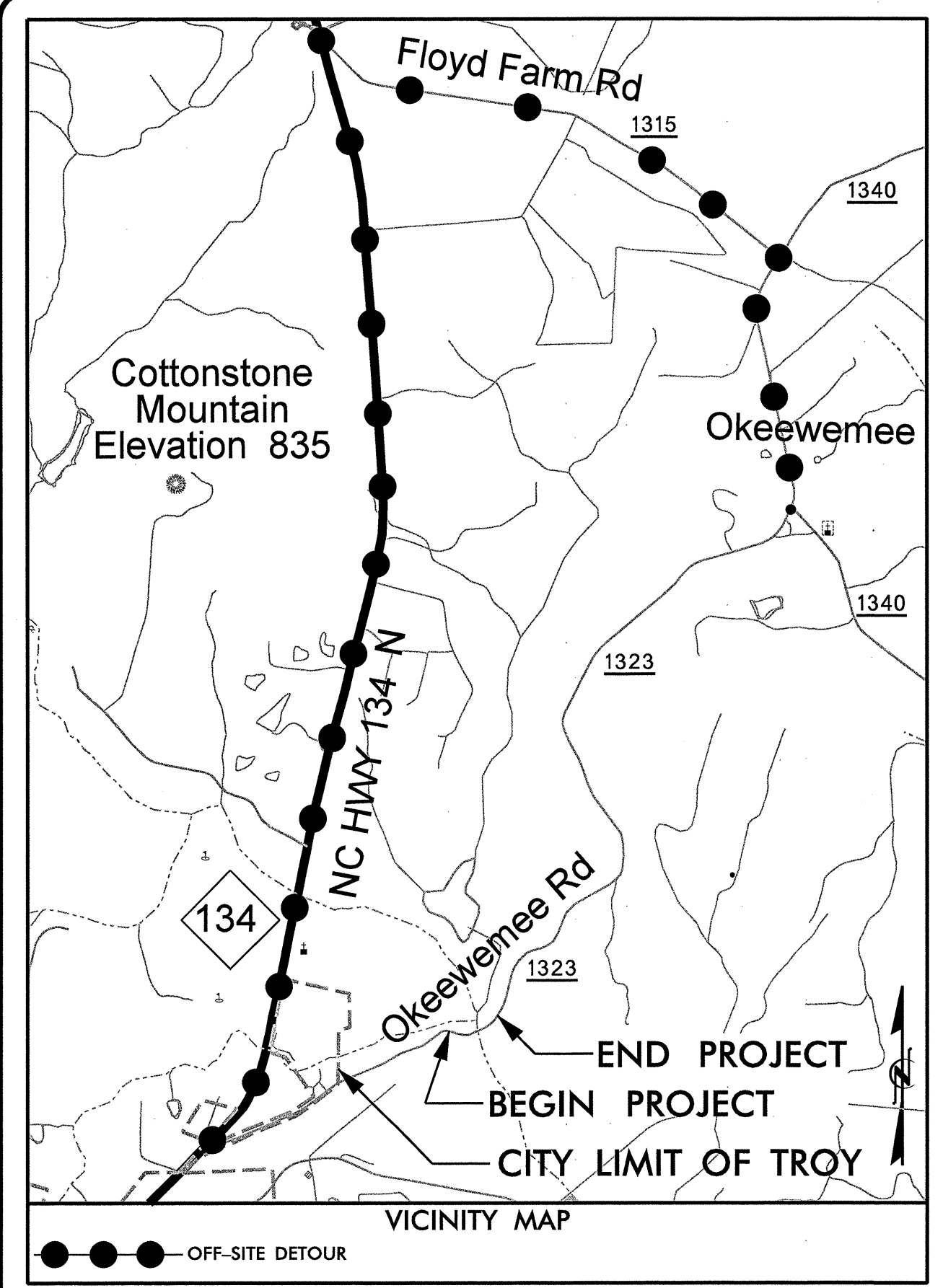


09/08/09

TIP PROJECT: B-4582

CONTRACT: C202439



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

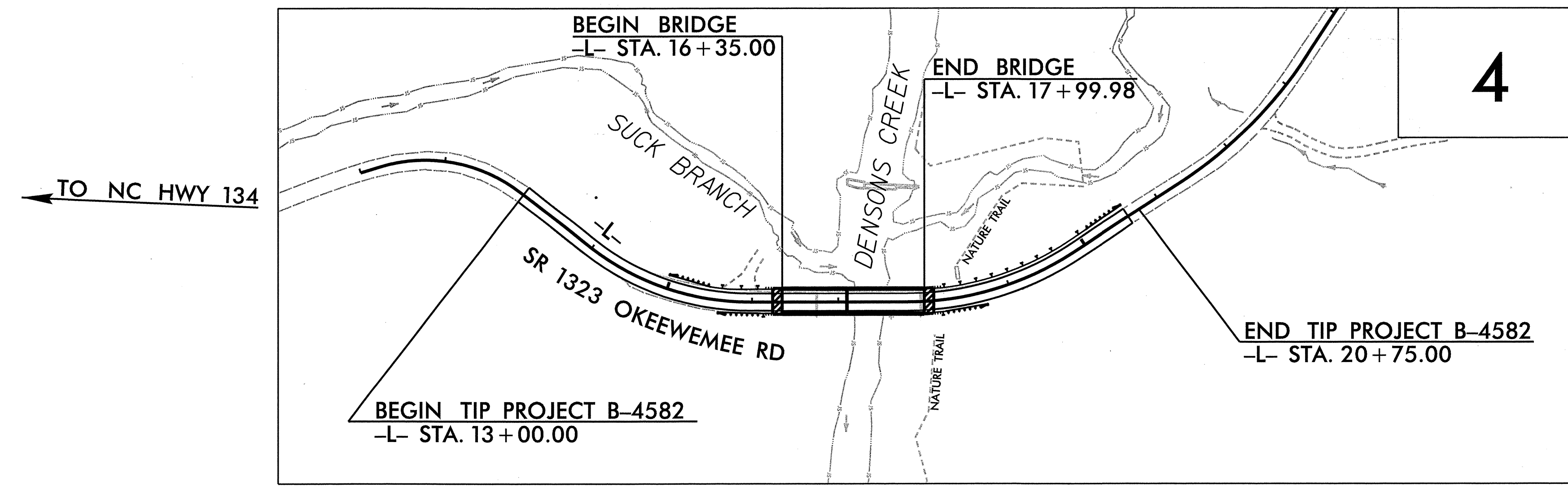
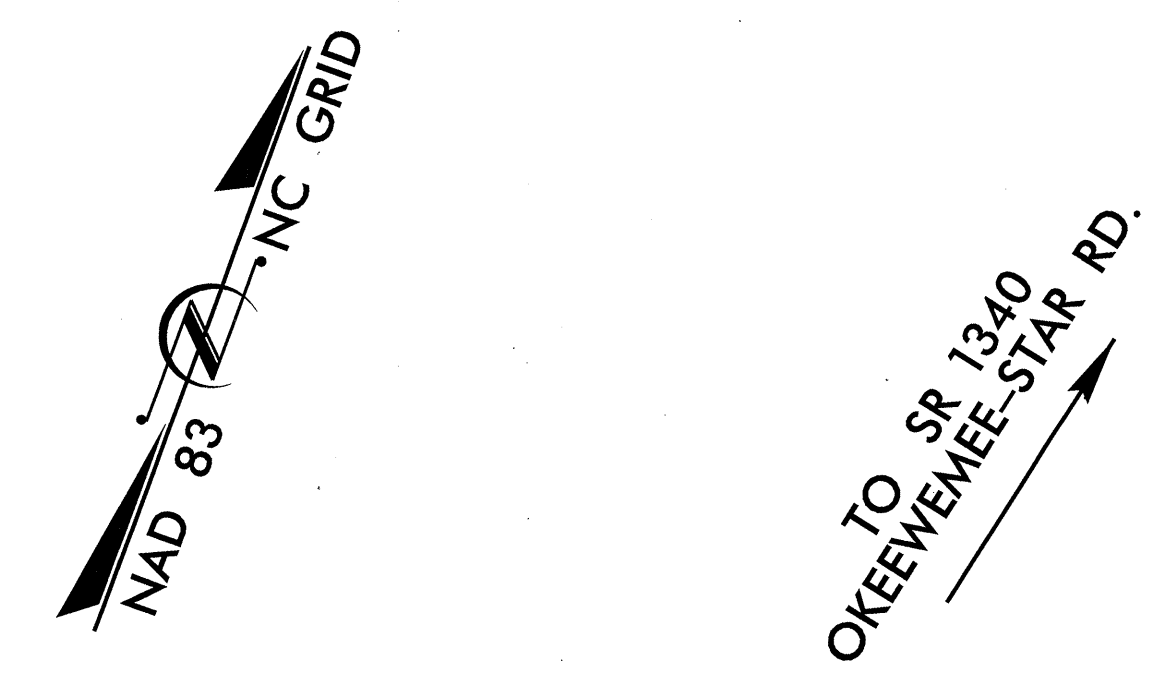
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MONTGOMERY COUNTY

