

09/08/09

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

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CHOWAN COUNTY

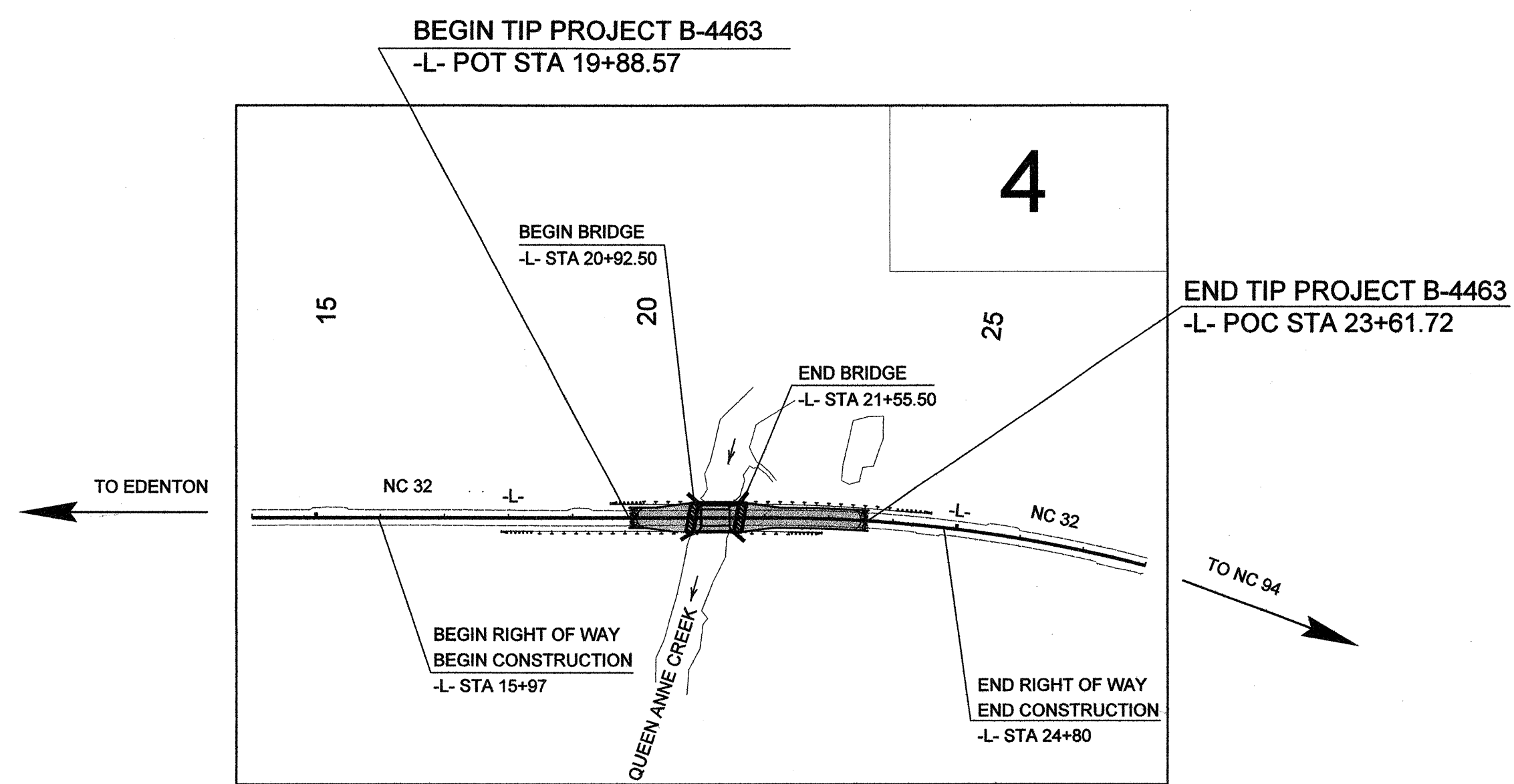
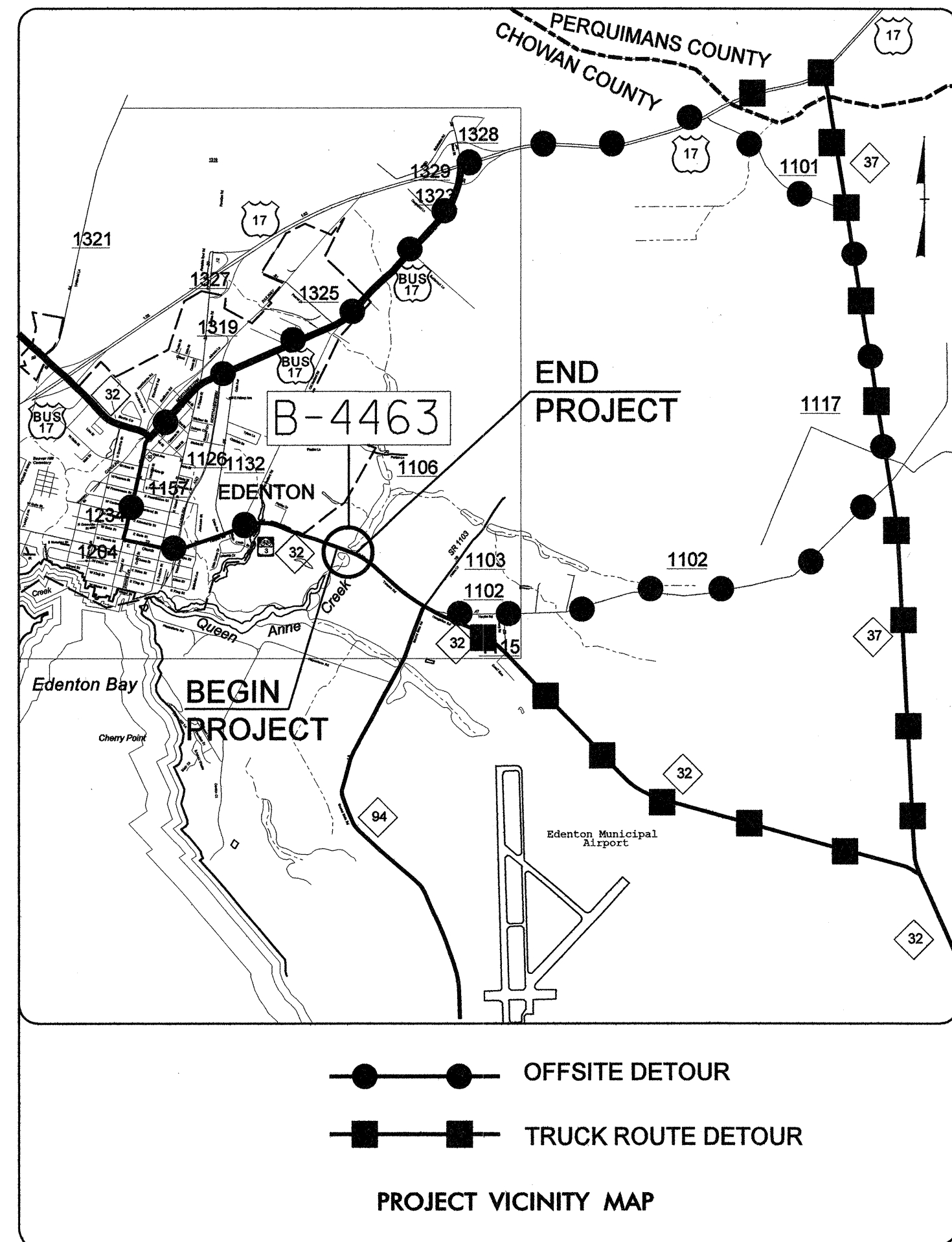
LOCATION: BRIDGE NO. 12 OVER QUEEN ANNE CREEK
ON NC 32

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

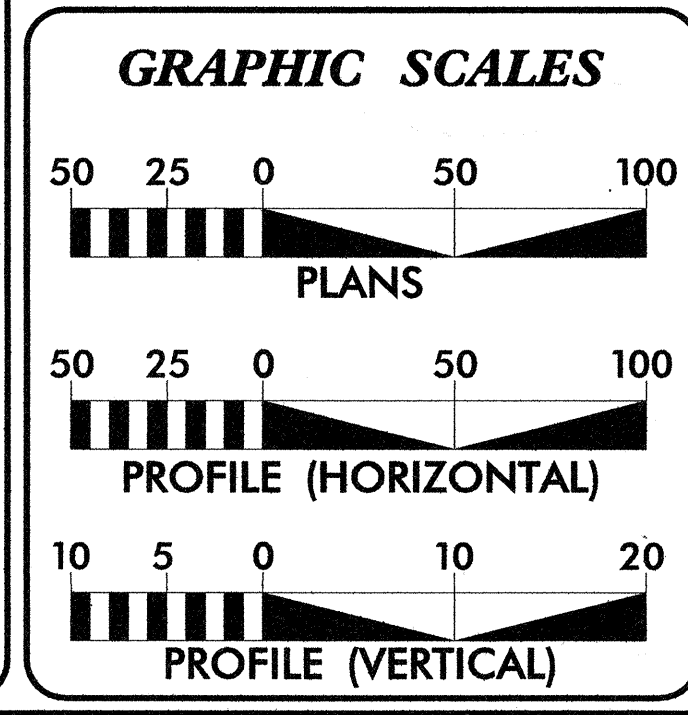
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4463	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
33713.1.2	STP-0032(8)	P.E.	
33713.2.1	STP-0032(8)	R.W. & UTILITY	
33713.3.1	BRSTP-0032(8)	CONST.	

TIP PROJECT: B-4463

CONTRACT: C202659



NCDOT Contact: Ron E McCollum, PE
Roadway Design-Engineering Coordination



DESIGN DATA

ADT 2011 = 6280
ADT 2031 = 9360
DHV = 10 %
D = 60 %
T = 5% (TTST 2%, DUAL 3%)
V = 60 MPH
FUNC CLASS = MAJOR COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4463	=	0.059 MILE
LENGTH STRUCTURE TIP PROJECT B-4463	=	0.012 MILE
TOTAL LENGTH TIP PROJECT B-4463	=	0.071 MILE

Prepared in the Office of
DYER, RIDDLE, MILLS & PRECOURT, INC. (DRMP)
5950 FAIRVIEW RD., SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289 NC LICENSE NO. C-2213

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 15, 2010

LETTING DATE:
OCTOBER 18, 2011

James E. Beck, PE
PROJECT ENGINEER

Garrett S. McCaffety, EI
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

James E. Beck 7/25/11
SIGNATURE: P.E.

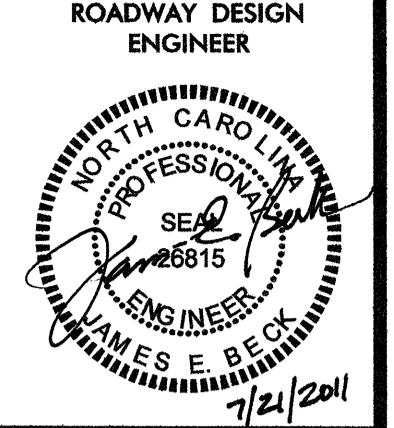
ROADWAY DESIGN ENGINEER

James E. Beck 7/21/2011
SIGNATURE: P.E.

