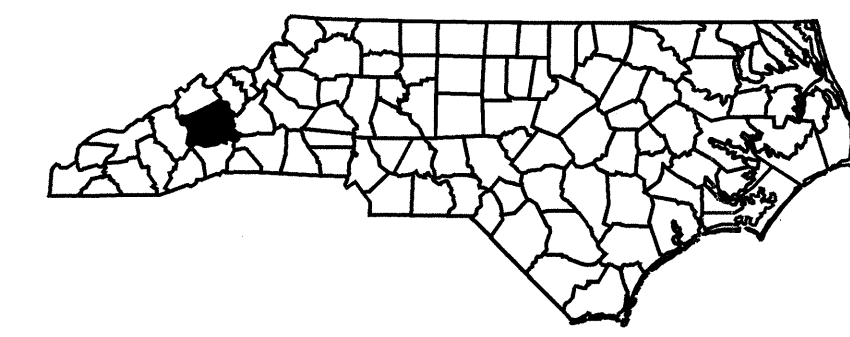


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4446	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33703.1.1	BRZ-2105(1)	PE	
33703.2.1	BRZ-2105(1)	RW & UTIL	
33703.3.1	BRZ-2105(1)	CONST.	

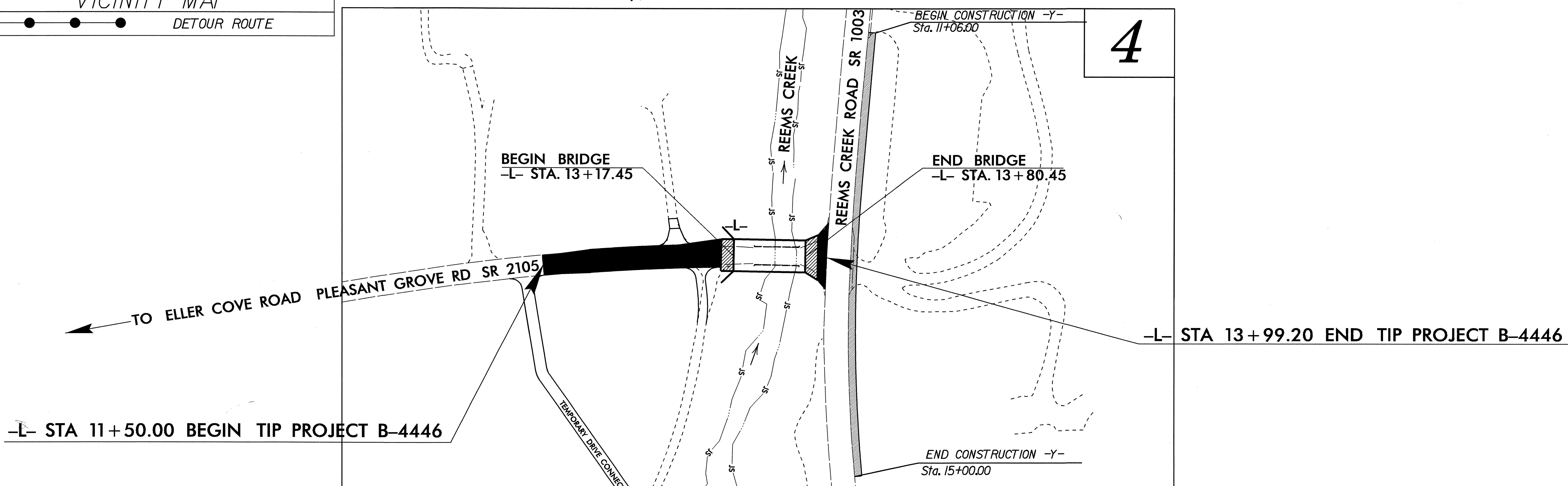
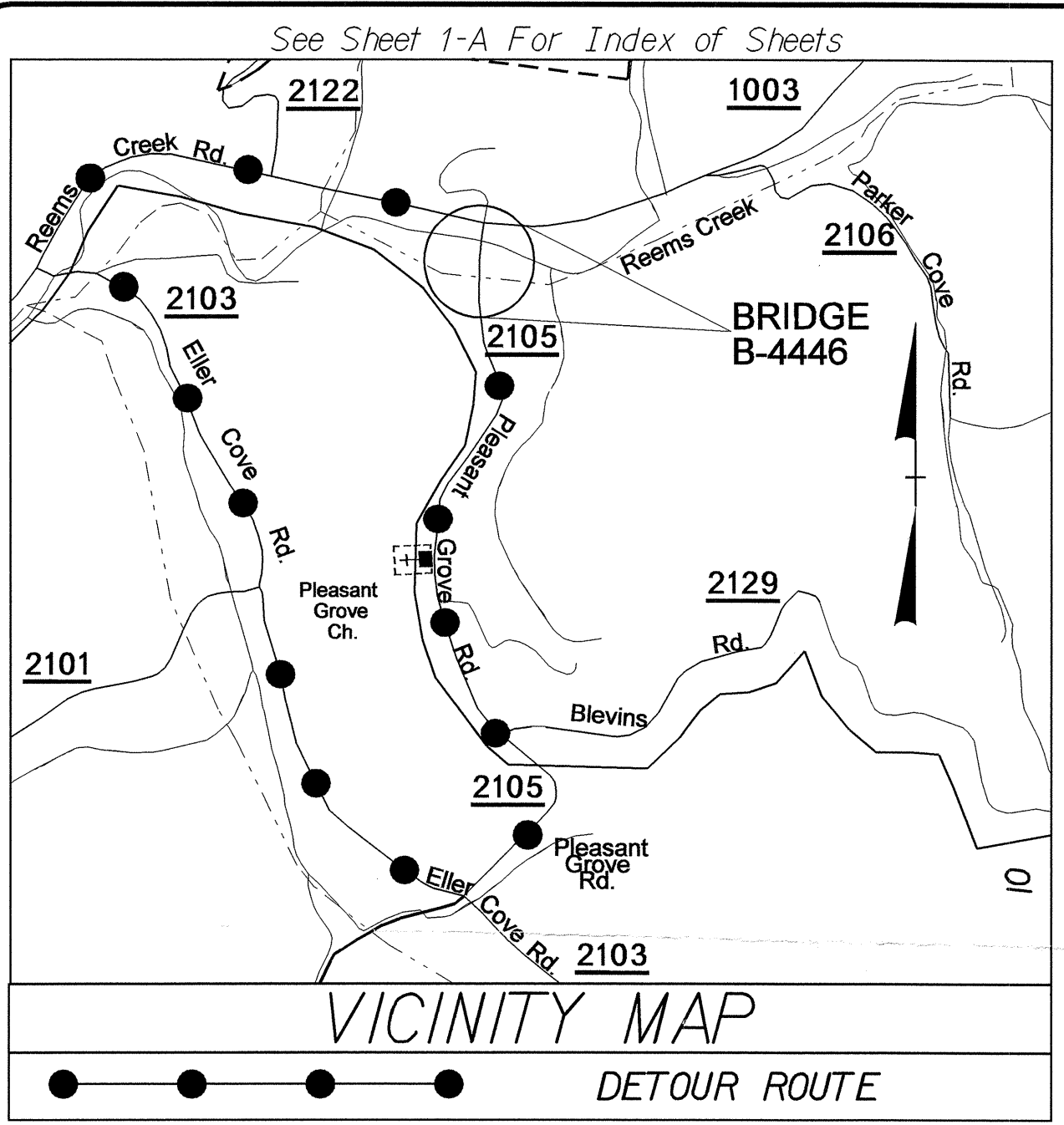


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

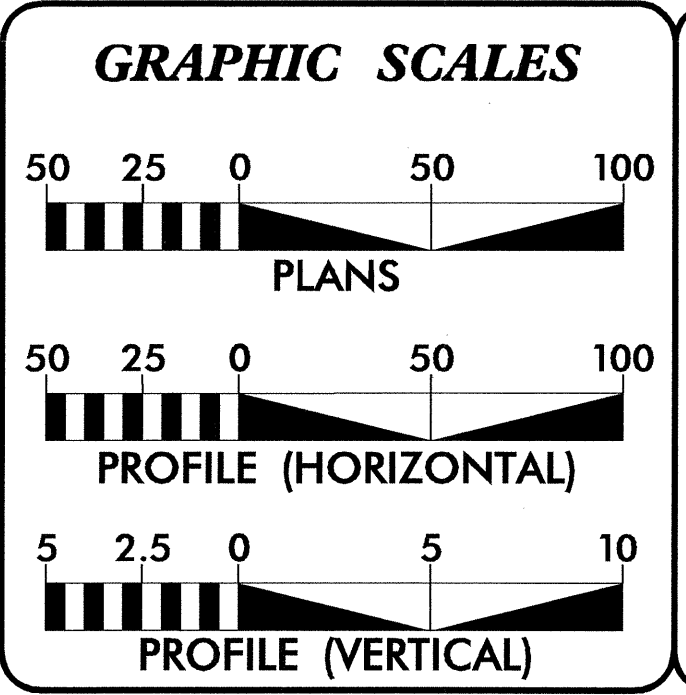
LOCATION: BRIDGE NO. 227 OVER REEMS CREEK
ON SR 2105

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



TIP PROJECT: B-4446

CONTRACT: C202269



DESIGN DATA

ADT 2010 =	592
ADT 2030 =	900
DHV =	9 %
D =	60 %
T =	6 % *
V =	30 MPH
FUNC. CLASS =	LOCAL
* TTST 1	DUAL 5

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4446 =	0.035 miles
LENGTH STRUCTURE TIP PROJECT B-4446 =	0.012 miles
TOTAL LENGTH TIP PROJECT B-4446 =	0.047 miles

Prepared In the Office of:

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: January 16, 2009	JIMMY GOODNIGHT, P.E. PROJECT ENGINEER
LETTING DATE: January 19, 2010	MARK HUSSEY PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

Stephen R. Moran
SIGNATURE: 10-28-2009

ROADWAY DESIGN ENGINEER

James S. Goodnight
SIGNATURE: 10-27-2009

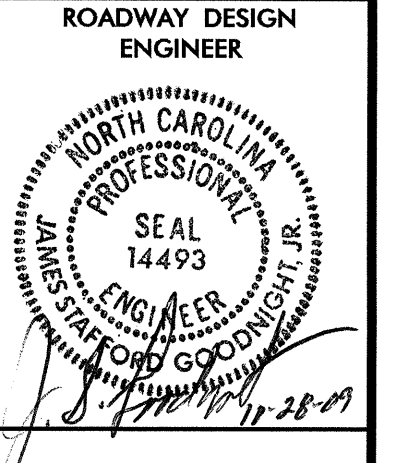
Professional Engineer Seals for Stephen R. Moran and James S. Goodnight.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Professional Engineer Seal for **Art W. Millon**, P.E.

STATE HIGHWAY DESIGN ENGINEER

26-OCT-2009 14:09
T:\goodway\proj\B4446_rdy_tsh.dgn
\$\$\$USERNAME\$\$\$



STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

INDEX OF SHEETS

LIST OF STANDARDS

GENERAL NOTES

2006 ROADWAY ENGLISH STANDARD DRAWINGS
EFF. 07-18-06
REV. 01-02-07

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:

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	LIST OF STANDARDS INDEX OF SHEETS, GENERAL NOTES &
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2-A	BRIDGE APPROACH FILL (SUB-REGIONAL TIER)
2-B	ANCHORAGE FOR FRAMES
2-C AND 2-D	METHOD OF PIPE INSTALLATION
3	SUMMARY OF QUANTITIES
3-A	DRAINAGE, GUARDRAIL, PAVEMENT REMOVAL AND EARTHWORK SUMMARIES
4	PLAN /PROFILE SHEET
TCP-1 THROUGH TCP-5	TRAFFIC CONTROL PLANS
EC-1 THROUGH EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION
SD-1	SPECIAL SIGN DESIGN
UC-1 THROUGH UC-2	UTILITY CONSTRUCTION PLANS
U0-1 THROUGH U0-2	UTILITIES BY OTHERS PLANS
X-1A	EARTHWORK VOLUME SUMMARY
X-1 THROUGH X-4	CROSS-SECTIONS
S-1 THROUGH S-20	STRUCTURE 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 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
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 - for Cast Iron Double Frame and Grates
840.66	Drainage Structure Steps
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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 II.

