

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

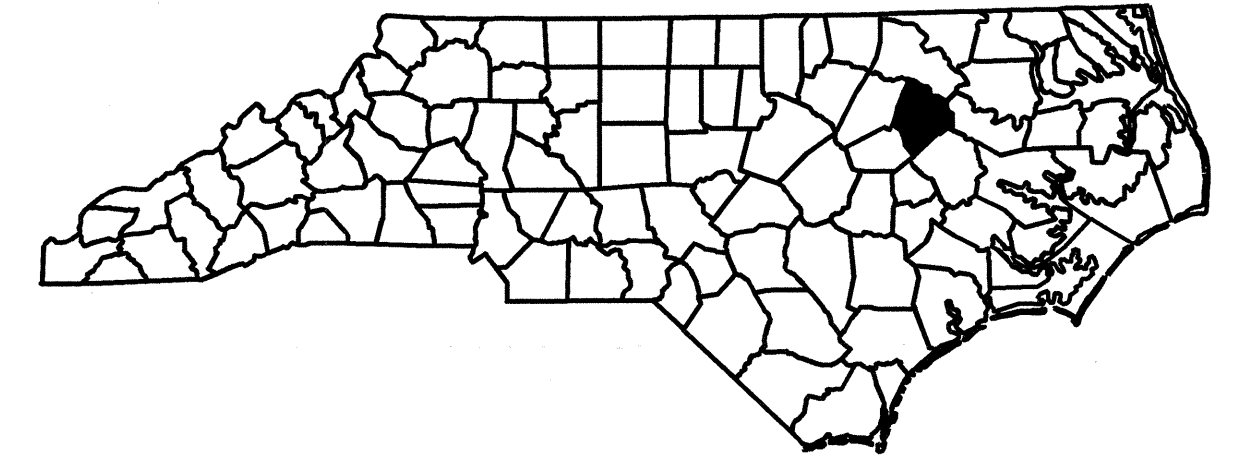
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4503	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33734.1.1	BRSTP-1250(2)	P.E.	
33734.2.1	BRSTP-1250(2)	ROW & UTIL	
33734.3.1	BRSTP-1250(2)	CONSTRUCTION	

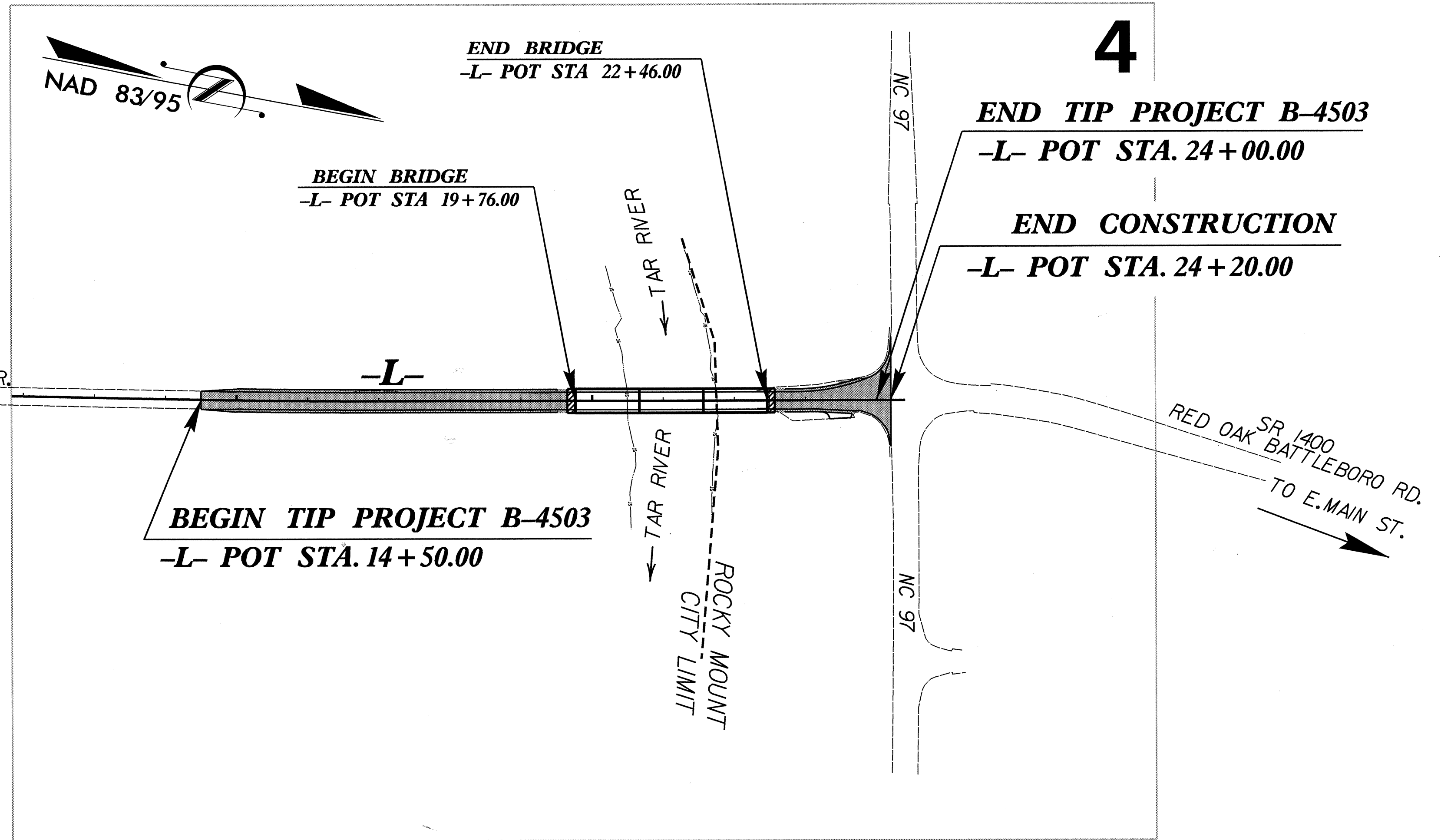
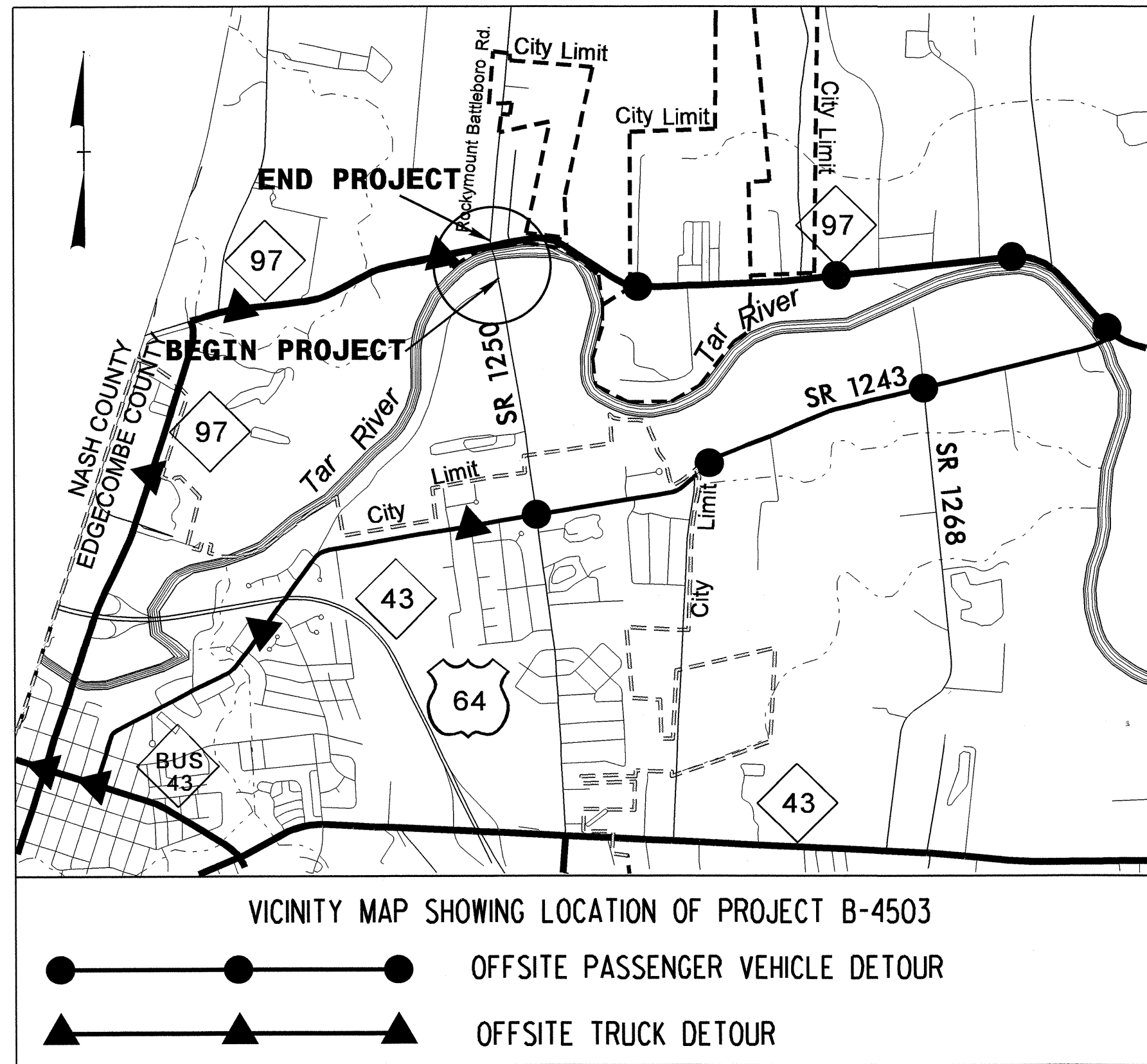
EDGECOMBE COUNTY

LOCATION: BRIDGE NO. 7 OVER THE TAR RIVER
ON SR 1250 (SPRINGFIELD DR.)

