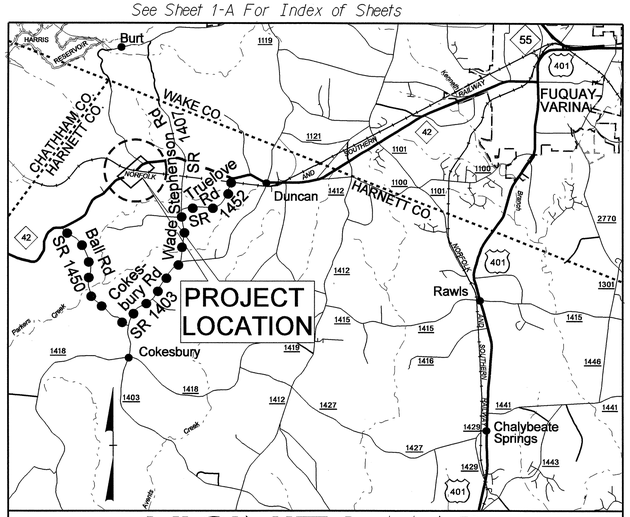
09/08/09

TIP PROJECT: B-4137

CONTRACT: C202153

See Sheet 1-A For Index of Sheets



VICINITY MAP

Detour Route ●●●●●●

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

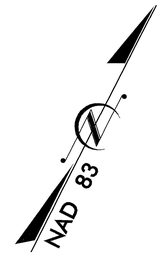
HARNETT COUNTY

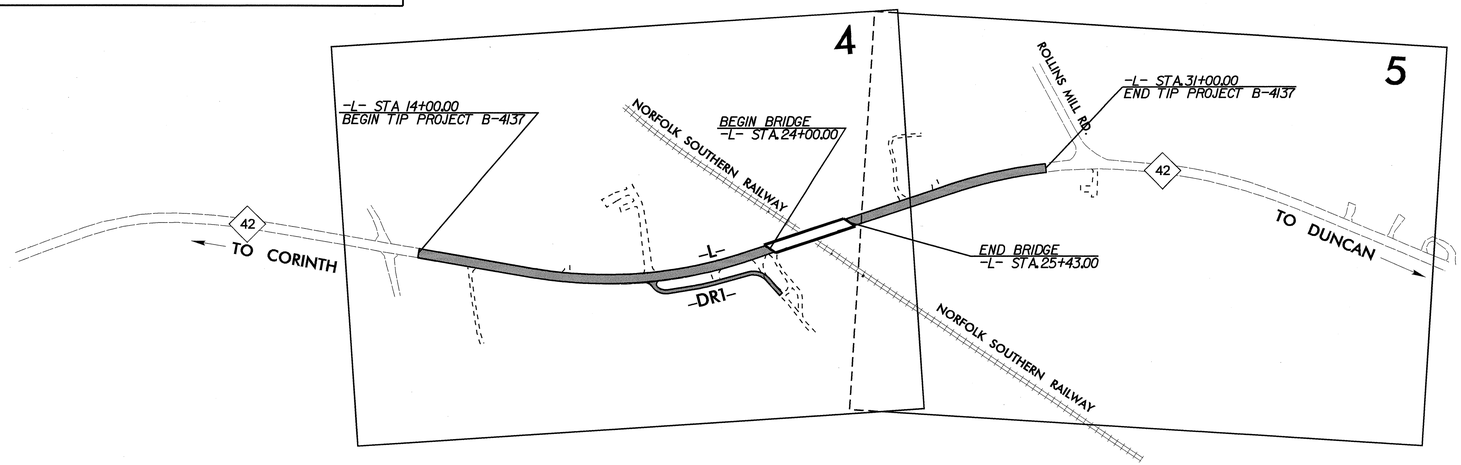
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4137	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33489.1.1	BRSTP-42(8)	PE
33489.2.1	BRSTP-42(8)	RW + UTIL.
33489.3.1	BRSTP-42(8)	CONSTR.

LOCATION: BRIDGE No. 35 OVER NORFOLK AND SOUTHERN RAILROAD ON NC 42

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, RETAINING WALL





NOTE: TRAFFIC IS TO BE MAINTAINED WITH AN OFFSITE DETOUR.

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 = 2,240
ADT 2030 = 4,000
DHV = 12 %
D = 60 %
T = 12 % *
V = 60 MPH
FUNC CLASS: RURAL MAJOR COLLECTOR
* TTST 6% DUAL 6%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4137 = 0.295 mi
LENGTH STRUCTURE TIP PROJECT B-4137 = 0.027 mi
TOTAL LENGTH TIP PROJECT B-4137 = 0.322 mi

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 20, 2007

LETTING DATE: SEPTEMBER 15, 2009

JASON MOORE, PE
PROJECT ENGINEER

JEANIE TYSON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
04/28/09
NORTH CAROLINA PROFESSIONAL SEAL 33181 ENGINEER BRIAN S. LIPSCOMB
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
4/27/09
NORTH CAROLINA PROFESSIONAL SEAL 27007 ENGINEER ANDREW JASON MOORE
SIGNATURE: P.E.

