

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UNION COUNTY

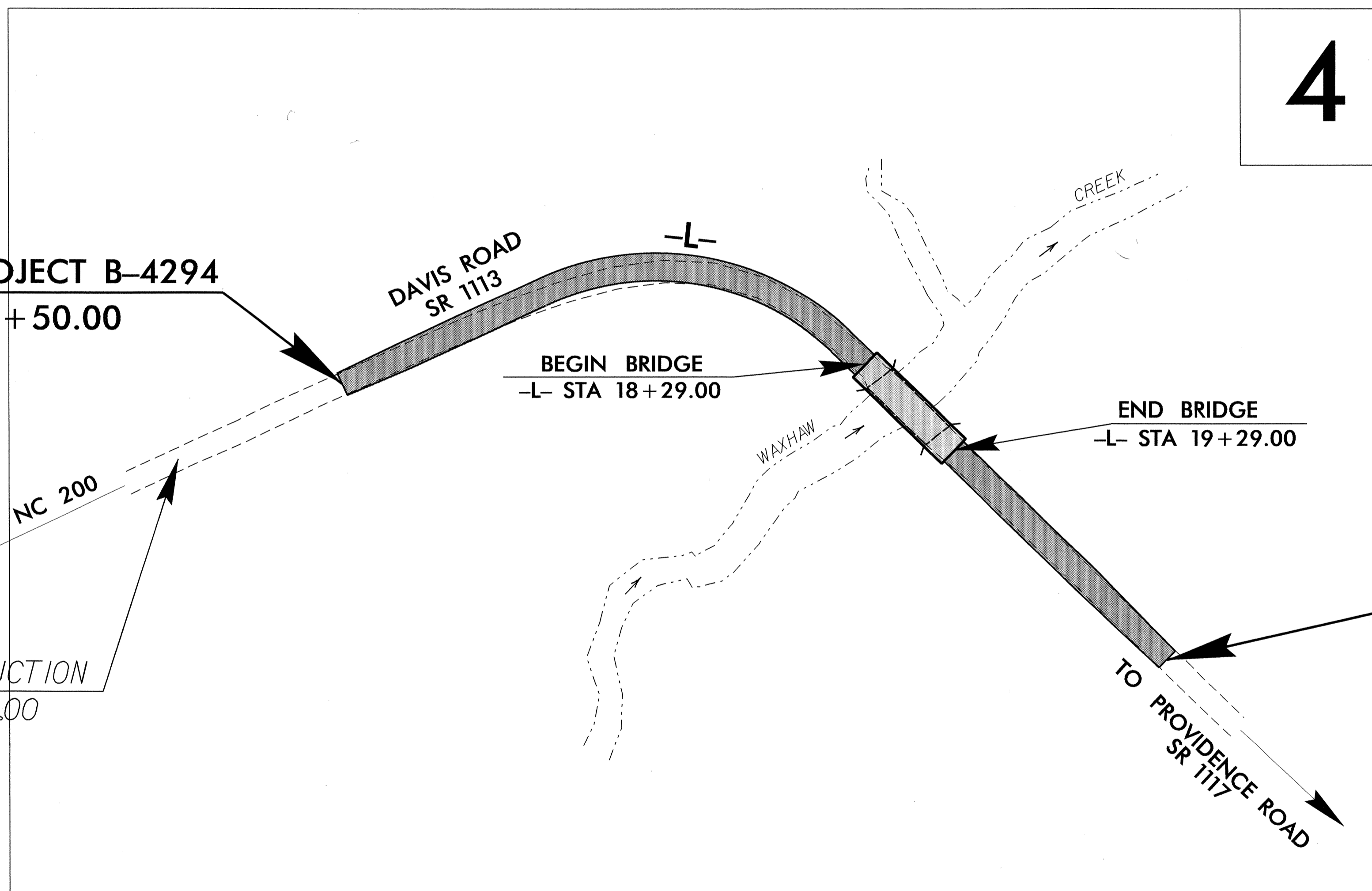
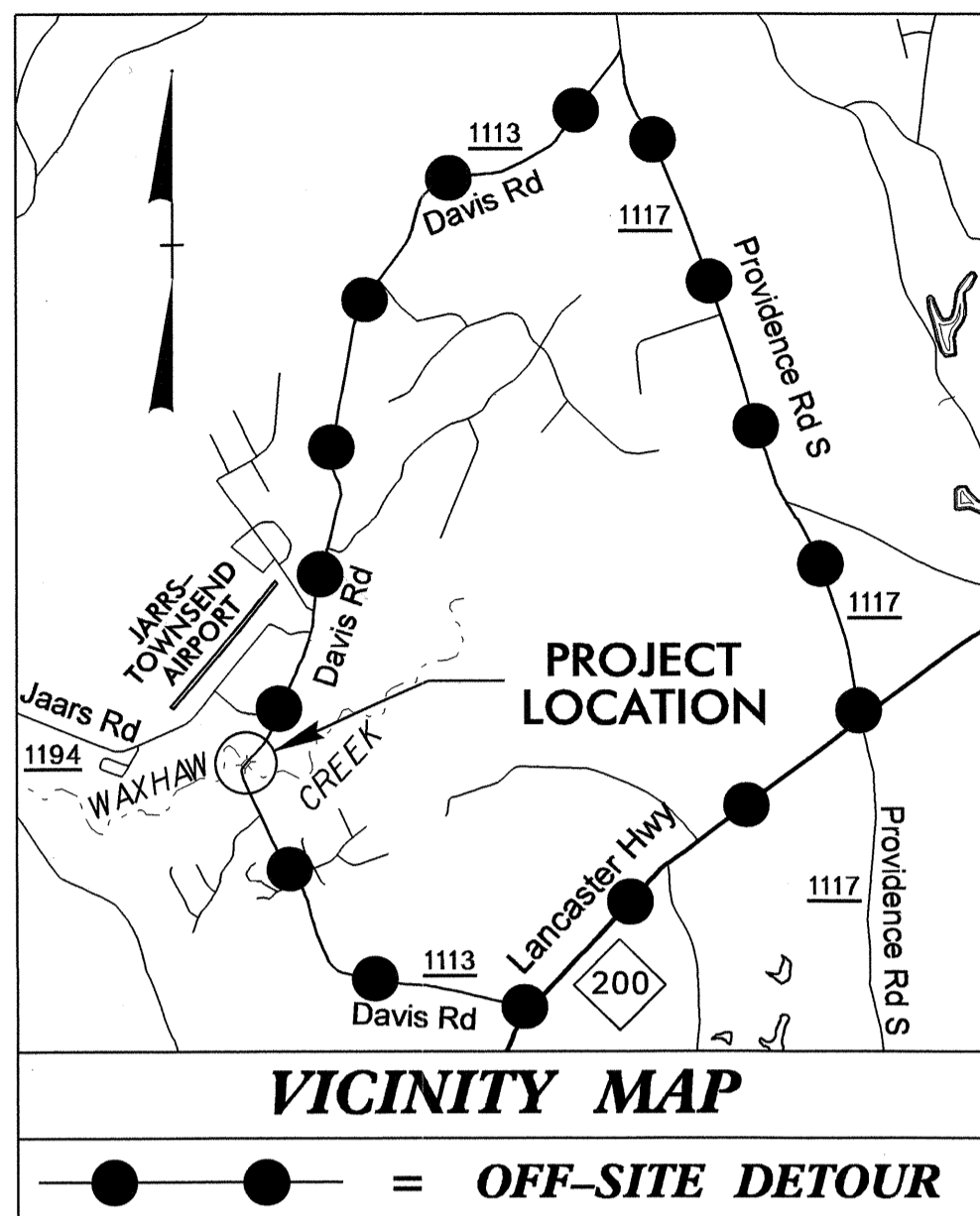
LOCATION: BRIDGE NO. 184 OVER WAXHAW CREEK AND APPROACHES ON SR 1113 (DAVIS ROAD)

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

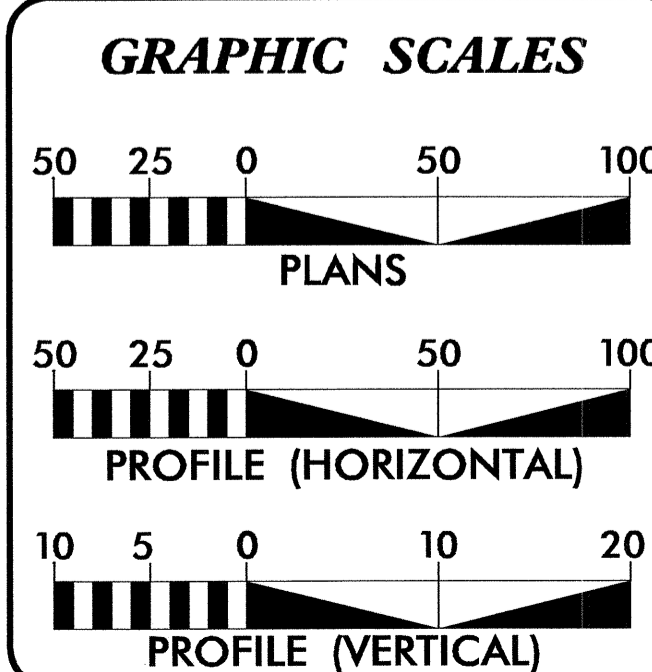
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4294	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33632.1.1	BRZ-1113(3)	P.E.	
33632.2.1	BRZ-1113(3)	ROW & UTIL	
33632.3.1	BRZ-1113(3)	CONST.	

TIP PROJECT: B-4294

CONTRACT: C202725



** DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED



DESIGN DATA

ADT 2011 =	1,500
ADT 2035 =	2,200
DHV =	10 %
D =	65 %
T =	4 %*
**V =	30 MPH
* (TTST 1% + DUAL 3%)	
FUNC CLASS = LOCAL	
SUB - REGIONAL TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJ. B-4294 =	0.138 mile
LENGTH STRUCTURE TIP PROJ. B-4294 =	0.019 mile
TOTAL LENGTH OF TIP PROJ. B-4294 =	0.157 mile

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 7, 2010	REKHA PATEL, P.E. PROJECT ENGINEER
LETTING DATE: JANUARY 17, 2012	SAMUEL L. ST. CLAIR PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

W. Helen Carl
SIGNATURE

ROADWAY DESIGN ENGINEER

Rekha Patel
SIGNATURE

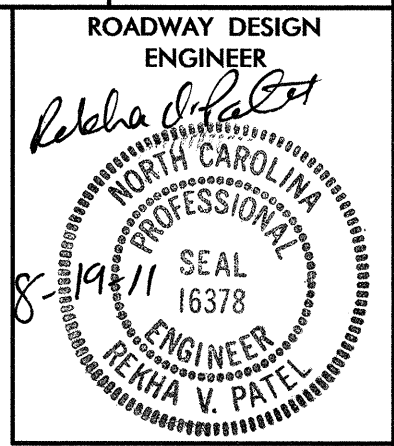
Professional Engineer Seals for Galen Chaffin and Rekha V. Patel.

