

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION

HUR - 20 - 0.98  
FR - 69 (85)

OHIO  
FHWA  
REGION 5  
FEDERAL  
PROJECT

1  
70

DESIGN	DESIGNATION	
CURRENT ADT (1985)	=	7,500
DESIGN YEAR ADT (2005)	=	11,000
DHV	=	1,100
D	=	55%
T	=	26%
V - RURAL EXPRESSWAY	=	60 MPH
URBAN ARTERIAL	=	40 MPH
LEGAL SPEEDS - RURAL	=	55 MPH
URBAN	=	25 & 35 MPH

EXCEPT AS NOTED  
ON SHEETS 5 & 8

**HUR - 20 - 0.98**  
**VILLAGE OF MONROEVILLE**  
**LYME AND RIDGEFIELD TOWNSHIPS**  
**HURON COUNTY**

FR - 69(85)

No PID  
C No. 870431

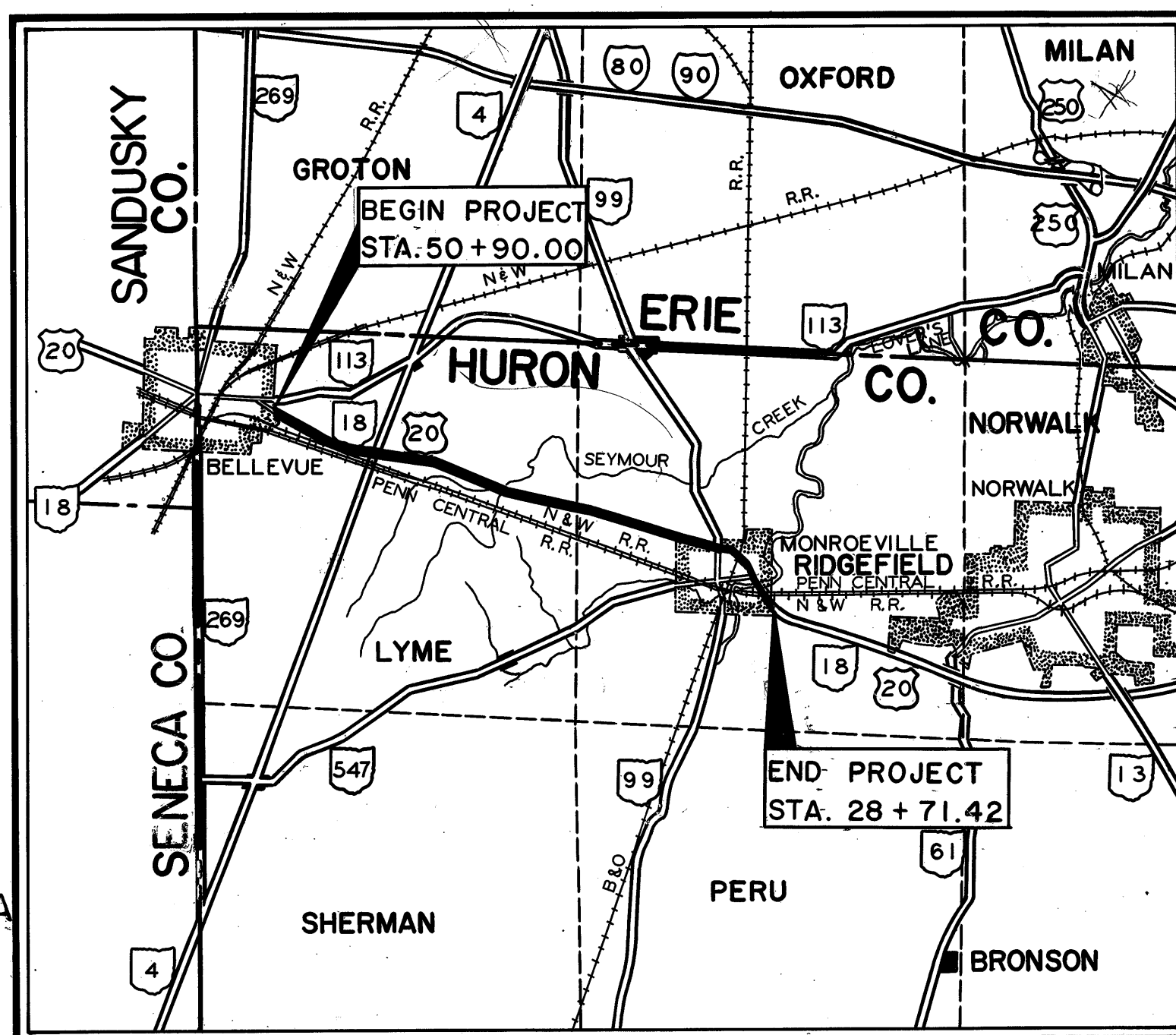
1987 SPECIFICATIONS

The standard specifications of the State of Ohio, Department of Transportation, including changes and supplemental specifications listed in the proposal shall govern this improvement.

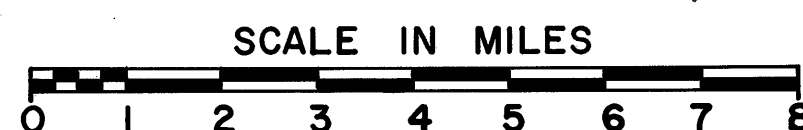
I hereby approve these plans and declare that the making of this improvement will not require the closing of the highway to traffic and that provisions for the maintenance and safety of traffic will be as set forth on the plans and estimates.

**CONVENTIONAL SIGNS**

County Line	-----	Limited Access (only)	----- LA
Township Line	-----	Right of Way (only)	----- RW
Section Line	-----	Limited Access & Right of Way	----- LA & RW
Corporation Line	----- or -----	Existing Right of Way	-----
Fence Line (existing)	-x-x-	Property Line	----- (in existing fence) -x-x-
Center Line	352 ----- 353	Railroad	----- or -----
Trees	(to be removed)	Guardrail (existing)	----- (proposed) -----
Utility Poles: Telephone	φ		
Power	φ		
Light	φ		



LOCATION MAP



Portion to be improved: \_\_\_\_\_  
State & Federal Routes: \_\_\_\_\_  
Other Roads: \_\_\_\_\_

SCALES

Plan: \_\_\_\_\_  
Profile: \_\_\_\_\_ Horizontal \_\_\_\_\_, Vertical \_\_\_\_\_  
Cross Section: Horizontal \_\_\_\_\_, Vertical \_\_\_\_\_

SUPPLEMENTAL SPECIFICATIONS

824	10-8-82
847	10-17-83
846	11-24-86
947	10-17-83
932	3-25-85

Approved: Gary W. Pines  
Date: 12/12/86 District Deputy Director of Transportation

Approved: Walter J. Jastrow  
Date: 1-5-87 Engineer, Bureau of Bridges and Structural Design

Approved: Wayne H. Kauble  
Date: 5-1-87 Chief Engineer, Planning and Design

Approved: Walter J. Smith  
Date: 5-1-87 Director, Department of Transportation

DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR DATE

INDEX OF SHEETS

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LINE DATA

BEGIN PROJECT	STA. 50+90.00	34,570.02 L.F.
STATION EQUATION	STA. 396+60.02 (BK.) =	
	STA. 396+70.02 (AHD.)	2,932.66 L.F.
STATION EQUATION	STA. 426+02.68 (BK.) =	
	STA. 2+00.00 (AHD.)	2,671.42 L.F.
END PROJECT	STA. 28+71.42	
DEDUCT FOR BRIDGE HUR-20-0813		- 272.88 L.F.
NET PROJECT LENGTH		39,901.22 LIN. FT. OR 7.557 MILES

ADD FOR WORK:		
S.R. 4 INTERSECTION SIGNAL WORK	607.00 L.F.	
BRIDGE HUR-20-0813	272.88 L.F.	
STA. 28+71.42 TO 29+00	28.58 L.F.	
NET WORK LENGTH	40,809.68 LIN. FT. OR 7.729 MILES	

Plan Prepared By  
DISTRICT 3 DESIGN

UNDERGROUND UTILITIES  
**2 WORKING DAYS BEFORE YOU DIG**  
Call--800-362-2764 (Toll free)  
OHIO UTILITIES PROTECTION SERVICE  
NON-MEMBERS MUST BE CALLED DIRECTLY

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS

BP-1	6-1-85	GR-1	1-11-85	MC-4	7-26-76	TC-41.10	8-29-84	TC-83.10	1-20-84
BP-3	12-6-76	GR-2B	2-5-82	MC-9A	1-11-85	TC-41.20	3-26-79	TC-84.20	1-20-84
BP-4	11-11-85	GR-3	1-21-85	MC-10	5-1-76	TC-41.40	6-18-79	TC-85.20	1-20-84
BP-5	11-11-85	GR-4	2-5-82	MH-1	12-18-84			AS-1-81	11-27-81
BP-6	6-1-85	GR-4A	1-30-84	MH-3	12-18-84	TC-42.10	8-19-77	DBR-2-73	4-10-73
BP-7	12-6-76	GR-5	2-5-82	MH-5	6-12-75	TC-42.20	3-26-79	PSBD-1-81	9-18-81
		GR-6	2-5-82			TC-52.20	4-3-79	CS-2-73	4-10-73
CB-2-2A8B	5-1-79			TC-16.20	1-20-84				
CB-5	11-10-83	I-2A	12-18-84	TC-21.20	1-20-84	TC-71.10	4-9-79	MT-99.10	11-14-86
		HL-10	12-28-84	TC-35.10	8-29-84	TC-81.10	1-20-84	MT-99.20	11-14-86
		HL-11	6-1-79			TC-82.10	8-29-84		

