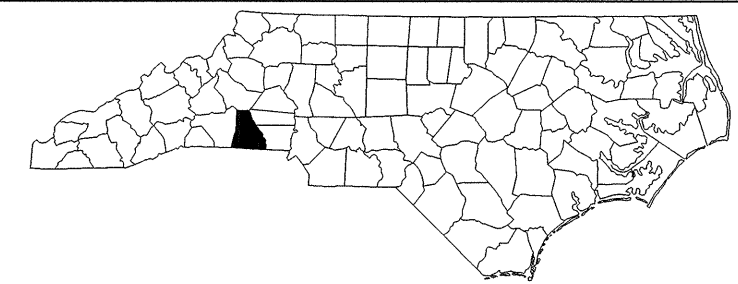


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4468	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33717.1.1	BRSTP-1327(2)	P.E.	
33717.2.1	BRSTP-1327(2)	R/W, UTL.	
33717.3.1	BRSTP-1327(2)	CONST.	



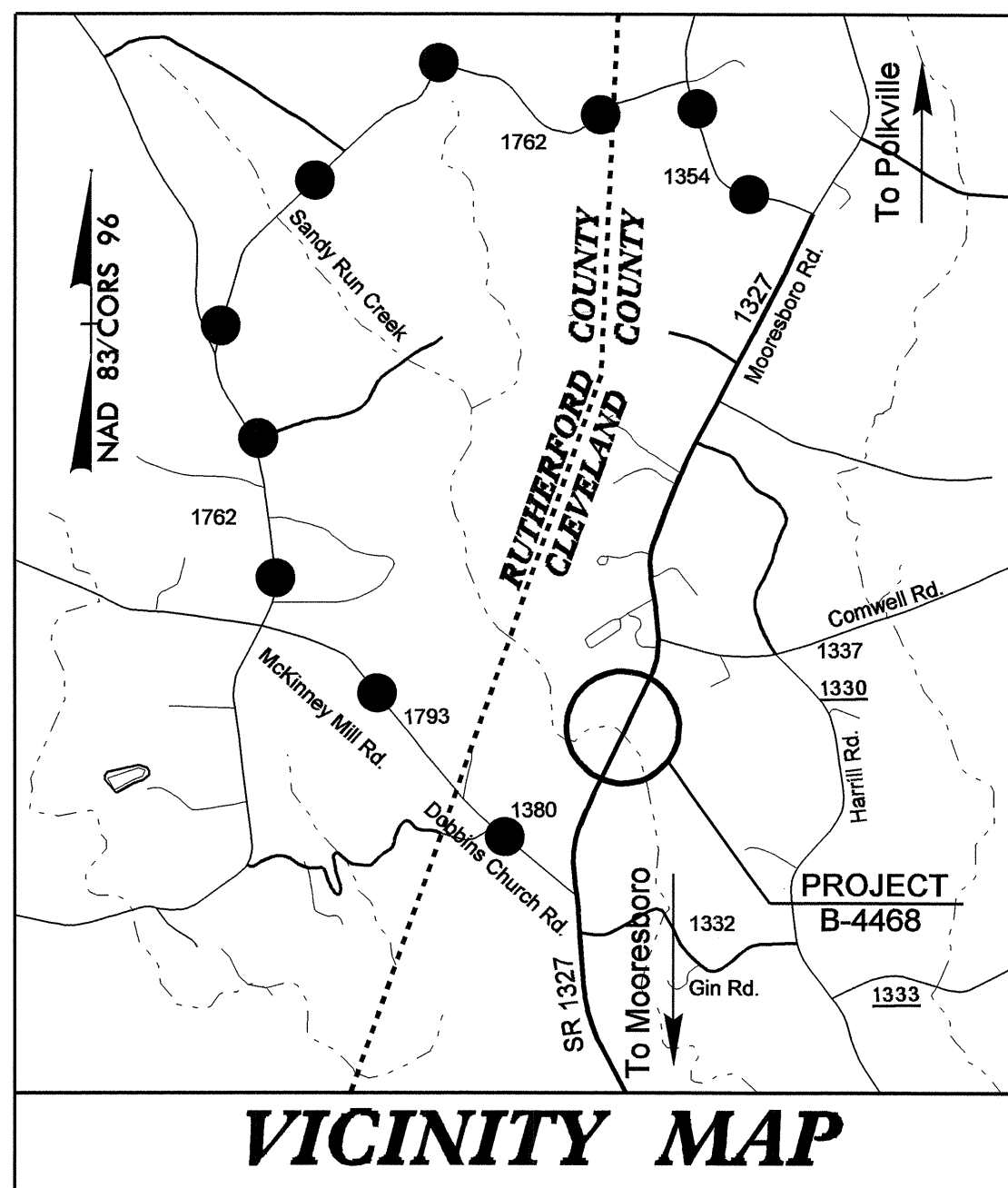
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CLEVELAND COUNTY

LOCATION: BRIDGE NO. 144 ON SR 1327
(MOORESBO ROAD) OVER SANDY RUN CREEK

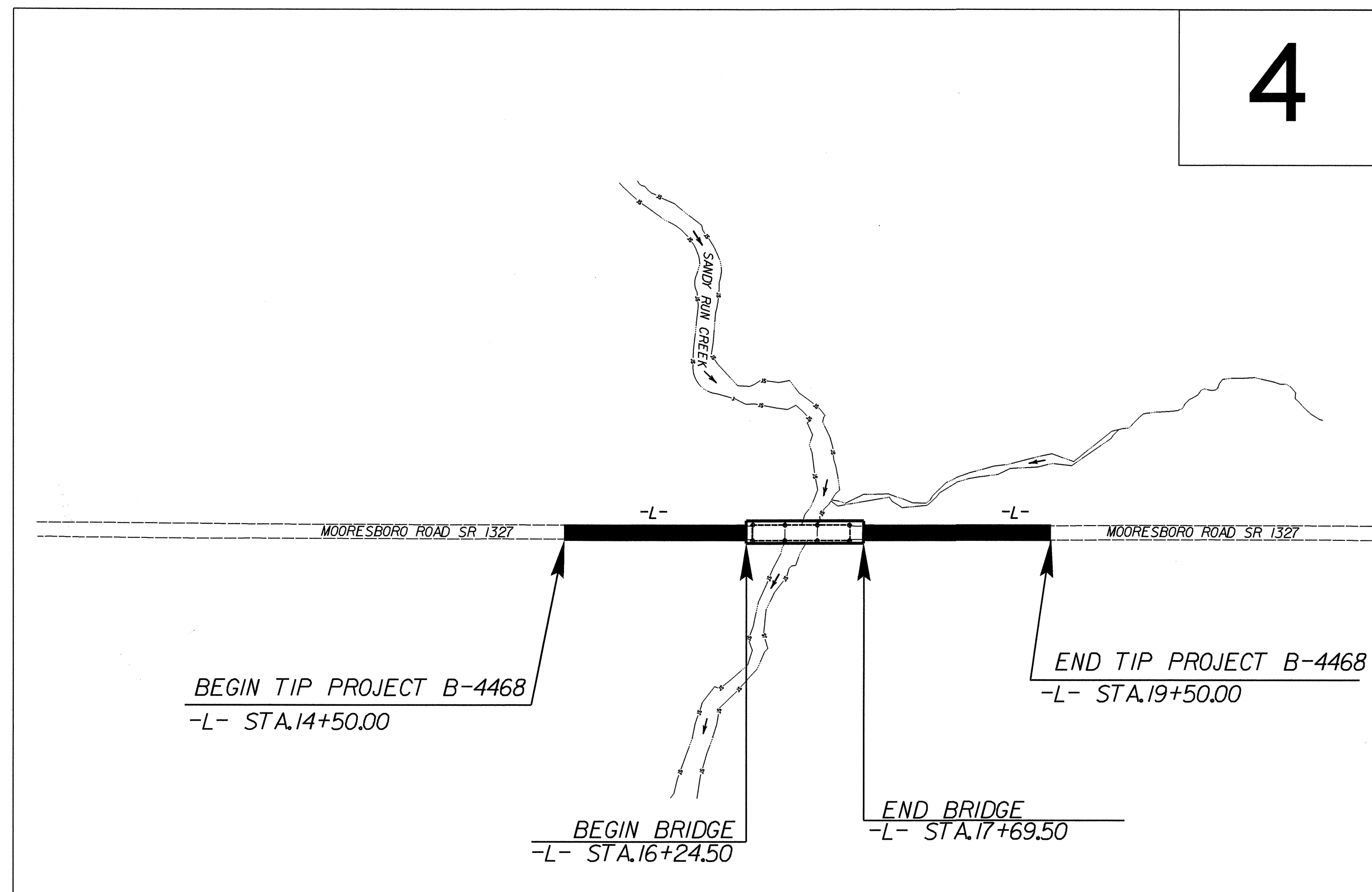
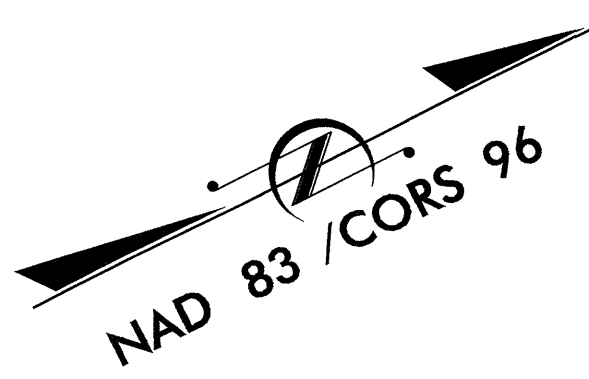
TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

See Sheet 1-A For Index of Sheets



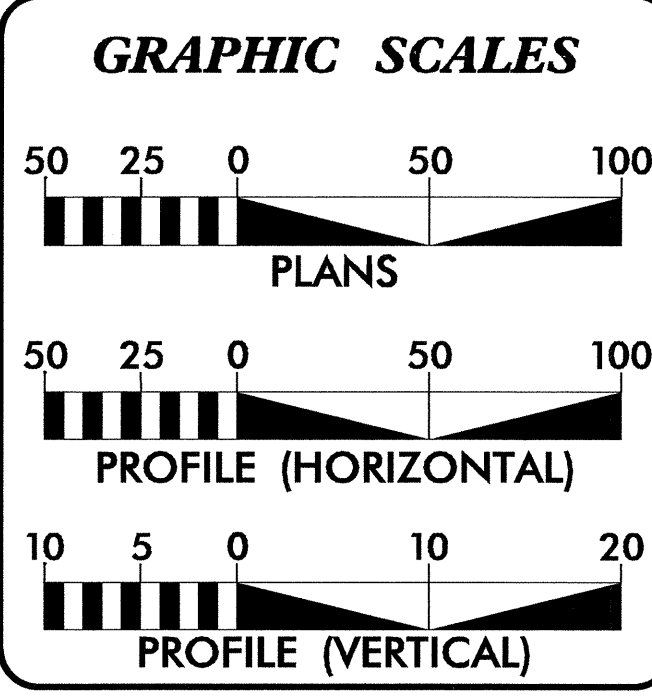
VICINITY MAP

OFFSITE DETOUR ●—●—●



TIP PROJECT: B-4468

CONTRACT: C202336



DESIGN DATA

ADT 2010	=	830
ADT 2030	=	1,200
DHV	=	10 %
D	=	60 %
T	=	3 % *
V	=	40 MPH
FUNC CLASS	=	LOCAL
* TTST 1%		DUAL 2%
		SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4468	=	0.068 Miles
LENGTH STRUCTURE TIP PROJECT B-4468	=	0.027 Miles
TOTAL LENGTH ROADWAY TIP PROJECT B-4468	=	0.095 Miles

Prepared In the Office of:

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: March 20, 2009	G.E. BREW PE PROJECT ENGINEER
LETTING DATE: March 16, 2010	D.WILLIAMS PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

Denis K. Motle 1-7-10
SIGNATURE

ROADWAY DESIGN ENGINEER

G.E. Brew 12-29-09
SIGNATURE

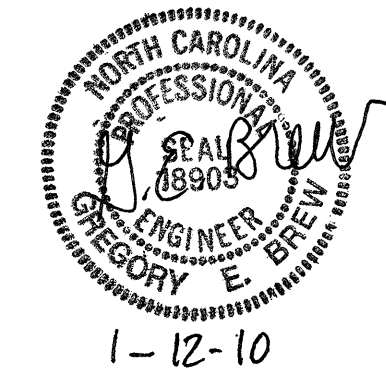
Professional Engineer Seals for Denis K. Motle and G.E. Brew.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Ant McMillan
STATE HIGHWAY DESIGN ENGINEER P.E.

