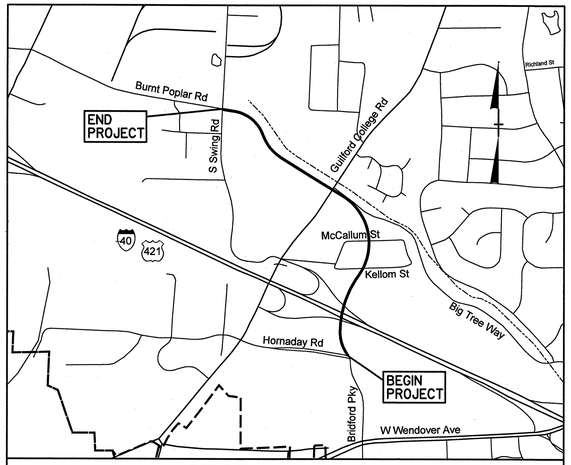
09/08/99

TIP PROJECT: U-4006

CONTRACT: C202163

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

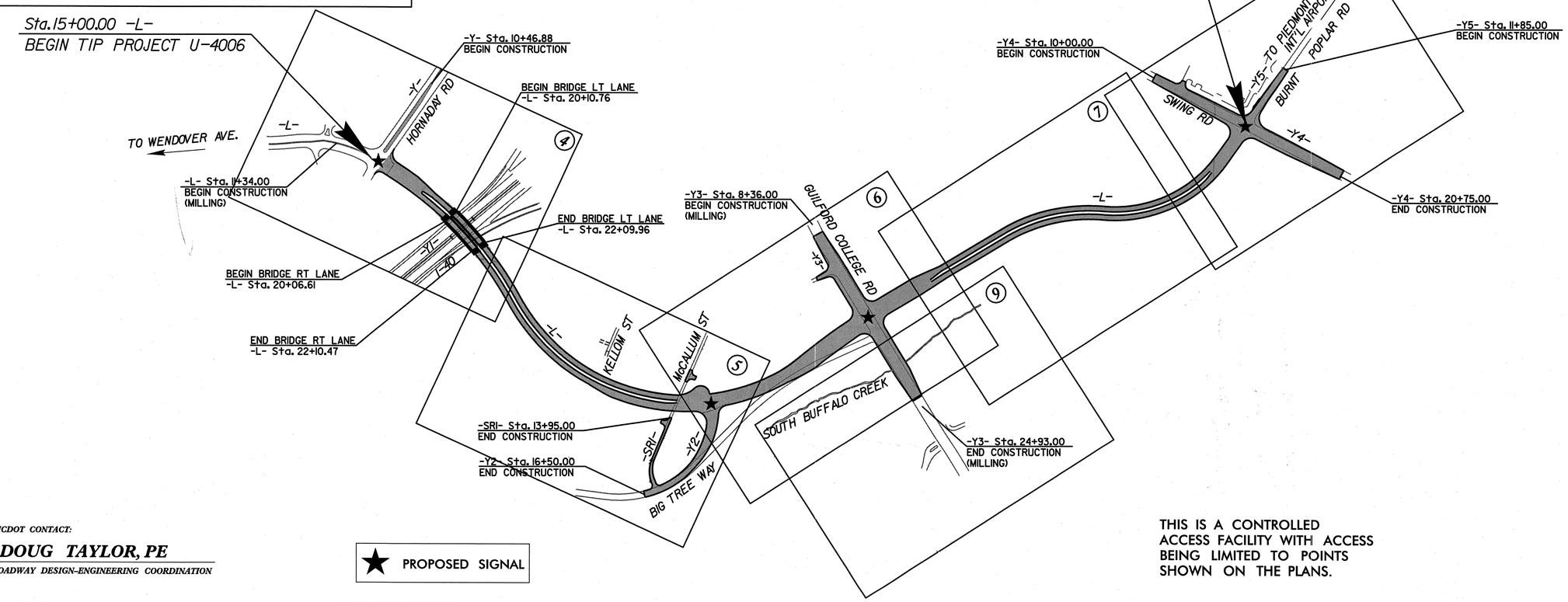
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4006	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
35007.1.1	STP-4126(1)	P.E.
35007.2.1	STP-4126(1)	R/W UTIL
35007.3.1	STP-4126(2)	CONST

LOCATION: GREENSBORO SR 4126 (BRIDFORD PARKWAY, NEW ROUTE) FROM SR 1541 (WENDOVER AVE.) AT HORNADAY RD. TO SR 1607 (BURNT POPLAR ROAD) AT SWING ROAD

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

NAD 83/95



NCDOT CONTACT:

DOUG TAYLOR, PE

ROADWAY DESIGN-ENGINEERING COORDINATION

★ PROPOSED SIGNAL

THIS IS A CONTROLLED ACCESS FACILITY WITH ACCESS BEING LIMITED TO POINTS SHOWN ON THE PLANS.

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2009 = 23,577
ADT 2030 = 32,300
DHV = 11 %
D = 60 %
T = 6 % *
V = 40 MPH

* TTST 1% DUAL 5%

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT U-4006 = 0.985 miles

LENGTH OF STRUCTURE TIP PROJECT U-4006 = 0.038 miles

TOTAL LENGTH TIP PROJECT U-4006 = 1.023 miles

ARCADIS
G & M of North Carolina, Inc.
WWW.ARCADIS-US.COM
801 Corporate Center Drive, Suite 300
Raleigh, NC 27607-5073
Tel: 919/854-0382 Fax: 919/854-5448
for the North Carolina Department of Transportation

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 28, 2007

LETTING DATE:
AUGUST 18, 2009

ARCADIS CONTACT:

STEVE SMALLWOOD, P.E.
PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD

SEAL NOT VALID UNLESS SIGNED AND DATED

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

P.E.
STATE HIGHWAY DESIGN ENGINEER

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

\\radsaav\Proj\U4006 RDY TSH dgn 6/5/2009 1:20:55 PM

PROJECT REFERENCE NO.	SHEET NO.
U-4006	1A

NORTH CAROLINA PROFESSIONAL SEAL 7689 ENGINEER R. W. HILL 6-17-09
SEAL NOT VALID UNLESS SIGNED AND DATED

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, & LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEETS
1-D	CENTERLINE COORDINATE LIST
2 THRU 2-D	PAVEMENT SCHEDULE, WEDGING DETAIL, & TYPICAL SECTIONS
2-E	ROCK PLATING DETAIL
2-F	ANCHORAGE FOR FRAMES DETAIL
2-G	CAP FOR BARRIER UNDERNEATH BRIDGE DETAIL
2-H	ENERGY DISSIPATOR DETAIL
2-I	DROP INLET DETAIL
2-J	TEMPORARY SHORING
2-K	STOCKPILE CONTAINMENT DETAIL
2-L	CONVERT CB TO JB DETAIL
3 (2 SHEETS)	SUMMARY OF QUANTITIES
3-A THRU 3-E	DRAINAGE SUMMARIES
3-F	GUARDRAIL SUMMARY & PAVEMENT REMOVAL SUMMARY
3-G	EARTHWORK SUMMARY
3-H	PARCEL INDEX SHEET
4 THRU 9	PLAN SHEETS
10 THRU 15	PROFILE SHEETS
TCP-1 THRU TCP- 17A	TRAFFIC CONTROL PLANS
SD-1	SPECIAL SIGN DESIGN
PMP-1 THRU PMP- 6	PAVEMENT MARKING PLANS
E-1 THRU E-6	ELECTRIC LIGHTING PLANS
EC-1 THRU EC-15	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
SIG-1 THRU SIG- 31	SIGNAL PLANS
UC-1 THRU UC-7	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-6	UTILITIES BY OTHERS PLANS
X-1A	CROSS SECTION SUMMARY SHEETS
X-1 THRU X-45	CROSS SECTIONS
S-1 THRU S-76	STRUCTURE PLANS
W-1 THRU W-5	WALL PLANS

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
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
240.01	Guide for Berm Ditch Construction
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
300.02	Method of Pipe Installation - Method 'B'
300.03	Method of Structural Plate Pipe and Pipe Arch Installation - Method 'A'
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	
610.03	Guide for Paving Shoulders Under Bridges - Method III
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
816.04	Markers for Drainage Structure and Concrete Pad
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
838.28	Reinforced Concrete Endwall - for Double and Triple 60" Pipes 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std.Dwg 838.21 thru 838.40
838.57	Reinforced Brick Endwall - for Single 60" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std.Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std.Dwg 840.14 and 840.15
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.51	Brick Manhole - 12" thru 36" Pipe
840.53	Precast Manhole with Masonry Base - 12" thru 42" Pipe
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.03	Driveway Turnout - Drop Curb Type
848.04	Street Turnout
848.05	Wheelchair Ramp - Curb Cut
852.01	Concrete Islands
852.04	Method for Placement of Drop Inlets in Grassed Median - Using 1'-6" Curb and Gutter
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
852.10	Median Construction - with Curb and Gutter
854.05	Concrete Median Transition Barrier - Location of Overhead Assembly
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.01	Chain Link Fence - 4', 5' and 6' High Fence
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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

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

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

BERM DITCHES:
BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD.NO.240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

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

DRIVEWAYS:
DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD.848.03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:
STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD.NO.848.04 USING THE RADII NOTED ON PLANS.

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

TEMPORARY SHORING:
SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

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

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE DUKE POWER, BELL SOUTH, CITY OF GREENSBORO
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 OTHERS.

WHEELCHAIR RAMPS:
WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH STD.NO.848.05

8/17/99

REVISIONS

$$$$SYSTIME$$$$DGN$$$$
$$$$FILENAME$$$$

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
U-4006	1B

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
- Proposed Temporary Utility Easement — TUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

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

SANITARY SEWER:

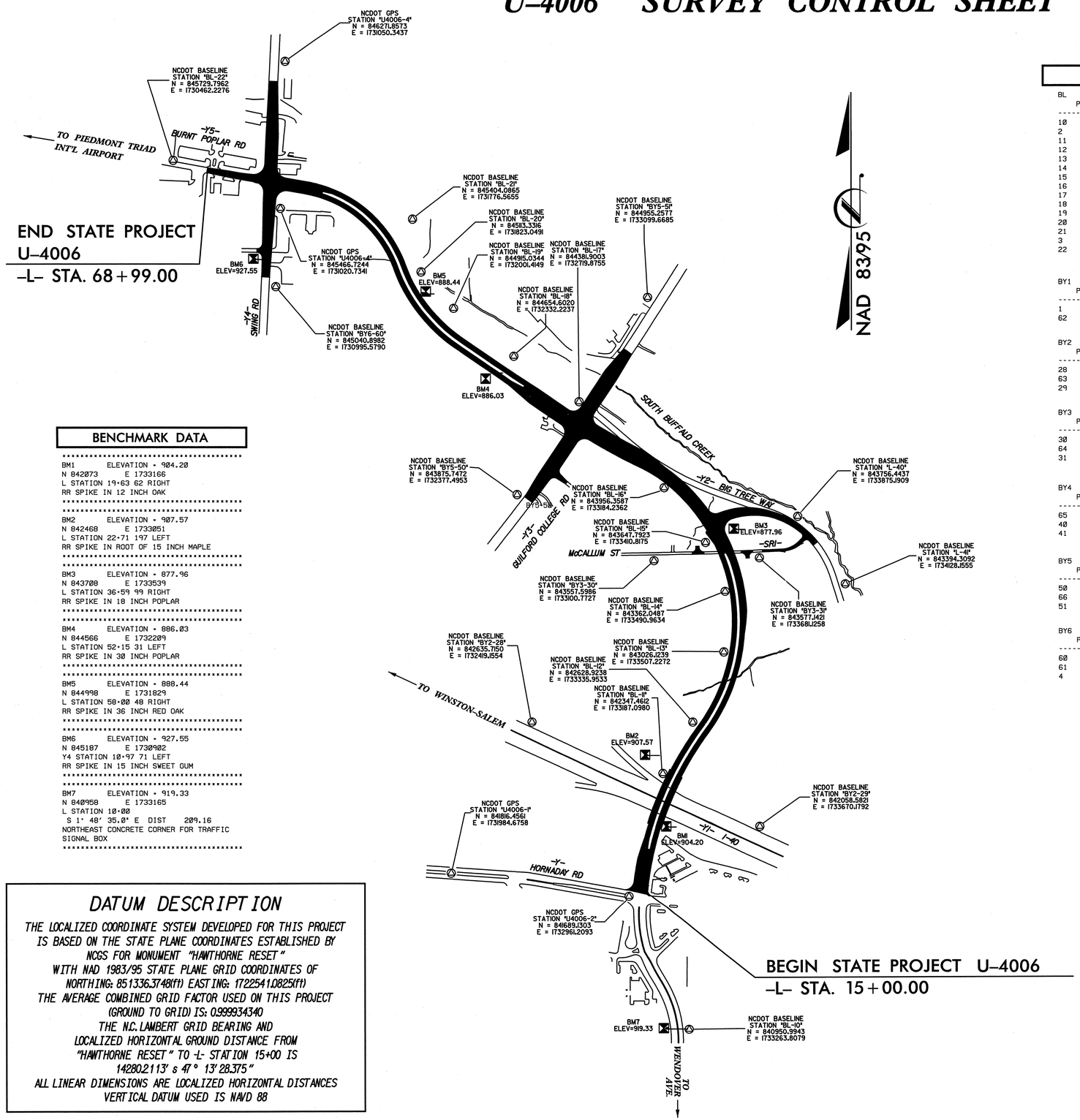
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
U-4006	1C
Location and Surveys	

U-4006 SURVEY CONTROL SHEET



BENCHMARK DATA

```
*************************************
BM1       ELEVATION - 904.20
N 842073      E 1733166
L STATION 19+63 62 RIGHT
RR SPIKE IN 12 INCH OAK
*************************************
*************************************
BM2       ELEVATION - 907.57
N 842468      E 1733051
L STATION 22+71 197 LEFT
RR SPIKE IN ROOT OF 15 INCH MAPLE
*************************************
*************************************
BM3       ELEVATION - 877.96
N 843708      E 1733539
L STATION 36+59 99 RIGHT
RR SPIKE IN 18 INCH POPLAR
*************************************
*************************************
BM4       ELEVATION - 886.03
N 844566      E 1732209
L STATION 52+15 31 LEFT
RR SPIKE IN 30 INCH POPLAR
*************************************
*************************************
BM5       ELEVATION - 888.44
N 844998      E 1731829
L STATION 58+00 48 RIGHT
RR SPIKE IN 36 INCH RED OAK
*************************************
*************************************
BM6       ELEVATION - 927.55
N 845187      E 1730902
Y4 STATION 10+97 71 LEFT
RR SPIKE IN 15 INCH SWEET GUM
*************************************
*************************************
BM7       ELEVATION - 919.33
N 840958      E 1733165
L STATION 10+00
 S 1° 48' 35.0" E  DIST    209.16
NORTHEAST CONCRETE CORNER FOR TRAFFIC
SIGNAL BOX
*************************************
```

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "HAWTHORNE RESET"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 851336.3748(ft) EASTING: 1722541.0825(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999934340
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "HAWTHORNE RESET" TO -L- STATION 15+00 IS 14280.2113' s 47° 13' 28.375"
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
10	BL-10	840950.9943	1733263.8079	920.87	OUTSIDE PROJECT LIMITS	
2	U4006-2	841689.1303	1732961.2093	916.50	15+45.79	65.09 LT
11	BL-11	842347.4612	1733187.0980	907.27	22+28.27	21.27 LT
12	BL-12	842628.9238	1733335.9533	882.90	25+41.20	40.02 LT
13	BL-13	843026.1239	1733507.2272	878.49	29+95.75	41.13 LT
14	BL-14	843362.0487	1733490.9634	892.24	33+51.21	59.20 LT
15	BL-15	843647.7923	1733410.8175	885.23	36+64.62	42.25 LT
16	BL-16	843956.3587	1733184.2362	889.59	40+62.21	21.94 LT
17	BL-17	844381.9003	1732719.8755	879.58	46+87.46	104.11 RT
18	BL-18	844654.6020	1732332.2237	878.60	51+63.50	111.20 RT
19	BL-19	844915.0344	1732001.4149	880.65	56+06.24	129.00 RT
20	BL-20	845113.3316	1731823.0491	889.11	59+13.82	98.34 RT
21	BL-21	845404.0865	1731776.5655	886.73	61+66.58	185.37 RT
3	U4006-3	845466.7244	1731920.7341	920.00	68+43.15	139.84 LT
22	BL-22	845729.7962	1730462.2276	918.86	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
1	U4006-1	841816.4561	1731984.6758	923.59	OUTSIDE PROJECT LIMITS	
62	U-4006-2	841689.1303	1732961.2093	916.50	14+68.48	0.58 RT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
28	BY2-28	842635.7150	1732419.1554	909.90	OUTSIDE PROJECT LIMITS	
63	BL-11	842347.4612	1733187.0980	907.27	12+35.90	138.48 LT
29	BY2-29	842058.5821	1733670.1792	899.75	OUTSIDE PROJECT LIMITS	

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
30	BY3-30	843557.5986	1733100.7727	901.22	37+66.00	355.17 LT
64	BL-15	843647.7923	1733410.8175	885.23	36+64.62	42.25 LT
31	BY3-31	843577.1421	1733681.1258	878.38	35+03.72	178.87 RT

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
65	BL-16	843956.3587	1733184.2362	889.59	OUTSIDE PROJECT LIMITS	
40	BY4-40	843756.4437	1733875.1909	859.42	14+81.91	23.87 LT
41	BY4-41	843394.3092	1734128.1555	853.37	OUTSIDE PROJECT LIMITS	

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
50	BY5-50	843875.7472	1732377.4953	914.29	10+45.71	31.75 LT
66	BL-17	844381.9003	1732719.8755	879.58	16+58.75	31.79 LT
51	BY5-51	844955.2577	1733099.6685	893.72	OUTSIDE PROJECT LIMITS	

BY6

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
60	BY6-60	845040.8982	1730995.5790	928.38	OUTSIDE PROJECT LIMITS	
61	U4006-3	845466.7244	1731020.7341	920.00	13+81.31	36.10 RT
4	U4006-4	846271.8573	1731050.3437	909.47	OUTSIDE PROJECT LIMITS	

NOTES

2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

   HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILE TO BE FOUND IS:

   U4006_LS_CONTROL_060227.TXT

2. 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 FROM EXISTING NCGS MONUMENTATION.

NOTE: DRAWING NOT TO SCALE

12/01/2005

\Drawings\U4006_1c_lc_060227.dgn 4/21/2006 1:34:25 PM

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L	10+00.00	841167.0535	1733158.3948
2	L	11+00.00	841253.8056	1733108.6547
3	L	12+00.00	841343.8441	1733065.3713
4	L	13+00.00	841439.4496	1733036.3904
5	L	14+00.00	841538.3668	1733022.4025
6	L	15+00.00	841638.2996	1733023.0561
7	L	16+00.00	841737.9554	1733031.1888
8	L	17+00.00	841837.0059	1733044.8426
9	L	18+00.00	841935.1455	1733063.9752
10	L	19+00.00	842032.0712	1733088.5277
11	L	20+00.00	842127.4841	1733118.4243
12	L	21+00.00	842221.0897	1733153.5728
13	L	22+00.00	842312.5993	1733193.8647
14	L	23+00.00	842401.7303	1733239.1757
15	L	24+00.00	842488.2079	1733289.3660
16	L	25+00.00	842571.7651	1733344.2806
17	L	26+00.00	842653.5603	1733401.7895
18	L	27+00.00	842739.9056	1733452.1497
19	L	28+00.00	842830.8472	1733493.6383
20	L	29+00.00	842925.4764	1733525.8405
21	L	30+00.00	843022.8477	1733548.4348
22	L	31+00.00	843121.9882	1733561.1952
23	L	32+00.00	843221.9074	1733563.9944
24	L	33+00.00	843321.6068	1733556.8043
25	L	34+00.00	843420.0903	1733539.6968
26	L	35+00.00	843516.3739	1733512.8428
27	L	36+00.00	843609.4956	1733476.5107
28	L	37+00.00	843698.5248	1733431.0634
29	L	38+00.00	843782.5722	1733376.9551
30	L	39+00.00	843860.7978	1733314.7263
31	L	40+00.00	843932.4202	1733244.9989
32	L	41+00.00	843996.7236	1733168.4696
33	L	42+00.00	844053.0655	1733085.9029
34	L	43+00.00	844101.0197	1732998.1917
35	L	44+00.00	844147.4522	1732909.6290
36	L	45+00.00	844196.3957	1732822.4290
37	L	46+00.00	844247.8103	1732736.6627
38	L	47+00.00	844301.6541	1732652.4002
39	L	48+00.00	844357.6799	1732569.5702
40	L	49+00.00	844414.1099	1732487.0132
41	L	50+00.00	844470.5398	1732404.4562
42	L	51+00.00	844526.9698	1732321.8992
43	L	52+00.00	844583.3998	1732239.3422
44	L	53+00.00	844639.8298	1732156.7852
45	L	54+00.00	844696.2597	1732074.2282
46	L	55+00.00	844753.4270	1731992.1920
47	L	56+00.00	844818.1546	1731916.0421
48	L	57+00.00	844891.3730	1731848.0160
49	L	58+00.00	844972.0698	1731789.0542
50	L	59+00.00	845059.1295	1731739.9719
51	L	60+00.00	845151.3161	1731701.3581
52	L	61+00.00	845241.9854	1731659.3962
53	L	62+00.00	845325.4677	1731604.5105
54	L	63+00.00	845399.9339	1731537.9034
55	L	64+00.00	845463.7529	1731461.0343
56	L	65+00.00	845515.5263	1731375.5870
57	L	66+00.00	845554.1200	1731283.4336
58	L	67+00.00	845578.6986	1731186.5948
59	L	68+00.00	845596.5914	1731088.2086
60	L	68+99.00	845614.3058	1730990.8030

5/28/99
$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$$$$$$$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4006	2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD

SEAL NOT VALID UNLESS SIGNED AND DATED

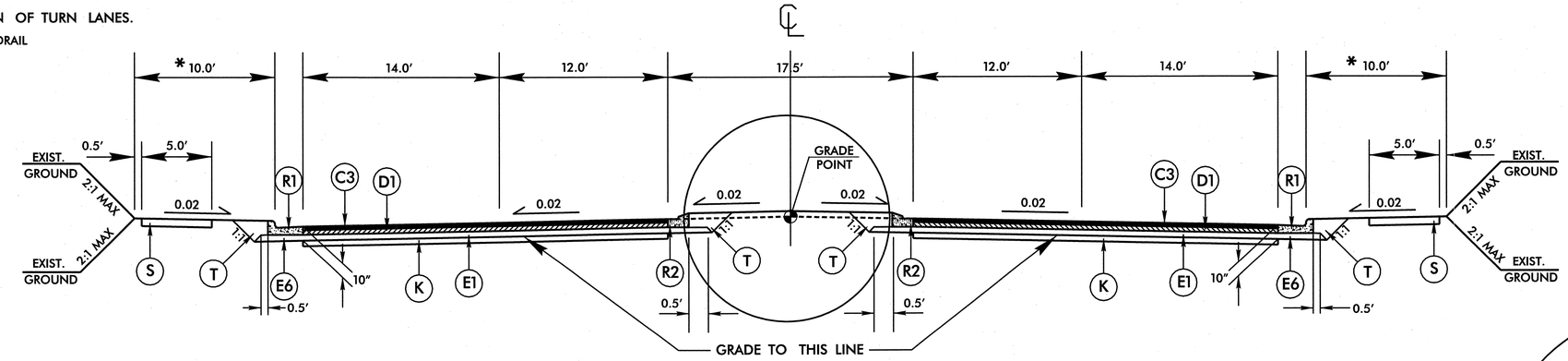
PAVEMENT ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON

6/16/09

NOTE: SEE PLANS FOR LOCATION OF TURN LANES.