SEAL

Project: HUR - 20 - 0.98, HURON COUNTY  
Date of Letting: 19\_\_\_\_, Contract No. \_\_\_\_\_

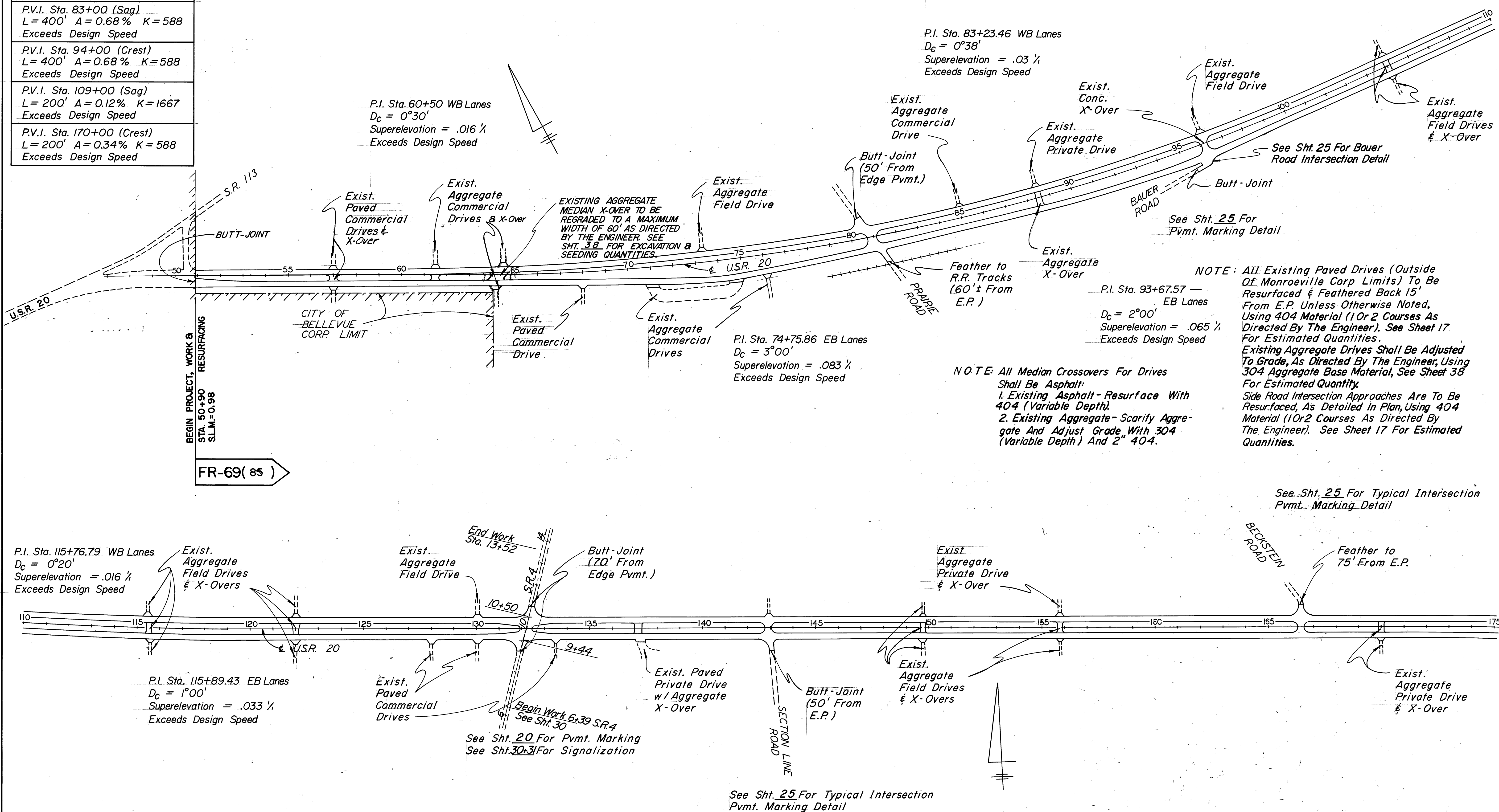
US 20 VERTICAL ALIGNMENT	
P.V.I. Sta. 66+00 (Sag)	L=400' A=1.54% K=260 Exceeds Design Speed
P.V.I. Sta. 73+00 (Crest)	L=400' A=2.06% K=194 Exceeds Design Speed
P.V.I. Sta. 83+00 (Sag)	L=400' A=0.68% K=588 Exceeds Design Speed
P.V.I. Sta. 94+00 (Crest)	L=400' A=0.68% K=588 Exceeds Design Speed
P.V.I. Sta. 109+00 (Sag)	L=200' A=0.12% K=1667 Exceeds Design Speed
P.V.I. Sta. 170+00 (Crest)	L=200' A=0.34% K=588 Exceeds Design Speed

MICROFILMED  
JUL 28 1992

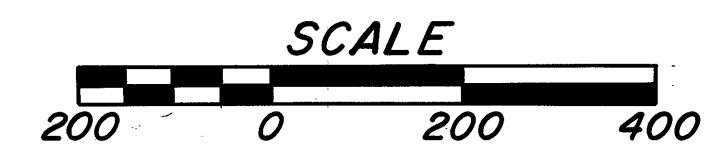
FHWA REGION	STATE	PROJECT
5	OHIO	

2  
70

HUR - 20 - 0.98

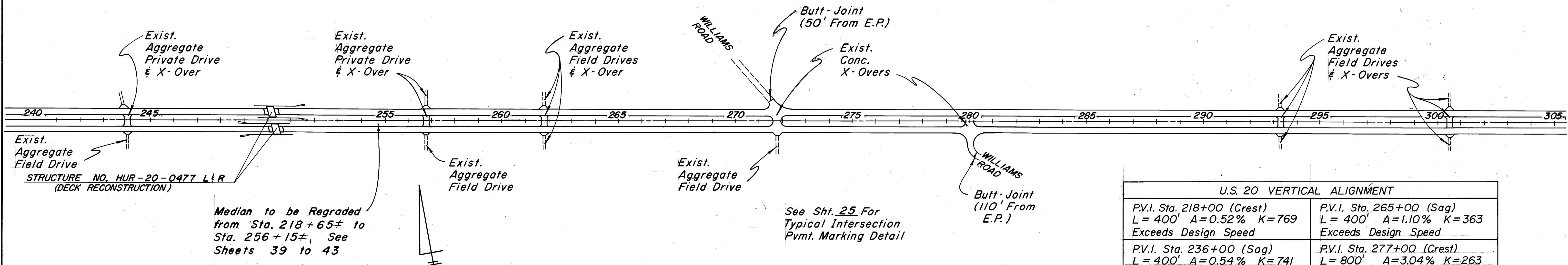
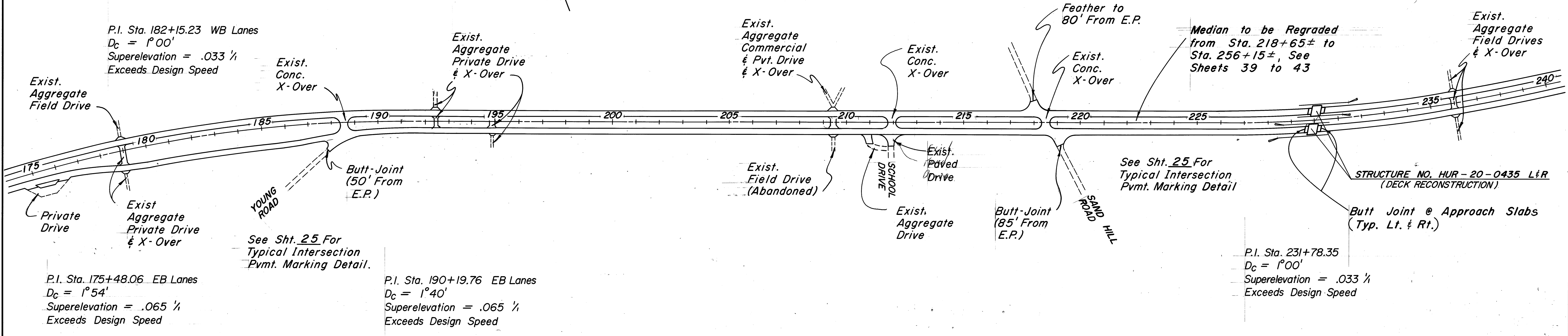


