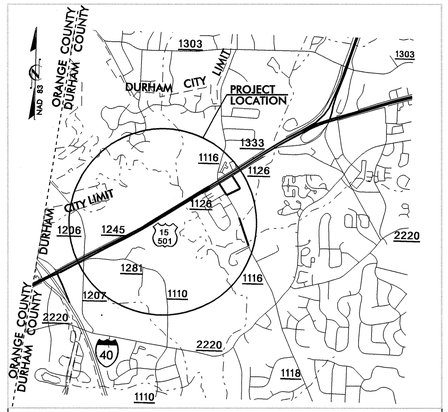
09/08/99

CONTRACT: C201487 TIP PROJECTS: U-4012 /U-4009 /B-3450

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

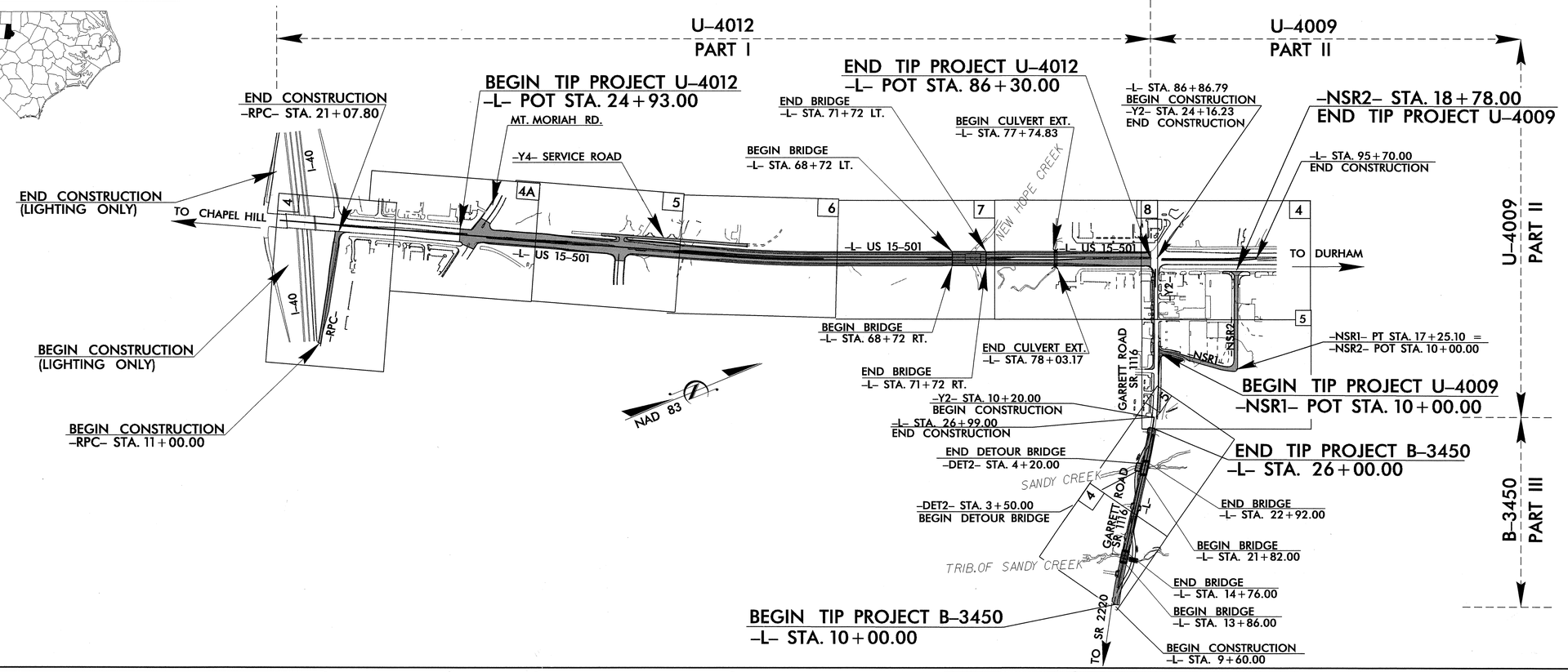
DURHAM COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4012/U-4009/B-3450	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
35012.1.1	MA-NHF-15(8)	U-4012 (PE)
35010.1.1		U-4009 (PE)
33070.1.1	BRSTP-1116(4)	B-3450 (PE)
35012.2.2	NHF-15(8)	U-4012 (R/W, UTIL)
35010.2.1		U-4009 (R/W, UTIL)
33070.2.2	BRSTP-1116(4)	B-3450 (R/W, UTIL)
35012.3.1	NHF-15(17)	U-4012 (CONST)
35010.3.1		U-4009 (CONST)
33070.3.1	BRSTP-1116(6)	B-3450 (CONST)

LOCATION: *BRIDGE 217 OVER TRIBUTARY OF SANDY CREEK AND BRIDGE 122 OVER SANDY CREEK ON SR 1116 (GARRETT ROAD); DURHAM – SR 1126 (SERVICE ROAD) NEAR US 15–501 & SR 1116 (GARRETT ROAD) INTERSECTION; US 15–501 FROM NORTH OF MT. MORIAH ROAD TO SOUTH OF GARRETT ROAD*

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



PROJECT LENGTH

LENGTH ROADWAY TIP PROJECTS U–4012 /U–4009 /B3450	=	1.674 MI
LENGTH STRUCTURE TIP PROJECTS U–4012 /U–4009 /B3450	=	0.095 MI
TOTAL LENGTH OF TIP PROJECTS U–4012 /U–4009 /B3450	=	1.769 MI

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

2006 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	(U–4012): JANUARY 30, 2004
RIGHT OF WAY DATE:	(U–4009): MARCH 31, 2003
RIGHT OF WAY DATE:	(B–3450): MARCH 21, 2003
LETTING DATE:	AUGUST 21, 2007

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

art w. miller P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMNISTRATOR *DATE*

07-MAY-2007 15:37
r:\estimates\combined final\combined_tsh.dgn
$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4012/ U-4009/ B-3450	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY

5-10-07

INDEX OF SHEETS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
INDEX OF SHEETS

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 OR STD. NO. 225.05 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01 OR STD. NO. 560.02.

SIDE ROADS:

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

BERM DITCHES:

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

UNDERDRAINS:

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

DRIVEWAYS:

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

STREET TURNOUT:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

PART III
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.

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE DUKE POWER COMPANY.

VERIZON TELEPHONE COMPANY, PROGRESS TELECOMMUNICATION, PSNC ENERGY, AND

THE CITY OF DURHAM, TIME WARNER CABLEVISION (UTILITIES BY OTHERS)

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

PART II
ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

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

WHEELCHAIR RAMPS:

PART I
WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH STD. 848.05 and STD. 848.06.

PART II
WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH DETAILS IN PLANS.

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

2006 ROADWAY STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
816.01	Concrete Pads - for Shoulder Drain Installation
816.02	Aggregate Shoulder Drain
816.04	Markers for Drainage Structure and Concrete Pad
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05	Brick Open Throat Catch Basin - 12" thru 48" Pipe
840.13	Concrete Bridge Approach Drop Inlet - 12" thru 24" Pipe
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.30	Driveway Drop Inlet
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.51	Brick Manhole - 12" thru 36" Pipe
840.52	Precast Manhole - 4', 5' and 6' Diameter
840.53	Precast Manhole with Masonry Base - 12" thru 42" Pipe
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Wheelchair Ramp - Curb Cut
848.06	Wheelchair Ramp - Retrofitting of Existing Curb
852.01	Concrete Islands
852.04	Method for Placement of Drop Inlets in Grassed Median
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.03	Drainage Ditches with Class 'A' Rip Rap
876.04	Drainage Ditches with Class 'B' Rip Rap

19-APR-2007 10:24
I:\projects\combined final\combined_1a.dgn
$$$$USERNAME$$$$

RD223172 4/19/2007 combined_1a jrhatfield RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
U-4012\ U-4009\ B-3450	1-B

5/28/99

*S.U.E = SUBSURFACE UTILITY ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

ROADS & RELATED ITEMS

- Edge of Pavement
- Curb
- Prop. Slope Stakes Cut (C)
- Prop. Slope Stakes Fill (F)
- Prop. Woven Wire Fence
- Prop. Chain Link Fence
- Prop. Barbed Wire Fence
- Prop. Wheelchair Ramp (WCR)
- Curb Cut for Future Wheelchair Ramp (CCFR)
- Exist. Guardrail
- Prop. Guardrail
- Equality Symbol
- Pavement Removal

RIGHT OF WAY

- Baseline Control Point
- Existing Right of Way Marker
- Exist. Right of Way Line w/Marker
- Prop. Right of Way Line with Proposed R/W Marker (Iron Pin & Cap)
- Prop. Right of Way Line with Proposed (Concrete or Granite) R/W Marker
- Exist. Control of Access Line (CA)
- Prop. Control of Access Line (CA)
- Exist. Easement Line (E)
- Prop. Temp. Construction Easement Line (E)
- Prop. Temp. Drainage Easement Line (TDE)
- Prop. Perm. Drainage Easement Line (PDE)

HYDROLOGY

- Stream or Body of Water
- River Basin Buffer (BZ)
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Shoreline
- Falls, Rapids
- Prop Lateral, Tail, Head Ditches (FLOW)

STRUCTURES

MAJOR

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

MINOR

- Head & End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Boxes (CB)
- Paved Ditch Gutter

UTILITIES

- Exist. Pole
- Exist. Power Pole
- Prop. Power Pole
- Exist. Telephone Pole
- Prop. Telephone Pole
- Exist. Joint Use Pole
- Prop. Joint Use Pole
- Telephone Pedestal (T)
- U/G Telephone Cable Hand Hold (HH)
- Cable TV Pedestal (C)
- U/G TV Cable Hand Hold (HH)
- U/G Power Cable Hand Hold (HH)
- Hydrant
- Satellite Dish
- Exist. Water Valve
- Sewer Clean Out
- Power Manhole (P)
- Telephone Booth
- Cellular Telephone Tower
- Water Manhole (W)
- Light Pole
- H-Frame Pole
- Power Line Tower
- Pole with Base
- Gas Valve
- Gas Meter
- Telephone Manhole (T)
- Power Transformer
- Sanitary Sewer Manhole (S)
- Storm Sewer Manhole
- Tank; Water, Gas, Oil
- Water Tank With Legs
- Traffic Signal Junction Box (S)
- Fiber Optic Splice Box (F)
- Television or Radio Tower
- Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement (TS)

- Recorded Water Line (W)
- Designated Water Line (S.U.E.*) (W)
- Sanitary Sewer (SS)
- Recorded Sanitary Sewer Force Main (FSS)
- Designated Sanitary Sewer Force Main(S.U.E.*) (FSS)
- Recorded Gas Line (G)
- Designated Gas Line (S.U.E.*) (G)
- Storm Sewer (S)
- Recorded Power Line (P)
- Designated Power Line (S.U.E.*) (P)
- Recorded Telephone Cable (T)
- Designated Telephone Cable (S.U.E.*) (T)
- Recorded U/G Telephone Conduit (TC)
- Designated U/G Telephone Conduit (S.U.E.*) (TC)
- Unknown Utility (S.U.E.*) (?UTL)
- Recorded Television Cable (TV)
- Designated Television Cable (S.U.E.*) (TV)
- Recorded Fiber Optics Cable (FO)
- Designated Fiber Optics Cable (S.U.E.*) (FO)
- Exist. Water Meter
- U/G Test Hole (S.U.E.*) (ATTUR)
- Abandoned According to U/G Record
- End of Information (E.O.I.)

BOUNDARIES & PROPERTIES

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Property Line Symbol (PL)
- Exist. Iron Pin (EIP)
- Property Corner
- Property Monument (ECM)
- Property Number (123)
- Parcel Number (6)
- Fence Line (WW & ISBW)
- Existing Wetland Boundaries (WLB)
- High Quality Wetland Boundary (HQ WLB)
- Medium Quality Wetland Boundaries (MQ WLB)
- Low Quality Wetland Boundaries (LQ WLB)
- Proposed Wetland Boundaries (WLB)
- Existing Endangered Animal Boundaries (EAB)
- Existing Endangered Plant Boundaries (EPB)

BUILDINGS & OTHER CULTURE

- Buildings
- Foundations
- Area Outline
- Gate
- Gas Pump Vent or U/G Tank Cap
- Church
- School
- Park
- Cemetery
- Dam
- Sign (S)
- Well (W)
- Small Mine
- Swimming Pool

TOPOGRAPHY

- Loose Surface
- Hard Surface
- Change in Road Surface
- Curb
- Right of Way Symbol (R/W)
- Guard Post (GP)
- Paved Walk
- Bridge
- Box Culvert or Tunnel
- Ferry
- Culvert
- Footbridge
- Trail, Footpath
- Light House

VEGETATION

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (VINEYARD)

RAILROADS

- Standard Gauge (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)

revised 02/02/00

09-APR-2007 09:15
n:\estimates\combined final\combined_1b.typ
$$$$USERNAME$$$$

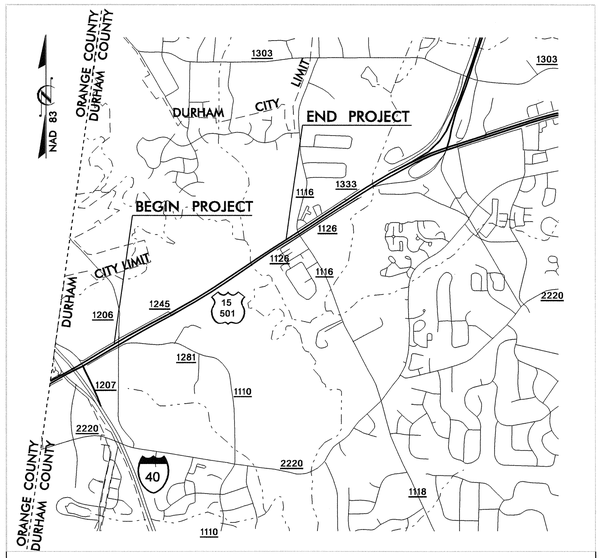
RD223172 4/9/2007 combined_1b jrhatfield RD-Oce34

09/08/99

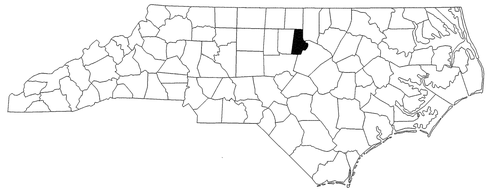
TIP PROJECT: U-4012

CONTRACT: C201487

See Sheet 1-A For Index of Sheets



VICINITY MAP



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DURHAM COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4012	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
35012.1.1	MA-NHF-15(8)	U-4012 (PE)
35012.2.2	NHF-15(8)	U-4012 (RW, UTIL)
35012.3.1	NHF-15(17)	U-4012 (CONST)

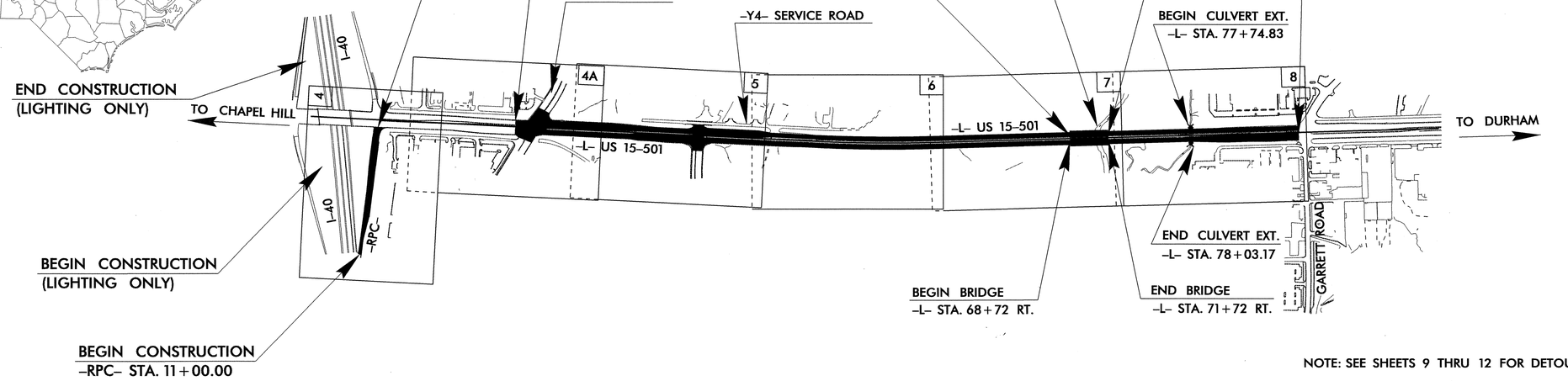
LOCATION: US 15-501 FROM NORTH OF MT MORIAH ROAD TO SOUTH OF GARRETT ROAD

TYPE OF WORK: GRADING, DRAINAGE, PAVING, WIDENING, LIGHTING, RESURFACING, SIGNALS (MOD), STRUCTURES, AND CULVERT

NAD 83

BEGIN TIP PROJECT U-4012
-L- POT STA. 24+93.00

END TIP PROJECT U-4012
-L- POT STA. 86+30.00



NOTE: SEE SHEETS 9 THRU 12 FOR DETOURS

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 2002	=	50,524
ADT 2025	=	99,100
DHV	=	9 %
D	=	60 %
T	=	7 % *
V	=	60 MPH

* TTST 4% DUAL 3%
FUNC. CLASS = ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-4012 = 1.100 MI
LENGTH STRUCTURE TIP PROJECT U-4012 = 0.062 MI
TOTAL LENGTH OF TIP PROJECT U-4012 = 1.162 MI

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

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 30, 2004

LETTING DATE:
JULY 17, 2007

JASON MOORE, P.E.
PROJECT ENGINEER

BRYAN KEY, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARK T. BROWN
5-10-07
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY
5-10-07 P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

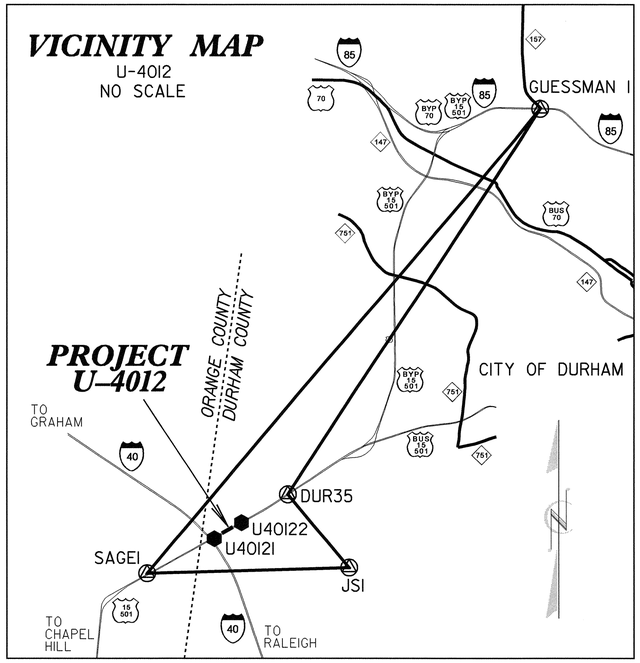
10-APR-2007 12:44
R:\Estimates\COMBINED FINAL\u4012-tsh
$$$$USERNAME$$$$

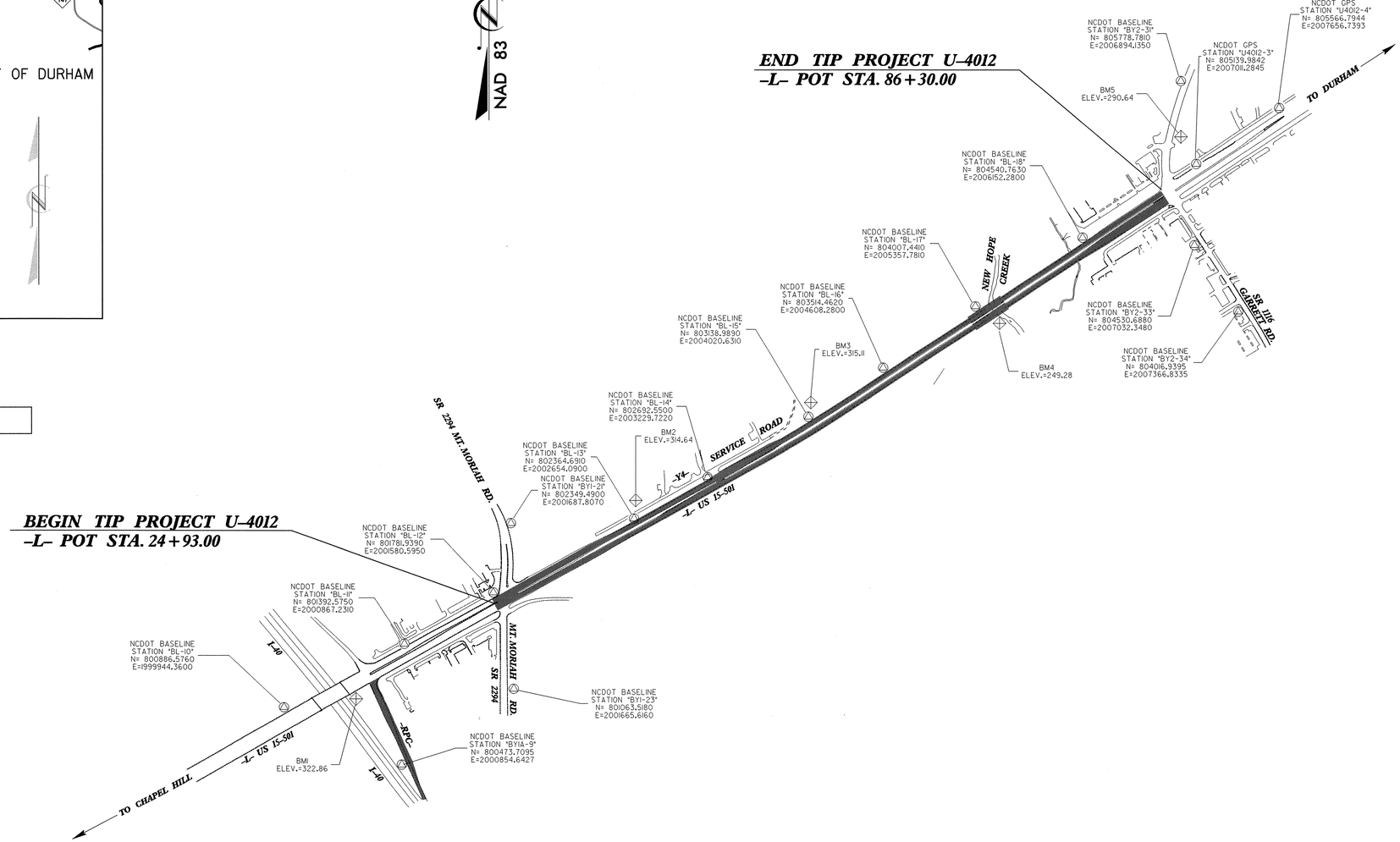
RD226358 4/10/2007 u4012-tsh bckey RD-Oce34

1/22/04

U–4012 SURVEY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
U–4012	1–C
LOCATION AND SURVEYS	





NOTES

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAYBE 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.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:

   U4012_LS_GPSCALIB_040122.TXT
   U4012_LS_WGS84_040122.TXT
   U4012_LS_LOCAL_040122.TXT
   U4012_LS_BASELINE_040122.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.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CAPRI"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 805205.9355(ft) EASTING: 2007271.7729(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999941240
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CAPRI" TO -L- STATION 33+00.00 IS
S 58° 11' 00.7" W 5,927.8674'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

△ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION.

SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

18-JAN-2005 08:5
R:\Proj\u4012_psh1c.dgn
TCovington

RD187108 Tuesday January 18 2005 u4012_psh1c.m TCovington rd-09oce34

SURVEY CONTROL SHEET U-4012

GPS CALIBRATION REPORT

PROJECT : U4012

TIP NUMBER			
USER NAME	KHUDSON	DATE & TIME	2:50:22 PM 1/14/04
COORDINATE SYSTEM	US STATE PLANE 1983	ZONE	NORTH CAROLINA 3200
HORIZONTAL DATUM	NAD 1983 (CONUS)		
VERTICAL DATUM		GEOID MODEL	GEOID99 (CONUS)
COORDINATE UNITS	US SURVEY FEET		
DISTANCE UNITS	US SURVEY FEET		
HEIGHT UNITS	US SURVEY FEET		

LOCAL SITE INFORMATION

LOCALIZED AROUND NCGS "CAPRI"
NORTHING 805205.9355
EASTING 2007271.7729
SITE SCALE FACTOR 1.000058763

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	805648.477SFT
EASTING COORDINATE OF ROTATION CENTER	2006308.411SFT
ROTATION ABOUT THE CENTER POINT	0°00'00"
TRANSLATION NORTH	-0.016SFT
TRANSLATION EAST	0.033SFT
SCALE FACTOR	1.00005066

VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN POINT	798805.431SFT
EASTING COORDINATE OF ORIGIN POINT	1996126.909SFT
VERTICAL SEPARATION AT ORIGIN	-0.007SFT
SLOPE NORTH	3.957PPM
SLOPE EAST	-2.711PPM

GEOID MODEL DEFINITION

GEOID99 (CONUS)

RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

SUMMARY

	MAXIMUM ERROR	ROOT MEAN SQUARE ERROR	POINT
HORIZONTAL	0.102SFT	0.014	SAGE - WGS84
VERTICAL	0.048SFT	0.008	SAGE - WGS84
THREE-DIMENSIONAL	0.113SFT	0.017	SAGE - WGS84

POINT RESIDUALS

WGS84 COORDINATES		CALCULATED POINT FOR DISPLAY ONLY		LOCAL COORDINATES	
POINT	SAGE - WGS84	NORTHING	798805.431SFT	POINT	SAGE - LOCAL
LATITUDE	35°56'41.29031"N	EASTING	1996126.909SFT	NORTHING	798805.422SFT
LONGITUDE	79°00'47.09912"W	ELEVATION	334.484SFT	EASTING	1996127.010SFT
HEIGHT	232.641SFT	HORZ ERROR	0.102SFT	ELEVATION	334.436SFT
		VERT ERROR	0.048SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.113SFT	QUALITY CONTROL	QUALITY

POINT	44 JS 1 - WGS84	NORTHING	799179.552SFT	POINT	44 JS 1 - LOCAL
LATITUDE	35°56'44.97749"N	EASTING	2009418.841SFT	NORTHING	799179.541SFT
LONGITUDE	78°58'05.44827"W	ELEVATION	316.905SFT	EASTING	2009418.769SFT
HEIGHT	214.609SFT	HORZ ERROR	0.073SFT	ELEVATION	316.870SFT
		VERT ERROR	0.035SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.081SFT	QUALITY CONTROL	QUALITY

POINT	GUESSMAN - WGS84	NORTHING	829305.437SFT	POINT	GUESSMAN - LOCAL
LATITUDE	36°01'42.82700"N	EASTING	2021989.360SFT	NORTHING	829305.463SFT
LONGITUDE	78°55'32.29549"W	ELEVATION	396.574SFT	EASTING	2021989.387SFT
HEIGHT	294.442SFT	HORZ ERROR	0.037SFT	ELEVATION	396.558SFT
		VERT ERROR	0.016SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.041SFT	QUALITY CONTROL	QUALITY

POINT	DUR 35 - WGS84	NORTHING	803985.433SFT	POINT	DUR 35 - LOCAL
LATITUDE	35°57'32.51379"N	EASTING	2005390.042SFT	NORTHING	803985.437SFT
LONGITUDE	78°58'54.43419"W	ELEVATION	259.572SFT	EASTING	2005390.029SFT
HEIGHT	157.519SFT	HORZ ERROR	0.014SFT	ELEVATION	259.583SFT
		VERT ERROR	0.011SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.018SFT	QUALITY CONTROL	QUALITY

POINT	U-4012-1 - WGS84	NORTHING	801072.437SFT	POINT	U-4012-1 - LOCAL
LATITUDE	35°57'03.71159"N	EASTING	2000541.762SFT	NORTHING	801072.434SFT
LONGITUDE	78°59'53.40748"W	ELEVATION	322.319SFT	EASTING	2000541.762SFT
HEIGHT	220.374SFT	HORZ ERROR	0.003SFT	ELEVATION	322.336SFT
		VERT ERROR	0.017SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.017SFT	QUALITY CONTROL	QUALITY

POINT	U-4012-2 - WGS84	NORTHING	802132.613SFT	POINT	U-4012-2 - LOCAL
LATITUDE	35°57'14.19496"N	EASTING	2002332.587SFT	NORTHING	802132.609SFT
LONGITUDE	78°59'31.62571"W	ELEVATION	310.590SFT	EASTING	2002332.569SFT
HEIGHT	208.605SFT	HORZ ERROR	0.018SFT	ELEVATION	310.610SFT
		VERT ERROR	0.020SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.027SFT	QUALITY CONTROL	QUALITY

POINT	U-4012-3 - WGS84	NORTHING	805139.986SFT	POINT	U-4012-3 - LOCAL
LATITUDE	35°57'43.92793"N	EASTING	2007011.301SFT	NORTHING	805139.984SFT
LONGITUDE	78°58'34.71046"W	ELEVATION	280.445SFT	EASTING	2007011.286SFT
HEIGHT	178.359SFT	HORZ ERROR	0.015SFT	ELEVATION	280.463SFT
		VERT ERROR	0.018SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.024SFT	QUALITY CONTROL	QUALITY

POINT	U-4012-4 - WGS84	NORTHING	805566.796SFT	POINT	U-4012-4 - LOCAL
LATITUDE	35°57'48.14711"N	EASTING	2007656.749SFT	NORTHING	805566.796SFT
LONGITUDE	78°58'26.85782"W	ELEVATION	272.729SFT	EASTING	2007656.739SFT
HEIGHT	170.630SFT	HORZ ERROR	0.010SFT	ELEVATION	272.762SFT
		VERT ERROR	0.033SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.034SFT	QUALITY CONTROL	QUALITY

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CAPRI" WITH NAD 1983 STATE PLANE GRID COORDINATES OF NORTHING: 805205.9355(ft) EASTING: 2007271.7729(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999941240
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CAPRI" TO -L- STATION 33+00.00 IS S 58°11'00.7" W 5927.8674'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAYBE 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.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:

   U4012_LS_GPSCALIB_040122.TXT
   U4012_LS_WGS84_040122.TXT
   U4012_LS_LOCAL_040122.TXT
   U4012_LS_BASELINE_040122.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.