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

15-APR-2009 15:20
r:\roadway_proj\b-4137_rdy_tsh.dgn
$$$$USERNAME$$$$

RD244219 4/15/2009 b4137_rdy_tsh scalhoun RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
B-4137	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE

Andrew J. Moore 7/1/09

8/17/09

INDEX OF SHEETS	
SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-A	SPECIAL DITCH DETAILS
2-B	ANCHORAGE FOR FRAMES DETAIL
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF QUANTITIES: GUARDRAIL, EARTHWORK, DRAINAGE, AND EXISTING ASPHALT PAVEMENT REMOVAL & BREAKUP
3-B	PARCEL INDEX SHEET
4 THRU 5	PLAN SHEET
6	PROFILE SHEET
TCP-1 THRU TCP-2	TRAFFIC CONTROL MARKING & DELINEATION PLAN
EC-1 THRU EC-7	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
UC-1 THRU UC-3	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-3	UTILITY BY OTHERS PLANS
X-1 THRU X-13	CROSS-SECTIONS
S-1 THRU S-24	STRUCTURE PLANS
W-1 THRU W-2	WALL PLANS

GENERAL NOTES:

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

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED 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.

GUARDRAIL:

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

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

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

POWER - PROGRESS ENERGY (UO)

TELEPHONE - EMBARQ (UO)

WATER - DEPARTMENT OF PUBLIC UTILITIES, HARNETT COUNTY (UC)

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

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

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

2006 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
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
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
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
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

01-JUL-2009 10:53
r:\roadway\proj\b4137_rdy_psh_1a.dgn
$$$$USERNAME$$$$

10/25/05

PROJECT REFERENCE NO.	SHEET NO.
B-4137	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
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

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

RIGHT OF WAY:

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

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
- Curb Cut for Future Wheel Chair Ramp — CCFR
- 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.

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4137	1-C
Location and Surveys	

SURVEY CONTROL SHEET B-4137

BL

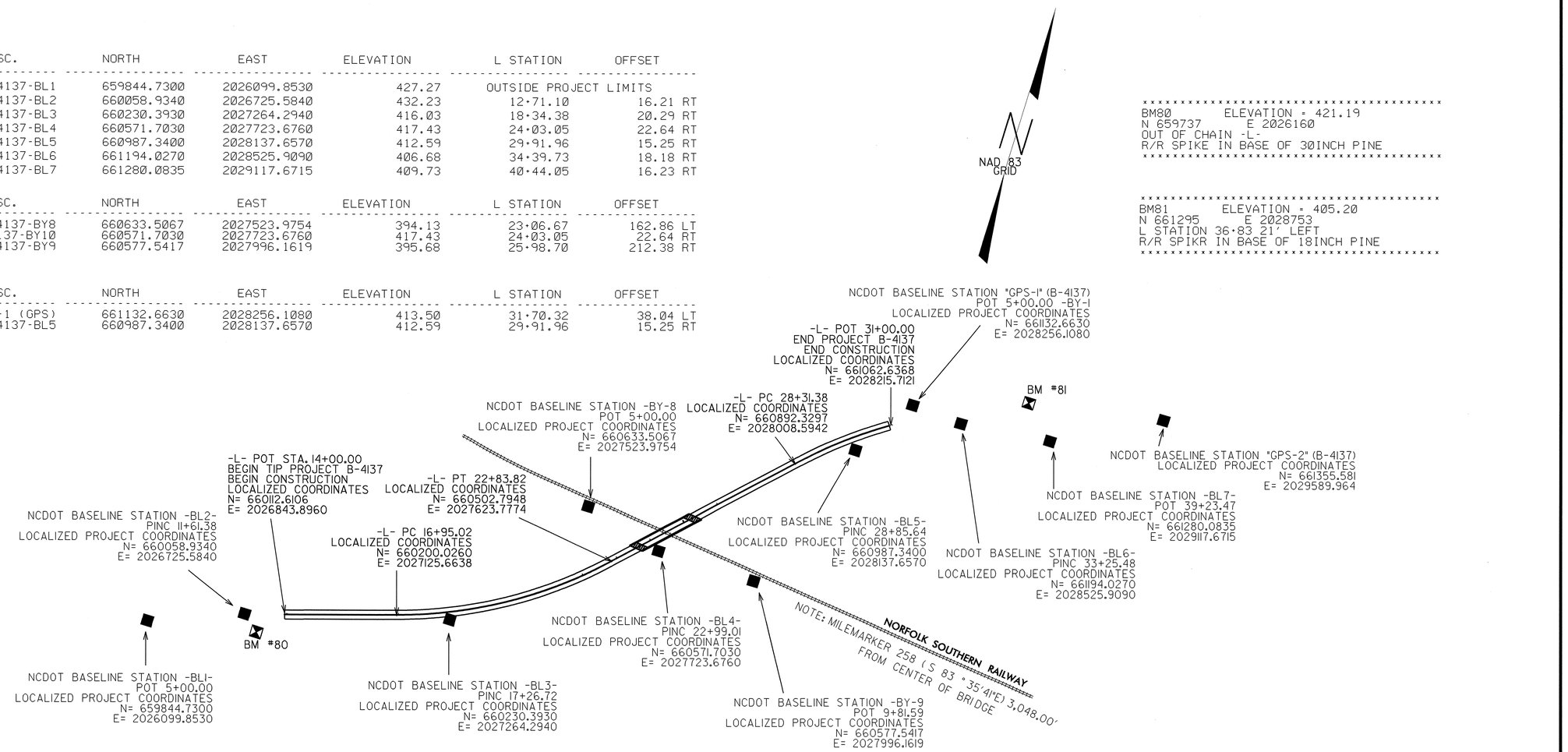
POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	B4137-BL1	659844.7300	2026099.8530	427.27	OUTSIDE PROJECT LIMITS	
2	B4137-BL2	660058.9340	2026725.5840	432.23	12+71.10	16.21 RT
3	B4137-BL3	660230.3930	2027264.2940	416.03	18+34.38	20.29 RT
4	B4137-BL4	660571.7030	2027723.6760	417.43	24+03.05	22.64 RT
5	B4137-BL5	660987.3400	2028137.6570	412.59	29+91.96	15.25 RT
6	B4137-BL6	661194.0270	2028525.9090	406.68	34+39.73	18.18 RT
7	B4137-BL7	661280.0835	2029117.6715	409.73	40+44.05	16.23 RT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
8	B4137-BY8	660633.5067	2027523.9754	394.13	23+06.67	162.86 LT
10	B4137-BY10	660571.7030	2027723.6760	417.43	24+03.05	22.64 RT
9	B4137-BY9	660577.5417	2027996.1619	395.68	25+98.70	212.38 RT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
11	B4137-1 (GPS)	661132.6630	2028256.1080	413.50	31+70.32	38.04 LT
12	B4137-BL5	660987.3400	2028137.6570	412.59	29+91.96	15.25 RT



