

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS

OHIO PROJECT  
NO. A-S-1130(I)

FED. RD. DIVISION	STATE	PROJECT	TYPE FUND.
2	OHIO	A-S-1130(I)	POST WAR

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

# PHILO-DUNCAN FALLS ROAD

COUNTY ROAD No.32  
HARRISON & WAYNE TWP.  
& VILLAGE OF PHILO  
MUSKINGUM COUNTY

NOTE: Federal Number AS-1130(I) appearing elsewhere in this plan shall be considered as S-1130(I)

We, the Commissioners of Muskingum County, in formal session hereby approve these plans and certify that the necessary right of way is available. We agree to maintain the project in a manner satisfactory to the Director of Highways, State of Ohio, or his duly authorized representatives and will make ample provision each year for such maintenance.  
Done under authority of Sections 6906 et seq. and 7464 et seq. of The General Code of Ohio.

BOARD OF COMMISSIONERS-MUSKINGUM COUNTY

Date Sept. 22, 1952

The Standard Specifications of the State of Ohio, Department of Highways in force on date of contract together with Supplemental Specifications listed hereon will govern this improvement.

I hereby approve these plans and declare that the making of this improvement will require the closing of traffic of the highway and that detours will be provided as indicated on the plans.

Approved [Signature]  
Date Sept. 22, 1952 County Engineer  
Approved [Signature]  
Date Sept. 30, 1952 Resident Division Deputy Director  
Approved [Signature]  
Date Dec. 1, 1952 Chief Engineer, Bureau of Maintenance  
Approved [Signature]  
Date Dec. 1, 1952 Chief Engineer, Bureau of Planning & Programming  
Approved [Signature]  
Date Dec. 22, 1952 Chief Engineer, Bureau of Bridges & R.R. Crossings

Approved [Signature]  
Date Dec. 22, 1952 Chief Engineer, Bureau of Location & Design  
Approved [Signature]  
Date Dec. 2, 1952 First Ass't Director & Chief Engineer

Approved [Signature]  
Date Dec. 9, 1952 Director of Highways

DEPARTMENT OF COMMERCE  
BUREAU OF PUBLIC ROADS

RECOMMENDED FOR APPROVAL:

DISTRICT ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

APPROVED: \_\_\_\_\_

DIVISION ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

6054 129 Philo-Duncan Falls

CONVENTIONAL SIGNS

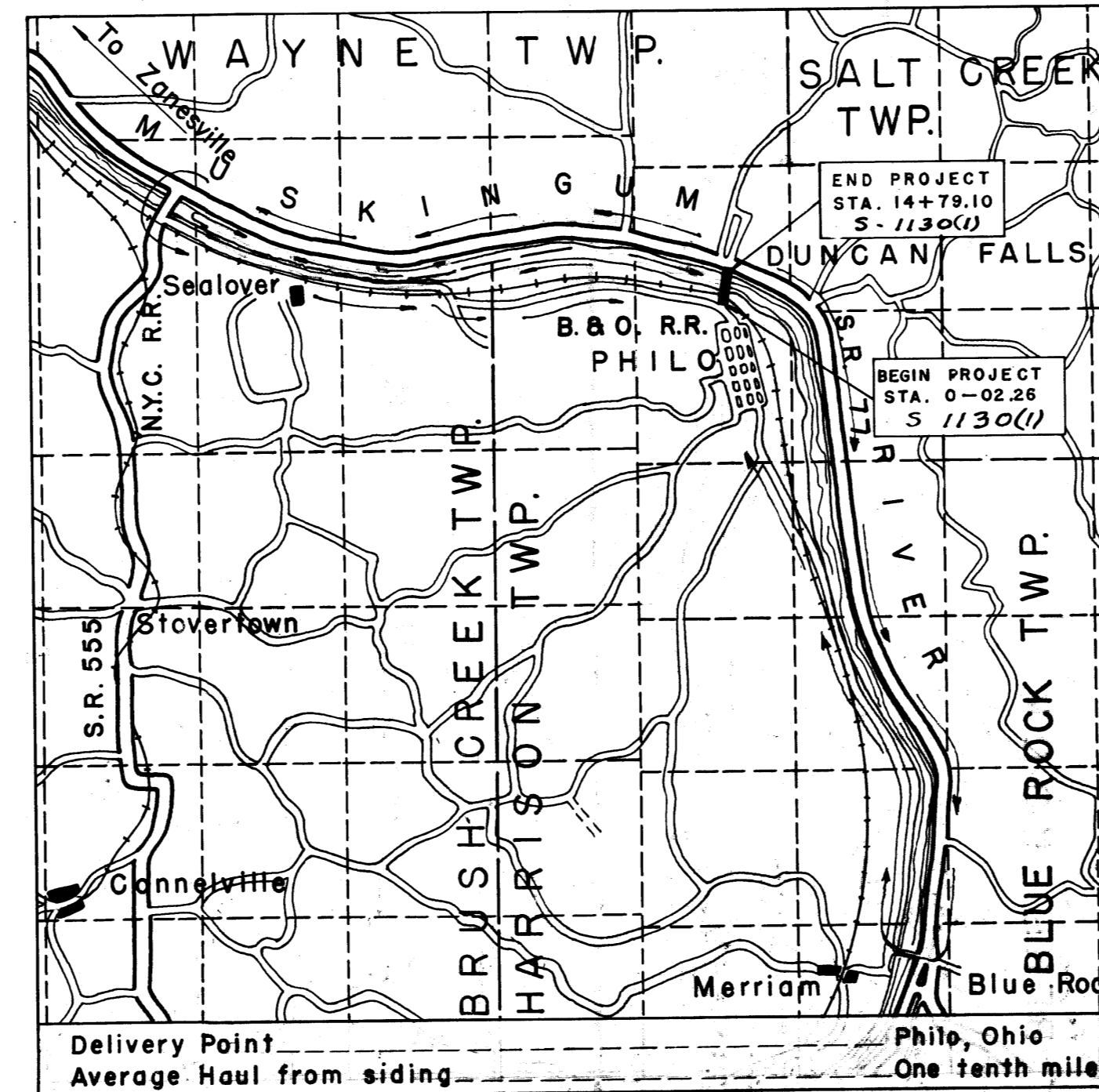
- County Line
- Township Line
- Section Line
- City or Village Line
- Property Line
- Center Line
- Pole Line—General— $\phi$ , Telegraph or Telephone— $\nabla$ , Power— $\delta$ , Light— $\epsilon$
- Guard Rail (existing)
- Guard Rail (new)
- Trees (existing)
- Trees (to be removed)

INDEX OF SHEETS

	Sheet No.
Title Page	1
Typical Sections	2
General Notes & Summary of Quantities	3
Calculations & General Summary	4
Plan & Profile	5-7
Cross Sections	8-12
Intersections	13-15
Approach Slabs	16-17
Lock Ramp	18
Site Plans	19-20
Intake Structure	21-26
River Structure	27-46, 37A
Swing Span Machinery	47-54
Reinforcing Steel-List & Lighting Details	55-58

LINE DATA

Begin Project \_\_\_\_\_ Sta. 0-02.26  
End Project \_\_\_\_\_ Sta. 14+79.10  
Gross Length of Project \_\_\_\_\_ 1481.36 Lin. Ft.  
Deduct for Railroad Crossing \_\_\_\_\_ 8.54 Lin. Ft.  
Net Length of Project & Work \_\_\_\_\_ S-1130(I) \_\_\_\_\_ 1472.82 Lin. Ft. or 0.278 Miles



Portion to be improved  
Detours shown thus  
State Highways  
County Roads

SCALE

Plan  $1'' = 20'$   
Cross Sections  $1'' = 5'$   
Profile Horizontal  $1'' = 20'$   
Profile Vertical  $1'' = 5'$

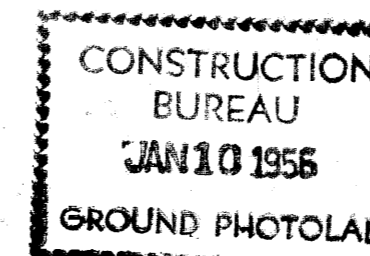
\* Accepted by B.P.R.  
\*\* Submitted to B.P.R. for Approval.

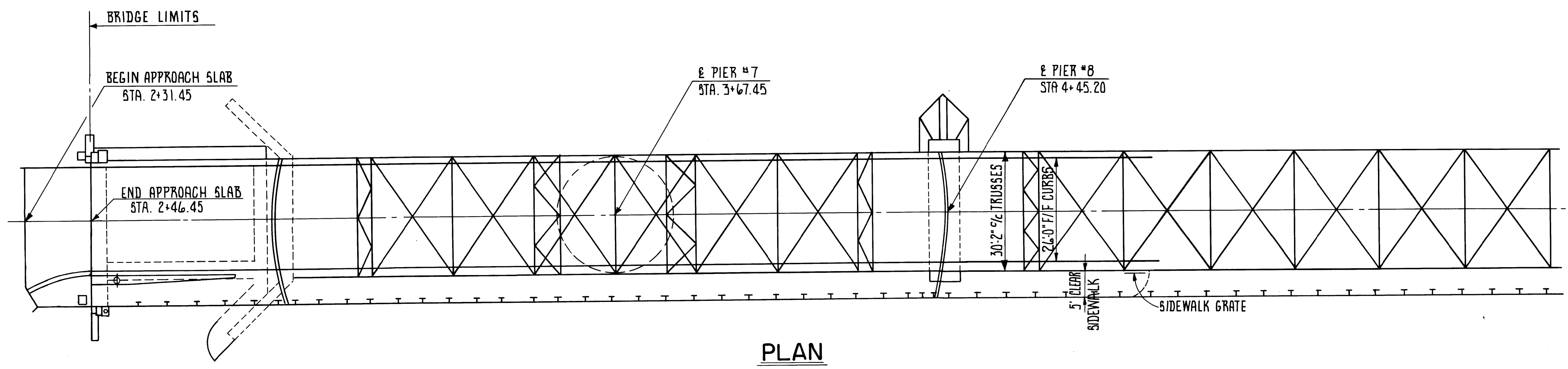
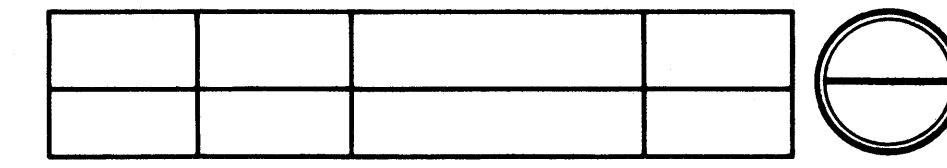
SUPPLEMENTAL PRINTS OF STANDARD DRAWINGS	
*G B.07	5-1-51
I-15 No.1	3-1-47
I-15 No.2	6-17-49
I-1,2,3,4 & 5	2-20-45
L-1	4-1-50
*I-8 C.B. No. 3A	5-1-52
*I-12	1-25-52
*B-T-71 R	1-2-51
*T-35	10-1-52

SUPPLEMENTAL SPECIFICATIONS	
5	5-28-48
31	6-13-49
33	Rev. 10-24-49
T-171.19	Rev. 7-31-50
M-110.25	Rev. 7-25-51

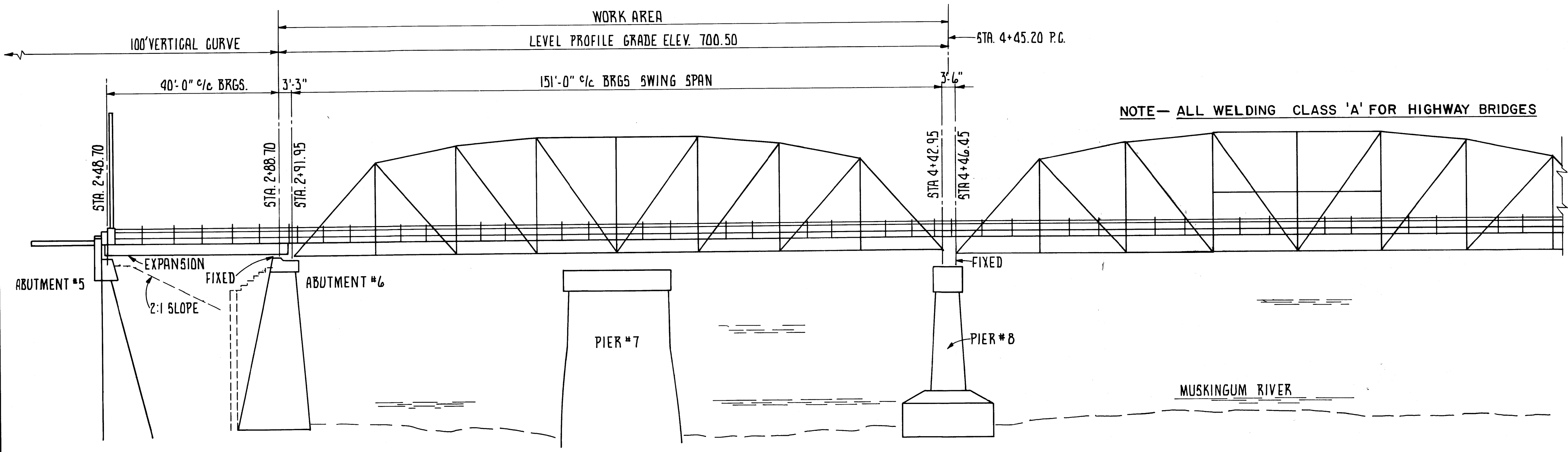
File No. Muskingum County  
Date of Letting \_\_\_\_\_ 1952  
Contract No. \_\_\_\_\_

Approved for The Baltimore & Ohio Railroad Co.  
By A.C. Clarke  
Title Chief Engineer Date Oct. 17, 1952





PLAN



ELEVATION

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	SUPERSTR.	GENERAL
202		LUMP SUM	PORTIONS OF EXISTING STRUCTURE REMOVED	LUMP	
513	43,500	LB5	STRUCTURAL STEEL ASTM-A36	43,500	
514		LUMP SUM	FIELD PAINTING OF STRUCTURAL STEEL		
514		LUMP SUM	CLEANING AND PAINTING EXISTING STRUCTURAL STEEL.		
SPECIAL	4030	SQ. FT.	5/16" GA. 3"X9" METAL FLOOR DECK AS SPECIFIED.	4030	
513		LUMP SUM	RECONDITION FLOOR BEAMS AND LOWER LATERALS.		

GENERAL NOTES

**DESIGN DATA:**  
 DESIGN LOADING S-20-46, (ORIGINAL DESIGN SPECIFICATIONS FOR BRIDGE).  
 STRUCTURAL STEEL-ASTM-A36, UNIT STRESS 20,000 PSI.

**CONSTRUCTION AND MATERIAL SPECIFICATION:**  
 STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, DATED JANUARY 1, 1977

**CONSTRUCTION PROCEDURE:**  
 ALL CONSTRUCTION TECHNIQUES SHALL BE CONDUCTED SO AS TO MINIMIZE THE TIME REQUIRED FOR COMPLETE CLOSURE OF THE BRIDGE TO TRAFFIC.  
 REMOVE EXISTING OPEN STEEL GRID DECK, STRINGERS AND CONNECTION ANGLES.  
 CLEAN ALL STRUCTURAL STEEL BELOW DECK ELEVATION AND RECONDITION FLOOR BEAMS & BOTTOM LATERALS IN PLACE BY WELDING STEEL PLATES TO BADLY DETERIORATED AREAS. THIS WORK TO BE DIRECTED BY THE ENGINEER & PAID FOR IN LBS. OF STRUC. STEEL

FURNISH AND INSTALL 5-LINES OF NEW STRINGERS W18 X 55 OF ASTM-A36 SPECS. NEW STEEL AND NEW ANGLE CONNECTIONS, AND METAL FLOOR DECK. PAINT ALL STRUCTURAL STEEL BELOW METAL FLOOR DECK.

**FURNISH AND INSTALL:**  
 ROADWAY METAL FLOOR DECK.  
 5/16" GAGE, 3"X9" CORRUGATIONS WITH END"EDGE" DAMS OF ASTM-A242 MIN. SECTION MODULUS 0.401 INCHES 3/PER. INCH WEATHERING TYPE 'UNPAINTED', WELDED TO SUPPORTS WITH ELECTRODE CLASS E80XX WEATHERING TYPE.  
 EXISTING STEEL BEAM STRINGERS BEING REPLACED SHALL REMAIN THE PROPERTY OF THE COUNTY.

**ITEM SPECIAL PAINTING, EXISTING STEEL:**

**I. SURFACE PREPARATION:**

A. ALL EXPOSED SURFACES SHALL BE BLAST CLEANED TO GRADE SA 2 ASTM D 2200 OR SSPC SP 6. BLAST CLEANING SHALL BE PERFORMED WITH SAE NO. 330 SHOT OR SMALLER, SAE NO. 625 GRIT OR SMALLER, OR DRY SAND PASSING A 16 MESH SCREEN, U.S. SIEVE SERIES.

B. ALL LOOSE RUST, MILL SCALE, OLD PAINT AND OTHER FOREIGN MATERIAL SHALL BE REMOVED.

C. CLEANING SHALL PROCEED BY SPANS, PANELS, BEAMS OR OTHER READILY IDENTIFIABLE SECTIONS.

D. THE PREPARED SURFACES SHALL BE BLASTED FREE OF ALL FOREIGN MATERIAL PRIOR TO PAINTING.

E. THE BLAST CLEANING SHALL LEAVE A MINIMUM PROFILE OF 1 1/2 MILS.

F. PAINT SHALL BE APPLIED ONLY TO CLEAN DRY SURFACES. PAINT SHALL NOT BE APPLIED UNDER THE FOLLOWING CONDITIONS OF WEATHER, TEMPERATURE AND HUMIDITY:

1. WHEN AMBIENT TEMPERATURE IS BELOW 35°F OR ABOVE 100°F.
2. WHEN RELATIVE HUMIDITY IS ABOVE 95%.
3. DURING RAIN, MIST, HIGH WINDS, SNOW OR FOG.

