

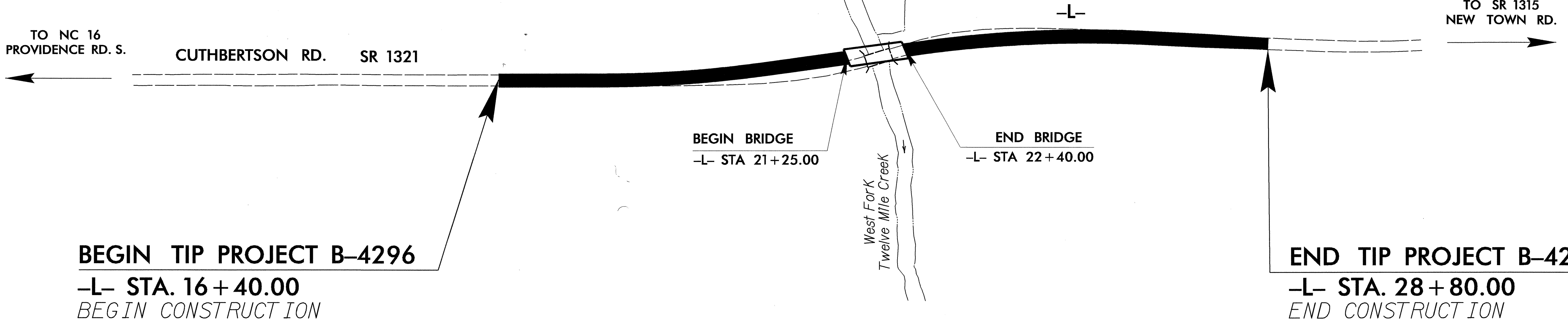
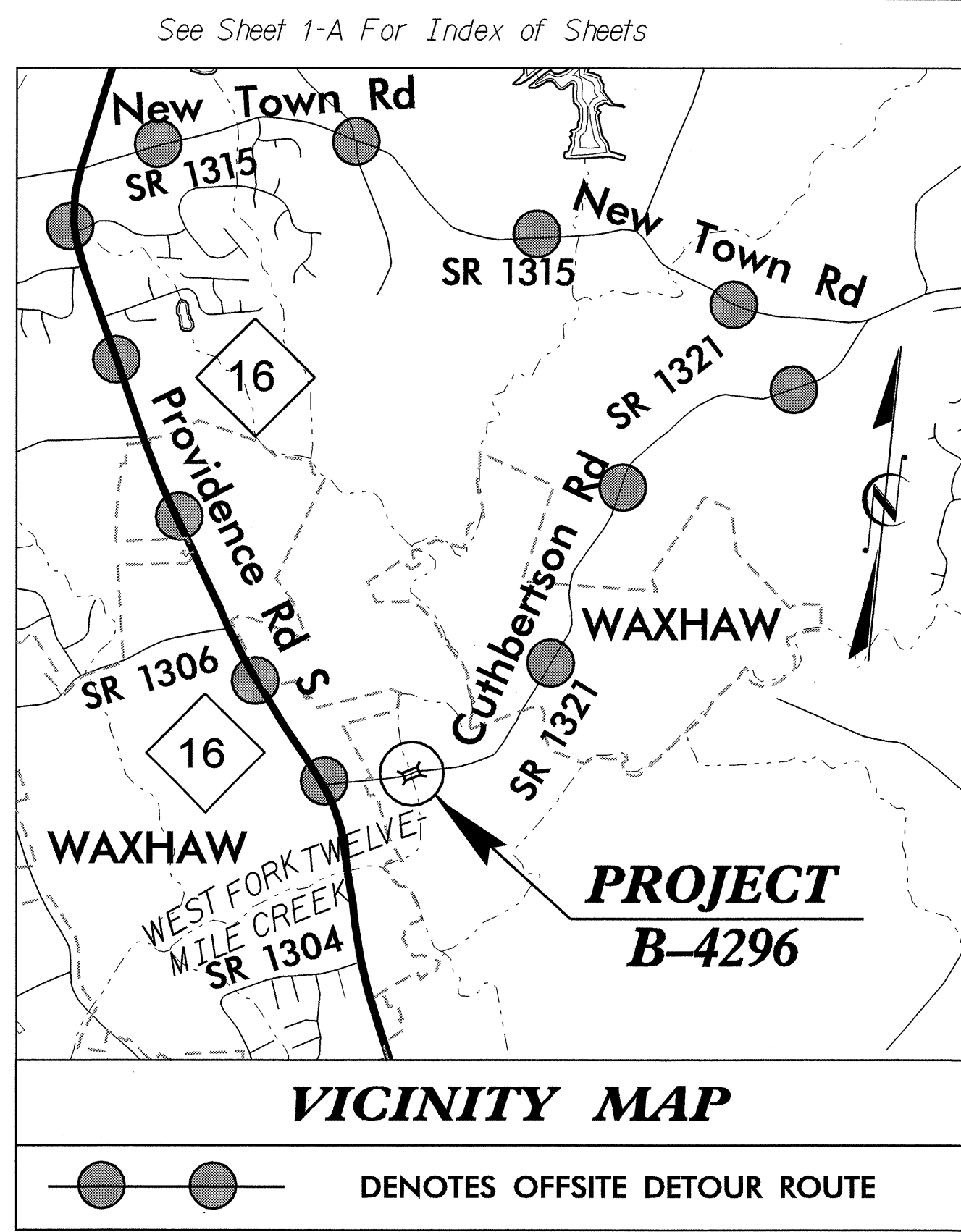
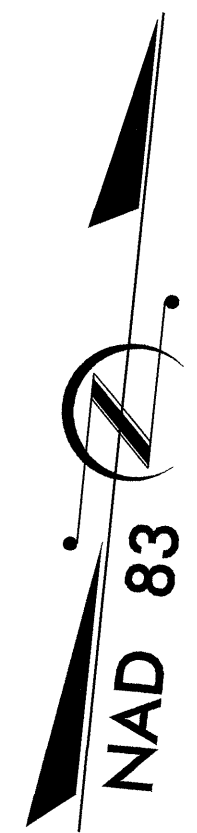
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4296	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33634.1.1	BRZ-1321(3)	P.E.	
33634.2.1	BRZ-1321(3)	R/W & UTIL	
33634.3.1	BRZ-1321(3)	CONSTR.	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UNION COUNTY

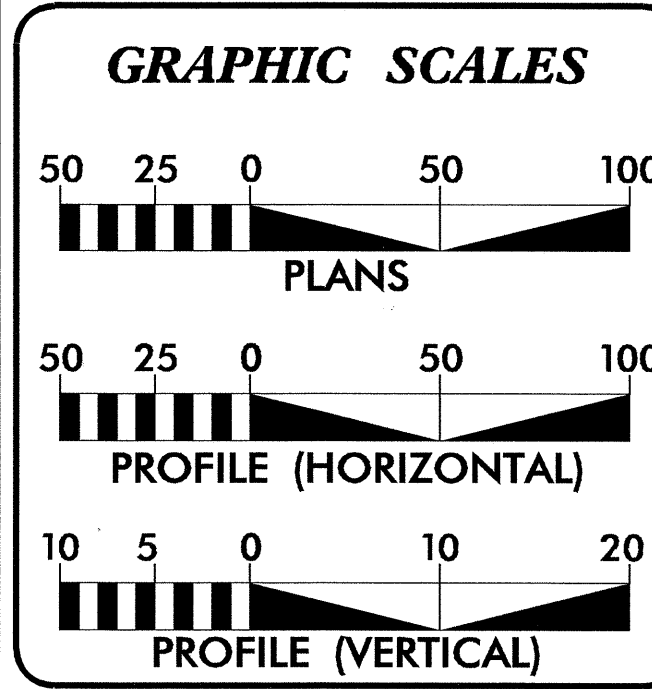
LOCATION: BRIDGE NO. 223 OVER WEST FORK TWELVE MILE CREEK AND APPROACHES ON SR 1321 (CUTHBERTSON ROAD)

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



TIP PROJECT: B-4296

CONTRACT: C202032



DESIGN DATA

ADT 2008 =	935
ADT 2025 =	1600
DHV =	10 %
D =	60 %
T =	5 % *
V =	45 MPH
* TTST	1% + DUAL 4%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJ. B-4296 =	0.213 MILES
LENGTH STRUCTURES TIP PROJ. B-4296 =	0.022 MILES
TOTAL LENGTH OF TIP PROJ. B-4296 =	0.235 MILES

Prepared In the Office of:

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE	DECEMBER 21, 2007
LETTING DATE:	DECEMBER 16, 2008

ROGER D. THOMAS, PE
PROJECT ENGINEER

SAMUEL L. ST. CLAIR
PROJECT DESIGN ENGINEER

HYDRAULIC ENGINEER

PROFESSIONAL ENGINEER
SEAL 19865
WILLIAM S. ZERMAN
9/22/08

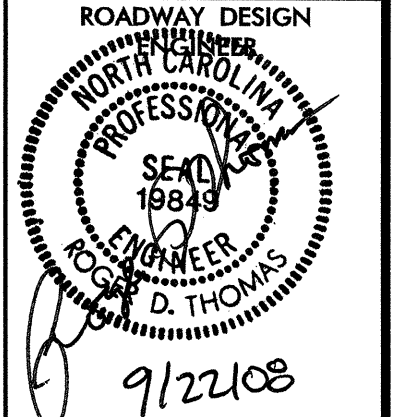
ROADWAY DESIGN ENGINEER
SEAL 19849
ROGER D. THOMAS

9-19-08

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

15-SEP-2008 09:07
C:\p00\AD\B4296_rdy_tsh.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$



SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C THRU 1-D	SURVEY CONTROL SHEETS
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-A	DRAINAGE DITCH DETAILS
2-B	DETAIL FOR ANCHORAGE OF FRAMES
2-C	DETAIL FOR 2 STRAND ELECTRIC WIRE FENCE
3	SUMMARY OF QUANTITIES
3-A	SUMMARIES FOR DRAINAGE, GUARDRAIL, EARTHWORK, ASPHALT PAVEMENT REMOVAL, BREAKING OF ASPHALT PAVEMENT AND SHOULDER BERM GUTTER
4	PLAN SHEET
5	PROFILE SHEET
TOP-1 THRU TOP-3	TRAFFIC CONTROL PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1 THRU RF-2	REFORESTATION PLANS
SIGN-1 THRU SIGN-3	SIGNING PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-0	CROSS-SECTION SUMMARY
X-1 THRU X-10	CROSS-SECTIONS
S-1 THRU S-24	STRUCTURE PLANS

GENERAL NOTES:

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

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.

SIDE ROADS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

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 Union EMC (Power), Time Warner Cable (CATV), Windstream (Telephone), Piedmont Natural Gas, Union County Public Works (Water)

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

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

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
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
862.04	Anchorng End of Guardrail - B-77 and B-83 Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
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	○
Swamp Marsh	⊕
Proposed Lateral, Tail, Head Ditch	← FLOW
False Sump	⊕

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	○
Proposed Right of Way Line with Concrete or Granite Marker	□
Existing Control of Access	⊕
Proposed Control of Access	⊕
Existing Easement Line	---E---
Proposed Temporary Construction Easement	---E---
Proposed Temporary Drainage Easement	---TDE---
Proposed Permanent Drainage Easement	---PDE---
Proposed Permanent Utility Easement	---PUE---

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	---C---
Proposed Slope Stakes Fill	---F---
Proposed Wheel Chair Ramp	⊕ WCR
Proposed Wheel Chair Ramp Curb Cut	⊕ WCC
Curb Cut for Future Wheel Chair Ramp	⊕ CCFR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	⊕

VEGETATION:

Single Tree	⊕
Single Shrub	⊕
Hedge	-----
Woods Line	-----
Orchard	⊕
Vineyard	⊕

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	-----

UTILITIES:

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

TELEPHONE:

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

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊕
Water Hydrant	⊕
Recorded U/G Water Line	---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---

