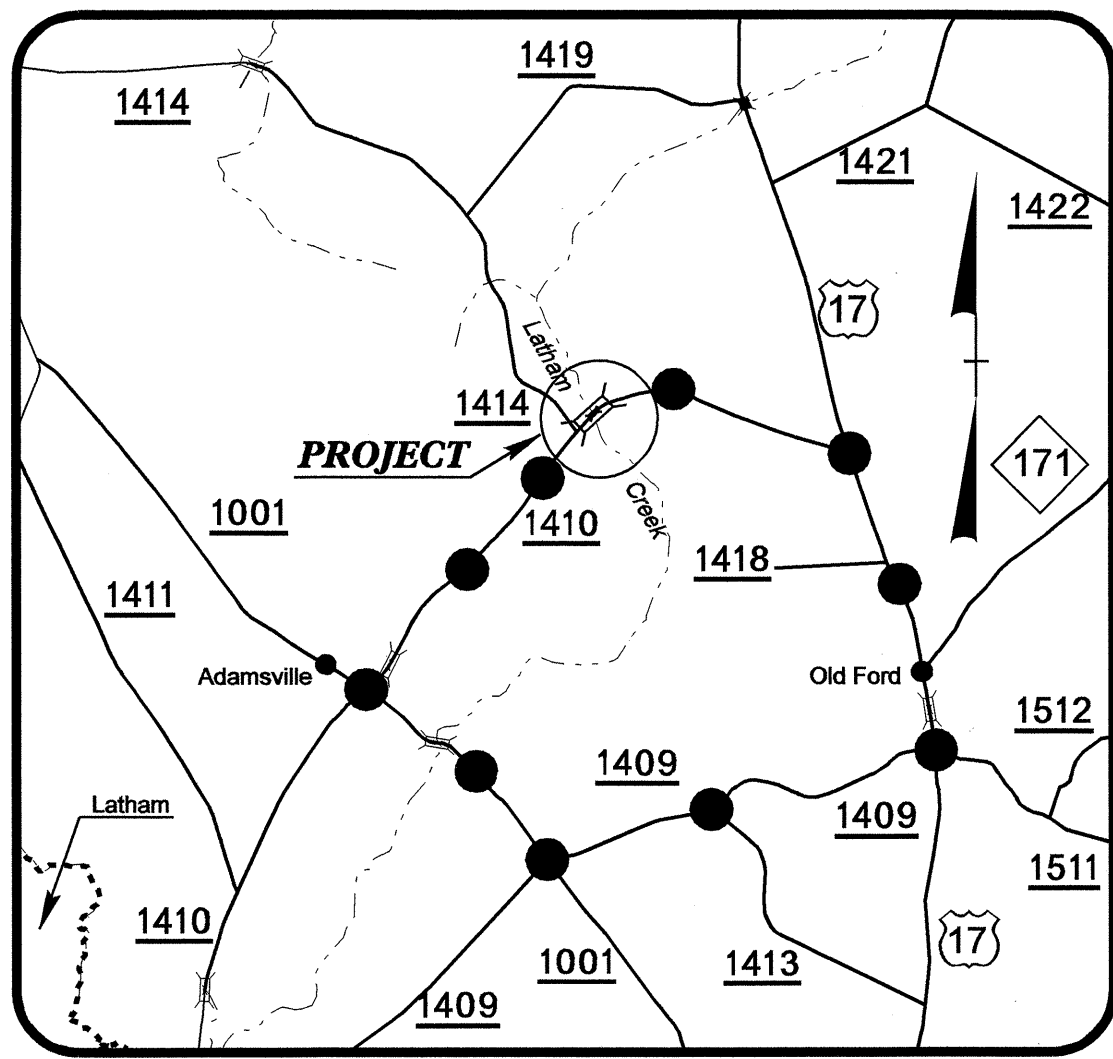


**TIP PROJECT: B-4021**

**CONTRACT: C201481**

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



**VICINITY MAP**

PROPOSED DETOUR ROUTE ●—●—●—●—●—

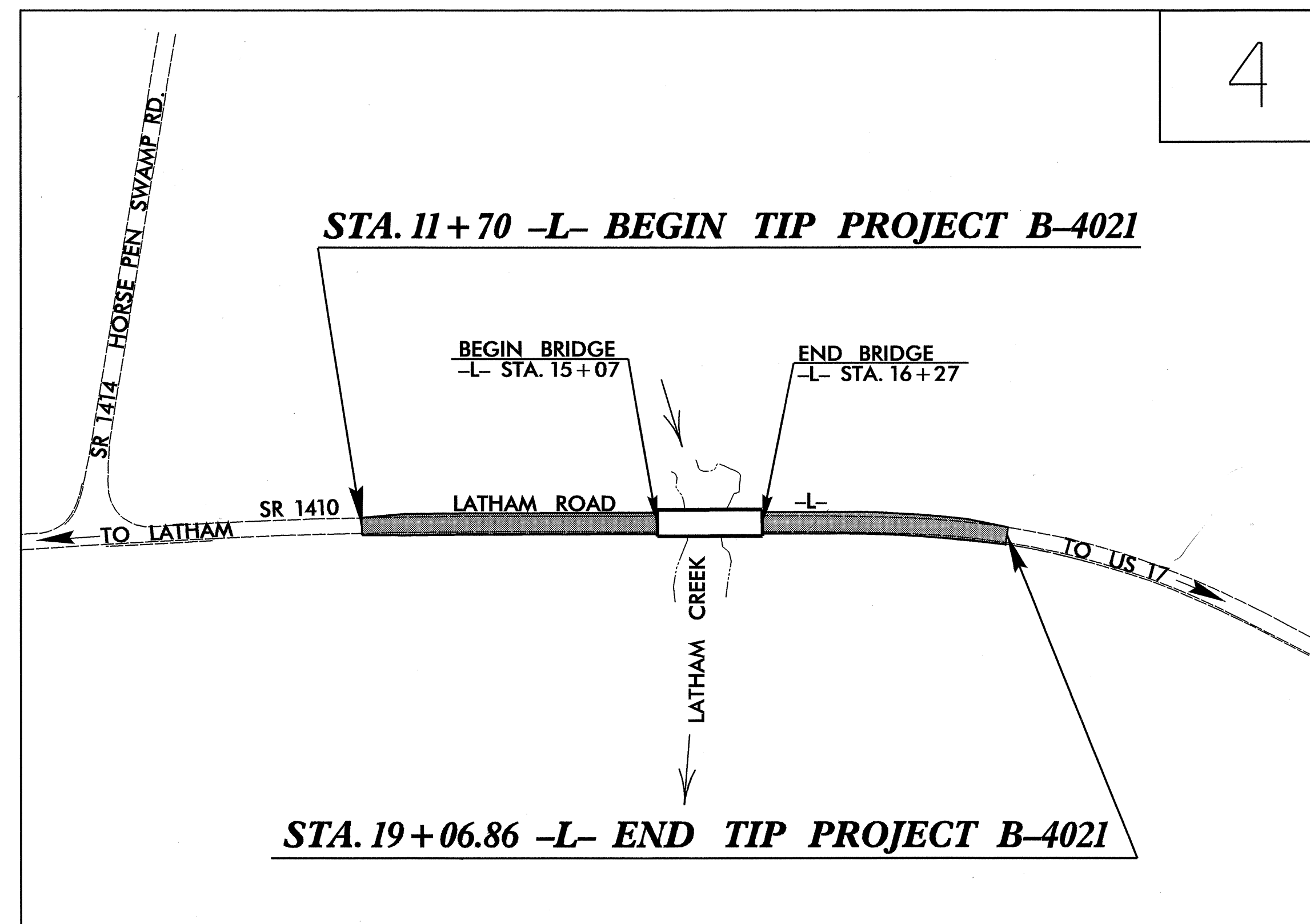
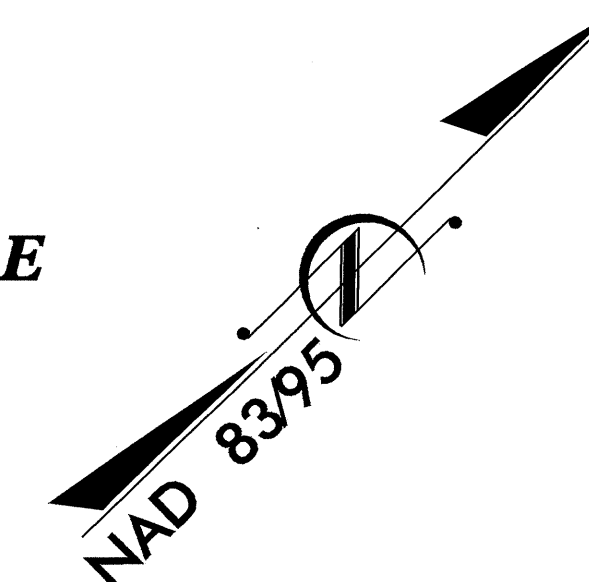
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**BEAUFORT COUNTY**

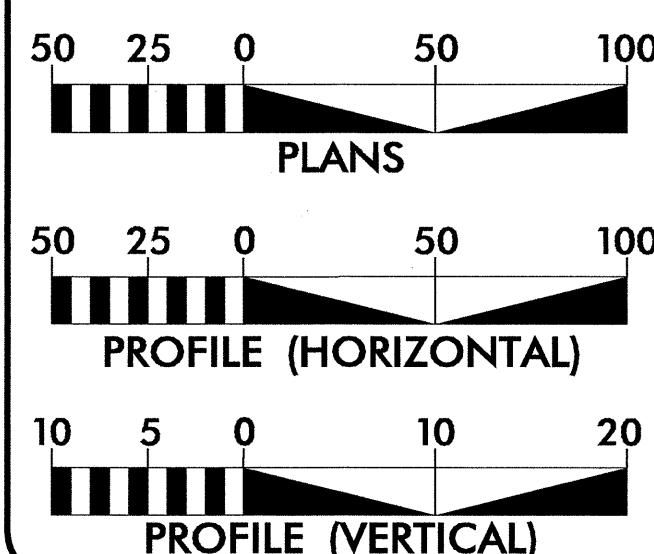
**LOCATION: BRIDGE NO. 84 OVER LATHAM CREEK ON SR 1410**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>B-4021</b>	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33388.1.1	BRZ-1410(2)	PE	
33388.2.1	BRZ-1410(2)	R/W & UTIL	
33388.3.1	BRZ-1410(2)	CONST.	