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

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

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

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

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

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

SUBSURFACE PLANS:
NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

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

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE Progress Energy, Verizon
Chart Communication, Town of Weaverville
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.

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	----- CONC
Bridge Wing Wall, Head Wall and End Wall	----- CONC WW
MINOR:	
Head and End Wall	----- CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	○ S
Storm Sewer	----- S

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	○ P
Power Line Tower	□
Power Transformer	□
U/G Power Cable Hand Hole	□ 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	□
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	----- 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	□ PH
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	○ SS
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.

SURVEY CONTROL SHEET B-4446

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
2	BL-2	723375.5210	952515.9010	2199.44	OUTSIDE PROJECT LIMITS	
3	BL-3	723617.8780	952630.2690	2170.33	OUTSIDE PROJECT LIMITS	
4	BL-4	724086.1730	952470.1270	2126.77	OUTSIDE PROJECT LIMITS	
5	BL-5	724537.6370	952481.1810	2104.51	13+89.12	19.49 LT

BY1 POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
6	BY1-6	724577.7390	952312.6930	2102.27	14+00.29	192.28 LT
55	BL-5	724537.6370	952481.1810	2104.51	13+89.12	19.49 LT
7	BY1-7	724515.7380	952724.8350	2112.43	14+08.61	224.42 RT

.....
 BM1 ELEVATION = 2166.48
 N 723683 E 952635
 L STATION 9+03 837 RIGHT
 8 INCH SPIKE IN BASE OF A RED OAK

.....
 BM2 ELEVATION = 2105.27
 N 724315 E 952523
 L STATION 7+35 218 RIGHT
 8 INCH SPIKE IN BASE OF A TRIPLE MAPLE.

.....
 BM3 ELEVATION = 2100.04
 N 724605 E 952362
 L STATION 5+42 38 LEFT
 CHISELED X ON CORNER OF A CONC HEADWALL.

NCDOT BASELINE STATION B4446-BL2
 LOCALIZED PROJECT COORDINATES
 N = 723375.5210
 E = 952515.9010
 ELEV. = 2199.44'

NCDOT BASELINE STATION B4446-BL3
 LOCALIZED PROJECT COORDINATES
 N = 723617.8780
 E = 952630.2690
 ELEV. = 2170.33'

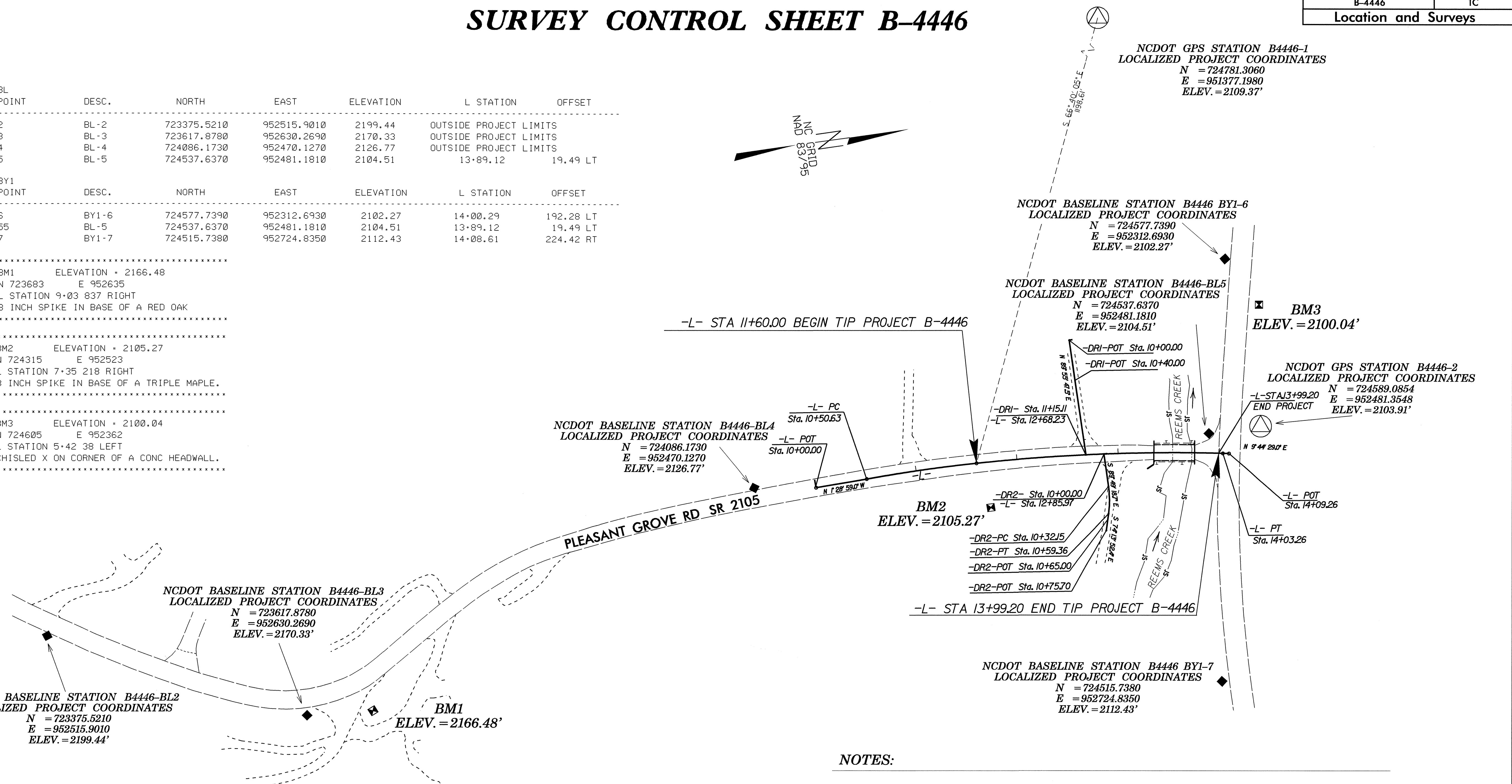
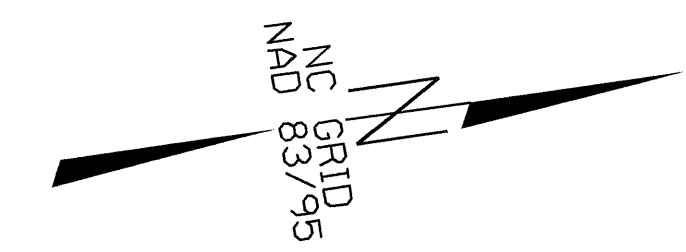
NCDOT BASELINE STATION B4446-BL4
 LOCALIZED PROJECT COORDINATES
 N = 724086.1730
 E = 952470.1270
 ELEV. = 2126.77'

NCDOT BASELINE STATION B4446-BL5
 LOCALIZED PROJECT COORDINATES
 N = 724537.6370
 E = 952481.1810
 ELEV. = 2104.51'

NCDOT GPS STATION B4446-1
 LOCALIZED PROJECT COORDINATES
 N = 724781.3060
 E = 951377.1980
 ELEV. = 2109.37'

NCDOT GPS STATION B4446-2
 LOCALIZED PROJECT COORDINATES
 N = 724589.0854
 E = 952481.3548
 ELEV. = 2103.91'

NCDOT GPS STATION B4446-3
 LOCALIZED PROJECT COORDINATES
 N = 724577.7390
 E = 952312.6930
 ELEV. = 2102.27'



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/](http://www.ncdot.org/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/)

THE FILES TO BE FOUND ARE AS FOLLOWS:
 B4446_LS_CONTROL_071101.TXT
 B4446_LS_1C_071101.DGN

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)

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4446-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 724781.3060(±) EASTING: 951377.1980(±) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999811068 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4446-1" TO -L- STATION 11+60.00 IS S 66°40'05" E 1198.61'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