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

Professional Engineer Seal for Samuel L. St. Clair.

Art McMiller
STATE HIGHWAY DESIGN ENGINEER

10-AUG-2011 13:49
r:\roadway\proj\b4294_rdy-tsh.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$



SHEET NUMBER	SHEET
I	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	TYPICAL SECTIONS, PAVEMENT SCHEDULE, AND WEDGING DETAILS
2-A	DETAIL FOR BRIDGE APPROACH FILLS - SUBREGIONAL TIER
2-B & 2-C	DETAIL FOR METHOD OF PIPE INSTALLATION
2-D	DETAIL FOR ANCHORAGE FOR FRAMES
3	SUMMARY OF QUANTITIES
3A	EARTHWORK SUMMARY, SUMMARIES OF DRAINAGE QUANTITIES, GUARDRAIL, SHOULDER BERM GUTTER BREAKING OF EXISTING ASPHALT PAVEMENT, AND REMOVAL OF EXISTING ASPHALT PAVEMENT
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-2	TRANSPORTATION MANAGEMENT PLANS
SD-1	SPECIAL SIGN DESIGN PLAN
EC-1 THRU EC-4	EROSION CONTROL PLANS
UO-1 THRU U-2	UTILITIES BY OTHERS PLANS
X-0	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-5	CROSS-SECTIONS
S-1 THRU S-18	STRUCTURE PLANS

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 07-19-2011

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 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.

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.

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

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY AND WINDSTREAM COMMUNICATIONS ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

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

2006 ROADWAY ENGLISH STANDARD DRAWINGS

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

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 Superlevation - Two Lane Pavement
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
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
840.66	Drainage Structure Steps
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	⑫③
Existing Fence Line	-----
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	----- WLB
Proposed Wetland Boundary	----- WLB
Existing Endangered Animal Boundary	----- EAB
Existing Endangered Plant Boundary	----- EPB
Known Soil Contamination: Area or Site	☠
Potential Soil Contamination: Area or Site	☠?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
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	-----
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 Drainage / Utility Easement	----- DUE
Proposed Permanent Utility Easement	----- PUE
Proposed Temporary Utility Easement	----- TUE
Proposed Aerial Utility Easement	----- AUE

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	----- C
Proposed Slope Stakes Fill	----- F
Proposed Curb Ramp	----- CR

Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	▭

VEGETATION:

Single Tree	○
Single Shrub	○
Hedge	-----
Woods Line	-----

Orchard	-----
Vineyard	-----

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	----- 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

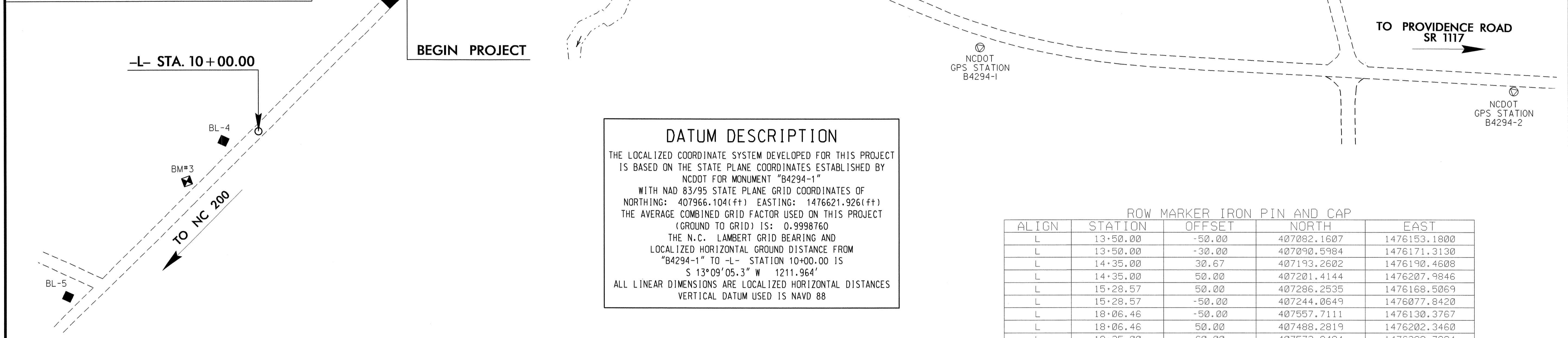
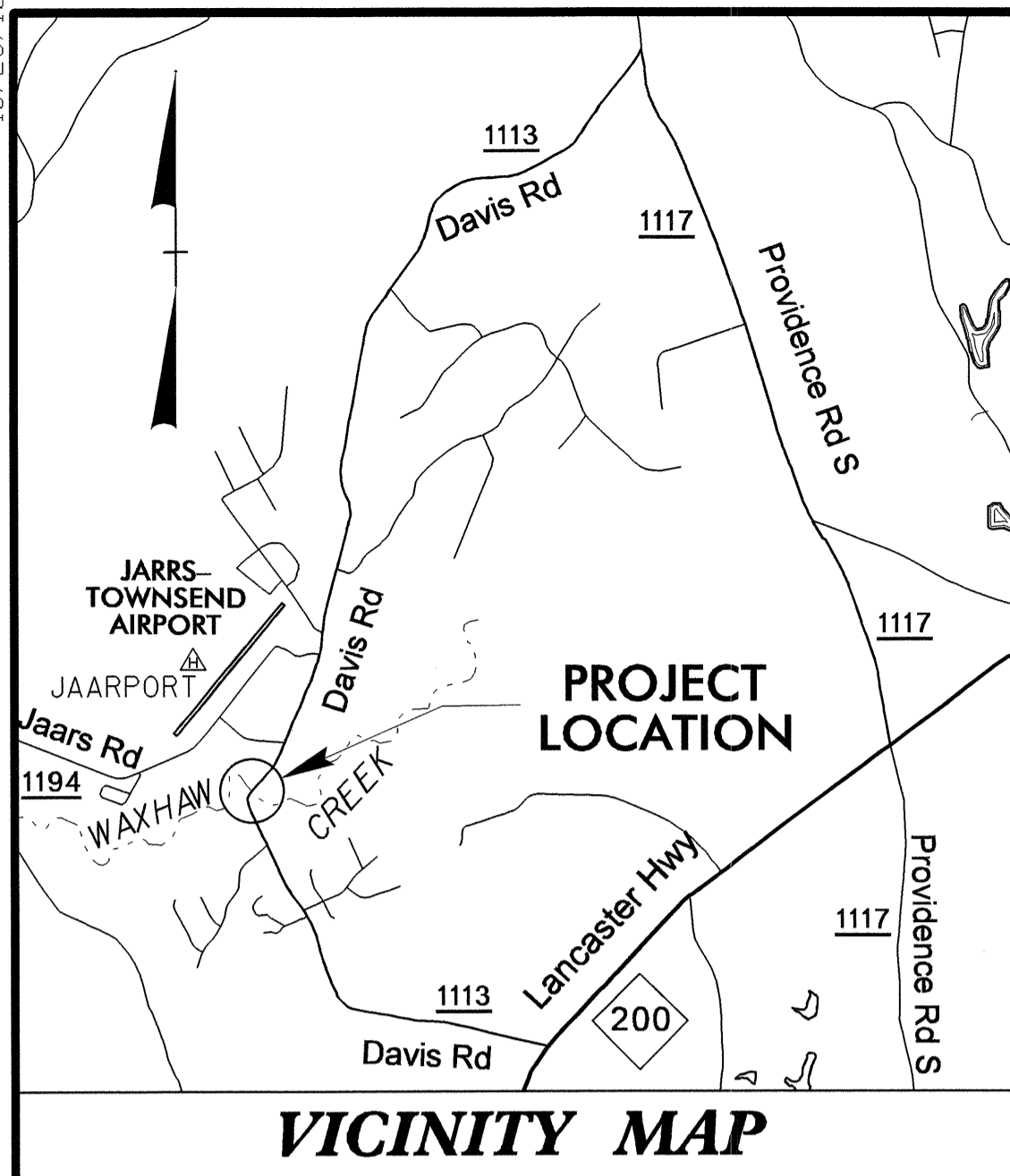
SANITARY SEWER:

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.	⊕
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-4294



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4294-1"

WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
 NORTHING: 407966.104(ft) EASTING: 1476621.926(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998760

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4294-1" TO -L- STATION 10+00.00 IS
 S 13°09'05.3" W 1211.964'

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

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+50.00	-50.00	407082.1607	1476153.1800
L	13+50.00	-30.00	407090.5984	1476171.3130
L	14+35.00	30.67	407193.2602	1476190.4608
L	14+35.00	50.00	407201.4144	1476207.9846
L	15+28.57	50.00	407286.2535	1476168.5069
L	15+28.57	-50.00	407244.0649	1476077.8420
L	18+06.46	-50.00	407557.7111	1476130.3767
L	18+06.46	50.00	407488.2819	1476202.3460
L	19+35.00	60.00	407573.8494	1476298.7884
L	19+35.00	50.00	407580.7923	1476291.5915
L	19+75.00	60.00	407602.6371	1476326.5601
L	19+75.00	50.00	407609.5800	1476319.3632
L	21+80.00	-50.00	407826.5463	1476389.7239
L	21+80.00	50.00	407757.1171	1476461.6932
L	21+80.00	30.00	407771.0029	1476447.2993
L	21+80.00	-30.00	407812.6604	1476404.1178

TYPE	STATION	NORTH	EAST
POT	10+00.00	406785.9279	1476346.1726
PC	15+28.57	407265.1592	1476123.1745
PT	18+06.46	407522.9965	1476166.3613
POT	22+99.64	407877.9350	1476508.7730

NOTES:

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

THE FILES TO BE FOUND ARE AS FOLLOWS:
 B4294_LS_CONTROL_080129.TXT
 B4294_LS_LOCAL_080129.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.
 - ◆ INDICATES CONTROL MONUMENTS SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 - ▼ INDICATES BENCHMARKS USED OR SET FOR VERTICAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
- PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM NETWORK ESTABLISHED FROM EXISTING HARN MONUMENT "JAARPORT"