08-DEC-2009 14:18: P:\Roadway\Projects\B4468_rdy_rsh.dgn \$\$\$USERNAME\$\$\$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
INDEX OF SHEETS



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

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, WEDGING DETAIL AND SHOULDER BERM GUTTER DETAIL
2-A THRU 2-B	METHOD OF PIPE INSTALLATION DETAIL
2-C	BRIDGE APPROACH FILLS DETAIL
2-D	ANCHORAGE FOR FRAMES DETAIL
2-E	ROCK PLATING DETAIL
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF DRAINAGE QUANTITIES
	SUMMARY OF GUARDRAIL, EARTHWORK, SHOULDER BERM GUTTER AND BARBED WIRE FENCE SUMMARIES
3-B	PARCEL INDEX SHEET
4	PLAN SHEET
5	PROFILE SHEET
TCP-1 THRU TCP-3	TRAFFIC CONTROL PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SD-1	SIGNING PLANS
UC-1 THRU UC-2	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS
X-1A	CROSS-SECTIONS SUMMARY SHEET
X-1 THRU X-3	CROSS-SECTIONS
S-1 THRU S-26	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.

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.

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 DUKE POWER AND AT&T TELEPHONE

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.

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 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 7 - CONCRETE PAVEMENTS AND SHOULDERS	
700.05	Tying Proposed Pavement to Existing
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.04	Barbed Wire Fence with Wood Posts (2 - 7 Strands)
876.02	Guide for Rip Rap at Pipe Outlets

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	EDM
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	---WLB---
Proposed Lateral, Tail, Head Ditch	---FLW---
False Sump	◇

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	CSX TRANSPORTATION 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	○ R W
Proposed Right of Way Line with Iron Pin and Cap Marker	○ R W
Proposed Right of Way Line with Concrete or Granite Marker	○ R W
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 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	XXXX

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	⊙
Storm Sewer	---S---

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	PH
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	PH
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	---TF0---
Designated U/G Fiber Optics Cable (S.U.E.*)	---TF0---

WATER:

Water Manhole	⊙
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	PH
Recorded U/G TV Cable	---TV---
Designated U/G TV Cable (S.U.E.*)	---TV---
Recorded U/G Fiber Optic Cable	---TF0---
Designated U/G Fiber Optic Cable (S.U.E.*)	---TF0---

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---

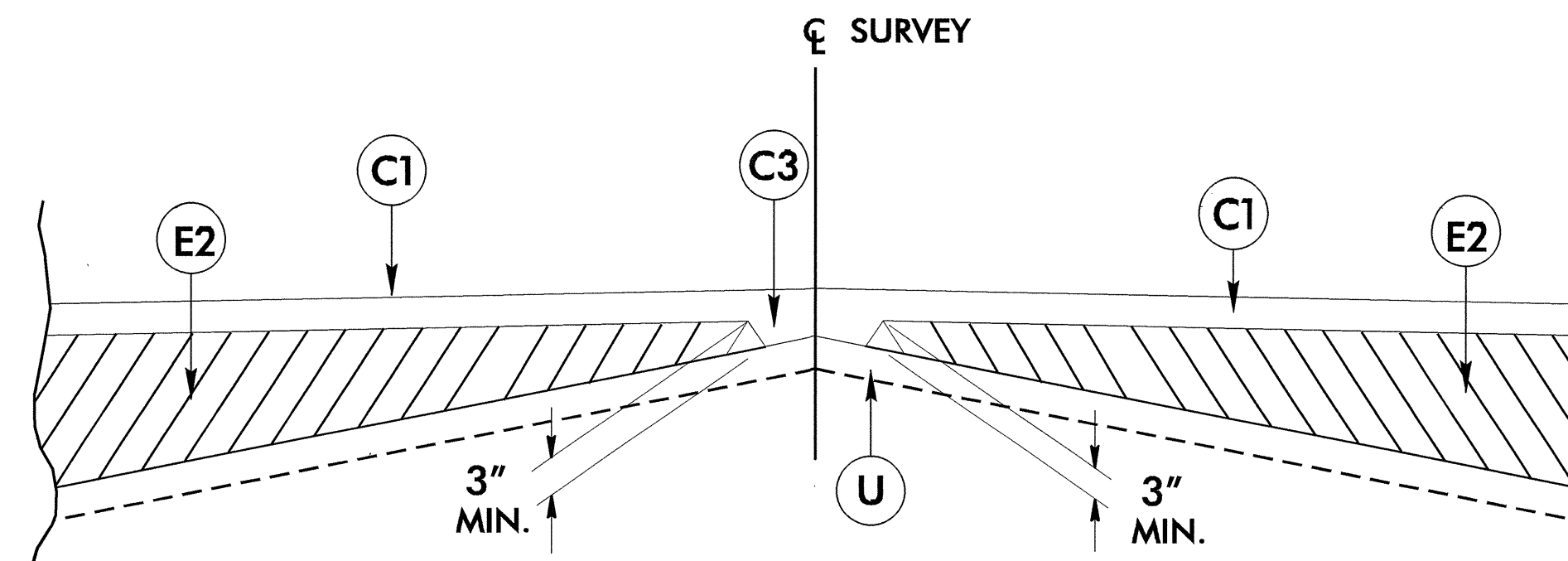
MISCELLANEOUS:

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	□
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.

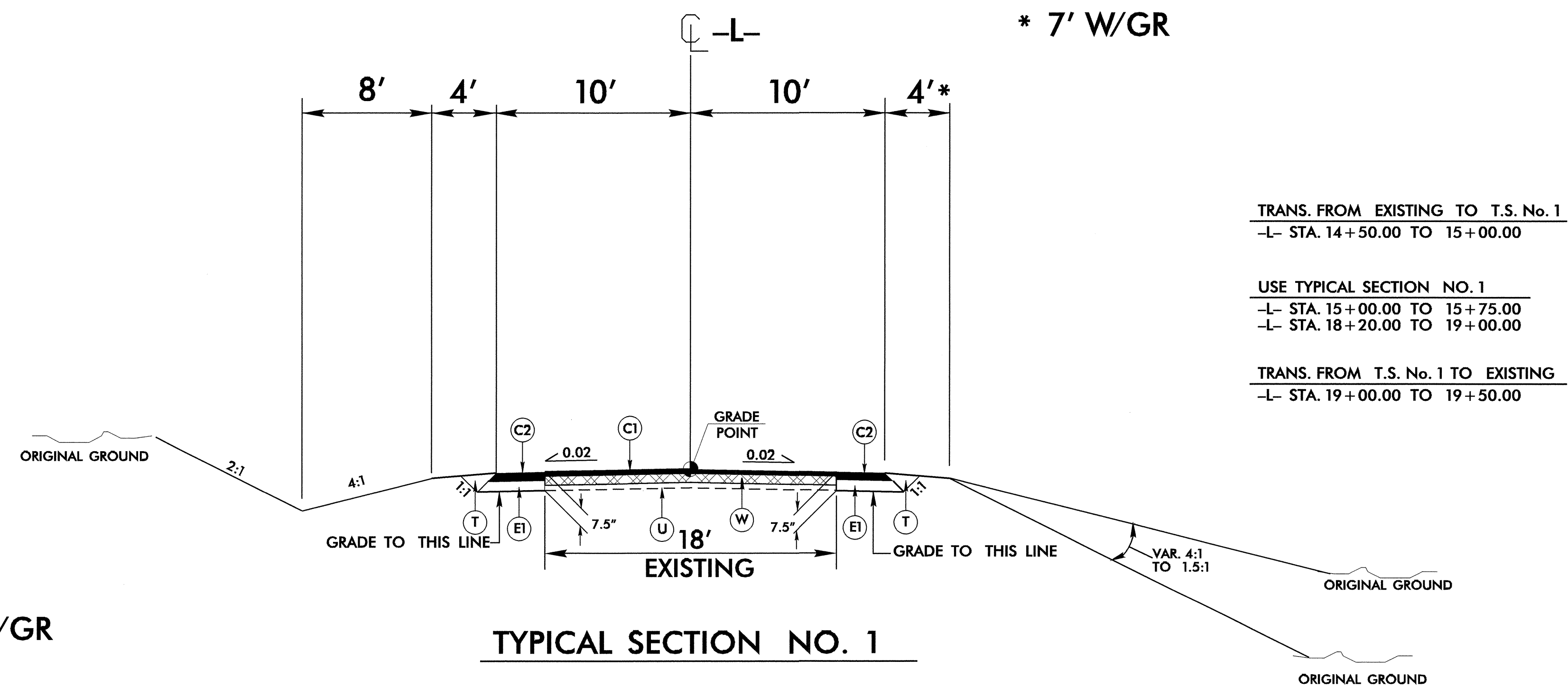
FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" 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 LESS THAN 1.5" IN DEPTH OR GREATER THAN 3" IN DEPTH.
E1	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE 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 5.5" IN DEPTH.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)

