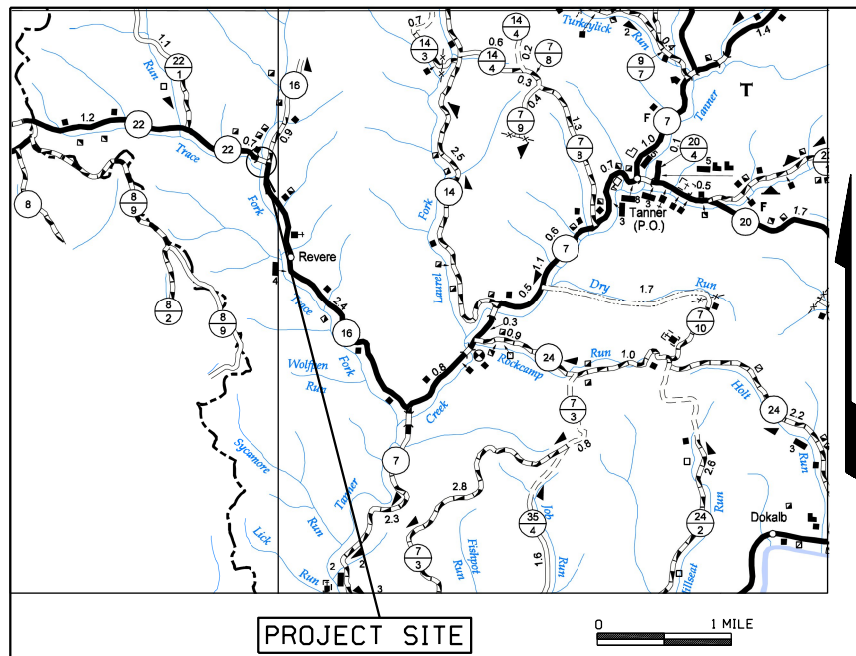


# WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PLANS FOR CONSTRUCTION OF REVERE DECK GIRDER REPLACEMENT

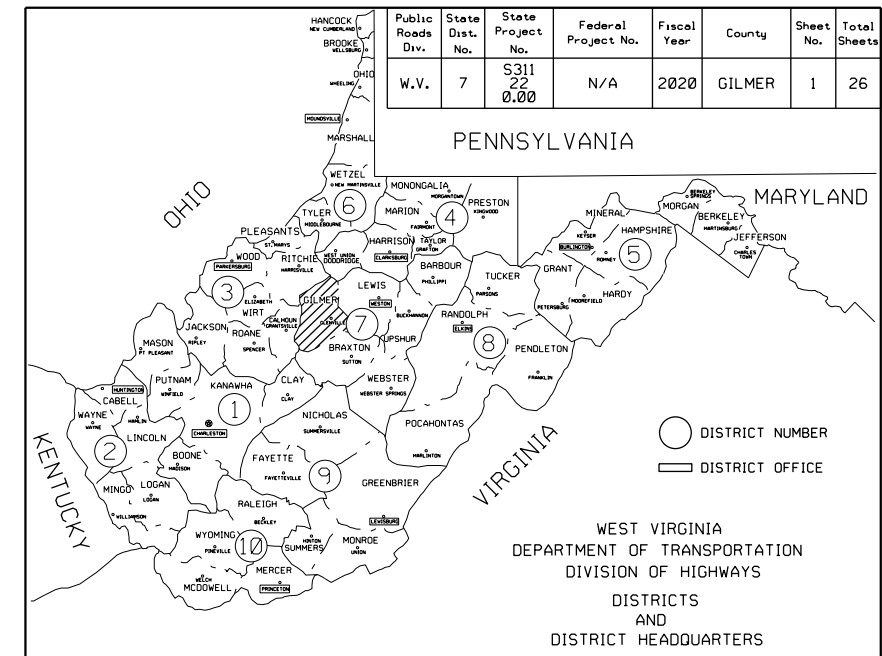
STATE PROJECT NO. S311-22-0.00  
COUNTY ROUTE NO. 22  
TROY DISTRICT  
GILMER COUNTY

	Station	Station	ft.	mile(s)
Roadway	0+50.00	to 1+53.79	= 103.79	= 0.020
Bridge	1+53.79	to 1+96.21	= 42.42	= 0.008
Roadway	1+96.21	to 2+75.00	= 78.79	= 0.015
Total Project Length			= 225.00	= 0.043



**PROJECT SITE**

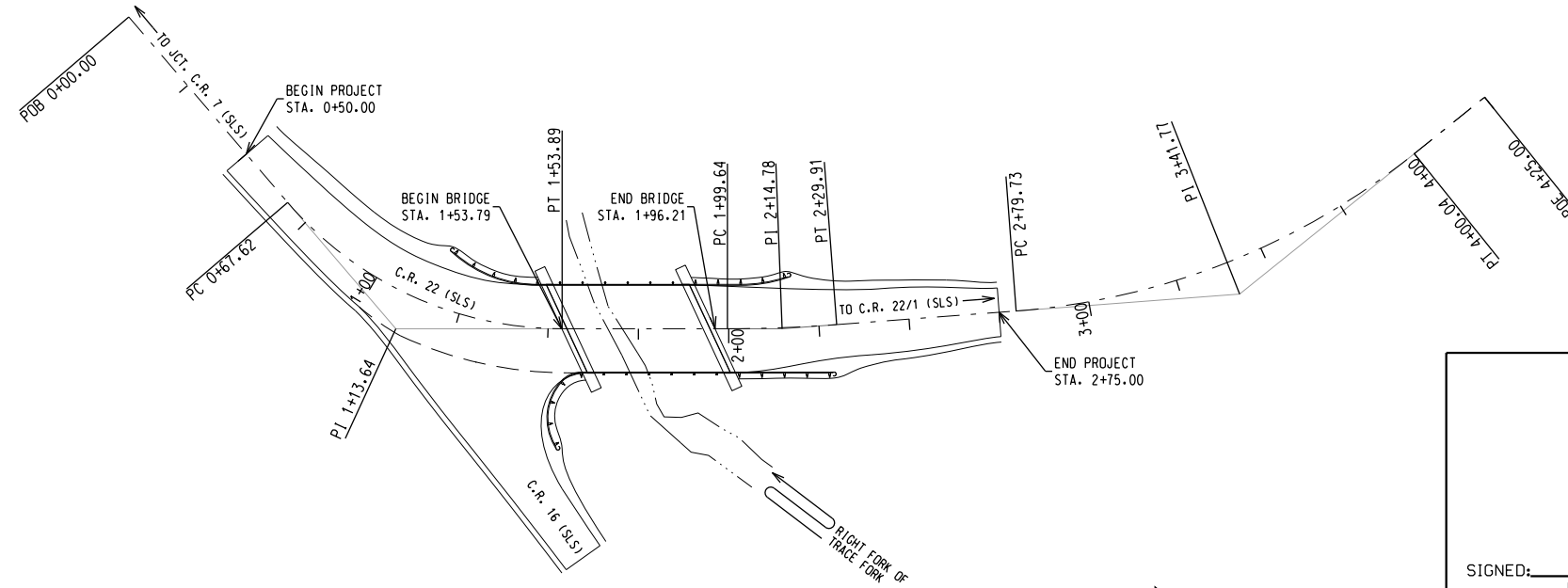
**UTILITIES**  
FIRST ENERGY CORPORATION  
FRONTIER COMMUNICATIONS



Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	7	S311-22-0.00	N/A	2020	GILMER	1	26

WEST VIRGINIA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
DISTRICTS  
AND  
DISTRICT HEADQUARTERS

**TYPE OF CONSTRUCTION**  
BRIDGE REPLACEMENT #11622  
BR. NO. 11-22-0.01  
BARS NO. 11A051



SIGNED: \_\_\_\_\_  
RESPONSIBLE CHARGE ENGINEER

DATE: \_\_\_\_\_

DESIGNED BY:	ATD	03-19
DRAWN BY:	ATD	03-19
CHECKED BY:	RMW	04-20
REVIEWED BY:	CMB	---

DESIGN DESIGNATION	
A . D . T (2015)	= 55
A . D . T (2035)	= 56
D . H . V	= N/A
D	= N/A
T	= N/A
V	= 30 MPH

**CONVENTIONAL SIGNS**

	STATE LINE
	COUNTY LINE
	CORPORATION LINE
	PROPOSED R/W & EASEMENT LINE
	EXISTING 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

**INDEX TO SHEETS**

NO.	DESCRIPTION
1	TITLE SHEET
2	GENERAL NOTES
3	EXISTING ELEV. AND DECK SECTION, ESTIMATE OF QUANTITIES & SCOPE OF WORK
4	R/W AND UTILITY INDEX
5	PROJECT PLAN VIEW
6	SURVEY AND PROJECT ALIGNMENT DATA
7	PROPERTY MAP
8	TRAFFIC CONTROL PLAN
9	PROFILES & TYPICAL SECTIONS
10	PROPOSED BRIDGE PLAN VIEW, POST TEN ROD DETAILS, & GUARDRAIL SPACING DETAILS
11	SIDE MOUNT GUARDRAIL DETAILS
12	ELEVATION VIEW, HYDRAULIC DATA, STRUCTURE EXCAVATION DETAILS, & PROP. DECK SECTION
13-15	SUBSTRUCTURE DETAILS
16-22	SUPERSTRUCTURE DETAILS
23-24	C.R. 22 CROSS SECTIONS
25	C.R. 16 CROSS SECTIONS
26	DETOUR CROSS SECTIONS

REVISION NUMBER	SHEET NUMBER	REVISIONS	DATE	BY

I HEREBY CERTIFY THAT THIS IS A CORRECT COPY OF THE PLANS OF PROJECT S311-22-0.00

EXECUTIVE SECRETARY  
20

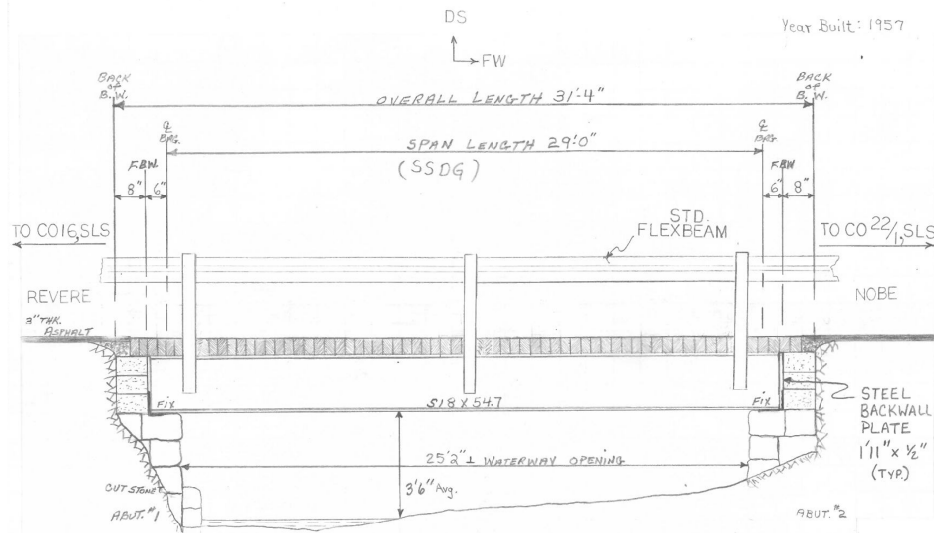
NOTES:  
STANDARD DETAIL BOOK VOL. I DATED MAY 1, 2016,  
VOL. II DATED JANUARY 1, 2019, VOL. III DATED  
MAY 2, 2019, AND THE 2019 TYPICAL SECTIONS  
& RELATED DETAILS SHALL APPLY TO THIS PROJECT.

RECOMMENDED \_\_\_\_\_ PROJECT ENGINEER \_\_\_\_\_

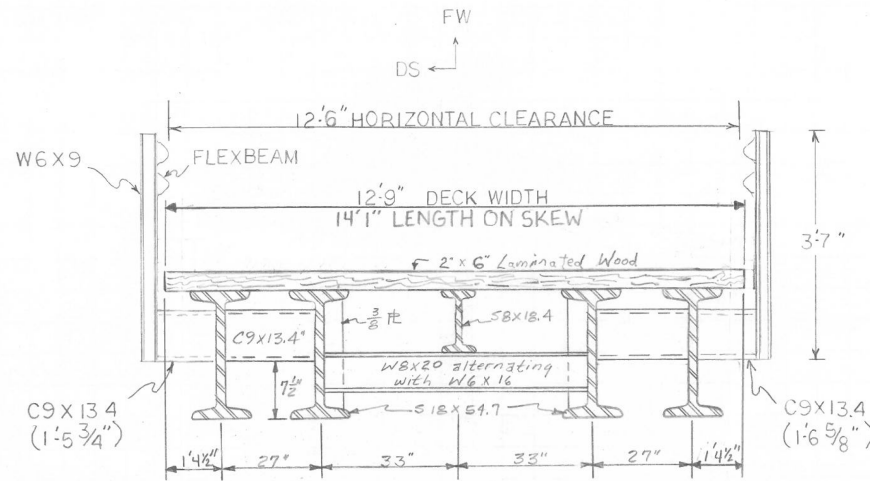
RECOMMENDED FOR APPROVAL \_\_\_\_\_ STATE HIGHWAY ENGINEER \_\_\_\_\_

APPROVED \_\_\_\_\_ COMMISSIONER OF HIGHWAYS \_\_\_\_\_





EXISTING ELEVATION VIEW  
NO SCALE



EXISTING DECK SECTION  
NO SCALE

**SCOPE OF WORK**

1. INSTALL TRAFFIC CONTROL.
2. CLEAR AND GRUB.
3. PLACE FABRIC FOR SEPARATION, STONE AND CONSTRUCT DETOUR.
4. CLOSE AND REMOVE EXISTING STRUCTURE.
5. EXCAVATE FOR ABUTMENTS AND DRIVE PILING.
6. FORM AND POUR ABUTMENTS.
7. PLACE FOUNDATION PROTECTION MATERIAL.
8. PLACE BEAMS, GROUT, AND POST TENSION.
9. FORM AND POUR BACKWALLS AND WINGWALLS.
10. BACKFILL AND CONSTRUCT APPROACHES.
11. OPEN NEW STRUCTURE TO TRAFFIC.
12. CLOSE AND REMOVE DETOUR STRUCTURE.
13. SITE DRESS, SEED, AND MULCH.
14. PLACE GUARDRAIL BY PURCHASE ORDER CONTRACT.
15. PAVE BY PURCHASE ORDER CONTRACT.

**ESTIMATE OF QUANTITIES**

PROJECT NO. S311-22-0.00  
FOR INFORMATION ONLY

DESCRIPTION	UNITS	NO. AND SIZE	TOTAL
17 IN. CONC. BOX BEAMS (EXT.)	SF	2 @ 39' 6" LONG	237
17 IN. CONC. BOX BEAMS (INT.)	SF	6 @ 39' 6" LONG	711
CLASS B CONCRETE	CY	-	32
BENT REBAR	LB	-	1458
#5 REBAR STRAIGHT	LB	-	918
#8 REBAR STRAIGHT	LB	-	1709
1" POST TENSIONING BAR X 27'5 1/4" W/ NUTS	LF	3 EA.	82.3
1" POST TENSIONING BAR X 15'2 5/8" W/ NUTS	LF	2 EA.	30.5
9" X 9" X 1" PLATES	EA	-	8
5" X 5" X 1 1/4" PLATES	EA	-	2
BEARING PADS 1 1/4" X 4 3/4" X 28" (A1)	EA	-	14
BEARING PADS 1 1/4" X 4 3/4" X 15 1/2" (A2)	EA	-	4
1 1/2" SPONGE RUBBER PREFORMED JOINT FILLER	EA	4 3/4" X 1' 0 1/2"	12
1 1/2" SPONGE RUBBER PREFORMED JOINT FILLER	EA	4 3/4" X 9 1/2"	4
1 1/2" SPONGE RUBBER PREFORMED JOINT FILLER	EA	5 3/4" X 3' 3 3/4"	16
1" SPONGE RUBBER PREFORMED JOINT FILLER	EA	1' 5" X 3' 3 3/4"	16
1" SPONGE RUBBER PREFORMED JOINT FILLER	EA	1' 5" X 1' 11 3/8"	4
1" SPONGE RUBBER WASHER	EA	8" X 8" W/ 3 1/2" DIA. HOLE	27
SWEDGED ANCHOR BOLTS	EA	1" DIA. X 2' 0"	16
NON-SHRINK GROUT FOR JOINTS AND ANCHORS	BAG	-	104
GUARDRAIL INSERT AND HARDWARE	EA	-	12
BRIDGE GUARDRAIL (THRIE BEAM)	LF	-	62.5
ASYMMETRICAL THRIE BEAM TRANSITION	EA	-	4
CLASS 1 APPROACH GUARDRAIL	LF	-	100
H.M.A. BASE COURSE	TON	-	128
H.M.A. WEARING	TON	-	50
BASE STONE	TON	-	105
DETOUR STONE	TON	-	50
FABRIC FOR SEPARATION (DETOUR)	SY	-	125
FABRIC FOR SEPARATION (ABUTMENT)	SY	-	88
FOUNDATION PROTECTION MATERIAL	TON	-	120
ANTIROCK WATERPROOFING MEMBRANE	ROLL	-	10
FLAM 180 WATERPROOFING MEMBRANE	ROLL	-	2
ELASTICOL PRIMER	EA	-	2

DESIGNED BY:	ATO	03-19
DRAWN BY:	ATO	03-19
CHECKED BY:	RMW	04-20
REVIEWED BY:	CMB	-----

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
EXISTING ELEVATION AND DECK SECTION,  
ESTIMATE OF QUANTITIES AND SCOPE OF WORK

ROW OWNERSHIP INDEX																
PARCEL NO.	TITLE HOLDER	RECORDED			TRACT NO.	R/W	AREA - SQUARE FEET (UNLESS OTHERWISE NOTED)					REMARKS	R/W DEED RECORD			
		DEED BOOK	PAGE NUMBER	R/W			EASEMENT		REMAINING				TOTAL TAKEN	PARCEL TOTAL	DEED BOOK	PAGE NUMBER
							TYPE	AREA	LEFT	RIGHT	TOTAL					
1	JOSEPH A. YURKIEWICZ & LYNN YURKIEWICZ	381	85	1	2195					313.42	0.05	313.47	TAX MAP 9, PARCEL 30			
2	RILDA F. BUSH	465	449	1	1275					2.04	0.03	2.07	TAX MAP 10, PARCEL 27.1			
				2		T.C.E	2055									
3-1	RIGHT FORK OF TRACE FORK			1		P.E	95									
3-2	STATE OF WEST VIRGINIA DEPARTMENT OF COMMERCE			1		P.E	130									
	DIVISION OF NATURAL RESOURCES			2		T.E	213									

UTILITIES TABLE			
STATION	SHEET	DESCRIPTION	DISPOSITION
1+54.0 TO 2+85.4	5	FIRST ENERGY CORPORATION	RELOCATE LINE (TEMPORARY)
1+78.8	5	FRONTIER COMMUNICATIONS	RELOCATE

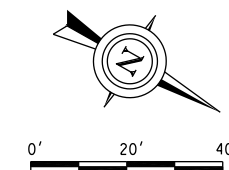
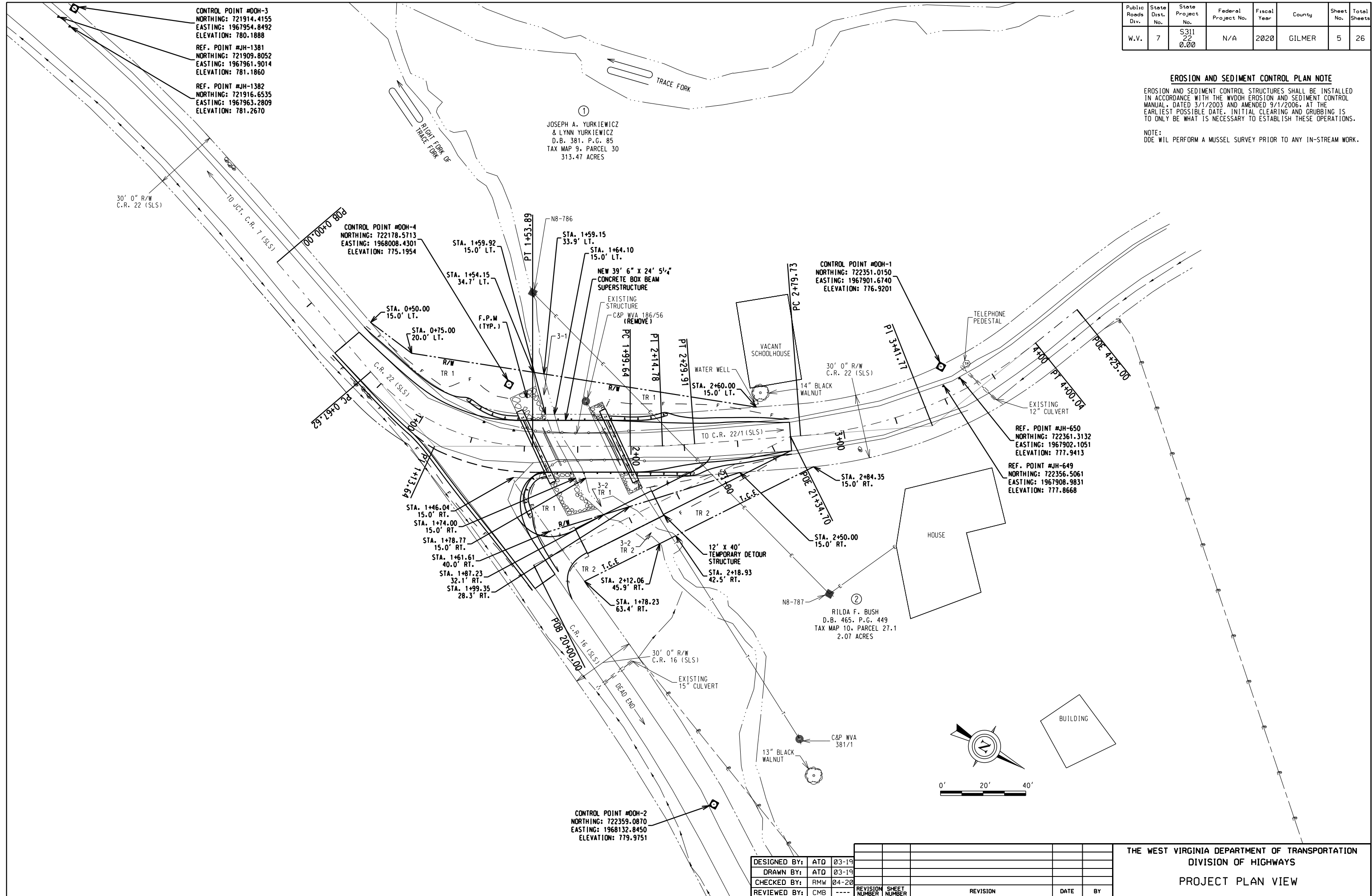
DESIGNED BY:	ATD	03-19							
DRAWN BY:	ATD	03-19							
CHECKED BY:	RMW	04-20							
REVIEWED BY:	CMB	----	REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY		

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	7	S311 22 0.00	N/A	2020	GILMER	5	26

**EROSION AND SEDIMENT CONTROL PLAN NOTE**

EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSTALLED IN ACCORDANCE WITH THE WVDOT EROSION AND SEDIMENT CONTROL MANUAL, DATED 3/1/2003 AND AMENDED 9/1/2006, AT THE EARLIEST POSSIBLE DATE. INITIAL CLEARING AND GRUBBING IS TO ONLY BE WHAT IS NECESSARY TO ESTABLISH THESE OPERATIONS.

NOTE:  
DDE WILL PERFORM A MUSSEL SURVEY PRIOR TO ANY IN-STREAM WORK.



DESIGNED BY:	ATD	03-19					
DRAWN BY:	ATD	03-19					
CHECKED BY:	RMW	04-20					
REVIEWED BY:	CMB	----					
	REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY		

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
PROJECT PLAN VIEW

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	7	S311 22 0.00	N/A	2020	GILMER	6	26

**CONTROL POINT #00H-3**  
 NORTHING: 721914.4155  
 EASTING: 1967954.8492  
 ELEVATION: 780.1888

**REF. POINT #JH-1381**  
 NORTHING: 721909.8052  
 EASTING: 1967961.9014  
 ELEVATION: 781.1860

**REF. POINT #JH-1382**  
 NORTHING: 721916.6535  
 EASTING: 1967963.2809  
 ELEVATION: 781.2670

**CONTROL POINT #00H-4**  
 NORTHING: 722178.5713  
 EASTING: 1968008.4301  
 ELEVATION: 775.1954

**CONTROL POINT #00H-1**  
 NORTHING: 722351.0150  
 EASTING: 1967901.6740  
 ELEVATION: 776.9201

**REF. POINT #JH-650**  
 NORTHING: 722361.3132  
 EASTING: 1967902.1051  
 ELEVATION: 777.9413

**REF. POINT #JH-649**  
 NORTHING: 722356.5061  
 EASTING: 1967908.9831  
 ELEVATION: 777.8668

**CONTROL POINT #00H-2**  
 NORTHING: 722359.0870  
 EASTING: 1968132.8450  
 ELEVATION: 779.9751

**C.R. 22 ALIGNMENT DATA**

Project Name: Reverse Deck Girder  
 Description:  
 Horizontal Alignment Name: C.R. 22  
 Description: Existing

STATION	NORTHING	EASTING
<b>Element: Linear</b>		
POB 0+00.000	722055.6587	1968011.9581
PC 0+67.615	722119.1894	1968035.1027
Tangent Direction: N 20°01'01" E		
Tangent Length: 67.61530		
<b>Element: Circular</b>		
PC 0+67.615	722119.1894	1968035.1027
PI 1+13.642	722162.4359	1968050.8577
CC 722153.4193	1967941.1436	
PT 1+53.888	722202.5300	1968028.2535
Radius: 100.00000		
Delta: 49°25'49" Left		
Degree of Curvature(Arc): 57°17'45"		
Length: 86.27223		
Tangent: 46.02695		
Chord: 83.62153		
Middle Ordinate: 9.16025		
External: 10.08397		
Tangent Direction: N 20°01'01" E		
Radial Direction: S 69°58'59" E		
Chord Direction: N 4°41'53" W		
Radial Direction: N 60°35'12" E		
Tangent Direction: N 29°24'48" W		
<b>Element: Linear</b>		
PT 1+53.888	722202.5300	1968028.2535
PC 1+99.639	722242.3844	1968005.7845
Tangent Direction: N 29°24'48" W		
Tangent Length: 45.75189		
<b>Element: Circular</b>		
PC 1+99.639	722242.3844	1968005.7845
PI 2+14.780	722255.5736	1967998.3487
CC 722045.9417	1967657.3447	
PT 2+29.907	722268.1630	1967989.9372
Radius: 400.00000		
Delta: 4°20'08" Left		
Degree of Curvature(Arc): 14°19'26"		
Length: 30.26727		
Tangent: 15.14086		
Chord: 30.26005		
Middle Ordinate: 0.28625		
External: 0.28645		
Tangent Direction: N 29°24'48" W		
Radial Direction: N 60°35'12" E		
Chord Direction: N 31°34'52" W		
Radial Direction: N 56°15'04" E		
Tangent Direction: N 33°44'56" W		
<b>Element: Linear</b>		
PT 2+29.907	722268.1630	1967989.9372
PC 2+79.730	722309.5898	1967962.2578
Tangent Direction: N 33°44'56" W		
Tangent Length: 49.82300		
<b>Element: Circular</b>		
PC 2+79.730	722309.5898	1967962.2578
PI 3+41.768	722361.1734	1967927.7923
CC 722198.4792	1967795.9616	
PT 4+00.042	722384.1967	1967870.1844
Radius: 200.00000		
Delta: 34°28'01" Left		
Degree of Curvature(Arc): 28°38'52"		
Length: 120.31197		
Tangent: 62.03820		
Chord: 118.50608		
Middle Ordinate: 8.97886		
External: 9.40090		
Tangent Direction: N 33°44'56" W		
Radial Direction: N 56°15'04" E		
Chord Direction: N 50°58'56" W		
Radial Direction: N 21°47'04" E		
Tangent Direction: N 68°12'56" W		
<b>Element: Linear</b>		
PT 4+00.042	722384.1967	1967870.1844
PDE 4+25.000	722393.4591	1967847.0084
Tangent Direction: N 68°12'56" W		
Tangent Length: 24.95835		

**DETOUR ALIGNMENT DATA**

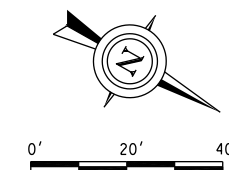
Project Name: Reverse Deck Girder  
 Description:  
 Horizontal Alignment Name: Detour  
 Description:  
 Style: Default

STATION	NORTHING	EASTING
<b>Element: Linear</b>		
POB 20+00.000	722230.3218	1968076.5457
PDE 21+34.698	722305.6572	1967964.8854
Tangent Direction: N 55°59'35" W		
Tangent Length: 134.69758		

**C.R. 16 ALIGNMENT DATA**

Project Name: Reverse Deck Girder  
 Description:  
 Horizontal Alignment Name: C.R. 16  
 Description:  
 Style: Default

STATION	NORTHING	EASTING
<b>Element: Linear</b>		
POB 10+00.000	722261.4140	1968091.1358
PC 10+68.804	722199.1271	1968061.9074
Tangent Direction: S 25°08'19" W		
Tangent Length: 68.80378		
<b>Element: Circular</b>		
PC 10+68.804	722199.1271	1968061.9074
PI 10+79.874	722189.1049	1968057.2045
CC 722209.7473	1968039.2754	
PT 10+89.647	722185.8513	1968046.6227
Radius: 25.00000		
Delta: 47°46'13" Right		
Degree of Curvature(Arc): 229°10'59"		
Length: 20.84370		
Tangent: 11.07071		
Chord: 20.24521		
Middle Ordinate: 2.14102		
External: 2.34155		
Tangent Direction: S 25°08'19" W		
Radial Direction: N 64°51'41" W		
Chord Direction: S 49°01'25" W		
Radial Direction: N 17°05'29" W		
Tangent Direction: S 72°54'31" W		
<b>Element: Linear</b>		
PT 10+89.647	722185.8513	1968046.6227
PDE 11+00.000	722182.8088	1968036.2774
Tangent Direction: S 72°54'31" W		
Tangent Length: 10.35252		

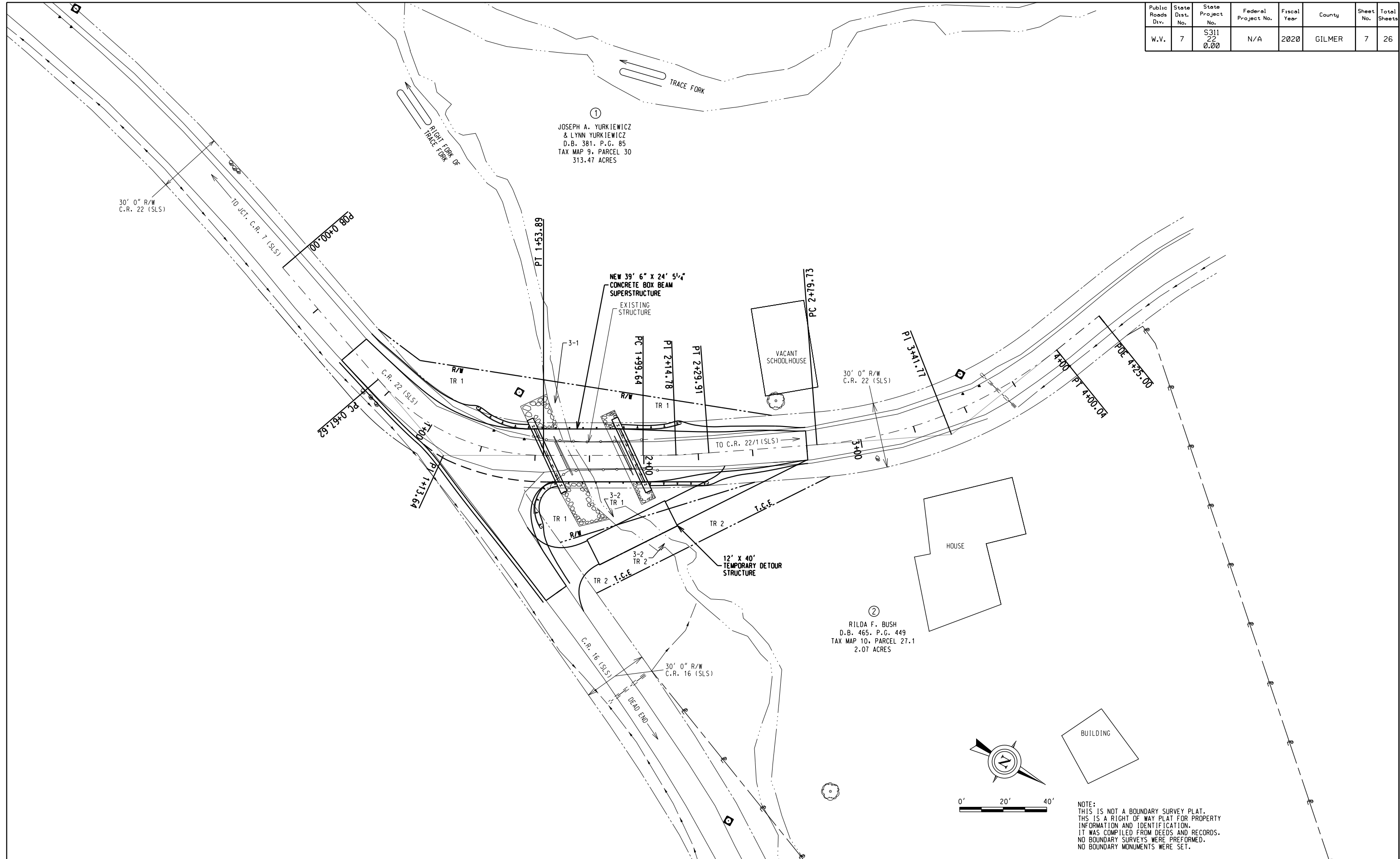


COORDINATE VALUES WERE DERIVED FROM GPS METHODS AND ADJUSTED BY THE NATIONAL GEODETIC SURVEY ON-LINE POSITIONING USER SERVICE (OPUS).  
 COORDINATES SHOWN ARE WEST VIRGINIA STATE PLANE SOUTH (4702).