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

Art McMiller
STATE HIGHWAY DESIGN ENGINEER

R:\Roadway\Proj\B4463_Rdy_tsh.dgn
7/26/2011 10:36:20 AM



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 THRU 2-B	METHOD OF PIPE INSTALLATION
2-C	ANCHORAGE FOR FRAMES AND GRATES
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF GUARDRAIL AND EARTHWORK SUMMARY
3-B	SUMMARY OF DRAINAGE QUANTITIES
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-2	TRANSPORTATION MANAGEMENT PLANS
PM-1 THRU PM-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-4	EROSION CONTROL PLANS
UC-1 THRU UC-5	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS
X-1 THRU X-6	CROSS-SECTIONS
S-1 THRU S-3	STRUCTURE PLANS

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 07-30-08

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

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. 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.

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 CITY OF EDENTON POWER, CENTURY-LINK (TELEPHONE), MEDIA-COM TELECOM (CATV), PIEDMONT NATURAL GAS (GAS), CHOWAN COUNTY WATER

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 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 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.45	Precast Drainage Structure
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure 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

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	_____ X
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-
Known Soil Contamination: Boundary or Site	☠ ☠
Potential Soil Contamination: Boundary or Site	☠ ? ☠

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	_____ (RW)
Proposed Right of Way Line with Iron Pin and Cap Marker	_____ (RW) ▲
Proposed Right of Way Line with Concrete or Granite Marker	_____ (RW) ▲
Existing Control of Access	○ CA
Proposed Control of Access	○ CA
Existing Easement Line	_____ E
Proposed Temporary Construction Easement	_____ E
Proposed Temporary Drainage Easement	_____ TDE
Proposed Permanent Drainage Easement	_____ PDE
Proposed Permanent Drainage / Utility Easement	_____ DUE
Proposed Permanent Utility Easement	_____ PUE
Proposed Temporary Utility Easement	_____ TUE
Proposed Aerial Utility Easement	_____ AUE

Proposed Permanent Easement with Iron Pin and Cap Marker	◆
--	---

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	_____
Existing Curb	_____
Proposed Slope Stakes Cut	_____ C
Proposed Slope Stakes Fill	_____ F
Proposed Curb Ramp	○ CR
Curb Cut Future 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	○ S
Storm Sewer	_____ S

UTILITIES:

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

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○ T
Telephone Booth	□
Telephone Pedestal	□
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	_____
Recorded U/G Telephone Cable	_____ T
Designated U/G Telephone Cable (S.U.E.*)	_____ T
Recorded U/G Telephone Conduit	_____ TC
Designated U/G Telephone Conduit (S.U.E.*)	_____ TC
Recorded U/G Fiber Optics Cable	_____ T FO
Designated U/G Fiber Optics Cable (S.U.E.*)	_____ T FO

WATER:

Water Manhole	○ W
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded U/G Water Line	_____ W
Designated U/G Water Line (S.U.E.*)	_____ W
Above Ground Water Line	_____ A/G Water

TV:

TV Satellite Dish	⊕
TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	_____
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

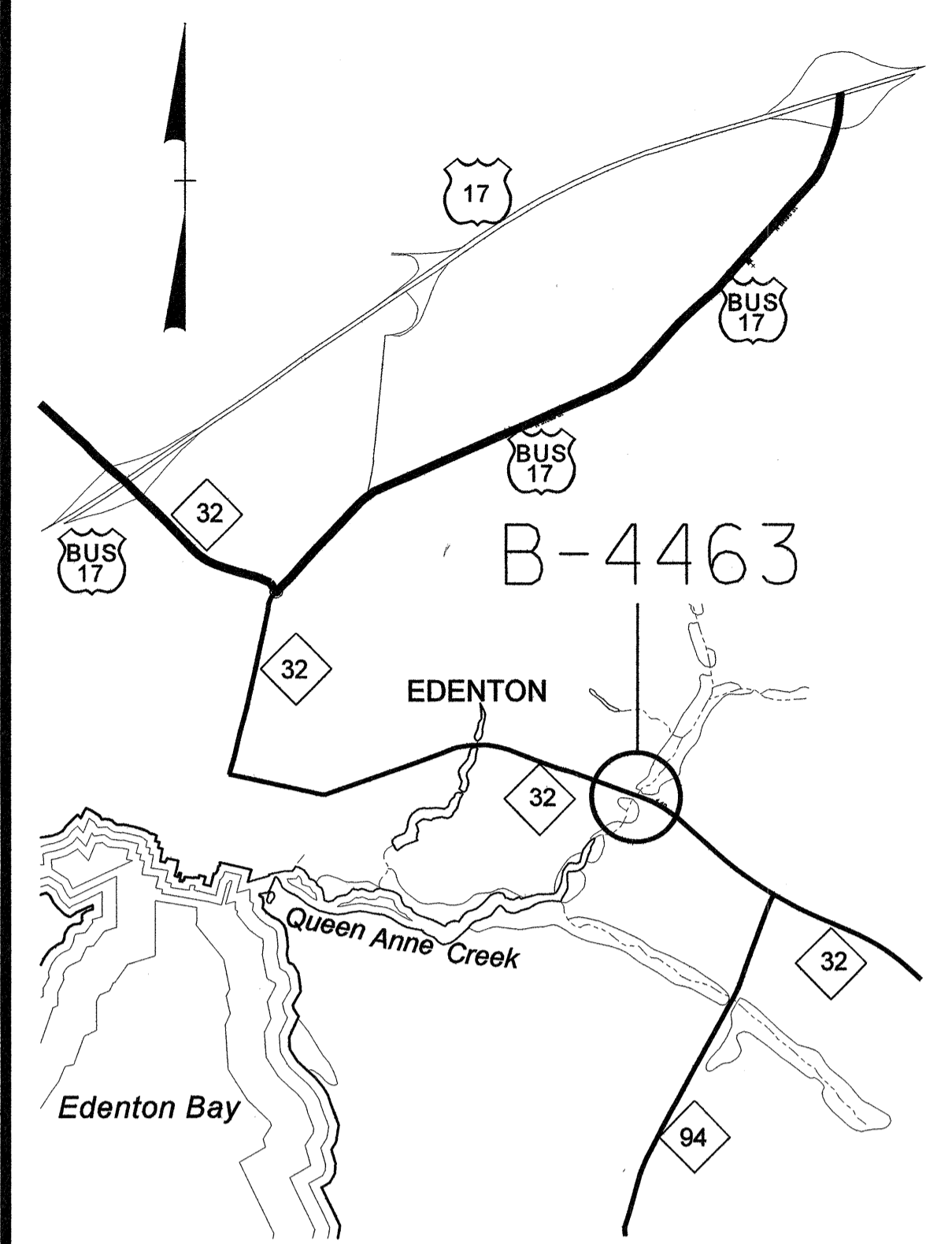
SANITARY SEWER:

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	□
Underground Storage Tank, Approx. Loc.	⊕ (UST)
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

SURVEY CONTROL SHEET B-4463



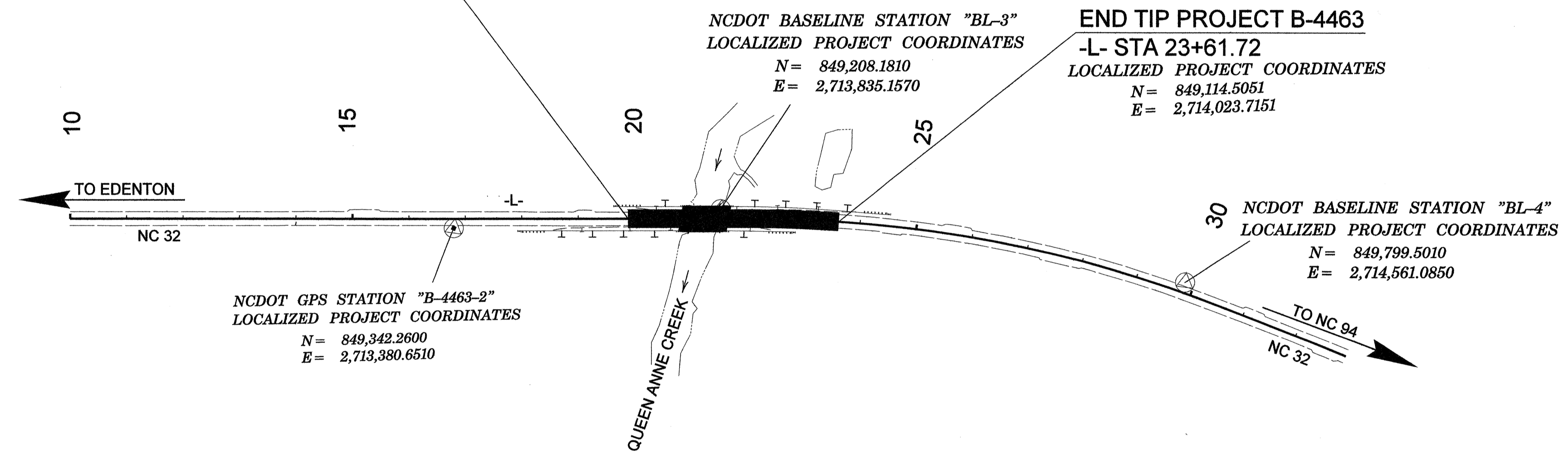
CONTROL DATA

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B44631	GPS MON	B4463-1	849855.8240	2712004.6850	12.20	OUTSIDE PROJECT LIMITS	
B44632	GPS MON	B4463-2	849342.2600	2713380.6510	7.99	16+79.50	16.51 RT
BL3		BL3	849208.1810	2713835.1570	4.81	21+52.20	16.79 LT
BL4		BL4	848799.5010	2714561.0850	11.56	29+83.79	18.25 LT



BEGIN TIP PROJECT B-4463
 -L- STA 19+88.57
 LOCALIZED PROJECT COORDINATES
 N= 849,249.6585
 E= 2,713,675.9843

END TIP PROJECT B-4463
 -L- STA 23+61.72
 LOCALIZED PROJECT COORDINATES
 N= 849,114.5051
 E= 2,714,023.7151



NCDOT GPS STATION "B-4463-1"
 LOCALIZED PROJECT COORDINATES
 N= 849,855.8240
 E= 2,712,004.6850

NCDOT GPS STATION "B-4463-2"
 LOCALIZED PROJECT COORDINATES
 N= 849,342.2600
 E= 2,713,380.6510

NCDOT BASELINE STATION "BL-3"
 LOCALIZED PROJECT COORDINATES
 N= 849,208.1810
 E= 2,713,835.1570

NCDOT BASELINE STATION "BL-4"
 LOCALIZED PROJECT COORDINATES
 N= 849,799.5010
 E= 2,714,561.0850

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4463-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 849855.824(ft) EASTING: 2712004.685(ft) ELEVATION: 12.20(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99997746

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4463-1" TO -L- STATION 15+97.00 IS S70°03'53"E 1,777.83'

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

BENCHMARK DATA

BM5	ELEVATION = 8.11
N 849171	E 2713349
L STATION 17+09 188 RIGHT	

BM6	ELEVATION = 13.53
N 848737	E 2714693
L STATION 31+24 58 LEFT	

NOTES:

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

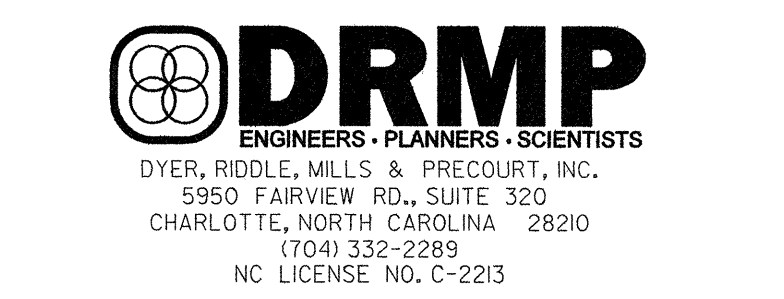
FILE: b4463_ls_control_090218.txt

SITE CALIBRATION PARAMETERS HAVE NOT BEEN DETERMINED 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.

