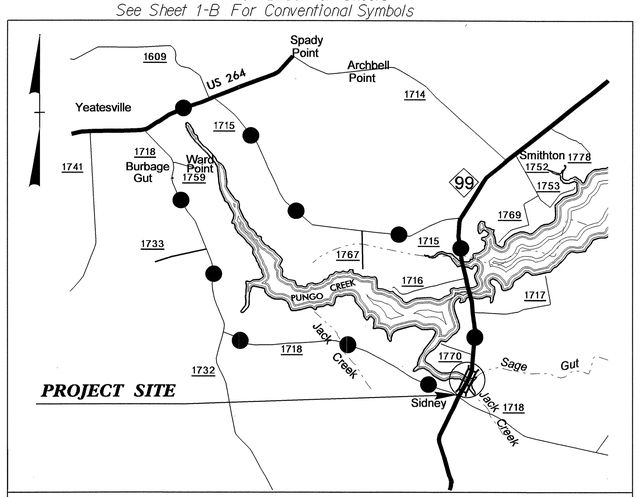
09/08/99

TIP PROJECT: B–4417

CONTRACT: C202376

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



VICINITY MAP

OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BEAUFORT COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4417	1	

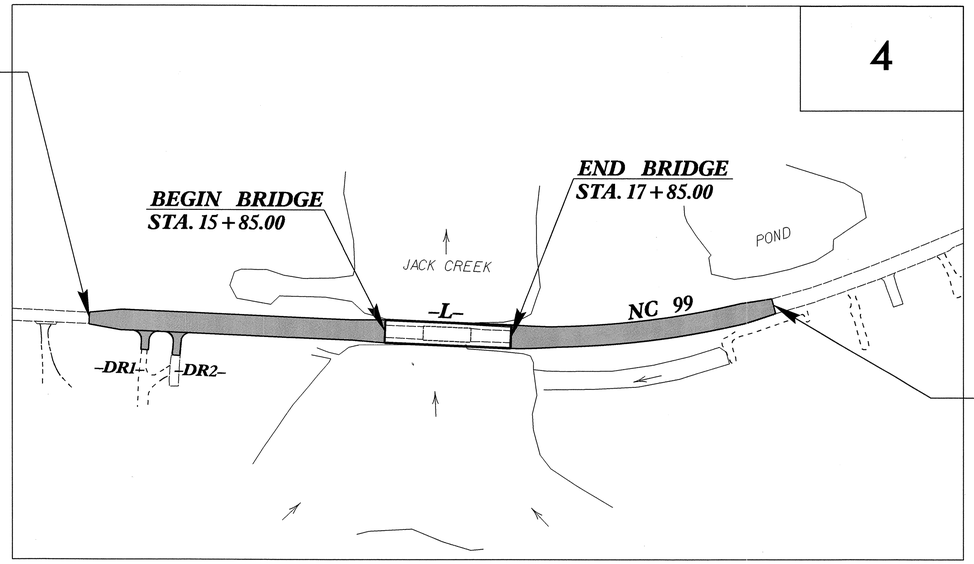
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33693.1.1	BRSTP–0099(4)	PE
33693.2.1	BRSTP–0099(4)	ROW, UTIL
33693.3.1	BRSTP–0099(17)	CONST

LOCATION: ***BRIDGE NO. 59 OVER JACK CREEK ON NC 99***

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

NAD 83/
NSRS 2007

STA. 11+17.00
–L– BEGIN TIP PROJECT B–4417



STA. 22+05.00
–L– END TIP PROJECT B–4417

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2010 = 2,660
ADT 2030 = 4,200
DHV = 10 %
D = 60 %
T = 9 % *
V = 60 MPH
FUNC CLASS = RURAL MAJOR COLLECTOR
* (TTST 3% + DUAL 6%)
CLASS = REGIONAL

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B–4417 = 0.168 MILES
LENGTH OF STRUCTURE TIP PROJECT B–4417 = 0.038 MILES
TOTAL LENGTH STATE TIP PROJECT B–4417 = 0.206 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 15, 2009

LETTING DATE: MARCH 15, 2011

BRENDA MOORE, PE
PROJECT ENGINEER

THAD F. DUNCAN, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022000 ENGINEER W. GALEN CAIL
12/17/10
W. Galen Cail P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25477 ENGINEER THAD F. DUNCAN
12-16-10
Thad F. Duncan
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

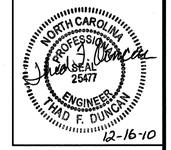
P.E.
STATE HIGHWAY DESIGN ENGINEER

06-DEC-2010 07:46
r:\roadwy\proj\b-4417_rdy_tsh.dgn
$$$$USERNAME$$$$

8.17.99

PROJECT REFERENCE NO.	SHEET NO.
B-4417	1-A

ROADWAY DESIGN ENGINEER



12-16-10

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, **1-D**	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE. TYPICAL SECTIONS. AND WEDGING DETAILS
2-A	ROCK PLATING DETAIL. AND FABRIC OVERLAP DETAIL
2-B	TYPE III SHOP CURVED STRUCTURE ANCHOR UNIT DETAILS
2-C	ANCHORAGE FOR FRAMES DETAILS
2-D THRU 2-E	METHOD OF PIPE INSTALLATION DETAILS
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF DRAINAGE QUANTITIES
3-B	SUMMARY OF EARTHWORK. GUARDRAIL SUMMARY. SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL. AND SUMMARY OF EXISTING ASPHALT PAVEMENT BREAKING
4	PLAN SHEET
5 THRU 6	PROFILE SHEETS
TCP-1	TRAFFIC CONTROL PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
RF-1	REFORESTATION PLANS
EC-1 THRU EC-4	EROSION CONTROL PLANS
UC-1 THRU UC-6	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY
X-1 THRU X-7	CROSS-SECTIONS
S-1 THRU S-27	STRUCTURE PLANS

GENERAL NOTES:

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

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

UNDERDRAINS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

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

1. Beaufort County Water

2. Tri County Telephone and CATV

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

RIGHT-OF-WAY MARKERS:

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

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

2006 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE. BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
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
840.27	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
840.46	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

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$$$$USER$$$$

09/08/05

PROJECT REFERENCE NO.	SHEET NO.
B-4417	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

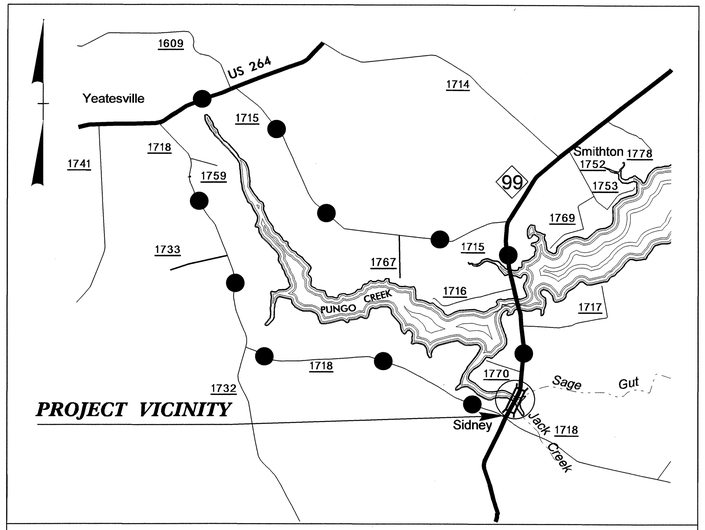
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
B-4417	1C
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET B-4417



VICINITY MAP

OFFSITE DETOUR

CONTROL DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B44171	GPS MON (B4417-1)	637979.6070	2692096.4790	5.11	OUTSIDE PROJECT LIMITS	
BL1	BL-1	638540.5640	2692368.4220	4.74	OUTSIDE PROJECT LIMITS	
BL2	BL-2	639193.1620	2692741.6310	3.35	17+40.87	17.58 RT
BL3	BL-3	639861.7760	2692942.2480	4.28	24+40.60	17.60 RT

NAD 83/2007

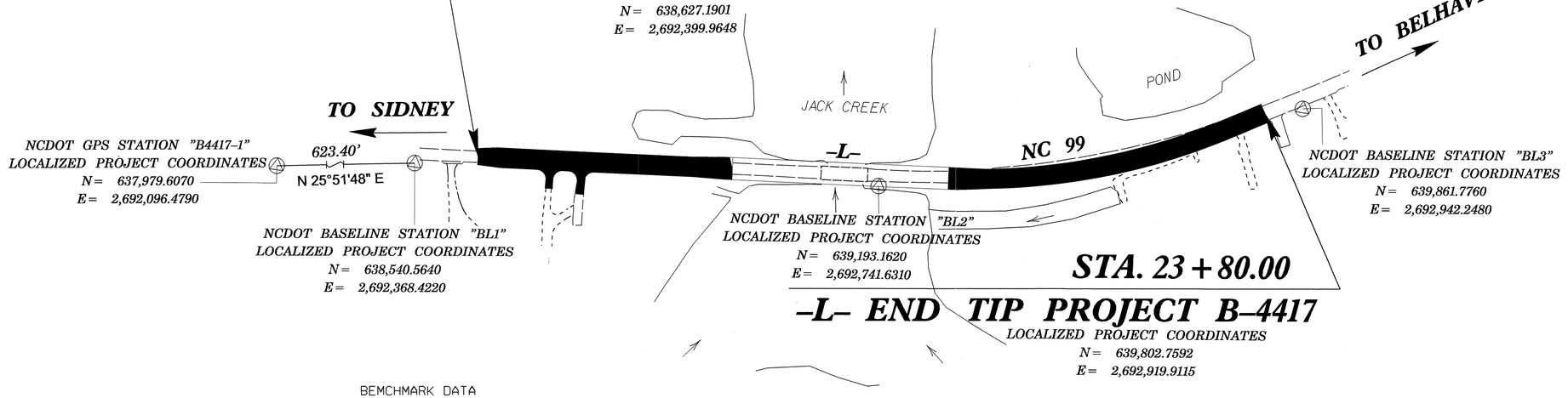
STA. 10+80.00

-L- BEGIN TIP PROJECT B-4417

LOCALIZED PROJECT COORDINATES

N = 638,627.1901

E = 2,692,399.9648



STA. 23+80.00

-L- END TIP PROJECT B-4417

LOCALIZED PROJECT COORDINATES

N = 639,802.7592

E = 2,692,919.9115

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT ""B4417-1"" WITH NAD 83/2007 STATE PLANE GRID COORDINATES OF NORTHING: 637979.607(ft) EASTING: 2692096.479(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999886120 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM ""B4417-1"" TO -L- L STATION 10+80 IS N 25°06'35" E 715.17 (ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