DESIGNED BY:	ATD	03-19			
DRAWN BY:	ATD	03-19			
CHECKED BY:	RMW	----			
REVIEWED BY:	CMB	----			
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY	

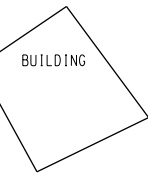
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 SURVEY AND ALIGNMENT DATA

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	7	S311 22 0.00	N/A	2020	GILMER	7	26



①  
 JOSEPH A. YURKIEWICZ  
 & LYNN YURKIEWICZ  
 D.B. 381, P.G. 85  
 TAX MAP 9, PARCEL 30  
 313.47 ACRES

②  
 RILDA F. BUSH  
 D.B. 465, P.G. 449  
 TAX MAP 10, PARCEL 27.1  
 2.07 ACRES

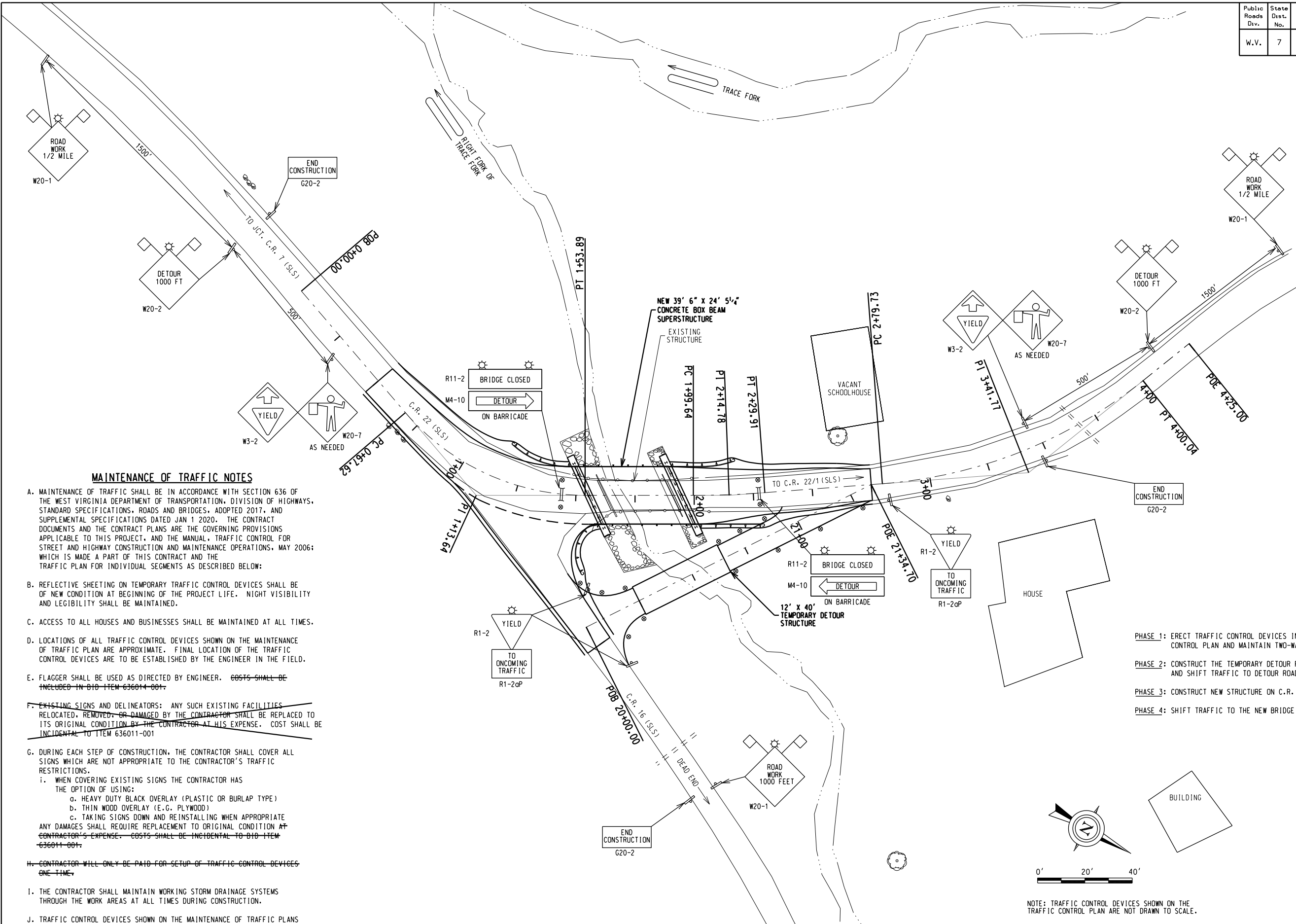


NOTE:  
 THIS IS NOT A BOUNDARY SURVEY PLAT.  
 THIS IS A RIGHT OF WAY PLAT FOR PROPERTY  
 INFORMATION AND IDENTIFICATION.  
 IT WAS COMPILED FROM DEEDS AND RECORDS.  
 NO BOUNDARY SURVEYS WERE PERFORMED.  
 NO BOUNDARY MONUMENTS WERE SET.

DESIGNED BY:	ATD	03-19					
DRAWN BY:	ATD	03-19					
CHECKED BY:	RMW	04-20					
REVIEWED BY:	CMB	----					
	REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY		

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 PROPERTY MAP

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	7	S311 22 0.00	N/A	2020	GILMER	8	26



**MAINTENANCE OF TRAFFIC NOTES**

- A. 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 2017, AND SUPPLEMENTAL SPECIFICATIONS DATED JAN 1 2020. THE CONTRACT DOCUMENTS AND THE CONTRACT PLANS ARE THE GOVERNING PROVISIONS APPLICABLE TO THIS PROJECT, AND THE MANUAL, TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS, MAY 2006; WHICH IS MADE A PART OF THIS CONTRACT AND THE TRAFFIC PLAN FOR INDIVIDUAL SEGMENTS AS DESCRIBED BELOW:
- B. 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.
- C. ACCESS TO ALL HOUSES AND BUSINESSES SHALL BE MAINTAINED AT ALL TIMES.
- D. LOCATIONS OF ALL TRAFFIC CONTROL DEVICES SHOWN ON THE MAINTENANCE OF TRAFFIC PLAN ARE APPROXIMATE. FINAL LOCATION OF THE TRAFFIC CONTROL DEVICES ARE TO BE ESTABLISHED BY THE ENGINEER IN THE FIELD.
- E. FLAGGER SHALL BE USED AS DIRECTED BY ENGINEER. COSTS SHALL BE INCLUDED IN BID ITEM 636014-001.
- F. ~~EXISTING SIGNS AND DELINEATORS: ANY SUCH EXISTING FACILITIES RELOCATED, REMOVED, OR DAMAGED BY THE CONTRACTOR SHALL BE REPLACED TO ITS ORIGINAL CONDITION BY THE CONTRACTOR AT HIS EXPENSE. COST SHALL BE INCIDENTAL TO ITEM 636011-001.~~
- G. DURING EACH STEP OF CONSTRUCTION, THE CONTRACTOR SHALL COVER ALL SIGNS WHICH ARE NOT APPROPRIATE TO THE CONTRACTOR'S TRAFFIC RESTRICTIONS.
  - i. WHEN COVERING EXISTING SIGNS THE CONTRACTOR HAS THE OPTION OF USING:
    - a. HEAVY DUTY BLACK OVERLAY (PLASTIC OR BURLAP TYPE)
    - b. THIN WOOD OVERLAY (E.G. PLYWOOD)
    - c. TAKING SIGNS DOWN AND REINSTALLING WHEN APPROPRIATE
- H. ~~CONTRACTOR WILL ONLY BE PAID FOR SETUP OF TRAFFIC CONTROL DEVICES ONE TIME.~~
- I. THE CONTRACTOR SHALL MAINTAIN WORKING STORM DRAINAGE SYSTEMS THROUGH THE WORK AREAS AT ALL TIMES DURING CONSTRUCTION.
- J. TRAFFIC CONTROL DEVICES SHOWN ON THE MAINTENANCE OF TRAFFIC PLANS ARE NOT DRAWN TO SCALE.
- K. FLAGGER: WHEN WORK IS PERFORMED AT NIGHT WITH A FLAGGER, THE FLAGGER STATIONS SHALL BE ADEQUATELY ILLUMINATED. ~~THIS COST SHALL BE PAID FOR AS PART OF ITEM 636014-001.~~

- PHASE 1: ERECT TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE TEMPORARY TRAFFIC CONTROL PLAN AND MAINTAIN TWO-WAY TRAFFIC ON EXISTING ROADS.
- PHASE 2: CONSTRUCT THE TEMPORARY DETOUR ROAD AND BRIDGE FROM STA. 20+00 TO 21+34.70 AND SHIFT TRAFFIC TO DETOUR ROAD.
- PHASE 3: CONSTRUCT NEW STRUCTURE ON C.R. 22.
- PHASE 4: SHIFT TRAFFIC TO THE NEW BRIDGE AND ROADWAY. REMOVE DETOUR ROAD AND BRIDGE.

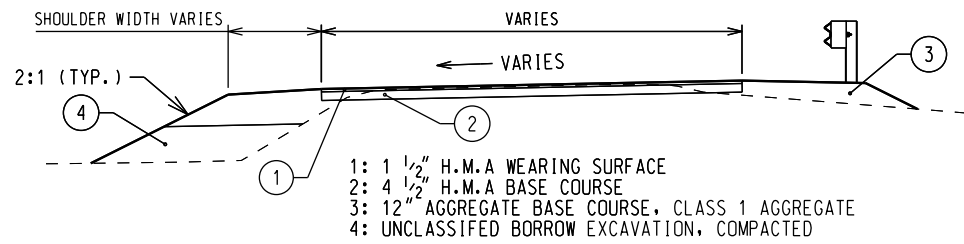
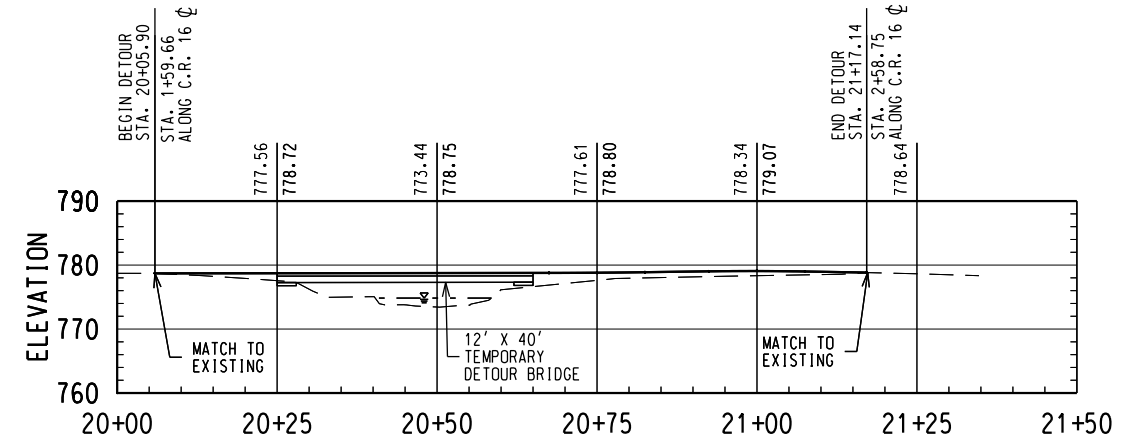
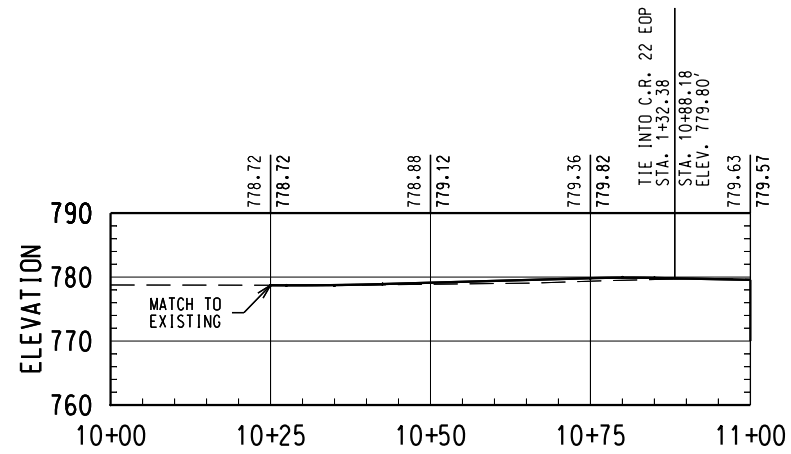
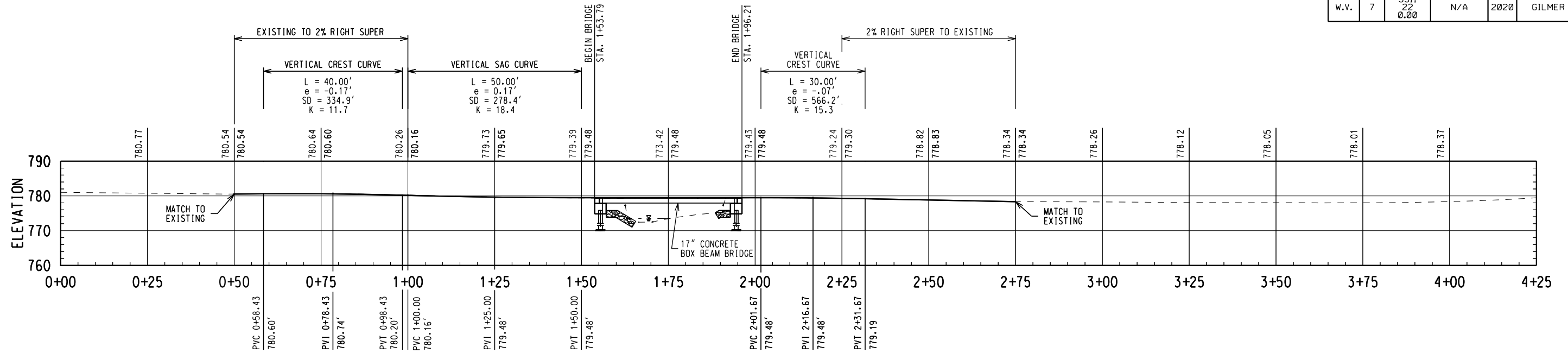
- ⊥ SIGN OF PORTABLE OR PERMANENT SUPPORT
- ☀ TYPE 'B' WARNING LIGHTS
- ⊗ DRUM
- || TYPE III BARRICADES W/ TYPE 'B' LIGHTS

DESIGNED BY:	ATD	03-19			
DRAWN BY:	ATD	03-19			
CHECKED BY:	RMW	04-20			
REVIEWED BY:	CMB	----			
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY	

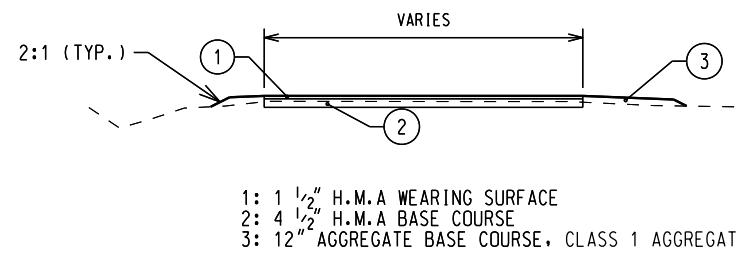
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
TRAFFIC CONTROL PLAN



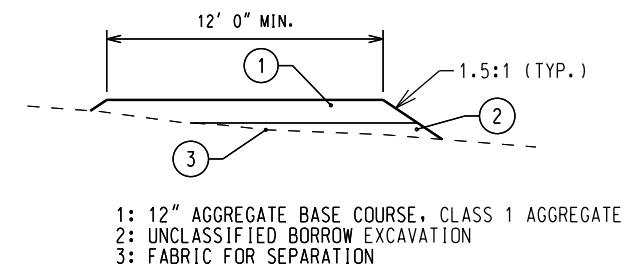
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	7	S311 22 0.00	N/A	2020	GILMER	9	26



C.R. 22 (SLS) TYP. SECTION  
(NO SCALE)



C.R. 16 (SLS) TYP. SECTION  
(NO SCALE)

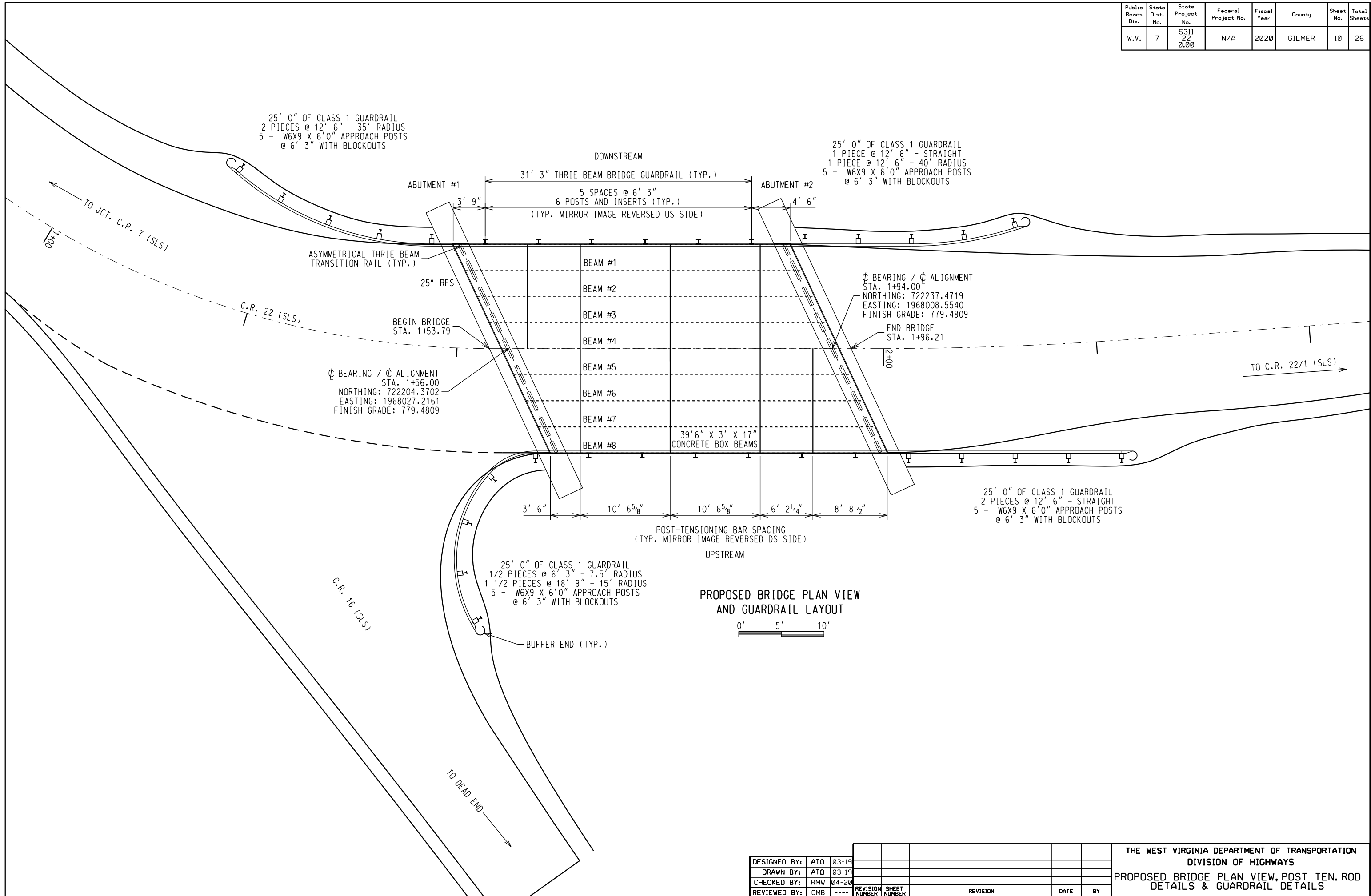


DETOUR TYP. SECTION  
(NO SCALE)

DESIGNED BY:	ATD	02-19			
DRAWN BY:	ATD	02-19			
CHECKED BY:	RMW	04-20			
REVIEWED BY:	CMB	----			
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY	

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
PROFILES & TYPICAL SECTIONS

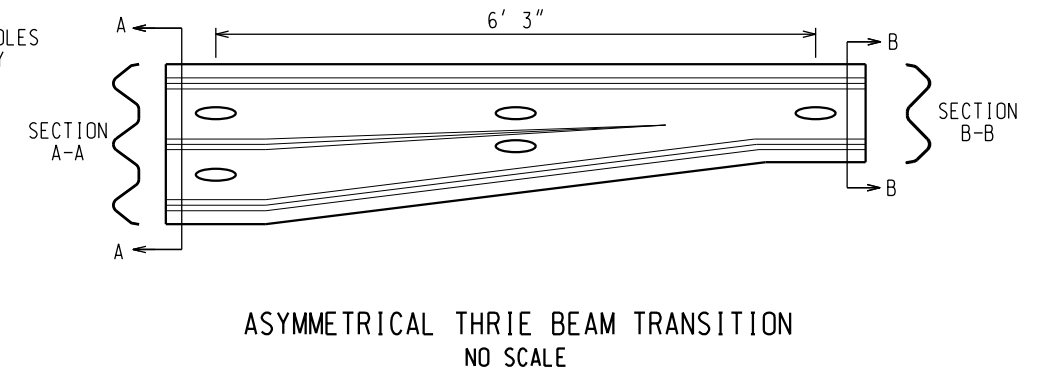
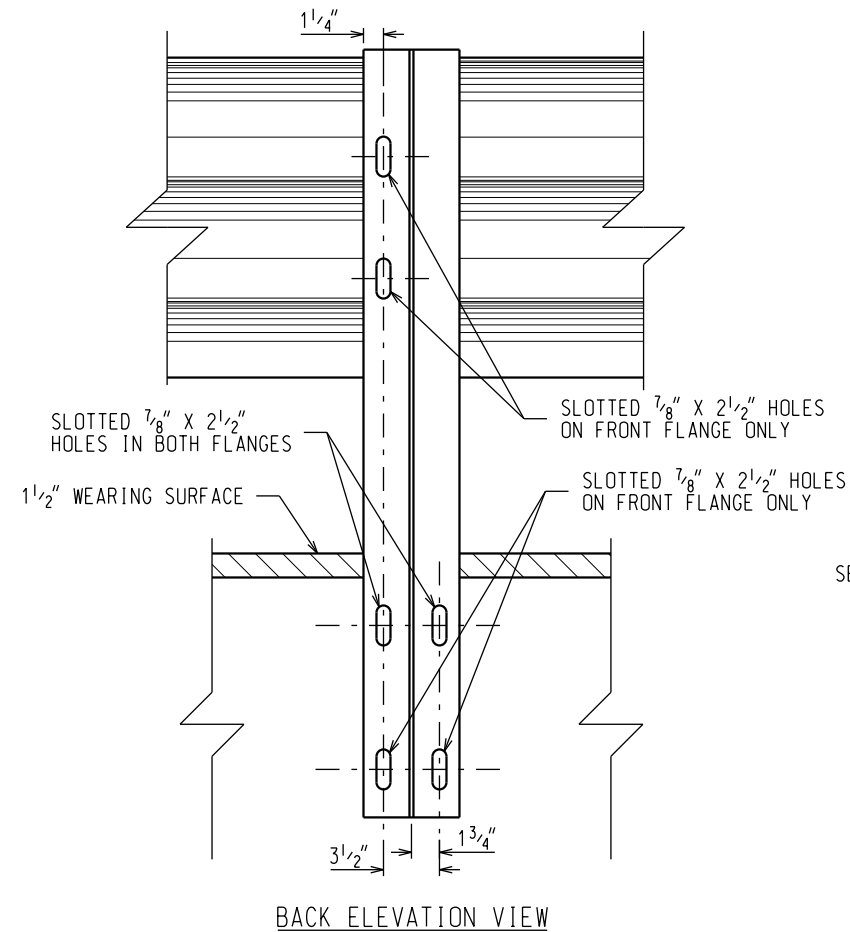
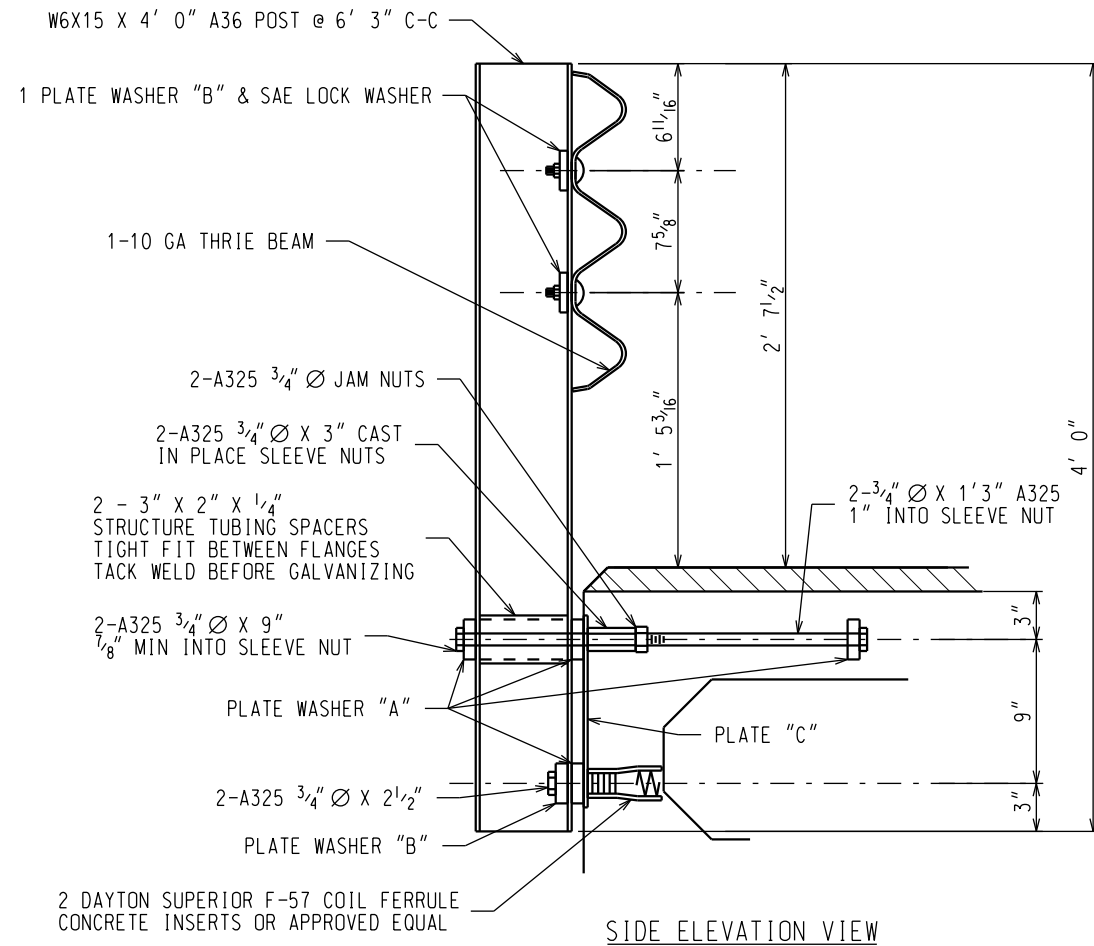
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	7	S311 22 0.00	N/A	2020	GILMER	10	26