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-4137-2" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 661355.581(ft) EASTING: 2029589.964(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987666

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-4137-2" TO -L- STATION 14+00.00 IS
S 65°38'57.7" W 3,014.24 FT

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NAVD 88

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:
   B4137_LS_CONTROL_060628.TXT

   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.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

08-APR-2009 12:07
r:\roadway\proj\b4137_ls_1c_060628.dgn
$$$$ICEHARP $$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4137	2

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE — 4/24/09

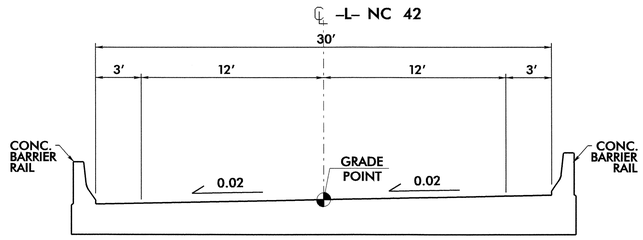
PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 17818 ENGINEER CHI CHEN — 4/29/09

PAVEMENT SCHEDULE

FINAL PAVEMENT DESIGN

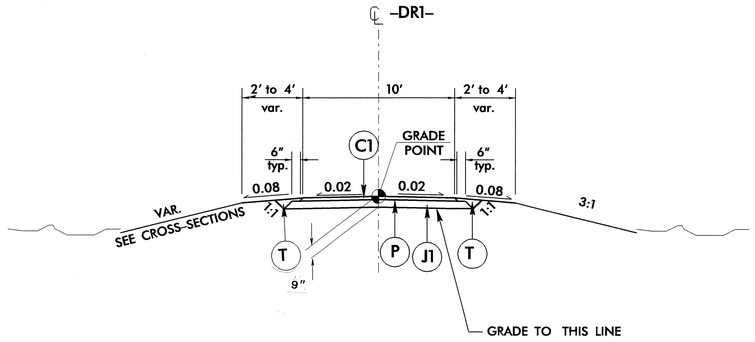
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 4" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J1	PROP. 6" AGGREGATE BASE COURSE.
P	PRIME COAT AT AT RATE OF 0.35 GAL. PER SQ. YD.
R	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.

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



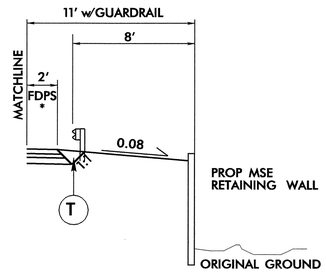
TYPICAL SECTION ON STRUCTURE

–L– STA. 24+00.00 TO STA. 25+43.00

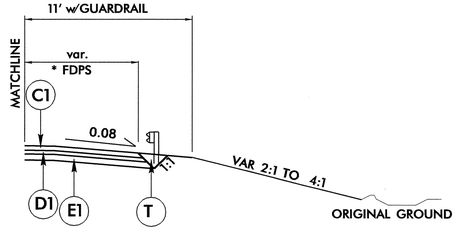


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:
–DR1– STA. 10+12.39 TO STA. 13+93.61

