

09/08/09

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

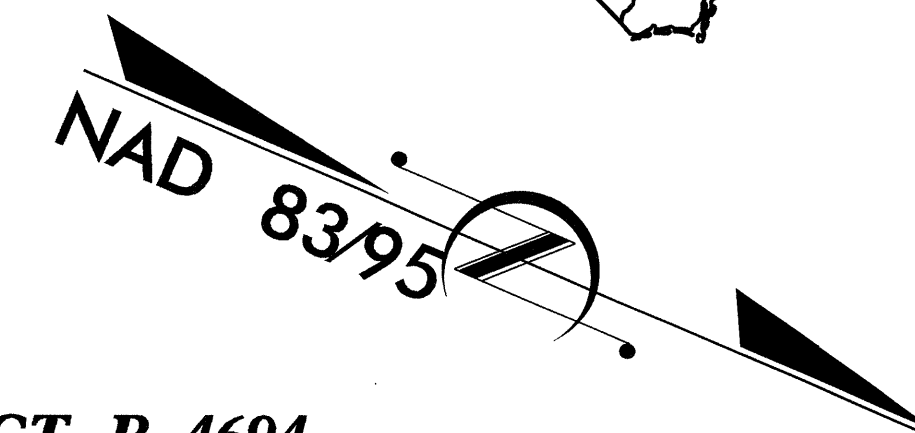
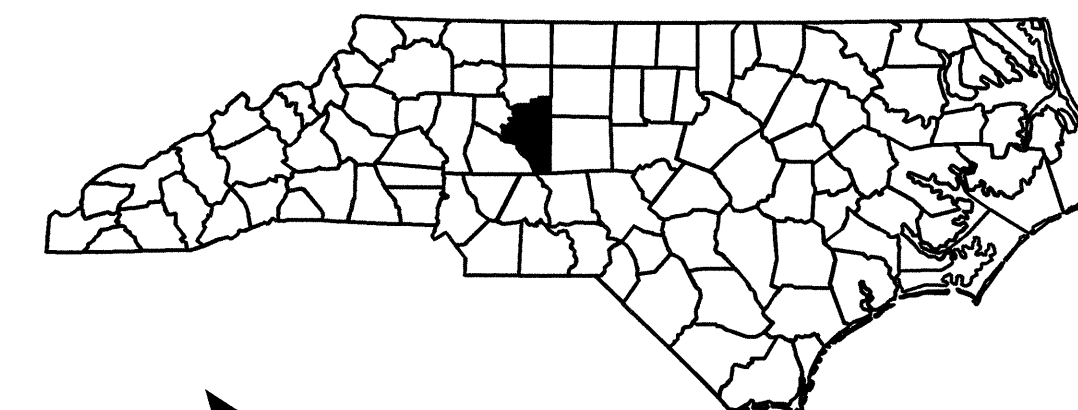
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DAVIDSON COUNTY

**LOCATION: BRIDGE NO. 52 OVER REEDY CREEK ON
SR 1445 (OLD MILL RD.)**

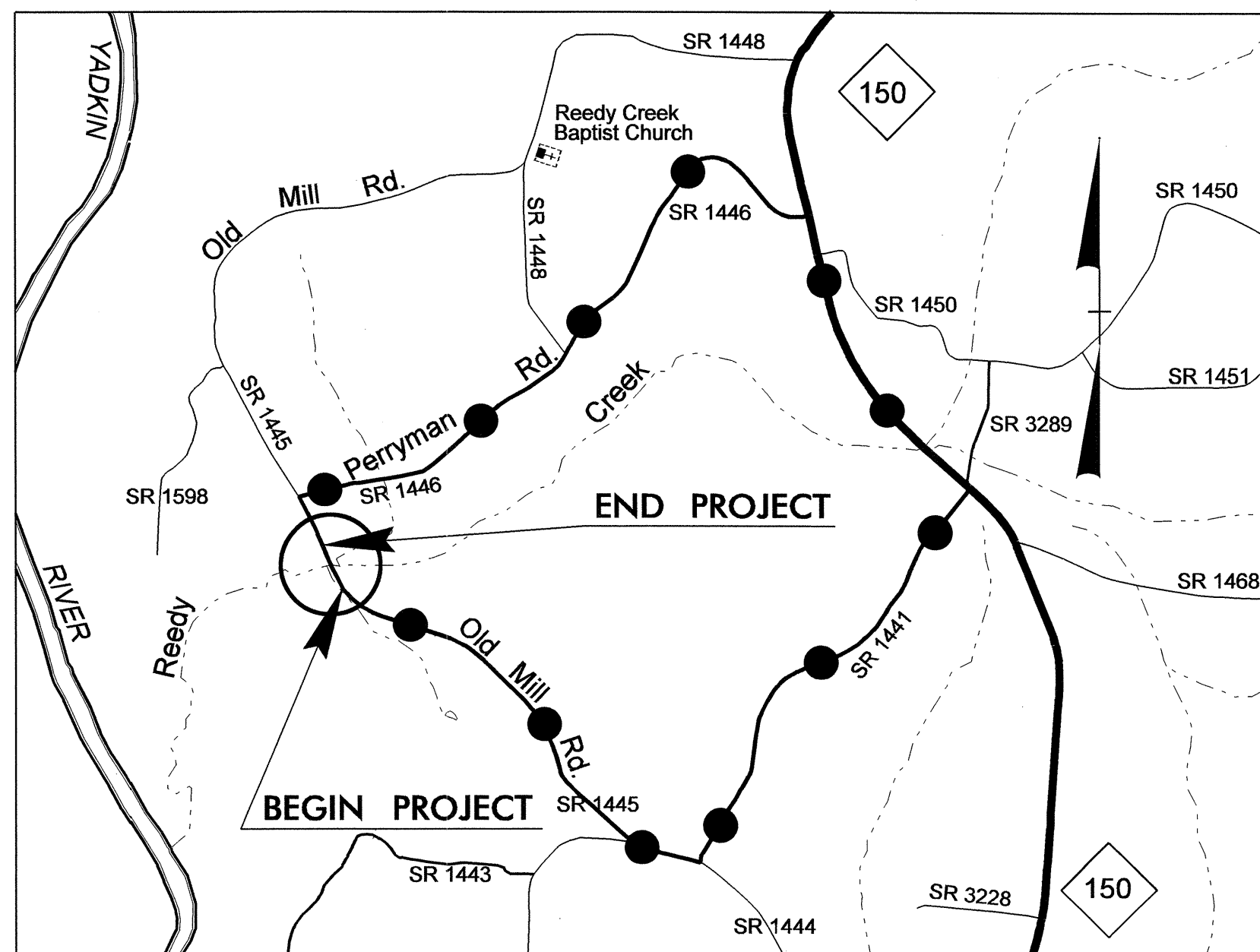
**TYPE OF WORK: GRADING, DRAINAGE, PAVING AND
STRUCTURE.**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4694	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38473.1.1	BRZ-1445(3)	PE	
38473.2.1	BRZ-1445(3)	R.W.UTIL.	
38473.3.1	BRZ-1445(3)	CONST.	



TIP PROJECT: B-4694

CONTRACT: C202735

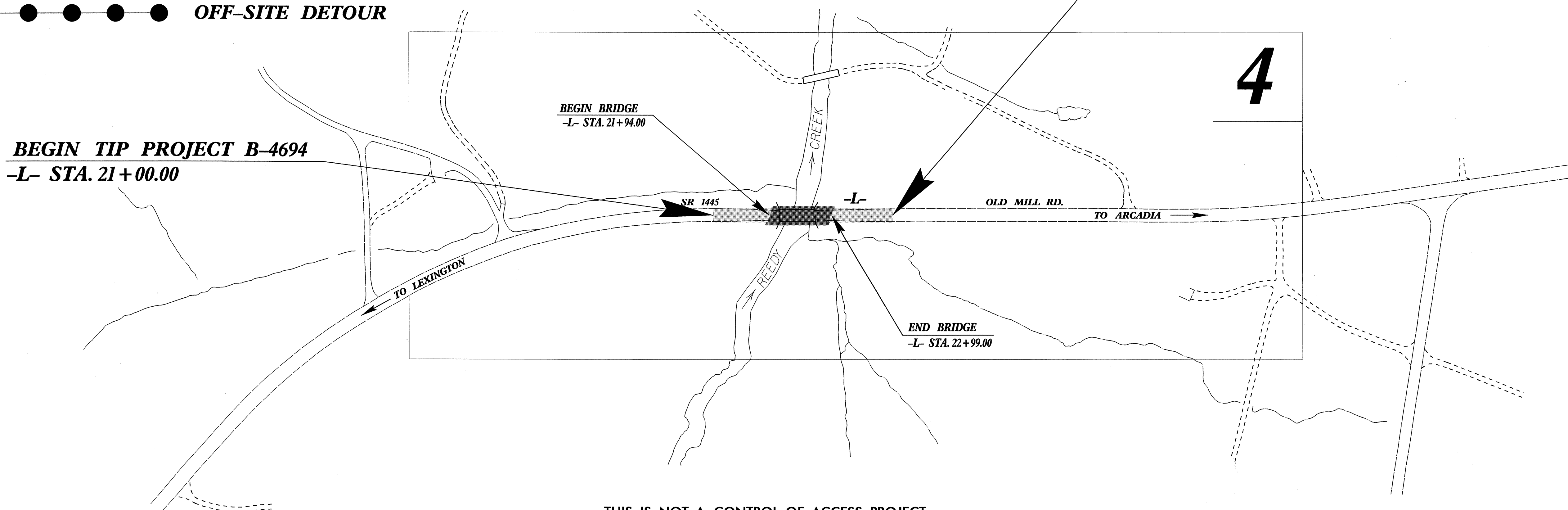


VICINITY MAP

●●●●● OFF-SITE DETOUR

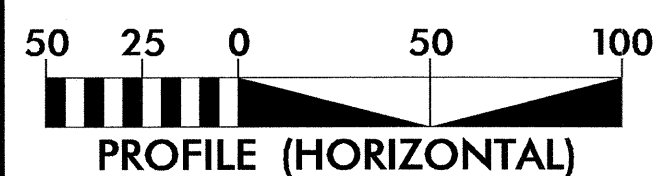
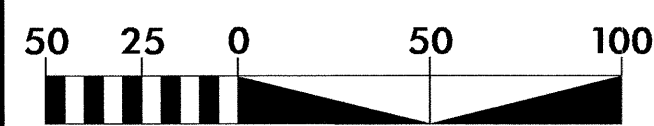
**BEGIN TIP PROJECT B-4694
-L- STA. 21+00.00**

**END TIP PROJECT B-4694
-L- STA. 24+01.00**



THIS IS NOT A CONTROL OF ACCESS PROJECT.

