

PUBLIC ROADS DIV.	STATE DIST. NO.	PROJECT NUMBER	COUNTY	SHEET NO.	TOTAL SHTS
W. VA.	7	S349-1/1-0.03	UPSHUR	2	10

GOVERNING SPECIFICATIONS

The governing provisions applicable to this project are the West Virginia Department of Highways Standard Specifications, Roads and Bridges, adopted 2000, as amended by the current Supplemental Specifications of the West Virginia Department of Highways, the contract plans and the contract documents.

*Current Supplemental Specifications shall be the Specifications in effect on the first day of project advertisement for letting to contract.

DESIGN-NEW STRUCTURES

This bridge is designed for an HS-20 five load capacity, as well as for a 25 p.s.f. wearing surface.

Design Unit Stresses:

Reinforcing Steel - $f_s = 20,000$ p.s.i.	Class B Concrete - $f'_c = 3,000$ p.s.i.
Structural Steel (A36) - $f_s = 20,000$ p.s.i.	Class B Concrete - $f'_c = 1,200$ p.s.i.
Structural Steel (A588) - $f_s = 27,000$ p.s.i.	Class B Concrete - $n = 10$

DESIGN-REHABILITATION AND STRENGTHENING

This bridge is strengthened for a live load capacity of 20. Strengthening steel design stress - $f_s = 20,000$ p.s.i. All structural steel shall be ASTM A36 unless otherwise designated on the construction plans.

CONCRETE (CAST-IN-PLACE)

Concrete shall be cured in accordance with Subsection 601.12 of the Standard Specifications. If used, polyethylene covered burlap shall conform to the requirements of Subsection 207.5 of the Standard Specifications.

The minimum covering, measured from the surface of the concrete to the face of any reinforcing steel bar, shall be 3 inches if the concrete is in contact with the ground surface and 2 inches otherwise, except as specified differently on the plans.

SUBSTRUCTURE CONCRETE (CAST-IN-PLACE)

All concrete in the substructure shall be Class B, air entrained.

Chamfer all exposed edges of the substructure concrete 1 inch, except for the abutment curbs, which shall be chamfered 3/4 inch.

The exposed surface of the substructure shall be Class 1, Ordinary Surface Finish, in accordance with Subsection 601.11 of the Standard Specifications, except for the abutment curbs and wingwalls, which shall be Class 2, Rubbed Finish, in accordance with Subsection 601.11.2 of the Standard Specifications.

The abutment curtain wall shall not be poured until after the superstructure is in place.

For footings embedded in rock, the top of the abutment footing shall be maintained at the elevations shown on the plans. The footings shall be carried a minimum of 1 foot into solid rock and poured against the face of the rock without forms, except where the rock excavation is not the entire depth of the footing.

The abutment bearing seat upon which the shoes or other bearing devices will be set, shall be finished to true elevations as shown on the plans.

Fill anchor bolt holes with non-shrink grout after anchor bolts are set. The non-shrink grout shall consist of 1 part regular portland cement, 1 part silica sand and 1 part non-shrink admixture. The cost of the non-shrink grout shall be included in Pay Item 601-2, "Class B Concrete".

SUPERSTRUCTURE CONCRETE (CAST-IN-PLACE)

All concrete in the superstructure shall be Class K, air entrained. All concrete for decks, curbs, parapets or medians shall be Class K, air entrained, containing 7 bags of cement per cubic yard.

Chamfer all exposed edges of the curbs, parapets or medians 3/4". The exposed surfaces of the bridge shall be Class 2, Rubbed Finish, in accordance with Subsection 601.11.2 of the Standard Specifications. Bridge decks shall be finished in accordance with Subsection 601.11.4 of the Standard Specifications.

REINFORCING STEEL BARS

All reinforcing steel bars shall be intermediate grade billet steel, Grade 40 or 60 in accordance with Subsection 709.1 of the Standard Specifications. The requirements of Section 602 of the Standard Specifications shall be followed.

The minimum splice length or dowel bar embedment shall be 30 bar diameters.

Reinforcement under the shoes or other bearing device shall be so placed so as to avoid interference with drilling of anchor bolt holes.

The inspector shall select random bars from the reinforcing bar list for test bars. He shall cut 5'-0" from the bars chosen, rebars have been detailed to allow a 30 bar diameter splice at each end. One rebar for each 10 tons or fraction thereof, of each size has been included in the bill of steel and will be paid for under item 602-1. In the event all bars of any one size are not sent in one shipment, the supplier shall, at his expense, furnish one bar for each 10 tons or fraction thereof, for each extra shipment.

In the event that any shipment of material has been pre-tested and has been identified in accordance with Materials Control, Soil and Testing Division's Informational Memorandum Number 17(IM-17), the shipment may be accepted without further testing subject to record sampling procedures.

STRUCTURE EXCAVATION (FOOTINGS FOUNDED IN ROCK)

Structure excavation quantities through earth fill shall be measured from the top of rock to the original ground line, 18 inches outside the neat lines of the footings. No excavation will be classified as wet or rock excavation. Rock shall be excavated and paid for as structure excavation to the neat lines of the footings only. Rock shall be excavated until a level surface is provided with the entire footing resting on hard rock.

STEEL TOUGHNESS REQUIREMENT

The provisions of the AASHTO Specifications in accordance with Article 615.4.9 of the Standard Specifications shall apply to those items of structural steel as shown and/or designated by these plans.

PAINTING (NEW STRUCTURES)

Shop and field painting shall be in accordance with Section 615 of the current Standard Specifications and/or Special Provisions.

OPTION: (9A)

Paint system shall consist of one shop prime coat, one field prime coat and two field finish coats.

Shop Prime Coat: One complete coat of vinylshop primer conforming to the requirements of Subsection 711.7 of the Standard Specifications. This will replace the shop paint specified in Subsection 615.6.3. Dry film thickness shall be a minimum of two (2) mils.

Field Prime Coat: One complete coat of linseedalkyd primer conforming to the requirements of Subsection 711.8 of the Standard Specifications. Dry film thickness shall be a minimum of two (2) mils.