G. THINNER MAY BE ADDED WHEN NECESSARY, AMOUNT WILL VARY DEPENDING UPON WEATHER CONDITIONS. IN NO CASE SHALL THE AMOUNT OF THINNER EXCEED THE AMOUNT SPECIFIED BY THE PAINT MANUFACTURER.

H. METHOD OF MEASUREMENT. FIELD PAINTING OF STRUCTURAL STEEL IS BASED ON LUMP SUM.

I. PAYMENT SHALL BE AT THE CONTRACT PRICE BID FOR ITEM SPECIAL LUMP SUM AS FOLLOWS.

1. 837 SURFACE PREPARATION AS PER PLAN.
2. COMPLETE COAT EXPERIMENTAL PAINT.

EXPERIMENTAL PAINT SHALL BE CARBOMASTIC 15 AS MANUFACTURED BY CARBOLINE, 350 HANLEY INDUSTRIAL COURT ST. LOUIS MISSOURI 63144. IT SHALL BE APPLIED BY AIRLESS SPRAY ACCORDING TO THE MANUFACTURERS RECOMMENDATIONS. THE MINIMUM DRY FILM THICKNESS SHALL BE 6 MILS.

**ITEM 514. PAINTING NEW STEEL:**

A. THIS ITEM CONSISTS OF PAINTING ALL NEW ASTM A-36 STEEL BELOW THE OPEN STEEL GRID DECK IN THE WORK AREA ACCORDING TO ITEM 514. THE PAINT SYSTEM SHALL BE THE SAME AS FOR EXISTING STEEL, CARBOMASTIC 15.

**FRANKLIN CONSULTANTS INC.** 1/2  
 Consulting Engineers  
 COLUMBUS, OHIO

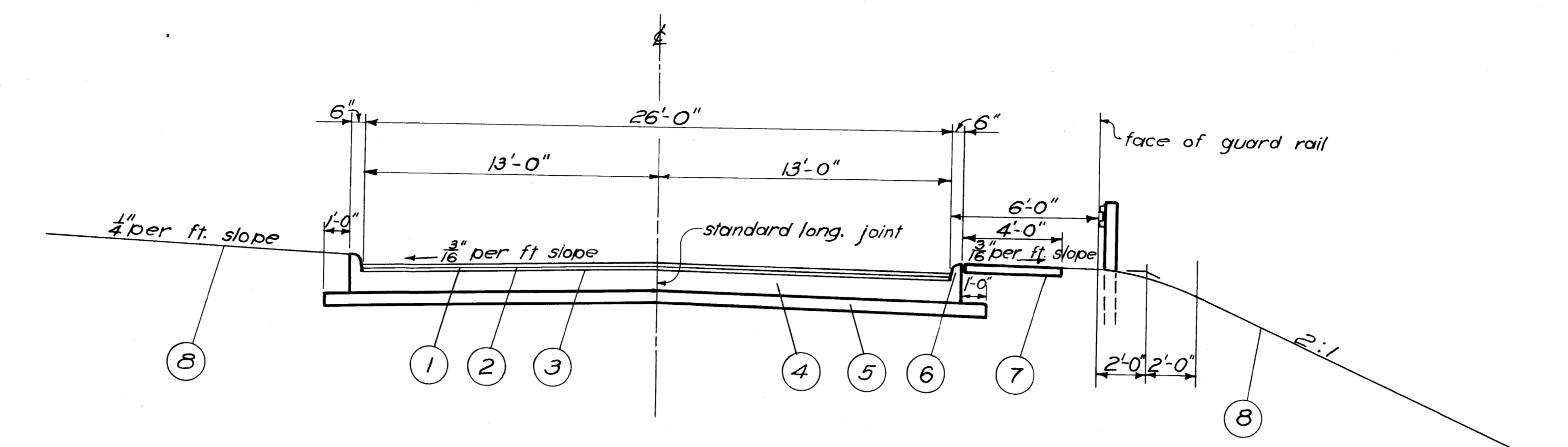
**GENERAL PLAN & ELEVATION  
 NOTES-ESTIMATED QUANTITIES  
 BRIDGE OVER MUSKINGUM RIVER  
 BETWEEN  
 DUNCAN FALLS & PHILO  
 MUSKINGUM COUNTY C.R. 32**

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
	J.L.J.	J.L.J.		JA	1/12-78	

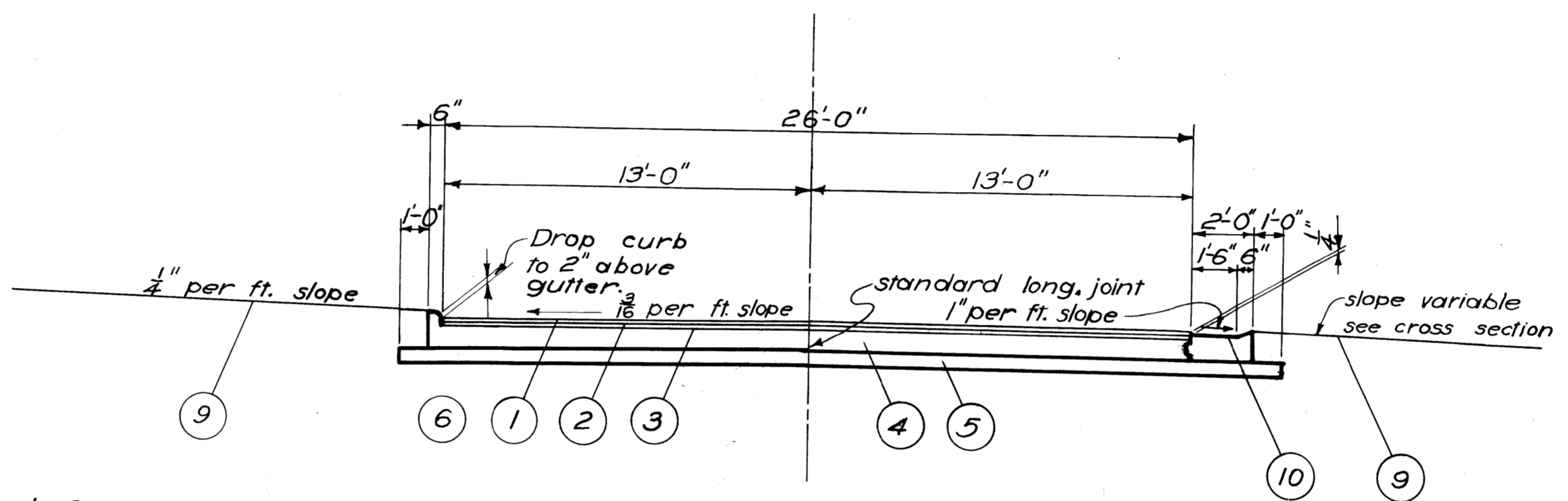
BRUNING 44-550 20645

605 4-129

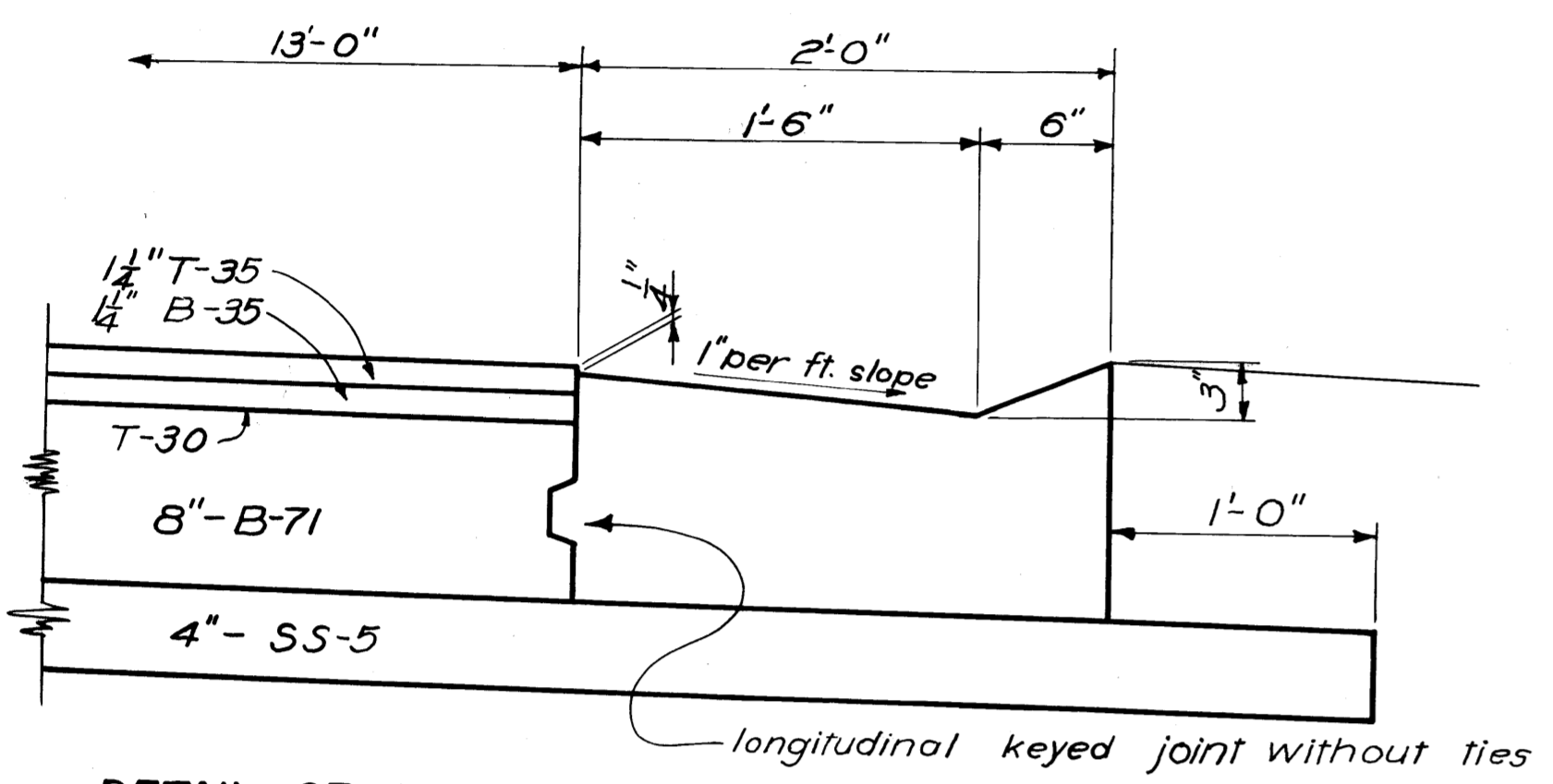
# TYPICAL SECTION T-35 ON B-71



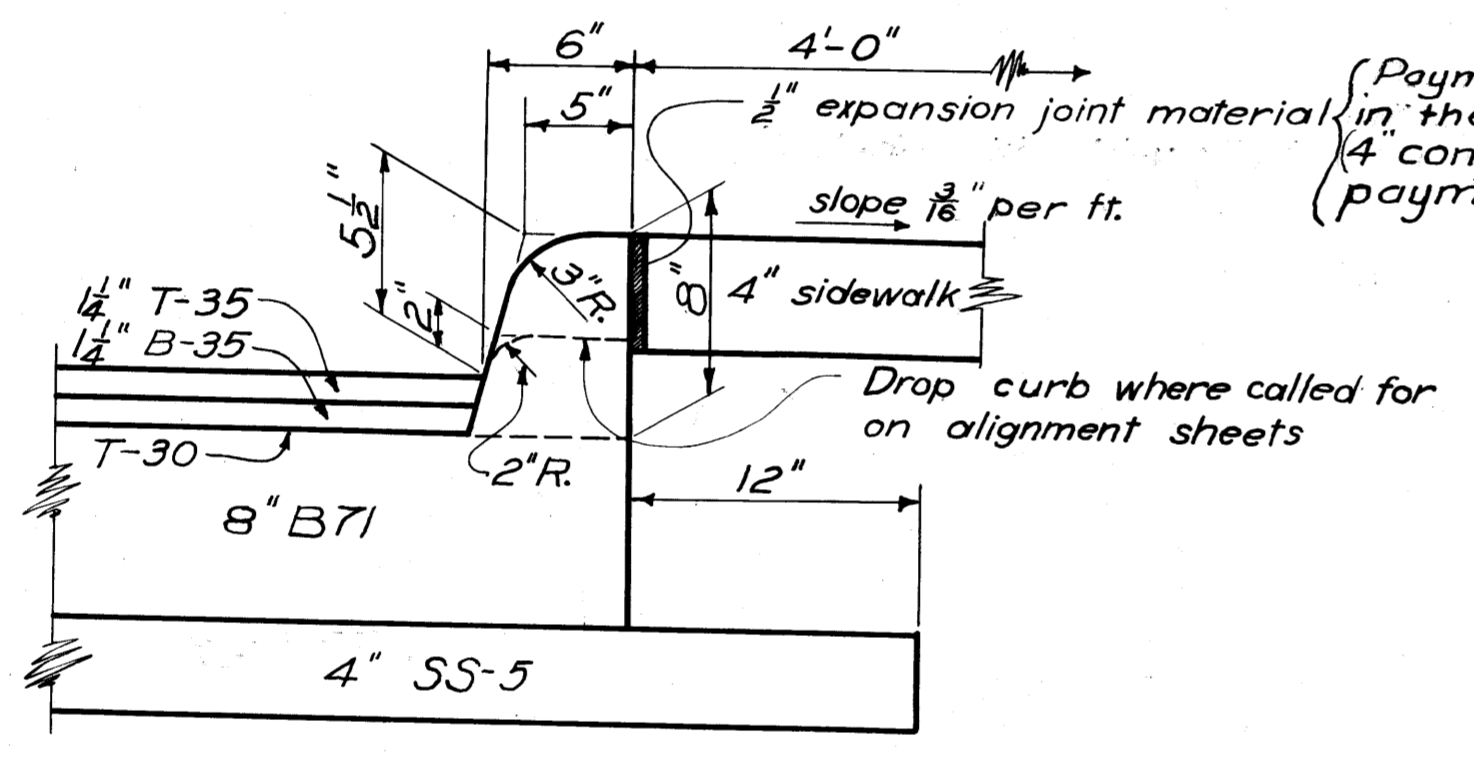
STA. 12+60 TO STA. 14+44.12



STA. 11+81.50 TO STA. 12+60



DETAIL OF TYPE A COMBINATION CONCRETE CURB & GUTTER



DETAIL OF CONCRETE CURB-TYPE 2-B MODIFIED

(Payment for exp. joint is included in the total amount bid for Item I-13 (4 conc. sidewalk) and no additional payment will be allowed.)

- ① Item T-35-1/4" asphaltic concrete surface course, type "C" (70-80).
- ② Item B-35-1/4" asphaltic concrete leveling course (70-80).
- ③ Item T-30 bituminous tack coat, sec. M-5.5, MS-2 or SS-1 (applied at rate of 0.10 gal. per sq. yd.).
- ④ Item B-71-8" reinforced portland cement concrete base course.
- ⑤ Item SS-5-4" classified embankment material, grading "C" or "D". (Modified)
- ⑥ Item I-12 - standard type 2-B concrete curb (modified).
- ⑦ Item I-13-4" concrete sidewalk.
- ⑧ Item L-10 - sodding.
- ⑨ Item I-17-6" side approaches, mail box turnouts & berm material (see alignment sheet).
- ⑩ Item I-12 - type A combination curb & gutter as per plans.

### SUMMARY OF QUANTITIES

From Sheet No.	E-1	E-8	E-9	E-12	I-13	I-13	Special	I-15	L-10	I-2	I-2	I-2	I-8		I-16	B-35	B-71	T-30	T-35	I-7	I-12	I-17	SS-5	I-7	E-8	I-12	
	Roadway Excavation	Removal and Disposal of Existing Pavement	Removal of Trees and Stumps	Removal and Disposal of Pipe	4" Concrete Sidewalk	Concrete Steps as per Plan	Removal and Disposal of Guard Rail	Type 1-15.13 Guard Rail (deep)	Sodding	15" Pipe for storm sewer under P.V.M.	12" Pipe for Outlets for Storm Sewer	15" Pipe for Outlets for Storm Sewer	Sfd. # 3A Catch Basin		Catch Basin Abandoned	1/2" (minimum) Asphaltic Conc. Leveling Course	8" Reinf. Portland Cement Concrete Base Course	Bituminous Tack Coat	Asphaltic Concrete Surface Course	Reinforced Concrete Approach Slab	Sfd. Type 2-B Curb (modified)	6" Side Appr. Mail Box Turnout and Berm Mat'l	4" classified Emb. Mat'l. grading C or D	Reinf. Conc. Appr. Slab for sidewalk	Removal and Disposal of Existing sidewalk	Type A Comb-ination Curb and Gutter as per plans	
	cu. yds.	sq. yds.	each	lin. ft.	sq. ft.	lin. ft.	lin. ft.	lin. ft.	sq. yds.	lin. ft.	lin. ft.	lin. ft.	each		each	cu. yds.	sq. yds.	gal.	cu. yds.	sq. yds.	lin. ft.	cu. yds.	cu. yds.	sq. yds.	sq. ft.	lin. ft.	
5	28		2		112	75																					
7	414			88	786		94	300.00	891	166					2												74.5
9		80																									117
13																9.0	282	27.6	9.0			152.75		35.0			
14																4.4	135	13.1	4.4			66.10		15.8			
15																16.7	510	50.1	16.7			168.50		58.8			65.4
16																				93.8							8.7
17																				93.5							8.9
TOTAL	To Calculation	80														30.1	927	90.8	30.1			387.35		109.6			
	To General Summary	442	2	88	898	75	94	384.35	1182	166	11	10	3		2					187.3		76		17.6	117	139.9	

### GENERAL NOTES

**UTILITY ADJUSTMENTS:**— Any and all work required for Public or Private Utilities will be done by and at the expense of their respective owners unless otherwise noted in these plans. Utilities affected by this project are as follows: The Ohio Power Company, The Baltimore and Ohio Railroad Company, The U.S. Army, Corps of Engineers, and The Ohio Bell Telephone Company.