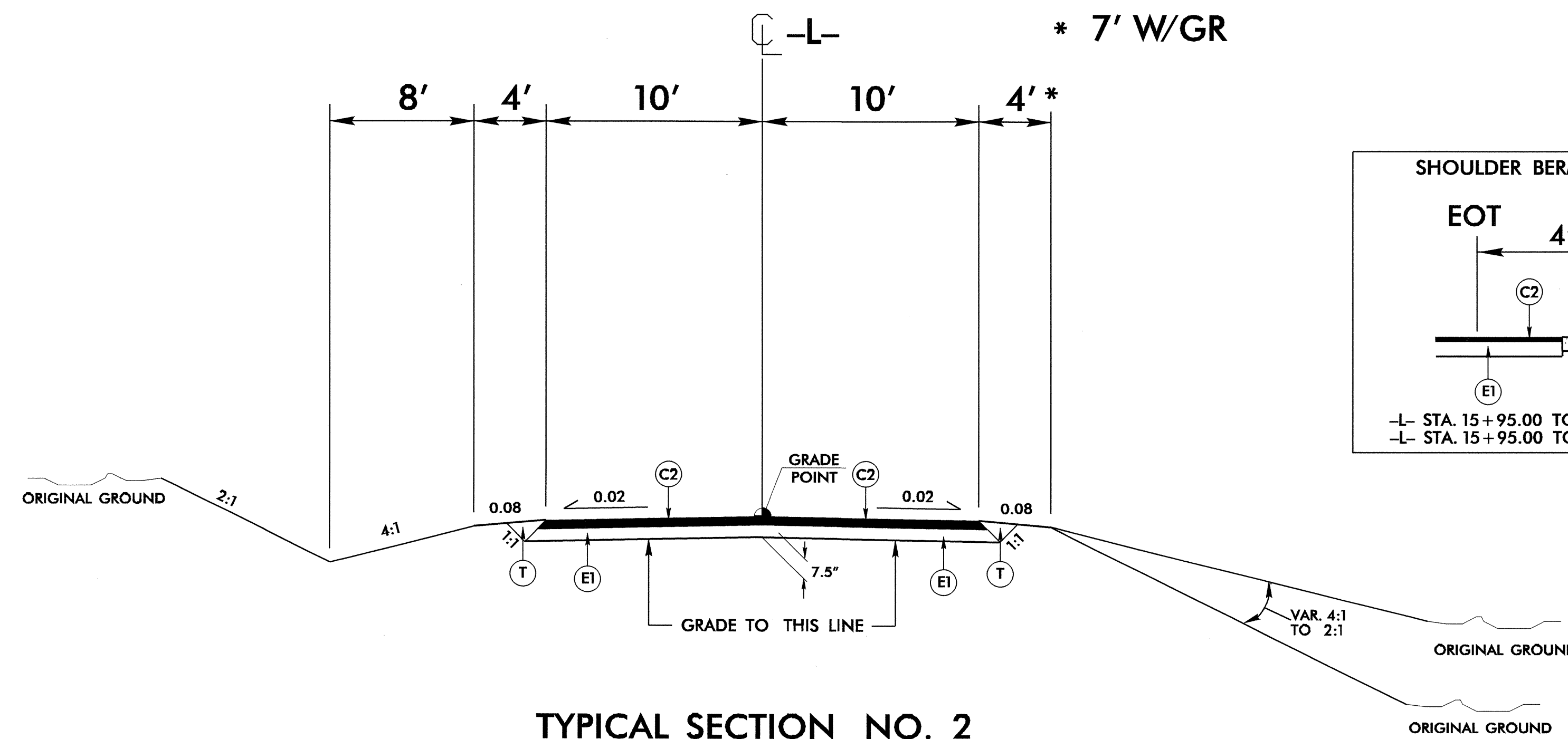
*NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



Detail Showing Method of Wedging

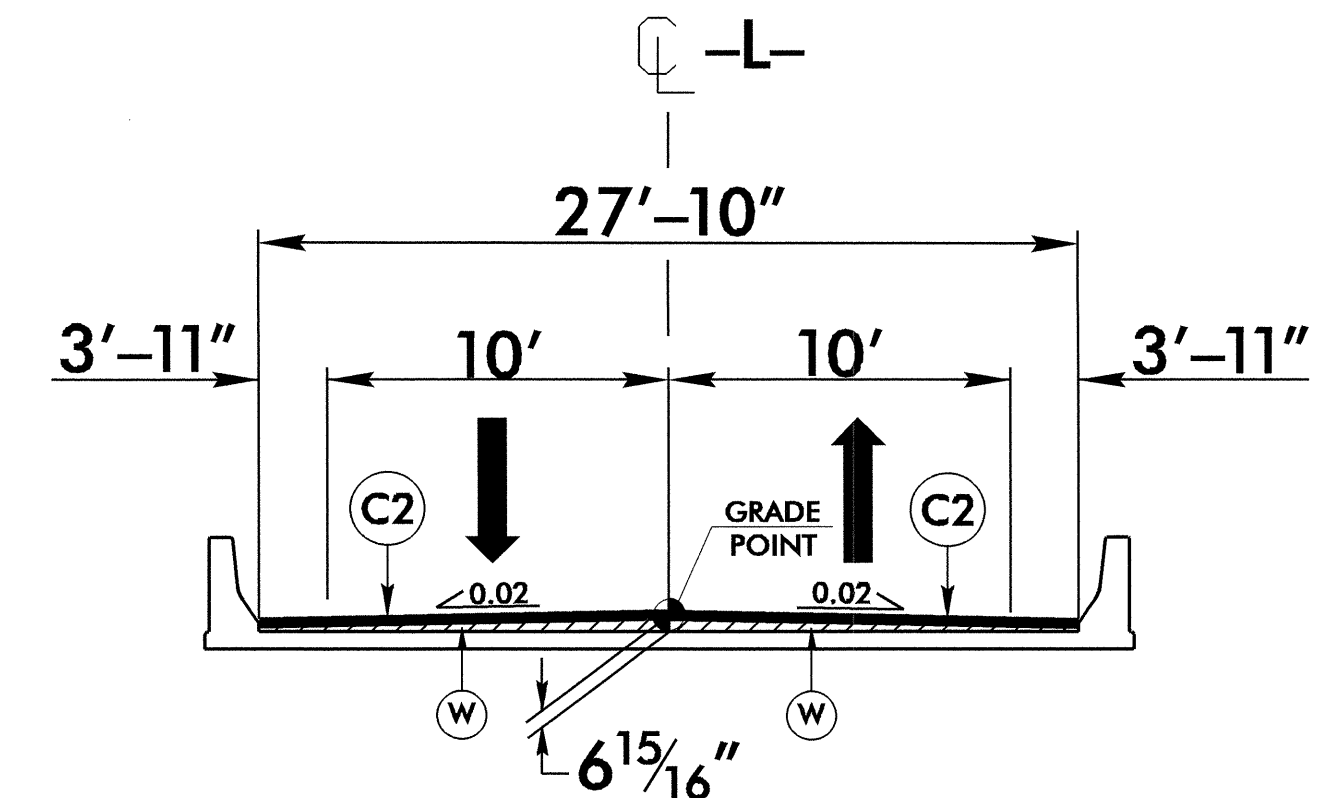
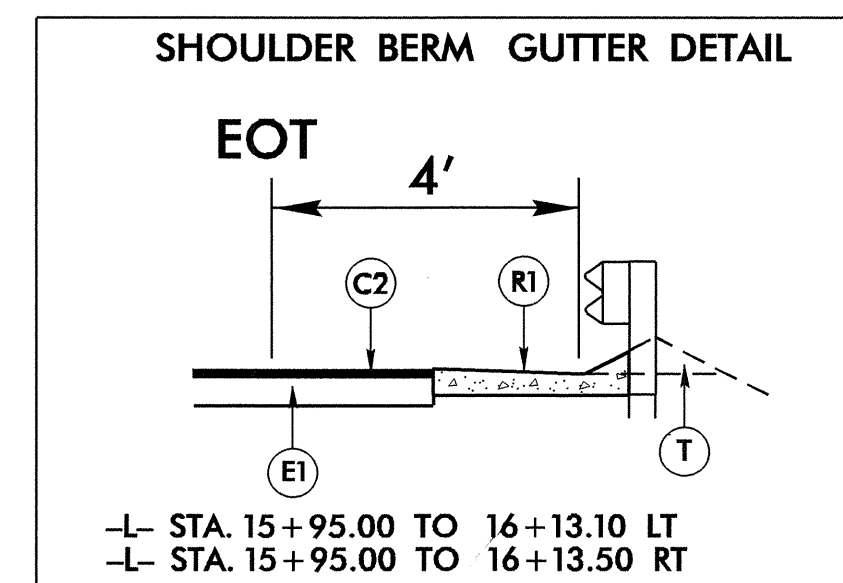


TYPICAL SECTION NO. 1



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
 -L- STA. 15+75.00 TO 16+24.50 (BEGIN BRIDGE)
 -L- STA. 17+69.50 (END BRIDGE) TO 18+20.00



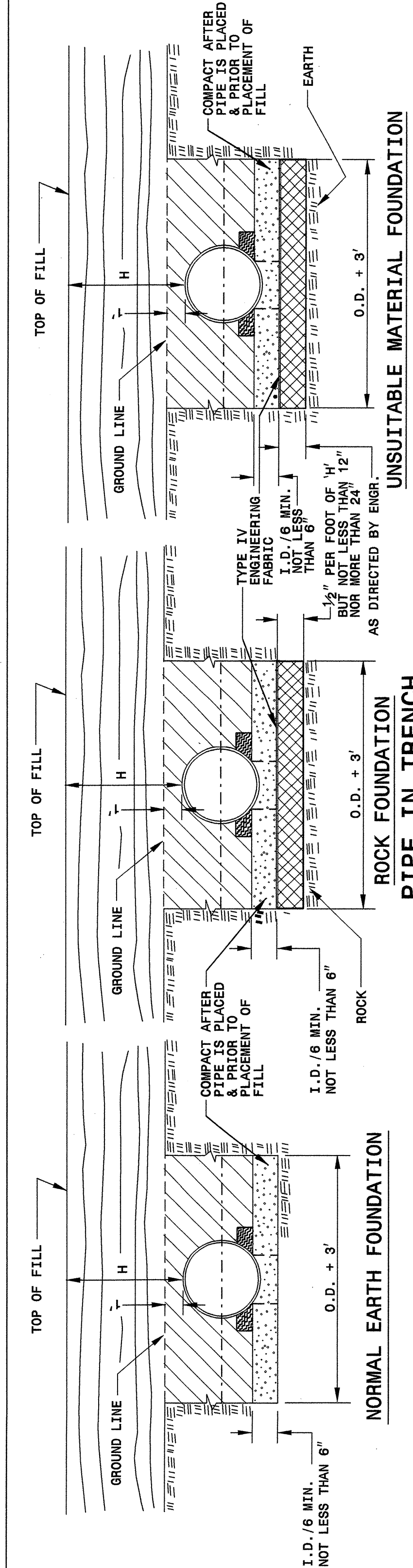
TYPICAL SECTION ON STRUCTURE
 -L- STA. 16+24.50 (BEGIN BRIDGE) TO -L- STA. 17+69.50 (END BRIDGE)

