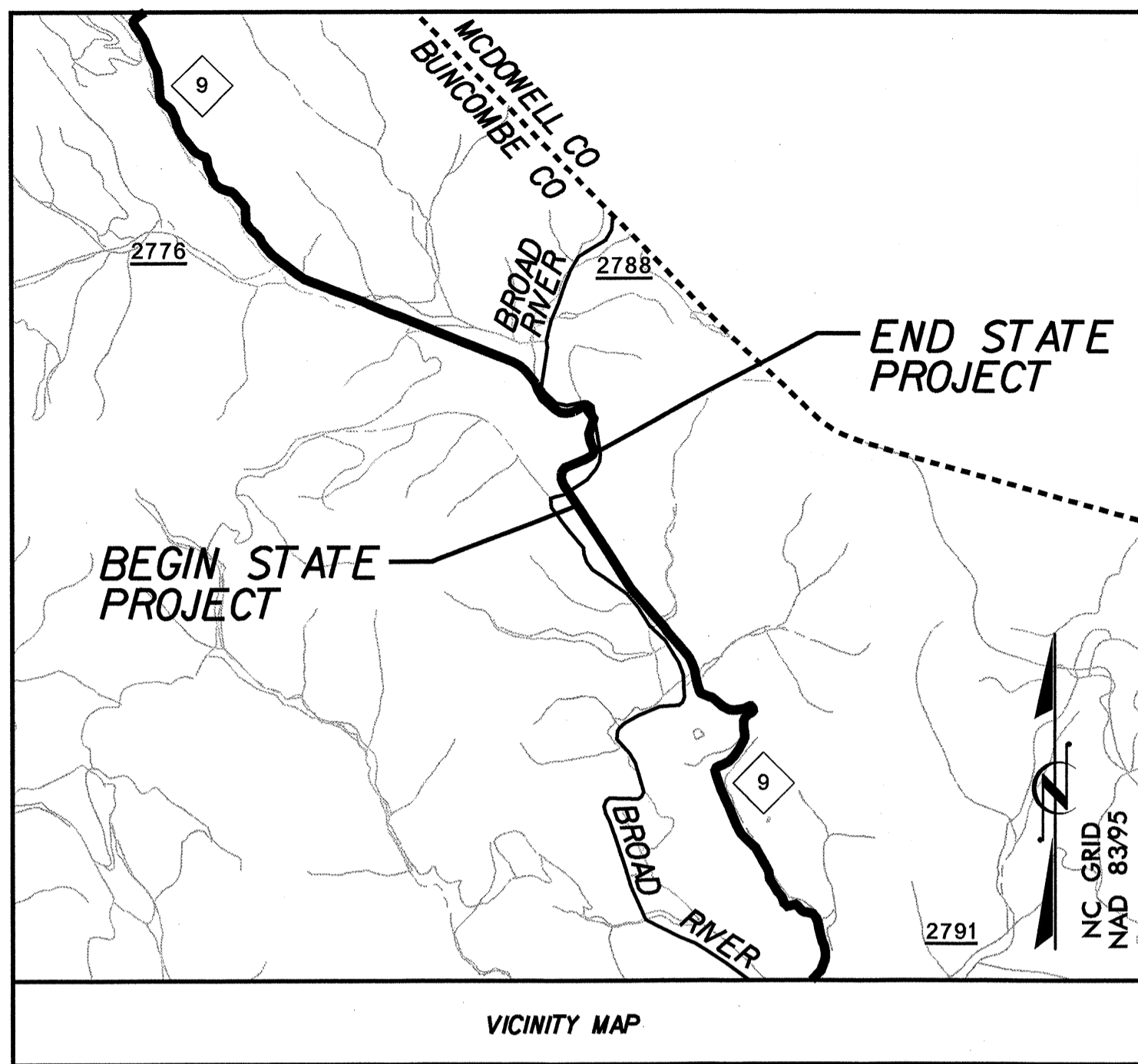


**TIP PROJECT: B-4032**

**CONTRACT: C201849**

SEE SHEET 1-A FOR INDEX OF SHEETS  
SEE SHEET 1-B FOR CONVENTIONAL SYMBOLS

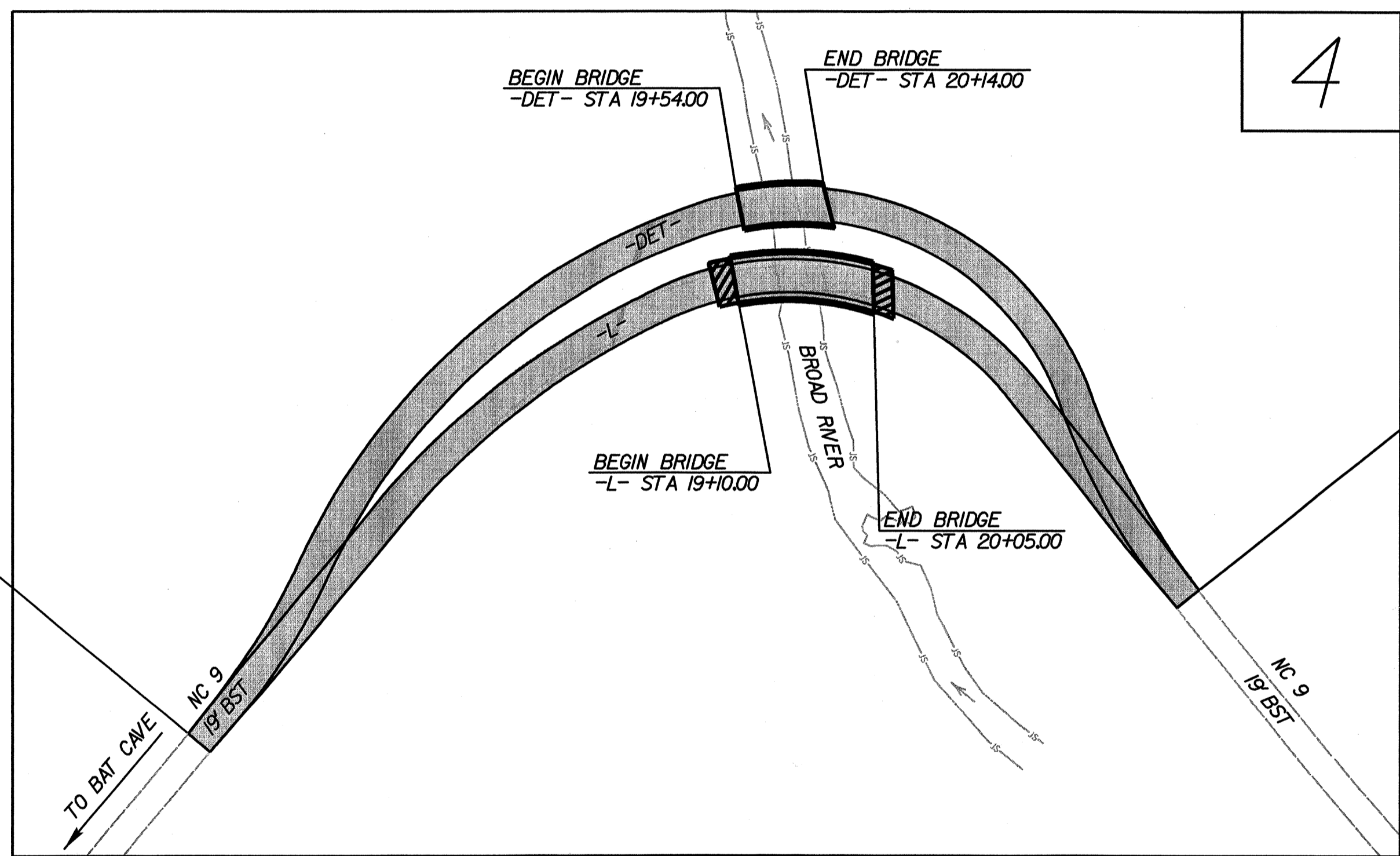


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**BUNCOMBE COUNTY**

**LOCATION: BRIDGE NO. 130 OVER BROAD RIVER ON NC 9**  
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE**

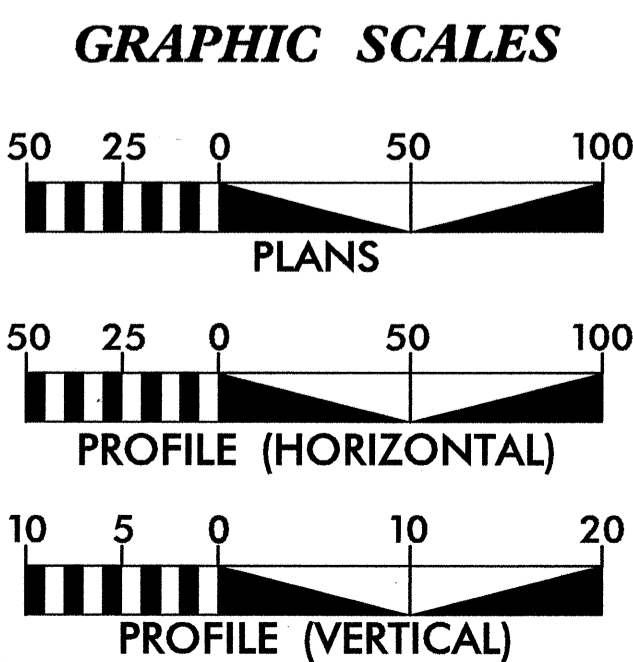
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4032	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33399.1.1	BRSTP-0009(1)	P.E.	
33399.2.1	BRSTP-0009(1)	RIGHT-OF-WAY	
33399.2.1	BRSTP-0009(1)	UTILITY	
33399.3.1	BRSTP-0009(1)	CONSTRUCTION	



STA 14+24.00 -L- =  
STA 14+24.00 -DET-  
BEGIN STATE PROJECT B-4032  
BEGIN CONSTRUCTION

STA 23+93.00 -DET- =  
STA 23+08.76 -L-  
END CONSTRUCTION  
STA 23+09.00 -L-  
END STATE PROJECT B-4032  
END CONSTRUCTION

NCDOT CONTACT: B.D. TAYLOR, P.E.  
PROJECT ENGINEER  
ROADWAY DESIGN UNIT



**DESIGN DATA**

ADT 2008	= 1,100 VPD
ADT 2030	= 1,900 VPD
DHV	= 12%
D	= 60%
T	= 8% *
V	= 35 mph

DESIGN EXCEPTION:  
HORIZONTAL CURVE RADIUS  
HORIZONTAL SSD

FUNCTIONAL CLASSIFICATION:  
RURAL MAJOR COLLECTOR  
\* (TTST 2% + DUAL 6%)

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT B-4032	= 0.150 MILE
LENGTH OF STRUCTURE TIP PROJECT B-4032	= 0.018 MILE
TOTAL LENGTH OF TIP PROJECT B-4032	= 0.168 MILE

PLANS PREPARED FOR THE NCDOT BY:

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
**JANUARY 19, 2007**

LETTING DATE:  
**JUNE 17, 2008**

**JEFFREY W. MOORE, PE**  
PROJECT ENGINEER

**J. JASON PACE, PE**  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

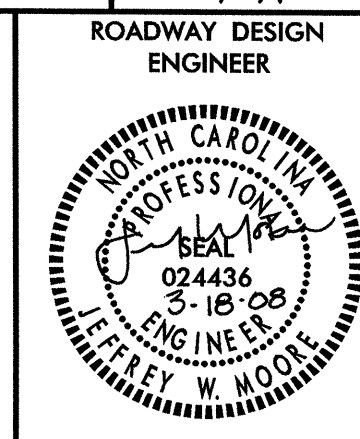
**ROADWAY DESIGN ENGINEER**

Seals and signatures for the Hydraulics Engineer and Roadway Design Engineer.

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

Seal of the State of North Carolina and the Division of Highways.

STATE HIGHWAY DESIGN ENGINEER



33399.3.1 (B-4032)  
 BUNCOMBE COUNTY

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2 THRU 2-A	TYPICAL SECTIONS, PAVEMENT SCHEDULE, AND MISCELLANEOUS DETAILS
2-B	DETOUR PLAN SHEET
2-C	ANCHORAGE FOR FRAMES
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF DRAINAGE QUANTITIES
3-B	SUMMARY OF GUARDRAIL, SUMMARY OF PAVEMENT REMOVAL, AND EARTHWORK SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TCP-1 THRU TCP-5	TRAFFIC CONTROL PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
AF-1	BEFORE STATE LOT
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS SECTION SUMMARY SHEET
X-1 THRU X-12	CROSS SECTIONS
S-1 THRU S-22	STRUCTURE PLANS

GENERAL NOTES: 2006 SPECIFICATIONS  
 EFFECTIVE: 07-18-06  
 REVISED: 07-18-06

GRADE LINE:  
 GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED 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  
 BELLSOUTH  
 PROGRESS ENERGY  
 ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

2006 ROADWAY STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
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
300.01	Method of Pipe Installation - Method 'A'
310.10	Driveway Pipe Construction
422.10	Reinforced Bridge Approach Fills
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
654.01	Pavement Repairs
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.24	Frames and Narrow Slot Sag Grates
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
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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



Note: Not to Scale

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. B-4032	SHEET NO. I-B
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# 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	⑫③
Existing Fence Line	× × ×
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-----
Proposed Wetland Boundary	-----
Existing High Quality Wetland Boundary	-----
Existing Endangered Animal Boundary	-----
Existing Endangered Plant Boundary	-----

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or UG Tank Cap	○
Sign	○
Well	⊕
Small Mine	⊗
Foundation	□
Area Outline	□
Cemetery	⊕
Building	□
School	⊕
Church	⊕
Dam	⊕

### HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
River Basin Buffer	-----
Flow Arrow	←
Disappearing Stream	-----
Spring	○
Swamp Marsh	-----
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	-----

### ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----
Proposed Slope Stakes Fill	-----
Proposed Wheel Chair Ramp	-----
Curb Cut for Future Wheel Chair Ramp	-----
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	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	-----
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	⊗
UG Power Cable Hand Hole	⊕
H-Frame Pole	●
Recorded UG Power Line	-----
Designated UG Power Line (S.U.E.*)	-----

### TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	⊕
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
UG Telephone Cable Hand Hole	⊕
Recorded UG Telephone Cable	-----
Designated UG Telephone Cable (S.U.E.*)	-----
Recorded UG Telephone Conduit	-----
Designated UG Telephone Conduit (S.U.E.*)	-----
Recorded UG Fiber Optics Cable	-----
Designated UG Fiber Optics Cable (S.U.E.*)	-----

### WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded UG Water Line	-----
Designated UG Water Line (S.U.E.*)	-----
Above Ground Water Line	-----

### TV:

TV Satellite Dish	⊕
TV Pedestal	⊕
TV Tower	⊗
UG TV Cable Hand Hole	⊕
Recorded UG TV Cable	-----
Designated UG TV Cable (S.U.E.*)	-----
Recorded UG Fiber Optic Cable	-----
Designated UG Fiber Optic Cable (S.U.E.*)	-----

### GAS:

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

### SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
UG Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

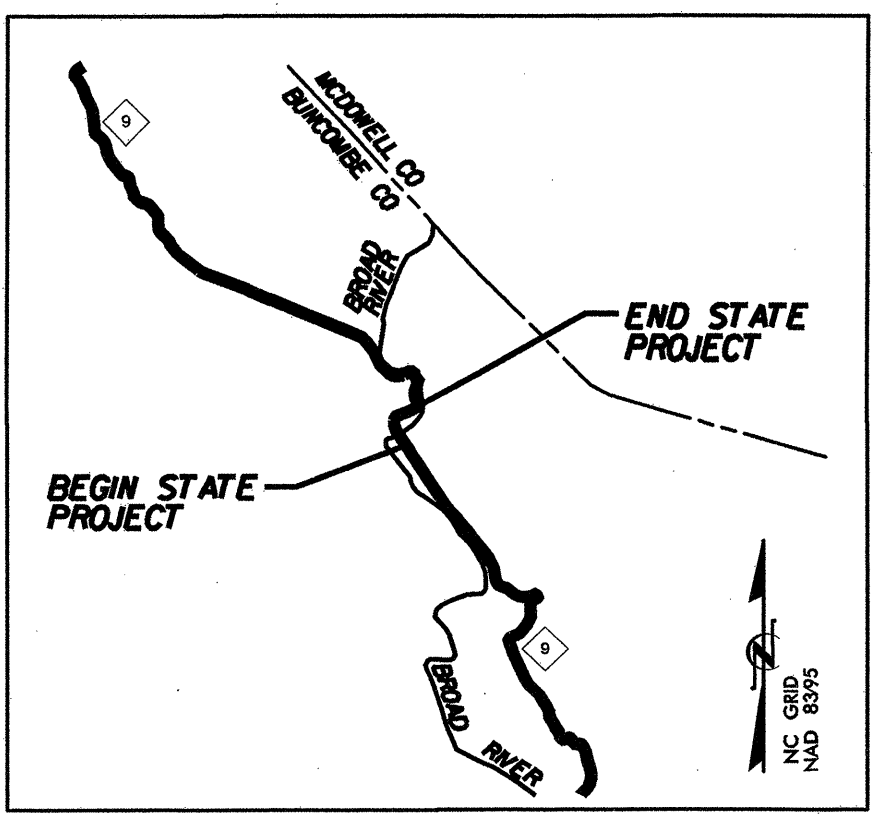
### MISCELLANEOUS:

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

R:\01036118\Roadway\Proj\04032\_rdy\_1shdgn

3/7/2008

# SURVEY CONTROL SHEET B-4032



VICINITY MAP  
DRAWING NOT TO SCALE

**DATUM DESCRIPTION**  
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4032-1" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 671584.6150(ft) EASTING: 1029131.1770(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999576905 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4032-1" TO -L- STATION 10+00.00 IS N 33°55'07" W 1374.67' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

**NCDOT GPS STA B4032-2  
LOCALIZED PROJECT COORDINATES**

N = 672740.8292  
E = 1028334.6943

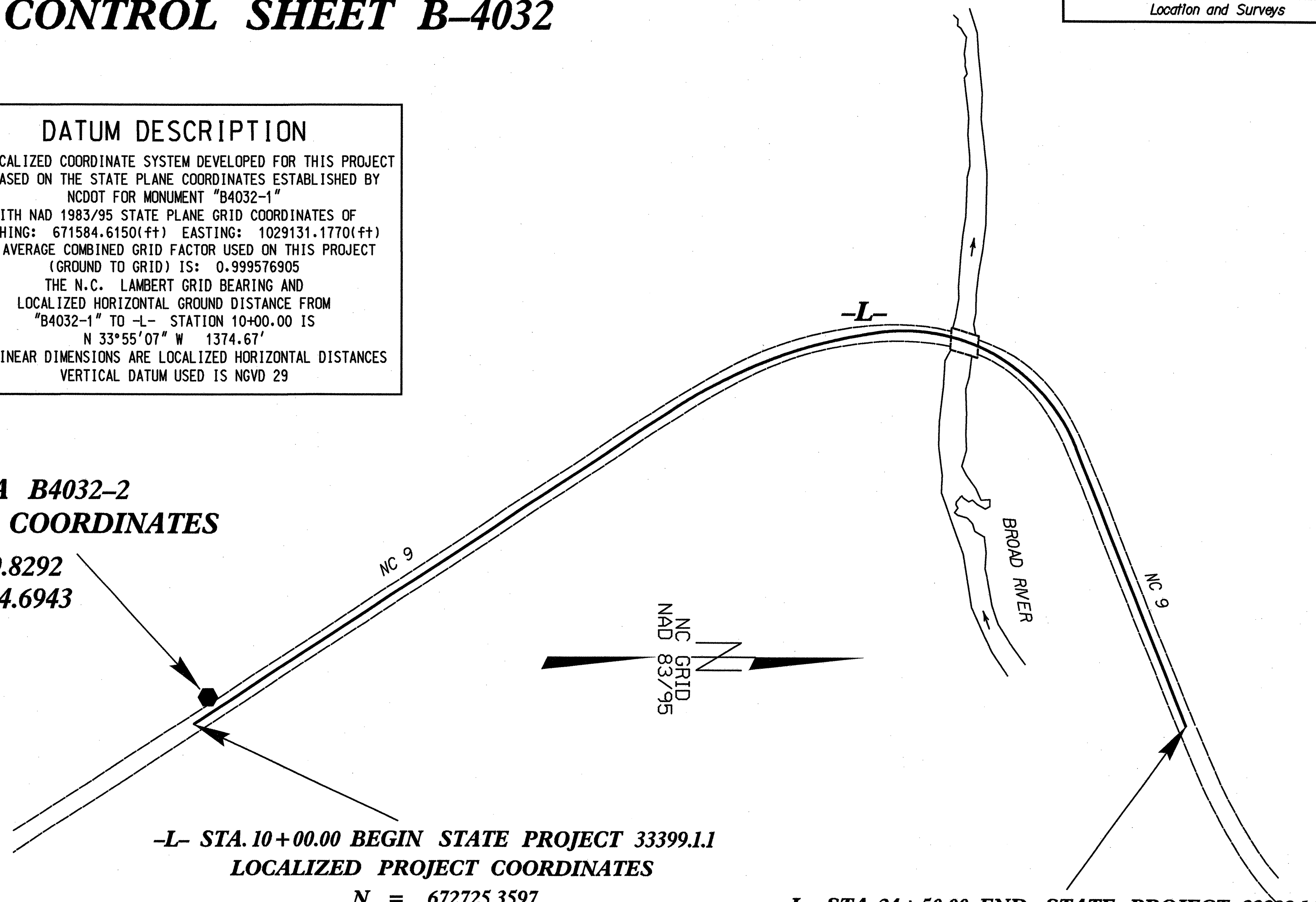
**NOTES:**

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/)

THE FILES TO BE FOUND ARE AS FOLLOWS:  
 B4032\_LS\_CONTROL\_060321.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 33399.1.1  
LOCALIZED PROJECT COORDINATES**

N = 672725.3597  
E = 1028364.0887

**-L- STA. 24+50.00 END STATE PROJECT 33399.1.1  
LOCALIZED PROJECT COORDINATES**

N = 673799.0353  
E = 1028362.5631

**NCDOT GPS STA B4032-1  
LOCALIZED PROJECT COORDINATES**

N = 671584.6150  
E = 1029131.1770

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
GPS2		GPS STA B4032-2	672740.8292	1028334.6943	2379.22	10+29.10	16.02 LT
1			673253.3858	1028000.2580	2382.87	16+40.62	13.37 LT
2			673534.9780	1027928.4649	2388.77	19+27.55	11.82 LT
3			673665.5006	1028067.5398	2394.94	21+26.48	15.12 RT
4			673781.1986	1028359.9846	2411.84	24+41.02	15.62 RT
5			673934.6771	1028590.1212	2428.07		OUTSIDE PROJECT LIMITS

.....

BM1	ELEVATION - 2382.56
N 673264	E 1027991
L STATION 16+54 16 LEFT	
CHISELED SQUARE SW CORNER OF HEADWALL	
.....	
BM2	ELEVATION - 2389.03
N 673395	E 1027978
L STATION 17+81 24 RIGHT	
SPIKE IN BASE 23 INCH LOCUST	
.....	
BM3	ELEVATION - 2391.41
N 673572	E 1027943
L STATION 19+65 8 LEFT	
BRASS DISK TVA - LHT 1835	
.....	
BM4	ELEVATION - 2426.19
N 673835	E 1028349
L STATION 24+50	
N 20° 33' 16.5" W DIST	38.68
SPIKE IN BASE 10 INCH OAK	
.....	

NOTE: DRAWING NOT TO SCALE





Kimley-Horn  
and Associates, Inc.

P.O. BOX 33068  
RALEIGH, N.C. 27636-3068

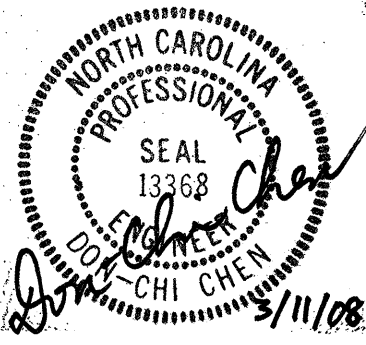
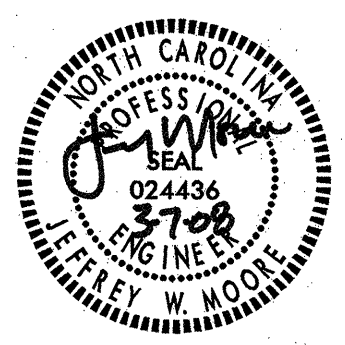
PROJECT REFERENCE NO.

B-4032

SHEET NO.