SCHMATIC PLAN - STA. 47+00 TO STA. 175+00



FHWA REGION	STATE	PROJECT
5	OHIO	

HUR - 20 - 0.98

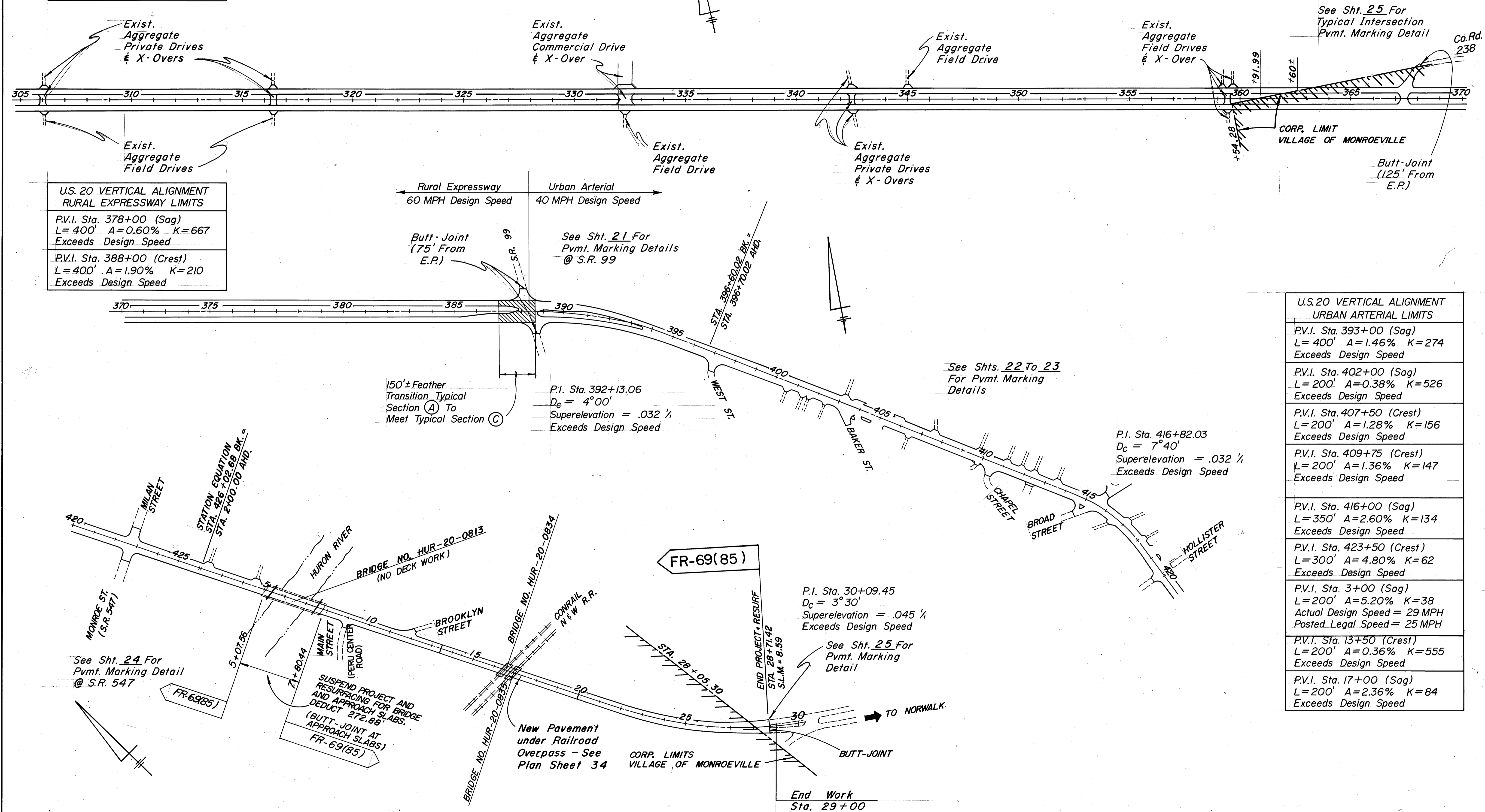
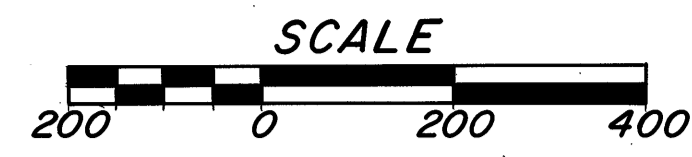


U.S. 20 VERTICAL ALIGNMENT	
P.V.I. Sta. 218+00 (Crest) L = 400' A = 0.52% K = 769 Exceeds Design Speed	P.V.I. Sta. 265+00 (Sag) L = 400' A = 1.10% K = 363 Exceeds Design Speed
P.V.I. Sta. 236+00 (Sag) L = 400' A = 0.54% K = 741 Exceeds Design Speed	P.V.I. Sta. 277+00 (Crest) L = 800' A = 3.04% K = 263 Exceeds Design Speed
P.V.I. Sta. 248+00 (Sag) L = 200' A = 0.36% K = 555 Exceeds Design Speed	P.V.I. Sta. 283+50 (Sag) L = 500' A = 2.04% K = 245 Exceeds Design Speed
P.V.I. Sta. 256+00 (Crest) L = 400' A = 0.40% K = 1000 Exceeds Design Speed	P.V.I. Sta. 302+00 (Sag) L = 200' A = 0.16% K = 1250 Exceeds Design Speed

U.S. 20 VERTICAL ALIGNMENT  
RURAL EXPRESSWAY LIMITS  
P.V.I. Sta. 317+00 (Crest)  
L=200' A=0.26% K=769  
Exceeds Design Speed

U.S. 20 VERTICAL ALIGNMENT  
RURAL EXPRESSWAY LIMITS  
P.V.I. Sta. 378+00 (Sag)  
L=400' A=0.60% K=667  
Exceeds Design Speed  
P.V.I. Sta. 388+00 (Crest)  
L=400' A=1.90% K=210  
Exceeds Design Speed

U.S. 20 VERTICAL ALIGNMENT  
URBAN ARTERIAL LIMITS  
P.V.I. Sta. 393+00 (Sag)  
L=400' A=1.46% K=274  
Exceeds Design Speed  
P.V.I. Sta. 402+00 (Sag)  
L=200' A=0.38% K=526  
Exceeds Design Speed  
P.V.I. Sta. 407+50 (Crest)  
L=200' A=1.28% K=156  
Exceeds Design Speed  
P.V.I. Sta. 409+75 (Crest)  
L=200' A=1.36% K=147  
Exceeds Design Speed  
P.V.I. Sta. 416+00 (Sag)  
L=350' A=2.60% K=134  
Exceeds Design Speed  
P.V.I. Sta. 423+50 (Crest)  
L=300' A=4.80% K=62  
Exceeds Design Speed  
P.V.I. Sta. 3+00 (Sag)  
L=200' A=5.20% K=38  
Actual Design Speed = 29 MPH  
Posted Legal Speed = 25 MPH  
P.V.I. Sta. 13+50 (Crest)  
L=200' A=0.36% K=555  
Exceeds Design Speed  
P.V.I. Sta. 17+00 (Sag)  
L=200' A=2.36% K=84  
Exceeds Design Speed



SCHEMATIC PLAN - STA. 305 + 00 TO STA. 28 + 71.42

## ESTIMATED QUANTITIES

Item	Total	Unit	Description	Abutments	Piers	Super.	General
202	Lump		Portions of Structure Removed, Superstructure, As Per Plan			Lump	
202	43	Cu.Yd.	Portions of Structure Removed, Abutments, As Per Plan	43			
202	13	Cu.Yd.	Portions of Structure Removed, Pier Caps, As Per Plan		13		
503	Lump		Unclassified Excavation	Lump			
511	29	Cu.Yd.	Class "S" Concrete, Pier Caps, As Per Plan		29		
511	60	Cu.Yd.	Class "S" Concrete, Abutments, As Per Plan	60			
511	157	Cu.Yd.	Class "S" Concrete, Superstructure, As Per Plan			157	
517	200	Lin. Ft.	Railing (Deep Beam Rail with Steel Tubular Back-up, Type 2 Posts and Bolts)			200	
518	51	Cu.Yd.	Porous Backfill, As Per Plan	51			
824	44,322	Lb.	Epoxy Coated Reinforcing Steel	4469	6237	33,616	
Special	42	Sq. Yd.	Sealing of Concrete Surfaces (See Proposal Note)				42

### EXISTING STRUCTURE

TYPE: Continuous Concrete Slab with Concrete Substructure  
 SPAN: 2 @ 18'-0" Clear  
 ROADWAY: 2 @ 44'-0" F/F Guardrail  
 SKEW: 15° L.F.  
 LOADING: S-20-46  
 WEARING SURFACE: Asphalt  
 APPROACH SLABS: 15' Long x 24' Wide  
 ALIGNMENT: 1°-00' L.C.  
 SUPERELEVATION: 0.033 1/4

### PROPOSED STRUCTURE

TYPE: Continuous Concrete Slab on Existing Substructure  
 SPAN: 2 @ 19'-0" Clear  
 ROADWAY: 2 @ 44'-6" F/F Railing  
 SKEW: 15° L.F.  
 LOADING: HS-20-44 (Slab only)  
 WEARING SURFACE: 1" Monolithic Concrete  
 APPROACH SLABS: 25' Long x 44'-6" Wide  
 ALIGNMENT: 1°-00' L.C.  
 SUPERELEVATION: 0.033 1/4

References shall be made to Standard Drawings:  
 AS-1-81 - Dated 11-27-81  
 CS-2-73 - Dated 4-10-73  
 DBR-2-73 - Dated 4-10-73  
 GR-1 Dated 1-11-85  
 And to Supplemental Specification  
 824 - Dated 10-8-82