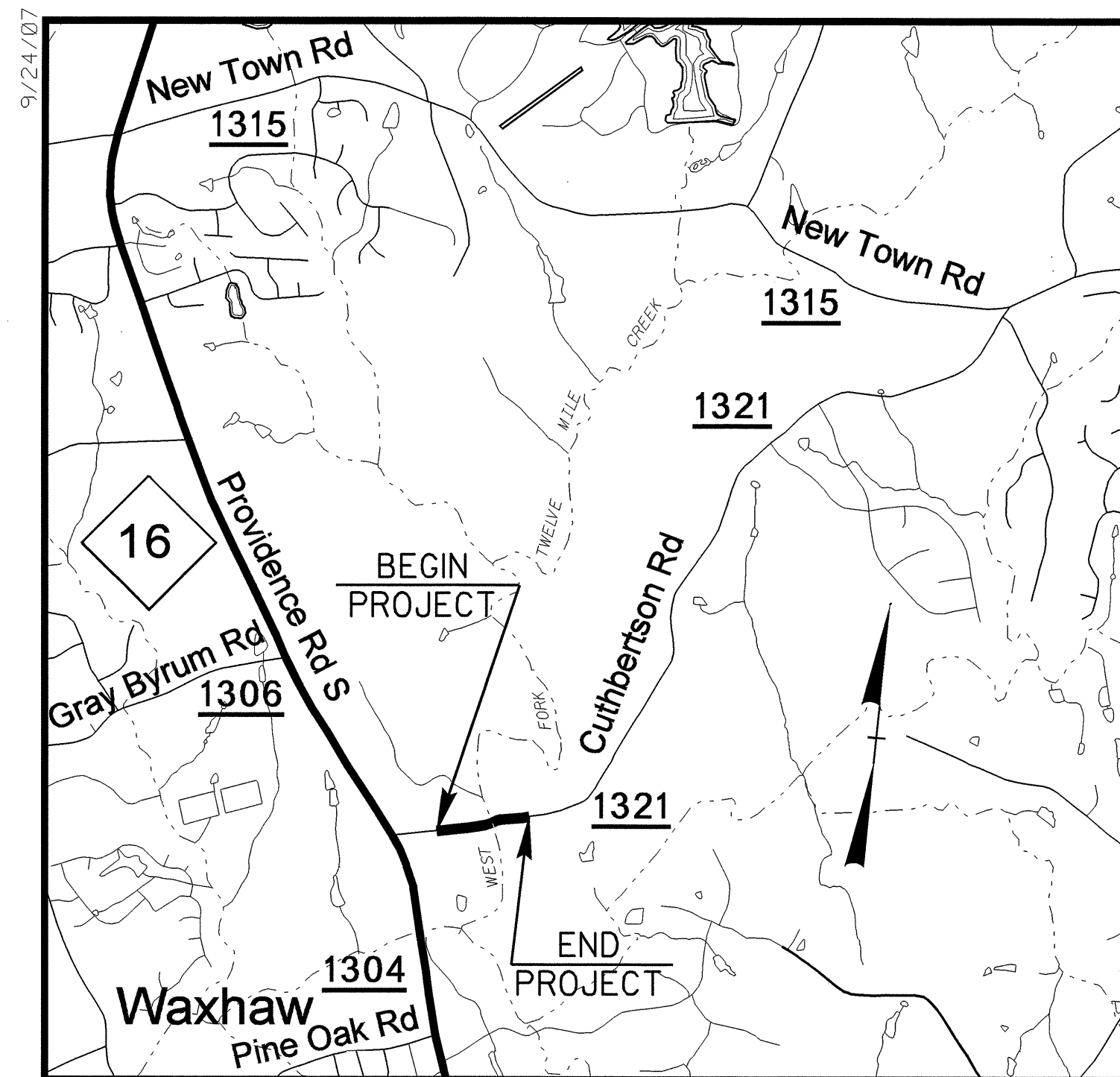
SANITARY SEWER:

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	---ZUL---
U/G Tank; Water, Gas, Oil	□
A/G Tank; Water, Gas, Oil	□
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

SURVEY CONTROL SHEET B-4296



VICINITY MAP
NOT TO SCALE

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	B4296-1	443862.7660	1473383.1990	558.75	OUTSIDE PROJECT LIMITS	
2	B4296-2	443992.9580	1474232.2100	531.29	OUTSIDE PROJECT LIMITS	
3	BL-3	444009.8930	1474723.4860	520.02	17+89.18	22.45 RT
4	BL-4	444082.4210	1475083.2800	508.62	21+52.54	23.68 RT
5	BL-5	444179.3640	1475312.6620	512.96	23+96.90	21.34 LT
6	BL-6	444193.2050	1475932.3110	558.22	OUTSIDE PROJECT LIMITS	
7	BL-7	444308.1700	1476334.3320	567.71	OUTSIDE PROJECT LIMITS	

.....
 BM1 ELEVATION = 536.55
 N 444021 E 1474324
 L STATION 15+79
 N 87° 20' 28.5" W DIST 188.95
 RR SPIKE IN BASE OF POWER POLE 941

.....
 BM2 ELEVATION = 506.18
 N 444020 E 1475103
 L STATION 21+57 89 RIGHT
 RR SPIKE IN BASE OF 36IN OAK

.....
 BM3 ELEVATION = 568.23
 N 444339 E 1476302
 L STATION 28+80
 N 74° 09' 07.0" E DIST 523.50
 RR SPIKE IN BASE OF 24IN TWIN PINE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4296-2" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 443992.958(ft) EASTING: 1474232.210(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999865 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4296-2" TO -L- STATION 15+78.69 IS N 85°58'19.2" E 281.007 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/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 B4269_LS_GPSCALIB_061201.HTML
 B4269_LS_WGS84_061201.TXT
 B4296_LS_LOCAL_061201.TXT
 B4296_LS_CONTROL_070924.TXT
 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) SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NCDOT GPS STATION B4296-1
 LOCALIZED PROJECT COORDINATES
 N 443862.766
 E 1473383.199
 ELEV 558.75

← TO NC 16
 PROVIDENCE RD. S.

-L- STA 15+78.69

BEGIN PROJECT

END PROJECT

NCDOT GPS STATION B4296-2
 LOCALIZED PROJECT COORDINATES
 N 443992.958
 E 1474232.210
 ELEV 531.29

CUTHBERTSON RD.
 SR 1321

→ TO SR 1315
 NEW TOWN RD.

NOTE: DRAWING NOT TO SCALE

9/24/07
21-AUG-2008 15:51 N:\4296_rdlj_lo.dgn

SURVEY CONTROL SHEET B-4296

GPS CALIBRATION SHEET

GPS CALIBRATION REPORT
PROJECT : B4296 CALIB

TIP NUMBER B-4296
USER NAME TBLWDER DATE & TIME 3:13:09 PM 11/28/2006
COORDINATE SYSTEM US STATE PLANE 1983 ZONE NORTH CAROLINA 3200
HORIZONTAL DATUM NAD 1983 (CONUS)
VERTICAL DATUM NAD 88 GEOID MODEL GEOID03 (CONUS) NC SUB GRID
COORDINATE UNITS US SURVEY FEET
DISTANCE UNITS US SURVEY FEET
HEIGHT UNITS US SURVEY FEET

LOCAL SITE INFORMATION
LOCALIZED AROUND B4296-2
LATITUDE N/A
LONGITUDE N/A
SITE SCALE FACTOR N/A
HEIGHT N/A

DATUM TRANSFORMATION PARAMETERS

METHOD THREE PARAMETER
TRANSLATION ALONG X AXIS 13.218SFT
TRANSLATION ALONG Y AXIS -80.714SFT
TRANSLATION ALONG Z AXIS 57.211SFT

UPDATED DEFAULT PROJECTION (TRANSVERSE MERCATOR) DEFINITION

UPDATED DEFAULT PROJECTION NOT REQUESTED

HORIZONTAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ROTATION CENTER 444145.882SFT
EASTING COORDINATE OF ROTATION CENTER 1474900.174SFT
ROTATION ABOUT THE CENTER POINT 0.00'00"
TRANSLATION NORTH 0.000SFT
TRANSLATION EAST 0.000SFT
SCALE FACTOR 1.00013967

VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN POINT 443862.766SFT
EASTING COORDINATE OF ORIGIN POINT 1473383.199SFT
VERTICAL SEPARATION AT ORIGIN 0.158SFT
SLOPE NORTH 2.078PPM
SLOPE EAST -1.118PPM

GEOID MODEL DEFINITION

GEOID03 (CONUS) NC SUB GRID

RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

SUMMARY

	MAXIMUM ERROR	ROOT MEAN SQUARE ERROR	POINT
HORIZONTAL	0.000SFT	0.000	B4296-1 GPS
VERTICAL	0.014SFT	0.002	B4296-2 GPS
THREE-DIMENSIONAL	0.014SFT	0.002	B4296-2 GPS

POINT RESIDUALS

WGS84 COORDINATES	CALCULATED POINT FOR DISPLAY ONLY	LOCAL COORDINATES
POINT B4296-1 GPS LATITUDE 34°57'24.41529"N LONGITUDE 80°45'27.65212"W HEIGHT 458.926SFT	NORTHING 443862.766SFT EASTING 1473383.199SFT ELEVATION 558.753SFT HORZ ERROR 0.000SFT VERT ERROR 0.004SFT 3D ERROR 0.004SFT	POINT B4296-1 NORTHING 443862.766SFT EASTING 1473383.199SFT ELEVATION 558.749SFT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY
POINT P2 GPS LATITUDE 34°57'29.57668"N LONGITUDE 80°45'19.70887"W HEIGHT 451.161SFT	NORTHING 444372.834SFT EASTING 1474053.521SFT ELEVATION 550.980SFT HORZ ERROR 0.001SFT VERT ERROR 0.003SFT 3D ERROR 0.003SFT	POINT P2 NORTHING 444372.834SFT EASTING 1474053.521SFT ELEVATION 550.977SFT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY
POINT B4296-2 GPS LATITUDE 34°57'25.85131"N LONGITUDE 80°45'17.48184"W HEIGHT 431.456SFT	NORTHING 443992.958SFT EASTING 1474232.210SFT ELEVATION 531.274SFT HORZ ERROR 0.001SFT VERT ERROR 0.014SFT 3D ERROR 0.014SFT	POINT B4296-2 NORTHING 443992.958SFT EASTING 1474232.210SFT ELEVATION 531.288SFT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY

POINT P1 GPS
LATITUDE 34°57'22.40659"N
LONGITUDE 80°45'18.66806"W
HEIGHT 420.472SFT

NORTHING 443646.475SFT
EASTING 1474127.327SFT
ELEVATION 520.292SFT
HORZ ERROR 0.000SFT
VERT ERROR 0.004SFT
3D ERROR 0.004SFT

POINT P1
NORTHING 443646.475SFT
EASTING 1474127.327SFT
ELEVATION 520.288SFT
UTILIZED HORZ AND VERT
QUALITY SURVEY QUALITY

POINT P3 GPS
LATITUDE 34°57'31.71064"N
LONGITUDE 80°45'06.05173"W
HEIGHT 407.414SFT

NORTHING 444568.477SFT
EASTING 1475193.955SFT
ELEVATION 507.222SFT
HORZ ERROR 0.000SFT
VERT ERROR 0.001SFT
3D ERROR 0.001SFT

POINT P3
NORTHING 444568.477SFT
EASTING 1475193.955SFT
ELEVATION 507.221SFT
UTILIZED HORZ AND VERT
QUALITY SURVEY QUALITY

POINT P4 GPS
LATITUDE 34°57'32.72547"N
LONGITUDE 80°44'53.12721"W
HEIGHT 468.608SFT

NORTHING 444652.104SFT
EASTING 1476271.408SFT
ELEVATION 568.406SFT
HORZ ERROR 0.000SFT
VERT ERROR 0.001SFT
3D ERROR 0.001SFT

POINT P4
NORTHING 444652.104SFT
EASTING 1476271.408SFT
ELEVATION 568.405SFT
UTILIZED HORZ AND VERT
QUALITY SURVEY QUALITY

POINT P5 GPS
LATITUDE 34°57'25.55248"N
LONGITUDE 80°44'52.15446"W
HEIGHT 453.546SFT

NORTHING 443925.557SFT
EASTING 1476339.596SFT
ELEVATION 553.344SFT
HORZ ERROR 0.001SFT
VERT ERROR 0.001SFT
3D ERROR 0.001SFT

POINT P5
NORTHING 443925.557SFT
EASTING 1476339.596SFT
ELEVATION 553.343SFT
UTILIZED HORZ AND VERT
QUALITY SURVEY QUALITY

DATUM DESCRIPTION

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NOTES:

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[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)

THE FILES TO BE FOUND ARE AS FOLLOWS:

B4269_LS_GPSCALIB_061201.HTML

B4269_LS_WGS84_061201.TXT

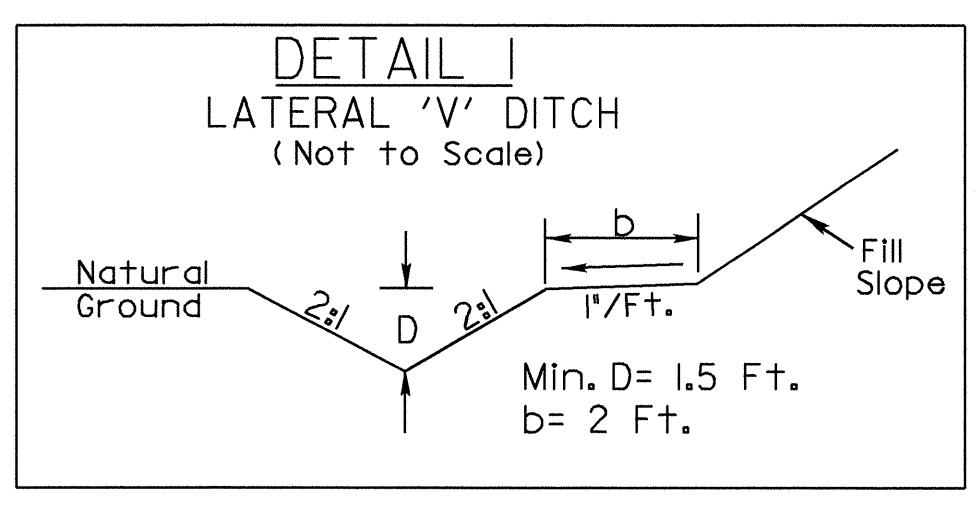
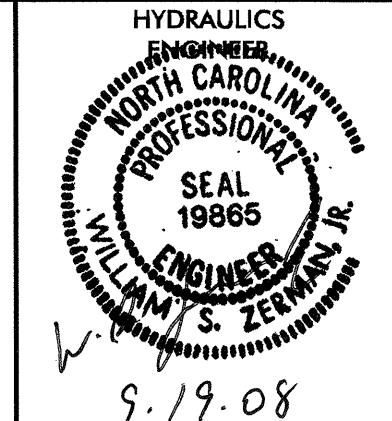
B4296_LS_LOCAL_061201.TXT