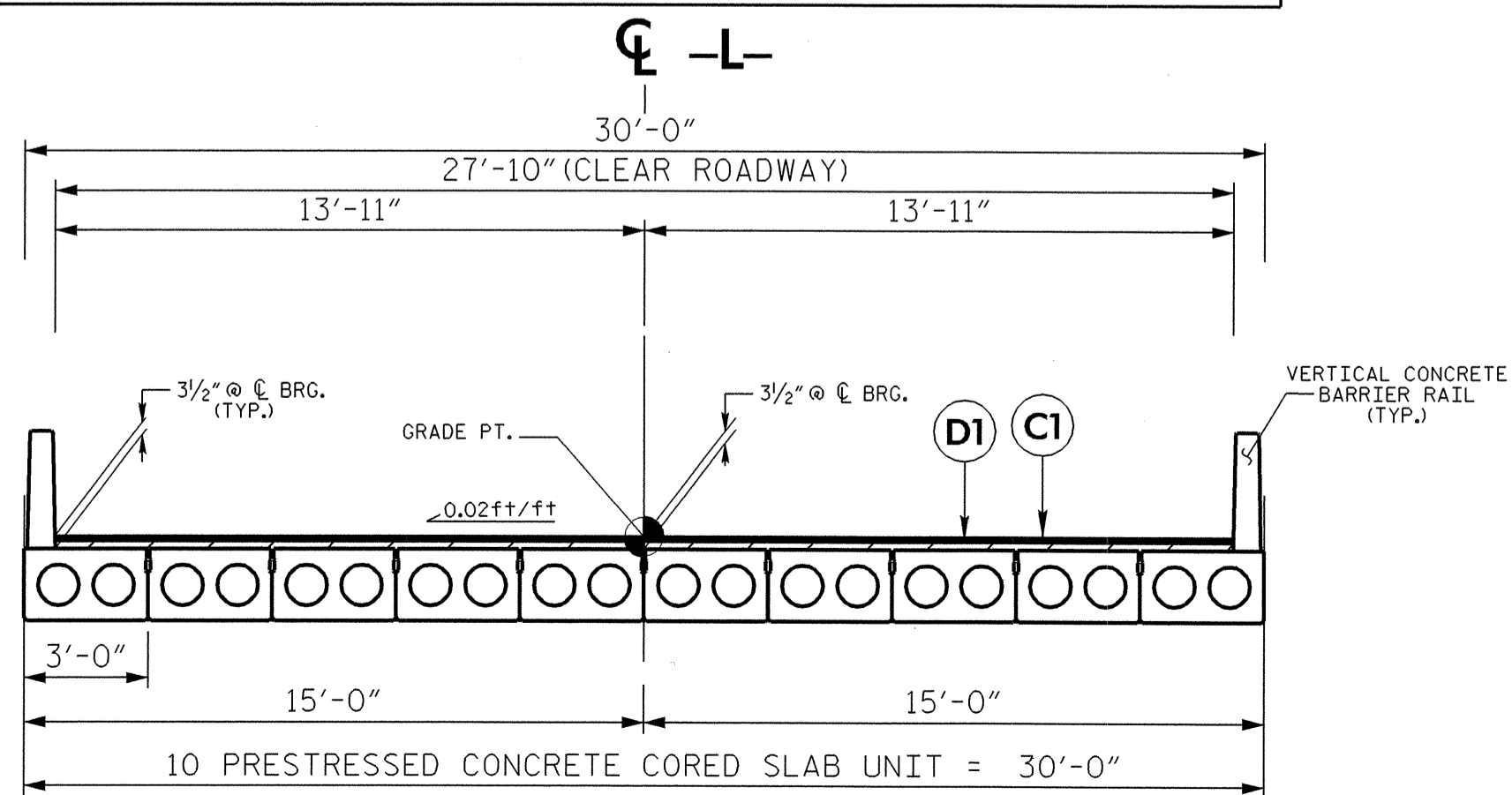
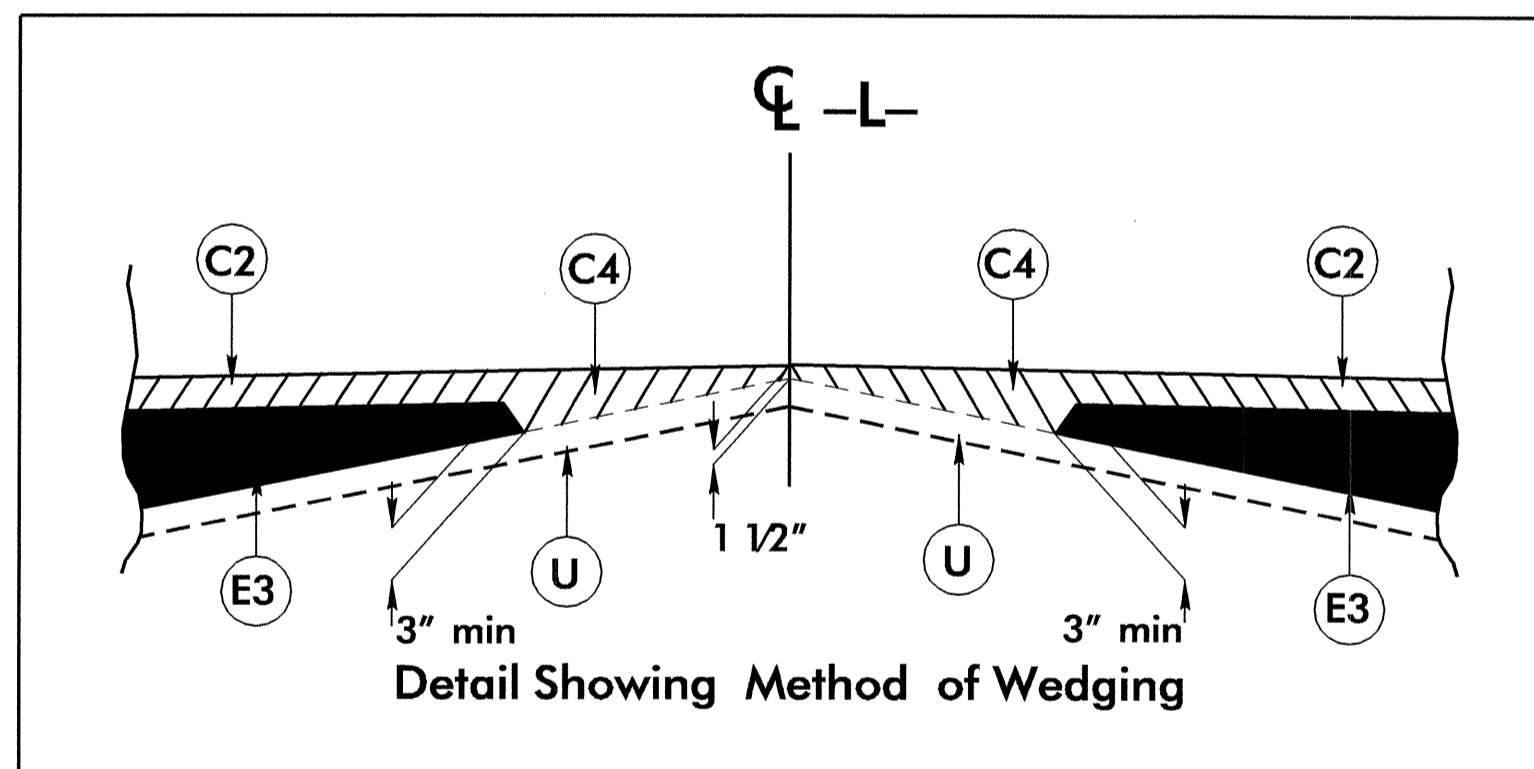
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6/2/89

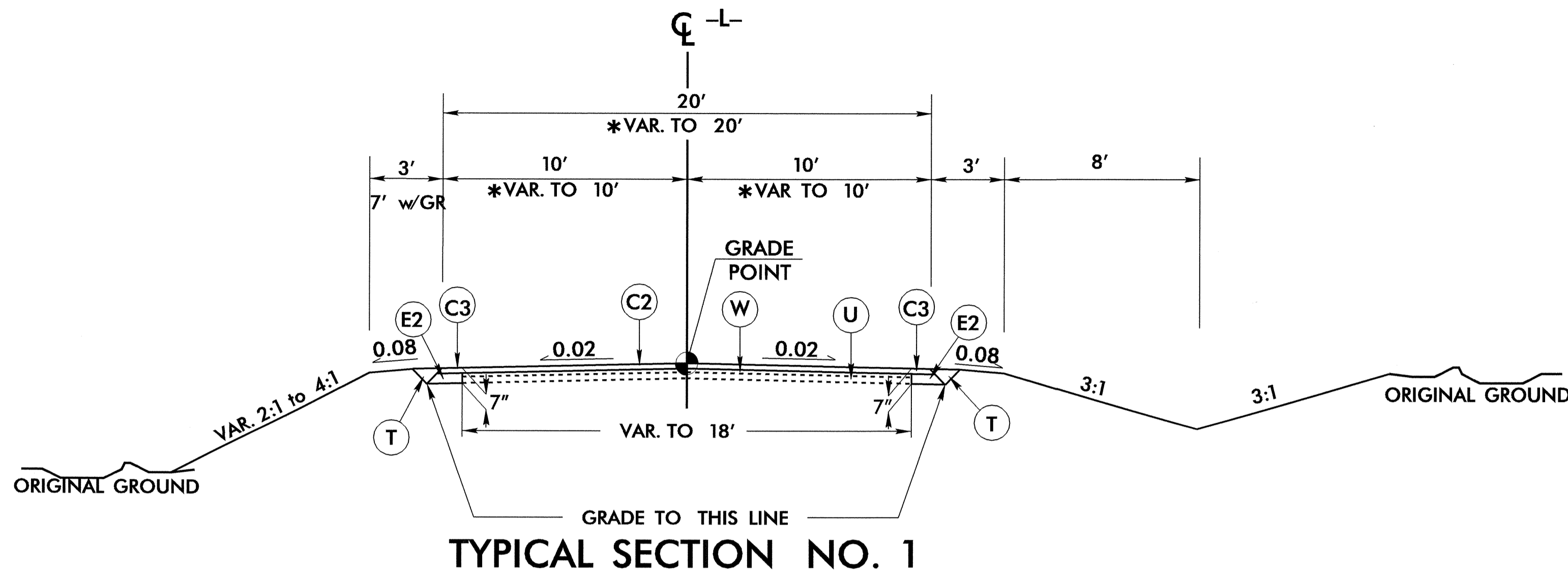
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.
C2	PROP. APPROX. 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C3	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.
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 4 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.B, 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.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

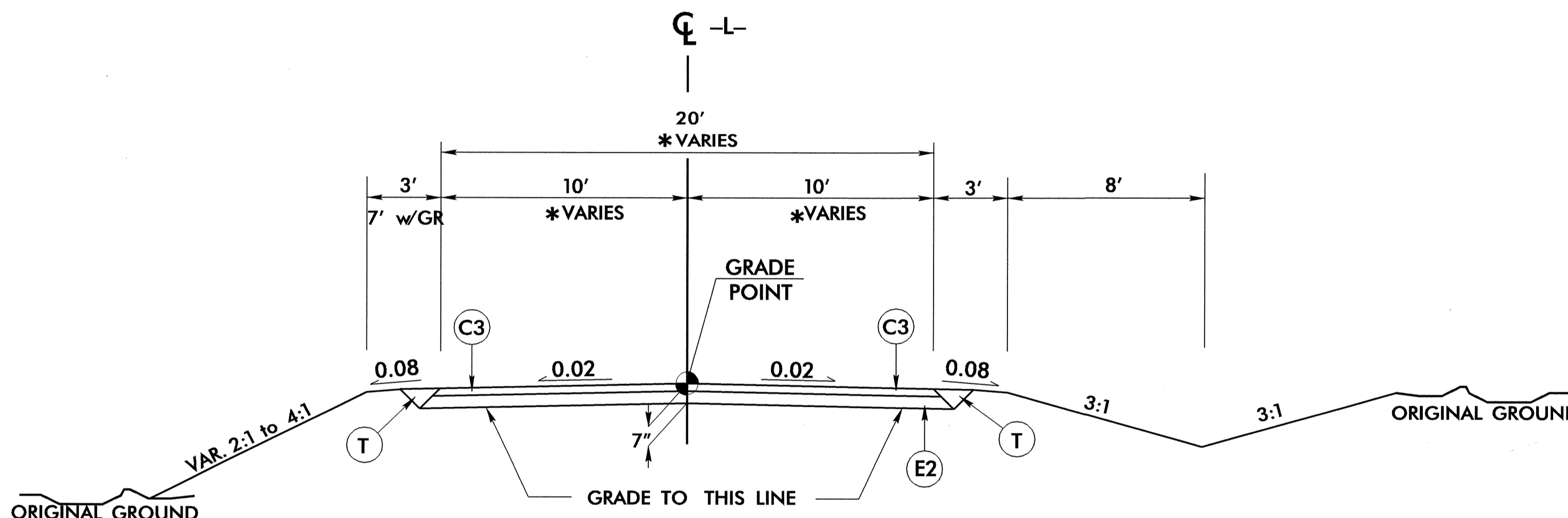
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



