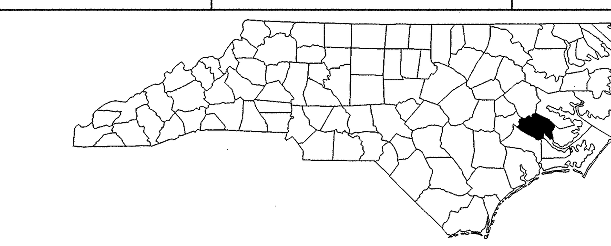
TIP PROJECT: R-3403AA

CONTRACT: C201877

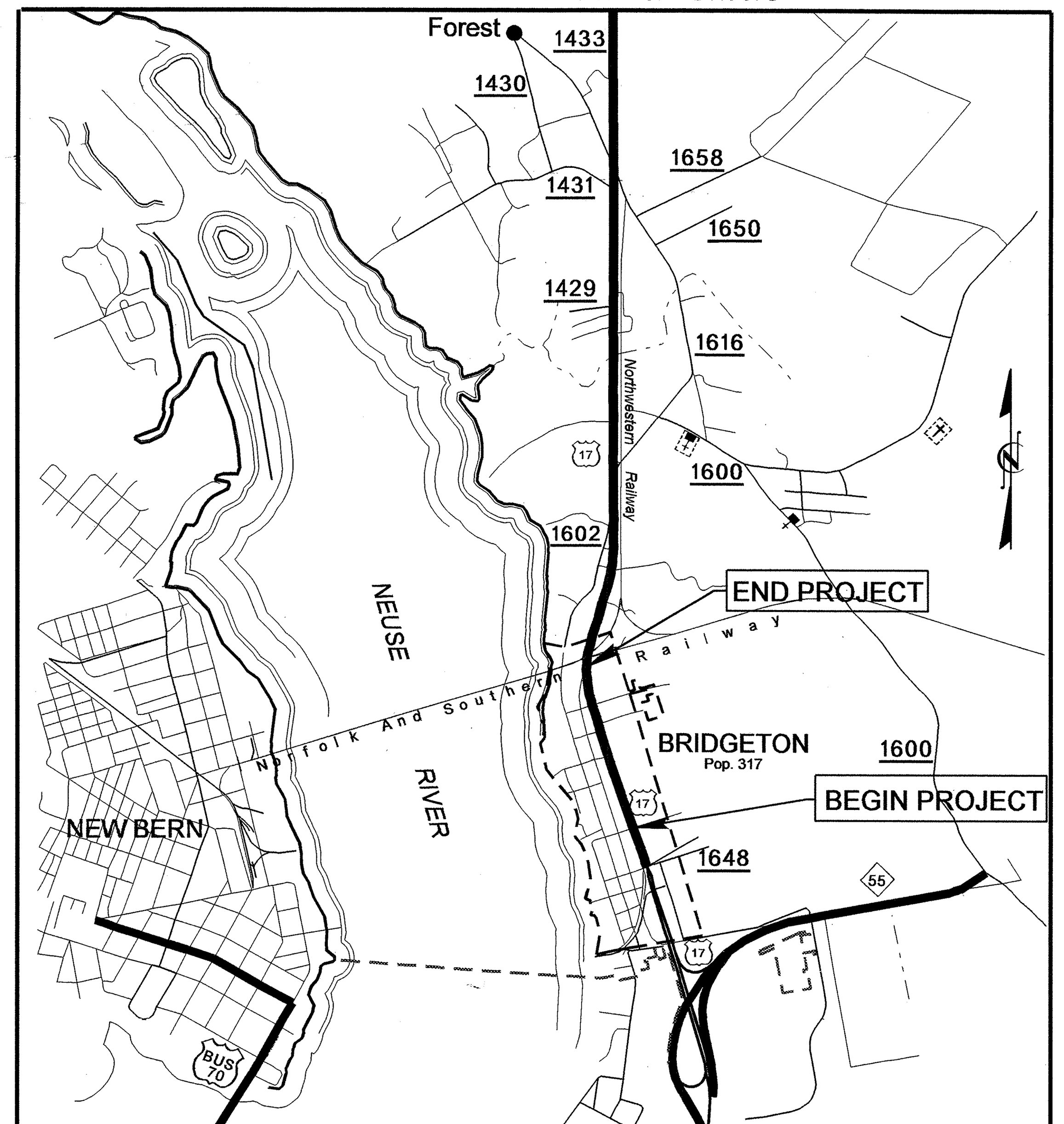
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3403AA	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34538.1.1	STPNHF-17(24)	PE
34538.2.2	STPNHF-17(47)	RW, UTIL
34538.3.5	STPNHF-17(74)	CONST.



See Sheet 1-A For Index of Sheets

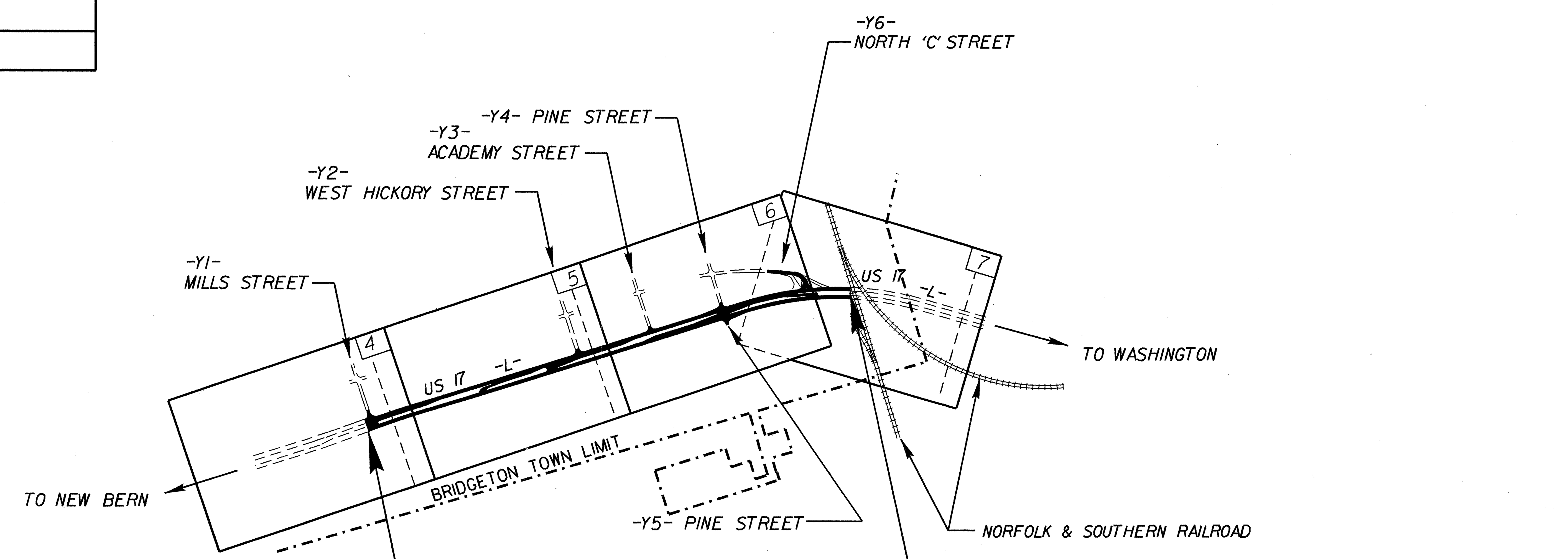


VICINITY MAP

CRAVEN COUNTY

LOCATION: US 17 FROM MILLS STREET TO NORFOLK SOUTHERN RAILROAD IN BRIDGETON

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



-L- STA. 50+90.00 END TIP PROJECT R-3403AA

-L- STA. 17+70.00 BEGIN TIP PROJECT R-3403AA

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 = 16,900
ADT 2035 = 29,600
DHV = 11 %
D = 60 %
T = 10 % *
V = 50 MPH
* TTST 5% DUAL 5%
FUNC CLASS = ARTERIAL

STATEWIDE TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT R-3403AA	=	0.629 MILES
TOTAL LENGTH OF TIP PROJECT R-3403AA	=	0.629 MILES

Prepared In the Office of:

DIVISION OF HIGHWAYS

1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: March 22, 2005

LETTING DATE: September 21, 2010

G.E.BREW, PE
PROJECT ENGINEER

E. MORRISON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.

ROADWAY DESIGN ENGINEER

7-14-10

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY DESIGN ENGINEER

09/08/99

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PROJECT REFERENCE NO.	SHEET NO.
R-3403AA	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

8-4-10

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C THRU 1-E	SURVEY CONTROL SHEET
2 THRU 2B	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-C	DETAIL OF CONCRETE FLUME INSTALLATION
2-D	DETAIL OF ANCHORAGE FOR FRAMES - BRICK/CONCRETE/ PRECAST CONCRETE
2-E THRU 2-F	DETAILS FOR METHOD OF PIPE INSTALLATION
2-G	DETAILS FOR SPECIAL CONCRETE MEDIAN DROP INLET
2-H	DETAIL FOR TEMPORARY CONTAINMENT OF PETROLEUM CONTAMINATED SOIL
2-I THRU 2-J	CHANNELIZATION AND INTERSECTION DETAILS
3	SUMMARY OF QUANTITIES
3-A THRU 3-C	SUMMARY OF DRAINAGE QUANTITIES
3-D	SUMMARY OF EARTHWORK AND SUMMARY OF REMOVAL OF EXISTING ASPHALT PAVEMENT
3-E	PARCEL INDEX SHEET
4 THRU 7	PLAN SHEET
8 THRU 10	PROFILE SHEET
TCP-1 THRU TCP-9	TRAFFIC CONTROL PLANS
PM-1 THRU PM-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-10	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-7	SIGNING PLANS
UC-1 THRU UC- 7	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-5	UTILITY BY OTHERS
X-1A	CROSS-SECTION SUMMARY
X-1 THRU X-16	CROSS-SECTIONS

GENERAL NOTES

GENERAL NOTES:

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

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

UNDERDRAINS:

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

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" OR "TEMPORARY SHORING BARRIER SUPPORTED" DEPENDING UPON THE LOCATION OF THE SHORING.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

TOWN OF BRIDGETON, FIRST CRAVEN SANITARY DISTRICT, EMBARQ

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.

LIST OF STANDARD DRAWINGS

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
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
310.10	Driveway Pipe Construction
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
654.01	Pavement Repairs
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls-12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
850.01	Concrete Paved Ditches
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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Note: Not to Scale

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

PROJECT REFERENCE NO.	SHEET NO.
R-3403AA	1-B

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 — R/W
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite Marker
- Existing Control of Access — C/A
- Proposed Control of Access
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

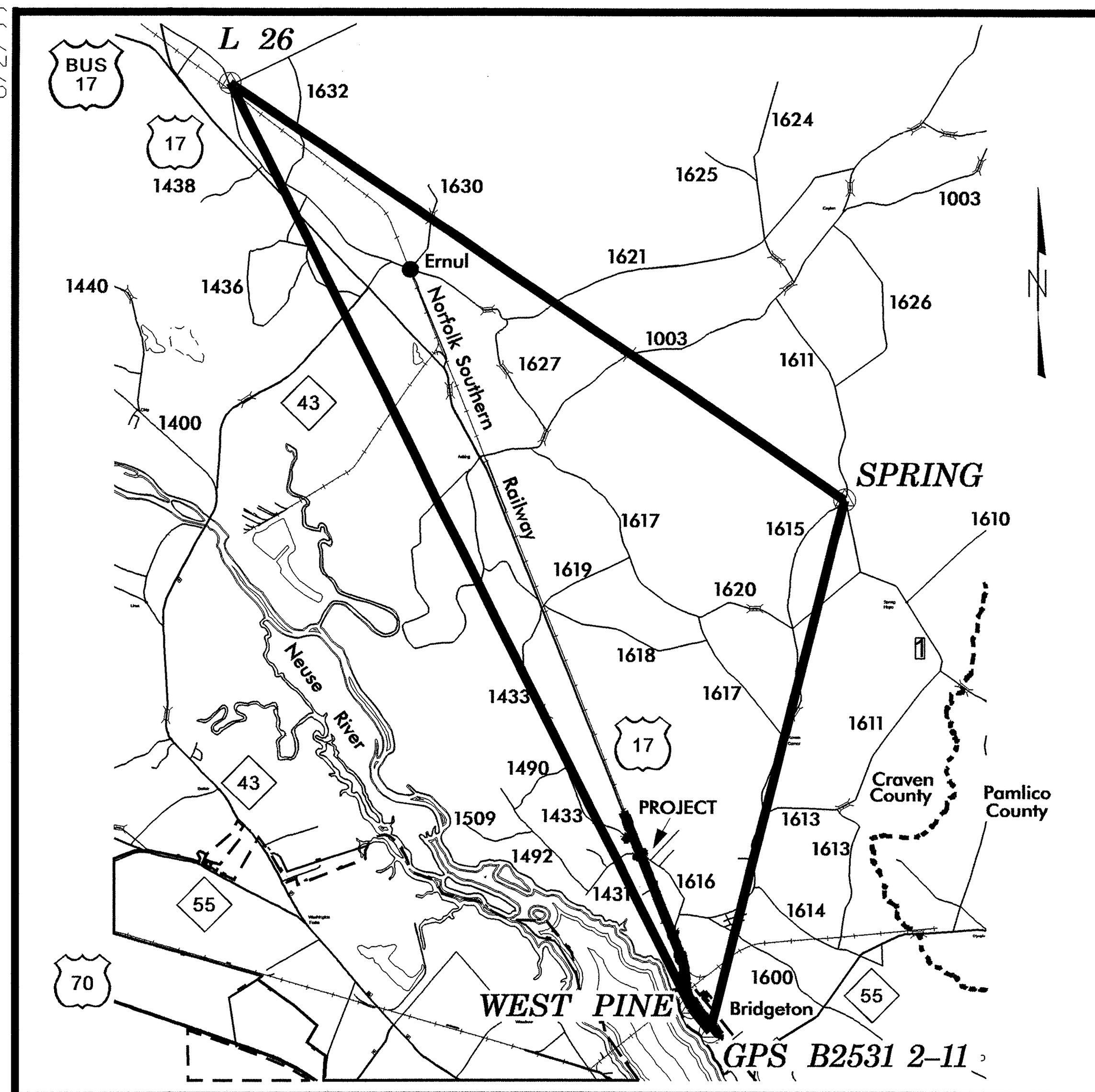
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

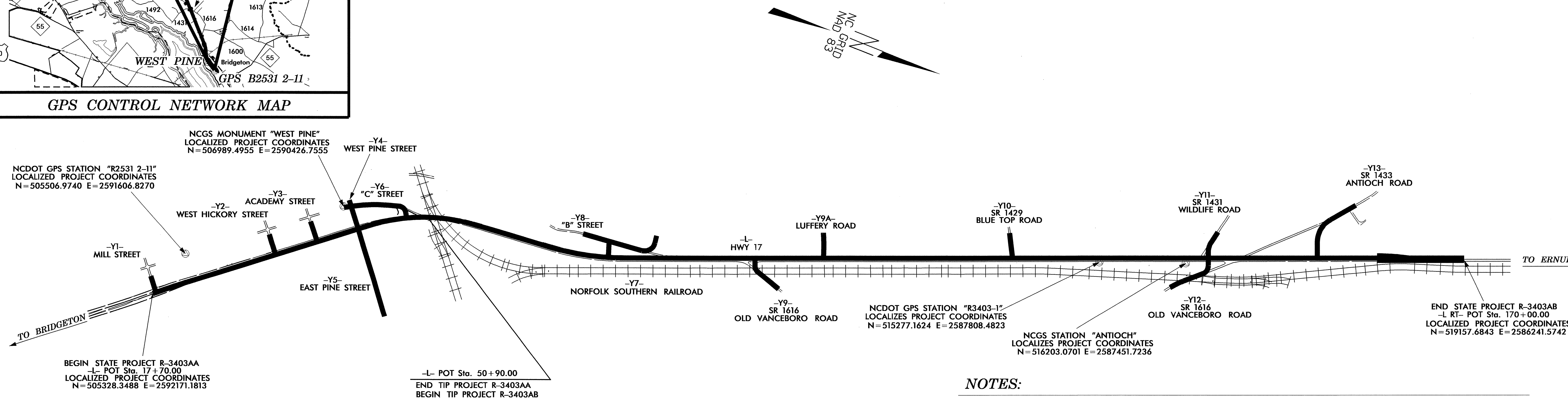
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
R-3403-AA	1-C
Location and Surveys	

SURVEY CONTROL SHEET R-3403A



GPS CONTROL NETWORK MAP



NOTES:

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE NAD 83 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:
   R3403A_LS_GPSCALIB_071017.HTML
   R3403A_LS_WGS84_071017.TXT
   R3403A_LS_LOCAL_071017.TXT
   R3403A_LS_CONTROL_071017.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.

◎ 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 NAD 83 MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R3403-4"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 532123.276(ft) EASTING: 2581086.826(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987844
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R3403-4" TO -L- STATION 17+70.00 IS
S 22°28'24.9" E 28997.09 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-3403-AA	1-D
Location and Surveys	

SURVEY CONTROL SHEET R-3403A

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                         GPS CALIBRATION REPORT

                            PROJECT : R3403

TIP NUMBER          R-3403

USER NAME           BREIGNER            DATE & TIME         7:37:08 AM
                                                             10/18/2007

COORDINATE SYSTEM   US STATE PLANE      ZONE                NORTH CAROLINA
                    1983(AT GROUND)                         3200
HORIZONTAL DATUM    NAD 1983 (CONUS)

VERTICAL DATUM      NGVD29              GEOID MODEL         GEOID99 (CONUS) NC
                                                             SUB GRID
COORDINATE UNITS    US SURVEY FEET
DISTANCE UNITS      US SURVEY FEET
HEIGHT UNITS        US SURVEY FEET
  ----------------------------------------------------------------
LOCAL SITE INFORMATION
LOCALIZED AROUND    R3403-4
LATITUDE            35°11'47.27071"N
LONGITUDE           77°03'17.23378"W
SITE SCALE FACTOR   1.0001215750
HEIGHT              -97.636SFT
  ----------------------------------------------------------------

 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                 533655.915SFT
 EASTING COORDINATE OF
 ROTATION CENTER                2579560.924SFT
 ROTATION ABOUT THE CENTER
 POINT                                0°00'00"
 TRANSLATION NORTH                   0.014SFT
 TRANSLATION EAST                    0.049SFT
 SCALE FACTOR                      1.00000000

  ----------------------------------------------------------------
VERTICAL ADJUSTMENT PARAMETERS

 NORTHING COORDINATE OF ORIGIN
 POINT                           506989.548SFT
 EASTING COORDINATE OF ORIGIN
 POINT                          2590426.616SFT
 VERTICAL SEPARATION AT ORIGIN      -0.023SFT
 SLOPE NORTH                        13.087PPM
 SLOPE EAST                         28.340PPM

  ----------------------------------------------------------------
GEOID MODEL DEFINITION

GEOID99 (CONUS) NC SUB GRID

  ----------------------------------------------------------------
RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

                               SUMMARY

                      MAXIMUM ERROR  ROOT MEAN SQUARE ERROR      POINT
HORIZONTAL             0.154SFT             0.017            WEST PINE GPS
VERTICAL               0.077SFT             0.009            WEST PINE GPS
THREE-DIMENSIONAL      0.172SFT             0.020            WEST PINE GPS

                           POINT RESIDUALS

    WGS84 COORDINATES            CALCULATED POINT         LOCAL COORDINATES
                                 FOR DISPLAY ONLY

 POINT        WEST PINE GPS   NORTHING     506989.548SFT  POINT  WEST PINE
 LATITUDE  35°07'36.90994"N   EASTING     2590426.616SFT  NORTHING  506989.497SFT
 LONGITUDE 77°01'30.74675"W   ELEVATION         9.198SFT  EASTING  2590426.762SFT
 HEIGHT          -112.829SFT  HORZ ERROR        0.154SFT  ELEVATION       9.275SFT
                              VERT ERROR        0.077SFT  UTILIZED  HORZ AND VERT
                              3D ERROR          0.172SFT  QUALITY CONTROL QUALITY

 POINT          R3403-1 GPS   NORTHING     515277.209SFT  POINT  R3403-1
 LATITUDE  35°08'59.37724"N   EASTING     2587808.453SFT  NORTHING  515277.161SFT
 LONGITUDE 77°02'00.28312"W   ELEVATION        10.369SFT  EASTING  2587808.479SFT
 HEIGHT          -111.537SFT  HORZ ERROR        0.055SFT  ELEVATION      10.387SFT
                              VERT ERROR        0.018SFT  UTILIZED  HORZ AND VERT
                              3D ERROR          0.057SFT  QUALITY CONTROL QUALITY

 POINT          ANTIOCH GPS   NORTHING     516203.132SFT  POINT  ANTIOCH
 LATITUDE  35°09'08.60317"N   EASTING     2587451.723SFT  NORTHING  516203.069SFT
 LONGITUDE 77°02'04.35727"W   ELEVATION        13.184SFT  EASTING  2587451.721SFT
 HEIGHT          -108.706SFT  HORZ ERROR        0.063SFT  ELEVATION      13.166SFT
                              VERT ERROR        0.018SFT  UTILIZED  HORZ AND VERT
                              3D ERROR          0.065SFT  QUALITY CONTROL QUALITY

 POINT          R3403-2 GPS   NORTHING     523237.650SFT  POINT  R3403-2
 LATITUDE  35°10'18.71540"N   EASTING     2584632.099SFT  NORTHING  523237.650SFT
 LONGITUDE 77°02'36.63611"W   ELEVATION        15.617SFT  EASTING  2584632.043SFT
 HEIGHT          -106.145SFT  HORZ ERROR        0.055SFT  ELEVATION      15.581SFT
                              VERT ERROR        0.036SFT  UTILIZED  HORZ AND VERT
                              3D ERROR          0.066SFT  QUALITY CONTROL QUALITY

