

See Sheet 1-A For Index of Sheets

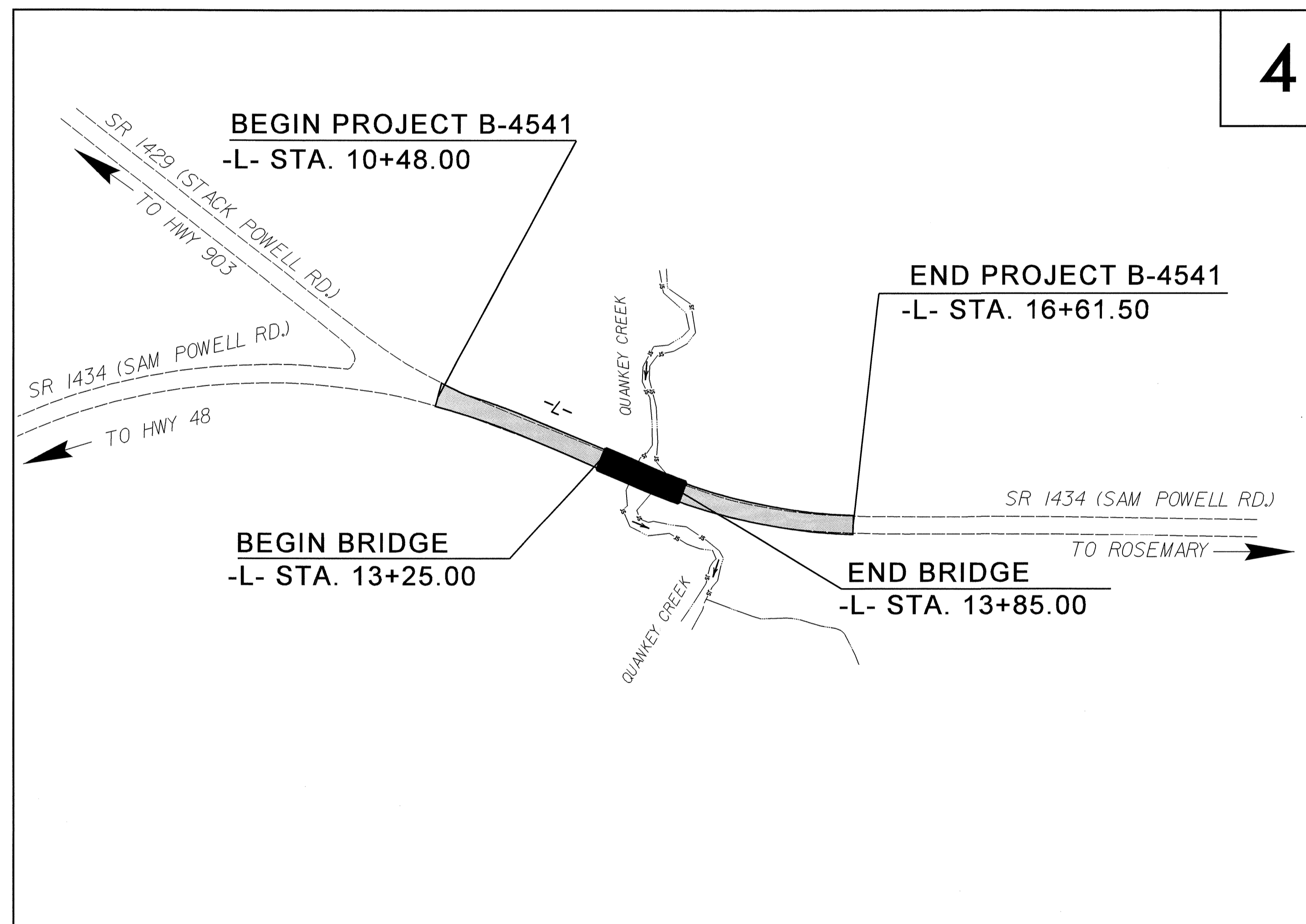
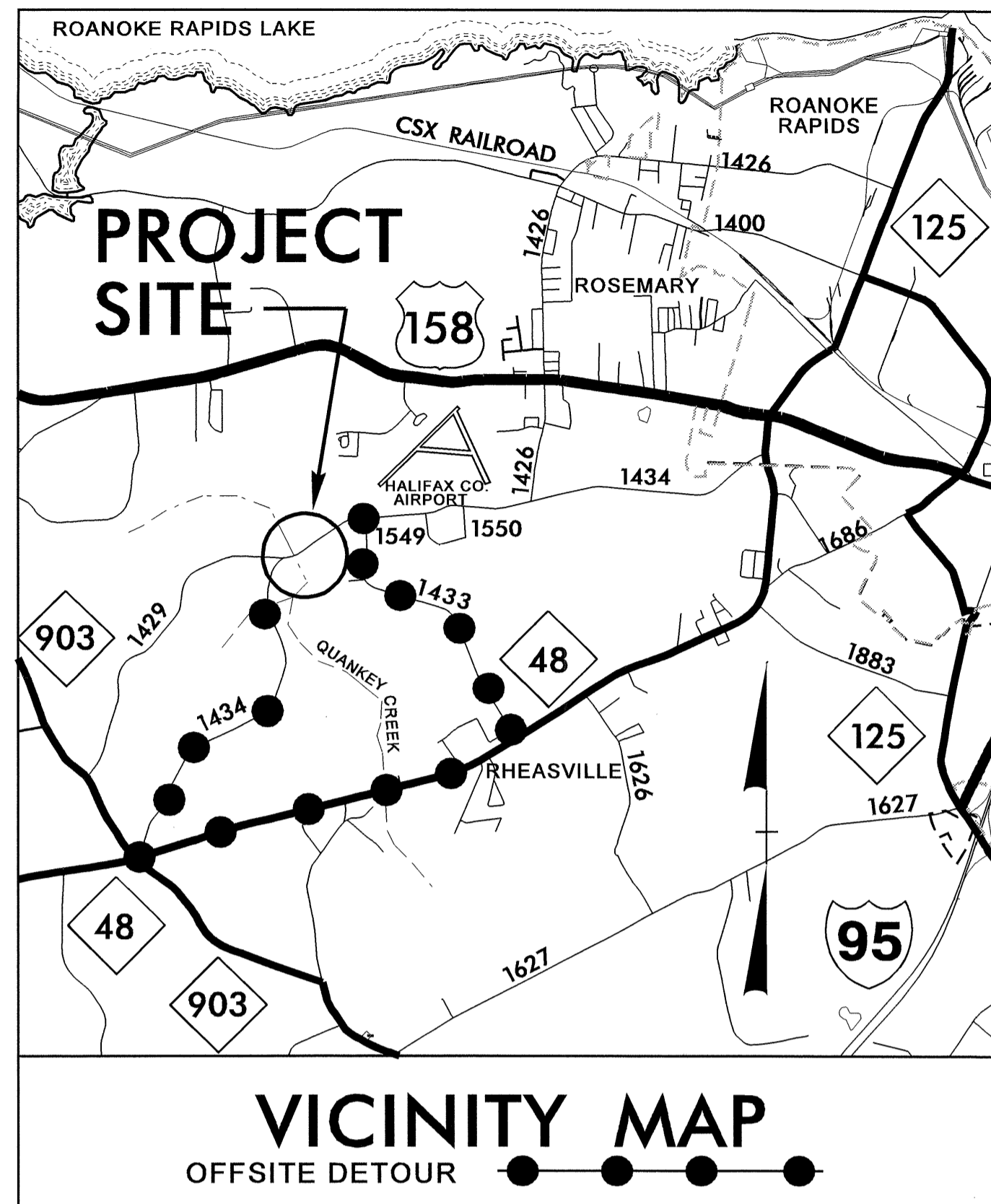
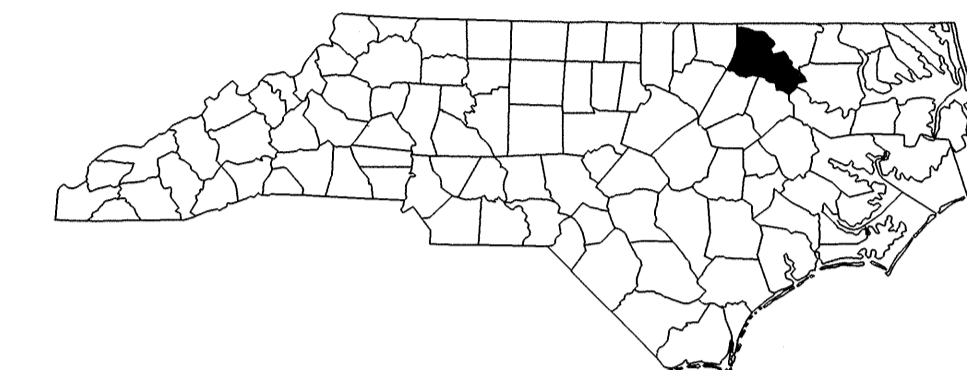
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HALIFAX COUNTY

**LOCATION: BRIDGE No. 24 ON SR 1434 (SAM POWELL RD.)
OVER QUANKEY CREEK**

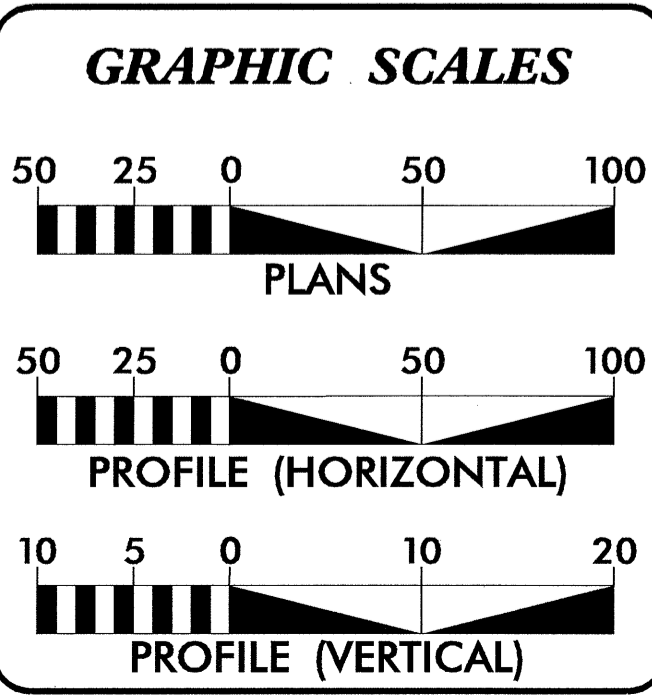
**TYPE OF WORK: GRADING, DRAINAGE, PAVING,
AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4541	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33756.1.1	BRZ-1434(3)	P.E.	
33756.2.1	BRZ-1434(3)	ROW /UTIL	
33756.3.STI	STM-1434(4)	CONST.	



TIP PROJECT: B-4541

CONTRACT: C202234



DESIGN DATA

ADT 2008 =	1385
ADT 2030 =	2200
DHV =	10 %
D =	60 %
T =	3 % *
V =	50 MPH
FUNC. CLASS =	LOCAL
* TTST 1%	DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4541 =	0.105 MI
LENGTH STRUCTURE TIP PROJECT B-4541 =	0.011 MI
TOTAL LENGTH OF TIP PROJECT B-4541 =	0.116 MI

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 18, 2008

LETTING DATE:
NOVEMBER 17, 2009

JASON MOORE, PE
PROJECT ENGINEER

BRYAN KEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SEAL 9334
HENRY WELLS, JR.
ENGINEER

SIGNATURE: [Signature] 8/15/09

ROADWAY DESIGN ENGINEER

SEAL 26964
BRYAN C. KEY
ENGINEER

SIGNATURE: [Signature] 8-25-09

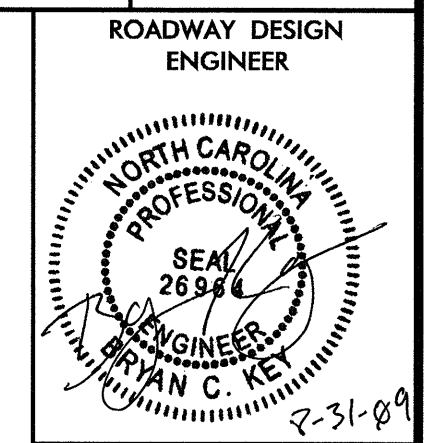
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

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8/17/99



SHEET NUMBER	INDEX OF SHEETS SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-A THRU 2-B	DETAIL FOR METHOD OF PIPE INSTALLATION
2-C	DETAIL FOR BRIDGE APPROACH FILLS
2-D	DETAIL OF ANCHORAGE FOR FRAMES
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF DRAINAGE QUANTITIES SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, AND ASPHALT PAVEMENT REMOVAL SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TCP-1 THRU TCP-2	TRAFFIC CONTROL PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKINGS
SIGN-1 THRU SIGN-3	SIGNING PLANS
SD-1	SPECIAL SIGN DESIGN
EC-1 THRU EC-4	EROSION CONTROL PLANS
UO-1 THRU UO-2	UTILITIES PLANS BY OTHERS
X	CROSS-SECTION SUMMARY
X-1 THRU X-3	CROSS-SECTIONS
S-1 THRU S-19	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.