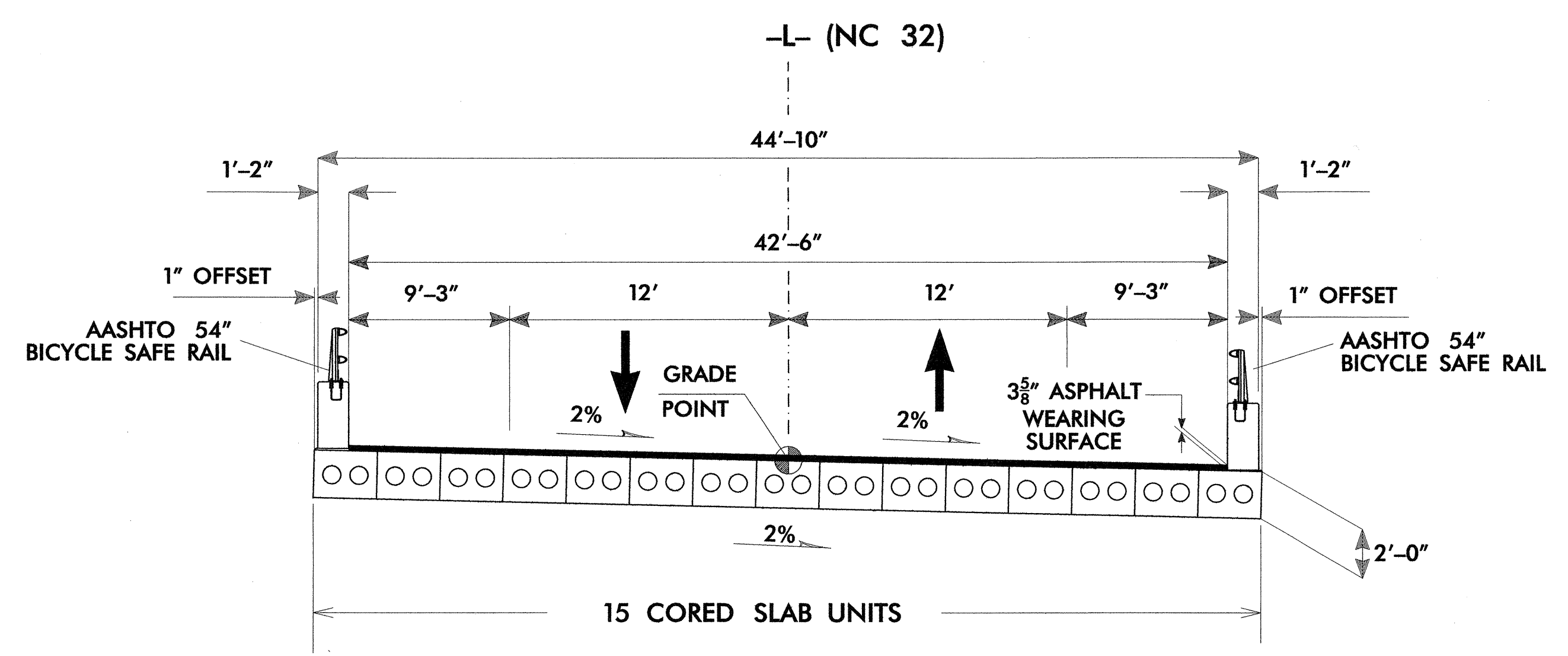
PROJECT CONTROL ESTABLISHED UTILIZING GLOBAL POSITIONING SYSTEM. NETWORK FOR GPS "B4463-1" ESTABLISHED FROM NGS ONLINE POSITIONING USER SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE



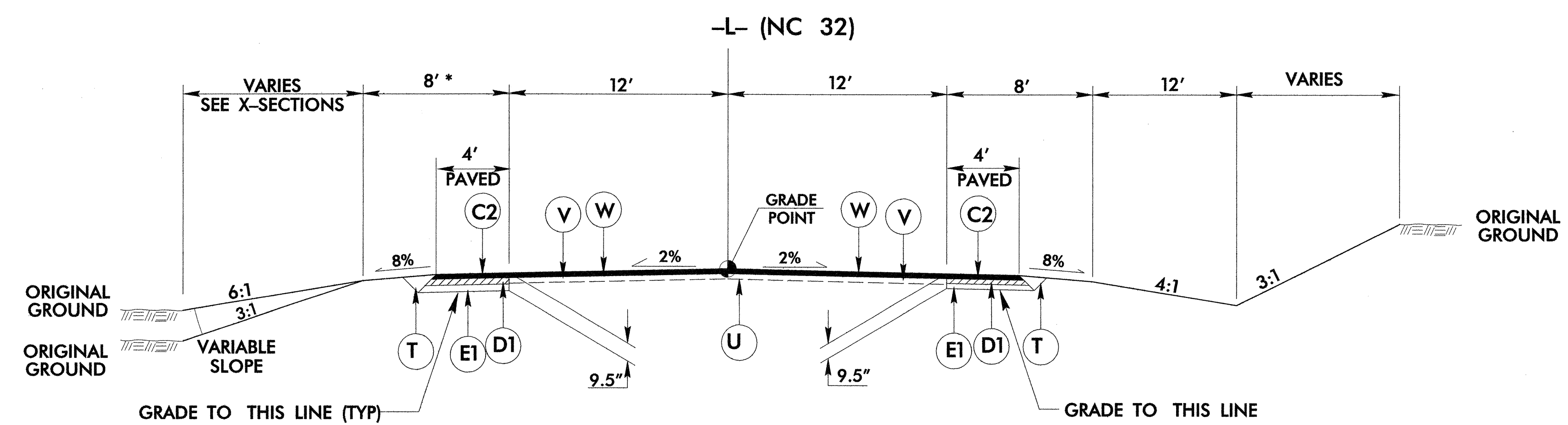
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE 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 1.5" IN DEPTH OR GREATER THAN 2.0" IN DEPTH.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4.0" IN DEPTH.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 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 BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
V	PROP. APPROX. 1.5" MILLING ASPHALT PAVEMENT
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING. (SEE WEDGING DETAIL, THIS SHEET)

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



TYPICAL SECTION NO. 2

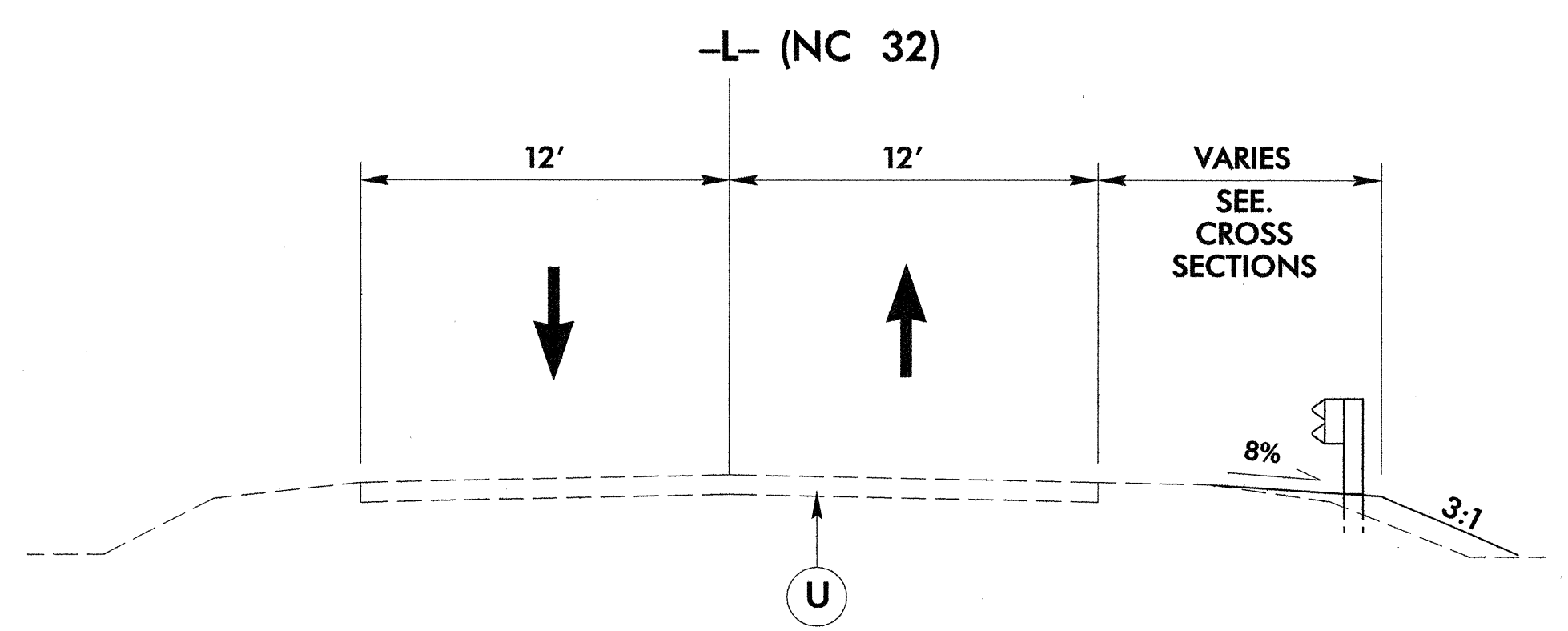
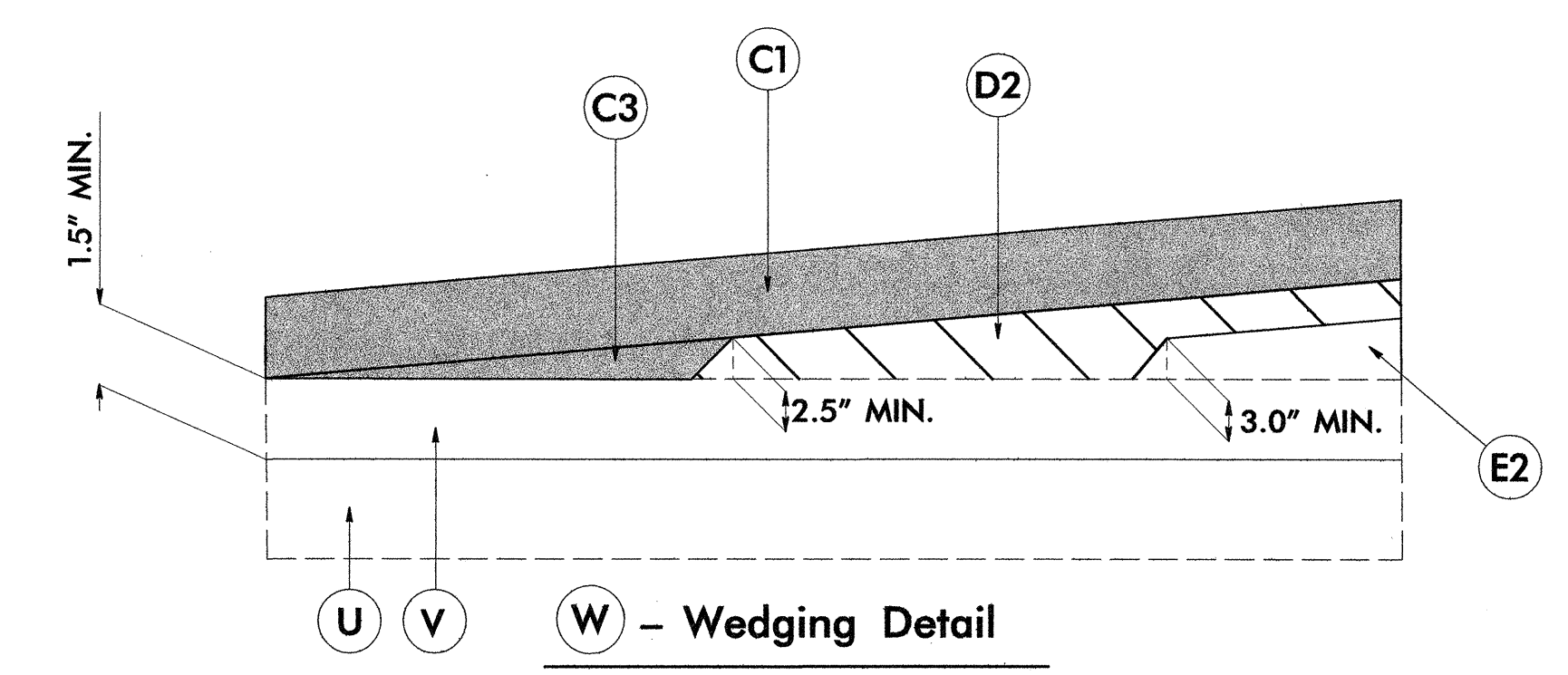
USE TYPICAL SECTION NO. 2
-L- STA 20+92.50 (BEGIN BRIDGE) TO -L- STA 21+55.50 (END BRIDGE)