GRAPHIC SCALES



DESIGN DATA

ADT 2009 = 510
ADT 2030 = 800
DHV = 60 %
D = 13 %
T = 3 % *
V = 60 MPH
* TTST 1% DUAL 2%
FUNC CLASS = LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT B-4694 = 0.037 MI
LENGTH STRUCTURE T.I.P. PROJECT B-4694 = 0.020 MI
TOTAL LENGTH OF T.I.P. PROJECT B-4694 = 0.057 MI

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 9, 2009

LETTING DATE:
NOVEMBER 15, 2011

JASON MOORE, PE
PROJECT ENGINEER

KEVIN E. MOORE, PE
PROJECT DESIGN ENGINEER

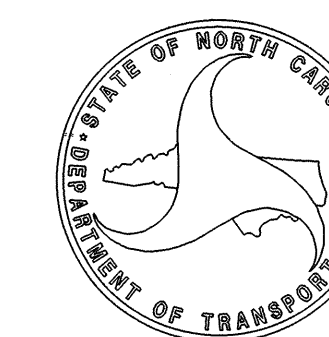
HYDRAULICS ENGINEER

SIGNATURE:

**ROADWAY DESIGN
ENGINEER**

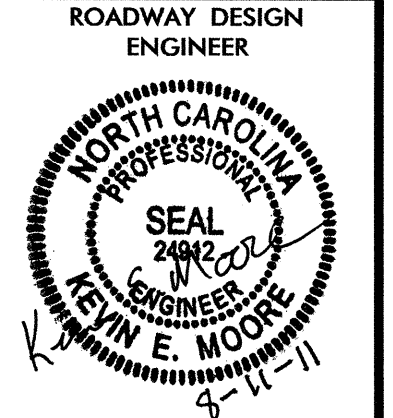
SIGNATURE: *Kevin E. Moore*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA



Art McMiller P.E.
STATE HIGHWAY DESIGN ENGINEER

I:\AUG-2011\4.25
RAYPOC\01\4694\01\B-4694_rdy_tsh.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$



8/17/99

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-A	DETAIL OF ANCHORAGE FOR FRAMES
2-B THRU 2-C	DETAIL OF PIPE INSTALLATION
2-D	DETAIL OF BRIDGE APPROACH FILL - SUB REGIONAL TIER
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF DRAINAGE QUANTITIES SUMMARY OF GUARDRAIL
3-B	SUMMARY OF EARTHWORK, ASPHALT PAVEMENT REMOVAL SUMMARY, SHOULDER BERM GUTTER SUMMARY & SUMMARY OF INCIDENTAL MILLING.
4	PLAN SHEET PROFILE SHEET
TMP-1 THRU TMP-2	TRAFFIC MANAGEMENT PLANS
SD-1	SIGN DESIGN
PMP-1 THRU PMP-2	PAVEMENT MARKING PLAN
EC-01 THRU EC-04	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-2	SIGNING PLANS
UC-1 THRU UC-2	UTILITIES PLANS
X-1 THRU X-5	CROSS-SECTIONS
S-1 THRU S-18	STRUCTURE PLANS

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 07-19-11

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.

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.

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 DAVIDSON WATER, INC. 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 CONTRACT.

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:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Super-elevation - Two Lane Pavement
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Super-elevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
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
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

3/15/06

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	○
Property Corner	→
Property Monument	□
Parcel/Sequence Number	(23)
Existing Fence Line	×-×-×-×
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-----
Proposed Wetland Boundary	-----
Existing Endangered Animal Boundary	-----
Existing Endangered Plant Boundary	-----

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○
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	○
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	○
Proposed Control of Access	○
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
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	-----

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	-----

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	-----
Designated U/G Power Line (S.U.E.*)	-----

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	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
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	-----
Designated U/G TV Cable (S.U.E.*)	-----
Recorded U/G Fiber Optic Cable	-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----

GAS:

Gas Valve	◇
Gas Meter	⊕
Recorded U/G Gas Line	-----
Designated U/G Gas Line (S.U.E.*)	-----
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

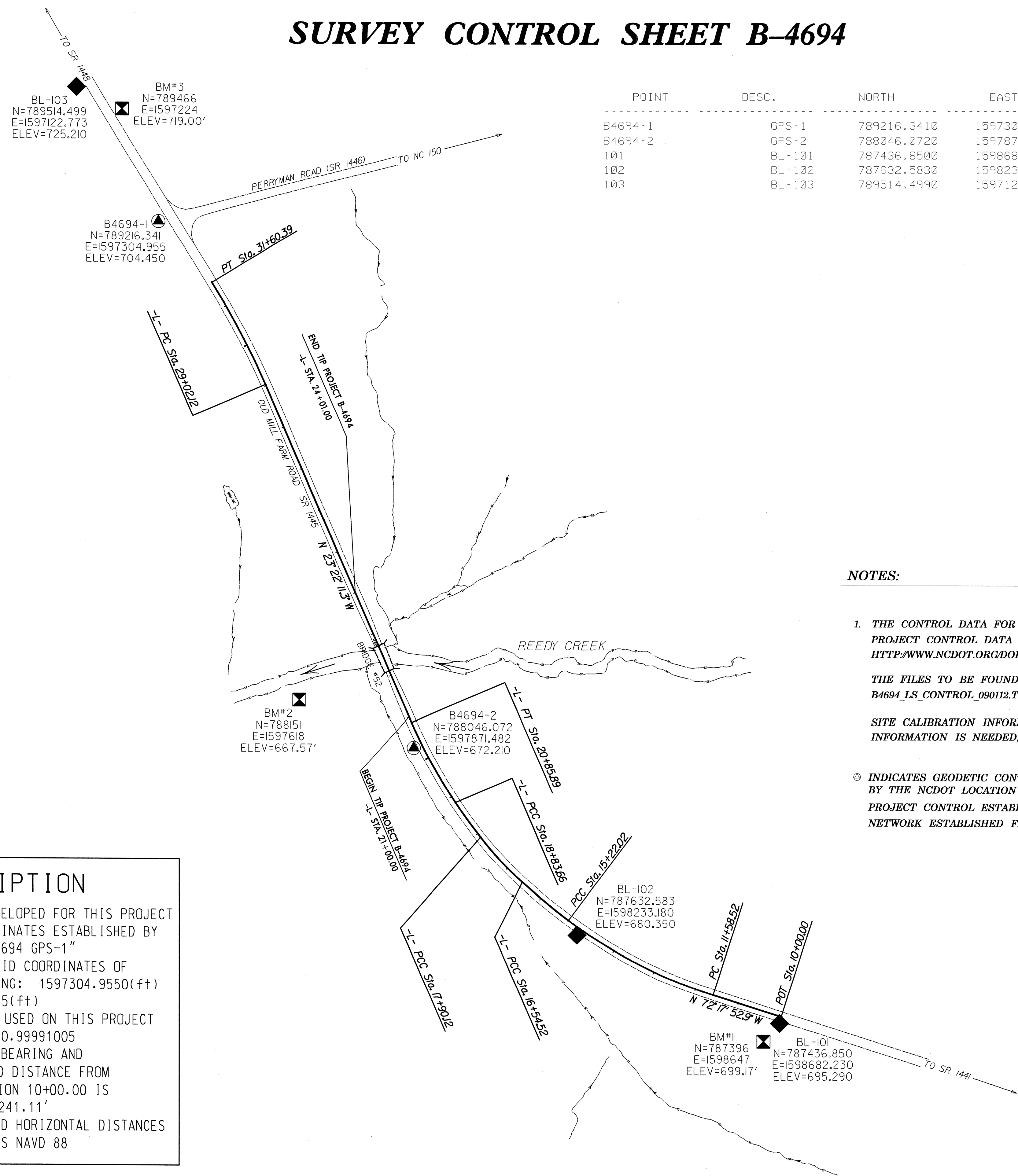
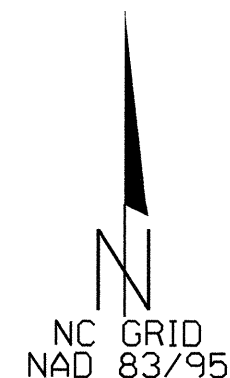
MISCELLANEOUS:

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4694	1-C
Location and Surveys	

SURVEY CONTROL SHEET B-4694



POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B4694-1	GPS-1	789216.3410	1597304.9550	704.45	OUTSIDE PROJECT LIMITS	
B4694-2	GPS-2	788046.0720	1597871.4820	672.21	20+33.76	19.35 LT
101	BL-101	787436.8500	1598682.2300	695.29	OUTSIDE PROJECT LIMITS	
102	BL-102	787632.5830	1598233.1800	680.35	14+87.12	16.16 LT
103	BL-103	789514.4990	1597122.7730	725.21	OUTSIDE PROJECT LIMITS	

BENCHMARKS:

BM#1 ELEVATION = 699.17'
 N 787396 E 1598647
 L STATION 10+21 65' LEFT
 R/R SPIKE IN BASE OF 10" GUM

BM#2 ELEVATION = 667.57'
 N 788151 E 1597618
 L STATION 22+30 209' LEFT
 R/R SPIKE IN BASE OF 36" SYCAMORE

BM#3 ELEVATION = 719.00'
 N 789466 E 1597224
 OUTSIDE PROJECT LIMITS
 R/R SPIKE IN POWER POLE

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:
B4694_LS_CONTROL_090112.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 USER SERVICE (OPUS)

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4694 GPS-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 789216.3410(++) EASTING: 1597304.9550(++) ELEVATION: 704.45(++)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991005

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4694 GPS-1" TO -L- STATION 10+00.00 IS S 38°03'33.5"E 2241.11'