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) Dominion NC Power
2) Embarq
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED 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 Superlevation - Two Lane Pavement
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
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
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
876.02	Guide for Rip Rap at Pipe Outlets

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

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	(23)
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	----- FLM
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	□ 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	○ T
Telephone Booth	□ T
Telephone Pedestal	□ T
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	□ TH
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
TV Tower	⊗
U/G TV Cable Hand Hole	□ TH
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.

SURVEY CONTROL SHEET B-4541

BASELINE DATA

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
101	BL-101	976813.6060	2373613.2180	222.62	OUTSIDE PROJECT LIMITS	
102	BL-102	977317.3320	2373936.0640	208.01	OUTSIDE PROJECT LIMITS	
103	BL-103	977437.2310	2374468.1990	190.42	14+64.23	15.80 RT
104	BL-104	977930.5440	2375216.4800	233.96	OUTSIDE PROJECT LIMITS	

BENCHMARK DATA

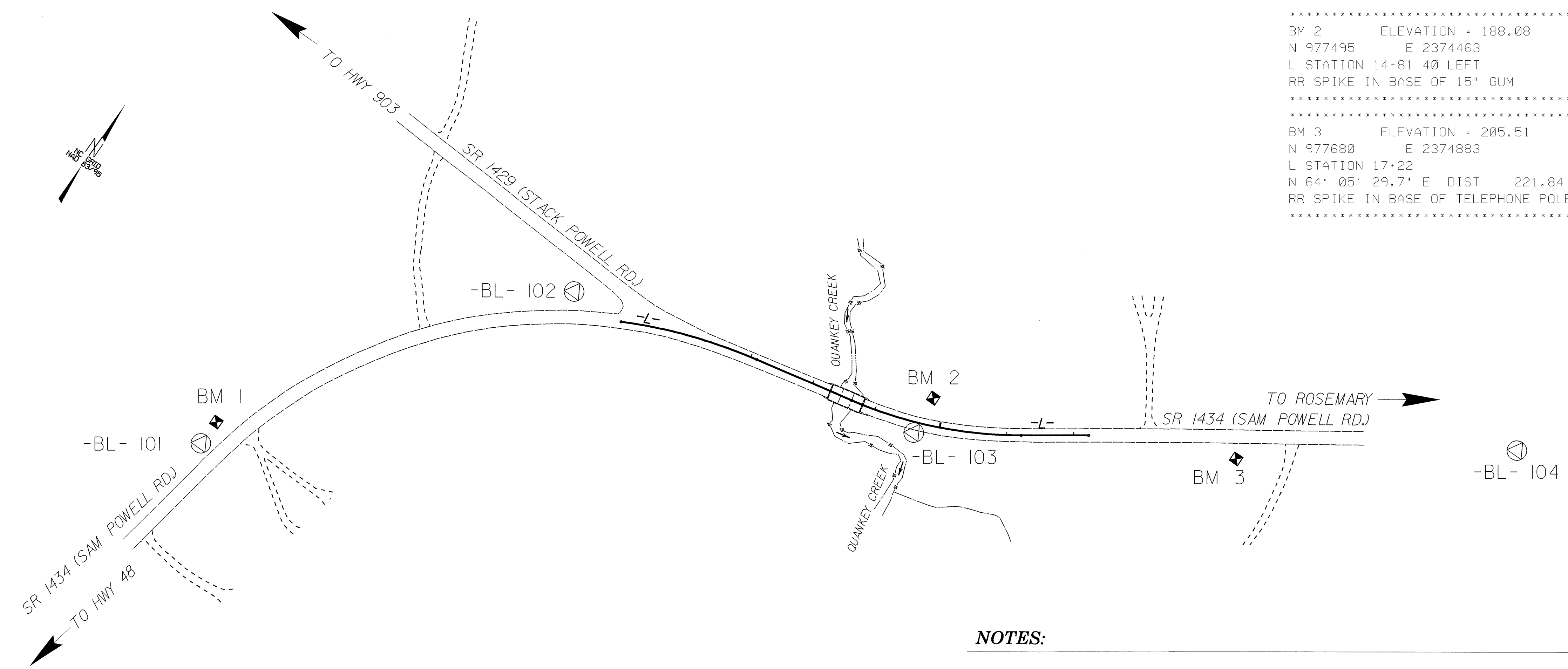
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*****
BM 1      ELEVATION = 226.44
N 976853  E 2373614
L STATION 10+00
S 40° 55' 19.7" W DIST 618.67
RR SPIKE IN BASE OF 10" GUM
*****

