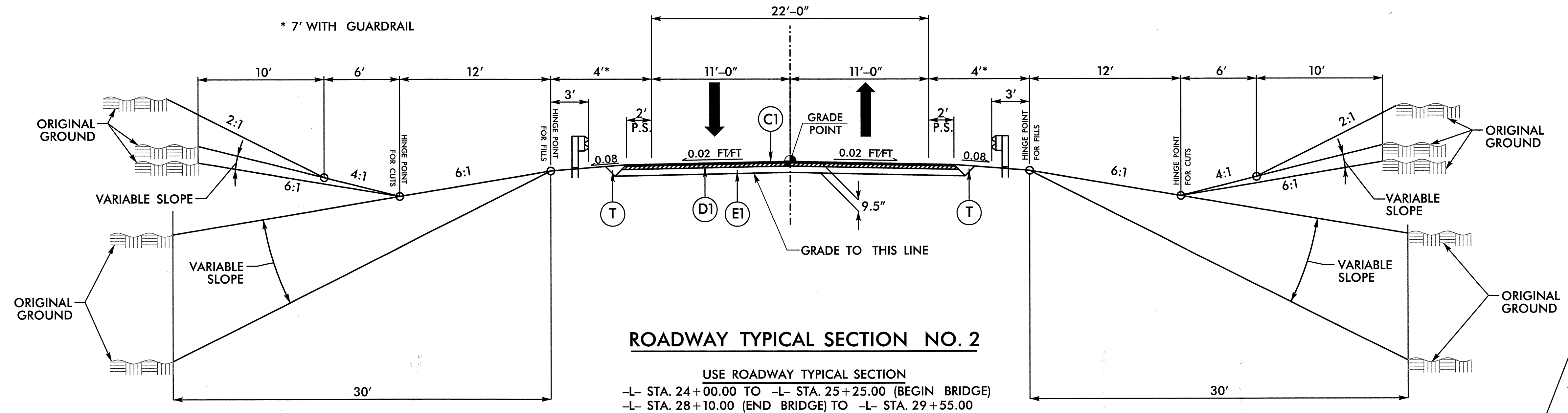
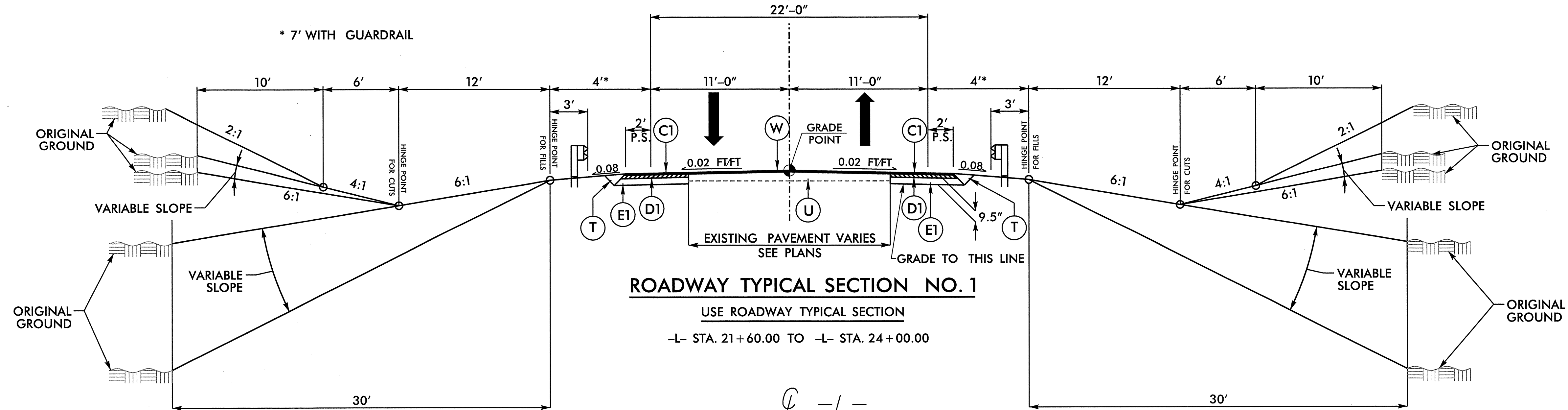
SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

⊙ 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: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1 -L- STA. 21+10.00 TO -L- STA. 21+60.00
 TRANSITION FROM TYPICAL SECTION NO. 2 TO EXISTING -L- STA. 29+55.00 TO -L- STA. 30+05.00