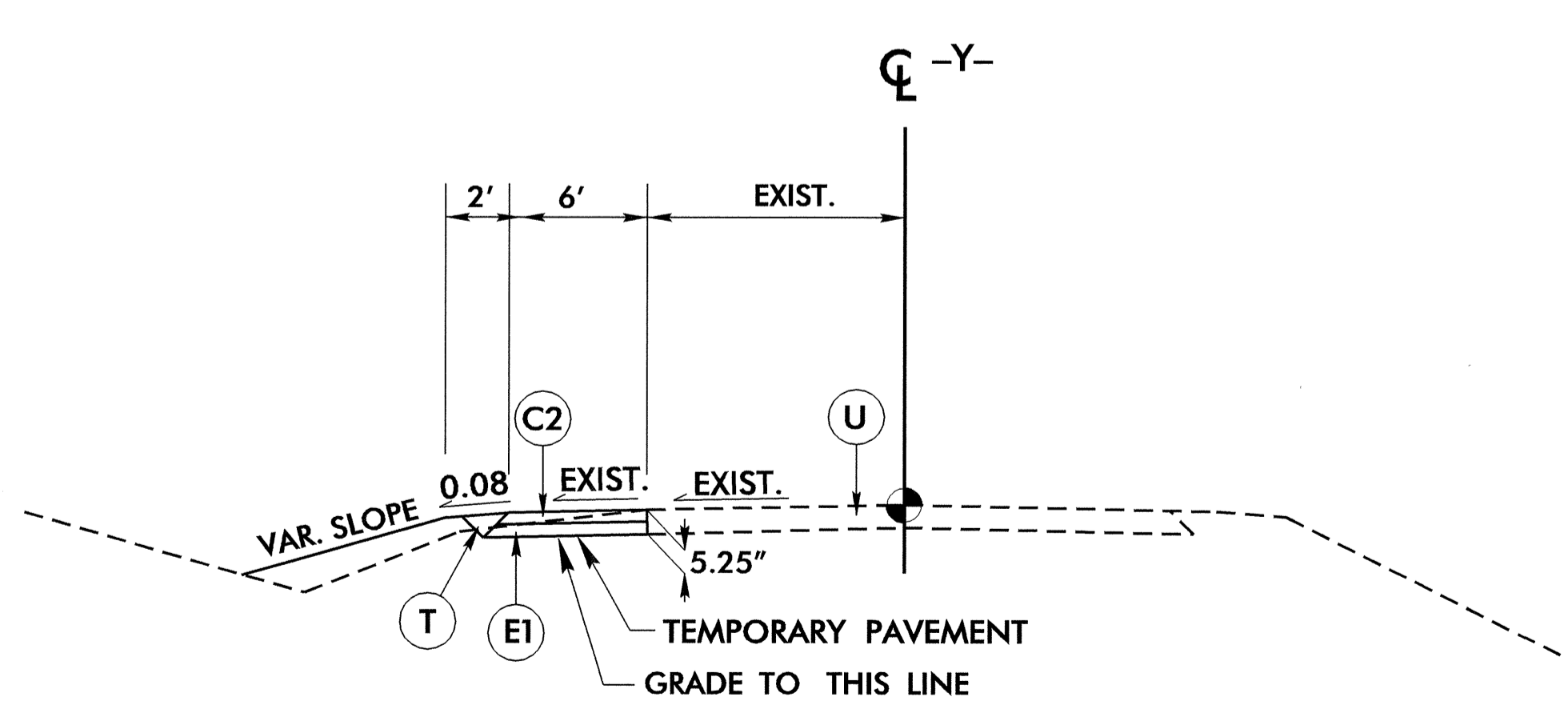
TYPICAL SECTION ON STRUCTURE



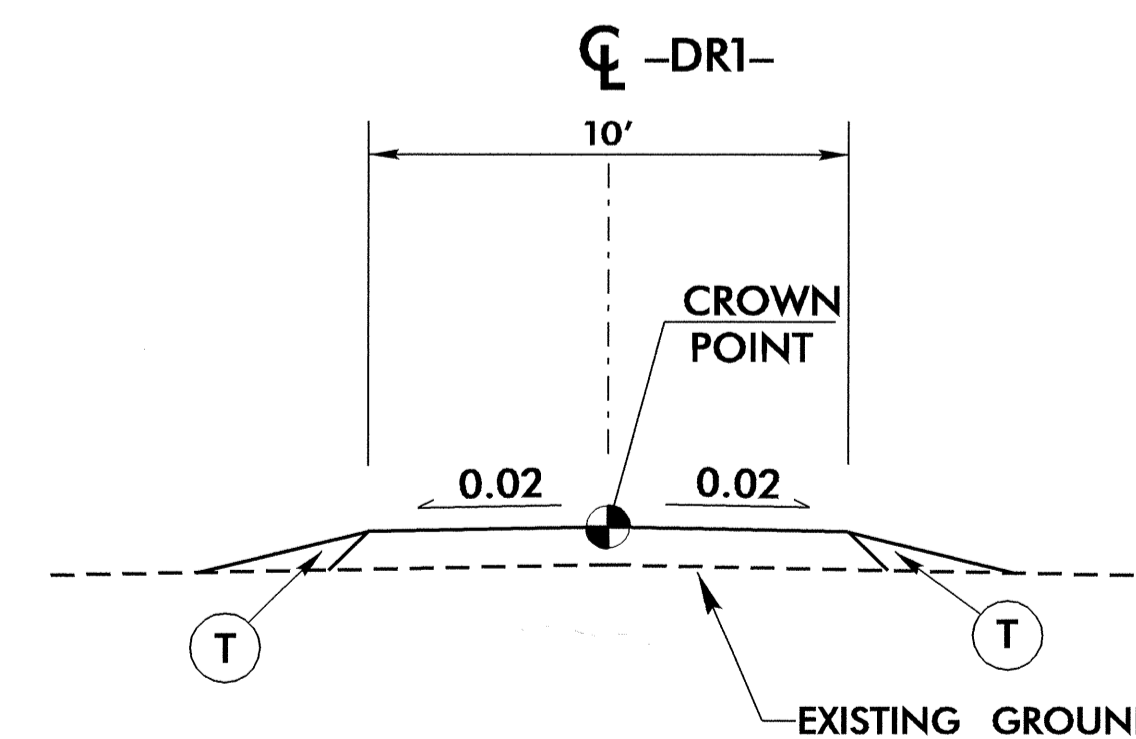
*-L- STA. 11+50 TO 11+66
-L- STA. 11+66 TO 13+00



-L- STA. 13+00 TO 13+17.45 (BEG BRIDGE)
*-L- STA. 13+80.45 (END BRIDGE) TO 13+99.20



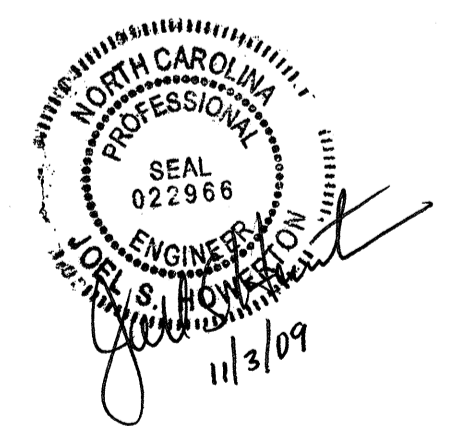
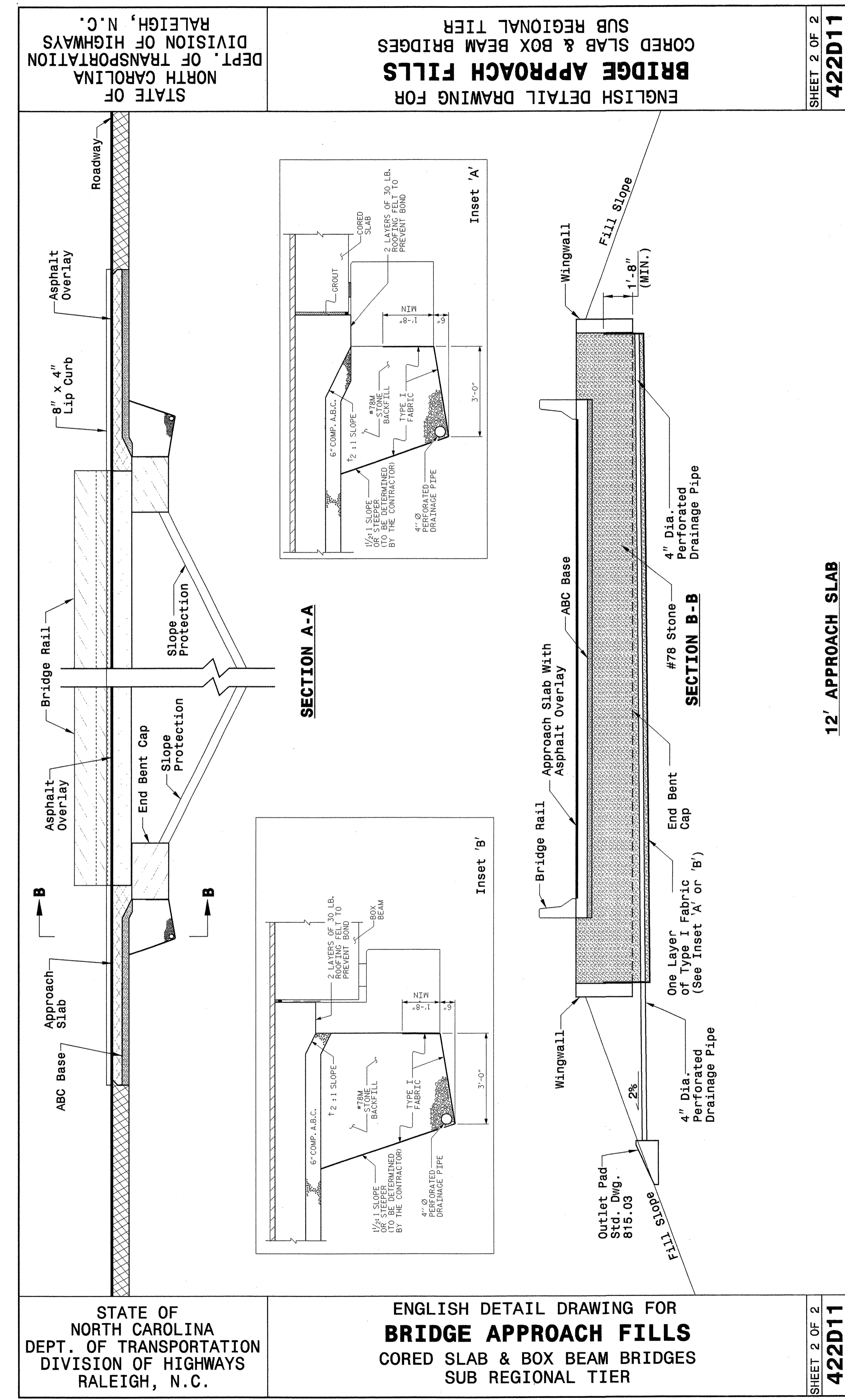
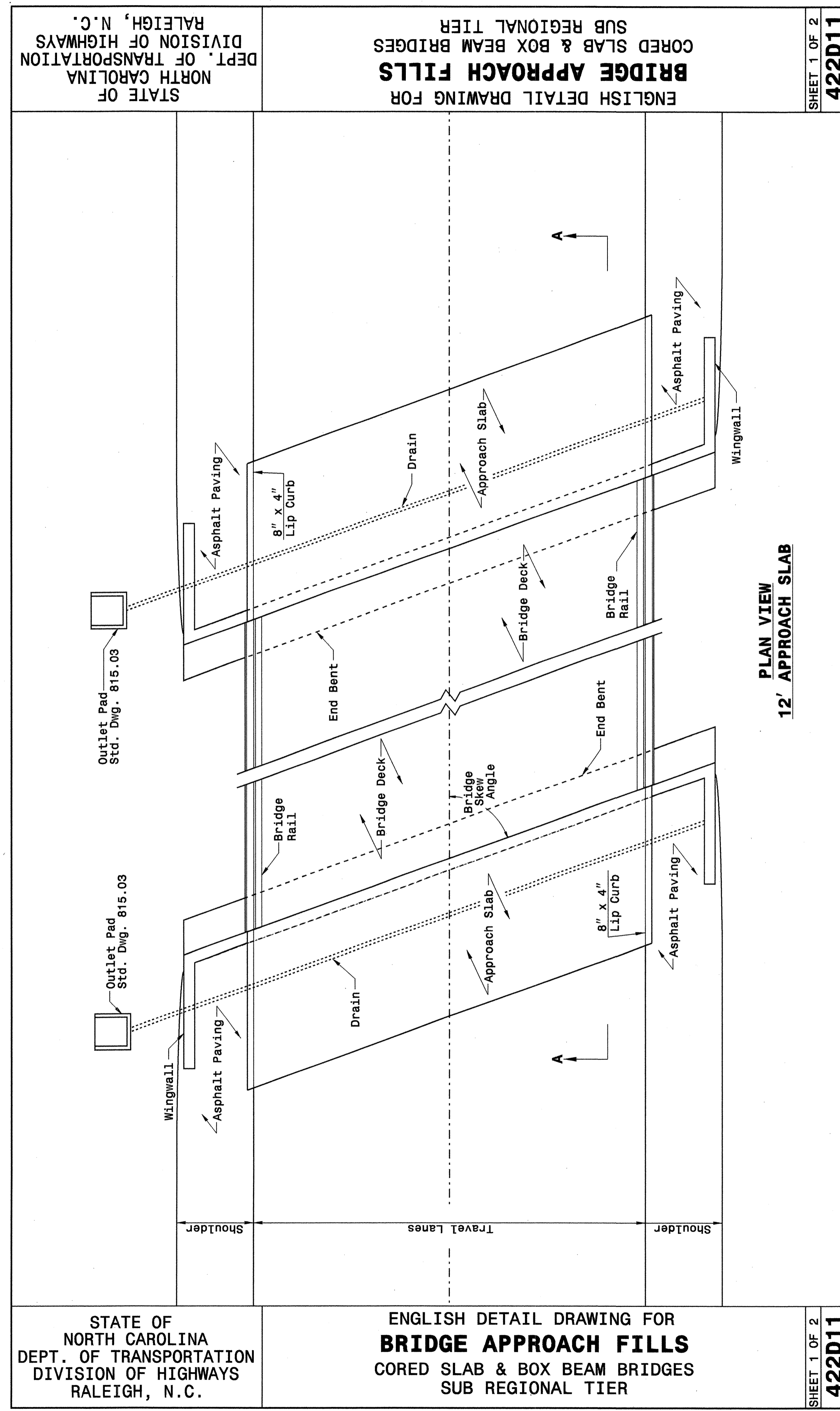
-Y- STA. 11+06 TO 15+00 LT