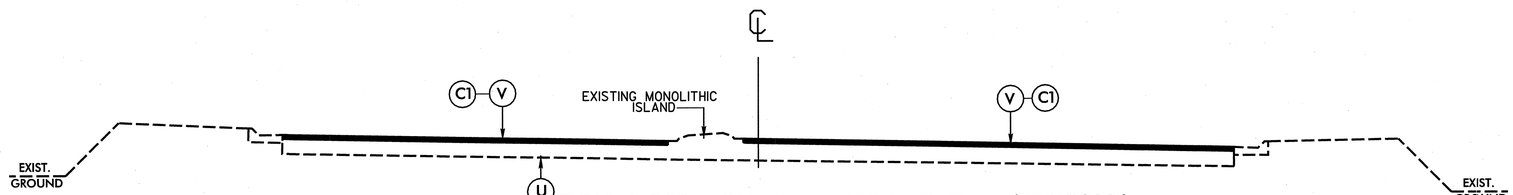
* 14.0' WHERE WIDENED FOR GUARDRAIL



TYPICAL SECTION NO. 1

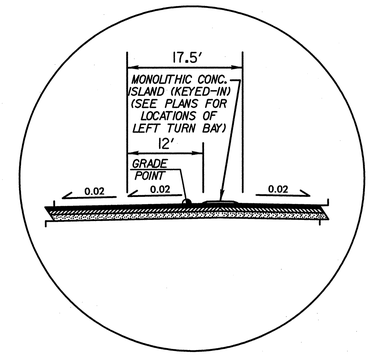
USE TYPICAL SECTION NO. 1:

STA. 15+50.00 TO STA. 20+10.76 -L- (LEFT LANE BRIDGE)
STA. 22+09.96 (LEFT LANE BRIDGE) TO STA. 46+29.81 -L-
STA. 46+83.98 TO STA. 68+75.72 -L-



TYPICAL FOR MILLING AT BEGINNING -L-(BRIDFORD)

SEE TRAFFIC CONTROL PLANS SHEET TCP-6A
FOR LIMITS OF MILLING ON -L- (BRIDFORD)



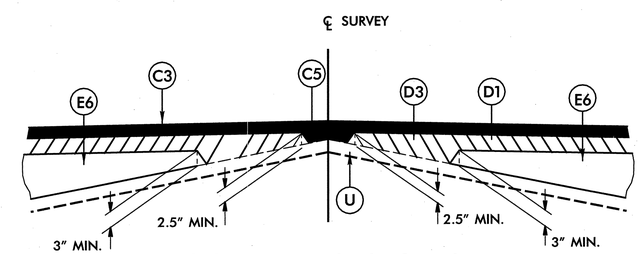
PARTIAL SECTION #1

USE IN CONJUNCTION WITH TYPICAL SECTION #1

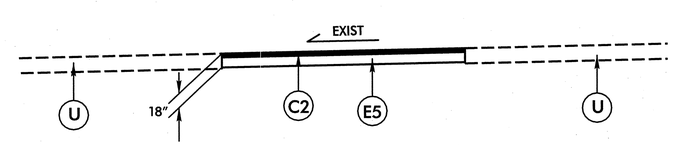
NOTE: SEE PLANS FOR LOCATION OF MONOLITHIC CONCRETE ISLAND (KEYED-IN)

CODE	PAVEMENT SCHEDULE
C1	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	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.
C4	PROP. APPROX. 3.0" ASPHALT CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD IN EACH OF TWO LAYERS.
C5	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. 4.0" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 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. 3.0" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
E2	PROP. APPROX. 4.0" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E3	PROP. APPROX. 5.5" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E4	PROP. APPROX. 7.0" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E5	PROP. APPROX. 16.5" ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD. IN EACH OF THREE LAYERS.
E6	PROP. VAR. DEPTH ASPHALT CONC. BASE SOURSE, 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
E7	PROP. VAR. DEPTH ASPHALT CONC. BASE SOURSE, TYPE B25.0C, 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
K	SUBBASE TO BE TREATED WITH LIME TO A DEPTH OF 8 IN., AT AN APPROX. RATE OF 20 LBS./SQ. YD. AS DIRECTED BY THE ENGINEER, OR SUBBASE TO BE TREATED WITH CEMENT TO A DEPTH OF 7 IN., AT AN APPROX. RATE OF 55 LBS./SQ. YD. AS DIRECTED BY THE ENGINEER.
R1	2' - 6" CONCRETE CURB AND GUTTER
R2	1' - 6" CONCRETE CURB AND GUTTER
S	SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5" MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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



Detail Showing Method of Wedging



TYPICAL SHOULDER REPLACEMENT

USE ON -Y1- (I-40) RIGHT SHOULDER FOR PAVEMENT REPAIR WITH REPLACEMENT OF 36" RCP AND MEDIAN SHOULDER FOR BENT PLACEMENT AND LIGHTING CONDUIT INSTALLATION.

8/17/99

SYSTIME$$
USERNAME$$

PROJECT REFERENCE NO.	SHEET NO.
U-4006	2A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD

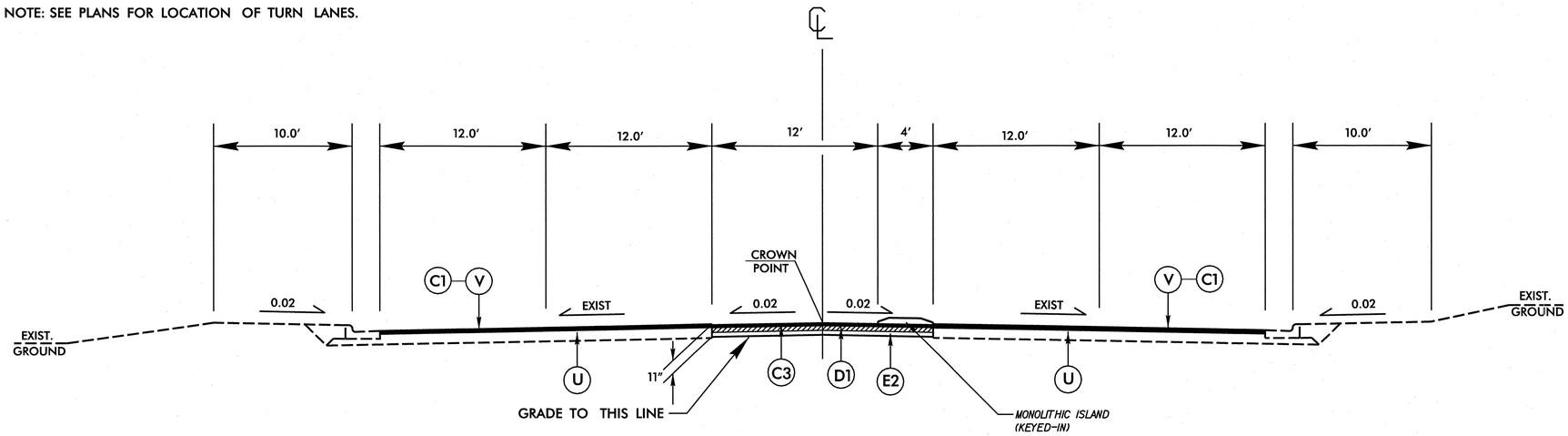
SEAL NOT VALID UNLESS SIGNED AND DATED

PAVEMENT ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON

6/10/09

NOTE: SEE PLANS FOR LOCATION OF TURN LANES.

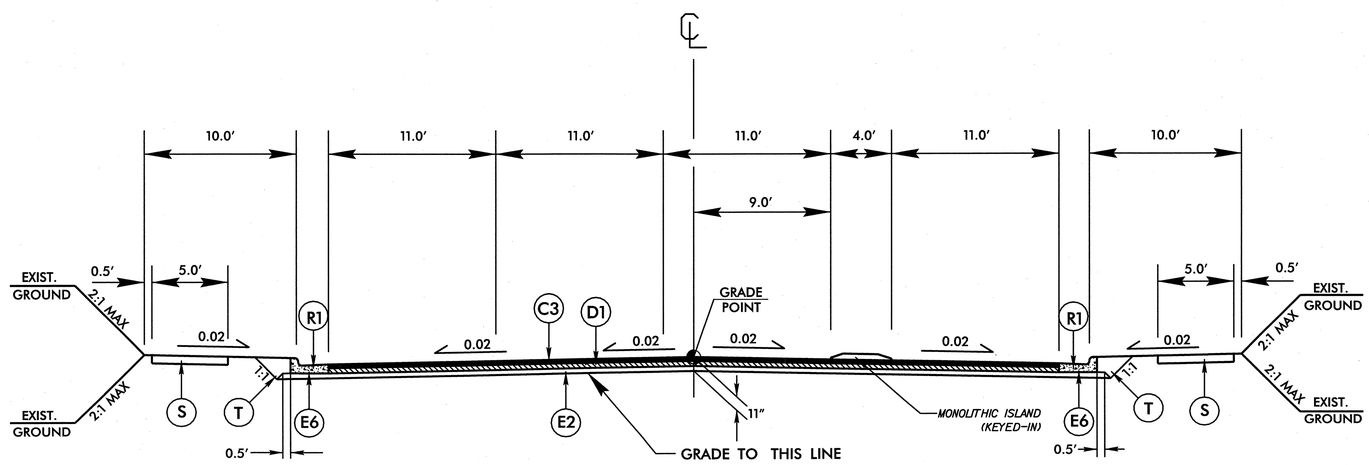


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2:

STA. 10+46.88 TO STA. 14+70.00 -Y-

SEE TRAFFIC CONTROL PLANS SHEET TCP-6A
FOR LIMITS OF MILLING ON -Y- (HORNADAY ROAD)



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3:

STA. 10+34.75 TO STA. 14+25.00 -Y2- (TRANSITION TO TYPICAL NO.4)

CODE	PAVEMENT SCHEDULE
C1	1.5" ASPHALT, TYPE S9.5B
C2	1.5" ASPHALT, TYPE S9.5C
C3	3.0" ASPHALT, TYPE S9.5B
C4	3.0" ASPHALT, TYPE S9.5C
C5	VAR. DEPTH ASPHALT, TYPE S9.5B
D1	4.0" ASPHALT, TYPE I19.0B
D2	4.0" ASPHALT, TYPE I19.0C
E1	3.0" ASPHALT, TYPE B25.0B
E2	4.0" ASPHALT, TYPE B25.0B
E3	5.5" ASPHALT, TYPE B25.0B
E4	7.0" ASPHALT, TYPE B25.0C
E5	16.5" ASPHALT, TYPE B25.0B
E6	VAR. DEPTH ASPHALT, TYPE B25.0B
E7	VAR. DEPTH ASPHALT, TYPE B25.0C
R1	2' 6" CONCRETE CURB AND GUTTER
R2	1' 6" CONCRETE CURB AND GUTTER
S	SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5" MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT

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

8/17/99

SYSTIME$$$$$$$$
DGN$$$$$$$$
USERNAME$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4006	2B

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD

6/5/09

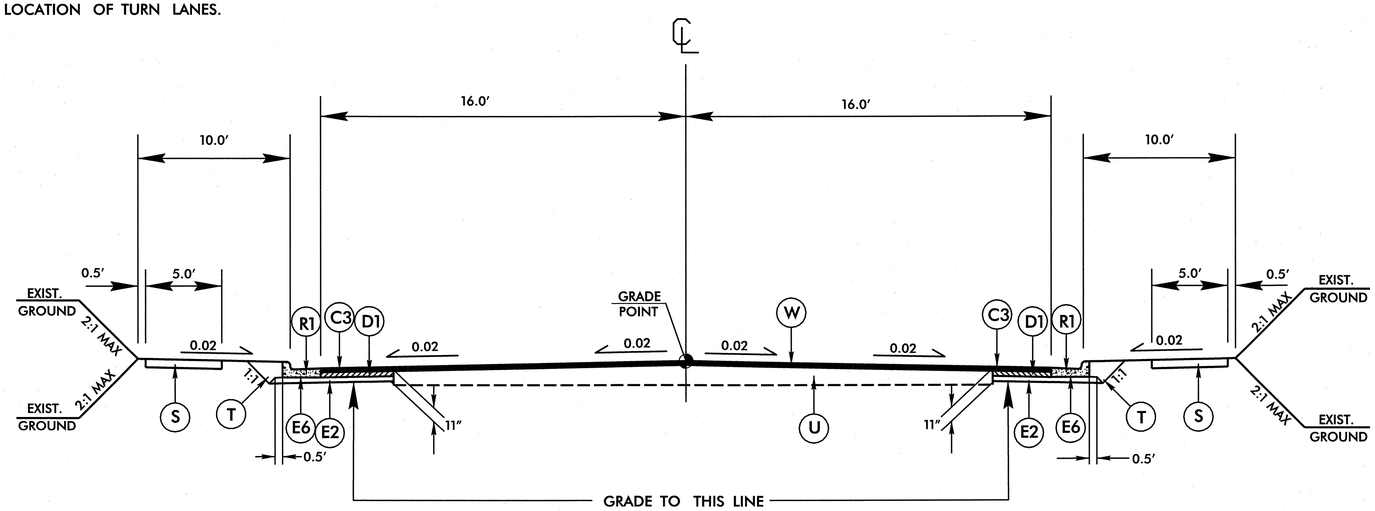
SEAL NOT VALID UNLESS SIGNED AND DATED

PAVEMENT ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON

6/10/09

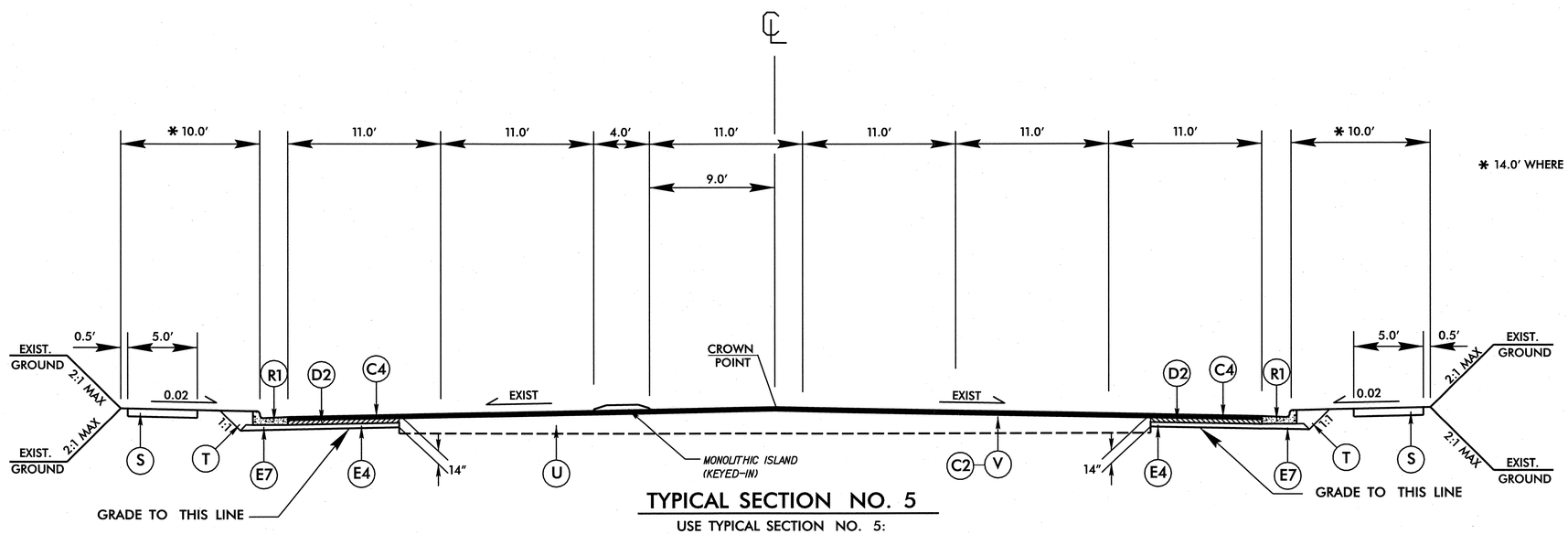
NOTE: SEE PLANS FOR LOCATION OF TURN LANES.



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4:

STA. 14+25.00 TO STA. 16+50.00 –Y2–



✱ 14.0′ WHERE WIDENED FOR GUARDRAIL

TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5:

STA. 10+60.00 TO STA. 20+40.00 –Y3–

SEE TRAFFIC CONTROL PLANS SHEET TCP-14
FOR LIMITS OF MILLING ON –Y3– (GUILFORD COLLEGE ROAD)

CODE	PAVEMENT SCHEDULE
C1	1.5″ ASPHALT, TYPE S9.5B
C2	1.5″ ASPHALT, TYPE S9.5C
C3	3.0″ ASPHALT, TYPE S9.5B
C4	3.0″ ASPHALT, TYPE S9.5C
C5	VAR. DEPTH ASPHALT, TYPE S9.5B
D1	4.0″ ASPHALT, TYPE I19.0B
D2	4.0″ ASPHALT, TYPE I19.0C
E1	3.0″ ASPHALT, TYPE B25.0B
E2	4.0″ ASPHALT, TYPE B25.0B
E3	5.5″ ASPHALT, TYPE B25.0B
E4	7.0″ ASPHALT, TYPE B25.0C
E5	16.5″ ASPHALT, TYPE B25.0B
E6	VAR. DEPTH ASPHALT, TYPE B25.0B
E7	VAR. DEPTH ASPHALT, TYPE B25.0C
R1	2′ 6″ CONCRETE CURB AND GUTTER
R2	1′ 6″ CONCRETE CURB AND GUTTER
S	SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5″ MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT

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

8/17/99

REVISIONS

SYSTIME 6/9/09 DGN USERNAME

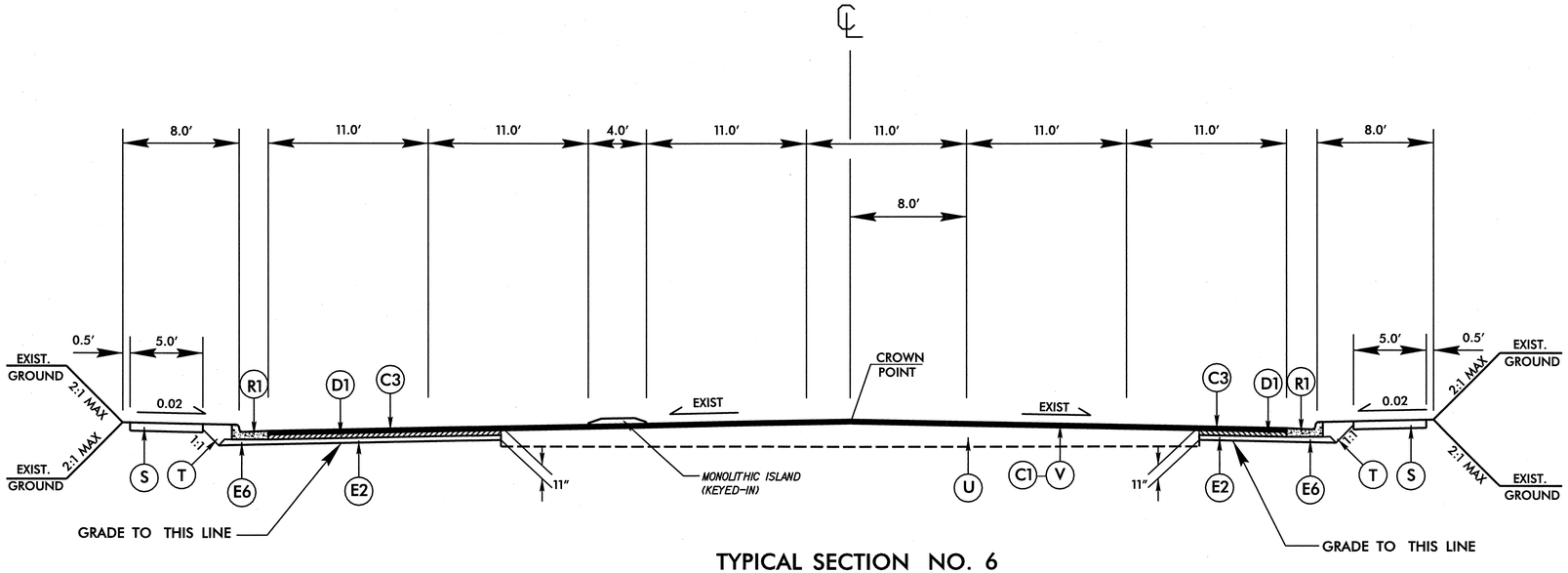
PROJECT REFERENCE NO.	SHEET NO.
U-4006	2C

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
5-26-09

PAVEMENT ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
5/28/09

SEAL NOT VALID UNLESS SIGNED AND DATED

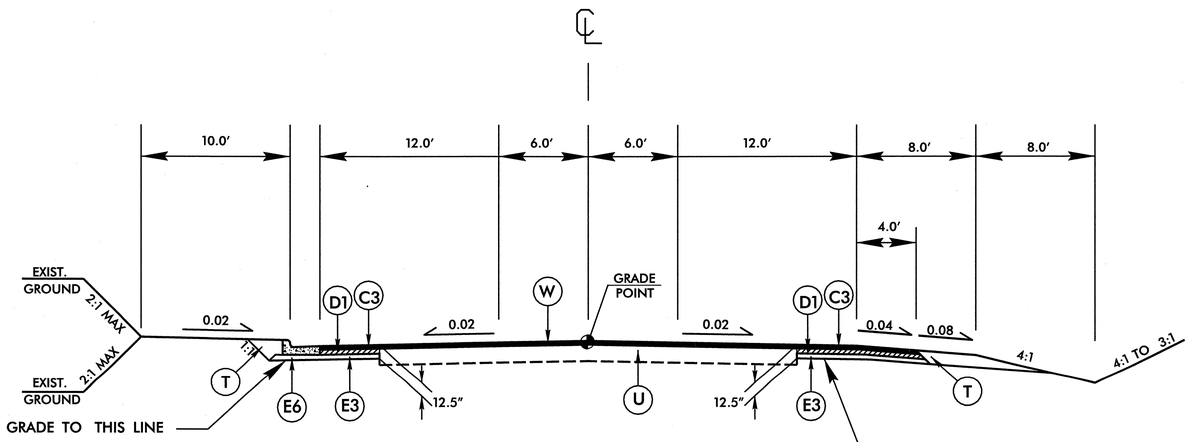
NOTE: SEE PLANS FOR LOCATION OF TURN LANES.



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6:

STA. 10+00.00 TO STA. 20+75.00 –Y4–



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7:

STA. 11+85.00 TO STA. 15+02.78 –Y5–

CODE	PAVEMENT SCHEDULE
C1	1.5″ ASPHALT, TYPE S9.5B
C2	1.5″ ASPHALT, TYPE S9.5C
C3	3.0″ ASPHALT, TYPE S9.5B
C4	3.0″ ASPHALT, TYPE S9.5C
C5	VAR. DEPTH ASPHALT, TYPE S9.5B
D1	4.0″ ASPHALT, TYPE I19.0B
D2	4.0″ ASPHALT, TYPE I19.0C
E1	3.0″ ASPHALT, TYPE B25.0B
E2	4.0″ ASPHALT, TYPE B25.0B
E3	5.5″ ASPHALT, TYPE B25.0B
E4	7.0″ ASPHALT, TYPE B25.0C
E5	16.5″ ASPHALT, TYPE B25.0B
E6	VAR. DEPTH ASPHALT, TYPE B25.0B
E7	VAR. DEPTH ASPHALT, TYPE B25.0C
R1	2′ 6″ CONCRETE CURB AND GUTTER
R2	1′ 6″ CONCRETE CURB AND GUTTER
S	SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5″ MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT

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

REVISIONS

8/17/99

SYSTIME$$$$$$$$
SYSDATE$$$$$$$$
USERNAME$$$$$$$$

PM 07 07 2009 21:43 \\dfs\pwd\Design_Projects\U4006\U-4006_2C.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-4006	2D