2

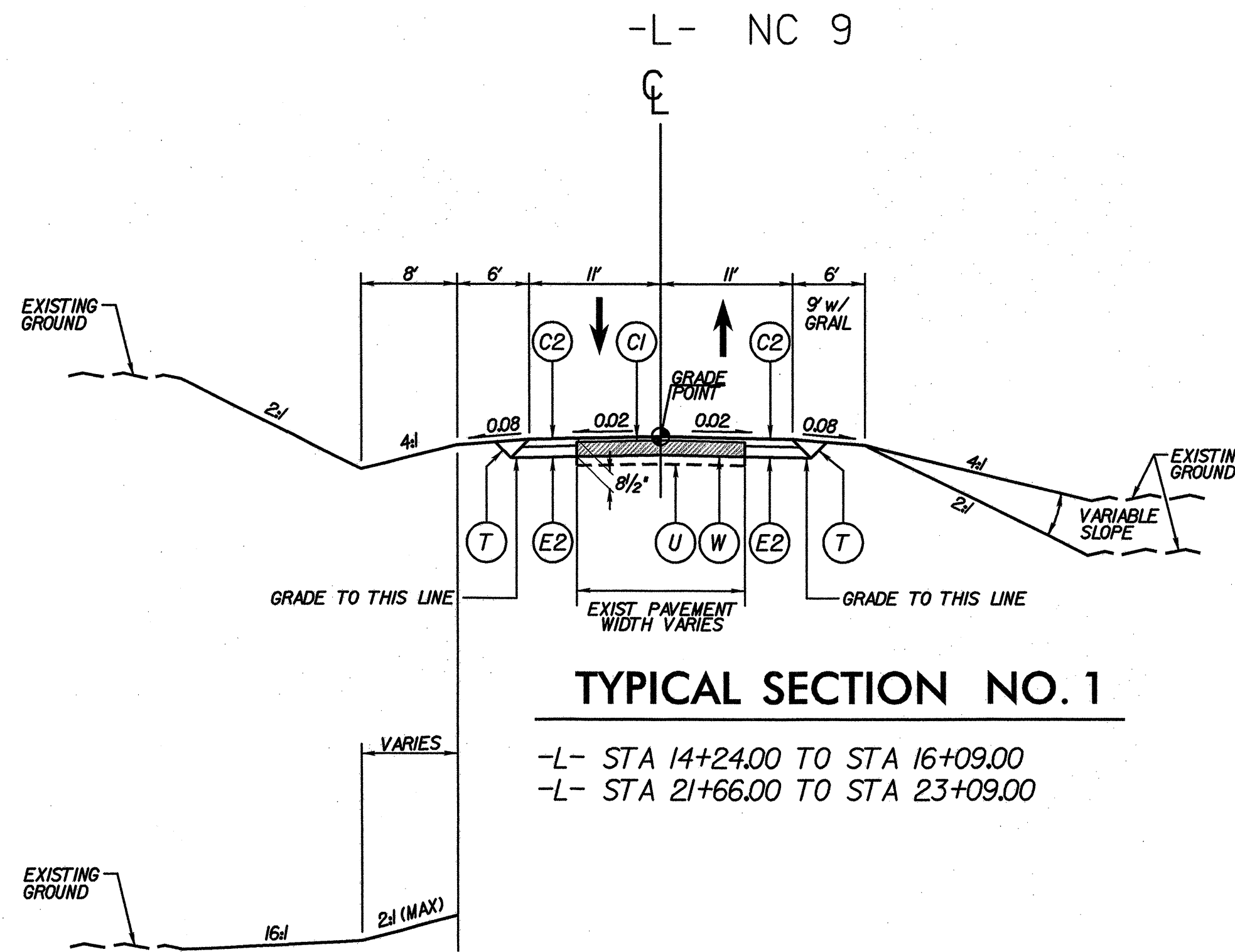
ROADWAY DESIGN  
ENGINEER



### PAVEMENT SCHEDULE

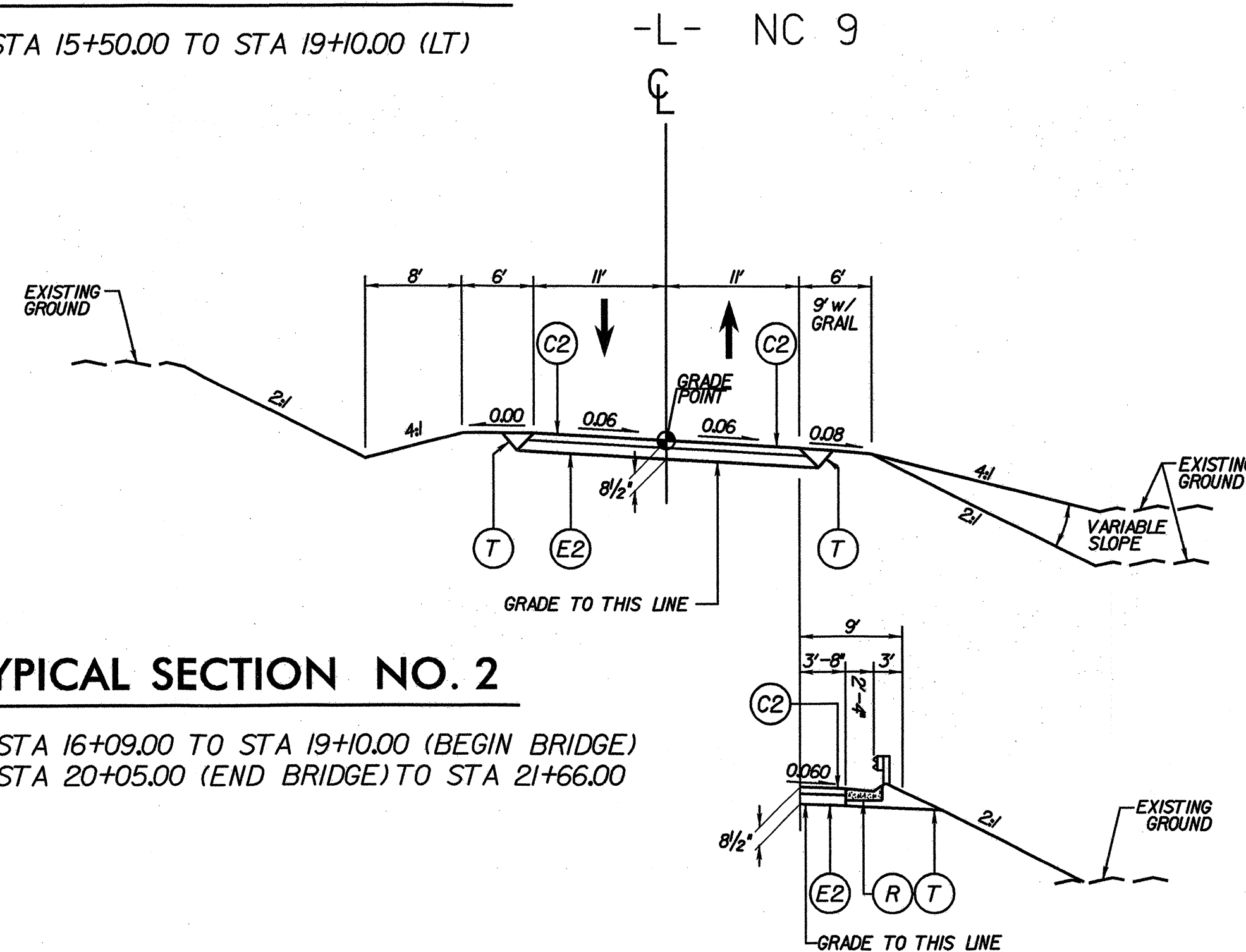
<b>C1</b>	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
<b>C2</b>	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
<b>C3</b>	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1/2" IN DEPTH OR GREATER THAN 2" IN DEPTH.
<b>E1</b>	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
<b>E2</b>	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
<b>E3</b>	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" OR GREATER THAN 5 1/2" DEPTH.
<b>R</b>	PROPOSED SHOULDER BERM GUTTER
<b>T</b>	EARTH MATERIAL
<b>U</b>	EXISTING PAVEMENT
<b>W</b>	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL WITH THIS SHEET)

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE INDICATED



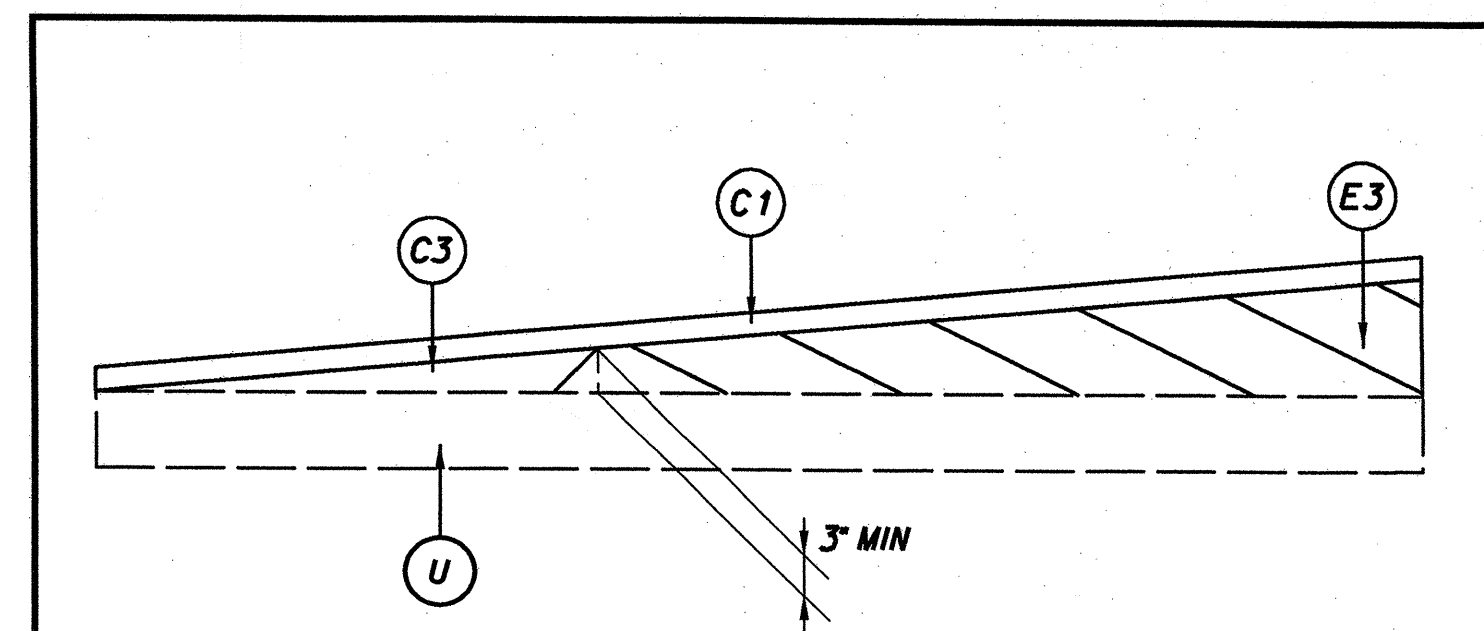
### TYPICAL SECTION NO. 1A

-L- STA 15+50.00 TO STA 19+10.00 (LT)



### TYPICAL SECTION NO. 2A

-L- STA 18+5.00 TO STA 18+95.00 (RT)



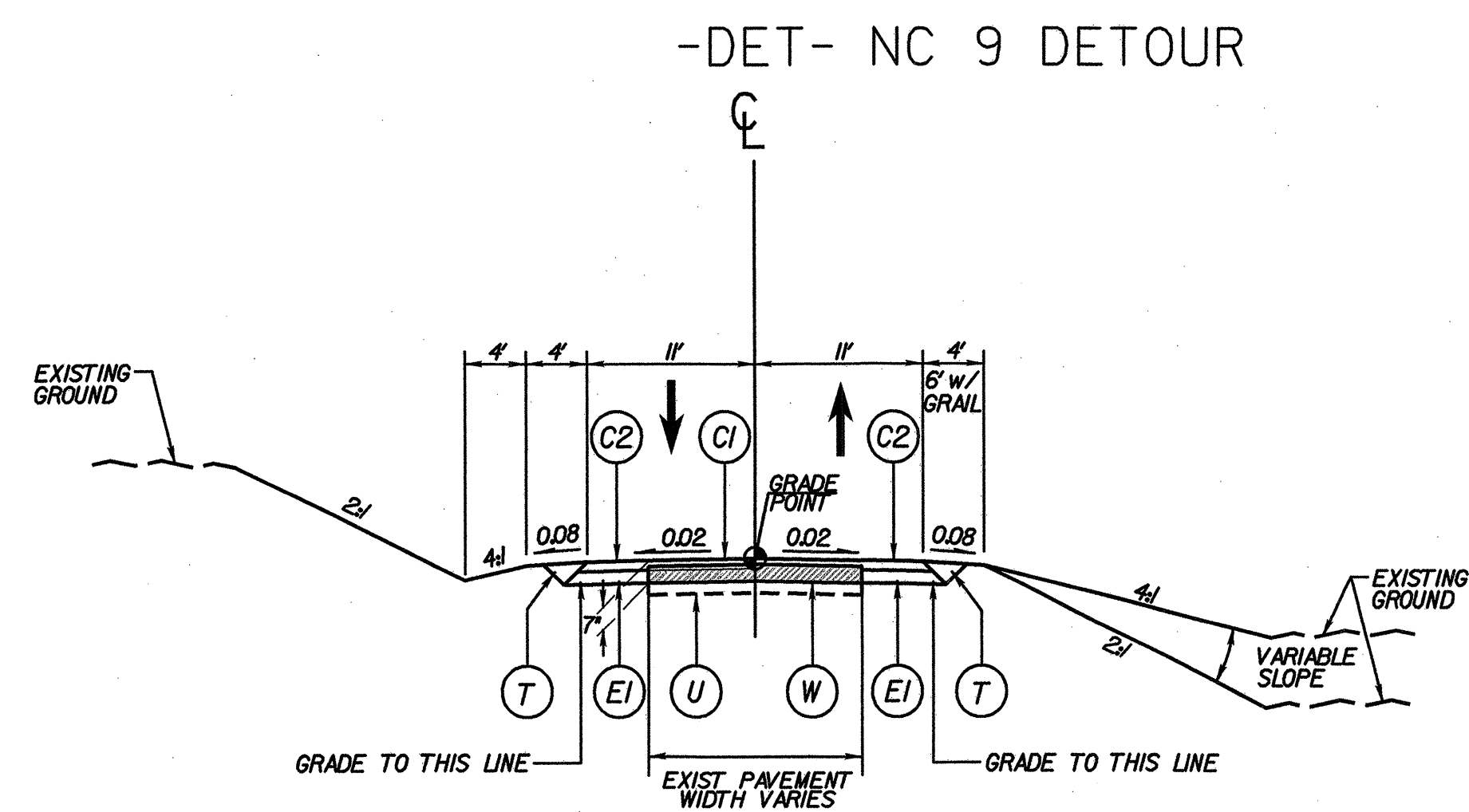
DETAIL W/ SHOWING METHOD OF WEDGING



Kimley-Horn  
and Associates, Inc.

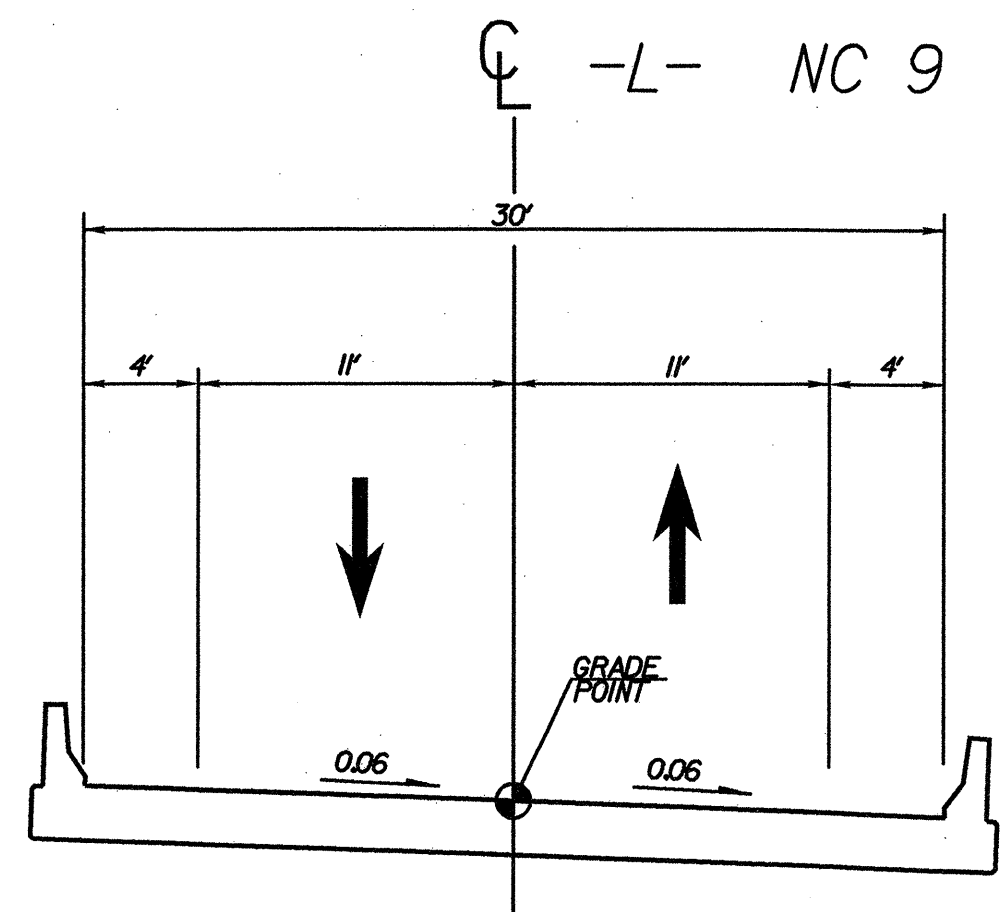
P.O. BOX 33068  
RALEIGH, N.C. 27636-3068