First Finish Coat: One complete pigmented finish coat conforming to the requirements of Subsection 711.10 of the Standard Specifications. The color shall be (C) in accordance with Federal Standard 595, number (C). Dry film thickness shall be a minimum of two (2) mils.

Top Finish Coat: One complete pigmented finish coat conforming to the requirements of Subsection 711.11 of the Standard Specifications. The color shall be (C) in accordance with Federal Standard 595, number (C). Dry film thickness shall be a minimum of two (2) mils.

OPTION: (9B)

Paint system shall consist of shop prime coat, intermediate field fogcoat and finish topcoat. Field painting shall also include touch-up and repair of shop paint. Paint system shall be the inorganic zinc rich system meeting the requirements of Section 711.20 of the Standard Specifications.

Shop Prime Coat: Shall conform to the requirements of Subsection 711.20.2 of the Standard Specifications. Dry film thickness shall be minimum three (3) mils.

Intermediate Field Coat: Shall conform to the requirements of Subsection 711.20.3 of the Standard Specifications.

Topcoat: Shall conform to the requirements of Subsection 711.20.4 of the Standard Specifications. The color shall be (C) in accordance with Federal Standard 595, number (C). Dry film thickness of the total paint system shall be a minimum of seven (7) mils.

OPTION: (9C)

Paint system shall consist of application of shop prime coat and field touch-up and repair of shop coat. Paint system shall be the inorganic zinc rich primer meeting the requirements of Subsection 711.20.2 of the Standard Specifications. Dry film thickness shall be a minimum three (3) mils.

CLEANING AND PAINTING (EXISTING STRUCTURES)

Field cleaning and painting shall be in accordance with either **OPTION (10A)** or **(10B)** and shall also conform to all applicable requirements of Section 620 of the current Standard Specifications and/or Special Provisions. When it is determined that the structure contains an environmentally hazardous existing paint system, then option **(10C)** shall also apply.

OPTION: (10A)

Cleaning: The portions of the structure listed in the special notes and quantity sheet, which is approximately (C) per cent, shall be cleaned in accordance with Subsection 620.6.1 of the Standard Specifications.

The remaining portions of the structure not specified, shall be cleaned in accordance with Subsection 620.6.2.

It is not intended that sound, adherent old paint be removed unless it is excessively thick or inflexible.

Attention is called to the requirements of paragraph 2 of Section 620.6 which requires that edges of paint be properly feathered to produce a smooth appearance.

In the event that there is a difference of opinion as to which areas must be sandblasted or hand cleaned or to the extent of surface cleaning or surface preparation, the decision of the Engineer shall be final.

Spot Painting: All steel surfaces cleaned to bare metal shall receive one coat of linseedalkyd primer conforming to the requirements of Section 711.8 of the Standard Specifications. This coat shall be tinted with a tinting agent, type as recommended by the paint manufacturer and approved by the Engineer.

Prime Coat: One complete coat of linseedalkyd primer shall be applied to the entire structure upon completion of the spot painting. The primer shall conform to the requirements of Section 711.8 of the Standard Specifications. Dry film thickness shall be a minimum of two (2) mils.

Intermediate Field Coat: Upon completion of application of the prime coat, the entire structure shall receive a minimum of one complete color undercoat conforming to the requirements of Section 711.10 of the Standard Specifications. Dry film thickness shall be a minimum two (2) mils. The color shall be (C) in accordance with Federal Standard 595, number (C).

Top Coat-Pigmented Finish Coat: Upon completion of application of the intermediate coat, the entire structure shall receive a minimum of one complete pigmented finish coat conforming to the requirements of Section 711.11 of the Standard Specifications. Dry film thickness shall be a minimum two (2) mils. The color shall be (C) in accordance with Federal Standard 595, number (C).

OPTION: (10B)

Cleaning: All surfaces to be painted shall be cleaned and prepared in accordance with Section 620.5 of the Standard Specifications to a "white metal" or "near white metal" condition. The paint system shall be as follows:

Field Prime Coat: All bare surfaces shall be primed with an organic zinc rich primer conforming to the requirements of SSPC Specification Number 20, Type 2. Dry film thickness of the primer shall be a minimum of four (4) mils.

Field Intermediate Coat: The field intermediate coat shall conform to the requirements of Article 711.20.3 of the Standard Specifications.

Field Top Coat: The field top coat shall conform to the requirements of Article 711.20.4 of the Standard Specifications. The color shall be (C) in accordance with Federal Standard 595, number (C). Dry film thickness of the total paint system shall be a minimum seven (7) mils.

OPTION: (10C)

Environmental Protection: All portions of the structure shall be cleaned in accordance with the Special Provision for 620-Cleaning and Painting Existing Steel Bridges, Sub-articles 620.1, 620.9, 620.10, 620.11, and 620.12 as contained in these plans.

STRUCTURE EXCAVATION (FOOTINGS FOUNDED ON PILES)

Structure excavation quantities through earth fill shall be measured from the bottom of the footing to the original ground line, 18 inches outside the neat line of the footings. No excavation will be classified as wet or rock excavation.

PREFORMED ELASTOMERIC JOINT SEALER

The preformed elastomeric joint sealer shall conform to the requirements of Section 624 of the Standard Specifications.

BRIDGE GUARDRAIL

The guardrail, buffer end terminal sections, posts and end anchors shall conform to the requirements as set forth by the West Virginia Department of Highways Standard Details Book (Standard Sheets G.R.1 through G.R.7, as applicable) and Standard Bridge Plan Sheet BR-G1. Blocks are required. End anchorage shall be in accordance with Design Directive DD 16.4. All guardrail mounting hardware will be hot-dip galvanized after fabrication. Threads shall be retapped to ensure proper fit. Guardrail posts may be square or beveled.

STRUCTURAL STEEL

All structural steel shall conform to the requirements of ASTM A36 ($f_s = 20,000$ p.s.i.) unless otherwise noted.

For superstructures utilizing steel grid flooring, structural steel conforming to the requirements of ASTM A588 ($f_s = 27,000$ p.s.i.) may be substituted for ASTM A36 steel. No painting shall be required for ASTM A588 steel.

