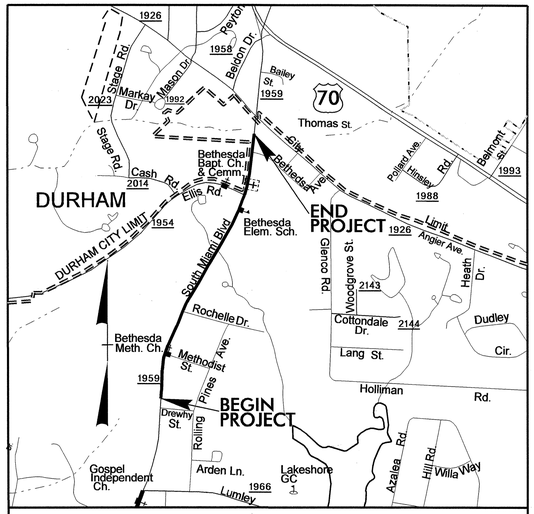
09/08/99

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

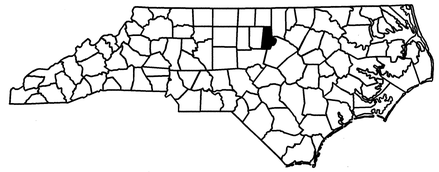
DURHAM COUNTY

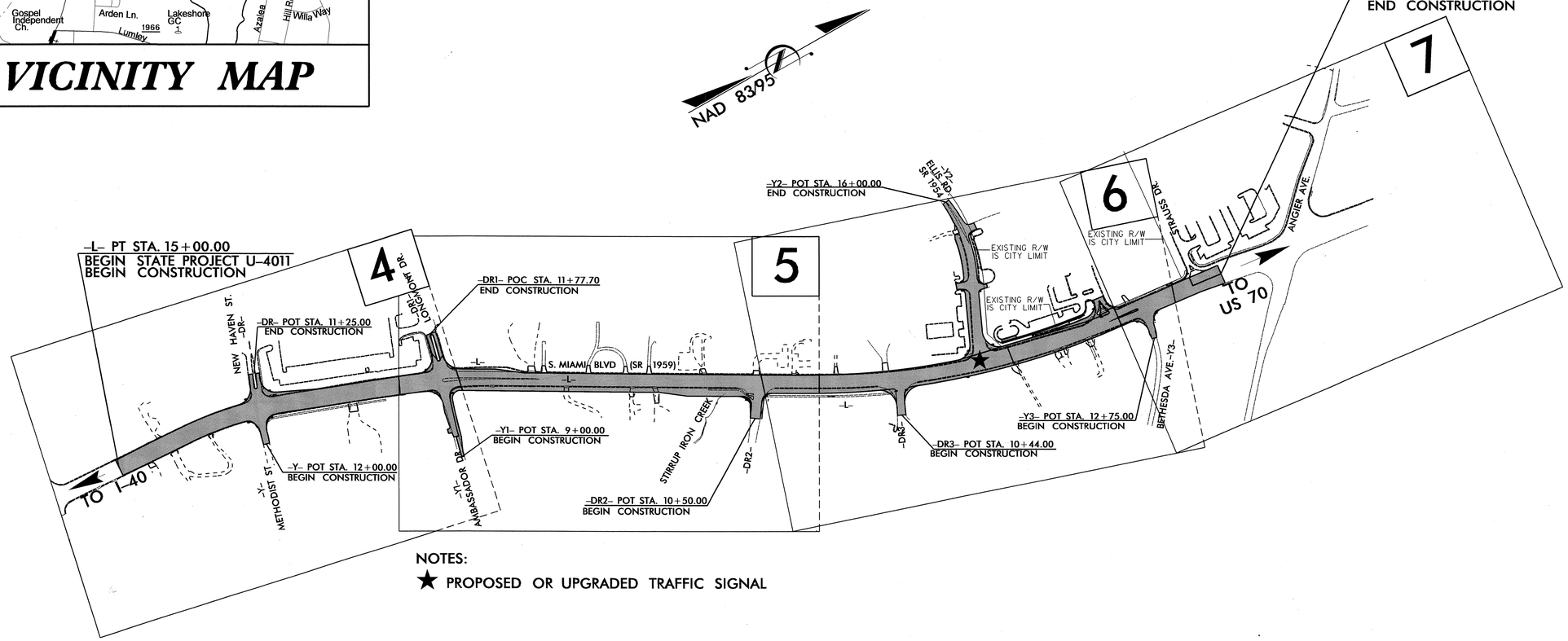
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4011	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
40221.1.1	STP-1959(2)	PE
40221.2.1	STP-1959(2)	R/W & UTILITIES
40221.3.1	STP-1959(3)	CONST

LOCATION: *SR 1959 (SOUTH MIAMI BLVD.) FROM SOUTH OF SR 2112 (METHODIST ST.) TO NORTH OF SR 1960 (BETHESDA AVE.)*

TYPE OF WORK: *WIDENING, DRAINAGE, GRADING, PAVING, CURB & GUTTER AND SIGNALS*





NOTES:

★ PROPOSED OR UPGRADED TRAFFIC SIGNAL

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 2010 = 35,320
ADT 2030 = 55,000
DHV = 11 %
D = 70 %
T = 7 % *
V = 50 MPH
* TTST 3% DUAL 4%

FUNCTIONAL CLASSIFICATION:
URBAN MINOR ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U–4011 = 0.767 MILES

TOTAL LENGTH OF TIP PROJECT U–4011 = 0.767 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: AUGUST 27, 2008

LETTING DATE: MAY 17, 2011

JASON MOORE, PE
PROJECT ENGINEER

JEANIE TYSON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

3-11-11

NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE

Andrew Jason Moore P.E.
SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

art mcmillan P.E.
STATE HIGHWAY DESIGN ENGINEER

TIP PROJECT: U–4011

CONTRACT: C202164

10-MAR-2011 13:42
R:\Roadway\Proj\u4011_rdy_tsh.dgn
$$$$USERNAME$$$$

RD244219 3/10/2011 u4011_rdy_tsh scalhoun RD-Oce860-34

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4011	I-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE

5-11-11

Andrew Jason Moore

INDEX OF SHEETS

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 II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

UNDERDRAINS:

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

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3' RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE 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.

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".

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE TIME WARNER CABLE

DUKE ENERGY

VERIZON

PSNC

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 THE DETAILS SHOWN IN 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	
200.02	Method of Clearing - Method II
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
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
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
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
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
840.54	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
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
852.01	Concrete Islands
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
876.02	Guide for Rip Rap at Pipe Outlets

09/08/09

PROJECT REFERENCE NO.	SHEET NO.
U-4011	1-B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth — 3
- 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-4011	1 C

Location and Surveys

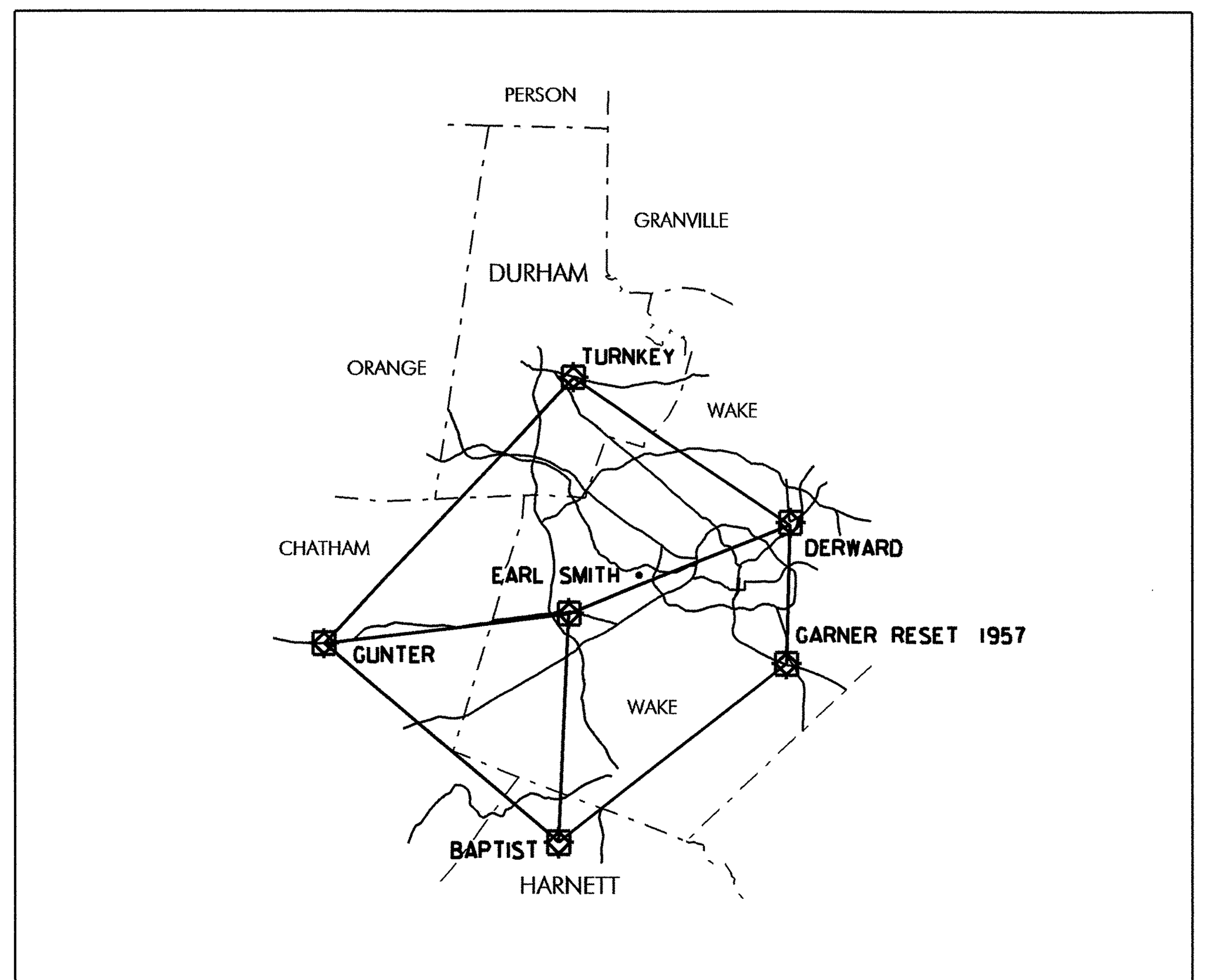
U-4011

6/2/99

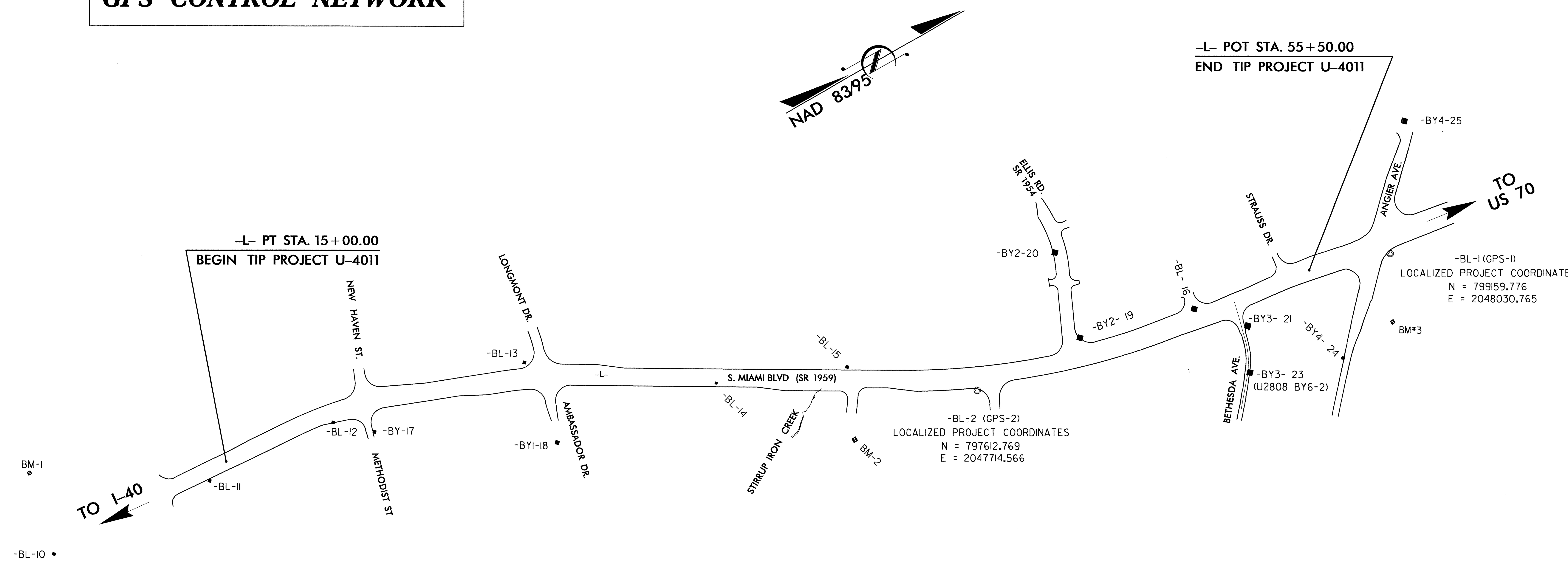
SURVEY CONTROL SHEET U-4011

DURHAM COUNTY

LOCATION: SR 1959 (SOUTH MIAMI BLVD.) FROM SOUTH OF SR 2112 (METHODIST ST.) TO NORTH OF SR 1960 (BETHESDA AVE.)



GPS CONTROL NETWORK



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U4011-1"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 799,159.776(ft) EASTING: 2,048,030.765(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99993032
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U4011-1" TO -L- STATION 15+00.00 IS
S 19°39'46.0"W 4,292.97'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
U4011_LS_GPSCALIB_080114.HTML
U4011_LS_WGS84_080114.TXT
U4011_LS_LOCAL_080114.TXT
U4011_LS_CONTROL_080114.TXT

IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

◈ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-4011	1 D
Location and Surveys	

SURVEY CONTROL SHEET U-4011

GPS CALIBRATION REPORT

PROJECT : U4011

TIP NUMBER

USER NAME	GGREEN	DATE & TIME	3:10:18 PM 12/5/2007
COORDINATE SYSTEM	US STATE PLANE 1983(AT GROUND)	ZONE	NORTH CAROLINA 3200
HORIZONTAL DATUM	NAD 1983 (CONUS)		
VERTICAL DATUM	NAVD88	GEOID MODEL	GEOID03 (CONUS) NC SUB GRID
COORDINATE UNITS	US SURVEY FEET		
DISTANCE UNITS	US SURVEY FEET		
HEIGHT UNITS	US SURVEY FEET		

LOCAL SITE INFORMATION
LOCALIZED AROUND

LATITUDE	35°56'44.40526"N
LONGITUDE	78°50'15.83937"W
SITE SCALE FACTOR	1.0000006968
HEIGHT	319.616SFT

THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION USES A LOCALIZED COORDINATE SYSTEM
WHICH IS VERY SIMILAR TO NORTH CAROLINA ZONE 3200 FROM WHICH IT IS DERIVED.
PLEASE TAKE CARE IN UTILIZING THESE COORDINATES TO ELIMINATE CONFUSION OF THE TWO SYSTEMS.
THIS FILE IS TO AID IN THE USE OF REAL TIME KINEMATIC (RTK) GPS DURING CONSTRUCTION LAYOUT.

DATUM TRANSFORMATION PARAMETERS

DATUM TRANSFORMATION COMPUTATION NOT REQUESTED

UPDATED DEFAULT PROJECTION (TRANSVERSE MERCATOR) DEFINITION

UPDATED DEFAULT PROJECTION NOT REQUESTED

HORIZONTAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ROTATION CENTER	799159.717SFT
EASTING COORDINATE OF ROTATION CENTER	2048030.742SFT
ROTATION ABOUT THE CENTER POINT	0°00'08"
TRANSLATION NORTH	0.059SFT
TRANSLATION EAST	0.022SFT
SCALE FACTOR	0.99997946

VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN POINT	799159.776SFT
EASTING COORDINATE OF ORIGIN POINT	2048030.765SFT
VERTICAL SEPARATION AT ORIGIN	0.715SFT
SLOPE NORTH	-0.047PPM
SLOPE EAST	-0.010PPM

GEOID MODEL DEFINITION

GEOID03 (CONUS) NC SUB GRID

RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

SUMMARY

	MAXIMUM ERROR	ROOT MEAN SQUARE ERROR	POINT
HORIZONTAL	0.000SFT	0.000	U4011-1 GPS
VERTICAL	0.000SFT	0.000	U4011-1 GPS
THREE-DIMENSIONAL	0.000SFT	0.000	U4011-1 GPS

POINT RESIDUALS

WGS84 COORDINATES		CALCULATED POINT FOR DISPLAY ONLY		LOCAL COORDINATES	
POINT	U4011-1 GPS	NORTHING	799159.776SFT	POINT	U4011-1
LATITUDE	35°56'44.40467"N	EASTING	2048030.765SFT	NORTHING	799159.776SFT
LONGITUDE	78°50'15.83966"W	ELEVATION	423.599SFT	EASTING	2048030.765SFT
HEIGHT	318.901SFT	HORZ ERROR	0.000SFT	ELEVATION	423.599SFT
		VERT ERROR	0.000SFT	UTILIZED	HORZ AND VERT ADJUSTED
		3D ERROR	0.000SFT	QUALITY	QUALITY
POINT	U4011-2 GPS	NORTHING	797612.769SFT	POINT	U4011-2
LATITUDE	35°56'29.10990"N	EASTING	2047714.566SFT	NORTHING	797612.769SFT
LONGITUDE	78°50'19.71520"W	ELEVATION	414.922SFT	EASTING	2047714.566SFT
HEIGHT	310.202SFT	HORZ ERROR	0.000SFT	ELEVATION	414.922SFT
		VERT ERROR	0.000SFT	UTILIZED	HORZ AND VERT ADJUSTED
		3D ERROR	0.000SFT	QUALITY	QUALITY

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U4011-1" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 799,159.776(ft) EASTING: 2,048,030.765(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99993032 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U4011-1" TO -L- STATION 15+00.00 IS S 19°39'46.0"W 4,292.97' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

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PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

24-MAY-2010 11:41
C:\Projects\2010\u4011_ls_1d_080117.dgn
$$$$USERNAME$$$$

RD242263 5/24/2010 u4011_ls_1d_080117 jtyson RD-Oce860-34

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-4011	1 E
Location and Surveys	

SURVEY CONTROL SHEET U-4011

BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
10	BL-10	794406.4690	2046567.9310	410.63	OUTSIDE PROJECT LIMITS	
11	BL-11	795029.7070	2046616.9940	412.89	14+14.78	36.42 RT
12	BL-12	795523.9010	2046656.4980	412.49	19+14.73	35.74 RT
13	BL-13	796234.7680	2046811.9770	406.60	26+38.63	54.16 LT
14	BL-14	796802.4510	2047220.7350	405.17	33+30.12	19.02 RT
15	BL-15	797244.6070	2047406.0000	401.69	38+05.46	43.25 LT
2	U4011-2 GPS	797612.7690	2047714.5660	414.23	42+73.92	52.71 RT
26	NOT SET	798020.1705	2047781.4374	UNKNOWN	46+77.89	23.52 LT
16	BL-16	798442.0120	2047850.6790	418.84	51+10.32	35.51 LT
27	NOT SET	798631.4700	2047898.2138	UNKNOWN	53+03.95	9.77 LT
1	U4011-1 GPS	799159.7760	2048030.7650	422.97	OUTSIDE PROJECT LIMITS	

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
A12	BL-12	795523.9010	2046656.4980	412.49	12+85.16	122.17 LT
17	BY-17	795637.5640	2046759.8200	410.26	12+20.11	16.98 RT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
A13	BL-13	796234.7680	2046811.9770	406.60	26+38.63	54.16 LT
18	BY1-18	796193.8340	2047122.8170	404.33	27+54.84	240.50 RT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
20	BY2-20	798104.9170	2047422.2490	426.56	13+95.84	29.87 LT
19	BY2-19	798031.5030	2047733.4060	421.18	10+77.77	27.81 RT
A26	NOT SET	798020.1705	2047781.4374	UNKNOWN	10+29.37	37.43 RT

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
A27	NOT SET	798631.4700	2047898.2138	UNKNOWN	OUTSIDE PROJECT LIMITS	
21	BY3-21	798580.3530	2047999.3070	423.03	12+99.41	21.76 RT
23	U2808 BY6-2	798503.8630	2048150.5800	428.53	11+34.13	7.82 RT

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
25	BY4-25	799444.0000	2047636.8570	420.48	OUTSIDE PROJECT LIMITS	
A1	U4011-1	799159.7760	2048030.7650	422.97	OUTSIDE PROJECT LIMITS	
24	BY4-24	798822.9220	2048271.6520	423.66	55+37.74	339.51 RT

BASELINE DATA

```
**************************************
BM1       ELEVATION = 407.84
N 794477      E 2046267
L STATION 10+00  LEFT
S 63° 45' 08.2" W  DIST    319.31
RR SPIKE SET IN 36" OAK
**************************************
```

```
**************************************
BM2       ELEVATION = 402.74
N 797137      E 2047649
L STATION 38+35 221 RIGHT
"X" CHISLED IN BASE OF LIGHT POLE
**************************************
```

```
**************************************
BM3       ELEVATION = 426.16
N 799044      E 2048249
L STATION 56+67   RIGHT
N 79° 49' 20.0" E  DIST    302.76
RR SPIKE SET IN 18" GUM
**************************************
```

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U4011-1" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 799,159.776(ift) EASTING: 2,048,030.765(ift) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99993032 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U4011-1" TO -L- STATION 15+00.00 IS S 19 °39'46.0 "W 4,292.97' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*

2. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   U4011_LS_GPSCALIB_080114.HTML
   U4011_LS_WGS84_080114.TXT
   U4011_LS_LOCAL_080114.TXT
   U4011_LS_CONTROL_080114.TXT

   THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

24-MAY-2010 12:43
R:\Roadway Projects\u4011_ls_1e_100505.dgn
$$$$USERNAME$$$$

RD244219 5/24/2010 u4011_ls_1e_100505 scalhoun RD-Oce860-34

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-4011	2

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE — 8/13/10

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON — 8/13/10

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
C3	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 8" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 4" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
E4	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E5	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 4" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J1	PROP. 4" AGGREGATE BASE COURSE
R1	2'-6" CONCRETE CURB & GUTTER
R2	1'-6" CONCRETE CURB & GUTTER
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING 2.5"
W	WEDGING

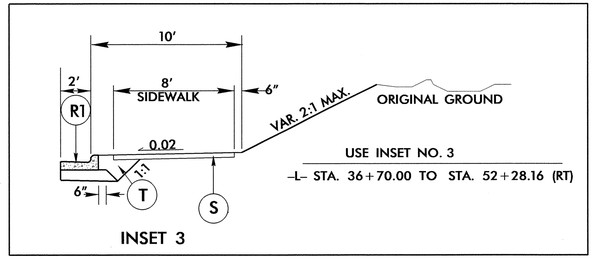
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

NOTE: PER FINAL PAVEMENT DESIGN MEMO DATED DECEMBER 15, 2009, FULL DEPTH PAVEMENT REPAIR PAVEMENT IS RECOMMENDED AT THE FOLLOWING LOCATIONS:

NORTHBOUND - THE VICINITY OF -L- STA. 49+00 IN OUTSIDE LANE. APPROX. 70 SY.

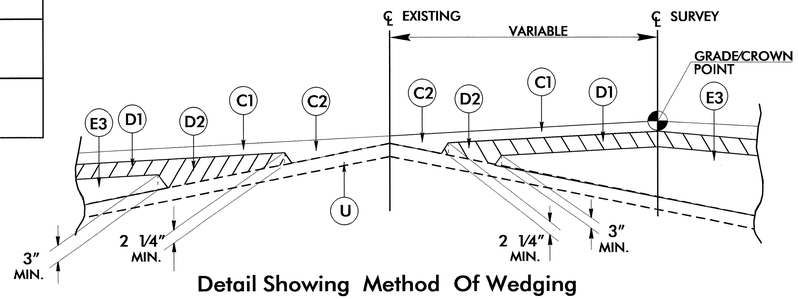
SOUTHBOUND - THE VICINITY OF -L- STA. 42+50, 45+50, AND 47+00 IN OUTSIDE LANE. APPROX. 230 SY.

OTHER LOCATIONS COULD BE DEFINED DURING CONSTRUCTION.

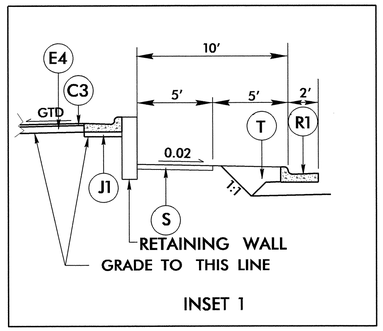


USE INSET NO. 3
–L– STA. 36+70.00 TO STA. 52+28.16 (RT)

INSET 3



Detail Showing Method Of Wedging

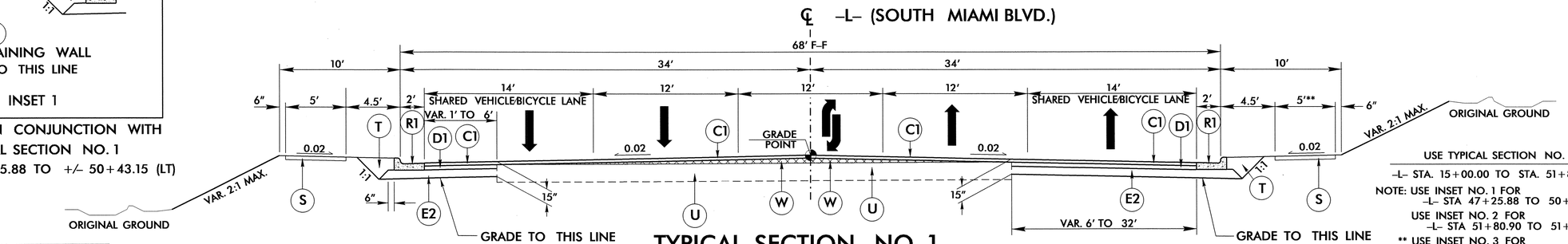


INSET 1

USE INSET 1 IN CONJUNCTION WITH TYPICAL SECTION NO. 1
–L– STA. +/– 47+25.88 TO +/– 50+43.15 (LT)

NOTE: PAVEMENT DESIGN FOR CHURCH PARKING AREA ON PARCEL 40 IS 1.5" SF9.5A AND 5.5" B25.0B. USE 4" ABC UNDER 2'-6" CURB AND GUTTER IN PARKING AREA.SEE INSET 1 FOR DETAILS ADJACENT TO RETAINING WALL.

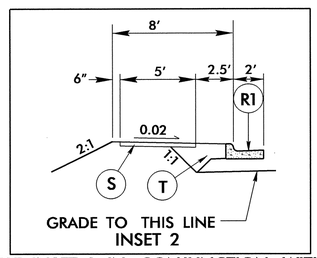
℄ –L– (SOUTH MIAMI BLVD.)



