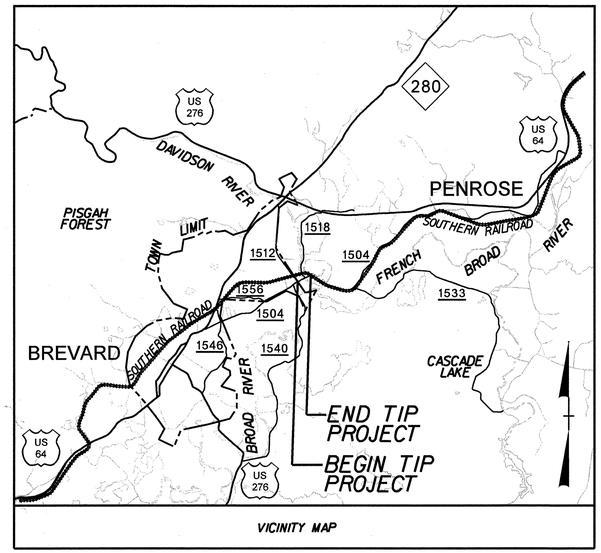
TIP PROJECT: B-4291

CONTRACT: C202262

K:\RAL_Roadway\Oll036\24\Roadway\Proj\0429ll_rdy_tshdgn

1/26/2012

SEE SHEET 1-A FOR INDEX OF SHEETS
SEE SHEET 1-B FOR CONVENTIONAL PLAN SHEET SYMBOLS



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4291	1	

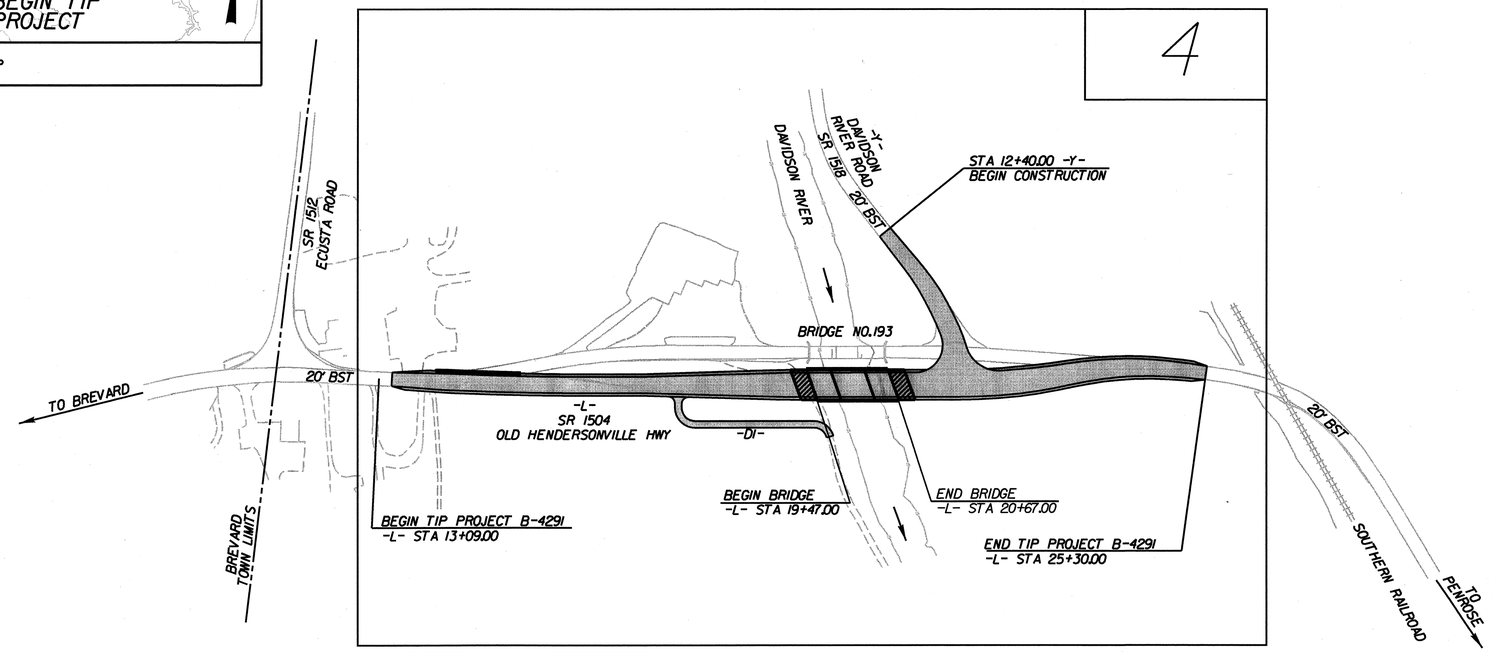
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33630.1.1	BRSTP-1504(7)	P.E.
33630.2.1	BRSTP-1504(7)	RIGHT-OF-WAY
33630.2.1	BRSTP-1504(7)	UTILITY
33630.3.1	BRSTP-1504(7)	CONSTRUCTION

TRANSYLVANIA COUNTY

LOCATION: BRIDGE NO. 193 OVER DAVIDSON RIVER ON SR 1504

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

NC GRID
NAD 83/95



NCDOT CONTACT: BRENDA L. MOORE, P.E.
PROJECT ENGINEER
ROADWAY DESIGN UNIT

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2012 = 8,900 VPD
ADT 2032 = 13,400 VPD
DHV = 10%
D = 60%
T = 5% *
V = 40 mph

FUNCTIONAL CLASSIFICATION:
RURAL MAJOR COLLECTOR

* (TTST 1% + DUAL 4%)

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4291 = 0.208 MILE

LENGTH OF STRUCTURE TIP PROJECT B-4291 = 0.023 MILE

TOTAL LENGTH OF TIP PROJECT B-4291 = 0.231 MILE

PLANS PREPARED FOR NCDOT BY:

Kimley-Horn and Associates, Inc.

Post Office Box 33068
Raleigh, North Carolina 27636
PE NO. F-0102

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 19, 2008

LETTING DATE: APRIL 17, 2012

JEFFREY W. MOORE, PE
PROJECT ENGINEER

J. JASON PACE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
1-26-12

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 24436 ENGINEER JEFFREY W. MOORE
1-26-12

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

PROJECT REFERENCE NO.	SHEET NO.
B-4291	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE 1-20-12

33630.3.1 (B-4291)
TRANSYLVANIA COUNTY

INDEX OF SHEETS

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

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD 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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

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, SYLVAN VALLEY CATV, AND CITIZENS TELEPHONE

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.

