WEST VIRGINIA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PLANS FOR CONSTRUCTION
OF
STATE HIGHWAY

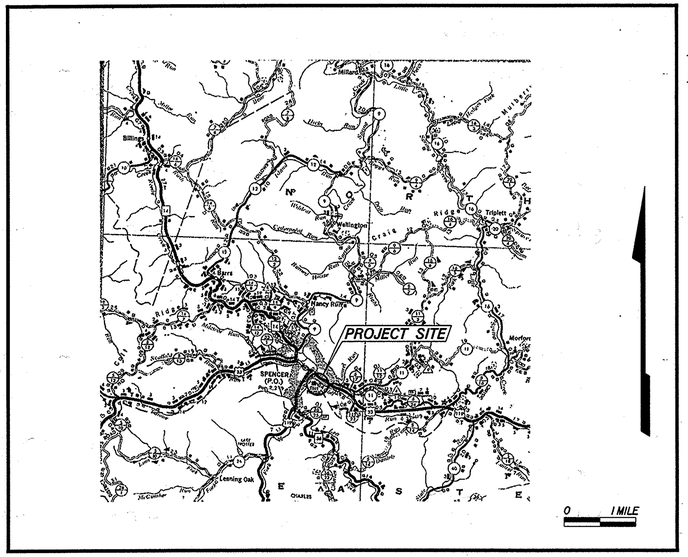
STATE PROJECT NO. X344-33/2-0.00

NEW ROUTE NO. 33/2

NORTHERN DISTRICT

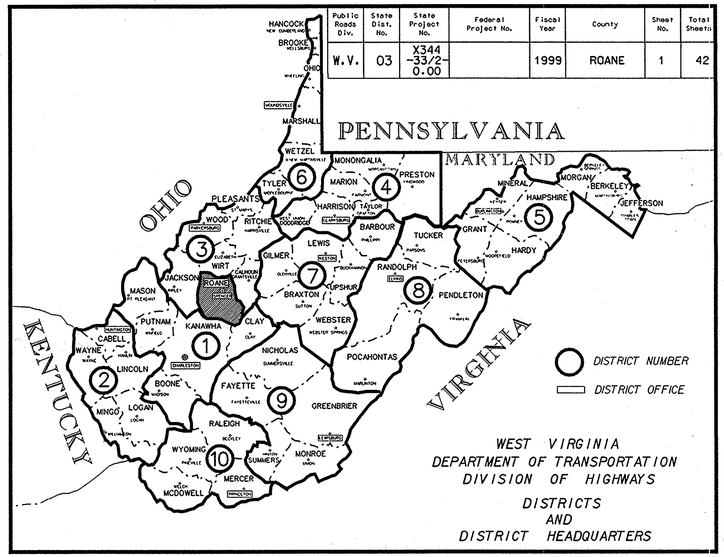
ROANE COUNTY

ROANE COUNTY/SPENCER BUSINESS PARK



Station	Station	f.t.	mile(s)
Roadway 1+10.99	to 2+63.00	=152.01	=0.028
Bridge 2+63.00	to 2+87.00	=24.00	=0.0045
Roadway 2+87.00	to 8+00.88	=513.88	=0.097
Total Project Length		=689.89	=0.130

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	03	X344 -33/2- 0.00		1999	ROANE	1	42

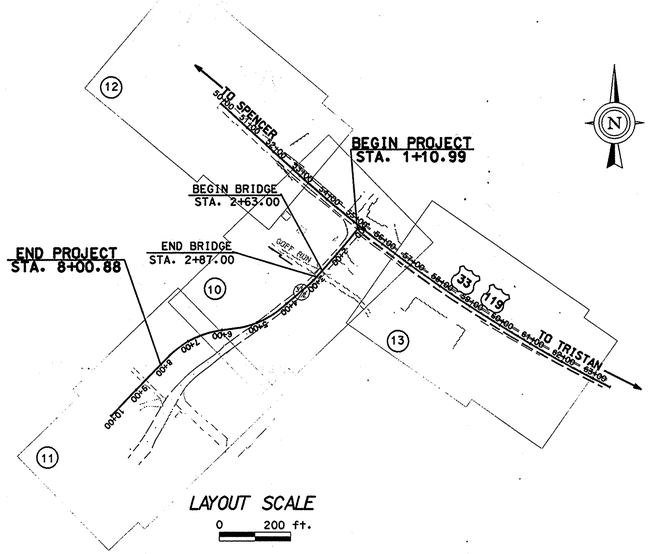


UTILITIES

BELL ATLANTIC-WV INC.
CONSUMERS GAS
SPENCER WATERWORKS
ALLEGHENY POWER
SPENCER SEWER

TYPE OF CONSTRUCTION

GRADE, DRAIN, PAVE, BRIDGE NO. 4842



SCALES

PLAN HOR. 0 — 20 ft.

PROFILE VERT. 0 — 4 ft.

PROFILE HOR. 0 — 20 ft.

CONVENTIONAL SIGNS

STATE LINE
COUNTY LINE
CORPORATION LINE
PROPOSED R/W LINE
PROPERTY LINE
EXISTING FENCE
PROPOSED FENCE
EDGE OF STREAM
PROPOSED GUARD RAIL
EXISTING GUARD RAIL
RAILROAD
GAS LINE
WATER LINE
TELEPHONE LINE
ELECTRIC LINE
TELEPHONE POLE
POWER POLE
COMBINED POWER AND TELEPHONE POLE
TREE
SHRUB
RIGHT OF WAY MARKER

DESIGN DESIGNATION

A.D.T. (19) *
A.D.T. (2000) * 7500
D.H.V. *
D *
T *
V * 25 MPH

EXCEPTION TO CRITERIA: VERTICAL CURVE AT STA. 3+57.48 (SPEED WILL BE REDUCED DUE TO NEARBY STOPPING CONDITION)

INDEX TO SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2-3	TYPICAL SECTIONS
4	GENERAL NOTES AND ESTIMATE OF QUANTITIES
5	QUANTITY TABLES
6	GEOMETRIC LAYOUT
7	REFERENCE POINTS
8	MAINTENANCE OF TRAFFIC
9	PAVEMENT MARKINGS
10-13	PLAN SHEETS
14-15	PROFILE SHEETS
16-23	BRIDGE PLANS
24-42	CROSS SECTIONS

For the new order of sheets this project was changed after the submission of the approved index to Design Directive DD-01. For the new order of sheets please refer to Design Directive DD-01.

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

May 4 19 99

I HEREBY CERTIFY THAT THIS IS A CORRECT COPY OF THE PLANS OF PROJECT X344-33/2-0.00

Ray Hutchinson
EXECUTIVE SECRETARY

NOTES: STANDARD DETAIL BOOK VOL. I DATED MARCH 1, 1993 & VOLUME II DATED JAN. 1, 1994, SHALL APPLY TO THIS PROJECT.

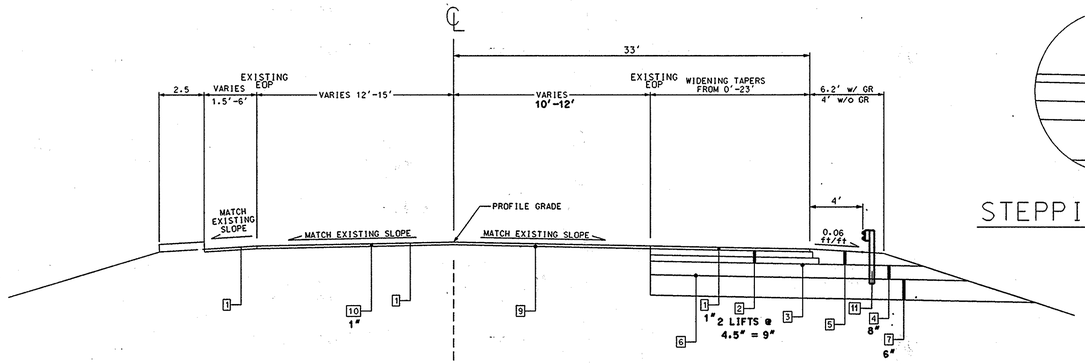
RECOMMENDED Michael D. Lilly
DESIGNER

RECOMMENDED FOR APPROVAL Jerry T. Demerault
STATE HIGHWAY ENGINEER

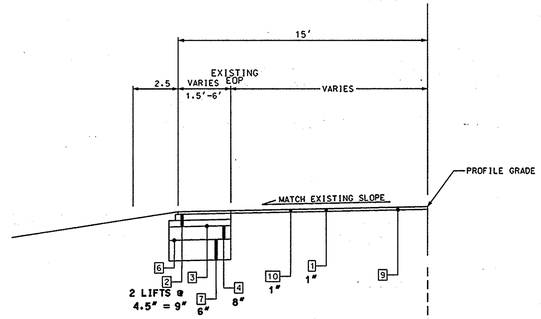
APPROVED Samuel N Bowman
COMMISSIONER OF HIGHWAYS

PROJECT NO. X344-33/2-0.00

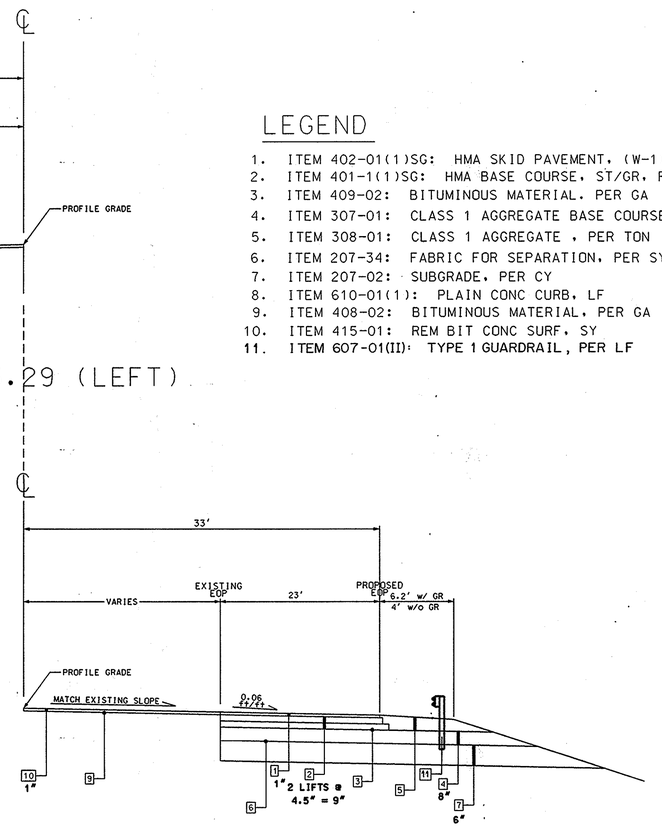
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	03	X344 35/2 0.00		1999	ROANE	2	42



STA. 52+55.00 TO 54+40.89 (LEFT)
STA. 52+55.00 TO 53+92.28 (RIGHT)

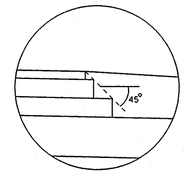


STA. 54+40.89 TO 54+93.29 (LEFT)



STA. 53+92.28 TO 55+38.75 (RIGHT)

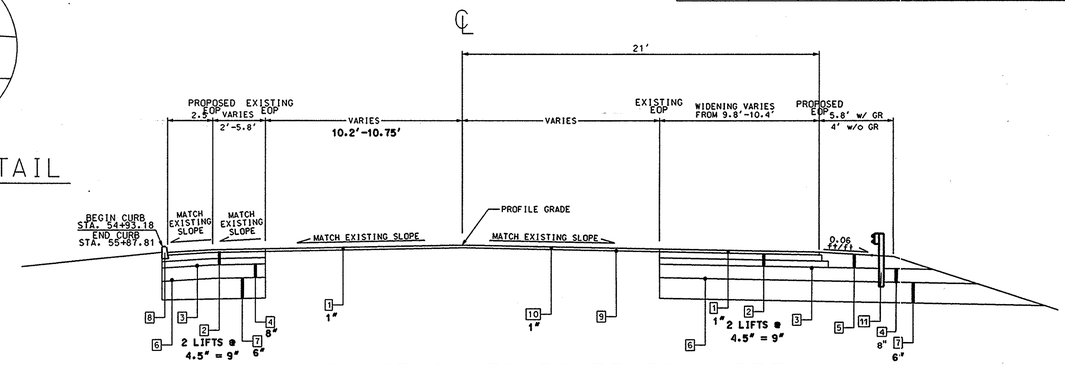
TANGENT SECTION: U.S. ROUTE 33



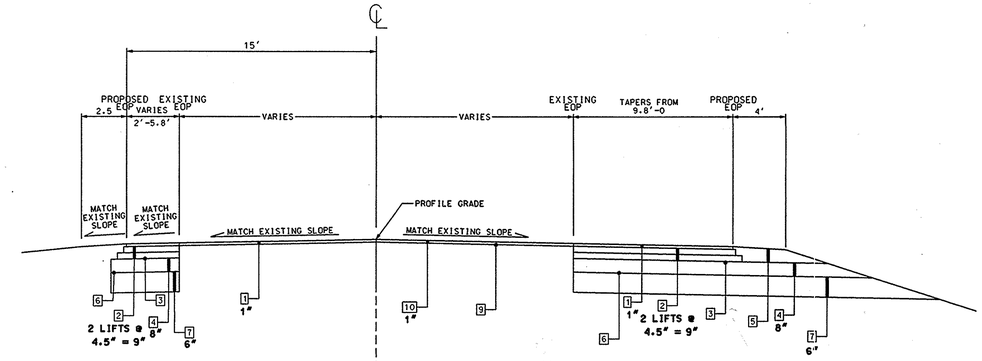
STEPPING DETAIL

LEGEND

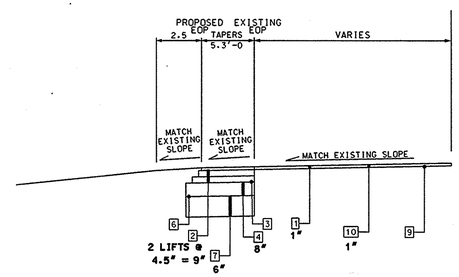
1. ITEM 402-01(1)SG: HMA SKID PAVEMENT, (W-1) ST OR GR, PER TN
2. ITEM 401-1(1)SG: HMA BASE COURSE, ST/GR, PER TN
3. ITEM 409-02: BITUMINOUS MATERIAL, PER GA
4. ITEM 307-01: CLASS 1 AGGREGATE BASE COURSE, PER CY
5. ITEM 308-01: CLASS 1 AGGREGATE , PER TON
6. ITEM 207-34: FABRIC FOR SEPARATION, PER SY
7. ITEM 207-02: SUBGRADE, PER CY
8. ITEM 610-01(1): PLAIN CONC CURB, LF
9. ITEM 408-02: BITUMINOUS MATERIAL, PER GA
10. ITEM 415-01: REM BIT CONC SURF, SY
11. ITEM 607-01(II): TYPE 1 GUARDRAIL, PER LF



STA. 54+93.29 TO 56+37.72 (LEFT)
STA. 55+38.75 TO 57+41.18 (RIGHT)



STA. 56+37.72 TO 57+60.00 (LEFT)
STA. 57+41.18 TO 59+60.97 (RIGHT)



STA. 57+60.00 TO 59+60.97 (LEFT)

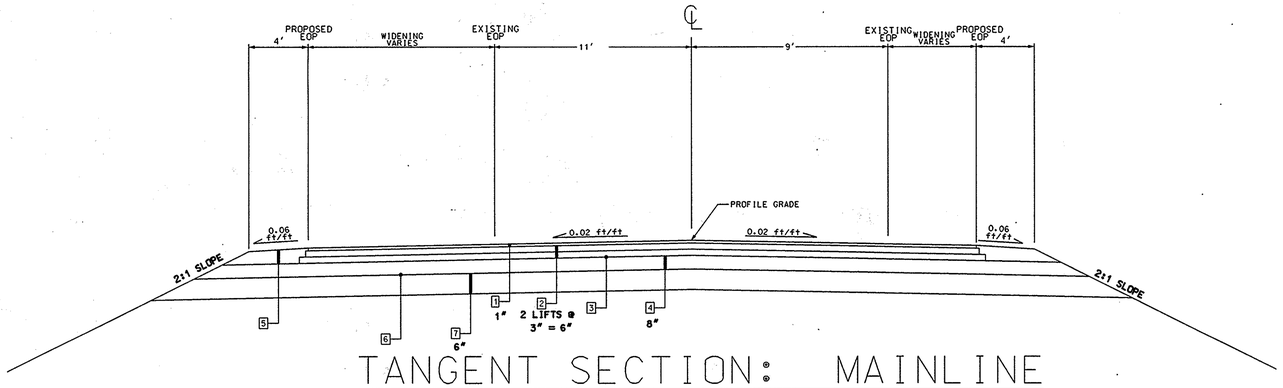
TANGENT SECTION: U.S. ROUTE 33

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

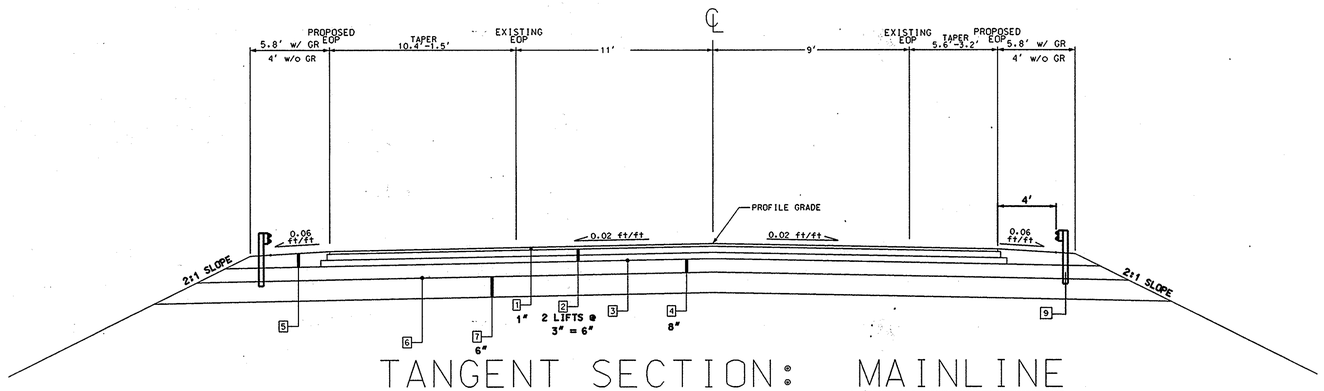
TYPICAL SECTIONS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	03	X344 33/2 0.00		1999	ROANE	3	42



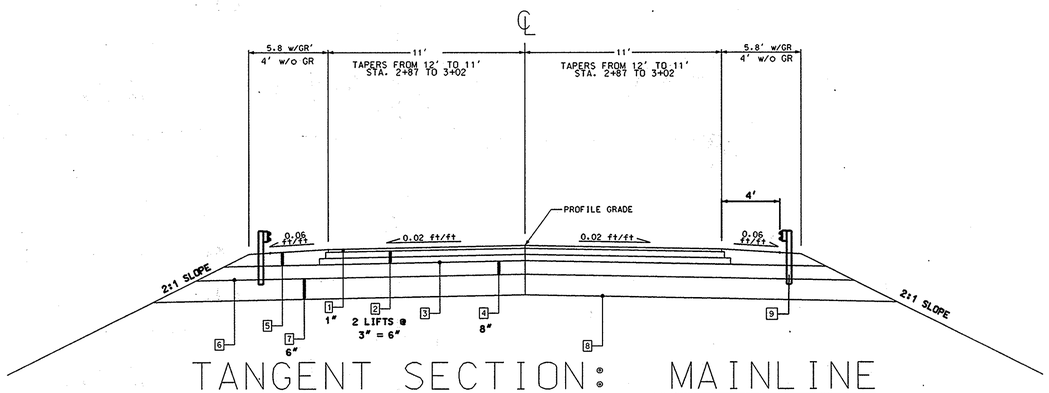
TANGENT SECTION: MAINLINE

STA. 1+10.99 TO 2+25.00



TANGENT SECTION: MAINLINE

STA. 2+25.00 TO 2+63

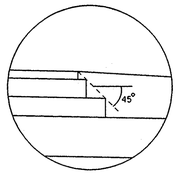


TANGENT SECTION: MAINLINE

STA. 2+87 TO 8+00.00

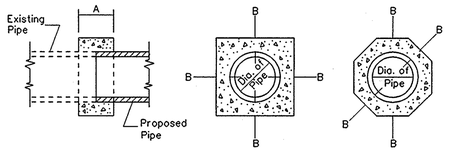
LEGEND

1. ITEM 402-01(1)SG: HMA SKID PAVEMENT, (W-1) ST OR GR, PER TN
2. ITEM 401-1(1)SG: HMA BASE COURSE, ST/GR, PER TN
3. ITEM 409-02: BITUMINOUS MATERIAL, PER GA
4. ITEM 307-01: CLASS 1 AGGREGATE BASE COURSE, PER CY
5. ITEM 308-01: CLASS 1 AGGREGATE , PER TON
6. ITEM 207-34: FABRIC FOR SEPARATION, PER SY
7. ITEM 207-02: SUBGRADE, PER CY
8. ITEM 228-01: SUBGRADE PREPERATION, SY
9. ITEM 607-01(II): TYPE 1 GUARDRAIL, PER LF



STEPPING DETAIL

CONCRETE COLLAR DETAIL



NOTES :

A and B are minumum dimensions. Forming will not be required if minimum dimensions are obtained.
Metal connecting bands may be substituted for a concrete collar to join existing and new metal pipes. The cost of metal bands are to be included in the unit bid price for the various pipes.
Concrete for constructing the collar shall be in accordance with Section 715.12 of the Specifications; however, testing will not be required.
The cost of concrete collar is to be included in the unit bid price of proposed pipe.

