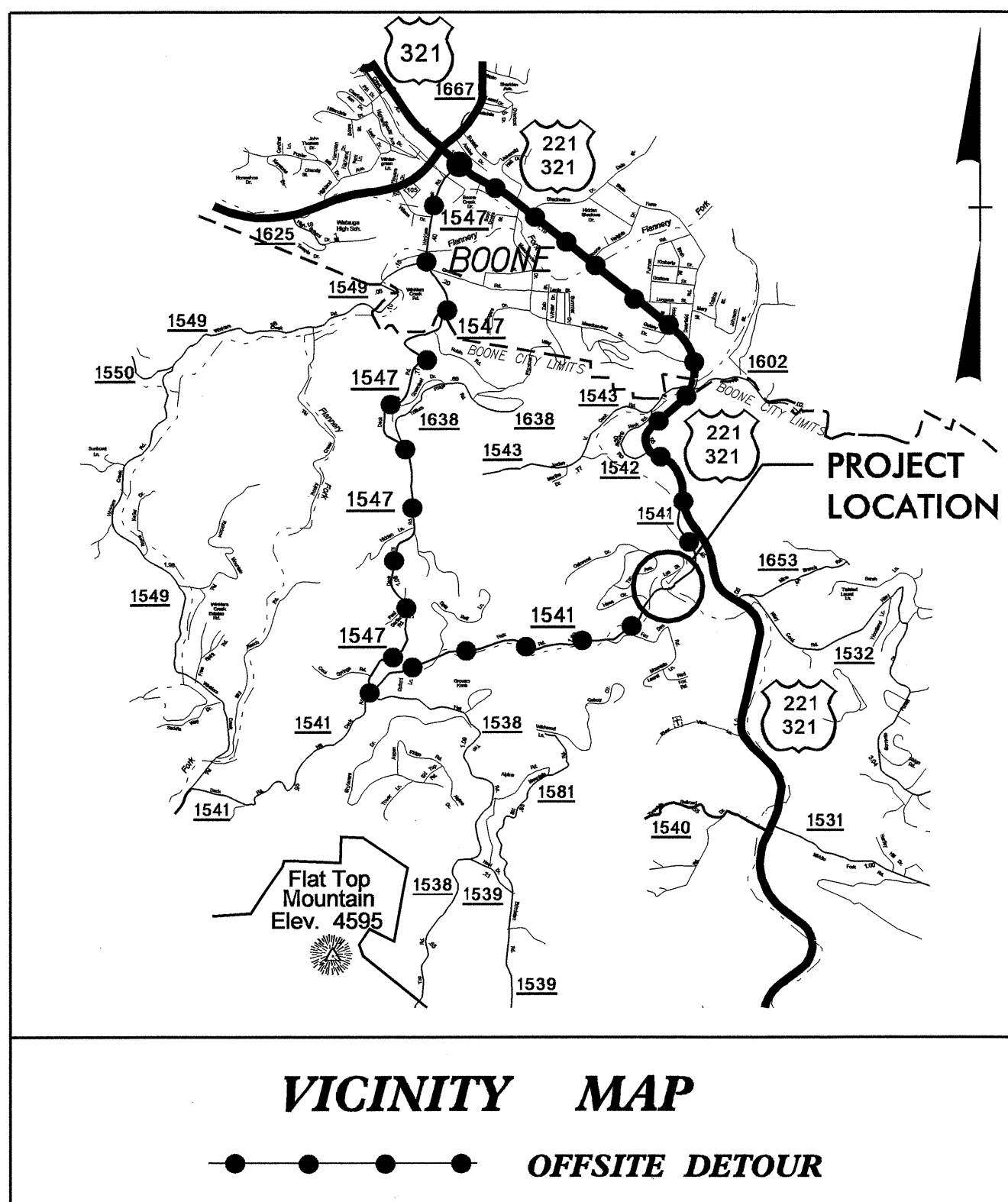


TIP PROJECT: B-4317

CONTRACT: C201775

29-NOV-2007 08:44  
F:\cadd\wcy\_dco\1b-4317\_rdy\_tsh.dgn  
\$\$\$\$\$USERNAME\$\$\$\$\$

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



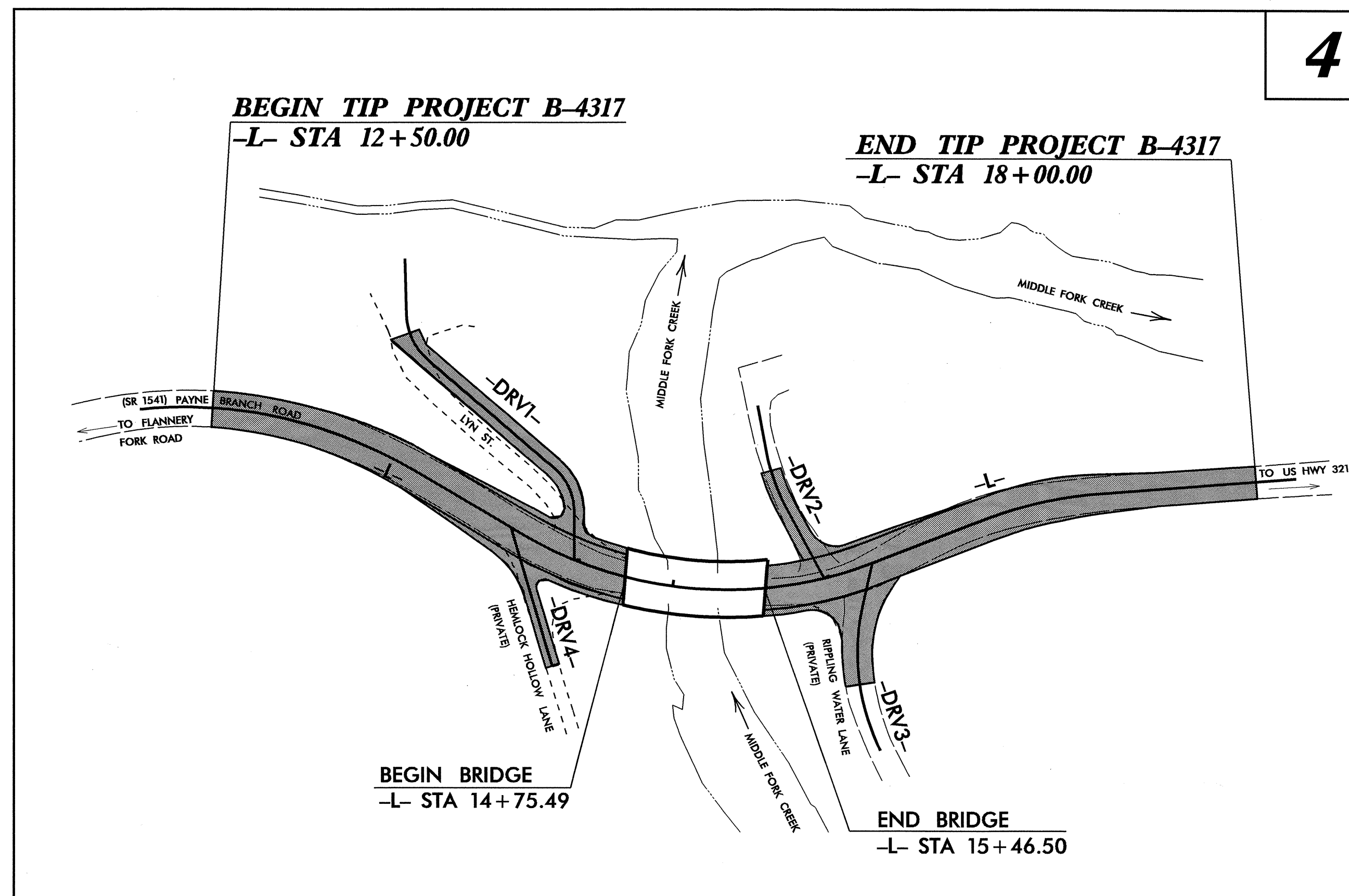
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**WATAUGA COUNTY**

**LOCATION: BRIDGE NO.16 OVER MIDDLE FORK CREEK  
ON SR 1541 (PAYNE BRANCH ROAD)**

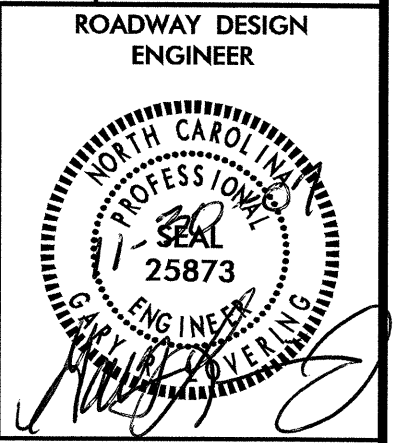
**TYPE OF WORK: GRADING, PAVEMENT, DRAINAGE AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4317	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33654.1.1	BRZ-1541(3)	PE	
33654.2.1	BRZ-1541(3)	ROW & UTIL	
33654.3.1	BRZ-1541(3)	CONSTR.	



\*\* DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED (30mph), MINIMUM HORIZONTAL CURVE RADIUS (205') AND HORIZONTAL STOPPING SIGHT DISTANCE (120').

<p><b>GRAPHIC SCALES</b></p> <p>30 15 0 30 60 PLANS</p> <p>50 25 0 50 100 PROFILE (HORIZONTAL)</p> <p>10 5 0 10 20 PROFILE (VERTICAL)</p>	<p><b>DESIGN DATA</b></p> <p>ADT 2008 = 1009 ADT 2028 = 1705 DHV = 12 % D = 55 % T = 3% * ** V = 55 MPH FUNC CLASS = LOCAL RURAL * TTST 1% + DUAL 2%</p>	<p><b>PROJECT LENGTH</b></p> <p>LENGTH ROADWAY TIP PROJECT B-4317 = 0.091 MILES LENGTH STRUCTURE TIP PROJECT B-4317 = 0.013 MILES TOTAL LENGTH TIP PROJECT B-4317 = 0.104 MILES</p>	<p style="text-align: center;">Prepared In the Office of: <b>DIVISION OF HIGHWAYS</b> 1000 Birch Ridge Dr., Raleigh NC, 27610</p> <p>2006 STANDARD SPECIFICATIONS</p> <p><b>RIGHT OF WAY DATE:</b> FEBRUARY 16, 2007</p> <p><b>LETTING DATE:</b> FEBRUARY 19, 2008</p>	<p><b>HYDRAULICS ENGINEER</b></p> <p style="text-align: center;">               SEAL 9334 1306 ENGINEER GARY LOVERING, PE         </p> <p>SIGNATURE: _____ GARY LOVERING, PE PROJECT ENGINEER</p> <p><b>ROADWAY DESIGN ENGINEER</b></p> <p style="text-align: center;">               SEAL 25873 ENGINEER ANTHONY C. WEST, PE         </p> <p>SIGNATURE: _____ ANTHONY C. WEST, PE PROJECT DESIGN ENGINEER</p>	<p style="text-align: center;"><b>DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA</b></p> <p style="text-align: center;">               STATE OF NORTH CAROLINA              DEPARTMENT OF TRANSPORTATION         </p> <p style="text-align: right;">               STATE DESIGN ENGINEER P.E.         </p>
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SHEET NUMBER	INDEX OF SHEETS SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARDS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	TYPICAL SECTIONS, PAVEMENT SCHEDULE AND WEDGING DETAIL
2-A	GUARDRAIL ANCHOR UNIT TYPE B-83 SHOP CURVED DETAIL
2-B	MODIFIED CONCRETE FLUME DETAIL
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF DRAINAGE QUANTITIES AND GUARDRAIL SUMMARY
3-B	SUMMARY OF EARTHWORK SUMMARY OF EXPRESSWAY GUTTER SUMMARY OF PAVEMENT REMOVAL SUMMARY OF PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED
4	PLAN SHEET
5	PROFILE SHEET
TCP-1 TO TCP-3	TRAFFIC CONTROL PLANS
EC-1 TO EC-4	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL
SIGN-1 TO SIGN-3	SIGNING PLANS
SD-1	SPECIAL SIGN DESIGN
UO-1 TO UO2	UTILITIES BY OTHERS PLANS
X-1A	CROSS SECTION SUMMARY SHEET
X-1 TO X-5	-L- CROSS SECTIONS
X-6 TO X-8	-DRV2- , -DRV3- AND -DRV4- CROSS SECTIONS
S-1 TO S-24	STRUCTURE PLANS
W-1 TO W-5	WALL PLANS

**GENERAL NOTES:** 2006 SPECIFICATIONS

EFFECTIVE: 07-18-06  
REVISED: 07-18-06

**GRADE LINE:  
GRADING AND SURFACING:**

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

**CLEARING:**

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

**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 BELL SOUTH AND NEW RIVER LIGHT AND POWER

**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   |
|---|---|
| <b>DIVISION 2 - EARTHWORK</b>                     |   |
| 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                        |
| <b>DIVISION 3 - PIPE CULVERTS</b>                 |   |
| 300.01  | Method of Pipe Installation - Method 'A'                                      |
| 310.10  | Driveway Pipe Construction  |
| <b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b> |   |
| 560.01  | Method of Shoulder Construction - High Side of Superelevated Curve - Method I |
| <b>DIVISION 8 - INCIDENTALS</b>                   |   |
| 806.01  | Concrete Right-of-Way Marker  |
| 806.02  | Granite Right-of-Way Marker   |
| 815.03  | Pipe Underdrain and Blind Drain   |
| 816.01  | Concrete Pads - for Shoulder Drain Installation                               |
| 816.04  | Markers for Drainage Structure and Concrete Pad                               |
| 840.00  | Concrete Base Pad for Drainage Structures                                     |
| 840.24  | Frames and Narrow Slot Sag Grates   |
| 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     |
| 840.54  | Manhole Frame and Cover   |
| 840.66  | Drainage Structure Steps  |
| 846.01  | Concrete Curb, Gutter and Curb & Gutter                                       |
| 846.02  | Drop Inlet Installation in Expressway Gutter                                  |
| 857.01  | Precast Reinforced Concrete Barrier - 41" Single Faced                        |
| 862.01  | Guardrail Placement   |
| 862.02  | Guardrail Installation  |
| 862.03  | Structure Anchor Units  |
| 862.04  | Anchoring End of Guardrail - B-77 and B-83 Anchor Units                       |
| 876.01  | Rip Rap in Channels   |
| 876.02  | Guide for Rip Rap at Pipe Outlets   |

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

3/15/05

Note: Not to Scale

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

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

Table listing symbols for State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin, Property Corner, Property Monument, Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary.