BM 2      ELEVATION = 188.08
N 977495  E 2374463
L STATION 14+81 40 LEFT
RR SPIKE IN BASE OF 15" GUM
*****

BM 3      ELEVATION = 205.51
N 977680  E 2374883
L STATION 17+22
N 64° 05' 29.7" E DIST 221.84
RR SPIKE IN BASE OF TELEPHONE POLE
*****

```



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS B4541-1"

WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
 NORTHING: 978377.164(±) EASTING: 2375811.797(±)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
 (GROUND TO GRID) IS: 1.00007714

THE N.C. LAMBERT GRID BEARING AND
 LOCALIZED HORIZONTAL GROUND DISTANCE FROM
 "GPS B4541-1" TO -L- STATION 10+00.00 IS
 S 59°28'53" W 2081.12 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 PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 B4541_LS_CONTROL_080715.TXT
 SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- ⊙ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

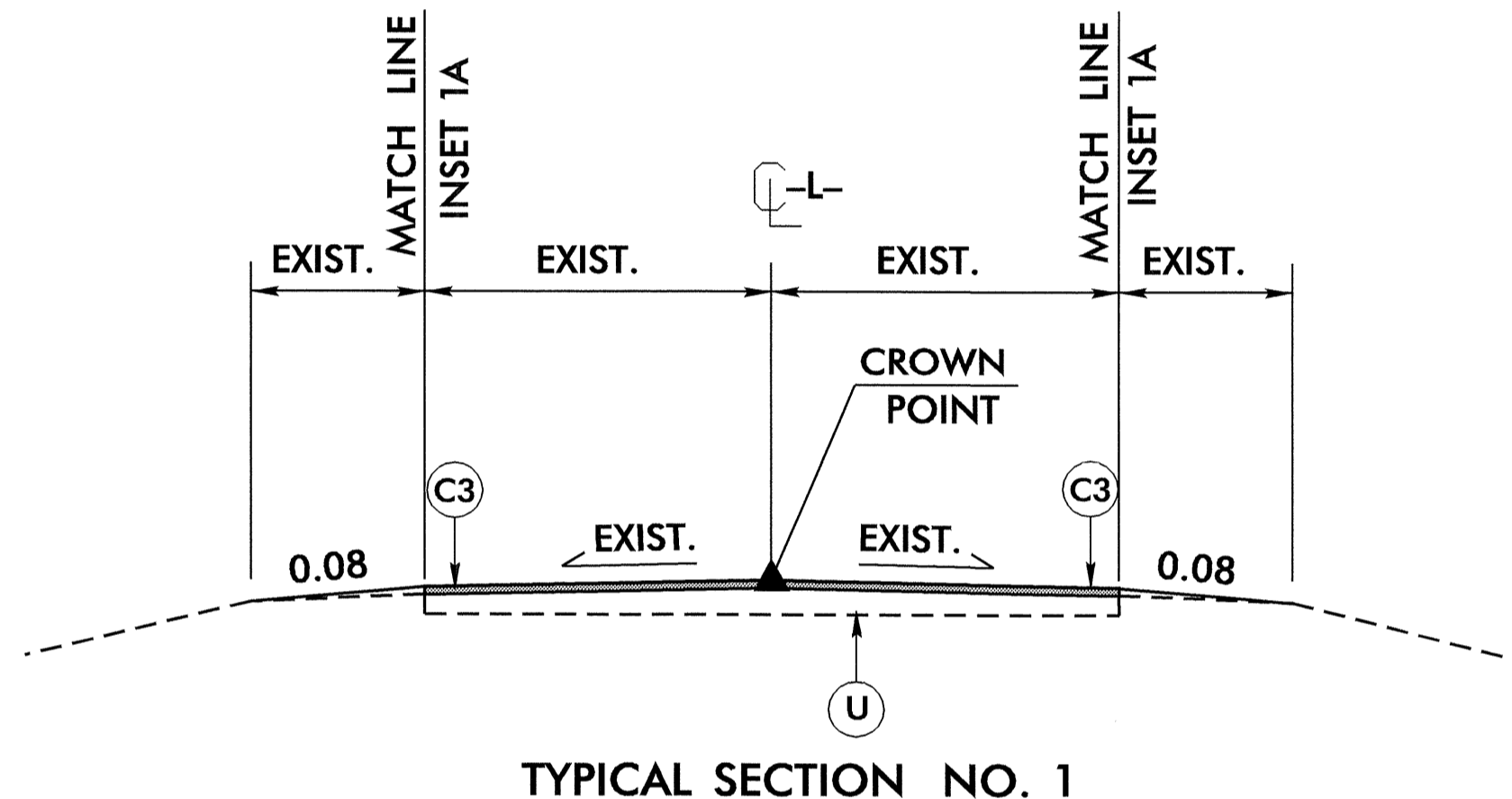
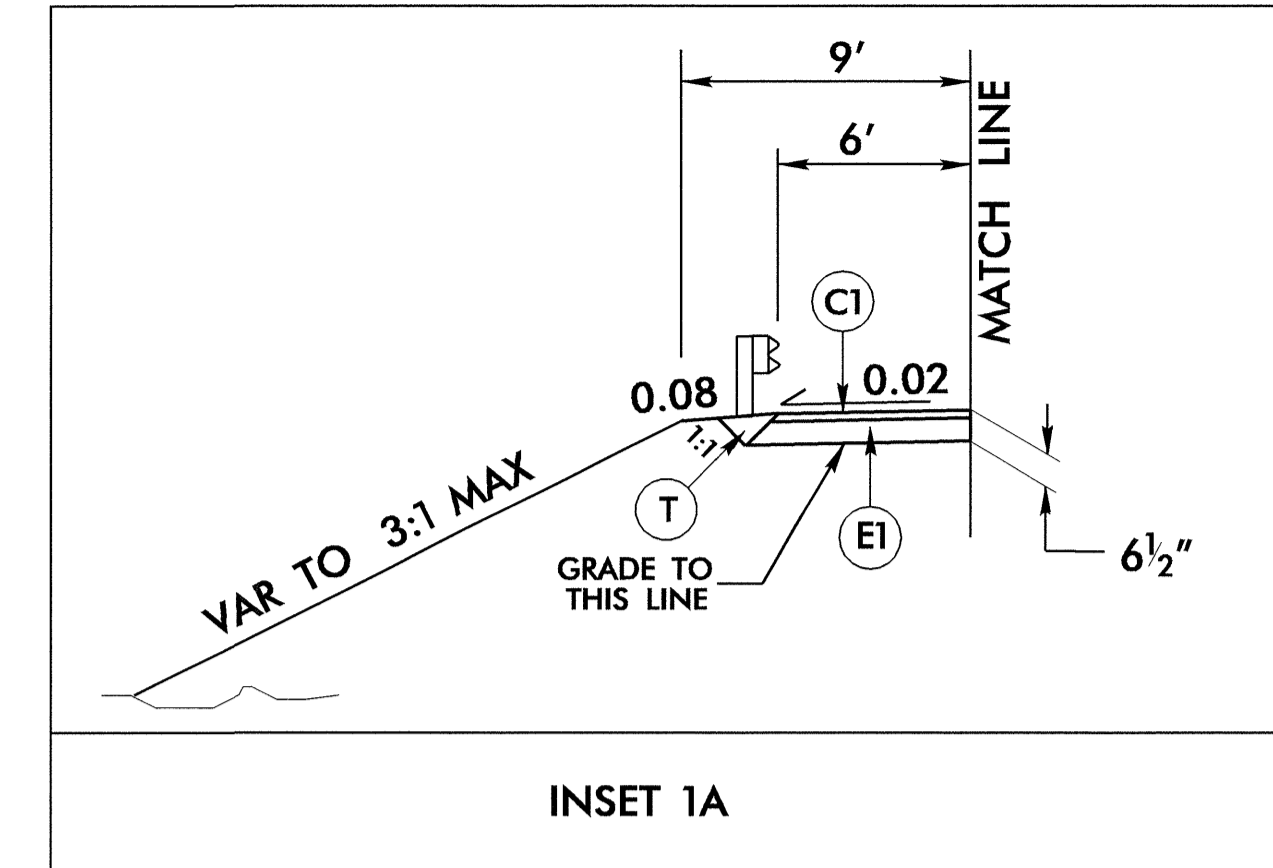
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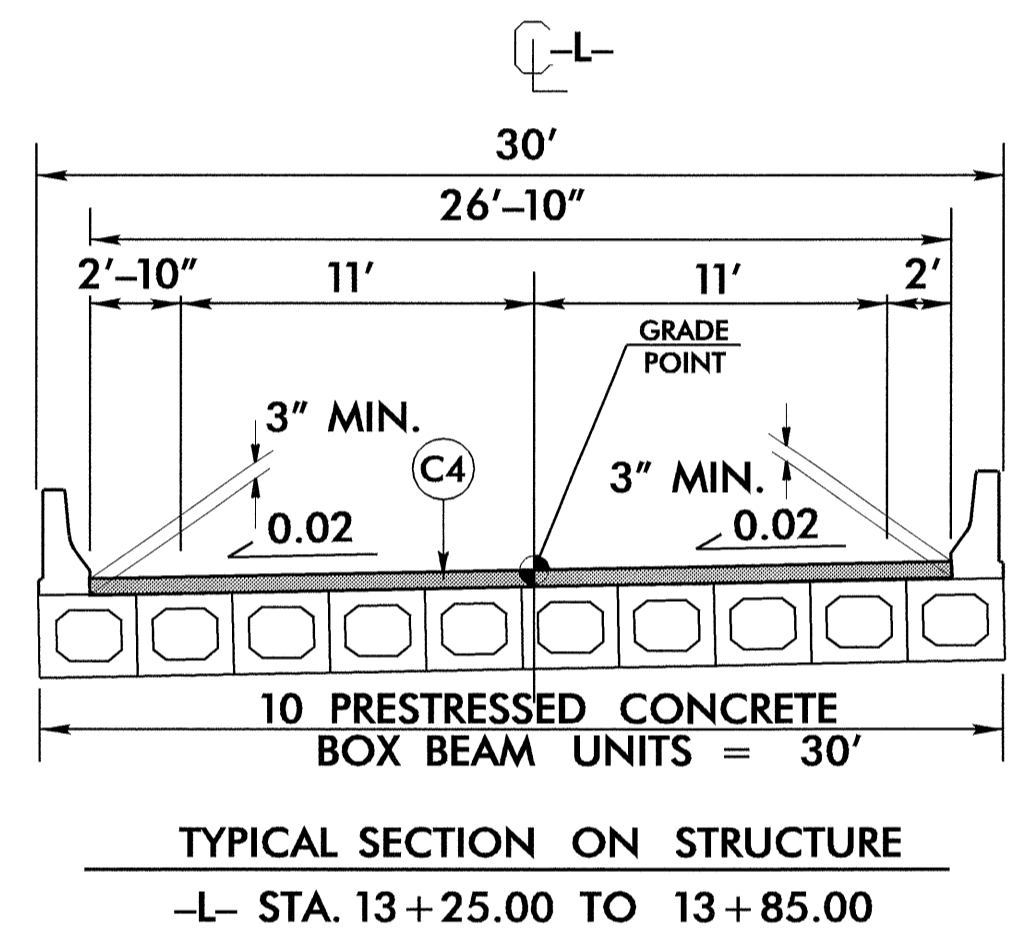
PROJECT REFERENCE NO. B-4541	SHEET NO. 2
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 2898 WYAN C. KEEL 8-25-09	PAVEMENT DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 13368- DOU-CHI CHEN 8/25/09

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.	T	EARTH MATERIAL.
C3	PROP. APPROX. 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
C4	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.	

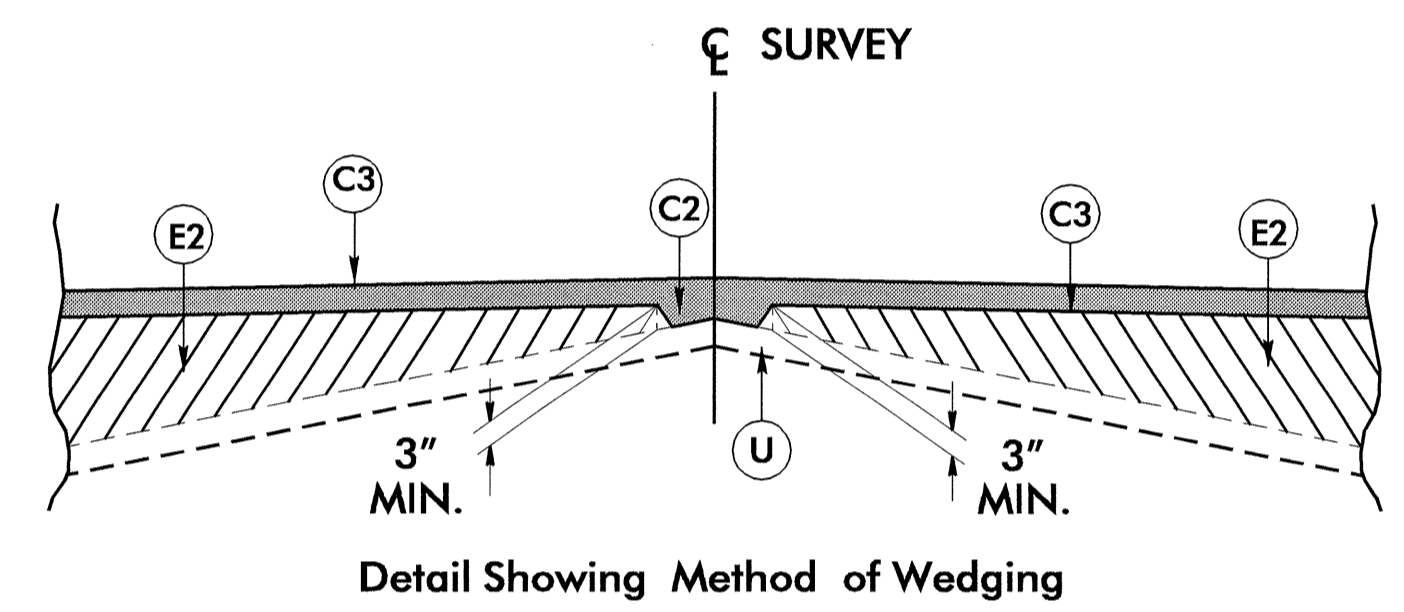


TYPICAL SECTION NO. 1

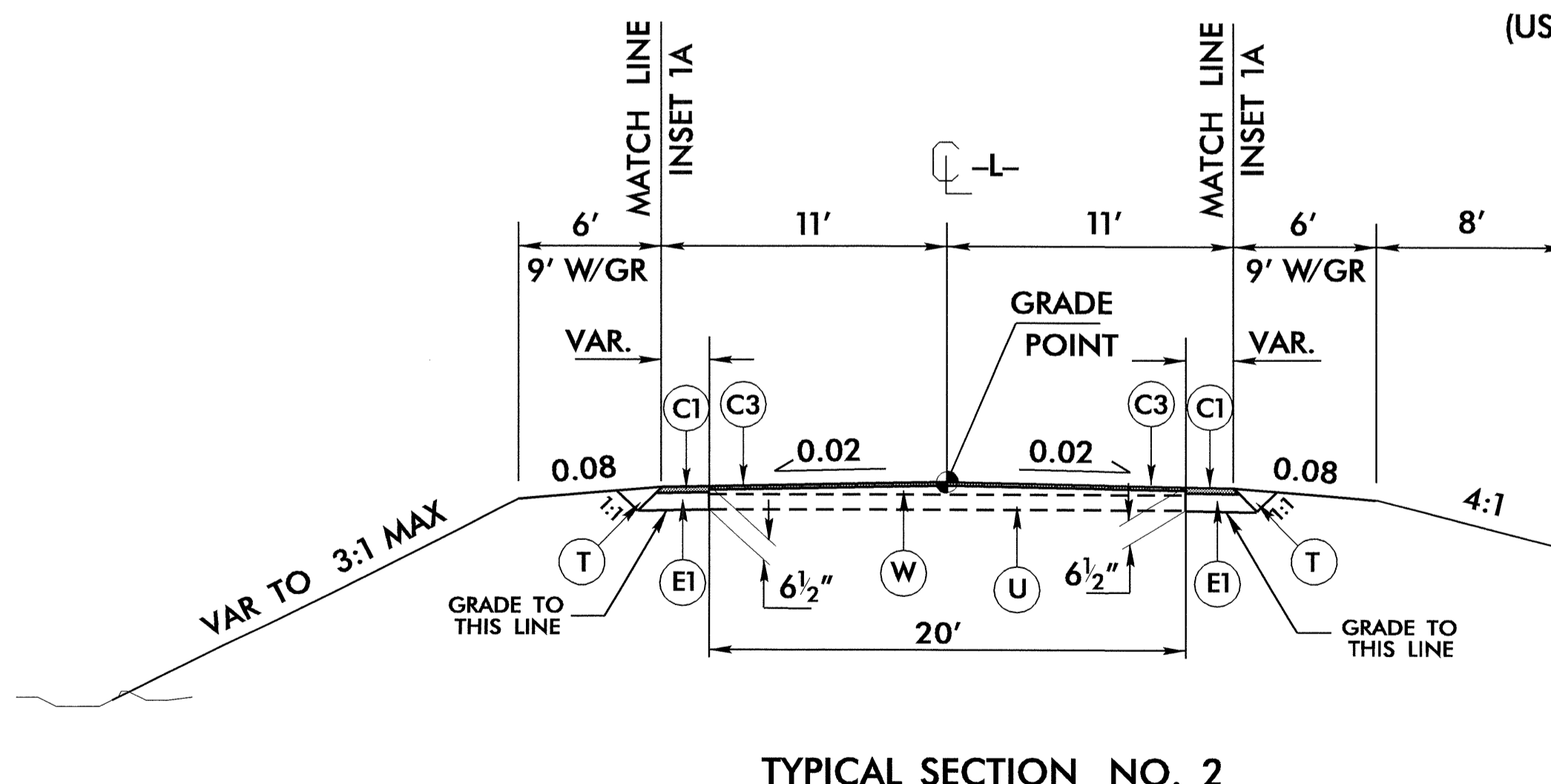


TYPICAL SECTION ON STRUCTURE
-L- STA. 13+25.00 TO 13+85.00

USE TYPICAL SECTION NO. 1
-L- STA. 10+48.00 TO 11+00.00
-L- STA. 16+00.00 TO 16+61.50
(USE INSET 1A AT GUARDRAIL LOCATIONS)

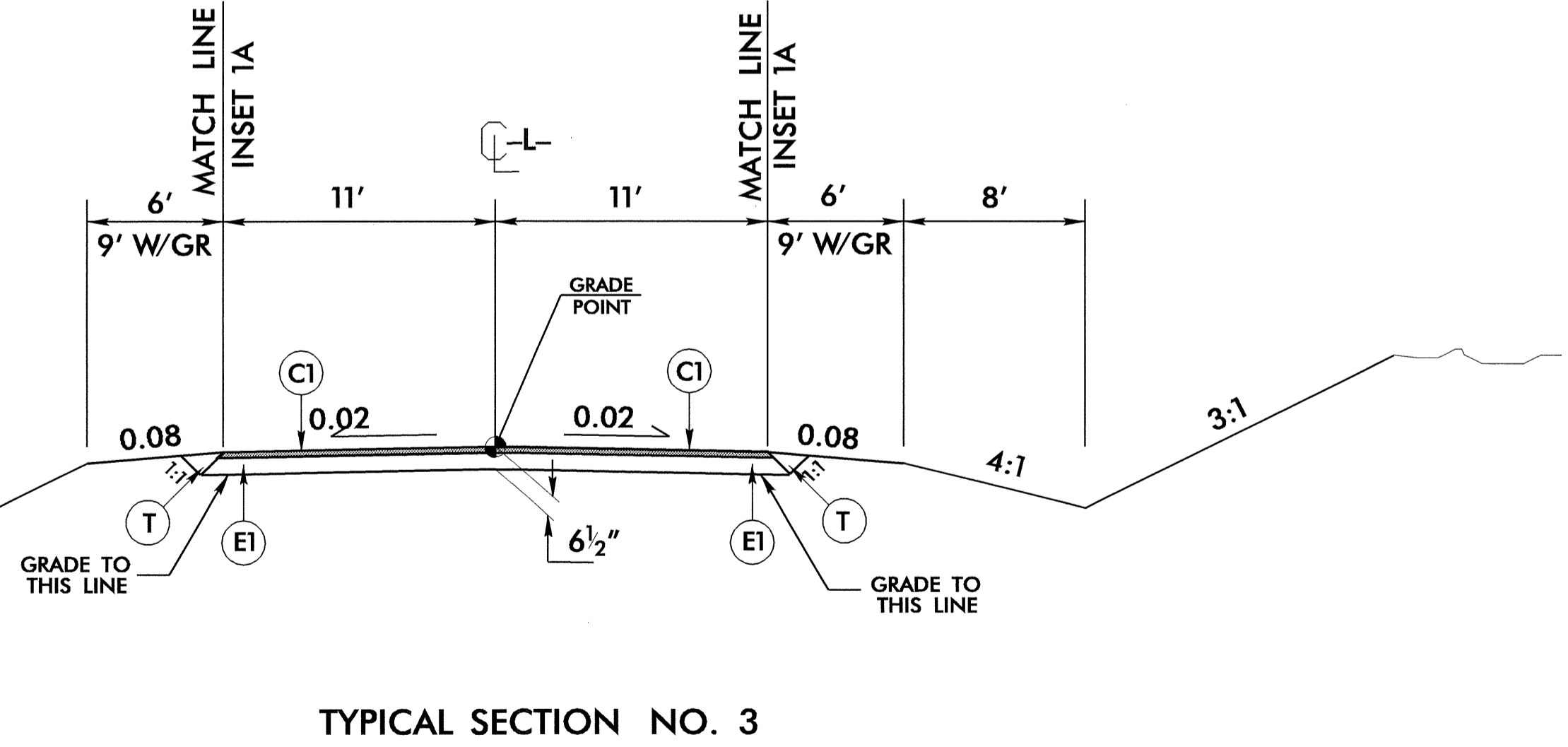


Detail Showing Method of Wedging