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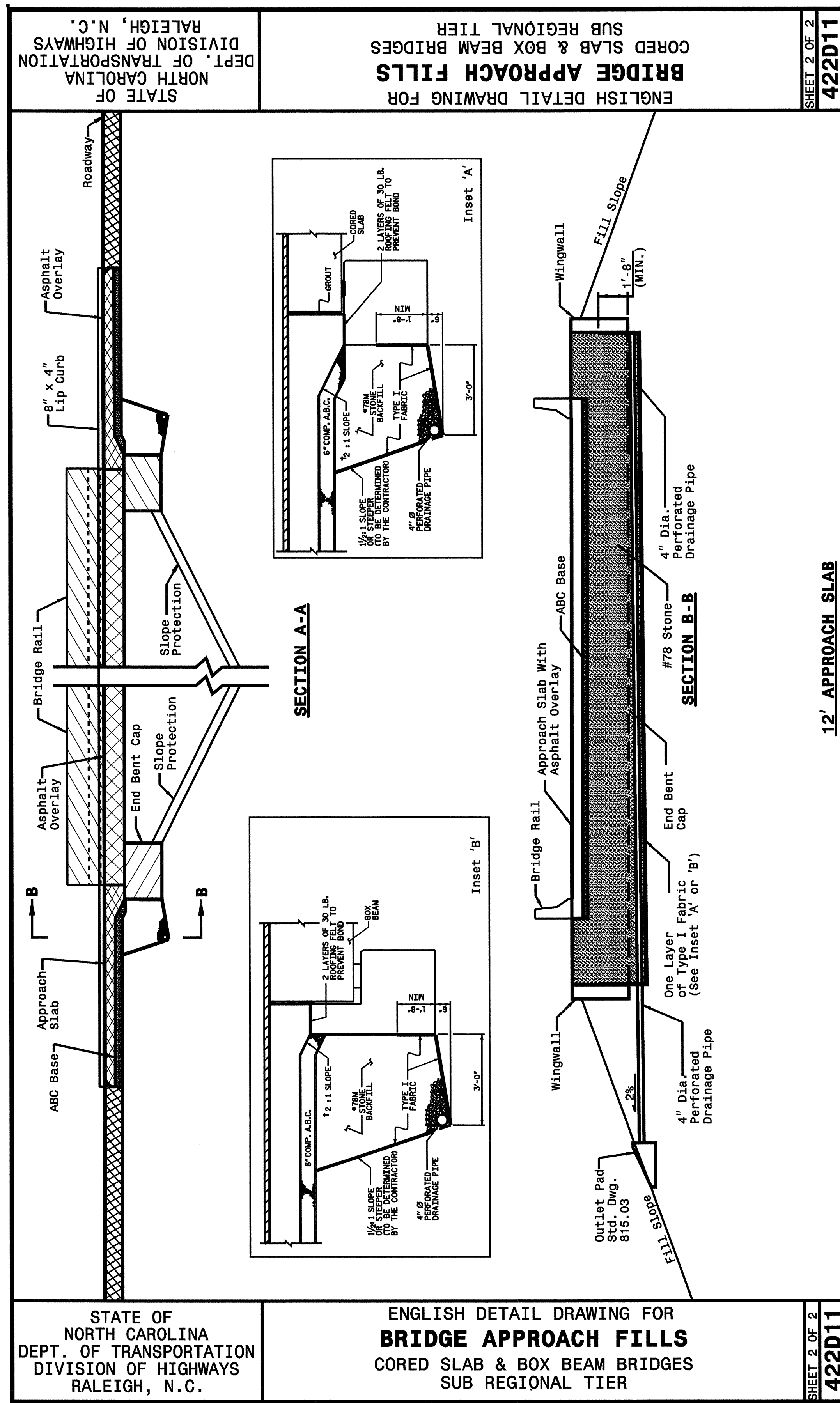
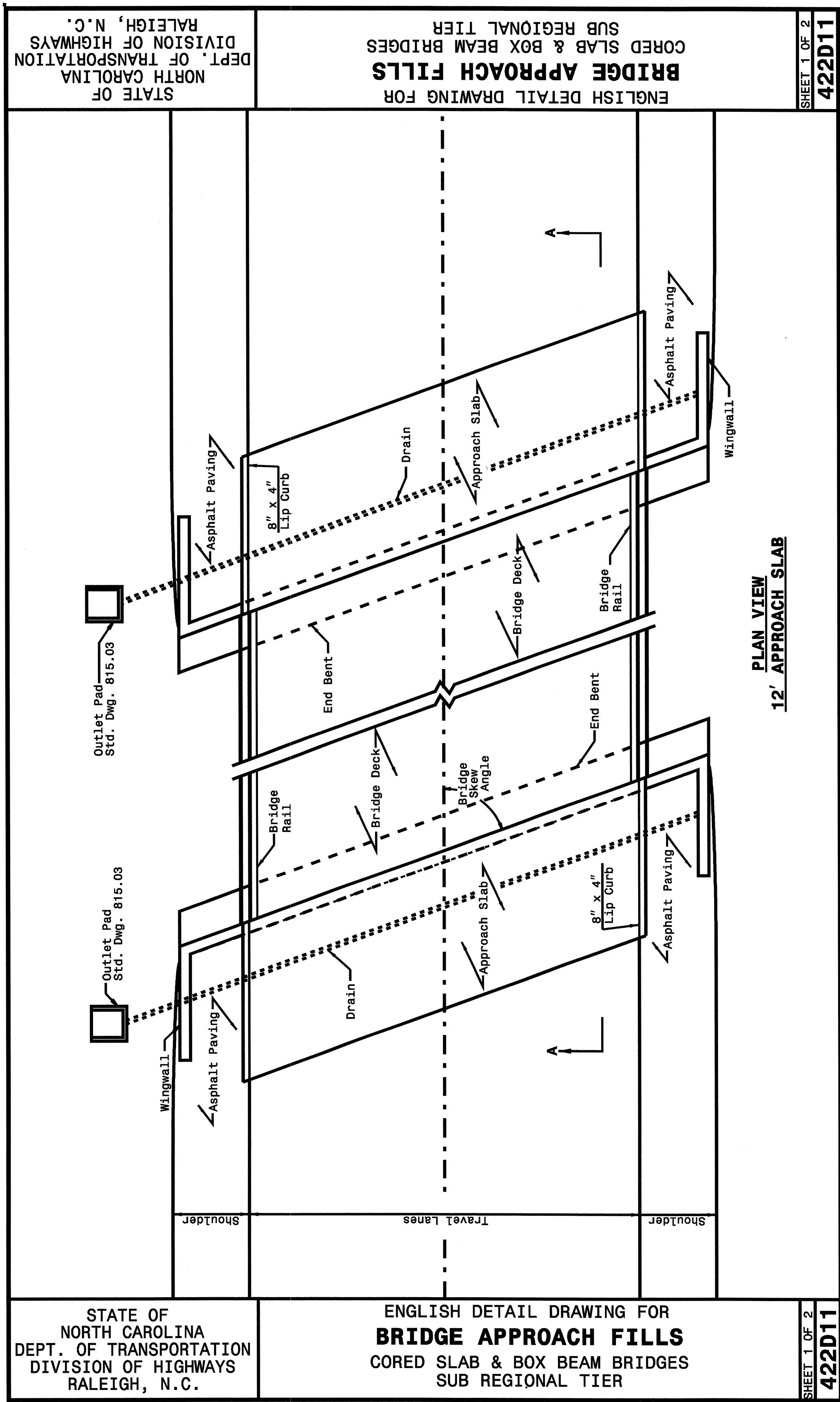
BM1	ELEVATION - 526.36
N 408202	E 1476611
L STATION 23+00	
N 17° 35' 51.0" E DIST	339.47
RR SPIKE IN 36" RED OAK	
.....	
BM2	ELEVATION - 508.38
N 407670	E 1476213
L STATION 19+45 69 LEFT	
RR SPIKE IN 10" MAPLE	
.....	
BM3	ELEVATION - 564.23
N 406645	E 1476384
L STATION 10+00	
S 14° 58' 57.9" E DIST	145.38
RR SPIKE IN POWER POLE	
.....	

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
LS5	BL-5	406393.1210	1476497.0950	570.97		OUTSIDE PROJECT LIMITS
LS4	BL-4	406725.5420	1476341.1330	560.46		OUTSIDE PROJECT LIMITS
LS3	BL-3	407202.8220	1476172.8970	531.87	14+51.08	18.78 RT
LS2	BL-2	407453.7960	1476091.0590	522.64	17+12.56	27.19 LT
LS1	BL-1	407643.0460	1476260.8480	513.44	19+58.46	15.35 LT
GPS1	B4294-1	407966.1040	1476621.9260	517.28		OUTSIDE PROJECT LIMITS
GPS2	B4294-2	408778.3350	1476993.1130	534.95		OUTSIDE PROJECT LIMITS

T0 POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
LST1	T-1	407699.8110	1476135.1260	507.66	19+12.02	145.24 LT
LSE01	BL-1	407643.0460	1476260.8480	513.44	19+58.46	15.35 LT
LST2	T-2	407496.9780	1476318.8690	506.82	18+93.62	127.82 RT
LST3	T-3	407380.3370	1476428.7000	507.83	18+85.93	287.85 RT

NOTE: DRAWING NOT TO SCALE

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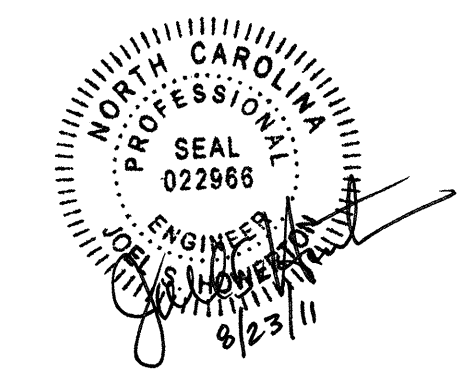


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 Jhewerton AT P5237501

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

ORIGINAL BY: K. A. Kempf	DATE: 6-10-08
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: k Kempf/english/bridge approach fills.dgn	