BEMCHMARK DATA

```
**************************************
B165        ELEVATION = 4.97
N 639113        E 2692692
L STATION 16+46 14 RIGHT

**************************************
**************************************
BM10        ELEVATION = 2.22
N 638878        E 2692500
L STATION 13+47 37 LEFT

**************************************
**************************************
BM11        ELEVATION = 5.08
N 639431        E 2692893
L STATION 20+16 45 RIGHT

**************************************
```

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT FILE: b4417_ls_control_081217.txt

SITE CALIBRATION PARAMETERS HAVE NOT BEEN DETERMINED 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 UTILIZING GLOBAL POSITIONING SYSTEM. NETWORK FOR GPS "B4417-1" ESTABLISHED FROM NGS ONLINE POSITIONING USER SERVICE (OPUS)*

NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
B-4417	1D
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET B-4417

DESIGN ALIGNMENT

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	638557.6267	2692360.4562
PC	17+66.47	639224.1035	2692738.9828
PT	23+92.01	639817.3578	2692921.0683
POT	25+39.15	639964.0365	2692932.6915

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+48.00	50.00	638661.6271	2692477.0225
L	18+36.00	58.00	639259.2175	2692823.6026
L	18+65.00	-48.00	639332.1653	2692741.3815
L	22+05.00	30.00	639626.1753	2692923.5061
L	11+17.00	-53.00	638685.5377	2692372.1518
L	11+17.00	-30.00	638674.1800	2692392.1495
L	11+17.00	30.00	638644.5485	2692444.3220
L	20+79.00	50.00	639495.8253	2692910.3210
L	22+05.00	-30.00	639638.6744	2692864.8224

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT ""B4417-1"" WITH NAD 83/2007 STATE PLANE GRID COORDINATES OF NORTHING: 637979.607(ft) EASTING: 2692096.479(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999886120 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM ""B4417-1"" TO -L- L STATION 10+80 IS N 25°06'35" E 715.17 (ft) 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 HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT

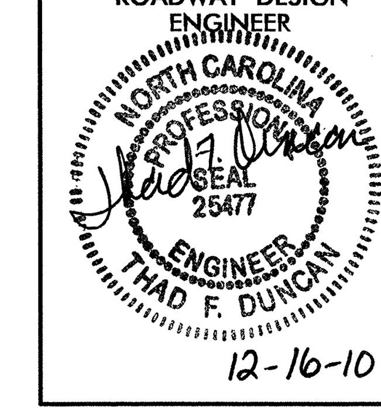
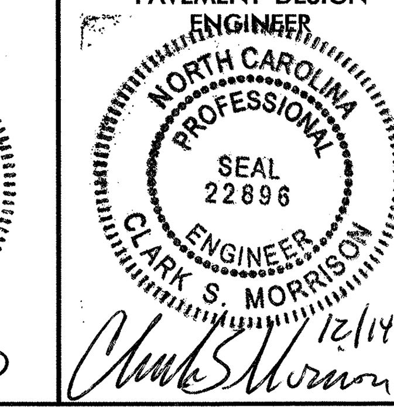
FILE: b4417_ls_control_081217.txt

SITE CALIBRATION PARAMETERS HAVE NOT BEEN DETERMINED 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 UTILIZING GLOBAL POSITIONING SYSTEM.
NETWORK FOR GPS "B4417-1" ESTABLISHED FROM NGS ONLINE POSITIONING USER SERVICE (OPUS)

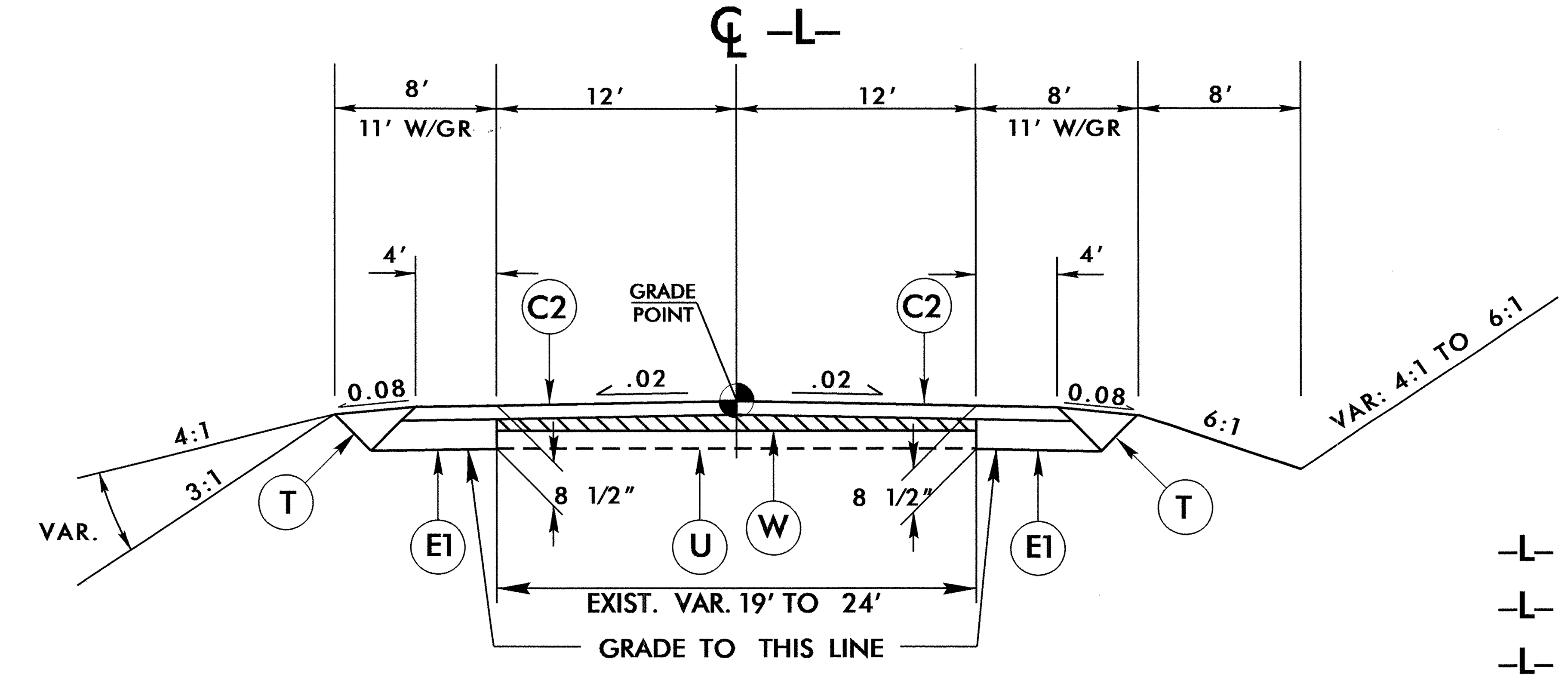
NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
B-4417	2

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
	

	PAVEMENT SCHEDULE *(FINAL PAVEMENT DESIGN)*
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 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 5½" IN DEPTH.
J1	PROP. 6" AGGREGATE BASE COURSE.
U	EXISTING PAVEMENT.
T	EARTH MATERIAL.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL THIS SHEET.)

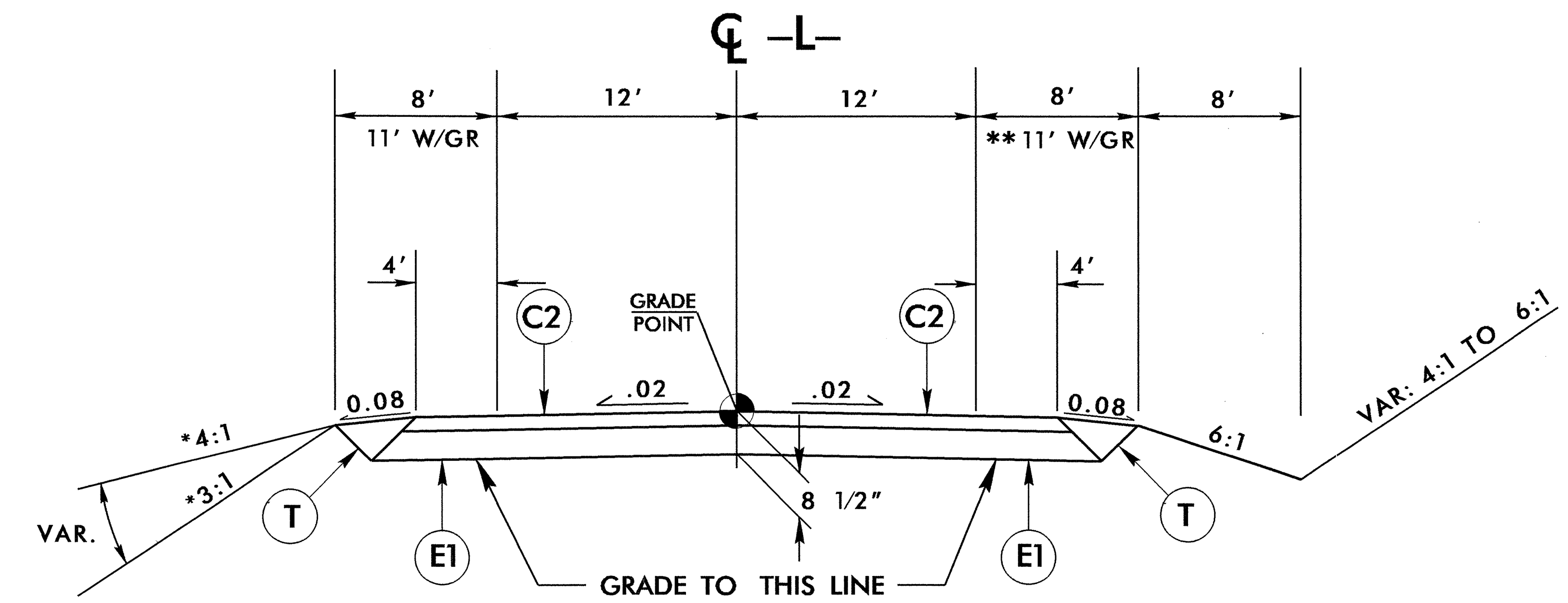
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA. 11+17.00 TO -L- STA. 11+67.00 TRANSITION FROM EXIST.
-L- STA. 11+67.00 TO -L- STA. 12+50.00
-L- STA. 20+50.00 TO -L- STA. 21+55.00
-L- STA. 21+55.00 TO -L- STA. 22+05.00 TRANSITION TO EXIST.