OPTION: (14A)

All ASTM A36 steel shall be blast cleaned and shop primed in accordance with Section 615 of the Standard Specifications.

STEEL GRID FLOORING (CONCRETE FILLED TYPE)

The steel grid flooring shall conform to all applicable requirements of Section 624 of the current Standard Specifications and/or all Special Provisions of the West Virginia Department of Highways. The grid shall conform to all applicable requirements as set forth by the Bridge Grid Flooring Manufacturers Association. Size and type shall be as specified on the plans.

The steel grid flooring shall conform to all requirements of ASTM A36, A572 or A588, type as specified on the plans.

Cleaning: All surfaces to be painted shall be cleaned and prepared in accordance with Section 615.6 of the Standard Specifications to a "white metal" or "near white metal" condition. The paint system shall be as follows:

The steel grid flooring and all components shall either be shop painted with an inorganic zinc rich primer meeting Subsection 711.20.2 of the Standard Specifications or hot dipped galvanized meeting requirements of ASTM A123. Type of coating shall be as specified on the plans.

All reinforcing steel shall be number 3 billet steel bars either Grade 40 or 60 in accordance with Subsection 709.1 of the Standard Specifications.

The concrete used to fill the steel grid shall be Class A air entrained. The design stresses for this concrete are $f'_c = 3,500$ psi, $f'_t = 1,400$ psi and $n = 10$.

STEEL GRID FLOORING (OPEN TYPE)

The steel grid flooring shall conform to all applicable requirements of Section 621 of the current Standard Specifications and/or all Special Provisions of the West Virginia Department of Highways. The grid shall conform to all applicable requirements as set forth by the Bridge Grid Flooring Manufacturers Association. Size and type shall be as specified on the plans.

The steel grid flooring shall conform to all requirements of ASTM A36, A572 or A588, type as specified on the plans.

Cleaning: All surfaces to be painted shall be cleaned and prepared in accordance with Section 615.6 of the Standard Specifications to a "white metal" or "near white metal" condition. The paint system shall be as follows:

The steel grid flooring and all components shall either be shop painted with an inorganic zinc rich primer meeting Subsection 711.20.2 of the Standard Specifications or hot dipped galvanized meeting requirements of ASTM A123. Type of coating shall be as specified on the plans.

MAINTAINING TRAFFIC

Traffic shall be maintained in accordance with Section 636 and Subsection 104.5 of the Standard Specifications.

CODE	YES	NO	CODE	YES	NO
1	✓		10B		✓
2		✓	10C		✓
3		✓	11	✓	
4		✓	12		✓
5		✓	13	✓	
6		✓	14	✓	
7		✓	14A	✓	
8	✓		15		✓
9		✓	16		✓
SA		✓	17	✓	
9B		✓	18	✓	
9C		✓	19		✓
10		✓			
10A		✓			

☐ These items are for Purchase Order Contract only.

**THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS-STRUCTURES**

**CONSTRUCTION PLANS OF
HACKERS CREEK ARCH REPLACEMENT
ON C.R. 11 (SLS)
OVER HACKERS CREEK
UPSHUR COUNTY**

DESIGNED BY:	RMW
DRAWN BY:	DWJ
CHECKED BY:	GFL
REVIEWED BY:	WRW
DATE:	09-18
SCALE:	NONE
SHEET NO.:	2 of 10
BRIDGE NUMBER:	49-1/1-0.04 (10983)

