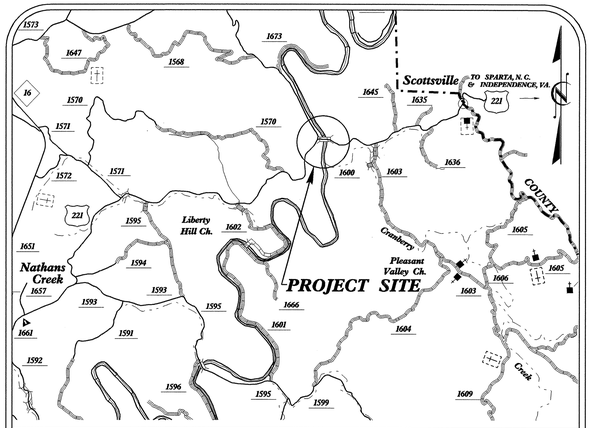
09/08/99

TIP PROJECT: B–1037

CONTRACT: C202165

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ASHE COUNTY

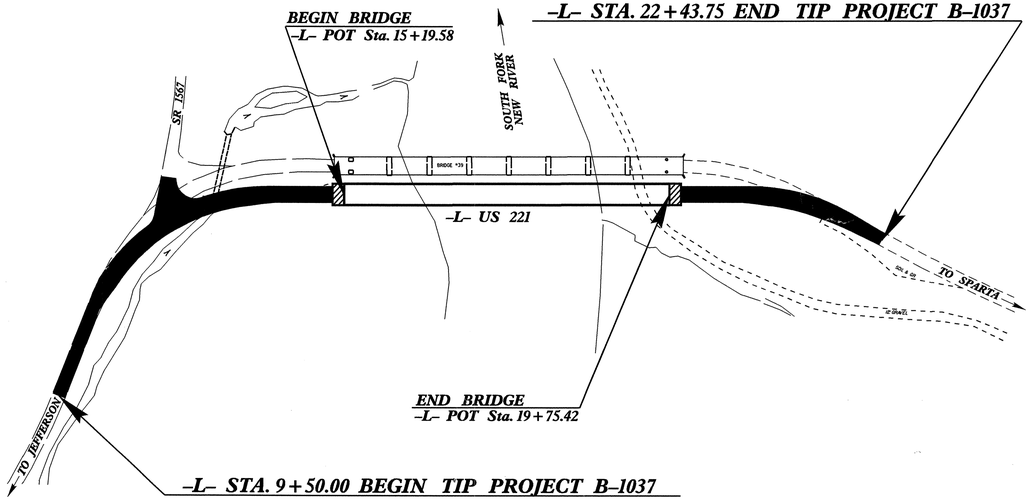
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–1037	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
32579.1.1	BRSTP–221(6)	P.E.
32579.3.1	BRSTP–0221(20)	R/W & UTIL
32579.2.3	BRSTP–221(29)	CONST.

LOCATION: BRIDGE NO. 39 OVER SOUTH FORK NEW RIVER ON US 221 NORTHEAST OF JEFFERSON.

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE.

4



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2009	=	800
ADT 2030	=	1300
DHV	=	14 %
D	=	55 %
T	=	4 % *
V	=	30 MPH
FUNC CLASS	=	COLLECTOR

* TTST 1% DUAL 3%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–1037 = 0.159 mi.
LENGTH STRUCTURE TIP PROJECT B–1037 = 0.086 mi
TOTAL LENGTH TIP PROJECT B–1037 = 0.245 mi.

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 19, 2008

LETTING DATE: JANUARY 19, 2010

JIMMY GOODNIGHT, P.E.
PROJECT ENGINEER

MARK HUSSEY
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN
SIGNATURE: 11-3-09

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES LANFORD GOODNIGHT, JR.
SIGNATURE: P.E. 11-3-09

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION
P.E.
STATE HIGHWAY DESIGN ENGINEER

15-OCT-2009 06:56
r:\roadway\proj\b1037_rdy_tsh.dgn
$$$$USERNAME$$$$

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	LIST OF STANDARDS INDEX OF SHEETS, GENERAL NOTES &
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2-A	ANCHORAGE FOR FRAMES
2-B	TRAFFIC BEARING JUNCTION BOX
2-C THROUGH 2-D	METHOD OF PIPE INSTALLATION
3	SUMMARY OF QUANTITIES
3-A	DRAINAGE SUMMARIES
3-B	GUARDRAIL, PAVEMENT REMOVAL AND EARTHWORK SUMMARIES
4	PLAN SHEET
5	PROFILE SHEET
TCP-1 THROUGH TCP-4	TRAFFIC CONTROL PLANS
PMP-1 THROUGH PMP-2	PAVEMENT MARKING PLANS
EC-1 THROUGH EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION
U0-1 THROUGH U0-2	UTILITIES BY OTHERS PLANS
X-1A	EARTHWORK VOLUME SUMMARY
X-1 THROUGH X-34	CROSS-SECTIONS
S-1 THROUGH S-54	STRUCTURE PLANS
W-1 THROUGH W-3	RETAINING WALL PLANS

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

2006 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.33	Reinforced Concrete Endwall - for Single 66" Pipe 90 Skew
838.63	Reinforced Brick Endwall - for Single 66" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
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

GENERAL NOTES:

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

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

UNDERDRAINS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE Skyline Membership Corporation

(Telephone) and Blue Ridge EMC (Power).

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

09/08/09

PROJECT REFERENCE NO.	SHEET NO.
B-1037	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

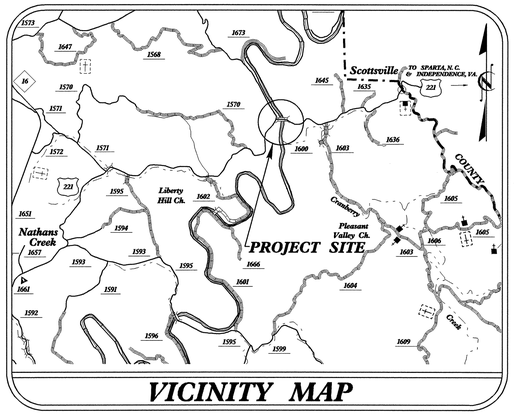
MISCELLANEOUS:

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-1037	1C
Location and Surveys	

SURVEY CONTROL SHEET B-1037



VICINITY MAP

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
2	GPS B1037-2	998601.5360	1311715.2530	2662.37	OUTSIDE PROJECT LIMITS	
3	BL-3	999066.1460	1312249.8900	2623.78	OUTSIDE PROJECT LIMITS	
4	BL-4	999512.9290	1312502.3530	2595.75	12+97.92	54.68 LT
5	BL-5	999485.2960	1313200.7780	2585.75	19+75.57	49.87 LT
6	BL-6	999137.4260	1313850.0080	2591.55	OUTSIDE PROJECT LIMITS	

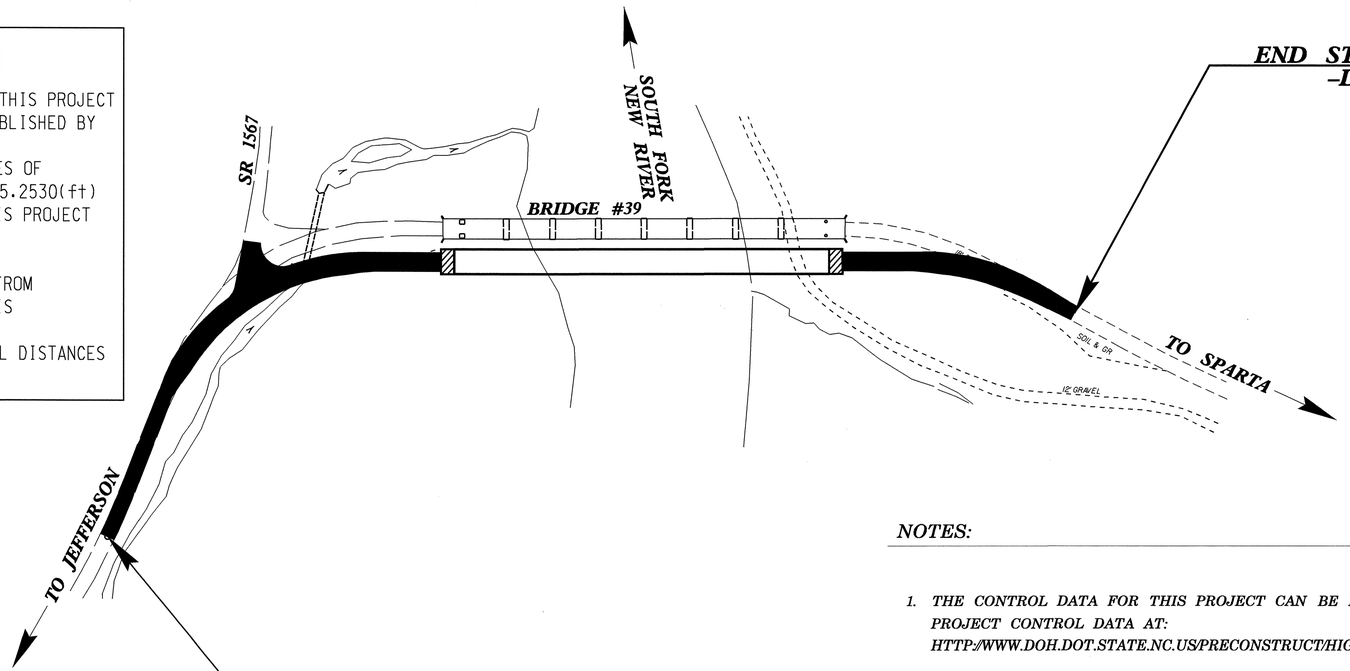
BM#1 ELEVATION = 2632.80
N 999113. E 1312238.
OUTSIDE PROJECT LIMITS
RR-SPIKE IN BASE OF 12" OAK TREE