DIAMETER OF PIPE	A	B	CU. YD. CONC.	DIAMETER OF PIPE	A	B	CU. YD. CONC.
15"	1'-0"	0'-6"	0.18	48"	2'-0"	1'-0"	2.10
18"	1'-0"	0'-6"	0.21	54"	2'-6"	1'-0"	2.09
21"	1'-0"	0'-6"	0.24	60"	3'-0"	1'-6"	4.31
24"	1'-0"	0'-6"	0.27	72"	3'-0"	1'-6"	5.03
30"	1'-6"	0'-9"	0.75	84"	3'-0"	2'-0"	7.94
36"	1'-6"	0'-9"	0.92	96"	3'-0"	2'-0"	8.90
42"	2'-0"	1'-0"	1.84	108"	3'-0"	2'-0"	9.87

FOR INFORMATION ONLY

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

TYPICAL SECTIONS

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Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	03	X344 -33/2- 0.00		1999	ROANE	4	42

GENERAL NOTES

GOVERNING SPECIFICATIONS

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, STANDARD SPECIFICATIONS ROADS AND BRIDGES, ADOPTED 1993, AS AMENDED BY THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS, SUPPLEMENTAL SPECIFICATIONS, DATED JULY 1, 1998, AS AMENDED BY THE CONTRACT DOCUMENTS AND THE CONTRACT PLANS ARE THE GOVERNING PROVISIONS APPLICABLE TO THIS PROJECT.

FERTILIZER, SEEDING, AND MULCHING

ALL DISTURBED SOIL AREAS ARE TO BE SEEDED, MULCHED, AND FERTILIZED. SEEDING, FERTILIZER AND MULCHING WILL BE AS SPECIFIED IN SECTION 642 AND SECTION 652 OF THE STANDARD SPECIFICATIONS. NO ADDITIONAL PAYMENT WILL BE MADE FOR THIS WORK. COST OF THIS WORK WILL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 207-01, "UNCLASSIFIED EXCAVATION". TESTING WILL NOT BE REQUIRED ON THESE ITEMS WHEN PURCHASED FROM A REPUTABLE DEALER.

UTILITY STATUS

THE CONTRACTOR IS ADVISED THAT ALL KNOWN EXISTING UTILITIES ARE LOCATED ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ANY UTILITY WITHIN THE LIMITS OF THE PROJECT OF ALL WORK TO BE PERFORMED. UTILITY COMPANIES WILL NORMALLY LOCATE AND MARK THEIR EXISTING FACILITIES ON THE GROUND WITHIN THREE (3) WORKING DAYS. THE ENGINEER WILL MAKE EVERY EFFORT TO ADJUST THE PROPOSED GUARDRAIL OR OTHER INSTALLATIONS TO AVOID CONFLICTS WITH OR RELOCATIONS BY THE UTILITY.

CONSTRUCTION COORDINATION

CONTRACTOR IS ADVISED THAT OTHER CONSTRUCTION FIRMS WILL BE WORKING IN THE VICINITY OF THE PROJECT, AND WILL BE UTILIZING THE EXISTING ROAD FOR ACCESS TO THEIR WORK AREA. CONTRACTOR SHALL COORDINATE HIS CONSTRUCTION ACTIVITIES TO MINIMIZE DISRUPTION OF THE FLOW OF EQUIPMENT AND MATERIALS TO THE ADJACENT CONSTRUCTION AREA.

EARTHWORK-STA. 2+86.98 TO STA. 8+00.88

CONTRACTOR IS ADVISED THAT THE FILL WORK NECESSARY FROM STA. 2+86.98 TO STA. 8+00.88 IS TO BE PERFORMED BY OTHERS. CONTRACTOR WILL BE RESPONSIBLE FOR FINE GRADING ONLY IN THIS AREA.

DRAINAGE

ALL CULVERTS, INLETS, AND OTHER DRAINAGE ITEMS ON THIS PROJECT HAVE BEEN LOCATED AS AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING THE EXACT LOCATION AND ELEVATION OF ALL DRAINAGE ITEMS AND MAKE ANY NECESSARY ADJUSTMENTS IN THE FIELD TO INSURE PROPER DRAINAGE, AFTER REVIEW AND APPROVAL BY THE PROJECT ENGINEER.

PRESTRESSED CONCRETE BOX BEAMS

THE CONTRACTOR SHALL COORDINATE THE DELIVERY OF THE BEAMS WITH THE BEAM SUPPLIER, MARIETTA STRUCTURES, P.O. BOX 653, MARIETTA, OH, 45750, TELEPHONE * 800-633-9969.

ROADWAY CR 33/2

ALTERNATE ITEM CODE	ITEM NO.	ITEM DESCRIPTION	APPROXIAMATE QUANTITY	UNITS
	201-01	CLEARING AND GRUBBING	1	LS
	204-01	MOBILIZATION	1	LS
	207-01	UNCLASSIFIED EXCAVATION	485	CY
	207-02	SUBGRADE	471	CY
	207-34	FABRIC FOR SEPARATION	2825	SY
	228-01	SUBGRADE PREPARATION	2022	CY
	307-01	CLASS 1 AGGREGATE BASE COURSE	618	CY
	308-01	CLASS 1 AGGREGATE	259	TN
	409-02	BIT MTL	826	GAL
	605-15	ADJ EXISTING MANHOLE	4	EA
	607-01(II)	TYPE 1 GUARDRAIL	190	LF
	636-11	TRAFFIC CONTROL DEVICES	5935	UN
	636-14	FLAGGER	500	HR
	636-17	TEMPORARY CONCRETE BARRIER	150	LF
	636-18	REMOVE AND RESET TEMP CONC BARRIER	150	LF
	636-25(B)	WARNING LIGHTS	400	DA
	638-02	RIGHT OF WAY MARKERS	18	EA
	639-01	CONSTRUCTION LAYOUT STAKES	1	LS
	642-13	TEMPORARY POLLUTION CONTROL	1	LS
AA1	401-01(1)SG	HMA BASE COURSE, ST/GR	625	TON
AA2	401-01(1)S	HMA BASE COURSE, SLAG	568	TON
BB1	402-01(1)SG	HMA SKID PVT. (W-1) ST OR GR	107	TON
BB2	402-01(1)S	HMA SKID PAVEMENT, (W-1) SLAG	97	TON

ROADWAY US 33

ALTERNATE ITEM CODE	ITEM NO.	ITEM DESCRIPTION	APPROXIAMATE QUANTITY	UNITS
	207-01	UNCLASSIFIED EXCAVATION	819	CY
	207-02	SUBGRADE	301	CY
	207-34	FABRIC FOR SEPARATION	1800	SY
	307-01	CLASS 1 AGGREGATE BASE COURSE	390	CY
	308-01	CLASS 1 AGGREGATE	215	T
	408-02	BIT MTL	462	GAL
	409-02	BIT MTL	527	GAL
	415-01	REM BIT CONC SURF	1843	SY
	604-01(15)A2	MET CTD CORR PIPE	11	LF
	605-09	TYPE G INLET	1	EA
	607-01(II)	TYPE 1 GUARDRAIL	467	LF
	610-01(1)	PLAIN CONC CURB	102	LF
AA1	401-01(1)SG	HMA BASE COURSE, ST/GR	528	TON
AA2	401-01(1)S	HMA BASE COURSE, SLAG	480	TON
BB1	402-01(1)SG	HMA SKID PVT. (W-1) ST OR GR	166	TON
BB2	402-01(1)S	HMA SKID PAVEMENT, (W-1) SLAG	151	TON

PAVEMENT MARKINGS

ALTERNATE ITEM CODE	ITEM NO.	ITEM DESCRIPTION	APPROXIAMATE QUANTITY	UNITS
	663-01-1(II)W	EDGE LINE, WHITE	1800	LF
	663-02-1(II)W	LANE LINE, WHITE	100	LF
	663-03-1(II)Y	BARRIER LINE	1200	LF
	663-04(V)	TYPE V, CHANNELIZING LINE (8")	230	LF
	663-05 (V)	TYPE, STOP LINE (24")	120	LF
	663-07 (V) Y	TYPE V, STRIPES, YELLOW (12")	100	LF
	663-11 (V)	TYPE V, LANE LETTERS	9	EA

BRIDGE

ALTERNATE ITEM CODE	ITEM NO.	ITEM DESCRIPTION	APPROXIAMATE QUANTITY	UNITS
	203-01	DISMANTLING STRUCTURE	1	LS
	601-02	CLASS "B" CONCRETE	5.2	CY
	602-01	REINFORCING STEEL BARS	292	LB
	603-05	INSTALLATION OF DOH FURNISHED PS CONC BEAMS	1	LS
	615-03	FABRICATED STRUCTURAL STEEL	1	LS

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GENERAL NOTES & ESTIMATE OF QUANTITIES

ROADWAY DESIGN DIVISION

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	03	X344 -33/2- 0.00		1999	ROANE	5	42

PAVING QUANTITIES

LOCATION STATION	LOCATION STATION	LENGTH	ITEM 402-01(1) PRIN. STONE OR GRAVEL TON	ITEM 402-01(1) ALT. SLAG TON	ITEM 401-01(1) PRIN. STONE OR GRAVEL TON	ITEM 401-01(1) ALT. SLAG TON	ITEM 308-01 TON	ITEM 207-02 CY	ITEM 409-02 GAL.	ITEM 408-02 GAL.	ITEM 307-01 C.Y.	ITEM 207-34 FABRIC FOR SEPARATION S.Y.	ITEM 415-01 S.Y.	ITEM 228-01 S.Y.	REMARKS
U.S. RTE 33.															
52+55.00	55+20.00	265.00	76	69	251	228	60	130	253	205	167	776	817	0	
55+20.00	59+60.97	440.97	90	82	278	253	155	171	274	257	223	1024	1026	0	
NEW C.R 33/2															
1+10.99	2+63.03	152.04	32	44	193	175	57	134	260	0	174	803	0	0	
2+63.03	2+86.95	23.92	5	6	10	9	0	0	0	0	0	0	0	0	
2+86.95	8+00.88	513.93	70	95	421	383	202	337	566	0	444	2022	0	2022	
	TOTAL	1395.86	273	248	1153	1048	474	772	1353	462	1008	4625	1843	2022	

CLEARING & GRUBBING

LOCATION STATION	LOCATION STATION	AREA S.F.	AREA ACRES	REMARKS
U.S.RTE. 33				
52+55.00	55+20.00	8570	0.20	
55+20.00	59+60.97	10847	0.25	
NEW C.R.RTE. 33/2				
1+10.99	2+63.03	6489	3	
2+63.03	2+86.95	0	0	
2+86.95	8+00.88	22238	0.51	
	TOTAL	48144	1.11	

PIPE CULVERTS

LOCATION STATION	LOCATION STATION	SKEW	CORRUGATED METAL PIPE 15"	"	"	THICK.	REINFORCED CONCRETE PIPE "	"	"	CLASS	INLET LEFT NUMBER	INLET LEFT TYPE	REMARKS
56+37.06	56+48.01		11 ft.			0.064"							EXTEND EXISTING PIPE
56+50.00											1	G.	

* NOTE: FOR INFORMATION ONLY

SEEDING & MULCHING *

LOCATION STATION	LOCATION STATION	AREA S.F.	AREA ACRES	REMARKS
U.S. RTE. 33				
52+55.00	55+20.00	3290	0.075	
55+20.00	59+60.97	1850	0.042	
NEW C.R. RTE. 33/2				
1+10.99	2+63.03	184	0.004	
2+63.03	2+86.95	0	0	
2+86.95	8+00.88	1239	0.028	
	TOTAL	6563	0.15	

GUARDRAIL

LOCATION STATION	LOCATION STATION	ITEM 607-01 LENGTH LEFT	ITEM 607-01 LENGTH RIGHT	ITEM 607-01 CLASS	ITEM 607-29 B.C.T.	ITEM 607-30 S.T.E.T.	ITEM 607-25 C.S.T. A	ITEM 607-25 C.S.T. B	REMARKS
U.S.RTE. 33									
52+91.00	1+89.64		250'	II					1 BUFFER END
1+83.60	57+16.50		217'	II					2 BUFFER ENDS
NEW C.R. 33/2									
2+28.03	3+20.82		95'	II					
2+30.67	3+16.79	95'		II					2 BUFFER ENDS
TOTAL		95'	562'						

RIGHT OF WAY MARKERS

STATION	OFFSET LEFT	OFFSET RIGHT	REMARKS
1+56.52		33.37'	
1+70.68		57.18'	
1+77.36		23.51'	
1+89.79		35.02'	
3+07.84		35.93'	
4+90.00		20.00'	
8+00.88	19.22'		
1+46.23	55.43'		
1+57.77	45.69'		
2+31.80	41.51'		
8+00.88		20.00'	
56+76.88		52.80'	
58+36.57		30.00'	
3+00.00	25.00'		
3+31.00	20.00'		
6+45.43	17.21'		
6+92.44	16.77'		
7+62.89	19.09'		
	TOTAL	18	

PLAIN CONCRETE CURBING

LOCATION STATION	LOCATION STATION	LENGTH LEFT	LENGTH RIGHT	TYPE	REMARKS
54+93.00	55+88.20	102'		1	

GRADING SUMMARY

LOCATION STATION	LOCATION STATION	TOTAL UNCLASS. EXCAV. ITEM 207-01 C.Y.	UNSUIT. EXCAV. C.Y.	USABLE EXCAV. C.Y.	SHRINK OR SWELL C.Y.	ADJUST. EXCAV. C.Y.	UNCLASS. EMBANK. C.Y.	SELECT EMBANK. C.Y.	TOTAL EMBANK. C.Y.	EXCESS(+) OR BORROW(-) C.Y.	REMARKS
U.S.RTE.33											
52+55.00	55+20.00	336	0	336	0	336	426	0	426	-124	
55+20.00	59+60.97	483	0	483	0	483	120	0	120	+363	
NEW C.R. 33/2											
1+10.99	2+63.03	380	0	380	0	380	3	0	3	+377	
2+63.03	2+86.95	0	0	0	0	0	0	0	0	0	
2+86.95	8+00.88	105	0	105	0	105	5	0	5	+100	
	TOTAL	1304	0	1304		1304	554	0	554	+750	

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

QUANTITY TABLES

ROADWAY DESIGN DIVISION

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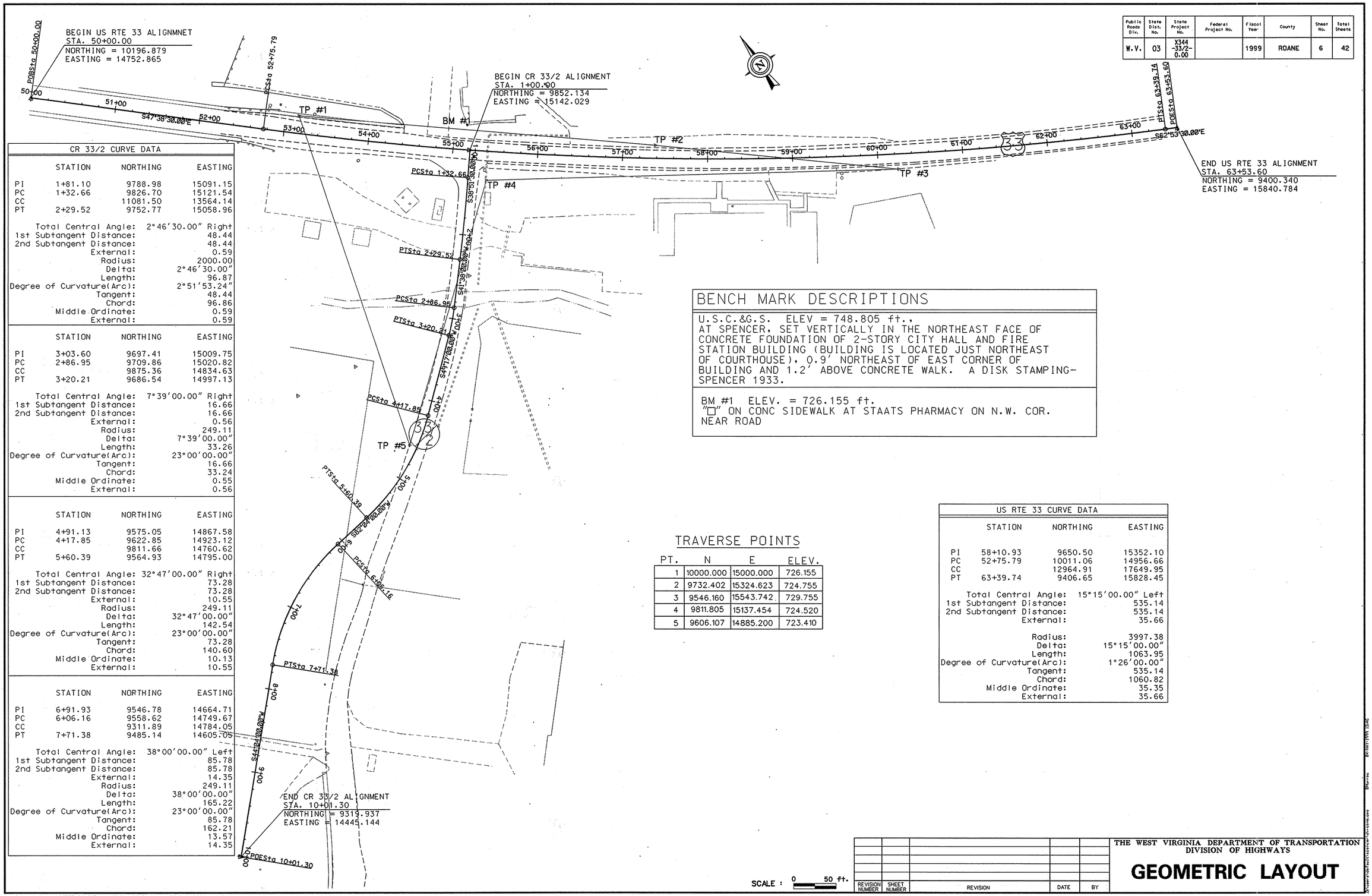
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	03	X344 -33/2- 0.00		1999	ROANE	6	42



CR 33/2 CURVE DATA

	STATION	NORTHING	EASTING
PI	1+81.10	9788.98	15091.15
PC	1+32.66	9826.70	15121.54
CC		11081.50	13564.14
PT	2+29.52	9752.77	15058.96

Total Central Angle:	2°46'30.00" Right
1st Subtangent Distance:	48.44
2nd Subtangent Distance:	48.44
External:	0.59
Radius:	2000.00
Delta:	2°46'30.00"
Length:	96.87
Degree of Curvature(Arc):	2°51'53.24"
Tangent:	48.44
Chord:	96.86
Middle Ordinate:	0.59
External:	0.59

	STATION	NORTHING	EASTING
PI	3+03.60	9697.41	15009.75
PC	2+86.95	9709.86	15020.82
CC		9875.36	14834.63
PT	3+20.21	9686.54	14997.13

Total Central Angle:	7°39'00.00" Right
1st Subtangent Distance:	16.66
2nd Subtangent Distance:	16.66
External:	0.56
Radius:	249.11
Delta:	7°39'00.00"
Length:	33.26
Degree of Curvature(Arc):	23°00'00.00"
Tangent:	16.66
Chord:	33.24
Middle Ordinate:	0.55
External:	0.56

	STATION	NORTHING	EASTING
PI	4+91.13	9575.05	14867.58
PC	4+17.85	9622.85	14923.12
CC		9811.66	14760.62
PT	5+60.39	9564.93	14795.00

Total Central Angle:	32°47'00.00" Right
1st Subtangent Distance:	73.28
2nd Subtangent Distance:	73.28
External:	10.55
Radius:	249.11
Delta:	32°47'00.00"
Length:	142.54
Degree of Curvature(Arc):	23°00'00.00"
Tangent:	73.28
Chord:	140.60
Middle Ordinate:	10.13
External:	10.55

	STATION	NORTHING	EASTING
PI	6+91.93	9546.78	14664.71
PC	6+06.16	9558.62	14749.67
CC		9311.89	14784.05
PT	7+71.38	9485.14	14605.05

Total Central Angle:	38°00'00.00" Left
1st Subtangent Distance:	85.78
2nd Subtangent Distance:	85.78
External:	14.35
Radius:	249.11
Delta:	38°00'00.00"
Length:	165.22
Degree of Curvature(Arc):	23°00'00.00"
Tangent:	85.78
Chord:	162.21
Middle Ordinate:	13.57
External:	14.35

BENCH MARK DESCRIPTIONS

U.S.C.&G.S. ELEV = 748.805 ft.,
AT SPENCER, SET VERTICALLY IN THE NORTHEAST FACE OF CONCRETE FOUNDATION OF 2-STORY CITY HALL AND FIRE STATION BUILDING (BUILDING IS LOCATED JUST NORTHEAST OF COURTHOUSE), 0.9' NORTHEAST OF EAST CORNER OF BUILDING AND 1.2' ABOVE CONCRETE WALK. A DISK STAMPING-SPENCER 1933.