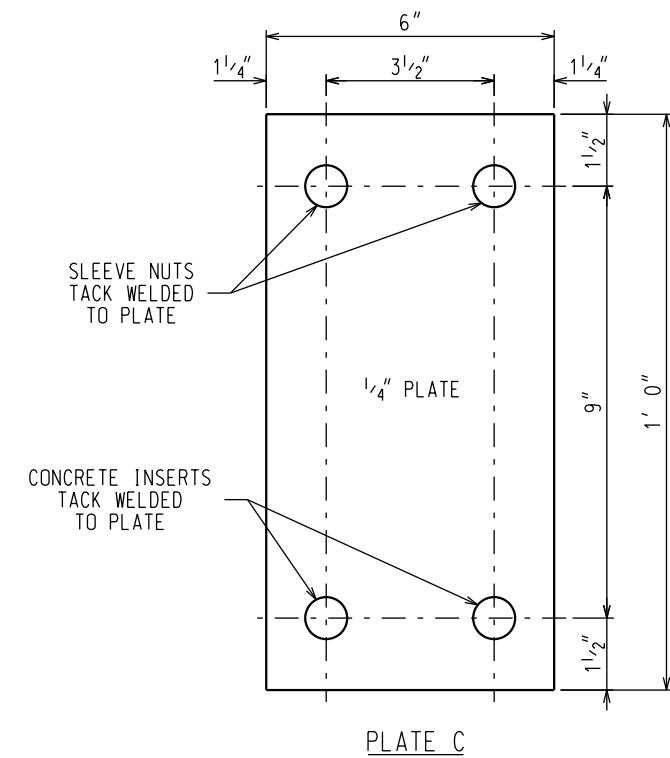
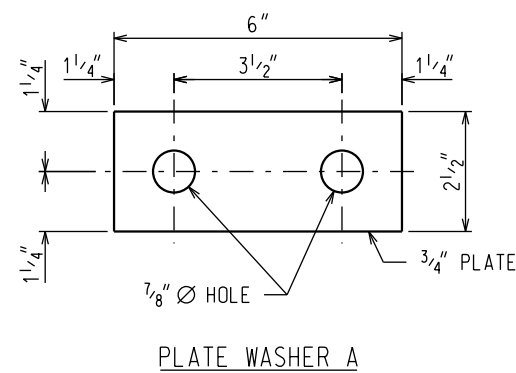
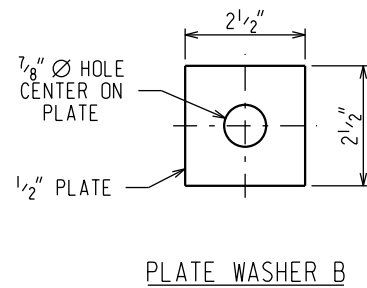
DESIGNED BY:	ATD	03-19					
DRAWN BY:	ATD	03-19					
CHECKED BY:	RMW	04-20					
REVIEWED BY:	CMB	----					
	REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY		

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 PROPOSED BRIDGE PLAN VIEW, POST TEN. ROD  
 DETAILS & GUARDRAIL DETAILS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	7	S311 22 0.00	N/A	2020	GILMER	11	26



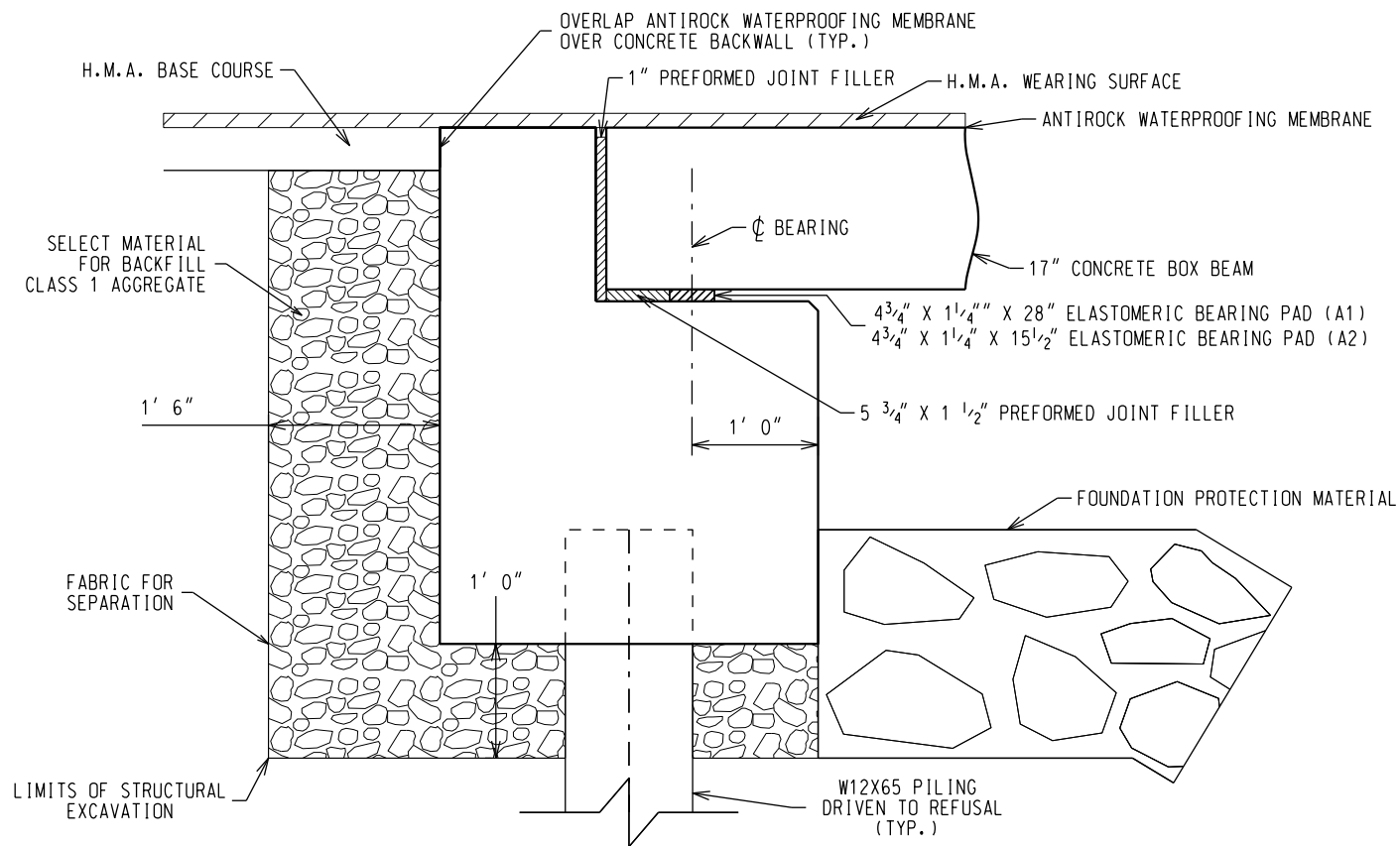
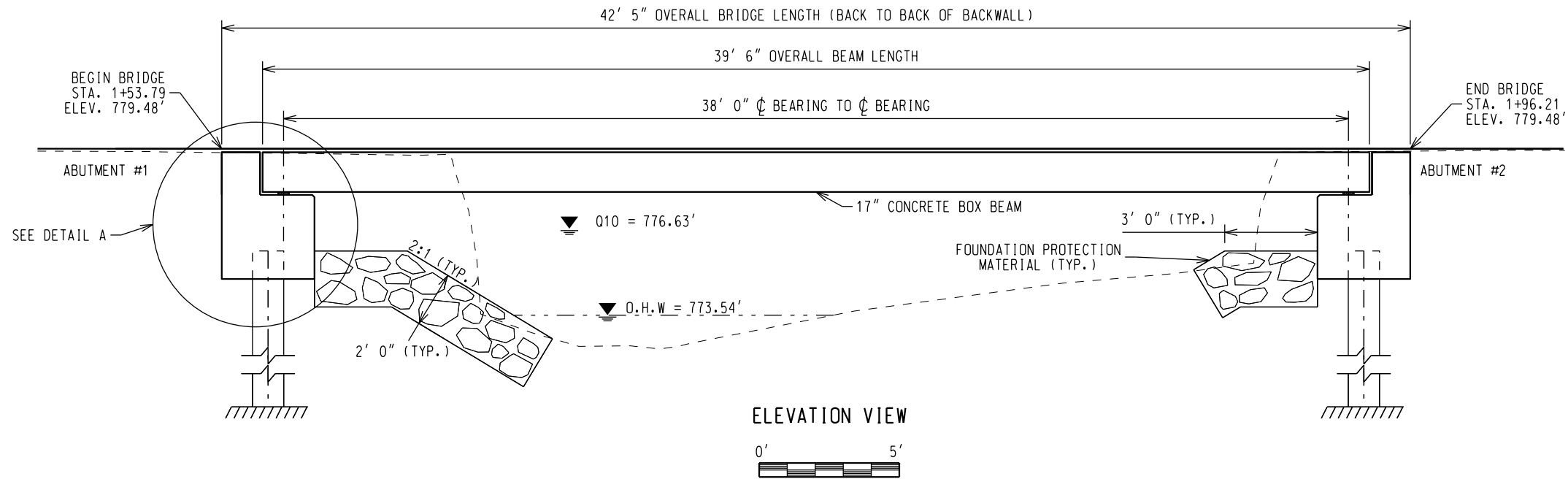
SIDE MOUNTED POST DETAILS  
OREGON THRIE-BEAM SIDE MOUNT (TL-2)  
NO SCALE



NOTE: ALL GUARDRAIL FASTENERS SHALL BE GALVANIZED ACCORDING TO THE COATING SPECS. IN AASHTO M232 AND THE STEEL SECTIONS AND PLATES SHALL BE GALVANIZED ACCORDING TO AASHTO M111.

DESIGNED BY:	ATD	03-19					
DRAWN BY:	ATD	03-19					
CHECKED BY:	RMW	04-20					
REVIEWED BY:	CMB	----	REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
SIDE MOUNT GUARDRAIL DETAILS



STRUCTURE EXCAVATION DETAIL  
DETAIL A  
(NO SCALE - TYP. BOTH ABUTMENTS)

GRADATION OF ABUTMENT FOUNDATION PROTECTION MATERIAL		
	MINIMUM	MAXIMUM
D100	2.0	2.2
D85	1.6	1.8
D50	1.3	1.5
D15	0.5	0.8

HYDRAULIC DATA

DESIGN FLOOD FREQUENCY: \_\_\_\_\_ Q10

DESIGN DISCHARGE: \_\_\_\_\_ 355 CFS

EFFECTIVE WATERWAY AREA OF EXISTING STRUCTURE: 100.51 SF

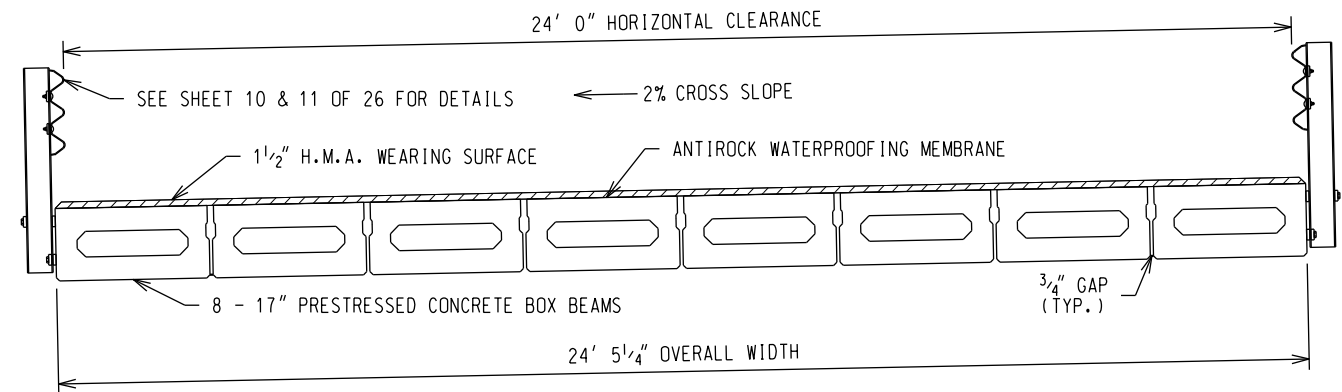
EFFECTIVE WATERWAY OF NEW STRUCTURE: \_\_\_\_\_ 128.91 SF

ELEVATION AT BOTTOM OF EXISTING SUPERSTRUCTURE: 777.33

ELEVATION AT BOTTOM OF NEW STRUCTURE: \_\_\_\_\_ 777.94

LOW WATER ELEVATION: \_\_\_\_\_ 772.55

STREAM BED ELEVATION: \_\_\_\_\_ 772.34

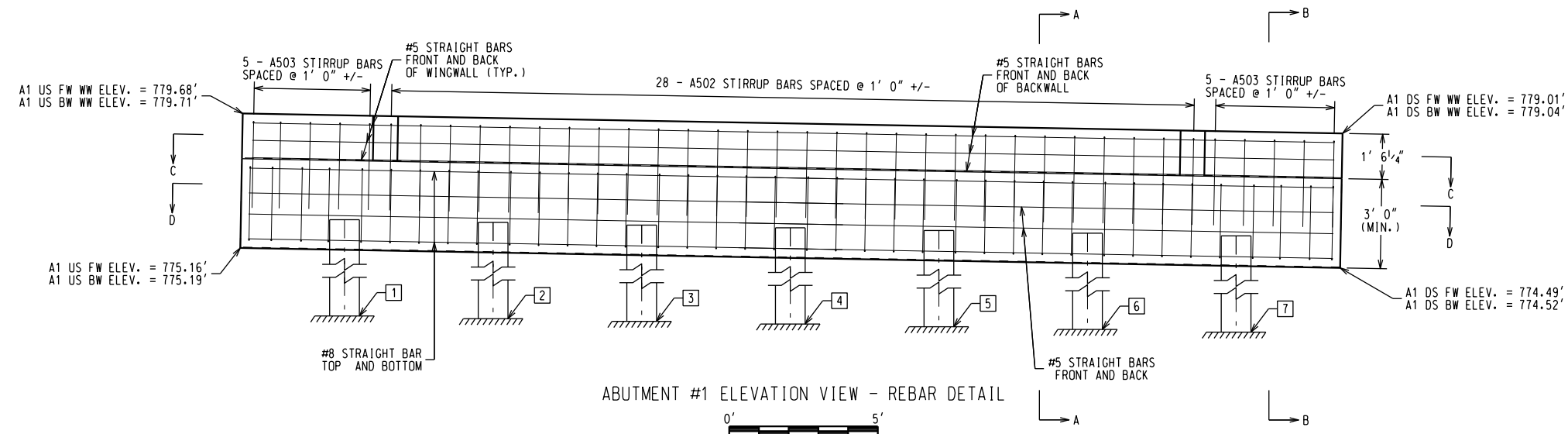
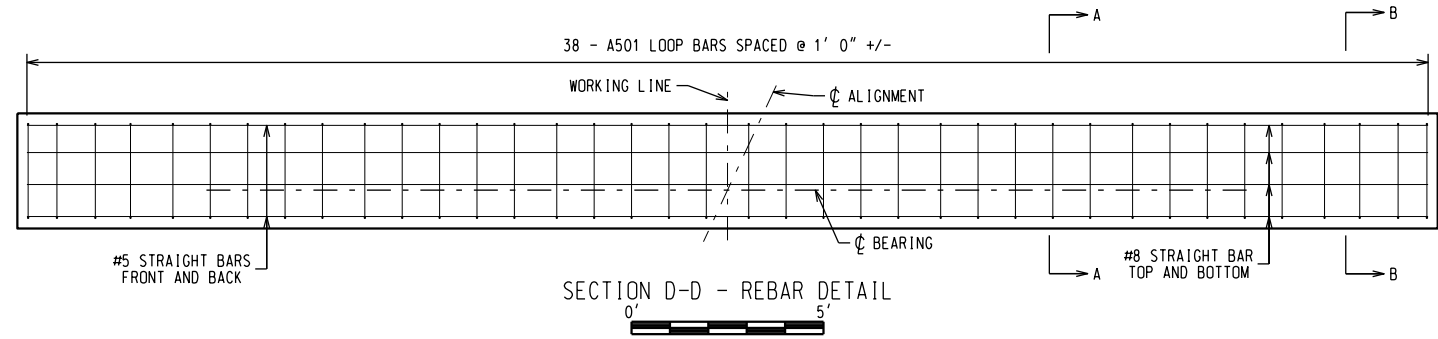
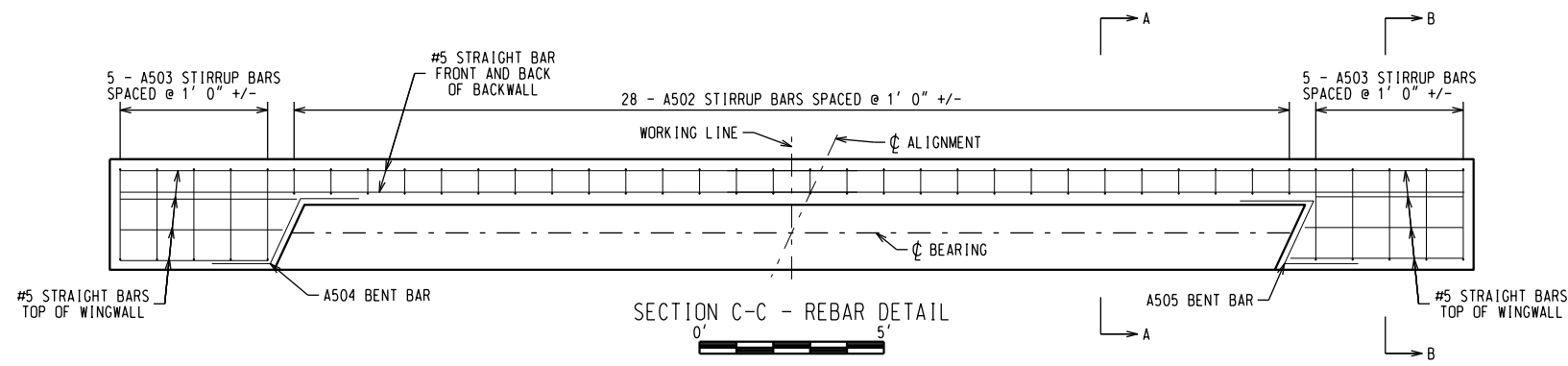
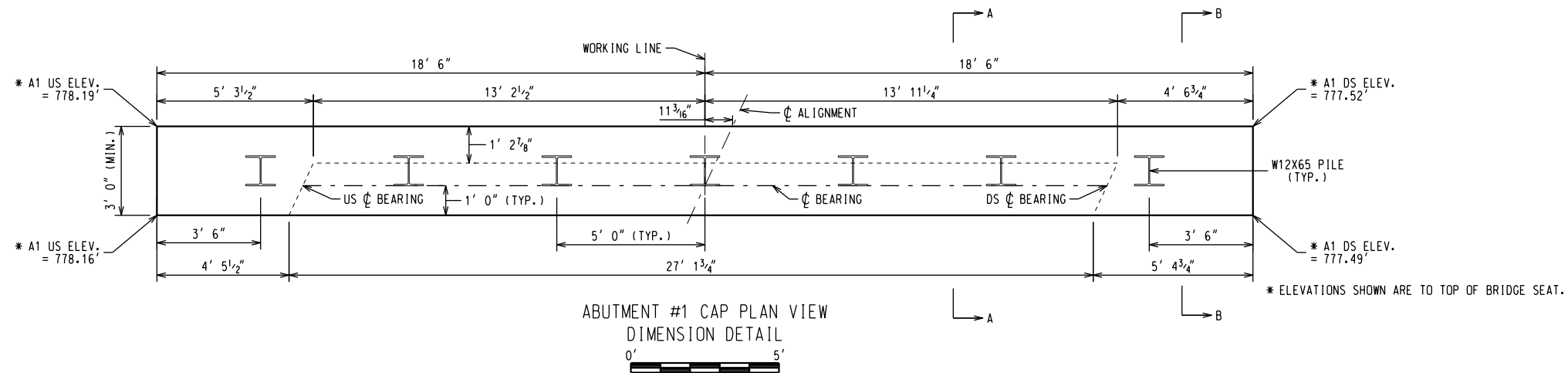


PROPOSED DECK SECTION  
(NO SCALE)

DESIGNED BY:	ATD	03-19					
DRAWN BY:	ATD	03-19					
CHECKED BY:	RMW	04-20					
REVIEWED BY:	CMB	----	REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
ELEVATION VIEW, HYDRAULIC DATA, STRUCTURE  
EXCAVATION DETAILS & PROP. DECK SECTION

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	7	S311 22 0.00	N/A	2020	GILMER	13	26



ABUTMENT #1 COORDINATES

LOCATION	NORTHING	EASTING
US FW	722219.9970	1968037.1686
US BW	722218.2512	1968039.6083
DS FW	722189.9072	1968015.6371
DS BW	722188.1614	1968018.0768
US $\phi$ BEARING	722215.4100	1968035.1147
DS $\phi$ BEARING	722193.3305	1968019.3176

ABUTMENT #1 PILE COORDINATES & CUTOFFS

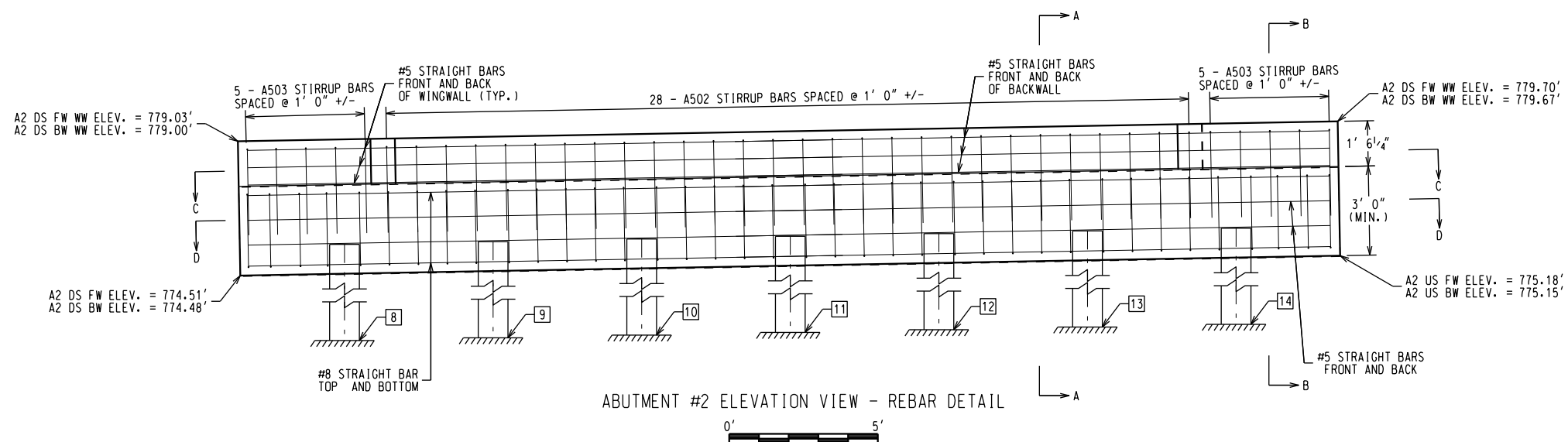
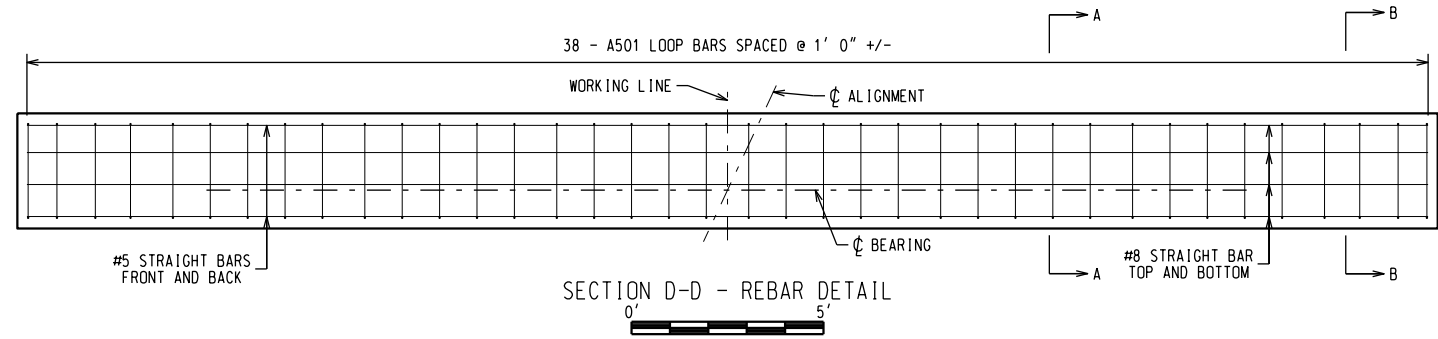
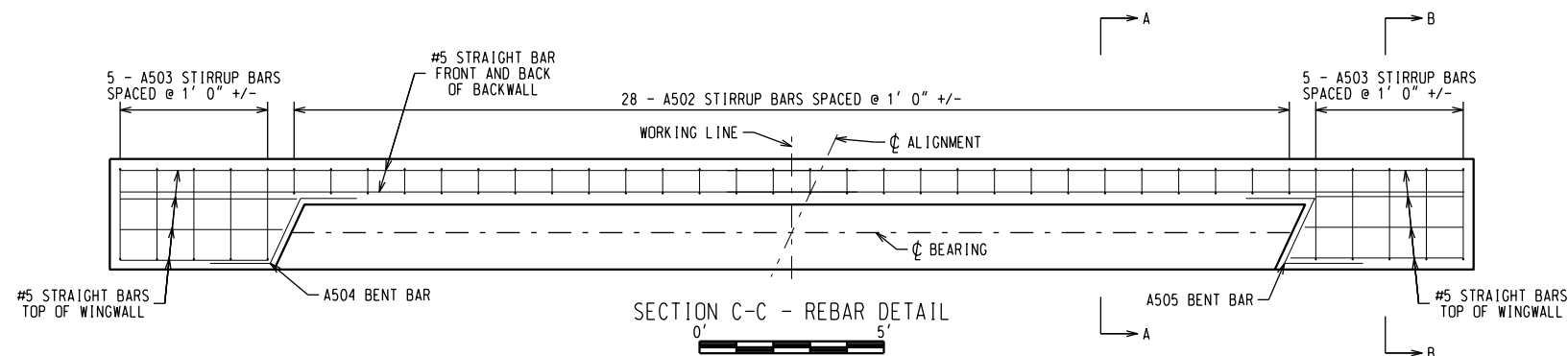
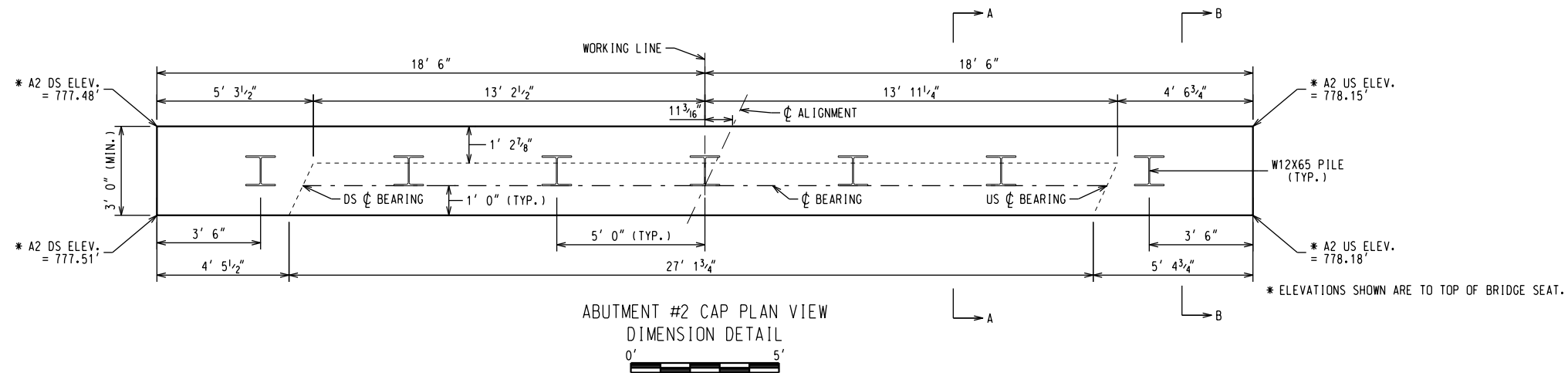
PILE	NORTHING	EASTING	CUTOFF ELEVATION
1	722216.2777	1968036.3517	776.12'
2	722212.2116	1968033.4420	776.03'
3	722208.1454	1968030.5324	775.94'
4	722204.0792	1968027.6227	775.85'
5	722200.0130	1968024.7130	775.76'
6	722195.9468	1968021.8034	775.67'
7	722191.8806	1968018.8937	775.58'

- NOTES: - UNLESS OTHERWISE NOTED, ALL CLEARANCES ARE 3".  
- LAP SPLICES AND ANCHORAGES ARE 19" FOR #5 BARS.  
- LAP SPLICES AND ANCHORAGES ARE 42" FOR #8 BARS.  
- ALL REBARS SHALL BE EPOXY COATED.  
- CUT STRAIGHT BARS TO FIT AND REPAIR DAMAGED EPOXY COATING.  
- RETOUCH EPOXY AS SOON AS POSSIBLE.  
- PILING SHALL BE DRIVEN TO REFUSAL.