-DRI- STA. 10+09 TO -DRI- STA. 12+73.80
USE INCIDENTAL STONE BASE
DEPTH DETERMINED BY THE ENGINEER

PROJECT REFERENCE NO. B-4446	SHEET NO. 2
ROADWAY DESIGN ENGINEER SEAL 14493 J. D. [Signature]	PAVEMENT DESIGN ENGINEER SEAL 22898 C. L. S. MORRIS 11/23/09

19-NOV-2009 11:44
r:\projects\pavement\pavement.dgn



**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: DATE:
 CHECKED BY: DATE: 2/16/09
 FILE SPEC.: k Kempf/english/bridge approach fills.dgn

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

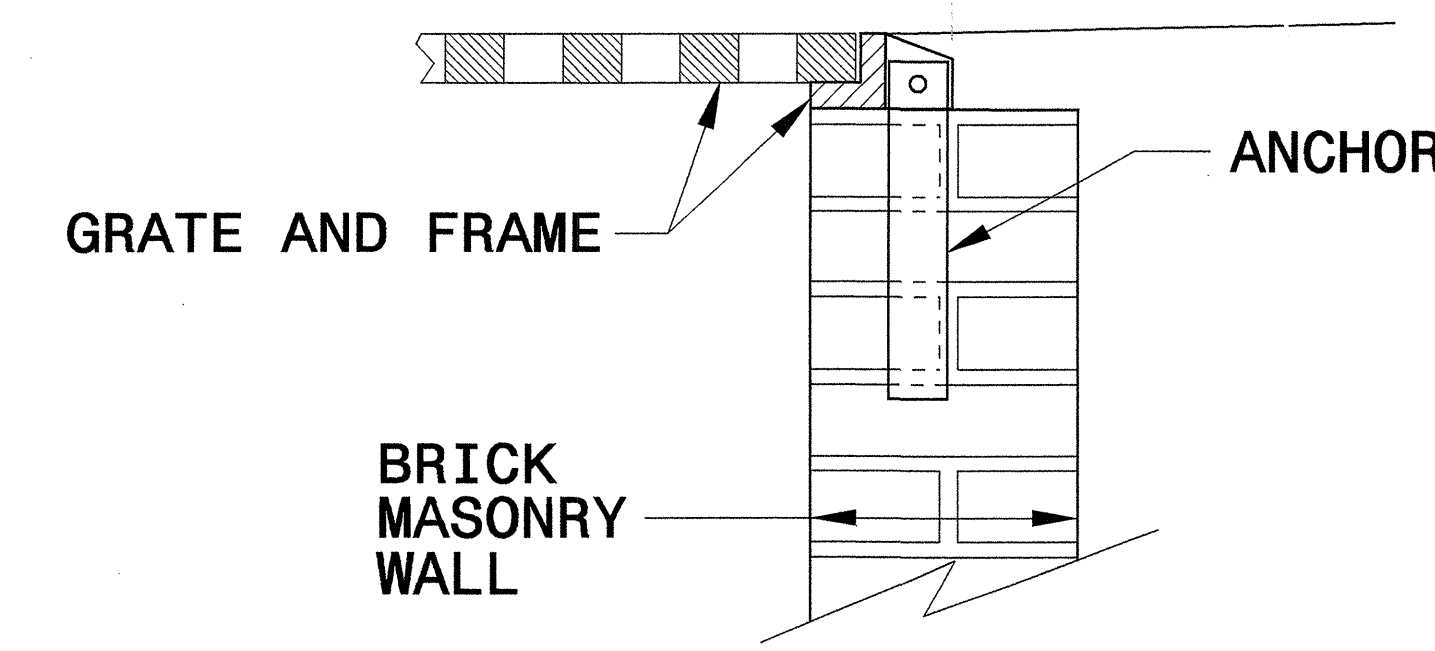
ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1
840D25

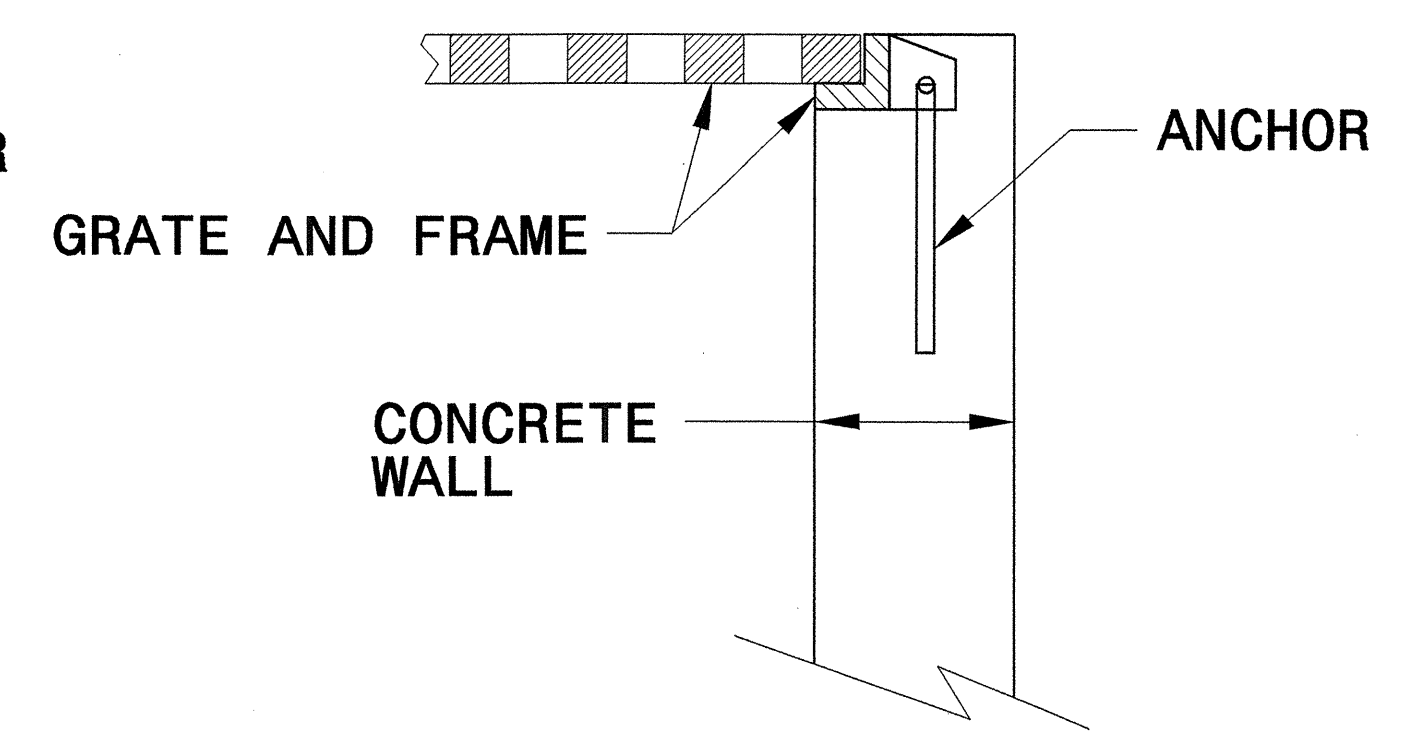
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