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

NOTE: DRAWING NOT TO SCALE

09-MAR-2010 08:13 14694_1s_1c_090112.dgn

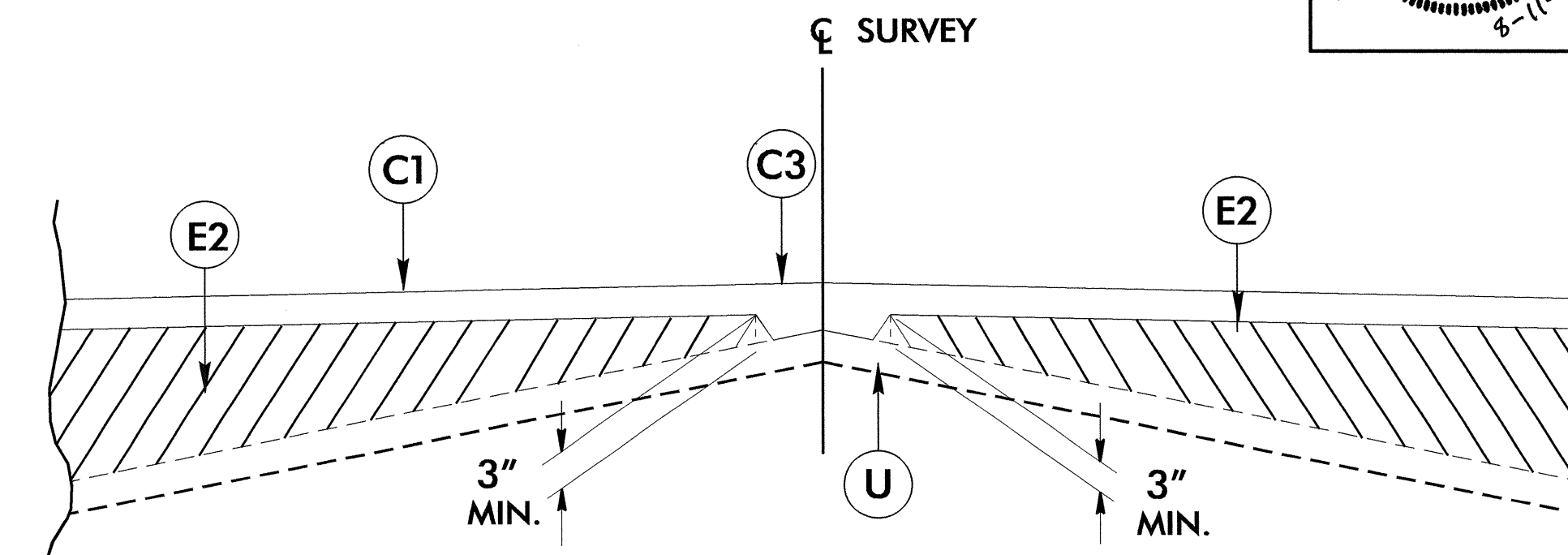
6/2/99

PAVEMENT SCHEDULE

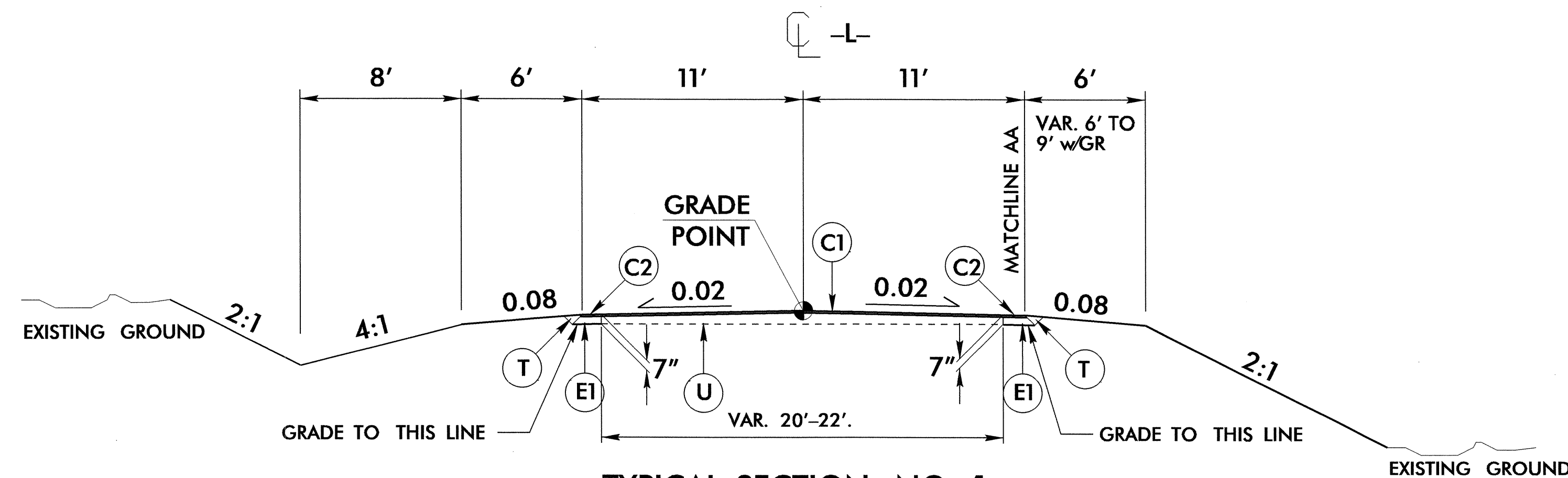
C1	PROP. APPROX. 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.	R1	SHOULDER BERM GUTTER
C2	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	T	EARTH MATERIAL.
C3	PROP. 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.	U	EXISTING PAVEMENT.
E1	PROP. APPROX. 4 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	W	WEDGING
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.		

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

PROJECT REFERENCE NO. B-4694	SHEET NO. 2
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER



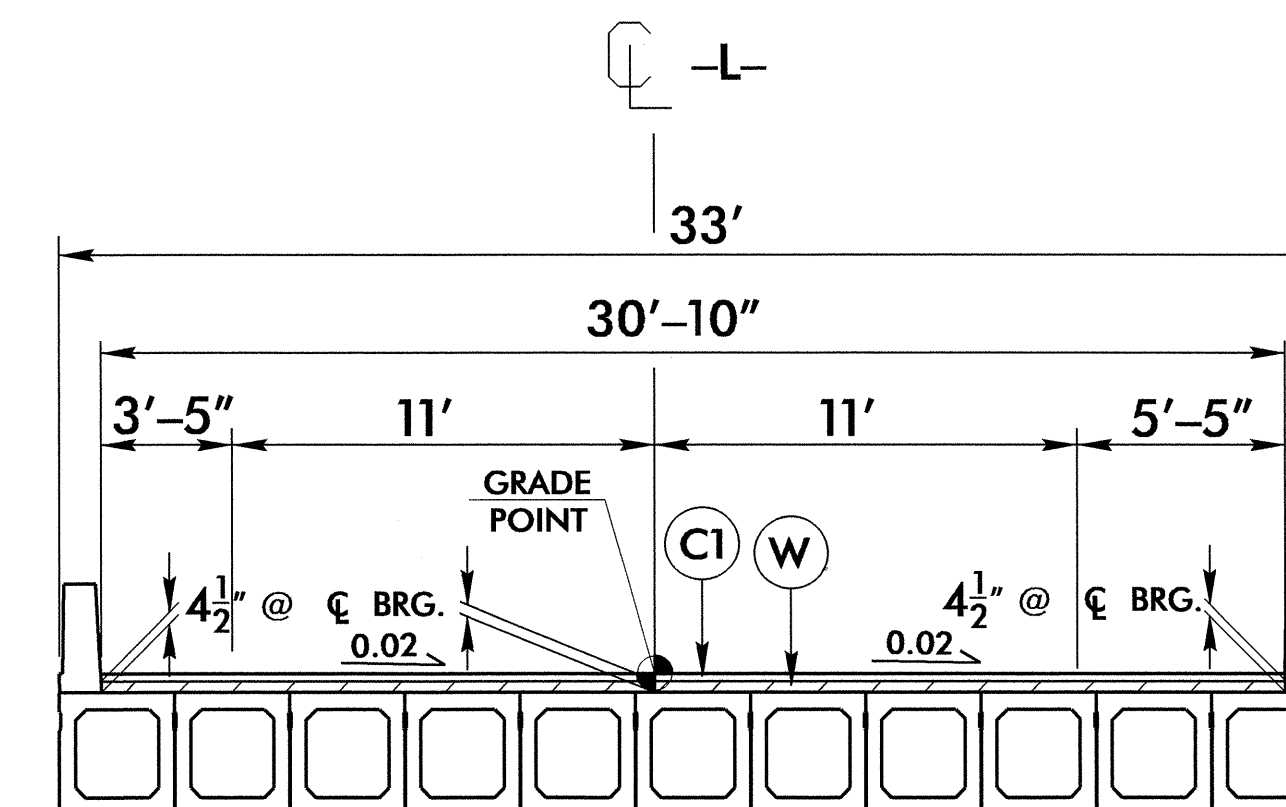
Detail Showing Method of Wedging



TYPICAL SECTION NO. 1

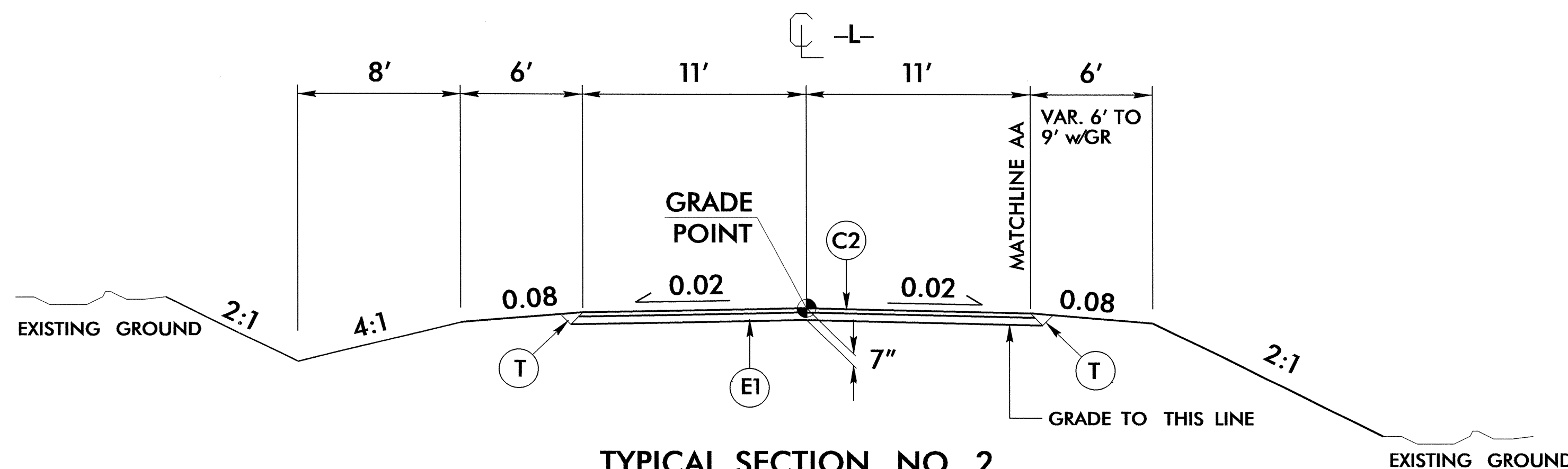
USE TYPICAL SECTION NO. 1

-L- STA. 21+00.00 TO 21+44.00
-L- STA. 23+52.00 TO 24+01.00



TYPICAL SECTION ON STRUCTURE

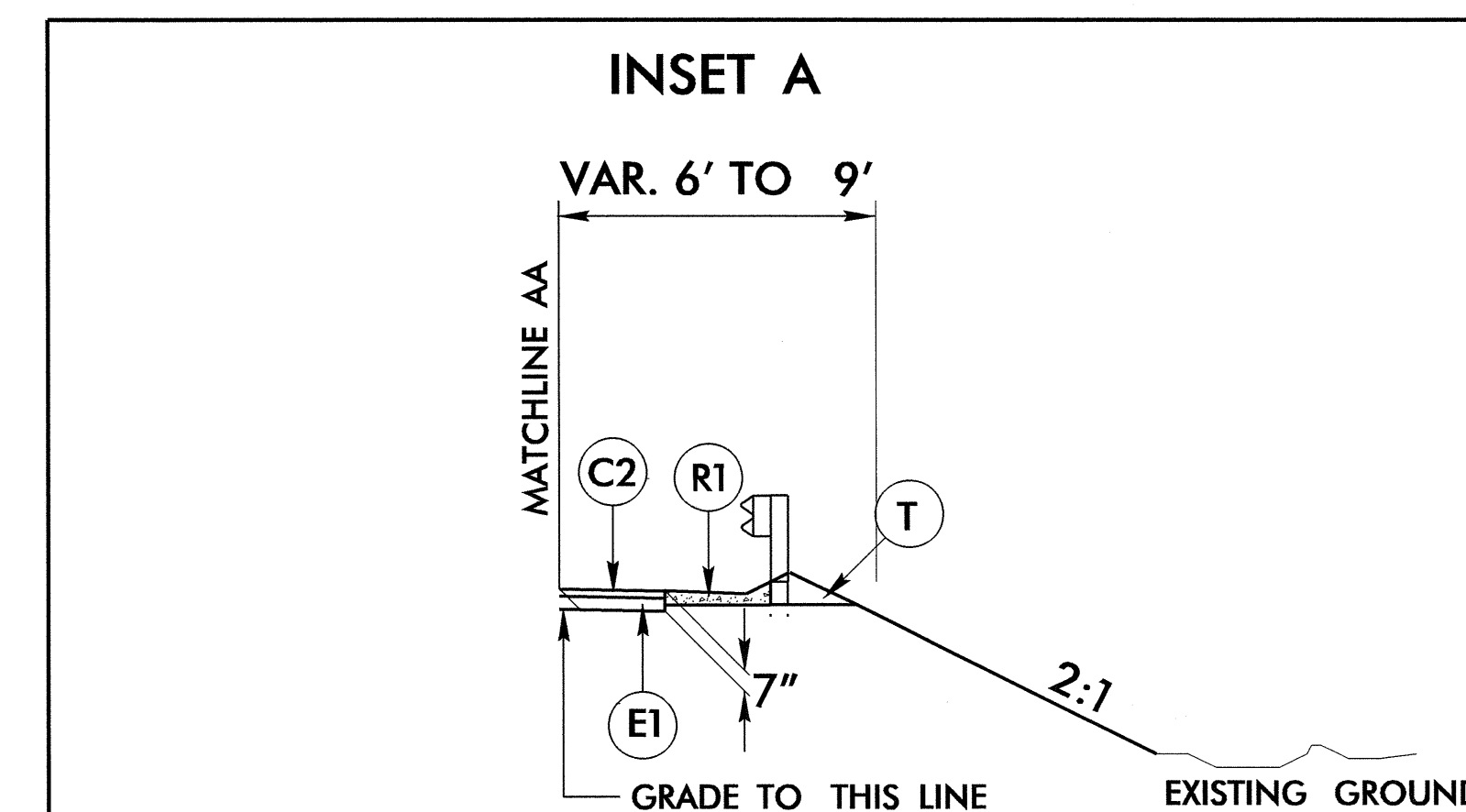
-L- STA. 21+94.00 TO 22+99.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 21+44.00 TO 21+94.00 (BEGIN BRIDGE)
-L- STA. 22+99.00 (END BRIDGE) TO 23+52.00



USE INSET A IN CONJUNCTION WITH T.S. NO. 1 AND T.S. NO. 2

-L- STA. 21+44.00 TO 21+77.96
-L- STA. 23+04.84 TO 23+21.00

I:\16-2011\0929\16-4694-r.dwg - typ.dgn
 8/15/11 10:58:38 AM

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

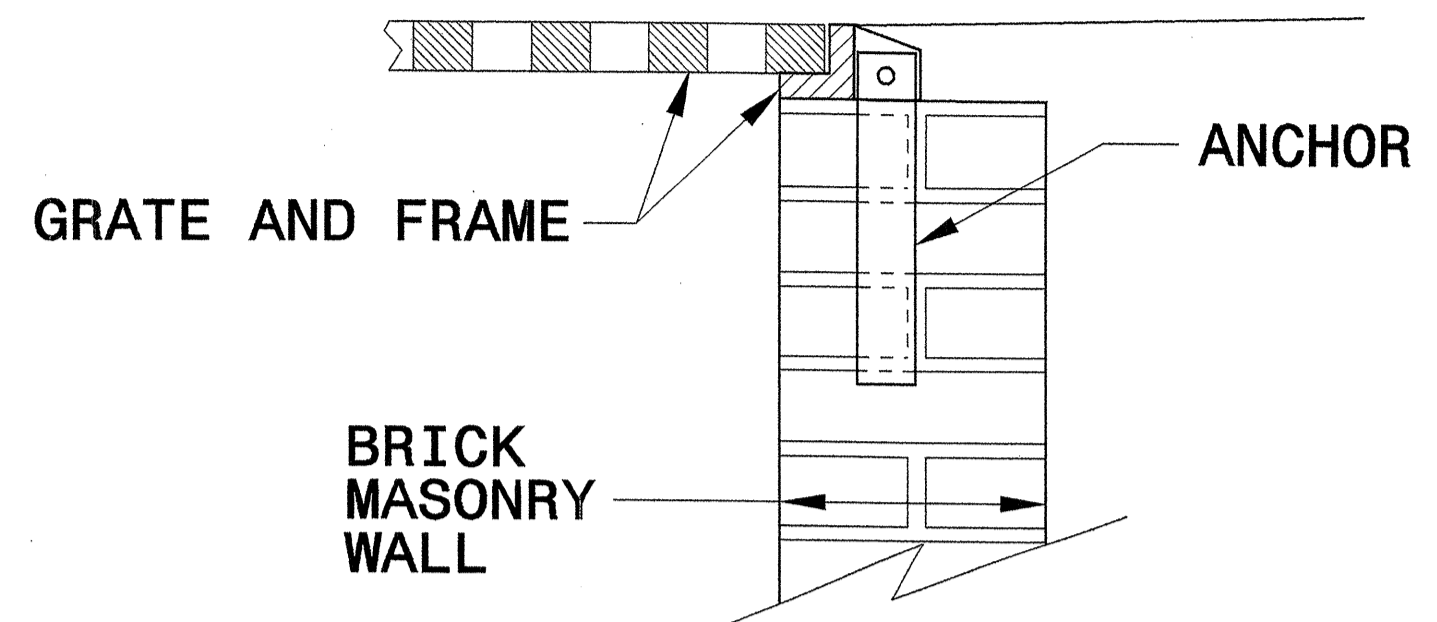
ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1
840D25