BUILDINGS AND OTHER CULTURE:

Table listing symbols for Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam.

HYDROLOGY:

Table listing symbols for Stream or Body of Water, Hydro, Pool or Reservoir, Jurisdictional Stream, Buffer Zone 1, Buffer Zone 2, Flow Arrow, Disappearing Stream, Spring, Wetland, Proposed Lateral, Tail, Head Ditch, False Sump.

RAILROADS:

Table listing symbols for Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

RIGHT OF WAY:

Table listing symbols for 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, Proposed Temporary Construction Easement, Proposed Temporary Drainage Easement, Proposed Permanent Drainage Easement, Proposed Permanent Utility Easement.

ROADS AND RELATED FEATURES:

Table listing symbols for Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Wheel Chair Ramp, Proposed Wheel Chair Ramp Curb Cut, Curb Cut for Future Wheel Chair Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Equality Symbol, Pavement Removal.

VEGETATION:

Table listing symbols for Single Tree, Single Shrub, Hedge, Woods Line, Orchard, Vineyard.

EXISTING STRUCTURES:

Table listing symbols for MAJOR: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall; MINOR: Head and End Wall, Pipe Culvert, Footbridge, Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer.

UTILITIES:

Table listing symbols for 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, Designated U/G Power Line (S.U.E.\*).

TELEPHONE:

Table listing symbols for 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, Designated U/G Telephone Cable (S.U.E.\*), Recorded U/G Telephone Conduit, Designated U/G Telephone Conduit (S.U.E.\*), Recorded U/G Fiber Optics Cable, Designated U/G Fiber Optics Cable (S.U.E.\*).

WATER:

Table listing symbols for Water Manhole, Water Meter, Water Valve, Water Hydrant, Recorded U/G Water Line, Designated U/G Water Line (S.U.E.\*), Above Ground Water Line.

TV:

Table listing symbols for TV Satellite Dish, TV Pedestal, TV Tower, U/G TV Cable Hand Hole, Recorded U/G TV Cable, Designated U/G TV Cable (S.U.E.\*), Recorded U/G Fiber Optic Cable, Designated U/G Fiber Optic Cable (S.U.E.\*).

GAS:

Table listing symbols for Gas Valve, Gas Meter, Recorded U/G Gas Line, Designated U/G Gas Line (S.U.E.\*), Above Ground Gas Line.

SANITARY SEWER:

Table listing symbols for Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, Recorded SS Forced Main Line, Designated SS Forced Main Line (S.U.E.\*).

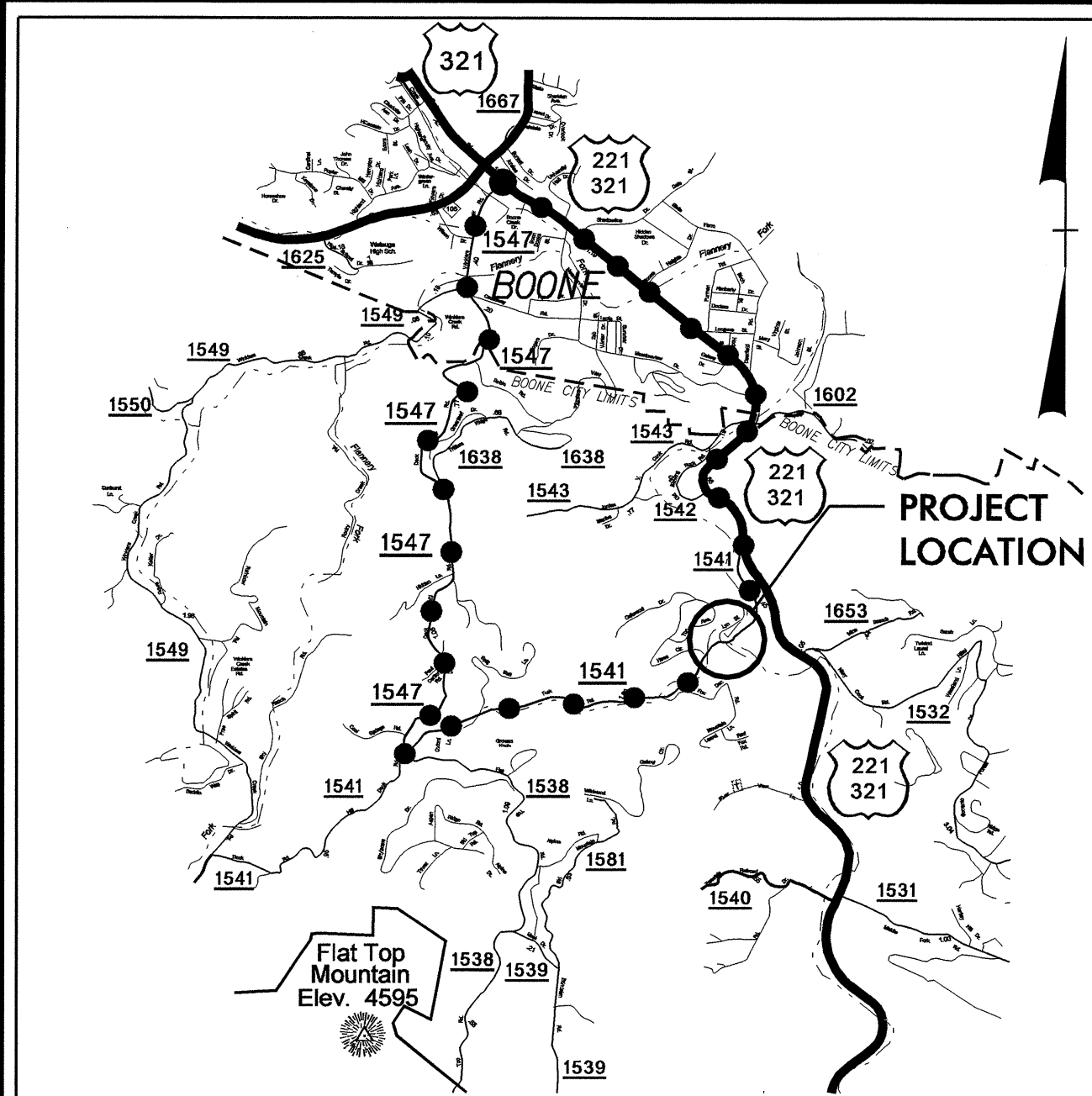
MISCELLANEOUS:

Table listing symbols for Utility Pole, Utility Pole with Base, Utility Located Object, Utility Traffic Signal Box, Utility Unknown U/G Line, U/G Tank; Water, Gas, Oil, AG Tank; Water, Gas, Oil, U/G Test Hole (S.U.E.\*), Abandoned According to Utility Records, End of Information.

6/2/99

# SURVEY CONTROL SHEET B-4317

PROJECT REFERENCE NO.	SHEET NO.
B-4317	1C
Location and Surveys	



VICINITY MAP



**NC DOT GPS STATION B4317-2**  
 N = 897332.6830  
 E = 1217151.3300

**NC DOT GPS STATION B4317-1**  
 N = 896568.2110  
 E = 1217611.8600

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3	BL-3		895438.9665	1216532.9067	3311.37	OUTSIDE PROJECT LIMITS	
4	BL-4		895635.9856	1216709.4388	3289.99	12+64.82	19.79 LT
5	BL-5		895619.3345	1216939.5522	3278.05	14+82.76	25.93 RT
6	BL-6		895797.6615	1217083.6253	3275.40	17+01.49	16.64 LT
7	BL-7		895985.4304	1217395.3800	3277.21	OUTSIDE PROJECT LIMITS	
8	BL-8		896232.1635	1217479.8827	3276.00	OUTSIDE PROJECT LIMITS	
9	BL-9		896553.6853	1217378.9295	3273.49	OUTSIDE PROJECT LIMITS	
10	BL-10		896912.6100	1217099.9666	3267.99	OUTSIDE PROJECT LIMITS	
2	GPS	B4317-2	897332.6830	1217151.3300	3301.48	OUTSIDE PROJECT LIMITS	
1	GPS	B4317-1	896568.2110	1217611.8600	3354.78	OUTSIDE PROJECT LIMITS	
BY	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
25	BL-5		895619.3345	1216939.5522	3278.05	14+82.76	25.93 RT
11	BY-11		895672.6385	1217026.6606	3277.59	15+74.55	24.00 RT
12	BY-12		895564.6207	1217186.2932	3277.37	15+95.28	214.18 RT

BM\*1 ELEVATION = 3319.54'  
 N 895406 E 1216441  
 OUTSIDE PROJECT LIMITS  
 RR SPIKE SET IN BASE OF 13" MAPLE TREE

BM\*2 ELEVATION = 3281.96'  
 N 895540 E 1217009  
 L STATION 15+09 125' RIGHT  
 RR SPIKE SET IN BASE OF 12" LOCUST TREE

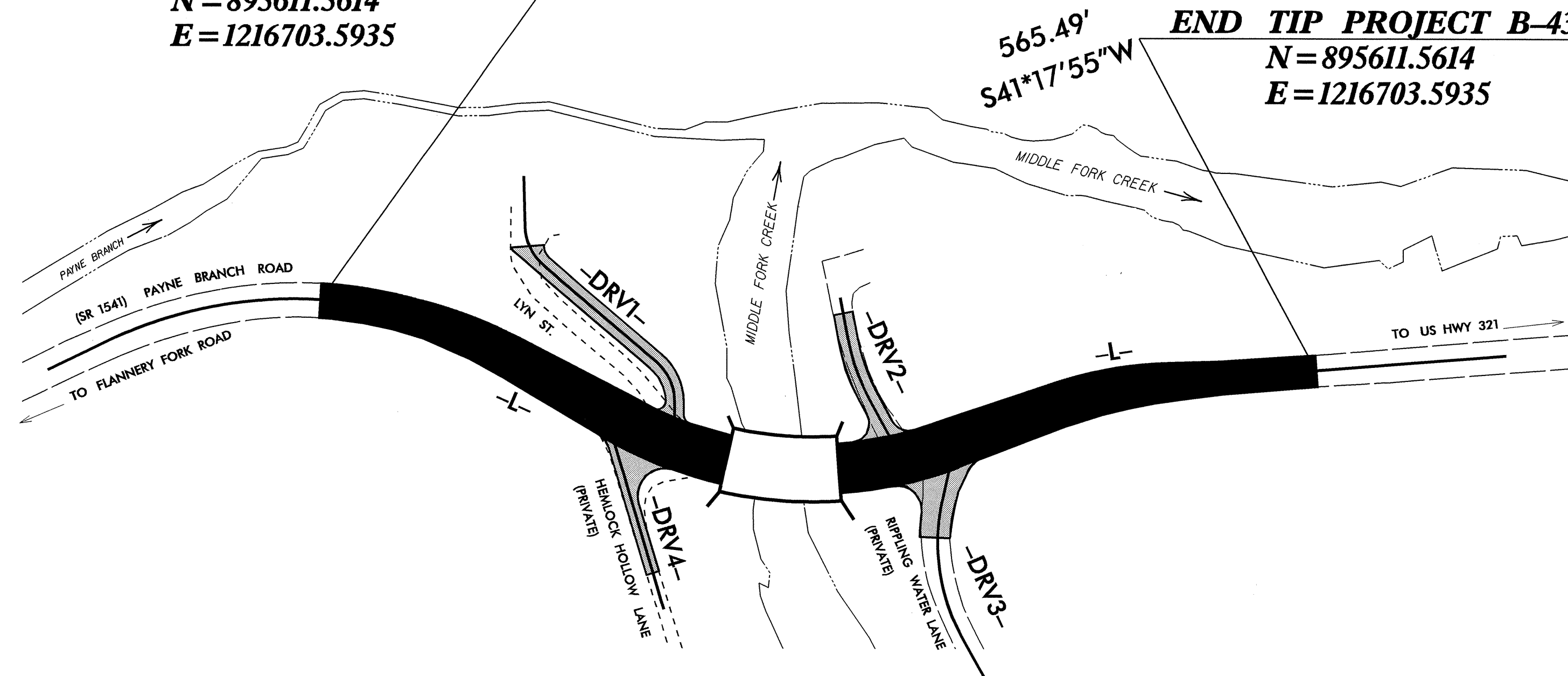
BM\*3 ELEVATION = 3281.27'  
 N 895973 E 1217393  
 OUTSIDE PROJECT LIMITS  
 RR SPIKE SET IN BASE OF 8" LOCUST TREE

## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4317-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 896568.2110(++) EASTING: 1217611.8600(++) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99985144 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4317-1" TO -L- STATION 12+50.00 IS S 43°30'50" W 1319.14 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

**-L- STA 12+50.00**  
**BEGIN TIP PROJECT B-4317**  
 N = 895611.5614  
 E = 1216703.5935

**-L- STA 18+00.00**  
**END TIP PROJECT B-4317**  
 N = 895611.5614  
 E = 1216703.5935



### NOTES:

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

THE FILES TO BE FOUND ARE AS FOLLOWS:  
 TIP B4317\_LS\_CONTROL\_060427.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.