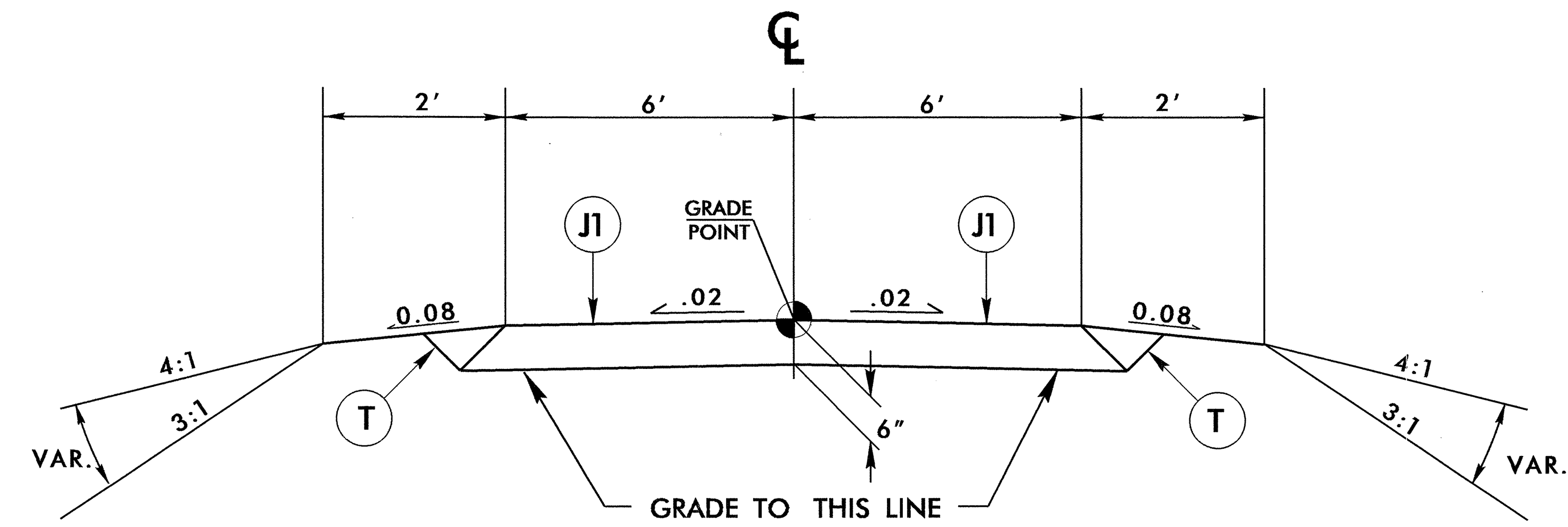
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 12+50.00 TO -L- STA. 15+85.00 (BEGIN BRIDGE)
-L- STA. 17+85.00 (END BRIDGE) TO -L- STA. 20+50.00

* NOTE: USE 2:1 FILL SLOPES AT ROCK PLATING LOCATIONS SEE DETAIL SHEET 2-A

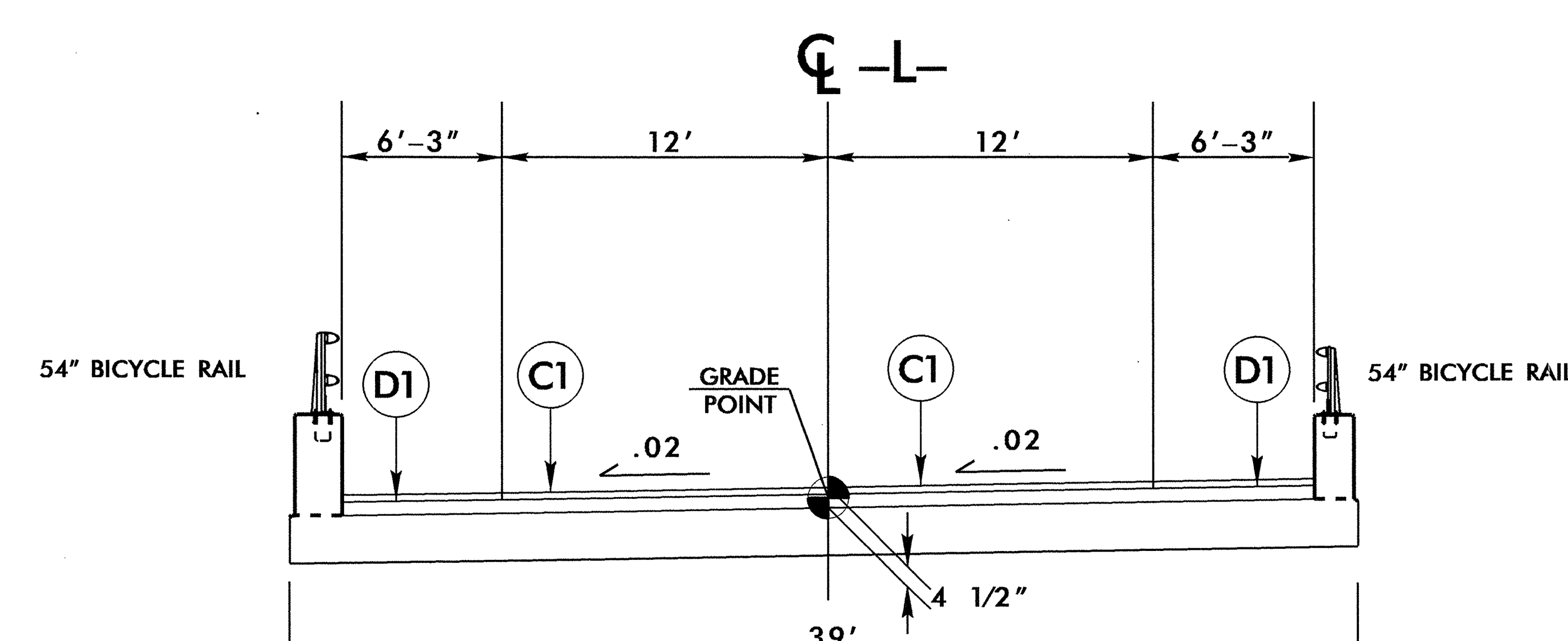
** NOTE: VAR. SHOULDER WIDTH FROM -L- STA. 13+44.50 TO -L- STA. 15+85.00 RT. SEE PLANS.



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

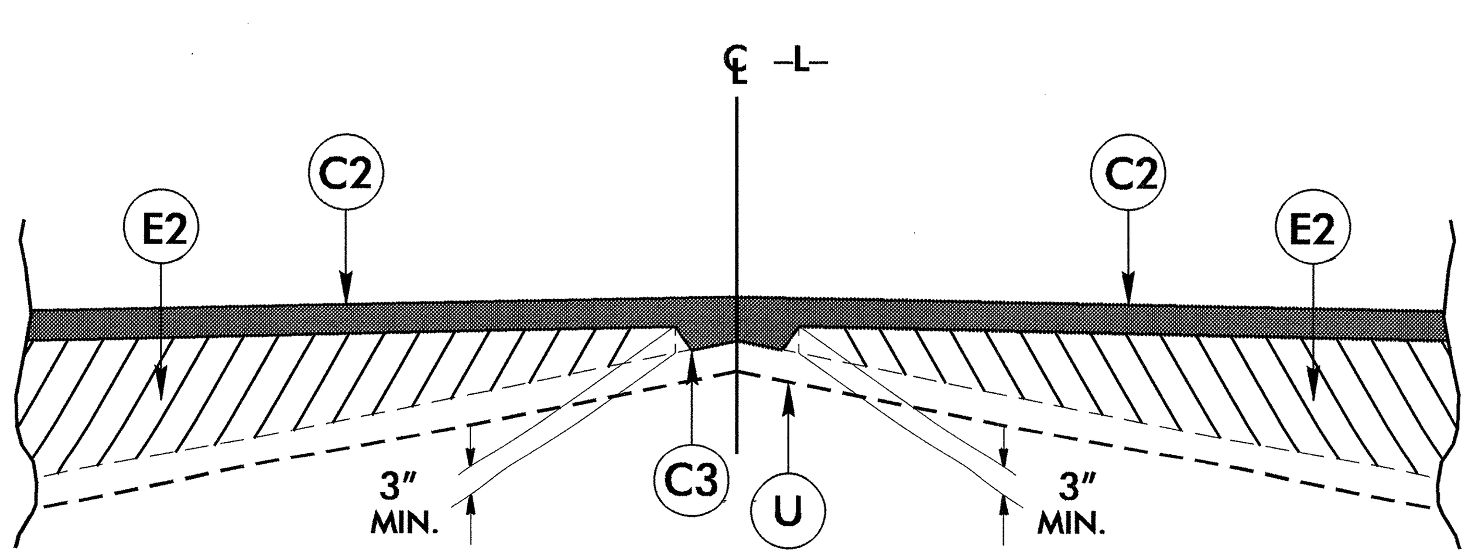
-DR1- STA. 10+16.01 TO -DR1- STA. 10+51.00
-DR2- STA. 10+16.02 TO -DR2- STA. 10+55.00



BRIDGE TYPICAL SECTION NO. 1

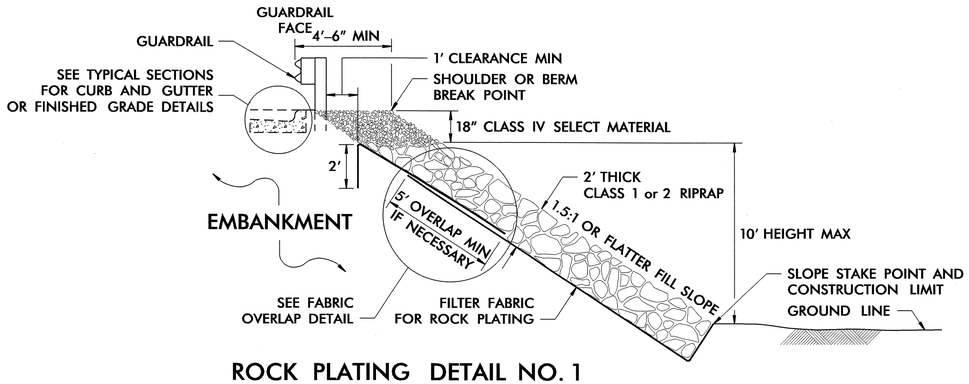
USE BRIDGE TYPICAL SECTION NO. 1

-L- STA. 15+85.00 TO -L- STA. 17+85.00



DETAIL SHOWING METHOD OF WEDGING USE WITH TYPICAL SECTION NO. 1

PROJECT REFERENCE NO.	SHEET NO.
B-4417	2-A

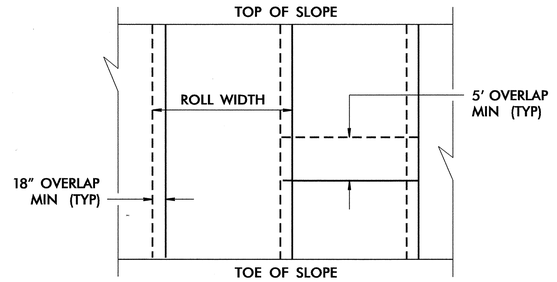


ROCK PLATING DETAIL NO. 1

USE ROCK PLATING DETAIL NO. 1 AT THE FOLLOWING LOCATIONS:

STA 13+40 ± TO STA 15+85 ± –L– LT
STA 15+00 ± TO STA 15+85 ± –L– RT
STA 17+85 ± TO STA 18+50 ± –L– LT & RT

EXTEND ROCK PLATING LIMITS TO 2.5 : 1 (H:V) SLOPES.