**GRAPHIC SCALES**



**DESIGN DATA**

ADT 2008 = 857  
ADT 2028 = 1378  
DHV = 10 %  
D = 60 %  
T = 3 % \*  
V = 60 MPH  
\* TTST 1% DUAL 2%  
FUNC. CLASS = RURAL LOCAL

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4021 = 0.117 MILES  
LENGTH STRUCTURE TIP PROJECT B-4021 = 0.023 MILES  
TOTAL LENGTH TIP PROJECT B-4021 = 0.140 MILES

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

2006 STANDARD SPECIFICATIONS

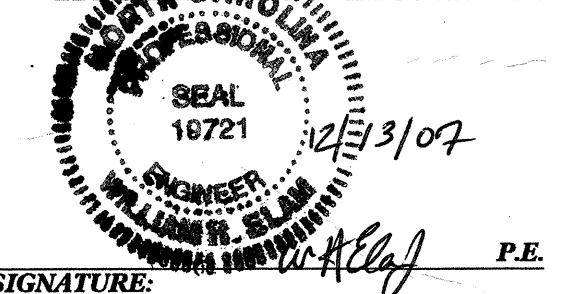
RIGHT OF WAY DATE:  
APRIL 8, 2005

LETTING DATE:  
MARCH 18, 2008

GARY LOVERING, P.E.  
PROJECT ENGINEER

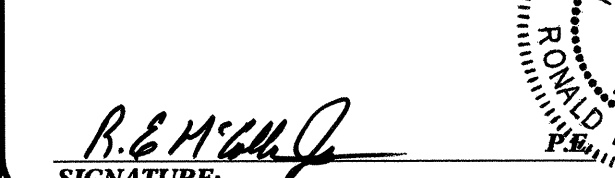
RON McCOLLUM, P.E.  
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER



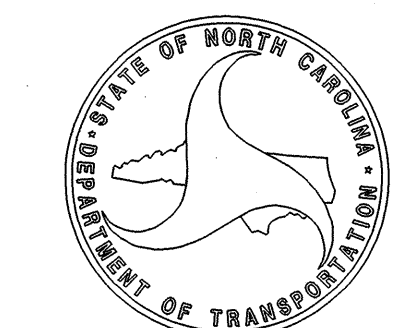
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ROADWAY DESIGN ENGINEER

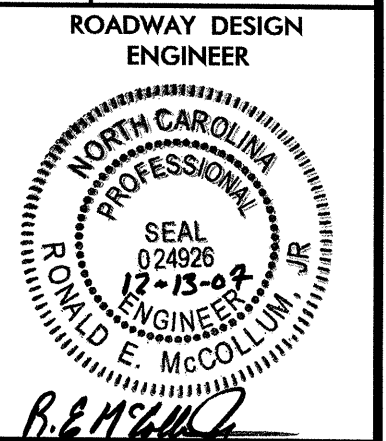


SIGNATURE: [Signature]

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA



Aut McMillan  
STATE HIGHWAY DESIGN ENGINEER



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 FOR ANCHORAGE FOR FRAMES
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF DRAINAGE QUANTITIES, SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, ASPHALT PAVEMENT REMOVAL SUMMARY, SUMMARY OF HYDRAULIC RIP RAP, AND SUMMARY OF SHOULDER BERM GUTTER
4	PLAN SHEET
5	PROFILE SHEET
TCP-1	TRAFFIC CONTROL PLANS
RF-1	REFORESTATION PLANS
EC-1 THRU EC-4	EROSION CONTROL PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
UC-1 THRU UC-3	UTILITY CONSTRUCTION PLANS
X-1A	CROSS-SECTION SUMMARY
X-1 THRU X-3	CROSS-SECTIONS
S-1 THRU S-21	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 111.

**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 TYPICAL SECTIONS.

**SHOULDER CONSTRUCTION:**

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

**SIDE ROADS:**

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

**GUARDRAIL:**

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

**TEMPORARY SHORING:**

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

**SUBSURFACE PLANS:**

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

**END BENTS:**

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

**UTILITIES:**

UTILITY OWNERS ON THIS PROJECT ARE NORTH CAROLINA NATURAL GAS,  
SPRINT, BEAUFORT COUNTY WATER DISTRICT 1

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

**RIGHT-OF-WAY MARKERS:**

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

2006 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining 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	
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

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

Note: Not to Scale

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

**BOUNDARIES AND PROPERTY:**

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○-----
Proposed Chain Link Fence	□-----
Proposed Barbed Wire Fence	◇-----
Existing Wetland Boundary	----- WLB
Proposed Wetland Boundary	----- WLB
Existing Endangered Animal Boundary	----- EAB
Existing Endangered Plant Boundary	----- EPB

**BUILDINGS AND OTHER CULTURE:**

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	□

**HYDROLOGY:**

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
Jurisdictional Stream	----- JS
Buffer Zone 1	----- BZ 1
Buffer Zone 2	----- BZ 2
Flow Arrow	←
Disappearing Stream	-----
Spring	○
Wetland	-----
Proposed Lateral, Tail, Head Ditch	----- FDM
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	○
Proposed Control of Access	○
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:**

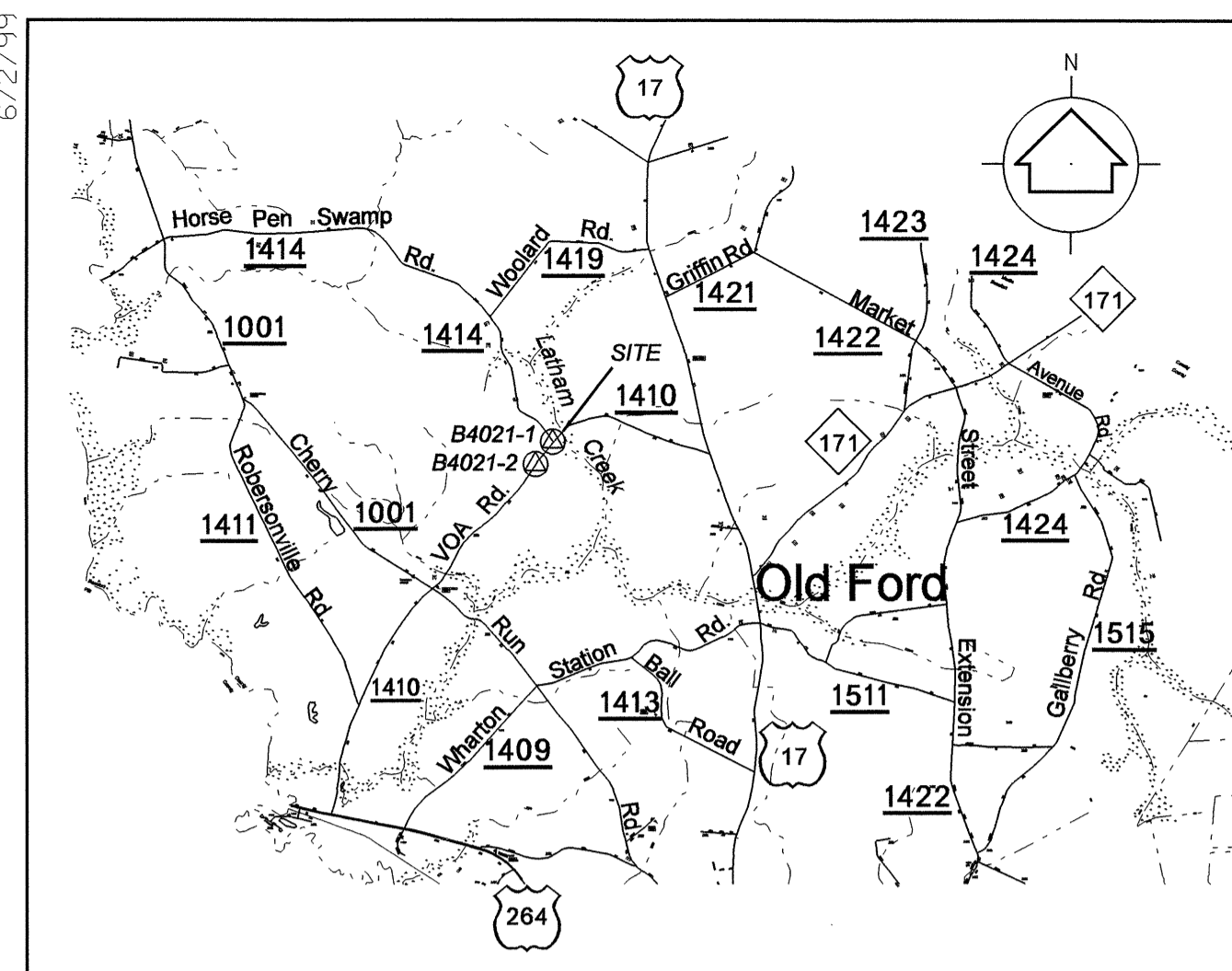
Sanitary Sewer Manhole	○
Sanitary Sewer Cleanout	○
U/G Sanitary Sewer Line	----- SS
Above Ground Sanitary Sewer	----- A/G Sanitary Sewer
Recorded SS Forced Main Line	----- FSS
Designated SS Forced Main Line (S.U.E.*)	----- FSS