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
–L– STA. 15+00.00 TO STA. 51+82.88
NOTE: USE INSET NO. 1 FOR
–L– STA 47+25.88 TO 50+43.15 (LT)
USE INSET NO. 2 FOR
–L– STA 51+80.90 TO 51+82.88 (LT)
** USE INSET NO. 3 FOR
–L– STA 36+70.00 TO 52+55.00 (RT)

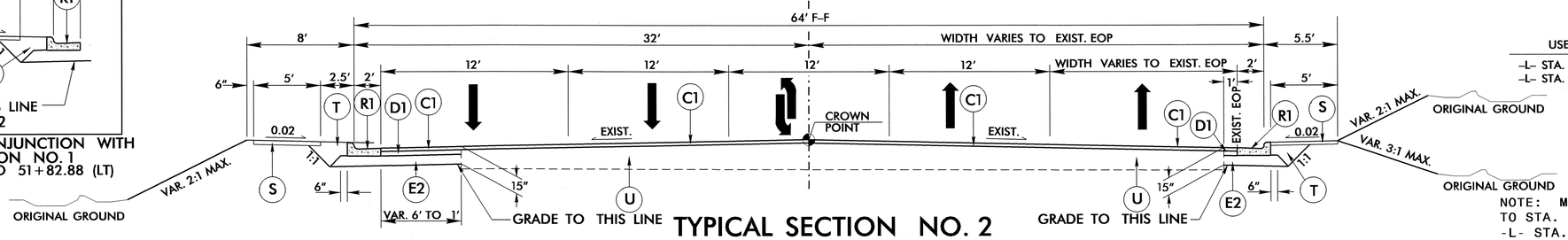
NOTE: MILL 2.5" FROM -L- STA. 15+00.00 TO STA. 52+55.00 PRIOR TO WEDGING AND RESURFACING.



INSET 2

USE INSET 2 IN CONJUNCTION WITH TYPICAL SECTION NO. 1
–L– STA. 51+80.90 TO 51+82.88 (LT)

℄ –L– (SOUTH MIAMI BLVD.)



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
–L– STA. 51+82.88 TO STA. 54+40.00 LT OF CL
–L– STA. 51+82.88 TO STA. 55+50.00 RT OF CL

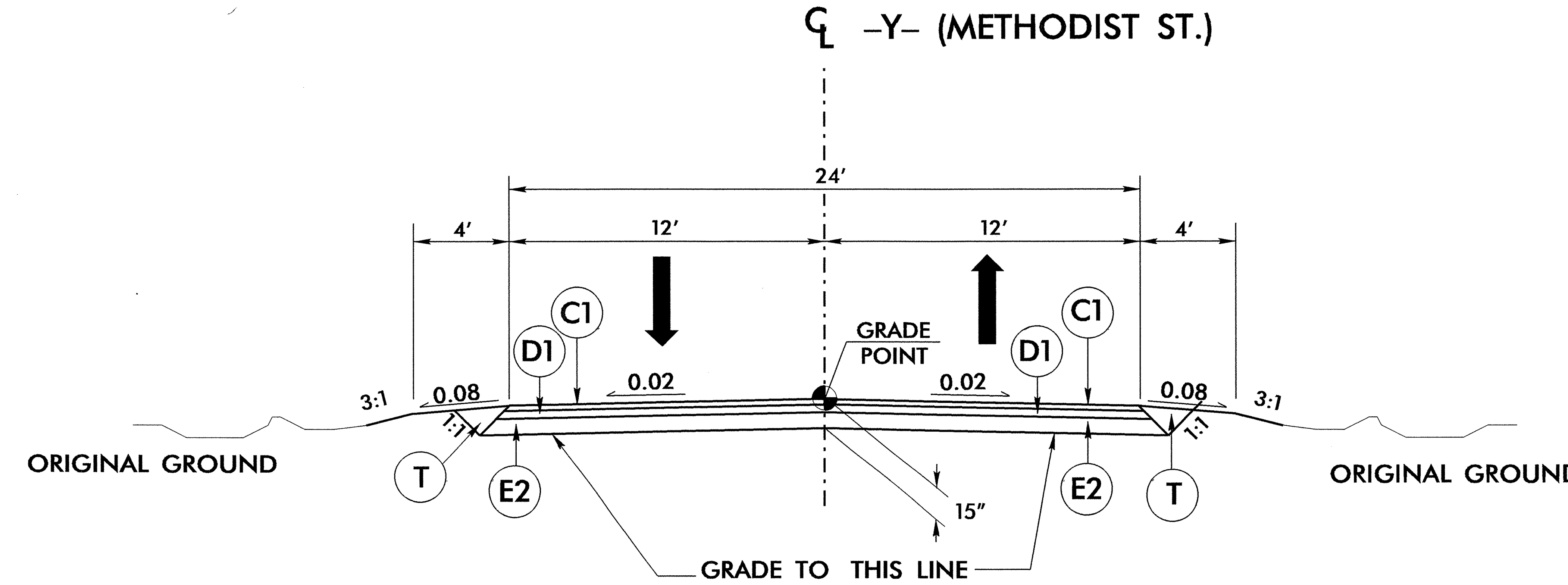
NOTE: MILL 2.5" FROM -L- STA. 52+55.00 TO STA. 54+40.00 LT OF CL AND FROM -L- STA. 52+55.00 TO STA. 55+50.00 RT OF CL PRIOR TO RESURFACING.

13-AUG-2010 08:17
f:\roadway\proj\u4011_rdy_typ.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4011	2A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE 7/28/10	NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 7/8/10

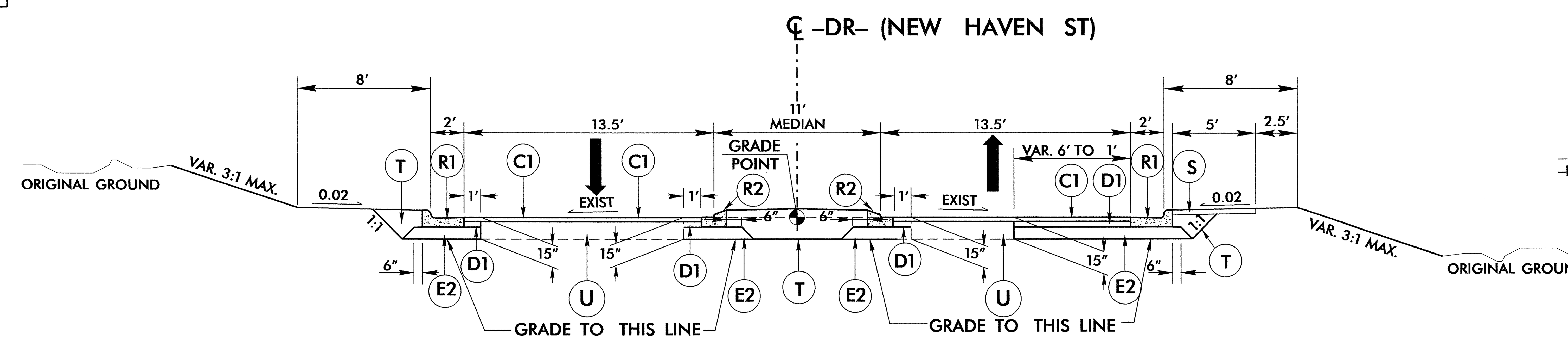
6/2/99

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" TYPE S9.5C
D1	PROP. APPROX. 4" I19.0C
E2	PROP. APPROX. 8" TYPE B25.0C
R1	2'-6" CONCRETE CURB & GUTTER
R2	1'-6" CONCRETE CURB & GUTTER
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING
W	WEDGING SEE SHEET 2 FOR WEDGING DETAIL



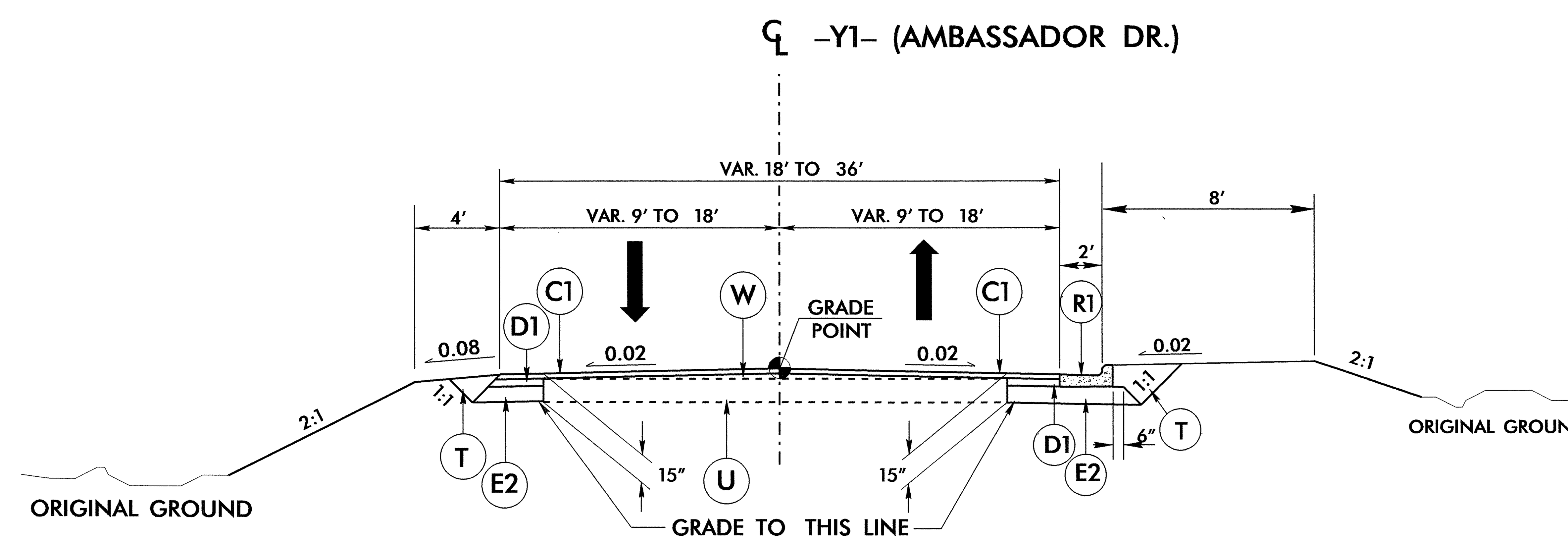
TYPICAL SECTION NO. 3

USE TYPICAL NO. 3
-Y- STA. 12+00.00 TO STA. 12+25.00



TYPICAL SECTION NO. 4

USE TYPICAL NO. 4
-DR- STA. 11+06.07 TO STA. 11+25.00



TYPICAL SECTION NO. 5

NOTE: TRANSITION FROM EXISTING TO TYPICAL NO. 5
FROM -Y1- STA. 9+00.00 TO STA. 9+25.00

USE TYPICAL NO. 5
-Y1- STA. 9+25.00 TO STA. 10+89.99

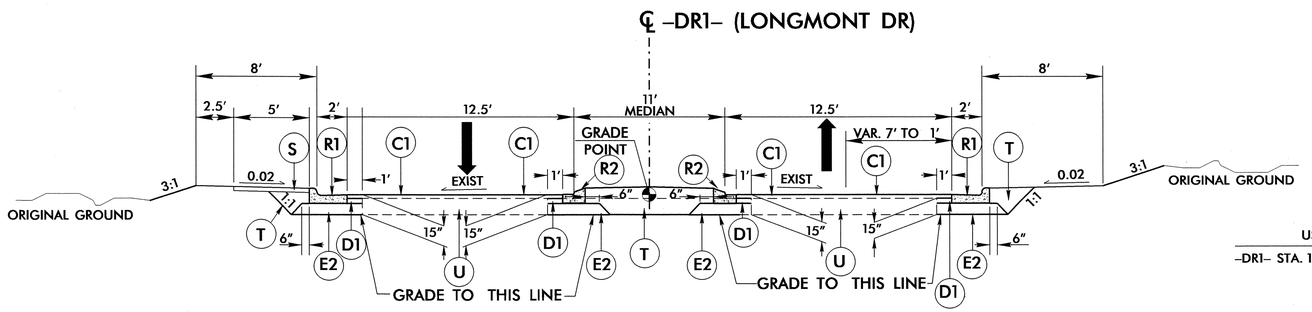
08-JUN-2010 10:46
r:\roadway\proj\u4011_rdy_typ.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4011	2B

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE — 3-11-11

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22888 ENGINEER CLARK S. MORRISON — 3/11/11

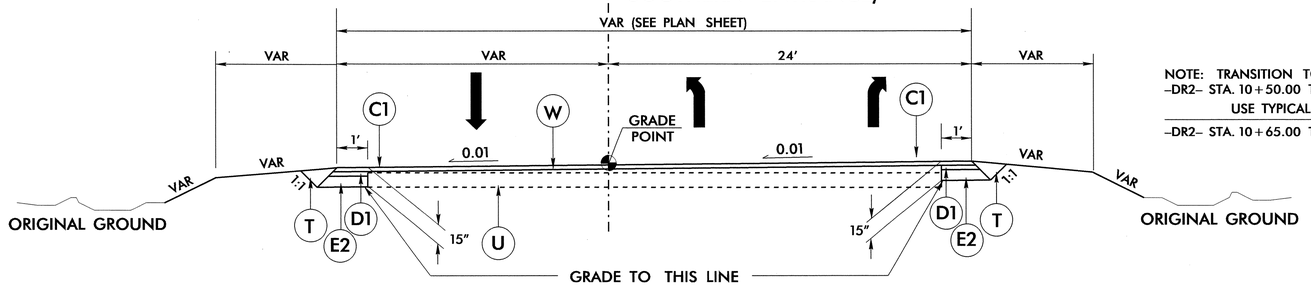
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" TYPE S9.5C
D1	PROP. APPROX. 4" I19.0C
E2	PROP. APPROX. 8" TYPE B25.0C
R1	2'-6" CONCRETE CURB & GUTTER
R2	1'-6" CONCRETE CURB & GUTTER
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING
W	WEDGING SEE SHEET 2 FOR WEDGING DETAIL



USE TYPICAL NO. 6

–DR1– STA. 11+09.97 TO STA. 11+77.70

TYPICAL SECTION NO. 6

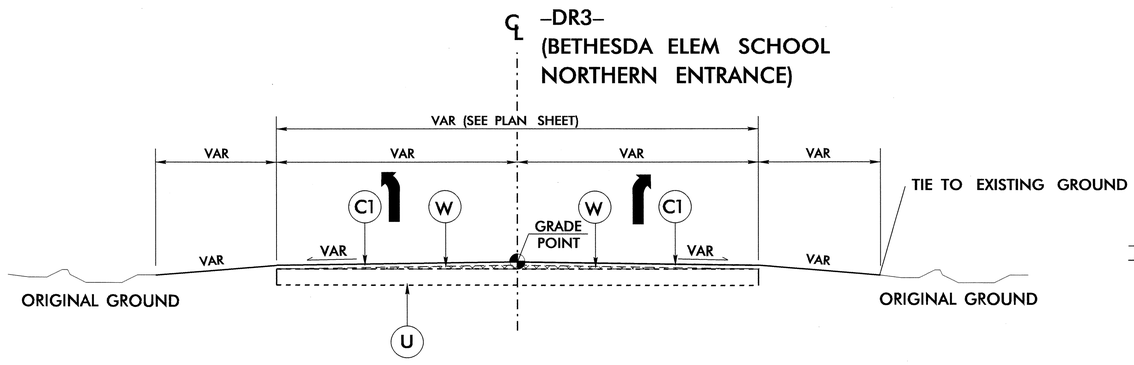


NOTE: TRANSITION TO TYPICAL NO.7
–DR2– STA. 10+50.00 TO STA. 10+65.00

USE TYPICAL NO. 7

–DR2– STA. 10+65.00 TO STA. 11+01.37

TYPICAL SECTION NO. 7



USE TYPICAL NO. 8A

–DR3– STA. 10+44.00 TO STA. 10+79.52

TYPICAL SECTION NO. 8A

08-MAR-2011 15:29
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$$$$USERNAME$$$$

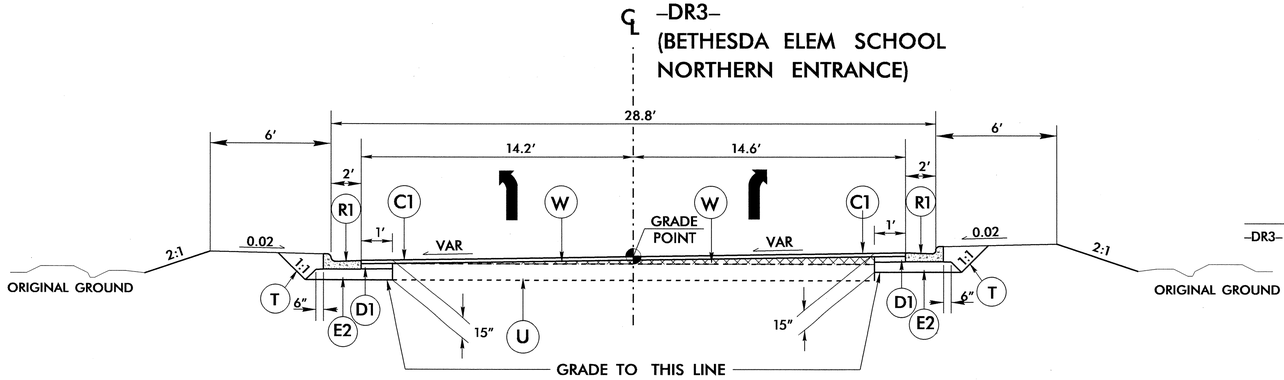
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-4011	2C

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE — 3-11-11

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON — 3/11/11

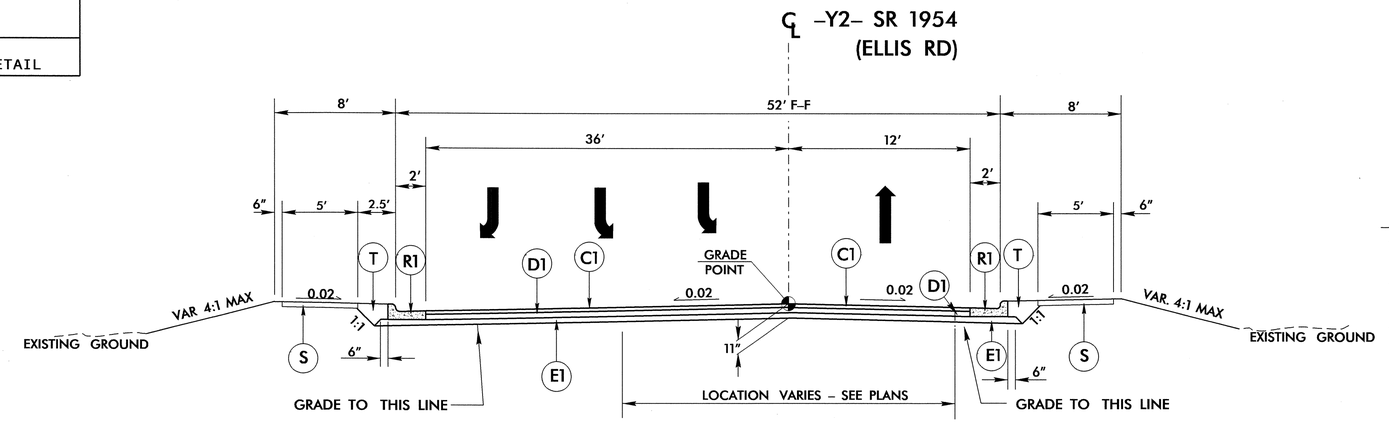
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" TYPE S9.5C
D1	PROP. APPROX. 4" I19.0C
E1	PROP. APPROX. 4" TYPE B25.0C
E2	PROP. APPROX. 8" TYPE B25.0C
R1	2'-6" CONCRETE CURB & GUTTER
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING
W	WEDGING SEE SHEET 2 FOR WEDGING DETAIL



USE TYPICAL NO. 8B

–DR3– STA. 10+79.52 TO STA. 11+13.83

TYPICAL SECTION NO. 8B



USE TYPICAL NO. 9 AS FOLLOWS:

–Y2– STA. 11+16.73 TO STA. 14+65.00

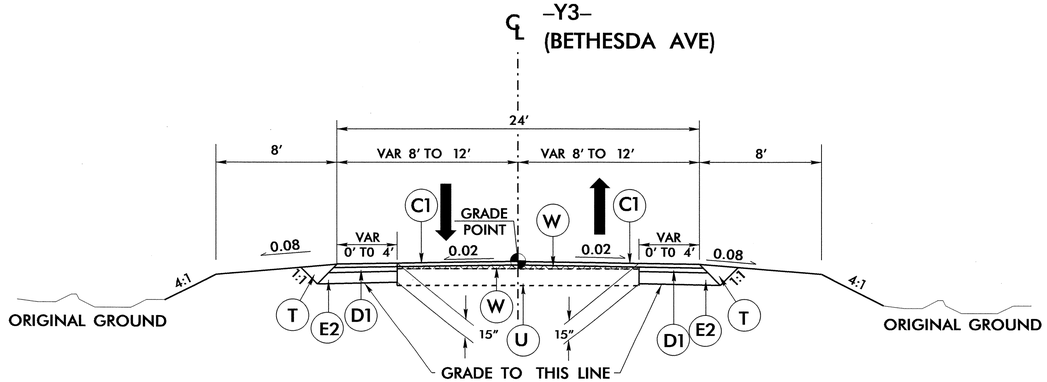
NOTE: TRANSITION FROM TYPICAL NO. 9 TO EXISTING

–Y2– STA. 14+65.00 TO 15+00.00

NOTE: MINIMAL RESURFACING FROM

–Y2– STA. 15+00.00 TO 16+00.00

TYPICAL SECTION NO. 9



USE TYPICAL NO. 10

–Y3– STA. 12+75.00 TO STA. 13+03.26

TYPICAL SECTION NO. 10

09-MAR-2011 10:11
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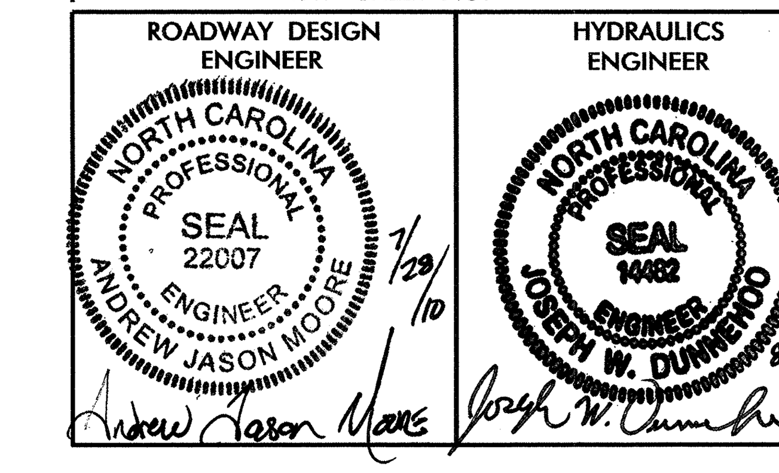
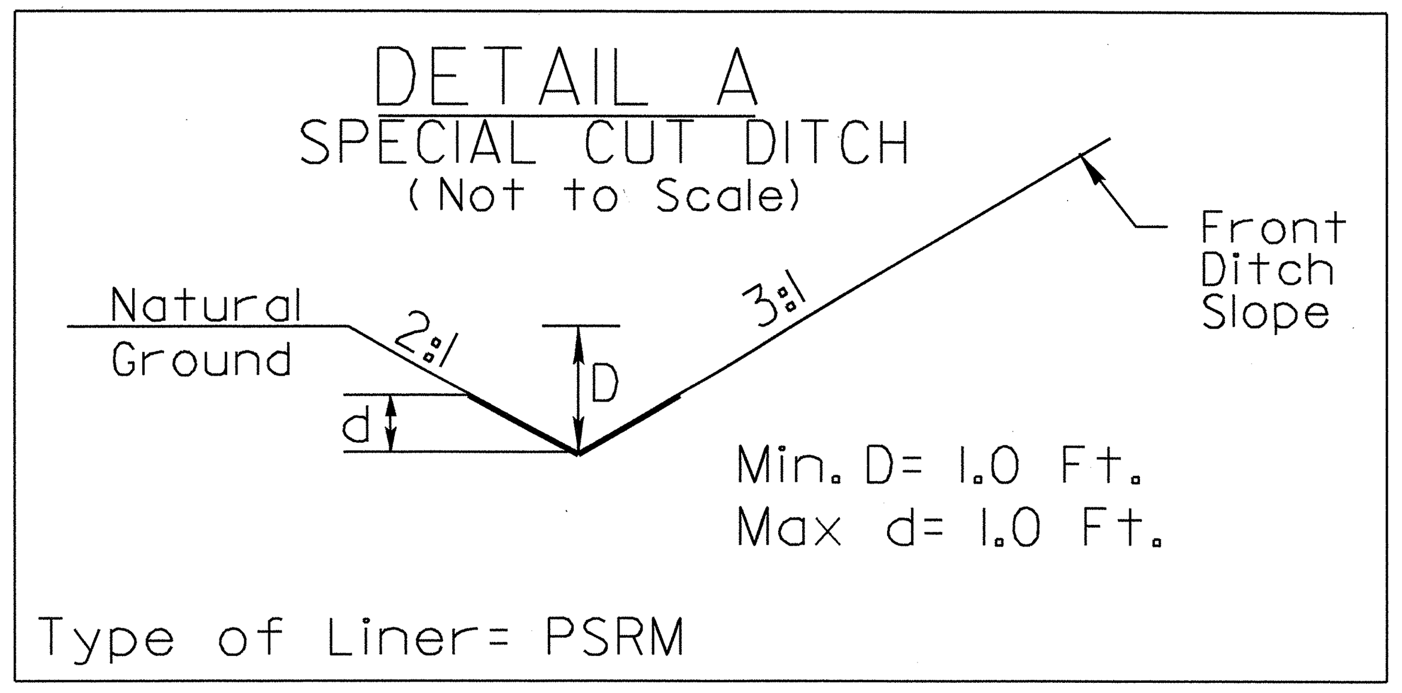
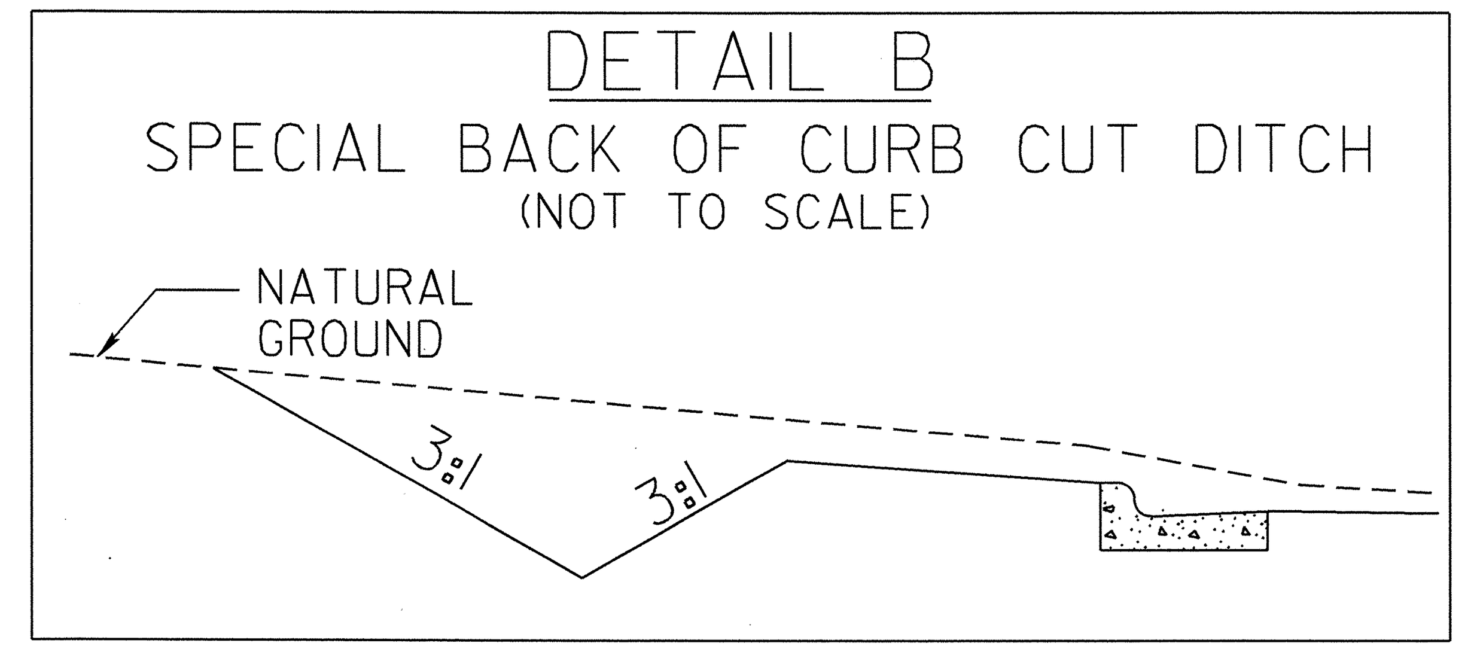
PROJECT REFERENCE NO.	SHEET NO.
U-4011	2D
RW SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