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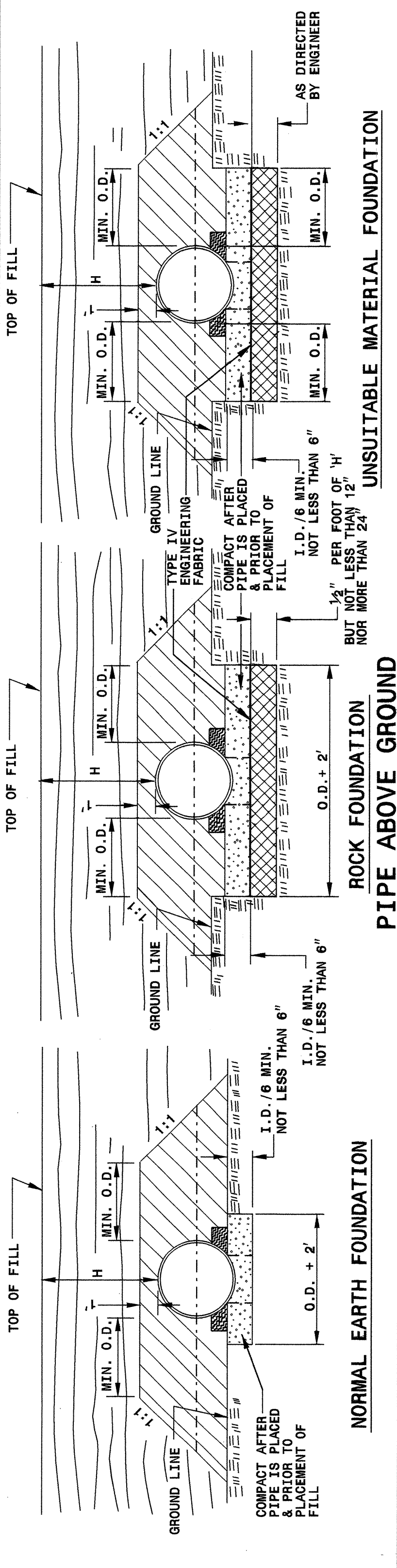
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STATE OF NORTH CAROLINA
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 DIVISION OF HIGHWAYS
 RALEIGH, N.C.
 7-06



STATE OF NORTH CAROLINA
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 DIVISION OF HIGHWAYS
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 7-06

ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE
 SHEET 1 OF 3
 300D01



ENGLISH DETAIL DRAWING FOR
 METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE
 SHEET 1 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.

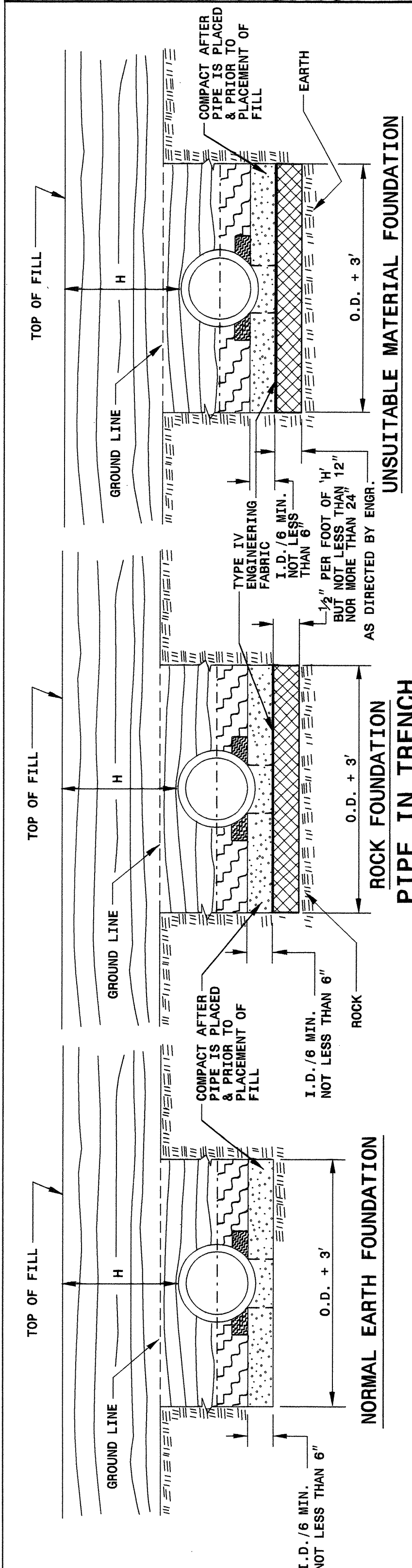
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

--- 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.

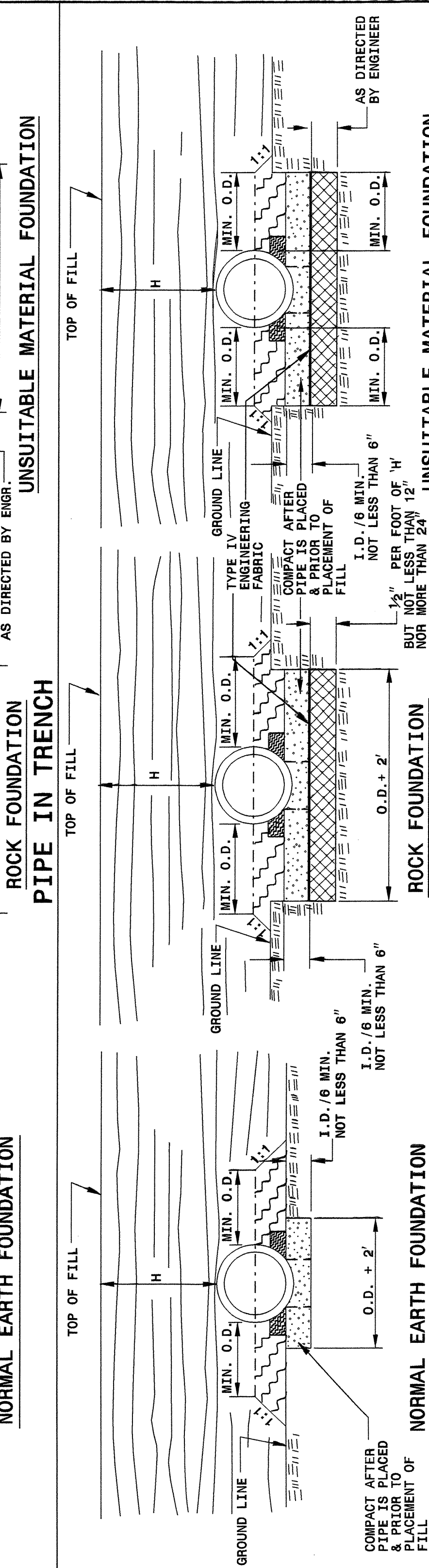
TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
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 RALEIGH, N.C.
 7-06



STATE OF NORTH CAROLINA
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 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.

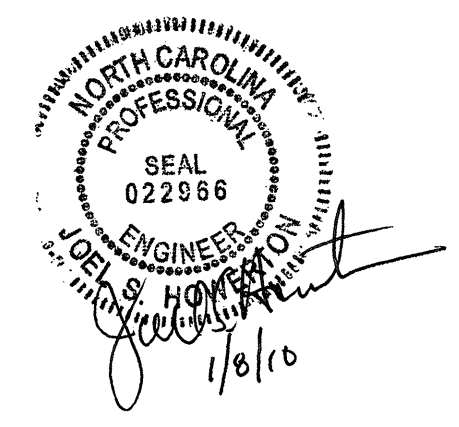
--- SPRINGLINE OF PIPE
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 BELOW SPRINGLINE.
 APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.
 UNDISTURBED EARTH MATERIAL
 SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

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.

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: 7/20/09
 FILE SPEC:\p523\stds\stdstodetails\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	14	12	10
12	12	204	256		8
15	12	162	204		
18	12	135	169	239	
21	12	115	145	204	
24	12	100	128	178	
30	12	79	100	142	
36	12	65	83	117	152
42	12	55	70	100	130
48	12	48	61	87	113
54	12	42	54	77	100
60	12	36	47	69	90
66	12	30	40	61	81
72	12	24	33	53	74
78	12	18	26	45	66
84	12	12	19	38	59

Round Corrugated Aluminum Pipe
 2 2/3 x 1/2 corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet)			
		(Ga) 16	14	12	10
12	12	123	155	218	8
15	12	98	123	174	224
18	12	81	102	144	275
21	12	69	87	123	228
24	12	60	76	108	195
27	12	53	67	95	171
30	12	47	60	85	151
36	12	42	50	71	136
42	12	36	43	60	113
48	12	30	36	50	92
54	12	24	29	46	78
60	12	18	22	40	68
66	12	12	15	34	62
72	12	6	9	28	51
	12	0	3	22	41

** 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

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 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

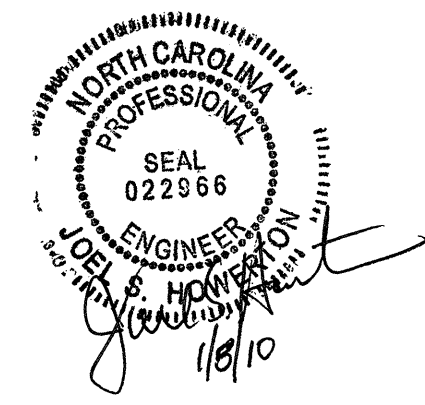
FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

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

SEE PLATE FOR TITLE

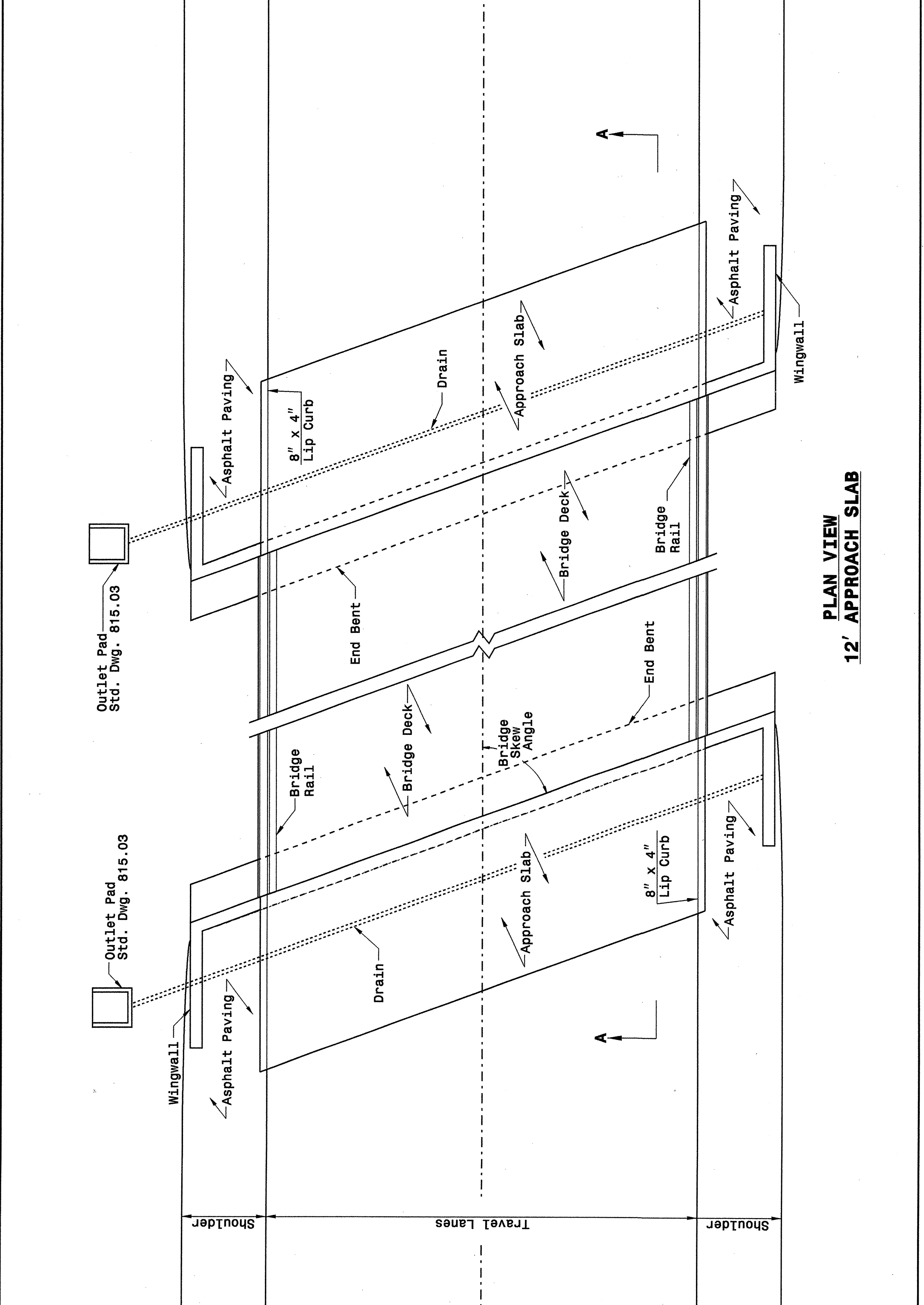
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STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
SUB REGIONAL TIER