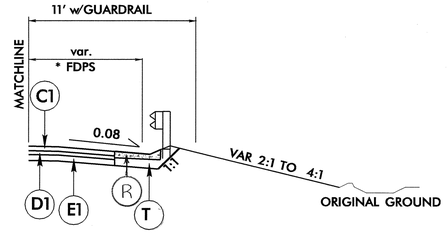


INSET A

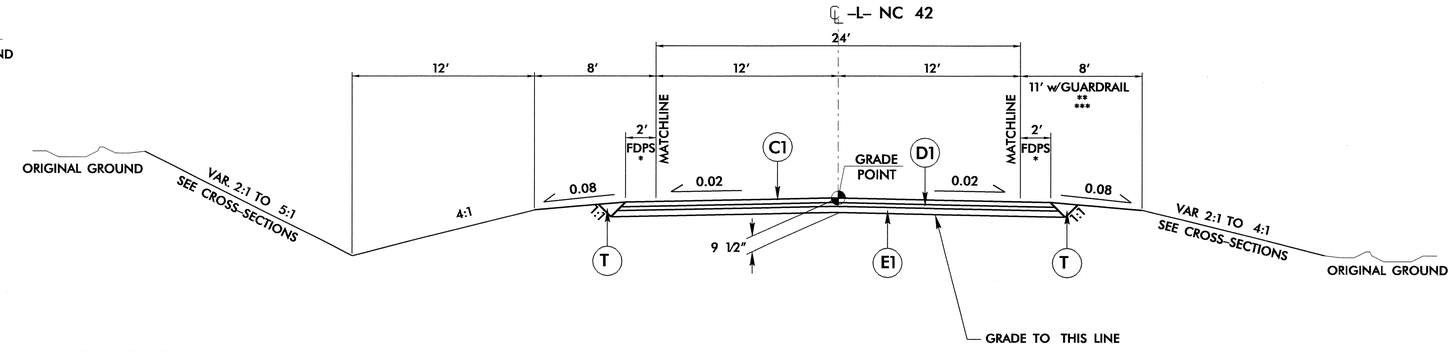


INSET B

(EXTEND PAVED SHOULDERS TO GUARDRAIL FACE)



INSET C



*** USE INSET B AS FOLLOWS:
–L– STA. 22+50.86 TO STA. 22+75.00 LT
–L– STA. 26+27.00 TO STA. 26+93.86 LT
–L– STA. 15+66.77 TO 23+77.50 RT
–L– STA. 25+54.64 TO 29+29.64 RT

*** USE INSET C AS FOLLOWS:
–L– STA. 22+75.00 TO STA. 23+75.16 LT
–L– STA. 25+46.61 TO STA. 26+27.00 LT

TYPICAL SECTION NO. 1

* FULL DEPTH PAVED SHOULDER

USE TYPICAL SECTION NO. 1 AS FOLLOWS:
–L– STA. 14+50.00 TO STA. 24+00.00 (BEGIN BRIDGE)
–L– STA. 25+43.00 (END BRIDGE) TO STA. 30+50.00
** USE INSET A FROM:
–L– STA. 23+42.81 LT TO BEGIN BRIDGE
–L– STA. 23+77.50 RT TO BEGIN BRIDGE

NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1
–L– STA. 14+00.00 TO STA. 14+50.00
–L– STA. 30+50.00 TO STA. 31+00.00

6/2/99

28-APR-2009 15:03
R:\Roadway\Projects\b-4137_rdy_typ.dgn
$$$$USERNAME$$$$

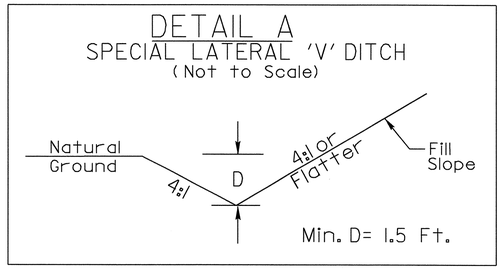
RD244219 4/28/2009 b-4137_rdy_typ scalhoun RD-Oce34

6/2/99

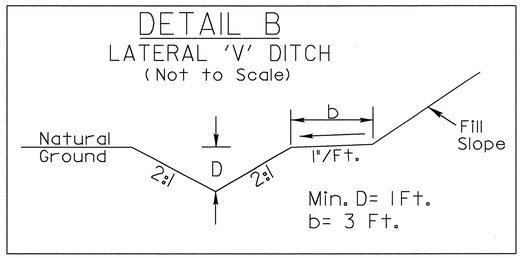
PROJECT REFERENCE NO.	SHEET NO.
B-4137	2A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 33181 ENGINEER BRIAN S. LIPSCOMB
04/29/09

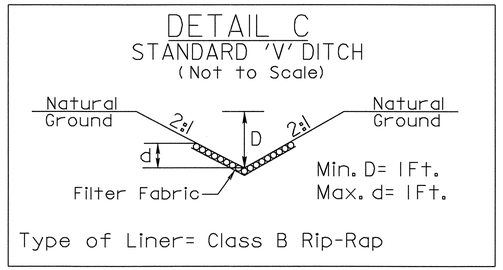
DITCH DETAILS



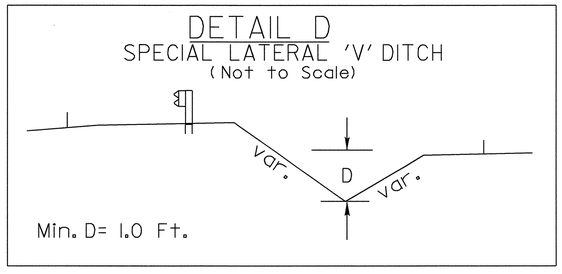
FROM –L– STA. 15+00 TO STA. 16+50 RT.
FROM –L– STA. 17+00 TO STA. 22+00 LT.
FROM –L– STA. 28+00 TO STA. 30+50 LT.
FROM –L– STA. 29+86 TO STA. 30+50 RT.