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD 5-21-09

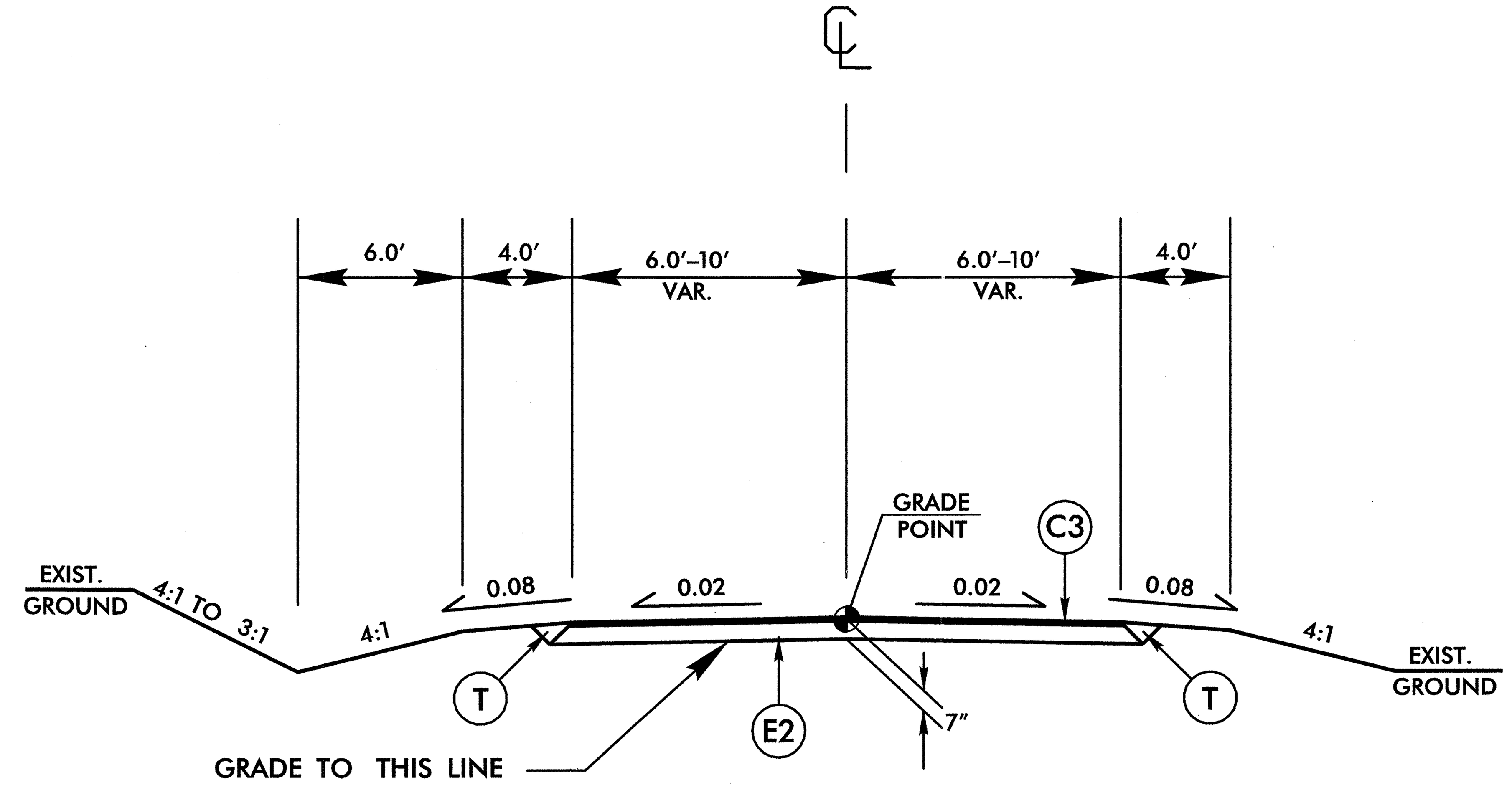
SEAL NOT VALID UNLESS SIGNED AND DATED

PAVEMENT ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 5/28/09

8/17/99

REVISIONS

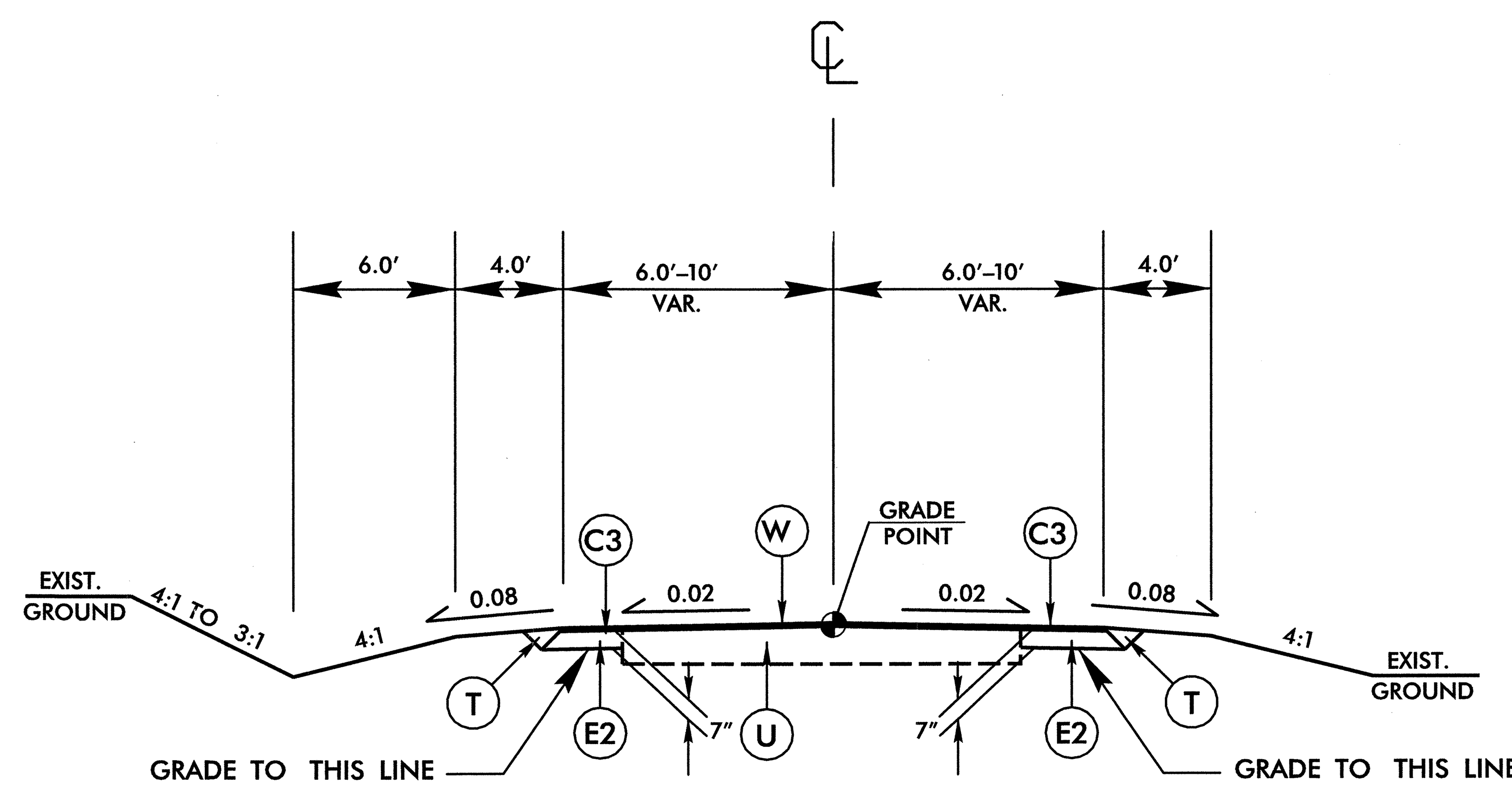
NOTE: SEE PLANS FOR LOCATION OF TURN LANES.



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8:

STA. 10+16.00 TO STA. 11+60.00 –SR1–
STA. 12+85.00 TO STA. 13+95.00 –SR1–



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9:

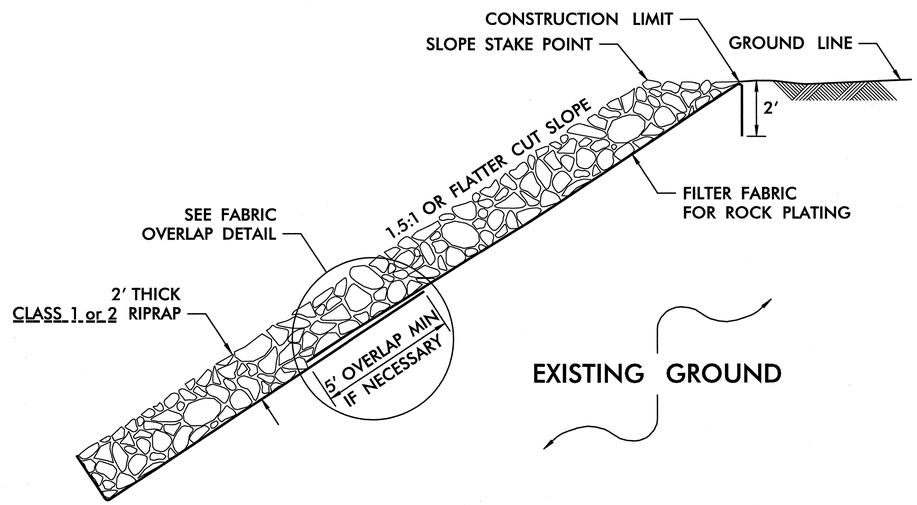
STA. 11+60.00 TO STA. 12+85.00 –SR1–

CODE	PAVEMENT SCHEDULE
C1	1.5″ ASPHALT, TYPE S9.5B
C2	1.5″ ASPHALT, TYPE S9.5C
C3	3.0″ ASPHALT, TYPE S9.5B
C4	3.0″ ASPHALT, TYPE S9.5C
C5	VAR. DEPTH ASPHALT, TYPE S9.5B
D1	4.0″ ASPHALT, TYPE I19.0B
D2	4.0″ ASPHALT, TYPE I19.0C
E1	3.0″ ASPHALT, TYPE B25.0B
E2	4.0″ ASPHALT, TYPE B25.0B
E3	5.5″ ASPHALT, TYPE B25.0B
E4	7.0″ ASPHALT, TYPE B25.0C
E5	16.5″ ASPHALT, TYPE B25.0B
E6	VAR. DEPTH ASPHALT, TYPE B25.0B
E7	VAR. DEPTH ASPHALT, TYPE B25.0C
R1	2′ 6″ CONCRETE CURB AND GUTTER
R2	1′ 6″ CONCRETE CURB AND GUTTER
S	SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5″ MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT

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

$$$$SYSTIME$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

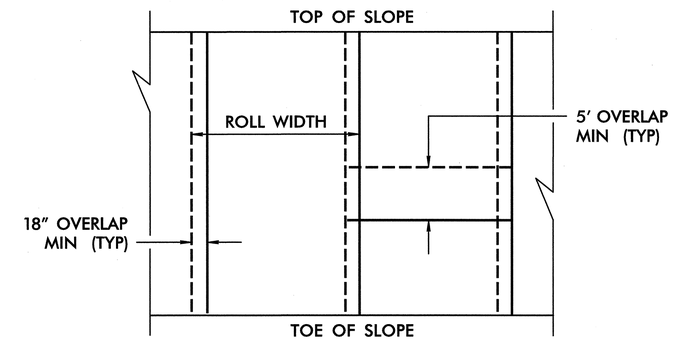
PROJECT REFERENCE NO.	SHEET NO.
U-4006	2E



ROCK PLATING DETAIL

USE ROCK PLATING DETAIL
AT THE FOLLOWING LOCATIONS:

-Y4- STA 19+50.00 TO STA 20+75.00 LEFT
EXTEND ROCK PLATING LIMITS TO 2:1 SLOPES.



FABRIC OVERLAP DETAIL
(PLAN VIEW)

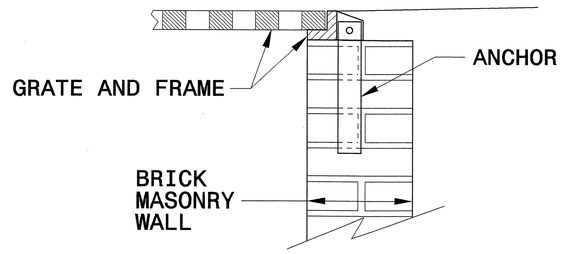
FOR ROCK PLATING,
SEE ROCK PLATING SPECIAL PROVISION.

NOTE: ROCK PLATING DETAIL AND LOCATION WERE PROVIDED THROUGH A SEALED DOCUMENT FROM THE GEOTECHNICAL ENGINEERING UNIT. THE DOCUMENT WAS SUBMITTED TO THE ROADWAY DESIGN UNIT ON MAY 8, 2009 AND SEALED BY A PROFESSIONAL ENGINEER, THEIN T. ZAN, PE, LICENSE # 30943

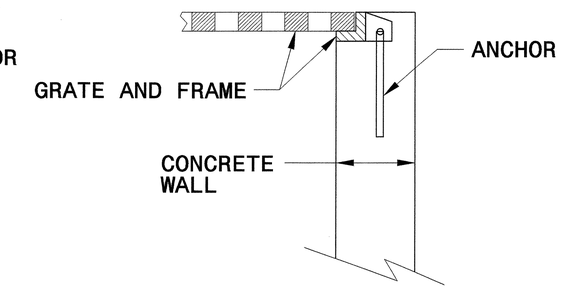
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

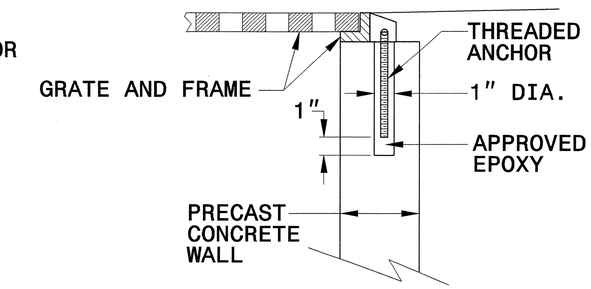
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



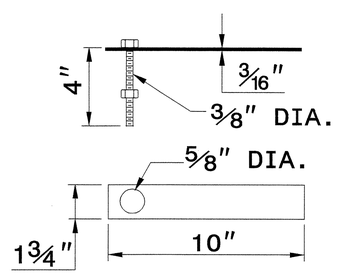
CONCRETE CONSTRUCTION



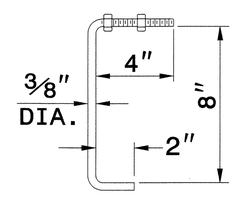
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

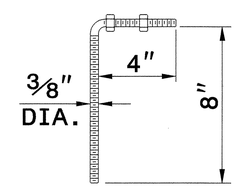
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



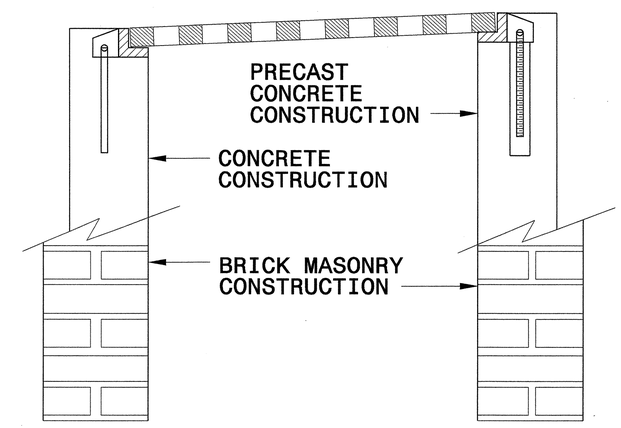
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



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 B. HOWERTON 7-28-09

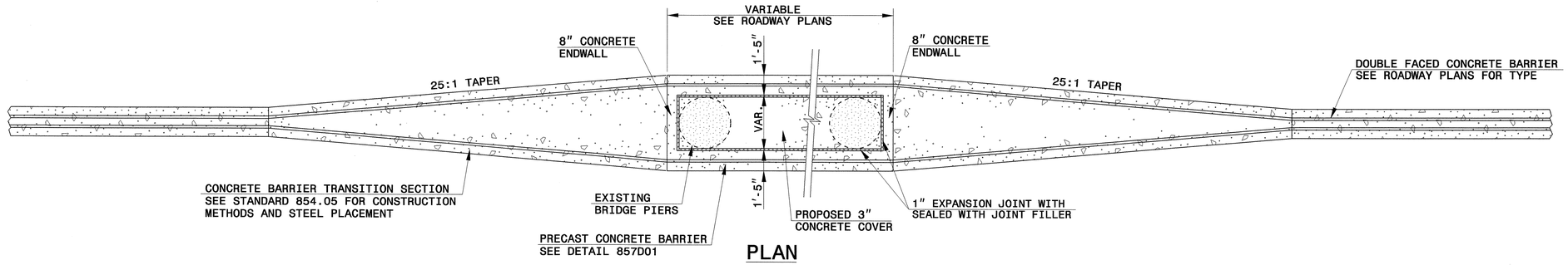
PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

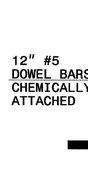
ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: DATE: 11/1/06
FILE SPEC.:

$$$$SYSTIME$$$$
$$$$DGNNAME$$$$
$$$$USERNAME$$$$

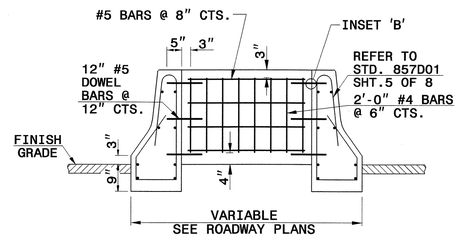
PROJECT REFERENCE NO.	SHEET NO.
U4006	2G



PLAN



INSET 'B'



8" CONCRETE ENDWALL

GENERAL NOTES:

CONCRETE BARRIER TO BE CONSTRUCTED OF CLASS 'AA' CONCRETE. (SEE SPECIFICATIONS SECTION 854).

EXPANSION AND CONTRACTION JOINTS SHALL BE CONSTRUCTED AS SHOWN IN STANDARD DRAWING 854.01.

EXPANSION JOINTS SHALL BE SEALED WITH JOINT FILLER. (SEE SECTION 1028 OF THE SPECIFICATIONS).

ALTERNATIVE METHODS FOR STEEL FABRICATION PLACEMENT SHALL BE SUBMITTED FOR REVIEW.

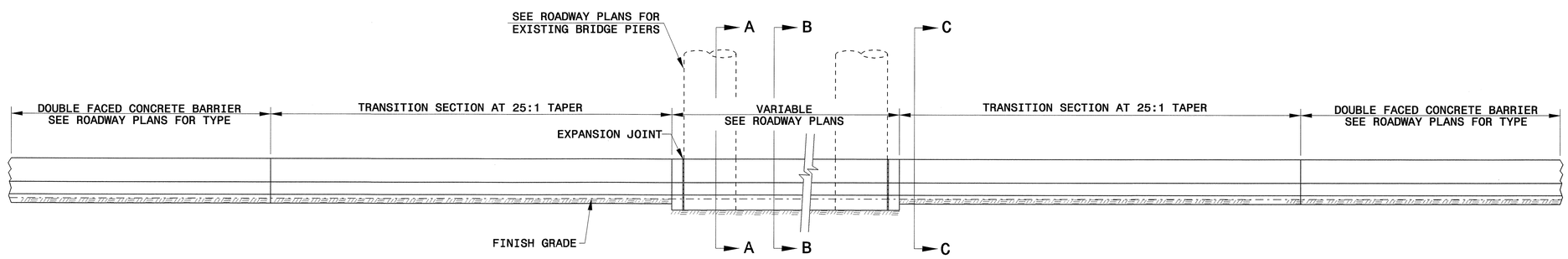
SEE STANDARD DRAWING 854.05 FOR STEEL LAYOUT OF TRANSITION BARRIER.

*THE 2" DIMENSION FROM FINSIH GRADE TO THE BASE IS A MINIMUM DIMENSION.

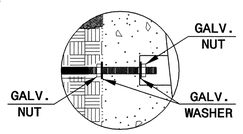
INSET FIRST 1" DIA. GALVANIZED BAR 12'-6" AND SPACE THE REMAINING 1' BARS AT 25'-0".

USE AN APPROVED BONDING SYSTEM IN ACCORDANCE WITH SECTION 1081-1, TYPE 3A OF THE STANDARD SPECIFICATIONS.

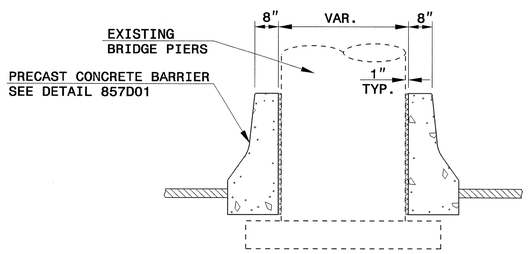
SEAL ALL EXPANSION JOINTS WITH JOINT FILLER (SEE SECTION 1028 OF THE SPECIFICATIONS).



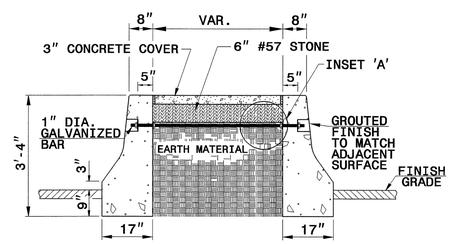
ELEVATION



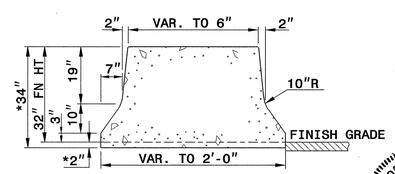
INSET 'A'



SECTION A-A



SECTION B-B



SECTION C-C

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. POWERSON
5/28/09

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

DETAIL OF CONCRETE BARRIER TRANSITION

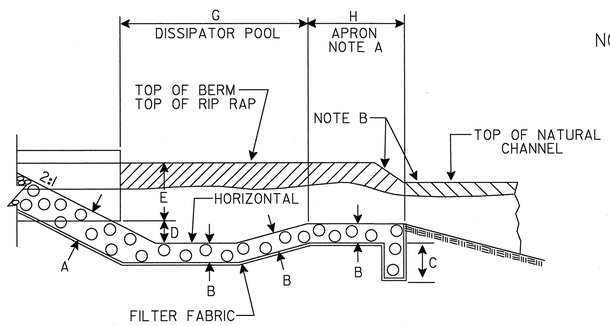
ORIGINAL BY:	E.E. WARD	DATE:	7-28-03
MODIFIED BY:	E.E. WARD	DATE:	8-26-04
CHECKED BY:		DATE:	4/22/08
FILE SPEC.:	\usr\details\stand\transition barrier.dgn		

$$$$$$CYCTIME$$$$
$$$$$$CURTIME$$$$
$$$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4006	2-H
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

RIP-RAPPED ENERGY DISSIPATOR BASIN

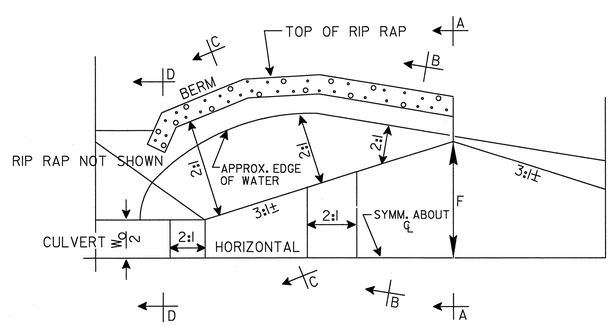
℄ SECTION

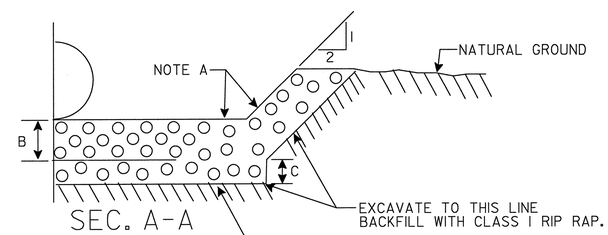


NOTE A IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A-A SUCH THAT Q_{des} /(CROSS SECTION AREA AT SEC. A-A) = SPECIFIED EXIT VELOCITY.

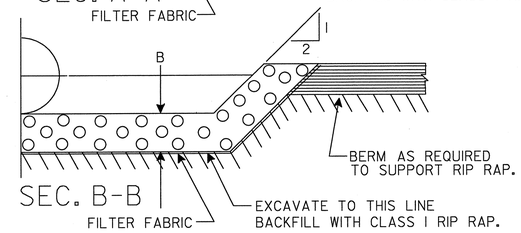
NOTE B WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIPRAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

HALF PLAN

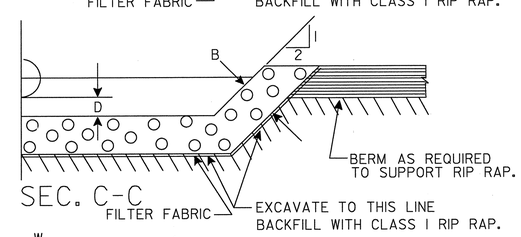




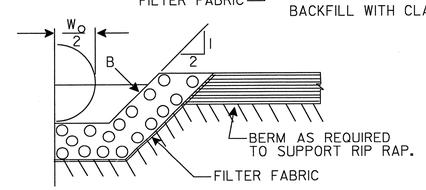
SEC. A-A



SEC. B-B



SEC. C-C



SEC. D-D

NOTE:
W_O = DIAMETER FOR PIPE CULVERT
W_O = BARREL WIDTH FOR BOX CULVERT
W_O = SPAN OF PIPE-ARCH CULVERT

DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	2							
B	1							
C	0.5							
D	2							
E	1.5							
F	4							
G	10							
H	2							

*ALL DIMENSIONS APPROXIMATE IN FT.

BASIN #	LOCATION (AT OUTLET)
1	STATION 39+15 RT
2	
3	
4	
5	
6	
7	
8	

REVISIONS

8/17/99

$$$$$$$$SYSTIME$$$$
$$$$$$$$DGN$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4006	2-1

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

USE STD NO. 840.16 FOR GRATE AND FRAME UNLESS OTHERWISE INDICATED.

CONSTRUCT WITH PIPE CROWNS MATCHING.

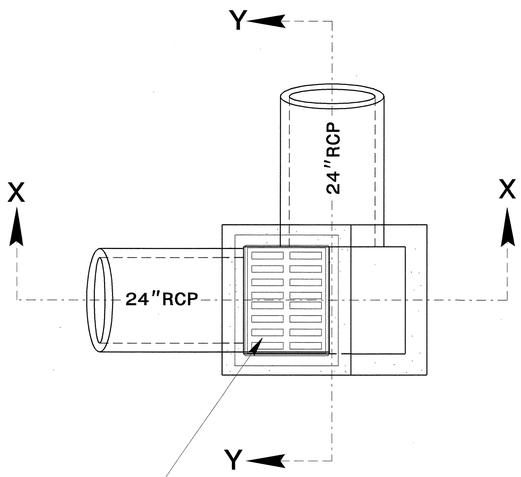
INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.

INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.

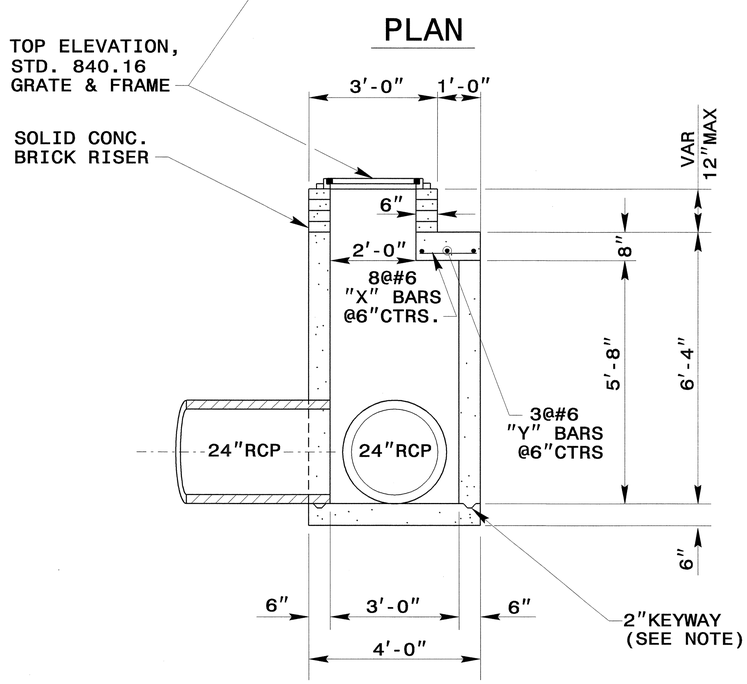
CHAMFER ALL EXPOSED CORNERS 1".

