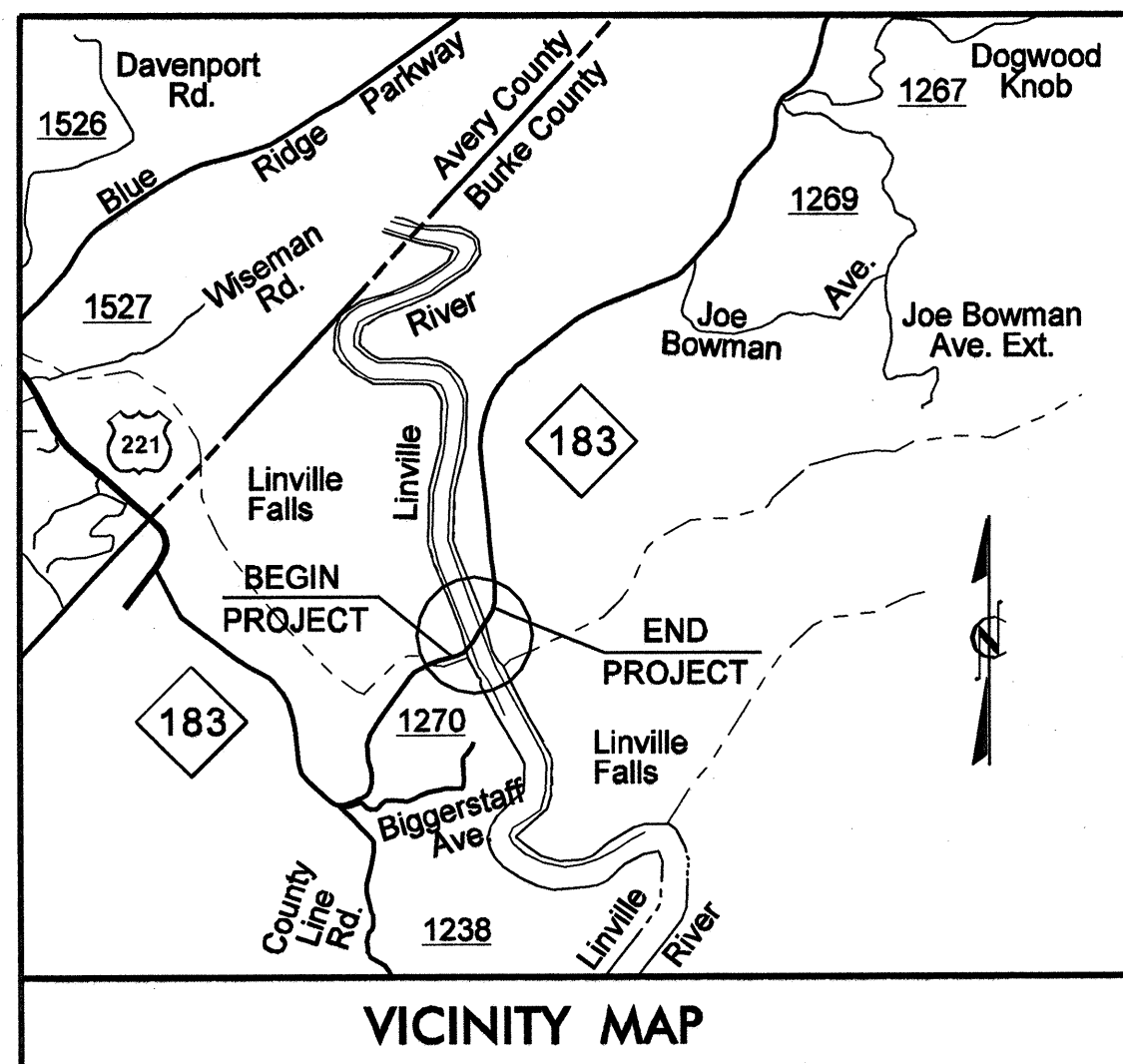


TIP PROJECT: B-4038

CONTRACT: C201812

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

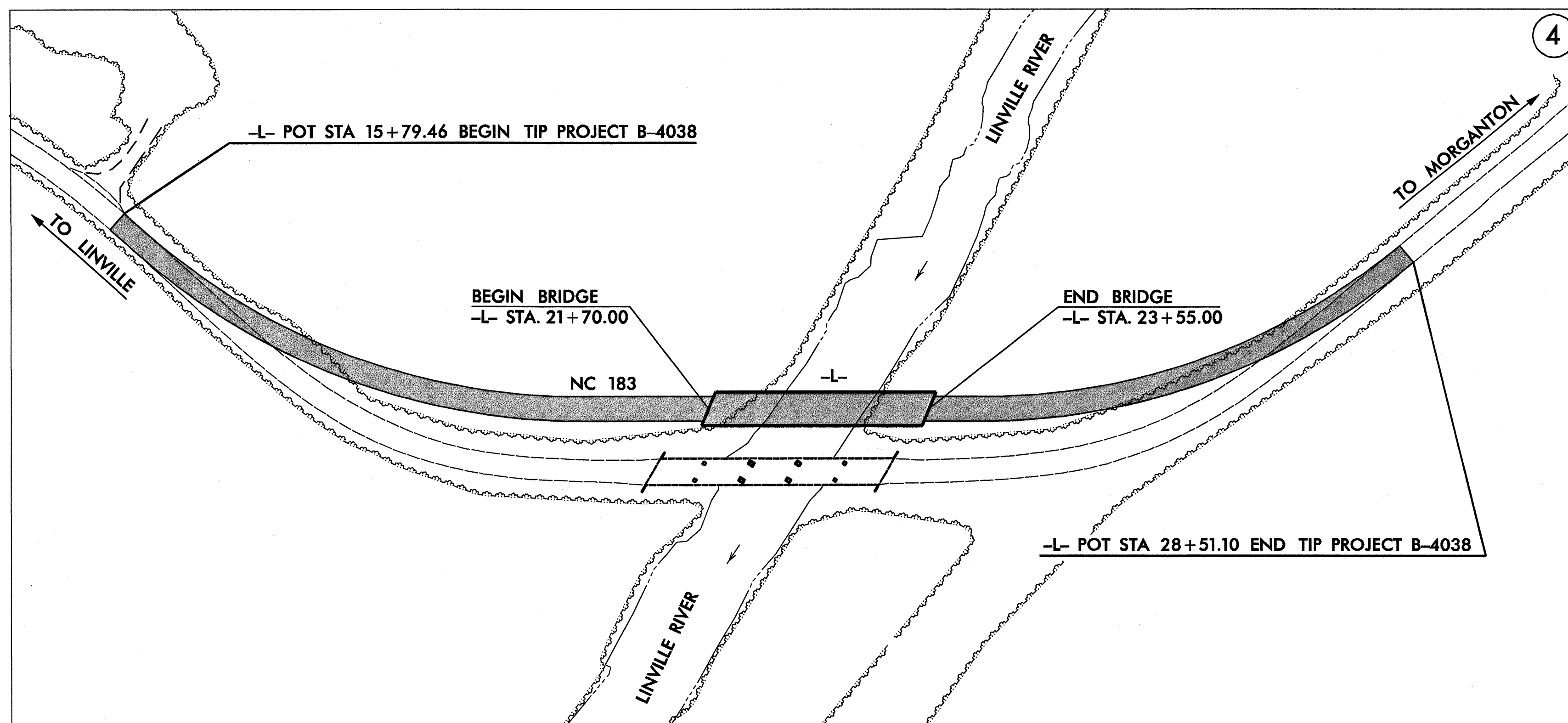
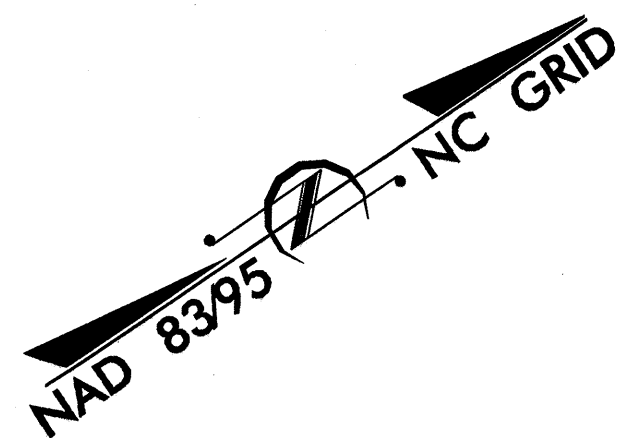


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**BURKE COUNTY**

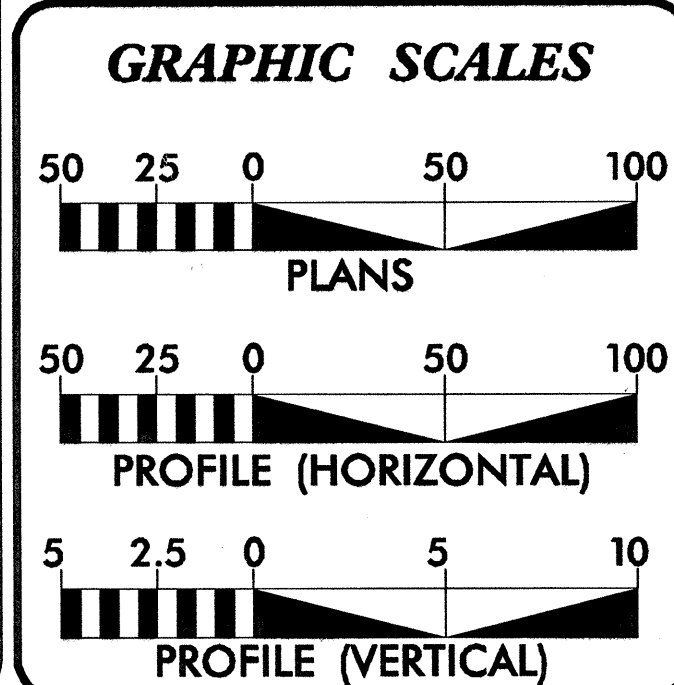
**LOCATION: BRIDGE NO. 26 OVER LINVILLE RIVER ON NC 183**  
**TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4038	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33404.1.1	BRSTP-0183(1)	P.E.	
33404.2.1	BRSTP-0183(1)	R/W & UTIL.	
33404.3.1	BRSTP-0183(1)	CONST.	



\*\* DESIGN EXCEPTION FOR HORIZONTAL ALIGNMENT REQUIRED

NCDOT CONTACT: CATHY S. HOUSER, P.E



**DESIGN DATA**

ADT 2008 =	831
ADT 2028 =	1265
DHV =	12 %
D =	55 %
T =	4 % *
** V =	60 MPH
DUAL	3 %

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4038	=	.206 mi
LENGTH STRUCTURE TIP PROJECT B-4038	=	.035 mi
TOTAL LENGTH OF TIP PROJECT B-4038	=	.241 mi

Prepared In the Office of:

**RAMEY KEMP ASSOCIATES, INC.**

2006 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
APRIL 20, 2007

**LETTING DATE:**  
JUNE 17, 2008

**SCOTT CLARK, P.E.**  
PROJECT ENGINEER

**MATTHEW COPPLE, P.E.**  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

1/24/08

**W. HENRY WELLS, JR.**  
P.E.

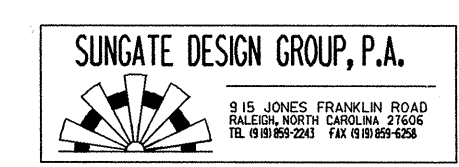
**ROADWAY DESIGN ENGINEER**

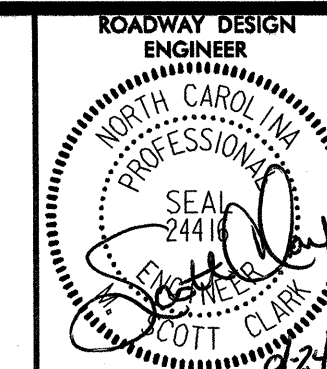
01-24-08

**M. SCOTT CLARK, P.E.**  
P.E.

**DIVISION OF HIGHWAYS**  
**STATE OF NORTH CAROLINA**

**STATE HIGHWAY DESIGN ENGINEER**





PROJECT REFERENCE NO.

B-4038

SHEET NO.

