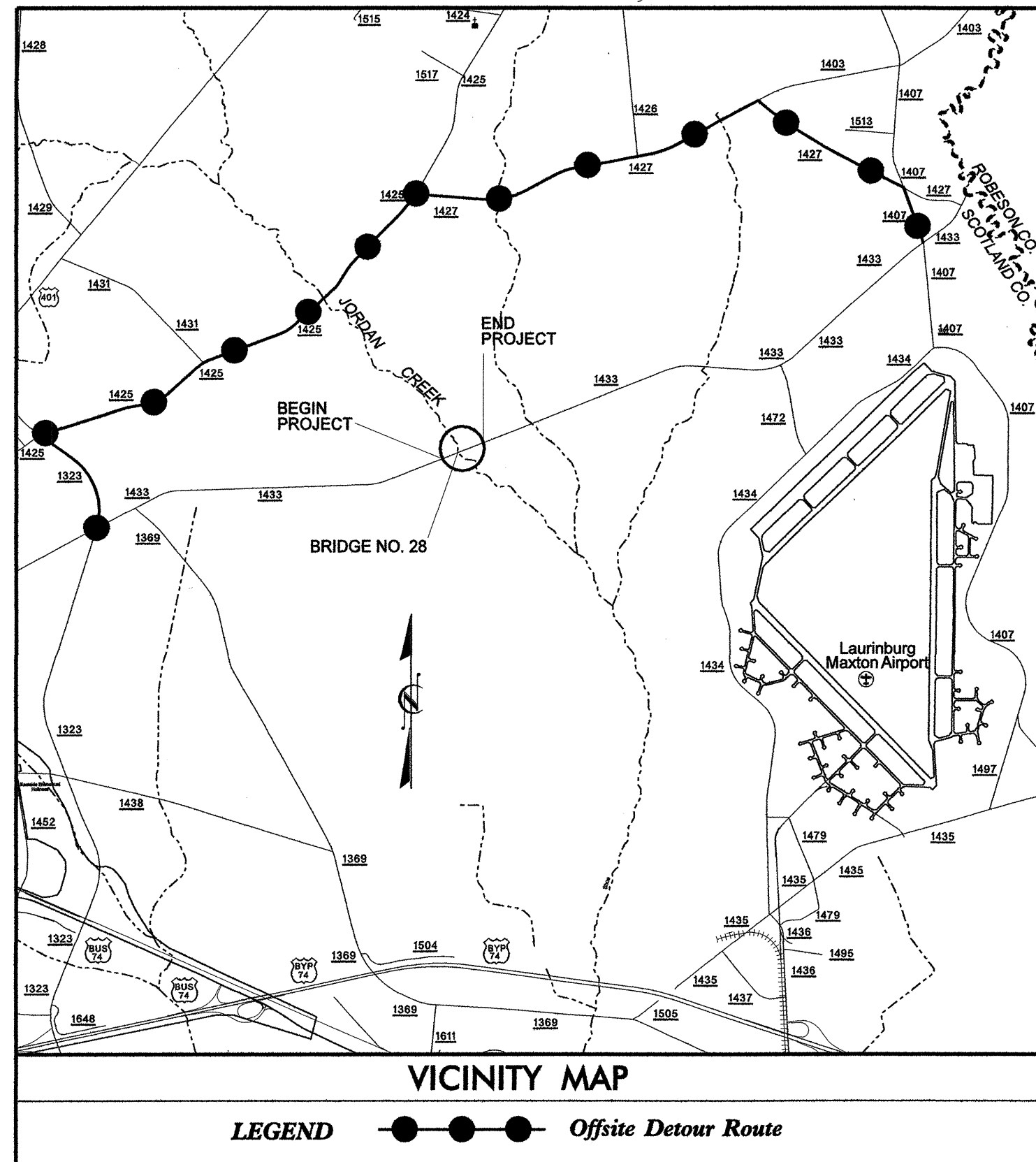


TIP PROJECT: B-4642

CONTRACT: C202329

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

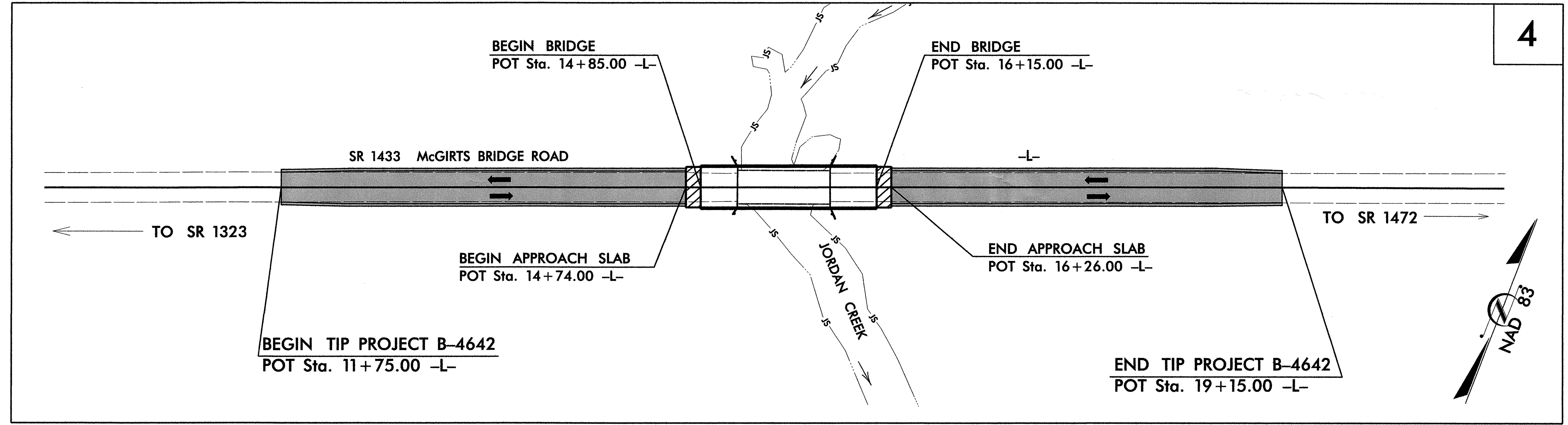


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**SCOTLAND COUNTY**

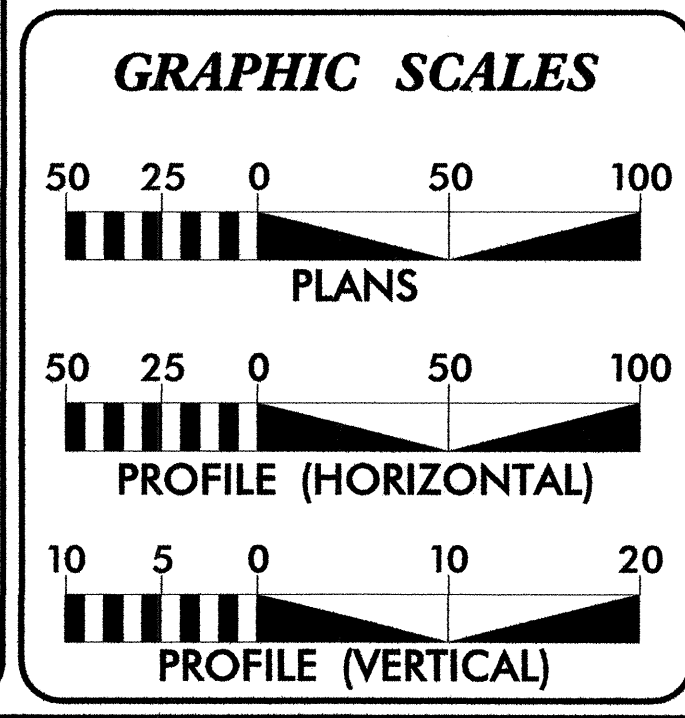
**LOCATION: BRIDGE NO. 28 OVER JORDAN CREEK ON SR 1433**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4642	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
33810.1.1	BRSTP-1433(2)	PE	
33810.2.1	BRSTP-1433(2)	RW, UTIL.	
33810.3.1	BRSTP-1433(2)	CONSTR.	



NCDOT CONTACT: DOUG TAYLOR, P.E., PROJECT ENGINEER - ROADWAY DESIGN



**DESIGN DATA**

ADT 2010 =	3,300
ADT 2030 =	5,100
DHV =	10 %
D =	60 %
T =	3 %
V =	60 MPH
FUNC. CLASS =	RURAL MAJOR COLLECTOR
TTST 1 %	DUAL 2 %

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4642	=	0.115 mi.
LENGTH STRUCTURE TIP PROJECT B-4642	=	0.025 mi.
TOTAL LENGTH TIP PROJECT B-4642	=	0.140 mi.

Prepared In the Office of:  
**WANG ENGINEERING COMPANY, INC.**  
CARY, N.C.  
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
2006 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:** FEBRUARY 20, 2009  
**LETTING DATE:** FEBRUARY 16, 2010

**CLIFTON T. REGISTER, P.E.**  
PROJECT ENGINEER

**SCOTT L. KENNEDY**  
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER  
SUNGATE DESIGN GROUP

11/30/09  
**HENRY WELLS, P.E.**  
SIGNATURE

ROADWAY DESIGN ENGINEER  
WANG ENGINEERING

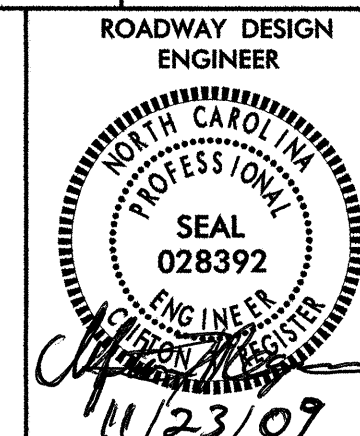
11/19/09  
**CLIFTON T. REGISTER, P.E.**  
SIGNATURE

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

**Art McMillan**  
P.E.  
STATE HIGHWAY DESIGN ENGINEER

\$\$\$\$\$SYTIME\$\$\$\$\$DGN\$\$\$\$\$US\$\$\$\$\$\$\$\$\$\$

8/17/09



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

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	TYPICAL SECTIONS, PAVEMENT SCHEDULE.
2-A	DETAIL OF ANCHORAGE OF FRAMES
2-B AND 2-C	METHOD OF PIPE INSTALLATION DETAILS
2-D	BRIDGE APPROACH FILLS - SUB REGIONAL TIER
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF EARTHWORK SUMMARY OF GUARDRAIL, DRAINAGE SUMMARY, AND ASPHALT PAVEMENT REMOVAL SUMMARY
4	PLAN/PROFILE SHEET
TCP-1 THRU TCP- 3	TRAFFIC CONTROL PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-4	EROSION CONTROL PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1	CROSS SECTION INDEX AND SUMMARY SHEET
X-2 THRU X-5	CROSS-SECTIONS
S-1 THRU S-22	STRUCTURE PLANS

2006 ROADWAY 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 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
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet
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

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

GRADING AND SURFACING:  
THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

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

SUPERELEVATION:  
ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AN 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.