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-L- STA. 11+00.00 TO 11+50.00
-L- STA. 14+50.00 TO 16+00.00
(USE INSET 1A AT GUARDRAIL LOCATIONS)

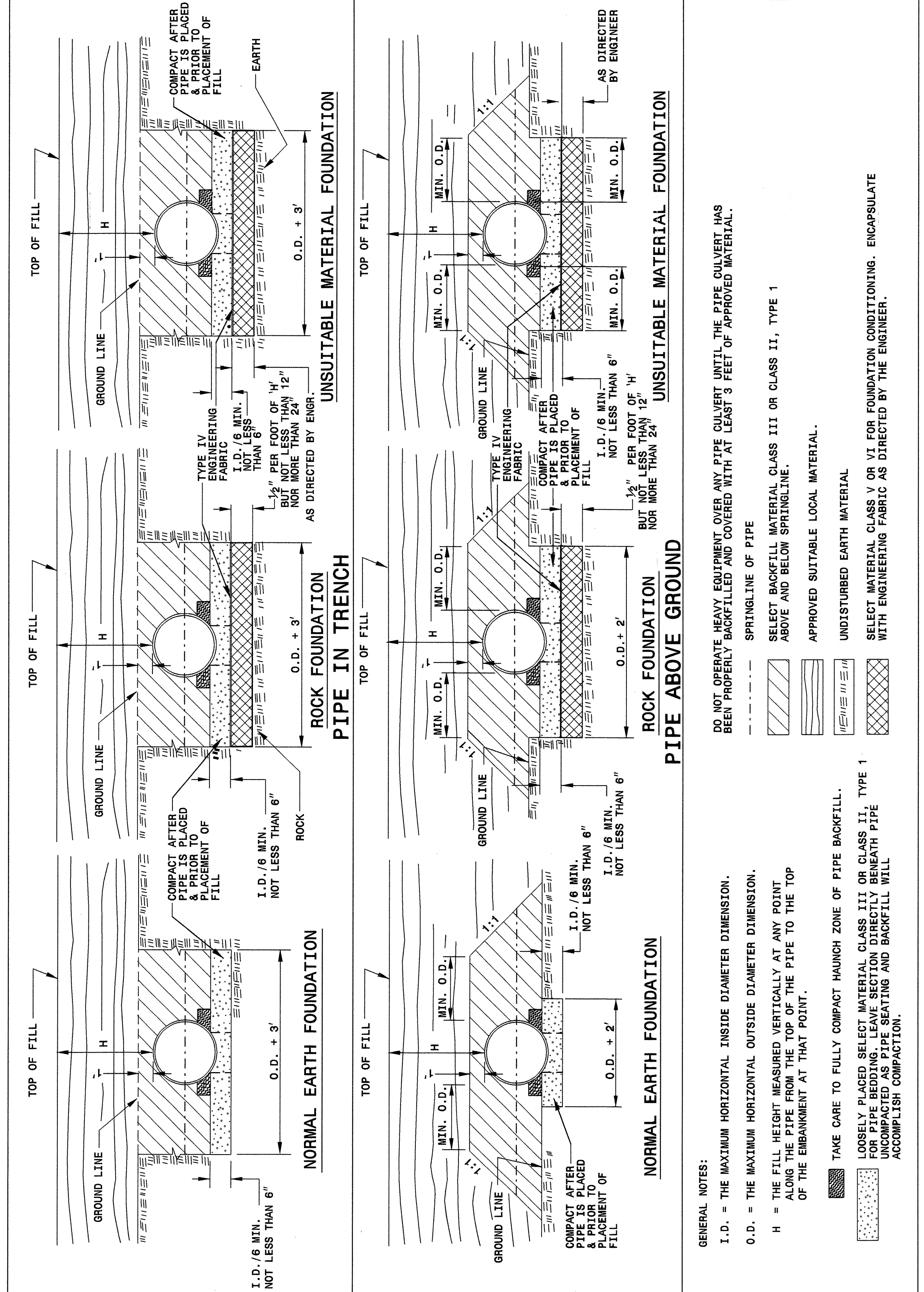


TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
-L- STA. 11+50.00 TO 13+25.00 (BEGIN BRG)
-L- STA. 13+85.00 (END BRG) TO 14+50.00
(USE INSET 1A AT GUARDRAIL LOCATIONS)

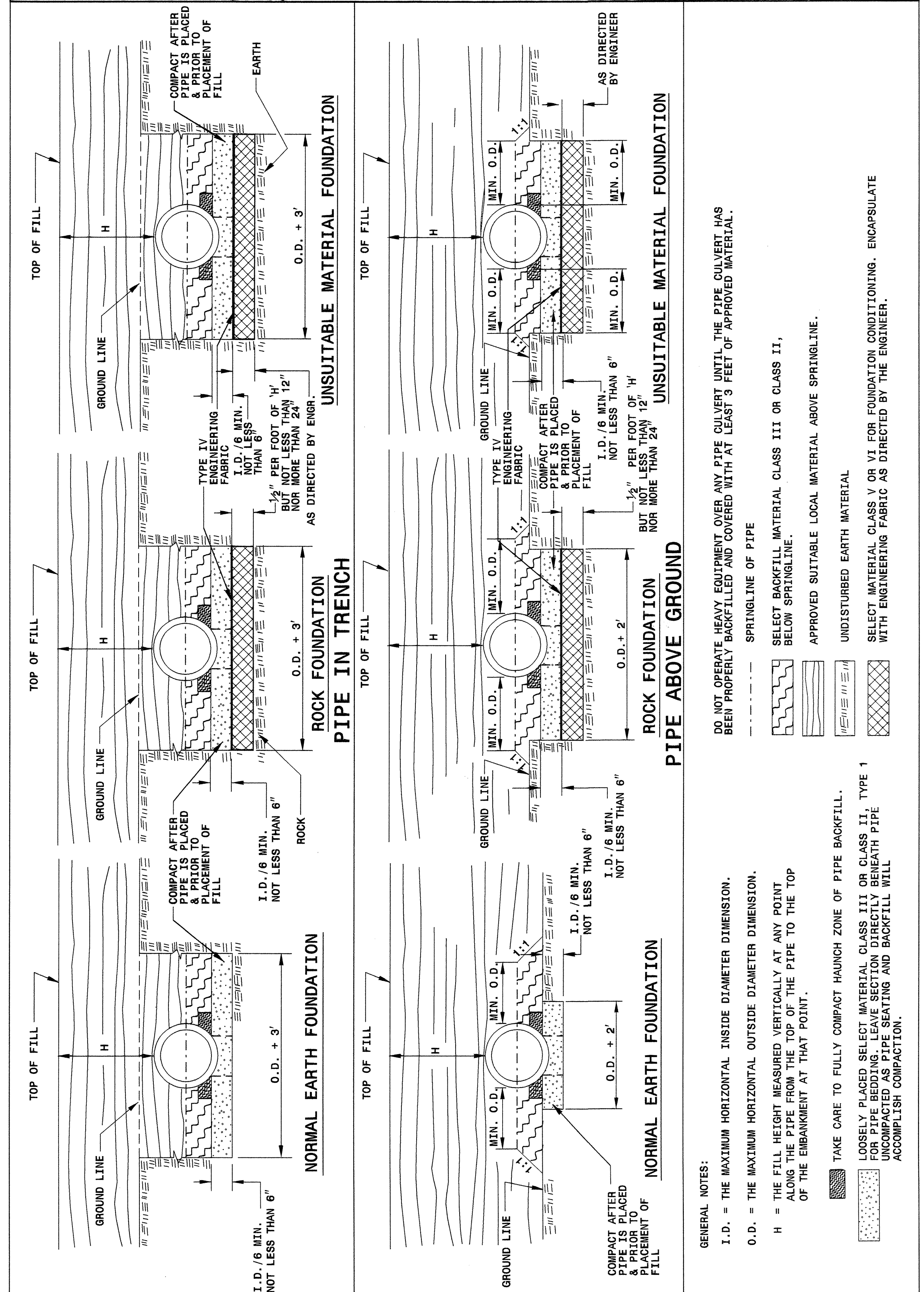
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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 7-06
 ENGLISH DETAIL DRAWING FOR METHOD OF PIPE INSTALLATION FLEXIBLE PIPE
 SHEET 1 OF 3 300D01



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 7-06
 ENGLISH DETAIL DRAWING FOR METHOD OF PIPE INSTALLATION FLEXIBLE PIPE
 SHEET 1 OF 3 300D01

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 7-06
 ENGLISH DETAIL DRAWING FOR METHOD OF PIPE INSTALLATION RIGID PIPE
 SHEET 2 OF 3 300D01

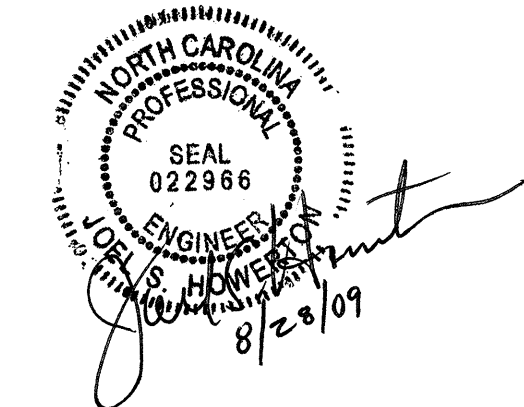


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. 7-06
 ENGLISH DETAIL DRAWING FOR METHOD OF PIPE INSTALLATION RIGID PIPE
 SHEET 2 OF 3 300D01

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: DATE: 7/20/09
 CHECKED BY: DATE: DATE: 7/20/09
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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

Diameter (Inches)	Round Corrugated Steel Pipe 2 2/3 x 1/2 corrugation **		14	12	10	8
	Minimum cover (Inches)	Maximum Height of Cover (feet)				
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	44	54	77	100	123
60	12	42	54	69	90	111
66	12	42	54	69	81	100
72	12	42	54	69	74	91
78	12	42	54	69	74	81
84	12	42	54	69	74	69

Diameter (Inches)	Round Corrugated Aluminum Pipe 2 2/3 x 1/2 corrugation **		14	12	10	8
	Minimum cover (Inches)	Maximum Height of Cover (feet)				
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	42	60	78	96	
48	12	42	52	68	84	
54	12	42	46	50	74	
60	12	42	46	50	62	
66	12	42	46	50	62	
72	12	42	46	50	62	