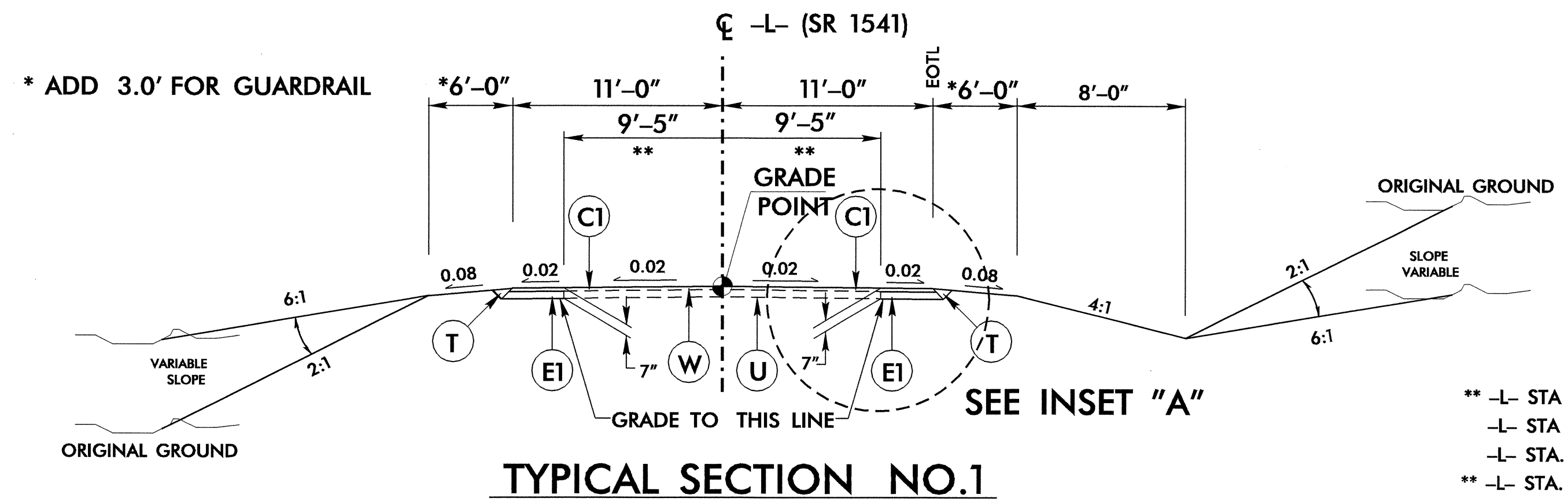
NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

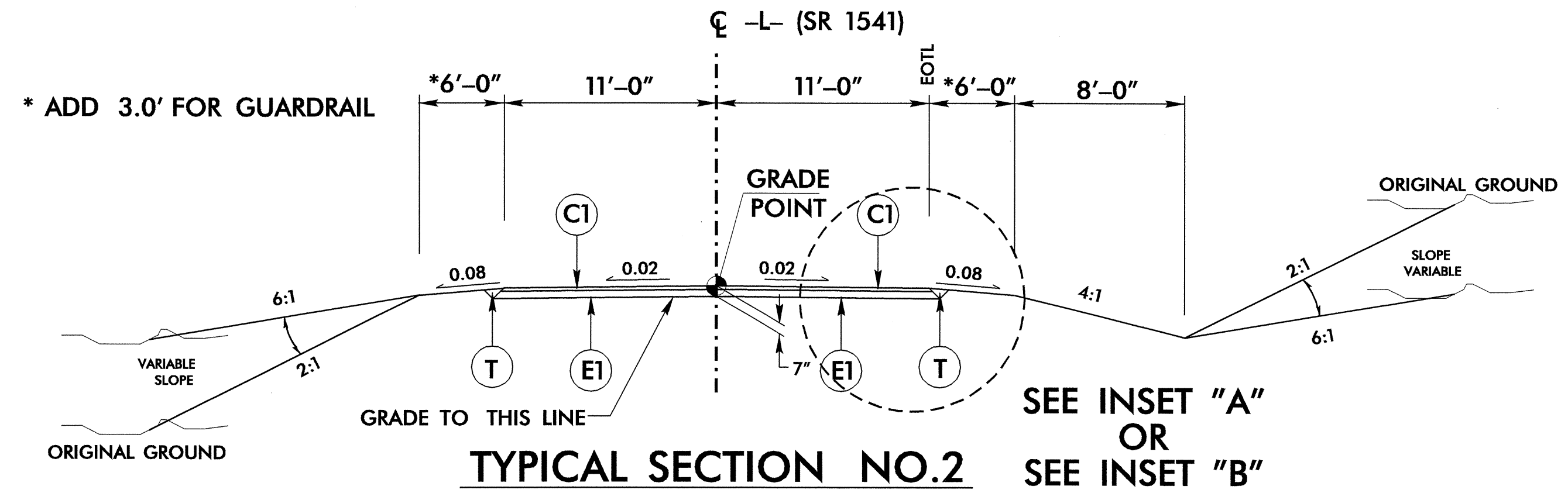
22-AUG-2007 16:01 b4317\_1c\_1s\_060427.dgn

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. TO BE PLACED IN EACH OF TWO LAYERS
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 5.5" IN DEPTH OR LESS THAN 3" IN DEPTH
J	8" AGGREGATE BASE COURSE
P	PRIME COAT
R	EXPRESSWAY GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE WEDGING DETAIL)

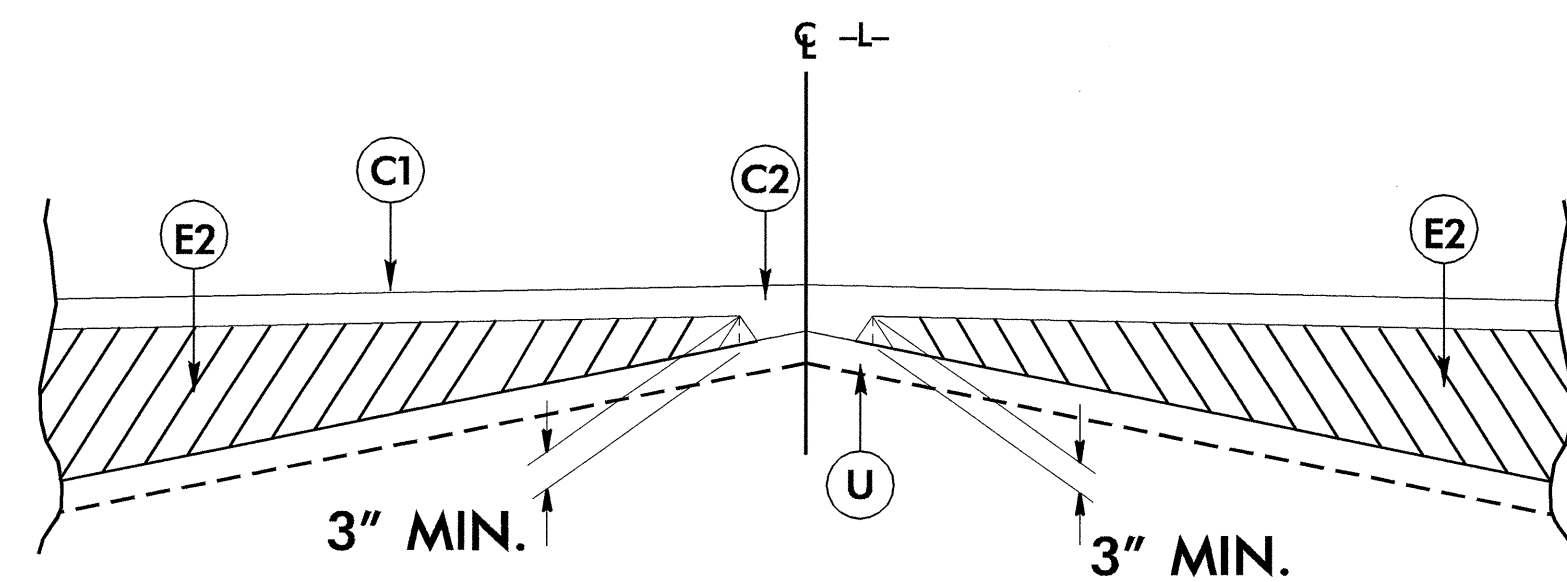
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



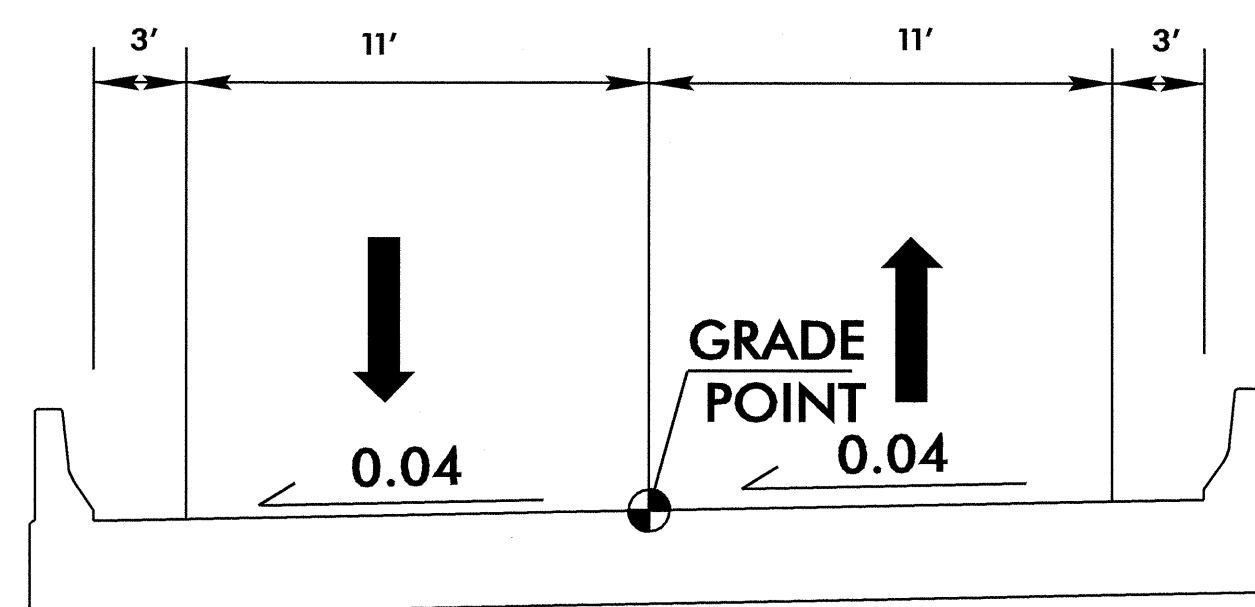
USE TYPICAL SECTION NO. 1  
 \*\* -L- STA 12+50.00 TO 13+00.00 (RESURFACING ONLY)  
 -L- STA 13+00.00 TO 13+50.00  
 -L- STA 17+00.00 TO 17+50.00  
 \*\* -L- STA 17+50.00 TO 18+00.00 (RESURFACING ONLY)



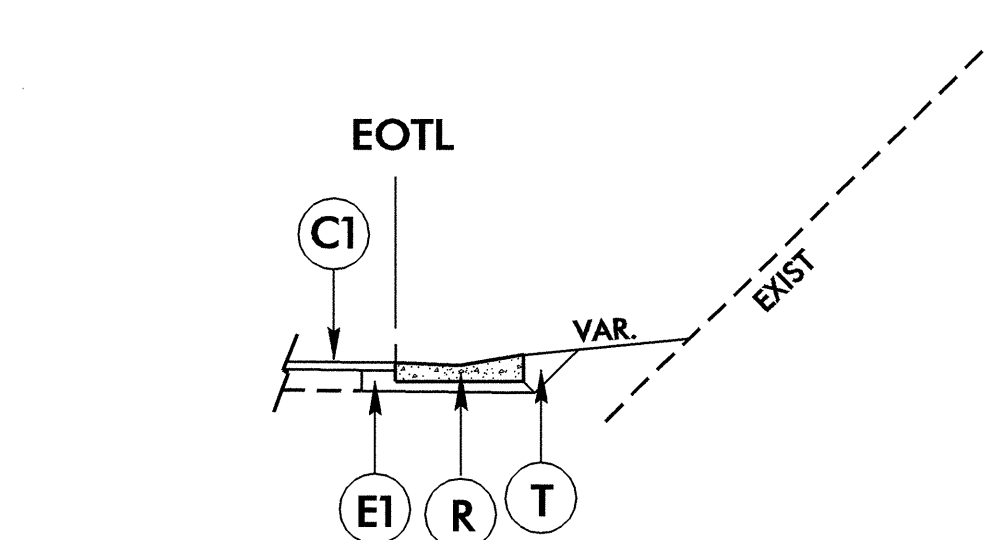
USE TYPICAL SECTION NO. 2  
 -L- STA. 13+50 TO 14+75.49 (BGN BRG)  
 -L- STA. 15+46.50 (END BRG) TO 17+00.00