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

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

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

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

UTILITIES:  
UTILITY OWNERS ON THIS PROJECT ARE  
Lumbee River EMC / City of Laurinburg  
AT&T

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.



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	○ EP
Property Corner	_____
Property Monument	□ ECM
Parcel/Sequence Number	①23
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-

**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	_____
False Sump	□

**RAILROADS:**

Standard Gauge	_____
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	_____
RR Dismantled	_____

**RIGHT OF WAY:**

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

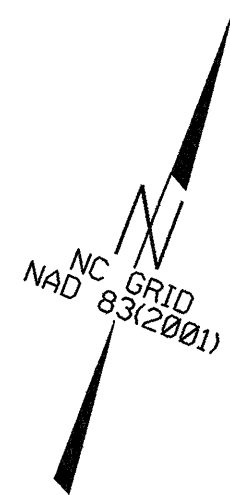
**MISCELLANEOUS:**

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

6/2/99

# SURVEY CONTROL SHEET B-4642

PROJECT REFERENCE NO.	SHEET NO.
<b>B-4642</b>	<b>IC</b>
Location and Surveys	



BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
101	BL-101	381322.3300	1880157.0400	184.79	10+00.21	15.75 RT
102	BL-102	381535.3080	1880705.8350	186.28	15+98.88	15.93 RT
103	BL-103	381713.5040	1881162.0090	184.92	20+78.67	14.29 RT

.....  
 BM1 ELEVATION = 181.93  
 N 381248 E 1880176  
 L STATION 10+00  
 S 15° 52' 57.5" E DIST 92.29  
 RR SPIKE IN BASE OF 15" BLACK GUM TREE  
 .....  
 BM2 ELEVATION = 182.12  
 N 381453 E 1880726  
 L STATION 15+78 100 RIGHT  
 RR SPIKE IN BASE OF 18" HOLLY TREE  
 .....

**NCDOT BASELINE STATION "BL-101"**  
**LOCALIZED PROJECT COORDINATES**  
 N = 381322.3300  
 E = 1880157.0400

SR 1433 MCGIRTS BRIDGE ROAD  
 TO SR 1303  
 BM #1 ELEVATION = 181.93'  
 N 381248 E 1880176

**NCDOT BASELINE STATION "BL-102"**  
**LOCALIZED PROJECT COORDINATES**  
 N = 381535.3080  
 E = 1880705.8350

BM #2 ELEVATION = 182.12'  
 N 381453 E 1880726

**NCDOT BASELINE STATION "BL-103"**  
**LOCALIZED PROJECT COORDINATES**  
 N = 381713.5040  
 E = 1881162.0090

**-L- STA. 11+75.00 BEGIN TIP PROJECT B-4642**  
**LOCALIZED PROJECT COORDINATES**  
 N = 381400.2982  
 E = 1880314.2729

**-L- STA. 19+15.00 END TIP PROJECT B-4642**  
**LOCALIZED PROJECT COORDINATES**  
 N = 381668.1388  
 E = 1881004.0999

## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4642-1" WITH NAD 83(2001) STATE PLANE GRID COORDINATES OF NORTHING: 380745.689(ft) EASTING: 1878617.024(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989948 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4642-1" TO -L- STATION 11+75.00 IS N 68° 54' 32.2" E 1819.11' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

## NOTES:

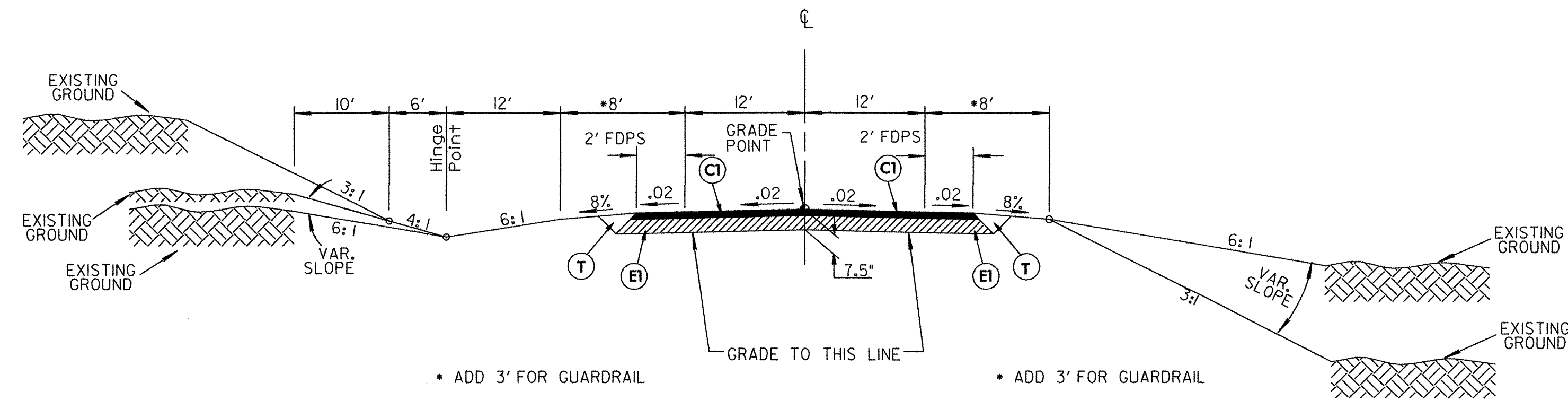
1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
<http://www.ncdot.org/doh/preconstruct/highway/location/project/>  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 B4642\_LS\_CONTROL\_080409.TXT  
 SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR 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.

NOTE: DRAWING NOT TO SCALE

DATE PLOTTED: 06/02/99 10:22:00

6/2/09

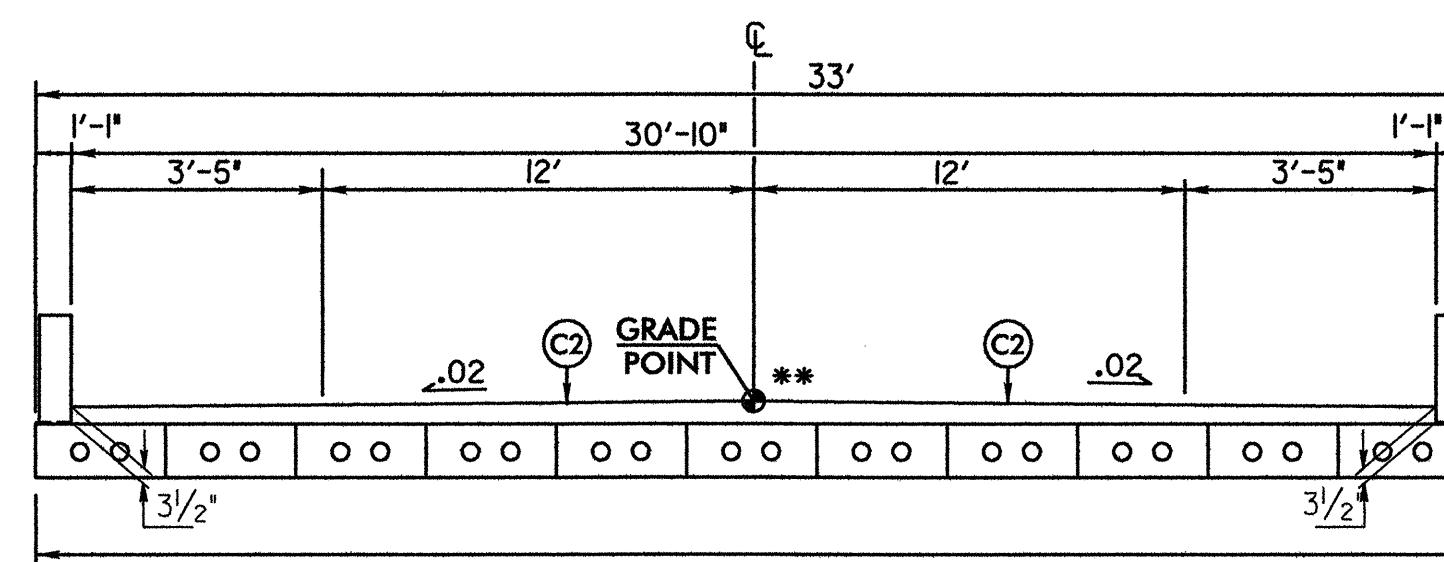
PROJECT REFERENCE NO. B-4642	SHEET NO. 2
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 



**TYPICAL SECTION NO. 1**  
 USE TYPICAL SECTION NO. 1 AS FOLLOWS  
 -L- Sta. 11+75.00 to Sta. 14+85.00 (BEGIN BRIDGE)  
 -L- Sta. 16+15.00 (END BRIDGE) to Sta. 19+15.00

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2.5" ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1" OR GREATER THAN 1.5" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS PER SQ. YD.
T	EARTH MATERIAL