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA 20+03.57 TO -L- STA 20+92.50 (BEGIN BRIDGE)
-L- STA 21+55.50 (END BRIDGE) TO -L- STA 23+46.72

TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING (INCLUDES FEATHERING)
-L- STA 19+88.57 (BEGIN PROJECT) TO -L- STA 20+03.57
-L- STA 23+46.72 TO -L- STA 23+61.72 (END PROJECT)



TYPICAL SECTION NO. 3 SHOULDER CONSTRUCTION

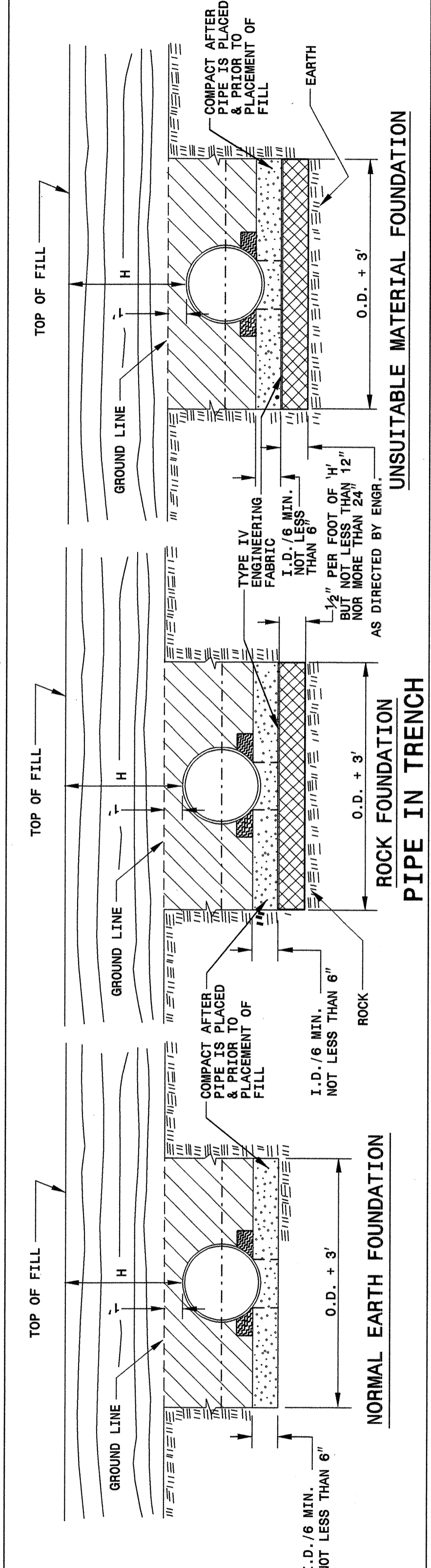
USE TYPICAL SECTION NO. 3
-L- STA 17+71.27 TO -L- STA 19+88.57 RT.
-L- STA 19+30.76 TO -L- STA 19+88.57 LT.

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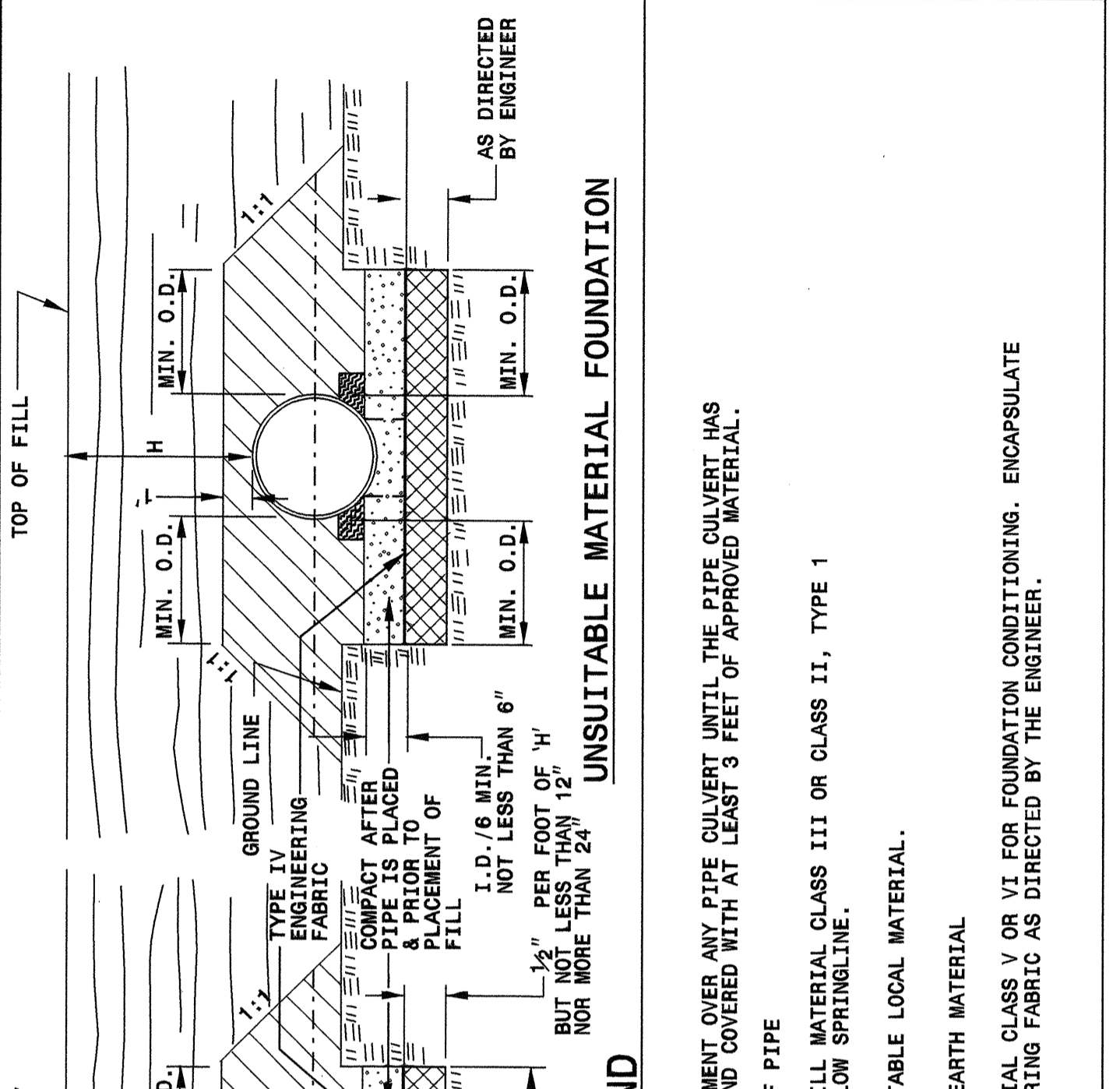
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STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.



ENGLISH DETAIL DRAWING FOR METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE
 SHEET 1 OF 3
 300D01

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



ENGLISH DETAIL DRAWING FOR METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE
 SHEET 1 OF 3
 300D01

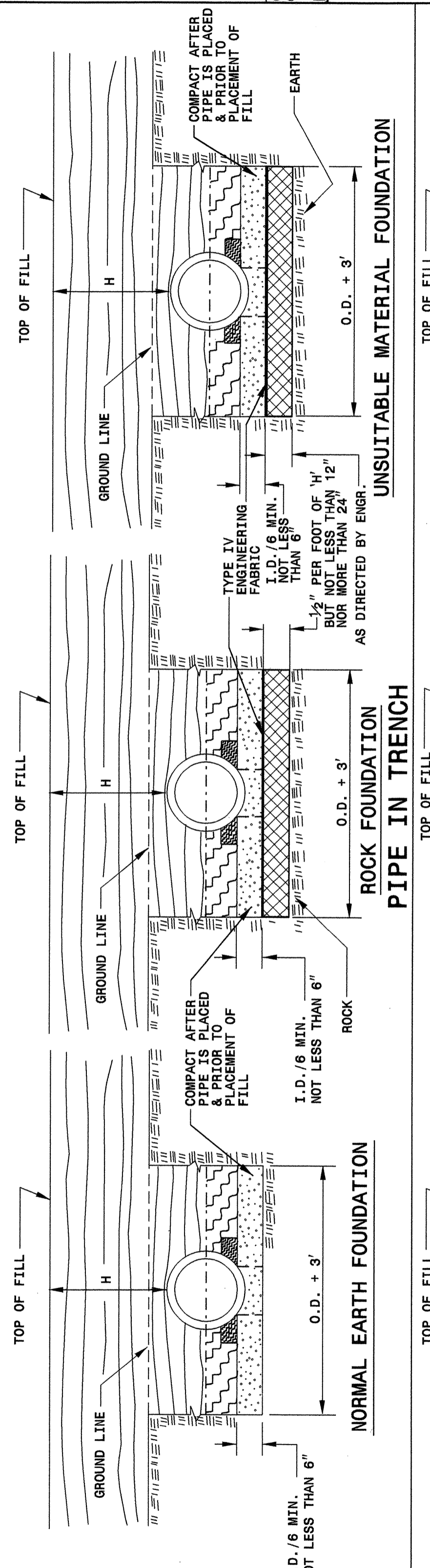
GENERAL NOTES:
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.
 TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 UNCOMPACTED SECTION DIRECTLY BENEATH PIPE TO ACCOMPLISH COMPACTION.