B4296_LS_CONTROL_070924.TXT

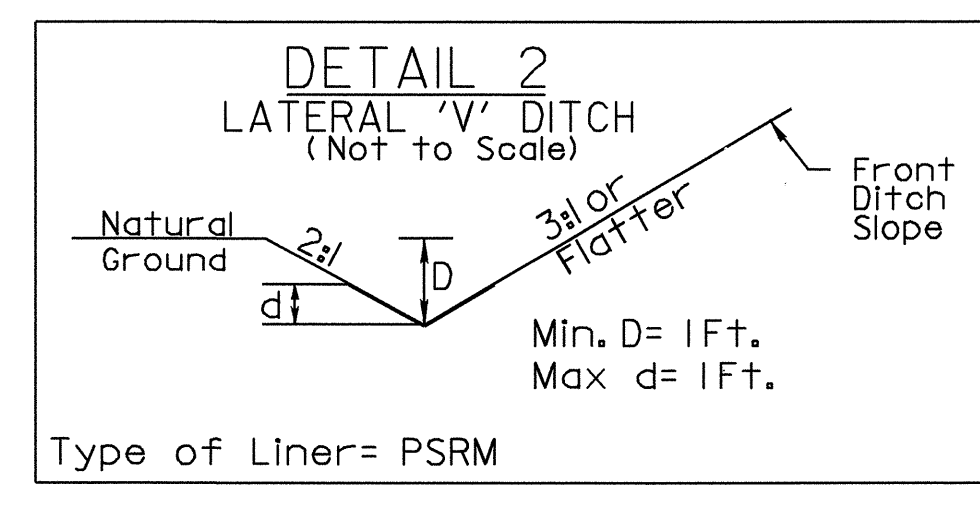
INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

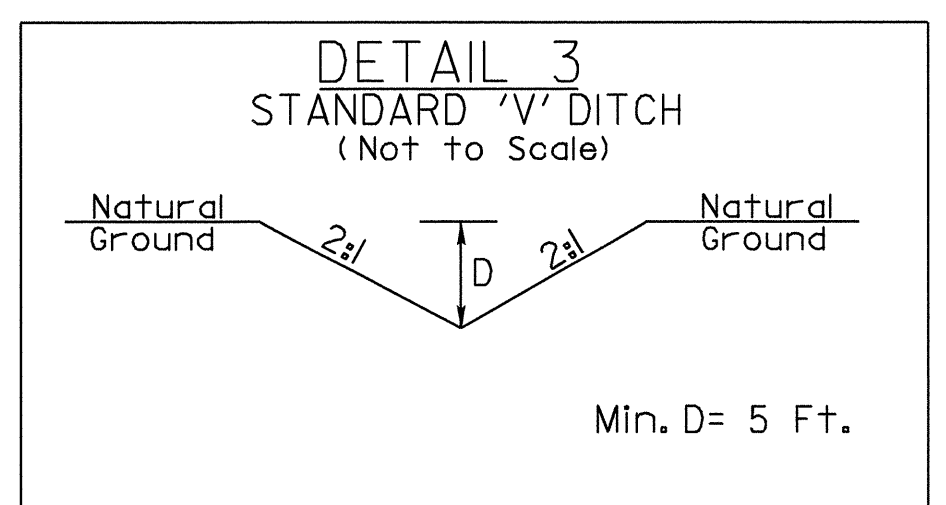


-L- LT 23+00 TO 26+50
-L- RT 20+00 TO 21+38

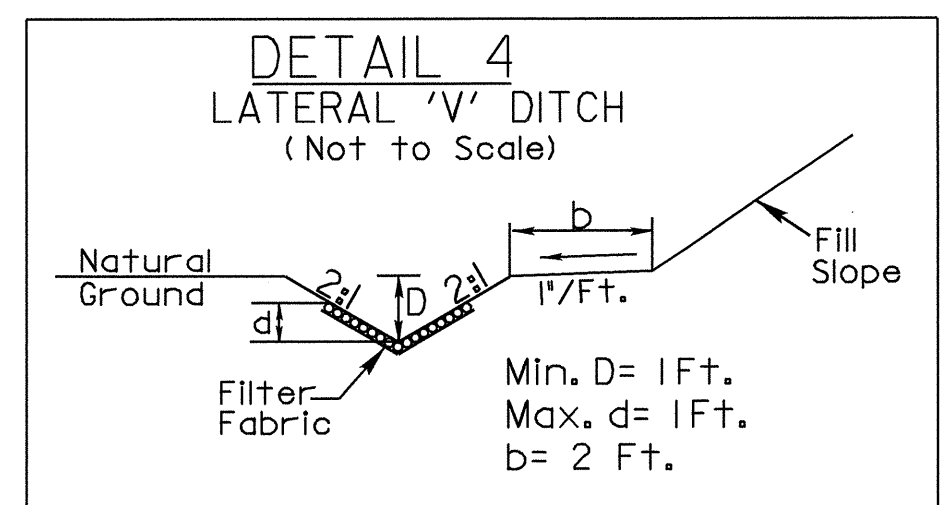


Type of Liner= PSRM

-L- LT 26+50 TO 28+50
-L- LT 17+50 TO 20+00

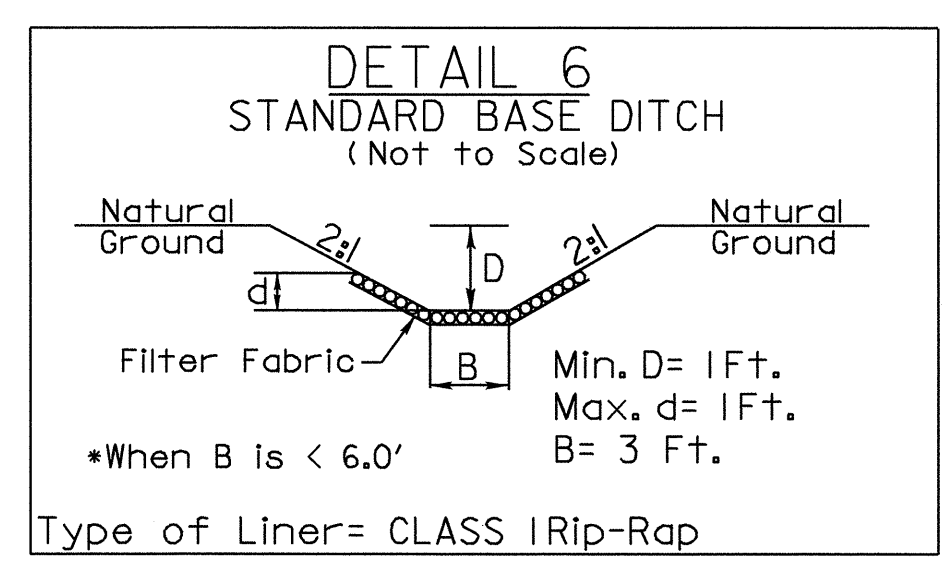


-L- LT 21+85 +/- TO 22+45 +/-



Type of Liner= Class I Rip-Rap

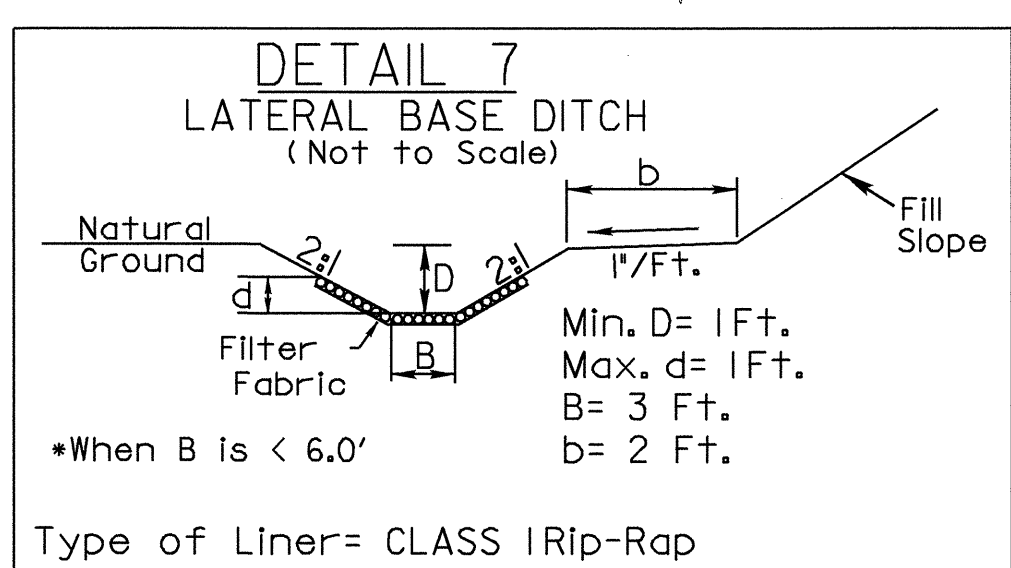
-L- LT 22+23 TO 23+00



*When B is < 6.0'

Type of Liner= CLASS I Rip-Rap

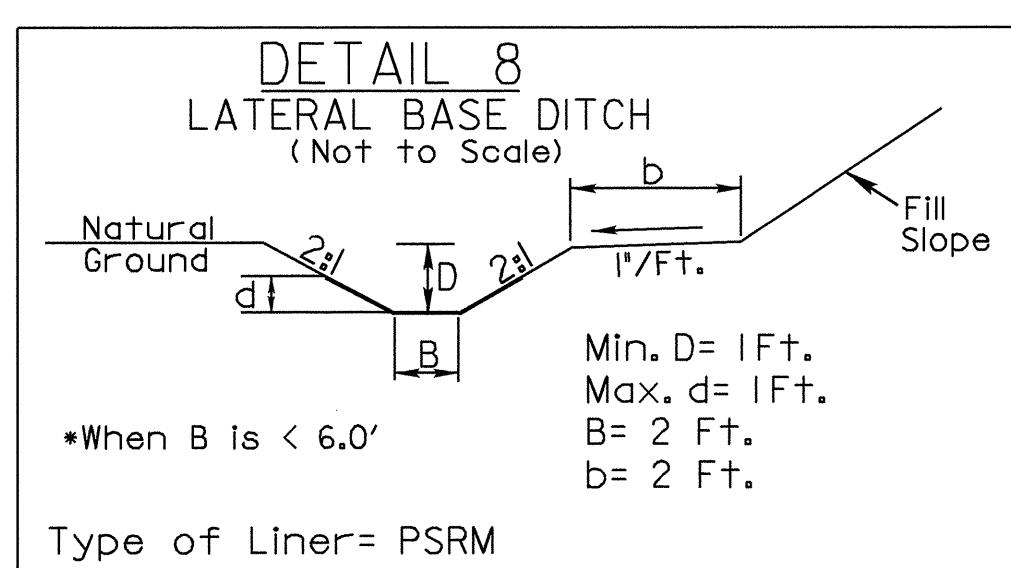
-L- RT 22+08 TO 22+50



*When B is < 6.0'