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



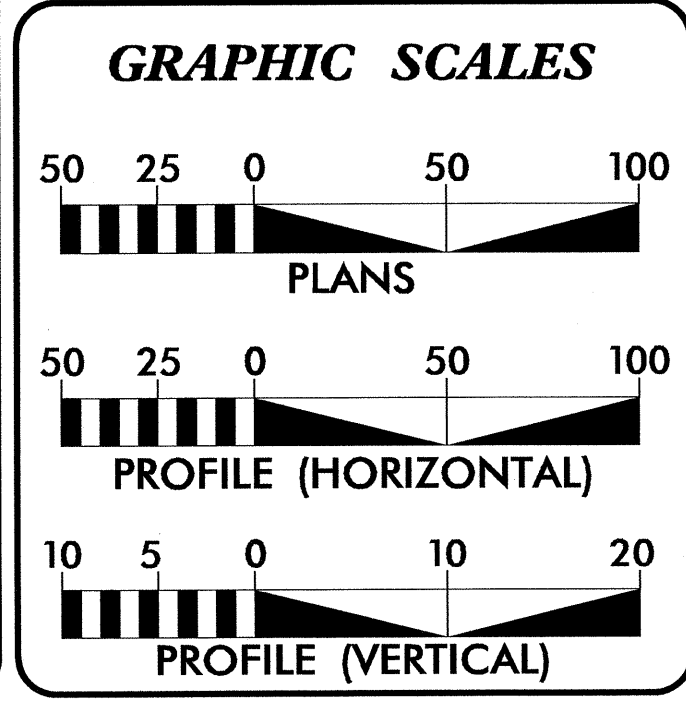
TIP PROJECT: B-4503



THIS PROJECT WAS DESIGNED USING
THE SUB REGIONAL TIER DESIGN GUIDELINES
FOR BRIDGE PROJECTS

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT

CONTRACT: C202730



DESIGN DATA

ADT 2010 =	5300
ADT 2030 =	9500
DHV =	10 %
D =	60 %
T =	6 % *
V =	60 MPH
* TTST 2 %	DUAL 4 %
FUNC. CLASS=RURAL LOCAL	

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4503 =	0.129 MILES
LENGTH OF STRUCTURE TIP PROJECT B-4503 =	0.051 MILES
TOTAL LENGTH OF TIP PROJECT B-4503 =	0.180 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 19, 2010

LETTING DATE:
NOVEMBER 15, 2011

TONY HOUSER, P.E.
PROJECT ENGINEER

LEE ANN MOORE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER

SEAL 22100

SEAL 78494

8-18-2011

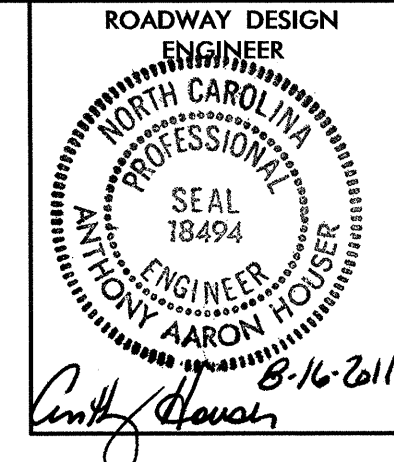
8-16-2011

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

Art McMiller, P.E.

12-AUG-2011 11:11:11 R:\Roadway\Proj\B4503_rdy.tsh.dgn \$\$\$USERNAME\$\$\$



INDEX OF SHEETS

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1B	CONVENTIONAL SYMBOLS
1C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, WEDGING DETAIL, BRIDGE TYPICAL, AND SHOULDER BERM GUTTER DETAIL
2A	DETAIL OF JUNCTION BOX
2B THRU 2C	DETAIL OF METHOD OF PIPE INSTALLATION
2D	DETAIL OF ANCHORAGE FOR FRAMES
2E	DETAIL OF BRIDGE APPROACH FILLS FOR CORED SLAB & BOX BEAM BRIDGES SUB REGIONAL TIER
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF EARTHWORK, SUMMARY OF PAVEMENT REMOVAL, SHOULDER BERM GUTTER SUMMARY, GUARDRAIL SUMMARY, AND BREAKING OF PAVEMENT SUMMARY
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PM-1 THRU PM-2	PAVEMENT MARKING PLANS
RF-1	REFORESTATION PLANS
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SIG-1 THRU SIG-8	SIGNALS PLANS
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X-A	CROSS-SECTION SUMMARY
X-1 THRU X-7	CROSS-SECTIONS
S-1 THRU S-24	STRUCTURE PLANS

GENERAL NOTES

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

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 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
CITY OF ROCKY MOUNT
EDGECOMBE - MARTIN EMC
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

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

2006 ROADWAY ENGLISH STANDARD DRAWINGS

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 111
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superlevation - Two Lane Pavement
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method 1
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
838.39	Reinforced Concrete Endwall - for Single 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
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
876.02	Guide for Rip Rap at Pipe Outlets

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

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Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○
Property Corner	✕
Property Monument	□
Parcel/Sequence Number	(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	○
Well	⊙
Small Mine	⊗
Foundation	▭
Area Outline	▭
Cemetery	⊕
Building	▭
School	▭
Church	⊕
Dam	▭

HYDROLOGY:

Stream or Body of Water	~~~~~
Hydro, Pool or Reservoir	▭
Jurisdictional Stream	-JS-
Buffer Zone 1	-BZ 1-
Buffer Zone 2	-BZ 2-
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	⬇
Proposed Lateral, Tail, Head Ditch	▭
False Sump	▽

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	CSX TRANSPORTATION 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 Drainage / Utility Easement	PDE
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	⊙
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	PH
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	PH
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	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	PH
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.

04/16/11

6/2/09

SURVEY CONTROL SHEET B-4503

BASELINE DATA

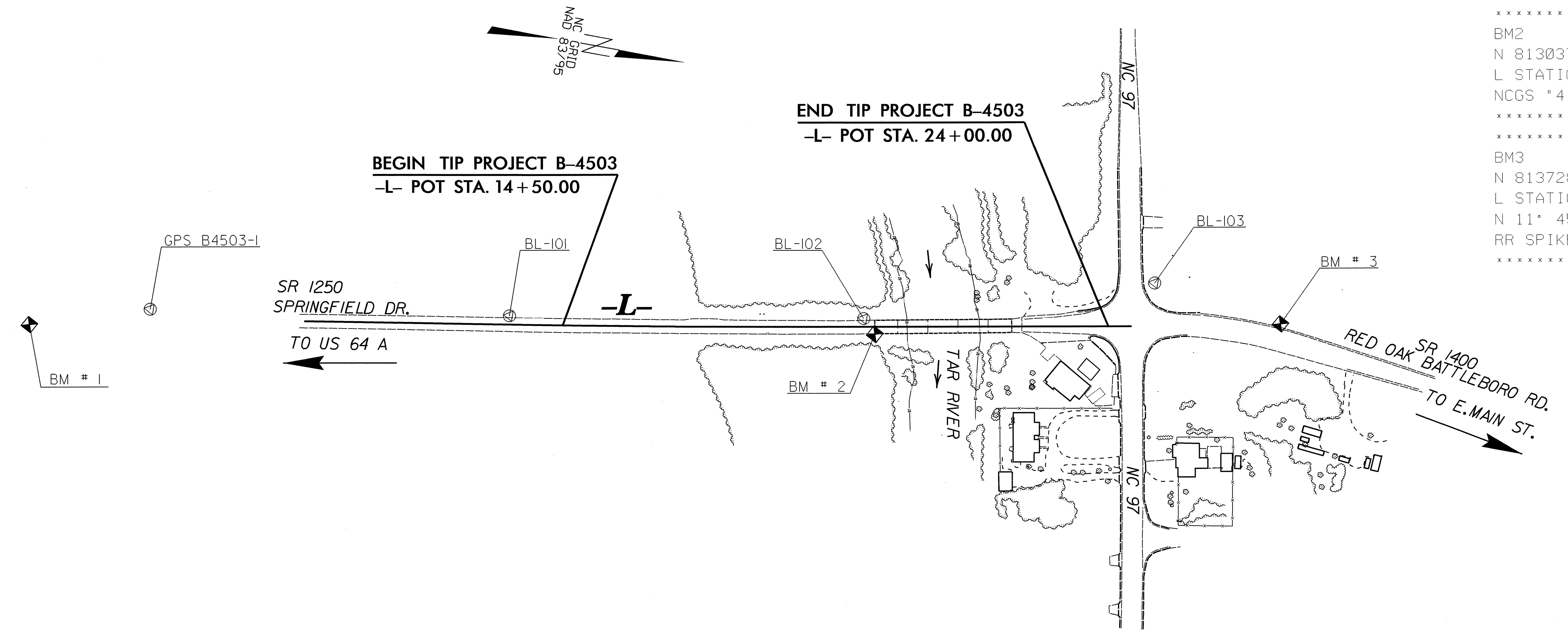
BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1		GPS B4503-1	811789.7281	2367776.8818	72.01	OUTSIDE PROJECT LIMITS	
101		BL-101	812406.2540	2367673.1920	71.75	13+56.86	15.72 LT
102		BL-102	813013.1510	2367563.5980	79.11	19+73.85	15.01 LT
103		BL-103	813499.6060	2367409.2220	77.18	OUTSIDE PROJECT LIMITS	

BENCHMARK DATA

 BM1 ELEVATION = 71.59 (DOT)
 N 811588 E 2367842
 L STATION 10+00
 S 11° 13' 27.6" E DIST 478.31
 NCGS "GATE 1963"

 BM2 ELEVATION = 80.53 (DOT)
 N 813037 E 2367587
 L STATION 19+93 13 RIGHT
 NCGS "4-JS-29 1960" (ON BRIDGE)

 BM3 ELEVATION = 76.87
 N 813728 E 2367439
 L STATION 24+40
 N 11° 45' 21.8" W DIST 259.34
 RR SPIKE IN BASE OF POWER POLE



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS B4503-1"
 WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
 NORTHING: 811789.7281(ft) EASTING: 2367776.8818(ft)
 ELEVATION: 72.01(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99995324
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS B4503-1" TO -L- STATION 14+50.00 IS
 N 08° 18' 53.0" W 718.54'
 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.NCDOT.ORG/DOH/RECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/DOH/RECONSTRUCT/HIGHWAY/LOCATION/PROJECT/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 B4503_LS_CONTROL_090520.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)