**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.

3/15/06

# SURVEY CONTROL SHEET B-4021



VICINITY MAP  
(NOT TO SCALE)

**CONTROL DATA**

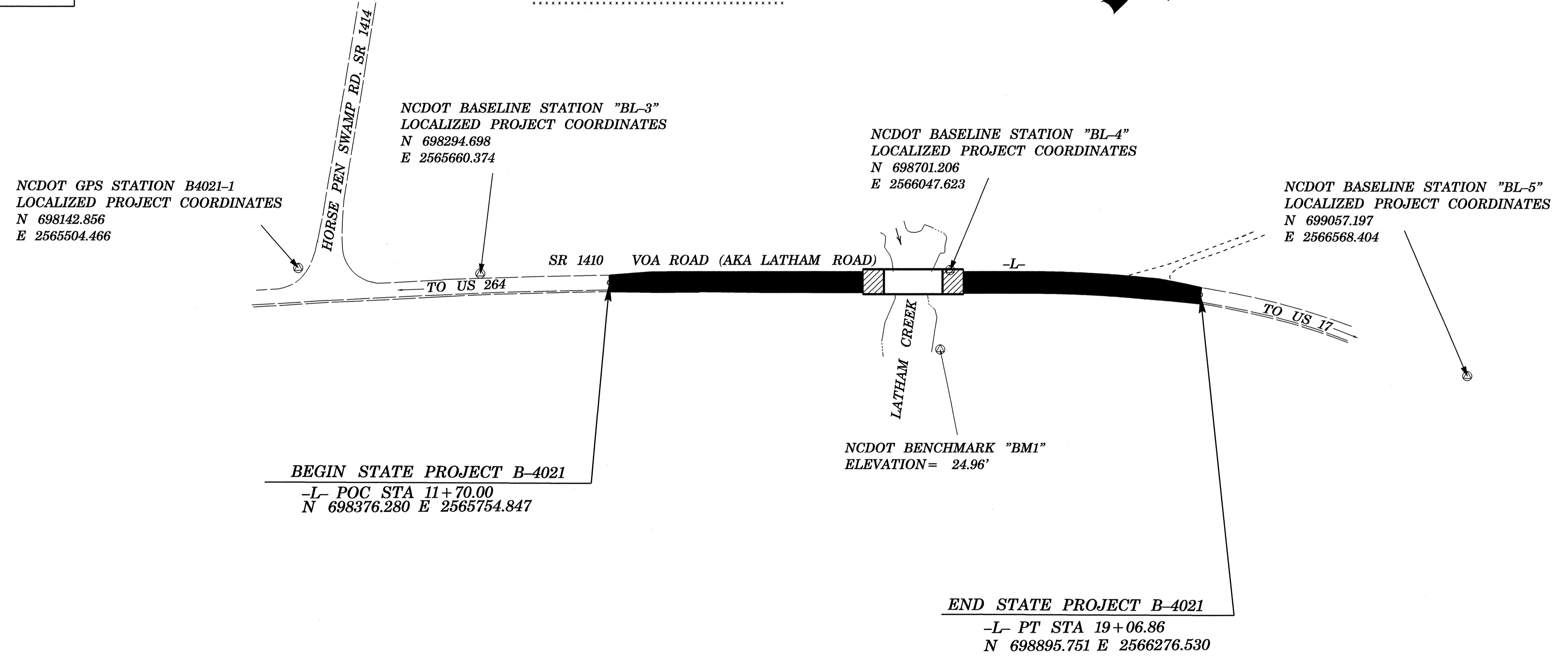
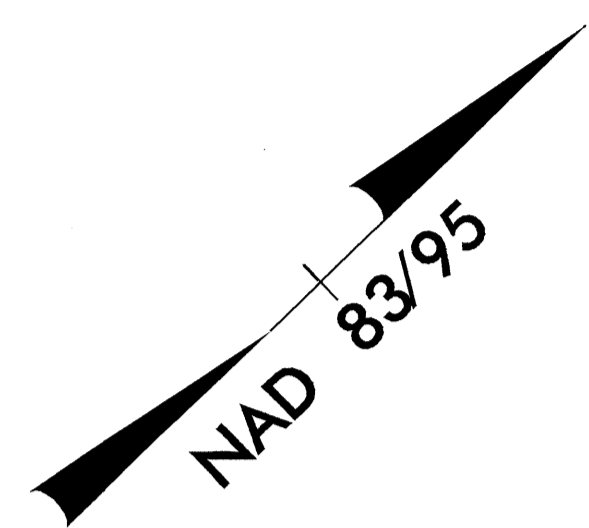
BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1		GPS B4021-1	698142.8560	2565504.4660	31.67		OUTSIDE PROJECT LIMITS
3		BL-3	698294.6982	2565660.3737	29.88	10+46.19	14.78 LT
4		BL-4	698701.2062	2566047.6232	28.69	16+07.11	14.06 LT
5		BL-5	699057.1970	2566568.4036	31.15		OUTSIDE PROJECT LIMITS

**BENCHMARK DATA**

.....

BM1	ELEVATION = 24.96
N 698626	E 2566108
L STATION 15+95 82 RIGHT	
R/R SPIKE SET IN 18" HARDWOOD	

.....



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4021-1"

WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF  
NORTHING: 698142.8557(ft) EASTING: 2565504.4654(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99990078

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4021-1" TO -L- STATION 11+70.00 IS  
N47° 00' 26.3"E 342.312 (ft)

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

**NOTES:**

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project)  
 FILE: b4021\_ls\_control\_040714.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)

NOTE: DRAWING NOT TO SCALE

6/22/99  
26-NOV-2007 13:43 1021\_1s\_1c\_041118.dgn

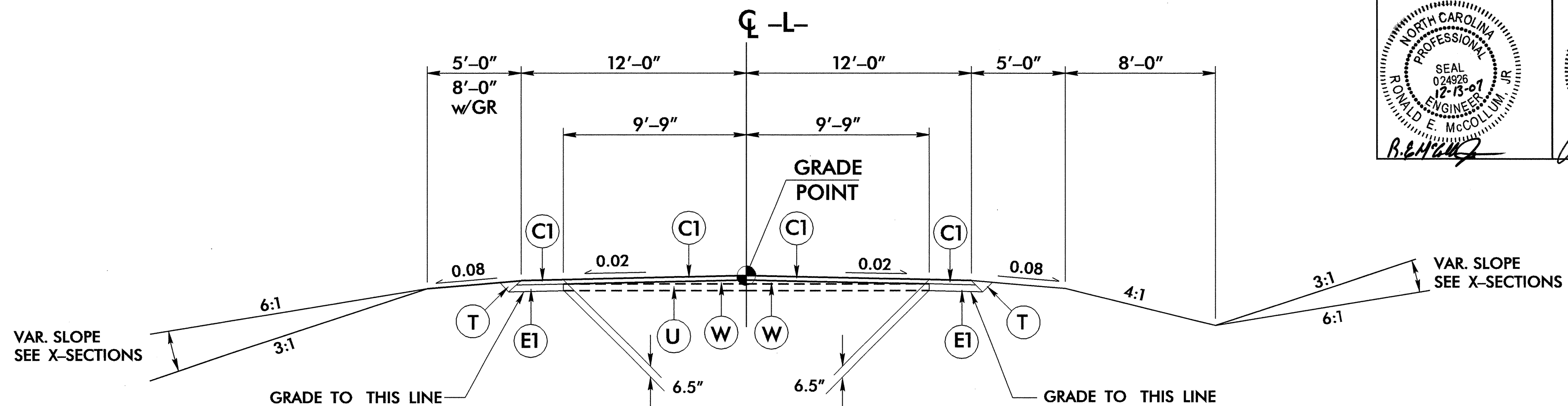
6/22/99

**PAVEMENT SCHEDULE  
FINAL DESIGN**

<b>C1</b>	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
<b>C2</b>	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
<b>C3</b>	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 1½" 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. 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 5½" IN DEPTH.
<b>T</b>	EARTH MATERIAL.
<b>U</b>	EXISTING PAVEMENT.
<b>W</b>	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