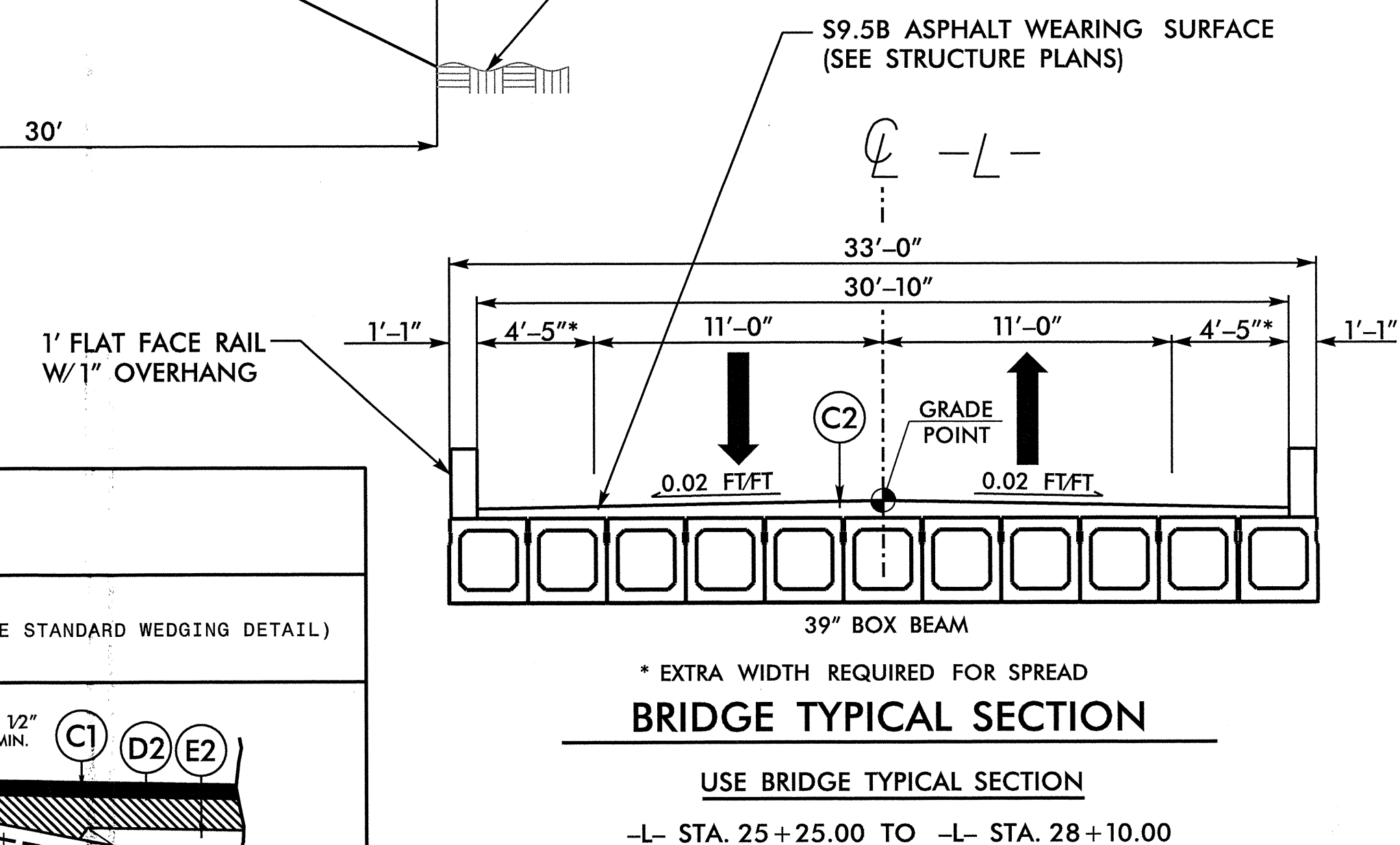
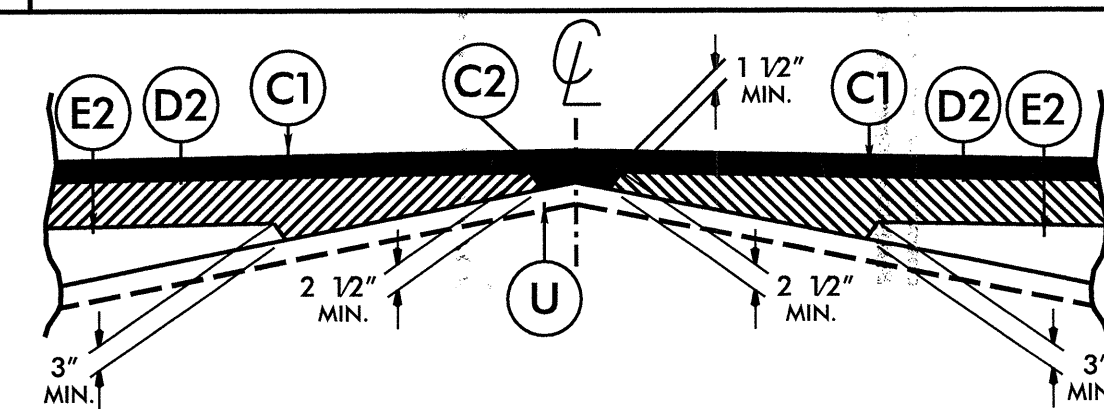
PROJECT REFERENCE NO. B-4514	SHEET NO. 2
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER
 STEWART 421 FAYETTEVILLE ST SUITE 400 RALEIGH, NC 27601 T 919.380.8750 F 919.380.8752 www.stewart-eng.com FIRM NO.: C-1051	