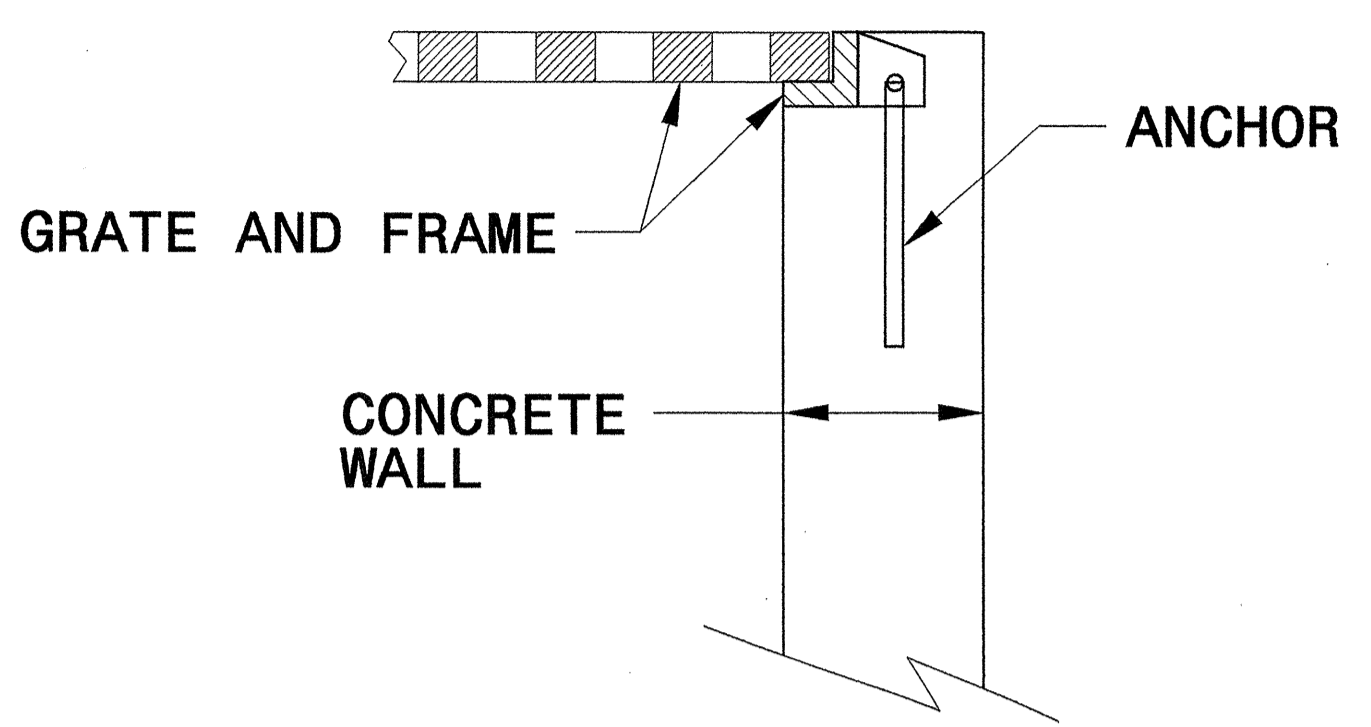
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

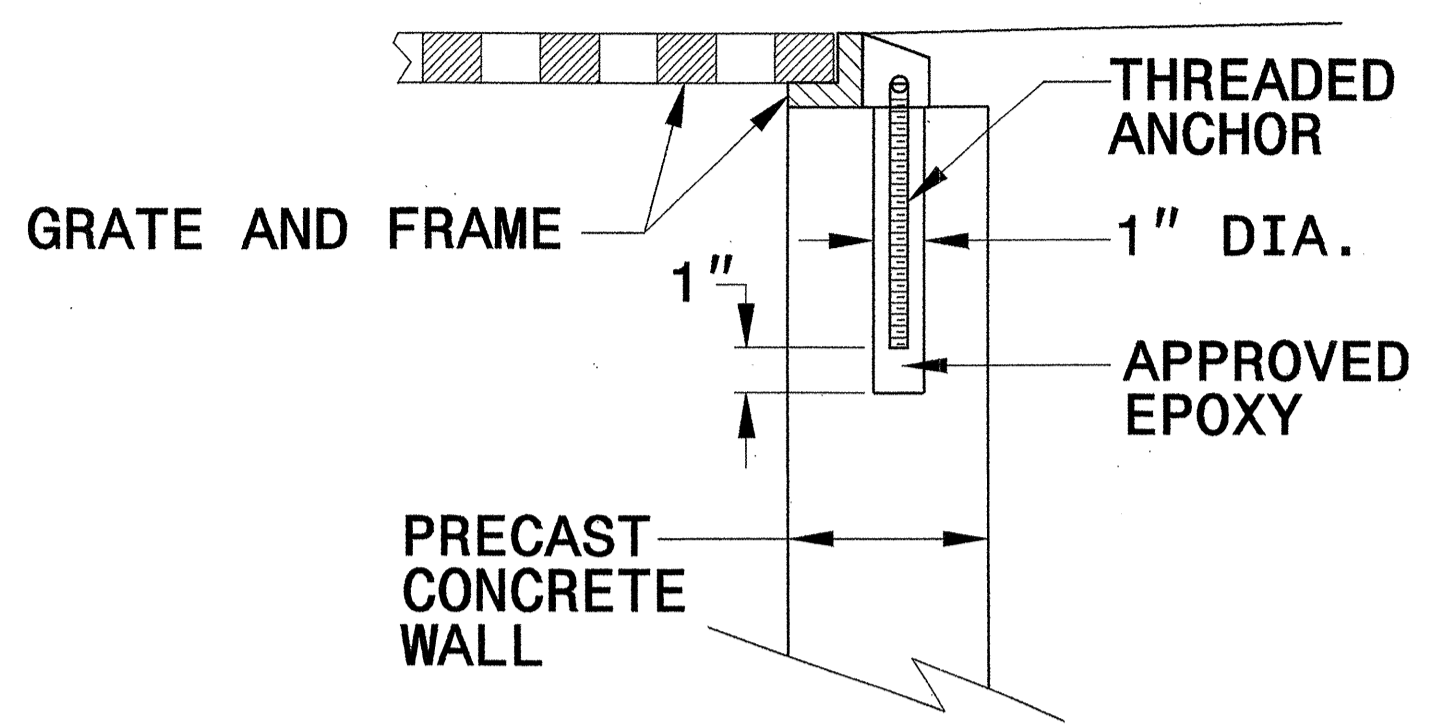
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



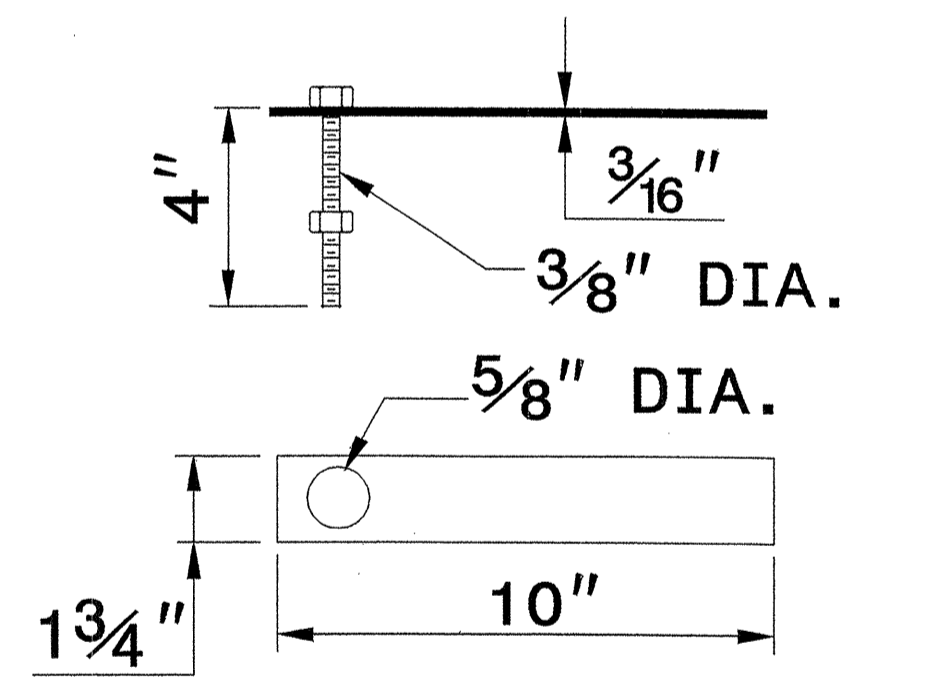
CONCRETE CONSTRUCTION



PRECAST CONCRETE CONSTRUCTION

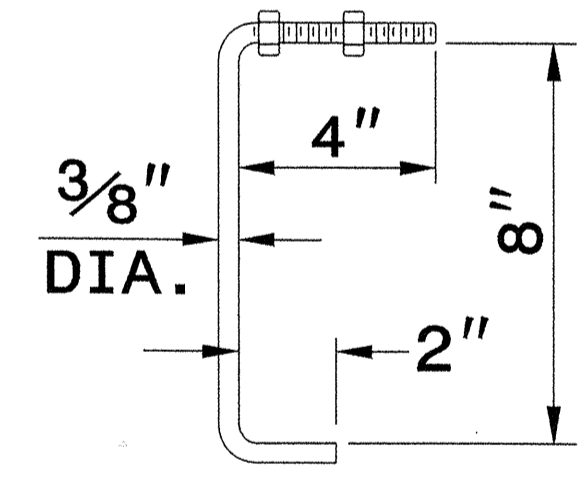
DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