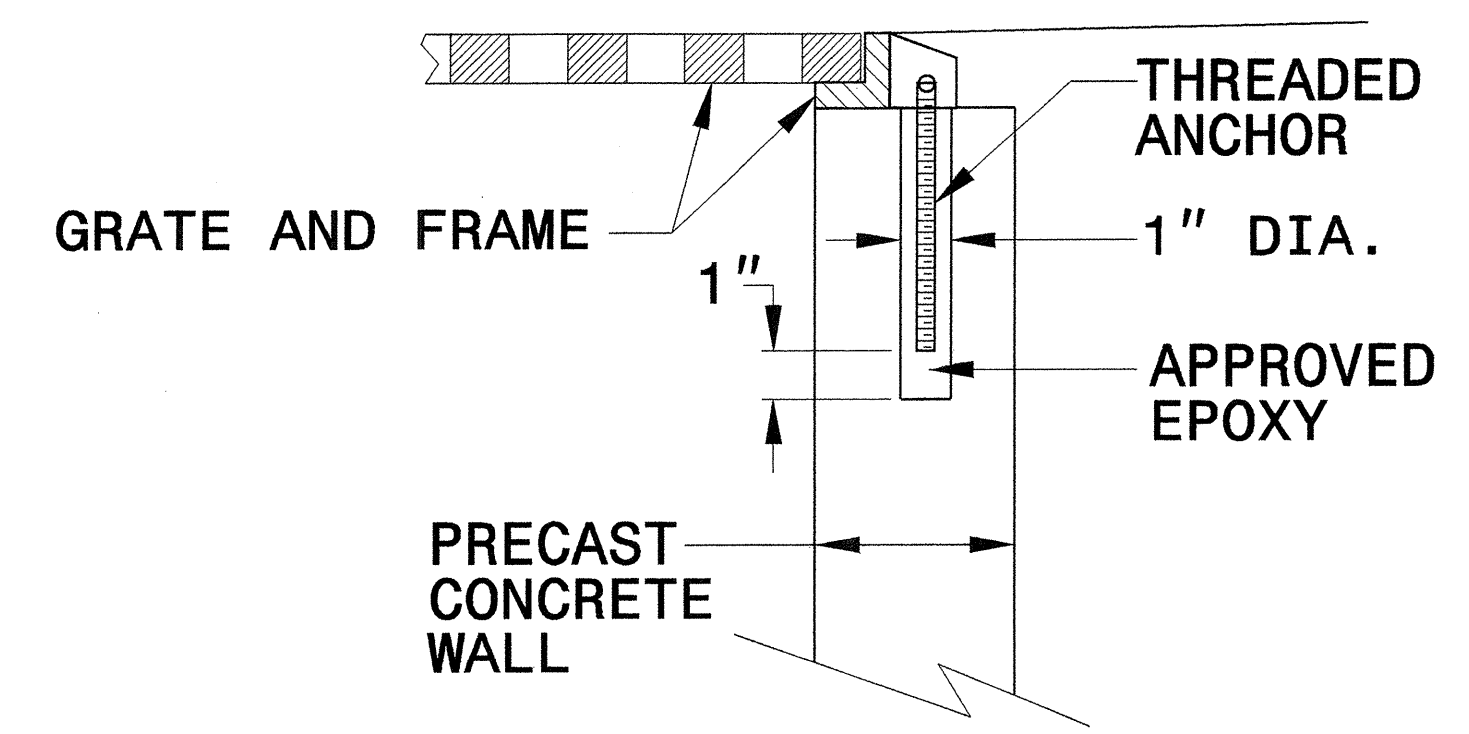
SHEET 1 OF 1
840D25



**BRICK MASONRY
CONSTRUCTION**



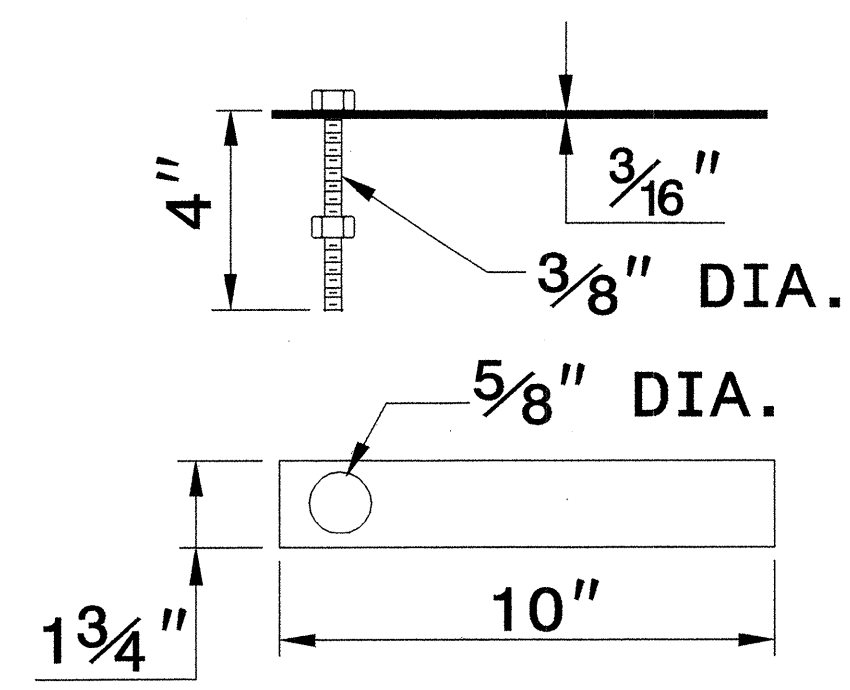
**CONCRETE
CONSTRUCTION**



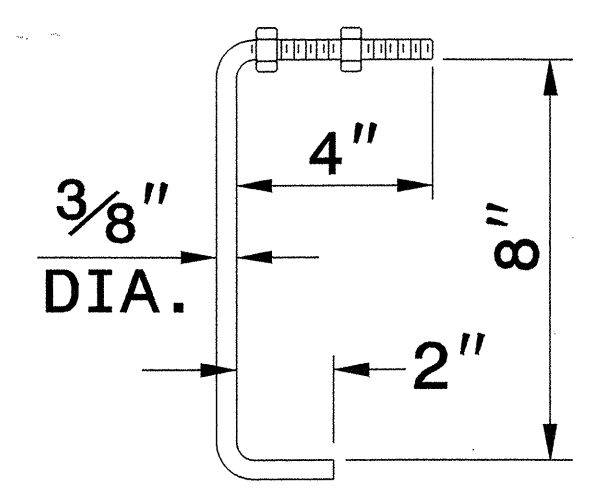
**PRECAST CONCRETE
CONSTRUCTION**

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

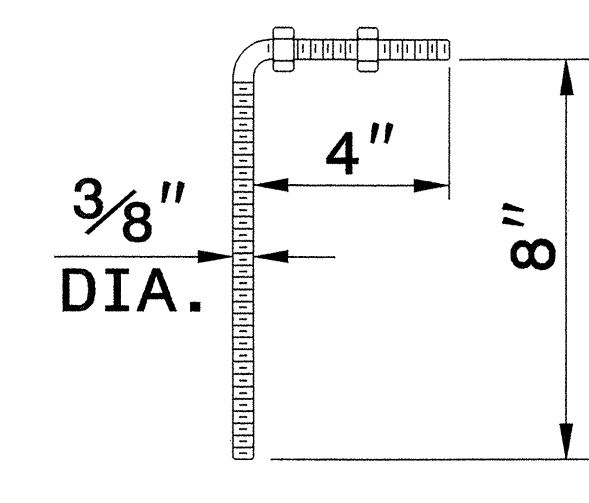
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL
OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



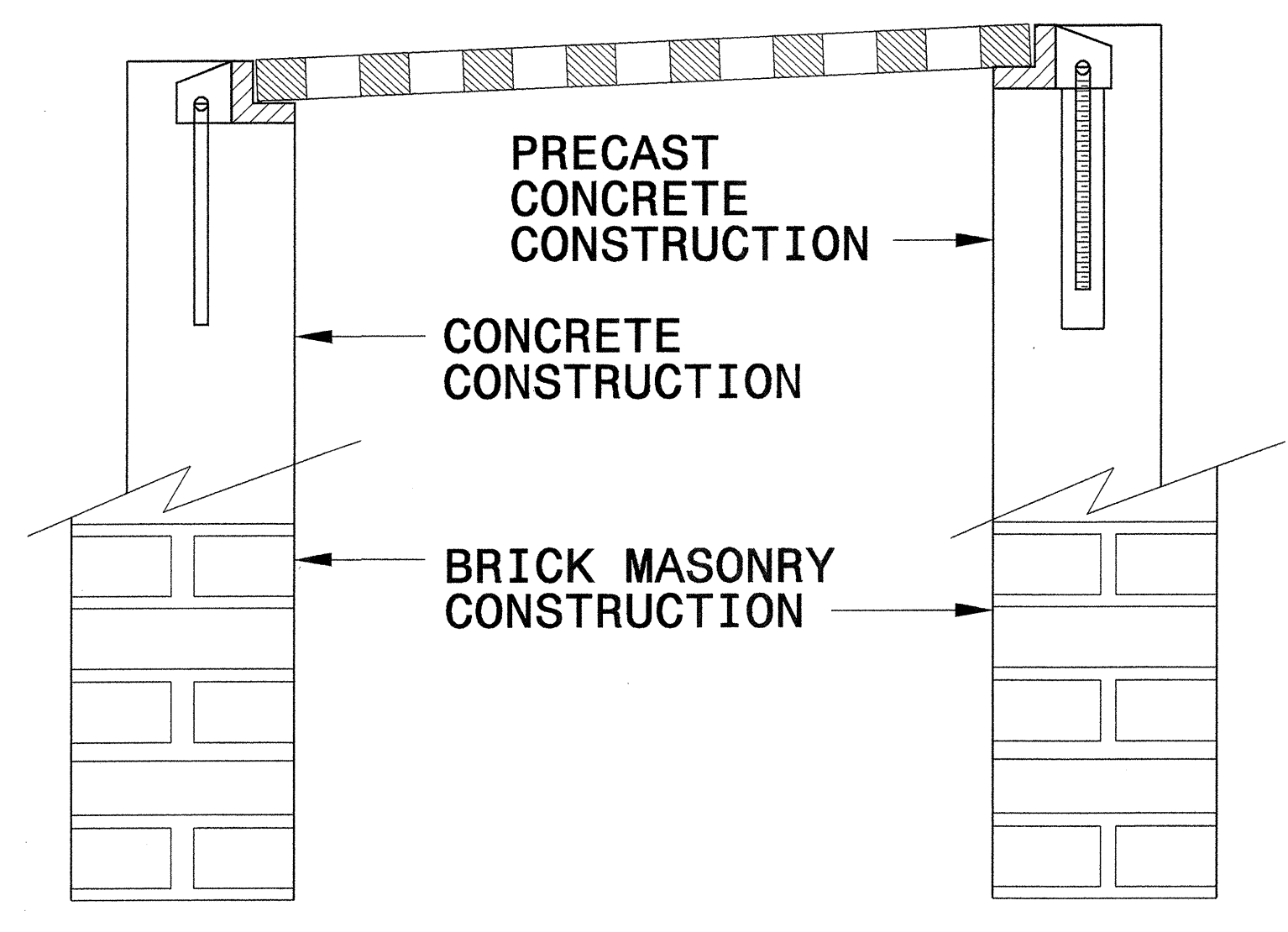
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



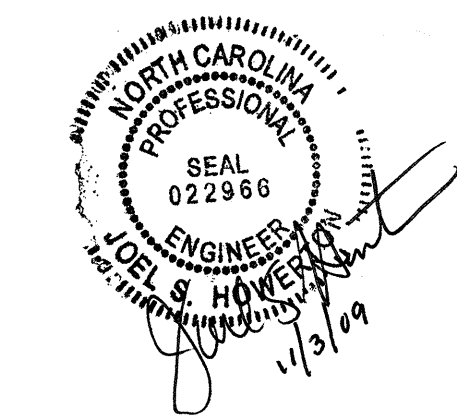
CONCRETE ANCHOR
3/8" DIA. BENT BAR



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



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



PROJECT SERVICES UNIT
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Office 919-250-4128 FAX 919-250-4119

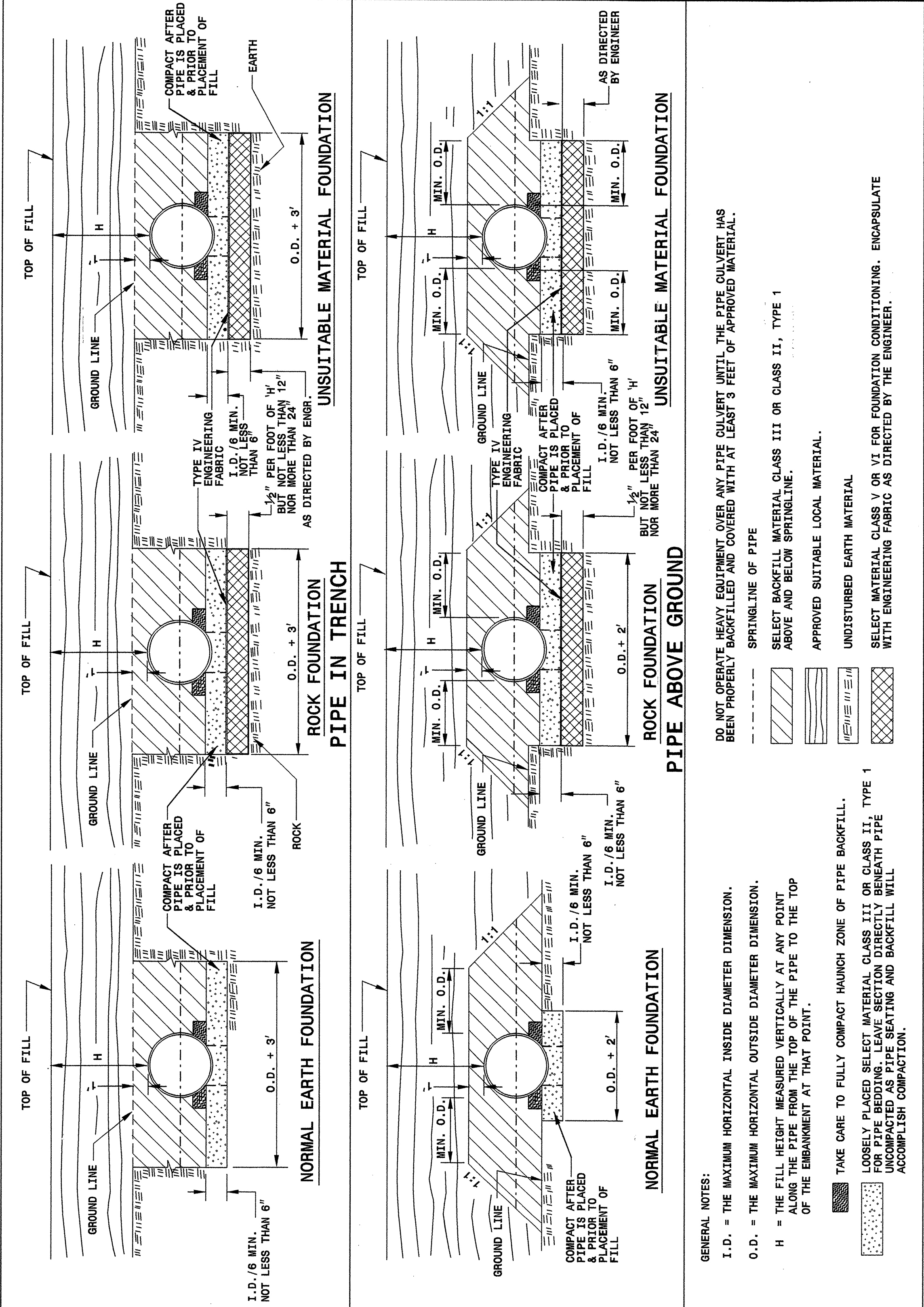
SEE PLATE FOR TITLE

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: *[Signature]* DATE: 1/13/08
FILE SPEC.: :