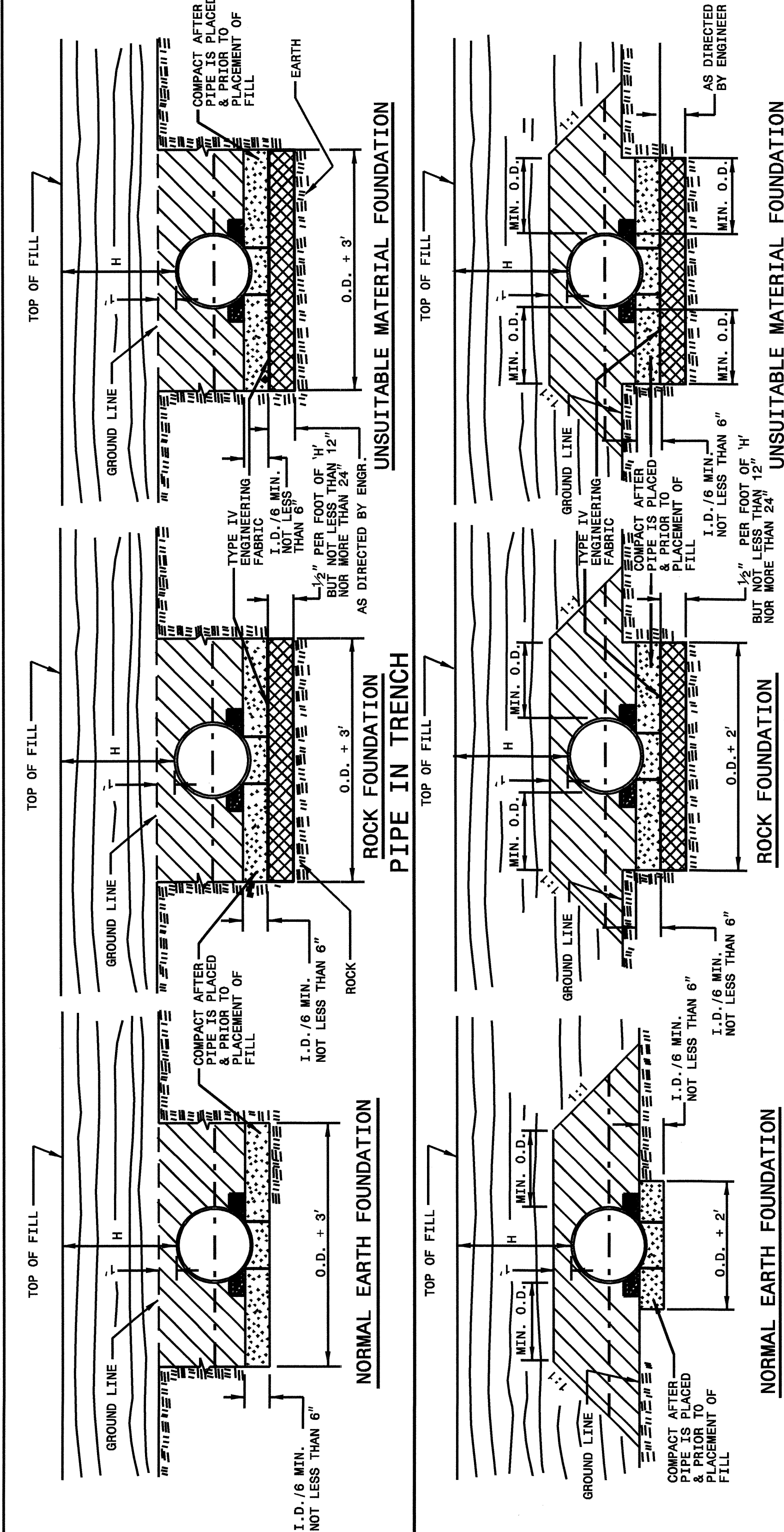
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 Jlower-ton AT P5237501

5/14/99

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

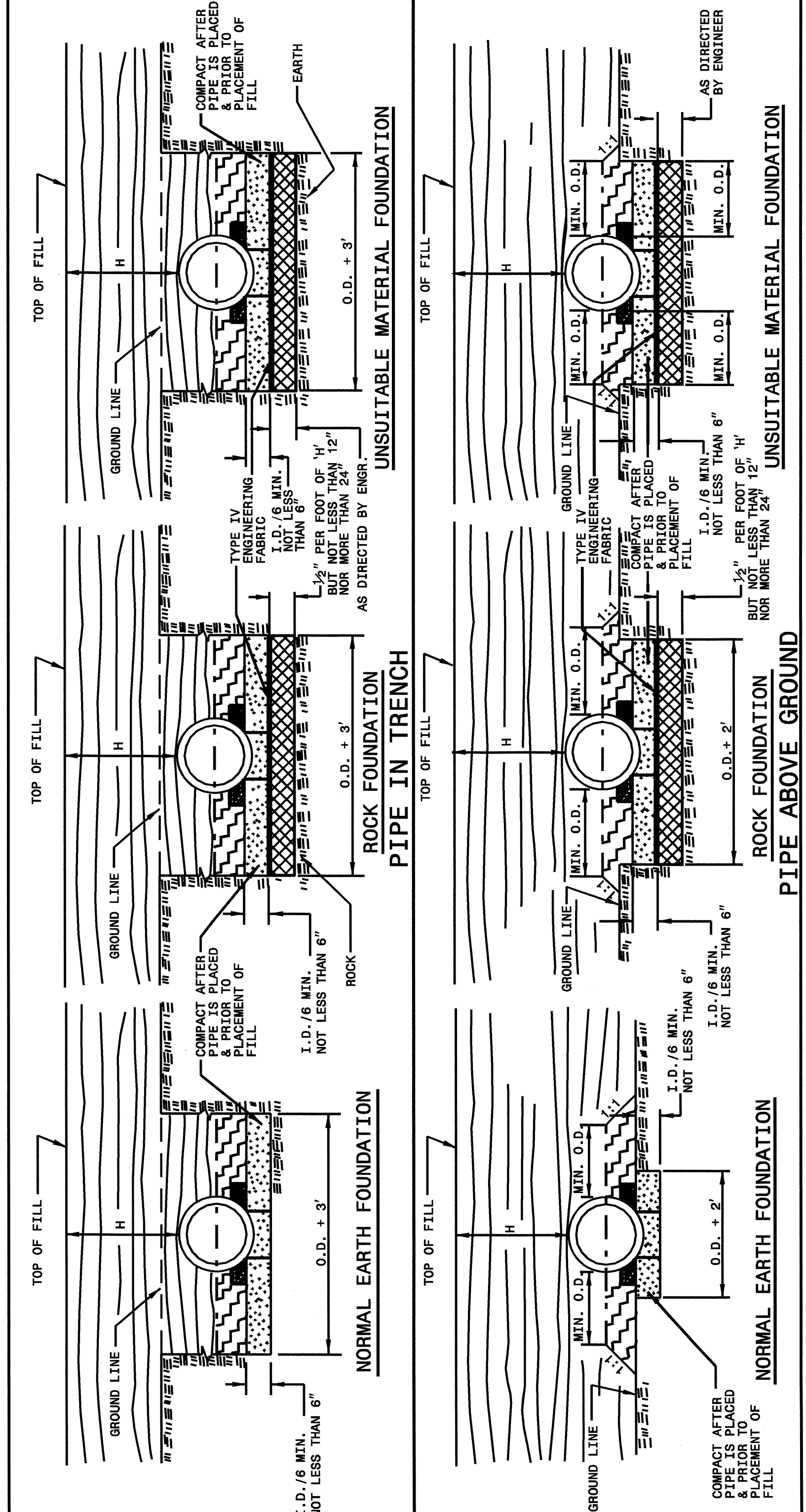
--- SPRINGLINE OF PIPE
 ▨ ABOVE AND BELOW SPRINGLINE.
 ▩ APPROVED SUITABLE LOCAL MATERIAL.
 ▧ UNDISTURBED EARTH MATERIAL

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

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

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 RIGID PIPE

SHEET 2 OF 3
300D01



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:
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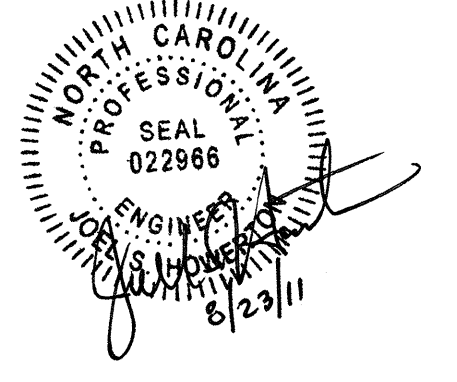
--- SPRINGLINE OF PIPE
 ▨ ABOVE AND BELOW SPRINGLINE.
 ▩ APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.
 ▧ UNDISTURBED EARTH MATERIAL

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:
 CHECKED BY: DATE:
 FILE SPEC: /ericward/stds/stdstodetails/30001/0300d01.dgn



05-NOV-2009 11:36 s:\contracts\contractss\special_details\verward\stds\06\stds to special_details\30001\0300d01.dgn
 Jhewer-ton AT PS237501

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)	(Ga) 16	Maximum Height of Cover (feet)
12	12	204	12
15	12	182	204
18	12	135	189
21	12	115	145
24	12	100	126
30	12	79	100
36	12	65	83
42	12	55	70
48	12	48	61
54	12	54	77
60	12	69	69
66	12	81	100
72	12	74	74
84	12	69	69

Round Corrugated Aluminum Pipe 2 2/3 x 1/2 corrugation **			
Diameter (Inches)	Minimum cover (Inches)	(Ga) 16	Maximum Height of Cover (feet)
12	12	123	10
15	12	98	123
18	12	81	102
21	12	69	87
24	12	60	76
27	12	67	95
30	12	60	85
36	12	50	71
42	12	60	71
48	12	52	52
54	12	46	46
60	12	50	50
66	12	50	50
72	12	51	51
84	12	41	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

RIGID PIPE

- 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

- 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

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.