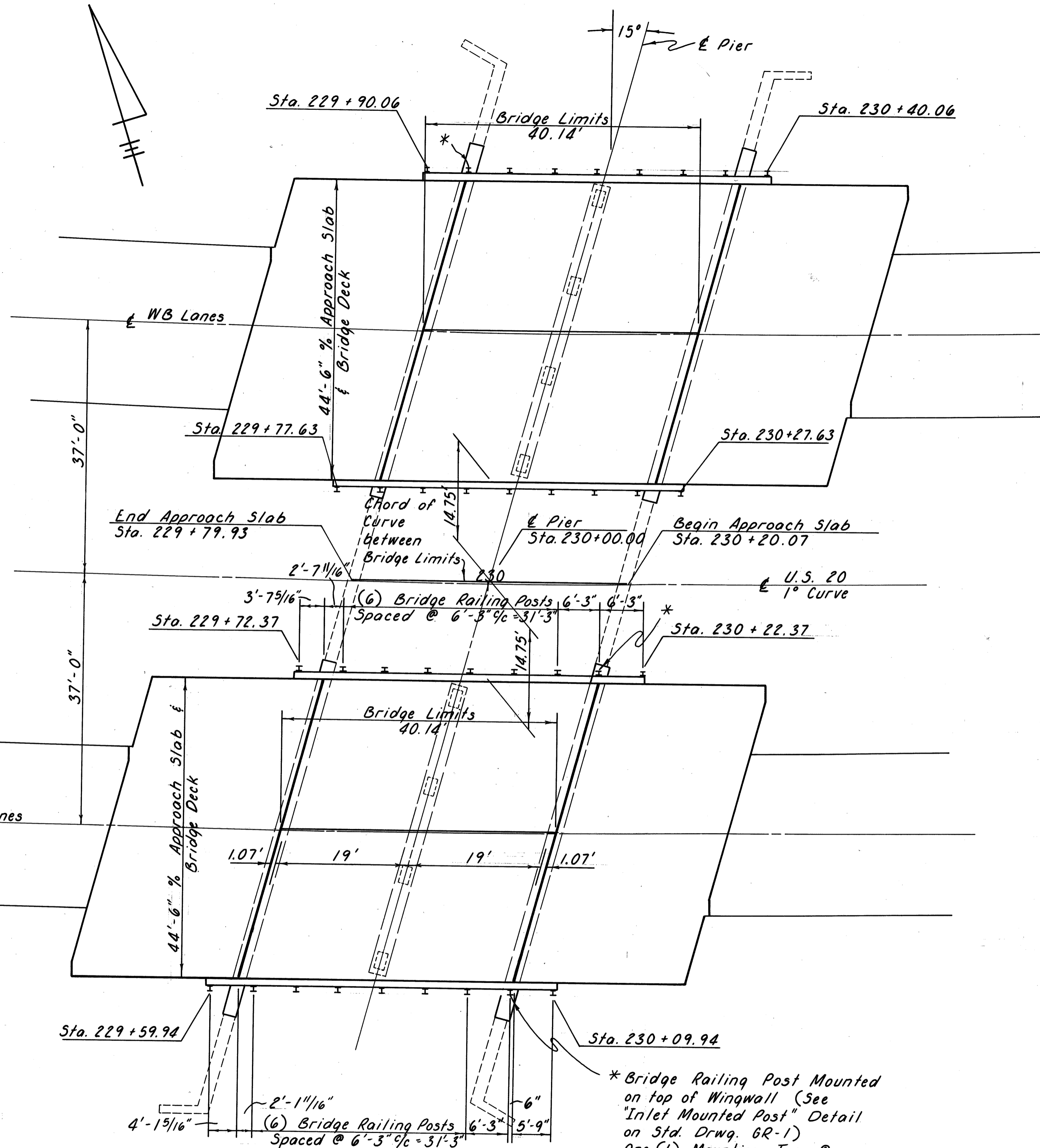
Design Specifications: This Structure Conforms to "Standard Specifications for Highway Bridges" Adopted by the American Association of State Highway and Transportation Officials, 1983, including the 1984 & 1985 Interim Specifications and the "Ohio Supplement" to the Specifications.

Design Data: Design Loading - HS-20-44 and the Alternate Military Loading.  
 Concrete Class "S" - Unit Stress 1500 P.S.I.  
 Concrete Class "C" - Unit Stress 1333 P.S.I.  
 Reinforcing Steel - ASTM A615, A616, or A617  
 Unit Stress 20,000 P.S.I.

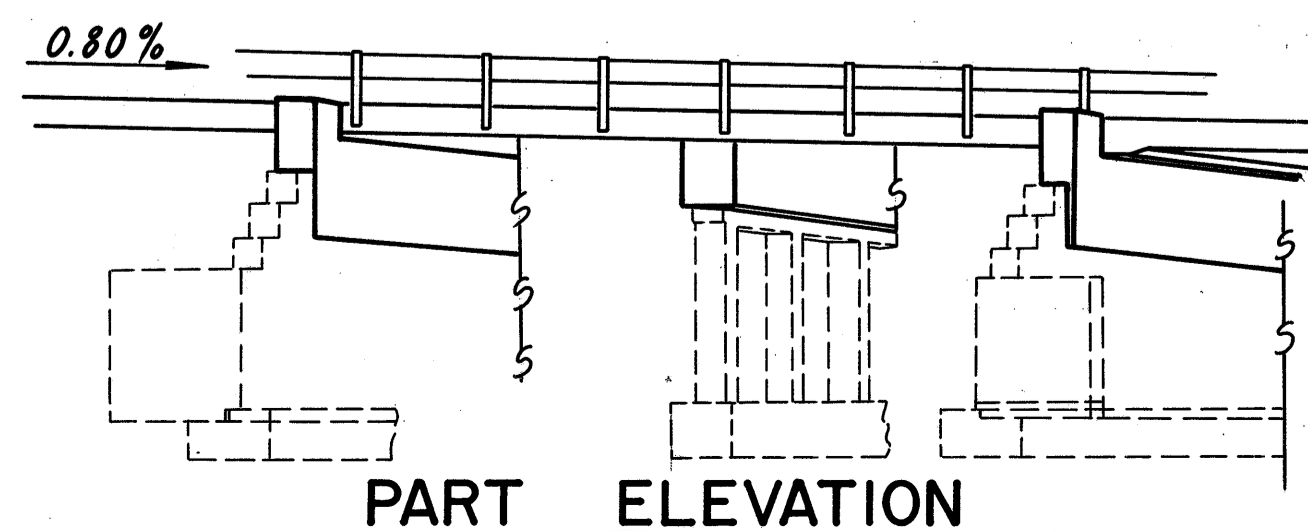
Deck Protection Method: Epoxy Coated Reinforcing Steel, Top and Bottom Mats. 2 1/2" Clearance of Top Reinforcing from Surface of Deck.

Monolithic Wearing Surface: Is Assumed, for Design purposes, to be 1" thick.

Bench Mark: Spike in Cable Pole  
 South Side of Bridge 0435 Rt.  
 Elev. = 759.34.



PLAN VIEW



PART ELEVATION

\* Bridge Railing Post Mounted on top of Wingwall (See "Inlet Mounted Post" Detail on Std. Drwg. GR-1)  
 One (1) Mounting Typ. @ Trailing End of each side of both Bridges. Cost included in Item 517.

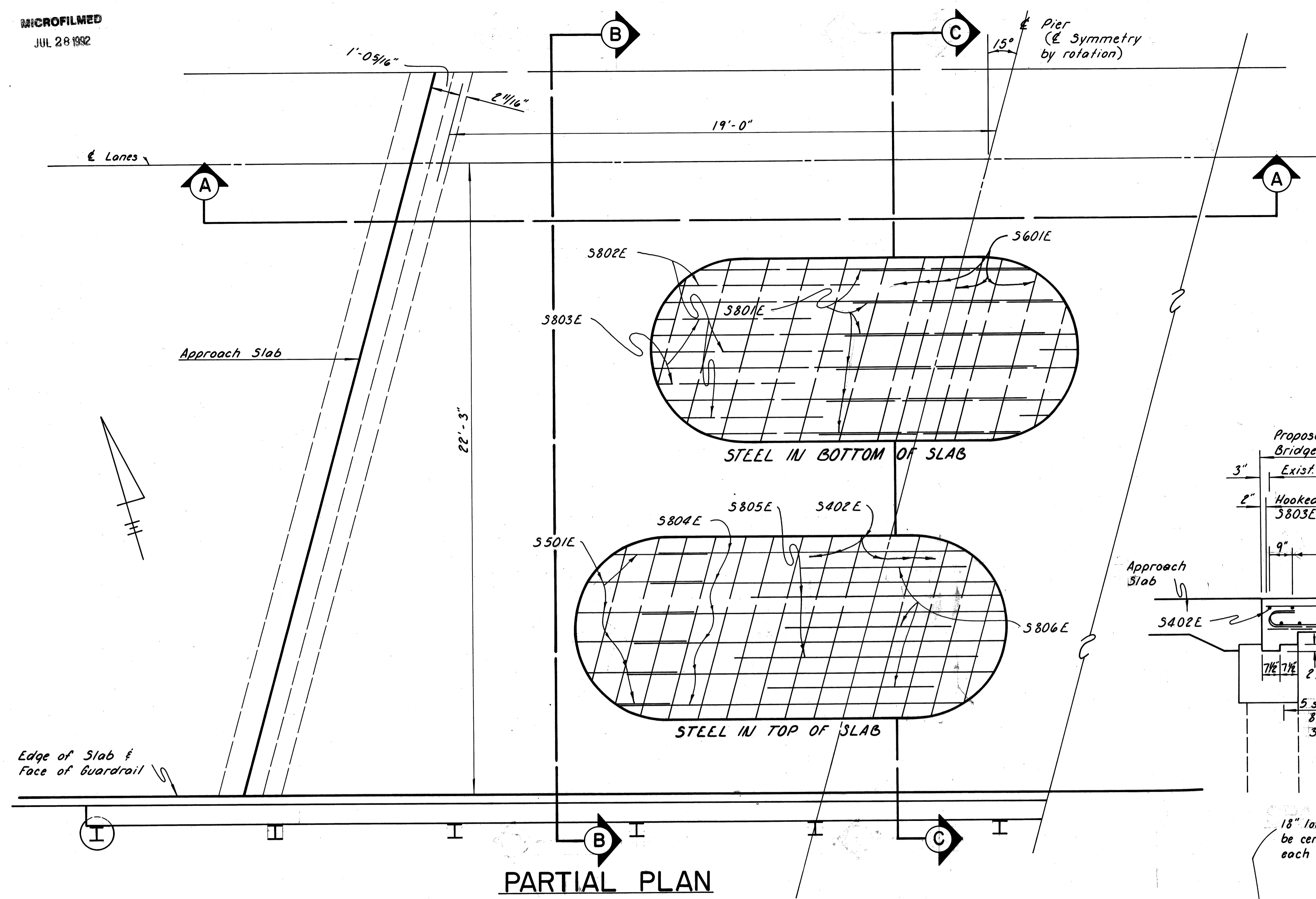
STATE OF OHIO  
 DEPARTMENT OF TRANSPORTATION  
 DISTRICT THREE

GENERAL PLAN - ELEVATION

ESTIMATED QUANTITIES

HUR - 20 - 0435 L & R

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RJR	MA	MA	KW	JEC	11/85	1-29-86
11/85	11/85	11/85	12-85			