 POINT          R3403-3 GPS   NORTHING     524155.221SFT  POINT  R3403-3
 LATITUDE  35°10'27.86037"N   EASTING     2584265.141SFT  NORTHING  524155.194SFT
 LONGITUDE 77°02'40.83766"W   ELEVATION        15.639SFT  EASTING  2584265.077SFT
 HEIGHT          -106.106SFT  HORZ ERROR        0.070SFT  ELEVATION      15.633SFT
                              VERT ERROR        0.006SFT  UTILIZED  HORZ AND VERT
                              3D ERROR          0.070SFT  QUALITY CONTROL QUALITY
```

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POINT          R3403-4 GPS   NORTHING     532123.293SFT  POINT  R3403-4
LATITUDE  35°11'47.27071"N   EASTING     2581086.878SFT  NORTHING  532123.276SFT
LONGITUDE 77°03'17.23378"W   ELEVATION        23.959SFT  EASTING  2581086.826SFT
HEIGHT           -97.636SFT  HORZ ERROR        0.055SFT  ELEVATION      23.917SFT
                             VERT ERROR        0.042SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.069SFT  QUALITY CONTROL QUALITY

POINT          R3403-5 GPS   NORTHING     533230.866SFT  POINT  R3403-5
LATITUDE  35°11'58.30870"N   EASTING     2580644.542SFT  NORTHING  533230.869SFT
LONGITUDE 77°03'22.30111"W   ELEVATION        19.668SFT  EASTING  2580644.526SFT
HEIGHT          -101.906SFT  HORZ ERROR        0.017SFT  ELEVATION      19.610SFT
                             VERT ERROR        0.058SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.061SFT  QUALITY CONTROL QUALITY

POINT        R3403-112 GPS   NORTHING     540559.728SFT  POINT  R3403-112
LATITUDE  35°13'11.36524"N   EASTING     2577617.658SFT  NORTHING  540559.740SFT
LONGITUDE 77°03'57.04562"W   ELEVATION        19.967SFT  EASTING  2577617.640SFT
HEIGHT          -101.460SFT  HORZ ERROR        0.021SFT  ELEVATION      19.933SFT
                             VERT ERROR        0.035SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.041SFT  QUALITY ADJUSTED QUALITY

POINT          R3403-6 GPS   NORTHING     541415.612SFT  POINT  R3403-6
LATITUDE  35°13'19.92229"N   EASTING     2577131.772SFT  NORTHING  541415.624SFT
LONGITUDE 77°04'02.69977"W   ELEVATION        13.493SFT  EASTING  2577131.750SFT
HEIGHT          -107.911SFT  HORZ ERROR        0.025SFT  ELEVATION      13.465SFT
                             VERT ERROR        0.028SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.038SFT  QUALITY CONTROL QUALITY

POINT          SNAPPYS GPS   NORTHING     547975.059SFT  POINT  SNAPPYS
LATITUDE  35°14'25.45355"N   EASTING     2573652.757SFT  NORTHING  547975.109SFT
LONGITUDE 77°04'43.09329"W   ELEVATION        15.618SFT  EASTING  2573652.738SFT
HEIGHT          -105.623SFT  HORZ ERROR        0.054SFT  ELEVATION      15.607SFT
                             VERT ERROR        0.011SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.055SFT  QUALITY CONTROL QUALITY

POINT          R3403-7 GPS   NORTHING     548696.228SFT  POINT  R3403-7
LATITUDE  35°14'32.71348"N   EASTING     2572980.434SFT  NORTHING  548696.265SFT
LONGITUDE 77°04'51.02883"W   ELEVATION        17.425SFT  EASTING  2572980.434SFT
HEIGHT          -103.786SFT  HORZ ERROR        0.037SFT  ELEVATION      17.441SFT
                             VERT ERROR        0.016SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.040SFT  QUALITY CONTROL QUALITY

POINT          R3403-8 GPS   NORTHING     553513.367SFT  POINT  R3403-8
LATITUDE  35°15'21.20456"N   EASTING     2568483.187SFT  NORTHING  553513.419SFT
LONGITUDE 77°05'44.12225"W   ELEVATION        18.534SFT  EASTING  2568483.203SFT
HEIGHT          -102.473SFT  HORZ ERROR        0.054SFT  ELEVATION      18.550SFT
                             VERT ERROR        0.016SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.057SFT  QUALITY CONTROL QUALITY

POINT          R3403-9 GPS   NORTHING     554295.335SFT  POINT  R3403-9
LATITUDE  35°15'29.07477"N   EASTING     2567757.123SFT  NORTHING  554295.386SFT
LONGITUDE 77°05'52.69466"W   ELEVATION        19.621SFT  EASTING  2567757.138SFT
HEIGHT          -101.352SFT  HORZ ERROR        0.053SFT  ELEVATION      19.652SFT
                             VERT ERROR        0.032SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.062SFT  QUALITY CONTROL QUALITY

POINT        R3403-101 GPS   NORTHING     498420.009SFT  POINT  R3403-101
LATITUDE  35°06'12.72209"N   EASTING     2587608.803SFT  NORTHING  498419.952SFT
LONGITUDE 77°02'06.70470"W   ELEVATION         3.992SFT  EASTING  2587608.864SFT
HEIGHT          -117.948SFT  HORZ ERROR        0.084SFT  ELEVATION       4.000SFT
                             VERT ERROR        0.008SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.084SFT  QUALITY ADJUSTED QUALITY

POINT        R3403-102 GPS   NORTHING     518984.637SFT  POINT  R3403-102
LATITUDE  35°09'34.63128"N   EASTING     2594945.629SFT  NORTHING  518984.598SFT
LONGITUDE 77°00'33.45906"W   ELEVATION        16.936SFT  EASTING  2594945.634SFT
HEIGHT          -105.259SFT  HORZ ERROR        0.039SFT  ELEVATION      16.925SFT
                             VERT ERROR        0.011SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.041SFT  QUALITY ADJUSTED QUALITY

POINT        R3403-103 GPS   NORTHING     514597.600SFT  POINT  R3403-103
LATITUDE  35°08'53.28616"N   EASTING     2584587.905SFT  NORTHING  514597.557SFT
LONGITUDE 77°02'39.21875"W   ELEVATION        16.119SFT  EASTING  2584587.912SFT
HEIGHT          -105.656SFT  HORZ ERROR        0.043SFT  ELEVATION      16.117SFT
                             VERT ERROR        0.003SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.043SFT  QUALITY ADJUSTED QUALITY

POINT        R3403-104 GPS   NORTHING     535934.243SFT  POINT  R3403-104
LATITUDE  35°12'23.96024"N   EASTING     2586198.825SFT  NORTHING  535934.237SFT
LONGITUDE 77°02'14.74458"W   ELEVATION        23.667SFT  EASTING  2586198.807SFT
HEIGHT           -98.135SFT  HORZ ERROR        0.019SFT  ELEVATION      23.662SFT
                             VERT ERROR        0.005SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.020SFT  QUALITY ADJUSTED QUALITY
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POINT        R3403-105 GPS   NORTHING     532120.002SFT  POINT  R3403-105
LATITUDE  35°11'48.20854"N   EASTING     2576058.293SFT  NORTHING  532119.991SFT
LONGITUDE 77°04'17.81212"W   ELEVATION        17.264SFT  EASTING  2576058.262SFT
HEIGHT          -104.118SFT  HORZ ERROR        0.032SFT  ELEVATION      17.239SFT
                             VERT ERROR        0.025SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.041SFT  QUALITY ADJUSTED QUALITY

POINT        R3403-106 GPS   NORTHING     542968.683SFT  POINT  R3403-106
LATITUDE  35°13'34.49676"N   EASTING     2581184.447SFT  NORTHING  542968.698SFT
LONGITUDE 77°03'13.49638"W   ELEVATION        15.833SFT  EASTING  2581184.439SFT
HEIGHT          -105.740SFT  HORZ ERROR        0.017SFT  ELEVATION      15.844SFT
                             VERT ERROR        0.011SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.020SFT  QUALITY ADJUSTED QUALITY

POINT        R3403-107 GPS   NORTHING     537524.765SFT  POINT  R3403-107
LATITUDE  35°12'42.03929"N   EASTING     2574049.539SFT  NORTHING  537524.767SFT
LONGITUDE 77°04'40.75008"W   ELEVATION        10.460SFT  EASTING  2574049.524SFT
HEIGHT          -110.823SFT  HORZ ERROR        0.015SFT  ELEVATION      10.443SFT
                             VERT ERROR        0.016SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.022SFT  QUALITY ADJUSTED QUALITY

POINT        R3403-108 GPS   NORTHING     555897.322SFT  POINT  R3403-108
LATITUDE  35°15'43.62018"N   EASTING     2574554.356SFT  NORTHING  555897.366SFT
LONGITUDE 77°04'30.37423"W   ELEVATION        21.265SFT  EASTING  2574554.353SFT
HEIGHT           -99.997SFT  HORZ ERROR        0.044SFT  ELEVATION      21.301SFT
                             VERT ERROR        0.036SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.057SFT  QUALITY ADJUSTED QUALITY

POINT        R3403-109 GPS   NORTHING     547279.426SFT  POINT  R3403-109
LATITUDE  35°14'19.81541"N   EASTING     2567134.691SFT  NORTHING  547279.455SFT
LONGITUDE 77°06'01.81738"W   ELEVATION        23.002SFT  EASTING  2567134.681SFT
HEIGHT           -97.961SFT  HORZ ERROR        0.031SFT  ELEVATION      22.999SFT
                             VERT ERROR        0.003SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.031SFT  QUALITY ADJUSTED QUALITY

POINT        R3403-110 GPS   NORTHING     560360.456SFT  POINT  R3403-110
LATITUDE  35°16'29.27926"N   EASTING     2566545.647SFT  NORTHING  560360.515SFT
LONGITUDE 77°06'05.90143"W   ELEVATION        27.993SFT  EASTING  2566545.642SFT
HEIGHT           -92.912SFT  HORZ ERROR        0.059SFT  ELEVATION      28.027SFT
                             VERT ERROR        0.034SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.068SFT  QUALITY ADJUSTED QUALITY

POINT        R3403-111 GPS   NORTHING     552002.017SFT  POINT  R3403-111
LATITUDE  35°15'07.26639"N   EASTING     2563151.406SFT  NORTHING  552002.061SFT
LONGITUDE 77°06'48.74604"W   ELEVATION         9.110SFT  EASTING  2563151.401SFT
HEIGHT          -111.668SFT  HORZ ERROR        0.044SFT  ELEVATION       9.123SFT
                             VERT ERROR        0.013SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.046SFT  QUALITY ADJUSTED QUALITY