EFF. 01-17-12

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	
422.10	Reinforced Bridge Approach Fills
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	
815.03	Pipe Underdrain and Blind Drain
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
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation In Expressway Gutter
846.04	Drop Inlet Installation In Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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PROJECT REFERENCE NO.	SHEET NO.
B-4291	1-B

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 — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

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 — CSX TRANSPORTATION
- 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 Marker — RW
- 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 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 Wheel Chair Ramp — WCR
- 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 — 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 — HH
- 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 — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- 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 — 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 — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- 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 — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

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1/24/2012

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4291	1C
Location and Surveys	

SURVEY CONTROL SHEET B-4291

CONTROL DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	567912.3340	895607.0950	2102.57	11+47.45	21.45 RT
2	BL-2	568134.6670	895943.2980	2099.07	15+47.34	46.30 LT
3	BL-3	568296.4480	896237.6030	2102.60	18+83.38	63.19 LT
4	BL-4	568381.3310	896412.7340	2103.28	20+77.99	62.81 LT
5	BL-5	568497.0520	896685.8020	2099.73	23+78.00	24.48 LT
6	BL-6	568585.2160	896942.0350	2098.79	26+39.44	23.14 LT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
8	BY2-8	568652.9510	896122.7210	2098.37	10+00.03	5.20 RT
44	BL-4	568381.3310	896412.7340	2103.28	14+00.31	72.96 RT

BM1 ELEVATION = 2103.53
N 567934 E 895655
BL STATION 5+52 8 RIGHT
8 INCH SPIKE SET IN BASE OF 24 INCH MAPLE TREE

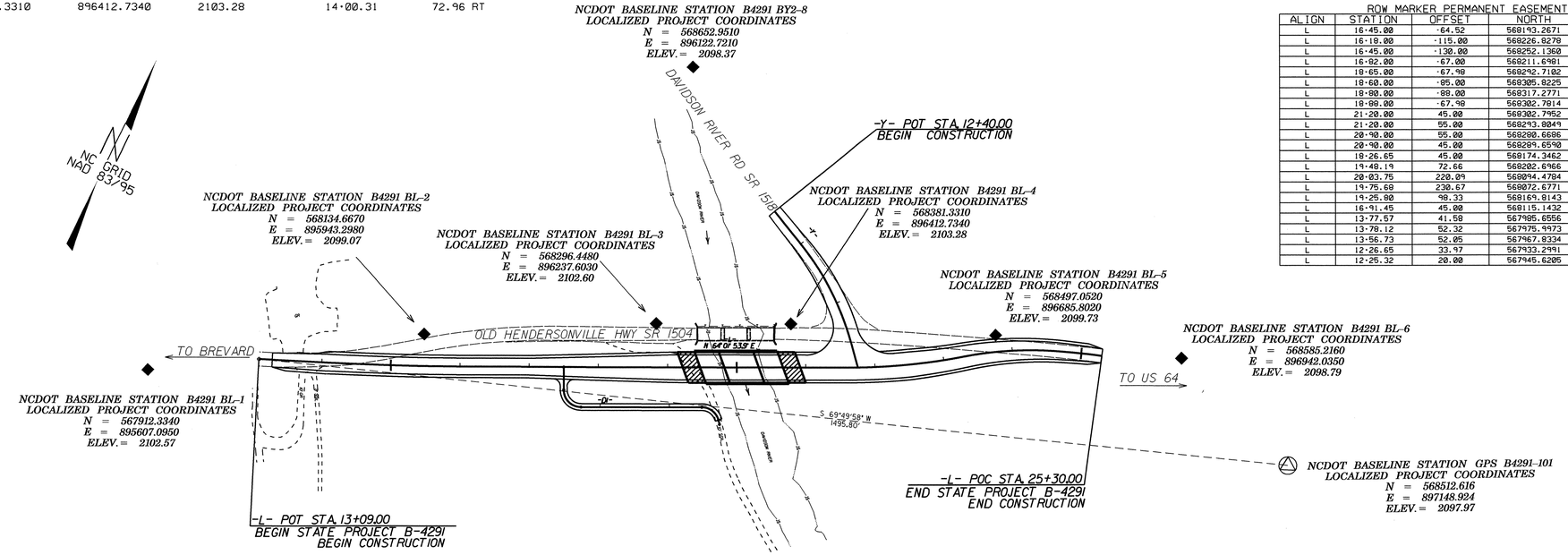
BM2 ELEVATION = 2098.61
N 568150 E 895961
BL STATION 9+26 5 LEFT
CHISLED SQUIRE IN NORTH SIDE OF CONCRETE HEADWALL

BM3 ELEVATION = 2099.96
N 568449 E 896516
BL STATION 15+55 22 LEFT
8 INCH SPIKE SET IN BASE OF 24 INCH CHEERY TREE

BM4 ELEVATION = 2099.61
N 568576 E 896907
BL STATION 19+65 3 LEFT
CHISLED SQUIRE IN BASE OF RAILROAD SIGNAL POST

BM5 ELEVATION = 2104.52
N 568318 E 896294
BL STATION 12+99 5 RIGHT
NCGS BENCH MARK DISK (TRA 1) SET IN THE WHEEL GUARD AT THE NORTHWEST CORNER OF THE BRIDGE

NC GRID
NAD 83/95



L

TYPE	STATION	NORTH	EAST
PC	10+00.00	567851.8373	895473.3079
PT	12+06.91	567956.7681	895650.9640
PC	14+17.99	568039.7000	895845.8349
PT	15+94.53	568113.1640	896005.5883
PC	21+58.00	568360.2424	896512.9848
PRC	23+28.12	568448.2221	896657.2571
PCC	24+74.99	568518.9421	896785.4578
PCC	25+83.93	568552.9203	896888.9203
PT	28+14.93	568618.9211	897110.5891
POT	29+81.00	568428.9981	897250.2112

Y

TYPE	STATION	NORTH	EAST
POT	10+00.00	568661.5577	896135.2541
PC	10+24.50	568641.3404	896149.0847
PT	11+79.39	568542.3013	896265.7691
PC	12+47.51	568492.3324	896372.8127
PT	14+62.31	568394.2516	896503.7947
POT	14+98.00	568367.4667	896527.3846

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+29.90	-20.00	568023.5259	895756.1784
L	14+93.81	-39.06	568185.9136	895898.3155
L	15+47.64	-50.59	568238.6738	895941.7397
L	17+24.90	-68.00	568231.3823	896093.0161
L	20+79.35	-67.95	568386.5428	896411.7029
L	25+35.10	-47.91	568584.5518	896827.4138
L	25+54.63	-21.95	568565.7962	896854.3474
L	25+30.00	18.52	568519.7817	896843.0490
L	25+30.00	25.00	568513.6242	896845.0674
L	24+28.00	32.50	568467.6365	896749.9366
L	21+58.90	45.00	568319.7858	896532.5892
L	15+94.53	45.00	568072.7074	896025.2926
L	15+00.00	45.00	568031.9311	895938.7816
L	12+98.72	40.00	567956.1014	895751.1147
L	12+96.83	20.00	567973.7427	895741.5026

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y	12+40.00	-25.00	568539.3124	896331.2749
Y	12+40.00	-30.00	568543.8430	896333.3899
Y	12+97.51	-30.00	568519.5168	896385.5016
Y	14+16.82	-30.00	568448.8613	896491.9740
Y	12+91.71	68.50	568432.7163	896338.5888
Y	12+40.00	51.18	568470.2831	896299.0514

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	16+45.00	-64.52	568193.2671	896822.7890
L	16+18.00	-115.00	568226.8279	895976.3311
L	16+45.00	-130.00	568252.1360	895994.0370
L	16+82.00	-67.00	568211.6981	896054.8874
L	18+65.00	-67.98	568242.7102	896218.9819
L	18+60.00	-85.00	568305.8225	896207.0341
L	18+80.00	-88.00	568317.2771	896223.7812
L	18+98.00	-67.98	568302.7814	896239.6597
L	21+20.00	45.00	568302.7952	896497.7071
L	21+20.00	55.00	568293.8049	896502.0859
L	20+90.00	55.00	568200.6686	896475.1148
L	20+90.00	45.00	568299.6590	896470.7361
L	18+26.65	45.00	568174.3462	896233.9782
L	19+48.19	72.66	568202.8966	896355.3954
L	20+03.75	220.09	568094.4784	896469.8637
L	19+75.69	230.67	568072.6771	896449.2585
L	19+25.80	98.33	568169.8143	896346.4662
L	16+91.45	45.00	568115.1432	896112.4236
L	13+77.57	41.58	567985.6556	895824.2295
L	13+79.12	52.32	567975.9973	895828.9580
L	13+56.73	52.05	567967.8334	895809.1954
L	12+26.65	33.97	567933.2991	895682.4768
L	12+25.32	20.00	567945.6205	895675.7603