BILL OF MATERIALS

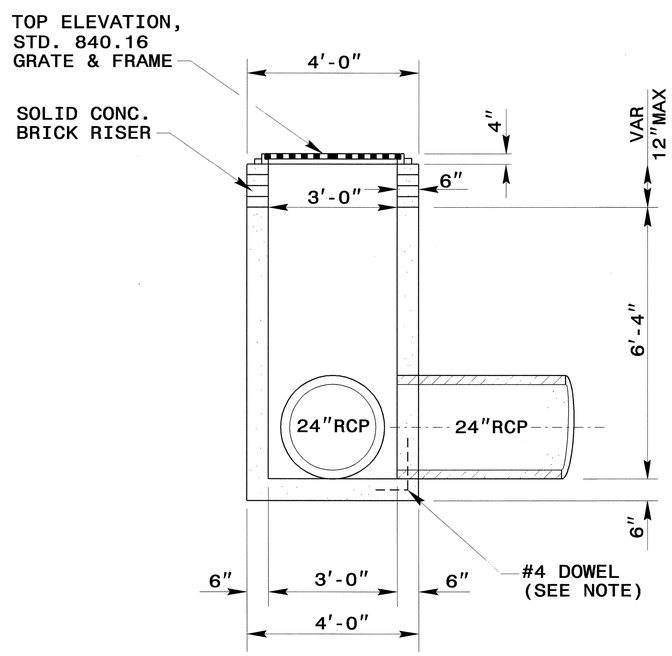
BAR	NO.	SIZE	LENGTH	WEIGHT
X	8	#6	1'-2"	16
Y	3	#6	3'-8"	17
TOTAL REINF. STEEL(lbs)				32
CONC. (cu. yds)				2.2
DEDUCTIONS FOR PIPES				
2-24" RCP				-0.17
DROP INLET OPENING				-0.15
TOTAL CONC. (cu. yds)				1.88



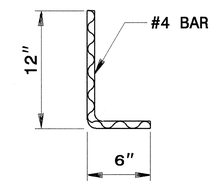
PLAN



SECTION X-X



SECTION Y-Y



DOWEL

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOMESLEY
5/28/09

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

DROP INLET DETAIL

ORIGINAL BY: rnbritt DATE: 04-30-04
MODIFIED BY: rnbritt DATE: 05-04-09
CHECKED BY: DATE: 5/6/09
FILE SPEC.: details/rnbritt/english/urban/u4006.dgn

5/14/99

$$$$SYSTIME$$$$ $$$$JOBNAME$$$$ $$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET
U 4006	2-J

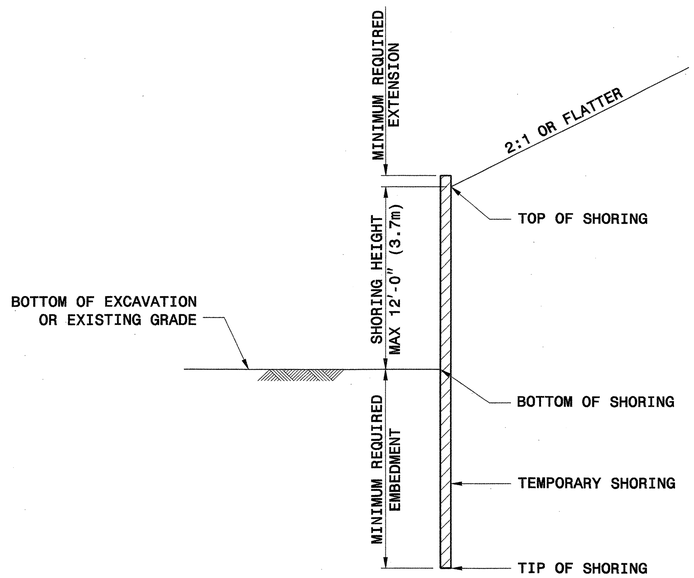
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

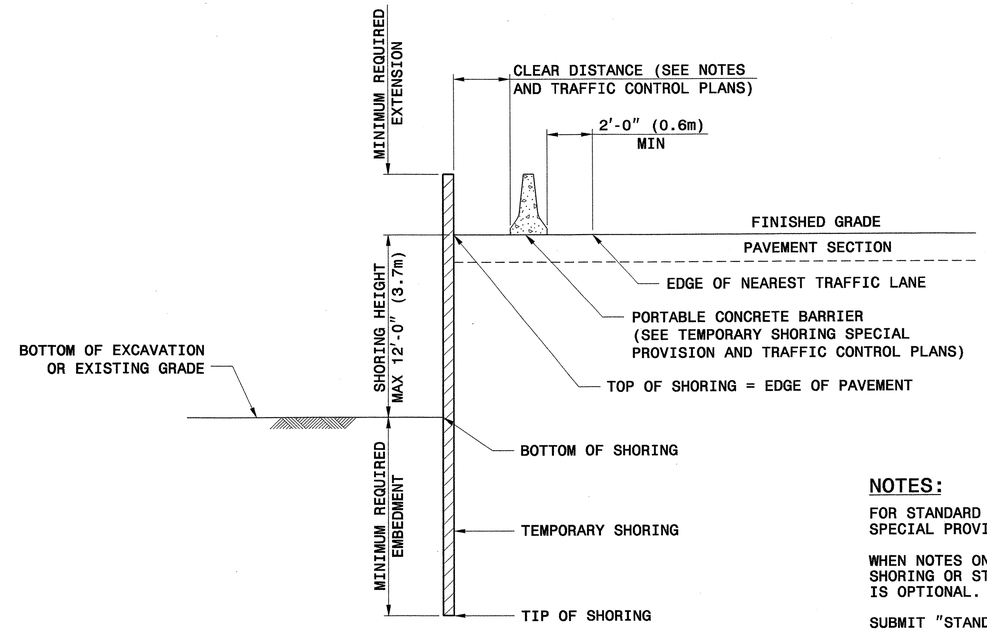
Scott A. Hidden 3/29/07
SIGNATURE DATE

ENGINEER

SIGNATURE DATE



SLOPE CASE



SURCHARGE CASE

GROUNDWATER CONDITION	SHORING HEIGHT FT (m)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H PILES WITH TIMBER LAGGING			SHEET PILES		H PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT FT (m)	MINIMUM REQUIRED SECTION MODULUS IN^3/FT (cm^3/m)	MINIMUM REQUIRED EMBEDMENT FT (m)			MINIMUM REQUIRED EMBEDMENT FT (m)	MINIMUM REQUIRED SECTION MODULUS IN^3/FT (cm^3/m)	MINIMUM REQUIRED EMBEDMENT FT (m)		
				HP 10x42 (HP 250x62)	HP 12x53 (HP 310x79)	HP 14x73 (HP 360x108)			HP 10x42 (HP 250x62)	HP 12x53 (HP 310x79)	HP 14x73 (HP 360x108)
GROUNDWATER ELEVATION BELOW TIP OF SHORING	< 6 (1.8)	7.5 (2.3)	3.0 (161)	8.0 (2.4)	8.0 (2.4)	8.0 (2.4)	11.0 (3.4)	10.0 (538)	9.5 (2.9)	9.5 (2.9)	9.5 (2.9)
	7 (2.1)	8.5 (2.6)	4.5 (242)	9.5 (2.9)	9.5 (2.9)	9.5 (2.9)	12.0 (3.7)	12.0 (645)	10.5 (3.2)	10.5 (3.2)	10.5 (3.2)
	8 (2.4)	10.0 (3.0)	6.5 (349)	10.5 (3.2)	10.5 (3.2)	10.5 (3.2)	12.5 (3.8)	14.0 (753)	11.5 (3.5)	11.5 (3.5)	11.5 (3.5)
	9 (2.7)	11.0 (3.4)	9.5 (511)	--	12.0 (3.7)	12.0 (3.7)	13.5 (4.1)	16.5 (887)	--	12.5 (3.8)	12.5 (3.8)
	10 (3.0)	12.5 (3.8)	13.0 (699)	--	--	13.5 (4.1)	14.0 (4.3)	19.5 (1048)	--	13.5 (4.1)	13.5 (4.1)
	11 (3.4)	13.5 (4.1)	17.0 (914)	--	--	14.5 (4.4)	15.0 (4.6)	22.5 (1210)	--	--	14.5 (4.4)
	12 (3.7)	15.0 (4.6)	21.5 (1156)	--	--	16.0 (4.9)	16.0 (4.9)	25.5 (1371)	--	--	15.5 (4.7)
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND TIP OF SHORING	< 6 (1.8)	11.5 (3.5)	4.5 (242)	11.5 (3.5)	11.5 (3.5)	11.5 (3.5)	16.0 (4.9)	12.0 (645)	13.0 (4.0)	13.0 (4.0)	13.0 (4.0)
	7 (2.1)	13.0 (4.0)	7.0 (376)	13.0 (4.0)	13.0 (4.0)	13.0 (4.0)	17.0 (5.2)	14.5 (780)	14.5 (4.4)	14.5 (4.4)	14.5 (4.4)
	8 (2.4)	15.0 (4.6)	10.0 (538)	--	15.0 (4.6)	15.0 (4.6)	18.0 (5.5)	17.0 (914)	--	15.5 (4.7)	15.5 (4.7)
	9 (2.7)	17.0 (5.2)	14.0 (753)	--	17.0 (5.2)	17.0 (5.2)	19.0 (5.8)	20.0 (1075)	--	17.0 (5.2)	17.0 (5.2)
	10 (3.0)	18.5 (5.6)	19.5 (1048)	--	--	18.5 (5.6)	20.0 (6.1)	23.5 (1263)	--	--	18.5 (5.6)
	11 (3.4)	20.5 (6.3)	26.0 (1398)	--	--	--	21.0 (6.4)	28.0 (1505)	--	--	20.0 (6.1)
	12 (3.7)	22.5 (6.9)	33.0 (1774)	--	--	--	22.0 (6.7)	33.0 (1774)	--	--	21.5 (6.6)

NOTE: MINIMUM REQUIRED EXTENSION IS 6" (150mm) FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" (800 mm) FOR "SURCHARGE CASE WITH TRAFFFIC IMPACT".

NOTES:

FOR STANDARD TEMPORARY SHORING, SEE TEMPORARY SHORING SPECIAL PROVISION.

WHEN NOTES ON PLANS DO NOT PROHIBIT STANDARD TEMPORARY SHORING OR STANDARD SHORING, STANDARD TEMPORARY SHORING IS OPTIONAL.

SUBMIT "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 14 DAYS BEFORE BEGINNING SHORING CONSTRUCTION. UP TO THREE LOCATIONS MAY BE INCLUDED ON EACH SELECTION FORM.

STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING CONDITIONS:
1) MAXIMUM SHORING HEIGHT IS 12'-0" (3.7m).
2) TRAFFIC SURCHARGE IS 240 PSF (11.5 KPA) MAXIMUM OR BACKSLOPE IS 2:1 (H:V) OR FLATTER.
3) BOTTOM OF EXCAVATION OR EXISTING GRADE IN FRONT OF SHORING IS 6:1 (H:V) SLOPE OR FLATTER.
4) H PILE SPACING IS 6'-0" (1.8m).
5) H PILE EMBEDMENT DEPTHS ARE FOR DRIVEN PILES.
6) TIMBER LAGGING IS A MINIMUM OF 3" (75mm) THICK.

STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
TOTAL UNIT WEIGHT = 120 PCF (18.8 KN/M^3)
FRICTION ANGLE = 30 DEGREES
COHESION = 0 PSF (0 KPA)
GROUNDWATER IS ASSUMED TO BE BELOW BOTTOM OF SHORING.

DO NOT USE STANDARD TEMPORARY SHORING WHEN THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE THE BOTTOM OF SHORING.

DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS PRESENT WITHIN THE EMBEDMENT DEPTH.

VERIFY GROUNDWATER ELEVATION BEFORE BEGINNING SHORING CONSTRUCTION.

IF THE CLEAR DISTANCE AVAILABLE IS LESS THAN THE MINIMUM REQUIRED IN ACCORDANCE WITH THE TRAFFIC CONTROL PLANS, SET THE BARRIER AGAINST THE TRAFFIC SIDE OF THE SHORING AND USE THE "SURCHARGE CASE WITH TRAFFIC IMPACT".

AT THE CONTRACTOR'S OPTION, H PILE EMBEDMENT DEPTHS FOR PILES SET IN DRILLED HOLES MAY BE REDUCED BY 25%. FOR PILE EXCAVATION, SEE TEMPORARY SHORING SPECIAL PROVISION.

CONTROL DRAINAGE DURING CONSTRUCTION IN THE VICINITY OF THE SHORING. COLLECT AND DIRECT RUNOFF AWAY FROM SHORING.

CONTACT THE ENGINEER IF MINIMUM REQUIRED EMBEDMENT IS NOT ACHIEVED.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.01

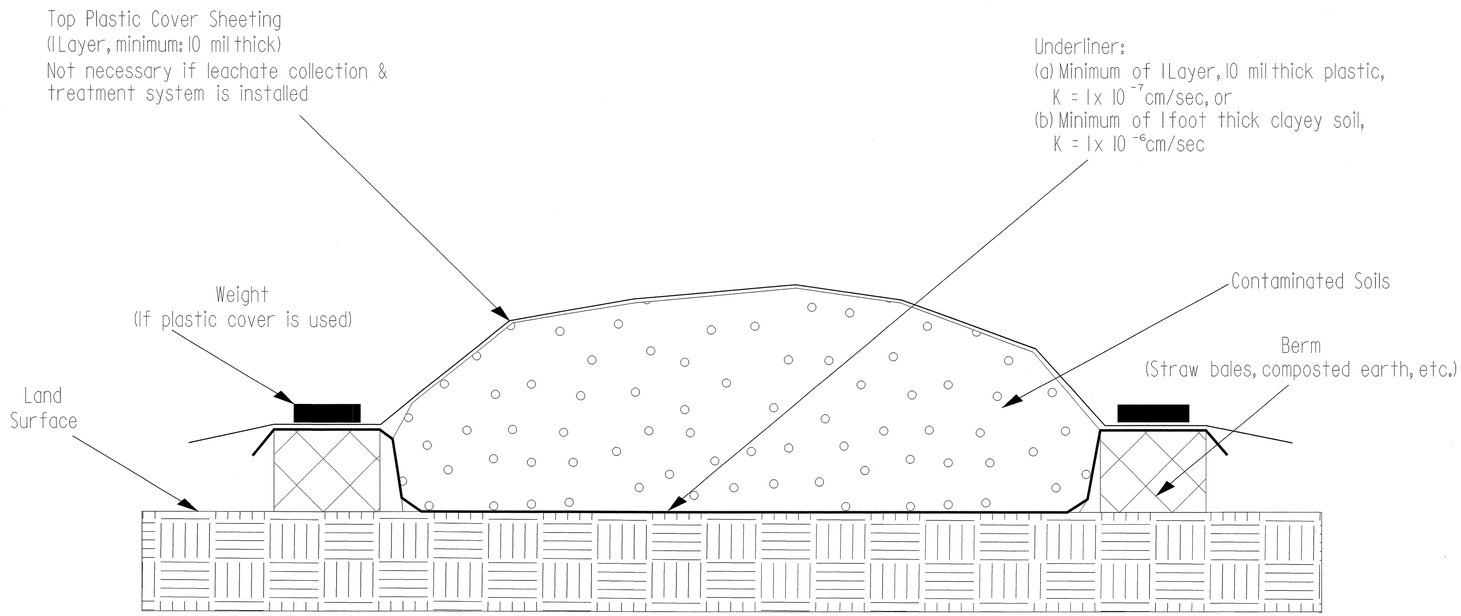
STANDARD TEMPORARY SHORING

DATE: 2-20-07

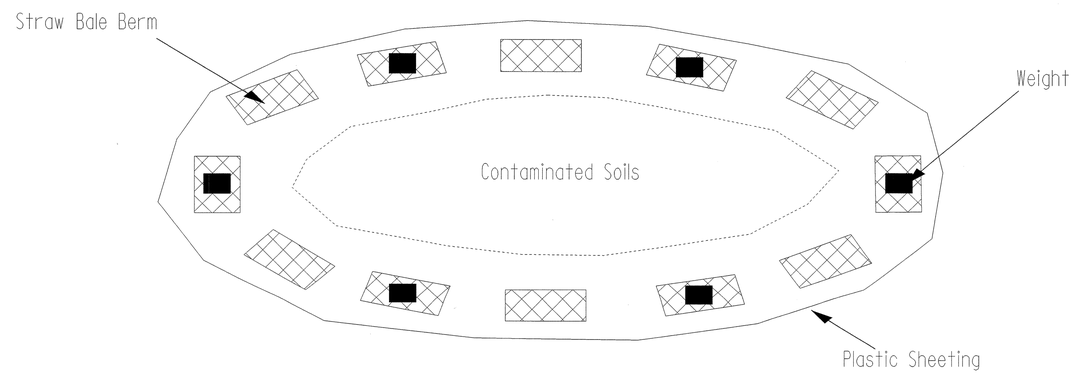
PROJECT REFERENCE NO.	SHEET
U-4006	2-K

Detail for Temporary Containment of Petroleum Contaminated Soil

Cross-Section View



Map View

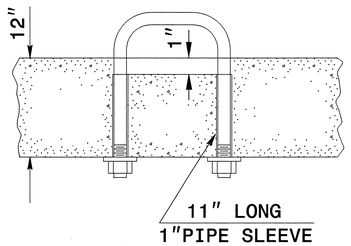


NORTH CAROLINA PROFESSIONAL SEAL 031499 ENGINEER CYRUS F. PARKER

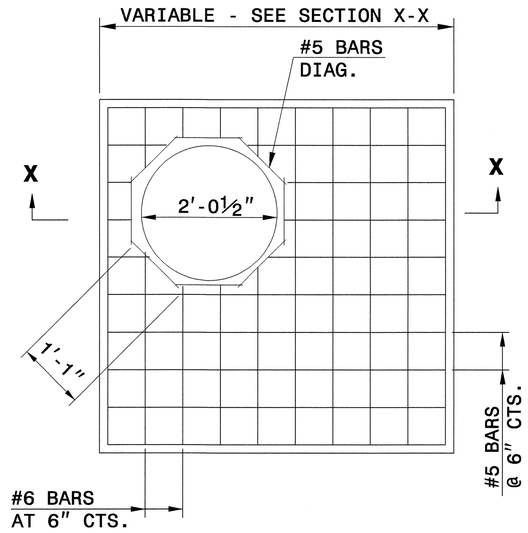
5/28/09

PROJECT REFERENCE NO.	SHEET NO.
U4006	2L

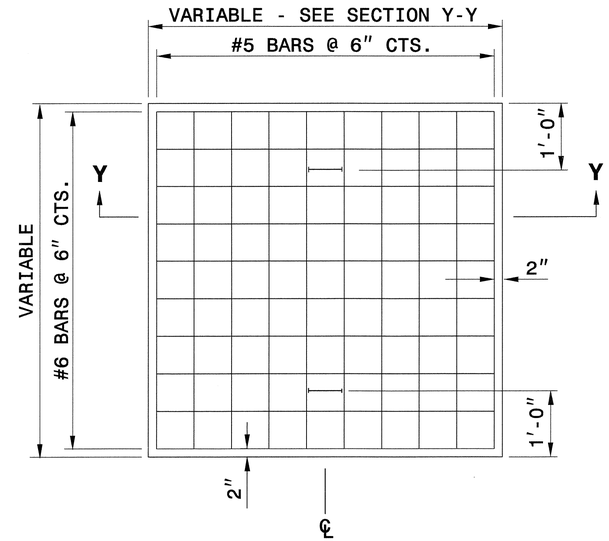
5/14/99



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

FIELD VERIFY THE DIMENSIONS FOR THE EXISTING BOXES.

BILL OF MATERIALS

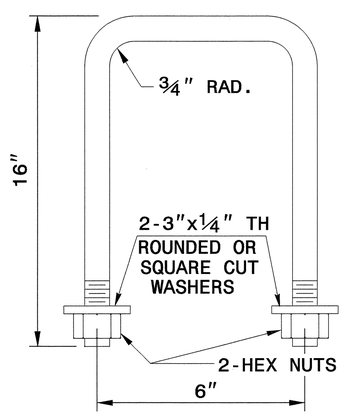
MASONRY	
TOP SLAB CONCRETE CLASS "A"	.037YDS^3 PER FT^2
BRICK MASONRY	.025YDS^3 PER FT^2
REINFORCING STEEL	7.64LBS PER FT^2

MANHOLE OPTION QUANTITIES

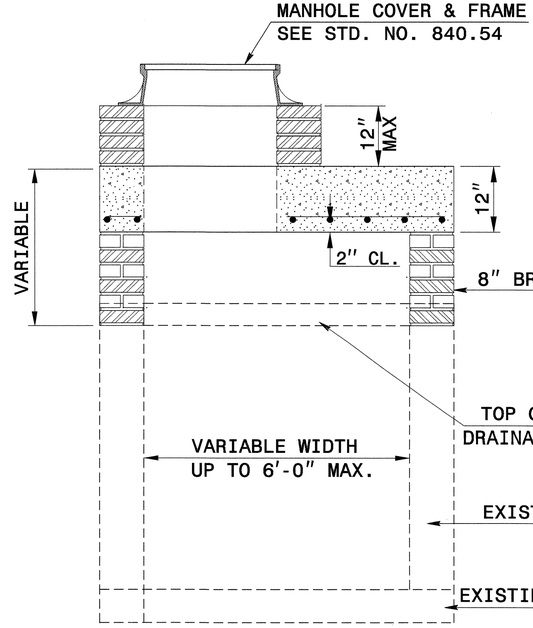
SIZE	QTY.	LENGTH	REINF. STEEL LBS.
#5 DIAG.	8	1'-1"	9.04

NOTE:
CONCRETE AND REINFORCING STEEL QUANTITIES BASED ON SQUARE FOOT AREA OF THE PROPOSED TOP SLAB FOR THE EXISTING DRAINAGE STRUCTURE.

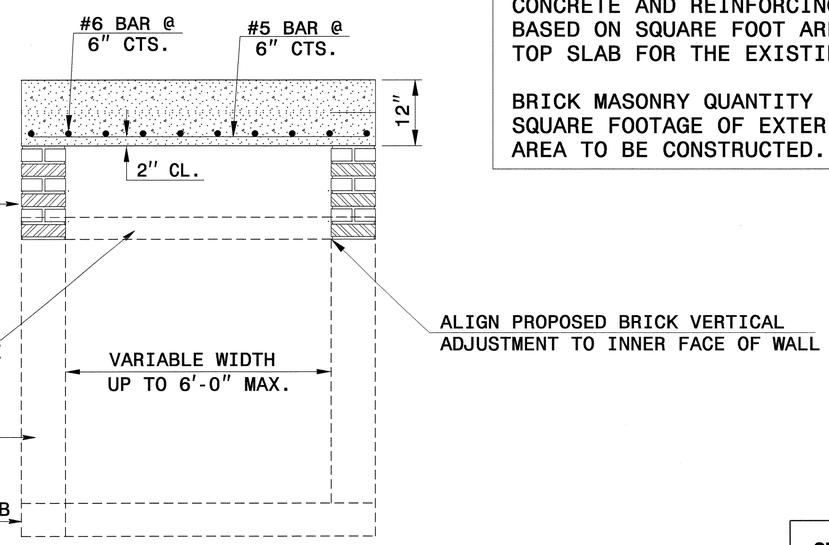
BRICK MASONRY QUANTITY IS BASED ON THE TOTAL SQUARE FOOTAGE OF EXTERIOR WALL SURFACE AREA TO BE CONSTRUCTED.