1/22/04

PROJECT REFERENCE NO.	SHEET NO.
U-4012	1-E
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET

BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
10		800886.5760	1999944.3600	328.82	OUTSIDE PROJECT LIMITS	
11		801392.5750	2000867.2310	320.04	17+70.36	59.74 LT
12		801781.9390	2001580.5950	312.60	25+83.06	55.12 LT
13		802364.6910	2002654.0900	312.92	38+04.49	45.39 LT
14		802692.5500	2003229.7220	311.11	44+66.89	53.62 LT
15		803138.9890	2004020.6310	314.39	53+77.53	49.21 LT
16		803514.4620	2004608.2800	296.56	60+76.40	44.99 LT
17		804007.4410	2005357.7810	259.28	69+73.49	44.46 LT
18		804540.7630	2006152.2800	258.97	79+30.36	52.87 LT
3		805139.9840	2007011.2840	280.46	89+77.34	80.84 LT
4		805566.7940	2007656.7390	272.76	97+51.15	82.28 LT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
21		802349.4900	2001687.8070	316.91	29+51.61	499.84 LT
120		801781.9390	2001580.5950	312.60	25+83.06	55.12 LT
23		801063.5180	2001665.6160	299.19	23+09.68	614.68 RT

BY1A

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
110		800886.5760	1999944.3600	328.82	OUTSIDE PROJECT LIMITS	
9		800473.7095	2000854.6428	306.85	13+14.55	738.20 RT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	BY2 STATION	OFFSET
31		805778.7810	2006894.1350	303.63	5+00.00	0.00
130		805139.9842	2007011.2845	280.46	11+49.45	0.00
33		804530.6880	2007032.3480	267.77	17+59.11	0.00
34		804016.9395	2007366.8335	258.13	23+72.15	0.00

BENCHMARK DATA

BM1 ELEVATION = 322.86
N 801017 E 2000444
L STATION 12+18 64 RIGHT
SQUARE CUT IN CONCRETE BRIDGE NORTHEAST WINGWALL

BM2 ELEVATION = 314.64
N 802462 E 2002597
L STATION 38+02 158 LEFT
RR SPIKE SET IN BASE OF 20" DOUBLE HICKORY

BM3 ELEVATION = 315.11
N 803255 E 2003958
L STATION 53+85 181 LEFT
RR SPIKE SET IN BASE OF 19" PINE

BM4 ELEVATION = 249.28
N 803932 E 2005499
L STATION 70+50 96 RIGHT
RR SPIKE SET IN BASE OF 18" RED OAK

BM5 ELEVATION = 290.64
N 805353 E 2006845
L STATION 89+56 350 LEFT
RR SPIKE SET IN BASE OF 12" PINE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CAPRI"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 805205.9355(ft) EASTING: 2007271.7729(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999941240
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CAPRI" TO -L- STATION 33+00.00 IS
S 58° 11' 00.7" W 5,927.8674'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAYBE 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.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:

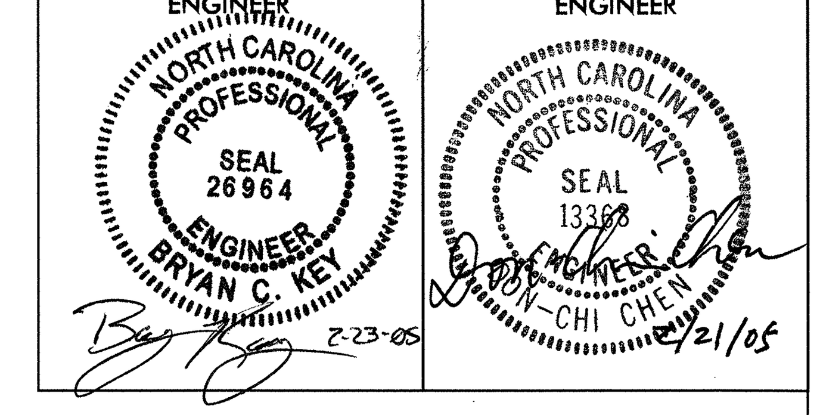
   U4012_LS_GPSCALIB_040122.TXT
   U4012_LS_WGS84_040122.TXT
   U4012_LS_LOCAL_040122.TXT
   U4012_LS_BASELINE_040122.TXT

   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.

12-JAN-2005 15:34
R:\Projects\U4012_psht1e.dgn
jenniferevans

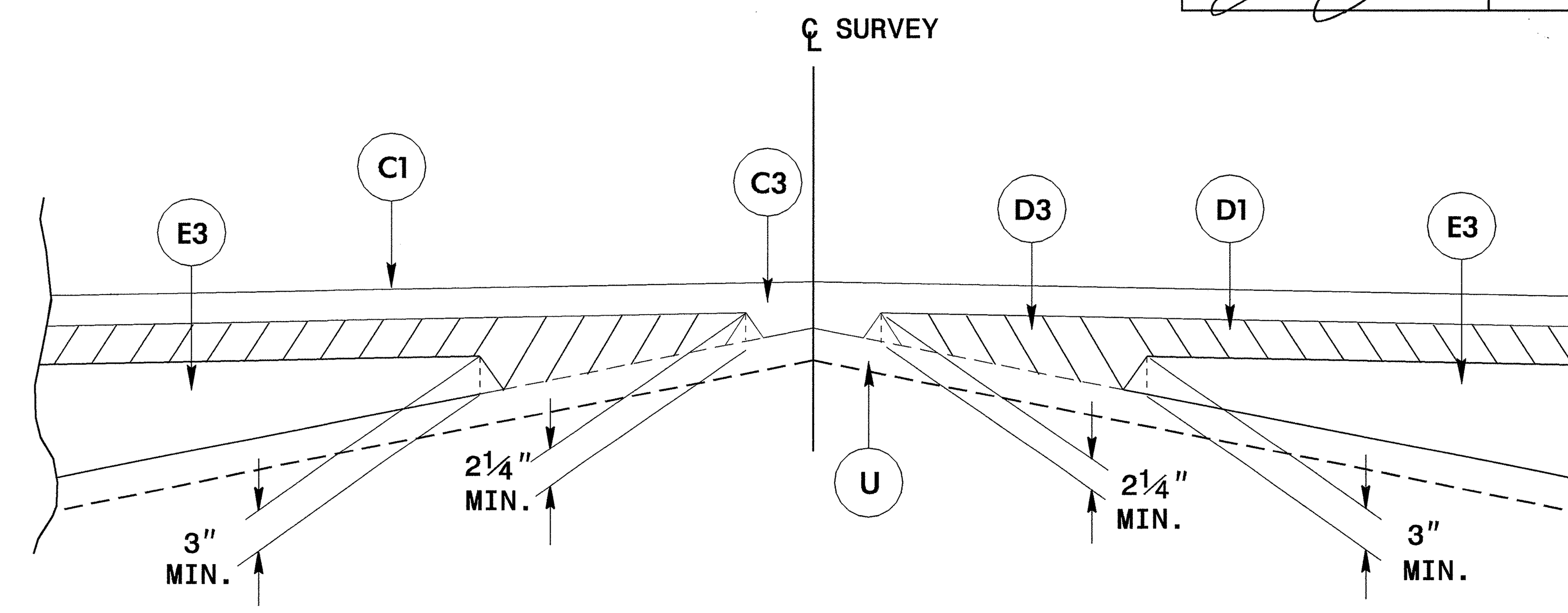
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-4012	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

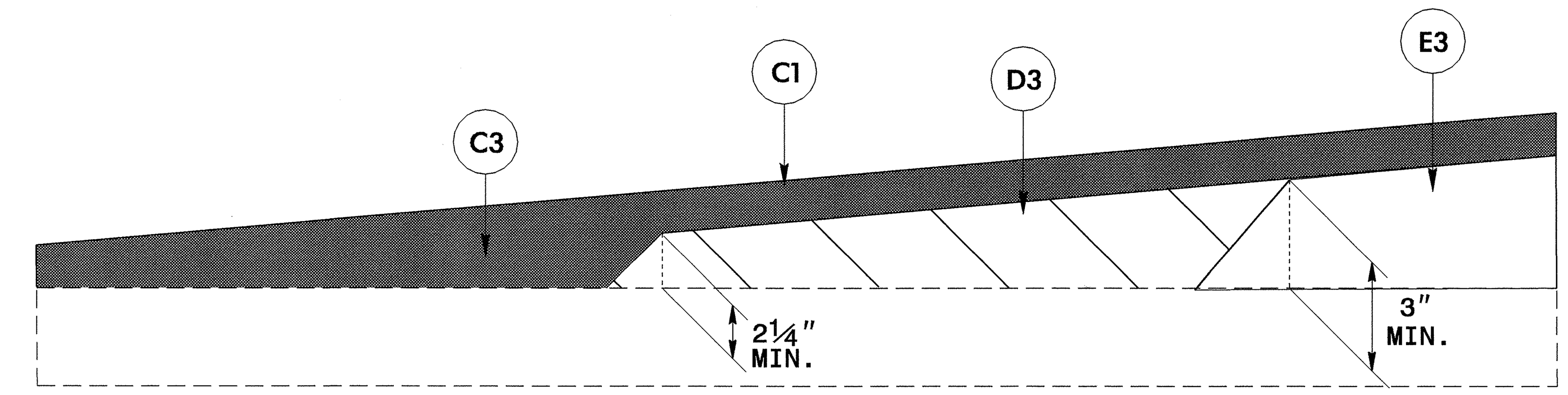


PAVEMENT SCHEDULE			
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	J1	PROP. 8" AGGREGATE BASE COURSE.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J2	PROP. 10" AGGREGATE BASE COURSE.
C3	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 1¼" IN DEPTH OR GREATER THAN 1½" IN DEPTH.	R1	2'-6" CONCRETE CURB AND GUTTER.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	R2	4' EXPRESSWAY GUTTER
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R3	5 " MONOLITHIC CONCRETE ISLAND.
D3	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 2¼" IN DEPTH OR GREATER THAN 4" IN DEPTH.	T	EARTH MATERIAL.
D4	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
E1	PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	V	MILLING BITUMINOUS PAVEMENT. 1½" DEPTH.
E2	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE STANDARD WEDGING DETAIL)
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN IN DEPTH OR GREATER THAN 5½" IN DEPTH.		
E4	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.		

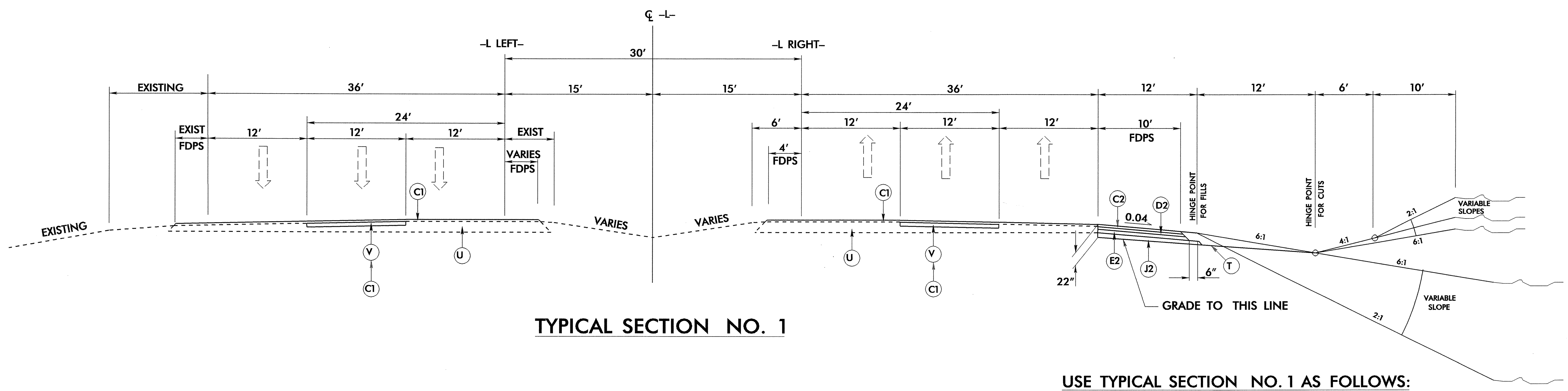
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



Detail Showing Method of Wedging



Wedging Detail For Resurfacing



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:

-L- STA. 24+93.00 TO -L- STA. 34+00.00 LT.
-L- STA. 24+93.00 TO -L- STA. 34+00.00 RT.

21-FEB-2005 14:18
R:\Proj\u4012_typ
BCKey AT RD206394

RD206394 Monday February 21 2005 u4012typ-2 BCKey rd-09oce34

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-4012	2-A

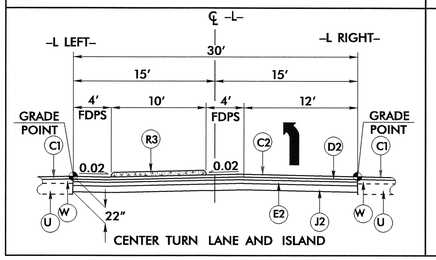
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY — 2-23-05

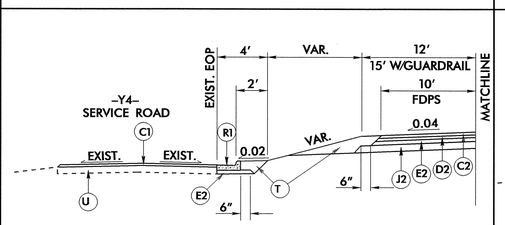
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER CHARLOTTE-CHI CHEN — 2/1/05

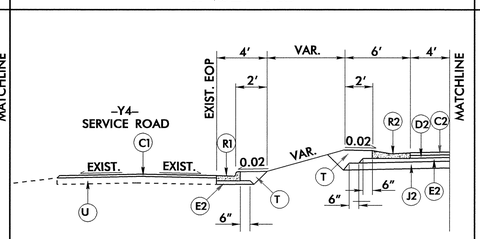
INSET A1



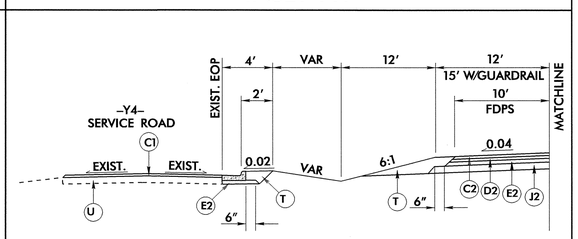
INSET A2

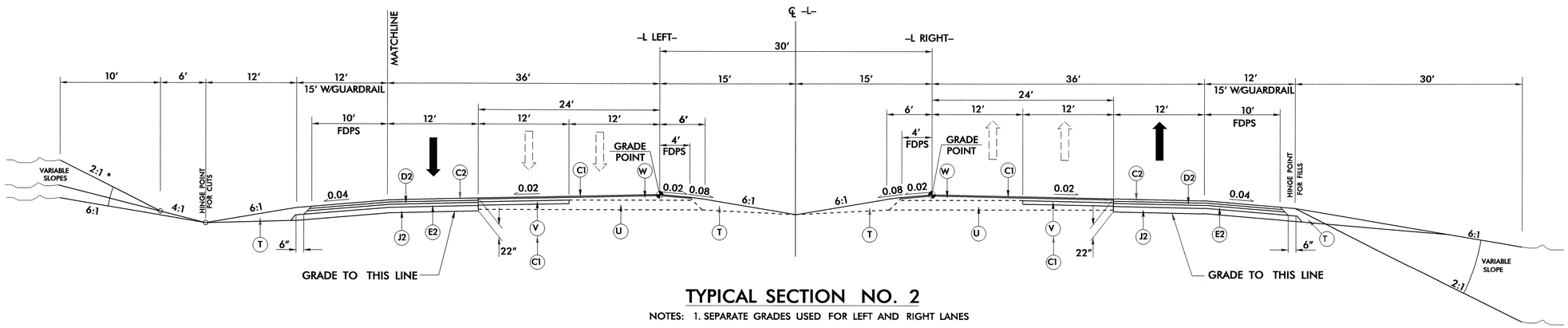


INSET A3



INSET A4





TYPICAL SECTION NO. 2

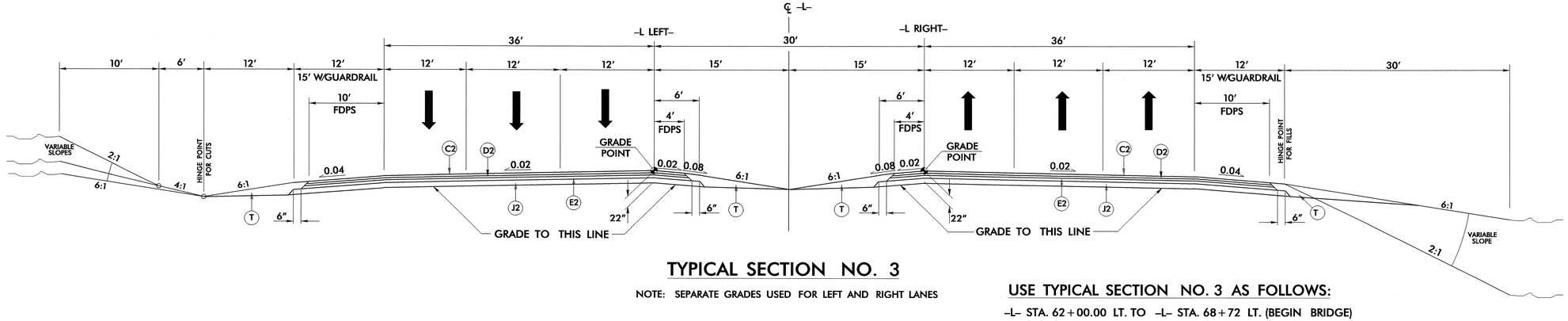
NOTES: 1. SEPARATE GRADES USED FOR LEFT AND RIGHT LANES

* 3:1 MAX BACK SLOPE –L– STA. 48+86 (RT) TO –L– STA. 59+35 (RT)

C1	1½" TYPE S9.5C
C2	3" TYPE S9.5C
C3	VAR. DEPTH S9.5C
D1	2½" TYPE I19.0C
D2	4" TYPE I19.0C
D3	VAR. DEPTH I19.0C
D4	3" TYPE I19.0C
E1	3" TYPE B25.0C
E2	5" TYPE B25.0C
E3	VAR. DEPTH B25.0C
E4	4" TYPE B25.0C
J1	8" ABC
J2	10" ABC
R1	2'-6" CURB & GUTTER
R2	4' EXPRESSWAY GUTTER
R3	5" ISLAND
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1½" MILLING
W	VAR. DEPTH PAVEMENT

USE TYPICAL SECTION NO. 2 AS FOLLOWS:

–L– STA. 34+00.00 TO –L– STA. 62+00.00 LT.
–L– STA. 34+00.00 TO –L– STA. 60+00.00 RT.
USE INSET A1 FROM –L– STA. 34+54 TO –L– STA. 39+27
USE INSET A1 FROM –L– STA. 39+27 TO –L– STA. 44+00 (MIRROR)
USE INSET A2 FROM –L– STA. 37+80 LT. TO –L– STA. 39+27 LT.
USE INSET A3 FROM –L– STA. 39+27 LT. TO –L– STA. 44+50 LT.
USE INSET A4 FROM –L– STA. 44+50 LT. TO –L– STA. 50+50 LT.
–L– STA. 77+00.00 LT. TO –L– STA. 86+30.00
–L– STA. 79+00.00 RT. TO –L– STA. 86+30.00
USE INSET A1 FROM –L– STA. 80+50 TO –L– STA. 86+30



TYPICAL SECTION NO. 3

NOTE: SEPARATE GRADES USED FOR LEFT AND RIGHT LANES

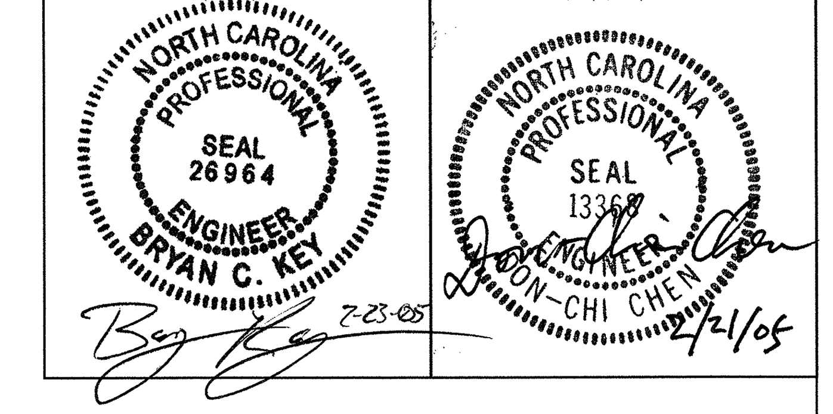
USE TYPICAL SECTION NO. 3 AS FOLLOWS:

–L– STA. 62+00.00 LT. TO –L– STA. 68+72 LT. (BEGIN BRIDGE)
–L– STA. 60+00.00 RT. TO –L– STA. 68+72 RT. (BEGIN BRIDGE)
–L– STA. 71+72 LT. (END BRIDGE) TO –L– STA. 77+00.00 LT.
–L– STA. 71+72 RT. (END BRIDGE) TO –L– STA. 79+00.00 RT.

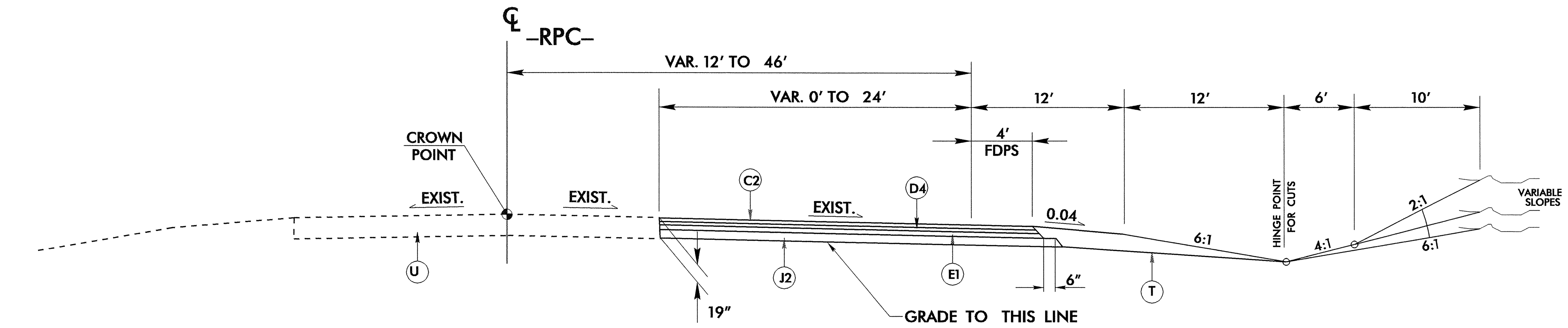
21-FEB-2005 14:18
R:\Proj\u4012\typ
BCKey A1 rd206394

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-4012	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



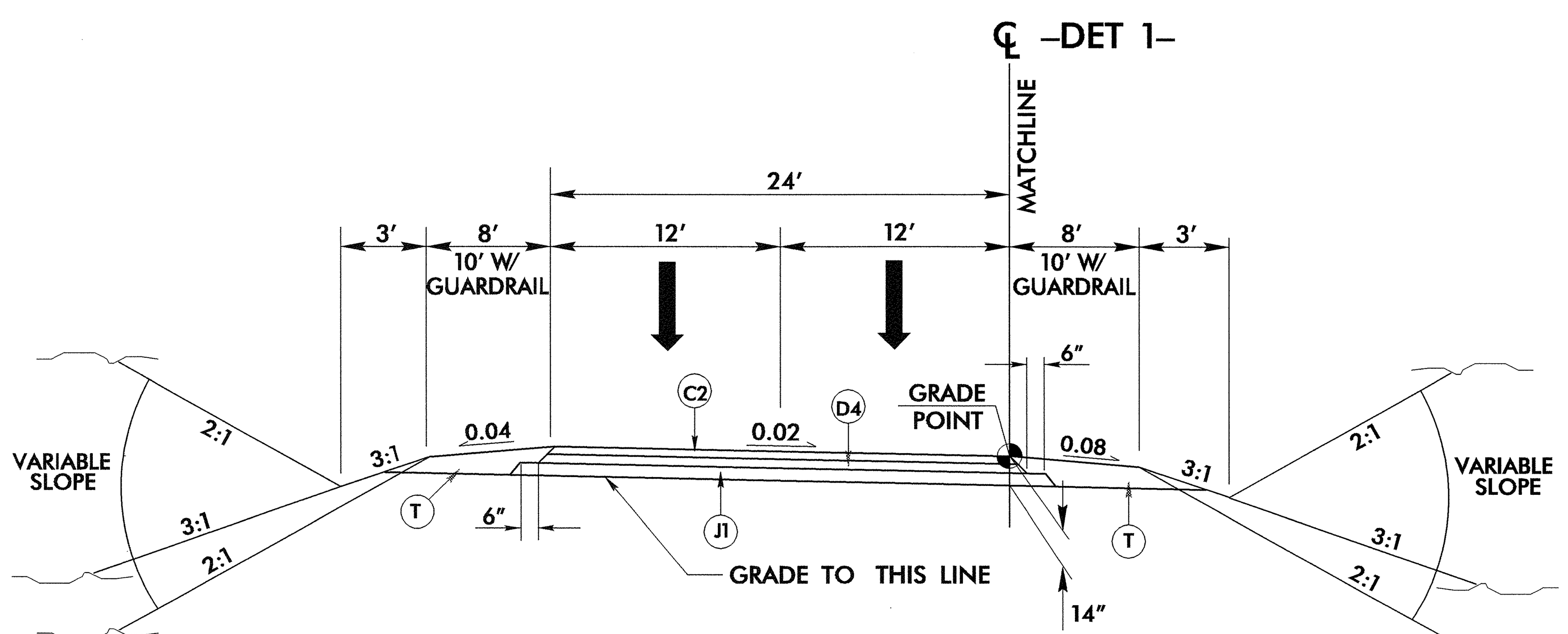
C1	1½" TYPE S9.5C
C2	3" TYPE S9.5C
C3	VAR. DEPTH S9.5C
D1	2½" TYPE I19.0C
D2	4" TYPE I19.0C
D3	VAR. DEPTH I19.0C
D4	3" TYPE I19.0C
E1	3" TYPE B25.0C
E2	5" TYPE B25.0C
E3	VAR. DEPTH B25.0C
E4	4" TYPE B25.0C
J1	8" ABC
J2	10" ABC
R1	2'-6" CURB & GUTTER
R2	4' EXPRESSWAY GUTTER
R3	5" ISLAND
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1½" MILLING
W	VAR. DEPTH PAVEMENT



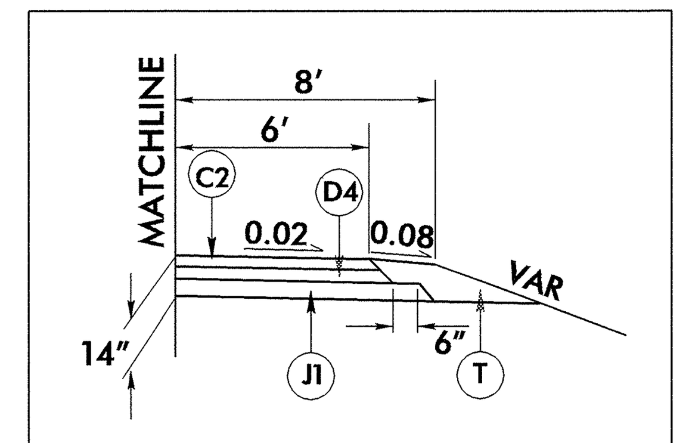
TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AS FOLLOWS:

-RPC- STA. 11+00.00 TO -RPC- STA. 21+08.80



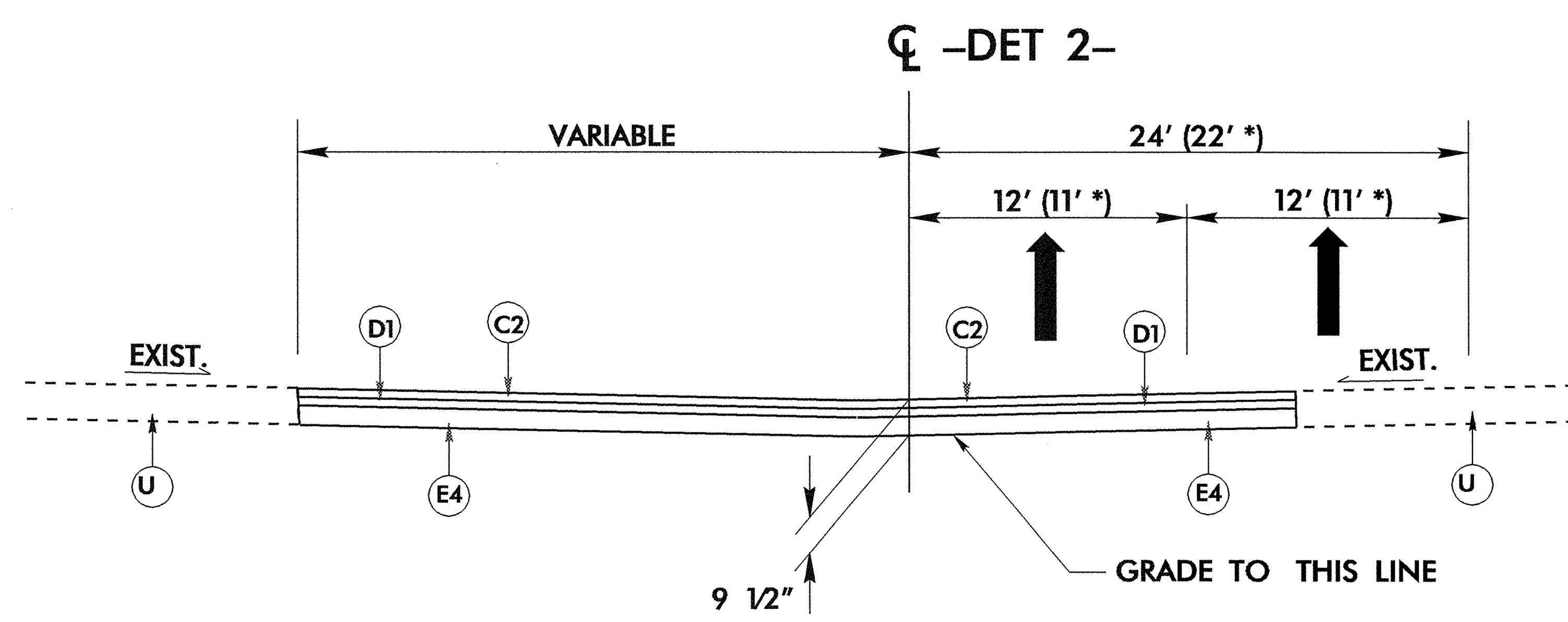
TYPICAL SECTION NO. 5



INSET B1

USE TYPICAL SECTION NO. 5 AS FOLLOWS:

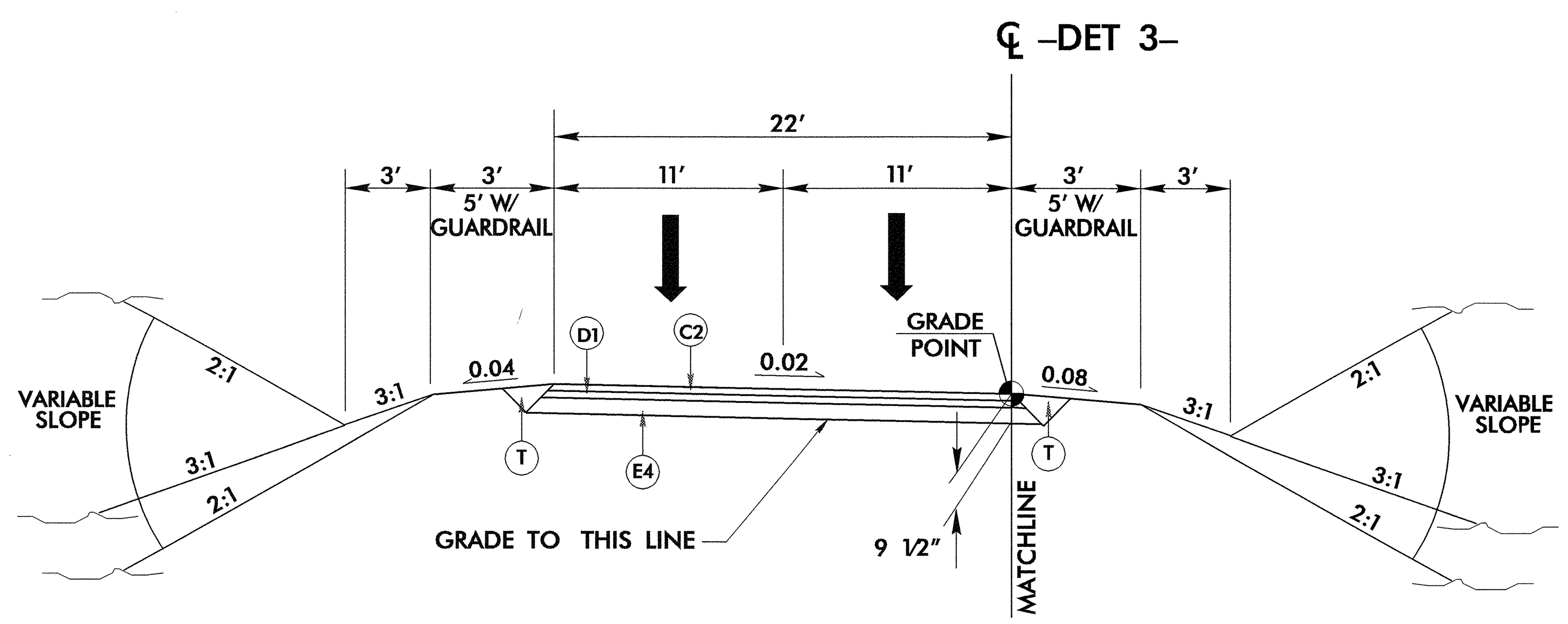
-DET1- STA. 12+88.37 TO -DET1- STA. 22+26.34 (BEGIN BRIDGE)
-DET1- STA. 23+76.40 (END BRIDGE) TO -DET1-STA. 30+07.03
USE INSET B1 FROM -DET1- STA. 27+92 TO -DET1- STA. 29+88 RT.