NOTE: ALL SLOPES 1:1 UNLESS OTHERWISE SPECIFIED



11 CORED SLAB UNITS = 33'  
**TYPICAL BRIDGE SECTION**  
 -L- Sta. 14+85.00 to Sta. 16+15.00

\*\* ASPHALT OVERLAY AT CENTERLINE - SEE STRUCTURE PLANS, SHEET 5-5

6/2/09



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

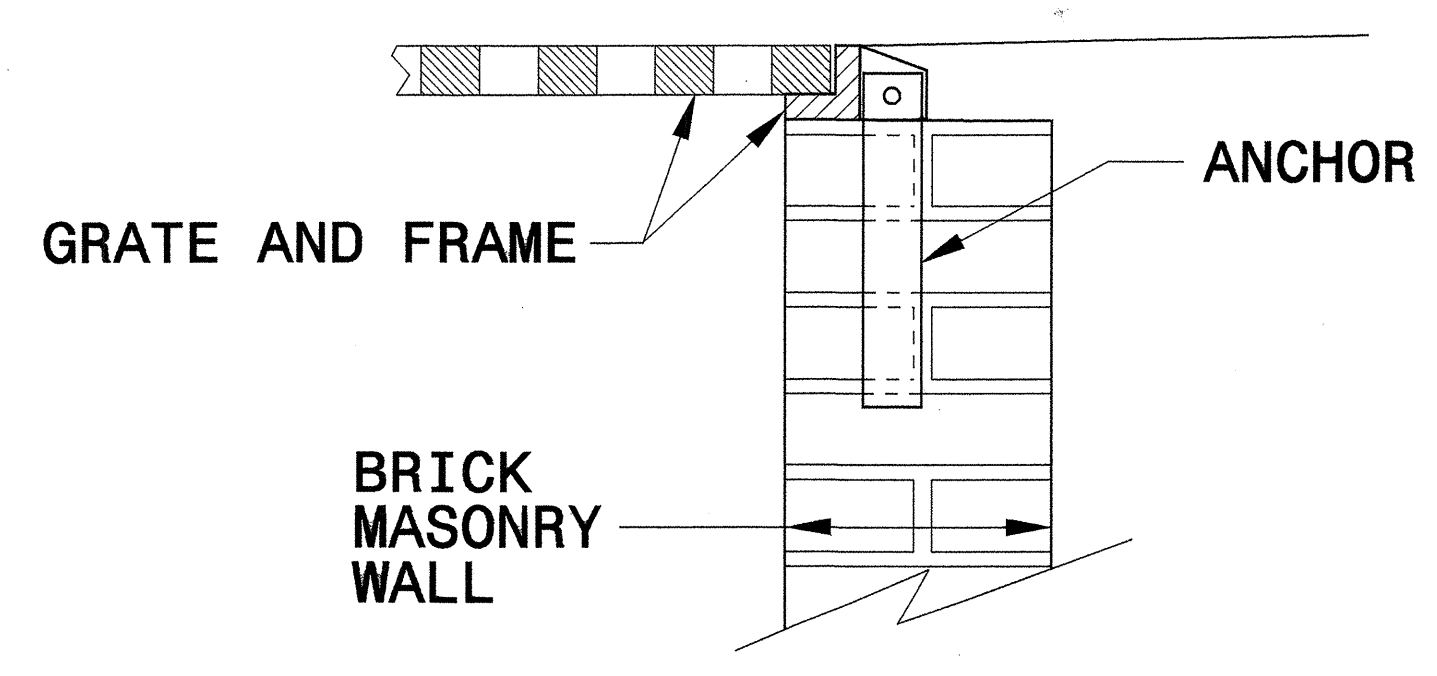
ENGLISH DETAIL DRAWING FOR  
**ANCHORAGE FOR FRAMES**  
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1  
**840D25**

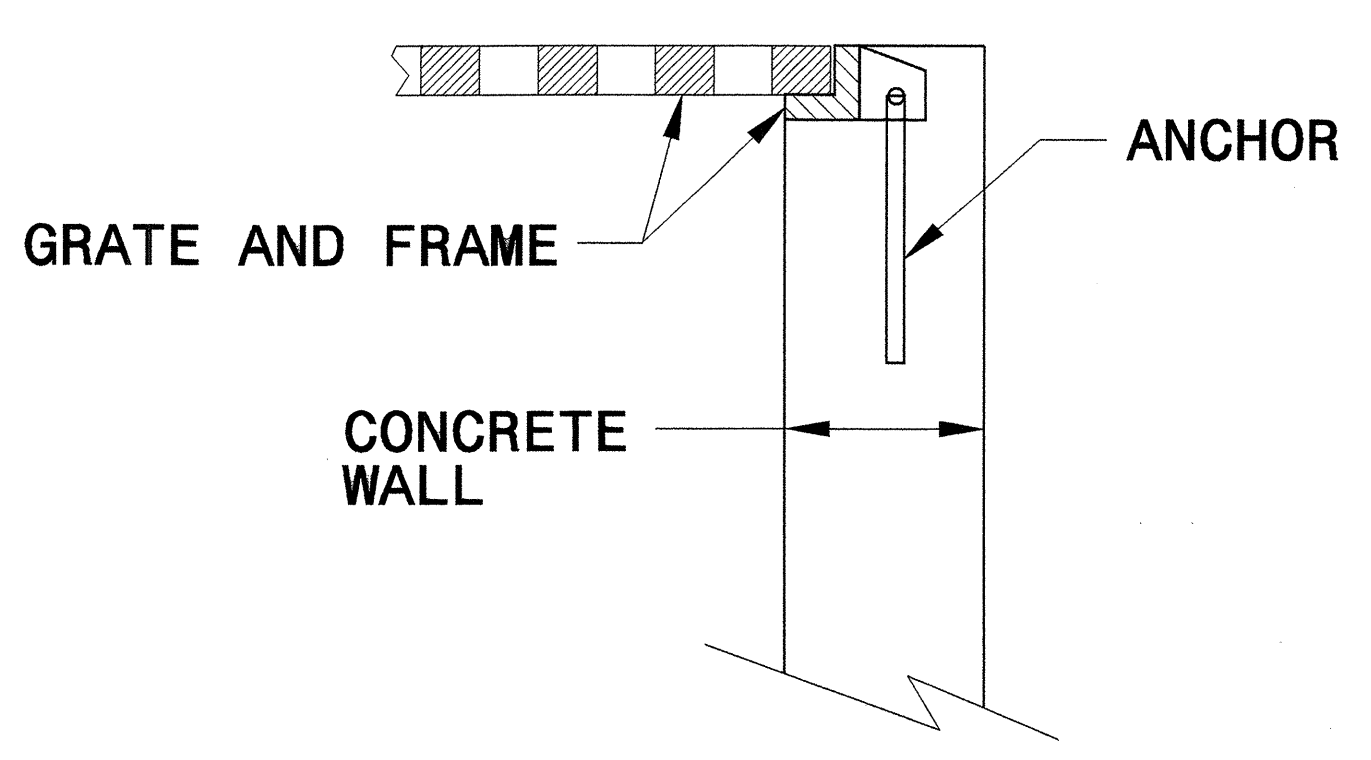
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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