1-A

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 January 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 Superelevation - Two Lane Pavement

DIVISION 3 - PIPE CULVERTS

300.01 Method of Pipe Installation - Method 'A'

DIVISION 4 - MAJOR STRUCTURES

422.10 Reinforced Bridge Approach Fills

DIVISION 5 - SUBGRADE, BASES AND SHOULDERS

560.01 Method of Shoulder Construction - High Side of Superelevated Curve - Method I

DIVISION 8 - INCIDENTALS

806.01 Concrete Right-of-Way Marker  
806.02 Granite Right-of-Way Marker  
815.03 Pipe Underdrain and Blind Drain  
838.34 Reinforced Concrete Endwall - for Double and Triple 66" Pipes 90 Skew  
840.29 Frames and Narrow Slot Flat Grates  
840.35 Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates  
862.01 Guardrail Placement  
862.02 Guardrail Installation  
862.03 Structure Anchor Units  
876.02 Guide for Rip Rap at Pipe Outlets

INDEX OF SHEETS

<u>SHEET NUMBER</u>	<u>SHEET</u>
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND STRUCTURE DETAIL
2-A	ANCHORAGE FOR FRAMES DETAIL
2-B	DETAIL OF SPECIAL JUNCTION BOX
3	SUMMARY OF QUANTITIES
3-A THRU 3-B	SUMMARY OF DRAINAGE QUANTITIES GUARDRAIL, PAVEMENT REMOVAL AND EARTHWORK
4	PLAN SHEET
5	PROFILE SHEET
TCP-1 THRU TCP-6	TRAFFIC CONTROL PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
RF-1	REFORESTATION PLAN
UO-1 THRU UO-2	UTILITY BY OTHERS PLANS
X-1	CROSS-SECTION SUMMARY
X-2 THRU X-17	CROSS-SECTIONS
S-1 THRU S-23	STRUCTURE PLANS

GENERAL NOTES: 2006 SPECIFICATIONS

EFFECTIVE: 7-18-06

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.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE: DUKE POWER AND BELL SOUTH. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON PLANS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.



**RAMEY KEMP  
&  
ASSOCIATES, INC.**

Transportation Engineers

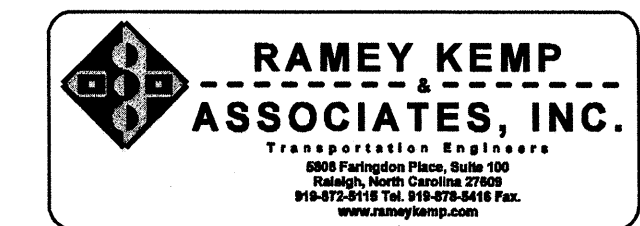
5808 Faringdon Place, Suite 100  
Raleigh, North Carolina 27609  
919-872-8116 Tel. 919-878-5416 Fax.  
www.rameykemp.com



Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS



# CONVENTIONAL PLAN SHEET SYMBOLS

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	⑫③
Existing Fence Line	-----
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	----- FLOW
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 Utility Easement	----- PUE

### 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
Proposed Wheel Chair Ramp Curb Cut	----- WCC
Curb Cut for Future Wheel Chair Ramp	----- CCFR
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	⊙
Storm Sewer	----- S

### UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊙
Power Line Tower	⊗
Power Transformer	⊠
U/G Power Cable Hand Hole	⊠
H-Frame Pole	●
Recorded U/G Power Line	----- P
Designated U/G Power Line (S.U.E.*)	----- P

### TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊙
Telephone Booth	⊠
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	⊠
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	⊙
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	⊠
Recorded U/G TV Cable	----- TV
Designated U/G TV Cable (S.U.E.*)	----- TV
Recorded U/G Fiber Optic Cable	----- TV FO
Designated U/G Fiber Optic Cable (S.U.E.*)	----- TV FO

### GAS:

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

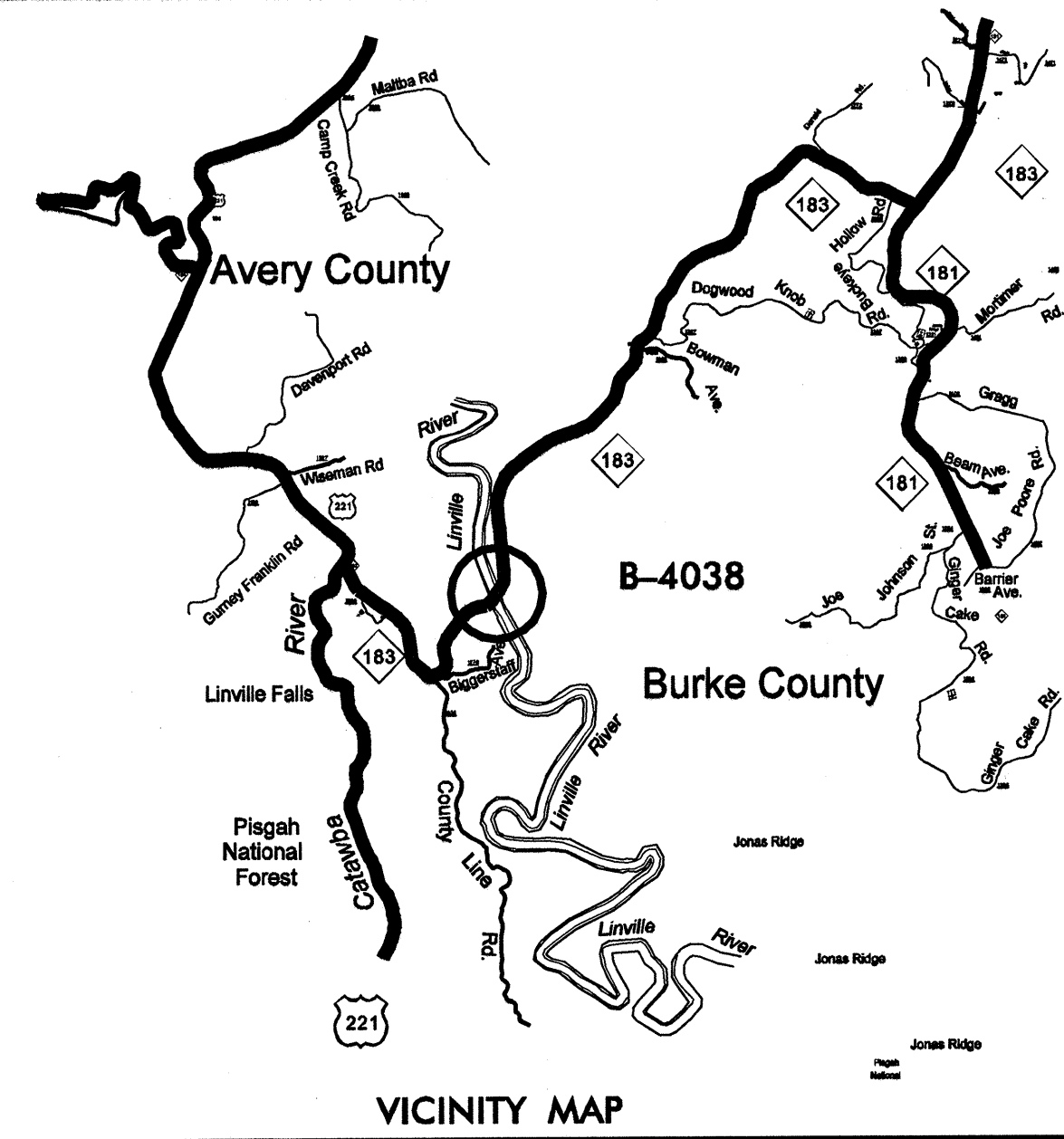
### SANITARY SEWER:

Sanitary Sewer Manhole	⊙
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	----- SS
Above Ground Sanitary Sewer	----- A/G Sanitary Sewer
Recorded SS Forced Main Line	----- FSS
Designated SS Forced Main Line (S.U.E.*)	----- FSS

### MISCELLANEOUS:

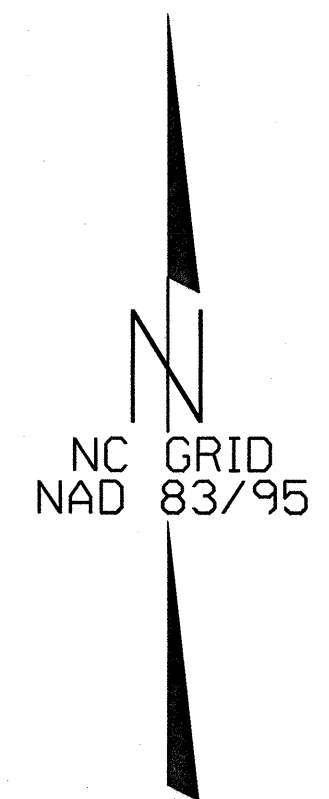
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line	----- ?UTL
U/G Tank; Water, Gas, Oil	□
A/G Tank; Water, Gas, Oil	□
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

# SURVEY CONTROL SHEET B-4038



**NCDOT GPS STA. "B4038-2"**  
**LOCALIZED PROJECT COORDINATES**  
 N 819387.4590  
 E 1132201.9318

**NCDOT GPS STA. "B4038-1"**  
**LOCALIZED PROJECT COORDINATES**  
 N 818802.2950  
 E 1133185.2960



POINT	DESC.	NORTH	EAST	ELEVATION	L. STATION	OFFSET
GPS 2	B-4038-2	819387.4590	1132201.9318	3216.32		OUTSIDE PROJECT LIMITS
BL 1	BL-1	815119.0470	1131896.4690	3228.62		OUTSIDE PROJECT LIMITS
BL 2	BL-2	815670.4230	1132363.3390	3204.41	13+96.66	14.94 LT
BL 3	BL-3	815853.0912	1132900.3164	3197.90	19+41.23	69.85 RT
BL 6	BL-6	816175.8442	1133129.4043	3196.91	23+28.97	71.87 RT
BL 4	BL-4	816390.2900	1133253.6100	3198.61	25+49.38	59.16 RT
BL 5	BL-5	817745.3700	1133108.1400	3214.08		OUTSIDE PROJECT LIMITS

**-L- STA. 33+60.63 END STATE PROJECT 33404.1.1**  
**LOCALIZED PROJECT COORDINATES**  
 N 817213.8534  
 E 1133153.2112

**NOTES:**

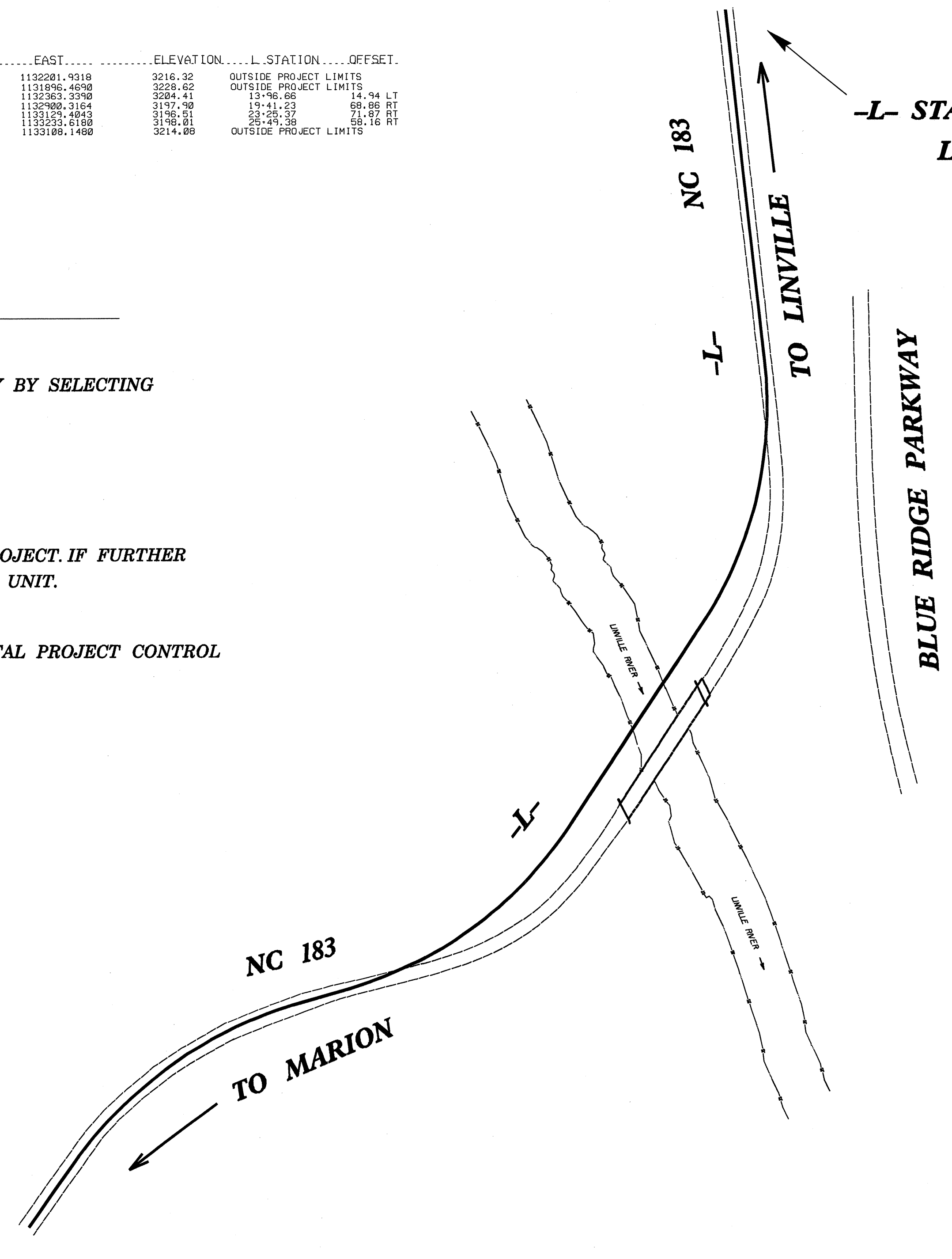
1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.NCDOT.ORG/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/preconstruct/highway/location/project/)

THE FILES TO BE FOUND ARE AS FOLLOWS:  
 B4038\_LS\_CONTROL\_051216.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)

**-L- STA. 10+00.00 BEGIN STATE PROJECT 33404.1.1**  
**LOCALIZED PROJECT COORDINATES**  
 N 815373.71389  
 E 1132099.5350



.....