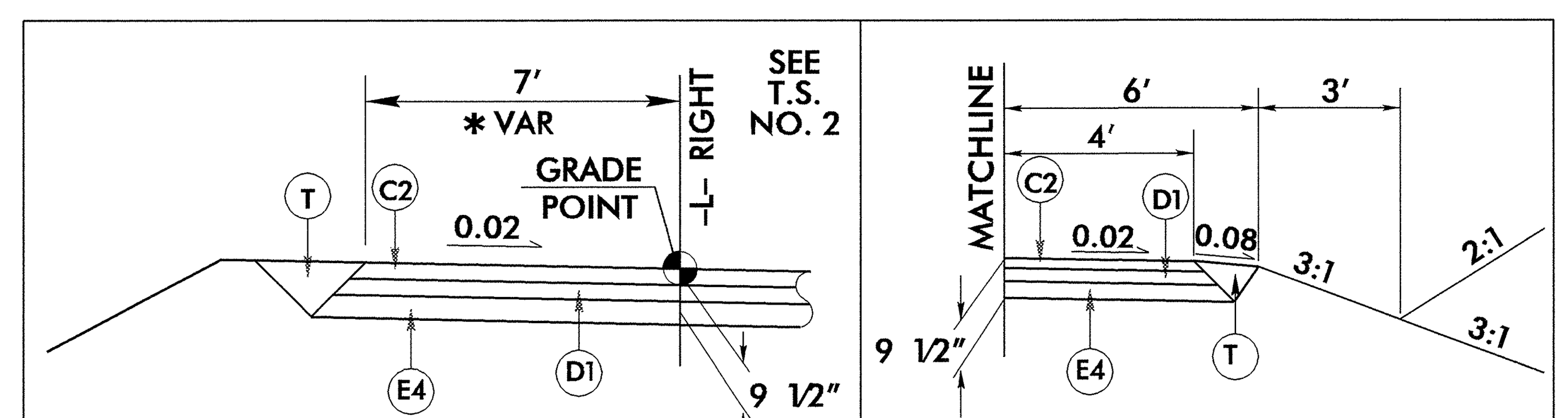
TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 AS FOLLOWS:

* -DET2- STA. 10+13.93 TO -DET2- STA. 16+07.78
-DET2- STA. 29+79.11 TO -DET2- STA. 34+14.39



TYPICAL SECTION NO. 7



INSET B2 | INSET B3

USE TYPICAL SECTION NO. 7 AS FOLLOWS:

-DET3- STA. 10+00.00 TO -DET3- STA. 13+30.52
*USE INSET B2 FROM -DET3- STA. 13+30.52 TO -DET3- STA. 15+71.65 LT.
USE INSET B2 FROM -DET3- STA. 15+71.65 TO -DET3- STA. 29+94.63 LT.
*USE INSET B2 FROM -DET3- STA. 29+94.63 TO -DET3- STA. 32+65.24 LT.
-DET3- STA. 32+65.24 TO -DET3- STA. 35+81.55
USE INSET B3 FROM -DET3- STA. 33+28 TO -DET3- STA. 35+36 RT.

18-JAN-2005 08:10
R:\Proj\u4012.typ
TCovington AT

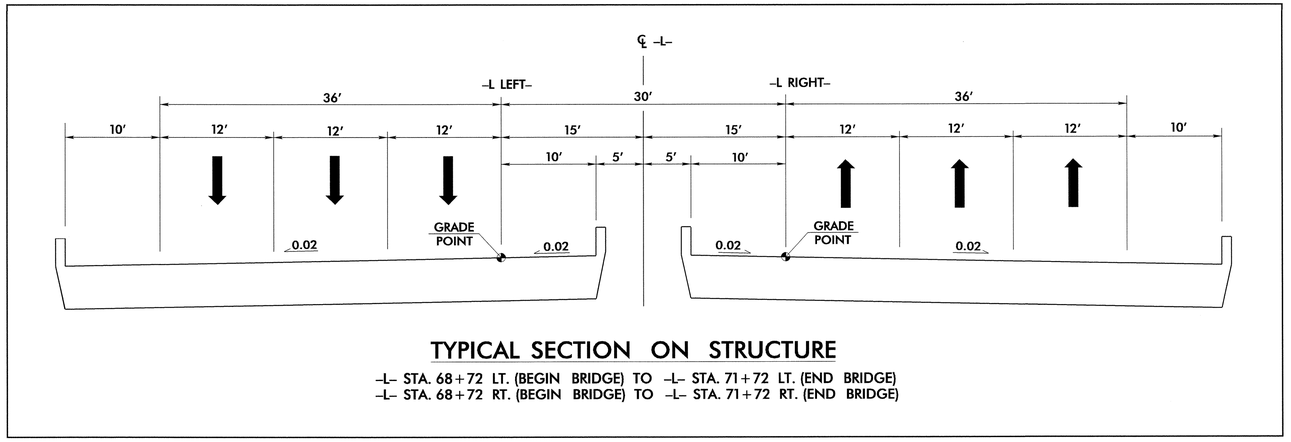
RD187108 Tuesday January 18 2005 u4012.m TCovington rd-09oce34

PROJECT REFERENCE NO.	SHEET NO.
U-4012	2-C

ROADWAY DESIGN ENGINEER

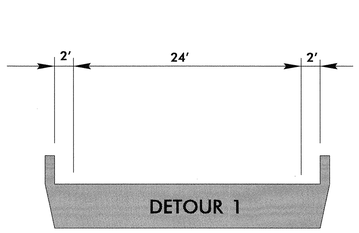
NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY

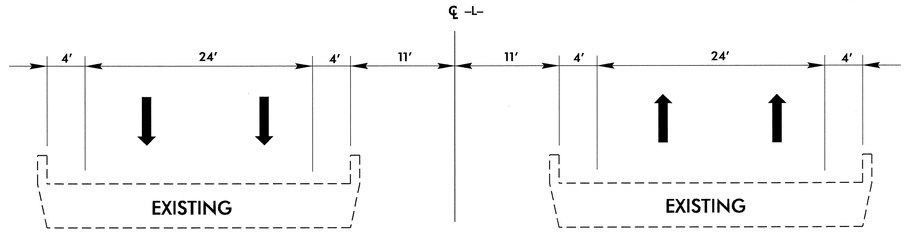
3-2-05

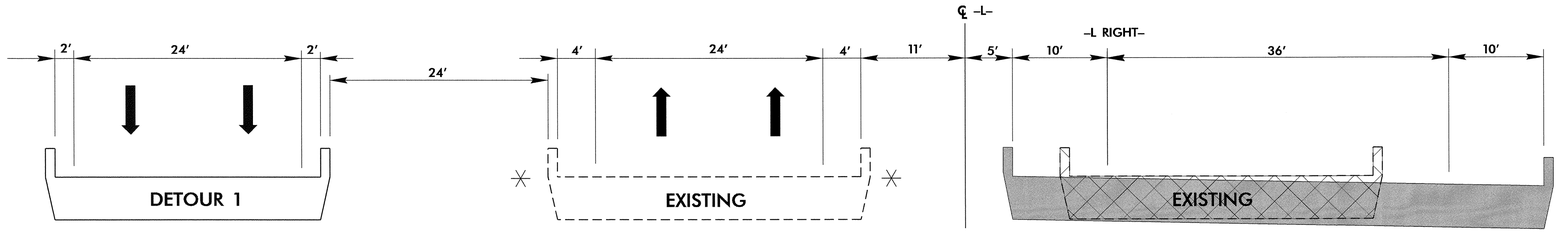


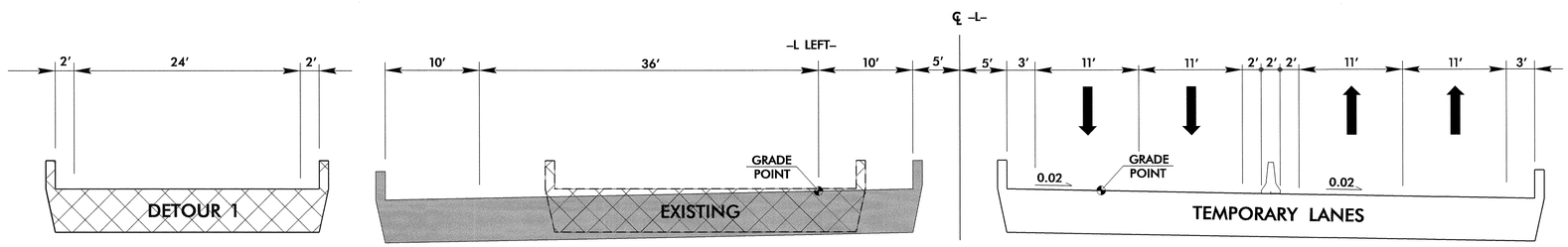
TYPICAL SECTION ON STRUCTURE

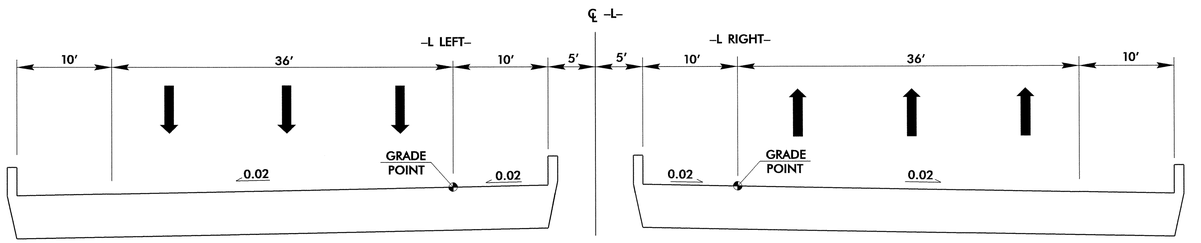
–L– STA. 68+72 LT. (BEGIN BRIDGE) TO –L– STA. 71+72 LT. (END BRIDGE)
–L– STA. 68+72 RT. (BEGIN BRIDGE) TO –L– STA. 71+72 RT. (END BRIDGE)











BRIDGE CONSTRUCTION STAGING

LEGEND

UNDER CONSTRUCTION

BRIDGE REMOVAL

SEE SHEETS S–1 THRU S–75

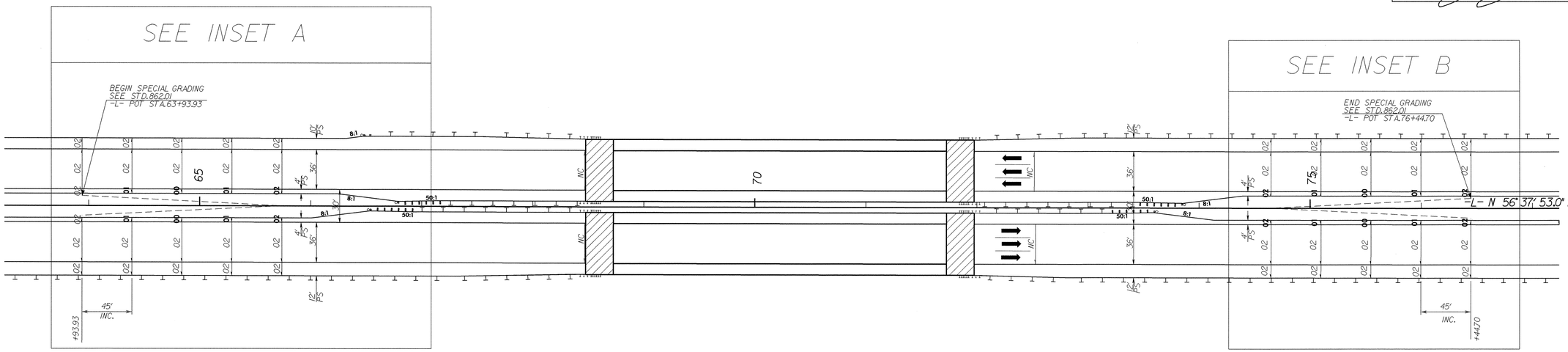
SPECIAL SHOULDER SLOPE GRADING DETAIL

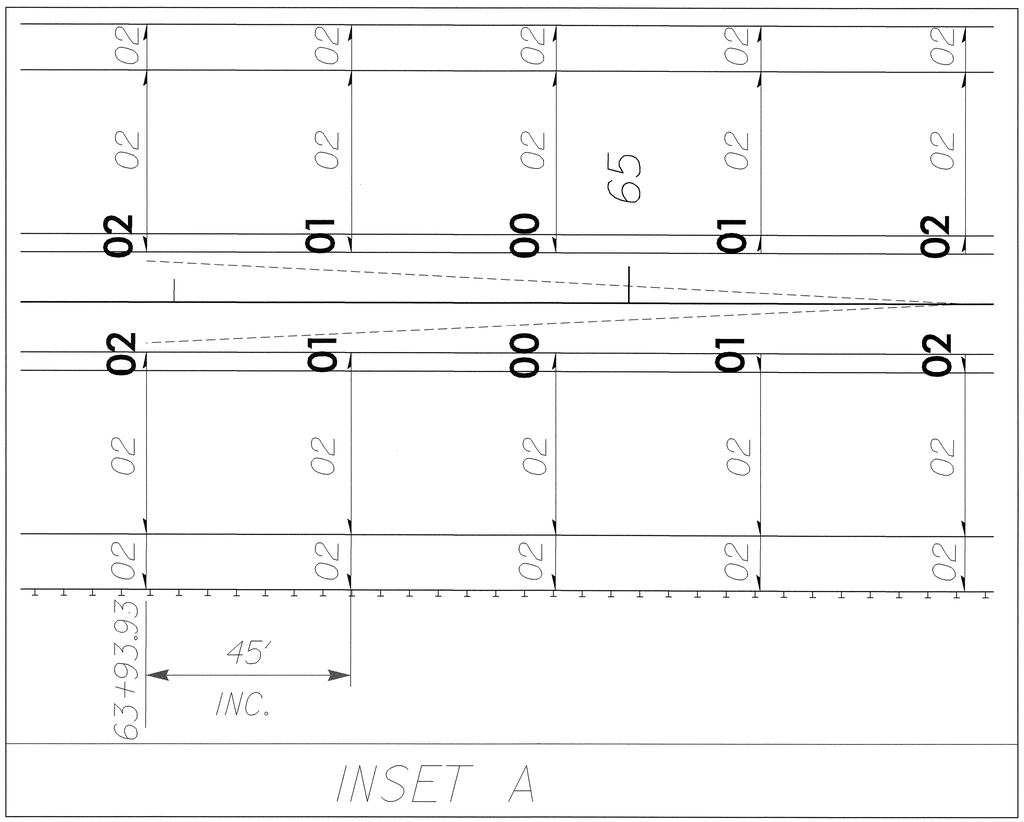
PROJECT REFERENCE NO.	SHEET NO.
U-4012	2-D
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

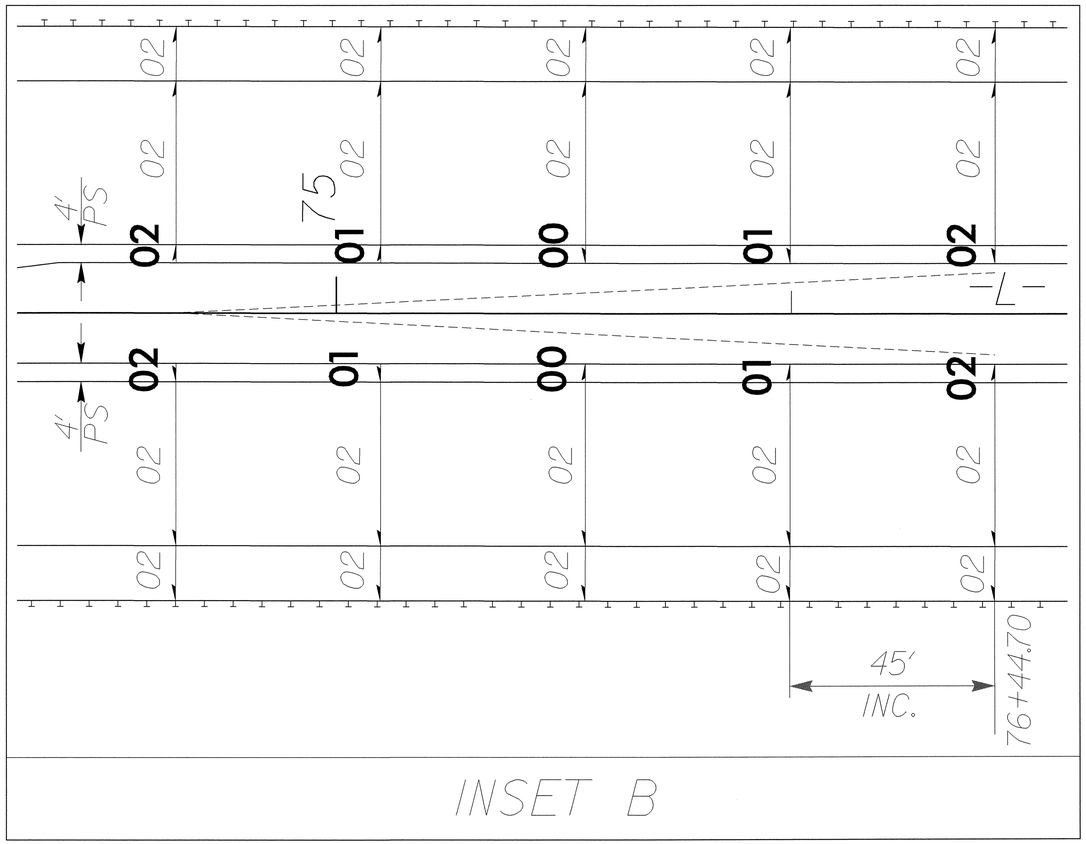
NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY

7-23-05





INSET A



INSET B

REVISIONS

8/17/99

R:\Proj\u4012super-det.dgn

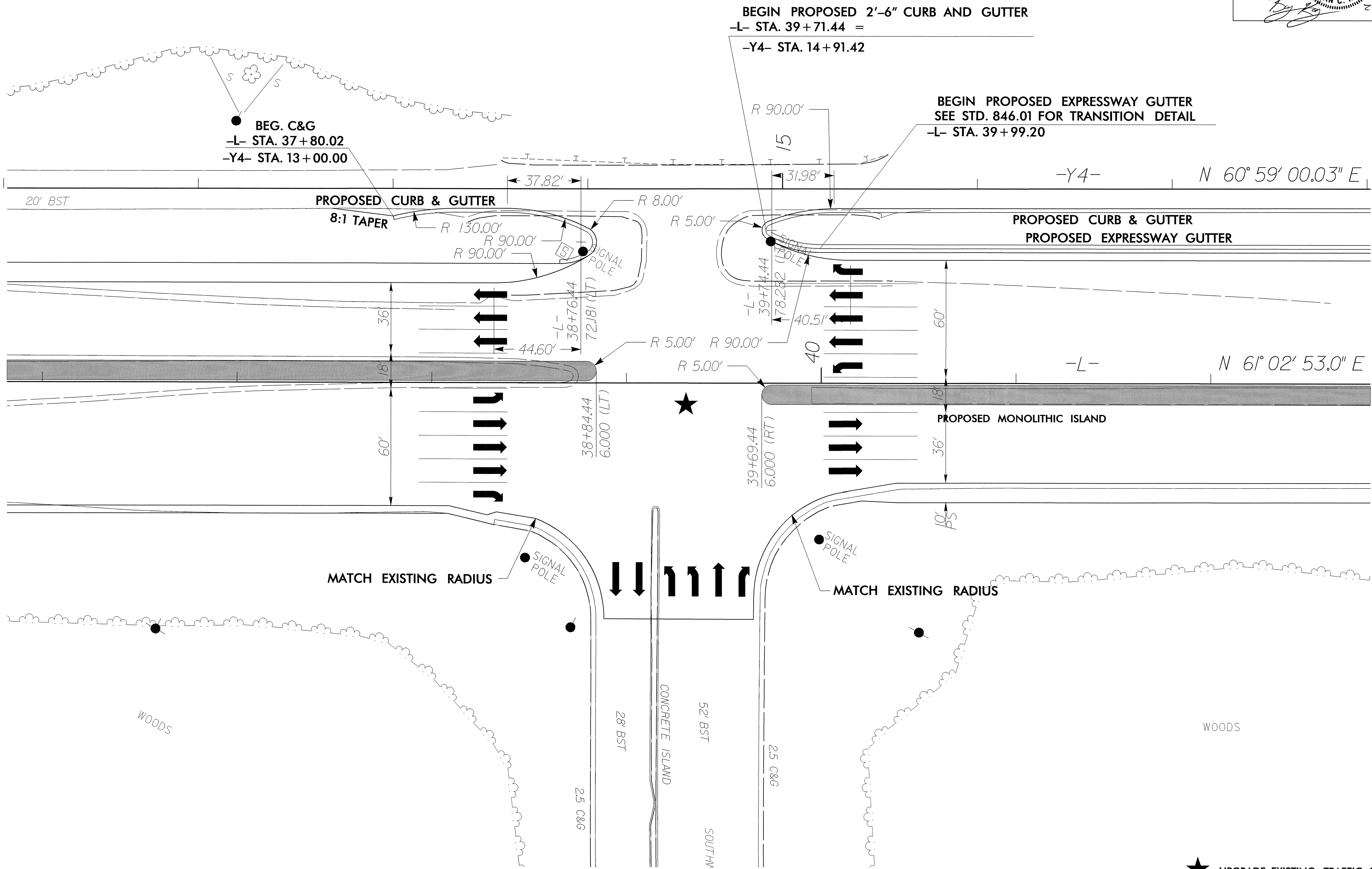
22-FEB-2005 08:36
BCKey &T RD223183

RD223183 Tuesday February 22 2005 u4012typ-2d BCKey rd-09oce34

SPECIAL INTERSECTION DETAIL

PROJECT REFERENCE NO.	SHEET NO.
U-4012	2-E
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY
2-23-05



BEGIN PROPOSED 2'-6" CURB AND GUTTER
-L- STA. 39+71.44 =
-Y4- STA. 14+91.42
BEGIN PROPOSED EXPRESSWAY GUTTER
SEE STD. 846.01 FOR TRANSITION DETAIL
-L- STA. 39+99.20
BEG. C&G
-L- STA. 37+80.02
-Y4- STA. 13+00.00
PROPOSED CURB & GUTTER
8:1 TAPER
20' BST
R 130.00'
R 90.00'
R 90.00'
R 8.00'
R 5.00'
R 90.00'
37.82'
31.98'
15
-Y4-
N 60° 59' 00.03" E
PROPOSED CURB & GUTTER
PROPOSED EXPRESSWAY GUTTER
SIGNAL POLE
SIGNAL POLE
-L- 38+76.44 72.181 (LT)
-L- 39+74.44 78.282 (LT)
40.51'
44.60'
R 5.00'
R 90.00'
R 5.00'
40
36'
18'
60'
60'
18'
36'
-L-
N 61° 02' 53.0" E
PROPOSED MONOLITHIC ISLAND
38+84.44 6.000 (LT)
39+69.44 6.000 (RT)
10' PS
MATCH EXISTING RADIUS
SIGNAL POLE
SIGNAL POLE
MATCH EXISTING RADIUS
WOODS
WOODS
28' BST
CONCRETE ISLAND
52' BST
2.5 C&G
2.5 C&G
SOUTH
UPGRADE EXISTING TRAFFIC SIGNAL

REVISIONS

8/17/99

22-FEB-2005 08:36
R:\Proj\U4012_rd_interdet.dgn
BCKey AT RD223183

RD223183 Tuesday February 22 2005 u4012typ-2e BCKey rd-09oce34

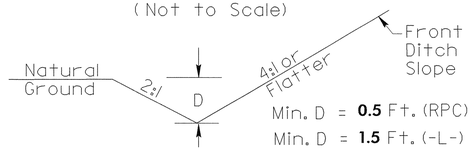
7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-4012	2-F
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN
2-23-05

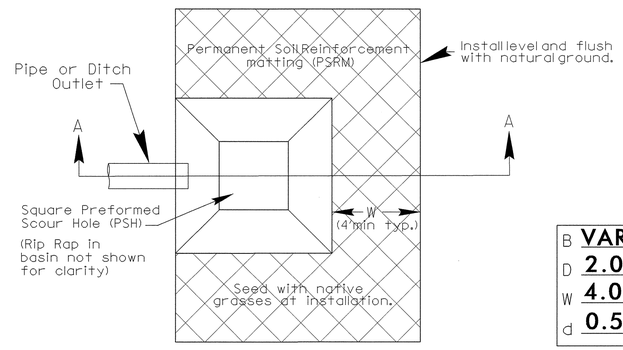
DETAIL "A"
SPECIAL CUT DITCH
(Not to Scale)



-L- STA 41+95 TO 43+50 RT
RPC STA 13+50 TO 17+15 RT

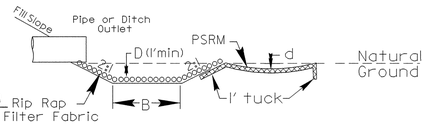
DETAIL "B"
PREFORMED SCOUR HOLE

PLAN VIEW



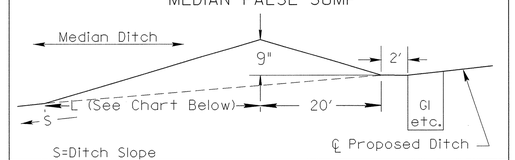
B	VAR
D	2.0'
W	4.0'
d	0.5'

SECTION A-A



-L- STA 67+80 RT
-L- STA 68+51 LT
-L- STA 72+70 RT
-L- STA 72+87 LT
-L- STA 76+61 RT
-L- STA 78+66 LT

DETAIL
MEDIAN FALSE SUMP

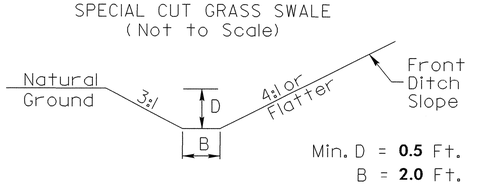


S=Ditch Slope

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'

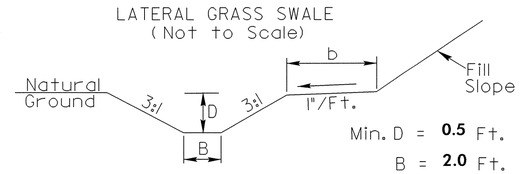
-L- CENTERLINE

DETAIL "C"
SPECIAL CUT GRASS SWALE
(Not to Scale)



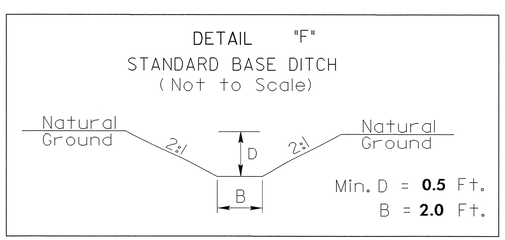
-L- STA 78+85 TO 81+50 RT

DETAIL "D"
LATERAL GRASS SWALE
(Not to Scale)



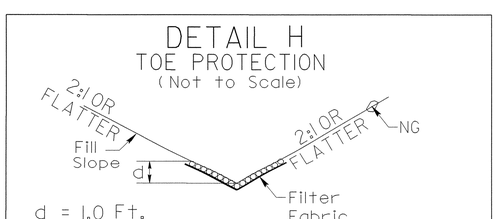
-L- STA 79+00 TO 81+50 LT

DETAIL "F"
STANDARD BASE DITCH
(Not to Scale)