BM#2 ELEVATION = 2605.40
N 999188. E 1313908.
OUTSIDE PROJECT LIMITS
RR-SPIKE IN ROOT OF 20" WHITE PINE TREE

NAD 83

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B1037-2"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 998601.5360(ft) EASTING: 1311715.2530(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99997388
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B1037-2" TO -L- STATION 10+00.00 IS
N 45°46'08" E 845.21'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29



END STATE PROJECT B-1037
-L- POT 22+43.75
N = 999309.8619
E = 1313516.0150

BEGIN STATE PROJECT B-1037
-L- POC Sta. 9+50.00
N = 999191.1190
E = 1312320.875

NC DOT GPS STATION B1037-2
N = 998601.5360
E = 1311715.2530

NC DOT GPS STATION B1037-1
N = 997000.3420
E = 1311800.5063

NOTE: DRAWING NOT TO SCALE

NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
B1037_LS_CONTROL_080502.HTML

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

△ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

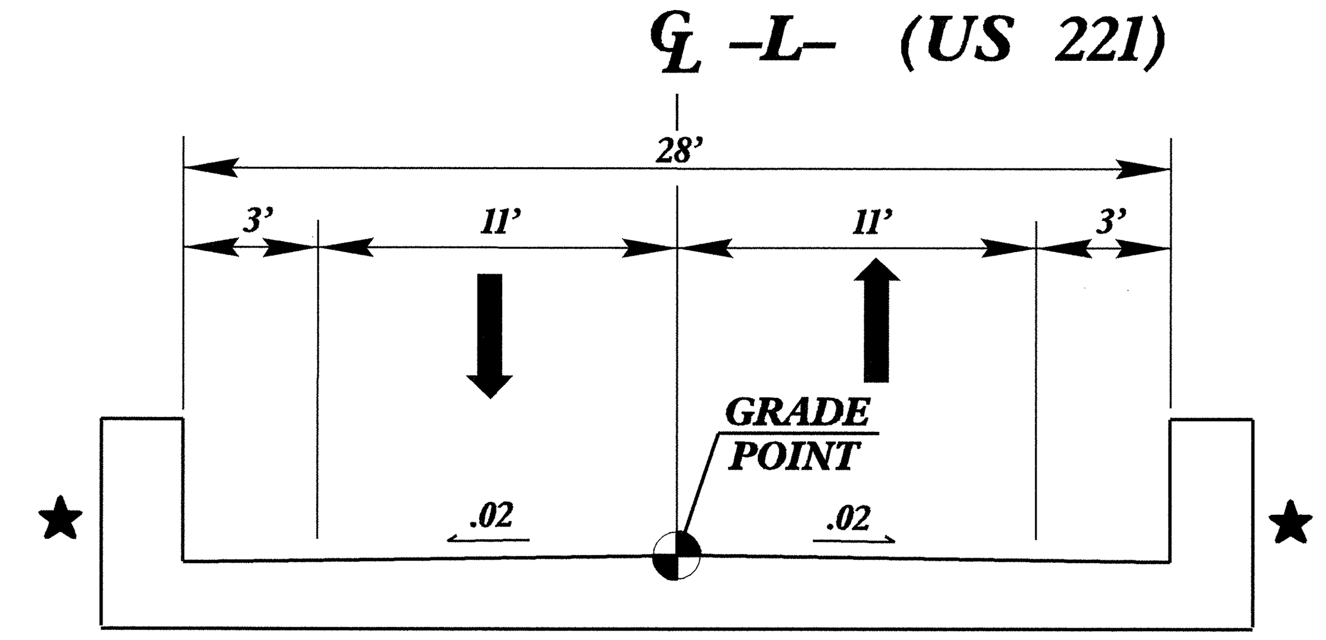
14-OCT-2009 10:11
I:\roadway\prj\b1037_ls_lc_080509.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-1037	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

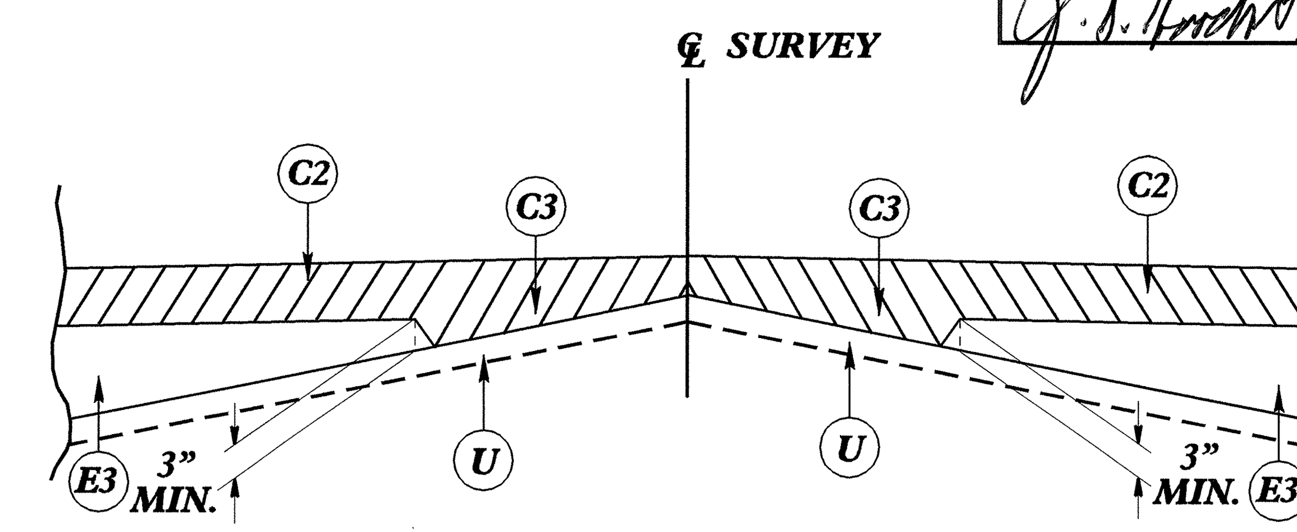
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL).

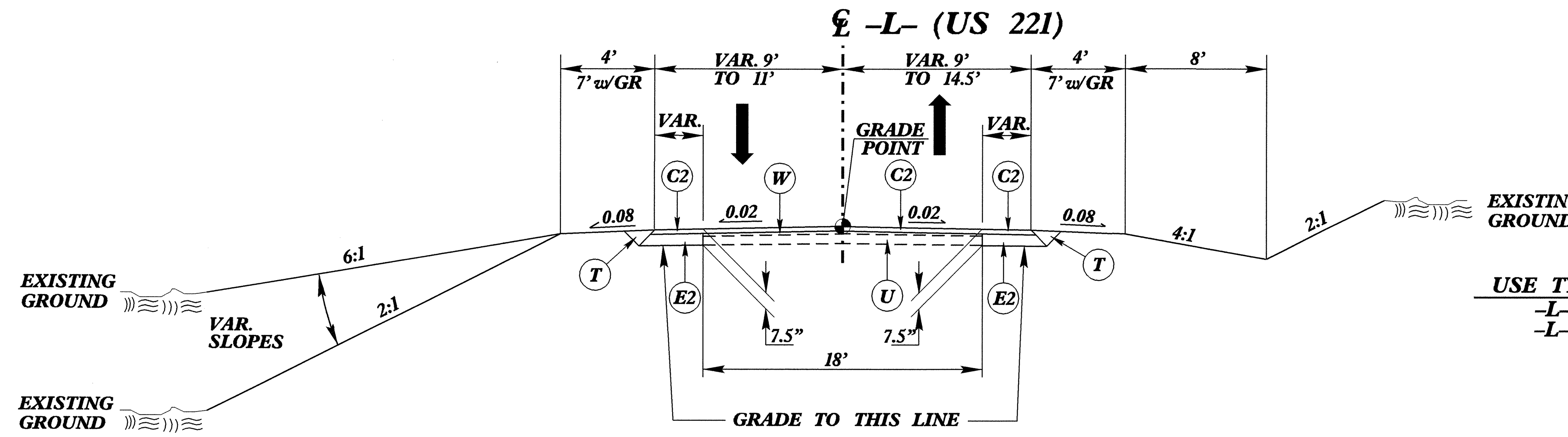
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION ON STRUCTURE
-L- STA. 15+19.58 TO 19+75.42
★BRIDGE RAIL TO BE TEXAS CLASSIC RAIL