**FIELD OFFICE:**— The Contractor shall provide a suitable field office in accordance with Sec. S-0.01 (b) having a minimum of 200 sq. ft. of floor space. The Contractor shall have a telephone installed and maintained during construction of this project.

**BERMS AND SLOPES:**— Berms and slopes shall be finished in accordance with the Typical Sections except where otherwise shown or noted on the cross section. Although the cross sections as drawn show straight lines and angles, in construction all corners shall be rounded as shown on the Typical Sections.

**FLASHER LIGHT PROTECTION** will be provided at B & O Railroad crossing under SG-1130(2).

**EXISTING FLEXIBLE PAVEMENT** at south approach to intake will be removed under Item E-1, Roadway Excavation.

**CROWN AT RAILROAD CROSSING:**— The approach to the railroad crossing at County Road No. 6 shall be built without crown. Starting at the bridge limit, Sta. O+38.83, back to Sta. O+27.14, at the railroad crossing, the crown shall be worked out of the pavement by raising the edges of the pavement to meet the rail elevation.

**HAND FINISHING:**— Hand finishing of concrete base course and approach slabs will be permitted as per Sec. T-71.211 of the Construction and Material Specifications.

**CONCRETE CURB ON APPROACH SLAB:** Transitioning of the concrete curb from 9" height on bridges to 5 1/2" height on approaches shall be accomplished within the limits of each approach slab. Cost of concrete curb on approach slabs shall be included with Item I-7, Reinforced Concrete Approach Slabs, for payment.

Work in adjusting tracks at south end of project will be done by the Railroad Company and paid for by the County.

**CONTRACTION JOINTS** will not be permitted in the reinforced concrete base course.

**SODDING:**— Quantities for Sodding, Item L-10, are calculated for the soil areas from back of curbs or outside edge of sidewalks to a point 2' outside the limits of earthwork as shown on the cross sections. All areas outside these limits where the vegetative growth has been injuriously disturbed or destroyed by the Contractor, shall be restored and sodded in accordance with the provisions of Item L-10, by the Contractor at his own expense.

**SUBBASE ITEM No. SS-5:**— Classified Embankment Material used on this project shall meet the requirement of grading "C" or "D" except that the percent passing the No. 200 sieve shall be between 5 and 15 for grading "C" or between 5 and 20 for grading "D". The material need not meet the requirements of SS-5 as to percent passing the No. 50 sieve. In addition to meeting the above grading requirements coefficient of permeability shall be not greater than 5 feet per day.

**PROPOSED WORK ON LOCK RAMP:**—

1. Remove portions of existing structure.
2. Raise structure.
3. Construct new concrete footings and reconstruct existing concrete footings and bents.
4. Construct new steel bent and superstructure.
5. Paint both new and existing steel.
6. Construct I-17 approach fill.

PAVEMENT CALCULATIONS

Begin Project Sta. 0-02.26			
End Project Sta. 14+79.10			
Gross Length =	1481.36	Lin. Ft.	
Deductions			
Intersections, Bridges, and Approaches Sta. 0-02.26 to Sta. 11+81.50 =	1183.76		
Intersection Sta. 14+44.12 to Sta. 14+79.10 =	34.98		
Total Deductions	1218.74		
Net Length of Project =	262.62	Lin. Ft.	
<b>T-35</b>			
(262.62 x 26 x .1042) ÷ 27 =	26.4	Cu. Yds.	
Intersections (from Summary of Quantities) =	30.1	" "	
Approach Slab No. 1 (2 1/2" thick)	2.5	" "	
Approach Slab No. 2 (2 1/2" thick)	4.2	" "	
Approach Slab No. 3 (2 1/2" thick)	3.4	" "	
Approach Slab No. 4 (2 1/2" thick)	3.2	" "	
Sta. 11+81.50 to Sta. 12+60 Rt. = (78.5 x .5 x .1042) ÷ 27 =	0.1	" "	
<b>Total T-35 =</b>	69.9	Cu. Yds.	
<b>B-35</b>			
(262.62 x 26 x .1042) ÷ 27 =	26.4	Cu. Yds.	
Intersections (from Summary of Quantities) =	30.1	" "	
Sta. 11+81.50 to Sta. 12+60 Rt. = (78.5 x .5 x .1042) ÷ 27 =	0.1	" "	
<b>Total B-35 =</b>	56.6	Cu. Yds.	
<b>T-30 Tack Coat</b>			
(262.62 x 26 x .1) ÷ 9 =	75.9	Gal.	
Intersections (from Summary of Quantities)	90.8	" "	
Sta. 11+81.50 to Sta. 12+60 Rt. = (78.5 x .5 x .1) ÷ 9 =	0.4	" "	
Area of Approach Slabs = 190.4 x .1 =	19.0	" "	
<b>Total T-30 =</b>	186.1	Gal.	
<b>B-71 8" Reinforced Portland Cement Concrete Base Course</b>			
(262.62 x 27) ÷ 9 =	788.	Sq. Yds.	
Intersections (from Summary of Quantities) =	92.7	" "	
<b>Total B-71 =</b>	1715	Sq. Yds.	
<b>SS-5</b>			
(262.62 x 29 x .3) ÷ 27 =	94.0	Cu. Yds.	
Intersections (from Summary of Quantities)	109.6	" "	
Approach Slabs = (198.6 x 4) ÷ 36 =	22.1	" "	
<b>Total SS-5 =</b>	225.7	Cu. Yds.	
<b>I-12 Standard Type 2B Concrete Curb (Modified)</b>			
Sta. 11+81.50 to Sta. 14+44.12 (Lt.) =	262.62	Lin. Ft.	
Sta. 12+60 to Sta. 14+44.12 (Rt.) =	184.12	" "	
Intersections (from Summary of Quantities) =	387.35	" "	
<b>Total I-12 =</b>	834.09	Lin. Ft.	
<b>E-11 Water</b>			
1380 Cu. Yds. x 5 Gal. per Cu. Yd. =	7 M	Gal.	
<b>E-8 Removal and Disposal of Existing Pavement</b>			
Sta. 10+74.75 to Sta. 14+79.10 = (404.35 x 16) ÷ 9 =	718.8	Sq. Yds.	
From Summary of Quantities	80.0	" "	
<b>Total E-8 =</b>	798.8	Sq. Yds.	
<b>L-9 Commercial Fertilizer</b>			
From General Summary (1182 Sq. Yds. x 9 x 20) ÷ (1000 x 2000) =	0.11	Ton	

EARTH WORK				
STATION	EXCAVATION	EMBANKMENT	EMBANKMENT+15%	BORROW
FROM TO	CU. YDS.	CU. YDS.	CU. YDS.	CU. YDS.
0-02.26 14+79.10	442	1380	1587	1145

GENERAL SUMMARY			TYPE CODE G/TOB	
ITEM		TOTAL	UNIT	
<b>ROADWAY</b>				
E-1	Roadway Excavation, As Per Plan	442	Cu. Yds.	
E-4	Borrow	1145	Cu. Yds.	
E-8	Removal & Disposal of Existing Pavement	799	Sq. Yds.	
E-9	Removal & Disposal of Existing Sidewalk	117	Sq. Ft.	
E-11	Water	2	Each	
E-12	Pipe Removed & Disposed of	7	M Gal.	
I-13	4" Concrete Sidewalk	88	Lin. Ft.	
I-13	Concrete Steps as per Plan	898	Sq. Ft.	
Special	Removal & Disposal of Existing Guard Rail	75	Lin. Ft.	
I-15	Guard Rail, Steel Beam Type (Deep) as per Plan	94	Lin. Ft.	
I-17	Side Approaches, Mail Box Turnouts & Berm Material	384.35	Lin. Ft.	
L-9	Commercial Fertilizer (10-6-4)	76	Cu. Yds.	
L-10	Sodding	0.11	Ton	
SS-5	Classified Embankment Material Grading C or D (Modified)	1182	Sq. Yds.	
		226	Cu. Yds.	
<b>DRAINAGE</b>				
I-2	15" Pipe for Storm Sewer Under Pavement	166	Lin. Ft.	
I-2	12" Pipe for Outlets for Storm Sewer	11	Lin. Ft.	
I-2	15" Pipe for Outlets for Storm Sewer	10	Lin. Ft.	
I-8	Standard No. 3A Catch Basin (Modified)	3	Each	
I-16	Catch Basins Abandoned	2	Each	
<b>PAVEMENT</b>				
B-35	Asphaltic Concrete Leveling Course (70-80)	57	Cu. Yds.	
T-35	Asphaltic Concrete Surface Course, Type C (70-80)	70	Cu. Yds.	
B-71	8" Reinforced Portland Cement Concrete Base Course	1715	Sq. Yds.	
T-30	Bituminous Tack Coat, Sec. M-5.5, MS-2, or SS-1	186	Gal.	
I-7	Reinforced Concrete Approach Slabs, for Roadway	187	Sq. Yds.	
I-7	Reinforced Concrete Approach Slab, for Sidewalk	18	Sq. Yds.	
I-12	Type A Combination Curb & Gutter, as per Plan	140	Lin. Ft.	
I-12	Standard Type 2B Curb (Modified)	834	Lin. Ft.	
<b>LOCK RAMP (Left of Sta. 1+89.50) (see sheet 18)</b>				
E-2	Unclassified Excavation For Structures	6	Cu. Yds.	
S-1	Class "C" Concrete For Structures	3	Cu. Yds.	
S-4	Reinforcing Steel	128	Lbs.	
S-7	Structural Steel	2500	Lbs.	
S-7	Structural Steel- Raising Existing Structure	Lump	Sum	
S-8	Field Painting of Structural Steel	2500	Lbs.	
S-8	Field Painting of Structural Steel- Existing Structure	Lump	Sum	
S-13	Plank Floor, Nailers & Felloe Guards	0.8	MBM	
S-14	Pipe Railing	33	Lin. Ft.	
I-17	Side Approaches, Mail Box Turnouts & Berm Material	3	Cu. Yds.	
QUANTITIES FOR STRUCTURES OVER 20FT. SPAN SEE SHEETS 21 & 27				

BEGIN PROJECT  
STA. 0-02.26

NOTE: Marker will be furnished and erected on the right by the State before acceptance of this improvement.

Work involved in adjusting tracks at south end of project will be done by the Railroad Company and paid for by the County.

U.S. Gov't. Lock No 9

New bituminous concrete pavement to meet proposed grade of project by Muskingum County prior to acceptance of this improvement.

S-1130 (I) POST WAR

5  
58

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

**PROPOSED STRUCTURE OVER INTAKE**

TYPE: 3 continuous spans, steel beam with conc. deck and conc. substructure  
SPAN: 48'-60'-48'  
ROADWAY: 26' f/curbs plus 5' sidewalk and 1.9" safety curb.  
LOADING: S-20-4G  
SKEW: 15° 29'  
SURFACE COURSE: Bituminous  
APPROACH SLABS: As shown

**MUSKINGUM**

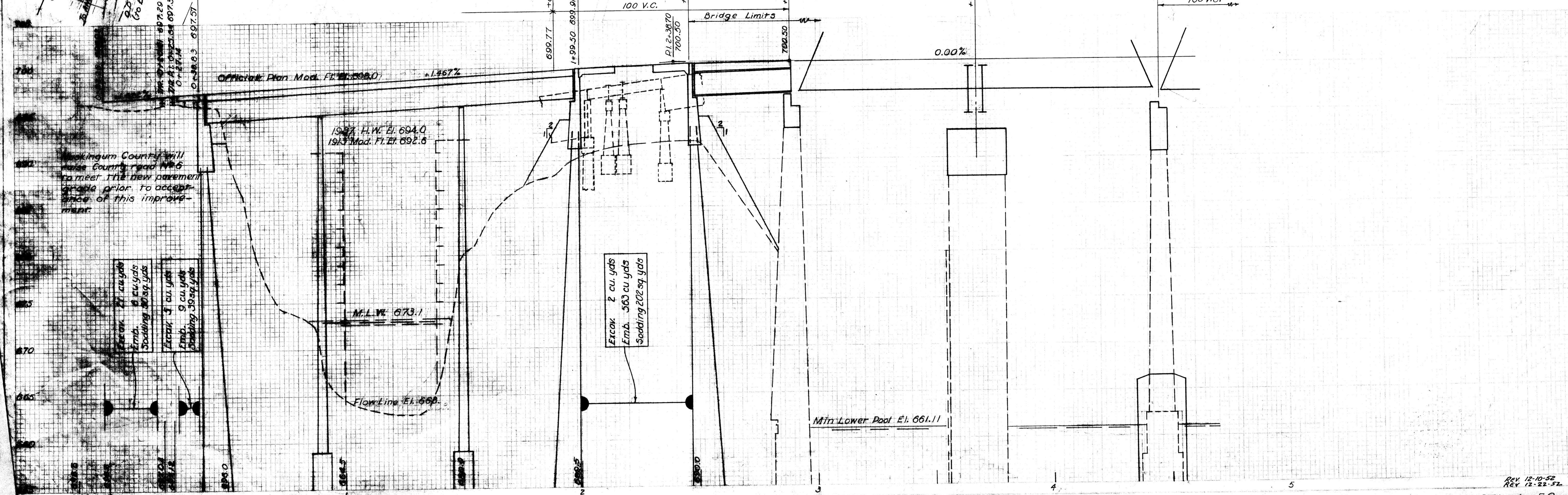
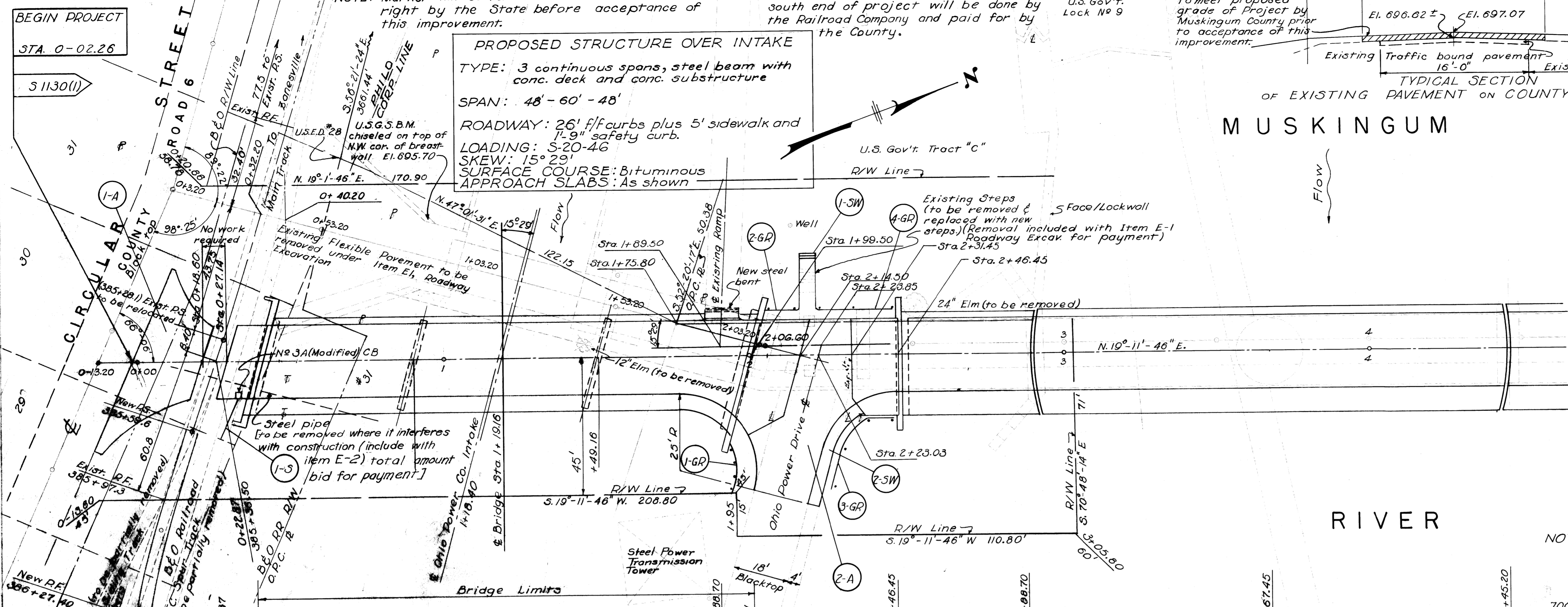
TYPICAL SECTION OF EXISTING PAVEMENT ON COUNTY ROAD No 6

SIDEWALK & STEPS				GUARD RAIL	
Ref No	Station to Station	Side	I-13 Sidewalk Sq. ft.	I-13 Steps Lin. ft.	I-15 Guard Rail Lin. Ft.
1-SW	2+19.20	Lf.		75	Rf. 18.75
2-SW		Rf.	112		Lf. 7.85
					Rf. 37.50
					Lf. 20.25
TOTAL			112	75	
					TOTAL 84.35

See Sheet No 13 For Details of Intersection 1-A.  
See Sheet No 14 For Details of Intersection 2-A and Section Through Steps.

DRAINAGE				
Ref No	Station	Side	I-2 Storm Sewer Outlet 12" Lin. Ft.	I-8 No. 3A CB (Modified) Each
1-3	0+35.2	Right	11	1
TOTAL			11	1

NOTE: Flasher signals will be installed under a separate contract for crossing protection at the proposed B&O Railroad grade crossing.