GENERAL NOTES

CONTROL VALUE

CODE	VALUE
A	NA
B	NA
C	NA
D	NA
E	NA
F	NA
G	NA

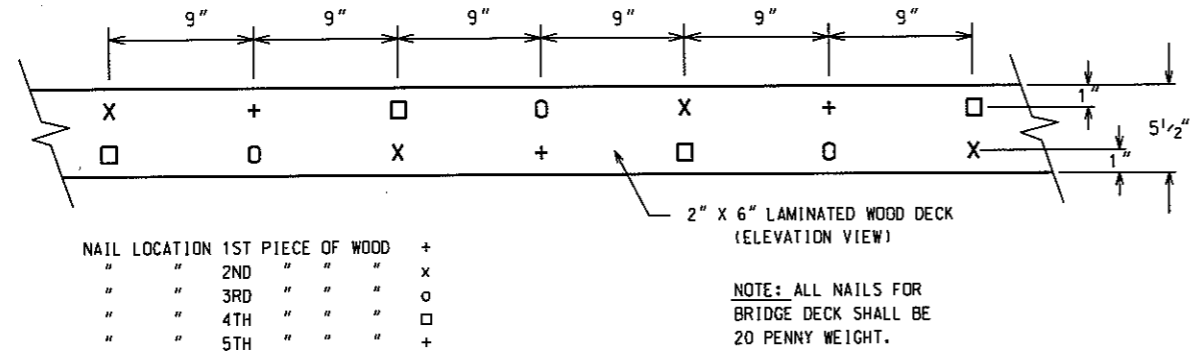
APPROVED _____ DATE _____

DIRECTOR, STRUCTURES DIVISION

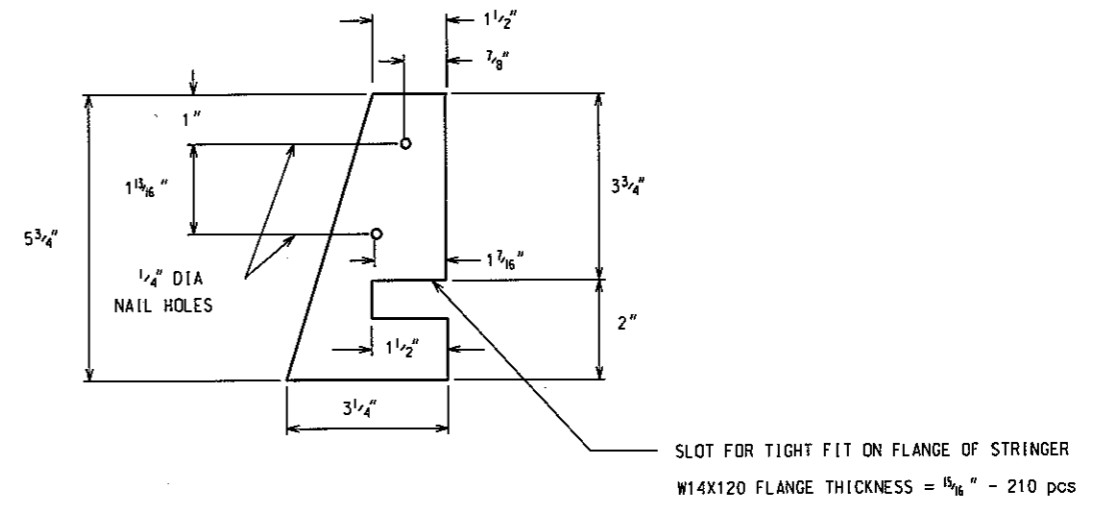
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS-STRUCTURES
STANDARD BRIDGE PLANS

**GENERAL NOTES
STANDARD SHEET BR-2A**

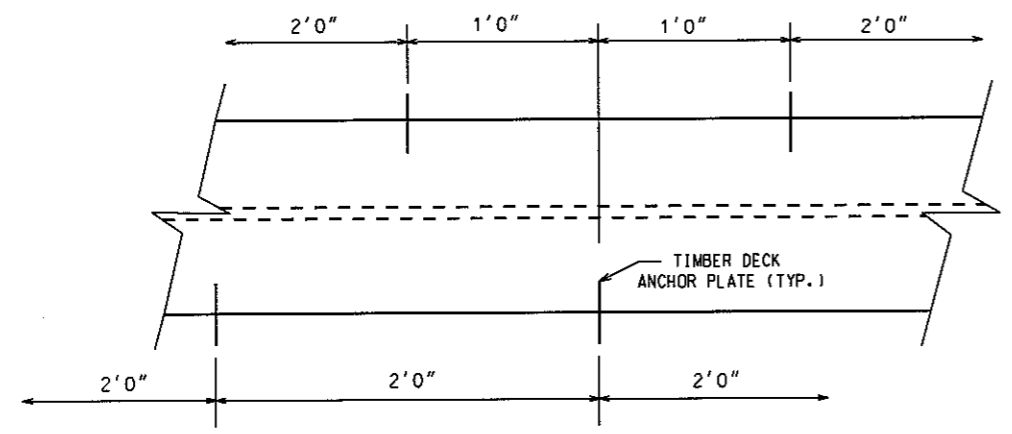
PREPARED: 11-26-90
REVISED: 5-91
8-93



TIMBER DECK NAILING DIAGRAM
NO SCALE



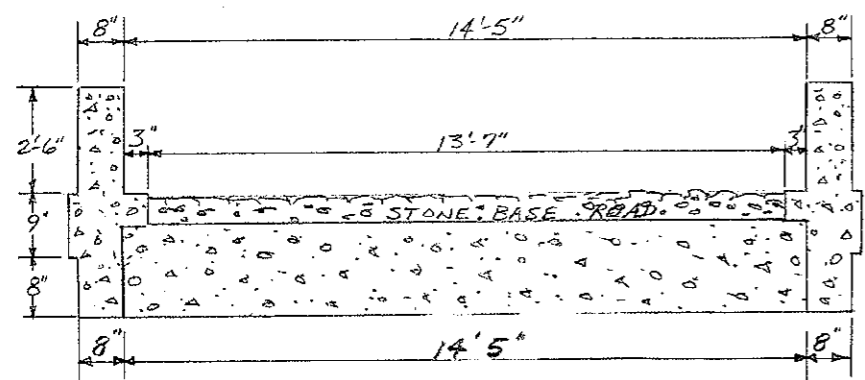
DECK ANCHOR PLATE DETAILS
NO SCALE



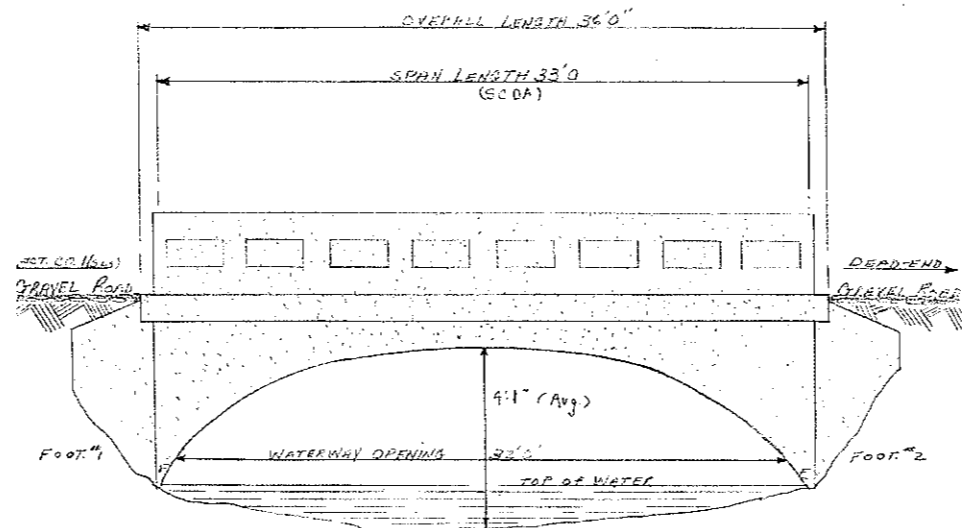
NOTE: ALL ANCHOR PLATES ON EXTERIOR STRINGERS SHALL BE PLACED ON INTERIOR FLANGE SPACED @ 1'0" c-c.