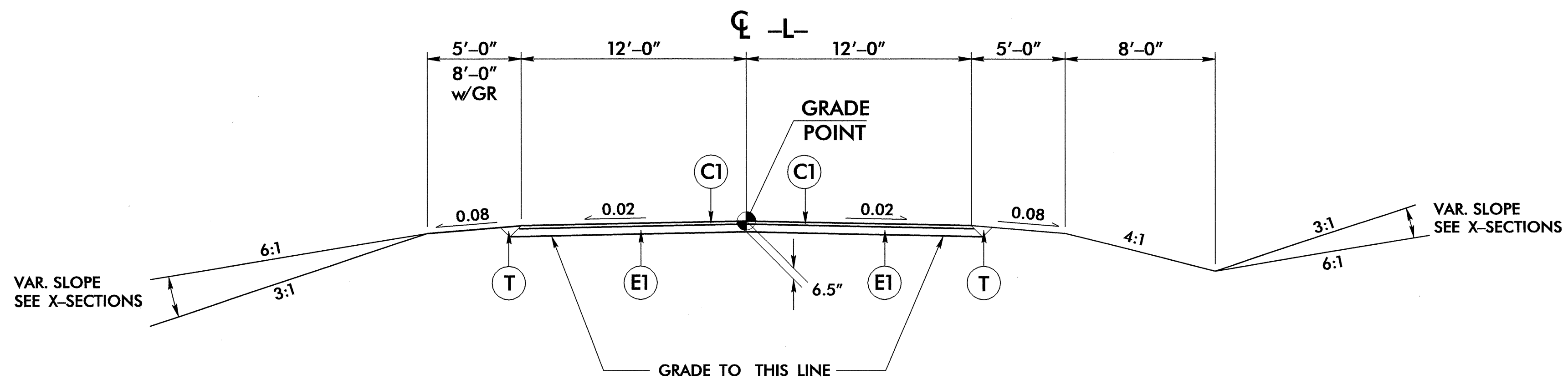
PROJECT REFERENCE NO. <b>B-4021</b>	SHEET NO. <b>2</b>
ROADWAY DESIGN ENGINEER <i>R. E. HARRIS</i>	PAVEMENT DESIGN ENGINEER <i>Clark S. Morrison</i>



**TYPICAL SECTION NO. 1**

**USE TYPICAL SECTION NO. 1**

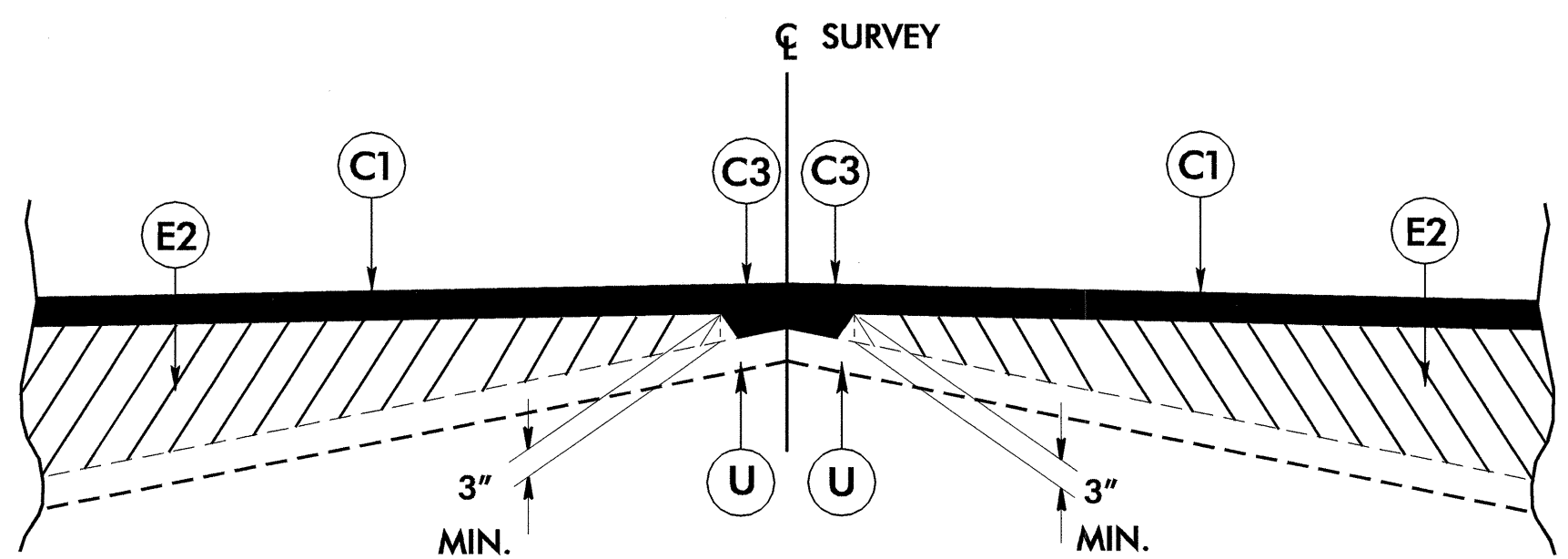
-L- STA. 11+70 TO -L- STA. 14+50  
-L- STA. 16+77 TO -L- STA. 19+06.86