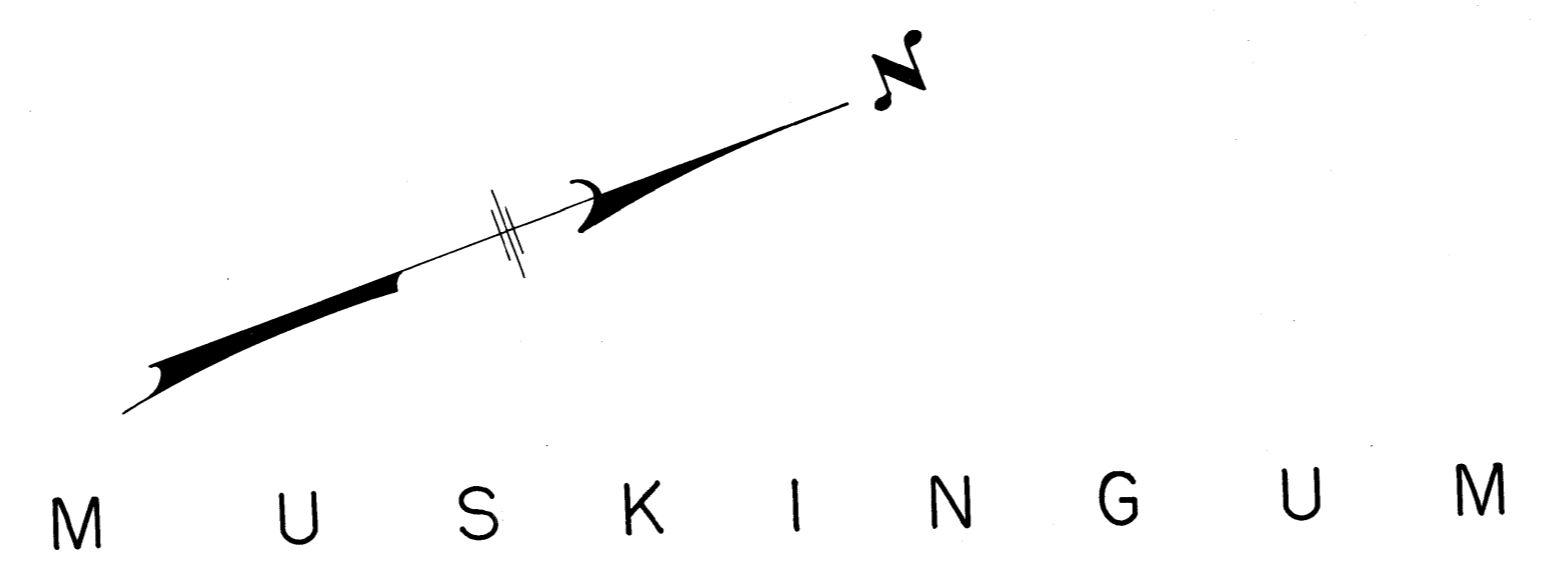


PLAN & PROFILE STA. 0-02.26 TO STA. 4+50

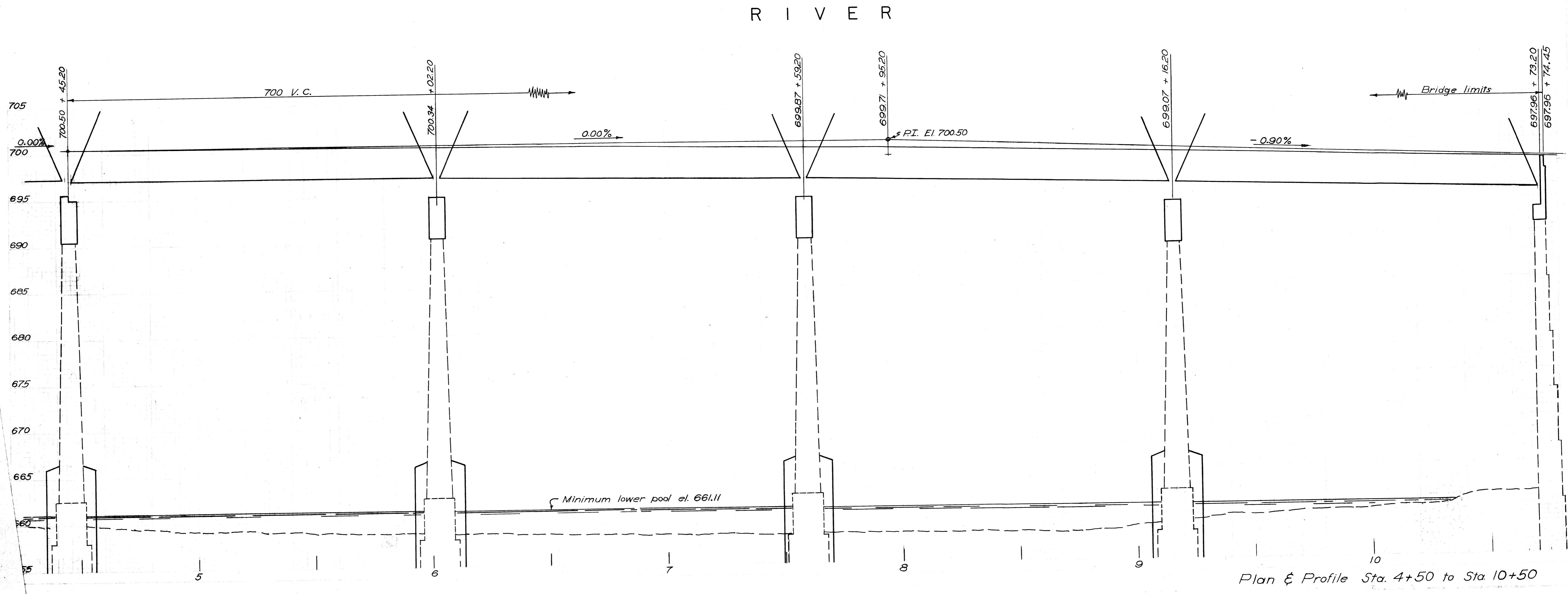
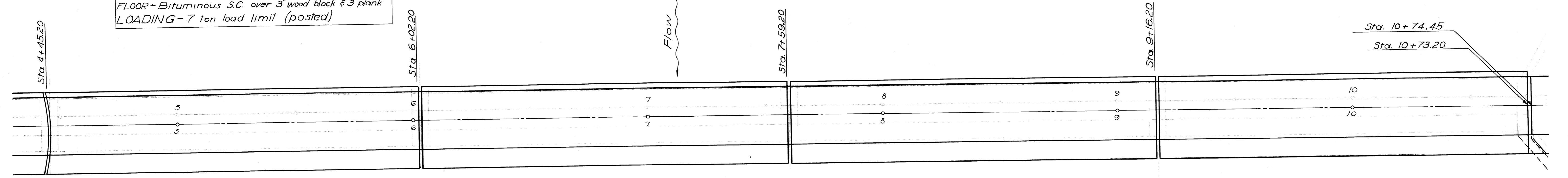
REV. 12-10-52  
REV. 12-22-52

MUSKINGUM COUNTY ROAD No.32

**EXISTING BRIDGE**  
 over river & intake  
**EXISTING SUPERSTRUCTURE (to be removed)**  
 Consisting of 4 truss spans 154'-6" brgs.  
 One swing span 150'-6" brgs.  
 3 plate girder spans 53'-3" brgs.  
 One steel beam span 28'-1" brgs.  
 Condition - good  
**EXISTING SUBSTRUCTURE (Condition good)**  
 2 Main conc. abuts. } to remain  
 4 Stone piers } in place  
 One swing span pier }  
 Miscellaneous abutments and piers  
 for approach spans (to be removed)  
**ROADWAY** - 15'-8" c.l. with 5' c.l. sidewalk on E. side  
**FLOOR** - Bituminous S.C. over 3" wood block & 3" plank  
**LOADING** - 7 ton load limit (posted)



**PROPOSED STRUCTURE OVER RIVER**  
**TYPE**: Steel truss spans with concrete and open steel grating deck and modified existing stone and concrete substructure.  
**SPAN**: 4 trusses @ 154'-6" brgs.  
 One swing span @ 151'-0" brgs.  
 One steel beam approach span 40' brgs.  
**ROADWAY**: 26' f/f Curbs (28'-0" f/f Guard Rails)  
**SIDEWALK**: 5' clear  
**LOADING**: S-20-46  
**SKEW**: none  
**SURFACE COURSE**: Bituminous  
**APPROACH SLABS**: As shown



Plan & Profile Sta. 4+50 to Sta. 10+50

END PROJECT sta. 14+79.10

MUSKINGUM COUNTY ROAD No. 32

NOTE: Marker will be furnished and erected on the left by the State before acceptance of this improvement.

Combination Curb & Gutter

Ref No	station to station	side	I-12 Type 'X' curb & gutter lin. ft.
I-G	11+81.50 to 12+56.00	right	74.5

DRAINAGE

Ref No	station to station	side	E-12 storm pipe material disposal lin. ft.	I-2 storm sewer under 15' lin. ft.	I-2 outlet for storm sewer modified C.B. each	I-6 No. 3-A C.B. abrad each	I-16 C.B. abrad each
I-S	11+04 to 11+76	lt.		70	10	1	
2-S	11+76 to 12+63	rt/lt		96		1	
3-S	11+62 to 11+78	rt/lt					2
4-S	11+74 to 11+78	rt/lt	88				
total			88	166	10	2	2

SIDEWALK

Ref No	station to station	side	I-13 side walk sq. ft.
I-SW	12+56 to 14+58	right	786
total			786

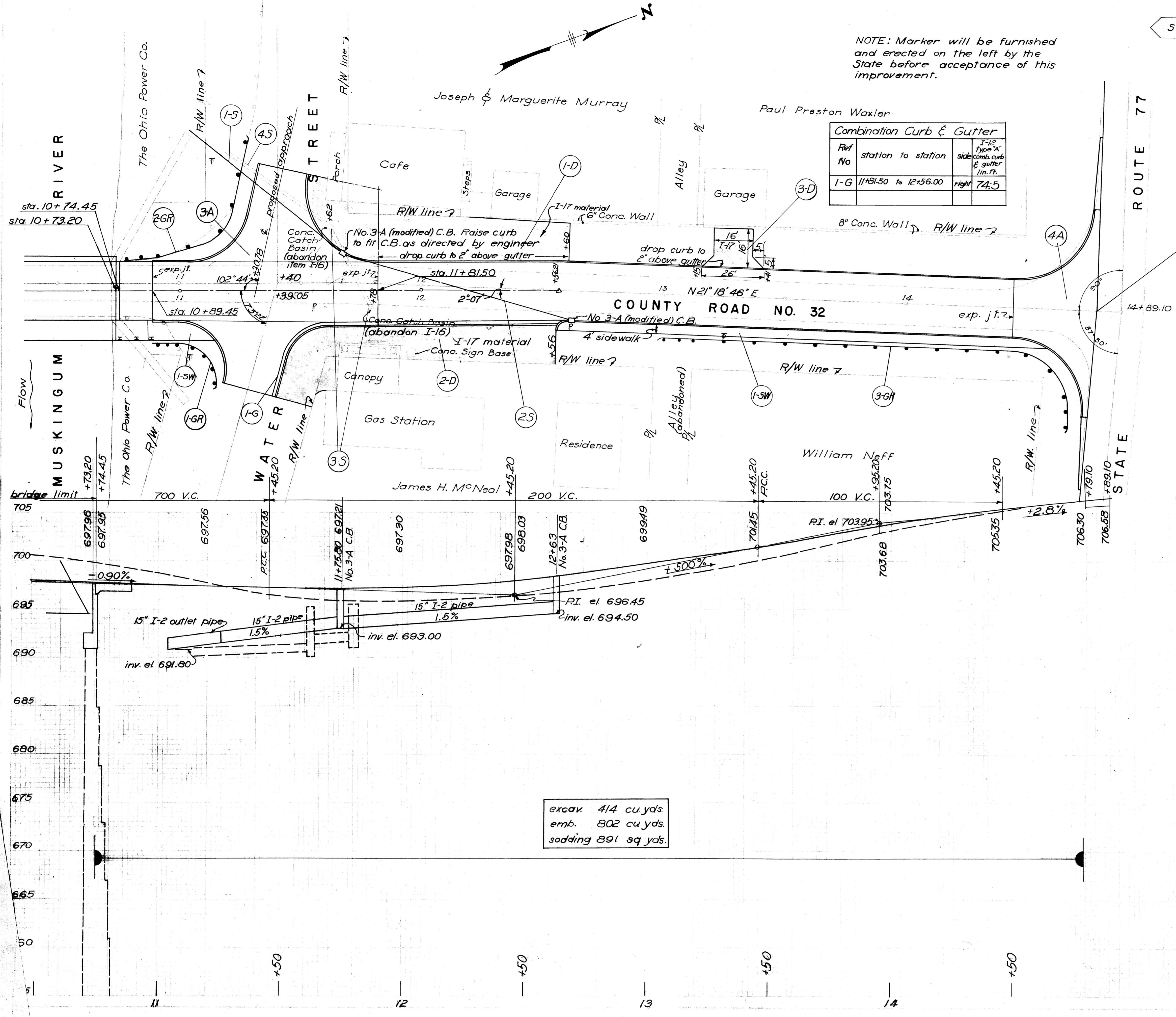
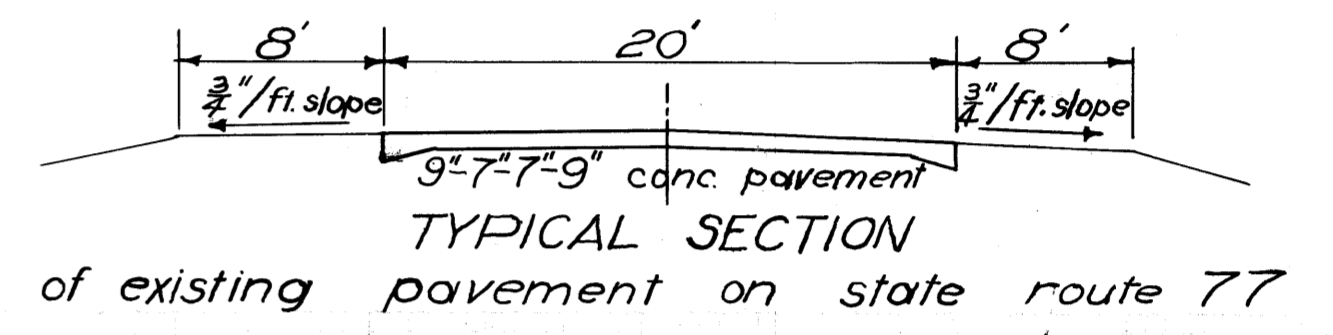
DRIVES

Ref No	station to station	side	I-17 6" drive material cu. yds.
I-D	Water St. to 12+60	left	39
2-D	Water St. to 12+56	right	33
3-D	13+15 to 13+41	left	4
total			76

GUARD RAIL

Ref No	station to station	side	I-15 guard rail lin. ft.
I-GR	10+90 to 11+15	right	37.50
2-GR	10+78 to 11+28	left	75.00
3-GR	13+00 to 14+68	right	187.50
total			300.00

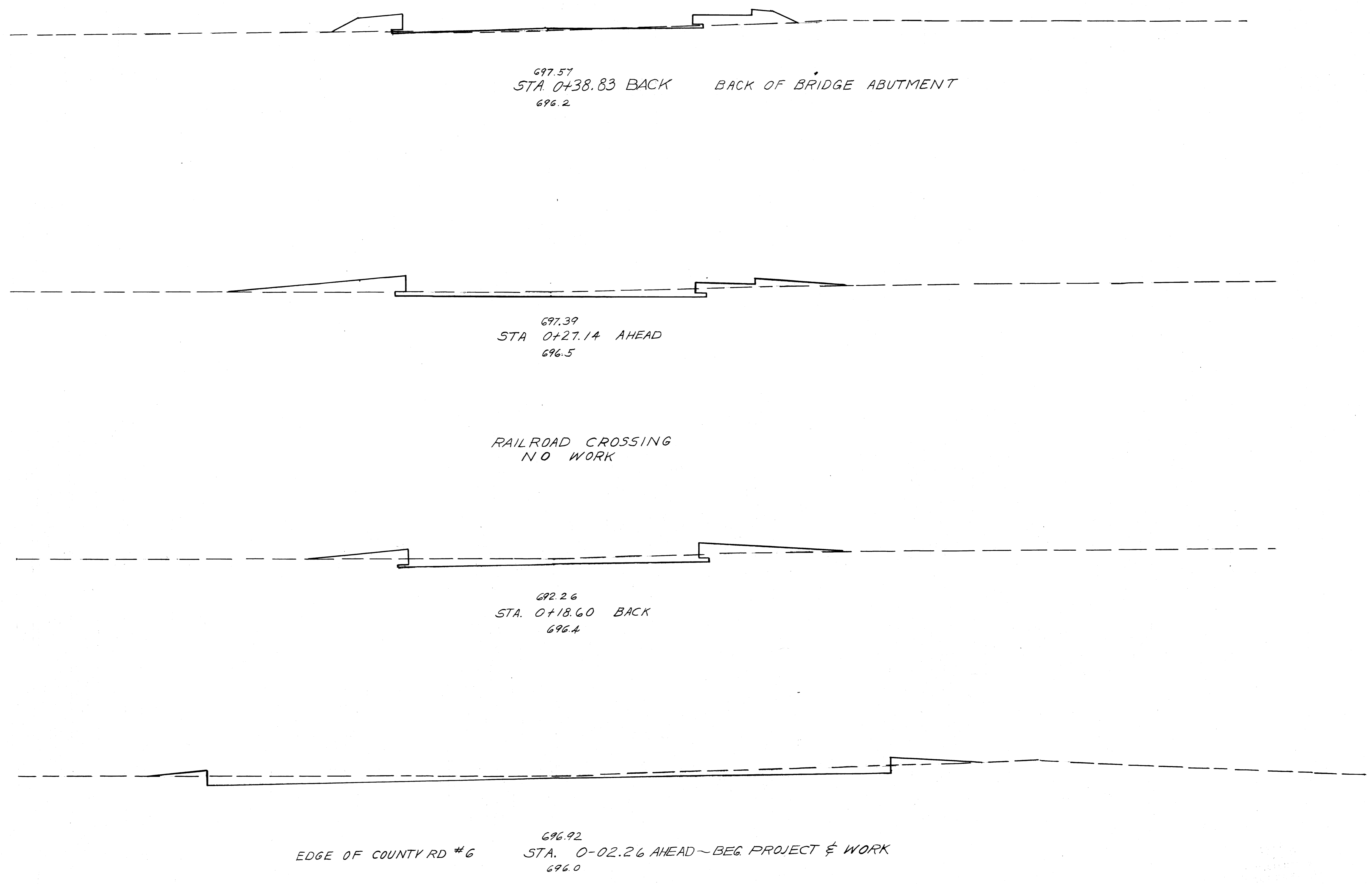
For intersection details No. 3-A and 4-A see sheets 15 & 13.



excav 414 cu. yds.  
emb. 802 cu. yds.  
sodding 891 sq. yds.



