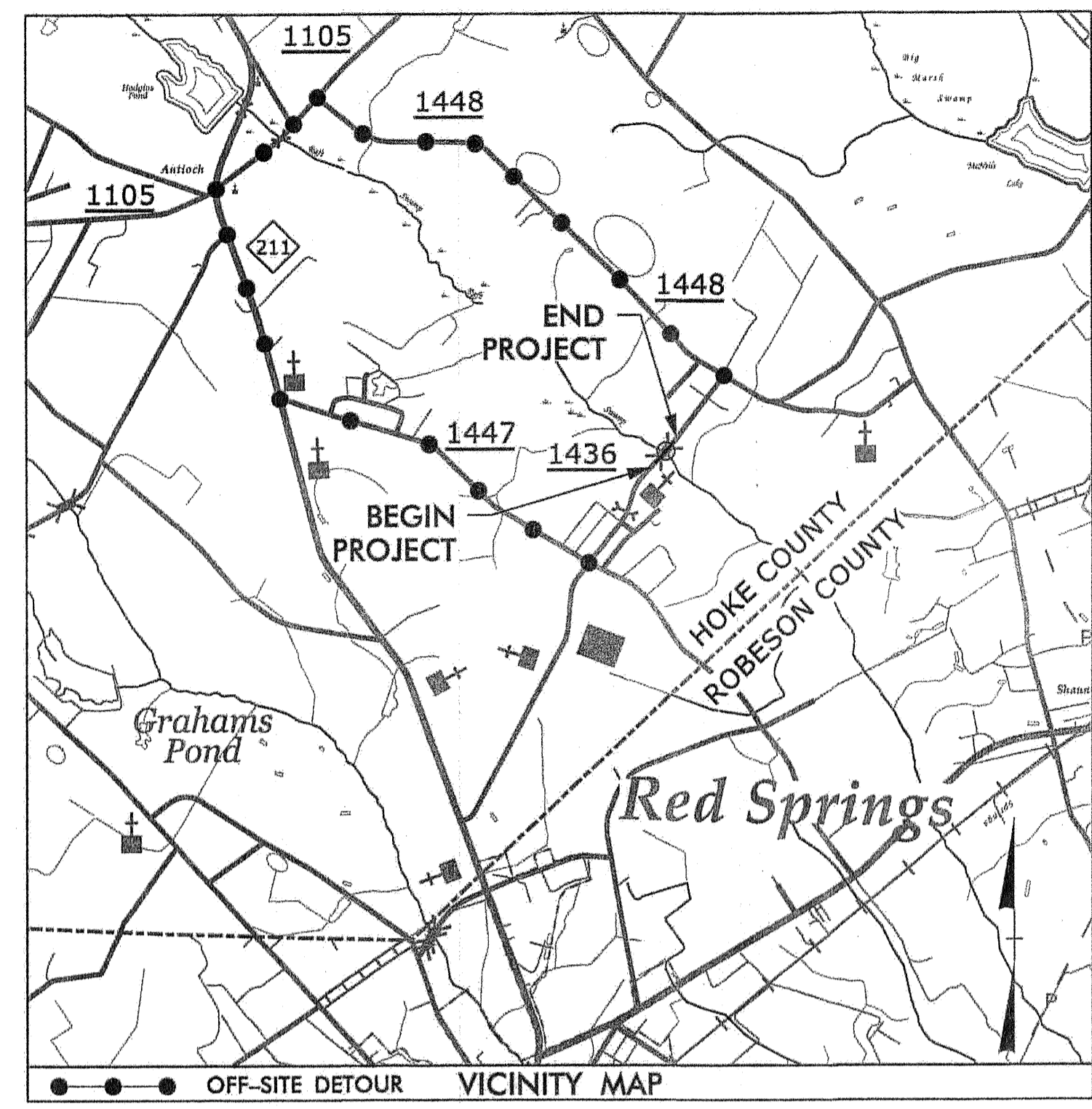


09/08/99

TIP PROJECT: B-5132

CONTRACT: C203354



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

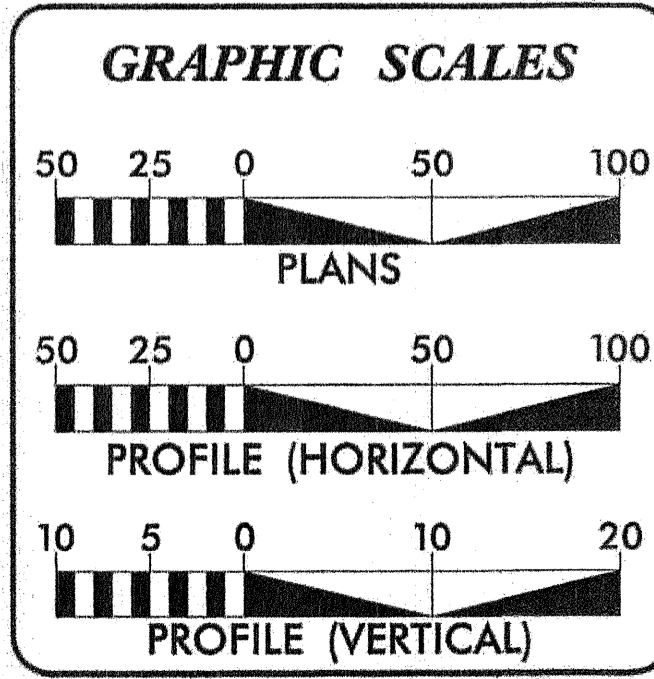
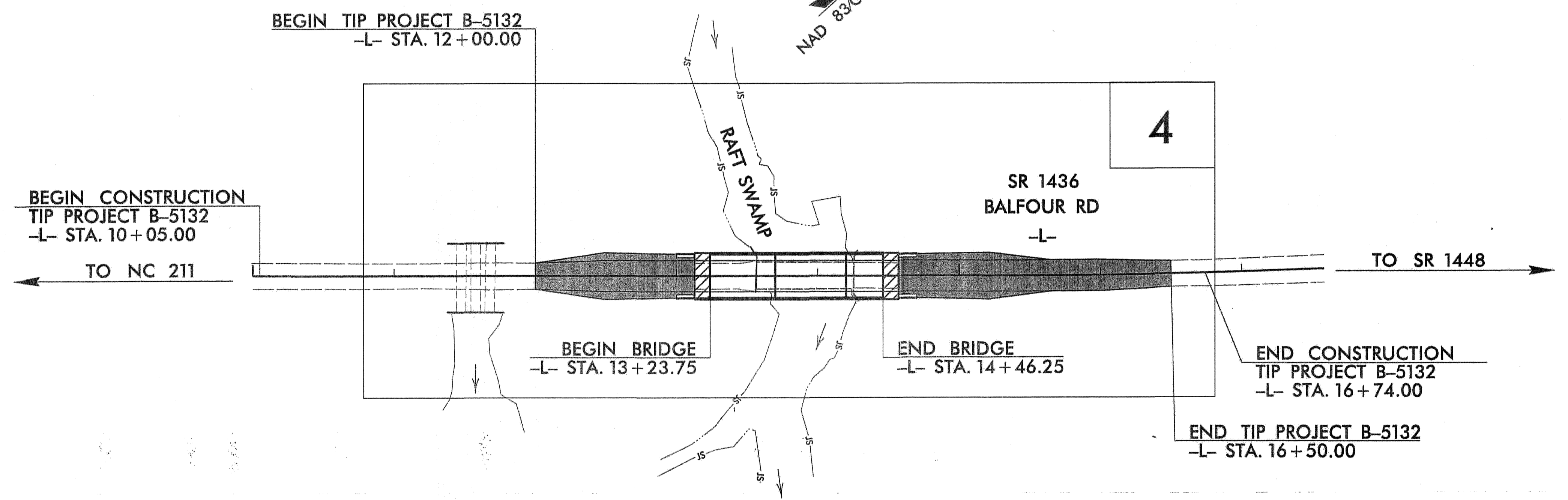
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# HOKE COUNTY

**LOCATION:** BRIDGE NO. 37 OVER RAFT SWAMP  
ON SR 1436 (BALFOUR RD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5132	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
42291.1.1	BRZ-1436(2)	PE	
42291.2.1	BRZ-1436(2)	RW & UTILITIES	
42291.3.FD1	BRZ-1436(2)	CONSTRUCTION	



**DESIGN DATA**

ADT 2013 = 960
ADT 2033 = 1730
DHV = 13%
D = 60%
T = 6% *
* (TTST 2% + DUAL 4%)
V = 60 MPH
CLASS = RURAL LOCAL
SUBREGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-5132	= 0.062 mi.
LENGTH STRUCTURE TIP PROJECT B-5132	= 0.023 mi.
TOTAL LENGTH TIP PROJECT B-5132	= 0.085 mi.

Prepared in the Office of:  
**STEWART**

For  
NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
FEBRUARY 15, 2013

**LETTING DATE:**  
FEBRUARY 18, 2014

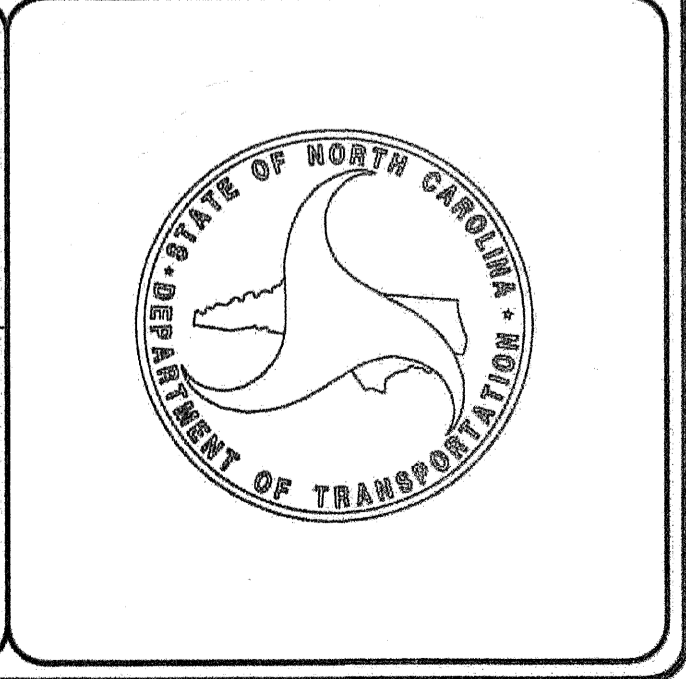
<b>MICHAEL TAYLOR, PE</b> PROJECT ENGINEER
<b>MATT LUDWIG, PE</b> PROJECT DESIGN ENGINEER
<b>BRENDA L. MOORE, PE</b> NCDOT CONTACT

**HYDRAULICS ENGINEER**

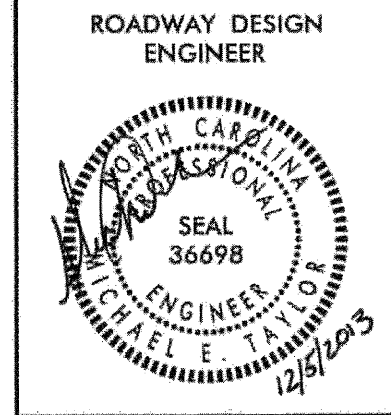
SIGNATURE: [Signature]

**ROADWAY DESIGN ENGINEER**

SIGNATURE: [Signature]



12/2/2013 \\Roadway\Proj\B5132\_rdy\_tsh.dgn USER:mattaylor



STEWART  
Firm License No. C-1057  
 23 Fayetteville St.  
 Raleigh, NC 27603  
 Tel. 919.286.9733  
 www.stewartinc.com

8/17/99

REVISIONS

SHEET NUMBER	TITLE
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C THRU 1-D	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-A	STRUCTURE ANCHOR UNIT DETAIL, TYPE III
3A	SUMMARY OF DRAINAGE QUANTITIES SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, AND ASPHALT PAVEMENT REMOVAL SUMMARY
4	PLAN SHEET
TMP-1 THRU TMP-3	TRAFFIC CONTROL PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-2	SIGNING PLANS
UC-1 THRU UC-7	UTILITIES CONSTRUCTION PLANS
X-1A	CROSS-SECTION SUMMARY
X-1 THRU X-2	CROSS-SECTIONS
S-1 THRU S-21	STRUCTURE PLANS

2012 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-17-2012  
REV. 10-30-2012

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 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
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	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
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
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
876.02	Guide for Rip Rap at Pipe Outlets

GENERAL NOTES: 2012 SPECIFICATIONS  
EFFECTIVE: 01-17-2012  
REVISED: 07-30-2012

GRADE LINE:  
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 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

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.

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

UTILITIES:  
UTILITY OWNERS ON THIS PROJECT ARE :  
Hoke County Utility Department (Water)  
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 CONTRACT.

04/16/11

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	(23)
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
Known Soil Contamination: Area or Site	☠ ☠
Potential Soil Contamination: Area or Site	☠ ?

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○
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	-----
False Sump	-----

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
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	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite RW Marker	-----
Proposed Control of Access Line with Concrete C/A Marker	-----
Existing Control of Access	-----
Proposed Control of Access	-----
Existing Easement Line	----- E
Proposed Temporary Construction Easement	----- E
Proposed Temporary Drainage Easement	----- TDE
Proposed Permanent Drainage Easement	----- PDE
Proposed Permanent Drainage / Utility Easement	----- DUE
Proposed Permanent Utility Easement	----- PUE
Proposed Temporary Utility Easement	----- TUE
Proposed Aerial Utility Easement	----- AUE
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 Curb Ramp	-----
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	-----

### 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	○
Storm Sewer	-----

### UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊗
Power Transformer	⊠
U/G Power Cable Hand Hole	-----
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	⊕
Telephone Booth	□
Telephone Pedestal	⊕
Telephone Cell Tower	⊗
U/G Telephone Cable Hand Hole	-----
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	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	----- A/G Water

### TV:

TV Satellite Dish	⊗
TV Pedestal	⊕
TV Tower	⊗
U/G TV Cable Hand Hole	-----
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	⊕
Utility Unknown U/G Line	----- UTUL
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊗
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

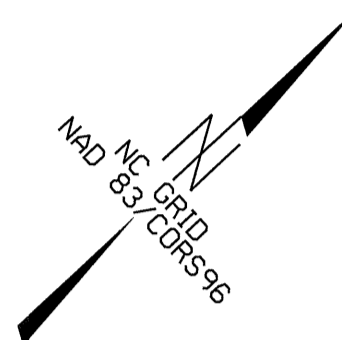
6/2/99

# SURVEY CONTROL SHEET B-5132

PROJECT REFERENCE NO.	SHEET NO.
B-5132	1C
Location and Surveys	

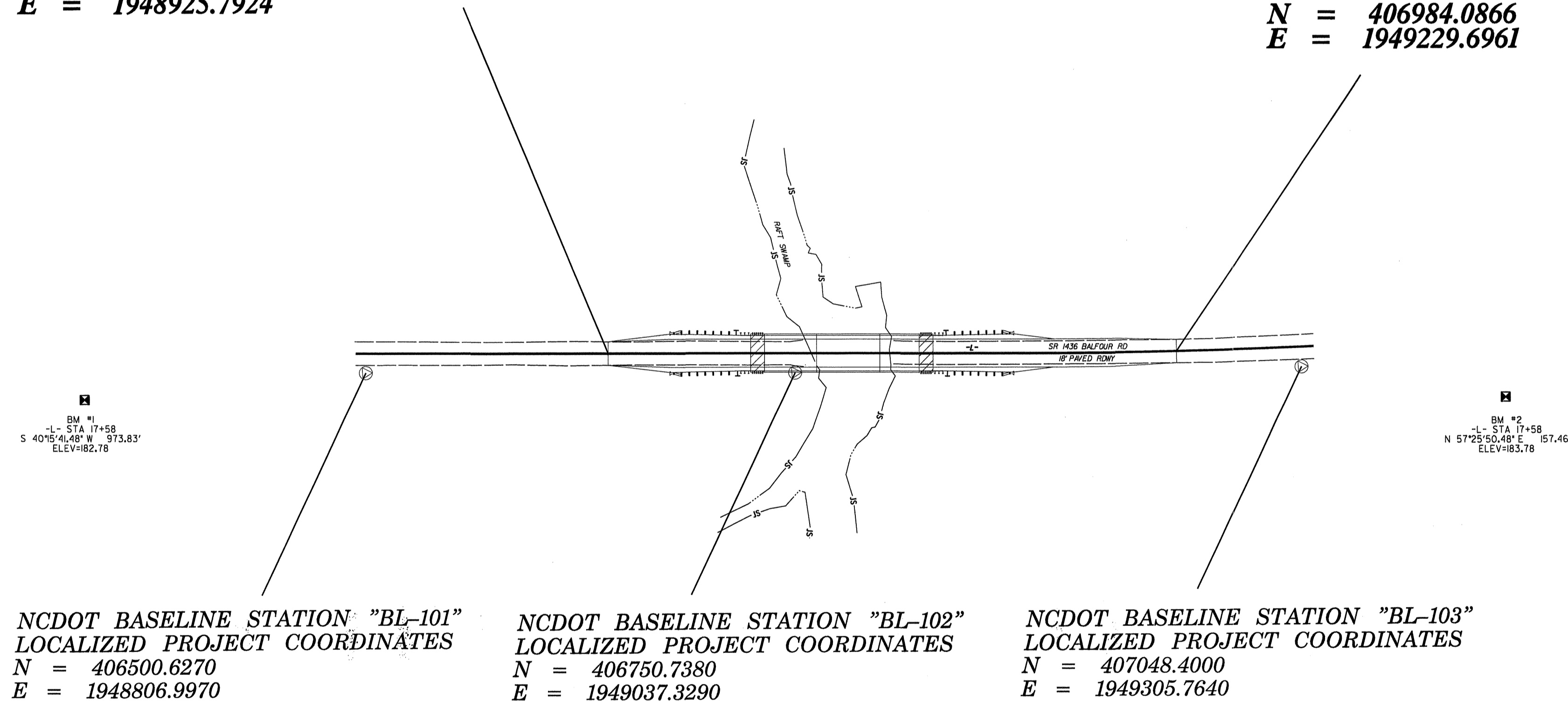
BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
101	BL-101	406500.6270	1948806.9970	184.23	10+00.00	15.31 RT
102	BL-102	406750.7380	1949037.3290	185.45	13+48.83	15.31 RT
103	BL-103	407048.4000	1949305.7640	185.24	17+48.30	15.53 RT

.....  
 BM1 ELEVATION = 182.78  
 N 408323 E 1940671  
 L STATION 17+58.00  
 S 40°15'41.48" W DIST 973.83  
 BM1  
 .....  
 BM2 ELEVATION = 183.78  
 N 407151 E 1949433  
 L STATION 17+58.00  
 N 57°25'58.48" E DIST 157.46  
 BM2  
 .....



**LOCALIZED PROJECT COORDINATES**  
**-L- STA. 12+00.00 BEGIN TIP PROJECT B-5132**  
**N = 406652.2198**  
**E = 1948925.7924**

**LOCALIZED PROJECT COORDINATES**  
**-L- STA. 16+50.00 END TIP PROJECT B-5132**  
**N = 406984.0866**  
**E = 1949229.6961**



NCDOT BASELINE STATION "BL-101"  
 LOCALIZED PROJECT COORDINATES  
**N = 406500.6270**  
**E = 1948806.9970**

NCDOT BASELINE STATION "BL-102"  
 LOCALIZED PROJECT COORDINATES  
**N = 406750.7380**  
**E = 1949037.3290**

NCDOT BASELINE STATION "BL-103"  
 LOCALIZED PROJECT COORDINATES  
**N = 407048.4000**  
**E = 1949305.7640**

**NOTES:**

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.NCDOT.ORG/DOHPRECONSTRUCT/HIGHWAYLOCATION/PROJECT/](http://www.ncdot.org/DOHPRECONSTRUCT/HIGHWAYLOCATION/PROJECT/)  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 B5132\_LS\_CONTROL.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 NGS ONLINE POSITIONING SERVICE (OPUS)

**DATUM DESCRIPTION**  
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5132-1"  
 WITH NAD 83/CORS96 STATE PLANE GRID COORDINATES OF  
 NORTHING: 408076.507(FT) EASTING: 1951659.945(FT)  
 ELEVATION: 199.16(FT)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989572  
 THE N. C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5132-1" TO -L- STATION 12+00.00 IS  
 S62°29'02.0" W 3082.89'  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

11/7/2013 10:16:52 AM r:\b5132\_1s\_1c.dgn

# SURVEY CONTROL SHEET B-5132

## FINAL

TYPE	STATION	NORTH	EAST
POT	10+00.00	406505.1014	1948790.3074
PC	15+37.50	406900.4829	1949154.4239
PT	17+25.91	407041.4477	1949279.4165
POT	17+58.35	407066.1238	1949300.4798

ROW MARKER CONCRETE OR GRANITE -E				
ALIGN	STATION	OFFSET	NORTH	EAST
L	12+25.00	-30.00	406690.9324	1948920.8602
L	12+25.00	-40.00	406697.7066	1948913.3043
L	15+25.00	-40.00	406918.3843	1949116.5317
L	15+25.00	-30.00	406911.6100	1949123.8876
L	15+25.00	30.00	406870.9645	1949168.0232
L	15+25.00	40.00	406864.1903	1949175.3791
L	12+25.00	30.00	406650.2869	1948964.7958
L	12+25.00	40.00	406643.5126	1948972.1517

PERMANENT EASEMENTS				
ALIGN	STATION	OFFSET	NORTH	EAST
L	12+90.00	-50.00	406752.2943	1948949.9810
L	12+90.00	-40.00	406745.5201	1948957.3369
L	13+15.00	-50.00	406770.6842	1948966.9166
L	13+15.00	-40.00	406763.9099	1948974.2725
L	12+90.00	40.00	406691.3261	1949016.1843
L	12+90.00	50.00	406684.5519	1949023.5402
L	13+15.00	40.00	406709.7159	1949033.1199
L	13+15.00	50.00	406702.9417	1949040.4758
L	14+55.00	-50.00	406873.6670	1949061.7561
L	14+80.00	-50.00	406892.0569	1949078.6917
L	14+55.00	-40.00	406866.8928	1949069.1128
L	14+80.00	-40.00	406885.2826	1949086.0476
L	14+55.00	40.00	406812.6988	1949127.9594
L	14+80.00	40.00	406831.0886	1949144.8950
L	14+80.00	50.00	406824.3144	1949152.2509
L	14+55.00	50.00	406805.9246	1949135.3153

### DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5132-1"

WITH NAD 83/CORS96 STATE PLANE GRID COORDINATES OF  
 NORTHING: 408076.507(±ft) EASTING: 1951659.945(±ft)  
 ELEVATION: 199.16(±ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999889752

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5132-1" TO -L- STATION 12+00.00 IS  
 S62°29'02.0"W 3082.89'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

### NOTES:

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.NCDOT.ORG/DOHPRECONSTRUCTHIGHWAYLOCATIONPROJECT/](http://www.ncdot.org/DOHPRECONSTRUCTHIGHWAYLOCATIONPROJECT/)  
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 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.  
 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

6/2/99

05-DEC-2013 10:00 AM B5132-1s-1.dgn

6/2/2013

STEWART  
Firm License No. C-1051  
431 Paving/Gravel/Gr. & C. Eng.  
Raleigh, NC 27601  
919-333-8700  
www.stewartinc.com