BM1	ELEVATION = 3225.41
N 815165	E 1131898
L STATION 10+00	
S 44° 03' 07.4" W DIST 289.95	
8" NAIL IN BASE OF 18" DOUBLE MAPLE	
.....	
BM2	ELEVATION = 3199.16
N 815776	E 1132830
L STATION 18+40 80 RIGHT	
8" NAIL IN BASE OF 12" BIRCH	
.....	
BM3	ELEVATION = 3214.23
N 817557	E 1133141
L STATION 33+61	
N 2° 00' 15.9" W DIST 343.66	
8" NAIL IN BASE OF TRIPLE WHITE OAK	
.....	

**DATUM DESCRIPTION**

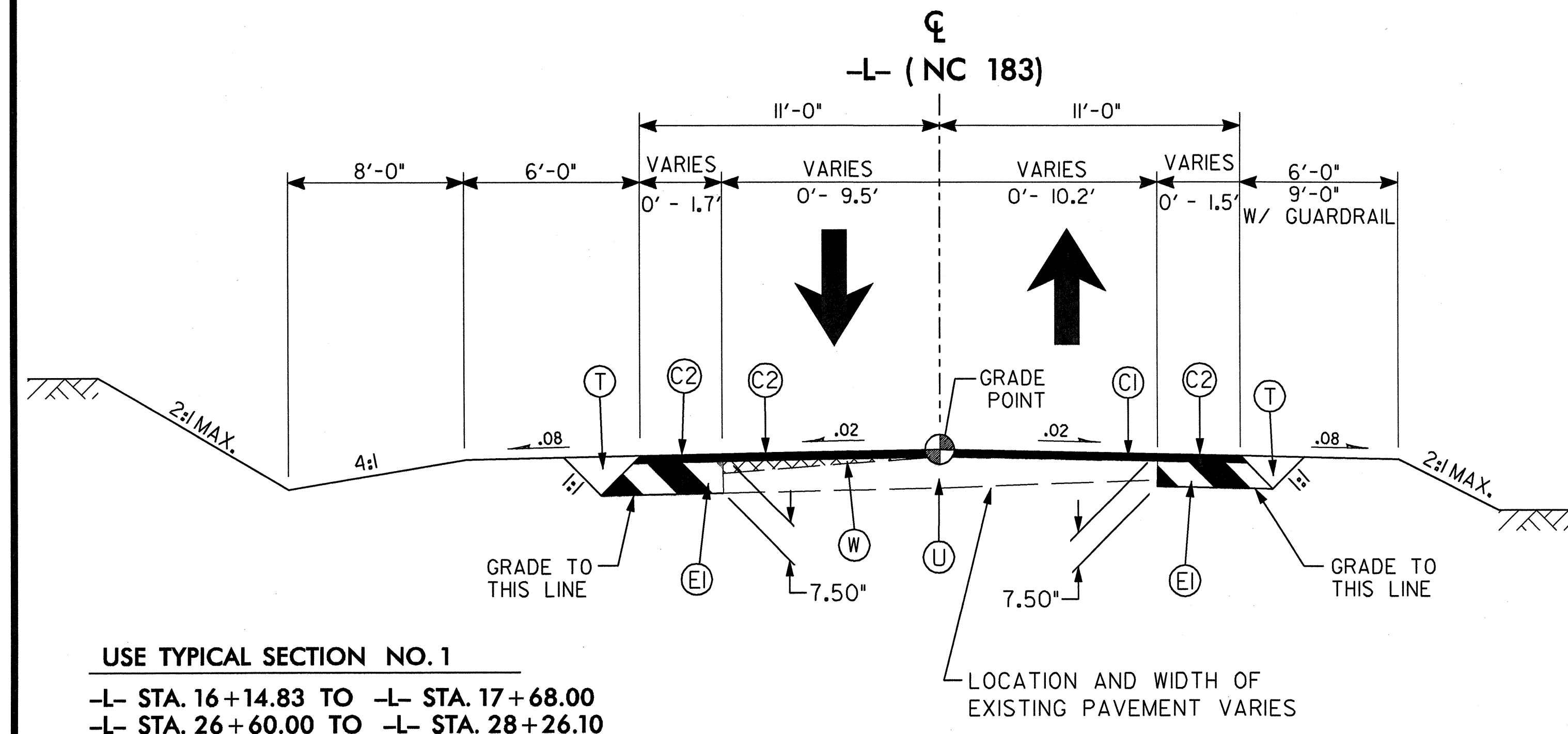
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS B4038-2"

WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF  
 NORTHING: 819387.4590(ft) EASTING: 1132201.9318(ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999831700

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS B4038-2" TO -L- STATION 10+00.00 IS  
 S 1- 27- 41 W 4.015.05

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

NOTE: DRAWING NOT TO SCALE



USE TYPICAL SECTION NO. 1  
 -L- STA. 16+14.83 TO -L- STA. 17+68.00  
 -L- STA. 26+60.00 TO -L- STA. 28+26.10

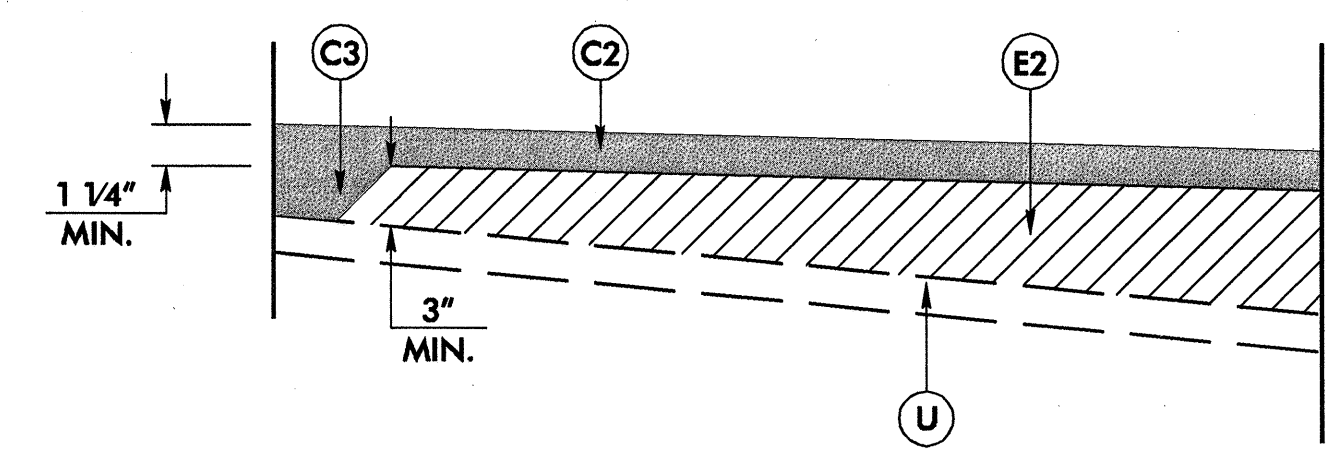
TYPICAL SECTION NO. 1

TRANSITION FROM EXIST. TO TS NO. 1:  
 FROM -L- STA. 15+79.46 TO -L- STA. 16+14.83

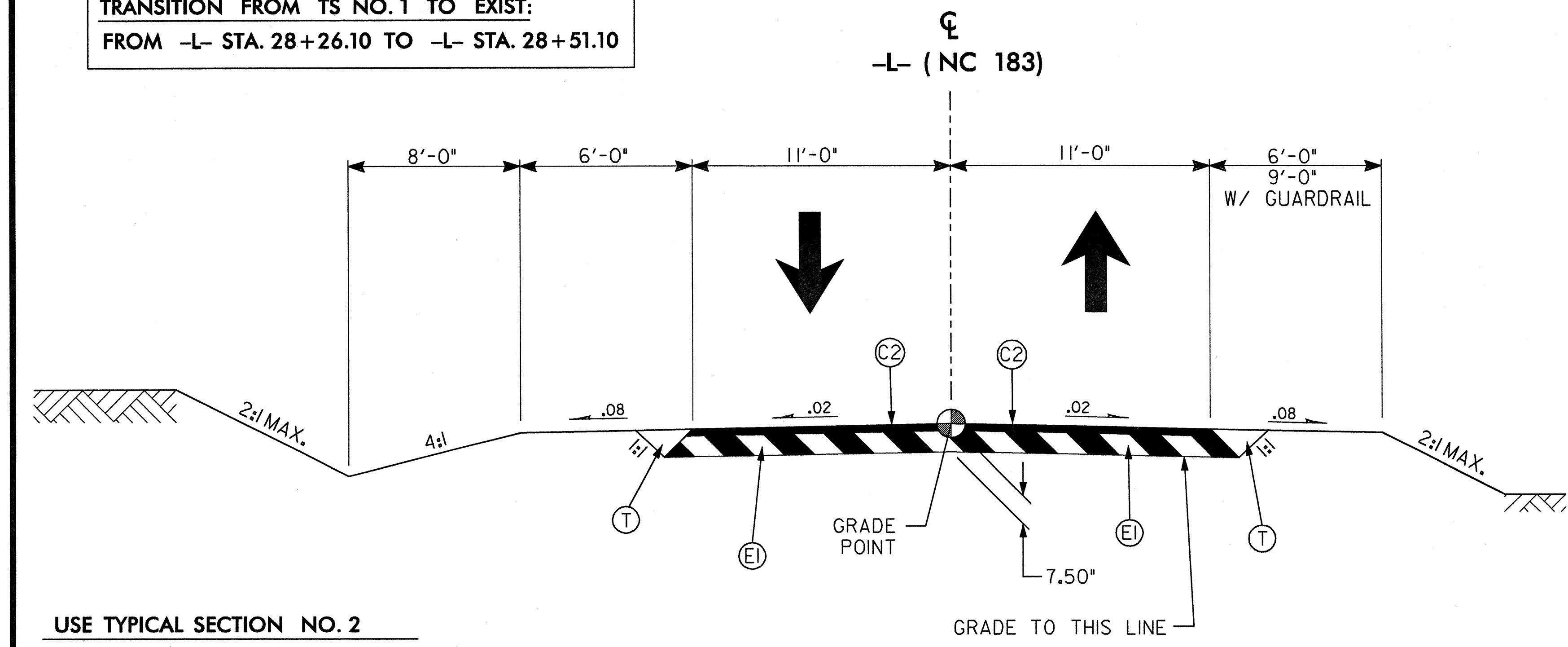
TRANSITION FROM TS NO. 1 TO EXIST:  
 FROM -L- STA. 28+26.10 TO -L- STA. 28+51.10

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.
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.
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 PLACED IN LAYERS NOT TO EXCEED 1 1 / 2" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
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 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.