BM #1 ELEV. = 726.155 ft.
"□" ON CONC SIDEWALK AT STAATS PHARMACY ON N.W. COR. NEAR ROAD

TRAVERSE POINTS

PT.	N	E	ELEV.
1	10000.000	15000.000	726.155
2	9732.402	15324.623	724.755
3	9546.160	15543.742	729.755
4	9811.805	15137.454	724.520
5	9606.107	14885.200	723.410

US RTE 33 CURVE DATA

	STATION	NORTHING	EASTING
PI	58+10.93	9650.50	15352.10
PC	52+75.79	10011.06	14956.66
CC		12964.91	17649.95
PT	63+39.74	9406.65	15828.45

Total Central Angle:	15°15'00.00" Left
1st Subtangent Distance:	535.14
2nd Subtangent Distance:	535.14
External:	35.66
Radius:	3997.38
Delta:	15°15'00.00"
Length:	1063.95
Degree of Curvature(Arc):	1°26'00.00"
Tangent:	535.14
Chord:	1060.82
Middle Ordinate:	35.35
External:	35.66

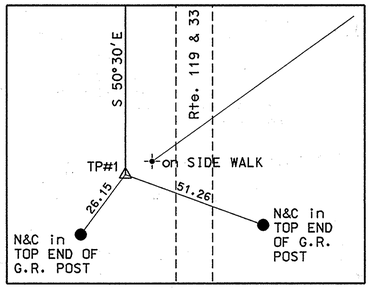
SCALE : 0 50 ft.

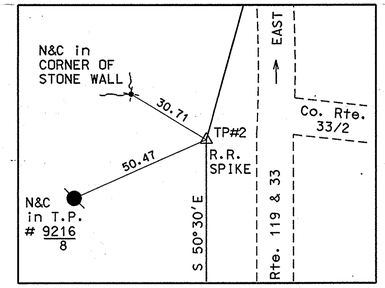
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

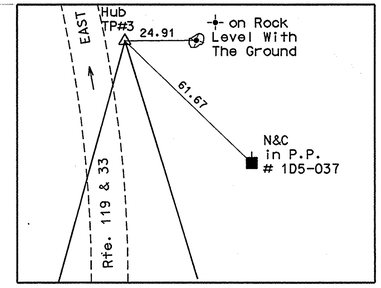
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

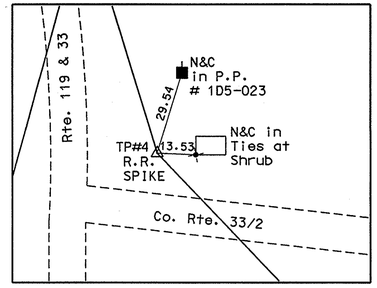
GEOMETRIC LAYOUT

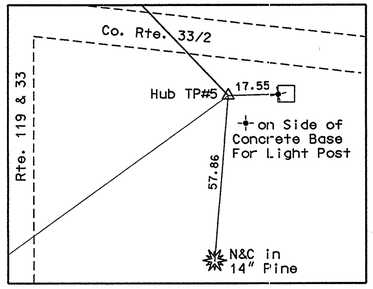
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	03	X344 -33/2- 0.00		1999	ROANE	7	42



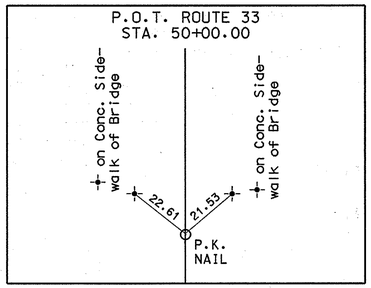


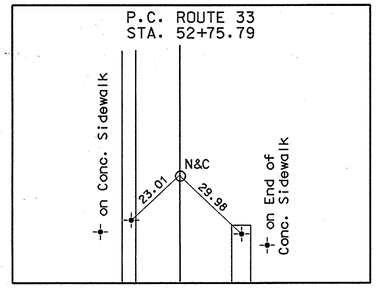


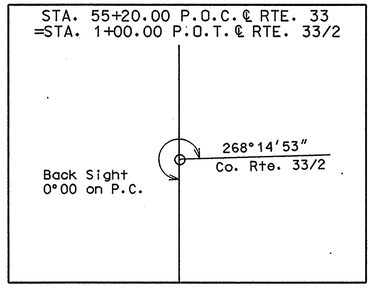


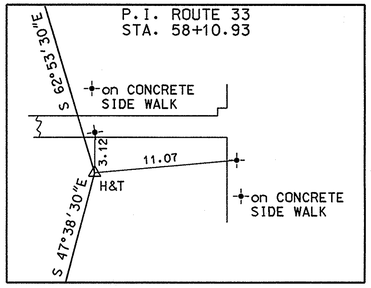


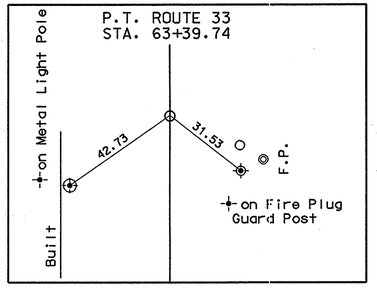
REFERENCES ON TRAVERSE POINTS



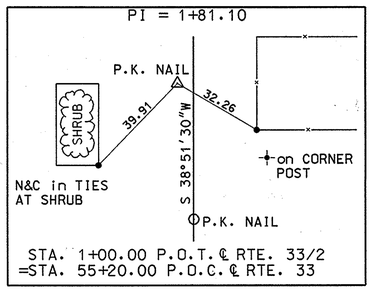


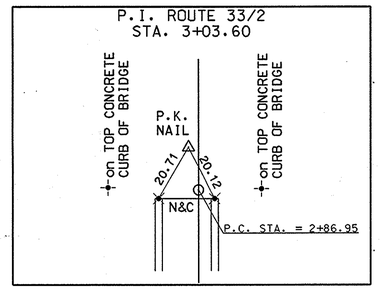


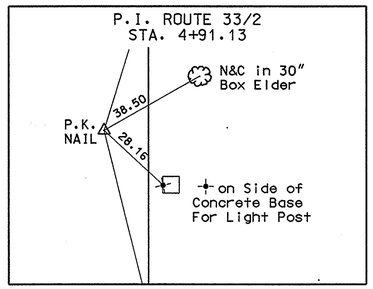


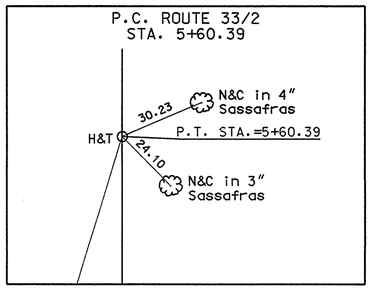


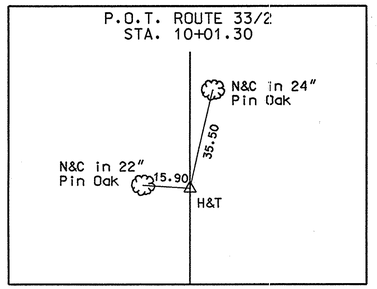
℄ ON U.S. ROUTE 33











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REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

REFERENCE POINTS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	03	X344 -33/2- 0.00		1999	ROANE	8	42

MAINTENANCE OF TRAFFIC SUMMARY

ITEM NO.	DESCRIPTION	QUANTITY UNIT	QUANTITY TOTAL
636-02S	Aggregate for Maintaining Traffic. Slag	Ton	
636-02SG	Aggregate for Maintaining Traffic. Stone or Gravel	Ton	
636-03	Bituminous Material for Dust Palliative	Gal.	
636-04	Calcium Chloride for Dust Palliative	Ton	
636-05	Temporary Structures for Maintaining Traffic	L.S.	
636-06	Pilot Truck and Driver	Day	
636-07	Eradication of Pavement Markings	L.F.	
636-08	Temporary Pavement Markings - Paint	L.F.	
636-09	Temporary Pavement Markings - Tape Type	L.F.	
636-10	Temporary Raised Pavement Markers - Type	Each	
636-11	Traffic Control Devices	Unit	5935
636-12	Cleaning of Project Traffic Control Devices	Each	
636-13	Cleaning of Individual Traffic Control Devices	Each	
636-14	Flagger	Hr.	500
636-15	Temporary Guardrail Channelization Device	L.F.	
636-16	Remove and Reset Temp. Guardrail Channelization Device	L.F.	
636-17	Temporary Concrete Barrier	L.F.	150
636-17-1	DOH Furnished Temporary Concrete Barrier	L.F.	
636-18	Remove and Reset Temporary Concrete Barrier	L.F.	150
636-18-1	Remove and Reset DOH Furnished Temp. Concrete Barrier	L.F.	
636-19	Temporary Guardrail Barrier	L.F.	
636-20	Remove and Reset Temporary Guardrail Barrier	L.F.	
636-21	Electric Arrow	Day	
636-22	Changeable Message Sign	Day	
636-23(01)	Temporary Traffic Signal	L.S.	
636-24	Temporary Pipe for Maintaining Traffic	L.F.	
636-25(A)	Warning Lights	Day	
636-25(B)	Warning Lights	Day	400
636-25(C)	Warning Lights	Day	
636-26( )	Temporary Lighting	L.S.	
636-28	Shadow Vehicle	Day	

TRAFFIC CONTROL DEVICE QUANTITIES

DEVICE	DESCRIPTION	VALUE IN UNITS	QUANTITY	TOTAL UNITS
*1	SIGNS ON PORTABLE MOUNTS AND BARRICADES. (Total Sign Area 16 S.F. or Greater.)	170	4	680
*2	SIGNS ON PORTABLE MOUNTS AND BARRICADES. (Total Sign Area Less Than 16 S.F.)	80		
*3	SIGNS ON PERMANENT POSTS. (Total Sign Area 16 S.F. or Greater.)	180	8	1440
*4	SIGNS ON PERMANENT POSTS. (Total Sign Area Less Than 16 S.F.)	90	2	180
**5	BARRICADES - Type I	35		
**6	BARRICADES - Type II	60		
**7	BARRICADES - Type III	90	4	360
**8	DRUMS	60	40	2400
9	CONES	5	20	100
10	VERTICAL PANELS OR GROUND MOUNTED DELINEATORS.	10		
11	BARRIERS OR GUARDRAIL MOUNTED DELINEATORS. (To Be Bid Incidental To The Cost of The Barrier or Guardrail.)	0		
12	TEMPORARY OVERLAYS AND TEMPORARY OVERSIZE SIGNS			
	SUBTOTAL			5160
	15% OF SUBTOTAL (TO BE USED AT THE DIRECTION OF THE ENGINEER.)			775
	TOTAL			5935

* - ORANGE SIGN SHEETING TO BE REFLECTIVE FLOURESCENT ORANGE, TYPE V

** - BARRICADES AND DRUM SHEETING TO BE 6" FLEXIBLE HIGH INTENSITY, TYPE IV

MAINTENANCE OF TRAFFIC NOTES

1. Maintenance of Traffic shall be in accordance with Section 636 of the West Virginia Department of Transportation, Division of Highways, Standard Specifications, Roads and Bridges, adopted 1993, as amended by the West Virginia Department of Transportation, Division of Highways, Supplemental Specifications, dated July 1, 1998, the Contract Documents and the Contract Plans are the governing provisions applicable to this project, and the manual, Traffic Control Devices for Street and Highway Construction and Maintenance Operations, November 1994, which is made a part of this contract and the traffic plan for individual segments as described below:

2. The quantities of traffic control devices have been increased by 15 percent for use as directed by the Engineer when unanticipated changes in the traffic control plan occur.

3. Reflective sheeting on temporary traffic control devices shall be of new condition at beginning of the project life. Night visibility and legibility shall be maintained.

4. Access to all houses and businesses shall be maintained at all times.

5. All temporary concrete barrier shall have Type B-1 delineators (white or yellow as appropriate) facing traffic at 20 foot centers.

SEQUENCE OF CONSTRUCTION

1. Install Case A9 on US33 and a "ROAD WORK AHEAD" sign on CR 33/2. Perform widening work along US 33.

2. Construct CR 33/2 lane at a time, lift at a time, leaving enough room for motorists to stop/yield to each other without backing traffic onto US 33.

3. Install temporary concrete barrier for bridge widening work and flare away at approximately 8:1. Also, protect end of temporary concrete barrier with drums.

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

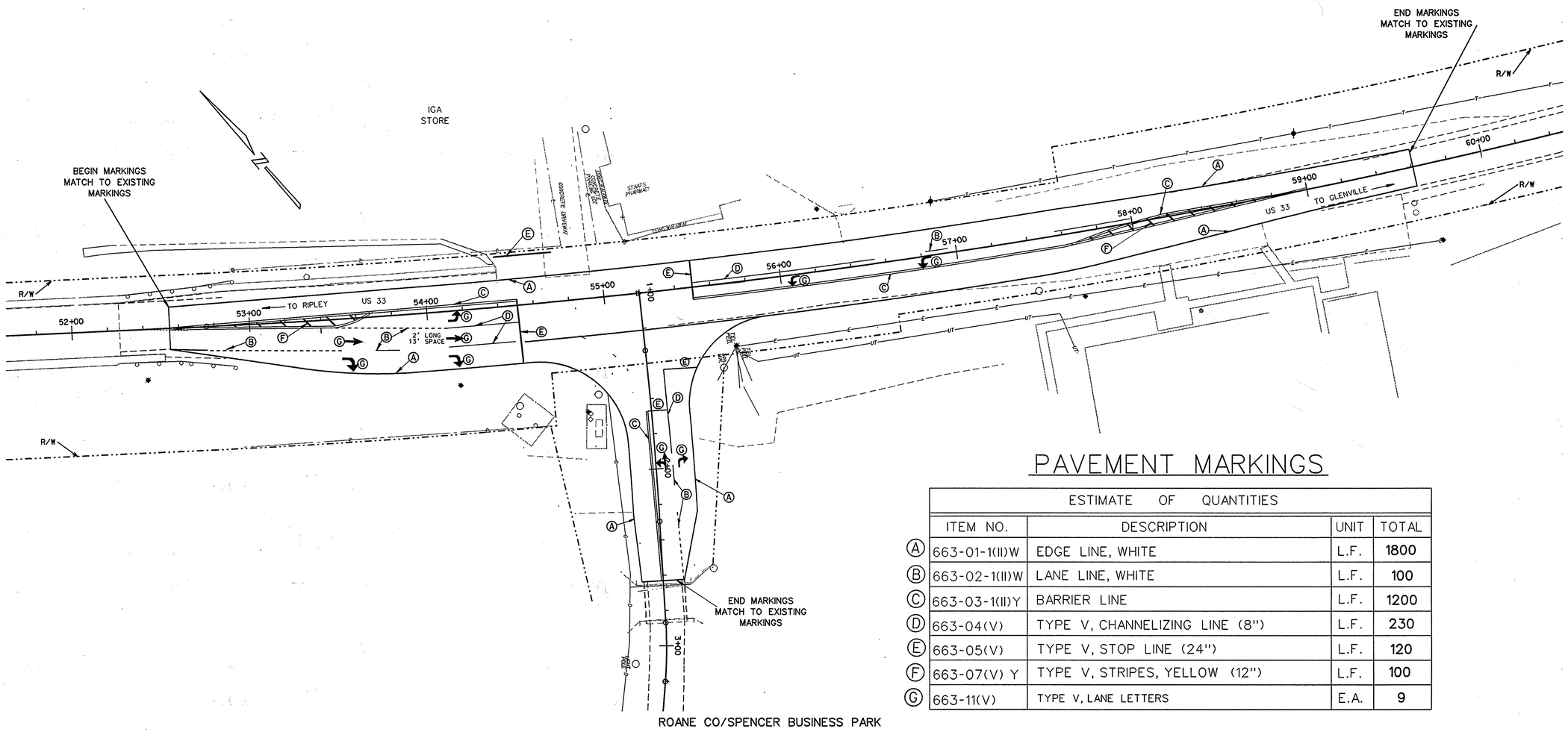
MAINTENANCE OF TRAFFIC

PUBLIC ROADS DIV.	STATE DIST. NO.	STATE PROJECT NO.	FEDERAL PROJECT NO.	FISCAL YEAR	COUNTY	SHEET NO.	TOTAL SHEETS
W.V.	3	X344 -33/2-0.00	———	1999	ROANE	9	42

NOTES

1. CONTRACTOR SHALL INSTALL PAVEMENT MARKINGS AS SHOWN ON THIS SHEET. ALSO SEE TEM 2, & 3 .

* * – THE CONTRACTOR SHALL SUPPLY AND INSTALL TYPE V "STOP LINE" PAVEMENT MARKINGS (A TOTAL OF 120 L.F. AS SHOWN ON THIS SHEET). THESE LINES SHALL BE 24" WIDE AND BID AS SUCH. THEY MAY BE INSTALLED AS TWO 12" WIDE LINES OR ONE 24" WIDE LINE. A PRIMER SHALL BE APPLIED PRIOR TO INSTALLATION AS DESCRIBED IN SPECIFICATION 715.40.2.



PAVEMENT MARKINGS

ESTIMATE OF QUANTITIES

	ITEM NO.	DESCRIPTION	UNIT	TOTAL
A	663-01-1(II)W	EDGE LINE, WHITE	L.F.	1800
B	663-02-1(II)W	LANE LINE, WHITE	L.F.	100
C	663-03-1(II)Y	BARRIER LINE	L.F.	1200
D	663-04(V)	TYPE V, CHANNELIZING LINE (8")	L.F.	230
E	663-05(V)	TYPE V, STOP LINE (24")	L.F.	120
F	663-07(V) Y	TYPE V, STRIPES, YELLOW (12")	L.F.	100
G	663-11(V)	TYPE V, LANE LETTERS	E.A.	9

SCALE : 0 30 '

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

PAVEMENT MARKINGS
US 33 AT ROANE CO./ SPENCER BUSINESS PARK
SPENCER, ROANE CO.