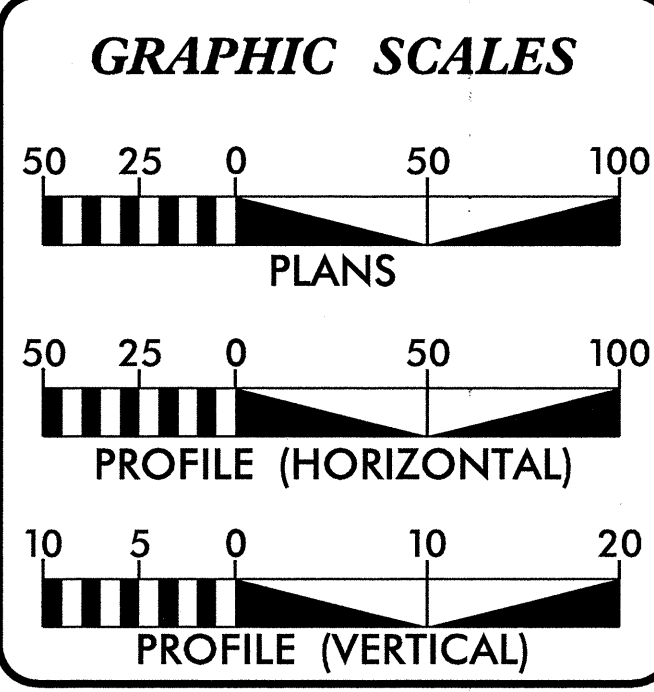
**LOCATION: BRIDGE NO. 121 OVER DENSONS CREEK
ON SR 1323 (OKEEWEMEE RD.).**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4582	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33783.1.1	BRZ-1323(1)	PE	
33783.2.1	BRZ-1323(1)	RW /UTL.	
33783.3.1	BRZ-1323(1)	CONST.	



NCDOT CONTACT: K. ZAK HAMIDI, PE
ROADWAY DESIGN - ENGINEERING COORDINATION



DESIGN DATA

ADT 2011 = 860
ADT 2031 = 1320
DHV = 13%
D = 65%
T = 5% TTST = 1%
DUAL = 4%
V = 40 MPH
CLASS = RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4582 = 0.116 mi.
LENGTH STRUCTURE TIP PROJECT B-4582 = 0.031 mi.
TOTAL LENGTH TIP PROJECT B-4582 = 0.147 mi.

421 Fayetteville Street Mail
Suite 400
Raleigh, NC 27601
T 919.380.8750
F 919.380.8752
www.stewart-eng.com

STEWART

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 17, 2009

LETTING DATE:
AUGUST 16, 2011

Prepared in the Office of:
STEWART ENGINEERING

For
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

DAVID RUGGLES, PE
PROJECT ENGINEER

JONATHAN HEFNER, PE
PROJECT DESIGN ENGINEER

K. ZAK HAMIDI, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER

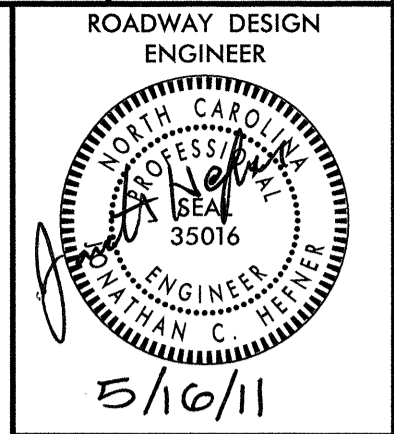
SIGNATURE: [Signature] 5/16/11

SIGNATURE: [Signature] 5/16/11

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Art McMillan
ART McMILLAN, PE
STATE HIGHWAY DESIGN ENGINEER

5/16/2011 9:01 AM B4582_RDY_PLANSHEETS.dgn
USER: jhefner



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 THRU 2-B	METHOD OF PIPE INSTALLATION
2-C	ANCHORAGE OF FRAMES
2-D	BRIDGE APPROACH FILLS - SUBREGIONAL TIER
3	SUMMARY OF QUANTITIES
3-A	EARTHWORK, DRAINAGE, GUARDRAIL, SHOULDER BERM GUTTER, AND ASPHALT PAVEMENT REMOVAL SUMMARIES
4	PLAN & PROFILE SHEET
TMP-1 THRU TMP-3	TRAFFIC CONTROL PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-2	SIGNING PLANS
SD-1	SIGN DESIGN PLANS
UD-1 THRU UD-2	UTILITIES BY OTHERS PLANS
X-1	CROSS SECTION SUMMARY AND INDEX
X-2 THRU X-6	CROSS-SECTIONS
S-1 THRU S-22	STRUCTURE PLANS

GENERAL NOTES: 2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 09-12-08

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

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

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

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

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.

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: CENTURY LINK
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

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

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 Superlevation - Two Lane Pavement
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
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	⊙ EP
Property Corner	⊙
Property Monument	⊙ ECM
Parcel/Sequence Number	Ⓜ
Existing Fence Line	-x-x-x-
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: Boundary or Site	☠
Potential Soil Contamination: Boundary or Site	☠

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	⊙
Well	⊙ W
Small Mine	⊗
Foundation	▭
Area Outline	▭
Cemetery	⊕
Building	▭
School	▭
Church	⊕
Dam	▭

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	▭
Jurisdictional Stream	----- JS
Buffer Zone 1	----- BZ 1
Buffer Zone 2	----- BZ 2
Flow Arrow	→
Disappearing Stream	→
Spring	⊙
Wetland	▭
Proposed Lateral, Tail, Head Ditch	→
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 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	Ⓜ
Curb Cut Future 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

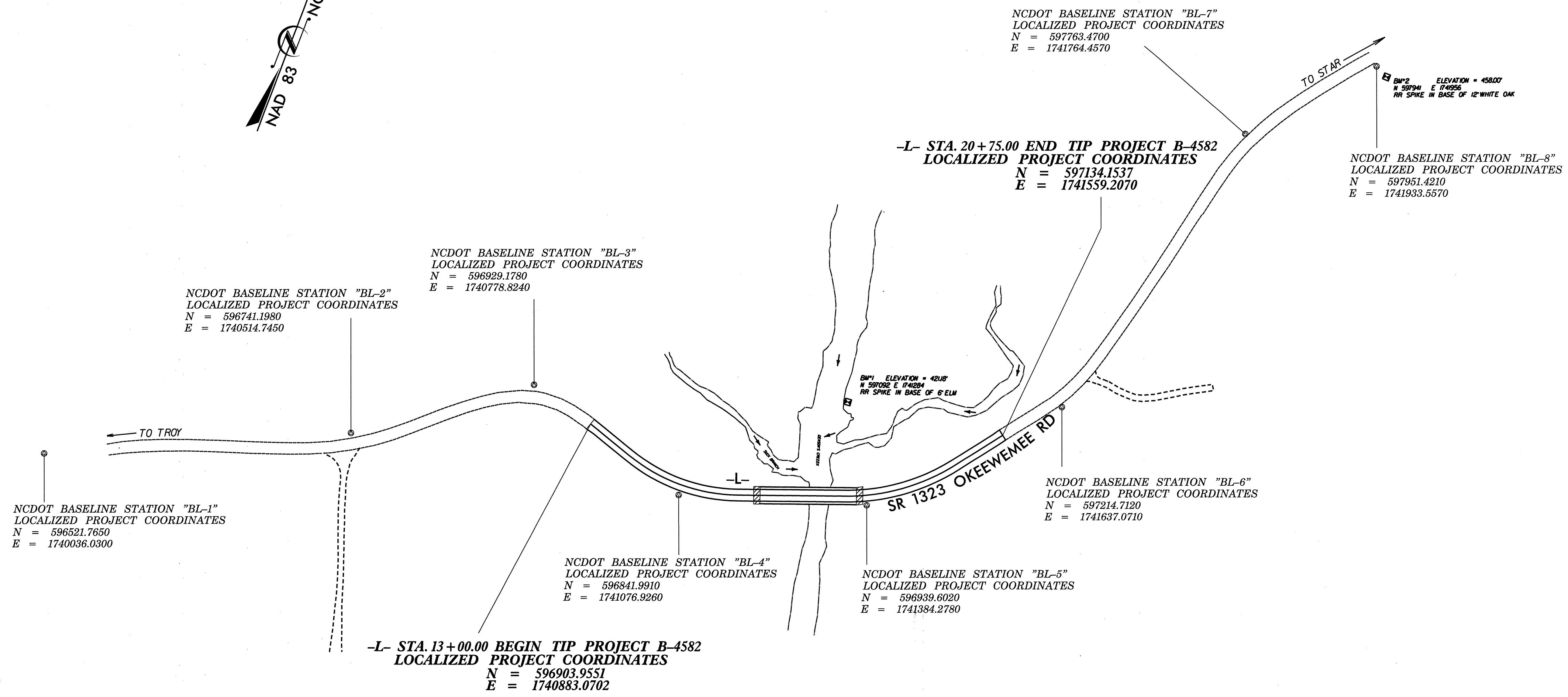
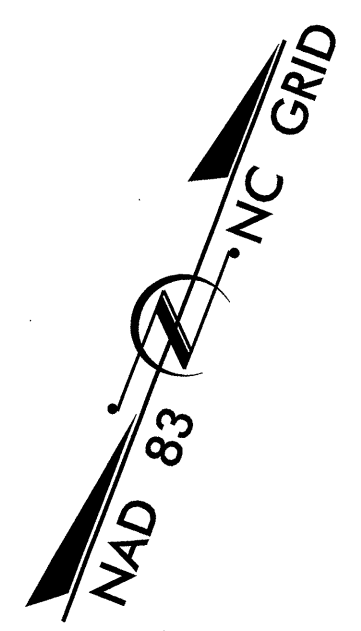
SANITARY SEWER:

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	----- UUL
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.

SURVEY CONTROL SHEET B-4582



NCDOT BASELINE STATION "BL-1"
LOCALIZED PROJECT COORDINATES
N = 596521.7650
E = 1740036.0300

NCDOT BASELINE STATION "BL-2"
LOCALIZED PROJECT COORDINATES
N = 596741.1980
E = 1740514.7450

NCDOT BASELINE STATION "BL-3"
LOCALIZED PROJECT COORDINATES
N = 596929.1780
E = 1740778.8240

NCDOT BASELINE STATION "BL-4"
LOCALIZED PROJECT COORDINATES
N = 596841.9910
E = 1741076.9260

NCDOT BASELINE STATION "BL-5"
LOCALIZED PROJECT COORDINATES
N = 596939.6020
E = 1741384.2780

NCDOT BASELINE STATION "BL-6"
LOCALIZED PROJECT COORDINATES
N = 597214.7120
E = 1741637.0710

-L- STA. 20+75.00 END TIP PROJECT B-4582
LOCALIZED PROJECT COORDINATES
N = 597134.1537
E = 1741559.2070

NCDOT BASELINE STATION "BL-7"
LOCALIZED PROJECT COORDINATES
N = 597763.4700
E = 1741764.4570

NCDOT BASELINE STATION "BL-8"
LOCALIZED PROJECT COORDINATES
N = 597951.4210
E = 1741933.5570

-L- STA. 13+00.00 BEGIN TIP PROJECT B-4582
LOCALIZED PROJECT COORDINATES
N = 596903.9551
E = 1740883.0702

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CLUB" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 596065.4122(ft) EASTING: 1738103.1544(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99985390 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CLUB" TO -L- STATION 13+10.00 IS N 73° 19' 32.2" E 2911.888' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

NOTES:

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: [HTTP://WWW.DOHT.DOT.STATE.NC.US/PRECONSTRUCTION/HIGHWAY/LOCATION/PROJECT](http://www.doh.dot.state.nc.us/preconstruction/highway/location/project) THE FILES TO BE FOUND ARE AS FOLLOWS: B4582_LS_CONTROL_090422.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.

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1		596521.7650	1740036.0300	497.98		OUTSIDE PROJECT LIMITS
2	BL-2		596741.1980	1740514.7450	478.65		OUTSIDE PROJECT LIMITS
3	BL-3		596929.1780	1740778.8240	455.02	11+99.15	28.99 LT
4	BL-4		596841.9910	1741076.9260	434.47	14+99.55	17.74 RT
5	BL-5		596939.6020	1741384.2780	432.93	18+16.89	17.17 RT
6	BL-6		597214.7120	1741637.0710	446.98	21+84.51	15.66 RT
7	BL-7		597763.4700	1741764.4570	449.55		OUTSIDE PROJECT LIMITS
8	BL-8		597951.4210	1741933.5570	463.38		OUTSIDE PROJECT LIMITS

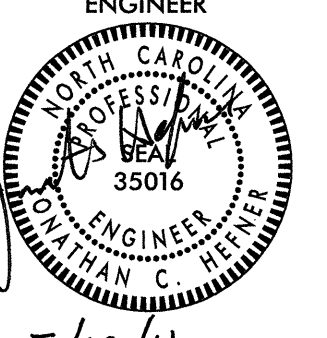

.....
 BM1 ELEVATION = 421.10
 N 597892 E 1741284
 L STATION 17+76.162 LEFT
 RR SPIKE IN BASE OF 6 INCH ELM

 BM2 ELEVATION = 458.00
 N 597941 E 1741956
 L STATION 25+80
 N 28° 51' 01" E DIST 481.98
 RR SPIKE IN BASE OF 12 INCH WHITE OAK

NOTE: DRAWING NOT TO SCALE

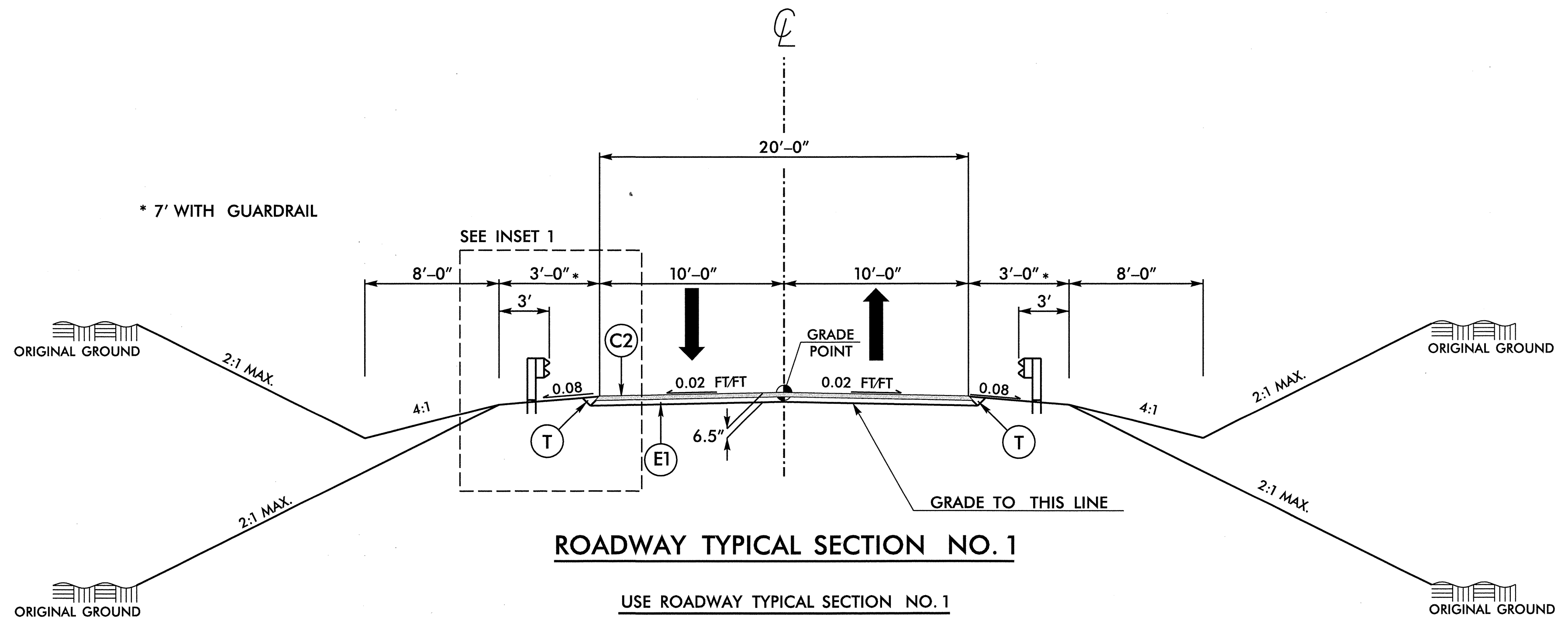
5/9/2011 11:58:58 AM B4582_ROY_PLANSHEETS.dgn

6/2/99

PROJECT REFERENCE NO. B-4582	SHEET NO. 2
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 
5/10/11	