Detail Showing Method of Wedging

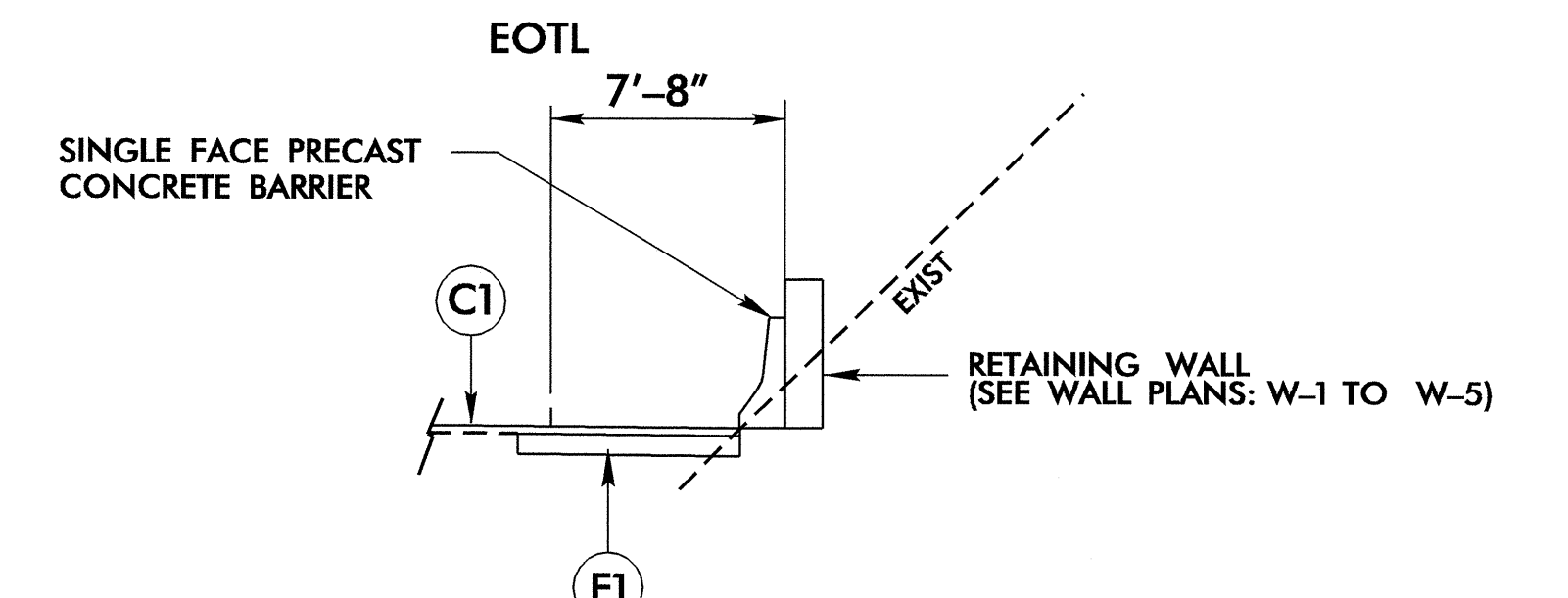


TYPICAL SECTION ON STRUCTURE



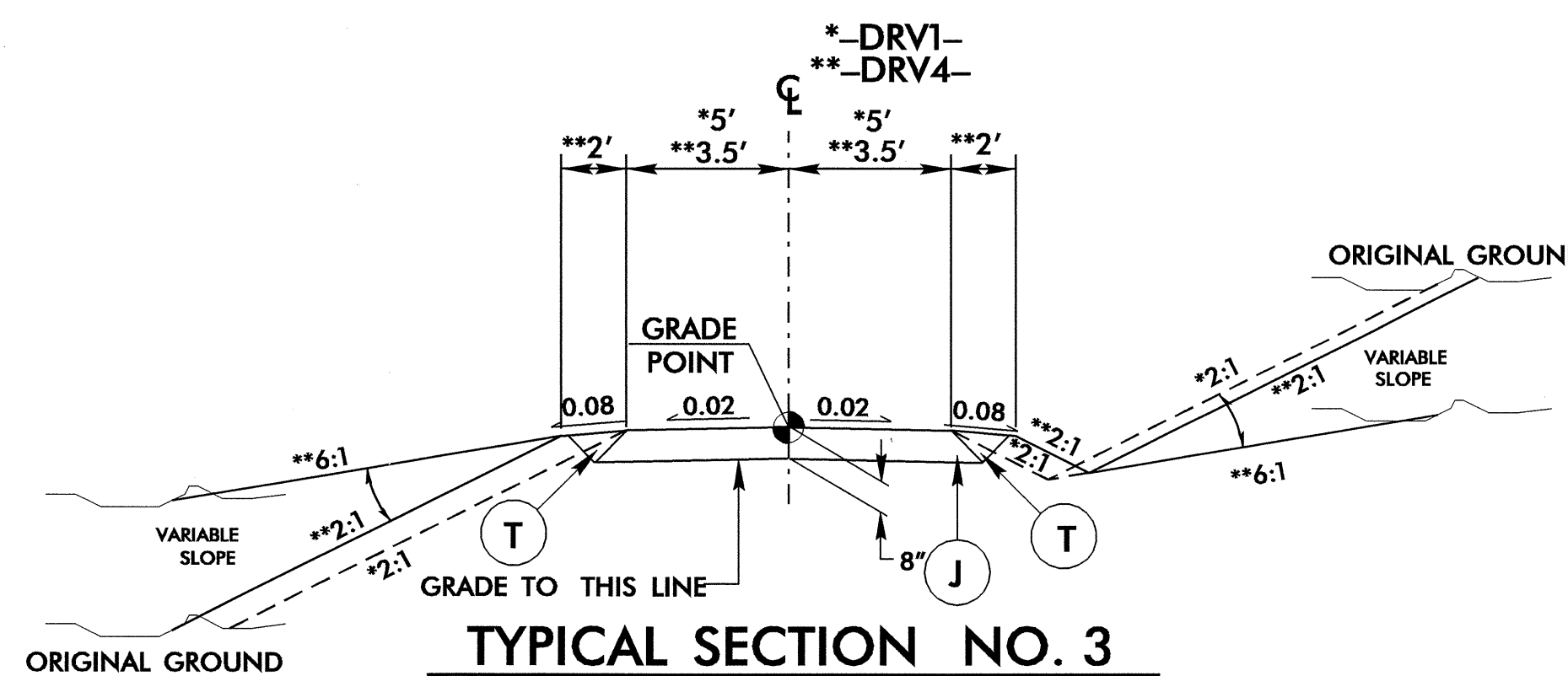
USE IN CONJUNCTION W/TYPICAL SECTION NOS. 1 & 2  
 -L- STA. 13+00.00 TO 14+00.00 RT.

INSET "A"

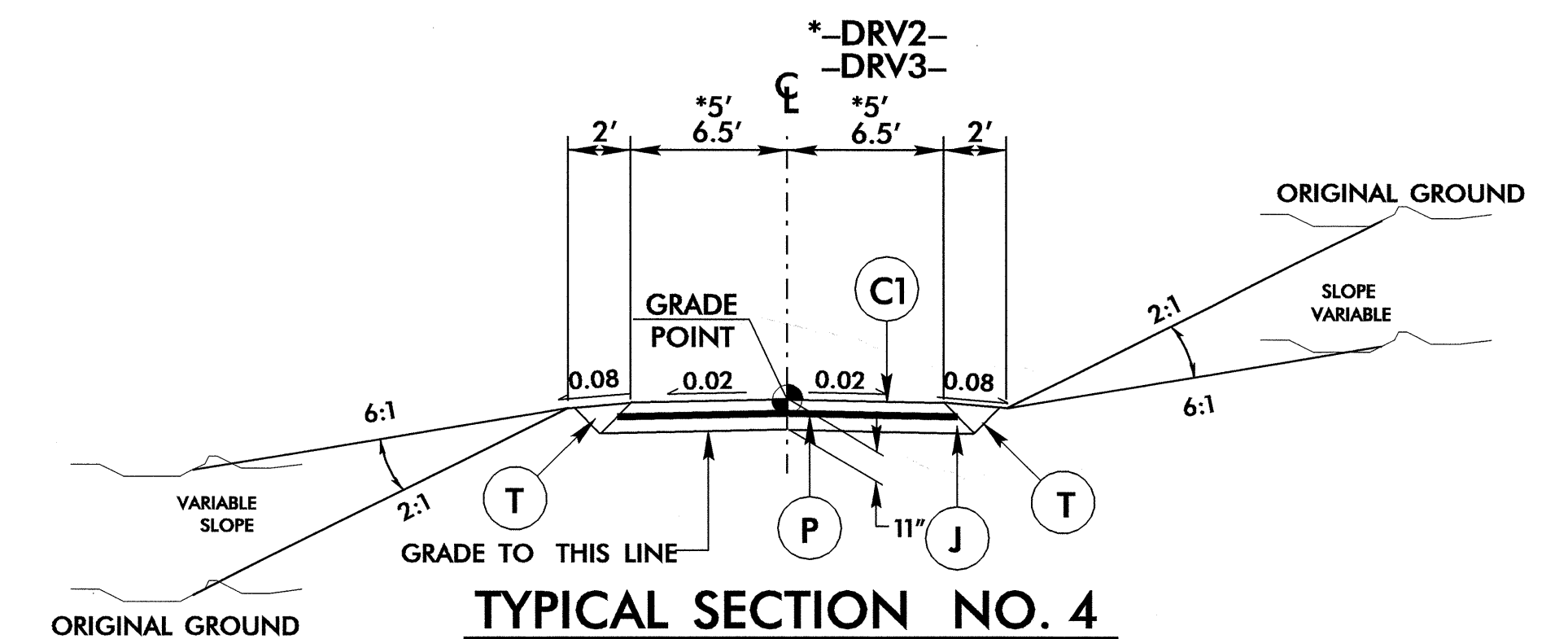


USE IN CONJUNCTION W/TYPICAL SECTION NO. 2  
 -L- STA. 16+25.00 TO 17+00.00 RT.

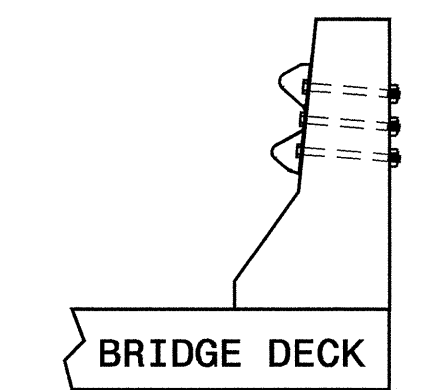
INSET "B"



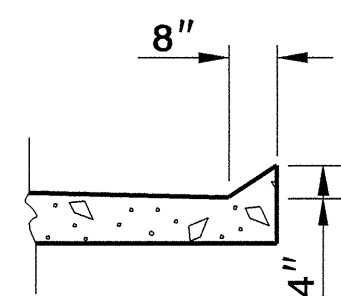
\*-DRV1- STA. 10+15.09 TO 11+48.75  
 \*\*-DRV4- STA. 10+00.00 TO 10+56.06



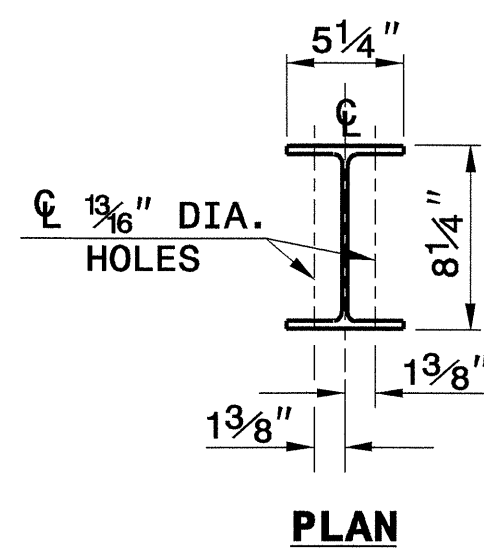
\*-DRV2- STA. 10+14.80 TO 10+60.00  
 -DRV3- STA. 10+80.00 TO 11+28.53