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

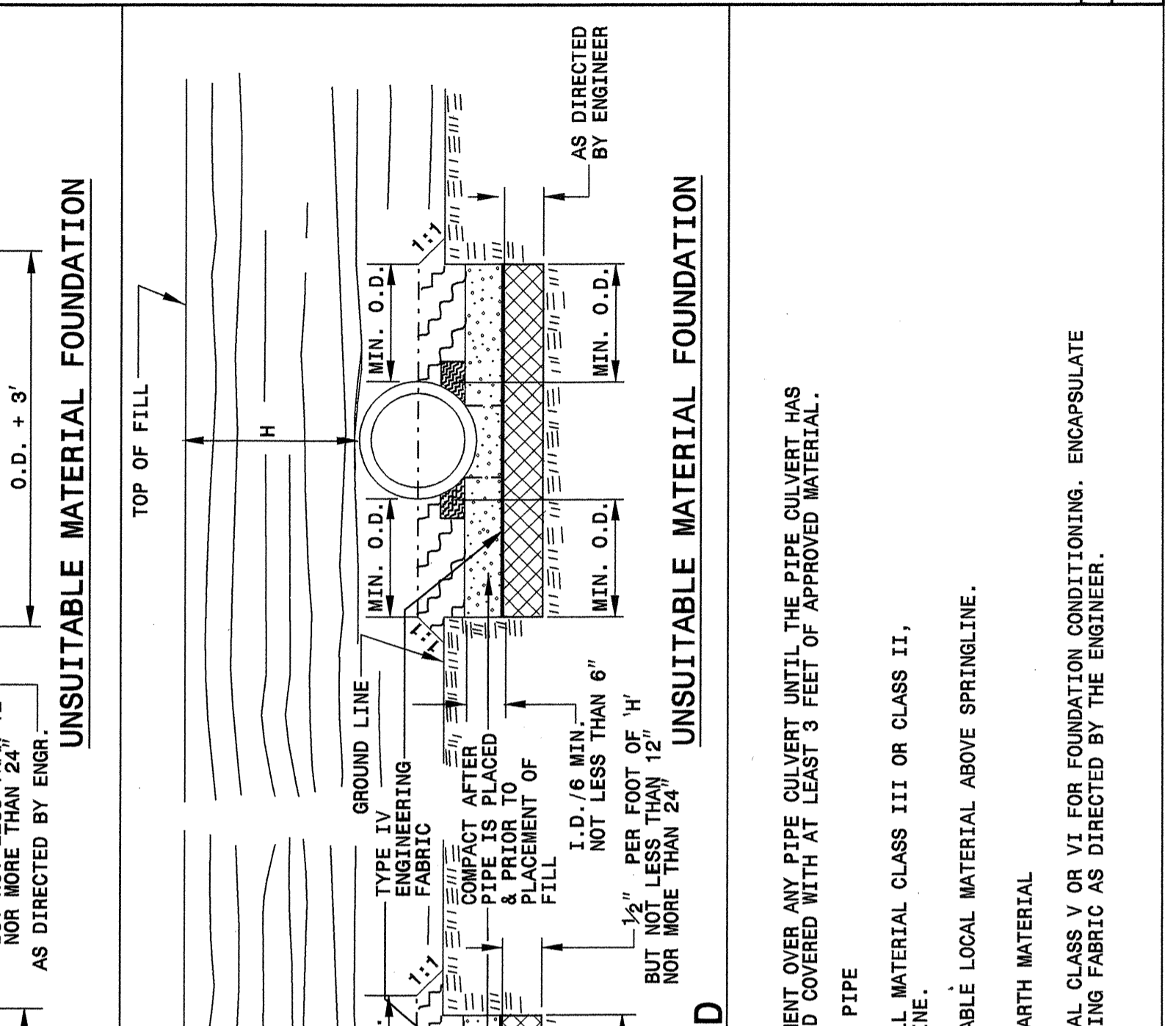
--- SPRINGLINE OF PIPE
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.
 APPROVED SUITABLE LOCAL MATERIAL.

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

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



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



ENGLISH DETAIL DRAWING FOR METHOD OF PIPE INSTALLATION
 RIGID PIPE
 SHEET 2 OF 3
 300D01

GENERAL NOTES:
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.
 TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 UNCOMPACTED AS SETTING AND BACKFILL WILL ACCOMPLISH COMPACTION.

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

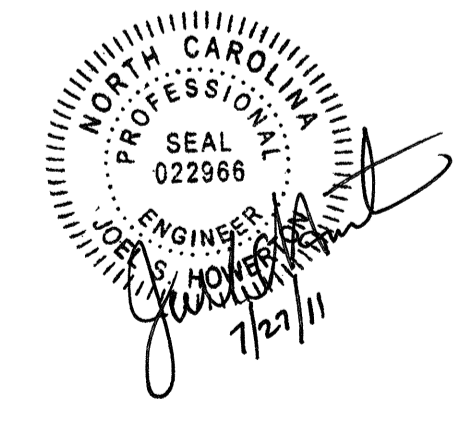
--- SPRINGLINE OF PIPE
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.
 APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.

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

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

SEE PLATE FOR TITLE

ORIGINAL BY: KKempf DATE: 5-15-09
 MODIFIED BY: DATE: 7/29/09
 CHECKED BY: DATE: 7/29/09
 FILE SPEC: /ricward/stds/stdstodetails/30001/0300d01.dgn



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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

FLEXIBLE PIPE

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

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet)			
		16	14	12	10
12	12	204	256		8
15	12	162	204		
18	12	135	169	239	
21	12	115	145	204	
24	12	100	126	178	
30	12	79	100	142	
36	12	65	83	117	152
42	12	55	70	100	130
48	12	48	61	87	113
54	12		54	77	100
60	12			69	90
66	12				81
72	12				74
78	12				81
84	12				69

HDPE - * (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 60"
 * (Maximum fill) 20' for pipe diameters ≤ 24"
 17' for pipe diameters ≥ 30" and ≤ 60"

PVC - * (Minimum fill) 2' for pipe diameters ≥ 12" and ≤ 36"
 * (Maximum fill) 30' for pipe diameters ≥ 12" and ≤ 36"

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

RIGID PIPE

RCP - * (Minimum fill) 1' for Class IV & CLASS V
 2' for Class III & Class II

* (Maximum fill) 10' - Class II pipe
 20' - Class III pipe
 30' - Class IV pipe
 40' - Class V pipe

(For fills > 40' & < 80' use LRFD Direct Design Method)

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

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

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

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

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

- CSP - AASHTO M36
- CAAP - AASHTO M196
- HDPE - AASHTO M294
- PVC - ASTM F949 or AASHTO M304

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

- RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1' MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

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

SEE PLATE FOR TITLE

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



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

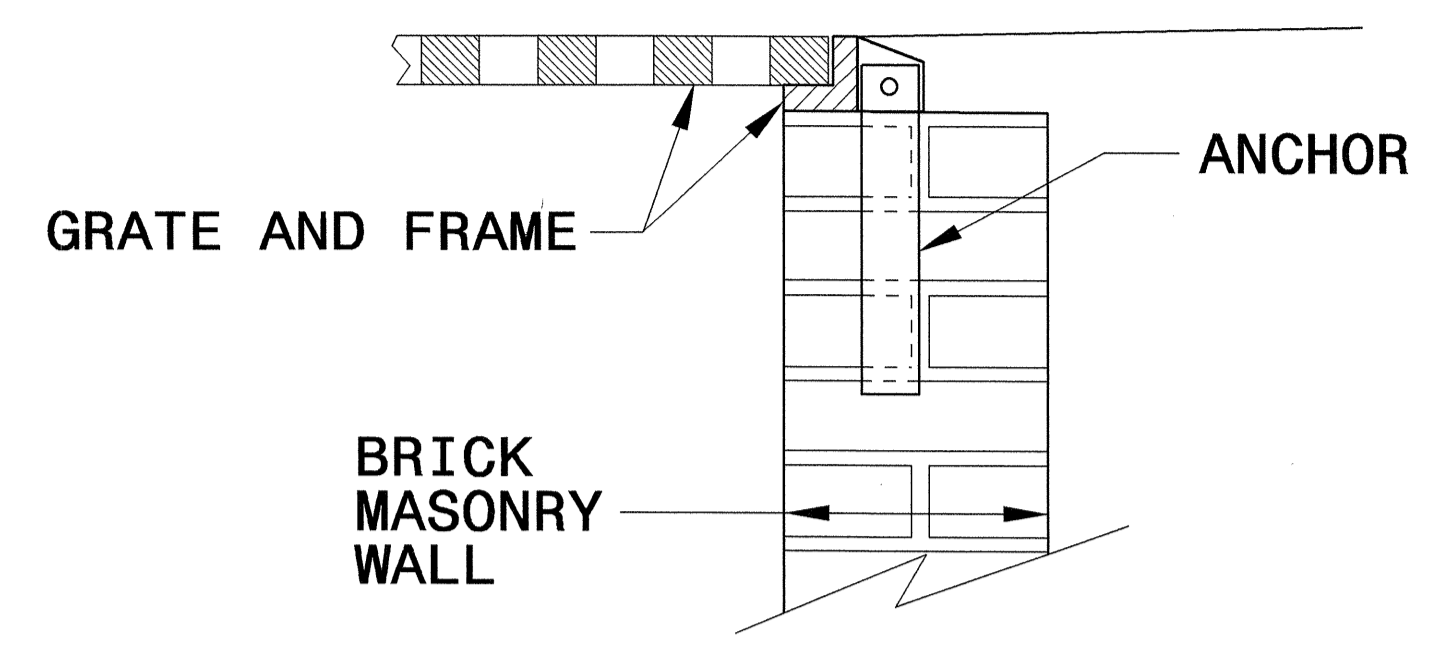
ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1
840D25