D:\users\default\spencer\dtroane.mrk BMurray 04-MAY-1999 13:46 TRAFFIC ENGINEERING DIVISION

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	03	X344 -33/2- 0.00		1999	ROANE	10	42

CURVE #1

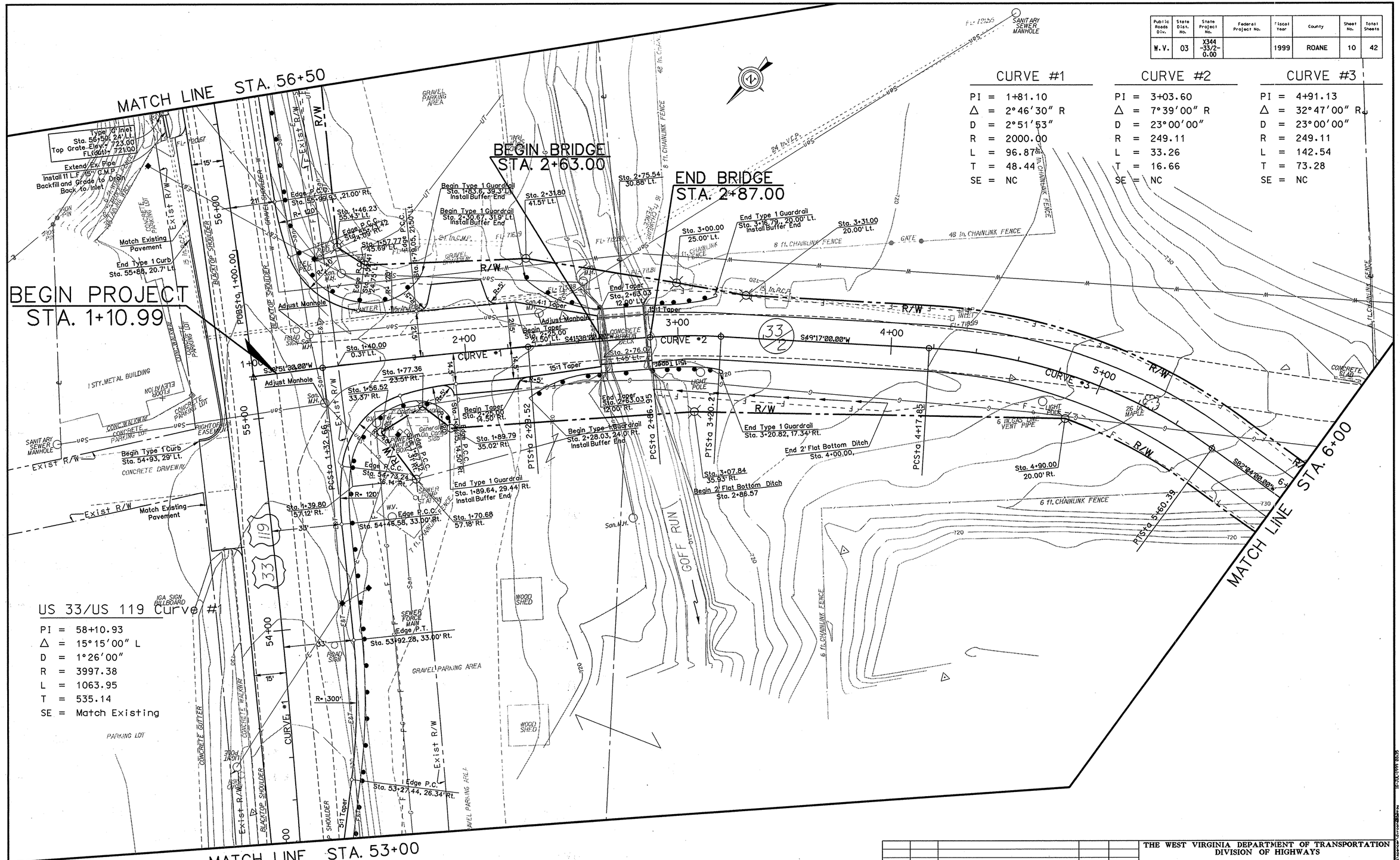
PI = 1+81.10
Δ = 2°46'30" R
D = 2°51'53"
R = 2000.00
L = 96.87
T = 48.44
SE = NC

CURVE #2

PI = 3+03.60
Δ = 7°39'00" R
D = 23°00'00"
R = 249.11
L = 33.26
T = 16.66
SE = NC

CURVE #3

PI = 4+91.13
Δ = 32°47'00" R
D = 23°00'00"
R = 249.11
L = 142.54
T = 73.28
SE = NC

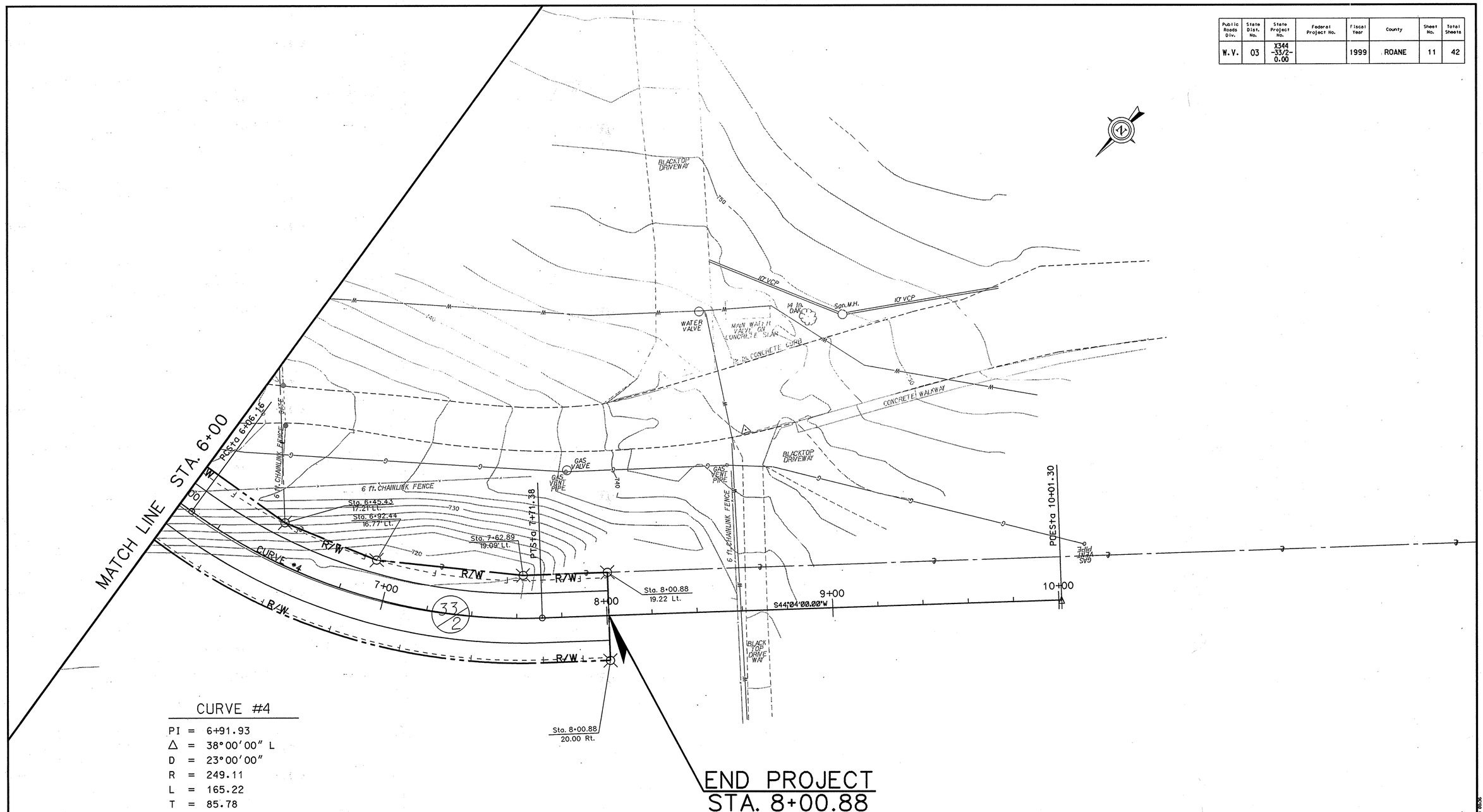


REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLAN SHEET

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	03	X344 -33/2- 0.00		1999	ROANE	11	42



CURVE #4

PI = 6+91.93
Δ = 38°00'00" L
D = 23°00'00"
R = 249.11
L = 165.22
T = 85.78
SE = NC

END PROJECT
STA. 8+00.88

SCALE : 0 20 ft.

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

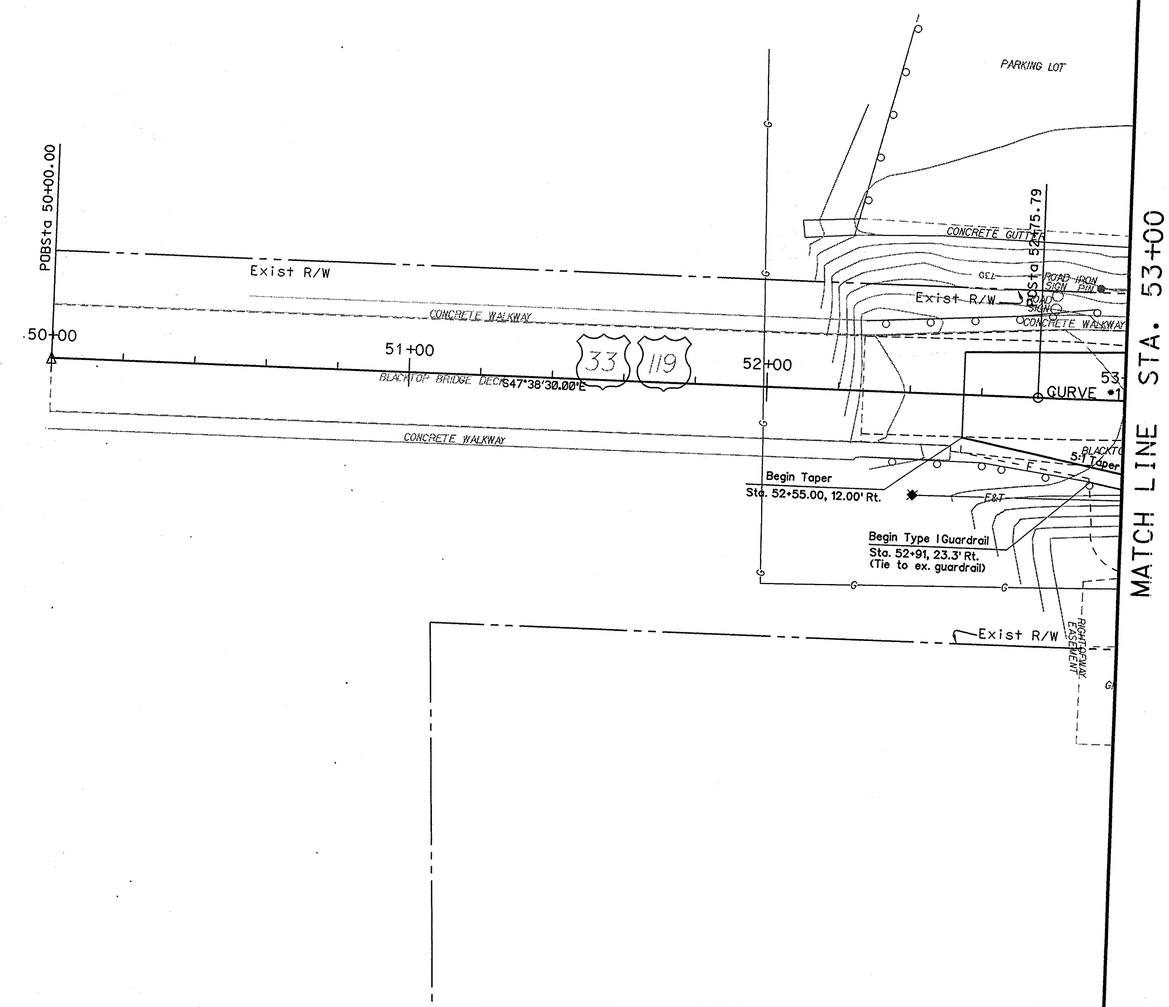
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLAN SHEET

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	03	X344 -33/2- 0.00		1999	ROANE	12	42

US 33/US 119 Curve #1

PI = 58+10.93
Δ = 15°15'00" L
D = 1°26'00"
R = 3997.38
L = 1063.95
T = 535.14
SE = Match Existing



SCALE : 0 20 ft.

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

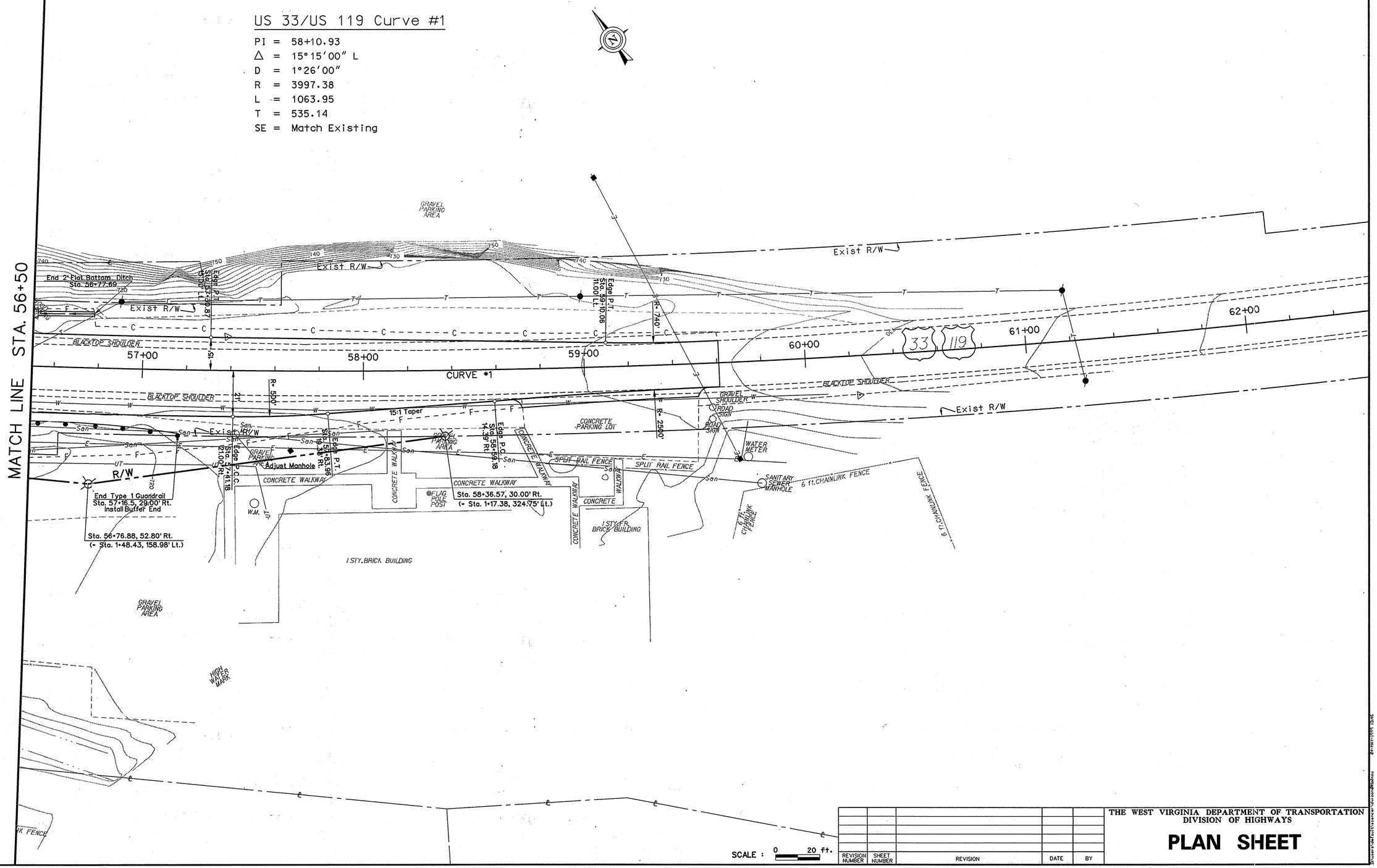
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLAN SHEET

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	03	X344 -33/2- 0.00		1999	ROANE	13	42

US 33/US 119 Curve #1

PI = 58+10.93
△ = 15°15'00" L
D = 1°26'00"
R = 3997.38
L = 1063.95
T = 535.14
SE = Match Existing



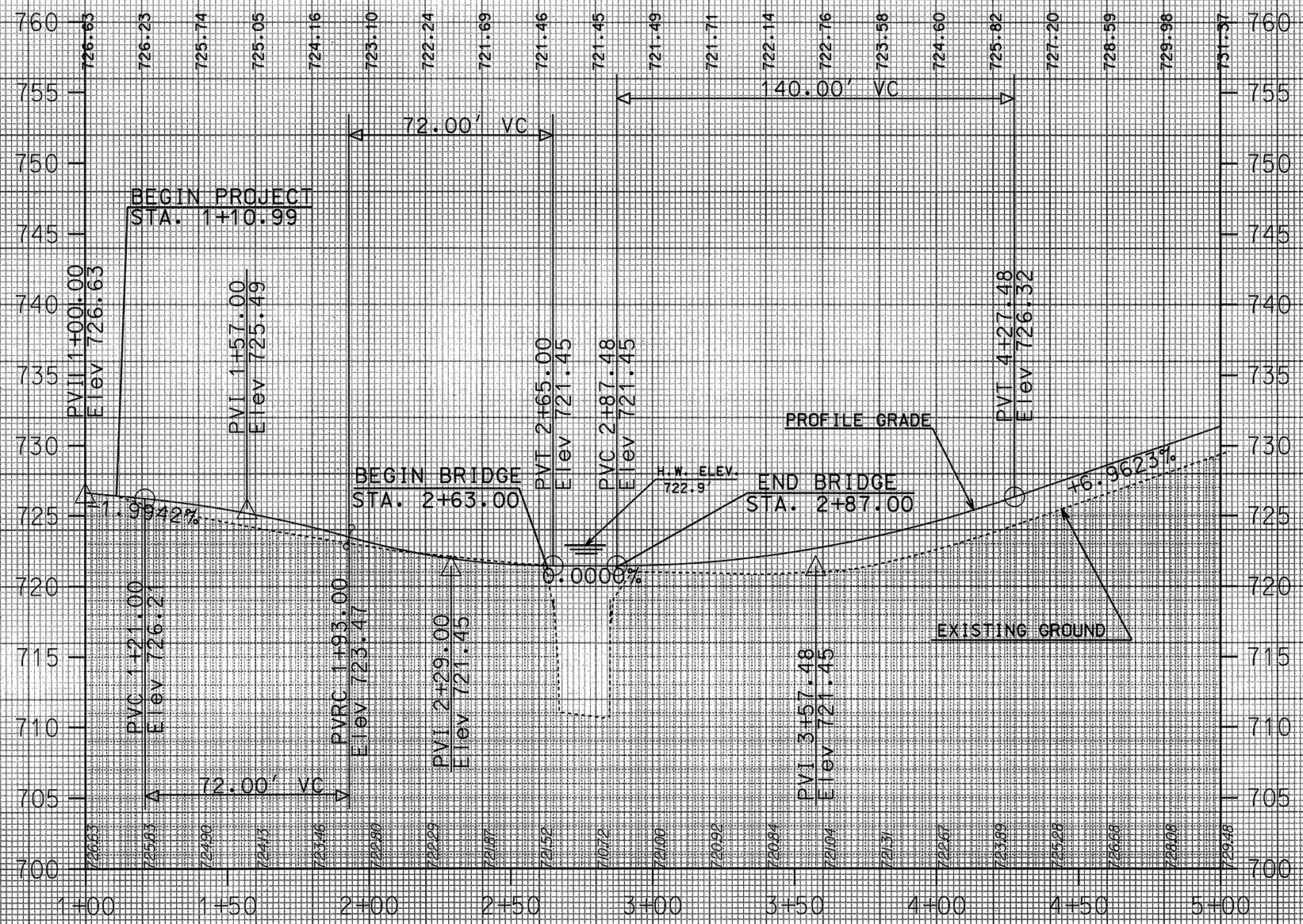
SCALE : 0 20 ft.

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLAN SHEET

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	03	X344 -33/2- 0.00		1999	ROANE	14	42



SCALES

4 ft.