ECOLOGICAL ENGINEERING  
NC Firm License No. P-1148  
1131 SE Cary Parkway  
Cary, NC 27513  
(919) 597-0999

PROJECT REFERENCE NO.  
**B-5132**

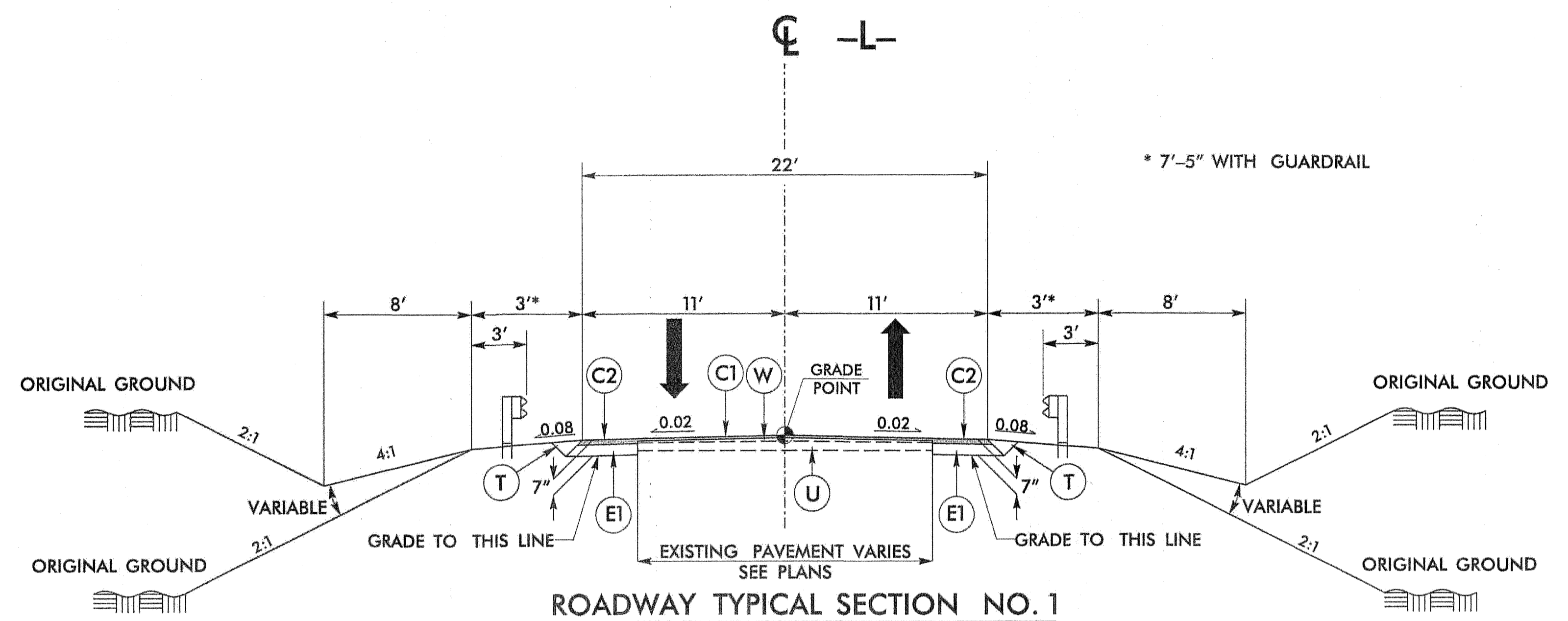
ROADWAY DESIGN ENGINEER

SHEET NO.  
**2**

PAVEMENT DESIGN ENGINEER

SEAL  
36698  
ENGINEER  
MEL TAYLOR  
12/17/2013

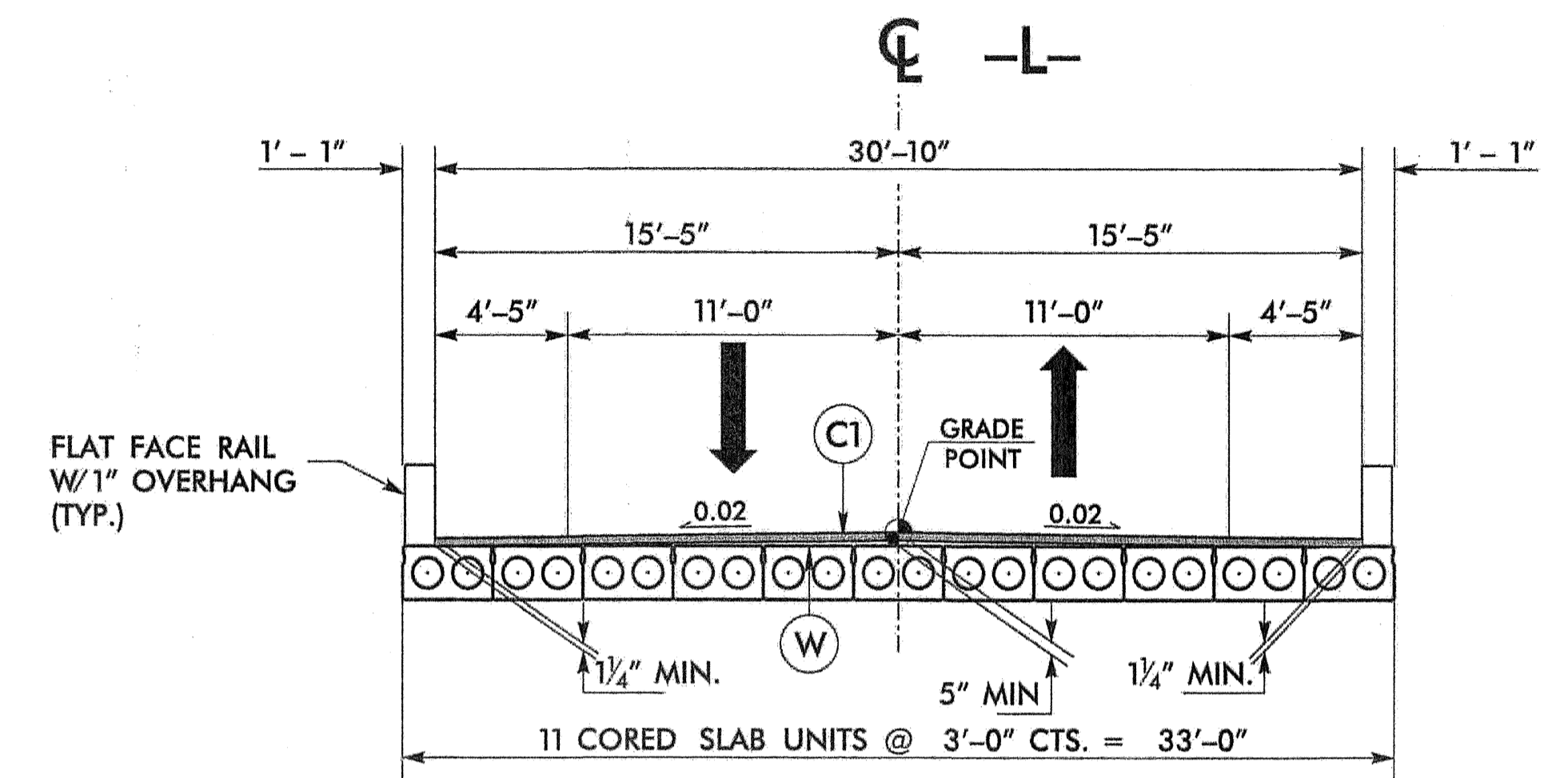
SEAL  
22888  
ENGINEER  
CHRIS S. MORRISON  
12/15/13



**ROADWAY TYPICAL SECTION NO. 1**

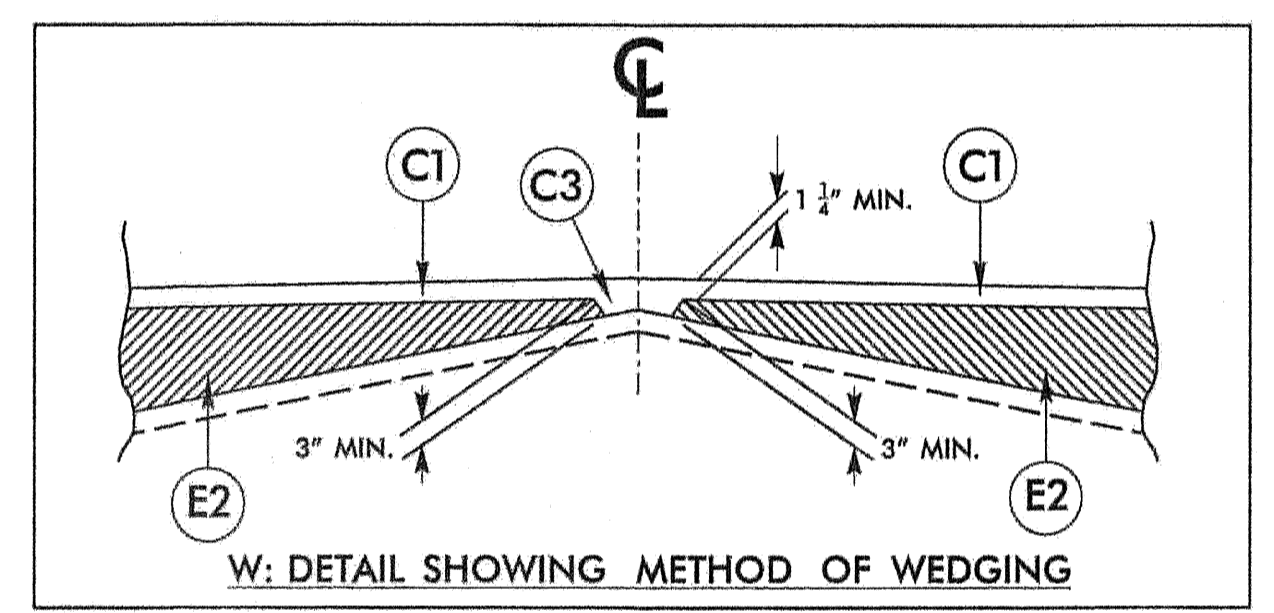
USE ROADWAY TYPICAL SECTION NO. 1  
 -L- STA. 12+50.00 TO -L- STA. 12+70.00  
 -L- STA. 15+20.00 TO -L- STA. 16+00.00

NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO.1 -L- STA. 12+00.00 TO -L- STA. 12+50.00  
 TRANSITION FROM TYPICAL SECTION NO.1 TO EXISTING -L- STA. 16+00.00 TO -L- STA. 16+50.00

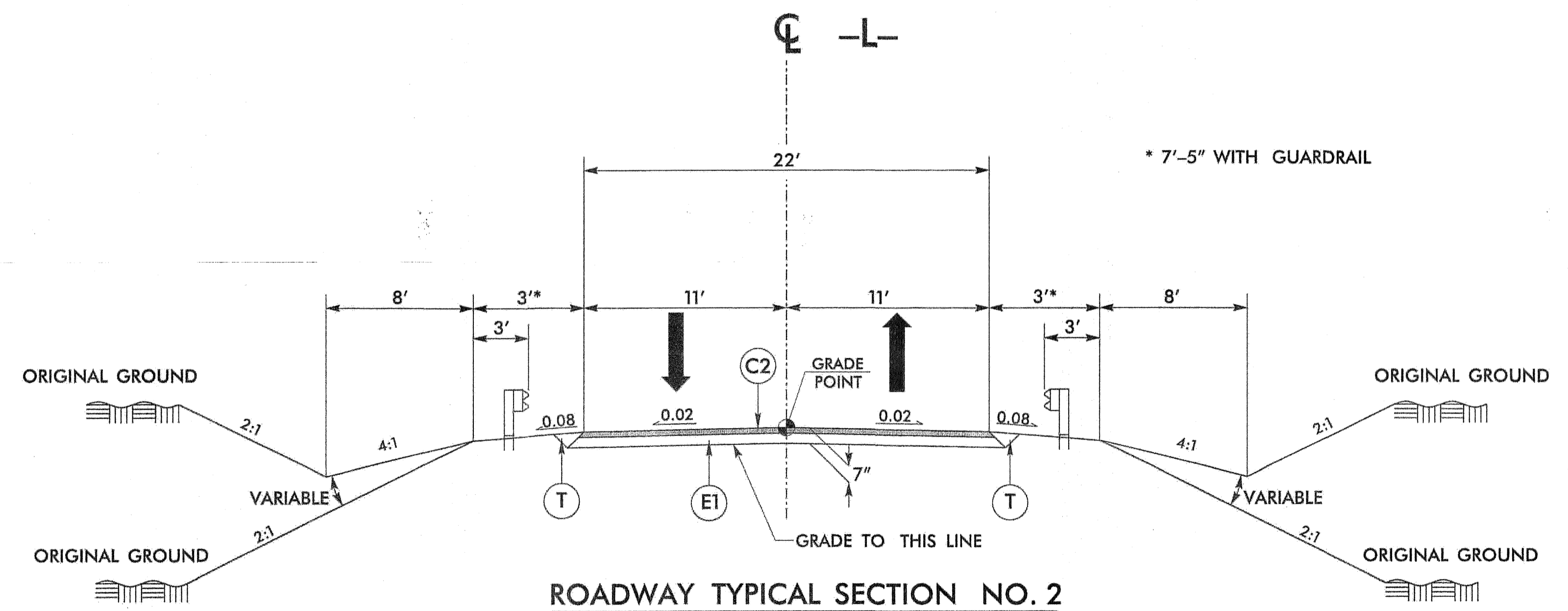


**BRIDGE TYPICAL SECTION**

USE BRIDGE TYPICAL SECTION  
 -L- STA. 13+23.75 TO -L- STA. 14+46.25  
 SEE STRUCTURE PLANS FOR BRIDGE OVERLAY



W: DETAIL SHOWING METHOD OF WEDGING



**ROADWAY TYPICAL SECTION NO. 2**

USE ROADWAY TYPICAL SECTION NO. 2

-L- STA. 12+70.00 TO -L- STA. 13+23.75 (BEGIN BRIDGE)  
 -L- STA. 14+46.25 (END BRIDGE) TO -L- STA. 15+20.00

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	PROP. APPROX. 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. APPROX. 2 1/2" 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 1 1/2" IN DEPTH.
E1	PROP. APPROX. 4 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING (SEE STANDARD WEDGING DETAIL)

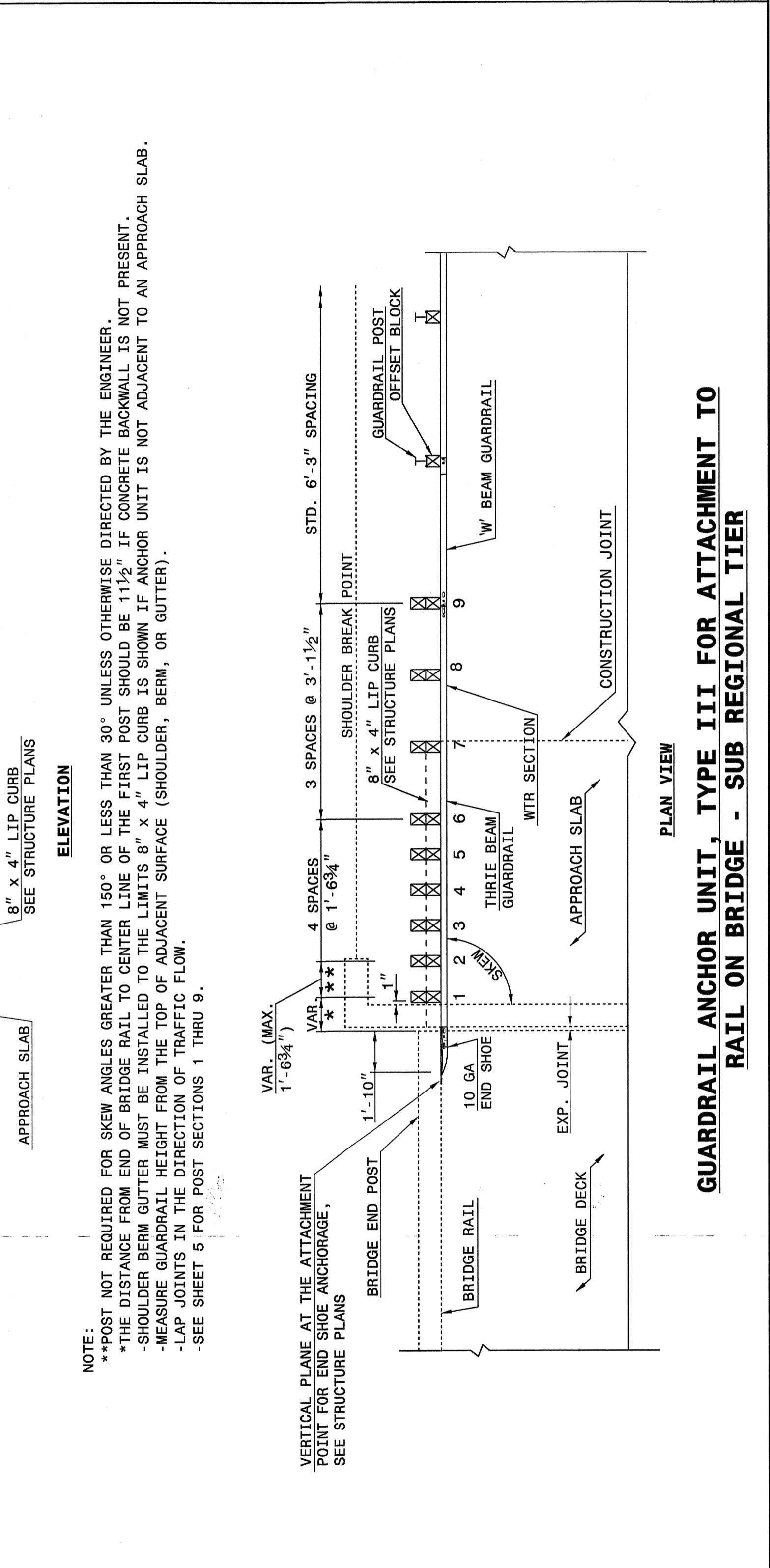
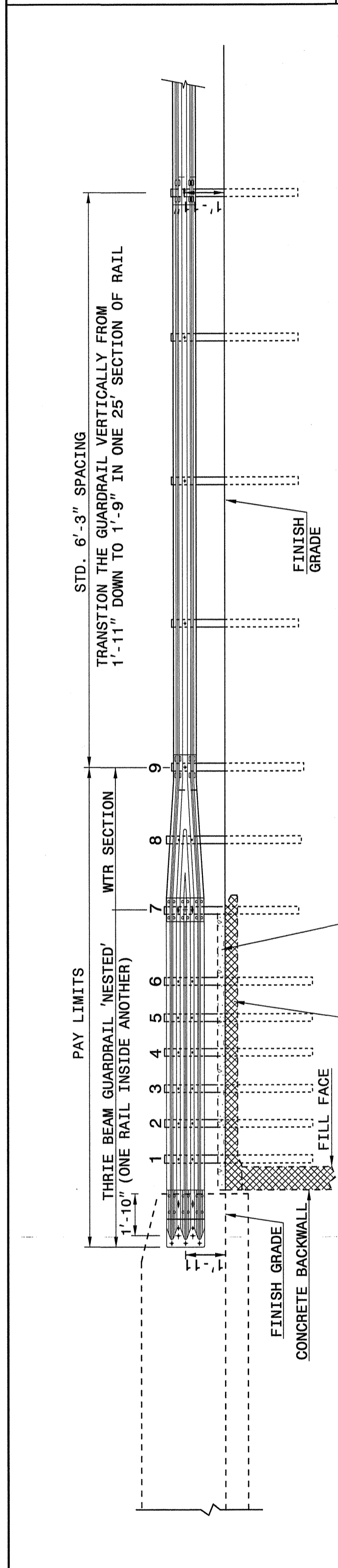
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

12/4/2013 12:44:00 PM I:\Roadway\NProj\B5132.rdy-typ.dgn

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

ENGLISH DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO  
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7  
**862d03**



**GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER**

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

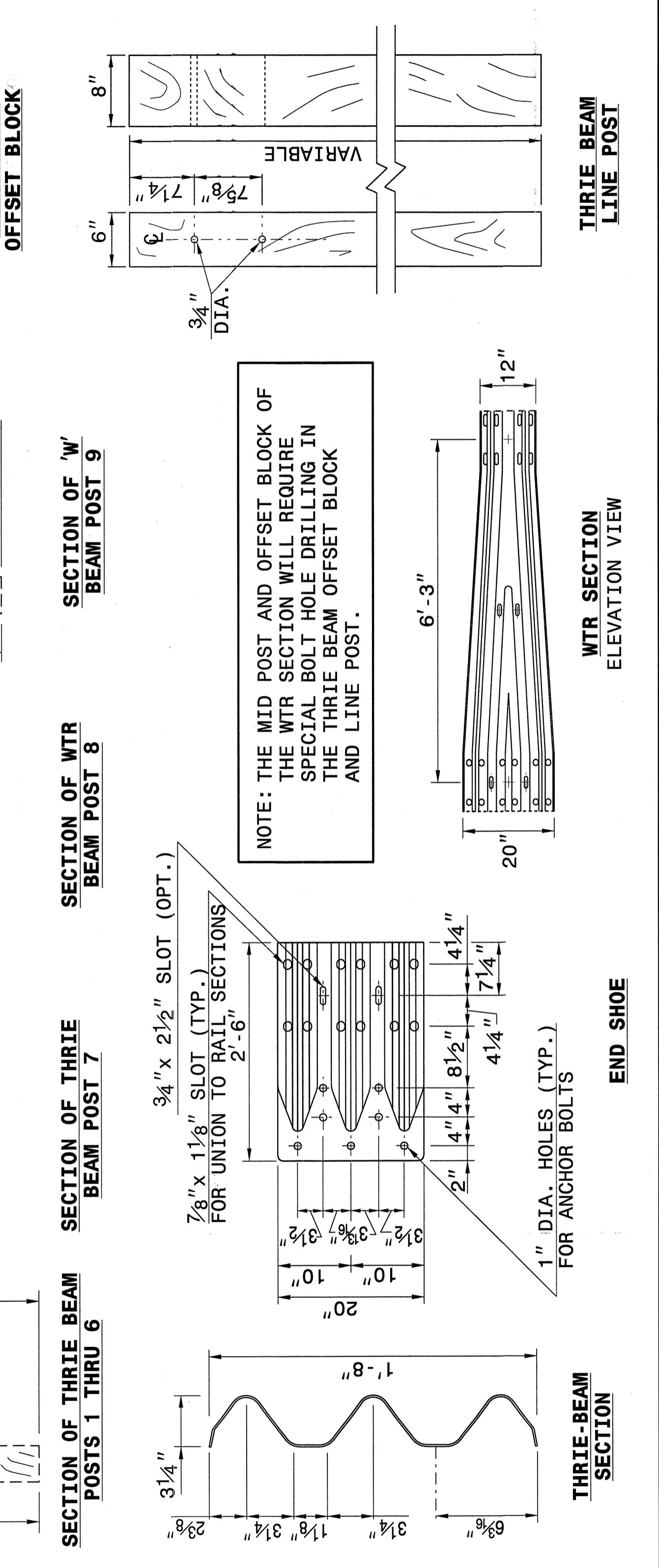
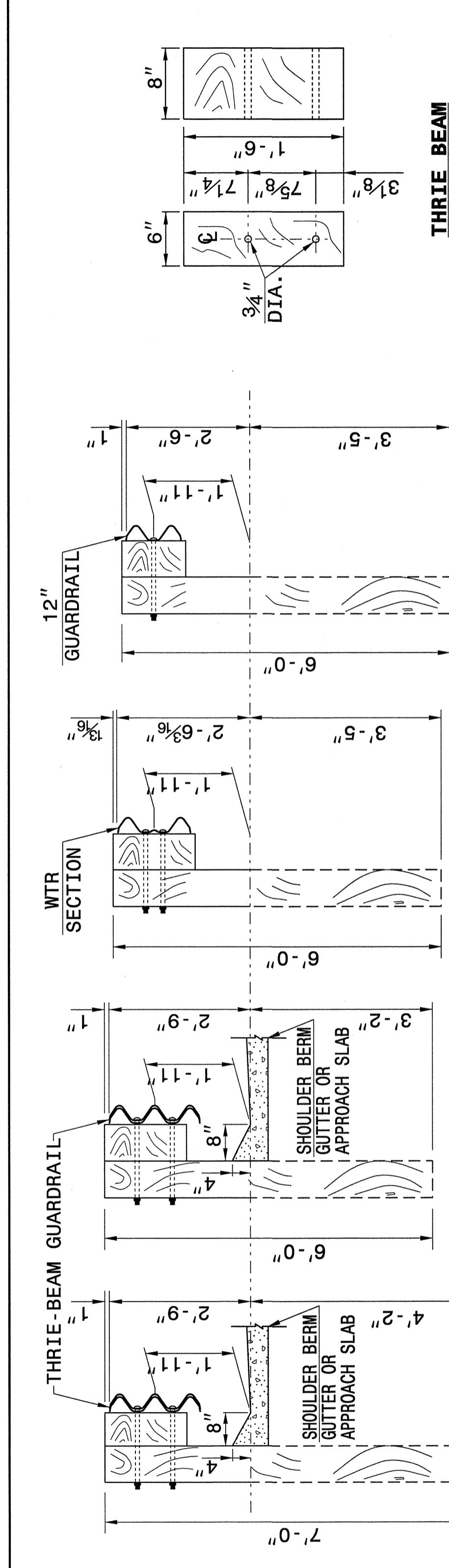
ENGLISH DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO  
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7  
**862d03**

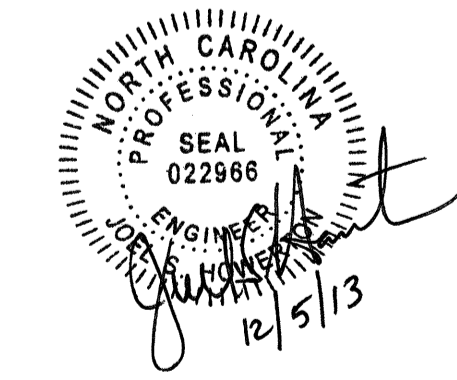
STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7  
**862d03**



NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.