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4291 GPS-101" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 568512.616(ft) EASTING: 897148.924(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999772298 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4291 GPS-101" TO -L- STATION 13+09.00 IS S 69° 49' 58" W 1495.80' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

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/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   TIP B4291_LS_CONTROL_060711.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)

△ NCDOT BASELINE STATION GPS B4291-102
LOCALIZED PROJECT COORDINATES
N = 568079.280
E = 897811.930
ELEV.= 2096.35

02-FEB-2012 11:55
R:\Roadway\Proj\b4291_ls_1c_120201.dgn
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
B-4291	1-D

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L	10+00.00	567851.8373	895473.3079
2	L	11+00.00	567908.2916	895555.7694
3	L	12+00.00	567954.0246	895644.6259
4	L	13+00.00	567993.3797	895736.5561
5	L	14+00.00	568032.7073	895828.4981
6	L	15+00.00	568072.8911	895920.0663
7	L	16+00.00	568115.5580	896010.5035
8	L	17+00.00	568159.3455	896100.4071
9	L	18+00.00	568203.1330	896190.3107
10	L	19+00.00	568246.9204	896280.2143
11	L	20+00.00	568290.7079	896370.1179
12	L	21+00.00	568334.4954	896460.0215
13	L	22+00.00	568379.1242	896549.4993
14	L	23+00.00	568431.7547	896634.4685
15	L	24+00.00	568487.2359	896717.5674
16	L	25+00.00	568527.6459	896808.9032
17	L	26+00.00	568556.7165	896904.5288
18	L	27+00.00	568559.4564	897003.9410
19	L	28+00.00	568526.6587	897097.8271
20	L	29+00.00	568472.8567	897182.1126
21	L	29+81.00	568428.9981	897250.2112
22	Y	10+00.00	568661.5577	896135.2541
23	Y	11+00.00	568585.2428	896199.3029
24	Y	12+00.00	568533.5787	896284.4548
25	Y	13+00.00	568491.2725	896375.0649
26	Y	14+00.00	568437.6206	896459.1452
27	Y	14+98.00	568367.4667	896527.3846

Point #	Chain	Station	Northing (Y)	Easting (X)

Point #	Chain	Station	Northing (Y)	Easting (X)

Point #	Chain	Station	Northing (Y)	Easting (X)

Point #	Chain	Station	Northing (Y)	Easting (X)

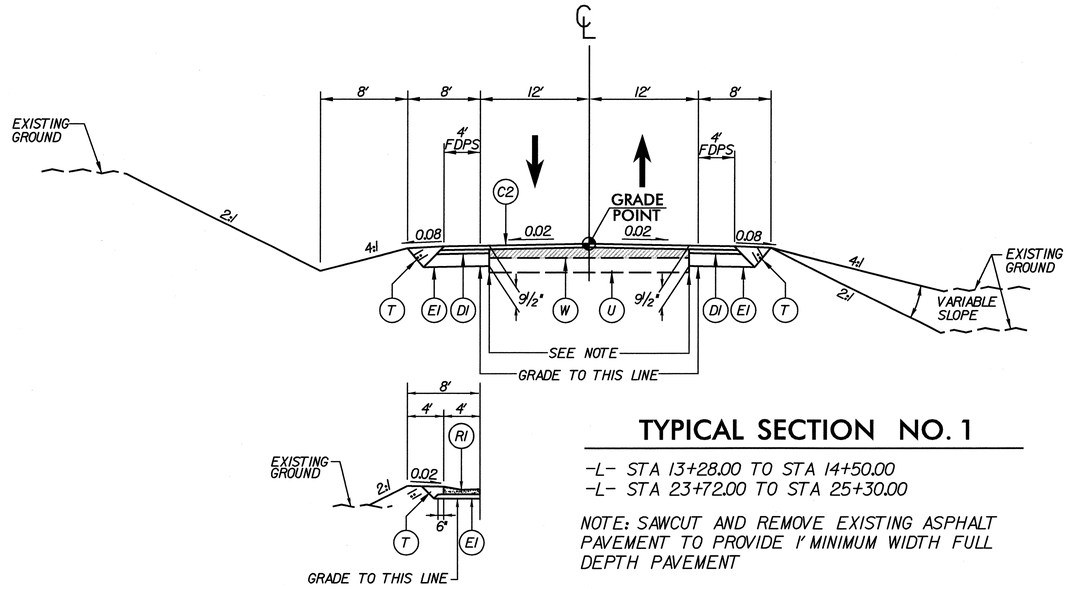
PROJECT REFERENCE NO.	SHEET NO.
B-4291	2

Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE
1-22-12

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
11/27/12

-L- SR 1504 (OLD HENDERSONVILLE HWY)



TYPICAL SECTION NO. 1

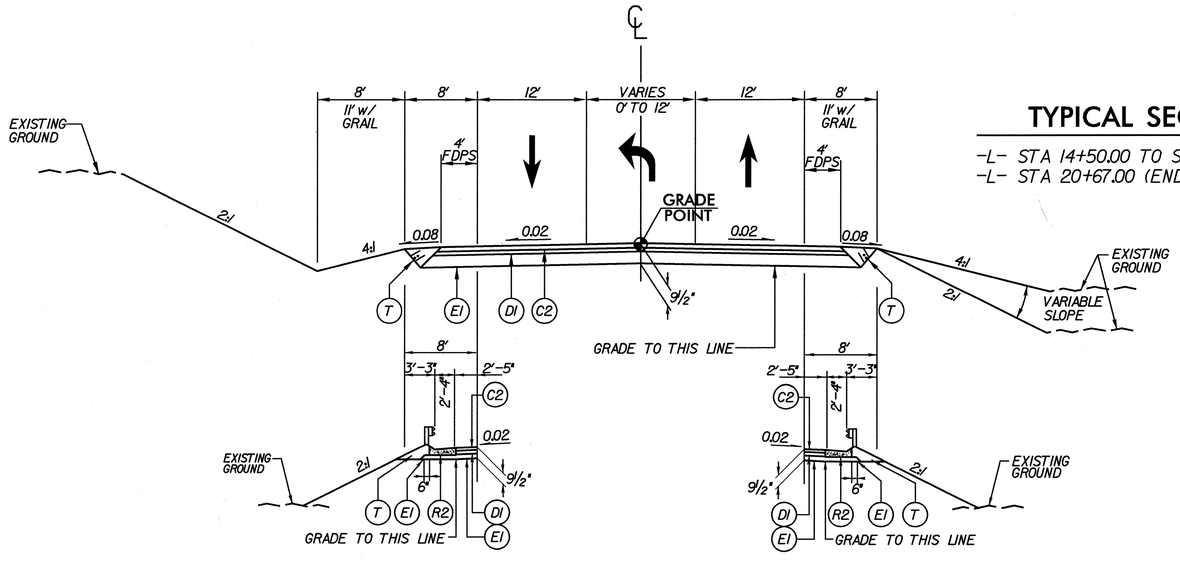
-L- STA 13+28.00 TO STA 14+50.00
-L- STA 23+72.00 TO STA 25+30.00

NOTE: SAWCUT AND REMOVE EXISTING ASPHALT PAVEMENT TO PROVIDE 1' MINIMUM WIDTH FULL DEPTH PAVEMENT

TYPICAL SECTION NO. 1A

-L- STA 13+92.00 TO STA 15+17.00 (LT)

-L- SR 1504 (OLD HENDERSONVILLE HWY)