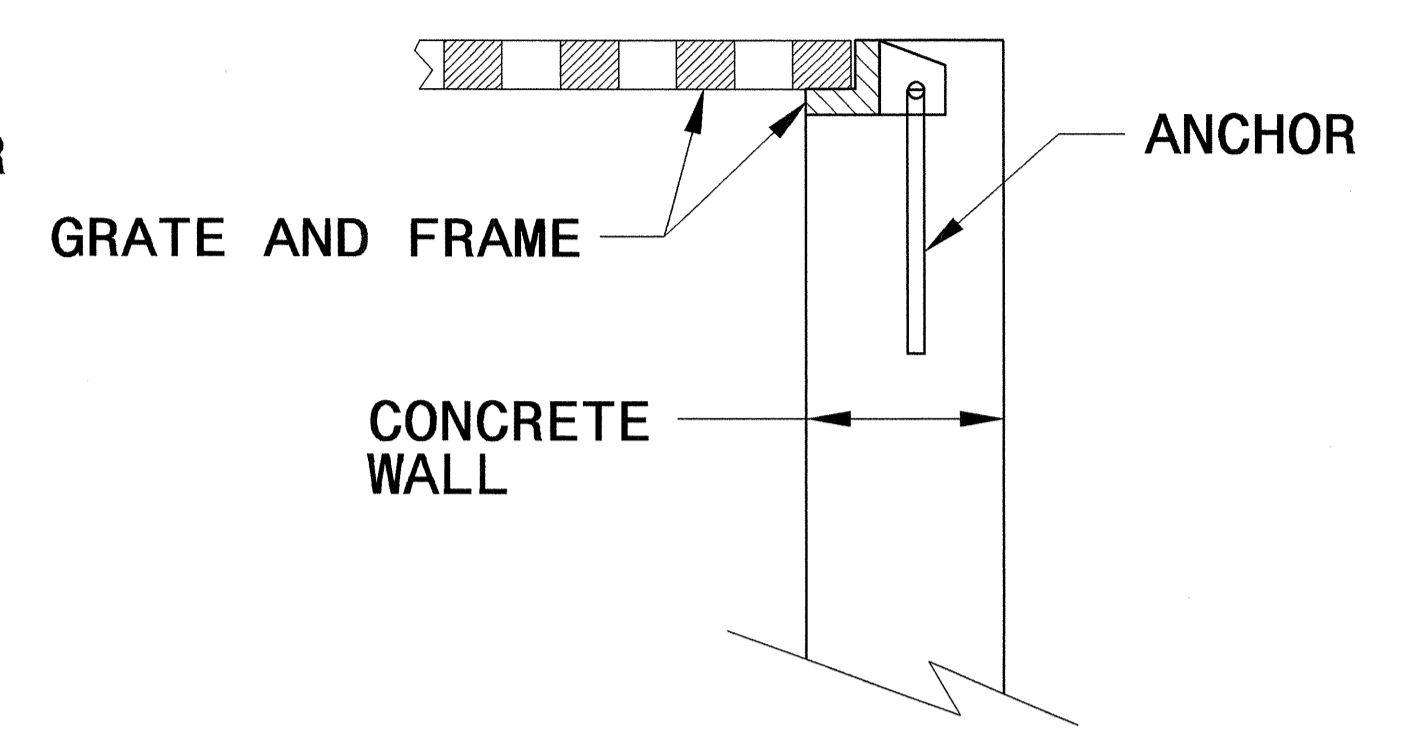
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

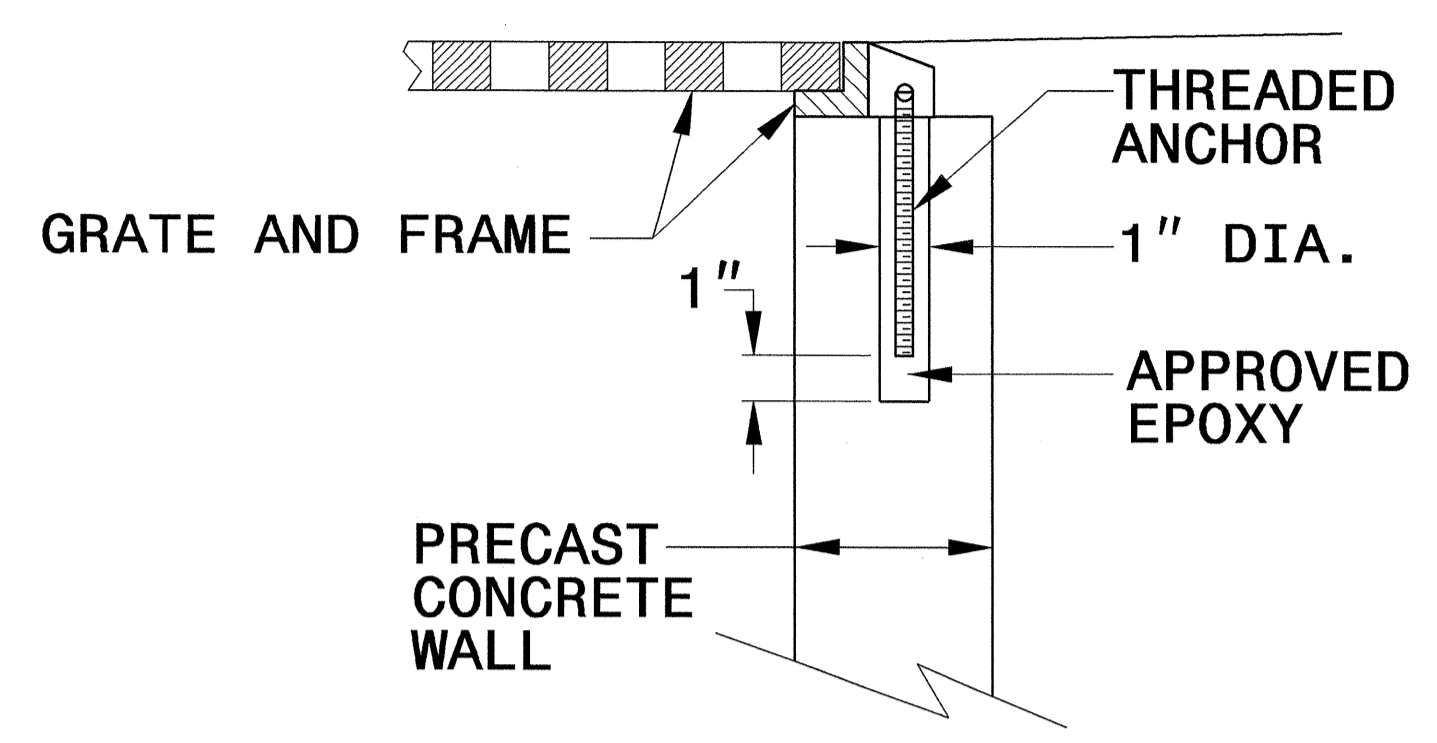
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



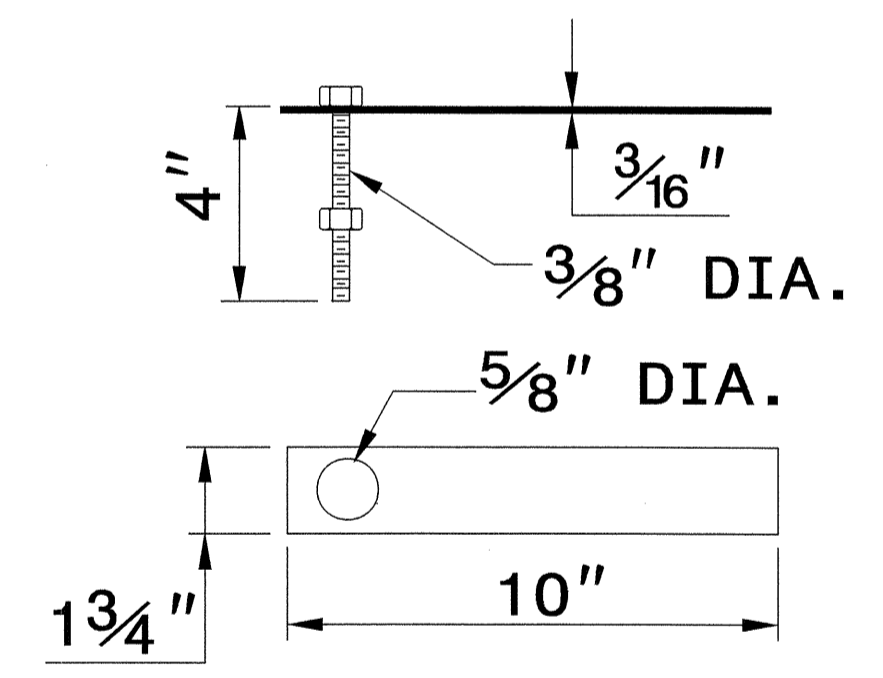
CONCRETE CONSTRUCTION



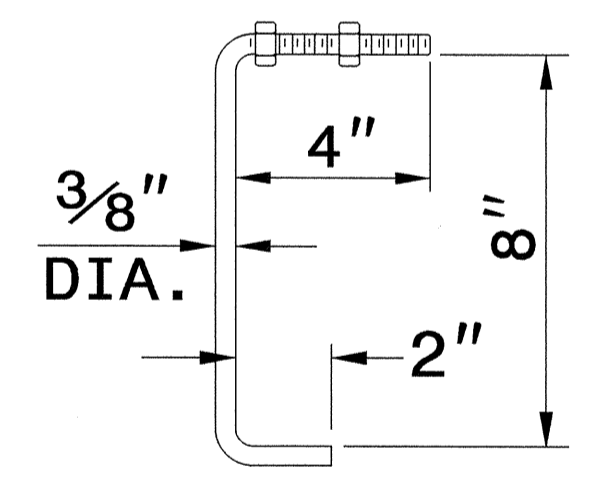
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

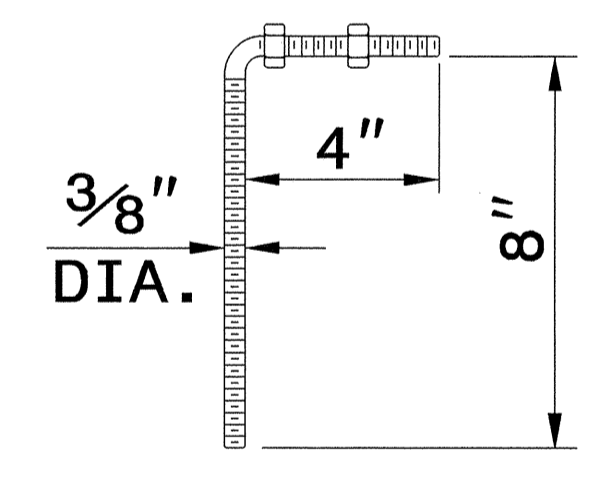
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