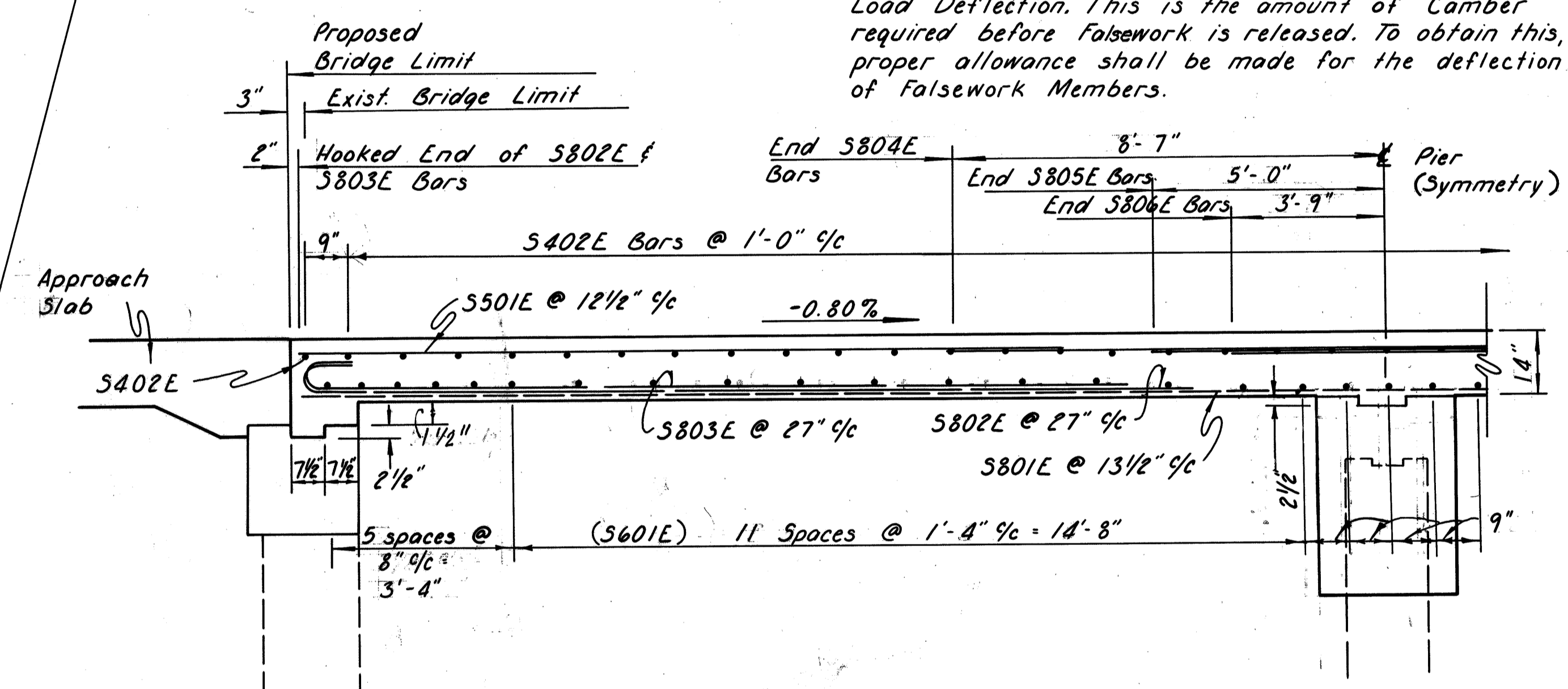


**GENERAL NOTES**

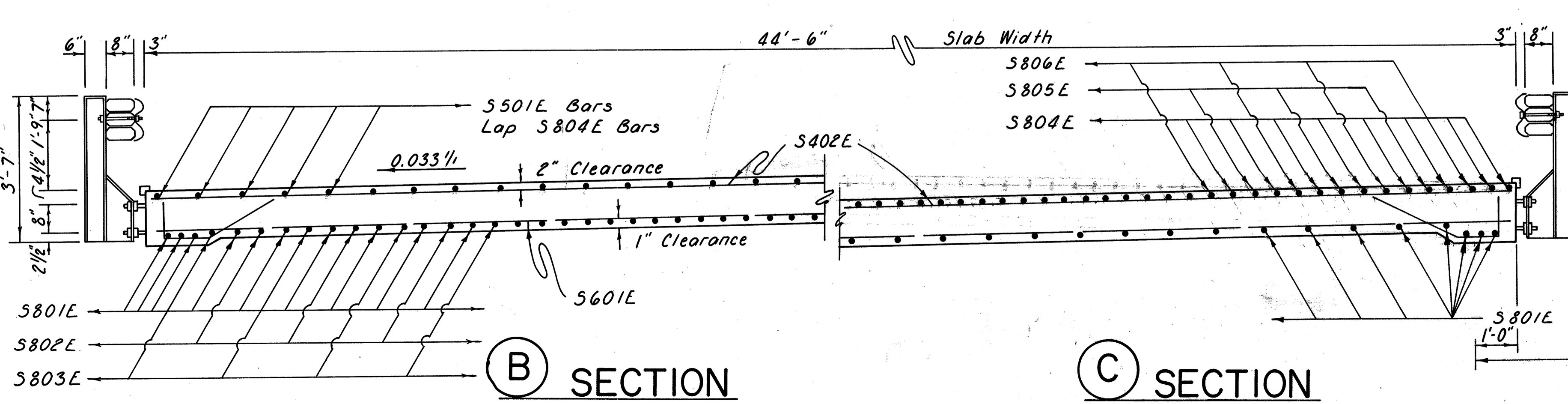
**CONSTRUCTION JOINTS:** One Construction Joint in Bridge Slab may be placed on Transverse Centerline of Middle Span or 1'-0" ± off Transverse Centerline if necessary to miss Railing Post and Transverse Reinforcing Steel.  
One Longitudinal Joint will be permitted, on Centerline of Roadway.

**REINFORCING STEEL:** At the option of the Contractor, the S601E and S402E Bars may be furnished in pairs of equal length, lapped thirty diameters at the Centerline of Roadway, or in pairs of different lengths, in order to place the thirty diameter lap beyond a Longitudinal Joint at the center of Roadway. Determination of the Pay Quantity will be according to the number and length of Bars shown on the Project Plans.

**CAMBER:** Of 1/800 of the Span shall be provided in each Span in addition to that required for confirmation with the profile of the highway to allow for Dead Load Deflection. This is the amount of Camber required before falsework is released. To obtain this, proper allowance shall be made for the deflection of falsework Members.