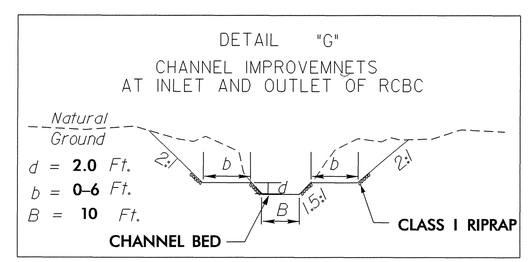
STA 41+48 TO 41+62 -L- RT

DETAIL H
TOE PROTECTION
(Not to Scale)



-L- STA 28+00 TO 29+00 RT

DETAIL "G"
CHANNEL IMPROVEMNETS
AT INLET AND OUTLET OF RCBC



-L- STA 77+89 LT/RT

21-JAN-2005 16:35
R:\Proj\u4012\typ2f.dgn
Jennifer evans AT RD196588

PROJECT REFERENCE NO.	SHEET NO.
U-4012	2-G

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

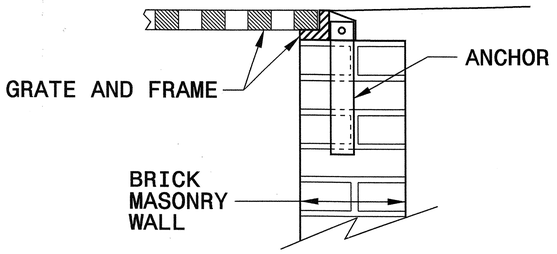
ENGLISH DETAIL DRAWING FOR

ANCHORAGE FOR FRAMES

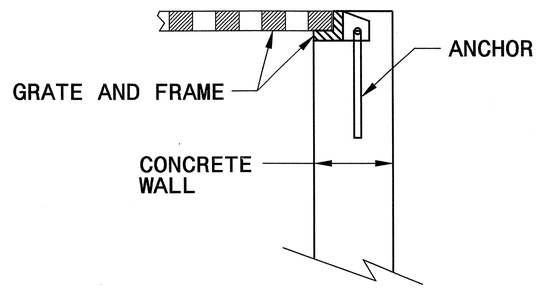
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1

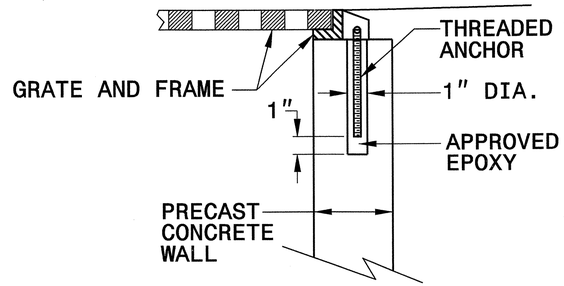
840D25



BRICK MASONRY CONSTRUCTION



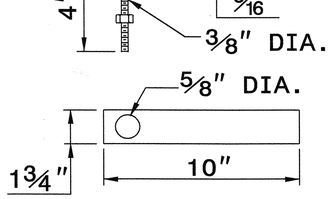
CONCRETE CONSTRUCTION



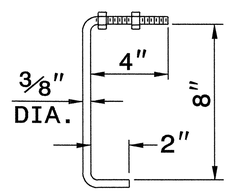
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

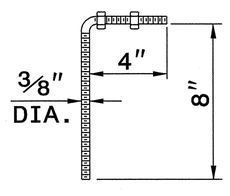
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



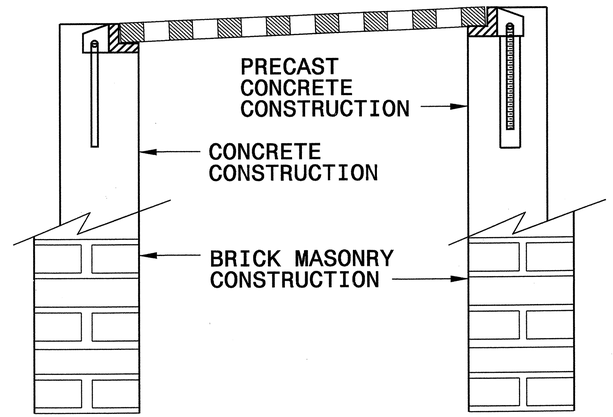
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

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

ENGLISH DETAIL DRAWING FOR

ANCHORAGE FOR FRAMES

BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1

840D25

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

SEE PLATE FOR TITLE

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

01-MAR-2007 09:04
s:\contracts\contracts\special details\ericward\stds\06' stds to special details\84025 anchorage for frames\0840d25.dgn
jhowerton AI PS212260

PROJECT REFERENCE NO.	SHEET NO.
U-4012	2-H

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

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

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

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

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

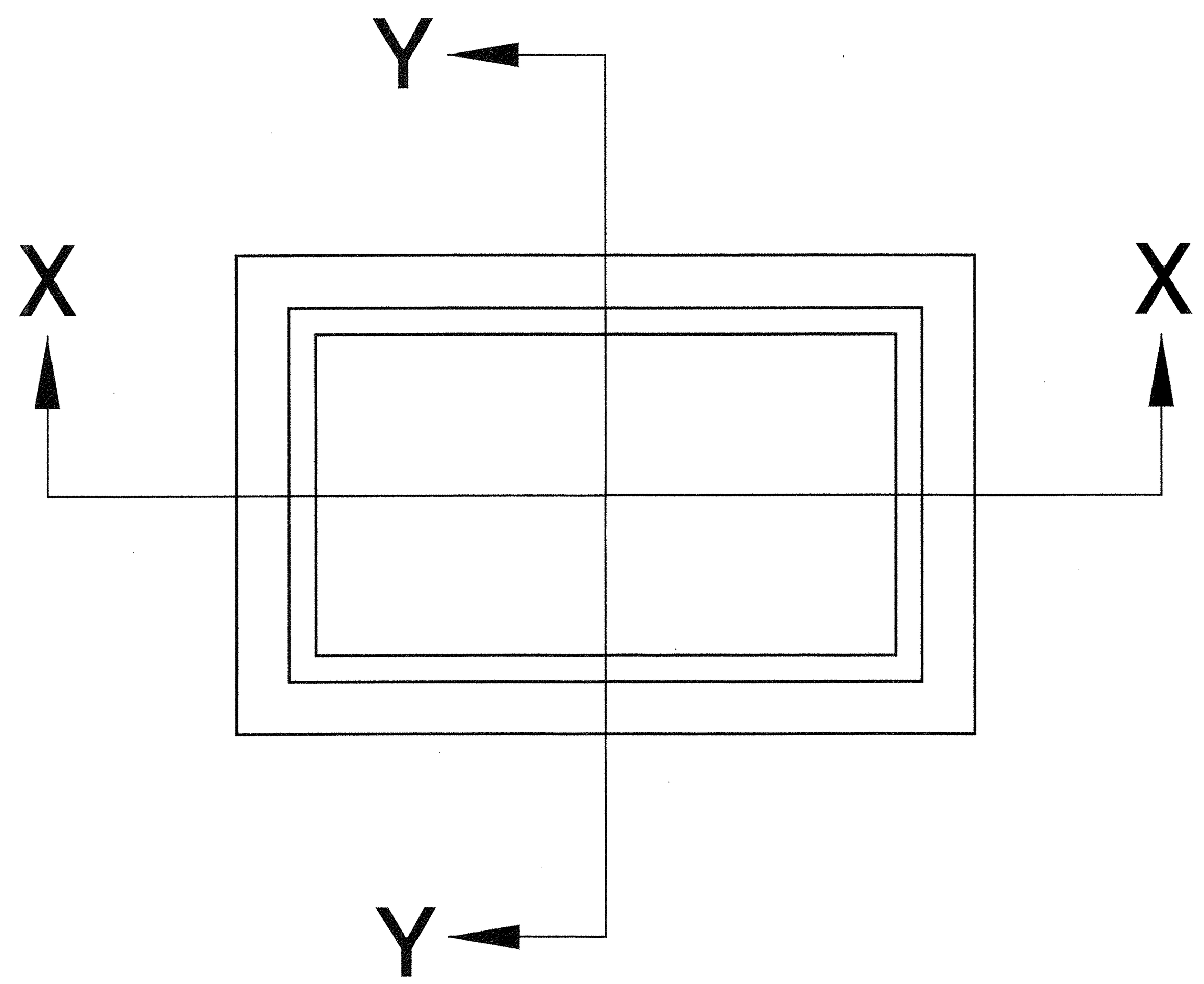
#4 BAR DOWELS "B" AT 12″ CENTERS.

MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.

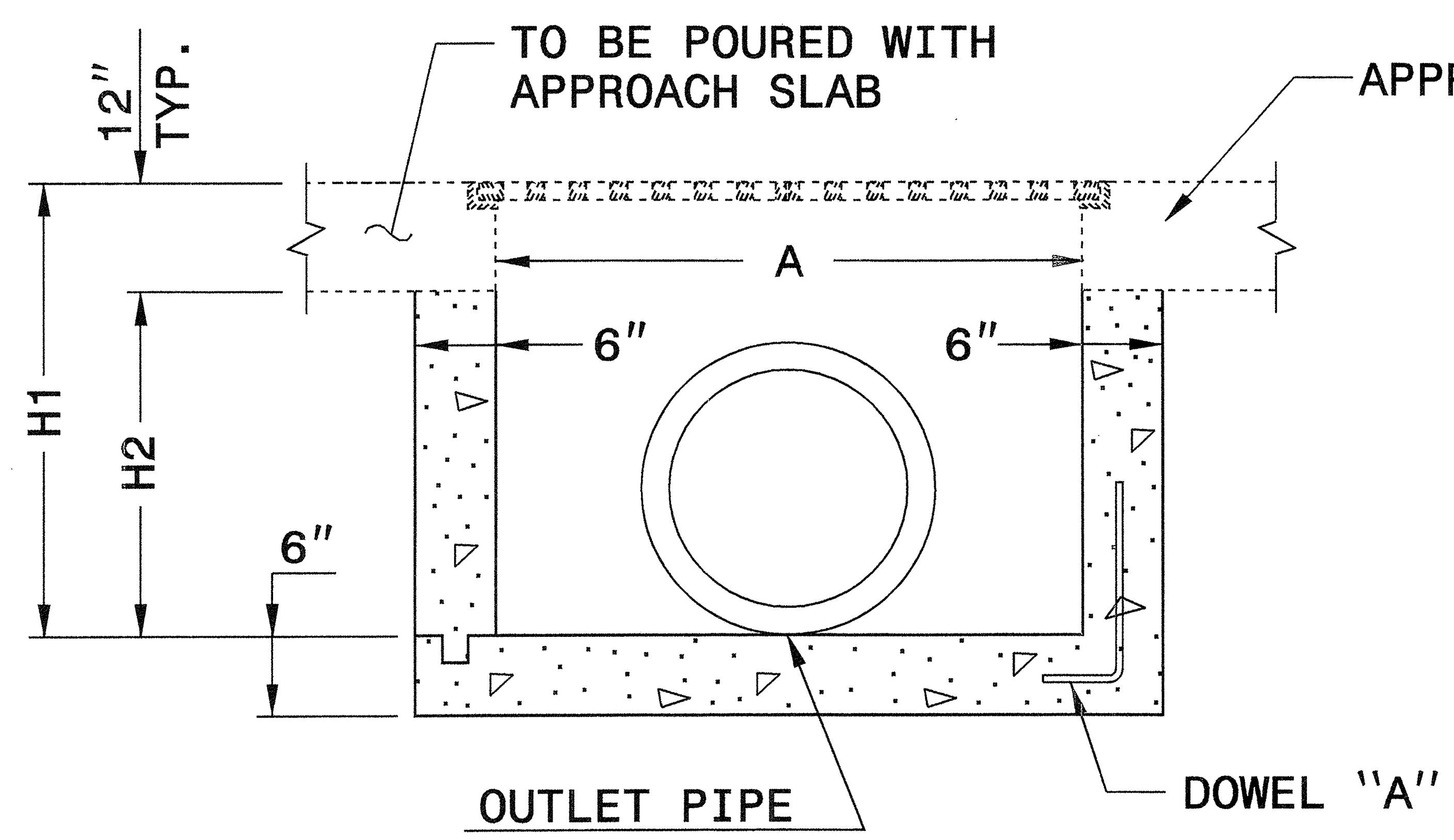
FOR LOCATIONS OF DROP INLET, SEE BRIDGE APPROACH SLABS IN THE STRUCTURE PLANS.

CONSTRUCT WITH PIPE CROWNS MATCHING.

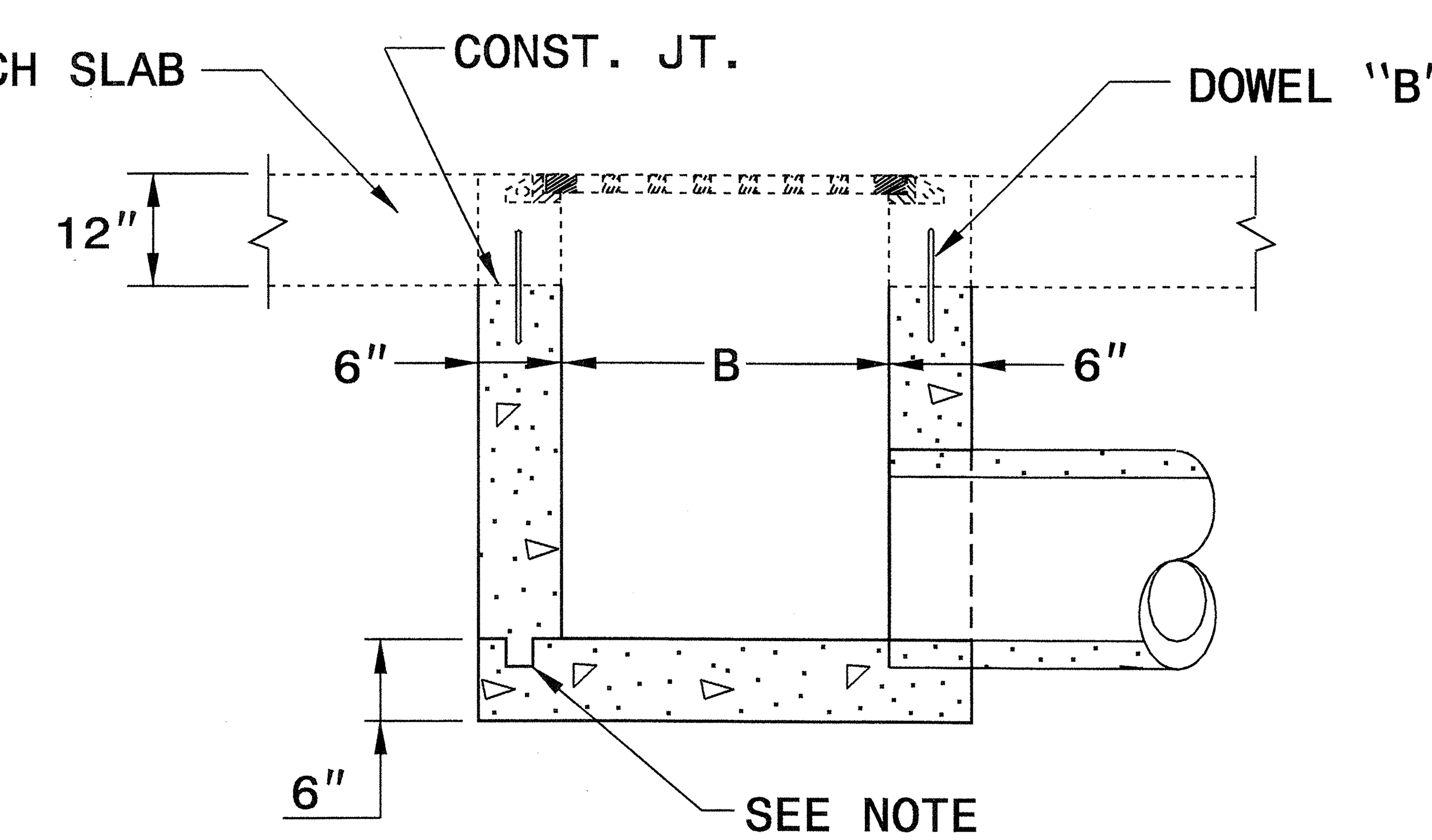
DRAWING NOT TO SCALE.



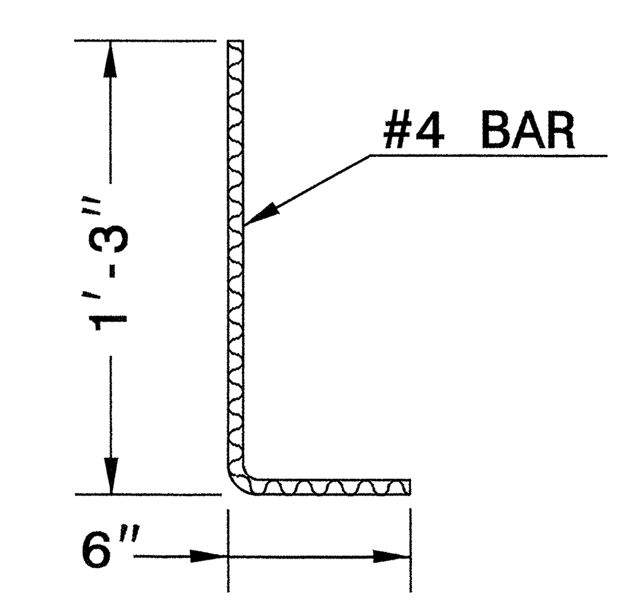
PLAN



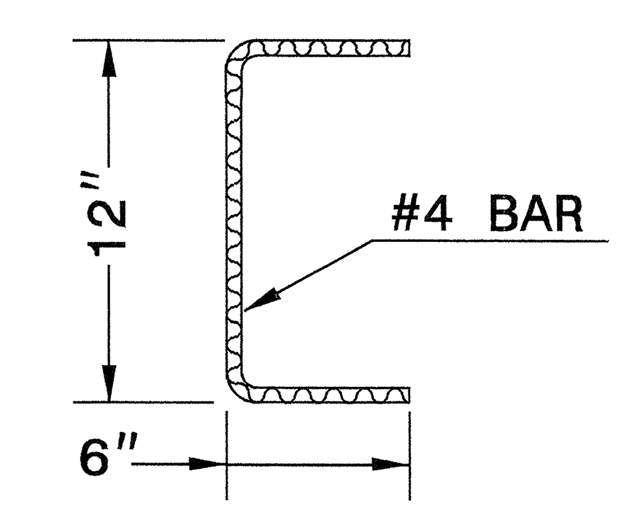
SECTION X-X



SECTION Y-Y



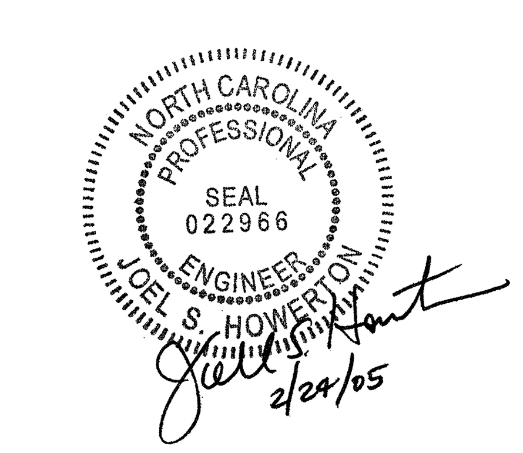
DOWEL "A"



DOWEL "B"

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE DROP INLET

PIPE	SPAN	WIDTH	HEIGHT	HEIGHT	CUBIC YARDS OF CONCRETE IN BOX				DEDUCTIONS FOR ONE PIPE	
D	A	B	H1	H2	BOTTOM SLAB	H PER FT. HT.	H MIN. TOTAL	TOTAL	C.S.	R.C.
12″	3′-8″	2′-0″	2′-6″	1′-6″	0.259	0.247	0.597	0.856	0.020	0.032
15″	3′-8″	2′-0″	2′-9″	1′-9″	0.259	0.247	0.659	0.918	0.023	0.036
18″	3′-8″	2′-0″	3′-0″	2′-0″	0.259	0.247	0.720	0.979	0.033	0.049
24″	3′-8″	2′-0″	3′-6″	2′-6″	0.259	0.247	0.865	1.124	0.059	0.085



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

DETAIL FOR CONCRETE BRIDGE APPROACH DROP INLET

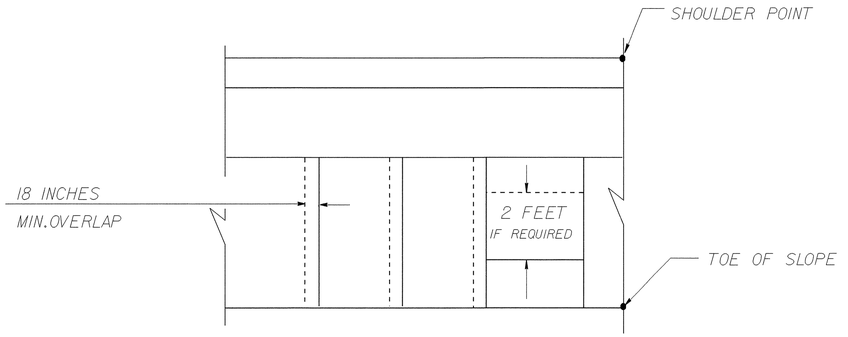
ORIGINAL BY: T.Spell DATE: 04-07-04
MODIFIED BY: DATE:
CHECKED BY: C.B.Perry DATE: 4-13-04
FILE SPEC.: stds/02stdstddetails/english/840d13.dgn

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-4012	2-I

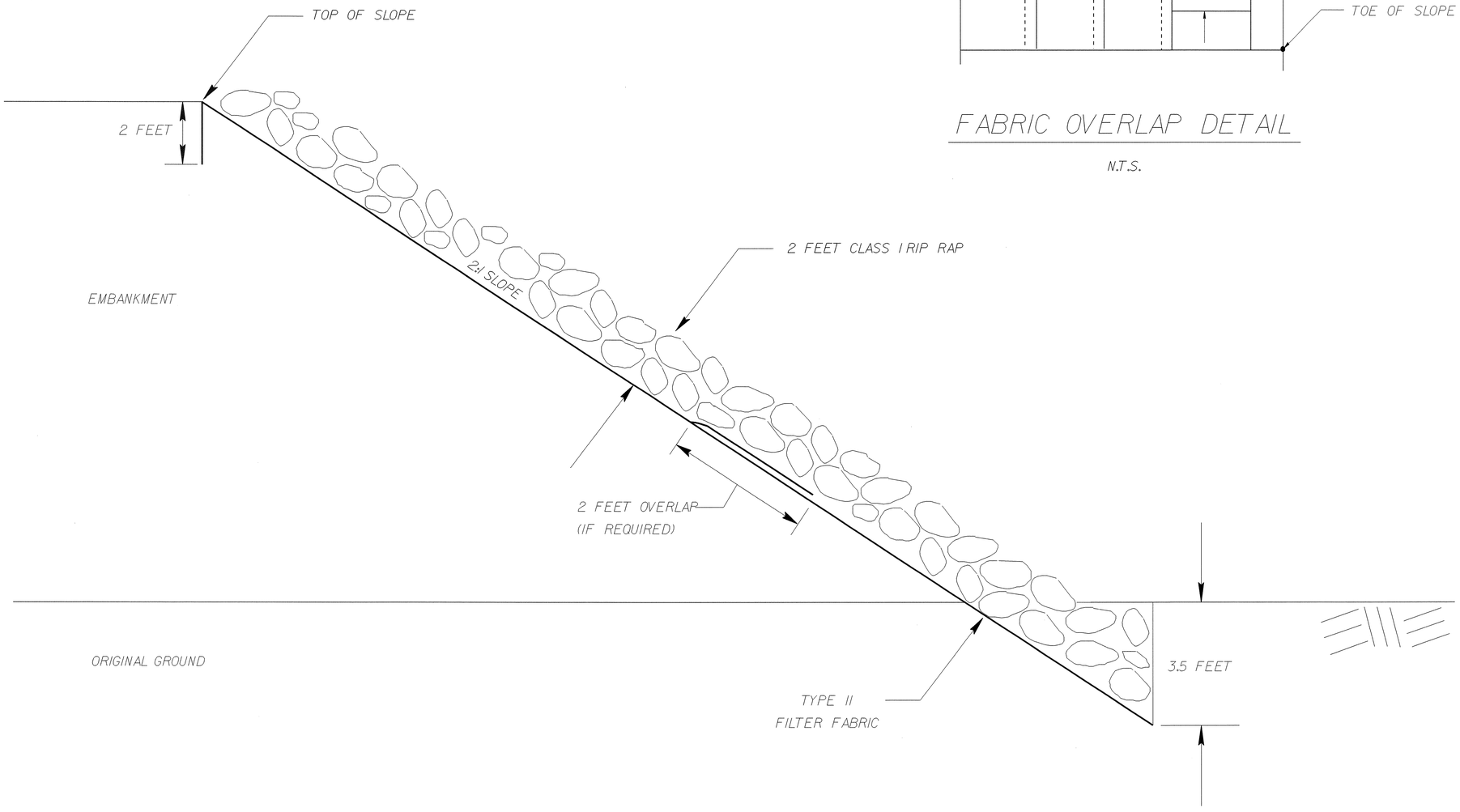
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028669 ENGINEER RICHARD SCOTT



FABRIC OVERLAP DETAIL

N.T.S.



SLOPE REPAIR DETAIL

N.T.S.

18-FEB-2005 09:28
BCKey J:\4012_Slope_Repair.dgn
BCKey A1

PROJECT U-4012
DURHAM COUNTY
STATION

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE REPAIR DETAIL

DRAWN BY RSW DATE 7/03
CHECKED BY NS DATE 7/03

RD223183 Friday February 18 2005 u4012-2q BCKey rd-09oce34

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-4012/U-4009/B-3450	3(1 of 2)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201487

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000700000-N	SP	Lump Sum		FIELD OFFICE
0000960000-E	SP	250	SY	GENERIC MISCELLANEOUS ITEM SLOPE REPAIR
0001000000-E	200	Lump Sum		CLEARING & GRUBBING .. ACRE(S)
0008000000-E	200	1	ACR	SUPPLEMENTARY CLEARING & GRUB- BING
0015000000-N	205	3	EA	SEALING ABANDONED WELLS
0022000000-E	225	39,200	CY	UNCLASSIFIED EXCAVATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ************ (70+22.00-L- LT)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ************ (70+22.00-L- RT)
0036000000-E	225	4,900	CY	UNDERCUT EXCAVATION
0080000000-E	SP	1,075	TON	CLASS IV SUBGRADE STABILIZA- TION
0106000000-E	230	105,800	CY	BORROW EXCAVATION
0134000000-E	240	1,400	CY	DRAINAGE DITCH EXCAVATION
0156000000-E	250	19,830	SY	REMOVAL OF EXISTING ASPHALT PAVEMENT
0177000000-E	250	5,890	SY	BREAKING OF EXISTING ASPHALT PAVEMENT
0195000000-E	265	4,100	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	4,500	SY	FABRIC FOR SOIL STABILIZATION
0199000000-E	SP	360	SF	TEMPORARY SHORING
0318000000-E	300	945	TON	FOUNDATION CONDITIONING MATE- RIAL, MINOR STRS
0576000000-E	310	240	LF	**" CS PIPE CULVERTS, *****" THICK (72", 0.138")
0582000000-E	310	224	LF	15" CS PIPE CULVERTS, 0.064" THICK
0654000000-E	310	80	LF	***" X ***" CS PIPE ARCH CUL- VERTS, *****" THICK (142" X 91", 0.138")
0708000000-E	310	584	LF	15" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
0714000000-E	310	288	LF	18" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
0720000000-E	310	92	LF	24" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
0806000000-E	310	16	EA	15" BIT COAT CS PIPE ELBOWS, TYPE B 0.064" THICK
0807000000-E	310	2	EA	18" BIT COAT CS PIPE ELBOWS, T YPE B 0.064" THICK
0808000000-E	310	2	EA	24" BIT COAT CS PIPE ELBOWS, T YPE B 0.064" THICK
0995000000-E	340	2,150	LF	PIPE REMOVAL
1011000000-N	500	Lump Sum		FINE GRADING
1110000000-E	510	500	TON	STABILIZER AGGREGATE
1121000000-E	520	29,620	TON	AGGREGATE BASE COURSE
1220000000-E	545	235	TON	INCIDENTAL STONE BASE
1297000000-E	607	13,520	SY	MILLING ASPHALT PAVEMENT, ***" DEPTH (1-1/2")
1297000000-E	607	180	SY	MILLING ASPHALT PAVEMENT, ***" DEPTH (1-1/4")
1308000000-E	607	3,820	SY	MILLING ASPHALT PAVEMENT, ***" TO ******" DEPTH (0" TO 3-1/2")
1330000000-E	607	500	SY	INCIDENTAL MILLING
1489000000-E	610	3,340	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1491000000-E	610	14,730	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
1498000000-E	610	3,970	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1503000000-E	610	14,780	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1519000000-E	610	3,390	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1523000000-E	610	14,860	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1560000000-E	620	1,883	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1565000000-E	620	966	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 70-22