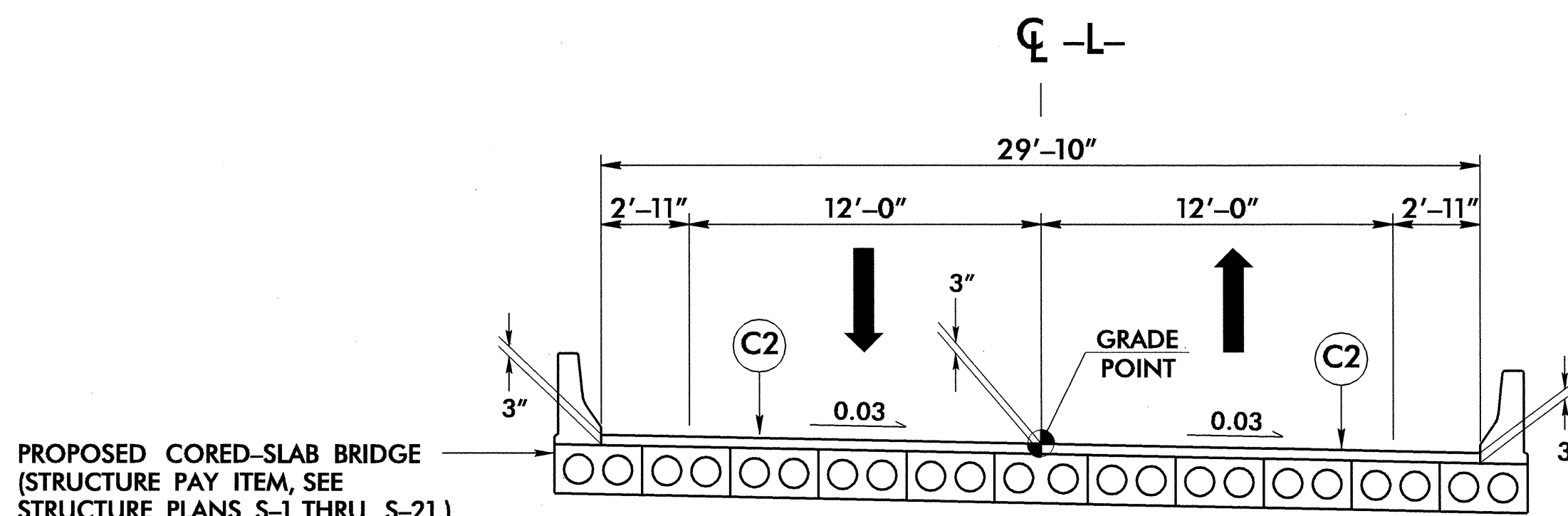
**TYPICAL SECTION NO. 2**

**USE TYPICAL SECTION NO. 2**

-L- STA. 14+50 TO -L- STA. 15+07 (BEG. BRIDGE)  
-L- STA. 16+27 (END BRIDGE) TO -L- STA. 16+77



**Wedging Detail**



**TYPICAL SECTION ON STRUCTURE**

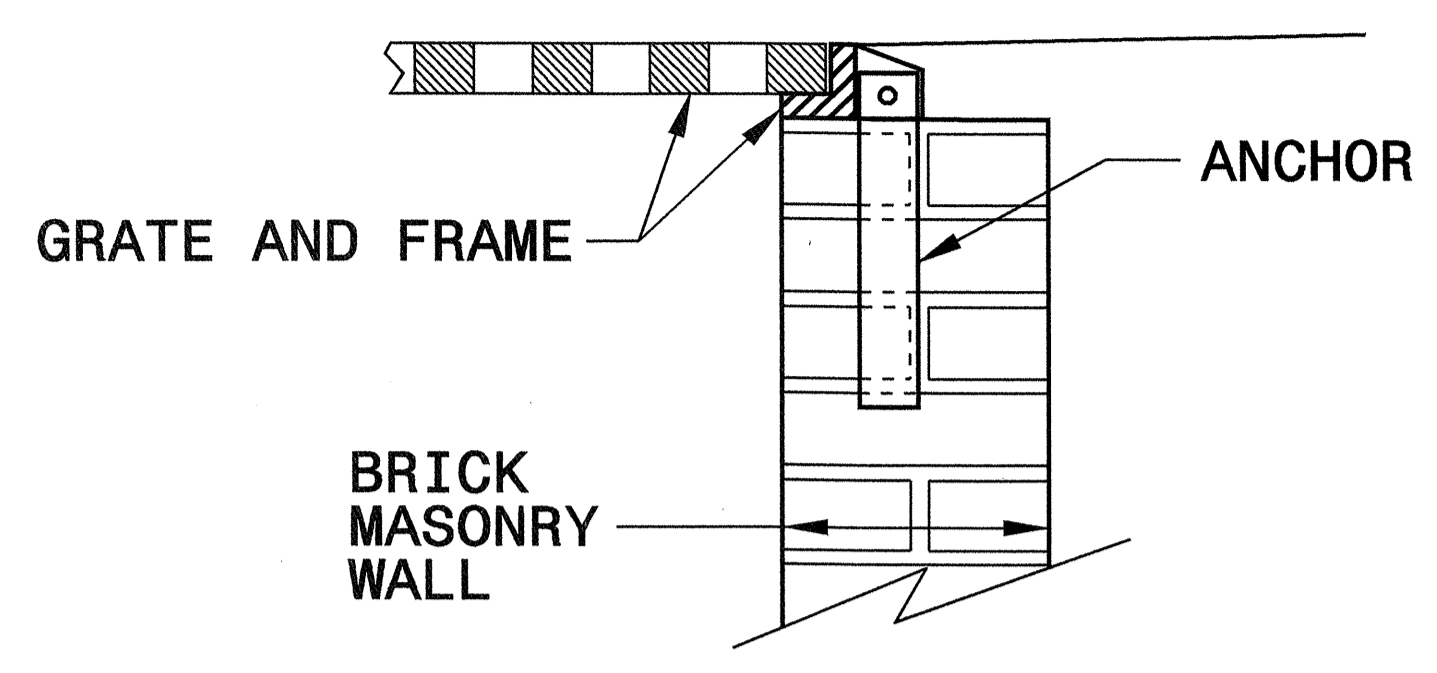
**USE TYPICAL SECTION ON STRUCTURE**

-L- STA. 15+07 (BEG. BRIDGE) TO -L- STA. 16+27 (END BRIDGE)

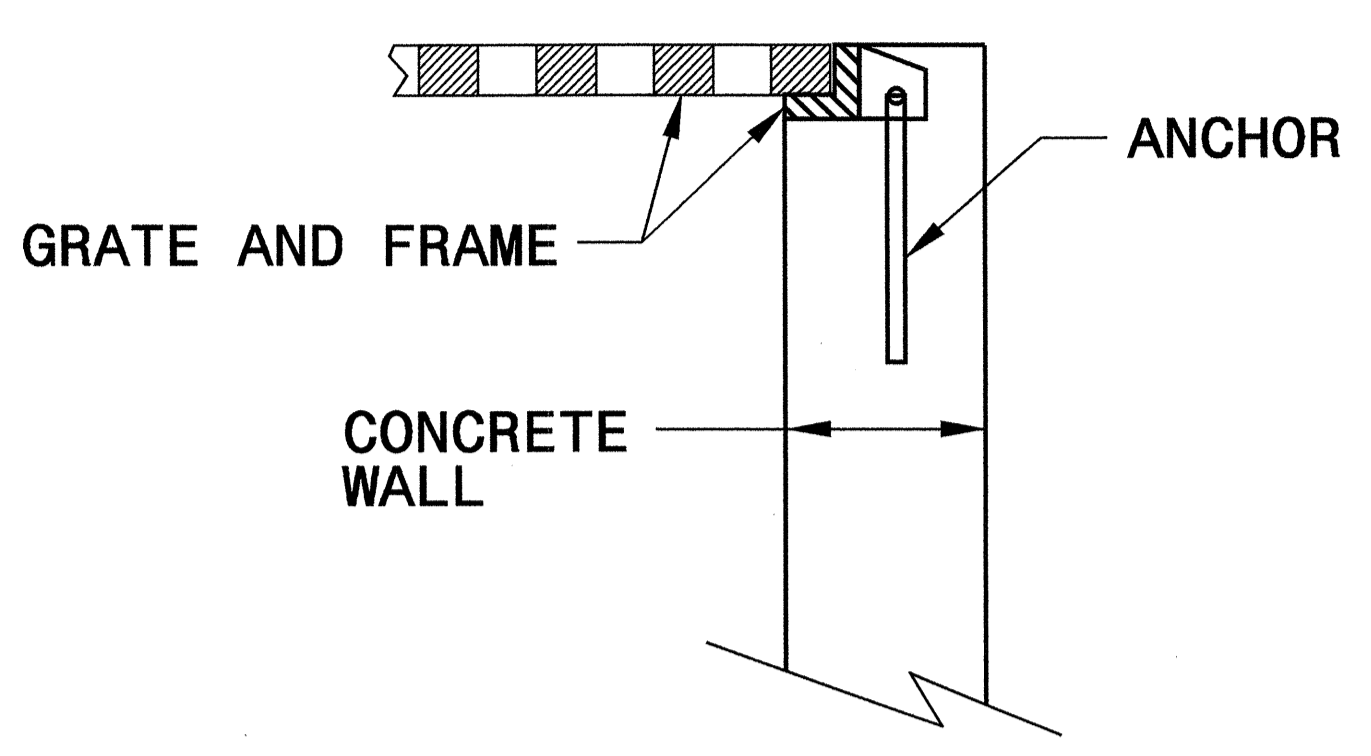
26-NOV-2007 13:26  
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STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

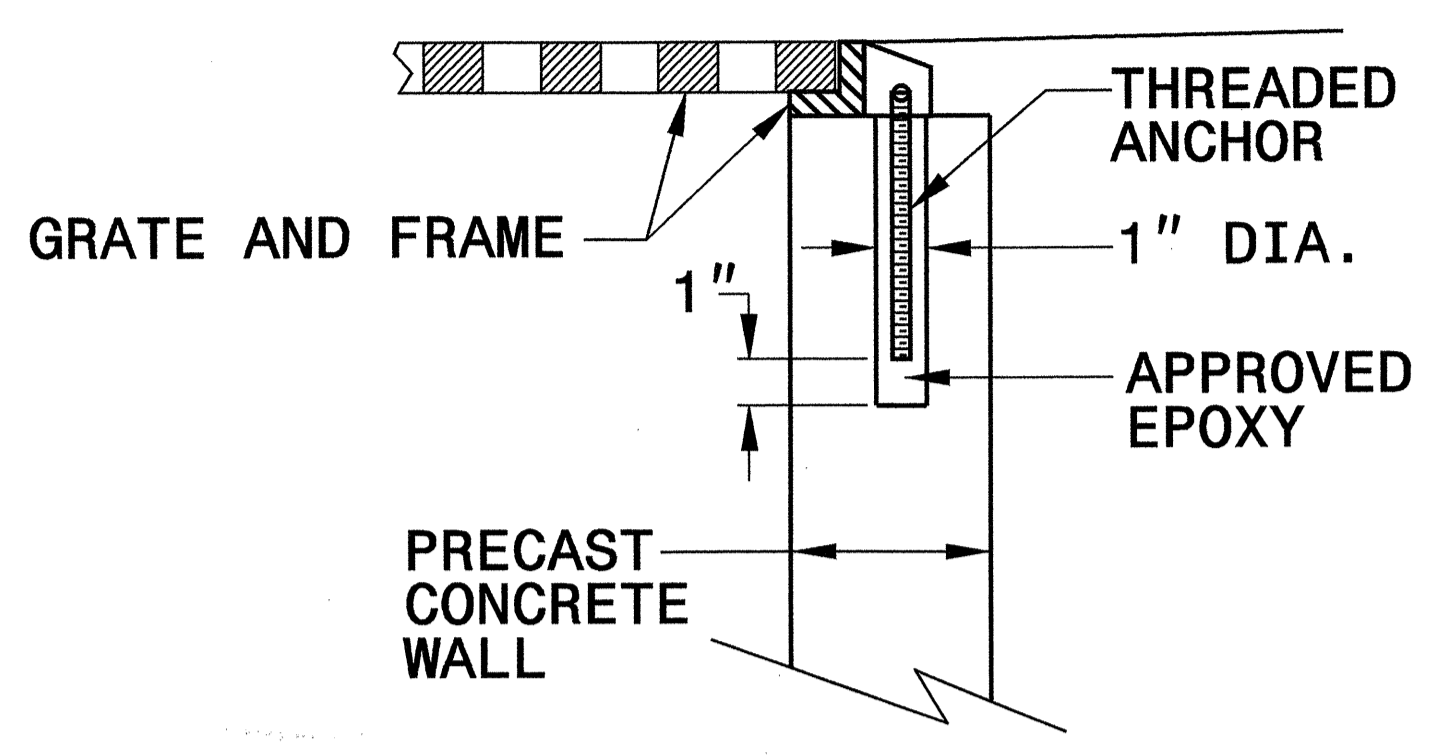
ENGLISH DETAIL DRAWING FOR  
**ANCHORAGE FOR FRAMES**  
BRICK/CONCRETE/PRECAST CONCRETE