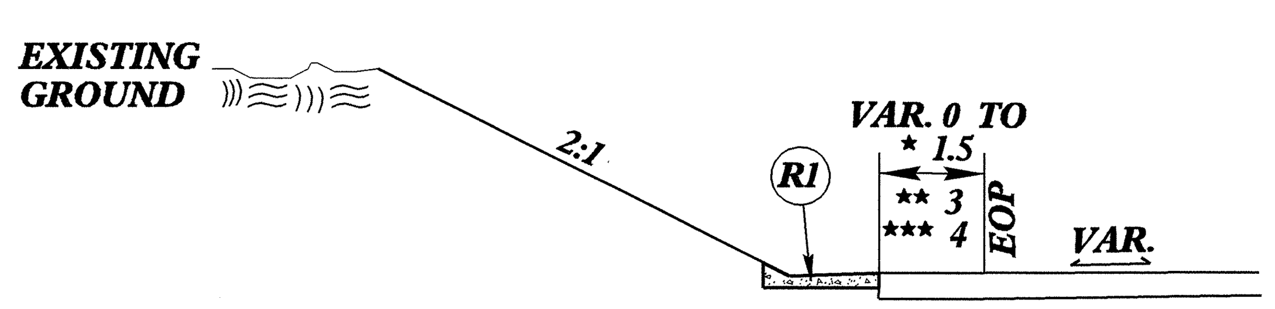


Detail Showing Method of Wedging

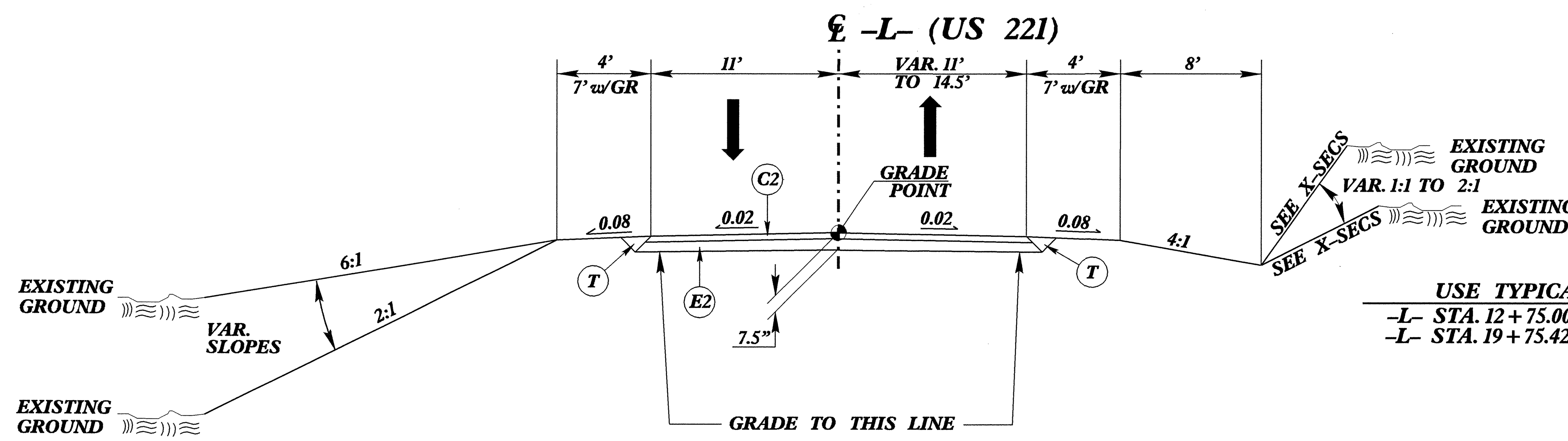


TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS
-L- STA. 10+00.00 TO STA. 12+75.00
-L- STA. 21+25.00 TO STA. 22+43.75



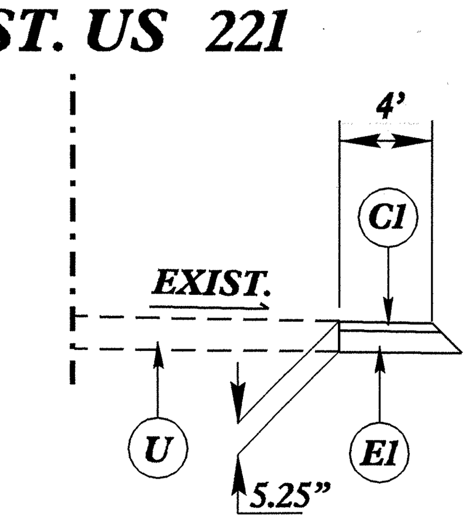
INSET 1A
TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 1
* -L- LT STA. 9+50.00 TO STA. 10+50.00
** -L- LT. STA. 10+75.00 TO STA. 11+25.00
*** -L- LT. STA. 11+50.00 TO STA. 12+00.00
* -L- LT STA. 21+50.00 TO STA. 22+43.75
* -L- RT STA. 19+89.42 TO STA. 20+49.79



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS
-L- STA. 12+75.00 TO STA. 15+19.58 (BEGIN BRIDGE)
-L- STA. 19+75.42 (END BRIDGE) TO STA. 21+25.00