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

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	E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)
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 2" IN DEPTH.	E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0, 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.		
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	T	EARTH MATERIAL.		
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.	U	EXISTING PAVEMENT.		



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202747

ItemNumber	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION
003000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ***** (26+67.50)
003600000-E	225	200	CY	UNDERCUT EXCAVATION
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
006300000-N	SP	Lump Sum		GRADING
010600000-E	230	4,600	CY	BORROW EXCAVATION
019500000-E	265	200	CY	SELECT GRANULAR MATERIAL
019600000-E	270	300	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	36	LF	15" DRAINAGE PIPE
033585000-E	305	2	EA	*** DRAINAGE PIPE ELBOWS (15")
044820000-E	310	28	LF	15" RC PIPE CULVERTS, CLASS IV
122000000-E	545	100	TON	INCIDENTAL STONE BASE
148900000-E	610	390	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
149800000-E	610	250	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
151900000-E	610	520	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
157500000-E	620	60	TON	ASPHALT BINDER FOR PLANT MIX
200000000-N	806	8	EA	RIGHT OF WAY MARKERS
202200000-E	815	44.8	CY	SUBDRAIN EXCAVATION
203300000-E	815	33.6	CY	SUBDRAIN FINE AGGREGATE
204400000-E	815	200	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

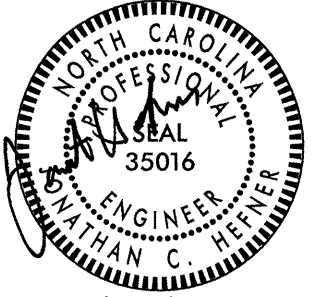
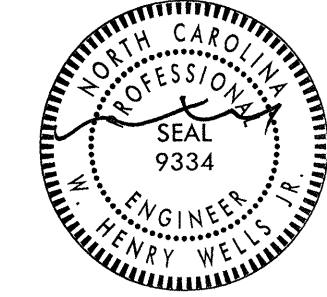
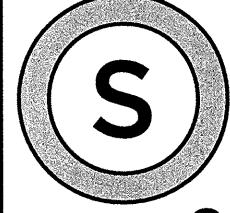
ItemNumber	Sec #	Quantity	Unit	Description
236700000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29
255600000-E	846	38	LF	SHOULDER BERM GUTTER
303000000-E	862	912.5	LF	STEEL BM GUARDRAIL
315000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
321500000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
327000000-N	SP	2	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
336000000-E	863	1,102	LF	REMOVE EXISTING GUARDRAIL
363500000-E	876	260	TON	RIP RAP, CLASS II
364900000-E	876	80	TON	RIP RAP, CLASS B
365600000-E	876	1,280	SY	GEOTEXTILE FOR DRAINAGE
365900000-N	SP	1	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
407200000-E	903	82	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
409600000-N	904	2	EA	SIGN ERECTION, TYPE D
410200000-N	904	1	EA	SIGN ERECTION, TYPE E
415500000-N	907	5	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
440000000-E	1110	740	SF	WORK ZONE SIGNS (STATIONARY)
441000000-E	1110	116	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
444500000-E	1145	80	LF	BARRICADES (TYPE III)
468500000-E	1205	1,790	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
468600000-E	1205	1,790	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
490000000-N	1251	11	EA	PERMANENT RAISED PAVEMENT MARKERS
600000000-E	1605	1,450	LF	TEMPORARY SILT FENCE
600600000-E	1610	225	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	150	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	485	TON	SEDIMENT CONTROL STONE
601500000-E	1615	1.5	ACR	TEMPORARY MULCHING
601800000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	1.25	TON	FERTILIZER FOR TEMPORARY SEEDING
602400000-E	1622	320	LF	TEMPORARY SLOPE DRAINS
602900000-E	SP	600	LF	SAFETY FENCE
603000000-E	1630	260	CY	SILT EXCAVATION
603600000-E	1631	6,000	SY	MATTING FOR EROSION CONTROL
603700000-E	SP	10	SY	COIR FIBER MAT
604200000-E	1632	1,300	LF	1/4" HARDWARE CLOTH
604800000-E	SP	50	SY	FLOATING TURBIDITY CURTAIN
607000000-N	1639	8	EA	SPECIAL STILLING BASINS
607101000-E	SP	100	LF	WATTLE
607102000-E	SP	25	LB	POLYACRYLAMIDE (PAM)
607103000-E	1640	70	LF	COIR FIBER BAFFLE
607105000-E	SP	1	EA	*** SKIMMER (1-1/2")
608400000-E	1660	2	ACR	SEEDING & MULCHING
608700000-E	1660	2	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	1.25	TON	FERTILIZER TOPDRESSING
611450000-N	1667	10	MHR	SPECIALIZED HAND MOWING
611700000-N	SP	16	EA	RESPONSE FOR EROSION CONTROL
612300000-E	1670	0.25	ACR	REFORESTATION