DECK ANCHOR PLATE SPACING DETAIL
(INTERIOR STRINGER)
NO SCALE

WEST VIRGINIA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS DISTRICT SEVEN	
CONSTRUCTION PLANS OF HACKERS CREEK ARCH REPLACEMENT ON C.R. 1/1 (SLS) OVER HACKERS CREEK UPSHUR COUNTY	
DESIGNED BY: RMW	DATE: 08-10
DRAWN BY: RMW	DATE: 09-10
CHECKED BY: GFL	DATE: 09-10
CHECKED BY:	
REVIEWED BY: WRW	DATE: 10-10
NAILING AND DECK ANCHOR DETAILS	
SHEET 7 OF 10	
BR. NO. 49-1/1-0.04 (10983)	



EXISTING DECK SECTION
NO SCALE



EXISTING ELEVATION VIEW
NO SCALE

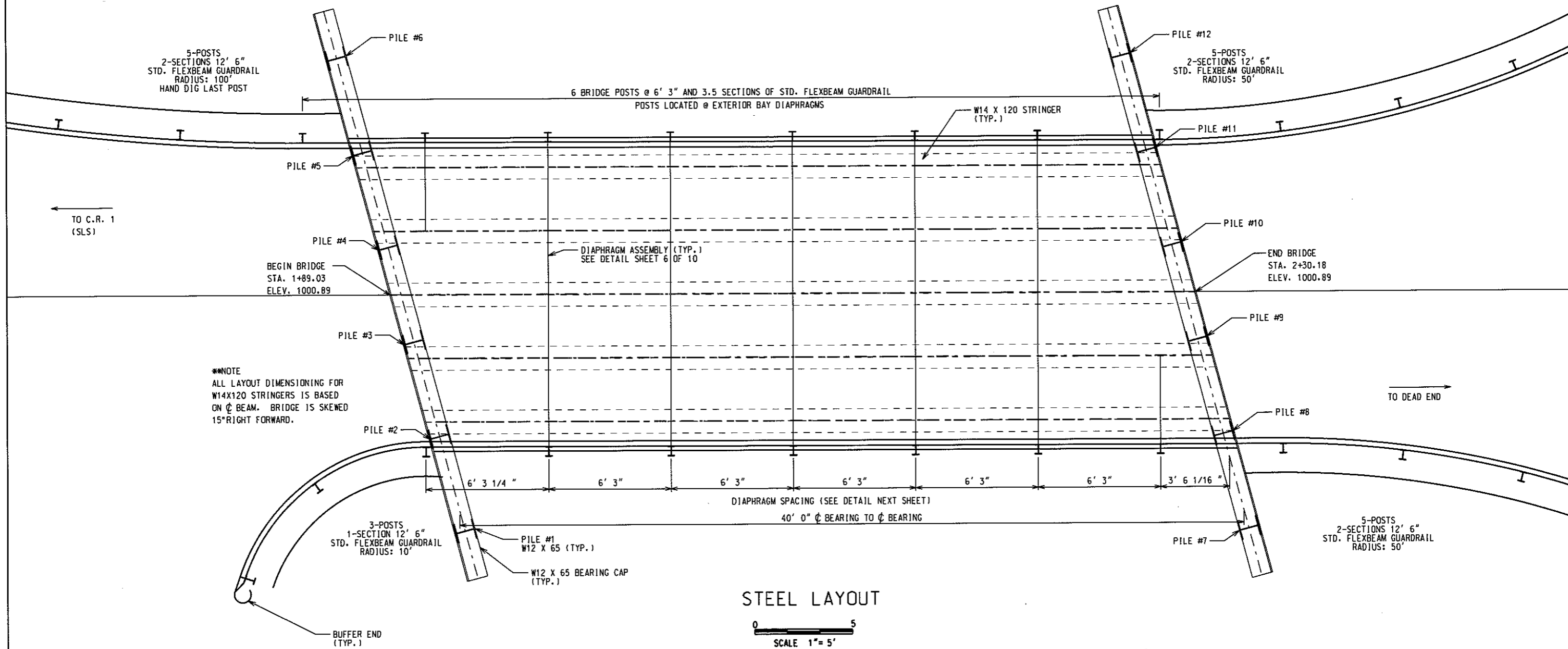
ESTIMATE OF QUANTITIES			
PROJECT NO. S349-1/1-0.03 FOR INFORMATION ONLY			
DESCRIPTION	UNITS	NO. AND SIZE	TOTAL
DECK TIMBER	EA	2" X 6" X 16'	318
NAILS	LB	20 PENNY	132
*NAILING CLIPS	EA	TF=15/16"	210
*STRINGERS	LB	5-W14 X 120 X 41' 0"	24600
*PILING	LB	12-W12 X 65 X 20'	15600
*BEARING CAPS	LB	2-W12 X 65 X 30'	3900
*BACKWALL PLATES	LB	2-4' X 3/4" X 30'	7136
*DIAPHRAGM ASSEMBLIES	LB	22-EA	1114
3/4" X 2 1/2" HIGH STRENGTH BOLTS	EA	W/NUT AND WASHER	81
3/4" X 2" HIGH STRENGTH BOLTS	EA	W/NUT AND WASHER	6
FOUNDATION PROTECTION MATERIAL	CY		124
HLBC BASE	TON		167
HLBC WEARING	TON		65
STONE	TON		714
APPROACH RAIL (BY CONTRACT)	LF		87.5
BRIDGE GUARDRAIL (BY FABRICATOR)	LF		87.5
*GUARDRAIL ASSEMBLIES	LB	12-EA	691

* -ALL STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM M223 GRADE 50 AND SHALL BE GALVANIZED.
GALVANIZING SHALL CONFORM TO THE WVDOT SPECIFICATIONS, JAN 2003, FOR SECTION 689.