FROM –L– STA. 16+50 TO STA. 20+00 RT.
FROM –L– STA. 22+00 TO STA. 23+00 LT.
FROM –L– STA. 25+50 TO STA. 28+00 LT.
FROM –L– STA. 27+50 TO STA. 29+86 RT.



FROM –L– STA. 18+42 RT.
FROM –L– STA 29+85 RT.



FROM –L– STA. 20+50 TO STA. 23+00 RT.

15-APR-2009 15:20
r:\roadway\pro\b-4137_rdy_typ.dgn
$$$$USERNAME$$$$

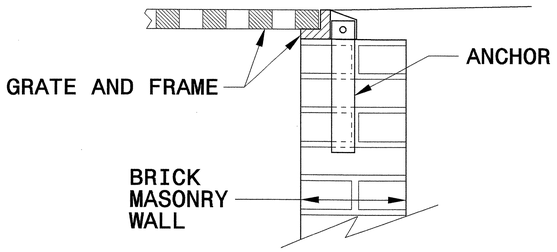
RD244219 4/15/2009 b-4137_rdy_det scalhoun RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
B-4137	2-B

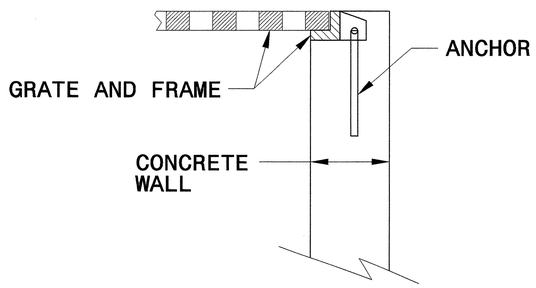
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

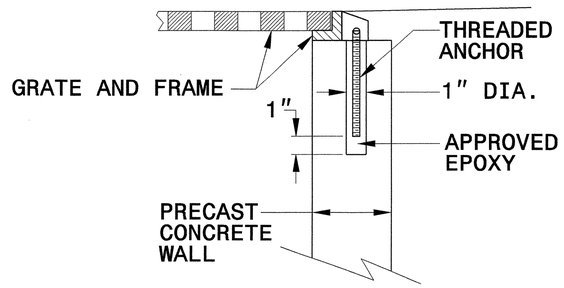
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



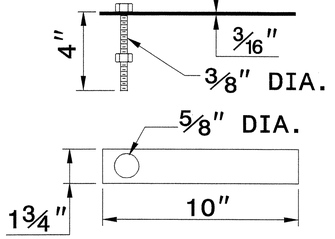
CONCRETE CONSTRUCTION



PRECAST CONCRETE CONSTRUCTION

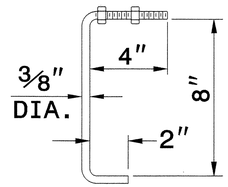
DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

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



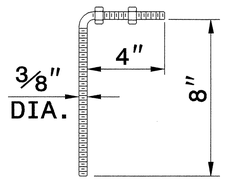
MASONRY ANCHOR

3/8" DIA. BOLT WITH PLATE



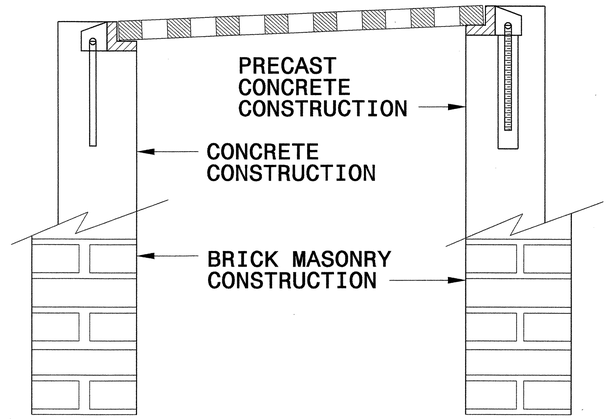
CONCRETE ANCHOR

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
9/30/09

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: F.E. WARD DATE: 9/25/06
CHECKED BY: DATE: 11/13/06
FILE SPEC.:

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4137	3
ROADWAY DESIGN ENGINEER	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202153