TYPICAL SECTION NO. 2

-L- STA 14+50.00 TO STA 19+47.00 (BEGIN BRIDGE)
-L- STA 20+67.00 (END BRIDGE) TO STA 23+72.00

TYPICAL SECTION NO. 2A

-L- STA 18+90.00 TO STA 19+15.00 (LT)
-L- STA 20+83.00 TO STA 21+00.00 (LT)

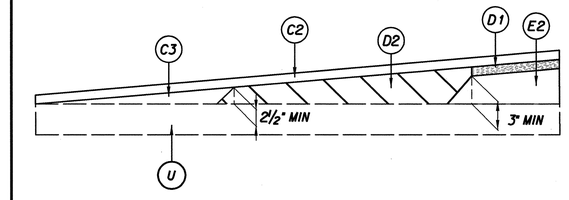
TYPICAL SECTION NO. 2B

-L- STA 18+90.00 TO STA 19+31.00 (RT)
-L- STA 20+99.00 TO STA 21+05.00 (RT)

PAVEMENT SCHEDULE

C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
C2	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.
C3	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 LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0B, AT AN AVERAGE RATE OF 285 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 2.5" OR GREATER THAN 4" 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" OR GREATER THAN 5.5" DEPTH.
J	PROPOSED 8" AGGREGATE BASE COURSE
P	PRIME COAT AT THE RATE OF 0.35 GAL PER SQ YD
RI	PROPOSED 4' CONCRETE EXPRESSWAY GUTTER
R2	PROPOSED SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL W)

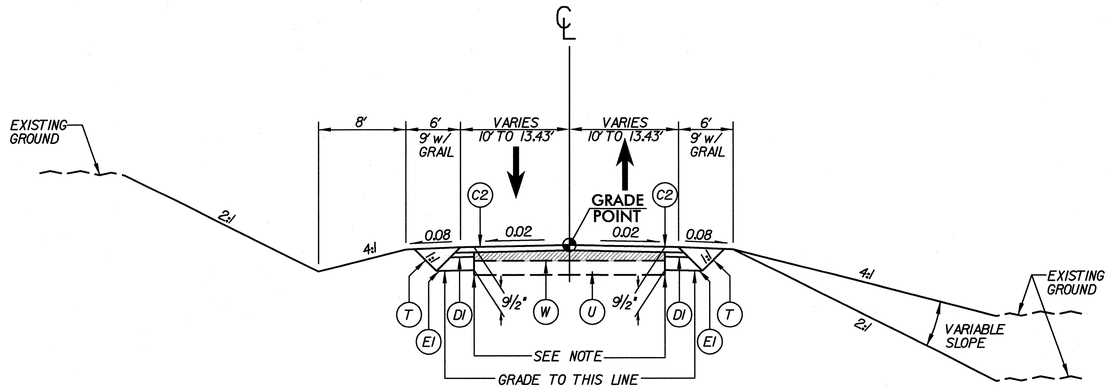
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE INDICATED



DETAIL W SHOWING METHOD OF WEDGING

K:\RAL_Roadway\DII036124\Roadway\Pro\B4291_rdy_typdgn
1/24/2012

-Y- SR 1518 (DAVIDSON RIVER ROAD)

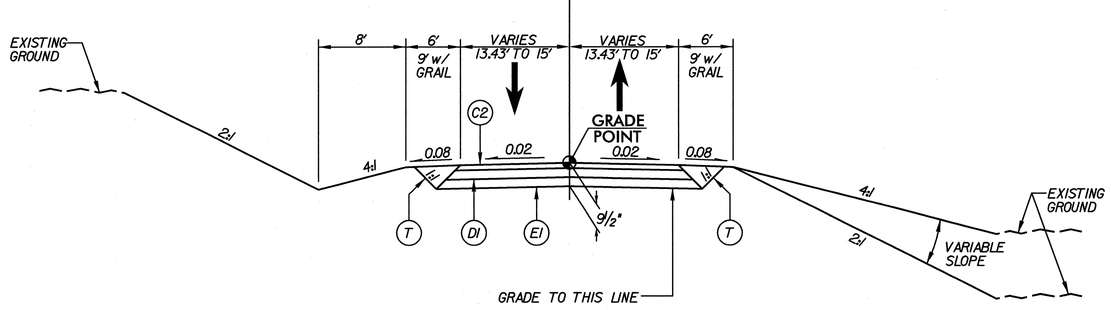


TYPICAL SECTION NO. 3

-Y- STA 12+40.00 TO STA 13+60.00

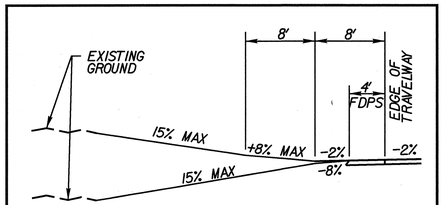
NOTE: SAWCUT AND REMOVE EXISTING ASPHALT PAVEMENT TO PROVIDE 1' MINIMUM WIDTH OF FULL DEPTH PAVEMENT

-Y- SR 1518 (DAVIDSON RIVER ROAD)



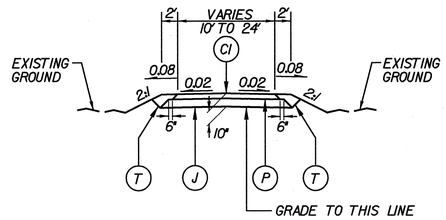
TYPICAL SECTION NO. 4

-Y- STA 13+60.00 TO STA 14+79.41



DRIVEWAY GRADE

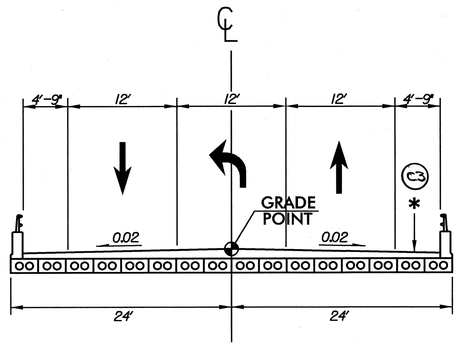
DRIVEWAYS



TYPICAL SECTION NO. 5

-L- STA 13+60 (LT)
-L- STA 13+73 (RT)
-L- STA 13+95 (RT)
-L- STA 15+33 (LT)
-L- STA 15+92 (LT)
-L- STA 16+86 (LT)
-L- STA 17+51 (RT)
-L- STA 18+31 (LT)
-Y- STA 12+85 (RT)

-L- SR 1504 (OLD HENDERSONVILLE HWY)



BRIDGE TYPICAL SECTION NO. 1

Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO.	SHEET NO.
B-4291	2-A

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE
3-9-12

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22888 ENGINEER CLARK S. MORRISON

PAVEMENT SCHEDULE

CI	2" S9.5B
C2	3" S9.5B
C3	VARIABLE S9.5B
DI	2.5" I19.0B
D2	VARIABLE I19.0B
EI	4" B25.0B
E2	VARIABLE B25.0B
J	8" ABC
P	PRIME COAT
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

DESIGN DATA

ADT 2012	=	8,900 VPD
ADT 2032	=	13,400 VPD
DHV	=	10%
D	=	60%
TTST	=	1%
DUAL	=	4%
V	=	40 mph

FUNCTIONAL CLASSIFICATION: RURAL MAJOR COLLECTOR

* SEE STRUCTURE PLANS FOR ASPHALT OVERLAY

K:\RAL_Roadway\0110361\2A\Roadway\Pro\N4291_rdy_typdgn

3/9/2012

PROJECT REFERENCE NO.	SHEET
B-4291	2-8

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 11/28/11
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