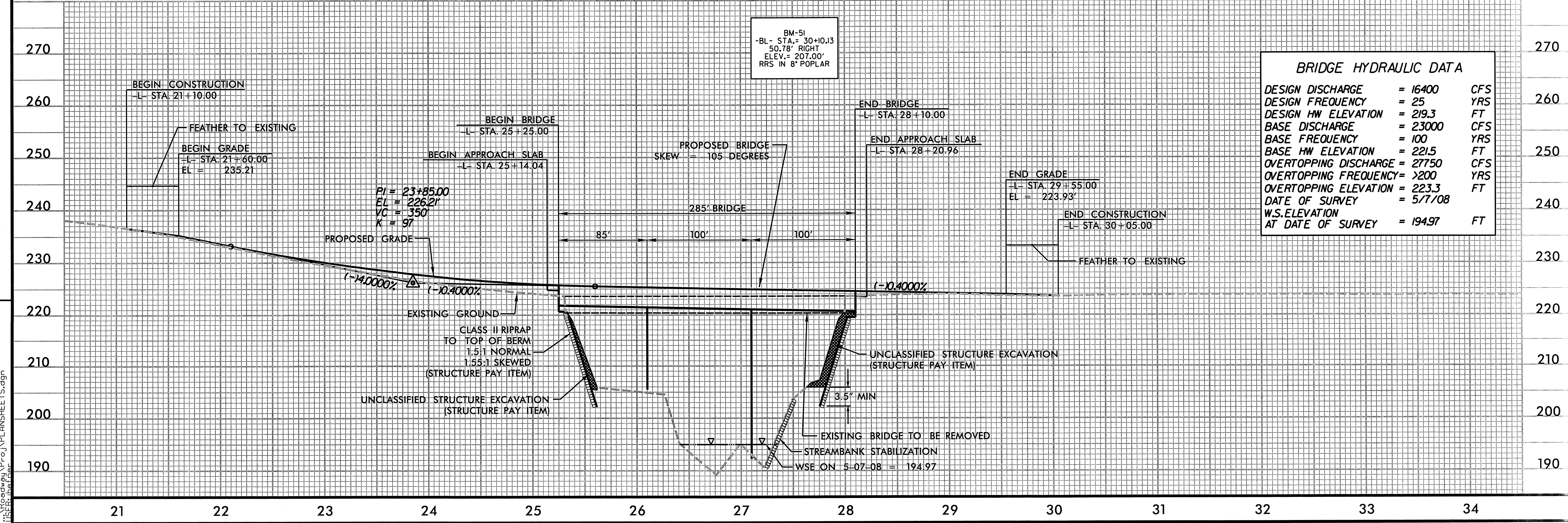
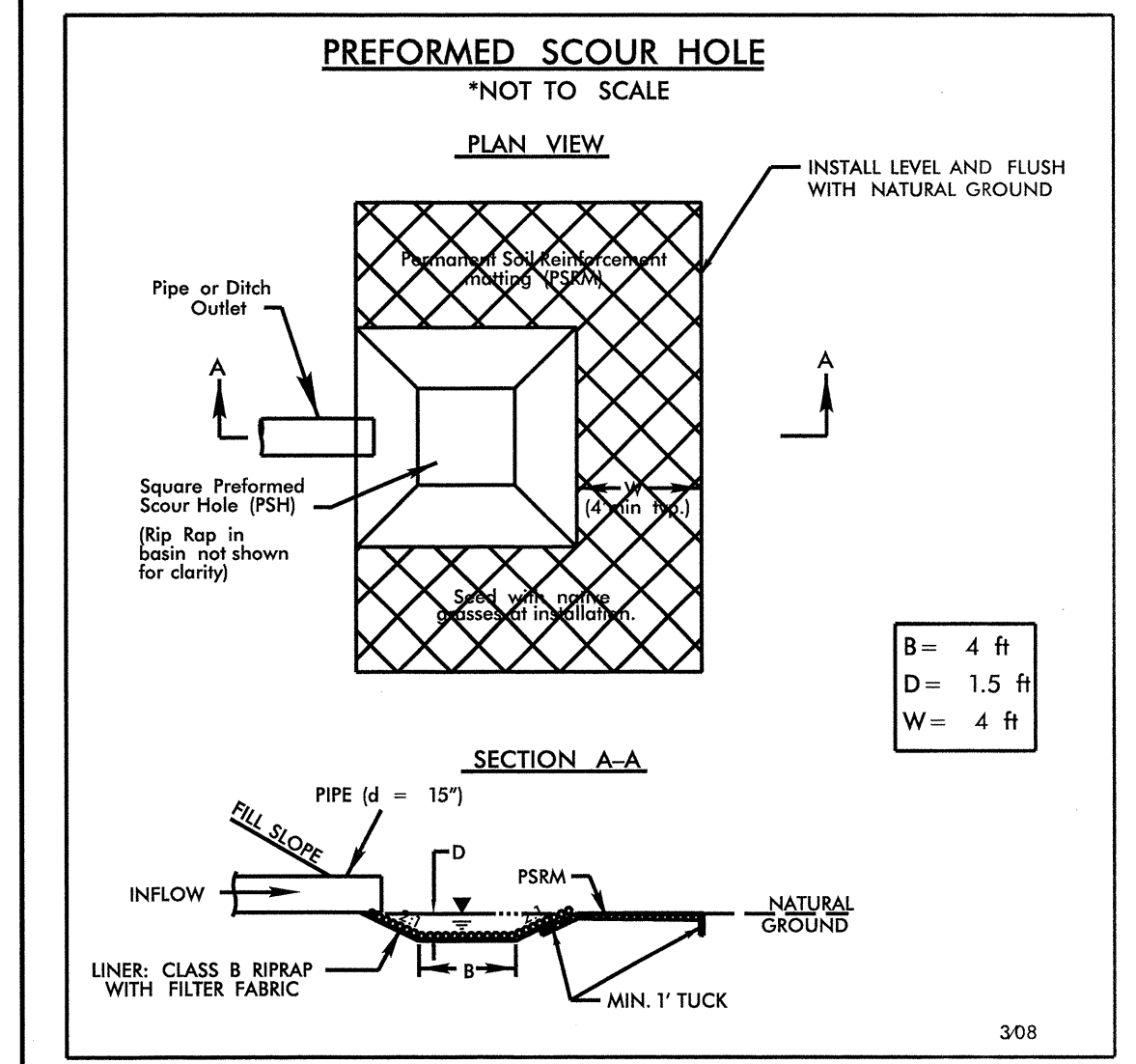
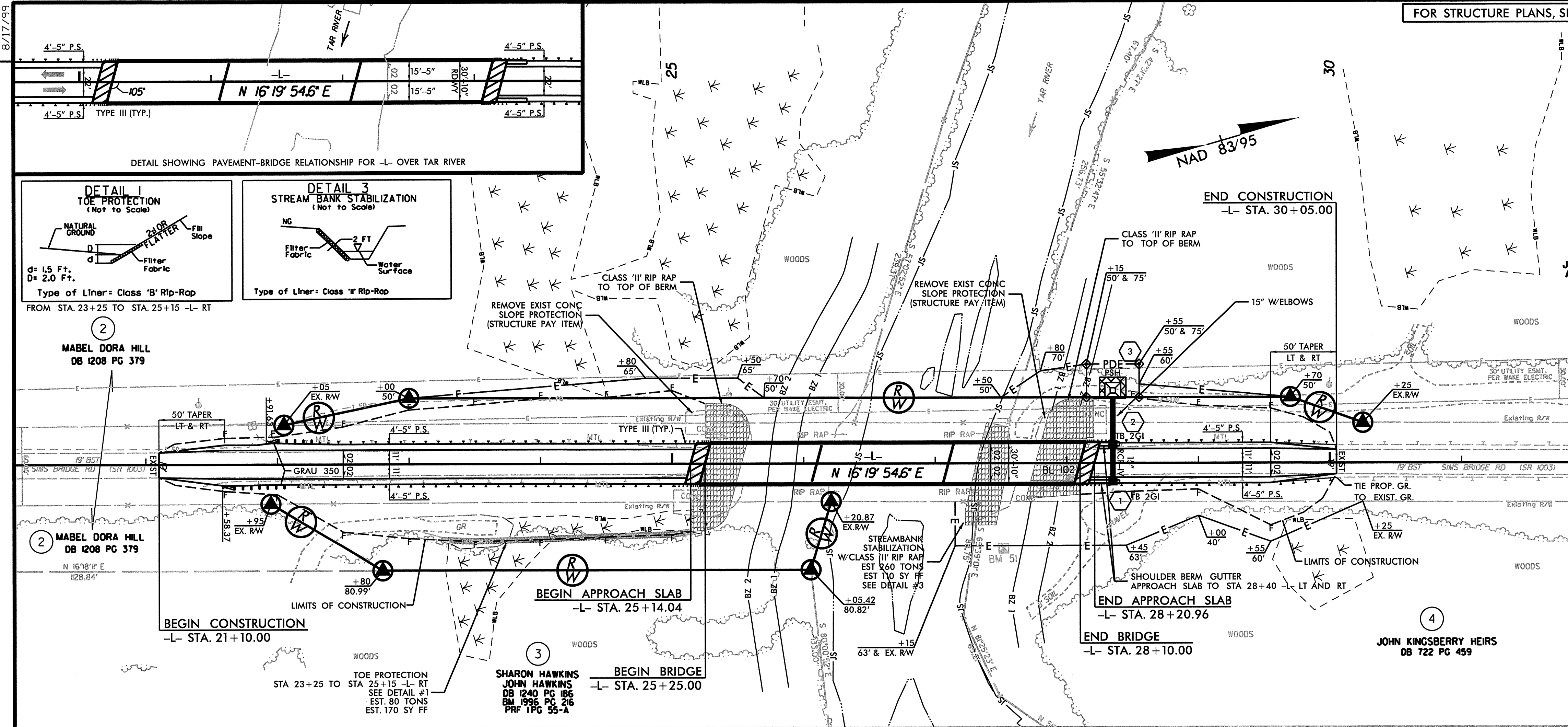
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FOR STRUCTURE PLANS, SEE SHEETS S1 THRU 27

PROJECT REFERENCE NO. B-4514	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
10/20/2011	10/24/11
 421 FAYETTEVILLE ST SUITE 400 RALEIGH, NC 27801 T 919.380.8750 F 919.380.8752 www.stewart-eng.com FIRM NO.: C-1051 STEWART	



BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 16400	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 219.3	FT
BASE DISCHARGE	= 23000	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 221.5	FT
OVERTOPPING DISCHARGE	= 27750	CFS
OVERTOPPING FREQUENCY	= >200	YRS
OVERTOPPING ELEVATION	= 223.3	FT
DATE OF SURVEY	= 5/7/08	
W.S. ELEVATION AT DATE OF SURVEY	= 194.97	FT

REVISIONS

10/20/2011
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USER: jeh