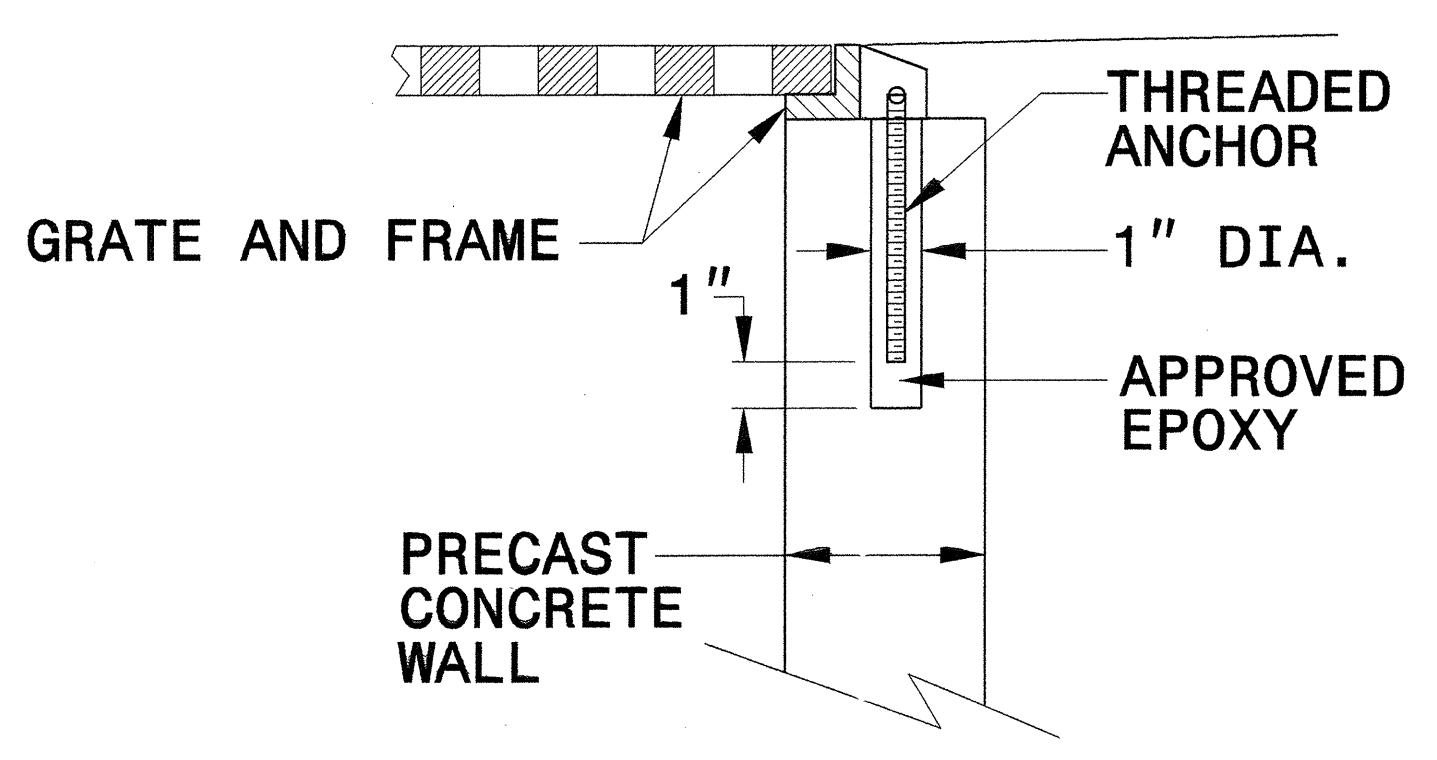
SHEET 1 OF 1  
**840D25**



**BRICK MASONRY CONSTRUCTION**



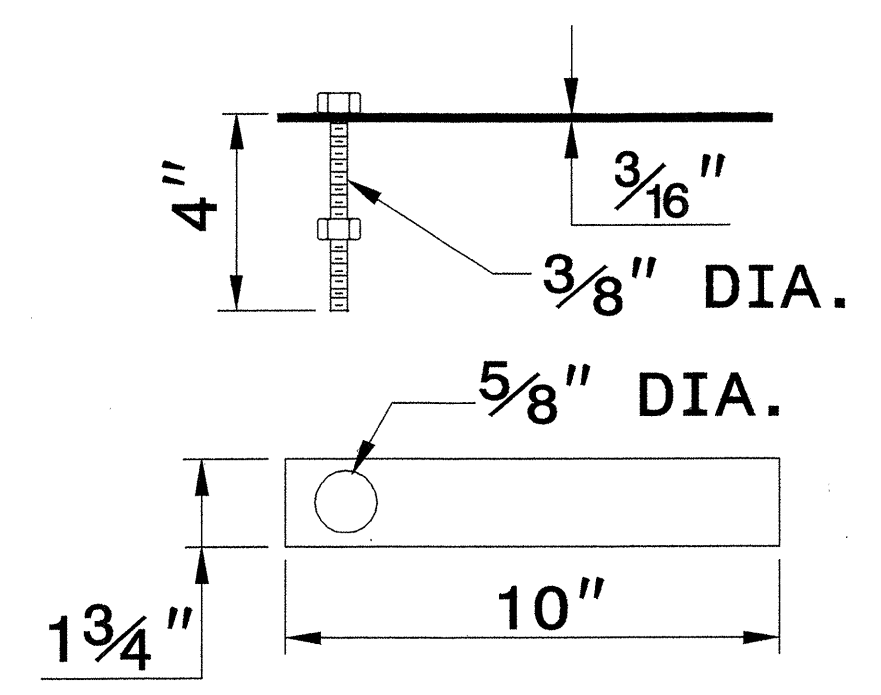
**CONCRETE CONSTRUCTION**



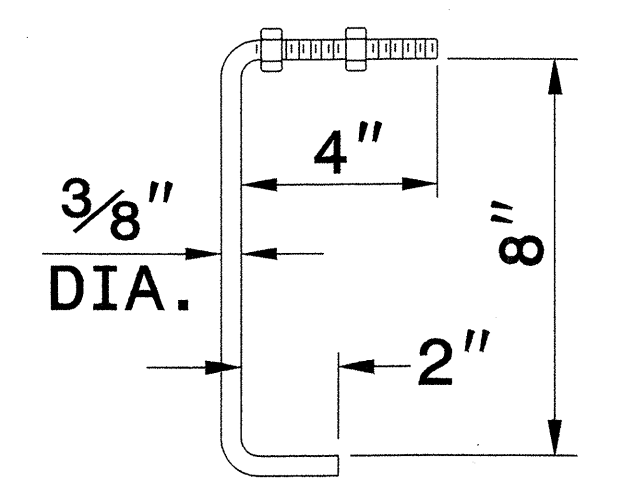
**PRECAST CONCRETE CONSTRUCTION**

**DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET**

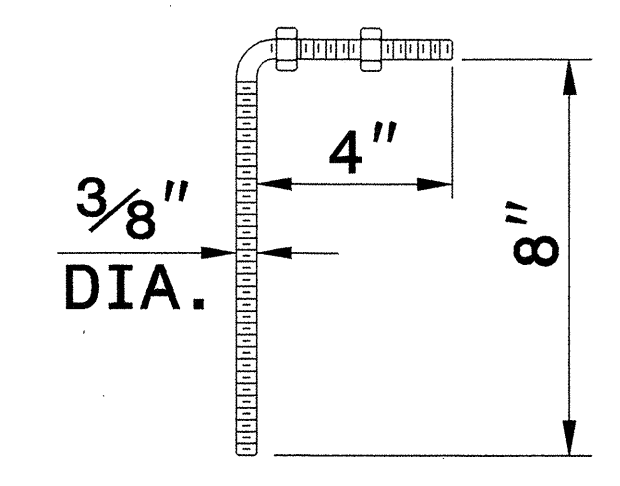
NOTE:  
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



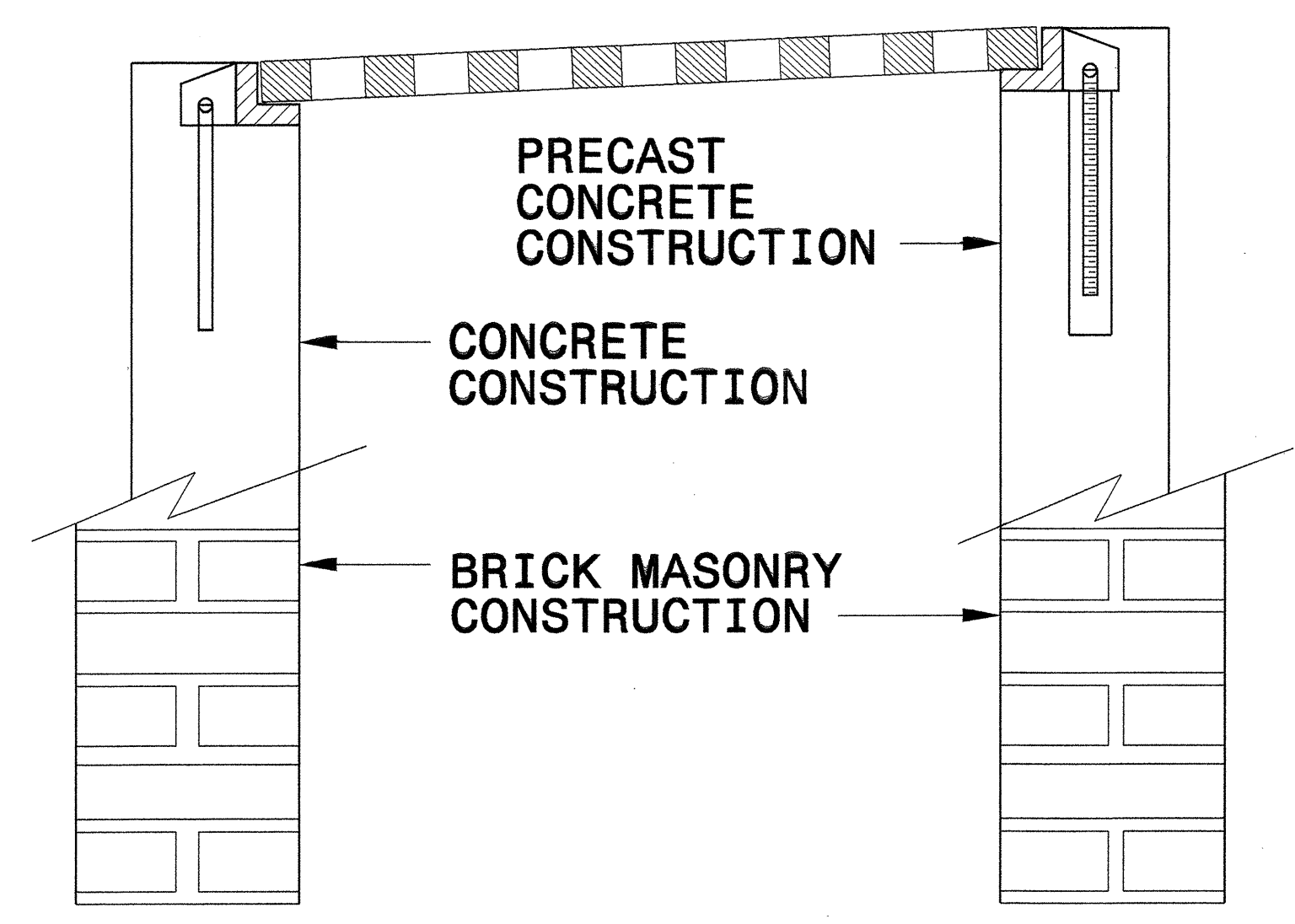
**MASONRY ANCHOR**  
3/8" DIA. BOLT WITH PLATE



**CONCRETE ANCHOR**  
3/8" DIA. BENT BAR

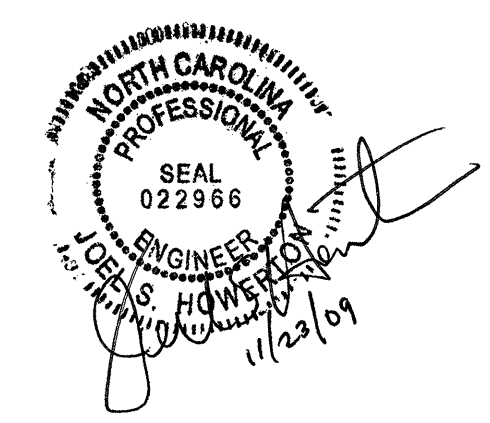


**PRECAST CONCRETE ANCHOR**  
3/8" DIA. BENT BAR



**FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS**

SYTIME  
LON  
USERNAME



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

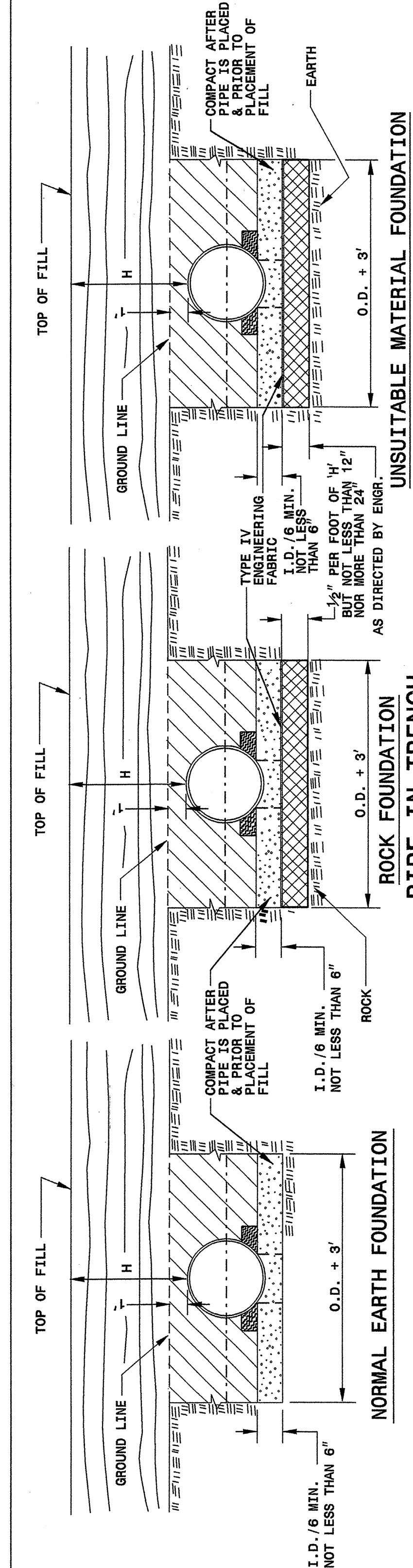
**SEE PLATE FOR TITLE**

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06  
MODIFIED BY: E. E. WARD DATE: 9/25/06  
CHECKED BY: *[Signature]* DATE: 11/13/08  
FILE SPEC.:

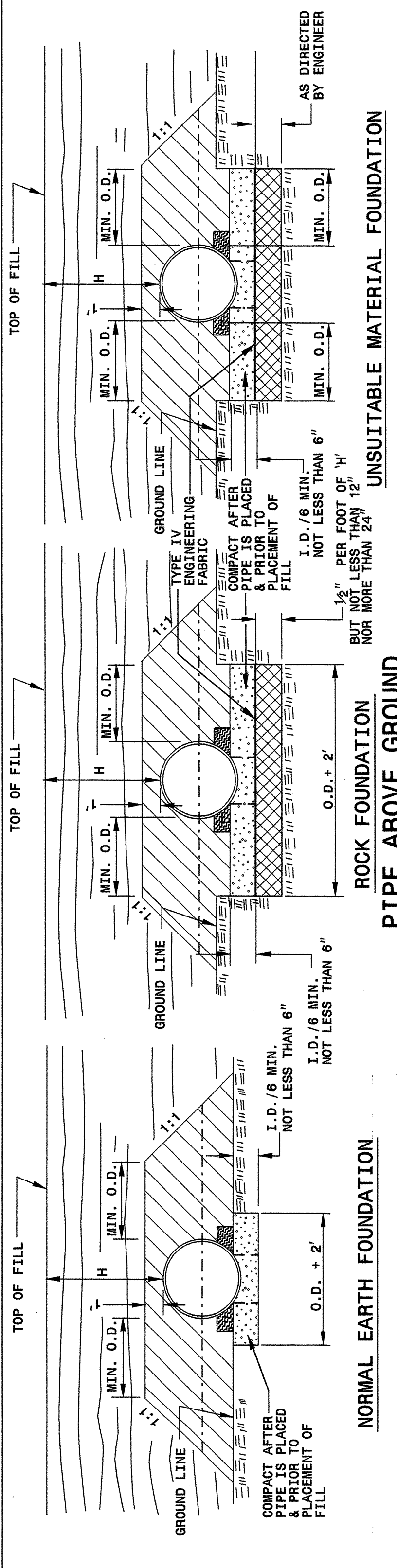


30-Jul-2009 08:48  
 st:\contracts\contractors\special details\rivercard\stds\06\stds to special details\300d01\0300d01.dgn  
 jhowerton