421 Fayetteville Street Mall
Suite 400
Raleigh, NC 27601
T 919.380.8750
F 919.380.8752
www.stewart-eng.com

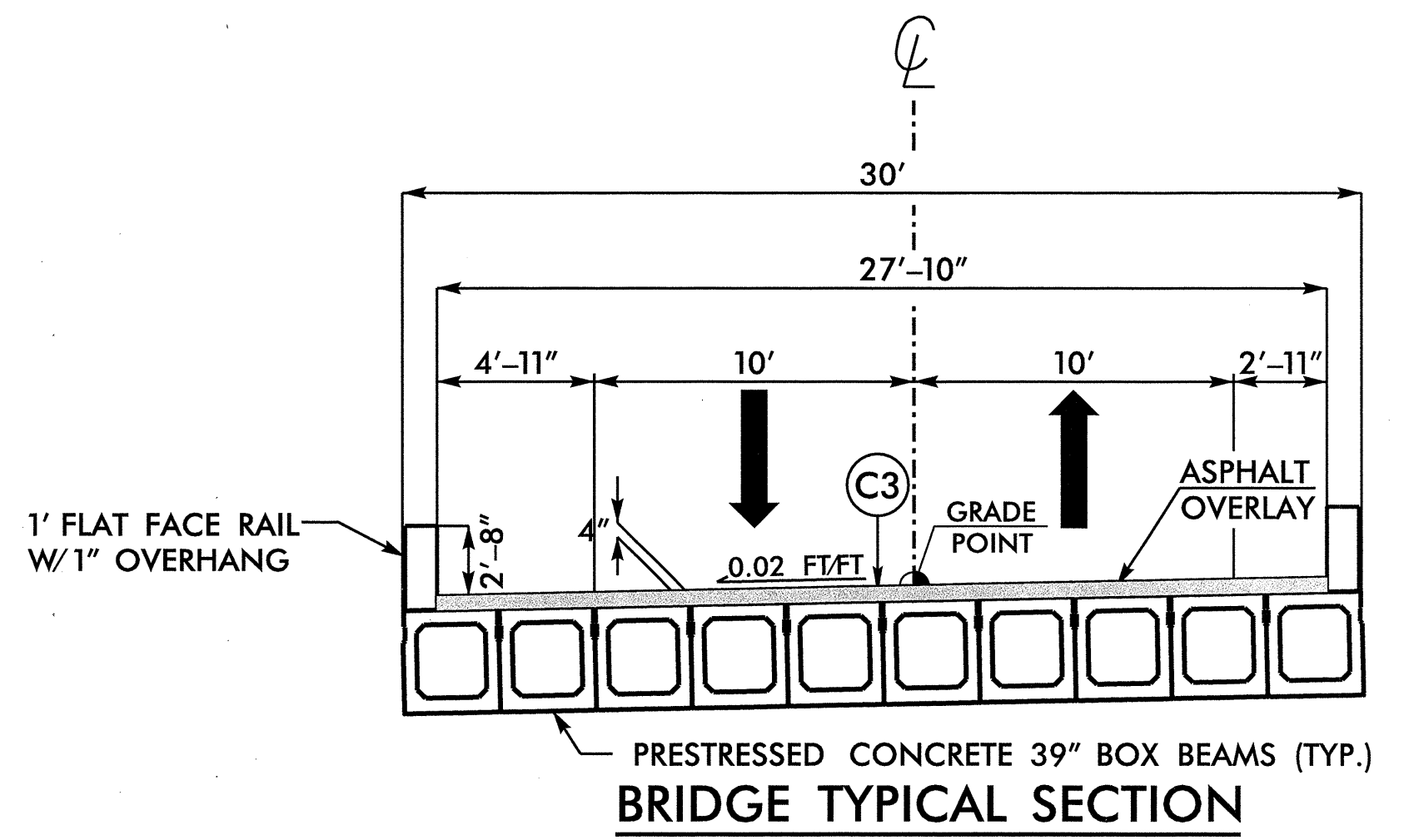
STEWART



ROADWAY TYPICAL SECTION NO. 1

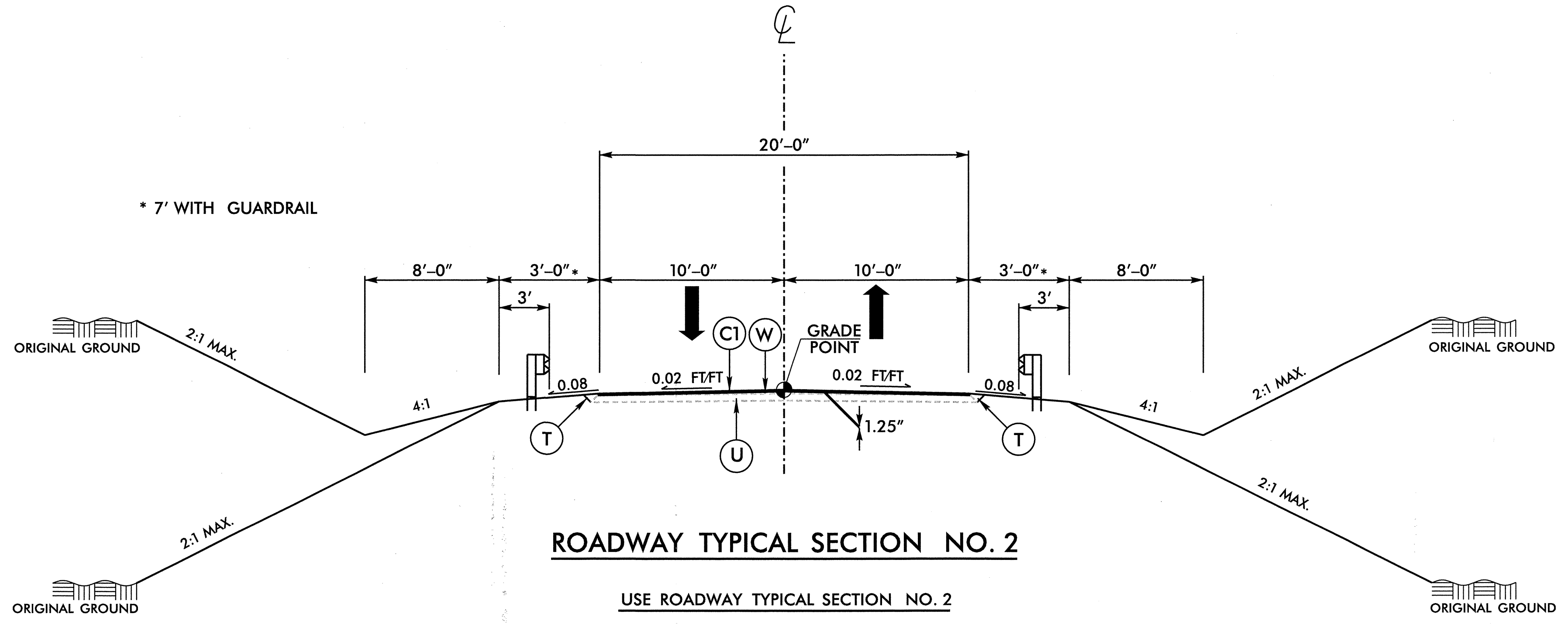
USE ROADWAY TYPICAL SECTION NO. 1

-L- STA. 13+50.00 TO -L- STA. 16+35.00 (BEGIN BRIDGE)
-L- STA. 17+99.98 (END BRIDGE) TO -L- STA. 20+60.00



BRIDGE TYPICAL SECTION

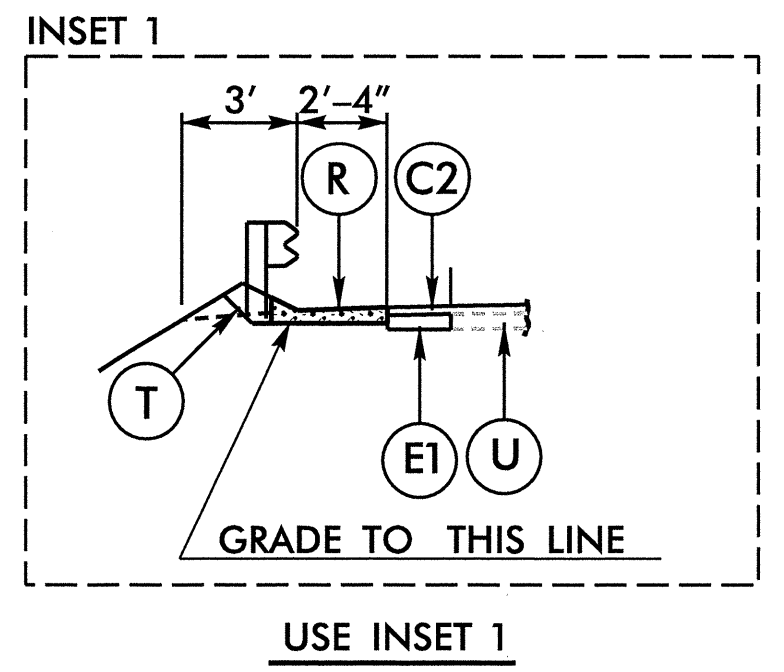
USE BRIDGE TYPICAL SECTION
-L- STA. 16+35.00 TO -L- STA. 17+99.98