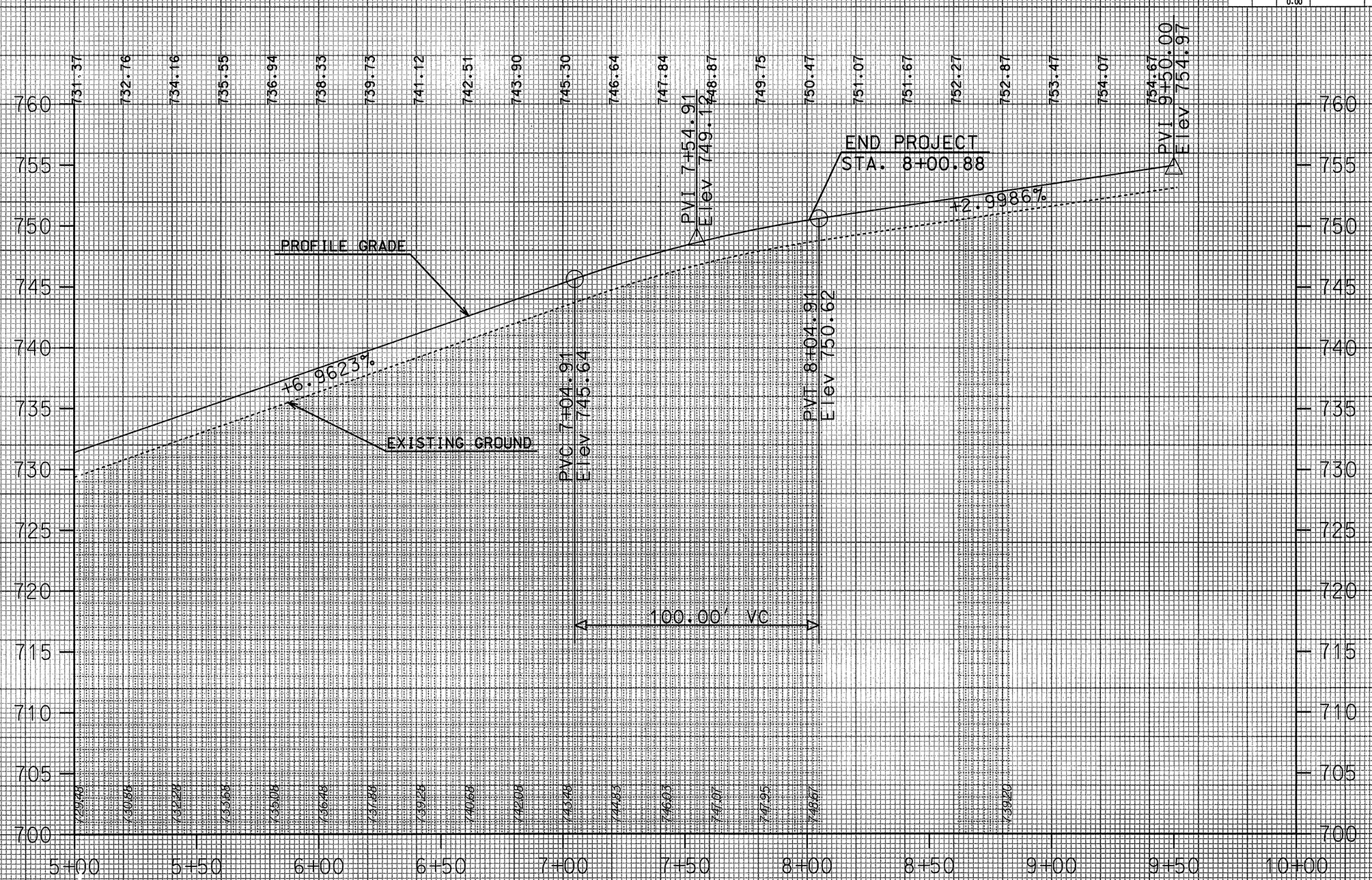
0 20 ft.

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROFILE SHEET

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	03	X344 -33/2- 0.00		1999	ROANE	15	42



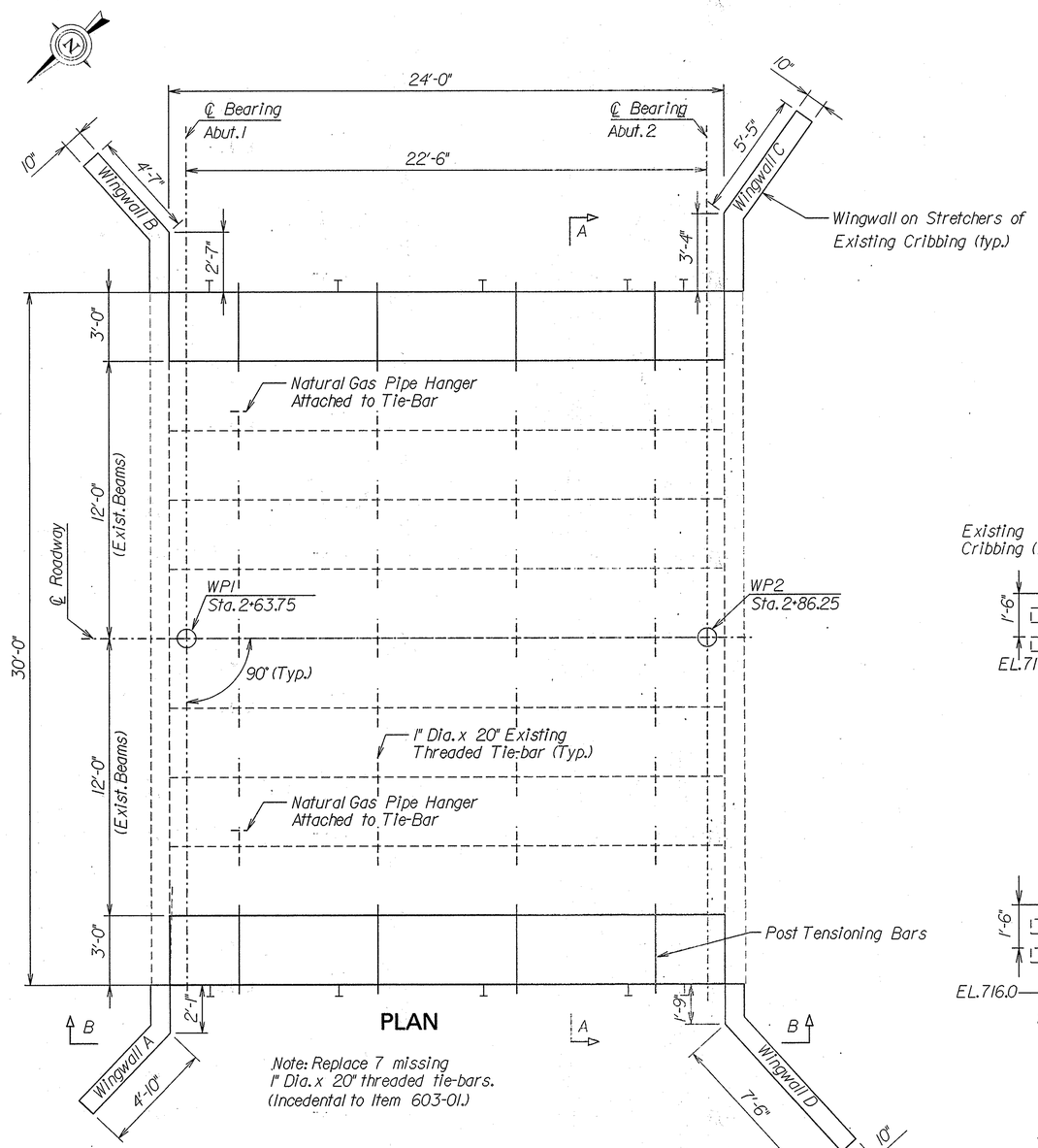
SCALES
4 ft.
0
20 ft.
0

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

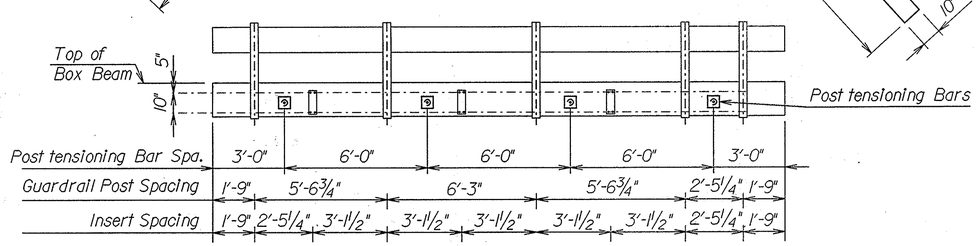
PROFILE SHEET

PROJECT NUMBERS STATE	PROJECT NUMBERS FEDERAL	DISTRICT	COUNTY	SHEET NO.	TOTAL
X344-332-0.00		3	ROANE	16	42

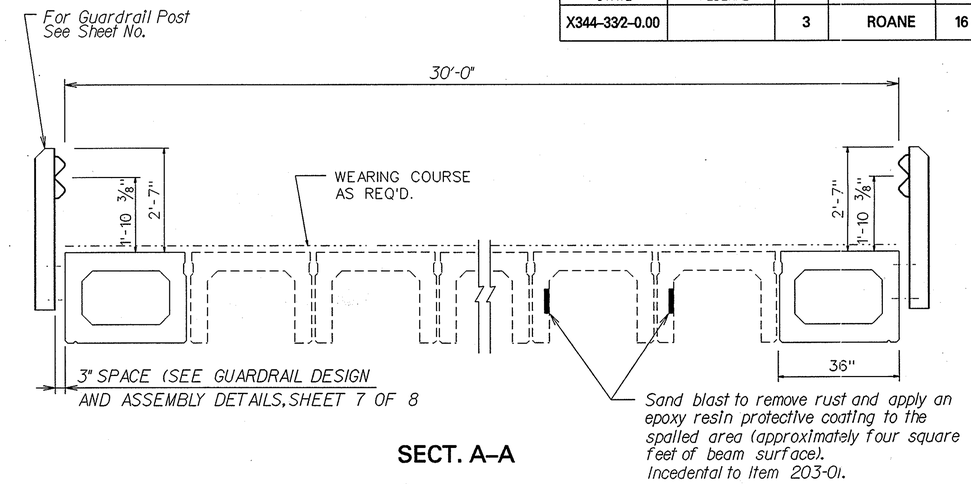


PLAN

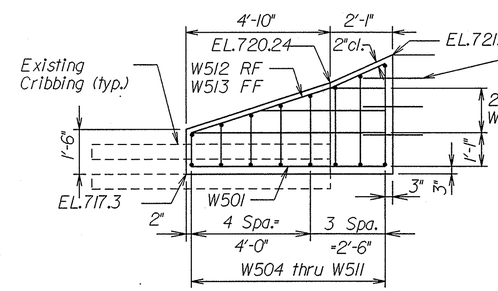
Note: Replace 7 missing 1" Dia. x 20" threaded tie-bars. (Incedental to Item 603-01.)



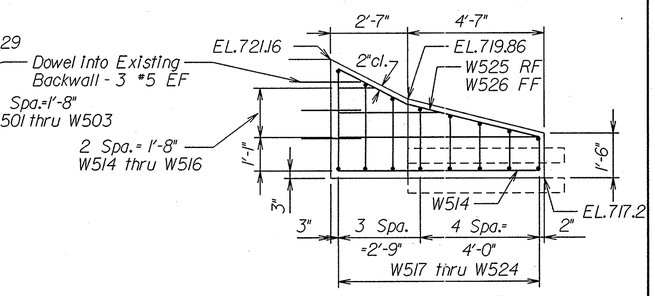
VIEW B–B



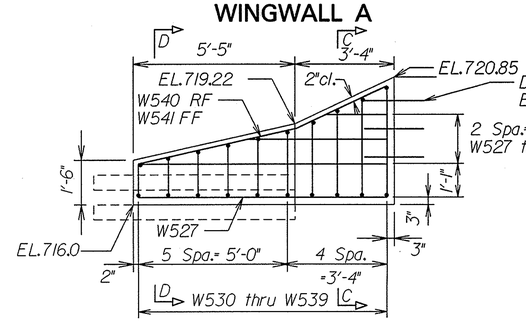
SECT. A–A



WINGWALL A



WINGWALL B



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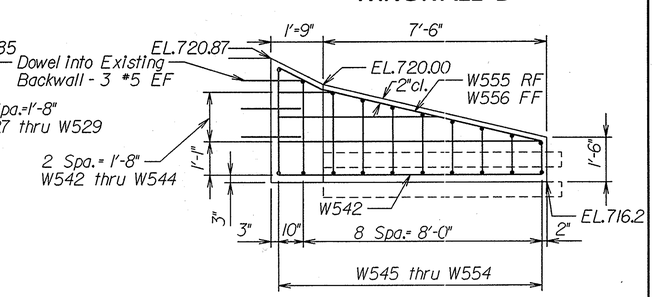
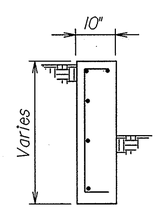
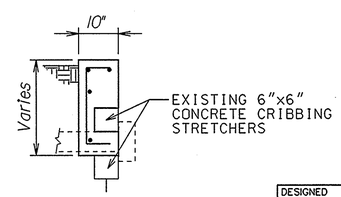


WINGWALL D



SECT. C–C



SECT. D–D

NO.	REVISION	DATE:	BY:

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W. VA. DEPARTMENT OF HIGHWAYS
ENGINEERING DIVISION

ROANE CO./SPENCER
BUS. PK. BRIDGE
COUNTY ROUTE 33/2
over GOFF RUN
ROANE COUNTY

DESIGNED	DATE
DRAWN JKB	4-99
CHECKED	
REVIEWED	

LAYOUT & WINGWALLS

SHEET 1 OF 8

BRIDGE NO. 4842

PROJECT NUMBERS STATE	PROJECT NUMBERS FEDERAL	DISTRICT	COUNTY	SHEET NO.	TOTAL
X344-332-0.00		3	ROANE	17	42

GOVERNING SPECIFICATIONS:

The West Virginia Department of Transportation, Division of Highways Standard Specifications, Roads and Bridges adopted 1993, as amended by the Supplemental Specifications dated July 1, 1998, the Contract Documents, and the Contract Plans are the governing provisions applicable to this project. The design is in accordance with the AASHTO Specifications for Roads and Bridges, sixteenth edition, dated 1996 and the 1997, 1998 Interim Specifications.

The exterior beams are designed by the strength design method (load factor design). The bridge is designed for an HS25 live loading defined as 125 percent of HS20-44 live loading.

SCOPE OF WORK:

1. Remove existing asphalt pavement from bridge (approximately 7 inches).
2. Saw-cut and remove existing curb on exterior beams.
3. Remove four concrete shear blocks adjacent to exterior beams.
4. Modify the bridge seats as shown in the the plans.
5. Sandblast the outside face of each exterior beam to provide a a good bonding surface for the grout.
6. Install one new 17" box beam on each side of the existing bridge.
7. Replace seven 1" diameter x 20" tie-bars in existing channel beams.
8. Sandblast spalled areas and rusted rebar on the bottom of existing channel beams. Apply an Epoxy Resin Protective Coating to the repair area in accordance with 601.13.2 of the Standard Specifications.
9. Grout shear key between new and existing beams.
10. Install new guardrail.*
11. Overlay with asphalt pavement.*

*Roadway pay items.

DESIGN UNIT STRESSES:

Class B Concrete: f'c = 3000 psi; N = 9
Class K Concrete: f'c = 4500 psi; N = 8
Reinforcing Steel: fy = 60,000 psi

Prestressed Beam Concrete: f'c = 6000 psi
f'ci = 5000 psi
f's = 270,000 psi

CONCRETE:

A water reducing retarding admixture in accordance with Section 707.2 of the specifications shall be used in all superstructure concrete. Payment shall be included in item 601-03. Retarder will not be required below 50 degrees f. The Contractor's attention is called to the test requirements for the retarder admixture.

Chamfer all exposed edges of concrete 3/4 inches for superstructure and 1 inch for substructure concrete.

All concrete shall be finished with the requirements of section 601.11.

REINFORCING STEEL:

All reinforcing steel bars shall be intermediate grade billet steel in accordance with ASTM A615, grade 60. Unless otherwise noted in the plans, the clear distance between the reinforcing steel and the face of the concrete shall be:

Top of Slab:	2.5 inches
Bottom of Slab:	1.0 inches
Bottom of Footings:	3.0 inches
All other Locations:	2.0 inches

All reinforcing bar dimensions are out to out.

Bend details and hook dimensions are in accordance with ACI detailing manual, 1980.

Minimum length of lap splice unless otherwise noted:

#5	1'-11"
#6	2'-9"
#7	3'-9"
#8	4'-11"
#9	6'-3"
#10	7'-11"

PRESTRESSING REINFORCEMENT:

Prestressing strands shall be oversized 1/2" inch diameter (Area= .1670 Sq. inches) 270 Grade low relaxation uncoated seven-wire stabilized strand in accordance with ASTM A416.

EXCAVATION:

All excavation shall be paid for as Unclassified Excavation, Item 207-01, in Roadway Quantities.

JOINT FILLER:

Preformed joint filler for vertical joints in the superstructure shall be sponge rubber in accordance with Section 708.1.1. The cost shall be included in Item 601-03.

All joint filler for vertical joints in the substructure shall be in accordance with Section 708.1.2. The cost shall be included in Item 601-02.

PRESTRESSED CONCRETE BOX BEAMS:

Beams and associated hardware will be furnished by the DOH. This includes beams, G/R attachments, standard tie-rods, washer, nuts, and grout-backer rods.

△1 The cost of bearing pads will be included in Item 603-05.

The contractor shall coordinate the delivery of the beams with the beam supplier, Marrietta Structures, P.O. Box 653, Marietta, OH, 45750, telephone * 800-633-9969.

ESTIMATE OF QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNITS
203-01	Dismantling Structure	1	LS
601-02	Class "B" Concrete	5.2	CY
602-01	Reinforcing Steel Bars	292	Lbs.
603-05	Installation of DOH Furnished Prestressed Concrete Beams	1	LS
615-03	Fabricated Structural Steel	1	LS

The following items are incidental to item 203-01: Sandblasting, 80 SF; Field Epoxy Coating, 4 SF; Demolition Concrete Shear Blocks & Curbs, 2 CY; Excavation, 0.5 CY.

8 - 4" Beveled washers & Replacing 7 Missing Tie-bars is incidental to item 615-03.

△1 Bearing Pads are incidental to item 603-05.