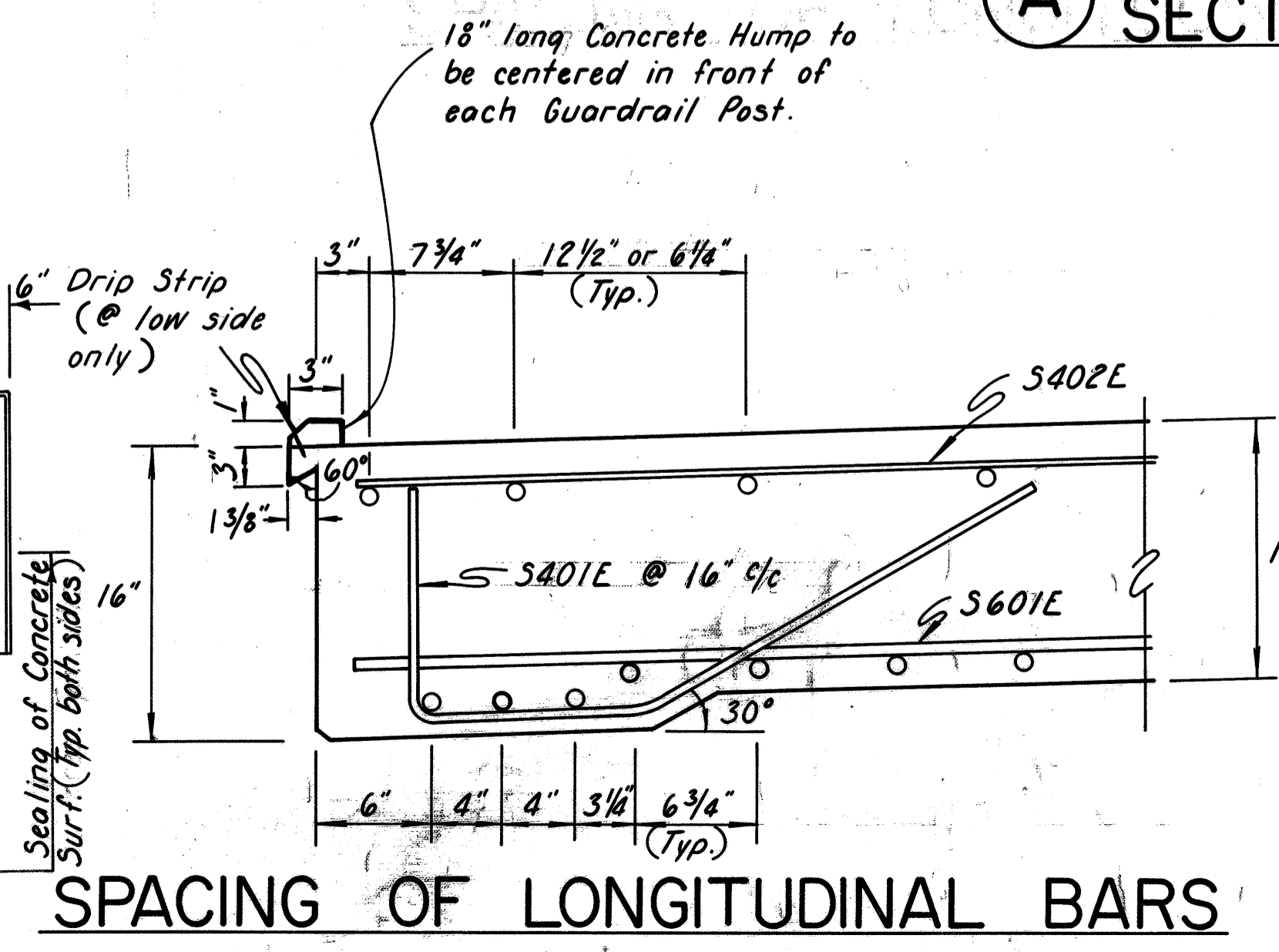


**A SECTION**



**B SECTION**

**C SECTION**



**SPACING OF LONGITUDINAL BARS**

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION  
DISTRICT THREE

**SUPERSTRUCTURE DETAILS**  
HUR - 20 - 0435 L & R

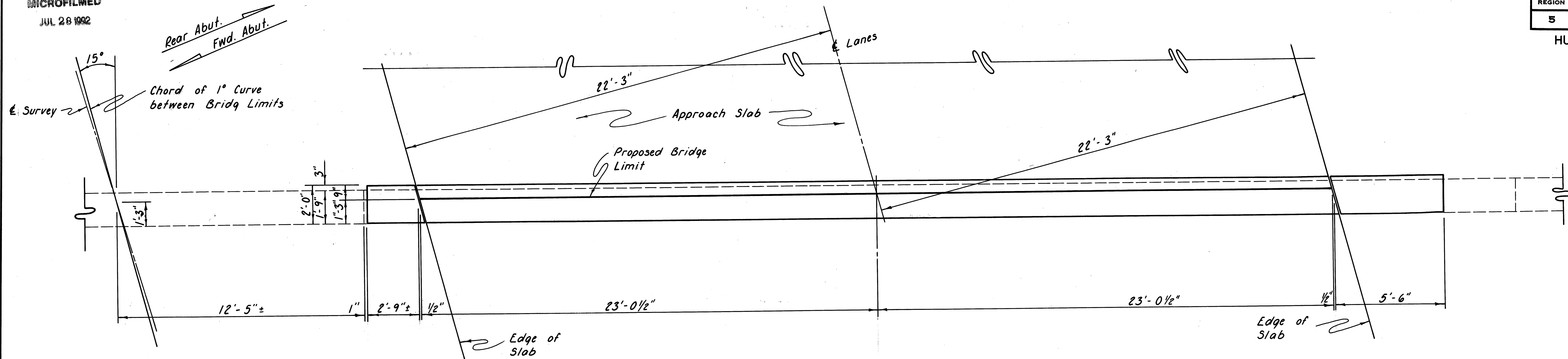
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RJR	MA	MA	KW	KEC	9-29-86	
11/85	11/85	11/85	12/85			

MICROFILMED  
JUL 28 1992

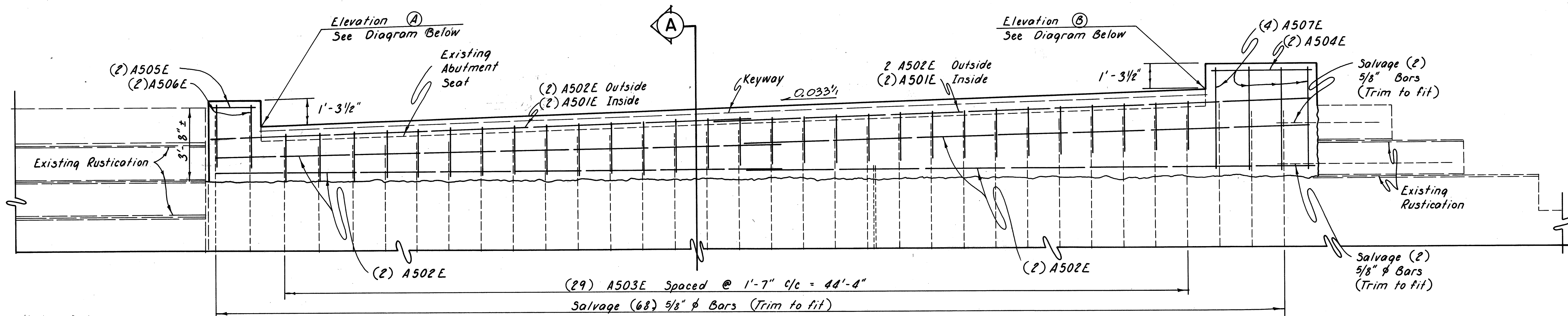
FHWA REGION	STATE	PROJECT	
5	OHIO		

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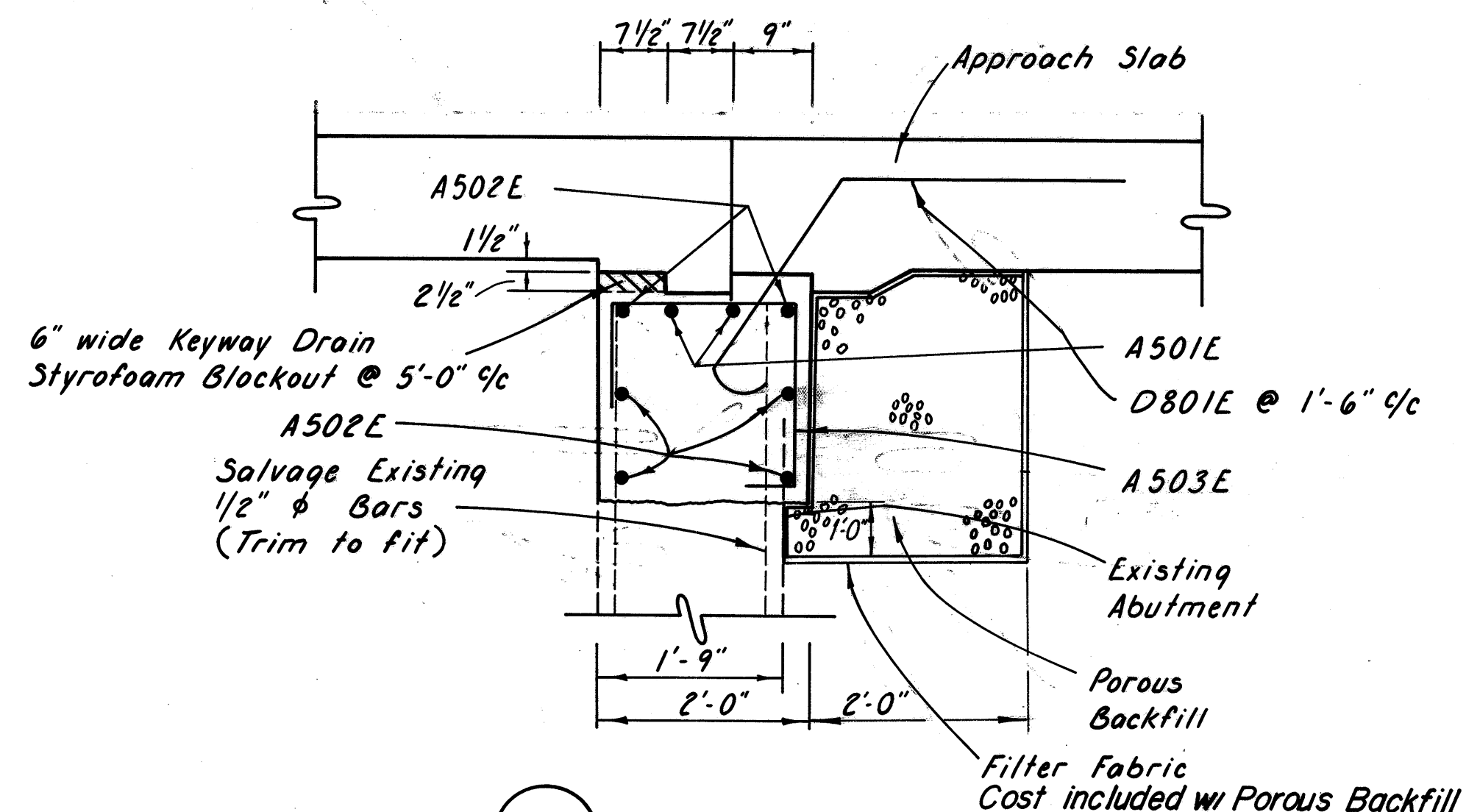
HUR - 20 - 0.98