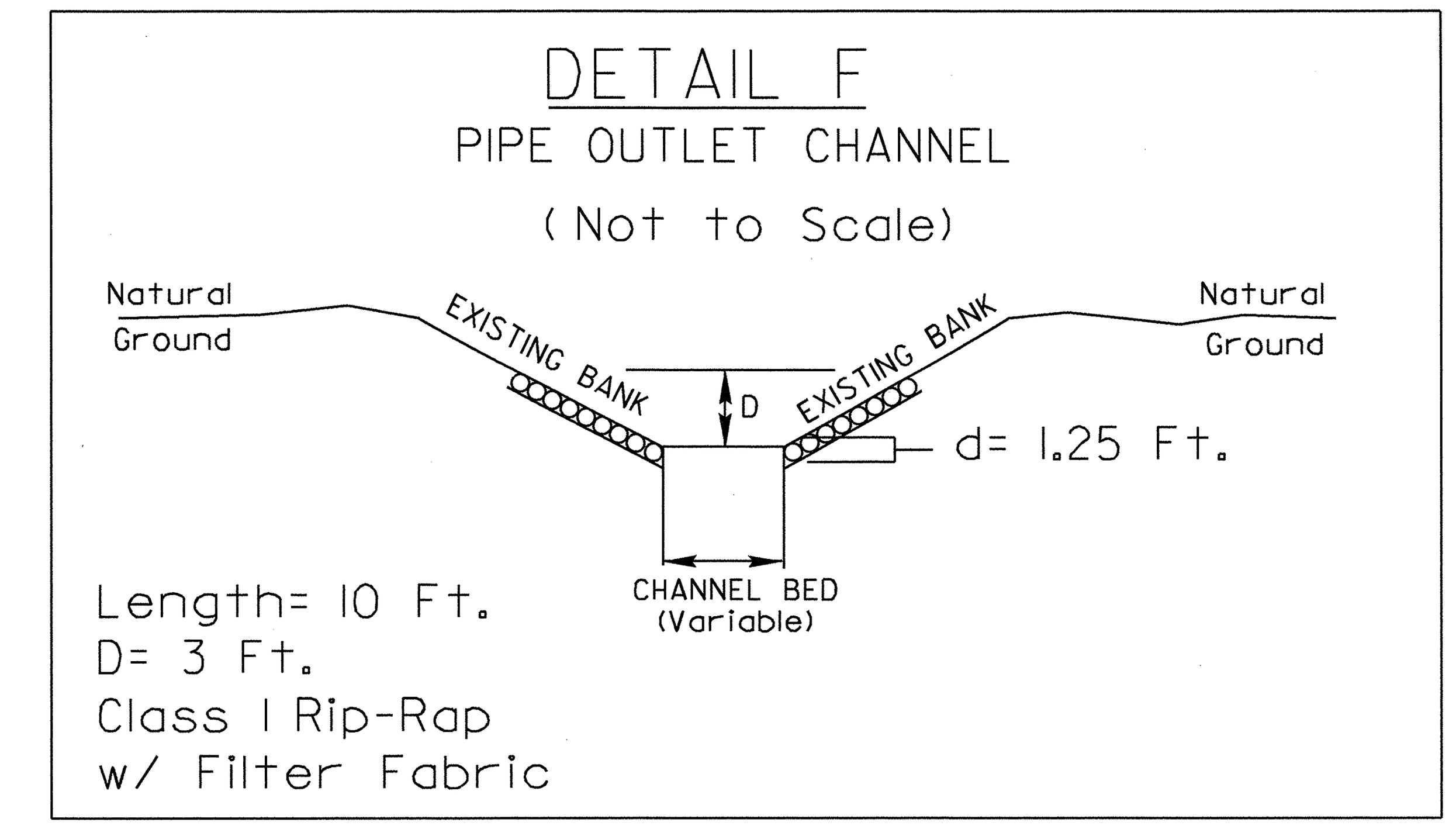




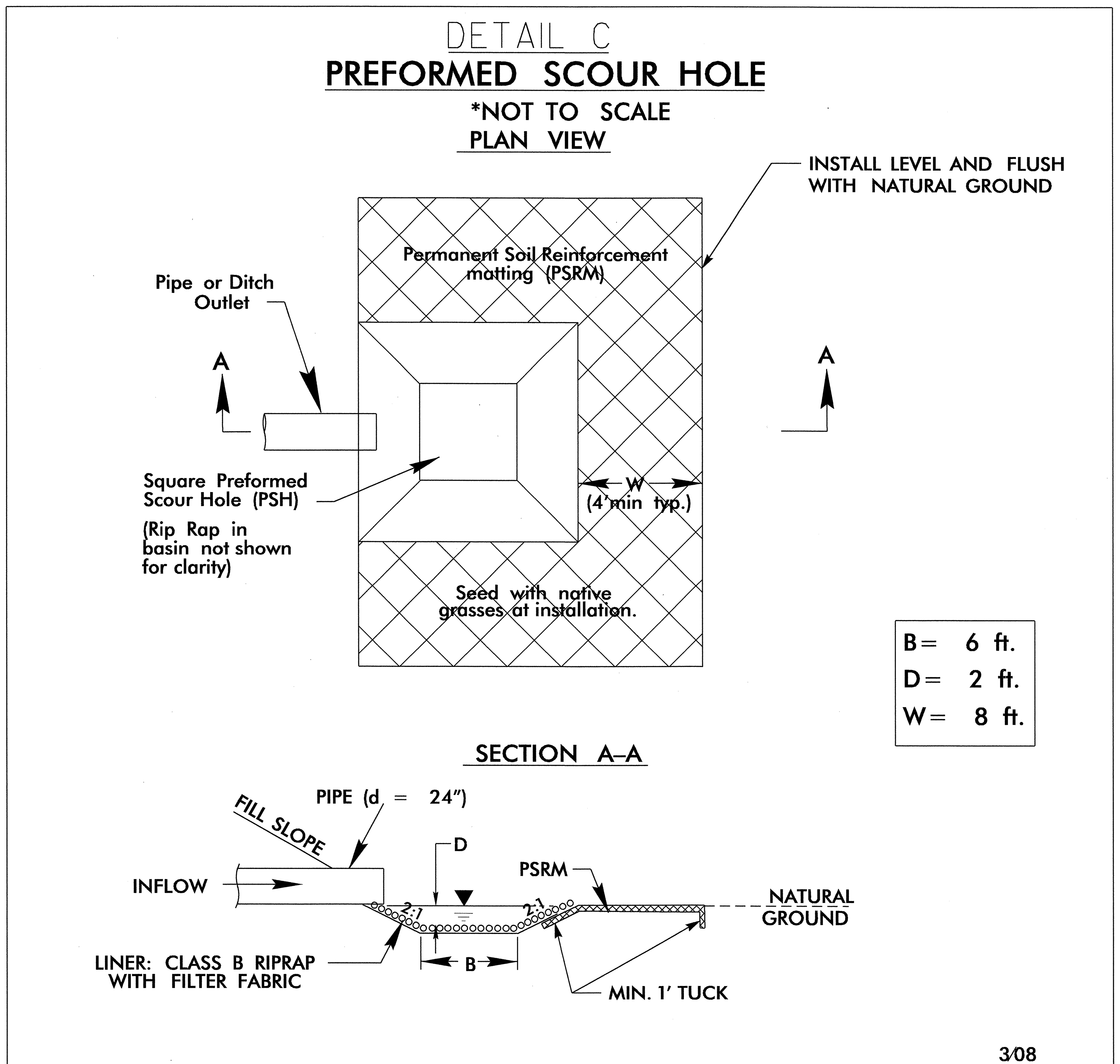
FROM STA. 12+00 TO STA. 12+25 -Y- (LT)



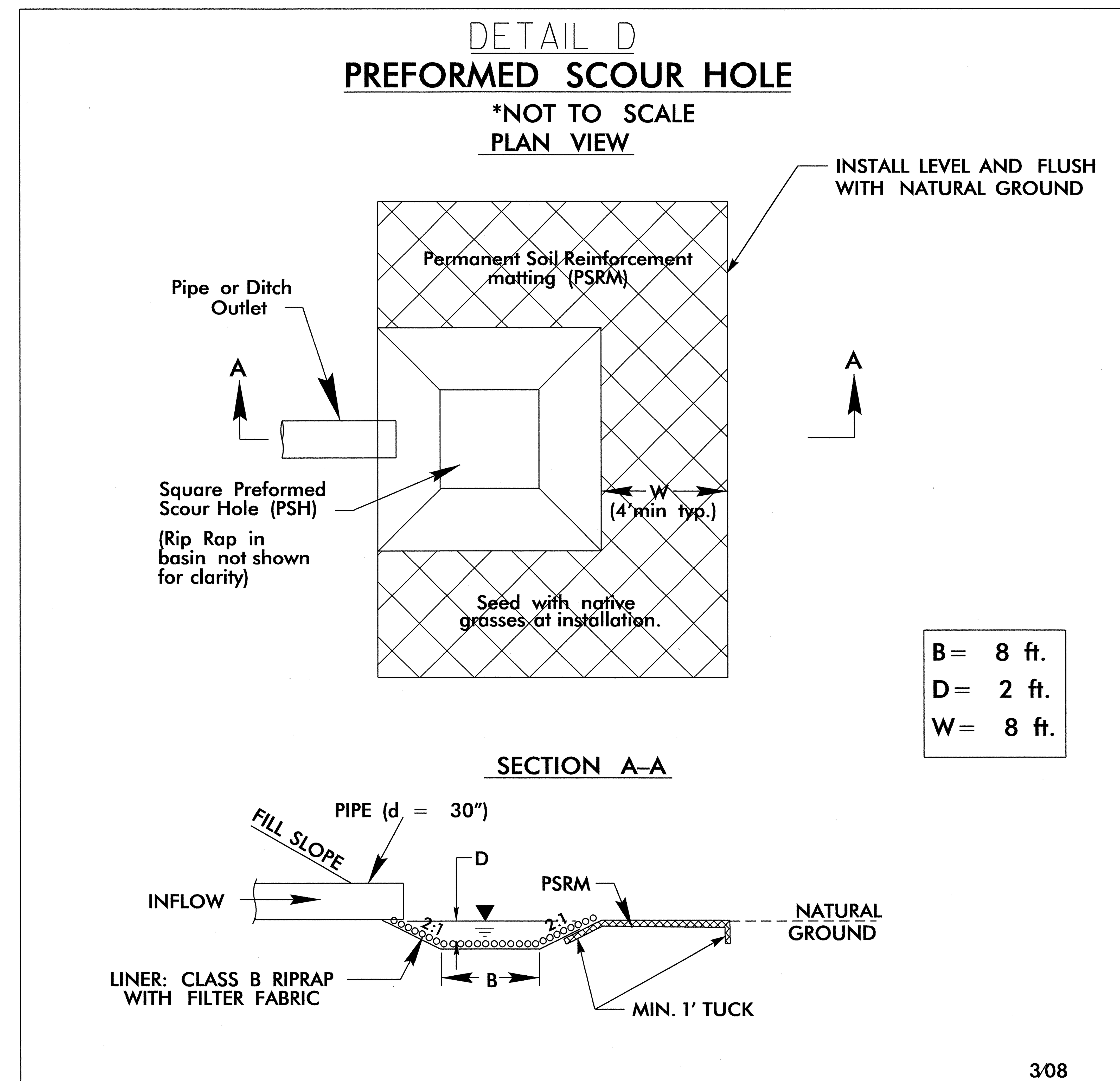
FROM STA. 50+43.15 TO STA. 51+50 -L- (RT)
FROM STA. 10+79.52 TO STA. 11+21.40 -DR3- (RT)
FROM STA. 43+92.68 TO STA. 45+00 -L- (RT)



FROM STA. 24+78 TO STA. 24+90 -L- (RT)
FROM STA. 36+69 TO STA. 36+83 -L- (RT)

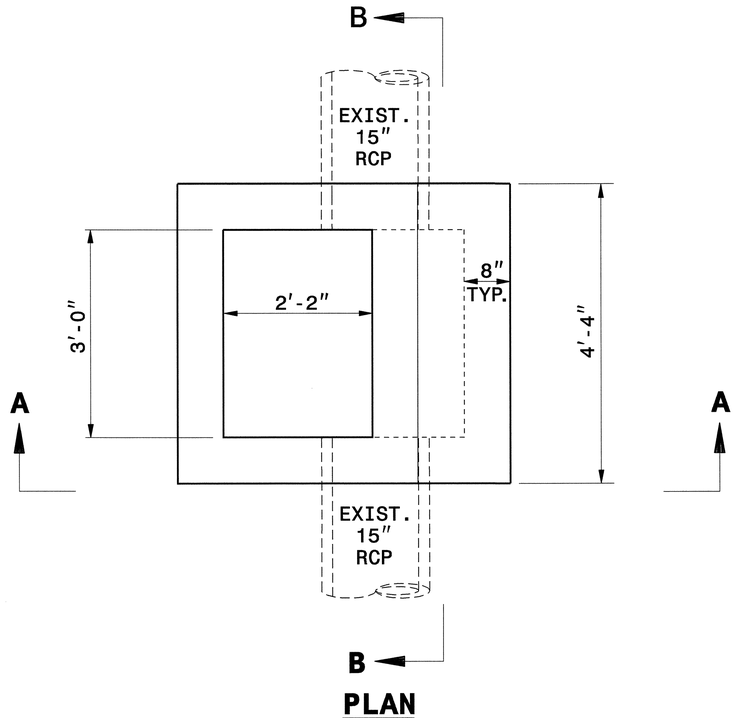


AT STA. 35+70 -L- RT.

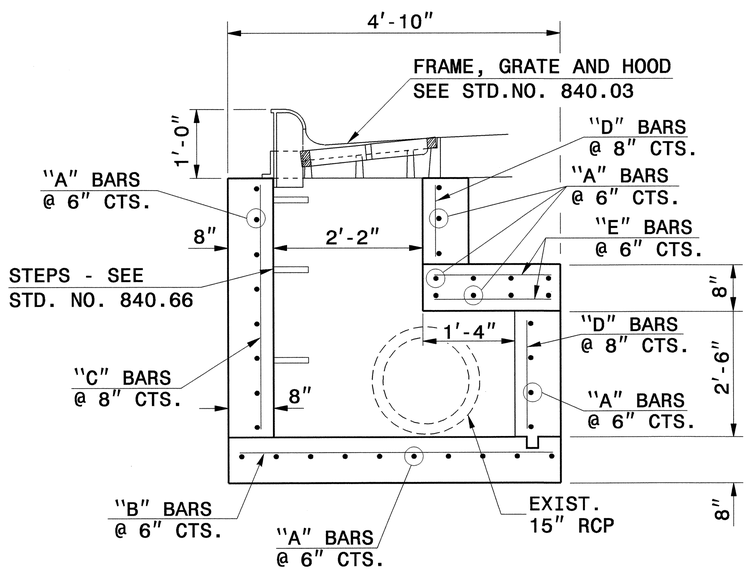


AT STA. 37+65 -L- RT.

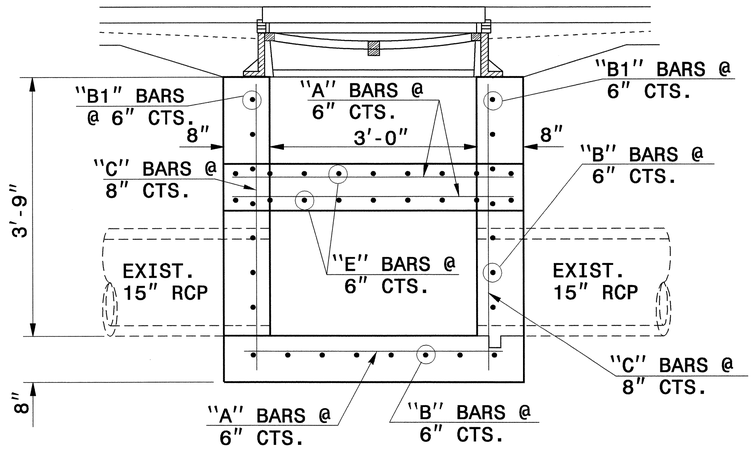
PROJECT REFERENCE NO.	SHEET NO.
U-4011	2-E



PLAN



SECTION A-A



SECTION B-B

NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

CONSTRUCT CONCRETE BOX IN ACCORADANCE WITH SECTION 825 OF THE STANDARD SPECIFICATIONS.

USE FORMS FOR CONSTRUCTION OF THE BOTTOM SLAB.

ADJUST LENGTH OF STEEL BARS AS NEEDED TO COMPENSATE FOR PIPES AND FRAME AND GRATE OPENINGS.

CONFORM REINFORCING STEEL TO ASTM A 615, GRADE 400.

CUT OR BEND STEEL BARS AS NEEDED TO PROVIDE 50mm CLEARANCE AROUND PIPES AND OPENINGS OR AS DIRECTED BY THE ENGINEER.

LOCATE FRAME, GRATE AND HOOD (SEE STANDARD 840.03) AS FIELD CONDITIONS DICTATE AND AS DIRECTED BY THE ENGINEER.

IF REINFORED CONCRETE PIPE IS SET IN BASE SLAB OR BOX, ADD TO BASE AS SHOWN ON STD. NO. 840.00.

BILL OF MATERIALS

BAR	QTY	SIZE	LENGTH	WEIGHT
A	32	#5	4'-0"	133
B	16	#5	3'-8"	61
B1	18	#5	3'-2"	59
C	17	#5	7'-2"	127
D	20	#5	3'-6"	73
E	18	#5	1'-8"	31
TOTAL REINF. STEEL (LBS.)				483
TOTAL CONC. (CU.YDS.)				1.85
DEDUCTION FOR ONE 15" RCP				0.05

NOTE: NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. (HOWARD) HUNT
7/7/10

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

DETAIL OF SPECIAL CATCH BASIN

ORIGINAL BY: T.S.Spell DATE: 7-26-02
MODIFIED BY: DATE:
CHECKED BY: John S. Hunt DATE: 10/3/08
FILE SPEC.: w:\stand/cb15rcp_r2906a.dgn

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

PROJECT REFERENCE NO.	SHEET NO.
U-4011	2-F
RW SHEET NO.	

-L-	
PI Sta 19+66.84	PI Sta 26+51.60
△ = 17° 10' 44.9" (RT)	△ = 9° 14' 55.8" (RT)
D = 4° 27' 31.7"	D = 4° 32' 50.2"
L = 385.28'	L = 203.39'
T = 194.10'	T = 101.92'
R = 1,285.00'	R = 1,260.00'
SE = .04	SE = .04
RO = 168'	RO = 168'

-L-	-Y1-
PI Sta 26+51.60	PI Sta 11+02.06
△ = 9° 14' 55.8" (RT)	△ = 7° 05' 30.6" (RT)
D = 4° 32' 50.2"	D = 4° 05' 33.2"
L = 203.39'	L = 173.29'
T = 101.92'	T = 86.75'
R = 1,260.00'	R = 1,400.00'
SE = .04	SE = SEE PLANS
RO = 168'	RO = SEE PLANS

-DR1-
PI Sta 11+70.60
△ = 10° 49' 57.9" (LT)
D = 11° 27' 33.0"
L = 94.53'
T = 47.41'
R = 500.00'
SE = SEE PLANS

PROJECT REFERENCE NO.	SHEET NO.
U-4011	2-G
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE

Andrew Jason Moore 7/29/10

8/17/99

REVISIONS

-L-	-Y2-
PI Sta 45+57.05 Δ = 23° 41' 06.0" (LT) D = 2° 09' 14.3" L = 1,099.59' T = 557.76' R = 2,660.00' SE = .03 RO = 126'	PI Sta 14+58.88 Δ = 30° 34' 39.3" (LT) D = 11° 48' 48.8" L = 258.83' T = 132.58' R = 485.00' SE = SEE PLANS RO = SEE PLANS

-Y2- POT STA. 16+00.00
END CONSTRUCTION
END RESURFACING

S 83° 56' 36.4" W

-Y2- PT STA. 15+85.13

-Y2- POC STA. 15+00.00
END GRADE
BEGIN RESURFACING

NAD 83/95

15+00

-Y2- PC STA. 13+26.30

40+00

45+00

N 65° 28' 44.3" W

50+00

-L- PC STA. 39+99.28

MATCHLINE
-L- STA. 39+00

N 30° 11' 49.0" E

-L- PT STA. 50+98.88

N 6° 30' 43.0" E

-L- STA. 52+00
MATCHLINE

N 63° 54' 44.2" W

-DR3- POT STA. 11+72.85=
-L- POC STA. 43+35.89

-DR3- POT STA. 10+44.00
BEGIN CONSTRUCTION

-Y2- POT STA. 10+00.00=
-L- POC STA. 46+36.35

-L- POC Sta. 55+50.00
END STATE PROJECT U-4011
END CONSTRUCTION

55+00

NAD 83/95

-L- PC Sta. 55+17.18

-L- PT Sta. 56+66.67

MATCHLINE
-L- STA. 52+00

N 6° 30' 43.0" E

N 76° 11' 19.5" W

-Y3- POT STA. 13+93.87=
-L- POT STA. 52+55.04

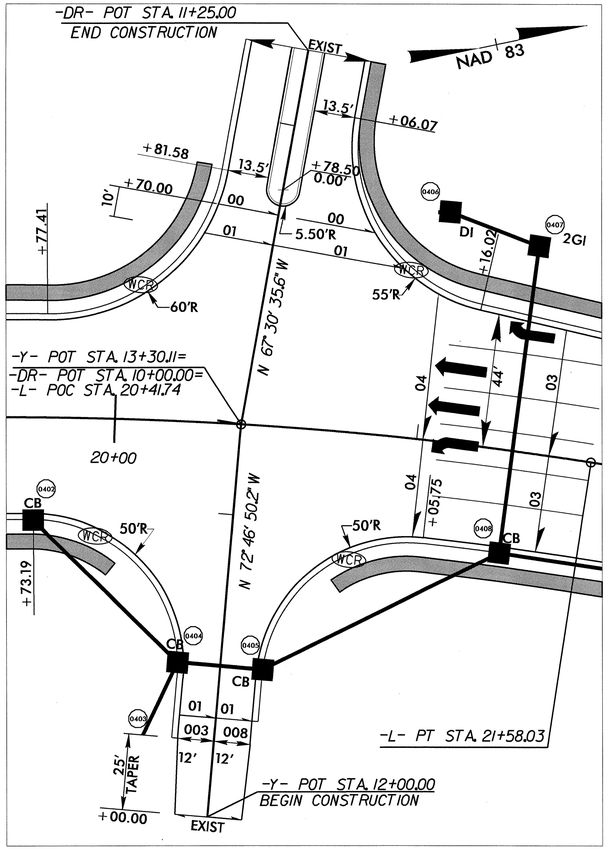
-Y3- POT STA. 12+75.00
BEGIN CONSTRUCTION

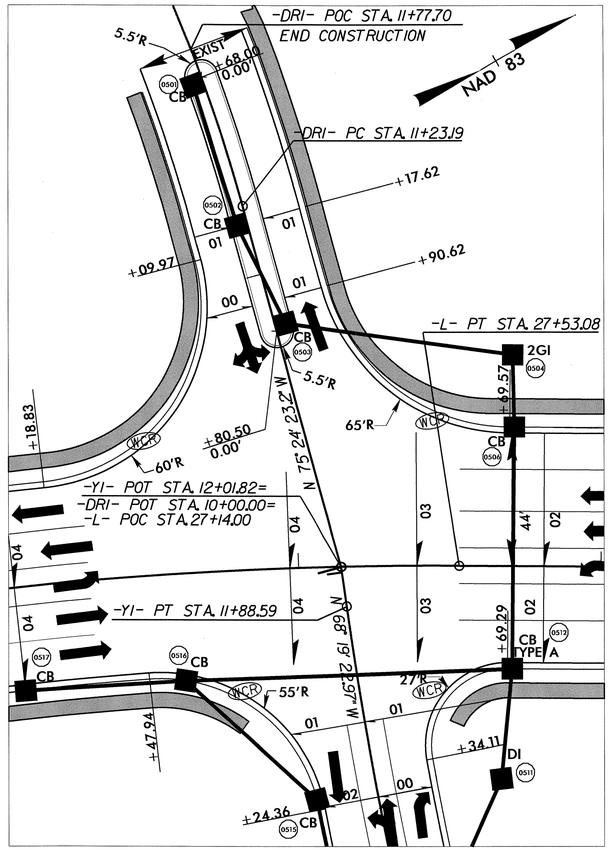
-Y3 PT STA. 12+53.95

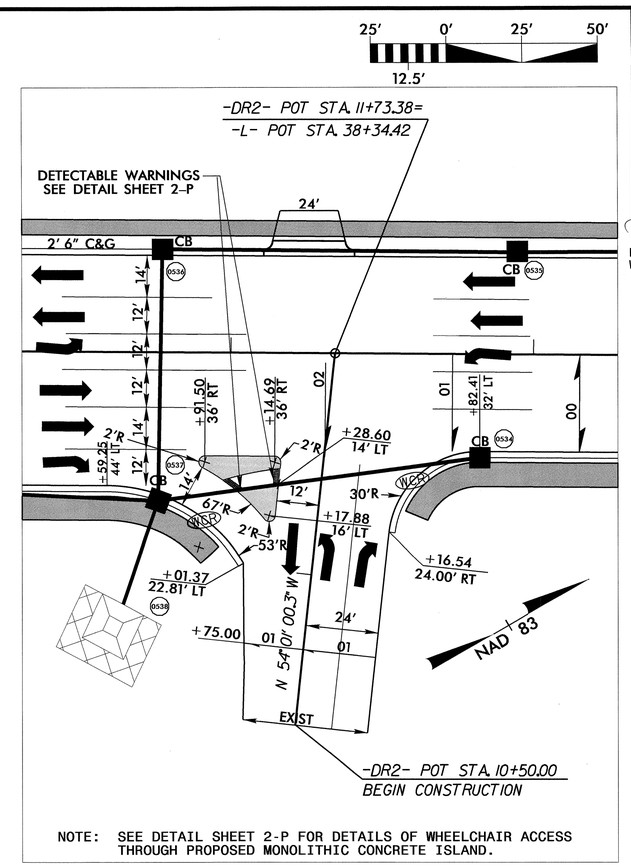
-L-	-Y3-
PI Sta 55+91.93 Δ = 1° 30' 00.0" (RT) D = 1° 00' 12.3" L = 149.49' T = 74.75' R = 5,710.04'	PI Sta 11+85.54 Δ = 26° 37' 01.3" (LT) D = 19° 05' 54.9" L = 139.37' T = 70.96' R = 300.00'

07-JUN-2010 15:03
R:\Roadway Projects\u4011_rdy_2g.dgn
$$$$USERNAME$$$$

RD244219 6/7/2010 u4011_rdy_2g scalhoun RD-Oce860-34





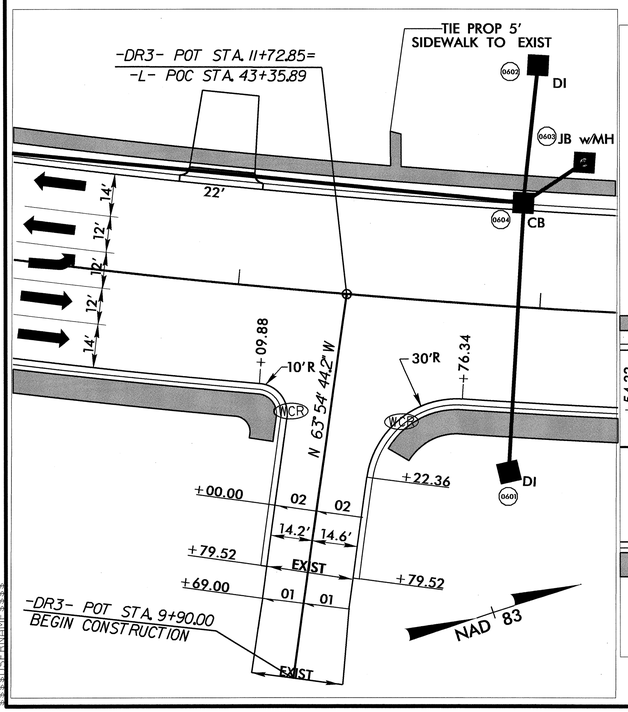


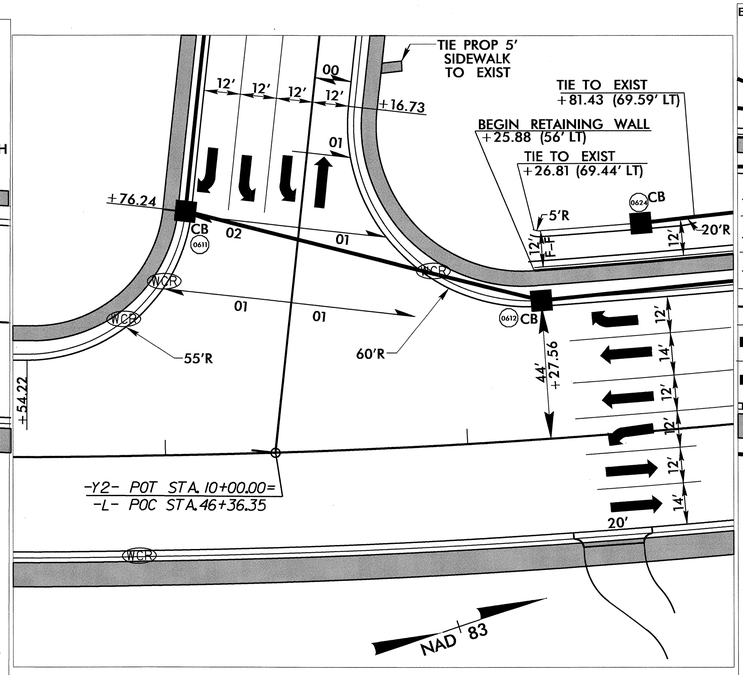
NOTE: SEE DETAIL SHEET 2-P FOR DETAILS OF WHEELCHAIR ACCESS THROUGH PROPOSED MONOLITHIC CONCRETE ISLAND.