DETAIL OF HANDLE



SECTION X-X



SECTION Y-Y

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
5/20/09

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

DETAIL TO CONVERT EXISTING DROP INLET OR CATCH BASIN TO TRAFFIC BEARING JUNCTION BOX (MANHOLE OPTIONAL)

ORIGINAL BY: T.S.S. DATE: FEB.2000
MODIFIED BY: E.E.M. DATE: NOV.2001
CHECKED BY: DATE: 5/20/09
FILE SPEC.: w:\ericward\usr\details\stand\boxtotbjbe.dgn

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8/17/99

REVISIONS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202163

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
0022000000-E	225	50,000	CY	UNCLASSIFIED EXCAVATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ************ (20+89.07)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ************ (20+90.21)
0036000000-E	225	1,725	CY	UNDERCUT EXCAVATION
0106000000-E	230	230,000	CY	BORROW EXCAVATION
0134000000-E	240	725	CY	DRAINAGE DITCH EXCAVATION
0141000000-E	240	850	LF	BERM DITCH CONSTRUCTION
0156000000-E	250	3,230	SY	REMOVAL OF EXISTING ASPHALT PAVEMENT
0177000000-E	250	2,075	SY	BREAKING OF EXISTING ASPHALT PAVEMENT
0192000000-N	260	9	HR	PROOF ROLLING
0195000000-E	265	650	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	650	SY	FABRIC FOR SOIL STABILIZATION
0199000000-E	SP	1,428	SF	TEMPORARY SHORING
0223000000-E	SP	100	SY	ROCK PLATING
0234000000-E	SP	50	CY	GENERIC GRADING ITEM EXCAVATION & STOCKPILING OF CONTAMINATED SOIL
0312000000-E	300	9,270	TON	SELECT MATERIAL, CLASS IV
0318000000-E	300	670	TON	FOUNDATION CONDITIONING MATE-RIAL, MINOR STRS
0343000000-E	310	24	LF	15" SIDE DRAIN PIPE
0384000000-E	310	160	LF	30" RC PIPE CULVERTS, CLASS III
0402000000-E	310	36	LF	48" RC PIPE CULVERTS, CLASS III
0448000000-E	310	380	LF	****" RC PIPE CULVERTS, CLASS IV (60")
0714000000-E	310	324	LF	18" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
0726000000-E	310	48	LF	30" BIT COAT CS PIPE CULVERTS, TYPE B 0.079" THICK
0807000000-E	310	4	EA	18" BIT COAT CS PIPE ELBOWS, T YPE B 0.064" THICK
0809000000-E	310	2	EA	30" BIT COAT CS PIPE ELBOWS, T YPE B 0.079" THICK
0938000000-E	320	30	LF	**" X **" CS STRUCTURAL PLATE PIPE ARCH, ** GAUGE (190" X 118", 7)
0986000000-E	SP	636	LF	GENERIC PIPE ITEM 15" DUCTILE IRON PIPE
0986000000-E	SP	248	LF	GENERIC PIPE ITEM 24" DUCTILE IRON PIPE
0986000000-E	SP	124	LF	GENERIC PIPE ITEM 30" DUCTILE IRON PIPE
0995000000-E	340	621	LF	PIPE REMOVAL
1000000000-E	462	90	SY	6" SLOPE PROTECTION
1011000000-N	500	Lump Sum		FINE GRADING
1044000000-E	501	21,850	SY	LIME TREATED SOIL (SLURRY METHOD)
1066000000-E	501	220	TON	LIME FOR LIME TREATED SOIL
1110000000-E	510	500	TON	STABILIZER AGGREGATE
1176000000-E	542	14,570	SY	SOIL CEMENT BASE
1187000000-E	542	401	TON	PORTLAND CEMENT FOR SOIL CE-MENT BASE
1209000000-E	543	5,470	GAL	ASPHALT CURING SEAL
1220000000-E	545	200	TON	INCIDENTAL STONE BASE
1297000000-E	607	19,520	SY	MILLING ASPHALT PAVEMENT, ***" DEPTH (1-1/2")
1489000000-E	610	8,650	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1491000000-E	610	1,500	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C

ItemNumber	Sec #	Quantity	Unit	Description
1498000000-E	610	9,700	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1503000000-E	610	575	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1519000000-E	610	8,400	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1523000000-E	610	1,300	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1560000000-E	620	1,425	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1565000000-E	620	80	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 70-22
1693000000-E	654	200	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
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)
2143000000-E	818	15	TON	BLOTTING SAND
2209000000-E	838	6	CY	ENDWALLS
2220000000-E	838	4	CY	REINFORCED ENDWALLS
2253000000-E	840	3	CY	PIPE COLLARS
2264000000-E	840	0.3	CY	PIPE PLUGS
2286000000-N	840	106	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	88	LF	MASONRY DRAINAGE STRUCTURES
2354000000-N	840	1	EA	FRAME WITH GRATE, STD 840.22
2364000000-N	840	17	EA	FRAME WITH TWO GRATES, STD 840.16
2365000000-N	840	8	EA	FRAME WITH TWO GRATES, STD 840.22
2374000000-N	840	5	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	26	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	33	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	17	EA	FRAME WITH COVER, STD 840.54
2440000000-N	852	13	EA	CONCRETE TRANSITIONAL SECTION FOR CATCH BASIN
2451000000-N	852	17	EA	CONCRETE TRANSITIONAL SECTION FOR DROP INLETS
2542000000-E	846	5,900	LF	1'-6" CONCRETE CURB & GUTTER
2549000000-E	846	14,990	LF	2'-6" CONCRETE CURB & GUTTER
2591000000-E	848	8,030	SY	4" CONCRETE SIDEWALK
2605000000-N	848	35	EA	CONCRETE WHEELCHAIR RAMPS
2612000000-E	848	160	SY	6" CONCRETE DRIVEWAY
2655000000-E	852	1,280	SY	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)
2710000000-N	854	2	EA	CONCRETE BARRIER TRANSITION SECTION
2724000000-E	857	275	LF	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED
2830000000-N	858	16	EA	ADJUSTMENT OF MANHOLES
2845000000-N	858	15	EA	ADJUSTMENT OF METER BOXES OR VALVE BOXES
2860000000-N	859	1	EA	CONVERT EXISTING CATCH BASIN TO JUNCTION BOX
3000000000-N	SP	2	EA	IMPACT ATTENUATOR UNIT, TYPE 350
3030000000-E	862	3,162.5	LF	STEEL BM GUARDRAIL
3105000000-N	862	4	EA	STEEL BM GUARDRAIL TERMINAL SECTIONS
3150000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS
3210000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	5	EA	GUARDRAIL ANCHOR UNITS, TYPE 350

ItemNumber	Sec #	Quantity	Unit	Description
3317000000-N	862	6	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3360000000-E	863	125	LF	REMOVE EXISTING GUARDRAIL
3536000000-E	866	11,225	LF	CHAIN LINK FENCE, 48" FABRIC
3542000000-E	866	940	EA	METAL LINE POSTS FOR 48" CHAIN LINK FENCE
3548000000-E	866	57	EA	METAL TERMINAL POSTS FOR 48" CHAIN LINK FENCE
3557000000-E	866	1,000	LF	ADDITIONAL BARBED WIRE
3628000000-E	876	313	TON	RIP RAP, CLASS I
3635000000-E	876	3	TON	RIP RAP, CLASS II
3649000000-E	876	1	TON	RIP RAP, CLASS B
3656000000-E	876	2,489	SY	FILTER FABRIC FOR DRAINAGE
3659000000-N	SP	4	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4072000000-E	903	565	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4102000000-N	904	35	EA	SIGN ERECTION, TYPE E
4108000000-N	904	1	EA	SIGN ERECTION, TYPE F
4116100000-N	904	2	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
4155000000-N	907	18	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4238000000-N	907	2	EA	DISPOSAL OF SIGN, D, E OR F
4400000000-E	1110	1,534	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	639	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	538	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	7	EA	FLASHING ARROW PANELS, TYPE C
4420000000-N	1120	4	EA	CHANGEABLE MESSAGE SIGN
4422000000-N	1120	99	DAY	CHANGEABLE MESSAGE SIGN (SHORT TERM)
4430000000-N	1130	660	EA	DRUMS
4445000000-E	1145	352	LF	BARRICADES (TYPE III)
4450000000-N	1150	1,200	HR	FLAGGER
4465000000-N	1160	4	EA	TEMPORARY CRASH CUSHIONS
4480000000-N	1165	2	EA	TMIA
4490000000-E	1170	1,996	LF	PORTABLE CONCRETE BARRIER (ANCHORED)
4507000000-E	SP	1,064	LF	WATER FILLED BARRIER
4650000000-N	1251	814	EA	TEMPORARY RAISED PAVEMENT MARKERS
4686000000-E	1205	15,517	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4695000000-E	1205	740	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4697000000-E	1205	2,620	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS)
4710000000-E	1205	740	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4721000000-E	1205	8	EA	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)
4725000000-E	1205	118	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4770000000-E	1205	113	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (III)
4770000000-E	1205	4,465	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)
4810000000-E	1205	53,715	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	344	LF	PAINT PAVEMENT MARKING LINES (8")
4835000000-E	1205	314	LF	PAINT PAVEMENT MARKING LINES (24")
4845000000-N	1205	14	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-E	1205	6,063	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4875000000-N	1205	6	EA	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS
4900000000-N	1251	253	EA	PERMANENT RAISED PAVEMENT MARKERS
4915000000-E	1264	3	EA	7' U-CHANNEL POSTS

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

STATE OF NORTH CAROLINA
SUMMARY OF QUANTITIES

PROJECT REFERENCE No.	SHEET No.
U-4006	3 (2 of 2)

ItemNumber	Sec #	Quantity	Unit	Description
4955000000-N	1264	3	EA	OBJECT MARKERS (END OF ROAD)
5030000000-N	1403	6	EA	HIGH MOUNT LUMINAIRES ******** (1000W HPS)
5070000000-N	1405	1	EA	STANDARD FOUNDATION ********* (TYPE M1)
5090000000-N	1406	8	EA	LIGHT STANDARD LUMINAIRES, TYPE RDW 400W HPS
5155000000-E	1409	100	LF	ELECTRICAL DUCT, TYPE BD, SIZE ***** (3")
5160000000-E	1409	50	LF	ELECTRICAL DUCT, TYPE JA, SIZE ***** (6")
5175000000-E	1410	150	LF	** #6 W/G FEEDER CIRCUIT (2)
5180000000-E	1410	550	LF	** #4 W/G FEEDER CIRCUIT (2)
5185000000-E	1410	150	LF	** #2 W/G FEEDER CIRCUIT (2)
5190000000-E	1410	150	LF	********** FEEDER CIRCUIT (2 #1 W/G)
5210000000-E	1410	100	LF	** #6 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1.5")
5215000000-E	1410	250	LF	** #4 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1.5")
5220000000-E	1410	100	LF	** #2 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1.5")
5225000000-E	1410	100	LF	** #1 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1.5")
5240000000-N	1411	3	EA	ELECTRICAL JUNCTION BOXES ********** (PC18)
5270000000-N	SP	2	EA	GENERIC LIGHTING ITEM 1000W LAMP HPS
5270000000-N	SP	10	EA	GENERIC LIGHTING ITEM 400W LAMP HPS
5270000000-N	SP	1	EA	GENERIC LIGHTING ITEM RELOCATE LIGHT STANDARD
5271000000-N	SP	16	HR	GENERIC LIGHTING ITEM FAULT TROUBLESHOOT & LOCATE
5326200000-E	1510	146	LF	12" WATER LINE
5648000000-N	1515	8	EA	RELOCATE WATER METER
5653100000-E	1515	1	EA	RELOCATE **" DCV BACK-FLOW PREVENTOR (2")
5672000000-N	1515	5	EA	RELOCATE FIRE HYDRANT
5691300000-E	1520	40	LF	8" SANITARY GRAVITY SEWER
5768000000-N	1520	5	EA	SANITARY SEWER CLEAN-OUT
5815000000-N	1530	6	EA	REMOVE WATER METER
5815500000-N	1530	2	EA	REMOVE FIRE HYDRANT
5882000000-N	SP	5	EA	GENERIC UTILITY ITEM REMOVE SANITARY SEWER C/O
5882000000-N	SP	3	EA	GENERIC UTILITY ITEM REMOVE VALVE
6000000000-E	1605	12,000	LF	TEMPORARY SILT FENCE
6006000000-E	1610	1,375	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	2,325	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	2,150	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	34	ACR	TEMPORARY MULCHING
6018000000-E	1620	650	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	4.5	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	2,750	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	22	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	2,400	LF	SAFETY FENCE
6030000000-E	1630	9,100	CY	SILT EXCAVATION
6036000000-E	1631	12,000	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	137	SY	COIR FIBER MAT
6038000000-E	SP	2,100	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	6,175	LF	1/4" HARDWARE CLOTH

ItemNumber	Sec #	Quantity	Unit	Description
6071010000-E	SP	50	LF	WATTLE
6071020000-E	SP	24	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	3,025	LF	COIR FIBER BAFFLES
6071050000-E	SP	6	EA	**" SKIMMER (1-1/2")
6084000000-E	1660	35	ACR	SEEDING & MULCHING
6087000000-E	1660	39	ACR	MOWING
6090000000-E	1661	250	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	1.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	800	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	23.5	TON	FERTILIZER TOPDRESSING
6114000000-N	SP	13	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	36	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.25	ACR	REFORESTATION
6133000000-N	SP	Lump Sum		GENERIC EROSION CONTROL ITEM ENERGY DISSIPATOR BASIN
7000000000-E	1705	28	EA	PEDESTRIAN SIGNAL HEAD (**", ** SECTION) (16", 1 SECTION WITH COUNT-DOWN)
7060000000-E	1705	9,220	LF	SIGNAL CABLE
7120000000-E	1705	39	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7132000000-E	1705	1	EA	VEHICLE SIGNAL HEAD (12", 4 SECTION)
7144000000-E	1705	11	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)
7252000000-E	1710	2,800	LF	MESSENGER CABLE (1/4")
7264000000-E	1710	2,440	LF	MESSENGER CABLE (3/8")
7279000000-E	1715	2,965	LF	TRACER WIRE
7300000000-E	1715	3,060	LF	UNPAVED TRENCHING (**********) (1,2")
7301000000-E	1715	815	LF	DIRECTIONAL DRILL (**********) (1,2")
7324000000-N	1716	17	EA	JUNCTION BOX (STANDARD SIZE)
7348000000-N	1716	11	EA	JUNCTION BOX (OVER-SIZED, HEAVY DUTY)
7360000000-N	1720	16	EA	WOOD POLE
7372000000-N	1721	37	EA	GUY ASSEMBLY
7396000000-E	1722	10	EA	1/2" RISER WITH WEATHERHEAD
7408000000-E	1722	4	EA	1" RISER WITH WEATHERHEAD
7420000000-E	1722	15	EA	2" RISER WITH WEATHERHEAD
7430000000-N	1722	1	EA	HEAT SHRINK TUBING RETROFIT KIT
7432000000-E	1722	4	EA	2" RISER WITH HEAT SHRINK TUBING
7444000000-E	1725	6,680	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	8,870	LF	LEAD-IN CABLE (**********) (14-2)
7516000000-E	1730	9,540	LF	COMMUNICATIONS CABLE (**FIBER) (12)
7528000000-E	1730	800	LF	DROP CABLE
7540000000-N	1731	5	EA	SPLICE ENCLOSURE
7552000000-N	1731	4	EA	INTERCONNECT CENTER
7566000000-N	1733	9	EA	DELINEATOR MARKER
7575160000-E	1734	1,500	LF	REMOVE EXISTING COMMUNICATIONS CABLE
7575180000-N	1735	1	EA	CABLE TRANSFER
7624000000-N	1743	1	EA	SIGNAL PEDESTAL WITH FOUNDATION
7636000000-N	1745	5	EA	SIGN FOR SIGNALS
7684000000-N	1750	4	EA	SIGNAL CABINET FOUNDATION
7756000000-N	1751	4	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)
7780000000-N	1751	28	EA	DETECTOR CARD (TYPE 2070L)
7901000000-N	1753	4	EA	CABINET BASE EXTENDER
7980000000-N	SP	4	EA	GENERIC SIGNAL ITEM FIELD ETHERNET SWITCH

ItemNumber	Sec #	Quantity	Unit	Description
7980000000-N	SP	1	EA	GENERIC SIGNAL ITEM FURNISH FIELD ETHERNET SWITCH
******* BEGIN SCHEDULE AA ******* ******* (3 ALTERNATES) *******				
0366000000-E AA1	310	2,340	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA1	310	612	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E AA1	310	804	LF	24" RC PIPE CULVERTS, CLASS III
0390000000-E AA1	310	424	LF	36" RC PIPE CULVERTS, CLASS III
0396000000-E AA1	310	148	LF	42" RC PIPE CULVERTS, CLASS III
*** OR ***				
0366000000-E AA2	310	2,300	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA2	310	512	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E AA2	310	772	LF	24" RC PIPE CULVERTS, CLASS III
0390000000-E AA2	310	276	LF	36" RC PIPE CULVERTS, CLASS III
0396000000-E AA2	310	108	LF	42" RC PIPE CULVERTS, CLASS III
0536000000-E AA2	SP	40	LF	***" HDPE PIPE CULVERTS (15")
0536000000-E AA2	SP	100	LF	***" HDPE PIPE CULVERTS (18")
0536000000-E AA2	SP	32	LF	***" HDPE PIPE CULVERTS (24")
0536000000-E AA2	SP	148	LF	***" HDPE PIPE CULVERTS (36")
0536000000-E AA2	SP	40	LF	***" HDPE PIPE CULVERTS (42")
*** OR ***				
0366000000-E AA3	310	2,300	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA3	310	512	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E AA3	310	772	LF	24" RC PIPE CULVERTS, CLASS III
0390000000-E AA3	310	276	LF	36" RC PIPE CULVERTS, CLASS III
0396000000-E AA3	310	108	LF	42" RC PIPE CULVERTS, CLASS III
0540000000-E AA3	SP	40	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (15", 0.064")
0540000000-E AA3	SP	100	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (18", 0.064")
0540000000-E AA3	SP	32	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (24", 0.064")
0540000000-E AA3	SP	148	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (36", 0.079")
0540000000-E AA3	SP	40	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (42", 0.079")
******* END SCHEDULE AA *******				

NC1D-AARCHER

COMPUTED BY: STS DATE: 8/12/2008

CHECKED BY: JEC DATE: 10/28/2008

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-4006	3-A

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	THICKNESS OR GAUGE	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) SIZE	THICKNESS OR GAUGE	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D SIZE	DUCTILE IRON PIPE(SEALED DRAINAGE SYSTEM. SEE SPECIAL PROVISION) SIZE	CLASS IV R.C. PIPE SIZE
								12" 15" 18" 24" 30" 36" 42" 48"		12" 15" 18" 24" 30" 36" 42" 48"	.064 .064 .064 .064 .079 .079 .109 .109	12" 15" 18" 24" 30" 36" 42" 48"	15" 24" 30"	36"
16+05.00	CL	1		916.09										
16+05.00		1	2		911.2	909.66		64						
10+95.00	-Y- CL	2A		912.5	900.2	900.2								
16+40.00	LT	2		918.15										
16+40.00		2	Out		909.00	908.66						64		
16+05.00		3	1		911.47	911.2		32						
16+05.00	RT	3		915.2										
17+70.00	CL	4		920.24										
17+70.00		4	5		916.74	915.70		36						
17+70.00		5	3		915	911.47		160						
17+70.00	RT	5		919.6										
19+40.00	LT	6		909.7										
19+40.00		6	7		897.48	894.5								
20+00.00	LT	7		902.5										
20+20.00	LT	7	7A		894.5	894.2								
20+20.00	LT	7A		904.5										
20+20.00	RT	7A	7B		894.2	893.7								
20+20.00	RT	7B		903.8										
20+00.00		7B	7C		893.7	892.10								
20+00.00	RT	7C		900.6										
20+00.00	RT	7C	Out		892.07	891.58								
24+80.00	RT	8		916.4										
24+80.00		8	9		913.2	912.5		44						
24+80.00	CL	9		917.20										
24+80.00		9	10		912.5	912		32						
24+80.00	LT	10		917.5										
24+80.00		10	Out		910.5	873.00								
29+20.00	CL	12		896.3										
29+20.00		12	13		891.81	892.11		44						
29+20.00	LT	13		894.6										
29+20.00		12	14		891.50	891.81	X	32						
29+20.00	RT	14		897.4										
29+20.00		14	15		883.00	855.25								
29+20.00	RT	15		859										
29+20.00		15	Out		855.25	855.00		12						
30+45.00	CL	16		892.3										
30+45.00		16	17		882.30	883.00		196						
30+45.00		16	Out		882.30	858.00								
32+38.00	CL	17		888.8										
32+38.00		17	18		883.00	883.70		44						
32+38.00	LT	18		887.2										
35+80.00	CL	19		883.7										
35+80.00		19	19A		879.00	877.80		120						
36+85.00	CL	19A		881.3										
36+85.00		19A	21		877.00	876.50		44						
37+00.00	LT	21		879.15										
37+00.00		21	20		876.55	875.5		136						
35+65.00	LT	20		882.3										
35+65.00	LT	20A		889.83										
35+65.00		20A	20		882.3	878.55						36		
37+00.00		21	22		874.5	875		40						
37+00.00		21	23		875.5	875		56						
36+50.00	LT	20B						48						
37+05.00	LT	22		878.3										
37+60.00		IN	23		872.5	872.3		16						
37+60.00	LT	23		879.08										
37+60.00		23	OUT		872	866.41	X		160					
38+60.00	RT	24		EXIST.										
SHEET TOTALS								756	208	192	160	180	324	100	116

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.	C.S.P.	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	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	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. FRAME WITH ONE 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	J.B. STD. 840.31 OR 840.32	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	DISSIPATER BOX	RISER	T.B.J.B. STD. 840.34	ENERGY DISSIPATOR BASIN SHEET 2-H	CONVERT CB TO JB DETAIL 2-L	DROP INLET SHEET 2-I	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
16+05.00						1								1		1	1																										
16+05.00																																											
10+95.00						1								1		1	1																										
16+40.00						1			1		1																																
16+40.00																																											
16+05.00																																											
16+05.00						1			1			1																															
17+70.00						1								1		1	1																										
17+70.00																																											
17+70.00																																											
17+70.00						1			1			1																															
19+40.00						1	5	2.2									1				1	1																			162		
19+40.00																																											
20+00.00						1	3										1				1																						
20+20.00																																											
20+20.00						1	5	0.3									1				1																						
20+20.00																																									216		
20+20.00						1	5	0.1									1				1																						
20+00.00																																											
20+00.00						1	3.5										1				1																						
20+00.00																																									52		
24+80.00						1			1		1																																
24+80.00																																											
24+80.00						1			1		1		1																														
24+80.00																																											
24+80.00						1	2		1			1																															
24+80.00																																								2@18"				
29+20.00						1			1			1		1																													
29+20.00																																											
29+20.00						1			1			1																															
29+20.00																																											
29+20.00						1	9.4		1		1																																
29+20.00																																								2@18"				
29+20.00						1																			1			1															
29+20.00																																											
30+45.00						1	5		1			1		1																													
30+45.00																																											
30+45.00																																											
32+38.00						1	0.8		1			1		1																													
32+38.00																																											
32+38.00						1			1			1																															
35+80.00						1			1			1		1																													
35+80.00																																											
36+85.00						1							1		1	1																											
36+85.00																																											
37+00.00						1																								1			1										
37+00.00																																											
35+65.00						1			1			1																															
35+65.00						1											1		1																								
35+65.00																																											
37+00.00																																											
37+00.00																																											
36+50.00																																											
37+05.00						1			1			1																															
37+60.00																																											
37+60.00						1	2		1			1																															
37+60.00																																											
38+60.00																																									63		REMOVE 2 EXIST. CB
SHEET TOTALS						28	40.7	2.6	16		4	12	4	5	4	4	5	1			6	1			1			2			1					4@18"			493	

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

NC1L-LFISHER,10/30/2008,G:\TRA\605014_U4006\U-4006\Roadway\Estimate\Final\Drainage_summaries.xls

COMPUTED BY:	STS	DATE:	8/12/2008
CHECKED BY:	JEC	DATE:	10/28/2008

NC1D-AARCHER

PROJECT NO.	SHEET NO.
U-4006	3-B

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) 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	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	DUCTILE IRON PIPE(SEALED DRAINAGE SYSTEM. SEE SPECIAL PROVISION) 15"	24"	30"	CLASS IV R.C. PIPE 36"
39+15.00	RT	24A																																	
11+95.00	-Y2- CL	25		871.7																														
		25	25A		868.45	867.95			16																										
11+95.00	-Y2- RT	25A		871.7																														
		25A	26		866.6	859			144																										
13+50.00		26		862.3																														
		26	26A		852.72	852.37					8																								
13+50.00	-Y2- LT	26A		862.5																														
15+50.00	-Y2- RT	27		856.8																														
		27	28		853.5	853				60																									
		IN	27		857.5	853.5				32																									
16+15.00		28		856																														
		28	29		853	852.5				36																									
		IN	28		855.42	853.5				32																									
16+50.00		29		855.4																														
12+00.00	-Y2- RT	29A																																	
		29	Out		851.4	851					68																								
		IN	29		854.5	851.4					32																								
39+10.00	CL	30		879.7																														
		30	31		872	872.4	X			44																									
		30	Out		872	867.82	X			80																									
39+10.00	LT	31		878																														
		IN	31		872.5	872.4				20																									
41+50.00	CL	32		880.5																														
		32	33		874.5	875			44																										
41+50.00	LT	33		878.9																														
		32	Out		873.5	865			100																										
41+50.00	CL	34		880.5																														
		32	34		876	876.5			76																										
43+95.00	CL	35		881.9																														
		35	36		876.46	875.17					36																								
		IN	35		877.04	876.46					64																								
43+45.00	CL	35A		881.5																														
		35	35A		877.5	876.5			48																										
43+80.00	RT	36		880.5																														
43+75.00	RT	37		881.3																														
		37	38		876	877			44																										
43+35.00	RT	38		880.5																														
14+20.00	-Y3- RT	39		891.9																														
		39	40		887.53	887.63			20																										
14+20.00	-Y3- RT	40		891.85																														
14+65.00	-Y3- RT	41		889.43																														
		41	42		886	886.5			20																										
14+65.00	-Y3- RT	42		889.1																														
14+65.00	-Y3- CL	41A		889.9																														
		41	41A		886	886.94			44																										
14+20.00	-Y3- LT	43		892.2				8																										
12+05.00	-Y3- RT	43A		904.6																														
12+05.00	-Y3- RT	43B		904.6																														
		43A	43B		897.5	897			8																										
12+20.00	-Y3- LT	43C		903.96																														
		43B	43C		897	897.5			72																										
17+40.00	-Y3- LT	44		EXIST.																														
17+40.00	-Y3- LT	46		876.1																														
17+40.00	-Y3- RT	45		876.42																														
		46	Out		871.00	869.50																				40										
18+65.00	-Y3- RT	47A		875.3																														
18+65.00	-Y3- RT	47		874.94																														
		47	48		868	868.69			8																										
18+65.00	-Y3- RT	48		874.8																														
		47	47A		869	870			28																										
SHEET TOTALS								680	304	208														40										

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	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.	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	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	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. FRAME WITH ONE 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	J.B. STD. 840.31 OR 840.32	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	DISSIPATER BOX	RISER	T.B.J.B. STD. 840.34	ENERGY DISSIPATOR BASIN SHEET 2-H	CONVERT CB TO JB DETAIL 2-L	DROP INLET SHEET 2-I	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
39+15.00	24A																																		1							
11+95.00	25						1							1		1	1																							
	25	25A																																								
11+95.00	25A						1	0.1		1		1																												
	25A	26																																								
13+50.00	26						1			1		1																												
	26	26A																																					0.55			
13+50.00	26A																																			1						REMOVE 22' OF EXIST. 24" PIPE
15+50.00	27						1			1		1																												
	27	28																																								
	IN	27																																								
16+15.00	28						1			1		1																												
	28	29																																								
	IN	28																																								
16+50.00	29						1			1		1																												
12+00.00	29A		24																																					20	
	29	Out																																								
	IN	29																																								
39+10.00	30						1	2.7						1		1	1																							
	30	31																																								
	30	Out																																								
39+10.00	31						1	0.6		1	1																													
	IN	31																																								
41+50.00	32						1	2						1		1	1																							
	32	33																																								
41+50.00	33						1			1		1																												
	32	Out																																								
41+50.00	34						1							1		1	1																							
	32	34																																								
43+95.00	35						1	0.44						1		1	1																							
	35	36																																								
	IN	35																																								
43+45.00	35A						1							1		1	1																							
	35	35A																																								
43+80.00	36																																					0.55		32	
43+75.00	37						1	0.3		1			1																											
	37	38																																								
43+35.00	38						1			1			1																											
14+20.00	39						1																							1			1								REMOVE EXIST. CB
	39	40																																								
14+20.00	40						1			1		1																												
14+65.00	41						1																							1			1								
	41	42																																								
14+65.00	42						1			1		1																												
14+65.00	41A						1							1		1	1																							
	41	41A																																								
14+20.00	43						1			1			1																									0.4			REMOVE EXIST. CB
12+05.00	43A						1	2.1		1		1																												
12+05.00	43B						1	2.6																						1			1								
	43A	43B																																								
12+20.00	43C						1	1.5		1			1																											
	43B	43C																																								
17+40.00	44																																								0.13		REMOVE EXIST. CB
17+40.00	46						1	0.1		1			1																											
17+40.00	45						1																							1			1								REMOVE EXIST. CB
	46	Out																																								
18+65.00	47A						1	0.3						1		1	1																							
18+65.00	47						1	1.94																						1			1								REMOVE EXIST. CB
	47	48																																								
18+65.00	48						1	1.11		1	1																													
	47	47A																																								
SHEET TOTALS			24					29	15.79		16	2	9	5	8		8	8													5			5	1	1			1.5	0.13	52	