POINT        R3403-100 GPS   NORTHING     507636.817SFT  POINT  R3403-100
LATITUDE  35°07'41.59810"N   EASTING     2599066.414SFT  NORTHING  507636.768SFT
LONGITUDE 76°59'46.59922"W   ELEVATION        17.711SFT  EASTING  2599066.481SFT
HEIGHT          -104.664SFT  HORZ ERROR        0.084SFT  ELEVATION      17.747SFT
                             VERT ERROR        0.036SFT  UTILIZED  HORZ AND VERT
                             3D ERROR          0.091SFT  QUALITY ADJUSTED QUALITY
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DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R3403-4"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 532123.276(ft) EASTING: 2581086.826(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987844
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R3403-4" TO -L- STATION 17+70.00 IS
S 22°28'24.9" E 28997.09 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

6/2/99

09-JUN-2010 08:40
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$$$$USERNAME$$$$

6/2/99

SURVEY CONTROL SHEET R-3403A

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	504593.0030	2592649.9740	10.23	OUTSIDE PROJECT LIMITS	
2	BL-2	505142.5210	2592402.8180	9.89	14+78.43	53.83 RT
3	BL-3	505704.2960	2591890.4130	8.85	22+38.92	26.83 RT
4	BL-4	506197.9490	2591445.9240	10.19	29+02.34	6.80 LT
5	BL-5	506589.6550	2591126.1700	9.64	34+07.99	7.92 LT
6	BL-6	506999.7290	2590793.3000	9.24	39+36.16	7.64 LT
7	BL-7	507517.0450	2590403.8940	9.55	45+84.13	7.04 RT
8	BL-8	508004.1620	2590193.9150	9.43	51+20.92	33.05 RT
9	BL-9	508620.2880	2590124.3210	7.93	57+52.25	73.03 RT
10	BL-10	509329.8900	2590033.1630	8.26	64+67.14	48.76 RT
11	BL-11	509880.1320	2589937.4660	8.08	70+18.26	48.80 RT
12	BL-12	510482.0460	2589718.5800	8.68	76+53.56	46.93 RT
13	BL-13	511055.3060	2589488.9620	9.02	82+71.10	45.73 RT
14	BL-14	511553.8700	2589291.4000	9.88	88+07.38	46.68 RT
15	BL-15	512132.5920	2589059.1600	10.34	94+30.96	45.07 RT
16	BL-16	512688.2400	2588839.1130	11.09	100+28.59	46.25 RT
17	BL-17	513237.7370	2588576.8700	10.62	106+36.12	5.95 RT
18	BL-18	513817.5560	2588388.5780	10.04	112+44.46	45.58 RT
19	BL-19	514412.4180	2588151.3550	10.24	118+84.88	45.31 RT
20	BL-20	514833.5370	2587983.8170	10.70	123+38.10	45.50 RT
21	NCDOT GPS R3403-1	515277.1624	2587808.4823	10.39	128+15.12	46.76 RT
22	NCGS MONUMENT ANTIOCH	516203.0701	2587451.7236	13.17	138+07.31	57.95 RT
23	BL-23	516759.4290	2587221.4960	15.36	144+09.37	49.93 RT
24	BL-24	517322.7880	2586999.0390	15.91	150+15.06	51.73 RT
25	BL-25	517888.7220	2586766.6160	16.20	156+26.83	45.22 RT
26	BL-26	518432.3680	2586548.5090	16.30	162+12.59	43.76 RT
27	BL-27	519018.7585	2586316.4385	16.00	168+43.23	45.14 RT
28	BL-28	519594.2600	2586084.9223	16.32	OUTSIDE PROJECT LIMITS	

BY-1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
100	BY1-100	505192.0830	2591906.4570	9.58	OUTSIDE PROJECT LIMITS	
101	BY1-101	505326.1340	2592068.6160	8.14	11+17.80	24.17 LT
102	COMPUTED POINT	505404.7113	2592163.6696	UNKNOWN	OUTSIDE PROJECT LIMITS	

BY-2

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
200	BY2-200	506285.2120	2591029.3540	9.99	OUTSIDE PROJECT LIMITS	
201	BY2-201	506414.0590	2591188.6990	9.33	11+72.82	16.11 RT
202	COMPUTED POINT	506453.4217	2591237.3788	UNKNOWN	12+35.42	16.11 RT

BY-3

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
300	BY3-300	506691.4640	2590685.2250	9.31	OUTSIDE PROJECT LIMITS	
301	BY3-301	506826.3550	2590845.9500	6.87	11+68.79	20.82 LT
302	COMPUTED POINT	506870.3251	2590898.3412	UNKNOWN	12+37.18	20.37 LT

BY-4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
400	BY4-400	506904.7900	2590215.4690	7.71	OUTSIDE PROJECT LIMITS	
401	BY4-401	507176.4270	2590559.0620	7.02	12+71.31	21.05 RT
402	COMPUTED POINT	507226.5994	2590622.5249	UNKNOWN	OUTSIDE PROJECT LIMITS	

BY-5

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
499	COMPUTED POINT	507256.7320	2590599.8428	UNKNOWN	10+04.24	15.92 LT
500	BY5-500	507269.8470	2590616.5270	8.97	10+25.46	15.74 LT
501	BY5-501	507589.3130	2591022.9340	7.71	15+42.38	11.45 LT

BY-6

POINT	DESC.	NORTH	EAST	ELEVATION	Y6 STATION	OFFSET
50	NCGS MONUMENT WEST PINE	506989.4955	2590426.7555	9.28	OUTSIDE PROJECT LIMITS	
600	BY6-600	507212.5020	2590300.5840	8.81	12+52.19	16.22 LT
601	BY6-601	507852.7900	2590163.4030	9.14	17+72.58	184.08 LT
602	BL-8	508004.1620	2590193.9150	9.43	OUTSIDE PROJECT LIMITS	

BY-8

POINT	DESC.	NORTH	EAST	ELEVATION	Y8 STATION	OFFSET
800	BY8-800	509585.1400	2589722.2010	5.20	OUTSIDE PROJECT LIMITS	
801	BY8-801	510098.7250	2589666.5790	7.11	14+43.27	12.70 RT
802	BY8-802	510629.3670	2589602.1670	7.47	18+38.42	183.82 RT
803	BL-13	511055.3060	2589488.9620	9.02	18+79.49	594.97 RT

BY-9

POINT	DESC.	NORTH	EAST	ELEVATION	Y9 STATION	OFFSET
900	BL-14	511553.8700	2589291.4000	9.88	14+27.23	57.62 LT
901	BY9-901	512007.4640	2589451.1750	10.12	OUTSIDE PROJECT LIMITS	

BY-9A

POINT	DESC.	NORTH	EAST	ELEVATION	Y9A STATION	OFFSET
950	BY9A-950	512232.3890	2588680.6580	10.03	10+22.02	12.12 LT
951	BY9A-951	512301.1290	2588927.6650	10.37	12+76.74	16.50 RT
952	COMPUTED POINT	512317.3599	2588985.9884	UNKNOWN	OUTSIDE PROJECT LIMITS	

BY-10

POINT	DESC.	NORTH	EAST	ELEVATION	Y10 STATION	OFFSET
1000	BY10-1000	514175.8500	2587814.5240	10.58	OUTSIDE PROJECT LIMITS	
1001	BY10-1001	514336.1020	2588113.4680	9.82	12+72.39	9.85 LT
999	BL-19	514412.4180	2588151.3550	10.24	OUTSIDE PROJECT LIMITS	

BY-11

POINT	DESC.	NORTH	EAST	ELEVATION	Y11 STATION	OFFSET
1100	BY11-1100	516454.7110	2586854.4620	8.86	OUTSIDE PROJECT LIMITS	
1101	BY11-1101	516371.8930	2587270.4650	13.07	12+79.30	33.78 RT
1102	NCGS MONUMENT ANTIOCH	516203.0701	2587451.7236	13.17	OUTSIDE PROJECT LIMITS	

BY-12

POINT	DESC.	NORTH	EAST	ELEVATION	Y12 STATION	OFFSET
1200	BL-23	516759.4290	2587221.4960	15.36	15+64.18	344.37 RT
1201	BY12-1201	516142.2090	2587733.8860	12.32	10+37.60	25.46 LT

BY-13

POINT	DESC.	NORTH	EAST	ELEVATION	Y13 STATION	OFFSET
1301	BY13-1301	517899.7664	2585966.9110	11.19	OUTSIDE PROJECT LIMITS	
1300	BY13-1300	517370.1900	2586543.1170	15.66	15+24.24	124.17 RT
1299	BL-23	516759.4290	2587221.4960	15.36	OUTSIDE PROJECT LIMITS	

BM1 ELEVATION = 10.56
N 504898 E 2592845
L STATION 10+09 237 RIGHT
RR SPIKE SET IN BASE OF POWER POLE (NO NUMBER)

BM2 ELEVATION = 9.75
N 506556 E 2591507
L STATION 31+42 266 RIGHT
RR SPIKE SET IN BASE OF 20′ GUM TREE

BM3 ELEVATION = 11.00
N 507499 E 2590733
L STATION 43+63 260 RIGHT
RR SPIKE SET IN BASE OF CP&L POWER POLE #NEW50

BM4 ELEVATION = 9.44
N 509789 E 2590165
L STATION 68+83 248 RIGHT
RR SPIKE SET IN BASE OF 28′ GUM TREE

BM5 ELEVATION = 12.34
N 511860 E 2589331
L STATION 90+77 196 RIGHT
RR SPIKE SET IN BASE OF 30IN PINE TREE

BM6 ELEVATION = 11.42
N 513601 E 2588592
L STATION 109+68 155 RIGHT
CHISLED SQUARE IN NE COR.OF SOUTH R/R BRIDGE HEADWALL

BM7 ELEVATION = 13.26
N 514852 E 2588141
L STATION 122+97 198 RIGHT
RR SPIKE SET IN BASE OF 6IN PINE TREE

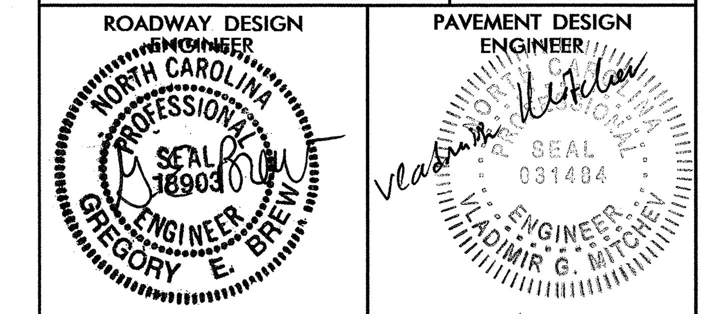
BM8 ELEVATION = 15.50
N 516308 E 2587629
L STATION 138+40 262 RIGHT
TOP OF WEST ANCOR BOLT OF EAST R/R SIGNAL LIGHTS

BM9 ELEVATION = 19.77
N 518568 E 2586611
TRANRT STATION 163+16 125 RIGHT
RR SPIKE SET IN BASE OF CP&L POWER POLE #NEM31

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R3403-4"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 532123.276(ft) EASTING: 2581086.826(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987844
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R3403-4" TO -L- STATION 17+70.00 IS
S 22°28′24.9″ E 28997.09 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

PROJECT REFERENCE NO.	SHEET NO.
R-3403AA	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
7-14-10	07/14/10

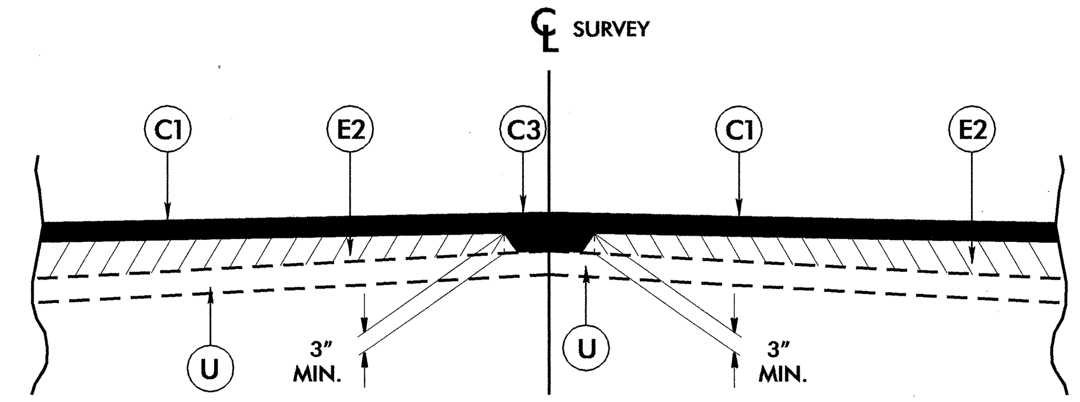


FINAL PAVEMENT SCHEDULE

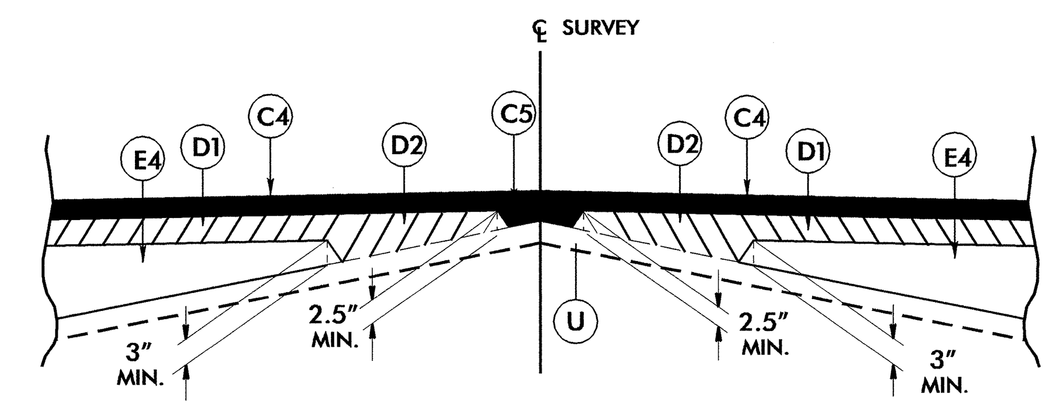
C1	PROP. APPROX. 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ.YD.
C2	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ.YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
C4	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD. IN EACH OF TWO LAYERS.
C5	PROP. VAR. DEPTH ASPHALT 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 LESS THAN 1.5" IN DEPTH OR GREATER THAN 2.25" IN DEPTH.
D1	PROP. APPROX. 3.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 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 2.5" IN DEPTH OR GREATER THAN 4.0" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3.0" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
E3	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E4	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 3.0" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL).

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.
FDPS = FULL DEPTH PAVED SHOULDER

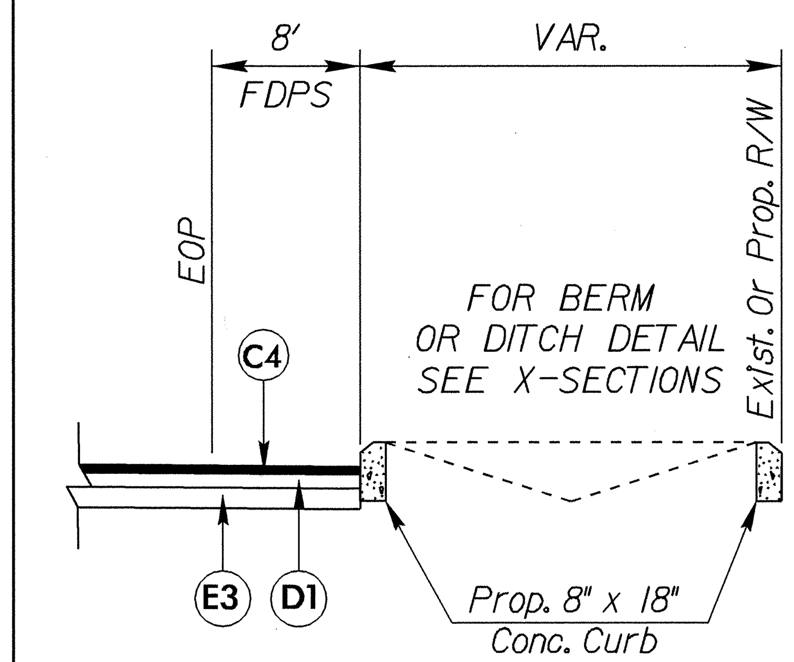
Details Showing Method of Wedging



USE WITH TYPICAL SECTION 5

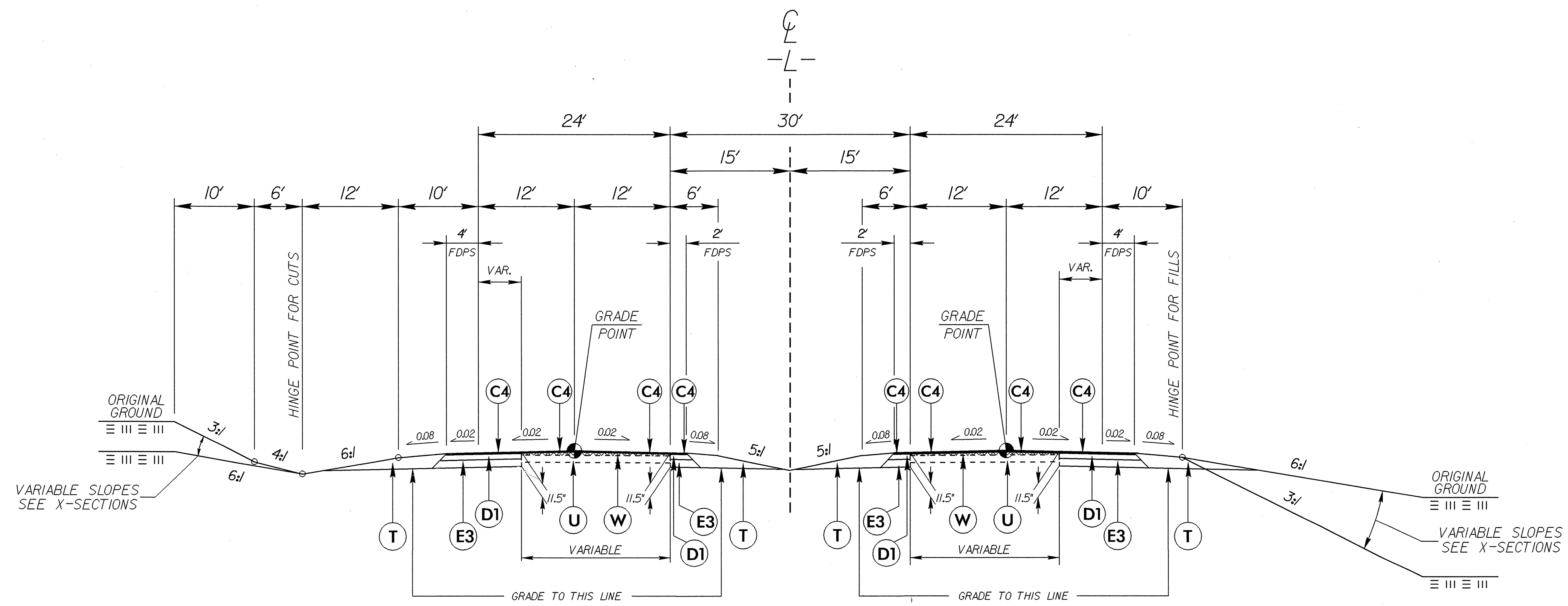


USE WITH TYPICAL SECTION 1



Detail for Business Channelization

See Plans for Locations



TYPICAL SECTION NO. 1

-L- STA. 18+50.00 TO -L- STA. 22+69.25

NOTE:

TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1 -L- STA. 17+70.00 TO -L- STA. 18+50.00

MILL EXISTING PAVMENT (3"-6") FROM -L- STA 18+50 TO STA 22+50 IN ORDER TO ALLOW MINIMUM RESURFACING DEPTH