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



ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 FLEXIBLE PIPE



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

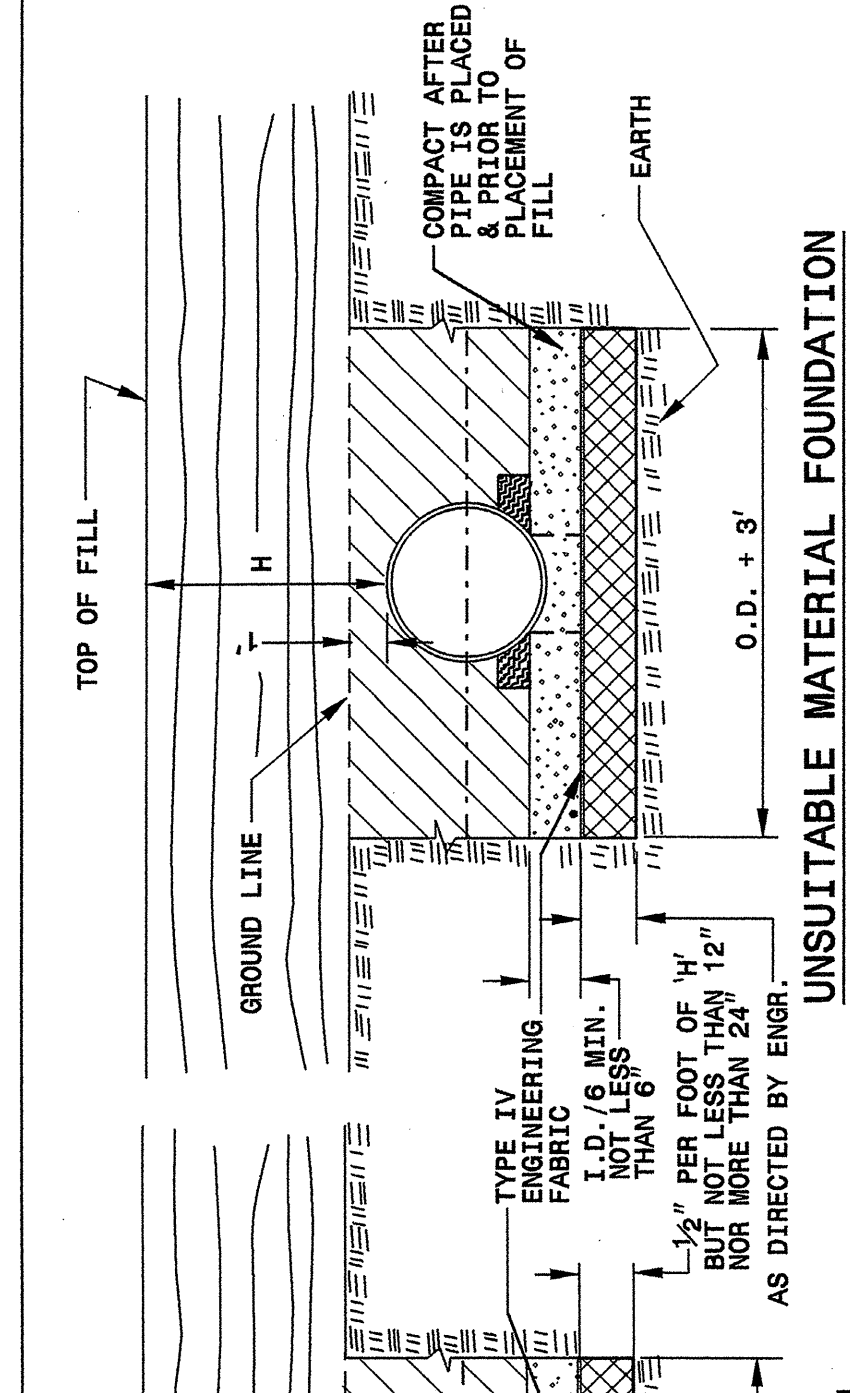
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

----- SPRINGLINE OF PIPE  
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.  
 APPROVED SUITABLE LOCAL MATERIAL.

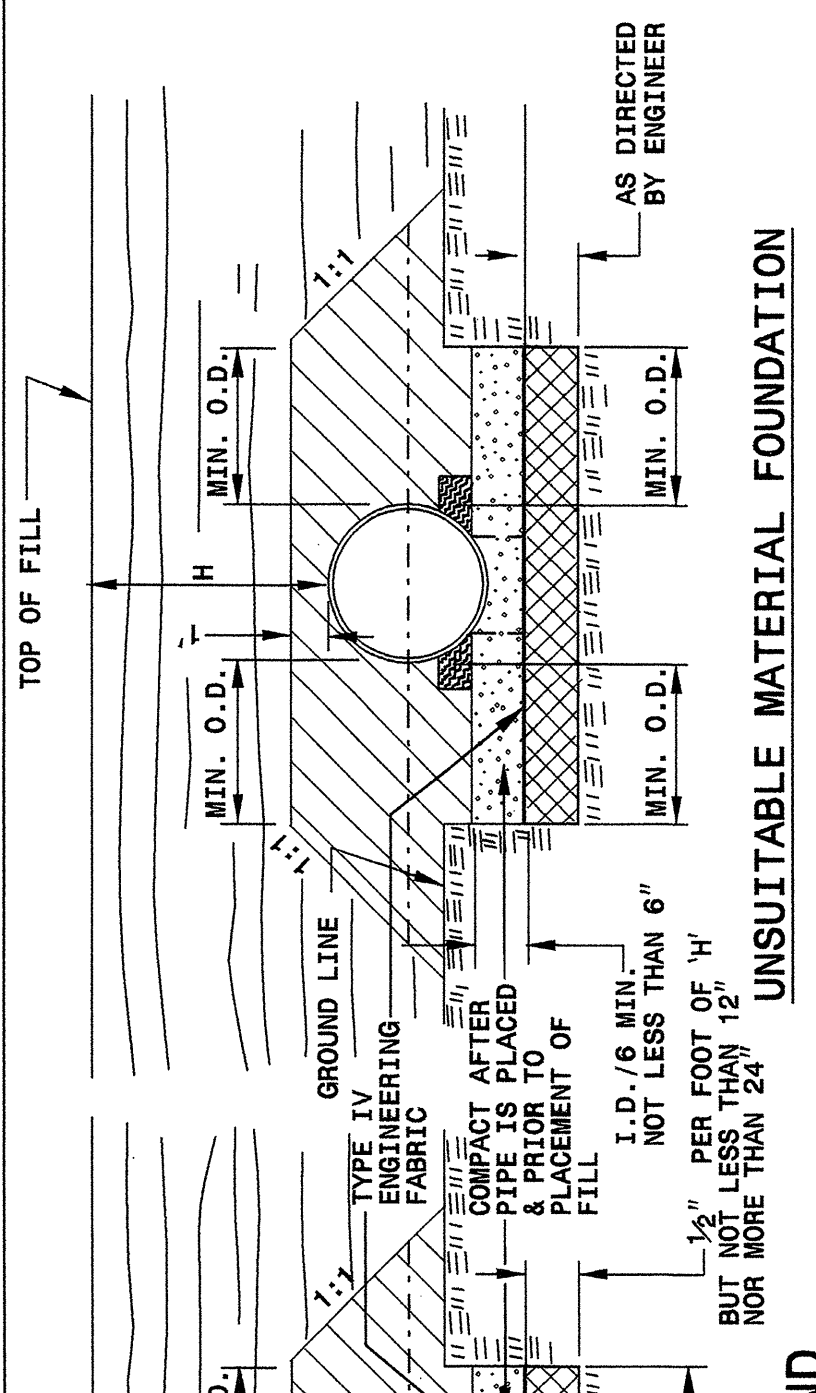
UNDISTURBED EARTH MATERIAL  
 SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

SHEET 1 OF 3  
**300D01**

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



ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 FLEXIBLE PIPE



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

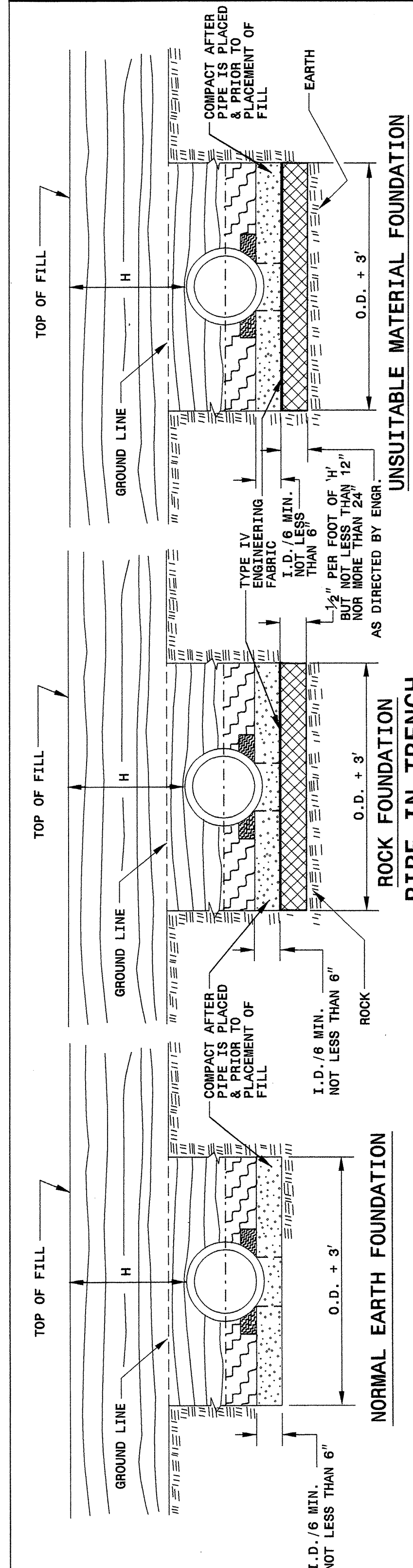
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

----- SPRINGLINE OF PIPE  
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.  
 APPROVED SUITABLE LOCAL MATERIAL.