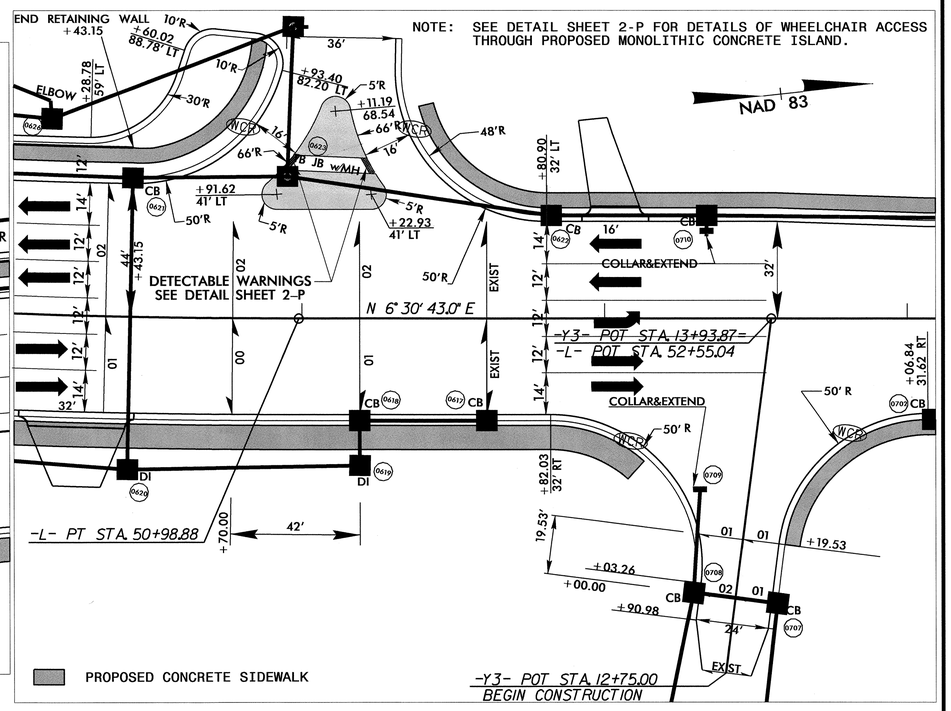
PROJECT REFERENCE NO.	SHEET NO.
U-4011	2-H
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE
3-11-11

NOTE: SEE PAVEMENT MARKING PLANS FOR WHEELCHAIR RAMP LOCATIONS.







5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-4011	2-1

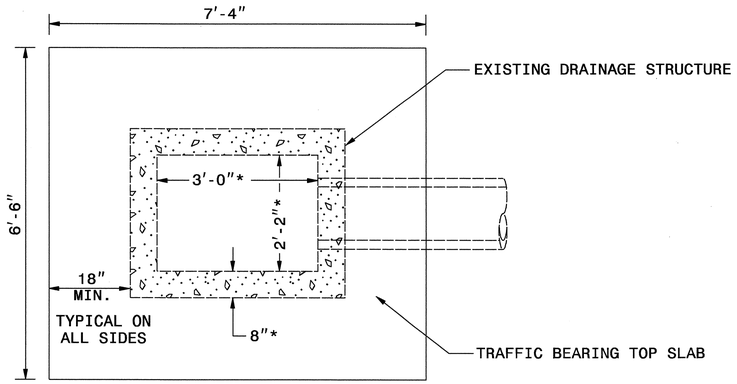
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

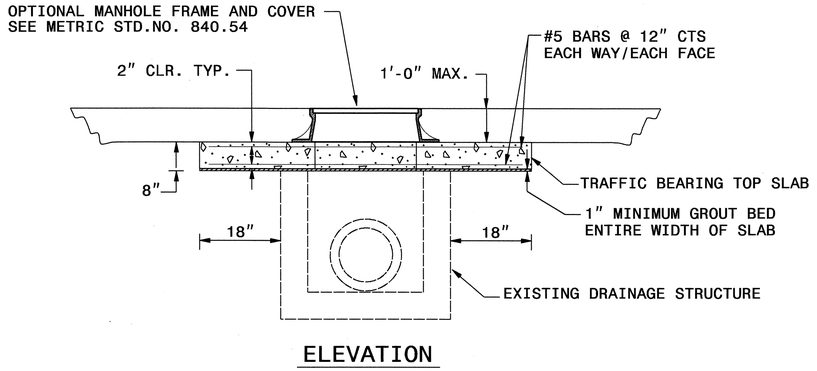
PRECAST TRAFFIC BEARING TOP SLAB FOR EXISTING BOXES

SHEET 1 OF 1

trficbearslab



PLAN



ELEVATION

BILL OF MATERIAL

TRAFFIC BEARING TOP SLAB

BAR	NO.	SIZE	LENGTH	WEIGHT
S1	8	#5	6'-6"	54.2
S2	7	#5	7'-4"	53.5
TOTAL REINF. STEEL (lbs.)				107.7
CLASS "B" CONC. (cu.yds.)				1.2

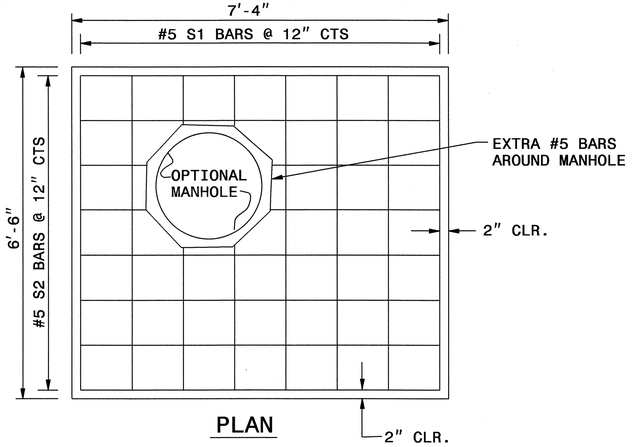
GENERAL NOTES:

QUANTIES FOR TRAFFIC BEARING TOP SLAB ARE CALCULATED FOR A TYPICAL SIZE CATCH BASIN HOUSING 12" THROUGH 36" PIPES

USE 4000 PSI COMPRESSIVE STRENGTH CONCRETE.

ADJUST QUANTIES FOR MANHOLE CONSTRUCTION

* DIMENSIONS MAY VARY AND SHOULD BE FIELD CONFIRMED



PLAN

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

ENGLISH DETAIL DRAWING FOR

PRECAST TRAFFIC BEARING TOP SLAB FOR EXISTING BOXES

SHEET 1 OF 1

trficbearslab

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOWERTON
7/7/10

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

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. WARD DATE: 11-98
MODIFIED BY: DATE:
CHECKED BY: DATE: 6/3/10
FILE SPEC.: ds172:\usr\detail\stand\tricbearslab.dgn

Q3-JUN-2010 11:38
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PS237501 6/3/2010 traffic bear slab jhowerton PS-Oce860-34dtbond

PROJECT REFERENCE NO.	SHEET
U-4011	2-J

GEOTECHNICAL ENGINEER

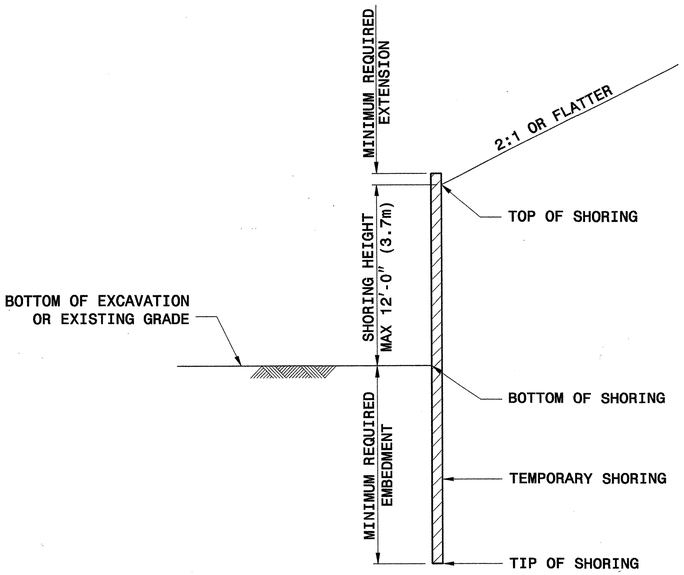
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 3/29/07

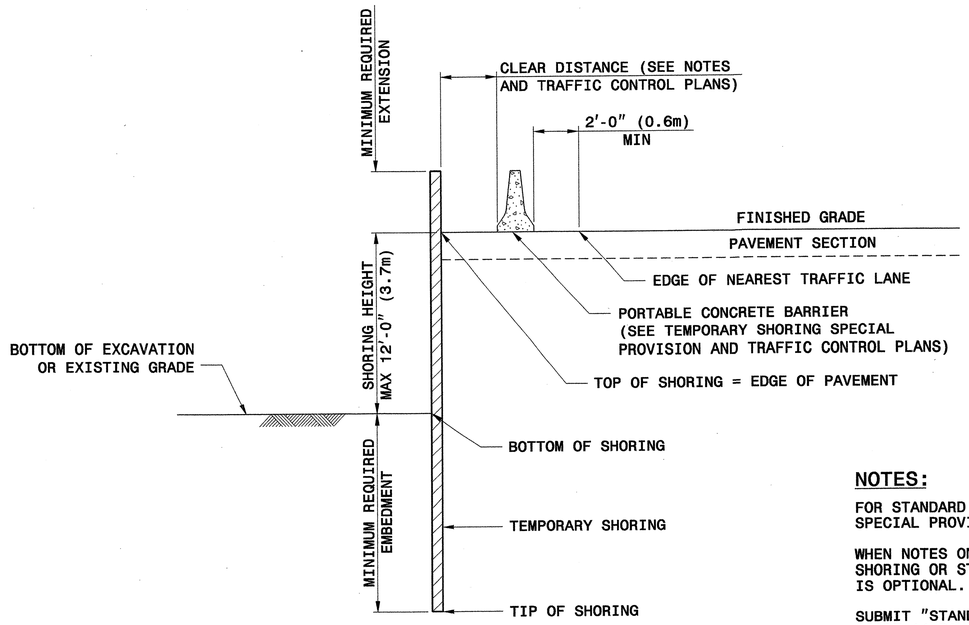
SIGNATURE DATE

ENGINEER

SIGNATURE DATE



SLOPE CASE



SURCHARGE CASE

		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		
GROUNDWATER CONDITION	SHORING HEIGHT FT (m)	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

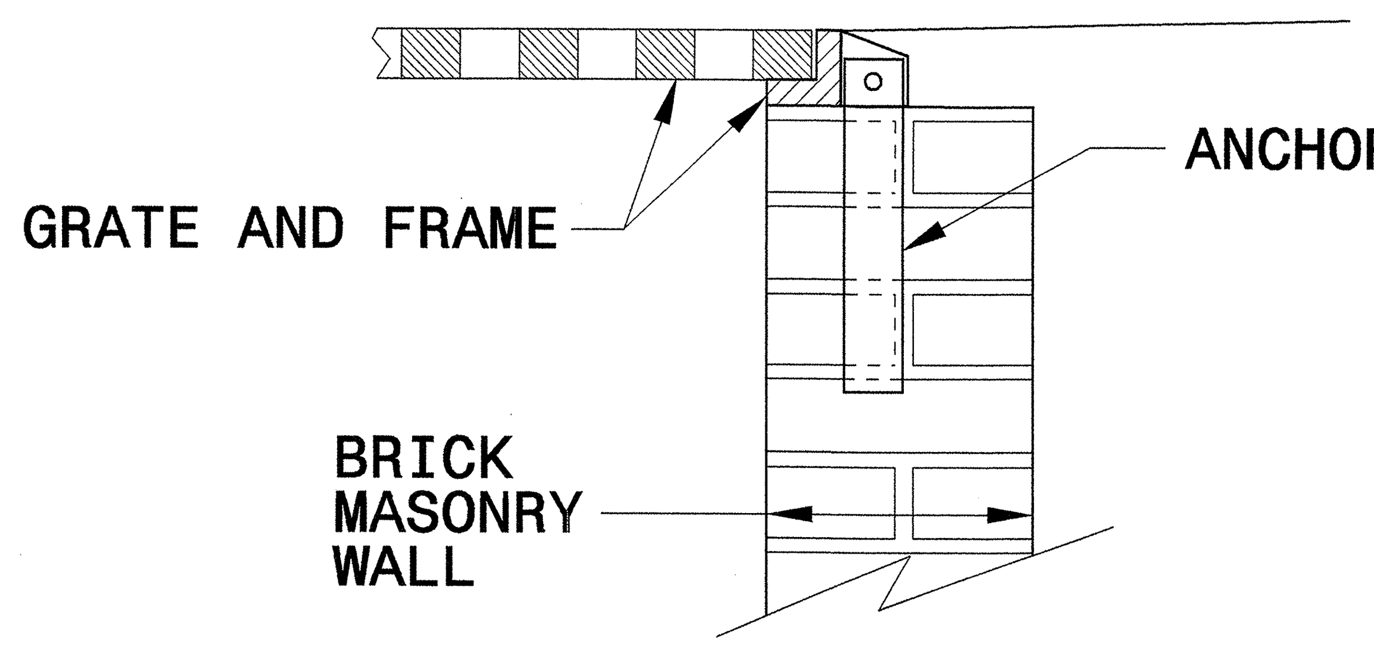
STANDARD TEMPORARY SHORING

DATE: 2-20-07

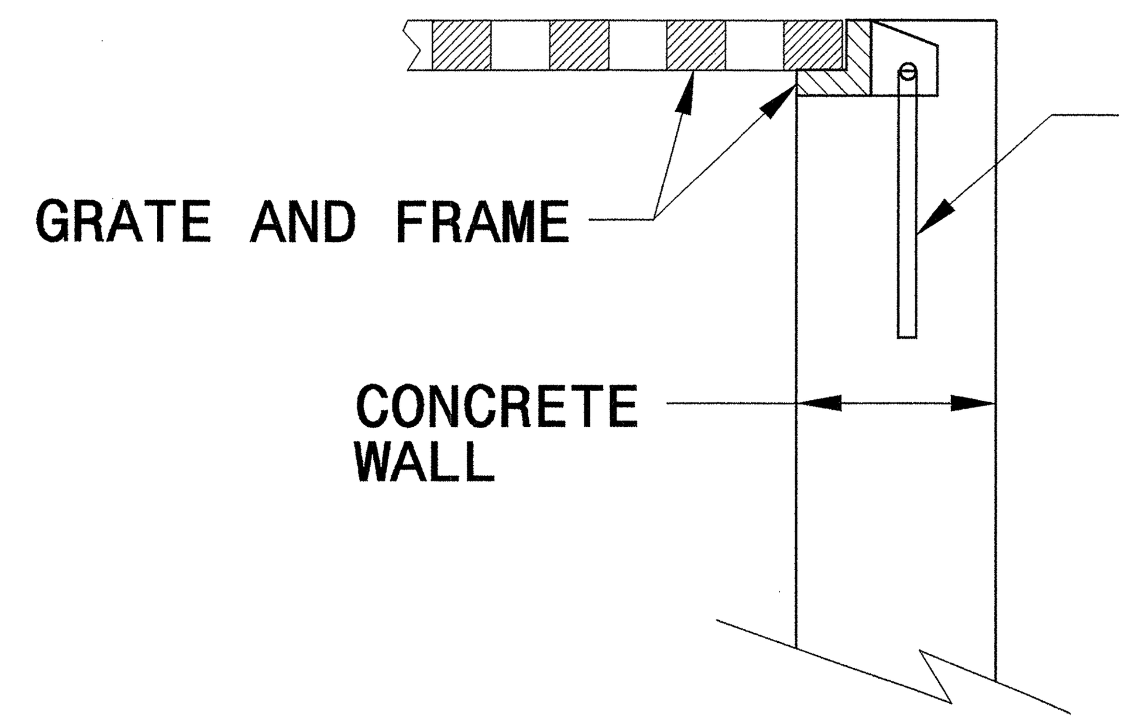
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

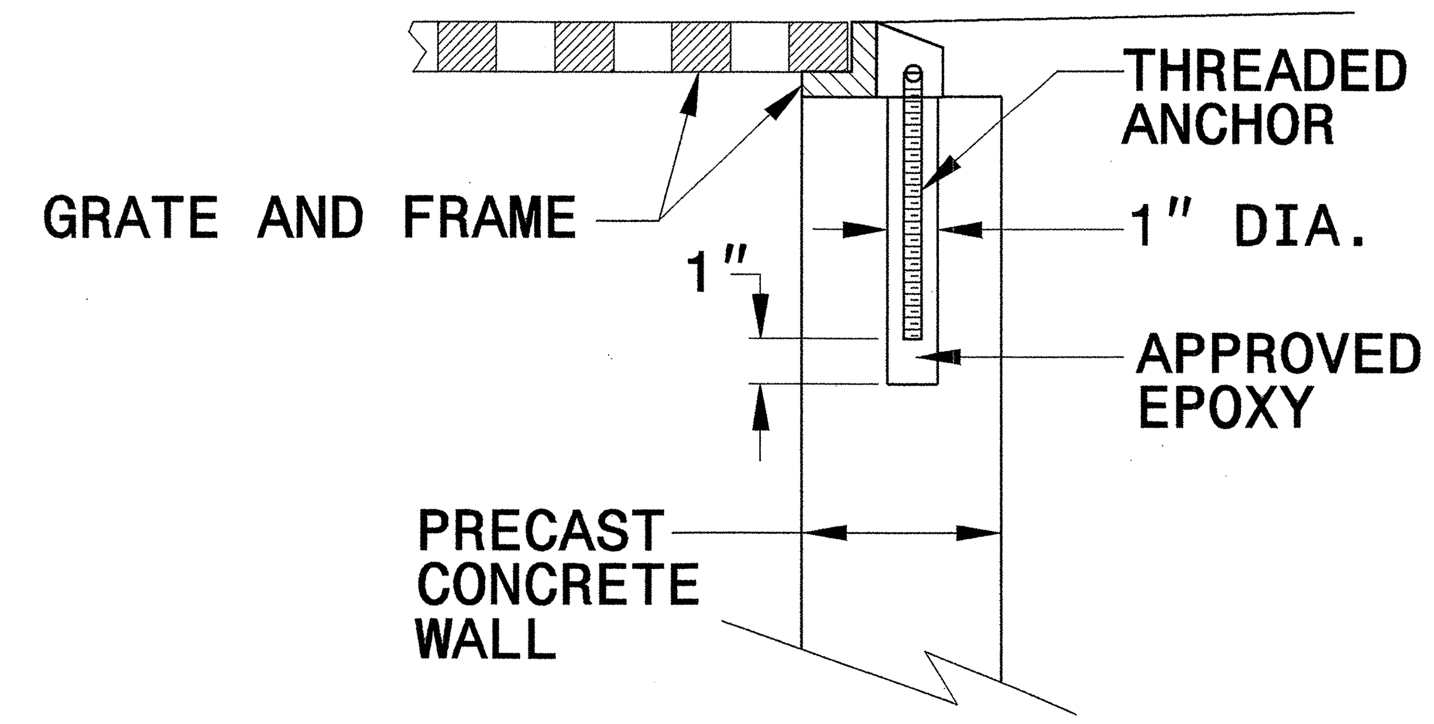
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



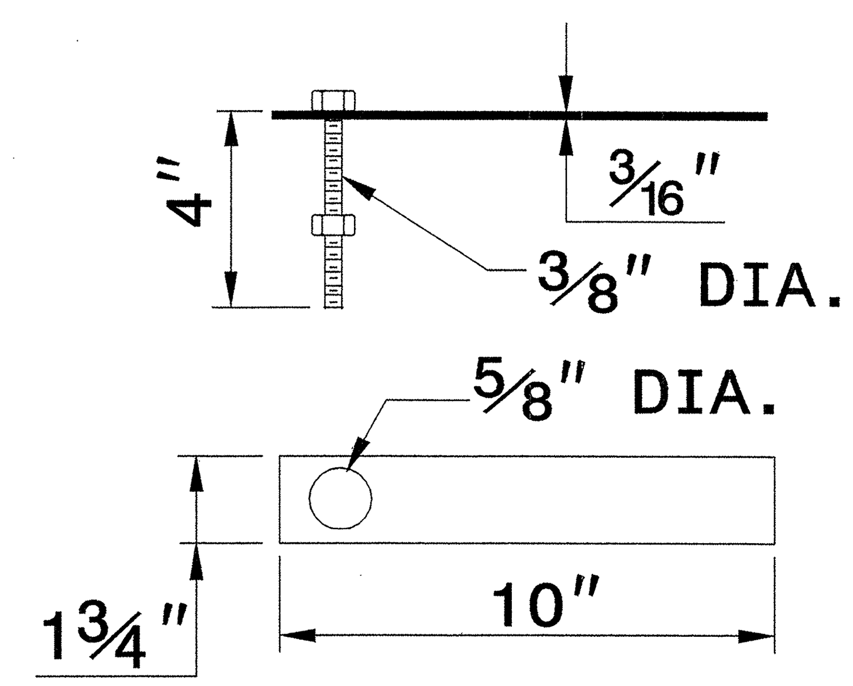
CONCRETE CONSTRUCTION



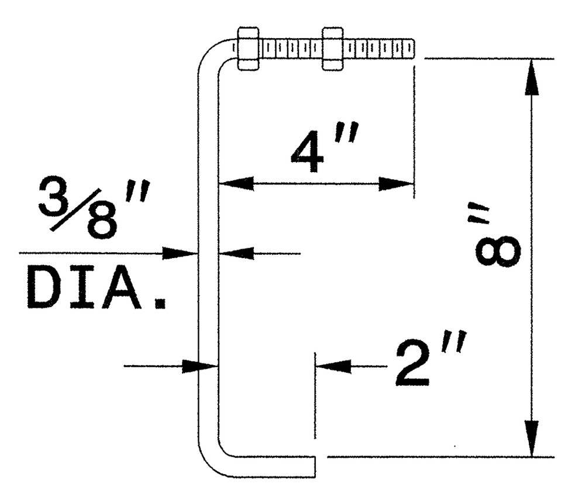
PRECAST CONCRETE CONSTRUCTION

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
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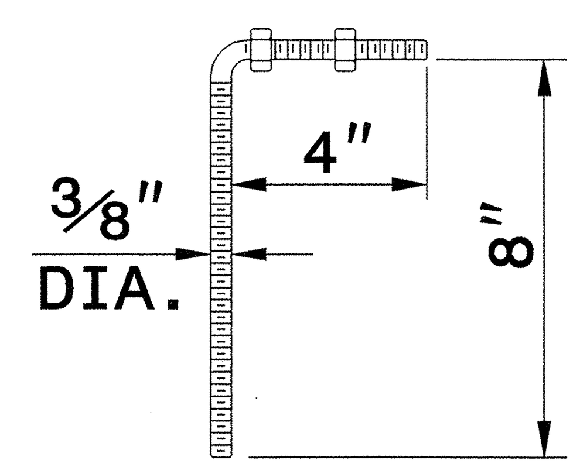
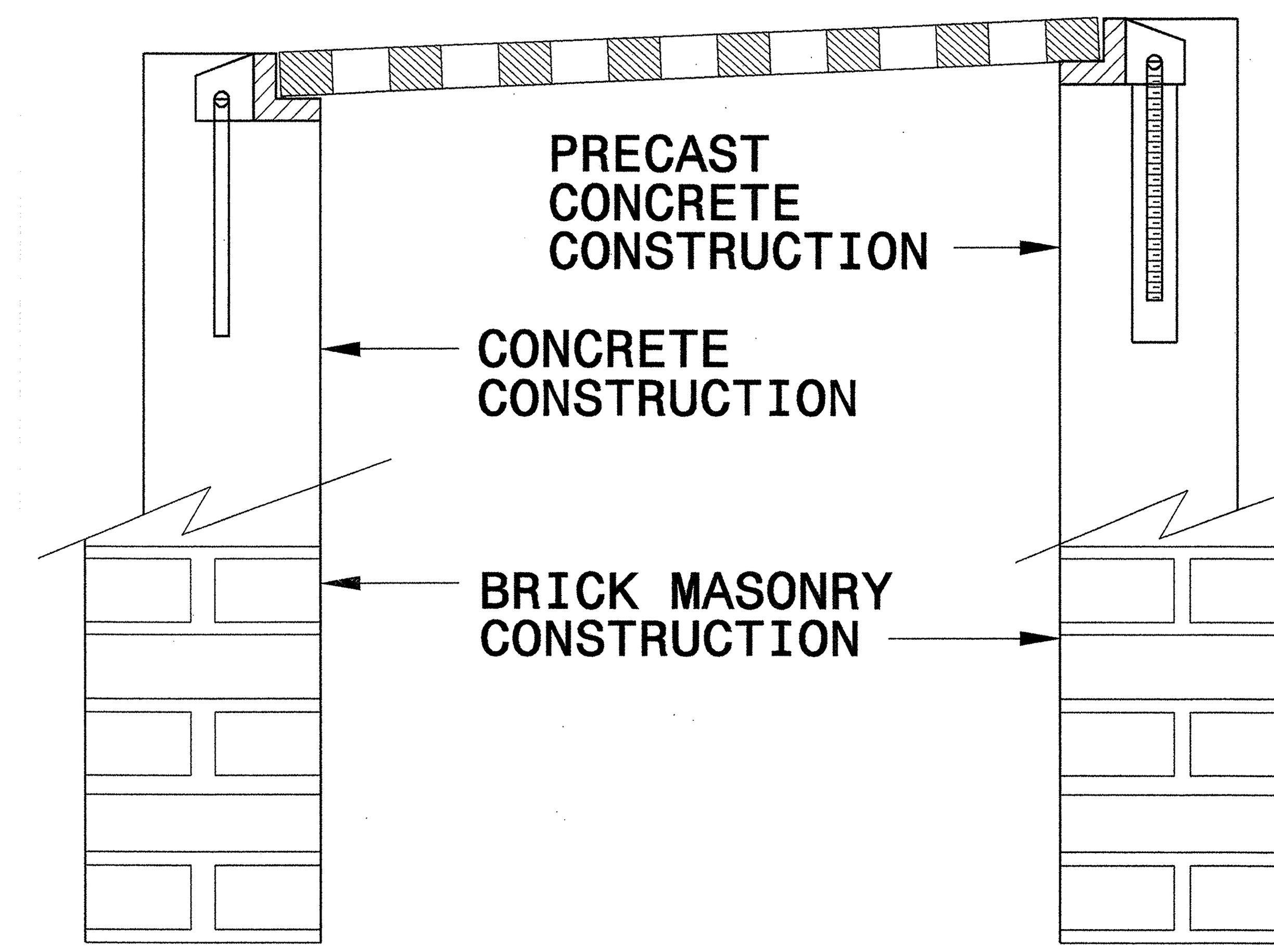


PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR

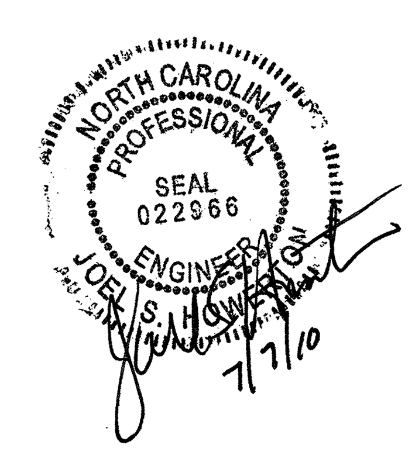


FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

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



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: [signature] DATE: 11/13/08
FILE SPEC.:

$$$$$$SYSTIME$$$$$
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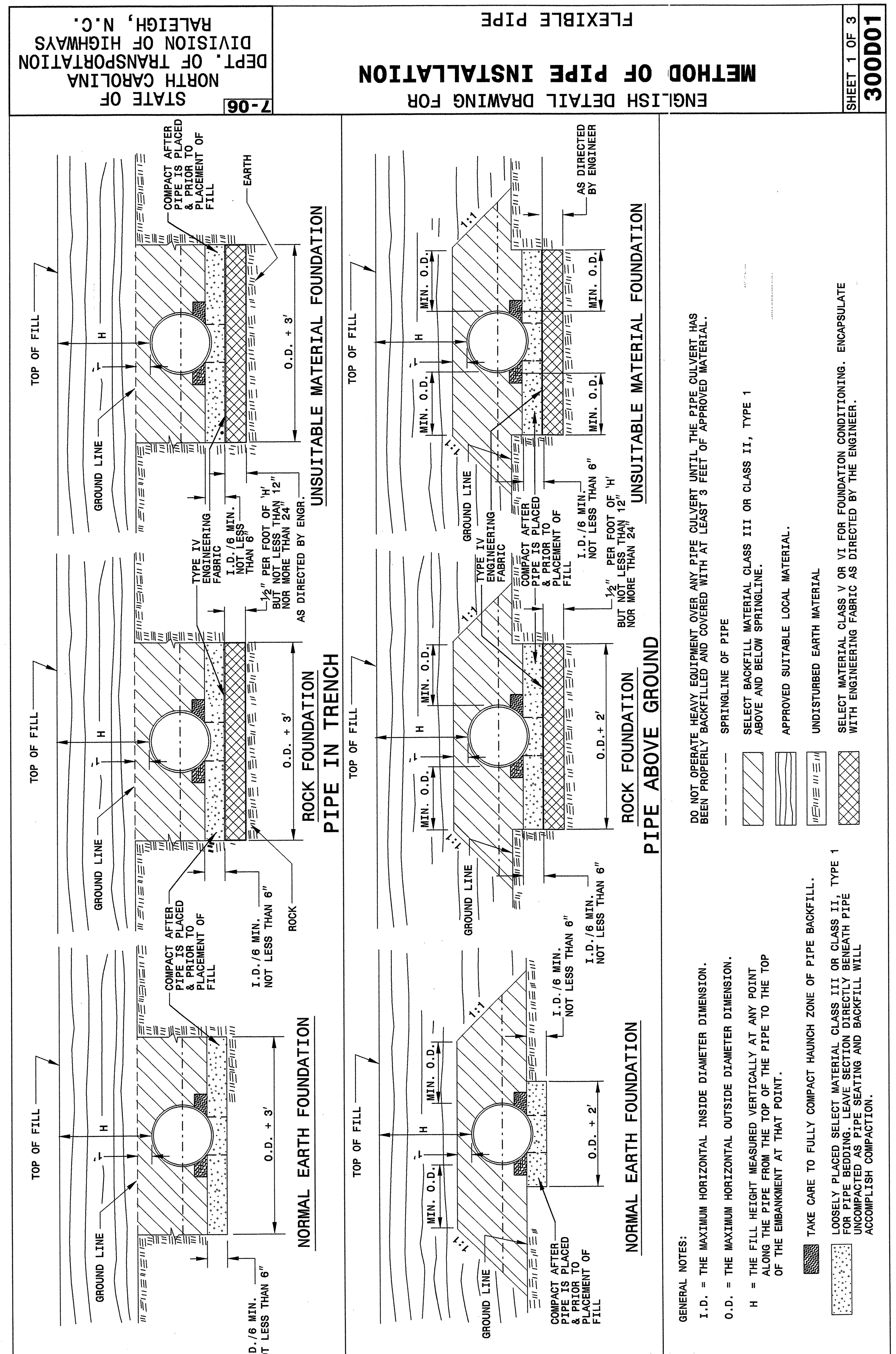
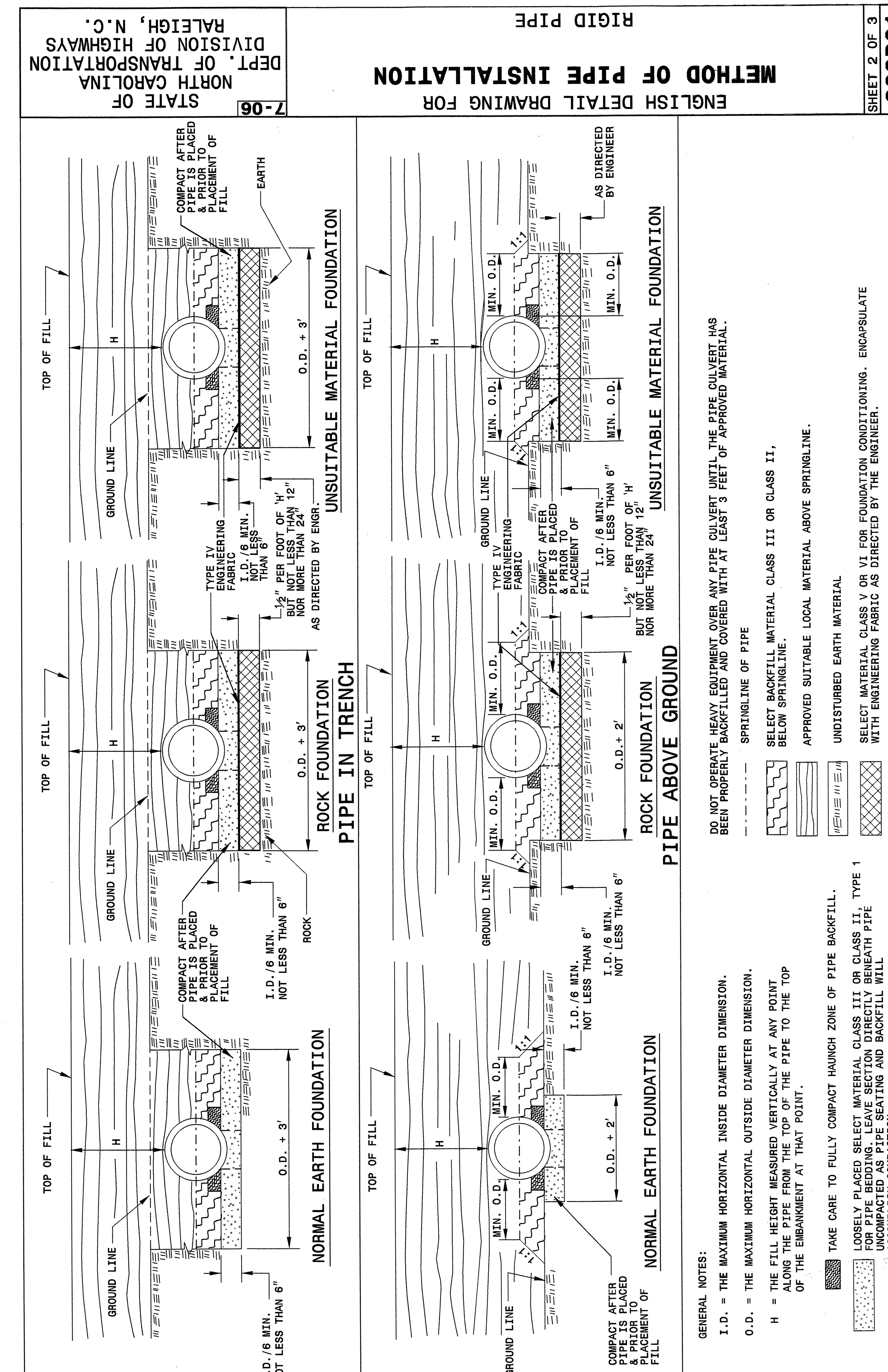
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4011	2-L



NORMAL EARTH FOUNDATION
ROCK FOUNDATION
PIPE IN TRENCH
UNSUITABLE MATERIAL FOUNDATION
PIPE ABOVE GROUND
TOP OF FILL
GROUND LINE
COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL
TYPE IV ENGINEERING FABRIC
EARTH
ROCK
AS DIRECTED BY ENGR.
GENERAL NOTES:
I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.
TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. (7-06)	ENGLISH DETAIL DRAWING FOR **METHOD OF PIPE INSTALLATION** FLEXIBLE PIPE	SHEET 1 OF 3 **300D01**



NORMAL EARTH FOUNDATION
ROCK FOUNDATION
PIPE IN TRENCH
UNSUITABLE MATERIAL FOUNDATION
PIPE ABOVE GROUND
TOP OF FILL
GROUND LINE
COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL
TYPE IV ENGINEERING FABRIC
EARTH
ROCK
AS DIRECTED BY ENGINEER
GENERAL NOTES:
I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.
TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. (7-06)	ENGLISH DETAIL DRAWING FOR **METHOD OF PIPE INSTALLATION** RIGID PIPE	SHEET 2 OF 3 **300D01**

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

SEE PLATE FOR TITLE

ORIGINAL BY: KKempf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: [signature] DATE: 7/30/09
FILE SPEC: /ericward/stds/stdstodetails/30001/0300d01.dgn

30-JUL-2009 08:49
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jhowerton AT PS237501

5/14/99

FLEXIBLE PIPE

Round Corrugated Steel Pipe
2 2/3 x ½ corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet) (Ga) 16	14	12	10	8
12	12	204	256			
15	12	162	204			
18	12	135	169	239		
21	12	115	145	204		
24	12	100	126	178		
30	12	79	100	142		
36	12	65	83	117	152	
42	12	55	70	100	130	160
48	12	48	61	87	113	139
54	12		54	77	100	123
60	12			69	90	111
66	12				81	100
72	12				74	91
78	12					81
84	12					69

Round Corrugated Aluminum Pipe
2 2/3 x ½ corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet) (Ga) 16	14	12	10	8
12	12	123	155	218	281	344
15	12	98	123	174	224	275
18	12	81	102	144	187	228
21	12	69	87	123	160	195
24	12	60	76	108	139	171
27	12		67	95	123	151
30	12		60	85	111	136
36	12		50	71	92	113
42	12			60	78	96
48	12			52	68	84
54	12			46	50	74
60	12				50	62
66	12					51
72	12					41

** FOR DIFFERENT CORRUGATIONS AND ARCH PIPES REFER TO ROADWAY DESIGN MANUAL OR MANUFACTURERS SPECIFICATION.

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

CSP - AASHTO M36
CAAP - AASHTO M196
HDPE - AASHTO M294
PVC - ASTM F949 or AASHTO M304

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

HDPE - * (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 60"
* (Maximum fill) 20' for pipe diameters ≤ 24"
17' for pipe diameters ≥ 30" and ≤ 60"

PVC - * (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 36"
* (Maximum fill) 30' for pipe diameters ≥ 12" and ≤ 36"

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

RIGID PIPE

RCP - * (Minimum fill) 1' for Class IV & CLASS V
2' for Class III & Class II

* (Maximum fill) 10' - Class II pipe
20' - Class III pipe
30' - Class IV pipe
40' - Class V pipe

(For fills > 40' & < 80' use LRFD Direct Design Method)

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
7-06
ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FILL HEIGHT TABLES
SHEET 3 OF 3
300D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022066 JOEL S. HOWERTON 7/7/10

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

SEE PLATE FOR TITLE

ORIGINAL BY: KKempf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/30/09
FILE SPEC: c:/ericward/stds/stdstodetails/30001/0300d01.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-4011	2-M

PS237501 7/30/2009 0300d01 jhowerton PS-Oce860-34dtbond

PROJECT REFERENCE NO.	SHEET NO.
U-4011	2-N

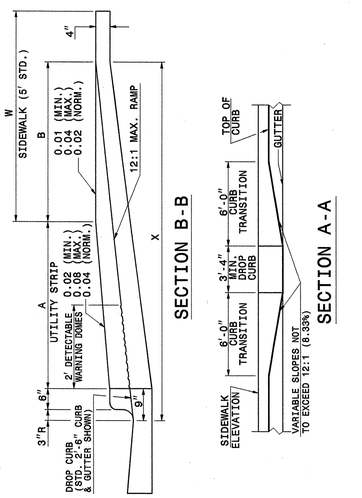
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

WHEELCHAIR RAMP

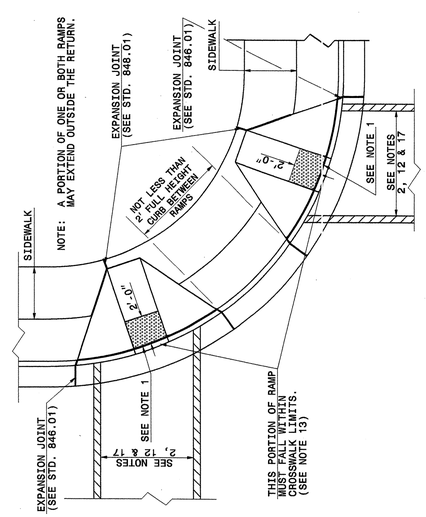
PROPOSED CURB AND GUTTER

SHEET 1 OF 3 **848D05**



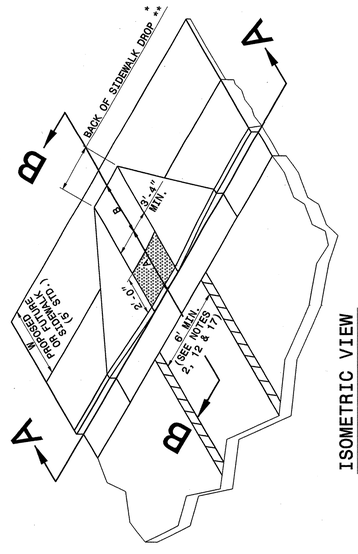
SECTION B-B

SECTION A-A



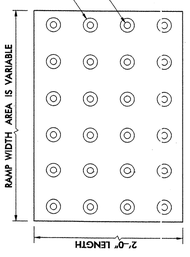
PLAN VIEW

DUAL RAMPS
ANY RADII
(40" MIN. FLOOR WIDTH)



ISOMETRIC VIEW

NOTES:
1. DETECTABLE WARNING DOMES SHALL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP, FOR ADDITIONAL DETAILS SEE STD. 848.02.
2. OBTAIN 70% CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



DETECTABLE WARNING DOMES

W	A	W+A+9"	X	B
5'	0.0'	5.8'	5.8'	5.0"*
6'	0.0'	6.8'	6.8'	6.0"*
7'	0.0'	7.8'	7.3'	6.5"*
8'	0.0'	8.8'	7.3'	6.5"*
5'	2.0'	7.8'	7.8'	5.0'
5'	2.5'	8.3'	8.1'	4.8'
5'	3.0'	8.8'	8.3'	4.4'
5'	3.5'	9.3'	8.4'	4.1'
5'	4.0'	9.8'	8.6'	3.8'
5'	4.5'	10.3'	8.7'	3.4'
5'	5.0'	10.8'	8.9'	3.1'

B = X-(A+9")
B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (8.33%) SLOPE.
* BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES
** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.

STATE OF
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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 1 OF 3 **848D05**

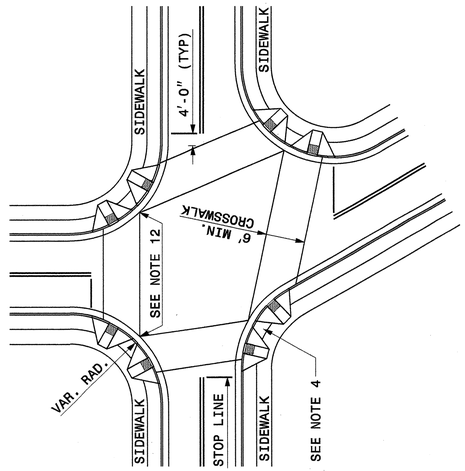
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

WHEELCHAIR RAMP

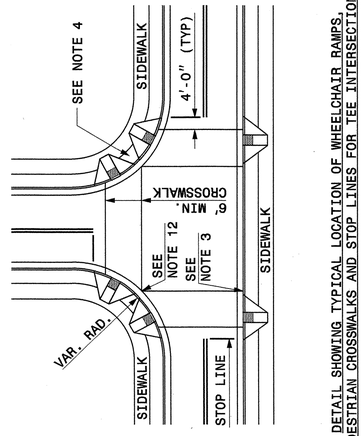
PROPOSED CURB AND GUTTER

SHEET 2 OF 3 **848D05**



DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES

ALLOWABLE LOCATIONS
DUAL RAMP RADII.....ANY



DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES FOR TEE INTERSECTIONS

ROADWAY PLAN SYMBOL
(WCR)
FOR PROPOSED WHEELCHAIR RAMP

PROPOSED WHEELCHAIR RAMP
PROPOSED OR FUTURE SIDEWALK

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

ENGLISH DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 2 OF 3 **848D05**

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

SEE PLATE FOR TITLE

ORIGINAL BY: STD.NO.848.05 DATE: 4-22-10
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: 4/22/10
FILE SPEC.: SpecialDetails/EricWard/STDS/848d05.dgn

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWARD 7/1/10

22-APR-2010 09:59
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tspell AT PS244552

22-APR-2010 09:58
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.tspell AT PS244552

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

ENGLISH DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 3 OF 3

848D05

NOTES:

1. CONSTRUCT THE WALKING SURFACE WITH SLIP RESISTANTANCE AND A 70% CONTRASTING COLOR TO THE SIDEWALK.
2. CROSSWALK WIDTHS AND CONFIGURATION VARY BUT MUST CONFORM TO TRAFFIC DESIGN STANDARDS.
3. NORTH CAROLINA GENERAL STATUTE 136-44.14 REQUIRES THAT ALL STREET CURBS BEING CONSTRUCTED OR RECONSTRUCTED FOR MAINTENANCE PROCEDURES, TRAFFIC OPERATIONS, REPAIRS, CORRECTION OF UTILTIES OR ALTERED FOR ANY REASON AFTER SEPTEMBER 1, 1973 SHALL PROVIDE WHEELCHAIR RAMPS FOR THE PHYSICALLY DISABLED AT ALL INTERSECTIONS WHERE BOTH CURB AND GUTTER AND SIDEWALKS ARE PROVIDED AND AT OTHER POINTS OF PEDESTRIAN FLOW.

   IN ADDITION, SECTION 228 OF THE 1973 FEDERAL AID HIGHWAY SAFETY ACT REQUIRES PROVISION OF CURB RAMPS ON ANY CURB CONSTRUCTION AFTER JULY 1,1976 WHETHER A SIDEWALK IS PROPOSED INITIALLY OR IS PLANNED FOR A FUTURE DATE.

   THE AMERICANS WITH DISABILITIES ACT (ADA) OF 1990 EXTENDS TO INDIVIDUALS WITH DISABILITIES. COMPREHENSIVE CIVIL RIGHTS PROTECTIONS SIMILIAR TO THOSE PROVIDED TO PERSONS ON THE BASIS OF RACE, SEX, NATIONAL ORIGIN AND RELIGION UNDER THE CIVIL RIGHTS ACT OF 1964. THESE CURB RAMPS HAVE BEEN DESIGNED TO COMPLY WITH THE CURRENT ADA STANDARDS.

4. PROVIDE WHEELCHAIR RAMPS AT LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. LOCATE WHEELCHAIR RAMPS AS DIRECTED BY THE ENGINEER WHERE EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. AFFECT PLACEMENT. WHERE TWO RAMPS ARE INSTALLED PLACE NOT LESS THAN 2 FEET OF FULL HEIGHT CURB BETWEEN THE RAMPS. PLACE DUAL RAMPS AS NEAR PERPENDICULAR TO THE TRAVEL LANE BEING CROSSED AS POSSIBLE.
5. DO NOT EXCEED 0.08 (12:1) SLOPE ON THE WHEELCHAIR RAMP IN RELATIONSHIP TO THE GRADE OF THE STREET.
6. CONSTRUCT WHEELCHAIR RAMPS 40″ (3′-4″) OR GREATER FOR DUAL RAMPS.
7. USE CLASS "B" CONCRETE WITH A SIDEWALK FINISH IN ORDER TO OBTAIN A ROUGH NON-SKID TYPE SURFACE.
8. PLACE A ½″ EXPANSION JOINT WHERE THE CONCRETE WHEELCHAIR RAMP JOINS THE CURB AND AS SHOWN ON STD. DWG. 848.01.
9. PLACE THE INSIDE PEDESTRIAN CROSSWALK LINES NO CLOSER IN THE INTERSECTION BY BISECTING THE INTERSECTION RADII, WITH ALLOWANCE OF A 4′ CLEAR ZONE IN THE VEHICULAR TRAVELWAY WHEN ONE RAMP IS INSTALLED. (SEE NOTE 17)
10. COORDINATE THE CURB CUT AND THE PEDESTRIAN CROSSWALK LINES SO THE FLOOR OF THE WHEELCHAIR RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES. PLACE DIAGONAL RAMPS WITH FLARED SIDES SO 24″ OF FULL HEIGHT CURB FALLS WITHIN THE CROSSWALK MARKINGS ON EACH SIDE OF THE FLARES.
11. CONSTRUCT THE PEDESTRIAN CROSSWALK A MINIMUM OF 6 FEET. A CROSSWALK WIDTH OF 10 FEET OR GREATER IS DESIRABLE.
12. USE STOP LINES, NORMALLY PERPENDICULAR TO THE LANE LINES, WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL, STOP SIGN OR OTHER LEGAL REQUIREMENT. AN UNUSUAL APPROACH SKEW MAY REQUIRE THE PLACEMENT OF THE STOP LINE TO BE PARALLEL TO THE INTERSECTING ROADWAY.
13. TERMINATE PARKING A MINIMUM OF 20 FEET BACK OF PEDESTRIAN CROSSWALK.
14. PLACE ALL PAVEMENT MARKINGS IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION AND THE NORTH CAROLINA SUPPLEMENT TO THE MUTCD.