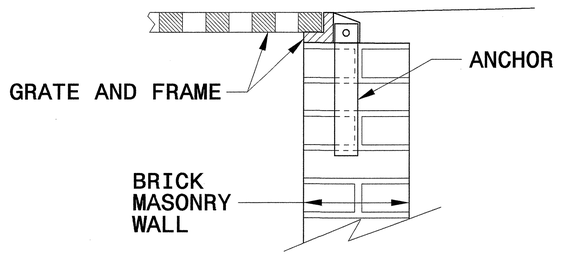
EXIST. US 221

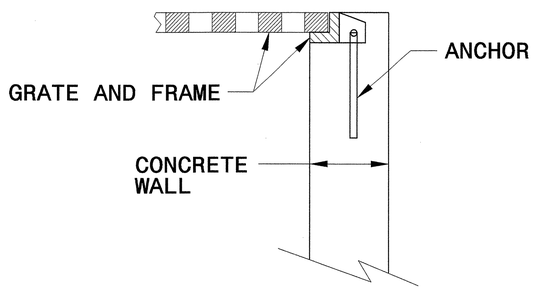


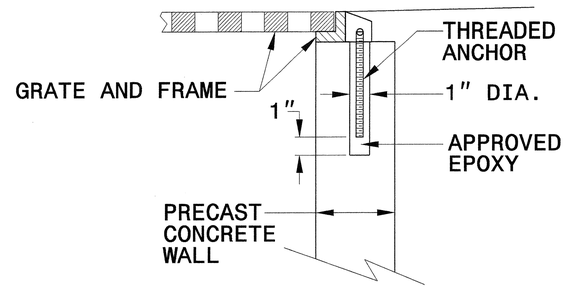
TYPICAL SECTION NO. 3

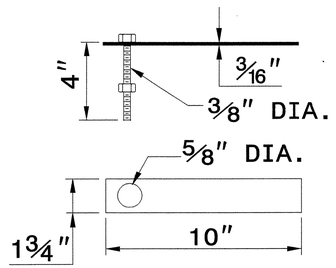
USE TYPICAL SECTION NO. 3 AS FOLLOWS
-L- STA. 19+67.00 TO STA. 20+43.00

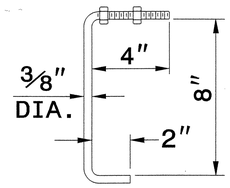
10-NOV-2009 15:16

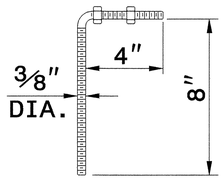


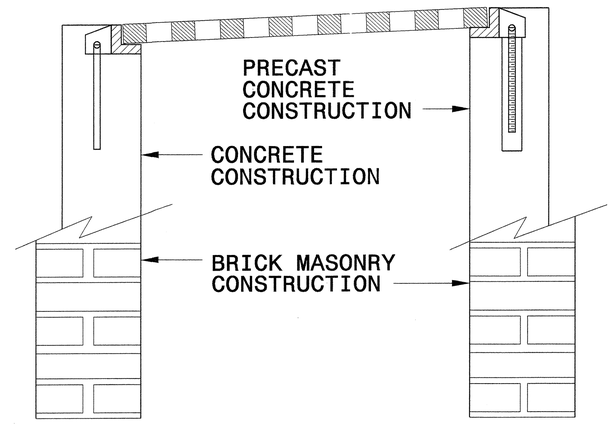












PROJECT REFERENCE NO.	SHEET NO.
B-2037	2-A

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

SEAL 022966
JOEL S. HOWERTON
11/17/09

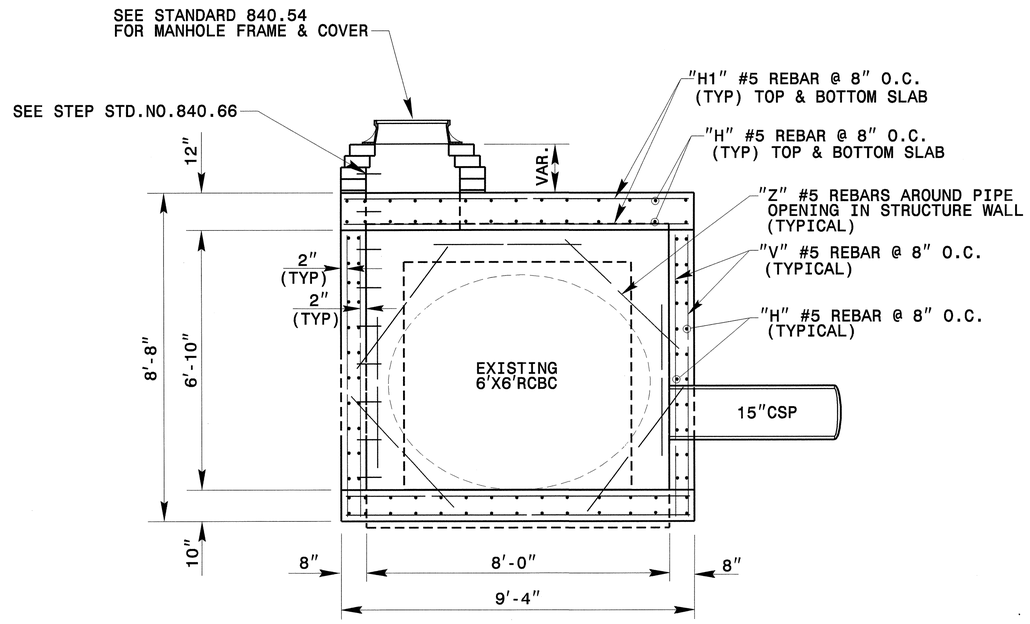
PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

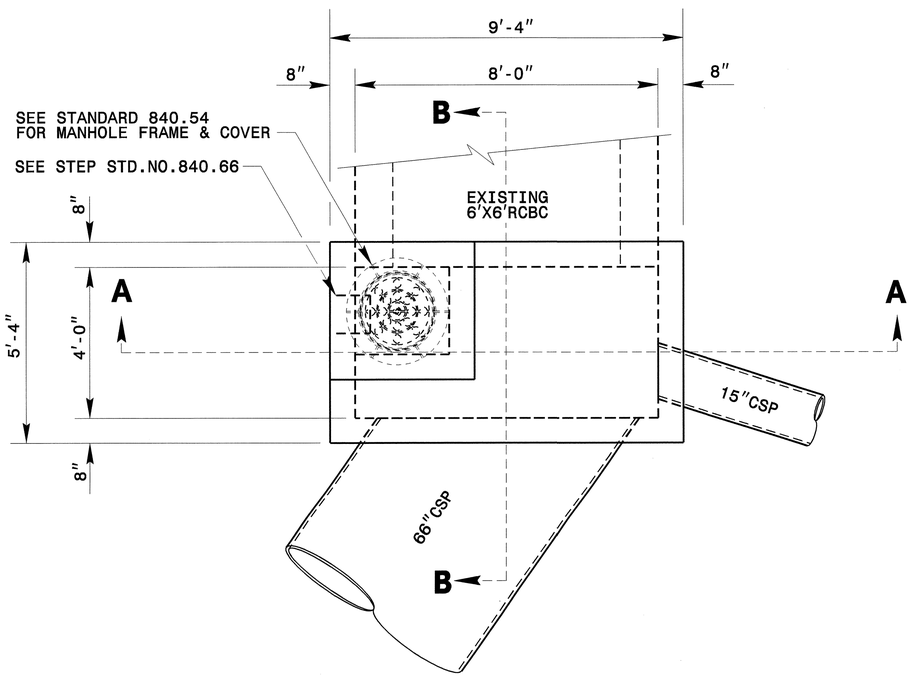
ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: Joel S. Howerton DATE: 11/13/08
FILE SPEC.:

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

PROJECT REFERENCE NO.	SHEET NO.
B-1037	2-B



SECTION A-A



PLAN VIEW

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL JUNCTION BOXES 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.

INSTALL MANHOLE IN POSITION AS DIRECTED BY THE ENGINEER. CUT AND BEND ALL REBAR CROSSING THIS OPENING TO ALLOW 2" MINIMUM CONCRETE COVERAGE.

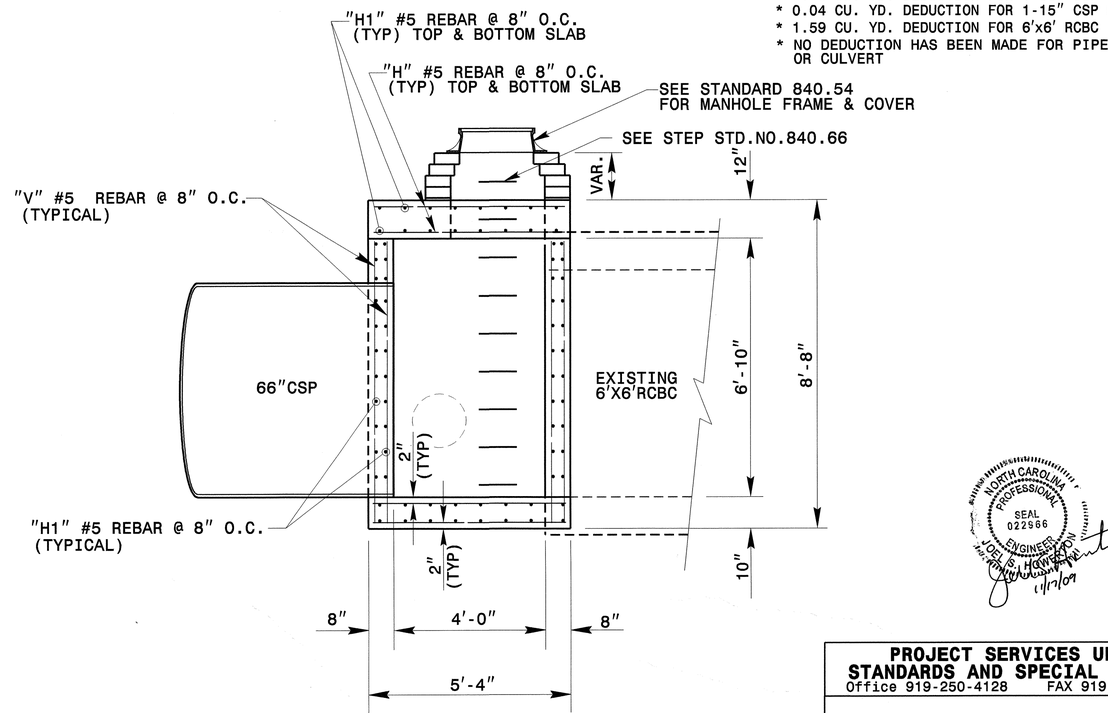
CHAMFER ALL EXPOSED CORNERS 1".

2" MINIMUM CONCRETE COVERAGE ON ALL REBAR.