NOTE: DRAWING NOT TO SCALE

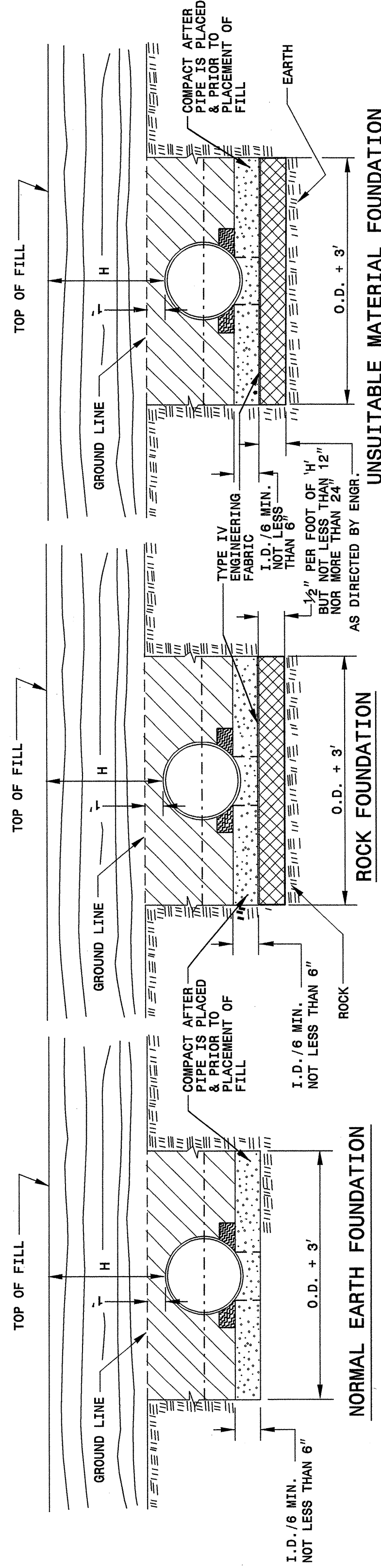
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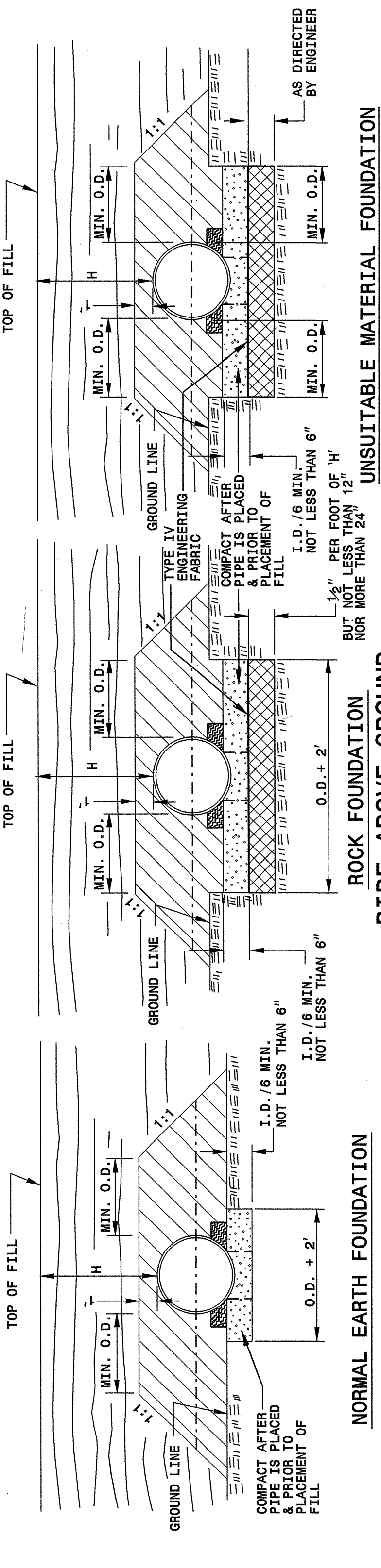
STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

7-06



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

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE



ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE

SHEET 1 OF 3
300D01

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.

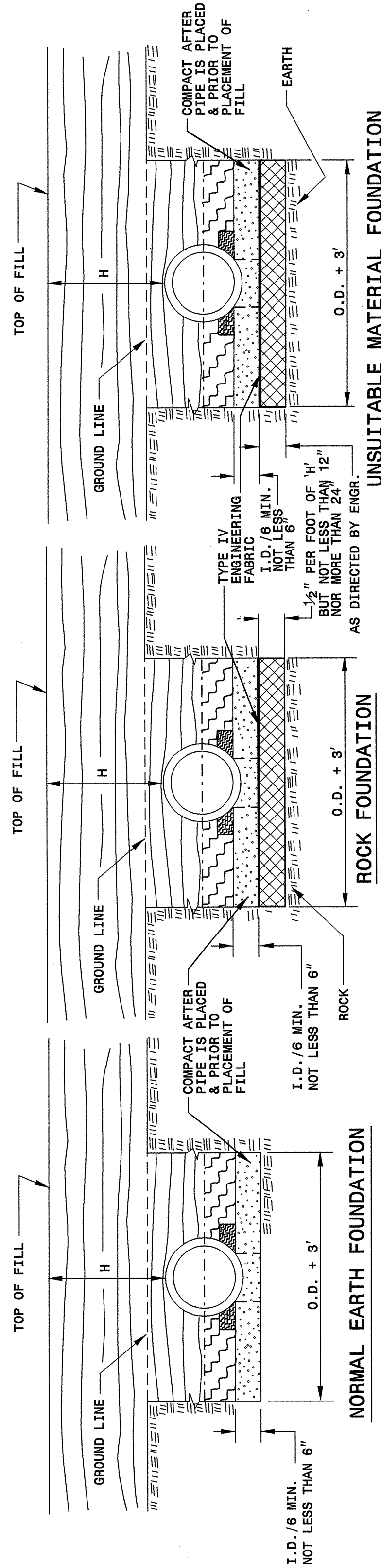
TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

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

SPRINGLINE OF PIPE
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.
 APPROVED SUITABLE LOCAL MATERIAL.
 UNDISTURBED EARTH MATERIAL
 SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

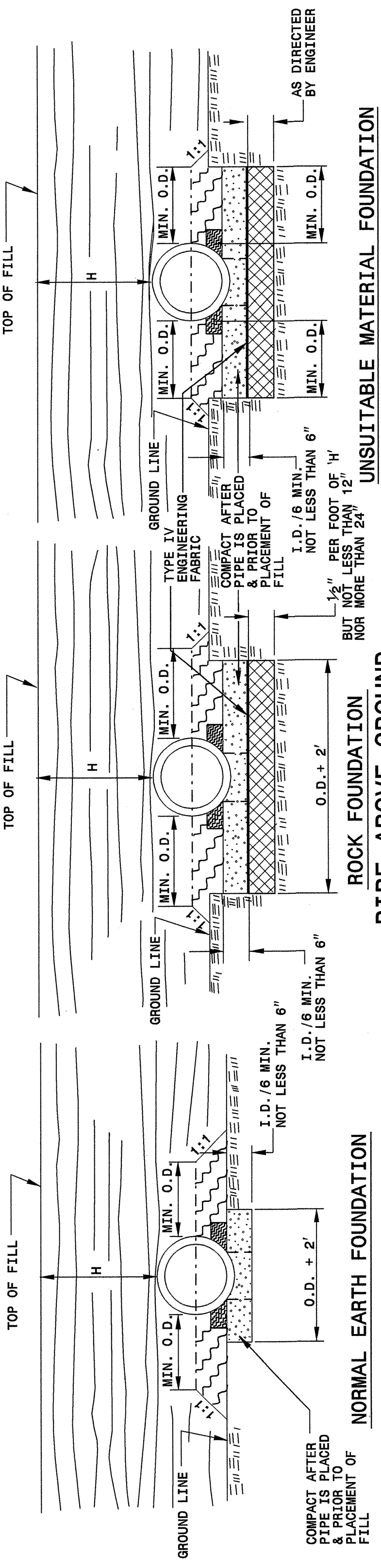
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 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

7-06



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

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 RIGID PIPE



ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 RIGID PIPE

SHEET 2 OF 3
300D01

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 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

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

SPRINGLINE OF PIPE
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, 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: K Kempf DATE: 5-15-09
 MODIFIED BY: DATE: 7/20/09
 CHECKED BY: DATE: 7/20/09
 FILE SPEE:\ericward\stds\stdstodetails\30001\0300d01.dgn



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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

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 (Ga)	14	12	8
12	12	204	256		
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	111
66	12				90
72	12				81
78	12				74
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 (Ga)	14	12	8
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	151
30	12	60	85	111	136
36	12	50	71	92	113
42	12		60	78	96
48	12		52	68	84
54	12		46	50	74
60	12			50	62
66	12				51
72	12				41

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

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

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

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

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

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.