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



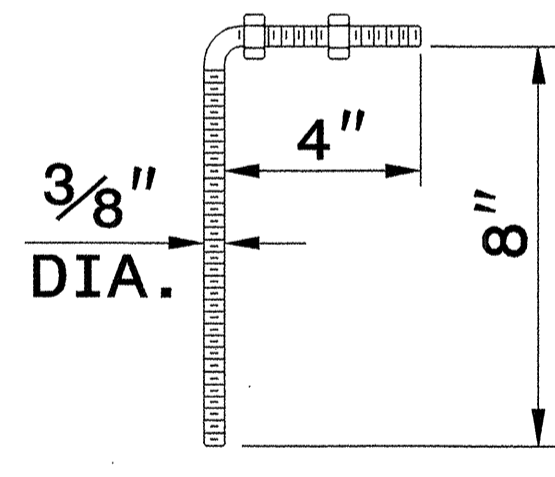
MASONRY ANCHOR

3/8" DIA. BOLT WITH PLATE



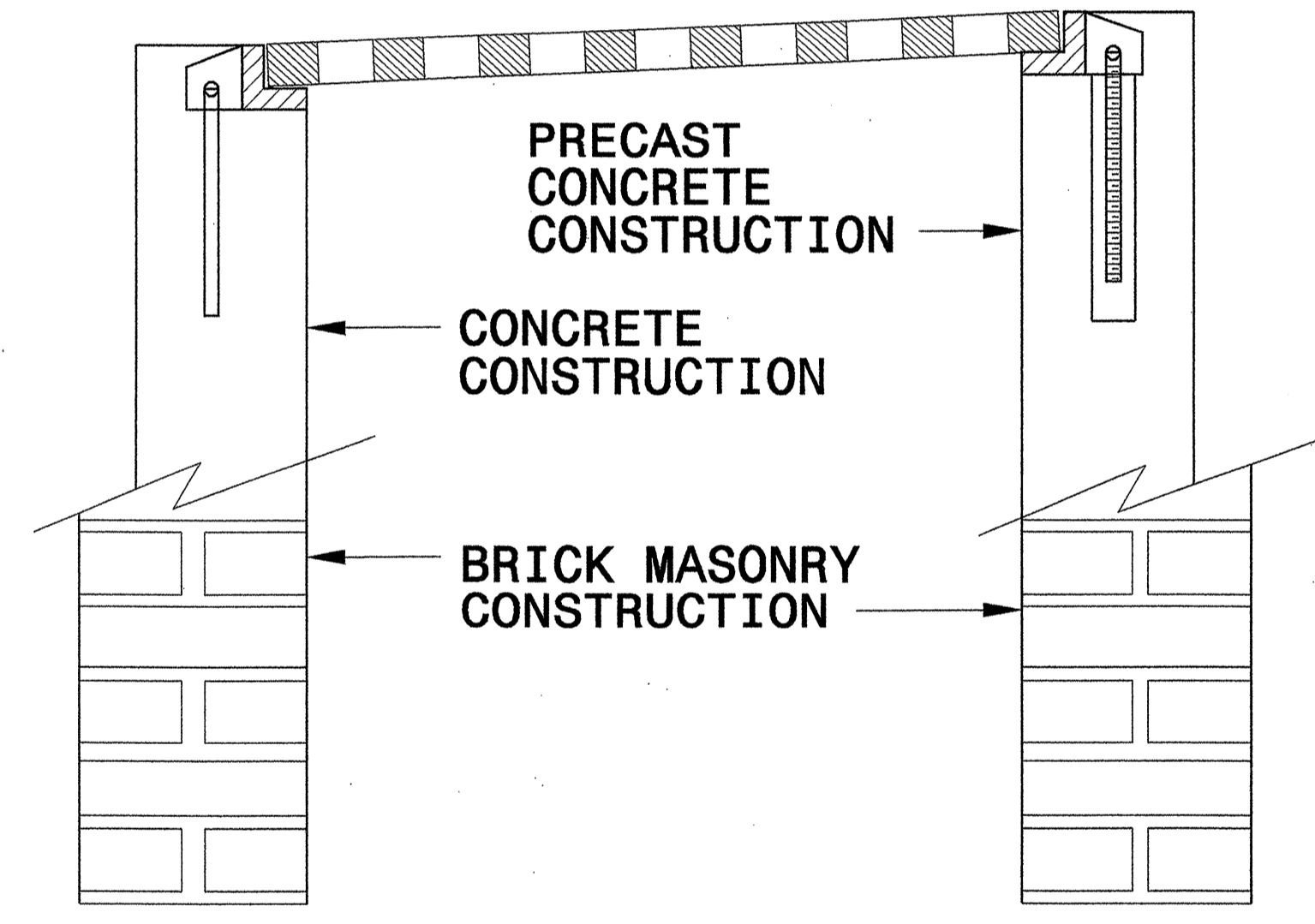
CONCRETE ANCHOR

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
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: J. R. WARD DATE: 4/13/08
FILE SPEC.:

11/14/11
 J. R. WARD
 PROFESSIONAL ENGINEER
 NO. 022966
 STATE OF NORTH CAROLINA

30-JUL-2009 08:48
 s:\contracts\contract\special details\ward\stds\06\stds to special details\30001\0300d01.dgn
 Jlower-ton AT PS237501

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**

300D01
SHEET 1 OF 3

GENERAL NOTES:

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

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

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.

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RALEIGH, N.C.**

7-06

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

300D01
SHEET 2 OF 3

GENERAL NOTES:

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

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

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.

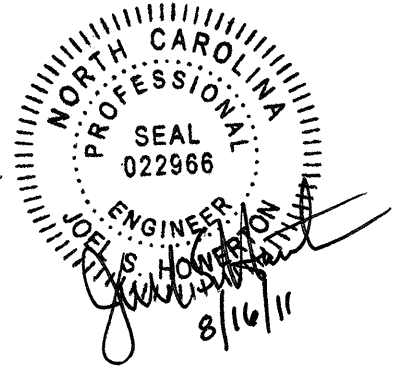
UNDISTURBED EARTH MATERIAL

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

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SEE PLATE FOR TITLE

ORIGINAL BY: K Kempf	DATE: 5-15-09
MODIFIED BY: <i>[Signature]</i>	DATE: 7/29/09
CHECKED BY: <i>[Signature]</i>	DATE: 7/29/09
FILE SPEC: ericward/stds/stdstodetails/30001/0300d01.dgn	



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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)				
		16	14	12	10	8
12	12	204	266			
15	12	162	204			
18	12	135	169	239		
21	12	115	145	204		
24	12	100	126	178		
30	12	79	100	142		
36	12	65	83	117	152	
42	12	55	70	100	130	160
48	12	48	61	87	113	139
54	12		54	77	100	123
60	12			69	90	111
66	12				81	100
72	12				74	91
78	12					81
84	12					69

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

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

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

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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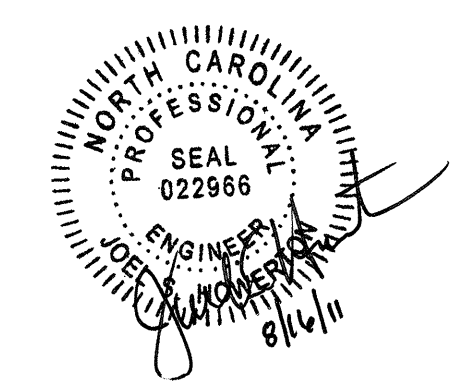
ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

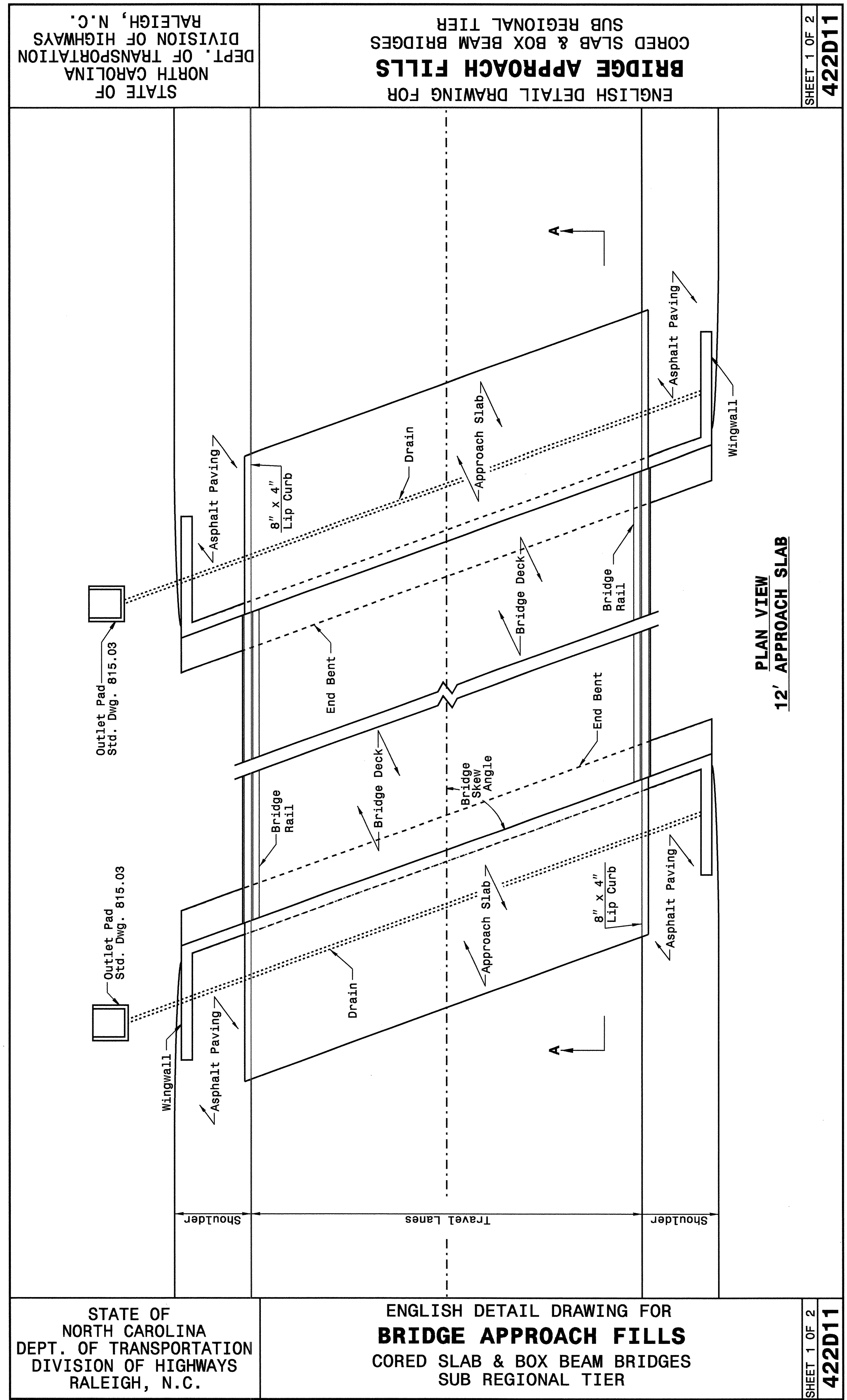
**PROJECT SERVICES UNIT
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SEE PLATE FOR TITLE