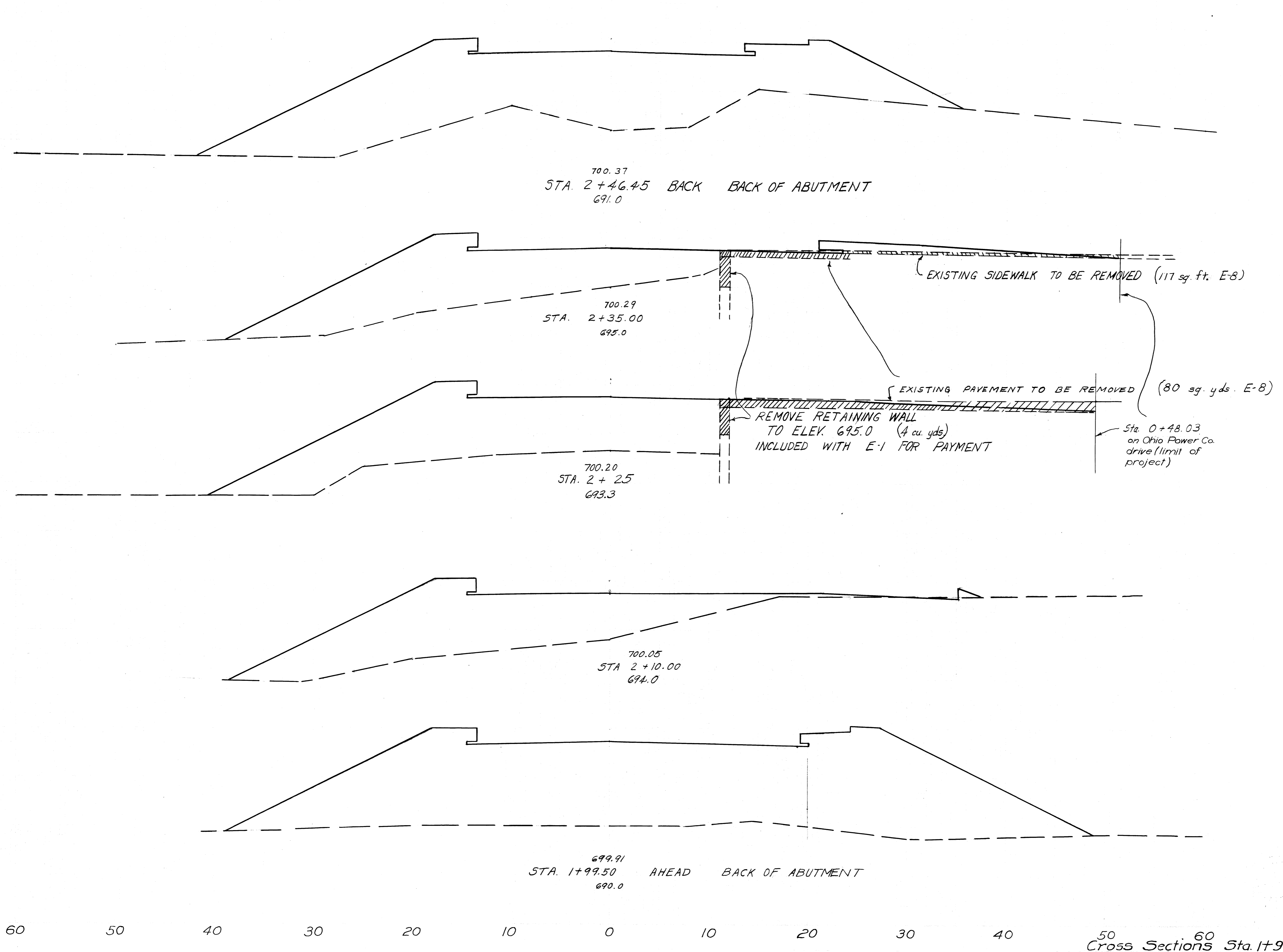
MUSKINGUM COUNTY  
COUNTY ROAD No. 32



End Cut	Area Fill	Cu. Cut	Yds. Fill
2	14		
		5	9
17	19		
19	10		
		21	6
35	6		

70 60 50 40 30 20 10 0 10 20 30 40 50 60 70  
Cross Sections Sta. 0-02.26 to Sta. 0+38.83

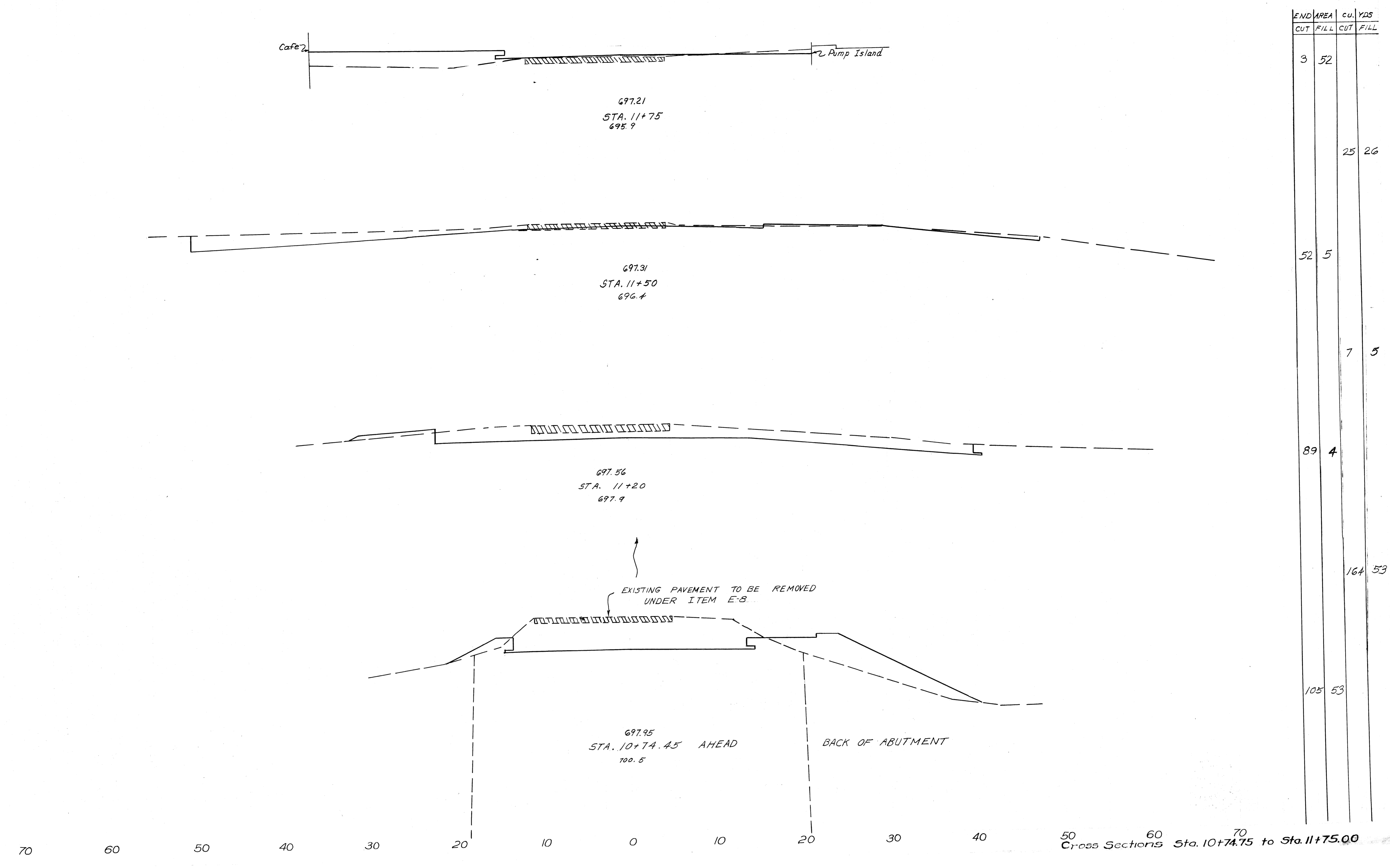
MUSKINGUM COUNTY  
COUNTY ROAD No. 32



END AREA		CUT YDS	
CUT	FILL	CUT	FILL
0	430		
		0	145
0	253		
		0	102
0	296		
		1	148
1	237		
		1	168
0	626		

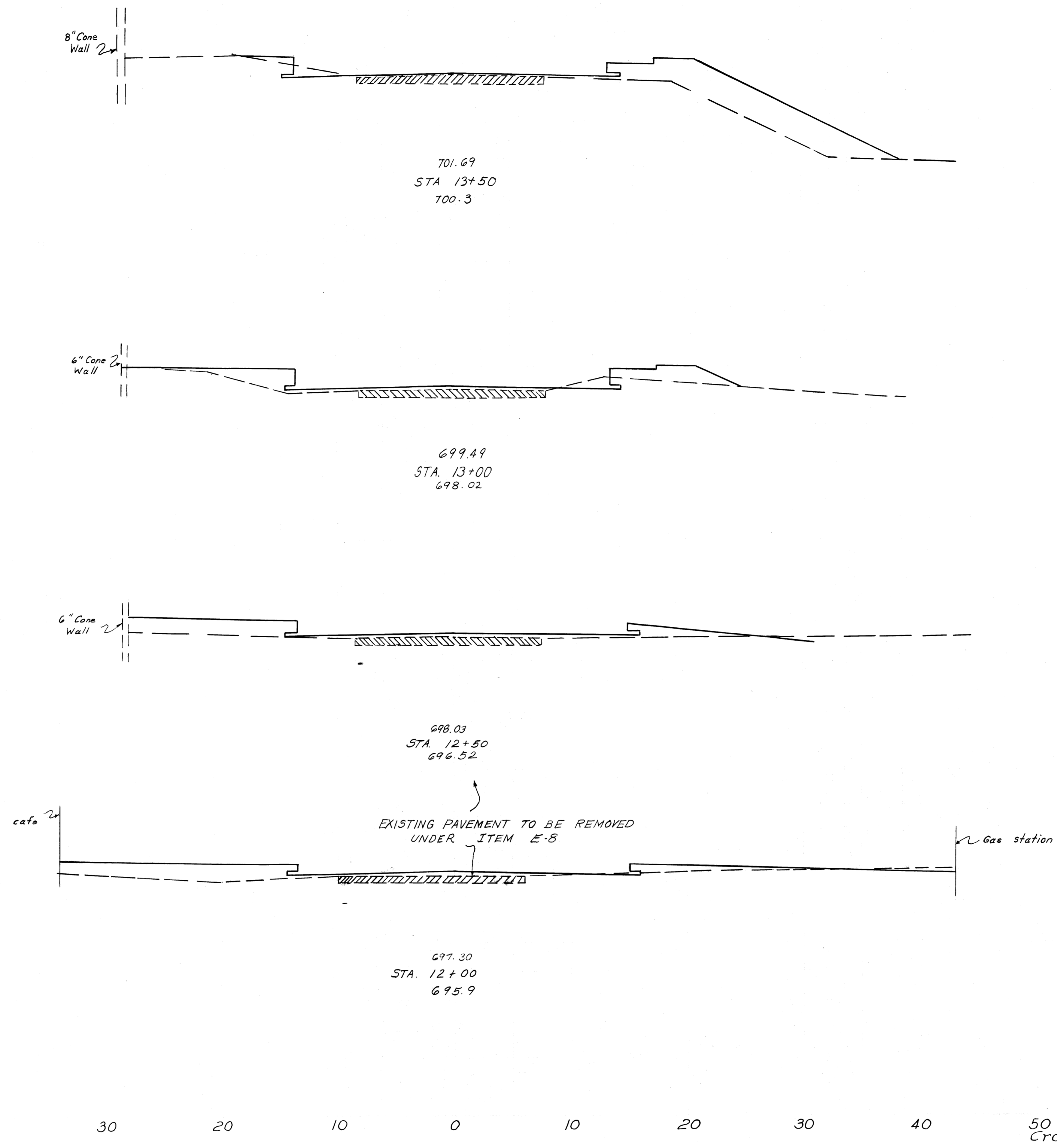
70 60 50 40 30 20 10 0 10 20 30 40 50 60 70  
Cross Sections Sta. 1+99.50 to Sta. 2+46.45