**BRICK MASONRY CONSTRUCTION**



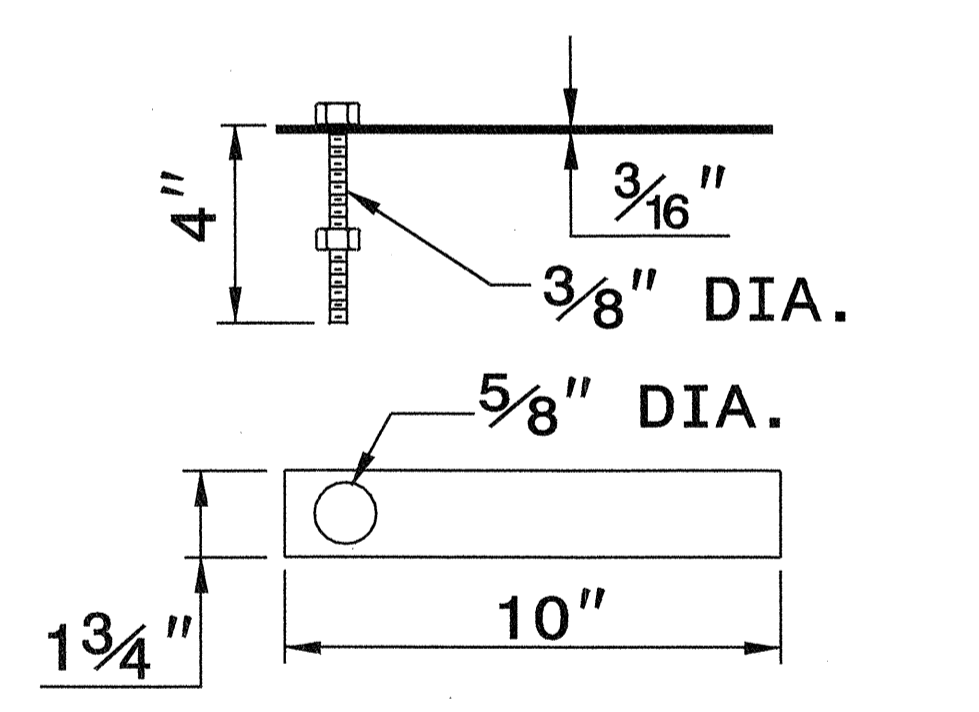
**CONCRETE CONSTRUCTION**



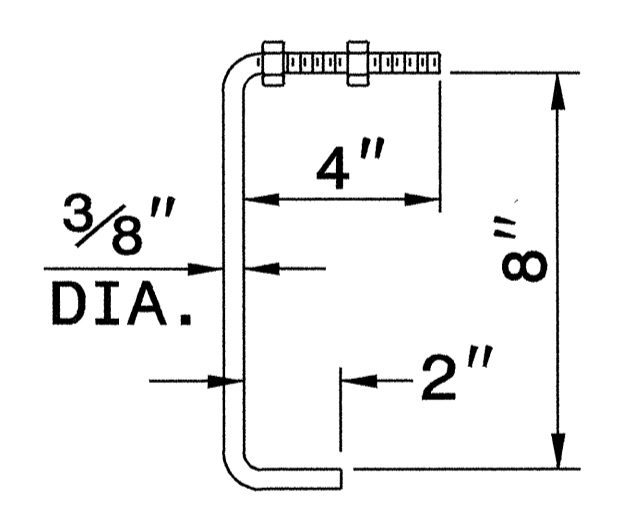
**PRECAST CONCRETE CONSTRUCTION**

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

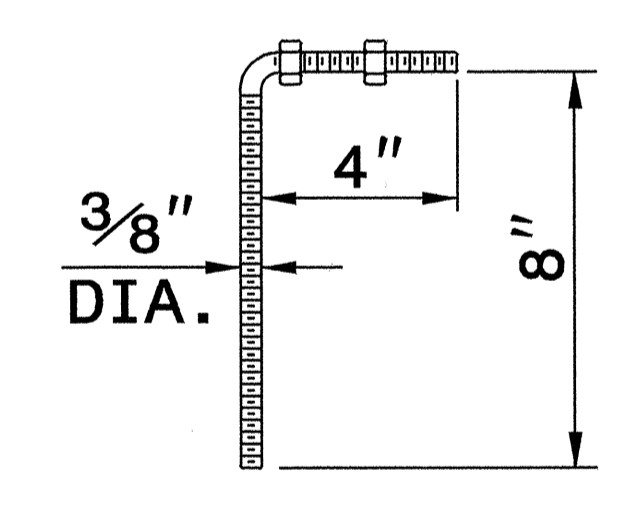
NOTE:  
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



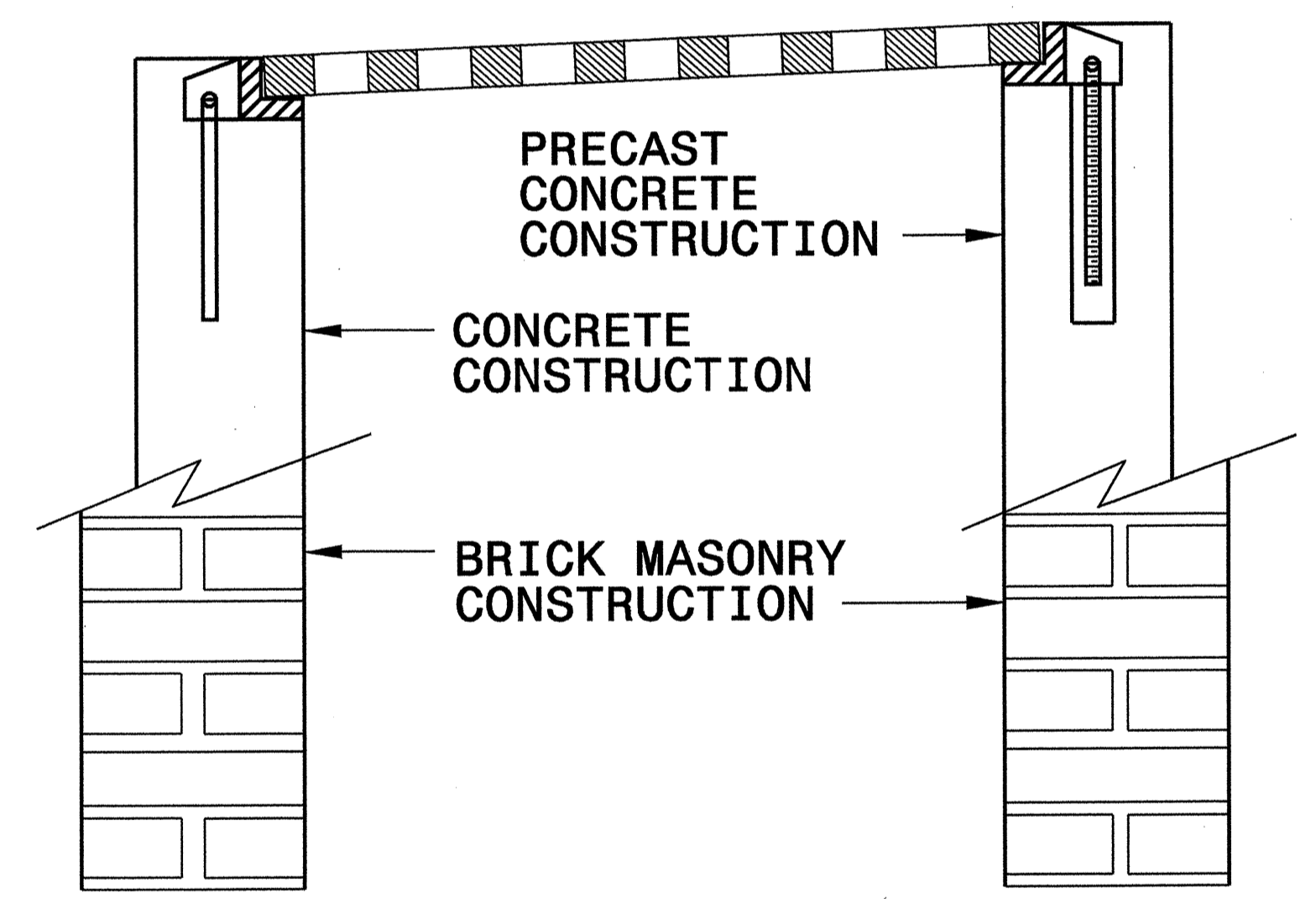
**MASONRY ANCHOR**  
3/8" DIA. BOLT WITH PLATE



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



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

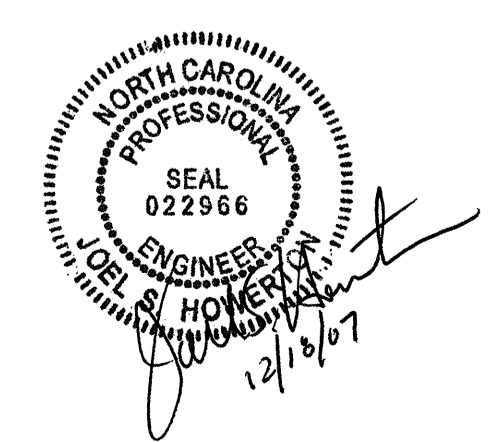


**FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS**

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

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

01-MAR-2007 09:04 s:\contracts\contract\9535\special\_details\viewward\stds\06\stds to special\_details\84025\_anchors\_for\_frames\0840d25.dgn J:\power-ton RT: P5212260



