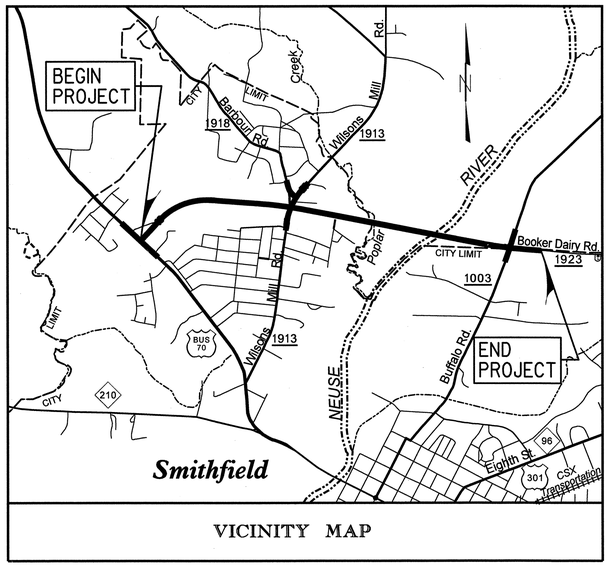
TIP: U-3334A

CONTRACT: C201300

See Sheet 1-B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

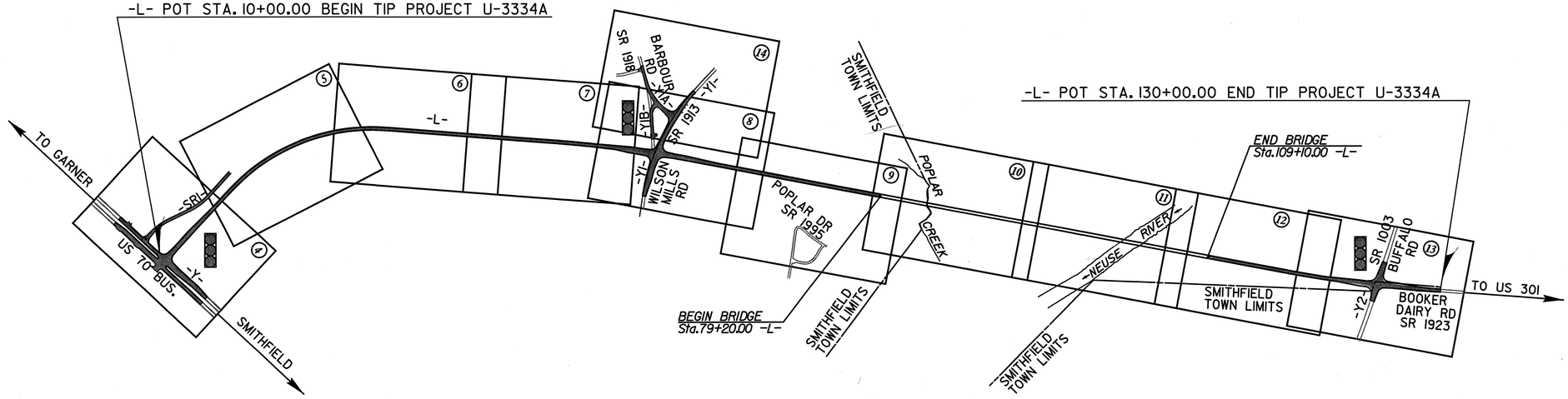
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3334A	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34929.1.1	STP-1923(2)	P.E.
34929.2.4	STP-1923(3)	ROW, UTIL.
34929.3.2	STP-1923(6)	CONSTR.

LOCATION: SR 1923 EXTENSION (BOOKER DAIRY RD) FROM US 70 BUSINESS WEST TO SR 1003 (BUFFALO RD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURES, SIGNING, AND SIGNALS

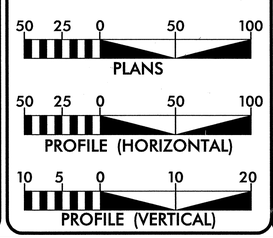
-L- POT STA. 10+00.00 BEGIN TIP PROJECT U-3334A



NCDOT CONTACT
B. DOUG TAYLOR, P.E.
ROADWAY DESIGN-ENGINEERING COORDINATION

THIS IS A FULL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS SHOWN ON THE PLANS.

GRAPHIC SCALES



DESIGN DATA

ADT 2005 = 6,700
ADT 2025 = 10,200
DHV = 10 %
D = 55 %
* T = 10 %
V = 50 MPH

*(TTST 4 % + DUAL 6 %)
URBAN COLLECTOR

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT U-3334A = 1.707 miles
LENGTH OF STRUCTURE TIP PROJECT U-3334A = 0.566 miles
TOTAL LENGTH TIP PROJECT U-3334A = 2.273 miles

Prepared In The Office of:
ARCADIS
G & A of North Carolina, Inc.
801 Corporate Center Drive, Suite 300
Raleigh, NC 27607-5073
Tel: 919/854-1282 Fax: 919/854-5448
WWW.ARCADIS-US.COM

for the North Carolina Department of Transportation

2006 STANDARD SPECIFICATIONS	*ARCADIS CONTACT*
RIGHT OF WAY DATE: NOVEMBER 13, 2003	STEVE SMALLWOOD, P.E. *PROJECT ENGINEER*
LETTING DATE: APRIL 21, 2009	

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032355 ENGINEER JANE E. COCO
P.E.
SIGNATURE: SEAL NOT VALID UNLESS SIGNED AND DATED

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022031 ENGINEER STEPHEN T. SMALLWOOD
SEAL NOT VALID UNLESS SIGNED AND DATED
P.E.
SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

P.E.
STATE HIGHWAY DESIGN ENGINEER

ARCADIS G&A
Default:27/2008 Time: 9:47:05 AM
S:\Projects\Johnston\3334A\Design\Roadway\3334A_rdy_title.dgn

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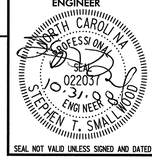
PROJECT REFERENCE NO.	SHEET NO.
U-3334A	1-A

ROADWAY DESIGN ENGINEER



SEAL NOT VALID UNLESS SIGNED AND DATED

REVISIONS

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 THRU 1-D	SURVEY CONTROL SHEETS
1-E	CENTERLINE COORDINATE LIST
2 THRU 2-C	TYPICAL SECTIONS, PAVEMENT SCHEDULE, WEDGING DETAIL, UNDERCUT DETAIL, FALSE SUMP DETAILS, & DRIVEWAY DETAIL
2-D THRU 2-E	DETAIL OF HAZARDOUS SPILL BASINS
2-F	DETAIL OF ANCHORAGE FOR FRAMES
2-G	DETAIL OF OUTLET CONTROL STRUCTURE
3	SUMMARY OF QUANTITIES
3-A THRU 3-C	DRAINAGE SUMMARY
3-D	GUARDRAIL SUMMARY AND PAVEMENT REMOVAL
3-E	SUMMARY OF EARTHWORK
3-F	PARCEL INDEX SHEET
4 THRU 14	PLAN SHEETS
15 THRU 21	PROFILE SHEETS
TCP-1 THRU TCP-12	TRAFFIC CONTROL PLANS
PM-1 THRU PM-7	PAVEMENT MARKING PLANS
EC-1 THRU EC-25	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL
SIGN-1 THRU SIGN-11	SIGNING PLANS
SIG-1 THRU SIG-23	SIGNAL PLANS
UC-1 THRU UC-6	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-6	UTILITY BY OTHERS
X-0A THRU X-0B	CROSS SECTION SUMMARY SHEETS
X-1 THRU X-50	CROSS SECTIONS
S-1 THRU S-115	STRUCTURE PLANS

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 07-30-08

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. 225.05 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

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: TOWN OF SMITHFIELD, PROGRESS ENERGY, EMBARQ, TIME WARNER CABLE, & PIEDMONT NATURAL GAS.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

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

EFF. 07-18-06
REV. 01-02-07

2006 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 July 18, 2006 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
225.05	Method of Obtaining Superelevation - Divided Highways
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
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	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
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
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.36	Traffic Bearing Grated Drop Inlet - for Steel (840.37) Double Frame and Grates
840.37	Steel Grate and Frame
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
852.01	Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

ARCADS G&M
Date=$DATE$
Plan=$PLAN$
Time $TIME$

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
U-3334A	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 Utility Easement — PUE

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:

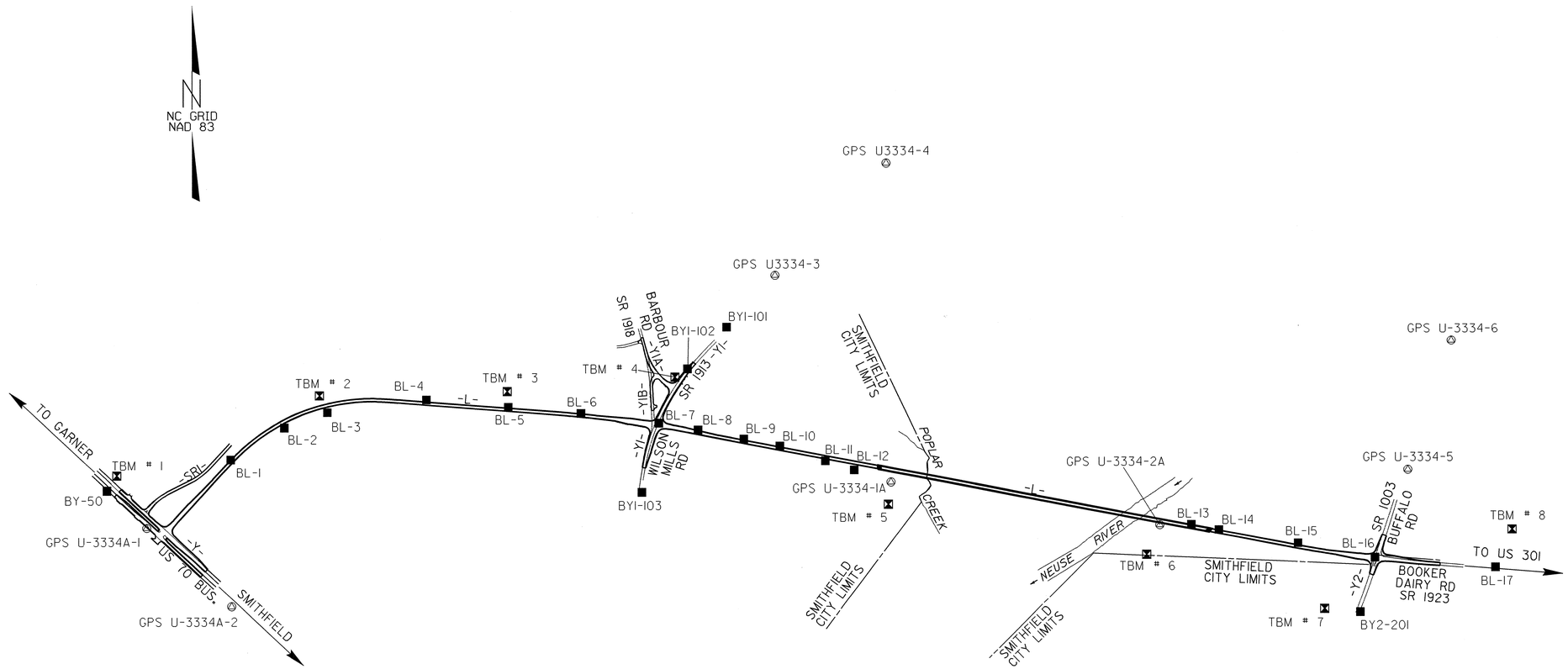
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

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.

PROJECT REFERENCE NO.	SHEET NO.
U-3334-A	1 C
Location and Surveys	

SURVEY CONTROL SHEET U-3334A



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U3334-5"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 649737.519(ft) EASTING: 2198859.949(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988232
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U3334-5" TO -L- STATION 10+00.00 IS S 87°06'42.9" W 11163.74'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

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.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
U3334A_LS_CONTROL_080924.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 EXISTING HARN MONUMENTATION

6/2/99
10-OCT-2008 09:47
r:\roadway\proj\u3334a_ls_lc_080924.dgn
$$$$USERNAME$$$$
10/10/2008 u3334a ls lc 080924 tmurray RD-Oce34

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-3334-A	1 D
Location and Surveys	

SURVEY CONTROL SHEET U-3334A

BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
A1	GPS U-3334-1	649224.1700	2187576.7450	157.23	OUTSIDE PROJECT LIMITS	
508	BL-1	649832.6870	2188325.4120	158.00	19+00.50	3.56 RT
509	BL-2	650115.0920	2188807.5020	159.45	24+69.57	70.10 RT
510	BL-3	650249.4200	2189195.0730	161.29	28+99.23	82.99 RT
511	BL-4	650363.1960	2190081.7430	163.25	38+10.21	12.33 LT
512	BL-5	650296.0780	2190812.9640	163.43	45+44.42	1.39 LT
513	BL-6	650239.8030	2191462.7520	164.02	51+96.68	1.94 RT
515	BL-7	650152.4040	2192159.2350	172.73	58+98.73	1.89 LT
524	BL-8	650092.5770	2192510.6650	172.73	62+55.14	4.57 LT
525	BL-9	650013.0660	2192919.3290	152.45	66+71.46	2.65 LT
526	BL-10	649951.3690	2193241.1240	160.61	69+99.11	2.03 LT
527	BL-11	649820.3950	2193648.5940	156.82	74+23.86	50.67 RT
528	BL-12	649737.3430	2193907.0210	138.17	76+93.24	84.08 RT
529	GPS U-3334-1A	649628.9310	2194237.4760	123.75	80+38.11	128.98 RT

BL1

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
504	GPS U-3334-2A	649246.8760	2196640.0240	121.38	104+69.76	56.37 RT
503	BL-13	649250.2880	2196921.4820	113.04	107+45.65	0.54 RT
502	BL-14	649202.5830	2197168.7570	133.06	109+97.48	1.31 RT
501	BL-15	649083.0570	2197877.3020	142.94	117+16.02	12.78 LT
500	BL-16	648955.6480	2198566.3140	143.14	124+16.38	12.46 RT
505	BL-17	648868.9900	2199641.3310	145.55	OUTSIDE PROJECT LIMITS	

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
507	BY-50	649556.9320	2187220.4740	151.24	11+50.42	52.61 RT
C1	GPS U-3334A-1	649224.1700	2187576.7450	157.23	16+37.92	54.74 RT
2	GPS U-3334A-2	648524.3680	2188336.6000	151.40	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
517	BY1-101	651008.9110	2192764.7510	170.20	OUTSIDE PROJECT LIMITS	
516	BY1-102	650635.9020	2192415.6230	174.84	22+40.67	15.29 LT
A515	BL-7	650152.4040	2192159.2350	172.73	16+92.47	14.02 RT
523	BY1-103	649540.4530	2192009.2260	171.52	10+56.49	12.75 RT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
5	GPS U-3334A-5	649737.5200	2198859.9500	147.69	OUTSIDE PROJECT LIMITS	
A500	BL-16	648955.6480	2198566.3140	143.14	14+27.64	20.36 LT
506	BY2-201	648468.9550	2198435.7830	144.43	OUTSIDE PROJECT LIMITS	

GPS CONTROL NOT IN ALIGNMENTS

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3	GPS U-3334-3	651470.6030	2193197.5070	133.34	66+73.00	1486.49 LT
4	GPS U-3334-4	652463.2650	2194191.6650	159.75	74+64.64	2647.11 LT
6	GPS U-3334-6	650885.2270	2199245.4370	150.80	129+43.95	1972.52 LT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U3334-5" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 649737.519(ft) EASTING: 2198859.949(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988232 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U3334-5" TO -L- STATION 10+00.00 IS S 87°06'42.9" W 11163.74' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

BENCHMARK DATA

```
**********************************************
TBM1       ELEVATION = 147.22
N 649690      E 2187309
Y STATION 11+25 105 LEFT
RR SPIKE IN BASE OF 27" TWIN OAK
**********************************************

**********************************************
TBM2       ELEVATION = 164.79
N 650401      E 2189124
L STATION 28+68 81 LEFT
RR SPIKE IN BASE OF 8" PINE
**********************************************

**********************************************
TBM3       ELEVATION = 165.26
N 650437      E 2190805
L STATION 45+26 142 LEFT
RR SPIKE IN BASE OF 8" RED OAK
**********************************************

**********************************************
TBM4       ELEVATION = 175.23
N 650562      E 2192305
Y1 STATION 21+17 59 LEFT
RR SPIKE IN BASE OF 26" PINE
**********************************************

**********************************************
TBM5       ELEVATION = 121.02
N 649434      E 2194214
L STATION 80+51 325 RIGHT
RR SPIKE IN BASE OF 10" ELM
**********************************************

**********************************************
TBM6       ELEVATION = 124.23
N 648983      E 2196524
L STATION 104+05 337 RIGHT
RR SPIKE IN BASE OF 15" POPLAR
**********************************************

**********************************************
TBM7       ELEVATION = 146.65
N 648498      E 2198117
L STATION 120+40 526 RIGHT
RR SPIKE IN BASE OF 30" OAK
**********************************************

**********************************************
TBM8       ELEVATION = 148.29
N 649207      E 2199791
L STATION 133+65
N 40° 53' 50.8" E  DIST    424.58
RR SPIKE IN BASE OF 20" OAK
**********************************************
```

NOTES:

1. *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/*

   THE FILES TO BE FOUND ARE AS FOLLOWS: U3334A_LS_CONTROL_080924.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 EXISTING HARN MONUMENTATION

NOTE: DRAWING NOT TO SCALE

10-OCT-2008 09:48
f:\roadway\prj\u3334a_ls_ld_080924.dgn
$$$$USERNAME$$$$

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Raleigh, NC 27607-5073
Tel: 919/854-1282 Fax: 919/854-5448

U-3334A	1-E

Disclaimer: This coordinate list is provided for the convenience of interested contractors and is intended for use during the project bidding process only. Coordinates are localized to this particular project and any conversion to state grid coordinates or other formats will be the responsibility of the recipient. While every effort has been made to provide up-to-date, accurateinformation, NCDOT makes no express guarantee as to the validity or potential for revision of this information prior to project letting.

Point #	Chain	Station	Northing(Y)	Easting(X)										
1	L	10+00.00	649175.0305	2187710.3925	43	L	52+00.00	650241.4036	2191466.2478	85	L	94+00.00	649501.7207	2195599.5297
2	L	11+00.00	649248.4092	2187778.3305	44	L	53+00.00	650230.9921	2191565.7040	86	L	95+00.00	649483.0755	2195697.7760
3	L	12+00.00	649321.7878	2187846.2685	45	L	54+00.00	650219.7132	2191665.0656	87	L	96+00.00	649464.4302	2195796.0224
4	L	13+00.00	649395.1664	2187914.2066	46	L	55+00.00	650207.5676	2191764.3250	88	L	97+00.00	649445.7850	2195894.2688
5	L	14+00.00	649468.5450	2187982.1446	47	L	56+00.00	650194.5562	2191863.4746	89	L	98+00.00	649427.1397	2195992.5152
6	L	15+00.00	649541.9237	2188050.0827	48	L	57+00.00	650180.6802	2191962.5068	90	L	99+00.00	649408.4945	2196090.7616
7	L	16+00.00	649615.3023	2188118.0207	49	L	58+00.00	650165.9404	2192061.4142	91	L	100+00.00	649389.8492	2196189.0080
8	L	17+00.00	649688.6809	2188185.9587	50	L	59+00.00	650150.3381	2192160.1893	92	L	101+00.00	649371.2040	2196287.2544
9	L	18+00.00	649762.0546	2188253.9021	51	L	60+00.00	650133.8744	2192258.8244	93	L	102+00.00	649352.5587	2196385.5008
10	L	19+00.00	649834.8079	2188322.5067	52	L	61+00.00	650116.5506	2192357.3120	94	L	103+00.00	649333.9135	2196483.7472
11	L	20+00.00	649905.0851	2188393.6340	53	L	62+00.00	650098.3681	2192455.6448	95	L	104+00.00	649315.2682	2196581.9936
12	L	21+00.00	649971.3646	2188468.4961	54	L	63+00.00	650079.7235	2192553.8913	96	L	105+00.00	649296.6230	2196680.2400
13	L	22+00.00	650033.2934	2188546.9954	55	L	64+00.00	650061.0782	2192652.1377	97	L	106+00.00	649277.9777	2196778.4864
14	L	23+00.00	650090.6722	2188628.8794	56	L	65+00.00	650042.4330	2192750.3841	98	L	107+00.00	649259.3325	2196876.7328
15	L	24+00.00	650143.3166	2188713.8847	57	L	66+00.00	650023.7877	2192848.6305	99	L	108+00.00	649240.6872	2196974.9792
16	L	25+00.00	650191.0570	2188801.7378	58	L	67+00.00	650005.1425	2192946.8769	100	L	109+00.00	649222.0420	2197073.2256
17	L	26+00.00	650233.7401	2188892.1561	59	L	68+00.00	649986.4972	2193045.1233	101	L	110+00.00	649203.3967	2197171.4720
18	L	27+00.00	650271.2284	2188984.8488	60	L	69+00.00	649967.8520	2193143.3697	102	L	111+00.00	649184.7515	2197269.7184
19	L	28+00.00	650303.4015	2189079.5178	61	L	70+00.00	649949.2067	2193241.6161	103	L	112+00.00	649166.1062	2197367.9648
20	L	29+00.00	650330.1557	2189175.8585	62	L	71+00.00	649930.5615	2193339.8625	104	L	113+00.00	649147.4610	2197466.2112
21	L	30+00.00	650351.4051	2189273.5610	63	L	72+00.00	649911.9162	2193438.1089	105	L	114+00.00	649128.8157	2197564.4576
22	L	31+00.00	650367.0813	2189372.3111	64	L	73+00.00	649893.2710	2193536.3553	106	L	115+00.00	649110.1705	2197662.7040
23	L	32+00.00	650377.1338	2189471.7911	65	L	74+00.00	649874.6257	2193634.6017	107	L	116+00.00	649091.5252	2197760.9504
24	L	33+00.00	650381.5304	2189571.6810	66	L	75+00.00	649855.9805	2193732.8481	108	L	117+00.00	649073.3124	2197859.2775
25	L	34+00.00	650380.2815	2189671.6603	67	L	76+00.00	649837.3352	2193831.0945	109	L	118+00.00	649055.9582	2197957.7599
26	L	35+00.00	650374.5392	2189771.4909	68	L	77+00.00	649818.6900	2193929.3409	110	L	119+00.00	649039.4642	2198056.3899
27	L	36+00.00	650366.9992	2189871.2061	69	L	78+00.00	649800.0447	2194027.5873	111	L	120+00.00	649023.8315	2198155.1601
28	L	37+00.00	650359.3433	2189970.9126	70	L	79+00.00	649781.3995	2194125.8337	112	L	121+00.00	649009.0613	2198254.0630
29	L	38+00.00	650351.6873	2190070.6191	71	L	80+00.00	649762.7542	2194224.0801	113	L	122+00.00	648995.1547	2198353.0910
30	L	39+00.00	650344.0314	2190170.3256	72	L	81+00.00	649744.1090	2194322.3265	114	L	123+00.00	648982.1128	2198452.2366
31	L	40+00.00	650336.3755	2190270.0321	73	L	82+00.00	649725.4637	2194420.5729	115	L	124+00.00	648969.9367	2198551.4922
32	L	41+00.00	650328.7196	2190369.7386	74	L	83+00.00	649706.8185	2194518.8193	116	L	125+00.00	648958.6271	2198650.8503
33	L	42+00.00	650321.0637	2190469.4451	75	L	84+00.00	649688.1732	2194617.0657	117	L	126+00.00	648948.1850	2198750.3033
34	L	43+00.00	650313.4078	2190569.1516	76	L	85+00.00	649669.5280	2194715.3121	118	L	127+00.00	648938.6113	2198849.8436
35	L	44+00.00	650305.7519	2190668.8581	77	L	86+00.00	649650.8827	2194813.5585	119	L	128+00.00	648929.9065	2198949.4637
36	L	45+00.00	650298.0960	2190768.5646	78	L	87+00.00	649632.2375	2194911.8049	120	L	129+00.00	648922.0090	2199049.1512
37	L	46+00.00	650290.4401	2190868.2712	79	L	88+00.00	649613.5922	2195010.0513	121	L	130+00.00	648914.2793	2199148.8520
38	L	47+00.00	650282.7842	2190967.9777	80	L	89+00.00	649594.9470	2195108.2977	122	L	131+00.00	648906.5497	2199248.5529
39	L	48+00.00	650275.1283	2191067.6842	81	L	90+00.00	649576.3017	2195206.5441	123	L	132+00.00	648898.8201	2199348.2537
40	L	49+00.00	650267.4724	2191167.3907	82	L	91+00.00	649557.6565	2195304.7905	124	L	133+00.00	648891.0905	2199447.9545
41	L	50+00.00	650259.6208	2191267.0818	83	L	92+00.00	649539.0112	2195403.0369	125	L	133+64.77	648886.0840	2199512.5305
42	L	51+00.00	650250.9467	2191366.7045	84	L	93+00.00	649520.3660	2195501.2833	126	L	133+64.77	648886.0840	2199512.5305