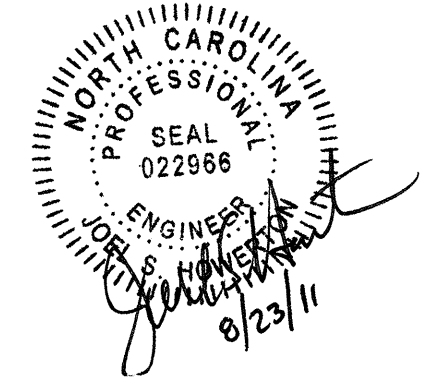
7-06
 ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

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

SEE PLATE FOR TITLE

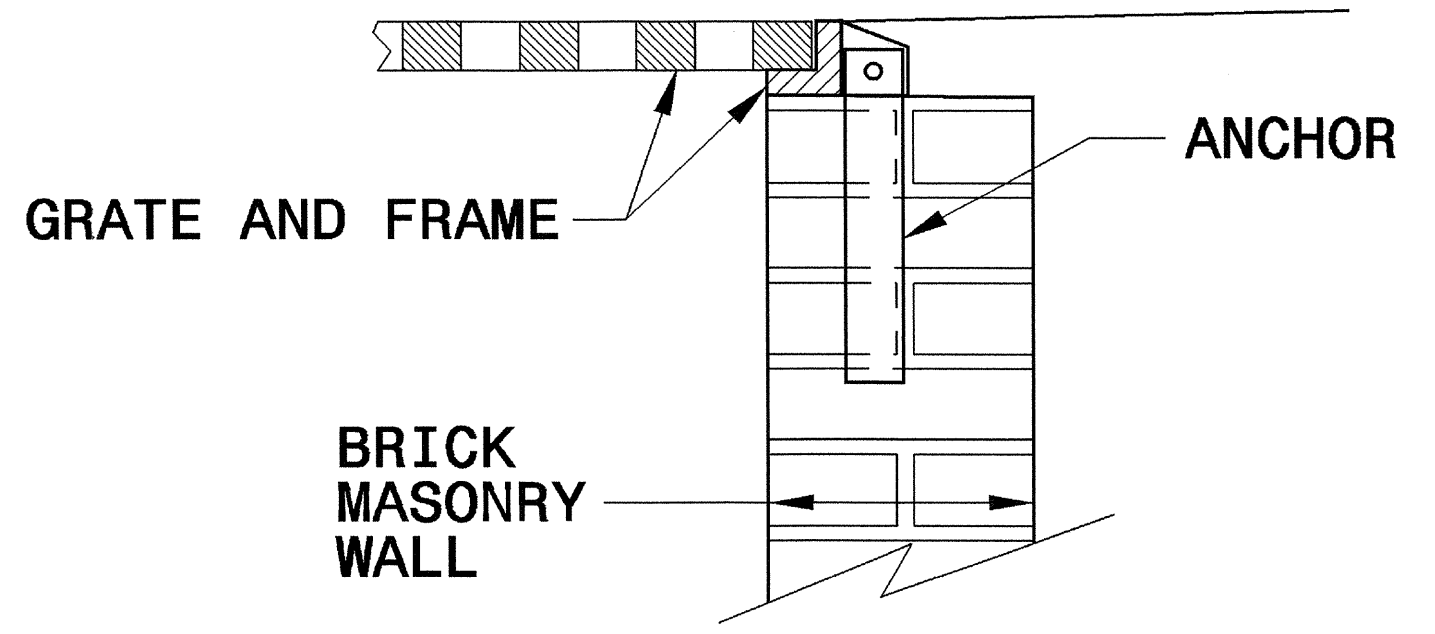
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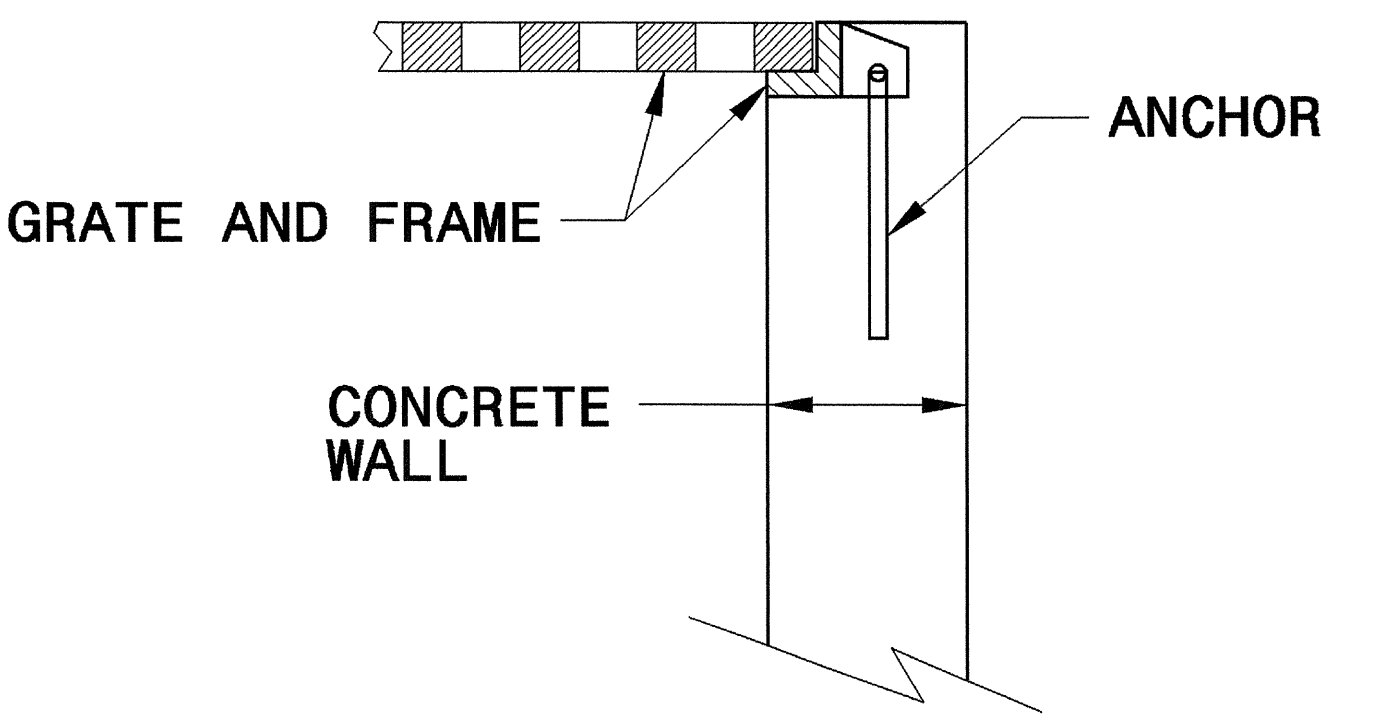
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

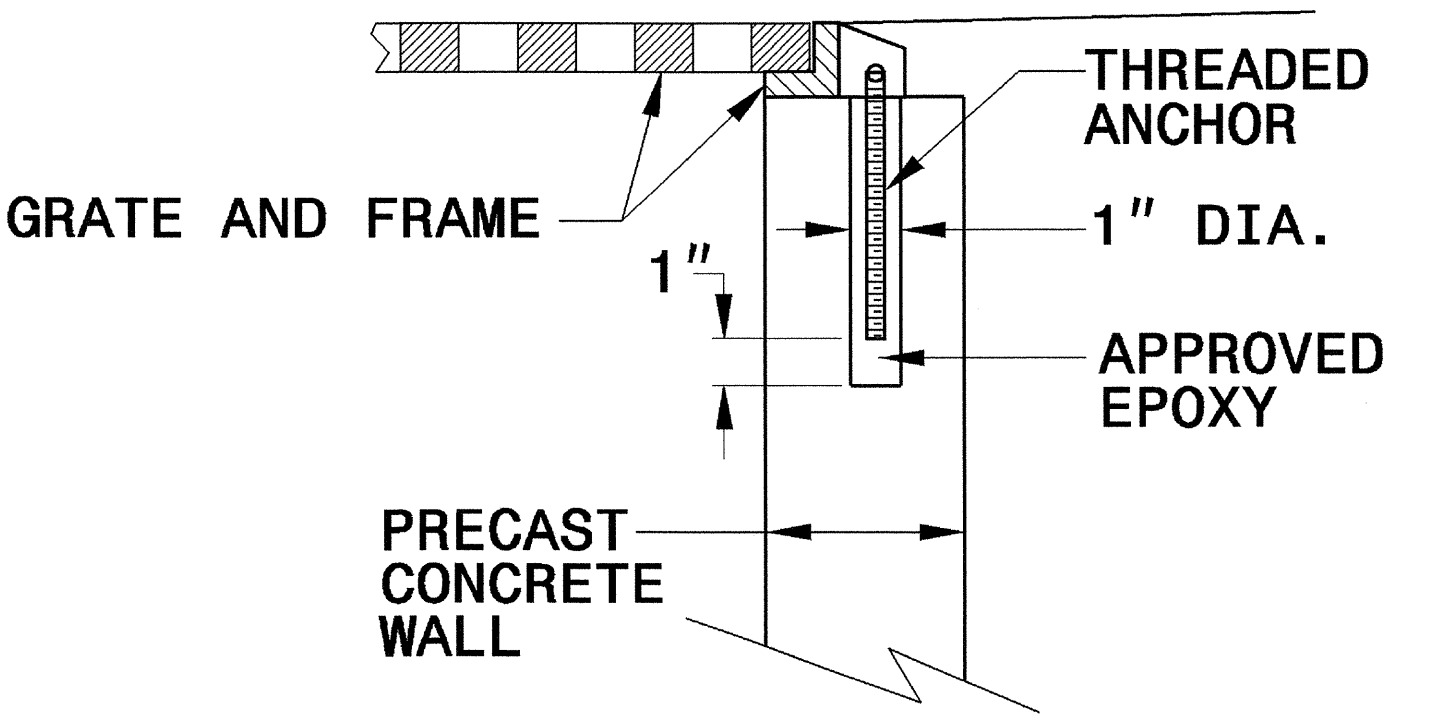
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