ROADWAY TYPICAL SECTION NO. 2

USE ROADWAY TYPICAL SECTION NO. 2

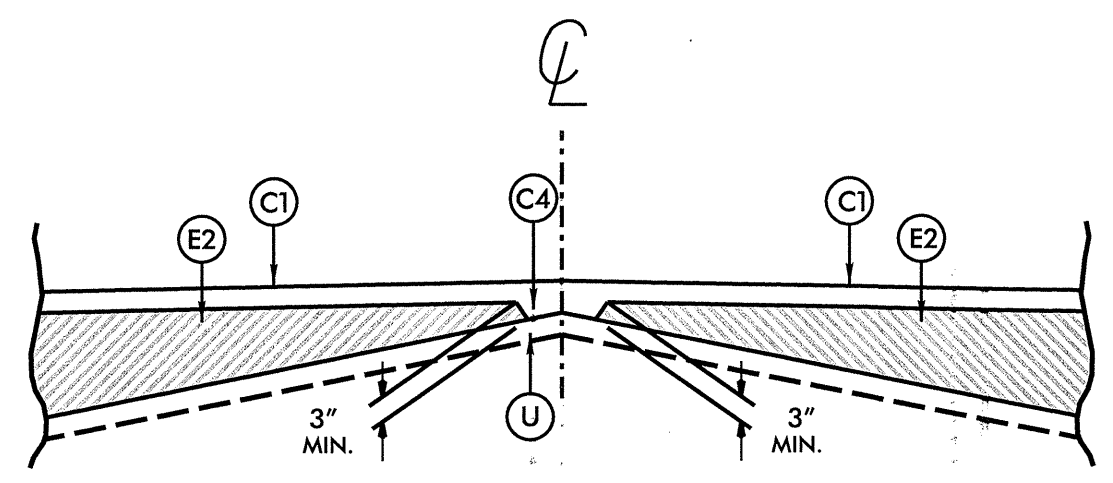
-L- STA. 13+25.00 TO -L- STA. 13+50.00



USE INSET 1

-L- STA. 15+50.00 LT TO BEGIN APP. SLAB LT
END APP. SLAB LT TO -L- STA. 20+10.00 LT

NOTE:
TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 2
-L- STA. 13+00.00 TO -L- STA. 13+25.00



Detail Showing Method of Wedging

PAVEMENT SCHEDULE	
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. APPROX. 4" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 146.7 LBS. PER SQ. YD. IN EACH OF THREE LAYERS
C4	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" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
R	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)

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

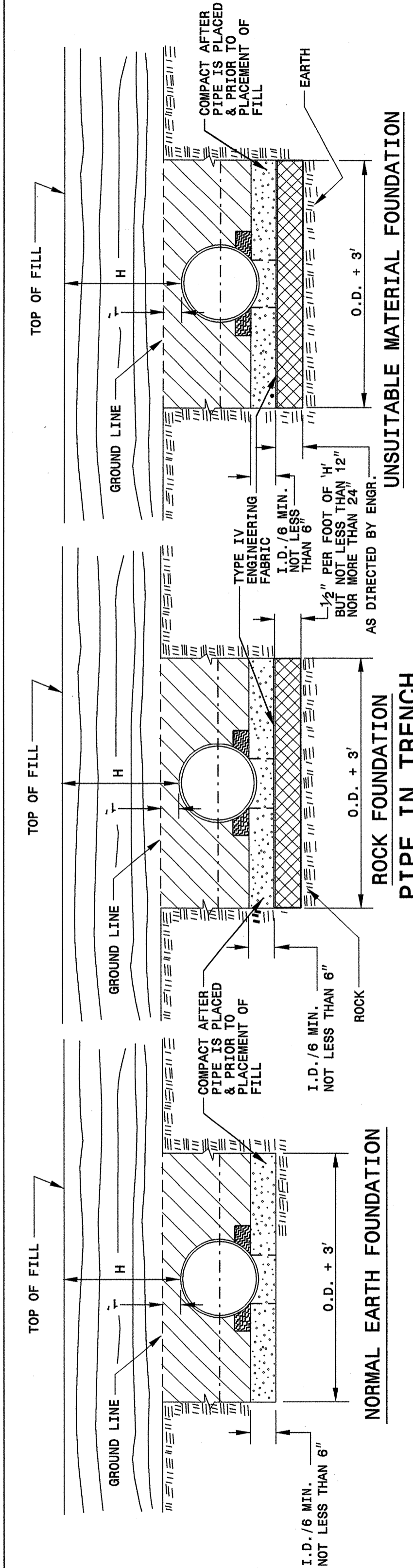
5/18/2011 8:45:22 AM RDY_PLANSHEETS.dgn

30-JUL-2009 08:48
 s:\contracts\corporate\special_details\viewward\stds\06' stds to special_details\30001\0300d01.dgn
 Jpower-ton At P5237501