PROJECT REFERENCE NO. B-4032	SHEET NO. 2-A
ROADWAY DESIGN ENGINEER	



**TYPICAL SECTION NO. 3**

-DET- STA 14+24.00 TO STA 15+39.00  
-DET- STA 22+94.00 TO STA 23+93.00

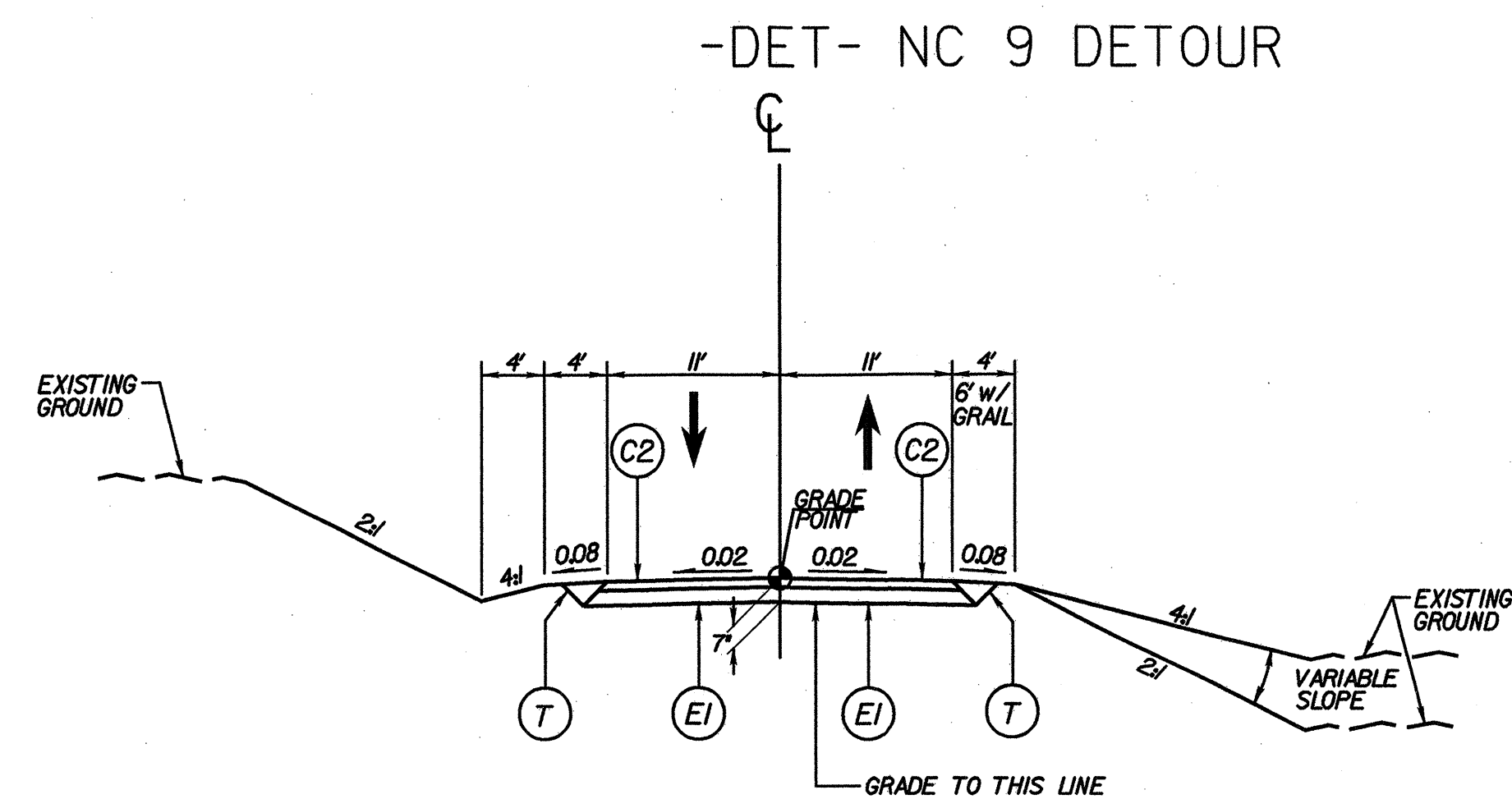


**BRIDGE TYPICAL SECTION NO. 1**

**PAVEMENT SCHEDULE**

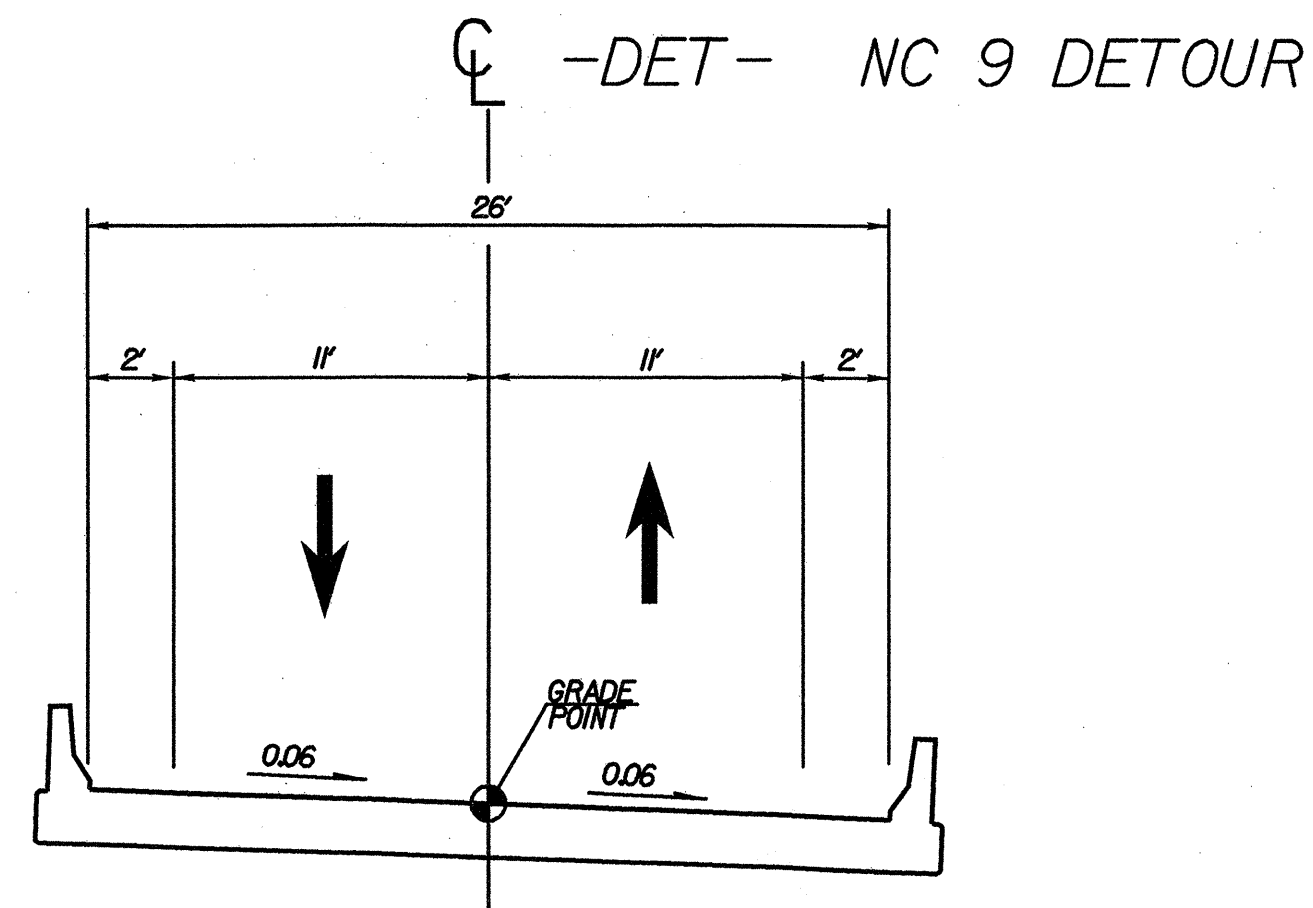
C1	1 1/2" S9.5B
C2	3" S9.5B
EI	4" B25.0B
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT

PAVEMENT EDGE SLOPES ARE 1/4  
UNLESS OTHERWISE INDICATED



**TYPICAL SECTION NO. 4**

-DET- STA 15+39.00 TO STA 19+54.00 (BEGIN BRIDGE)  
-DET- STA 20+14.00 (END BRIDGE) TO STA 22+94.00



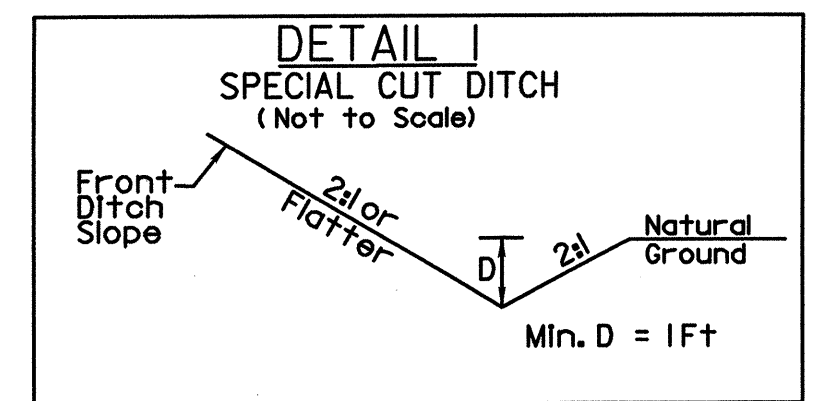
**BRIDGE TYPICAL SECTION NO. 2**

**DESIGN DATA**

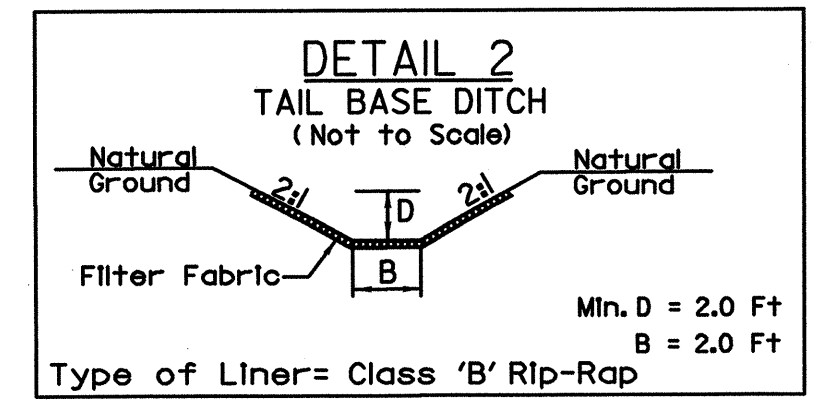
- ADT 2008 = 1,100 VPD
- ADT 2030 = 1,900 VPD
- DHV = 12%
- D = 60%
- TTST = 2%
- DUAL = 6%
- V = 35 mph



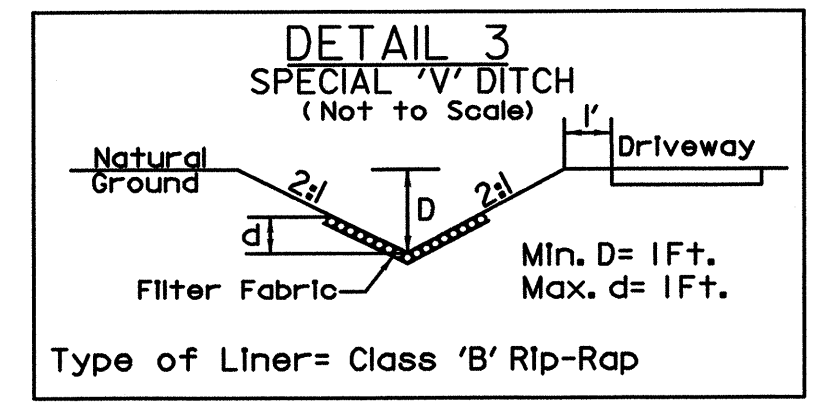
PROJECT REFERENCE NO. B-4032		SHEET NO. 2-B
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
P.O. BOX 33068 RALEIGH, N.C. 27636-3068		
RIGHT-OF-WAY REV.		
CONST. REV.		