DESIGNED BY:	ATD	03-19				
DRAWN BY:	ATD	03-19				
CHECKED BY:	RMW	04-20				
REVIEWED BY:	CMB	----				
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY		

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
ABUTMENT #1 DETAILS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	7	S311 22 0.00	N/A	2020	GILMER	14	26



ABUTMENT #2 COORDINATES

LOCATION	NORTHING	EASTING
DS FW	722221.8451	1967998.6015
DS BW	722223.5909	1967996.1618
US FW	722251.9349	1968020.1330
US BW	722253.6807	1968017.6933
DS $\phi$ BEARING	722226.4323	1968000.6556
US $\phi$ BEARING	722248.5118	1968016.4526

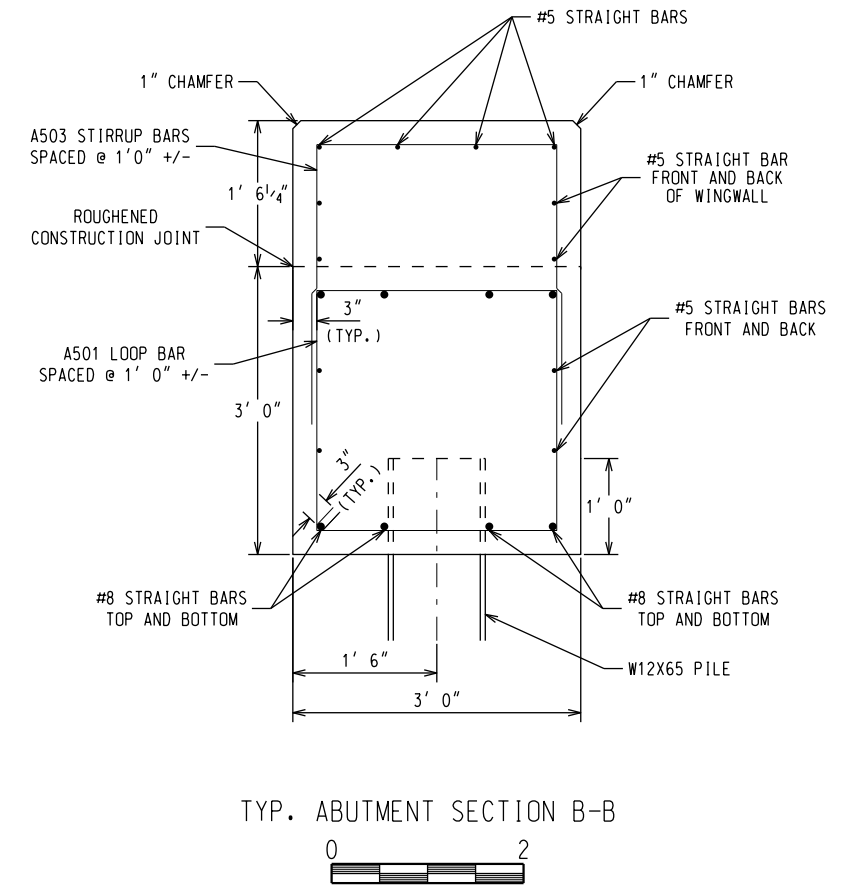
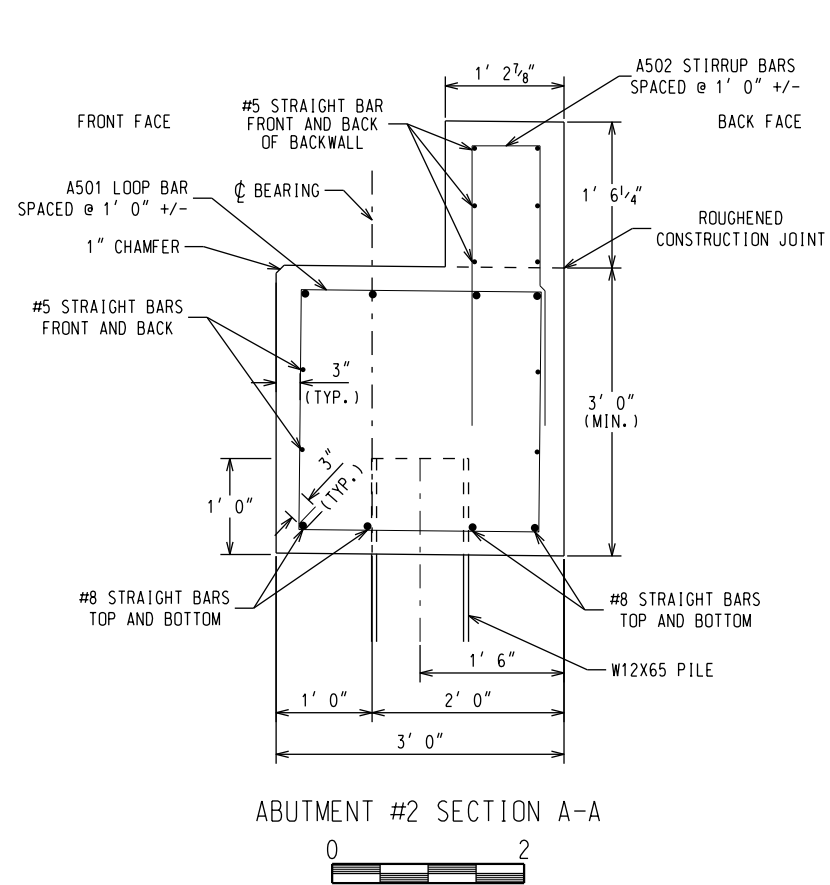
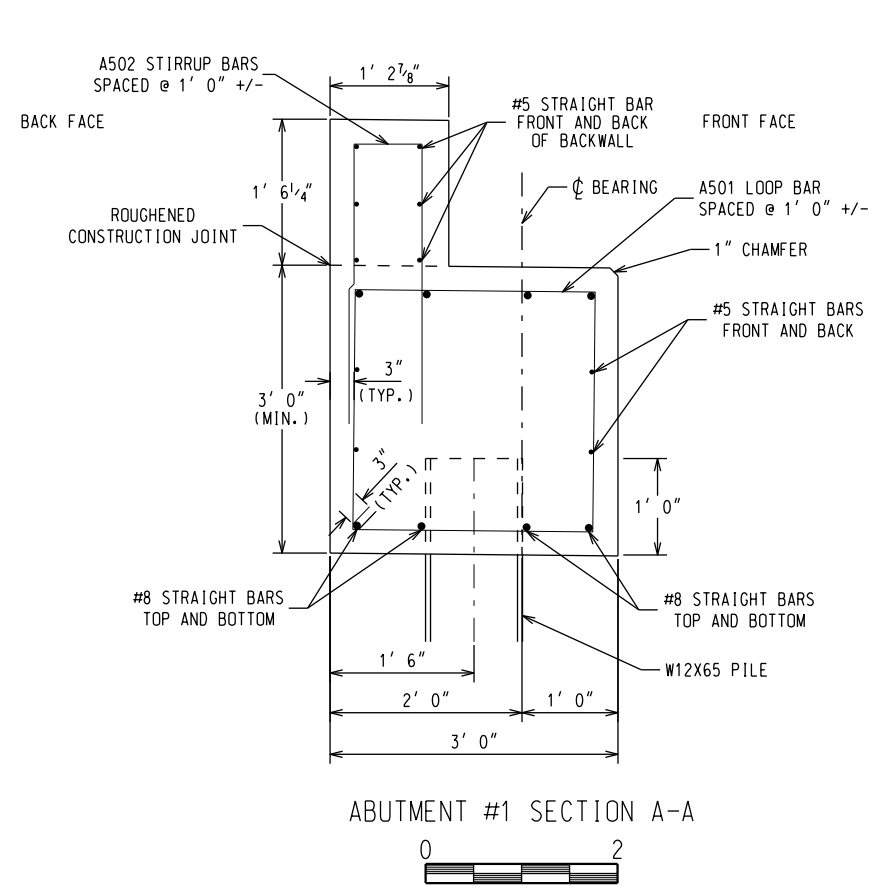
ABUTMENT #2 PILE COORDINATES & CUTOFFS

PILE	NORTHING	EASTING	CUTOFF ELEVATION
8	722225.5644	1967999.4184	775.57'
9	722229.6305	1968002.3281	775.66'
10	722233.6967	1968005.2378	775.75'
11	722237.7629	1968008.1474	775.84'
12	722241.8291	1968011.0571	775.93'
13	722245.8953	1968013.9668	776.02'
14	722249.9614	1968016.8764	776.11'

- NOTES: - UNLESS OTHERWISE NOTED, ALL CLEARANCES ARE 3".  
 - LAP SPLICES AND ANCHORAGES ARE 19" FOR #5 BARS.  
 - LAP SPLICES AND ANCHORAGES ARE 42" FOR #8 BARS.  
 - ALL REBARS SHALL BE EPOXY COATED.  
 - CUT STRAIGHT BARS TO FIT AND REPAIR DAMAGED EPOXY COATING.  
 - RETOUCH EPOXY AS SOON AS POSSIBLE.  
 - PILING SHALL BE DRIVEN TO REFUSAL.

DESIGNED BY:	ATD	03-19				
DRAWN BY:	ATD	03-19				
CHECKED BY:	RMW	04-20				
REVIEWED BY:	CMB	----				
	REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY	

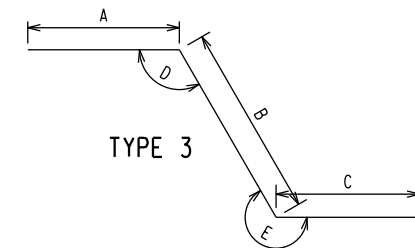
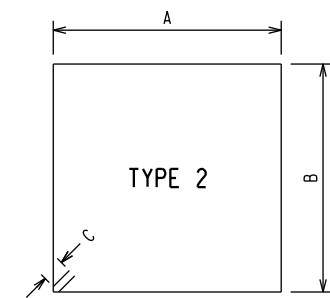
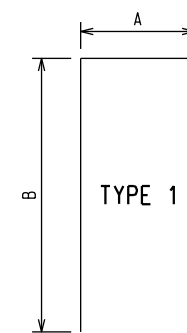
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 ABUTMENT #2 DETAILS



REBAR SCHEDULES

MARK	TYPE	NO.	LOCATION	TOTAL LENGTH	DIMENSIONS					WEIGHT LBS.
					A	B	C	D	E	
A501	2	76	ABUTMENT CAP LOOP BAR REINFORCEMENT	10' 6"	2' 6"	2' 6"	0' 3"			832.3
A502	1	56	STIRRUP BAR FOR BACKWALL REINFORCEMENT	6' 6 3/4"	0' 8 3/4"	2' 11"				383.3
A503	1	20	STIRRUP BAR FOR WINGWALL REINFORCEMENT	8' 4"	2' 6"	2' 11"				173.8
A504	3	6	BENT BAR FOR ABUTMENT REINFORCEMENT	5' 1 1/4"	1' 7"	1' 11 1/4"	1' 7"	115°	245°	31.9
A505	3	6	BENT BAR FOR ABUTMENT REINFORCEMENT	5' 10 1/2"	2' 0"	1' 10 1/2"	2' 0"	65°	295°	36.8
									TOTAL	1458.1

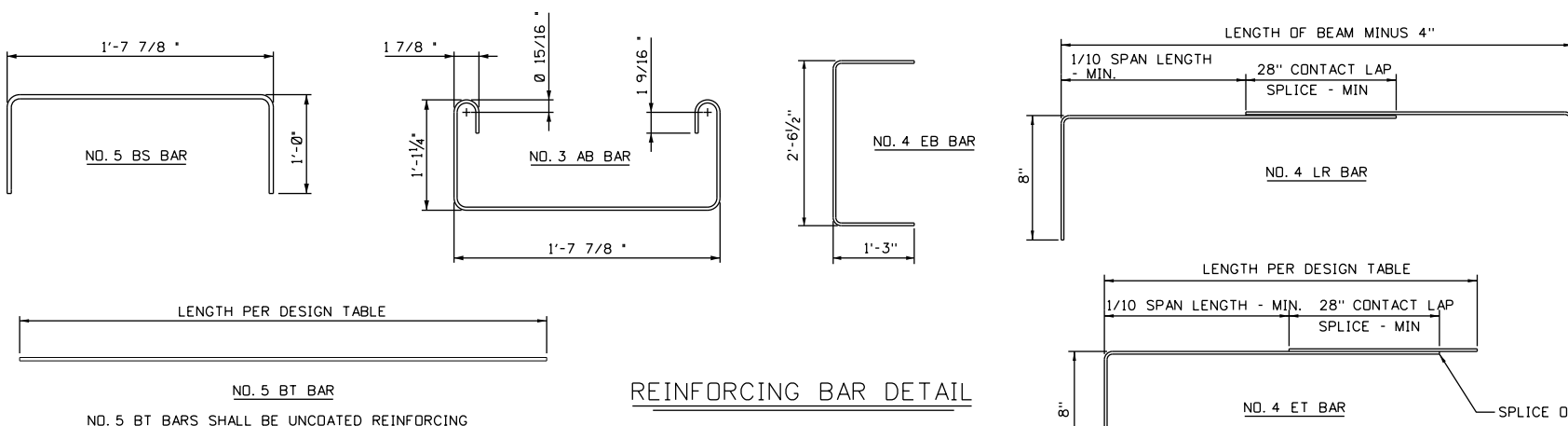
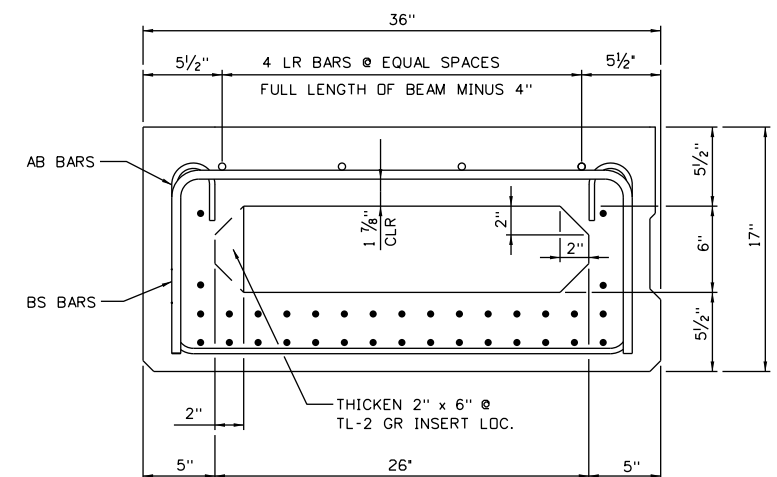
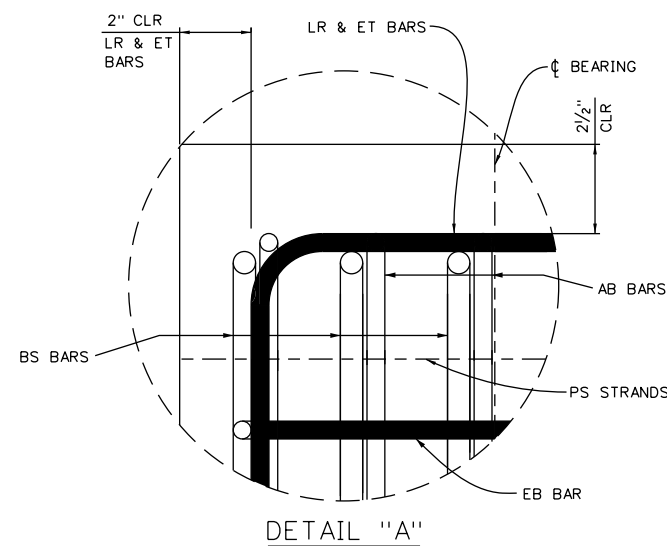
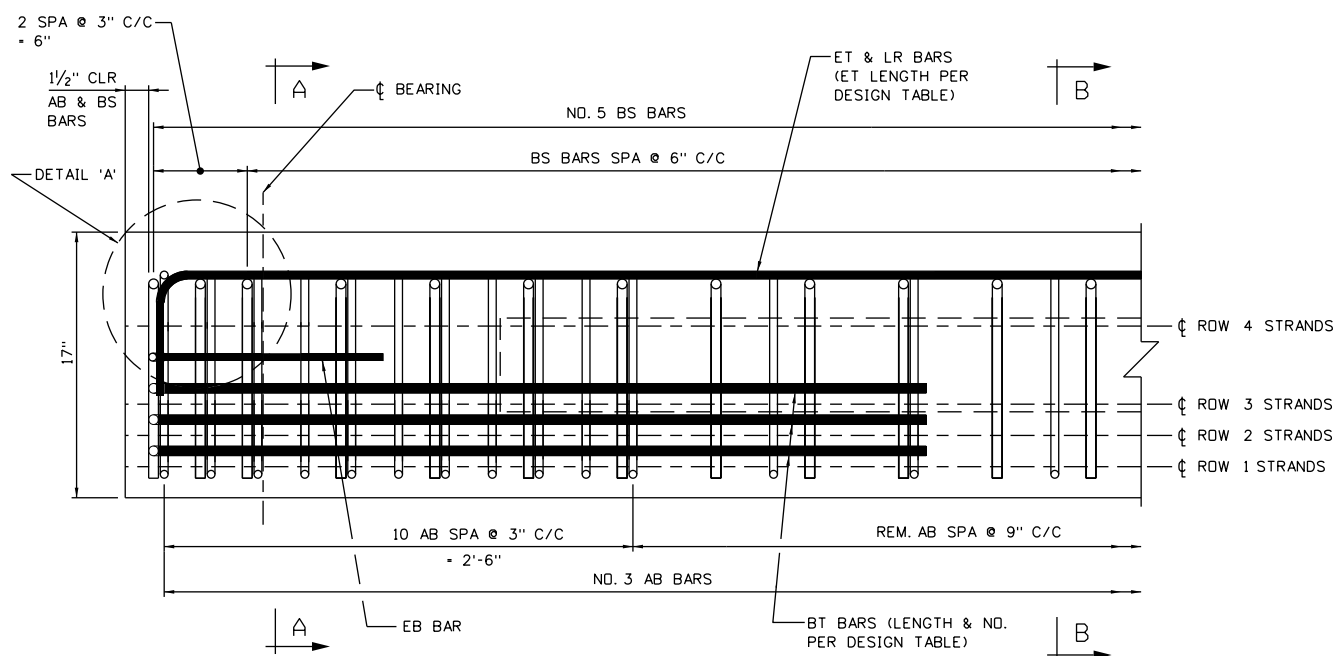
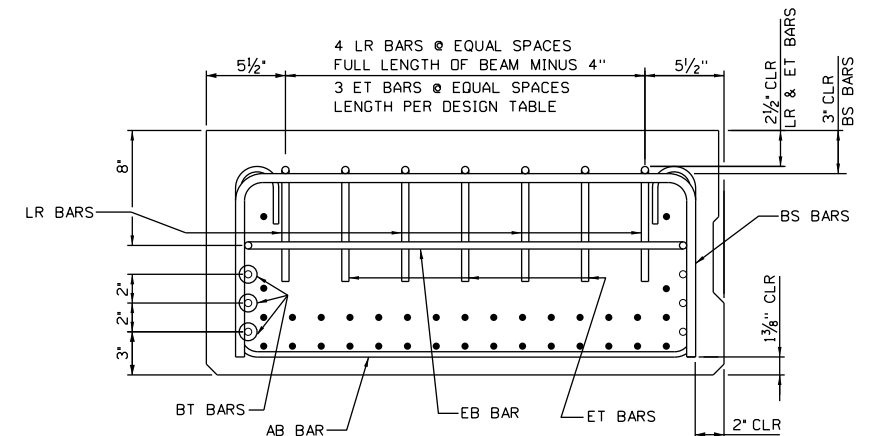
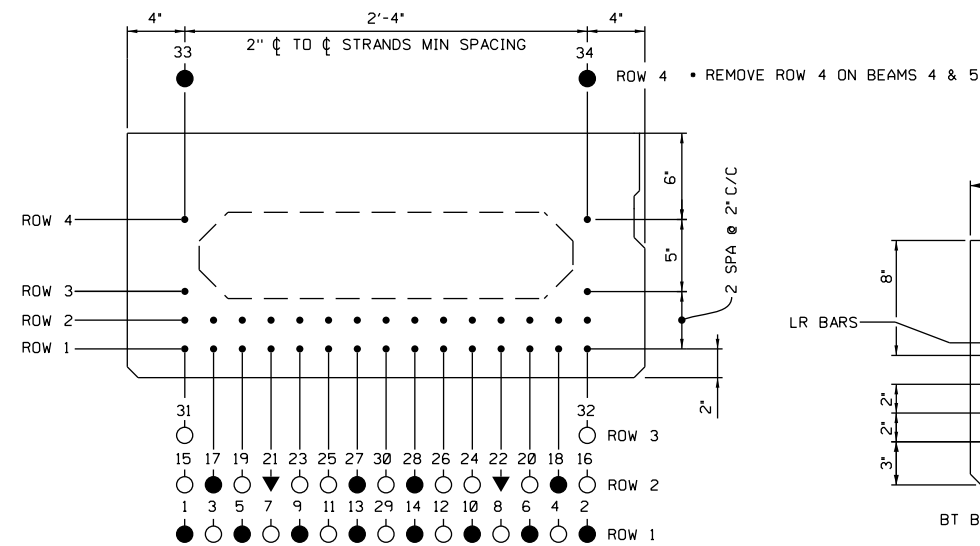
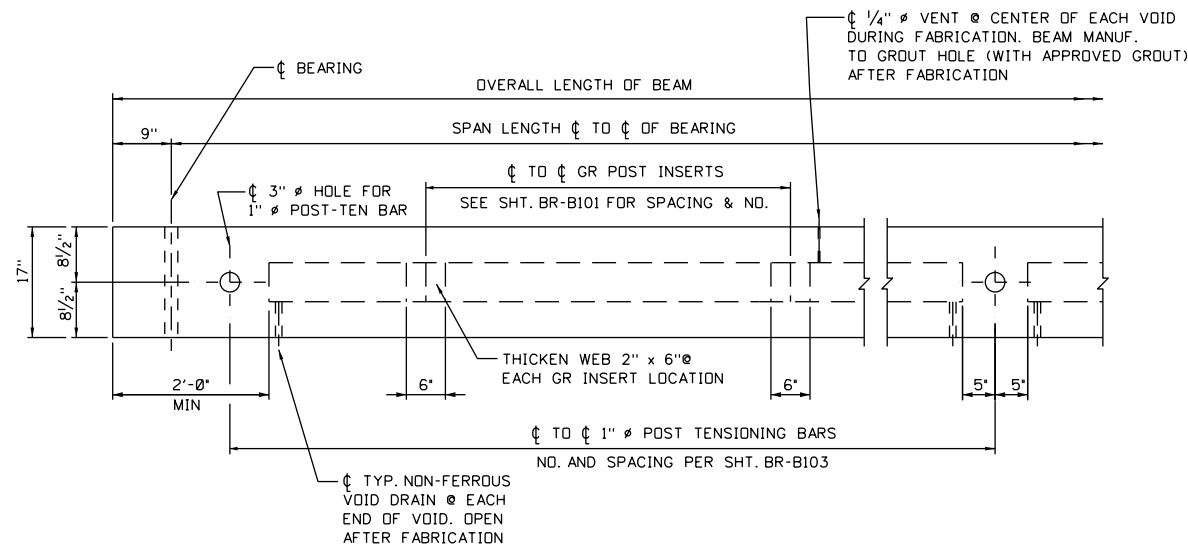
#5	STR.	44	ABUTMENT CAP AND BACKWALL REINFORCEMENT	20'						917.8
#8	STR.	32	ABUTMENT CAP REINFORCEMENT	20'						1708.8



DESIGNED BY:	ATD	03-19	REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY
DRAWN BY:	ATD	03-19					
CHECKED BY:	RMW	04-20					
REVIEWED BY:	CMB	----					

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
TYP. ABUTMENT SECTIONS AND  
REBAR SCHEDULE

PROJECT NUMBERS		DISTRICT	COUNTY	SHEET NO.	TOTAL
STATE	FEDERAL				
S311-22-0.00	N/A	7	GILMER	16	26



NOTES:

- REFER TO SHEET BR-B102A FOR SHEAR KEY DETAILS.
- DESIGNER SHALL USE THE FOLLOWING KEY TO INDICATE STRAND AND DEBONDING PATTERN ON "BEAM PRESTRESSING VIEW", THIS SHEET.
  - ACTIVE STRAND
  - ▽ DEBOND STRAND: LENGTH FROM END OF BEAM \* 7' 6"
  - △ DEBOND STRAND: LENGTH FROM END OF BEAM
  - DEBOND STRAND: LENGTH FROM END OF BEAM
- THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-B17B, BR-B100, BR-B101, BR-B102A & B, BR-B103, BR-B104, BR-B105A & B AND BR-B106 AS APPLICABLE.

WHEN A POST-TEN ACCESS POCKET IS USED AS DETAILED ON SHEET BR-103 STRANDS IN ROWS 3 AND 4 SHALL BE ELIMINATED. THE BEAM SHALL BE REDESIGNED AS NECESSARY.

APPROVED: *Gregory Bailey* DATE: 10-25-07  
DIRECTOR, ENGINEERING DIVISION

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS ENGINEERING DIVISION

17" PRESTRESSED CONCRETE BOX BEAMS DESIGN AND ASSEMBLY DETAILS

STANDARD SHEET BR-B17A

PREPARED: 07-02-07

REVIEWED:

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS ENGINEERING DIVISION

DESIGNED BY: TW/ATQ

DRAWN BY: BH/ATQ

CHECKED BY: THB/RMW

REVIEWED BY: TW/CMB

DATE: 03-19

SCALE:

SHEET: 16 OF 26

BRIDGE NO. 11-22-0.01 (11622)

CONSTRUCTION PLANS OF REVERE DECK GIRDER REPLACEMENT ON C.R. 22 (SLS) OVER RIGHT FORK OF TRACE FORK GILMER COUNTY

17" PRESTRESSED BOX BEAM DESIGN AND ASSEMBLY DETAILS



STATE PROJECT NUMBER	FEDERAL PROJECT NUMBER	STATE DIST. NO.	COUNTY	SHEET NO.	TOTAL SHEETS
S311-22-0.00	N/A	7	GILMER	17	26

MIN. CONCRETE STRENGTH @ RELEASE = 5500 PSI  
 MIN. CONCRETE STRENGTH @ 28 DAYS = 8000 PSI  
 INITIAL PULL/STRAND = 33,820 LBS  
 CROSS-SECTION AREA/STRAND = 0.167 SQ. IN.