**CONTRACT STANDARDS AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

**SEE TITLE BLOCK**

ORIGINAL BY: J. HOWERTON DATE: 06-22-12  
MODIFIED BY: DATE:  
CHECKED BY: DATE:  
FILE SPEC.:

\$\$\$\$\$SYTIME\$\$\$\$\$  
\$\$\$\$\$DGN\$\$\$\$\$  
\$\$\$\$\$USERNAME\$\$\$\$\$

12/06/07

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

SUMMARY OF EARTHWORK  
IN CUBIC YARDS

Table with columns: STATION, UNCL. EXCAV., EMBANK. +%, BORROW, WASTE. Rows include STA. 12+00.00, STA. 13+23.75, STA. 14+46.25, STA. 16+50.00, PROJECT SUBTOTAL, EST 5% TO REPLACE TOP SOIL ON BORROW PIT, PROJECT TOTAL, SAY.

PER GEOTECH RECOMMENDATIONS, ESTIMATE 100 CY OF UNDERCUT EXCAVATION  
PER GEOTECH RECOMMENDATIONS, ESTIMATE 100 SY OF GEOTEXTILE FOR SOIL STABILIZATION  
PER GEOTECH RECOMMENDATIONS, ESTIMATE 100 CY OF SELECT GRANULAR MATERIAL

SHOULDER BERM GUTTER SUMMARY

Table with columns: SURVEY LINE, STATION, STATION, LOCATION, LENGTH. Rows include STA. 13+00.00, 13+12.75, 14+57.25, 14+70.00, TOTAL: 51.

PAVEMENT REMOVAL SUMMARY

Table with columns: SURVEY LINE, STATION, STATION, LOCATION, YD². Rows include STA. 12+70.00, 13+57.00, 14+25.00, 15+20.00, TOTAL: 370.

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

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

Main data table for pipes and structures. Columns include: STATION, LOCATION, STRUCTURE NO., TOP ELEVATION, INVERT ELEVATION, SLOPE CRITICAL, DRAINAGE PIPE, C.S. PIPE, R.C. PIPE, ENDWALLS, FRAME, GRATES AND HOOD, CONCRETE TRANSITIONAL SECTION, CATCH BASIN, DROP INLET, TRAFFIC BEARING, G.D.I., REMARKS.

GUARDRAIL SUMMARY

Table with columns: SURVEY LINE, BEG. STA., END STA., LOCATION, LENGTH, WARRANT POINT, ANCHORS, IMPACT ATTENUATOR, SINGLE FACED GUARDRAIL, REMOVE EXISTING GUARDRAIL, REMOVED AND STOCKPILE EXISTING GUARDRAIL, REMARKS.

"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

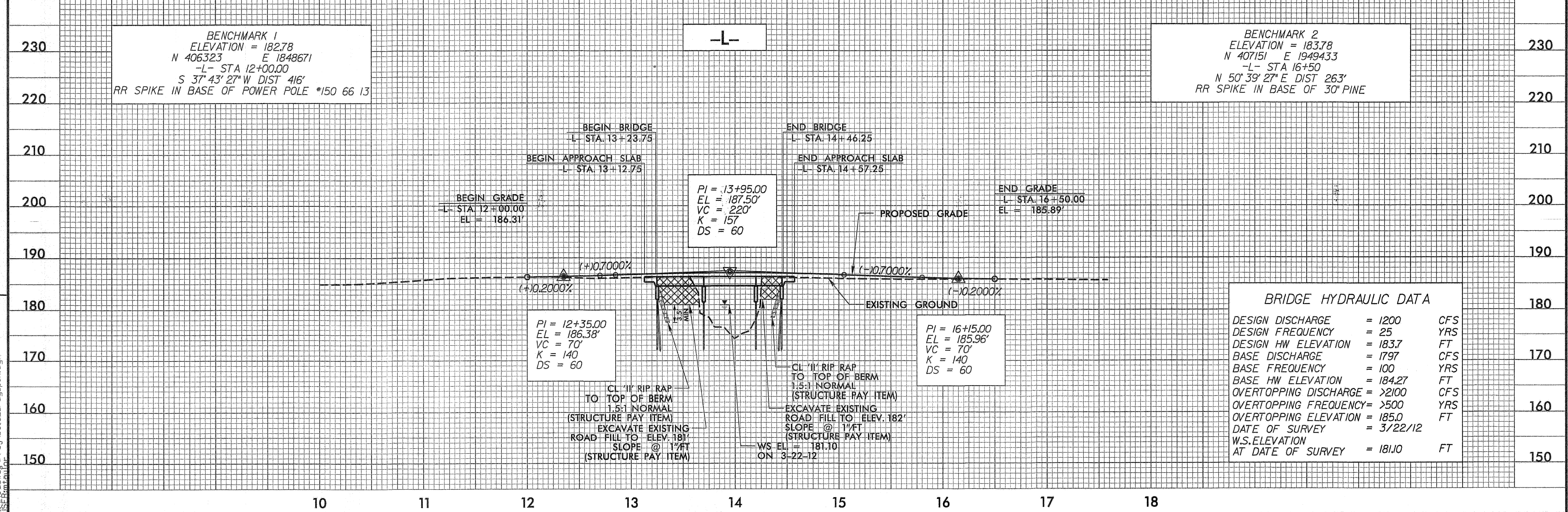
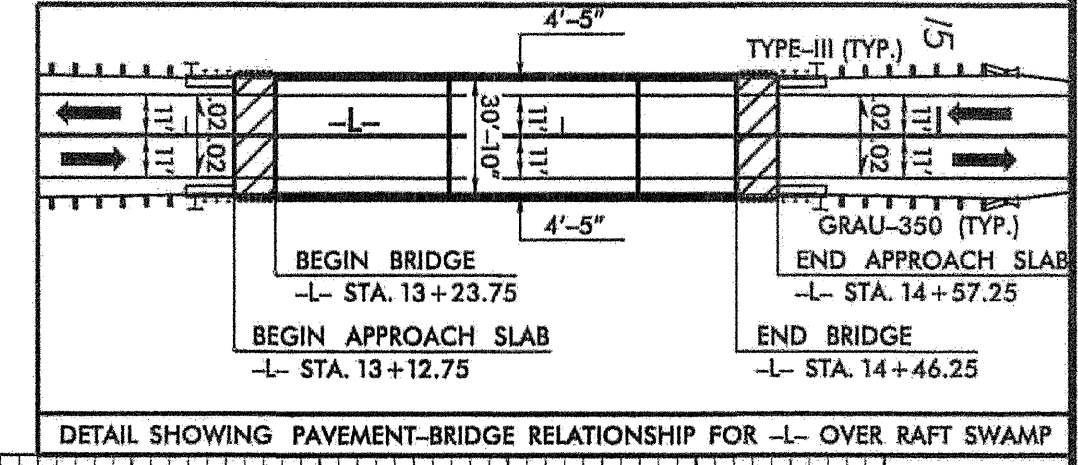
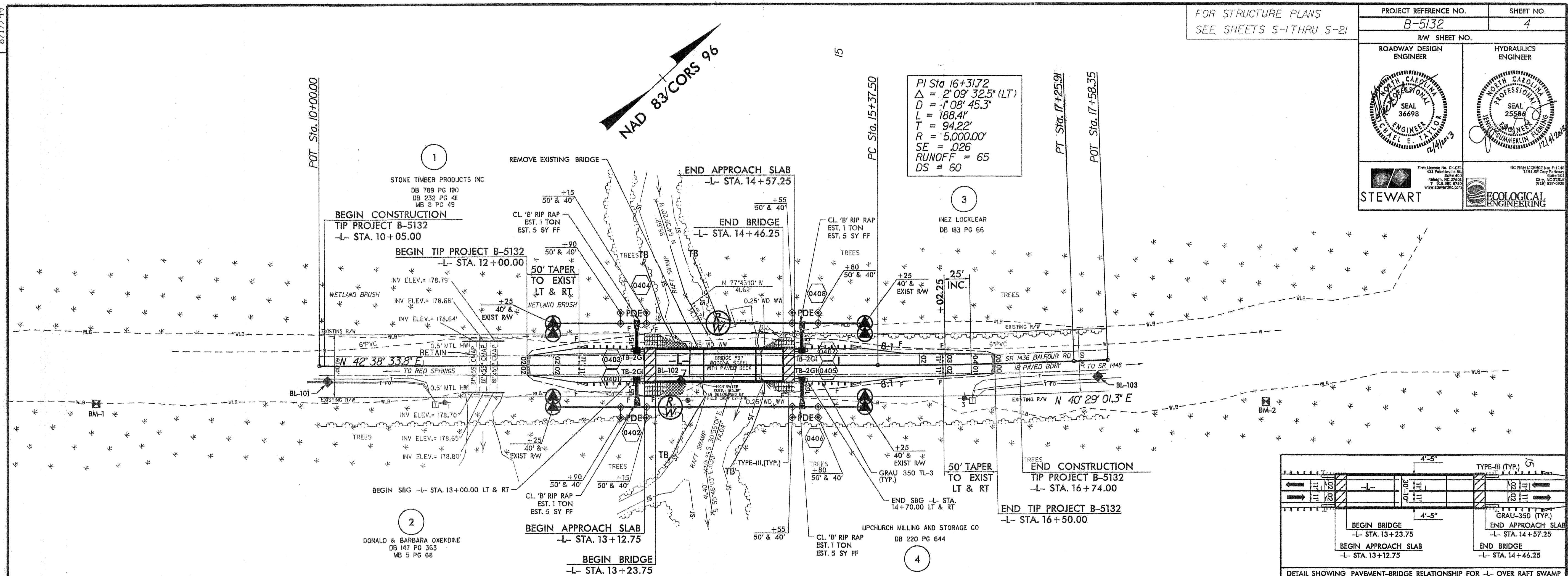
ADDITIONAL GUARDRAIL POSTS = 3

12/2/2013 11:55:15 AM \\Fs\Roadway\Proj\B5132\rdy-sum.dgn



FOR STRUCTURE PLANS  
SEE SHEETS S-1 THRU S-21

PROJECT REFERENCE NO. <b>B-5132</b>	SHEET NO. <b>4</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

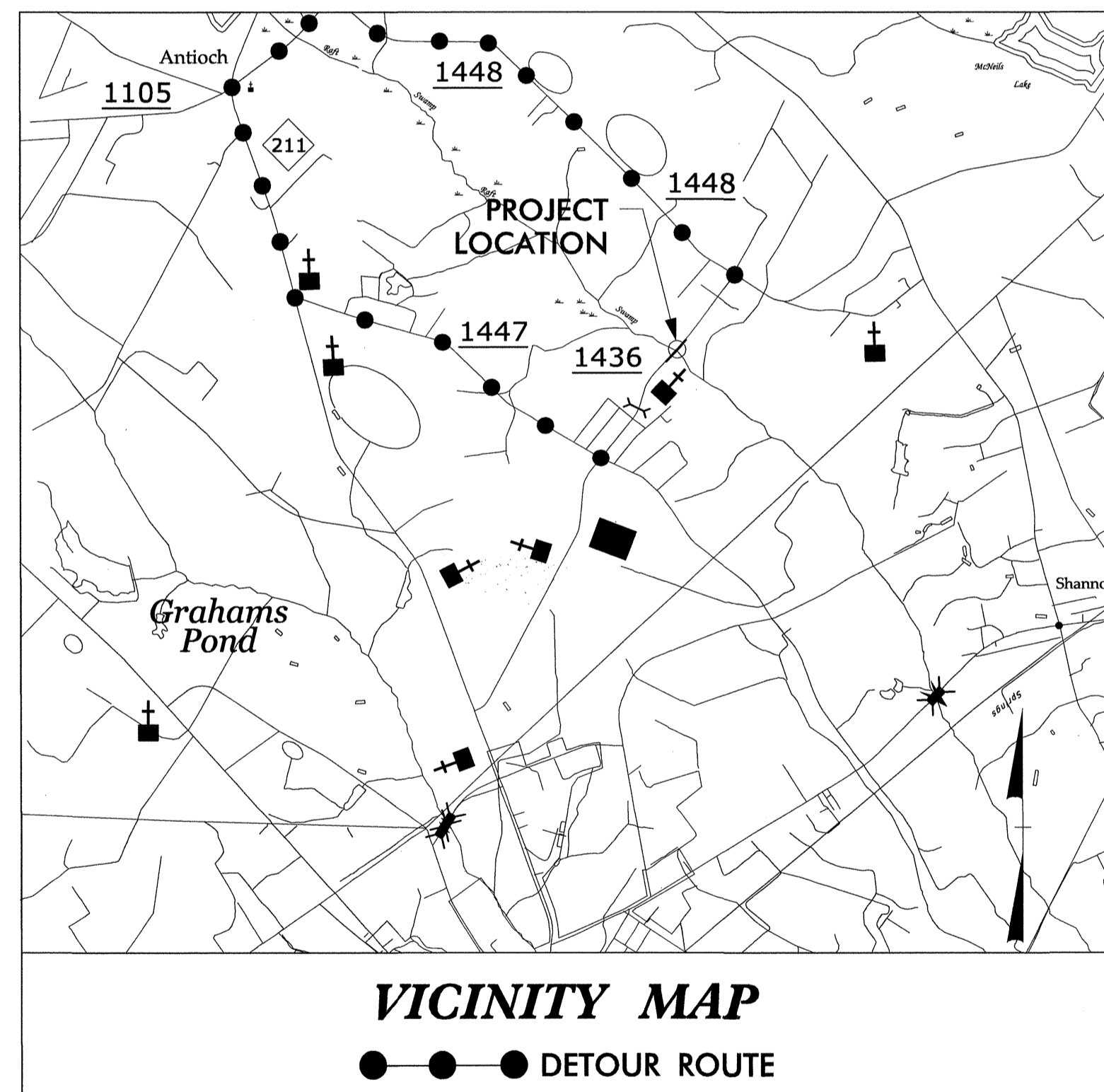
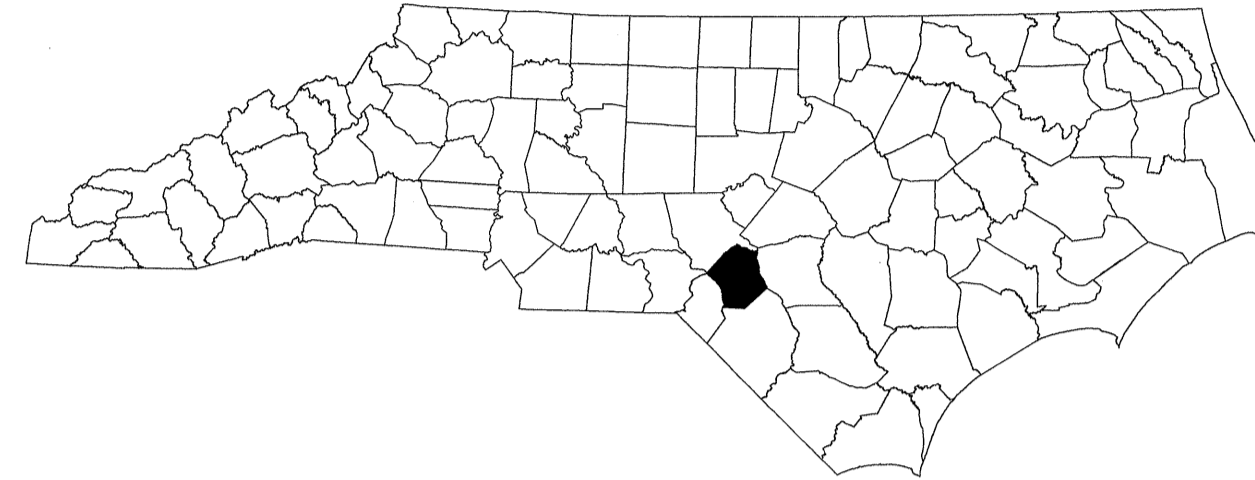


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12/2/2013  
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STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

**HOKE COUNTY**



**INDEX OF SHEETS**

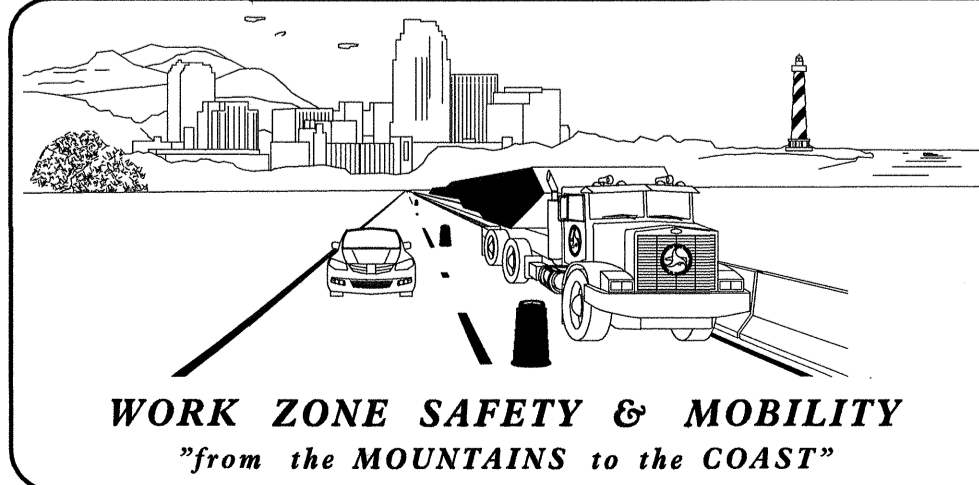
SHEET NO.	TITLE
TMP-1	TITLE SHEET, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKING
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES AND LOCAL NOTES)
TMP-2	SPECIAL SIGN DESIGN
TMP-3	OFF-SITE DETOUR AND BARRICADE PLACEMENT

SHEET NO.  
TMP-1

**B-5132**

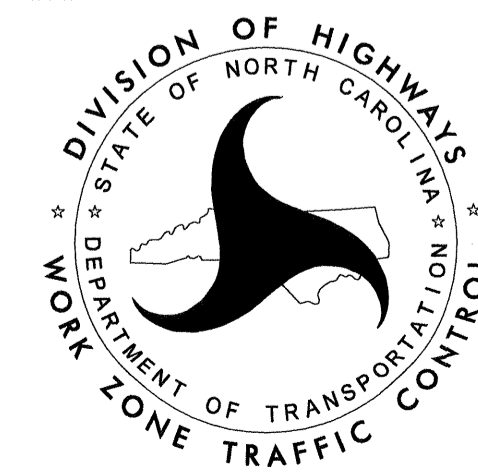
**TIP PROJECT:**

7/31/2013 P:\TIP\Projects-B\5132\Traffic\TrafficControl\TCPAB-5132.TC.TMP\_01.dgn User:shassan



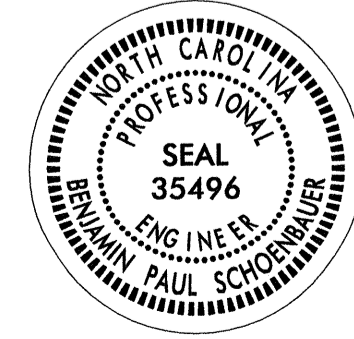
**N.C.D.O.T. WORK ZONE TRAFFIC CONTROL**  
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561  
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)  
PHONE: (919) 773-2800 FAX: (919) 771-2745

J. S. BOURNE, P.E. STATE TRAFFIC MANAGEMENT ENGINEER  
J. ISHAK, P.E. TRAFFIC CONTROL PROJECT ENGINEER  
B. SCHOENBAUER, P.E. TRAFFIC CONTROL PROJECT DESIGN ENGINEER  
S. HASSAN TRAFFIC CONTROL DESIGN ENGINEER



APPROVED: *Ben Schoenbauer*  
DATE: 7/31/13

SEAL



# ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.03	TEMPORARY ROAD CLOSURES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

# LEGEND

## GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)

- WORK AREA
- REMOVAL
- USER DEFINED (IF NEEDED)
- USER DEFINED (IF NEEDED)

## SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

## PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

## TRAFFIC CONTROL DEVICES

- N/A BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

## TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN



## PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

## PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

## TEMPORARY PAVEMENT MARKING

APPROVED: <i>ben schenker</i> DATE: 7/2/13		
<h3>ROADWAY STANDARD DRAWINGS &amp; LEGEND</h3>		

## MANAGEMENT STRATEGIES

THE FOLLOWING LISTED STRATEGIES DERIVE FROM DETAILED DESIGN LEVEL ASSESSMENTS OF THE WORK ZONE IMPACTS CONDUCTED DURING THE DEVELOPMENTAL STAGES OF THIS TRANSPORTATION MANAGEMENT PLAN (TMP).