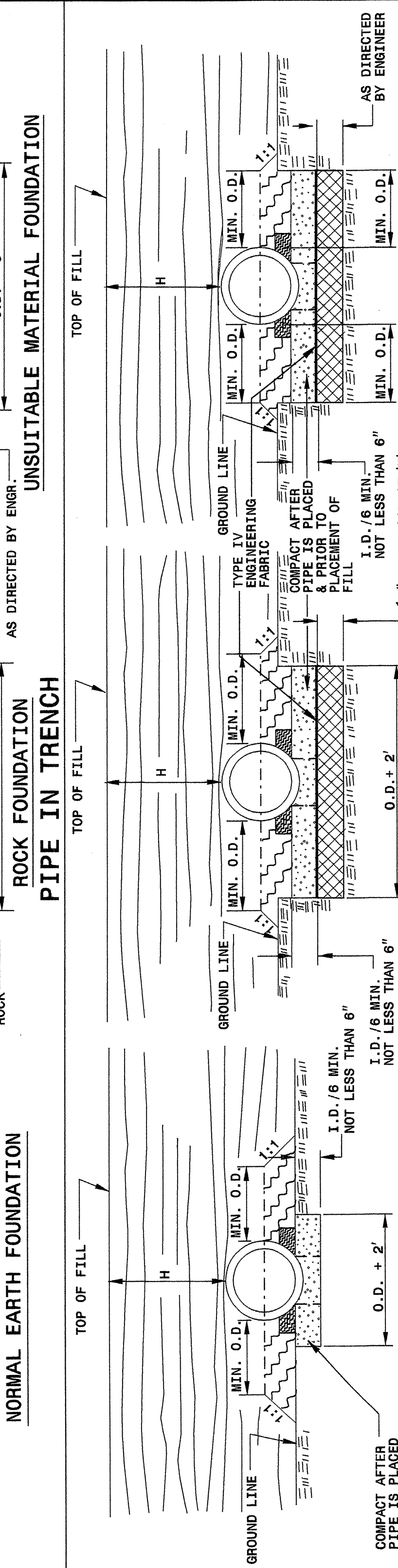
UNDISTURBED EARTH MATERIAL  
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SHEET 1 OF 3  
**300D01**

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



ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 RIGID PIPE



GENERAL NOTES:  
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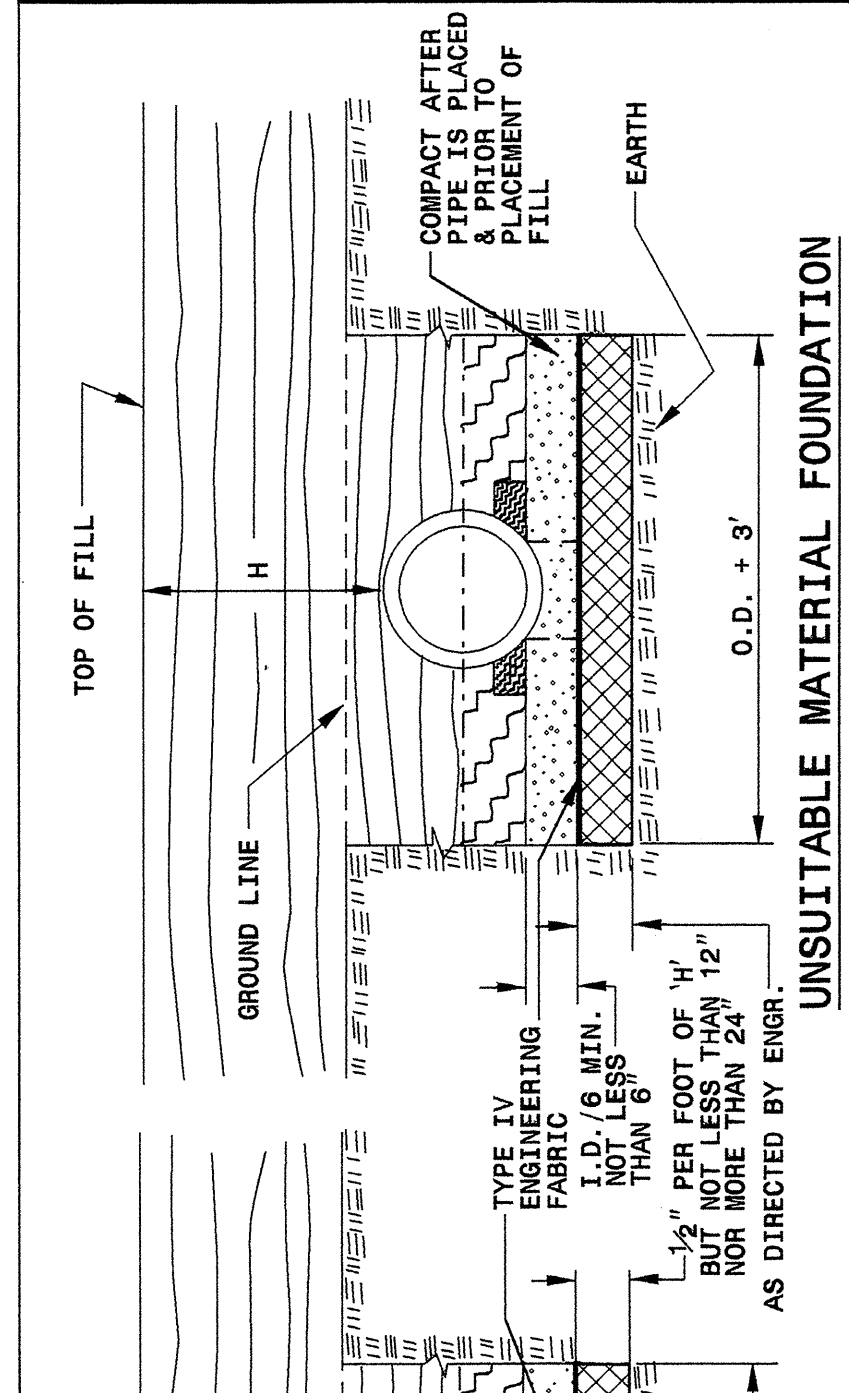
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 APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.

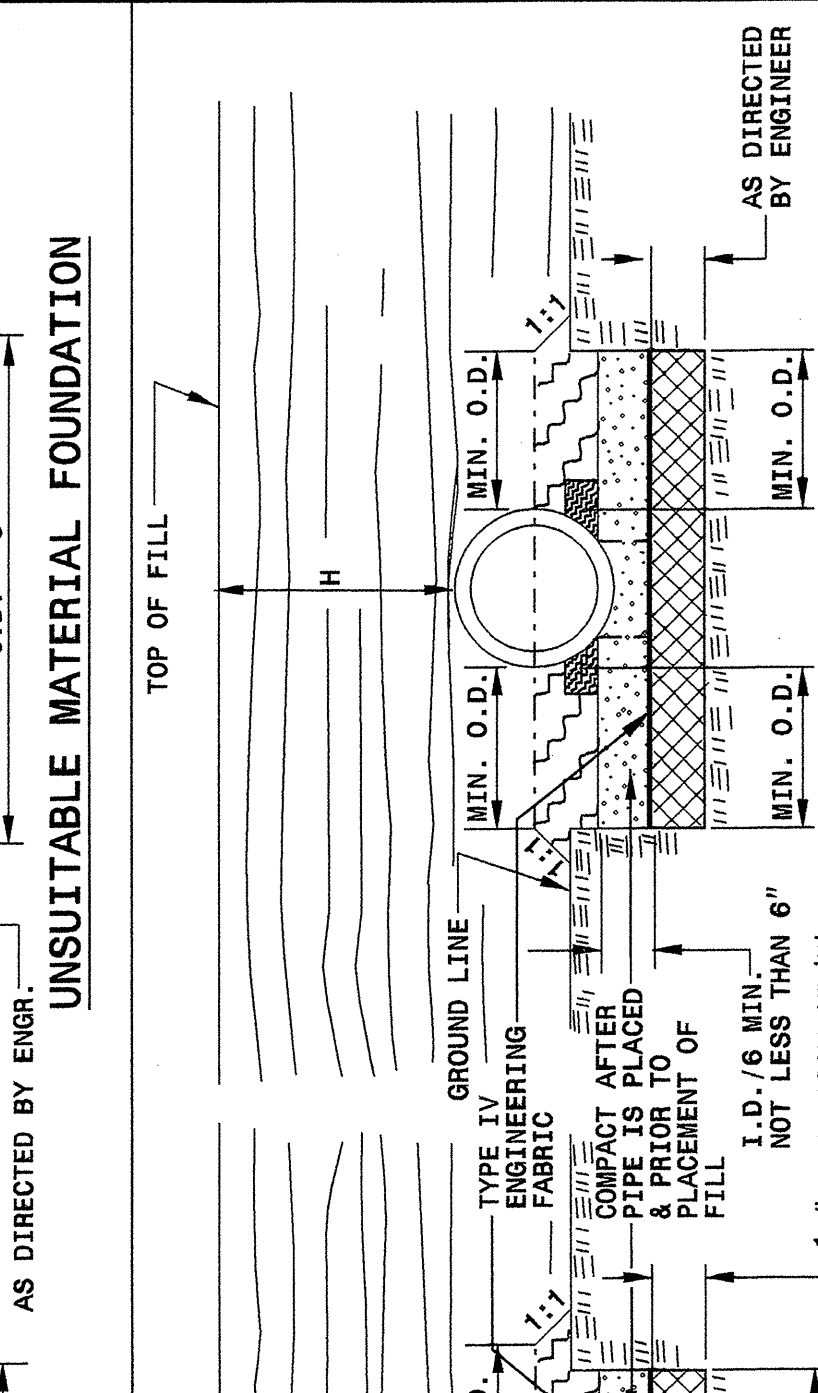
UNDISTURBED EARTH MATERIAL  
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SHEET 2 OF 3  
**300D01**

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



ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 RIGID PIPE



GENERAL NOTES:  
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.  
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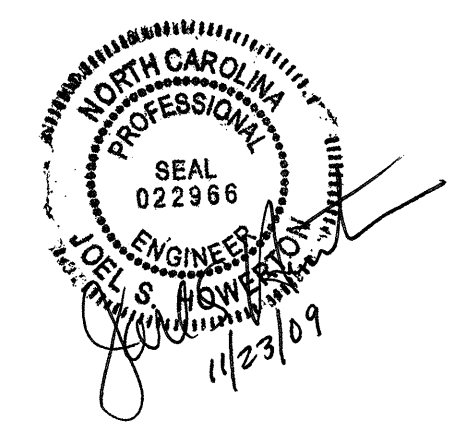
UNDISTURBED EARTH MATERIAL  
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SHEET 2 OF 3  
**300D01**

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

**SEE PLATE FOR TITLE**

ORIGINAL BY: kKempf DATE: 5-15-09  
 MODIFIED BY: [Signature] DATE: 7/20/09  
 CHECKED BY: [Signature] DATE: 7/20/09  
 FILE SPE/eng/ard/stds/stdsdetail/30001/0300d01.dgn