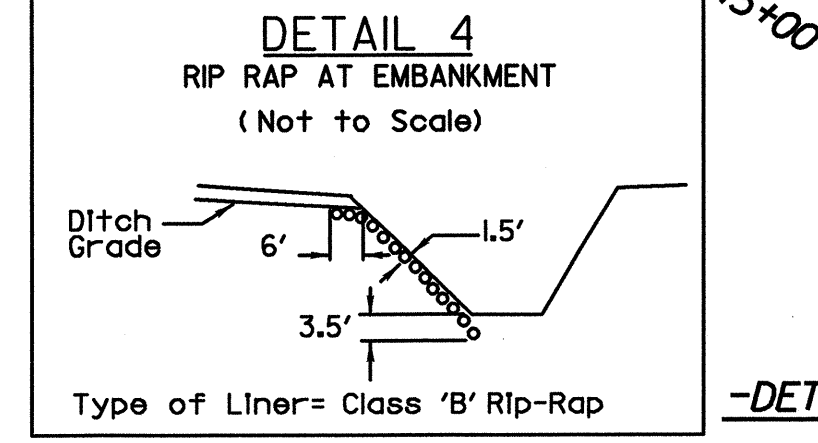
- DET- STA 14+24 TO STA 15+50 (RT)
- DET- STA 15+50 TO STA 16+58 (RT)
- DET- STA 16+58 TO STA 17+58 (RT)
- DET- STA 16+60 TO STA 17+75 (RT)
- DET- STA 18+50 TO STA 19+62 (RT)
- DET- STA 20+15 TO STA 21+50 (RT)



Type of LIner= Class 'B' Rip-Rap  
-DET- STA 19+90 TO 20+08 (LT)



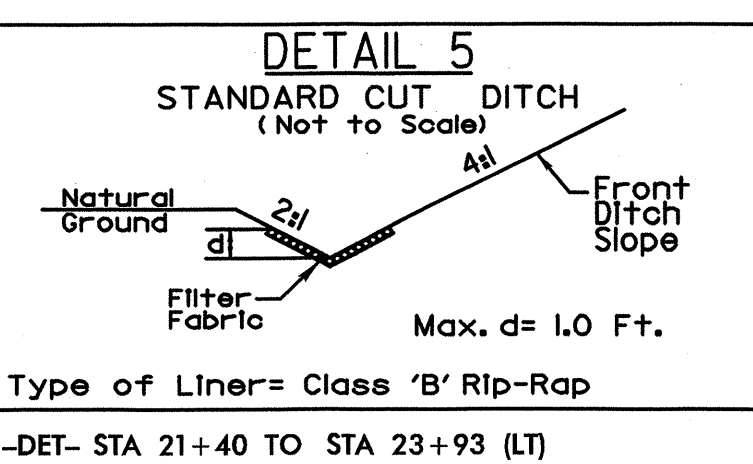
Type of LIner= Class 'B' Rip-Rap  
-DET- STA 20+16 TO STA 21+40 (LT)



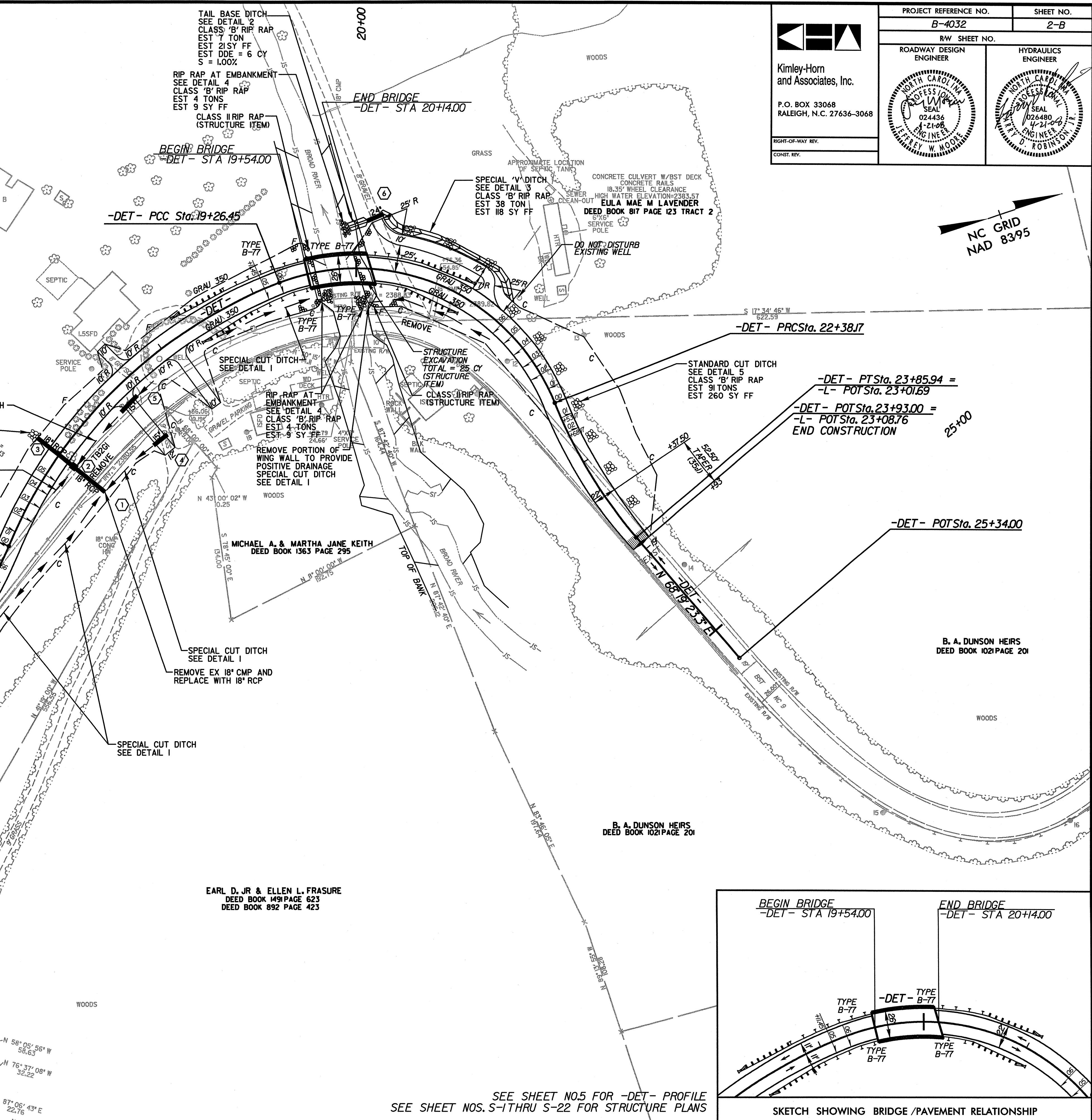
Type of LIner= Class 'B' Rip-Rap  
-DET- STA 19+62 (RT)  
-DET- STA 19+90 (LT)  
-DET- STA 20+15 (RT)

**-DET-**

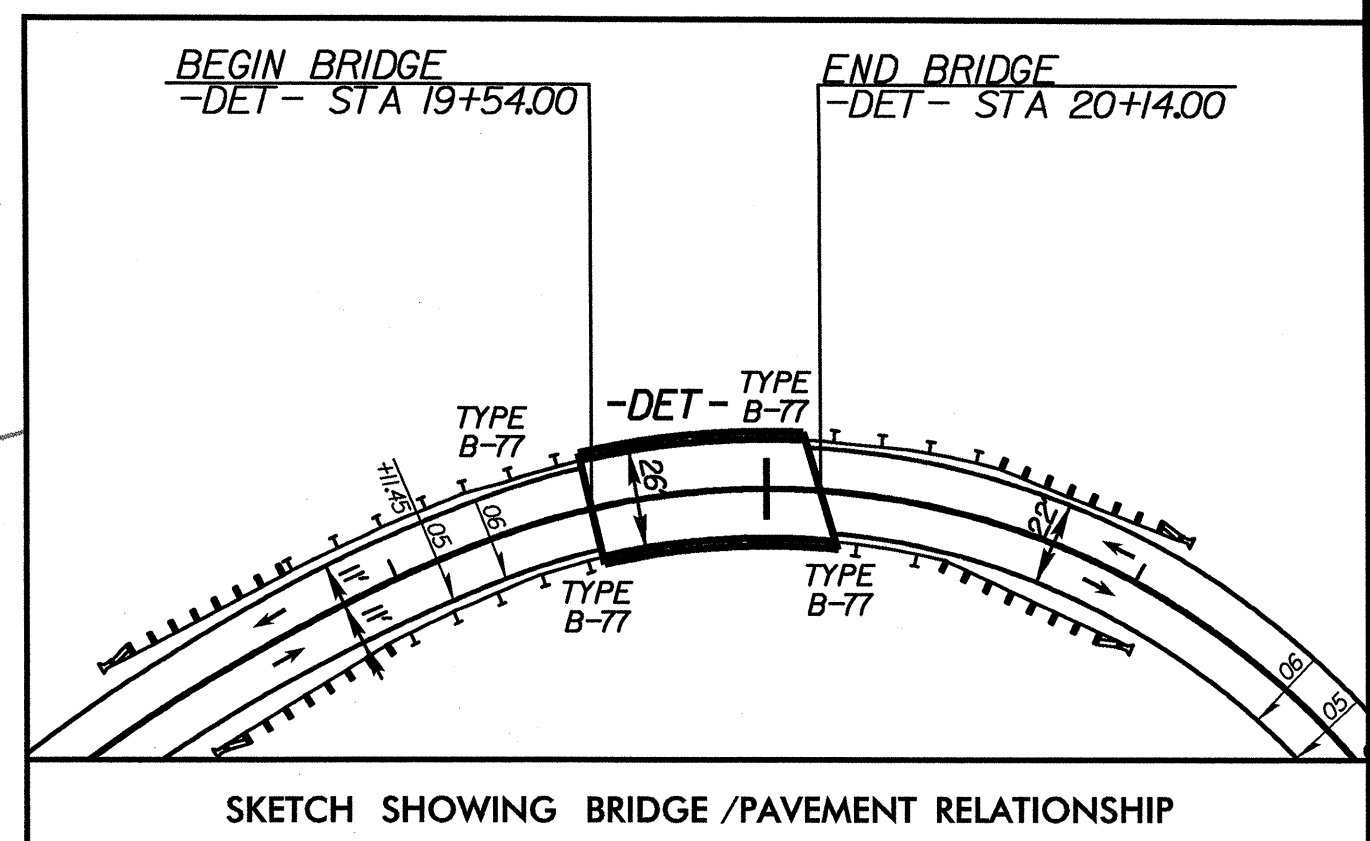
PI Sta 15+05.30 Δ = 14' 56" 51.2" (LT) D = 12' 43" 56.6" L = 117.40' T = 59.03' R = 450.00' SE = 0.02 RO = SEE PLAN	PI Sta 17+55.57 Δ = 46' 11" 28.4" (RT) D = 12' 43" 56.6" L = 362.78' T = 191.90' R = 450.00' SE = 0.05 RO = 75'
PI Sta 21+24.02 Δ = 89' 18" 01.3" (RT) D = 28' 38" 52.4" L = 311.72' T = 197.57' R = 200.00' SE = 0.06 RO = 90'	PI Sta 23+12.72 Δ = 18' 48" 52.4" (LT) D = 12' 43" 56.6" L = 147.77' T = 74.56' R = 450.00' SE = 0.02 RO = SEE PLAN



Type of LIner= Class 'B' Rip-Rap  
-DET- STA 21+40 TO STA 23+93 (LT)



NC GRID  
NAD 8395



SEE SHEET NO.5 FOR -DET- PROFILE  
SEE SHEET NOS. S-1 THRU S-22 FOR STRUCTURE PLANS

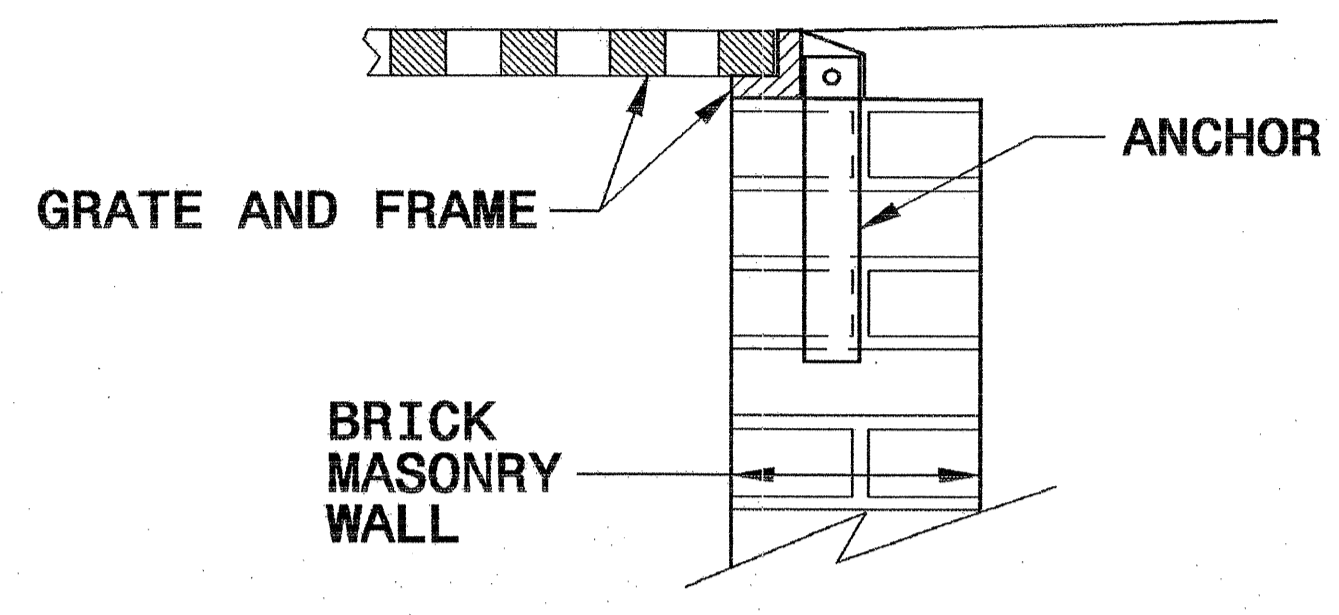
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4/21/2008