6/2/99

24-JUN-2010 14:32
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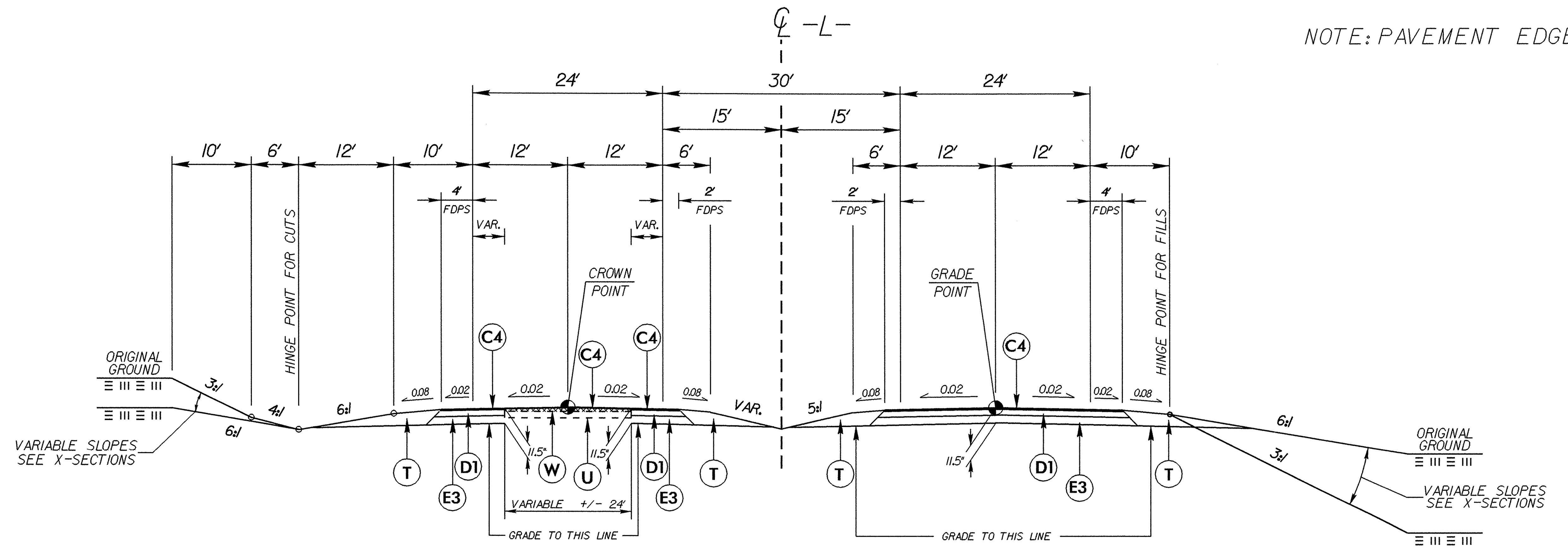
PROJECT REFERENCE NO.	SHEET NO.
R-3403AA	2-A

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18803 GREGORY E. BREW — 7-14-10

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031484 VLADIMIR G. MITCHEV — 07/14/10

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

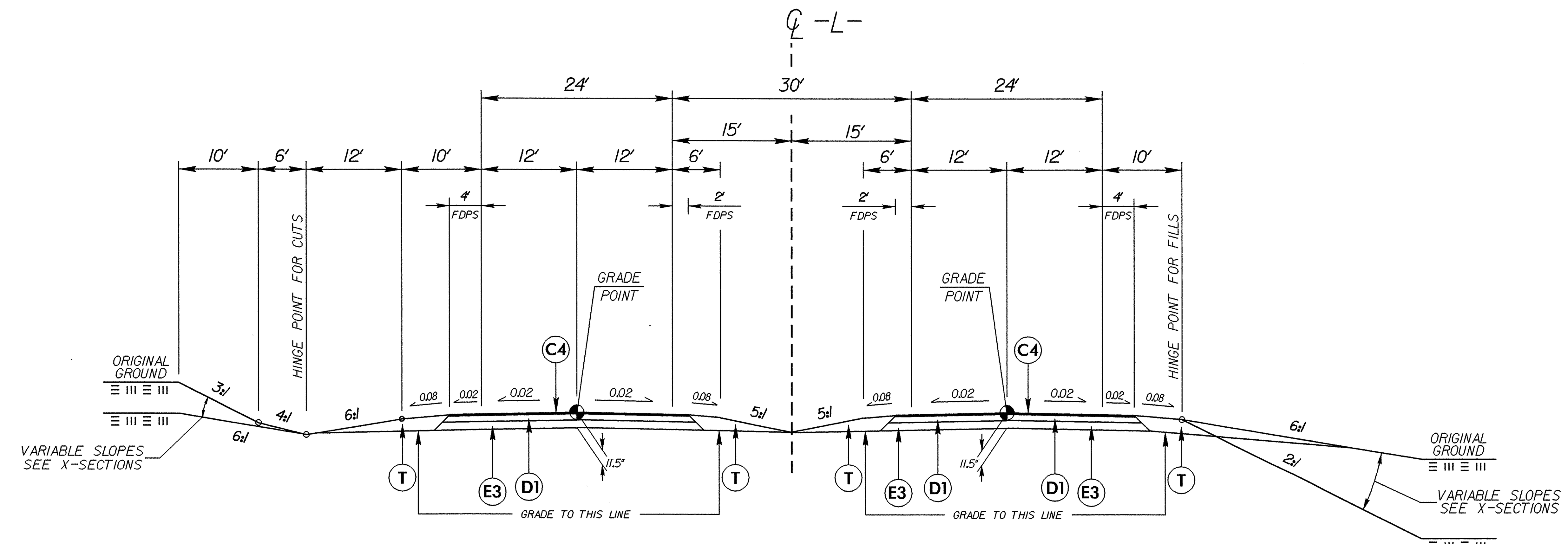
FDPS = FULL DEPTH PAVED SHOULDER



TYPICAL SECTION NO. 2

-L- STA. 23+00.00 TO -L- STA. 40+50.00

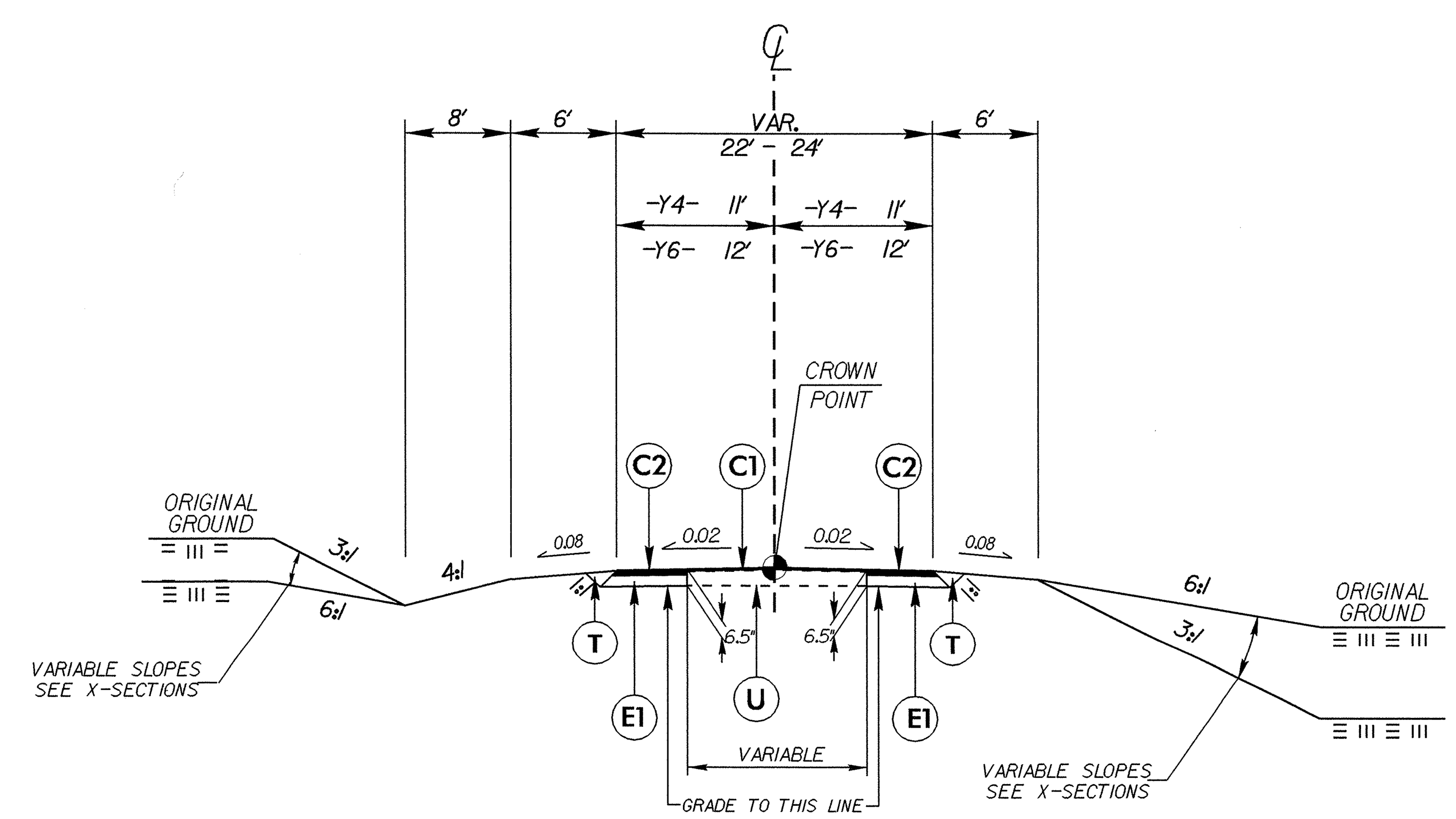
NOTE:
TRANSITION FROM TYPICAL SECTION NO. 1 TO TYPICAL SECTION NO. 2
-L- STA. 22+69.25 TO -L- STA. 23+00.00



TYPICAL SECTION NO. 3

-L- STA. 41+00.00 TO -L- STA. 50+90.00

NOTE:
TRANSITION FROM TYPICAL SECTION NO. 2 TO TYPICAL SECTION NO. 3
-L- STA. 40+50.00 TO -L- STA. 41+00.00



TYPICAL SECTION NO. 4

-Y4- STA. 11+00.00 TO STA. 12+45.89
-Y6- STA. 11+00.00 TO STA. 14+50.00

NOTE:
TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 4
-Y4- STA. 10+46.48 TO STA. 11+00.00
-Y6- STA. 10+50.00 TO STA. 11+00.00

FINAL PAVEMENT SCHEDULE

C1	1.25" SF9.5A
C2	2.5" SF9.5A
C4	3" S9.5C
D1	3.5" I19.0C
E1	4" B25.0B
E3	5" B25.0C
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

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6/2/99

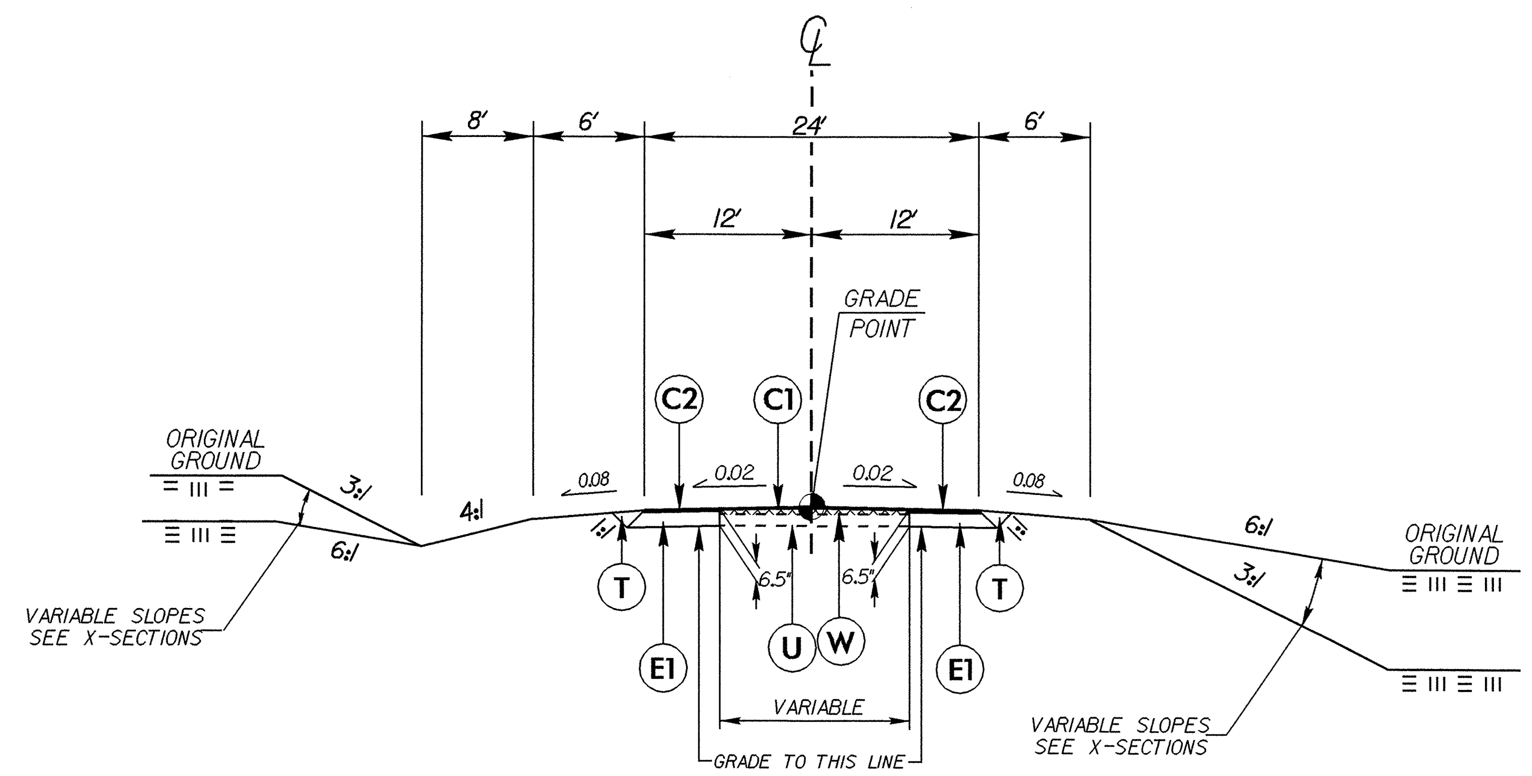
PROJECT REFERENCE NO.	SHEET NO.
R-3403AA	2-B

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18903 GREGORY E. BREW — 7-14-10

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031484 VLADIMIR G. MITCHELL — 07/14/10

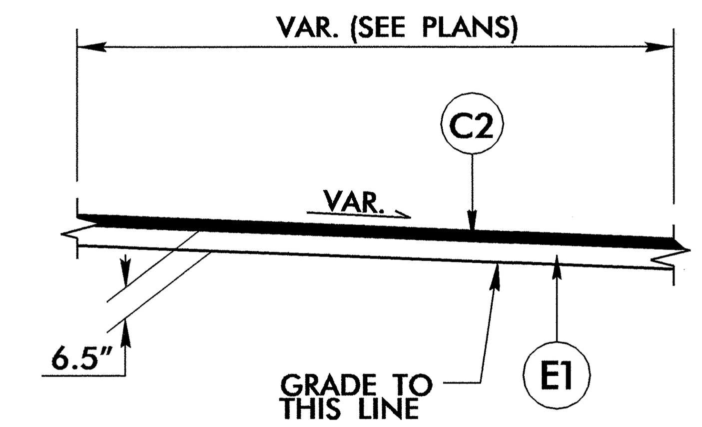
FINAL PAVEMENT SCHEDULE

C1	1.25" SF9.5A
C2	2.5" SF9.5A
C3	3" S9.5C
D1	3.5" I19.0C
E1	4" B25.0B
E3	5" B25.0C
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

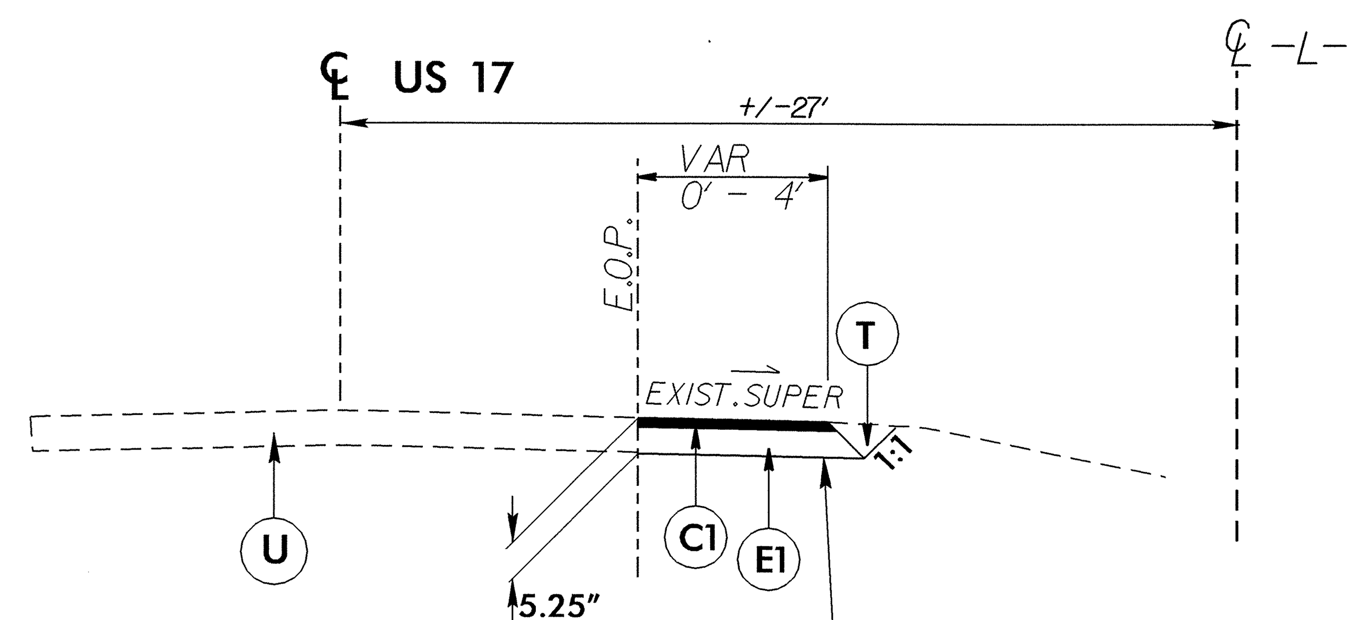


TYPICAL SECTION NO. 5

–Y6– STA. 14+50.00 TO STA. 17+39.32



ROADWAY	REMARKS
MISC. PAVED PRIVATE DRIVES	SEE PLANS FOR LOCATIONS



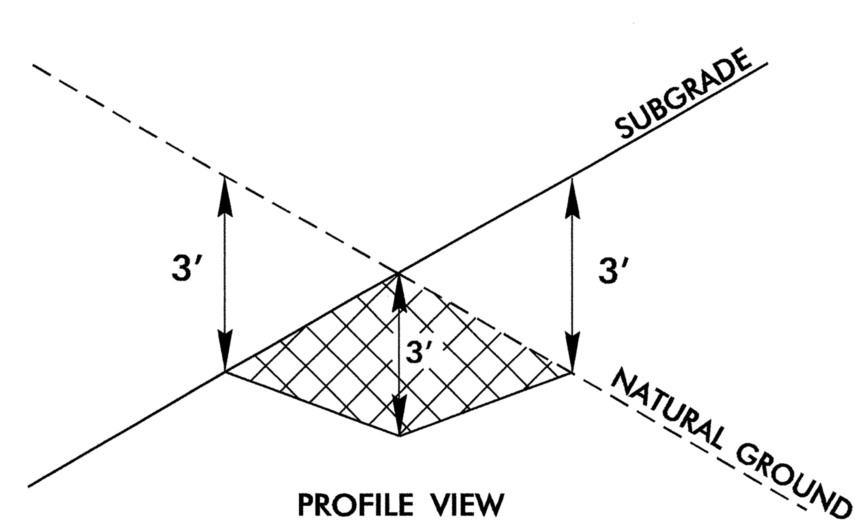
TYPICAL SECTION NO. 6

NOTE: TEMPORARY WIDENING FOR MAINTENANCE OF TRAFFIC
SEE TRAFFIC CONTROL PLANS

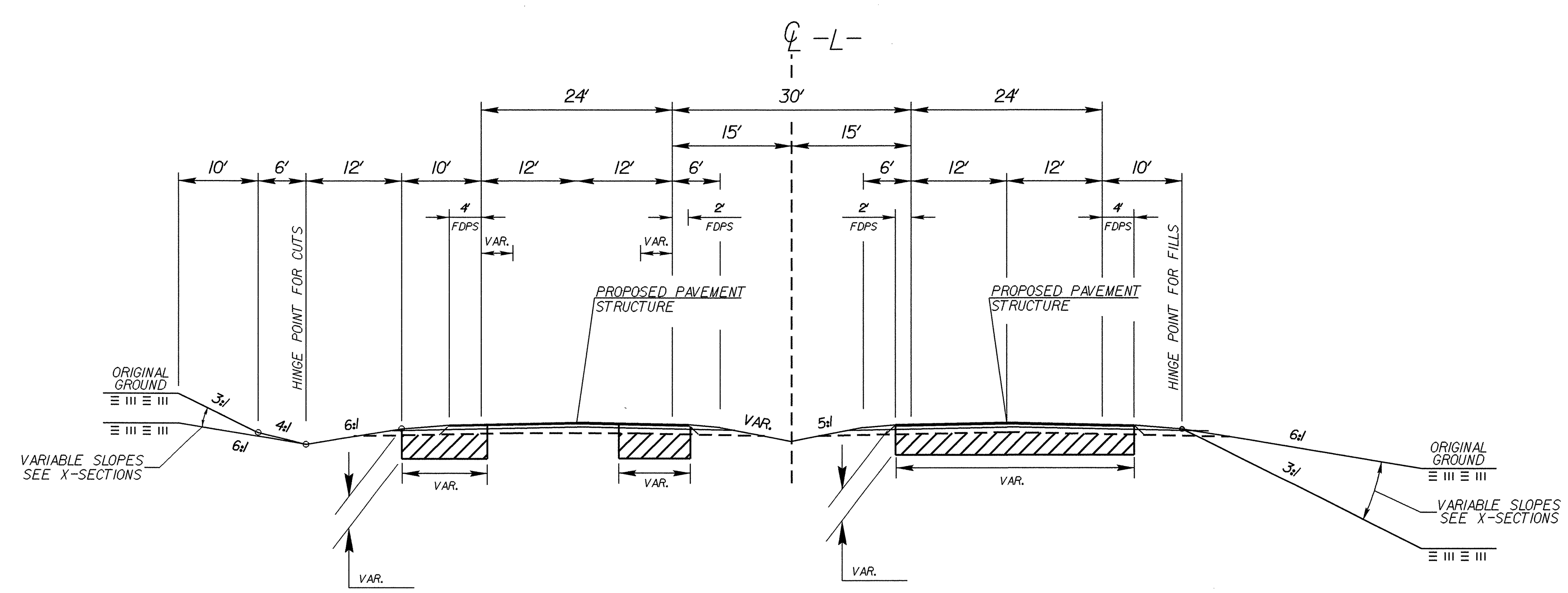
USE TYPICAL SECTION NO. 6

–L– STA. 39+10.00 +/– TO 42+10.00 +/– RT
–L– STA. 42+80.00 +/– TO 44+70.00 +/– RT

DETAIL OF PROPOSED UNDERCUT AT GRADE POINT



PROFILE VIEW



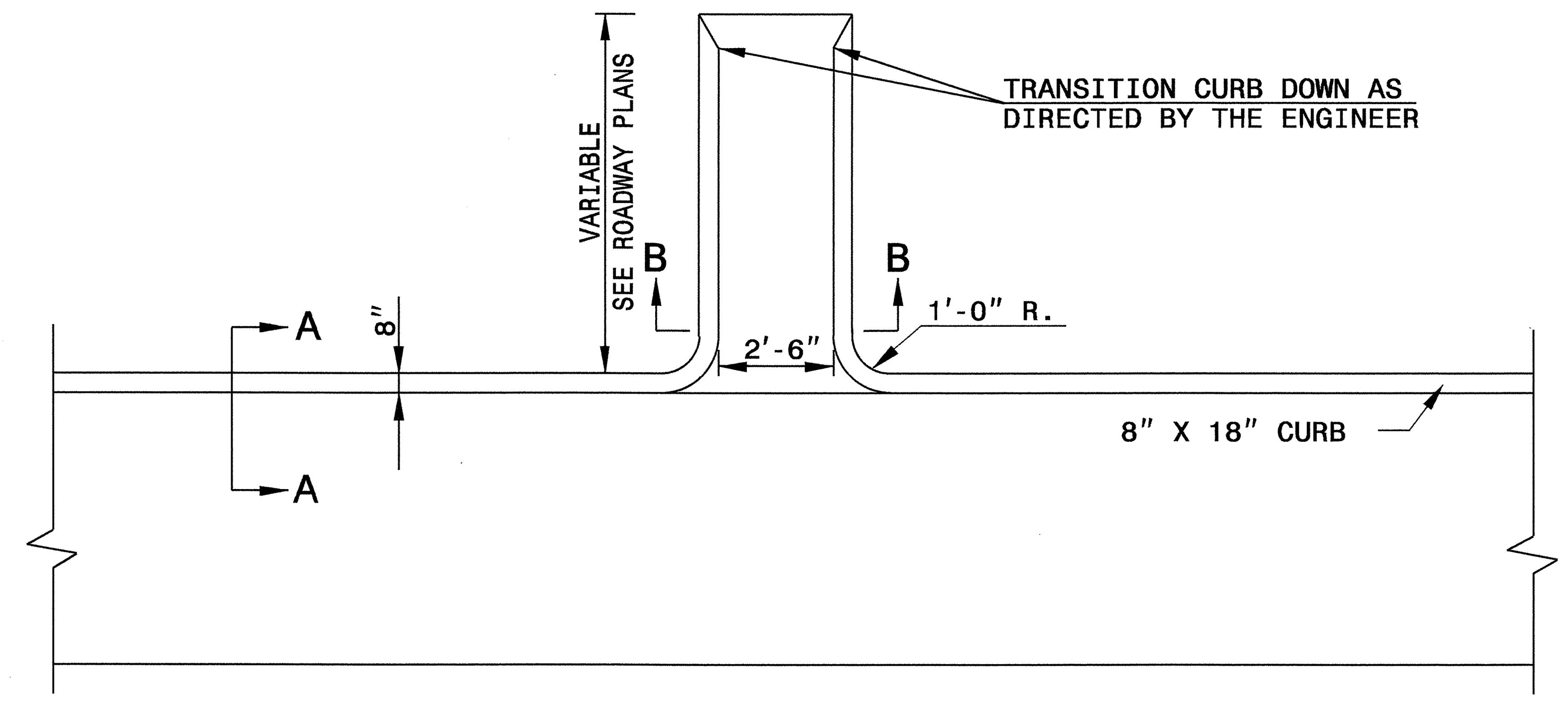
UNDERCUT DETAIL (SEE CROSS SECTIONS)

LINE	STATIONS
–L–	STA. 18+50.00 TO STA. 42+15.00
–L–	STA. 42+60.00 TO STA. 47+50.00

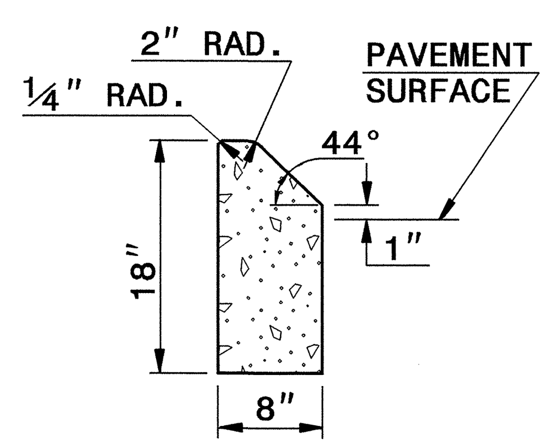
PROJECT REFERENCE NO.	SHEET NO.
R-3403AA	2-C

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

ENGLISH DETAIL DRAWING FOR
CONCRETE FLUME INSTALLATION IN 8" X 18" CURB

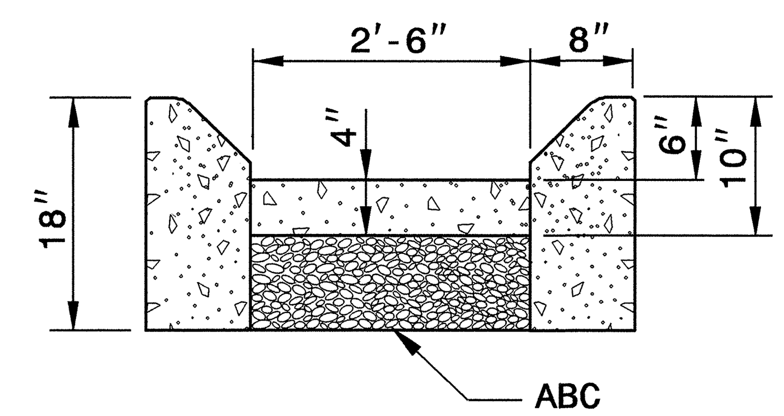


PLAN VIEW



SECTION A-A

8" X 18" CONCRETE CURB



SECTION B-B

NOTES:

- THE CONCRETE BASE FOR THE FLUME WILL BE PAID FOR AS 4" CONCRETE PAVED DITCH.
- THE ABC SHOWN WILL BE INCIDENTAL TO THE 4" CONCRETE PAVED DITCH.
- EXTEND THE FLUME, IN EACH LOCATION, TO THE DITCH LINE AS SHOWN ON THE ROADWAY PLANS.

SHEET 1 OF 1

MODFLMDTCH

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

ENGLISH DETAIL DRAWING FOR
CONCRETE FLUME INSTALLATION IN 8" X 18" CURB

SHEET 1 OF 1

MODFLMDTCH

NORTH CAROLINA PROFESSIONAL SEAL 022066 ENGINEER JOEL S. HOWERTON

7/14/10

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: 3-12-02
MODIFIED BY: T.S. Snell DATE: 10-6-04
CHECKED BY: Joel S. Howerton DATE: 5/12/10
FILE SPEC.: w:details\stand\modifiedflume.dgn

12-MAY-2010 12:07
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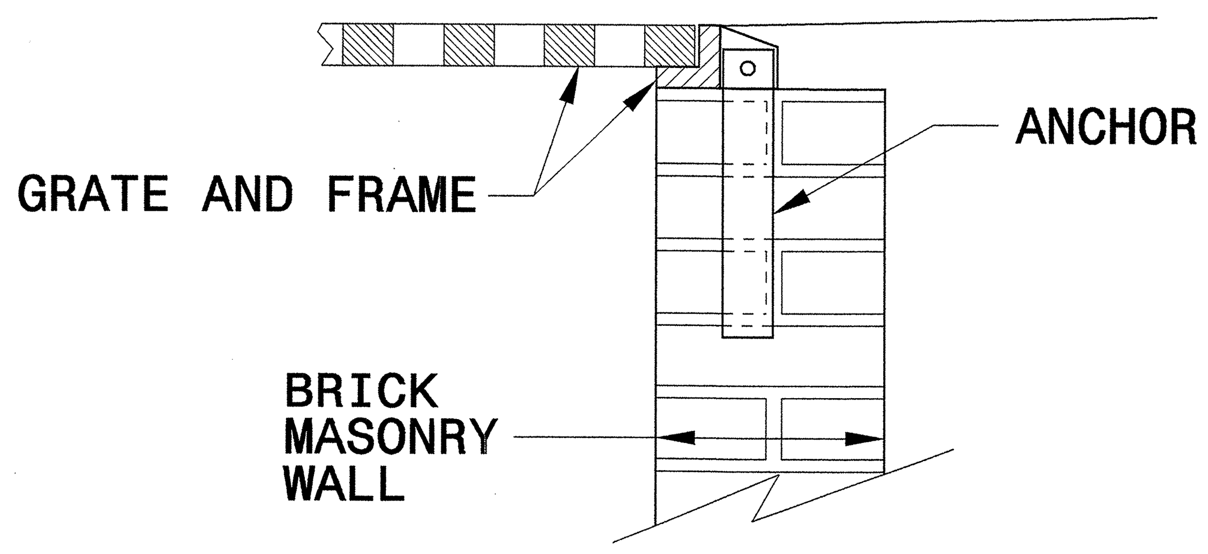
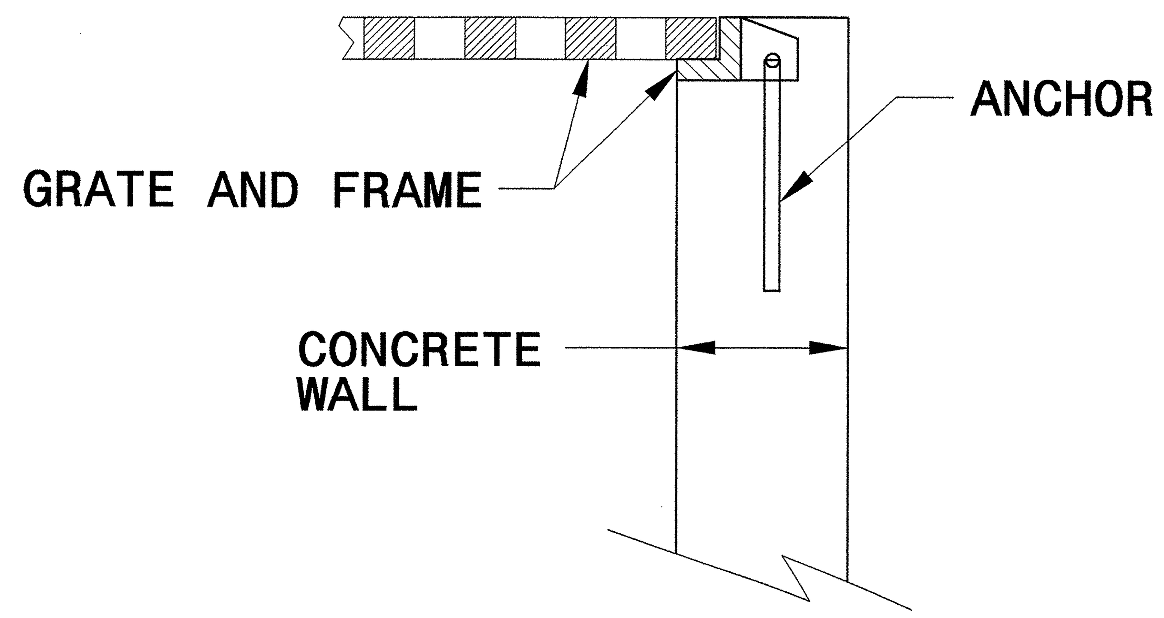
$$$$USERNAME$$$$

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

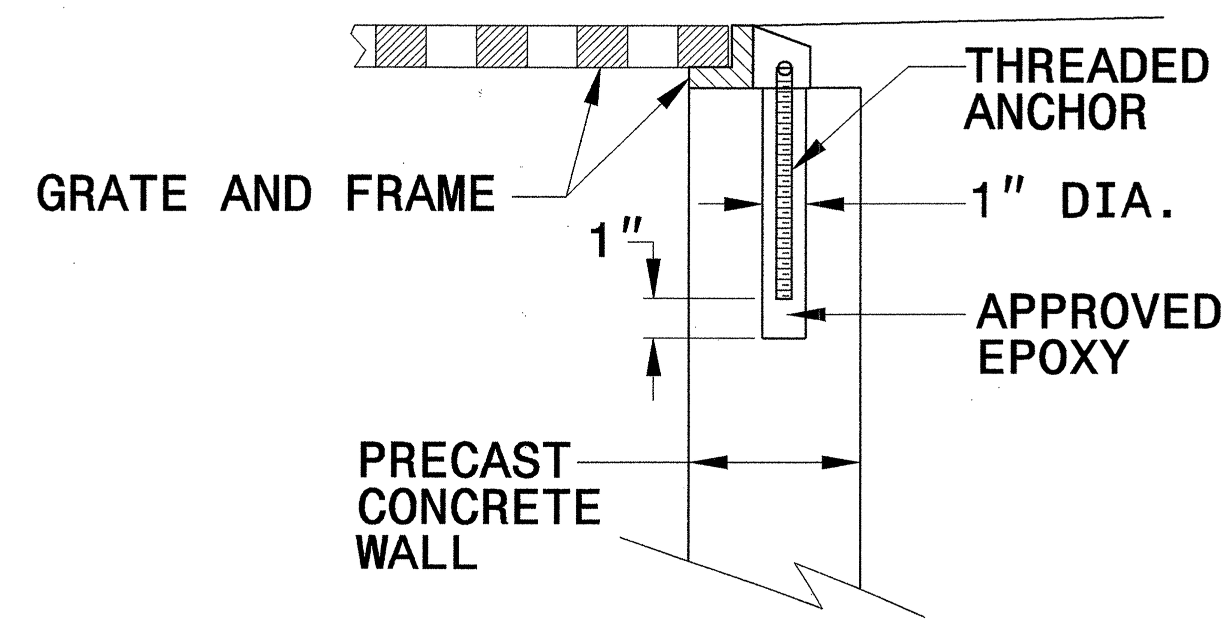
ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE



BRICK MASONRY CONSTRUCTION



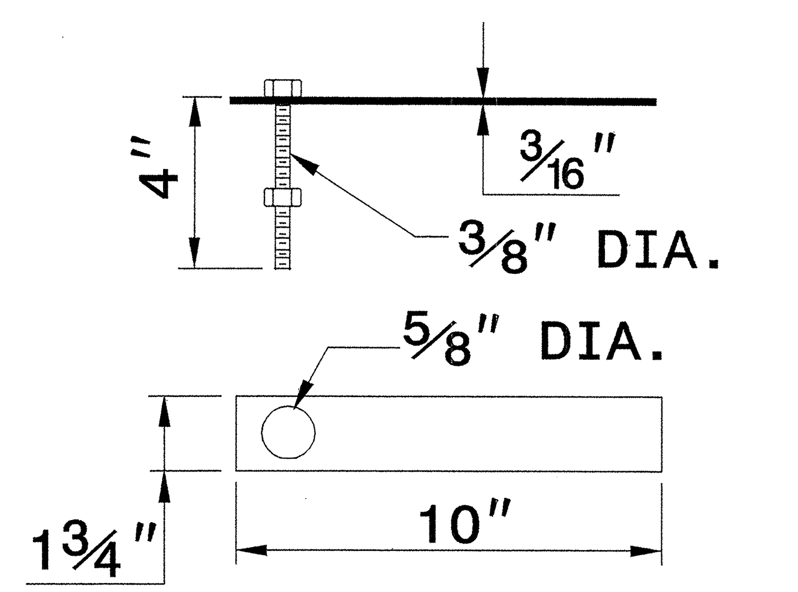
CONCRETE CONSTRUCTION



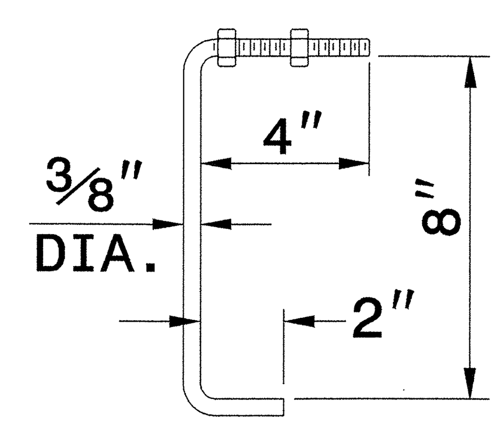
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

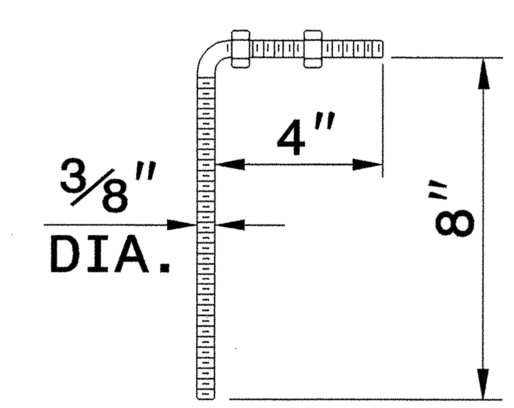
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



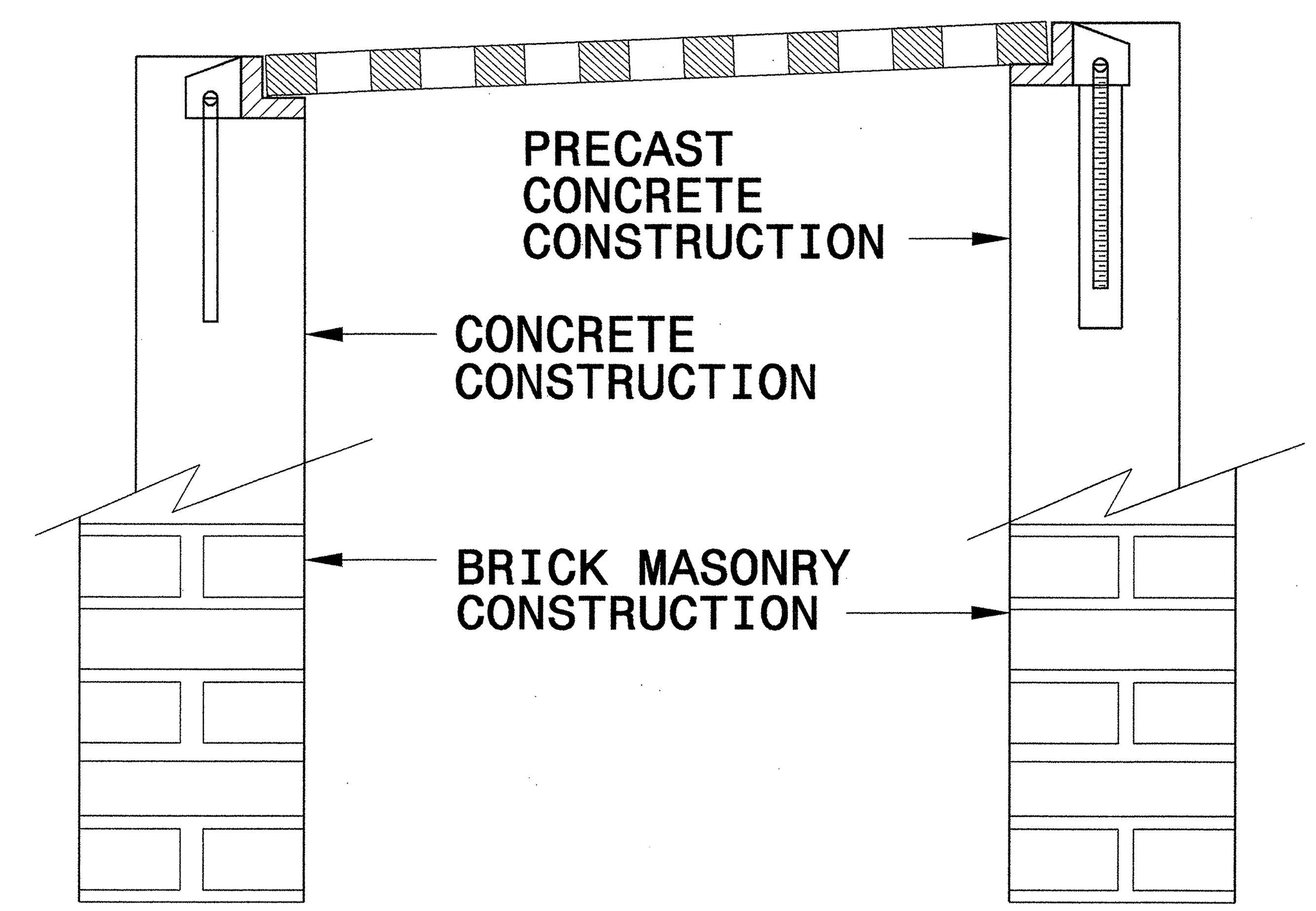
MASONRY ANCHOR
3⁄8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3⁄8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3⁄8" DIA. BENT BAR



FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

SHEET 1 OF 1
840D25

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

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

SHEET 1 OF 1
840D25

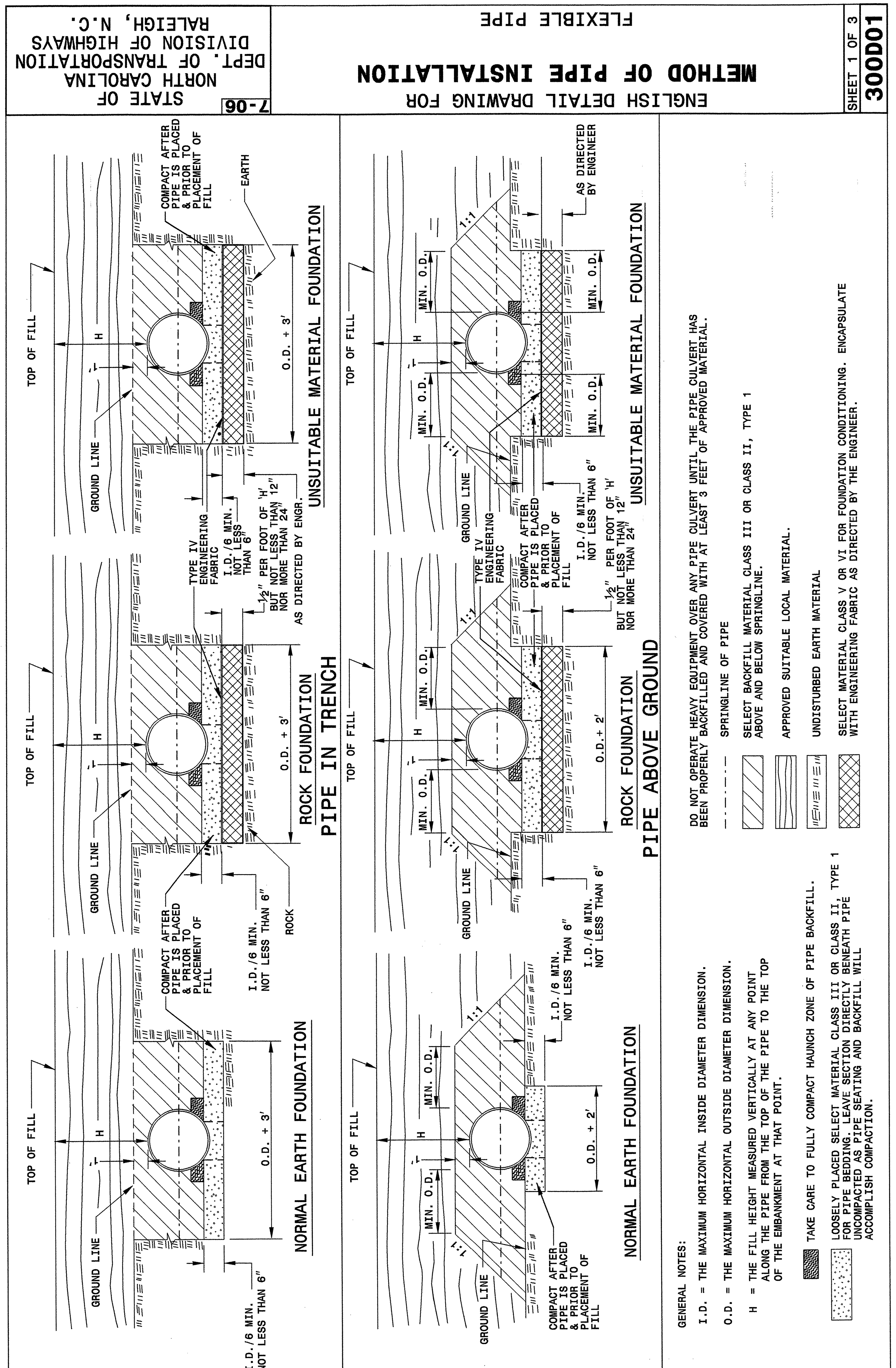
NORTH CAROLINA PROFESSIONAL SEAL 022566 ENGINEER JOEL S. HOWERTON 7/19/10

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: DATE: 11/13/06
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
R-3403AA	2-E



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

7-06

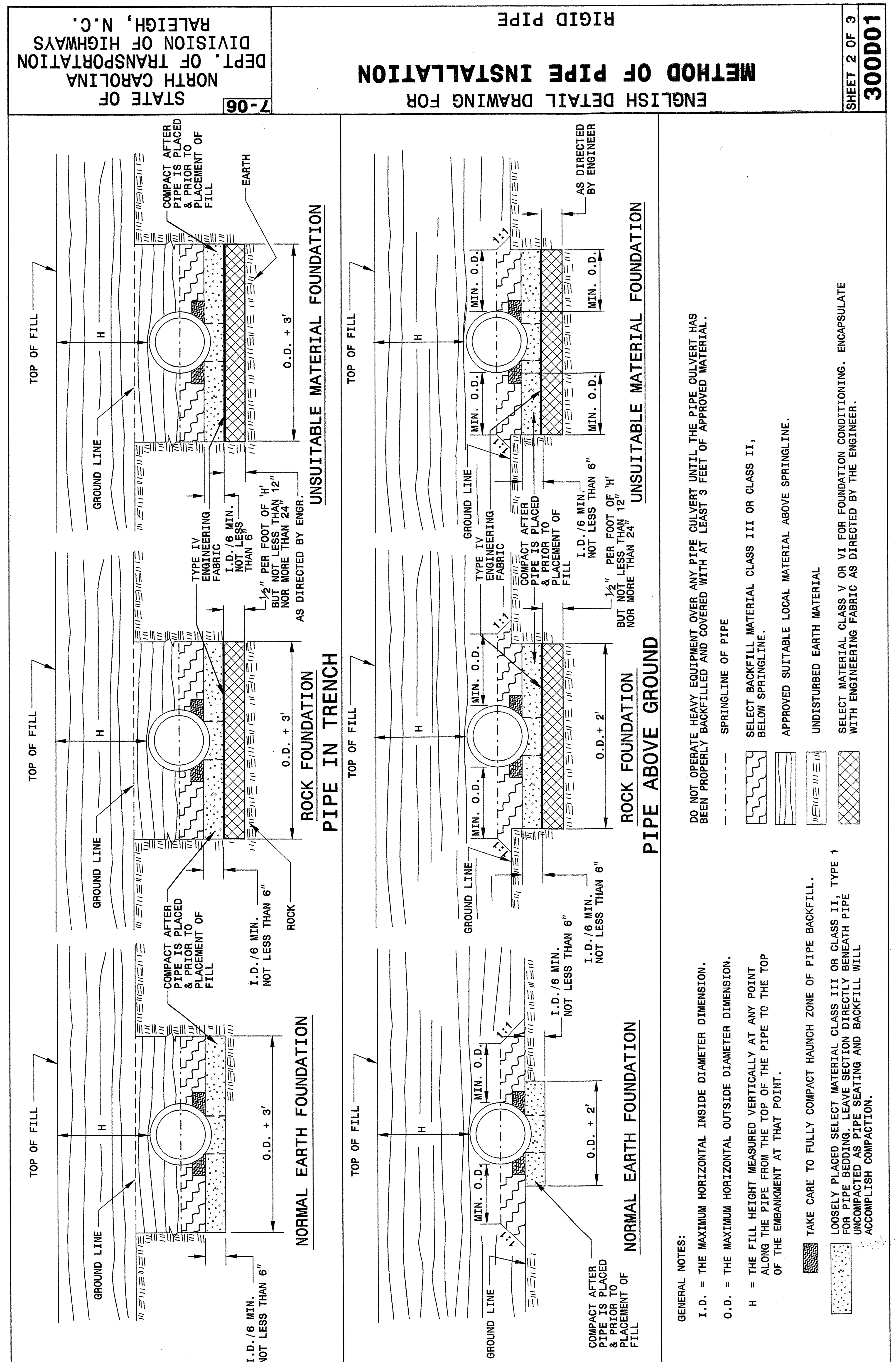
ENGLISH DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 3

300D01



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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 JOEL S. HOWERTON 7/14/10

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: s:/ericward/stds/stdstodetails/30001/0300d01.dgn

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jhowerton AT PS237501

5/14/99

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-3403AA	2-F

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.

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

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

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 SEAL 022866 ENGINEER
7/14/10

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: ericward/stds/stdstodetails/30001/0300d01.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-3403AA	2-G

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

ENGLISH DETAIL DRAWING FOR
SPECIAL CONCRETE MEDIAN DROP INLET

GENERAL NOTES:

ALL EXPOSED CORNERS TO BE CHAMFERED 1".

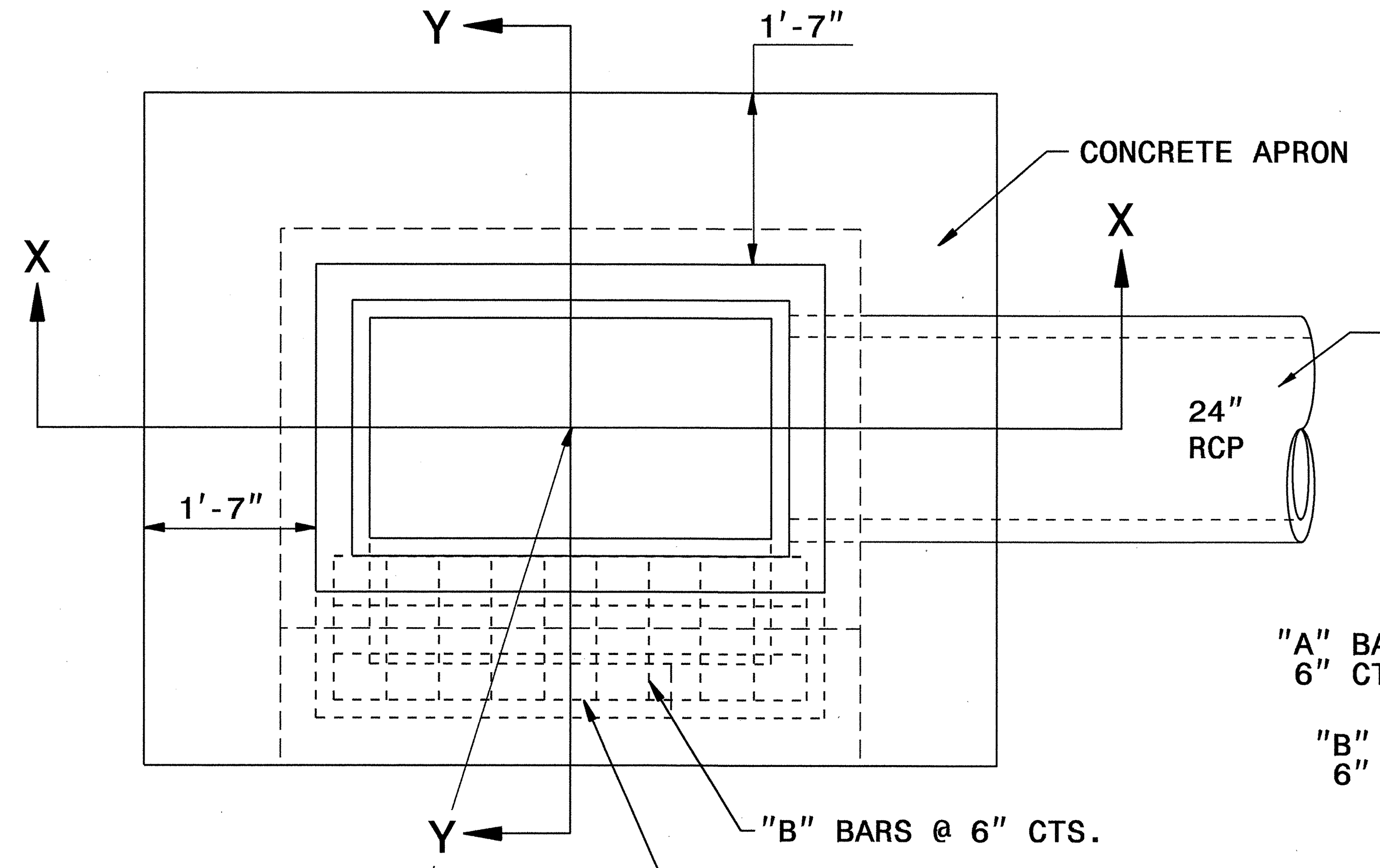
CLASS "B" CONCRETE TO BE USED THROUGHOUT.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 50mm KEYWAY, OR
#4 BAR DOWELS "A" AT 1'-0" CENTERS AS DIRECTED BY THE ENGINEER.

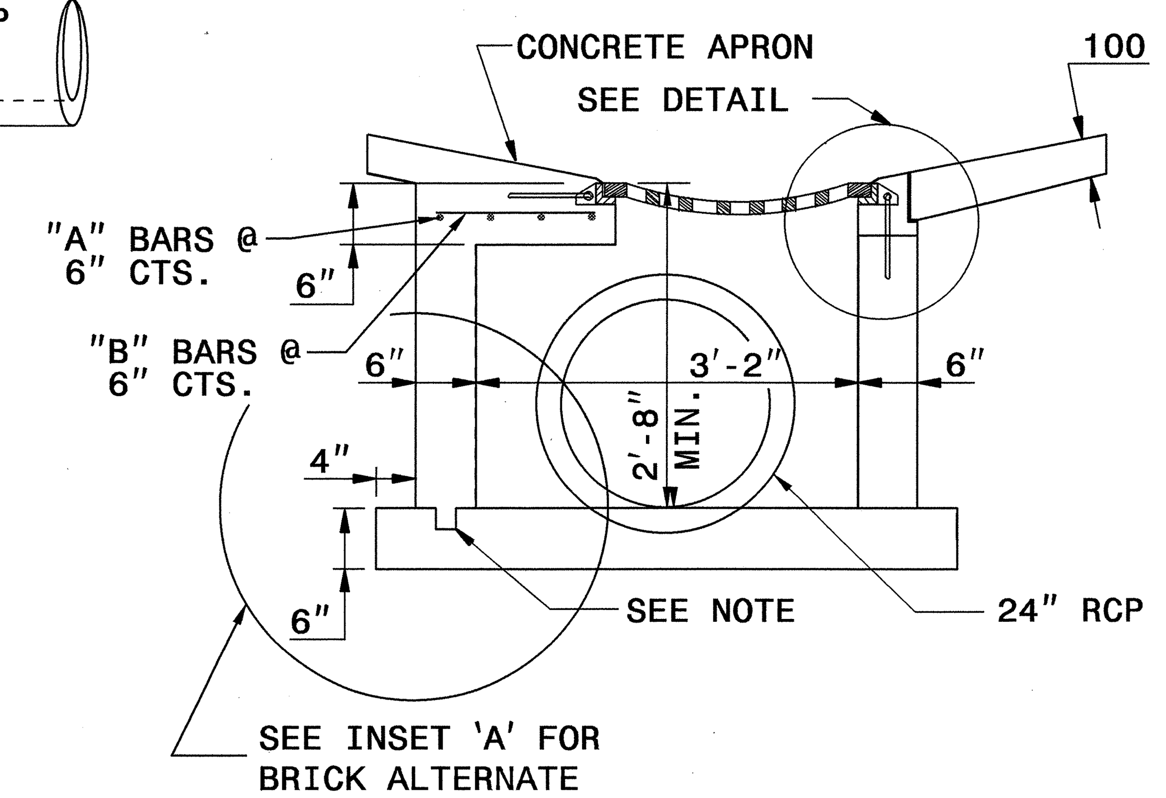
FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

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

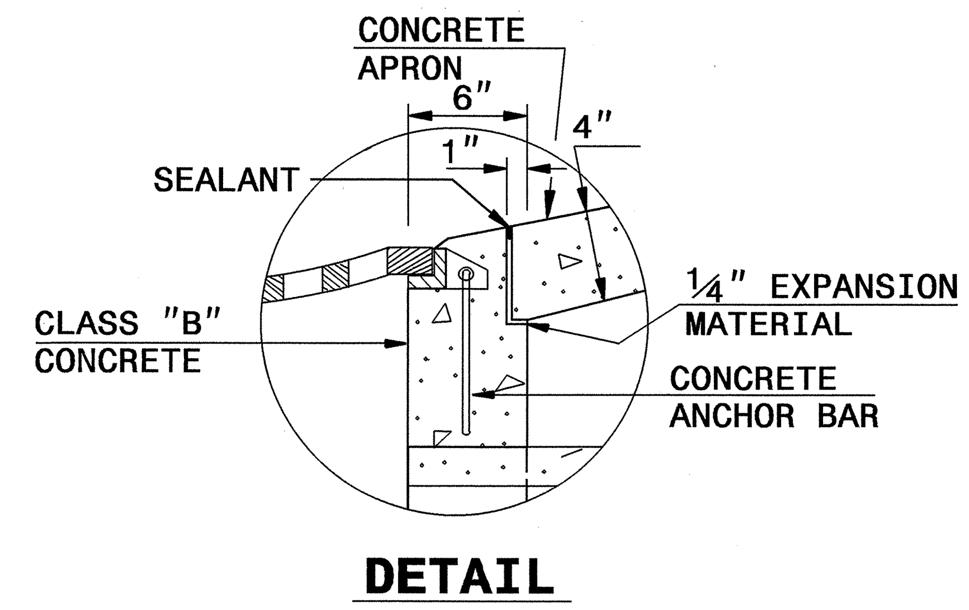
WHEN BRICK ALTERNATE IS USED INTERIOR DIMENSIONS SHALL
BE MAINTAINED.



PLAN



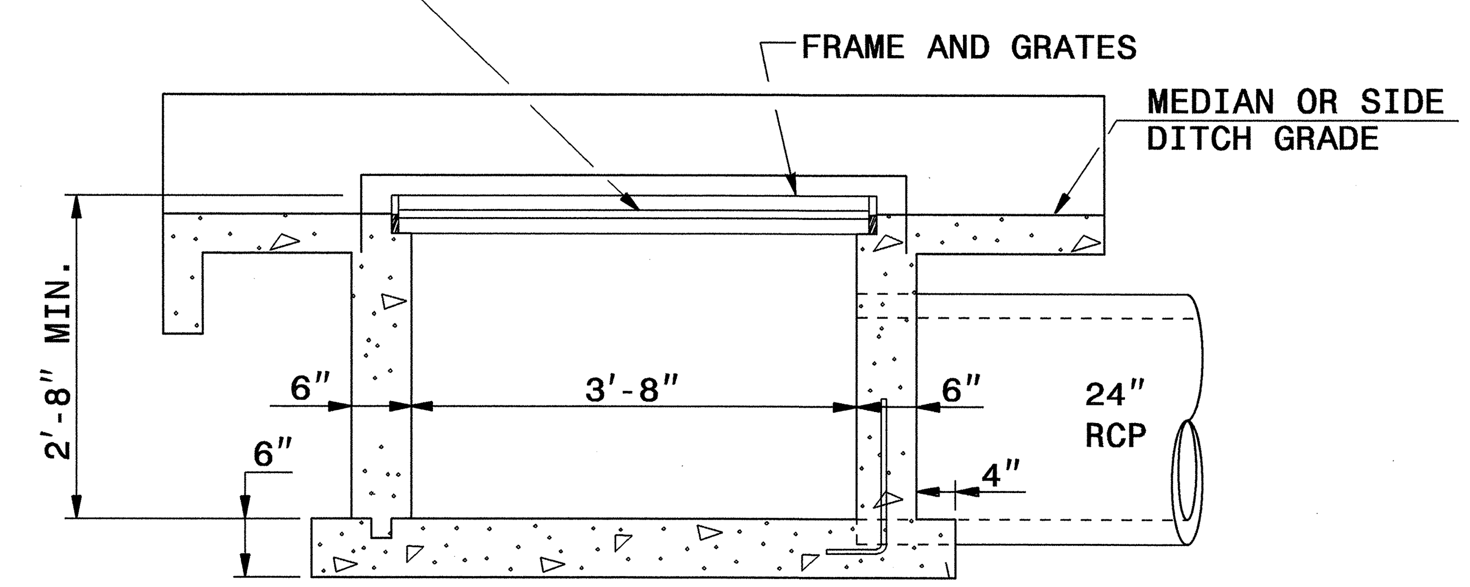
SECTION Y-Y



DETAIL

(APRON SUPPORT NOTCH)

GRADE ELEVATION
SEE STD. NO.840.17

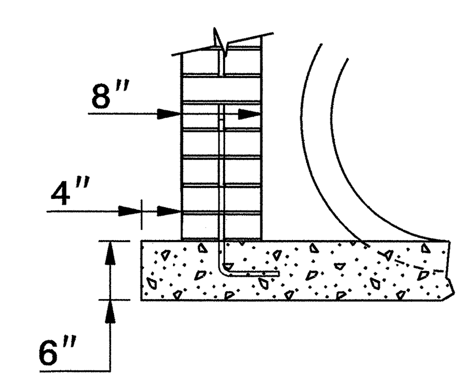


SECTION X-X

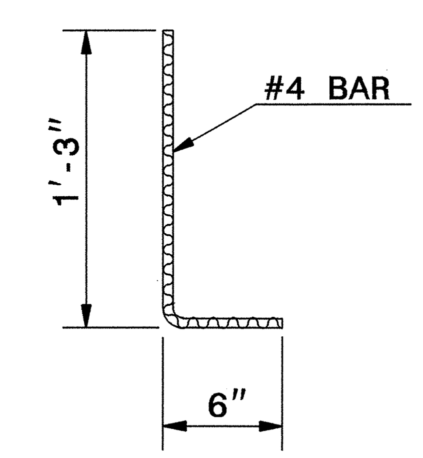
BILL OF MATERIAL

CONCRETE BOX

BAR	NO.	SIZE	LENGTH	WEIGHT
A	4	5	4'-4"	18
B	10	5	1'-4"	14
C	14	5	1'-9"	26
TOTAL REINF. STEEL (LBS.)				58
CLASS "B" CONC. (CU.YDS.)				1.25
DEDUCT FOR 18" RCP				0.05



INSET 'A'



DOWEL "C"

SHEET 1 OF 1
840D19

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

ENGLISH DETAIL DRAWING FOR
SPECIAL CONCRETE MEDIAN DROP INLET

SHEET 1 OF 1
840D19

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON 7/14/10

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

SEE PLATE FOR TITLE

ORIGINAL BY: T.S.Spell DATE: January 2002
MODIFIED BY: T.S.Spell DATE: April 2008
CHECKED BY: DATE:
FILE SPEC.: w:details/tspell/stand/840d19e 2.7ht.dgn

08-JUN-2010 11:14
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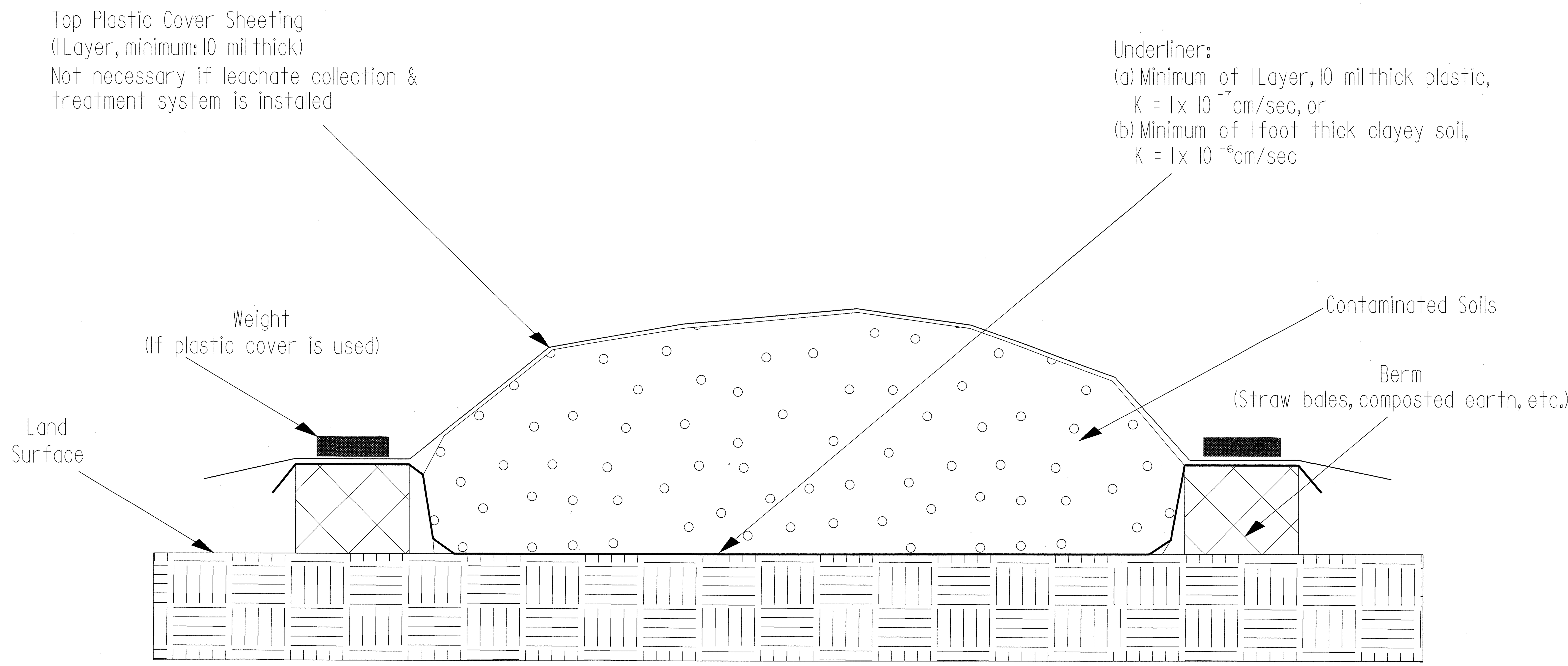
tspell AT PS24552

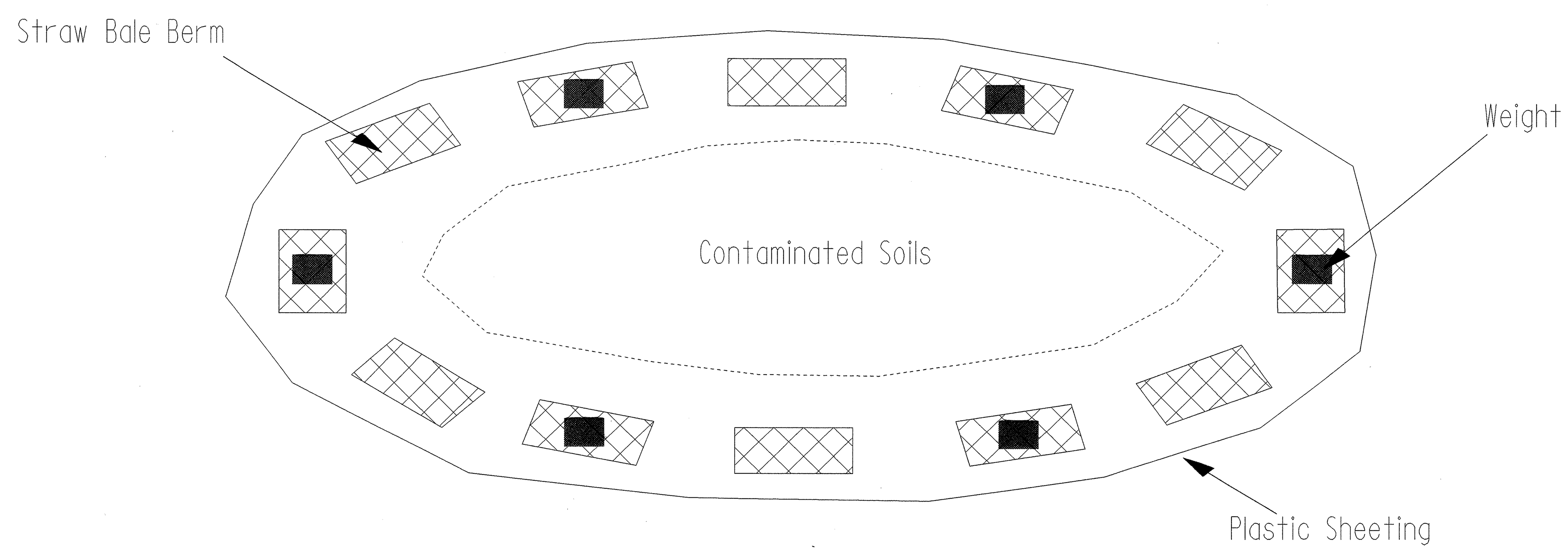
PROJECT REFERENCE NO.	SHEET
R-3403AA	2-H

Detail for Temporary Containment of Petroleum Contaminated Soil

Cross-Section View



Map View



PROJECT REFERENCE NO.	SHEET NO.
R-3403AA	2-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

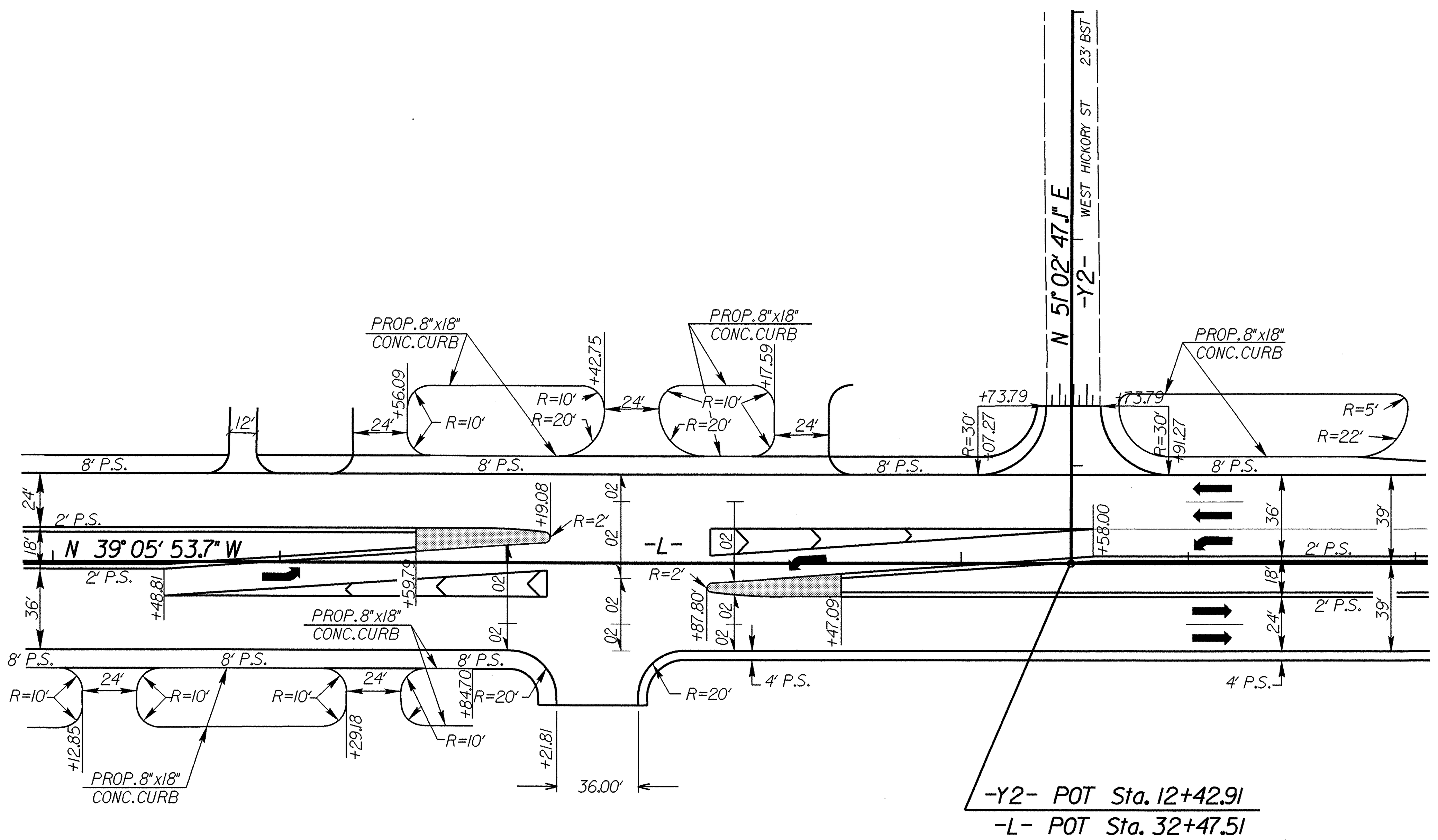
7-14-10

GRAPHIC SCALES

50 25 0 50 100

PLANS

NAD 83



CHANNELIZATION AND INTERSECTION DETAILS FOR –L– NEAR –Y2–

FOR PLANS SEE SHEET 5

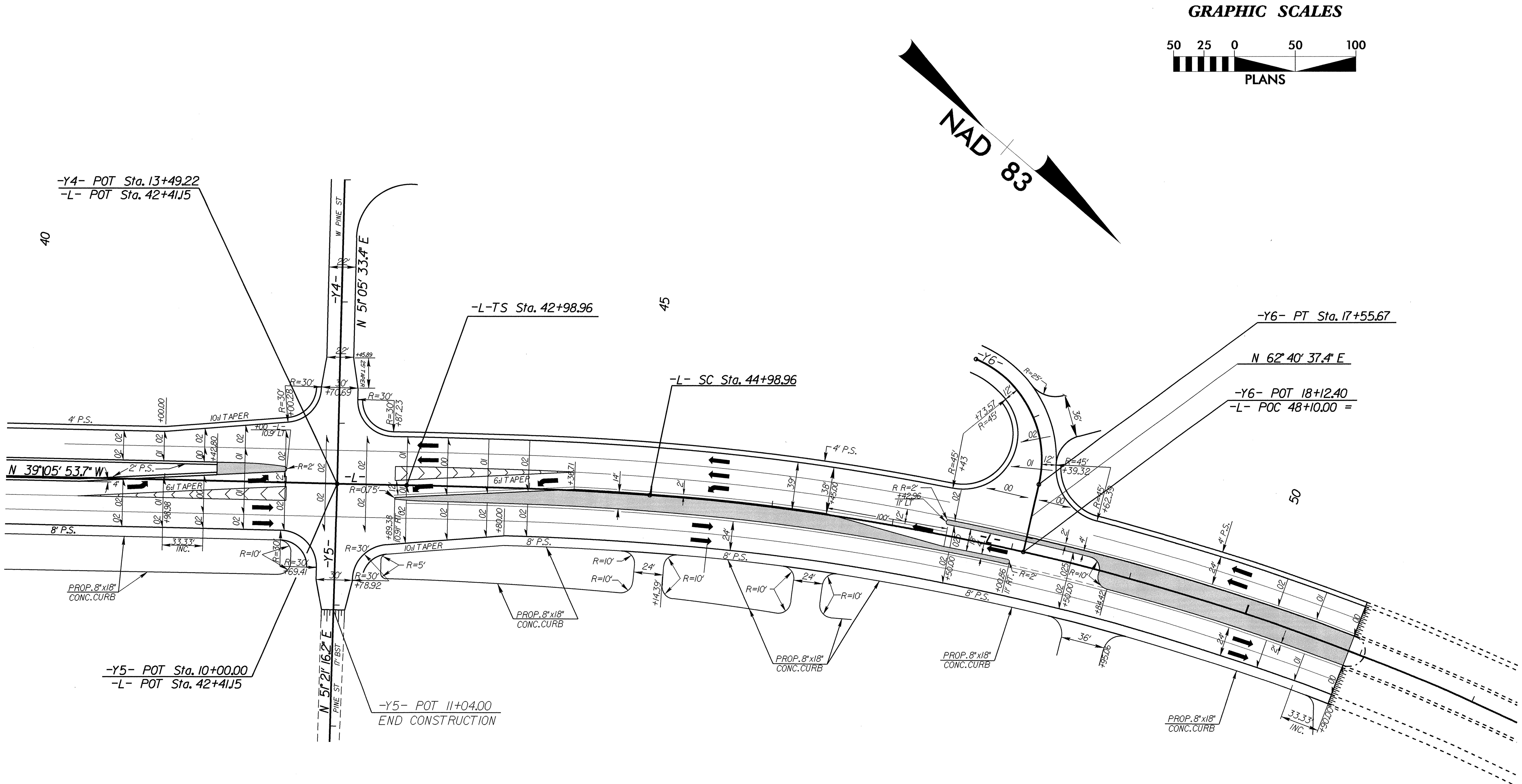
PROPOSED 5" MONOLITHIC ISLAND

PROJECT REFERENCE NO.	SHEET NO.
R-3403AA	2-J

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

7-14-10



-L-	
PIs Sta 44+32.31	PI Sta 49+97.54
θs = 2° 51' 53.2"	Δ = 27° 59' 44.3" (RT)
Ls = 200.00'	D = 2° 51' 53.2"
LT = 133.35'	L = 977.23
ST = 66.68'	T = 498.58'
	R = 2,000.00'

FOR PLANS SEE SHEETS 6 & 7

PROPOSED 5" MONOLITHIC ISLAND

CHANNELIZATION AND INTERSECTION DETAILS
FOR –L– NEAR –Y4– & –Y5– & –Y6–

5/14/99

25-JUN-2010 12:00
...\R-3403AA\y5 & y6 channelization_rdy.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-3403AA	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201877

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0000700000-N	SP	Lump Sum		FIELD OFFICE
0036000000-E	225	24,400	CY	UNDERCUT EXCAVATION
0038000000-E	SP	250	CY	SHALLOW UNDERCUT
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0063000000-N	SP	Lump Sum		GRADING
0080000000-E	SP	500	TON	CLASS IV SUBGRADE STABILIZA-TION
0106000000-E	230	7,300	CY	BORROW EXCAVATION
0134000000-E	240	10	CY	DRAINAGE DITCH EXCAVATION
0192000000-N	260	6	HR	PROOF ROLLING
0194000000-E	SP	24,300	CY	SELECT GRANULAR MATERIAL, CLASS III
0196000000-E	270	20,450	SY	FABRIC FOR SOIL STABILIZATION
0199000000-E	SP	3,000	SF	TEMPORARY SHORING