						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

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

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

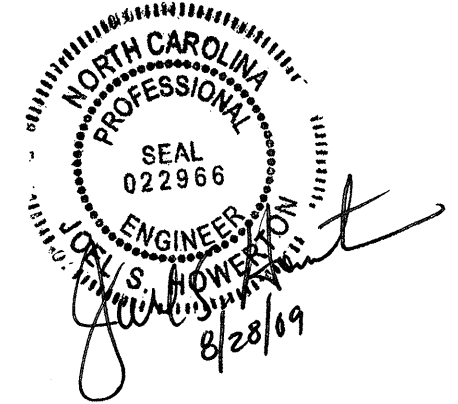
FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

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

SEE PLATE FOR TITLE

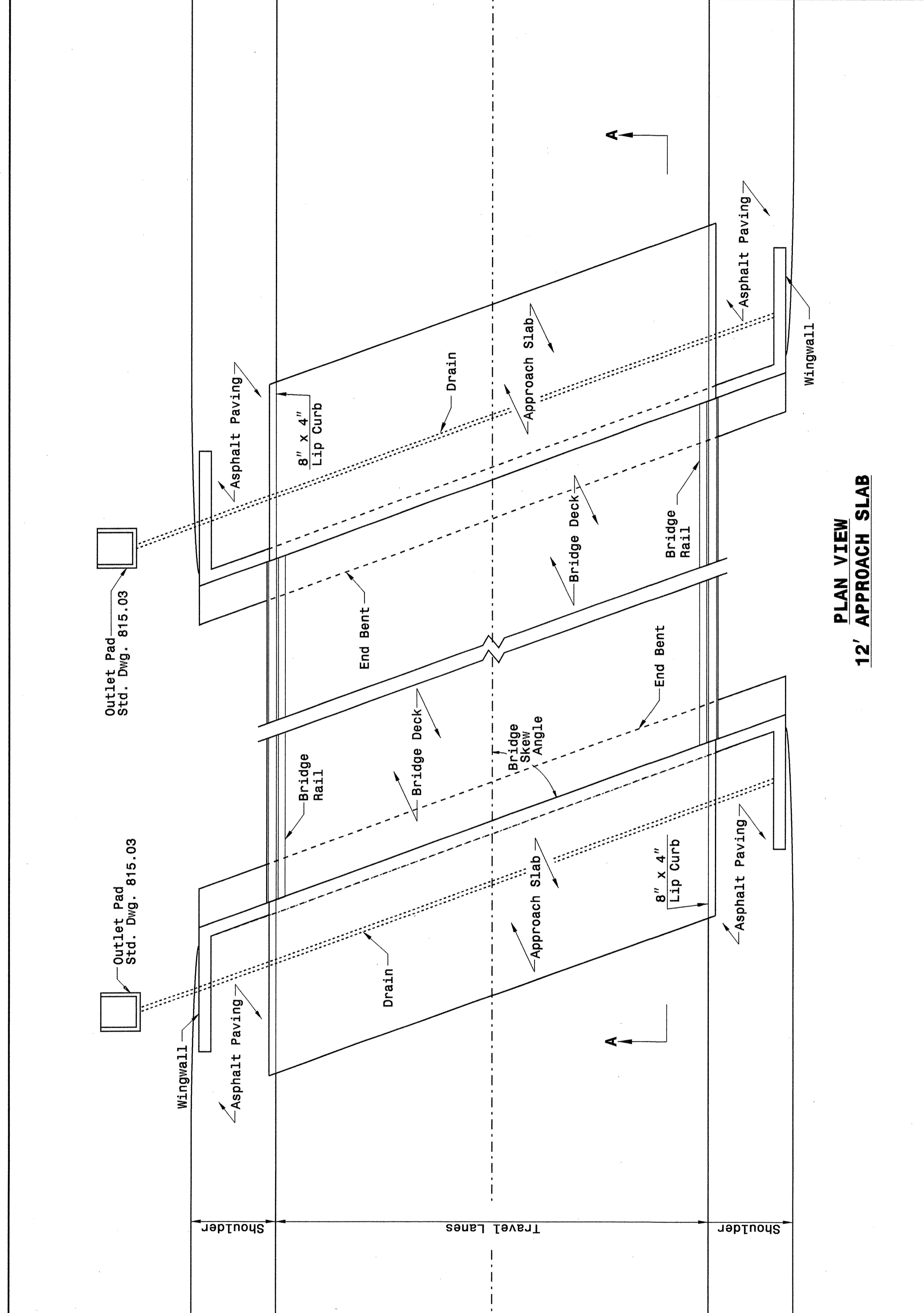
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 CHECKED BY: *James H. Hart* DATE: 7/30/09
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STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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.

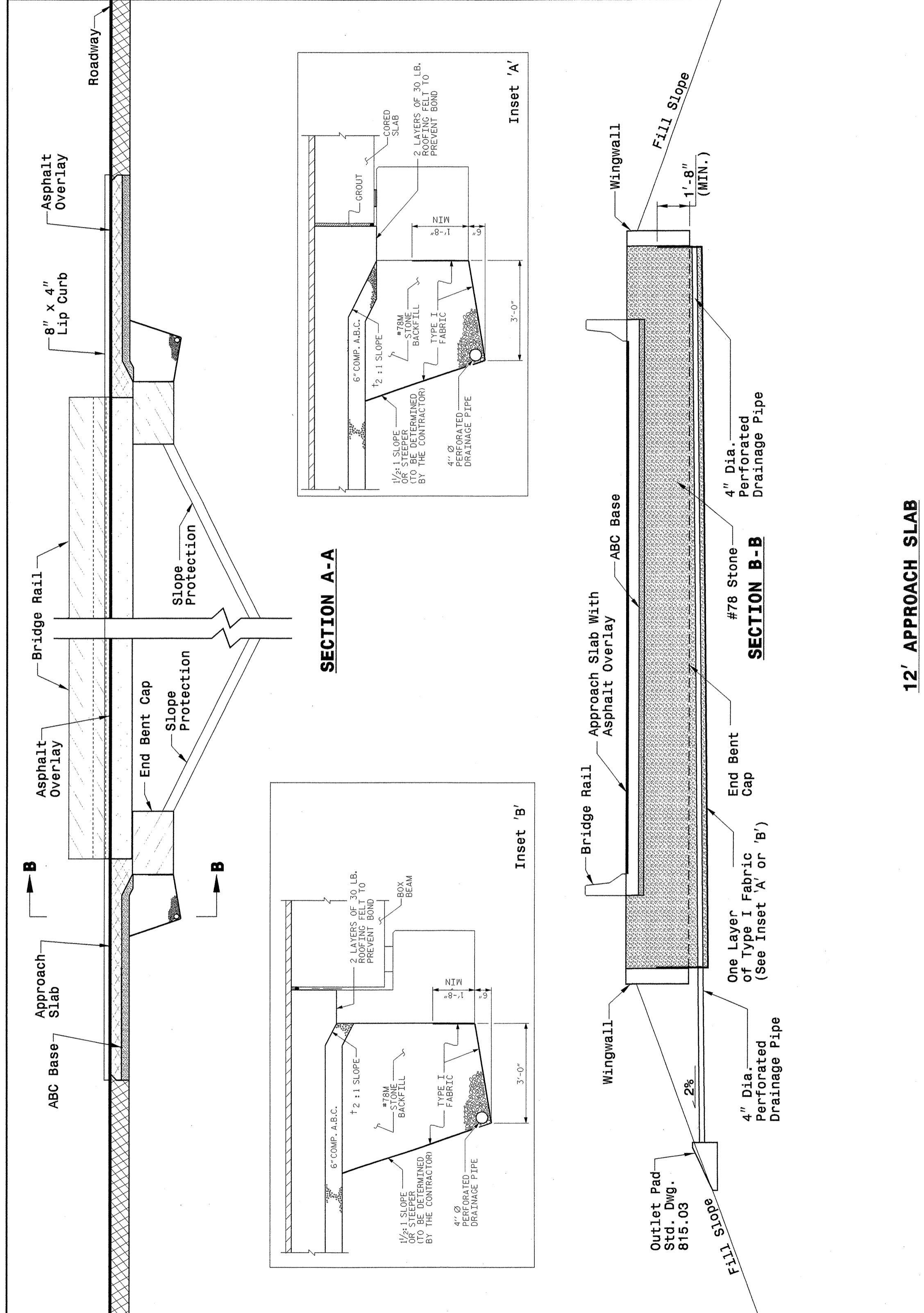
ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER

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.

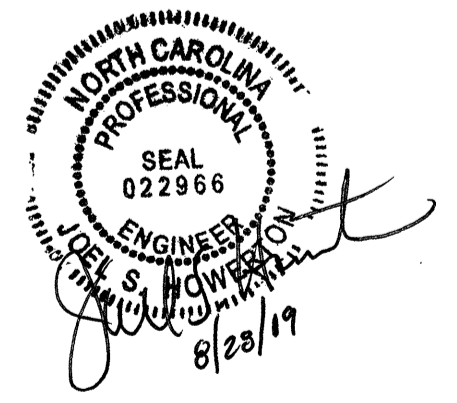
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BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER

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

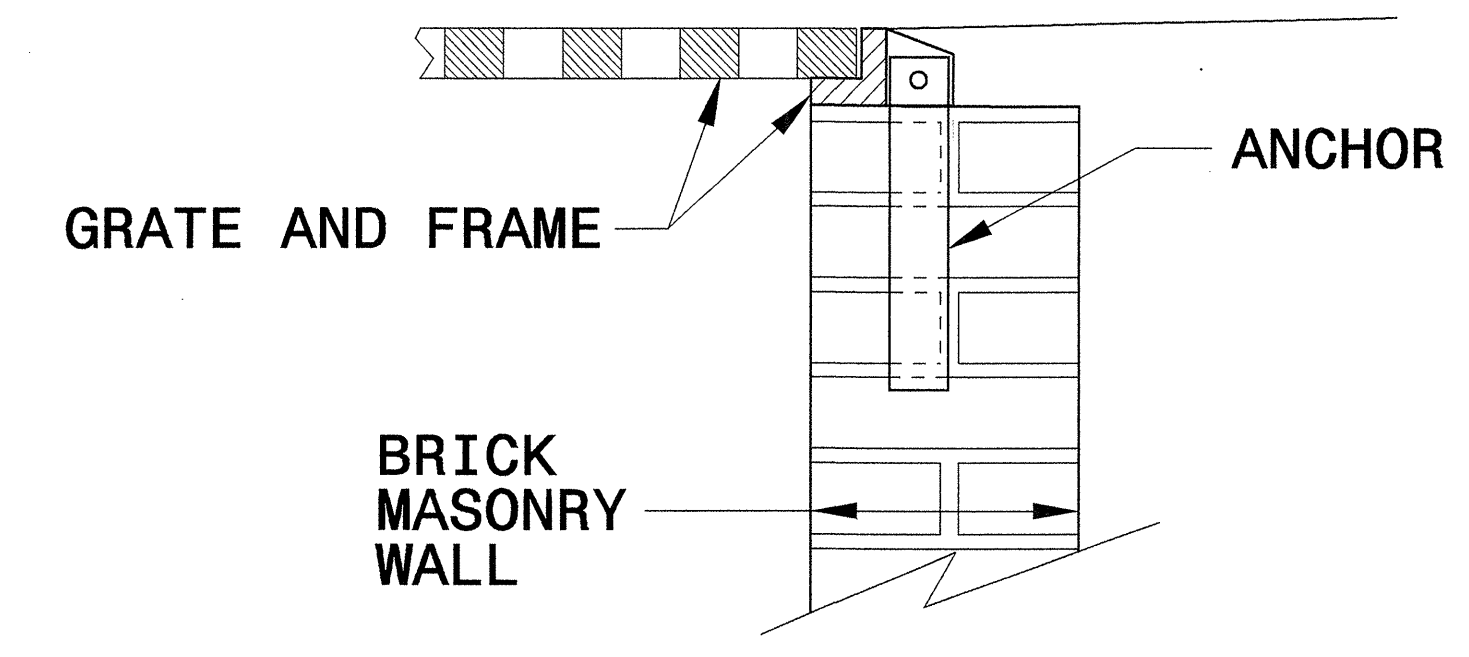
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CHECKED BY: [Signature] DATE: 2/16/09
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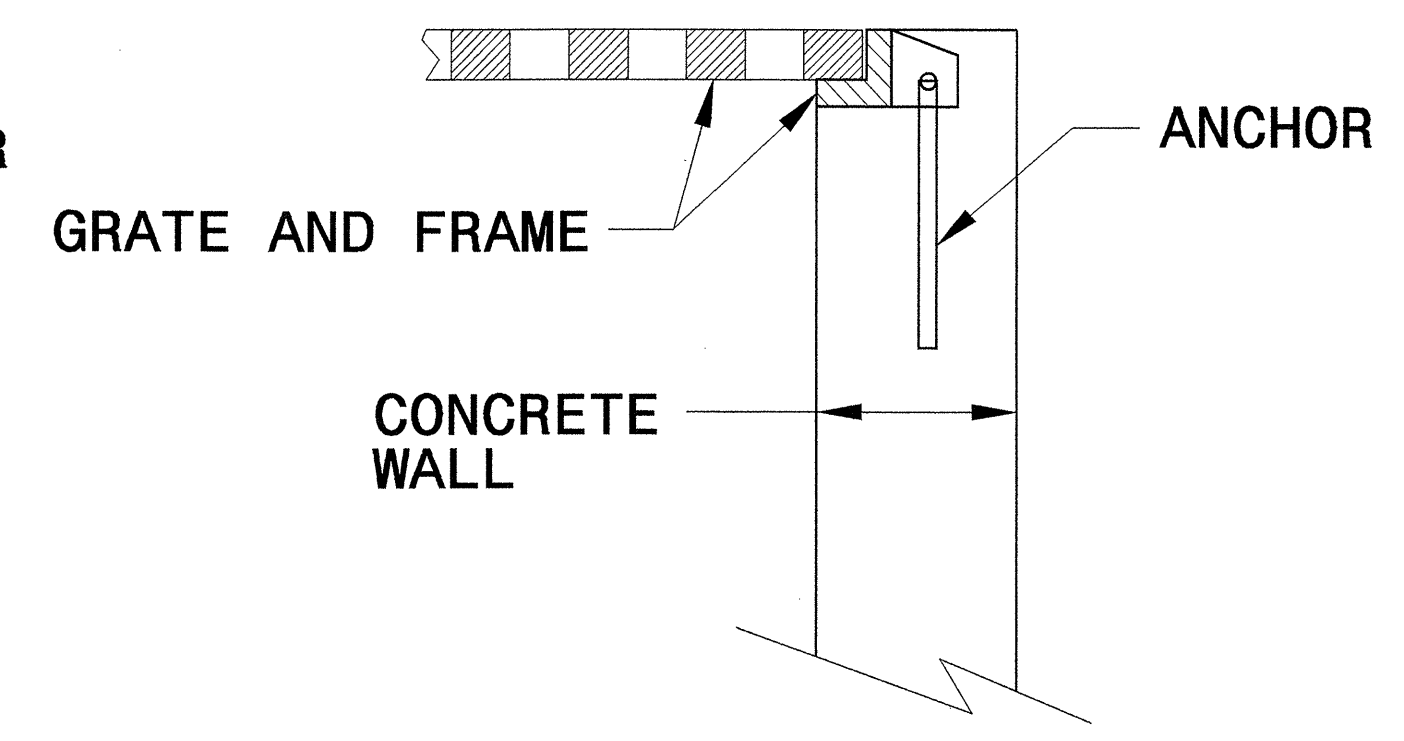
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

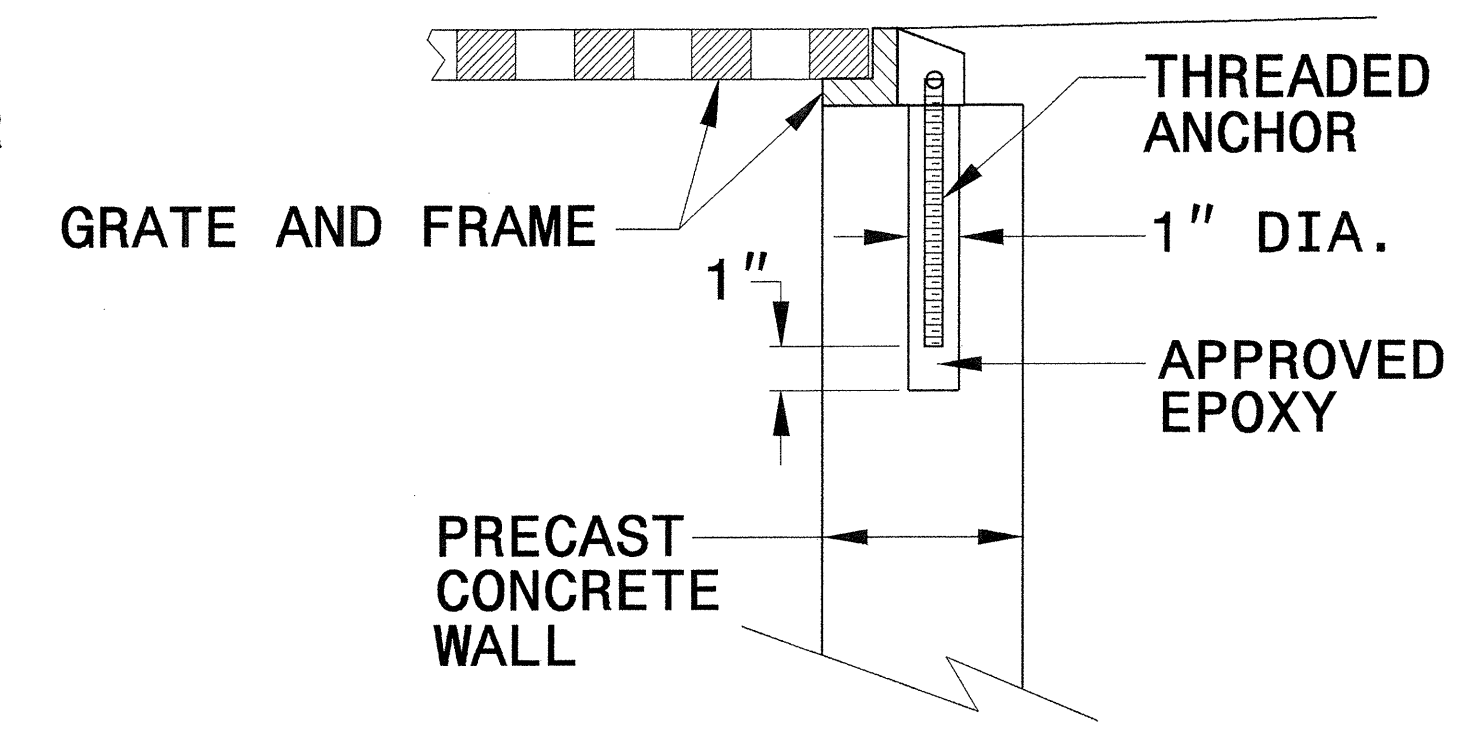
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



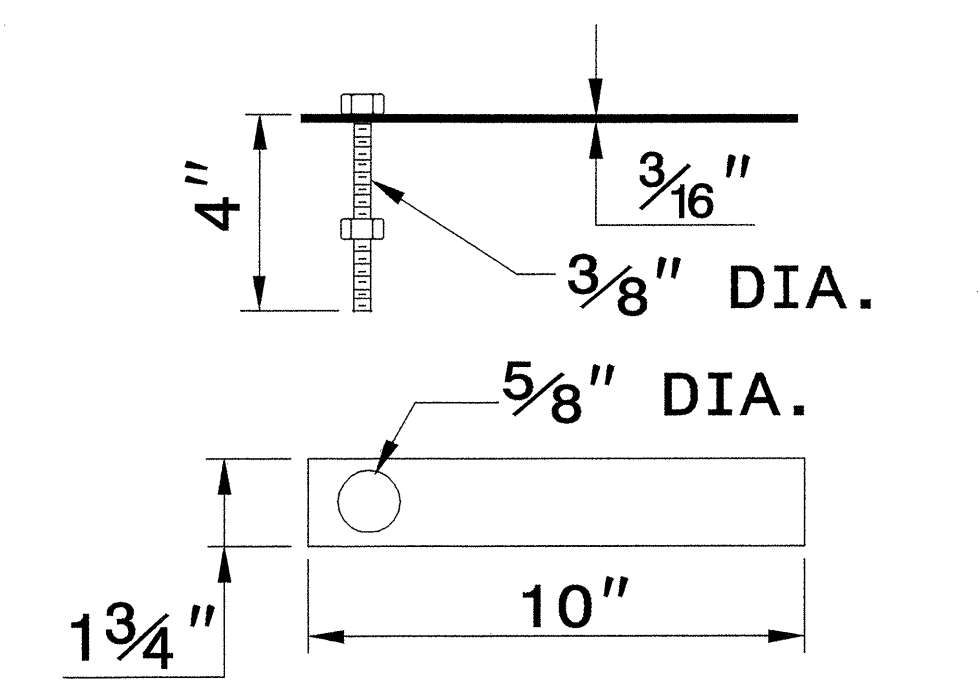
CONCRETE CONSTRUCTION



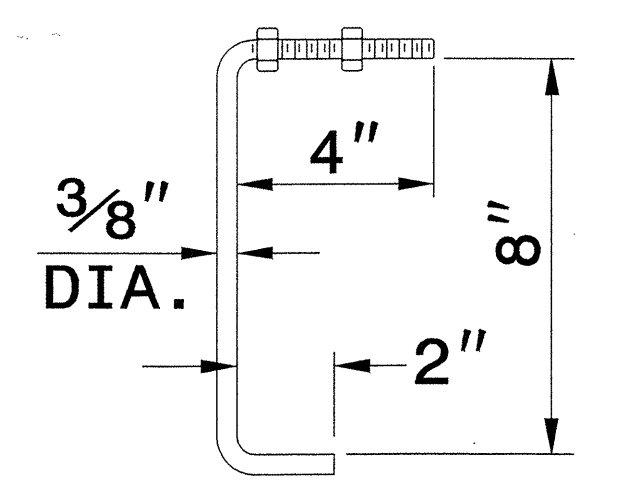
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

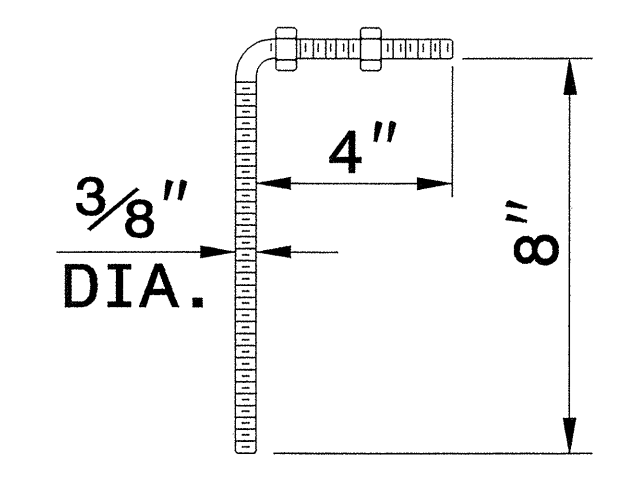
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



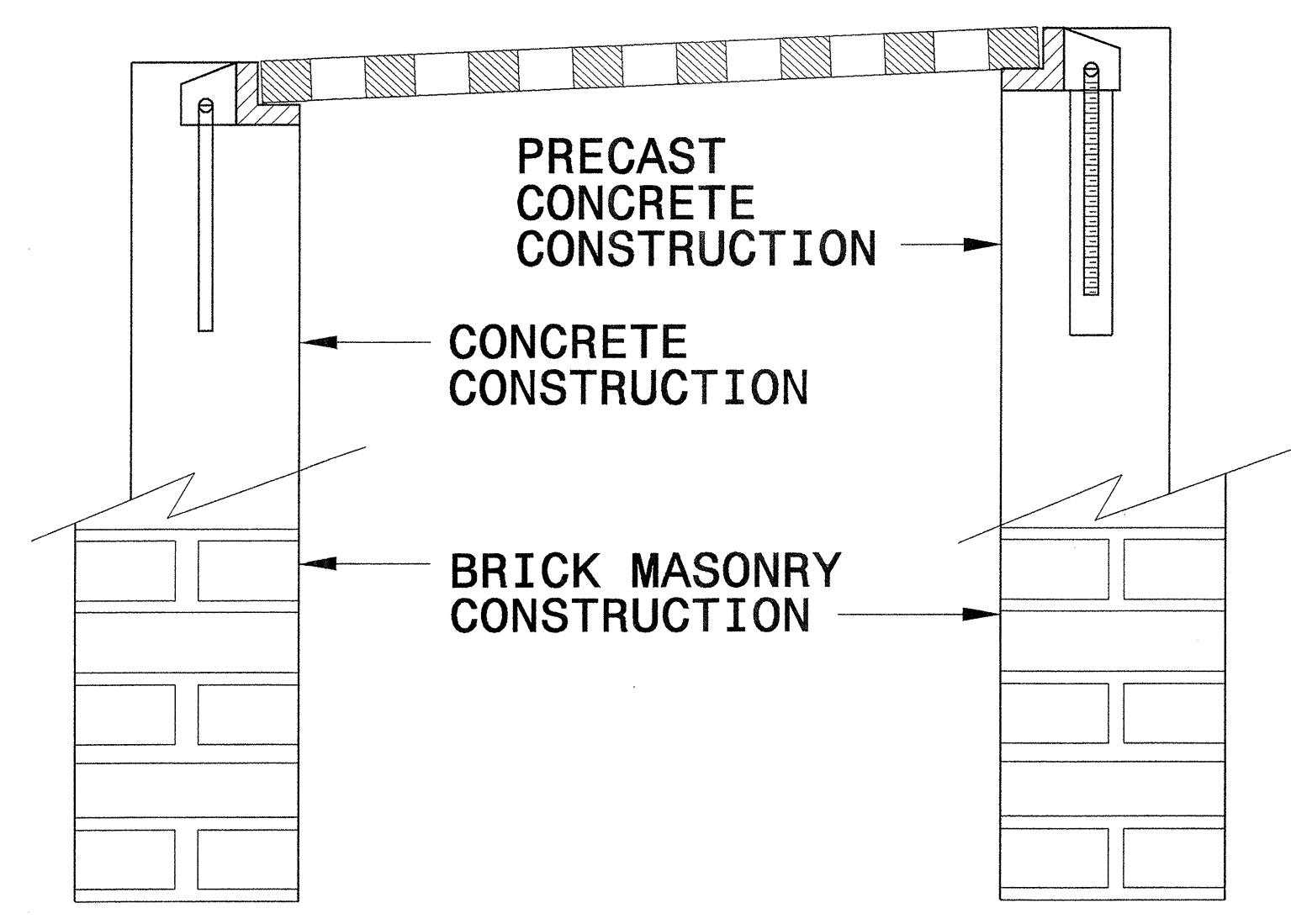
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



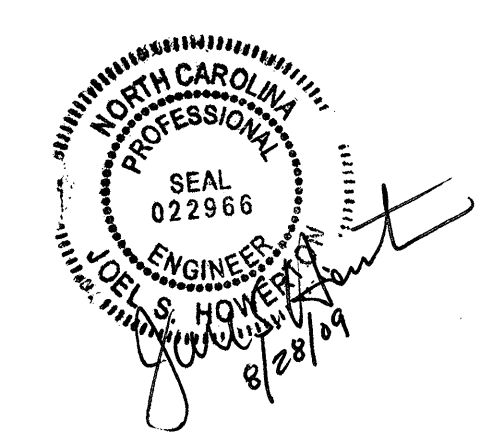
FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

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