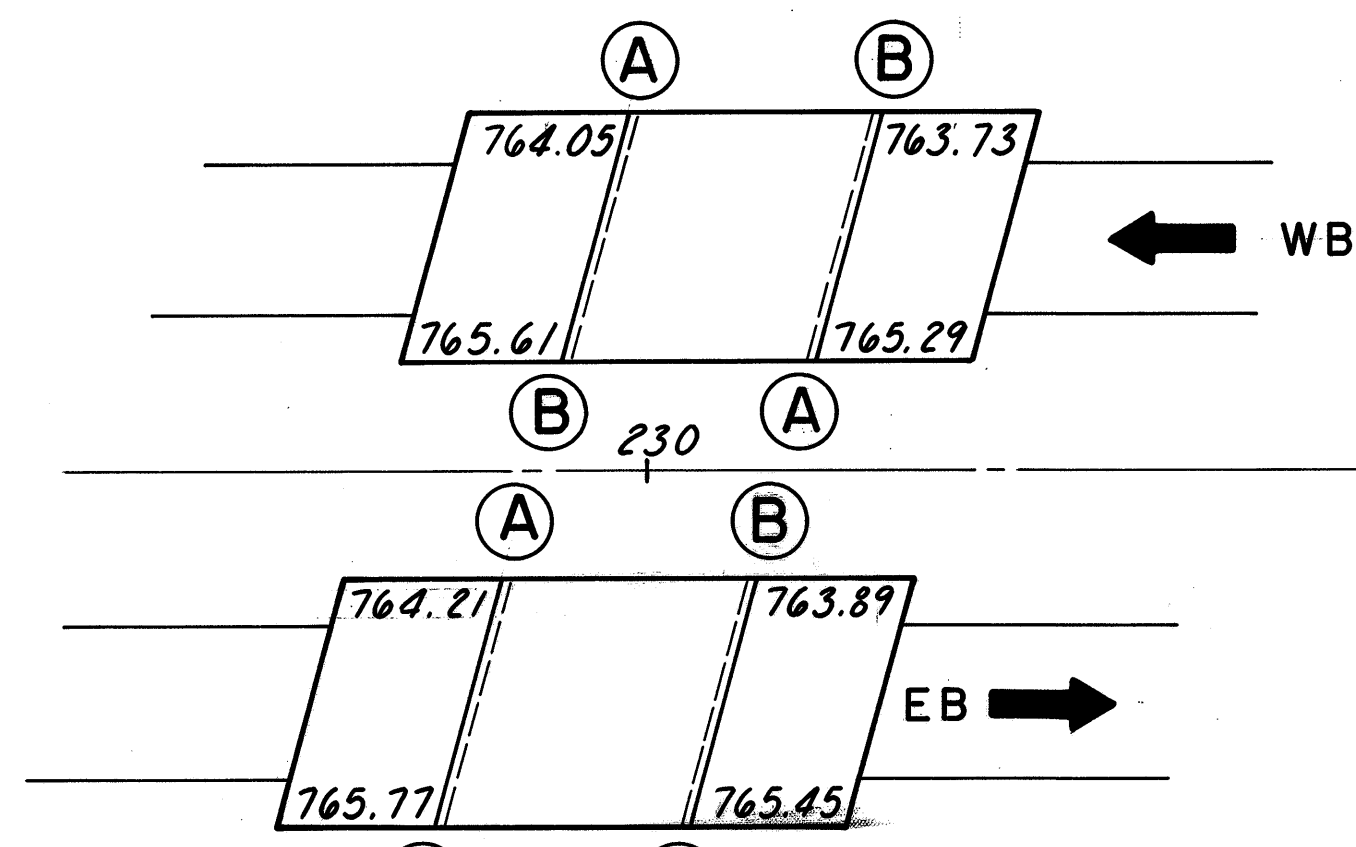
PLAN



ELEVATION



A SECTION



ABUTMENT ELEVATIONS

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION  
DISTRICT THREE

ABUTMENT DETAILS  
HUR - 20 - 0435 L & R

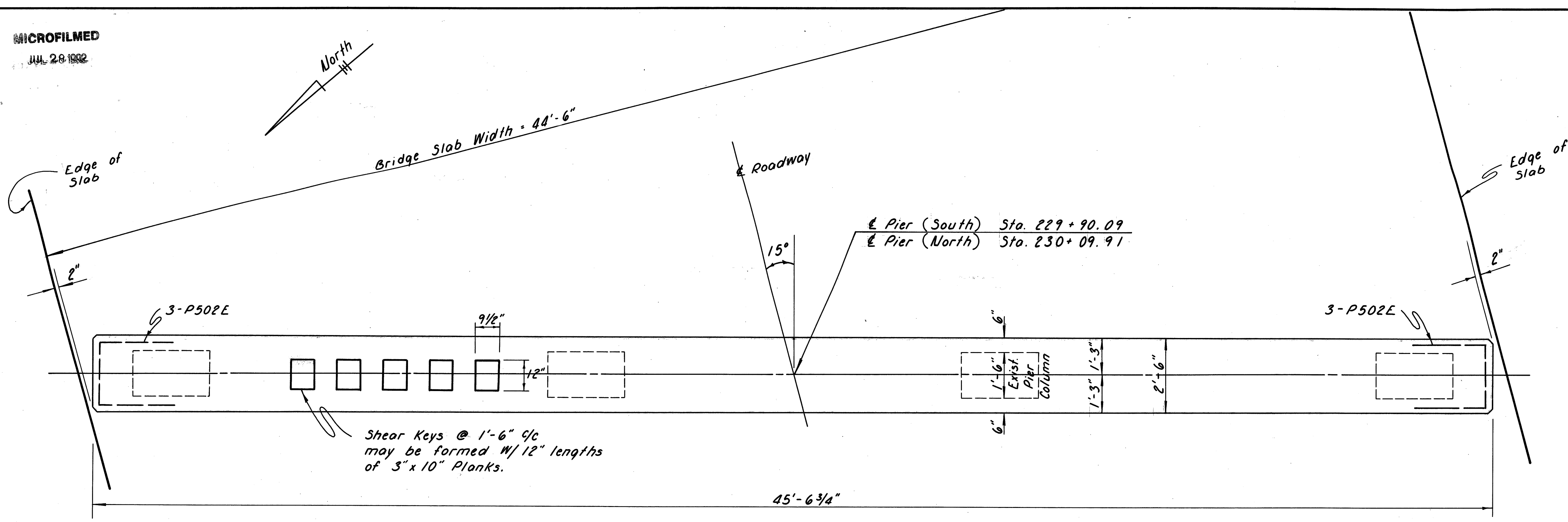
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RJR 11/85	MA 11/85	MA 11/85	KW 12/85	JCC 9-29-86		

MICROFILMED  
JUL 28 1982

FHWA REGION	STATE	PROJECT
5	OHIO	

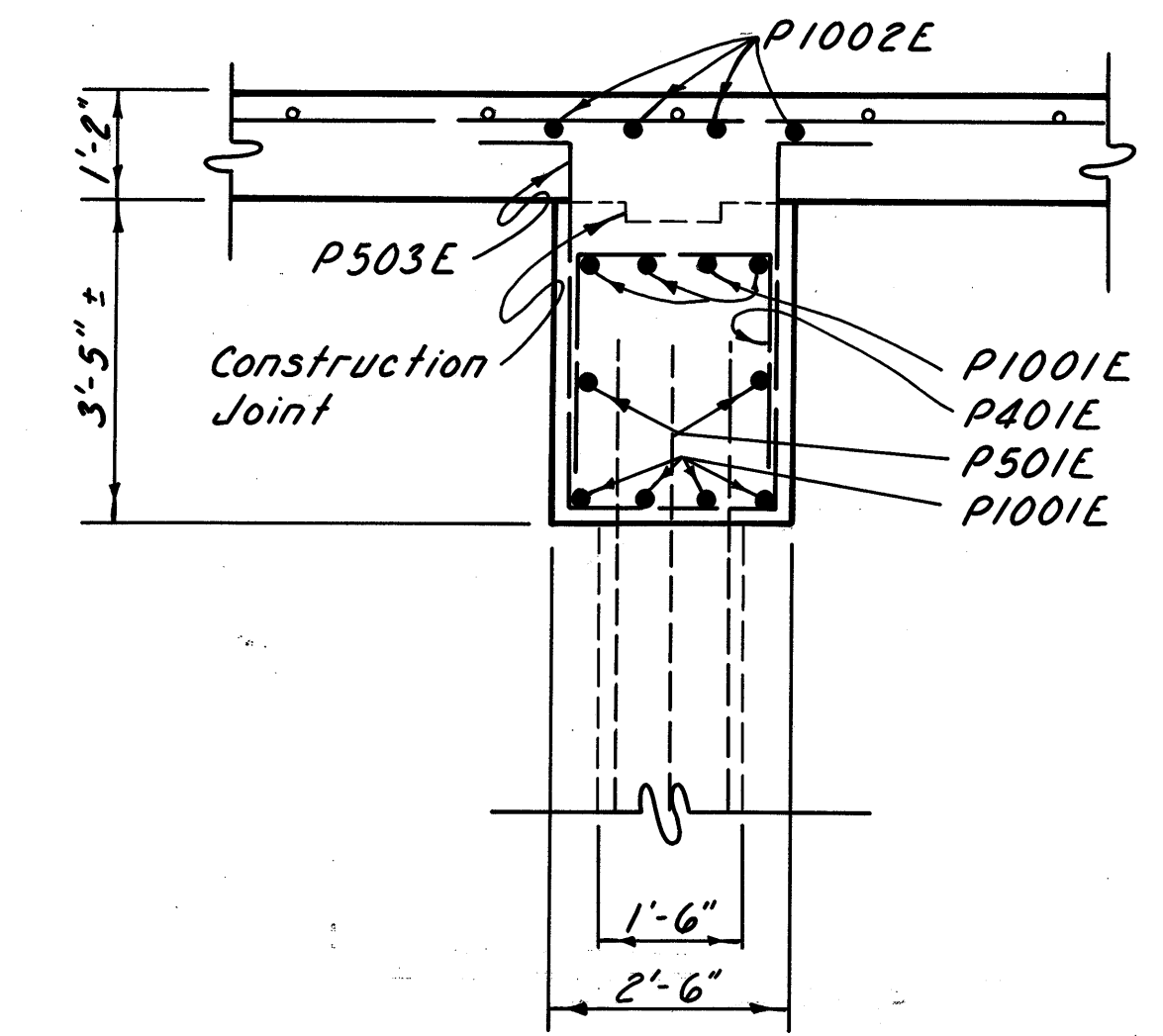
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HUR - 20 - 0.98