REVISIONS

ARCADIS G&M
Date:10/27/2008 Time: 9:41:08 AM
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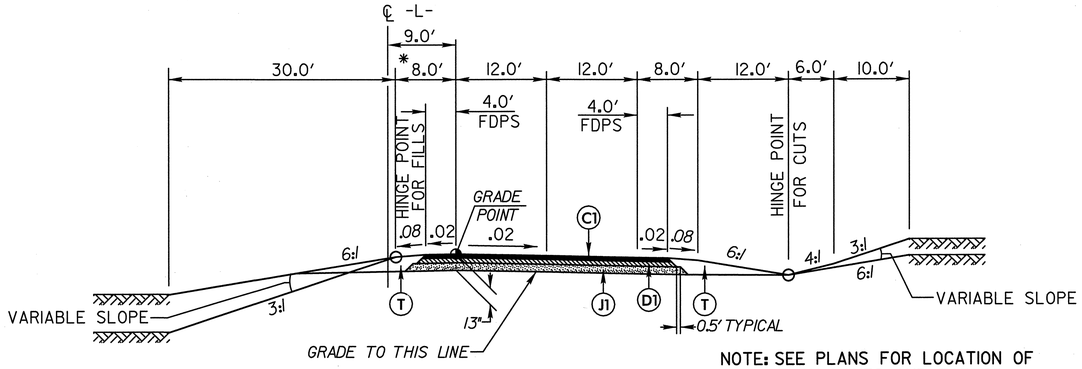
PROJECT REFERENCE NO.	SHEET NO.
U-3334A	2

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
10.31.08
SEAL NOT VALID UNLESS SIGNED AND DATED

PAVEMENT ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
11/5/08

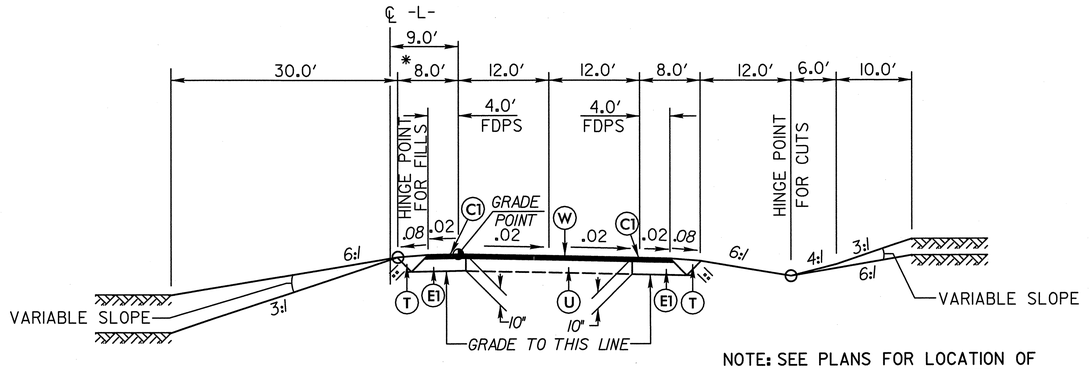


*11.0' WHERE WIDENED FOR GUARDRAIL

NOTE: SEE PLANS FOR LOCATION OF TURN LANES AND TAPERS.

TYPICAL SECTION #1

USE TYPICAL SECTION #1:
STA. 10+00.00 -L- TO STA. 79+20.00 -L- (BRIDGE)
STA. 109+10.00 -L- (BRIDGE) TO STA. 124+39.72 -L-



NOTE: SEE PLANS FOR LOCATION OF TURN LANES AND TAPERS.

TYPICAL SECTION #2

USE TYPICAL SECTION #2:
USE IN CONJUNCTION WITH WEDGING DETAIL ON SHEET 2A
STA. 124+39.72 -L- TO STA. 130+00.00 -L-

CODE	PAVEMENT SCHEDULE
C1	PROP. APPROX. 3.0" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	PROP. VAR. DEPTH ASPHALT CONC. 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.
D1	PROP. APPROX. 4.0" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. APPROX. 2.5" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D3	PROP. VAR. DEPTH ASPHALT CONC. 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" IN DEPTH.
E1	PROP. APPROX. 7.0" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD IN EACH OF TWO LAYERS.
E2	PROP. APPROX. 5.5" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E3	PROP. APPROX. 4.0" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E4	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT GREATER THAN 5.5" OR LESS THAN 3" IN DEPTH.
J1	PROP. 6.0" AGGREGATE BASE COURSE
P	PRIME COAT AT RATE OF 0.35 GALLONS PER SQ. YD.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

Note: Pavement Edge Slopes are 1:1 Unless Shown Otherwise

REVISIONS

ARCADIS G&M
Date: $DATE$ Time: $TIME$
Filename: $FILE$

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PROJECT REFERENCE NO.	SHEET NO.
U-3334A	2A

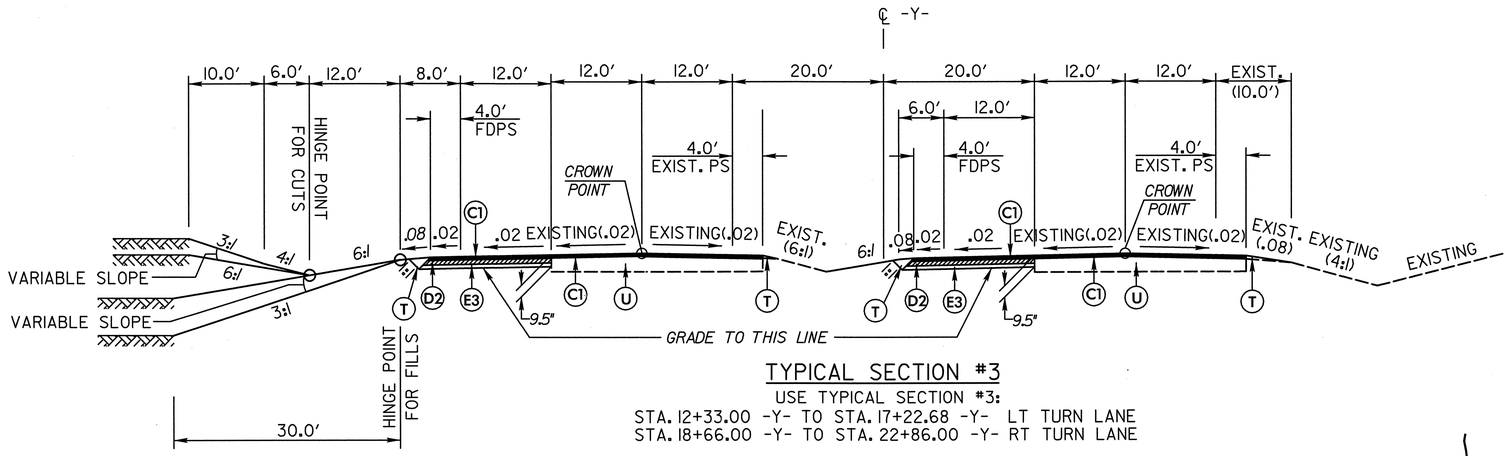
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
10-29-08
SEAL NOT VALID UNLESS SIGNED AND DATED

PAVEMENT ENGINEER

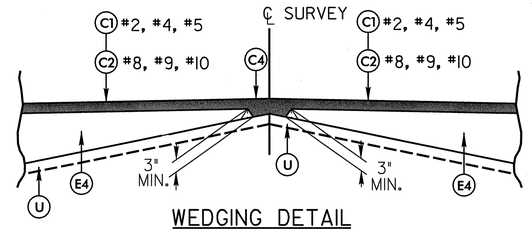
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
11/5/08

REVISIONS



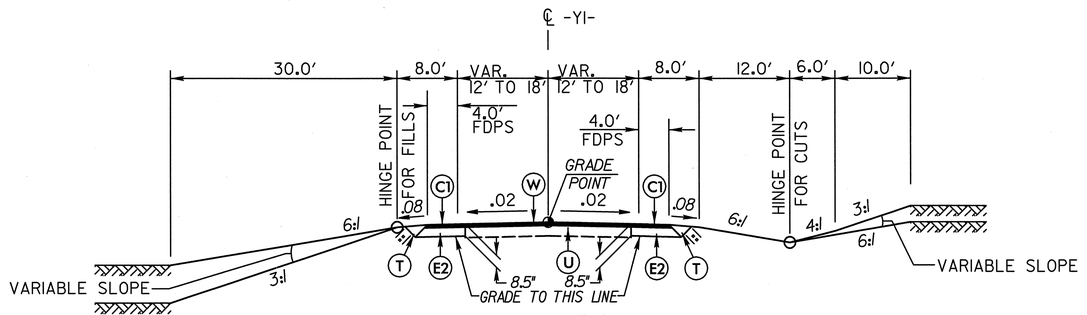
TYPICAL SECTION #3

USE TYPICAL SECTION #3:
STA. 12+33.00 -Y- TO STA. 17+22.68 -Y- LT TURN LANE
STA. 18+66.00 -Y- TO STA. 22+86.00 -Y- RT TURN LANE



WEDGING DETAIL

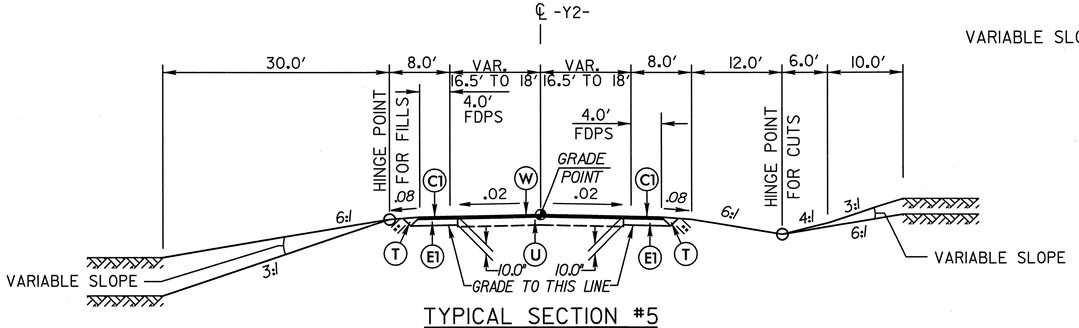
USE IN CONJUNCTION WITH TYPICAL SECTIONS #2, #4, #5, #8, #9, & #10



TYPICAL SECTION #4

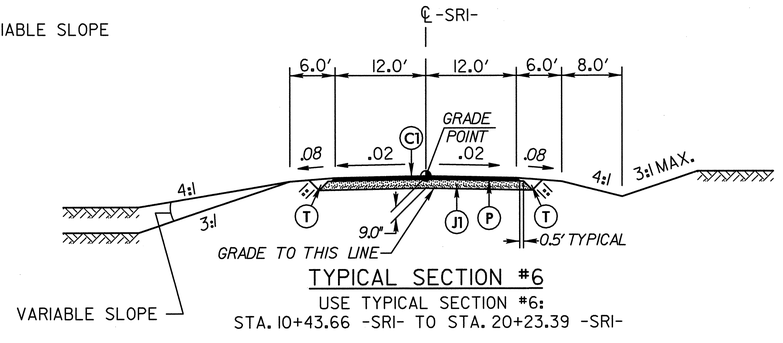
USE TYPICAL SECTION #4:
USE IN CONJUNCTION WITH WEDGING DETAIL
STA. 12+75.00 -YI- TO STA. 16+53.29 -YI-
STA. 16+90.24 -YI- TO STA. 23+20 -YI-

NOTE: SEE PLANS FOR LOCATION OF TURN LANES AND TAPERS.



TYPICAL SECTION #5

USE TYPICAL SECTION #5:
USE IN CONJUNCTION WITH WEDGING DETAIL
STA. 12+74.33 -Y2- TO STA. 14+10.87 -Y2-
STA. 14+47.63 -Y2- TO STA. 16+39.53 -Y2-



TYPICAL SECTION #6

USE TYPICAL SECTION #6:
STA. 10+43.66 -SRI- TO STA. 20+23.39 -SRI-

CODE	PAVEMENT SCHEDULE
C1	3.0" TYPE S9.5B
C2	1.5" TYPE S9.5B
C3	VAR. DEPTH TYPE S9.5B
D1	4.0" TYPE I19.0B
D2	2.5" TYPE I19.0B
D3	VAR. DEPTH TYPE I19.0B
E1	7.0" TYPE B25.0B
E2	5.5" TYPE B25.0B
E3	4.0" TYPE B25.0B
E4	VAR. DEPTH TYPE B25.0B
J1	6.0" AGGREGATE BASE COURSE
P	PRIME COAT
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VAR. DEPTH ASPHALT PAVEMENT

Note: Pavement Edge Slopes are 1:1 Unless Shown Otherwise

ARCADIS G&M
Date:10/27/2008 Time: 9:47:39 AM
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PROJECT REFERENCE NO.	SHEET NO.
U-3334A	2B

ROADWAY DESIGN ENGINEER

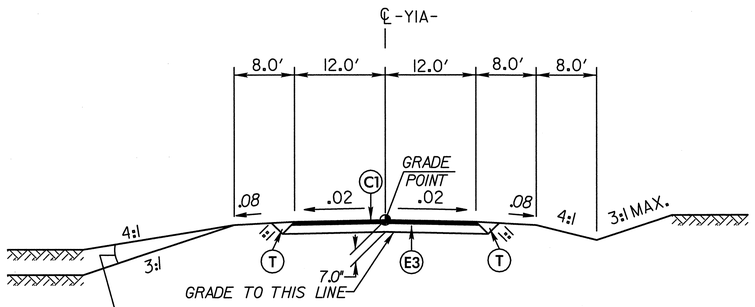
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD 10.27.08

SEAL NOT VALID UNLESS SIGNED AND DATED

PAVEMENT ENGINEER

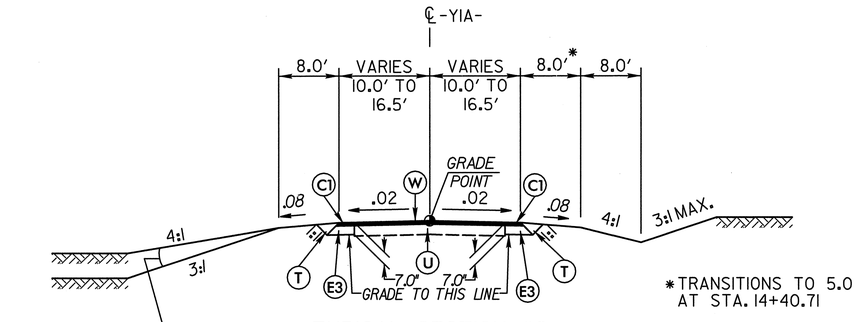
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 10/27/08

REVISIONS



TYPICAL SECTION #7

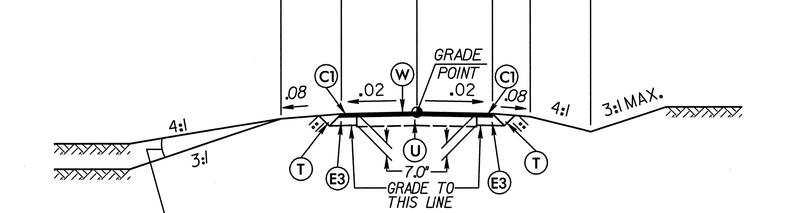
USE TYPICAL SECTION #7:
STA. 10+22.00 -YIA- TO STA. 12+90.00 -YIA-



*TRANSITIONS TO 5.0 AT STA. 14+40.71

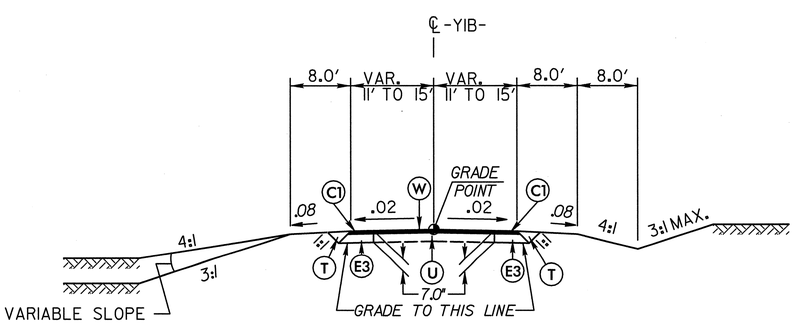
TYPICAL SECTION #8

USE TYPICAL SECTION #8:
USE IN CONJUNCTION WITH WEDGING DETAIL ON SHEET 2A
STA. 12+90.00 -YIA- TO STA. 14+40.71 -YIA-



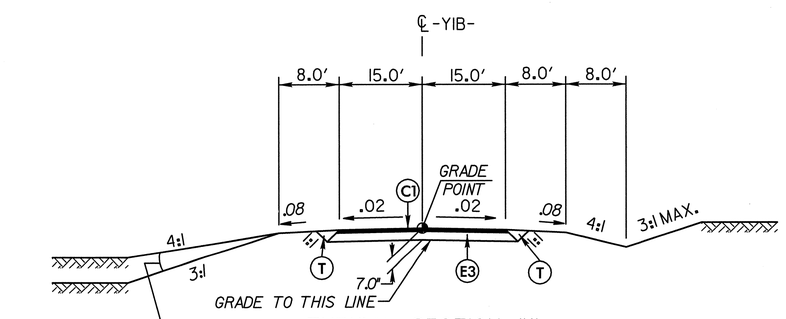
TYPICAL SECTION #9

USE TYPICAL SECTION #9:
USE IN CONJUNCTION WITH WEDGING DETAIL ON SHEET 2A
STA. 14+40.71 -YIA- TO STA. 15+65.00 -YIA-



TYPICAL SECTION #10

USE TYPICAL SECTION #10:
USE IN CONJUNCTION WITH WEDGING DETAIL ON SHEET 2A
STA. 12+15.58 -YIB- TO STA. 12+80 -YIB-



TYPICAL SECTION #11

USE TYPICAL SECTION #11:
STA. 12+80 -YIB- TO STA. 13+20.45 -YIB-

NOTE: SEE PLANS FOR TURNAROUND PAVEMENT DESIGN

NOTE: OVERLAY EXISTING YIB FROM STA. 10+00 TO 12+15.58 WITH 1.25" S9.5B

CODE	PAVEMENT SCHEDULE
C1	3.0" TYPE S9.5B
C2	1.5" TYPE S9.5B
C3	VAR. DEPTH TYPE S9.5B
D1	4.0" TYPE I19.0B
D2	2.5" TYPE I19.0B
D3	VAR. DEPTH TYPE I19.0B
E1	7.0" TYPE B25.0B
E2	5.5" TYPE B25.0B
E3	4.0" TYPE B25.0B
E4	VAR. DEPTH TYPE B25.0B
J1	6.0" AGGREGATE BASE COURSE
P	PRIME COAT
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VAR. DEPTH ASPHALT PAVEMENT

Note: Pavement Edge Slopes are 1:1 Unless Shown Otherwise

ARCADIS G&M
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PROJECT REFERENCE NO.	SHEET NO.
U-3334A	2C

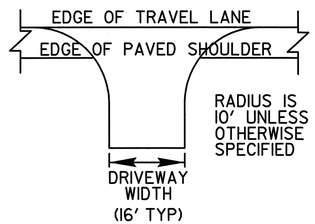
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL 022037 ENGINEER STEPHEN T. SMALLWOOD 10.29.08