Type of Liner= CLASS I Rip-Rap

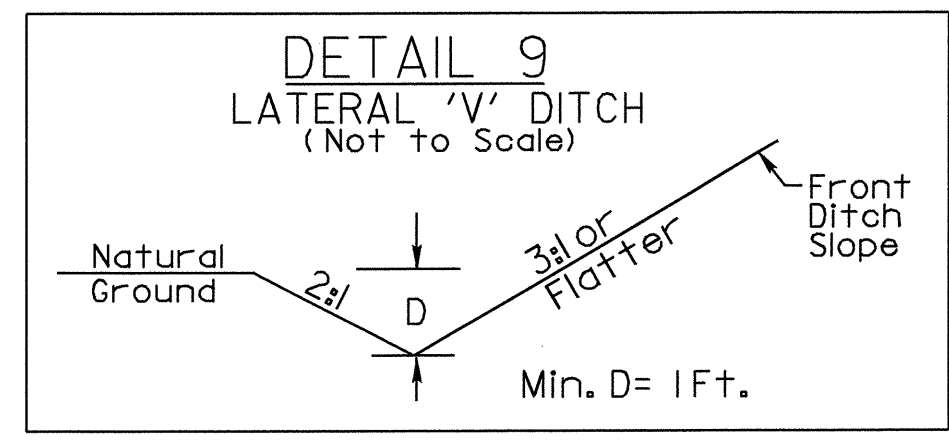
-L- RT 22+50 TO 25+50



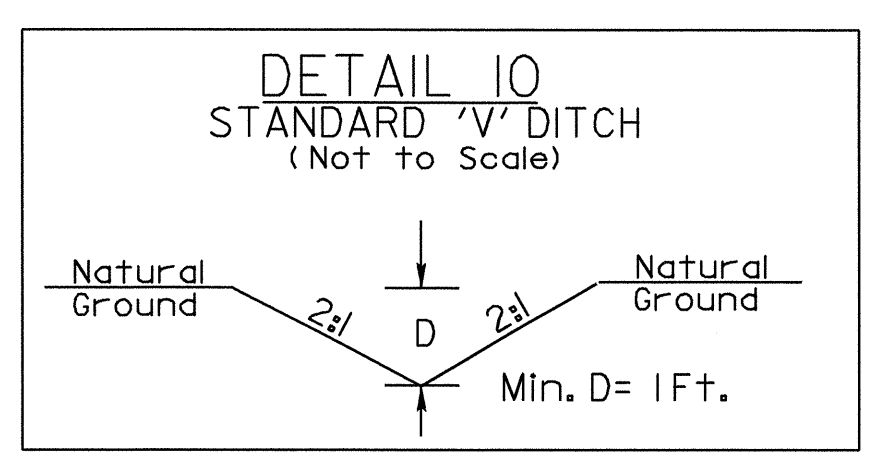
*When B is < 6.0'

Type of Liner= PSRM

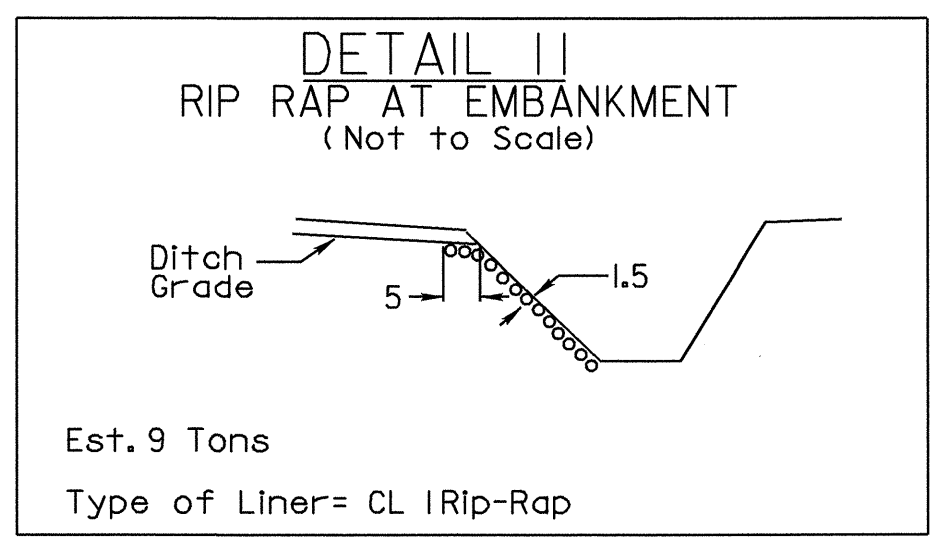
-L- RT 25+50 TO 28+50



-L- RT 17+50 TO 20+00

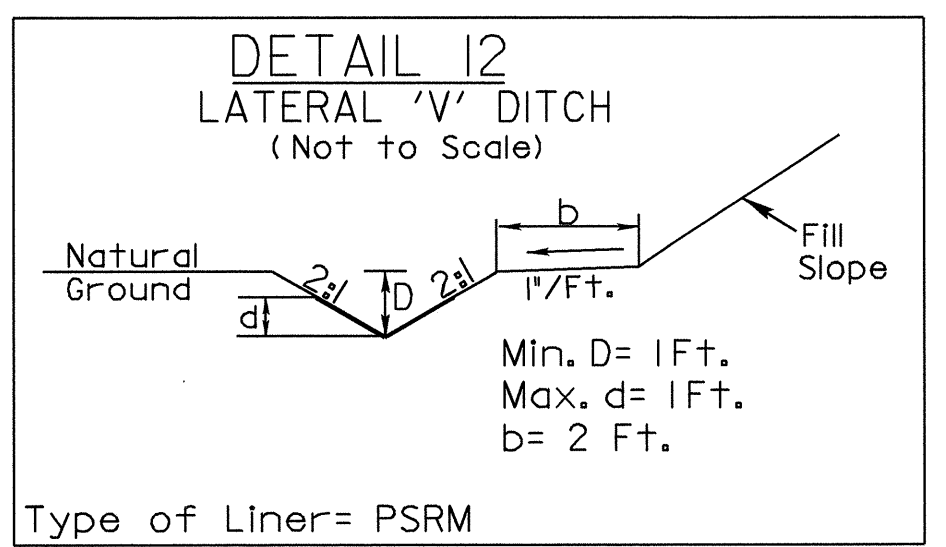


-L- RT 21+38 TO 21+69



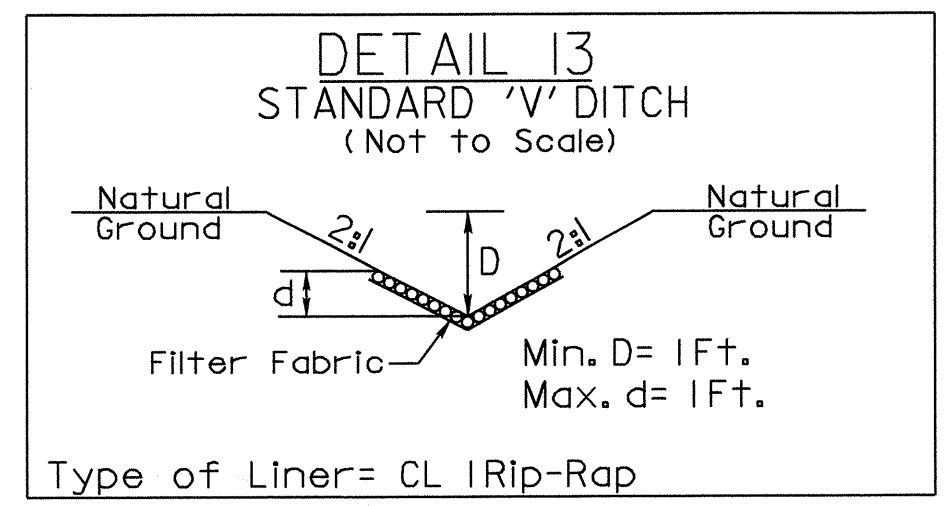
Type of Liner= CL I Rip-Rap

-L- RT 21+38 TO 21+69



Type of Liner= PSRM

-L- LT 20+00 TO 21+21



Type of Liner= CL I Rip-Rap

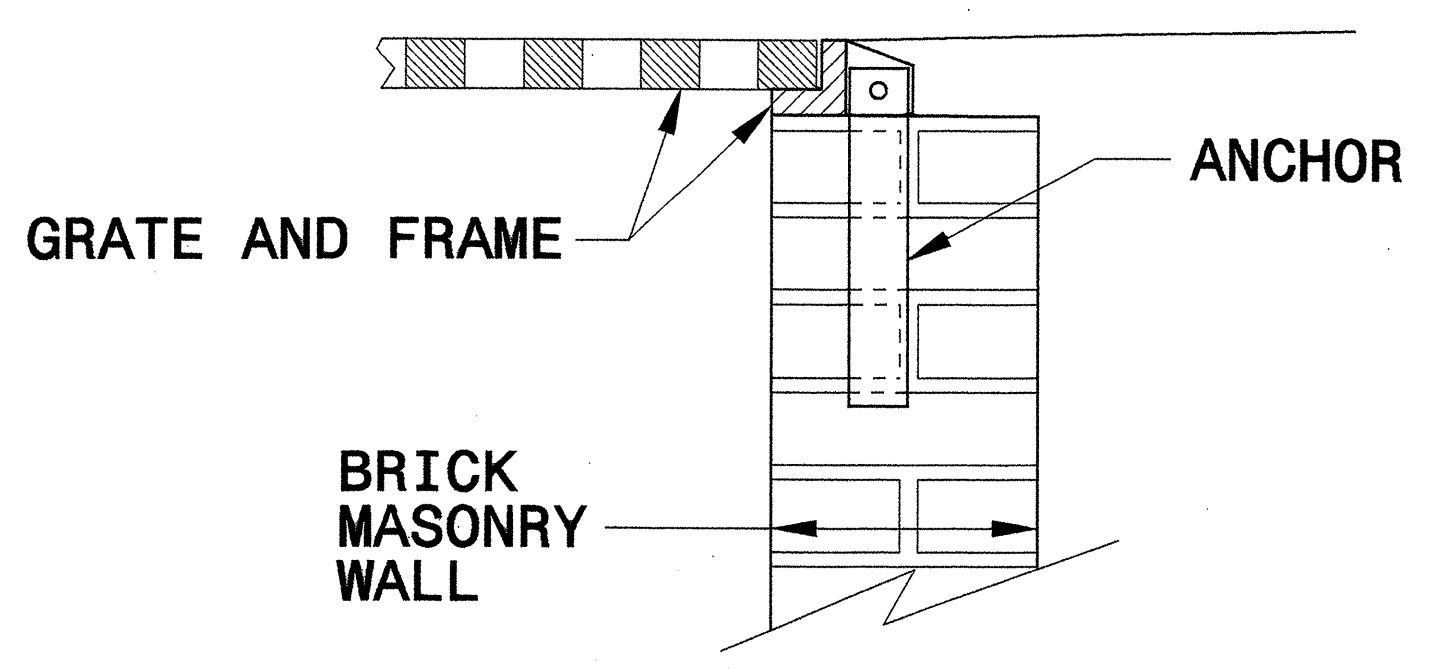
-L- LT 21+21 TO 21+43

REVISIONS

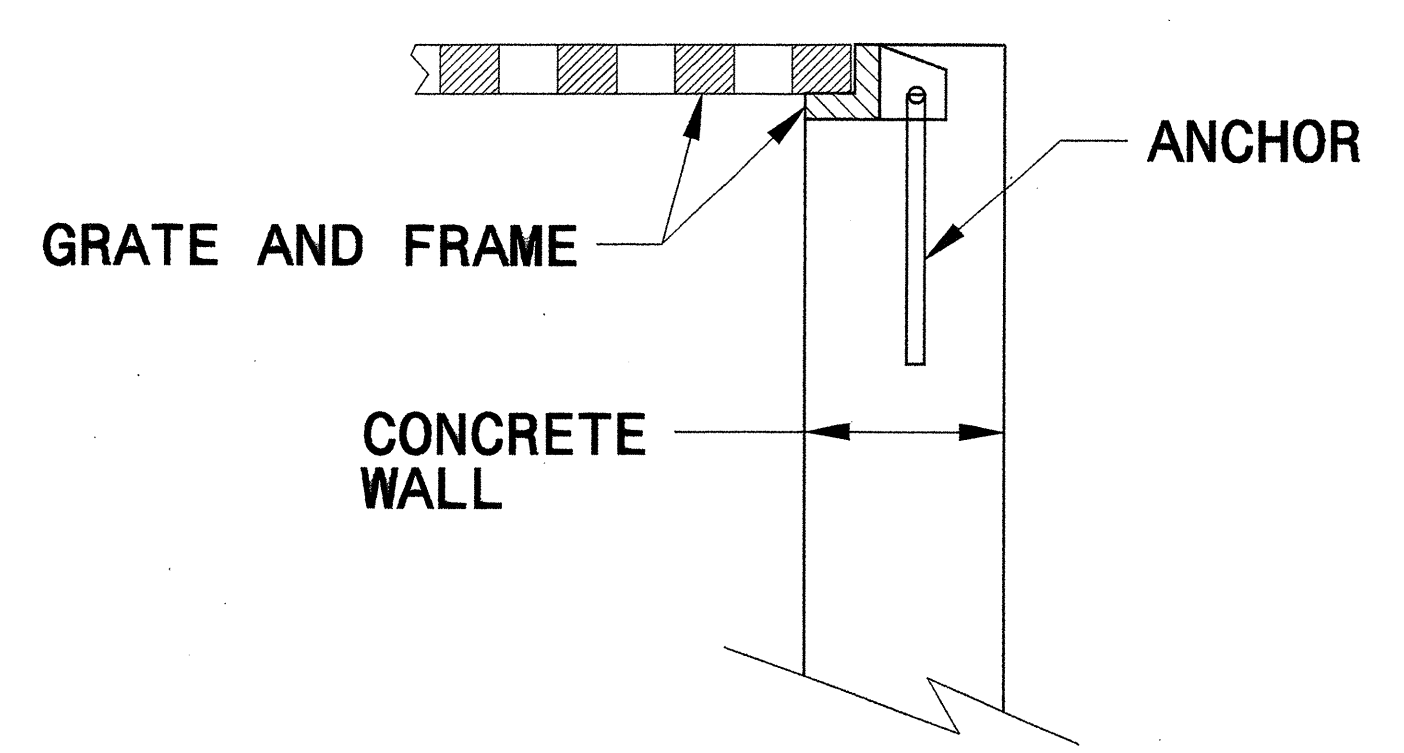
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