STEEL LIST

MARK	TYPE	NUMBER	LENGTH	A	B	C
			WINGWALL A			
W501	1	2	6'-0"	1'-7"	4'-5"	
W502	1	1	3'-8"	1'-7"	2'-1"	
W503	STR	1	1'-7"			
W504	2	1	4'-5"	0'-6"	3'-5"	0'-6"
W505	2	1	4'-0"	0'-6"	3'-0"	0'-6"
W506	2	1	3'-8"	0'-6"	2'-8"	0'-6"
W507	2	1	3'-5"	0'-6"	2'-5"	0'-6"
W508	2	1	3'-1"	0'-6"	2'-1"	0'-6"
W509	2	1	2'-9"	0'-6"	1'-9"	0'-6"
W510	2	1	2'-5"	0'-6"	1'-5"	0'-6"
W511	2	1	2'-1"	0'-6"	1'-1"	0'-6"
W512	1	1	6'-4"	1'-8"	4'-8"	
W513	1	1	6'-8"	1'-10"	4'-10"	
			WINGWALL B			
W514	1	2	6'-2"	2'-1"	4'-1"	
W515	1	1	3'-0"	2'-1"	0'-11"	
W516	STR	1	1'-1"			
W517	2	1	4'-5"	0'-6"	3'-5"	0'-6"
W518	2	1	3'-11"	0'-6"	2'-11"	0'-6"
W519	2	1	3'-5"	0'-6"	2'-5"	0'-6"
W520	2	1	3'-1"	0'-6"	2'-1"	0 '-6"
W521	2	1	2'-10"	0'-6"	1'-10"	0'-6"
W522	2	1	2'-7"	0'-6"	1'-7"	0'-6"
W523	2	1	2'-4"	0'-6"	1'-4"	0'-6"
W524	2	1	2'-1"	0'-6"	1'-1"	0'-6"
W525	1	1	6'-4"	1'-8"	4'-8"	
W526	1	1	6'-8"	1'-10"	4'-10"	
			WINGWALL C			
W527	1	2	7'-10"	2'-10"	5'-0"	
W528	1	1	4'-1"	2'-10"	1'-3"	
W529	STR	1	1'-9"			
W530	2	1	4'-9"	0'-6"	3'-9"	0'-6"
W531	2	1	4'-4"	0'-6"	3'-4"	0'-6"
W532	2	1	3'-11"	0'-6"	2'-11"	0'-6"
W533	2	1	3'-6"	0'-6"	2'-6"	0'-6"
W534	2	1	3'-3"	0'-6"	2'-3"	0'-6"
W535	2	1	3'-0"	0'-6"	2'-0"	0'-6"
W536	2	1	3'-9"	0'-6"	2'-9"	0'-6"
W537	2	1	2'-7"	0'-6"	1'-7"	0'-6"
W538	2	1	2'-4"	0'-6"	1'-4"	0'-6"
W539	2	1	2'-1"	0'-6"	1'-1"	0'-6"
W540	1	1	8'-8"	3'-3"	5'-5"	
W541	1	1	8'-4"	3'-1"	5'-3"	
			WINGWALL D			
W542	1	2	8'-4"	1'-3"	7'-1"	
W543	1	1	4'-10"	1'-3"	3'-7"	
W544	1	1	1'-5"	1'-3"	0'-2"	
W545	2	1	4'-9"	0'-6"	3'-9"	0'-6"
W546	2	1	4'-4"	0'-6"	3'-4"	0'-6"
W547	2	1	3'-11"	0'-6"	2'-11"	0'-6"
W548	2	1	3'-6"	0'-6"	2'-6"	0'-6"
W549	2	1	3'-3"	0'-6"	2'-3"	0'-6"
W550	2	1	3'-0"	0'-6"	2'-0"	0'-6"
W551	2	1	3'-9"	0'-6"	2'-9"	0'-6"
W552	2	1	2'-7"	0'-6"	1'-7"	0'-6"
W553	2	1	2'-4"	0'-6"	1'-4"	0'-6"
W554	2	1	2'-1"	0'-6"	1'-1"	0'-6"
W555	1	1	8'-8"	3'-3"	5'-5"	
W556	1	1	8'-4"	3'-1"	5'-3"	
			ABUTMENT 2 BRIDGE SEAT			
A501	STR	6	4'-0"			

NO.	REVISION	DATE:	BY:
△1	INCLUDE BEARING PADS IN ITEM 603-05	9/8/99	DWK

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W. VA. DEPARTMENT OF HIGHWAYS
ENGINEERING DIVISION

ROANE CO./SRENCER
BUS. PK. BRIDGE
COUNTY ROUTE 33/2
over GOFF RUN
ROANE COUNTY

DESIGNED	DWK	4/99
DRAWN	DWK	4/99
CHECKED		
REVIEWED		

NOTES AND QUANTITIES

SHEET 2 OF 8

BRIDGE NO. 4842

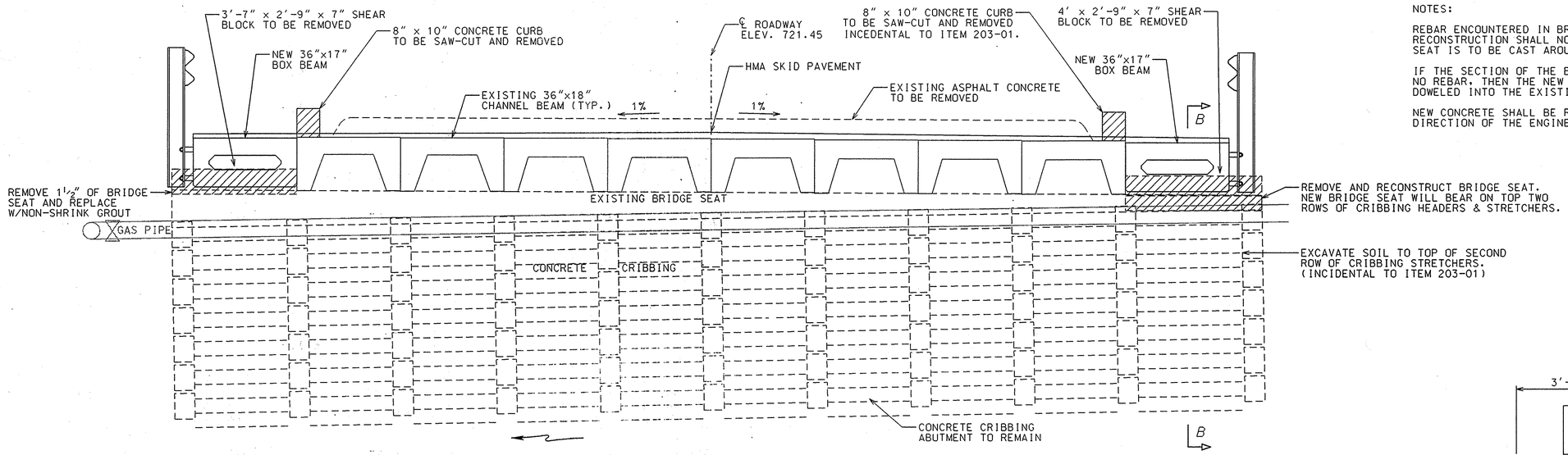
PROJECT NUMBERS		DISTRICT	COUNTY	SHEET NO.	TOTAL
STATE	FEDERAL				
X344-332-0.00		3	ROANE	18	42

NOTES:

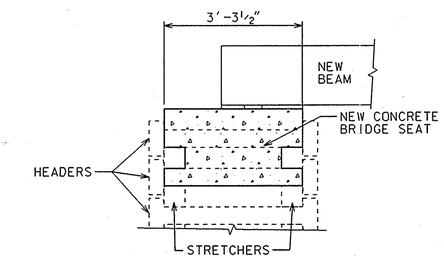
REBAR ENCOUNTERED IN BRIDGE SEAT REMOVAL AND RECONSTRUCTION SHALL NOT BE REMOVED. NEW BRIDGE SEAT IS TO BE CAST AROUND EXISTING REBAR.

IF THE SECTION OF THE BRIDGE SEAT THAT IS REMOVED HAS NO REBAR, THEN THE NEW SECTION OF THE BRIDGE SEAT IS TO DOWELED INTO THE EXISTING BRIDGE WITH # 5 BARS.

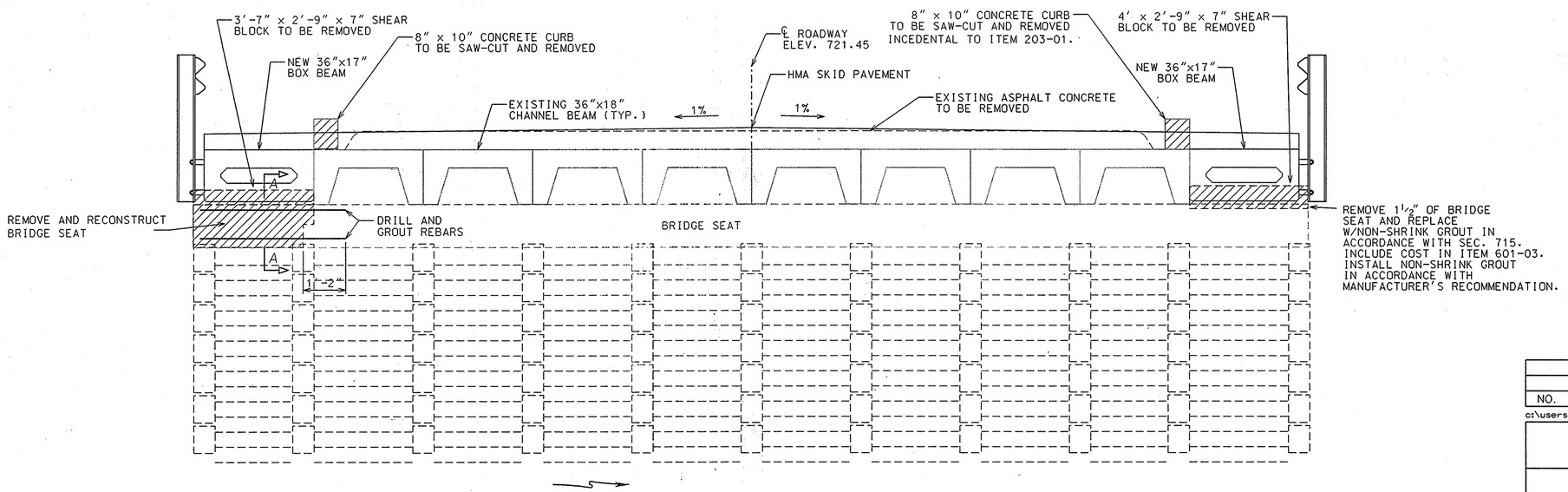
NEW CONCRETE SHALL BE REINFORCED AS REQUIRED, AT THE DIRECTION OF THE ENGINEER.



BRIDGE SECTION @ ABUTMENT 1

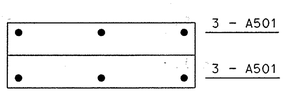


Sect. B-B



CONCRETE TO BE REMOVED

BRIDGE SECTION @ ABUTMENT 2



Sect. A-A

NO.	REVISION	DATE:	BY:

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W. VA. DEPARTMENT OF HIGHWAYS
ENGINEERING DIVISION

ROANE CO./SPRENCER
BUS. PK. BRIDGE
COUNTY ROUTE 33/2
over GOFF RUN
ROANE COUNTY

DESIGNED	DATE
DRAWN	
CHECKED	
REVIEWED	

BRIDGE SECTIONS @ ABUTMENTS

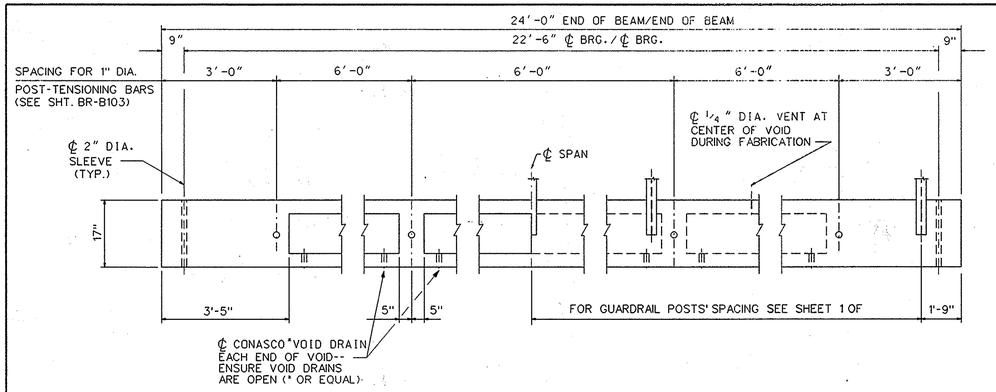
SHEET 3 OF 8

BRIDGE NO. 4842

PROJECT NUMBERS STATE	PROJECT NUMBERS FEDERAL	DISTRICT	COUNTY	SHEET NO.	TOTAL
X344-332-0.00		3	ROANE	19	42

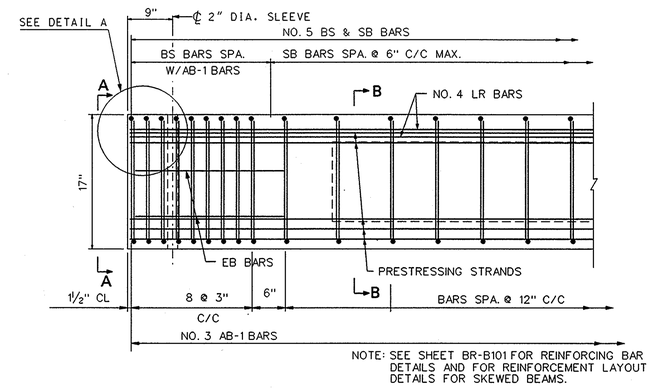
NOTES:

1. ALL NON-PRESTRESSING REINFORCING BARS SHALL BE GRADE 60.
2. ALL LAP SPLICE LENGTHS, EXCEPT WHERE SHOWN, SHALL BE AS IN TABLE ON SHEET BR-B101.
3. ALL REINFORCING STEEL BARS SHALL BE EPOXY COATED.
4. ALL STRANDS SHALL BE ENCLOSED INSIDE STIRRUP CAGE ENTIRE LENGTH OF BEAM.
5. THIS SHEET TO BE USED WITH STANDARD SHEET NUMBERS BR-1 OR BR-1A, BR-B17B, BR-B100, BR-B101, BR-B102, BR-B103, AND BR-B104.
6. WHEN STRAND NO'S. 29 AND 30 ARE USED, SEE SHEET BR-B101 FOR DETAIL OF 2" DIA. ANCHOR SLEEVE.



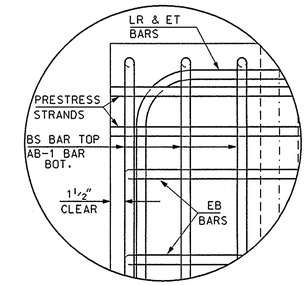
1/2 LONGITUDINAL SECTION

1/2 ELEVATION

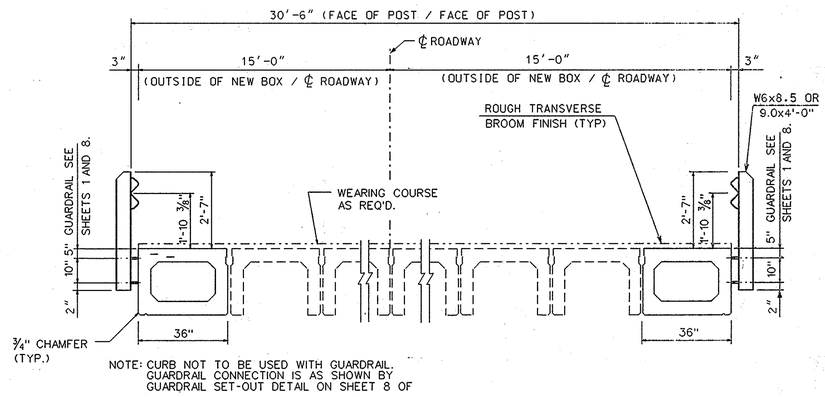


NOTE: SEE SHEET BR-B101 FOR REINFORCING BAR DETAILS AND FOR REINFORCEMENT LAYOUT DETAILS FOR SKEWED BEAMS.

REINFORCING STEEL ELEV. VIEW



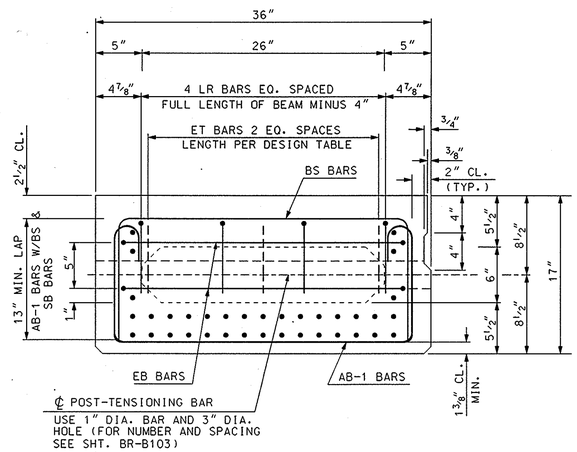
DETAIL A



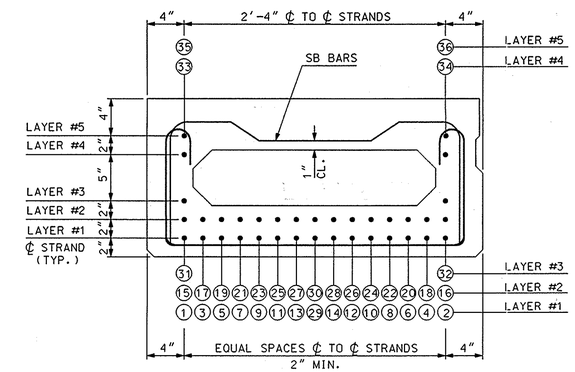
NOTE: CURB NOT TO BE USED WITH GUARDRAIL. GUARDRAIL CONNECTION IS AS SHOWN BY GUARDRAIL SET-OUT DETAIL ON SHEET 8 OF

TYPICAL CROSS-SECTION (AT MID-SPAN)

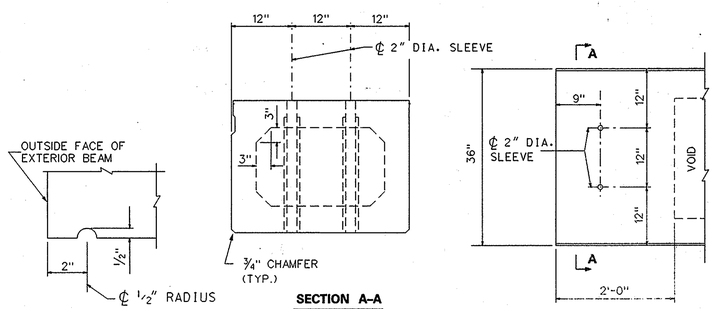
NOTE: ONE NEW 17" PRECAST BEAM IS TO BE ADDED TO EACH SIDE OF THE EXISTING BRIDGE AT THE SAME ELEVATION AS THE EXISTING PRECAST BEAMS.



SECTION A-A
TYPICAL BEAM REINFORCEMENT



SECTION B-B
TYPICAL BEAM PRESTRESSING



EXTERIOR BEAM DRIP DETAIL

END BLOCK DETAILS

DETAILS TAKEN FROM STANDARD SHEETS BR-B17A AND BR-B100

NO.	REVISION	DATE:	BY:

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W. VA. DEPARTMENT OF HIGHWAYS
ENGINEERING DIVISION

ROANE CO./SPENCER
BUS. PK. BRIDGE
COUNTY ROUTE 33/2
over GOFF RUN
ROANE COUNTY

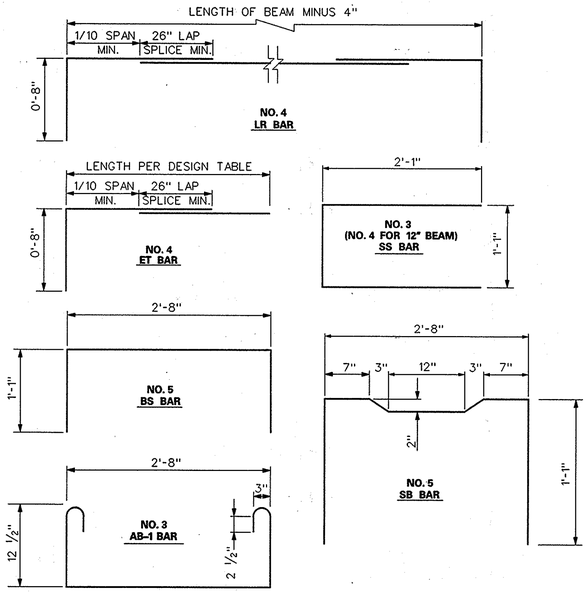
DESIGNED	DATE
DRAWN JRB	4-99
CHECKED	
REVIEWED	

17" PRESTRESSED BOX BEAM DESIGN & ASSEMBLY

SHEET 4 OF 8

BRIDGE NO. 4842

PROJECT NUMBERS		DISTRICT	COUNTY	SHEET NO.	TOTAL
STATE	FEDERAL				
X344-332-0.00		3	ROANE	20	42

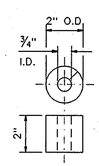


REINFORCING BAR DETAIL

LAP SPLICE TABLE					
GRADE \ BAR NO.	NO. 3	NO. 4	NO. 5	NO. 6	NO. 7
GRADE 60	20"	26"	33"	38"	45"

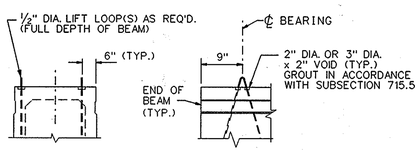
NOTES

1. MINIMUM BAR BENDING DIAMETER SHALL BE 6 BAR DIAMETERS, EXCEPT THAT NO 3 AB AND AB-1 BARS THE MINIMUM BAR BENDING DIAMETER SHALL BE 4 BAR DIAMETERS. ALL DIMENSIONS ARE OUT TO OUT.
2. IF OPTIONAL SPLICING OF LR AND ET BARS IS USED, TERMINATION OF LAP SPLICE SHALL BE NO CLOSER TO THE END OF THE BEAM THAN 1/10 OF THE SPAN LENGTH. ADDITIONALLY ALL LAP SPLICES SHALL BE CONTACT TYPE.