0245000000-E	SP	1,000	GAL	GENERIC GRADING ITEM CONTAINERIZING CONTAMINATED WATER
0255000000-E	SP	150	TON	GENERIC GRADING ITEM EXCAVATION AND STOCKPILING CONTAMINATED SOIL
0318000000-E	SP	814	TON	FOUNDATION CONDITIONING MATE-RIAL, MINOR STRS
0320000000-E	SP	2,270	SY	FOUNDATION CONDITIONING FABRIC
0343000000-E	SP	764	LF	15" SIDE DRAIN PIPE
0344000000-E	SP	660	LF	18" SIDE DRAIN PIPE
0345000000-E	SP	1,004	LF	24" SIDE DRAIN PIPE
0366000000-E	SP	788	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E	SP	388	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E	SP	200	LF	24" RC PIPE CULVERTS, CLASS III
0384000000-E	SP	140	LF	30" RC PIPE CULVERTS, CLASS III
0995000000-E	340	1,900	LF	PIPE REMOVAL
1110000000-E	510	850	TON	STABILIZER AGGREGATE
1220000000-E	545	300	TON	INCIDENTAL STONE BASE
1308000000-E	607	560	SY	MILLING ASPHALT PAVEMENT, ***" TO ******" DEPTH (3" TO 6")
1489000000-E	610	480	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1491000000-E	610	7,000	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
1503000000-E	610	4,660	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1523000000-E	610	5,260	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1525000000-E	610	400	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1560000000-E	620	567	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1565000000-E	620	316	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 70-22
1693000000-E	654	195	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	SP	336	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)
2209000000-E	838	1	CY	ENDWALLS
2253000000-E	840	3	CY	PIPE COLLARS
2264000000-E	840	1	CY	PIPE PLUGS
2286000000-N	840	28	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	3	LF	MASONRY DRAINAGE STRUCTURES
2364000000-N	840	9	EA	FRAME WITH TWO GRATES, STD 840.16

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ItemNumber	Sec #	Quantity	Unit	Description
2366000000-N	840	19	EA	FRAME WITH TWO GRATES, STD 840.24
2451000000-N	852	9	EA	CONCRETE TRANSITIONAL SECTION FOR DROP INLETS
2535000000-E	846	7,220	LF	**"X **" CONCRETE CURB (8" x 18")
2619000000-E	850	120	SY	4" CONCRETE PAVED DITCH
2647000000-E	852	1,400	SY	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)
2815000000-N	858	1	EA	ADJUSTMENT OF DROP INLETS
3649000000-E	876	31	TON	RIP RAP, CLASS B
3656000000-E	876	1,289	SY	FILTER FABRIC FOR DRAINAGE
4048000000-E	902	2	CY	REINFORCED CONCRETE SIGN FOUN-DATIONS
4060000000-E	903	1,339	LB	SUPPORTS, BREAKAWAY STEEL BEAM
4082000000-E	903	792	LF	SUPPORTS, WOOD
4102000000-N	904	37	EA	SIGN ERECTION, TYPE E
4108000000-N	904	1	EA	SIGN ERECTION, TYPE F
4110000000-N	904	1	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)
4110000000-N	904	1	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)
4116100000-N	904	1	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
4141000000-N	907	1	EA	DISPOSAL OF SUPPORT, WOOD
4152000000-N	907	1	EA	DISPOSAL OF SIGN SYSTEM, STEEL BEAM
4155000000-N	907	27	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4158000000-N	907	16	EA	DISPOSAL OF SIGN SYSTEM, WOOD
4400000000-E	1110	136	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	192	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	30	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	1	EA	FLASHING ARROW PANELS, TYPE C
4420000000-N	1120	2	EA	CHANGEABLE MESSAGE SIGN
4430000000-N	1130	200	EA	DRUMS
4435000000-N	1135	50	EA	CONES
4445000000-E	1145	50	LF	BARRICADES (TYPE III)
4455000000-N	1150	150	MD	FLAGGER
4465000000-N	1160	4	EA	TEMPORARY CRASH CUSHIONS
4480000000-N	1165	1	EA	TMIA
4485000000-E	1170	245	LF	PORTABLE CONCRETE BARRIER
4495000000-E	1170	245	LF	PORTABLE CONCRETE BARRIER (DRAINAGE)
4510000000-N	SP	40	HR	LAW ENFORCEMENT
4650000000-N	1251	292	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	1,430	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	1,904	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4688000000-E	1205	13,400	LF	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)
4690000000-E	1205	2,750	LF	THERMOPLASTIC PAVEMENT MARKING LINES (6", 120 MILS)
4695000000-E	1205	320	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4700000000-E	1205	500	LF	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)
4705000000-E	1205	57	LF	THERMOPLASTIC PAVEMENT MARKING LINES (16", 120 MILS)
4710000000-E	1205	200	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4721000000-E	1205	4	EA	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)
4725000000-E	1205	21	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4810000000-E	1205	77,950	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	550	LF	PAINT PAVEMENT MARKING LINES (8")

ItemNumber	Sec #	Quantity	Unit	Description
4830000000-E	1205	114	LF	PAINT PAVEMENT MARKING LINES (16")
4835000000-E	1205	410	LF	PAINT PAVEMENT MARKING LINES (24")
4840000000-N	1205	8	EA	PAINT PAVEMENT MARKING CHARAC-TER
4845000000-N	1205	28	EA	PAINT PAVEMENT MARKING SYMBOL
4905000000-N	1253	200	EA	SNOWPLOWABLE PAVEMENT MARKERS
5325600000-E	1510	198	LF	6" WATER LINE
5325800000-E	1510	128	LF	8" WATER LINE
5326000000-E	1510	3,240	LF	10" WATER LINE
5536000000-E	1515	2	EA	2" VALVE
5540000000-E	1515	1	EA	6" VALVE
5546000000-E	1515	1	EA	8" VALVE
5552000000-E	1515	5	EA	10" VALVE
5648000000-N	1515	7	EA	RELOCATE WATER METER
5649000000-N	1515	9	EA	RECONNECT WATER METER
5666000000-E	1515	5	EA	FIRE HYDRANT
5709200000-E	1520	307	LF	4" FORCE MAIN SEWER
5709300000-E	1520	200	LF	6" FORCE MAIN SEWER
5709600000-E	1520	200	LF	12" FORCE MAIN SEWER
6000000000-E	1605	3,450	LF	TEMPORARY SILT FENCE
6006000000-E	1610	1,000	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	615	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	600	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	8	ACR	TEMPORARY MULCHING
6018000000-E	1620	150	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	0.5	TON	FERTILIZER FOR TEMPORARY SEED-ING
6024000000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	550	LF	SAFETY FENCE
6030000000-E	1630	350	CY	SILT EXCAVATION
6036000000-E	1631	2,575	SY	MATTING FOR EROSION CONTROL
6042000000-E	1632	2,250	LF	1/4" HARDWARE CLOTH
6071010000-E	SP	850	LF	WATTLE
6071020000-E	SP	605	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	55	LF	COIR FIBER BAFFLES
6084000000-E	1660	6	ACR	SEEDING & MULCHING
6087000000-E	1660	6	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	100	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	2.5	TON	FERTILIZER TOPDRESSING
6114500000-N	SP	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	54	EA	RESPONSE FOR EROSION CONTROL

5/28/99

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$$$$USERNAME$$$$

RD238340

COMPUTED BY: CJT DATE: 5/6/2010

CHECKED BY: JBT DATE: 5/13/2010

PROJECT NO.	SHEET NO.
R-3403AA	3-A

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	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
18+35.25	LT	1		8.5															
	LT	6	1		3.8	3.72					92'								
18+64.86	LT	2																	
18+52.11	RT	3																	
18+80.93	RT	4																	
19+26.89	LT	5																	
19+26.89	LT	6		8.56															
	LT	8	6		3.85	3.81	X				52'								
19+80.92	LT	7																	
19+77.53	LT	8		6.59															
	LT	9	8		3.93	3.85	X												
19+81.40	CL	9		9.15															
	CL	10	9		4.37	3.93	X				320'								
19+84.43	RT	9A																	
23+00.00	CL	10		8.51															
	CL	22	10		4.72	4.37	X			260'									
20+50.49	LT	11								44'									
20+80.04	LT	12																	
20+00.00	RT	13																	
21+85.00	LT	14																	
21+96.01	RT	15							36'										
22+19.07	RT	15A																	
22+40.00	LT	16																	
24+02.00	RT	17							32'										
24+25.00	RT	18																	
24+95.00	RT	19							32'										
25+49.54	RT	20							36'										
25+36.43	LT	21		6.89	4.76				44'										
25+59.56	CL	22		9.45															
25+75.00	RT	23																	
25+75.00	RT	24																	
26+62.00	RT	25																	
27+09.63	LT																		
27+46.00	RT	26																	
28+00.00	RT	27																	
28+23.50	RT	28							36'										
28+50.00	CL	29		9.46															
	CL	29	41		6.71	5.62	X												
28+67.34	RT																		
29+45.00	RT																		
30+47.01	RT																		
28+83.95	LT	31							24'										
29+15.00	RT	32																	
29+44.50	LT	33							36'										
29+41.50	RT	34							36'										
30+39.18	RT	34A								68'									
29+68.00	LT	35																	
30+22.76	LT	36																	
30+55.32	LT	37							36'										
30+76.81	LT	37A																	
31+06.00	LT	38																	
SHEET TOTALS									348'	372'	464'								

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	30" (.079)	36" (.079)	42" (.109)	48" (.109)	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
18+35.25	1																									
	6	1																								
18+64.86	2																									
18+52.11	3																									
18+80.93	4																									
19+26.89	5																									
19+26.89	6																									
	8	6																								
19+80.92	7																									
19+77.53	8																									
	9	8												76'												
19+81.40	9																									
	10	9																								
19+84.43	9A																									
23+00.00	10																									