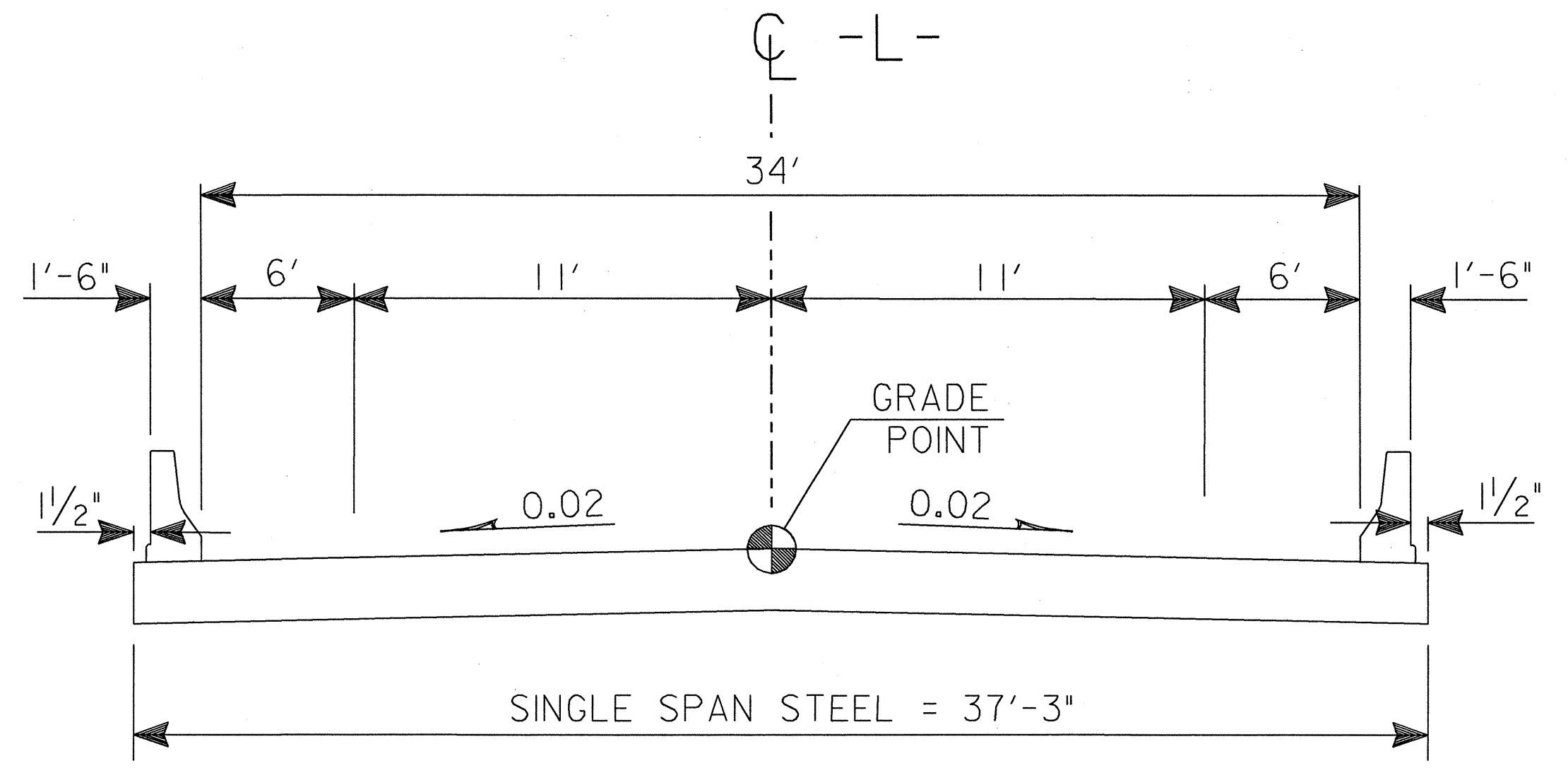


Detail Showing Method of Wedging



USE TYPICAL SECTION NO. 2  
 -L- STA. 17+68.00 TO -L- STA. 21+70.00 (BEGIN BRIDGE)  
 -L- STA. 23+55.00 (END BRIDGE) TO -L- STA. 26+60.00

TYPICAL SECTION NO. 2



TYPICAL SECTION ON STRUCTURE  
 (SINGLE SPAN STEEL)



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

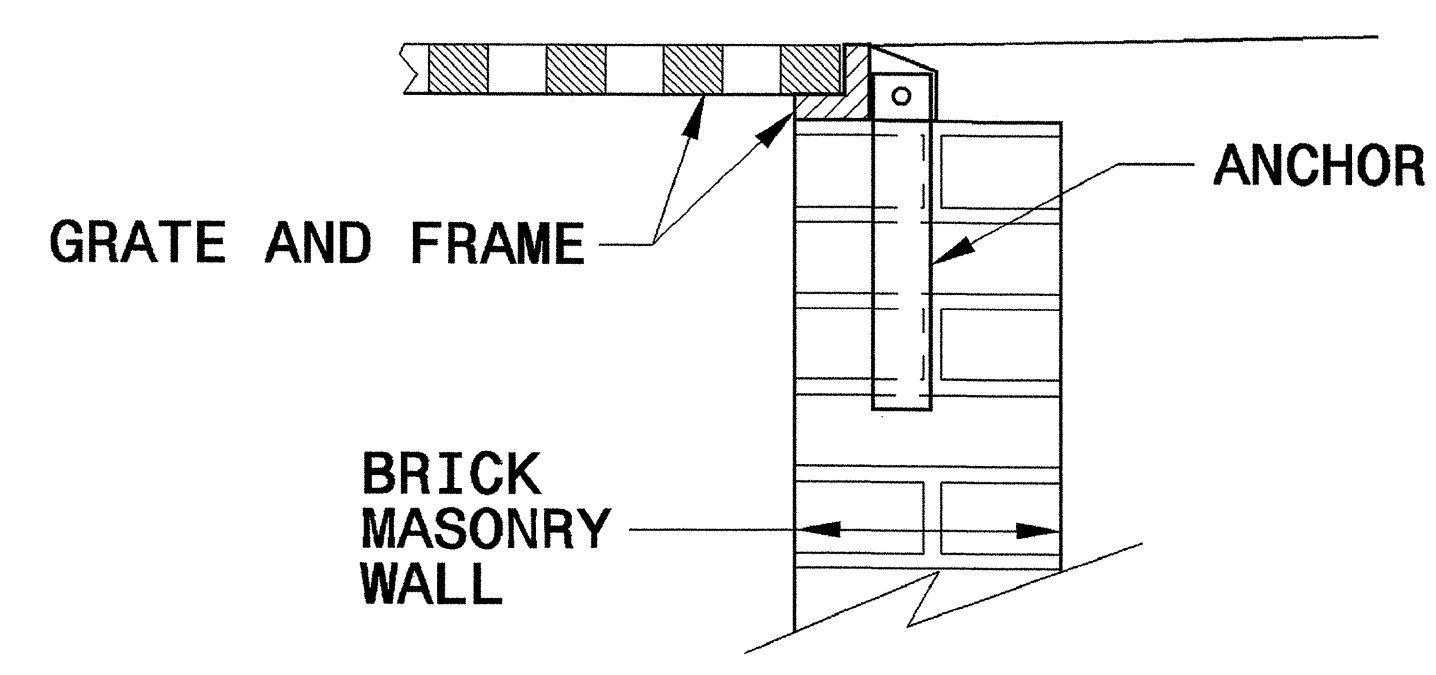
ENGLISH DETAIL DRAWING FOR  
**ANCHORAGE FOR FRAMES**  
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1  
**840D25**

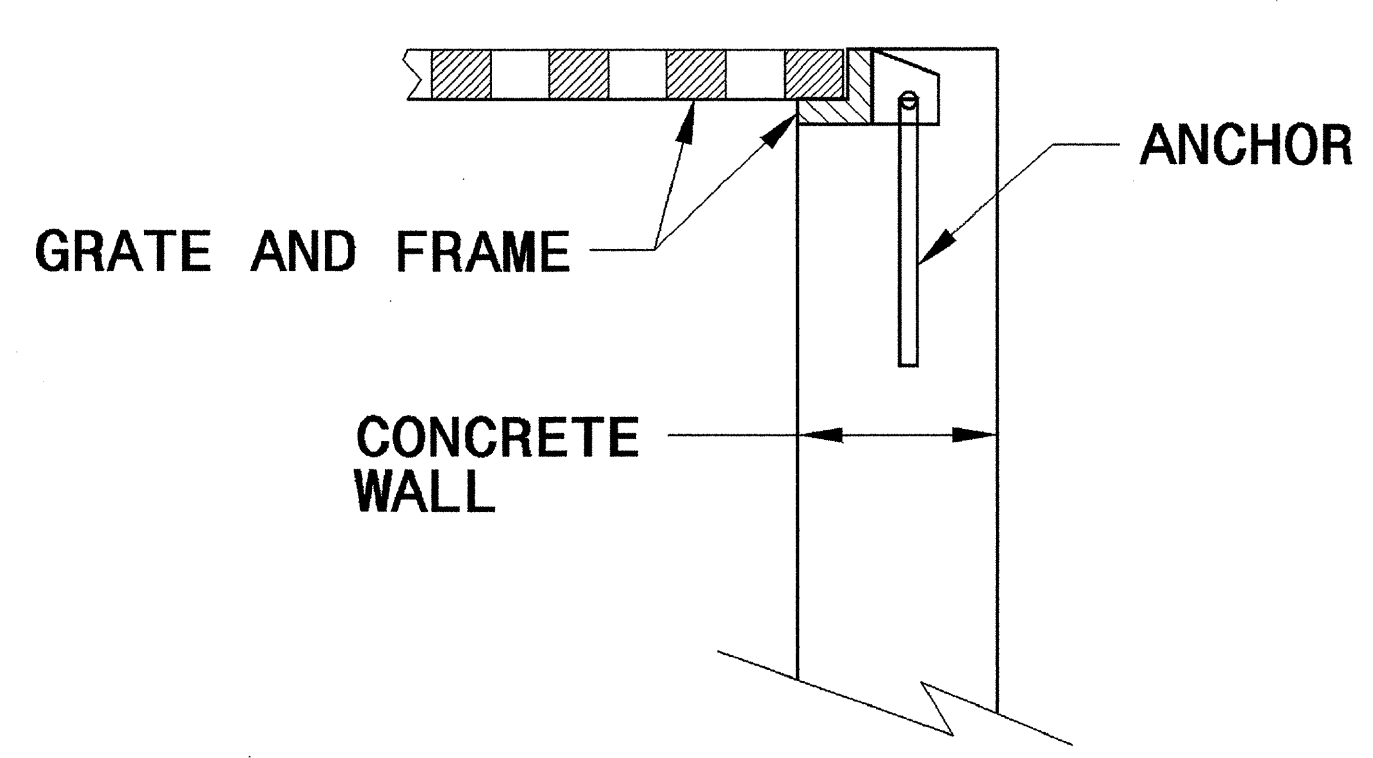
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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