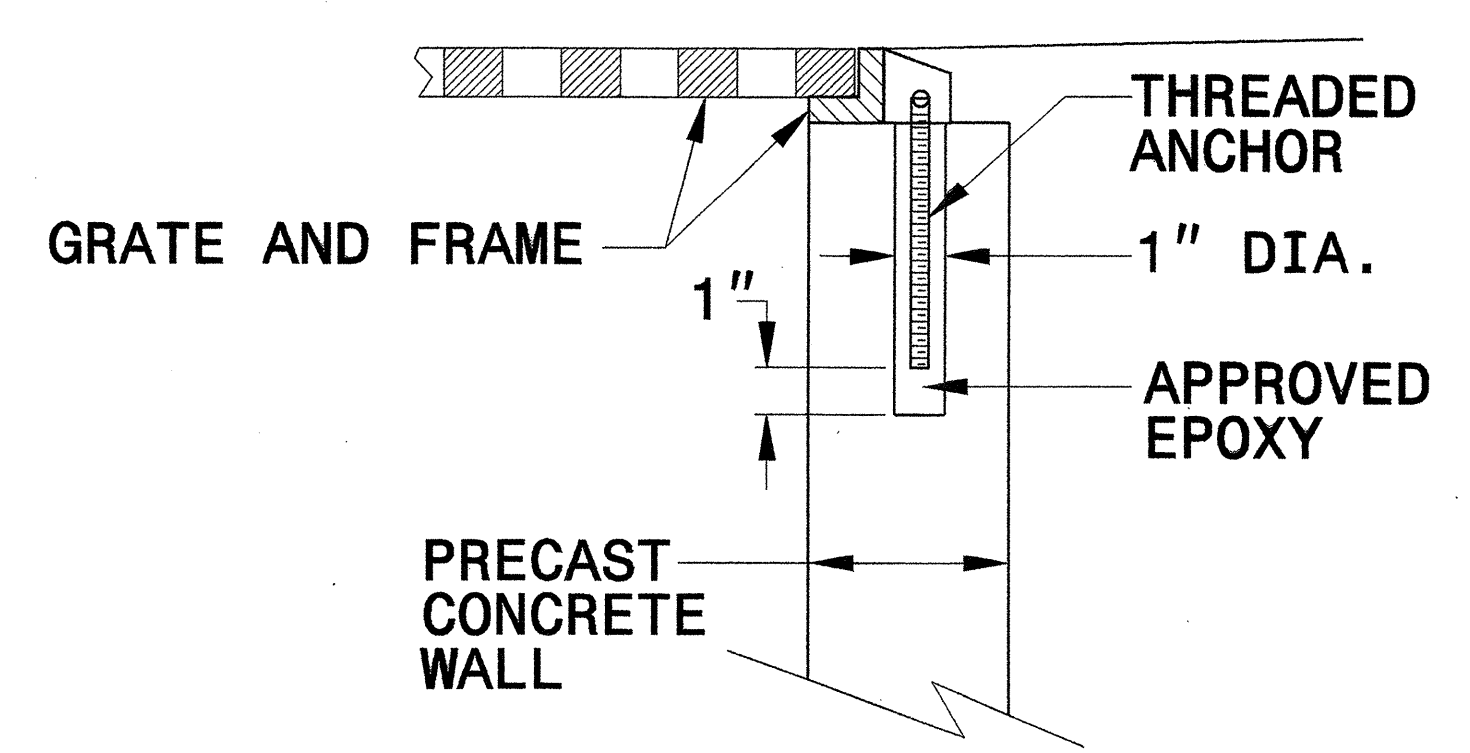
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



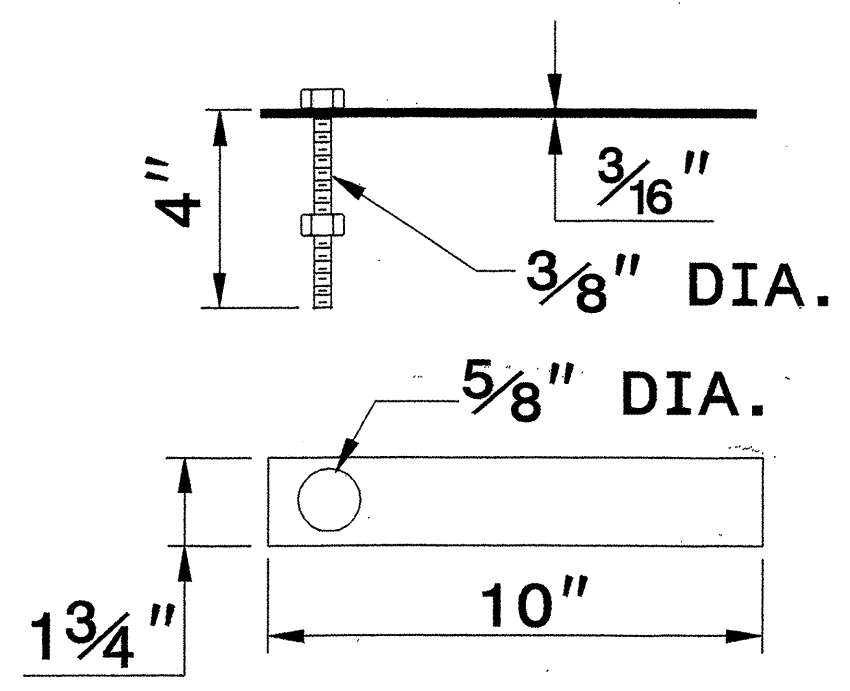
CONCRETE CONSTRUCTION



PRECAST CONCRETE CONSTRUCTION

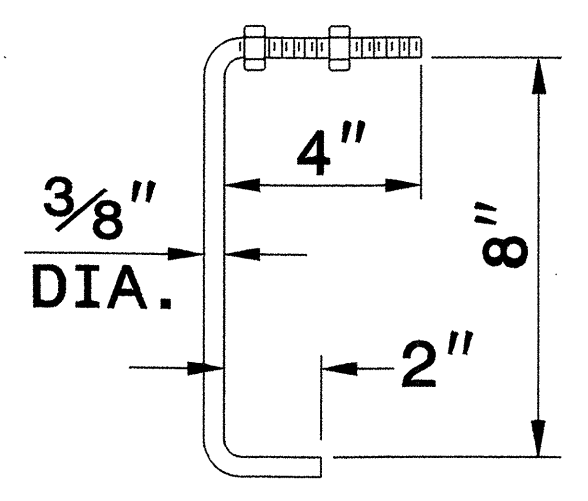
DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