	22	10																								
20+50.49	11																									
20+80.04	12																									
20+00.00	13																									
21+85.00	14																									
21+96.01	15																									
22+19.07	15A																									
22+40.00	16																									
24+02.00	17																									
24+25.00	18																									
24+95.00	19																									
25+49.54	20																									
25+36.43	21																									
25+59.56	22																									
25+75.00	23																									
25+75.00	24																									
26+62.00	25																									
27+09.63																										
27+46.00	26																									
28+00.00	27																									
28+23.50	28																									
28+50.00	29																									
	29	41										364'														
28+67.34																										
29+45.00																										
30+47.01																										
28+83.95	31																									
29+15.00	32																									
29+44.50	33																									
29+41.50	34																									
30+39.18	34A																									
29+68.00	35																									
30+22.76	36																									
30+55.32	37																									
30+76.81	37A																									
31+06.00	38																									
SHEET TOTALS												364'		76'												

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (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 (EA) DROP INLET	CATCH BASIN	SPECIAL CONC. FLUME (SEE DETAIL SHEET 2-C)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.16	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. (N.S.) FRAME WITH TWO GRATES STD. 840.24			SPECIAL G.D.I. SEE DETAIL 2-G	ADJUST EXIST. D.I.					DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
18+35.25	1									1												1			1												13'	REM. PART OF 24" PIPE & EXIST. DI
	6	1																																				REMOVE 18" CONC. PIPE
18+64.86	2																		X																			
18+52.11	3																		X																			
18+80.93	4																		X																			
19+26.89	5																		X																			
19+26.89	6									1												1			1													
	8	6																																				
19+80.92	7																		X																			
19+77.53	8									1															1			1										
	9	8																																				REM PART OF 18" PIPE
19+81.40	9									1	0.22											1			1													
	10	9																																				
19+84.43	9A																												1								719'	REMOVE 15" PIPE SYSTEM
23+00.00	10									1															1			1										
	22	10																																			27'	REM PART OF EXIST. 15" PIPE
20+50.49	11																																				16'	REMOVE 18" PLASTIC PIPE
20+80.04	12																		X																			
20+00.00	13																		X																			
21+85.00	14																		X																			
21+96.01	15																																					
22+19.07	15A																		X																			
22+40.00	16																		X																			
24+02.00	17																																					
24+25.00	18																		X																			
24+95.00	19																																					
25+49.54	20																																					
25+36.43	21																																				20'	REMOVE EXIST PIPE
25+59.56	22									1													1		1													
25+75.00	23																		X																			
25+75.00	24																		X																			
26+62.00	25																		X																			
27+09.63																																					61'	REMOVE EXIST. 15" CMP
27+46.00	26																		X																			
28+00.00	27																		X																			
28+23.50	28																																					
28+50.00	29									1													1		1													
	29	41																																				
28+67.34																																					37'	REMOVE EXIST. 15" PIPE
29+45.00																																					54'	REMOVE EXIST. 15" PIPE
30+47.01																																					33'	REMOVE EXIST. 15" PIPE
28+83.95	31																																				26'	REMOVE EXIST 15" PIPE
29+15.00	32																		X																			
29+44.50	33																																				49'	REMOVE EXIST. 15" PIPE
29+41.50	34																																					
30+39.18	34A																																					
29+68.00	35																		X																			
30+22.76	36																		X																		192'	REMOVE EXIST. 18" PIPE & EXIST. DI
30+55.32	37																																					
30+76.81	37A																		X																			
31+06.00	38																		X																			
SHEET TOTALS										7	0.22											3	2		7			2	1							0	1247'	

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.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY:	CJT	DATE:	5/6/2010
CHECKED BY:	JBT	DATE:	5/13/2010

PROJECT NO.	SHEET NO.
R-3403AA	3-B

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

RD238340

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	TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE 15"	SIDE DRAIN PIPE 18"	SIDE DRAIN PIPE 24"	R.C. PIPE CLASS III 15"	R.C. PIPE CLASS III 18"	R.C. PIPE CLASS III 24"	R.C. PIPE CLASS III 30"	ENDWALLS R.C.P. (CU. YARDS)	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	DROP INLET	SPECIAL CONC. FLUME (SEE DETAIL SHEET 2-C)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	SPECIAL G.D.I. SEE DETAIL 2-G	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
31+27.50	LT	39							36'																			0.45		EXTEND EXIST. 18" PIPE
32+15.68	LT	40							32'																			0.45		EXTEND EXIST. 18" PIPE
32+13.00	CL	41		9.69												1	0.11						1		1					
	RT	41	42		5.62	4.58	X				68'																			
33+68.00	LT	43																	X											
34+27.37	LT	44	45		6.35	5.23	X		48'																			0.45		EXTEND EXIST. 18" PIPE
34+50.00	LT	45		7.4												1									1	1				
34+50.00	LT	45	46		4.73	4.13	X			152'																			37'	REMOVE EXIST. 18" PIPE
36+00.00	LT	46		6.8												1									1	1				
36+00.00	LT	46	47		4.13	3.75	X			128'																			50'	REMOVE EXIST. 18" PIPE
37+27.00	LT	47		6.8												1									1	1				
37+27.00	LT	47	48		3.75	3.59	X			48'																			57'	REMOVE EXIST. 18" PIPE
36+50.00	CL	49		7.29												1								1	1					
	CL	49	50		5.37	4.7	X	128'																						
36+98.34	RT																										0.13		12'	REM. PART EXIST. 18" PIPE, 4' HW, PLUG & FILL
37+75.00	CL	50		8.7												1						1			1					
	RT	50	51									80'																	29'	REMOVE EXIST. 15" PIPE
	CL	51A	50		5	4.45	X			96'																				
38+70.00	CL	51A		8.7												1						1			1					
	CL	51A	52		3.67	3.33	X			96'																				
39+66.95	CL	52		8.9												1	0.57					1			1					
	RT	52	57		3.45	3.33	X						64'																	REM. PART EXIST. 24" PIPE & 6' HW
	CL	60	52		6.53	3.33		136'																					25'	REMOVE EXIST. 24" PIPE
38+38.00	RT	53																	X											
38+46.50	RT	54																	X											
38+72.00	RT	55						32'																					110'	REMOVE EXIST.15" PIPE
38+97.00	RT	56																	X											
39+66.95	RT	57		6.12												1								1	1					
	RT	57	58		4.66	3.95			16'						1															
39+67.08	LT	59								20'																		0.553		REM. PART OF EXSIT. 24" PIPE & TIE TO COLLAR
41+00.00	CL	60		6.53												1							1		1					
40+50.00	RT	61																	X											
41+45.00	RT	62																	X											
42+37.18	RT																												53'	REMOVE EXIST. 24" PIPE
42+81.95	RT																										0.13			PLUG & FILL EXIST. 18" PIPE, & REM. 5' HW
42+88.00	RT	62A																	X											
43+07.87	RT	63	64		5.5	4.8	X		88'																					
43+49.93	RT	64		7.6												1								1	1					
	RT	65	64		5.33	5.26	X		20'																					
	RT	64	67		4.3	4.02	X						60'																	
43+49.91	RT	65		7.5												1								1	1					
44+00.00	CL	66		9.84												1	0.32	1		1	1									
43+22.80	RT																												46'	REMOVE EXIST. 18" PIPE
	CL	66	67		6.12	4.52						52'																		
43+50.07	CL	67		10.14												1	1.62	1		1	1									
	LT	67	68		3.52	3.26	X							84'																
44+37.31	RT																												45'	REMOVE EXIST 18" PIPE
	CL	70	66		6.34	6.12	X					52'																		
43+82.90	RT	69																	X											
44+50.00	CL	70		10												1		1		1	1									
45+04.49	RT																												49'	REMOVE EXIST 15" PIPE
	CL	71	70		6.71	6.34	X					100'																		
	CL	74	71		7	6.78	X					68'																		
45+50.00	CL	71		10.2												1		1		1	1									
46+50.00	CL	72		10.39												1		1		1	1									
	RT	72	71		7.22	6.96					100'																			
45+28.35	RT	73																	X											
SHEET TOTALS								296'	240'	540'	168'	352'	124'	84'	1	17	2.62	5		5	5	3	2	4	12	3	0.26	1.903	514'	

Other printed column headings (no entries on this sheet): SIZE; THICKNESS OR GAUGE; SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12", 30", 36", 42", 48" — DO NOT USE RCP, DO NOT USE CSP, DO NOT USE CAAP, DO NOT USE HDPE; C.S. PIPE 12" (.064), 15" (.064), 18" (.064), 24" (.064), 30" (.079), 36" (.079), 42" (.109), 48" (.109); R.C. PIPE CLASS III 12", 36", 42", 48"; R.C. PIPE CLASS IV 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 OR STD 838.80 (UNLESS NOTED OTHERWISE) C.S.P.; *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') — 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 (EA); CATCH BASIN; ADJUST EXIST. D.I.; DRAINAGE PIPE ELBOWS NO. & SIZE.