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (25+43.00)
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0057000000-E	226	200	CY	UNDERCUT EXCAVATION
0063000000-N	SP	Lump Sum		GRADING
0106000000-E	230	24,500	CY	BORROW EXCAVATION
0134000000-E	240	250	CY	DRAINAGE DITCH EXCAVATION
0195000000-E	265	200	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	200	SY	FABRIC FOR SOIL STABILIZATION
0318000000-E	300	51	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0343000000-E	310	112	LF	15" SIDE DRAIN PIPE
0366000000-E	310	128	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E	310	40	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E	310	76	LF	24" RC PIPE CULVERTS, CLASS III
0546000000-E	310	40	LF	**" CAA PIPE CULVERTS, *****" THICK (15", 0.064")
0564000000-E	310	4	EA	**" CAA PIPE ELBOWS, *****" THICK (15", 0.064")
0986000000-E	SP	48	LF	GENERIC PIPE ITEM 16" DI PIPE
0995000000-E	340	150	LF	PIPE REMOVAL
1121000000-E	520	190	TON	AGGREGATE BASE COURSE
1220000000-E	545	50	TON	INCIDENTAL STONE BASE
1275000000-E	600	1,260	GAL	PRIME COAT
1489000000-E	610	1,160	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	710	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	950	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1560000000-E	620	145	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
2253000000-E	840	2	CY	PIPE COLLARS
2286000000-N	840	4	EA	MASONRY DRAINAGE STRUCTURES
2367000000-N	840	4	EA	FRAME WITH TWO GRATES, STD 840.29
2556000000-E	846	185	LF	SHOULDER BERM GUTTER
3030000000-E	862	1,150	LF	STEEL BM GUARDRAIL
3045000000-E	862	50	LF	STEEL BM GUARDRAIL, SHOP CURVED
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3195000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3270000000-N	SP	5	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3317000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3649000000-E	876	15	TON	RIP RAP, CLASS B
3656000000-E	876	260	SY	FILTER FABRIC FOR DRAINAGE
4072000000-E	903	44	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4102000000-N	904	2	EA	SIGN ERECTION, TYPE E
4116100000-N	904	5	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
4155000000-N	907	6	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4192000000-N	907	1	EA	DISPOSAL OF SUPPORT, U-CHANNEL
4400000000-E	1110	526	SF	WORK ZONE SIGNS (STATIONARY)
4410000000-E	1110	94	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4445000000-E	1145	80	LF	BARRICADES (TYPE III)
4685000000-E	1205	3,400	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	3,400	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4880000000-E	1205	572	LF	CURING COMPOUND REMOVAL, LINES
4900000000-N	1251	4	EA	PERMANENT RAISED PAVEMENT MARKERS
4905000000-N	1253	20	EA	SNOWPLOWABLE PAVEMENT MARKERS
~~5325200000-E~~	~~1510~~	~~216~~	~~LF~~	~~2" WATER LINE~~
5325600000-E	1510	12	LF	6" WATER LINE
5540000000-E	1515	1	EA	6" VALVE
5648000000-N	1515	4	EA	RELOCATE WATER METER
5672000000-N	1515	1	EA	RELOCATE FIRE HYDRANT
5800000000-E	1530	208	LF	ABANDON 6" UTILITY PIPE
6000000000-E	1605	2,950	LF	TEMPORARY SILT FENCE
6006000000-E	1610	160	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	615	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	260	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	6.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	150	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	0.75	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	100	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6030000000-E	1630	710	CY	SILT EXCAVATION
6036000000-E	1631	4,900	SY	MATTING FOR EROSION CONTROL
6042000000-E	1632	155	LF	1/4" HARDWARE CLOTH
6071010000-E	SP	110	LF	WATTLE
6071020000-E	SP	41	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	360	LF	COIR FIBER BAFFLES
6084000000-E	1660	10	ACR	SEEDING & MULCHING
6087000000-E	1660	3.5	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	150	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	4.25	TON	FERTILIZER TOPDRESSING
6114000000-N	SP	5	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL

COMPUTED BY: S CALHOUN	DATE: 4/1/2009
CHECKED BY: J. TYSON	DATE: 4/1/2009

SUMMARY OF QUANTITIES

PROJECT REFERENCE NO.	SHEET NO.
B-4137	3-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22037 ANDREW JASON MOORE 4/29/09

SUMMARY OF EARTHWORK IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- STA. 14+50.00 TO STA. 24+00.00	1,419		19,331	18,134	
BRIDGE					
-L- STA. 25+43.00 TO STA. 30+50.00	194		4,341	4,147	
PROJECT TOTAL:	1,391		23,672	22,281	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				1,114	
GRAND TOTAL:	1,391		23,672	23,395	
SAY:	1,400			24,500	
DDE	250				
CONTIGENCY UNDERCUT	200				

Note:
Approximate quantities only. Fine grading, clearing and grubbing, unclassified excavation, breaking of existing pavement, and removal of existing pavement will be paid for at the lump sum price for "Grading".

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

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL & BREAKUP

PAVEMENT REMOVAL STATION	LOCATION	SQUARE YARDS	PAVEMENT BREAKUP STATION	LOCATION	SQUARE YARDS
-L- STA. 14+00.00 TO STA. 16+00.00	CL	533.33	-L- STA. 16+00.00 TO STA. 23+80.00	CL	2080.00
-L- STA. 25+00.00 TO STA. 25+60.00	CL	160.00	-L- STA. 25+60.00 TO STA. 28+50.00	CL	773.30
-L- STA. 28+50.00 TO STA. 31+00.00	CL	666.67			
TOTAL:		1360.00	TOTAL:		2853.00
SAY:		1380	SAY:		2900

DRAINAGE SUMMARY

Column groups: CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE); BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE), thickness or gauge .064; CORRUGATED ALUMINUM ALLOY (UNLESS NOTED OTHERWISE); ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YDS.; QUANTITIES FOR DRAINAGE STRUCTURES (* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B')) LIN. FT.; FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE.