MUSKINGUM COUNTY  
COUNTY ROAD No. 32



END AREA		cu. YDS	
CUT	FILL	CUT	FILL
3	52		
		25	26
52	5		
		7	5
89	4		
		164	53
105	53		

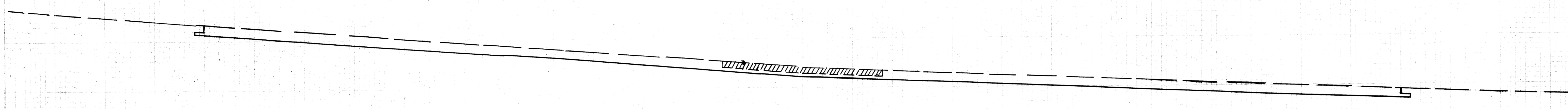
MUSKINGUM COUNTY  
COUNTY ROAD No. 32



END	AREA	CU	YDS
CUT	FILL	CUT	FILL
5	71		
		8	153
4	40		
		5	78
1	44		
		3	90
2	53		
		2	49

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

END AREA		CU. YDS	
CUT	FILL	CUT	FILL

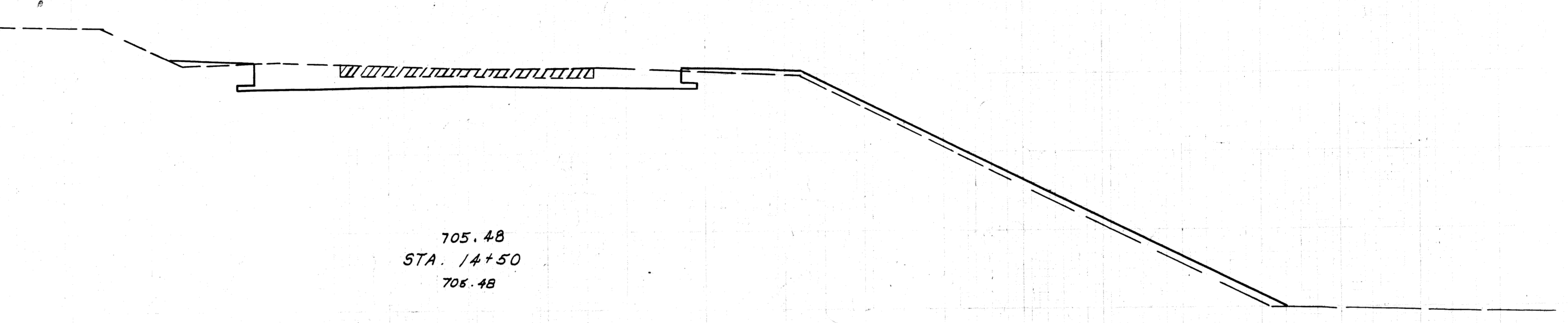


706.30  
STA. 14+79.10  
766.30  
END PROJECT Edge of Pav't S.R. 77

62 2

54 10

8" Concrete Wall

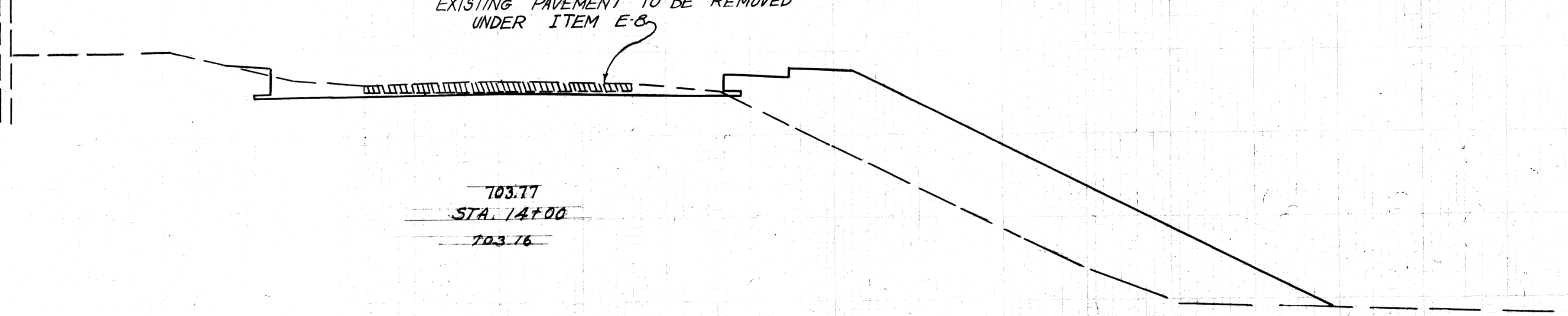


705.48  
STA. 14+50  
705.48

38 16

53 143

8" Concrete Wall



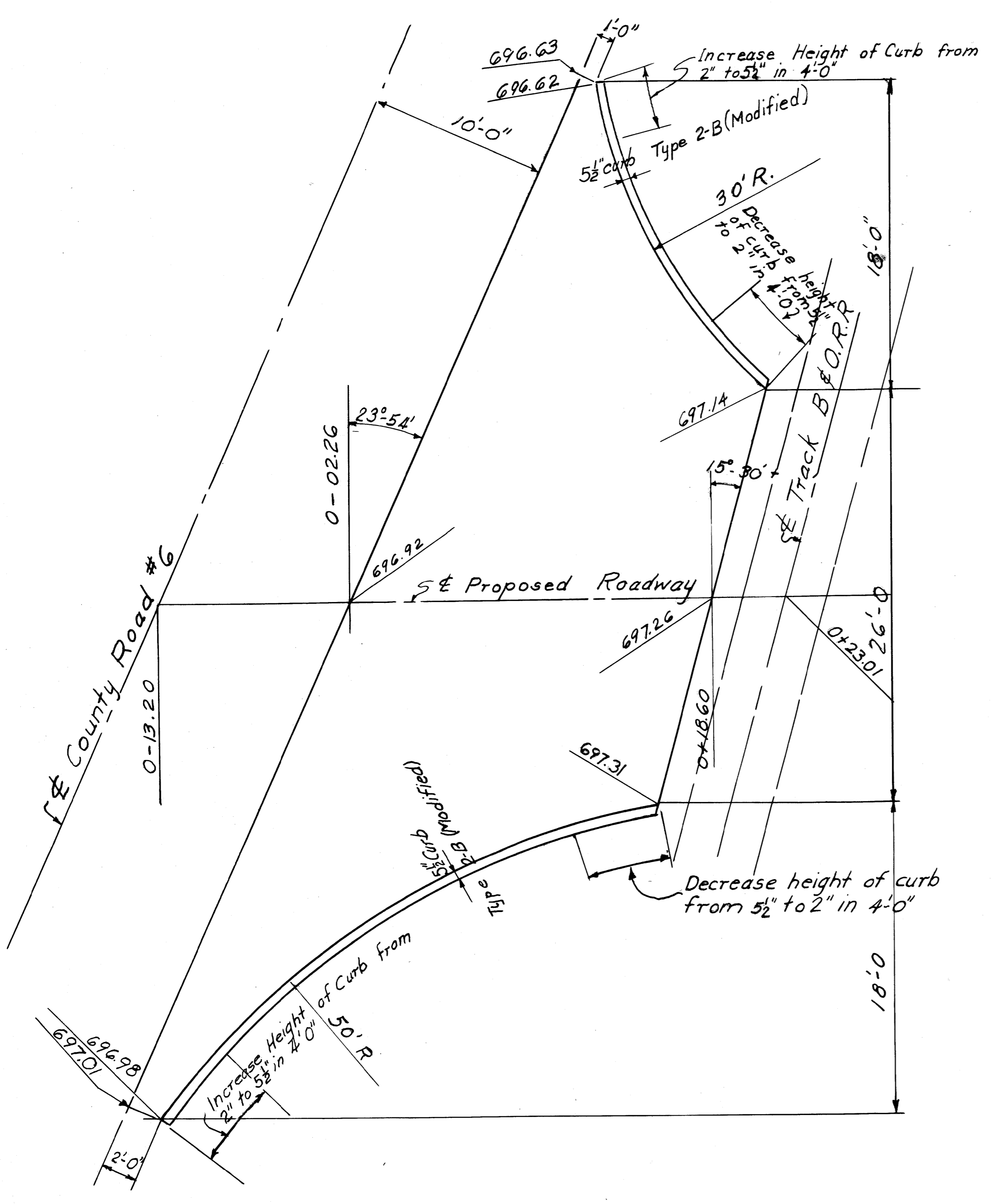
EXISTING PAVEMENT TO BE REMOVED  
UNDER ITEM E-8

703.77  
STA. 14+00  
703.76

19 139

22 195

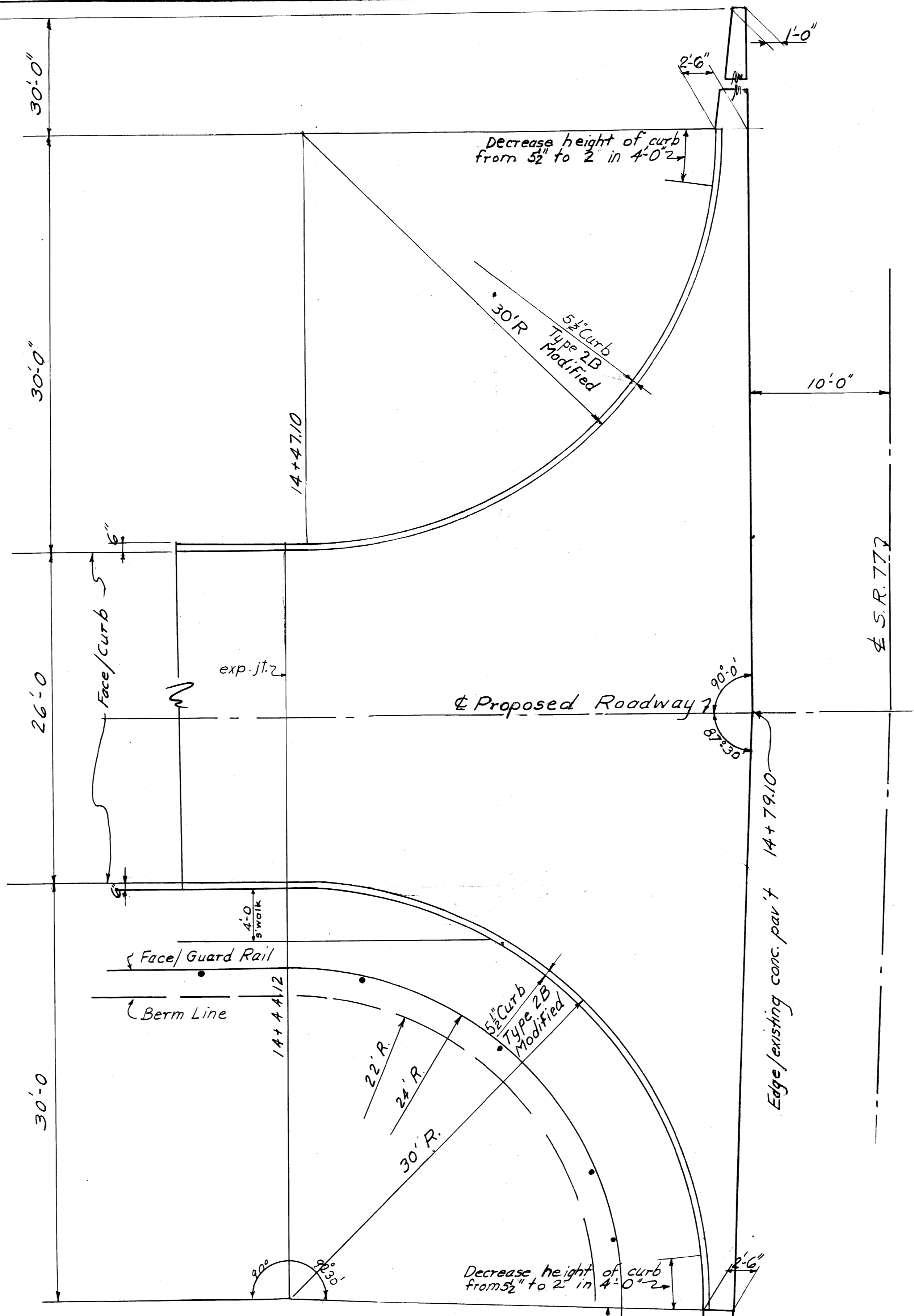
70 60 50 40 30 20 10 0 10 20 30 40 50 60 70  
Cross Sections Sta. 14+00 to Sta. 14+79.10



INTERSECTION # 1A

ESTIMATED QUANTITIES

Item T-35	1 1/4" Asphaltic Concrete Surface Course	3.3 Cu. Yds
Item B-35	1 1/4" Asphaltic Concrete Leveling Course	3.3 Cu. Yds
Item T-30	Bituminous Tack Coat	100 Gals
Item B-71	8" Reinforced Portland Cement Base Course	103 Sq. Yds
Item 55-5	4" Classified Embankment Material	13.3 Cu. Yds
Item F-12	Concrete Curb, Type 2-B Modified	55.8 Lin. Ft.



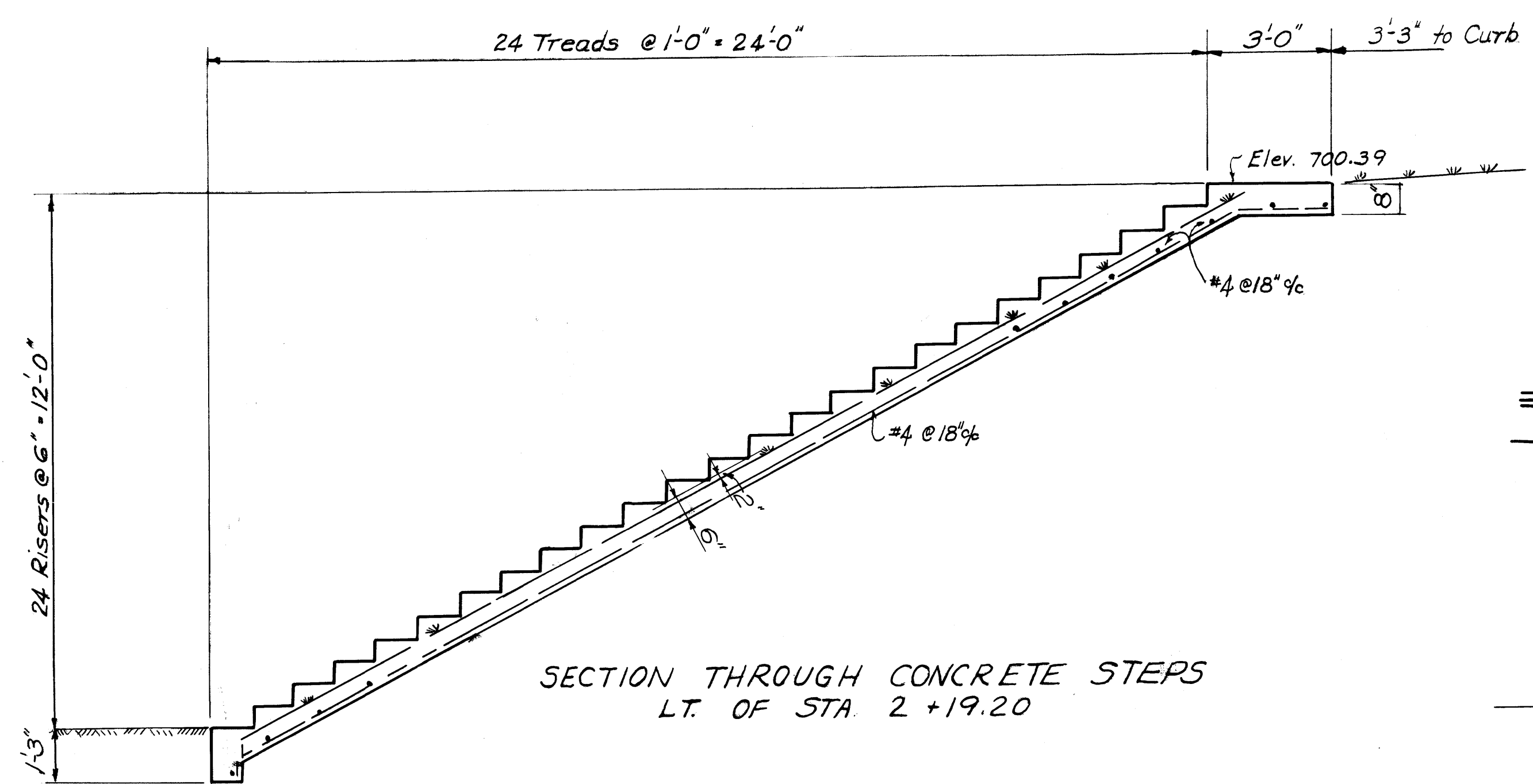
INTERSECTION # 4A

ESTIMATED QUANTITIES

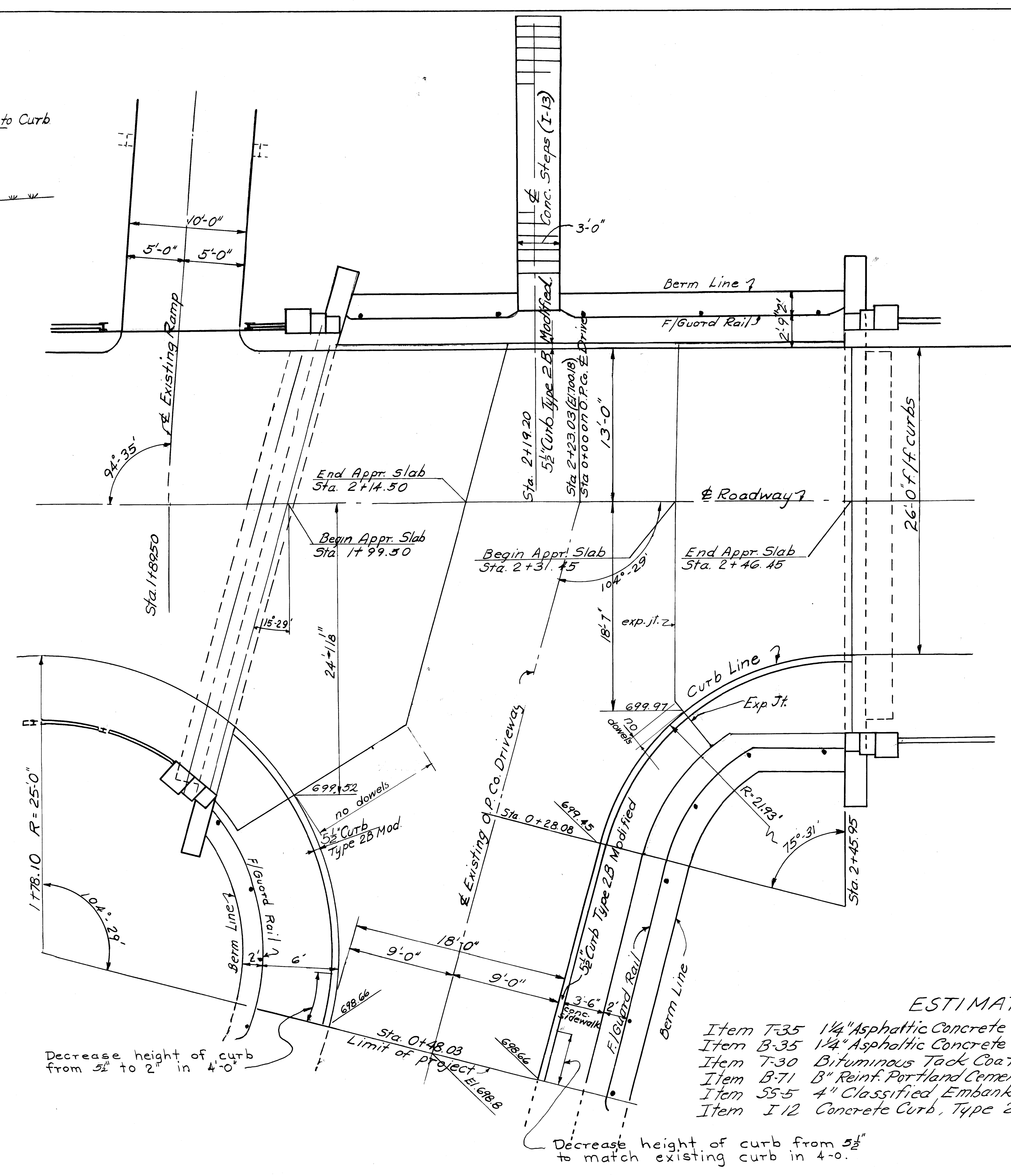
Item T-35	1 1/4" Asphaltic Concrete Surface Course	5.7 Cu. Yds
Item B-35	1 1/4" Asphaltic Concrete Leveling Course	5.7 Cu. Yds
Item T-30	Bituminous Tack Coat	17.6 Gals
Item B-71	8" Reinforced Portland Cement Base Course	176.9 Sq. Yds
Item 55-5	4" Classified Embankment Material	21.7 Cu. Yds
Item F-12	Concrete Curb, Type 2-B Modified	97.0 Lin. Ft.