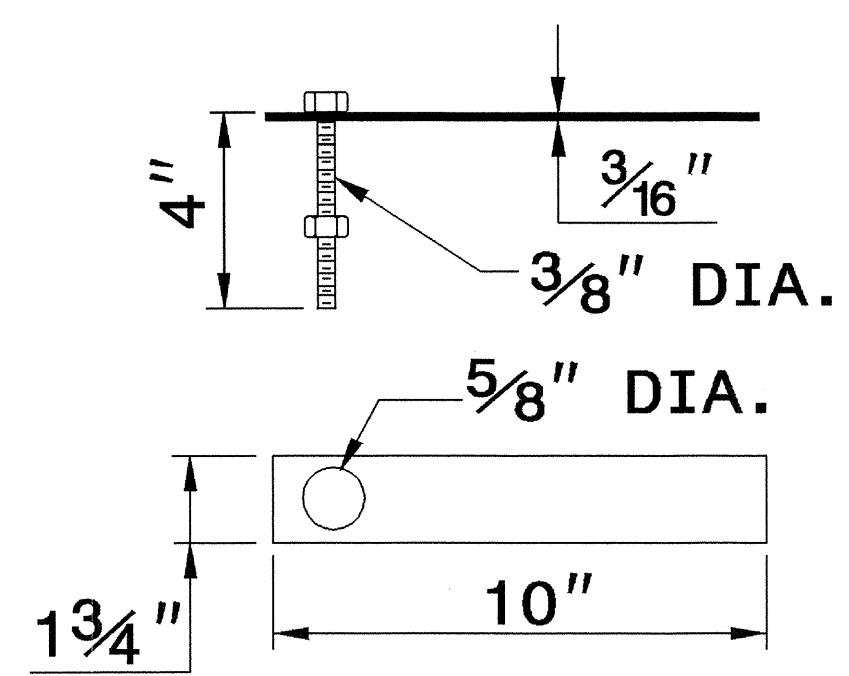
CONCRETE CONSTRUCTION



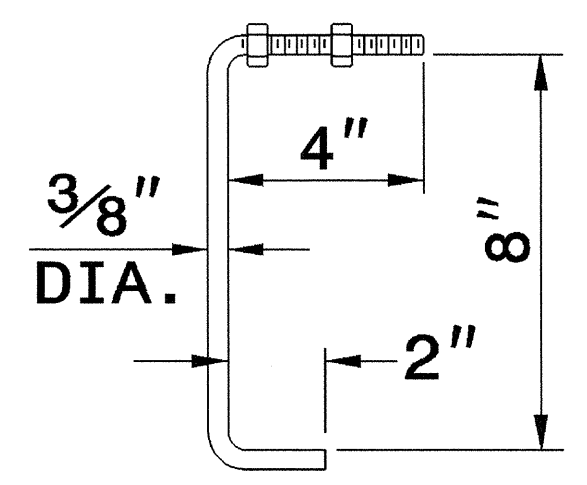
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

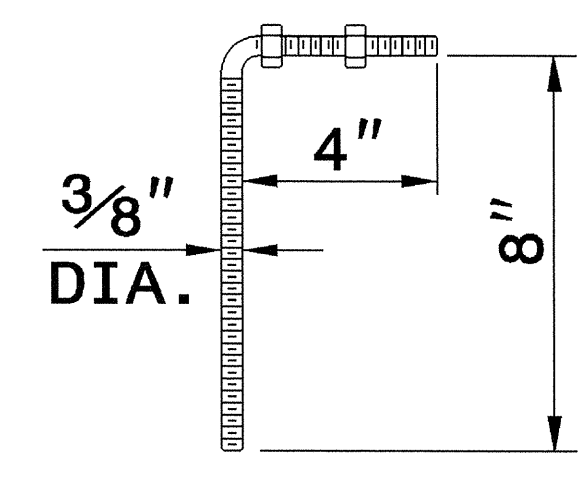
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



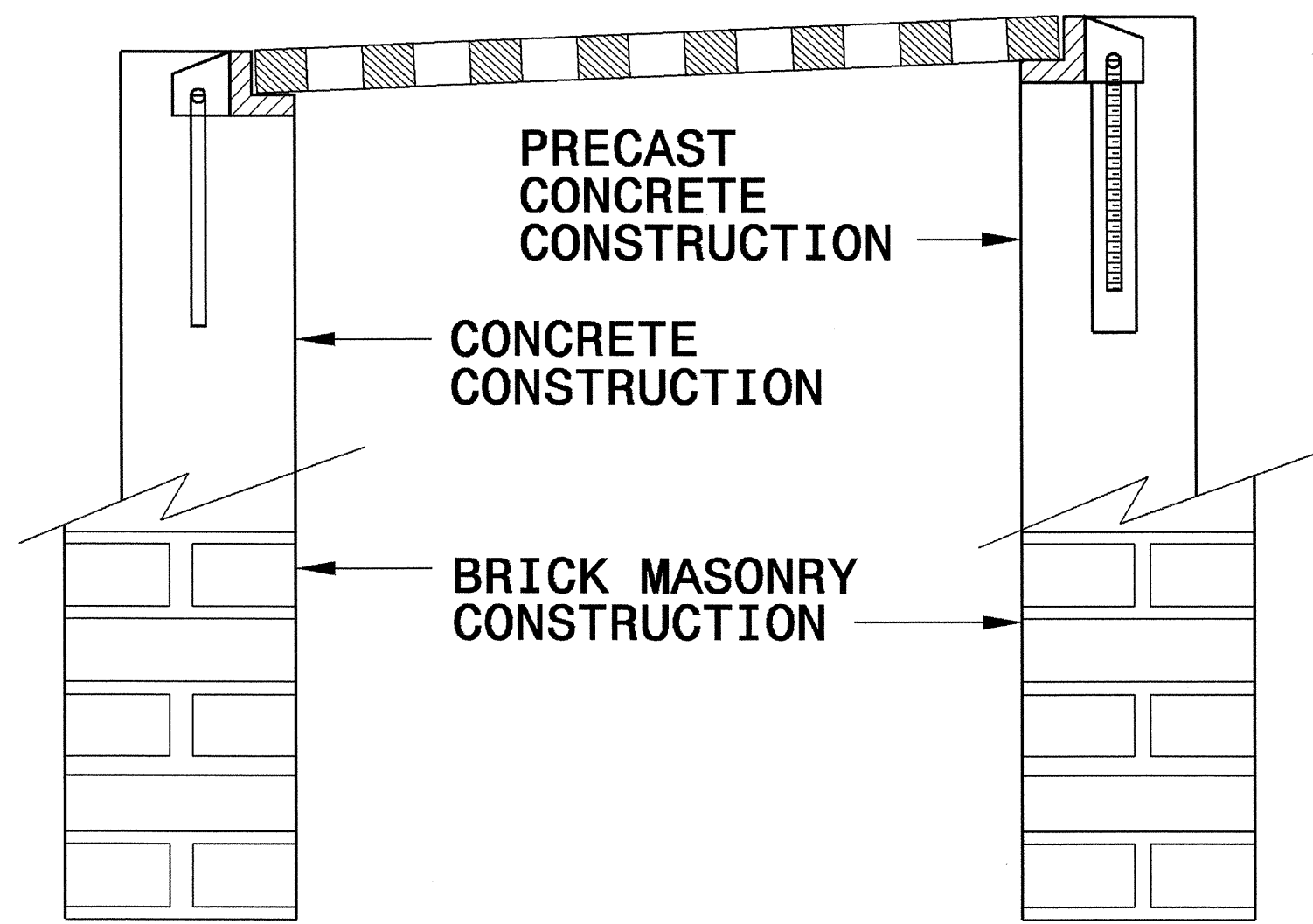
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



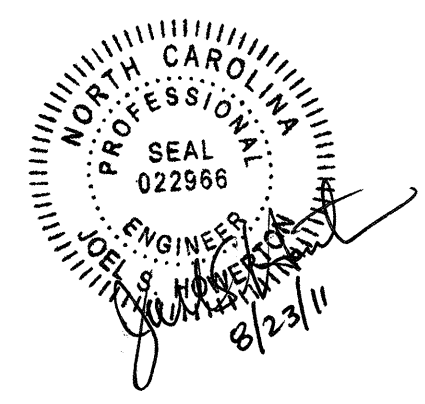
FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

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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**
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

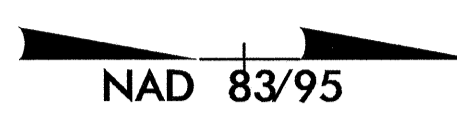
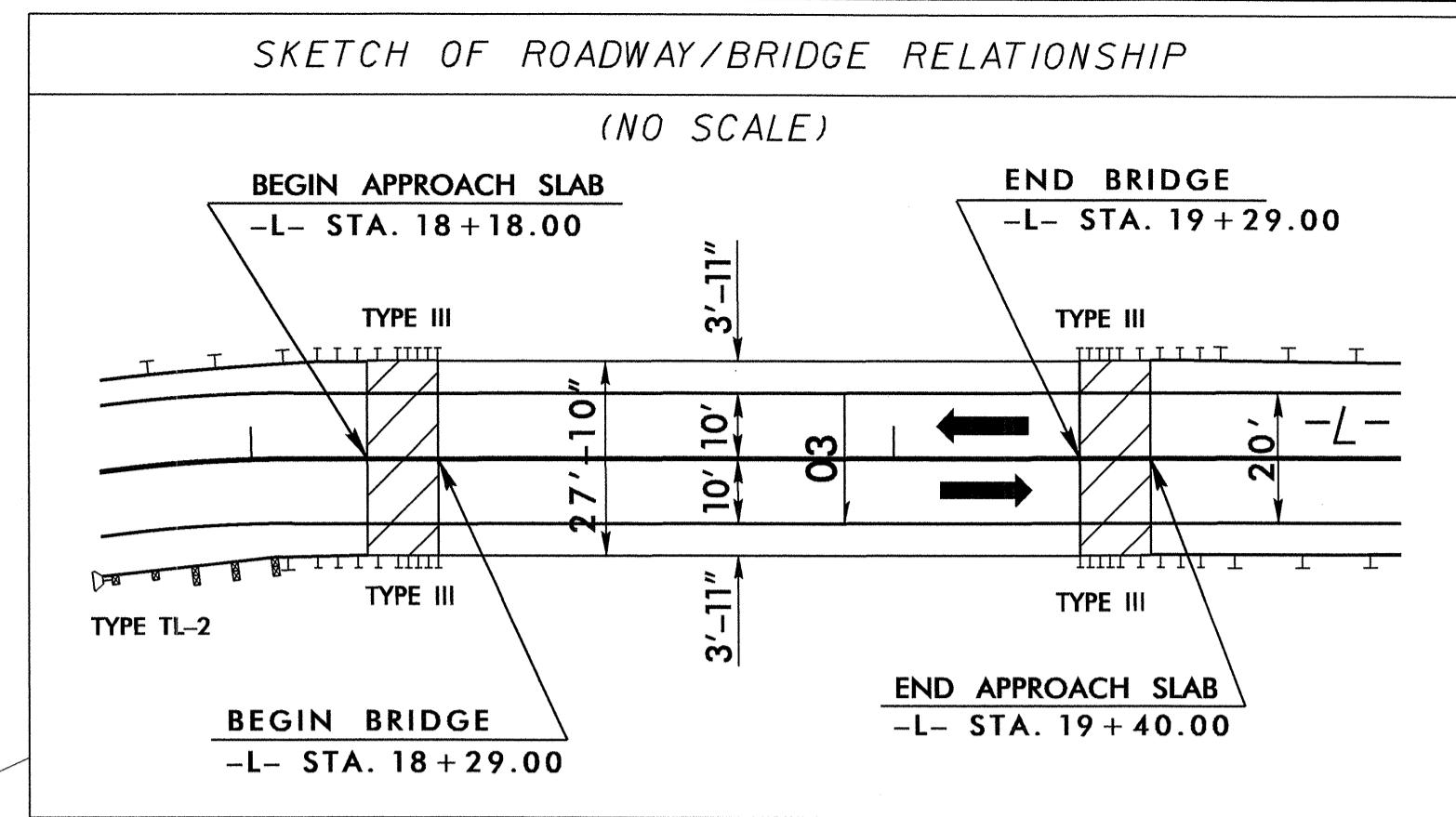
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 MODIFIED BY: E.E. WARD DATE: 9/25/06
 CHECKED BY: _____ DATE: _____
 FILE SPEC.: _____