ItemNumber	Sec #	Quantity	Unit	Description
1693000000-E	654	140	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2000000000-N	806	23	EA	RIGHT OF WAY MARKERS
2022000000-E	815	306	CY	SUBDRAIN EXCAVATION
2033000000-E	815	230	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	1,350	LF	6" PERFORATED SUBDRAIN PIPE
2055000000-E	815	39	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	2	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-E	815	12	LF	6" OUTLET PIPE (SUBDRAINS)
2190000000-N	828	4	EA	TEMPORARY STEEL PLATE COVERS FOR MASONRY DRAINAGE STRUCTURE
2253000000-E	840	3.553	CY	PIPE COLLARS
2264000000-E	840	1.18	CY	PIPE PLUGS
2286000000-N	840	107	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	18.86	LF	MASONRY DRAINAGE STRUCTURES
2352000000-N	840	17	EA	FRAME WITH GRATE, STD 840.**** (840.16)
2366000000-N	840	13	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	25	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	8	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	14	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	21	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	7	EA	FRAME WITH COVER, STD 840.54
2418000000-E	SP	26	LF	FRAME WITH GRATES, DRIVEWAY DROP INLET
2535000000-E	846	1,500	LF	**"X **" CONCRETE CURB (8" X 18")
2549000000-E	846	8,670	LF	2'-6" CONCRETE CURB & GUTTER
2556000000-E	846	2,510	LF	SHOULDER BERM GUTTER
2577000000-E	846	480	LF	CONCRETE EXPRESSWAY GUTTER
2580000000-E	846	150	LF	CONCRETE VALLEY GUTTER
2591000000-E	848	2,690	SY	4" CONCRETE SIDEWALK
2605000000-N	848	30	EA	CONCRETE WHEELCHAIR RAMPS
2612000000-E	848	130	SY	6" CONCRETE DRIVEWAY
2647000000-E	852	2,370	SY	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)
2815000000-N	858	7	EA	ADJUSTMENT OF DROP INLETS
2830000000-N	858	1	EA	ADJUSTMENT OF MANHOLES
2905000000-N	859	4	EA	CONVERT EXISTING DROP INLET TO JUNCTION BOX
3030000000-E	862	3,612.5	LF	STEEL BM GUARDRAIL
3045000000-E	862	50	LF	STEEL BM GUARDRAIL, SHOP CURVED
3150000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS
3195000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3210000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3215000000-N	862	16	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	9	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3285000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE M-350
3360000000-E	863	3,493	LF	REMOVE EXISTING GUARDRAIL
3380000000-E	862	1,900	LF	TEMPORARY STEEL BM GUARDRAIL
3387000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE ********* TEMPORARY (CAT-1)
3387000000-N	862	5	EA	GUARDRAIL ANCHOR UNITS, TYPE ********* TEMPORARY (III)
3389100000-N	SP	9	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 TEMPORARY

ItemNumber	Sec #	Quantity	Unit	Description
3524000000-E	SP	1,740	LF	VINYL COATED CHAIN LINK FENCE, **" FABRIC (60")
3539000000-E	866	476	EA	METAL LINE POSTS FOR **" CHAIN LINK FENCE (60")
3545000000-E	866	6	EA	METAL TERMINAL POSTS FOR **" CHAIN LINK FENCE (60")
3595000000-E	869	1,188	LF	RELAPPING GUARDRAIL
3628000000-E	876	98	TON	RIP RAP, CLASS I
3642000000-E	876	55	TON	RIP RAP, CLASS A
3649000000-E	876	118	TON	RIP RAP, CLASS B
3656000000-E	876	3,997	SY	FILTER FABRIC FOR DRAINAGE
3659000000-N	SP	15	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4048000000-E	902	2	CY	REINFORCED CONCRETE SIGN FOUN- DATIONS
4060000000-E	903	1,119	LB	SUPPORTS, BREAKAWAY STEEL BEAM
4072000000-E	903	1,101	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4096000000-N	904	7	EA	SIGN ERECTION, TYPE D
4102000000-N	904	44	EA	SIGN ERECTION, TYPE E
4108000000-N	904	2	EA	SIGN ERECTION, TYPE F
4116100000-N	904	2	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (A)
4116100000-N	904	1	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (B)
4116100000-N	904	1	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (D)
4116100000-N	904	3	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
4116100000-N	904	1	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (F)
4138000000-N	907	6	EA	DISPOSAL OF SUPPORT, STEEL BEAM
4155000000-N	907	50	EA	DISPOSAL OF SIGN SYSTEM, U- CHANNEL
4192000000-N	907	7	EA	DISPOSAL OF SUPPORT, U-CHANNEL
4400000000-E	1110	624	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	1,002	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	204	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	8	EA	FLASHING ARROW PANELS, TYPE C
4430000000-N	1130	570	EA	DRUMS
4435000000-N	1135	100	EA	CONES
4445000000-E	1145	362	LF	BARRICADES (TYPE III)
4450000000-N	1150	832	HR	FLAGGER
4465000000-N	1160	5	EA	TEMPORARY CRASH CUSHIONS
4470000000-N	1160	9	EA	RESET TEMPORARY CRASH CUSHIONS
4480000000-N	1165	2	EA	TMIA
4485000000-E	1170	80	LF	PORTABLE CONCRETE BARRIER
4490000000-E	1170	2,350	LF	PORTABLE CONCRETE BARRIER (ANCHORED)
4495000000-E	1170	5,490	LF	PORTABLE CONCRETE BARRIER (DRAINAGE)
4500000000-E	1170	8,414	LF	RESET PORTABLE CONCRETE BAR- RIER
4510000000-N	SP	88	HR	POLICE
4650000000-N	1251	1,316	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	25,639	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	24,532	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4690000000-E	1205	100	LF	THERMOPLASTIC PAVEMENT MARKING LINES (6", 120 MILS)
4695000000-E	1205	33	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4697000000-E	1205	710	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS)

ItemNumber	Sec #	Quantity	Unit	Description
4710000000-E	1205	788	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4725000000-E	1205	119	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4770000000-E	1205	1,571	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (TYPE 2)
4810000000-E	1205	192,684	LF	PAINT PAVEMENT MARKING LINES (4")
4815000000-E	1205	400	LF	PAINT PAVEMENT MARKING LINES (6")
4820000000-E	1205	550	LF	PAINT PAVEMENT MARKING LINES (8")
4835000000-E	1205	1,938	LF	PAINT PAVEMENT MARKING LINES (24")
4845000000-N	1205	216	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-E	1205	17,225	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4870000000-E	1205	255	LF	REMOVAL OF PAVEMENT MARKING LINES (24")
4875000000-N	1205	27	EA	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS
4900000000-N	1251	1,213	EA	PERMANENT RAISED PAVEMENT MARKERS
4915000000-E	1264	6	EA	7' U-CHANNEL POSTS
4955000000-N	1264	6	EA	OBJECT MARKERS (END OF ROAD)
5010000000-E	1401	4	EA	100' HIGH MOUNT STANDARD
5020000000-N	1401	1	EA	PORTABLE DRIVE UNIT
5025000000-E	1402	28	CY	HIGH MOUNT FOUNDATIONS
5030000000-N	1403	24	EA	HIGH MOUNT LUMINAIRES ******** (750W HPS)
5120000000-N	1407	1	EA	ELECTRIC SERVICE POLE **** ******** (30' CLASS 4)
5125000000-E	1407	60	LF	ELECTRIC SERVICE LATERAL ************ (3 #1/0 USE)
5145000000-N	1408	1	EA	LIGHT CONTROL EQUIPMENT, TYPE RW ************ (240/480 VOLT)
5155000000-E	1409	660	LF	ELECTRICAL DUCT, TYPE BD, SIZE ***** (2")
5160000000-E	1409	360	LF	ELECTRICAL DUCT, TYPE JA, SIZE ***** (4")
5170000000-E	1410	451	LF	** #8 W/G FEEDER CIRCUIT (2)
5175000000-E	1410	691	LF	** #6 W/G FEEDER CIRCUIT (2)
5180000000-E	1410	484	LF	** #4 W/G FEEDER CIRCUIT (2)
5205000000-E	1410	1,038	LF	** #8 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1-1/2")
5210000000-E	1410	820	LF	** #6 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1-1/2")
5215000000-E	1410	143	LF	** #4 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1-1/2")
5240000000-N	1411	9	EA	ELECTRICAL JUNCTION BOXES ************ (PC18)
5255000000-N	1413	Lump Sum		PORTABLE LIGHTING
5325400000-E	1510	25	LF	4" WATER LINE
5325600000-E	1510	10	LF	6" WATER LINE
5326600000-E	1510	236	LF	16" WATER LINE
5558600000-E	1515	1	EA	16" VALVE
5648000000-N	1515	6	EA	RELOCATE WATER METER
5672000000-N	1515	3	EA	RELOCATE FIRE HYDRANT
5810000000-E	1530	450	LF	ABANDON 16" UTILITY PIPE
5882000000-N	SP	1	EA	GENERIC UTILITY ITEM RELOCATE EXT 4" WATER METER ASSEMBLY W/ NEW 6' X 8' METER VAULT
5882000000-N	SP	1	EA	GENERIC UTILITY ITEM RELOCATE EXT 6" WATER METER ASSEMBLY W/ NEW 6' X 10' METER VAULT

23-FEB-2005 16:27
R:\Proj\u4012.syp
BCKey AT RD223183

PROJECT REFERENCE NO.	SHEET NO.
U-4012 / U-4009 / B-3450	3 (2 of 2)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUMMARY OF QUANTITIES

ItemNumber	Sec #	Quantity	Unit	Description
5888000000-E	SP	230	LF	GENERIC UTILITY ITEM 20" HDPE WATER PIPE, SDR 9, 200 # WP BY DIRECTIONAL BORE
6000000000-E	1605	14,090	LF	TEMPORARY SILT FENCE
6006000000-E	1610	470	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	2,170	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	2,100	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	28.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	1,050	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	4.25	TON	FERTILIZER FOR TEMPORARY SEED-ING
6024000000-E	1622	400	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	10	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	3,200	LF	SAFETY FENCE
6030000000-E	1630	8,415	CY	SILT EXCAVATION
6036000000-E	1631	6,910	SY	MATTING FOR EROSION CONTROL
6042000000-E	1632	2,280	LF	1/4" HARDWARE CLOTH
6069000000-E	1638	90	CY	STILLING BASINS
6070000000-N	SP	24	EA	SPECIAL STILLING BASINS
6071030000-E	SP	2,050	LF	COIR FIBER BAFFLES
6084000000-E	1660	34	ACR	SEEDING & MULCHING
6087000000-E	1660	16.5	ACR	MOWING
6090000000-E	1661	350	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	1	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	675	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	25.25	TON	FERTILIZER TOPDRESSING
6111000000-E	SP	260	LF	IMPERVIOUS DIKE
6114000000-N	SP	14	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	44	EA	RESPONSE FOR EROSION CONTROL

ItemNumber	Sec #	Quantity	Unit	Description
6123000000-E	1670	3.05	ACR	REFORESTATION
7000000000-E	1705	6	EA	PEDESTRIAN SIGNAL HEAD (**", ** SECTION) (16", 1 SECTION W/COUNTDOWN)
7060000000-E	1705	8,870	LF	SIGNAL CABLE
7120000000-E	1705	48	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7132000000-E	1705	3	EA	VEHICLE SIGNAL HEAD (12", 4 SECTION)
7144000000-E	1705	14	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)
7180000000-N	1706	17	EA	BACKPLATE
7264000000-E	1710	2,710	LF	MESSENGER CABLE (3/8")
7279000000-E	1715	1,771	LF	TRACER WIRE
7300000000-E	1715	560	LF	UNPAVED TRENCHING (**********) (1, 2")
7300000000-E	1715	1,050	LF	UNPAVED TRENCHING (**********) (2, 2")
7301000000-E	1715	1,721	LF	DIRECTIONAL DRILL (**********) (1, 2")
7324000000-N	1716	14	EA	JUNCTION BOX (STANDARD SIZE)
7348000000-N	1716	4	EA	JUNCTION BOX (OVER-SIZED, HEA-VY DUTY)
7360000000-N	1720	2	EA	WOOD POLE
7372000000-N	1721	4	EA	GUY ASSEMBLY
7408000000-E	1722	1	EA	1" RISER WITH WEATHERHEAD
7420000000-E	1722	2	EA	2" RISER WITH WEATHERHEAD
7444000000-E	1725	6,075	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	5,000	LF	LEAD-IN CABLE (************) (18-2)
7456000000-E	1726	3,290	LF	LEAD-IN CABLE (************) (18-4)
7516000000-E	1730	1,921	LF	COMMUNICATIONS CABLE (**FIBER) (12)
7552000000-N	1731	1	EA	INTERCONNECT CENTER
7564100000-N	1732	1	EA	FIBER-OPTIC TRANSCEIVER, SELF-HEALING RING

ItemNumber	Sec #	Quantity	Unit	Description
7566000000-N	1733	2	EA	DELINEATOR MARKER
7575160000-E	1734	1,677	LF	REMOVE EXISTING COMMUNICATIONS CABLE
7576000000-N	SP	12	EA	METAL STRAIN SIGNAL POLE
7613000000-N	SP	12	EA	SOIL TEST
7614100000-E	SP	72	CY	DRILLED PIER FOUNDATION
7636000000-N	1745	12	EA	SIGN FOR SIGNALS
7744000000-N	1751	7	EA	DETECTOR CARD (TYPE 170)
7816000000-N	1751	4	EA	DETECTOR CARD (NEMA TS-1)
******* BEGIN SCHEDULE AA ******* ******* (3 ALTERNATES) *******				
0366000000-E AA1	310	4,608	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA1	310	958	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E AA1	310	784	LF	24" RC PIPE CULVERTS, CLASS III
0384000000-E AA1	310	656	LF	30" RC PIPE CULVERTS, CLASS III
*** OR ***				
0366000000-E AA2	310	4,452	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA2	310	834	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E AA2	310	760	LF	24" RC PIPE CULVERTS, CLASS III
0384000000-E AA2	310	560	LF	30" RC PIPE CULVERTS, CLASS III
0536000000-E AA2	SP	156	LF	***" HDPE PIPE CULVERTS (15")
0536000000-E AA2	SP	124	LF	***" HDPE PIPE CULVERTS (18")
0536000000-E AA2	SP	24	LF	***" HDPE PIPE CULVERTS (24")
0536000000-E AA2	SP	96	LF	***" HDPE PIPE CULVERTS (30")
*** OR ***				
0366000000-E AA3	310	4,452	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E AA3	310	834	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E AA3	310	760	LF	24" RC PIPE CULVERTS, CLASS III
0384000000-E AA3	310	560	LF	30" RC PIPE CULVERTS, CLASS III
0540000000-E AA3	SP	156	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (15", 0.064")
0540000000-E AA3	SP	124	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (18", 0.064")
0540000000-E AA3	SP	24	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (24", 0.064")
0540000000-E AA3	SP	96	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (30", 0.064")
******* END SCHEDULE AA *******				

5/28/99

16-FEB-2004 10:45
R:\Proj\u4009.sum
BCKey AT RD214492

RD223172

COMPUTED BY: J. Evans DATE: 12/13/04

CHECKED BY: B. C. Key DATE: 1/21/05

PROJECT NO.	SHEET NO.
U-4012	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) SIZE 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54	T.B.D.I. STD. 840.35	FRAME AND N.S. FLAT GRATE STD. 840.29	O.T.C.B. STD. 840.05	TEMPORARY STEEL PLATE COVER	ADJUST D.I., EA	CONV. EXISTING M.D.I. TO J.B., EA	PREFORMED SCOUR HOLE, EA	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
THICKNESS OR GAUGE								.064	.064	.064	.064	.079	.079	.109	.109																																		
-RPC- 20+35	RT	1		318.70																								1			1																	
-RPC- 20+35	RT	1	OUT		315.70	315.00			24																																						
-L- 29+06	RT	2		305.47																								1																1				
-L- 29+10	RT	2A			302.22																																										0.45		
-L- 29+10	RT	2	2A		302.22	302.22				8																																						
-L- 33+50	RT	3		308.97																								1																1				
-L- 33+50	RT	3	OUT		306.16	302.91			60																																						
-L- 38+57	CL	4		314.65																								1														1	1				
-L- 38+56	LT	5		313.95																								1														1	1				
-L- 38+57	LT	4	5		311.48	310.78			12																																						
-L- 38+56	LT	5	6		310.53	305.81			60																																						
-L- 38+53	LT	6		310.50																								1															1	1			43	REMOVE 43' OF 18" CONC PIPE
-L- 40+12	LT	7		306.87	300.92																																							1				
-L- 40+60	LT	8		304.86	301.30																																							1				
-L- 41+22	RT	9	IN		299.63	290.41					28																																			0.55			
-L- 41+05	LT	10		305.83																								1			1			1													
-L- 40+60	LT	10	8		302.83	301.69			48																																						
-L- 42+79	LT	11		310.00																								1			1			1													
-L- 41+05	LT	11	10		307.00	302.83			172																																						
-L- 41+76	LT	12		311.95																								1																1	1			
-L- 42+02	CL	13		313.14																								1														1	1				
-L- 42+80	LT	14		311.67																								1																1	1			
-L- 42+79	LT	14	11		308.31	307.00			20																																						
-L- 41+76	LT	12	14		309.20	308.92			96																																						
-L- 41+87	LT	15		311.45																								1																1	1			
-L- 43+96	LT	16		311.46																								1																1	1			
-L- 43+88	RT	17		312.70																								1														1	1				
-L- 43+88	RT	18		312.95																								1														1	1				
-L- 44+05	RT	19		312.00																								1																1		1		
-L- 42+80	LT	15	14		308.70	308.31			104																																						
-L- 41+87	LT	16	15		308.71	308.70			4																																						
-L- 42+02	CL	13	17		309.97	309.53			184																																						Remove CB
-L- 43+88	LT	18	17		309.78	309.53			8																																						
-L- 43+88	LT	17	19		309.53	309.25			12																																						
-L- 43+88	LT	19	20		309.25	308.41			152																																						
-L- 45+61	CL	20		311.16																								1																1	1			243	Remove (2) Existing D.I.'s
-L- 45+61	CL	20	EXJB		308.41	307.24			12																																						
-L- 45+64	RT	EX	21		308.00	306.88																																								0.45		
-L- 45+64	RT	21	OUT		306.88	307.24				28																																					
-L- 45+77	LT	22		309.90																																									1			
-L- 46+14	LT	23		311.58																								1			1			1													
-L- 45+77	LT	23	22		308.41	307.15			36																																						
-L- 48+31	LT	24		312.10																								1			1			1													
-L- 46+14	LT	24	23		309.10	307.15			216																																						
-L- 48+40	RT	25		310.68																								1																1				
-L- 48+39	RT	25A			310.68	307.43																																							0.45			
-L- 48+39	RT	25	25A		307.43	307.43				20																																					
SHEET TOTALS									1220	56	28																	20			5			5	5	5	3		4	1	1	4	4	2			1	2			1.9		286	

ABBREVIATIONS

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

RD223172

COMPUTED BY: J. Evans DATE: 12/13/04

CHECKED BY: B. C. Key DATE: 1/21/05

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-4012	3-B

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS C.S.P.	QUANITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	"TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54	T.B.D.I. STD. 840.35	FRAMES AND N.S. FLAT GRATES, STD. 840.29	O.T.C.B. STD. 840.05	TEMPORARY STEEL PLATE COVER	ADJUST D.I., EA	CONV. EXISTING M.D.I. TO J.B., EA	PREFORMED SCOUR HOLE, EA	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
-L- 59+18	LT	26		301.13																									1										1	1														
-L- 59+28	LT	26A			298.47																																														0.45			Remove Headwall
-L- 59+28	LT	26	26A		299.21	298.47				24																																												
-L- 59+50	CL	27		301.41																																				1							1						252	Remove Temp. 15" CSP, See Also Sheet 3-*C
-L- 59+37	RT	28		301.14																									1									1		1														
-L- 59+85	RT	30		297.00																									1												1	1												
-L- 59+73	RT	30A			294.34																																														0.45			
-L- 59+73	RT	30A	30		294.34	292.60				24																																												
-L- 59+85	RT	30	OUT		288.00	282.70													32																																			
-L- 59+37	CL	28	30		298.39	292.60											44																																					
-L- 66+50	CL	31		271.36																																											1							See Also Sheet 3-C
-L- 66+01	RT	32		274.10																									1									1						1										
-L- 66+50	RT	33		272.37																									1									1						1										
-L- 67+78	RT	34		268.68																									1									1						1										
-L- 66+50	RT	31	33		263.14	262.37			56																																													
-L- 66+01	RT	32	33		271.35	262.37			48																																													
-L- 66+50	RT	33	OUT		262.37	248.00												52																															(2) 18"				
-L- 67+80	RT	34A			247.70																																												1					
-L- 68+30	RT	35		267.42																									1									1						1										
-L- 68+29	CL	36		266.59																																											1							See Also Sheet 3-C
-L- 68+29	RT	36	35		258.11	257.42			56																																													
-L- 68+30	RT	35	34		257.43	257.28			48																																													
-L- 67+78	RT	34	34A		257.28	247.70											48																																(2) 15"				
-L- 68+50	LT	37		266.84																									1									1						1										See Sheet 2-M for Detail
-L- 68+51	LT	37A			247.64																																												1					
-L- 68+50	LT	37	37A		264.09	247.64											44																																(2) 15"			26	Remove 18" Conc. @ -L- 69+75 Centerline
-L- 71+89	LT	38		262.39																									1									1						1									24	Remove 18" Conc. @ -L- 71+34 Centerline
-L- 71+90	RT	39		262.39																									1									1						1										
-L- 72+69	RT	40		262.13																									1									1						1										
-L- 72+70	RT	40A			247.45																																												1					
-L- 72+85	LT	41		262.11																									1									1						1										
-L- 72+85	LT	41A			247.80																																												1				236	
-L- 71+89	LT	38	41		259.64	259.36			96																																													
-L- 72+85	LT	41	41A		259.36	247.80											36																																(2) 15"				
-L- 71+90	RT	39	40		259.67	259.38			76																																													
-L- 72+69	RT	40	40A		259.38	247.45											36																																(2) 15"				
-L- 75+75	CL	42		261.20																									1									1		1														Remove Temp. 18" CSP
-L- 74+75	CL	42A																																																		0.065		Remove Existing DI
-L- 76+78	LT	43		261.15																									1									1						1										
-L- 76+60	CL	44		260.57																																				1							1							See Also Sheet 3-C
-L- 76+61	RT	45		260.30																									1									1						1										
-L- 76+62	RT	45A			248.00																																												1					
-L- 77+90	CL	46		259.77																																				1							1							See Also Sheet 3-C
-L- 78+75	LT	47		260.38																									1									1						1										
-L- 78+77	LT	47A			249.00																																												1					
-L- 76+78	LT	43	47		258.40	257.63			196																																													
-L- 78+75	LT	47	47A		257.63	249.00											32																																(2) 15"				
-L- 75+75	CL	42	44		256.55	254.42			80																																													
-L- 77+90	CL	46	44		255.34	254.42				128																																												
-L- 76+60	RT	44	45		254.42	253.30				60																																												
SHEET TOTALS									656	236							240	52	32										16									14	1	6	1	1		12			5		6	(12) See Remarks	0.9	0.065	538	Steel Elbows (10) @ 15", (2) @ 18"

ABBREVIATIONS

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

COMPUTED BY: JRH	DATE: 4-10-07
CHECKED BY: BCK	DATE: 5-22-07

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-4012	3-C

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

STATION (SIZE / THICKNESS OR GAUGE)	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	24"	CLASS III R.C. PIPE OR C.S. PIPE, TYPE IR ALUMINIZED OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"
-L- 76+61	RT	45	45A		253.30	248.00													36									
-L- 78+32	RT	48		260.88																								
-L- 78+32	RT	48	45		253.13	253.30			172																			
-L- 79+88	CL	49		261.10																								
-L- 80+54	LT	50		262.07																								
-L- 80+54	CL	51		262.75																								
-L- 80+54	LT	50	51		257.50	257.20			8																			
-L- 81+24	CL	52		261.39																								
-L- 85+26	CL	53		268.39																								
-DET3- 13+40	LT	27		300.37		296.33																						
-DET3- 13+40	LT	27	OUT		296.33	294.34											252											
-DET3- 20+42	LT	31		265.89																								
-DET3- 22+21	LT	36		260.03																								
-DET3- 30+52	LT	44		259.31																								
-DET3- 29+66	LT	42A	44		256.55	254.42												236										
-DET3- 31+84	LT	46		256.34																								
-DET3- 33+81	RT	49		260.06																								
SHEET TOTALS									180								252	236	36									
(U-4012) TOTALS									2056	292	28						492	288	68									
(U-4009) TOTALS									2204	298	496	192																
(B-3450) TOTALS									192	244	236	368					92		24			156	124	24	96			
GRAND TOTALS									4452	834	760	560					584	288	92			156	124	24	96			

STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	M.H. FRAME & COVER STD. 840.54	T.B.D.I. STD. 840.35	FRAMES AND N.S. FLAT GRATES, STD. 840.29	O.T.C.B. STD. 840.05	T.B.J.B. STD. 840.34	DRIVEWAY D.I. STD. 840.30 (LF)	C.S. PIPE CULVERT, 0.064" THICK	TEMPORARY STEEL PLATE COVER	ADJUST D.I., EA	CONV. EXISTING M.D.I. TO J.B., EA	PREFORMED SCOUR HOLE, EA	BITUMINOUS COATED CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L- 76+61																														(2) 15"				
-L- 78+32						1									1						1													
-L- 78+32																																		
-L- 79+88																	1										1							SEE ALSO BELOW
-L- 80+54						1								1	1																			
-L- 80+54						1								1	1																			
-L- 80+54																																		
-L- 81+24																												1						
-L- 85+26																												1						
-DET3- 13+40						1														1						1								
-DET3- 13+40																																		
-DET3- 20+42						1									1		1																	
-DET3- 22+21						1									1		1																	
-DET3- 30+52						1									1											1								
-DET3- 29+66																																		
-DET3- 31+84						1														1						1								REMOVE EXISTING BOX
-DET3- 33+81						1														1						1								
SHEET TOTALS						9								2	6		3			3	1					4	1	2		(2) 15"				
(U-4012) TOTALS						45			5			5	5	7	23	1	13	2	2	7	17					4	7	4	6	(14) SEE REMARKS	3	1	824	STEEL ELBOWS (12) 15", (2) 18"
(U-4009) TOTALS						39			23	6	9	8	10	10				4	5			2	2	26							0.553	0.18	620	
(B-3450) TOTALS						23	18.86		15	2	5	8			5	3					8				224				9	(6) SEE REMARKS			706	STEEL ELBOWS (4) 15", (2) 24"
GRAND TOTALS						107	18.86		43	8	14	21	15	17	28	4	13	6	7	7	25	2	2	26	224	4	7	4	15	(20) SEE REMARKS	3.553	1.18	2150	STEEL ELBOWS (16) 15",(2) 18", (2) 24"

ABBREVIATIONS

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

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

STATION (SIZE / THICKNESS OR GAUGE)	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 54"	60"	66"	72"	78"	84"	C.S. PIPE TYPE B 54" .109	54" .138	54" .168	54" SHOP ELON-GATED .138	54" SHOP ELON-GATED .168	60" .138	60" .168	66" .138	66" .168	72" .138	72" .168	STRUCTURAL PLATE PIPE 60" 12	60" 10	66" 12	66" 10	72" 12	72" 10	REINFORCED ENDWALLS WITH R.C. - C.Y.	WITH C.S. - C.Y.	MASONARY DRAINAGE STRUCTURES CUBIC YARDS	142" X 91" C.S. PIPE ARCH CULVERT, 0.138" THICK	REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & SIZE	REINF. CONC. ELBOWS NO. & SIZE	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	PIPE REMOVAL LIN.FT.	REMARKS
(B-3450) TOTALS																							240											80							72" CS PIPES PLAIN
GRAND TOTALS																							240											80							

ABBREVIATIONS

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

6/16/99

COMPUTED BY: MRB DATE: 08-26-02
CHECKED BY: J. RECK DATE: 08-26-02

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-4012	3-D

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		DIST. FROM CENTERLINE	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			RELAPPING EXISTING GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350	M-350	III	CAT 1	XI	XI MOD	XIII	AT-1	BIC	EA	G	NG				
-L-	66+90.75	68+72.00	MED. LT	181.25			BRIDGE		-5.00'	15'						1	1											143'		
-L-	66+65.75	68+72.00	MED. RT	206.25				BRIDGE	5.00'	15'						1	1											153'		
-L-	71+72.00	73+78.25	MED. LT	206.25				BRIDGE	-5.00'	15'						1	1											140'		
-L-	71+72.00	73+53.25	MED. RT	181.25			BRIDGE		5.00'	15'						1	1											131'		
-L-	66+47.00	68+7200	LT	225			BRIDGE	66+47.48	-61.00'	15'		200'		2'			1	1										206'		
-L-	58+65.75	68+72.00	RT	1006.25			59+91.35	BRIDGE	61.00'	15'	100'		2'		1		1											1088'		
-L-	71+72.00	79+78.25	LT	806.25			78+53.73	BRIDGE	-61.00'	15'	100'		2'		1		1											801'		
-L-	71+72.00	78+47.00	RT	675			BRIDGE	78+47.60	61.00'	15'		100'		2'			1	1										831'		
-L-	67+84.00	69+90.00	LT																								206'			SEE TRAFFIC CONTROL PLANS
-L-	71+25.00	76+00.00	RT																								475'			SEE TRAFFIC CONTROL PLANS
-L-	68+90.00	69+90.00	MED. LT																								100'			SEE TRAFFIC CONTROL PLANS
-L-	71+25.00	72+25.00	MED. RT																								100'			SEE TRAFFIC CONTROL PLANS
SUBTOTALS				3487.5											2	4	8	2									881'	3493'		
	LESS ANCHOR UNITS																													
	GRAU-350	2 @ 50'		100																										
	TYPE-III	8 @ 18.75'		150																										
	CAT-1	2 @ 6.25'		12.5																										
	M-350	4 @ 37.5'		150																										
	ANCHOR TOTALS			412.5																										
(U4012) TOTALS				3075											2	4	8	2									881'	3493'		
(B-3450) TOTALS				512.5	50										7		8					1								
GRAND TOTALS				3587.5	50										9	4	16	2				1					881'	3493'		
SAY				3612.5	50										9	4	16	2				1					881'	3493'		
	ADDITIONAL GUARDRAIL POSTS = 10		EACH																											

TEMPORARY GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		DIST. FROM CENTERLINE	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			RELAPPING EXISTING GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350	M-350	III	CAT 1	XI	XI MOD	XIII	AT-1	BIC	EA	G	NG				
-DET1-	17+38.90	22+26.40	LT	487.5			BRIDGE	17+38.90				300		6			1	1												
-DET1-	23+76.40	32+07.65	LT	831.25			31+07.65	BRIDGE			300		6		1		1													
-DET1-	23+76.34	25+32.59	RT	156.25				BRIDGE			87.5		1.75		1		1													
-DET3-	18+33.29	20+83.29	LT	200			BRIDGE								1															
-DET3-	20+80.00	22+45.00	LT																								169			SEE TRAFFIC CONTROL PLANS
-DET3-	25+84.00	27+20.00	LT																								138			SEE TRAFFIC CONTROL PLANS
SUBTOTALS				1675											3		3	1									307			
	LESS ANCHOR UNITS																													
	GRAU-350	3 @ 50'		150																										
	TYPE-III	3 @ 18.75'		56.25																										
	CAT-1	1 @ 6.25'		6.25																										
	ANCHOR TOTALS			212.5																										
(U-4012) TOTALS				1462.5											3		3	1									307			
(B-3450) TOTALS				412.5											6		2													
GRAND TOTAL				1875											9		5	1									307			
SAY				1900																										