Intersections #1A & #4A

MUSKINGUM COUNTY  
COUNTY ROAD No. 32



SECTION THROUGH CONCRETE STEPS  
LT. OF STA. 2+19.20



ESTIMATED QUANTITIES

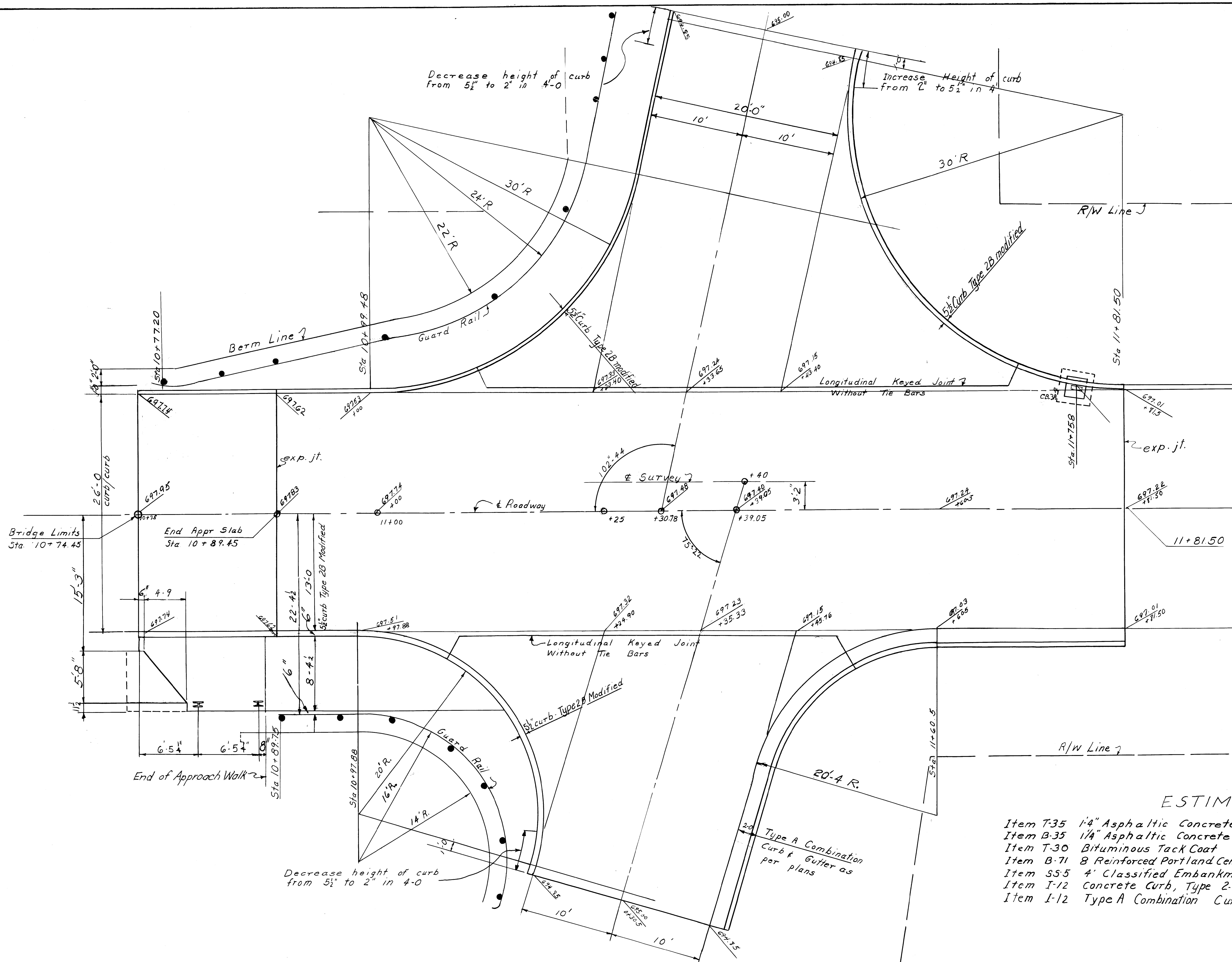
Item T-35	1 1/4" Asphaltic Concrete Surface Course	4.4 Cu.Yds
Item B-35	1 1/4" Asphaltic Concrete Leveling Course	4.4 Cu.Yds
Item T-30	Bituminous Tack Coat	13.1 Gals
Item B-71	8" Reinf. Portland Cement Concrete Base Course	135.59 Yds
Item 55-5	4" Classified Embankment Material	15.8 Cu.Yds
Item I-12	Concrete Curb, Type 2-B Modified	66.1 Lin. Ft

Decrease height of curb from 3 1/2" to 2" in 4'-0"

Decrease height of curb from 5 1/2" to match existing curb in 4'-0"

INTERSECTION #2A

Scale 3/16" = 1'

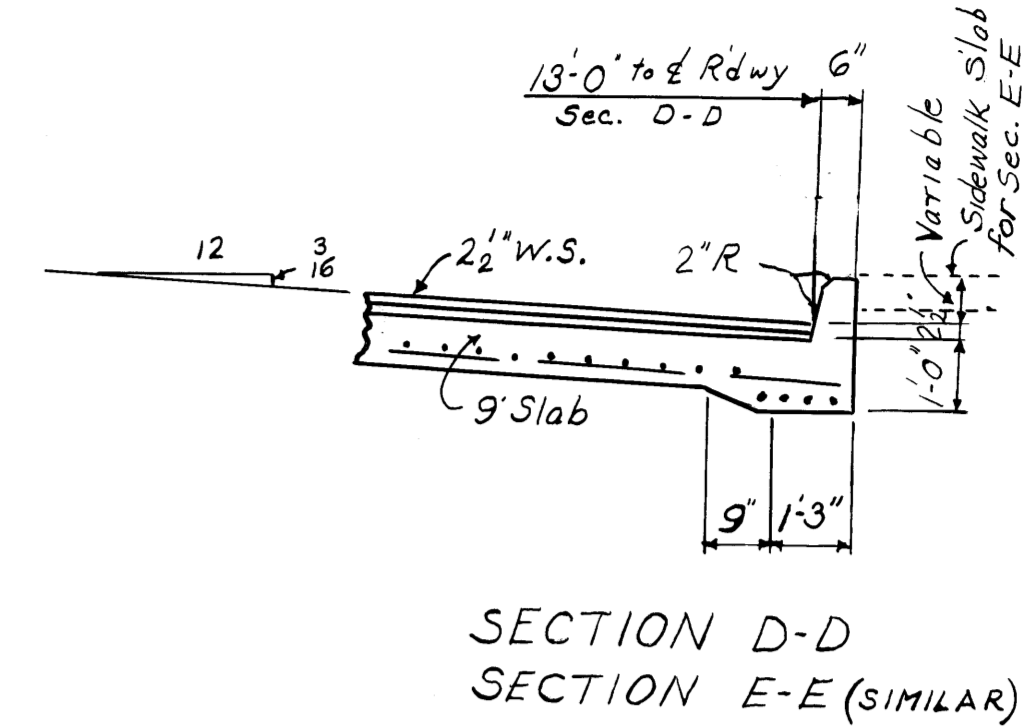
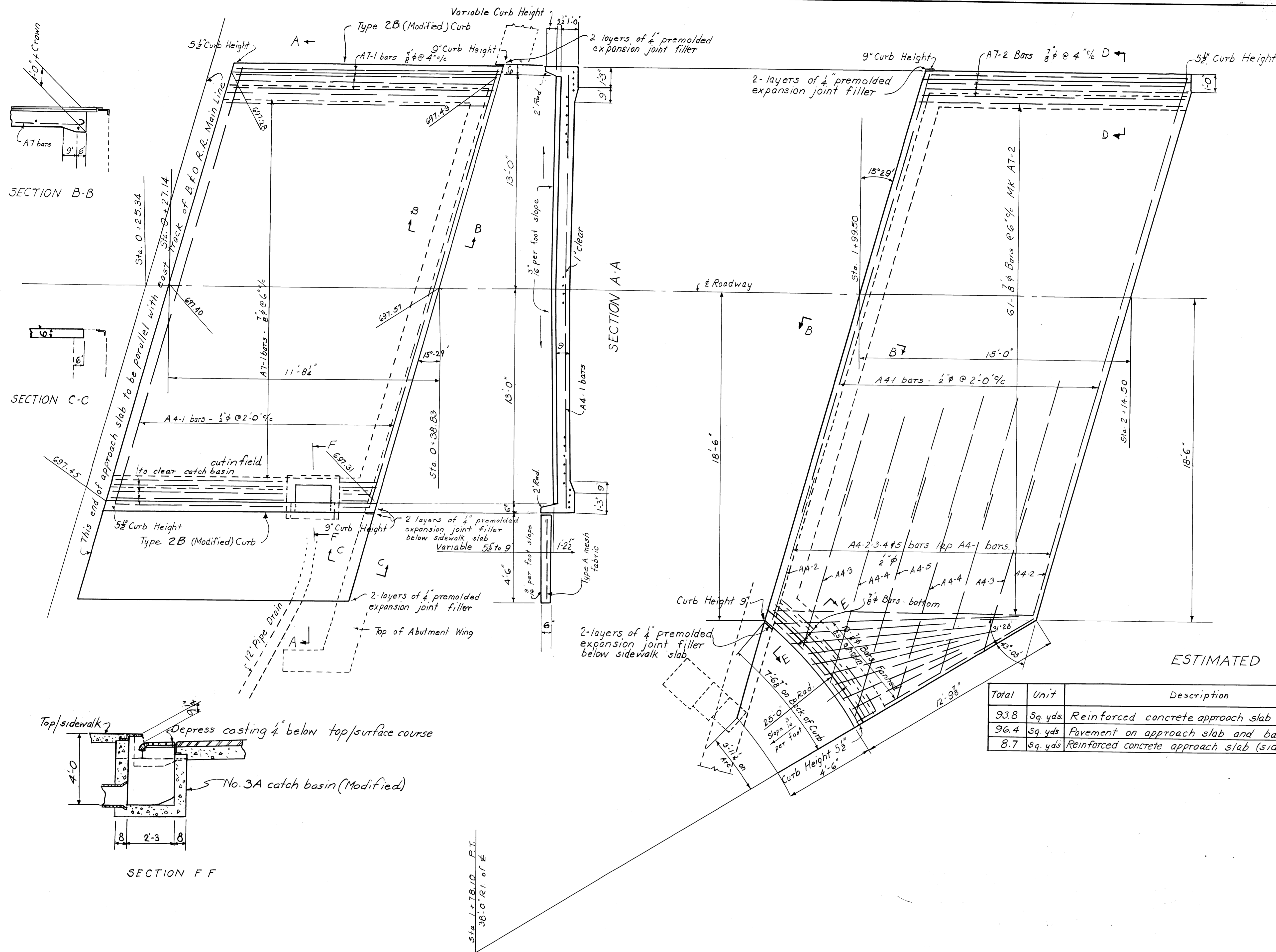


INTERSECTION 3A

ESTIMATED QUANTITIES

Item T-35	1/4" Asphaltic Concrete Surface Course	16.7	Cu. yds
Item B-35	1/4" Asphaltic Concrete Leveling Course	16.7	Cu. yds
Item T-30	Bituminous Tack Coat	50.1	Gals
Item B-71	8 Reinforced Portland Cement concrete Base Course	510.3	Sq. Yds
Item S55	4' Classified Embankment Material	58.8	Sq. Yds
Item I-12	Concrete Curb, Type 2-B Modified	168.5	Lin Ft
Item I-12	Type A Combination Curb & Gutter as per Plan	65.4	Lin. Ft.



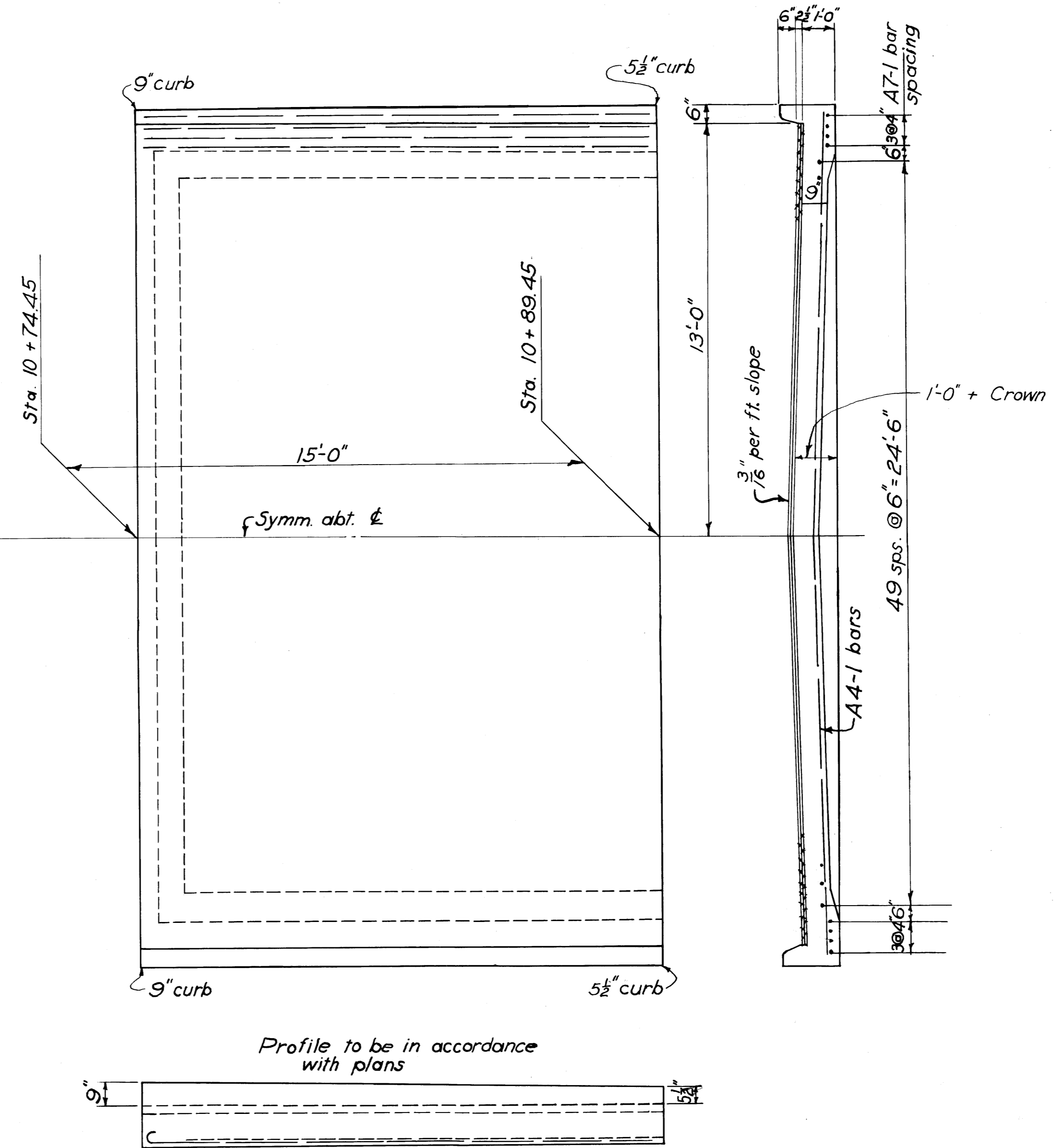
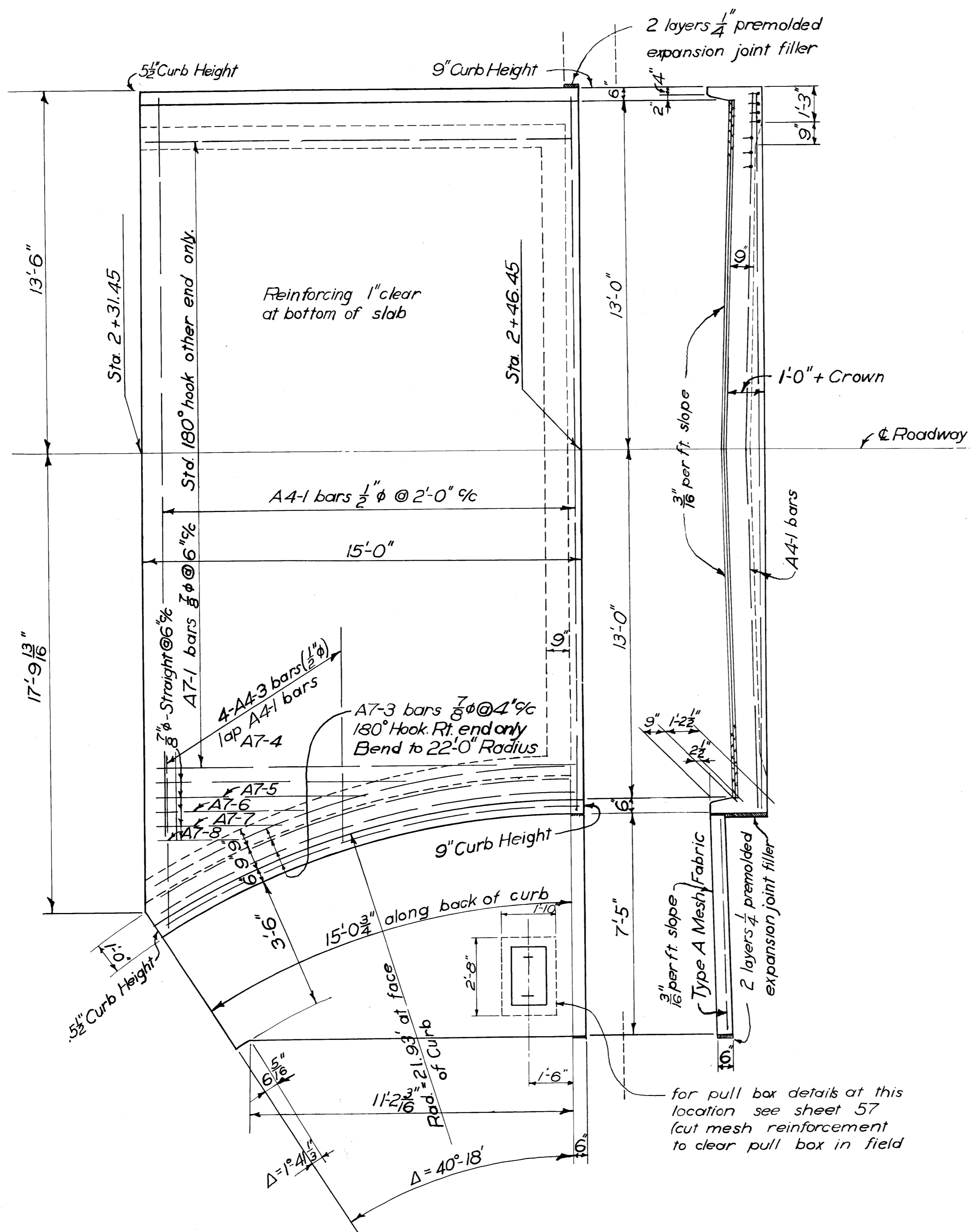