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	RCP 12"	RCP 15"	RCP 18"	RCP 24"	RCP 30"	RCP 36"	RCP 42"	RCP 48"	BCCS 12"	BCCS 15"	BCCS 18"	CAA 12"	CAA 15"	CAA 18"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	16" D. I. PIPE	R.C.P.	C.S.P.	PER EACH (0' THRU 5.0')	A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	M.D.I. TYPE "A" STD. 840.17 OR 840.26	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. FRAME WITH GRATE STD. 840.22	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FRAME WITH GRATE STD. 840.36	FRAMES AND NARROW SLOT FLAT GRATES 840.29	PIPE COLLAR, CY STD. 848.72	15" CAA PIPE ELBOWS	PIPE REMOVAL LIN. FT.	REMARKS
15+45.77	RT																					20'																												22'	
17+93.54	LT																					20'																												24'	
18+43.77	RT	1	OUT		EX PIPE	407.50					36'																																						.55			
18+57.11	LT	2			412.25	EX PIPE					40'																																						.55			
20+12.21	LT																					32'																												32'	
21+04.00	RT																																																	26'	
21+84.00	RT																																																	24'	
22+79.97	LT	3	OUT	427.43	424.68	420.90														20'							1																			1		1		2		
23+70.00	LT	3	4	427.53	424.68	425.61			84'																		1																			1		1				
25+61.23	LT	5	6		422.9	422.7																		48'																												
25+76.88	LT	6	7	425.5	422.7	421.2			44'																		1																			1		1				
26+19.60	LT	7	OUT	424.3	421.2	418.7														20'							1																			1		1		2		
27+06.61	LT																					20'																													
28+06.79	LT																					20'																												22'	
29+86.42	RT	8	OUT		EX PIPE	406.7				20'																																							.45			
29+94.29	LT	9			408.58	EX PIPE				20'																																							.45			
TOTAL									128'	40'	76'									40'		112'		48'			4																			4		4	2.0	4@15"	150'	

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	B-77	GRAU 350	AT-1	XIII	CAT-1	VI MOD	BIC	AT-1	IMPACT ATTENUATOR TYPE 350 EA	G	NG
-L-	22+48.86	23+88.36	LT.	137.50				BRIDGE	8	11		118.75		2.375		1	1									
-L-	15+66.77	20+17.35	RT.	425.00	50.00		FILL 17+00.00		8	11	50		1				1	1								
-L-	20+36.64	24+11.64	RT.	375.00			FILL 24+11.64		8	11	50	250	1	5		1	1									
BRIDGE																										
-L-	25+31.36	26+93.86	LT.	162.50			BRIDGE		8	11	143.75		2.875			1	1									
-L-	25+54.64	29+29.64	RT.	375.00				FILL 28+00.00	8	11	250	50	5	1		1	1									
	SUBTOTAL			1475.00																						
LESS ANCHOR DEDUCTIONS:																										
	GRAU 350: 5 @ 50ft = 250			250.00																						
	B-77: 4 @ 18.75ft = 75			75.00																						
	AT-1 1 @ 6.25ft = 6.25			6.25																						
	ANCHOR TOTALS 331.25																									
	GRAND TOTALS			1143.75	50.00											4	5	1								
	SAY			1150.00			ADDITIONAL GUARDRAIL POSTS = 5 EA									4	5	1								

"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

RD244219,4/8/2009,R:\Roadway\Proj\rowparcels.xls

PROJ. REFERENCE NO.	SHEET NO.
B-4137	3-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	CURTIS L. JONES
2	4	BUCKHORN FARMS
3	4	JIMMIE G. BAKER
4	4	REBECCA J. & OT TRUELOVE
5	4	KEITH M. BROWN AND JOHNNY M. CARROLL
5A	4	JAMES W. RACKLEY
5B	4	ROBERT W. HORNER
6	4	JONAH DAVIS BLACK
7	4	MARTY RAY TART
8	4	OMA T. OCONNEL TRUST
8	5	OMA T. OCONNEL TRUST
9	5	EDWARD N. JONES

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
B-4137	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE — 7/14/09

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 33181 ENGINEER BRIAN S. LIPSCOMB — 7/15/09

8/17/99

REVISIONS

SKETCH SHOWING BRIDGE/ROADWAY RELATIONSHIP

BEGIN BRIDGE -L- STA. 24+00.00
BEGIN APPROACH SLAB -L- STA. 23+86.27
END BRIDGE -L- STA. 25+43.00
-L- POT STA. 24+44.64
△ 127^48'03.3"
N 83°09'00.7" W
N 44°39'03.2" E
PROP SHOULDER BERM GUTTER
GRAU 350
TYPE B-77
2' PS
24'
07 06 05 04 03 02
3'
25:1 TAPER PAVED SHLDR
10' GRAVEL DR
PROP RETAINING WALL
-L- PT Sta. 22+83.82
END APPROACH SLAB -L- STA. 25+56.73
NOT TO SCALE