BILL OF MATERIALS

BAR	NO.	SIZE	LENGTH	WEIGHT
H	100	#5	5'-0"	522
H1	76	#5	9'-0"	714
V	88	#5	7'-4"	674
Z	14	#5	4'-0"	59
TOTAL REINF. STEEL (LBS.)				1969
TOTAL CONC. (CU. YDS.)				7.9

* 0.30 CU. YD. PER FOOT OF RISER HEIGHT
* 0.76 CU. YD. DEDUCTION FOR 1-66" CSP PIPE
* 0.04 CU. YD. DEDUCTION FOR 1-15" CSP PIPE
* 1.59 CU. YD. DEDUCTION FOR 6'x6' RCBC
* NO DEDUCTION HAS BEEN MADE FOR PIPES OR CULVERT



SECTION B-B

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL B. HOWARD
11/7/08

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

TRAFFIC BEARING JUNCTION BOX

ORIGINAL BY:		DATE:
MODIFIED BY:	nbritt	DATE: 06/10/08
CHECKED BY:		DATE: 11/7/08
FILE SPEC.:	detail/nbritt/english/bridge/b3710 6x6culvtbjb.dgn	

5/14/99

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nbritt

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jhowerton AT PS237501

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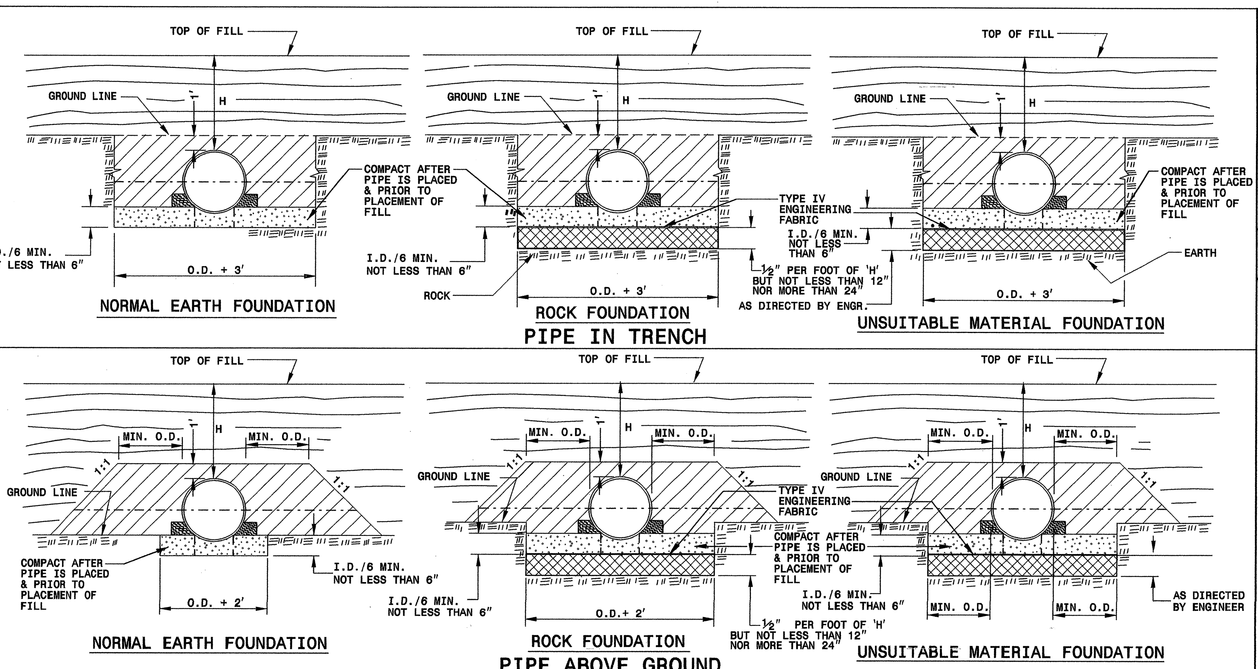
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FLEXIBLE PIPE



GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

APPROVED SUITABLE LOCAL MATERIAL.

UNDISTURBED EARTH MATERIAL

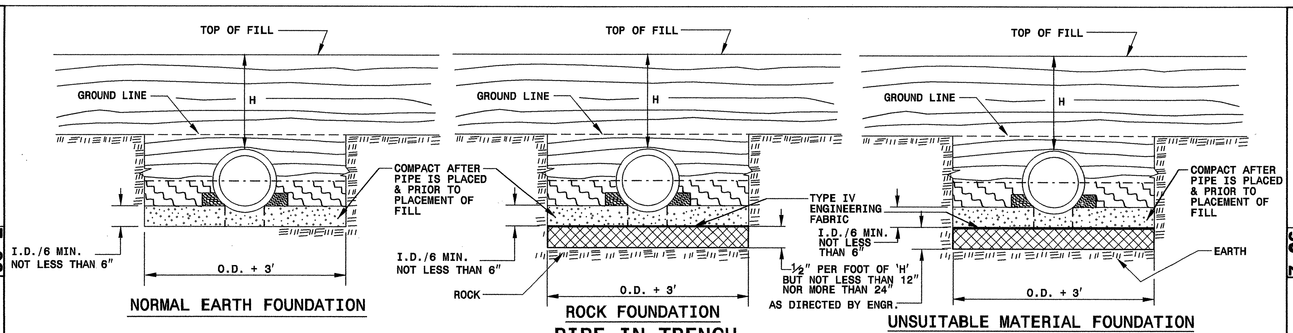
SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

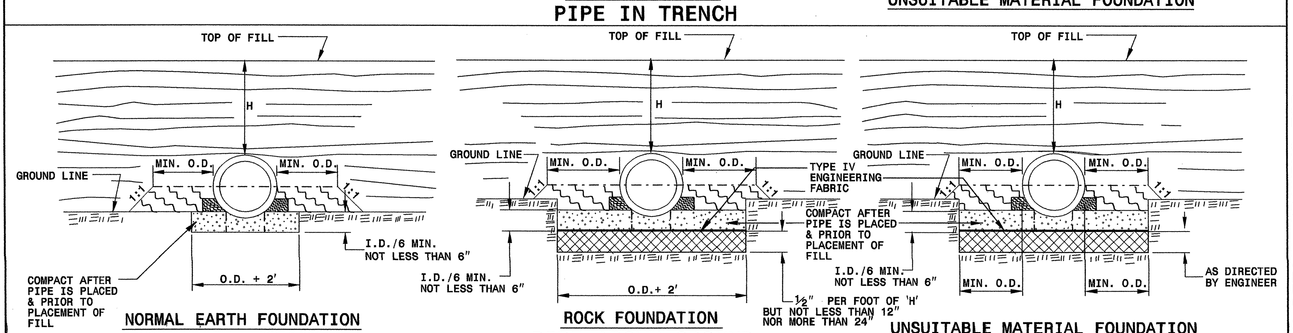
SHEET 1 OF 3
300D01

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
RIGID PIPE





GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

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H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

SHEET 2 OF 3
300D01

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

SEE PLATE FOR TITLE

ORIGINAL BY: KKoenpf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/15/09
FILE SPEC: o:\ericward\stds\stdstodetails\30001\0300d01.dgn

PROJECT REFERENCE NO. B-1037
SHEET NO. 2-C

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PROJECT REFERENCE NO.	SHEET NO.
B-1037	2-D

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

FLEXIBLE PIPE

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

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

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

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

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

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

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

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

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

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

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

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

RIGID PIPE

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

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

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

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

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

RCP - AASHTO M170

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

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

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
11/17/09

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

SEE PLATE FOR TITLE

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

PROJECT REFERENCE NO.	SHEET NO.
B–1037	*3*

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202165

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000900000-N	SP	Lump Sum		GENERIC MISCELLANEOUS ITEM BUILDING SURVEYS
0022000000-E	225	6,900	CY	UNCLASSIFIED EXCAVATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ************ (17+47.50)
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0057000000-E	226	50	CY	UNDERCUT EXCAVATION
0063000000-N	SP	Lump Sum		GRADING
0134000000-E	240	20	CY	DRAINAGE DITCH EXCAVATION
0320000000-E	SP	180	SY	FOUNDATION CONDITIONING FABRIC
0330000000-E	SP	60	TON	GENERIC DRAINAGE ITEM FOUNDATION COND MATERIAL
0366000000-E	310	180	LF	15" RC PIPE CULVERTS, CLASS III
0708000000-E	310	24	LF	15" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
0714000000-E	310	76	LF	18" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
0762000000-E	310	172	LF	66" BIT COAT CS PIPE CULVERTS, TYPE B 0.138" THICK
0986000000-E	SP	48	LF	GENERIC PIPE ITEM 16" DUCTILE IRON PIPE
1220000000-E	545	100	TON	INCIDENTAL STONE BASE
1489000000-E	610	570	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1525000000-E	610	380	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1560000000-E	620	50	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1693000000-E	654	20	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2000000000-N	806	14	EA	RIGHT OF WAY MARKERS
2022000000-E	815	45	CY	SUBDRAIN EXCAVATION
2033000000-E	815	34	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	200	LF	6" PERFORATED SUBDRAIN PIPE
2055000000-E	815	6	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
2209000000-E	838	1	CY	ENDWALLS
2220000000-E	838	6.6	CY	REINFORCED ENDWALLS
2253000000-E	840	0.45	CY	PIPE COLLARS
2286000000-N	840	8	EA	MASONRY DRAINAGE STRUCTURES
2297000000-E	840	11.834	CY	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	1.5	LF	MASONRY DRAINAGE STRUCTURES
2367000000-N	840	7	EA	FRAME WITH TWO GRATES, STD 840.29
2396000000-N	840	1	EA	FRAME WITH COVER, STD 840.54
2556000000-E	846	410	LF	SHOULDER BERM GUTTER
3030000000-E	862	537.5	LF	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3649000000-E	876	2	TON	RIP RAP, CLASS B
3656000000-E	876	1,760	SY	FILTER FABRIC FOR DRAINAGE
4400000000-E	1110	152	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	20	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	30	EA	DRUMS
4435000000-N	1135	20	EA	CONES
4445000000-E	1145	48	LF	BARRICADES (TYPE III)
4450000000-N	1150	6,400	HR	FLAGGER