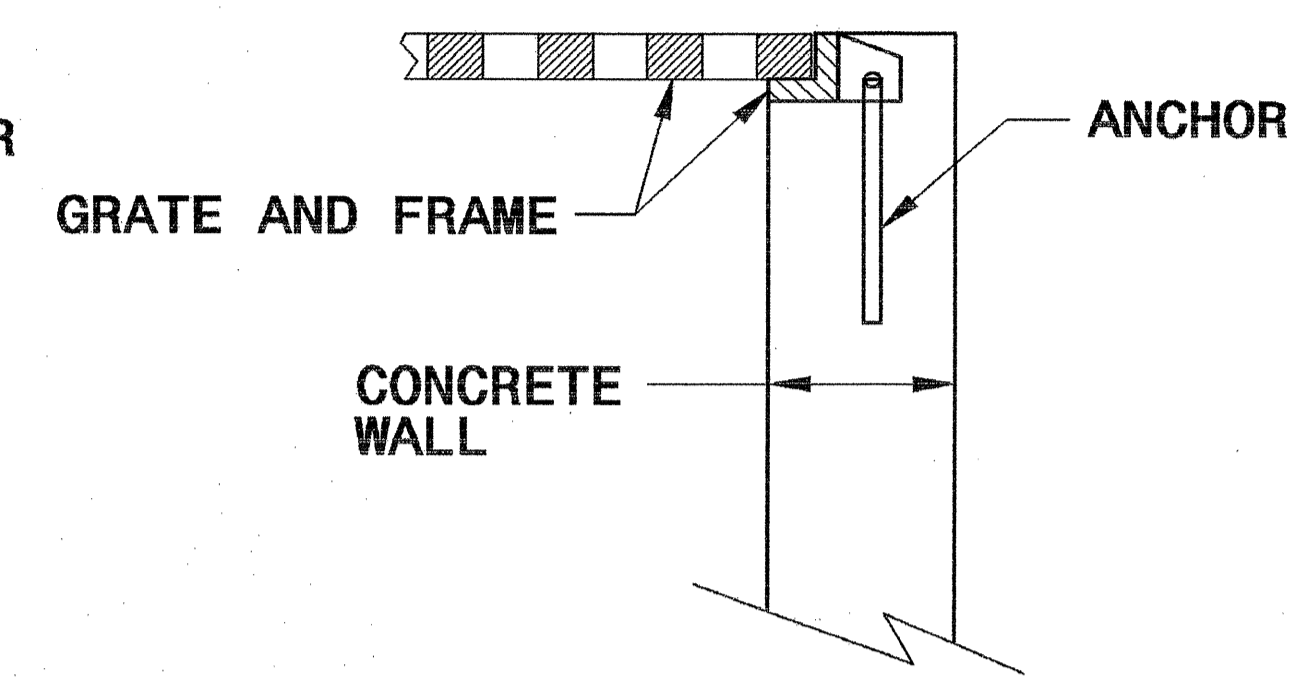
STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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

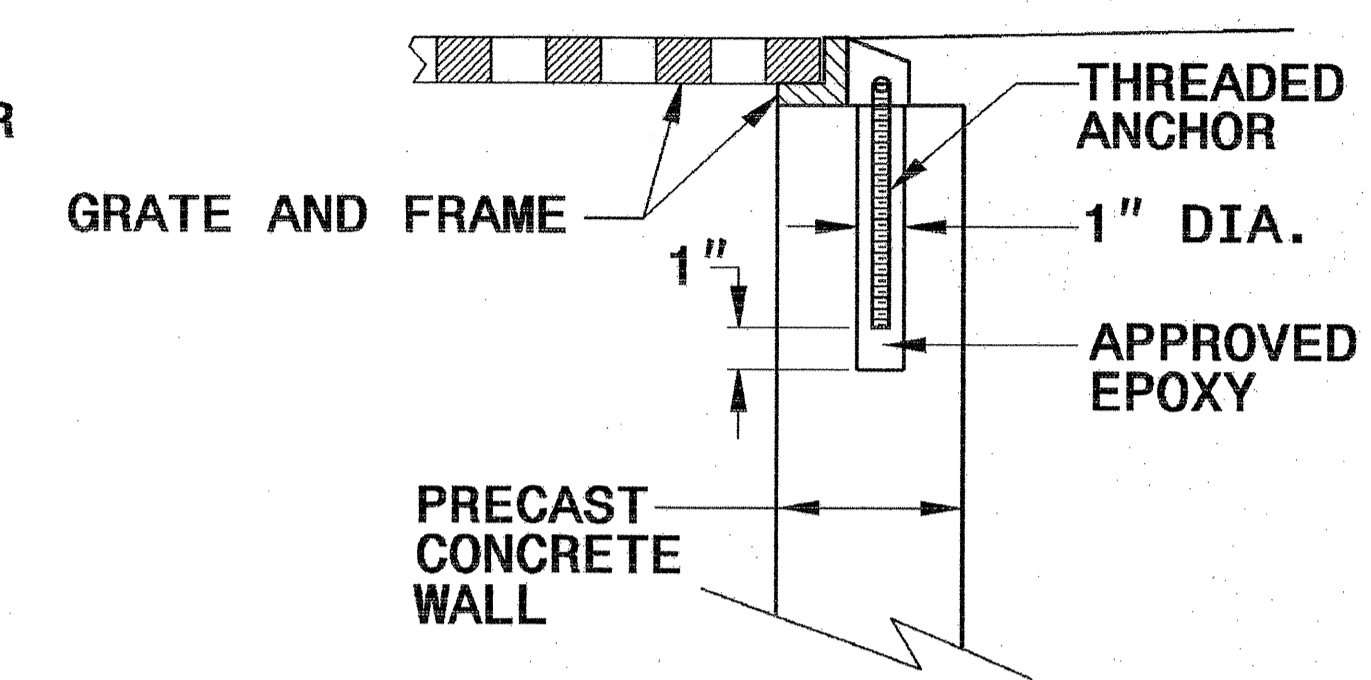
SHEET 1 OF 1  
**840D25**



**BRICK MASONRY  
CONSTRUCTION**



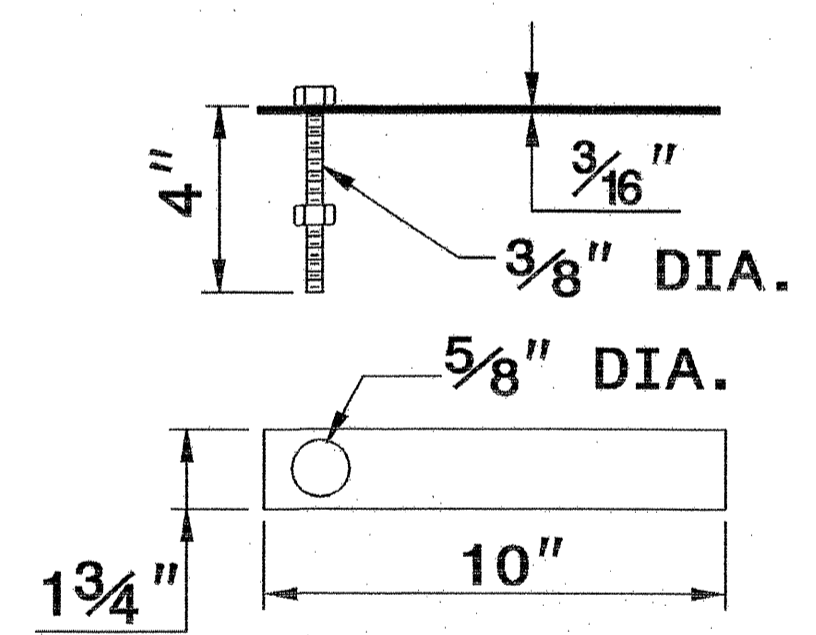
**CONCRETE  
CONSTRUCTION**



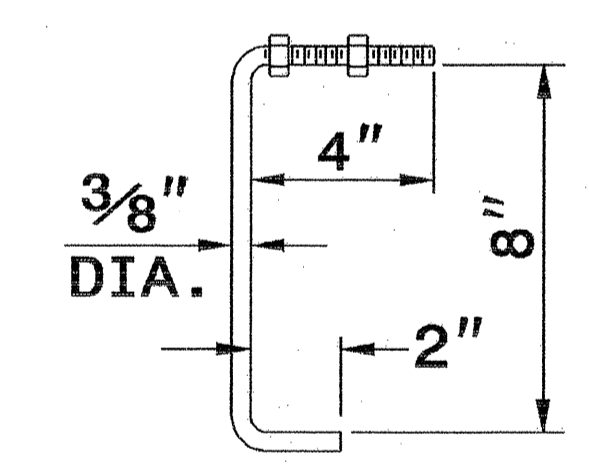
**PRECAST CONCRETE  
CONSTRUCTION**

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

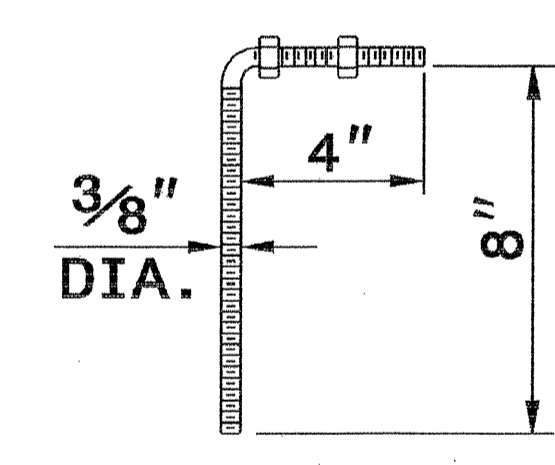
NOTE:  
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL  
OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



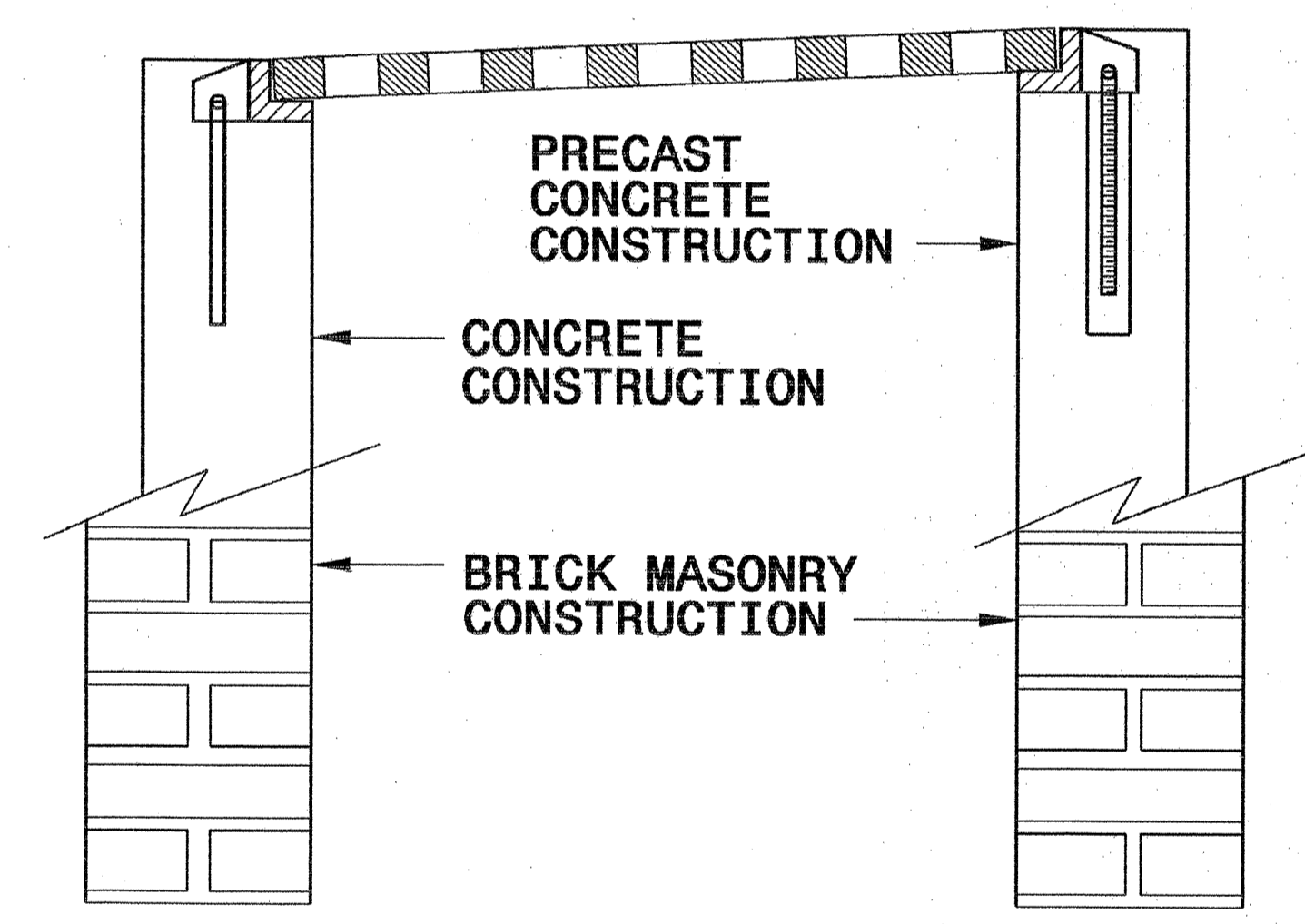
**MASONRY ANCHOR**  
3/8" DIA. BOLT WITH PLATE



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



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



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

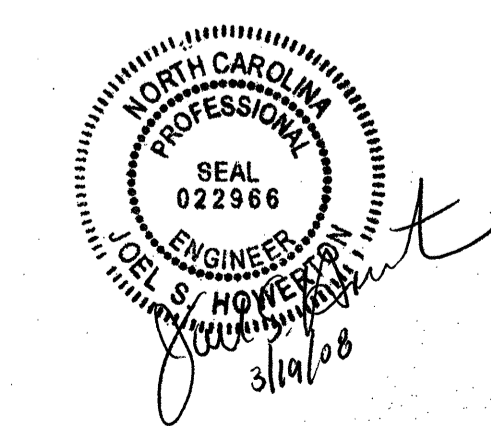
STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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

SHEET 1 OF 1  
**840D25**

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27-SEP-2006 08:59 S:\Contracts\031\Projects\Special Details\enward\stds\06 Stds to Special Details\840D25 Anchorage for Frames\0840d25.dgn enward 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.:



# STATE OF NORTH CAROLINA

## DIVISION OF HIGHWAYS

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201849

Item Number	Sec #	Quantity	Unit	Description
000010000-N	800	Lump Sum		MOBILIZATION
001500000-N	205	1	EA	SEALING ABANDONED WELLS
002900000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (19+57.50 -L-)
004300000-N	226	Lump Sum		GRADING
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
005700000-E	226	20	CY	UNDERCUT EXCAVATION
008000000-E	SP	500	TON	CLASS IV SUBGRADE STABILIZATION
013400000-E	240	10	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	31	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
034300000-E	310	56	LF	15" SIDE DRAIN PIPE
034500000-E	310	116	LF	24" SIDE DRAIN PIPE
036600000-E	310	8	LF	15" RC PIPE CULVERTS, CLASS III
037200000-E	310	104	LF	18" RC PIPE CULVERTS, CLASS III
099500000-E	340	132	LF	PIPE REMOVAL
122000000-E	545	25	TON	INCIDENTAL STONE BASE
148900000-E	610	780	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
151900000-E	610	690	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
156000000-E	620	75	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
169300000-E	654	25	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
200000000-N	806	17	EA	RIGHT OF WAY MARKERS
202200000-E	815	224	CY	SUBDRAIN EXCAVATION
203300000-E	815	168	CY	SUBDRAIN FINE AGGREGATE
204400000-E	815	1,000	LF	6" PERFORATED SUBDRAIN PIPE
205500000-E	815	30	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
206600000-N	815	2	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
207700000-E	815	12	LF	6" OUTLET PIPE (SUBDRAINS)
225300000-E	840	1	CY	PIPE COLLARS
228600000-N	840	2	EA	MASONRY DRAINAGE STRUCTURES
236600000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.24
236700000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.29
255600000-E	846	80	LF	SHOULDER BERM GUTTER
303000000-E	862	100	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
338000000-E	862	200	LF	TEMPORARY STEEL BM GUARDRAIL
338700000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE ***** TEMPORARY (B-77)
338910000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 TEMPORARY
364900000-E	876	225	TON	RIP RAP, CLASS B
365600000-E	876	925	SY	FILTER FABRIC FOR DRAINAGE
440000000-E	1110	90	SF	WORK ZONE SIGNS (STATIONARY)
440500000-E	1110	100	SF	WORK ZONE SIGNS (PORTABLE)
441000000-E	1110	80	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
443000000-N	1130	80	EA	DRUMS
443500000-N	1135	80	EA	CONES
444500000-E	1145	64	LF	BARRICADES (TYPE III)
445500000-N	1150	50	MD	FLAGGER
465000000-N	1251	100	EA	TEMPORARY RAISED PAVEMENT MARKERS

Item Number	Sec #	Quantity	Unit	Description
468500000-E	1205	1,800	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
468600000-E	1205	1,800	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
481000000-E	1205	15,200	LF	PAINT PAVEMENT MARKING LINES (4")
490500000-N	1253	25	EA	SNOWPLOWABLE PAVEMENT MARKERS
600000000-E	1605	1,000	LF	TEMPORARY SILT FENCE
600600000-E	1610	150	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	210	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	105	TON	SEDIMENT CONTROL STONE
601500000-E	1615	3	ACR	TEMPORARY MULCHING
601800000-E	1620	150	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	1.5	TON	FERTILIZER FOR TEMPORARY SEEDING
602900000-E	SP	275	LF	SAFETY FENCE
603000000-E	1630	525	CY	SILT EXCAVATION
603600000-E	1631	725	SY	MATTING FOR EROSION CONTROL
603700000-E	SP	20	SY	COIR FIBER MAT
604200000-E	1632	150	LF	1/4" HARDWARE CLOTH
607103000-E	SP	200	LF	COIR FIBER BAFFLES
607105000-E	SP	3	EA	*** SKIMMER (1-1/2")
608400000-E	1660	3.5	ACR	SEEDING & MULCHING
608700000-E	1660	2	ACR	MOWING
609000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
609300000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
609600000-E	1662	75	LB	SEED FOR SUPPLEMENTAL SEEDING
610800000-E	1665	2.25	TON	FERTILIZER TOPDRESSING
611400000-N	SP	2	HR	SPECIALIZED HAND MOWING
611700000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL
612300000-E	1670	0.25	ACR	REFORESTATION



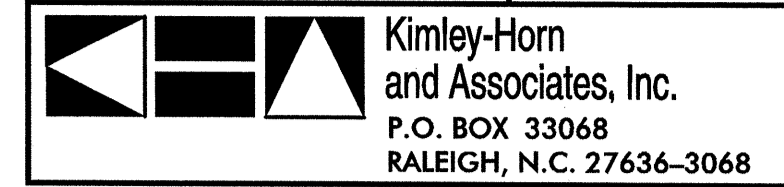


COMPUTED BY: J.J.PACE DATE: 3/6/08  
 CHECKED BY: J.W.MOORE DATE: 3/7/08

# STATE OF NORTH CAROLINA

## DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. B-4032 SHEET NO. 3-B



"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.  
 G = GATING IMPACT ATTENUATOR TYPE 350  
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

### GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS							IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE DETOUR GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS					
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE 350	AT-1	B-77	TEMP TYPE 350	TEMP AT-1	TEMP B-77	NO.	G	NG										
-DET-	18+22.75	19+54.00	LT	137.50				19+54.00	4	6		50		1					1		1											TEMPORARY GUARDRAIL	
-DET-	18+35.25	19+54.00	RT	125.00				19+54.00	4	6		50		1					1		1											TEMPORARY GUARDRAIL	
-DET-	20+09.48	21+03.23	RT	100.00				20+09.48	4	6		50		1					1		1											TEMPORARY GUARDRAIL	
-DET-	20+19.20	21+12.95	LT	100.00				20+19.20	4	6		50		1					1		1											TEMPORARY GUARDRAIL	
LESS ANCHOR DEDUCTIONS																																	
	TEMP GRAU 350	4 @ 50.00'	=	-200																													
	TEMP B-77	4 @ 18.75'	=	-75																													
			TOTAL SAY	187.50															4		4											TEMPORARY GUARDRAIL	
			TOTAL SAY	200																													TEMPORARY GUARDRAIL
-L-	18+10.00	19+10.00	RT	100.00				19+10.00	6	9		50		1					1		1												
-L-	18+41.25	19+10.00	LT	75.00				19+10.00	6	9		50		1					1		1												
-L-	20+00.48	20+81.73	LT	87.50				20+00.48	6	9		50		1					1		1												
-L-	20+10.29	21+04.04	RT	100.00				20+10.29	6	9		50		1					1		1												
LESS ANCHOR DEDUCTIONS																																	
	GRAU 350	4 @ 50.00'	=	-200																													
	B-77	4 @ 18.75'	=	-75																													
			TOTAL SAY	87.50																													
			TOTAL SAY	100															4		4												

ADDITIONAL GUARDRAIL POSTS = 5 EA

### SUMMARY OF EARTHWORK IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
SUMMARY 1					
-DET- STA 14+24.00 TO STA 19+54.00	233		1325	1092	
-L- STA 14+24.00 TO STA 19+10.00	684		1716	1032	
SUMMARY 1 TOTAL	917		3041	2124	
SUMMARY 2					
-DET- STA 20+14.00 TO STA 23+93.00	2173		240		1933
-L- STA 20+05.00 TO STA 23+09.00	132		705	573	
SUMMARY 2 TOTAL	2305		945	573	1933
TOTALS	3222		3986	2697	1933
EST LOSS DUE TO CLEARING AND GRUBBING	-315			315	
WASTE TO REPLACE TO BORROW				-1933	-1933
PROJECT TOTALS	2907		3986	1079	0
EST. FOR REPLACING TOPSOIL ON BORROW PITS				54	
GRAND TOTAL	2907			1133	
SAY	3000			1200	
ESTIMATED UNDERCUT = 20 CY					

LINE	STATION TO STATION	LOCATION	SQ. YDS.
-DET-	14+24 TO 19+39	L/RT	1000
-DET-	20+29 TO 23+93	L/RT	500
-L-	16+09 TO 19+39	L/RT	670
-L-	19+70 TO 21+66	L/RT	400
TOTAL			2570

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".

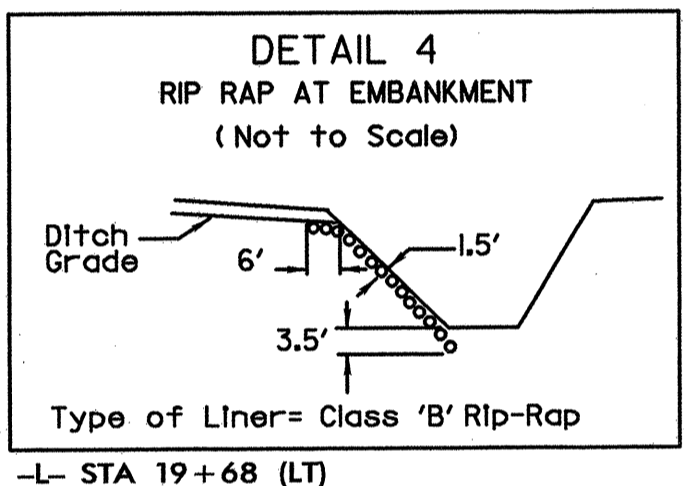
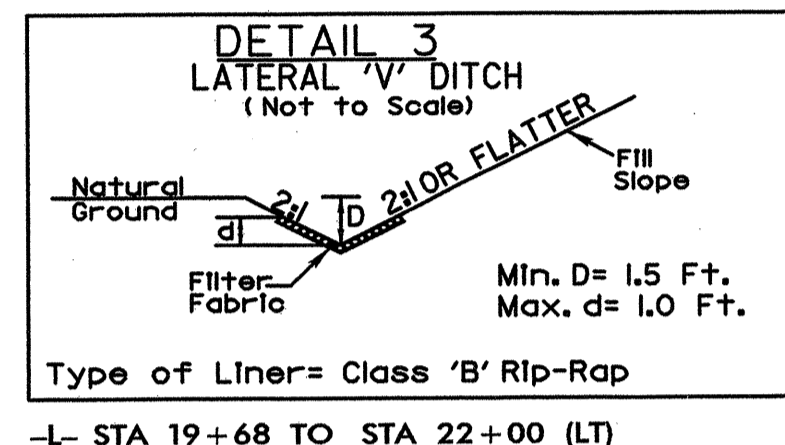
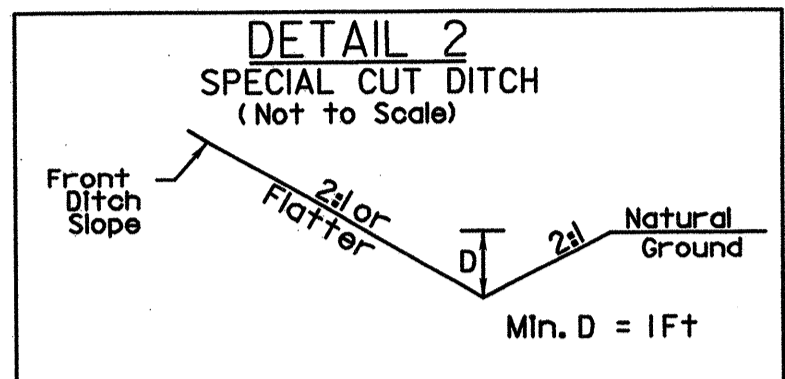
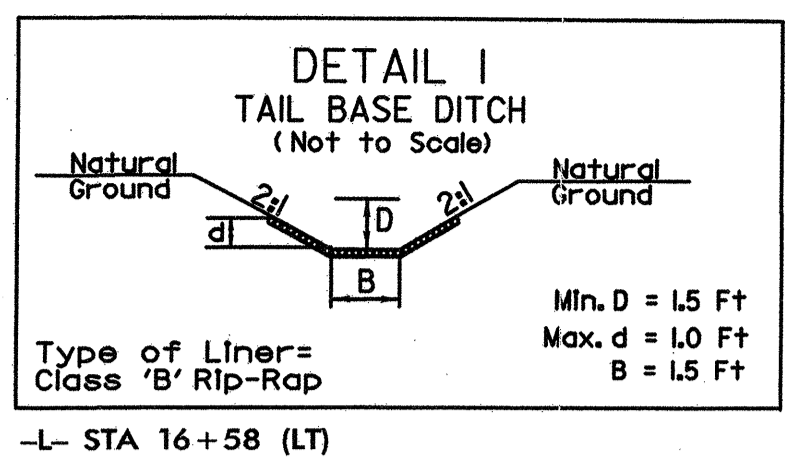
NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