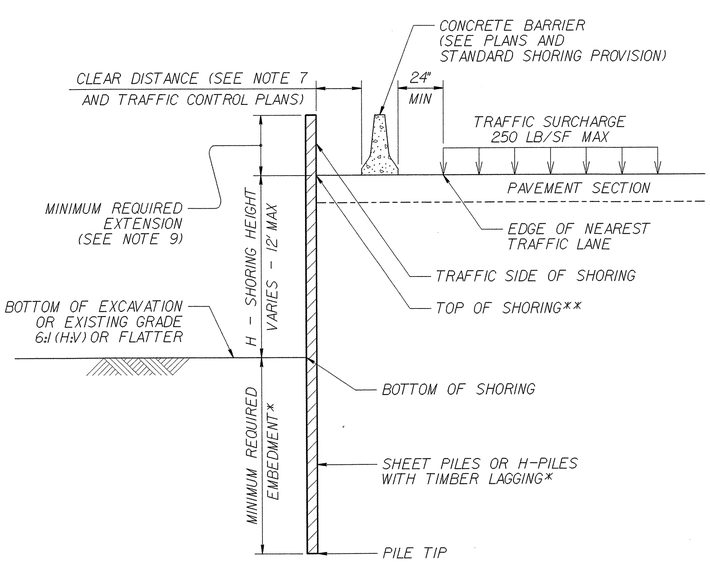
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

***DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".**

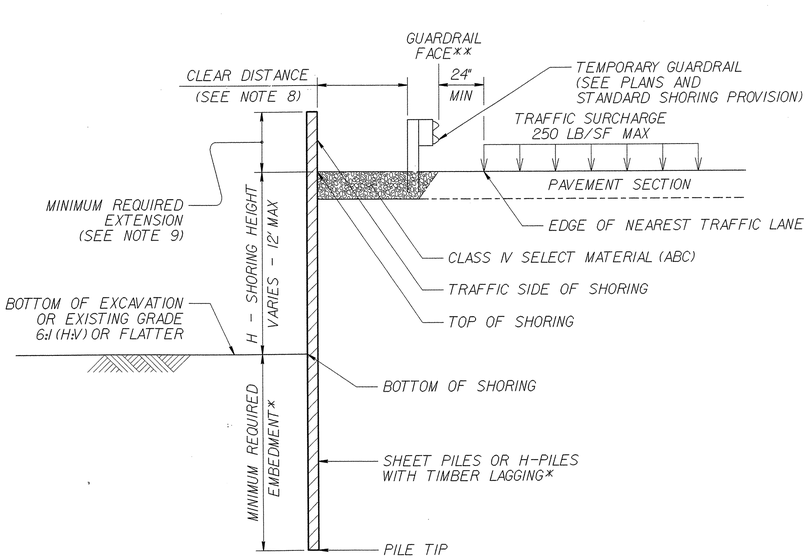
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM.
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



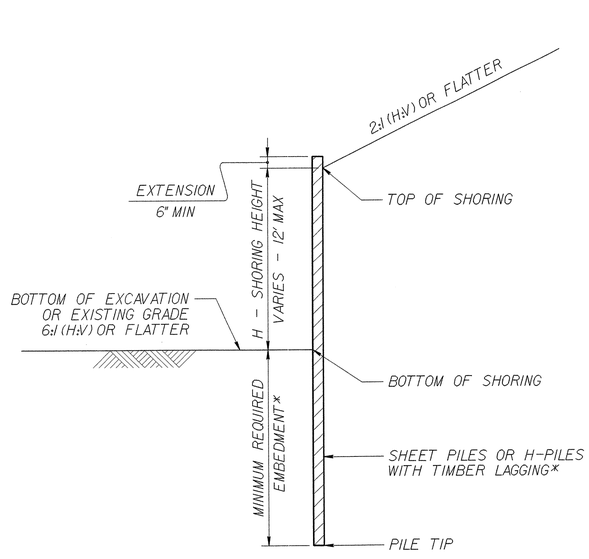
CONCRETE BARRIER

****TOP OF SHORING = EDGE OF PAVEMENT**



TEMPORARY GUARDRAIL

****GUARDRAIL FACE = EDGE OF PAVEMENT**



STANDARD TEMPORARY SHORING

(SLOPE CASE)
***SEE TABLE ABOVE.**

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
***SEE TABLE ABOVE.**

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 1-17-12

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202262

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (20+07.00 -L-)
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0134000000-E	240	90	CY	DRAINAGE DITCH EXCAVATION
0195000000-E	265	500	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	700	SY	GEOTEXTILE FOR SOIL STABILIZATION
0199000000-E	SP	120	SF	TEMPORARY SHORING
0318000000-E	300	40	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES
0320000000-E	300	130	SY	FOUNDATION CONDITIONING GEOTEXTILE
0335200000-E	305	52	LF	15" DRAINAGE PIPE
0343000000-E	310	112	LF	15" SIDE DRAIN PIPE
0448200000-E	310	144	LF	15" RC PIPE CULVERTS, CLASS IV
0448600000-E	310	60	LF	36" RC PIPE CULVERTS, CLASS IV
0995000000-E	340	64	LF	PIPE REMOVAL
1099500000-E	505	500	CY	SHALLOW UNDERCUT
1099700000-E	505	475	TON	CLASS IV SUBGRADE STABILIZATION
1121000000-E	520	390	TON	AGGREGATE BASE COURSE
1220000000-E	545	300	TON	INCIDENTAL STONE BASE
1275000000-E	600	292	GAL	PRIME COAT
1489000000-E	610	860	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	610	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	940	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1575000000-E	620	125	TON	ASPHALT BINDER FOR PLANT MIX
1693000000-E	654	100	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	815	90	CY	SUBDRAIN EXCAVATION
2033000000-E	815	68	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	400	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	815	1	EA	SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE
2209000000-E	838	4	CY	ENDWALLS
2286000000-N	840	5	EA	MASONRY DRAINAGE STRUCTURES
2367000000-N	840	5	EA	FRAME WITH TWO GRATES, STD 840.29
2556000000-E	846	90	LF	SHOULDER BERM GUTTER
2577000000-E	846	125	LF	CONCRETE EXPRESSWAY GUTTER
3030000000-E	862	175	LF	STEEL BM GUARDRAIL
3045000000-E	862	75	LF	STEEL BM GUARDRAIL, SHOP CURVED
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3380000000-E	862	50	LF	TEMPORARY STEEL BM GUARDRAIL
3387000000-N	862	2	EA	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ********** (III)
3389100000-N	SP	2	EA	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE 350
3649000000-E	876	55	TON	RIP RAP, CLASS B
3656000000-E	876	1,515	SY	GEOTEXTILE FOR DRAINAGE
3659000000-N	SP	1	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4072000000-E	903	160	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4096000000-N	904	2	EA	SIGN ERECTION, TYPE D
4102000000-N	904	6	EA	SIGN ERECTION, TYPE E
4155000000-N	907	15	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL

ItemNumber	Sec #	Quantity	Unit	Description
4400000000-E	1110	328	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	256	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	113	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	120	EA	DRUMS
4435000000-N	1135	30	EA	CONES
4445000000-E	1145	196	LF	BARRICADES (TYPE III)
4450000000-N	1150	1,620	HR	FLAGGER
4480000000-N	1165	2	EA	TMA
4516000000-N	1180	50	EA	SKINNY DRUM
4650000000-N	1251	53	EA	TEMPORARY RAISED PAVEMENT MARKERS
4810000000-E	1205	24,261	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	754	LF	PAINT PAVEMENT MARKING LINES (8")
4830000000-E	1205	86	LF	PAINT PAVEMENT MARKING LINES (16")
4835000000-E	1205	116	LF	PAINT PAVEMENT MARKING LINES (24")
4840000000-N	1205	4	EA	PAINT PAVEMENT MARKING CHARACTER
4845000000-N	1205	14	EA	PAINT PAVEMENT MARKING SYMBOL
6000000000-E	1605	2,400	LF	TEMPORARY SILT FENCE
6006000000-E	1610	285	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	120	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	410	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	4	ACR	TEMPORARY MULCHING
6018000000-E	1620	150	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	1.5	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	400	LF	SAFETY FENCE
6030000000-E	1630	430	CY	SILT EXCAVATION
6036000000-E	1631	15,200	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	55	SY	COIR FIBER MAT
6038000000-E	SP	225	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	555	LF	1/4" HARDWARE CLOTH
6070000000-N	1639	12	EA	SPECIAL STILLING BASINS
6071010000-E	SP	90	LF	WATTLE
6071020000-E	SP	40	LB	POLYACRYLAMIDE (PAM)
6071030000-E	1640	245	LF	COIR FIBER BAFFLE
6071050000-E	SP	6	EA	"" SKIMMER (1-1/2")
6084000000-E	1660	4	ACR	SEEDING & MULCHING
6087000000-E	1660	2	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	100	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	2.75	TON	FERTILIZER TOPDRESSING
6114500000-N	1667	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	25	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.5	ACR	REFORESTATION

COMPUTED BY: JJP DATE: 12/2/2012

CHECKED BY: JDL DATE: 12/2/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-4291	3-A

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
								THICKNESS OR GAUGE											
13+83 -L-	RT	1			2098.3														
15+14 -L-	LT	2		2101.5	2098.3														
15+14 -L-	LT	2	2A		2098.3	2098.2	0.01		16								X	X	
15+32 -L-	LT	3																	
15+73 -L-	CL	4			2095.3	2094.7	0.01												
16+85 -L-	LT	5																	
18+00 -L-	CL	6			2097.7	2097.4	0.01												
18+90 -L-	LT	7		2102.3	2098.8														
18+90 -L-	LT	7	8		2098.8	2097.9	0.03												
18+90 -L-	RT	8		2102.3	2097.9														
18+90 -L-	RT	8	9		2097.9	2096.9	0.05		20								X	X	
21+00 -L-	LT	10		2102.3	2099.1														
21+00 -L-	LT	10	11		2099.1	2098.7	0.01												
21+05 -L-	RT	11		2102.5	2098.7														
21+05 -L-	RT	11	12		2098.7	2098.6	0.01		16								X	X	
SHEET TOTALS									52										
SAY																			

STATION	C.S. PIPE SIZE 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS III SIZE 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV SIZE 12"	15"	18"	24"	30"	36"	42"	48"
	THICKNESS OR GAUGE																							
13+83 -L-																								
15+14 -L-																								
15+14 -L-																								
15+32 -L-																								
15+73 -L-																								
16+85 -L-																								
18+00 -L-																								
18+90 -L-																								
18+90 -L-																								
18+90 -L-																								
18+90 -L-																								
21+00 -L-																								
21+00 -L-																								
21+05 -L-																								
21+05 -L-																								
SHEET TOTALS																	144					60		
SAY																								

STATION	** R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	***** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') PER EACH (0' THRU 5.0')	LIN. FT. 5.0' THRU 10.0' A	LIN. FT. 10.0' AND ABOVE B	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
13+83 -L-				36												
15+14 -L-								1								
15+14 -L-																
15+32 -L-				20												
15+73 -L-						3.4										
16+85 -L-				56												
18+00 -L-																
18+90 -L-								1								
18+90 -L-																
18+90 -L-								1								
18+90 -L-																
21+00 -L-								1								
21+00 -L-																
21+05 -L-								1								
21+05 -L-																
SHEET TOTALS				112		3.4		5								
SAY						4										

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.D.I. STD. 840.35	T.B.D.I. (N.S.) FRAME WITH TWO GRATES STD 840.29	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
13+83 -L-																40	
15+14 -L-											1	1					
15+14 -L-																	
15+32 -L-																24	
15+73 -L-																	
16+85 -L-																	
18+00 -L-																	
18+90 -L-											1	1					
18+90 -L-																	
18+90 -L-											1	1					
18+90 -L-																	
21+00 -L-											1	1					
21+00 -L-																	
21+05 -L-											1	1					
21+05 -L-																	
SHEET TOTALS											5	5				64	
SAY																	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: J. PACE DATE: 1/25/12
CHECKED BY: J. MOORE DATE: 1/25/12

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4291	3-B

Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

"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 BERM 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	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	TEMP GRAU 350	TYPE III	TEMP TYPE III	VI MOD	BIC	AT-1	EA	G	NG				
-L-	18+42.50	19+42.50	LT	100.00			19+42.50		3	6	50		1					1		1										TEMPORARY GUARDRAIL (SEE TCP PLANS)
-L-	20+54.50	21+29.40	LT	75.00				20+54.50	3	6		50		1				1		1										TEMPORARY GUARDRAIL (SEE TCP PLANS)
			SUBTOTAL	175.00																										
	LESS ANCHOR	DEDUCTIONS																												
	TEMP GRAU 350	2 @ 50.00'	=	-100																										
	TEMP TYPE III	2 @ 18.75'	=	-37.50																										
			TOTAL	37.50														2		2										
			SAY	50																										
-L-	18+64.00	19+39.00	LT	75.00				19+39.00	4.75	8		50		1			1		1											
-L-	17+67.50	19+55.00	RT	187.50			19+55.00		4.75	8	50		1				1		1											
-L-	20+59.00	20+96.50	LT	37.50	68.75		20+59.00		4.75	8									1											
-L-	20+75.00	21+62.50	RT	87.50				20+75.00	4.75	8		50		1			1		1											
-Y-	13+65.00	14+15.00	RT	50.00					6	9	50		1				1													
			SUBTOTAL	437.50	68.75																									
	LESS ANCHOR	DEDUCTIONS																												
	GRAU 350	4 @ 50.00'	=	200.00																										
	TYPE III	4 @ 18.75'	=	75.00																										
			TOTAL	162.50	68.75												4		4											
			SAY	175	75																									

ADDITIONAL GUARDRAIL POSTS = 5 EA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

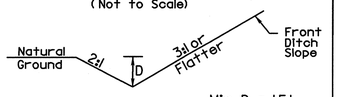
LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
PHASE 1					
-L- STA 13+09.00 TO STA 19+47.00	372		1400	1233	205
-L- STA 20+67.00 TO STA 25+30.00	20		599	579	0
-Y- STA 12+40.00 TO STA 13+50.00	8		29	21	0
SUBTOTAL	400		2028	1833	205
PHASE 2					
-L- STA 13+28.00 TO STA 19+47.00	284		60	0	224
-L- STA 20+67.00 TO STA 25+30.00	555		26	0	529
-Y- STA 13+50.00 TO STA 14+79.41	200		12	0	188
SUBTOTAL	1039		98	0	941
TOTAL	1439		2126	1833	1146
LOSS DUE TO CLEARING & GRUBBING	-175			175	
PROJECT TOTALS	1264		2126	2008	1146
EST. FOR REPLACING TOPSOIL ON BORROW PITS				100	
GRAND TOTALS	1264			2108	
SAY	1300			2200	
CONTINGENCY SHALLOW UNDERCUT = 500 CY					
CLASS IV SUBGRADE STABILIZATION = 475 TONS					
ESTIMATED DDE = 90 CY					

REMOVAL OF EXISTING ASPHALT PAVEMENT			
LINE	STATION TO STATION	LOCATION	SQ. YDS.
-L-	14+20 TO 15+85	LT	230
-L-	16+00 TO 16+75	LT	165
-L-	17+00 TO 18+18	LT	260
-L-	18+42 TO 19+42	LT	200
-L-	20+55 TO 21+40	LT	165
-L-	21+80 TO 23+80	LT	325
-Y-	13+78 TO 14+45	LT	65
-Y-	13+95 TO 14+32	RT	40
TOTAL			1450

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING."