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

RD238340

COMPUTED BY:	CJT	DATE:	5/6/2010
CHECKED BY:	JBT	DATE:	5/13/2010

PROJECT NO.	SHEET NO.
R-3403AA	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	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 15"	SIDE DRAIN PIPE 18"	SIDE DRAIN PIPE 24"	R.C. PIPE CLASS III 15"	R.C. PIPE CLASS III 18"	R.C. PIPE CLASS III 24"	R.C. PIPE CLASS III 30"	ENDWALLS STD. 838.01 OR STD. 838.11 OR STD 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.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'	DROP INLET	SPECIAL CONC. FLUME (SEE DETAIL SHEET 2-C)	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	SPECIAL G.D.I. SEE DETAIL 2-G	ADJUST EXIST. D.I.	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
46+03.02	RT	75																	X												
46+37.79	RT	76						36'																							
46+63.07	RT	77																	X												
47+13.87	RT																													97'	REM. EXIST. 18" PIPE & EXIST. DI
48+42.51	RT	78																	X												
48+75.44	RT	79						48'																							
48+72.72	CL	80		10.6												1		1		1	1										
	CL	80	81		7.43	7.26	X				52'																				
49+22.00	CL	81		10.5												1		1		1	1										
	CL	81	82		7.26	6.96	X				100'																				
50+20.00	CL	82		10.4												1		1		1	1										
	CL	82	83		6.96	6.84	X				40'																				
50+60.00	CL	83		10.5												1		1		1	1										
	LT	83	84		6.84	6.25					64'																				
50+53.62	RT	85																	X												
-Y4-																															
12+63.44	CL	86												56'																	
12+86.66	CL																													41'	REMOVE EXIST. 18" PIPE
11+94.76	RT	87						36'																							
11+00.23	RT	88							12'																				0.45		REMOVE EXIST. HW
11+08.80	LT	89										36'																	0.45		REMOVE EXIST. HW & EXTEND
11+02.16	CL																														
-Y6-																															
13+43.73	RT	90							36'																						
SHEET TOTALS								**120'**	**48'**		**256'**	**36'**		**56'**		**4**		**4**		**4**	**4**								**0.9**	**138'**	**SHEET TOTALS**
PROJ. TOTALS								**764'**	**660'**	**1004'**	**788'**	**388'**	**200'**	**140'**	1	28	2.84	9		9	9	6	4	4	19	5	1	0.26	2.803	1900'	**PROJECT TOTALS**
																SAY	3											1	3		SAY

ABBREVIATIONS

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

RD223184

COMPUTED BY: JBT DATE: 5/20/2010	PROJECT NO.	SHEET NO.
CHECKED BY: CJT DATE: 5/28/2010	R-3403AA	3-D

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

CUBIC YARDS

Station to Station	Uncl. Exc. C.Y.	Undercut. C.Y.	Embank. +% C.Y.	Borrow	Waste
SUMMARY NO. 1					
-L- (LT) 18+00 TO 37+00	1,282	2,089	3,704	2,917	2,584
SUMMARY NO. 1 TOTALS	1,282	2,089	3,704	2,917	2,584
SUMMARY NO. 2					
-L- (LT) 37+00 TO 50+90	3,489	879	1,521		2,847
-Y4- 11+00 TO 12+40	153		69		84
-Y6- 10+50 TO 17+50	792		154		638
SUMMARY NO. 2 TOTALS	4,434	879	1,744		3,569
SUMMARY NO. 3					
-L- (RT) 18+00 TO 37+00	2,152	12,815	18,216	16,888	13,639
SUMMARY NO. 3 TOTALS	2,152	12,815	18,216	16,888	13,639
SUMMARY NO. 4					
-L- (RT) 37+00 TO 50+90	1,278	5,995	10,705	9,638	6,206
SUMMARY NO. 4 TOTALS	1,278	5,995	10,705	9,638	6,206
PROJECT SUB TOTAL	9,146	21,778	34,369	29,443	25,998
ADDITIONAL UNDERCUT (GRADE POINTS)		100	125	125	100
ADDITIONAL UNDERCUT (CONTINGENCY)		2,500	3,125	3,125	2,500
Waste In Lieu of Borrow				-2,182	-2,182
SELECT GRAN. MAT. In Lieu of Borrow			-24,300	-24,300	
Loss due to Clearing&Grubbing	-500			500	
PROJECT TOTALS	8,646	24,378	13,319	6,711	26,416
Est 5% To Replace Topsoil at Borrow Pit				335	
GRAND TOTALS	8,646			7,046	
SAY	9,000	24,400		7,300	
ESTIMATED DDE = 10 CU. YDS.					
ESTIMATED CONTINGENCY SHALLOW UNDERCUT = 250 CU. YDS.					
ESTIMATED CLASS IV SUBGRADE STABILIZATION = 500 TONS.					
ESTIMATED SELECT GRANULAR MATERIAL CLASS III = 24,300 CU. YDS.					

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

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

SUMMARY OF ASPHALT PAVEMENT REMOVAL

LINE	Station to Station	LOC LT/RT/CL	Ashalt Removal SQ. YDS.
-L-	18+21.32 TO 29+66.04	LT	587.89
-L-	18+62.43 TO 29+59.79	RT/CL/LT	1,648.18
-L-	42+13.95 TO 42+68.31	LT	114.16
-L-	41+94.24 TO 50+90.00	LT	2,695.51
-L-	46+72.81 TO 47+97.92	LT	488.89
-Y6-	16+85.91 TO 17+92.49	LT	380.16
	TEMPORARY PAVEMENT		
-L-	39+10.00 TO 42+10.00	RT	133.33
-L-	42+80.00 TO 44+70.00	RT	84.44
	PROJECT TOTALS		6,132.56
		SAY	6,140.00

PROJ. REFERENCE NO.	SHEET NO.
R-3403AA	3-E

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4,5	PETER J. HARMATUK
2	4,5	JOHN C. HARMON
3	5	JAMES A. THOMAS, et ux, et al
4	5	DGNC PROPERTIES LLC
5	5	J.A. THOMAS, et ux, et al
6	5	P.J. HARMATUK, et ux
7	5	ARTHUR O. GASKILL, et ux
8	5	A.D. WARD, SR., et al
9	5	HERBERT D. FULCHER, et ux, et al
10	5	WILLIAM E. WATERS, et ux
11	5	IDA MAE CURTIS, et al
12	5	BRIDGETON RESCUE SQUAD
13	5	ROY BRANCH
14	5	MARY M. BUNDY
15	5	ROBERT YALDEN
16	5	CHARLIE RAY HART
17	5	BENJAMIN F. TOMPKINS, et ux
18	5	CLYDE E. NELSON, JR.
19	5,6	CARMEN V. DONOFRIO
20	5	CHARLES D. FREEMAN
21	5,6	RICHARD E. FULCHER
22	6	PAULINE BEACHAM
23	6	B.A. WINTERS, et vir
24	6	DAVID W. IPOCK
25	6	HERBERT DONALD EVANS, et ux
26	6	MILTON H. ROWE, JR.
27	6	HARRY G. STEWART, SR., et al
28	6	BENJAMIN F. BROADWAY
29	6,7	BHB ASSOCIATES
30	6	RIGGS & RIGGS PARTNERSHIP
31	6	JAMES L. KIRKMAN, JR., et ux
32	7	ASA B. DAIL, et ux

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
R-3403AA	4
R-3403A R/W SHEET NO. 4	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW 7-14-10	NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR. 7/27/10

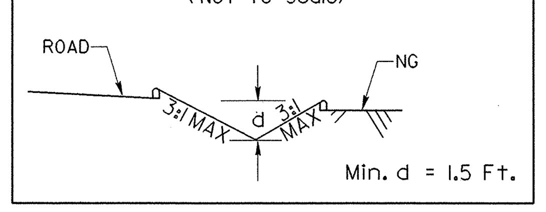
FOR -L- PROFILE SEE SHEET 8

FOR INTERSECTION DETAIL SEE SHEET 2-G

NOTE: DRIVE PIPES TO BE RAISED 3-INCHES ABOVE DITCH LINE THROUGHOUT PROJECT

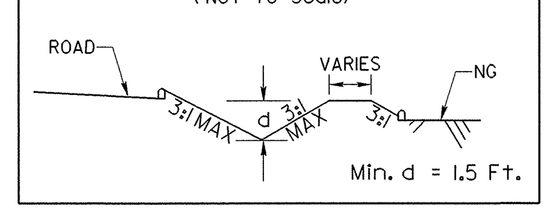
SCF = SPECIAL CONCRETE FLUME

DETAIL 1
SPECIAL DITCH
(Not to Scale)

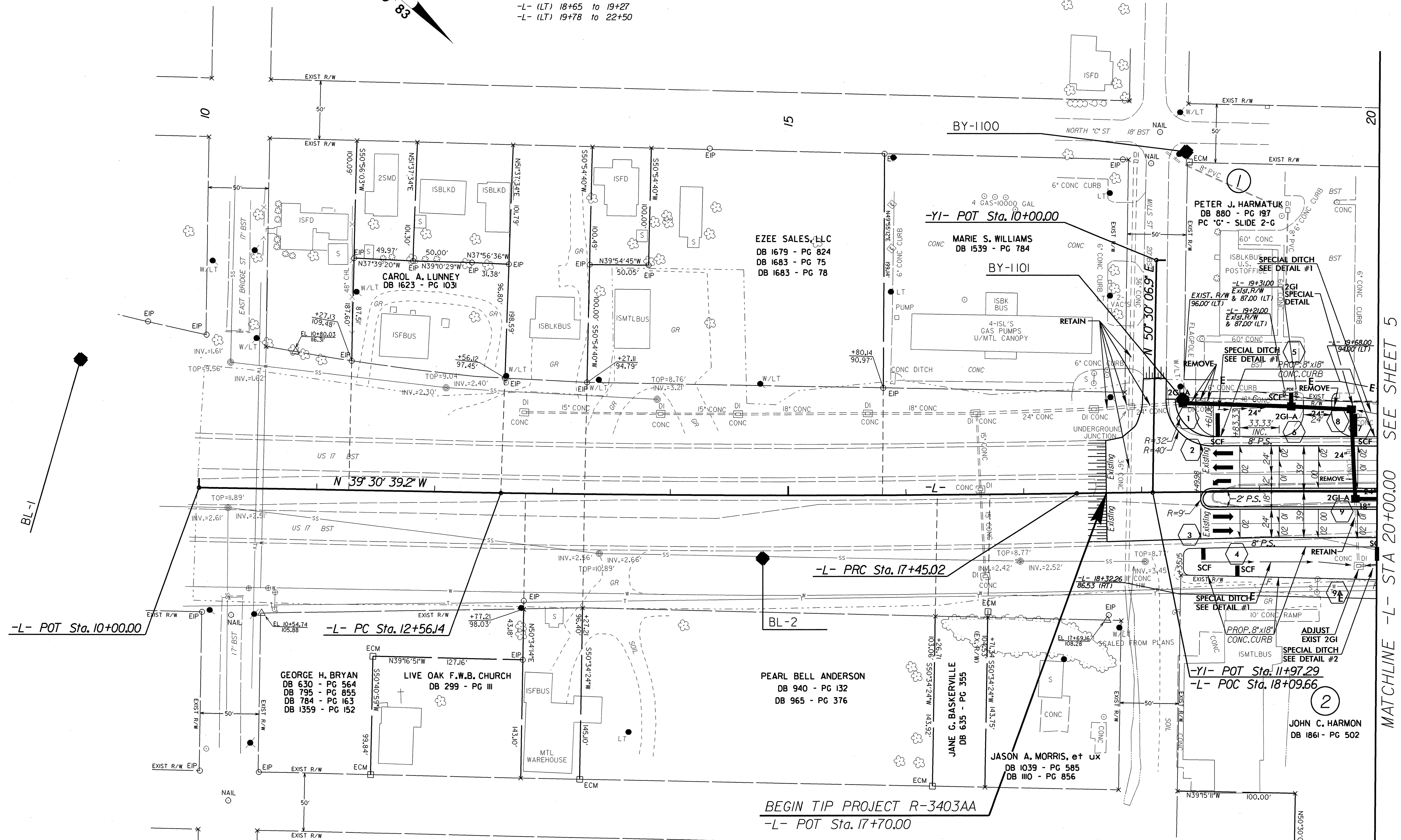


-L- (RT) 18+50 to 19+83
-L- (LT) 18+65 to 19+27
-L- (LT) 19+78 to 22+50

DETAIL 2
SPECIAL DITCH
(Not to Scale)

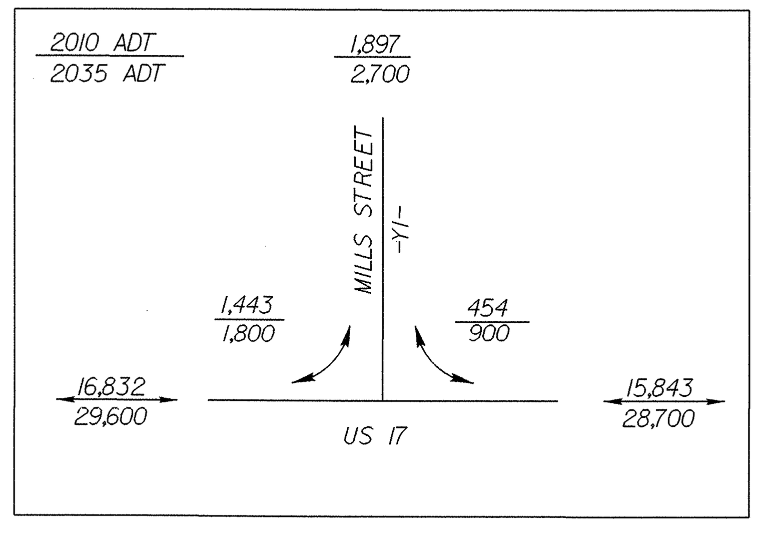


-L- (RT) 19+83 to 25+50



- L -

PI Sta 15+00.60	PI Sta 19+71.52
Δ = 1° 45' 00.0" (LT)	Δ = 2° 09' 45.5" (RT)
D = 0° 21' 28.7"	D = 0° 28' 38.9"
L = 488.88'	L = 452.94'
T = 244.46'	T = 226.50'
R = 16,006.00'	R = 12,000.00'



REVISIONS

8/17/99

07-JUL-2010 14:32
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ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18903 GREGORY E. BREW — 8-4-10

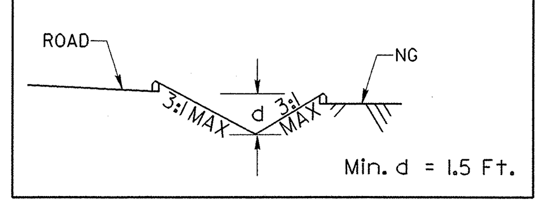
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 9334 W. HENRY WELLS, JR. — 7/27/10

FOR -L- PROFILE SEE SHEET 8

FOR CHANNELIZATION DETAIL SEE SHEET 2-I

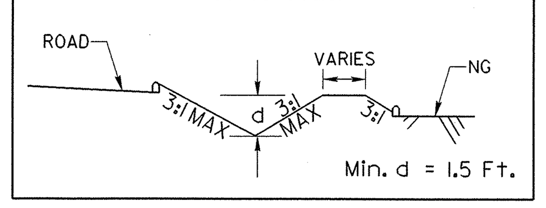
REVISIONS

DETAIL 1
SPECIAL DITCH
(Not to Scale)



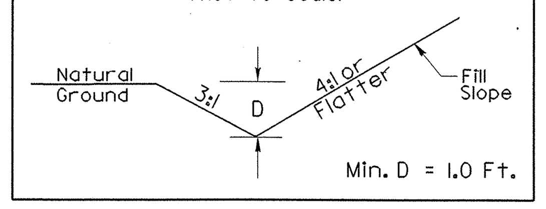
-L- (RT) 25+50 TO 26+67
-L- (RT) 27+09 TO 29+85
-L- (LT) 19+78 TO 22+50
-L- (LT) 29+15 TO 31+62
-L- (LT) 33+50 TO 33+75

DETAIL 2
SPECIAL DITCH
(Not to Scale)



-L- (RT) 19+83 TO 25+50

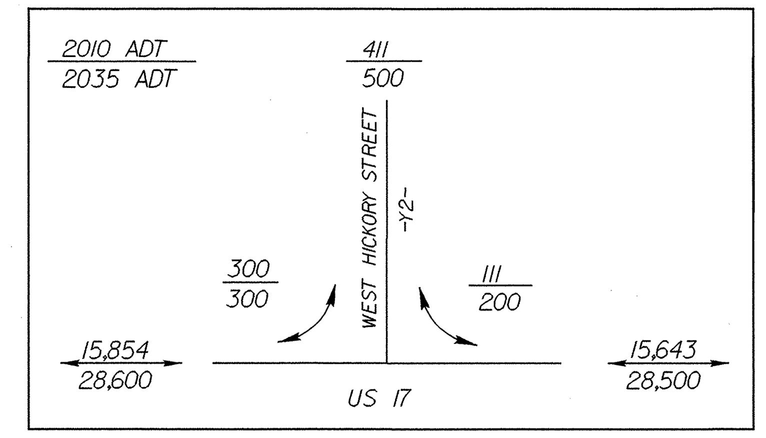
DETAIL 3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

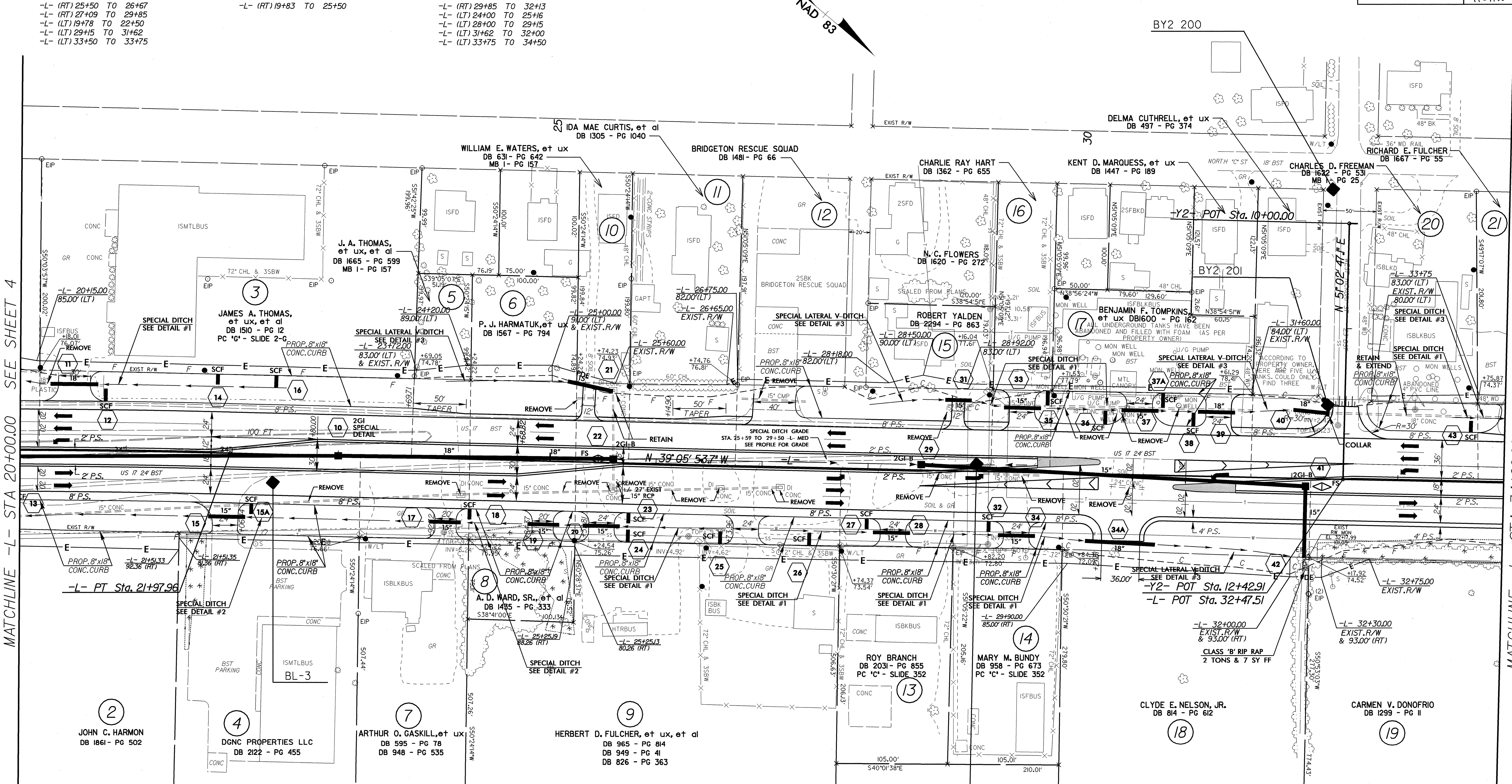


-L- (RT) 29+85 TO 32+13
-L- (LT) 24+00 TO 25+16
-L- (LT) 28+00 TO 29+15
-L- (LT) 31+62 TO 32+00
-L- (LT) 33+75 TO 34+50

SCF = SPECIAL CONCRETE FLUME

NOTE: DRIVE PIPES TO BE RAISED 3-INCHES ABOVE DITCH LINE THROUGHOUT PROJECT

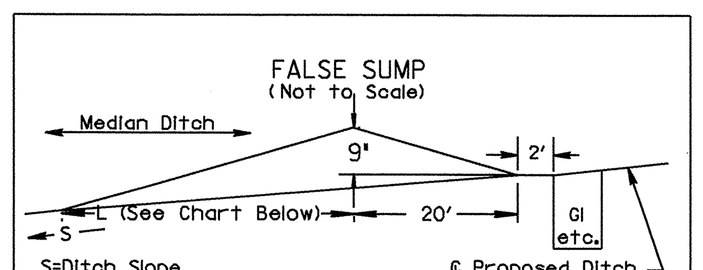




-L-

PI Sta 19+71.52
Δ = 2° 09' 45.5" (RT)
D = 0° 28' 38.9"
L = 452.94'
T = 226.50'
R = 12,000.00'

FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 25+14 TO STA. 25+54 -L-
FROM STA. 32+17 TO STA. 32+57 -L-

22-JUL-2010 08:21
R:\Roadway\Proj\NEW R-3403AA\r-3403aa_rdy_psh05.dgn
$$$$USERNAME$$$$
8/17/99


PROJECT REFERENCE NO. R-3403AA
SHEET NO. 6
R-3403A RW SHEET NO. 6
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
8-4-10
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
FOR INTERSECTIONS & CHANNELIZATION DETAIL SEE SHEET 2-J
FOR -L- PROFILE SEE SHEET 9
FOR -Y4- PROFILE SEE SHEET 10
FOR -Y6- PROFILE SEE SHEET 10
DETAIL 1 SPECIAL DITCH (Not to Scale)
-L- (RT) 38+00 TO 41+50
-L- (RT) 45+23 TO 46+60
DETAIL 2 SPECIAL DITCH (Not to Scale)
-L- (RT) 42+85 TO 44+00
DETAIL 4 SPECIAL LATERAL BASE DITCH (Not to Scale)
-L- (LT) 37+75 TO 39+66
-L- (LT) 39+70 TO 44+00
SCF = SPECIAL CONCRETE FLUME
NOTE: DRIVE PIPES TO BE RAISED 3-INCHES ABOVE DITCH LINE THROUGHOUT PROJECT
DETAIL 12 CUT DITCH (Not to Scale)
-Y6- LT FROM STA. 11+00 TO STA. 12+40
-Y6- LT FROM STA. 13+50 TO STA. 15+50
-Y6- RT FROM STA. 11+40 TO STA. 15+00
-Y6-
PI Sta 13+09.98
Δ = 13° 10' 26.2" (RT)
D = 3° 10' 21.1"
L = 415.25'
T = 208.55'
R = 1,806.00'
BEGIN CONSTRUCTION -Y4- POT Sta. 10+46.48
-Y6- POT Sta. 10+83.46
-Y4- POT Sta. 10+75.99
BEGIN CONSTRUCTION -Y6- POT Sta. 10+50.00
-Y6- POT Sta. 10+00.00
-Y4- POT Sta. 10+00.00
-Y6- PC Sta. 11+01.43
-Y6- PT Sta. 15+16.68