ENGLISH DETAIL DRAWING FOR METHOD OF PIPE INSTALLATION

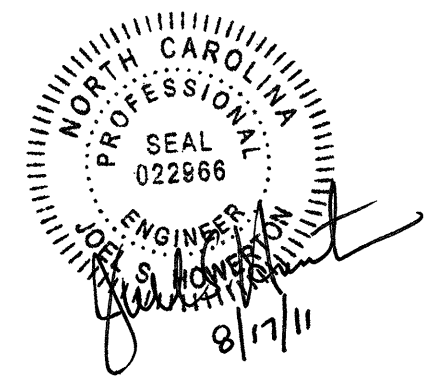
FILL HEIGHT TABLES

SHEET 3 OF 3 300D01

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

SEE PLATE FOR TITLE

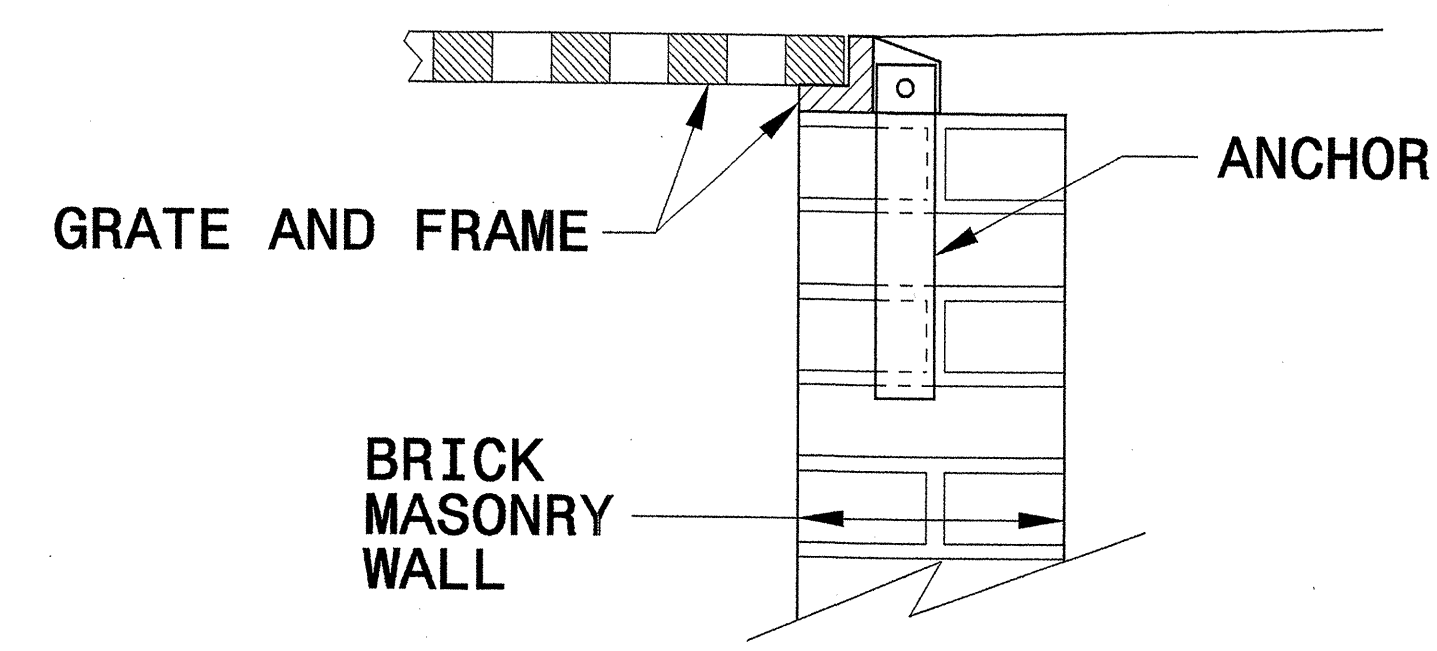
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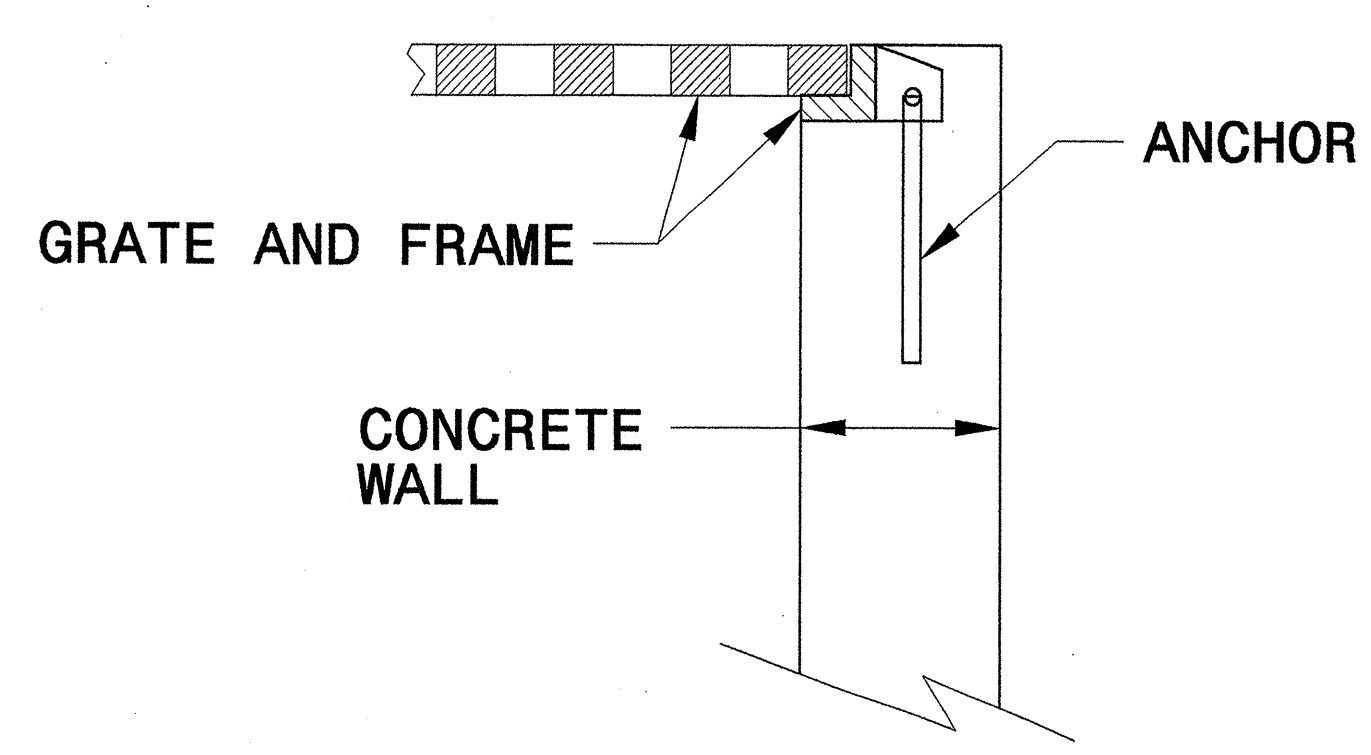
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

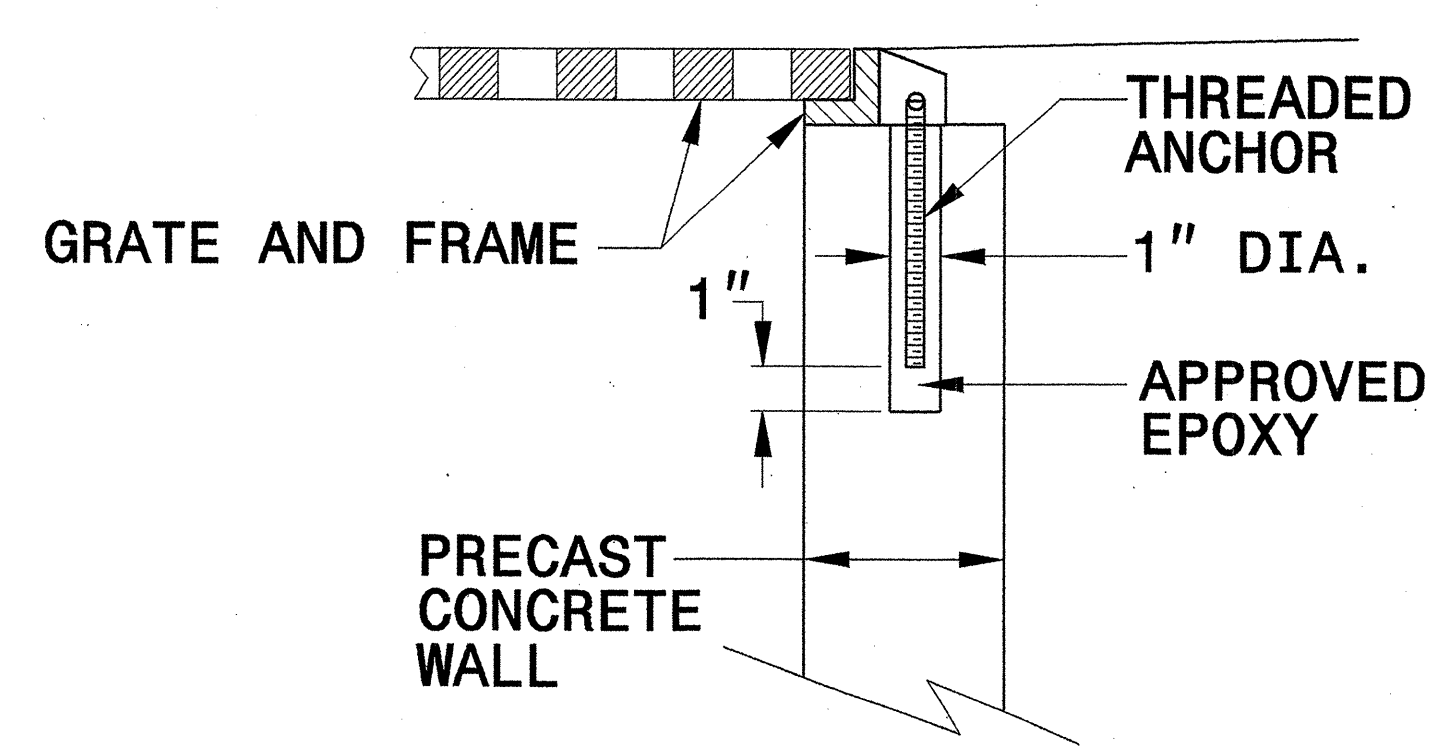
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



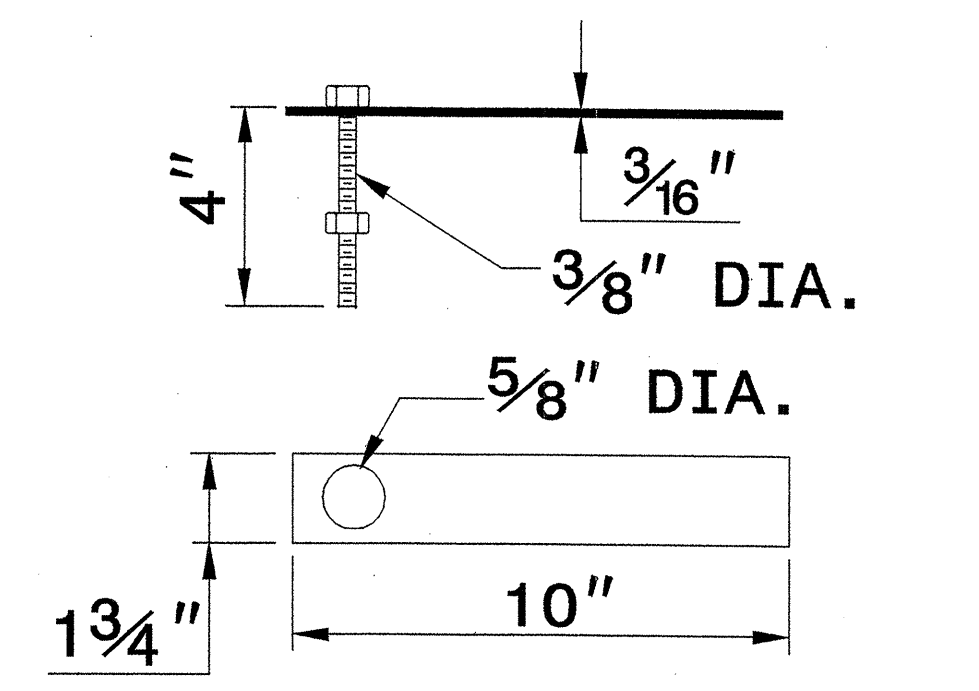
CONCRETE CONSTRUCTION



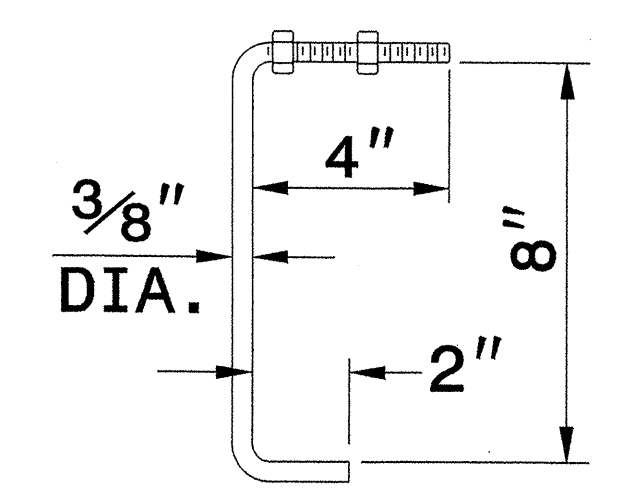
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