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:	STS	DATE:	8/12/2008
CHECKED BY:	JEC	DATE:	10/28/2008

PROJECT NO.	SHEET NO.
U-4006	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) 12"	15"	18"	24"	30"	36"	42"	48"
18+65.00	-Y3- LT	49		874.94											
		49	50		867.36	869.59			20						
18+70.00	-Y3- LT	50		874.6											
19+45.00	-Y3- RT	51		875.6											
47+50.00	CL	52		884.6											
		52	53		880.30	879.20					32				
47+50.00	RT	53		883.1											
		53	Out		880.3	879.2					104				
		52	54		881	880.3					160				
49+15.00		54		885.9											
		54	55		881.42	881.13					76				
49+45.00		55		886.3											
		55	56		882	883.19									
49+45.00		56		890											
		55	57		881.5	882.75			80						
50+25.00	LT	57		885.9											
51+65.00	LT	58		887											
		58	59		879.5	879	X							84	
		58	In		882	883								24	
51+65.00	RT	59		886.8											
		59	Out		879.00	878.04									
53+75.00	CL	61		888.9											
53+60.00	RT	60		888.1											
		60	61		883.5	884.4							48		
		60	Out		883.5	883									
		60	63		883.5	884.4			68						
		61	In		884.1	888.07							48		
		61	62		884.4	885.8			52						
54+25.00	CL	62		889.3											
		63		888.3											
57+14.00	CL	64		891.4											
57+14.00		64	65		887.8	886			44						
57+14.00	RT	65		889.7											
57+14.00		65	67		886	885			208						
59+30.00	CL	66		892.7											
		66	67		889.01	888.35									
59+30.00	RT	67		892											
		67	68A		885	884.5									
60+00.00	RT	68A		893											
		68A	Out		884	878.4	X								
60+15.00		68		893.1											
		68	70		889	889.5									
60+45.00	CL	70		893.3											
		70	70A		889.5	890.6									
61+50.00		70A		894.1											
		68A	68		884.5	889									
SHEET TOTALS									472		372		96	108	

STATION	FROM	TO	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" .064	15" .064	18" .064	24" .064	24"	30" .079	30"	36" .079	36"	42" .109	42"	48" .109	48"	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	DUCTILE IRON PIPE(SEALED DRAINAGE SYSTEM. SEE SPECIAL PROVISION) 15"	24"	30"	CLASS IV R.C. PIPE 36"
18+65.00	49																										
	49	50																									
18+70.00	50																										
19+45.00	51																										
47+50.00	52																										
	52	53																									
47+50.00	53																										
	53	Out																									
	52	54																									
49+15.00	54																										
	54	55																									
49+45.00	55																										
	55	56																	32								
49+45.00	56																										
	55	57																									
50+25.00	57																										
51+65.00	58																										
	58	59																									
	58	In																									
51+65.00	59																										
	59	Out																				40					
53+75.00	61																										
53+60.00	60																										
	60	61																									
	60	Out																			32						
	60	63																									
	61	In																									
	61	62																									
54+25.00	62																										
	63																										
57+14.00	64																										
57+14.00	64	65																									
57+14.00	65																										
57+14.00	65	67																									
59+30.00	66																										
	66	67																						44			
59+30.00	67																										
	67	68A																						68			
60+00.00	68A																										
	68A	Out						48																			
60+15.00	68																										
	68	70																						32			
60+45.00	70																										
	70	70A																						108			
61+50.00	70A																										
	68A	68																								36	
SHEET TOTALS								48											32		32	40		252		36	

STATION	FROM	TO	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.	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	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
18+65.00	49							1	2.58							
	49	50														
18+70.00	50							1			1			1		
19+45.00	51							1			1			1		
47+50.00	52							1							1	
	52	53														
47+50.00	53							1			1		1			
	53	Out														
	52	54														
49+15.00	54							1	0.6						1	
	54	55														
49+45.00	55							1			1	1				
	55	56														
49+45.00	56															
	55	57														
50+25.00	57							1			1		1			
51+65.00	58							1	2.5		1		1			
	58	59														
	58	In														
51+65.00	59							1	2.8		1			1		
	59	Out														
53+75.00	61							1			1			1		1
53+60.00	60							1			1			1		
	60	61														
	60	Out														
	60	63														
	61	In														
	61	62														
54+25.00	62							1			1			1		1
	63							1			1			1		
57+14.00	64							1			1			1		1
57+14.00	64	65														
57+14.00	65							1			1			1		
57+14.00	65	67														
59+30.00	66							1			1			1		1
	66	67														
59+30.00	67							1	2		1			1		
	67	68A														
60+00.00	68A							1	4		1			1		
	68A	Out														
60+15.00	68							1			1		1			1
	68	70														
60+45.00	70							1			1		1			1
	70	70A														
61+50.00	70A							1			1		1			1
	68A	68														
SHEET TOTALS								22	14.48		19	1	6	12	2	7

STATION	FROM	TO	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. FRAME WITH ONE 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	J.B. STD. 840.31 OR 840.32	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	DISSIPATER BOX	RISER	T.B.J.B. STD. 840.34	ENERGY DISSIPATOR BASIN SHEET 2-H	CONVERT CB TO JB DETAIL 2-L	DROP INLET SHEET 2-I	RETAIN AND EXTEND EXIST. BARREL(SEE SPECIAL PROVISION)	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
18+65.00	49																1			1									REMOVE EXIST. CB
	49	50																											
18+70.00	50																												
19+45.00	51																												REMOVE EXIST. CB
47+50.00	52			1																			1						
	52	53																											
47+50.00	53																												
	53	Out																											
	52	54																											
49+15.00	54			1																			1						
	54	55																											
49+45.00	55																												
	55	56																											
49+45.00	56																												
	55	57																											
50+25.00	57																												
51+65.00	58																												
	58	59																											
	58	In																											
51+65.00	59																												
	59	Out																											
53+75.00	61																												
53+60.00	60																												
	60	61																											
	60	Out																											
	60	63																											
	61	In																											
	61	62																											
54+25.00	62																												
	63																												
57+14.00	64																												
57+14.00	64	65																											
57+14.00	65																												
57+14.00	65	67																											
59+30.00	66																												
	66	67																											
59+30.00	67																												
	67	68A																											
60+00.00	68A																												
	68A	Out																							2@30"				
60+15.00	68																												
	68	70																											
60+45.00	70																										0.145		
	70	70A																											
61+50.00	70A																												
	68A	68																											
SHEET TOTALS				2													1			1			2		2@30"		0.145		

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

RD238312

COMPUTED BY:	STS	DATE:	8/12/2008
CHECKED BY:	JEC	DATE:	10/28/2008

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-4006	3-D

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"
61+50.00	LT	70B		892.6											
		68	69		886	887									
60+40.00	LT	69		892.57											
		69	In		887	887.5									
		70B	69		889.00	888.00									
64+70.00	CL	71		897.9											
64+70.00		71	72		892	892.7									
64+70.00	LT	72		896.7											
64+70.00		72	73		894.00	899.00									
64+70.00		71	74		890.5	881.65									
64+70.00	RT	74													
64+70.00		71	75		893.8	895									
64+70.00	LT	73		900											
66+05.00	CL	75		902.8											
67+00.00		75	75A		899.5	903									
67+00.00	CL	75A		907.5											
		75A	75B		903	903.4									
67+00.00	RT	75B		906.9											
14+20.00	-Y4- RT	76		918.5											
14+20.00		76	77		911.24	909.62			168						
15+90.00	-Y4- RT	77		912.4											
14+65.00	-Y4- LT	78		917.4											
14+65.00		78	79		914.20	914.05			8						
14+65.00	-Y4- LT	79		917.4											
15+80.00	-Y4- LT	80		912.64											
14+45.00	-Y5- RT	81		917.1											
		81	82		914.35	914.7			52						
14+45.00	-Y5- RT	82		917.7											
12+50.00	-Y5- RT	82A							68						
		81	81A		914.35	914.5			40						
14+15.00	-Y5- RT	81A		916											
		81	81B		914.35	913.77			20						
14+70.00	-Y5- RT	81B		EXIST.											
17+70.00	-Y4- RT	83		905.2											
		83	83A		900.5	900.2			20						
17+70.00	-Y4- RT	84		904.5											
17+70.00	-Y4- RT	83A		904.8											
		83A	84		900	900.2			12						
18+40.00	-Y4- RT	85		911.2											
19+10.00	-Y4- RT	86		902.8											
19+10.00		86	87		898.57	898.8			4						
19+10.00	-Y4- RT	87		902.8											
19+10.00	-Y4- LT	88		903											
19+50.00	-Y4- RT	89		903											
19+70.00	-Y4- LT	90		903.1											
19+70.00		90	Out		893.32	GRD									24
19+15.00	-Y4- RT	91		903.19											12
SHEET TOTALS									392						36
GRAND TOTALS									2300	512	772	160	276	108	36
SAY															

STATION	FROM	TO	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" .064	15" .064	18" .064	24" .064	24"	30" .079	30"	36" .079	36"	42" .109	42"	48" .109	48"	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"
GRAND TOTALS					324			48									40	100	32		148	40	

STATION	FROM	TO	DUCTILE IRON PIPE(SEALED DRAINAGE SYSTEM. SEE SPECIAL PROVISION) 15"	24"	30"	CLASS IV R.C. PIPE 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.	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	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
61+50.00	70B											1			1		1			
	68	69			52															
60+40.00	69											1	0.57		1		1			
	69	In			36															
	70B	69	108																	
64+70.00	71											1	2.4		1		1			1
64+70.00	71	72		48																
64+70.00	72											1			1		1			
64+70.00	72	73		48																
64+70.00	71	74		152								1								
64+70.00	71	75	136																	
64+70.00	73											1	1							
66+05.00	75											1							1	
67+00.00	75	75A	96																	
67+00.00	75A											1							1	
	75A	75B	44																	
67+00.00	75B											1			1			1		
14+20.00	76											1	2.3		1		1			
15+90.00	77											1								
14+65.00	78											1			1			1		
14+65.00	79											1								
15+80.00	80											1								
14+45.00	81											1			1		1			
14+45.00	82											1			1			1		
14+15.00	81A											1								
14+70.00	81B											1								
17+70.00	83											1							1	
17+70.00	84											1			1		1			
17+70.00	83A											1								
18+40.00	85											1			1			1		
19+10.00	86											1								
19+10.00	87											1			1	1				
19+10.00	88											1			1	1				
19+50.00	89											1								
19+70.00	90											1	4.78							
19+70.00	90	Out								6										
SHEET TOTALS			384	248	88					6		27	11.05		13	2	7	4	3	1
GRAND TOTALS			636	248	124		24			6		106	82.02	2.6	64	5	26	33	17	13
SAY													85							

STATION	FROM	TO	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. FRAME WITH ONE 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	J.B. STD. 840.31 OR 840.32	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	DISSIPATER BOX	RISER	T.B.J.B. STD. 840.34	ENERGY DISSIPATOR BASIN SHEET 2-H	CONVERT CB TO JB DETAIL 2-L	DROP INLET SHEET 2-I	
64+70.00	74															1	1							
64+70.00	73					1			1															
66+05.00	75		1	1																				
67+00.00	75A		1	1																				
15+90.00	77																1			1				
14+65.00	79																1			1				
15+80.00	80																1			1				
14+15.00	81A					1			1															
14+70.00	81B																1			1				
17+70.00	83		1	1																				
17+70.00	83A																1			1				
19+10.00	86																1			1				
19+50.00	89																1			1				
19+70.00	90																1			1				
SHEET TOTALS			3	3		2			2							1	9			8				
GRAND TOTALS			15	17	5	3			8	1			1			1	17			15	1	1	2	

STATION	FROM	TO	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
15+90.00	77						REMOVE EXIST. CB
14+65.00	79						REMOVE EXIST. CB
15+80.00	80						REMOVE EXIST. CB
12+50.00	82A					68	
14+70.00	81B					8	REMOVE EXIST. CB
19+10.00	86						REMOVE EXIST. CB
19+50.00	89						REMOVE EXIST. CB
19+70.00	90						REMOVE EXIST. CB
19+15.00	91			1.0126			
SHEET TOTALS				1.0126		76	
GRAND TOTALS			4@18"	2.5152	0.275	621	
SAY			2@30"	3	0.3		

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

HY244577

COMPUTED BY:	STS	DATE:	8/12/2008
CHECKED BY:	JEC	DATE:	10/28/2008

PROJECT NO.	SHEET NO.
U-4006	3-E

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

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 IV R.C. PIPE 54"	60"	66"	72"	78"	84"		
28+00.00	-L-	11	Out		861.12	852.31			380						
18+70.00	-Y3- LT & RT														
SHEET TOTALS								0	380	0	0	0	0	0	0
SAY															

STATION	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 54" .109	54" .138	54" .168	SHOP ELON-GATED .138	SHOP ELON-GATED .168	60" .138	60" .168	66" .138	66" .168	72" .139	72" .168		STRUCTURAL PLATE PIPE 60" 12	60" 10		66" 12	66" 10		72" 12	72" 10				
28+00.00																								
18+70.00																								
SHEET TOTALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAY																								

STATION	REINFORCED ENDWALLS WITH R.C. - C.Y.	REINFORCED ENDWALLS WITH C.S. - C.Y.	MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		RETAIN AND EXTEND EXIST. BARREL(SEE SPECIAL PROVISION)													REINF. CONC. FLARED END SECTIONS NO. & SIZE			CORR. STEEL FLARED END SECTIONS NO. & Size			CORR. STEEL ELBOWS NO. & SIZE			CONC. COLLARS CL. "B" C.Y. STD. 840.72				PIPE REMOVAL LIN. FT.	REMARKS
28+00.00	3.1																																		
18+70.00									30																										
SHEET TOTALS	3.1	0	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
SAY	4																																			

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-SSMALLWOOD

COMPUTED BY: Steve Smallwood DATE: 8/13/08	PROJ. REFERENCE NO.	SHEET NO.
CHECKED BY: Thomas Archer DATE: 8/13/08	U-4006	3-F

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 STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	"N" DIST FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH APPR. END	FLARE LENGTH TRAIL. END	W APPR. END	W TRAIL. END	ANCHORS B-77	B-83	GRAU 350	M-350	TYPE III	CAT-1	AT-1	TES	IMP. ATTEN. TYPE 350 EA	G	NG	REMOVE EXISTING GRDRAIL	SINGLE FACED CONCRETE BARRIERS	REMARKS
-L-	16+00		LT																							75		
-L-	17+12.88	20+12.88	LT	300.00				17+25.00	14	14' BERM									1	1								
-L-	18+95.56	20+09.35	MED LT	114.30				BRIDGE	2	8.75		86.25		5.75	1								1		1			
-L-	18+95.56	20+08.06	MED RT	112.5			BRIDGE		2	8.75	86.25		5.75		1													
-L-	16+10.58	20+04.33	RT	393.75			16+75.00		14	14' BERM	50		1				1		1									
-Y1-	12+59.39		CL																								170	2 TRANSITION BARRIER SECTIONS
-Y1-	9+63.00	12+13.00	RT	310.0			MSE WALL	MSE WALL	12	14' BERM	50		1		2		1									50	105	REMOVE EXISTING ANCHOR AND TIE TO EXISTING G/R
-L-	22+12.97	30+87.97	LT	875.00			30+25.00		14	14' BERM	50		1				1		1									
-L-	22+07.68	23+24.91	MED LT	117.20			BRIDGE		2	8.75	86.25		5.75		1								1		1			
-L-	22+12.41	23+24.91	MED RT	112.5				BRIDGE	2	8.75		86.25		5.75	1													
-L-	22+06.96	31+94.46	RT	987.5				31+50.00	14	14' BERM									1	1								
-L-	36+10.00		LT	25.0																		2						
-L-	35+40.00		LT	25.0																		2						
-Y3-	18+15.00	19+40.00	LT	125.0			18+65.00	18+15.00	14	14' BERM	50		1				1			1								
-Y3-	17+60.00	18+85.00	RT	125.0			18+35.00	18+85.00	14	14' BERM	50		1				1			1								
Subtotal				3622.75											6		5		4	4		4	2			125	275	
Less Anchor deductions		Quantity	Deduction (ft)	Total Deduction																								
	GRAU-350	5	50	250																								
	CAT-1	4	6.25	25																								
	TYPE III	4	18.75	75																								
	TES	4		0																								
	B-77	6	18.75	112.5																								
Total Deductions				462.5																								
Total Guardrail				3160.25											6		5		4	4		4	2			125	275	
SAY				3162.5	LF																							
							10 ADDITIONAL POSTS																					

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	Station	Station	LOC LT/RT/CL	SY
-L-	16+00.00		CL	330
-L-	35+70.00		CL	270
-Y2-	13+75.00	15+00.00	RT	210
-L-	37+85.00	39+50.00	RT	780
-L-	42+55.00	46+25.00	RT	1,305
-Y1-	11+75.00	13+30.00	CL	330
			TOTAL:	3,225
			SAY:	3,230

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

LINE	Station	Station	LOC LT/RT/CL	SY
-Y2-	11+10.00	13+75.00	RT	860
-L-	39+50.00	42+55.00	RT	1,195
			TOTAL:	2,055
			SAY:	2,075

PROJECT REFERENCE NO.	SHEET NO.
U-4006	3G

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCL. EXCAVATION	EMBT+%	BORROW	WASTE
SUMMARY #1				
-L-				
15+50.00 TO 20+06.61	126	24438	24313	0
TOTAL SUMMARY #1	126	24438	24313	0
SUMMARY #2				
-L-				
22+10.29 TO 46+29.81	18052	202076	184024	0
-Y2-				
10+35.23 TO 46+29.81	784	8229	7445	0
-SR1-				
10+16.02 TO 13+95.00	4085	0	0	4084
-Y3RT-				
10+60.00 TO 20+40.00	924	1425	501	0
TOTAL SUMMARY #2	23845	211730	191970	4084
SUMMARY #3				
-Y3LT-				
10+60.00 TO 20+40.00	1703	1995	292	0
-L-				
47+50.00 TO 68+00.00	20107	21500	1393	0
-Y4RT-				
10+00.00 TO 20+75.00	714	1273	559	0
TOTAL SUMMARY #3	22524	24768	2244	0
SUMMARY #4				
-Y4LT-				
10+00.00 TO 20+75.00	599	200	0	398
-Y5-				
11+85.00 TO 15+02.78			0	
	276	84		192
TOTAL SUMMARY #4	874	284	0	
				590
TOTAL SUMMARY #1,2,3,4	47369	261221	218527	4675
LOSS DUE TO CLEAR. & GRUB.	-2950		2950	
WASTE TO REPLACE BORROW	0	0	-4675	-4675
PROJECT TOTALS	44419	261221	216802	0
EST. TO REPLACE TOPSOIL FOR BORROW PIT			10840	
GRAND TOTALS	44419	0	227642	0
SAY	50000		230000	

Estimated -L- Pavement Structure Volume = 7028 CY
Estimated Undercut = 1725 CY
Estimated DDE = 725 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."

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-4006	3H

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	HERITAGE PROPERTY INVESTMENT LIMITED PARTNERSHIP
2	4	CROWN PLAZA OF GREENSBORO,LLC
3	4	SEARS-DAVIS INVESTMENTS,L.L.C.
4	4,5	FISEAS PARTNERSHIP
7	5	LEWIS PRESSLEY & BERTHA LEE PRESSLEY
11	5	FISEAS PARTNERSHIP
13	5	ETHEL MOREHEAD
15	5	KAY F.BOYD
16	5	HAYES MEMORIAL HOLINESS CHURCH
17	5	FISEAS PARTNERSHIP
18	5	VIRGIL SPAULDING
19	5	GLADYS SEARS
20	5,6	FISEAS PARTNERSHIP
24	5	GEORGEANA HINES
25	5	COLEN HINES
26	5	WILLIS RAY HINES
27	5,6	CITY OF GREENSBORO
30	5,6	PERCY H.SEARS
901	6,9	NCDOT (FRANK W.WALLINGTON)
31	6	FISEAS PARTNERSHIP
33	6,9	CLARA W.GREEN
34	6	FISEAS PARTNERSHIP
35	6	DEES REAL ESTATE HOLDINGS,LLC
35A	6	GUILFORD,LLC.
36	6	E.LEE JEFFERS
37	6,7,9	WESTVIEW VALLEY,A LIMITED PARTNERSHIP
38	7,8	CHARLES L.WEILL,JR.
39	7,8	HP TRIAD PROPERTIES,INC.
40	7,8	CAM PROPERTIES,LLC
41	8	K PARTNERSHIP
43	8	NOVARTIS CROP PROTECTION INC.
44	8	THE CITY OF GREENSBORO
45	8	SWING ROAD OFFICE PARK ASSOC.INC.
47	8	THE PROCTER & GAMBLE MANUFACTURING COMPANY
48	6,7	LDS,LLC.

$$$$$SYSTIME$$$$$
$$$$$DGN$$$$$
$$$$$LENHTE$$$$$

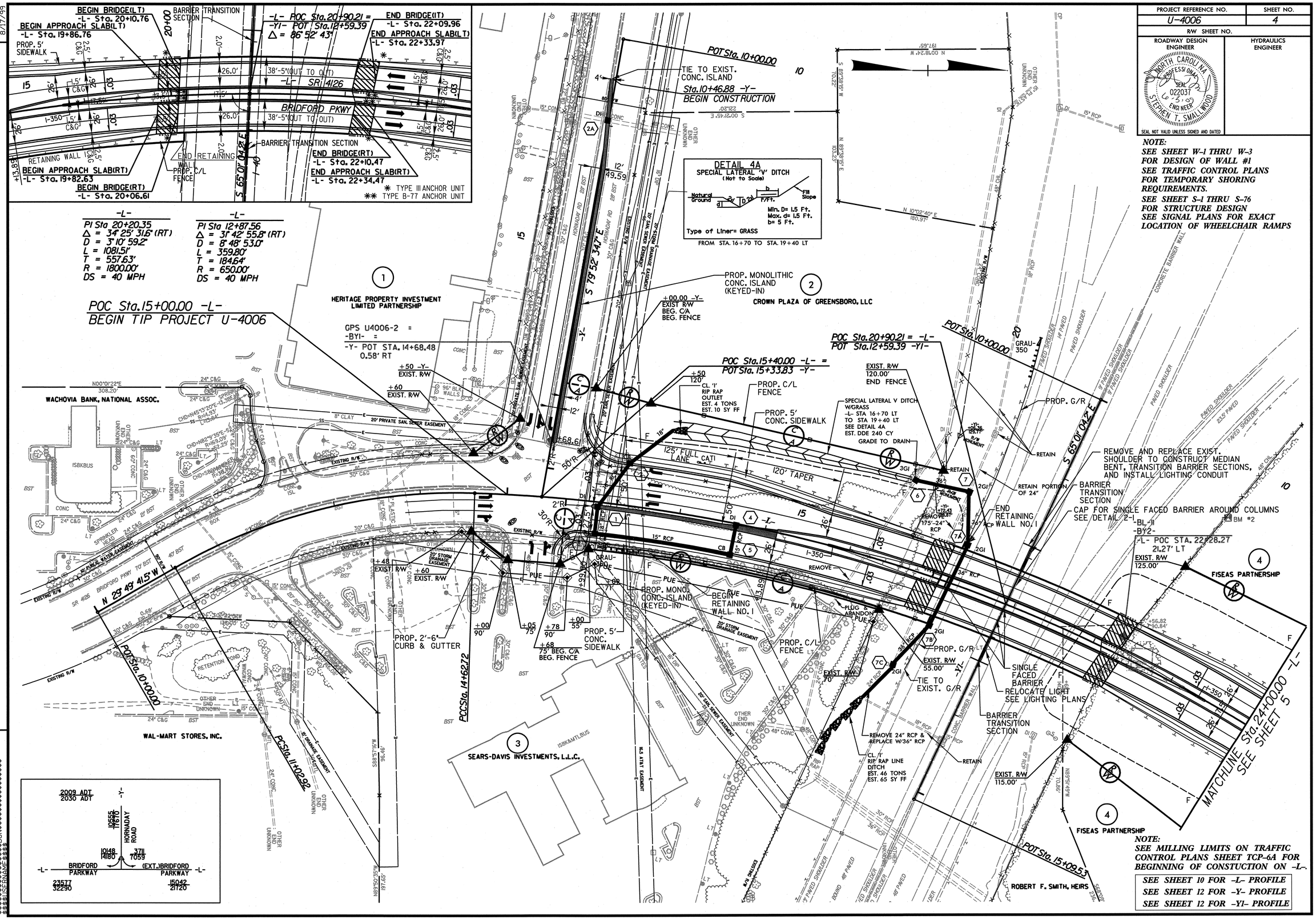
PROJECT REFERENCE NO.	SHEET NO.
U-4006	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD 6/23/09

SEAL NOT VALID UNLESS SIGNED AND DATED

REVISIONS

8/17/99



NOTE:
SEE SHEET W-1 THRU W-3 FOR DESIGN OF WALL #1
SEE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING REQUIREMENTS.
SEE SHEET S-1 THRU S-76 FOR STRUCTURE DESIGN
SEE SIGNAL PLANS FOR EXACT LOCATION OF WHEELCHAIR RAMPS

NOTE:
SEE MILLING LIMITS ON TRAFFIC CONTROL PLANS SHEET TCP-6A FOR BEGINNING OF CONSTUCTION ON -L-.