**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  
**SUMMARY OF QUANTITIES**

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201481														
ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION	364900000-E	876	2	TON	RIP RAP, CLASS B	611400000-N	SP	2	HR	SPECIALIZED HAND MOWING
000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING	365600000-E	876	160	SY	FILTER FABRIC FOR DRAINAGE	611700000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL
002900000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (15+67.000-L-)	440000000-E	1110	382	SF	WORK ZONE SIGNS (STATIONARY)	612300000-E	1670	0.1	ACR	REFORESTATION
004300000-N	226	Lump Sum		GRADING	441000000-E	1110	94	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)					
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB- BING	444500000-E	1145	64	LF	BARRICADES (TYPE III)					
005700000-E	226	200	CY	UNDERCUT EXCAVATION	481000000-E	1205	5,896	LF	PAINT PAVEMENT MARKING LINES (4")					
019600000-E	270	100	SY	FABRIC FOR SOIL STABILIZATION	532560000-E	1510	354	LF	6" WATER LINE					
023400000-E	SP	100	CY	GENERIC GRADING ITEM SELECT GRANULAR MATERIAL	600000000-E	1605	1,120	LF	TEMPORARY SILT FENCE					
031800000-E	300	5	TON	FOUNDATION CONDITIONING MATE- RIAL, MINOR STRS	600600000-E	1610	75	TON	STONE FOR EROSION CONTROL, CLASS A					
054600000-E	310	44	LF	*** CAA PIPE CULVERTS, ***** THICK (15", 0.060")	600900000-E	1610	50	TON	STONE FOR EROSION CONTROL, CLASS B					
056400000-E	310	4	EA	*** CAA PIPE ELBOWS, ***** THICK (15", 0.060")	601200000-E	1610	60	TON	SEDIMENT CONTROL STONE					
122000000-E	545	20	TON	INCIDENTAL STONE BASE	601500000-E	1615	1.5	ACR	TEMPORARY MULCHING					
148900000-E	610	220	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B	601800000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING					
152500000-E	610	350	TON	ASPHALT CONC SURFACE COURSE, TYPE SP9.5A	602100000-E	1620	0.25	TON	FERTILIZER FOR TEMPORARY SEED- ING					
156000000-E	620	33	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22	602400000-E	1622	150	LF	TEMPORARY SLOPE DRAINS					
169300000-E	654	20	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR	602700000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS					
228600000-N	840	2	EA	MASONRY DRAINAGE STRUCTURES	602900000-E	SP	220	LF	SAFETY FENCE					
236700000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29	603000000-E	1630	25	CY	SILT EXCAVATION					
255600000-E	846	310	LF	SHOULDER BERM GUTTER	603600000-E	1631	420	SY	MATTING FOR EROSION CONTROL					
303000000-E	862	512.5	LF	STEEL BM GUARDRAIL	604200000-E	1632	150	LF	1/4" HARDWARE CLOTH					
315000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS	608400000-E	1660	1.5	ACR	SEEDING & MULCHING					
327000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350	608700000-E	1660	1	ACR	MOWING					
331700000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77	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	1	TON	FERTILIZER TOPDRESSING					

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

SUMMARY OF EARTHWORK  
IN CUBIC YARDS

Table with columns: LOCATION, TOTAL UNCLAS. EXCAV., UNDERCUT, EMBANKMENT + %, BORROW, TOTAL WASTE. Rows include station ranges like -L- 11+70 TO 15+07 and subtotals.

UNDERCUT EXCAVATION = 200 C.Y.

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.

SUMMARY OF SHOULDER BERM GUTTER

Table with columns: LINE, STATION TO STATION, LOCATION, LENGTH FT. Rows include station ranges like 12+64 TO 14+93 and a total of 310.00'.

SUMMARY OF ASPHALT  
PAVEMENT REMOVAL  
IN SQUARE YARDS

Table with columns: LINE, STATION TO STATION, LOCATION, ASPHALT REMOVAL. Rows include station ranges like 14+50 TO 15+33 and a total of 390.

SUMMARY OF HYDRAULIC RIP RAP

Table with columns: LINE, STATION, STATION, LOC, RIP RAP CLASS (I, II, A, B), RR (TON), FF (SY), DDE (CY), DETAIL, COMMENT. Rows include station 13+42.38.

Summary table with columns: CLASS I, CLASS II, CLASS A, CLASS B, FILTER FABRIC, DDE, TOTAL, SAY.

Table with column: ABBREVIATIONS. Lists abbreviations like CY, DDE, FF, LOC, RR, SY with their corresponding full names.

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

Large multi-column table listing pipe and endwall details. Columns include STATION, SIZE, THICKNESS OR GAUGE, LOCATION, STRUCTURE NO., TOP ELEVATION, INVERT ELEVATION, SLOPE CRITICAL, CLASS III R.C. PIPE, CORRUGATED ALUMINUM ALLOY PIPE CULVERTS, ENDWALLS, and REMARKS. Includes project totals at the bottom.


"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

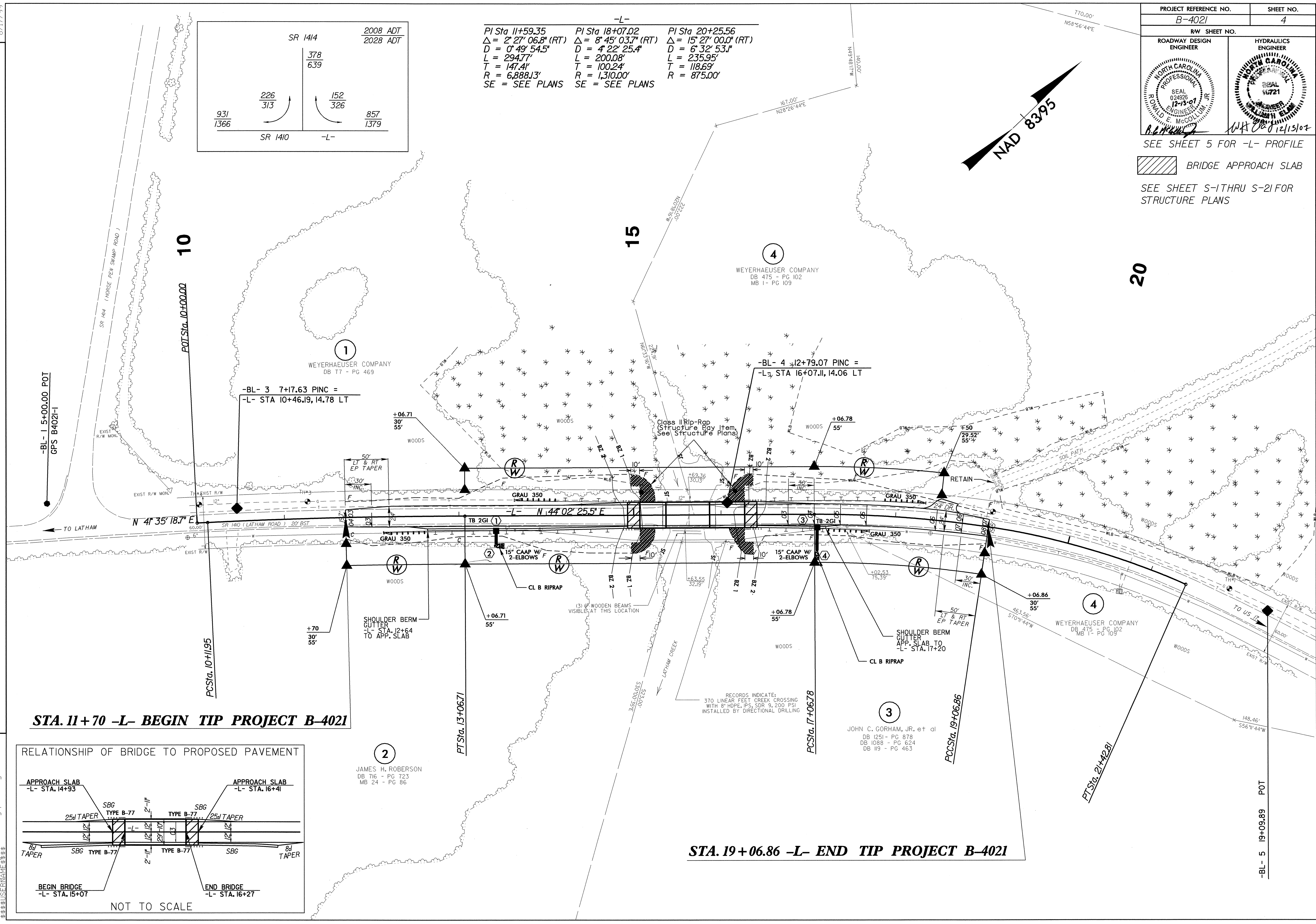
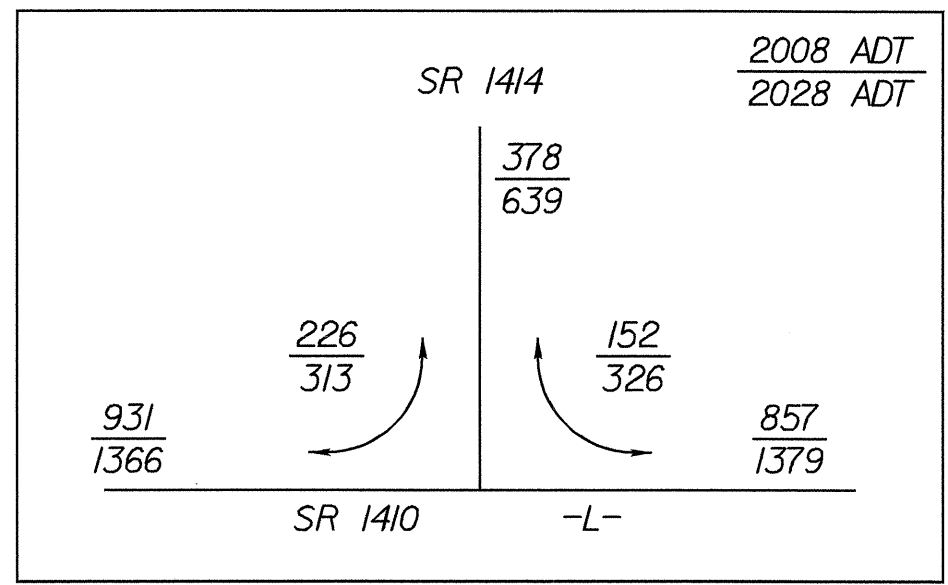
Table summarizing guardrail details. Columns include SURVEY LINE, BEG. STA., END STA., LOCATION, LENGTH (STRAIGHT, SHOP CURVED, DOUBLE FACED), WARRANT POINT (APPROACH END, TRAILING END), TOTAL SHOULDER WIDTH, FLARE LENGTH (APPROACH END, TRAILING END), W (APPROACH END, TRAILING END), ANCHORS (XI MOD, B-77, GRAU 350, M-350, TEMP GRAU 350, TERMINAL SECTIONS, VI MOD, BIC, AT-1), IMPACT ATTENUATOR TYPE 350 (EA, G, NG), SINGLE FACED GUARDRAIL, REMOVE EXISTING GUARDRAIL, REMOVE AND STOCKPILE EXISTING GUARDRAIL, and REMARKS. Includes subtotals and less anchor deductions.