FABRIC OVERLAP DETAIL
(PLAN VIEW)

ROCK PLATING DETAILS AND LOCATIONS WERE PROVIDED THROUGH A SEALED DOCUMENT FROM THE GEOTECHNICAL ENGINEERING UNIT. THE DOCUMENT WAS SUBMITTED TO THE ROADWAY DESIGN UNIT ON SEPTEMBER 17, 2009 AND SEALED BY A PROFESSIONAL ENGINEER, THEIN T. ZAN, LICENSE # 30943.

FOR ROCK PLATING,
SEE ROCK PLATING SPECIAL PROVISION.

ESTIMATED QUANTITIES:

ROCK PLATING 860 SQ.YD.

PROJECT REFERENCE NO.	SHEET NO.
B-4417	2-B

5/14/99

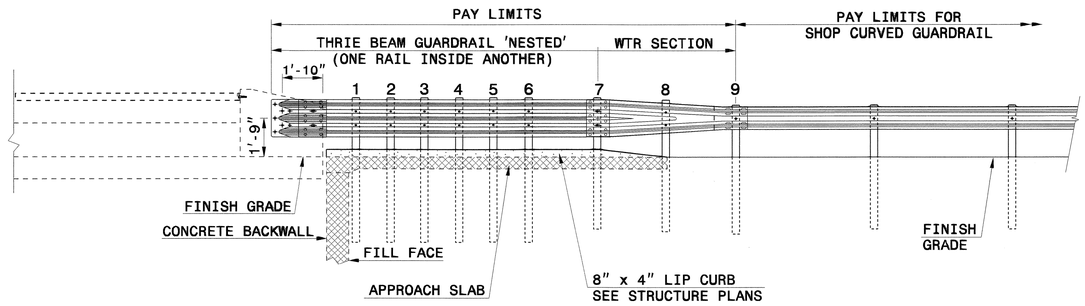
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT

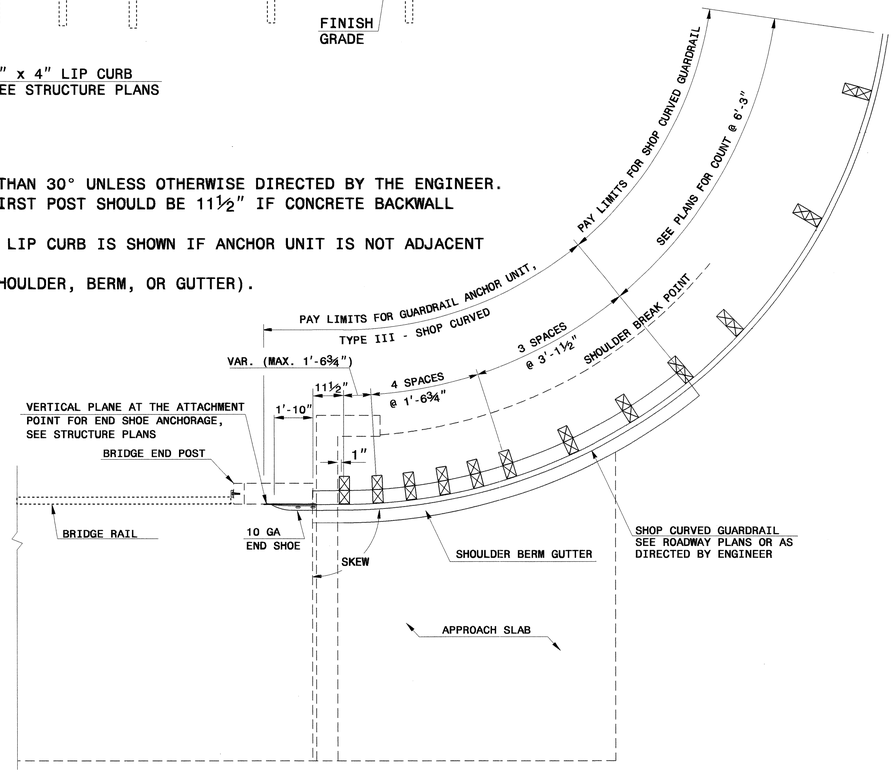
SHEET 1 OF 1

TYPE III SC



ELEVATION

NOTE:
 **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
  *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 -USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 -SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED FOR ATTACHMENT TO RAIL ON BRIDGE

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

ENGLISH DETAIL DRAWING FOR

TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT

SHEET 1 OF 1

TYPE III SC

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
12/17/10

CONTRACT STANDARDS & DEVELOPMENT UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

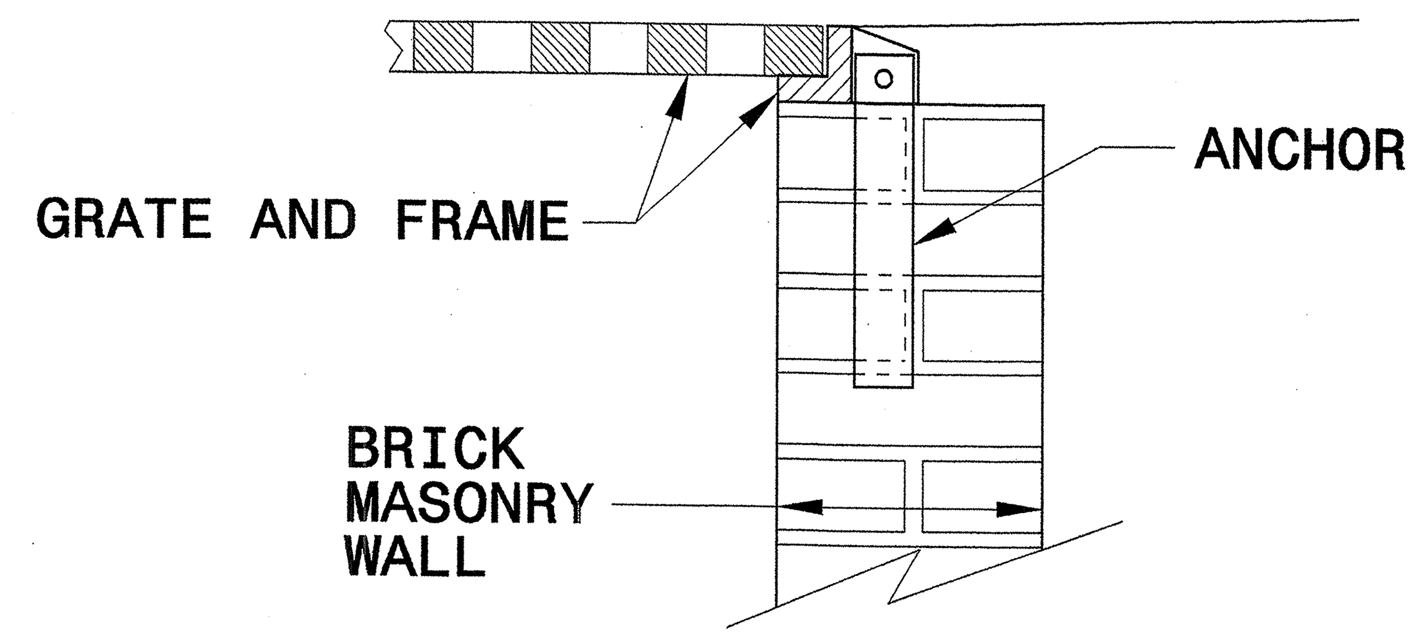
ORIGINAL BY: _____ DATE: _____
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: details/nbritt/english/guardrail/typeiiisc.dgn

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

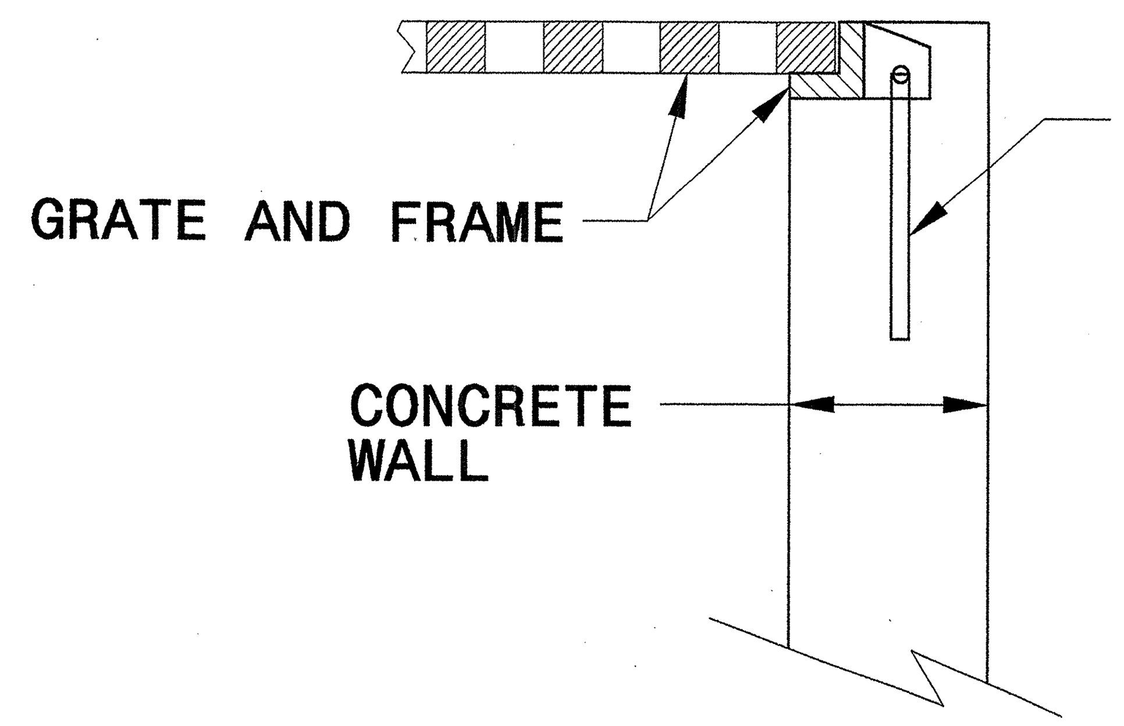
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