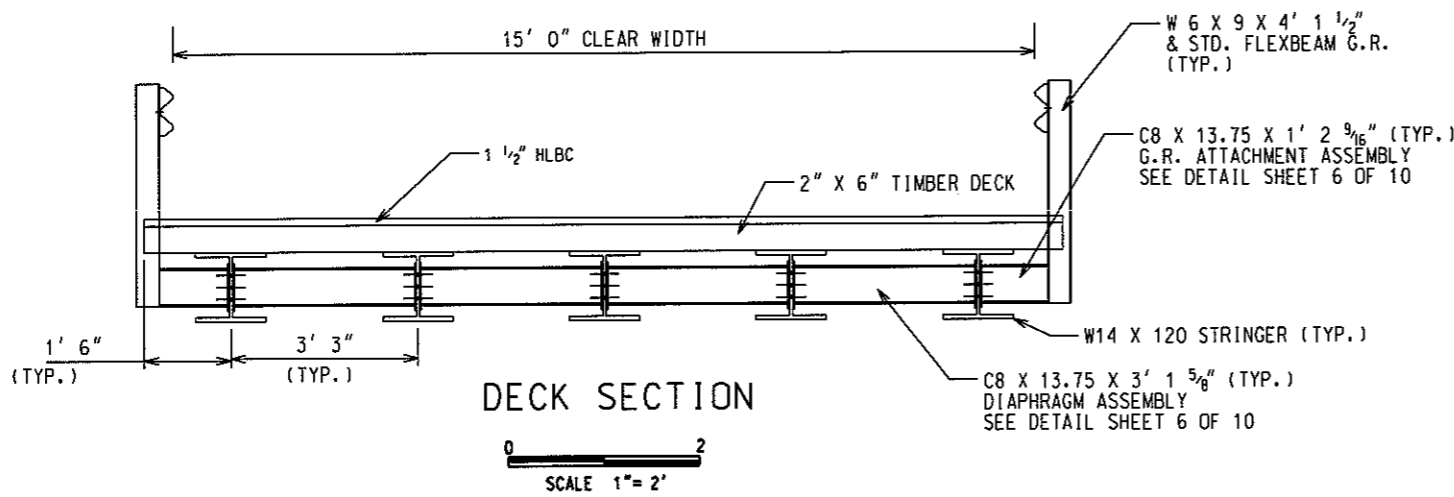
SCOPE OF WORK

1. CONSTRUCT APPROACH FILL.
2. DRIVE PILING AND PLACE CAP BEAMS.
3. PLACE FOUNDATION PROTECTION MATERIAL.
4. PLACE SUPERSTRUCTURE STEEL.
5. PLACE BACKWALL PLATES.
6. CONSTRUCT 2" X 6" DECK.
7. INSTALL BRIDGE GUARDRAIL POSTS.
8. PAVE.
9. OPEN STRUCTURE TO TRAFFIC.
10. REMOVE EXISTING STRUCTURE.
11. INSTALL APPROACH RAILING & SITE DRESS, SEED, & MULCH ALL DISTURBED AREAS.

		WEST VIRGINIA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS DISTRICT SEVEN	
		CONSTRUCTION PLANS OF HACKERS CREEK ARCH REPLACEMENT ON C.R 1/1 (SLS) OVER HACKERS CREEK UPSHUR COUNTY	
DESIGNED BY:	DATE:	DESIGNED BY:	DATE:
RMW	08-10	RMW	08-10
DRAWN BY:	DATE:	DRAWN BY:	DATE:
RMW	09-10	RMW	09-10
CHECKED BY:	DATE:	CHECKED BY:	DATE:
GFL	09-10	GFL	09-10
CHECKED BY:	DATE:	CHECKED BY:	DATE:
REVIEWED BY:	DATE:	REVIEWED BY:	DATE:
WRW	10-10	WRW	10-10
		EXISTING ELEVATION AND END VIEW, ESTIMATE OF QUANTITIES, & SCOPE OF WORK.	
		SHEET 3 OF 10	
		49-1/1-0.04 (10983)	



****NOTE**
ALL LAYOUT DIMENSIONING FOR W14X120 STRINGERS IS BASED ON ϕ BEAM. BRIDGE IS SKEWED 15° RIGHT FORWARD.



PILE NO.	NORTHING	EASTING	CUTOFF ELEV.
1	9967.5014	4918.6144	997.85
2	9971.3957	4921.7504	997.95
3	9975.2901	4924.8863	998.04
4	9979.1844	4928.0223	998.14
5	9983.0787	4931.1583	998.23
6	9986.9730	4934.2943	998.33
7	9935.2051	4942.2141	997.85
8	9939.0994	4945.3501	997.95
9	9942.9937	4948.4861	998.04
10	9946.8881	4951.6221	998.14
11	9950.7824	4954.7580	998.23
12	9954.6767	4957.8940	998.33