09-APR-2007 09:13
r:\estimates\combined final\combined.sum
$$$$USERNAME$$$$

RD223172 4/9/2007 combined jhatfield RD-Oce34

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-4012	3-E

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LINE	STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBT + %	BORROW	WASTE
SUMMARY NO. 1							
–DET1–							
–L–	57+50.00	70+00.96	1002		15930	14928	
–L–	71+18.96	79+50.00	49		15100	15051	
–DET2–							
–L–	56+00.00	62+50.00	280		108		172
–L–	75+50.00	80+50.00	276		20		256
SUBTOTAL NO. 1			1607		31158	29979	428
SUMMARY NO. 2							
–DET3–							
–L–	56+00.00	69+00.00	26		2888	2862	
–L–	71+50.00	81+50.00	29		1402	1373	
SUBTOTAL NO. 2			55		4290	4235	
SUMMARY NO. 3							
DETOUR REMOVAL							
–L–	57+50.00	70+00.00	7577		931		6646
–L–	71+00.00	78+00.00	6638				6638
–L– (LT)							
–L–	33+50.00	62+00.00	1695		2345	650	
–L–	62+00.00	69+00.54	23		3202	3179	
–L–	71+52.54	76+50.00			2611	2611	
–L–	76+50.00	86+50.00	407		1207	800	
SUBTOTAL NO. 3			16340		10296	7240	13284
SUMMARY NO. 4							
–L– (MEDIAN)							
–L–	33+50.00	62+00.00	477		841	364	
–L–	62+00.00	69+00.54	15		6556	6541	
–L–	71+52.54	76+50.00			2773	2773	
–L–	76+50.00	86+50.00	172		413	241	
SUBTOTAL NO. 4			664		10583	9919	
SUMMARY NO. 5							
–L– (RT)							
–L–	27+00.00	33+50.00	849		220		629
–L–	33+50.00	60+00.00	6386		1855		4531
–L–	60+00.00	69+00.54	2		31381	31379	
–L–	71+52.54	79+00.00	12		10336	10324	
–L–	79+00.00	86+50.00	1069		432		637
SUBTOTAL NO. 5			8318		44224	41703	5797
SUMMARY NO. 6							
–RPC–	11+00.00	21+50.00	4071	735	704		3367
SUBTOTAL NO. 6			4071	735	704		3367
SUMMARY TOTALS			31055	735	101255	93076	22876

LINE	STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBT + %	BORROW	WASTE
ROCK WASTE IN LIEU OF BORROW (U–4012)						–31	–31
ADJUSTMENT FOR ROCK WASTE (U–4012)					–6	–6	
LOSS DUE TO CLEARING & GRUBBING (U–4012)			–900			900	
WASTE USED IN LIEU OF BORROW (U–4012)						–22724	–22724
SHOULDER MATERIAL (U–4012)					7032	7032	
PROJECT TOTAL (U–4012)			30155		108281	78126	0
5% TO REPLACE TOPSOIL ON BORROW PIT (U–4012)						3907	
PROJECT GRAND TOTALS (U–4012)			30155		108281	82033	0
PROJECT GRAND TOTALS (U–4009)			1341	1236	5263	5306	2349
PROJECT GRAND TOTALS (B–3450)			7339		17317	17365	6560
GRAND TOTAL ((U–4012) + (U–4009) + (B–3450))			38835	1236	130861	104704	8909
SAY			39200	1300		105800	

ESTIMATED UNDERCUT (U–4012) = 3000 CY
ESTIMATED UNDERCUT (U–4009) = 100 CY
ESTIMATED UNDERCUT (B–3450) = 500 CY
ESTIMATED UNDERCUT GRAND TOTAL = 3600 CY

DDE (U–4012) = 876 CY
DDE (U–4009) = 340 CY
DDE (B–3450) = 170 CY
DDE GRAND TOTAL = 1386 CY SAY = 1400 CY
PAVEMENT STRUCTURE VOLUME (U–4012) = 4210 CY

PAVEMENT STRUCTURE VOLUME (B–3450) = 274 CY
PAVEMENT STRUCTURE VOLUME GRAND TOTAL = 4484 CY
TEMPORARY PAVEMENT STRUCTURE VOLUME (U–4012) = 201 CY

TEMPORARY PAVEMENT STRUCTURE VOLUME (B–3450) = 50 CY
TEMPORARY PAVEMENT STRUCTURE VOLUME GRAND TOTAL = 251 CY

SEDIMENT TRAP CLEANOUT (U–4009) = 35 CY
SELECT GRANULAR MATERIAL (U–4009) = 1100 CY
SELECT MATERIAL, CLASS IV (U–4009) = 1100 CY
INCIDENTAL STONE BASE (U–4009) AS PER FFI = 60 TONS
PROOF ROLLING (U–4009) = 2 HRS

SUMMARY OF BREAKING OF EXISTING ASPHALT PAVEMENT

CHAIN	STATION TO STATION	LOC	SQ YDS
–L–	64+00.00 TO 68+48.00	LT	2042.58
–L–	71+96.00 TO 75+00.00	LT	1491.89
–L–	64+00.00 TO 68+48.00	RT	998.90
–L–	71+96.00 TO 75+00.00	RT	1352.66
	TOTAL =		5886.04
	SAY =		5890

SUMMARY OF PAVEMENT REMOVAL

CHAIN	STATION TO STATION	LOCATION	AREA	TOTAL
–DET–	12+94.57 TO 29+93.35	LT	36841.81 SQ FT	4093.53 SY
–L–	44+71.32 TO 45+72.41	LT	2243.70 SQ FT	249.30 SY
–L–	62+00.00 TO 64+00.00	LT	6170.47 SQ FT	685.61 SY
–L–	60+00.00 TO 64+00.00	RT	12362.79 SQ FT	1373.64 SY
–L–	75+00.00 TO 77+00.00	LT	5971.43 SQ FT	663.49 SY
–L–	76+00.00 TO 79+00.00	RT	9725.09 SQ FT	1080.57 SY
–L–	79+86.00 TO 86+53.00	RT	13052.40 SQ FT	1450.27 SY
–L–	68+48.00 TO 69+88.60	LT	4058.94 SQ FT	450.99 SY
–L–	71+23.20 TO 71+96.00	LT	2195.63 SQ FT	243.96 SY
–L–	68+48.00 TO 69+88.23	RT	3495.44 SQ FT	388.38 SY
–L–	71+22.14 TO 71+96.00	RT	2147.32 SQ FT	238.59 SY
–DET2–	10+13.93 TO 16+07.78	CL	12474.82 SQ FT	1386.09 SY
–DET2–	29+79.11 TO 34+14.39	CL	8302.16 SQ FT	922.46 SY
–DET3–	11+13.70 TO 15+70.48	LT	4262.13 SQ FT	473.57 SY
–DET3–	29+92.77 TO 35+18.62	LT	4794.69 SQ FT	532.74 SY
			TOTAL	14233.20 SY
			TOTAL (U–4009)	1020 SY
			TOTAL (B–3450)	4570 SY
			SAY	19830 SY

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.

17-JUL-2007 13:12
r:\estimates\combined final\combined.sum
$$$$USERNAME$$$$

RD226358 7/17/2007 combined bckey RD-Oce34

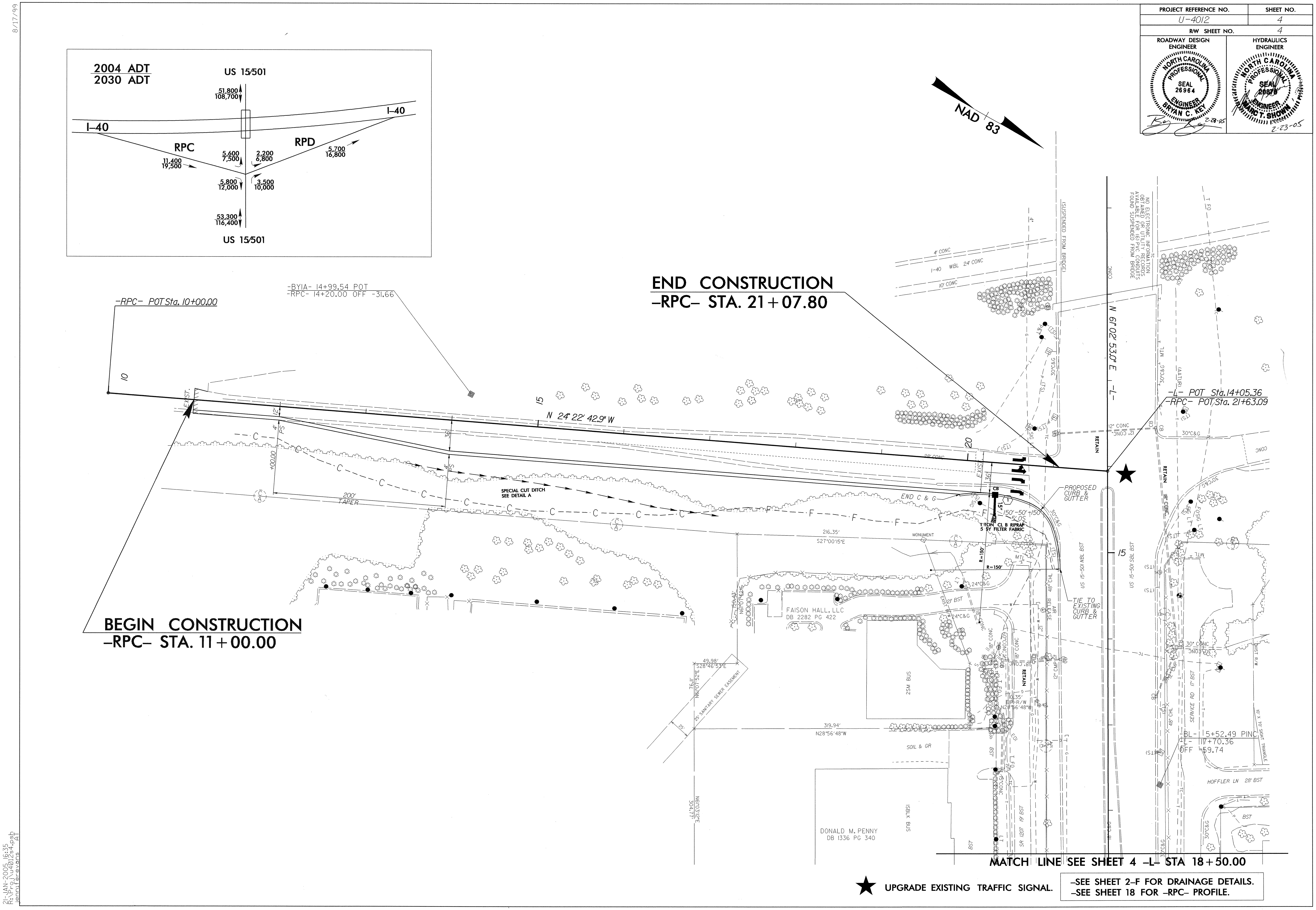
PROJ. REFERENCE NO.	SHEET NO.
U-4012	3-F

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1		JOSEPH J. POLCARO & ALFRIEDA B. POLCARO
2		JACK L. CHANDLER
3		DEBERRY LIMITED PARTNERSHIP
4		OAKRIDGE 58 INVESTORS, A NORTH CAROLINA GENERAL PARTNERSHIP
5		THE COUNTY OF DURHAM, NORTH CAROLINA
6		COUNTY OF DURHAM
7		COUNTY OF DURHAM
8		WELLINGTON PROPERTIES, LLC

PARCEL No.	SHEET No.	PROPERTY OWNER NAME


PROJECT REFERENCE NO. U-4012
SHEET NO. 4
R/W SHEET NO. 4
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY
NORTH CAROLINA PROFESSIONAL SEAL ENGINEER MARC T. SHOWN
2-23-05
8/17/99
2004 ADT
2030 ADT
US 15/501
51,800
108,700
I-40
RPC
RPD
11,400
19,500
5,600
7,500
2,200
6,800
5,700
16,800
5,800
12,000
3,500
10,000
53,300
116,400
US 15/501
NAD 83
END CONSTRUCTION
-RPC- STA. 21+07.80
-RPC- POT Sta. 10+00.00
-BYIA- 14+99.54 POT
-RPC- 14+20.00 OFF -31.66
N 24° 22' 42.9" W
N 61° 02' 53.0" E
-L-
-L- POT Sta. 14+05.36
-RPC- POT Sta. 21+63.09
SPECIAL CUT DITCH
SEE DETAIL A
200' TAPER
END C & G
PROPOSED CURB & GUTTER
TIE TO EXISTING CURB & GUTTER
1 TON CL B RIPRAP
5 SY FILTER FABRIC
216.35'
S27°00'15"E
R=150'
MONUMENT
FAISON HALL, LLC
DB 2282 PG 422
25M BUS
319.94'
N28°56'48"W
SOIL & GR
49.98'
S28°46'53"E
25' SANITARY SEWER EASEMENT
N61°03'12"E
304.77'
DONALD M. PENNY
DB 1336 PG 340
1SBLK BUS
RETAIN
-BL- 15+52.49 PINC
-L- 17+70.36
OFF 59.74
HOFFLER LN 28' BST
SERVICE RD 17' BST
US 15-501 SBL BST
US 15-501 NBL BST
SR 1207 19' BST
I-40 WBL 24' CONC
(SUSPENDED FROM BRIDGE)
NO ELECTRONIC INFORMATION OBTAINED FOR UTILITY RECORDS AVAILABLE FOR (6) PVC CONDUITS FOUND SUSPENDED FROM BRIDGE
BEGIN CONSTRUCTION
-RPC- STA. 11+00.00
MATCH LINE SEE SHEET 4 -L- STA 18+50.00
UPGRADE EXISTING TRAFFIC SIGNAL.
-SEE SHEET 2-F FOR DRAINAGE DETAILS.
-SEE SHEET 18 FOR -RPC- PROFILE.
21-JAN-2005 16:35
R:\Proj\u4012s4.psh
jenniferevans AT

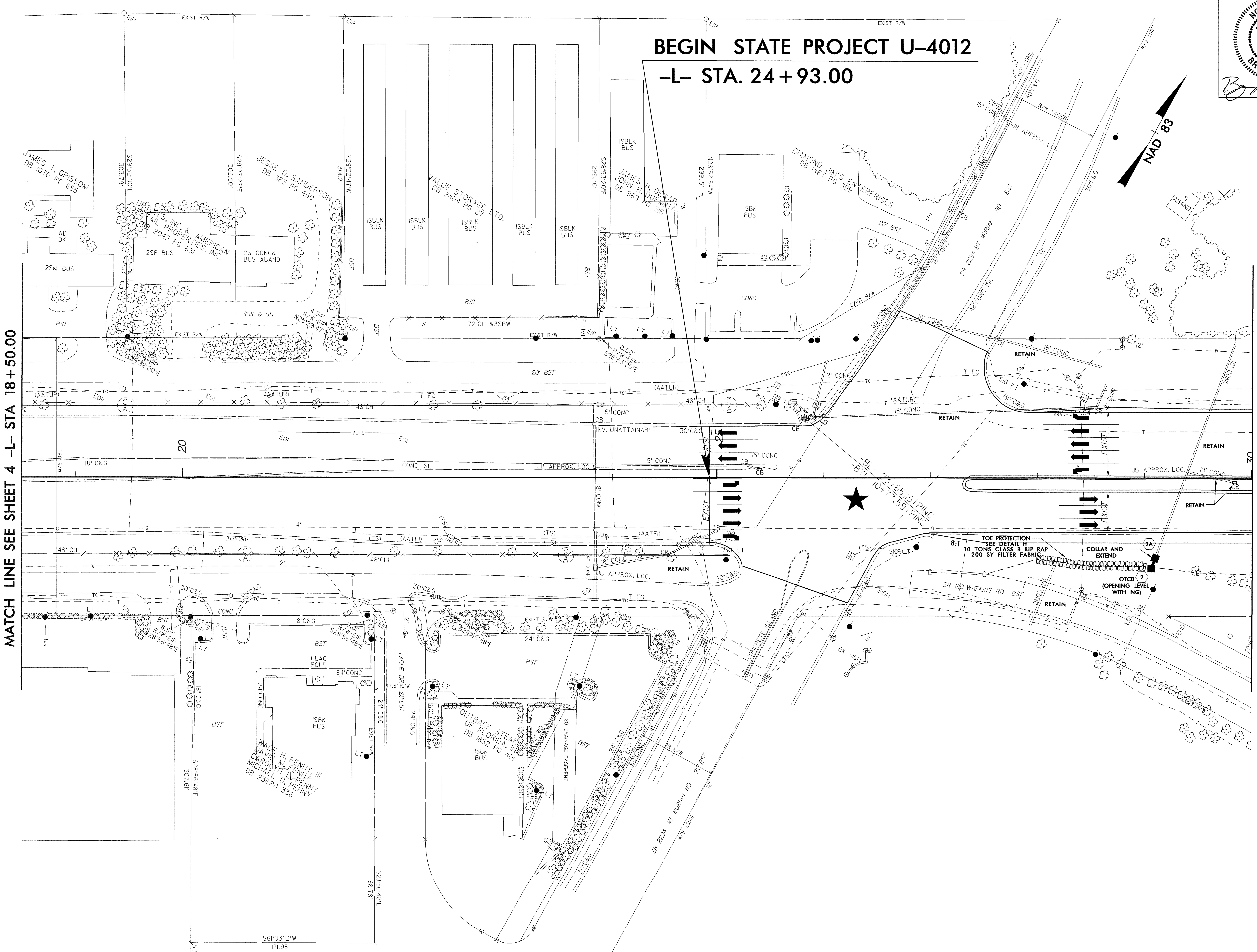
PROJECT REFERENCE NO.	SHEET NO.
U-4012	4-A

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26964 BRYAN C. KEY 2-12-07	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20670 MARC T. SHOWN 2-12-07

8/17/99

REVISIONS



★ UPGRADE EXISTING TRAFFIC SIGNAL.

-SEE SHEET 2-F FOR DRAINAGE DETAILS.
-SEE SHEET 13 FOR -L- PROFILE.

09-FEB-2007 15:06

RD226358 2/9/2007 u4012-psh04a bckey RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
U-4012	5
R/W SHEET NO.	5

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY — 12-12-07

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN — 12-12-07

8/17/99

REVISIONS

MATCH LINE SEE SHEET 4A –L– STA 30+00.00

MATCH LINE SEE SHEET 6 –L– STA 44+00.00

NAD 83

BERTA P. MCFARLAND ESTATE
DB 1097 PG 907

1 ALFRIEDA B. POLCARO
JOSEPH J. POLCARO &
DB 968 PG 237

MARION H. HUANG &
YANG LEE KUNG PING
DB 394 PG 375

JOSEPH J. POLCARO &
ALFRIEDA B. POLCARO
DB 394 PG 486

2 JACK L. CHANDLER
DB 1818 PG 67

CITY OF DURHAM
DB 2904 PG 234

N61°21'53"E 124.59'
N61°21'53"E 50.00'
N61°21'53"E 125.00'

-Y4- POT Sta. 10+00.00

-BL- 35+86.66 PINC
-L- 38+04.49
OFF -45.388

+32.00
180.00'
EXIST. R/W

+97.00
180.00'
EXIST. R/W

PDE

0.47' EIP-R/W S04°00'18"E

0.10' EIP-R/W S04°00'18"E

0.07' R/W-EIP N03°56'07"W

1.02' R/W-EIP N01°31'00"W

BEG. C&G -Y4- STA. +00.00

SHEET FLOW

GRADE TO DRAIN

SERVICE RD 20' BST

PROPOSED CURB & GUTTER

RETAIN

REMOVE

CONVERT TO JB

PROPOSED CURB & GUTTER

PROPOSED EXPRESSWAY GUTTER

TAPER TO EXISTING

US 15-501 SBL BST

US 15-501 NBL BST

-L- N 61° 02' 53.0" E

PROPOSED MONOLITHIC ISLAND

RETAIN 18" RCP

RETAIN 24" RCP

NOTE: ACCESS NOT AVAILABLE FOR THIS AREA

100' TAPER

430' FULL LANE

FS 2GI

1 TON CL B RIPRAP
5 SY FILTER FABRIC

2 TONS CLASS B RIPRAP
62 SY FILTER FABRIC

SPECIAL CUT DITCH
SEE DETAIL A

COLLAR AND EXTEND 24"

BASE DITCH SEE DETAIL F DIDE – 1 CY

BLOW OFF VALVE

SIGNAL POLE

ROBERT K. WITHERSPOON &
THELMA A. WITHERSPOON
DB 2047 PG 428

ISFD

WO

ISBKD

S ABAND

BLACKWOOD HEIRS
DB 3201 PG 470

WOODS

CONCRETE ISLAND

SOUTHWEST DURHAM PARKWAY

WATKINS ROAD INVESTORS
GENERAL PARTNERSHIP
DB 2155 PG 680

BOULEVARD PROPERTIES
LIMITED PARTNERSHIP
DB 1934 PG 449
PARCEL TWO

NEW HOPE CREEK PARTNERSHIP
DB 1935 PG 237

2004 ADT / 2030 ADT				
	FRONTAGE RD. 800 / 9,000			
51,500 / 113,400	200 / 2,000	100 / 2,000	52,500 / 123,400	
US 15/501	1,100 / 15,000	2,200 / 25,000	US 15/501	
	3,800 / 45,000			
	WATKINS RD.			

★ UPGRADE EXISTING TRAFFIC SIGNAL

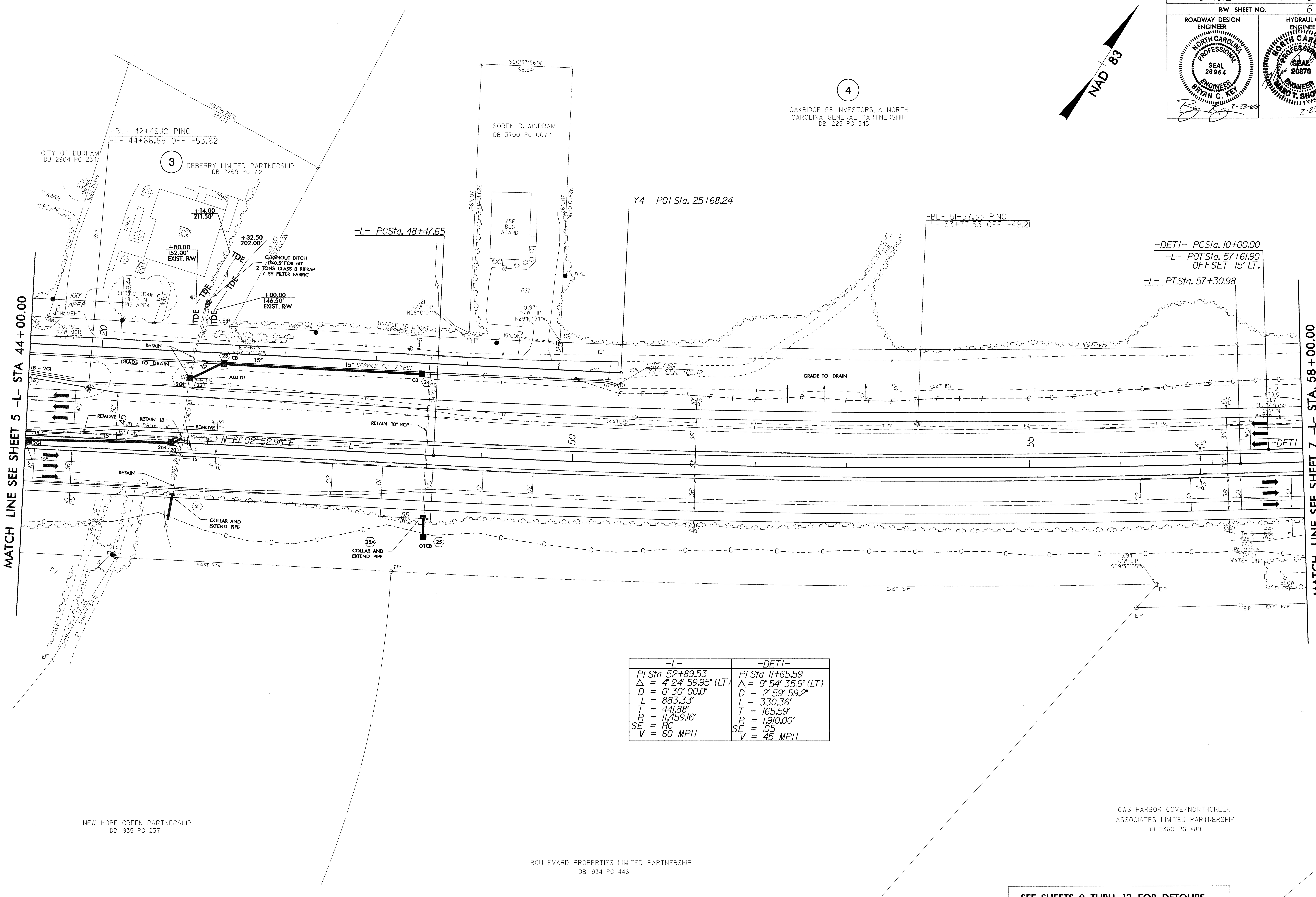
–SEE SHEET 2–E FOR SPECIAL INTERSECTION DETAIL.
–SEE SHEET 2–F FOR DRAINAGE DETAILS.
–SEE SHEETS 13 AND 15 FOR –L– PROFILES.

09-FEB-2007 14:48
r:\proj\u4012\psh\
ss\sht\ENGINE.sss

RD226358 2/9/2007 u4012-psh05 bckey RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
U-4012	6
R/W SHEET NO.	6

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY 2-23-05	NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN 2-23-05



NAD 83
MATCH LINE SEE SHEET 5 -L- STA 44+00.00
MATCH LINE SEE SHEET 7 -L- STA. 58+00.00
-BL- 42+49.12 PINC
-L- 44+66.89 OFF -53.62
CITY OF DURHAM DB 2904 PG 234
DEBERRY LIMITED PARTNERSHIP DB 2269 PG 712
SOREN D. WINDRAM DB 3700 PG 0072
OAKRIDGE 58 INVESTORS, A NORTH CAROLINA GENERAL PARTNERSHIP DB 1225 PG 545
-Y4- POT Sta. 25+68.24
-L- PC Sta. 48+47.65
-BL- 51+57.33 PINC
-L- 53+77.53 OFF -49.21
-DET1- PC Sta. 10+00.00
-L- POT Sta. 57+61.90 OFFSET 15' LT.
-L- PT Sta. 57+30.98
CLEANOUT DITCH D=0.5' FOR 50' 2 TONS CLASS B RIPRAP 7 SY FILTER FABRIC
GRADE TO DRAIN
RETAIN 18" RCP
COLLAR AND EXTEND PIPE
N 61° 02' 52.96" E
NEW HOPE CREEK PARTNERSHIP DB 1935 PG 237
BOULEVARD PROPERTIES LIMITED PARTNERSHIP DB 1934 PG 446
CWS HARBOR COVE/NORTHCREEK ASSOCIATES LIMITED PARTNERSHIP DB 2360 PG 489

-L-	-DET1-
PI Sta 52+89.53	PI Sta 11+65.59
Δ = 4° 24' 59.95" (LT)	Δ = 9° 54' 35.9" (LT)
D = 0° 30' 00.0"	D = 2° 59' 59.2"
L = 883.33'	L = 330.36'
T = 441.88'	T = 165.59'
R = 11,459.16'	R = 1,910.00'
SE = RC	SE = .05
V = 60 MPH	V = 45 MPH

-SEE SHEETS 9 THRU 12 FOR DETOURS.
-SEE SHEETS 13 AND 15 FOR -L- PROFILES.

REVISIONS

8/17/99

21-JAN-2005 16:34
R:\Proj\u4012s6.psh
jenniferevans AT

RD196588 Friday January 21 2005 u4012psh-06 jenniferevans rd-09oce34

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-4012	7
R/W SHEET NO.	7

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY

3-2-05

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN

3-2-05

-DET1-	
PI Sta 11+65.59	PI Sta 14+95.95
Δ = 9° 54' 35.9" (LT)	Δ = 9° 54' 35.9" (RT)
D = 2° 59' 59.2"	D = 2° 59' 59.2"
L = 330.36'	L = 330.36'
T = 165.59'	T = 165.59'
R = 1,910.00'	R = 1,910.00'
SE = .05	SE = .05
V = 45 MPH	V = 45 MPH

NAD 83

MATCH LINE SEE SHEET 6 -L- STA. 58+00.00

MATCH LINE SEE SHEET 8 -L- STA. 72+00.00

-BL- 58+54.69 PINC
-L- 60+76.40 OFF -44.99

-DET1- PRC Sta. 13+30.36

-DET1- PT Sta. 16+60.71

-BL- 67+51.78 PINC
-L- 69+73.49 OFF -44.46

-BL- 68+01.25 POT
-L- 70+29.97 OFF -44.90

4

OAKRIDGE 58 INVESTORS, A NORTH CAROLINA GENERAL PARTNERSHIP
DB 1225 PG 545

4

OAKRIDGE 58 INVESTORS, A NORTH CAROLINA GENERAL PARTNERSHIP
DB 1225 PG 545

+23.00
137.00'
EXIST. R/W

+64.00
137.00'

+98.00
161.00'

+07.00
138.00'
EXIST. R/W

+15.00
140.00'
EXIST. R/W

PSH – 3.75' X 3.75'
SEE DETAIL B

PSH – 3.75' X 3.75'
SEE DETAIL B

DETOUR SLOPE STAKES

NEW HOPE CREEK

TH 1
+30.3
T7.0
EL. 300.90'
12" DI
WATER LINE

REMOVE HDWL COLLAR AND EXTEND

COVER DURING DETOUR CONSTRUCTION

RETAIN AFTER DETOUR CONST.

COLLAR AND EXTEND 18"

BEG. SBG. +15.75 -L- RT

GRAU 350

15" CSP

PROPOSED GUARDRAIL

JB w/MH
24" CSP
w/ELBOWS

3 TONS CLASS B RIPRAP
11 SY FILTER FABRIC

N 56° 37' 53.0" E -L-

US 15-501 SBL 24'BST

US 15-501 NBL 24'BST

4' BST

TB2GI

M350 50:1

REMOVE EXIST. GUARDRAIL

PROPOSED GUARDRAIL

CAT-1 BEG. SBG +53.25 -L- LT

END SBG +48.00 -L- LT

BEG. SBG +96.00 -L- LT

END SBG +48.00-L- RT

15" CSP w/ELBOWS

18" CSP

3 TONS CL B RIPRAP
7 SY FILTER FABRIC

2 TONS CL B RIPRAP
7 SY FILTER FABRIC

BEGIN SPECIAL GRADING
-L- POT STA. 63+93.93

+15.00
151.00'

+75.00
EXIST. R/W

+30.00
140.00'
EXIST. R/W

+70.00
140.00'
EXIST. R/W

PDE

WLB

CLASS II RIPRAP
"STRUCTURE PAY ITEM"

TYPE-III

BRIDGE #17

BRIDGE #21

CONC STL

REMOVE

CWS HARBOR COVE/NORTHCREEK ASSOCIATES LIMITED PARTNERSHIP
DB 2360 PG 489

5

THE COUNTY OF DURHAM, NORTH CAROLINA
DB 2047 PG 579

5

THE COUNTY OF DURHAM, NORTH CAROLINA
DB 2047 PG 579

69' DUKE POWER EASEMENT

S17°26'41"W
666.62'

BEGIN APP. SLAB
-L- STA. 68+48.00

BEGIN BRIDGE
-L- STA. 68+72.00 LT.