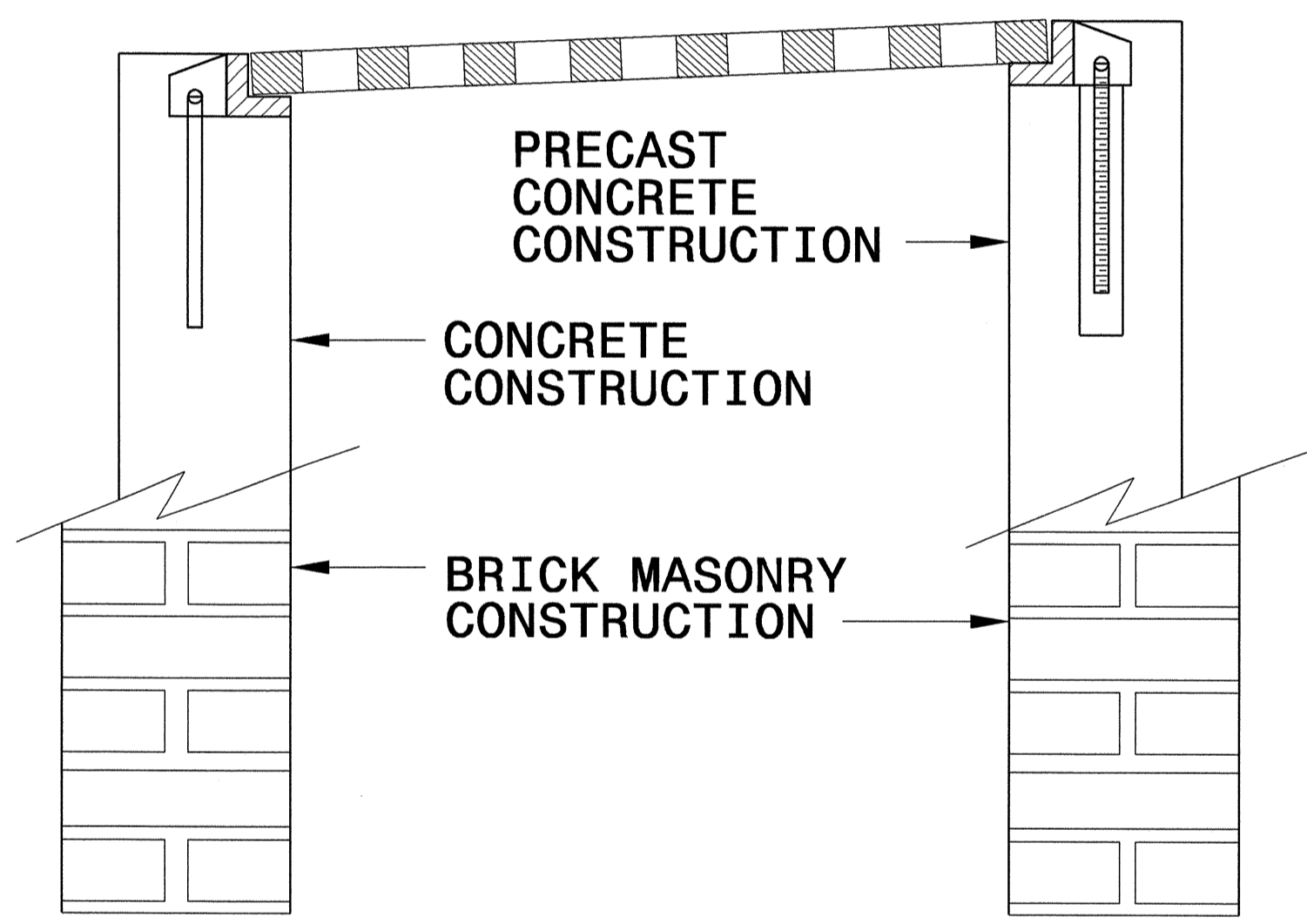
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS



PROJECT SERVICES UNIT
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.: _____

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$USER\$\$\$\$\$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202659														
ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION	2556000000-E	846	14	LF	SHOULDER BERM GUTTER	6015000000-E	1615	1	ACR	TEMPORARY MULCHING
0008000000-E	200	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING	3030000000-E	862	625	LF	STEEL BM GUARDRAIL	6018000000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (21+24.00)	3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS	6021000000-E	1620	0.25	TON	FERTILIZER FOR TEMPORARY SEEDING
0043000000-N	226	Lump Sum		GRADING	3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III	6024000000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
0057000000-E	226	400	CY	UNDERCUT EXCAVATION	3270000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350	6027000000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
0195000000-E	SP	400	CY	SELECT GRANULAR MATERIAL	3649000000-E	876	1	TON	RIP RAP, CLASS B	6029000000-E	SP	1,700	LF	SAFETY FENCE
0196000000-E	270	400	SY	FABRIC FOR SOIL STABILIZATION	3656000000-E	876	455	SY	FILTER FABRIC FOR DRAINAGE	6030000000-E	1630	40	CY	SILT EXCAVATION
0318000000-E	SP	69	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS	4400000000-E	1110	386	SF	WORK ZONE SIGNS (STATIONARY)	6036000000-E	1631	1,550	SY	MATTING FOR EROSION CONTROL
0320000000-E	SP	2,132	SY	FOUNDATION CONDITIONING FABRIC	4405000000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)	6042000000-E	1632	1,600	LF	1/4" HARDWARE CLOTH
0335200000-E	SP	16	LF	15" DRAINAGE PIPE	4410000000-E	1110	119	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)	6048000000-E	SP	90	SY	FLOATING TURBIDITY CURTAIN
1220000000-E	545	25	TON	INCIDENTAL STONE BASE	4435000000-N	1135	20	EA	CONES	6084000000-E	1660	1.5	ACR	SEEDING & MULCHING
1297000000-E	607	770	SY	MILLING ASPHALT PAVEMENT, **** DEPTH (1-1/2")	4445000000-E	1145	80	LF	BARRICADES (TYPE III)	6087000000-E	1660	0.5	ACR	MOWING
1489000000-E	610	120	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B	4450000000-N	1150	640	HR	FLAGGER	6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
1498000000-E	610	120	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE 119.0B	4685000000-E	1205	747	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
1519000000-E	610	260	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	4686000000-E	1205	747	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)	6096000000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
1575000000-E	SP	30	TON	ASPHALT BINDER FOR PLANT MIX	4900000000-N	1251	10	EA	PERMANENT RAISED PAVEMENT MARKERS	6108000000-E	1665	0.5	TON	FERTILIZER TOPDRESSING
1693000000-E	654	15	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR	5325600000-E	1510	638	LF	6" WATER LINE	6114500000-N	SP	10	MHR	SPECIALIZED HAND MOWING
2022000000-E	SP	23	CY	SUBDRAIN EXCAVATION	5540000000-E	1515	2	EA	6" VALVE	6117000000-N	SP	25	EA	RESPONSE FOR EROSION CONTROL
2033000000-E	SP	17	CY	SUBDRAIN FINE AGGREGATE	5800000000-E	1530	541	LF	ABANDON 6" UTILITY PIPE					
2044000000-E	SP	100	LF	6" PERFORATED SUBDRAIN PIPE	5871400000-E	1550	423	LF	TRENCHLESS INSTALLATION OF 6" IN SOIL					
2070000000-N	SP	1	EA	SUBDRAIN PIPE OUTLETS	5871410000-E	1550	47	LF	TRENCHLESS INSTALLATION OF 6" NOT IN SOIL					
2077000000-E	SP	6	LF	6" OUTLET PIPE (SUBDRAINS)	6000000000-E	1605	180	LF	TEMPORARY SILT FENCE					
2286000000-N	840	1	EA	MASONRY DRAINAGE STRUCTURES	6006000000-E	1610	225	TON	STONE FOR EROSION CONTROL, CLASS A					
2367000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.29	6009000000-E	1610	30	TON	STONE FOR EROSION CONTROL, CLASS B					
					6012000000-E	1610	320	TON	SEDIMENT CONTROL STONE					

5/28/99
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10:23:52 AM
7/20/2011

COMPUTED BY: GSM DATE: 8/1/2011
 CHECKED BY: JEB DATE: 8/1/2011

PROJECT NO. B-4463 SHEET NO. 3-A

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

Station	Station	TOTAL UNCLASS. EXCAV.	UNDERCUT	Embank. +%	Borrow	Waste
-L- 17+71.27	20+92.50 (BEG. BRIDGE)	15		286	271	
SUBTOTAL:		15		286	271	
-L- 21+55.50 (END BRIDGE)	23+61.72	18		241	223	
SUBTOTAL:		18		241	223	
SUMMARY SUBTOTAL:		33		527	494	0
EST. LOSS DUE TO CLEARING & GRUBBING		0			0	
PROJECT TOTALS:		33		527	494	0
EST. 5% FOR REPLACING TOP SOIL ON BORROW PITS					25	
GRAND TOTALS:		33			519	
SAY:		40			520	

SUMMARY OF PAVEMENT REMOVAL/BREAKING

LINE	STATION TO STATION	LOC	ASPHALT REMOVAL (SY)	ASPHALT BREAKING (SY)	CONCRETE REMOVAL (SY)	CONCRETE BREAKING (SY)
-L-	20+81 TO 21+00				49.50	
-L-	21+45 TO 21+68				58.04	
GRAND TOTAL:					107.54	
SAY:					110	

EST. UNDERCUT = 400 CY (CONTINGENCY FROM GEOTECHNICAL REPORT)
 EST. SELECT GRANULAR MATERIAL = 400 CY (CONTINGENCY FROM GEOTECHNICAL REPORT)
 EST. FABRIC FOR SOIL STABILIZATION = 400 SY (CONTINGENCY FROM GEOTECHNICAL REPORT)

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.

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

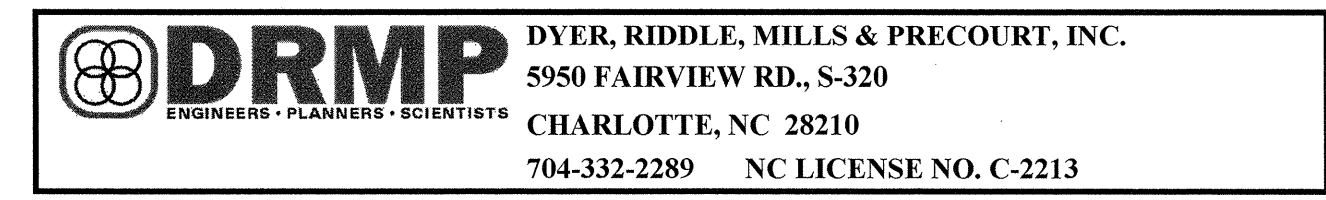
GUARDRAIL SUMMARY

"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

LINE	BEG. STA.	END STA.	LOC. -L-	LENGTH			WARRANT POINT		"N" DIST FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH		W		ANCHORS						IMP. ATTEN. TYPE 350			REMOVE EXISTING GRDRAIL	REMARKS						
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPR. END	TRAIL. END	APPR. END	TRAIL. END	XI MOD	XI	GRAU 350	M-350	XII	III	B-77	EA	G			NG					
-L-	17+88.75	20+88.75	RT	300.00			20+88.75		9.25	8	231.25		0.75				1														
-L-	19+58.75	20+96.25	LT	137.50				20+96.25	9.25	8		68.75	0.75				1														
-L-	21+51.75	22+89.25	RT	137.50				21+51.75	9.25	8		68.75	0.75				1														
-L-	21+59.25	24+59.25	LT	300.00			21+59.25		9.25	8	231.25		0.75				1														
SUBTOTAL				875.00																											