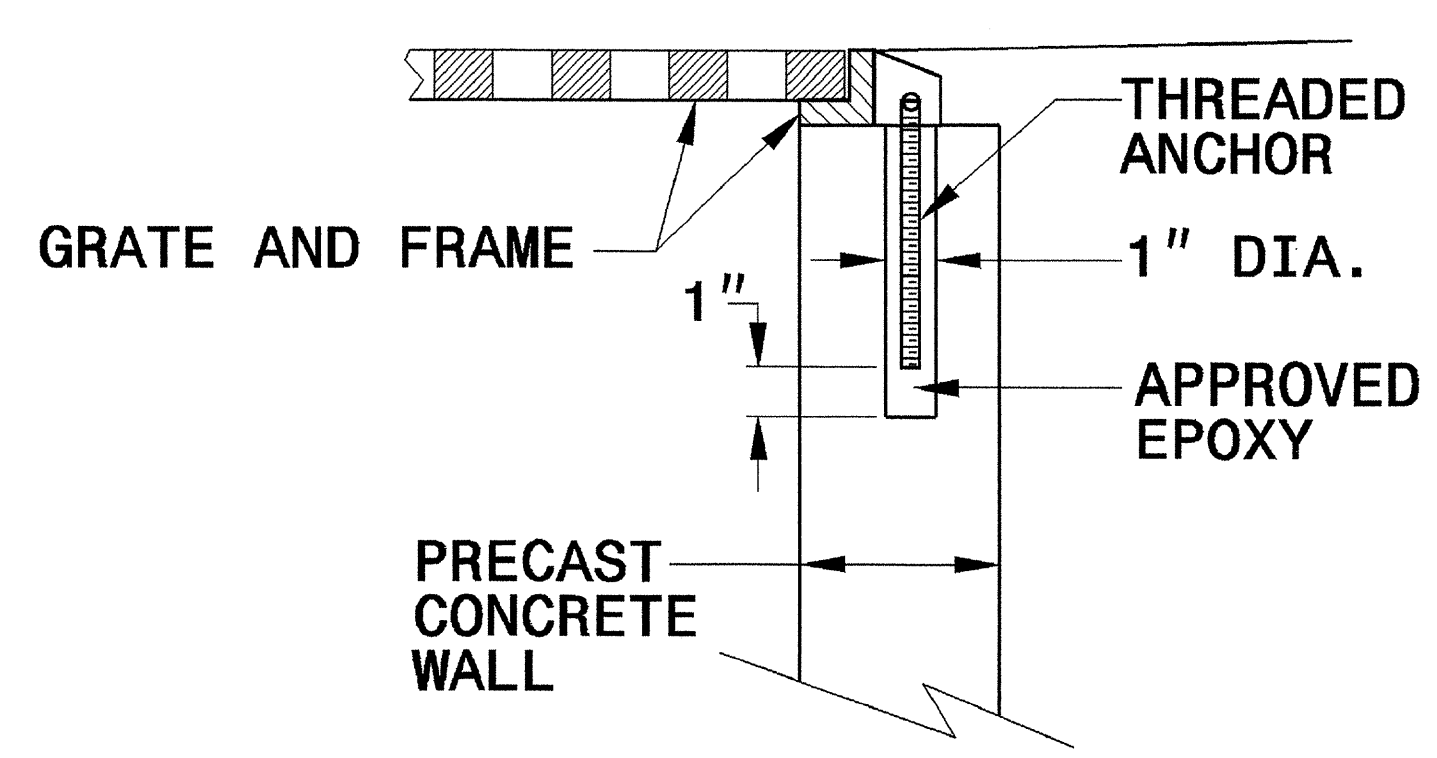
SHEET 1 OF 1  
**840D25**



**BRICK MASONRY CONSTRUCTION**



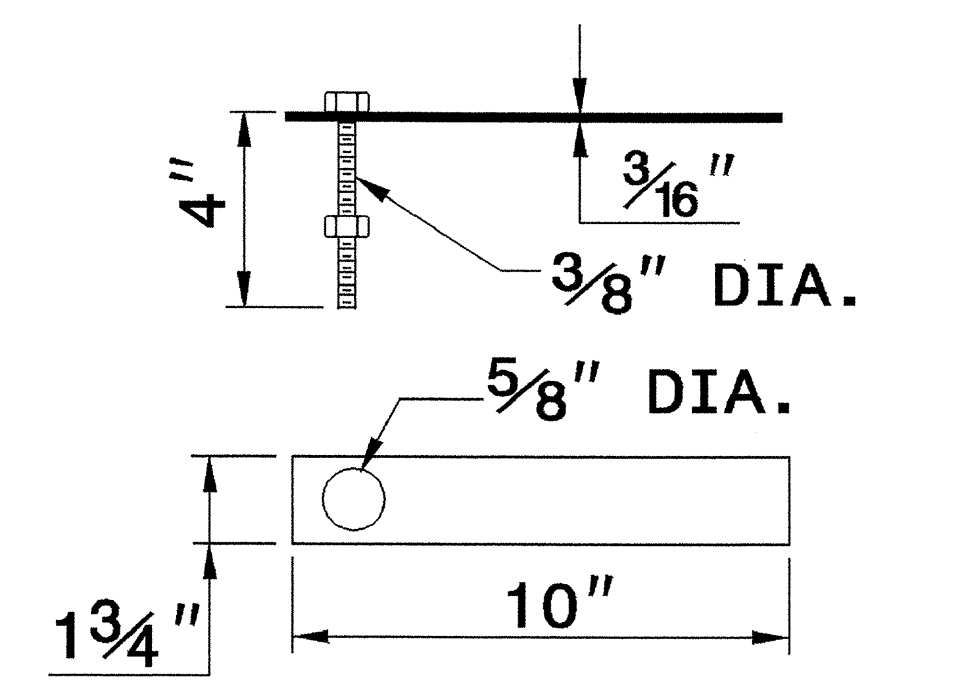
**CONCRETE CONSTRUCTION**



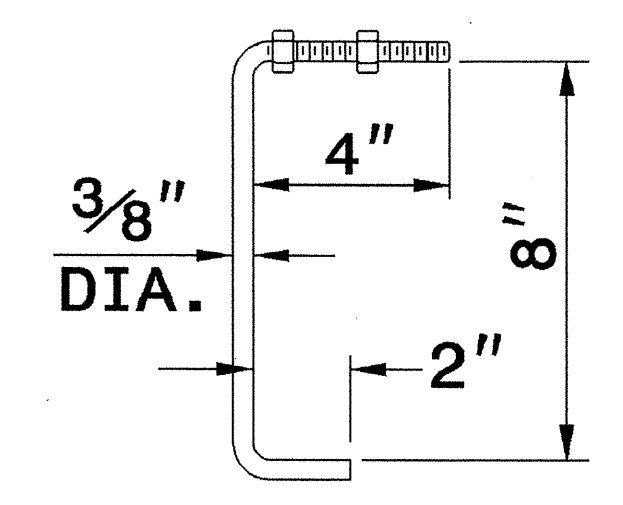
**PRECAST CONCRETE CONSTRUCTION**

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

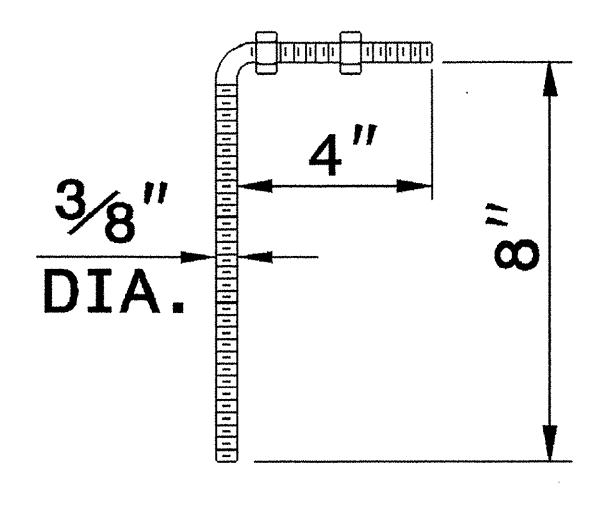
NOTE:  
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



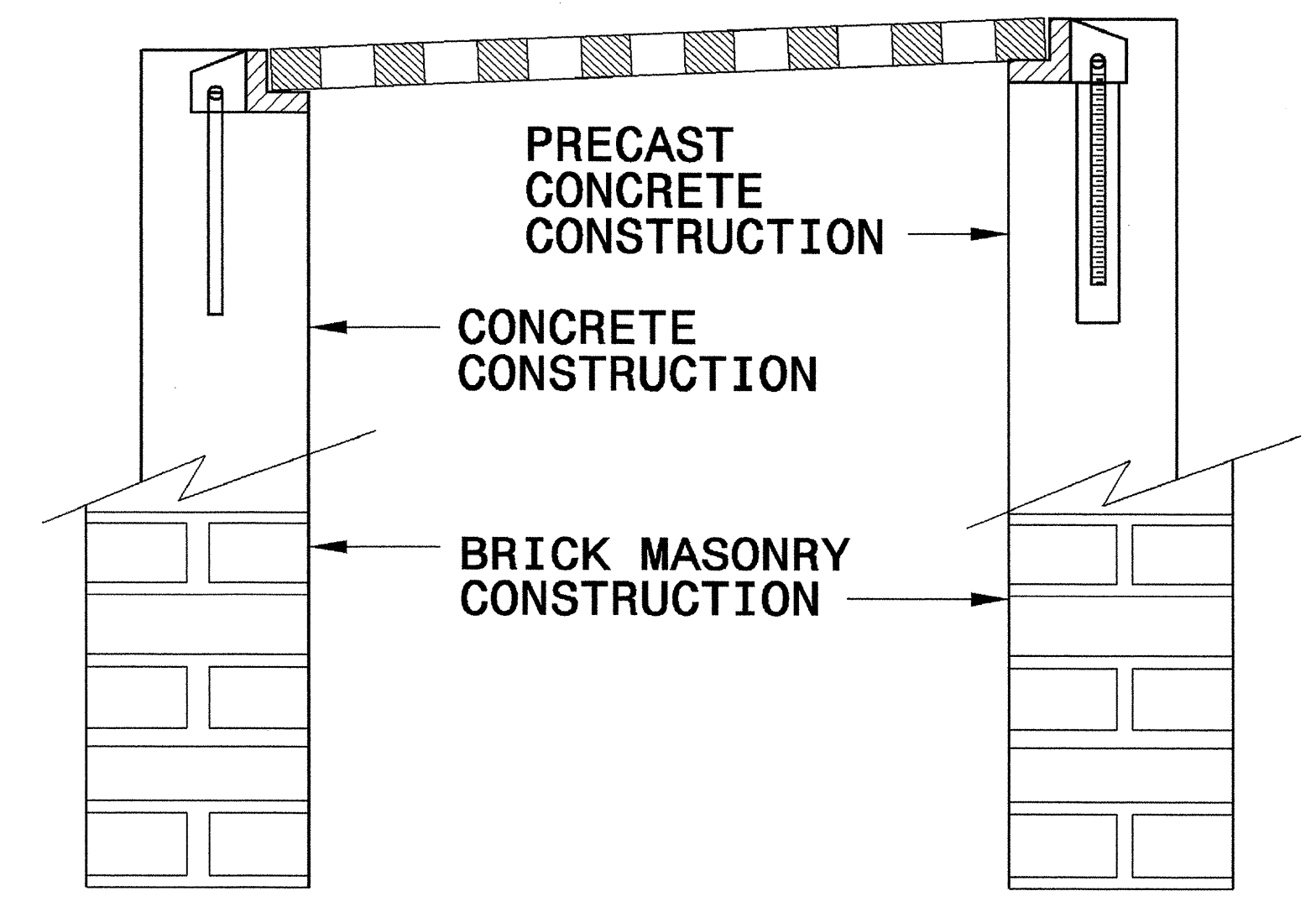
**MASONRY ANCHOR**  
3/8" DIA. BOLT WITH PLATE