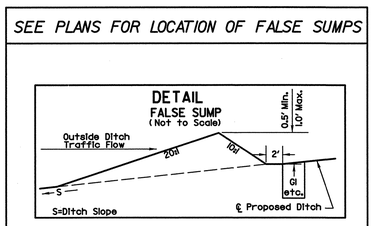
SEAL NOT VALID UNLESS SIGNED AND DATED

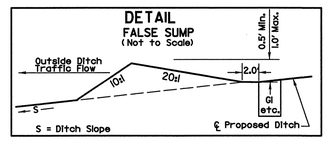
REVISIONS

TYPICAL FOR DRIVEWAY TURNOUTS
SEE PLANS FOR DRIVEWAY LOCATIONS

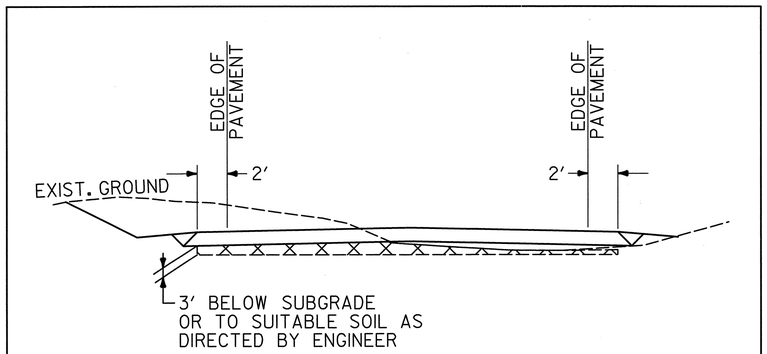


SEE PLANS FOR LOCATION OF FALSE SUMPS





STA. 18+18.61 -L-
STA. 77+55.53 -L-
STA. 78+32.07 -L-
STA. 110+84.07-L-
STA. 20+13.70 -Y-



DETAIL SHOWING UNDERCUT LIMITS

STA. 10+70 TO STA. 12+75 -L-
STA. 17+00 TO STA. 19+25 -L-
STA. 59+15 TO STA. 64+25 -L-
STA. 110+50 TO STA. 124+10 -L-
STA. 12+33 TO STA. 22+86 -Y-
STA. 12+75 TO STA. 23+20 -Y1-

ARCADIS G&M
Date:10/27/2008 Time: 9:47:39 AM
File:n:\projects\3334a\03\roadway\sheets\3334a_rdy_typ.dgn

ARCADIS
G & M of North Carolina, Inc.
WWW.ARCADIS-US.COM
801 Corporate Center Drive, Suite 300
Raleigh, NC 27607-5073
Tel: 919/854-1282 Fax: 919/854-5448

PROJECT REFERENCE NO.	SHEET NO.
U-3334A	2D

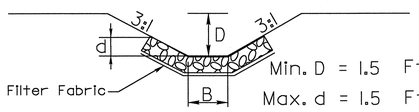
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032376 ENGINEER JULIE E. COCCIOLONE
SEAL NOT VALID UNLESS SIGNED AND DATED

10' 0 20' 40'
SCALE

REVISIONS

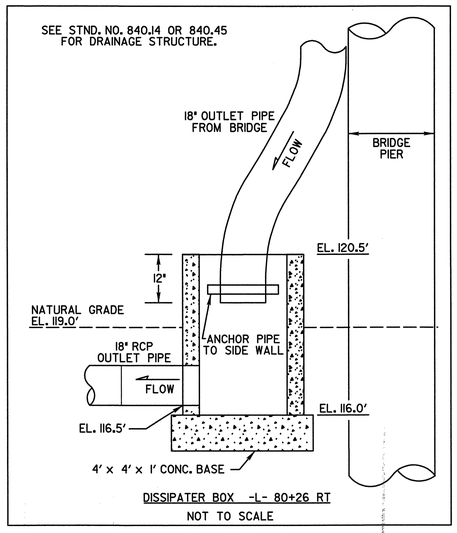
INLET DITCH and EMERGENCY SPILLWAY DITCH

(Not to Scale)

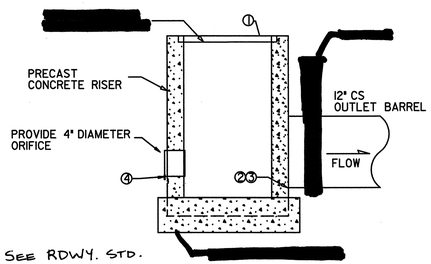


Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
B = 3 Ft.

Type of Liner = CL B Riprap



DISSIPATER BOX -L- 80+26 RT
NOT TO SCALE

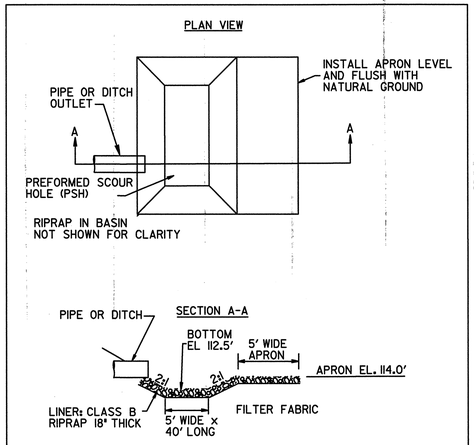


SEE RDWY. STD. DWG. NO. 840.45.

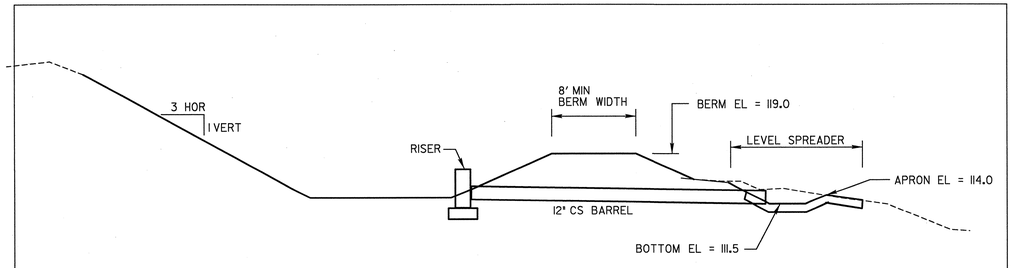
REFER TO SHEET 2-G. FOR OUTLET CONTROL STRUCTURE.

DESCRIPTION	ELEVATION
① TOP	117.0
② BOTTOM OF RISER EL.	112.0
③ OUTLET PIPE INVERT & DIAMETER	112.0
④ ORIFICE INVERT & DIAMETER	113.5 4"

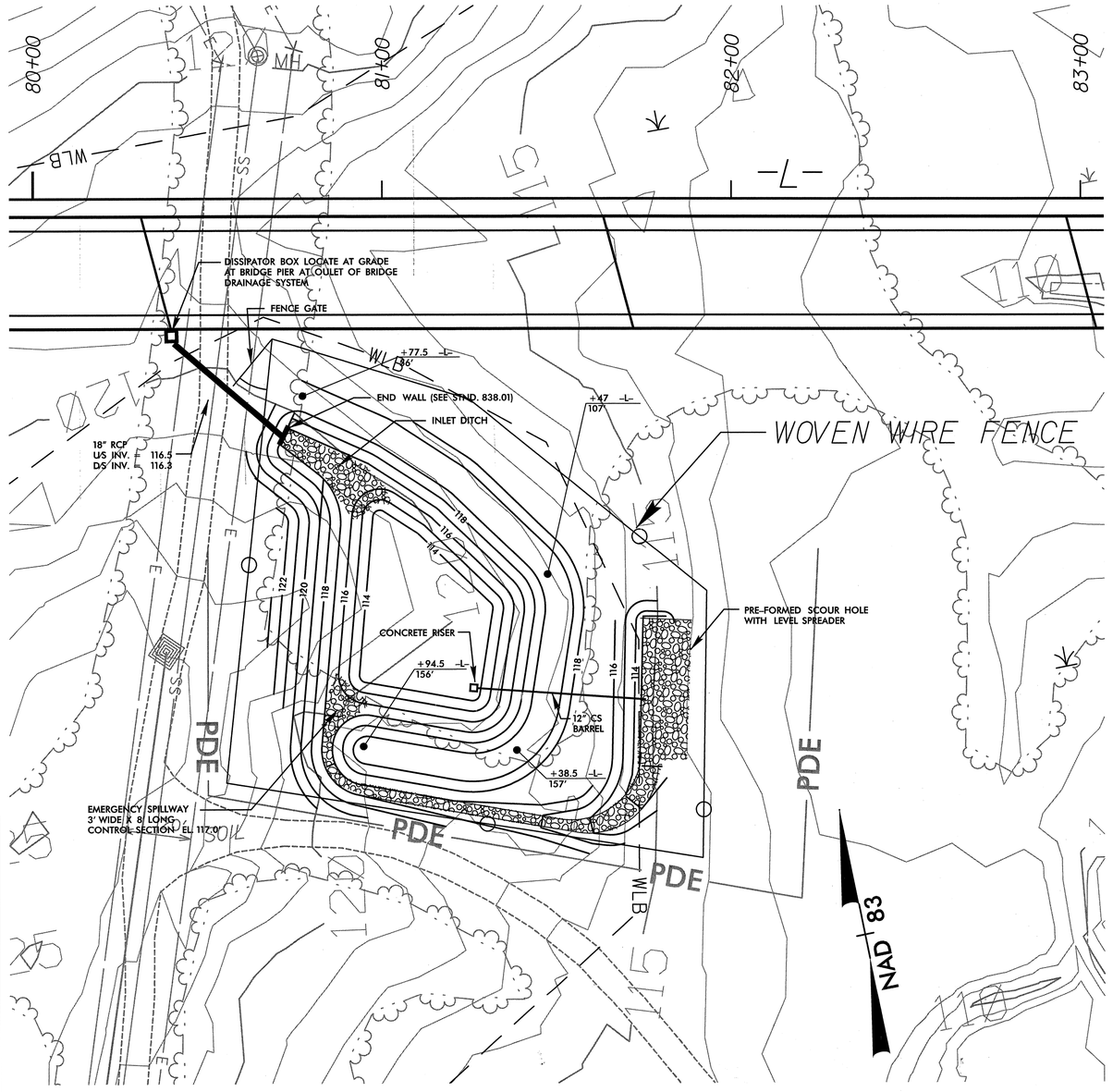
RISER DETAIL -L- 81+26 RT
NOT TO SCALE



LEVEL SPREADER



BASIN DETENTION POND TYPICAL SECTION



HAZARDOUS SPILL BASIN / DETENTION POND

ARCADIS G&M
Date:&DATE&
Filename:&FILE&
Time: &TIME&

ARCADIS
G & M of North Carolina, Inc.
WWW.ARCADIS-US.COM
801 Corporate Center Drive, Suite 300
Raleigh, NC 27607-5073
Tel: 919/854-1282 Fax: 919/854-5448

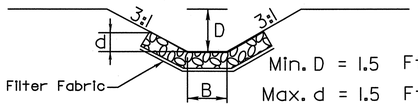
PROJECT REFERENCE NO.	SHEET NO.
U-3334A	2E

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032376 ENGINEER JULIE E. COCO
10/29/08
SEAL NOT VALID UNLESS SIGNED AND DATED

10' 0 20' 40'
SCALE

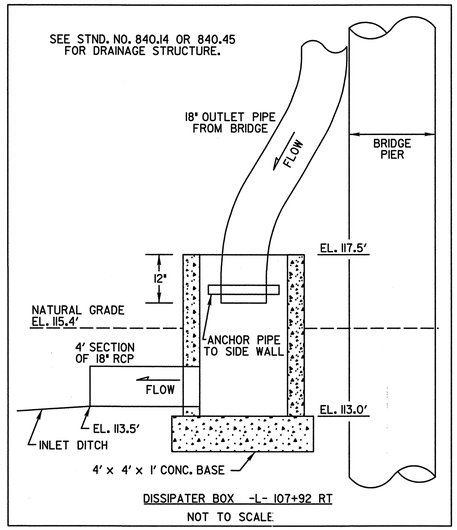
INLET DITCH and EMERGENCY SPILLWAY DITCH

(Not to Scale)

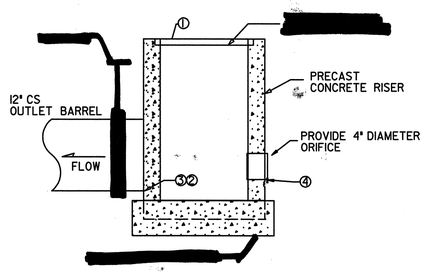


Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
B = 3 Ft.

Type of Liner = CL B Riprap



DISSIPATER BOX -L- 107+92 RT
NOT TO SCALE



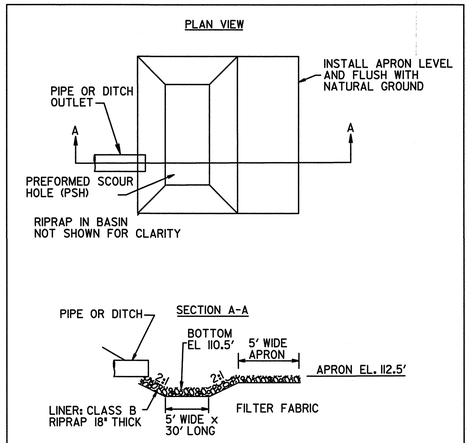
SEE RDWY. STD. DWG. NO. 840.45.

REFER TO SHEET 2-G FOR OUTLET CONTROL STRUCTURE.

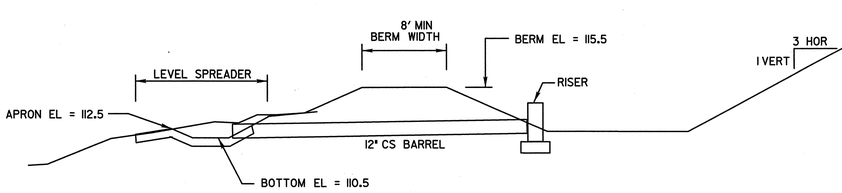
[redacted]

DESCRIPTION	ELEVATION
① TOP	113.5
② BOTTOM OF RISER EL.	111.0
③ OUTLET PIPE INVERT & DIAMETER	111.0
④ ORIFICE INVERT & DIAMETER	111.5 4"

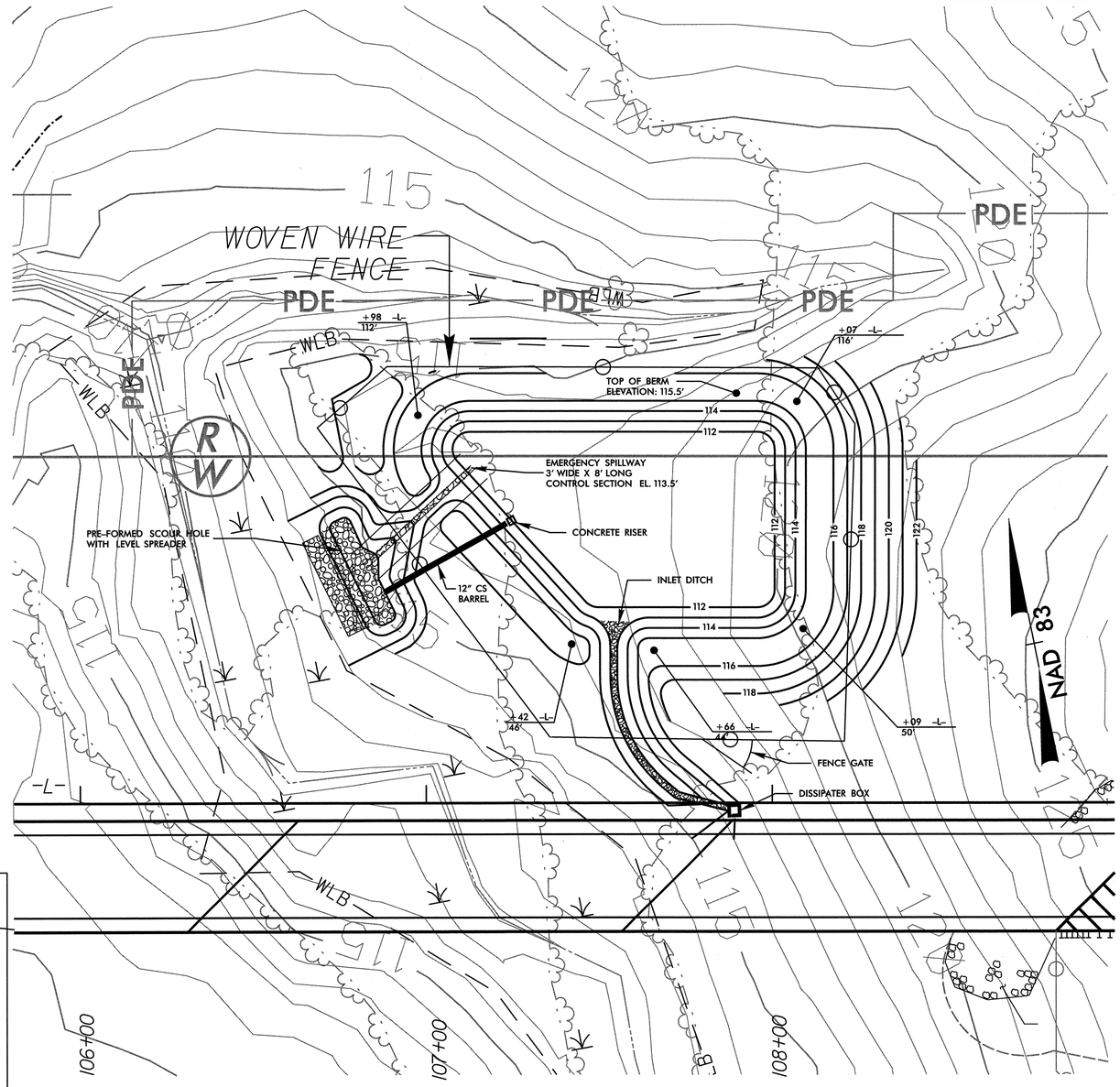
RISER DETAIL -L- 107+25 LT
NOT TO SCALE



LEVEL SPREADER



BASIN TYPICAL SECTION



HAZARDOUS SPILL BASIN / DETENTION POND

REVISIONS

ARCADIS G&M
Date:$DATE$ Time: $TIME$
Filename:$FILE$

PROJECT REFERENCE NO.	SHEET NO.
U-3334A	2-F

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

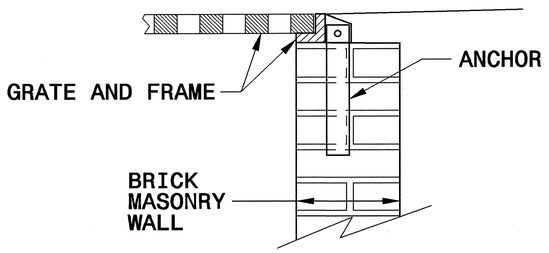
ENGLISH DETAIL DRAWING FOR

ANCHORAGE FOR FRAMES

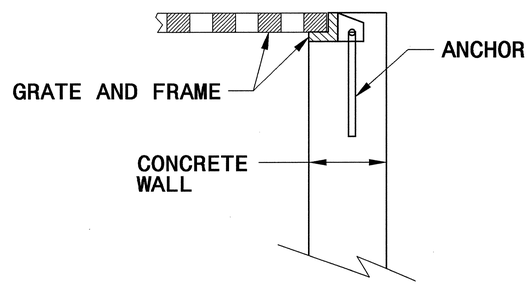
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1

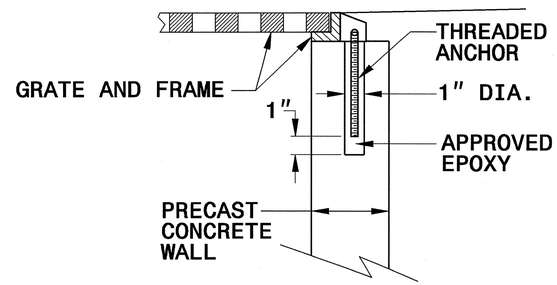
840D25



BRICK MASONRY CONSTRUCTION



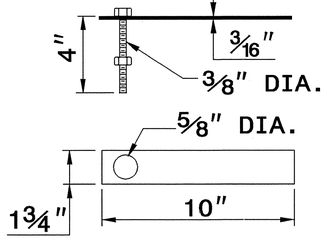
CONCRETE CONSTRUCTION



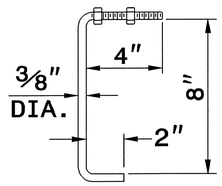
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

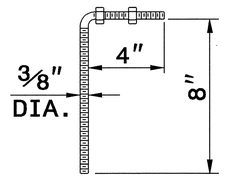
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



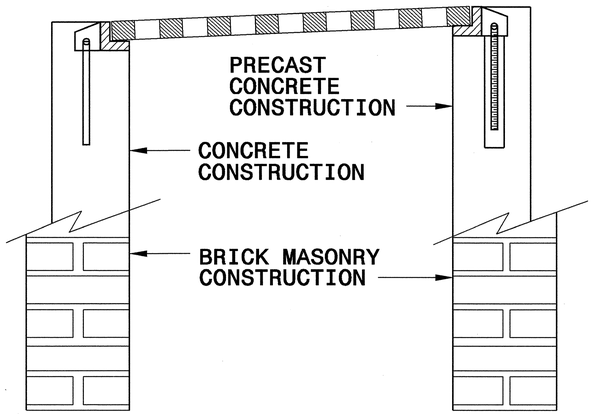
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

ANCHORAGE FOR FRAMES

BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1

840D25

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON 1/7/08

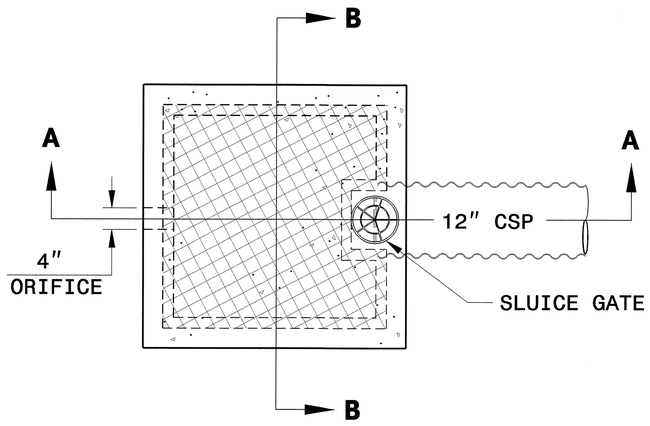
PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: DATE:
FILE SPEC.:

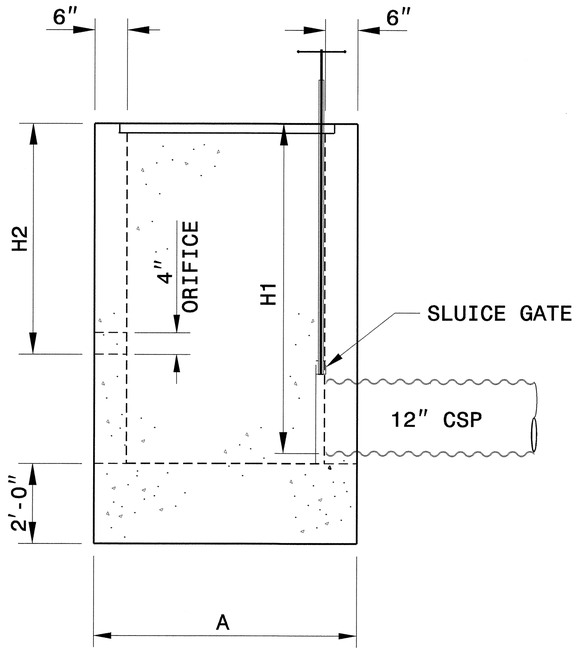
27-SEP-2006 08:59
S:\Contracts\Contracts\Special Details\ericward\stds\06 Stds to Special Details\840d25 Anchorage for Frames\0840d25.dgn
ericward MI PS222293

PROJECT REFERENCE NO.	SHEET NO.
	2-G

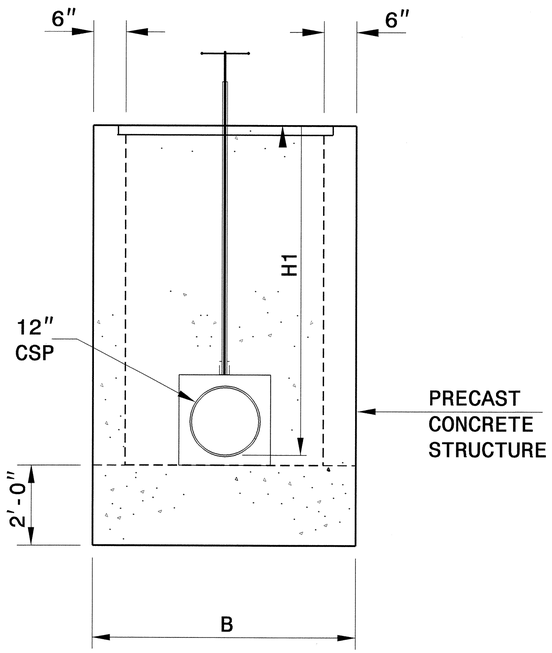


TOP VIEW OF RETICULINE FRAME AND GRATE WITH SLUICE GATE

BOX SIZE & QUANTITIES					
	BOX DIMENSIONS				CONCRETE QTY.
	A	B	H1	H2	LBS.
2-D	4'	4'	5'	3'-6"	2.48
2-E	4'	4'	2'-6'	2'	1.83



VIEW A-A



VIEW B-B

NOTES:

PLACE STEPS IN ALL STRUCTURES OVER 3' IN HEIGHT IN ACCORDANCE WITH STD.NO. 840.66. (12" ON CENTERS)

RETICULINE FRAMES AND GRATES TO BE APPROVED BY THE ENGINEER.

USE REBAR PLACEMENT AS SHOWN IN STD.NO. 840.45.

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

OUTLET CONTROL STRUCTURE

ORIGINAL BY: TSpell DATE: 12-16-08
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: s:details/tspell/outletcontrol_str.dgn

PS244552 12/3/2008 outletcontrol_str tspell PS-Oce34dtbond

REVISIONS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201300

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0001000000-E	200	Lump Sum		CLEARING & GRUBBING .. ACRE(S)
0008000000-E	200	2	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0015000000-N	205	1	EA	SEALING ABANDONED WELLS
0022000000-E	225	68,500	CY	UNCLASSIFIED EXCAVATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ************ (94+15.00)
0036000000-E	225	18,100	CY	UNDERCUT EXCAVATION
0080000000-E	SP	500	TON	CLASS IV SUBGRADE STABILIZA-TION
0106000000-E	230	50,000	CY	BORROW EXCAVATION
0134000000-E	240	480	CY	DRAINAGE DITCH EXCAVATION
0156000000-E	250	1,560	SY	REMOVAL OF EXISTING ASPHALT PAVEMENT
0192000000-N	260	10	HR	PROOF ROLLING
0195000000-E	265	1,500	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	1,500	SY	FABRIC FOR SOIL STABILIZATION
0234000000-E	SP	500	CY	GENERIC GRADING ITEM SELECT MATERIAL, CLASS III
0314000000-E	300	365	TON	SELECT MATERIAL, CLASS ***** (VI)
0318000000-E	300	310	TON	FOUNDATION CONDITIONING MATE-RIAL, MINOR STRS
0344000000-E	310	352	LF	18" SIDE DRAIN PIPE
0378000000-E	310	248	LF	24" RC PIPE CULVERTS, CLASS III
0384000000-E	310	220	LF	30" RC PIPE CULVERTS, CLASS III
0390000000-E	310	576	LF	36" RC PIPE CULVERTS, CLASS III
0396000000-E	310	196	LF	42" RC PIPE CULVERTS, CLASS III
0714000000-E	310	40	LF	18" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
0807000000-E	310	2	EA	18" BIT COAT CS PIPE ELBOWS, T YPE B 0.064" THICK
0995000000-E	340	463	LF	PIPE REMOVAL
1011000000-N	500	Lump Sum		FINE GRADING
1121000000-E	520	16,000	TON	AGGREGATE BASE COURSE
1220000000-E	545	150	TON	INCIDENTAL STONE BASE
1275000000-E	600	950	GAL	PRIME COAT
1489000000-E	610	3,000	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	8,700	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	10,100	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1560000000-E	620	1,145	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1693000000-E	654	100	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2000000000-N	806	82	EA	RIGHT OF WAY MARKERS
2022000000-E	815	168	CY	SUBDRAIN EXCAVATION
2033000000-E	815	84	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	500	LF	6" PERFORATED SUBDRAIN PIPE
2055000000-E	815	15	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
2209000000-E	838	36	CY	ENDWALLS
2253000000-E	840	2	CY	PIPE COLLARS
2286000000-N	840	12	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	0.68	LF	MASONRY DRAINAGE STRUCTURES
2365000000-N	840	9	EA	FRAME WITH TWO GRATES, STD 840.22
2396000000-N	840	1	EA	FRAME WITH COVER, STD 840.54
2407000000-N	840	2	EA	STEEL FRAME WITH TWO GRATES, STD 840.37

ItemNumber	Sec #	Quantity	Unit	Description
2474000000-N	SP	Lump Sum		GENERIC DRAINAGE ITEM HAZARDOUS SPILL BASINS
2556000000-E	846	40	LF	SHOULDER BERM GUTTER
2655000000-E	852	20	SY	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)
3030000000-E	862	1,800	LF	STEEL BM GUARDRAIL
3105000000-N	862	2	EA	STEEL BM GUARDRAIL TERMINAL SECTIONS
3150000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS
3210000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	7	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3503000000-E	866	25,440	LF	WOVEN WIRE FENCE, 47" FABRIC
3506000000-E	866	1,600	EA	4" TIMBER FENCE POSTS, ***** LONG (7'-6")
3512000000-E	866	410	EA	5" TIMBER FENCE POSTS, ***** LONG (8')
3557000000-E	866	1,000	LF	ADDITIONAL BARBED WIRE
3565000000-E	866	2	EA	DOUBLE GATES, **" HIGH, **' WIDE, **' OPENING (48", 12', 24')
3649000000-E	876	330	TON	RIP RAP, CLASS B
3656000000-E	876	8,575	SY	FILTER FABRIC FOR DRAINAGE
3659000000-N	SP	3	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4072000000-E	903	1,170	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4096000000-N	904	4	EA	SIGN ERECTION, TYPE D
4102000000-N	904	65	EA	SIGN ERECTION, TYPE E
4108000000-N	904	4	EA	SIGN ERECTION, TYPE F
4116100000-N	904	5	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
4155000000-N	907	31	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4192000000-N	907	5	EA	DISPOSAL OF SUPPORT, U-CHANNEL
4400000000-E	1110	288	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	480	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	80	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	2	EA	FLASHING ARROW PANELS, TYPE C
4430000000-N	1130	175	EA	DRUMS
4435000000-N	1135	100	EA	CONES
4445000000-E	1145	275	LF	BARRICADES (TYPE III)
4450000000-N	1150	1,440	HR	FLAGGER
4480000000-N	1165	2	EA	TMIA
4650000000-N	1251	119	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	28,448	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	18,255	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4695000000-E	1205	100	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4710000000-E	1205	670	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4725000000-E	1205	67	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4810000000-E	1205	52,840	LF	PAINT PAVEMENT MARKING LINES (4")
4835000000-E	1205	226	LF	PAINT PAVEMENT MARKING LINES (24")
4845000000-N	1205	11	EA	PAINT PAVEMENT MARKING SYMBOL
4847000000-E	1205	12,148	LF	POLYUREA PAVEMENT MARKING LINES (4", **********) (STANDARD GLASS BEADS)
4900000000-N	1251	375	EA	PERMANENT RAISED PAVEMENT MARKERS
4915000000-E	1264	6	EA	7' U-CHANNEL POSTS
4955000000-N	1264	6	EA	OBJECT MARKERS (END OF ROAD)
5325200000-E	1510	266	LF	2" WATER LINE

ItemNumber	Sec #	Quantity	Unit	Description
5325600000-E	1510	240	LF	6" WATER LINE
5325800000-E	1510	2,526	LF	8" WATER LINE
5536000000-E	1515	1	EA	2" VALVE
5546000000-E	1515	2	EA	8" VALVE
5648000000-N	1515	11	EA	RELOCATE WATER METER
5649000000-N	1515	3	EA	RECONNECT WATER METER
5672000000-N	1515	5	EA	RELOCATE FIRE HYDRANT
5691400000-E	1520	198	LF	10" SANITARY GRAVITY SEWER
5800000000-E	1530	643	LF	ABANDON 6" UTILITY PIPE
5801000000-E	1530	2,289	LF	ABANDON 8" UTILITY PIPE
5815000000-N	1530	3	EA	REMOVE WATER METER
5882000000-N	SP	2	EA	GENERIC UTILITY ITEM ANTI-SEEPAGE COLLAR
6000000000-E	1605	9,900	LF	TEMPORARY SILT FENCE
6006000000-E	1610	2,325	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	2,150	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	2,150	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	45.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	850	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	5.25	TON	FERTILIZER FOR TEMPORARY SEED-ING
6024000000-E	1622	375	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	5	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	8,050	LF	SAFETY FENCE
6030000000-E	1630	9,350	CY	SILT EXCAVATION
6036000000-E	1631	13,100	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	100	SY	COIR FIBER MAT
6038000000-E	SP	2,375	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	175	LF	1/4" HARDWARE CLOTH
6070000000-N	SP	50	EA	SPECIAL STILLING BASINS
6071030000-E	SP	1,400	LF	COIR FIBER BAFFLES
6071050000-E	SP	8	EA	**" SKIMMER (1-1/2")
6084000000-E	1660	55.5	ACR	SEEDING & MULCHING
6087000000-E	1660	33.5	ACR	MOWING
6090000000-E	1661	400	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	1.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	675	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	20	TON	FERTILIZER TOPDRESSING
6114000000-N	SP	5	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	36	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.25	ACR	REFORESTATION
7060000000-E	1705	2,650	LF	SIGNAL CABLE
7120000000-E	1705	26	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7144000000-E	1705	5	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)
7264000000-E	1710	2,135	LF	MESSENGER CABLE (3/8")
7288000000-E	1715	20	LF	PAVED TRENCHING (***********) (1, 2")
7300000000-E	1715	3,100	LF	UNPAVED TRENCHING (**********) (1, 2")
7324000000-N	1716	26	EA	JUNCTION BOX (STANDARD SIZE)
7360000000-N	1720	3	EA	WOOD POLE
7372000000-N	1721	8	EA	GUY ASSEMBLY
7408000000-E	1722	1	EA	1" RISER WITH WEATHERHEAD
7420000000-E	1722	4	EA	2" RISER WITH WEATHERHEAD
7444000000-E	1725	3,300	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	10,377	LF	LEAD-IN CABLE (************) (14-2)

ItemNumber	Sec #	Quantity	Unit	Description
7484000000-N	SP	2	EA	MICROWAVE VEHICLE DETECTOR
7576000000-N	SP	12	EA	METAL STRAIN SIGNAL POLE
7613000000-N	SP	12	EA	SOIL TEST
7614100000-E	SP	84	CY	DRILLED PIER FOUNDATION
7684000000-N	1750	3	EA	SIGNAL CABINET FOUNDATION
7756000000-N	1751	3	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)
7780000000-N	1751	20	EA	DETECTOR CARD (TYPE 2070L)
7901000000-N	1753	3	EA	CABINET BASE EXTENDER
******* BEGIN SCHEDULE AA ******* ******* (3 ALTERNATES) *******				
0366000000-E AA1	310	744	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA1	310	876	LF	18" RC PIPE CULVERTS, CLASS III
*** OR ***				
0366000000-E AA2	310	172	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA2	310	324	LF	18" RC PIPE CULVERTS, CLASS III
0536000000-E AA2	SP	572	LF	***" HDPE PIPE CULVERTS (15")
0536000000-E AA2	SP	552	LF	***" HDPE PIPE CULVERTS (18")
*** OR ***				
0366000000-E AA3	310	172	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA3	310	324	LF	18" RC PIPE CULVERTS, CLASS III
0540000000-E AA3	SP	572	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (15", 0.064")
0540000000-E AA3	SP	552	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (18", 0.064")
******* END SCHEDULE AA *******				

NC1D-AARCHER

COMPUTED BY: LCF DATE: 3/14/2005

CHECKED BY: STS DATE: 3/15/2005

PROJECT NO.	SHEET NO.
U-3334A	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

STATION (SIZE / THICKNESS OR GAUGE)	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" .064	15" .064	18" .064	24" .064	24"	30" .079	30"	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 15"	18"	24"	30"	36"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
23+07.76 -Y-	RT	1		154.74																												
23+08.76 -Y-	RT	1	OUT		EXIST	EXIST							24																			
20+00.00 -Y-	LT	2		156.09																												
20+00.00 -Y-	LT	2	OUT		150.49	150.41																					20					
20+00.00 -Y-	LT	2	3		152.30	150.49							232																			
10+85.00	CL	3		157.56																												
10+85.00	LT	3	OUT		152.75	152.30							52																		3.4	
10+62.86 -SR1-	LT	4			153.62	153.27				80																						
13+52.00 -SR1-	LT/RT	5			154.25	154.00						68																				
18+34.00	RT	6		158.00																												
18+34.00	RT	6	OUT		156.00	155.76			80																							
25+00.00	LT/RT	7			158.70	158.60					88																					
30+30.00	LT/RT	8			160.80	160.30					96																					
34+90.00	LT/RT	9			160.10	159.80							104																		3.9	
39+00.00	LT/RT	10			162.30	162.30								104																	9	
44+00.00	LT/RT	11			163.80	163.80					64																					
48+00.00	LT/RT	12			163.20	163.20							80																		6.8	
51+00.00	LT/RT	13			164.00	164.00								92																	9	
15+85.93 -Y1-	LT	14			169.23	169.15				40																						
16+99.88 -Y1-	RT	15			169.40	169.26				36																						
15+38.73 -Y1-	RT																															
14+65.75 -Y1-	RT																															
14+71.34 -Y1-	RT	16																												20			
58+19.12	LT																															
58+25.70	LT																															
SHEET TOTALS									80	156	248	68	492	196															20		32.1	

STATION	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	M.D.I. TYPE "A" STD. 840.17 OR 840.26	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. FRAME WITH GRATE STD. 840.20	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	T.B.J.B. STD. 840.34	M.D.I. FRAME WITH TWO GRATES STD. 840.29	MANHOLE STD. 840.51	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	HAZARDOUS SPILL BASIN	TRAFFIC BEARING GRATE DROP INLET STD. 840.36	STEEL GRATES STD. 840.37	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
23+07.76 -Y-	1										1			1															
23+08.76 -Y-																										0.764			
20+00.00 -Y-	1	0.68									1			1															
20+00.00 -Y-																													
20+00.00 -Y-																													
10+85.00	1																1				1								
10+85.00																													
10+62.86 -SR1-																													
13+52.00 -SR1-																													
18+34.00	1										1			1															
18+34.00																													
25+00.00																													
30+30.00																													
34+90.00																													
39+00.00																													
44+00.00																													
48+00.00																													
51+00.00																													
15+85.93 -Y1-																										0.4465			
16+99.88 -Y1-																										0.4465			
15+38.73 -Y1-																												22	
14+65.75 -Y1-																												16	
14+71.34 -Y1-																													
58+19.12																												23	
58+25.70																												22	
SHEET TOTALS	4	0.68									3			3			1				1					1.657		83	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
M.D.I.	MEDIAN DROP INLET
M.D.I.(N.S.)	MEDIAN DROP INLET (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

NC1D-AARCHER,10/27/2008,R:\Roadway\Estimate\Final\SummarySheets\Drainage_summaries.xls

NC1D-AARCHER

COMPUTED BY:	LCF	DATE:	3/14/2005
CHECKED BY:	STS	DATE:	3/15/2005

PROJECT NO.	SHEET NO.
U-3334A	3-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL')	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 15"	18"	24"	30"	36"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	M.D.I. TYPE "A" STD. 840.17 OR 840.26	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. FRAME WITH GRATE STD. 840.20	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	T.B.J.B. STD. 840.34	M.D.I. FRAME WITH TWO GRATES STD. 840.29	MANHOLE STD. 840.51	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	HAZARDOUS SPILL BASIN	TRAFFIC BEARING GRATE DROP INLET STD. 840.36	STEEL GRATES STD. 840.37	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
58+96.26	RT																																																									22	
59+04.03	LT																																																									21	
18+25.34 -Y1-	RT																																																									21	
18+59.51 -Y1-	RT																																																									29	
18+68.15 -Y1-	RT	18																									56																																
18+91.18 -Y1-	RT																																																									22	
19+80.00 -Y1-	RT																																																									21	
19+90.00 -Y1-	RT	19																									24																																
20+84.47 -Y1-	RT																																																									21	
20+86.92 -Y1-	RT	20																									28																																
21+49.54 -Y1-	RT																																																									36	
21+50.17 -Y1-	RT	21																									48																																
10+75.00 -Y1A-	LT/RT	22			172.45	171.52				80																																																	
13+70.31 -Y1A-	RT																																																									25	
13+75.99 -Y1A-	RT	23																									16																																
13+84.79 -Y1A-	LT																																																									21	
13+88.66 -Y1A-	LT	24																									20																																
14+24.00 -Y1A-	LT																																																									21	
14+26.01 -Y1A-	LT	25																									20																																
14+85.91 -Y1A-	RT	26																									28																																
14+86.89 -Y1A-	RT																																																									22	
10+34.96 -Y1B-	RT	26A																									36																																
59+64.00	LT/RT	17			170.00	169.50				88																																																	
64+00.00	LT	27		162.54																											1										1			1															
64+00.00	LT	27	OUT		158.54	156.00			56																																																		
SHEET TOTALS									56	168																	276				1										1			1														282	

ABBREVIATIONS	
C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
M.D.I.	MEDIAN DROP INLET
M.D.I.(N.S.)	MEDIAN DROP INLET (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

NC1D-AARCHER

COMPUTED BY: LCF DATE: 3/14/2005

CHECKED BY: STS DATE: 3/15/2005

PROJECT NO.	SHEET NO.
U-3334A	3-C

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE	12"	15"	18"	24"	30"	36"	42"	48"
								THICKNESS OR GAUGE								
66+00.00	RT/LT	28			152.50	148.00							152			
77+40.00	RT	29		135.96												
77+40.00	RT	29	OUT		133.00	132.00										
78+20.00	LT	30		135.90												
78+20.00	LT	30	OUT		131.90	131.70				36						
78+90.00	RT	31		138.12												
78+90.00	RT	31	OUT		136.00	122.00										
81+25.00	RT															
106+35.00	LT															
109+20.00	RT	32		137.88												
109+20.00	RT	32	OUT		134.70	125.00										
111+00.00	RT	33		134.60												
111+00.00	RT	33	OUT		131.50	130.50										
13+40.67 -Y2-	RT	34														
13+44.70 -Y2-	RT															
125+30.34	RT															
127+85.62	RT															
127+86.12	RT	35														
129+17.00	LT/RT	36			136.30	135.40							84			
129+17.00	RT															
121+00.00	RT	37		139.93												
121+00.00	RT	37	38		137.18	134.16										
116+00.00	RT	38		137.16												
116+00.00	RT	38	33		133.5	131.5										
SHEET TOTALS										36			152	84		
GRAND TOTALS										172	324	248	220	576	196	
SAY																

STATION	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) SIZE	12"	15"	18"	24"	30"
	THICKNESS OR GAUGE	.064	.064	.064	.064	.079
66+00.00						
77+40.00						
77+40.00						
78+20.00						
78+20.00						
78+90.00						
78+90.00				40		
81+25.00						
106+35.00						
109+20.00						
109+20.00						
111+00.00						
111+00.00						
13+40.67 -Y2-						
13+44.70 -Y2-						
125+30.34						
127+85.62						
127+86.12						
129+17.00						
129+17.00						
121+00.00						
121+00.00						
116+00.00						
116+00.00						
SHEET TOTALS				40		
GRAND TOTALS				40		
SAY						