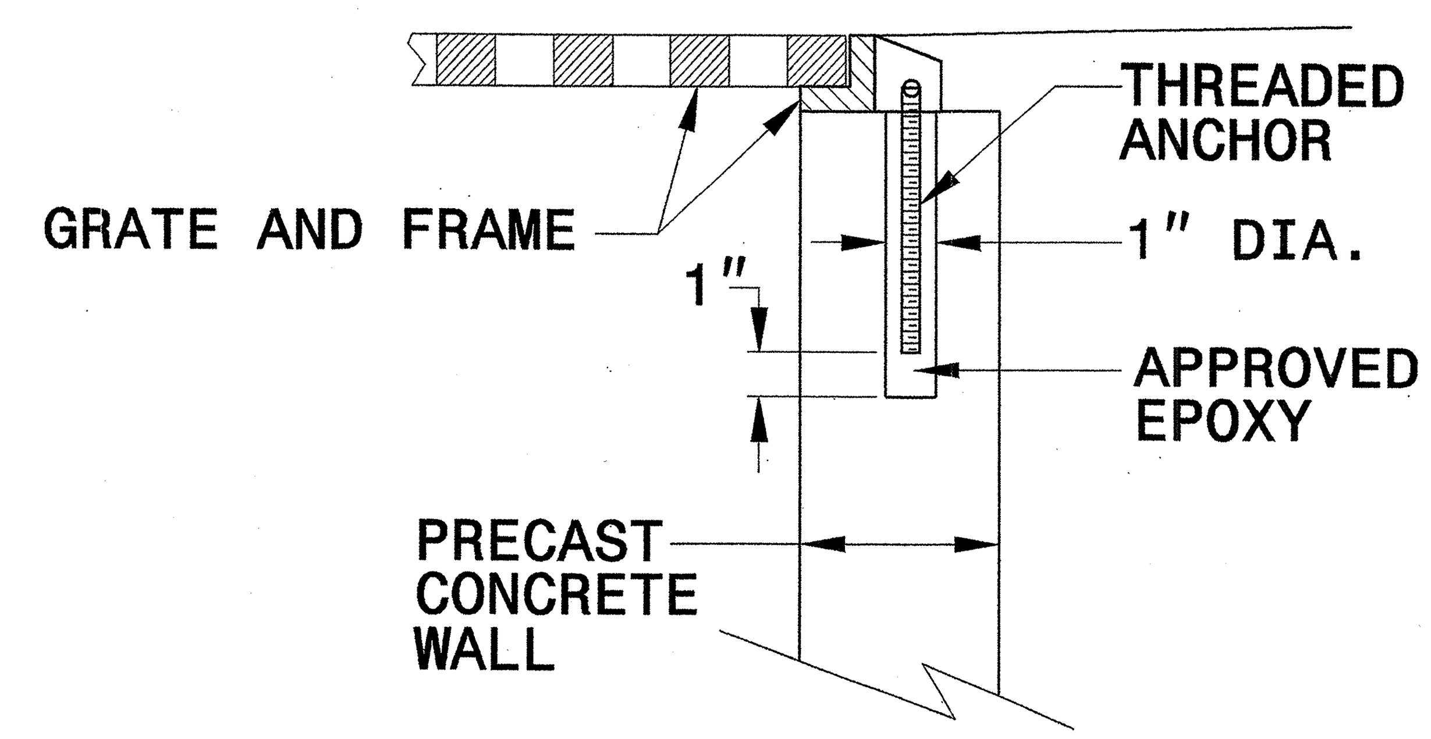
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



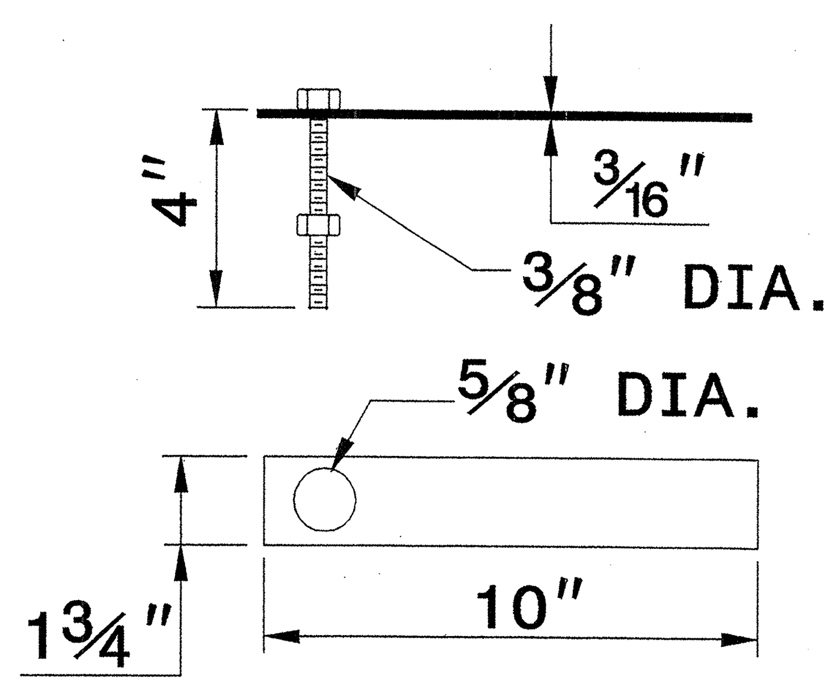
CONCRETE CONSTRUCTION



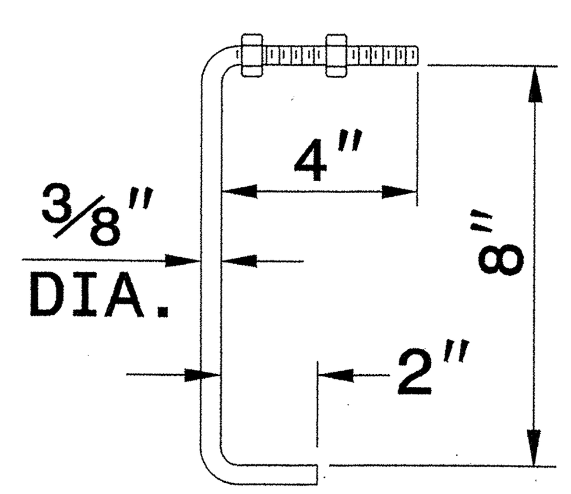
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

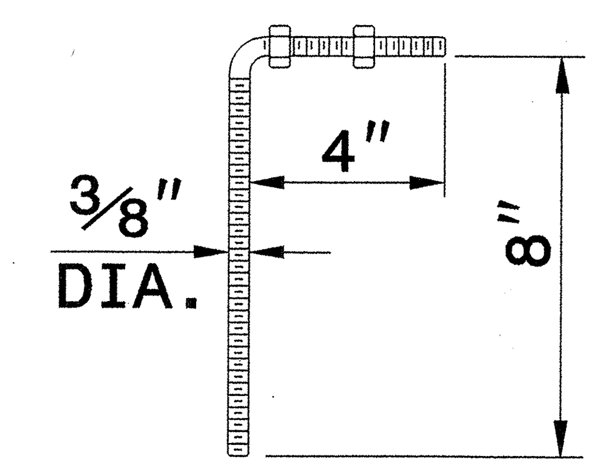
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



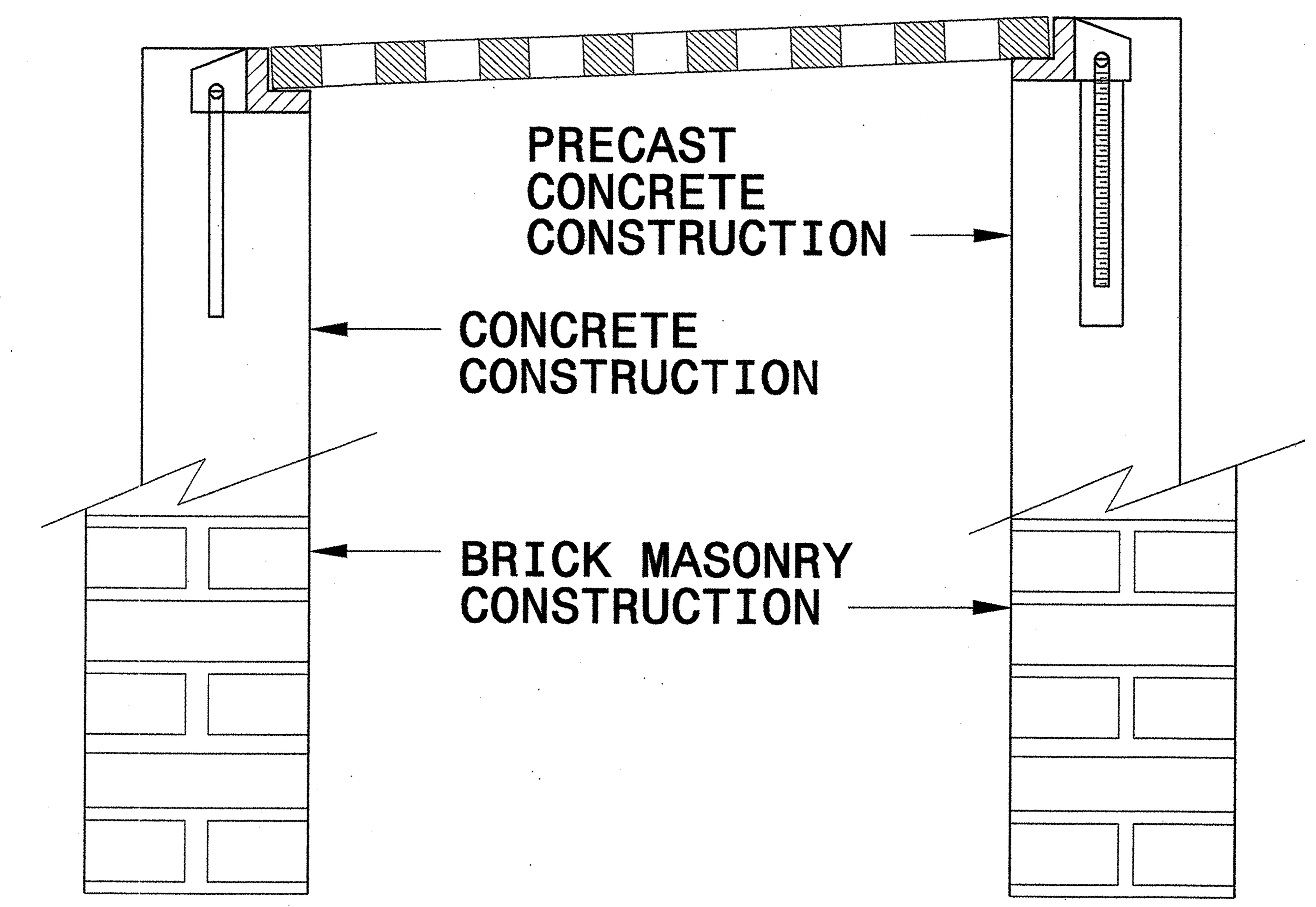
MASONRY ANCHOR
3⁄8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3⁄8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3⁄8" DIA. BENT BAR



FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

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

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

SHEET 1 OF 1
840D25

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 JOEL S. HOWERTON 12/17/10

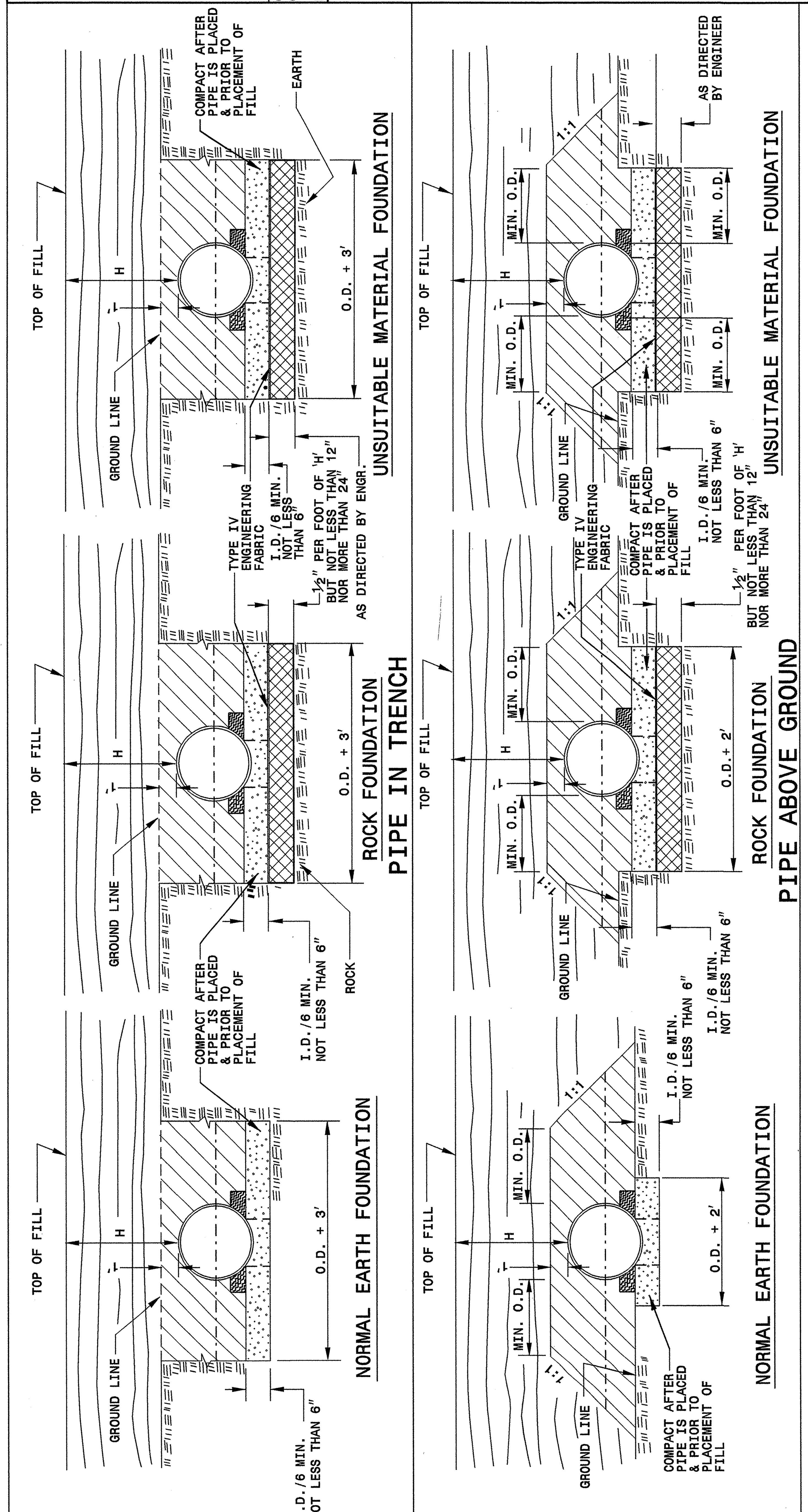
PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: [signature] DATE: 11/13/06
FILE SPEC.:

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

PROJECT REFERENCE NO.	SHEET NO.
B-4417	2-D



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:

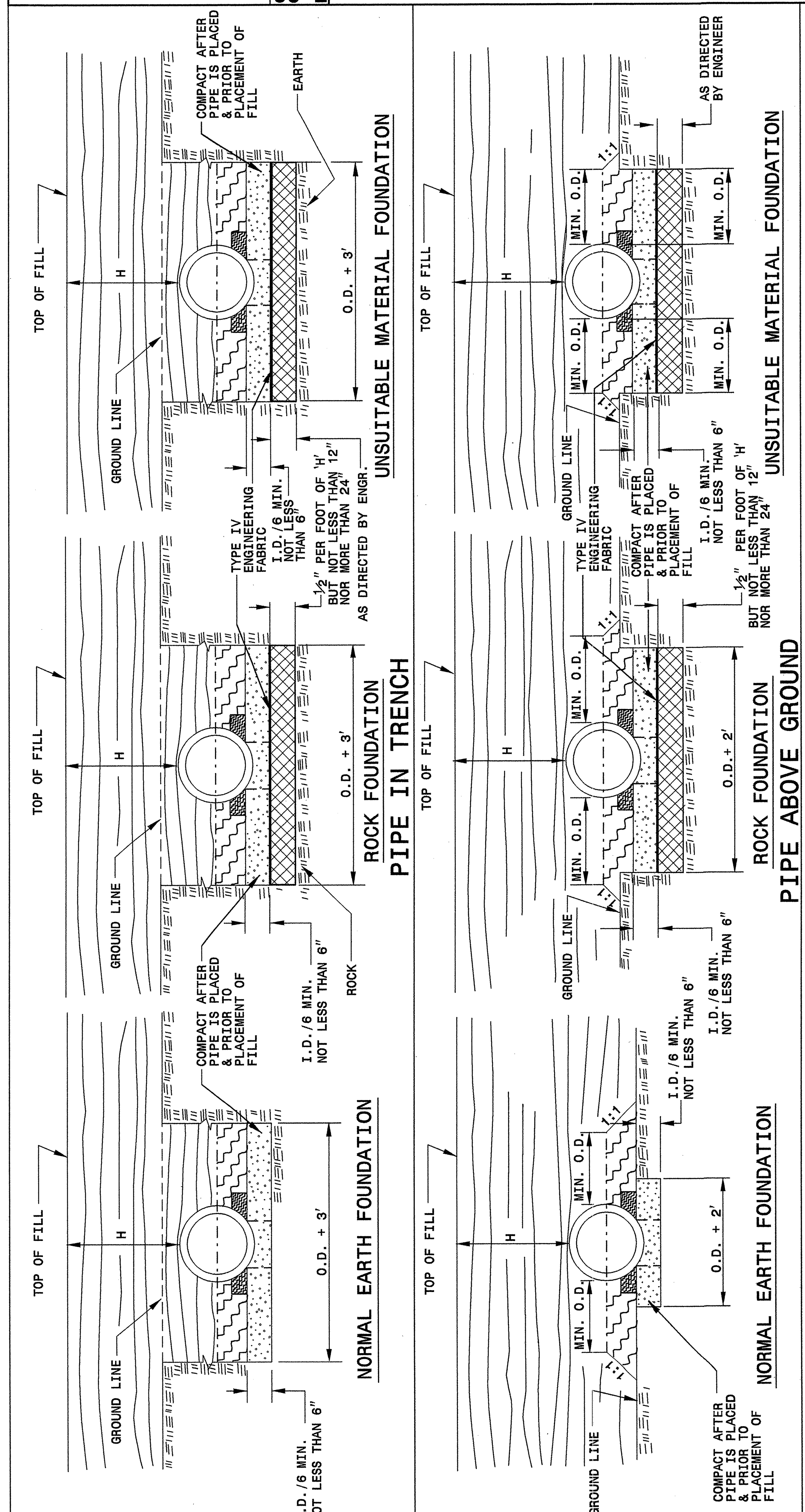
I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

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.

- TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
- LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

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**



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

- SPRINGLINE OF PIPE
- SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.
- APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.
- UNDISTURBED EARTH MATERIAL
- SELECT MATERIAL, CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

GENERAL NOTES:

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

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

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

- TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
- LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

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**

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966

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

SEE PLATE FOR TITLE

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

30-JUL-2009 08:48
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jhowerton AT PS23750I

30-JUL-2009 08:49
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jhowerton AT PS23750I

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

FILL HEIGHT TABLES

SHEET 3 OF 3

300D01

FLEXIBLE PIPE

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

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

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

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

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

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

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

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

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

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

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

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

RIGID PIPE

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

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

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

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

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

RCP - AASHTO M170

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

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

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

7-06

ENGLISH DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

SHEET 3 OF 3

300D01

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

SEE PLATE FOR TITLE

ORIGINAL BY: KKempf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/31/11
FILE SPEC: /ericward/stds/stdstodetails/300of/0300d01.dgn

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022585
12/7/10

PROJECT REFERENCE NO. B-4417
SHEET NO. 2-E

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4417	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202376

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (16+85.00)
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0057000000-E	226	500	CY	UNDERCUT EXCAVATION
0195000000-E	SP	300	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	598	SY	FABRIC FOR SOIL STABILIZATION
0223000000-E	SP	860	SY	ROCK PLATING
0318000000-E	SP	194	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0320000000-E	SP	240	SY	FOUNDATION CONDITIONING FABRIC
0335200000-E	SP	84	LF	15" DRAINAGE PIPE
0448200000-E	SP	616	LF	15" RC PIPE CULVERTS, CLASS IV
1121000000-E	520	38	TON	AGGREGATE BASE COURSE
1220000000-E	545	200	TON	INCIDENTAL STONE BASE
1489000000-E	610	970	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	140	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	700	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1560000000-E	620	95	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
2022000000-E	SP	22.4	CY	SUBDRAIN EXCAVATION
2033000000-E	SP	16.8	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	SP	100	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	SP	1	EA	SUBDRAIN PIPE OUTLETS
2077000000-E	SP	6	LF	6" OUTLET PIPE (SUBDRAINS)
2286000000-N	840	6	EA	MASONRY DRAINAGE STRUCTURES
2367000000-N	840	6	EA	FRAME WITH TWO GRATES, STD 840.29
2556000000-E	846	684	LF	SHOULDER BERM GUTTER
3030000000-E	862	912.5	LF	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3180000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE ********** (III, SHOP CURVED)
3215000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3649000000-E	876	4	TON	RIP RAP, CLASS B
3656000000-E	876	515	SY	FILTER FABRIC FOR DRAINAGE
4400000000-E	1110	400	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	90	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4435000000-N	1135	20	EA	CONES
4445000000-E	1145	40	LF	BARRICADES (TYPE III)
4450000000-N	1150	60	HR	FLAGGER
4685000000-E	1205	2,176	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	2,176	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4900000000-N	1251	14	EA	PERMANENT RAISED PAVEMENT MARKERS
5325600000-E	1510	1,074	LF	6" WATER LINE
5540000000-E	1515	2	EA	6" VALVE
5800000000-E	1530	1,080	LF	ABANDON 6" UTILITY PIPE
5871400000-E	1550	470	LF	TRENCHLESS INSTALLATION OF 6" IN SOIL
5871410000-E	1550	470	LF	TRENCHLESS INSTALLATION OF 6" NOT IN SOIL
6000000000-E	1605	1,175	LF	TEMPORARY SILT FENCE
6006000000-E	1610	225	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	160	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	210	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	2	ACR	TEMPORARY MULCHING
6018000000-E	1620	100	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	0.25	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	450	LF	SAFETY FENCE
6030000000-E	1630	160	CY	SILT EXCAVATION
6036000000-E	1631	1,530	SY	MATTING FOR EROSION CONTROL
6042000000-E	1632	800	LF	1/4" HARDWARE CLOTH
6048000000-E	SP	365	SY	FLOATING TURBIDITY CURTAIN
6071010000-E	SP	50	LF	WATTLE
6071020000-E	SP	35	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	100	LF	COIR FIBER BAFFLES
6084000000-E	1660	3	ACR	SEEDING & MULCHING
6087000000-E	1660	3	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	1.5	TON	FERTILIZER TOPDRESSING
6114500000-N	SP	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	18	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.1	ACR	REFORESTATION

COMPUTED BY: RWB DATE: 3/16/2010

CHECKED BY: TFD DATE: 11/23/2010

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-4417	3-A

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
-L- 12+07	RT	410							24'								X		
-L- 12+58	RT	411							28'								X		
-L- 12+28	LT	413		5.3															
-L- 12+28	LT	412	413		2.5	2.5			16'								X		
-L- 14+00	LT	414		6.2															
-L- 13+50	LT	413	414		2.5	3.4													
-L- 15+66	LT	415		7.4															
-L- 14+84	LT	414	415		3.4	4.6													
-L- 18+05	LT	416		7.4															
-L- 19+23	LT	417		5.8															
-L- 18+63	LT	416	417		4.6	3.0													
-L- 20+96	LT	418		5.0															
-L- 20+09	LT	417	418		3.0	0.7													
-L- 20+96	LT	418	419		0.7	0.7			16'								X		
PROJECT TOTALS									**84'**										

STATION	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	30" (.079)	36" (.079)	42" (.109)	48" (.109)	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
-L- 13+50																		168'						
-L- 14+84																		164'						
-L- 18+63																		116'						
-L- 20+09																		168'						
PROJECT TOTALS																		**616'**						

STATION	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	T.B.D.I. STD. 840.35	FRAME AND N.S. FLAT GRATES STD. 840.29	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 12+28 (413)						1									1	1				
-L- 14+00						1									1	1				
-L- 15+66						1									1	1				
-L- 18+05						1									1	1				
-L- 19+23						1									1	1				
-L- 20+96 (418)						1									1	1				
PROJECT TOTALS						**6**									**6**	**6**				

ABBREVIATIONS

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

COMPUTED BY: EJH	DATE: 2/23/2009
CHECKED BY: TFD	DATE: 2/23/2009

PROJECT NO.	SHEET NO.
B-4417	3-B

RD223236

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

Station	Station	Uncl. Excav.	Embank. +__%	Borrow	Waste
-L-					
11+17.00	15+85.00	136	2,561	2,425	
17+85.00	22+05.00	10	1,785	1,775	
-DR1-					
10+16.01	10+51.00	0	7	7	
-DR2-					
10+16.02	10+55.00	0	59	59	
PROJECT TOTALS:		146	4,412	4,266	
ESTIMATED 5% TO REPLACE					
TOPSOIL ON BORROW PITS:				213	
GRAND TOTALS:		146	4,412	4,479	
SAY:		**150 CY**		**4,500 CY**	

ESTIMATED UNDERCUT PER GEOTECH/DIVISION = 500 CY

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	Station	Station	LOC LT/RT/CL	AREA
-L-	12+50	12+75	CL	53
-L-	15+85	16+46	CL	129
-L-	17+21	17+85	CL	135
			TOTAL:	317
			SAY:	**320 SY**

SUMMARY OF EXISTING ASPHALT PAVEMENT BREAKING

LINE	Station	Station	LOC LT/RT/CL	AREA
-L-	12+75	15+85	CL	655
-L-	17+85	20+50	CL	560
			TOTAL:	1,215
			SAY:	**1,250 SY**

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, REMOVAL OF EXISTING PAVEMENT, AND BREAKING 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 QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

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

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH		W		ANCHORS			ADDITIONAL GUARDRAIL POSTS	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPR. END	TRAIL. END	APPR. END	TRAIL. END	TYPE III	TYPE III SHOP CURVED	GRAU 350		
-L-	11+60.00	15+85.00	LT	425.0			15+85		8'	11'		50.0'		1.0'	1		1		
-L-	13+47.50	15+85.00	RT	237.5				15+85	8'	VAR.	50.0'		1.0'		1		1		
-L-	17+85.00	21+72.50	LT	387.5				17+85	8'	11'	50.0'		1.0'			1	1		
-L-	17+85.00	19+22.50	RT	137.5			17+85		8'	11'		50.0'		1.0'		1	1		
SUBTOTAL:				1,187.5											2	2	4	5	
LESS ANCHORS DEDUCTIONS:																			
GRAU-350	4 @ 50.00			-200.0															
TYPE III	4 @ 18.75			-75.0															
ANCHOR TOTALS:				-275.0															
GRAND TOTAL:				912.5											2	2	4	5	
SAY:				**912.5 LF**											**2 EA**	**2 EA**	**4 EA**	**5 EA**	

PROJECT REFERENCE NO. B-4417
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
12-16-10
NAD 83/NSRS 2007
STA.11+17.00 -L- BEGIN STATE PROJECT B-4417
DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
3:1 or Flatter
D
3:1 or Flatter
Fill Slope
Min. D=1 Ft.
FROM -L- STA. 11+50 TO -L- STA. 12+72 LT
FROM -L- STA. 12+85 TO -L- STA. 15+00 RT
-L- POT Sta. 12+08.02
-DR1- POT Sta. 10+00.00
BEARING AH = S 58° 10' 49.8" E
-L- POT Sta. 12+59.10
-DR2- POT Sta. 10+00.00
BEARING AH = S 57° 22' 58.6" E
JACK CREEK
ALTON SHELBY
DB 481 PG 429
BDG STILLWATER ASSOCIATES, LLC
DB 1541 PG 735
-BL- 3
PT Sta. 23+92.01
BEGIN APPROACH SLAB
STA.15+71.00
END APPROACH SLAB
STA.17+99.00
PC Sta. 17+66.47
POT Sta. 10+00.00
SPECIAL DITCH
SEE DETAIL "A"
CLASS B RIP RAP
EST 2 TONS
EST 7 SY FF
ROCK PLATING
SEE DETAIL SHEET 2-A
END SBG
BEG. SBG
TYPE III
SHOP CURVED
BRIDGE #59
N 29° 35' 40.1" E
N 4° 31' 50.9" E
NC 99
GRADE TO DRAIN
50' TAPER
20:1 GR TAPER
NOTE: (2) 4" MTL COND. ATTACHED TO EAST SIDE OF BRIDGE
-BL- 1
-BL- 2
CHARLES E. SLADE, et ux
DB 1508 PG 449
JODIE SLADE
DB 477 PG 264
EDWARD WINDLEY
-DR1- POT Sta. 10+51.00
END CONSTRUCTION
-DR2- POT Sta. 10+55.00
END CONSTRUCTION
POT Sta. 10+75.90
POT Sta. 10+77.39
JOHNNIE B. BRINN, et ux
DB 1006 PG 53
DB 563 PG 107
CLASS II RIP-RAP
(STRUCTURE PAY ITEM)
BEGIN BRIDGE
STA.15+85.00
END BRIDGE
STA.17+85.00
STA.22+05.00 -L- END STATE PROJECT B-4417
-L-
PI Sta 20+84.33
Δ = 25° 03' 49.3" (LT)
D = 4° 00' 24.1"
L = 625.54'
T = 317.86'
R = 1,430.00'
SE = .06
RO = 156'
SBG: SHOULDER BERM GUTTER
BEGIN SBG STA 12+21 LT
END SBG BEGIN BRIDGE LT
BEGIN SBG END BRIDGE LT
END SBG STA 21+05 LT
SKETCH OF BRIDGE IN RELATIONSHIP TO PAVEMENT
TYPE III
TYPE III SHOP CURVED
6'-3"
24'
12'
FOR -L- PROFILE SEE SHEET 5
FOR -DR1- PROFILE SEE SHEET 6
FOR -DR2- PROFILE SEE SHEET 6
FOR STRUCTURE SEE SHEET S1 TO S27
REVISIONS