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.

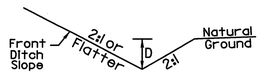
DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 1Ft

-L- STA 15+00 TO 15+69 (LT)
-L- STA 14+50 TO 15+00 (RT)
-L- STA 16+50 TO 18+00 (LT)
-L- STA 18+00 TO 19+82 (RT)
-L- STA 18+50 TO 19+55 (LT)
-L- STA 20+50 TO 21+00 (LT)
-L- STA 22+50 TO 23+50 (LT)

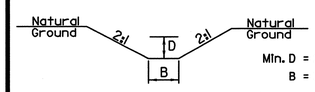
DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1.0'

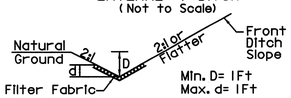
-L- STA 15+00 TO 15+79 (RT)

DETAIL 3
TAIL BASE DITCH
(Not to Scale)



Min. D = 2 Ft
B = 3 Ft

DETAIL 4
LATERAL 'V' DITCH
(Not to Scale)

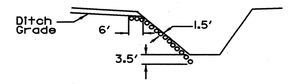


Min. D= 1Ft
Max. d= 1Ft

Type of Liner= Class 'B' Rip-Rap
-L- STA 23+50 TO 24+00 (LT)

-L- SAG
STA = 17+09.50
EL = 2100.72

DETAIL 5
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= Class 'B' Rip-Rap

-L- STA 19+55 LT
-L- STA 20+50 LT
-L- STA 19+82 RT DAVIDSON RIVER VILLAGE, LLC
DB 444 PG 527

Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.
CONST. REV.

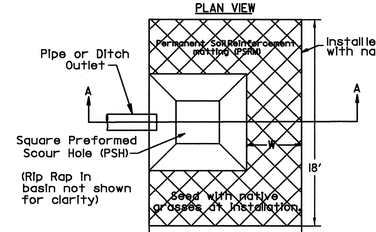
PROJECT REFERENCE NO.	SHEET NO.
B-4291	4
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE
1-20-12

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON
1-26-12

DETAIL 6
PREFORMED SCOUR HOLE
(Not to Scale)

PLAN VIEW



B	2.0'
D	2.0'
W	4.0'
d	0.5'

SECTION A-A

Liner: Class I Rip Rap
1.5' thick with Filter Fabric

-L- STA 15+85 (RT)
CULVERT INVERT = 2094.39'
DITCH INVERT = 2095.89'
+65.62 54.01' LT
BM #2
-L- PTSta. 12+06.91
-L- PCSta. 14+17.99
-L- PTSta. 15+94.53
-L- PCSta. 17+50.00
-L- POTSta. 13+09.00
BEGIN TIP PROJECT B-4291
-L- POTSta. 10+00.00
-L- PCSta. 10+24.50
-L- PTSta. 11+79.38
-L- POTSta. 12+40.00
BEGIN CONSTRUCTION
-L- PCSta. 12+97.51
-L- PTSta. 14+62.31
-L- POCSta. 21+75.00 =
-Y- POTSta. 14+98.00
Δ = 75° 37' 43.4"
-L- STA 21+05 RT
-L- PCCSta. 24+74.99
-L- PRCSta. 23+28.12
-L- PCCSta. 21+58.80
-L- POCSta. 25+30.00
END TIP PROJECT B-4291
-L- PCCSta. 25+83.93
-BL-1
-BL-2
-BL-3
-BL-4
-BL-5
-BL-6
-BY2-8
-Y- POTSta. 10+00.00
-Y- PCSta. 10+24.50
-Y- PTSta. 11+79.38
-Y- POTSta. 12+40.00
BEGIN CONSTRUCTION
-Y- PCSta. 12+97.51
-Y- PTSta. 14+62.31
-Y- POCSta. 21+75.00 =
-L- POTSta. 14+98.00
Δ = 75° 37' 43.4"
N 66° 50' 29.3" E
S 34° 22' 33.2" E
S 64° 58' 35.1" E
N 64° 01' 53.9" E
S 41° 22' 15.5" E
S 25° 58' 06.7" E
N 25° 58' 06.7" W
S 40° 54' 35.5" E
NC GRID NAD 83/95
-DI- POTSta. 10+00.00 = -L- POTSta. 17+50.00
-DI- PCSta. 10+33.00
-DI- PTSta. 10+72.27
-DI- POTSta. 12+46.80
-DI- POTSta. 12+86.00
-DI- PTSta. 12+79.55
-DI- POCSta. 12+75.00 = -L- POTSta. 14+98.00
Δ = 75° 37' 43.4"
-DI- PCSta. 10+58.00
Δ = 90° 00' 00.0" (LT)
D = 229° 10' 59.2"
L = 39.27'
T = 25.00'
R = 25.00'
-DI- PI Sta 12+66.00
Δ = 75° 03' 30.6" (RT)
D = 229° 10' 59.2"
L = 32.75'
T = 19.20'
R = 25.00'
-L- PI Sta 15+06.28
Δ = 2° 48' 35.4" (LT)
D = 1° 35' 29.6"
L = 176.55'
T = 88.29'
R = 3,600.00'
SE = NC
RO = NONE
-L- PI Sta 22+43.71
Δ = 10° 46' 44.6" (LT)
D = 6° 21' 58.3"
L = 169.32'
T = 84.91'
R = 900.00'
SE = 0.03
RO = 6.3'
-L- PI Sta 24+02.02
Δ = 15° 43' 46.0" (RT)
D = 10° 42' 34.2"
L = 146.87'
T = 73.90'
R = 535.00'
SE = 0.04
RO = 8.4'
-L- PI Sta 25+29.51
Δ = 5° 40' 28.4" (RT)
D = 5° 12' 31.3"
L = 108.94'
T = 54.52'
R = 1,100.00'
SE = SEE PLANS
RO = SEE PLANS
-L- PI Sta 27+06.74
Δ = 48° 07' 36.5" (RT)
D = 20° 50' 05.4"
L = 230.99'
T = 122.80'
R = 275.00'
SE = EXISTING
RO = EXISTING
-Y- PI Sta 11+03.83
Δ = 30° 36' 02.0" (LT)
D = 19° 45' 25.8"
L = 154.88'
T = 79.34'
R = 290.00'
SE = EXISTING
RO = EXISTING
-Y- PI Sta 13+81.10
Δ = 23° 36' 19.6" (RT)
D = 14° 19' 26.2"
L = 164.80'
T = 83.58'
R = 400.00'
SE = 0.02
RO = 30'

TRAFFIC DIAGRAM
-Y- DAVIDSON RIVER ROAD (SR 1518)
2012 ADT / 2032 ADT
1500 / 2000
DHV = 10%
DIR = 60%
TTST = 1%
DUAL = 4%
1200 / 1500
300 / 460
8900 / 13400
8000 / 12300
-L- OLD HENDERSONVILLE HWY (SR 1504)