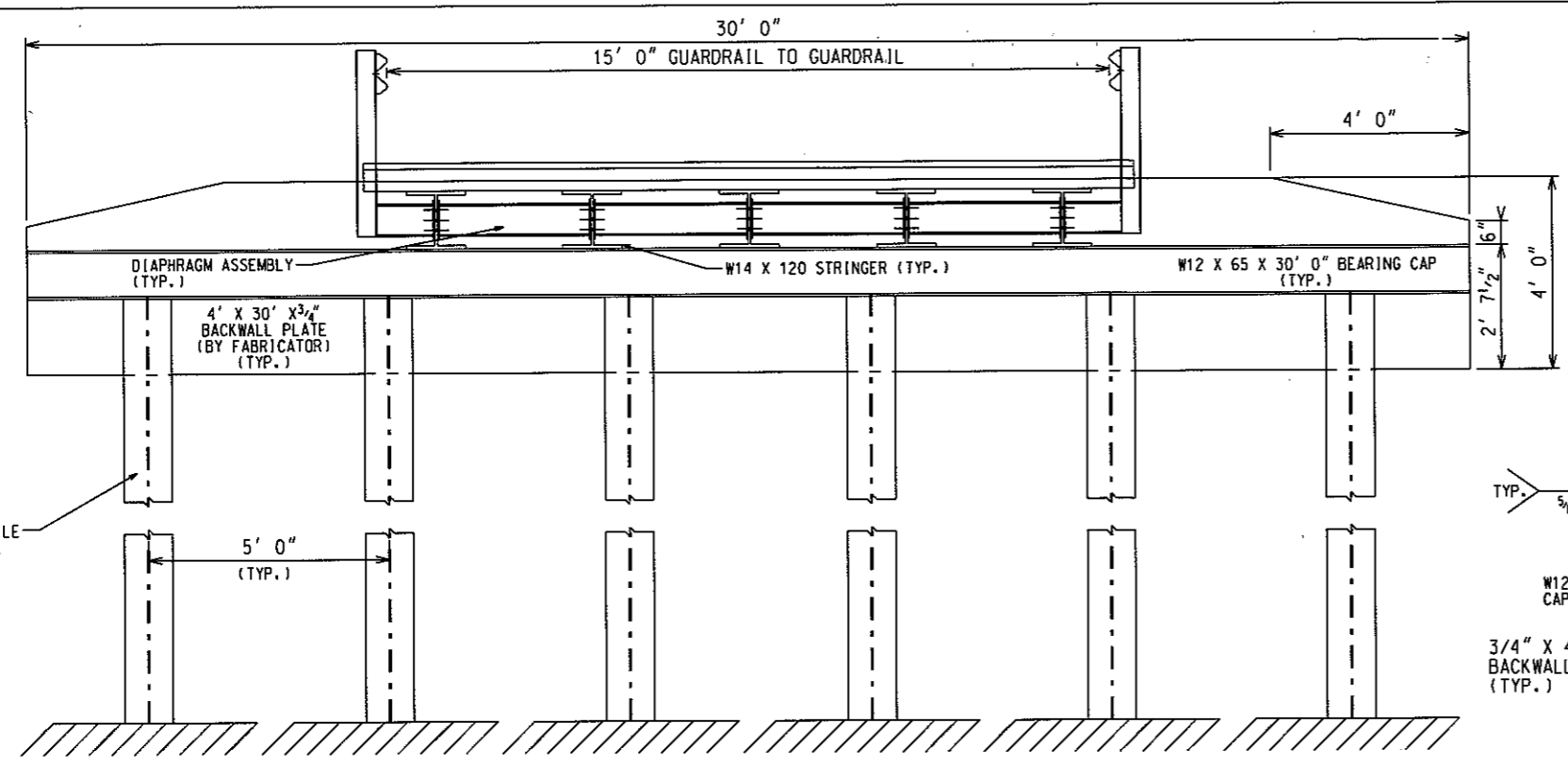
REVISIONS	DATE	BY
DESIGNED BY:	DATE:	
RMW	08-10	
DRAWN BY:	DATE:	
RMW	09-10	
CHECKED BY:	DATE:	
GFL	09-10	
REVIEWED BY:	DATE:	
WRW	10-10	

**WEST VIRGINIA DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DISTRICT SEVEN**

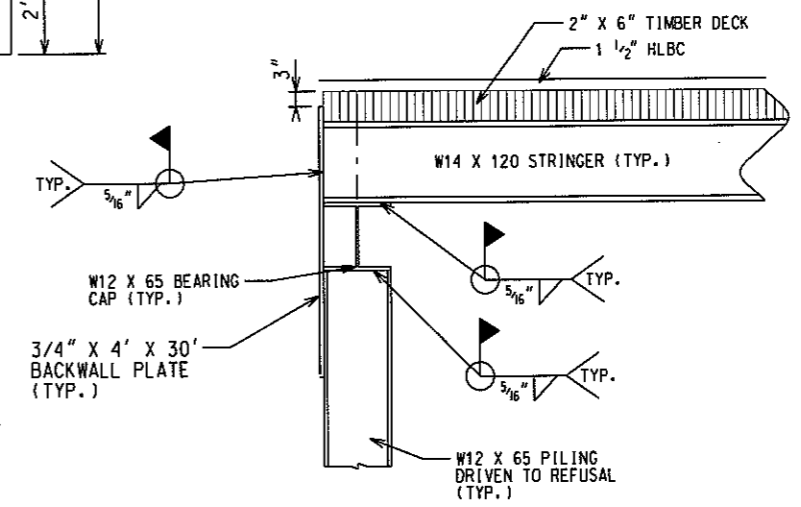
**CONSTRUCTION PLANS OF
HACKERS CREEK ARCH REPLACEMENT
ON C.R. 1/1 (SLS)
OVER HACKERS CREEK
UPSHUR COUNTY**

**STEEL LAYOUT & DECK SECTION,
GUARDRAIL POST ASSEMBLY DETAIL**

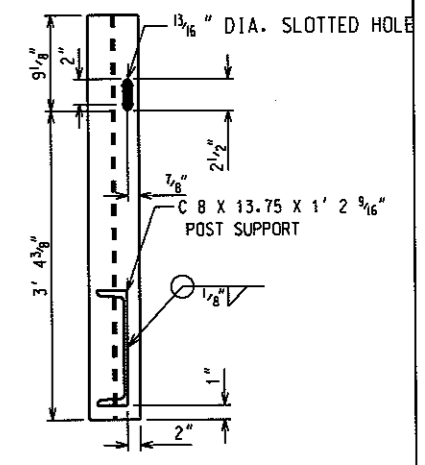
SHEET 5 OF 10
BR. NO. 49-1/1-0.04
(10983)