STATION	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D SIZE	15"	18"	24"	30"	36"
66+00.00						
77+40.00						
77+40.00		16				
78+20.00						
78+20.00						
78+90.00						
78+90.00						
81+25.00						
106+35.00						
109+20.00						
109+20.00		52				
111+00.00						
111+00.00			52			
13+40.67 -Y2-						32
13+44.70 -Y2-						
125+30.34						
127+85.62						
127+86.12						24
129+17.00						
129+17.00						
121+00.00						
121+00.00		504				
116+00.00						
116+00.00			500			
SHEET TOTALS		572	552			56
GRAND TOTALS		572	552			352
SAY						

STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS C.S.P.
66+00.00					
77+40.00					
77+40.00					
78+20.00					
78+20.00					
78+90.00					
78+90.00					
81+25.00					
106+35.00					
109+20.00					
109+20.00					
111+00.00					
111+00.00					
13+40.67 -Y2-			32		
13+44.70 -Y2-					
125+30.34					
127+85.62					
127+86.12			24		
129+17.00				3.4	
129+17.00					
121+00.00					
121+00.00					
116+00.00					
116+00.00					
SHEET TOTALS			56	3.4	
GRAND TOTALS			352	35.5	
SAY				36	

STATION	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. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE
66+00.00			
77+40.00	1		
77+40.00			
78+20.00	1		
78+20.00			
78+90.00	1		
78+90.00			
81+25.00			
106+35.00			
109+20.00	1		
109+20.00			
111+00.00	1		
111+00.00			
13+40.67 -Y2-			
13+44.70 -Y2-			
125+30.34			
127+85.62			
127+86.12			
129+17.00			
129+17.00			
121+00.00	1		
121+00.00			
116+00.00	1		
116+00.00			
SHEET TOTALS	7		
GRAND TOTALS	12	0.68	
SAY			

STATION	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	M.D.I. TYPE "A" STD. 840.17 OR 840.26	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. FRAME WITH GRATE STD. 840.20	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	T.B.J.B. STD. 840.34	M.D.I. FRAME WITH TWO GRATES STD. 840.29	MANHOLE STD. 840.51	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	TRAFFIC BEARING DROP INLET STD. 840.35	HAZARDOUS SPILL BASIN	TRAFFIC BEARING GRATE DROP INLET STD. 840.36	STEEL GRATES STD. 840.37
66+00.00																						
77+40.00								1			1											
77+40.00																						
78+20.00								1			1											
78+20.00																						
78+90.00																					1	1
78+90.00																						
81+25.00																				1		
106+35.00																				1		
109+20.00																					1	1
109+20.00																						
111+00.00								1			1											
111+00.00																						
13+40.67 -Y2-																						
13+44.70 -Y2-																						
125+30.34																						
127+85.62																						
127+86.12																						
129+17.00																						
129+17.00																						
121+00.00								1			1											
121+00.00																						
116+00.00								1			1											
116+00.00																						
SHEET TOTALS								5			5									2	2	2
GRAND TOTALS								9			9		1			1				2	2	2
SAY																						

STATION	CORR. STEEL ELBOWS NO. & SIZE 18"	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
66+00.00					
77+40.00					
77+40.00					
78+20.00					
78+20.00					
78+90.00					
78+90.00	2				
81+25.00					See hazardous spill basin
106+35.00					See hazardous spill basin
109+20.00					
109+20.00					
111+00.00					
111+00.00					
13+40.67 -Y2-					
13+44.70 -Y2-				24	
125+30.34				8	
127+85.62				25	
127+86.12					
129+17.00					
129+17.00				41	
121+00.00					
121+00.00					
116+00.00					
116+00.00					
SHEET TOTALS	2			98	
GRAND TOTALS	2	1.7		463	
SAY		2			

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
M.D.I.	MEDIAN DROP INLET
M.D.I.(N.S.)	MEDIAN DROP INLET (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: Steve Smallwood DATE: 4/111/05
CHECKED BY: Laura fisher DATE:4/13/05

	SHEET NO.
U-3334A	3-D

NC1D-SSMALLWOOD

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

"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

LINE	BEG. STA.	END STA.	LOC.	LENGTH			WARRANT POINT		"N" DIST	TOTAL	FLAIR LENGTH		W		ANCHORS							IMP. ATTEN. TYPE 350			REMOVE EXISTING GRDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END	FROM E.O.L.	SHLDR WIDTH	APPR. END	TRAIL. END	APPR. END	TRAIL. END	B-73	B-83	GRAU 350	M-350	III	CAT-1	AT-1	TES	EA	G	NG		
-L-	46+00.00	52+00.00	LT	600.0			51+00	47+00	8	11	50	50	1	1			2										
-L-	47+50.00	57+50.00	RT	1000.0			48+50	57+50	8	11	50		1				1			1							
-L-	10+00.00 -Y1B-		RT/LT	25.0																		2					
-L-	77+15.00	79+27.50	RT	212.5			BRIDGE		4	11	193.75		3.875				1		1								
-L-	78+31.50	79+19.00	LT	87.5				BRIDGE	4	11		68.75		1.375			1		1								
-L-	108+82.00	109+69.50	RT	87.5				BRIDGE	4	11		68.75		1.375			1		1								
-L-	109+14.00	111+26.50	LT	212.5			BRIDGE		4	11	193.75		3.875				1		1								
Subtotal				2225.0													7		4	1		2					
Less Anchor deductions		Quantity	Deduction (ft)	Total Deduction																							
	GRAU-350	7	50	350																							
	CAT-1	1	6.25	6.25																							
	TYPE III	4	18.75	75																							
	TES	2		0																							
Total Deductions				431.25																							
Total Guardrail				1793.75													7		4	1		2					
SAY				1800	LF																						
							10 ADDITIONAL POSTS																				

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	Station	Station	LOC LT/RT/CL	SY
-Y-	14+85.00	22+86.00	LT	400.50
-Y-	12+33.00	15+90.50	Exist. RT should	145.50
-Y1-	15+58.00	17+76.00	Exist. LT should	489.00
-Y1A-	11+87.00	13+86.00	LT	517.00
			TOTAL:	1552.00
			SAY:	1560

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PROJECT REFERENCE NO.	SHEET NO.
U-3334A	3E

REVISIONS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LINE	STATION	STATION	UNCL. EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
SUMMARY #1							
-L-	10+44	32+00	1084	4213	17048	15964	4213
-YLT-	18+00	22+86	1099	992	1420	321	992
-YMED-	12+23	17+25	66	741	1059	993	741
-SRI-	10+70	20+23.39	1899		757	0	1142
TOTAL SUMMARY #1			4148	5946	20284	17278	7088
SUMMARY #2							
-L-	32+00	58+84	113		46889	46776	0
-YILT-	12+75	23+20	62	1385	2904	2842	1385
-YIA-	10+50	15+65	435		1569	1134	0
-YIB-	12+16	13+25	67		349	282	0
TOTAL SUMMARY #2			677	1385	51711	51034	1385
SUMMARY #3							
-L-	58+83	79+20(BEG BR)	45390	2619	14373	0	33637
-YIRT-	12+75	23+20	1212	1624	2350	1138	1624
TOTAL SUMMARY #3			46602	4243	16723	1138	35261
SUMMARY #4							
-L-	109+10(END BR)	124+40	17521	6019	9833	0	13707
-Y2LT-	12+74	16+40	236		74	0	162
TOTAL SUMMARY #4			17757	6019	9907	0	13869
SUMMARY #5							
-L-	124+40	130+00	570		812	242	0
-Y2RT-	12+74	16+40	374		163	0	211
TOTAL SUMMARY #5			944		975	242	211
SUBTOTAL SUMMARIES #1-#5			70128	17593	99600	69692	57814
EST. SHOULDER MATERIAL					7500	7500	
ADDITIONAL UNDERCUT PER GEOTECH				500	625	625	500
LOSS DUE TO CLEARING & GRUBBING			-2000			2000	
WASTE TO REPLACE BORROW						-32402	-32402
PROJECT TOTALS			68128	18093	107725	47415	25912
EST. 5% TO REPLACE TOPSOIL ON BORROW PITS						2241	
GRAND TOTALS			68128	18093	107725	49656	25912
SAY			68500	18100		50000	

DDE	480	CY
PAVEMENT STRUCTURE VOLUME FOR -L-	3350	CY

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

ARCADIS G&M
Date:$DATE$ Time: $TIME$
Filename:$FILE$

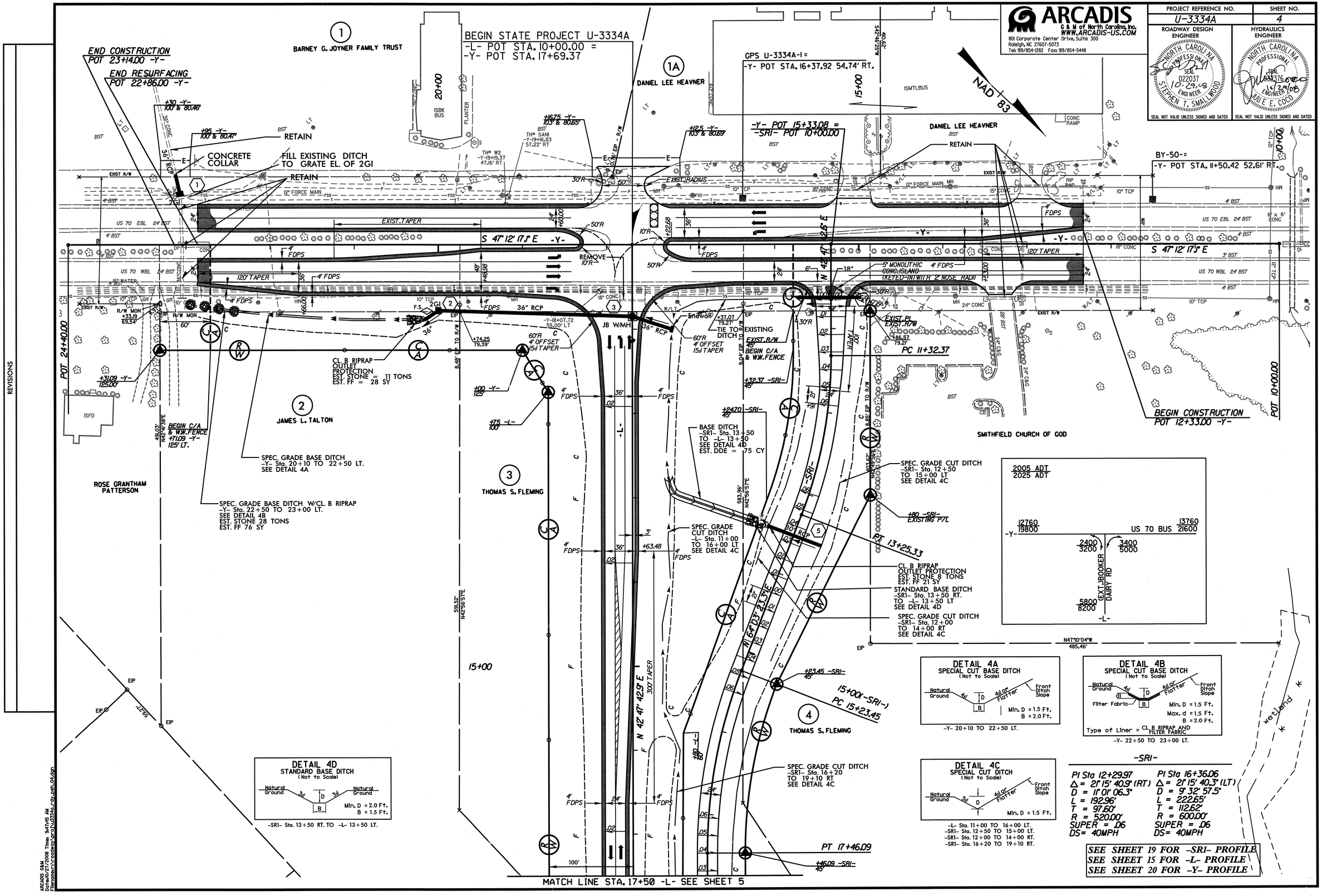
NC1D-SSMALLWOOD,4/1/2005,R:\Roadway\Proj\rowparcels.xls

PROJ. REFERENCE NO.	SHEET NO.
U-3334A	3-F

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	BARNEY G. JOYNER FAMILY TRUST
1A	4	DANIEL LEE HEAVNER
2	4,5	JAMES L. TALTON
3	4,5	THOMAS S. FLEMING
4	4,5	THOMAS S. FLEMING
5	5	WAYNE L. BAREFOOT & THERON L. McLAMB
6	5	JAMES L. TALTON
7	5	FRANK LEWIS HENRY
8	5,6	ROSS W. LAMPE
9	6	NEUSE FORESTRY,LLC
10	6	SANDRA S. MEACHEM
11	6	WALTER SANDERS, JR. HEIRS
12	6	SANDRA S. MEACHEM
13	6,7	WILLIAM W. SMITH, JR. ET AL
14	7	JANICE REYNOLDS
15	7	GENEVA MCNEILL
16	7	IRENE STEVENS, ET AL
17	7	JAMES C. WILLIAMS
18	7	LEO A. SANDERS
19	7	ELNORA SURLES
20	7,8	OVERA STEVENS
21	8	LEONARD LOFTON
22	7,8	LEO A. SANDERS
23	8	PATRICIA A. HENDERSON
24	8	IRVING D. ALLEN
25	7,8	WALTER SANDERS, JR. HEIRS
26	7,8	SANDRA S. MEACHEM
27	8	GWYNN F. BATTEN
28	8	NO CLAIM
29	14	EMILIO A. JAEN
30	14	MANUEL A. JAEN
31	14	NO CLAIM
32	14	MINNIE P. JORDAN
33	8,14	CHARLES W. FARROW
34	14	NO CLAIM
35	14	DANNY NORRIS
36	8	C&S PROPERTIES
37	8	NELSON SALAS VASQUEZ
38	8	SALLIE L. SCARBORO
39	8	JERRY HANSLEY, JR.
901	8	NCDOT (FORMERLY MICHAEL H. MORAND)
40	8	DIANE B. SLOOP
41	8	BOBBY R. BARBOUR
42	8	GEORGE M. LANGDON
43	8	FRED M. PARRISH, JR.
44	8,9	FRED M. PARRISH, JR.
45	9	OLIVE BRYANT
46	9,10	TOWN OF SMITHFIELD
47	11	WILSON 1995 FAMILY LIMITED PARTNERSHIP
48	11,12	JOHN W. TWISDALE
49	13	CYNTHIA M. HAMILTON
50	13	MARK WOLF
51	13	WAYNE L. BAREFOOT



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PROJECT REFERENCE NO.
U-3334A
SHEET NO.
4
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SEAL NOT VALID UNLESS SIGNED AND DATED
BEGIN STATE PROJECT U-3334A
-L- POT STA. 10+00.00 =
-Y- POT STA. 17+69.37
END CONSTRUCTION
POT 23+14.00 -Y-
END RESURFACING
POT 22+86.00 -Y-
BARNEY G. JOYNER FAMILY TRUST
DANIEL LEE HEAVNER
GPS U-3334A-1 =
-Y- POT STA. 16+37.92 54.74' RT.
NAD 83
-Y- POT 15+33.08 =
-SR1- POT 10+00.00
BY-50- =
-Y- POT STA. 11+50.42 52.61' RT.
CONCRETE COLLAR
FILL EXISTING DITCH TO GRATE EL. OF 2G1
RETAIN
EXIST. TAPER
S 47° 12' 17.1" E
120' TAPER
REMOVE
5' MONOLITHIC CONC. ISLAND (KEYED-IN) WITH 2' NOSE RADII
PC 11+32.37
BEGIN CONSTRUCTION
POT 12+33.00 -Y-
POT 24+40.00
POT 10+00.00
JAMES L. TALTON
ROSE GRANTHAM PATTERSON
THOMAS S. FLEMING
SMITHFIELD CHURCH OF GOD
CL. B RIPRAP OUTLET PROTECTION EST. STONE = 11 TONS EST. FF = 28 SY
SPEC. GRADE BASE DITCH -Y- Sta. 20+10 TO 22+50 LT. SEE DETAIL 4A
SPEC. GRADE BASE DITCH W/CL. B RIPRAP -Y- Sta. 22+50 TO 23+00 LT. SEE DETAIL 4B EST. STONE 28 TONS EST. FF 76 SY
BASE DITCH -SR1- Sta. 13+50 TO -L- 13+50 SEE DETAIL 4D EST. DDE = 75 CY
SPEC. GRADE CUT DITCH -SR1- Sta. 12+50 TO 15+00 LT SEE DETAIL 4C
SPEC. GRADE CUT DITCH -L- Sta. 11+00 TO 16+00 LT SEE DETAIL 4C
CL. B RIPRAP OUTLET PROTECTION EST. STONE 8 TONS EST. FF 21 SY
STANDARD BASE DITCH -SR1- Sta. 13+50 RT. TO -L- 13+50 LT SEE DETAIL 4D
SPEC. GRADE CUT DITCH -SR1- Sta. 12+00 TO 14+00 RT SEE DETAIL 4C
SPEC. GRADE CUT DITCH -SR1- Sta. 16+20 TO 19+10 RT SEE DETAIL 4C
PT 13+25.33
15+00(-SR1-)
PC 15+23.45
PT 17+46.09
N 42° 47' 42.9" E
300' TAPER
N 64° 03' 23.3" E
15+00
MATCH LINE STA. 17+50 -L- SEE SHEET 5
2005 ADT
2025 ADT
US 70 BUS
EXT. BOOKER DAIRY RD
DETAIL 4A
SPECIAL CUT BASE DITCH
(Not to Scale)
Min. D = 1.5 Ft.
B = 2.0 Ft.
-Y- 20+10 TO 22+50 LT.
DETAIL 4B
SPECIAL CUT BASE DITCH
(Not to Scale)
Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
B = 2.0 Ft.
Type of Liner = CL. B RIPRAP AND FILTER FABRIC
-Y- 22+50 TO 23+00 LT.
DETAIL 4C
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 1.5 Ft.
-L- Sta. 11+00 TO 16+00 LT.
-SR1- Sta. 12+50 TO 15+00 LT.
-SR1- Sta. 12+00 TO 14+00 RT.
-SR1- Sta. 16+20 TO 19+10 RT.
DETAIL 4D
STANDARD BASE DITCH
(Not to Scale)
Min. D = 2.0 Ft.
B = 1.5 Ft.
-SR1- Sta. 13+50 RT. TO -L- 13+50 LT.
-SR1-
PI Sta 12+29.97
Δ = 21° 15' 40.9" (RT)
D = 11° 01' 06.3"
L = 192.96'
T = 97.60'
R = 520.00'
SUPER = .06
DS = 40MPH
PI Sta 16+36.06
Δ = 21° 15' 40.3" (LT)
D = 9° 32' 57.5"
L = 222.65'
T = 112.62'
R = 600.00'
SUPER = .06
DS = 40MPH
SEE SHEET 19 FOR -SR1- PROFILE
SEE SHEET 15 FOR -L- PROFILE
SEE SHEET 20 FOR -Y- PROFILE
REVISIONS
ARCADIS G&M
Date:10/27/2008 Time: 9:47:45 AM
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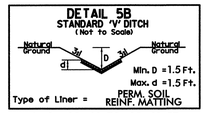
PROJECT REFERENCE NO.	SHEET NO.
U-3334A	5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
10.29.08
SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER WILLIE E. COCO
10/29/08
SEAL NOT VALID UNLESS SIGNED AND DATED

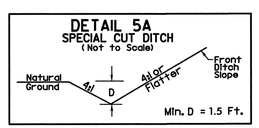
REVISIONS

DETAIL 5B
STANDARD "V" DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
Type of Liner = PERM. SOIL REINF. MATTING
-L- Sta. 25+00 TO 25+10 RT.

DETAIL 5A
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 1.5 Ft.
-L- Sta. 18+34 TO 20+50 RT.
-L- Sta. 24+00 TO 25+25 LT.
-L- Sta. 30+00 TO 30+50 LT.

NAD 83

4 THOMAS S. FLEMING

3 THOMAS S. FLEMING

2 JAMES L. TALTON

6 JAMES L. TALTON

7 FRANK LEWIS HENRY

5 WAYNE L. BAREFOOT & THERON L. McLAMB

8 ROSS W. LAMPE

N09°56'57"E 110.00'

20+00 -SRI-1

POT 20+23.39
END CONSTRUCTION 20+00

+23.39 -SRI- 45.00'

EOS 73' N00°04'03"W

+50 -L- 143.55'

+50 -L- 78.92'

+50 -L- 100'

BL-1 =
-L- POS STA. 19+00.50 3.56' RT

CL. B RIPRAP
OUTLET PROTECTION
EXCAVATE AND TIE
TO DITCH AT -SRI-
EST. STONE = 2 TONS
EST. FF = 7 SY

-SRI-

N 42° 47' 43.01"E

+50 60'

FDPS

15" RCP

2GI

F.S.