DESIGN DATA FOR 17" DEPTH ADJACENT BOX BEAM														BEAMS 4 & 5 ONLY		
SPAN LENGTH $\phi$ TO $\phi$ BEARING		20'-0"	22'-0"	24'-0"	26'-0"	28'-0"	30'-0"	32'-0"	34'-0"	36'-0"	38'-0"	40'-0"	38'-0"	38'-0"		
OVERALL LENGTH OF BEAM		21'-6"	23'-6"	25'-6"	27'-6"	29'-6"	31'-6"	33'-6"	35'-6"	37'-6"	39'-6"	41'-6"	39'-6"	39'-6"		
NO. OF 270 KSI, 1/2" # LOW-RELAXATION STRANDS, AREA/STRAND = 0.167 SQ. IN.		10	10	10	10	12	12	14	14	16	16	16	16	14		
STRAND POSITION NUMBER	ROW 1	1,2,11,12	1,2,11,12	1,2,11,12	1,2,11,12	1,2,7,8,13,14	1,2,7,8,13,14	1,2,7,8,13,14	1,2,7,8,13,14	1,2,5,6,9,10,13,14	1,2,5,6,9,10,13,14	1,2,5,6,9,10,13,14	1,2,5,6,9,10,13,14	1,2,5,6,9,10,13,14		
	ROW 2	17,18,25,26	17,18,25,26	17,18,25,26	17,18,25,26	17,18,27,28	17,18,27,28	17,18,27,28	17,18,27,28	17,18,21,22,27,28	17,18,21,22,27,28	17,18,21,22,27,28	17,18,21,22,27,28	17,18,21,22,27,28		
	ROW 3	---	---	---	---	---	---	---	---	---	---	---	---	---		
	ROW 4	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34	33,34		
PRESTRESSING FORCE IMMEDIATELY AFTER STRAND RELEASE, P <sub>pt</sub> , (KIPS/BEAM)		326	326	326	326	389	389	461	451	512	512	513	515	451		
EFFECTIVE PRESTRESSING FORCE AFTER ALL LOSSES, P <sub>pe</sub> , (KIPS/BEAM)		293	293	294	294	345	346	396	397	443	445	447	469	414		
REQUIRED FACTORED MOMENT @ STRENGTH I, M <sub>u</sub> (FT-KIPS/BEAM)		204	231	260	289	319	349	382	415	453	491	531	463	448		
FACTORED FLEXURAL RESISTANCE, M <sub>r</sub> (FT-KIPS/BEAM)		408	408	408	408	496	496	566	566	646	646	646	646	631		
TOTAL NO. DEBONDED STRANDS		---	---	---	---	---	---	---	---	---	---	---	---	---		
DEBONDED STRAND POSITION NUMBER & SHIELDING LENGTH FROM EACH END	ROW 1	---	---	---	---	---	---	---	---	---	---	---	---	21 & 22 @ 7'-6"		
	ROW 2	---	---	---	---	---	---	---	---	---	---	---	---	---		
NUMBER & LENGTH #4 ET TOP TENSION BARS @ EACH END		3 - #4 x 3'-0"	3 - #4 x 3'-6"	3 - #4 x 4'-0"	3 - #4 x 4'-0"	3 - #4 x 4'-0"	3 - #4 x 4'-6"	3 - #4 x 4'-6"	3 - #4 x 5'-0"	3 - #4 x 5'-0"	3 - #4 x 9'-0"	3 - #4 x 9'-0"	3 - #4 x 9'-0"	3 - #4 x 9'-0"		
NUMBER & LENGTH #5 BT BOTTOM TENSION BARS @ EACH END		2 - #5 x 4'-0"	2 - #5 x 4'-0"	2 - #5 x 4'-6"	2 - #5 x 4'-6"	2 - #5 x 4'-6"	2 - #5 x 5'-0"	2 - #5 x 5'-0"	2 - #5 x 5'-6"	2 - #5 x 5'-6"	2 - #5 x 5'-6"	2 - #5 x 5'-6"	2 - #5 x 5'-6"	2 - #5 x 5'-6"		
DESIGN CAMBER + = POSITIVE (UP) (INCHES)	@ RELEASE	0.13	0.14	0.16	0.17	0.28	0.30	0.40	0.42	0.59	0.62	0.63	0.62	0.69		
	@ ERECTION	0.21	0.24	0.26	0.27	0.45	0.47	0.64	0.65	0.93	0.95	0.95	1.00	1.06		
	@ FINAL	0.27	0.29	0.30	0.30	0.53	0.53	0.71	0.69	1.03	0.99	0.92	1.13	1.21		
NUMBER & SPACING OF TL-2 GUARDRAIL INSERTS	NO OF INSERTS REQD.	---	---	---	---	---	---	---	---	---	---	---	6	---		
	END OF BEAM TO $\phi$ OF FIRST INSERT EA. END	---	---	---	---	---	---	---	---	---	---	---	---	---		
SEE NOTE 6	$\phi$ OF 1st INSERT TO $\phi$ 2nd INSERT EA. END	---	---	---	---	---	---	---	---	---	---	---	6'-3"	---		
WEIGHT OF TYPICAL BEAM INCLUDING DIAPHRAGM (TONS)		5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6	10.1	10.1		

\*\*\* SEE SHEET 10 OF 26 FOR GUARDRAIL DETAILS

NOTES

- BEAM WEIGHTS LISTED IN THE DESIGN TABLE ARE BASED ON ZERO SKEW, 2 FT. LONG ENDBLOCK AND DIAPHRAGMS SPACED @ 15 FT C/C. WEIGHTS FOR SKEWED BEAMS, LONGER ENDBLOCKS AND ADDITIONAL DIAPHRAGMS SHOULD BE ADJUSTED ACCORDINGLY.  
 FOR ADDITIONAL DIAPHRAGMS, ADD 135 LBS/DIAPHRAGM.  
 FOR SKEW ADD 17 LBS/DEGREE OF SKEW/END.  
 FOR LONGER ENDBLOCK, ADD 163 LBS/LF/END.
- DESIGNERS SHOULD NOTE THAT DATA IN STANDARD TABLE IS BASED ON EVEN SPAN LENGTHS, A TWO LANE STRUCTURE 8 BEAMS WIDE AND ZERO SKEW. SUPERIMPOSED DEAD LOADS INCLUDE TYPE F PARAPET (321 PLF) AND A FWS OF 50 PSF. FOR NON-STANDARD BRIDGES DATA SHOULD BE VERIFIED AND IF REQUIRED NEW DESIGN DATA ENTERED INTO BLANK COLUMNS. IN NO CASE SHALL THE STANDARD DESIGN TABLE BE ALTERED.
- PREDICTED DESIGN CAMBER VALUES LISTED IN THE TABLE ARE BASED ON EMPIRICAL FORMULAS AND AS SUCH ARE APPROXIMATE. FOR MEMBERS WITH SPAN-TO-DEPTH RATIOS AT OR EXCEEDING 25, THE TOLERANCE VALUES LISTED IN APPENDIX B OF PCI MANUAL FOR QUALITY CONTROL, MNL-116, MAY NOT APPLY.  
 MEASUREMENT OF CAMBER FOR COMPARISON TO PREDICTED DESIGN VALUES SHOULD BE COMPLETED WITHIN 72 HOURS OF RELEASE. ADDITIONALLY, CAMBER SHOULD BE EVALUATED UNDER CONDITIONS THAT MINIMIZE THE EFFECT OF TEMPERATURE VARIATION.

- DESIGNER, FABRICATOR, AND ERECTOR SHALL BE AWARE THAT SKEWED END BEAMS MAY TWIST OR WARP, CAUSING UNEVEN BEAM SEATING AT THE BEARINGS. THE CONTRACTOR IS REQUIRED TO CORRECT AT THE TIME OF ERECTION, BEFORE THE BEAMS ARE SECURED IN PLACE. METHOD OF CORRECTION SHALL PROVIDE AN EVEN, TOTAL BEARING AND A LEVEL TOP BEAM SURFACE. TOLERANCE, AFTER CORRECTION, SHALL BE (+/-) 1/8 INCH. THE FABRICATOR SHALL NOTIFY THE CONTRACTOR AND DESIGNER IF CORRECTIONS ARE REQUIRED PRIOR TO SHIPMENT.
- MAXIMUM BEAM SKEW SHALL BE 30 DEGREES.
- DESIGNER INPUT VALUES OF NUMBER OF INSERTS, DISTANCE FROM END OF BEAM TO  $\phi$  FIRST INSERT, AND  $\phi$  FIRST INSERT TO  $\phi$  SECOND INSERT. ABOVE VALUES SHALL BE BASED ON THE REQUIRED 6'-3" GUARDRAIL POST SPACING ACROSS THE BRIDGE.
- SPECIAL STRAND NOTE FOR 17" BOX SECTION ONLY: WHEN TL-2 GUARDRAIL INSERTS ARE REQUIRED THE BOTTOM INSERT (TYPE 2A ANCHOR) CONFLICTS WITH STRAND NO. 15. STRANDS 15 AND 16 HAVE BEEN MOVED TO POSITIONS 17 AND 18. FOR UNIFORMITY PURPOSES, ALL BEAMS OF THE SAME DESIGN SHALL USE SAME STRAND PATTERN.
- THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-B17A, BR-B100, BR-B101, BR-B102A & B, BR-B103, BR-B104, BR-B105A & B AND BR-B106 AS APPLICABLE.

APPROVED:  DATE: 10-25-07  
 DIRECTOR, ENGINEERING DIVISION

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 ENGINEERING DIVISION

DESIGN TABLE FOR 17"  
 PRESTRESSED BOX BEAM  
 STANDARD SHEET BR-B17B

PREPARED: 07-02-07  
 REVISIONS:

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 ENGINEERING DIVISION

CONSTRUCTION PLANS OF  
 REVERE DECK GIRDER REPLACEMENT  
 ON C.R. 22 (SLS)  
 OVER RIGHT FORK OF TRACE FORK  
 GILMER COUNTY

DESIGNED BY: THB/ATO  
 DRAWN BY: THB/ATO  
 CHECKED BY: TM/RMW  
 REVIEWED BY: TW/CMB  
 DATE: 03-19  
 SCALE:  
 SHEET NO 17 OF 26

BRIDGE NUMBER  
 11-22-0.01  
 (11622)

DESIGN TABLE FOR 17"  
 PRESTRESSED BOX BEAM

STATE PROJECT NUMBER	FEDERAL PROJECT NUMBER	STATE DIST. NO.	COUNTY	SHEET NO.	TOTAL SHEETS
S311-22-0.00	N/A	7	GILMER	18	26

**GOVERNING SPECIFICATIONS**

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, ADOPTED **2017** AS AMENDED BY THE CURRENT SUPPLEMENTAL SPECIFICATIONS. THE CONTRACT PLANS AND CONTRACT SPECIAL PROVISIONS ARE THE GOVERNING PROVISIONS APPLICABLE TO THIS PROJECT.

ALL BEAMS ARE DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, DATED 1998 AS AMENDED BY THE 2003 INTERIM SPECIFICATIONS.

**DESIGN NOTES**

ALL STANDARD ADJACENT PRESTRESSED CONCRETE BRIDGE BEAMS ARE DESIGNED TO MEET THE FOLLOWING CRITERIA:

- DESIGN LOADS:
  - HL-93 LIVE LOAD IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
  - FUTURE WEARING SURFACE OF 50 PSF OF ROADWAY.
  - TYPE F PARAPET WEIGHING 321 PLF.
  - DIAPHRAGM DEAD LOAD, NUMBER REQUIRED BASED ON 15'-0" MAX. SPACING.
- TWO LANE BRIDGE WITH AN OVERALL WIDTH OF 24'-5" (INCL. 3/4" GAP BETWEEN ADJ. BEAMS), A CURB-TO-CURB WIDTH OF 22'-1", TRANSVERSE POST-TENSIONING, AND ZERO SKEW.
- DESIGN STRENGTH AND UNIT STRESSES:
 

MINIMUM CONCRETE STRENGTH @ STRAND RELEASE	5500 PSI
MINIMUM CONCRETE STRENGTH @ 28 DAYS	8000 PSI
TEMPORARY STRESS LIMITS IN CONCRETE BEFORE LOSSES:	
COMPRESSION STRESS LIMIT @ STRAND RELEASE	3600 PSI
TENSION STRESS LIMIT @ STRAND RELEASE	-200 PSI
COMPRESSIVE STRESS LIMITS IN CONCRETE @ SERVICE I AFTER LOSSES:	
@ FINAL 1 (PS-DL+LL)	4800 PSI
@ FINAL 2 (PS-DL)	3600 PSI
@ FINAL 3 [50%(PS-DL)+LL]	3200 PSI
TENSILE STRESS LIMIT IN CONCRETE @ SERVICE III AFTER LOSSES:	
@ FINAL 1 (PS-DL+LL)	-270 PSI
TENDON STRESS LIMIT PRIOR TO TRANSFER:	202.5 KSI
TENDON STRESS LIMIT AFTER ALL LOSSES:	194.4 KSI
- DEBONDING OR SHIELDING OF STRANDS TO REDUCE TEMPORARY TENSILE STRESSES IS PERMITTED, HOWEVER DEBONDING IS LIMITED TO 40% PER ROW AND 25% TOTAL. IN NO INSTANCES SHALL OUTER STRANDS BE DEBONDED. DEBONDED STRANDS SHALL BE SEPARATED BY AT LEAST ONE FULLY BONDED STRAND AND SHALL BE SYMMETRICAL ABOUT THE  $\phi$  OF THE BEAM. SHIELDING OF STRANDS SHALL BE ACCOMPLISHED BY TAPING OR TIGHT FITTING PLASTIC TUBES TAPED AT EACH END.
- THE ELASTOMERIC BEARING PADS PROVIDED IN THE STANDARD DESIGNS ARE BASED ON ZERO GRADE AND ARE LIMITED TO A MAXIMUM OF 5% GRADE. IN INSTANCES OF GRADES EXCEEDING THIS LIMIT, PADS SHALL BE SPECIFICALLY DESIGNED. INDIVIDUAL PAD DESIGNS SHALL BE IN ACCORDANCE WITH SECTION 14, AASHTO LRFD. BEVELED SOLE PLATES ARE PERMITTED.
- MAXIMUM BEAM SKEW SHALL BE 30 DEGREES.
- WHEN ALTERNATE DESIGNS OR SITE SPECIFIC DESIGNS ARE PROVIDED, CRITERIA SET FORTH IN THESE STANDARDS SHALL APPLY.
- NEGATIVE DESIGN CAMBER AFTER ALL LOSSES IS NOT PERMITTED.
- EACH BEAM PROVIDED IN THESE STANDARD DESIGNS HAS BEEN LOAD RATED IN ACCORDANCE WITH SECTION 3.15 OF THE WEST VIRGINIA DIVISION OF HIGHWAYS BRIDGE DESIGN MANUAL, 2004. ADDITIONALLY, LOAD RATING PROCEDURES ARE IN ACCORDANCE WITH THE AASHTO MANUAL FOR CONDITION EVALUATION AND LOAD AND RESISTANCE FACTOR RATING OF HIGHWAY BRIDGES, 2003.

BAR SIZE	NO. 3	NO. 4	NO. 5	NO. 6
SPLICE LEN.	21"	28"	34"	41"

THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-B17A & B THRU BR-B42A & B, BR-B101, BR-B102A & B, BR-B103, BR-B104, BR-B105A & B AND BR-B106 AS APPLICABLE.

**MATERIALS & FABRICATION NOTES**

- THE PRESTRESSED CONCRETE BEAMS SHALL CONFORM TO ALL APPLICABLE PROVISIONS OF SECTION 603 OF THE STANDARD SPECIFICATIONS.

**MILD REINFORCEMENT:**

- ALL MILD REINFORCING STEEL SHALL BE GRADE 60, DEFORMED BILLET STEEL AND SHALL BE EPOXY COATED EXCEPT WHERE NOTED. ALL UNCOATED REINFORCING SHALL MEET THE REQUIREMENTS OF AASHTO M31. ALL EPOXY COATED REINFORCING SHALL MEET THE REQUIREMENTS OF AASHTO M284, EXCEPT WHERE AMENDED BY SECTION 709.1 OF THE STANDARD SPECIFICATIONS.
- ALL TENSION LAP SPLICES SHALL BE A CLASS B, CONTACT TYPE. MINIMUM LAP SPLICE LENGTHS SHALL BE AS GIVEN IN THE "LAP SPLICE TABLE", THIS SHEET. ADDITIONALLY, IF LAP SPLICING OF ET, LR, AND BT BARS IS USED, TERMINATION OF THE SPLICE SHALL BE NO CLOSER TO THE END OF THE BEAM THAN 1/10 OF THE SPAN LENGTH.
- MINIMUM BAR BENDING DIAMETER SHALL BE 6 BAR DIAMETERS, EXCEPT THAT NO. 4 AB BARS MAY HAVE A MINIMUM BEND DIAMETER OF 4 BAR DIAMETERS.
- MINIMUM CONCRETE COVER SHALL BE AS SPECIFIED IN SECTION 603.5 OF THE STANDARD SPECIFICATIONS, EXCEPT WHERE NOTED ON THE PLANS.

**PRESTRESSING STRAND:**

- ALL PRESTRESSING STEEL SHALL BE 1/2"  $\phi$ , GRADE 270, 7 WIRE UNCOATED, LOW-RELAXATION STRAND MEETING THE REQUIREMENTS OF AASHTO M203, SUPPLEMENT S1.
- ALL BEAMS DESIGNED IN THESE STANDARDS UTILIZE STRANDS WITH A NOMINAL AREA OF 0.167 SQ. IN. STRANDS WITH A NOMINAL AREA OF 0.153 SQ. IN. IS PERMITTED FOR INDIVIDUAL OR ALTERNATE DESIGNS, HOWEVER THE DESIGNER IS ENCOURAGED TO USE THE LARGER STRAND FOR UNIFORMITY REASONS. IN NO CASES WILL STRESS-RELIEVED STRAND BE PERMITTED.
- ALL STRANDS SHALL BE ENCLOSED INSIDE THE STIRRUP CAGE FOR THE FULL LENGTH OF THE BEAM.
- ALL EXPOSED PRESTRESSING STRAND AT EACH BEAM END SHALL BE SHOP COATED WITH A LIQUID COLD-APPLIED BITUMINOUS ELASTOMERIC WATERPROOFING MEMBRANE. MATERIAL SHALL MEET ASTM C836-84.

**CONCRETE:**

- ALL CONCRETE USED IN MANUFACTURING PRESTRESSED CONCRETE BEAMS SHALL MEET THE REQUIREMENTS OF SECTION 603.6 OF THE STANDARD SPECIFICATIONS. DESIGN STRENGTHS SHALL MEET OR EXCEED THE MINIMUM VALUES SET FORTH IN THESE PLANS.
- ALL CONCRETE USED IN PARAPETS AND CURBS SHALL BE CLASS K CONCRETE.

**ELASTOMERIC BEARING PADS:**

- ALL BEARING PADS SHALL MEET THE APPLICABLE REQUIREMENTS AS SET FORTH IN SECTION 18.2 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, 1998 EDITION WITH CURRENT INTERIMS. ALL BEARINGS SHALL BE STEEL REINFORCED LAMINATED BEARINGS.
- THE ELASTOMER MATERIAL SHALL BE 60 DUROMETERS WITH A MINIMUM LOW TEMPERATURE GRADE OF 3 (ZONE C).
- ALL STEEL REINFORCING SHALL MEET THE REQUIREMENTS OF AASHTO M270, GRADE 36.

**GUARDRAIL, GUARDRAIL POSTS, TUBING & INSERTS:**

- ALL W-BEAM GUARDRAIL AND ATTACHMENT HARDWARE SHALL BE IN ACCORDANCE WITH SECTION 712.4 OF THE STANDARD SPECIFICATIONS. GUARDRAIL POSTS, STRUCTURAL TUBING, POST ATTACHMENT INSERTS, AND HARDWARE SHALL MEET THE LISTED MATERIAL AND COATING SPECIFICATIONS:

ITEM	DESCRIPTION	MATERIAL SPEC.	COATING SPEC.
POST	W6x25	AASHTO M270, GR 36	AASHTO M111
PLATE	1/2" x 7"	AASHTO M270, GR 36	AASHTO M111
TUBING	TS 8x4x3/16	ASTM A500, GR B	AASHTO M111
CHANNEL	C7x9.8	AASHTO M270, GR 36	AASHTO M111
FERRULE	]TYPE 2A 1/4" $\phi$ x 2 1/2" MIN LEN. ]ANCHOR 3/8" $\phi$	ASTM A108 (11L17 STEEL)	AASHTO M232
WIRE		ASTM A510 (1018 STEEL)	AASHTO M232
STUDS	1/4" $\phi$ x 8" LONG	ASTM A108 (1045 C.D. STEEL)	AASHTO M232
NUTS	1/4" $\phi$	AASHTO M291, CLASS C	AASHTO M232
COUPLERS	]TYPE 1A 1/4" $\phi$ x 5" LONG ]ANCHOR 1/4" $\phi$ x 12" LONG	ASTM A108 (12L14 STEEL)	AASHTO M232
BOLTS		AASHTO M164 (TYPE 1, HH)	AASHTO M232
BOLTS	3/8" $\phi$ x ALL LEN.	AASHTO M164 (TYPE 1, HH)	AASHTO M232
NUTS	5/8" $\phi$	AASHTO M291, CLASS C	AASHTO M232
WASHERS	ALL	AASHTO M293	AASHTO M232

**WELDING:**

- TACK WELDING OF REINFORCEMENT IS NOT PERMITTED. REINFORCING CAGES AND LONGITUDINAL STEEL SHALL BE ADEQUATELY TIED WITH APPROVED MEANS TO PREVENT RACKING AND MISALIGNMENT.
- ALL WELDING OF FABRICATED ITEMS, AS SHOWN IN THESE PLANS SHALL BE IN ACCORDANCE WITH ALL APPLICABLE PROVISIONS OF AASHTO/AWS D1.5, 2002.

**POST-TENSIONING BARS:**

- POST - TENSIONING THREAD BARS SHALL BE ONE INCH DIAMETER, 150 KSI STEEL, AND SHALL CONFORM TO AASHTO M275, TYPE II. STEEL THREAD BARS SHALL BE DESIGNED TO ALLOW THE USE OF HEAVY HEX NUTS AND COUPLERS THAT THREAD ONTO THE END OF THE DEFORMATIONS. HEAVY 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 SHALL BE PROVIDED FOR EACH HEAT OF STEEL THREAD BARS.
- ALL POST-TENSIONING THREAD BARS, NUTS, BEARING PLATES, COUPLERS, AND ANCILLARY HARDWARE SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M111. THE GALVANIZING PLANT SHALL ADMINISTER ADEQUATE QUALITY CONTROL MEASURES TO SAFEGUARD AGAINST HYDROGEN EMBRITTLEMENT. QUALITY CONTROL MEASURES SHALL COMPLY WITH ASTM A-143. CERTIFICATION FOR HOT-DIP GALVANIZING SHALL BE PROVIDED BY THE GALVANIZING PLANT.
- ALL POST-TENSIONING BEARING PLATES SHALL CONFORM TO AASHTO M270, GRADE 36.

**SHEAR KEY GROUT:**

- SHEAR KEY GROUT SHALL BE A GROUT THAT IS RECOMMENDED BY THE MANUFACTURER FOR A POURABLE GROUT APPLICATION AND THAT BASED ON THE MANUFACTURER'S TEST DATA WILL ATTAIN A MINIMUM OF 4500 PSI COMPRESSIVE STRENGTH IN 3 DAYS UNDER CONDITIONS REPRESENTATIVE OF THE CONDITIONS TO BE EXPERIENCED AT THE SITE. THE GROUT MUST 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 BRIDGE PROJECT MANAGER 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.
- THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT FOR EACH PROJECT, THE GROUT PRE-TEST RESULTS OBTAINED IN THE NOTE ABOVE. THE CONTRACTOR SHALL BE REQUIRED TO PERFORM A NEW PRE-TEST AND SUBMISSION FOR APPROVAL UNDER ANY OF THE FOLLOWING CONDITIONS:
  - A PERIOD OF 18 MONTHS HAS ELAPSED SINCE LAST PRE-APPROVAL TESTING.
  - GROUT MANUFACTURER HAS REVISED OR CHANGED THE GROUT SPECIFICATIONS.
  - THE CONTRACTOR ALTERS THE WATER/GROUT MIXTURE RATIO.
  - THE CONTRACTOR CHANGES GROUT MANUFACTURER.
- THE CONTRACTOR IS REQUIRED TO COMPLETE THE GROUT STRENGTH TABLE ON BR-B103.
- TEST PROCEDURE FOR DETERMINING THE COMPRESSIVE STRENGTH OF GROUT SHALL USE CUBE SPECIMENS IN ACCORDANCE WITH ASTM C109, AS MODIFIED BY ASTM C1107. GROUT TESTING IN ACCORDANCE WITH AASHTO T23 (STANDARD CYLINDER TEST) IS NOT ACCEPTABLE.

**PROTECTIVE SURFACE TREATMENT:**

- EACH PRESTRESSED CONCRETE BEAM SHALL BE TREATED BY THE 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, SOIL AND TESTING DIVISION. COVERAGE SHALL INCLUDE TOP AND BOTTOM OF INTERIOR BEAMS, AND TOP, BOTTOM AND EXTERIOR SIDE OF EXTERIOR BEAM. APPLICATION RATE SHALL BE PER TREATMENT MANUFACTURER'S RECOMMENDATION.
- AFTER COMPLETION OF THE SILANE TREATMENT BY FABRICATOR AND A MAXIMUM OF FIVE WORKING DAYS PRIOR TO SHIPMENT OF THE BEAMS, THE FABRICATOR SHALL BE RESPONSIBLE FOR ABRASIVE BLAST CLEANING TO CLEAN WHITE CONCRETE THE INTERIOR SIDES OF BEAMS FOR THE FULL LENGTH. CLEAN WHITE CONCRETE SHALL MEAN REMOVAL OF ALL DIRT, GREASE, OIL, AND LOOSE CONCRETE LAITANCE AND PROVIDE A ROUGHENED CONCRETE SURFACE. BLASTING MEDIUM SHALL BE APPROVED BY THE DIVISION OF HIGHWAYS.

**SHOP DRAWINGS:**

THE FABRICATOR SHALL BE RESPONSIBLE FOR THE PREPARATION OF SHOP DRAWINGS IN ACCORDANCE WITH THE WEST VIRGINIA DIVISION OF HIGHWAYS DOCUMENTS, DD-102 AND THE STANDARD SPECIFICATIONS. ADDITIONAL INFORMATION IS PROVIDED IN SECTION 7 OF THE BRIDGE DESIGN MANUAL. SHOP DRAWINGS SHALL INCLUDE THE FABRICATOR'S DETENSIONING PLAN.

APPROVED: _____ DIRECTOR, ENGINEERING DIVISION	DATE: 10-25-07
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS ENGINEERING DIVISION	PREPARED: 07-02-07
PRESTRESSED CONCRETE BEAM DESIGN & ASSEMBLY NOTES	REVISID:
STANDARD SHEET BR-B100	

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS ENGINEERING DIVISION	
CONSTRUCTION PLANS OF REVERE DECK GIRDER REPLACEMENT ON C.R. 22 (SLS) OVER RIGHT FORK OF TRACE FORK GILMER COUNTY	
DESIGNED BY: THB/ATO	
DRAWN BY: THB/ATO	
CHECKED BY: TM/RMW	
REVIEWED BY: TW/CMB	
DATE: 03-19	
SCALE:	
SHEET 18 OF 26	
BRIDGE NUMBER 11-22-0.01 (11622)	

CONTROL DIMENSIONS		
DESCRIPTION	CODE	VALUE
OVERALL BEAM LENGTH	A	39' 6"
SPAN LENGTH, $\phi$ BEARING TO $\phi$ BEARING	B	38' 0"
SUPERSTRUCTURE WIDTH - OUT TO OUT	C	24' 5 1/4"
ROADWAY WIDTH - FACE GR/PARAPET TO FACE GR/PARAPET	D	24' 0"
NUMBER OF BEAMS REQUIRED	—	8
BEAM SIZE (WIDTH x DEPTH)	—	36" X 17"
SKEW ANGLE (NORMAL, DEG. RFS OR DEG. LFS)	E	25° RFS
PERPENDICULAR DISTANCE FROM FACE OF BEAM TO $\phi$ BEARING	F	8 3/6"
HLBC WEARING COURSE REQUIRED (YES/NO)	—	YES
THICKNESS OF WEARING COURSE $\phi$ $\phi$ OF DECK OR ROADWAY	G	1 1/2"
THICKNESS OF WEARING COURSE $\phi$ EDGE OF DECK OR PARAPET	H	1 1/2"
TL-2 BRIDGE GUARDRAIL SYSTEM REQUIRED (YES/NO)	—	YES
FABRICATOR TO SUPPLY TL-2 BRIDGE GUARDRAIL (YES/NO)	—	YES
FABRICATOR TO INSTALL BRIDGE GUARDRAIL PRIOR TO SHIPMENT (YES/NO) (IF NO, FABRICATOR TO SHIP LOOSE)	—	YES
NUMBER OF GUARDRAIL POST INSERTS REQUIRED PER SIDE	—	6
TYPE F PARAPET REQUIRED (YES/NO)	—	NO
DRAINS REQUIRED (YES/NO)	—	NO
NUMBER OF DRAINS REQUIRED PER SIDE	—	N/A
10" CURB REQUIRED (YES/NO)	—	NO

ESTIMATE OF QUANTITIES			
ITEM NO.	DESCRIPTION	UNITS	QUANTITY
603016	PRESTRESSED CONCRETE BOX BEAM	LF	316' 0"

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
ENGINEERING DIVISION

DESIGNED BY: THB/ATO  
DRAWN BY: THB/ATO  
CHECKED BY: TM/RMW  
REVIEWED BY: TW/CMB  
DATE: 03-19  
SCALE:  
SHEET NO 19 OF 26

CONSTRUCTION PLANS OF  
REVERE DECK GIRDER REPLACEMENT  
ON C.R. 22 (SLS)  
OVER RIGHT FORK OF TRACE FORK  
GILMER COUNTY

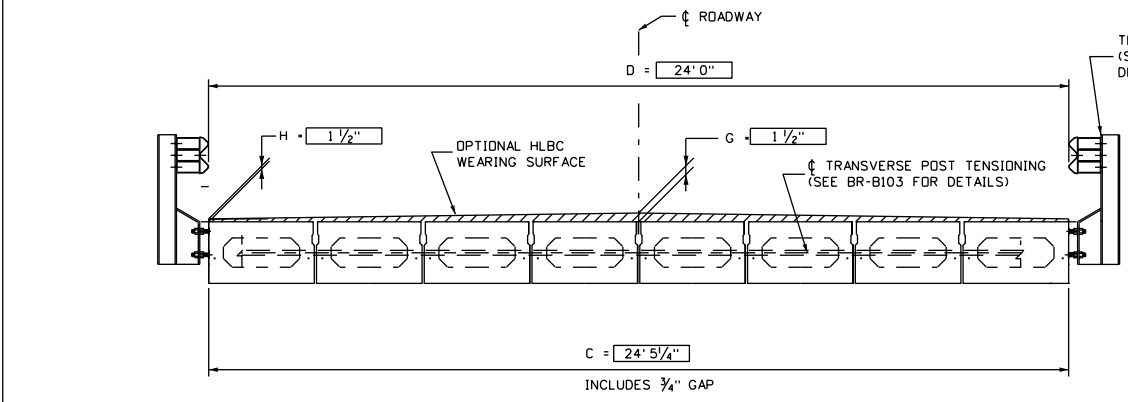
BRIDGE NUMBER  
11-22-0.01  
(11622)

APPROVED: *Logan Baile* DATE: 10-25-07  
DIRECTOR, ENGINEERING DIVISION

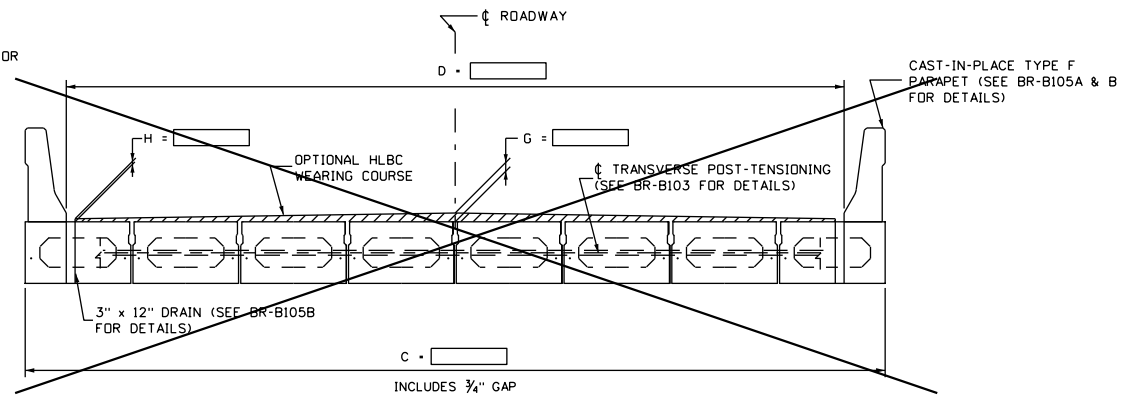
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
ENGINEERING DIVISION

PREPARED: 07-02-07  
REVISOR:

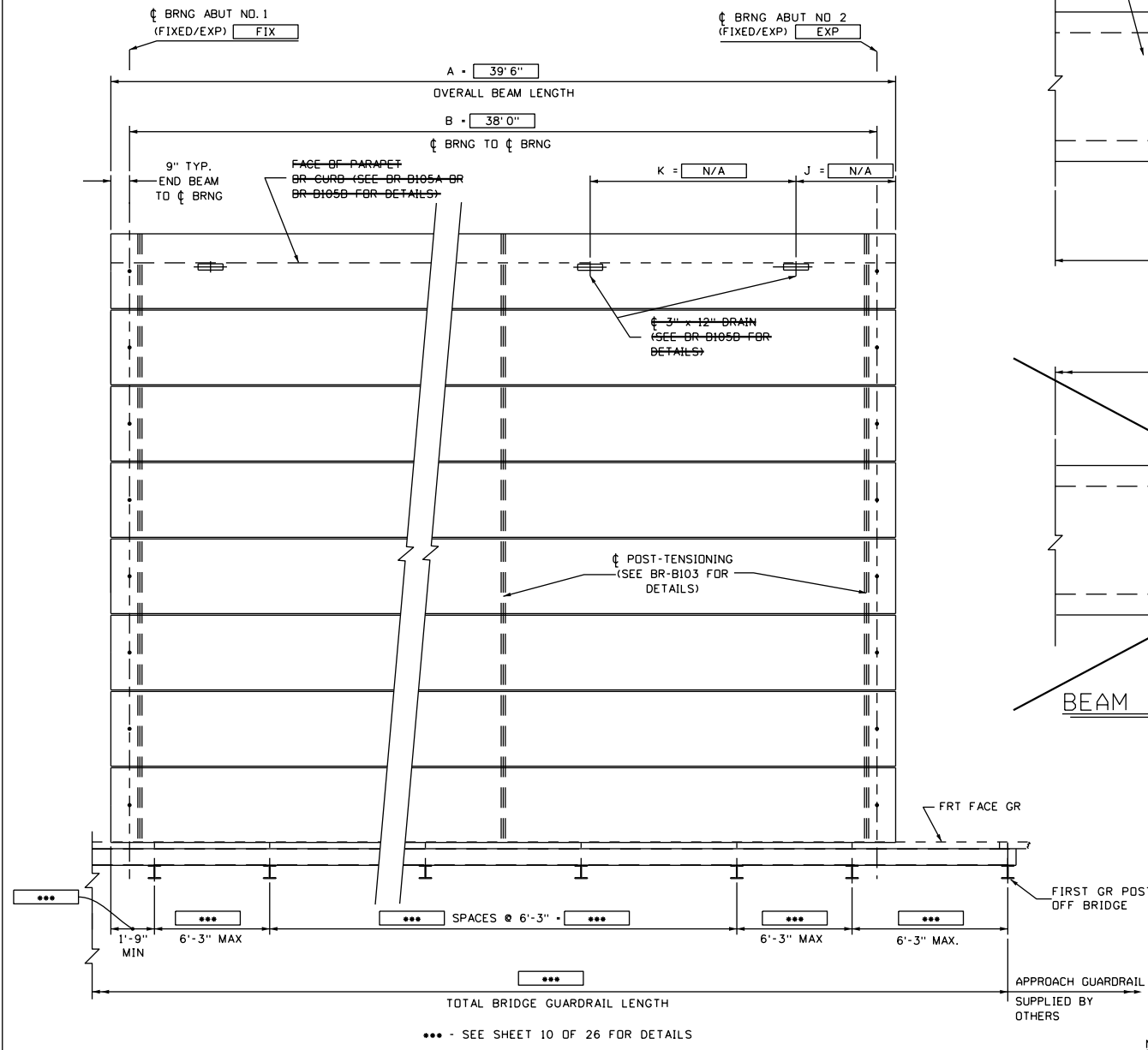
PRESTRESSED CONCRETE BEAM  
DESIGN AND ASSEMBLY NOTES  
STANDARD SHEET BR-B101



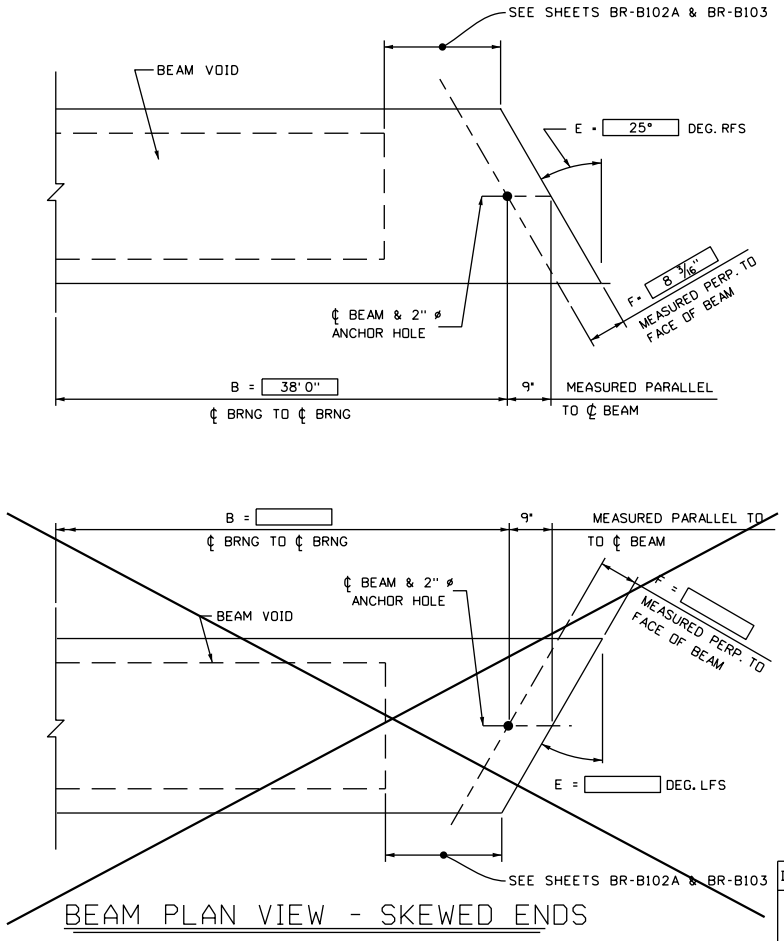
TYPICAL CROSS-SECTION WITH GUARDRAIL



TYPICAL CROSS-SECTION WITH PARAPET OR CURB



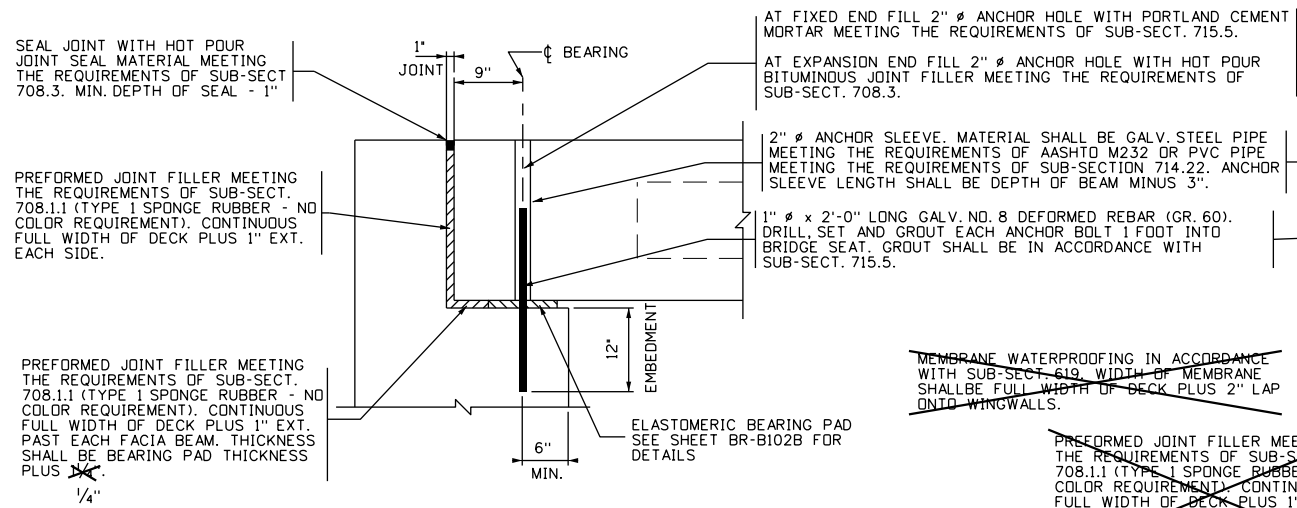
DECK PLAN VIEW



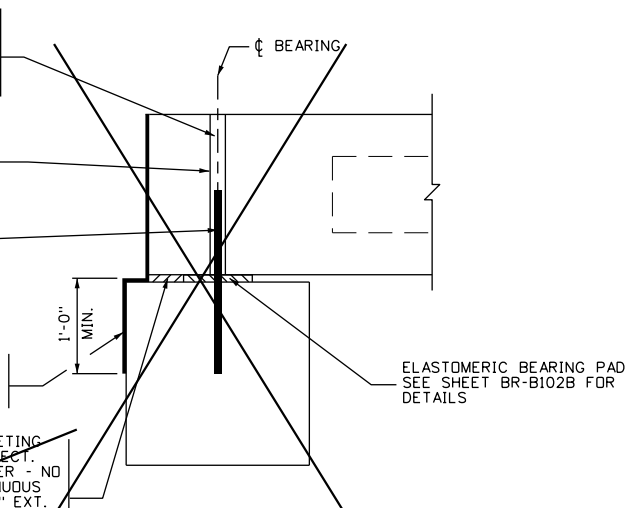
BEAM PLAN VIEW - SKEWED ENDS

- NOTES:
- WHEN BRIDGE GUARDRAIL IS TO BE SUPPLIED BY THE BEAM FABRICATOR, COST OF ALL BRIDGE GUARDRAIL ITEMS TO INCLUDE POSTS, RAIL ELEMENTS, ATTACHMENT HARDWARE, AND MISCELLANEOUS ITEMS NEEDED TO COMPLETELY INSTALL BRIDGE GUARDRAIL SHALL BE INCLUDED IN ITEM 603016 "PRESTRESSED CONCRETE BOX BEAM."
  - THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-B17A & B THRU BR-B42A & B, BR-B100, BR-B102A & B, BR-B103, BR-B104, BR-B105A & B AND BR-B106.

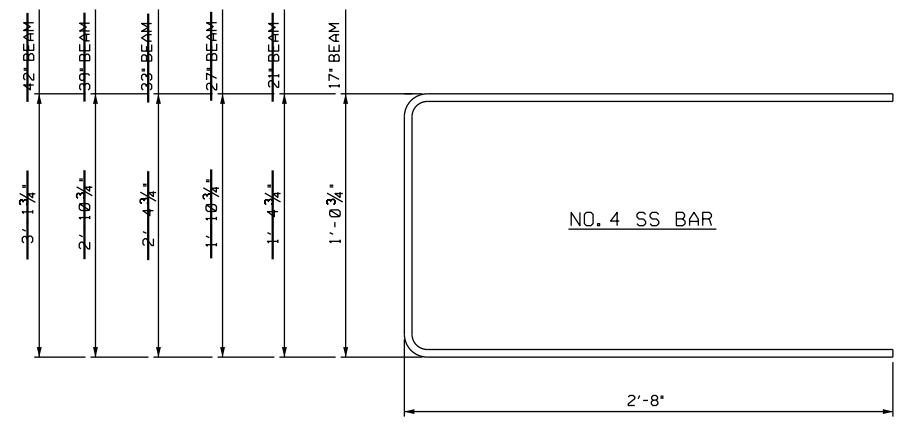
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S311-22-00.0	N/A	7	GILMER	20	26



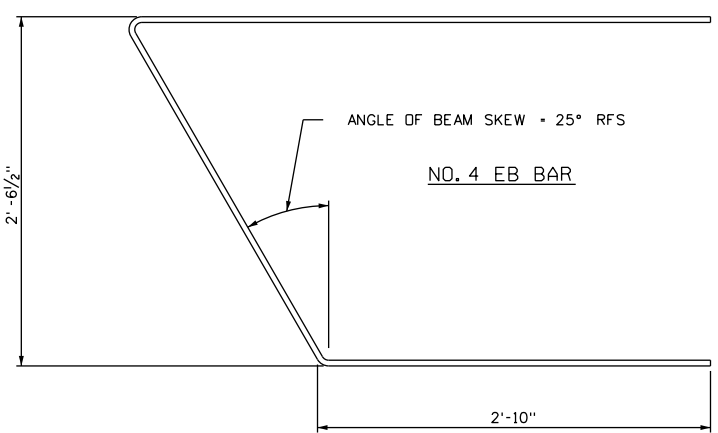
END BEARING DETAIL WITH BACKWALL



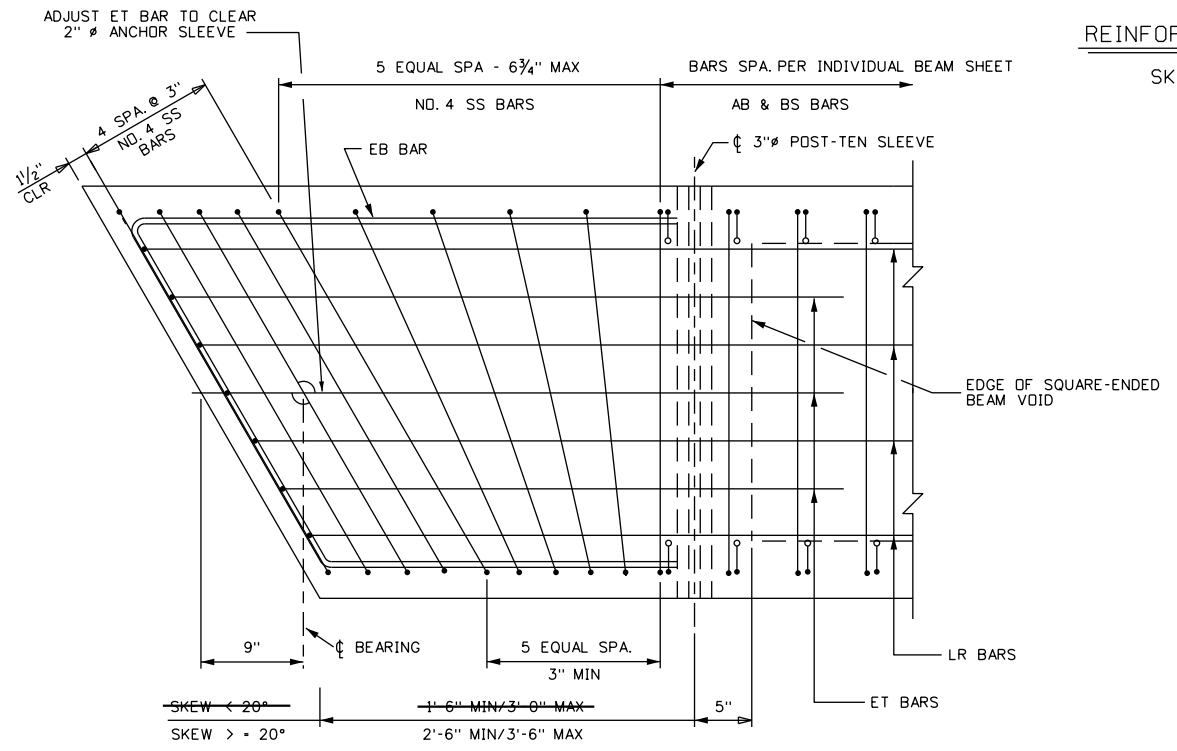
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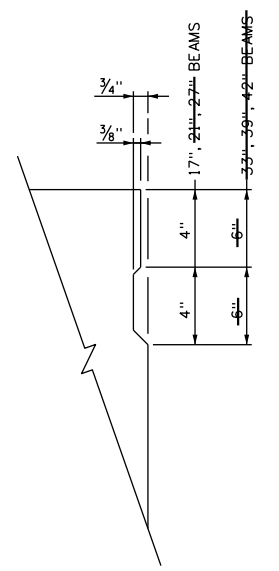
REINFORCING BAR DETAIL



SKEWED BEAMS

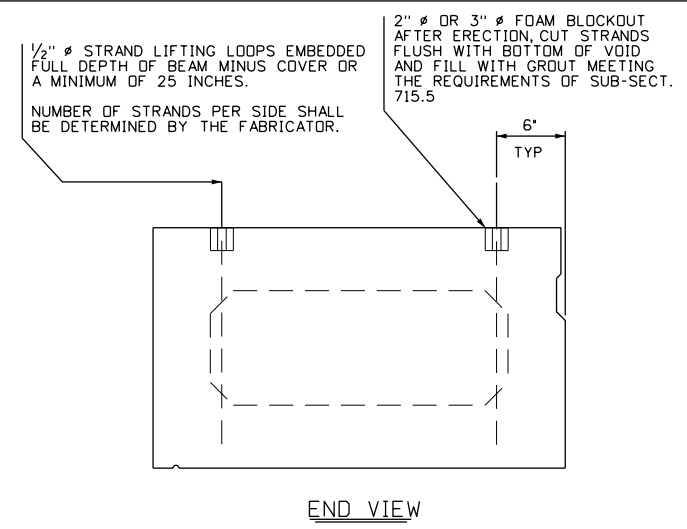


END BLOCK DETAIL - SKEWED BEAMS  
WO/POST-TEN, ACCESS POCKET

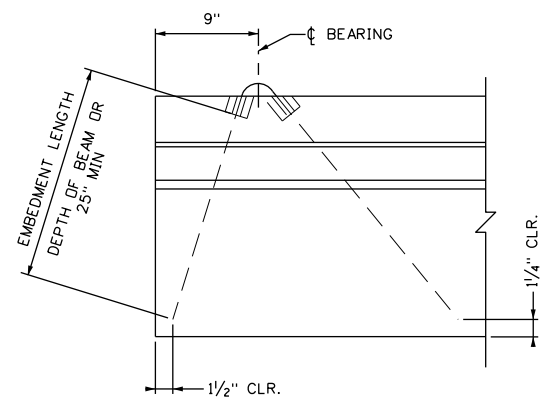


SHEAR KEY DETAIL

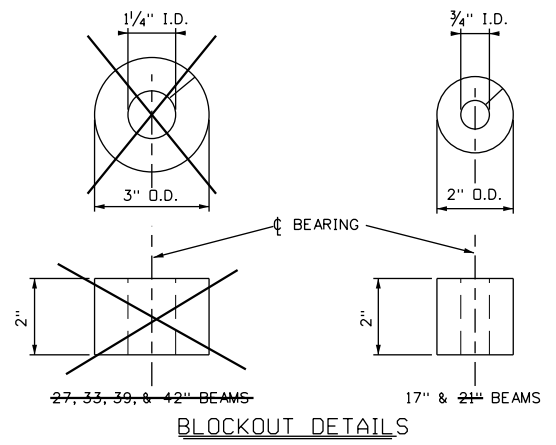
LIFTING DETAILS



END VIEW



SIDE VIEW



BLOCKOUT DETAILS

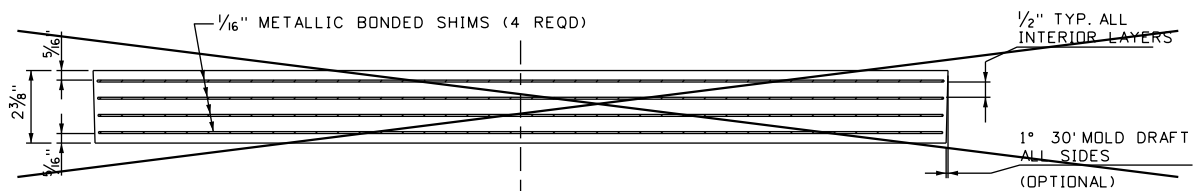
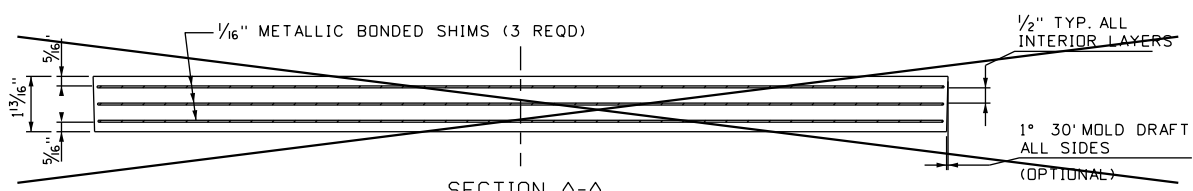
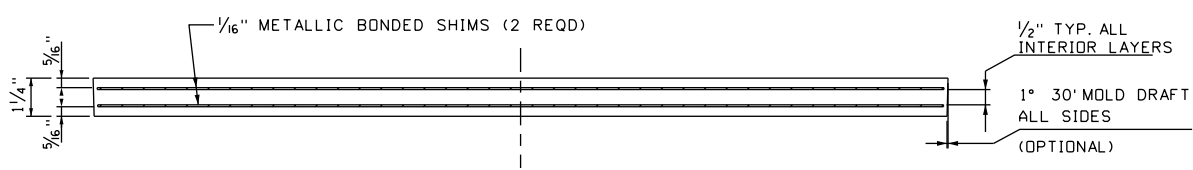
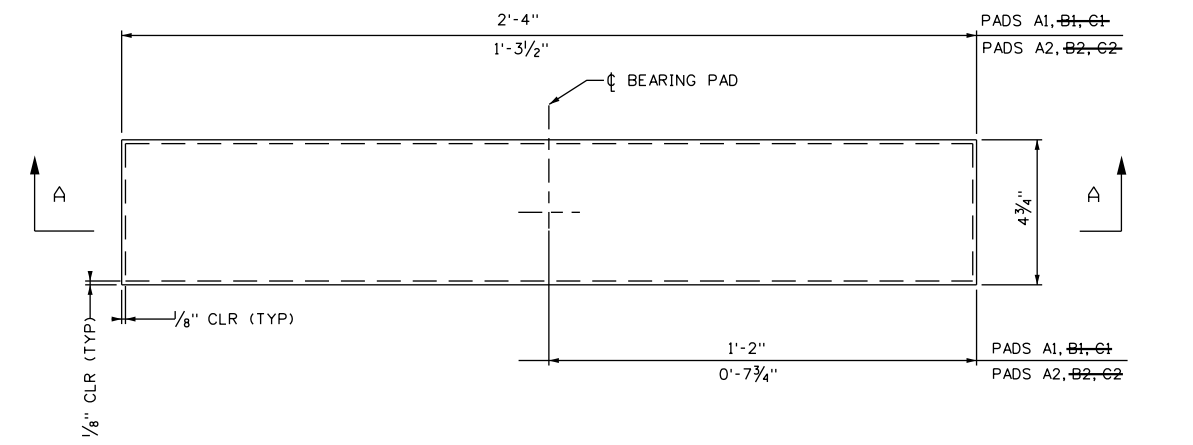
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
ENGINEERING DIVISION

CONSTRUCTION PLANS OF  
REVERE DECK GIRDER REPLACEMENT  
ON C.R. 22 (SLS)  
OVER RIGHT FORK OF TRACE FORK  
GILMER COUNTY

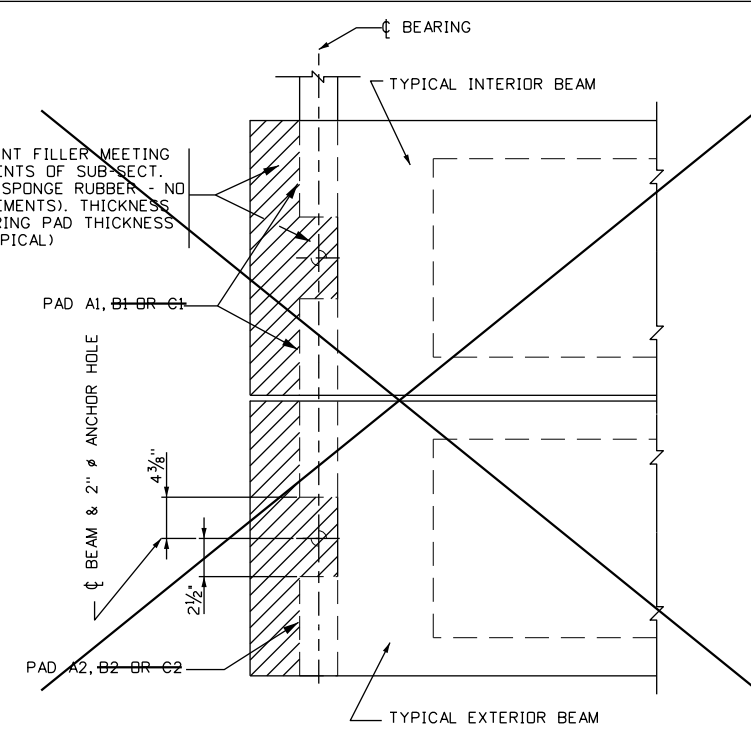
DESIGNED BY: THB/ATO
DRAWN BY: THB/ATO
CHECKED BY: TM/RMW
REVIEWED BY: TW/CMB
DATE: 03-19
SCALE:
SHEET NO 20 OF 26
BRIDGE NUMBER 11-22-0.01 (11622)

APPROVED: <i>Gregory Bails</i> DIRECTOR, ENGINEERING DIVISION	DATE: 10-25-07
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS ENGINEERING DIVISION	PREPARED: 07-02-07
PRESTRESSED CONCRETE BEAM SKEWED END REINFORCING MISC. DESIGN AND ASSEMBLY DETAILS STANDARD SHEET BR-B102A	REVISIONS:

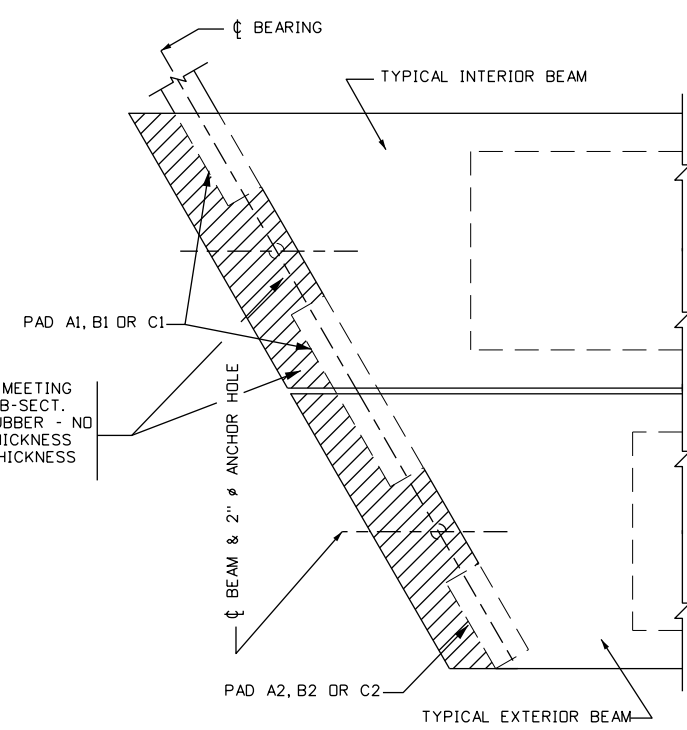
THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-B17A & B THRU BR-B42A & B, BR-B100, BR-B101, BR-B102B, BR-B103, BR-B104, BR-B105A & B AND BR-B106 AS APPROPRIATE.



PREFORMED JOINT FILLER MEETING THE REQUIREMENTS OF SUB-SECT. 708.11 (TYPE 1 SPONGE RUBBER - NO COLOR REQUIREMENTS). THICKNESS SHALL BE BEARING PAD THICKNESS PLUS 1/4". (TYPICAL)

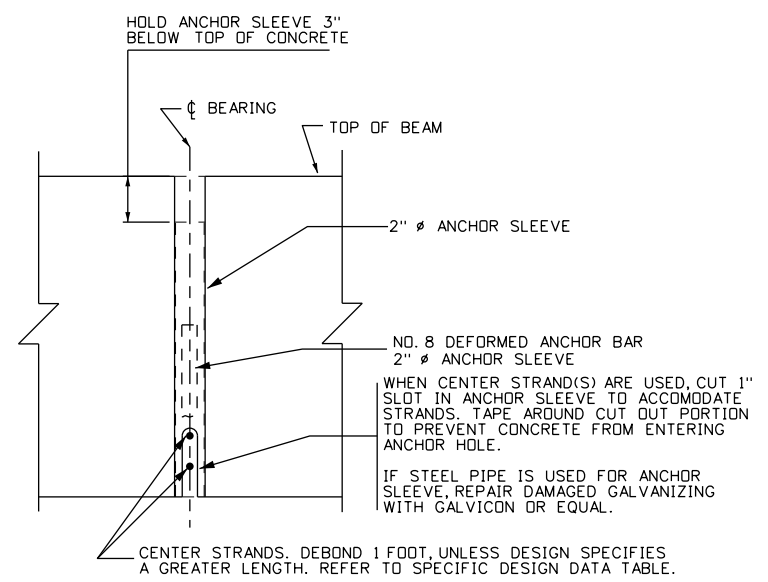


PLAN VIEW - BEARING PLACEMENT  
NORMAL BEAMS

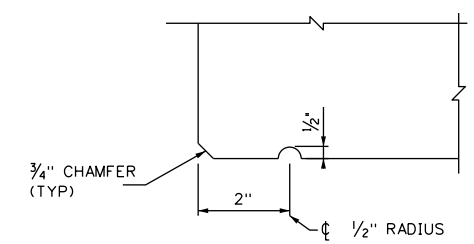


PLAN VIEW - BEARING PLACEMENT  
SKEWED BEAMS - 25' RFS

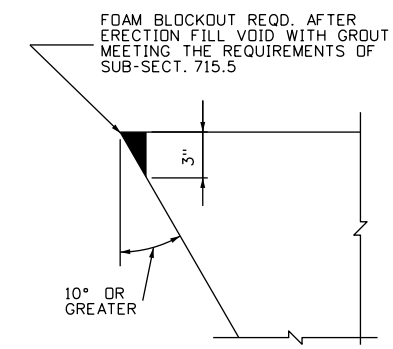
PREFORMED JOINT FILLER MEETING THE REQUIREMENTS OF SUB-SECT. 708.1.1 (TYPE 1 SPONGE RUBBER - NO COLOR REQUIREMENTS). THICKNESS SHALL BE BEARING PAD THICKNESS PLUS 1/4". (TYPICAL)



ANCHOR SLEEVE DETAIL



DRIP GROOVE DETAIL  
EXTERIOR BEAMS



SKEW BLOCKOUT DETAIL

NOTES:

- ELASTOMERIC BEARING PADS ARE DESIGNED IN ACCORDANCE WITH DESIGN METHOD B CONTAINED IN SECTION 14 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. FABRICATION SHALL BE IN ACCORDANCE WITH SECTION 18 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS.
- ALL BEARINGS ARE DESIGNED FOR A LOW TEMPERATURE ZONE C AND SHALL HAVE A DUROMETER HARDNESS OF 60. METALLIC REINFORCEMENT SHALL HAVE A MINIMUM YIELD STRENGTH OF 36 KSI.
- BEARING PADS ARE DESIGNED FOR ZERO BRIDGE GRADE. FOR BRIDGE GRADES GREATER THAN 5 %, PADS SHALL BE SPECIFICALLY DESIGNED FOR THE GRADE. AS AN ALTERNATE, CAST-IN-PLACE BEVELED SOLE PLATES MAY BE USED.
- DESIGNER, FABRICATOR AND ERECTOR SHALL BE AWARE THAT SKEWED END BEAMS MAY TWIST OR WARP, CAUSING UNEVEN BEAM SEATING AT THE BEARINGS. THE CONTRACTOR IS REQUIRED TO CORRECT AT THE TIME OF ERECTION, BEFORE THE BEAMS ARE SECURED IN PLACE. METHOD OF CORRECTION SHALL PROVIDE AN EVEN, TOTAL BEARING AND A LEVEL TOP BEAM SURFACE. TOLERANCE AFTER CORRECTION SHALL BE ± 1/8 INCH. THE FABRICATOR SHALL NOTIFY THE CONTRACTOR AND DESIGNER IF CORRECTIONS ARE REQUIRED PRIOR TO SHIPMENT.
- FOR BEAMS WITH STEPPED ENDS USE PADS A2, B2, OR C2 ON BOTH SIDES OF EACH BEAM.
- ELASTOMERIC BEARING PADS SHALL BE INCLUDED IN THE PRICE OF THE BEAMS.
- THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-B17A & B THRU BR-B42A & B, BR-B100, BR-B101, BR-B102A, BR-B103, BR-B104, BR-B105A & B AND BR-106 AS APPROPRIATE.