TRANSYLVANIA COUNTY
DB 269 PG 720

DAVIDSON RIVER VILLAGE, LLC
DB 444 PG 527

TERMINIX SERVICE INC.
DB 397 PG 625

ROGER W. CISON
DB 45 PG 137

KIMBERLY WHITMIRE
DB 465 PG 123

HOUCK & SONS INC.
DB 136 PG 269

WILLIAM C. HENDON
DB 224 PG 359

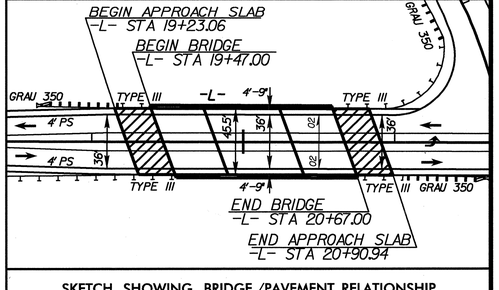
PEARL E. NORTON
DB 270 PG 342

DEBORAH S. ENGLISH ET AL
DB 151 PG 126

DAVIDSON RIVER VILLAGE, LLC
DB 444 PG 527

OBLITERATE AND REMOVE EXISTING ASPHALT PAVEMENT

SEE SHEET NO.5 FOR -L- & -Y- PROFILE
SEE SHEET NOS. S-1 THRU S-30 FOR STRUCTURE PLANS



SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP

K:\RAL_Roadway\DII\03612\Roadway\Proj\b4291_rdy_pstudgn
1/24/2012

BM#1
8" SPIKE SET IN THE BASE OF 24" MAPLE TREE
-L- STA 12+01.22 (21.90 RT)
ELEV 2103.53

BM#2
CHISLED SQUARE IN NORTH SIDE OF CONCRETE WALL
-L- STA 15+70.10 (52.69 LT)
ELEV 2098.61

PIPE HYDRAULIC DATA
(4) 36" RCP

DRAINAGE AREA	=	6.0 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	31 CFS
DESIGN HW ELEVATION	=	2098.2 FT
100 YEAR DISCHARGE	=	36 CFS
100 YEAR HW ELEVATION	=	2098.5 FT
OVERTOPPING FREQUENCY	=	> 100 YRS
OVERTOPPING DISCHARGE	=	> 71.20 CFS
OVERTOPPING ELEVATION	=	> 2101.3 FT

BM #5 - NCGS BENCH MARK DISK (TRA I)
SET IN THE WHEEL GUARD AT THE NORTHWEST CORNER OF BRIDGE
-L- STA 19+43.35 (57.75 LT)
ELEV 2104.52

BM#3
8" SPIKE SET IN BASE OF 24" CHERRY TREE
-L- STA 22+04.33 (77.06 LT)
ELEV 2099.96

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	7265 CFS
DESIGN FREQUENCY	=	25 YR
DESIGN HW ELEVATION	=	2101.7 FT
BASE DISCHARGE	=	10,760 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	2102.2 FT
OVERTOPPING DISCHARGE	=	5560 CFS
OVERTOPPING FREQUENCY	=	<10 YR
OVERTOPPING ELEVATION	=	2100.0 FT
DATE OF SURVEY	=	01/10/06
W.S. ELEVATION AT DATE OF SURVEY	=	2092.5 FT

Kimley-Horn and Associates, Inc.
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
B-4291	5
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024436 ENGINEER JEFFREY W. MOORE
1-24-12

HYDRAULICS ENGINEER
NORTH CAROLINA SEAL 026480 ENGINEER LARRY O. ROBINSON
1-26-12

BM#4
CHISLED SQUARE IN BASE OF RAILROAD SIGNAL POST
-L- STA 26+06.46 (18.77 LT)
ELEV 2099.61

BEGIN GRADE
-L- STA 13+28.00 ELEV 2102.55'
TIE PROPOSED PAVEMENT TO EXISTING

PI = 17+42.00
EL = 2,100.48'
VC = 130'
K = 65
V = 40 MPH

CL STA 20+07 -L-
1 @ 35', 1 @ 50', 1 @ 35'
2'-0" CORED SLAB
CL ELEV = 2103.79'
SKEW = 70°

BEGIN BRIDGE
-L- STA 19+47.00
ELEV 2103.52'

PI = 19+98.00
EL = 2,104.32'
VC = 140'
K = 47
V = 40 MPH

END BRIDGE
-L- STA 20+67.00
ELEV 2103.28'

PI = 21+58.00
EL = 2,101.92'
VC = 100'
K = 100
V > 40 MPH

(-)10.5000%
(-)3.86%(LT)
(-)13.00% (RT)
36" RCP
(+)11.5000%
15" RCP
(-)10.40%
(-)11.70%
(-)10.50%
2' (TYP)
3.5' (TYP)
CLASS II RIP RAP (TYP)
(-)11.5000%
(+)3.34%
(-)10.5000%
(-)10.50%
(-)16.00%

BEGIN SPECIAL DITCH GRADE RT
-L- STA 14+50.00
ELEV = 2099.30

BEGIN SPECIAL DITCH GRADE LT
-L- STA 15+00.00
ELEV = 2098.70

END SPECIAL DITCH GRADE RT
-L- STA 15+79.00
ELEV = 2095.43

END SPECIAL DITCH GRADE LT
-L- STA 15+69.00
ELEV = 2096.04

BEGIN SPECIAL DITCH GRADE LT
-L- STA 16+50.00
ELEV = 2098.30

END SPECIAL DITCH GRADE LT
-L- STA 18+00
ELEV = 2097.70

BEGIN SPECIAL DITCH GRADE RT
-L- STA 18+00.00
ELEV = 2097.36

BEGIN SPECIAL DITCH GRADE LT
-L- STA 18+50.00
ELEV = 2100.10

END SPECIAL DITCH GRADE LT
-L- STA 19+55.00
ELEV = 2098.31

END SPECIAL DITCH GRADE RT
-L- STA 19+82.00
ELEV = 2096.45

NORMAL W.S.EL= 2092.5' (01/10/06)

BEGIN SPECIAL DITCH GRADE LT
-L- STA 20+50.00
ELEV = 2097.00

END SPECIAL DITCH GRADE LT
-L- STA 21+00.00
ELEV = 2098.67

BEGIN SPECIAL DITCH GRADE LT
-L- STA 22+50.00
ELEV = 2098.50

PI = 23+50.00
ELEV = 2098.00

END SPECIAL DITCH GRADE LT
-L- STA 24+00.00
ELEV = 2095.00

END GRADE
-L- STA 25+30.00 ELEV 2100.06'
TIE PROPOSED PAVEMENT TO EXISTING

-L- OLD HENDERSONVILLE HWY (SR 1504)

SEE SHEET NO.4 FOR -L- PLAN

BEGIN GRADE
-Y- STA 12+40.00 ELEV 2101.09'
TIE PROPOSED PAVEMENT TO EXISTING

PI = 13+89.00
EL = 2,102.74'
VC = 110'
K = 46
V = 40 MPH

(+)11.1074%
-L-
(-)11.2941%
(+)11.7214%

END GRADE
-L- STA 21+70.29 (18' LT) =
-Y- STA 14+79.41
ELEV 2101.57'

-L- STA 21+75.00 =
-Y- STA 14+98.00
ELEV 2101.89'

-Y- DAVIDSON RIVER ROAD (SR 1518)

SEE SHEET NO.4 FOR -Y- PLAN

-L- STA 17+50.00 =
-DI- STA 10+00.00
ELEV 2100.85'

BEGIN GRADE
-L- STA 17+50.00 (17.43' RT) =
-DI- STA 10+17.43
ELEV 2100.50'

PI = 10+35.00
EL = 2,099.79'
VC = 30'

END GRADE
-DI- STA 10+65.00
ELEV 2099.10'

END CONSTRUCTION
-DI- STA 12+79.55

(-)12.0%
-L-
(-)14.0%
(-)12.3%

-DI-

SEE SHEET NO.4 FOR -DI- PLAN

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1/24/2012