12", 17" & 21" BEAMS

LIFTING LOOP BLOCKOUT DETAILS



END VIEW **SIDE VIEW**

NOTE: LIFTING LOOPS SHALL NOT BE EPOXY COATED. ON SKEWED BEAMS LIFTING DEVICES SHALL BE LOCATED IN A LINE TRANSVERSE TO THE CENTERLINE OF BEAM.

LIFT DETAILS

MIN. CONCRETE STRENGTH @ DETENSION = 5,000 PSI.
MIN. CONCRETE STRENGTH @ 28 DAYS = 6,000 PSI.
JACKING FORCE /LOW RELAX STRAND = 30,980 LBS.

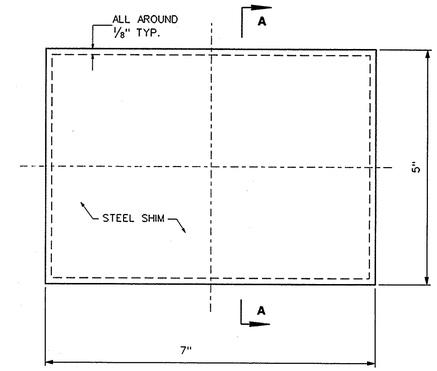
DESIGN DATA FOR 17" DEPTH BOX BEAM

(L) SPAN LENGTH ℄ TO ℄ BEARING		22'-6"
OVERALL LENGTH ALONG ℄ ROADWAY		24'-0"
NO. OF GRADE 270, 1/2" DIA. LOW-RELAX. STRANDS, AREA/STRAND= 0.153 SQ. IN.		13
STRAND POSITION NUMBER		1 thru 4, 7,8,11,12, 15,16,29, 35 & 36
PRESTRESSING FORCE AT DETENSION (KIPS/BEAM)		383
FINAL PRESTRESSING FORCE (KIPS/BEAM)		340
ULTIMATE DESIGN MOMENT (FT-KIPS/BEAM)		392
ULTIMATE RESISTING MOMENT (FT-KIPS/BEAM)		483
TOTAL NUMBER OF DEBONDED STRANDS		-
LAYER 1-DEBONDED STRAND POSITION NUMBER AND LENGTH FROM EACH END		-
LAYER 2-DEBONDED STRAND POSITION NUMBER AND LENGTH FROM EACH END		-
END TENSION STEEL EACH END (SIZE & LENGTH)		3-#4 x 5'-6"
CAMBER (3)	DETENSION, INCHES +=UPWARD (in)	0.23
	ERECTION, INCHES +=UPWARD (in)	0.40
	FINAL, INCHES +=UPWARD (in)	0.26
WEIGHT OF TYPICAL BEAM INCLUDING DIAPHRAGM (TONS) (1),(2)		6.2
NUMBER AND SPACING OF GUARDRAIL INSERTS	NO. OF INSERTS	8
	END OF BEAM TO ℄ OF FIRST INSERT EACH END	1'-9"
	℄ OF FIRST INSERT TO ℄ SECOND INSERT EACH END	2'-5 1/4"

NOTES:

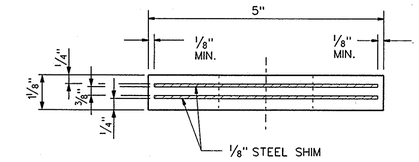
1. BEAM WEIGHTS LISTED IN DESIGN TABLES ARE APPROXIMATE AND ARE BASED ON ZERO SKEW AND DIAPHRAGMS SPA. @ 15'-0" C-C MAX. ADDITION OF SKEW AND EXTRA DIAPHRAGMS WILL INCREASE WEIGHT.
2. FOR STANDARD CURB, ADD 93 LBS. (0.05 TON) PER CURB, PER FOOT OF BEAM.
3. CAMBER VALUES LISTED IN DESIGN TABLE ARE APPROXIMATE AND ARE FOR COMPARISON PURPOSES ONLY. NOT TO BE USED FOR INSPECTION PURPOSES UNLESS PERMITTED BY THE DIRECTOR OF STRUCTURES DIVISION.
4. DATA LISTED IN THE DESIGN TABLE MAY NOT BE VALID FOR SPAN LENGTHS THAT FALL BETWEEN THE SPAN LENGTHS LISTED. IF DIFFERENCES ARE ENCOUNTERED, CALCULATE AND ENTER SPECIFIC DATA FOR BEAM LENGTH REQUIRED IN THIS COLUMN.
5. THIS SHEET TO BE USED WITH STANDARD SHEET NUMBERS BR-1 OR BR-1A, BR-B17A, BR-B100, BR-B101, BR-B102, BR-B103, AND BR-B104.
6. MAXIMUM BEAM SKEW SHALL BE 30 DEGREES.
7. DESIGNER, FABRICATOR AND ERECTOR SHALL BE AWARE THAT SKEWED BEAM ENDS MAY TWIST OR WARP, CAUSING UNEVEN BEAM SEATING AT THE BEARINGS. CONTRACTOR IS REQUIRED TO CORRECT AT THE TIME OF BEAM ERECTION, BEFORE BEAMS ARE SECURED IN PLACE. METHOD OF CORRECTION SHALL PROVIDE EVEN, TOTAL BEARING ON THE PADS AND A LEVEL TOP BEAM SURFACE. METHOD SHALL BE A PRE-APPROVED METHOD BY DIRECTOR OF STRUCTURES DIVISION.
8. BEAM FABRICATOR SHALL NOTIFY CONTRACTOR THAT BEAM ENDS ARE TWISTED PRIOR TO SHIPPING OF BEAMS.

Details taken from STANDARD SHEETS BR-B101 and BR-B17B.

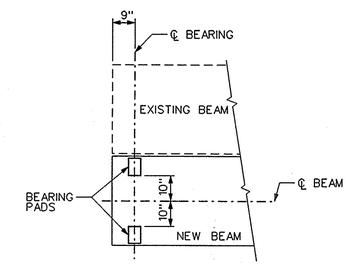


ELASTOMERIC BEARING PAD DETAIL

NOTES: THE BEARING PAD SHALL CONFORM TO AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 18, DIVISION II, WITH A DUROMETER HARDNESS OF 60.



SECTION A-A



ELASTOMERIC BEARING PAD LOCATIONS

NO.	REVISION	DATE:	BY:

c:\users\roane\brb101.dgn 01-SEP-1999 07:47

W. VA. DEPARTMENT OF HIGHWAYS
ENGINEERING DIVISION

ROANE CO./SRENCER
BUS. PK. BRIDGE
COUNTY ROUTE 33/2
over GOFF RUN
ROANE COUNTY

DESIGNED	DATE
DRAWN JRB	4-99
CHECKED	
REVIEWED	

REINFORCING BARS & BEARING PADS

SHEET 5 OF 8

BRIDGE NO. 4842

PROJECT NUMBERS		DISTRICT	COUNTY	SHEET NO.	TOTAL
STATE	FEDERAL				
X344-332-0.00		3	ROANE	21	42

GENERAL NOTES

1. POST-TENSIONING THREAD-BARS SHALL BE STRESSED TO 15 KIPS AFTER FINAL POSITIONING OF BOX BEAMS AND GROUTING OF JOINTS BETWEEN BEAMS. CALCULATED THEORETICAL ELONGATION IS 0.03 INCHES.

2. POST-TENSIONING THREAD-BARS SHALL BE ONE INCH DIAMETER, 150 KSI STEEL, AND SHALL CONFORM TO AASHTO M 275, TYPE II. STEEL THREAD-BARS SHALL BE DESIGNED TO ALLOW THE USE OF HEX NUTS AND COUPLERS THAT THREAD INTO THE DEFORMATIONS. HEX NUTS AND COUPLERS SHALL BE OF A DESIGN AND MATERIAL RECOMMENDED BY THE BAR MANUFACTURER TO DEVELOP THE FULL TENSILE STRENGTH OF THE BAR. PROPERLY DOCUMENTED CERTIFIED MILL TEST REPORTS WILL BE PROVIDED FOR EACH HEAT OF STEEL THREAD-BARS.

3. ALL POST-TENSIONING THREAD-BARS, NUTS, BEARING PLATES, COUPLERS AND ANCILLARY HARDWARE SHALL BE HOT-DIP GALVANIZED TO AASHTO M 111. THE GALVANIZING PLANT SHALL ADMINISTER ADEQUATE QUALITY CONTROL MEASURES TO SAFEGUARD AGAINST HYDROGEN EMBRITTLEMENT. QUALITY CONTROL MEASURES SHALL COMPLY WITH ASTM A-143. CERTIFICATIONS FOR HOT-DIP GALVANIZING SHALL BE PROVIDED BY THE GALVANIZING PLANT.

4. ALL REINFORCING STEEL SHALL BE GRADE 60 AND EPOXY COATED.

5. EACH PRESTRESSED CONCRETE BEAM SHALL BE TREATED BY MANUFACTURER AT THE FABRICATION PLANT WITH AN APPROVED CONCRETE SEALER (SILANE). AN APPROVED LIST OF CONCRETE SEALERS ARE ON FILE AT THE WEST VIRGINIA DIVISION OF HIGHWAYS - MATERIALS CONTROL, SOILS AND TESTING DIVISION. COVERAGE SHALL INCLUDE TOP AND BOTTOM OF INTERIOR BEAMS, AND TOP, BOTTOM AND EXTERIOR SIDE OF EXTERIOR BEAMS. APPLICATION RATE TO BE PER MANUFACTURER'S RECOMMENDATIONS.

6. AFTER COMPLETION OF SILANE TREATMENT BY MANUFACTURER AND A MAXIMUM OF FIVE WORKING DAYS BEFORE SHIPMENT OF BEAMS, THE MANUFACTURER SHALL BE RESPONSIBLE FOR SANDBLASTING TO CLEAN WHITE CONCRETE THE INTERIOR SIDES OF BEAMS FOR THE ENTIRE LENGTH. CLEAN WHITE CONCRETE SHALL MEAN REMOVAL OF ALL DIRT, GREASE AND LOOSE PIECES OF CONCRETE AND LEAVE A ROUGHENED SURFACE. BLASTING MEDIUM SHALL BE APPROVED BY THE DIVISION OF HIGHWAYS.

7. SHEAR KEY GROUT SHALL BE A GROUT THAT IS RECOMMENDED BY THE MANUFACTURER FOR A POURABLE GROUT APPLICATION AND THAT BASED ON THE MANUFACTURE'S TEST DATA WILL ATTAIN A MINIMUM OF 4500 PSI COMPRESSIVE STRENGTH IN 3 DAYS UNDER CONDITIONS REPRESENTATIVE OF THE CONDITION TO BE EXPERIENCED AT THE SITE. THE GROUT MUST ALSO BE LISTED ON THE APPROVED LIST OF GROUTS PUBLISHED BY THE WEST VIRGINIA DIVISION OF HIGHWAYS, MATERIALS CONTROL, SOIL AND TESTING DIVISION. THE CONTRACTOR SHALL PRE-TEST THE PROPOSED GROUT FOR COMPRESSIVE STRENGTH AT 3 AND 7 DAYS AND SUBMIT THE RESULTS TO THE STRUCTURES DIVISION FOR APPROVAL PRIOR TO INSTALLATION OF THE GROUT IN THE STRUCTURE. THE TESTS WILL BE BASED ON A POURABLE CONSISTENCY WITH THE SAME WATER/GROUT MIXTURE RATIO TO BE USED IN THE STRUCTURE. TEST PROCEDURE SHALL BE THE STANDARD CYLINDER TEST PER AASHTO T 22.

8. CONTRACTOR SHALL BE REQUIRED TO SUBMIT FOR EACH PROJECT, THE GROUT PRE-TEST RESULTS OBTAINED IN NOTE 7 ABOVE. CONTRACTOR SHALL BE REQUIRED TO PERFORM A NEW PRE-TEST AND SUBMISSION FOR APPROVAL UNDER THE FOLLOWING CONDITIONS:
   A) A PERIOD OF 18 MONTHS HAS ELAPSED SINCE LAST PRE-APPROVAL TESTING; OR
   B) GROUT MANUFACTURER HAS REVISED OR CHANGED GROUT SPECIFICATIONS; OR
   C) CONTRACTOR ALTERS WATER/GROUT MIXTURE RATIO OR CHANGES GROUT TYPE OR MANUFACTURER.

9. CONTRACTOR SHALL BE REQUIRED TO COMPLETE GROUT STRENGTH TABLE.

PROCEDURES

1. INSTALL ONE INCH THICK WASHER AND GROUT STOP BY GLUING TO ONE SIDE, FOR THE ENTIRE LENGTH, OF EACH BEAM PRIOR TO SETTING BEAMS. GLUE SHALL BE AN APPROVED CONSTRUCTION TYPE GLUE OR EPOXY ADHESIVE. GROUT STOP MAY BE INSTALLED AFTER BEAMS ARE SET.

2. GLUE A ¾" X 2" X 2" PIECE OF PRESSURE TREATED PLYWOOD AT EACH THREAD-BAR LOCATION TO INSURE THAT A ¾" GAP IS OBTAINED. OFFSET APPROXIMATELY 2 FEET FROM THE THREAD-BAR HOLE AND CENTERED ON THE HOLE DEPTH. PLYWOOD SPACERS ARE REQUIRED ON ONLY ONE BEAM EDGE AT EACH ABUTTING EDGE (SHEAR KEY LOCATION). AFTER ALL BEAMS ARE SET, THE BEAMS SHALL BE PULLED TOGETHER TRANSVERSELY BY APPLYING A SLIGHT POST-TENSIONING FORCE, APPROXIMATELY 3,000 POUNDS LEAVING A ¾" GAP BETWEEN BEAMS.

3. FILL THE GAP BETWEEN BEAMS AND SHEAR KEY FULL DEPTH WITH THE PRE-APPROVED, PRE-TESTED GROUT MIXTURE. FROM EACH BATCH, PREPARE JOB CONTROL GROUT CYLINDERS FOR THREE AND SEVEN DAY TESTS. THESE JOB CONTROL SAMPLES WILL BE USED TO DETERMINE WHEN THE GROUT'S COMPRESSIVE STRENGTH HAS ATTAINED A MINIMUM OF 4500 PSI. A MINIMUM OF THREE TEST SPECIMENS PER BATCH SHALL BE OBTAINED AND THE AVERAGE OF THE TEST RESULTS USED, EXCEPT THAT IF ONE SPECIMEN SHOWS MANIFEST EVIDENCE OF IMPROPER SAMPLING, MOLDING, OR TESTING, IT SHOULD BE DISCARDED AND THE REMAINING TWO STRENGTHS AVERAGED. SHOULD MORE THAN ONE SPECIMEN REPRESENTING A GIVEN TEST SHOW DEFINITE DEFECTS DUE TO IMPROPER SAMPLING, MOLDING OR TESTING, THE ENTIRE TEST SHALL BE DISCARDED. ACCEPTANCE SAMPLING AND TESTING OF GROUT IS THE RESPONSIBILITY OF THE DIVISION, EXCEPT FOR FURNISHING OF NECESSARY MATERIALS.

   TEST PROCEDURE SHALL BE THE STANDARD CYLINDER TEST PER AASHTO T 22.

4. AFTER GROUT HAS BEEN PLACED AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI AS DETERMINED BY TESTS ON JOB CONTROL SAMPLES, AND AFTER GROUT HAS CURED A MINIMUM OF 3 DAYS, APPLY 50% OF THE FINAL POST-TENSIONING FORCE TO ALL THREAD-BARS, WORKING BEAM ENDS TO MID-SPAN. AFTER ALL THREAD BARS ARE TENSIONED TO 50% OF THE POST-TENSIONING FORCE, APPLY REMAINING PERCENTAGE OF FINAL POST-TENSIONING FORCE, TENSIONING IN SAME SEQUENCE AS ABOVE.

5. MEASURE AND RECORD, ON THE SPACE PROVIDED ON THE PLANS, THE ACTUAL TOTAL ELONGATION OF EACH THREAD-BAR. COMPARE THE ACTUAL ELONGATION TO THE PREDICTED ELONGATION. A SIGNIFICANT DIFFERENCE IN ACTUAL ELONGATION VERSUS PREDICTED ELONGATION COULD INDICATE IMPROPER JACKING TECHNIQUES, IMPROPER MATERIALS, FAULTY JACK OR IMPROPERLY CALIBRATED JACK. IF THE DIFFERENCE IS MORE THAN 15%, THEN THE JACK WILL BE RECALIBRATED AND THE JACKING TECHNIQUES EVALUATED. IF, AFTER RECALIBRATION OF THE JACKS AND ASSURANCE THAT THE JACKING TECHNIQUES ARE SATISFACTORY, THE ELONGATION DIFFERENCE IS MORE THAN 10% FROM THE ESTIMATED ELONGATION THEN THE ENGINEER WILL BE CONTACTED FOR ADVICE.

6. USING SAW, TRIM EXCESS THREAD-BAR LEAVING A MINIMUM OF 4" PAST THE NUT. DO NOT TRIM THREAD-BARS BY TORCH CUTTING. TOUCH UP TRIMED ENDS WITH GALVICON, OR EQUAL.

7. INSTALL ANCHOR DOWELS AT EACH END.

NOTE

1. POST-TENSIONING BARS SHOULD BE SPACED TO AVOID INTERFERENCE WITH GUARDRAIL INSERTS.

GROUT STRENGTH TABLE	3 DAY (psi)	7 DAY (psi)
PRE-TEST STRENGTH		
JOB CONTROL STRENGTH		
GROUT TYPE & MANUFACTURER		

ELONGATION (INCHES)									
CALCU-LATED	MEASURED								
	NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6	NO. 7	NO. 8	
0.03									

DESIGN AND FABRICATION NOTES

1) ALL MEMBERS ARE DESIGNED FOR 1.25xHS20-44 (HS25) LIVE LOADING IN ACCORDANCE WITH 1992 AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES AS AMENDED BY CURRENT INTERIM SPECIFICATIONS. THE DESIGN PROVIDES FOR A WEARING SURFACE OF 50 POUNDS PER SQUARE FOOT OF ROADWAY. THE DESIGN ALSO PROVIDES FOR AN ADDITIONAL GUARDRAIL SUPERIMPOSED DEAD LOAD OF 30 POUNDS PER LINEAR FOOT OF BEAM AND DIAPHRAGM DEAD LOAD BASED UPON NO. REQ'D.

2) COMPRESSIVE STRENGTH OF CONCRETE AT TIME OF PRESTRESSING ($f'ci$) SHALL NOT BE LESS THAN 5,000 PSI.

3) COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS ($f'c$) SHALL NOT BE LESS THAN 6,000 PSI.

4) PRESTRESSING STEEL SHALL BE SEVEN-WIRE UNCOATED LOW RELAXATION STRAND IN ACCORDANCE WITH ASTM A416 GRADE 270 WITH MINIMUM TENSILE STRENGTH ($f's$) OF 270,000 PSI, EXCEPT FOR 42" BOX BEAM, PRESTRESSING STEEL SHALL BE SEVEN-WIRE UNCOATED LOW-RELAXATION OVERSIZE (AS=0.167 SQ.IN.) IN ACCORDANCE WITH ASTM A416 GRADE 270 WITH MINIMUM TENSILE STRENGTH ($f's$) OF 270,000 PSI.

5) CALCULATED INITIAL STRESSES SHALL NOT EXCEED THE FOLLOWING ALLOWABLE TEMPERORY STRESSES BEFORE LOSSES DUE TO CREEP AND SHRINKAGE: CONCRETE COMPRESSION = 0.60 $f'ci$; CONCRETE TENSION = 200 PSI OR $3\sqrt{f'ci}$ PRESTRESSING STEEL = 0.75 $f's$ FOR LOW RELAX. STRAND.

6) CALCULATED FINAL STRESSES SHALL NOT EXCEED THE FOLLOWING ALLOWABLE SERVICE LOAD STRESSES AFTER ALL LOSSES HAVE OCCURED: CONCRETE COMPRESSION = 0.40 $f'c$; CONCRETE TENSION = $3\sqrt{f'c}$; PRESTRESSING STEEL = 0.80 fy.

7) WHERE THE CALCULATED INITIAL STRESSES EXCEED THE ALLOWABLE STRESS VALUES, STRAND DEBONDING OR TOP STRANDS SHALL BE PROVIDED TO REDUCE THE CALCULATED VALUES TO BELOW THE ALLOWABLE VALUES. ADDITIONALLY, BONDED NON-PRESTRESSED REINFORCEMENT SHALL BE PROVIDED TO RESIST THE TOTAL TENSION.