RECOMMENDED MANAGEMENT STRATEGIES RELATIVE TO THIS TMP ARE AS FOLLOWS:

**-FULL ROAD CLOSURE**

TRAFFIC TO BE MAINTAINED ON THE FOLLOWING OFF-SITE DETOUR ROUTE THROUGHOUT THE DURATION OF THIS PROJECT:

- SR 1447 (COPE RD)
- NC 211 (RED SPRING HWY)
- SR 1105 (OLD WIRE RD)
- SR 1448 (JOHN RD)

## PHASING

STEP 1: USING ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9; AND SHEETS TMP-2 AND TMP-3, COMPLETE THE FOLLOWING:

- A) INSTALL DETOUR AND WARNING SIGNS.
- B) PLACE TYPE III BARRICADES TO CLOSE SR 1436 (BALFOUR RD) TO THROUGH TRAFFIC, AND PLACE TRAFFIC ONTO PROPOSED DETOUR.

STEP 2: AWAY FROM TRAFFIC, COMPLETE THE FOLLOWING:

- A) REMOVE EXISTING STRUCTURE NO. 37 AND CONSTRUCT PROPOSED STRUCTURE. SEE ROADWAY AND STRUCTURE PLANS.
- B) CONSTRUCT PROPOSED ROADWAY UP TO AND INCLUDING FINAL LAYER OF SURFACE COURSE. SEE ROADWAY PLANS.
- C) PLACE FINAL PAVEMENT MARKINGS AS DIRECTED BY THE ENGINEER.

STEP 3: A) OPEN SR 1436 (BALFOUR RD) TO FINAL TRAFFIC PATTERN.

- B) REMOVE ALL REMAINING WORK ZONE TRAFFIC CONTROL DEVICES.

## GENERAL NOTES / LOCAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

**TRAFFIC PATTERN ALTERATIONS**

- A) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

**SIGNING**

- B) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

- C) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

- D) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

**TRAFFIC CONTROL DEVICES**

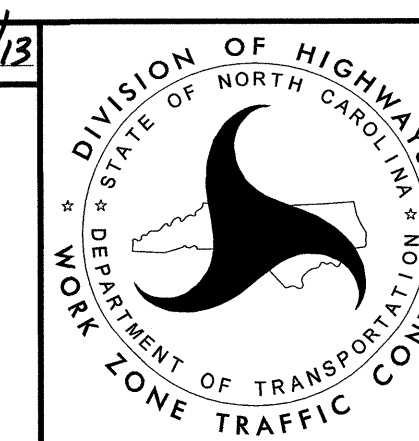
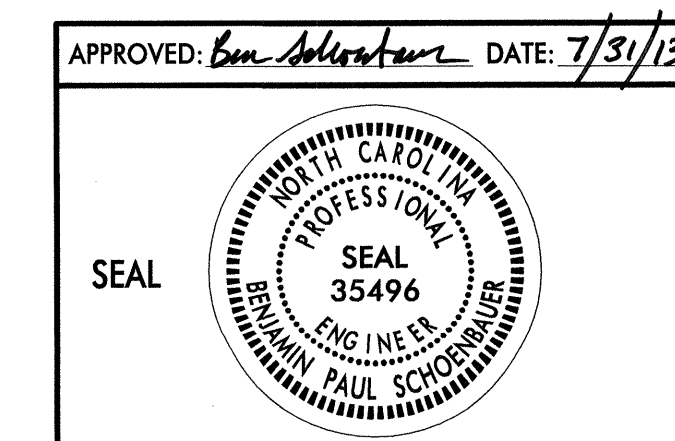
- E) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

**PAVEMENT MARKINGS AND MARKERS**

- G) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS SHOWN IN THE PAVEMENT MARKING PLAN.

- H) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

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**TRANSPORTATION  
OPERATIONS  
PLAN**

<b>SIGN NUMBER:</b> WZTC 1 <b>TYPE:</b> STATIONARY <b>QUANTITY:</b> SEE PLANS <b>SIGN WIDTH:</b> 3'-6" <b>HEIGHT:</b> 1'-0" <b>TOTAL AREA:</b> 3.5 Sq.Ft. <b>BORDER TYPE:</b> INSET <b>RECESS:</b> 0.5" <b>WIDTH:</b> 0.5" <b>RADII:</b> 1.5" <b>NO. Z BARS:</b> <b>LENGTH:</b>	<b>BACKG COLOR:</b> Fluorescent Orange <b>COPY COLOR:</b> Black	<b>DESIGN BY:</b> A. GRADY <b>PROJECT ID:</b> B-5132	<b>CHECKED BY:</b> S. KUNZ <b>DIV:</b> 8	<b>DATE:</b> Jun 12, 2013																																																	
	<table border="1"> <thead> <tr> <th>SYMBOL</th> <th>X</th> <th>Y</th> <th>WID</th> <th>HT</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	SYMBOL	X	Y	WID	HT																																															
SYMBOL	X	Y	WID	HT																																																	

**USE NOTES:** 1,2

- Legend and border shall be direct applied black non-reflective sheeting.
- Background shall be NC GRADE B fluorescent orange retroreflective sheeting.

Spacing Factor is 1 unless specified otherwise

**LETTER POSITIONS**

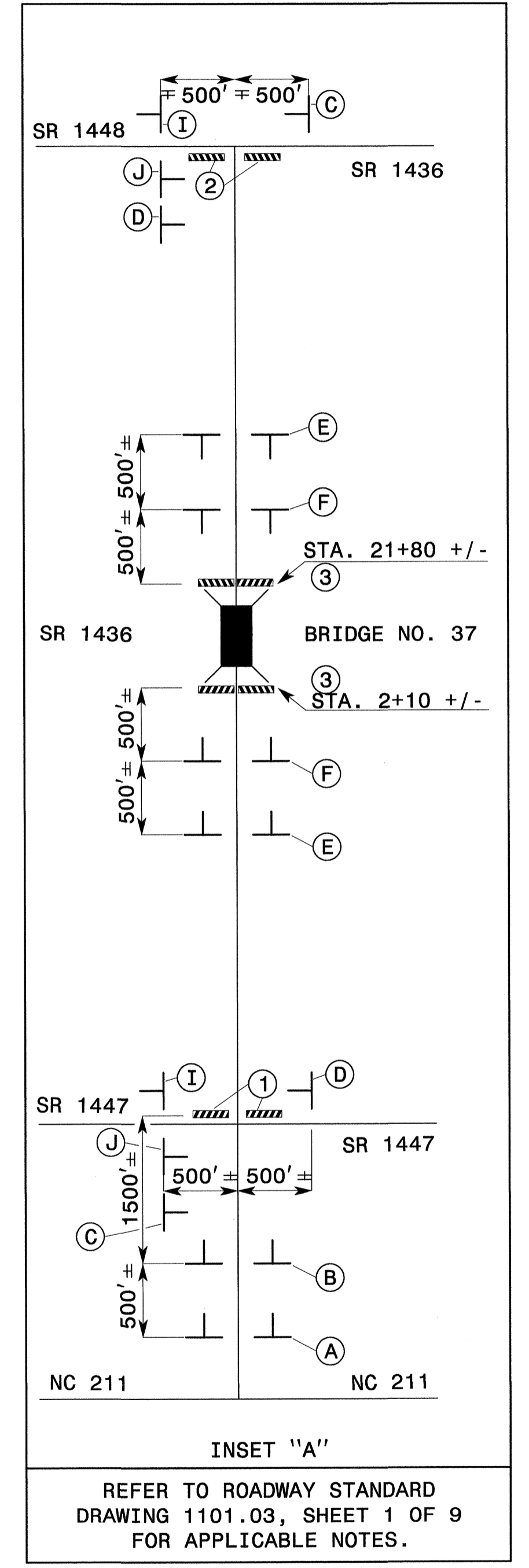
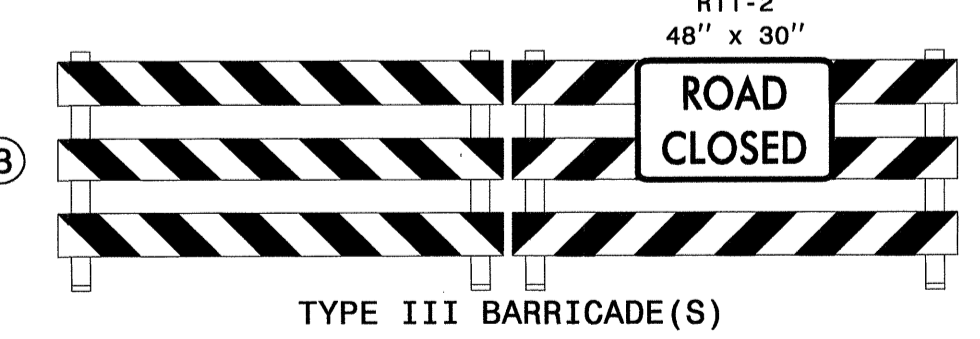
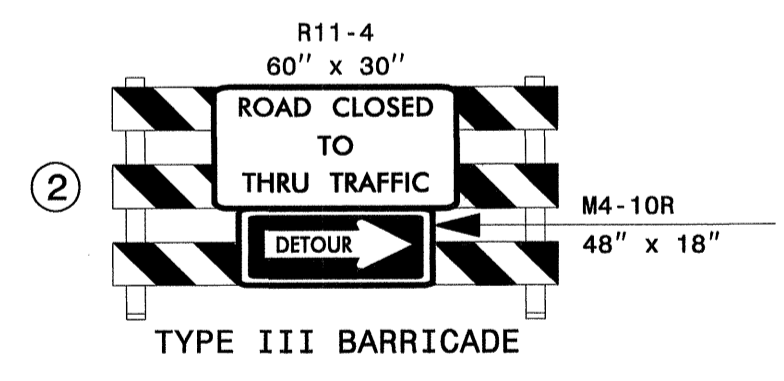
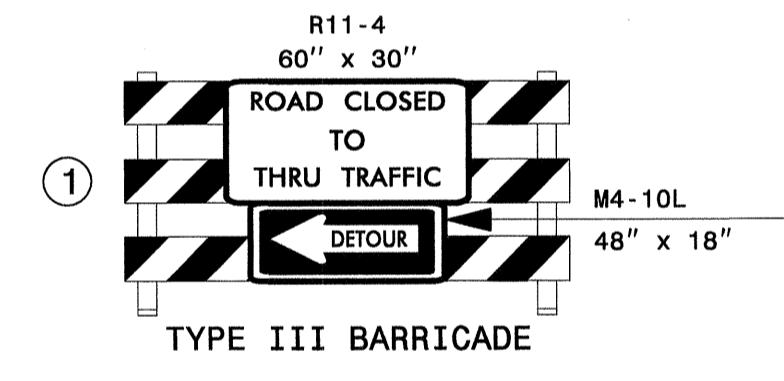
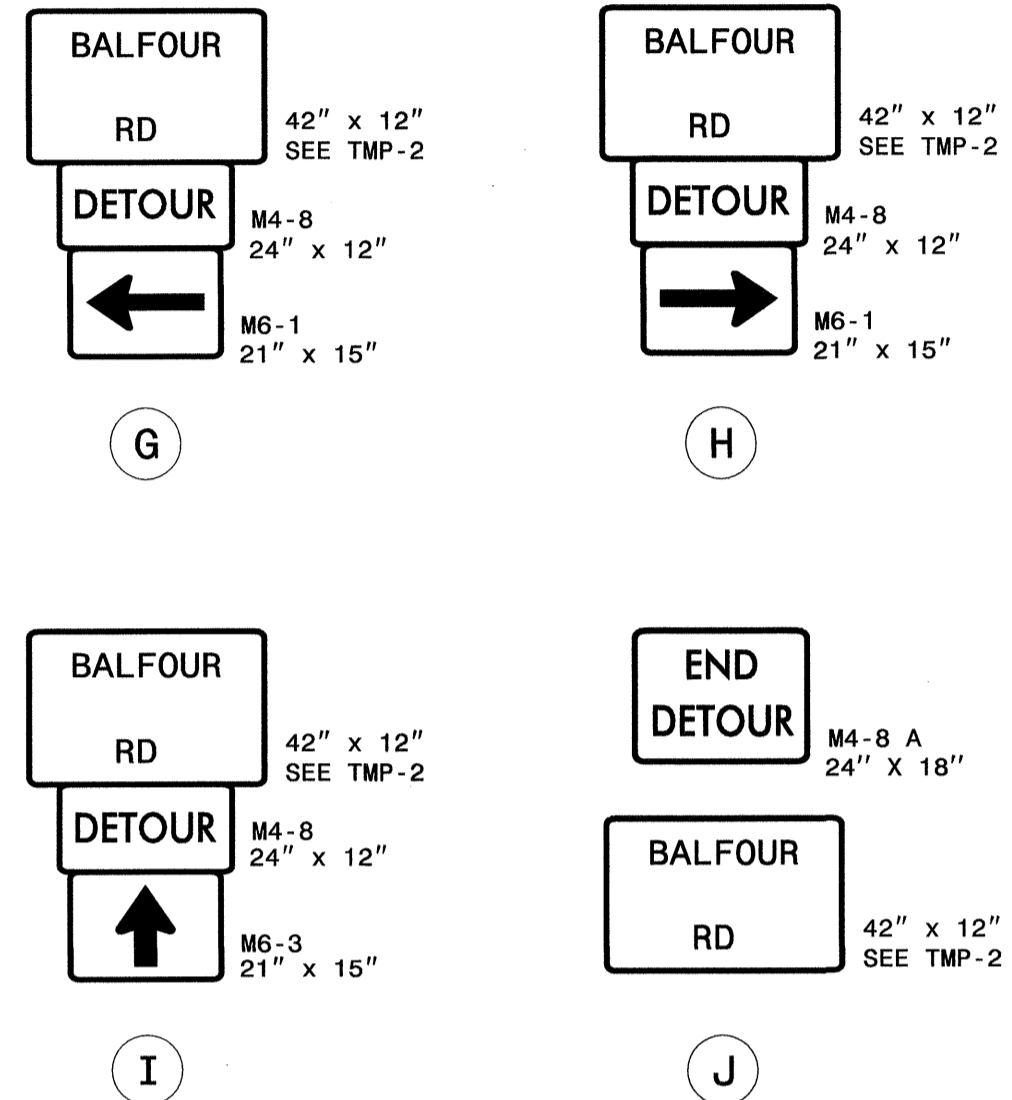
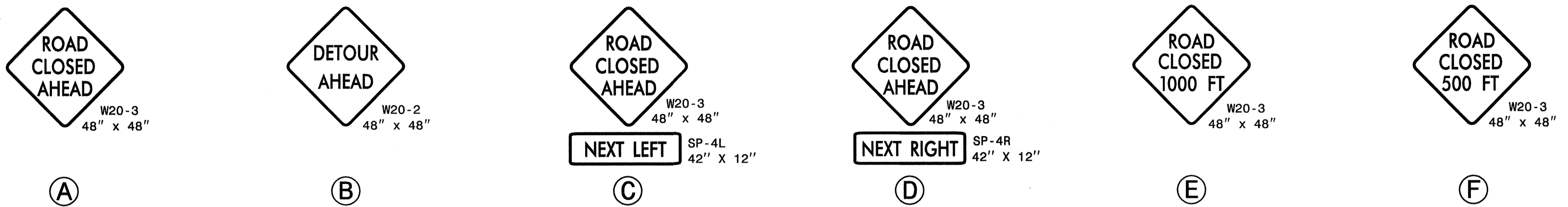
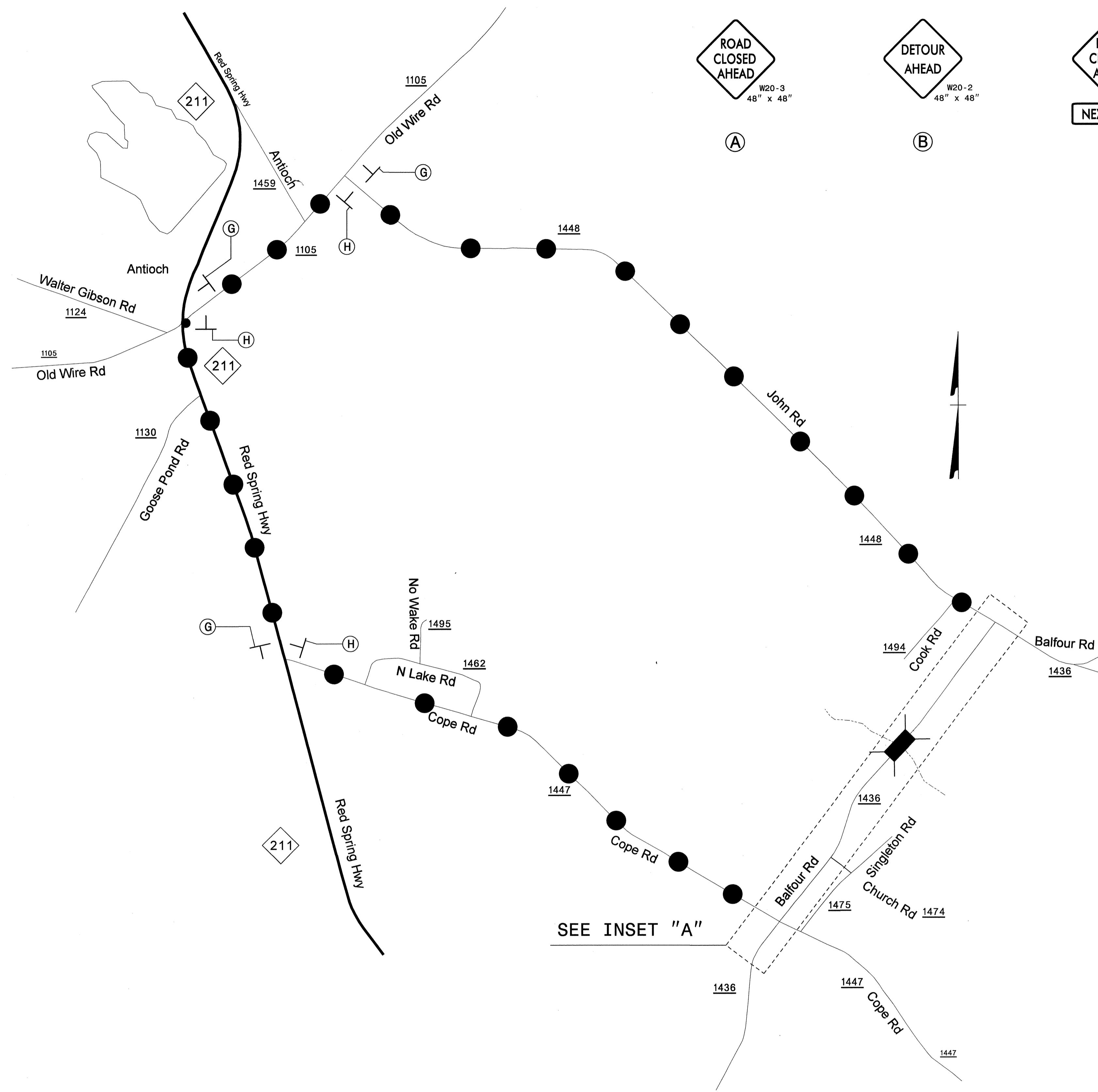
Letter spacings are to start of next letter

Letter Spacing													Series/Size	
B	A	L	F	O	U	R	R	D					Text Length	
4.4	3.3	3.9	3.3	3.2	3.9	3.9	2.8	2.5	3.6	2.8	4.4			C 2000
														33.2

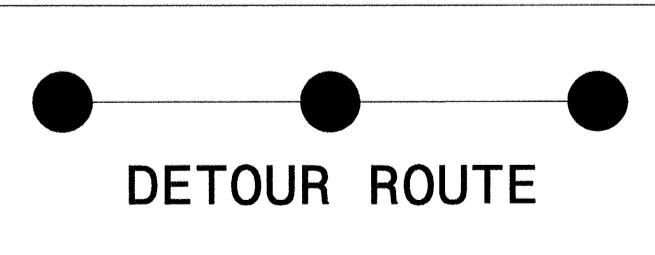
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7/18/2013 P:\TIP\Projects-B\B5132\TrafficControl\TCP\B-5132.TC\_TMP\_01.dgn User:smasson

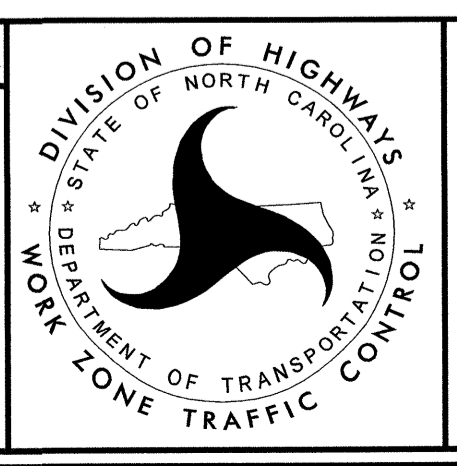
APPROVED:  DATE: 7/18/13			<b>SPECIAL SIGN DESIGN</b>
--------------------------	--	--	------------------------------------



NOTES:  
1. SEE SHEET TMP-2 FOR SIGN DESIGN.  
2. REFER TO 1101.03, SHEET 1 OF 9 FOR SIGN DISTANCES.



APPROVED: *Ben Schumaker* DATE: 7/21/13  
SEAL  
NORTH CAROLINA PROFESSIONAL ENGINEER  
SEAL 35496  
PAUL SCHUMAKER



OFF-SITE DETOUR AND BARRICADE PLACEMENT

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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

TIP NO. B-5132	SHEET NO. PMP-1
APPROVED: <i>[Signature]</i>	
DATE: 6/31/15	
SEAL	

PAVEMENT MARKING PLAN  
HOKE COUNTY

LOCATION: BRIDGE No. 37 OVER RAFT SWAMP ON SR 1436 (BLAFOUR ROAD)

T.I.P.: B-5132

CONTRACT: C203354

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
	PAINT (4")
PI	YELLOW DOUBLE CENTER
PA	WHITE EDGELINE

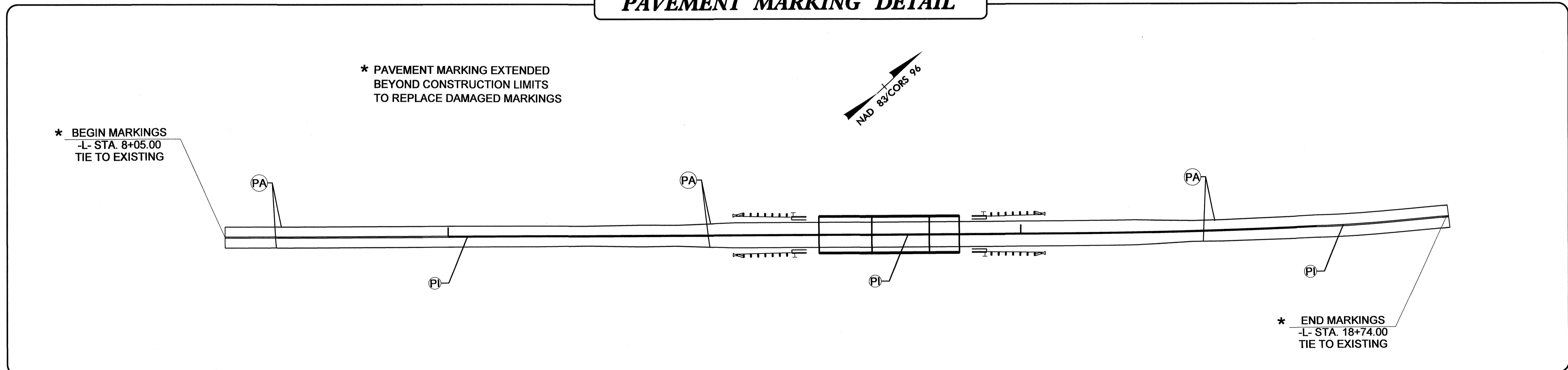
GENERAL NOTES

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

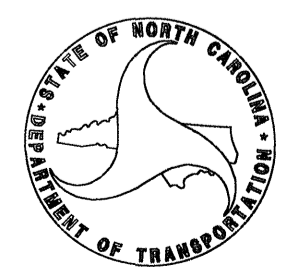
ROAD NAME	MARKING	MARKER
SR 1436	PAINT	NONE
- B) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.
- C) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- D) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- E) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.
- F) MARKERS ARE TO BE PLACED ACCORDING TO THE ROADWAY STANDARD DRAWINGS.