SHEET 1 OF 2
422D11



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

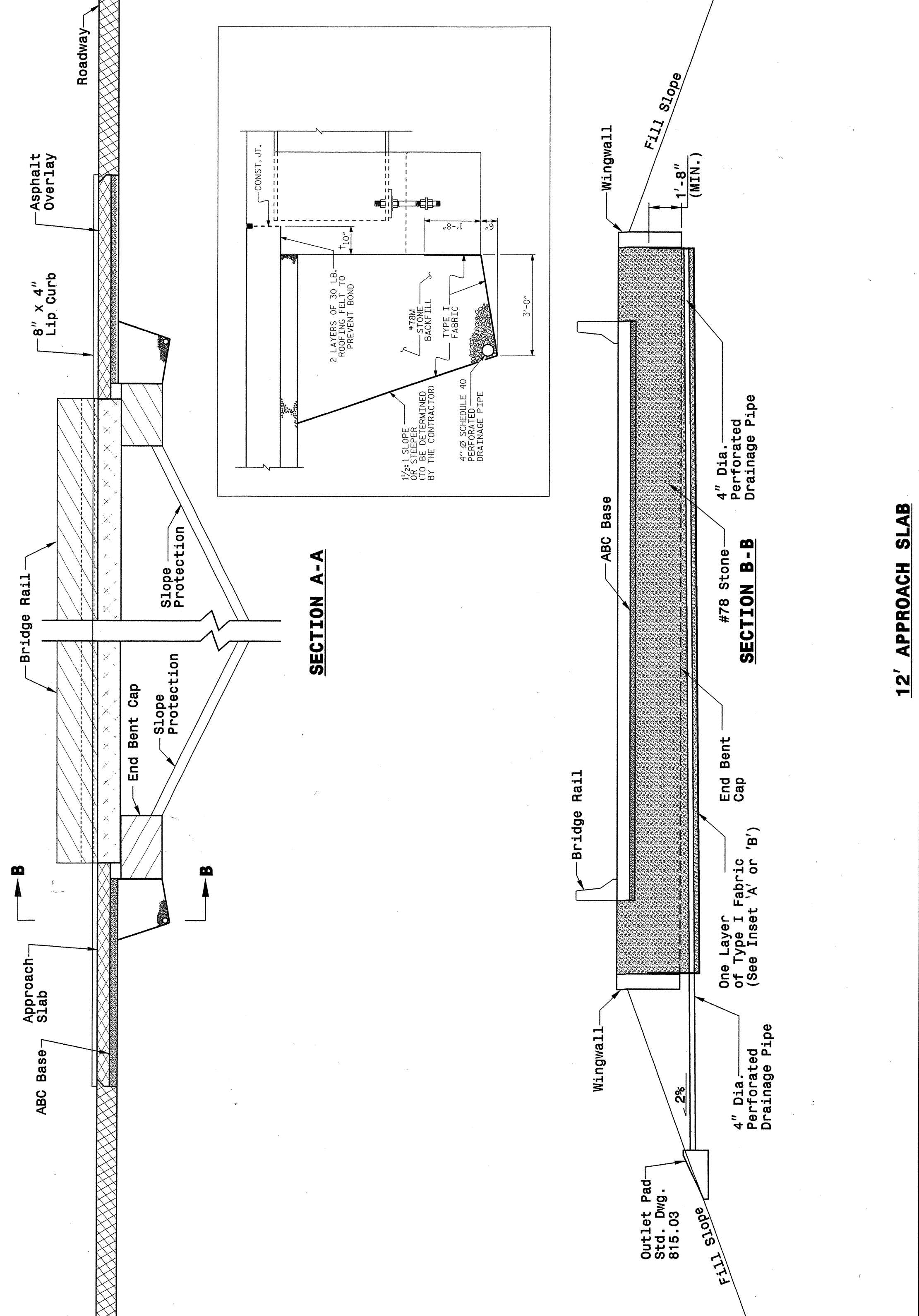
ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
SUB REGIONAL TIER

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
SUB REGIONAL TIER

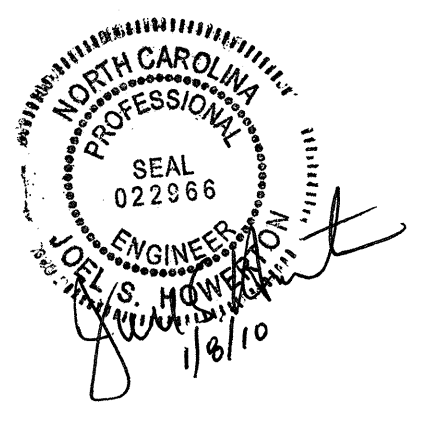
SHEET 2 OF 2
422D11



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

ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
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
SUB REGIONAL TIER

ORIGINAL BY: K. A. Kempf DATE: 6-10-08
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: kkempf\english\bridge approach fills.dgn

SYSTEMS

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

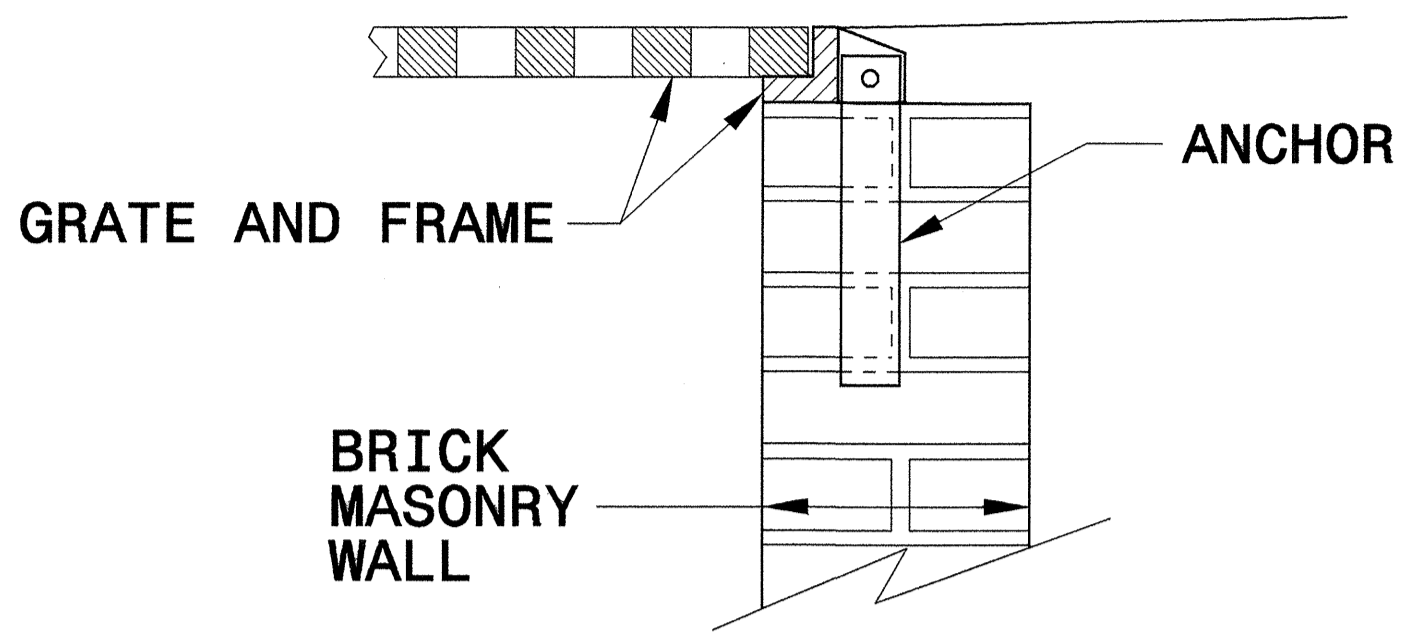
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ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1
840D25