CHORD

SP GRADE V DITCH
STA 18+34 TO 20+50 RT
SEE DETAIL 5A

+75.09 -L- 100'

MATCH LINE STA. 17+50 -L- SEE SHEET A

TS 17+75.09

SC 19+75.09

WAYNE L. BAREFOOT & THERON L. McLAMB

-L-

PIs Sta 19+08.45	PI Sta 27+07.05	PIs Sta 34+29.33
Θs = 3°15'00.0"	Δ = 45°05'44.0" (RT)	Θs = 3°15'00.0"
Ls = 200.00'	D = 3°15'00.0"	Ls = 200.00'
LT = 133.36'	L = 1,387.56	LT = 133.36'
ST = 66.69'	T = 731.96'	ST = 66.69'
	R = 1,762.95'	
	SUPER = .05	
	DS = 50MPH	

SPEC. GRADE DITCH
-L- Sta. 24+00
TO 25+25 LT.
SEE DETAIL 5A

BL-2 =
-L- POC STA. 24+69.57 70.10' RT

25+00

24" RCP

20' DRAINAGE EASEMENT

EIP

TDE

SDI

CL B RIPRAP
OUTLET
PROTECTION
EST. STONE = 5 TONS
EST. FF = 14 SY

+85 -L- 100'

+17 -L- 100'

+45 -L- 165'

+15 -L- 175'

V SHAPED TAIL DITCH
-L- Sta. 25+00 TO 25+10 RT.
SEE DETAIL 5B
wetland
EST. PSRM = 80 SY
EST. DDE = 30 CY

39.86' N88°56'08"W

402.89' S85°38'33"W

401.91' S85°56'08"W

24.55' S04°03'52"W

M48.50' S00°29'16"W

M48.50' S00°29'16"W

M=50'CH=90.39'CHB=S 25°30'07"W

R=40'CH=24.59'CHB=N 19°35'59"W

R=50'CH=90.26'CHB=N 25°33'08"W

R=40'CH=25.52'CHB=S 19°20'40"W

251.94' N89°15'20"W

137.20' N89°15'20"W

60' PRIVATE ACCESS TO BE DEDICATED TO PUBLIC

60.00'

38.17' N89°37'02"E

50' DRAINAGE EASEMENT

15.00' 35.00'

3.98' 24.00'

BL-3 =
-L- POC STA. 28+99.23 82.99' RT

CL B RIPRAP
OUTLET
PROTECTION
EST. STONE 5 TONS
EST. FF 14 SY

wetland

MATCH LINE STA. 31+00 -L- SEE SHEET 6

SEE SHEET 19 FOR -SRI- PROFILE
SEE SHEET 15 FOR -L- PROFILE

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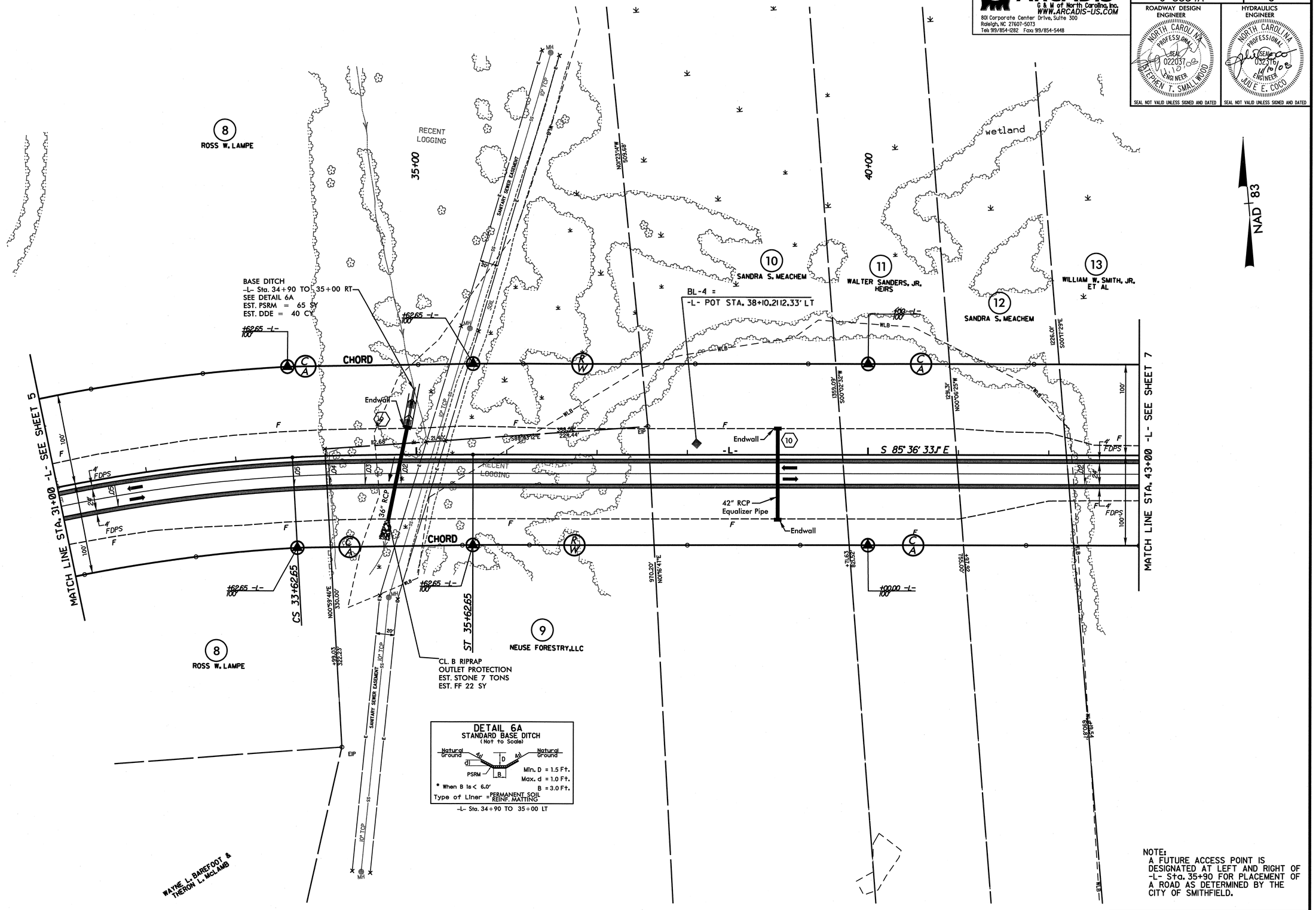
PROJECT REFERENCE NO.	SHEET NO.
U-3334A	6

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032316 ENGINEER JULIE E. COCO
SEAL NOT VALID UNLESS SIGNED AND DATED



NOTE:
A FUTURE ACCESS POINT IS DESIGNATED AT LEFT AND RIGHT OF -L- Sta. 35+90 FOR PLACEMENT OF A ROAD AS DETERMINED BY THE CITY OF SMITHFIELD.

SEE SHEETS 15 AND 16 -L- PROFILE

REVISIONS

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Date:#DATE#
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Time: #TIME#

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PROJECT REFERENCE NO.	SHEET NO.
U-3334A	7

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
10/29/08
SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032376 ENGINEER JULIE E. COCO
10/29/08
SEAL NOT VALID UNLESS SIGNED AND DATED

REVISIONS

NAD 83

MATCH LINE STA. 43+00 -L- SEE SHEET 6

MATCH LINE STA. 55+00 -L- SEE SHEET 8

45+00 50+00 55+00

KERMIT N. NIXON

N88°17'37"W 1241.17'

N88°15'43"W 489.37'

N89°27'43"W 1333.91'

N89°27'43"W 1291.80'

N89°27'43"W 1115.86'

BL-5 = -L- POT STA. 45+44.42 1.39' LT

BL-6 = -L- POC STA. 51+96.68 1.94' RT

PC #49+32.93

-L-
PI Sta 55+59.42
Δ = 6° 21' 18.1" (RT)
D = 0° 30' 00.0"
L = 1,271.00'
T = 636.15'
R = 11,459.16'
SUPER = NC
DS = 50MPH

13 WILLIAM W. SMITH, JR. ET AL

14 JANICE REYNOLDS

15 GENEVA MCNEILL

16 IRENE STEVENS, ET AL

17 JAMES C. WILLIAMS

18 LEO A. SANDERS

19 ELNORA SURLES

20 OVERA STEVENS

22 LEO A. SANDERS

25 WALTER SANDERS, JR. HEIRS

26 SANDRA S. MEACHEM

wetland

WLB

36" RCP Equalizer Pipe

24" RCP Equalizer Pipe

42" RCP Equalizer Pipe

Endwall

GRAU 350

4' FDPS

300' TAPER

SEE SHEET 16 FOR -L- PROFILE

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ARCADIS
G & M of North Carolina, Inc.
WWW.ARCADIS-US.COM
801 Corporate Center Drive, Suite 300
Raleigh, NC 27607-5073
Tel: 919/854-1282 Fax: 919/854-5448

PROJECT REFERENCE NO.	SHEET NO.
U-3334A	8

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD — SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032396 ENGINEER JULIE E. COCO — SEAL NOT VALID UNLESS SIGNED AND DATED

REVISIONS

NAD 83

MATCH LINE STA. 13+00 -Y1A- SEE SHEET 14

MATCH LINE STA. 22+00 -Y1- SEE SHEET 14

MATCH LINE STA. 55+00 -L- SEE SHEET 7

MATCH LINE STA. 67+00 -L- SEE SHEET 9

POC 12+00.00 -Y1A- = POT 13+36.96 -Y1B-

PT 13+12.08

NO CLAIM (28) STEPHANIE J. NIXON

RETAIN

BEGIN CONSTRUCTION PRC 12+15.58

(20) OVERA STEVENS

PAVEMENT FOR TURNAROUND IS 3" S9.5B AND 4" B25.0B (SEE SHEET 2 FOR RATES)

HENRY SANDERS, et als TRUSTEE GREEN HILL BAPTIST CHURCH

PC 10+73.23

POT 10+00.00

GUARDRAIL W-TES

PAVEMENT OBLITERATION

(22) LEO A. SANDERS

(21) LEONARD LOFTON

REMOVE

(27) GWYNN F. & BATTEN

PC 10+54.72

END C/A & WW. FENCE -Y1A-

CAP/SEAL WELL

(26A)

(26) SANDRA S. MEACHEM

(25) WALTER SANDERS, JR. HEIRS

(24) IRVING D. ALLEN

(23) PATRICIA A. HENDERSON

(16) IRENE STEVENS, ET AL

PREFORMED SCOUR HOLE SEE DETAIL 9B SHEET 9

POC 58+83.86 -L- = POC 16+87.15 -Y1-

COLLAR & EXTEND EXIST. 18" RCP

END C/A & WW. FENCE

BEGIN CONSTRUCTION POS 12+75.00 -Y1-

SC 12+83.20

PI Sta 55+59.42
Δ = 6° 21' 18.1" (RT)
D = 0° 30' 00.0"
L = 1,271.00'
T = 636.15'
R = 11,459.16'
SUPER = NC
DS = 50MPH

(17) CHARLES W. FARROW

(33)

CL B RIPRAP OUTLET PROTECTION, EST. STONE 3 TONS, EST. FF 10 SY

60'R REMOVE 4' OFFSET 15:1 TAPER

-Y1A- PI Sta 13+00.00 (RADIUS POINT) 30.67' RT

-Y1B- PI Sta 13+00.00 (RADIUS POINT) 15.43' RT

-Y1- PI Sta 12+16.55
Δs = 3° 00' 00.0"
Ls = 200.00'
LT = 133.35'
ST = 66.68'

-Y1- PI Sta 17+96.93
Δ = 30° 06' 40.9" (RT)
D = 3° 00' 00.0"
L = 1,003.71
T = 513.73'
R = 1,909.86'
SUPER = .04
DS = 50MPH

-Y1B- PI Sta 11+44.41
Δ = 1° 48' 45.0" (LT)
D = 1° 16' 23.7"
L = 142.35'
T = 71.18'
R = 4,500.00'
DS = >30MPH

-Y1A- PI Sta 12+67.96
Δ = 55° 17' 21.0" (RT)
D = 51° 17' 44.8"
L = 96.50'
T = 52.38'
R = 100.00'
SUPER = NC
DS = <15MPH

-Y1A- PI Sta 12+45.85
Δ = 41° 58' 36.3" (RT)
D = 11° 30' 00.0"
L = 365.02'
T = 191.13'
R = 498.22'
SUPER = .05
DS = 30MPH

(36) C&S PROPERTIES

(37) NELSON SALAS VASQUEZ

(38) SALLIE L. SCARBORO

(39) JERRY HANSLEY, JR.

(901) NCDOT (FORMERLY MICHAEL H. MORAND)

(40) DIANE B. SLOOP

(41) BOBBY R. BARBOUR

(42) GEORGE M. LANGDON

(43) FRED M. PARRISH, JR.

(44) FRED M. PARRISH, JR.

BEGIN C/A & WW. FENCE

PT 62+03.93

BL-8 = -L- POT STA. 62+55.14 4.57' LT
NOTE: BUILDINGS HAVE BEEN REMOVED, BUT FOUNDATIONS ARE STILL THERE.

SPEC. GRADE DITCH -Y1- Sta. 17+34 TO 18+00 RT SEE DETAIL 8A

SPEC. GRADE DITCH -Y1A- Sta. 10+80 TO 15+60 RT SEE DETAIL 8A

SPEC. GRADE DITCH -Y1- Sta. 13+58 TO 16+00 RT SEE DETAIL 8A

SPEC. GRADE DITCH -Y1- Sta. 19+00 TO 21+50 RT SEE DETAIL 8A

SPEC. GRADE DITCH -L- Sta. 64+50 TO 67+00 LT SEE DETAIL 8C EST. STONE 115 TONS EST. FF 324 SY

BL-7 = BYT = -L- POC STA. 58+98.73 1.89' LT

BL-9 = -L- POT STA. 66+71.46 2.65' LT

DITCH TURNOUT

PLACE 10 TONS CL B RIPRAP LINE TOE OF FILL W/PSRM SEE DETAIL 8B EST. PSRM = 260 SY

DETAIL 8C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3d, d, D, 4d or Flatter, Front Ditch Slope, Filter Fabric
Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
Type of Liner = CL B RIPRAP AND FILTER FABRIC
-L- Sta. 64+50 TO 67+00 LT.

DETAIL 8A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 4d, D, 4d or Flatter, Front Ditch Slope
Min. D = 1.5 Ft.
-Y1A- Sta. 10+80 TO 15+60 RT
-Y1- Sta. 13+58 TO 16+00 RT
-Y1- Sta. 19+00 TO 21+50 RT
-Y1- Sta. 17+34 TO 18+00 RT

DETAIL 8B
TOE PROTECTION
(Not to Scale)
3d OR FLATTER, Fill Slope, d, NATURAL GROUND
d = 1.5 Ft.
Type of Liner = PERMANENT SOIL REINF. MATTING
-L- Sta. 64+00 TO 66+00 RT.

-YIA- BARBOUR RD. 120 200 2100 3300 4060 6300 2005 ADT 2025 ADT
1980 3100 700 1100 820 1300 6040 8600
5800 8200 -L-
1860 2900 1980 3100
8240 12800
WILSON MILLS RD. (EXT.) BOOKER DAIRY RD.
-Y1-

SEE SHEETS 16 AND 17 FOR -L- PROFILE
SEE SHEET 20 FOR -Y1- PROFILE
SEE SHEET 21 FOR -Y1A- PROFILE
SEE SHEET 21 FOR -Y1B- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
U-3334A	9

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
10.29.08
SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033376 ENGINEER JULIE E. COCO
12.2.08
SEAL NOT VALID UNLESS SIGNED AND DATED

REVISIONS

MATCH LINE STA. 67+00 -L- SEE SHEET 8

MATCH LINE STA. 80+00 -L- SEE SHEET 10

SEE SHEET 11 FOR BRIDGE SKETCH

39 JERRY HANSLEY, JR.

46 TOWN OF SMITHFIELD

44 FRED M. PARRISH, JR.

45 OLIVE BRYANT

46 TOWN OF SMITHFIELD

wetland

70+00

75+00

CL B RIPRAP OUTLET PROTECTION EST. STONE 8 TONS EST. FF 21 SY

BL-10 = -L- POT STA. 69+99.11 2.03' LT

S 79°15'15.0" E

-L-

S34°58'53"E 200.25'

255.27' S36°10'11"E

SPEC. GRADE CUT DITCH -L- Sta. 78+50 TO 79+40 LT SEE DETAIL 9C EST. STONE 45 TONS EST. FF 125 SY

END WW FENCE +94.00 -L- TIE FENCE TO BRIDGE

15" RCP

2GI

30

F.S. GRAU 350

SHLDR. BERM GUTTER STA. 78+91 TO 79+10

2GI FLAT GRATE

GRAU-350

2GI

29

F.S.

15"

31

18" CSP W/Elbows

CLASS II RIP-RAP (STRUCTURE #)

PDE

END WW FENCE +27.58 -L- TIE FENCE TO BRIDGE

+15 -L- 100' & 110'

PREFORMED SCOUR HOLE SEE DETAIL 9B

+65 -L- 100' & 110'

SPEC. GRADE CUT DITCH -L- Sta. 77+50 TO 78+95 RT SEE DETAIL 9A EST. PSRM = 190 SY

BEGIN APPROACH SLAB Sta. 78+96.04 -L-

BEGIN BRIDGE Sta. 79+20.00 -L-

BL-12 = -L- POT STA. 76+93.24 84.08' RT

+80 -L- 100' & 130

+100 -L- 100' & 130

+75 -L- 100

+50 -L- 100' & 108'

+92.26 -L- 100' & 108'

S84°12'28"E 110.12'

S38°22'08"E 206.87'

S35°58'33"E

S55°52'05"E

S55°09'22"E 150.00'

S34°39'38"W 84.02'

N35°56'47"E 214.53'

410.59'

N84°06'39"W 0.66' R/W TO EIP

150.82'

S08°53'24"W 216.53'

148.15'

N81°06'11"W

1.33' EIP TO R/W

0.02' R/W TO EIP

2.58' EIP TO R/W

EXISTING R/W

60'

48" WW

18" CONC.DR.

21" CONC.DR.

16" CONC.DR.

14" CONC.DR.

15" CONC.

12" SOIL DR.

18" BST DR.

2' BST

8' GRAVEL PATH

11' GRAVEL PATH

4' FDPS

24'

02

100'

ISBK

MH

S

wood/debris

ARNOLD L. McLAIN

WILMOT N. BRITT

MICHAEL J. OWENS

FRED M. PARRISH, JR.

DONALD RAY ALLEN

WILLIAM DAVID MORGAN

NAD 83

DETAIL 9C
SPECIAL GRADE CUT DITCH
(Not to Scale)

Natural Ground, 3d, d, D, 4d or Flatter, Front Ditch Slope

Min. D = 1.5 Ft.
Max. d = 1.5 Ft.

Type of Liner = CL. B RIPRAP

-L- Sta. 78+50 TO 79+40 LT

DETAIL 9A
SPECIAL GRADE CUT DITCH
(Not to Scale)

Natural Ground, 4d, d, D, 3d or Flatter, Front Ditch Slope

Min. D = 1.5 Ft.
Max. d = 1.5 Ft.

Type of Liner = PERMANENT SOIL REINF. MATTING

-L- Sta. 77+50 TO 78+95 RT

DETAIL 9B
PREFORMED SCOUR HOLE
(Not to Scale)

PLAN VIEW

Pipe or Ditch Outlet

Permanent Soil Reinforcement matting (PSRM)

Install level and flush with natural ground.

Square Preformed Scour Hole (PSH)

(Rip Rap in basin not shown for clarity)

W (5.0' min. typ.)

Seed with native grasses at installation.

SECTION A-A

Pipe or Ditch Outlet

PSRM

D (1.0' min)

d

B

1.0' tuck

Natural Ground

Liner: Class B Rip Rap 1.0' thick with Filter Fabric

B	10
D	1
W	5
d	0.5

BASIN #	LOCATION (AT OUTLET)
1	-L- 78+80 RT
2	-L- 110+50 RT
3	-Y1- 15+80 LT
4	
5	
6	
7	

SEE STRUCTURE SHEETS S-1 THRU S-115 FOR STRUCTURE PLANS SEE SHEET 17 FOR -L- PROFILE

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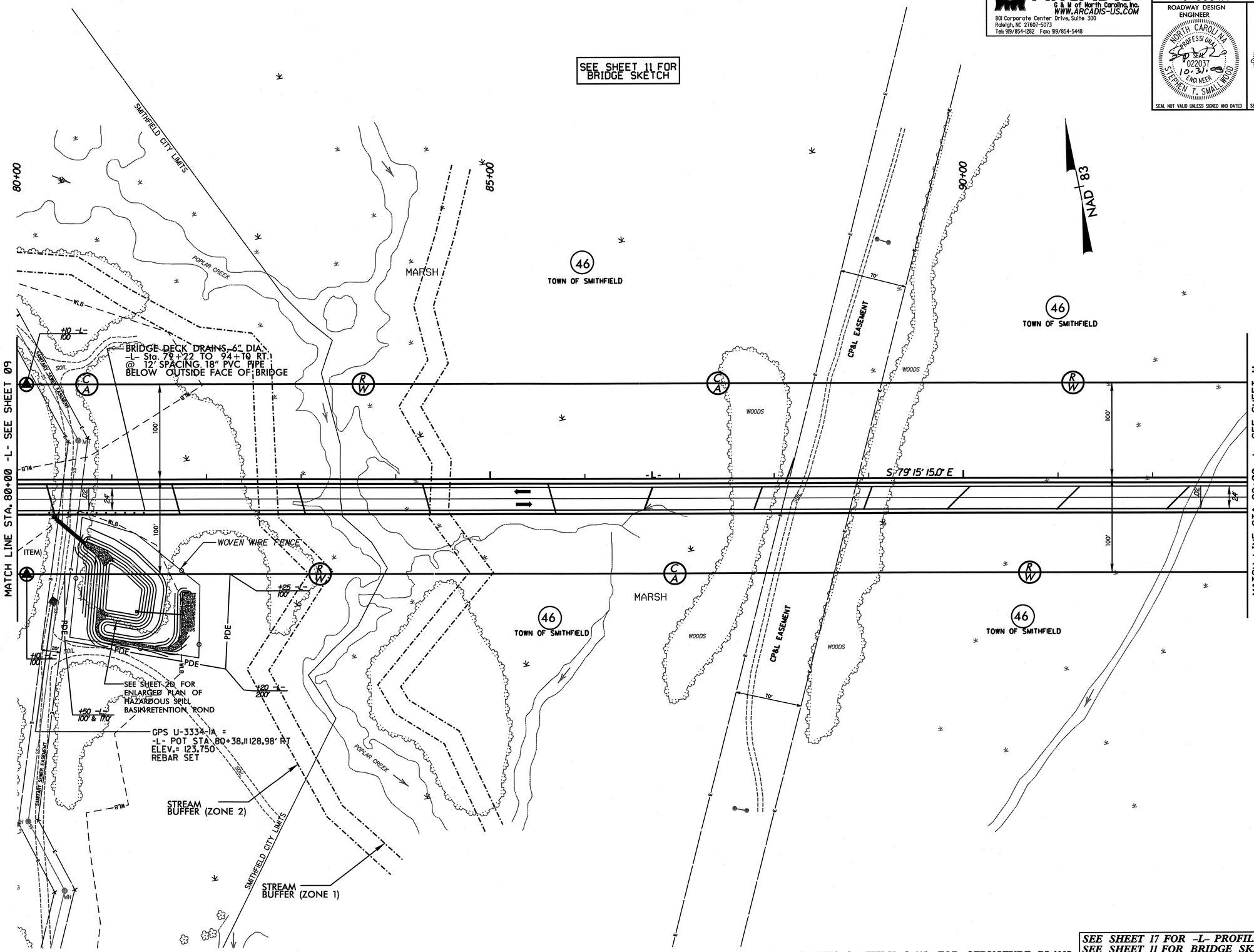
PROJECT REFERENCE NO.	SHEET NO.
U-3334A	10