END BRIDGE
-L- STA. 71+72.00 LT.

END APP. SLAB
-L- STA. 71+96.00

BEGIN BRIDGE
-L- STA. 68+72.00 RT.

END BRIDGE
-L- STA. 71+72.00 RT.

SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

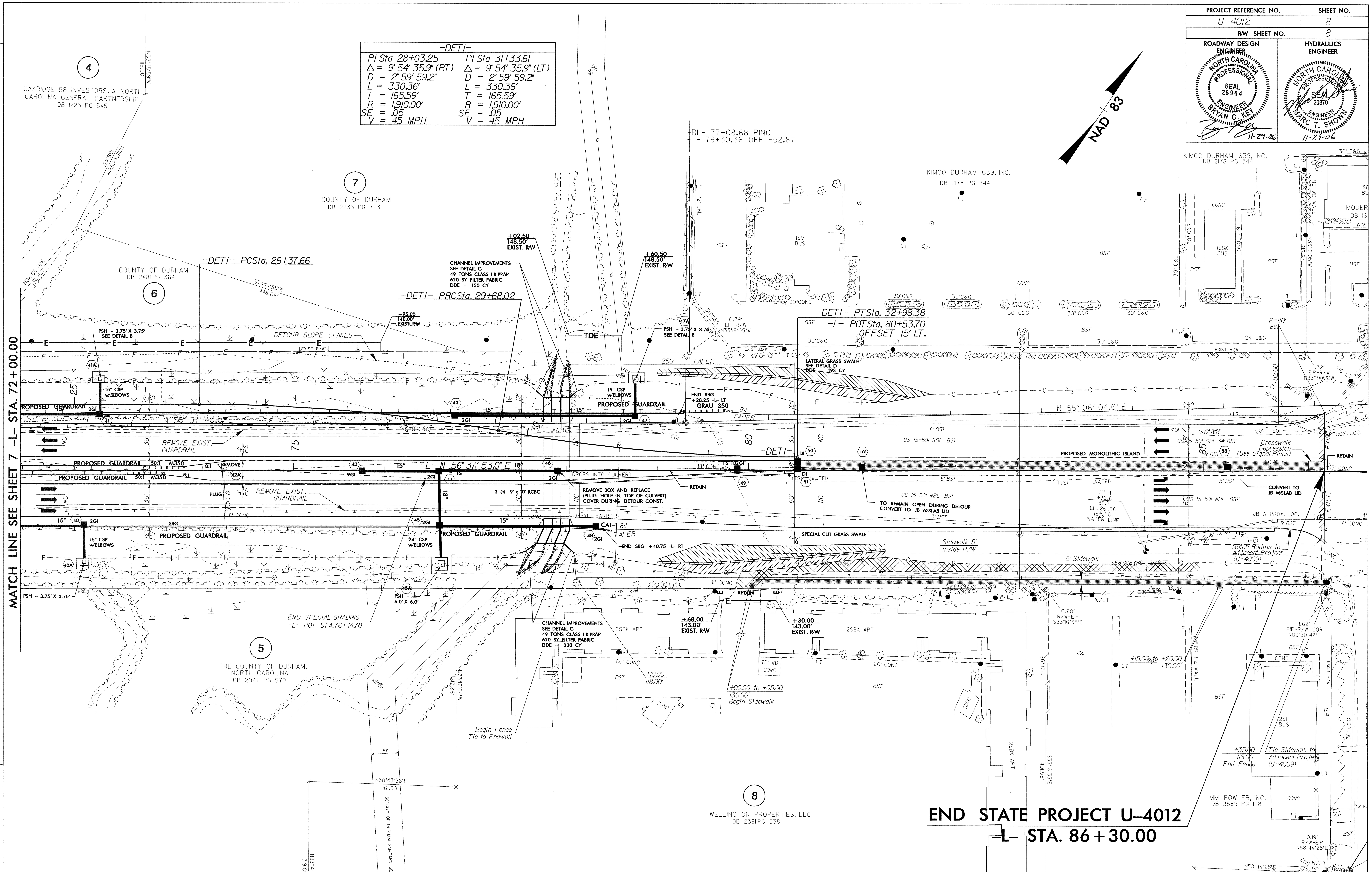
-SEE SHEET 2-C FOR STRUCTURE STAGING.
-SEE SHEET 2-D FOR SPECIAL MEDIAN GRADING DETAIL.
-SEE SHEET 2-F FOR DRAINAGE DETAILS.
-SEE SHEETS 9 THRU 12 FOR DETOURS.
-SEE SHEETS 14 AND 16 FOR -L- PROFILES.
-SEE SHEETS S-1 THRU S-75 FOR STRUCTURE PLANS.

02-MAR-2005 06:55
H:\Proj\u4012psh-07
BCKey All RD223183

RD223183 Wednesday March 02 2005 u4012psh-07 BCKey rd-09oce34

PROJECT REFERENCE NO.	SHEET NO.
U-4012	8
R/W SHEET NO.	8

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER



-DETI-
PI Sta 28+03.25
Δ = 9° 54' 35.9" (RT)
D = 2° 59' 59.2"
L = 330.36'
T = 165.59'
R = 1,910.00'
SE = .05
V = 45 MPH
PI Sta 31+33.61
Δ = 9° 54' 35.9" (LT)
D = 2° 59' 59.2"
L = 330.36'
T = 165.59'
R = 1,910.00'
SE = .05
V = 45 MPH
NAD 83
OAKRIDGE 58 INVESTORS, A NORTH CAROLINA GENERAL PARTNERSHIP
DB 1225 PG 545
COUNTY OF DURHAM
DB 2235 PG 723
COUNTY OF DURHAM
DB 2481 PG 364
KIMCO DURHAM 639, INC.
DB 2178 PG 344
-DETI- PCSta. 26+37.66
-DETI- PRCSta. 29+68.02
-DETI- PTSta. 32+98.38
-L- POTSta. 80+53.70
OFFSET 15' LT.
MATCH LINE SEE SHEET 7 -L- STA. 72+00.00
PROPOSED GUARDRAIL
REMOVE EXIST. GUARDRAIL
-L- N 56° 37' 53.0" E
N 55° 06' 04.6" E
3 @ 9' x 10' RCBC
CHANNEL IMPROVEMENTS
SEE DETAIL G
49 TONS CLASS I RIPRAP
620 SY FILTER FABRIC
DDE = 150 CY
DDE = 230 CY
LATERAL GRASS SWALE
SEE DETAIL D
DDE = 493 CY
SPECIAL CUT GRASS SWALE
PROPOSED MONOLITHIC ISLAND
CONVERT TO JB W/SLAB LID
TO REMAIN OPEN DURING DETOUR
CONVERT TO JB W/SLAB LID
REMOVE BOX AND REPLACE (PLUG HOLE IN TOP OF CULVERT) COVER DURING DETOUR CONST.
END SPECIAL GRADING
-L- POT STA.76+44.70
THE COUNTY OF DURHAM, NORTH CAROLINA
DB 2047 PG 579
WELLINGTON PROPERTIES, LLC
DB 2391 PG 538
MM FOWLER, INC.
DB 3589 PG 178
Begin Fence
Tie to Endwall
Begin Sidewalk
End Fence
Tie Sidewalk to Adjacent Project (U-4009)
Match Radius to Adjacent Project (U-4009)
30' CITY OF DURHAM SANITARY SEWER EASEMENT

END STATE PROJECT U-4012
-L- STA. 86+30.00

Legend

- 4" CONCRETE SIDEWALK
- OBLITERATION OF EXISTING ROAD

-SEE SHEET 2-D FOR SPECIAL MEDIAN GRADING DETAIL.
-SEE SHEET 2-F FOR DRAINAGE DETAILS.
-SEE SHEETS 9-12 FOR DETOURS.
-SEE SHEETS 14, 15, AND 17 FOR -L- PROFILES.
-SEE SHEETS C-1 THRU C-7 FOR CULVERT PLAN.

REVISIONS

8/17/99

28-NOV-2006 16:46

PROJECT REFERENCE NO.	SHEET NO.
U-4012	9

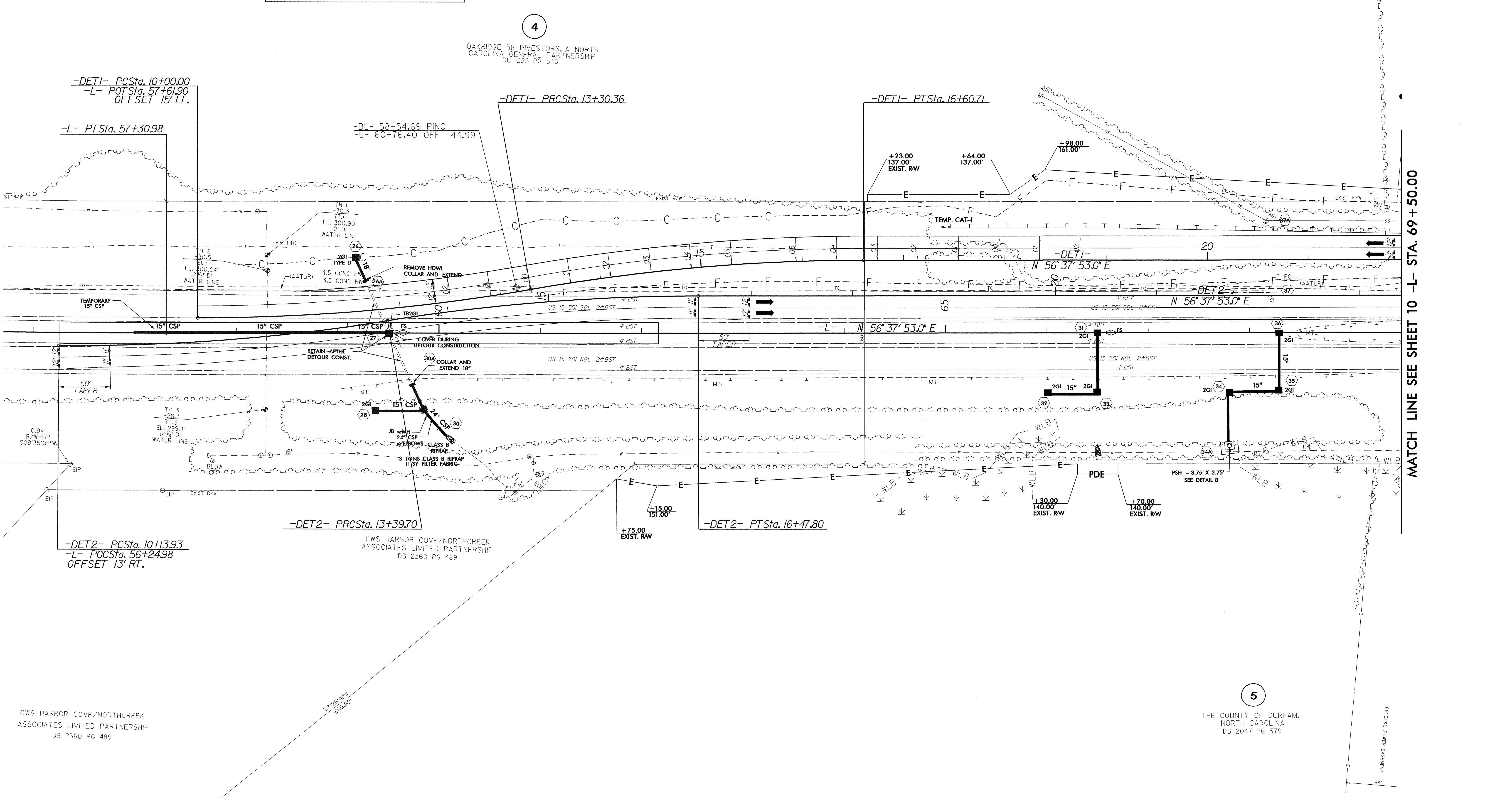
R/W SHEET NO.

ROADWAY DESIGN ENGINEER — SEAL 26964, BRYAN C. KEY, 2-23-05
HYDRAULICS ENGINEER — SEAL 20870, MARC T. SHOWN, 2-23-05

DETAIL OF TEMPORARY DETOURS

DETOUR DESIGN SPEED = 45 mph

-DET1-	
PI Sta 11+65.59	PI Sta 14+95.95
△ = 9° 54′ 35.9″ (LT)	△ = 9° 54′ 35.9″ (RT)
D = 2° 59′ 59.2″	D = 2° 59′ 59.2″
L = 330.36′	L = 330.36′
T = 165.59′	T = 165.59′
R = 1,910.00′	R = 1,910.00′
SE = .05	SE = .05
V = 45 MPH	V = 45 MPH
-DET2-	
PI Sta 11+77.21	PI Sta 14+94.08
△ = 9° 46′ 20.4″ (LT)	△ = 9° 14′ 32.5″ (RT)
D = 2° 59′ 59.2″	D = 2° 59′ 59.2″
L = 325.77′	L = 308.10′
T = 163.28′	T = 154.39′
R = 1,910.00′	R = 1,910.00′



NAD 83
4
OAKRIDGE 58 INVESTORS, A NORTH CAROLINA GENERAL PARTNERSHIP DB 1225 PG 545
-DET1- PCSta. 10+00.00
-L- POTSta. 57+61.90 OFFSET 15′ LT.
-L- PTSta. 57+30.98
-DET1- PRCSta. 13+30.36
-BL- 58+54.69 PINC
-L- 60+76.40 OFF -44.99
-DET1- PTSta. 16+60.71
-DET1-
N 56° 37′ 53.0″ E
-DET2-
-L-
US 15-501 SBL
US 15-501 NBL
TEMPORARY 15″ CSP
REMOVE HDWL COLLAR AND EXTEND
COVER DURING DETOUR CONSTRUCTION
RETAIN AFTER DETOUR CONST.
COLLAR AND EXTEND 18″
3 TONS CLASS B RIPRAP
11 SY FILTER FABRIC
50′ TAPER
TEMP. CAT-I
PSH - 3.75′ X 3.75′ SEE DETAIL B
PDE
-DET2- PCSta. 10+13.93
-L- POCSta. 56+24.98 OFFSET 13′ RT.
-DET2- PRCSta. 13+39.70
-DET2- PTSta. 16+47.80
CWS HARBOR COVE/NORTHCREEK ASSOCIATES LIMITED PARTNERSHIP DB 2360 PG 489
5
THE COUNTY OF DURHAM, NORTH CAROLINA DB 2047 PG 579
MATCH LINE SEE SHEET 10 -L- STA. 69+50.00

-SEE SHEETS 6 AND 7 FOR -L- DESIGN.
-SEE SHEETS 13, 14, AND 16 FOR -L- PROFILES.
-SEE SHEET 19 FOR -DET1- PROFILE.

REVISIONS

8/17/99

18-FEB-2005 09:16
R:\Proj\u4012\...
ofarr AT RD206394

PROJECT REFERENCE NO.	SHEET NO.
U-4012	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY 2-23-05

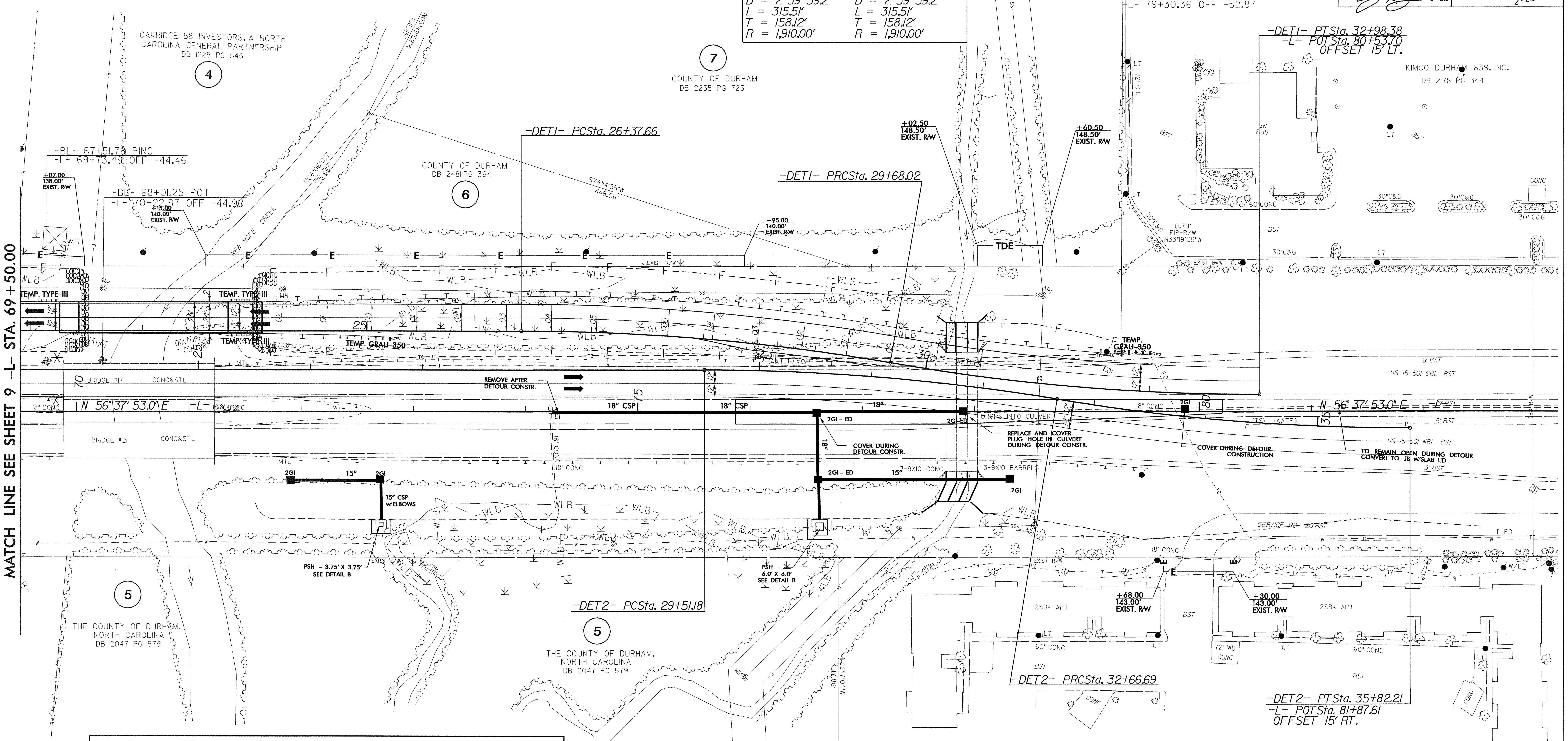
NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN 2-23-05

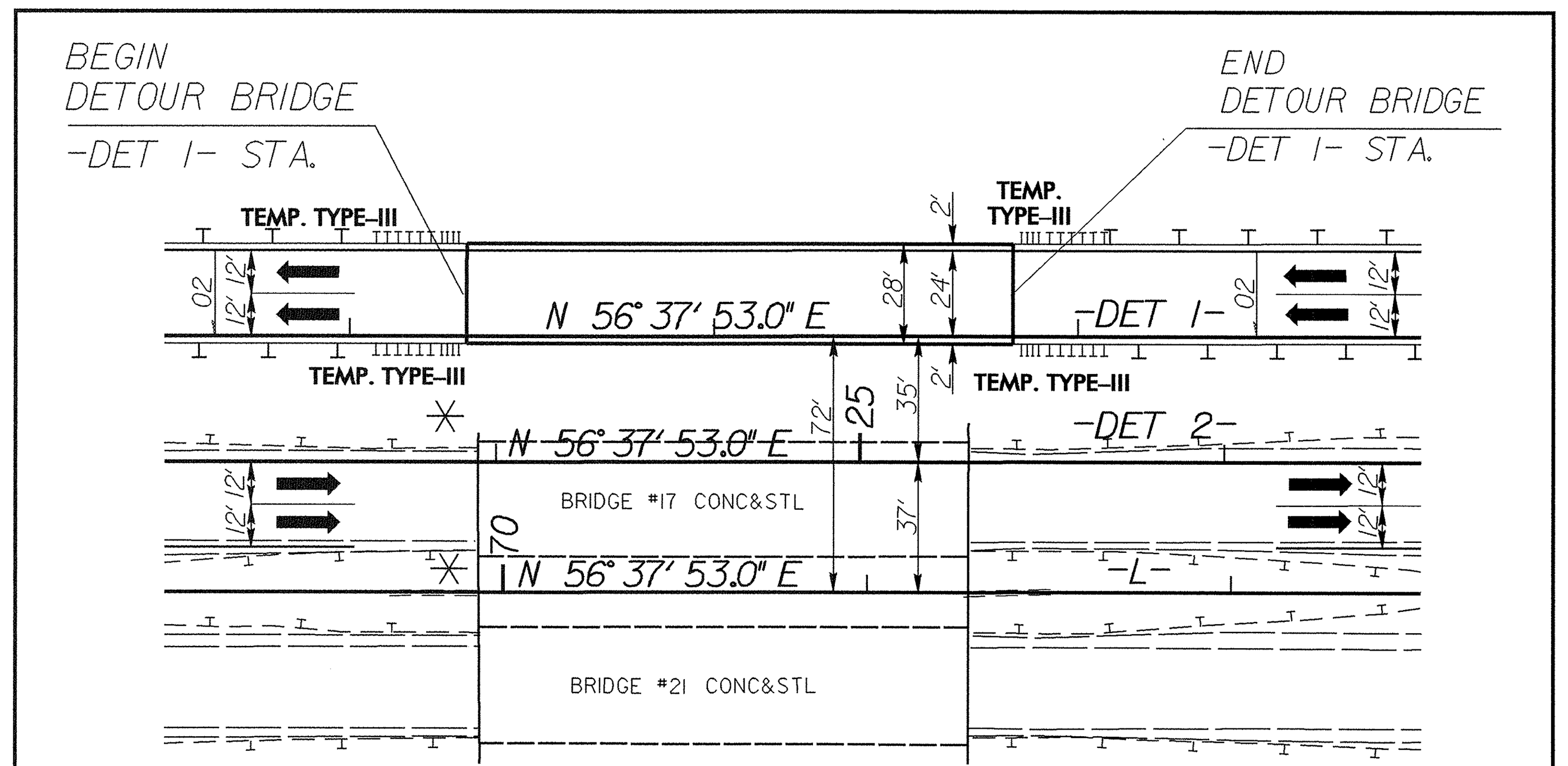
NAD 83

DETAIL OF TEMPORARY DETOURS

DETOUR DESIGN SPEED = 45 mph

-DET1-	
PI Sta 28+03.25	PI Sta 31+33.61
Δ = 9° 54' 35.9" (RT)	Δ = 9° 54' 35.9" (LT)
D = 2° 59' 59.2"	D = 2° 59' 59.2"
L = 330.36'	L = 330.36'
T = 165.59'	T = 165.59'
R = 1,910.00'	R = 1,910.00'
SE = .05	SE = .05
V = 45 MPH	V = 45 MPH
-DET2-	
PI Sta 31+09.30	PI Sta 34+24.81
Δ = 9° 27' 52.9" (RT)	Δ = 9° 27' 52.9" (LT)
D = 2° 59' 59.2"	D = 2° 59' 59.2"
L = 315.51'	L = 315.51'
T = 158.12'	T = 158.12'
R = 1,910.00'	R = 1,910.00'


MATCH LINE SEE SHEET 9 -L- STA. 69+50.00
OAKRIDGE 58 INVESTORS, A NORTH CAROLINA GENERAL PARTNERSHIP DB 1225 PG 545
COUNTY OF DURHAM DB 2481 PG 364
COUNTY OF DURHAM DB 2235 PG 723
KIMCO DURHAM 639, INC. DB 2178 PG 344
THE COUNTY OF DURHAM, NORTH CAROLINA DB 2047 PG 579
WELLINGTON PROPERTIES, LLC DB 2391 PG 538
-BL- 67+51.78 PINC
-L- 69+73.49 OFF -44.46
-BL- 68+01.25 POT
-L- 70+22.97 OFF -44.90
-BL- 77+08.68 PINC
-L- 79+30.36 OFF -52.87
-DET1- PCSta. 26+37.66
-DET1- PRCSta. 29+68.02
-DET1- PTSta. 32+98.38
-L- POT Sta. 80+53.70
OFFSET 15' LT.
-DET2- PCSta. 29+51.18
-DET2- PRCSta. 32+66.69
-DET2- PTSta. 35+82.21
-L- POT Sta. 81+87.61
OFFSET 15' RT.
NEW HOPE CREEK
TEMP. TYPE-III
TEMP. GRAU-350
REMOVE AFTER DETOUR CONSTR.
N 56° 37' 53.0" E -L-
BRIDGE #17 CONC&STL
BRIDGE #21 CONC&STL
18" CSP
2GI - ED
COVER DURING DETOUR CONSTR.
REPLACE AND COVER PLUG HOLE IN CULVERT DURING DETOUR CONSTR.
DROPS INTO CULVERT
COVER DURING DETOUR CONSTRUCTION
TO REMAIN OPEN DURING DETOUR CONVERT TO JB W/SLAB LID
3-9X10 BARRELS
15" CSP W/ELBOWS
PSH - 3.75' X 3.75' SEE DETAIL B
PSH - 6.0' X 6.0' SEE DETAIL B
US 15-501 SBL BST
US 15-501 NBL BST
SERVICE RD 20' BST
25BK APT
TDE
30' CITY OF DURHAM SANITARY SEWER EASEMENT
25' CITY OF DURHAM SANIT.



SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP FOR DETOUR

* TEMPORARY BRIDGE ANCHORS NEEDED.

- SEE SHEET 2-C FOR STRUCTURE STAGING.
- SEE SHEETS 7 AND 8 FOR -L- DESIGN.
- SEE SHEETS 14 THRU 17 FOR -L- PROFILES.
- SEE SHEET 19 FOR -DET1- PROFILE.

REVISIONS

8/17/99

21-JAN-2005 16:31
R:\Proj\u4012s10.psh
jenniferevans AT

PROJECT REFERENCE NO.	SHEET NO.
U-4012	11
R/W SHEET NO.	