PAD	LENGTH	WIDTH	HEIGHT	NO. SHIMS	SHIM SIZE	SPAN RANGES	MAXIMUM REACTION	MAXIMUM MOVEMENT ONE DIRECTION
A1	4 3/4"	28"	1 1/4"	2	1/16" x 4 1/2" x 2'-3 3/4"	20' - 38'	55 KIPS	0.39"
B1	4 3/4"	28"	1 3/8"	2	1/16" x 4 1/2" x 2'-3 3/4"	40' - 78'	75 KIPS	0.80"
C1	4 3/4"	28"	2 3/8"	4	1/16" x 4 1/2" x 2'-3 3/4"	80' - 100'	89 KIPS	1.02"
A2	4 3/4"	15 1/2"	1 1/4"	2	1/16" x 4 1/2" x 1'-3 1/4"	20' - 38'	28 KIPS	0.39"
B2	4 3/4"	15 1/2"	1 3/8"	3	1/16" x 4 1/2" x 1'-3 1/4"	40' - 78'	38 KIPS	0.80"
C2	4 3/4"	15 1/2"	2 3/8"	4	1/16" x 4 1/2" x 1'-3 1/4"	80' - 100'	45 KIPS	1.02"

APPROVED: *[Signature]* DATE: 10-25-07  
 DIRECTOR, ENGINEERING DIVISION

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 ENGINEERING DIVISION

PREPARED: 07-02-07  
 REVISIONS:

PRESTRESSED CONCRETE BEAM  
 ELASTOMERIC BEARING PAD DETAILS  
 MISC. DESIGN AND ASSEMBLY DETAILS  
 STANDARD SHEET BR-B102B

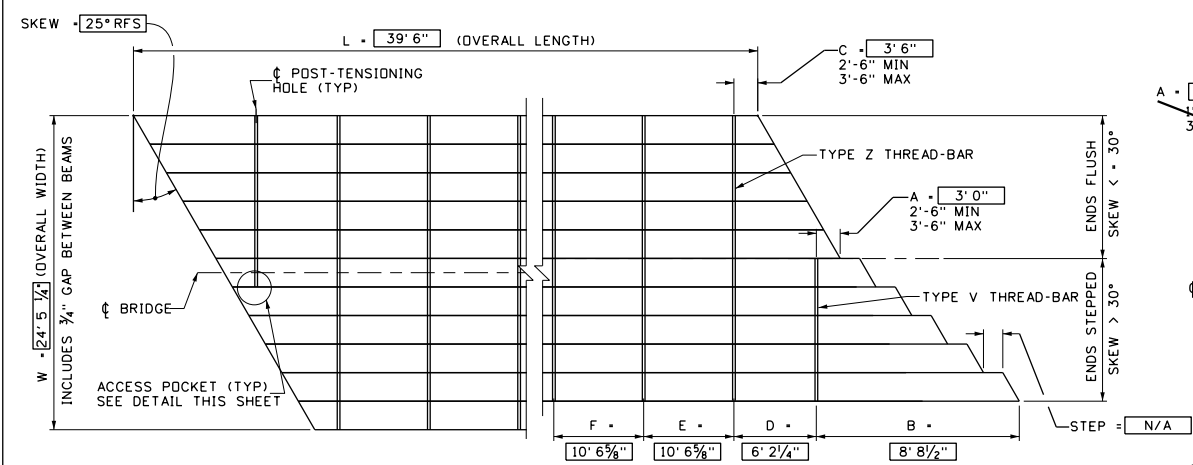
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 ENGINEERING DIVISION

DESIGNED BY: THB/ATO  
 DRAWN BY: THB/ATO  
 CHECKED BY: TM/RMW  
 REVIEWED BY: TW/CMB  
 DATE: 03-19  
 SCALE:  
 SHEET NO 21 OF 26

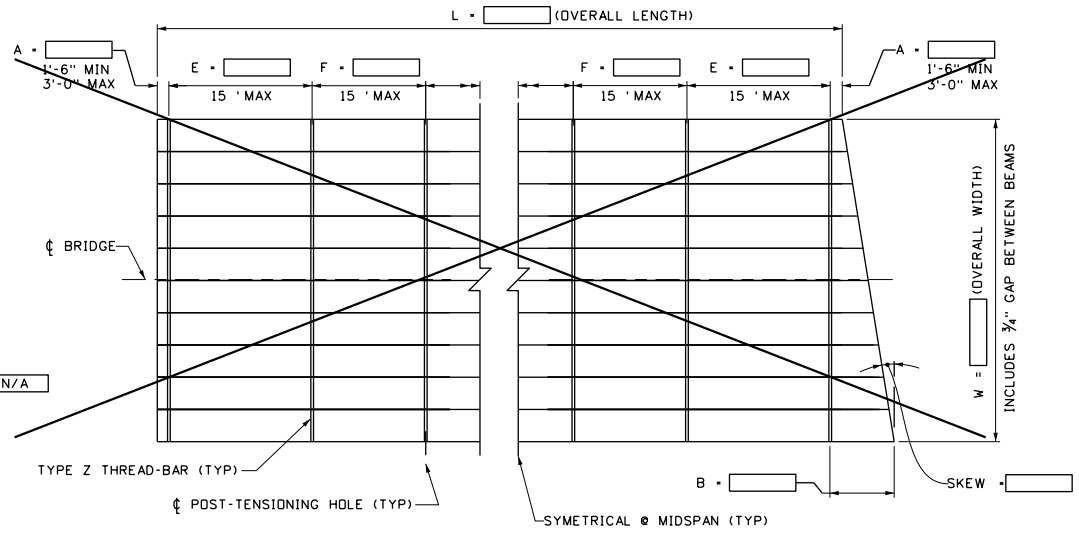
CONSTRUCTION PLANS OF  
 REVERE DECK GIRDER REPLACEMENT  
 ON C.R. 22 (SLS)  
 OVER RIGHT FORK OF TRACE FORK  
 GILMER COUNTY

BRIDGE NUMBER  
 11-22-0.01  
 (11622)

STATE PROJECT NUMBER	FEDERAL PROJECT NUMBER	STATE DIST. NO.	COUNTY	SHEET NO.	TOTAL SHEETS
S311-22-0.00	N/A	7	GILMER	22	26

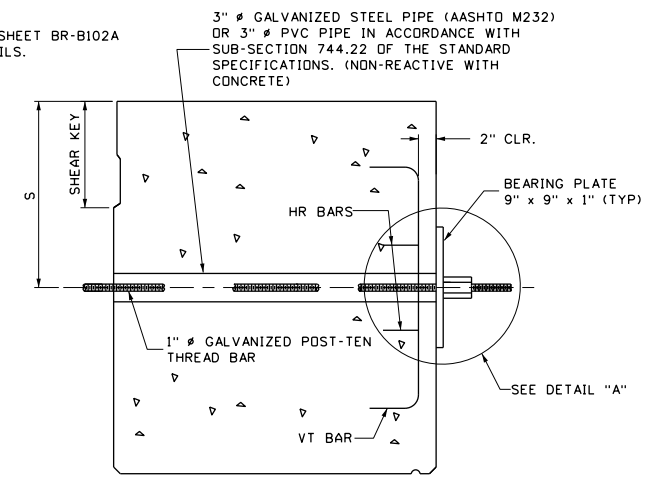


POST-TENSIONING BAR SPACING PLAN  
SKEW < 20°

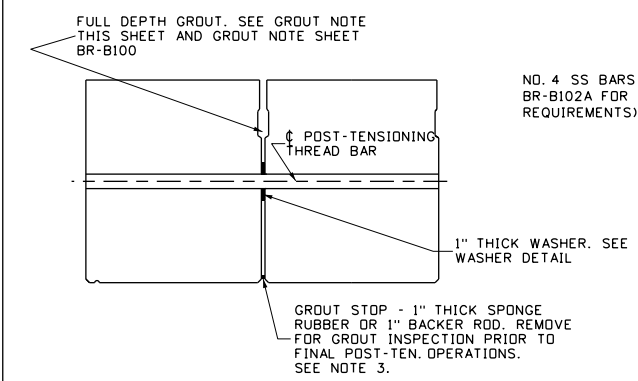


POST-TENSIONING BAR SPACING PLAN  
NORMAL OR SKEW < 20°

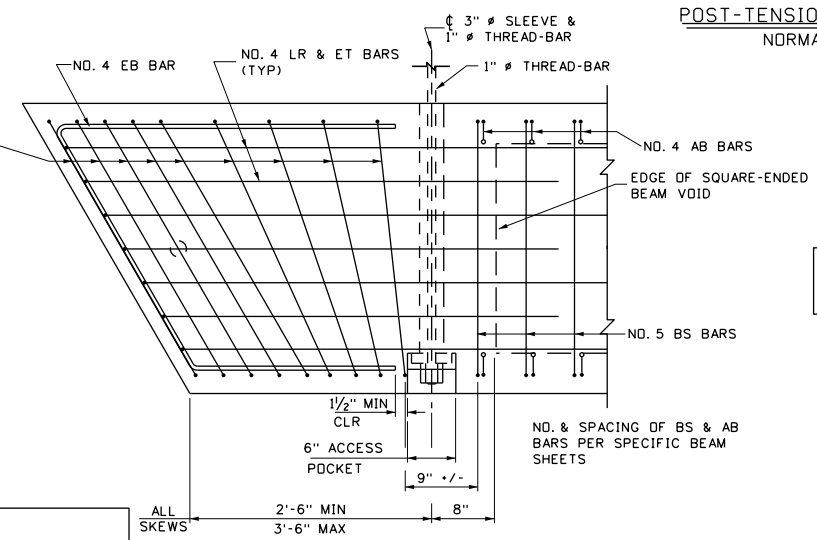
REFER TO STANDARD SHEET BR-B102A FOR SHEAR KEY DETAILS.



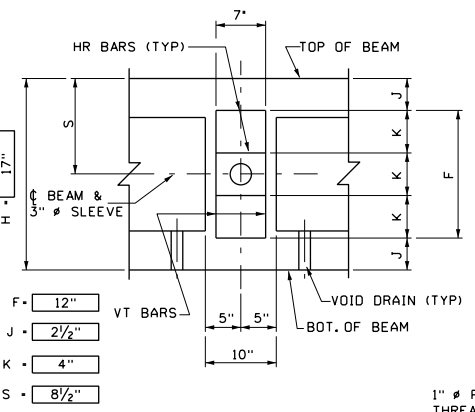
POST-TENSIONING BAR DETAILS



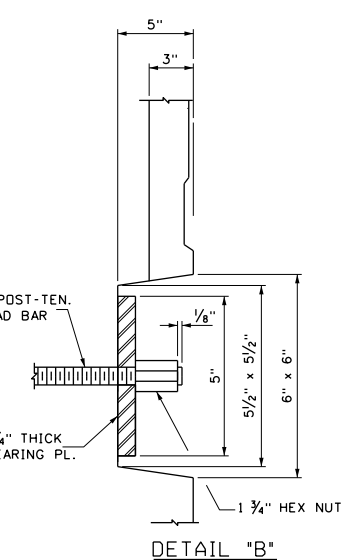
GROUT DETAILS



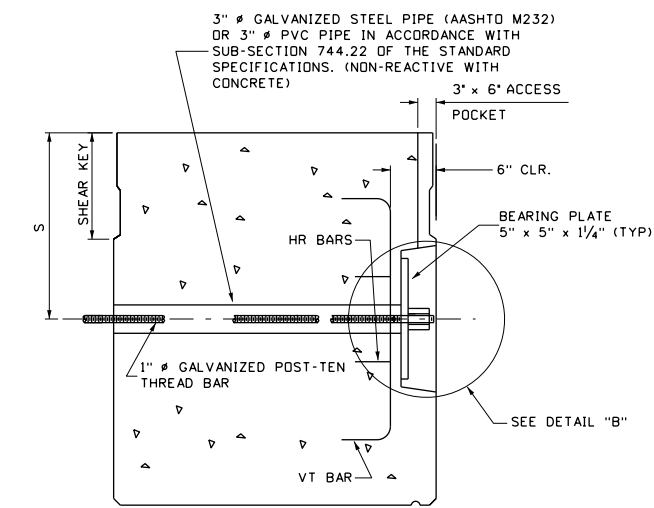
SHEAR REINFORCEMENT DETAIL  
BEAMS WITH ACCESS POCKETS



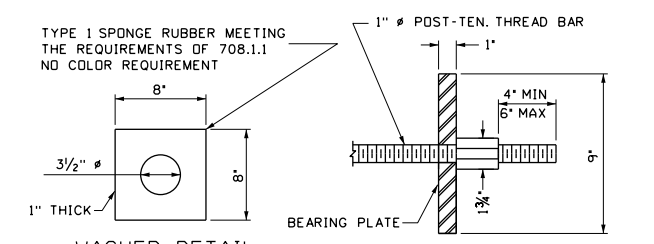
REINFORCING DETAILS @ DIAPHRAGM  
EXTERIOR BEAM & POCKETS ONLY



DETAIL "B"



ACCESS POCKET, END POST-TENSIONING BAR



WASHER DETAIL

DETAIL "A"

PROCEDURE NOTES

- TALL 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.
- GLUE A 3/4" x 2" x 2" PIECE OF PRESSURE TREATED PLYWOOD AT EACH THREAD-BAR LOCATION TO INSURE THAT A 3/4" GAP IS OBTAINED. PLYWOOD SPACERS TO BE OFFSET APPROXIMATELY 2 FEET FROM THE THREAD-BAR HOLE AND CENTERED ON THE HOLE DEPTH. PLYWOOD SPACERS ARE REQUIRED ON ONLY ONE BEAM EDGE FACE OF ABUTTING BEAMS. AFTER THE BEAMS ARE SET AND THE THREAD-BARS INSTALLED, PULL THE ENTIRE SUPERSTRUCTURE TOGETHER BY APPLYING A POST-TENSIONING FORCE OF APPROXIMATELY 3000 POUNDS. AT THIS STAGE THE GAP BETWEEN BEAMS SHALL BE A UNIFORM 3/4" WITH ALL SWEEP REMOVED. RECORD THE ACTUAL FORCE APPLIED.
- 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 CUBES FOR THREE AND SEVEN DAY TESTS. THESE JOB CONTROL SAMPLES WILL BE USED TO DETERMINE WHEN THE GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI. A MINIMUM OF THREE SPECIMENS PER TEST SHALL BE OBTAINED, AND THE AVERAGE OF THE TEST RESULTS USED. ACCEPTANCE SAMPLING AND TESTING OF THE GROUT IS THE RESPONSIBILITY OF THE CONTRACTOR; HOWEVER, A REPRESENTATIVE OF THE WVDH SHALL WITNESS ALL OF THE ACCEPTANCE SAMPLING AND TESTING.  
  
TEST PROCEDURE SHALL BE ASTM C109 AS MODIFIED BY ASTM C1107. IN NO INSTANCE SHALL THE CONTRACTOR PROCEED WITH POST-TENSIONING OR OTHER BEAM ERECTION PROCEDURES UNTIL THE REQUIRED MINIMUM GROUT STRENGTH IS ATTAINED AND VERIFIED BY THE ENGINEER. IN THE EVENT THAT THE MINIMUM GROUT STRENGTH IS NOT ATTAINED, THE ENGINEER SHALL BE NOTIFIED AND CORRECTIVE ACTION TAKEN AT THE DIRECTION OF THE ENGINEER. SEE SHEAR KEY GROUT NOTE, SHEET BR-B100 FOR ADDITIONAL REQUIREMENTS.  
  
AFTER THE GROUT HAS REACHED AN INITIAL SET CONDITION AND PRIOR TO ANY FINAL POST-TENSIONING PROCEDURES, THE CONTRACTOR SHALL REMOVE THE GROUT STOP AND INSPECT THE GROUT FOR VOIDS OR OTHER IRREGULARITIES. ANY VOIDS DEEPER THAN 2" FROM THE BOTTOM SHALL BE REGROUTED IN A MANNER ACCEPTABLE TO THE ENGINEER.
- AFTER GROUT AS BEEN PLACED AND REACHED IT'S MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI AND HAS CURED A MINIMUM OF 3 DAYS, APPLY 50% OF THE FINAL POST-TENSIONING FORCE TO ALL THREAD-BARS, WORKING BEAM ENDS TO MIDSPAN. AFTER ALL THREAD-BARS HAVE BEEN TENSIONED TO 50%, APPLY THE REMAINING PERCENTAGE OF FINAL POST-TENSIONING FORCE, WORKING IN THE SAME SEQUENCE AS THE FIRST STAGE OF FINAL TENSIONING.
- MEASURE AND RECORD IN THE ELONGATION TABLE, THIS SHEET, THE ACTUAL TOTAL ELONGATION OF EACH THREAD-BAR. COMPARE THE MEASURED ELONGATION TO THE CALCULATED ELONGATION. A SIGNIFICANT DIFFERENCE BETWEEN MEASURED AND CALCULATED ELONGATIONS COULD INDICATE IMPROPER JACKING TECHNIQUES, FAULTY MATERIALS, FAULTY JACKS, OR IMPROPERLY CALIBRATED JACKS. IF THE DIFFERENCE IS GREATER THAN 15%, THEN THE JACK SHALL BE RE-CALIBRATED AND THE JACKING TECHNIQUES EVALUATED. IF, AFTER THE ABOVE STEPS ARE TAKEN, THE PERCENTAGE DIFFERENCE IS GREATER THAN 10%, THEN THE ENGINEER SHALL BE NOTIFIED AND CORRECTIVE ACTION TAKEN AT THE DIRECTION OF THE ENGINEER. ALL COSTS INVOLVED IN CORRECTION SHALL BE AT THE CONTRACTORS EXPENSE.
- USING SAW, TRIM EXCESS THREAD-BAR LEAVING 4" TO 6" PAST THE NUT. DO NOT TRIM THREAD-BARS BY TORCH CUTTING. TOUCH-UP TRIMMED ENDS WITH GALVICON OR EQUAL.
- INSTALL ANCHOR DOWELS AS DETAILED ON STANDARD SHEETS BR-B101 AND BR-B102A.

FINAL POST-TENSIONING FORCE  
TYPE Z BARS = 80 KIPS  
TYPE V BARS = 40 KIPS

SPAN	1
SKEW	25° RFS
L	39' 6"
W	24' 5/4"
A	3' 0"
B	8' 8 1/2"
C	3' 6"
D	6' 2 1/4"
E	10' 6 5/8"
F	10' 6 5/8"
STEP	-

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

BEAM SIZE	REINFORCEMENT DIM	SPACING	BAR DIST
	F	J	K
	IN.	IN.	IN.
17	12	2 1/2	4
21	12	4 1/2	4
27	18	4 1/2	8
33	24	4 1/2	8
39	36	4 1/2	10
42	36	4 1/2	11

BAR	FORMULA	LENGTH
V(EVEN)	W-3'	15' 2 5/8"
Z	W-3'	27' 5 1/4"
WOODY	W-4'-6"	

BAR	CODE	CALC.	MEASURED											
			NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6	NO. 7	NO. 8	NO.	NO.		
Z	⊗	1"												
V	⊙	1 1/8"												

CALCULATED ⊗ • W(F.T.) / 24.8  
CALCULATED ⊙ • W(F.T.) / 99.2

ODD NO. BEAMS  
CALCULATED ⊕ • W(F.T.) / 99.2

- SPECIAL WARNING NOTES
- DO NOT STAND IN LINE WITH THE POST-TENSIONING BAR DURING TENSIONING PROCEDURES.
  - NUTS, COUPLERS AND EXTENSION RODS USED IN THE POST-TENSIONING WORK SHALL BE THE MATERIAL APPROVED BY THE MANUFACTURER OF THE HIGH STRENGTH POST-TENSIONING RODS. IN NO CASE SHALL THE CONTRACTOR USE NON-APPROVED MATERIAL OR MATERIAL FROM TWO DIFFERENT SOURCES.

APPROVED: *Gregory Bails* DIRECTOR, ENGINEERING DIVISION DATE: 10-25-07

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
ENGINEERING DIVISION

PREPARED: 07-02-07

PRESTRESSED CONCRETE BEAM  
TRANSVERSE POST-TENSIONING DETAILS

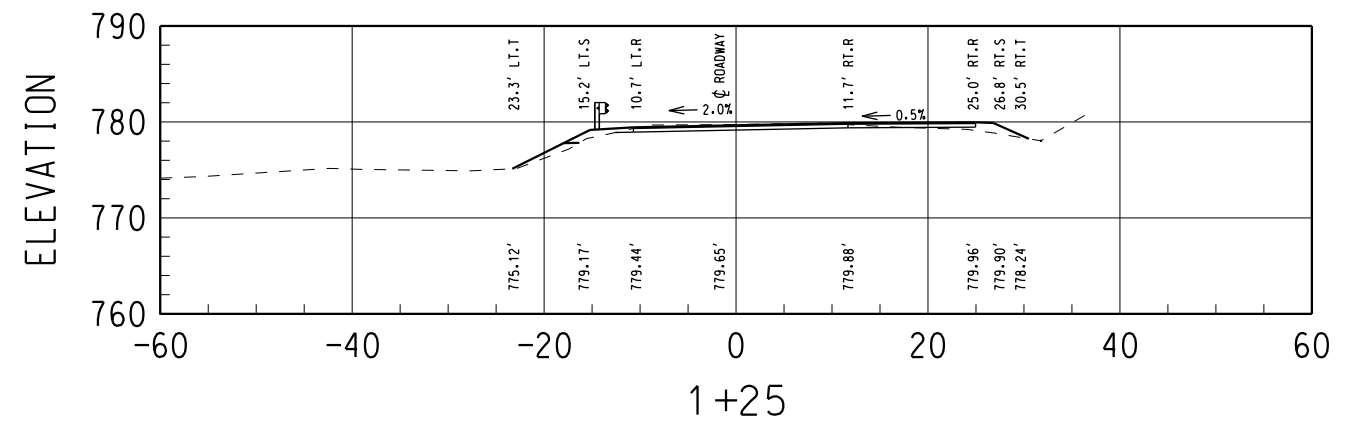
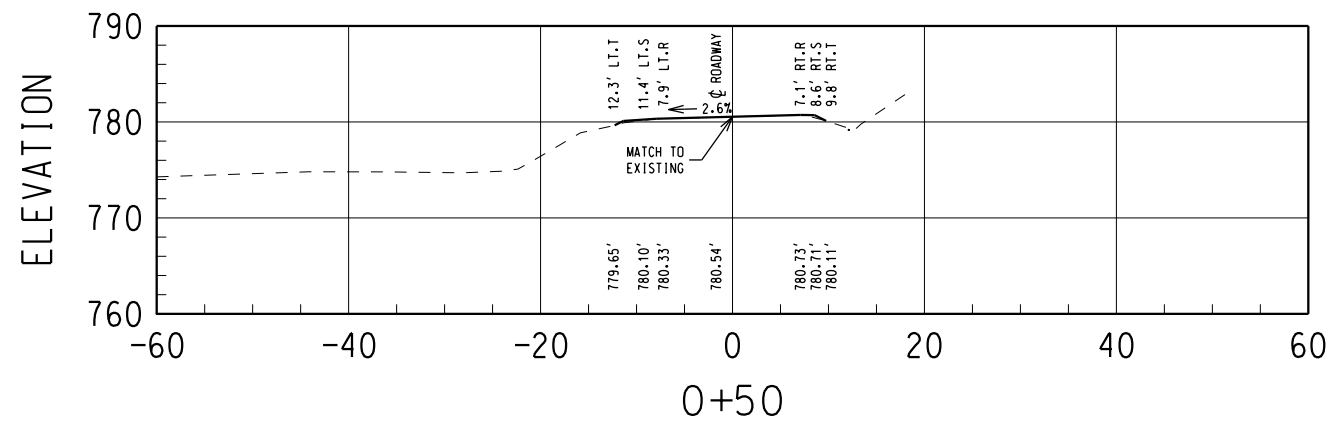
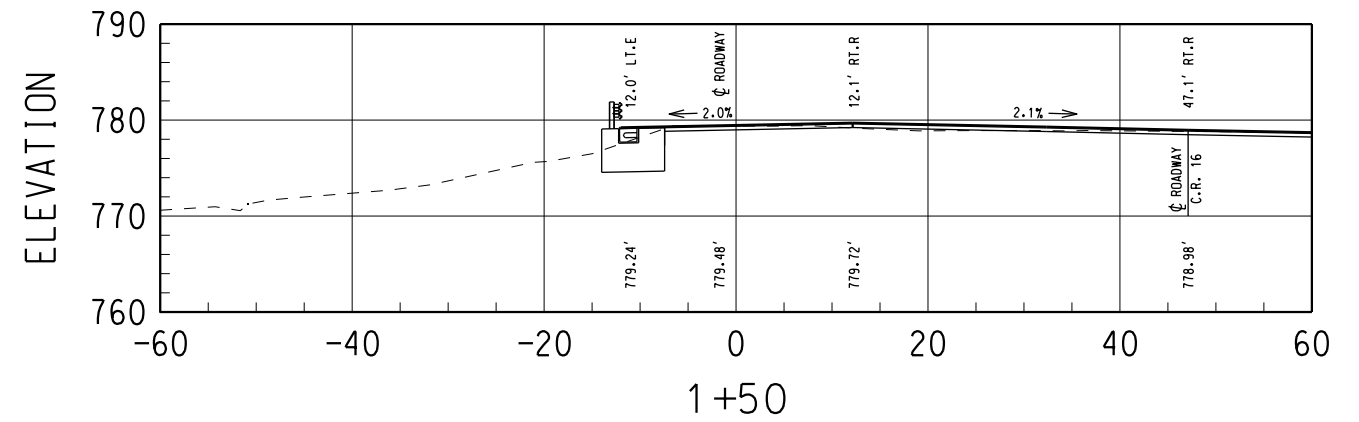
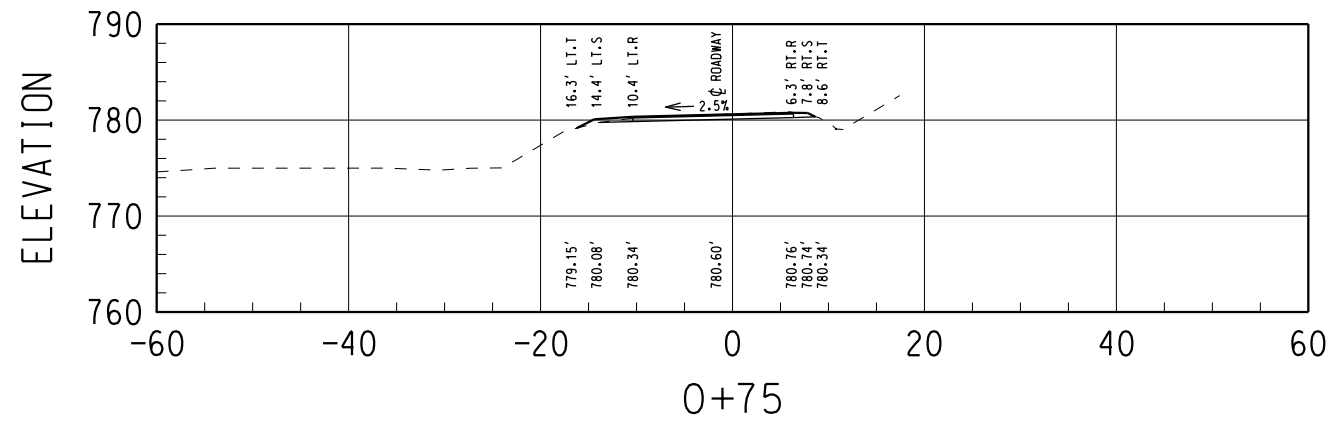
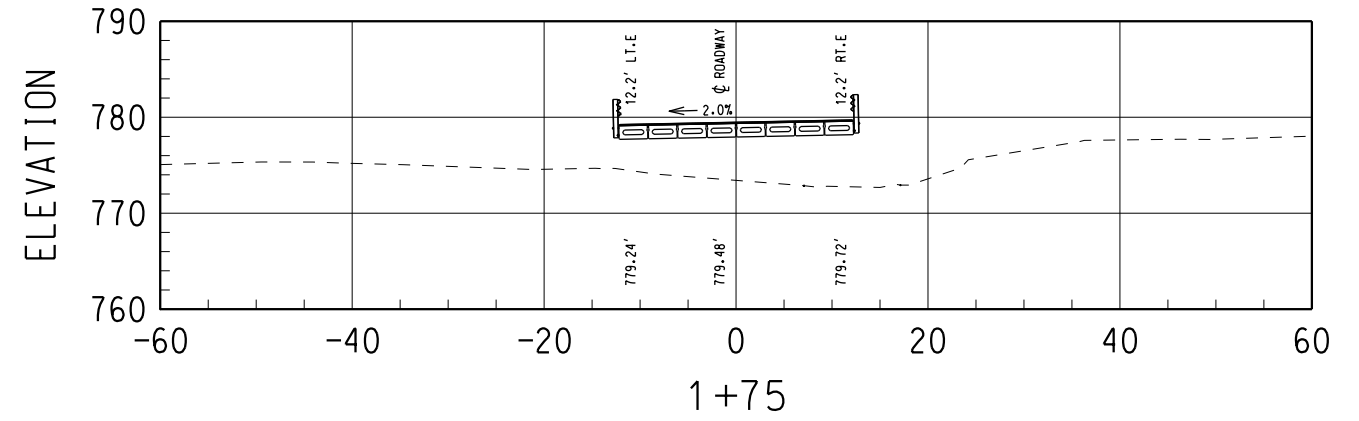
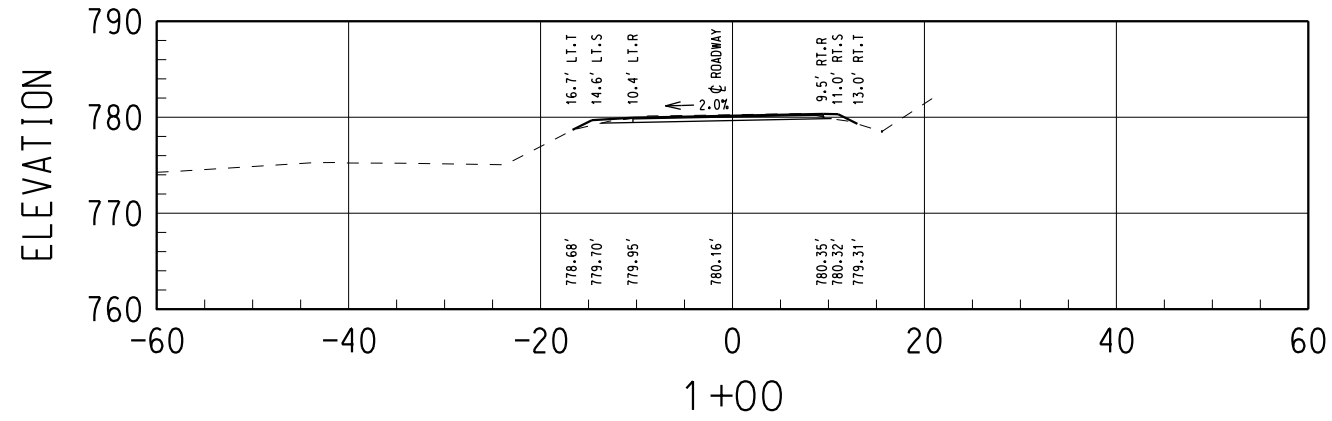
STANDARD SHEET BR-B103

THIS SHEET SHALL BE USED IN CONJUNCTION WITH STANDARD SHEETS BR-B17A & B THRU BR-B42A & B, BR-B100, BR-B101, BR-B102A & B, BR-B104, BR-B105A & B AND BR-B106.