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

**FLEXIBLE PIPE**

Diameter (Inches)	Round Corrugated Steel Pipe 2 2/3 x 1/2 corrugation **			
	Minimum cover (Inches)	Maximum (Ga)	Height of Cover (feet)	Height of Cover (feet)
12	12	204	14	8
15	12	162	204	8
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
42	12	55	70	100
48	12	48	61	87
54	12	42	54	77
60	12	37	48	69
66	12	32	42	61
72	12	27	36	54
78	12	22	30	47
84	12	17	24	40

Diameter (Inches)	Round Corrugated Aluminum Pipe 2 2/3 x 1/2 corrugation **			
	Minimum cover (Inches)	Maximum (Ga)	Height of Cover (feet)	Height of Cover (feet)
12	12	123	14	8
15	12	98	123	281
18	12	81	102	174
21	12	69	87	144
24	12	60	76	123
27	12	54	67	108
30	12	48	60	95
36	12	42	50	85
42	12	36	42	71
48	12	30	36	60
54	12	24	30	52
60	12	18	24	46
66	12	12	18	40
72	12	12	12	34

\*\* 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

SHEET 3 OF 3  
**300D01**

SHEET 3 OF 3  
**300D01**

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

ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 FILL HEIGHT TABLES

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: *[Signature]* DATE: 7/30/09  
 CHECKED BY: *[Signature]* DATE: 7/30/09  
 FILE SPEC: s:\contracts\cor\p2575\special\_details\eroward\stds\stdstodetails\30001\0300d01.dgn

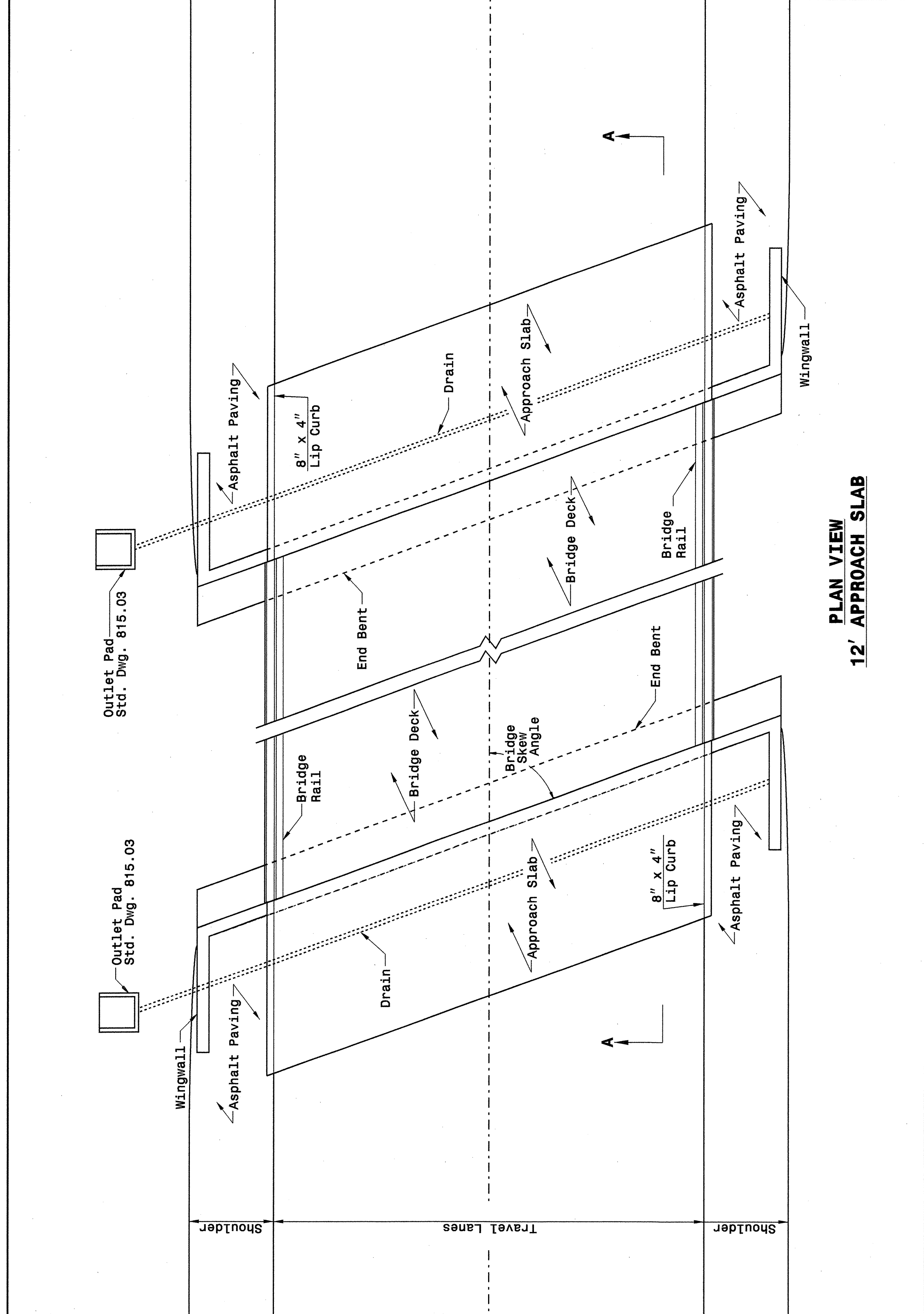




STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
CORED SLAB & BOX BEAM BRIDGES  
SUB REGIONAL TIER

SHEET 1 OF 2  
**422D11**



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

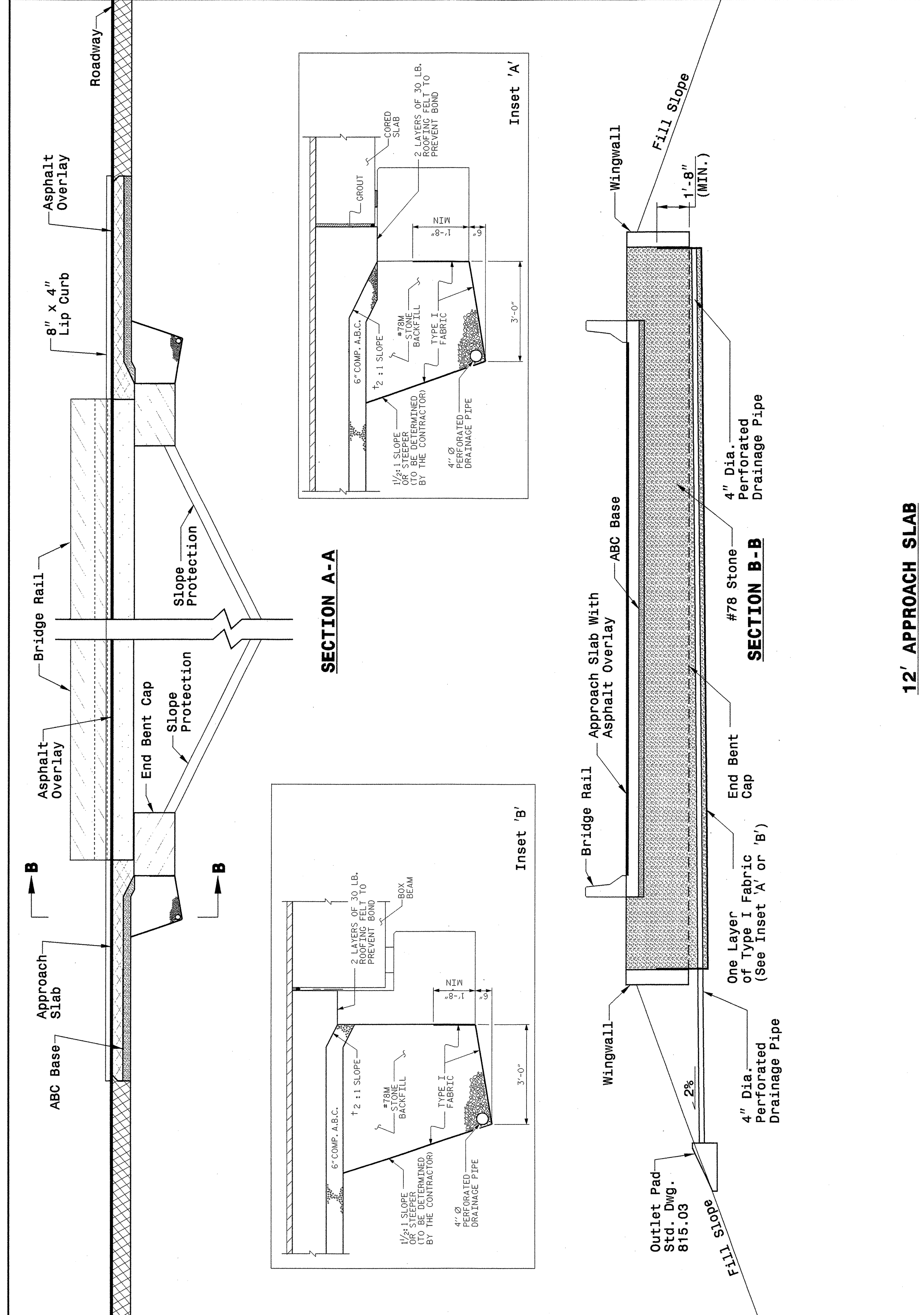
ENGLISH DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
CORED SLAB & BOX BEAM BRIDGES  
SUB REGIONAL TIER

SHEET 1 OF 2  
**422D11**

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

ENGLISH DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
CORED SLAB & BOX BEAM BRIDGES  
SUB REGIONAL TIER

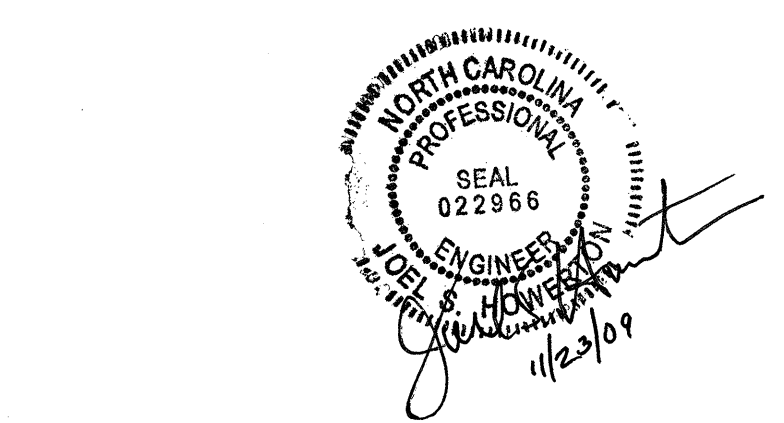
SHEET 2 OF 2  
**422D11**



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

ENGLISH DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
CORED SLAB & BOX BEAM BRIDGES  
SUB REGIONAL TIER

SHEET 2 OF 2  
**422D11**



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

**BRIDGE APPROACH FILLS**  
CORED SLAB & BOX BEAM BRIDGES  
SUB REGIONAL TIER

ORIGINAL BY: K. A. Kempf DATE: 6-10-08  
MODIFIED BY: *J. S. Hunt* DATE: \_\_\_\_\_  
CHECKED BY: *J. S. Hunt* DATE: 2/16/09  
FILE SPEC.: k Kempf/english/bridge approach fills.dgn