ItemNumber	Sec #	Quantity	Unit	Description
4465000000-N	1160	1	EA	TEMPORARY CRASH CUSHIONS
4480000000-N	1165	1	EA	TMIA
4490000000-E	1170	60	LF	PORTABLE CONCRETE BARRIER (ANCHORED)
4770000000-E	1205	5,185	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (I)
4810000000-E	1205	12,000	LF	PAINT PAVEMENT MARKING LINES (4")
4905000000-N	1253	32	EA	SNOWPLOWABLE PAVEMENT MARKERS
6000000000-E	1605	2,300	LF	TEMPORARY SILT FENCE
6006000000-E	1610	430	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	280	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	900	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	7.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	200	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	1.75	TON	FERTILIZER FOR TEMPORARY SEED-ING
6024000000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	2,000	LF	SAFETY FENCE
6030000000-E	1630	600	CY	SILT EXCAVATION
6036000000-E	1631	12,000	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	400	SY	COIR FIBER MAT
6042000000-E	1632	2,100	LF	1/4" HARDWARE CLOTH
6070000000-N	SP	15	EA	SPECIAL STILLING BASINS
6071010000-E	SP	150	LF	WATTLE
6071020000-E	SP	40	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	150	LF	COIR FIBER BAFFLES
6071050000-E	SP	1	EA	**" SKIMMER (1-1/2")
6084000000-E	1660	5	ACR	SEEDING & MULCHING
6087000000-E	1660	4.5	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	125	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	3.25	TON	FERTILIZER TOPDRESSING
6114500000-N	SP	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	27	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.5	ACR	REFORESTATION
********* BEGIN SCHEDULE AA ******* / ******* (3 ALTERNATES) *********				
0372000000-E AA1	310	22	LF	18" RC PIPE CULVERTS, CLASS III
***** OR *****				
0372000000-E AA2	310	10	LF	18" RC PIPE CULVERTS, CLASS III
0536000000-E AA2	SP	12	LF	***" HDPE PIPE CULVERTS (18")
***** OR *****				
0372000000-E AA3	310	10	LF	18" RC PIPE CULVERTS, CLASS III
0540000000-E AA3	SP	12	LF	***" ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****" THICK (18", 0.064")
********* END SCHEDULE AA *********				

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4/04/06

COMPUTED BY: B. C. FOWLER DATE: 10/15/09
CHECKED BY: MRH DATE: 10/19/09

PROJECT REFERENCE NO.	SHEET NO.
B-1037	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) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	16" D.I. PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	CU. YDS. C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") LIN. FT. A	LIN. FT. B	PER EACH (0' THRU 5.0')	5.0' THRU 10.0'	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	T.B.D.I. STD. 840.35	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.29	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVERSTD. 840.54	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
10+77.00	LT.	1		2608.7	2606.8																											1									1	1												
	LT.	1	2		2606.8	2602.6			64																																												
11+40.00	LT.	2		2605.4	2602.6																											1									1	1												
	LT.	2	3		2602.6	2601.9			12																																											
11+55.00	LT.	3		2604.6	2601.0																											1									1	1												REMOVE HW
11+62.00	RT.	5																																																	
	RT.	5	6		2590.1	2587.4																				12																									0.45		
	RT.	7	8		2575.0	2587.2											24																																			
13+61.00	RT.	8		2589.9	2587.2																											1									1	1												
	LT.	9	10		2582.5	2582.3																																			24												
20+00.00	LT.	10		2587.3	2582.3																											1									1	1												
	CL.	10	11		2582.3	2582.0			24																																											
20+00.00	RT.	11		2587.2	2582.0																											1									1	1												
	RT.	11	12		2582.3	2582.5																																			24												
	RT.	11	13		2582.0	2581.8			44																																											
20+43.00	RT.	13		2587.1	2581.8																											1	0.3								1	1												
	RT.	13	14		2581.8	2581.6			36																																											
	RT.	14																																																		
21+75.00	RT.	15																																					1.0													
	RT.	15	16		2581.1	2553.4											76																																			
21+75.00	RT.	16		2557.3	2551.1																											1	1.2																	1	1		
	RT.	16	17		2551.1	2551.1				10																																										
TOTAL									180	10							24	76								12								48		1.0	8	1.5				7	7					1	1			0.45		

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

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) 54"	60"	66"	72"	78"	84"	BITUMINOUS COATED 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	J.B. STD. 840.31 OR 840.32	M.H. FRAME & COVER STD. 840.54	T.B.J.B SEE DETAIL SHEET 2-8	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
11+43.00	RT.	4																													6.6																
	RT.	4	6		2585.6	2583.0																16																												
11+65.00	RT.	6		2590.7	2583.0																												5.917	1															
	RT.	6	7		2583.0	2573.0																156																												
13+42.00	RT.	7		2583.0	2570.8																												5.917			1													
TOTAL																						172												6.6	11.834	1		1												

ABBREVIATIONS

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

4/04/06

COMPUTED BY: I. JOHNSON DATE: 5/2108
CHECKED BY: B. FOWLER DATE: 10/5/09

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-1037	3-B

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350					REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE 350	TYPE III							NO.	PERMITTED G	PERMITTED NG			
–L–	10+00.00	15+19.58	RT	519.58			10+75.00		4.0	7.0		50		1.0	1	1											
–L–	14+44.58	15+19.58	LT	75.00			15+19.58		4.0	7.0	6.25		0.125		1	1											
–L–	19+75.42	21+00.00	RT	124.58				20+50.00	4.0	7.0	55.83		1.12		1	1											
–L–	19+75.42	20+62.92	LT	87.50				19+75.42	4.0	7.0		18.75	0.375		1	1											
			TOTALS	806.66											4	4											
ANCHOR DEDUCTIONS:			4 TYPE III @ 18.75' ea.	= 75																							
			4 GRAU 350's @ 50' ea	= 200																							
			GRAND TOTAL	531.66																							
			SAY	537.50			ADDITIONAL GUARDRAIL POSTS = 5								4	4											

SUMMARY OF PAVEMENT REMOVAL/BREAKING IN SQUARE YARDS

STATION TO STATION	PAVEMENT REMOVAL		
	LENGTH	WIDTH	SQUARE YARDS
–L– STA 12+58.00 TO 12+95.00			84.02 SY
–L– STA 13+14.00 TO 15+07.00			412.22 SY
–L– STA 19+69.00 TO 21+45.00			307.59 SY
–L– TEMPORARY PAVEMENT STA 19+67.00 TO 20+43..00	76	4	33.78 SY
TOTAL			837.61 SY
SAY			840.00 SY

SUMMARY OF EARTHWORK IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
–L– STA 9+50.00 TO STA 15+19.58	6,658	0	4,490	1,882	0
–L– STA 19+89.42 TO STA 22+43.75	680	0	174	0	506
PROJECT SUBTOTAL	7,338	0	4,664	1,882	506
Est.loss due to Clearing & Grubbing	–500	0	0	500	0
Waste in lieu of Borrow	0	0	0	–506	–506
PROJECT TOTAL	6,838	0	4,664	1,876	0
GRANDTOTAL	6,838			1,876	
SAY	6,900 CY			1950 CY	

GEOTECH REC'S CONTINGENCY ITEMS

UNDERDRAINS = 200 FT

GRADE POINT UNDERCUT = 50 CY

"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".

Note: Approximate quantities only. Borrow, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
–L– LT.	9+50.00	12+00.00	250 FT.
–L– LT.	21+50.00	22+43.75	93.8 FT.
–L– RT.	19+89.42	20+49.68	60.4 FT.
		TOTAL:	404.12 FT.
		SAY:	410 FT.