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**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: <i>Joel S. Hower</i>	DATE: 11/13/08
FILE SPEC.:	

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

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202234

ItemNumber	Sec #	Quantity	Unit	Description
000010000-N	800	Lump Sum		MOBILIZATION
003000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ***** (13+55)
004300000-N	226	Lump Sum		GRADING
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
005700000-E	226	200	CY	UNDERCUT EXCAVATION
019500000-E	265	200	CY	SELECT GRANULAR MATERIAL
019600000-E	270	200	SY	FABRIC FOR SOIL STABILIZATION
022300000-E	SP	50	SY	ROCK PLATING
031800000-E	300	10	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
032000000-E	SP	10	SY	FOUNDATION CONDITIONING FABRIC
122000000-E	545	75	TON	INCIDENTAL STONE BASE
148900000-E	610	330	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
152500000-E	610	270	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
156000000-E	620	35	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
228600000-N	840	1	EA	MASONRY DRAINAGE STRUCTURES
236700000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.29
255600000-E	846	13	LF	SHOULDER BERM GUTTER
303000000-E	862	325	LF	STEEL BM GUARDRAIL
315000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
327000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
331700000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
364900000-E	876	1	TON	RIP RAP, CLASS B
365600000-E	876	457	SY	FILTER FABRIC FOR DRAINAGE
402500000-E	901	25	SF	CONTRACTOR FURNISHED, TYPE *** SIGN (E)

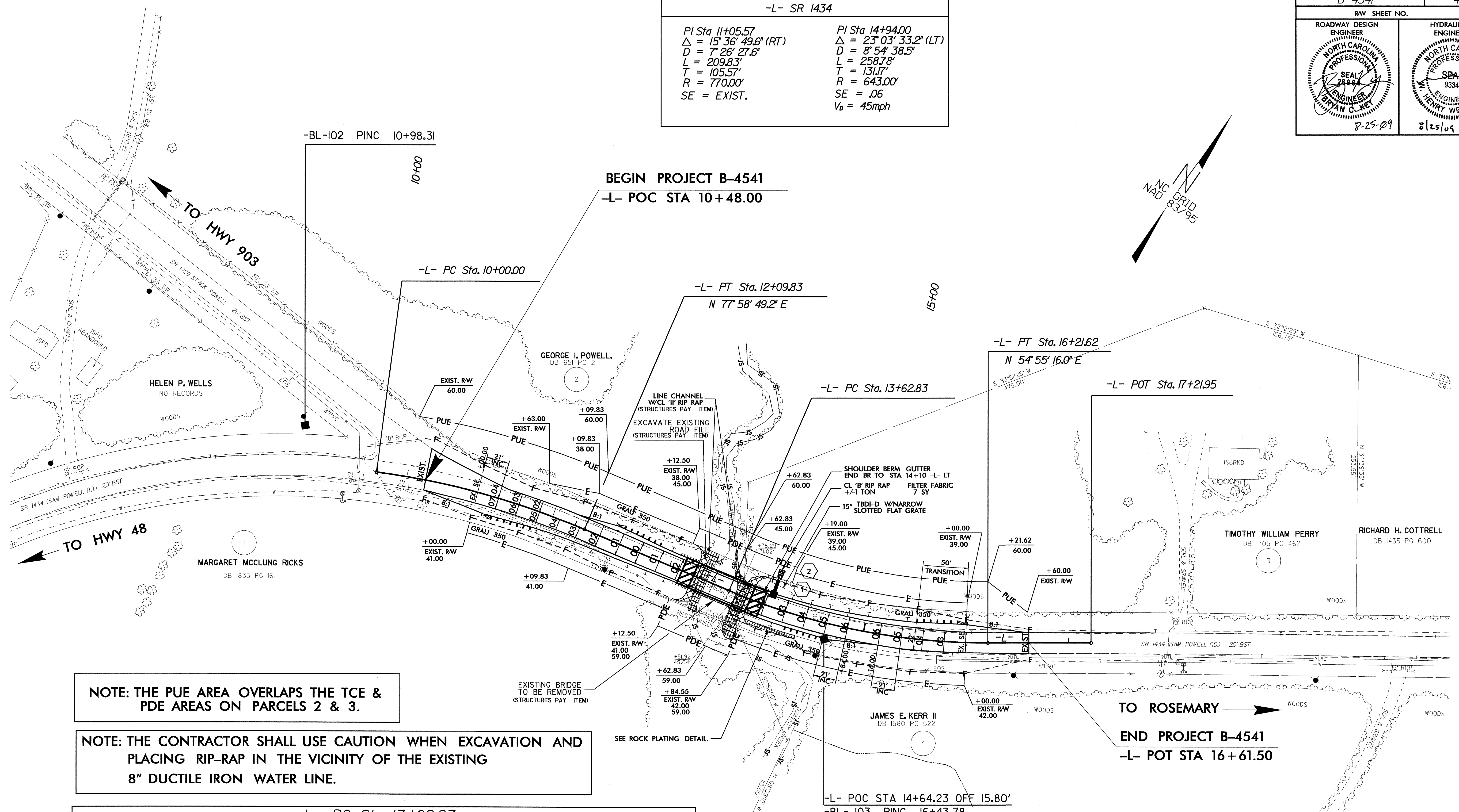
ItemNumber	Sec #	Quantity	Unit	Description
407200000-E	903	43	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
410200000-N	904	3	EA	SIGN ERECTION, TYPE E
415500000-N	907	1	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