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
10-31-08
SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022306 ENGINEER JULIE E. COCO
10/31/08
SEAL NOT VALID UNLESS SIGNED AND DATED



SEE STRUCTURE SHEETS S-1 THRU S-115 FOR STRUCTURE PLANS

SEE SHEET 17 FOR -L- PROFILE
SEE SHEET 11 FOR BRIDGE SKETCH
SEE SHEET 2D FOR SPILL-BASIN

REVISIONS

ARCADIS G&M
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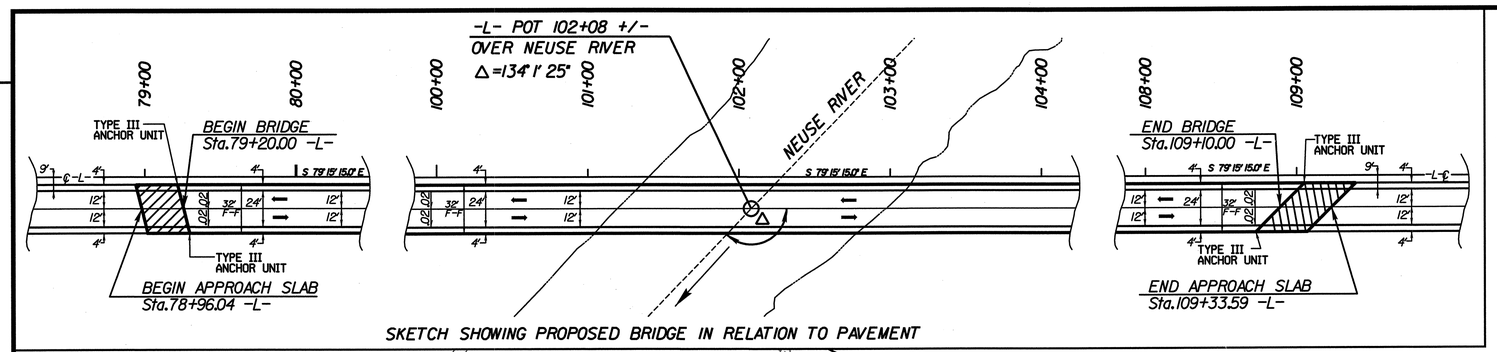
PROJECT REFERENCE NO.	SHEET NO.
U-3334A	11

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
10/31/08
SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032281 ENGINEER JULIE E. COCO
10/31/08
SEAL NOT VALID UNLESS SIGNED AND DATED

REVISIONS



SKETCH SHOWING PROPOSED BRIDGE IN RELATION TO PAVEMENT

NAD 83

STREAM BUFFER (ZONE 1)
STREAM BUFFER (ZONE 2)

95+00
100+00
105+00

(46) TOWN OF SMITHFIELD
(47) WILSON 1995 FAMILY LIMITED PARTNERSHIP
(48) JOHN W. TWISDALE

MATCH LINE STA. 93+00 -L- SEE SHEET 10

MATCH LINE STA. 106+00 -L- SEE SHEET 12

S 79° 15' 15.0" E -L-

100' C/A
100' R/W

(COMPUTED LINE, BANK OF RIVER IS PROPERTY LINE)

+50 -L- 100

S55°40'28"W 1092.42'

+39.28 547.59'

+39.28 547.59'

1092.42' S55°40'28"W

GPS U-3334-2A =
-L- POT STA. 104+69.76 56.37' RT

+00 -L- 100

BRIDGE DECK DRAINS, 6" DIA.
-L- Sta. 94+76 TO 109+04 RT.
@ 12' SPACING. 18" PVC PIPE
BELOW OUTSIDE FACE OF BRIDGE
(TYP)

BRIDGE DECK DRAINS, 6" DIA.
-L- Sta. 79+22 TO 94+10 RT.
@ 12' SPACING. 18" PVC PIPE
BELOW OUTSIDE FACE OF BRIDGE
(TYP)

NEUSE RIVER

POND

CONC. MON

EIP

SMITHFIELD CITY LIMITS

SEE STRUCTURE SHEETS S-1 THRU S-115 FOR STRUCTURE PLANS

SEE SHEETS 17 AND 18 FOR -L- PROFILE

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Filename=MFILE$ Time= $TIME$

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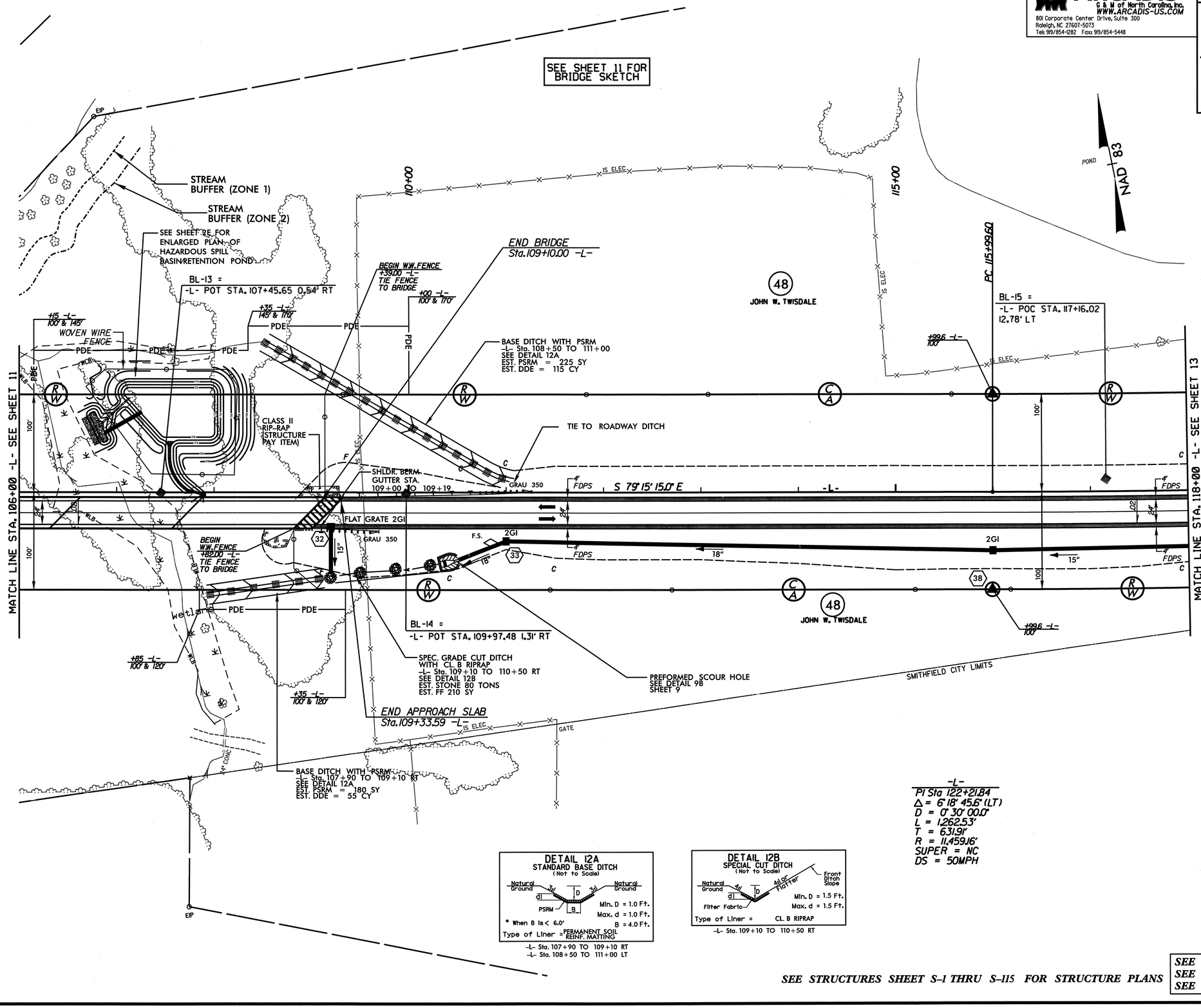
PROJECT REFERENCE NO.	SHEET NO.
U-3334A	12

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD 10/31/08 — SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032316 ENGINEER JULIE E. COCO 10/31/08 — SEAL NOT VALID UNLESS SIGNED AND DATED

REVISIONS



-L-
PI Sta 122+21.84
Δ = 6° 18' 45.6" (LT)
D = 0° 30' 00.0"
L = 1,262.53'
T = 631.91'
R = 11,459.16'
SUPER = NC
DS = 50MPH

-L- Sta. 107+90 TO 109+10 RT
-L- Sta. 108+50 TO 111+00 LT

-L- Sta. 109+10 TO 110+50 RT

SEE STRUCTURES SHEET S-1 THRU S-115 FOR STRUCTURE PLANS

SEE SHEET 18 FOR -L- PROFILE
SEE SHEET 11 FOR BRIDGE SKETCH
SEE SHEET 2E FOR SPILL-BASIN

ARCADIS G&M Date:$DATE$ Filename:$FILE$ Time: $TIME$

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PROJECT REFERENCE NO.	SHEET NO.
U-3334A	13

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
10.29.08
SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032894 ENGINEER JULIE E. COCO
10/29/08
SEAL NOT VALID UNLESS SIGNED AND DATED

REVISIONS

-L-
PI Sta 122+21.84
Δ = 6° 18' 45.6" (LT)
D = 0° 30' 00.0"
L = 1,262.53'
T = 631.91'
R = 11,459.16'
SUPER = NC
DS = 50MPH

-Y2-
PI Sta 12+83.74
Δ = 2° 50' 12.5" (LT)
D = 0° 30' 00.0"
L = 567.36'
T = 283.74'
R = 11,459.16'
SUPER = NC
DS = 50MPH

END STATE PROJECT U-3334A
-L- POT STA. 130+00.00

NAD 83

POT 18+00.00

120+00

125+00

130+00

MATCH LINE STA. 118+00 -L- SEE SHEET 12

15+00

10+00

48 JOHN W. TWISDALE

51 WAYNE L. BAREFOOT

49 CYNTHIA M. HAMILTON

50 MARK WOLF

CLYDE H. HAMILTON

ROSE H. GRANT

37

36

35

34

2SBKD

RETAIN

TIE TO EXISTING DITCH

END CONSTRUCTION
POT 16+39.53 -Y2-

N 17° 34' 50.0" E -Y2-

+39.53 -Y2-
50' & 29.99'
END C/A & WW.FENCE

+67.36 -Y2-
60'

PT 15+67.36

POC 124+39.72 -L- =
POC 14+44.57 -Y2-

+50 -L-
100'

SPEC. GRADE DITCH
-Y2- Sta. 14+50 LT TO
-Y2- Sta. 16+00 LT.
SEE DETAIL 13A

SMITHFIELD CITY LIMITS

60'R
200' R
6' OFFSET

300' TAPER

200' RIGHT TURN TAPER

65'R
4' OFFSET
15:1 TAPER

2GI

15"

IF EXISTING DRAIN TILE IS ABOVE ROADWAY DITCH, DISCHARGE INTO DITCH. IF BELOW ROADWAY DITCH, INSTALL 2GI AND EXTEND 15" RCP TO 2GI AT 111+00
BL-16 =
BY2 =
-L- POC STA. 124+16.38 12.46' RT

+74.33 -Y2-
60' & 31.08'
END C/A & WW.FENCE

SPEC. GRADE DITCH
-Y2- Sta. 12+75
TO 13+50 LT.
SEE DETAIL 13A
TIE TO EXIST DITCH

BEGIN CONSTRUCTION
POC 12+74.33 -Y2-

+74.33 -Y2-
65' & 28.92'

SPEC. GRADE DITCH
-Y2- Sta. 12+75 TO 13+50 RT.
SEE DETAIL 13A
TIE TO EXIST DITCH

LATERAL BASE DITCH
-L- Sta. 128+20
TO 129+20 LT.
SEE DETAIL 13B
EST. PSRM 150 SY
EST. DDE 150 CY

PT 128+62.13

BASE DITCH
-L- Sta. 129+20
TO 129+40 LT.
SEE DETAIL 13C
EST. PSRM 30 SY
EST. DDE 15 CY

+25 -L-
10' & 85'

+55 -L-
10' & 85'

PDE

+74.07 -L-
10'

+40.00
70'

EXIST. P/L

+84.53
13.30'

Endwall

36" RCP

S 85° 34' 00.6" E

SPEC. GRADE DITCH
-L- Sta. 125+00
TO 127+00 RT.
SEE DETAIL 13A

REMOVE
+28.29 -L-
75'

REMOVE
335.30'
S85°06'28"E

REMOVE
+62.13 -L-
60'

REMOVE

CL. B RIPRAP, OUTLET PROTECTION
EST. STONE 7 TONS
EST. FF 22 SY

+50 -Y2-
65'

+50
60' & 70'

+46.17
46.71'

+46.15
-L- 60'

3.09' R/W TO EIP

149.93'
N04°32'26"W

12" WD

ISFD

174.42'
S85°05'15"E

17.88'
S85°06'03"E

EIP

465.59'
S66°45'20"E

24" CONC

8" PVC WATER DATUM

2" PVC

4" FDPS

ISFD

DK

GR

IS ELEC

SIG LT

W/SIG LT

EOS

EXIST R/W

VAR. BST SR 1923 BOOKER DAIRY RD

SR 1003 BUFFALO RD VAR. BST

EXIST. R/W

PK NAIL

RR SPIKE

MH

2005 ADT
2025 ADT

6380
9900

6040
8600

1160
1800

1680
2000

6460
9100

(EXT.) BOOKER DAIRY RD.

1440
2000

1340
2300

BOOKER DAIRY RD.

BUFFALO RD

6360
10600

-Y2-

DETAIL 13A
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground
Front ditch Slope
4:1 or flatter
Min. D = Ft.

-Y2- Sta. 12+75 TO 13+50 LT.
-Y2- Sta. 12+75 TO 13+50 RT.
-Y2- Sta. 15+00 TO 16+00 RT.
-Y2- Sta. 14+50 TO 16+00 LT.
-L- Sta. 125+00 TO 127+00 RT.

DETAIL 13B
LATERAL BASE DITCH
(Not to Scale)

Natural Ground
Fill Slope
Filter Fabric
Min. D = 2.0 Ft.
Max. d = 1.0 Ft.
B = 4.0 Ft.
b = 5.0 Ft.
* When B Is < 6.0'
Type of Liner = PERMANENT SOIL REINF. MATTING

-L- Sta. 128+20 TO 129+20 LT

DETAIL 13C
BASE DITCH
(Not to Scale)

Natural Ground
PSRM
Min. D = 2.0 Ft.
Max. d = 1.0 Ft.
B = 4.0 Ft.
* When B Is < 6.0'
Type of Liner = PERMANENT SOIL REINF. MATTING

-L- Sta. 129+20 TO 129+40 LT

SEE SHEETS 18 AND 19 FOR -L- PROFILE
SEE SHEET 21 FOR -Y2- PROFILE

ARCADIS G&M
Date:10/27/2008 Time: 9:46:00 AM
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PROJECT REFERENCE NO.	SHEET NO.
U-3334A	14

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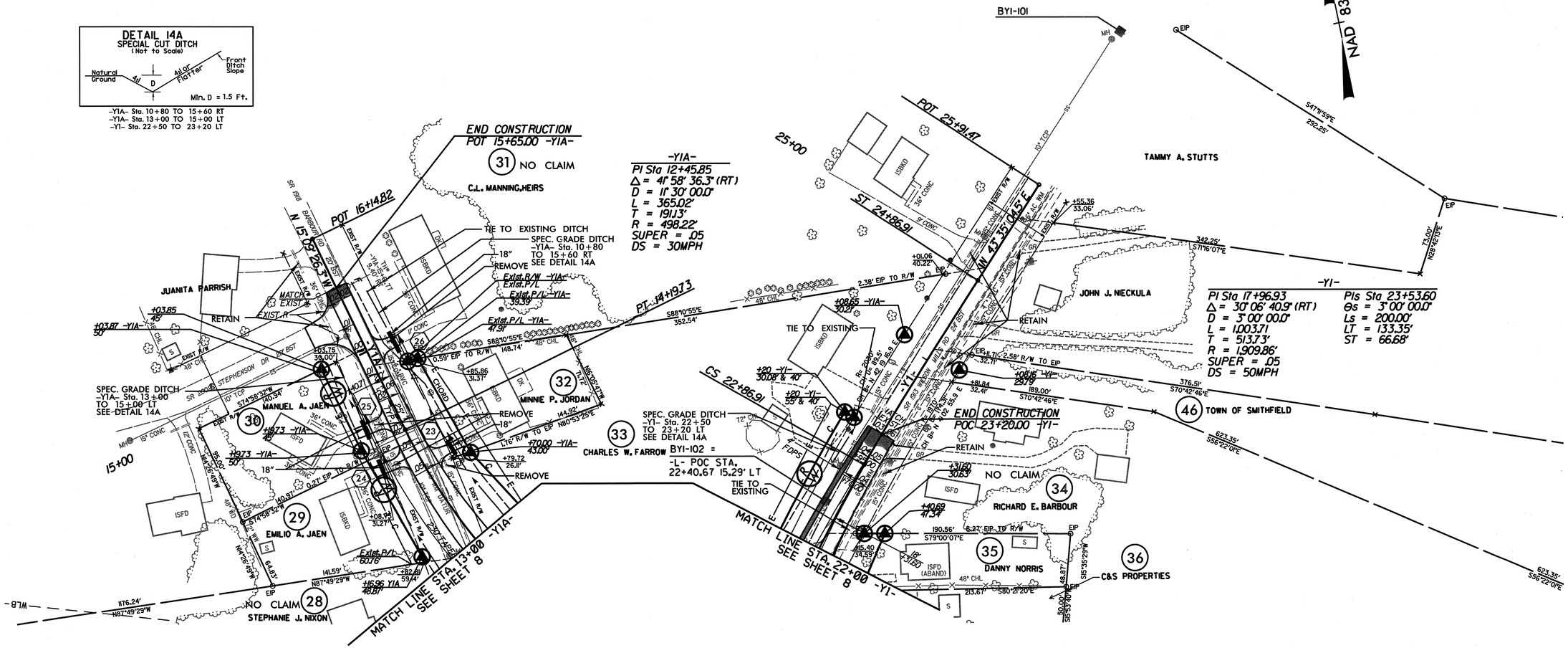
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032376 ENGINEER JULIE E. COCO
10/29/08
SEAL NOT VALID UNLESS SIGNED AND DATED

REVISIONS



SEE SHEET 20 FOR -Y1- PROFILE
SEE SHEET 21 FOR -Y1A- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
U-3334A	15

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. MALLWOOD
10/29/08
SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032316 ENGINEER JULIE T. TAYLOR
10/29/08
SEAL NOT VALID UNLESS SIGNED AND DATED

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.8

DRAINAGE AREA	= 12	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 35	CFS
DESIGN HW ELEVATION	= 155.6	FT
100 YEAR DISCHARGE	= 41	CFS
100 YEAR HW ELEVATION	= 155.9	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 70	CFS
OVERTOPPING ELEVATION	= 158.1	FT

BEGIN GRADE
POT Sta.10+00.00 -L-
POT Sta.11+69.37 -Y-
EL = 157.84'
PI = 10+32.00
EL = 158.37'
VPT = 11+92.00
ET = 158.12'

(-) 10.2746%
(+)2.0833%
(-)2.50%
(+)0.4480%
(+)1.40%
(+) 0.3000%
(+)0.4000% (+) 0.6000% (+)1.1000%
(+) 0.3000%
(-) 0.2995%

36" RCP

PI = 10+20.00
EL = 159.12'
VPC = 10+44.00
EL = 158.87'

PI = 10+73.00
EL = 157.99'
K = 80.3
VC = 58'
DS = 45 MPH

Sta.11+00.000
El = 152.75

SPECIAL GRADE CUT DITCH
Sta.11+00 TO Sta.16+00 LT

Sta.13+50.000
El = 153.30
Sta.14+00.000
El = 153.70
Sta.14+50.000
El = 154.00
Sta.15+00.000
El = 154.55
Sta.16+00.000
El = 154.85

SPECIAL GRADE DITCH
Sta.18+34 TO 20+50 RT

Sta.18+34.000
El = 158.00

PROPOSED UNDERCUT

Sta.20+50.00
El = 158.45

-L-

SEE SHEETS 4 AND 5 FOR -L- PLAN

TBM #2 RR SPIKE IN BASE OF 8" PINE
STA. 28+68.02 -L- 81.38' LT. EL. = 164.79

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.7

DRAINAGE AREA	= 4.1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 12	CFS
DESIGN HW ELEVATION	= 161.0	FT
100 YEAR DISCHARGE	= 14	CFS
100 YEAR HW ELEVATION	= 161.2	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 31	CFS
OVERTOPPING ELEVATION	= 163.7	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.8

DRAINAGE AREA	= 5.6	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 26	CFS
DESIGN HW ELEVATION	= 164.6	FT
100 YEAR DISCHARGE	= 28	CFS
100 YEAR HW ELEVATION	= 165.0	FT
OVERTOPPING FREQUENCY	= 200+	YRS
OVERTOPPING DISCHARGE	= 37	CFS
OVERTOPPING ELEVATION	= 167.0	FT

VPC = 35+60.00
EL = 169.58'

PI = 37+50.00
EL = 169.98'
K = 234
VC = 180'
DS = 70 MPH

(+)0.4480%

(+)0.4480%
24" RCP
(-) 0.3000%
(+) 0.6000%
(-) 0.3000% (+) 0.3000%
24" RCP
36" RCP

Sta.24+00.000
El = 159.00

SPECIAL GRADE DITCH
Sta.24+00 TO 25+25 LT.