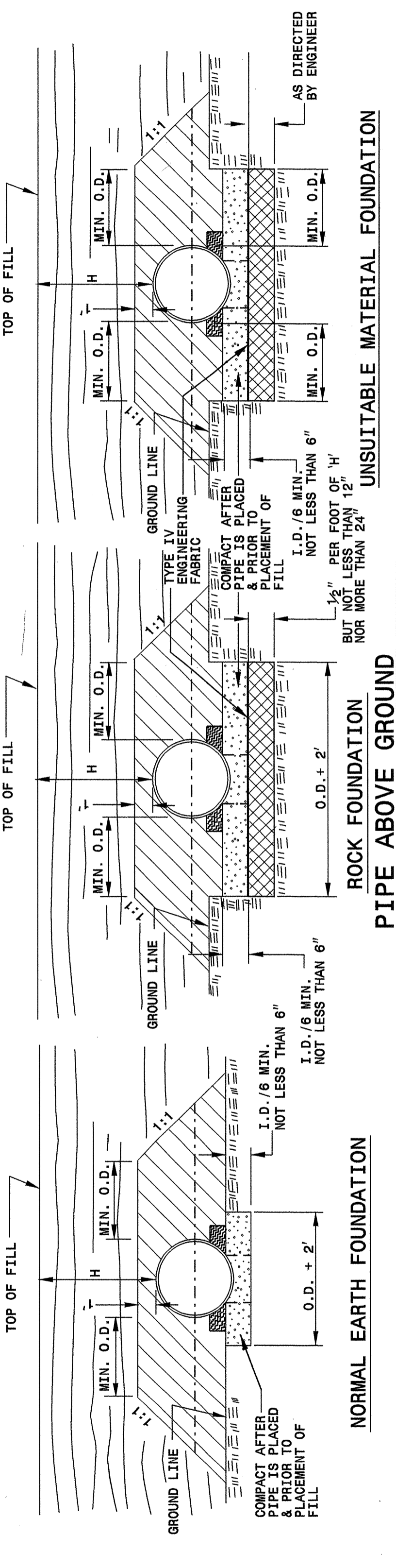
5/14/99

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

7-06

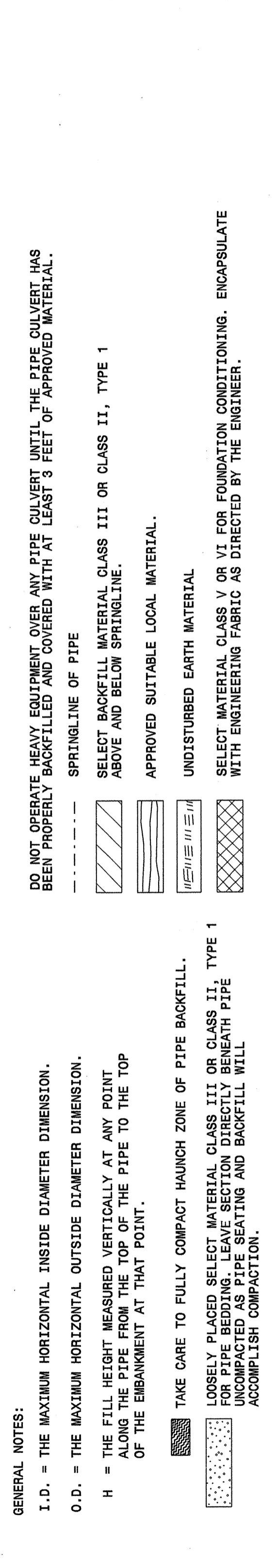


ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE



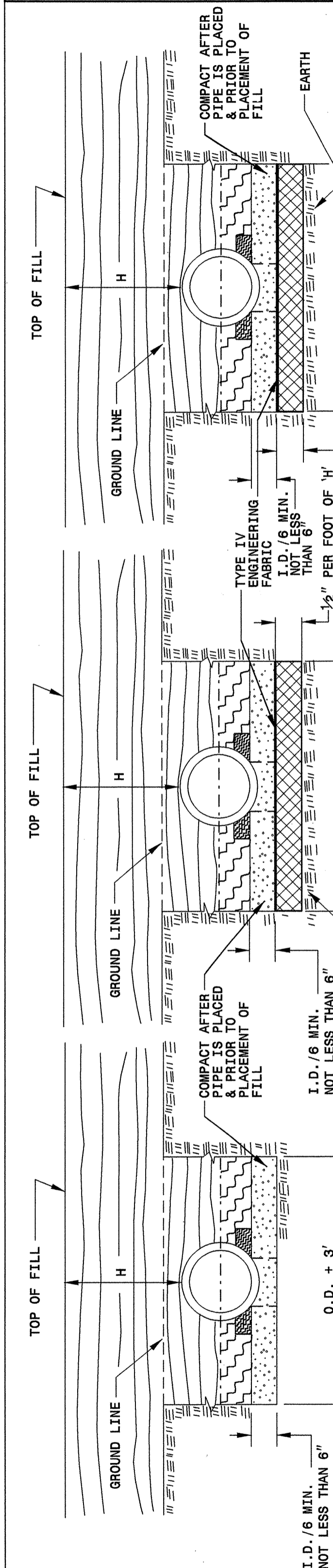
STATE OF
 NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

7-06

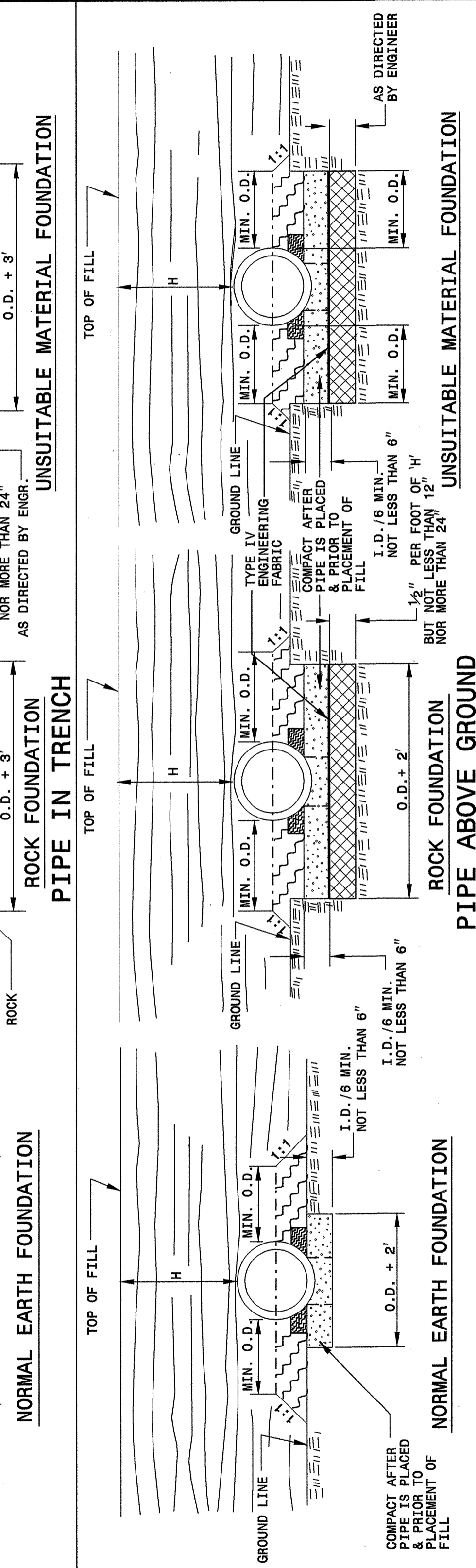


STATE OF
 NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

7-06

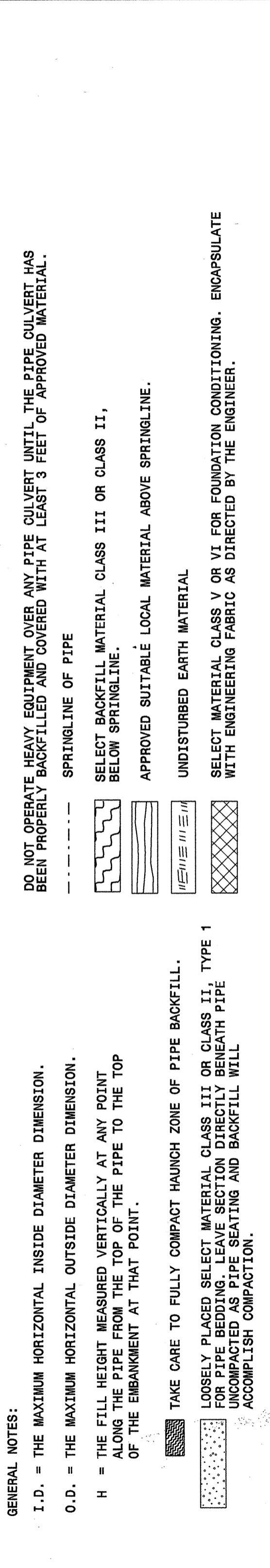


ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 RIGID PIPE



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

7-06



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

7-06

ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE

SHEET 1 OF 3
 300D01

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

7-06

ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 RIGID PIPE

SHEET 2 OF 3
 300D01

GENERAL NOTES:
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

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

SPRINGLINE OF PIPE

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

APPROVED SUITABLE LOCAL MATERIAL.

UNDISTURBED EARTH MATERIAL

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

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

SPRINGLINE OF PIPE

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

APPROVED SUITABLE LOCAL MATERIAL.

UNDISTURBED EARTH MATERIAL

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

GENERAL NOTES:
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

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

SPRINGLINE OF PIPE

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

APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.

UNDISTURBED EARTH MATERIAL

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

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

SPRINGLINE OF PIPE

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

APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.

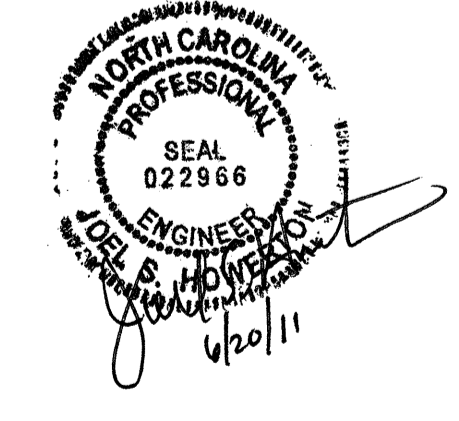
UNDISTURBED EARTH MATERIAL

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

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

SEE PLATE FOR TITLE

ORIGINAL BY: K Kempf DATE: 5-15-09
 MODIFIED BY: DATE: 7/29/09
 CHECKED BY: DATE: 7/29/09
 FILE SPEC: /stds/standards/stdsstdetails/30001/0300d01.dgn



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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

SHEET 3 OF 3

300D01

FLEXIBLE PIPE

Round Corrugated Steel Pipe 2 2/3 x 1/2 corrugation **			
Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet)	
		(Ga) 16	10 8
12	12	204	256
15	12	162	204
18	12	135	169
21	12	115	145
24	12	100	126
30	12	79	100
36	12	65	83
42	12	55	70
48	12	48	61
54	12	54	77
60	12	69	90
66	12	83	117
72	12	100	142
78	12	113	159
84	12	123	178

Round Corrugated Aluminum Pipe 2 2/3 x 1/2 corrugation **			
Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet)	
		(Ga) 16	10 8
12	12	123	155
15	12	98	123
18	12	81	102
21	12	69	87
24	12	60	76
27	12	67	95
30	12	60	85
36	12	50	71
42	12	60	78
48	12	52	68
54	12	46	50
60	12	46	50
66	12	50	71
72	12	60	78

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

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

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

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

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

RIGID PIPE

- RCP - * (Minimum fill) 1' for Class IV & CLASS V
 2' for Class III & Class II
- * (Maximum fill) 10' - Class II pipe
 20' - Class III pipe
 30' - Class IV pipe
 40' - Class V pipe