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4417	5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25477 ENGINEER THAD F. DUNCAN

12-17-10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022006 ENGINEER W. GALEN CAIL

12/17/10

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= N/A	CFS
DESIGN FREQUENCY	= N/A	YRS
DESIGN HW ELEVATION	= N/A	FT
BASE DISCHARGE	= N/A	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= N/A	FT
OVERTOPPING DISCHARGE	= 8,000	CFS
OVERTOPPING FREQUENCY	= +/- 100	YRS
OVERTOPPING ELEVATION	= 5.5	FT

-L-

BM #10
53.3' LEFT OF -BL- STA. 14+81.60
ELEV. 2.22'

BM #165
3.37' LEFT OF -BL- STA. 17+80.60
ELEV. 4.81'

BM #11
76.6' RIGHT OF -BL- STA. 21+46.50
ELEV. 5.08'

BEGIN GRADE STA. 11+17.00
EL = 5.92

END GRADE STA. 22+05.00
EL = 5.53

BEGIN BRIDGE STA. 15+85.00

END BRIDGE STA. 17+85.00

PI = 12+17.00
EL = 5.56'
VC = 200'
K = 194

PI = 16+85.00
EL = 8.70'
VC = 250'
K = 185

PI = 21+05.00
EL = 5.85'
VC = 200'
K = 558

(-)0.3600%
(+)0.6709%
(+)0.6709%
(-)0.6786%
(-)0.6786%
(-)0.3200%
(-)0.8279%
(-)0.4651%

2:1
2:1

CLASS II RIP RAP (STRUCTURE PAY ITEM)

CLASS II RIP RAP (STRUCTURE PAY ITEM)

MEAN HIGH TIDE ELEV. = 0.6'

BEGIN DITCH
STA. = 11+50 LT
ELEV. = 3.21'

BEGIN DITCH
STA. = 12+85 RT
ELEV. = 1.00'

END DITCH
STA. = 12+72 LT
ELEV. = 2.20

END DITCH
STA. = 15+00 RT
ELEV. = 0.00'

EXCAVATION
(STRUCTURE PAY ITEM)

10 0 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 10 0

17-DEC-2010 09:53
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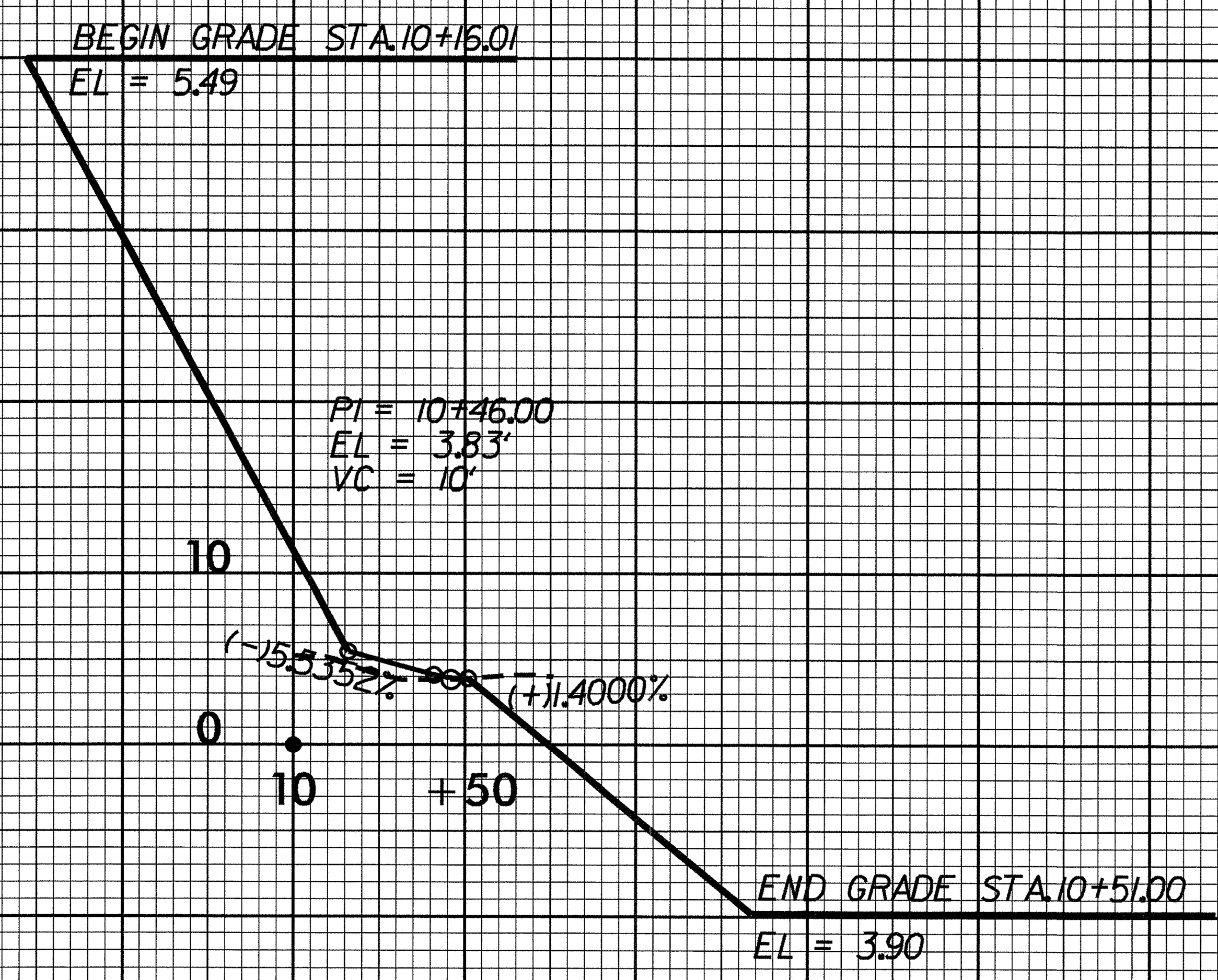
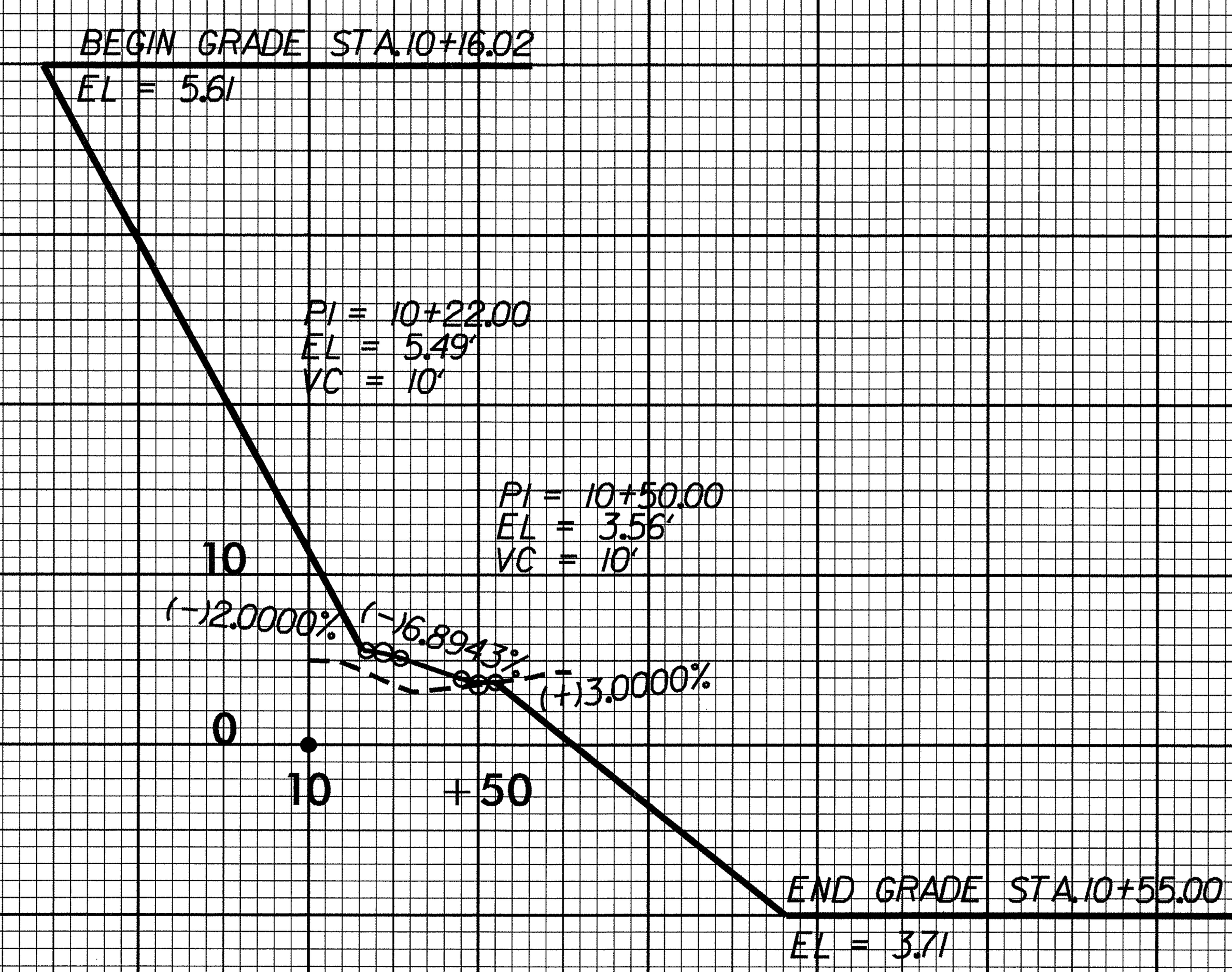
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4417	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-DR1-



-DR2-



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