PAVEMENT MARKING DETAIL



PLAN PREPARED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT

SUSAN B. KUNZ SIGNING & DELINEATION REGIONAL ENGINEER  
ADAM GRADY SIGNING & DELINEATION PROJECT DESIGN ENGINEER/TECHNICIAN

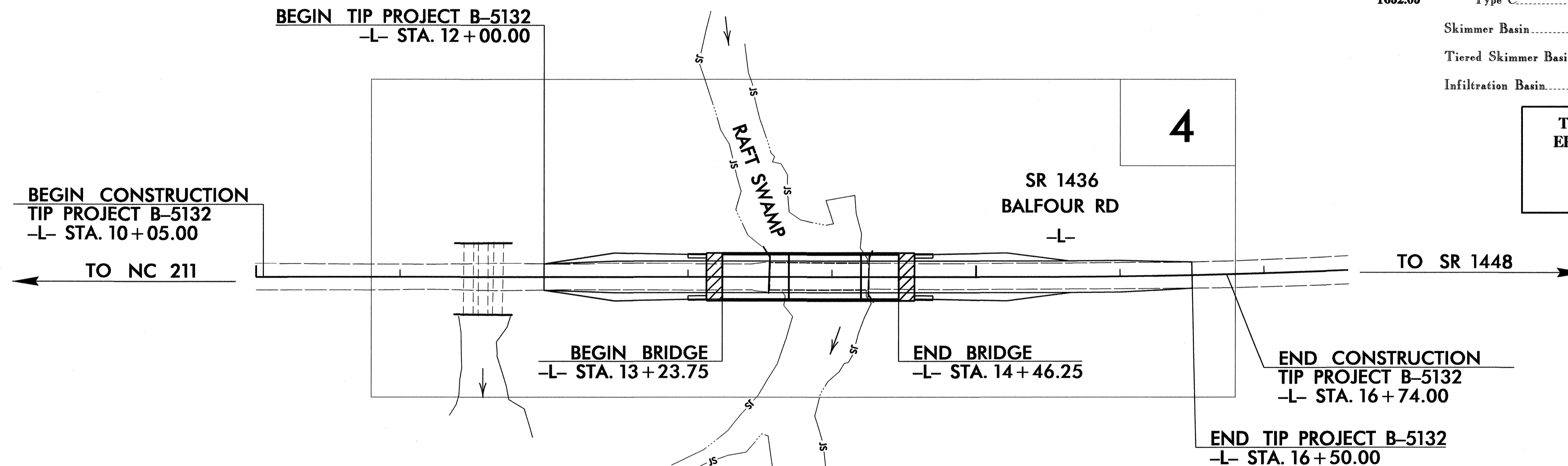
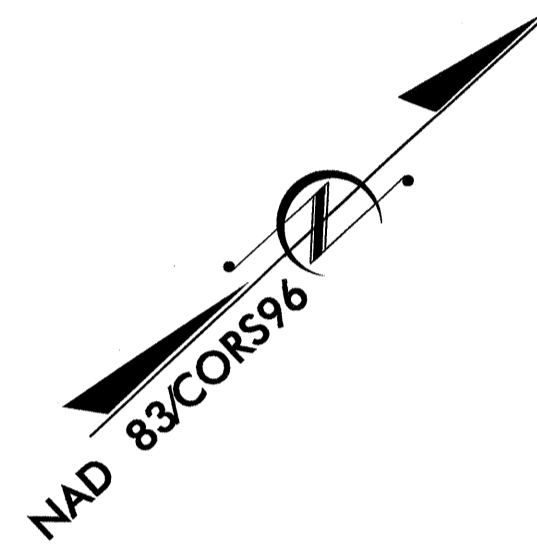


**TIP PROJECT: B-5132**

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
 PLAN FOR PROPOSED  
 HIGHWAY EROSION CONTROL  
**HOKE COUNTY**

**LOCATION: BRIDGE NO. 37 OVER RAFT SWAMP  
 ON SR 1436 (BALFOUR RD)**

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



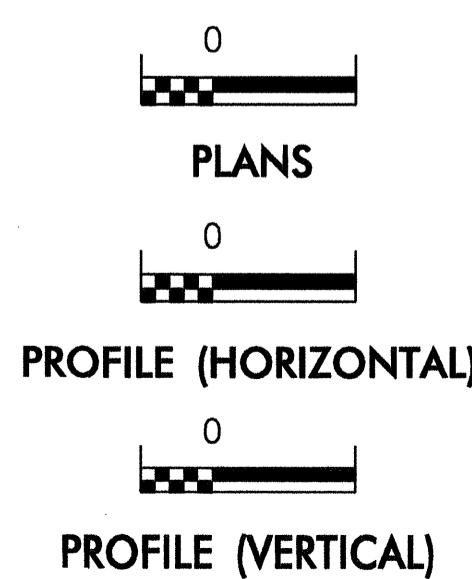
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5132	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

**EROSION AND SEDIMENT CONTROL MEASURES**

Std. #	Description	Symbol
1630.05	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	TSF
1606.01	Special Sediment Control Fence	SSCF
1622.01	Temporary Berms and Slope Drains	TBSD
1630.02	Silt Basin Type B	SB
1633.01	Temporary Rock Silt Check Type-A	TRSCA
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	TRSCA/PAM
1633.02	Temporary Rock Silt Check Type-B	TRSCB
	Wattle / Coir Fiber Wattle	WCFW
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	WCFW/PAM
1634.01	Temporary Rock Sediment Dam Type-A	TRSDA
1634.02	Temporary Rock Sediment Dam Type-B	TRSDB
1635.01	Rock Pipe Inlet Sediment Trap Type-A	RPISTRA
1635.02	Rock Pipe Inlet Sediment Trap Type-B	RPISTRB
1630.04	Stilling Basin	SB
1630.06	Special Stilling Basin	SSB
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	SKB
	Tiered Skimmer Basin	TSKB
	Infiltration Basin	IB

**THIS PROJECT CONTAINS  
 EROSION CONTROL PLANS  
 FOR CLEARING AND  
 GRUBBING PHASE OF  
 CONSTRUCTION.**

**GRAPHIC SCALE**



ROADSIDE ENVIRONMENTAL UNIT  
 DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA

**THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY  
 WITH THE REGULATIONS SET FORTH BY THE  
 NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011  
 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND  
 NATURAL RESOURCES DIVISION OF WATER QUALITY.**

Prepared In the Office of:  
**ROADSIDE ENVIRONMENTAL UNIT**  
 1 South Wilmington St.  
 Raleigh, NC 27611  
**2012 STANDARD SPECIFICATIONS**

**Roadway Standard Drawings**

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

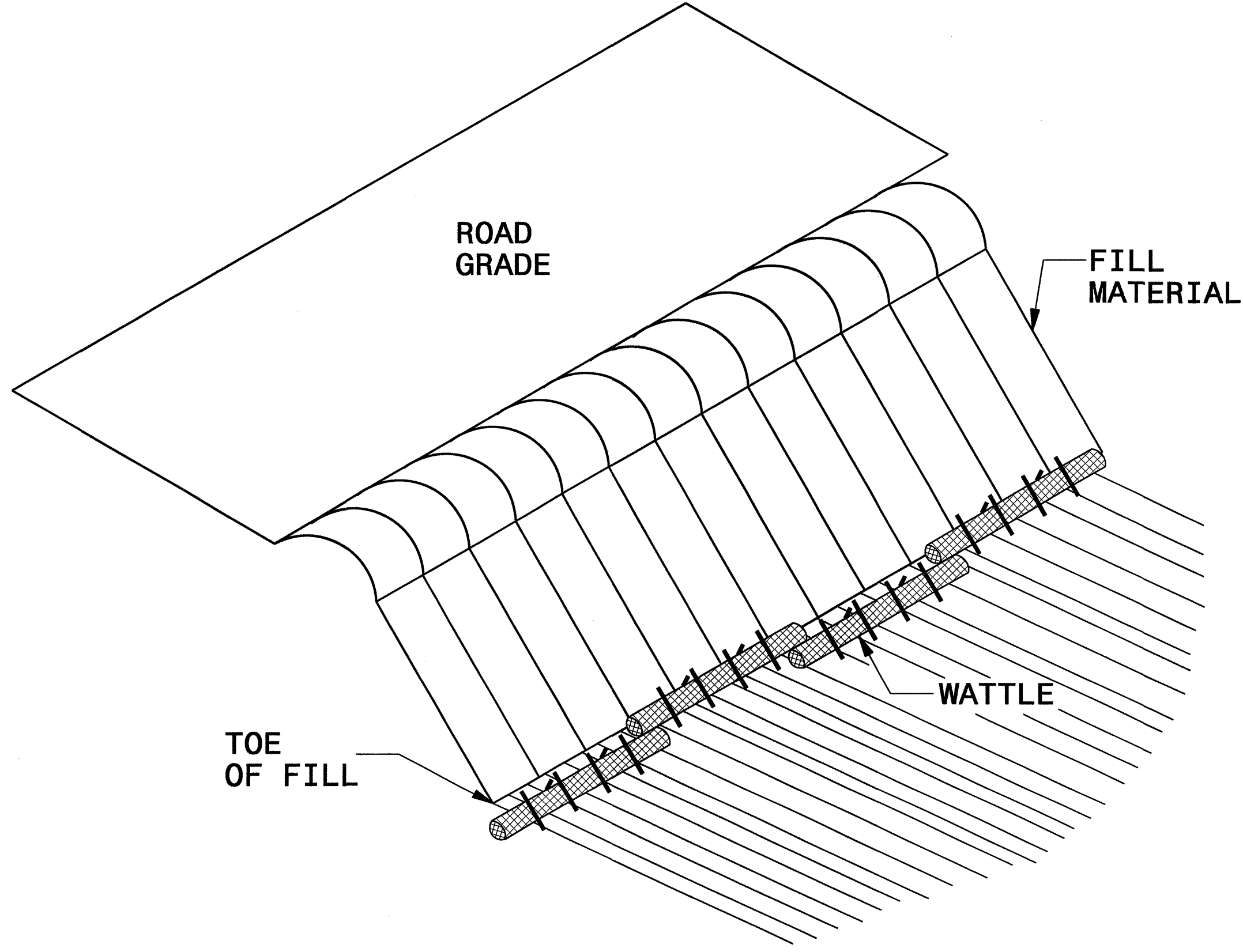
1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type B
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type A
1622.01 Temporary Berms and Slope Drains	1633.02 Temporary Rock Silt Check Type B
1630.01 Riser Basin	1634.01 Temporary Rock Sediment Dam Type A
1630.02 Silt Basin Type B	1634.02 Temporary Rock Sediment Dam Type B
1630.03 Temporary Silt Ditch	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.04 Stilling Basin	1635.02 Rock Pipe Inlet Sediment Trap Type B
1630.05 Temporary Diversion	1640.01 Coir Fiber Baffle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	

20-001-203, 08/02  
 N.C. DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA



PROJECT REFERENCE NO.		SHEET NO.	
B-5132		EC-2	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

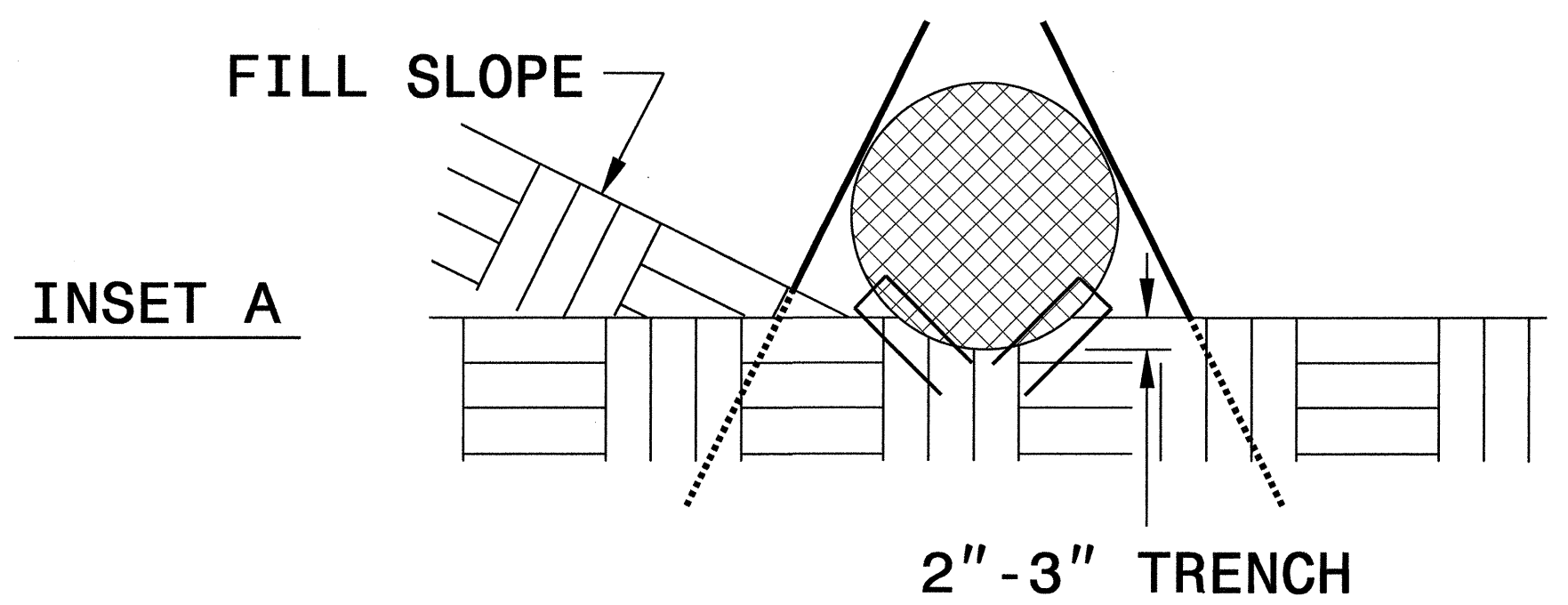
# COIR FIBER WATTLE BARRIER DETAIL



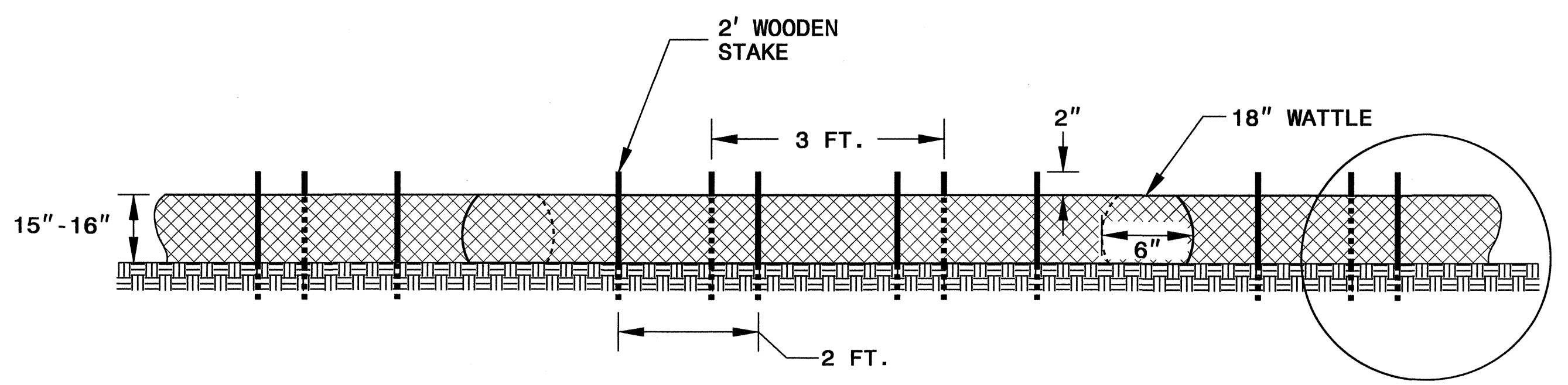
**ISOMETRIC VIEW**

**NOTES:**

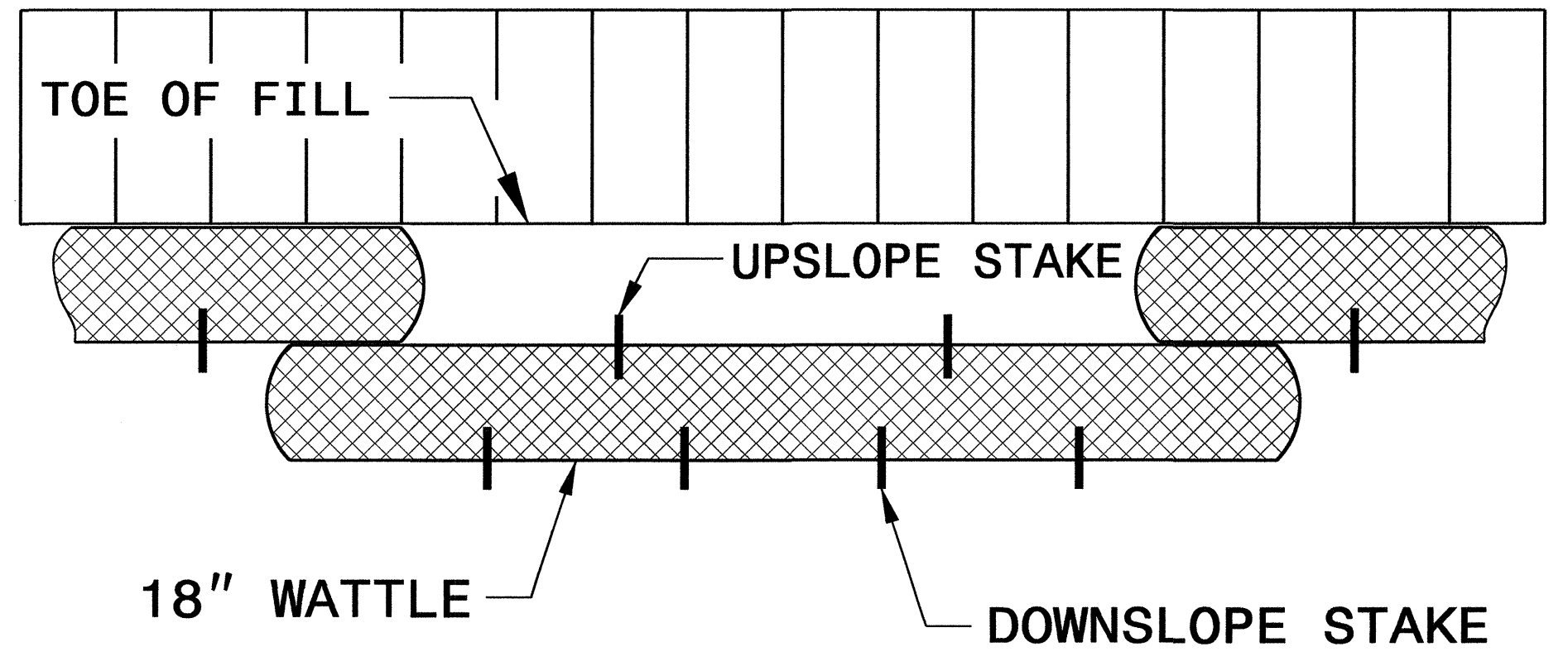
- USE MINIMUM 18 IN. NOMINAL DIAMETER COIR FIBER (COCONUT) WATTLE AND LENGTH OF 10 FT.
- EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.
- DO NOT PLACE WATTLES ON TOE OF SLOPE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.
- PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
- INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
- FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 20 FT.