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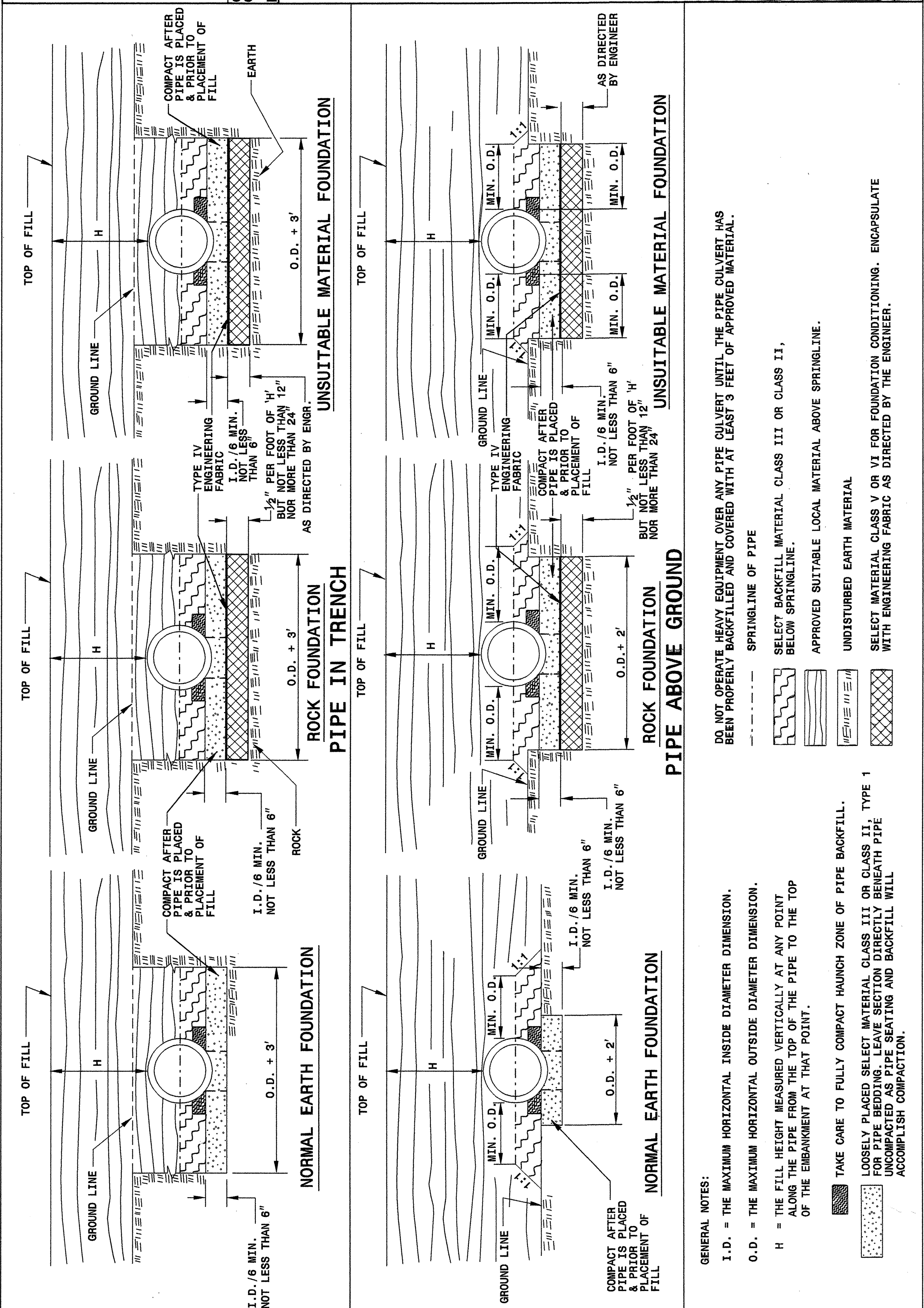
5/14/99

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

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

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

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

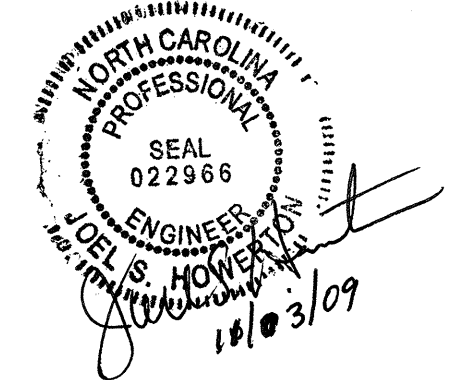
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ORIGINAL BY: KKempf DATE: 5-15-09
 MODIFIED BY: [Signature] DATE: [Blank]
 CHECKED BY: [Signature] DATE: 7/20/09
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5/14/99

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

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

FLEXIBLE PIPE

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

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet)			
		16 (Ga)	14	12	10
12	12	204	256	14	8
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
48	12	48	61	87	113
54	12	42	54	77	100
60	12	36	48	69	90
66	12	30	42	61	81
72	12	24	36	54	74
78	12	18	30	48	66
84	12	12	24	42	59

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

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

7-06

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

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

** 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

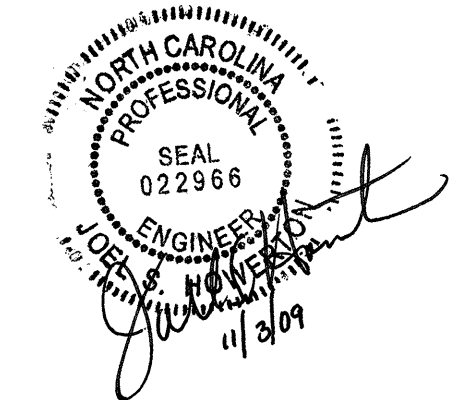
SHEET 3 OF 3
300D01

SHEET 3 OF 3
300D01

**PROJECT SERVICES UNIT
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ORIGINAL BY: KKempf	DATE: 5-15-09
MODIFIED BY: <i>[Signature]</i>	DATE: 7/30/09
CHECKED BY: <i>[Signature]</i>	DATE: 7/30/09
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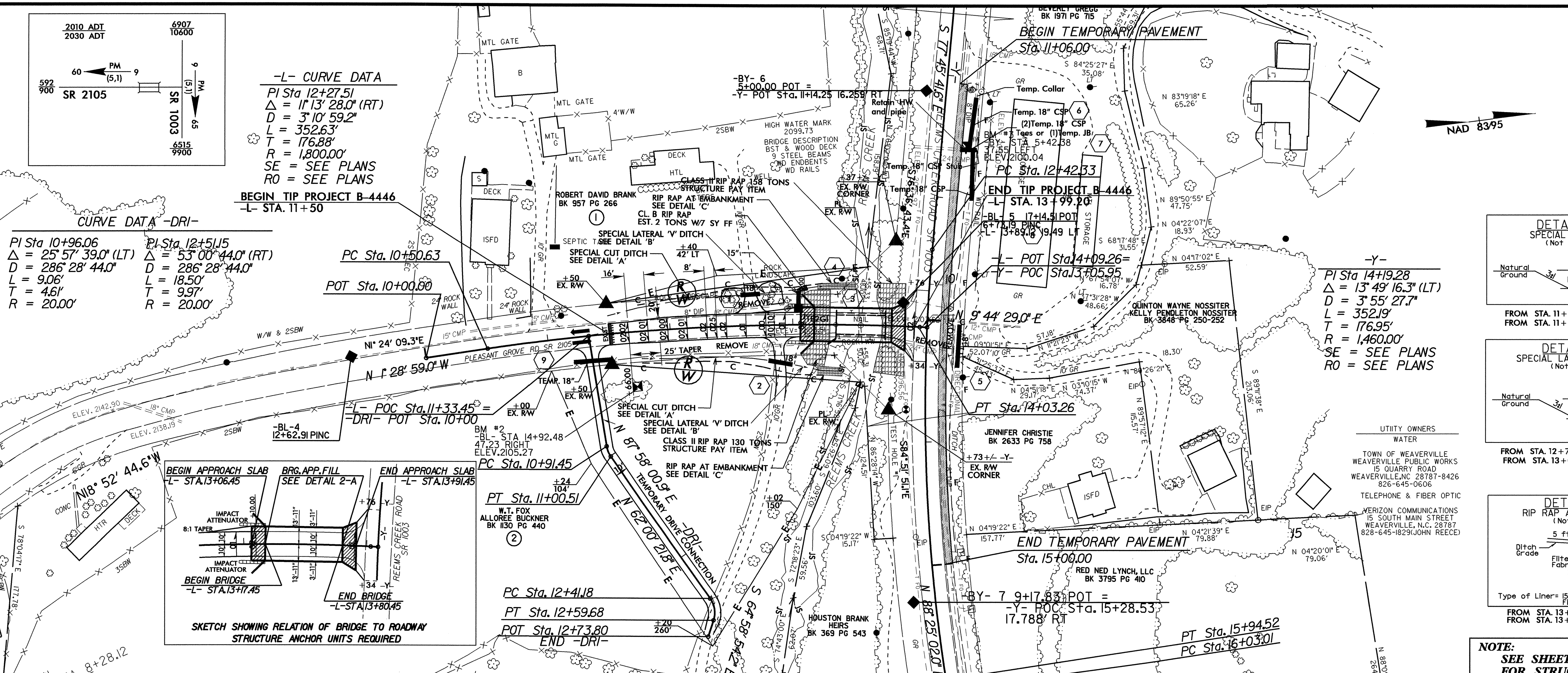
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