BEGIN GRADE -Y6- 14+50.00
-Y3- POT Sta. 10+00.00
-Y3- POT 11+65 BEGIN CONST.
-Y4- POT Sta. 13+49.22
-L- POT Sta. 42+41.15
-L-TS Sta. 42+98.96
-L- SC Sta. 44+98.96
-Y3- POT Sta. 12+44.45
-L- POT Sta. 37+48.51
-Y5- POT Sta. 10+00.00
-L- POT Sta. 42+41.15
-Y5- POT 11+04.00 END CONSTRUCTION
N 39° 05' 53.7" W -L-
N 49° 36' 57.5" E
N 29° 54' 22.2" W
N 16° 43' 56.1" W
N 51° 05' 33.4" E
N 51° 21' 16.2" E
MATCHLINE -L- STA 34+00.00 SEE SHEET 5
MATCHLINE -L- STA 47+00.00 SEE SHEET 7
DAVID W. IPOCK DB 1246 - PG 475 MB 1 - PG 25
B. A. WINTERS, et vir DB 1603 - PG 588
PAULINE BEACHAM DB 1730 - PG 116
HARRY G. STEWART, SR., et al DB 1110 - PG 647 MB 1 - PG 25
BENJAMIN F. BROADWAY, et ux DB 1157 - PG 978
BENJAMIN F. BROADWAY DB 1110 - PG 650
JAMES A. COLLINS DB 1348 - PG 630 DB 1090 - PG 220 MB 10 - PG 62
BHB ASSOCIATES DB 1073 - PG 656
CARMEN V. DONOFRIO DB 1299 - PG 11
HERBERT DONALD EVANS, et ux DB 901 - PG 164 MB 10 - PG 103
MILTON H. ROWE, JR. DB 882 - PG 778 MB 10 - PG 103
RIGGS & RIGGS PARTNERSHIP DB 1030 - PG 156
JAMES L. KIRKMAN JR., et ux DB 2118 - PG 891 PC G - SLIDE 176-G
BENJAMIN F. BROADWAY, et ux DB 1327 - PG 156
CLEAN OUT TAIL DITCH EST. DDE +/- 22CY OUTLET GRADE = 0.11%
HEAD DITCH EST. DDE +/-10CY SEE DETAIL #5
SPECIAL DITCH GRADE STA 37+00 to 37+50 -L- (RT) SEE PROFILE FOR GRADE
PIs Sta 44+32.31
θs = 2° 51' 53.2"
Ls = 200.00'
LT = 133.35'
ST = 66.68'
PI Sta 49+97.54
Δ = 27° 59' 44.3" (RT)
D = 2° 51' 53.2"
L = 977.23
T = 498.58'
R = 2,000.00'
DETAIL 11 SPECIAL DITCH (Not to Scale)
-L- (RT) 46+60 TO 50+56
DETAIL 5 STANDARD 'V' DITCH (Not to Scale)
-L- (RT) 39+67 TO 39+89
2010 ADT 218 / 2035 ADT 1,200
2010 ADT 428 / 2035 ADT 1,500
2010 ADT 175 / 2035 ADT 800
US 17
REVISIONS
8/17/99
22-JUL-2010 08:21
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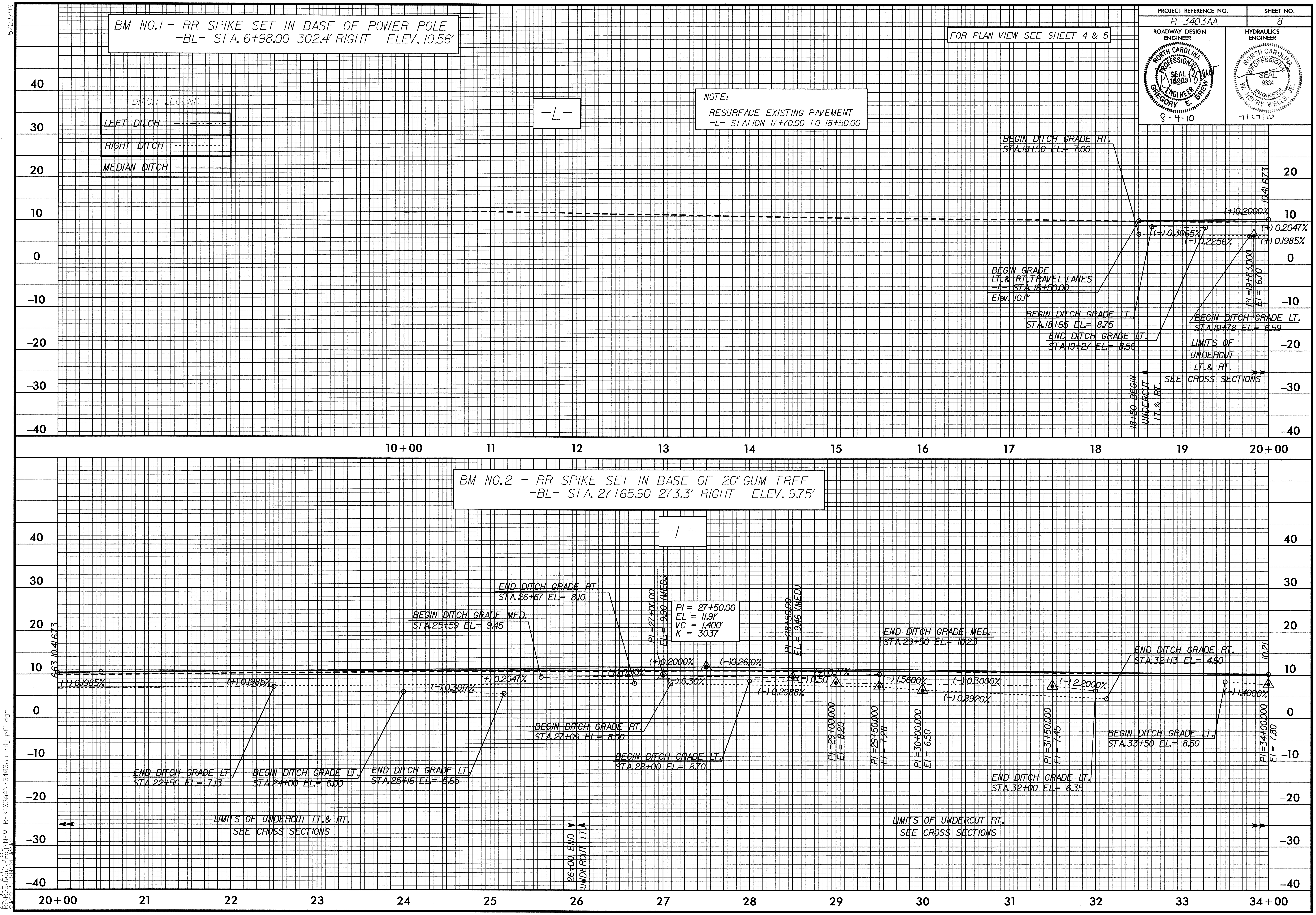
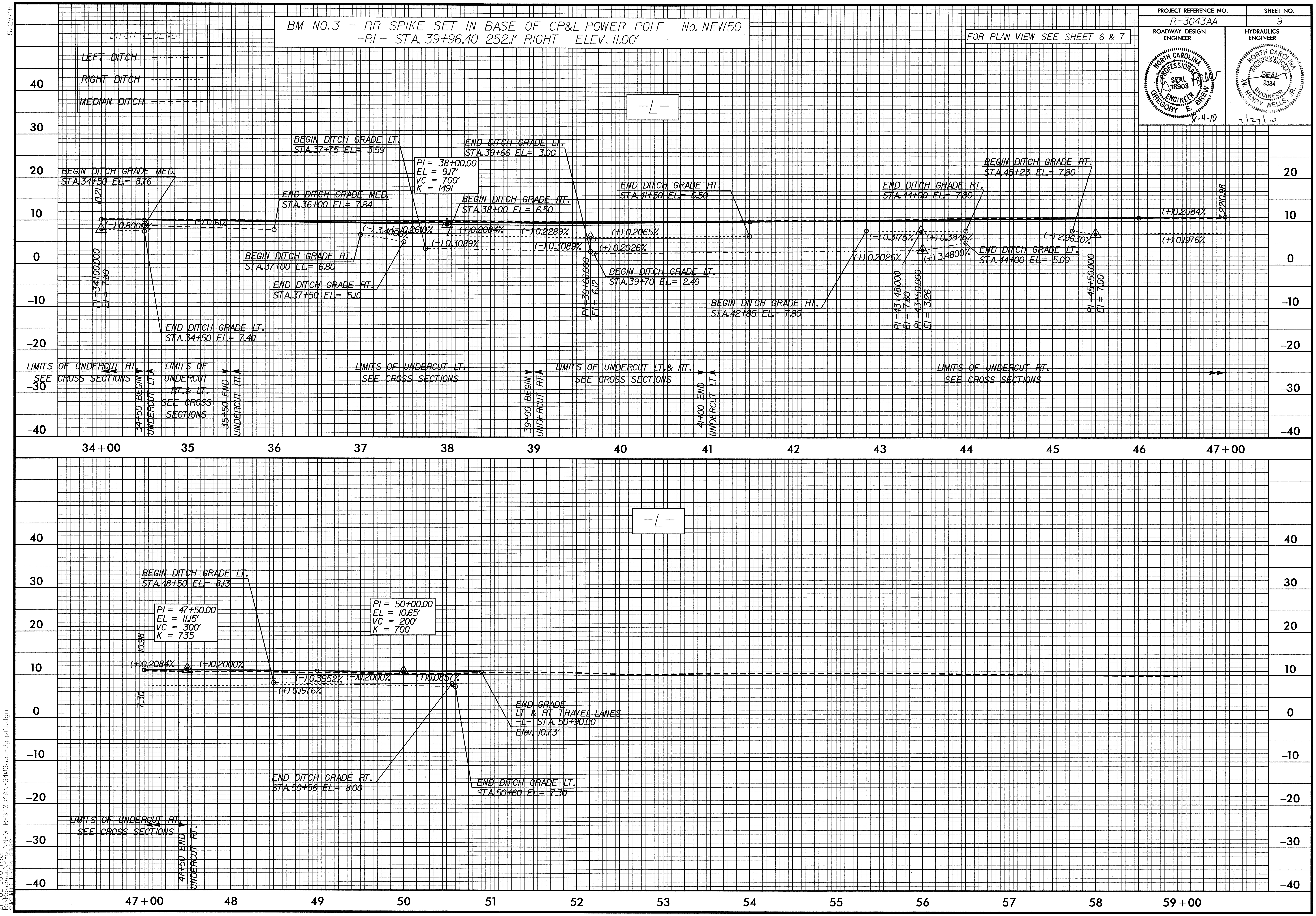
PROJECT REFERENCE NO.
R-3403AA
SHEET NO.
7
R-3403A R/W SHEET NO. 7
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18903 GREGORY E. BREW
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 9334 J. HENRY WELLS, JR.
8-4-10
7/27/10
FOR -L- PROFILE SEE SHEET 9
FOR -Y6- PROFILE SEE SHEET 10
FOR CHANNELIZATION DETAIL SEE SHEET 2-J
NAD 83
TIP PROJECT R-3403AB TO BE CONSTRUCTED BY OTHERS
FIRE DEPARTMENT
DB 1185 - PG 307
DB 1055 - PG 745
-Y6-
PI Sta 17+05.66
Δ = 79° 24' 33.5" (RT)
D = 63° 39' 43.1"
L = 124.74'
T = 74.73'
R = 90.00'
DETAIL 11
SPECIAL DITCH
(Not to Scale)
Min. d = 1.5 Ft.
-L- (RT) 46+60 TO 50+56
DETAIL 12
CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
Min. D=1.5 Ft.
-L- LT FROM STA. 48+50 TO STA. 50+60
-L-
PI Sta 49+97.54
Δ = 27° 59' 44.3" (RT)
D = 2° 51' 53.2"
L = 977.23
T = 498.58'
R = 2,000.00'
PIs Sta 55+42.88
θs = 2° 51' 53.2"
Ls = 200.00'
LT = 133.35'
ST = 66.68'
JEAN CAROL JONES
DB 1376 - PG 424
GEORGEANNAH LOCKLEAR, et vir
DB 1411 - PG 281
33
RESSIE LOCKLEAR LEWIS
DB 1186 - PG 834
34
ASA B. DAIL, et ux
DB 1167 - PG 48
MB 10 - PG 62
PC "D" - SLIDE 721
ROGER T. NEEDHAM, et ux
DB 1612 - PG 315
35
LINDA HINES SAULTER
DB 1055 - PG 157
36
ROBERT THOMAS COWARD, et al
DB 1159 - PG 443
DB 1495 - PG 366
DB 1420 - PG 790
37
W.E. BARNETTE
DB 1994 - PG 663
MB 11 - PG 86
38
-L- CS Sta. 54+76.19
-L- ST Sta. 56+76.19
BRIDGETON TOWN LIMIT
-Y6- PC Sta. 16+30.93
-Y6- PT Sta. 17+55.67
N 62° 40' 37.4" E
-L- POC 48+10.00 = -Y6- POT 18+12.40
SPECIAL CUT DITCH SEE DETAIL #12
CLASS 'B' RIP RAP 1 TONS & 5 SY FF
BY-6
BY-7
BL-8
BL-9
32
N 5° 22' 22.9" W -L-
MATCHLINE -L- STA 47+00.00 SEE SHEET 6
5' CONC. MONO. ISLAND
REMOVE
PROP. 8"x18" CONC.CURB
SPECIAL DITCH SEE DETAIL #11
TWO-TEN INVESTORS, INC.
DB 1378 - PG 514
DB 1550 - PG 748
PC 'C' - SLIDE 203
39
-L- 55+76.00 EXIST.R/W BEG.PROP WW FENCE BEG.PROP.C/A
-L- 57+60.00 EXIST.R/W END PROP.WW FENCE END PROP.C/A
-L- 58+20.00 EXIST.R/W BEG.PROP WW FENCE BEG.PROP.C/A
-L- 54+13.64 EXIST.R/W BEG.PROP WW FENCE BEG.PROP.C/A
-L- 55+16.00 EXIST.R/W END PROP WW FENCE END PROP.C/A
24' INGRESS & EGRESS
ALLEN THOMAS FRENCH, et ux
DB 627 - PG 210
DB 965 - PG 241
PC 'C' - SLIDE 2
EN-CEE CHEMICAL SALES, INC.
DB 648 - PG 35
END TIP PROJECT R-3403AA
BEGIN TIP PROJECT R-3403AB
-L- POC Sta. 50+90.00
CALVIN COOLEY, et ux
DB 791 - PG 224
LEON THOMAS SWARINGEN, et ux
DB 840 - PG 114
NOTE: ALL RAILROAD WORK WILL BE HANDLED BY OTHER
NOTE: DRIVE PIPES TO BE RAISED 3-INCHES ABOVE DITCH LINE THROUGHOUT PROJECT
SCF = SPECIAL CONCRETE FLUME
REVISIONS
8/17/99
22-JUL-2010 12:05


PROJECT REFERENCE NO. R-3403AA
SHEET NO. 8
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
8-4-10
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
BM NO.1 - RR SPIKE SET IN BASE OF POWER POLE
-BL- STA. 6+98.00 302.4' RIGHT ELEV. 10.56'
FOR PLAN VIEW SEE SHEET 4 & 5
DITCH LEGEND
LEFT DITCH
RIGHT DITCH
MEDIAN DITCH
-L-
NOTE:
RESURFACE EXISTING PAVEMENT
-L- STATION 17+70.00 TO 18+50.00
BEGIN DITCH GRADE RT.
STA.18+50 EL= 7.00
10.41 6.73
(+)0.2000%
(+) 0.2047%
(+) 0.1985%
(-) 0.3065%
(-) 0.2256%
PI =19+83.000
EI = 6.70
BEGIN GRADE
LT.& RT.TRAVEL LANES
-L- STA. 18+50.00
Elev. 10.11'
BEGIN DITCH GRADE LT.
STA.18+65 EL= 8.75
BEGIN DITCH GRADE LT.
STA.19+78 EL= 6.59
END DITCH GRADE LT.
STA.19+27 EL= 8.56
LIMITS OF UNDERCUT LT.& RT.
SEE CROSS SECTIONS
18+50 BEGIN UNDERCUT LT.& RT.
10+00
11
12
13
14
15
16
17
18
19
20+00
BM NO.2 - RR SPIKE SET IN BASE OF 20" GUM TREE
-BL- STA. 27+65.90 273.3' RIGHT ELEV. 9.75'
-L-
END DITCH GRADE RT.
STA.26+67 EL= 8.10
BEGIN DITCH GRADE MED.
STA.25+59 EL= 9.45
PI =27+00.00
EL = 9.30 (MED)
PI = 27+50.00
EL = 11.91'
VC = 1,400'
K = 3037
PI =28+50.00
EL = 9.46 (MED)
END DITCH GRADE MED.
STA.29+50 EL= 10.23
END DITCH GRADE RT.
STA.32+13 EL= 4.60
6.63 10.41 6.73
10.21
(+) 0.1985%
(+) 0.1985%
(-) 0.3017%
(+) 0.2047%
(+)0.2000%
(-)0.2610%
(-)0.30%
(-)0.50
(-) 0.2988%
(-) 1.5600%
(-) 0.3000%
(-) 0.8920%
(-) 2.2000%
(-) 1.4000%
BEGIN DITCH GRADE RT.
STA.27+09 EL= 8.00
BEGIN DITCH GRADE LT.
STA.28+00 EL= 8.70
PI =29+00.000
EI = 8.20
PI =29+50.000
EI = 7.28
PI =30+00.000
EI = 6.50
PI =31+50.000
EI = 7.45
PI =34+00.000
EI = 7.80
BEGIN DITCH GRADE LT.
STA.33+50 EL= 8.50
END DITCH GRADE LT.
STA.22+50 EL= 7.13
BEGIN DITCH GRADE LT.
STA.24+00 EL= 6.00
END DITCH GRADE LT.
STA.25+16 EL= 5.65
END DITCH GRADE LT.
STA.32+00 EL= 6.35
LIMITS OF UNDERCUT LT.& RT.
SEE CROSS SECTIONS
26+00 END UNDERCUT LT.
LIMITS OF UNDERCUT RT.
SEE CROSS SECTIONS
20+00
21
22
23
24
25
26
27
28
29
30
31
32
33
34+00
40
30
20
10
0
-10
-20
-30
-40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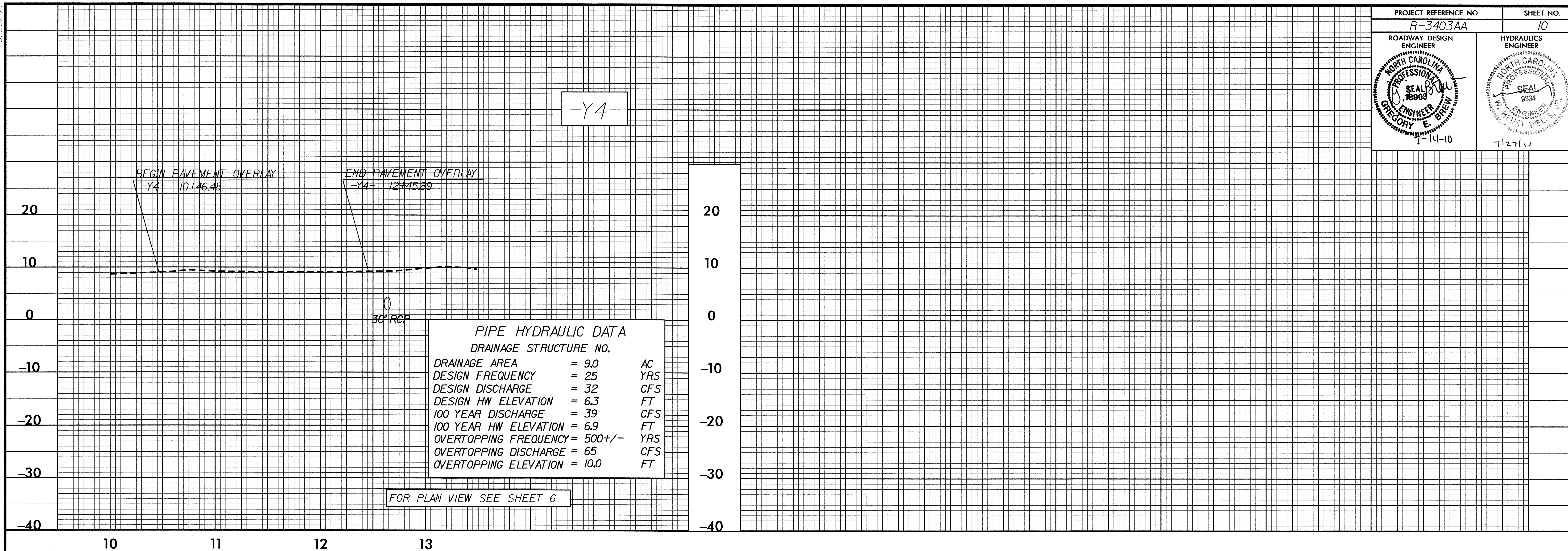
SHEET NO. 9
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
8-4-10
NORTH CAROLINA PROFESSIONAL SEAL 9334 ENGINEER W. HENRY WELLS, JR.
7/27/10
BM NO.3 - RR SPIKE SET IN BASE OF CP&L POWER POLE No. NEW50
-BL- STA. 39+96.40 252.1' RIGHT ELEV. 11.00'
FOR PLAN VIEW SEE SHEET 6 & 7
DITCH LEGEND
LEFT DITCH
RIGHT DITCH
MEDIAN DITCH
-L-
BEGIN DITCH GRADE MED. STA.34+50 EL= 8.76
END DITCH GRADE LT. STA.34+50 EL= 7.40
END DITCH GRADE MED. STA.36+00 EL= 7.84
BEGIN DITCH GRADE RT. STA.37+00 EL= 6.80
END DITCH GRADE RT. STA.37+50 EL= 5.10
BEGIN DITCH GRADE LT. STA.37+75 EL= 3.59
PI = 38+00.00
EL = 9.17'
VC = 700'
K = 1491
BEGIN DITCH GRADE RT. STA.38+00 EL= 6.50
END DITCH GRADE LT. STA.39+66 EL= 3.00
BEGIN DITCH GRADE LT. STA.39+70 EL= 2.49
END DITCH GRADE RT. STA.41+50 EL= 6.50
BEGIN DITCH GRADE RT. STA.42+85 EL= 7.80
END DITCH GRADE RT. STA.44+00 EL= 7.80
END DITCH GRADE LT. STA.44+00 EL= 5.00
BEGIN DITCH GRADE RT. STA.45+23 EL= 7.80
10.21'
(-) 0.8000%
(-) 0.61%
(-) 3.4000%
(-) 0.2610%
(-) 0.3089%
(+) 0.2084%
(-) 0.2289%
(-) 0.3089%
(+) 0.2065%
(+) 0.2026%
(-) 0.3175%
(+) 0.3846%
(+) 0.2026%
(+) 3.4800%
(-) 2.9630%
(+) 0.2084%
(+) 0.1976%
10.98
PI = 34+00.000 El = 7.80
PI = 39+66.000 El = 6.12
PI = 43+48.000 El = 7.60
PI = 43+50.000 El = 3.26
PI = 45+50.000 El = 7.00
LIMITS OF UNDERCUT RT. SEE CROSS SECTIONS
34+50 BEGIN UNDERCUT LT.
LIMITS OF UNDERCUT RT. & LT. SEE CROSS SECTIONS
35+50 END UNDERCUT RT.
LIMITS OF UNDERCUT LT. SEE CROSS SECTIONS
39+00 BEGIN UNDERCUT RT.
LIMITS OF UNDERCUT LT. & RT. SEE CROSS SECTIONS
41+00 END UNDERCUT LT.
LIMITS OF UNDERCUT RT. SEE CROSS SECTIONS
40
30
20
10
0
-10
-20
-30
-40
34+00
35
36
37
38
39
40
41
42
43
44
45
46
47+00
-L-
BEGIN DITCH GRADE LT. STA.48+50 EL= 8.13
PI = 47+50.00
EL = 11.15'
VC = 300'
K = 735
PI = 50+00.00
EL = 10.65'
VC = 200'
K = 700
10.98
7.30
(+) 0.2084%
(-) 0.2000%
(-) 0.3952%
(-) 0.2000%
(+) 0.0857%
(+) 0.1976%
END GRADE
LT. & RT. TRAVEL LANES
-L- STA. 50+90.00
Elev. 10.73'
END DITCH GRADE RT. STA.50+56 EL= 8.00
END DITCH GRADE LT. STA.50+60 EL= 7.30
LIMITS OF UNDERCUT RT. SEE CROSS SECTIONS
47+50 END UNDERCUT RT.
47+00
48
49
50
51
52
53
54
55
56
57
58
59+00

PROJECT REFERENCE NO.	SHEET NO.
R-3403AA	10

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18903 GREGORY E. BREW — 9-14-10

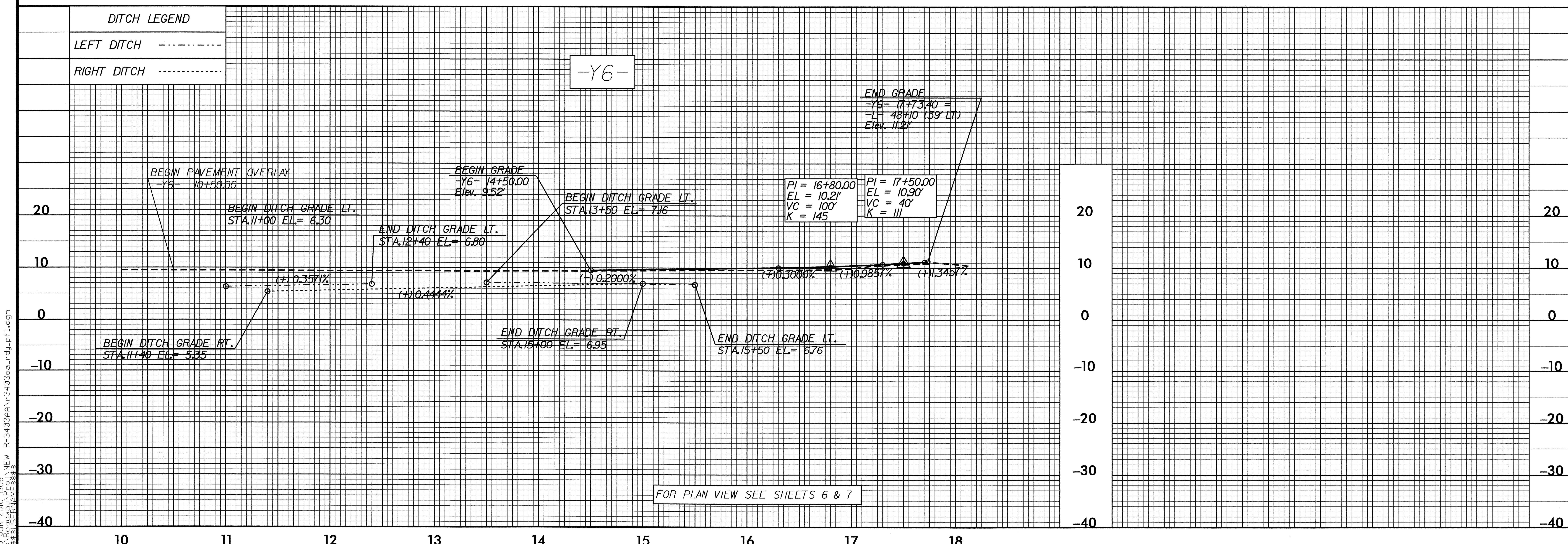
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 9334 W. HENRY WELLS, JR. — 7/27/10



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 9.0	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 32	CFS
DESIGN HW ELEVATION	= 6.3	FT
100 YEAR DISCHARGE	= 39	CFS
100 YEAR HW ELEVATION	= 6.9	FT
OVERTOPPING FREQUENCY	= 500+/-	YRS
OVERTOPPING DISCHARGE	= 65	CFS
OVERTOPPING ELEVATION	= 10.0	FT



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