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



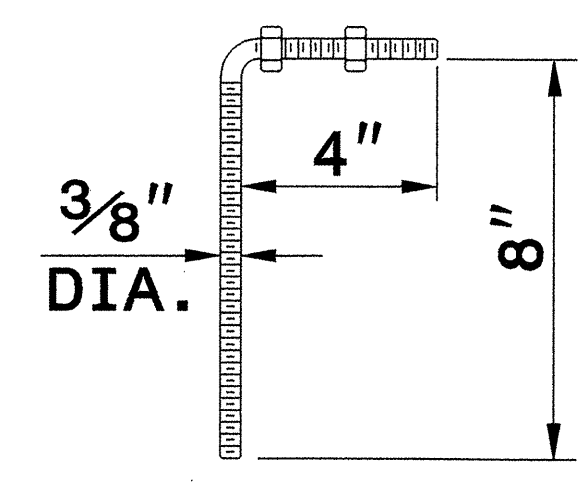
MASONRY ANCHOR

3/8" DIA. BOLT WITH PLATE



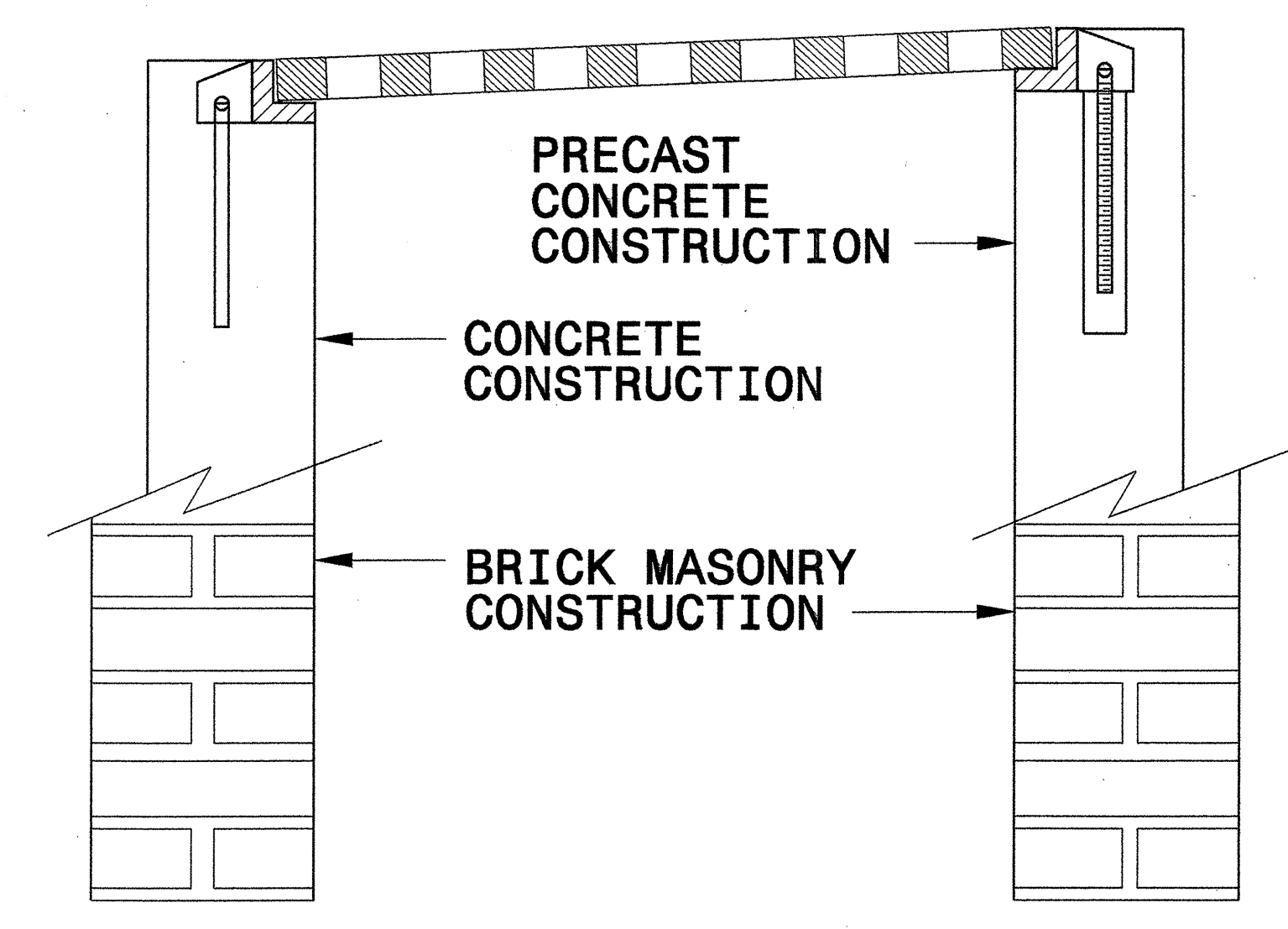
CONCRETE ANCHOR

3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR

3/8" DIA. BENT BAR

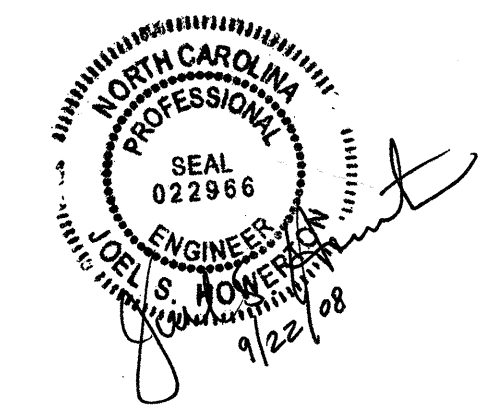


FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

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

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

SHEET 1 OF 1
840D25

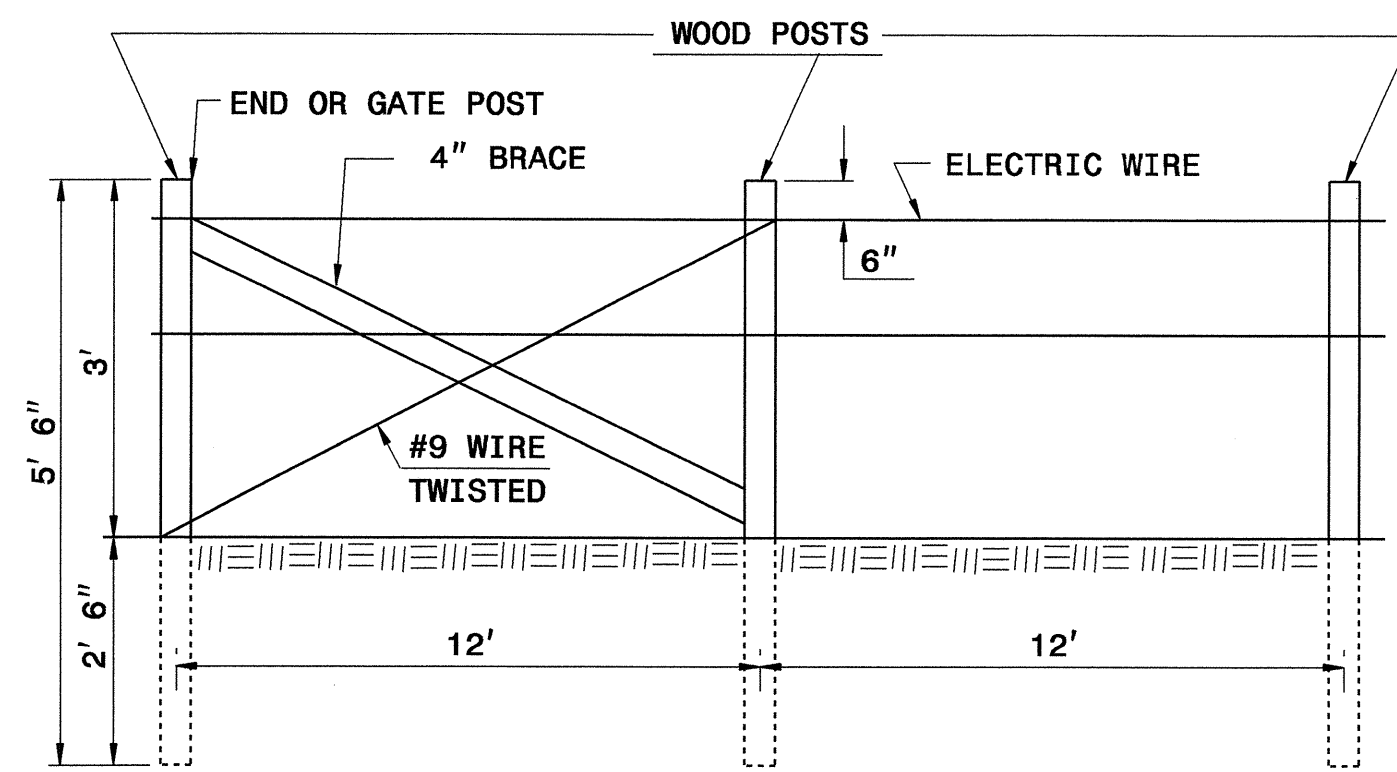


**PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN**
Office 919-250-4128 FAX 919-250-4119

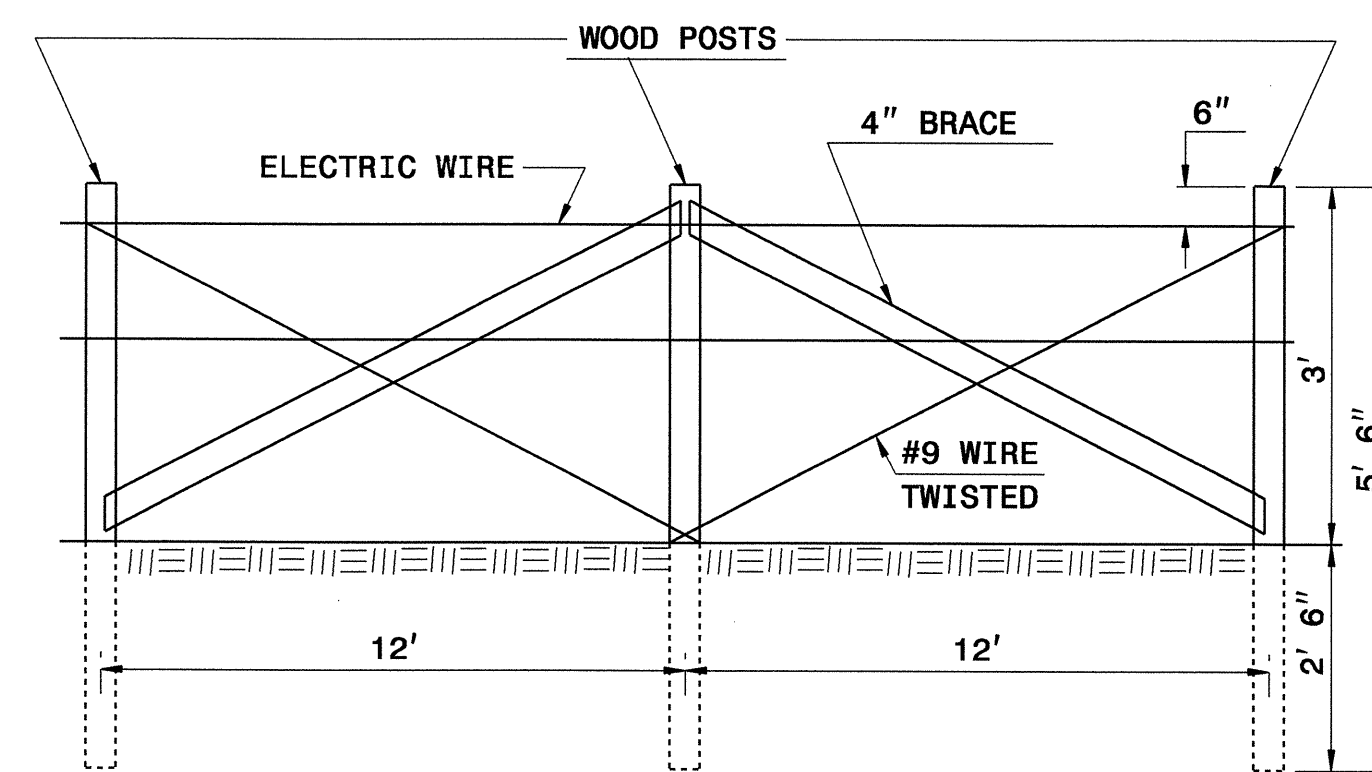
SEE PLATE FOR TITLE

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
 MODIFIED BY: E.E. WARD DATE: 9/25/06
 CHECKED BY: _____ DATE: _____
 FILE SPEC.: _____

\$\$\$\$\$ SYSTEMS DESIGN USERNAME\$\$\$\$\$



ONE STRAND ELECTRIC BARBED WIRE FENCE END OR GATE LOCATION



LINE BRACES

NOTES :

INSTALL ELECTRIC WIRE, GATES, LATCH DEVICES, HINGES, AND INSULATORS AS DIRECTED BY THE ENGINEER.

USE CLASS B CONCRETE ANCHOR AT GATE POSTS OR WHERE REQUIRED BY SOIL CONDITIONS. CONCRETE ANCHOR MAY ALSO BE USED IN LIEU OF SETTING POSTS TO THEIR REQUIRED DEPTH.

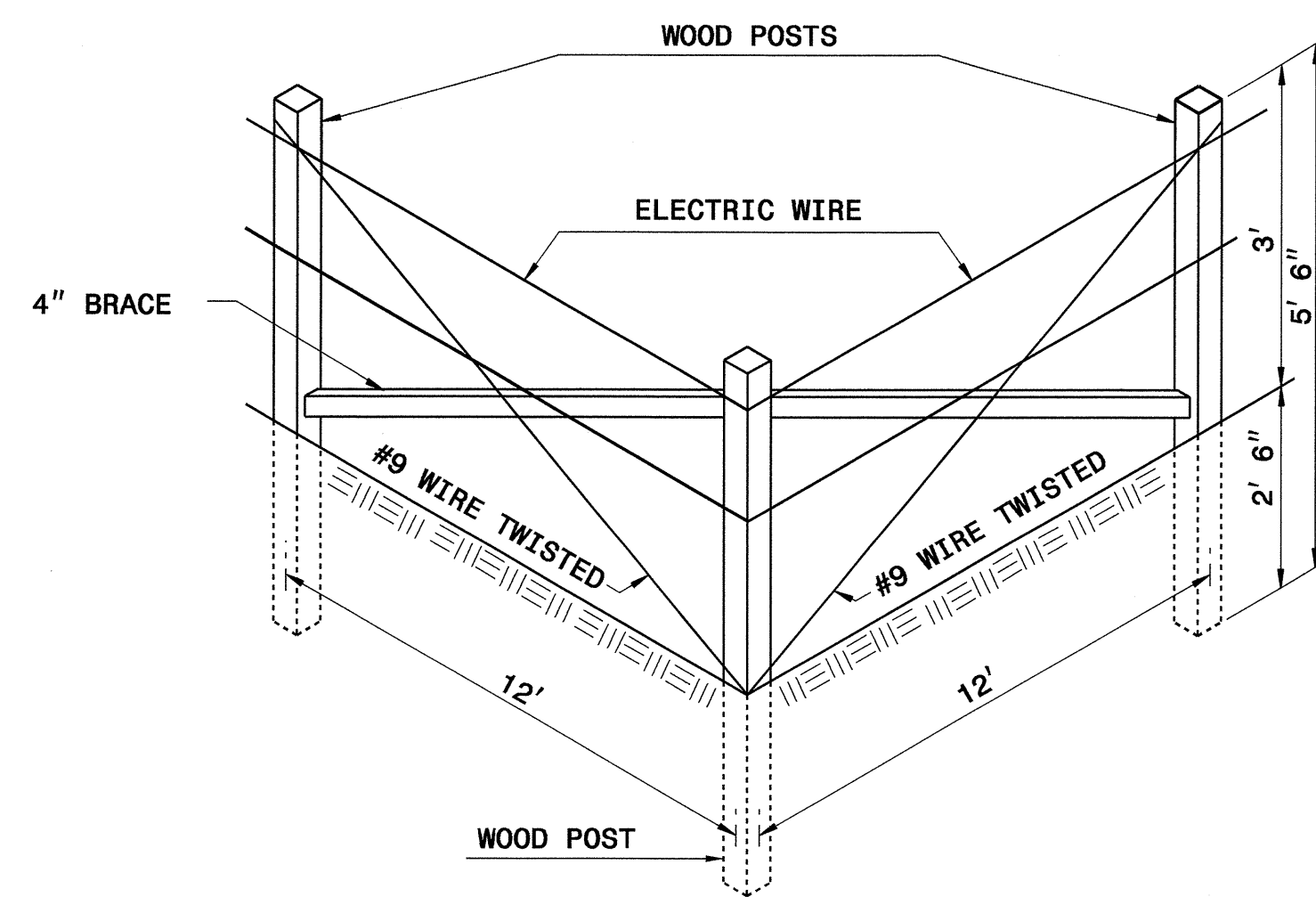
INSTALL THE FENCE FACING THE PROPERTY OWNER EXCEPT ON HORIZONTAL CURVES GREATER THAN 3 DEGREES INSTALL THE FENCE TO PULL AGAINST ALL POSTS.

MAXIMUM SPACING OF LINE BRACES IS 6".

ALL POSTS AND BRACES MAY BE EITHER ROUND OR SQUARE AT THE OPTION OF THE CONTRACTOR, PROVIDED THAT THE SAME TYPE IS USED THROUGHOUT THE PROJECT FOR BOTH POSTS AND BRACES. DIMENSIONS SHOW THE DIAMETER OF ROUND POSTS OR EDGE DIMENSIONS OF SQUARE POSTS.