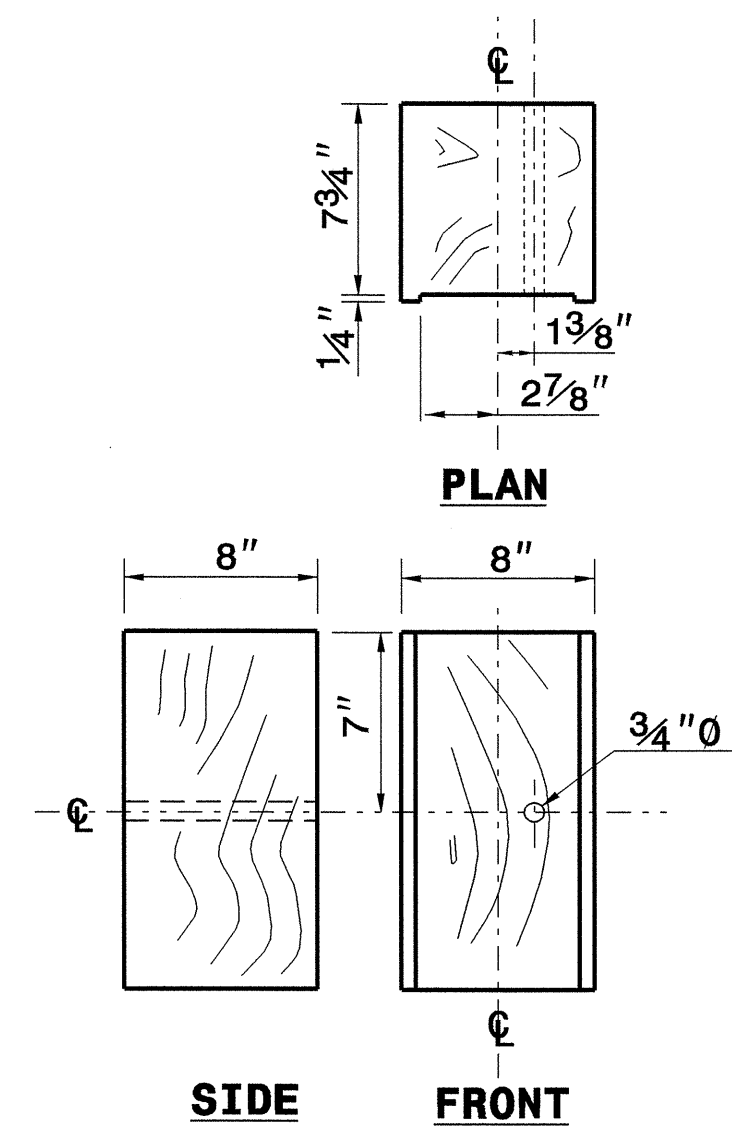
**SECTION A-A**



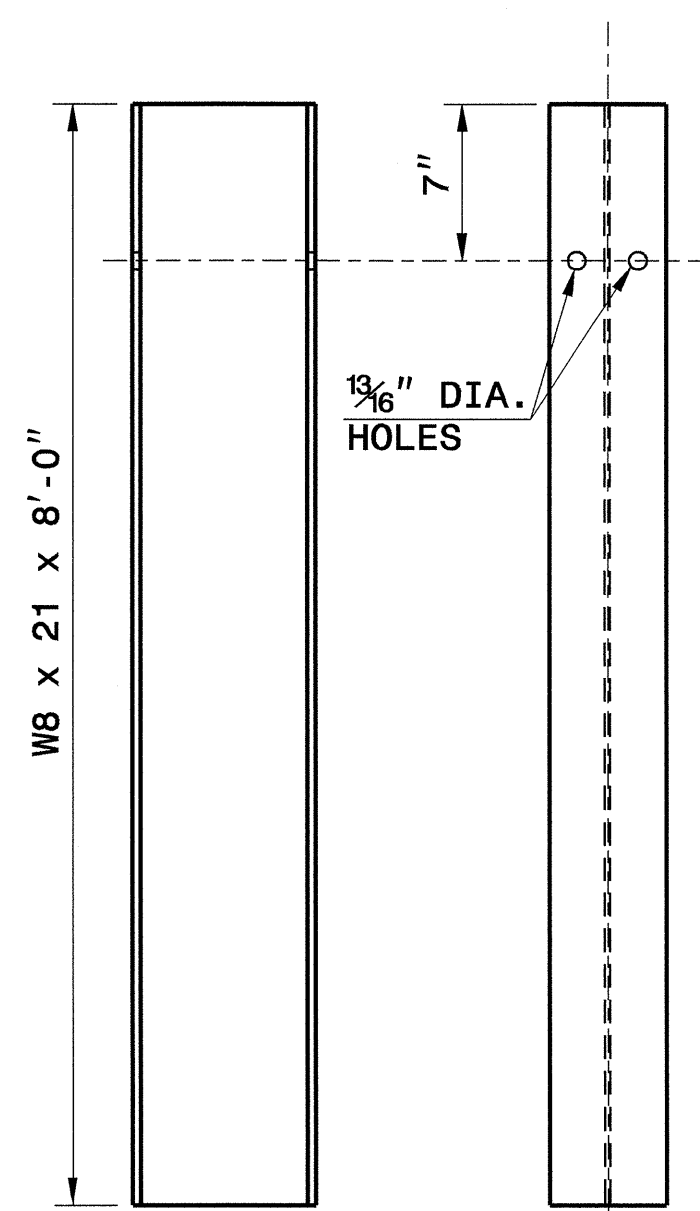
**SECTION B-B  
APPROACH SLAB CURB**



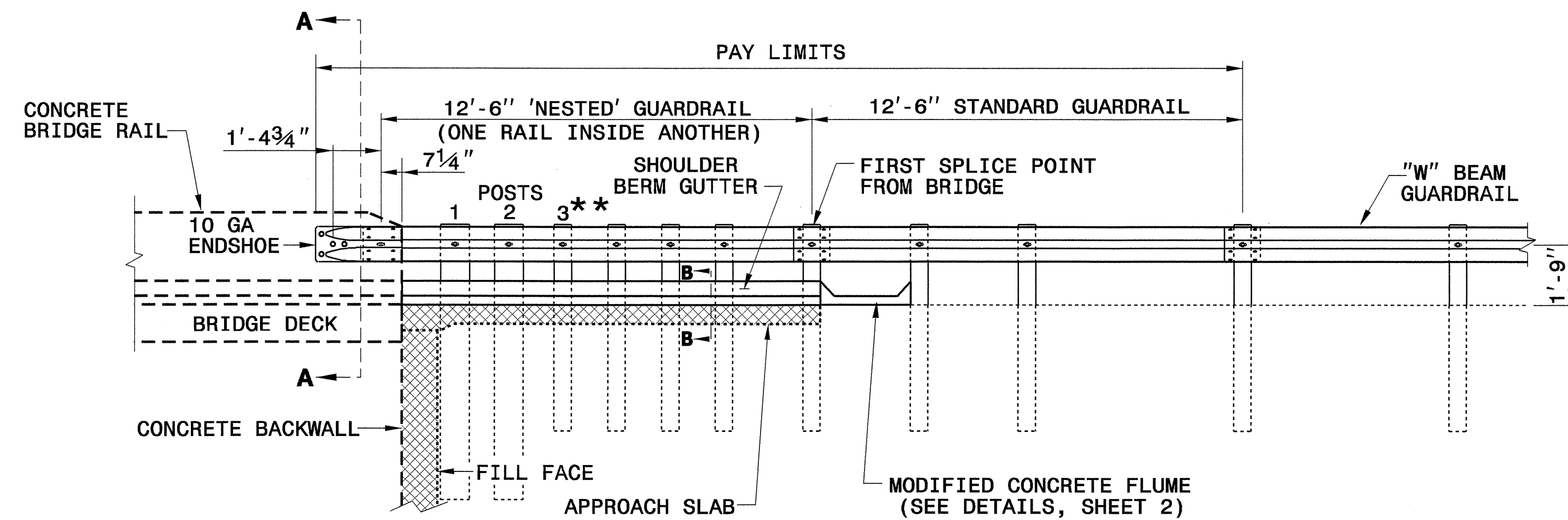
**PLAN**



**8" X 8" X 14" ROUTED  
WOOD OFFSET BLOCK**



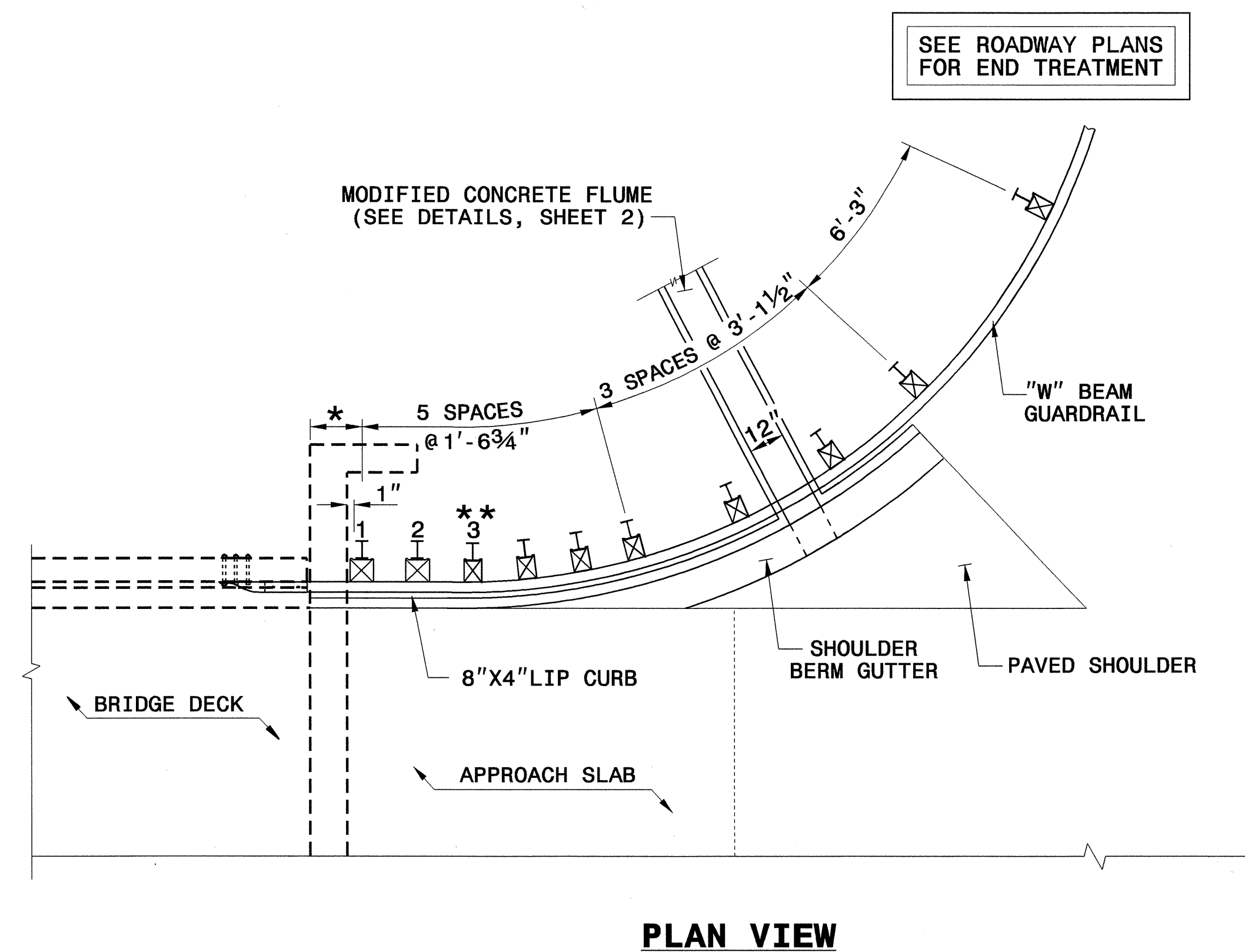
**W8 X 21 X 8'-0"  
STEEL POST**



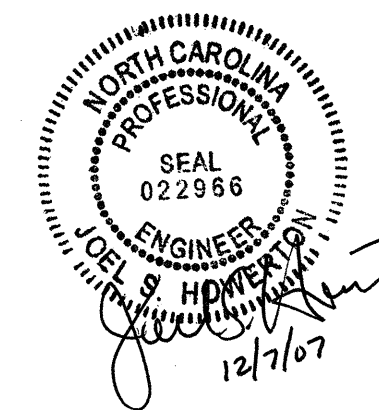
**ELEVATION VIEW**

**NOTE:**

- \*\*ELIMINATE POST 3 AND SHIFT POSTS 1 & 2 ON SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- \*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
- MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- USE NO WOOD POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- POSTS 1 AND 2 TO BE W8 X 21 X 8'-0" LONG STEEL POST AND 8" X 8" X 14" WOOD ROUTED OFFSET BLOCK.