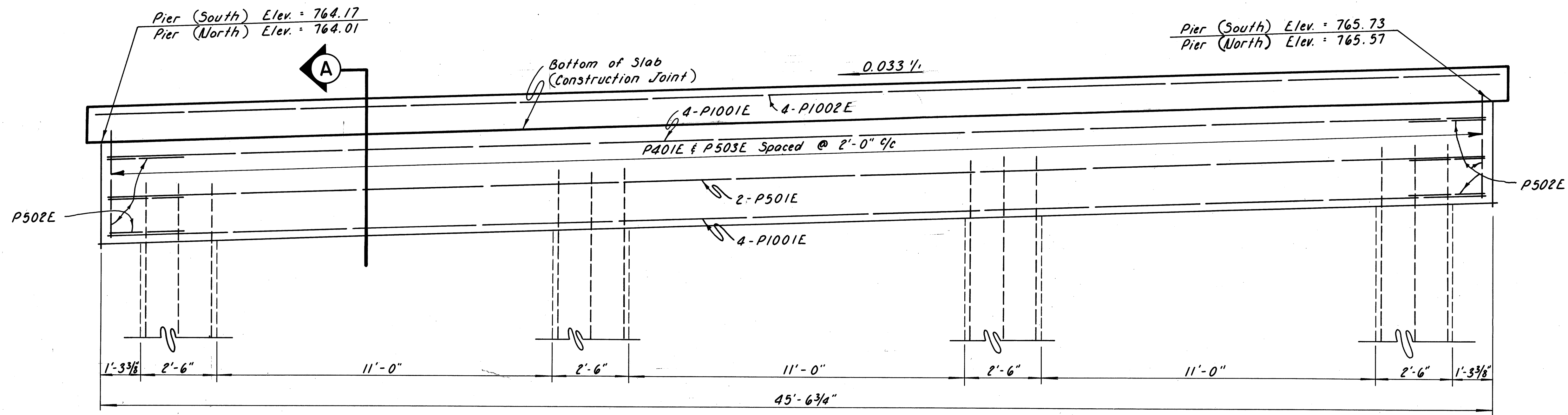


**REINFORCING STEEL:** The P501, P1001, and P1002E Bars, at the option of the Contractor, may be furnished in one length as shown hereon, or in pairs Lapped at or near the Centerline of the Roadway. Determination of the Pay Quantity will be according to the number and length of Bars as shown on the Project Plans. The P1001 and P1002E shall be Lapped 4'-10". The P501 Bar shall be Lapped 1'-8".

PLAN



A SECTION



ELEVATION

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION  
DISTRICT THREE

PIER  
HUR - 20 - 0435 L & R

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RJR	MA	MA	RW	Jpc	11/85	2-28-86
11/85	11/85	11/85	12/85			



# REINFORCING STEEL LIST

Calc. By: RJR 11/85  
Chk'd. By: KW 12/85

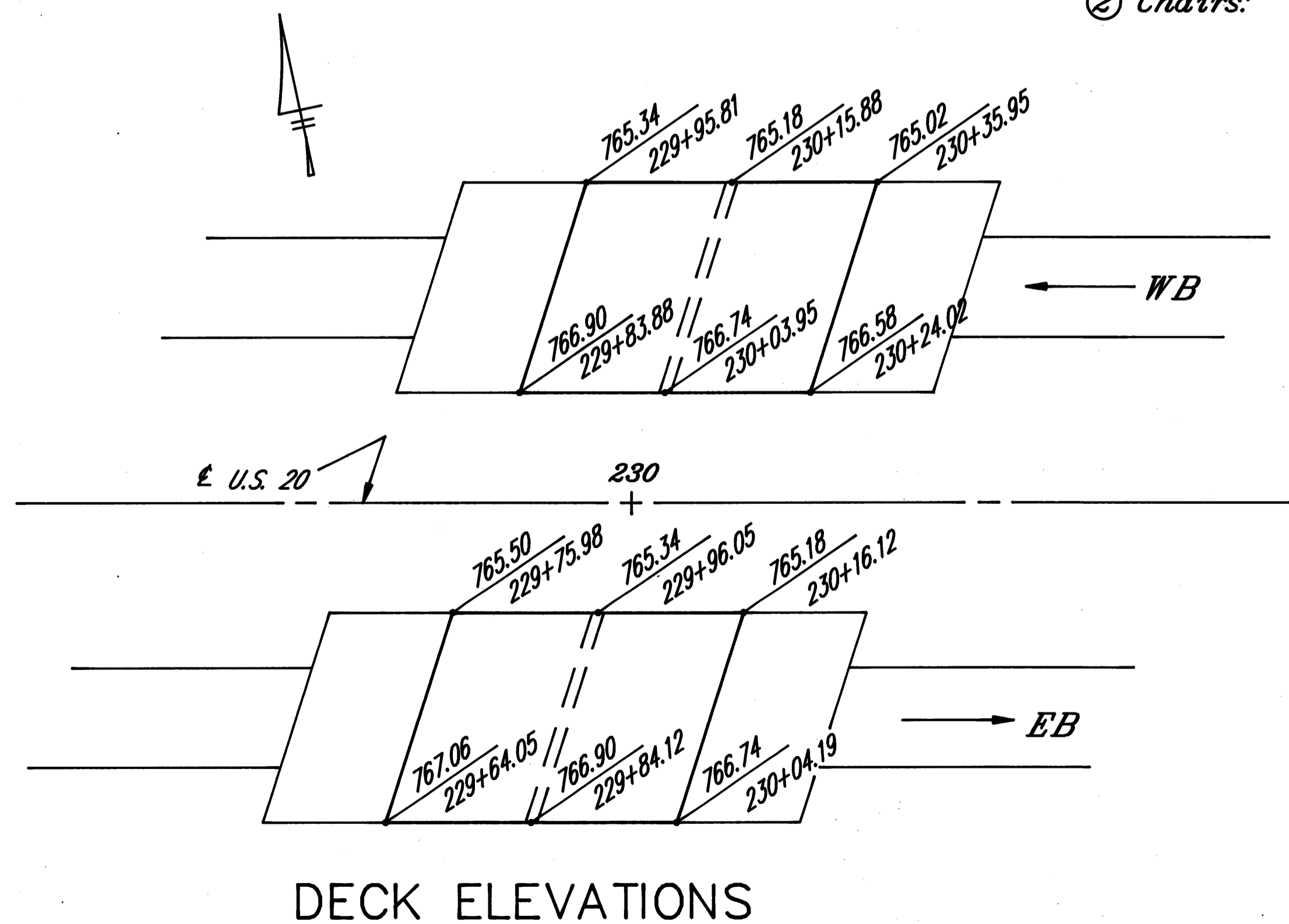
HUR-20-0.98

SUPERSTRUCTURE					
824-Epoxy Coated Reinforcing Steel					
Mark	No. *	Length	Shape	Weight	Bending Diagram
S801E	172	22'-9"	S	10448	
S802E	76	17'-1"	B	3467	
S803E	76	15'-9"	B	3196	
S804E	88	17'-2"	S	4034	
S805E	40	10'-0"	S	1068	
S806E	42	7'-6"	S	841	
S401E	124	4'-0"	B	331	
S402E	164	23'-0"	S	2520	
S501E	176	13'-9"	S	2524	
S601E	148	23'-4"	S	5187	
TOTAL = 33,616 LBS.					

ABUTMENTS					
824-Epoxy Coated Reinforcing Steel					
Mark	Number Pr. A.V.W.A.	Total No. *	Length	Shape	Weight
D801E	62	62	5'-0"	B	1655
A501E	8	8	24'-4"	S	406
A502E	24	24	27'-10"	S	1394
A503E	58	58	5'-10"	B	706
A504E	4	4	5'-0"	S	42
A505E	4	4	2'-3"	S	19
A506E	4	4	7'-10"	B	66
A507E	8	8	10'-10"	B	181
TOTAL = 4469 LBS.					

PIERS					
824-Epoxy Coated Reinforcing Steel					
Mark	No. *	Length	Shape	Weight	Bending Diagram
P1001E	32	25'-3"	S	3477	
P1002E	16	25'-6"	S	1756	
P401E	48	5'-4"	B	171	
P501E	8	23'-5"	S	195	
P502E	12	6'-11"	B	87	
P503E	48	11'-0"	B	551	
TOTAL = 6237 LBS.					

- ① Reinforcing Steel Samples: Refer to CMS Sections 106.03, 700, 709.01 through 709.05, and 709.08. Sufficient additional reinforcing steel shall be provided for sampling. Random samples shall be replaced in the structures by the additional steel, spliced in accordance with 509.08.
- ② Chairs: All chairs shall be epoxy coated.



\* Total Number For Both Bridges L&R.

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION  
DISTRICT THREE

Reinforcing Steel List  
And  
Deck Elevations For  
HUR-20-0435 L&R

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
RJR 11/85	Autocad	KW 12/85	HJC	9-20-86	