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

ENGLISH DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 3 OF 3

848D05

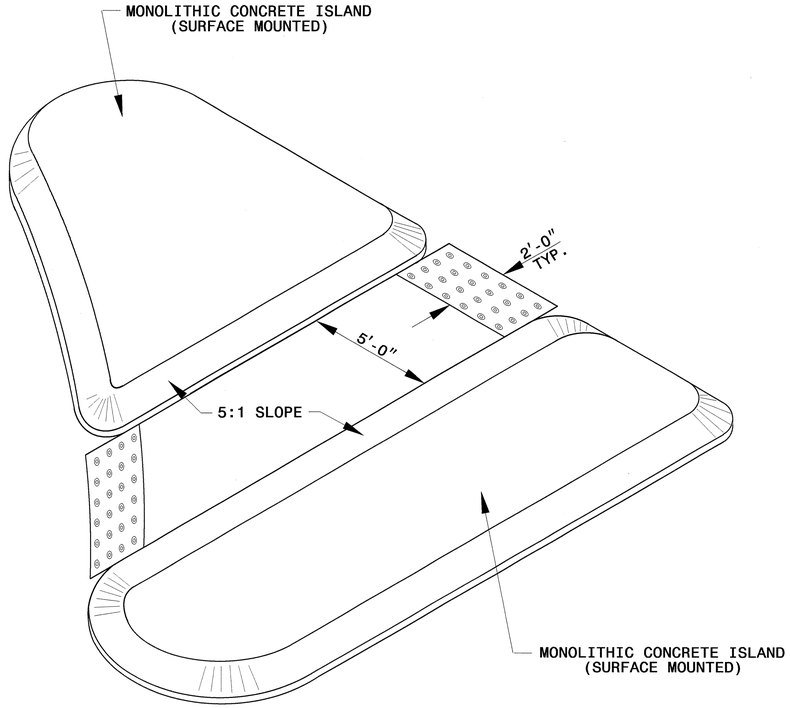
PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

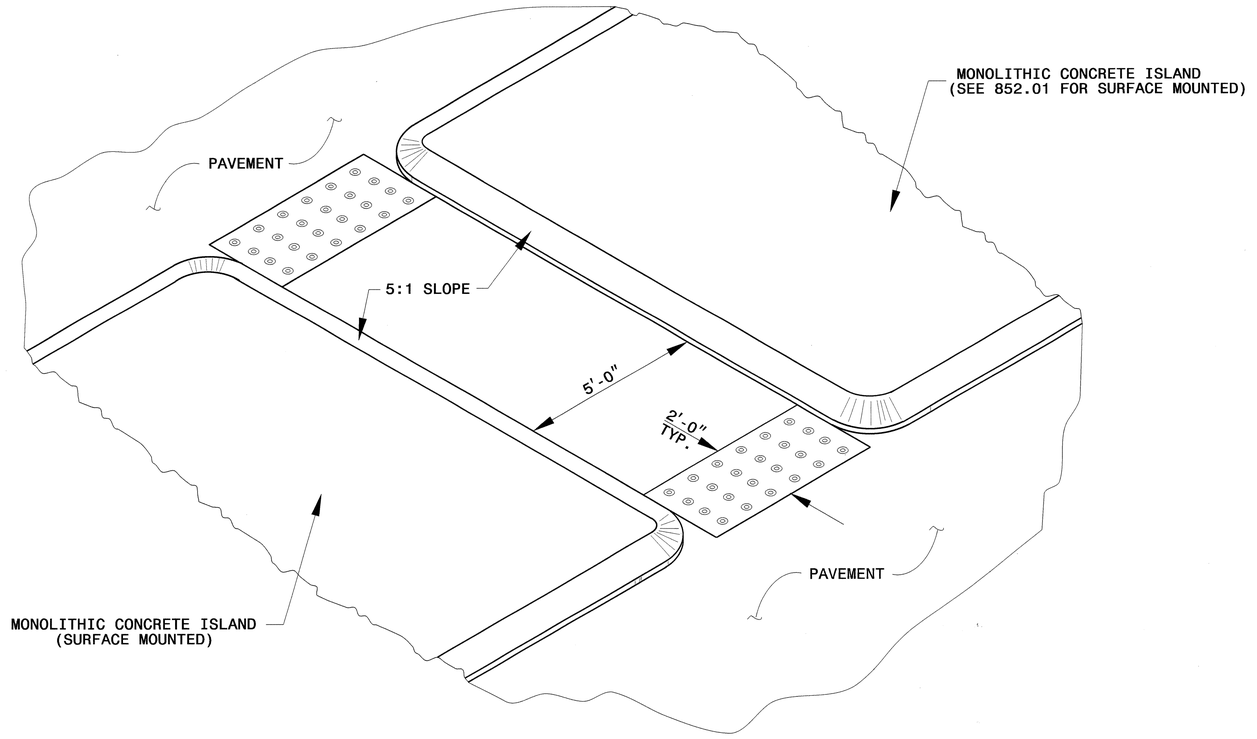
ORIGINAL BY: STD. NO. 848.05 DATE: 4-22-10
MODIFIED BY: DATE:
CHECKED BY: DATE: 4/22/10
FILE SPEC.: S:\Special Details\Ericward\stds\848d05.dgn

PROJECT REFERENCE NO. U-4011
SHEET NO. 2-O

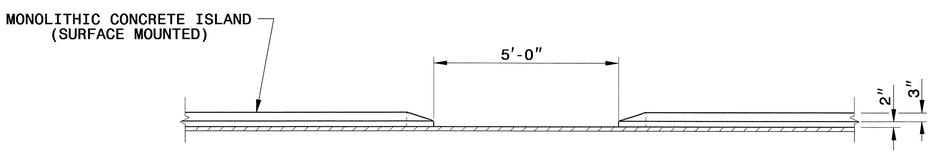
PROJECT REFERENCE NO.	SHEET NO.
U-4011	2-P



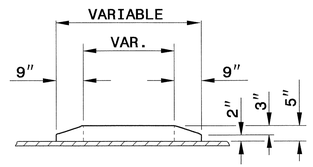
ISOMETRIC VIEW



ISOMETRIC VIEW



ELEVATION



MONOLITHIC CONCRETE ISLAND
REFER TO STD.852.01
(SURFACE MOUNTED)

NOTES:

- REFER TO DETAIL 848D05 FOR TRUNCATED DOMES.
- PLACE TRUNCATED DOMES IN PAVEMENT AND SECURE WITH AN APPROVED BONDING METHOD.
- IF CONCRETE ISLANDS ARE LESS THAN 6' IN WIDTH, TRUNCATED DOMES SHOULD NOT BE PLACED.

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-250-4128 FAX 919-250-4119

CROSSWALK/WHEELCHAIR RAMP THRU MONOLITHIC ISLAND

ORIGINAL BY: T.Spell DATE: 1-23-11
MODIFIED BY: DATE:
CHECKED BY: DATE: 2/16/11
FILE SPEC.: c:\details\stand\island_whchramp.dgn

5/9/06

PROJECT REFERENCE NO.	SHEET NO.
U-4011	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202164

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0038000000-E	SP	2,100	CY	SHALLOW UNDERCUT
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0057000000-E	226	500	CY	UNDERCUT EXCAVATION
0080000000-E	SP	4,100	TON	CLASS IV SUBGRADE STABILIZATION
0195000000-E	SP	500	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	7,600	SY	FABRIC FOR SOIL STABILIZATION
0199000000-E	SP	2,970	SF	TEMPORARY SHORING
0318000000-E	SP	853	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0320000000-E	SP	2,210	SY	FOUNDATION CONDITIONING FABRIC
0335000000-E	SP	36	LF	**" DRAINAGE PIPE (10")
0335200000-E	SP	176	LF	15" DRAINAGE PIPE
0335300000-E	SP	28	LF	18" DRAINAGE PIPE
0335400000-E	SP	12	LF	24" DRAINAGE PIPE
0335500000-E	SP	88	LF	30" DRAINAGE PIPE
0335600000-E	SP	44	LF	36" DRAINAGE PIPE
0335850000-E	SP	2	EA	**" DRAINAGE PIPE ELBOWS (10")
0448000000-E	SP	4	LF	****" RC PIPE CULVERTS, CLASS IV (12")
0448200000-E	SP	3,752	LF	15" RC PIPE CULVERTS, CLASS IV
0448300000-E	SP	824	LF	18" RC PIPE CULVERTS, CLASS IV
0448400000-E	SP	1,332	LF	24" RC PIPE CULVERTS, CLASS IV
0448500000-E	SP	340	LF	30" RC PIPE CULVERTS, CLASS IV
0995000000-E	340	5,028	LF	PIPE REMOVAL
1110000000-E	510	1,000	TON	STABILIZER AGGREGATE
1121000000-E	520	45	TON	AGGREGATE BASE COURSE
1220000000-E	545	1,000	TON	INCIDENTAL STONE BASE
1297000000-E	607	24,220	SY	MILLING ASPHALT PAVEMENT, ***" DEPTH (2-1/2")
1489000000-E	610	350	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1491000000-E	610	12,800	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
1503000000-E	610	7,100	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1523000000-E	610	6,400	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1525000000-E	610	100	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1560000000-E	620	910	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1565000000-E	620	385	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 70-22
1693000000-E	654	25	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	SP	224	CY	SUBDRAIN EXCAVATION
2033000000-E	SP	168	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	SP	1,000	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	SP	2	EA	SUBDRAIN PIPE OUTLETS
2077000000-E	SP	12	LF	6" OUTLET PIPE (SUBDRAINS)
2253000000-E	840	3.4	CY	PIPE COLLARS
2264000000-E	840	0.232	CY	PIPE PLUGS
2275000000-E	SP	10	CY	FLOWABLE FILL
2286000000-N	840	74	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	32.38	LF	MASONRY DRAINAGE STRUCTURES
2364000000-N	840	8	EA	FRAME WITH TWO GRATES, STD 840.16
2366000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	3	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	7	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	27	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	24	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	5	EA	FRAME WITH COVER, STD 840.54
2440000000-N	852	3	EA	CONCRETE TRANSITIONAL SECTION FOR CATCH BASIN
2542000000-E	846	320	LF	1'-6" CONCRETE CURB & GUTTER
2549000000-E	846	9,400	LF	2'-6" CONCRETE CURB & GUTTER
2591000000-E	848	5,340	SY	4" CONCRETE SIDEWALK
2605000000-N	848	27	EA	CONCRETE WHEELCHAIR RAMPS
2612000000-E	848	380	SY	6" CONCRETE DRIVEWAY
2647000000-E	852	110	SY	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)
2759000000-N	SP	4	EA	GENERIC PAVING ITEM DETECTABLE WARNINGS
2995000000-N	SP	1	EA	GENERIC DRAINAGE ITEM CONVERT EXISTING JB TOP TO TBJB W/ MH COVER
3628000000-E	876	30	TON	RIP RAP, CLASS I
3656000000-E	876	1,205	SY	FILTER FABRIC FOR DRAINAGE
3659000000-N	SP	2	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4072000000-E	903	550	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4102000000-N	904	56	EA	SIGN ERECTION, TYPE E
4108000000-N	904	1	EA	SIGN ERECTION, TYPE F
4116100000-N	904	4	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
4155000000-N	907	24	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4158000000-N	907	1	EA	DISPOSAL OF SIGN SYSTEM, WOOD
4192000000-N	907	4	EA	DISPOSAL OF SUPPORT, U-CHANNEL
4400000000-E	1110	240	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	369	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	78	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	2	EA	FLASHING ARROW PANELS, TYPE C
4420000000-N	1120	2	EA	CHANGEABLE MESSAGE SIGN
4430000000-N	1130	325	EA	DRUMS
4445000000-E	1145	96	LF	BARRICADES (TYPE III)
4455000000-N	1150	200	MD	FLAGGER
4465000000-N	1160	2	EA	TEMPORARY CRASH CUSHIONS
4470000000-N	1160	2	EA	RESET TEMPORARY CRASH CUSHIONS
4480000000-N	1165	2	EA	TMIA
4485000000-E	1170	480	LF	PORTABLE CONCRETE BARRIER
4500000000-E	1170	480	LF	RESET PORTABLE CONCRETE BARRIER
4507000000-E	SP	500	LF	WATER FILLED BARRIER
4508000000-E	SP	500	LF	RESET WATER FILLED BARRIER
4516000000-N	1180	30	EA	SKINNY DRUM
4650000000-N	1251	1,000	EA	TEMPORARY RAISED PAVEMENT MARKERS
4686000000-E	1205	14,763	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4695000000-E	1205	106	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4710000000-E	1205	958	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4721000000-E	1205	28	EA	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)
4725000000-E	1205	91	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4810000000-E	1205	55,129	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	76	LF	PAINT PAVEMENT MARKING LINES (8")
4835000000-E	1205	1,084	LF	PAINT PAVEMENT MARKING LINES (24")
4840000000-N	1205	12	EA	PAINT PAVEMENT MARKING CHARACTER
4845000000-N	1205	162	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-E	1205	23,960	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4860000000-E	1205	578	LF	REMOVAL OF PAVEMENT MARKING LINES (8")
4870000000-E	1205	90	LF	REMOVAL OF PAVEMENT MARKING LINES (24")
4875000000-N	1205	88	EA	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS
4900000000-N	1251	186	EA	PERMANENT RAISED PAVEMENT MARKERS
5325800000-E	1510	26	LF	8" WATER LINE
5326600000-E	1510	1,100	LF	16" WATER LINE
5546000000-E	1515	1	EA	8" VALVE
5648000000-N	1515	18	EA	RELOCATE WATER METER
5672000000-N	1515	6	EA	RELOCATE FIRE HYDRANT
5691300000-E	1520	231	LF	8" SANITARY GRAVITY SEWER
5775000000-E	1525	2	EA	4' DIA UTILITY MANHOLE
5801000000-E	1530	300	LF	ABANDON 8" UTILITY PIPE
5810000000-E	1530	1,062	LF	ABANDON 16" UTILITY PIPE
5816000000-N	1530	1	EA	ABANDON UTILITY MANHOLE
5882000000-N	SP	5	EA	GENERIC UTILITY ITEM ADJUST MANHOLE
5882000000-N	SP	1	EA	GENERIC UTILITY ITEM RECONNECT FIRE HYDRANT
6006000000-E	1610	900	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	270	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	1,000	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	9.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	250	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	1	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	1,300	LF	SAFETY FENCE
6030000000-E	1630	650	CY	SILT EXCAVATION
6036000000-E	1631	7,700	SY	MATTING FOR EROSION CONTROL
6038000000-E	SP	20	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	4,100	LF	1/4" HARDWARE CLOTH
6071010000-E	SP	120	LF	WATTLE
6071020000-E	SP	20	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	150	LF	COIR FIBER BAFFLES
6084000000-E	1660	9	ACR	SEEDING & MULCHING
6087000000-E	1660	6	ACR	MOWING
6090000000-E	1661	100	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	175	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	5	TON	FERTILIZER TOPDRESSING
6114500000-N	SP	12	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.1	ACR	REFORESTATION
7000000000-E	1705	6	EA	PEDESTRIAN SIGNAL HEAD (**", ** SECTION) (16" 1 SECTION W/ COUNTDOWN)
7060000000-E	1705	2,060	LF	SIGNAL CABLE
7120000000-E	1705	7	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7144000000-E	1705	5	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)
7252000000-E	1710	725	LF	MESSENGER CABLE (1/4")
7264000000-E	1710	680	LF	MESSENGER CABLE (3/8")
7300000000-E	1715	1,625	LF	UNPAVED TRENCHING (**********) (1, 2")
7324000000-N	1716	9	EA	JUNCTION BOX (STANDARD SIZE)
7348000000-N	1716	2	EA	JUNCTION BOX (OVER-SIZED, HEAVY DUTY)
7360000000-N	1720	4	EA	WOOD POLE
7372000000-N	1721	6	EA	GUY ASSEMBLY
7408000000-E	1722	1	EA	1" RISER WITH WEATHERHEAD
7420000000-E	1722	3	EA	2" RISER WITH WEATHERHEAD
7444000000-E	1725	2,340	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	5,580	LF	LEAD-IN CABLE (**********) (14-2)
7528000000-E	1730	350	LF	DROP CABLE
7552000000-N	1731	2	EA	INTERCONNECT CENTER
7575180000-N	1735	4	EA	CABLE TRANSFER
7576000000-N	SP	4	EA	METAL STRAIN SIGNAL POLE
7613000000-N	SP	4	EA	SOIL TEST
7614100000-E	SP	20	CY	DRILLED PIER FOUNDATION
7636000000-N	1745	11	EA	SIGN FOR SIGNALS
7684000000-N	1750	1	EA	SIGNAL CABINET FOUNDATION
7720000000-N	1751	1	EA	CONTROLLER WITH CABINET (TYPE 170E, BASE MOUNTED)
7744000000-N	1751	6	EA	DETECTOR CARD (TYPE 170)
7901000000-N	1753	1	EA	CABINET BASE EXTENDER
7980000000-N	SP	2	EA	GENERIC SIGNAL ITEM SCHOOL FLASHER
8802030000-E	SP	1,150	SF	SEGMENTAL GRAVITY RETAINING WALLS

******* BEGIN SCHEDULE AA *******
******* (2 ALTERNATES) *******

6000000000-E AA1	1605	6,900	LF	TEMPORARY SILT FENCE

*** OR ***

6147000000-E AA2	SP	6,900	LF	GENERIC EROSION CONTROL ITEM TEMPORARY SILT FENCE WITH WOODEN POSTS

******* END SCHEDULE AA *******

24-MAY-2010 14:40
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RD244219

COMPUTED BY: JBM DATE: 1/8/2009

CHECKED BY: SEC DATE: 7/26/2010

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-4011	3-A

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
-L- 16+70	RT	0401		413.42	409.67		
-L-19+73	RT	0402		411.39	408.39		
-Y- 12+50	LT	0404		410.5	407.5		
-L-19+73	RT	0402	0404		408.39	407.5	
-Y- 12+50	LT	0403	0404		408.5	407.5	
-Y- 12+50	RT	0405		410.16	405.5		
-L- 20+24	RT	0404	0405		407.5	407.16	
-L- 21+03	LT	0406		408.1	405.83		
-L- 21+03	LT	0406	0407		405.83	404.95	
-L- 21+32	LT	0407		407.7	404.7		
-L- 21+32	C/L	0407	0408		404.7	404.1	
-L- 21+32	RT	0408		408.92	403.6		
-L- 21+32	RT	0405	0408		405.5	404.75	
-L- 21+32	RT	0408	0409		403.6	403	
-L- 22+44	RT	0409		407.23	403		
-L- 22+44	RT	0409	0411		403	401.81	
-L-23+55	RT	0411		405.56	400.43		
-L- 23+54	RT	0410		406.58	401.22		
-L- 23+55	RT	0410	0411		401.22	401.18	
-L- 24+86	LT	0412		405.89	399.55		
-L-23+55	RT	0411	0414		400.43	399.64	
-L- 24+86	RT	0413	0414		COLLAR	398.67	
-L- 24+86	RT	0414		404.53	395.6		
-L- 24+86	RT	0414	0415		395.6	395.4	
-L- 26+06	RT	0517		403.79	398.11		
-L- 26+06	RT	0517	0414		398.11	397.28	
-L- 26+60	RT	0516		403.99	398.64		
-L- 26+60	RT	0516	0517		398.64	398.11	
-DR1- 11+66	LT	0501		408.17	405.17		
-DR1- 11+18	LT	0502		407.66	404.66		
-DR1- 11+18	LT	0501	0502		405.17	404.66	
-DR1- 10+82	RT	0503		407.49	404.49		
-DR1- 10+82	RT	0502	0503		404.66	404.49	
-L- 27+70	LT	0504		404.3	401.3		
-L- 27+70	LT	0503	0504		404.49	401.55	
-L- 27+71	LT	0506		407.46	401.06		
-L-27+71	LT	0504	0506		401.3	401.06	
-L- 27+71	RT	0512		405.64	399.5		
-L- 27+71	RT	0512	0516		399.5	398.64	
-L- 27+71	RT	0506	0512		401.06	400.26	
-Y1- 10+93	LT	0513	0514		400.3	399.89	
-Y1- 10+93	LT	0514		402.91	399.89		
-Y1- 11+28	LT	0515		403.18	399.71		
-Y1- 11+28	LT	0514	0515		399.89	399.71	
-Y1- 11+28	LT	0515	0516		399.71	399.39	
-Y1- 9+92	RT	0508	0509		404.86	401.18	
-Y1- 9+92	RT	0509		404.18	401.18		
-Y- 10+93	RT	0510		403.1	400.1		
-Y- 10+93	RT	0509	0510		401.18	400.1	
-Y- 11+23	RT	0511		402.8	399.8		
-Y- 11+23	RT	0510	0511		400.1	399.8	
SHEET TOTALS							

STATION (SIZE / THICKNESS OR GAUGE)	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 10"	15"	18"	24"	30"	36"	42"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
-L- 16+70																				
-L-19+73																				
-Y- 12+50																				
-L-19+73																				
-Y- 12+50																				
-Y- 12+50																				
-L- 20+24																				
-L- 21+03																				
-L- 21+03																				
-L- 21+32																				
-L- 21+32																				
-L- 21+32																				
-L- 21+32		88							X	X										
-L- 21+32																				
-L- 22+44																				
-L- 22+44																				
-L-23+55																				
-L- 23+54																				
-L- 23+55		8							X	X										
-L- 24+86																				
-L-23+55																				
-L- 24+86																				
-L- 24+86																				
-L- 24+86						44			X	X										
-L- 26+06																				
-L- 26+06																				
-L- 26+60																				
-L- 26+60																				
-DR1- 11+66																				
-DR1- 11+18																				
-DR1- 11+18																				
-DR1- 10+82																				
-DR1- 10+82																				
-L- 27+70																				
-L- 27+70																				
-L- 27+71																				
-L-27+71																				
-L- 27+71																				
-L- 27+71																				
-L- 27+71																				
-Y1- 10+93																				
-Y1- 10+93																				
-Y1- 11+28																				
-Y1- 11+28																				
-Y1- 11+28																				
-Y1- 9+92																				
-Y1- 9+92																				
-Y- 10+93																				
-Y- 10+93																				
-Y- 11+23																				
-Y- 11+23																				
SHEET TOTALS	0	96	0	0	0	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0

STATION	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	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
-L- 16+70		4																				1			1
-L-19+73																						1			1
-Y- 12+50																						1			1
-L-19+73		68																							
-Y- 12+50		28																							
-Y- 12+50																						1			1
-L- 20+24		32																							
-L- 21+03	4																					1			
-L- 21+03		32																							
-L- 21+32																						1			
-L- 21+32			104																						
-L- 21+32																						1	0.32		1
-L- 21+32																									
-L- 21+32				112																					
-L- 22+44																						1			1
-L- 22+44				112																					
-L-23+55																						1	0.13		1
-L- 23+54																						1	0.36		
-L- 23+55																									
-L- 24+86		4																				1	1.34		1
-L-23+55				132																					
-L- 24+86		12																							
-L- 24+86																						1	3.93		1
-L- 24+86																									
-L- 26+06																						1	0.68		1
-L- 26+06				120																					
-L- 26+60																						1	0.35		1
-L- 26+60				56																					
-DR1- 11+66																						1			1
-DR1- 11+18																						1			1
-DR1- 11+18		52																							
-DR1- 10+82																						1			1
-DR1- 10+82		40																							
-L- 27+70																						1			
-L- 27+70		76																							
-L- 27+71																						1	1.4		1
-L-27+71			24																						
-L- 27+71																						1	1.14		1
-L- 27+71				108																					
-L- 27+71			84																						
-Y1- 10+93		84																							
-Y1- 10+93																						1			1
-Y1- 11+28																						1			1
-Y1- 11+28		36																							
-Y1- 11+28		60																							
-Y1- 9+92		76																							
-Y1- 9+92																						1			1
-Y- 10+93																						1			1
-Y- 10+93		100																							
-Y- 11+23																						1			
-Y- 11+23		40																							
SHEET TOTALS	4	744	212	640	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	9.65	0	20

STATION	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 WITH 2 GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	FLOWABLE FILL, CY	T.B.J.B. STD. 840.34	CONV. JB TOP TO T.B.J.B. W/MH	G.D.I. (NS) FRAME WITH 2 FLAT GRATES 840.29
-L- 16+70			1																		
-L-19+73		1																			
-Y- 12+50			1																		
-L-19+73																					
-Y- 12+50																					
-Y- 12+50		1																			
-L- 20+24																					
-L- 21+03						1	1														
-L- 21+03																					
-L- 21+32									1												1
-L- 21+32																					
-L- 21+32		1																			
-L- 21+32																					
-L- 21+32																					
-L- 22+44		1																			
-L- 22+44																					
-L-23+55		1																			
-L- 23+54															1		1				
-L- 23+55																					
-L- 24+86			1																		
-L-23+55																					
-L- 24+86																					
-L- 24+86		1																			
-L- 24+86																					
-L- 26+06	1																				
-L- 26+06																					
-L- 26+60			1																		
-L- 26+60																					
-DR1- 11+66			1		1																
-DR1- 11+18			1		1																
-DR1- 11+18																					
-DR1- 10+82		1			1																
-DR1- 10+82																					
-L- 27+70									1					1							
-L- 27+70																					
-L- 27+71		1																			
-L-27+71																					
-L- 27+71			1																		
-L- 27+71																					
-L- 27+71																					
-Y1- 10+93																					
-Y1- 10+93	1																				
-Y1- 11+28		1																			
-Y1- 11+28																					
-Y1- 11+28																					
-Y1- 9+92																					
-Y1- 9+92		1																			
-Y- 10+93	1																				
-Y- 10+93																					
-Y- 11+23						1	1														
-Y- 11+23																					
SHEET TOTALS	3	10	7	0	3	2	2	0	2	0	0	0	0	1	1	0	1	0	0	0	1

STATION	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 16+70					REMOVE CB, SPECIAL CB SEE SHEET 2-E
-L-19+73					
-Y- 12+50					
-L-19+73					
-Y- 12+50					
-Y- 12+50					
-L- 20+24				48	REMOVE EXISTING 18" RCP
-L- 21+03					
-L- 21+03					
-L- 21+32					
-L- 21+32				96	REM RISER & JB. REM EXIST 15" RCP (2)
-L- 21+32					REMOVE EXISTING CB
-L- 21+32					
-L- 21+32					
-L- 22+44					REMOVE EXISTING 15" RCP
-L- 22+44				228	REMOVE EXISTING 15" RCP
-L-23+55				8	REMOVE EXISTING 15" RCP, CB & JB
-L- 23+54					
-L- 23+55					
-L- 24+86					RETAIN EXISTING 15" RCP
-L-23+55				132	REMOVE EXISTING 15" RCP
-L- 24+86			0.4		COLLAR AND EXTEND 15". REM EXIST CB
-L- 24+86					
-L- 24+86				36	REMOVE EXISTING 15" RCP & DI
-L- 26+06					
-L- 26+06				172	REMOVE EXISTING 15" RCP
-L- 26+60				88	REMOVE EXISTING 15" RCP
-L- 26+60					REMOVE CB
-DR1- 11+66					
-DR1- 11+18					
-DR1- 11+18					
-DR1- 10+82					
-DR1- 10+82					
-L- 27+70					
-L- 27+70					
-L- 27+71					
-L-27+71					
-L- 27+71					
-L- 27+71				104	REMOVE EXISTING 15" RCP
-L- 27+71				96	REM EXIST 15" RCP, DI, JB W/MH, CB
-Y1- 10+93				24	REMOVE EXISTING 15" RCP
-Y1- 10+93					
-Y1- 11+28					
-Y1- 11+28					
-Y1- 11+28					
-Y1- 9+92					
-Y1- 9+92					
-Y- 10+93					
-Y- 10+93					
-Y- 11+23					
-Y- 11+23					
SHEET TOTALS	0	0	0.4	1032	