**PLAN VIEW**



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

**GUARDRAIL ANCHOR UNIT  
TYPE B-83 SHOP CURVED**

ORIGINAL BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 MODIFIED BY: rnbritt DATE: 12-15-06  
 CHECKED BY: \_\_\_\_\_ DATE: 1/3/07  
 FILE SPEC.: \_\_\_\_\_

28-DEC-2006 10:29  
 s:\concrete\special\_details\britt\english\guardrail\b-83\_mrnndot.dgn  
 rnbritt AI PSC2939

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

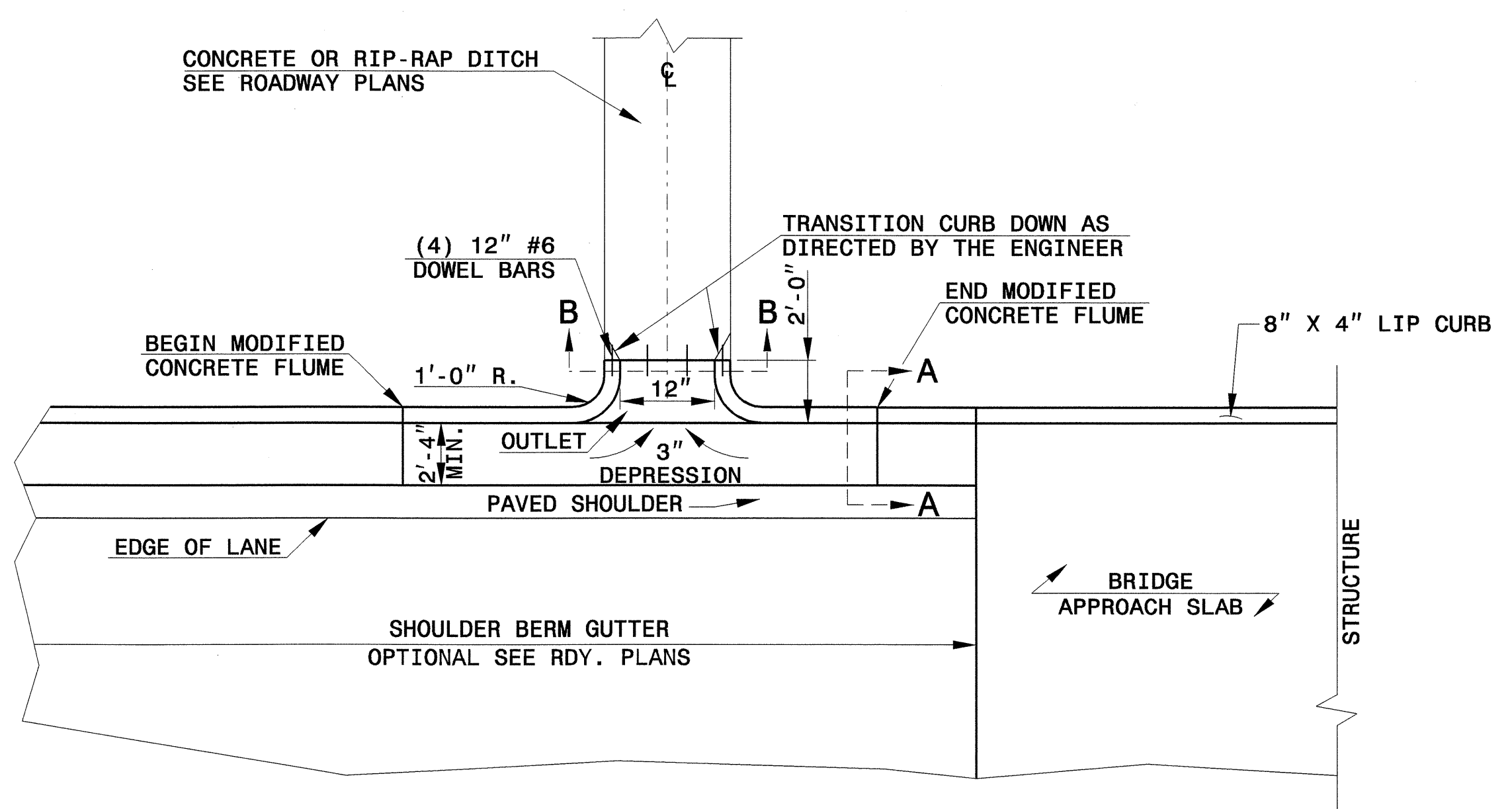
ENGLISH DETAIL DRAWING FOR  
**MODIFIED CONCRETE FLUME**  
 WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1  
 MODFLMDTCH

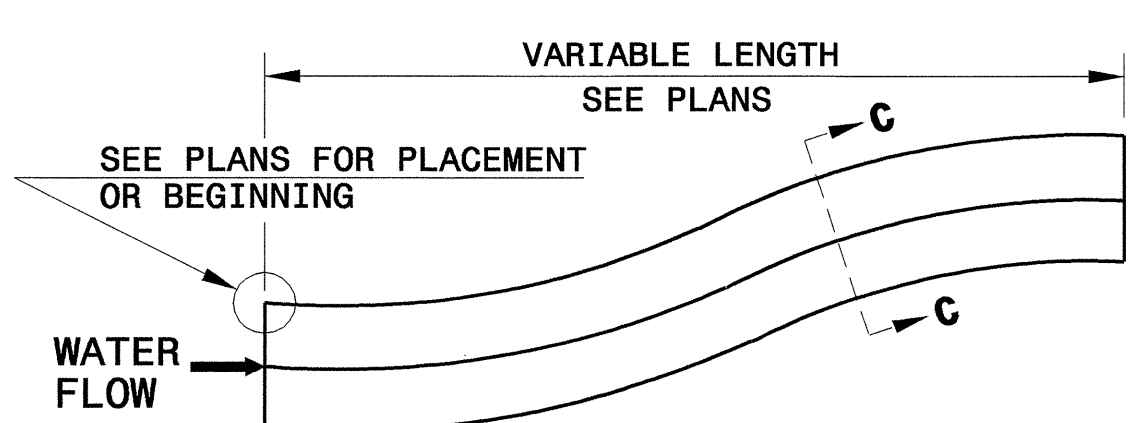
STATE OF  
 NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**MODIFIED CONCRETE FLUME**  
 WITH CONCRETE OR RIP-RAP DITCH

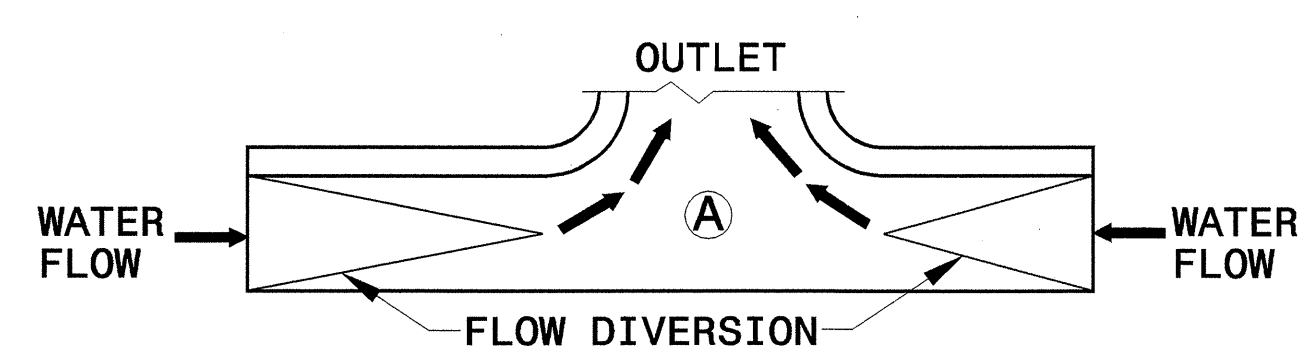
SHEET 1 OF 1  
 MODFLMDTCH



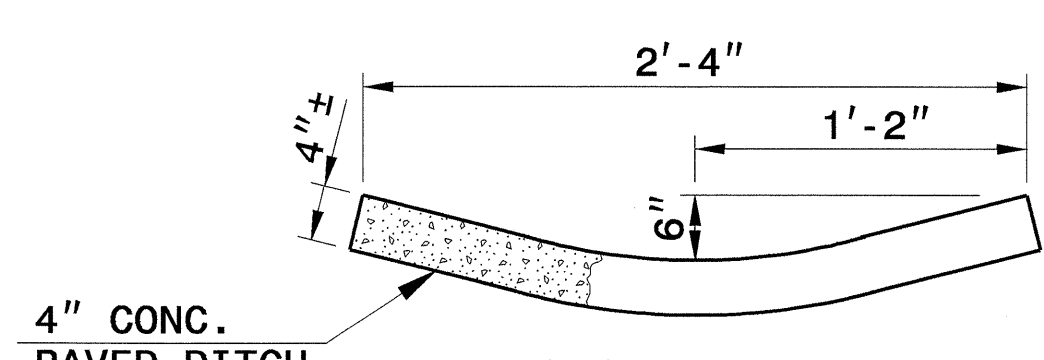
PLAN VIEW



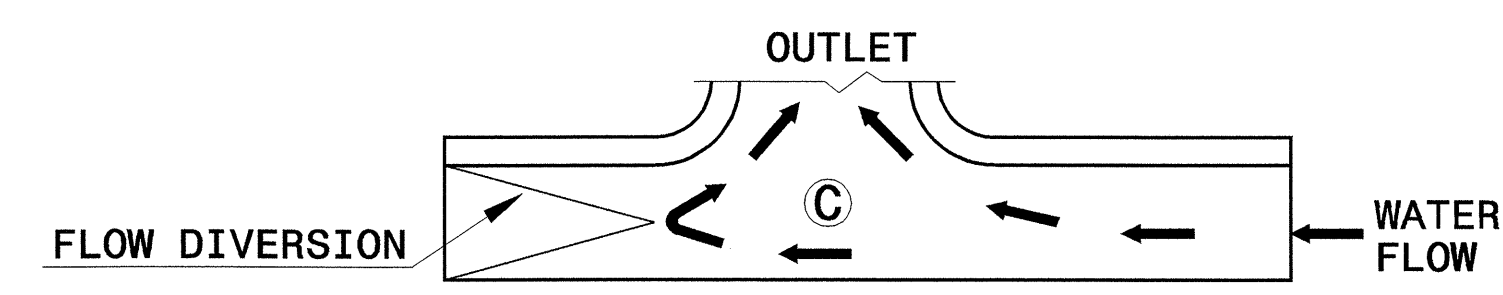
DOWNGRADE OR SAG



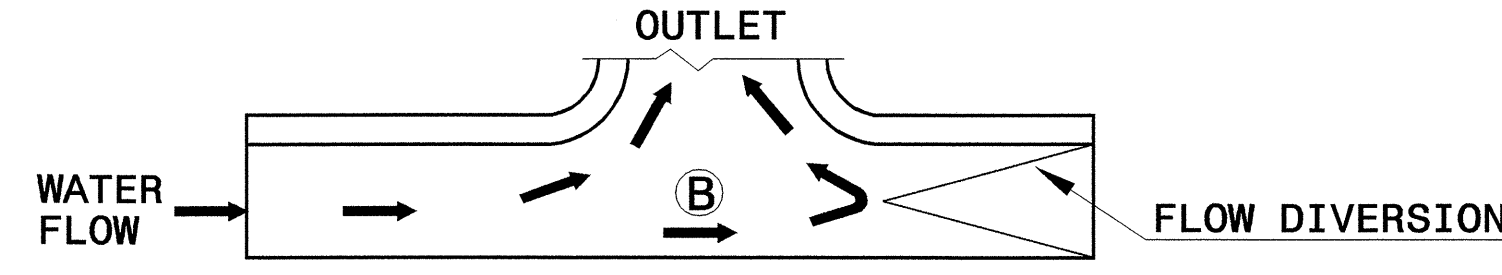
SAG



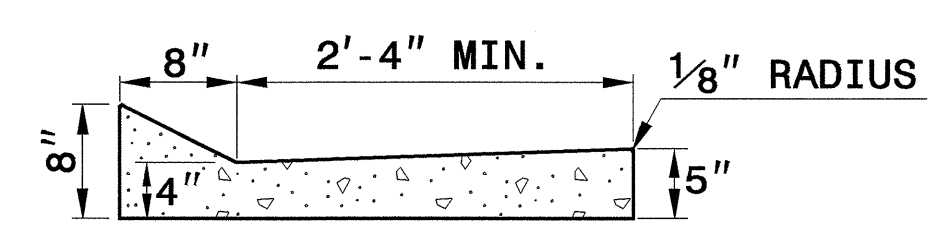
SECTION C-C



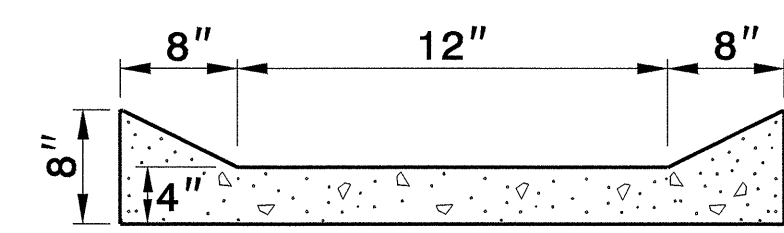
FLOW DIVERSION EXAMPLES



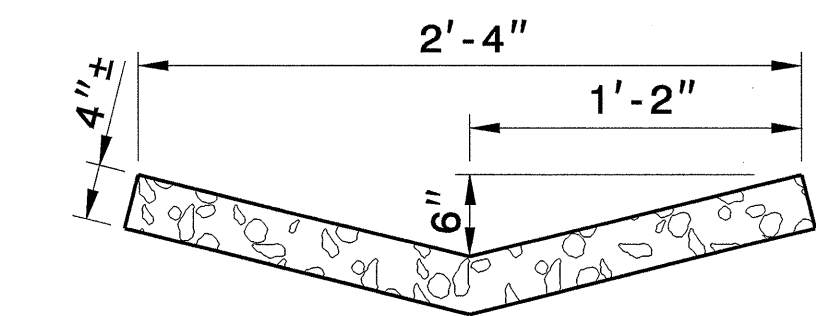
DOWN GRADE



SECTION A-A

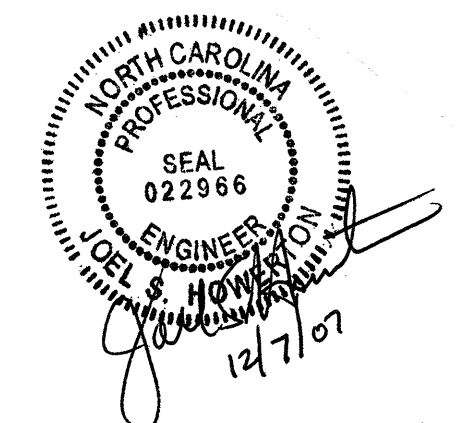


SECTION B-B



RIP-RAP LINED DITCH

- NOTES:
- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
  - CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
  - CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
  - CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18" PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
  - MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND 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: \_\_\_\_\_ DATE: \_\_\_\_\_  
 MODIFIED BY: *rbritt* DATE: 12-15-05  
 CHECKED BY: *Julie Hunt* DATE: 1/3/07  
 FILE SPEC.: *details/nbritt/english/misc/modifiedflume.dgn*