440000000-E	1110	430	SF	WORK ZONE SIGNS (STATIONARY)
441000000-E	1110	137	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
444500000-E	1145	80	LF	BARRICADES (TYPE III)
481000000-E	1205	4,908	LF	PAINT PAVEMENT MARKING LINES (4")
600000000-E	1605	900	LF	TEMPORARY SILT FENCE
600600000-E	1610	230	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	130	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	120	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 SEED-ING
602400000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
602700000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
602900000-E	SP	460	LF	SAFETY FENCE
603000000-E	1630	180	CY	SILT EXCAVATION
603600000-E	1631	1,500	SY	MATTING FOR EROSION CONTROL
604200000-E	1632	300	LF	1/4" HARDWARE CLOTH
607103000-E	SP	200	LF	COIR FIBER BAFFLES
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

ItemNumber	Sec #	Quantity	Unit	Description
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
614700000-E	SP	900	LF	GENERIC EROSION CONTROL ITEM TEMPORARY SILT FENCE WITH WOODEN POSTS
***** BEGIN SCHEDULE AA ***** ***** (3 ALTERNATES) *****				
036600000-E AA1	310	16	LF	15" RC PIPE CULVERTS, CLASS III
*** OR ***				
053600000-E AA2	SP	16	LF	*** HDPE PIPE CULVERTS (15")
*** OR ***				
054000000-E AA3	SP	16	LF	*** ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, **** THICK (15", 0.064")
***** END SCHEDULE AA *****				

5/28/99

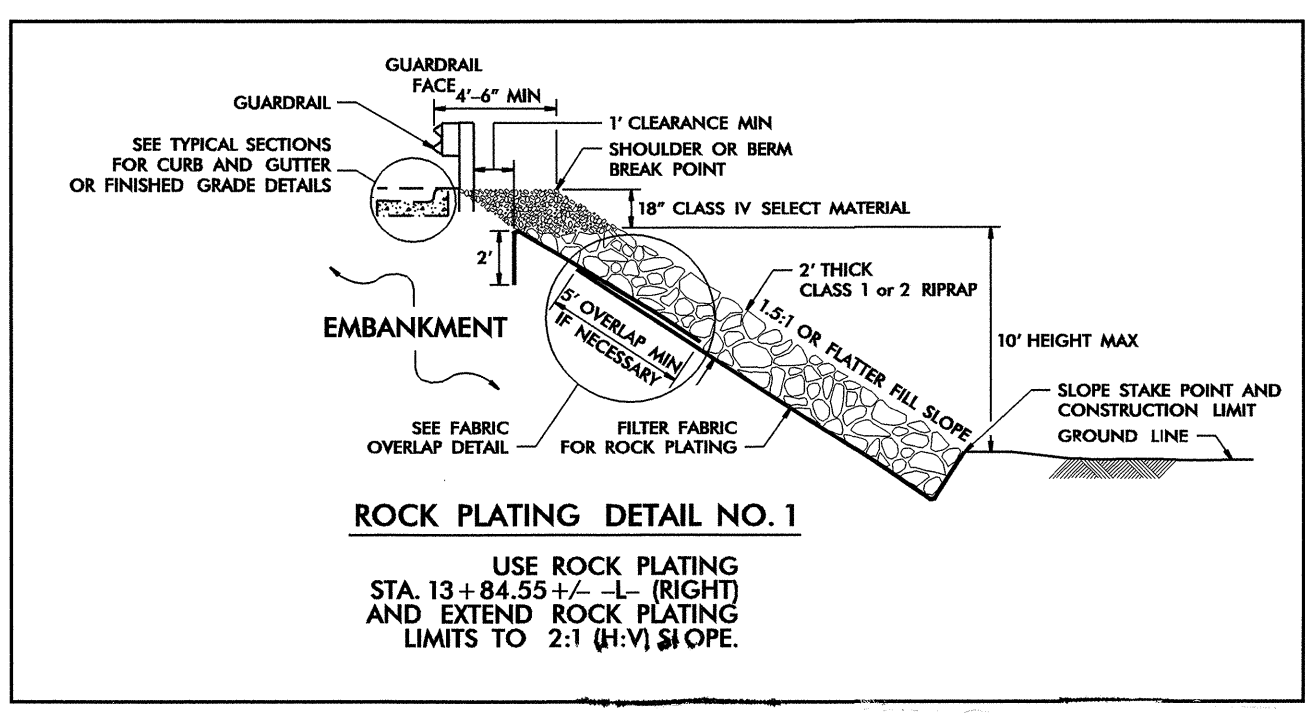
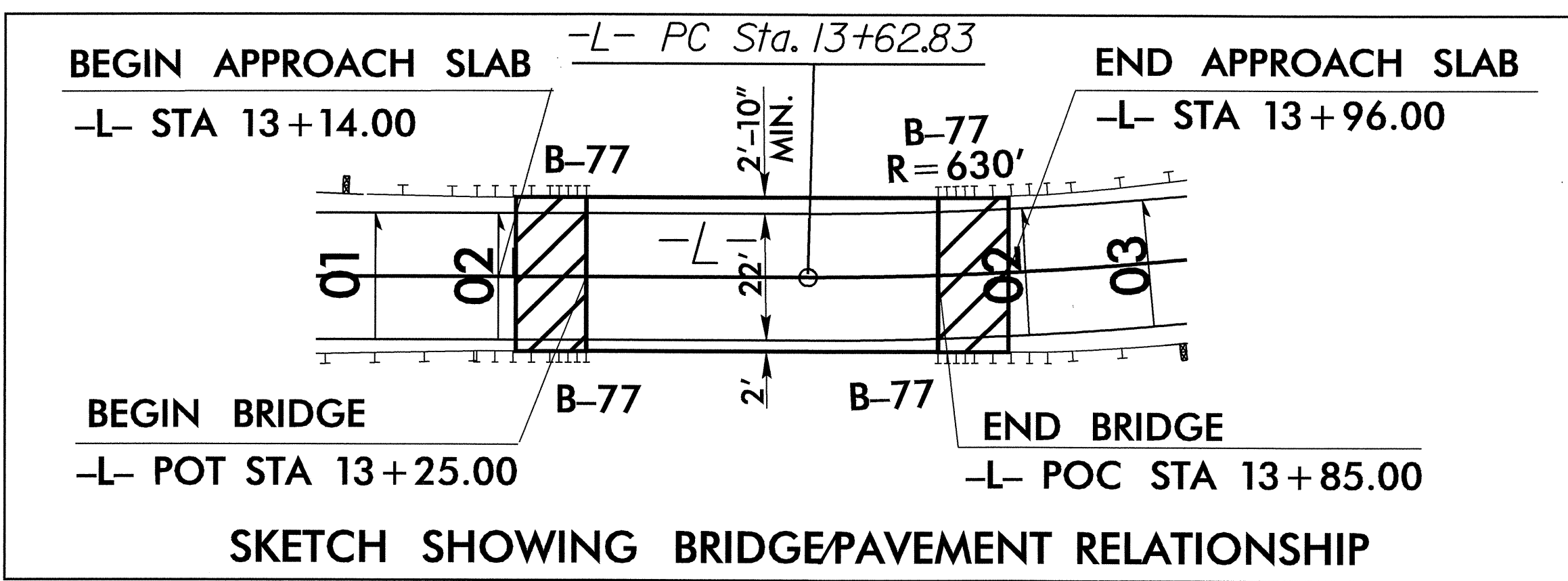
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B454I\RDJ-TSH

-L- SR 1434	
PI Sta 11+05.57 Δ = 15° 36' 49.6" (RT) D = 7' 26' 27.6" L = 209.83' T = 105.57' R = 770.00' SE = EXIST.	PI Sta 14+94.00 Δ = 23° 03' 33.2" (LT) D = 8' 54' 38.5" L = 258.78' T = 131.17' R = 643.00' SE = .06 V ₀ = 45mph



NOTE: THE PUE AREA OVERLAPS THE TCE & PDE AREAS ON PARCELS 2 & 3.