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



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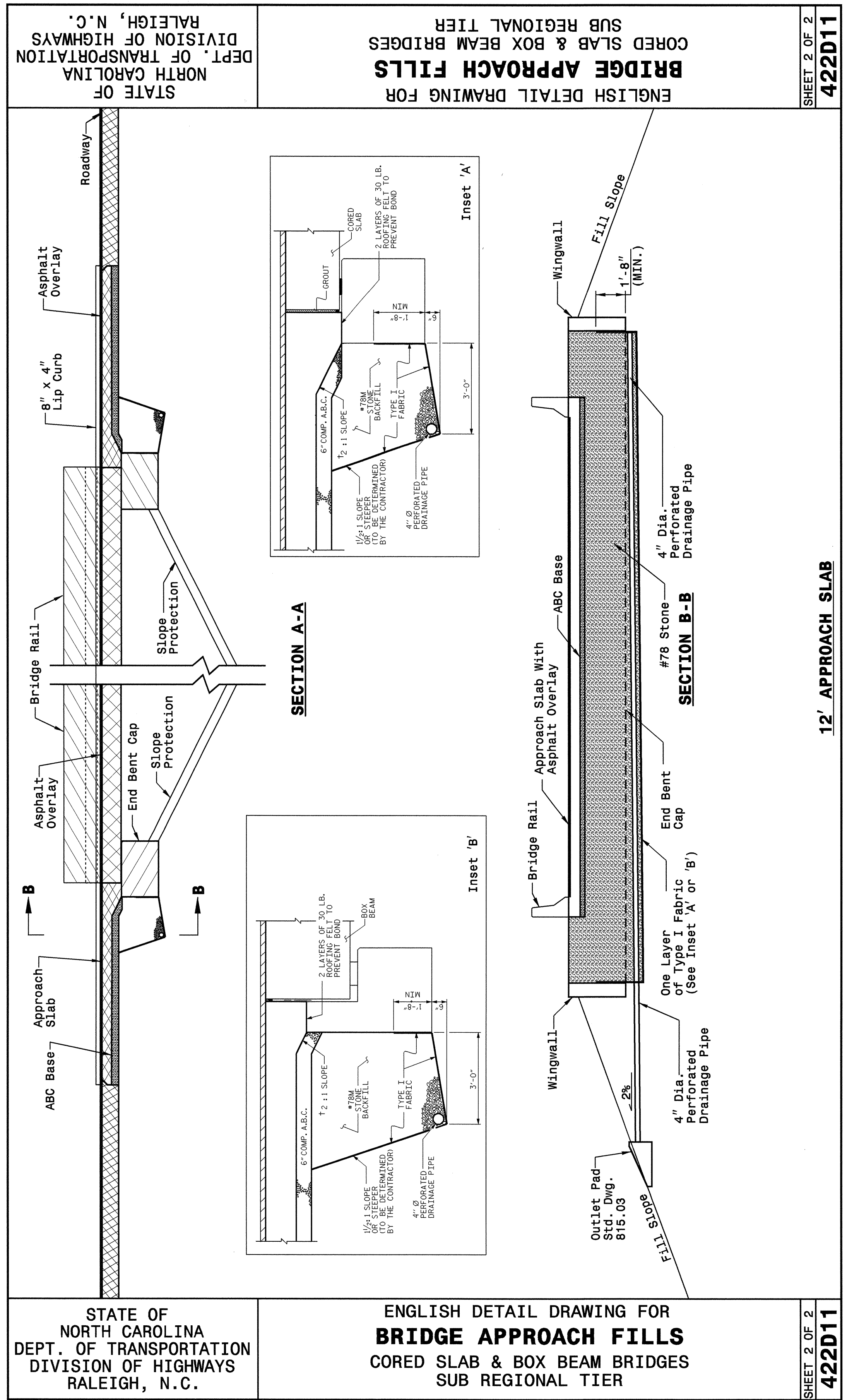
ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER

SHEET 1 OF 2
422D11

STATE OF NORTH CAROLINA
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RALEIGH, N.C.

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

SHEET 1 OF 2
422D11



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

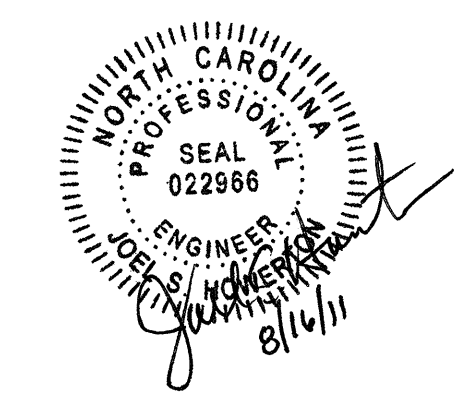
ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER

SHEET 2 OF 2
422D11

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

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

SHEET 2 OF 2
422D11



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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: _____
 FILE SPEC.: kkempf/english/bridge approach fills.dgn

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202735

ItemNumber	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION
003000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ***** (22+46.50)
003800000-E	SP	175	CY	SHALLOW UNDERCUT
004300000-N	226	Lump Sum		GRADING
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
005700000-E	226	200	CY	UNDERCUT EXCAVATION
008000000-E	SP	350	TON	CLASS IV SUBGRADE STABILIZATION
013400000-E	240	90	CY	DRAINAGE DITCH EXCAVATION
019600000-E	270	500	SY	FABRIC FOR SOIL STABILIZATION
031800000-E	SP	3	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
032000000-E	SP	8	SY	FOUNDATION CONDITIONING FABRIC
058200000-E	SP	24	LF	15" CS PIPE CULVERTS, 0.064" THICK
063600000-E	SP	2	EA	*** CS PIPE ELBOWS, ***** THICK (15", 0.064")
133000000-E	607	220	SY	INCIDENTAL MILLING
148900000-E	610	115	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
152500000-E	610	100	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
157500000-E	SP	12	TON	ASPHALT BINDER FOR PLANT MIX
200000000-N	806	4	EA	RIGHT OF WAY MARKERS
228600000-N	840	1	EA	MASONRY DRAINAGE STRUCTURES
236700000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.29
255600000-E	846	51	LF	SHOULDER BERM GUTTER
303000000-E	862	50	LF	STEEL BM GUARDRAIL
315000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
321500000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III

ItemNumber	Sec #	Quantity	Unit	Description
327000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
362800000-E	876	205	TON	RIP RAP, CLASS I
363500000-E	876	280	TON	RIP RAP, CLASS II
364900000-E	876	1	TON	RIP RAP, CLASS B
365600000-E	876	1,020	SY	FILTER FABRIC FOR DRAINAGE
407200000-E	903	76	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
409600000-N	904	2	EA	SIGN ERECTION, TYPE D
410200000-N	904	1	EA	SIGN ERECTION, TYPE E
415500000-N	907	7	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
440000000-E	1110	439	SF	WORK ZONE SIGNS (STATIONARY)
441000000-E	1110	94	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
444500000-E	1145	64	LF	BARRICADES (TYPE III)
481000000-E	1205	1,806	LF	PAINT PAVEMENT MARKING LINES (4")
532500000-E	1510	381	LF	6" WATER LINE
600000000-E	1605	820	LF	TEMPORARY SILT FENCE
600600000-E	1610	225	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	30	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	40	TON	SEDIMENT CONTROL STONE
601500000-E	1615	0.5	ACR	TEMPORARY MULCHING
601800000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	0.25	TON	FERTILIZER FOR TEMPORARY SEEDING
602400000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
602700000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
602900000-E	SP	100	LF	SAFETY FENCE
603000000-E	1630	40	CY	SILT EXCAVATION
603600000-E	1631	2,000	SY	MATting FOR EROSION CONTROL

ItemNumber	Sec #	Quantity	Unit	Description
604200000-E	1632	145	LF	1/4" HARDWARE CLOTH
608400000-E	1660	0.5	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	0.25	TON	FERTILIZER TOPDRESSING
611450000-N	SP	10	MHR	SPECIALIZED HAND MOWING
611700000-N	SP	18	EA	RESPONSE FOR EROSION CONTROL

5/28/99

SUMMARY OF PAVEMENT REMOVAL IN SQUARE YARDS

LINE	STATION	LOCATION	REMOVAL
-L-	21+44.00 TO 22+11.13	CL	137.60
-L-	22+70.62 TO 23+52.00	CL	165.66
		PROJECT TOTAL	303.26
		SAY	305 SY

SUMMARY OF EARTHWORK IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	EMBT + %	BORROW	WASTE
-L- STA. 21+00.00 TO STA. 21+94.00	24	38	14	0
SUBTOTAL NO. 1	24	38	14	0
PER HYDRO DETAIL B	38	0	0	38
PER HYDRO DETAIL A	14	0	0	14
PER HYDRO DETAIL B	80	0	0	80
SUBTOTAL NO. 2	132	0	0	132
-L- STA. 22+99.00 TO STA. 24+01.00	13	98	85	0
SUBTOTAL NO. 3	13	98	85	
PROJECT SUBTOTALS	169	136	99	132
LOSS DUE TO CLEAR. & GRUB.	-25		25	0
WASTE IN LIEU OF BORROW			0	0
REPLACE TOPSOIL IN BORROW PIT			7	
GRAND TOTALS	144		131	132
SAY	150		140	

SUMMARY OF INCIDENTAL MILLING IN SQUARE YARDS

LINE	STATION	LOCATION	SQ. YDS.
-L-	21+00.00 TO 21+44.00	CL	105.10
-L-	23+52.00 TO 24+01.00	CL	113.60
		PROJECT TOTAL	218.70
		SAY	220 SY

DRAINAGE DITCH EXCAVATION = 90 CU. YD.
 UNDERCUT EXCAVATION = 200 CU. YD.
 SHALLOW UNDERCUT = 175 CU. YD.

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading".