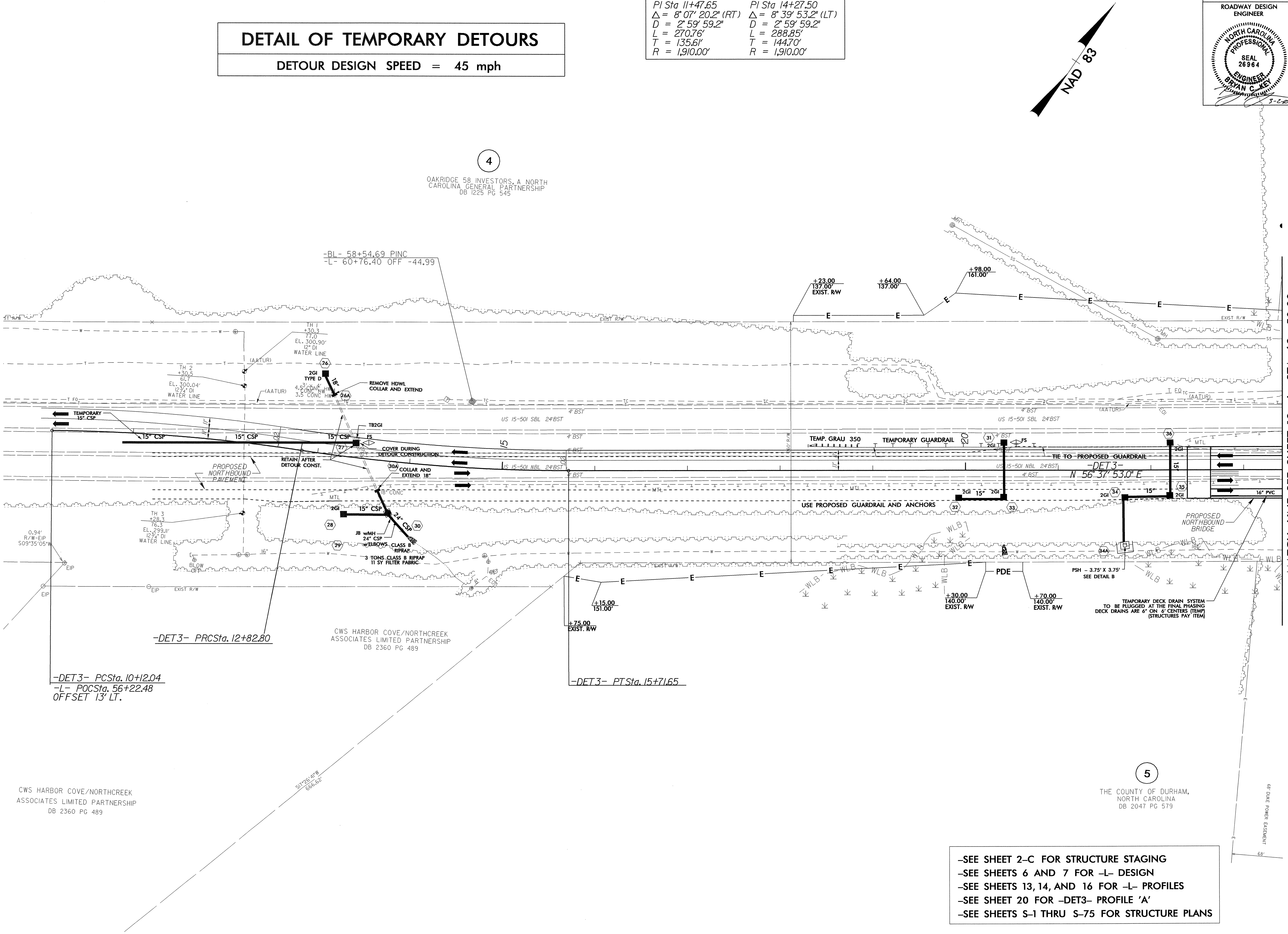
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26964 BRYAN C. KEY 3-2-05

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20870 MARC T. SHOWN 3-2-05

DETAIL OF TEMPORARY DETOURS

DETOUR DESIGN SPEED = 45 mph

-DET3-	
PI Sta 11+47.65	PI Sta 14+27.50
Δ = 8° 07' 20.2" (RT)	Δ = 8° 39' 53.2" (LT)
D = 2° 59' 59.2"	D = 2° 59' 59.2"
L = 270.76'	L = 288.85'
T = 135.61'	T = 144.70'
R = 1,910.00'	R = 1,910.00'



NAD 83
4
OAKRIDGE 58 INVESTORS, A NORTH CAROLINA GENERAL PARTNERSHIP DB 1225 PG 545
-BL- 58+54.69 PINC
-L- 60+76.40 OFF -44.99
REMOVE HDWL COLLAR AND EXTEND
TEMPORARY 15" CSP
COVER DURING DETOUR CONSTRUCTION
RETAIN AFTER DETOUR CONST.
COLLAR AND EXTEND 18"
PROPOSED NORTHBOUND PAVEMENT
US 15-501 SBL 24'BST
US 15-501 NBL 24'BST
TEMP. GRAU 350
TEMPORARY GUARDRAIL
TIE TO PROPOSED GUARDRAIL
-DET3- N 56° 37' 53.0" E
USE PROPOSED GUARDRAIL AND ANCHORS
PROPOSED NORTHBOUND BRIDGE
PSH - 3.75' X 3.75' SEE DETAIL B
TEMPORARY DECK DRAIN SYSTEM TO BE PLUGGED AT THE FINAL PHASING DECK DRAINS ARE 6" ON 6' CENTERS (TEMP) (STRUCTURES PAY ITEM)
3 TONS CLASS B RIPRAP 11 SY FILTER FABRIC
-DET3- PRCSta. 12+82.80
CWS HARBOR COVE/NORTHCREEK ASSOCIATES LIMITED PARTNERSHIP DB 2360 PG 489
-DET3- PCSta. 10+12.04
-L- POCSta. 56+22.48
OFFSET 13' LT.
-DET3- PTSta. 15+71.65
5
THE COUNTY OF DURHAM, NORTH CAROLINA DB 2047 PG 579
MATCH LINE SEE SHEET 12 -L- STA. 69+50.00

- SEE SHEET 2-C FOR STRUCTURE STAGING
- SEE SHEETS 6 AND 7 FOR -L- DESIGN
- SEE SHEETS 13, 14, AND 16 FOR -L- PROFILES
- SEE SHEET 20 FOR -DET3- PROFILE 'A'
- SEE SHEETS S-1 THRU S-75 FOR STRUCTURE PLANS

REVISIONS

8/17/99

02-MAR-2005 06:55 R:\Proj\U4012\psh-11 BCKey AT RD223183

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-4012	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 28984 ENGINEER BRYAN CZ KEY — 3-2-05

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN — 3-2-05

DETAIL OF TEMPORARY DETOURS

DETOUR DESIGN SPEED = 45 mph

-DET3-

PI Sta 31+41.65	PI Sta 34+35.11
△ = 8° 48' 11.4" (LT)	△ = 8° 48' 11.4" (RT)
D = 2° 59' 59.2"	D = 2° 59' 59.2"
L = 293.46'	L = 293.46'
T = 147.02'	T = 147.02'
R = 1,910.00'	R = 1,910.00'

NAD 83

MATCH LINE SEE SHEET 11 –L– STA. 69+50.00

OAKRIDGE 58 INVESTORS, A NORTH CAROLINA GENERAL PARTNERSHIP DB 1225 PG 545 — (4)

OAKRIDGE 58 INVESTORS, A NORTH CAROLINA GENERAL PARTNERSHIP DB 1225 PG 545 — (4)

(7) COUNTY OF DURHAM DB 2235 PG 723

COUNTY OF DURHAM DB 2481 PG 364 — (6)

KIMCO DURHAM 639, INC. DB 2178 PG 344

-BL- 67+51.73 PINC
-L- 69+73.48 OFF -44.46

-BL- 68+01.25 POT
-L- 70+22.97 OFF -44.90

-BL- 77+08.68 PINC
-L- 79+30.36 OFF -52.87

+07.00 138.00' EXIST. R/W

+15.00 140.00' EXIST. R/W

+95.00 140.00' EXIST. R/W

+02.50 148.50' EXIST. R/W

+60.50 148.50' EXIST. R/W

+68.00 143.00' EXIST. R/W

+30.00 143.00' EXIST. R/W

NEW HOPE CREEK

S74°14'55"W 448.06'

N00°06'00"E 175.48'

S3°39'39"E 425.89'

N13°45'59"W 60.00'

N23°57'04"W 301.86'

N13°45'59"W 394.55'

0.79' EIP-R/W N33°19'05"W

TEMPORARY BRIDGE TO BE REMOVED

BRIDGE #17 CONC&STL

BRIDGE #21 CONC&STL

REMOVE AFTER DETOUR CONSTR.

USE PROPOSED GUARDRAIL AND ANCHORS

-DET3-
N 56° 37' 53.0" E

PROPOSED NORTHBOUND BRIDGE

16" PVC

15" CSP w/ELBOWS

TEMPORARY DECK DRAIN SYSTEM TO BE PLUGGED AT THE FINAL PHASING DECK DRAINS ARE 6" ON 6' CENTERS (TEMP) (STRUCTURES PAY ITEM)

PSH – 3.75' X 3.75' SEE DETAIL B

PSH 6.0' X 6.0' SEE DETAIL B

-DET3- PCSta. 29+94.63

-DET3- PRCSta. 32+88.09

-DET3- PTSta. 35+81.55
-L- POTSta. 81+87.61
OFFSET 15' LT.

18" CSP — 18" CSP — 18" — 18" CSP — 15" — 15" CSP — 15"-2X18 CSPC

DROPS INTO CULVERT

REMOVE BOX AND REPLACE (PLUG HOLE IN TOP OF CULVERT) COVER DURING DETOUR CONSTR.

COVER DURING DETOUR CONSTR.

PROPOSED NORTHBOUND PAVEMENT

COVER DURING DETOUR CONSTRUCTION

US 15-501 SBL BST

US 15-501 NBL BST

TO REMAIN OPEN DURING DETOUR CONVERT TO JB W/SLAB LID

TDE STILLING BASIN

ISM BUS

60" CONC

30" C&G

72" WD CONC

2SBK APT

SERVICE RD 20' BST

6' BST

5' BST

3' BST

(TS) (AATFT)

(AATUR)

(AATHR)

THE COUNTY OF DURHAM, NORTH CAROLINA DB 2047 PG 579 — (5)

THE COUNTY OF DURHAM, NORTH CAROLINA DB 2047 PG 579 — (5)

WELLINGTON PROPERTIES, LLC DB 2391 PG 538 — (8)

N58°43'56"E 161.90'

30' CITY OF DURHAM SANITARY SEWER EASEMENT

N31°14'04"W 389.85'

N58°43'56"E 50.00'

N31°16'04"W 50.00'

S31°16'04"E 50.00'

25' CITY OF DURHAM SANIT.

-SEE SHEET 2-C FOR STRUCTURE STAGING
-SEE SHEETS 7 AND 8 FOR –L– DESIGN
-SEE SHEETS 14 THRU 17 FOR –L– PROFILES
-SEE SHEET 20 FOR –DET3– PROFILE 'B'
-SEE SHEETS S-1 THRU S-75 FOR STRUCTURE PLANS

02-MAR-2005 06:55
u:\Proj\u4012s12.psh
BCKey
41

RD223183 Wednesday March 02 2005 u4012psh-12 BCKey rd-09oce34

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-4012	13

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY

2-23-05

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN

2-23-05

–L LEFT–

PI = 36+10.00
EL = 314.75'
VC = 260'
K = 175
V = 60+MPH

BEGIN GRADE
END RESURFACING
–L– STA. 34+00.00
ELEV. = 312.26

BM#2 R/R SPIKE IN BASE OF 20" DOUBLE HICKORY
113' LT OF BL STA. 35+83.00. EL = 314.64

(+)1.1857%
(–)0.3006%

312.53

SEE SHEET 5 FOR PLANS

350 340 330 320 310 300 290 280 270 260

30 31 32 33 34 35 36 37 38 39 40 41 42 43 44

–L LEFT–

PI = 44+85.00
EL = 312.12'
VC = 380'
K = 360
V = 60+MPH

PI = 51+50.00
EL = 317.15'
VC = 340'
K = 311
V = 60+MPH

PI = 55+35.00
EL = 315.85'
VC = 420'
K = 164
V = 60+MPH

312.63

(–)0.3006%
(+)0.7564%
(+)0.7564%
(–)0.3377%
(–)0.3377%
(–)2.9032%

308.15

BM#3 R/R SPIKE IN BASE OF 19" PINE
113' LT OF BL STA. 51+67.00. EL = 315.11

SEE SHEET 6 FOR PLANS

350 340 330 320 310 300 290 280 270 260

44 45 46 47 48 49 50 51 52 53 54 55 56 57 58

21-JAN-2005 16:31
R:\PROJ\u4012.pfl
jenniferevans AT RD196588

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-4012	14

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY 2-23-05

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN 2-23-05

–L LEFT–

PI = 60+00.00
EL = 302.35'
VC = 440'
K = 192
V = 60+MPH

(-)2.9032%

(-)5.1949%

308.15

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 8,440 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 254.87 FT
BASE DISCHARGE	= 10,068CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 256.93 FT
OVERTOPPING DISCHARGE	= N/A
OVERTOPPING FREQUENCY	= N/A
OVERTOPPING ELEVATION	= N/A

PI = 67+85.00
EL = 261.57'
VC = 1,130'
K = 206
V = 60+MPH

BEGIN BRIDGE
-L- STA. 68+72.48+/- LT.

END BRIDGE
-L- STA. 71+72.48+/- LT.

(-)5.1949%

(+)0.3007%

263.37

BM#4 R/R SPIKE IN BASE OF 18" RED OAK
114' RT OF BL STA. 68+27.00 EL = 249.28

NOTE: EXCAVATE EXISTING ROADWAY FILL UNDER NEW BRIDGE TO MATCH FLOODPLAIN ELEVATION (+/- 248.0')

TEMPORARY COFFER DAMS

SEE SHEET 7 FOR PLANS

–L LEFT–

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 8,440 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 254.87 FT
BASE DISCHARGE	= 10,068CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 256.93 FT
OVERTOPPING DISCHARGE	= N/A
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= N/A

PI = 75+00.00
EL = 263.72'
VC = 300'
K = 250
V = 60++MPH

PI = 80+00.00
EL = 259.23'
VC = 700'
K = 240
V = 60++MPH

END GRADE STA. 85+20.00
BEGIN MIN. RESURFACING
ELEV. = 269.75

MIN. RESURFACING

263.37

(+)0.3007%

(-)0.8980%

(-)0.8980%

(+)2.023 1%

2.36 %

LEFT DITCH

BEGIN DITCH
STA. 81+50 ELEV. 256.89

END DITCH
STA. 79+00 ELEV. 251.00

SEE SHEET 8 FOR PLANS

21-JAN-2005 15:31
R:\Survey\Roadway\
jenniferevans AT RD196588

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-4012	15

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY

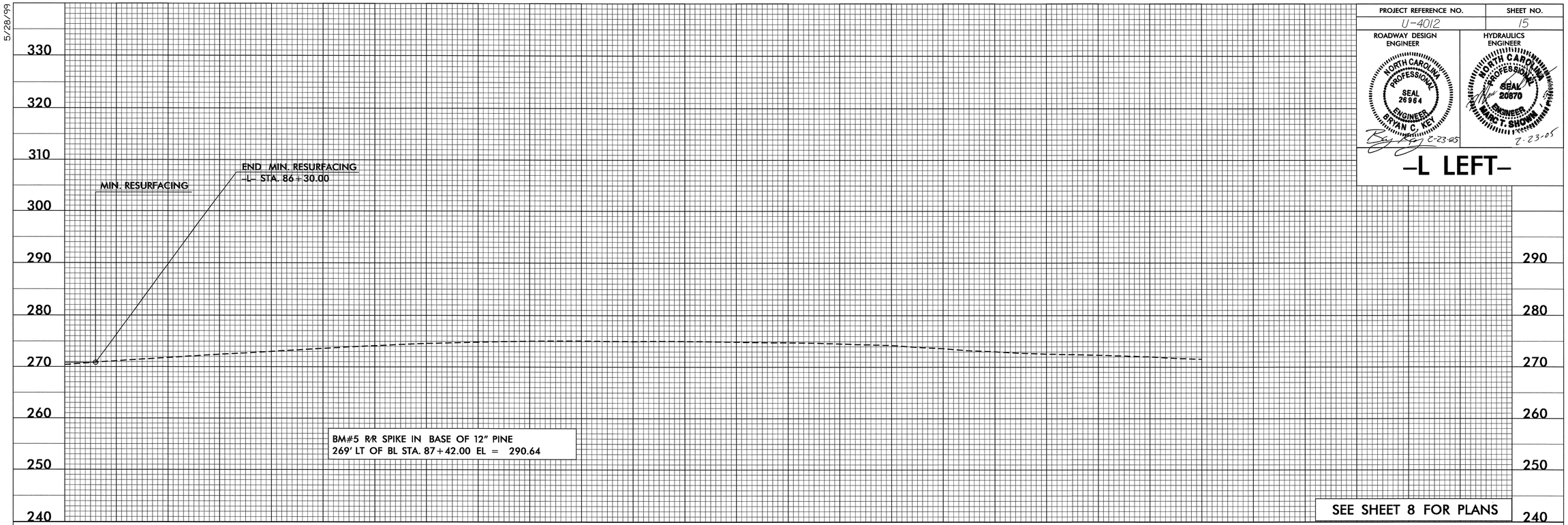
2-23-05

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN

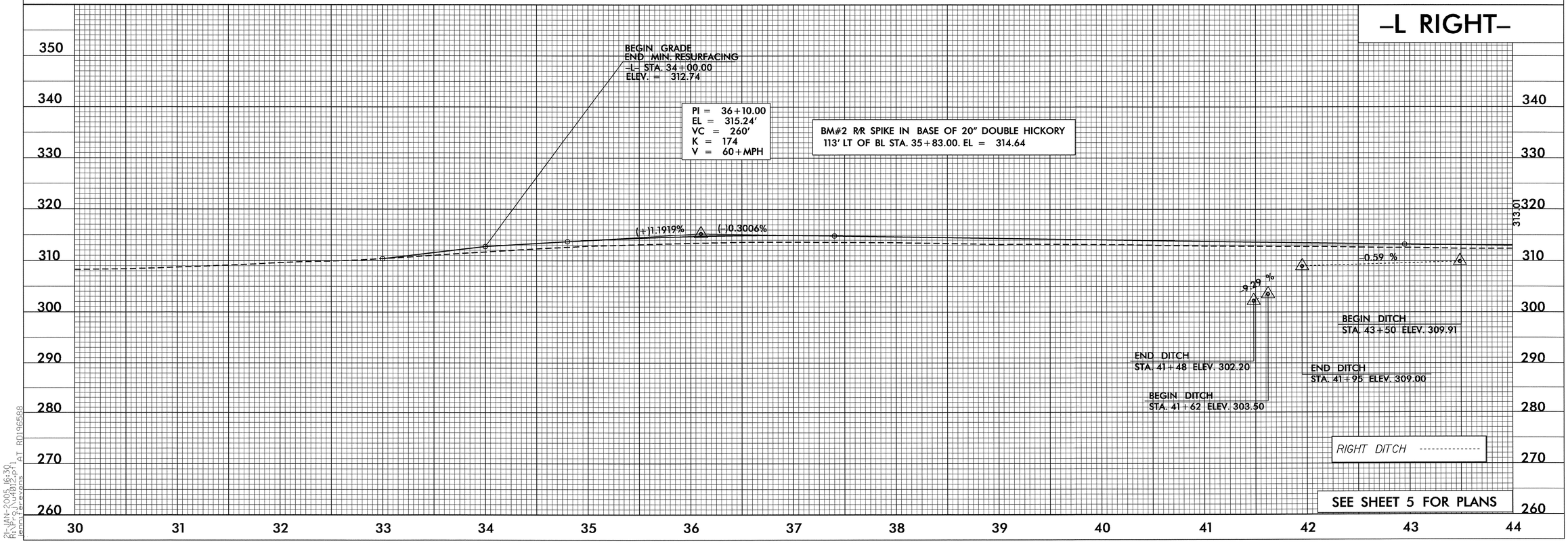
2-23-05

–L LEFT–



SEE SHEET 8 FOR PLANS

–L RIGHT–



SEE SHEET 5 FOR PLANS

21-JAN-2005 16:39
RD196588
(u4012pfl-15)
jenniferevans AT RD196588

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-4012	16

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN O. KEL

2-23-05

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN

2-23-05

–L RIGHT–

PI = 44+85.00
EL = 312.61'
VC = 380'
K = 383
V = 60+MPH

PI = 51+50.00
EL = 317.21'
VC = 340'
K = 342
V = 60+MPH

PI = 55+35.00
EL = 316.05'
VC = 420'
K = 172
V = 60+MPH

313.01

(–)0.3006% (+)0.6917% (+)0.6917% (–)0.3013% (–)0.3013% (–)2.7376%

308.78

BM#3 R/R SPIKE IN BASE OF 19" PINE
113' LT OF BL STA. 51+67.00. EL = 315.11

SEE SHEET 6 FOR PLANS

–L RIGHT–

PI = 60+00.00
EL = 303.32'
VC = 440'
K = 170
V = 60 MPH

308.78

(–)2.7376% (–)5.3210%

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 8,440 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 254.87 FT
BASE DISCHARGE	= 10,068CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 256.93 FT
OVERTOPPING DISCHARGE	= N/A
OVERTOPPING FREQUENCY	= N/A
OVERTOPPING ELEVATION	= N/A

BEGIN BRIDGE
-L- STA. 68+72.60+/- RT.

END BRIDGE
-L- STA. 71+72.60+/- RT.

PI = 67+85.00
EL = 261.55'
VC = 1,130'
K = 201
V = 60+MPH

(–)5.3210% (+)0.3021%

263.36

BM#4 R/R SPIKE IN BASE OF 18" RED OAK
114' RT OF BL STA. 68+27.00 EL = 249.28

NOTE: EXCAVATE EXISTING ROADWAY FILL UNDER NEW BRIDGE TO MATCH FLOODPLAIN ELEVATION (+/- 248.0')

TEMPORARY COFFER DAMS

SEE SHEET 7 FOR PLANS

21-JAN-2005 16:39
R:\U-4012\roll\pfl
jenniferevans AT RD196588

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-4012	17

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY
2-23-05

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN
2-23-05

–L RIGHT–

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 8,440 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 254.87 FT
BASE DISCHARGE	= 10,068CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 256.93 FT
OVERTOPPING DISCHARGE	= N/A
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= N/A

PI = 75+00.00
EL = 263.71'
VC = 300'
K = 286
V = 60+ +MPH

PI = 80+00.00
EL = 259.98'
VC = 700'
K = 267
V = 60+ +MPH

END GRADE STA. 85+20.00
BEGIN MIN. RESURFACING
ELEV. = 269.73

MIN. RESURFACING

263.36

(+)0.3021%

(–)0.7460%

(–)0.7460%

2.33 %

(+)1.8754%

BEGIN DITCH
STA. 81+50 ELEV. 260.18

END DITCH
STA. 78+85 ELEV. 254.00

RIGHT DITCH ----------

SEE SHEET 8 FOR PLANS

330 320 310 300 290 280 270 260 250 240

72 73 74 75 76 77 78 79 80 81 82 83 84 85 86

–L RIGHT–

END MIN. RESURFACING
–L– STA. 86+30.00

MIN. RESURFACING

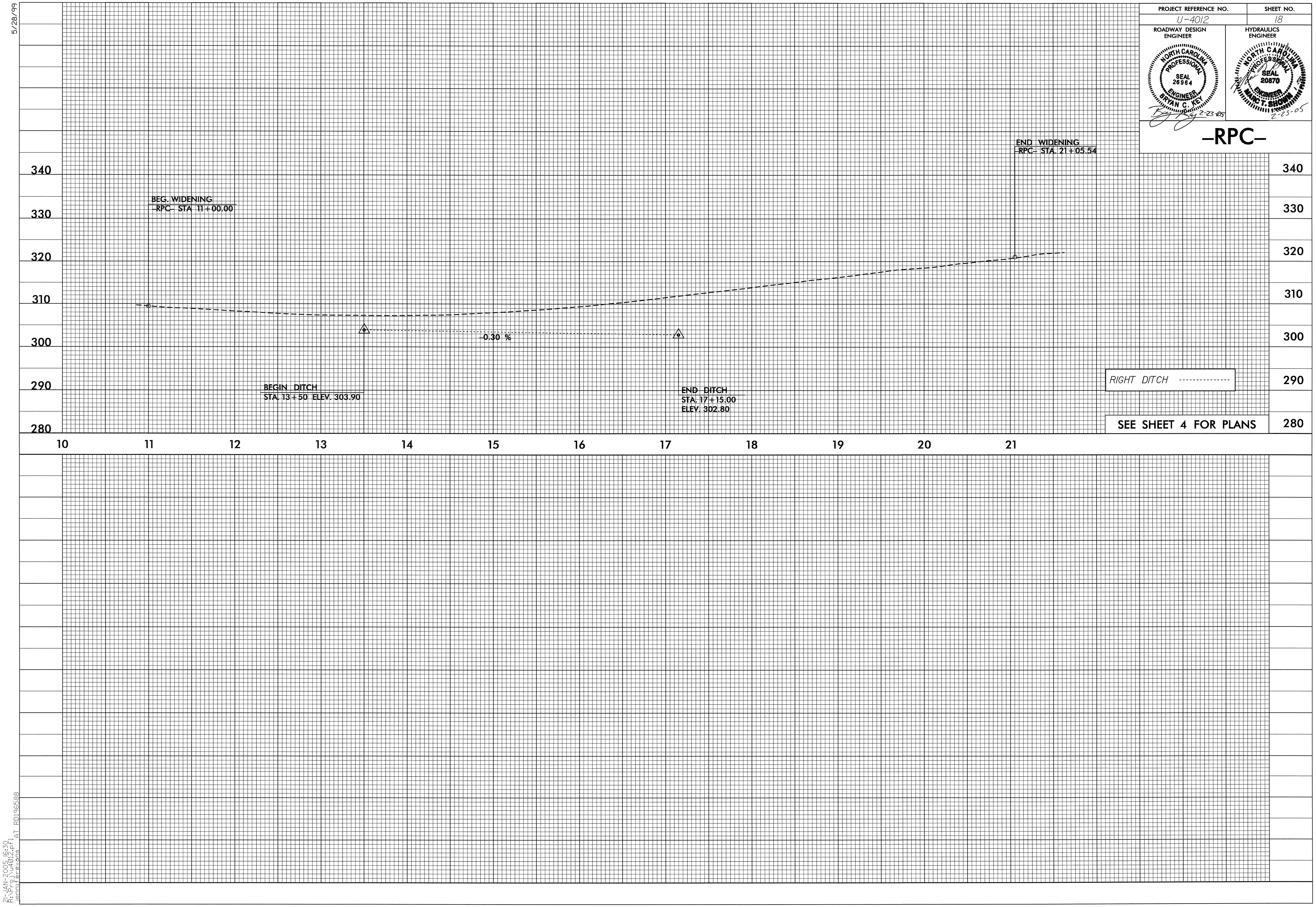
BM#5 R/R SPIKE IN BASE OF 12" PINE
269' LT OF BL STA. 87+42.00 EL = 290.64

SEE SHEET 8 FOR PLANS

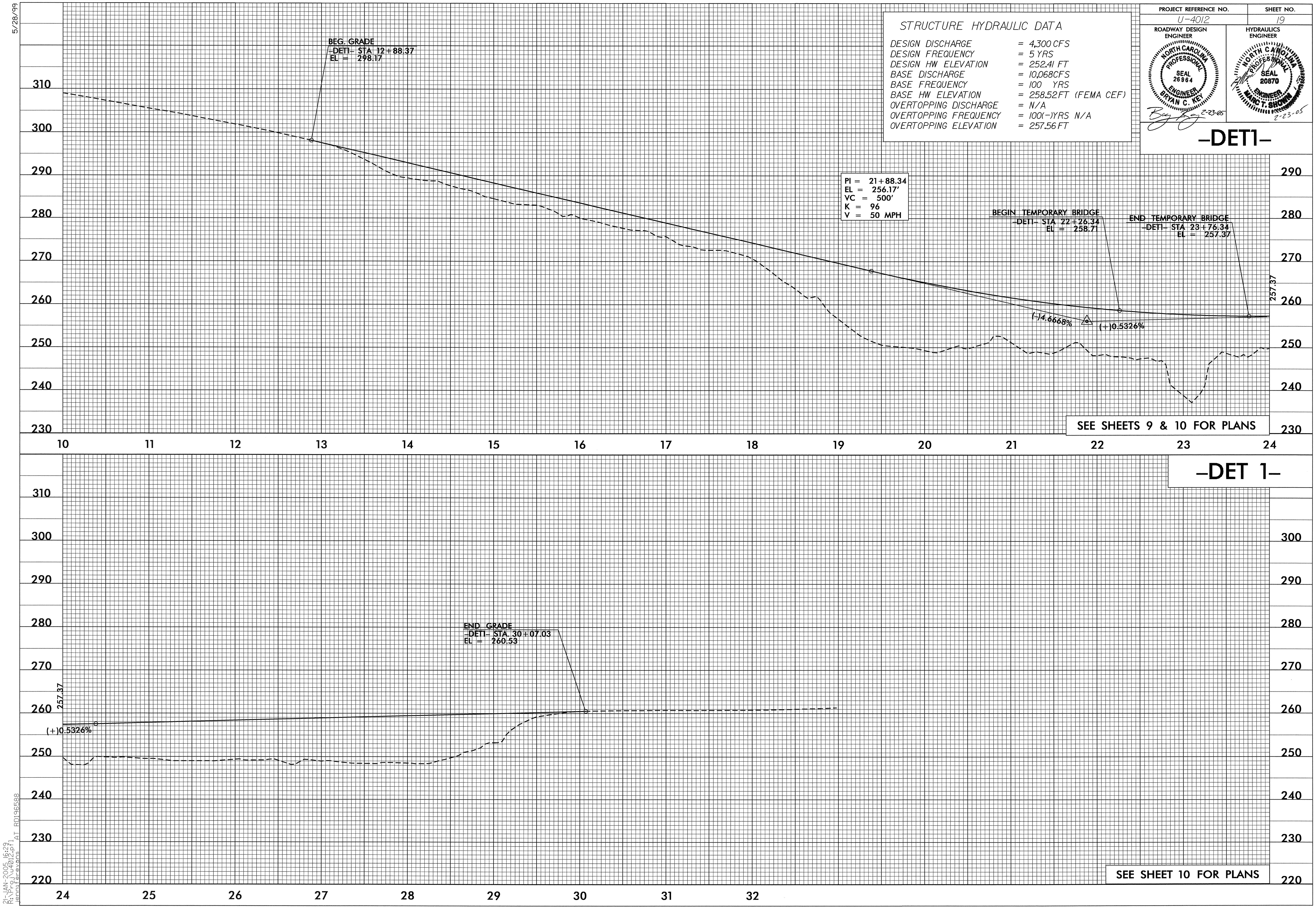
330 320 310 300 290 280 270 260 250 240

86 87 88 89 90 91 92 93 94 95 96 97

21-JAN-2005 16:39
R:\Roadway\RD196588\u4012pfl-17.dgn
jenniferevans AT RD196588


PROJECT REFERENCE NO.
U-4012
SHEET NO.
18
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY
2-23-05
NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN
2-23-05
-RPC-
5/28/99
END WIDENING
-RPC- STA. 21+05.54
BEG. WIDENING
-RPC- STA 11+00.00
-0.30 %
BEGIN DITCH
STA. 13+50 ELEV. 303.90
END DITCH
STA. 17+15.00
ELEV. 302.80
RIGHT DITCH
SEE SHEET 4 FOR PLANS
340
330
320
310
300
290
280
10
11
12
13
14
15
16
17
18
19
20
21
21-JAN-2005 16:30
R:\Proj\u4012.pfl
jenniferevans AT RD196588

RD196588 Friday January 21 2005 u4012pfl-18 jenniferevans rd-09oce34



PROJECT REFERENCE NO.
U-4012
SHEET NO.
19
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY
NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN
2-23-05
-DET1-
STRUCTURE HYDRAULIC DATA
DESIGN DISCHARGE = 4,300 CFS
DESIGN FREQUENCY = 5 YRS
DESIGN HW ELEVATION = 252.41 FT
BASE DISCHARGE = 10,068CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 258.52FT (FEMA CEF)
OVERTOPPING DISCHARGE = N/A
OVERTOPPING FREQUENCY = 100(-)YRS N/A
OVERTOPPING ELEVATION = 257.56 FT
5/28/99
BEG. GRADE
-DET1- STA 12+88.37
EL = 298.17
PI = 21+88.34
EL = 256.17'
VC = 500'
K = 96
V = 50 MPH
BEGIN TEMPORARY BRIDGE
-DET1- STA 22+26.34
EL = 258.71
END TEMPORARY BRIDGE
-DET1- STA 23+76.34
EL = 257.37
(-)4.6668%
(+)0.5326%
257.37
SEE SHEETS 9 & 10 FOR PLANS
-DET 1-
END GRADE
-DET1- STA. 30+07.03
EL = 260.53
257.37
(+)0.5326%
SEE SHEET 10 FOR PLANS
21-JAN-2005 16:29
R:\Proj\u4012.pfl
jenniferevans AT RD196588

RD196588 Friday January 21 2005 u4012pfl-19 jenniferevans rd-09oce34

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-4012	20

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26964 ENGINEER BRYAN C. KEY

2-23-05

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN

2-23-05

–DET3–

PI = 10+35.00
EL = 312.03'
VC = 45'
K = 123
V = 55 MPH

PI = 12+10.00
EL = 308.65'
VC = 241'
K = 138
V = 55 MPH

(-)2.2953%

(-)1.9309%

(-)3.6716%

BEG. GRADE 'A'
-DET3- STA. 10+12.04
EL = 312.56

END GRADE 'A'
-DET3- STA. 13+30.52
EL = 304.23
BEGIN WIDENING OFF LRT GRADE
-L- STA. 59+39.52

SEE SHEET 11 FOR PLANS

–DET 3–

PI = 33+00.00
EL = 261.89'
VC = 65'
K = 96
V = 50 MPH

PI = 34+25.00
EL = 261.15'
VC = 175'
K = 97
V = 50 MPH

BEG. GRADE 'B'
-DET3- STA. 32+65.24
EL = 261.86
END WIDENING OFF LRT GRADE
-L- STA. 78+72.69

(+)0.0880%

(-)0.5911%

(+)1.2137%

END GRADE 'B'
-DET3- STA. 35+81.55
EL = 263.05

SEE SHEET 12 FOR PLANS

21-JAN-2005 16:29
R:\Projects\U4012\Plans\DET3.dgn AT
jenniferevans