ANCHOR UNIT DEDUCTIONS			
GRAU 350 =	4 x 50	=	-200.00
TYPE III =	4 x 18.75	=	-75.00
TOTAL			600.00
SAY			625.00

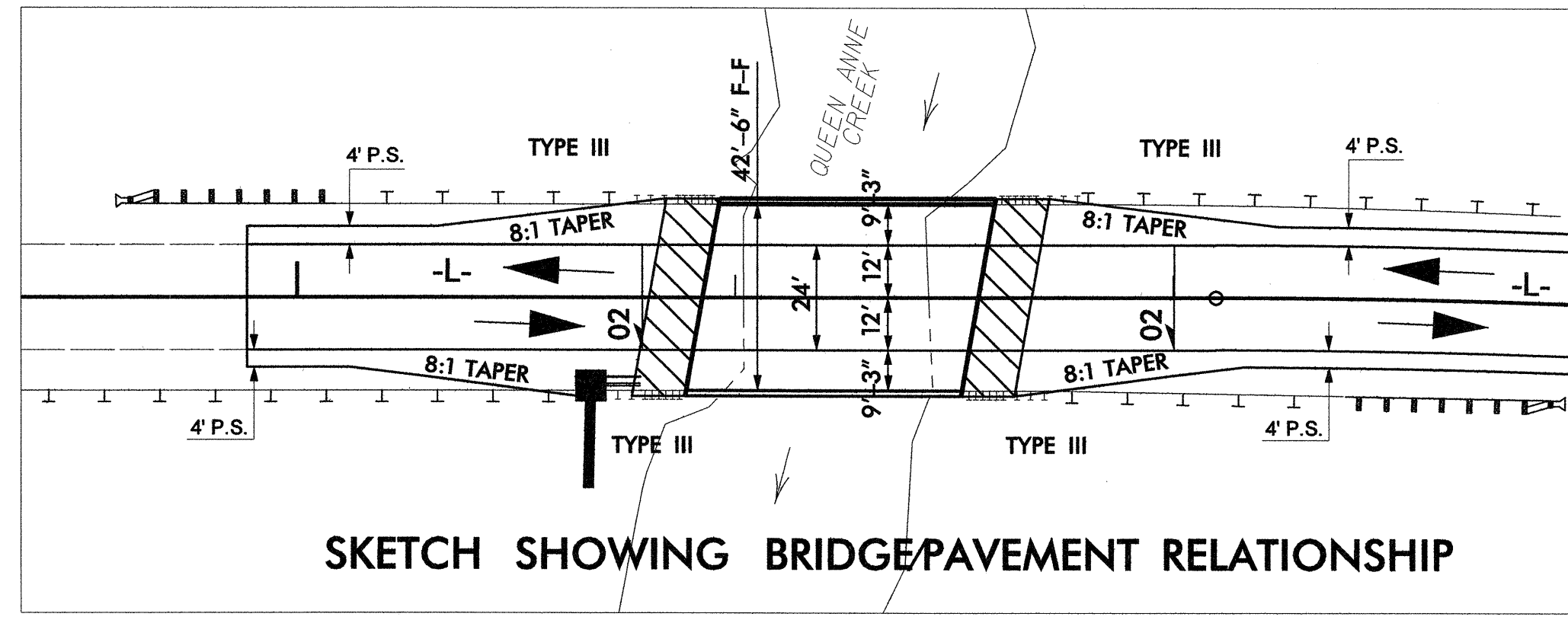
(5 ADDITIONAL GUARDRAIL POST)



8/17/99

REVISIONS

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10/15/98 AM
7/22/2011

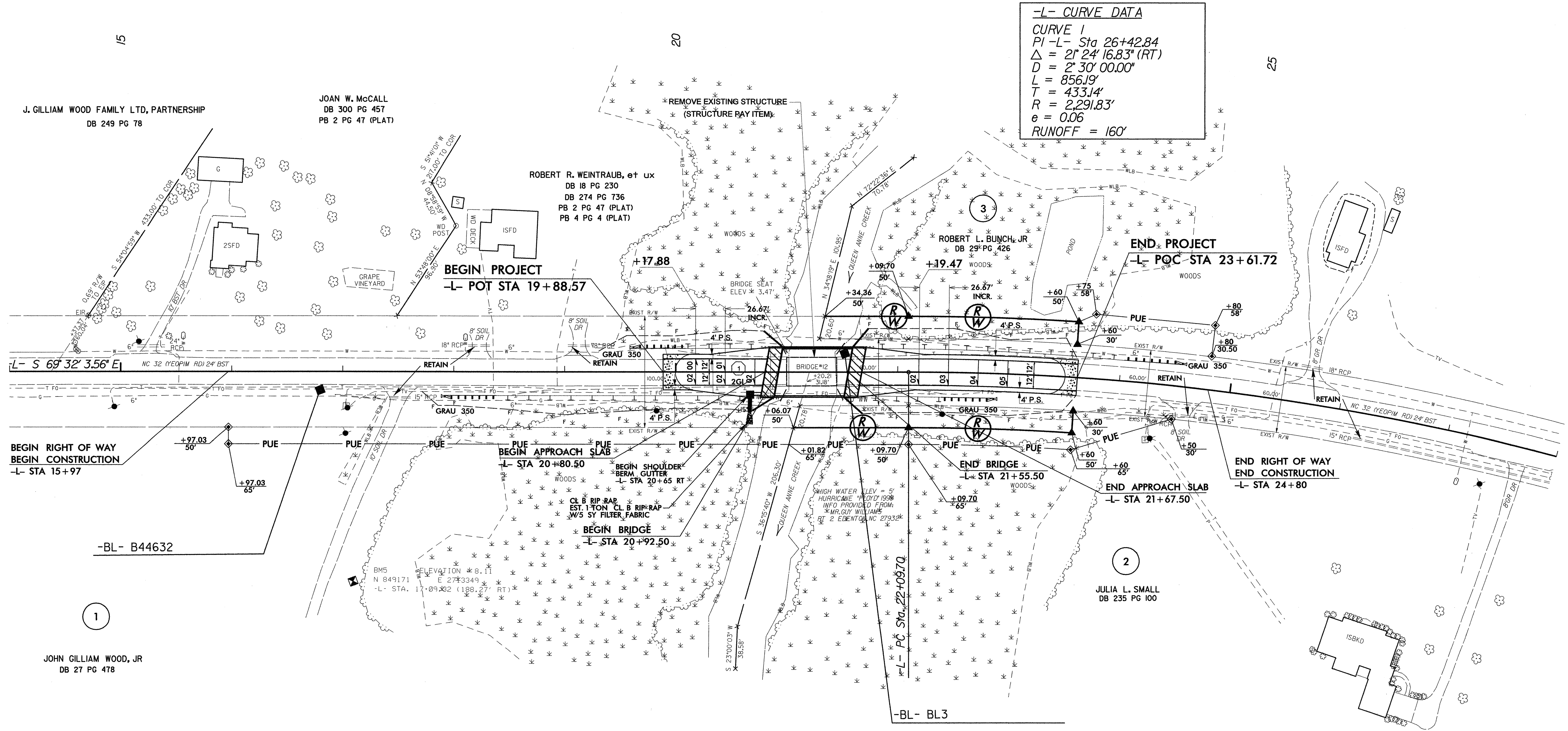


SKETCH SHOWING BRIDGE PAVEMENT RELATIONSHIP



PROJECT REFERENCE NO. B-4463	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER JAMES E. BECK 7/21/2011	HYDRAULICS ENGINEER ROGER S. WEAVER 7/25/11

FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-3
FOR -L- PROFILE, SEE SHEET NO. 5



-L- CURVE DATA
CURVE 1
 PI -L- Sta 26+42.84
 $\Delta = 21^{\circ} 24' 16.83''$ (RT)
 $D = 2^{\circ} 30' 00.00''$
 $L = 856.19'$
 $T = 433.14'$
 $R = 2,291.83'$
 $e = 0.06$
RUNOFF = 160'

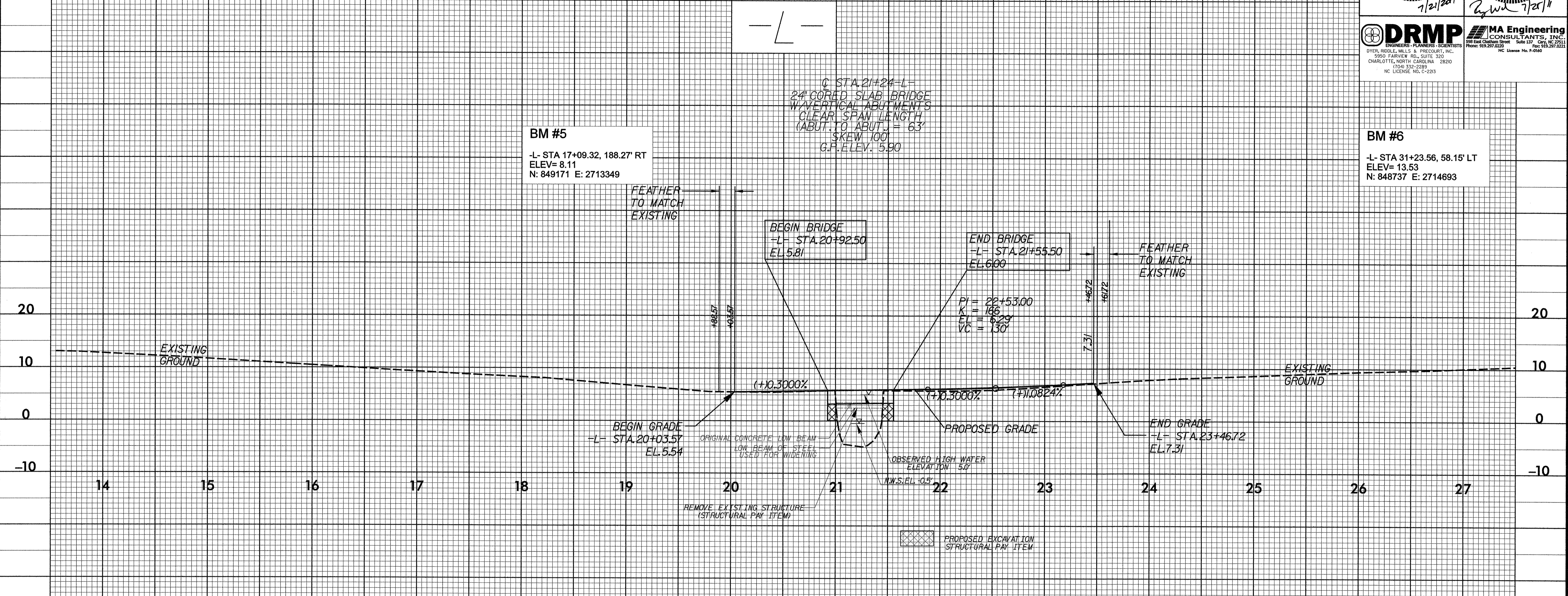
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JOHN GILLIAM WOOD, JR
DB 27 PG 478

-BL- BL3

5/14/99

PROJECT REFERENCE NO. B-4463	SHEET NO. 5
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
 DRMP CONSULTANTS, INC. ENGINEERS • PLANNERS • SCIENTISTS DYER, RIDLE, MILLS & PRECOURT, INC. 5950 PARKVIEW RD., SUITE 300 CHARLOTTE, NORTH CAROLINA 28210 (704) 332-2289 NC LICENSE NO. P-2283	
 MA Engineering CONSULTANTS, INC. 288 East Chatham Street, Suite 117, City, NC 27211 Phone: 919.297.0221 Fax: 919.297.0221 NC License No. P-0560	



BM #5
 -L- STA 17+09.32, 188.27' RT
 ELEV= 8.11
 N: 849171 E: 2713349

C STA 21+24-L-
 24' CORED SLAB BRIDGE
 W/VERTICAL ABUTMENTS
 CLEAR SPAN LENGTH
 (ABUT. TO ABUT.) = 63'
 SKEW 100'
 G.P. ELEV. 5.90

BM #6
 -L- STA 31+23.56, 58.15' LT
 ELEV= 13.53
 N: 848737 E: 2714693

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= NA (TIDAL) CFS
DESIGN FREQUENCY	= NA (TIDAL) YRS
DESIGN HW ELEVATION	= NA (TIDAL) FT
BASE DISCHARGE	= NA (TIDAL) CFS
BASE FREQUENCY	= NA (TIDAL) YRS
BASE HW ELEVATION	= NA (TIDAL) FT
OVERTOPPING DISCHARGE	= NA (TIDAL) CFS
OVERTOPPING FREQUENCY	= NA (TIDAL) YRS
OVERTOPPING ELEVATION	= NA (TIDAL) FT
DATE OF SURVEY	
W.S. ELEVATION AT DATE OF SURVEY	= NA (TIDAL) FT

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