ABBREVIATIONS

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

COMPUTED BY: JBM DATE: 1/8/2009

CHECKED BY: SEC DATE: 7/26/2010

RD244219

PROJECT NO.	SHEET NO.
U-4011	3-B

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 10"	15"	18"	24"	30"	36"	42"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	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 WITH 2 GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	FLOWABLE FILL, CY	T.B.J.B. STD. 840.34	CONV. JB TOP TO T.B.J.B. W/MH	G.D.I. (NS) FRAME WITH 2 FLAT GRATES 840.29	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-Y- 11+23	RT	0511	0512		399.8	399.5																								40																																																
-L- 29+07	LT	0505		408.21	405.21																																													1			1		1																								8	REMOVE EXISTING 15" RCP
-L- 29+07	LT	0505	0506		405.21	404.46																								140																																															240	REMOVE EXISTING 15" RCP, CB
-L- 29+26	RT	0507		408.25	405.01																																													1			1			1																							
-L- 29+26	RT	0507	0512		405.01	402.64																								156																																																
-L- 33+20	LT	0518		405.15	402.15																																													1			1			1																							
-L- 34+25	LT	0519		402.94	399.94																																													1			1			1																						48	REMOVE CB & EXIST 15" CMP
-L- 34+25	LT	0518	0519		402.15	399.94																								108																																																
-L- 35+00	LT	0520		401.42	398.17																																													1			1			1																						228	REMOVE CB & EXIST 15" CMP
-L- 35+00	LT	0519	0520		399.94	398.42																								76																																																
-L- 35+81	LT	0524		400.36	396.43																																													1			1			1																							
-L- 35+81	LT	0520	0524		398.17	397.11																									84																																															
-L- 33+20	RT	0525		405.15	402.15																																													1			1		1																							
-L- 35+81	RT	0528		400.12	393.14																																													1	1.98		1		1																							PREFORMED SCOUR HOLE - DETAIL D
-L- 35+81	RT	0525	0528		402.15	397.12																								264																																																
-L- 35+81	RT	0524	0528		396.43	395.63																									80																																															
-L- 36+26	RT	0527		399.83	396.54																																													1			1		1																							
-L- 36+26	RT	0527	0528		396.54	396.31																								48																																																
-L- 36+36	RT	0526		399.74	396.74																																													1			1	1																									
-L- 36+36	RT	0526	0527		396.74	396.54																								44																																																
-L- 36+16	LT	0523		400.11	396.61																																													1			1			1																							
-L- 36+16	LT	0523	0524		396.61	396.43																								36																																																
-L- 36+66	LT	0522		399.98	396.86																																													1			1	1																									
-L- 36+66	LT	0522	0523		396.86	396.61																								52																																																
-L- 36+66	LT	0521	0522		397.06	396.86																								40																																																
-L- 37+06	LT	0521		400.06	397.06																																													1			1		1																							
-L- 37+18	LT	0530		397.4	393.9																																													1												1											1					
-L- 37+18	LT	0531		400.6	393.84																																													1	1.76																		1		1									
-L- 37+18	LT	0530	0531		393.9	393.84					12					X	X																																																																					REMOVE DI
-L- 37+02.5	C/L	0531	0532		393.84	392.33																											136																																														200	REMOVE JB & EXISTING PIPE, 2 CB
-L- 37+01	RT	0533		400.04	396.29																																													1			1			1																							
-L- 37+77	RT	0537		400.28	394.62																																													1	0.66		1			1																							PREFORMED SCOUR HOLE - DETAIL D
-L- 37+77	RT	0533	0537		396.29	395.91																								76																																																
-L- 38+76	RT	0534		402.67	399.42																																													1			1			1																							
-L- 38+76	RT	0534	0537		399.59	396.51																								108																																															104	REMOVE EXISTING DI & 18" RCP
-L- 37+77	LT	0536		400.63	396.38																																													1			1		1																							
-L- 37+77	C/L	0536	0537		396.38	395.98																											84																																													
-L- 38+94	LT	0535		401.25	397																																													1			1		1																							
-L- 38+94	LT	0535	0536		397	396.38																											120																																														452	REMOVE EXISTING 24" RCP
-L- 40+41	LT	0607		406.41	402.66																																													1			1		1																							
-L- 40+41	LT	0607	0535		402.66	397.5																										148																																														
-L- 41+64	LT	0605	0606		COLLAR	406.51			32																																																																												0.4		COLLAR & EXTEND EXISTING 15" RCP
-L- 41+64	LT	0606		409.86	406.11																																													1			1		1																							48	REMOVE EXISTING CB & 15" RCP
-L- 41+64	LT	0606	0607		406.11	402.66																										124																																														
-L- 43+93	LT	0604		416.3	412.55																																													1			1		1																							
-L- 43+93	LT	0604	0606		412.55	406.11																										228																																													468	REMOVE EXISTING 12",15" 18" RCP & 2 CB'S
-L- 43+95	LT	0602		421.23	415.23																																													1	1								1	1																		
-L- 43+95	LT	0602	0604 || 415.23	413.05 ||| 48 |||||| X	X																																																																				
-L- 44+13	LT	0603		420.25	413.84																										4																		1	1.41																		1		1									
-L- 44+13	LT	0603	0604		413.84	413.05				28					X	X																																																																			24	REMOVE 23.7' EXISTING 18" RCP & CB
SHEET TOTALS								0	80	28	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1188	168	500	340	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	6.81	0	21	2	10	9	0	0	1	1	0	1	0	0	0	0	0	2	0	2	0	0	0	1	0	0	0.4	1820	

ABBREVIATIONS

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

COMPUTED BY: JBM DATE: 1/8/2009

CHECKED BY: SEC DATE: 7/26/2010

RD244219

PROJECT NO.	SHEET NO.
U-4011	3-C

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 10"	15"	18"	24"	30"	36"	42"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC
-L- 43+93	RT	0601		415.9	413.65														
-L- 43+93	RT	0601	0604		413.65	413.05													
-Y2- 10+76	LT	0611		420.2	417.2														
-Y2- 13+26	LT	0610		424.24	420.99														
-Y2- 13+26	LT	0610	0611		420.99	417.2													
-Y2- 14+52.50	LT	0609		424.8	421.80														
-Y2- 14+52.50	LT	0609	0610		421.80	420.99													
-Y2- 15+01	LT	0608	0609		422.50	421.80													
-L- 47+28	LT	0612		418.43	415.43														
-L- 46+09	LT	0611	0612		417.20	415.43													
-L- 47+63 CHURCH	LT	0624		420.22	417.22														
-L- 50+15 CHUR	LT	0626		420.36	414.83														
-L- 50+15 CHUR	LT	0624	0626		417.22	415.99													
-L- 50+15 CHUR	LT	0626	0627		414.83	414.40													
-L- 49+89.5	LT	0625	0626		415.00	414.83		36							X	X	X		X
-L- 48+99	LT	0613		416.96	413.71														
-L- 48+99	LT	0612	0613		415.43	413.96													
-L- 49+51	LT	0614		416.91	413.45														
-L- 49+51	LT	0613	0614		413.71	413.45													
-L- 50+43	LT	0621		417.05	412.32														
-L- 50+43	LT	0614	0621		413.45	412.32													
-L- 50+95	LT	0623		418.84	412.01														
-L- 50+95	LT	0621	0623		412.32	412.01													
-L- 50+97	LT	0627		418.66	411.47														
-L- 50+97	LT	0623	0627		412.01	411.47													
-L- 51+82	LT	0622		418.88	413.73														
-L- 51+82	LT	0622	0623		413.73	412.86													
-L- 52+34	LT	0710		419.4	413.99														
-L- 52+34	LT	0710	0622		413.99	413.73													
-L- 52+34	LT	0704	0710		414.97	414.3													
-L- 49+22	RT	0615		418.4	416.15														
-L- 49+73.5	RT	0616		418.1	415.85														
-L- 49+73.5	RT	0615	0616		416.15	415.85													
-L- 50+43	RT	0620		417.47	414.74														
-L- 50+43	RT	0616	0620		415.85	415.22													
-L- 50+43	C/L	0620	0621		414.74	412.82													
-L- 51+19	RT	0619		418.6	415.38														
-L- 51+19	RT	0619	0620		415.38	414.99													
-L- 51+19	RT	0618		418.65	415.47														
-L- 51+19	RT	0618	0619		415.47	415.38													
-L- 51+61	RT	0617		418.68	415.68														
-L- 51+61	RT	0617	0618		415.68	415.47													
-Y3- 13+00	LT	0708		421.57	416.87														
-Y3- 13+00	RT	0707		421.99	418.99														
-Y3- 13+00	C/L	0707	0708		418.99	418.32													
-Y3- 13+33.5	LT	0709																	
-Y3- 13+33.5	LT	0708	0709																
SHEET TOTALS								36	0	0	0	0	0	0	0	0	0	0	0

STATION	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
-L- 43+93																													
-L- 43+93										92																			
-Y2- 10+76																													
-Y2- 13+26																													
-Y2- 13+26										252																			
-Y2- 14+52.50																													
-Y2- 14+52.50										116																			
-Y2- 15+01										48																			
-L- 47+28																													
-L- 46+09										124																			
-L- 47+63 CHURCH																													
-L- 50+15 CHUR																													
-L- 50+15 CHUR										248																			
-L- 50+15 CHUR												88																	
-L- 49+89.5																													
-L- 48+99																													
-L- 48+99										172																			
-L- 49+51																													
-L- 49+51											52																		
-L- 50+43																													
-L- 50+43											92																		
-L- 50+95																													
-L- 50+95												52																	
-L- 50+97											4																		
-L- 50+97												52																	
-L- 51+82																													
-L- 51+82											92																		
-L- 52+34											8																		
-L- 52+34											52																		
-L- 52+34										136																			
-L- 49+22																													
-L- 49+73.5																													
-L- 49+73.5										56																			
-L- 50+43																													
-L- 50+43										72																			
-L- 50+43											100																		
-L- 51+19																													
-L- 51+19										80																			
-L- 51+19																													
-L- 51+19										16																			
-L- 51+61																													
-L- 51+61										44																			
-Y3- 13+00										44																			
-Y3- 13+00										48																			
-Y3- 13+00										28																			
-Y3- 13+33.5																													
-Y3- 13+33.5											36																		
SHEET TOTALS	0	0	0	0	0	0	0	0	0	1576	436	192	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

STATION	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH 2 GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	FLOWABLE FILL, CY	T.B.J.B. STD. 840.34	CONV. JB TOP TO T.B.J.B. W/MH	G.D.I. (NS) FRAME WITH 2 FLAT GRATES 840.29	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 43+93	1									1	1																			
-L- 43+93																													48	REMOVE EXISTING 18" RCP & CB
-Y2- 10+76	1			1		1																							48	REMOVE EXISTING 18" RCP & CB
-Y2- 13+26	1			1		1																								
-Y2- 13+26																													296	REMOVE EXISTING 15" RCP
-Y2- 14+52.50	1			1		1																								
-Y2- 14+52.50																													60	REMOVE EXISTING 15" RCP & JB & CB
-Y2- 15+01																													68	REMOVE EXISTING 15" RCP (2) & DI
-L- 47+28	1			1			1																						240	REMOVE EXIST 15" & 18" RCP & JB & CB'S (3)
-L- 46+09																														
-L- 47+63 CHURCH	1			1	1																									REMOVE CB
-L- 50+15 CHUR	1	0.53											1												1					NO APRON ON 2GI
-L- 50+15 CHUR																													104	REMOVE EXISTING 15" RCP & CB
-L- 50+15 CHUR																														
-L- 49+89.5																						10				0.232	2@10"		24	REMOVE 10" HDPE, PLUG&FILL 24" RCP
-L- 48+99	1			1			1																						92	REMOVE EXISTING 15" RCP
-L- 48+99																													324	REMOVE EXISTING 15" & 18"
-L- 49+51	1			1	1																									
-L- 49+51																														
-L- 50+43	1			1		1																								EXTRA DEPTH
-L- 50+43																													196	REMOVE EXISTING 24" & 18" RCP, JB & CB
-L- 50+95	1	1.83																			1		1							
-L- 50+95																														
-L- 50+97																					1			1				1.6		COLLAR & EXTEND 24" (2) & 18" RCP
-L- 50+97																														
-L- 51+82	1	0.15		1		1																								
-L- 51+82																													128	REMOVE EXISTING 18" RCP
-L- 52+34	1	0.41		1		1																						0.5		COLLAR & EXTEND 18" & REMOVE CB
-L- 52+34																														
-L- 52+34																													132	REMOVE EXISTING 18" RCP
-L- 49+22	1									1	1																			REMOVE DI
-L- 49+73.5	1									1	1																		64	REMOVE EXISTING 18" RCP'S, DI & CB
-L- 49+73.5																													48	REMOVE EXISTING 18" RCP
-L- 50+43	1									1	1																			
-L- 50+43																													100	REMOVE EXISTING 18" RCP & CB
-L- 50+43																														
-L- 51+19	1									1	1																			
-L- 51+19																														
-L- 51+19	1			1			1																							
-L- 51+19																														
-L- 51+61	1			1			1																							
-L- 51+61																														
-Y3- 13+00	1			1			1																							
-Y3- 13+00	1			1		1																								REMOVE DI
-Y3- 13+00																														
-Y3- 13+33.5																												0.5	76	REM EXIST 15"RCP,CB,COLLAR & EXT. 18" RCP
-Y3- 13+33.5																													56	REMOVE 15" RCP'S, DI & CB
SHEET TOTALS	21	2.92	0	14	2	7	5	0	0	5	5	0	1	0	0	0	0	0	0	0	2	10	1	1	1	0.232	2@10"	2.6	2104	

ABBREVIATIONS

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

COMPUTED BY:	JBM	DATE:	1/8/2009
CHECKED BY:	SEC	DATE:	7/26/2010

PROJECT NO.	SHEET NO.
U-4011	3-D

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

R0244219

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

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE							DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C.S. PIPE SIZE							C.S. PIPE THICKNESS OR GAUGE							R.C. PIPE CLASS IV SIZE							R.C. PIPE CLASS III SIZE						
								10"	15"	18"	24"	30"	36"	42"						12"	15"	18"	24"	30"	36"	42"	48"	.064	.064	.064	.064	.079	.079	.109	.109	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"
-L- 53+08.34	RT	0702		420.12	417.12																															64													
-L- 53+08.34	RT	0702	0703		417.12	416.68																														4													
-L- 53+69.8	RT	0703		420.42	416.68																															4													
-L- 53+69.8	RT	0701		420.43	417.18																															76													
-L- 54+43.52	RT	0701	0703		417.18	416.77																																											
-L- 35+70	RT	0529		393								48				X	X																																
	RT	0528	0529		393.14	393																																											
-L- 37+65	RT	0538		394.5								40				X	X																																
	RT	0537	0538		394.62	394.5																																											
-Y3- 12+56.67	LT	0706			420.16																																											
-Y3- 12+56.67	LT	0706	0708		420.16	418.32																														44													
-Y3- 12+52.70	RT	0705			420.88																																											
-Y3- 12+52.70	RT	0705	0707		420.88	418.99																														48													
-L- 12+56.67	LT	0711	0710																																		8												
-L- 53+70	RT	0703	0712																																	4													
SUBTOTAL FROM THIS SHEET								0	0	0	0	88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	244	8	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL FROM SHEET 3								36	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	0	1576	436	192	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL FROM SHEET 2								0	80	28	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1188	168	500	340	0	0	0	0	0	0	0	0	0	0
SUBTOTAL FROM SHEET 1								0	96	0	0	0	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	744	212	640	0	0	0	0	0	0	0	0	0	0
PROJECT TOTALS								36	176	28	12	88	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	3752	824	1332	340	0	0	0	0	0	0	0	0	0

STATION	** R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES 'TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. 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	TYPE OF GRATE F	TYPE OF GRATE G	CONCRETE TRANSITIONAL SECTION DROP INLET	CONCRETE TRANSITIONAL SECTION CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH 2 GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	FLOWABLE FILL, CY	T.B.J.B. STD. 840.34	CONV. JB TOP TO T.B.J.B. W/MH	G.D.I. (NS) FRAME WITH 2 FLAT GRATES 840.29	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 53+08.34						1			1			1																										
-L- 53+08.34																																								
-L- 53+69.8						1			1			1																												
-L- 53+69.8						1			1			1																											72	REMOVE EXISTING 15" RCP
-L- 54+43.52																																							
-L- 35+70																																							
-L- 37+65																																							
-Y3- 12+56.67																																							
-Y3- 12+56.67																																							
-Y3- 12+52.70																																							
-Y3- 12+52.70																																							
-L- 12+56.67																																							
-L- 53+70																																							
SUBTOTAL FROM THIS SHEET	0	0	0	0	0	3	0	0	3	0	0	3	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	
SUBTOTAL FROM SHEET 3	0	0	0	0	0	21	2.92	0	14	2	7	5	0	0	5	5	0	1	0	0	0	0	0	0	2	10	1	1	1	0.232	2@10"	2.6	2104	
SUBTOTAL FROM SHEET 2	0	0	0	0	0	25	6.81	0	21	2	10	9	0	0	1	1	0	1	0	0	0	0	0	2	0	2	0	0	0	0	0	0.4	1820	
SUBTOTAL FROM SHEET 1	0	0	0	0	0	25	9.65	0	20	3	10	7	0	3	2	2	0	2	0	0	0	0	1	1	0	1	0	0	0	1	0	0	0.4	1032	
PROJECT TOTALS	0	0	0	0	0	74	19.38	0	58	7	27	24	0	3	8	8	0	4	0	0	0	0	1	3	0	5	10	1	1	3	0.232	2@10"	3.4	5028	

TOTAL LENGTH OF PIPE (FT)= 6636

ABBREVIATIONS

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

5/9/06

COMPUTED BY: SEC DATE: 6/1/2010
CHECKED BY: DATE:

PROJECT REFERENCE NO.	SHEET NO.
U-4011	3-E

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- LT 15+00.00 TO 54+43.00	2,060		1,548	2	514
-DR- 10+81.52 TO 11+25.00	54		2		52
-DR1- 10+80.50 TO 11+77.70	39		26	2	15
-Y2- 10+76.24 TO 15+15.00	923		188		735
SUBTOTALS	3,076		1,765	4	1,315
-L- RT 15+00.00 TO 55+50.00	2,520		2,860	1,531	1,191
-Y- 12+00.00 TO 12+48.17	33		44	44	33
-Y1- 10+00.00 TO 11+25.00	43		92	92	43
-DR2- 10+50.00 TO 11+15.93	8		36	28	
-DR3- 9+90.00 TO 11+00.00	6		28	25	3
SUBTOTALS	2,610		3,060	1,720	1,270
-Y3- 12+75.00 TO 13+19.53	23		1	0	22
SUBTOTALS	23		1	0	22
TOTAL	5,709		4,826	1,724	2,607
LOSS DUE TO CLEARING AND GRUBBING	-200			200	
WASTE IN LIEU OF BORROW				-775	-775
PROJECT TOTAL	5,509		4,826	1,149	1,832
EST. 5% TO REPL. TOPSOIL ON BORROW PITS				57	
GRAND TOTAL	5,509		4,826	1,207	1,832
SAY	5,600			1,300	
EST. SHALLOW UNDERCUT CONTINGENCY	600				
EST. SHALLOW UNDERCUT BY STATIONS	1,500				
TOTAL SHALLOW UNDERCUT	2,100				

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

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

REMOVAL OF EXISTING ASPHALT PAVEMENT

IN SQUARE YARDS

LOCATION	SQUARE YARDS
-L- LT 15+00.00 TO 15+50.65	2.81
-DR- CL 10+72.TO 11+25.00	19.44
-DR- LT 10+72.TO 11+25.00	5.03
-DR- RT 10+72.TO 11+25.00	4.21
-L- RT 20+98.24 TO 22+71.04	12.86
-L- LT 22+75.15 TO 25+47.53	31.43
-L- LT 25+82.94 TO 26+36.00	2.64
-DR1- LT 10+93.07 TO 11+70.32	36.11
-DR1- CL 10+74.00 TO 11+75.00	38.40
-DR1- RT 10+63.08 TO 11+77.70	45.08
-L- LT 27+60.48 TO 40+89.00	276.07
-Y2- 10+76.24 TO 15+15.00	96.08
-Y2- 10+76.24 TO 15+15.00	123.40
-L- LT (CHURCH) 47+24.00 TO 50+48.35	996.32
-L- LT (CHURCH) 50+88.54 TO 50+91.68	3.63
-L- LT 52+96.00 TO 54+44.00	18.52
-Y1- LT 11+24.00 TO 11+41.00	0.38
-Y1- RT 9+25.00 TO 9+50.00	2.61
-DR2- LT 10+50.00 TO 11+04.00	11.13
-DR2- RT 10+50.00 TO 11+34.00	35.31
-DR3- RT 10+80.00 TO 11+02.00	2.03
-DR3- LT 10+80.00 TO 10+91.00	0.82
-Y3- RT 13+08.89 TO 13.42.54	11.81
-L- LT 42+50.00	77.62
-L- LT 45+50.00	77.35
-L- LT 47+00.00	75.06
-L- RT 49+00.00	70.69
TOTAL	2,120

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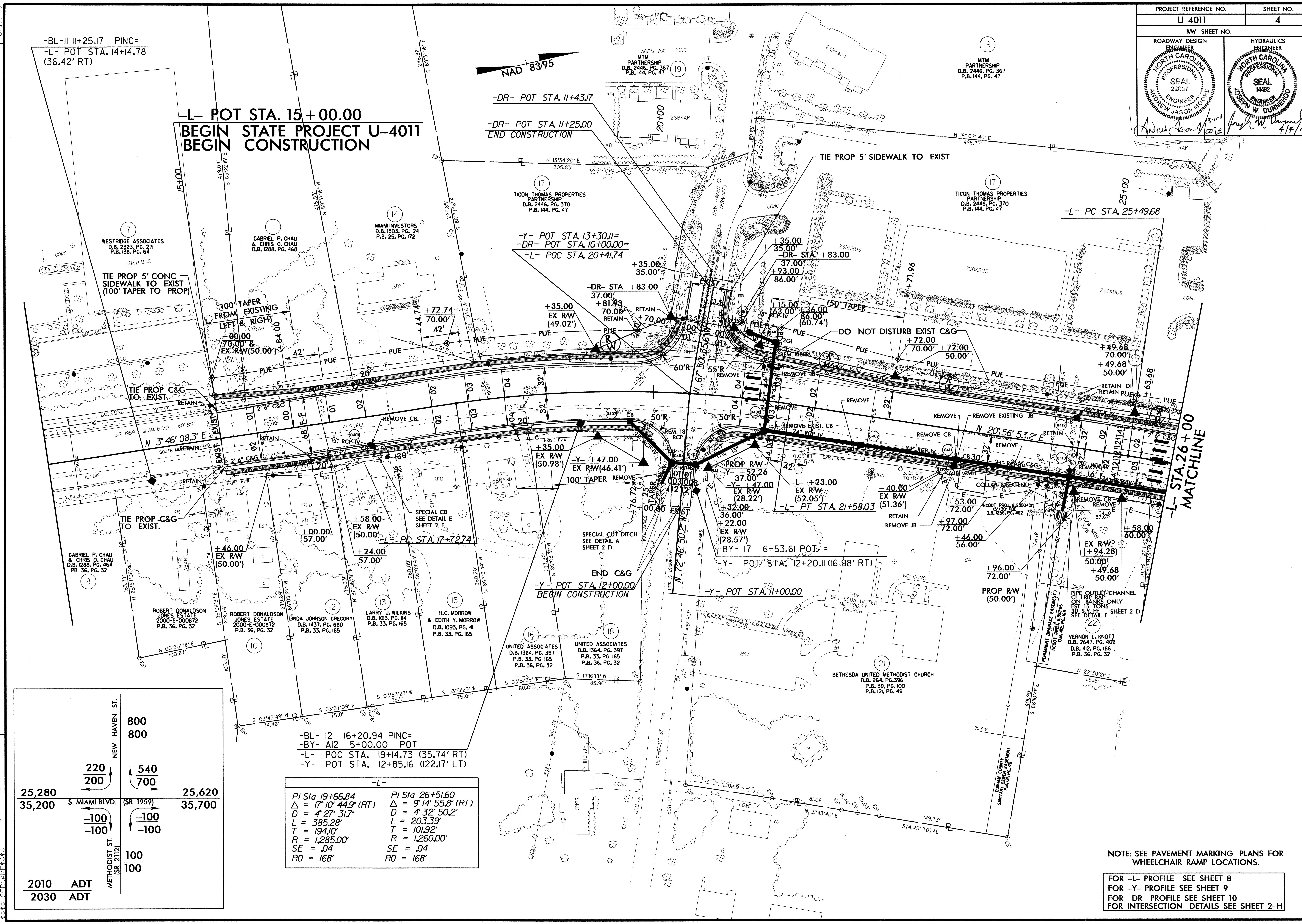
PROJ. REFERENCE NO.	SHEET NO.
U-4011	3-F

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
7	4	WESTRIDGE ASSOCIATES
10	4	ROBERT DONALDSON JONES ESTATE
11	4	GABRIEL P. CHAU & CHRIS O. CHAU
12	4	LINDA JOHNSON GREGORY
13	4	LARRY J. WILKINS
14	4	MIAMI INVESTORS
15	4	H.C. MORROW & EDITH Y. MORROW
16	4	UNITED ASSOCIATES
17	4,5	TICON THOMAS PROPERTIES PARTNERSHIP
18	4	UNITED ASSOCIATES
19	4,5	MTM PARTNERSHIP
21	4	BETHESDA UNITED METHODIST CHURCH
22	4	VERNON L. KNOTT
23	4,5	RANDALL F. STONE
24	5	M. M. FOWLER, INC.
26	5	JAMES WILFONG
27	5	RAVENCO, LLC
28	5	ROBERT E. WARD, III & JOANN WARD
29	5	SANDRA A. MOORE
30	5	JAMES W. PERRY & CAROLYN L. PERRY
31	5,6	BETHESDA ELEMENTARY SCHOOL DURHAM PUBLIC SCHOOL
32	5,6	WESLEY PERRY & CAROLYN L. PERRY
33	6	JAMES W. PERRY & CAROLYN L. PERRY
34	6	HERSCHAL EDWARD AUTRY
35	6	LAYTON FAMILY REVOCABLE MANAGEMENT TRUST
36	6	JOE BAILEY LAYTON & SOPHIE SMITH LAYTON
37	6	BETHESDA RURITAN CLUB, INC.
38	6	BETHESDA BAPTIST OF DURHAM
39	6	BETHESDA BAPTIST
40	6,7	BETHESDA BAPTIST OF DURHAM
41	6	JOHN MALCOLM McALLISTER & JOANN M. McALLISTER
42	6	JAMES W. PERRY & CAROLYN L. PERRY
43	6	SONYA F. PARKER
44	6	JOANN POWELL WOODS
45	6,7	JENNIFER SMITH
46	6,7	MILDRED LOUISE RAY
47	7	JOHN TRAN & TRUONG NGUYEN
48	7	JAMES WESLEY PERRY & CAROLYN L. PERRY
49	7	K&E PROPERTIES, LLC
50	7	RICHARD A. SHAPIRO
51	7	RTP COMMERCIAL, LLC
52	7	RTP COMMERCIAL, LLC
53	7	WALKER HOLDINGS GROUP, LLC
54	7	THOMAS E. STEPHENS & VERA STEPHENS
67	6	RITA BRITT WILLIAMS

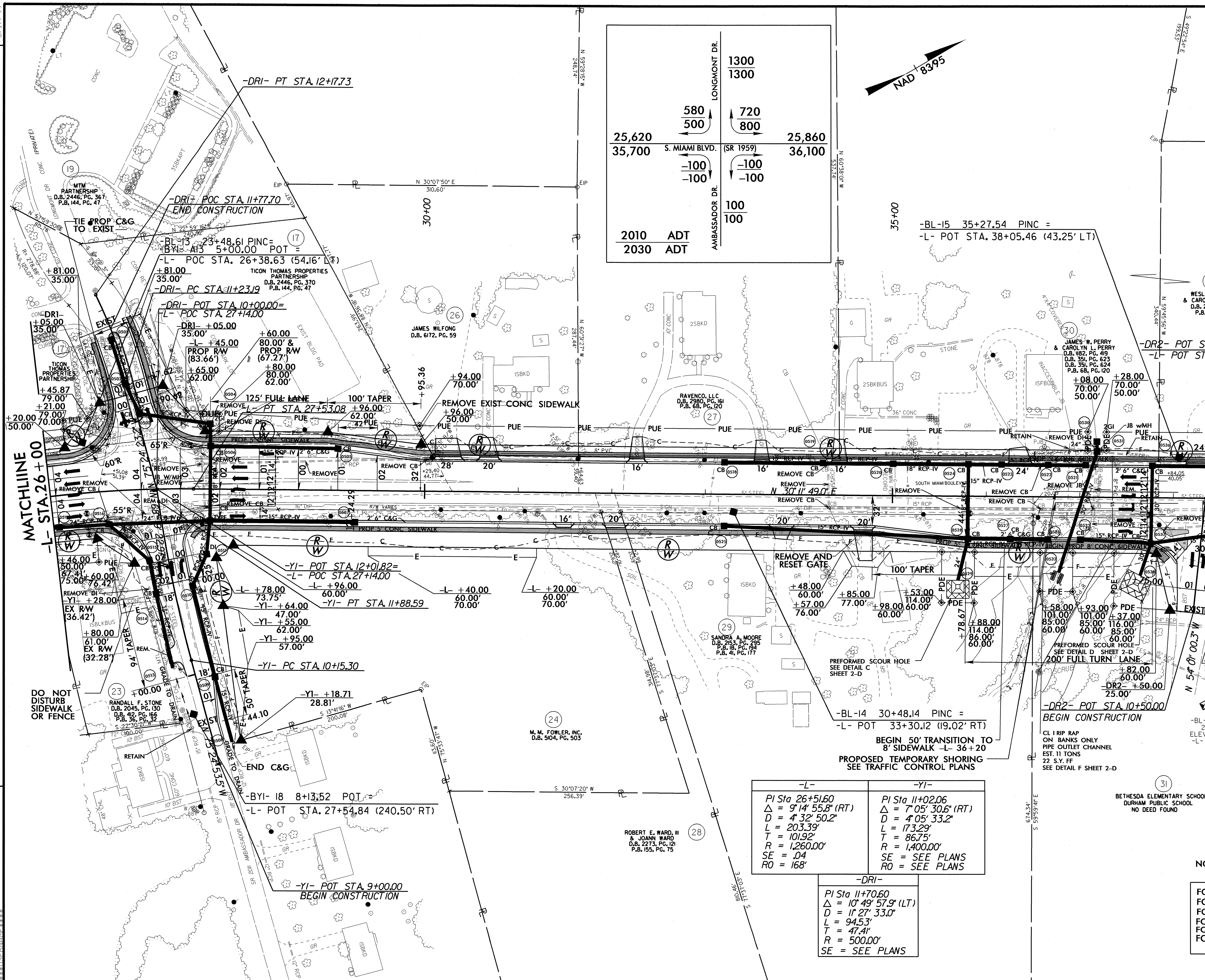
PARCEL No.	SHEET No.	PROPERTY OWNER NAME