NAD 83

1 JEFFERSON L. SUGG DB 2014 PG 331

2 BUCKHORN FARMS DB 1682 PG 394

3 JIMMIE G. BAKER DB 1089 PG 639

4 REBECCA J. & OT TRUELOVE DB 737 PG 9

5 KEITH M. BROWN AND JOHNNY M. CARROLL DB 2205 PG 01

5A JAMES W. RACKLEY, JR. DB 2378 PG 396

5B ROBERT W. HORNER, JR. DB 2378 PG 947

6 JOHNNY CARROLL DB 2231 PG 834

7 JOHN FERGUSON DB 2429 PG 559

8 OMA T. OCONNEL TRUST DB 1478 PG 957

NORFOLK SOUTHERN RAILWAY

NC HWY 42 TO SANFORD

-BL- 2
-L- 12+71.10 (16.21) RT

-L- POT STA.14+00.00
BEGIN PROJECT B-4137
BEGIN CONSTRUCTION

N 79°45'50.6" E

-BL- 3
-L- 18+34.38 (20.29) RT

-L- PC Sta. 16+95.02

-DRI- POT Sta.10+00.00
-L- POC Sta.20+14.84

-DRI- PC Sta. 10+13.74

-DRI- PT Sta. 10+69.24

-DRI- PC Sta. 11+39.06

-DRI- PT Sta. 11+90.86

-DRI- PC Sta. 12+85.26

-DRI- POT Sta. 13+62.98
END CONSTRUCTION

-BY- 8
-L- 23+06.67 (162.86) LT

-L- POT STA. 24+44.64
△ 127^48'3.3"

-RR- POT Sta. 13+26.90

-RR- POT Sta. 10+00.00

-BY- 9
-L- 25+98.70 (212.38) RT

-BL- 4
-BY- 10
-L- 24+03.05 (22.64) RT

-L- STA. 26+50.00 MATCH LINE SEE SHEET 5

-L-	-DRI-		
PI Sta 19+95.47	PI Sta 10+47.01	PI Sta 11+64.98	PI Sta 13+16.20
△ = 28° 06' 47.4" (LT)	△ = 79° 30' 38.0" (LT)	△ = 5° 56' 05.4" (LT)	△ = 63° 30' 09.7" (RT)
D = 4° 46' 28.7"	D = 143° 14' 22.0"	D = 11° 27' 33.0"	D = 114° 35' 29.6"
L = 588.80'	L = 55.51'	L = 51.79'	L = 55.42'
T = 300.45'	T = 33.27'	T = 25.92'	T = 30.94'
R = 1,200.00'	R = 40.00'	R = 500.00'	R = 50.00'
e = 0.08			
RO = 216'			

SEE SHEET 6 FOR PROFILES
SEE SHEET S-1 THRU S-24 FOR STRUCTURE PLANS
SEE SHEET W-1 THRU W-2 FOR RETAINING WALL DETAILS
TRAFFIC IS TO BE MAINTAINED ON AN OFF SITE DETOUR

14-JUL-2009 09:45
N:\roadway\proj\b4137_rdy_psh4.dgn
$$$$USERNAME$$$$

RD244219 7/14/2009 b4137_rdy_psh4 scalhoun RD-Oce860-34

PROJECT REFERENCE NO.	SHEET NO.
B-4137	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE — 4/27/09 — Andrew Jason Moore

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 33181 ENGINEER BRIAN S. LIPSCOMB — 04/28/09 — Brian S. Lipscomb

REVISIONS

8/17/99

ROY R. ADAMS
DB 1266 PG 111

ERNEST E. HOLDER
DB 1005 PG 962

EDWARD N. JONES
DB 1266 PG 102

OMA T. OCONNEL TRUST
DB 1478 PG 957

CURTIS B. SILVIS
DB 1467 PG 301

OMA T. OCONNEL TRUST
DB 1478 PG 957

OMA T. OCONNEL TRUST
DB 1478 PG 957

NAD 83

-BYI- 11
B4137-1
-L- 31+70.32 (38.04) LT

BM # 81
-BL- STA. 35+64.92
66.95' LEFT
ELEV. 405.20'

-BL- 6
-L- 34+40.74 (18.18) RT

-BL- 5
-BYI- 12
-L- 29+91.96 (15.25) RT

-L- POC STA. 31+00.00
END PROJECT B-4137
END CONSTRUCTION

-L- PC Sta. 28+31.38

-L- PT Sta. 37+62.16

-BL- 7
-L- 40+44.05 (16.23) RT

-L-
PI Sta 33+17.73
△ = 41° 01' 23.6" (RT)
D = 4° 24' 26.5"
L = 930.79'
T = 486.35'
R = 1,300.00'
e = 0.08
RO = 216'

-L-
MATCH STA. 26+50.00
SEE SHEET 4

N 44° 39' 03" E

N 85° 40' 26.9" E

NC HWY 42 TO DUNCAN

NOTE: MILEMARKER 258 I.S. 93 - 35°41'E) 3,048.00'
FROM CENTER OF BRIDGE

NORFOLK SOUTHERN RAILWAY

SEE SHEET 6 FOR PROFILE
SEE SHEET S-1 THRU S-24 FOR STRUCTURE PLANS
TRAFFIC IS TO BE MAINTAINED ON AN OFF SITE DETOUR

24-APR-2009 09:49
C:\Projects\B4137_rdy_psh5.dgn
$$$$USERNAME$$$$

RD244219 4/24/2009 b4137_rdy_psh5 scalhoun RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
B-4137	6

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22007 ENGINEER ANDREW JASON MOORE
7/14/09

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 33181 ENGINEER BRIAN S. LIPSCOMB
07/15/09

REVISIONS 5/28/99

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 1 & 2

DRAINAGE AREA	=	2.67	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	8.01	CFS
DESIGN HW ELEVATION	=	413.69	FT
100 YEAR DISCHARGE	=	8.76	CFS
100 YEAR HW ELEVATION	=	413.79	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	55.0	CFS
OVERTOPPING ELEVATION	=	425.5	FT