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

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

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

- RCP - AASHTO M170

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

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

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

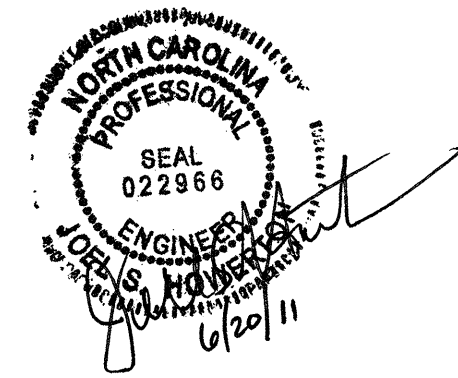
SHEET 3 OF 3

300D01

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

SEE PLATE FOR TITLE

ORIGINAL BY: Kkempff DATE: 5-15-09
 MODIFIED BY: DATE:
 CHECKED BY: DATE: 7/30/09
 FILE SPEC: s:\contracts\corbett\special_details\vertical\stds\stdstodetails\30001\0300d01.dgn



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202439

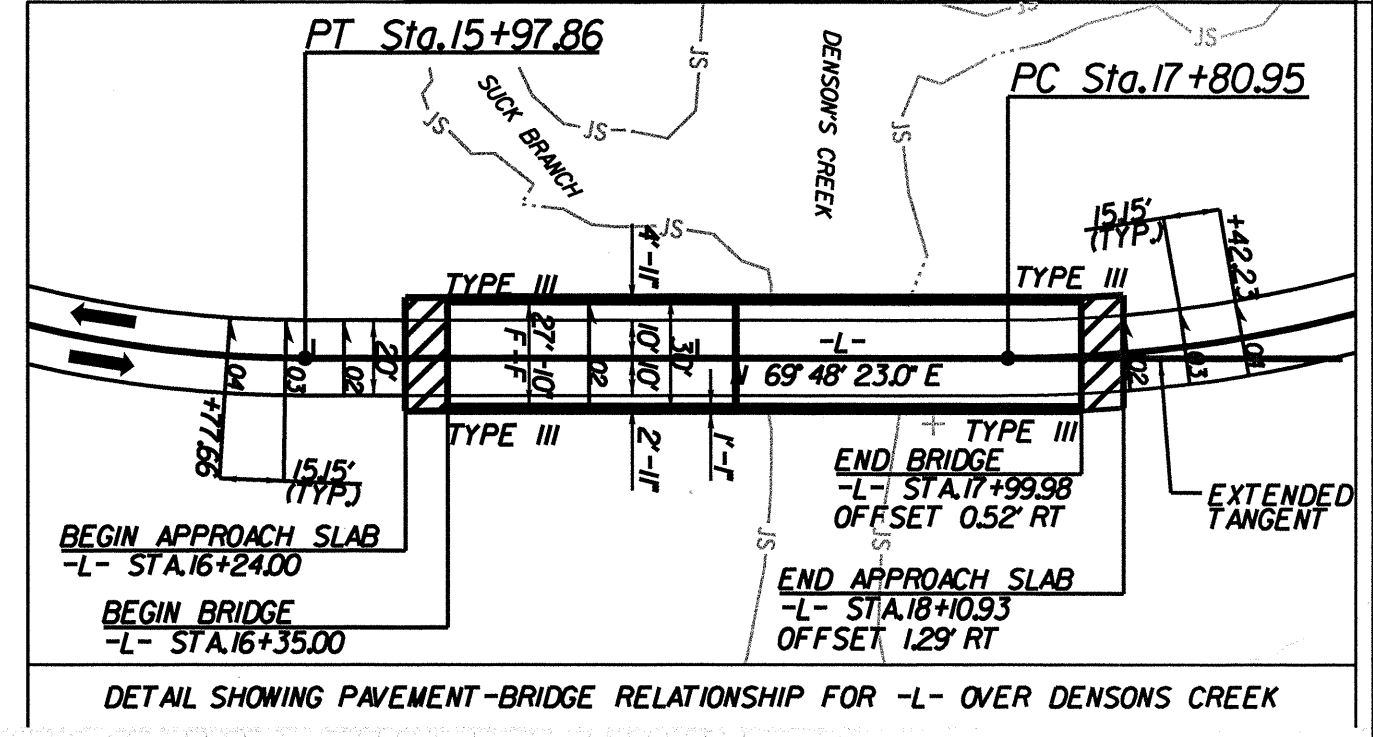
ItemNumber	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION
003000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ***** (17+17.50 -L-)
003800000-E	SP	85	CY	SHALLOW UNDERCUT
004300000-N	226	Lump Sum		GRADING
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
005700000-E	226	250	CY	UNDERCUT EXCAVATION
008000000-E	SP	160	TON	CLASS IV SUBGRADE STABILIZATION
019600000-E	270	250	SY	FABRIC FOR SOIL STABILIZATION
031800000-E	SP	20	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
032000000-E	SP	35	SY	FOUNDATION CONDITIONING FABRIC
033520000-E	SP	52	LF	15" DRAINAGE PIPE
033585000-E	SP	4	EA	*** DRAINAGE PIPE ELBOWS (15")
036600000-E	SP	44	LF	15" RC PIPE CULVERTS, CLASS III
122000000-E	545	75	TON	INCIDENTAL STONE BASE
148900000-E	610	290	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
152500000-E	610	320	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
157500000-E	SP	35	TON	ASPHALT BINDER FOR PLANT MIX
200000000-N	806	12	EA	RIGHT OF WAY MARKERS
202200000-E	SP	56	CY	SUBDRAIN EXCAVATION
203300000-E	SP	42	CY	SUBDRAIN FINE AGGREGATE
204400000-E	SP	250	LF	6" PERFORATED SUBDRAIN PIPE
207000000-N	SP	1	EA	SUBDRAIN PIPE OUTLETS
207700000-E	SP	6	LF	6" OUTLET PIPE (SUBDRAINS)
228600000-N	840	3	EA	MASONRY DRAINAGE STRUCTURES
236600000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.24

ItemNumber	Sec #	Quantity	Unit	Description
236700000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29
255600000-E	846	273	LF	SHOULDER BERM GUTTER
303000000-E	862	275	LF	STEEL BM GUARDRAIL
315000000-N	862	3	EA	ADDITIONAL GUARDRAIL POSTS
321500000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
327000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
364900000-E	876	3	TON	RIP RAP, CLASS B
365600000-E	876	765	SY	FILTER FABRIC FOR DRAINAGE
407200000-E	903	50	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
409600000-N	904	2	EA	SIGN ERECTION, TYPE D
415500000-N	907	6	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
440000000-E	1110	265	SF	WORK ZONE SIGNS (STATIONARY)
441000000-E	1110	94	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
444500000-E	1145	80	LF	BARRICADES (TYPE III)
481000000-E	1205	6,080	LF	PAINT PAVEMENT MARKING LINES (4")
490000000-N	1251	9	EA	PERMANENT RAISED PAVEMENT MARKERS
600000000-E	1605	1,075	LF	TEMPORARY SILT FENCE
600600000-E	1610	250	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	125	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	185	TON	SEDIMENT CONTROL STONE
601500000-E	1615	1	ACR	TEMPORARY MULCHING
601800000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	0.25	TON	FERTILIZER FOR TEMPORARY SEEDING
602400000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
602700000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS