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

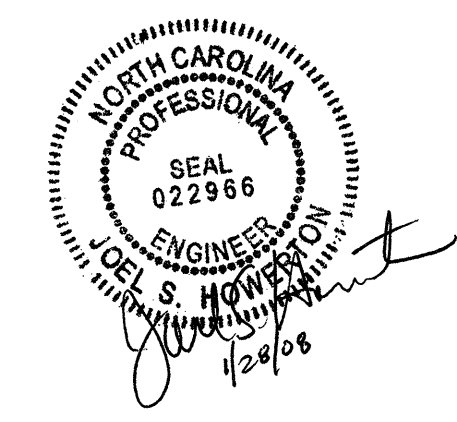


**PRECAST CONCRETE ANCHOR**  
3/8" DIA. BENT BAR



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

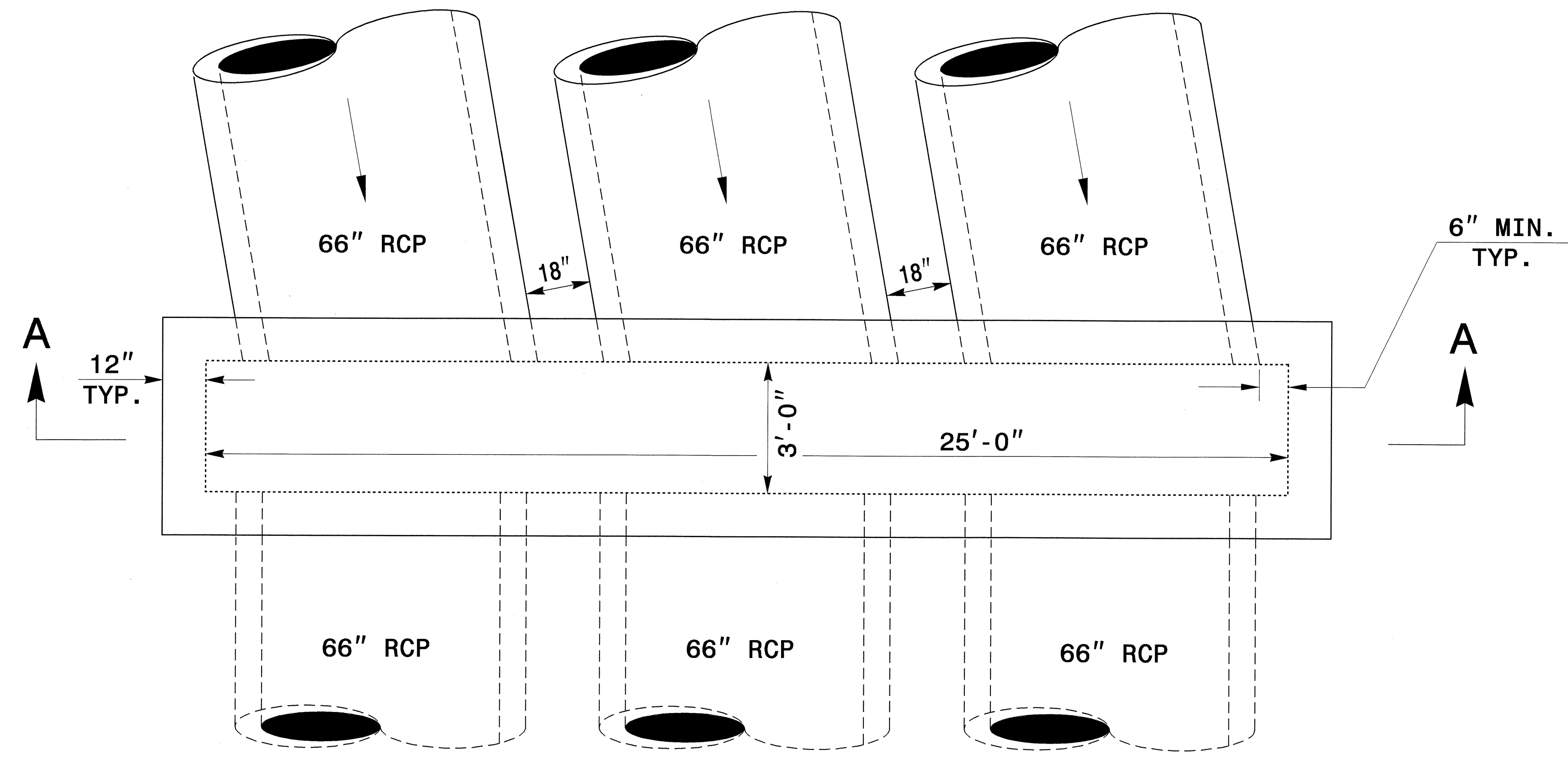
27-SEP-2006 08:59  
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eroward AT PS222293



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

**SEE PLATE FOR TITLE**

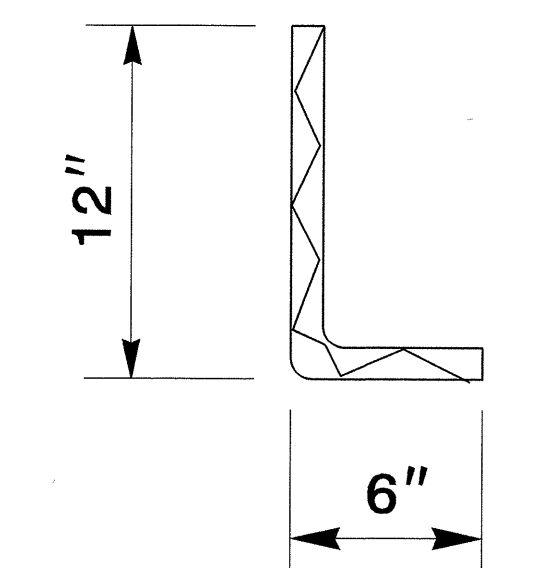
ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06  
MODIFIED BY: E.E. WARD DATE: 9/25/06  
CHECKED BY: DATE:  
FILE SPEC.:



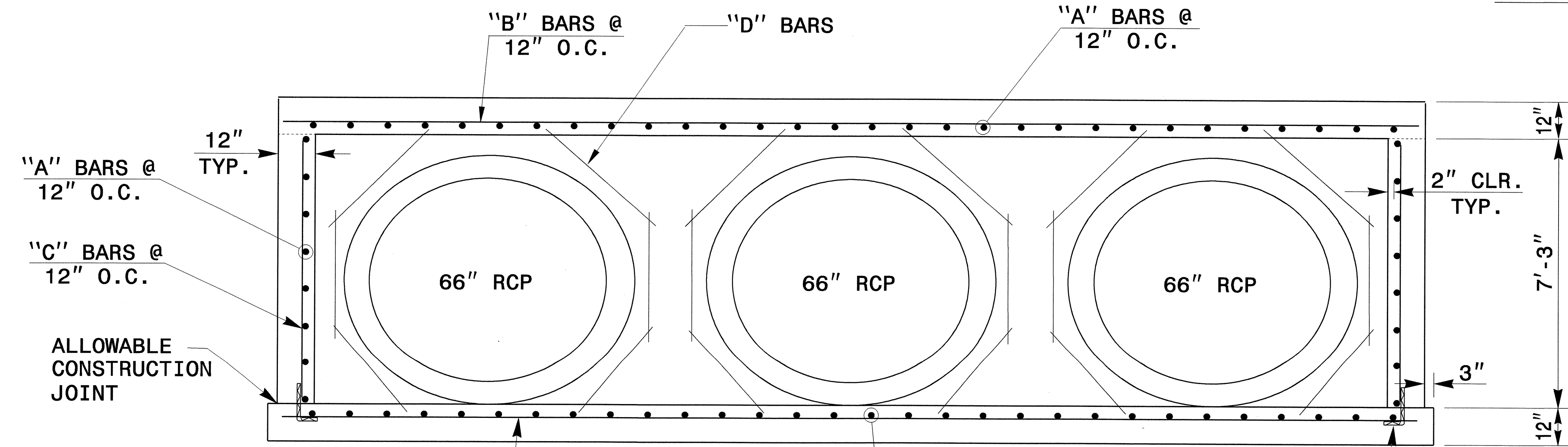
PLAN

**GENERAL NOTES:**

- CONSTRUCT THE BASE SLAB BY FORMING.
- SEE STD. DWG. 840.00 FOR CONSTRUCTION OF BASE SLAB IF PIPE IS SET INTO BASE SLAB.
- USE CLASS 'B' CONCRETE THROUGHOUT.
- CONSTRUCTION OPTIONS: MONOLITHIC POUR, 2" KEYWAY, OR #5 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
- CUT, BEND OR RELOCATE REINFORCING STEEL TO POSITION PIPE AS DIRECTED BY THE ENGINEER.
- CHAMFER ALL EXPOSED CORNERS 1".
- CONTRACTOR MAY ADJUST DIMENSIONS OF BOX AS FIELD CONDITIONS DICTATE OR AS DIRECTED BY THE ENGINEER.



DOWEL



SECTION A-A

**BILL OF MATERIAL**

BAR	NO.	SIZE	LENGTH	WEIGHT
A	72	#5	4'-8"	350.5
B	12	#5	26'-8"	333.8
C	12	#5	6'-11"	86.6
D	36	#5	4'-0"	150.2
TOTAL REINF. STEEL (lbs.)				921.1
CLASS "B" CONC. (cu. yds.)				26.7
NO DEDUCTIONS FOR PIPES				



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

**DETAIL OF  
SPECIAL JUNCTION BOX**

ORIGINAL BY: I.S.S. DATE: 6-26-00  
 MODIFIED BY: J.K. KEMPF DATE: 1-11-08  
 CHECKED BY: J.K. KEMPF DATE: 1/15/08  
 FILE SPEC.: special\_details\kkempf\english\jthtree66s.dgn

11/15/08 10:58 AM C:\TEMP\DWG\CONNS\CONNS.dwg

# SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201812

ItemNumber	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION
002200000-E	225	22,420	CY	UNCLASSIFIED EXCAVATION
002900000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (22+62.50)
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
005700000-E	226	500	CY	UNDERCUT EXCAVATION
006300000-N	SP	Lump Sum		GRADING
008000000-E	SP	1,200	TON	CLASS IV SUBGRADE STABILIZATION
013400000-E	240	620	CY	DRAINAGE DITCH EXCAVATION
019500000-E	265	1,000	CY	SELECT GRANULAR MATERIAL
019600000-E	270	1,000	SY	FABRIC FOR SOIL STABILIZATION
031800000-E	300	47	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
036600000-E	310	44	LF	15" RC PIPE CULVERTS, CLASS III
042000000-E	310	368	LF	66" RC PIPE CULVERTS, CLASS III
070800000-E	310	32	LF	15" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
080600000-E	310	2	EA	15" BIT COAT CS PIPE ELBOWS, TYPE B 0.064" THICK
122000000-E	545	25	TON	INCIDENTAL STONE BASE
148900000-E	610	680	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
152500000-E	610	360	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
156000000-E	620	53	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
200000000-N	806	19	EA	RIGHT OF WAY MARKERS
202200000-E	815	112	CY	SUBDRAIN EXCAVATION
203300000-E	815	84	CY	SUBDRAIN FINE AGGREGATE
204400000-E	815	500	LF	6" PERFORATED SUBDRAIN PIPE
205500000-E	815	15	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
206600000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
207700000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
222000000-E	838	11.1	CY	REINFORCED ENDWALLS
228600000-N	840	2	EA	MASONRY DRAINAGE STRUCTURES
236700000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29
255600000-E	846	50	LF	SHOULDER BERM GUTTER
299500000-N	SP	1	EA	GENERIC DRAINAGE ITEM SPECIAL JUNCTION BOX
303000000-E	862	575	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
362800000-E	876	75	TON	RIP RAP, CLASS I
364900000-E	876	10	TON	RIP RAP, CLASS B
365600000-E	876	480	SY	FILTER FABRIC FOR DRAINAGE
440000000-E	1110	409	SF	WORK ZONE SIGNS (STATIONARY)
440500000-E	1110	149	SF	WORK ZONE SIGNS (PORTABLE)
441000000-E	1110	126	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
443000000-N	1130	50	EA	DRUMS
443500000-N	1135	30	EA	CONES
444500000-E	1145	80	LF	BARRICADES (TYPE III)
445500000-N	1150	100	MD	FLAGGER
446500000-N	1160	2	EA	TEMPORARY CRASH CUSHIONS
448000000-N	1165	1	EA	TMIA
448500000-E	1170	180	LF	PORTABLE CONCRETE BARRIER
465000000-N	1251	32	EA	TEMPORARY RAISED PAVEMENT MARKERS
468500000-E	1205	2,544	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)

ItemNumber	Sec #	Quantity	Unit	Description
468600000-E	1205	2,544	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
481000000-E	1205	10,176	LF	PAINT PAVEMENT MARKING LINES (4")
490500000-N	1253	32	EA	SNOWPLOWABLE PAVEMENT MARKERS
600000000-E	1605	1,930	LF	TEMPORARY SILT FENCE
600600000-E	1610	90	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	350	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	330	TON	SEDIMENT CONTROL STONE
601500000-E	1615	2.5	ACR	TEMPORARY MULCHING
601800000-E	1620	100	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	0.5	TON	FERTILIZER FOR TEMPORARY SEEDING
602400000-E	1622	70	LF	TEMPORARY SLOPE DRAINS
602700000-N	1622	1	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
602900000-E	SP	500	LF	SAFETY FENCE
603000000-E	1630	1,725	CY	SILT EXCAVATION
603600000-E	1631	1,000	SY	MATTING FOR EROSION CONTROL
603700000-E	SP	45	SY	COIR FIBER MAT
603800000-E	SP	80	SY	PERMANENT SOIL REINFORCEMENT MAT
604200000-E	1632	480	LF	1/4" HARDWARE CLOTH
607000000-N	SP	2	EA	SPECIAL STILLING BASINS
607101000-E	SP	75	LF	WATTLE
607102000-E	SP	18	LB	POLYACRYLAMIDE (PAM)
607103000-E	SP	460	LF	COIR FIBER BAFFLES
607105000-E	SP	10	EA	*** SKIMMER (1-1/2")
607105000-E	SP	1	EA	*** SKIMMER (2")
608400000-E	1660	3	ACR	SEEDING & MULCHING
608700000-E	1660	1.5	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	2.25	TON	FERTILIZER TOPDRESSING
611100000-E	SP	360	LF	IMPERVIOUS DIKE
611400000-N	SP	2	HR	SPECIALIZED HAND MOWING
611700000-N	SP	27	EA	RESPONSE FOR EROSION CONTROL
612300000-E	1670	0.5	ACR	REFORESTATION



**ASPHALT PAVEMENT  
 REMOVAL SUMMARY**

STATION TO STATION	SQUARE YARDS
-L- STA. 19+62.49 TO -L- STA. 21+09.26	318.79
-L- STA. 23+21.28 TO -L- STA. 26+77.43	614.32
TOTAL	933.11
SAY	940

STATION TO STATION	UNCLASSIFIED EXCAVATION (cu. yds)	UNDERCUT (cu. yds.)	ROADWAY EMBANKMENT (cu. yds)	BORROW (cu. yds)	TOTAL WASTE (cu. yds)
-L- STA. 15+79.18 -L- STA. 21+70.00 (BEGIN BRIDGE)	23,344		4,671	0	18,673
-L- STA. 23+55.00 (END BRIDGE) -L- STA. 28+51.10	69		4,424	4,355	
SUBTOTALS	23,413		9,095	4,355	18,673
EST. LOSS DUE TO CLEARING & GRUBBING	-1,000				-1,000
ROCK WASTE TO REPLACE BORROW				-3,787	-3,787
ADJUST FOR ROCK WASTE			-568	-568	
ADJUST FOR EARTH WASTE			-9		9
GRAND TOTAL	22,413		8,518	0	13,895
SAY	22,420			0	14,000

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.  
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.  
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.  
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.