NOTE: THE CONTRACTOR SHALL USE CAUTION WHEN EXCAVATION AND PLACING RIP-RAP IN THE VICINITY OF THE EXISTING 8" DUCTILE IRON WATER LINE.



ROCK PLATING DETAIL AND LOCATION WERE PROVIDED THROUGH A SEALED DOCUMENT FROM THE GEOTECHNICAL ENGINEERING UNIT. THE DOCUMENT WAS SUBMITTED TO THE ROADWAY DESIGN UNIT ON June 15, 2009 AND SEALED BY A PROFESSIONAL ENGINEER, Jinyoung Park, PE, LICENSE # 32171.

SEE SHEET 5 FOR -L- PROFILE
SEE SHEET S-1 THRU S-19 FOR STRUCTURE PLANS

8/17/09

REVISIONS

20-AUG-2009 15:37
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BRYAN C. HENRY

NOT TO SCALE

5/14/09

-L- SR 1804

PROJECT REFERENCE NO. B-4541	SHEET NO. 5
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 29964 IRVIN C. KEY 7-25-09	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 9334 HENRY WELLS, JR. 8/25/09

BM #1
RR SPIKE IN BASE OF 10" GUM
-BL- STA 5+33.33 O/S 20.75' LT
EL = 226.44'

BM #2
RR SPIKE IN BASE OF 15" GUM
-L- STA 14+81.22 OFF 40.25' LT
EL = 188.08'

BM #3
RR SPIKE IN BASE OF TELEPHONE POLE
-BL- STA. 21+23.71 OS 25.10' RT
EL = 205.10'

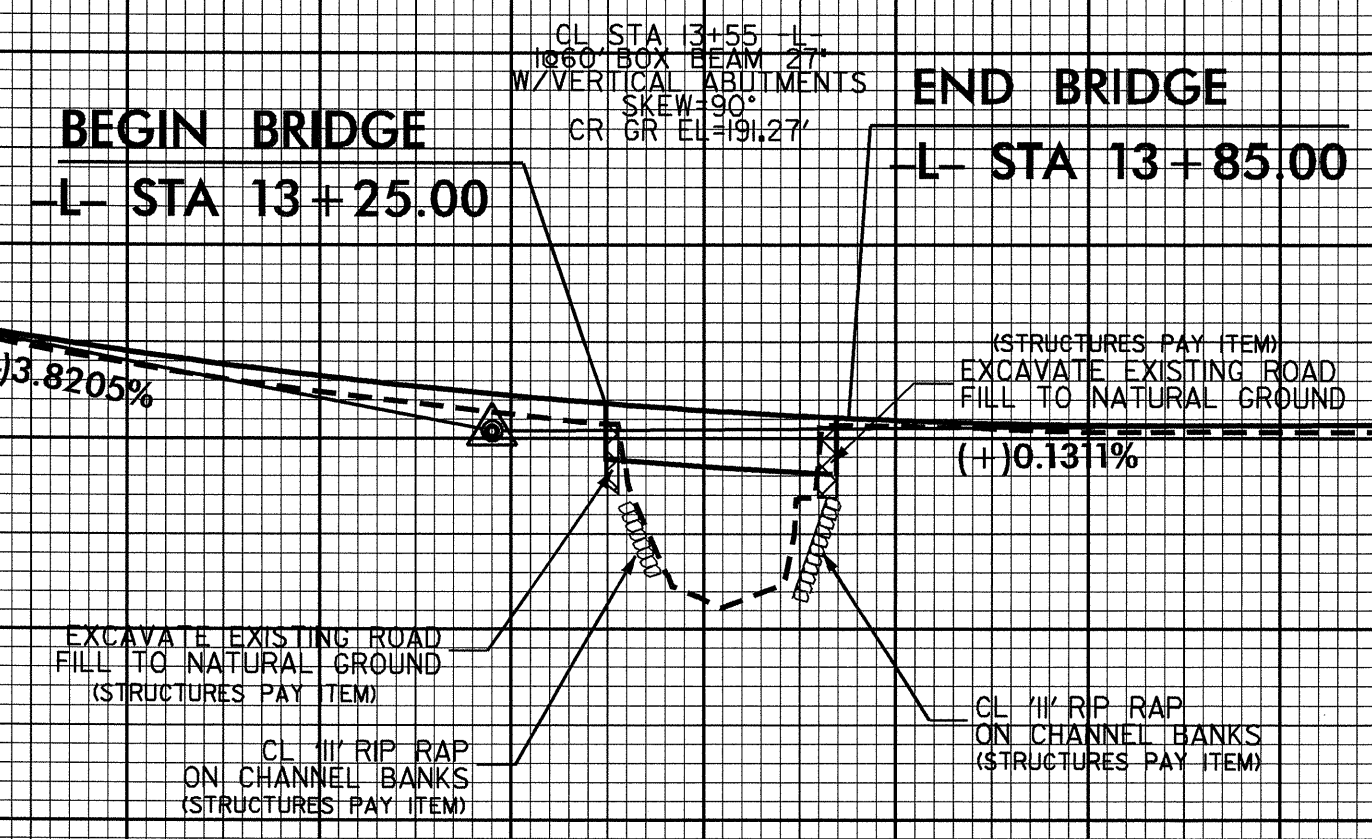
BEGIN GRADE
-L- STA 11+00.00
EL = 197.85

PI = 12+95.00
EL = 190.40'
VC = 390'
K = 99
V = 50 mph

END GRADE
-L- STA 16+00.00
EL = 190.80

BEGIN BRIDGE
-L- STA 13+25.00

END BRIDGE
-L- STA 13+85.00



BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 1200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 190.3	FT
BASE DISCHARGE	= 1800	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 190.9	FT
OVERTOPPING DISCHARGE	= <1800	CFS
OVERTOPPING FREQUENCY	= <100	YRS
OVERTOPPING ELEVATION	= 190.8	FT
DATE OF SURVEY	= 8/8/08	
W.S. ELEVATION AT DATE OF SURVEY	= 296	SF

NOTE: THE CONTRACTOR SHALL USE CAUTION WHEN EXCAVATION AND PLACING RIP-RAP IN THE VICINITY OF THE EXISTING 8" DUCTILE IRON WATER LINE.

SEE SHEET 4 FOR -L- PLAN VIEW

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00

20-AUG-2009 15:37
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