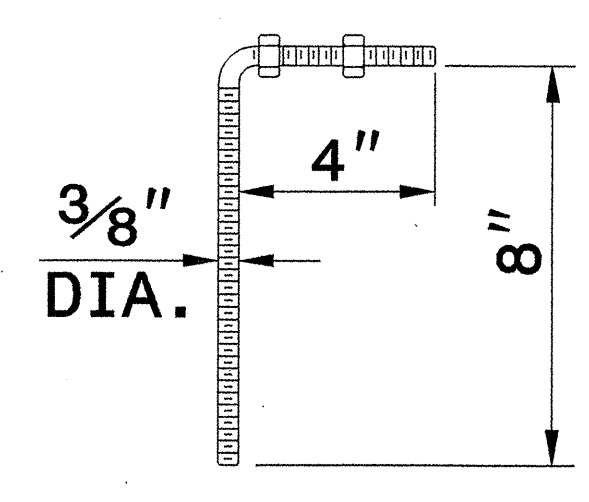
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



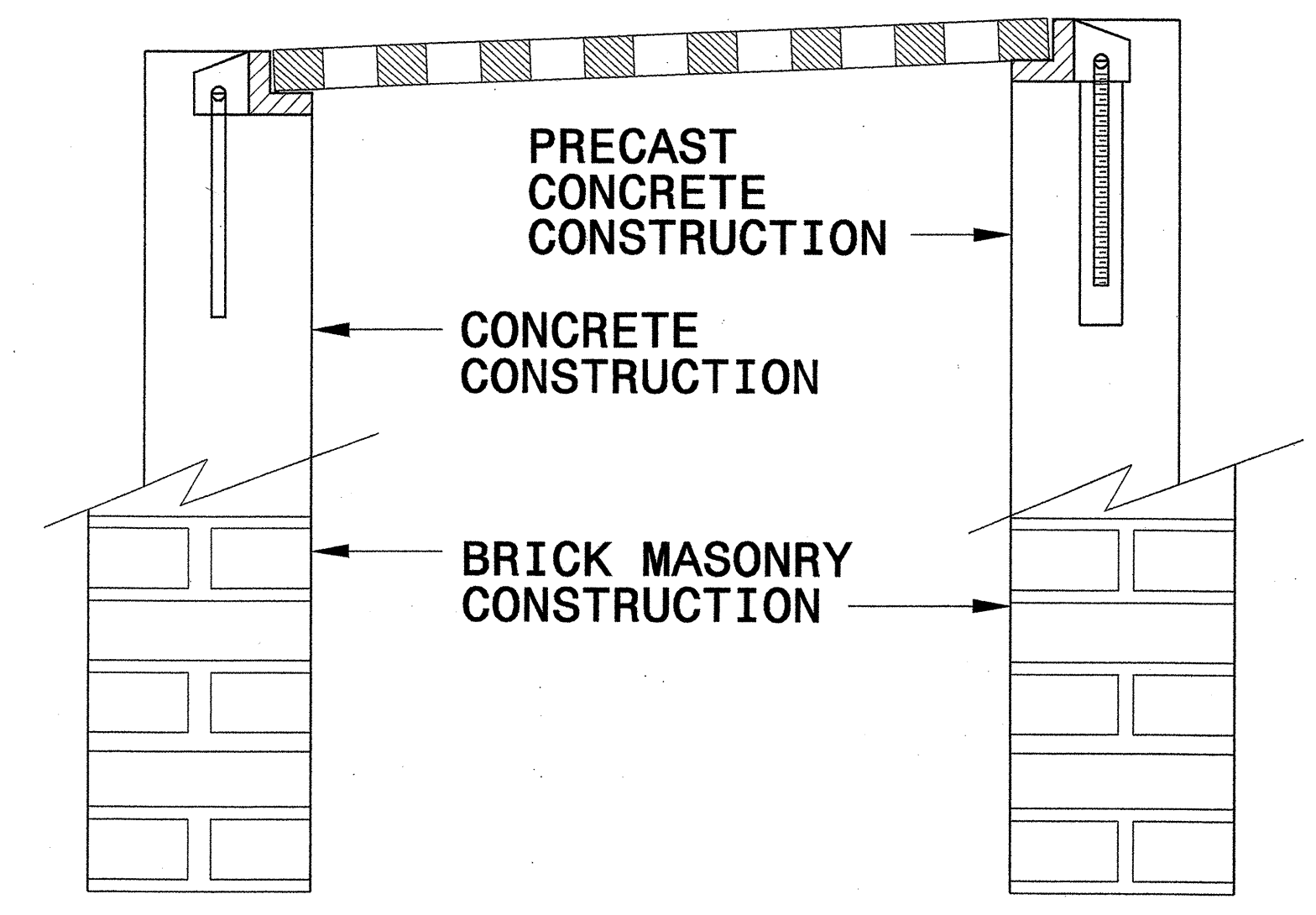
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



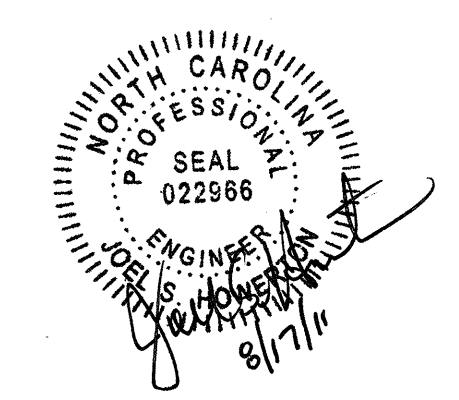
FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

STATE OF NORTH CAROLINA
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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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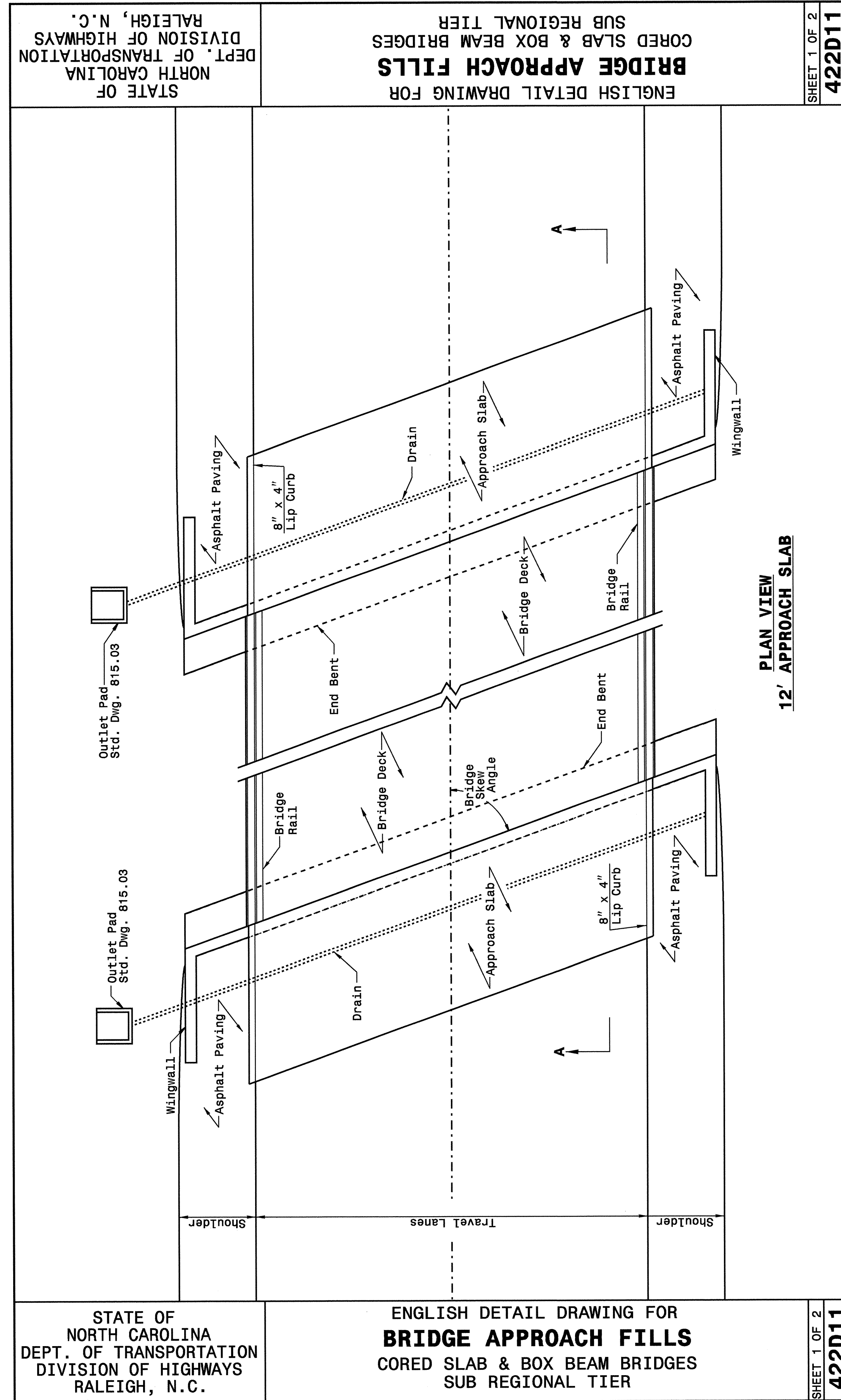


PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
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SEE PLATE FOR TITLE

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MODIFIED BY: E. E. WARD DATE: 9/25/06
CHECKED BY: *[Signature]* DATE: 11/17/08
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STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

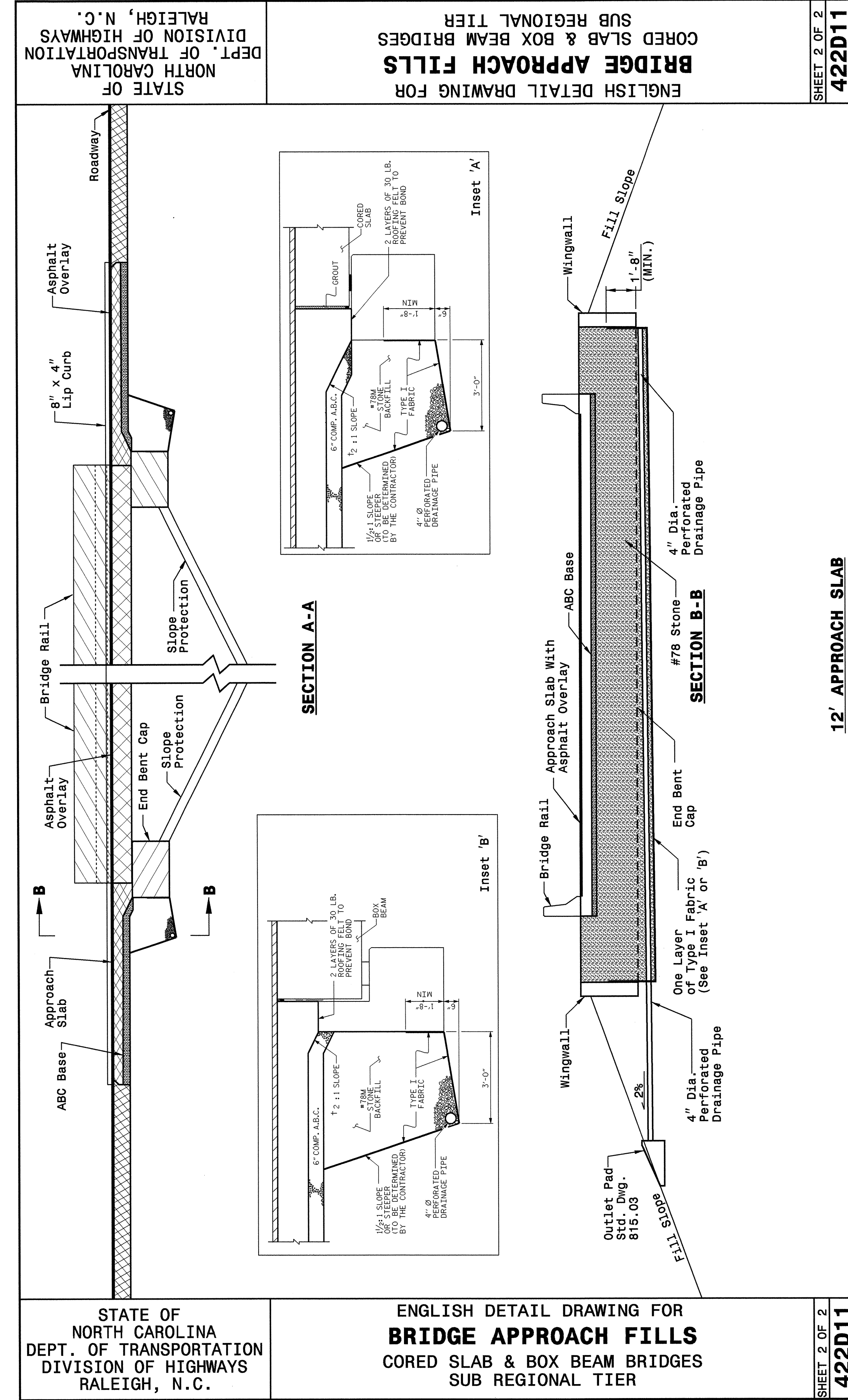
ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER

SHEET 1 OF 2
422D11

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

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

SHEET 1 OF 2
422D11



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

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

SHEET 2 OF 2
422D11

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

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

SHEET 2 OF 2
422D11



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

BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER

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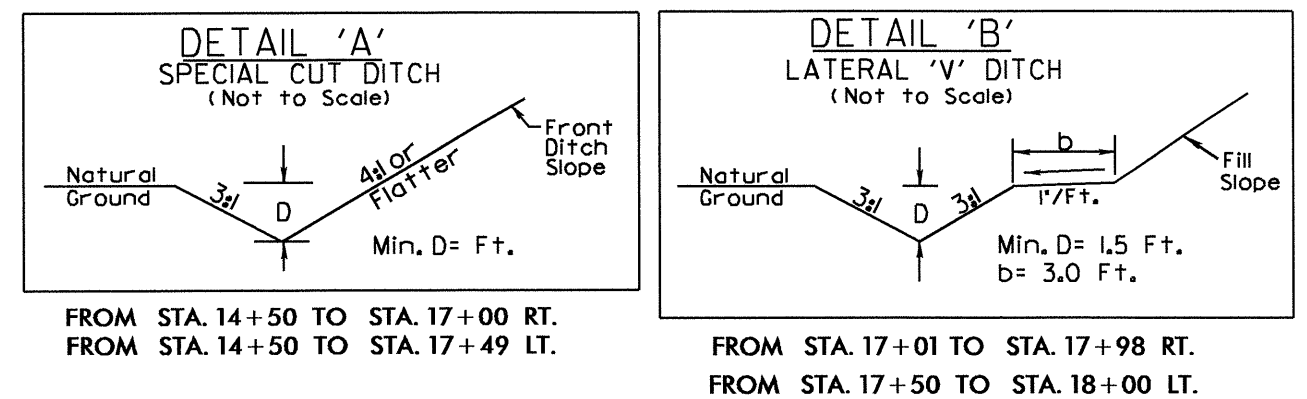
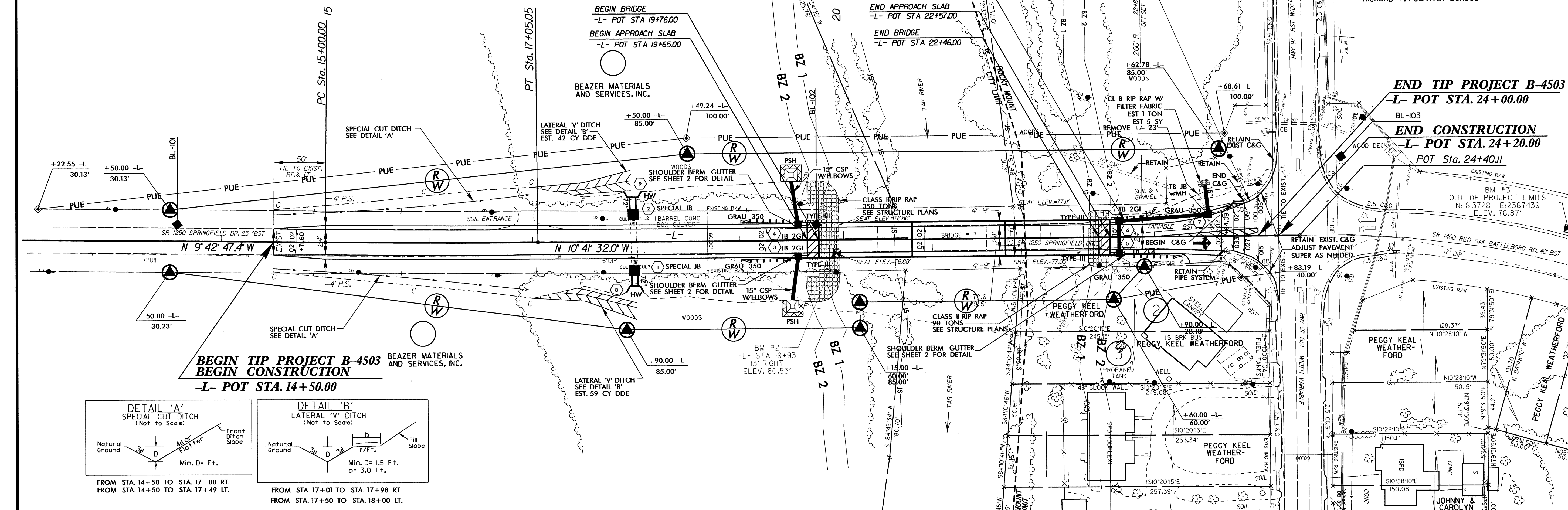
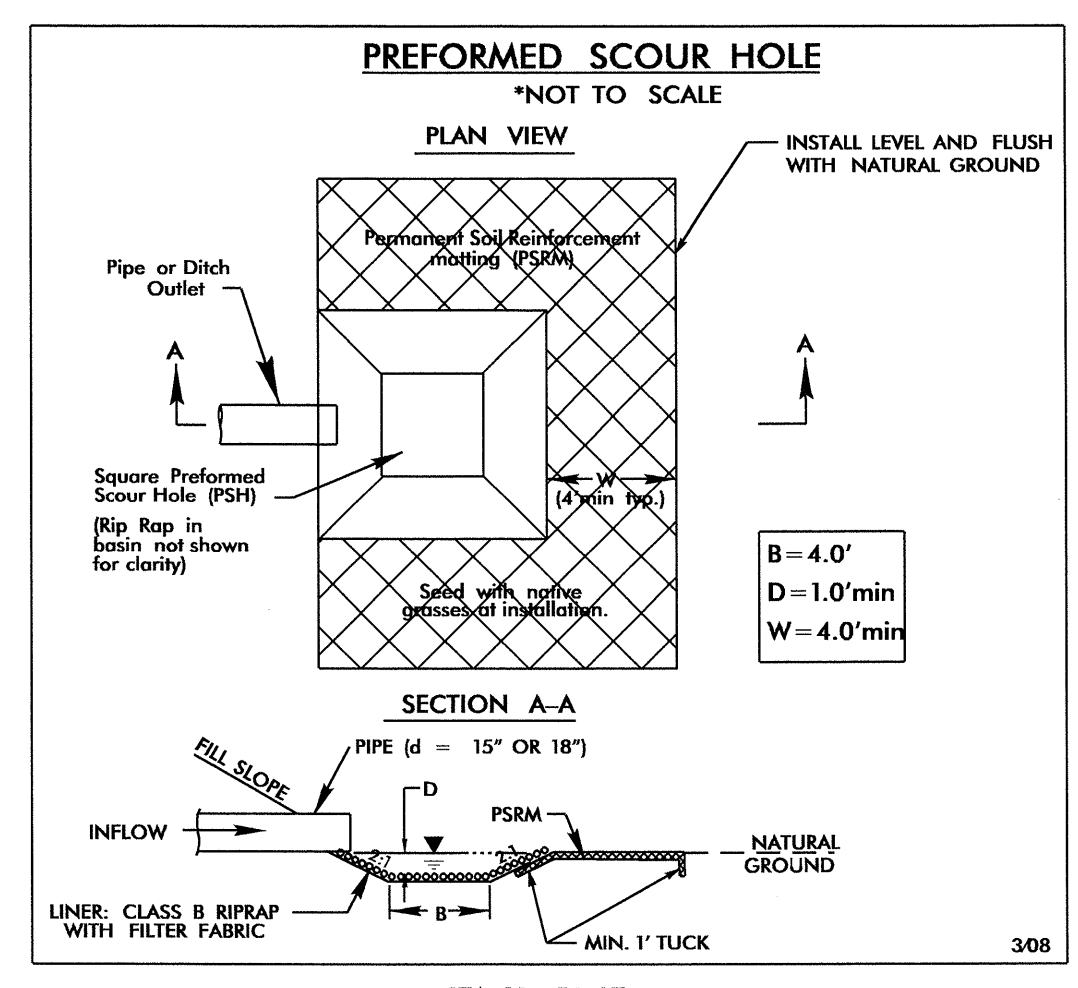
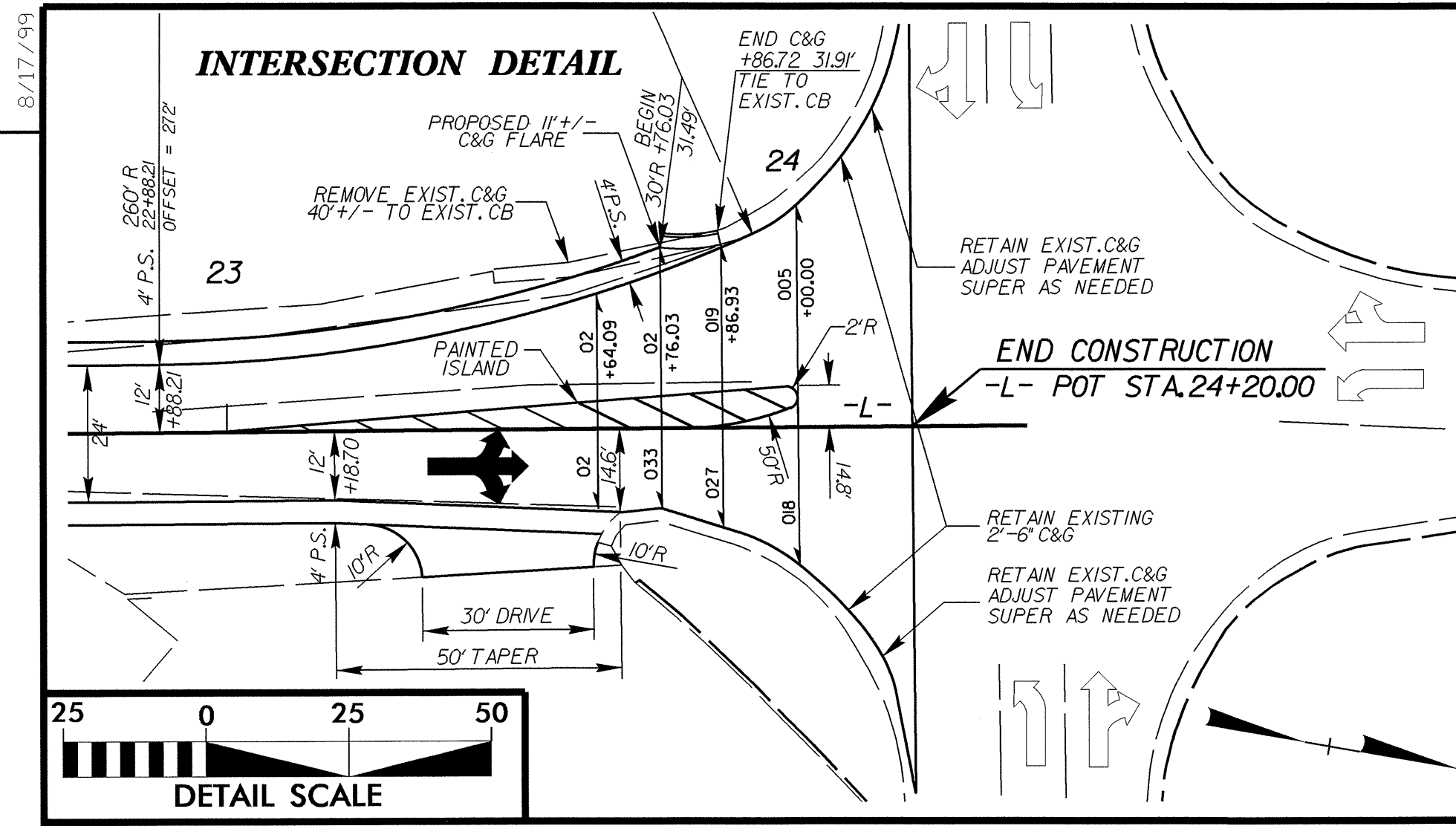
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