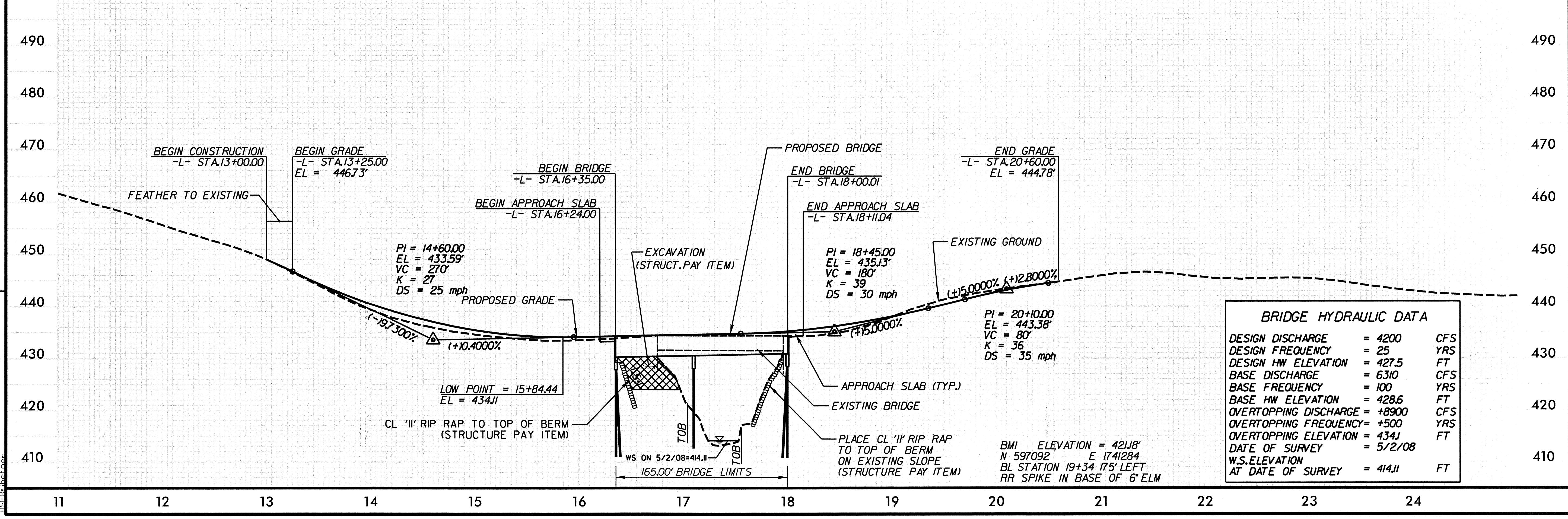
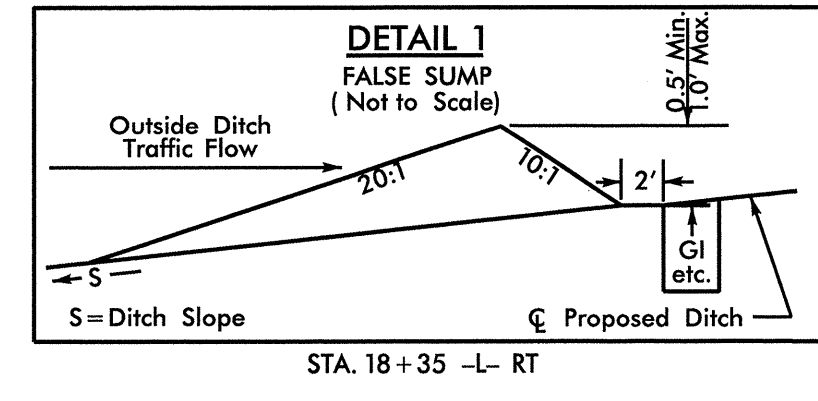
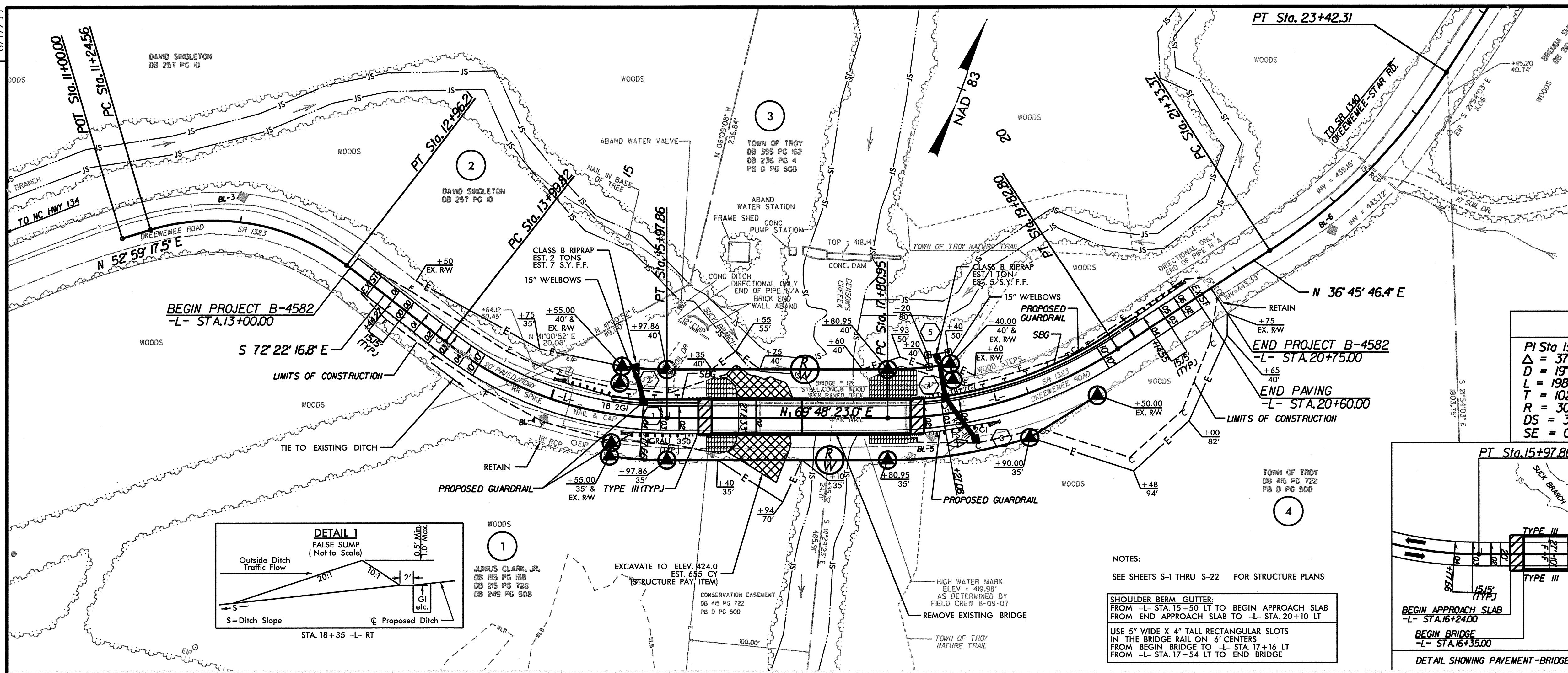
ItemNumber	Sec #	Quantity	Unit	Description
602900000-E	SP	400	LF	SAFETY FENCE
603000000-E	1630	140	CY	SILT EXCAVATION
603600000-E	1631	4,000	SY	MATTING FOR EROSION CONTROL
603800000-E	SP	375	SY	PERMANENT SOIL REINFORCEMENT MAT
604200000-E	1632	275	LF	1/4" HARDWARE CLOTH
607000000-N	SP	4	EA	SPECIAL STILLING BASINS
607101000-E	SP	80	LF	WATTLE
607102000-E	SP	40	LB	POLYACRYLAMIDE (PAM)
607103000-E	SP	105	LF	COIR FIBER BAFFLE
608400000-E	1660	1	ACR	SEEDING & MULCHING
608700000-E	1660	1	ACR	MOWING
609000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
609300000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
609600000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
610800000-E	1665	0.75	TON	FERTILIZER TOPDRESSING
611450000-N	SP	10	MHR	SPECIALIZED HAND MOWING
611700000-N	SP	25	EA	RESPONSE FOR EROSION CONTROL

PROJECT REFERENCE NO. B-4582	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
5/16/11	5/16/11
 STEWART	
421 Fayetteville Street Mall Suite 400 Raleigh, NC 27601 T 919.380.8750 F 919.380.8752 www.stewart-eng.com	

PI Sta 15+02.60 $\Delta = 37^{\circ} 49' 20.2''$ (LT) $D = 19^{\circ} 05' 54.9''$ $L = 198.04'$ $T = 102.78'$ $R = 300.00'$ $DS = 30$ MPH $SE = 0.04$	PI Sta 18+84.76 $\Delta = 33^{\circ} 02' 36.7''$ (LT) $D = 16^{\circ} 22' 12.8''$ $L = 201.85'$ $T = 103.82'$ $R = 350.00'$ $DS = 30$ MPH $SE = 0.04$
--	--



NOTES:
 SEE SHEETS S-1 THRU S-22 FOR STRUCTURE PLANS
 SHOULDER BERM, GLITTER:
 FROM -L- STA. 15+50 LT TO BEGIN APPROACH SLAB
 FROM END APPROACH SLAB TO -L- STA. 20+10 LT
 USE 5" WIDE X 4" TALL RECTANGULAR SLOTS
 IN THE BRIDGE RAIL ON 6' CENTERS
 FROM BEGIN BRIDGE TO -L- STA. 17+16 LT
 FROM -L- STA. 17+54 LT TO END BRIDGE



DESIGN DISCHARGE	= 4200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 427.5	FT
BASE DISCHARGE	= 6310	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 428.6	FT
OVERTOPPING DISCHARGE	= +8900	CFS
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING ELEVATION	= 434.1	FT
DATE OF SURVEY	= 5/2/08	
W.S. ELEVATION AT DATE OF SURVEY	= 414.11	FT

REVISIONS

5/16/2011 B4582.RDY_PLANSHEETS.dgn
 HSE:RAC