ESTIMATED UNDERCUT = 500 CY.  
 ESTIMATED FABRIC FOR SOIL STABILIZATION = 1,000 SY.  
 ESTIMATED SELECT GRANULAR MATERIAL = 1,000 CY.  
 ESTIMATED CLASS IV SUBGRADE STABILIZATION = 1,200 TNS.  
 ESTIMATED DRAINAGE DITCH EXCAVATION = 620 CY.  
 ESTIMATED INCIDENTAL STONE BASE = 25 TNS.

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.

**GUARDRAIL SUMMARY**

NOTE: APPROXIMATE QUANTITIES ONLY.  
 BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL  
 OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM  
 PRICE FOR "GRADING."

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS									
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	XIII	CAT-1	AT-1	BIC						B-77								
-L-	18+70.60	21+58.10	RT.	287.50'				21+58.10	6'	9'	37.50'		1.00'																							
-L-	20+44.40	21+81.90	LT.	137.50'				21+81.90	6'	9'																										
-L-	23+43.24	24+80.74	RT.	137.50'				23+43.24	6'	9'		37.50'		1.00'																						
-L-	23+66.90	26+54.40	LT.	287.50'				23+66.90	6'	9'	37.50'		1.00'																							
	SUBTOTAL			850.00'																																
	DEDUCTIONS FOR ANCHOR UNITS:			-275.00'				DEDUCTION FOR ANCHOR UNITS: 4 GRAU-350 @ 50.00' = 200.00'																												
	TOTAL			575.00'				4 B-77 @ 18.75' = 75.00'																												
	SAY			575.00'																																

**LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)**

STATION	SIZE	THICKNESS OR GAUGE	LOCATION (LT, RT, OR CU)	STRUCTURE NO.	TOP ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	PIPE												ENDWALLS	QUANTITIES FOR ENDWALLS	TYPE OF GRATE	TRAFFIC BEARING DROP INLET STD. 840.35	FRAME WITH TWO GRATES STD. 840.29	PIPE REMOVAL (LF)	REMARKS											
								CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE)		BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE)				CLASS III R.C. PIPE OR C.S. PIPE, TYPE IR ALUMINIZED OR HDPE PIPE, TYPE S OR D				15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE								24" SIDE DRAIN PIPE	R.C.P.	C.S.P.	PER EACH (0" THRU 5.0')	5.0' THRU 10.0'	10.0' AND ABOVE					
-L- 21+17	LT.	3																																			
	RT.	4	5																																		
-L- 21+50	RT.	5																																			
	RT.	6	OUT																																		
TOTALS																																					

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

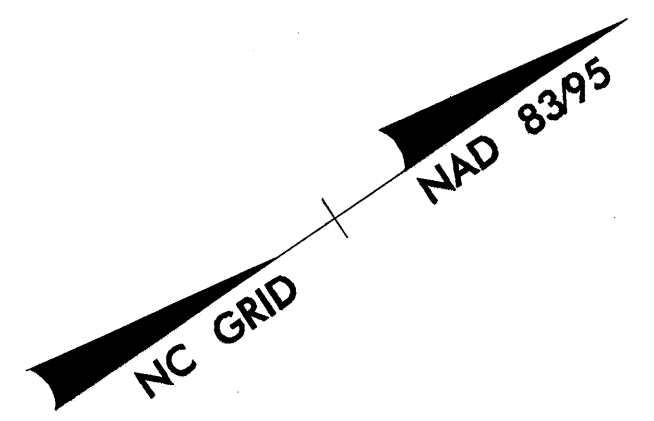
STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO.	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE)						BITUMINOUS COATED C.S. PIPE TYPE B						STRUCTURAL PLATE PIPE						REINFORCED HEADWALLS STD. 838.34		MASONRY DRAINAGE STRUCTURES CUBIC YARDS	SPECIAL JUNCTION BOX	PIPE REMOVAL LIN.FT.	REMARKS			
							54"	60"	66"	72"	78"	84"	54"			60"	66"	72"	60"	66"	72"	12	10	12	10	12					10	WITH R.C. - C.Y.	ABBREVIATIONS
													SHOP ELON-GATED																				
THICKNESS OR GAUGE	FROM	TO					.109	.138	.168	.138	.168	.138	.168	.138	.168	.138	.168																
-L- 17+33	LT.	1																															
-L- 18+45	RT.	2		3182.3	3180.79																					1	REMOVE HEADWALL, SPECIAL JB						
TOTALS																																	

NOTE:  
 WING WALLS CAN BE ADJUSTED IN THE FIELD  
 TO FIT CONDITIONS OTHER THAN STANDARD.

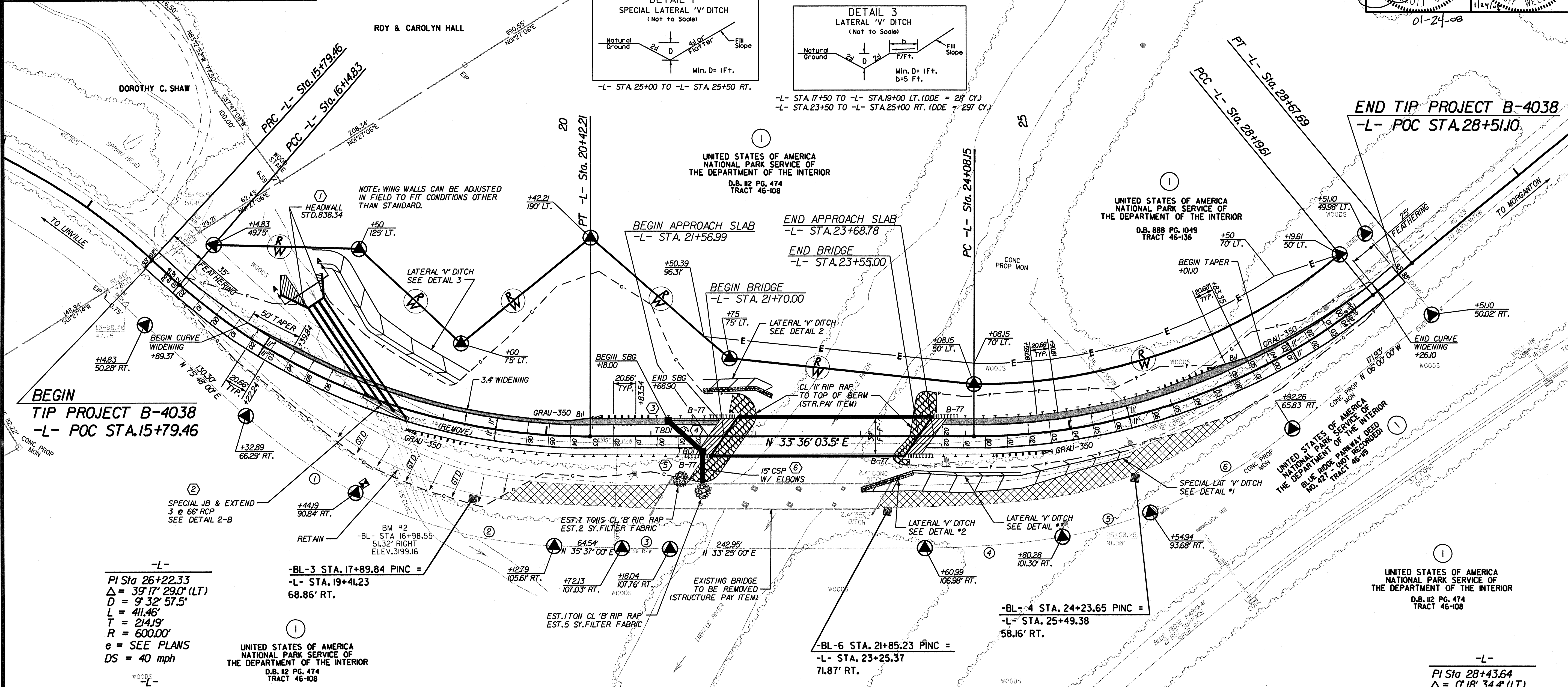
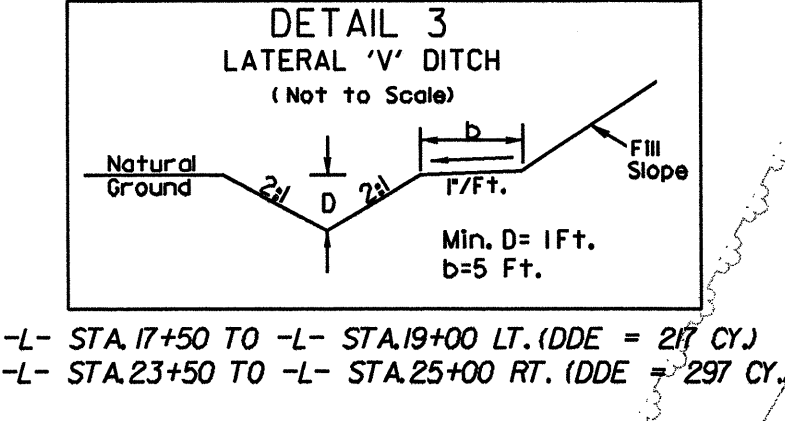
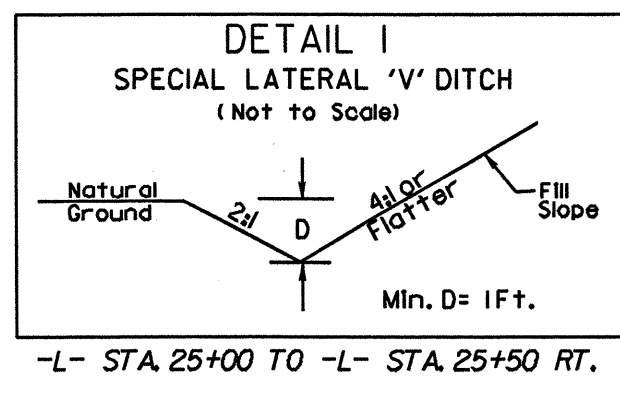
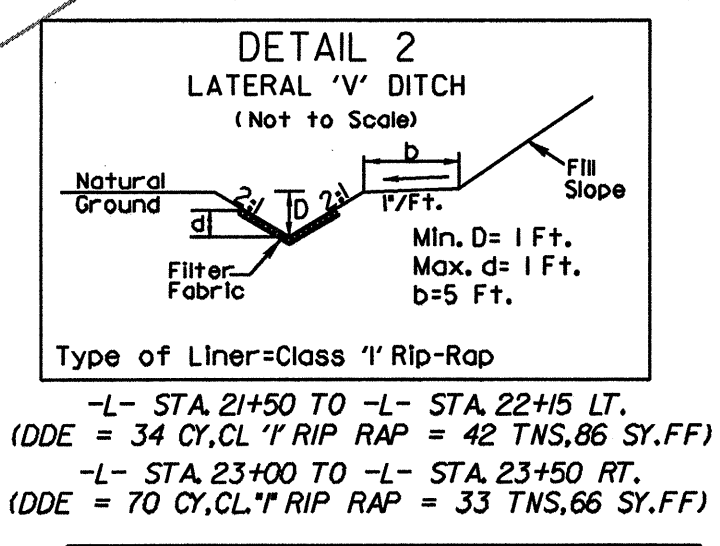