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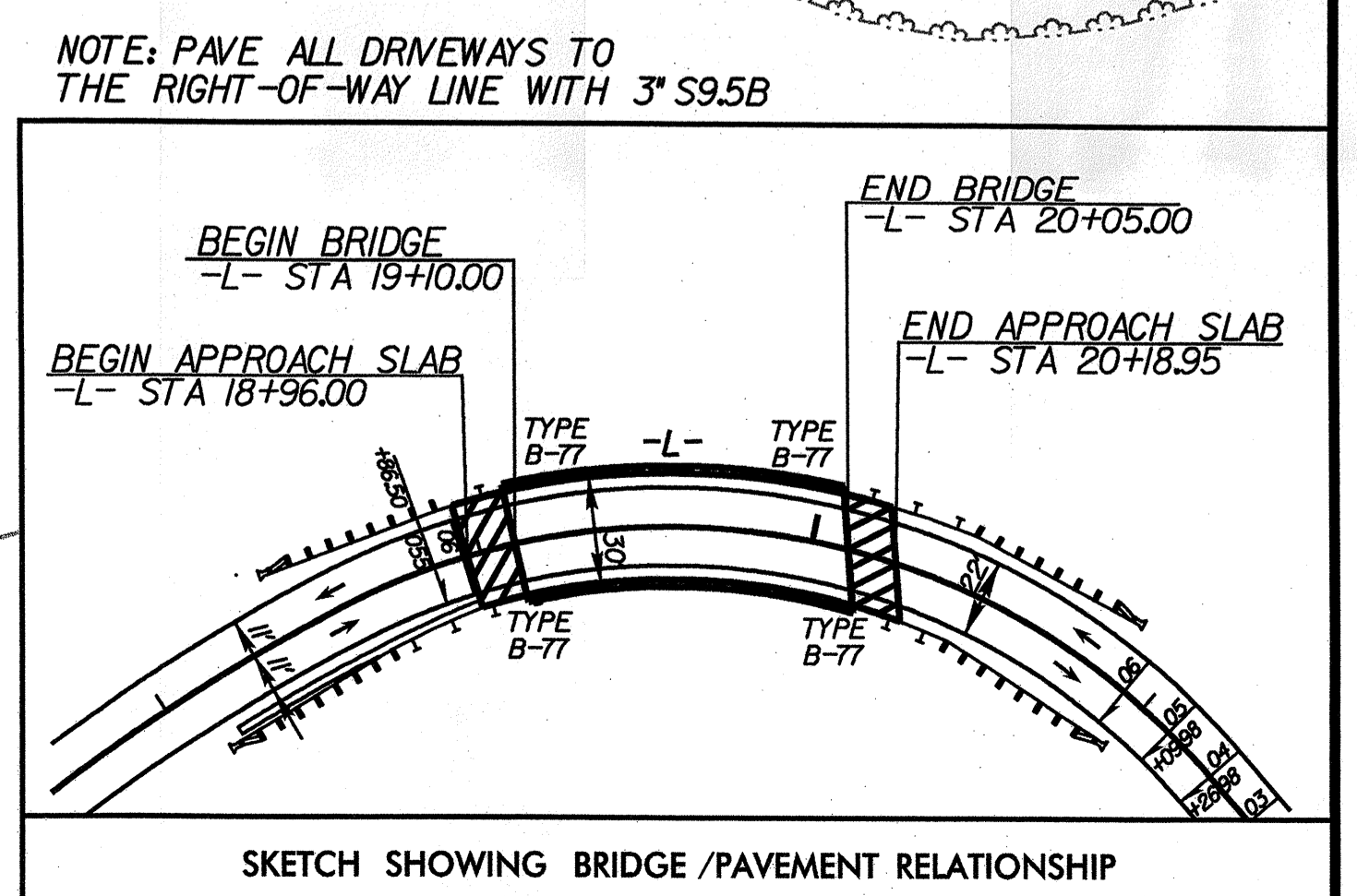
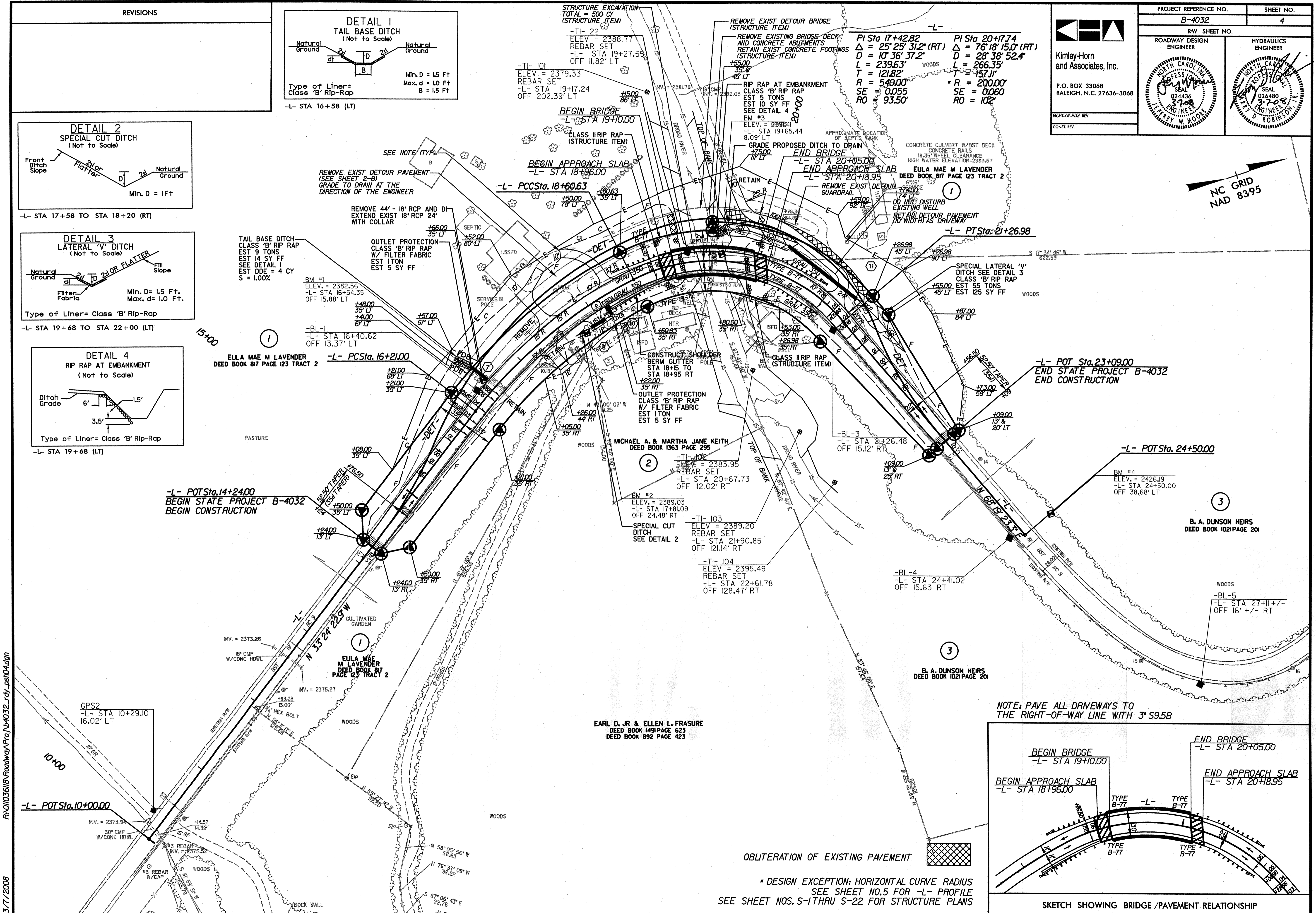
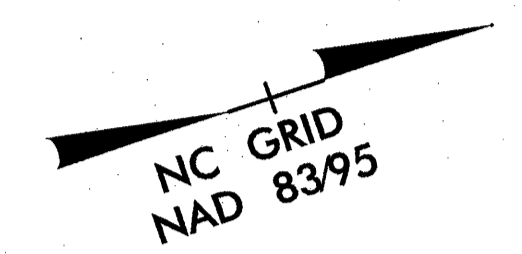
3/18/2008



REVISIONS



PROJECT REFERENCE NO. B-4032		SHEET NO. 4	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		SEAL	
Kimley-Horn and Associates, Inc.		SEAL	
P.O. BOX 33068 RALEIGH, N.C. 27636-3068		SEAL	
RIGHT-OF-WAY REV.		SEAL	
CONST. REV.		SEAL	

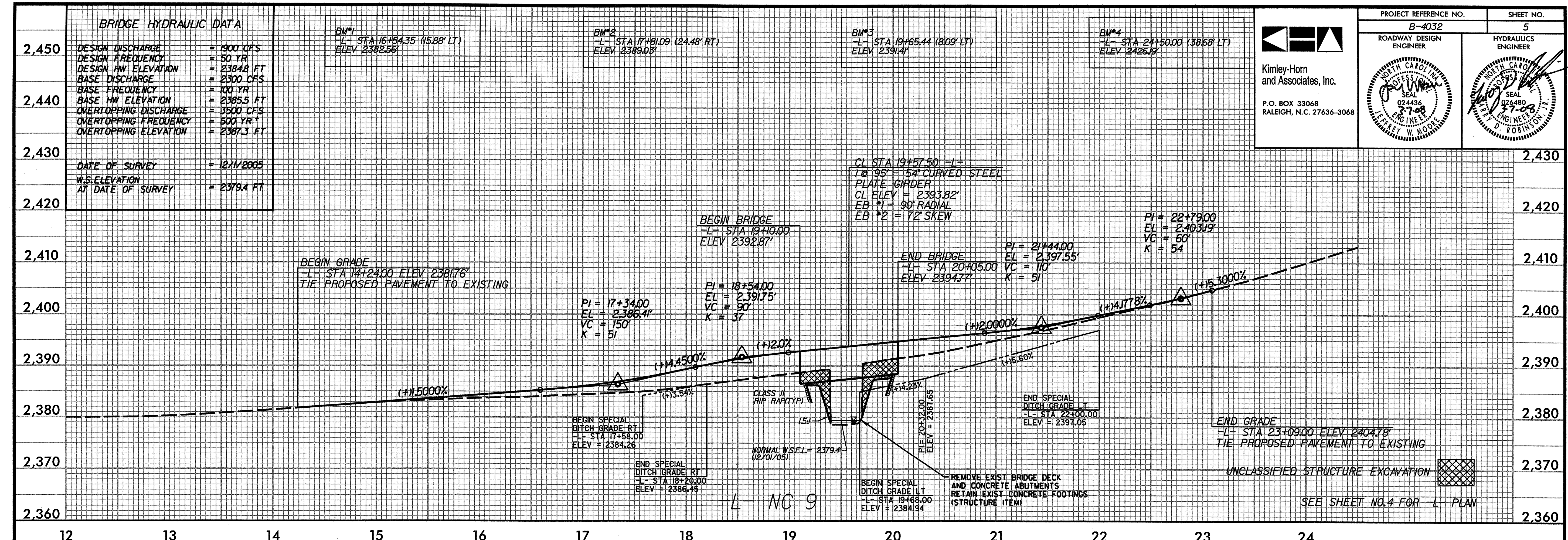


OBLITERATION OF EXISTING PAVEMENT

\* DESIGN EXCEPTION: HORIZONTAL CURVE RADIUS  
SEE SHEET NO.5 FOR -L- PROFILE  
SEE SHEET NOS. S-1 THRU S-22 FOR STRUCTURE PLANS

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3/7/2008





**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE	= 1900 CFS
DESIGN FREQUENCY	= 50 YR
DESIGN HW ELEVATION	= 2384.8 FT
BASE DISCHARGE	= 2300 CFS
BASE FREQUENCY	= 100 YR
BASE HW ELEVATION	= 2385.5 FT
OVERTOPPING DISCHARGE	= 3500 CFS
OVERTOPPING FREQUENCY	= 500 YR*
OVERTOPPING ELEVATION	= 2387.3 FT
DATE OF SURVEY	= 12/11/2005
W.S. ELEVATION AT DATE OF SURVEY	= 2379.4 FT

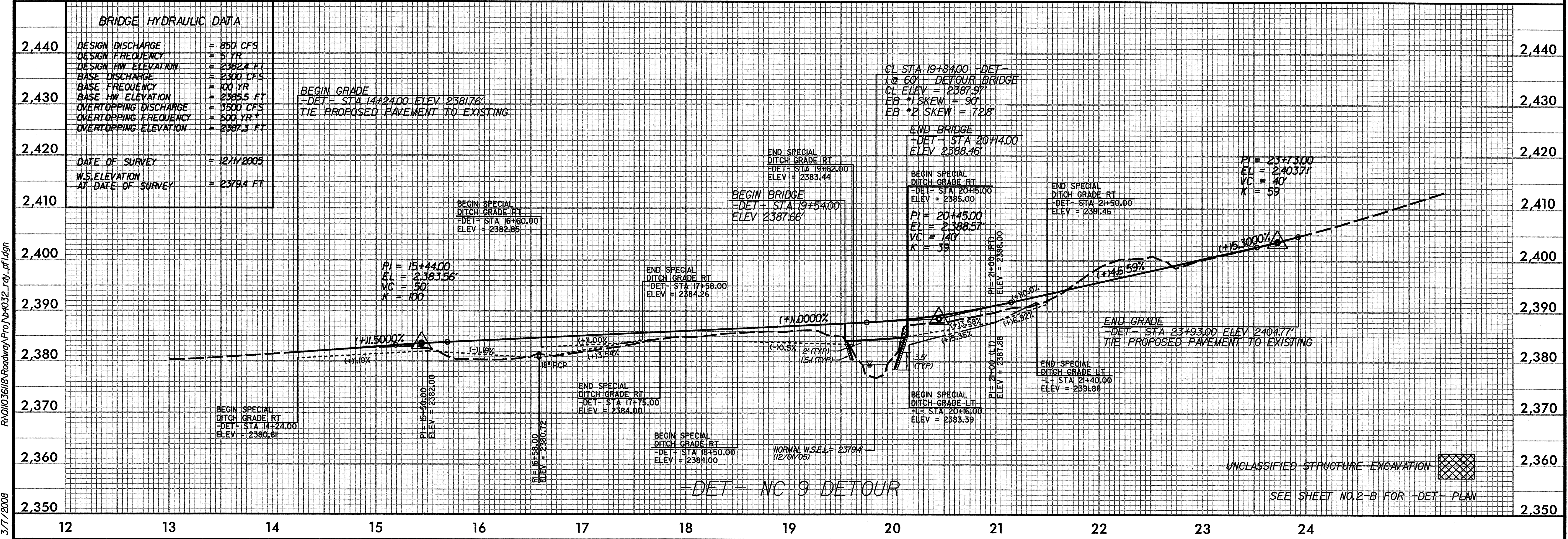
<b>BM#1</b> L- STA 16+54.35 (15.88' LT) ELEV 2382.56'	<b>BM#2</b> L- STA 17+81.09 (24.48' RT) ELEV 2389.03'	<b>BM#3</b> L- STA 19+65.44 (8.09' LT) ELEV 2391.41'	<b>BM#4</b> L- STA 24+50.00 (38.68' LT) ELEV 2426.19'
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PROJECT REFERENCE NO. B-4032 SHEET NO. 5

Roadway Design Engineer: *[Signature]*  
Hydraulics Engineer: *[Signature]*

Kimley-Horn and Associates, Inc.  
P.O. BOX 33068  
RALEIGH, N.C. 27636-3068

Professional Engineer Seal: *[Seal]*  
Professional Engineer Seal: *[Seal]*



**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE	= 850 CFS
DESIGN FREQUENCY	= 5 YR
DESIGN HW ELEVATION	= 2382.4 FT
BASE DISCHARGE	= 2300 CFS
BASE FREQUENCY	= 100 YR
BASE HW ELEVATION	= 2385.5 FT
OVERTOPPING DISCHARGE	= 3500 CFS
OVERTOPPING FREQUENCY	= 500 YR*
OVERTOPPING ELEVATION	= 2387.3 FT
DATE OF SURVEY	= 12/11/2005
W.S. ELEVATION AT DATE OF SURVEY	= 2379.4 FT

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3/7/2008