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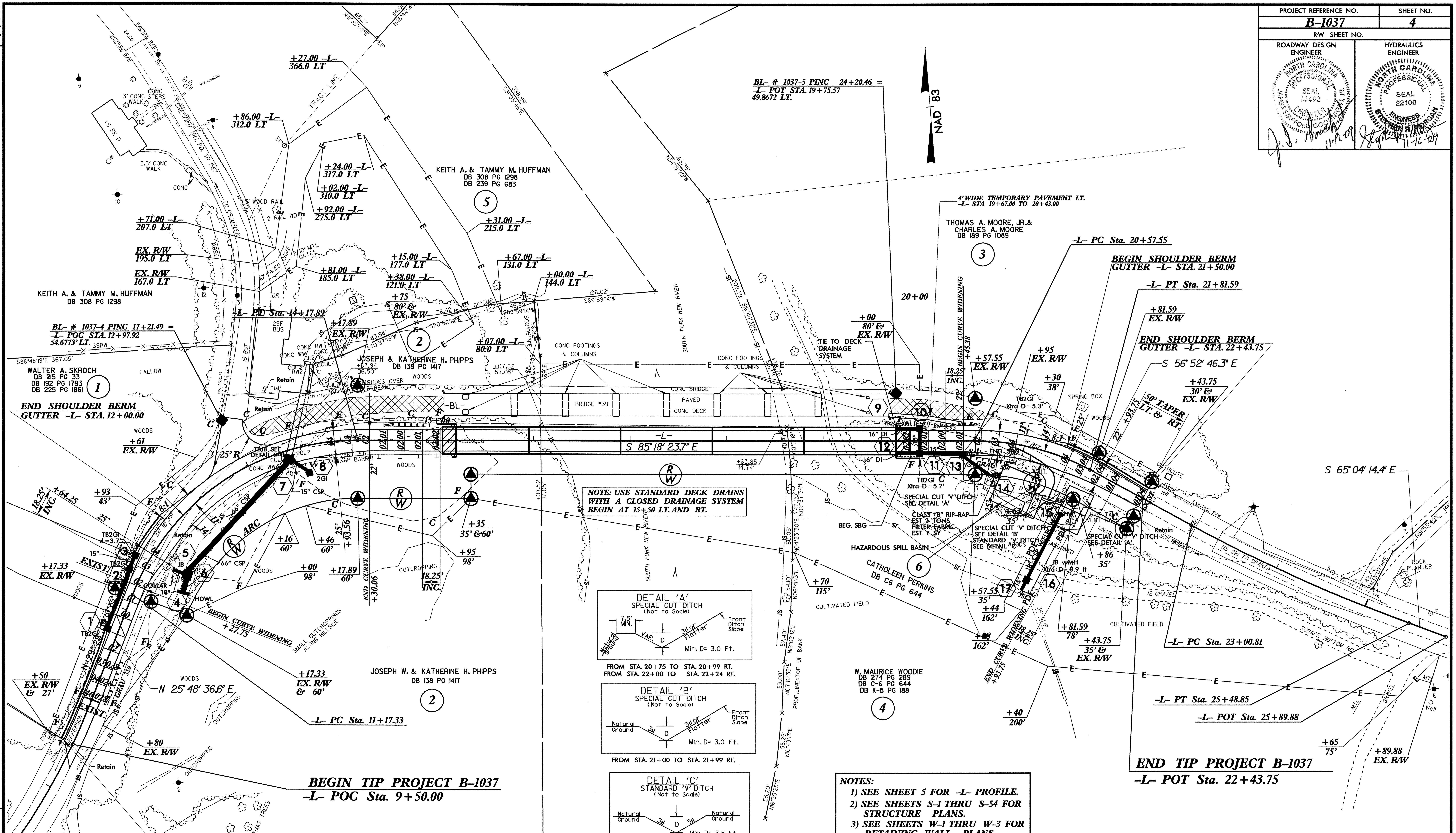
PROJECT REFERENCE NO.	SHEET NO.
B-1037	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14493 ENGINEER JAMES STAFFORD GOODE, JR. 11-17-09

NORTH CAROLINA PROFESSIONAL SEAL 22100 ENGINEER STEPHEN R. MORGAN 11-16-09



NAD 83
BEGIN TIP PROJECT B-1037
-L- POC Sta. 9+50.00
END TIP PROJECT B-1037
-L- POT Sta. 22+43.75
BL- # 1037-4 PINC 17+21.49 = -L- POC STA. 12+97.92 54.6773' LT.
BL- # 1037-5 PINC 24+20.46 = -L- POT STA. 19+75.57 49.8672 LT.
END SHOULDER BERM GUTTER -L- STA. 12+00.00
BEGIN SHOULDER BERM GUTTER -L- STA. 9+50.00
BEGIN SHOULDER BERM GUTTER -L- STA. 21+50.00
END SHOULDER BERM GUTTER -L- STA. 22+43.75
-L- PC Sta. 11+17.33
-L- PT Sta. 14+17.89
-L- PC Sta. 20+57.55
-L- PT Sta. 21+81.59
-L- PC Sta. 23+00.81
-L- PT Sta. 25+48.85
-L- POT Sta. 25+89.88
4' WIDE TEMPORARY PAVEMENT LT. -L- STA 19+67.00 TO 20+43.00
S 85° 18' 23.7" E
N 25° 48' 36.6" E
S 56° 52' 46.3" E
S 65° 04' 14.4" E
KEITH A. & TAMMY M. HUFFMAN DB 308 PG 1298 DB 239 PG 683
KEITH A. & TAMMY M. HUFFMAN DB 308 PG 1298
WALTER A. SKROCH DB 215 PG 33 DB 192 PG 1793 DB 225 PG 1861
JOSEPH & KATHERINE H. PHIPPS DB 138 PG 1417
JOSEPH W. & KATHERINE H. PHIPPS DB 138 PG 1417
THOMAS A. MOORE, JR.& CHARLES A. MOORE DB 189 PG 1089
CATHOLEEN PERKINS DB C6 PG 644
W. MAURICE WOODIE DB 274 PG 289 DB C-6 PG 644 DB K-5 PG 188
BRIDGE #39
CONC BRIDGE PAVED CONC DECK
CONC FOOTINGS & COLUMNS
SOUTH FORK NEW RIVER
NOTE: USE STANDARD DECK DRAINS WITH A CLOSED DRAINAGE SYSTEM BEGIN AT 15+50 LT. AND RT.
HAZARDOUS SPILL BASIN
CULTIVATED FIELD
WOODS
CHRISTMAS TREES
US 221 TO SPARTA
50' TAPER LT. & RT.
DETAIL 'A' SPECIAL CUT DITCH (Not to Scale)
Min. D= 3.0 Ft.
FROM STA. 20+75 TO STA. 20+99 RT.
FROM STA. 22+00 TO STA. 22+24 RT.
DETAIL 'B' SPECIAL CUT DITCH (Not to Scale)
Min. D= 3.0 Ft.
FROM STA. 21+00 TO STA. 21+99 RT.
DETAIL 'C' STANDARD 'V' DITCH (Not to Scale)
Min. D= 3.5 Ft. Slope = 0.4%
STA. 21+75 RT. EST. 20 C.Y. DDE

NOTES:

1) SEE SHEET 5 FOR -L- PROFILE.
2) SEE SHEETS S-1 THRU S-54 FOR STRUCTURE PLANS.
3) SEE SHEETS W-1 THRU W-3 FOR RETAINING WALL PLANS.