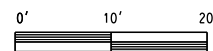
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
ENGINEERING DIVISION

CONSTRUCTION PLANS OF  
REVERE DECK GIRDER REPLACEMENT  
ON C.R. 22 (SLS)  
OVER RIGHT FORK OF TRACE FORK  
GILMER COUNTY

DESIGNED BY: THB/ATO  
DRAWN BY: THB/ATO  
CHECKED BY: TM/RMW  
REVIEWED BY: TW/CMB  
DATE: 03-19  
SCALE:  
SHEET NO 22 OF 26  
BRIDGE NUMBER  
11-22-0.01  
(11622)



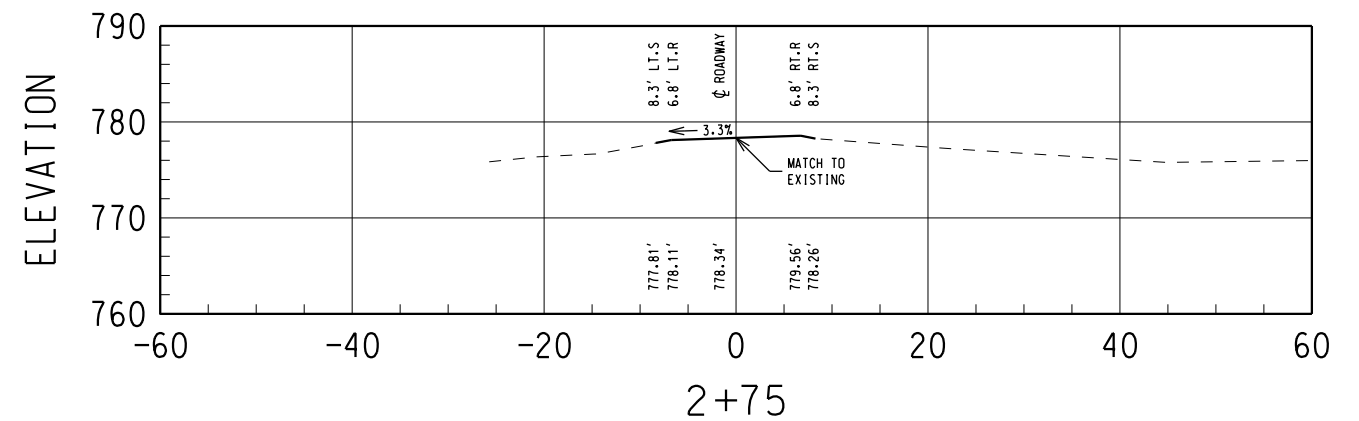
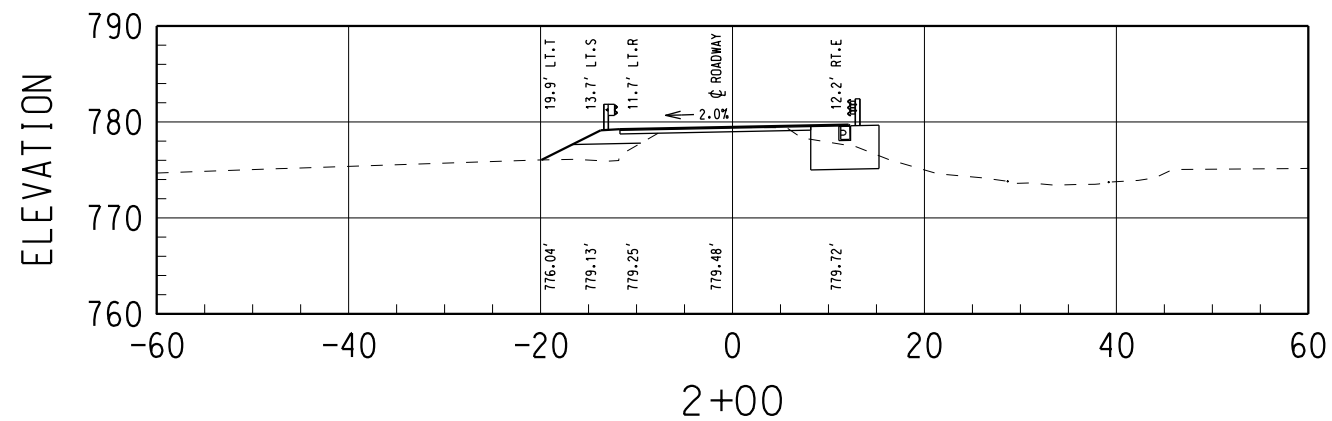
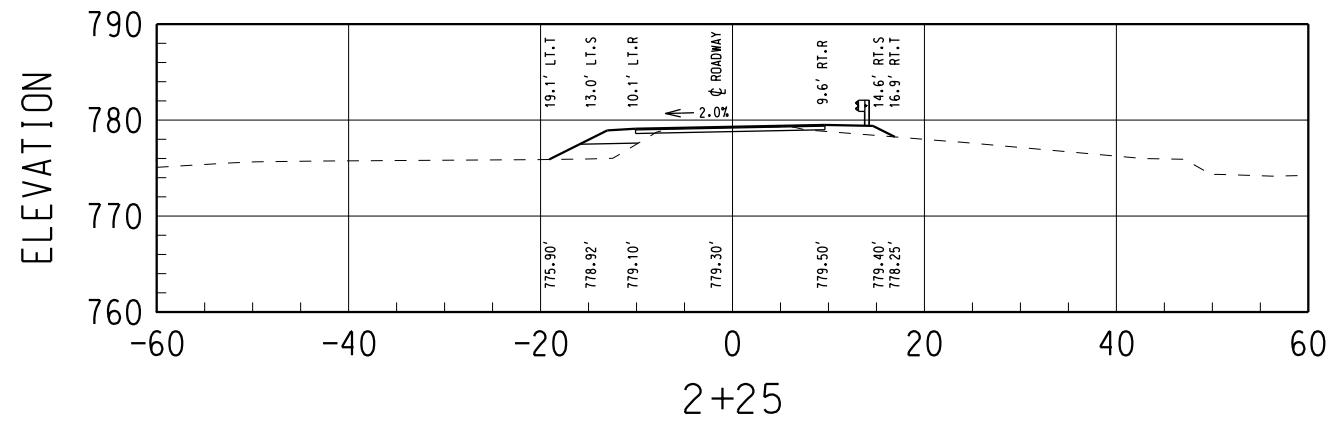
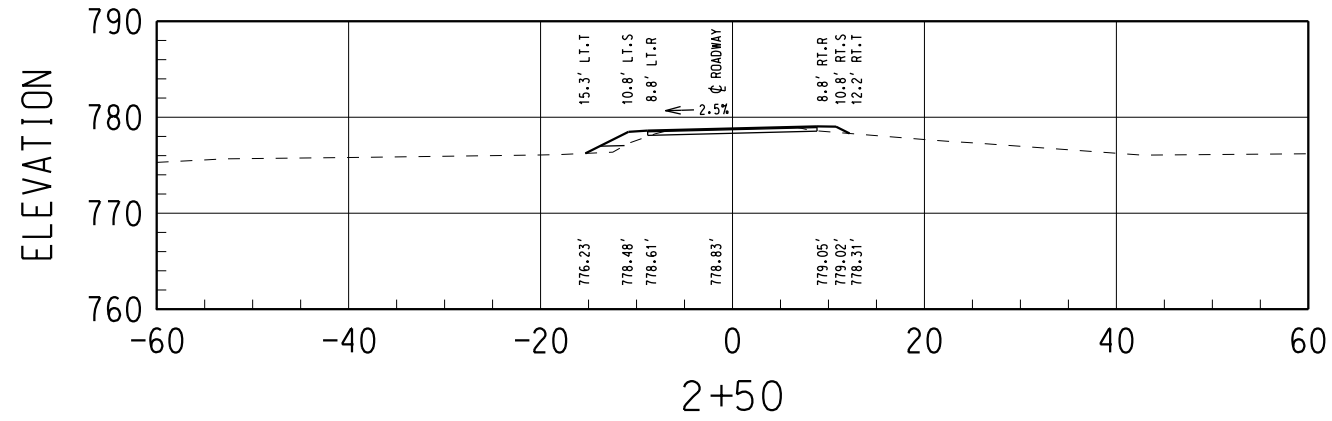
- NOTES:  
 UNLESS OTHERWISE NOTED ALL SLOPES ARE 2:1  
 R. - EDGE OF ROADWAY  
 S. - EDGE OF SHOULDER  
 D. - BOTTOM OF DITCH  
 T. - TOE OF SLOPE  
 B. - TOP OF BANK  
 E. - EDGE OF BRIDGE



DESIGNED BY:	ATD	02-19					
DRAWN BY:	ATD	02-19					
CHECKED BY:	RMW	04-20					
REVIEWED BY:	CMB	----					
	REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY		

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 C.R. 22 CROSS SECTIONS (1 OF 2)

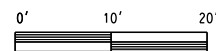
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	7	S311 22 0.00	N/A	2020	GILMER	24	26



NOTES:

UNLESS OTHERWISE NOTED ALL SLOPES ARE 2:1

- R. - EDGE OF ROADWAY
- S. - EDGE OF SHOULDER
- D. - BOTTOM OF DITCH
- T. - TOE OF SLOPE
- B. - TOP OF BANK
- E. - EDGE OF BRIDGE

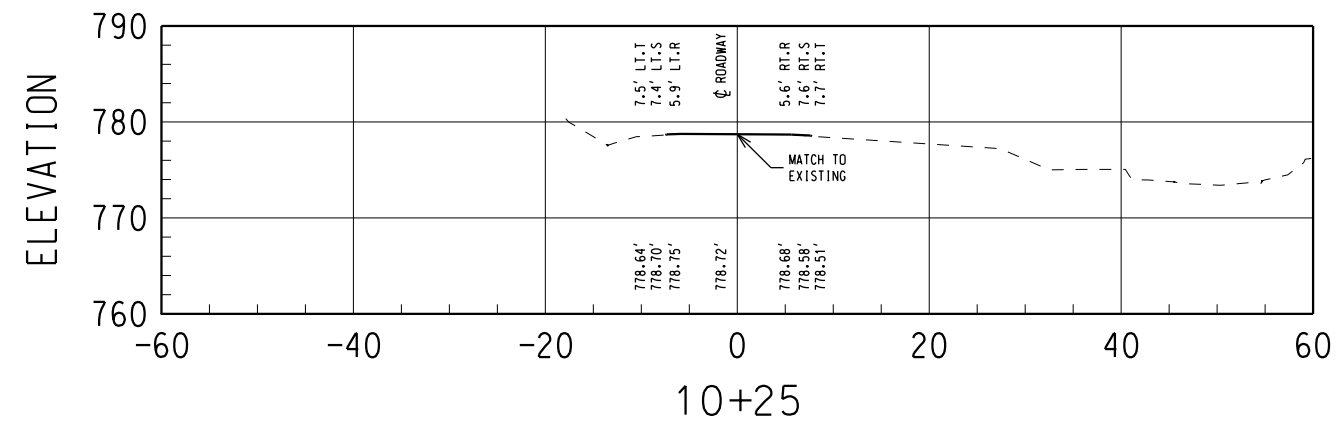
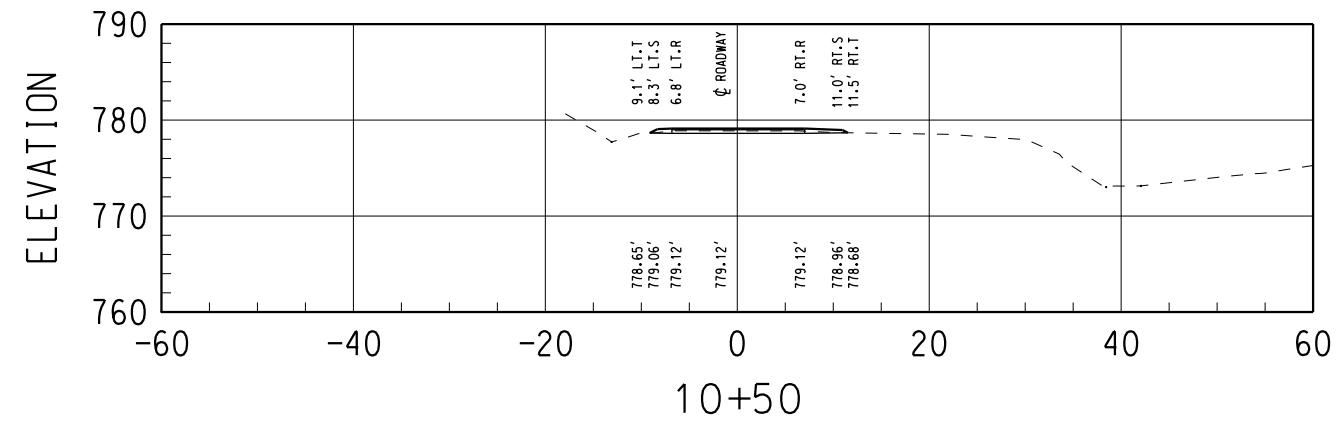
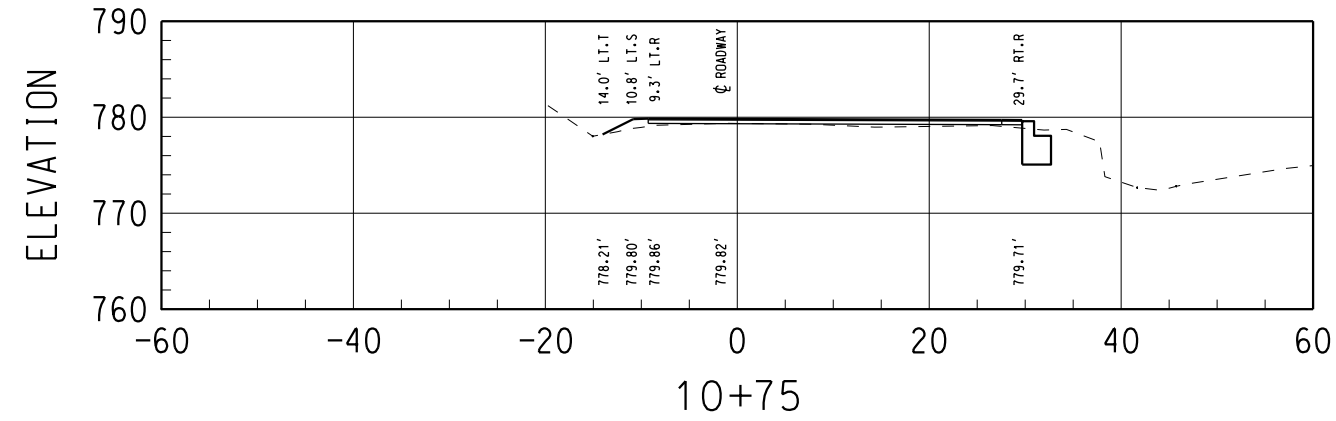


DESIGNED BY:	ATD	02-19					
DRAWN BY:	ATD	02-19					
CHECKED BY:	RMW	04-20					
REVIEWED BY:	CMB	----	REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

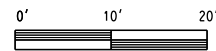
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
C.R. 22 CROSS SECTIONS (2 OF 2)



Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W.V.	7	S311 22 0.00	N/A	2020	GILMER	25	26

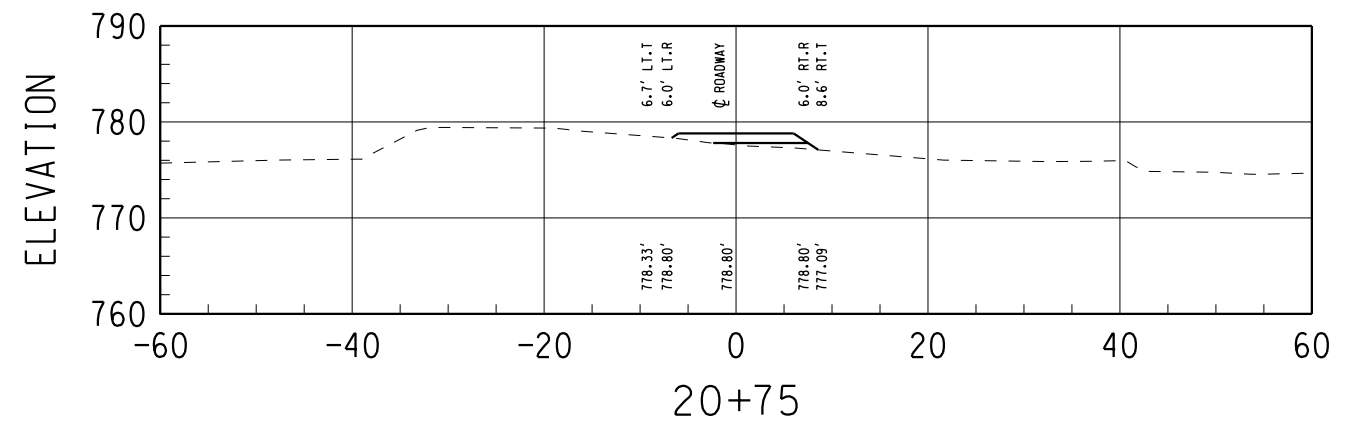
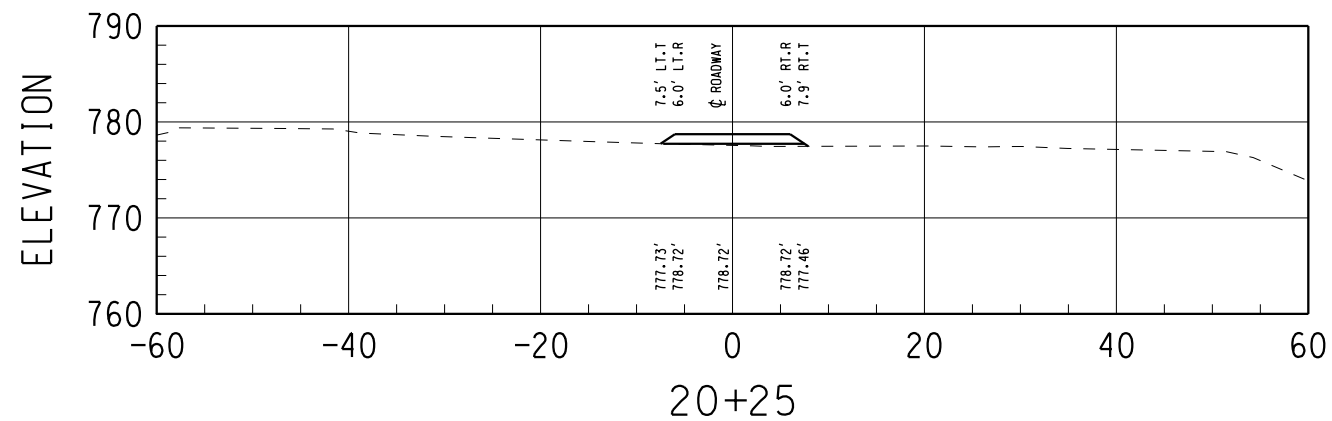
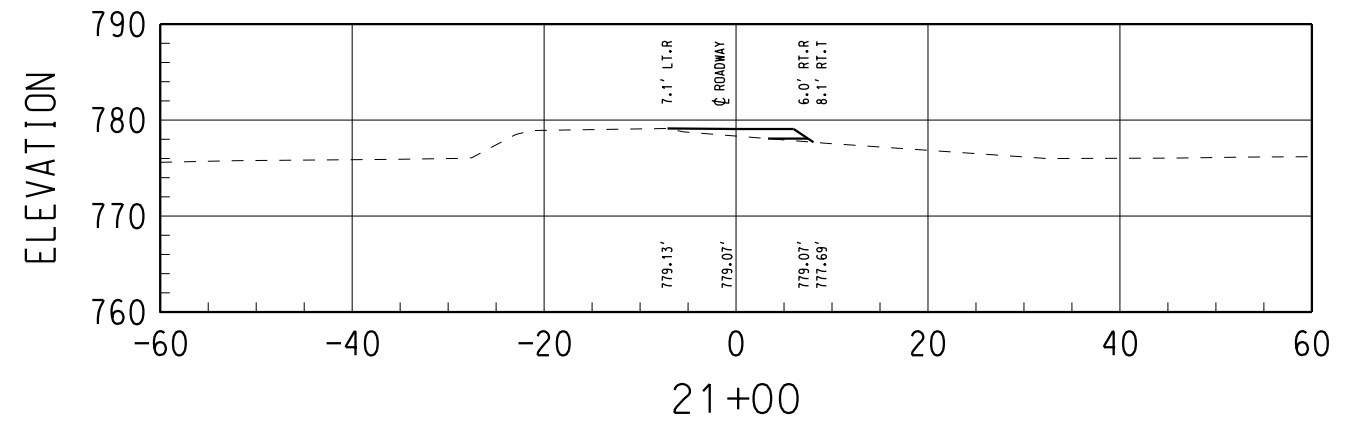
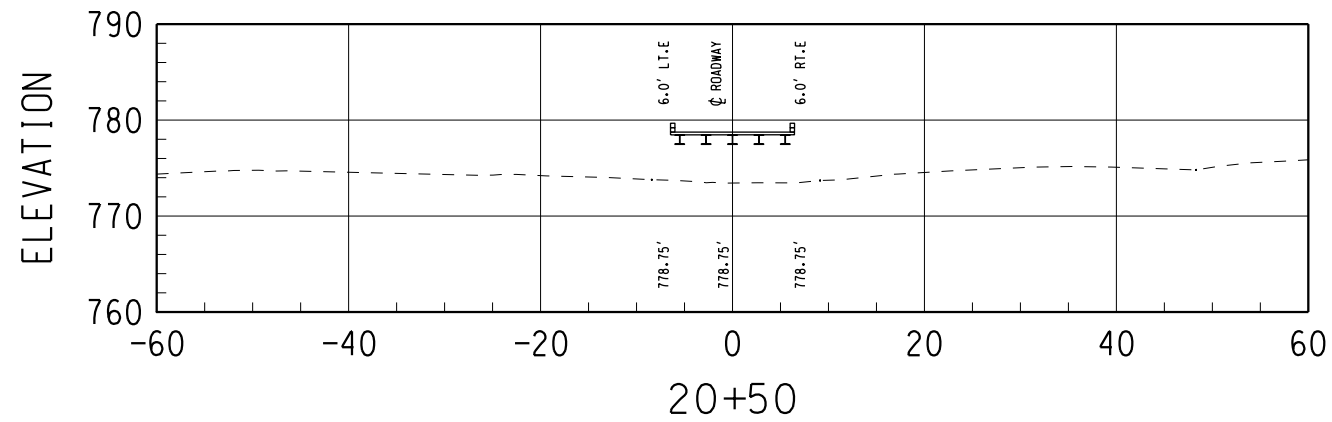
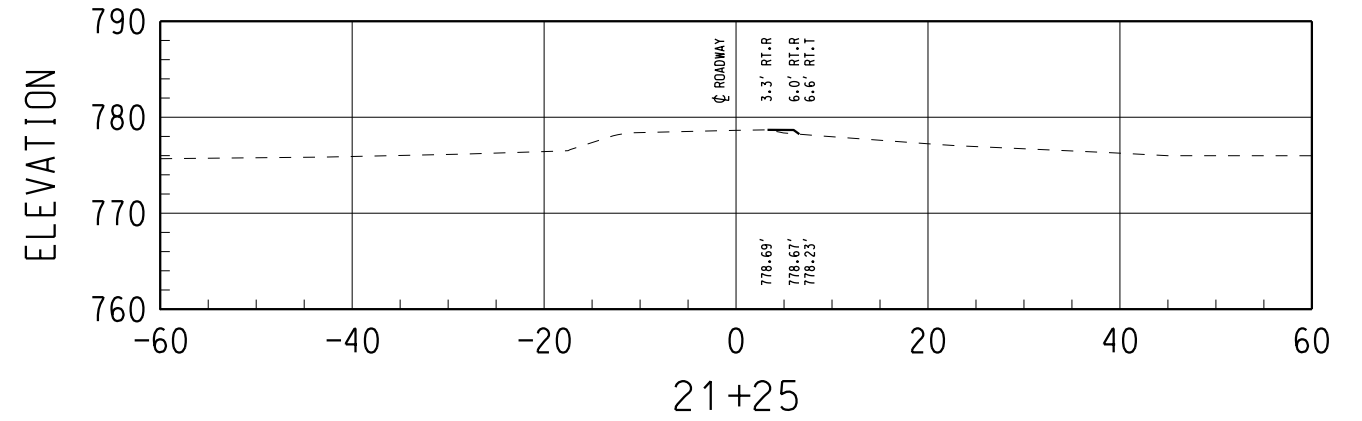
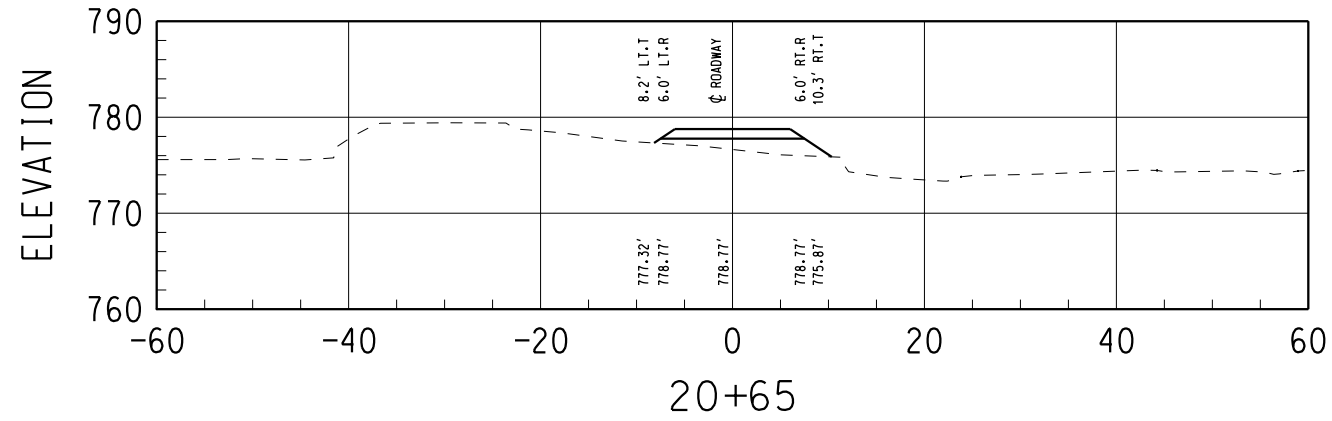


NOTES:  
 UNLESS OTHERWISE NOTED ALL SLOPES ARE 2:1  
 R. - EDGE OF ROADWAY  
 S. - EDGE OF SHOULDER  
 D. - BOTTOM OF DITCH  
 T. - TOE OF SLOPE  
 B. - TOP OF BANK  
 E. - EDGE OF BRIDGE

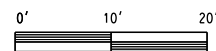


DESIGNED BY:	ATD	02-19					
DRAWN BY:	ATD	02-19					
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THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 C.R. 16 CROSS SECTIONS (1 OF 1)



NOTES:  
 UNLESS OTHERWISE NOTED ALL SLOPES ARE 1.5:1  
 R. - EDGE OF ROADWAY  
 S. - EDGE OF SHOULDER  
 D. - BOTTOM OF DITCH  
 T. - TOE OF SLOPE  
 B. - TOP OF BANK  
 E. - EDGE OF BRIDGE



DESIGNED BY:	ATD	02-19					
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THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 DETOUR CROSS SECTIONS (1 OF 1)