PROJECT REFERENCE NO. B-4021	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER SEAL 024926 12-13-01 RONALD E. McCOLLUM, JR.	HYDRAULICS ENGINEER SEAL 16721 WILLIAM E. BISHOP, JR.

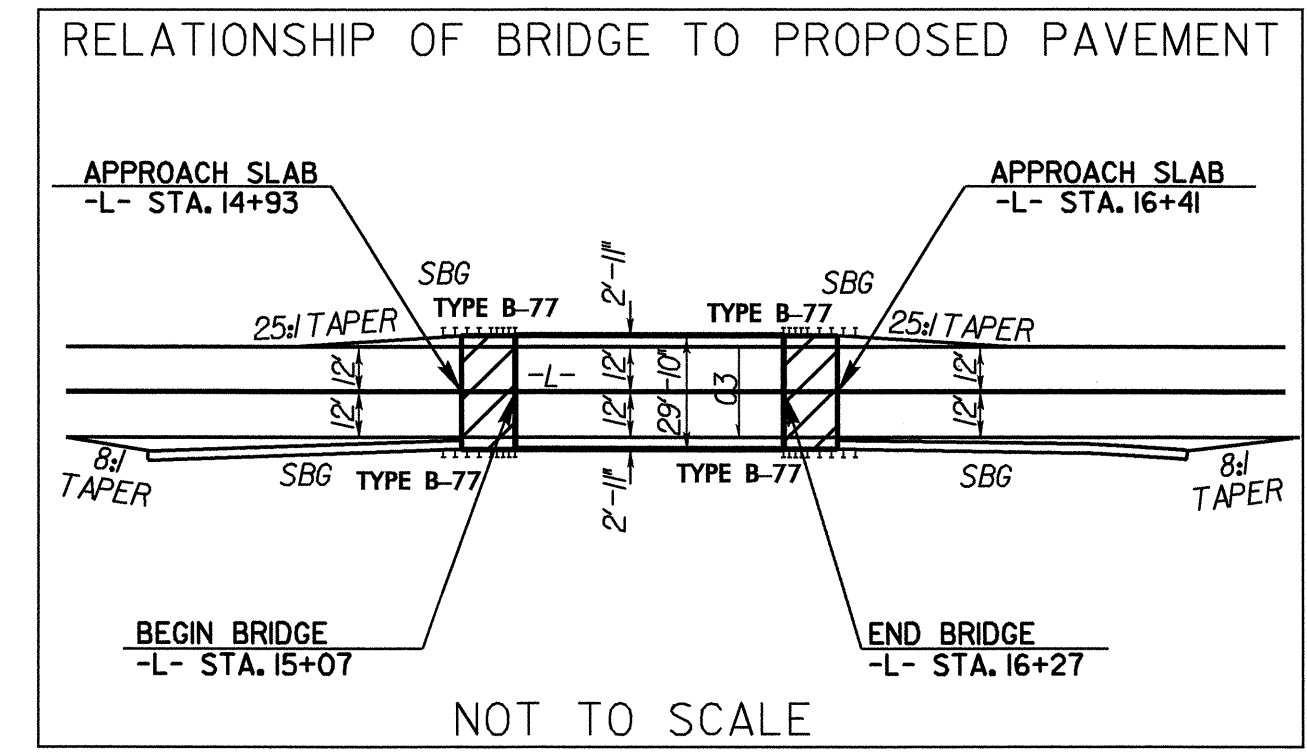
SEE SHEET 5 FOR -L- PROFILE  
 BRIDGE APPROACH SLAB  
 SEE SHEET S-1 THRU S-21 FOR STRUCTURE PLANS

-L-  
 PI Sta 11+59.35 Δ = 2° 27' 06.8" (RT) D = 0° 49' 54.5" L = 294.77' T = 147.41' R = 6,888.13' SE = SEE PLANS  
 PI Sta 18+07.02 Δ = 8° 45' 03.7" (RT) D = 4° 22' 25.4" L = 200.08' T = 100.24' R = 1,310.00' SE = SEE PLANS  
 PI Sta 20+25.56 Δ = 15° 27' 00.0" (RT) D = 6° 32' 53.1" L = 235.95' T = 118.69' R = 875.00'



**STA. 11+70 -L- BEGIN TIP PROJECT B-4021**

**STA. 19+06.86 -L- END TIP PROJECT B-4021**



REVISIONS

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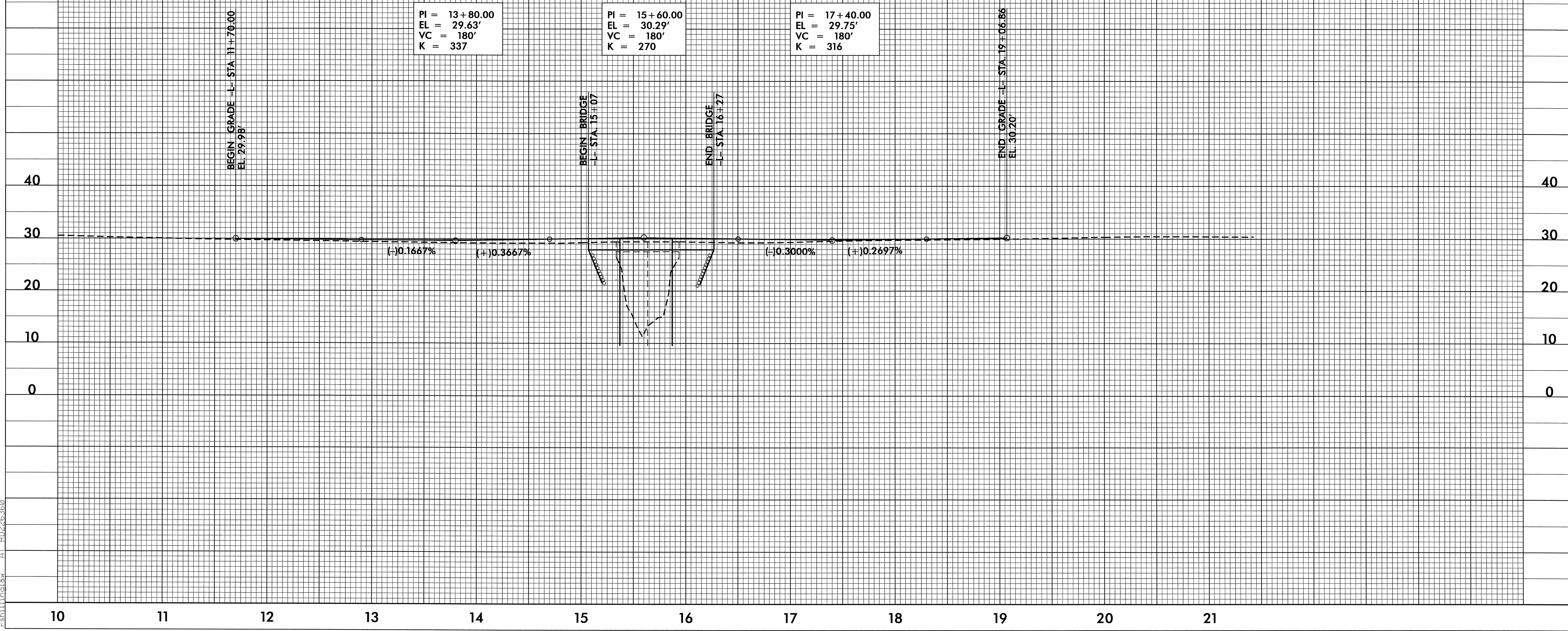
PROJECT REFERENCE NO. B-4021	SHEET NO. 5
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 024928 12-13-0 ENGINEER RONALD E. McCOLLUM, JR. R.E. McCollum, Jr.	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 19721 WILLIAM H. BLUM W.H. Blum 12/17/02

# -L-

**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE	= 990 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 24.7' FT
BASE DISCHARGE	= 1680 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 26.0' FT
OVERTOPPING DISCHARGE	= 2890 CFS
OVERTOPPING FREQUENCY	= 500 YRS
OVERTOPPING ELEVATION	= 27.9' FT
ESTIMATED NORMAL WATER SURFACE ELEVATION	= 19.5' FT
DATE OF SURVEY	= 7/22/04
W.S. ELEVATION AT DATE OF SURVEY	= 19.5' FT

BM \*1 R/R SPIKE SET IN 18" HARDWOOD  
 -L- STA. 15+95, 82' RIGHT  
 ELEVATION = 24.96'



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