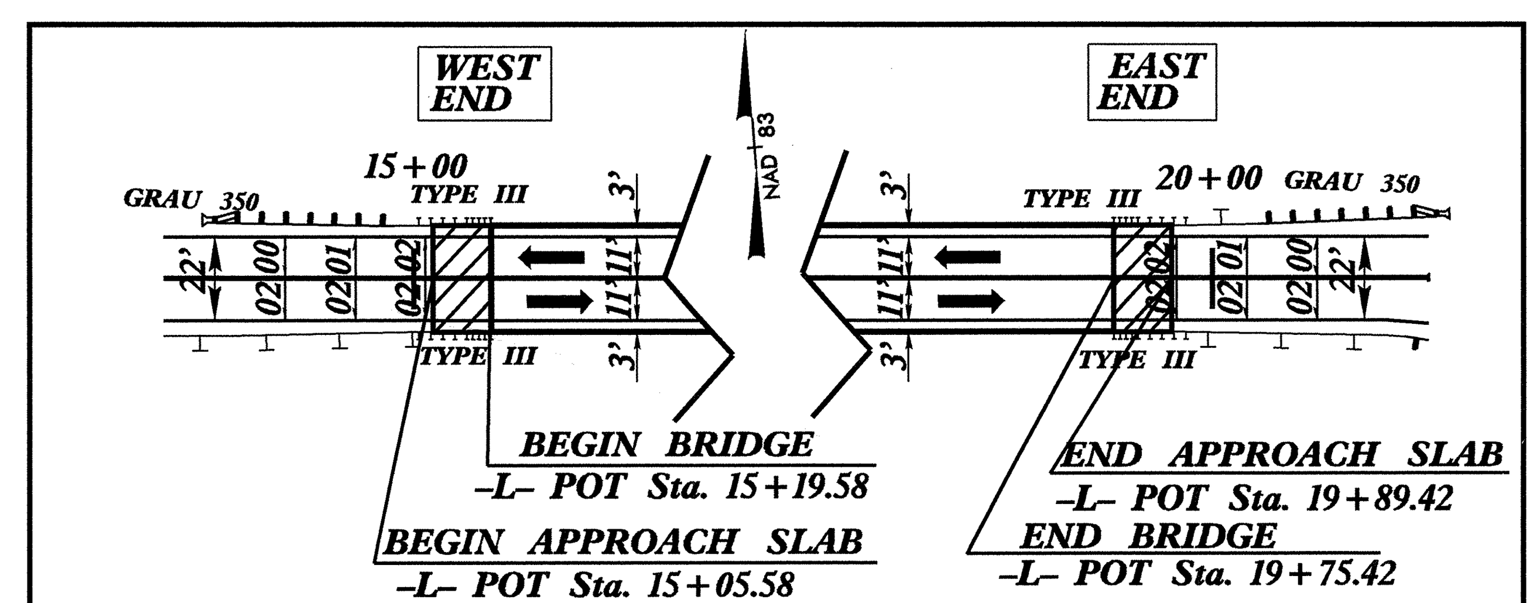
CULVERT #16
SINGLE BARREL

	NORTH	EAST	ELEV.
HW1			2578.80
CE1			2577.00
CUL1	999470.22	1312565.24	2571.00
CUL2	999471.69	1312572.19	2570.84
HW2			2574.10
CE2			2572.30
CUL3	999563.70	1312594.32	2566.34
CUL4	999564.39	1312601.17	2566.31

-L-

PI Sta 8+83.45	PI Sta 12+88.78	PI Sta 21+20.87	PI Sta 24+25.05
Δ = 19° 59' 27.4" (LT)	Δ = 68° 52' 59.7" (RT)	Δ = 28° 25' 37.3" (RT)	Δ = 8° 11' 28.1" (LT)
D = 8° 29' 17.7"	D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 3° 18' 08.5"
L = 235.51'	L = 300.56'	L = 124.04'	L = 248.04'
T = 118.97'	T = 171.45'	T = 63.32'	T = 124.23'
R = 675.00'	R = 250.00'	R = 250.00'	R = 1,735.00'
SE = EXISTING	SE = 04	SE = 04	SE = EXISTING
RO = EXISTING	RO = SEE PLANS	RO = SEE PLANS	RO = EXISTING

CURVE WIDENING RIGHT 3.0'



SKETCH SHOWING RELATIONSHIP OF BRIDGE TO ROADWAY

REVISIONS

8/17/99

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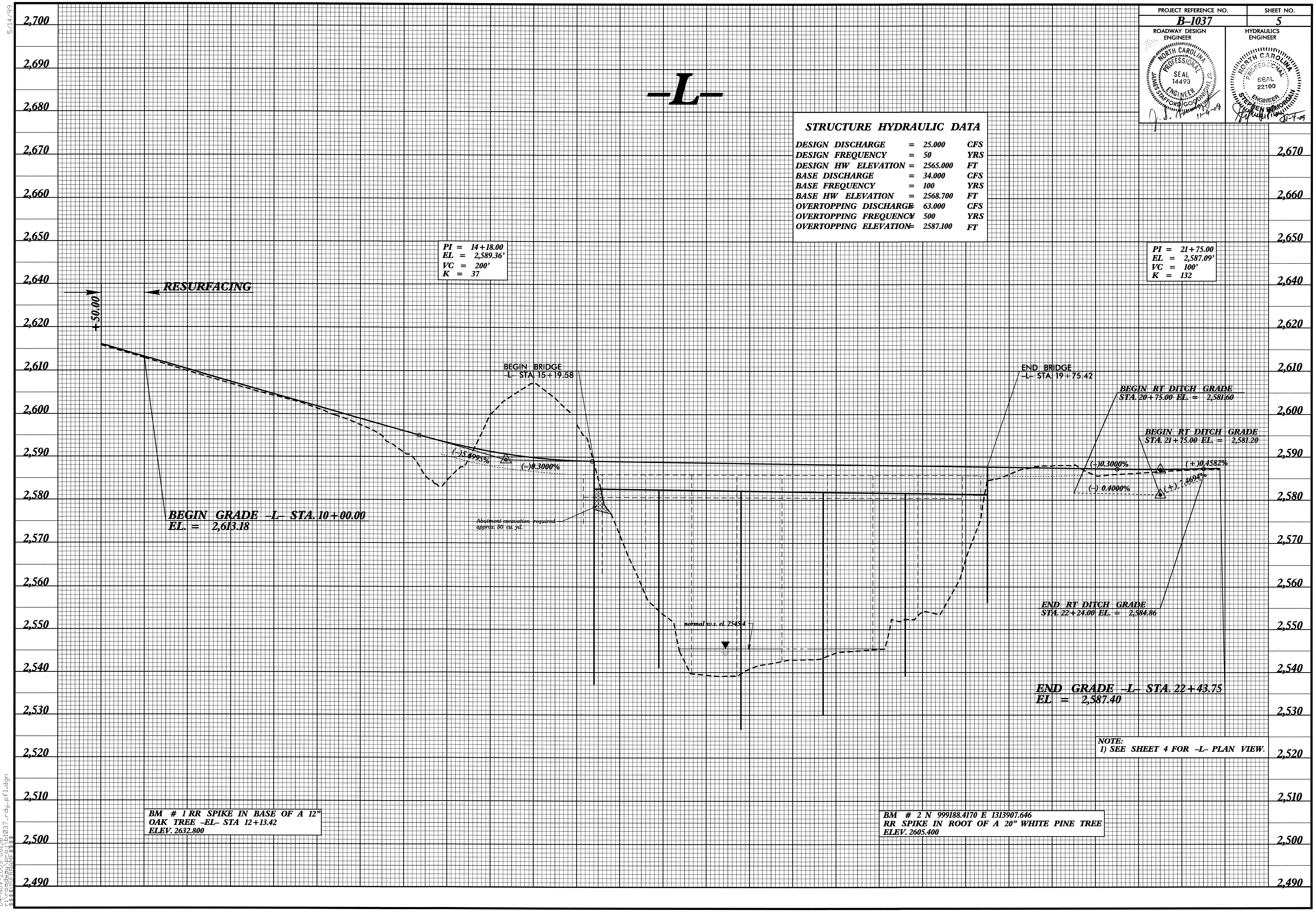
PROJECT REFERENCE NO. B-1037
SHEET NO. 5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
-L-
STRUCTURE HYDRAULIC DATA
DESIGN DISCHARGE = 25.000 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 2565.000 FT
BASE DISCHARGE = 34.000 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 2568.700 FT
OVERTOPPING DISCHARGE = 63.000 CFS
OVERTOPPING FREQUENCY = 500 YRS
OVERTOPPING ELEVATION = 2587.100 FT
PI = 14+18.00
EL = 2,589.36'
VC = 200'
K = 37
PI = 21+75.00
EL = 2,587.09'
VC = 100'
K = 132
+50.00
RESURFACING
BEGIN BRIDGE -L- STA. 15+19.58
END BRIDGE -L- STA. 19+75.42
BEGIN RT DITCH GRADE STA. 20+75.00 EL. = 2,581.60
BEGIN RT DITCH GRADE STA. 21+75.00 EL. = 2,581.20
(-)5.0995%
(-)0.3000%
(-)0.3000%
(-) 0.4000%
(+)0.4582%
(+) 1.4694%
BEGIN GRADE -L- STA. 10+00.00
EL. = 2,613.18
Abutment excavation required approx. 50 cu. yd.
normal w.s. el. 2545.4
END RT DITCH GRADE STA. 22+24.00 EL. = 2,584.86
END GRADE -L- STA. 22+43.75
EL = 2,587.40
NOTE:
1) SEE SHEET 4 FOR -L- PLAN VIEW.
BM # 1 RR SPIKE IN BASE OF A 12" OAK TREE -EL- STA 12+13.42
ELEV. 2632.800
BM # 2 N 999188.4170 E 1313907.646
RR SPIKE IN ROOT OF A 20" WHITE PINE TREE
ELEV. 2605.400
2,700
2,690
2,680
2,670
2,660
2,650
2,640
2,620
2,610
2,600
2,590
2,580
2,570
2,560
2,550
2,540
2,530
2,520
2,510
2,500
2,490
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