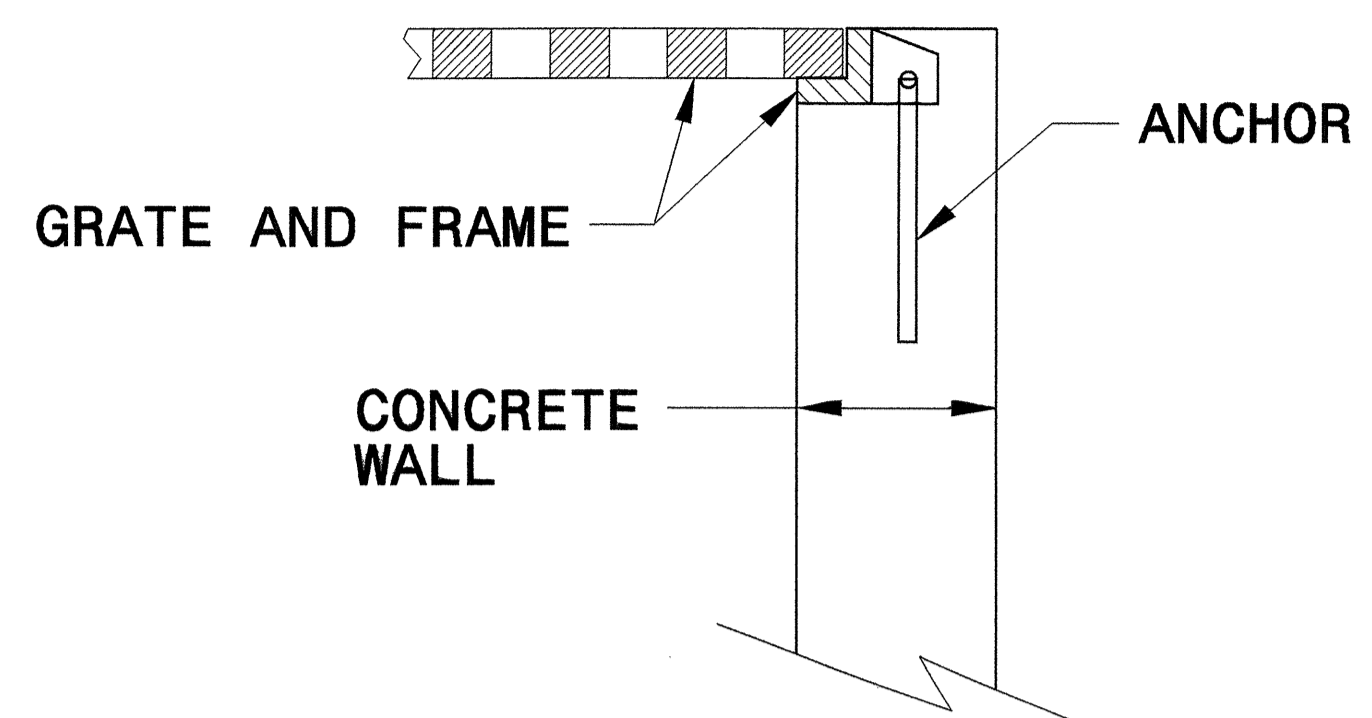
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

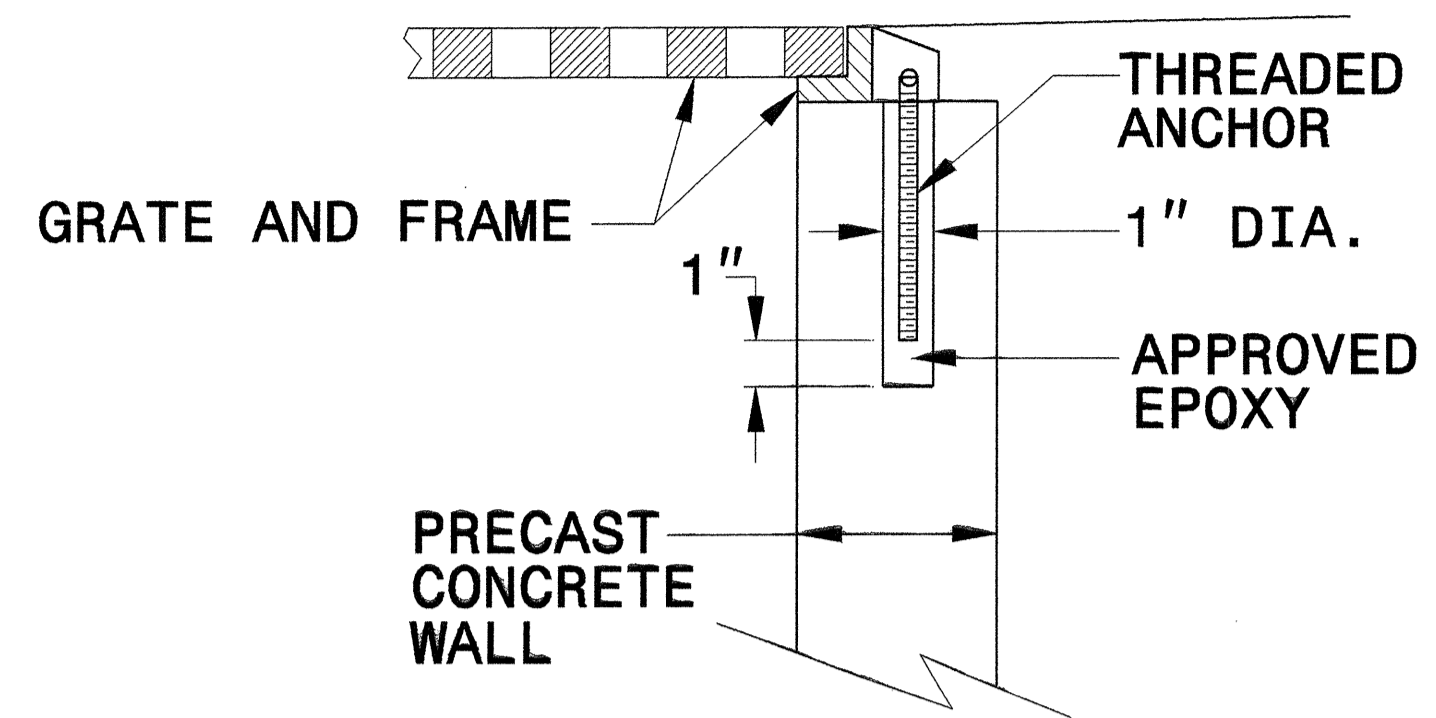
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



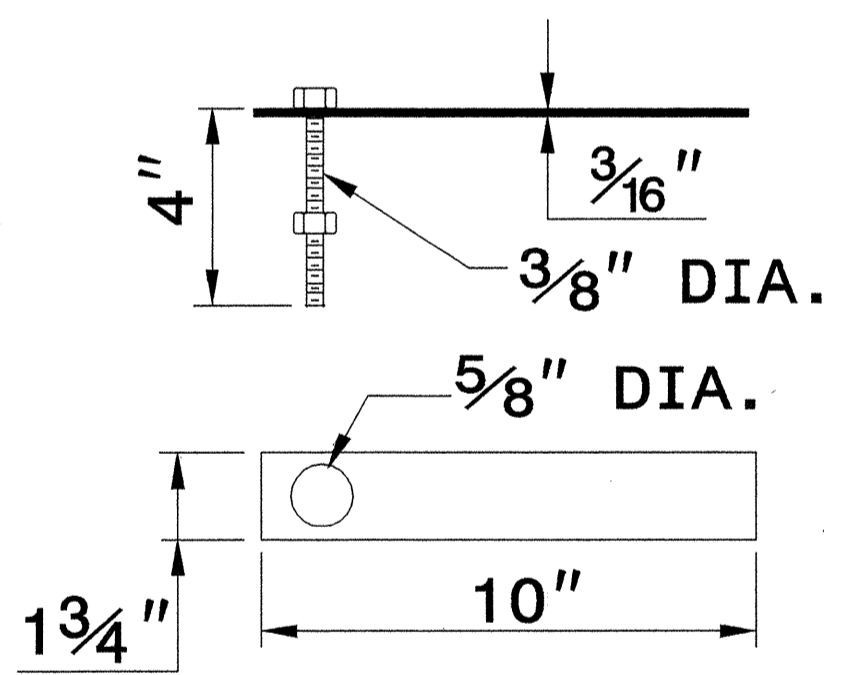
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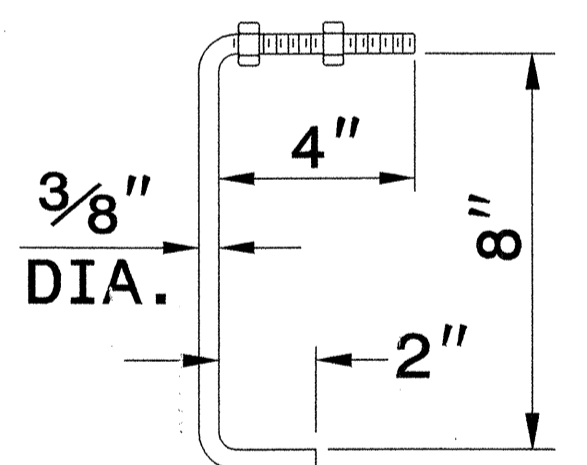
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

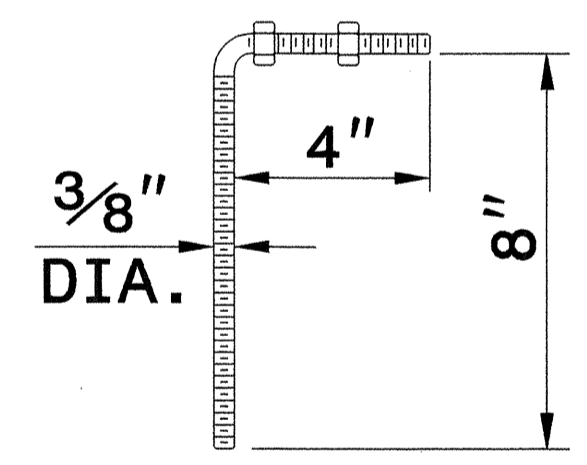
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



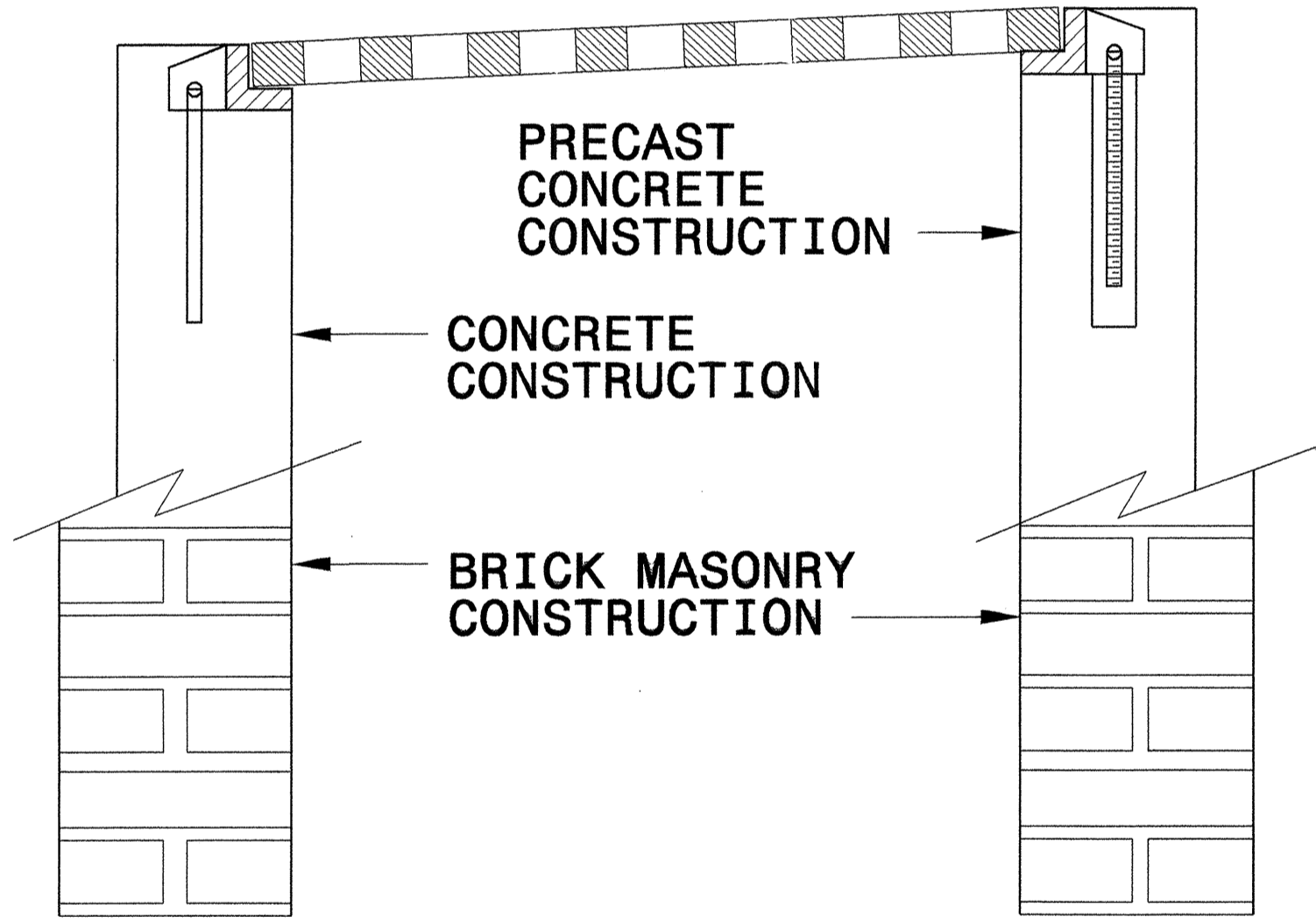
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