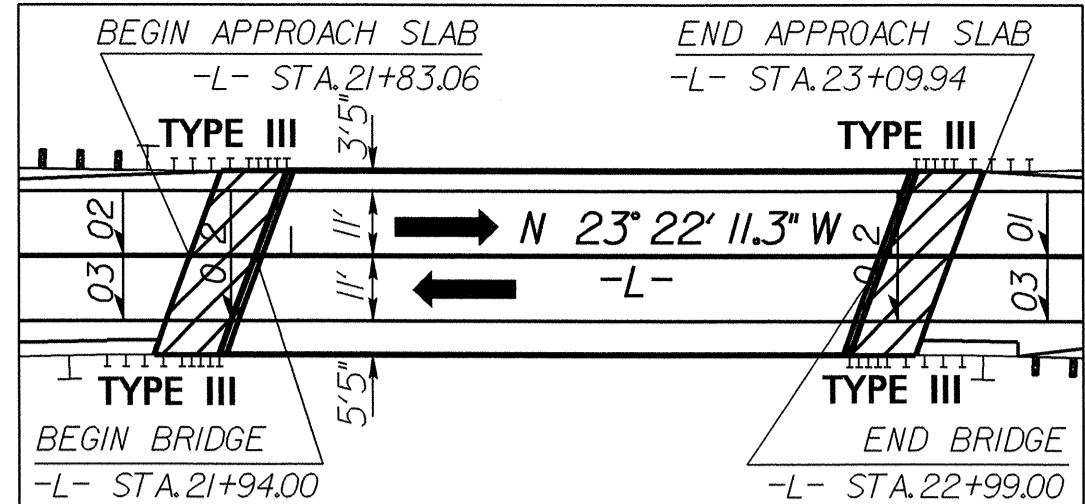
SHOULDER BERM GUTTER SUMMARY

LINE	STATION	LOCATION	LIN. FT.
-L-	21+44.00 TO 21+77.96	RT	33.97
-L-	23+04.84 TO 23+21.00	RT	16.16
		PROJECT TOTAL	50.13
		SAY	51 FT

12/06/07
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8/17/99

SKETCH SHOWING BRIDGE/ROADWAY RELATIONSHIP



SEE SHEET S-1 TO S-18 FOR STRUCTURE PLANS

PROJECT REFERENCE NO. B-4694 SHEET NO. 4. ROADWAY DESIGN ENGINEER SEAL NORTH CAROLINA PROFESSIONAL SEAL 24912 KEVIN E. MOORE 8-11-11. HYDRAULIC ENGINEER SEAL 19890 PAUL ATANASIU 2/11

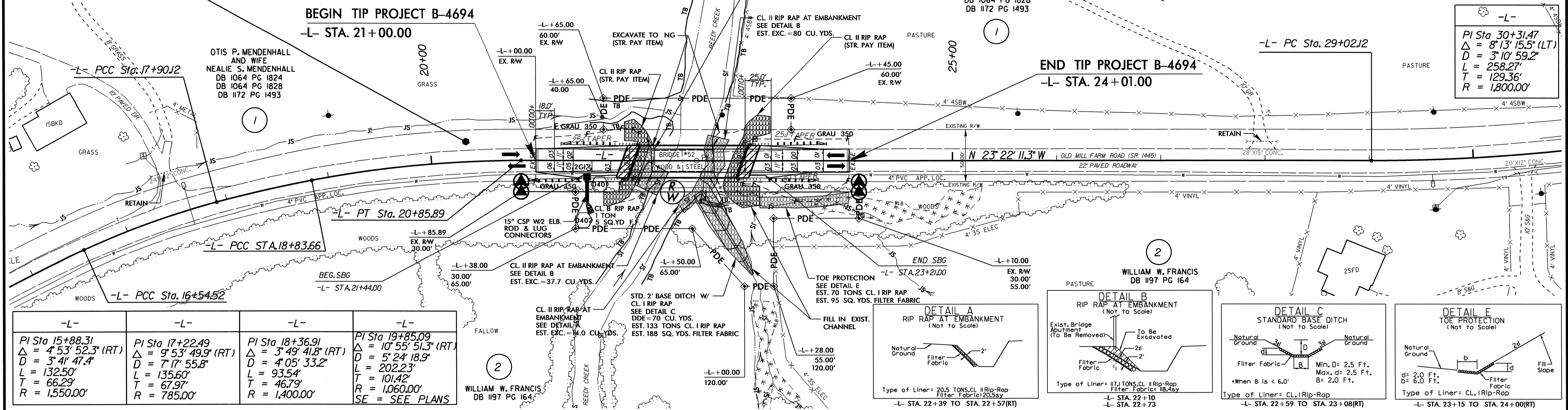
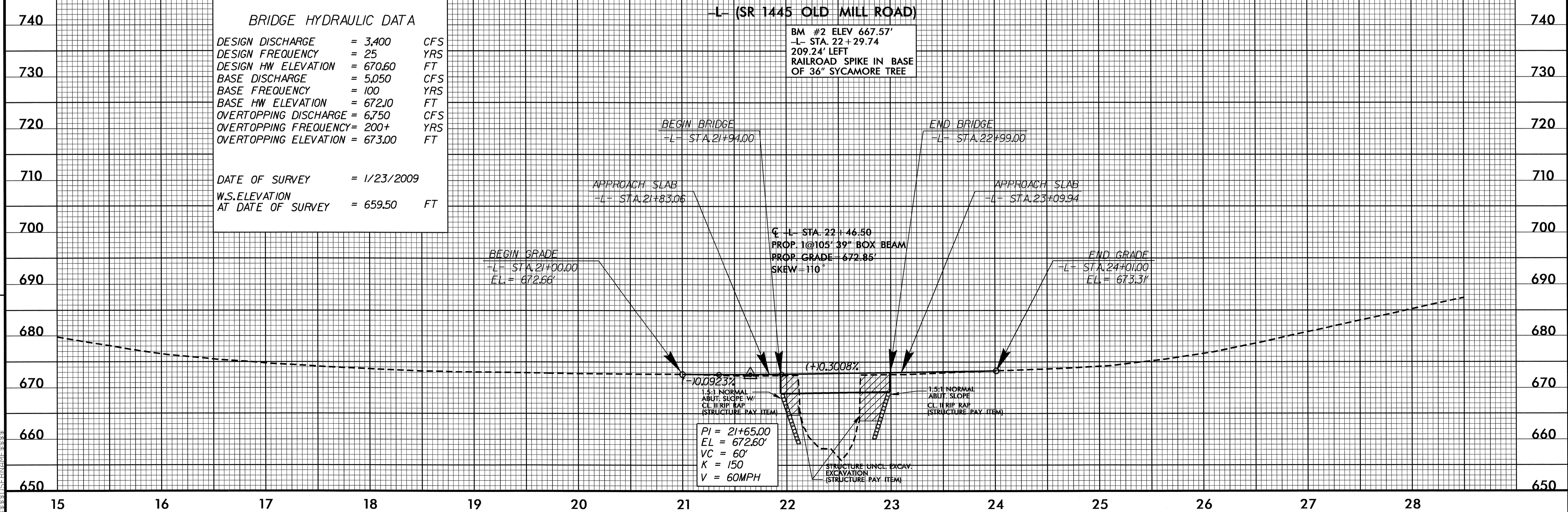
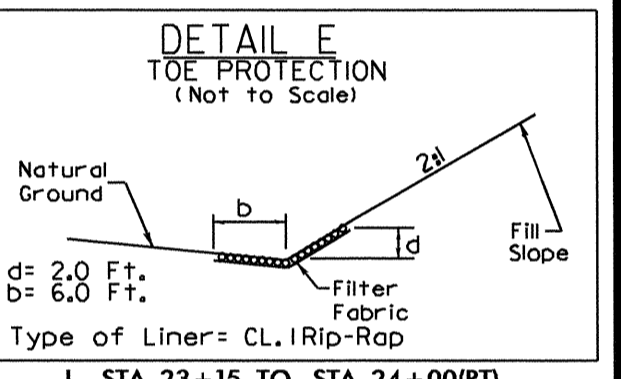
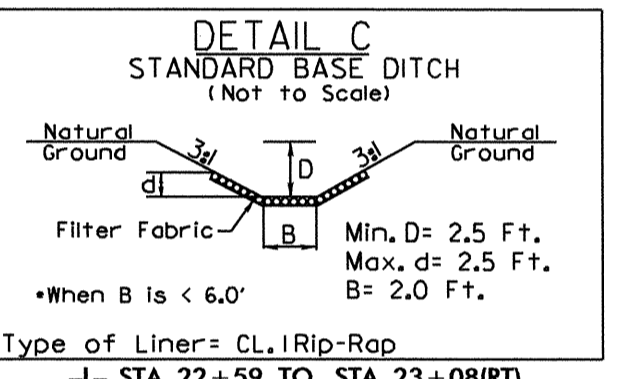
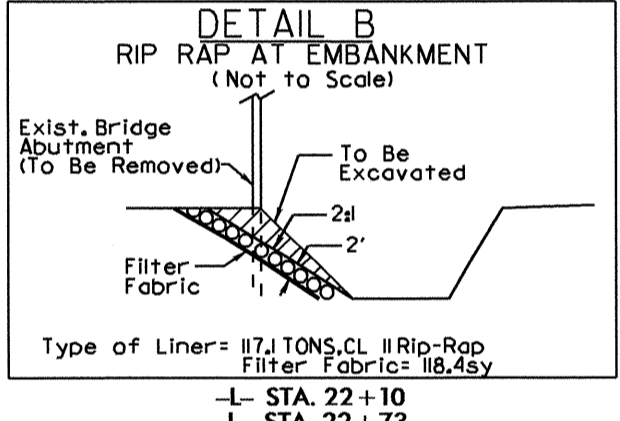
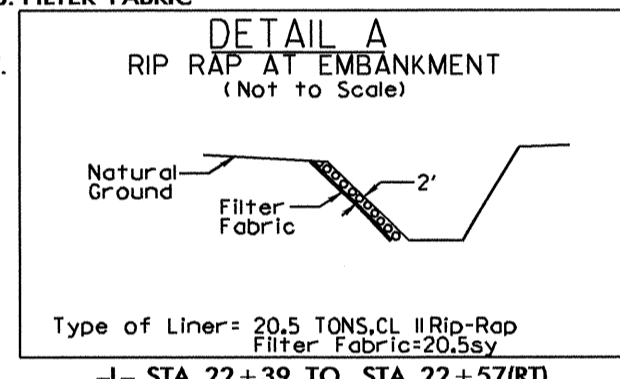


Table with 4 columns of curve data. Each column lists PI Sta, Δ, D, L, T, and R values for different curve segments.

WILLIAM W. FRANCIS DB 1197 PG 164



BRIDGE HYDRAULIC DATA table with columns for DESIGN DISCHARGE, DESIGN FREQUENCY, DESIGN HW ELEVATION, BASE DISCHARGE, BASE FREQUENCY, BASE HW ELEVATION, OVERTOPPING DISCHARGE, OVERTOPPING FREQUENCY, OVERTOPPING ELEVATION, DATE OF SURVEY, and W.S. ELEVATION AT DATE OF SURVEY.

BM #2 ELEV 667.57' -L- STA. 22+29.74 209.24' LEFT RAILROAD SPIKE IN BASE OF 36" SYCAMORE TREE

PI = 21+65.00 EL = 672.60' VC = 60' K = 150 V = 60MPH

REVISIONS

10-AUG-2011 14:42 P:\Projects\B-4694_r.dwg - 4.dgn