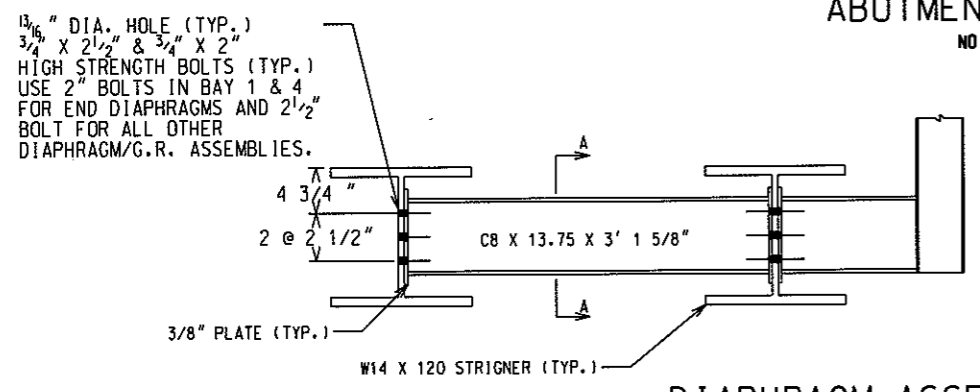
ABUTMENT DETAIL
NO SCALE



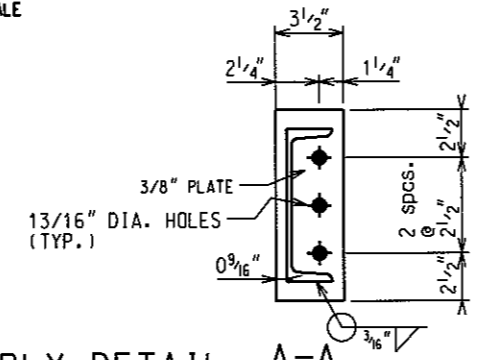
PROFILE WELD DETAIL
NO SCALE



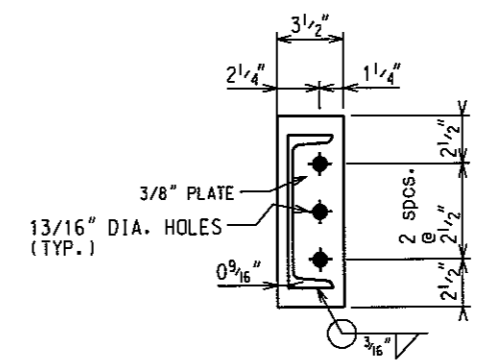
VIEW B-B
NO SCALE



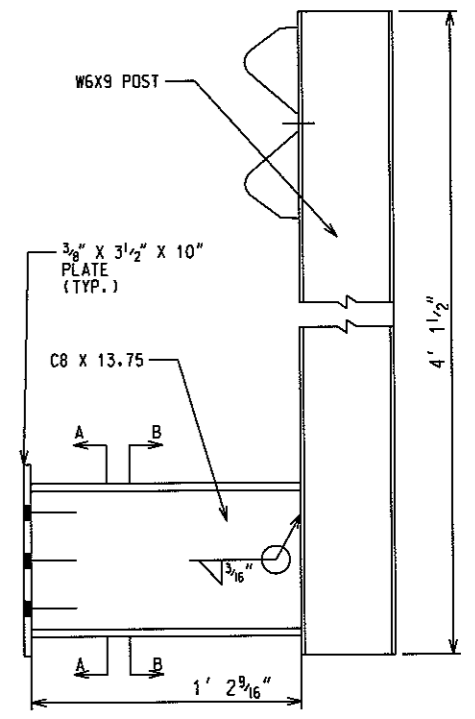
DIAPHRAGM ASSEMBLY DETAIL
NO SCALE



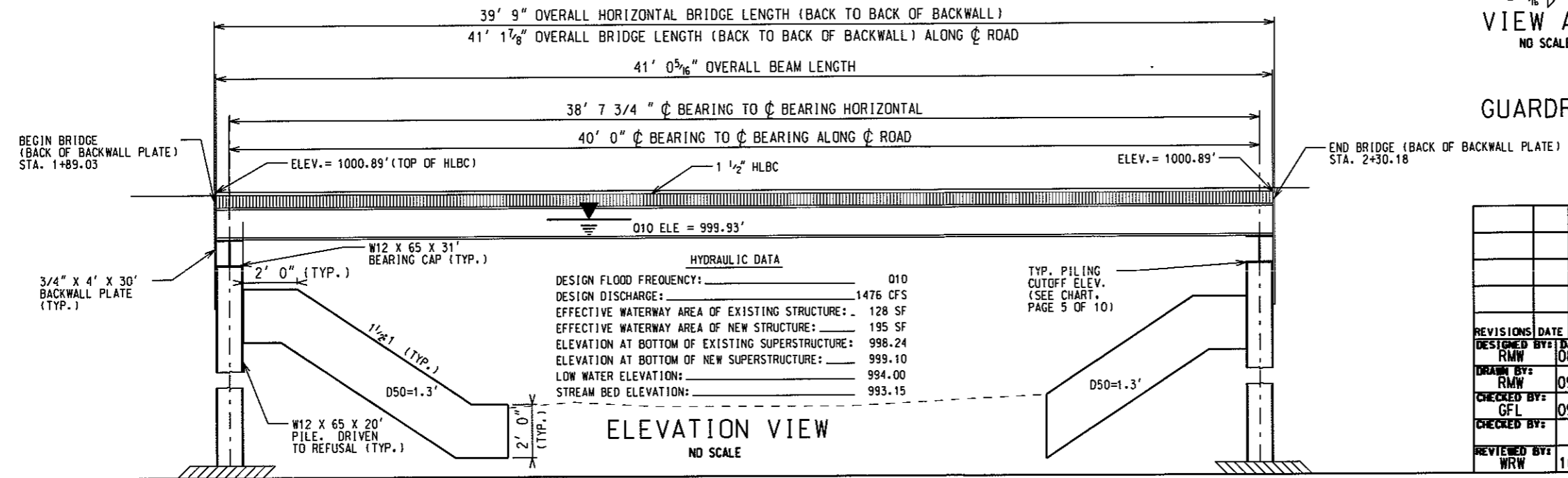
VIEW A-A



VIEW A-A
NO SCALE



GUARDRAIL ATTACHMENT DETAIL
NO SCALE



ELEVATION VIEW
NO SCALE

WEST VIRGINIA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS DISTRICT SEVEN	
CONSTRUCTION PLANS OF HACKERS CREEK ARCH REPLACEMENT ON C.R. 1/4 (SLS) OVER HACKERS CREEK UPSHUR COUNTY	
DESIGNED BY: RMW	DATE: 08-10
DRAWN BY: RMW	DATE: 09-10
CHECKED BY: GFL	DATE: 09-10
REVIEWED BY: WRW	DATE: 10-10
ELEVATION VIEW, ABUT. DETAILS, DIAPHRAGM DETAILS, WELD DETAILS, G.R. ATTACHMENT DETAILS, & HYDRAULIC DATA.	
SHEET 6 OF 10	BR. NO. 49-1/1-0.04 (10983)