-L-	
PI Sta 19+66.84	PI Sta 26+51.60
Δ = 17° 10' 44.9" (RT)	Δ = 9° 14' 55.8" (RT)
D = 4° 27' 31.7"	D = 4° 32' 50.2"
L = 385.28'	L = 203.39'
T = 194.10'	T = 101.92'
R = 1,285.00'	R = 1,260.00'
SE = .04	SE = .04
RO = 168'	RO = 168'

PROJECT REFERENCE NO.	SHEET NO.
U-4011	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE — 3-11-11	NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEHOO — 4/4/11



-L-	-YI-
PI Sta 26+51.60	PI Sta 11+02.06
Δ = 9° 14' 55.8" (RT)	Δ = 7° 05' 30.6" (RT)
D = 4° 32' 50.2"	D = 4° 05' 33.2"
L = 203.39'	L = 173.29'
T = 101.92'	T = 86.75'
R = 1,260.00'	R = 1,400.00'
SE = .04	SE = SEE PLANS
RO = 168'	RO = SEE PLANS

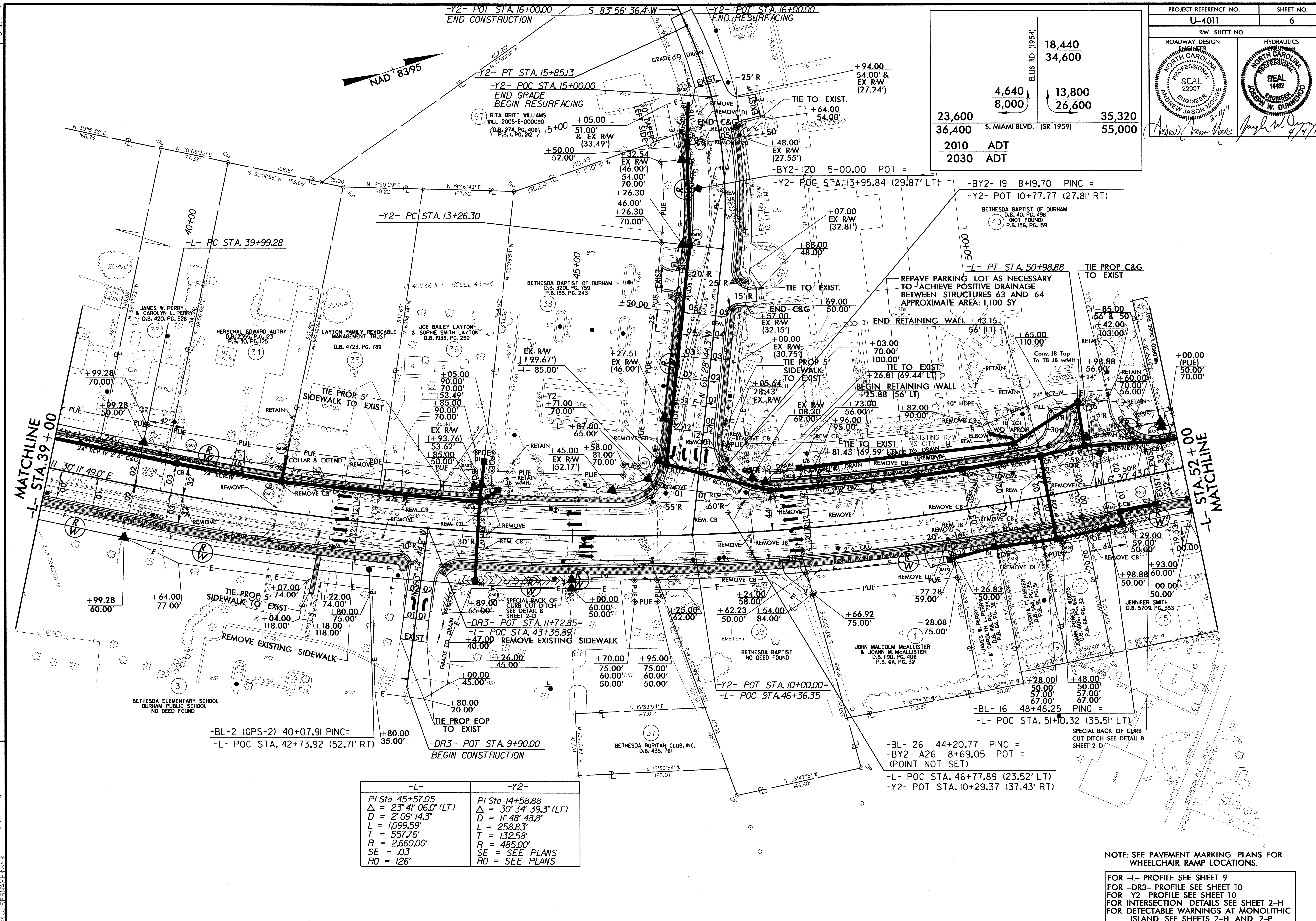
-DRI-
PI Sta 11+70.60
Δ = 10° 49' 57.9" (LT)
D = 11° 27' 33.0"
L = 94.53'
T = 47.41'
R = 500.00'
SE = SEE PLANS

NOTE: SEE PAVEMENT MARKING PLANS FOR WHEELCHAIR RAMP LOCATIONS.

FOR -L- PROFILE SEE SHEET 8
FOR -Y1- PROFILE SEE SHEET 10
FOR -DR1- PROFILE SEE SHEET 10
FOR -DR2- PROFILE SEE SHEET 10
FOR INTERSECTION DETAILS SEE SHEET 2-H
FOR DETECTABLE WARNINGS AT MONOLITHIC ISLAND SEE SHEETS 2-H AND 2-P

REVISIONS

RD244219 3/8/2011 u4011_rdy_psh5 scalhoun RD-Oce860-34


PROJECT REFERENCE NO. U-4011
SHEET NO. 6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE
NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNENOO
ELLIS RD. (1954)
18,440
34,600
4,640
8,000
13,800
26,600
23,600
36,400
S. MIAMI BLVD. (SR 1959)
35,320
55,000
2010 ADT
2030 ADT
NAD 83/95
-Y2- POT STA. 16+00.00
END CONSTRUCTION
-Y2- POT STA. 16+00.00
END RESURFACING
-Y2- PT STA. 15+85.13
-Y2- POC STA. 15+00.00
END GRADE
BEGIN RESURFACING
-Y2- PC STA. 13+26.30
-L- PC STA. 39+99.28
-L- PT STA. 50+98.88
-BY2- 20 5+00.00 POT =
-Y2- POC STA. 13+95.84 (29.87' LT)
-BY2- 19 8+19.70 PINC =
-Y2- POT 10+77.77 (27.81' RT)
REPAVE PARKING LOT AS NECESSARY
TO ACHIEVE POSITIVE DRAINAGE
BETWEEN STRUCTURES 63 AND 64
APPROXIMATE AREA: 1,100 SY
END RETAINING WALL
BEGIN RETAINING WALL
TIE PROP C&G TO EXIST
TIE PROP 5' SIDEWALK TO EXIST
TIE TO EXIST.
END C&G
MATCHLINE -L- STA. 39+00
-L- STA. 52+00 MATCHLINE
PROP 8' CONC SIDEWALK
REMOVE EXISTING SIDEWALK
-DR3- POT STA. 11+72.85 =
-L- POC STA. 43+35.89
-DR3- POT STA. 9+90.00
BEGIN CONSTRUCTION
TIE PROP EOP TO EXIST
-BL-2 (GPS-2) 40+07.91 PINC=
-L- POC STA. 42+73.92 (52.71' RT)
-Y2- POT STA. 10+00.00=
-L- POC STA. 46+36.35
-BL- 16 48+48.25 PINC =
-L- POC STA. 51+10.32 (35.51' LT)
-BL- 26 44+20.77 PINC =
-BY2- A26 8+69.05 POT =
(POINT NOT SET)
-L- POC STA. 46+77.89 (23.52' LT)
-Y2- POT STA. 10+29.37 (37.43' RT)
BETHESDA BAPTIST OF DURHAM
BETHESDA ELEMENTARY SCHOOL DURHAM PUBLIC SCHOOL NO DEED FOUND
BETHESDA RURITAN CLUB, INC. D.B. 435, 761
BETHESDA BAPTIST NO DEED FOUND
JOHN MALCOLM McALLISTER & JOANN M. McALLISTER
JENNIFER SMITH D.B. 5709, PG. 353
HERSCHAL EDWARD AUTRY
LAYTON FAMILY REVOCABLE MANAGEMENT TRUST D.B. 4723, PG. 789
JOE BAILEY LAYTON & SOPHIE SMITH LAYTON
JAMES W. PERRY & CAROLYN L. PERRY
RITA BRITT WILLIAMS WILL 2005-E-000090
REVISIONS

-L-	-Y2-
PI Sta 45+57.05	PI Sta 14+58.88
Δ = 23° 41' 06.0" (LT)	Δ = 30° 34' 39.3" (LT)
D = 2° 09' 14.3"	D = 11° 48' 48.8"
L = 1,099.59'	L = 258.83'
T = 557.76'	T = 132.58'
R = 2,660.00'	R = 485.00'
SE = .03	SE = SEE PLANS
RO = 126'	RO = SEE PLANS

NOTE: SEE PAVEMENT MARKING PLANS FOR WHEELCHAIR RAMP LOCATIONS.

FOR -L- PROFILE SEE SHEET 9
FOR -DR3- PROFILE SEE SHEET 10
FOR -Y2- PROFILE SEE SHEET 10
FOR INTERSECTION DETAILS SEE SHEET 2-H
FOR DETECTABLE WARNINGS AT MONOLITHIC ISLAND SEE SHEETS 2-H AND 2-P

PROJECT REFERENCE NO.	SHEET NO.
U-4011	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE — 3-11-11

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNHOO

REVISIONS

8/17/99

NAD 83/95

-L- POC STA. 55+50.00
END STATE PROJECT U-4011
END CONSTRUCTION

-BL- 27 50+43.58 PINC =
-BY3- A27 5+00.00 POT
(POINT NOT SET)
-L- POT STA. 53+03.95 (9.77' LT)

-L- PC Sta. 55+17.18

-BY4- 25 5+00.00 POT

MATCHLINE -L- STA.52+00

TIE PROP C&G TO EXIST

-L- PT Sta. 56+66.67

TIE PROP C&G TO EXIST.

TIE PROP C&G TO EXISTING

-Y3- POT STA. 13+93.87 =
-L- POT STA. 52+55.04

-BY3- 21 6+13.28 PINC=
-L- POT STA. 52+64.63 (96.47' RT)
-Y3- POT STA. 12+99.41 (21.76' RT)

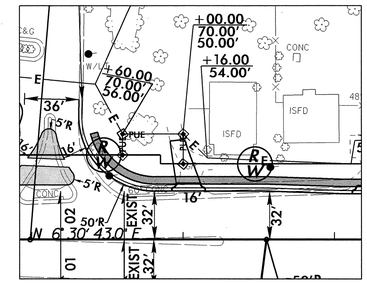
-Y3- POT STA. 12+75.00
BEGIN CONSTRUCTION
-Y3 PT STA. 12+53.95

-BY3- 23 7+82.79 POT
(U2808 BY6-2)
-L- POT STA. 52+05.79 (255.44' RT)
-Y3- POT STA. 11+34.13 (7.82' RT)

-BY4- 24 13+99.87 POT
-L- POT STA. 55+37.74 (339.51' RT)

-BL-1 (GPS-1) 55+88.26 POT=
-BY4- A1 9+85.74 PINC

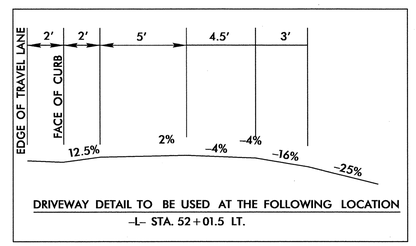
-L-	-Y3-
PI Sta 55+91.93	PI Sta 11+85.54
Δ = 1° 30' 00.0" (RT)	Δ = 26° 37' 01.3" (LT)
D = 1° 00' 12.3"	D = 19° 05' 54.9"
L = 149.49'	L = 139.37'
T = 74.75'	T = 70.96'
R = 5,710.04'	R = 300.00'



DETAIL OF DRIVEWAY FOR PARCEL 46

NOTE: CONSTRUCT 5' SIDEWALK AT END OF PROJECT ON RIGHT W/O DISTURBING EXISTING HOUSES

35,320		(SR 1959)	35,320
55,000	S. MIAMI BLVD.	-100 / -100	55,000
	BETHESDA AVE.	100 / 100	
2010 ADT			
2030 ADT			



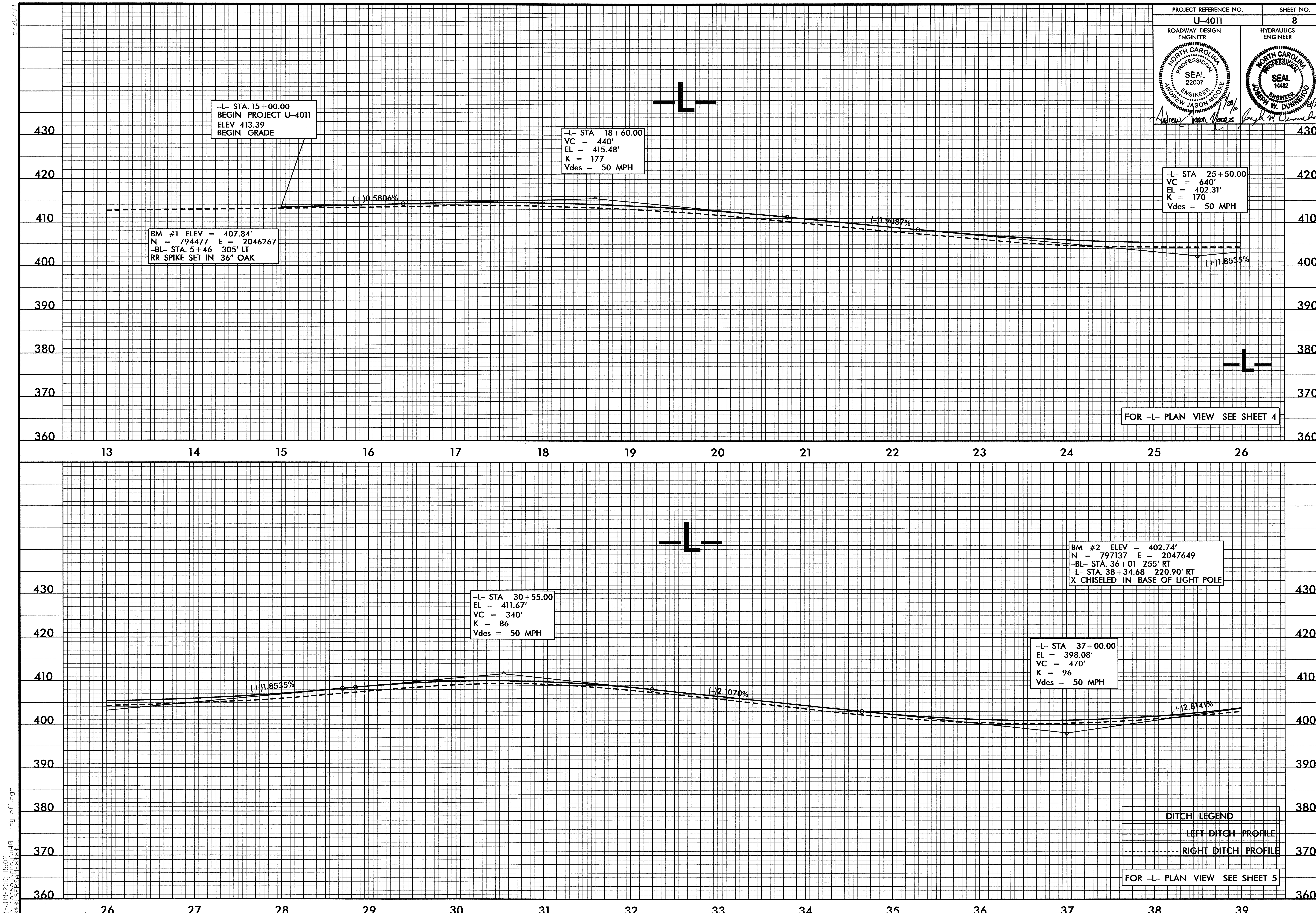
DRIVEWAY DETAIL TO BE USED AT THE FOLLOWING LOCATION
-L- STA. 52+01.5 LT.

NOTE: SEE PAVEMENT MARKING PLANS FOR WHEELCHAIR RAMP LOCATIONS.

FOR -L- PROFILE SEE SHEET 9
FOR -Y3- PROFILE SEE SHEET 10
FOR INTERSECTION DETAILS SEE SHEET 2-H

09-MAR-2011 09:21
R:\Roadway\Proj\u4011_rdy_psh7.dgn
\$\$\$\$USERNAME\$\$\$\$

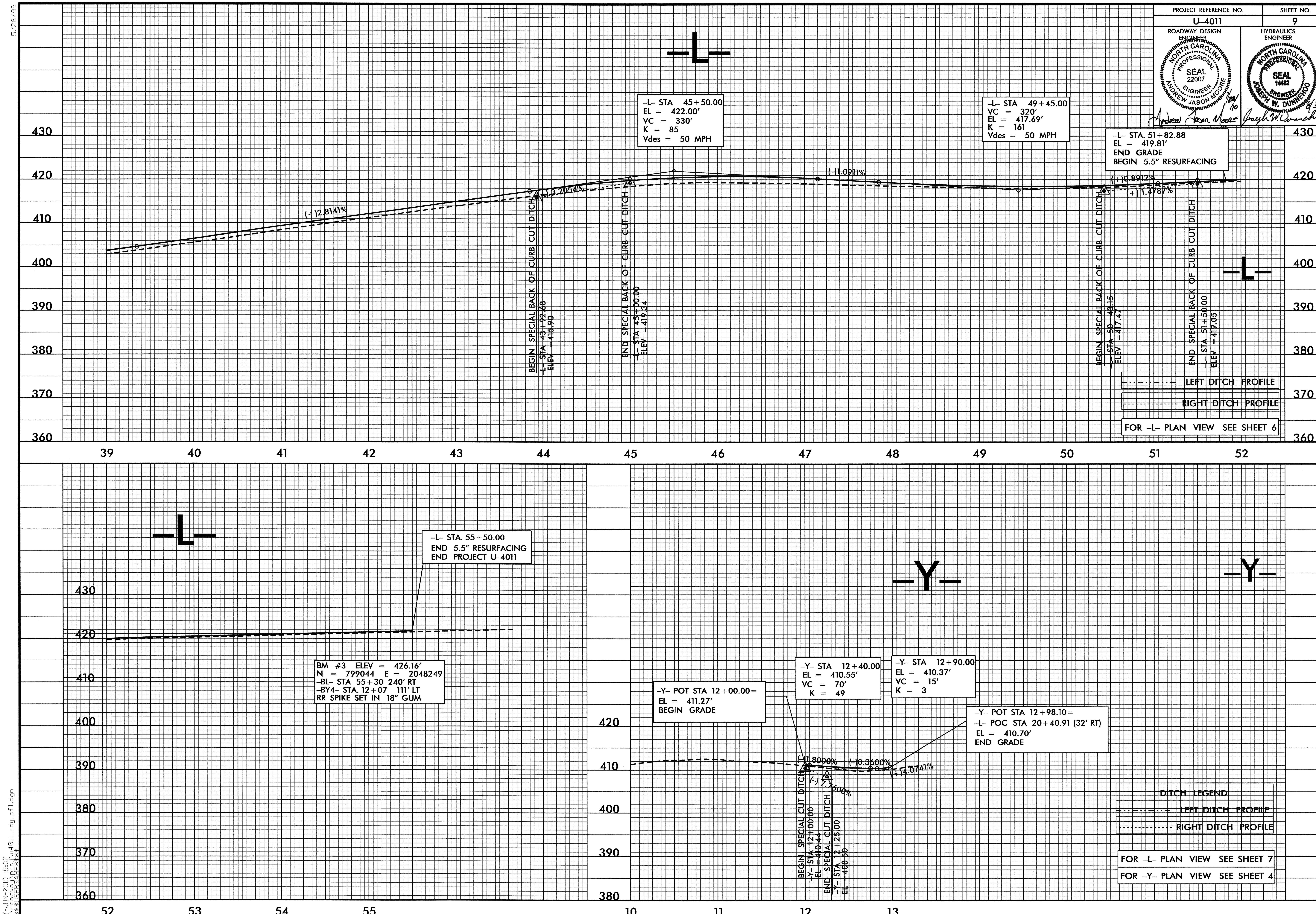
RD244219 3/9/2011 u4011_rdy_psh7 scalhoun RD-Oce860-34


PROJECT REFERENCE NO. U-4011
SHEET NO. 8
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE
NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEHOO
5/28/99
-L-
-L- STA. 15+00.00
BEGIN PROJECT U-4011
ELEV 413.39
BEGIN GRADE
-L- STA 18+60.00
VC = 440'
EL = 415.48'
K = 177
Vdes = 50 MPH
-L- STA 25+50.00
VC = 640'
EL = 402.31'
K = 170
Vdes = 50 MPH
(+)0.5806%
(-)1.9087%
(+)1.8535%
BM #1 ELEV = 407.84'
N = 794477 E = 2046267
-BL- STA. 5+46 305' LT
RR SPIKE SET IN 36" OAK
-L-
FOR -L- PLAN VIEW SEE SHEET 4
430
420
410
400
390
380
370
360
13 14 15 16 17 18 19 20 21 22 23 24 25 26
-L-
BM #2 ELEV = 402.74'
N = 797137 E = 2047649
-BL- STA. 36+01 255' RT
-L- STA. 38+34.68 220.90' RT
X CHISELED IN BASE OF LIGHT POLE
-L- STA 30+55.00
EL = 411.67'
VC = 340'
K = 86
Vdes = 50 MPH
-L- STA 37+00.00
EL = 398.08'
VC = 470'
K = 96
Vdes = 50 MPH
(+)1.8535%
(-)2.1070%
(+)2.8141%
DITCH LEGEND
LEFT DITCH PROFILE
RIGHT DITCH PROFILE
FOR -L- PLAN VIEW SEE SHEET 5
26 27 28 29 30 31 32 33 34 35 36 37 38 39
07-JUN-2010 15:02
r:\roadway\proj\u4011_rdy_pfl.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-4011	9

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22007 ANDREW JASON MOORE

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14482 JOSEPH W. DUNNEHOO



RD244219 6/7/2010 u4011_rdy_pfl_9 scalhoun RD-Oce860-34

PROJECT REFERENCE NO.	SHEET NO.
U-4011	10

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE — 6/3/10

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNIGAN — 6/3/10

–DR–

NOTE: PROFILE IS 8' RIGHT OF ALIGNMENT

–DR– POT STA 10+32.21 (8' RT)=
–L– POC STA 20+51.31 (32' LT)
EL = 413.05'
BEGIN GRADE

–L– STA 10+40.00
EL = 413.17'
VC = 15
K = 3

(+)1.5204%
(–)4.3175%

–DR– POT STA 10+71.50
EL = 411.81'
END GRADE
3" RESURFACING TO STA 11+25.00

FOR –DR– PLAN VIEW SEE SHEET 4

–Y1–

–Y1– POT STA 9+00.00
BEGIN 3" RESURFACING

–Y1– POT STA 9+05.00
EL = 406.85'
BEGIN GRADE

–Y1– POT STA 11+69.57
–L– POC STA 27+18.02 (32' RT)
EL = 404.98'
END GRADE

–L– STA 11+20.00
EL = 403.25'
VC = 90'
K = 21

(–)2.6332%
(–)0.8435%
(+)3.4900%

–L– STA 10+05.00
EL = 404.22'
VC = 70'
K = 39

FOR –Y1– PLAN VIEW SEE SHEET 5

–DR1–

NOTE: PROFILE IS 6' RIGHT OF ALIGNMENT

–DR1– POT STA. 10+32.93 (6' RT)=
–L– POC STA. 27+06.33 (32' LT)
EL = 407.27'
BEGIN GRADE

–DR1– POT STA. 11+77.70
EL = 409.04'
END GRADE

–L– STA 10+55.00
EL = 408.05'
VC = 40'
K = 13

(+)3.5342%
(+)0.5286%
(+)1.1765%

–L– STA 11+25.00
EL = 408.42'
VC = 50'
K = 77

FOR –DR1– PLAN VIEW SEE SHEET 5

–DR2–

–DR2– POT STA. 10+50.00
EL = 400.45'
BEGIN RESURFACING (3")

–DR2– POT STA. 10+65.00
EL = 400.55'
BEGIN GRADE

(+)1.5088%
(+)0.0667%
(+)2.0091%

–DR2– POT STA. 11+41.22 =
–L– POT STA. 38+31.17 (32' RT)
EL = 401.70'
END GRADE

FOR –DR2– PLAN VIEW SEE SHEET 5

–DR3–

–DR3– POT STA. 11+40.80=
–L– POC STA. 43+34.26 (32' RT)
EL = 416.89'
END GRADE

–DR3– POT STA. 10+44.00
EL = 416.19'
BEGIN GRADE

START SPECIAL BACK OF CURB CUT DITCH
–DR3– STA 10+79.52
ELEV = 416.02

END SPECIAL BACK OF CURB CUT DITCH
–DR3– STA 11+21.40
ELEV = 415.90

(+)2.4606%
(+)3.0000%
(+)0.3000%

–L– STA 11+10.00
EL = 417.81'
VC = 60'
K = 10

FOR –DR3– PLAN VIEW SEE SHEET 6

–Y2–

–Y2– POT STA 10+32.32=
–L– POC STA 46+40.93 (32' LT)
EL = 419.72'
BEGIN GRADE

PI = 10+50.00
EL = 420.07'
VC = 35'
K = 15
Vdes = 15 MPH

PI = 11+75.00
EL = 425.30'
VC = 210'
K = 61
Vdes = 45 MPH

PI = 14+00.00
EL = 426.92'
VC = 100'
K = 149
Vdes = 50 MPH

PI = 15+00.00
EL = 426.97'
END GRADE
BEGIN RESURFACING

Y2 STA 16+00.00
END RESURFACING

(+)1.9796%
(+)4.1840%
(+)0.7200%
(+)0.0500%

FOR –Y2– PLAN VIEW SEE SHEET 6

–Y3–

–Y3– POT STA 12+75.00
EL = 423.42'
BEGIN GRADE

–L– STA 13+20.00
EL = 420.95'
VC = 70'
K = 23

–Y3– POT STA 13+61.61=
–L– POT STA 52+50.94 (32' RT)
EL = 419.95'
END GRADE

(–)5.4889%
(–)2.4033%

FOR –Y3– PLAN VIEW SEE SHEET 7

–DR–
–Y1–
–DR1–
–DR2–
–DR3–
–Y2–
–Y3–

DITCH LEGEND
LEFT DITCH PROFILE
RIGHT DITCH PROFILE