8) ULTIMATE LOAD CAPACITY SHALL NOT BE LESS THAN $\frac{1.30}{\phi}$ [DL + $\frac{5}{3}$(LL + I) WHERE ϕ = 1.0 FOR FACTORY PRODUCED PRECAST PRESTRESSED MEMBERS.

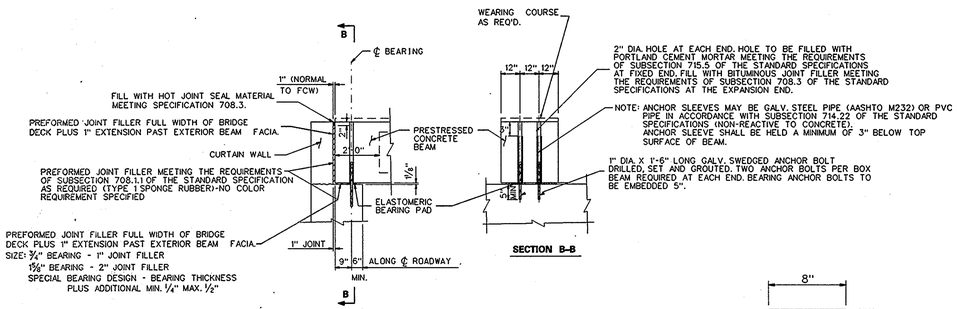
9) ALL ANCHOR DOWELS, NON-HEADED ANCHOR BOLTS, GUARDRAIL ATTACHMENT HARDWARE, GUARDRAIL POSTS, CONNECTION PLATES AND DRAIN PLATES SHALL CONFORM TO AASHTO M183 AND SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111, EXCEPT WHERE NOTED. ALL CAST-IN-PLACE THREADED INSERTS SHALL BE FABRICATED FROM HEX BAR STOCK MEETING THE REQUIREMENTS OF AASHTO M183, ASTM A108 OR A576, GRADE 1020 THRU 1035 OR GRADE 12L14. ALL GUARDRAIL POST ATTACHMENT BOLTS, IN OR OUT OF CONCRETE, SHALL MEET AASHTO M164 OR ASTM A307. NUTS AS REQUIRED SHALL BE HEAVY HEX AND SHALL MEET AASHTO M291. GRADE OF NUTS SUPPLIED SHALL BE AS SHOWN IN TABLE X1.1 OF M291. NUTS MAY ALSO BE SUPPLIED TO AASHTO M292, GRADE 2H. WASHERS SHALL BE CIRCULAR CARBON STEEL MEETING THE REQUIREMENTS OF AASHTO M293. ALL BOLTS, NUTS AND WASHERS SHALL BE HOT-DIP GALVANIZED TO AASHTO M232.

10) ALL WELDING TO BE ACCOMPLISHED PRIOR TO GALVANIZING, EXCEPT WHEN NOTED.

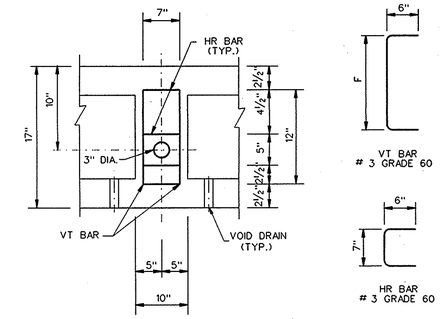
11) WHEN ALTERNATE BEAMS ARE TO BE SUPPLIED, THEIR DESIGNS SHALL BE BASED ON LOAD FACTOR DESIGN AND ALLOWABLE STRESS DESIGN AT ALL LOAD STAGES. ADDITIONALLY, ALL BEAMS SHALL BE DESIGNED TO MINIMIZE CAMBER, BUT SHALL HAVE A POSITIVE (UPWARD) CAMBER AFTER ALL LOSSES.

12) DEFINITIONS: JACKING FORCE/STRAND-MAX. FORCE IN INDIVIDUAL STRAND BEFORE ANY LOSSES HAVE OCCURED, AS DEFINED BY AASHTO SPECIFICATIONS
INITIAL PRESTRESS FORCE-TOTAL PRESTRESS FORCE IN BEAM AT RELEASE AFTER 10% LOSSES DUE TO ELASTIC SHORTENING, CREEP AND SHRINKAGE HAVE BEEN DEDUCTED.
FINAL PRESTRESS FORCE-TOTAL PRESTRESS FORCE IN BEAM AT SERVICE LOADS AFTER ALL LOSSES HAVE OCCURED.

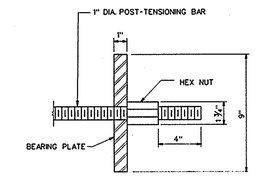
13) DIMENSIONAL TOLERANCES SHALL BE AS SPECIFIED BY DIVISION VI, SECTION 6.4 OF THE P.C.I. "MANUAL FOR QUALITY CONTROL", 3RD EDITION.



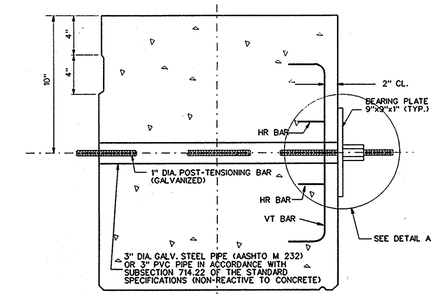
TYPICAL END BEARING DETAIL/BACKWALL
(ALONG CENTER LINE ROADWAY)



(EXT. BEAM & POCKETS ONLY)
(NO SCALE)

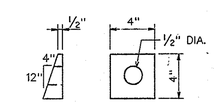


DETAIL A
(NO SCALE)

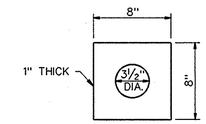


POST-TENSIONING BAR DETAILS
(NO SCALE)

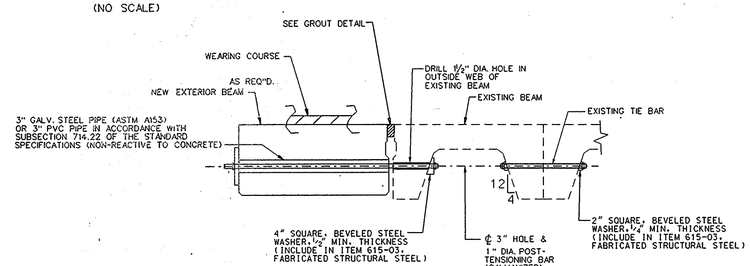
Details taken from STANDARD SHEET BRB-103.



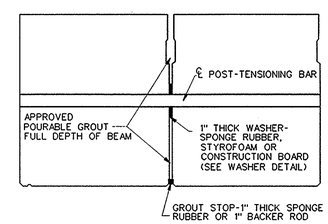
BEVELED WASHER DETAIL
(NO SCALE)



WASHER DETAIL
(NO SCALE)



TYP. BEAM CROSS SECTION AND TIE BAR DETAILS



GROUT DETAILS
(NO SCALE)

WARNING

1. DO NOT STAND IN LINE WITH THE POST-TENSIONING THREAD-BAR WHEN TENSIONING.
2. DUE TO THE DANGER ASSOCIATED WITH THE FAILURE OF THE TRANSVERSE POST-TENSIONING SYSTEM COMPONENTS, SPECIAL QUENCHED OR HARDENED COUPLERS, NUTS AND EXTENSION RODS MUST BE USED FOR REPEATED STRESSING OPERATION, REGULAR NUTS SHOULD NOT BE USED FOR THE REPEATED STRESSING OPERATION, AND SHOULD BE USED ONLY ONCE IN THE PERMANENT INSTALLATION.

NO.	REVISION	DATE:	BY:

c:\users\roane\brb103.dgn 01-SEP-1999 08:29

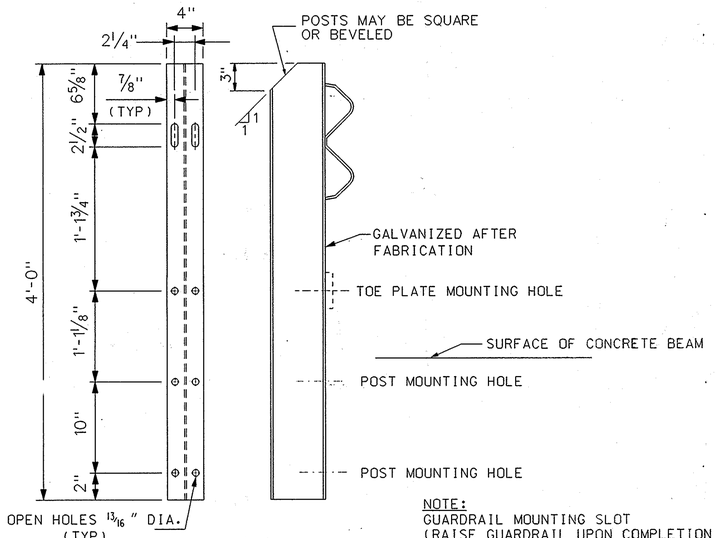
W. VA. DEPARTMENT OF HIGHWAYS
ENGINEERING DIVISION

ROANE CO./SRENCER
BUS. PK. BRIDGE
COUNTY ROUTE 33/2
over GOFF RUN
ROANE COUNTY

DESIGNED	DATE
DRAWN	
CHECKED	
REVIEWED	

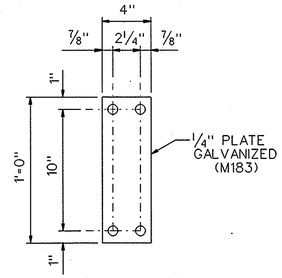
SHEET 6 OF 8
BRIDGE NO. 4842

PROJECT NUMBERS		DISTRICT	COUNTY	SHEET NO.	TOTAL
STATE	FEDERAL				
X344-33/2-0.00		3	ROANE	22	42

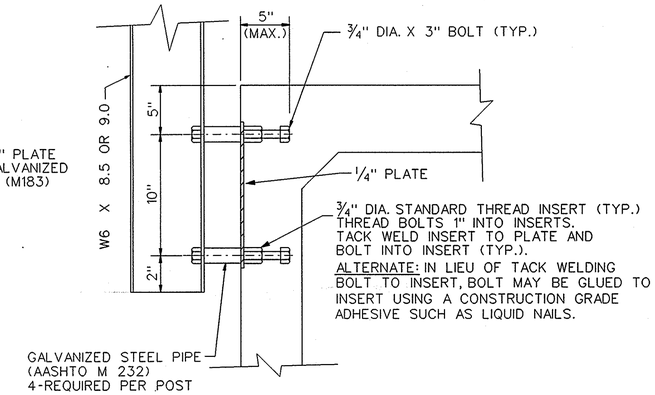


NOTE:
GUARDRAIL MOUNTING SLOT (RAISE GUARDRAIL UPON COMPLETION OF FUTURE WEARING SURFACE)

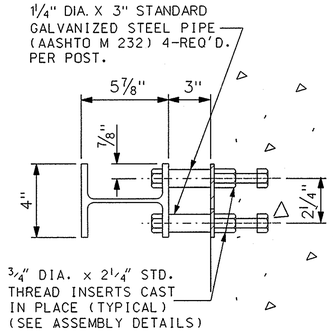
TYPICAL GUARDRAIL POST



GUARDRAIL INSERT DETAIL



GUARDRAIL SET-OUT DETAIL



ANCHOR DETAIL

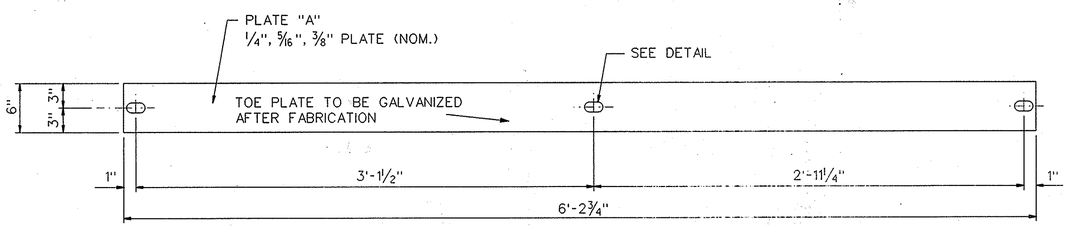


PLATE "A"

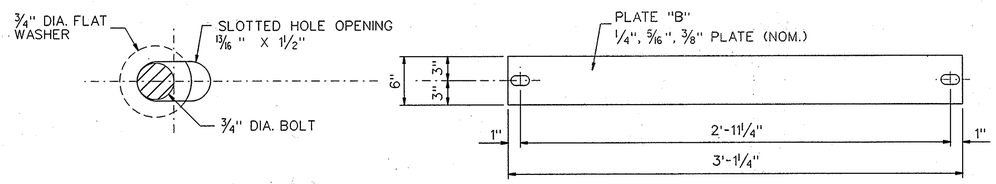
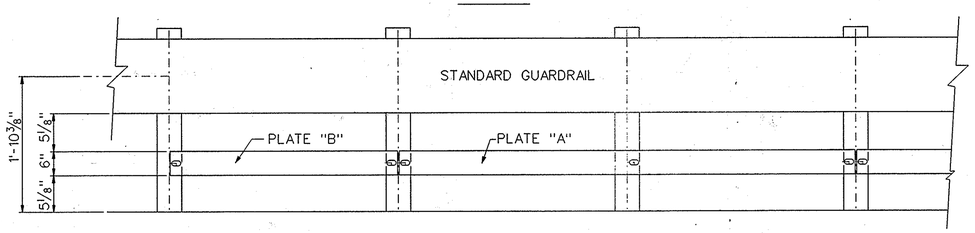


PLATE "B"



TOE PLATE DETAILS

FOR USE ON STRUCTURES WITH NO CURB

NOTES:

1. ENTIRE ASSEMBLY IS TO BE HOT-DIPPED GALVANIZED AFTER FABRICATION. RETAP THREADS FOR PROPER FIT. ALTERNATE: IN LIEU OF HOT-DIP GALVANIZING, GUARDRAIL INSERT ASSEMBLY MAY BE ELECTRO-DEPOSITED ZINC COATED AFTER FABRICATION IN ACCORDANCE WITH ASTM B-633, TYPE 2, CLASSIFICATION NO. 25.
2. ANY DAMAGE TO GALVANIZED AREAS SHALL BE TOUCHED WITH GALVICON, OR EQUAL.
3. WHEN THE GUARDRAIL POST IS LOCATED OVER THE BRIDGE SEAT (ON 12" BEAMS ONLY) THE ANCHOR PLATE AND FOUR BOLTS SHALL BE OMITTED. INSTALL IN ACCORANCE WITH THE "GUARDRAIL ANCHOR OVER BRIDGE SEAT" DETAIL THIS SHEET.
4. TO FACILITATE GUARDRAIL FABRICATION, STANDARD LENGTH GALVANIZED GUARDRAIL BEAMS MAY BE SAW CUT TO REQUIRED LENGTHS WITH SPLICE AND POST ATTACHMENT HOLES DRILLED AT THE REQUIRED LOCATIONS. HOLES TO BE 1" MAXIMUM DIAMETER. REMOVE ALL BURRS AFTER DRILLING. NO REAMING OF HOLES ALLOWED AFTER COMPLETION OF DRILLING OPERATIONS.

DETAILS TAKEN FROM STANDARD SHEET BR-B104

NO.	REVISION	DATE:	BY:

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W. VA. DEPARTMENT OF HIGHWAYS
ENGINEERING DIVISION

ROANE CO./SRENCER
BUS. PK. BRIDGE
COUNTY ROUTE 33/2
over GOFF RUN
ROANE COUNTY

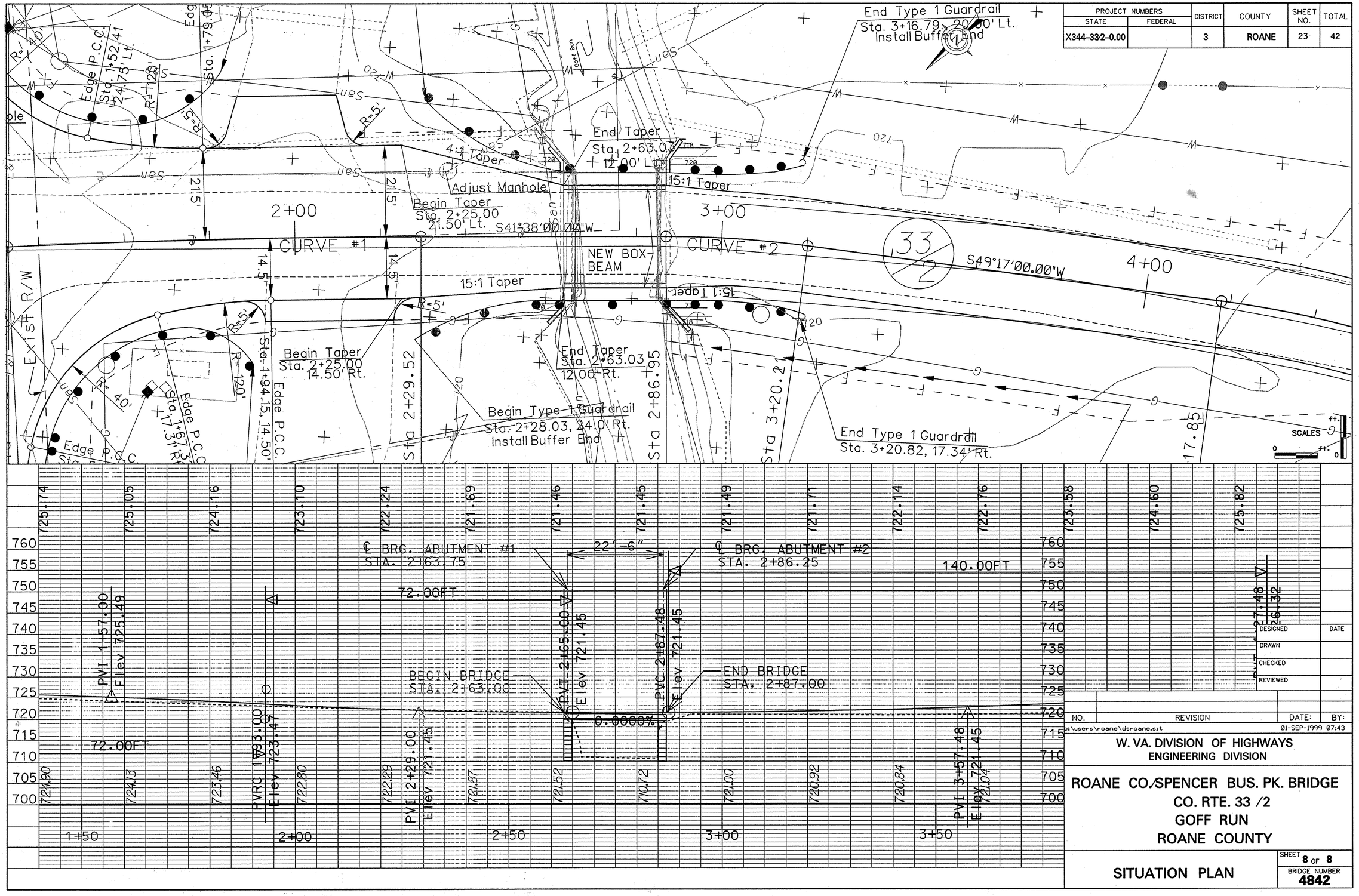
DESIGNED	DATE
DRAWN JKB	4-99
CHECKED	
REVIEWED	

GUARDRAIL DESIGN & ASSEMBLY DETAILS

SHEET 7 OF 8

BRIDGE NO. 4842

PROJECT NUMBERS STATE	PROJECT NUMBERS FEDERAL	DISTRICT	COUNTY	SHEET NO.	TOTAL
X344-33/2-0.00		3	ROANE	23	42



DESIGNED	DATE
DRAWN	
CHECKED	
REVIEWED	

NO.	REVISION	DATE:	BY:

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W. VA. DIVISION OF HIGHWAYS
ENGINEERING DIVISION

ROANE CO./SPENCER BUS. PK. BRIDGE
CO. RTE. 33 /2
GOFF RUN
ROANE COUNTY

SITUATION PLAN

SHEET 8 OF 8

BRIDGE NUMBER 4842