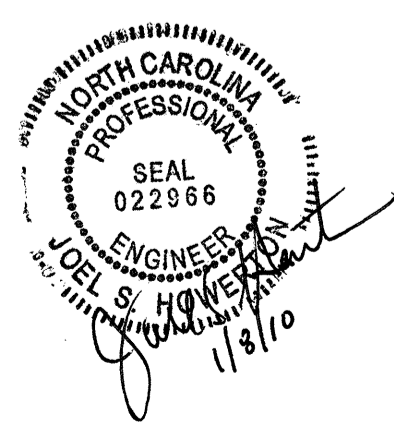
CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS



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: 11/3/06
FILE SPEC.: [Signature]

SYSTEMS
DONES
USERS
NAME



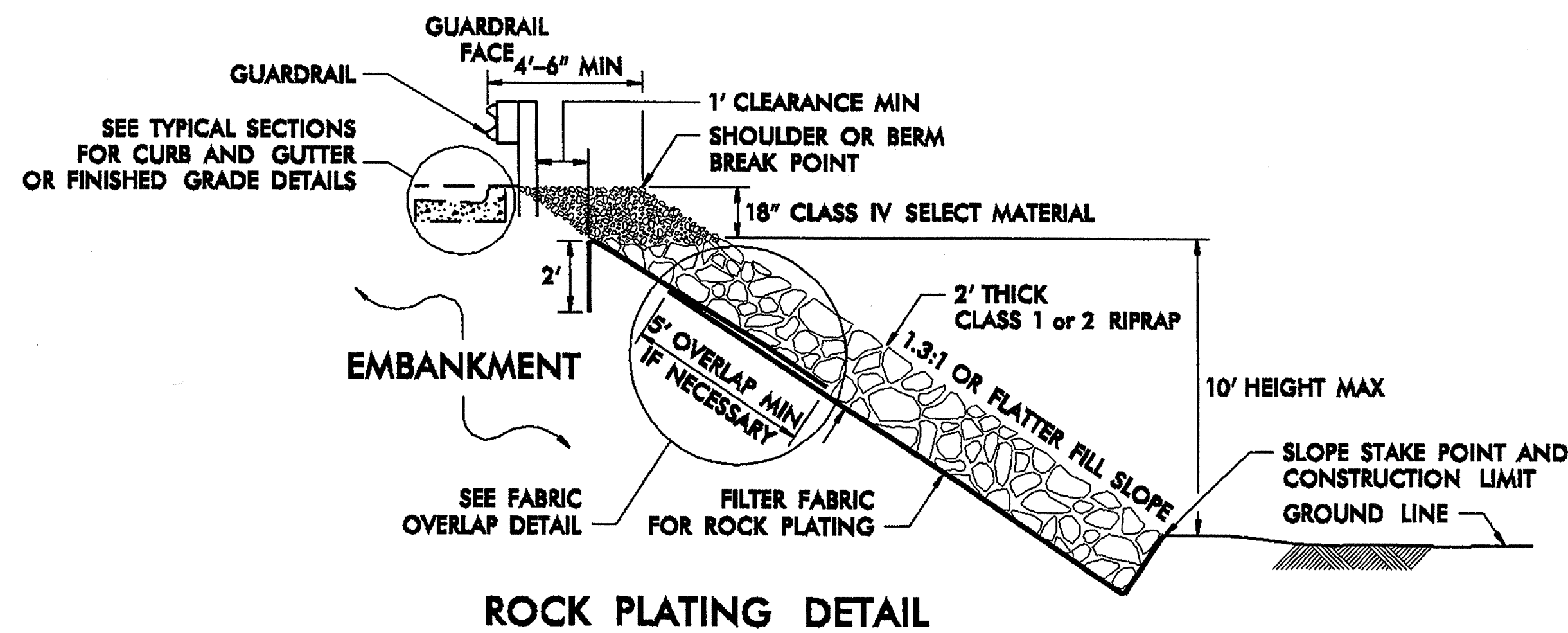
Signature: *Shane C. Clark* 1-8-10
 DATE

NOTES:

FOR ROCK PLATING, SEE ROCK PLATING SPECIAL PROVISION

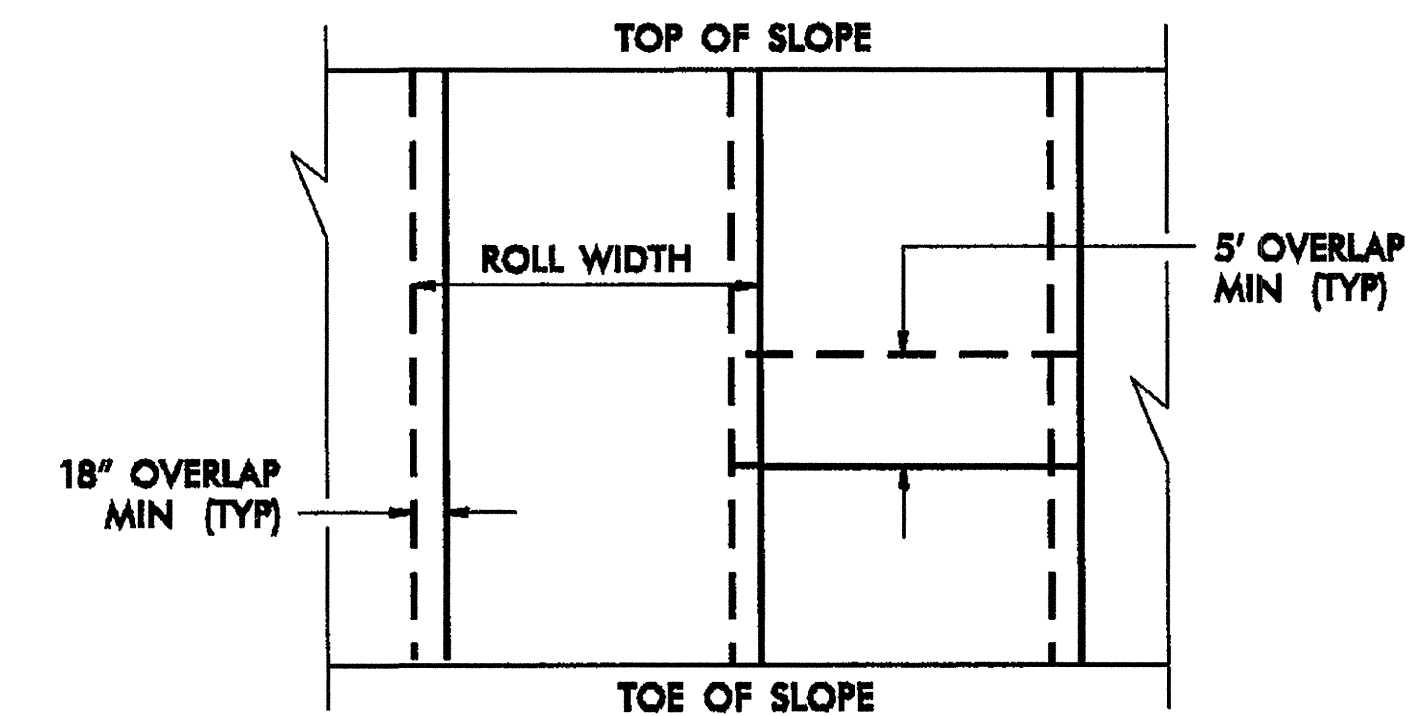
ROCK PLATING WILL BE INSTALLED AND MAINTAINED PER THE PROVIDED DETAIL. IN AREAS WHERE THE ROCK PLATING EXTENDS TO WITHIN 10 FEET OF THE STREAM BANK CREST, OR AS DIRECTED BY THE GEOTECHNICAL OPERATIONS ENGINEER, THE SIDE SLOPES CAN BE STEEPENED TO A MAXIMUM OF 1.3:1 (H:V).

ALL LOCATIONS MUST BE IDENTIFIED BY THE CONTRACTOR AND APPROVED PRIOR TO ROCK PLATING PLACEMENT



USE ROCK PLATING DETAIL AT THE FOLLOWING LOCATIONS:

-L- STA 17+80.00 LT.+ TO -L- STA 18+50.00 LT.+
 EXTEND ROCK PLATING LIMITS TO TIE INTO ADJOINING SLOPES AS DIRECTED BY THE ENGINEER.