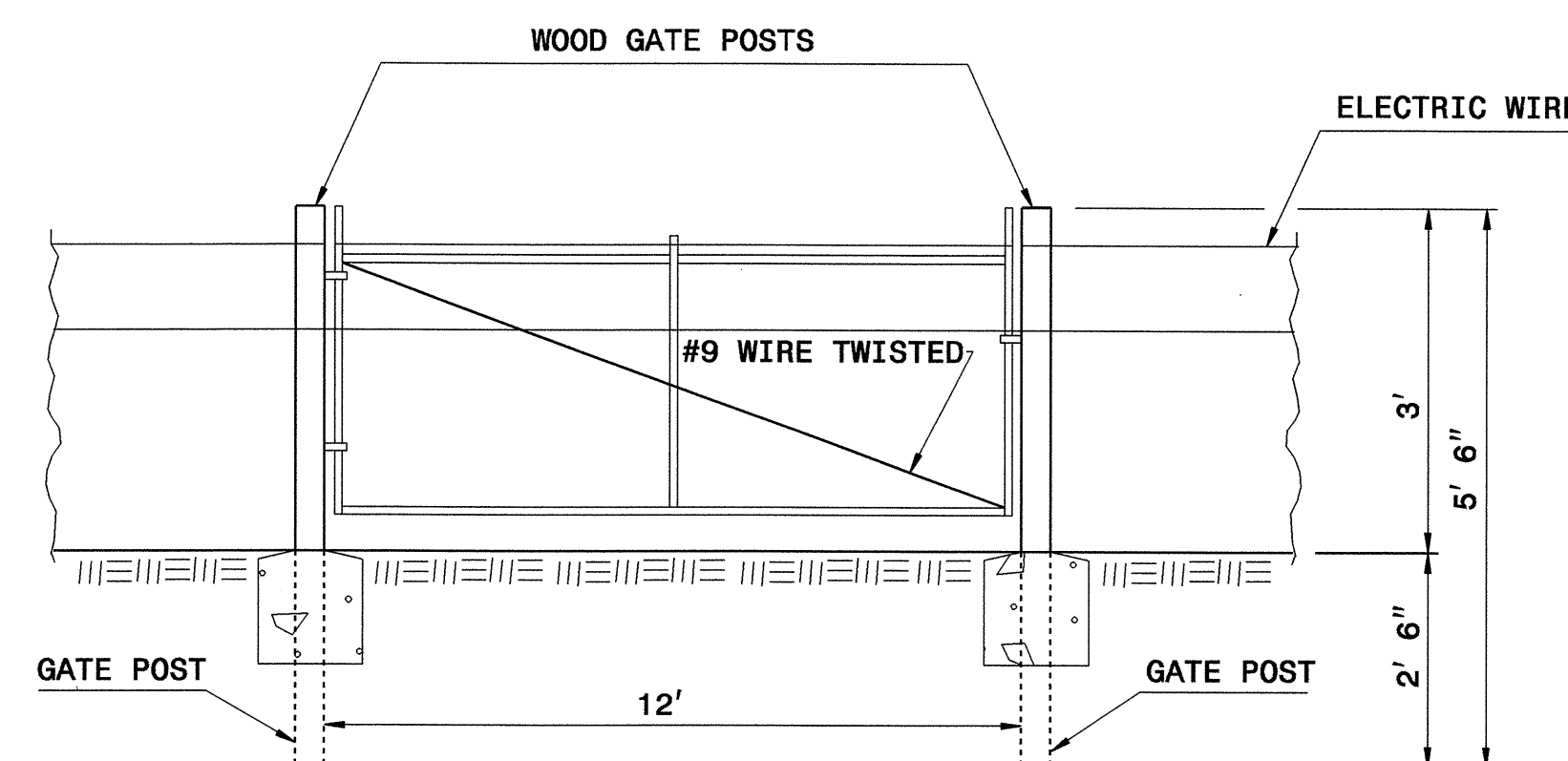
PLACE THE BRACE WIRE AROUND POSTS WITH ONE WIRE ON EACH SIDE OF THE BRACE. TIGHTEN ALL BRACE WIRES BY TWISTING BETWEEN BRACE AND EACH POST.

NOTCH POSTS 1" FOR BRACES AND ATTACHED TO BRACES USING TWO GALVANIZED 12D NAILS AT EACH END OR AS DIRECTED BY THE ENGINEER.

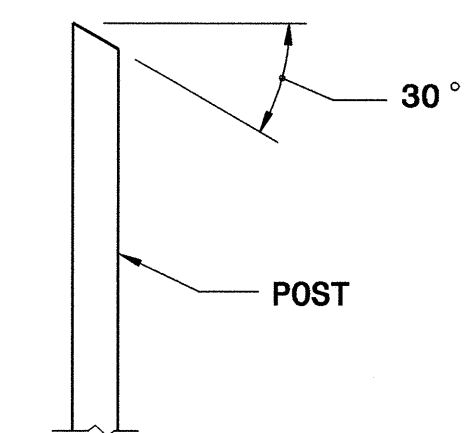


FENCE CORNER

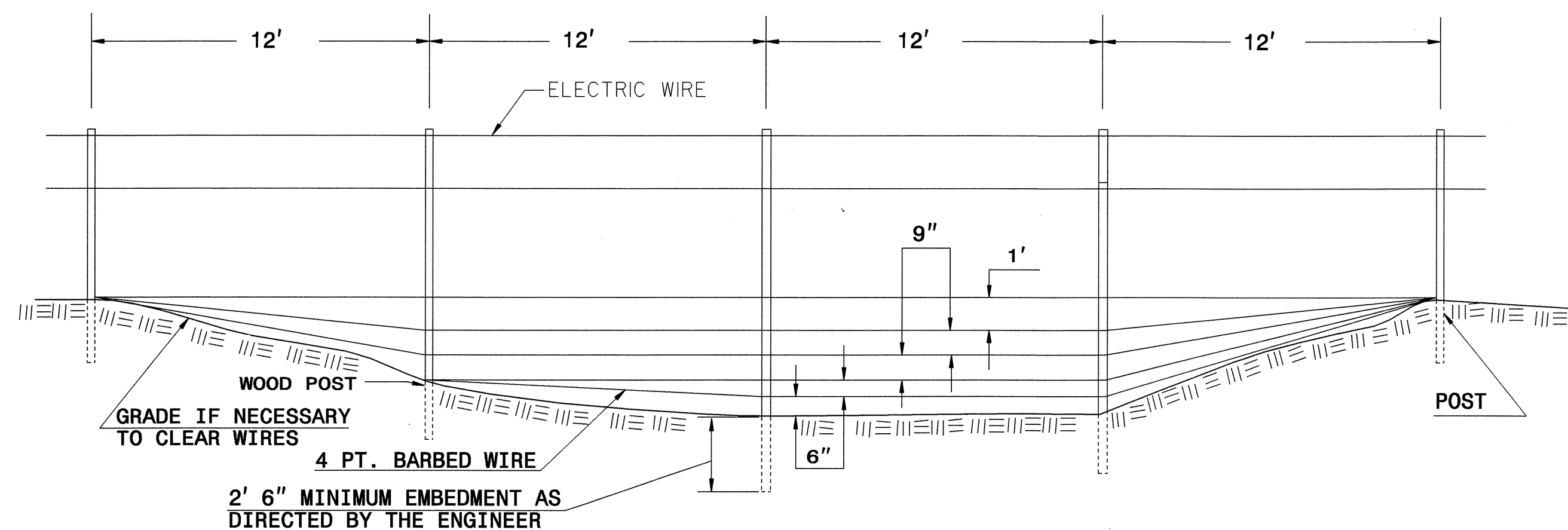
TO BE USED WHEN CORNER ANGLE IS 15° OR GREATER



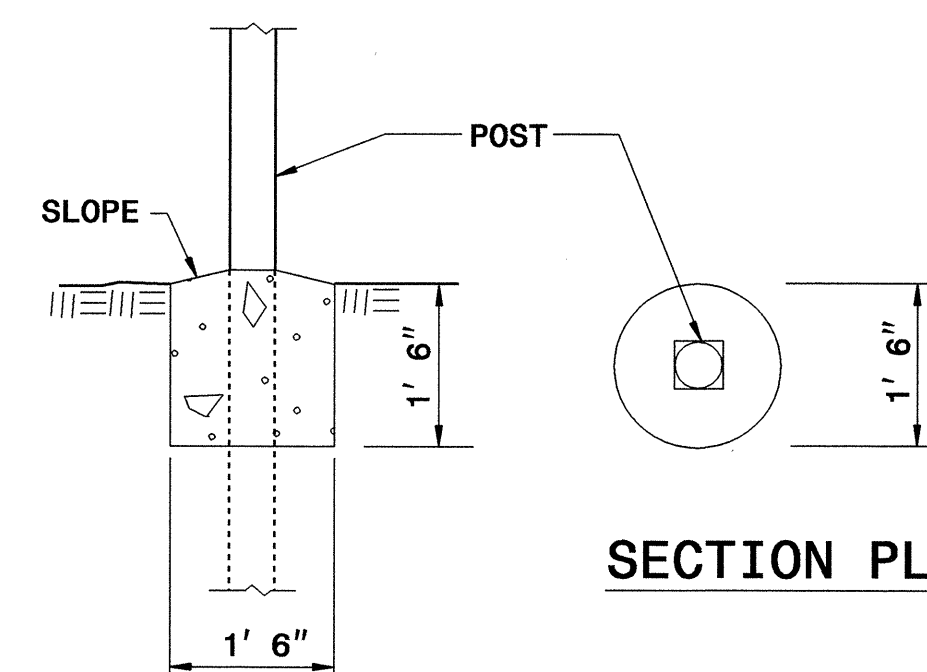
GATE



DETAIL SHOWING METHOD OF CUTTING POST TOPS

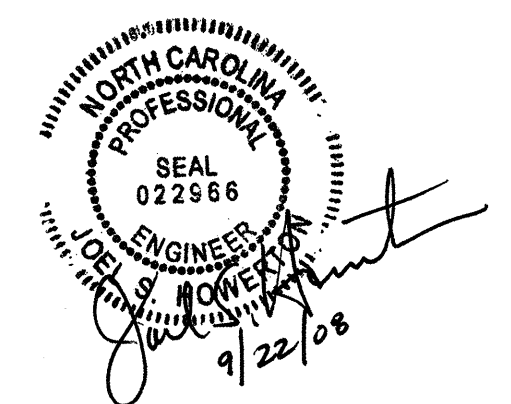


DETAIL OF DITCH CROSSING



SECTION PLAN

DETAIL OF POST ANCHOR



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

2 STRAND ELECTRIC WIRE FENCE

ORIGINAL BY: T.S. SPELL DATE: 4-5-99
 MODIFIED BY: *T.S. Spell* DATE: *7/8/08*
 CHECKED BY: *T.S. Spell* DATE: *7/8/08*
 FILE SPEC.: 4s182:/usr/cesar/metric/ts_ewfm.dgn

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202032

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (21+82.5)
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB- BING
0057000000-E	226	700	CY	UNDERCUT EXCAVATION
0063000000-N	SP	Lump Sum		GRADING
0106000000-E	230	13,300	CY	BORROW EXCAVATION
0134000000-E	240	1,950	CY	DRAINAGE DITCH EXCAVATION
0195000000-E	265	500	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	500	SY	FABRIC FOR SOIL STABILIZATION
0318000000-E	300	15	TON	FOUNDATION CONDITIONING MATE- RIAL, MINOR STRS
0343000000-E	310	20	LF	15" SIDE DRAIN PIPE
0344000000-E	310	20	LF	18" SIDE DRAIN PIPE
0345000000-E	310	20	LF	24" SIDE DRAIN PIPE
0708000000-E	310	60	LF	15" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
0806000000-E	310	4	EA	15" BIT COAT CS PIPE ELBOWS, TYPE B 0.064" THICK (15", 0.064")
0995000000-E	340	80	LF	PIPE REMOVAL
1220000000-E	545	100	TON	INCIDENTAL STONE BASE
1489000000-E	610	730	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	410	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1525000000-E	610	390	TON	ASPHALT CONC SURFACE COURSE, TYPE SP9.5A
1560000000-E	620	80	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
2286000000-N	840	2	EA	MASONRY DRAINAGE STRUCTURES
2367000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29