**INSET A**



**FRONT VIEW**



**TOP VIEW**

SEE INSET A

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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PROJECT REFERENCE NO. <i>B-5132</i>	SHEET NO. <i>EC-3</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

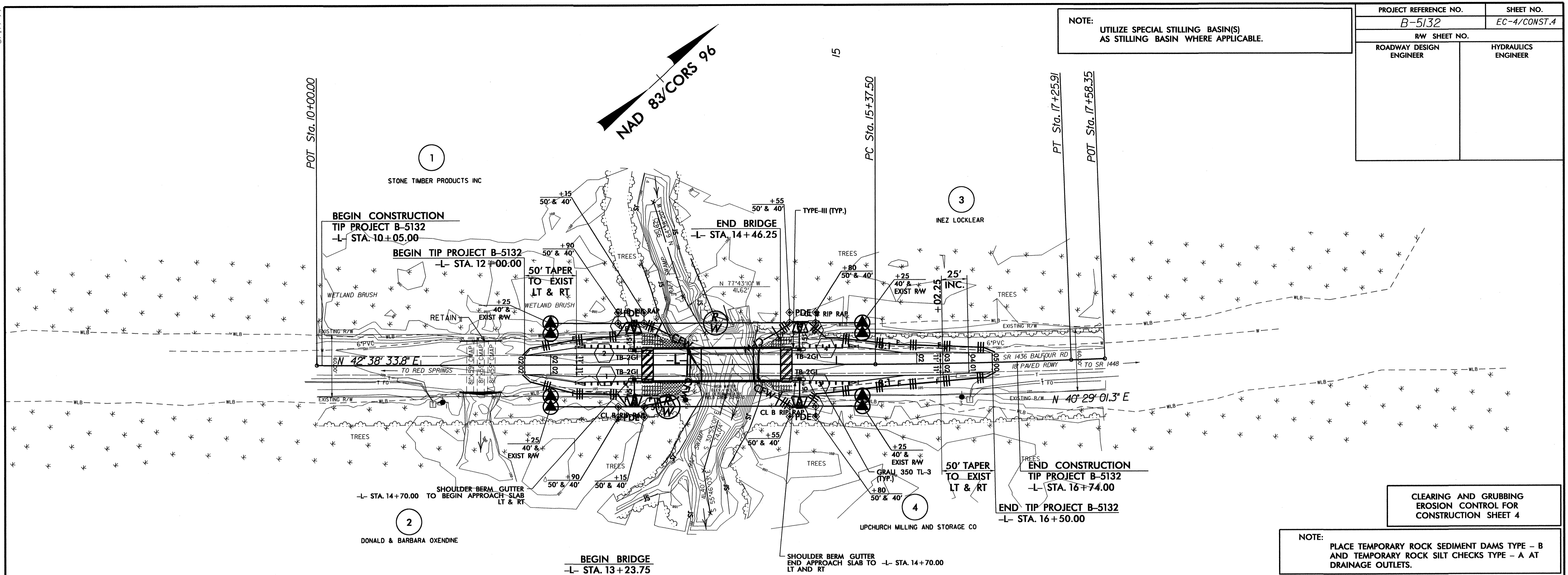
# ***SOIL STABILIZATION TIMEFRAMES***

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

8/17/99

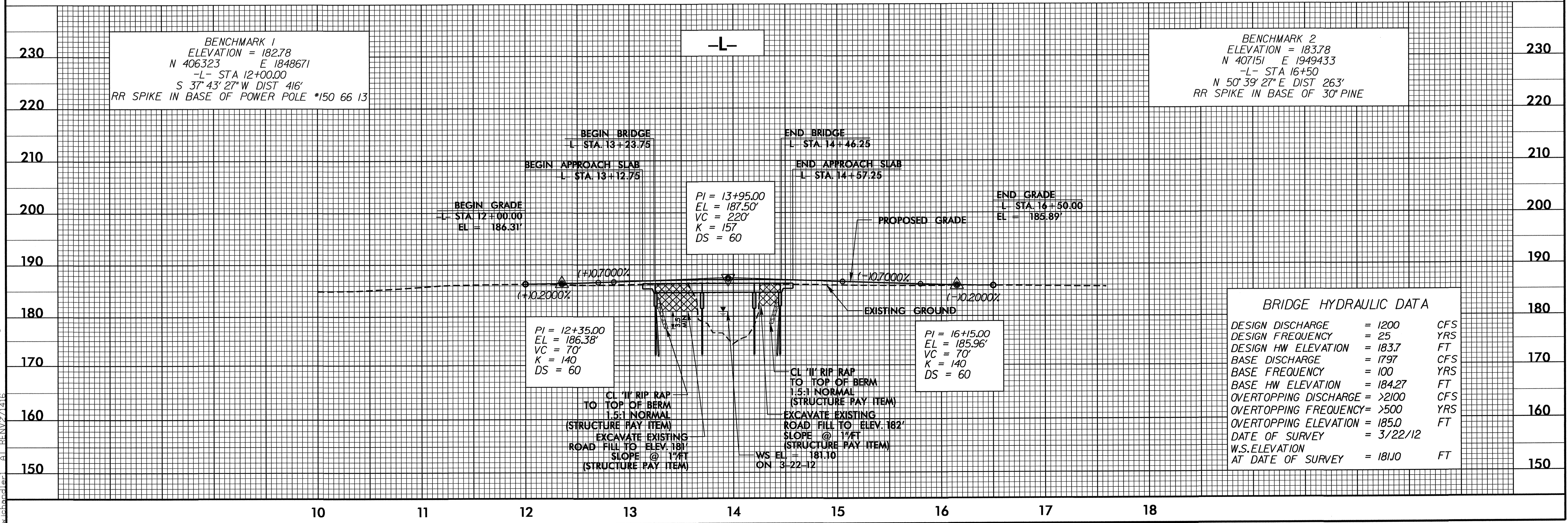
PROJECT REFERENCE NO.	SHEET NO.
B-5132	EC-4/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NOTE:  
UTILIZE SPECIAL STILLING BASIN(S)  
AS STILLING BASIN WHERE APPLICABLE.



CLEARING AND GRUBBING  
EROSION CONTROL FOR  
CONSTRUCTION SHEET 4

NOTE:  
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B  
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT  
DRAINAGE OUTLETS.

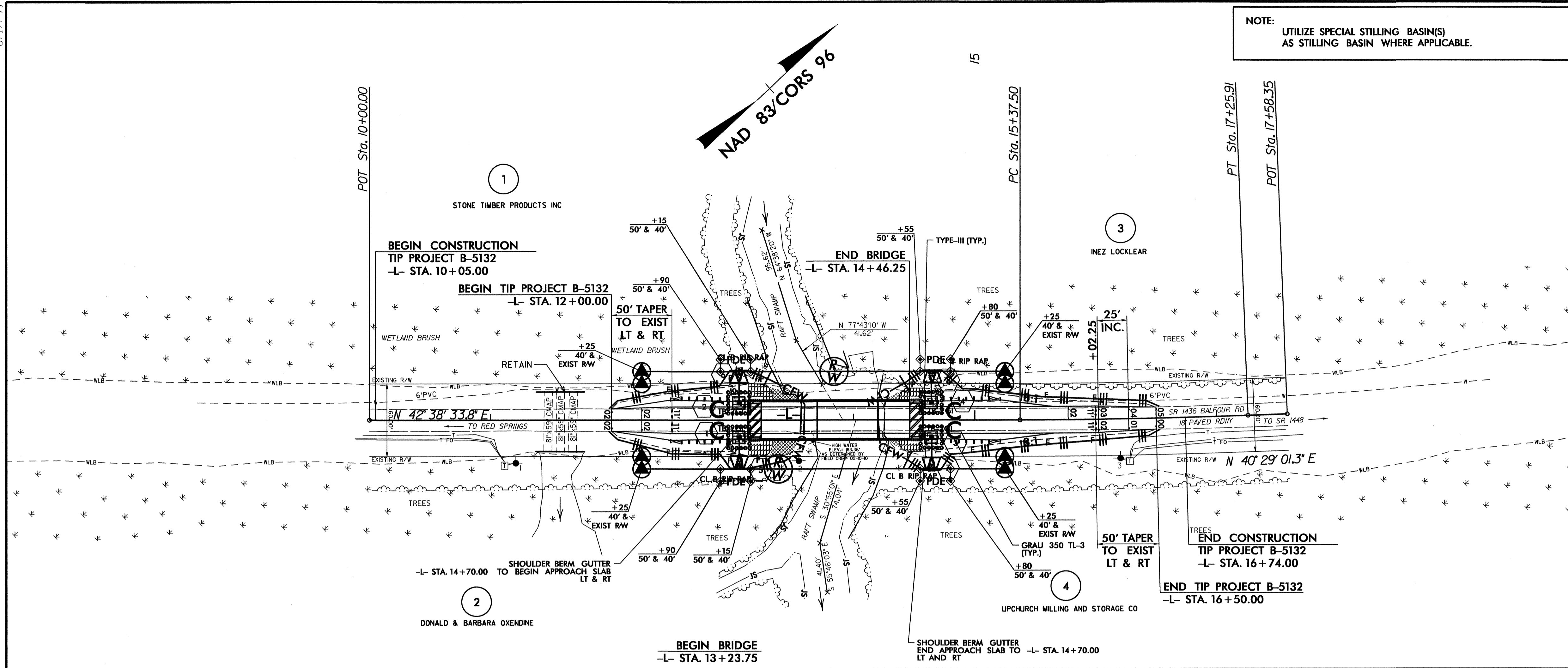


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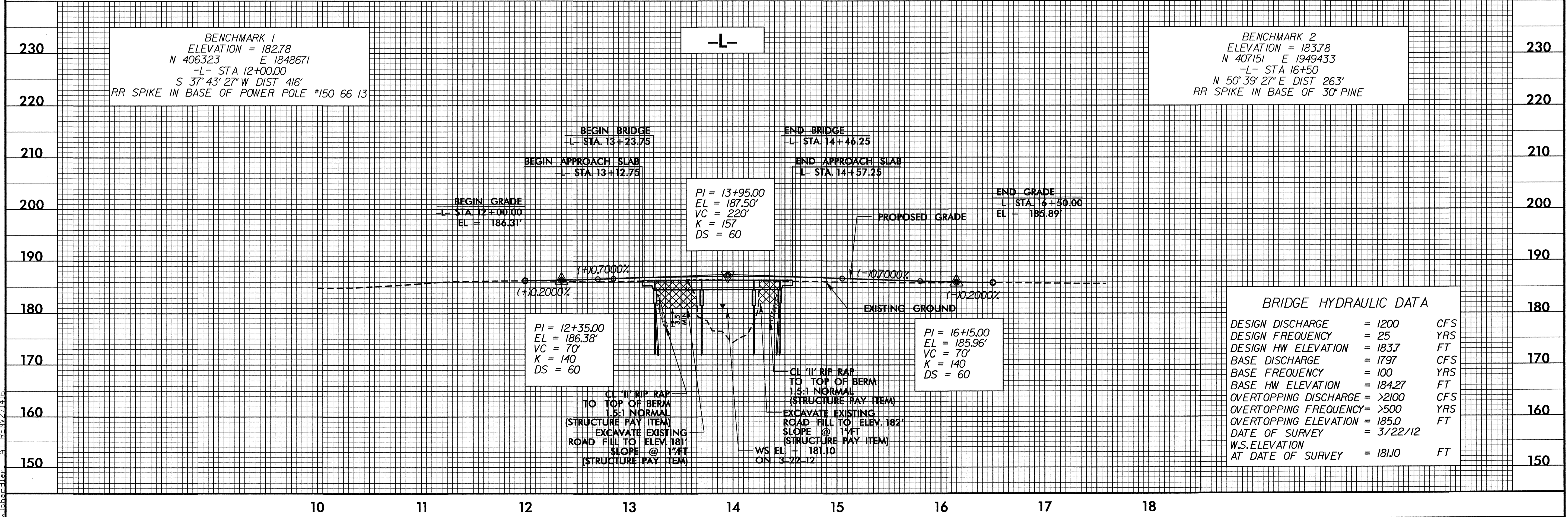
8/17/99

PROJECT REFERENCE NO. B-5132		SHEET NO. EC-5/CONST.4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

NOTE:  
UTILIZE SPECIAL STILLING BASIN(S)  
AS STILLING BASIN WHERE APPLICABLE.



Place Matting for Erosion Control on Slopes Adjacent to Permitted Wetlands as Work Allows.



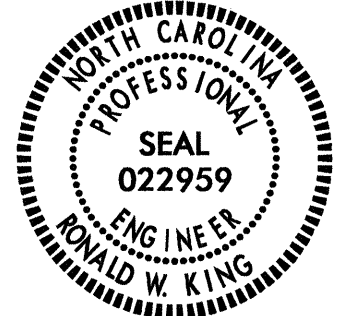
DESIGN DISCHARGE	= 1200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 183.7	FT
BASE DISCHARGE	= 1797	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 184.27	FT
OVERTOPPING DISCHARGE	= >2100	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= 185.0	FT
DATE OF SURVEY	= 3/22/12	
W.S. ELEVATION AT DATE OF SURVEY	= 181.10	FT

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 W:\Hand\ec1.dwg

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

SIGNING PLAN  
HOKE COUNTY

LOCATION: BRIDGE #37 OVER RAFT SWAMP  
ON SR 1436 (BALFOUR ROAD)

TIP NO. B-5132	SHEET NO. SIGN-1
APPROVED: <i>[Signature]</i>	
DATE: 10/31/13	
SEAL	
	

T.I.P.: B-5132

CONTRACT: C203354

GENERAL NOTES

- . SIGNS FURNISHED BY STATE
- . ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TWO U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.
- . WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER
- . ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
- . WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
- . THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
- . SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

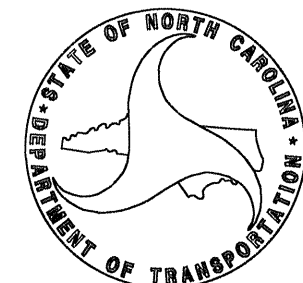
STD. NO.	TITLE
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

SUMMARY OF QUANTITIES

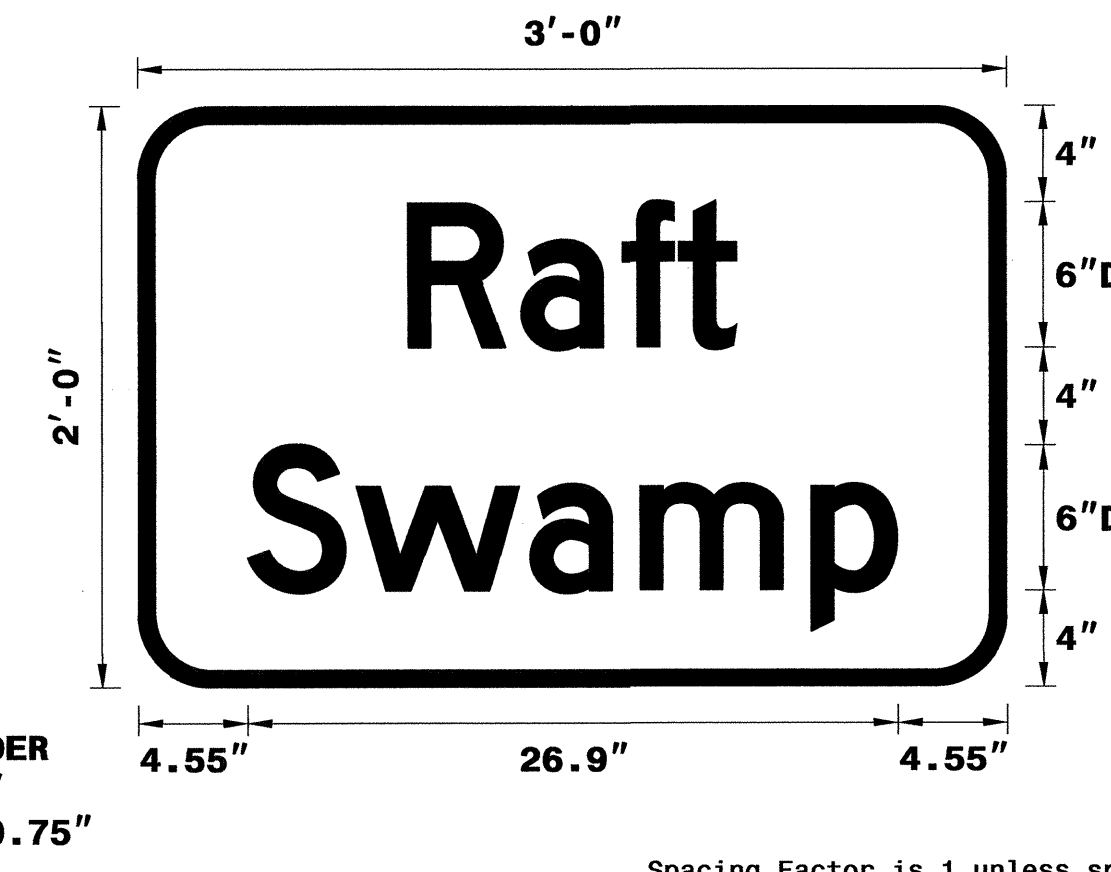
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT
4072000000	903 SUPPORTS, 3 LB STEEL U-CHANNEL	71	903
4096000000	904 SIGN ERECTION, TYPE D	2	904
4155000000	907 DISPOSAL OF SIGN SYSTEM, U-CHANNEL	6	907

PLAN PREPARED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT

SUSAN B. KUNZ SIGNING & DELINEATION REGIONAL ENGINEER  
ADAM GRADY SIGNING & DELINEATION PROJECT DESIGN ENGINEER



SIGN NUMBER: 301, 302 TYPE: D QUANTITY: 2 SIGN WIDTH: 3'-0" HEIGHT: 2'-0" TOTAL AREA: 6.0 Sq.Ft. BORDER TYPE: FLUSH RECESS: 0" WIDTH: 0.75" RADIUS: 3" NO. Z BARS: LENGTH:	BACKG COLOR: Green COPY COLOR: White SYMBOL X Y WID HT MAT'L: 0.125" (3.2 mm) ALUMINUM	DESIGN BY: A. GRADY PROJECT ID: B-5132 CHECKED BY: S. KUNZ DIV: 8 DATE: Oct 10, 2013
---	---	--



BORDER R=3" TH=0.75"

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS								Series/Size	Text Length
Letter spacings are to start of next letter									
11.2	4.7	4.2	2.3	2.4	11.2			D 2000	13.6
4.5	4.5	7.2	4.6	7.1	3.6	4.5		D 2000	26.9

FILENAME: Guideign\_Englsh

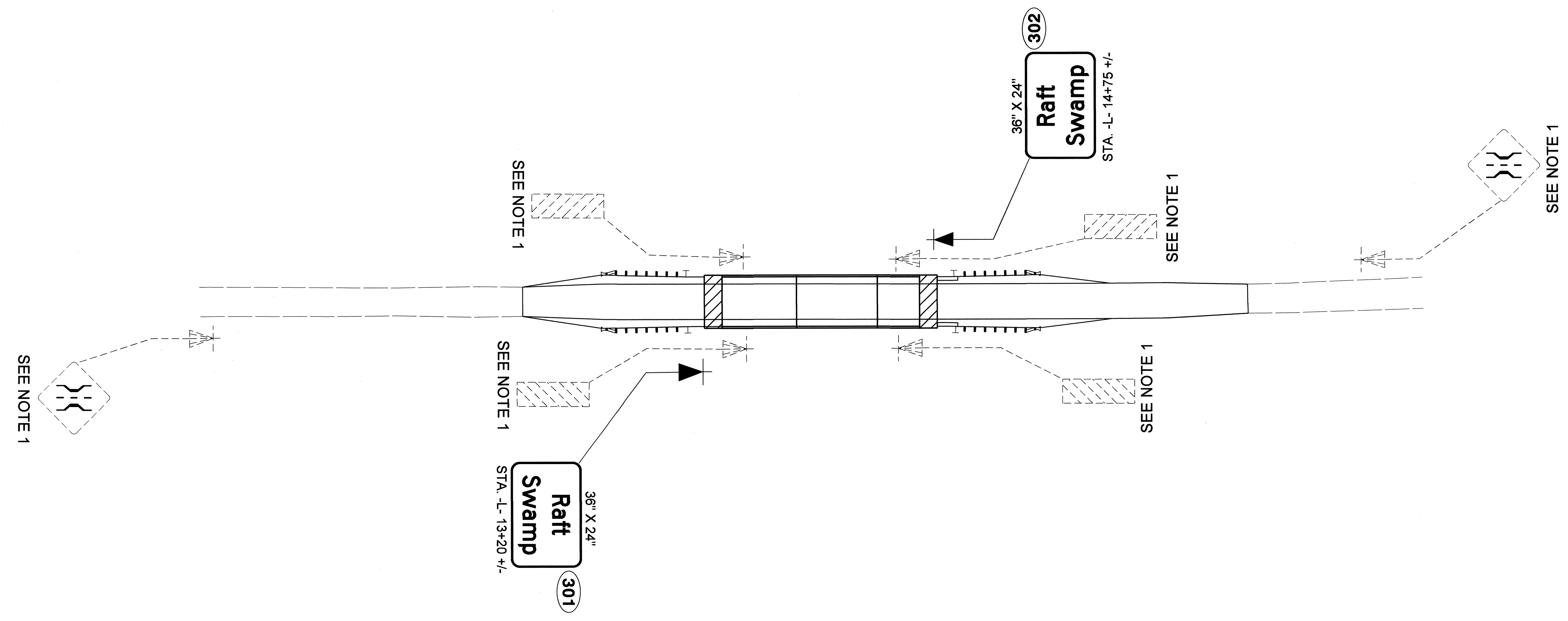
NORTH CAROLINA D.O.T. SIGN DETAIL

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2	SIGN DETAIL SHEET

TIP NO. B-5132	SHEET NO. SIGN-2
APPROVED: <i>R.W.K.</i>	
DATE: 10/31/13	
SEAL	

NAD 83/CORS 96



**PROJECT NOTES**

1 DISPOSAL OF SIGN SYSTEM, U-CHANNEL

**SIGN DETAIL SHEET**

28-OCT-2013 10:44  
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 ehgr.edj

09/08/99  
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**TIP PROJECT: B-5132**