5/14/99  
 28-DEC-2006 10:27  
 C:\projects\special\_details\nbritt\english\hydro\modflume.dgn  
 rbritt AT P5228331

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201775

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0057000000-E	226	50	CY	UNDERCUT EXCAVATION
0080000000-E	SP	25	TON	CLASS IV SUBGRADE STABILIZATION
0195000000-E	265	25	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	25	SY	FABRIC FOR SOIL STABILIZATION
0318000000-E	300	30	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0366000000-E	310	56	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E	310	8	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E	310	212	LF	24" RC PIPE CULVERTS, CLASS III
0995000000-E	340	57	LF	PIPE REMOVAL
1121000000-E	520	131	TON	AGGREGATE BASE COURSE
1220000000-E	545	100	TON	INCIDENTAL STONE BASE
1275000000-E	600	30	GAL	PRIME COAT
1489000000-E	610	225	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1525000000-E	610	230	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1560000000-E	620	25	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1693000000-E	654	10	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2000000000-N	806	17	EA	RIGHT OF WAY MARKERS
2022000000-E	815	44.8	CY	SUBDRAIN EXCAVATION
2033000000-E	815	33.6	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	200	LF	6" PERFORATED SUBDRAIN PIPE
2055000000-E	815	6	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS

ItemNumber	Sec #	Quantity	Unit	Description
2066000000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
2286000000-N	840	4	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	0.1	LF	MASONRY DRAINAGE STRUCTURES
2366000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.29
2396000000-N	840	1	EA	FRAME WITH COVER, STD 840.54
2570000000-N	SP	1	EA	MODIFIED CONCRETE FLUME
2577000000-E	846	100	LF	CONCRETE EXPRESSWAY GUTTER
2619000000-E	850	10	SY	4" CONCRETE PAVED DITCH
2724000000-E	857	75	LF	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED
3045000000-E	862	75	LF	STEEL BM GUARDRAIL, SHOP CURVED
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3180000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE ***** (B-83)
3195000000-N	862	5	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3317000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3628000000-E	876	9	TON	RIP RAP, CLASS I
3649000000-E	876	2	TON	RIP RAP, CLASS B
3656000000-E	876	322	SY	FILTER FABRIC FOR DRAINAGE
4025000000-E	901	6.25	SF	CONTRACTOR FURNISHED, TYPE *** SIGN (E)
4072000000-E	903	14	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4102000000-N	904	1	EA	SIGN ERECTION, TYPE E
4155000000-N	907	7	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4158000000-N	907	2	EA	DISPOSAL OF SIGN SYSTEM, WOOD

ItemNumber	Sec #	Quantity	Unit	Description
4400000000-E	1110	274	SF	WORK ZONE SIGNS (STATIONARY)
4410000000-E	1110	94	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	10	EA	DRUMS
4435000000-N	1135	10	EA	CONES
4445000000-E	1145	80	LF	BARRICADES (TYPE III)
4810000000-E	1205	4,840	LF	PAINT PAVEMENT MARKING LINES (4")
6000000000-E	1605	500	LF	TEMPORARY SILT FENCE
6006000000-E	1610	150	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	120	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	75	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	0.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	0.25	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	45	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	1	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	145	LF	SAFETY FENCE
6030000000-E	1630	290	CY	SILT EXCAVATION
6036000000-E	1631	360	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	25	SY	COIR FIBER MAT
6038000000-E	SP	55	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	60	LF	1/4" HARDWARE CLOTH
6071030000-E	SP	25	LF	COIR FIBER BAFFLES
6071050000-E	SP	2	EA	*** SKIMMER (1-1/2")
6084000000-E	1660	0.5	ACR	SEEDING & MULCHING
6087000000-E	1660	0.5	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING

ItemNumber	Sec #	Quantity	Unit	Description
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	0.5	TON	FERTILIZER TOPDRESSING
6114000000-N	SP	2	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.1	ACR	REFORESTATION

5/28/99

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**SUMMARY OF EARTHWORK  
IN CUBIC YARDS**

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L-					
12+50.00 TO 14+75.49 (BEGIN BRIDGE)	13		679	666	
15+46.50 (END BRIDGE) TO 18+00.00	295		98		197
-DRV2-					
10+14.80 TO 10+60.00	3		33	30	
-DRV3-					
10+80.00 TO 11+28.53	57		1		56
-DRV4-					
10+00.00 TO 10+56.06			39	39	
TOTAL:	368		850	735	253
WASTE IN LIEU OF BORROW				-253	
TOTAL:	368			482	
5% TO REPLACE BORROW				25	
GRAND TOTAL:	368			507	
SAY:	370			525	
CONTINGENCY UNDERCUT	50				

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

**SUMMARY OF PAVEMENT REMOVAL  
IN SQUARE YARDS**

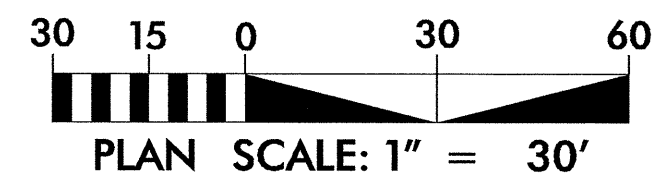
LINE	BEGIN STATION	END STATION	LOCATION	CADD MEASUREMENT (square feet)	SY
-L-	13+50.00	14+92.00	CL	2631.61	292.40
	15+31.00	17+50.00	CL	3798.76	422.08
-DRV2-	10+00.00	10+25.00	CL	322.68	35.85
-DRV3-	11+00.00	11+28.53	CL	330.83	36.76
			TOTAL:		787.09
			SAY:		790

**SUMMARY OF EXPRESSWAY GUTTER  
IN FEET**

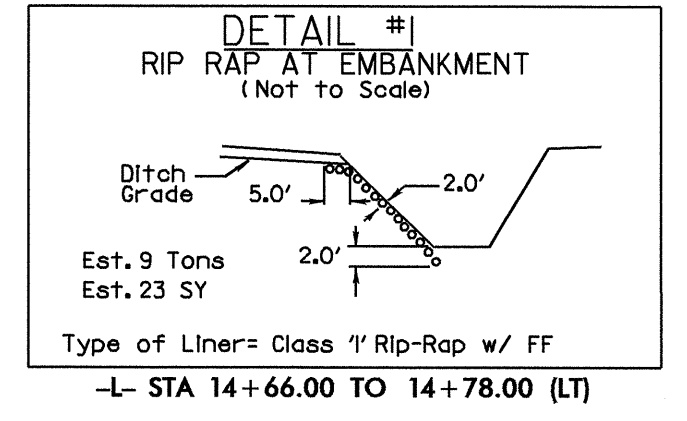
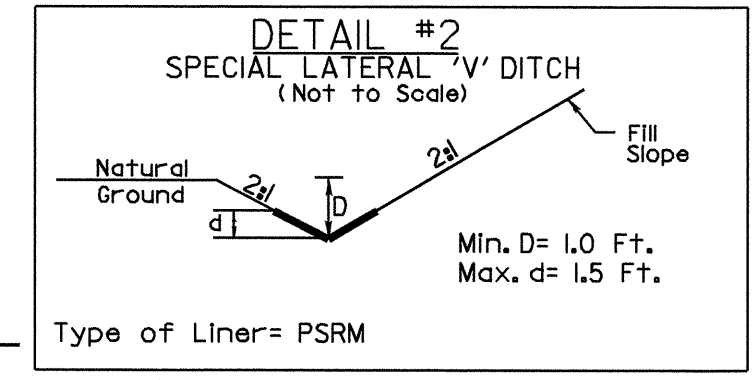
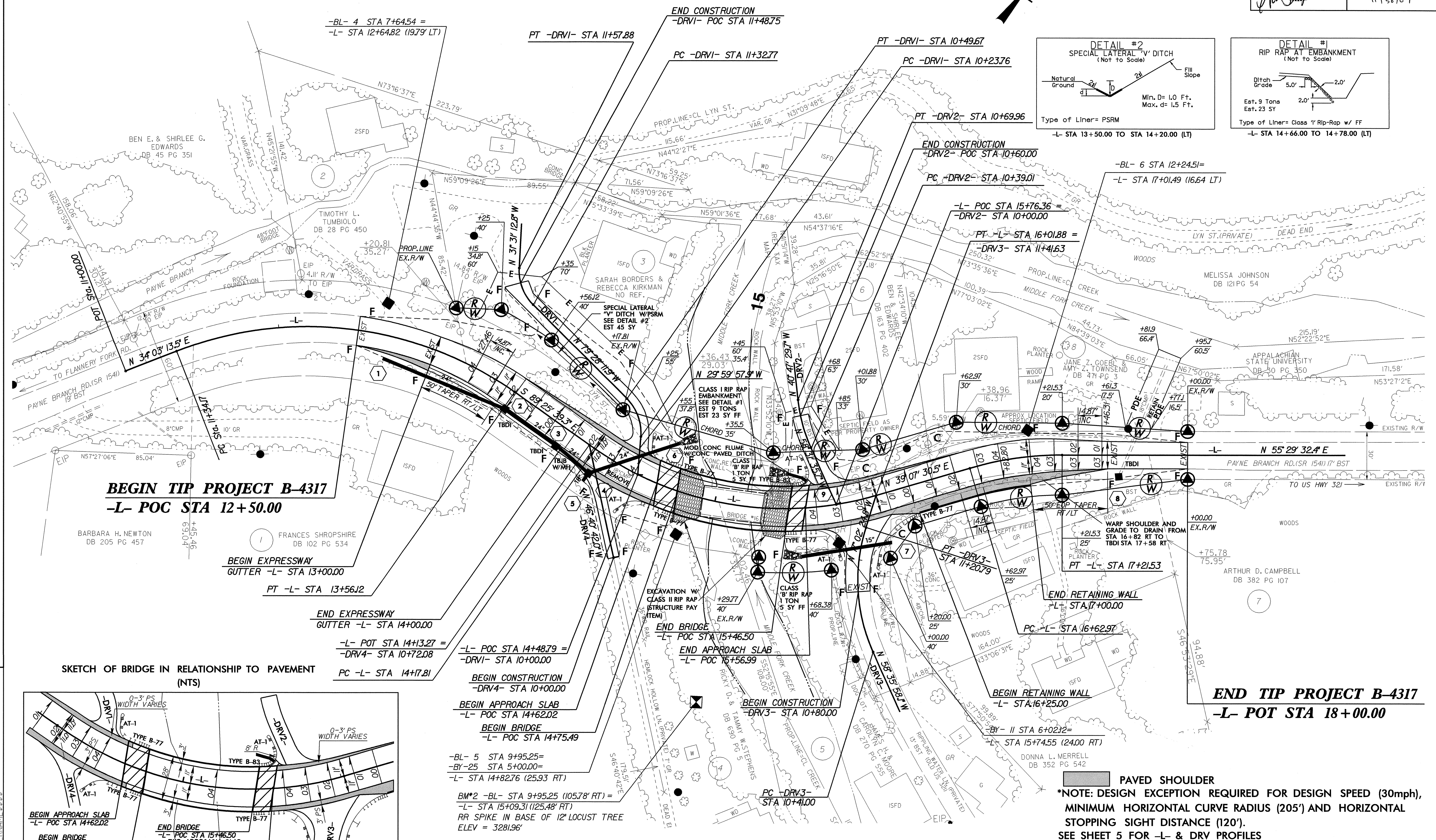
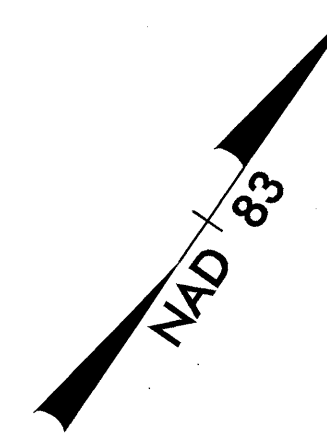
LINE	BEGIN STATION	END STATION	LOCATION	LENGTH
-L-	13+00.00	14+00.00	RT	100.00'
			TOTAL:	100.00'