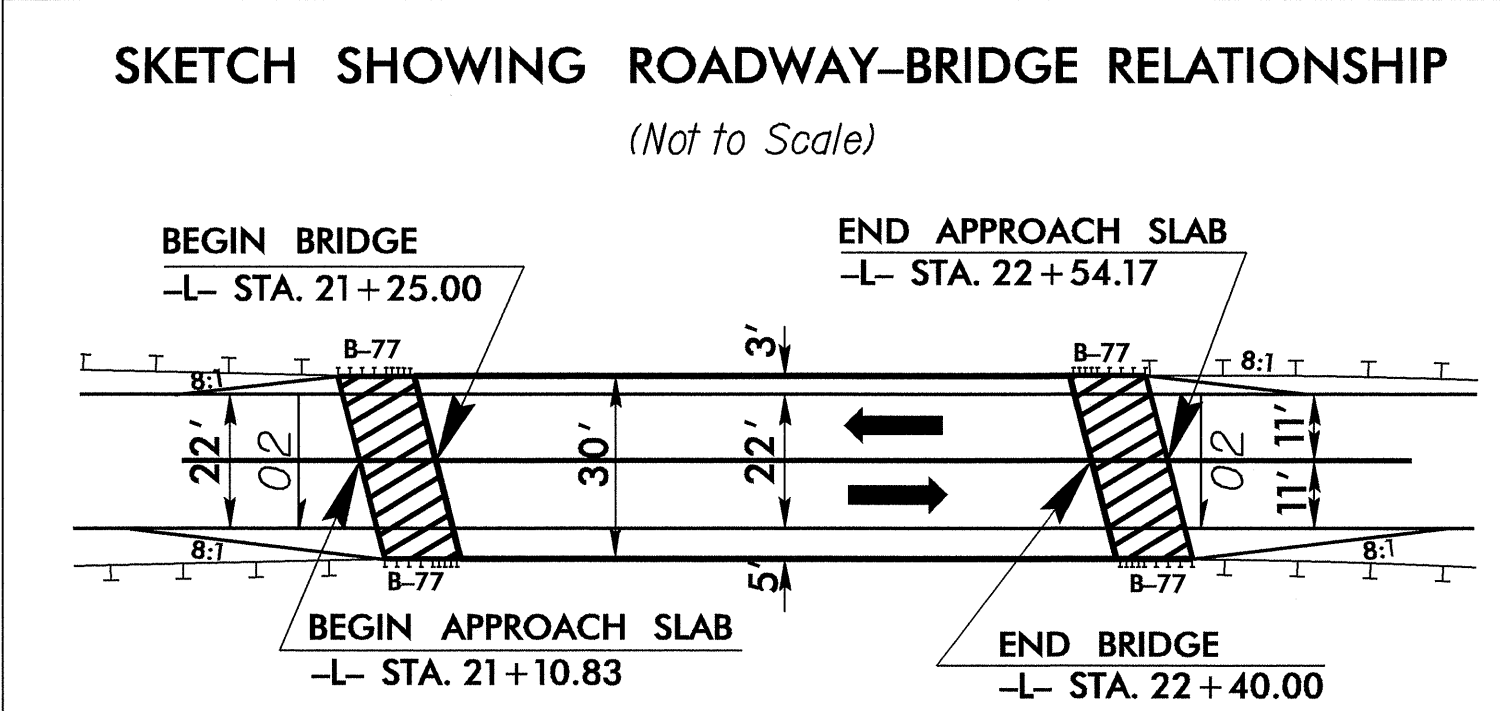
ItemNumber	Sec #	Quantity	Unit	Description
2556000000-E	846	293	LF	SHOULDER BERM GUTTER
3030000000-E	862	900	LF	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3270000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3317000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3575000000-E	SP	140	LF	GENERIC FENCING ITEM 2-STRAND ELECTRIC FENCE
3628000000-E	876	380	TON	RIP RAP, CLASS 1
3649000000-E	876	2	TON	RIP RAP, CLASS B
3656000000-E	876	1,075	SY	FILTER FABRIC FOR DRAINAGE
4072000000-E	903	26	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4102000000-N	904	2	EA	SIGN ERECTION, TYPE E
4155000000-N	907	10	EA	DISPOSAL OF SIGN SYSTEM, U- CHANNEL
4410000000-E	1110	68	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	10	EA	DRUMS
4435000000-N	1135	10	EA	CONES
4445000000-E	1145	144	LF	BARRICADES (TYPE III)
4455000000-N	1150	30	MD	FLAGGER
6000000000-E	1605	1,200	LF	TEMPORARY SILT FENCE
6006000000-E	1610	115	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	210	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	55	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	4.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	150	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	2.5	TON	FERTILIZER FOR TEMPORARY SEED- ING
6024000000-E	1622	350	LF	TEMPORARY SLOPE DRAINS

ItemNumber	Sec #	Quantity	Unit	Description
6027000000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	450	LF	SAFETY FENCE
6030000000-E	1630	620	CY	SILT EXCAVATION
6036000000-E	1631	2,400	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	25	SY	COIR FIBER MAT
6038000000-E	SP	1,260	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	70	LF	1/4" HARDWARE CLOTH
6071030000-E	SP	195	LF	COIR FIBER BAFFLES
6071050000-E	SP	4	EA	*** SKIMMER (1-1/2")
6084000000-E	1660	X5	ACR	SEEDING & MULCHING
6087000000-E	1660	2.5	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	100	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	3	TON	FERTILIZER TOPDRESSING
6114000000-N	SP	5	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL
6126000000-E	SP	0.1	ACR	STREAMBANK REFORESTATION

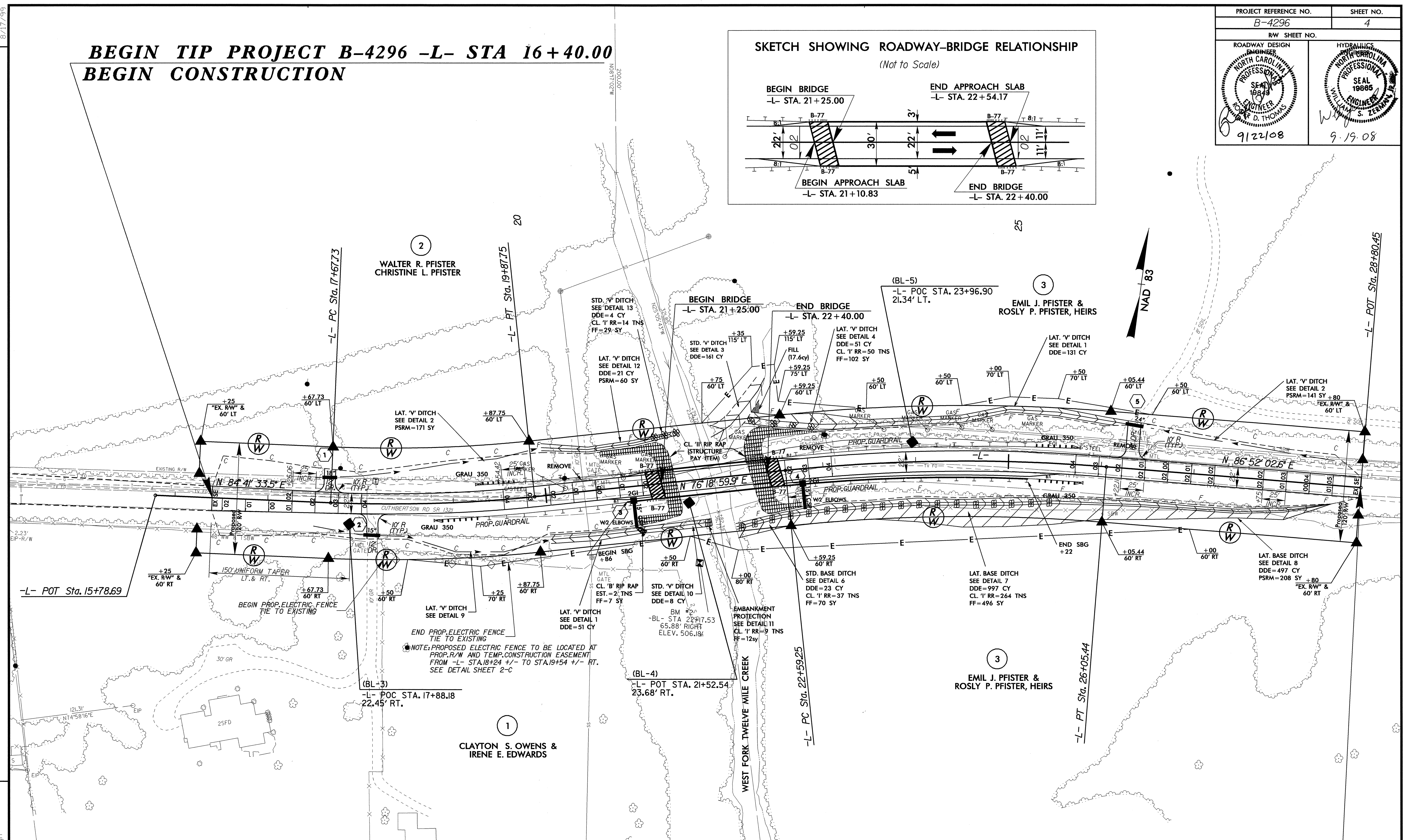
8/17/09

28-AUG-2008 16:35
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**BEGIN TIP PROJECT B-4296 -L- STA 16+40.00
BEGIN CONSTRUCTION**



REVISIONS



PI Sta 18+77.94 Δ = 8° 22' 33.6" (LT) D = 3' 48" 25.3" L = 220.0' T = 110.20' R = 1,505.00' SE = SEE PLANS	PI Sta 24+32.84 Δ = 10° 33' 02.7" (RT) D = 3' 02" 51.5" L = 346.19' T = 173.59' R = 1,880.00' SE = SEE PLANS
--	--

**END TIP PROJECT B-4296 -L- STA 28+80.00
END CONSTRUCTION**

FOR STRUCTURE PLANS, SEE SHEETS S-1 TO S-24
FOR -L- PROFILE, SEE SHEET NO. 5
FOR DITCH DETAILS, SEE SHEET NO. 2-A

15-SEP-2008 09:07
C:\Roadway\pco\B4296_rdy_psh.dgn
\$\$\$\$\$

5/14/99

28-AUG-2008 16:35
F:\PROJECTS\2008\B4296_rdy.pfl.dgn

PROJECT REFERENCE NO. B-4296	SHEET NO. 5
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 1986 D. THOMAS 9/22/08	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 1986 WILLIAM E. ZERNY JR. 9/19/08

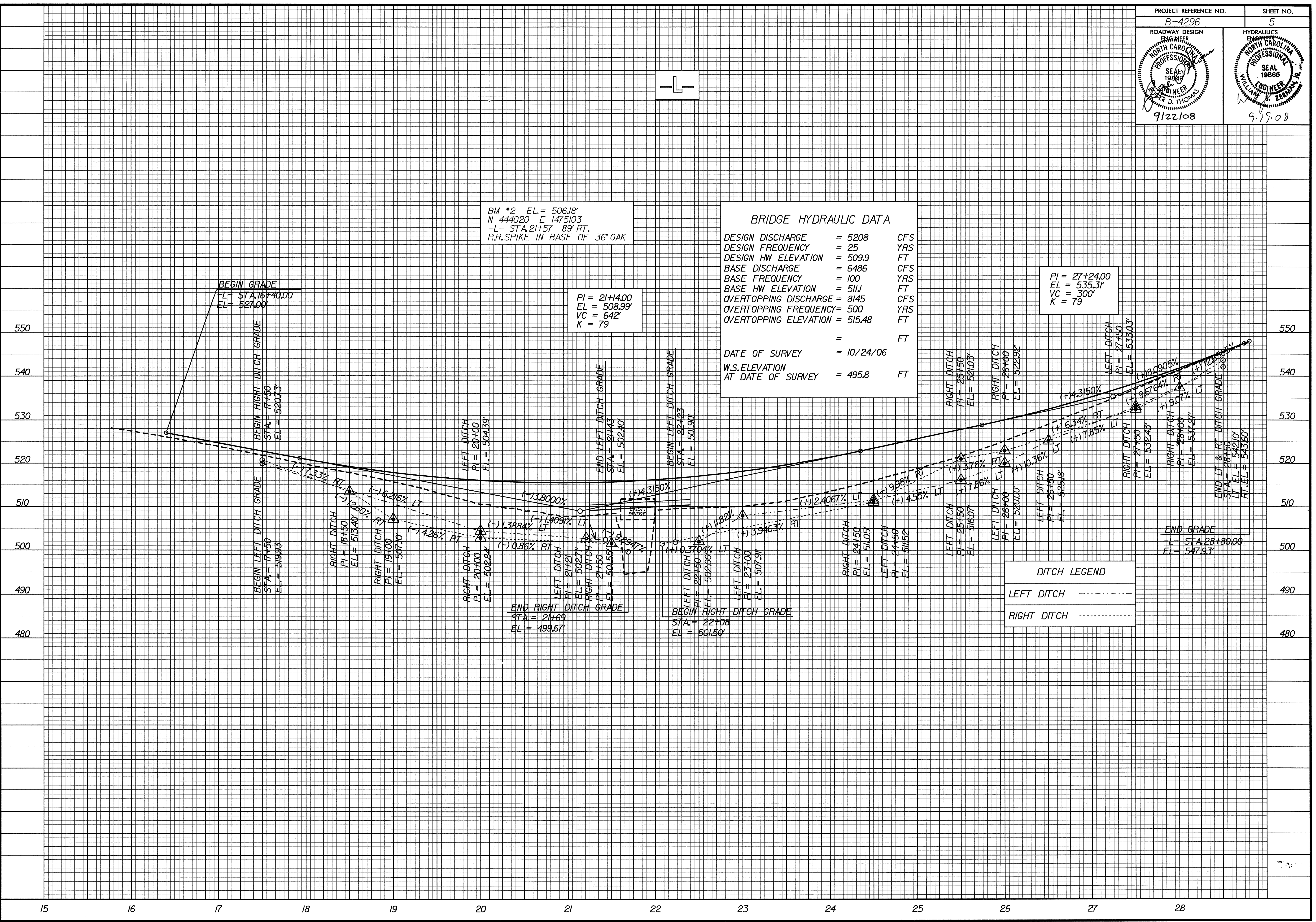
BM #2 EL = 506.18'
N 444020 E 1475103
-L- STA. 21+57 89' RT.
R.R. SPIKE IN BASE OF 36" OAK

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 5208	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 509.9	FT
BASE DISCHARGE	= 6486	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 511	FT
OVERTOPPING DISCHARGE	= 8145	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 515.48	FT
DATE OF SURVEY	= 10/24/06	FT
W.S. ELEVATION AT DATE OF SURVEY	= 495.8	FT

PI = 21+14.00
EL = 508.99'
VC = 642'
K = 79

PI = 27+24.00
EL = 535.31'
VC = 300'
K = 79



DITCH LEGEND

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

END RIGHT DITCH GRADE
STA = 21+69
EL = 499.67'

BEGIN RIGHT DITCH GRADE
STA = 22+08
EL = 501.50'

END GRADE
-L- STA 28+80.00
EL = 547.93'

70