FABRIC OVERLAP DETAIL (PLAN VIEW)

PREPARED BY: TIM WILLIAMS	DATE: 1-8-10
REVIEWED BY: SHANE CLARK	DATE: 1-8-10

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

ROCK PLATING DETAILS

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202336

ItemNumber	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION
003000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ***** (16+97 -L-)
003800000-E	SP	100	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	200	TON	CLASS IV SUBGRADE STABILIZATION
019600000-E	270	550	SY	FABRIC FOR SOIL STABILIZATION
022300000-E	SP	230	SY	ROCK PLATING
032000000-E	SP	20	SY	FOUNDATION CONDITIONING FABRIC
033000000-E	SP	20	TON	GENERIC DRAINAGE ITEM FOUNDATION CONDITIONING MATERIAL, MINOR STRS
033520000-E	SP	52	LF	15" DRAINAGE PIPE
033585000-E	SP	4	EA	*** DRAINAGE PIPE ELBOWS (15")
098600000-E	SP	8	LF	GENERIC PIPE ITEM 15" SIDE DRAIN PIPE
122000000-E	545	25	TON	INCIDENTAL STONE BASE
148900000-E	610	120	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
151900000-E	610	200	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
156000000-E	620	20	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
225300000-E	840	0.5	CY	PIPE COLLARS
228600000-N	840	2	EA	MASONRY DRAINAGE STRUCTURES
236700000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29
255600000-E	846	40	LF	SHOULDER BERM GUTTER
303000000-E	862	112.5	LF	STEEL BM GUARDRAIL
315000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS

ItemNumber	Sec #	Quantity	Unit	Description
316500000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE ***** 350 (TL-2)
331700000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
355700000-E	866	50	LF	ADDITIONAL BARBED WIRE
355900000-E	866	504	LF	** STRAND BARBED WIRE FENCE WITH POSTS (5)
356500000-E	866	1	EA	DOUBLE GATES, *** HIGH, ** WIDE, ** OPENING (48" X 9-8" X 19'-4")
364900000-E	876	2	TON	RIP RAP, CLASS B
365600000-E	876	1,360	SY	FILTER FABRIC FOR DRAINAGE
440000000-E	1110	326	SF	WORK ZONE SIGNS (STATIONARY)
441000000-E	1110	94	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
444500000-E	1145	96	LF	BARRICADES (TYPE III)
532560000-E	1510	352	LF	6" WATER LINE
554000000-E	1515	2	EA	6" VALVE
580000000-E	1530	310	LF	ABANDON 6" UTILITY PIPE
600000000-E	1605	550	LF	TEMPORARY SILT FENCE
600600000-E	1610	250	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	50	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	375	TON	SEDIMENT CONTROL STONE
601500000-E	1615	1	ACR	TEMPORARY MULCHING
601800000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	1.25	TON	FERTILIZER FOR TEMPORARY SEEDING
602400000-E	1622	250	LF	TEMPORARY SLOPE DRAINS
602700000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
602900000-E	SP	900	LF	SAFETY FENCE
603000000-E	1630	250	CY	SILT EXCAVATION

ItemNumber	Sec #	Quantity	Unit	Description
603600000-E	1631	7,800	SY	MATTING FOR EROSION CONTROL
603700000-E	SP	25	SY	COIR FIBER MAT
603800000-E	SP	150	SY	PERMANENT SOIL REINFORCEMENT MAT
604200000-E	1632	425	LF	1/4" HARDWARE CLOTH
607000000-N	SP	12	EA	SPECIAL STILLING BASINS
607101000-E	SP	25	LF	WATTLE
607102000-E	SP	5	LB	POLYACRYLAMIDE (PAM)
607103000-E	SP	150	LF	COIR FIBER BAFFLES
607105000-E	SP	2	EA	*** SKIMMER (1-1/2')
608400000-E	1660	5	ACR	SEEDING & MULCHING
608700000-E	1660	0.5	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	0.5	TON	FERTILIZER TOPDRESSING
611450000-N	SP	12	MHR	SPECIALIZED HAND MOWING
611700000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL

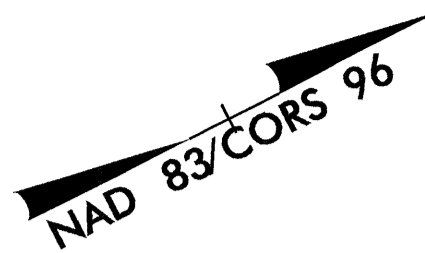
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PROJECT REFERENCE NO. B-4468	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER GREGORY E. BREWSTER NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16393 1-7-10	HYDRAULICS ENGINEER DENNIS K. HOYLE NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16393 1-7-10

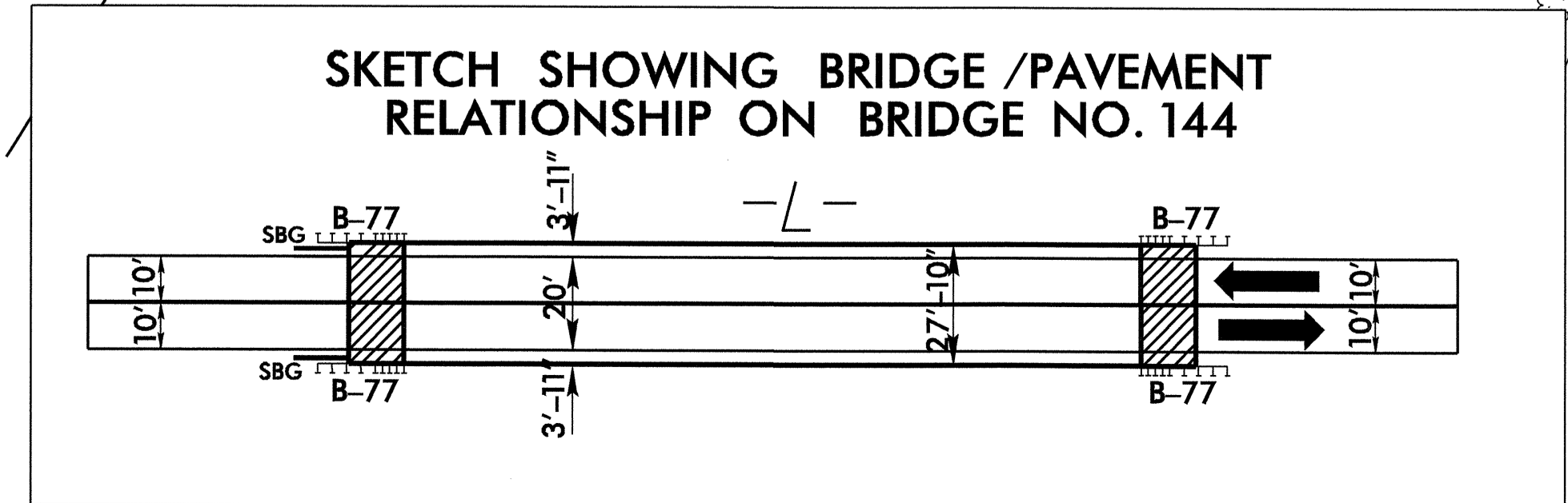
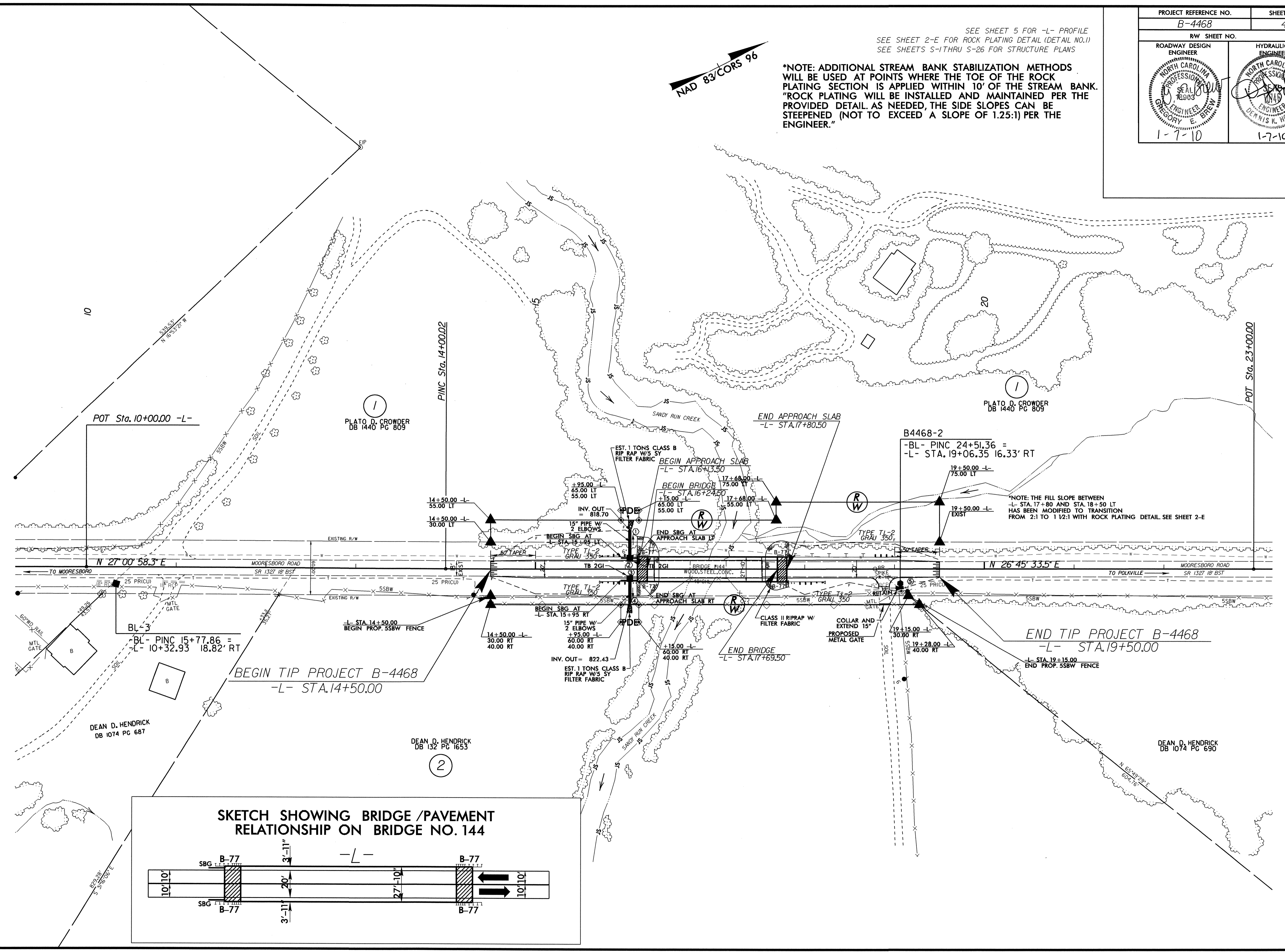
SEE SHEET 5 FOR -L- PROFILE
SEE SHEET 2-E FOR ROCK PLATING DETAIL (DETAIL NO.1)
SEE SHEETS S-1 THRU S-26 FOR STRUCTURE PLANS

*NOTE: ADDITIONAL STREAM BANK STABILIZATION METHODS WILL BE USED AT POINTS WHERE THE TOE OF THE ROCK PLATING SECTION IS APPLIED WITHIN 10' OF THE STREAM BANK. "ROCK PLATING WILL BE INSTALLED AND MAINTAINED PER THE PROVIDED DETAIL AS NEEDED, THE SIDE SLOPES CAN BE STEEPENED (NOT TO EXCEED A SLOPE OF 1.25:1) PER THE ENGINEER."



8/17/99

REVISIONS



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5/14/09

08-DEC-2009 10:37
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PROJECT REFERENCE NO. B-4468	SHEET NO. 5
ROADWAY DESIGN ENGINEER GREGORY E. BREW 12-29-09	HYDRAULICS ENGINEER DENNIS K. HOYLE 1-7-10

FOR -L- PLAN VIEW SEE SHEET 4

STRUCTURE HYDRAULIC DATA		
DESIGN DISCHARGE	= 2,200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 823.38	FT
BASE DISCHARGE	= 3,820	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 824.37	FT
OVERTOPPING DISCHARGE	= 15,000	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 832.98	FT