**SUMMARY OF PRECAST REINFORCED  
CONCRETE BARRIER, SINGLE FACED**

LINE	BEGIN STATION	END STATION	LOCATION	LENGTH
-L-	16+25.00	17+00.00	RT	75.00'
			TOTAL:	75.00'

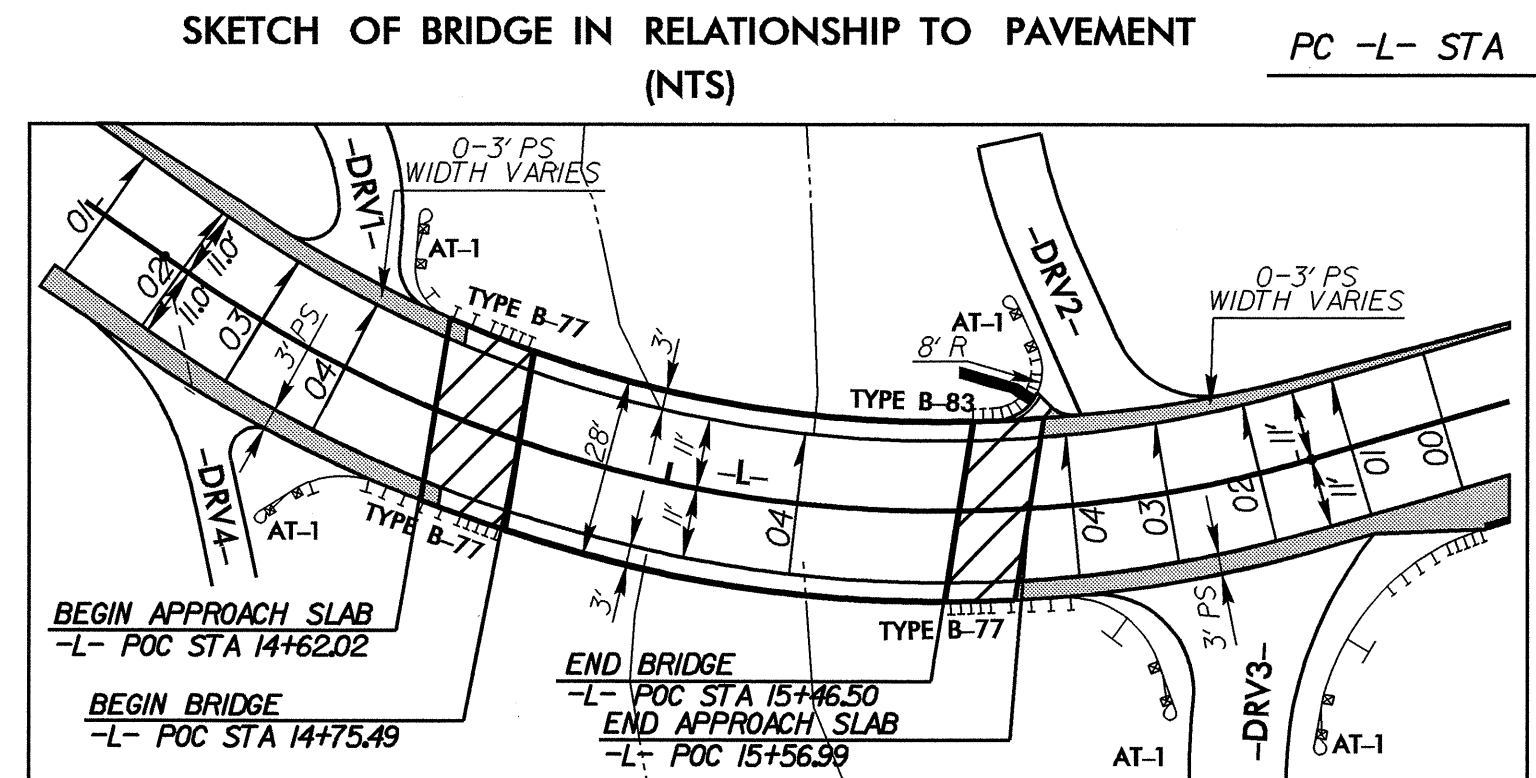


-L-	-DRVI-	-DRV2-	-DRV3-
PI Sta 12+55.11 Δ = 56° 31' 07.2" (RT) D = 25' 27" 53.2" L = 221.95' T = 120.94' R = 225.00'	PI Sta 15+16.57 Δ = 51° 26' 30.2" (LT) D = 27' 56" 57.0" L = 184.07' T = 98.76' +R = 205.00'	PI Sta 16+92.45 Δ = 16° 22' 01.9" (RT) D = 27' 56" 57.0" L = 58.56' T = 29.48' +R = 205.00'	PI Sta 10+37.58 Δ = 49° 28' 14.0" (LT) D = 190' 59" 09.4" L = 25.90' T = 13.82' R = 30.00'
PI Sta 11+46.11 Δ = 47° 56' 59.1" (RT) D = 190' 59" 09.4" L = 25.11' T = 13.34' R = 30.00'	PI Sta 10+54.61 Δ = 17° 44' 06.0" (RT) D = 57' 17" 44.8" L = 30.95' T = 15.60' R = 100.00'	PI Sta 10+82.74 Δ = 41° 33' 33.3" (RT) D = 52' 05" 13.5" L = 79.79' T = 41.74' R = 110.00'	



**BEGIN TIP PROJECT B-4317**  
-L- POC STA 12+50.00

**END TIP PROJECT B-4317**  
-L- POT STA 18+00.00



BEGIN CONSTRUCTION -DRV4- STA 10+00.00  
BEGIN APPROACH SLAB -L- POC STA 14+62.02  
BEGIN BRIDGE -L- POC STA 14+75.49

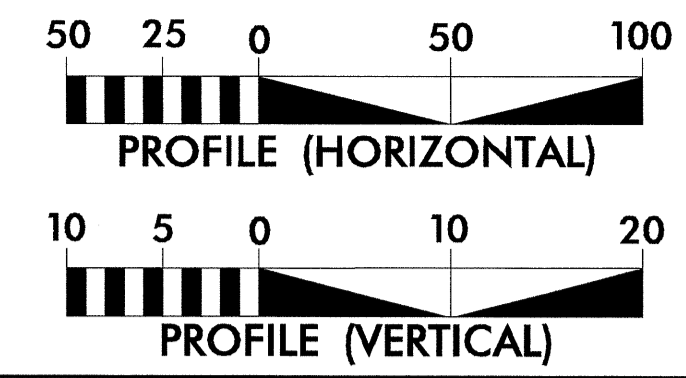
**PAVED SHOULDER**  
\*NOTE: DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED (30mph), MINIMUM HORIZONTAL CURVE RADIUS (205') AND HORIZONTAL STOPPING SIGHT DISTANCE (120').  
SEE SHEET 5 FOR -L- & DRV PROFILES  
SEE SHEET S-1 TO S-24 FOR STRUCTURES  
SEE SHEET W-1 TO W-5 FOR WALL DESIGN

REVISIONS

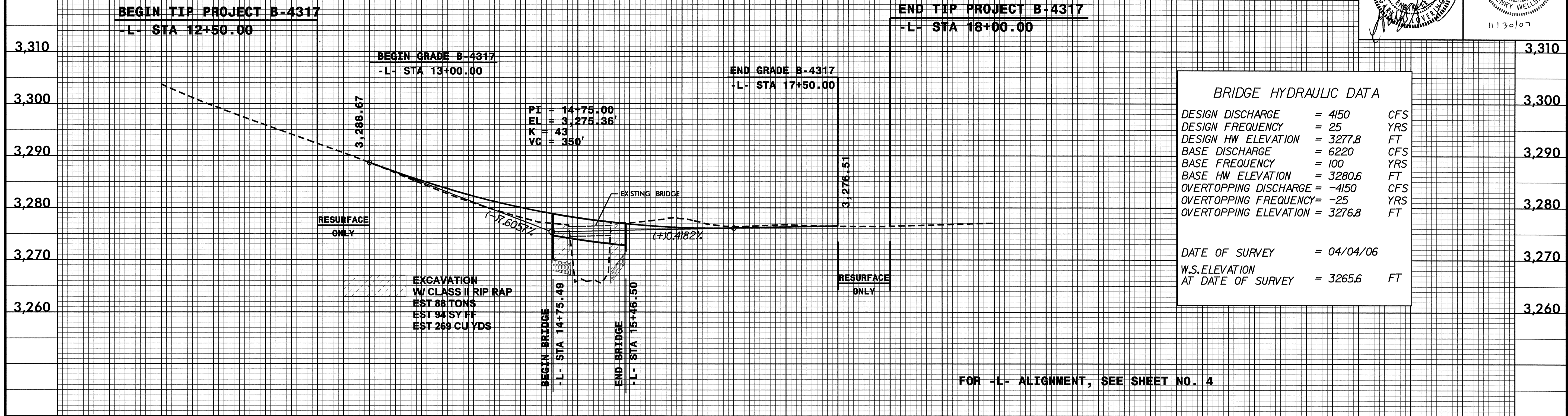
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F:\projects\B-4317-rdy-s4psh.dgn  
\$\$\$\$USER\$\$(11/29/07) 11:34:38 AM

5/28/99

BM #2 ELEVATION = 3281.96'  
-L- STA 15+09.31 (125.48' RT)  
RR SPIKE SET IN BASE OF  
12" LOCUST TREE



PROJECT REFERENCE NO. <b>B-4317</b>	SHEET NO. <b>5</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



**BRIDGE HYDRAULIC DATA**

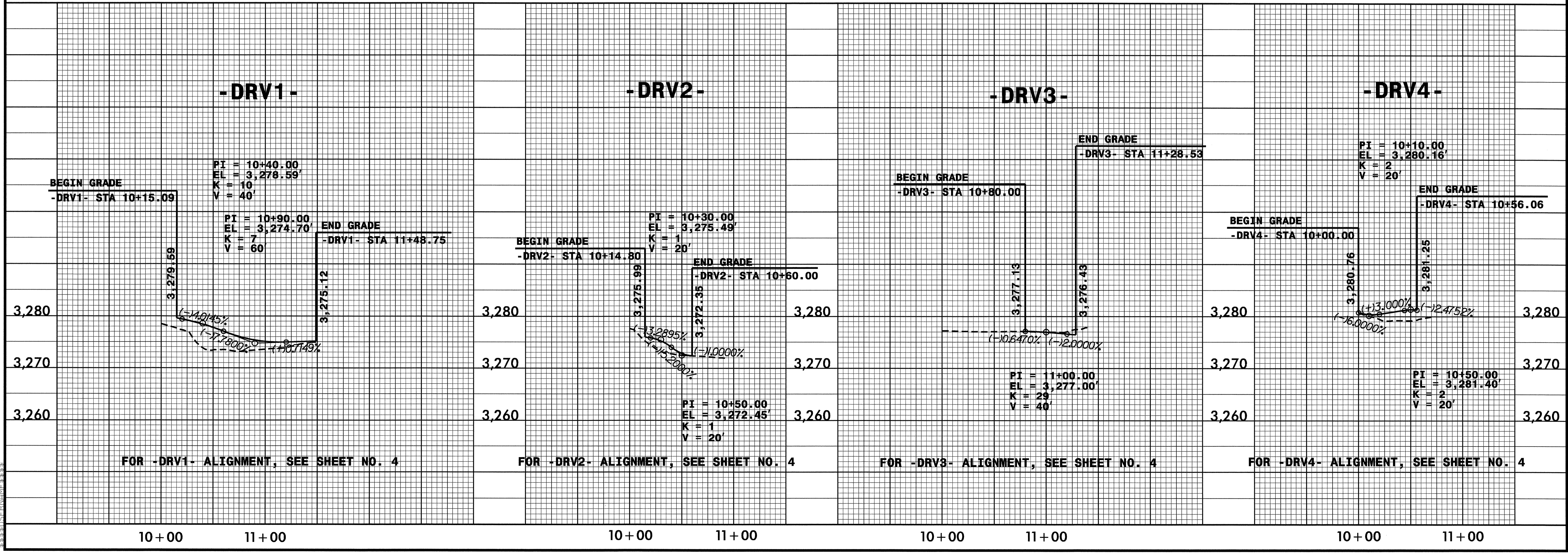
DESIGN DISCHARGE	= 4150	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 3277.8	FT
BASE DISCHARGE	= 6220	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 3280.6	FT
OVERTOPPING DISCHARGE	= 4150	CFS
OVERTOPPING FREQUENCY	= 25	YRS
OVERTOPPING ELEVATION	= 3276.8	FT

DATE OF SURVEY	= 04/04/06
W.S.ELEVATION AT DATE OF SURVEY	= 3265.6 FT

FOR -L- ALIGNMENT, SEE SHEET NO. 4

11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00



FOR -DRV1- ALIGNMENT, SEE SHEET NO. 4

FOR -DRV2- ALIGNMENT, SEE SHEET NO. 4

FOR -DRV3- ALIGNMENT, SEE SHEET NO. 4

FOR -DRV4- ALIGNMENT, SEE SHEET NO. 4

10+00 11+00 10+00 11+00 10+00 11+00 10+00 11+00

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