000100000-N	800	Lump Sum		MOBILIZATION					
003000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ***** (13+48.95)	5325800000-E	1510	180	LF	8" WATER LINE
003600000-E	225	100	CY	UNDERCUT EXCAVATION	5546000000-E	1515	1	EA	8" VALVE
004300000-N	226	Lump Sum		GRADING	5571800000-E	1515	1	EA	8" TAPPING VALVE
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING	5672000000-N	1515	1	EA	RELOCATE FIRE HYDRANT
008000000-E	SP	100	TON	CLASS IV SUBGRADE STABILIZATION	5801000000-E	1530	180	LF	ABANDON 8" UTILITY PIPE
019500000-E	265	100	CY	SELECT GRANULAR MATERIAL	5871500000-E	1550	20	LF	TRENCHLESS INSTALLATION OF 8" IN SOIL
019600000-E	270	100	SY	FABRIC FOR SOIL STABILIZATION	5871510000-E	1550	20	LF	TRENCHLESS INSTALLATION OF 8" NOT IN SOIL
032000000-E	SP	70	SY	FOUNDATION CONDITIONING FABRIC	6000000000-E	1605	100	LF	TEMPORARY SILT FENCE
033000000-E	SP	40	TON	GENERIC DRAINAGE ITEM FOUNDATION CONDITIONING MATERIAL, MINOR STRS	6060000000-E	1610	300	TON	STONE FOR EROSION CONTROL, CLASS A
033520000-E	SP	16	LF	15" DRAINAGE PIPE	6090000000-E	1610	75	TON	STONE FOR EROSION CONTROL, CLASS B
098600000-E	SP	94	LF	GENERIC PIPE ITEM 18" CS PIPE CULVERTS 0.064" THICK	6012000000-E	1610	150	TON	SEDIMENT CONTROL STONE
098600000-E	SP	72	LF	GENERIC PIPE ITEM 18" SIDE DRAIN PIPE	6015000000-E	1615	1	ACR	TEMPORARY MULCHING
099200000-E	SP	2	EA	GENERIC PIPE ITEM CS PIPE TEES (18" X 18" X 18", 0.064")	6018000000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
099500000-E	340	238	LF	PIPE REMOVAL	6021000000-E	1620	1.25	TON	FERTILIZER FOR TEMPORARY SEEDING
122000000-E	545	100	TON	INCIDENTAL STONE BASE	6024000000-E	1622	225	LF	TEMPORARY SLOPE DRAINS
148900000-E	610	150	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B	6027000000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
149800000-E	610	40	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B	6029000000-E	SP	650	LF	SAFETY FENCE
152500000-E	610	80	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A	6030000000-E	1630	250	CY	SILT EXCAVATION
156000000-E	620	15	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22	6036000000-E	1631	7,800	SY	MATting FOR EROSION CONTROL
169300000-E	654	65	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR	6037000000-E	SP	20	SY	COIR FIBER MAT
202200000-E	815	22.4	CY	SUBDRAIN EXCAVATION	6038000000-E	SP	200	SY	PERMANENT SOIL REINFORCEMENT MAT
203300000-E	815	16.8	CY	SUBDRAIN FINE AGGREGATE	6042000000-E	1632	625	LF	1/4" HARDWARE CLOTH
204400000-E	815	100	LF	6" PERFORATED SUBDRAIN PIPE	6071010000-E	SP	100	LF	WATTLE
205500000-E	815	3	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS	6071020000-E	SP	20	LB	POLYACRYLAMIDE (PAM)
206600000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET	6071030000-E	SP	150	LF	COIR FIBER BAFFLES
207700000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)	6071050000-E	SP	2	EA	*** SKIMMER (1-1/2')
225300000-E	840	0.45	CY	PIPE COLLARS	6084000000-E	1660	5	ACR	SEEDING & MULCHING
228600000-N	840	1	EA	MASONRY DRAINAGE STRUCTURES	6087000000-E	1660	0.5	ACR	MOWING
236700000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.29	6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
343500000-N	SP	2	EA	GENERIC GUARDRAIL ITEM IMPACT ATTENUATOR UNIT, TYPE 350 (TL-2)	6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
362800000-E	876	30	TON	RIP RAP, CLASS I	6096000000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
364900000-E	876	2	TON	RIP RAP, CLASS B	6108000000-E	1665	0.5	TON	FERTILIZER TOPDRESSING
365600000-E	876	705	SY	FILTER FABRIC FOR DRAINAGE	6114500000-N	SP	20	MHR	SPECIALIZED HAND MOWING
440000000-E	1110	410	SF	WORK ZONE SIGNS (STATIONARY)	6117000000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL
440500000-E	1110	100	SF	WORK ZONE SIGNS (PORTABLE)	6123000000-E	1670	0.1	ACR	REFORESTATION
441000000-E	1110	90	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)	7993000000-N	SP	20	DAY	GENERIC SIGNAL ITEM PORTABLE TRAFFIC SIGNAL SYSTEM
443000000-N	1130	20	EA	DRUMS					
443500000-N	1135	25	EA	CONES					
444500000-E	1145	40	LF	BARRICADES (TYPE III)					
445000000-N	1150	200	HR	FLAGGER					
450700000-E	SP	250	LF	WATER FILLED BARRIER					
450800000-E	SP	850	LF	RESET WATER FILLED BARRIER					
477000000-E	1205	2,600	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)					
479500000-E	1205	50	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (24") (IV)					
481000000-E	1205	1,600	LF	PAINT PAVEMENT MARKING LINES (4")					
485000000-E	1205	1,200	LF	REMOVAL OF PAVEMENT MARKING LINES (4")					

5/28/99

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CURVE DATA -DRI-

PI Sta. 10+96.06
 $\Delta = 25^\circ 57' 39.0''$ (LT)
 $D = 286' 28'' 44.0''$
 $L = 9.06'$
 $T = 4.61'$
 $R = 20.00'$

PI Sta. 12+51.15
 $\Delta = 53^\circ 00' 44.0''$ (RT)
 $D = 286' 28'' 44.0''$
 $L = 18.50'$
 $T = 9.97'$
 $R = 20.00'$

CURVE DATA -RT-

PI Sta. 12+42.33
 $\Delta = 1^\circ 13' 28.0''$ (RT)
 $D = 3' 10' 59.2''$
 $L = 352.63'$
 $T = 176.88'$
 $R = 1,800.00'$
 SE = SEE PLANS
 RO = SEE PLANS

CURVE DATA -BY-

PI Sta. 14+19.28
 $\Delta = 13^\circ 49' 16.3''$ (LT)
 $D = 3' 55' 27.7''$
 $L = 352.19'$
 $T = 176.95'$
 $R = 1,460.00'$
 SE = SEE PLANS
 RO = SEE PLANS

DETAIL 'A'
 SPECIAL CUT DITCH
 (Not to Scale)

Natural Ground
 3/4" D
 3/4" Flat
 Front Slope
 Min. D = 0.75 Ft.

FROM STA. 11+50 TO STA. 12+75 LT
 FROM STA. 11+75 TO STA. 13+00 RT

DETAIL 'B'
 SPECIAL LATERAL 'V' DITCH
 (Not to Scale)

Natural Ground
 3/4" D
 3/4" Flat
 Fill Slope
 Min. D = 0.75 Ft.

FROM STA. 12+76 TO STA. 13+37 LT
 FROM STA. 13+01 TO STA. 13+31 RT

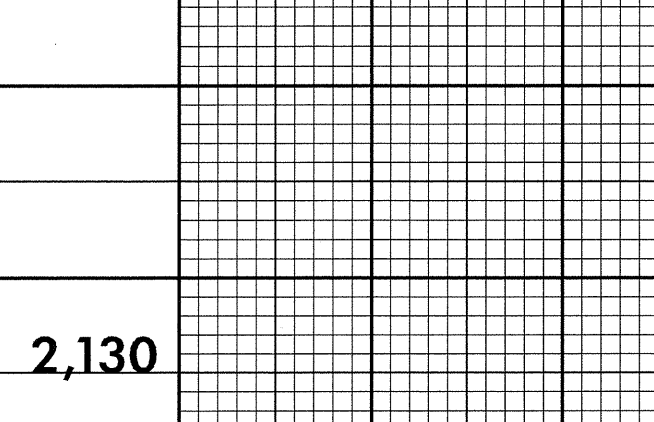
DETAIL 'C'
 RIP RAP AT EMBANKMENT
 (Not to Scale)

Ditch Grade
 5 ft
 1.5 ft
 Filter Fabric
 3 ft

Type of Liner = 15 TONS CL I Rip-Rap
 Filter Fabric = 22oz

FROM STA. 13+20 TO STA. 13+50 LT
 FROM STA. 13+20 TO STA. 13+40 RT

NOTE:
 SEE SHEETS S-1 THROUGH S-20
 FOR STRUCTURE PLANS.



UTILITY OWNERS

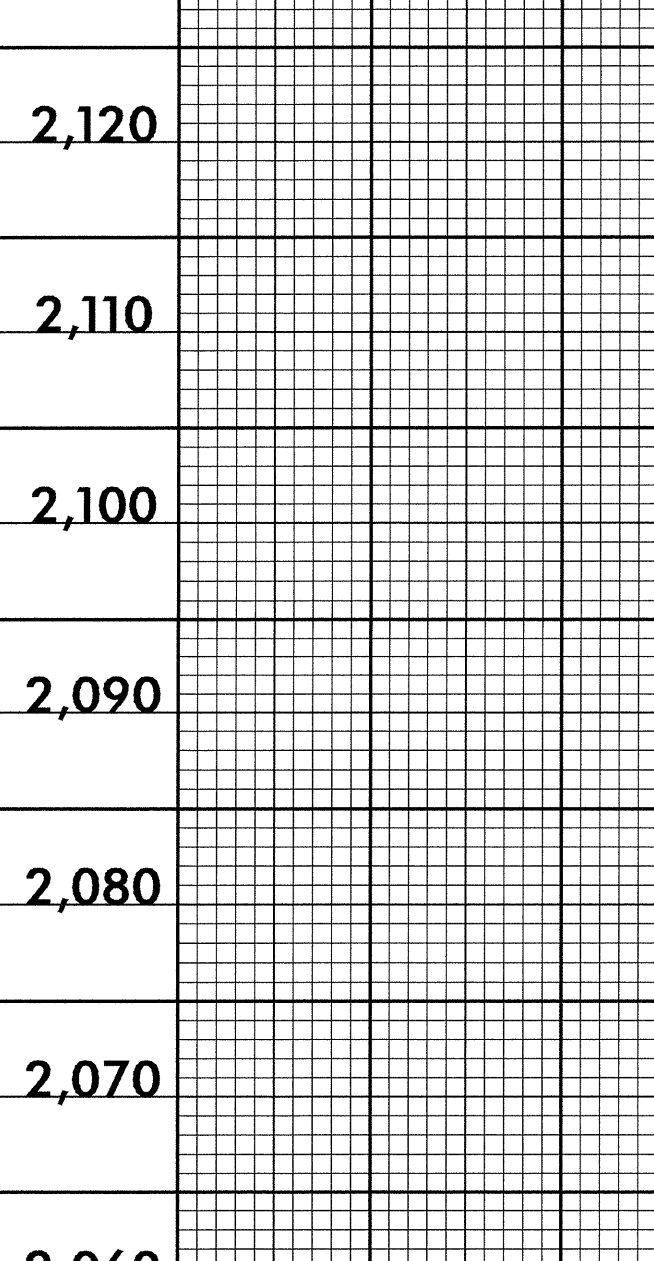
WATER
 TOWN OF WEAVERVILLE
 WEAVERVILLE PUBLIC WORKS
 15 QUARRY ROAD
 WEAVERVILLE, NC 28787-8426
 826-1645-0606

TELEPHONE & FIBER OPTIC
 VERIZON COMMUNICATIONS
 15 SOUTH MAIN STREET
 WEAVERVILLE, N.C. 28787
 828-645-1829 (JOHN REECE)

REVISIONS

BM2 ELEVATION = 2105.27
 N 724315 E 952523
 BL STATION 14+92.47 RIGHT
 8 INCH SPIKE IN BASE OF A TRIPLE MAPLE.

BM3 ELEVATION = 2100.04
 N 724605 E 952362
 BY STATION 5+42.38 LEFT
 CHISLED X ON CORNER OF A CONC HEADWALL.



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE = 3455 CFS
 DESIGN FREQUENCY = 25 YRS
 DESIGN HW ELEVATION = 2101.8 FT
 BASE DISCHARGE = 5090 CFS
 BASE FREQUENCY = 100 YRS
 BASE HW ELEVATION = 2105.3 FT
 OVERTOPPING DISCHARGE = 4050 CFS
 OVERTOPPING FREQUENCY = 25+/- YRS
 OVERTOPPING ELEVATION = 2104.3 FT

DITCH LEGEND

LEFT DITCH - - - - -

RIGHT DITCH - - - - -

RESURFACING

Class II Rip Rap
 slope = 1:3:1

Vertical Abutment

10 11 12 13 14

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