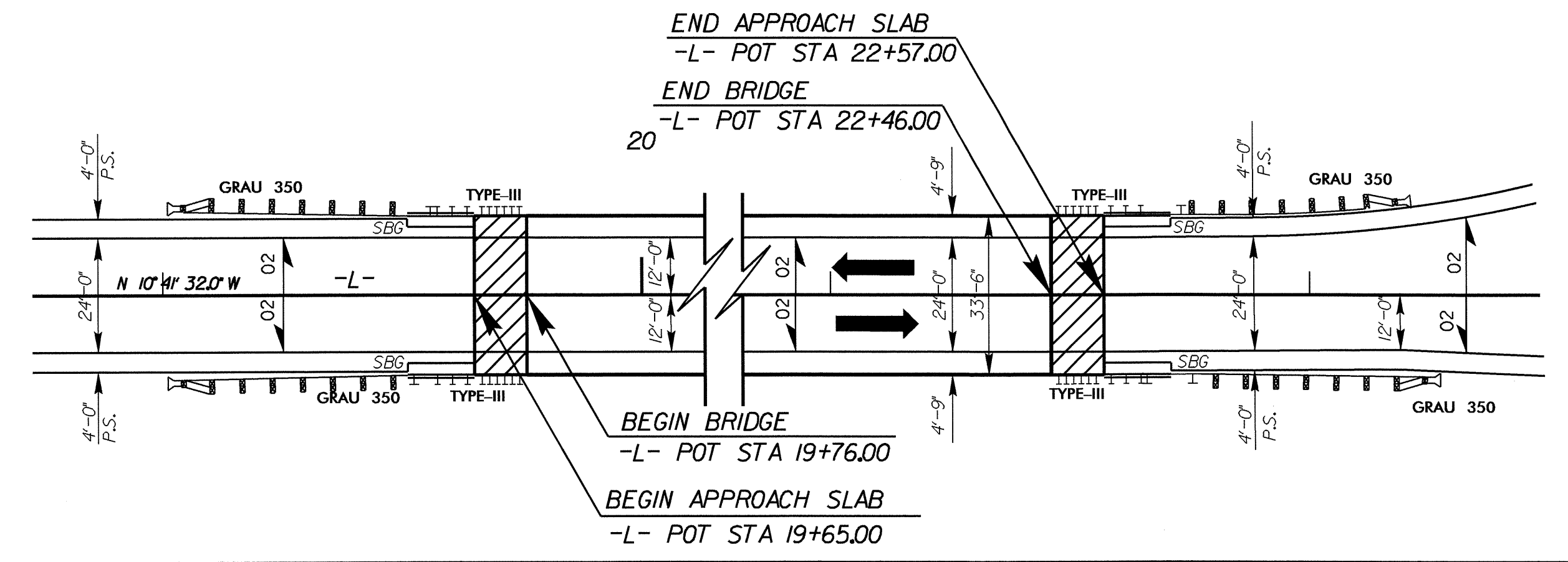
ItemNumber	Sec #	Quantity	Unit	Description
000010000-N	800	Lump Sum		MOBILIZATION
003000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ***** (21+11.00)
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
005700000-E	226	300	CY	UNDERCUT EXCAVATION
006300000-N	SP	Lump Sum		GRADING
010600000-E	230	4,125	CY	BORROW EXCAVATION
013400000-E	240	101	CY	DRAINAGE DITCH EXCAVATION
019500000-E	SP	300	CY	SELECT GRANULAR MATERIAL
019600000-E	270	400	SY	FABRIC FOR SOIL STABILIZATION
031800000-E	SP	45	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
032000000-E	SP	440	SY	FOUNDATION CONDITIONING FABRIC
033520000-E	SP	140	LF	15" DRAINAGE PIPE
042600000-E	SP	36	LF	72" RC PIPE CULVERTS, CLASS III
058200000-E	SP	84	LF	15" CS PIPE CULVERTS, 0.064" THICK
063600000-E	SP	4	EA	*** CS PIPE ELBOWS, ***** THICK (15", 0.064")
099500000-E	340	23	LF	PIPE REMOVAL
129700000-E	607	200	SY	MILLING ASPHALT PAVEMENT, **** DEPTH (1-1/2")
148900000-E	610	780	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
149800000-E	610	260	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE 119.0B
151900000-E	610	610	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
157500000-E	SP	85	TON	ASPHALT BINDER FOR PLANT MIX
200000000-N	806	9	EA	RIGHT OF WAY MARKERS
202200000-E	SP	22.4	CY	SUBDRAIN EXCAVATION
203300000-E	SP	16.8	CY	SUBDRAIN FINE AGGREGATE
204400000-E	SP	100	LF	6" PERFORATED SUBDRAIN PIPE
207000000-N	SP	1	EA	SUBDRAIN PIPE OUTLETS
207700000-E	SP	6	LF	6" OUTLET PIPE (SUBDRAINS)
222000000-E	838	14.2	CY	REINFORCED ENDWALLS
228600000-N	840	5	EA	MASONRY DRAINAGE STRUCTURES
229700000-E	840	18.4	CY	MASONRY DRAINAGE STRUCTURES
236700000-N	840	4	EA	FRAME WITH TWO GRATES, STD 840.29
239600000-N	840	1	EA	FRAME WITH COVER, STD 840.54
254900000-E	846	15	LF	2'-6" CONCRETE CURB & GUTTER
255600000-E	846	60	LF	SHOULDER BERM GUTTER
303000000-E	862	50	LF	STEEL BM GUARDRAIL
315000000-N	862	3	EA	ADDITIONAL GUARDRAIL POSTS
321500000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
327000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
364900000-E	876	1	TON	RIP RAP, CLASS B
365600000-E	876	1,055	SY	FILTER FABRIC FOR DRAINAGE
365900000-N	SP	1	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
407200000-E	903	51	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
409600000-N	904	1	EA	SIGN ERECTION, TYPE D
411610000-N	904	1	EA	SIGN ERECTION, RELOCATE, TYPE ***** (GROUND MOUNTED) (E)
415500000-N	907	7	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
415800000-N	907	1	EA	DISPOSAL OF SIGN SYSTEM, WOOD
419200000-N	907	1	EA	DISPOSAL OF SUPPORT, U-CHANNEL
440000000-E	1110	492	SF	WORK ZONE SIGNS (STATIONARY)
440500000-E	1110	144	SF	WORK ZONE SIGNS (PORTABLE)
441000000-E	1110	89	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
443000000-N	1130	44	EA	DRUMS
444500000-E	1145	96	LF	BARRICADES (TYPE III)
445000000-N	1150	240	HR	FLAGGER
468500000-E	1205	1,861	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
468600000-E	1205	2,156	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
469500000-E	1205	26	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
471000000-E	1205	32	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
532560000-E	1510	140	LF	6" WATER LINE
567200000-N	1515	2	EA	RELOCATE FIRE HYDRANT
581600000-N	1530	1	EA	ABANDON UTILITY MANHOLE
588200000-N	SP	1	EA	GENERIC UTILITY ITEM 6" CHECK VALVE ASSEMBLY
600000000-E	1605	1,050	LF	TEMPORARY SILT FENCE
600600000-E	1610	225	TON	STONE FOR EROSION CONTROL, CLASS A
600900000-E	1610	150	TON	STONE FOR EROSION CONTROL, CLASS B
601200000-E	1610	390	TON	SEDIMENT CONTROL STONE
601500000-E	1615	3	ACR	TEMPORARY MULCHING
601800000-E	1620	100	LB	SEED FOR TEMPORARY SEEDING
602100000-E	1620	1.5	TON	FERTILIZER FOR TEMPORARY SEEDING
602400000-E	1622	280	LF	TEMPORARY SLOPE DRAINS
602700000-N	1622	7	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
602900000-E	SP	800	LF	SAFETY FENCE
603000000-E	1630	400	CY	SILT EXCAVATION
603600000-E	1631	2,000	SY	MATTING FOR EROSION CONTROL
603700000-E	SP	40	SY	COIR FIBER MAT
603800000-E	SP	70	SY	PERMANENT SOIL REINFORCEMENT MAT
604200000-E	1632	820	LF	1/4" HARDWARE CLOTH
604800000-E	SP	130	SY	FLOATING TURBIDITY CURTAIN
607000000-N	SP	8	EA	SPECIAL STILLING BASINS
607102000-E	SP	20	LB	POLYACRYLAMIDE (PAM)
607103000-E	SP	200	LF	COIR FIBER BAFFLE
607105000-E	SP	4	EA	*** SKIMMER (1-1/2")
608400000-E	1660	4	ACR	SEEDING & MULCHING
608700000-E	1660	3	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	TON	FERTILIZER TOPDRESSING
611450000-N	SP	10	MHR	SPECIALIZED HAND MOWING
611700000-N	SP	16	EA	RESPONSE FOR EROSION CONTROL
612300000-E	1670	0.5	ACR	REFORESTATION
721600000-N	SP	2	EA	MODIFY EXISTING VEHICLE SIGNAL HEAD
730000000-E	1715	20	LF	UNPAVED TRENCHING (***** (1, 2'))
732400000-N	1716	1	EA	JUNCTION BOX (STANDARD SIZE)
744400000-E	1725	200	LF	INDUCTIVE LOOP SAWCUT
745600000-E	1726	400	LF	LEAD-IN CABLE (***** (14-2))

5/28/99

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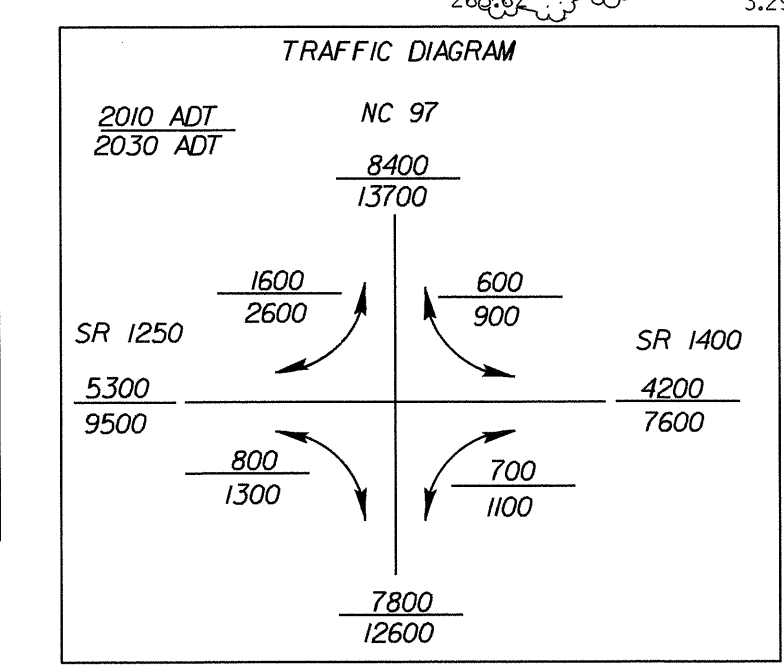


SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP



-L-
 Pi Sta 16+02.53
 $\Delta = 0^\circ 58' 44.6''$ (LT)
 $D = 0^\circ 28' 38.9''$
 $L = 205.05'$
 $T = 102.53'$
 $R = 12,000.00'$
 $SE = NC$

SHOULDER BERM GUTTER LOCATIONS:
 * SEE SHEET 2 FOR DETAIL
 -L- STA.19+51 to 19+65 Rt. and Lt.
 -L- STA. 22+57 to 22+71 Rt. and Lt.



NOTE: SEE -L- PROFILE, SHEET 5
 NOTE: SEE STRUCTURE PLANS, S-1 THRU S-24

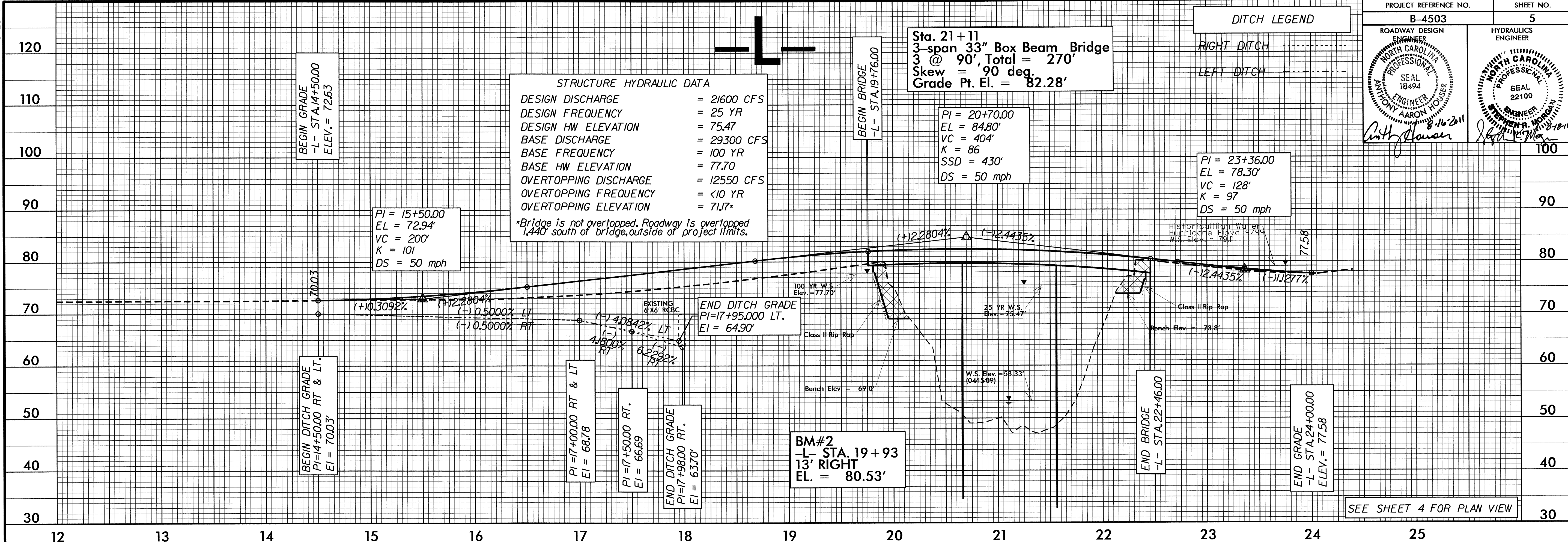
REVISIONS

8/17/99
 12-AUG-2011
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5/28/09

ROADWAY DESIGN ENGINEER
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 18494
 ANTHONY AARON HOUSER
 8-16-2011

HYDRAULICS ENGINEER
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 22100
 STEVEN R. MORGAN
 12-18-11



SEE SHEET 4 FOR PLAN VIEW

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