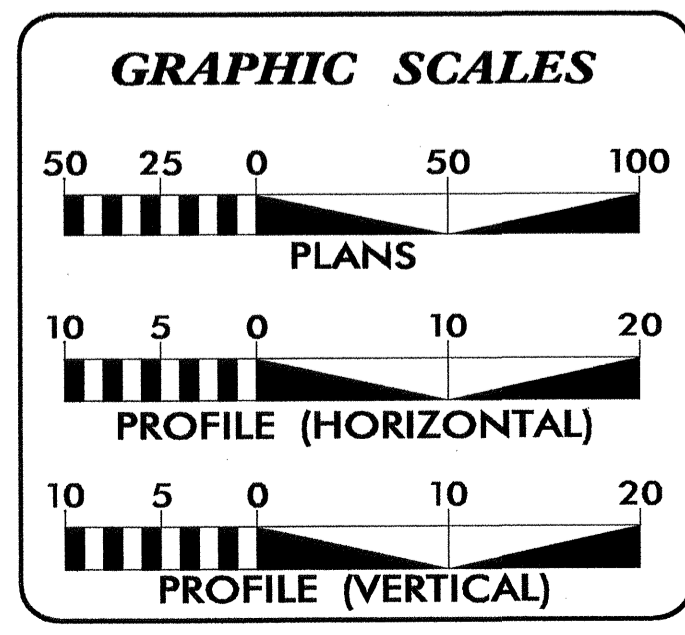
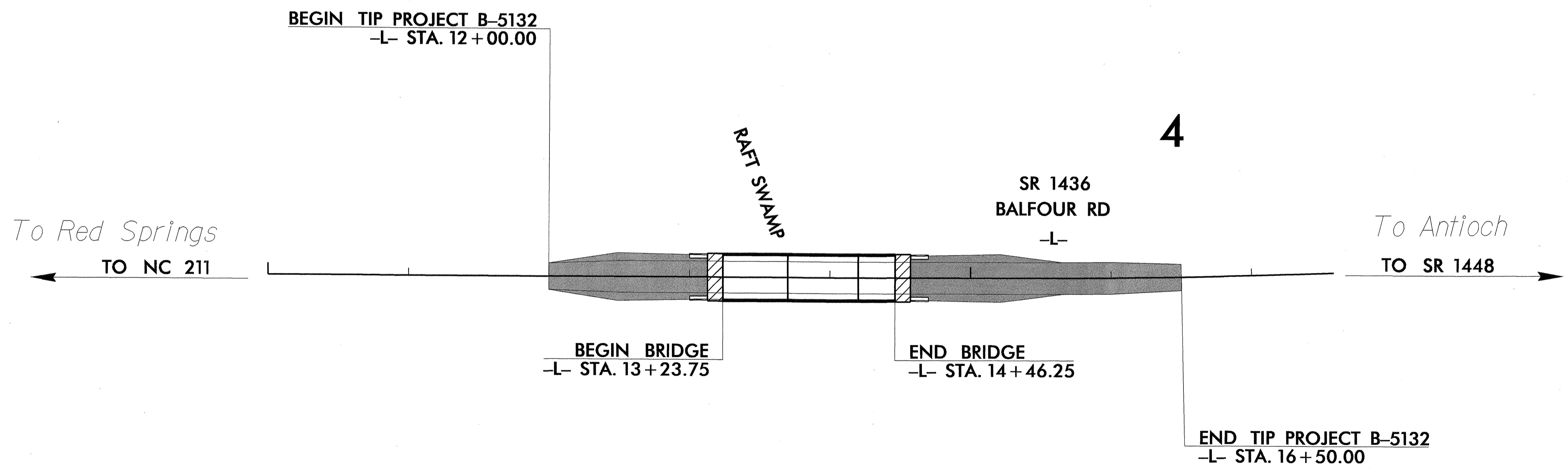
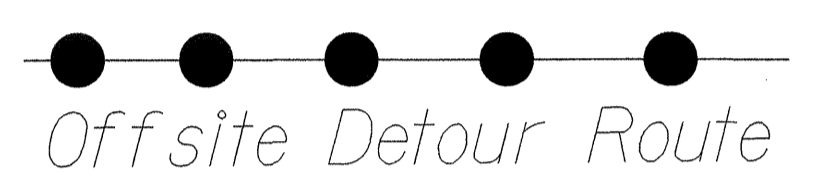
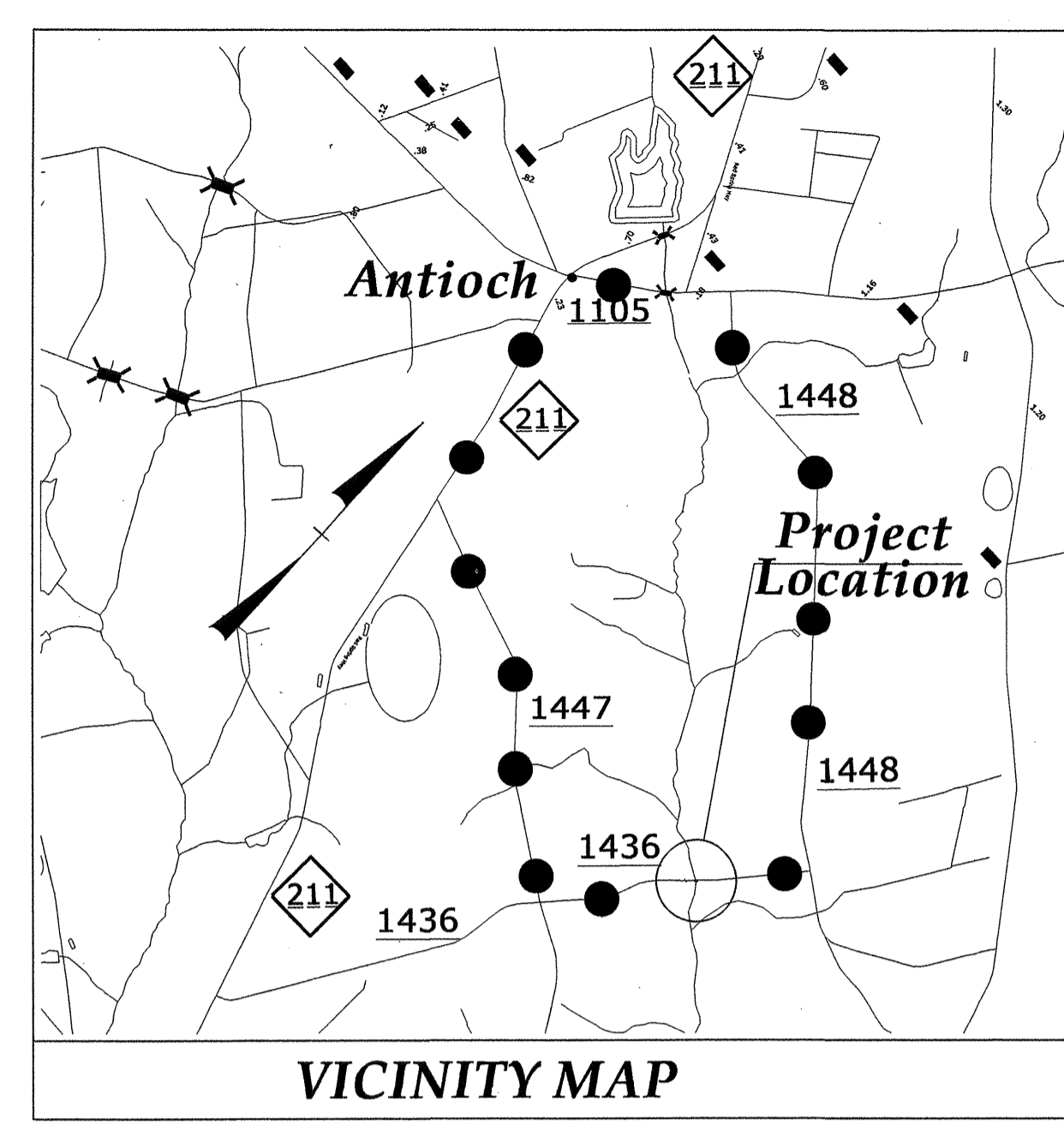
T.I.P. NO.	SHEET NO.
<b>B-5132</b>	<b>UC-1</b>

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UTILITY CONSTRUCTION PLANS**  
**HOKE COUNTY**

**LOCATION: BRIDGE # 37 ON SR 1436 (BALFOUR ROAD) OVER RAFT SWAMP**

**TYPE OF WORK: WATER LINE UTILITY CONSTRUCTION**

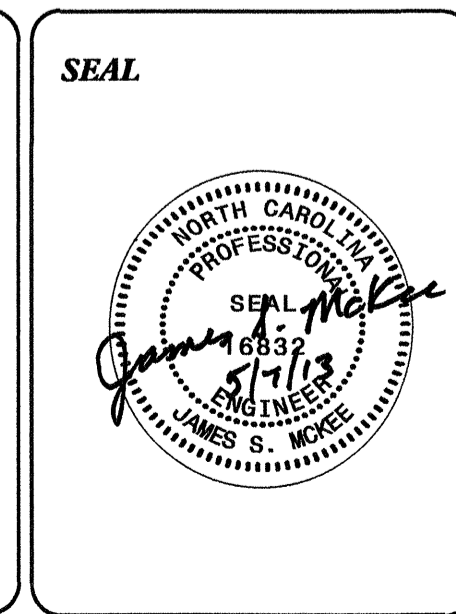


**INDEX OF SHEETS**

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-1A	UTILITY SYMBOLOGY SHEET
UC-2	UTILITY NOTES SHEET
UC-3	UTILITY CONSTRUCTION DETAIL SHEET
UC-4	UTILITY CONSTRUCTION PLAN SHEET
UC-5 - UC-7	PROFILE SHEETS

**WATER OWNER ON PROJECT**

(1) WATER - HOKE COUNTY UTILITY DEPARTMENT



PREPARED IN THE OFFICE OF:  
**DIVISION OF HIGHWAYS**  
**UTILITIES UNIT**  
**ENGINEERING SECTION**

1555 MAIL SERVICES CENTER  
RALEIGH, NC 27699-1555  
PHONE (919) 707-5690  
FAX (919) 250-4151

**Roger Worthington, P.E.** UTILITIES SECTION ENGINEER  
**Steve McKee, P.E.** UTILITIES SQUAD LEADER PROJECT ENGINEER  
**John A. Nigro, P.E.** UTILITIES PROJECT DESIGNER

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UTILITIES PLAN SHEET SYMBOLS**

**PROPOSED WATER SYMBOLS**

Water Line (Sized as Shown)	----- 12" WL -----
11¼ Degree Bend	----- ++ -----
22½ Degree Bend	----- +X -----
45 Degree Bend	----- +X -----
90 Degree Bend	----- + -----
Plug	-----   -----
Tee	----- +-----
Cross	----- +-----
Reducer	----- > -----
Gate Valve	----- GV -----
Butterfly Valve	----- BV -----
Tapping Valve	----- TGV -----
Line Stop	----- LS -----
Line Stop with Bypass	----- LS/BP -----
Blow Off	----- BO -----
Fire Hydrant	----- PFH -----
Relocate Fire Hydrant	----- REH -----
Remove Fire Hydrant	----- REM FH -----
Water Meter	----- PWW -----
Relocate Water Meter	----- RWM -----
Remove Water Meter	----- REM WM -----
Water Pump Station	----- PS(W) -----
RPZ Backflow Preventer	----- PBPZ -----
DCV Backflow Preventer	----- PBFDP -----
Relocate RPZ Backflow Preventer	----- RBPZ -----
Relocate DCV Backflow Preventer	----- RBFP -----

**PROPOSED SEWER SYMBOLS**

Gravity Sewer Line (Sized as Shown)	----- 12" SS -----
Force Main Sewer Line (Sized as Shown)	----- 12" FSS -----
Manhole (Sized per Note)	----- • -----
Sewer Pump Station	----- PS(SS) -----

**PROPOSED MISCELLANEOUS UTILITIES SYMBOLS**

Power Pole	----- 0 -----
Telephone Pole	----- 0 -----
Joint Use Pole	----- 0 -----
Telephone Pedestal	----- TEL PED -----
Utility Line by Others (Type as Shown)	----- PROP O/H POW LINES -----
Trenchless Installation	----- 12" TL INSTALL -----
Encasement by Open Cut	----- 24" ENCAS BY OC -----
Encasement	----- 24" ENCASEMENT -----

Thrust Block	-----   -----
Air Release Valve	----- AR -----
Utility Vault	----- UV -----
Concrete Pier	----- CP -----
Steel Pier	----- SP -----
Plan Note	----- NOTE -----
Pay Item Note	----- PAY ITEM -----

**EXISTING UTILITIES SYMBOLS**

Power Pole	----- • -----	*Underground Power Line	----- P -----
Telephone Pole	----- • -----	*Underground Telephone Cable	----- T -----
Joint Use Pole	----- • -----	*Underground Telephone Conduit	----- TC -----
Utility Pole	----- • -----	*Underground Fiber Optics Telephone Cable	----- T FO -----
Utility Pole with Base	----- □ -----	*Underground TV Cable	----- TV -----
H-Frame Pole	----- •-----	*Underground Fiber Optics TV Cable	----- TV FO -----
Power Transmission Line Tower	----- ☒ -----	*Underground Gas Pipeline	----- G -----
Water Manhole	----- ⊙ -----	Aboveground Gas Pipeline	----- A/G Gas -----
Power Manhole	----- ⊙ -----	*Underground Water Line	----- W -----
Telephone Manhole	----- ⊙ -----	Aboveground Water Line	----- A/G Water -----
Sanitary Sewer Manhole	----- ⊙ -----	*Underground Gravity Sanitary Sewer Line	----- SS -----
Hand Hole for Cable	----- □ -----	Aboveground Gravity Sanitary Sewer Line	----- A/G Sanitary Sewer -----
Power Transformer	----- ☒ -----	*Underground SS Forced Main Line	----- FSS -----
Telephone Pedestal	----- □ -----	Underground Unknown Utility Line	----- ?UTL -----
CATV Pedestal	----- □ -----	SUE Test Hole	----- • -----
Gas Valve	----- ◇ -----	Water Meter	----- ⊙ -----
Gas Meter	----- ⊙ -----	Water Valve	----- ⊙ -----
Located Miscellaneous Utility Object	----- ⊙ -----	Fire Hydrant	----- ◇ -----
Abandoned According to Utility Records	----- AATUR -----	Sanitary Sewer Cleanout	----- ⊙ -----
End of Information	----- E.O.I. -----		

\*For Existing Utilities  
Utility Line Drawn from Record (Type as Shown) -----  
Designated Utility Line (Type as Shown) -----

5/14/99

24-APR-2013 10:19 AM 5132.Ut.Title\_UCI\_psh.dgn  
REV: 2/1/2012



5/14/99  
24-APR-2013 10:18 : \\U:\titles\ncd\ut\proj\AB5132.Ut.\_Title\_UCL\_psh.dgn

# UTILITY CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
B-5132	UC-2
DESIGNED BY: JAN	
DRAWN BY: JAN	
CHECKED BY: JSM	
APPROVED BY: JSM	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919)707-6690 FAX: (919)250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

## GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2012.
2. THE EXISTING 6" WATER LINE BELONGS TO HOKE COUNTY UTILITY DEPARTMENT.
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES, DIVISION OF ENVIRONMENTAL HEALTH. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF WATER QUALITY. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPROTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

## PROJECT SPECIFIC NOTES:

1. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.
2. HDPE PIPE INSTALLED BY DIRECTIONAL DRILL SHALL BE FILLED WITH WATER AND NOT BE CONNECTED TO ANY OTHER PIPE OR FITTINGS FOR ONE WEEK FROM THE TIME OF INSTALLATION.
3. INSIDE DIAMETER OF HDPE WATER PIPE SHALL BE EQUAL TO OR GREATER THAN THE INSIDE DIAMETER OF THE 6" DUCTILE WATER PIPE.
4. SHUT DOWN OF WATER LINE TO MAKE CONNECTIONS AT BOTH ENDS SHALL BE LIMITED TO 4 HOURS.

Chain WL-1 contains:

WAT666 WAT667 WAT668 WAT669 WAT670 WAT671 WAT672 WAT673

Beginning chain WL-1 description

```

=====
Point WAT666      N      406,518.8 E      1,948,782.9 Sta      0+00.0

Course from WAT666 to WAT667 N 42° 38' 33.82" E Dist 20.0
Point WAT667      N      406,533.5 E      1,948,796.4 Sta      0+20.0

Course from WAT667 to WAT668 N 2° 21' 26.18" W Dist 11.0
Point WAT668      N      406,544.5 E      1,948,796.0 Sta      0+31.0

Course from WAT668 to WAT669 N 42° 38' 33.82" E Dist 503.4
Point WAT669      N      406,914.8 E      1,949,137.0 Sta      5+34.4

Course from WAT669 to WAT670 N 42° 38' 33.82" E Dist 8.3
Point WAT670      N      406,920.9 E      1,949,142.6 Sta      5+42.7

Course from WAT670 to WAT671 N 42° 38' 33.82" E Dist 103.1
Point WAT671      N      406,996.7 E      1,949,212.4 Sta      6+45.8

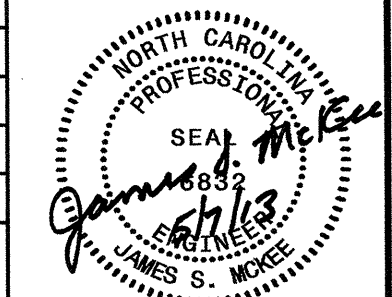
Course from WAT671 to WAT672 N 87° 38' 33.82" E Dist 8.6
Point WAT672      N      406,997.1 E      1,949,221.0 Sta      6+54.4

Course from WAT672 to WAT673 N 42° 38' 33.82" E Dist 20.3
Point WAT673      N      407,012.0 E      1,949,234.8 Sta      6+74.7

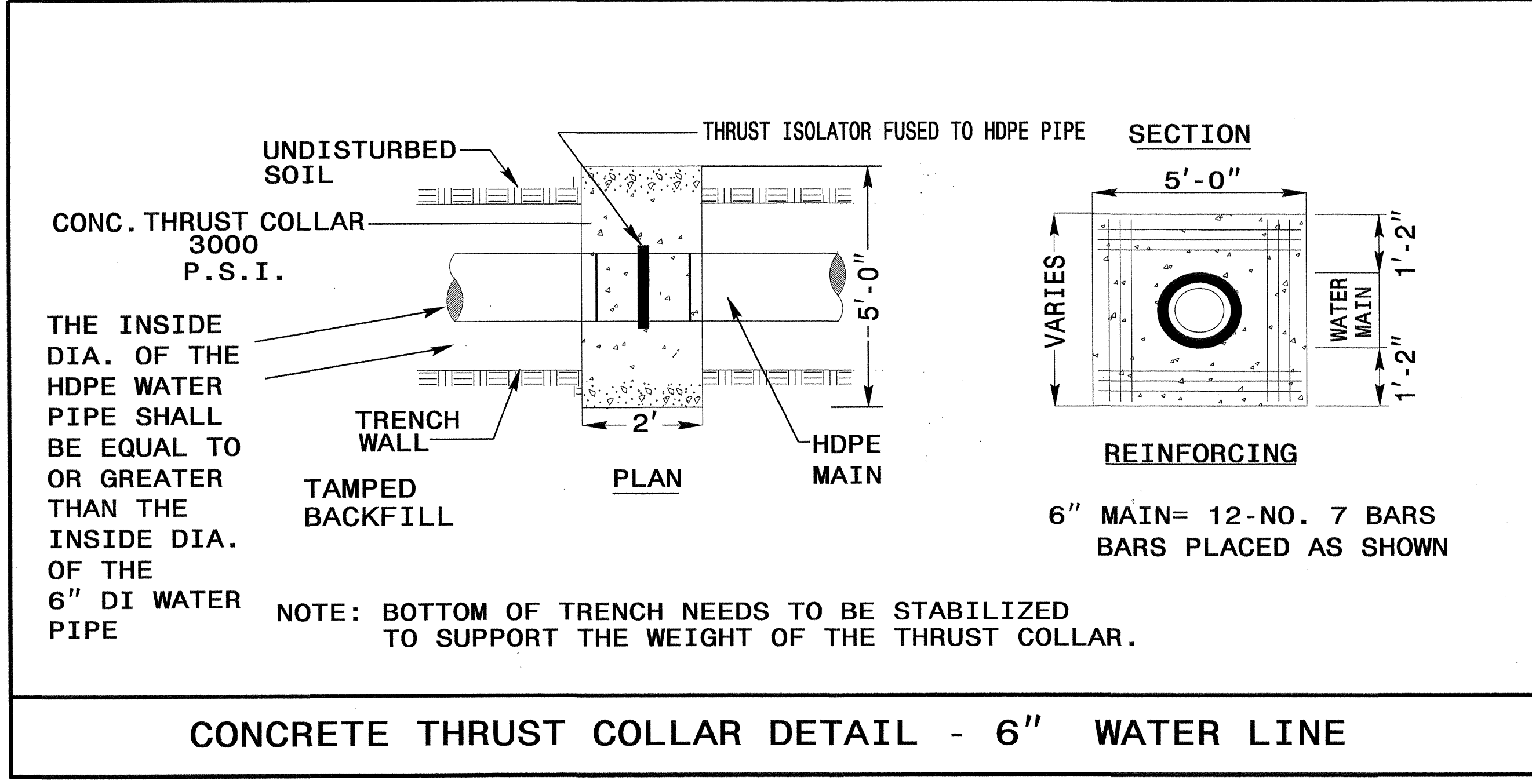
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## UTILITY CONSTRUCTION

# PROJECT TYPICAL DETAILS

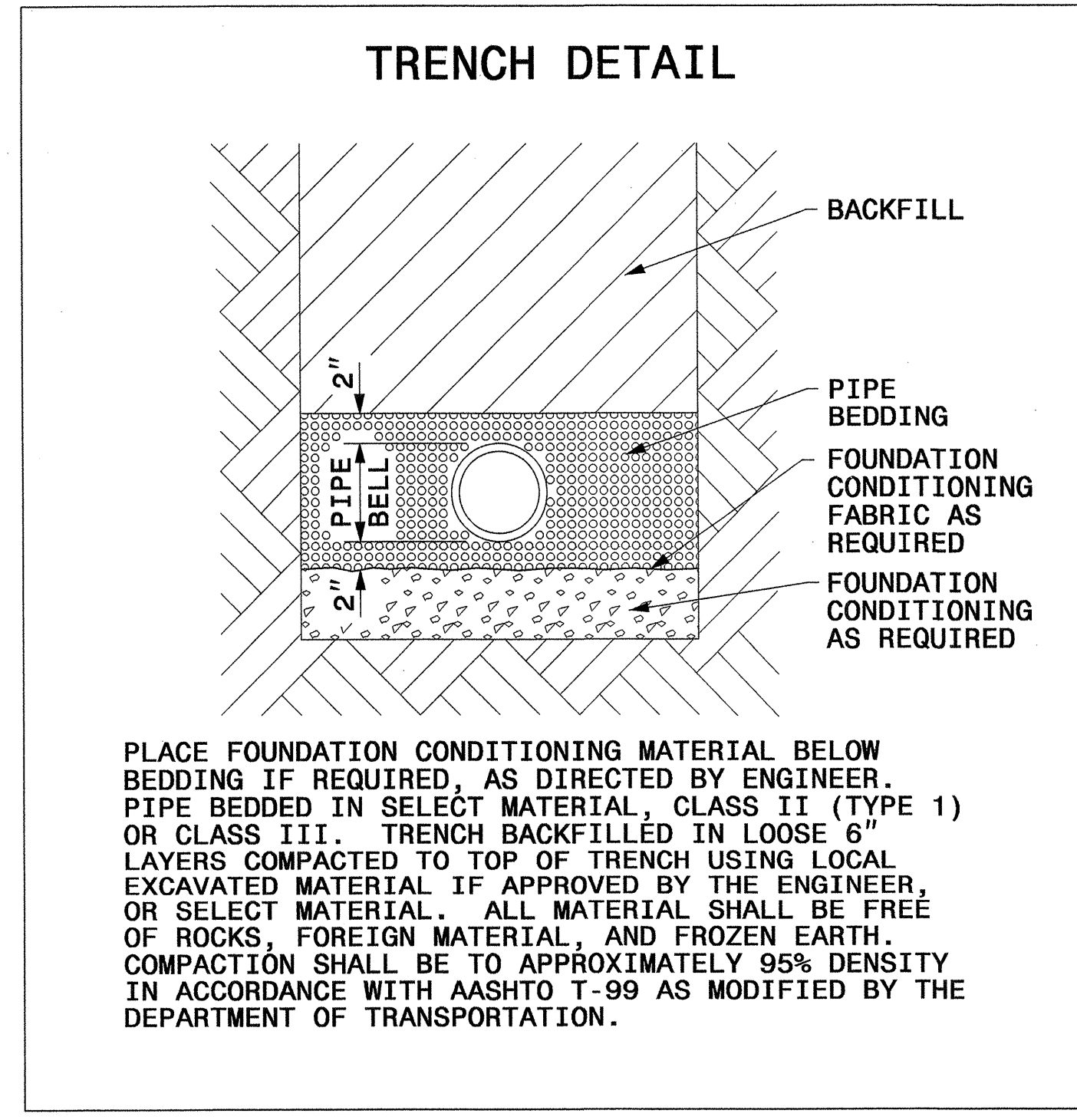
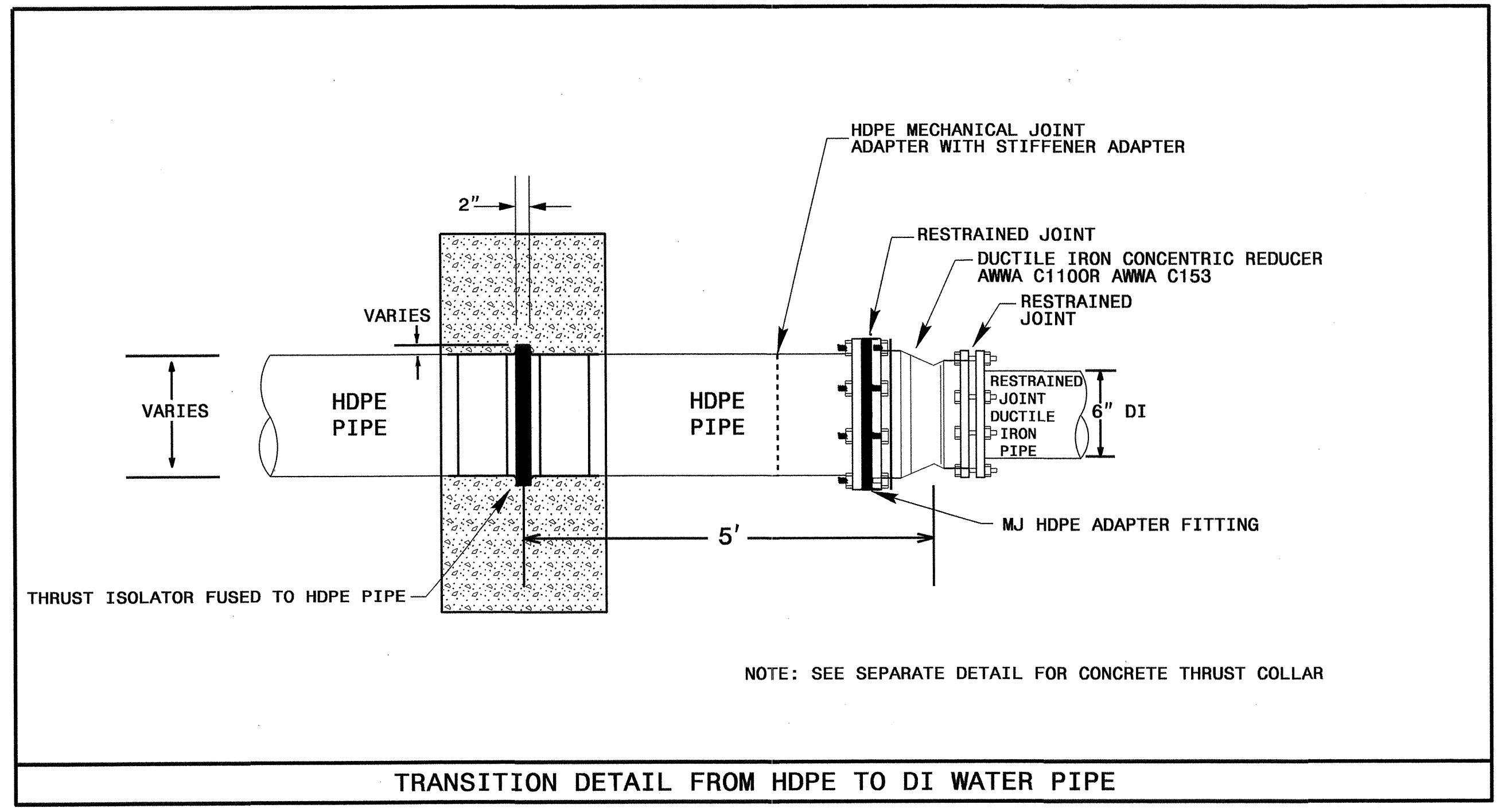
PROJECT REFERENCE NO.	SHEET NO.
B-5132	UC-3
DESIGNED BY: JAN	
DRAWN BY: JAN	
CHECKED BY: JSM	
APPROVED BY: JSM	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

## UTILITY CONSTRUCTION



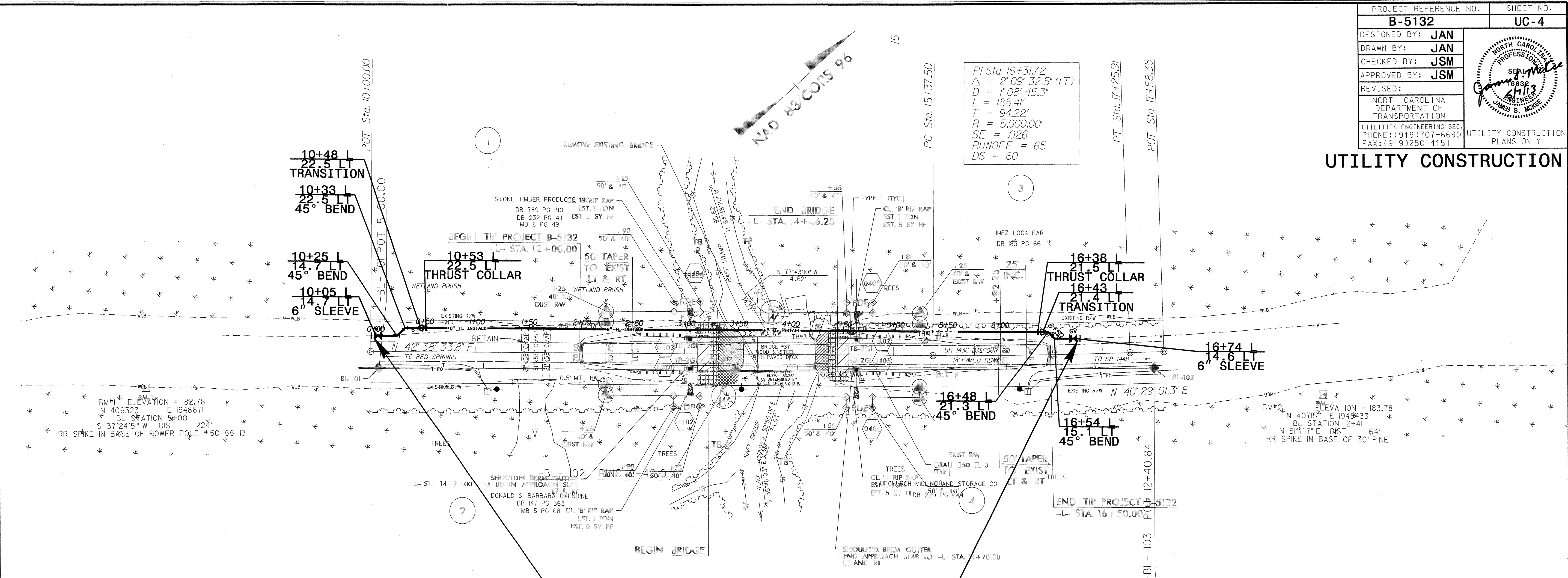
MAXIMUM TRENCH WIDTH AT TOP OF PIPE

NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		



PROJECT REFERENCE NO.	SHEET NO.
<b>B-5132</b>	<b>UC-4</b>
DESIGNED BY: <b>JAN</b>	
DRAWN BY: <b>JAN</b>	
CHECKED BY: <b>JSM</b>	
APPROVED BY: <b>JSM</b>	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

**UTILITY CONSTRUCTION**



- PROP. - 675 LF 6" WATER LINE
- PROP. - 2 6" VALVE
- PROP. - 535 LF TRENCHLESS INSTALLATION OF 6" IN SOIL
- PROP. - 60 LF TRENCHLESS INSTALLATION NOT IN SOIL

5/14/99

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 \$\$\$\$ USERIDM \$\$\$\$

5/14/99  
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PROJECT REFERENCE NO.	SHEET NO.
B-5132	UC-5
DESIGNED BY: JAN	
DRAWN BY: JAN	
CHECKED BY: JSM	
APPROVED BY: JSM	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

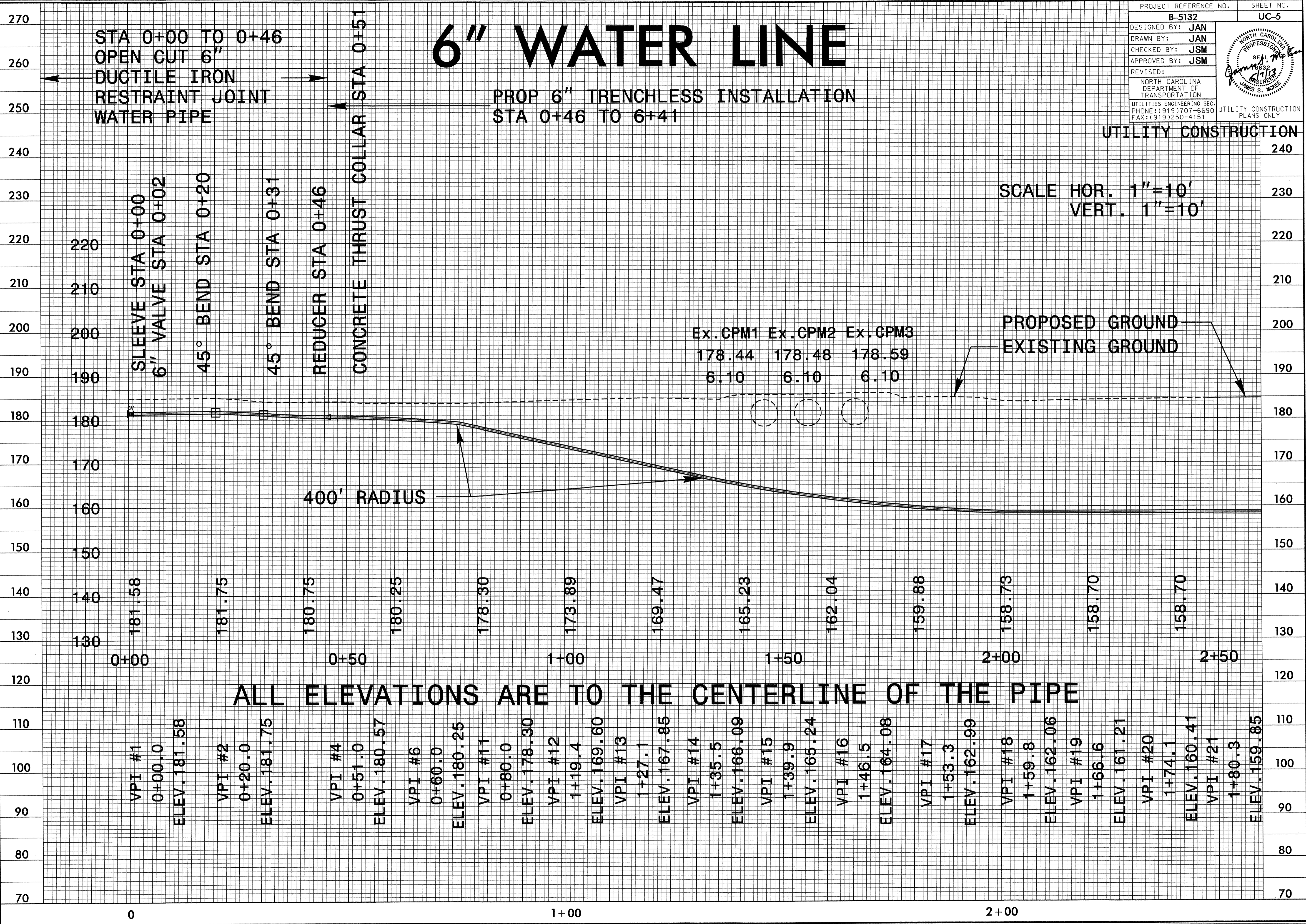
# 6" WATER LINE

STA 0+00 TO 0+46  
 OPEN CUT 6"  
 DUCTILE IRON  
 RESTRAINT JOINT  
 WATER PIPE

PROP 6" TRENCHLESS INSTALLATION  
 STA 0+46 TO 6+41

UTILITY CONSTRUCTION

SCALE HOR. 1"=10'  
 VERT. 1"=10'



SLEEVE STA 0+00  
 6" VALVE STA 0+02

45° BEND STA 0+20

45° BEND STA 0+31

REDUCER STA 0+46

CONCRETE THRUST COLLAR STA 0+51

Ex.CPM1	Ex.CPM2	Ex.CPM3
178.44	178.48	178.59
6.10	6.10	6.10

PROPOSED GROUND  
 EXISTING GROUND

400' RADIUS

ALL ELEVATIONS ARE TO THE CENTERLINE OF THE PIPE

0+00	0+50	1+00	1+50	2+00	2+50
181.58	180.75	178.30	165.23	158.73	158.70
181.75	180.25	173.89	162.04	159.88	158.70
181.75	178.30	169.47	159.88	158.73	158.70

VPI #1	VPI #2	VPI #4	VPI #6	VPI #11	VPI #12	VPI #13	VPI #14	VPI #15	VPI #16	VPI #17	VPI #18	VPI #19	VPI #20	VPI #21
0+00.0	0+20.0	0+51.0	0+60.0	0+80.0	1+19.4	1+27.1	1+35.5	1+39.9	1+46.5	1+53.3	1+59.8	1+66.6	1+74.1	1+80.3
ELEV. 181.58	ELEV. 181.75	ELEV. 180.57	ELEV. 180.25	ELEV. 178.30	ELEV. 169.60	ELEV. 167.85	ELEV. 166.09	ELEV. 165.24	ELEV. 164.08	ELEV. 162.99	ELEV. 162.06	ELEV. 161.21	ELEV. 160.41	ELEV. 159.85

5/14/99

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JSM

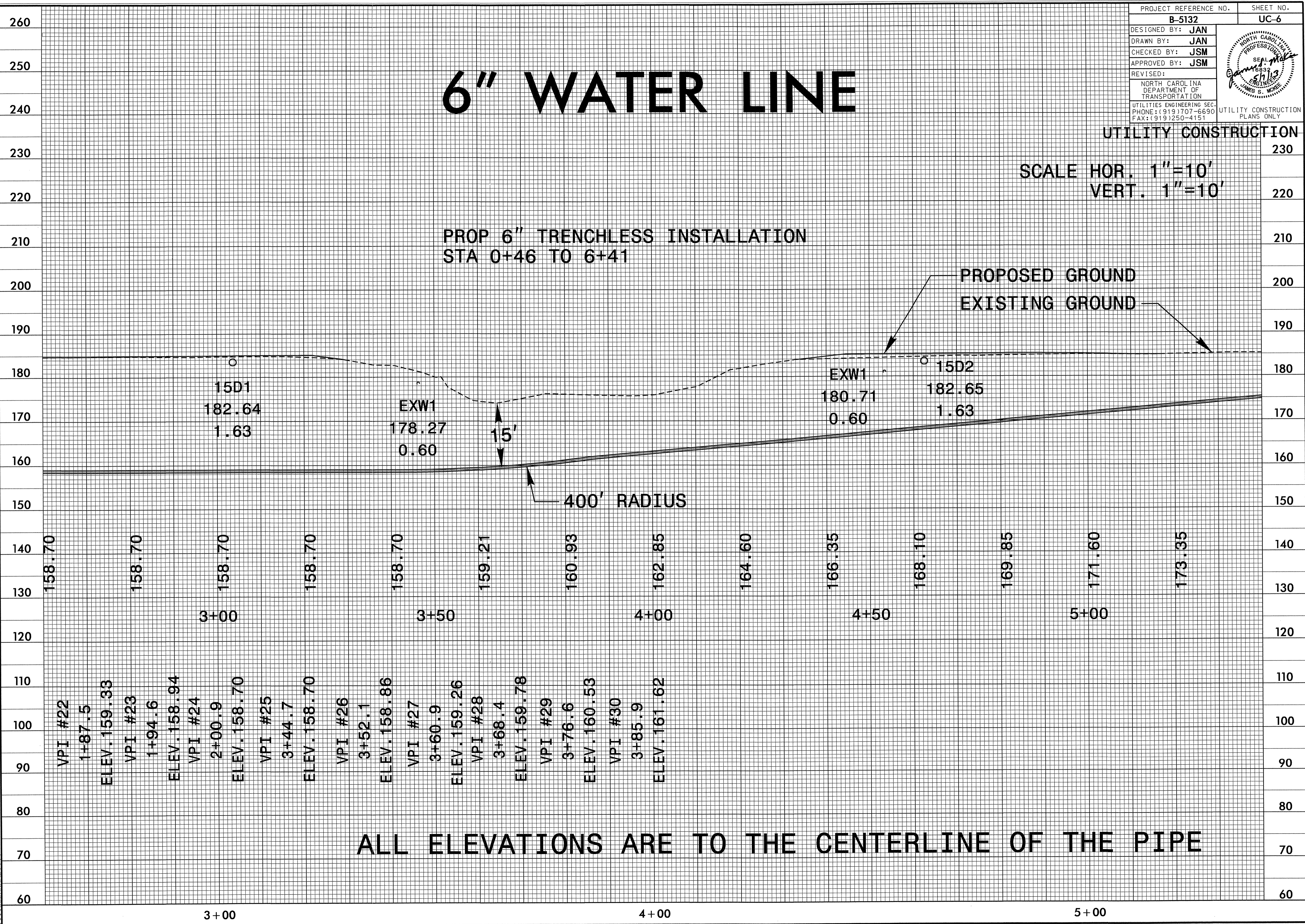
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DESIGNED BY: <b>JAN</b>	
DRAWN BY: <b>JAN</b>	
CHECKED BY: <b>JSM</b>	
APPROVED BY: <b>JSM</b>	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

# 6" WATER LINE

UTILITY CONSTRUCTION

SCALE HOR. 1"=10'  
VERT. 1"=10'

PROP 6" TRENCHLESS INSTALLATION  
STA 0+46 TO 6+41



ALL ELEVATIONS ARE TO THE CENTERLINE OF THE PIPE

5/14/99

08-MAY-2013 09:58  
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# 6" WATER LINE

PROJECT REFERENCE NO.	SHEET NO.
B-5132	UC-7
DESIGNED BY: JAN	
DRAWN BY: JAN	
CHECKED BY: JSM	
APPROVED BY: JSM	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4191	

UTILITY CONSTRUCTION PLANS ONLY

PROP 6" TRENCHLESS INSTALLATION  
STA 0+46 TO 6+41

STA 6+41 TO 6+75  
OPEN CUT 6"  
DUCTILE IRON  
RESTRAINT JOINT  
WATER PIPE

UTILITY CONSTRUCTION

SCALE HOR. 1"=10'  
VERT. 1"=10'

EXISTING GROUND

CONCRETE THRUST COLLAR STA 6+36  
 REDUCER STA 6+41  
 45° BEND STA 6+46  
 45° BEND STA 6+54  
 6" VALVE STA 6+73  
 SLEEVE STA 6+75

400' RADIUS

ALL ELEVATIONS ARE TO THE CENTERLINE OF THE PIPE

175.10	176.85	178.60	180.43	181.78	182.10	182.04
5+50			6+00		6+50	6+75
VPI #31 5+91.9 ELEV. 179.65	VPI #32 6+03.6 ELEV. 180.79	VPI #33 6+14.0 ELEV. 181.50	VPI #34 6+20.9 ELEV. 181.82	VPI #35 6+28.4 ELEV. 182.04	VPI #36 6+38.4 ELEV. 182.11	VPI #37 6+74.7 ELEV. 181.99

280  
270  
260  
250  
240  
230  
220  
210  
200  
190  
180  
170  
160  
150  
140  
130  
120  
110  
100  
90  
80

## CROSS SECTION SUMMARY

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

STATION L	UNCL. EXC. (CU. YD.)	EMBT. (CU. YD.)
12+00.00	-	-
12+50.00	5	3
13+00.00	6	11
13+23.75	0	11
14+46.25	-	-
15+00.00	0	38
15+50.00	1	10
16+00.00	3	2
16+50.00	2	0

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

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.

## CROSS SECTION INDEX

SHEET	BEGIN STATION	END STATION
X-1	12+00.00	13+50.00
X-2	14+00.00	16+50.00

REVISIONS

8/17/99

I2/2/2013  
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8/22/99

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0.020 0.020  
186.41  
13 + 50.00  
BEGIN BRIDGE -L- STA. 13 + 23.75

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186.28  
S.S. 181.57 S.S. 185.23  
13 + 23.75

3:1 0.020 0.020 3:1  
186.20  
S.S. 183.22 S.S. 185.61  
13 + 00.00

3:1 0.020 0.020 4:1  
186.14  
S.S. 184.68 S.S. 184.42  
12 + 50.00

0.016 0.021  
186.28  
12 + 00.00  
BEGIN PROJECT -L- STA. 12 + 00.00

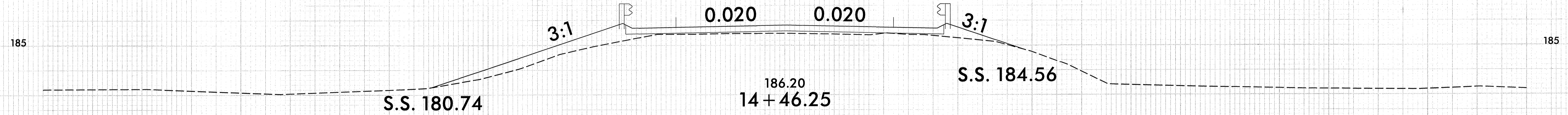
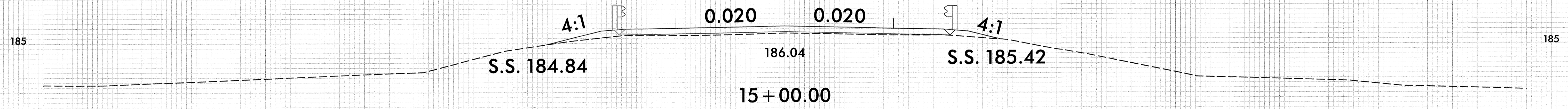
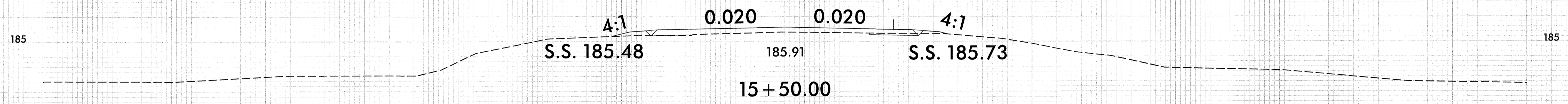
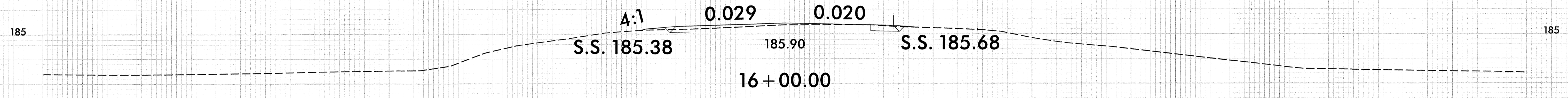
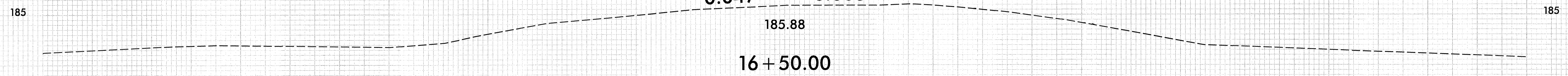
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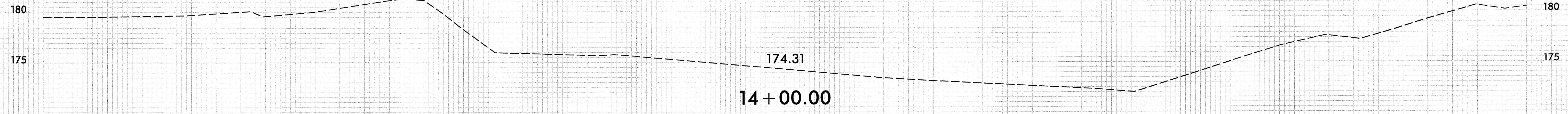
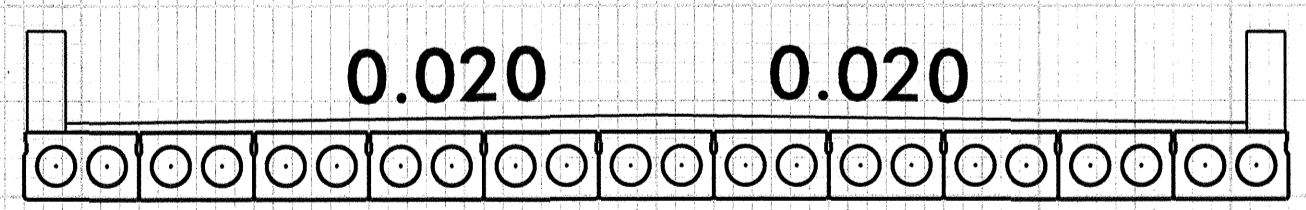


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END PROJECT -L- STA. 16 + 50.00  
0.047 0.003



END BRIDGE -L- STA. 14 + 46.25



-L-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75