Sta.25+00.000
El = 158.70
Sta.25+25.000
El = 158.85

PROPOSED UNDERCUT

Sta.30+00.000
El = 160.95
Sta.30+30.000
El = 160.70
Sta.30+50.000
El = 160.95

SPECIAL GRADE DITCH
Sta.30+00 TO 30+50 LT.

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.9

DRAINAGE AREA	= 26.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 52	CFS
DESIGN HW ELEVATION	= 164.0	FT
100 YEAR DISCHARGE	= 60	CFS
100 YEAR HW ELEVATION	= 164.7	FT
OVERTOPPING FREQUENCY	= 200+	YRS
OVERTOPPING DISCHARGE	= 93	CFS
OVERTOPPING ELEVATION	= 167.7	FT

-L-

SEE SHEETS 5 AND 6 FOR -L- PLAN

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PROJECT REFERENCE NO.	SHEET NO.
U-3334A	16

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
10-23-08
SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032376 ENGINEER JULIE F. TAYLOR
10/23/08
SEAL NOT VALID UNLESS SIGNED AND DATED

TBM #3 RR SPIKE IN BASE OF 8" RED OAK
STA. 45+26.00 -L- 141.62' LT. EL. = 165.26

VPT = 38+40.00
EL = 169.65'

(-)0.3222%

42" RCP EQUALIZER PIPE

VPC = 45+10.00
EL = 167.53'

PI = 46+00.00
EL = 167.24'
K = 150
VC = 180'
DS = 60 MPH

VPT = 46+90.00
EL = 168.03'

(-)0.3222%

(+)0.8765%

24" RCP EQUALIZER PIPE

36" RCP EQUALIZER PIPE

42" RCP EQUALIZER PIPE

-L-

SEE SHEETS 6 AND 7 FOR -L- PLAN

VPC = 56+40.00
EL = 176.36'

PI = 57+70.00
EL = 177.50'
K = 90
VC = 260'
DS = 50 MPH

POC Sta.58+83.96 -L- =
ROC Sta.18+87.15 -Y1-

VPT = 59+00.00
EL = 174.90'

(+)0.8765%

(-)2.0000%

18" RCP

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.17

DRAINAGE AREA	= 1.50	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 8.0	CFS
DESIGN HW ELEVATION	= 171.7	FT
100 YEAR DISCHARGE	= 9	CFS
100 YEAR HW ELEVATION	= 171.9	FT
OVERTOPPING FREQUENCY	= 200+	YRS
OVERTOPPING DISCHARGE	= 9	CFS
OVERTOPPING ELEVATION	= 172.0	FT

-L-

PROPOSED UNDERCUT

(-)0.3000% (-)3.7000% (-)1.0000%

PI =64+50.000
EL = 155.00

PI =65+00.000
EL = 155.85

PI =65+50.000
EL = 154.00

PI =66+00.000
EL = 148.50

SPECIAL GRADE DITCH LEFT
Sta.64+50 TO 67+00

SEE SHEETS 7 AND 8 FOR -L- PLAN

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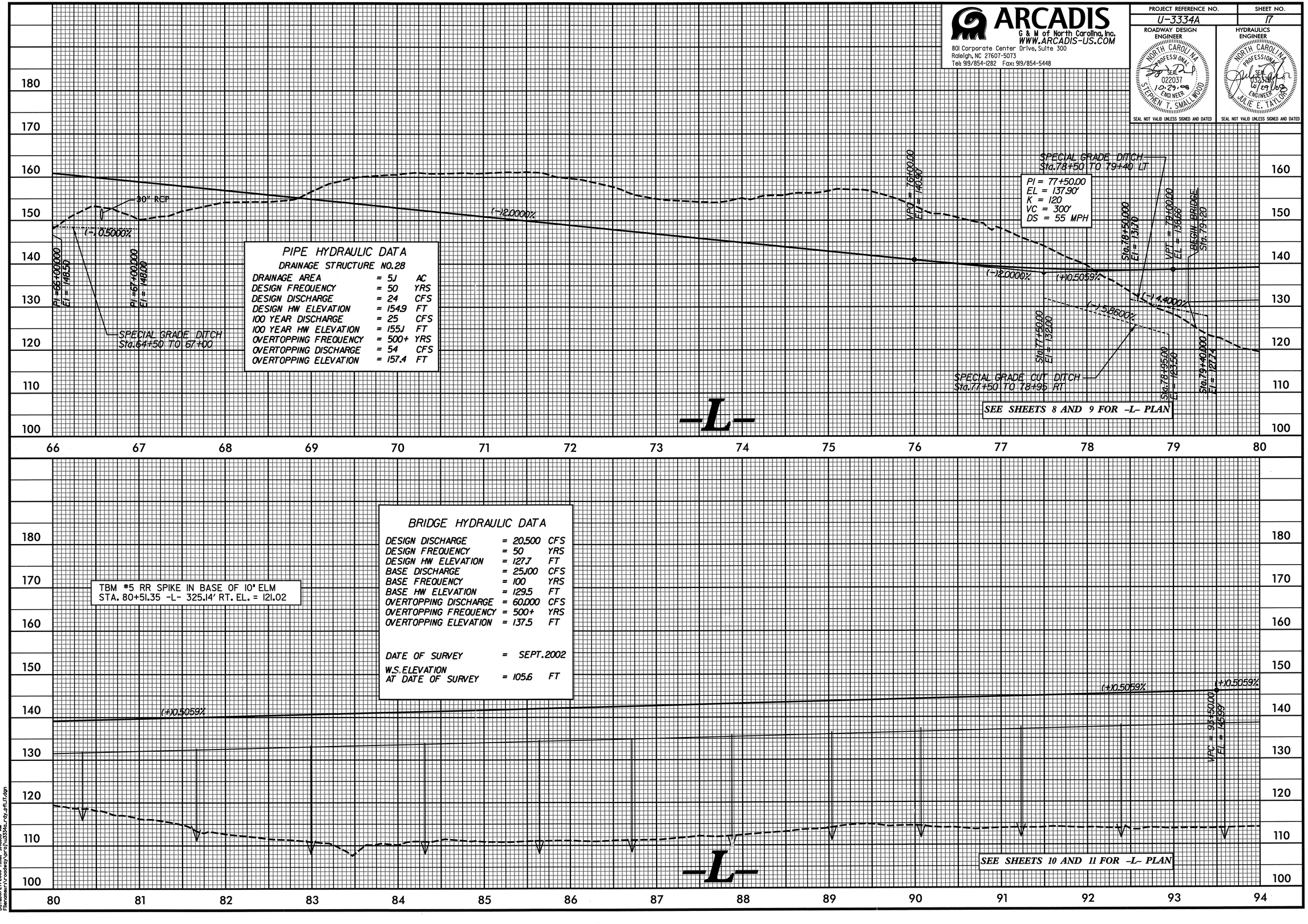
PROJECT REFERENCE NO.	SHEET NO.
U-3334A	17

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
10-29-08
SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032336 ENGINEER JULIE E. TAYLOR
10/29/08
SEAL NOT VALID UNLESS SIGNED AND DATED



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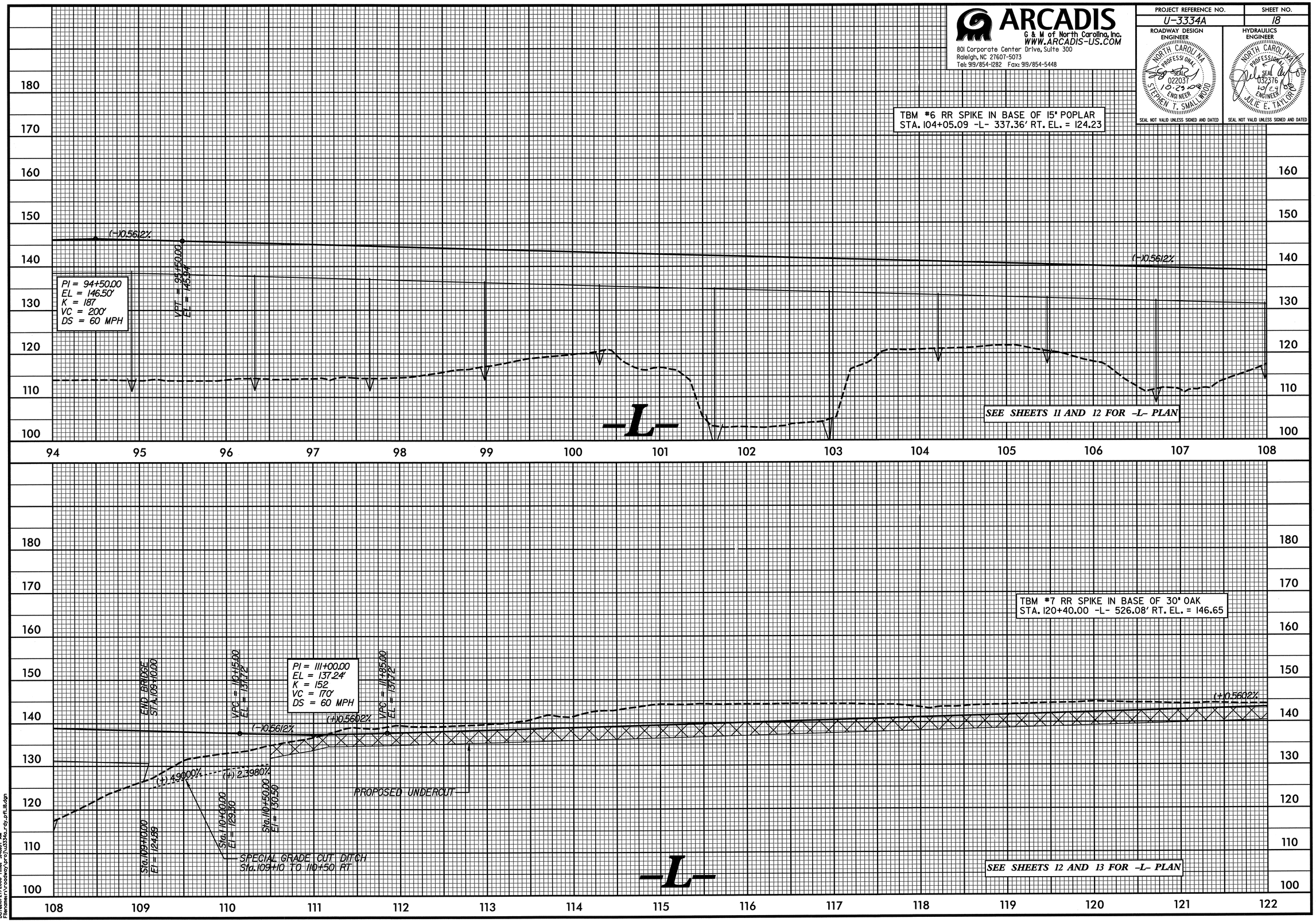
PROJECT REFERENCE NO.	SHEET NO.
U-3334A	18

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
10-29-08
SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032376 ENGINEER JULIE E. TAYLOR
10/29/08
SEAL NOT VALID UNLESS SIGNED AND DATED



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PROJECT REFERENCE NO.	SHEET NO.
U-3334A	19

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
10-29-08
SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 035379 ENGINEER JULIE E. TAYLOR
10/29/08
SEAL NOT VALID UNLESS SIGNED AND DATED

PI = 125+30.00
EL = 145.25'
K = 118
VC = 190'
DS = 50 MPH

PI = 128+60.00
EL = 141.79'
K = 229
VC = 150'
DS > 80 MPH

PVC: Sta.124+59.72 -L-
PVC: Sta.124+44.57 -Y2-
VPC: Sta.124+35.00
EL = 144.78'
VPT=126+25.00
EL = 144.25'
Sta.127+00.000
EL = 140.50
VPC=127+95.00
EL = 142.58'
VPT=129+35.00
EL = 141.50'
END GRADE
POT Sta.130+00.00 -L-
EL = 141.24'

(+)0.5602%
(+)0.5602%
(-)1.0488%
(-)1.0488%
(-)0.3000%
(-)0.3929%

Sta.125+00.000
EL = 141.10

36" RCP

PROPOSED UNDERCUT

SPECIAL GRADE DITCH
Sta.125+00 TO 127+00 RT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.36

DRAINAGE AREA	= 73	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 51	CFS
DESIGN HW ELEVATION	= 140.8	FT
100 YEAR DISCHARGE	= 62	CFS
100 YEAR HW ELEVATION	= 141.7	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 73	CFS
OVERTOPPING ELEVATION	= 141.6	FT

-L-

SEE SHEET 13 FOR -L- PLAN

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.4

DRAINAGE AREA	= 11	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 29	CFS
DESIGN HW ELEVATION	= 156.6	FT
100 YEAR DISCHARGE	= 32	CFS
100 YEAR HW ELEVATION	= 156.9	FT
OVERTOPPING FREQUENCY	= 200+	YRS
OVERTOPPING DISCHARGE	= 38	CFS
OVERTOPPING ELEVATION	= 158.0	FT

BEGIN GRADE
Sta.10+32.00 -SR1-
EL = 157.66'
PVC = 10+44.00
EL = 157.33'
VPT = 10+96.00
EL = 157.25'

PI = 10+70.00
EL = 157.14'
K = 68
VC = 52'
DS = 40 MPH

Sta.12+50.00
EL = 155.68
Sta.12+00.000
EL = 154.36
Sta.13+50.000
EL = 154.25
Sta.3+50.000
EL = 154.00
Sta.14+00.000
EL = 155.05
Sta.5+00.00
EL = 155.45
Sta.16+20.000
EL = 154.85
Sta.16+40.000
EL = 155.60
Sta.18+00.000
EL = 156.77
END GRADE
POT Sta.23+23.39 -SR1-
EL = 161.11'

SPECIAL GRADE CUT DITCH
Sta.12+50 TO 15+00 LT

SPECIAL GRADE DITCH
Sta.12+00 TO 14+00 RT

SPECIAL GRADE DITCH
Sta.16+20 TO 19+10 RT

(-)3.0853%
(-)0.3458%
(-)0.2400%
(-)1.4300%
(+)2.0000%
(+)0.8000%
(-)0.4164%
(+)0.3000%
(+)2.9250%

30" RCP

-SR1-

SEE SHEET 4 & 5 FOR -SR1- PLAN

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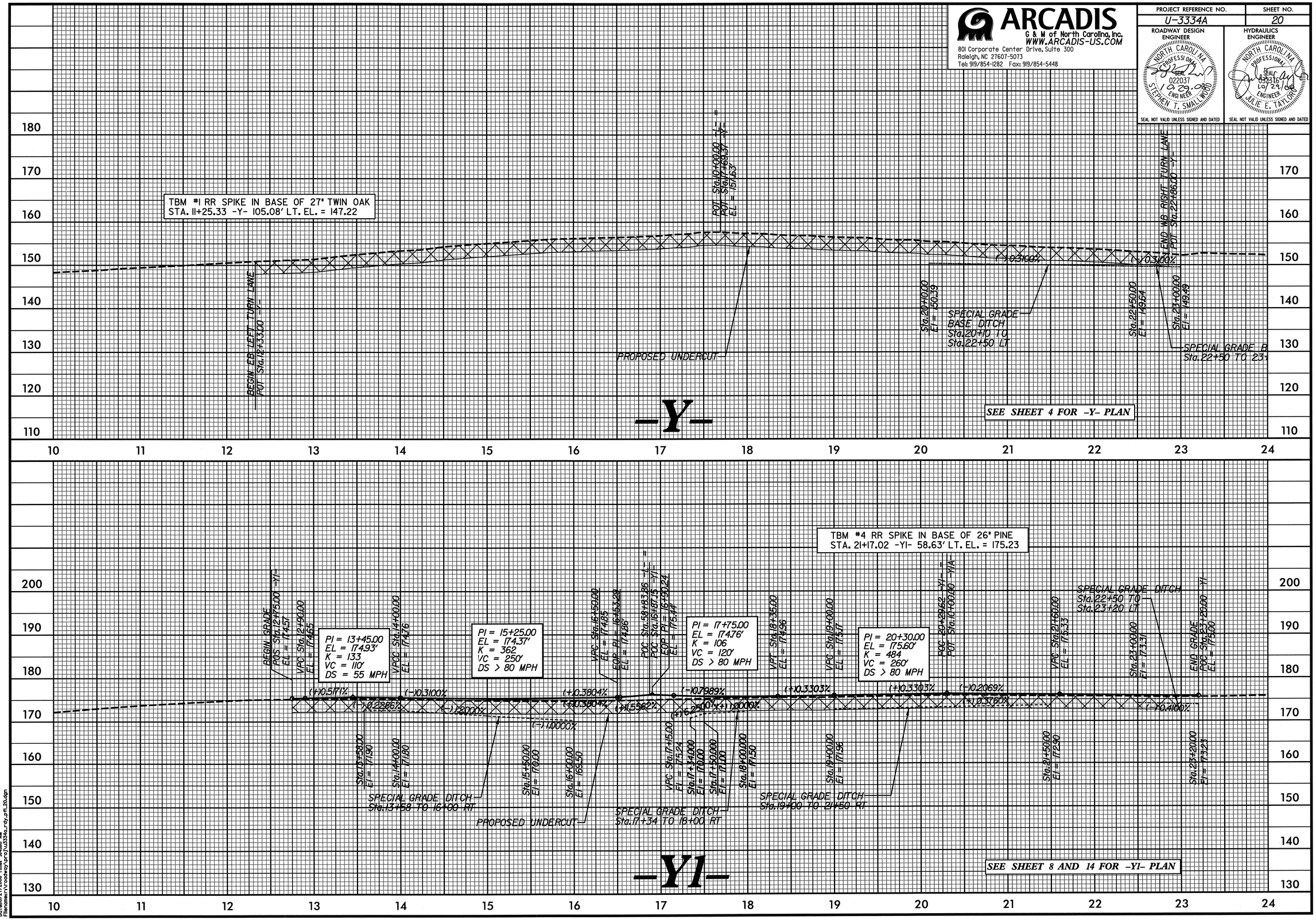
PROJECT REFERENCE NO.	SHEET NO.
U-3334A	20

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD — 10.29.08 — SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032316 ENGINEER JULIE E. TAYLOR — 10/29/08 — SEAL NOT VALID UNLESS SIGNED AND DATED



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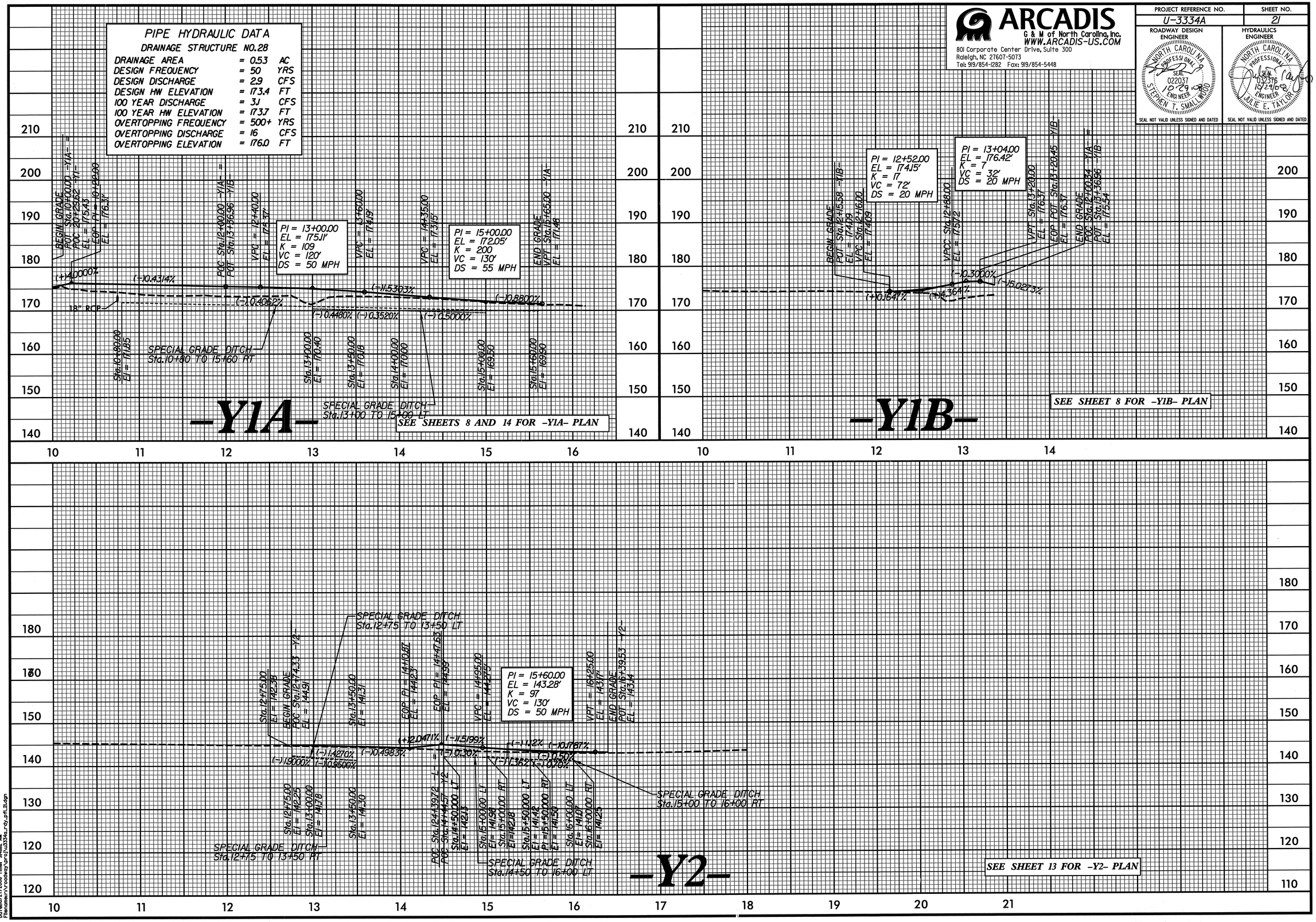
PROJECT REFERENCE NO.	SHEET NO.
U-3334A	21

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD — SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032376 ENGINEER JULIE E. TAYLOR — SEAL NOT VALID UNLESS SIGNED AND DATED



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