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202725

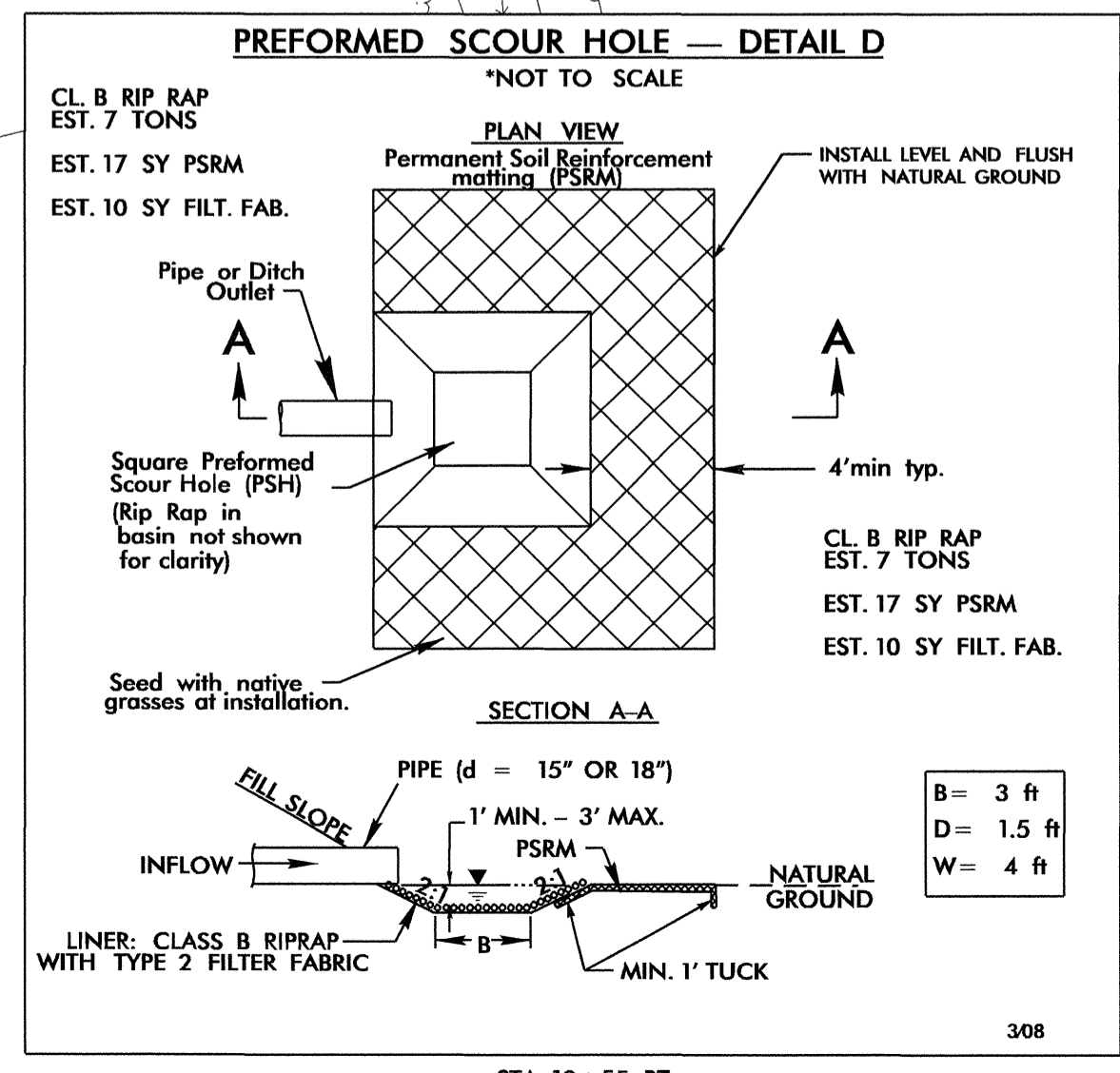
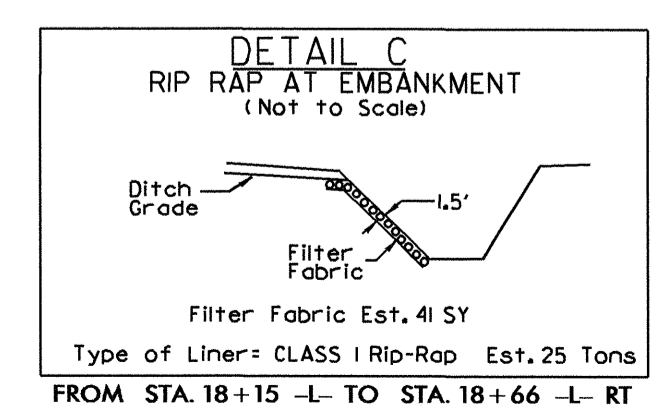
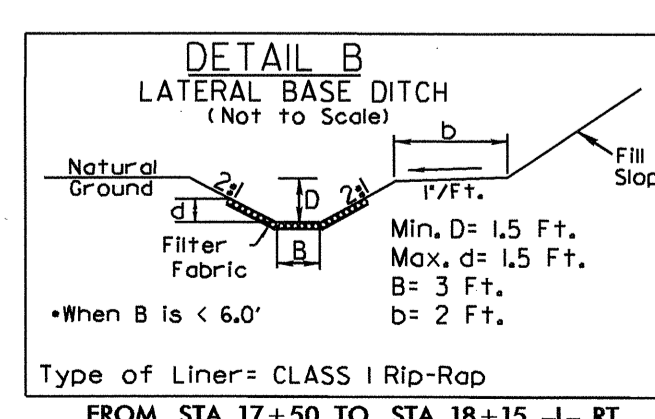
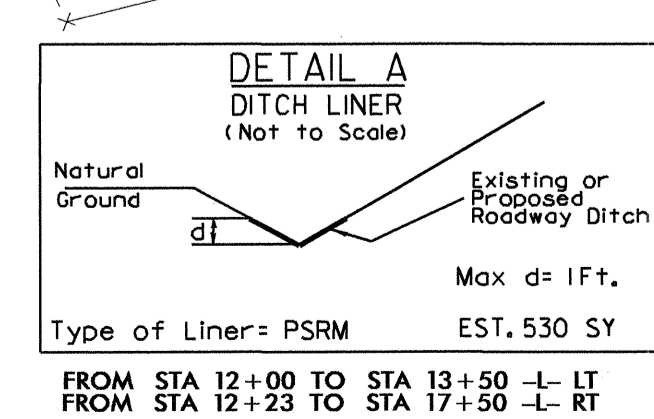
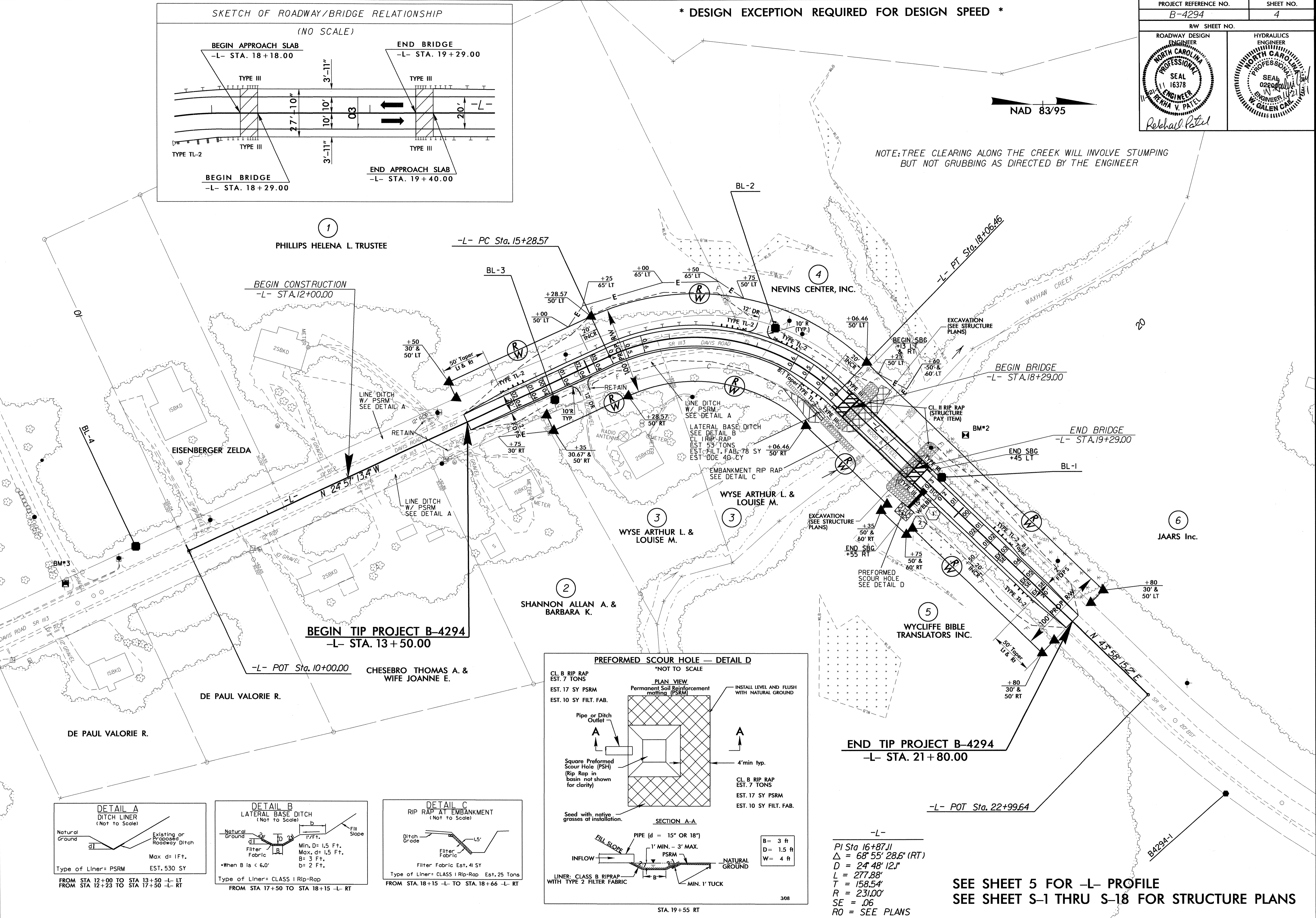
ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION	236700000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.29
000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING	255600000-E	846	30	LF	SHOULDER BERM GUTTER
003000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ***** (18+79.00-L)	303000000-E	862	600	LF	STEEL BM GUARDRAIL
003800000-E	SP	175	CY	SHALLOW UNDERCUT	315000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING	316500000-N	SP	6	EA	GUARDRAIL ANCHOR UNITS, TYPE ***** (TL-2)
005700000-E	226	250	CY	UNDERCUT EXCAVATION	321500000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
006300000-N	SP	Lump Sum		GRADING	362800000-E	876	75	TON	RIP RAP, CLASS I
008000000-E	SP	350	TON	CLASS IV SUBGRADE STABILIZATION	365600000-E	876	610	SY	FILTER FABRIC FOR DRAINAGE
010600000-E	230	3,075	CY	BORROW EXCAVATION	365900000-N	SP	1	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
013400000-E	240	35	CY	DRAINAGE DITCH EXCAVATION	440000000-E	1110	356	SF	WORK ZONE SIGNS (STATIONARY)
019600000-E	270	600	SY	FABRIC FOR SOIL STABILIZATION	441000000-E	1110	114	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
031800000-E	SP	3	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS	444500000-E	1145	112	LF	BARRICADES (TYPE III)
032000000-E	SP	10	SY	FOUNDATION CONDITIONING FABRIC	600000000-E	1605	1,400	LF	TEMPORARY SILT FENCE
033520000-E	SP	24	LF	15" DRAINAGE PIPE	600600000-E	1610	225	TON	STONE FOR EROSION CONTROL, CLASS A
033585000-E	SP	2	EA	*** DRAINAGE PIPE ELBOWS (15")	600900000-E	1610	205	TON	STONE FOR EROSION CONTROL, CLASS B
122000000-E	545	100	TON	INCIDENTAL STONE BASE	601200000-E	1610	125	TON	SEDIMENT CONTROL STONE
148900000-E	610	420	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B	601500000-E	1615	3	ACR	TEMPORARY MULCHING
152500000-E	610	470	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A	601800000-E	1620	100	LB	SEED FOR TEMPORARY SEEDING
157500000-E	SP	50	TON	ASPHALT BINDER FOR PLANT MIX	602100000-E	1620	1.5	TON	FERTILIZER FOR TEMPORARY SEEDING
202200000-E	SP	56	CY	SUBDRAIN EXCAVATION	602400000-E	1622	350	LF	TEMPORARY SLOPE DRAINS
203300000-E	SP	42	CY	SUBDRAIN FINE AGGREGATE	602700000-N	1622	5	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
204400000-E	SP	250	LF	6" PERFORATED SUBDRAIN PIPE	602900000-E	SP	400	LF	SAFETY FENCE
207000000-N	SP	1	EA	SUBDRAIN PIPE OUTLETS	603000000-E	1630	330	CY	SILT EXCAVATION
207700000-E	SP	6	LF	6" OUTLET PIPE (SUBDRAINS)	603600000-E	1631	7,500	SY	MATting FOR EROSION CONTROL
228600000-N	840	1	EA	MASONRY DRAINAGE STRUCTURES	603700000-E	SP	200	SY	COIR FIBER MAT
					603800000-E	SP	530	SY	PERMANENT SOIL REINFORCEMENT MAT
					604200000-E	1632	350	LF	1/4" HARDWARE CLOTH
					604800000-E	SP	110	SY	FLOATING TURBIDITY CURTAIN
					607101000-E	SP	150	LF	WATTLE
					607102000-E	SP	70	LB	POLYACRYLAMIDE (PAM)
					607103000-E	SP	80	LF	COIR FIBER BAFFLE
					607105000-E	SP	1	EA	*** SKIMMER (1-1/2")
					608400000-E	1660	3	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	18	EA	RESPONSE FOR EROSION CONTROL

* DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED *



NOTE: TREE CLEARING ALONG THE CREEK WILL INVOLVE STUMPING BUT NOT GRUBBING AS DIRECTED BY THE ENGINEER

REVISIONS
 8/17/99
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END TIP PROJECT B-4294
-L- STA. 21+80.00

-L-
 PI Sta 16+87.11
 $\Delta = 68^{\circ} 55' 28.6" (RT)$
 $D = 24' 48" 12.1"$
 $L = 277.88'$
 $T = 158.54'$
 $R = 231.00'$
 $SE = .06$
 $RO = SEE PLANS$

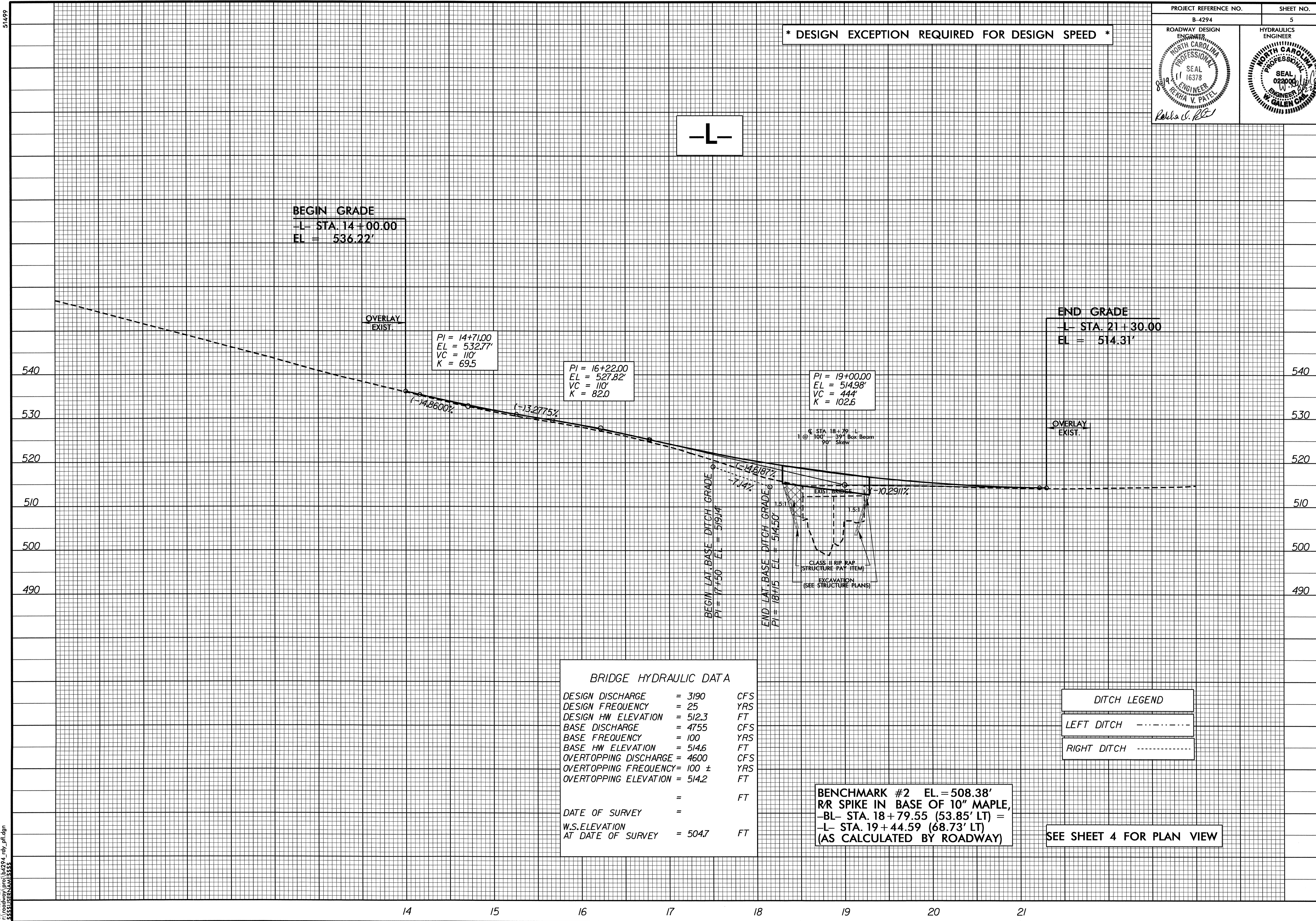
SEE SHEET 5 FOR -L- PROFILE
 SEE SHEET S-1 THRU S-18 FOR STRUCTURE PLANS

* DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED *

-L-

BEGIN GRADE
-L- STA. 14+00.00
EL = 536.22'

END GRADE
-L- STA. 21+30.00
EL = 514.31'



OVERLAY EXIST.

PI = 14+71.00
EL = 532.77'
VC = 110'
K = 69.5

PI = 16+22.00
EL = 527.82'
VC = 110'
K = 82.0

PI = 19+00.00
EL = 514.98'
VC = 444'
K = 102.6

C STA. 18+79.50
1 @ 100' = 39' Box Beam
90° Skew

OVERLAY EXIST.

BEGIN LAT. BASE DITCH GRADE
PI = 17+50 EL = 519.14

END LAT. BASE DITCH GRADE
PI = 18+15 EL = 514.50

EXIST. DITCH
CLASS II RIP RAP STRUCTURE PAY ITEM
EXCAVATION (SEE STRUCTURE PLANS)

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 3190	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 512.3	FT
BASE DISCHARGE	= 4755	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 514.6	FT
OVERTOPPING DISCHARGE	= 4600	CFS
OVERTOPPING FREQUENCY	= 100 ±	YRS
OVERTOPPING ELEVATION	= 514.2	FT
	=	FT
DATE OF SURVEY	=	
W.S. ELEVATION AT DATE OF SURVEY	= 504.7	FT

DITCH LEGEND	
LEFT DITCH	-----
RIGHT DITCH	-----

BENCHMARK #2 EL. = 508.38'
R/R SPIKE IN BASE OF 10" MAPLE,
-BL- STA. 18+79.55 (53.85' LT) =
-L- STA. 19+44.59 (68.73' LT)
(AS CALCULATED BY ROADWAY)

SEE SHEET 4 FOR PLAN VIEW

51499

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