SEE SHEET 10 FOR -L- PROFILE
SEE SHEET 12 FOR -Y- PROFILE
SEE SHEET 12 FOR -Y1- PROFILE

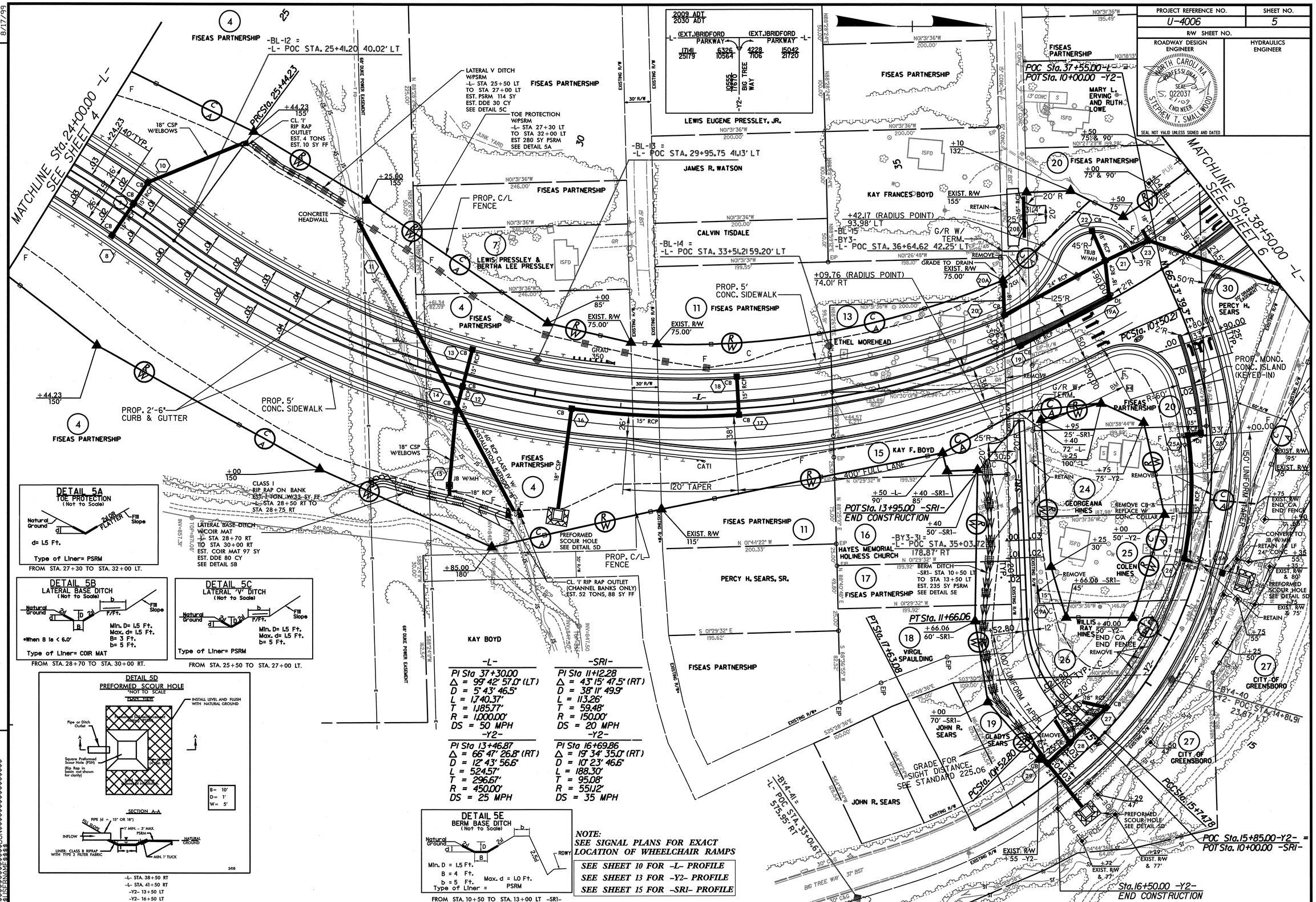
PROJECT REFERENCE NO.	SHEET NO.
U-4006	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD

SEAL NOT VALID UNLESS SIGNED AND DATED

8/17/99

REVISIONS



DETAIL 5A
TOE PROTECTION
(Not to Scale)

Type of Liner= PSRM

FROM STA. 27+30 TO STA. 32+00 LT.

DETAIL 5B
LATERAL BASE DITCH
(Not to Scale)

Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 3 Ft.
b= 5 Ft.

Type of Liner= COIR MAT

FROM STA. 28+70 TO STA. 30+00 RT.

DETAIL 5C
LATERAL 'V' DITCH
(Not to Scale)

Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
b= 5 Ft.

Type of Liner= PSRM

FROM STA. 25+50 TO STA. 27+00 LT.

DETAIL 5D
PREFORMED SCOUR HOLE
*NOT TO SCALE

-L- STA. 38+50 RT
-L- STA. 41+50 RT
-Y2- 13+50 LT
-Y2- 16+50 LT

-L-	-SRI-
PI Sta 37+30.00	PI Sta 11+12.28
Δ = 99° 42' 57.0" (LT)	Δ = 43° 15' 47.5" (RT)
D = 5° 43' 46.5"	D = 38° 11' 49.9"
L = 1,740.37'	L = 113.26'
T = 1,185.77'	T = 59.48'
R = 1,000.00'	R = 150.00'
DS = 50 MPH	DS = 20 MPH
-Y2-	**-Y2-**
PI Sta 13+46.87	PI Sta 16+69.86
Δ = 66° 47' 26.8" (RT)	Δ = 19° 34' 35.0" (RT)
D = 12° 43' 56.6"	D = 10° 23' 46.6"
L = 524.57'	L = 188.30'
T = 296.67'	T = 95.08'
R = 450.00'	R = 551.12'
DS = 25 MPH	DS = 35 MPH

DETAIL 5E
BERM BASE DITCH
(Not to Scale)

Min. D = 1.5 Ft.
B = 4 Ft.
b = 5 Ft.
Max. d = 1.0 Ft.
Type of Liner = PSRM

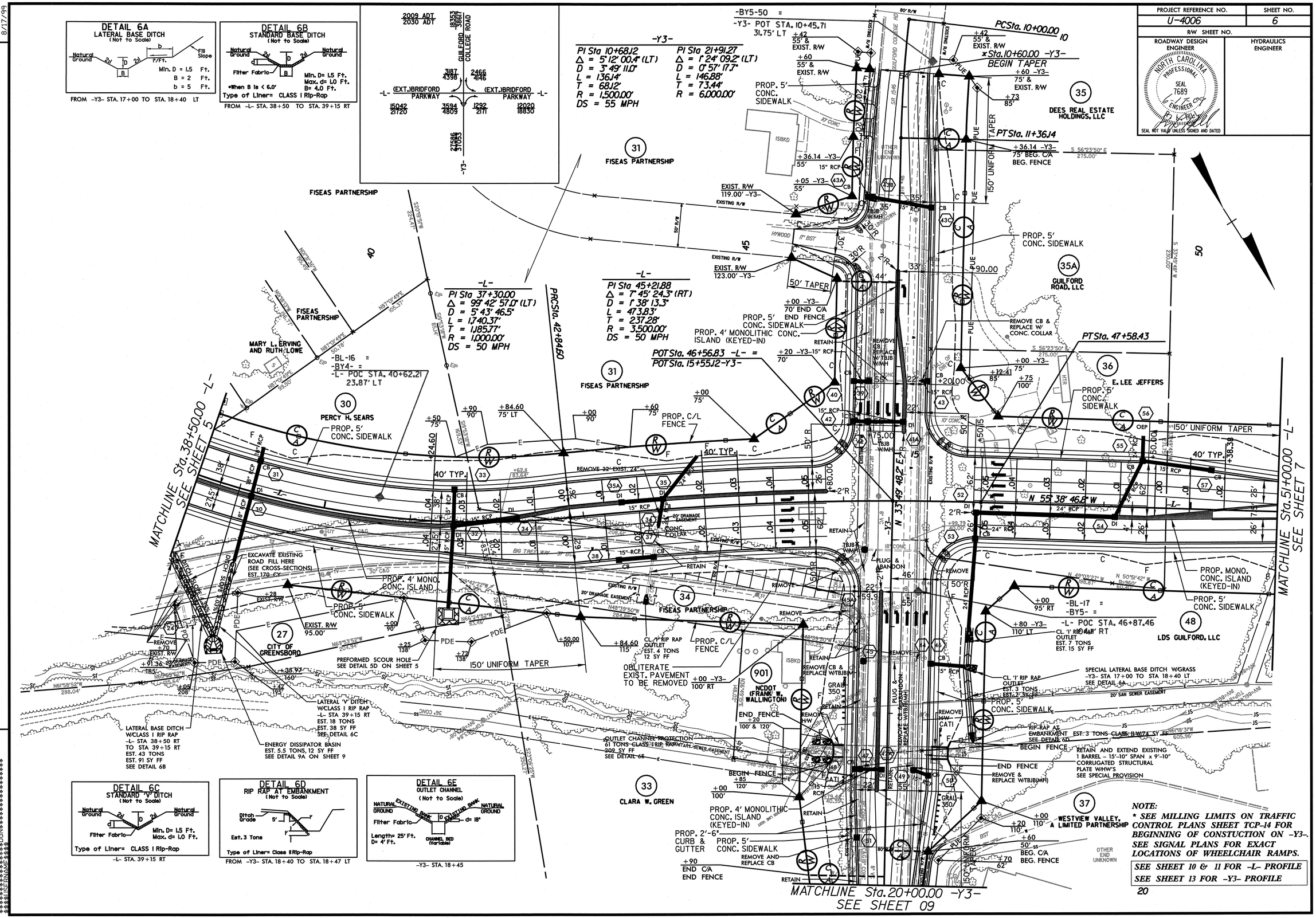
FROM STA. 10+50 TO STA. 13+00 LT -SRI-

NOTE:
SEE SIGNAL PLANS FOR EXACT LOCATION OF WHEELCHAIR RAMPS

SEE SHEET 10 FOR -L- PROFILE
SEE SHEET 13 FOR -Y2- PROFILE
SEE SHEET 15 FOR -SRI- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
U-4006	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 7689 ENGINEER 6-17-09
SEAL NOT VALID UNLESS SIGNED AND DATED



NOTE:
* SEE MILLING LIMITS ON TRAFFIC CONTROL PLANS SHEET TCP-14 FOR BEGINNING OF CONSTUCTION ON -Y3-.
SEE SIGNAL PLANS FOR EXACT LOCATIONS OF WHEELCHAIR RAMPS.

SEE SHEET 10 & 11 FOR -L- PROFILE
SEE SHEET 13 FOR -Y3- PROFILE

20

8/17/99

REVISIONS

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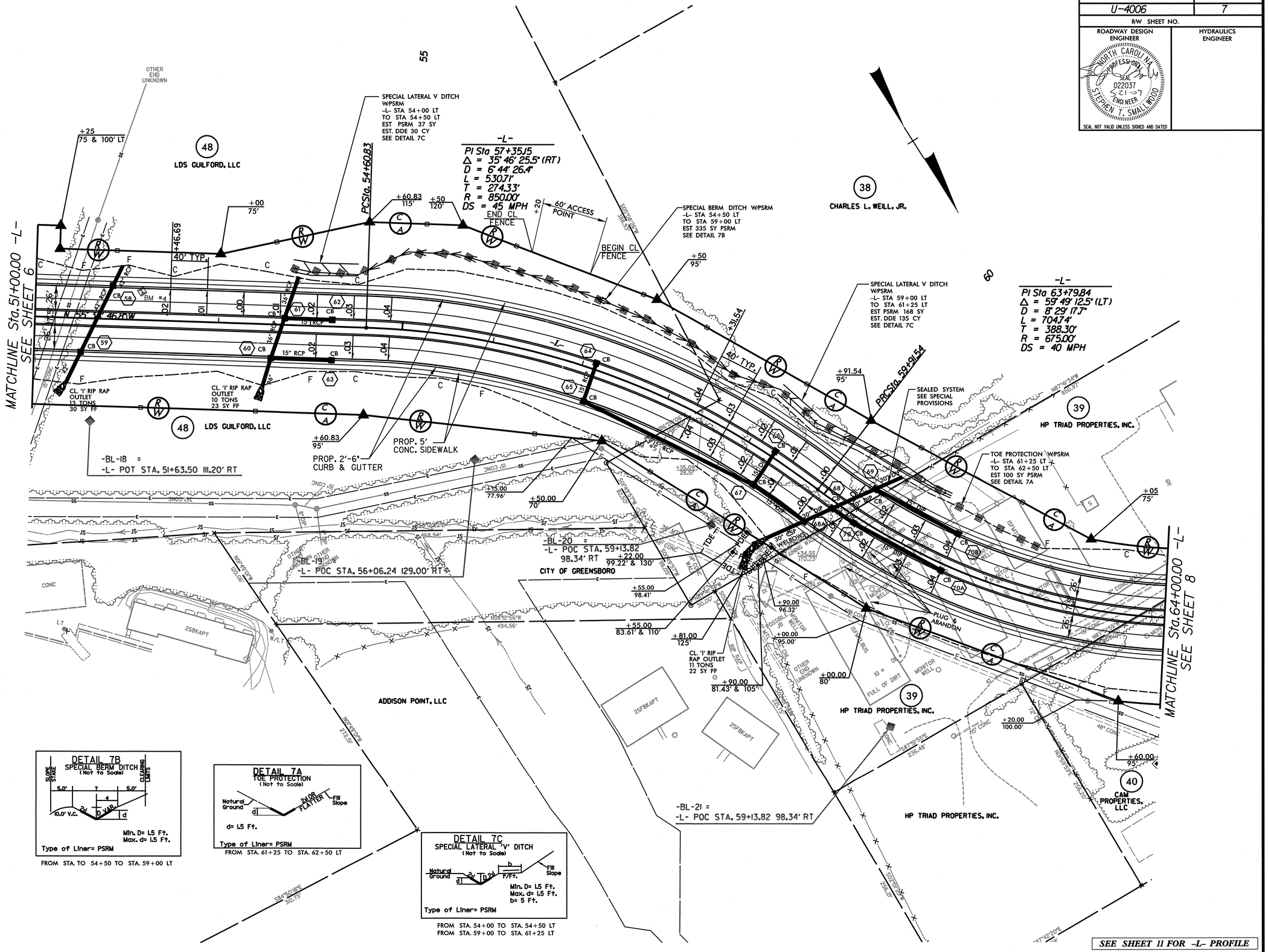
PROJECT REFERENCE NO.	SHEET NO.
U-4006	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD 5-12-99

SEAL NOT VALID UNLESS SIGNED AND DATED

8/17/99

REVISIONS

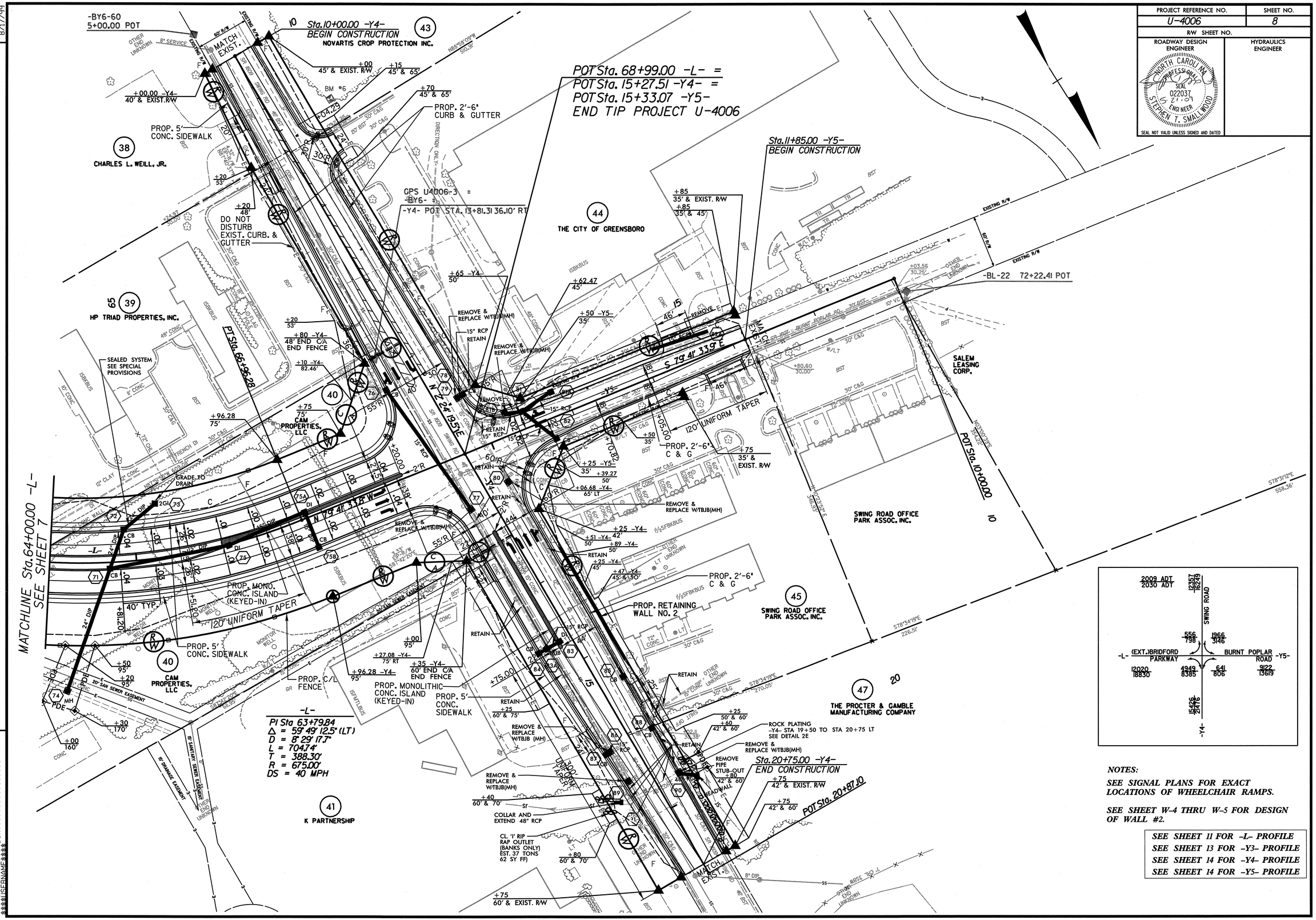


SEE SHEET 11 FOR -L- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
U-4006	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD 11-21-09

SEAL NOT VALID UNLESS SIGNED AND DATED



NOTES:

SEE SIGNAL PLANS FOR EXACT LOCATIONS OF WHEELCHAIR RAMPS.

SEE SHEET W-4 THRU W-5 FOR DESIGN OF WALL #2.

SEE SHEET 11 FOR -L- PROFILE
SEE SHEET 13 FOR -Y3- PROFILE
SEE SHEET 14 FOR -Y4- PROFILE
SEE SHEET 14 FOR -Y5- PROFILE

8/17/99

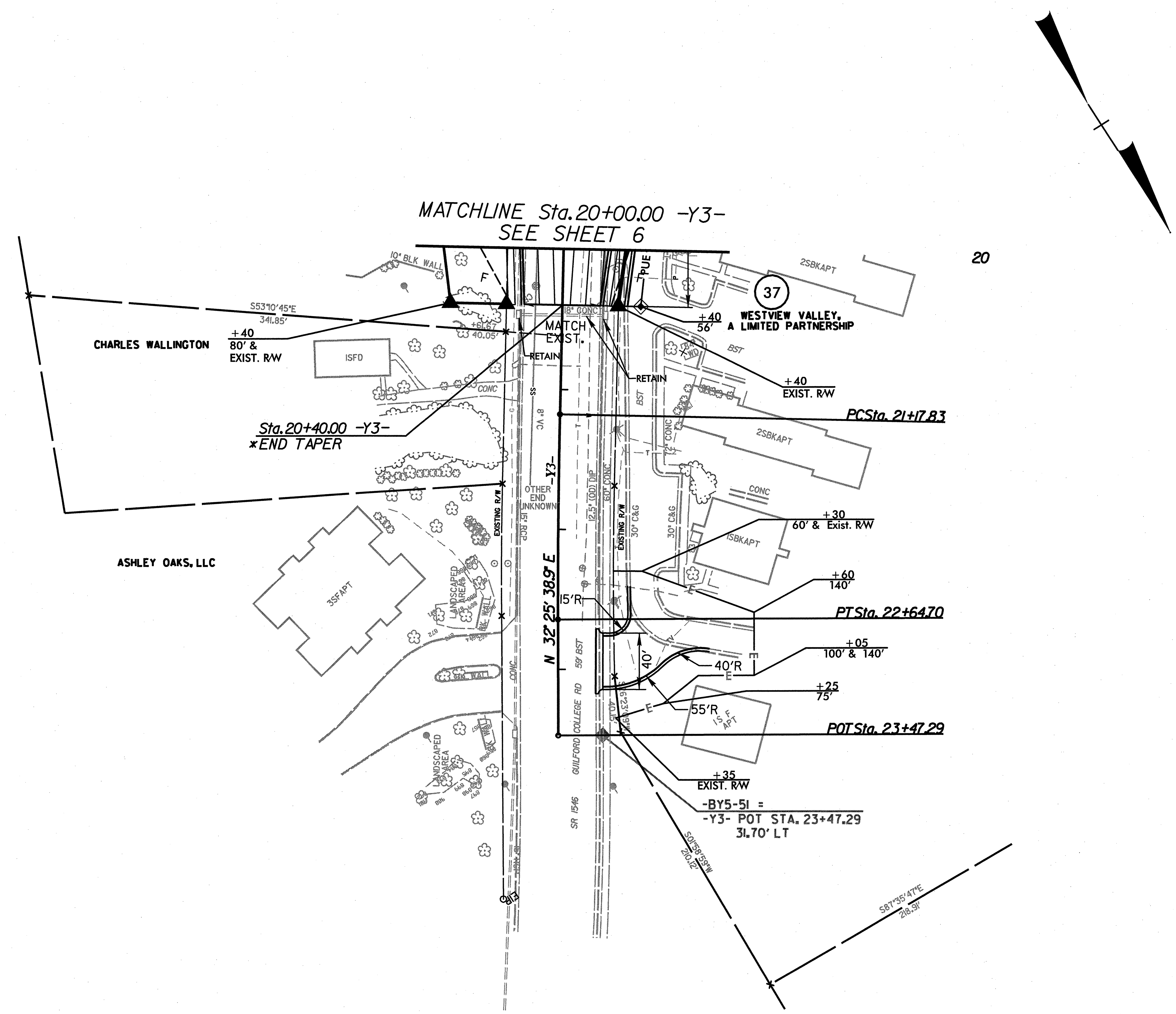
REVISIONS

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-4006	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
6-5-09
SEAL NOT VALID UNLESS SIGNED AND DATED



NOTE:
****SEE MILLING LIMITS ON TRAFFIC CONTROL PLANS SHEET TCP-14 FOR END OF CONSTUCTION ON -Y3-.***

SEE SHEET 13 FOR -Y3- PROFILE

$$$$$$SYSTIME$$$$
$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4006	10

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD

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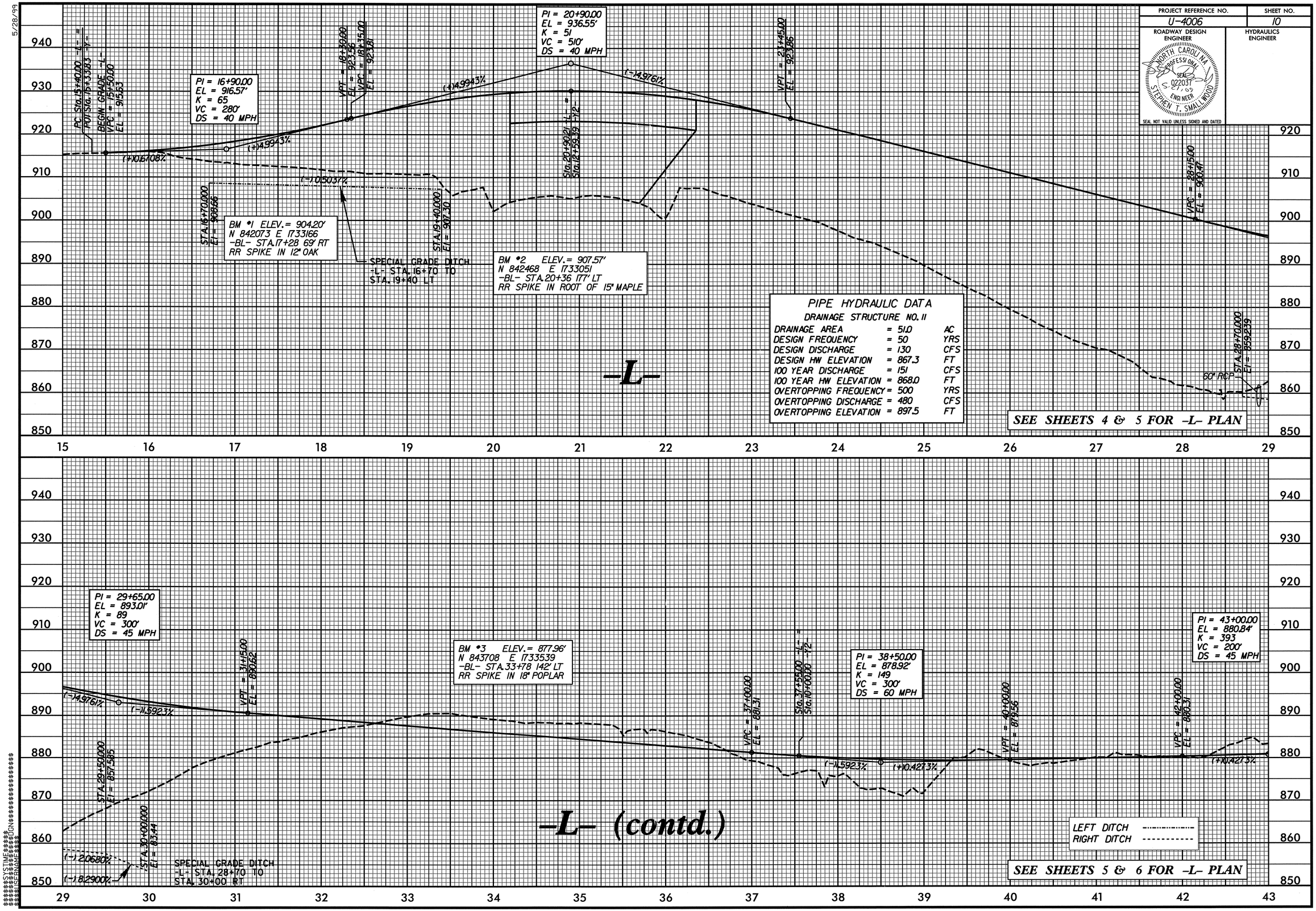