REVISIONS

PROJECT REFERENCE NO. B-4038	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 24717 SPOT CLARK	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 9334 HENRY WELLS



DESIGN EXCEPTION FOR HORIZONTAL ALIGNMENT



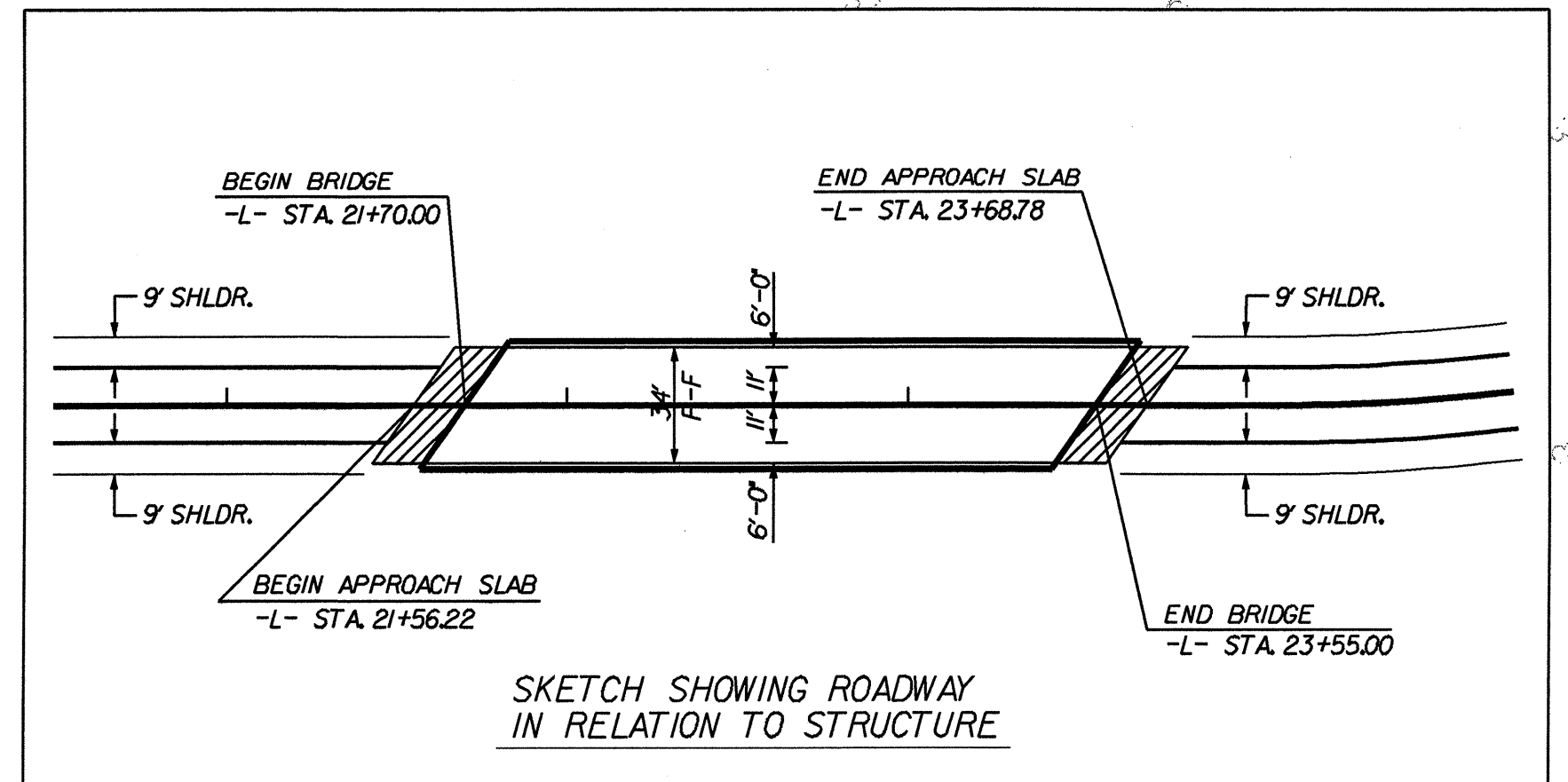
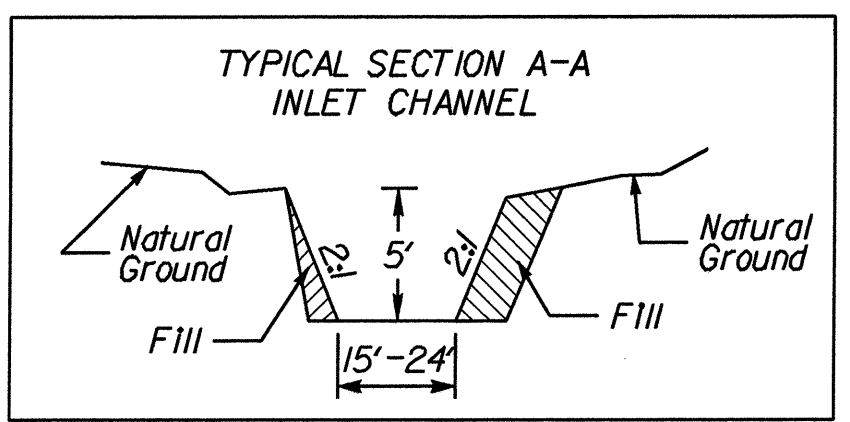
**BEGIN TIP PROJECT B-4038**  
-L- POC STA. 15+79.46

**END TIP PROJECT B-4038**  
-L- POC STA. 28+51.10

-L-  
PI Sta 26+22.33  
Δ = 39° 17' 29.0" (LT)  
D = 9° 32' 57.5"  
L = 411.46'  
T = 214.19'  
R = 600.00'  
e = SEE PLANS  
DS = 40 mph

UNITED STATES OF AMERICA  
NATIONAL PARK SERVICE OF  
THE DEPARTMENT OF THE INTERIOR  
D.B. 12 PG. 474  
TRACT 46-108

-L-  
PI Sta 15+97.15  
Δ = 1° 51' 02.1" (LT)  
D = 5° 13' 57.5"  
L = 35.37'  
T = 17.68'  
R = 1,094.97'  
e = SEE PLANS  
DS = 40 mph



- DENOTES PAVED SHOULDER
- DENOTES PAVEMENT REMOVAL
- DENOTES APPROACH SLAB

FOR -L- PROFILE SEE SHEET NO. 5

SEE SHEETS S-1 THRU S-23  
FOR STRUCTURE PLANS

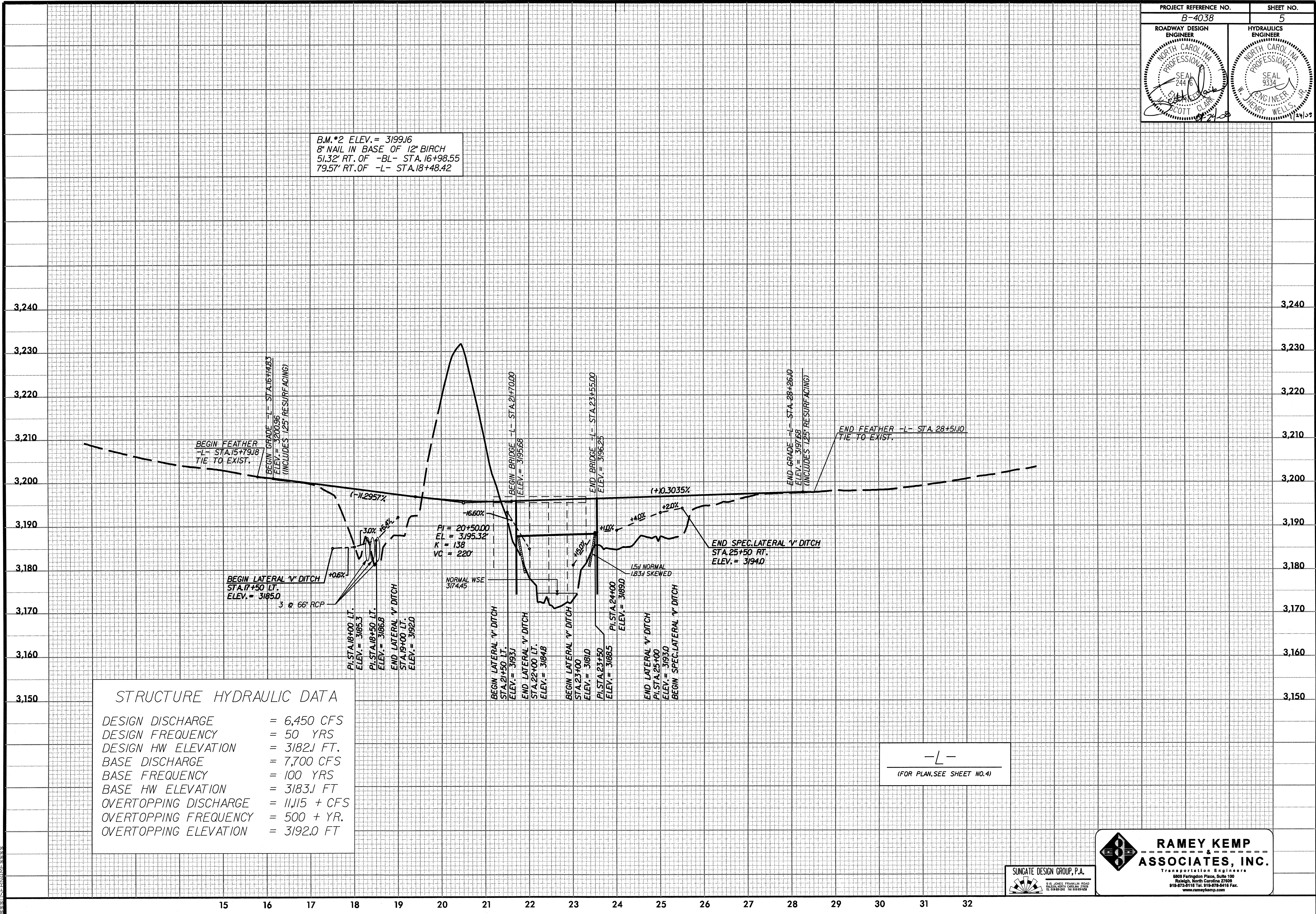
- ① R = 527.46'  
L = 128.36'  
Δ = 13° 56' 34" LT.  
Chord Bearing = N 68° 49' 43" E  
Chord Distance = 128.04'
- ② R = 431.97'  
L = 197.84'  
Δ = 26° 14' 26" LT.  
Chord Bearing = N 48° 44' 13" E  
Chord Distance = 196.11'
- ③ R = 1195.92'  
L = 45.92'  
Δ = 02° 12' 00" LT.  
Chord Bearing = N 34° 31' 00" E  
Chord Distance = 45.92'
- ④ R = 840.29'  
L = 131.84'  
Δ = 08° 59' 23" LT.  
Chord Bearing = N 28° 55' 19" E  
Chord Distance = 131.70'
- ⑤ R = 397.25'  
L = 87.25'  
Δ = 12° 35' 02" LT.  
Chord Bearing = N 18° 08' 07" E  
Chord Distance = 87.07'
- ⑥ R = 508.37'  
L = 158.32'  
Δ = 17° 50' 36" LT.  
Chord Bearing = N 02° 55' 18" E  
Chord Distance = 157.68'

-L-  
PI Sta 18+38.04  
Δ = 40° 48' 42.0" (LT)  
D = 9° 32' 57.5"  
L = 427.38'  
T = 223.21'  
R = 600.00'  
e = SEE PLANS  
DS = 40 mph





B.M. #2 ELEV. = 3199.16  
8" NAIL IN BASE OF 12" BIRCH  
51.32' RT. OF -BL- STA. 16+98.55  
79.57' RT. OF -L- STA. 18+48.42



STRUCTURE HYDRAULIC DATA	
DESIGN DISCHARGE	= 6,450 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 3182.1 FT.
BASE DISCHARGE	= 7,700 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 3183.1 FT
OVERTOPPING DISCHARGE	= 11,115 + CFS
OVERTOPPING FREQUENCY	= 500 + YR.
OVERTOPPING ELEVATION	= 3192.0 FT

-L-  
(FOR PLAN, SEE SHEET NO. 4)

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