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**SUMMARY OF QUANTITIES**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202329

ItemNumber	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION
003000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ***** (15+50)
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
005700000-E	226	500	CY	UNDERCUT EXCAVATION
006300000-N	SP	Lump Sum		GRADING
008000000-E	SP	350	TON	CLASS IV SUBGRADE STABILIZATION
019500000-E	265	500	CY	SELECT GRANULAR MATERIAL
019600000-E	270	500	SY	FABRIC FOR SOIL STABILIZATION
032000000-E	SP	40	SY	FOUNDATION CONDITIONING FABRIC
033000000-E	SP	15	TON	GENERIC DRAINAGE ITEM FOUNDATION CONDITIONING MATERIAL, MINOR STRS
033520000-E	SP	52	LF	15" DRAINAGE PIPE
098600000-E	SP	64	LF	GENERIC PIPE ITEM 15" RC PIPE CULVERTS, CLASS IV
148900000-E	610	560	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
152500000-E	610	410	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
156000000-E	620	55	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
200000000-N	806	8	EA	RIGHT OF WAY MARKERS
202200000-E	815	56	CY	SUBDRAIN EXCAVATION
203300000-E	815	42	CY	SUBDRAIN FINE AGGREGATE
204400000-E	815	250	LF	6" PERFORATED SUBDRAIN PIPE
205500000-E	815	9	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
206600000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
207700000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
228600000-N	840	4	EA	MASONRY DRAINAGE STRUCTURES
236700000-N	840	4	EA	FRAME WITH TWO GRATES, STD 840.29

ItemNumber	Sec #	Quantity	Unit	Description
255600000-E	846	96	LF	SHOULDER BERM GUTTER
303000000-E	862	600	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
362800000-E	876	5	TON	RIP RAP, CLASS I
365600000-E	876	465	SY	FILTER FABRIC FOR DRAINAGE
440000000-E	1110	574	SF	WORK ZONE SIGNS (STATIONARY)
441000000-E	1110	119	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
444500000-E	1145	96	LF	BARRICADES (TYPE III)
468500000-E	1205	1,480	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
468600000-E	1205	1,480	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
490000000-N	1251	9	EA	PERMANENT RAISED PAVEMENT MARKERS
600000000-E	1605	1,850	LF	TEMPORARY SILT FENCE
600600000-E	1610	225	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	50	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	140	TON	SEDIMENT CONTROL STONE
601500000-E	1615	1.5	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
602900000-E	SP	400	LF	SAFETY FENCE
603000000-E	1630	100	CY	SILT EXCAVATION
603600000-E	1631	7,575	SY	MATting FOR EROSION CONTROL

ItemNumber	Sec #	Quantity	Unit	Description
604200000-E	1632	550	LF	1/4" HARDWARE CLOTH
607103000-E	SP	30	LF	COIR FIBER BAFFLES
608400000-E	1660	5	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	12	EA	RESPONSE FOR EROSION CONTROL

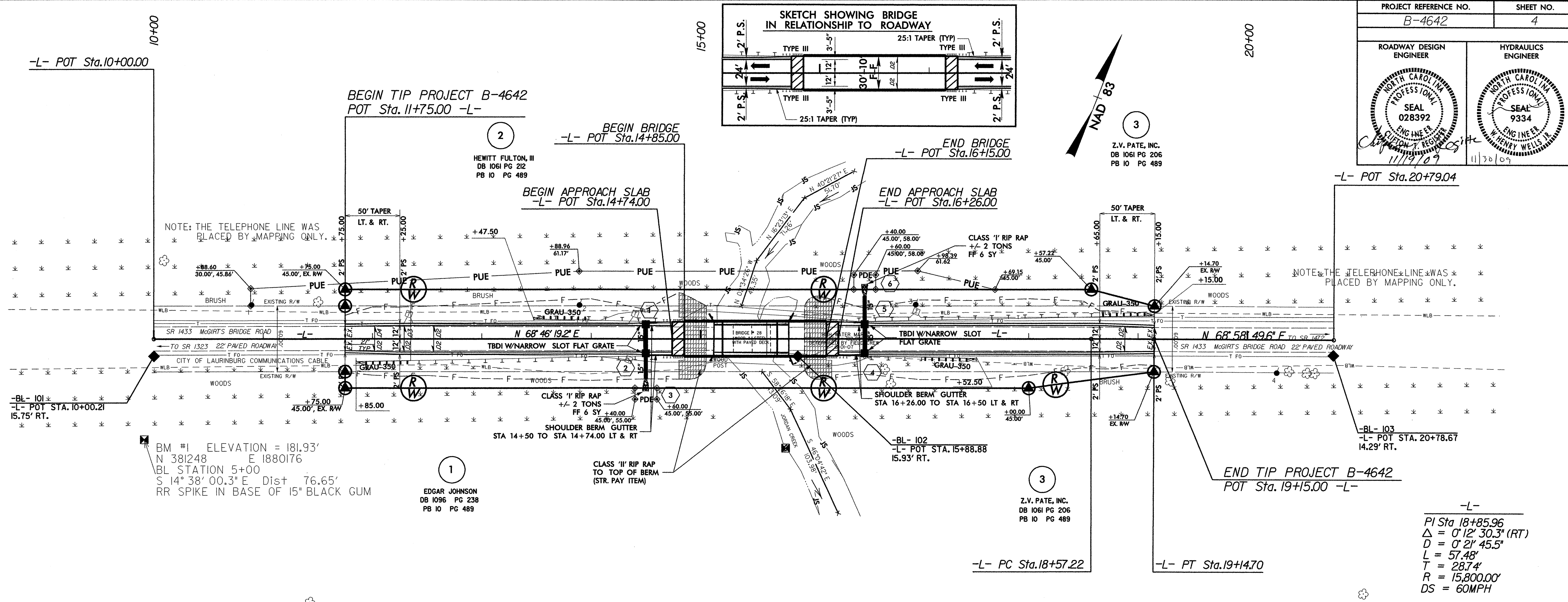
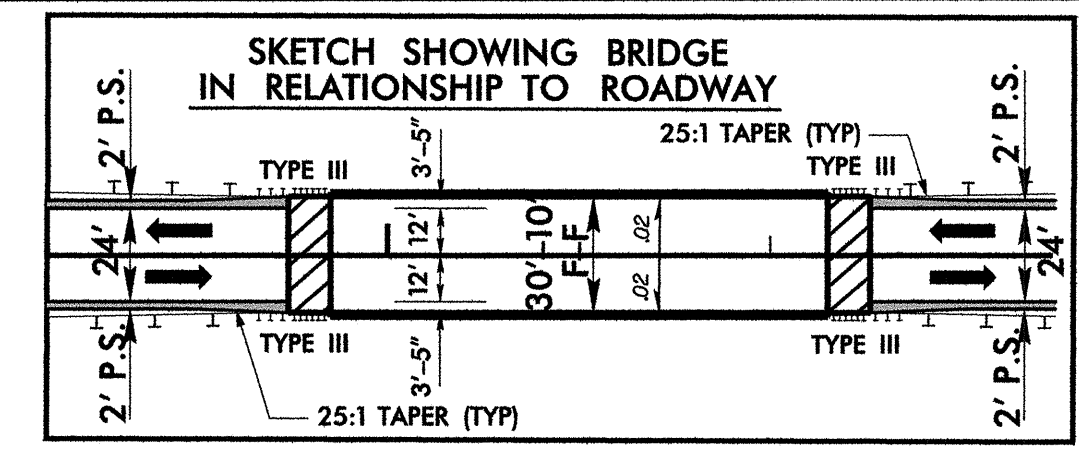
5/28/99

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
CONTRACT C202329  
SUMMARY OF QUANTITIES



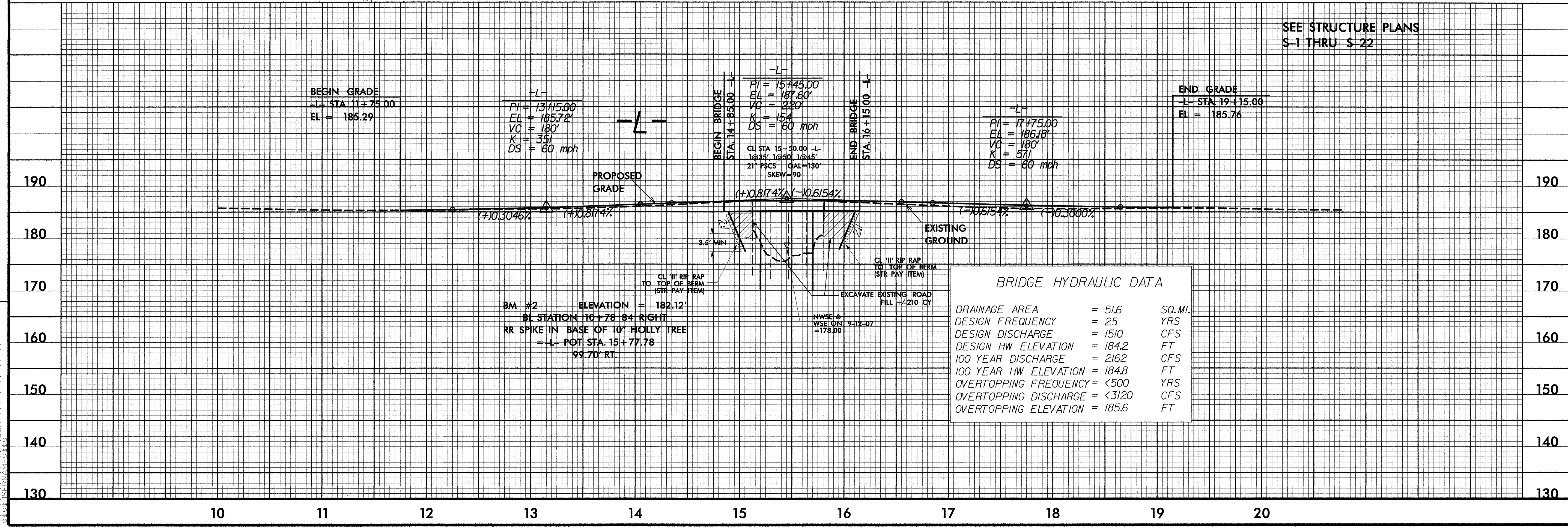






REVISIONS

-L-  
 PI Sta 18+85.96  
 $\Delta = 0' 12' 30.3''$  (RT)  
 $D = 0' 21' 45.5''$   
 $L = 57.48'$   
 $T = 28.74'$   
 $R = 15,800.00'$   
 $DS = 60MPH$



SEE STRUCTURE PLANS  
S-1 THRU S-22

8/17/99