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5/28/99

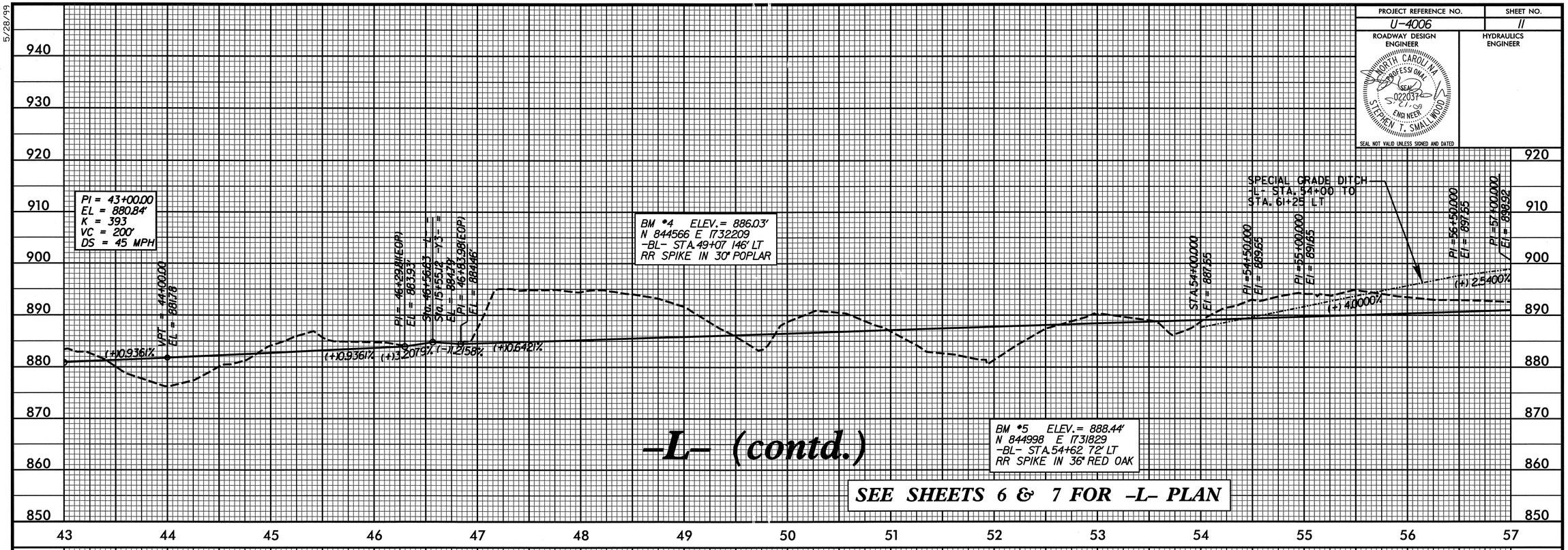
PROJECT REFERENCE NO.	SHEET NO.
U-4006	11

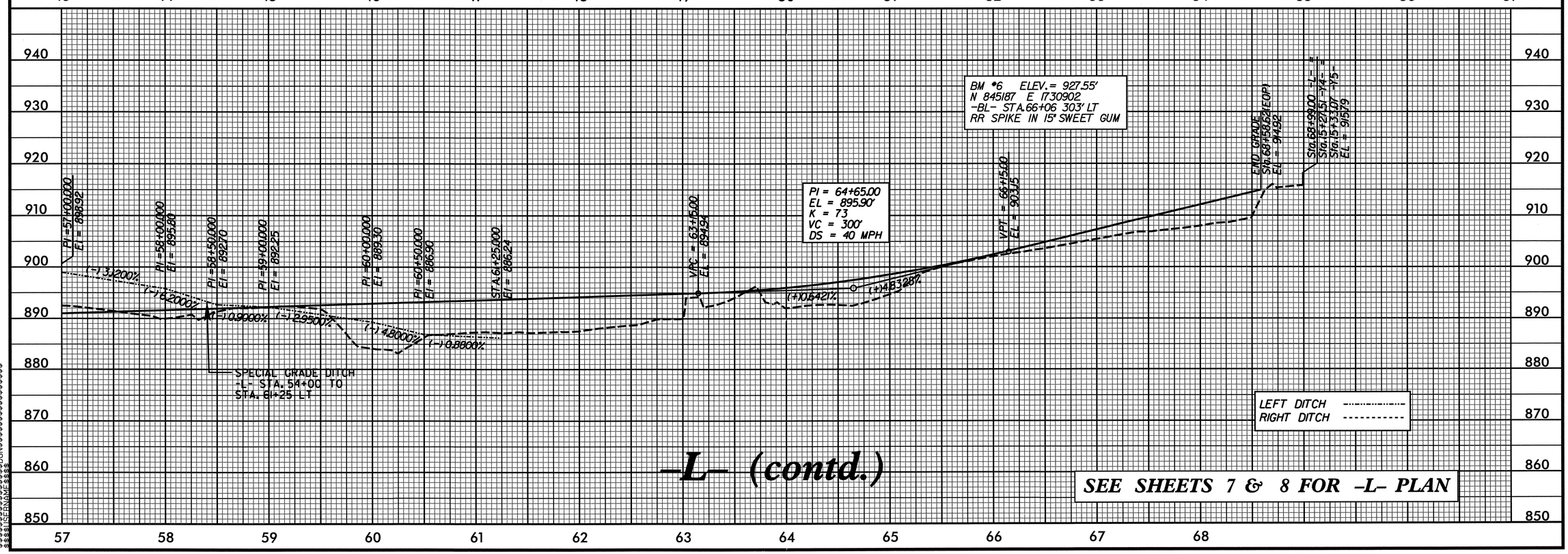
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022031 ENGINEER STEPHEN T. SMALLWOOD

SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER





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PROJECT REFERENCE NO.	SHEET NO.
U-4006	12

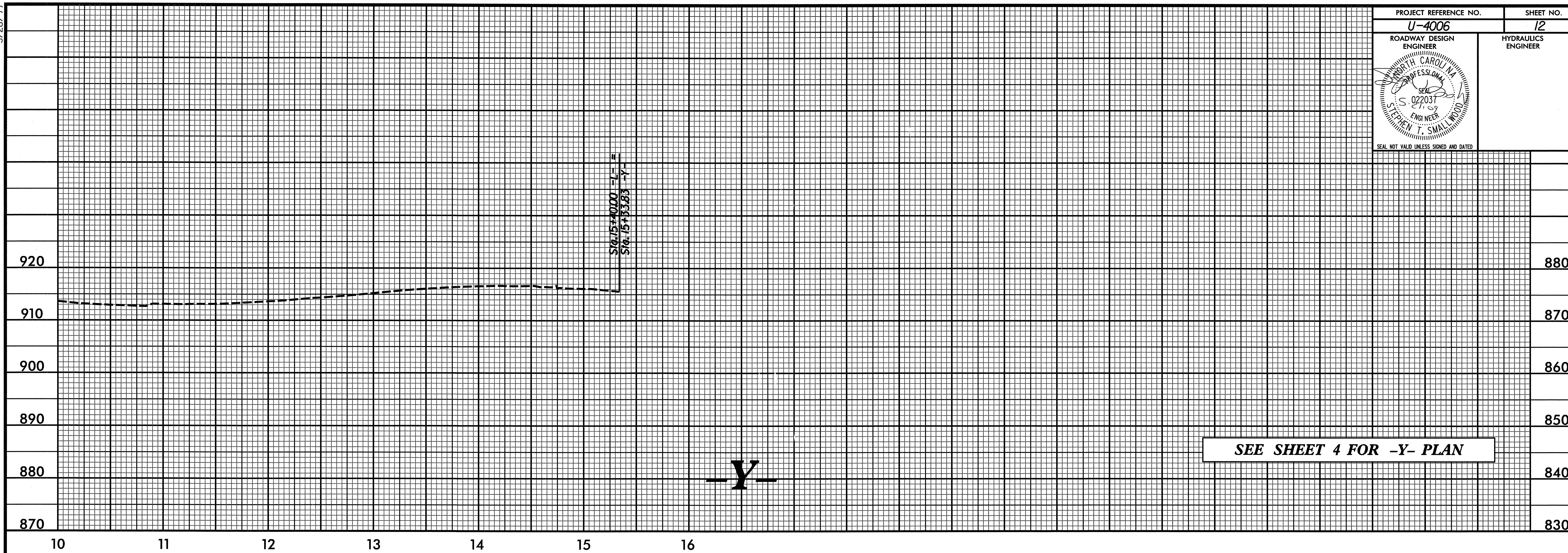
ROADWAY DESIGN ENGINEER

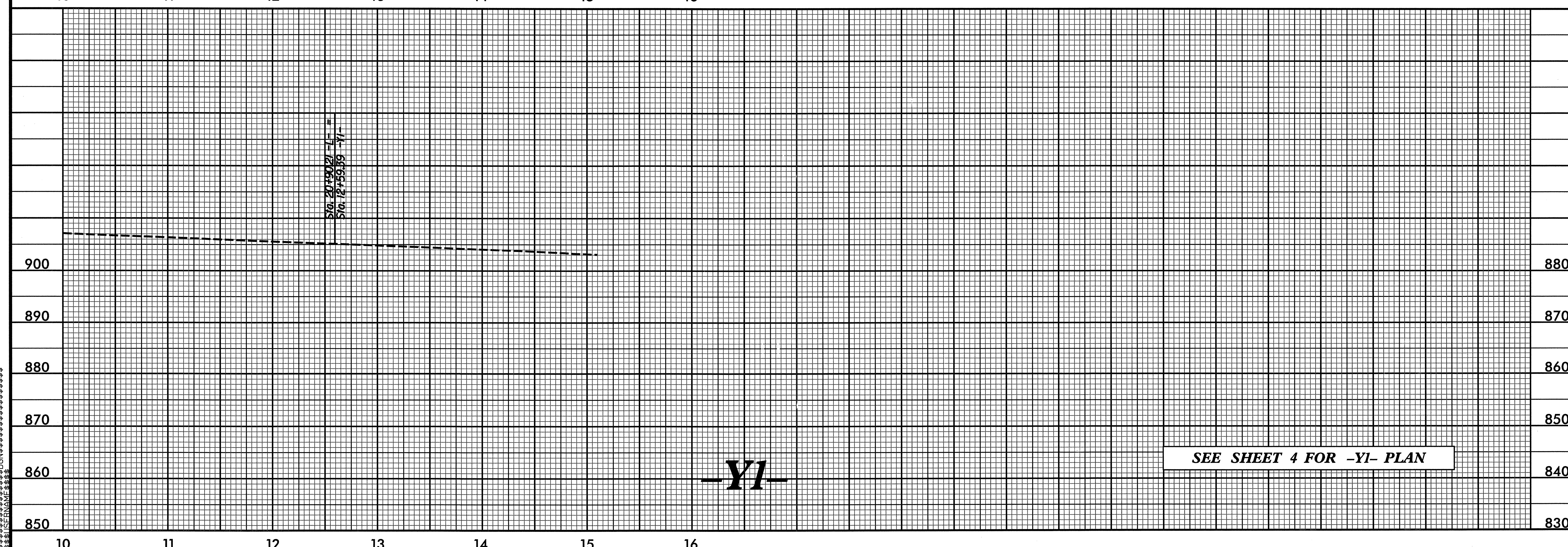
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD

SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER

5/28/99





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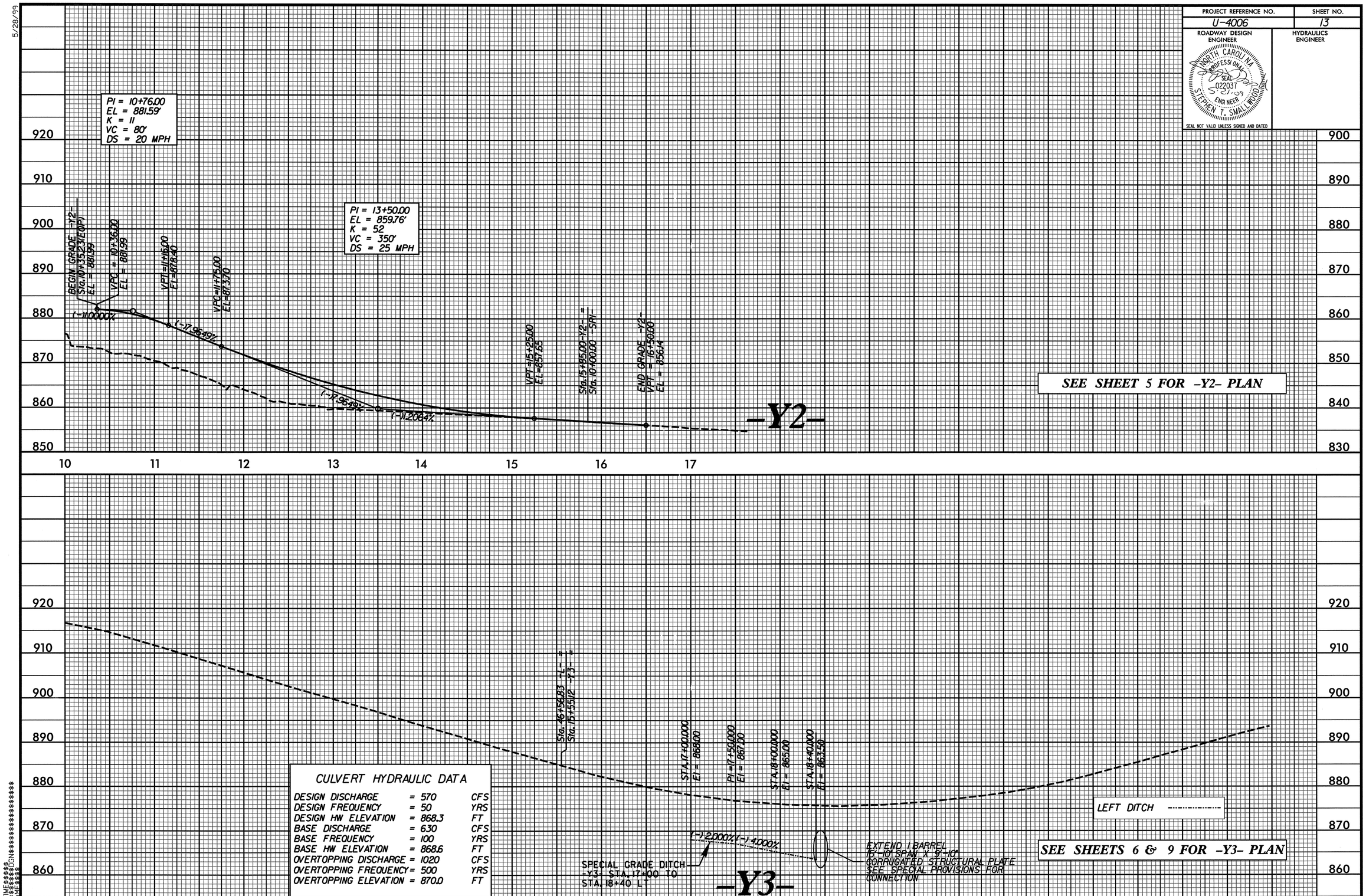
PROJECT REFERENCE NO.	SHEET NO.
U-4006	13

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD

SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER



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$$$$USERNAME$$$$

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5/28/99

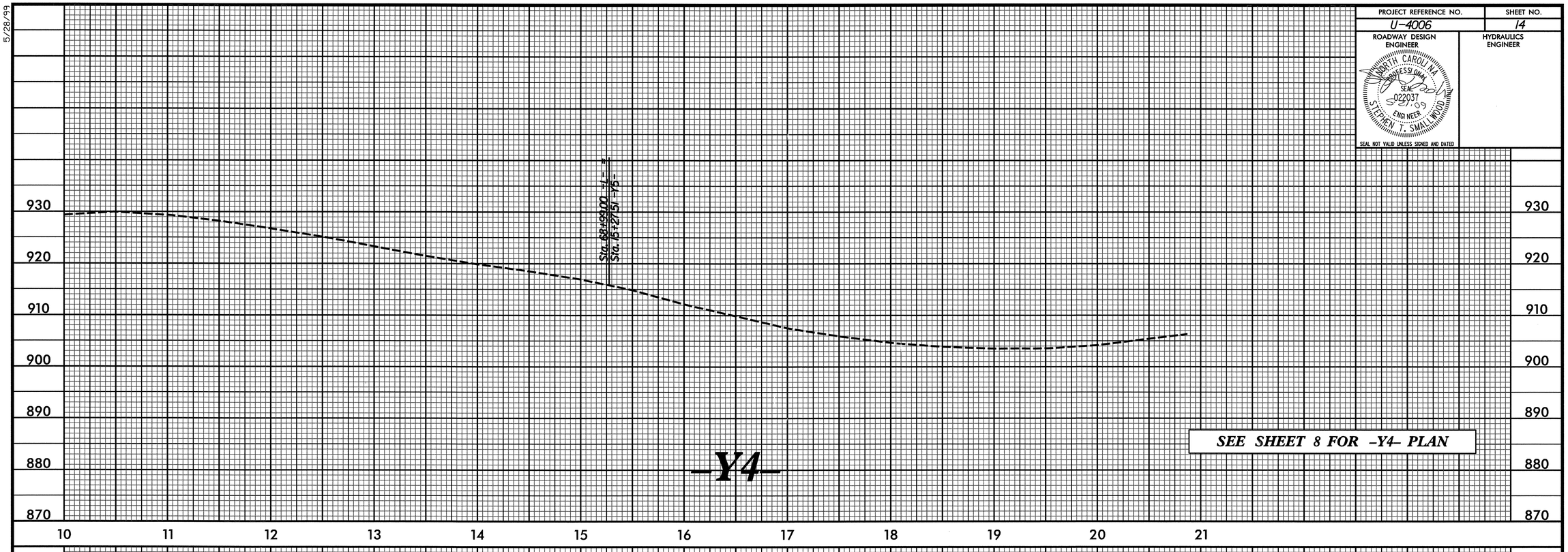
PROJECT REFERENCE NO.	SHEET NO.
U-4006	14

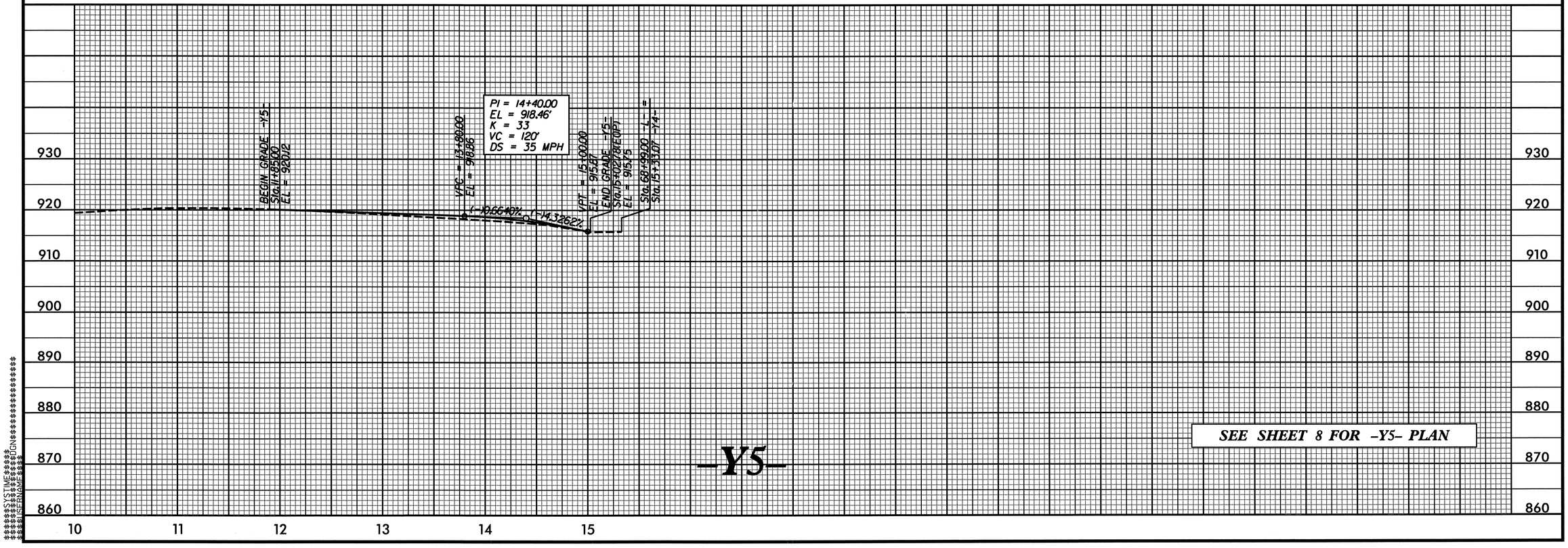
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD 5-27-99

SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER





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5/28/99

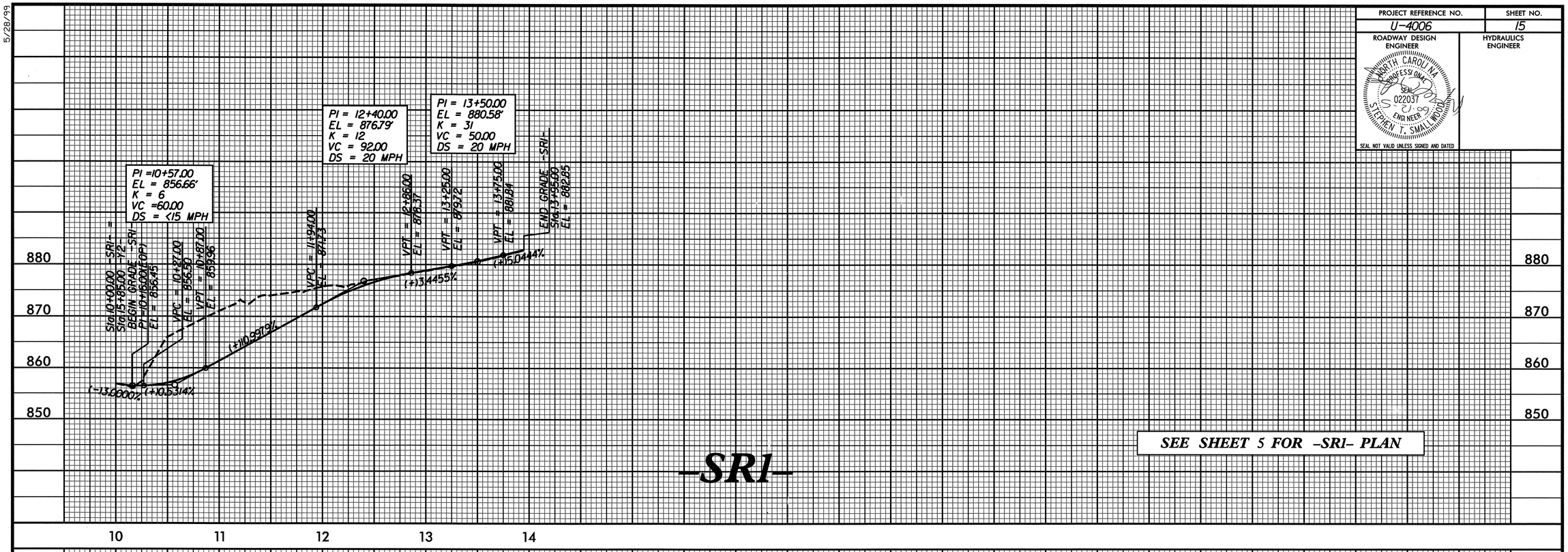
PROJECT REFERENCE NO.	SHEET NO.
U-4006	15

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD

SEAL NOT VALID UNLESS SIGNED AND DATED

HYDRAULICS ENGINEER



SEE SHEET 5 FOR -SRI- PLAN

$$$$$$$$$$SYSTIME$$$$$$$$$$
$$$$$$$$$$DGN$$$$$$$$$$
$$$$$$$$$$USERNAME$$$$$$$$$$

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