ESTIMATED QUANTITIES

Total	Unit	Description	Sta. 0+27.14 to Sta. 0+38.83	Sta. 1+99.50 to Sta. 2+14.50
93.8	Sq. yds.	Reinforced concrete approach slab (roadway)	35.1	58.7
96.4	Sq. yds.	Pavement on approach slab and backwall	35.8	60.6
8.7	Sq. yds.	Reinforced concrete approach slab (sidewalk)	5.8	2.9

Approach Slab for Intake Bridge

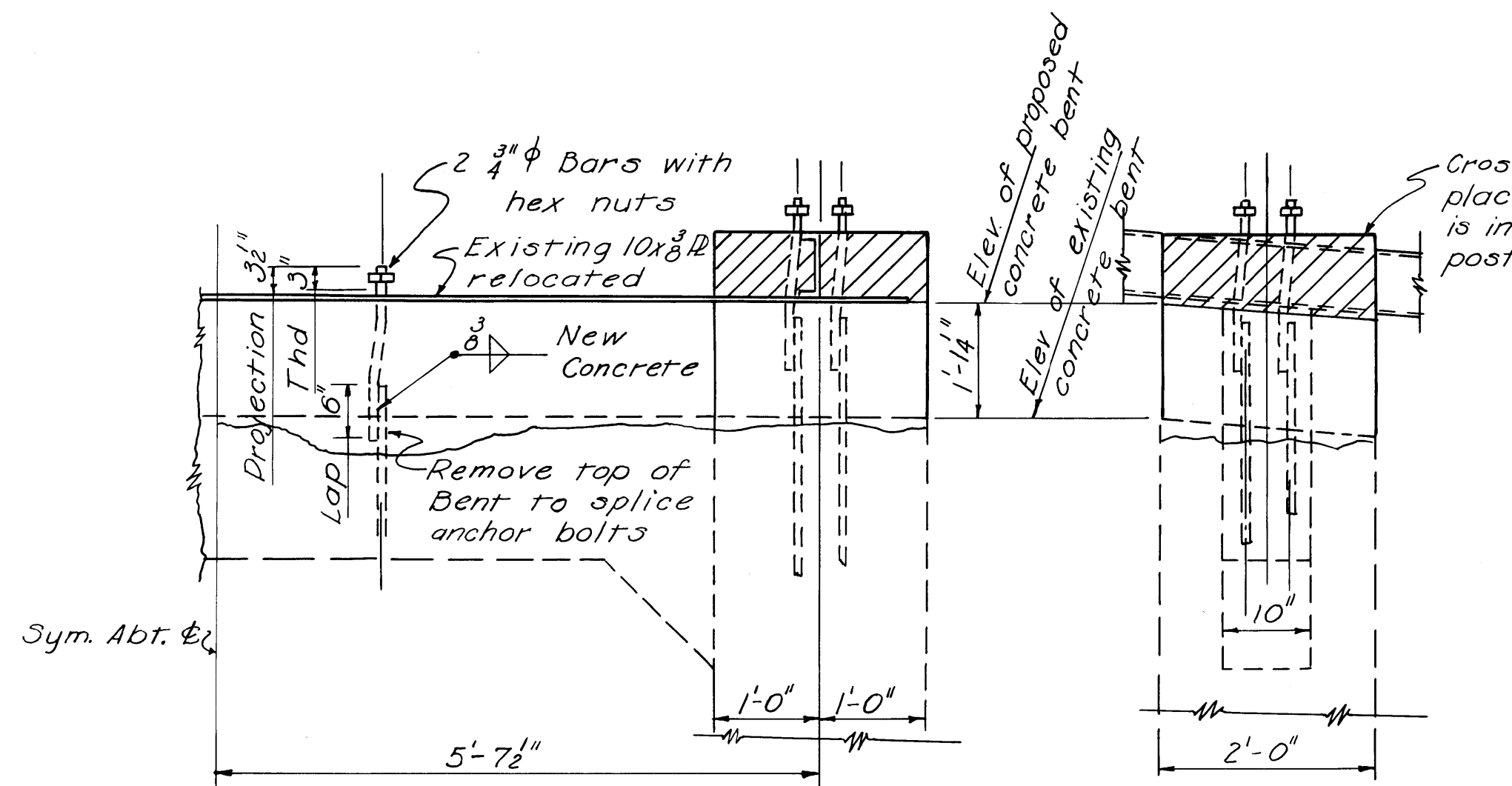
MUSKINGUM COUNTY  
COUNTY ROAD No. 32



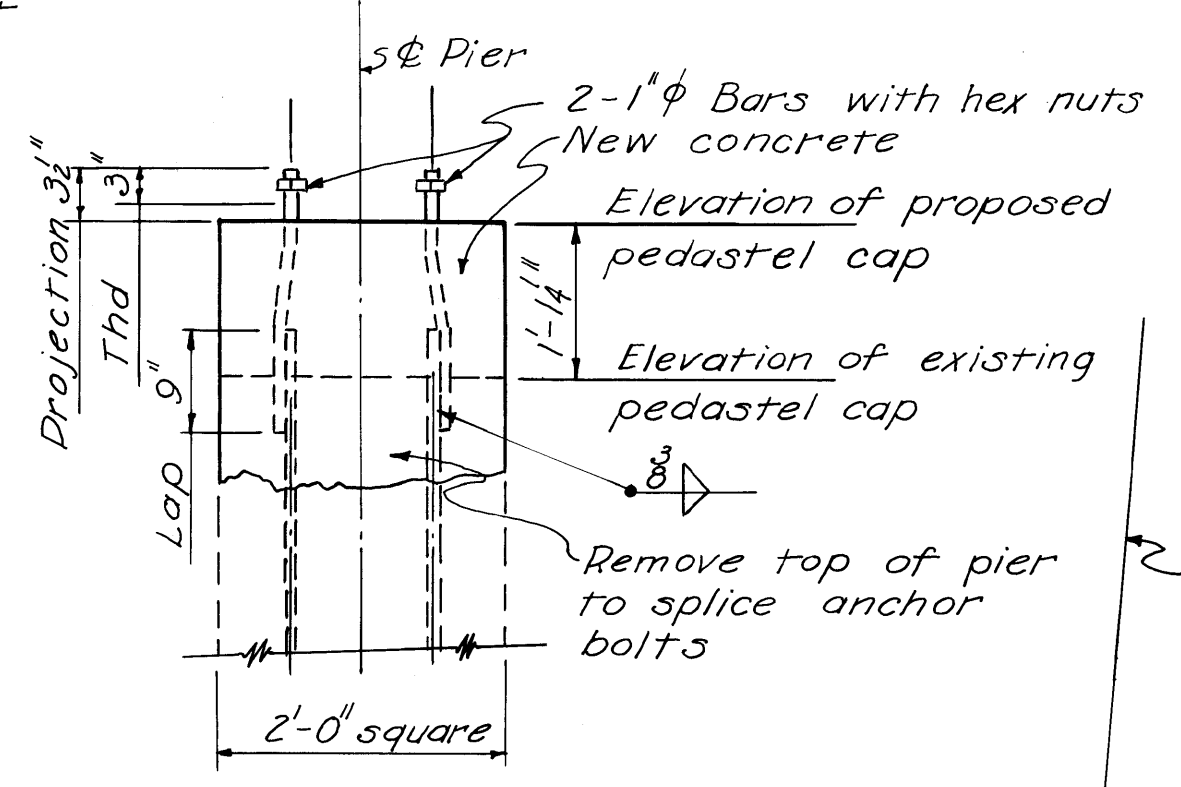
Total	Unit	Description	Sta. 2+31.45 to Sta. 2+46.45	Sta. 10+74.45 to Sta. 10+89.45
93.5	Sq. yds.	Reinforced concrete approach slab (roadway)	48.5	45.0
8.9	Sq. yds.	Reinforced concrete approach slab (sidewalk)	8.9	—
94.0	Sq. yds.	Pavement on approach slab and backwall	48.7	45.3

APPROACH SLABS Sta. 2+31.45 & Sta. 10+74.45

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

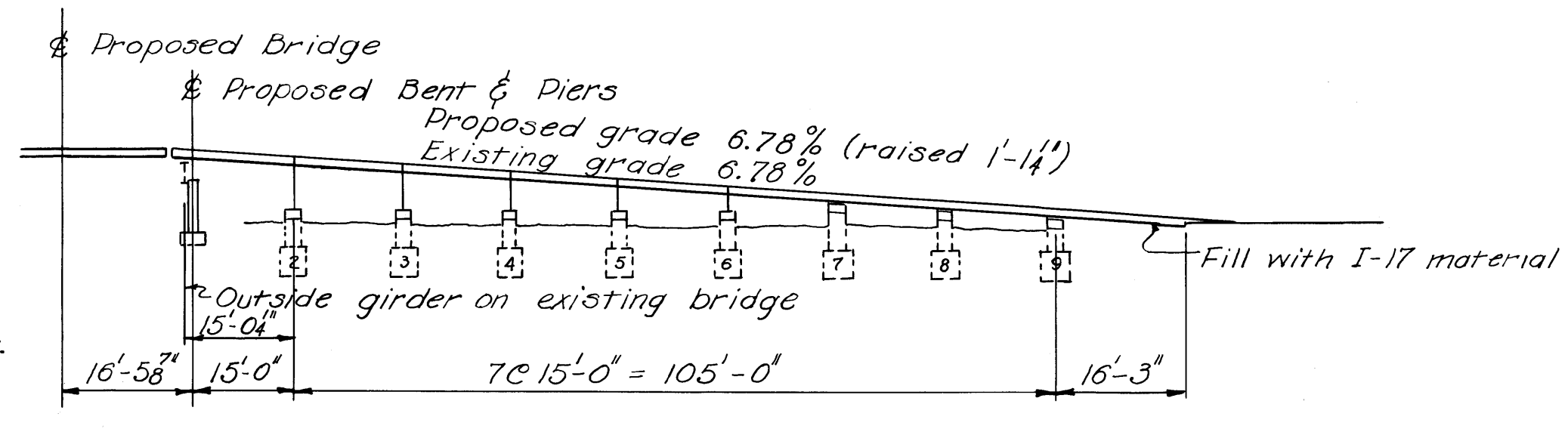


CONCRETE BENT EXTENSION  
FOR BENTS 7, 8, & 9

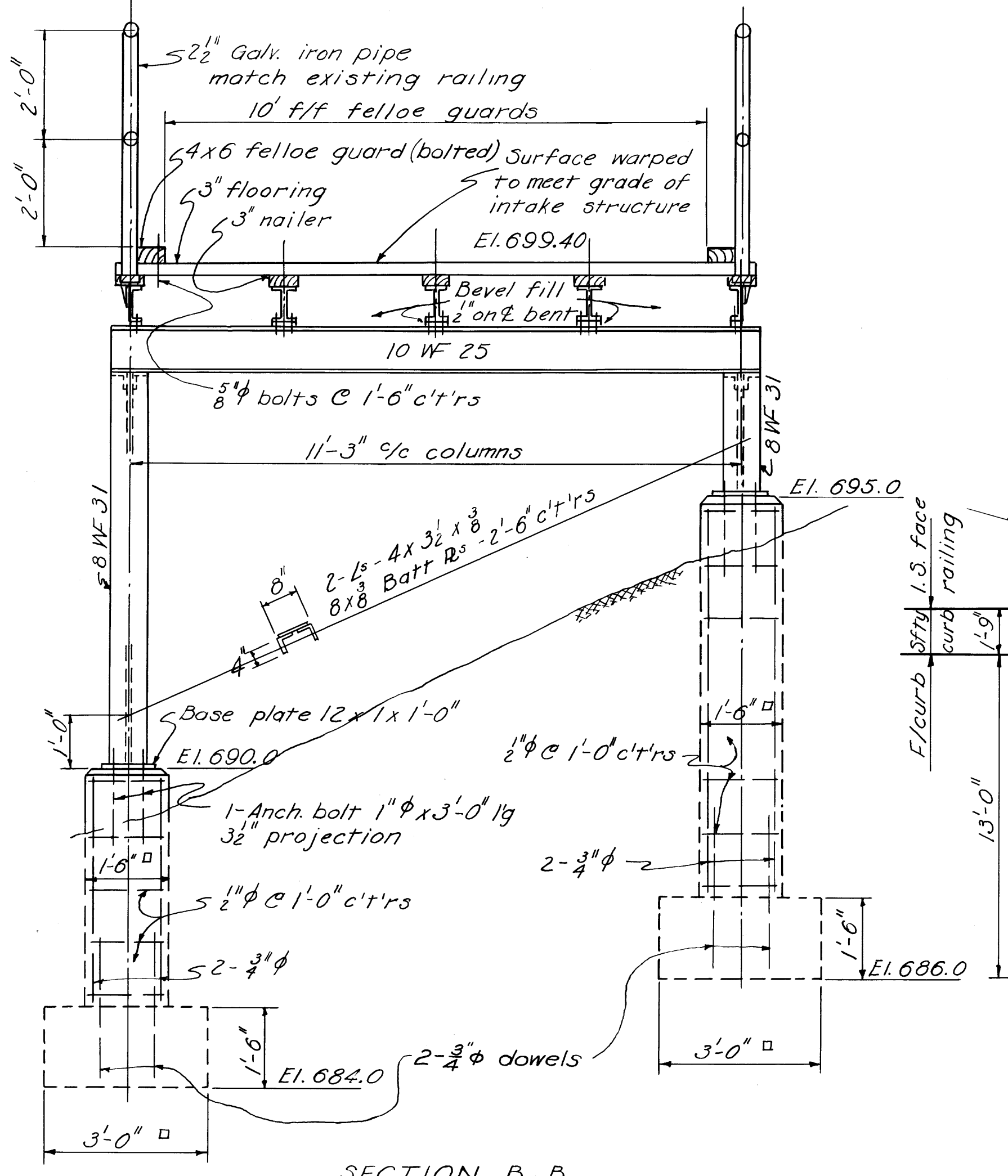


PEDESTAL EXTENSION  
FOR BENTS 2, 3, 4, 5, & 6

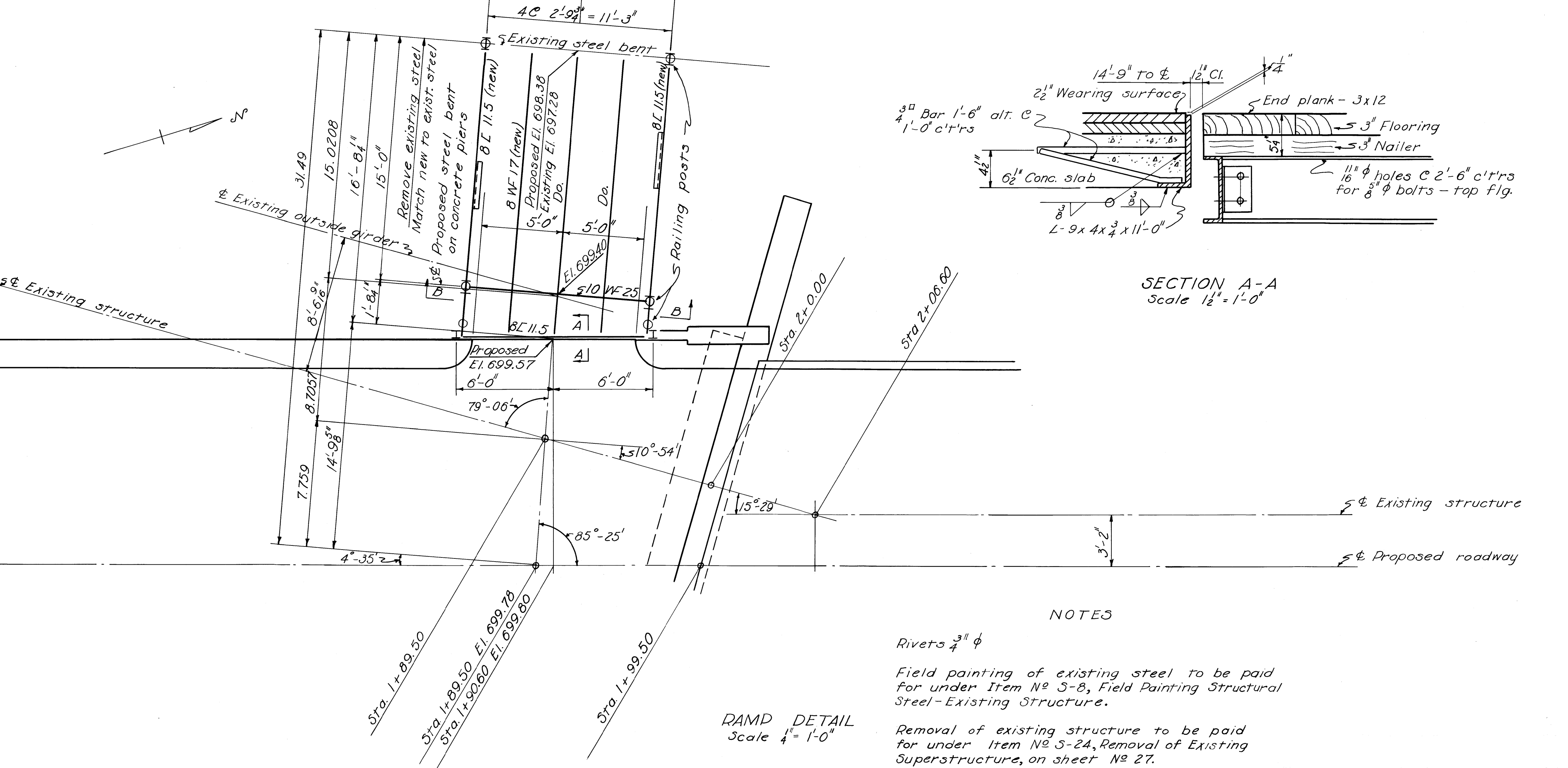
Raise existing ramp  $1'-1\frac{1}{4}''$  by extending concrete pedestals & concrete bents. Weld new anchor bolts to existing anchor bolts. Extend ramp to existing driveway grade by filling with I-17 material.



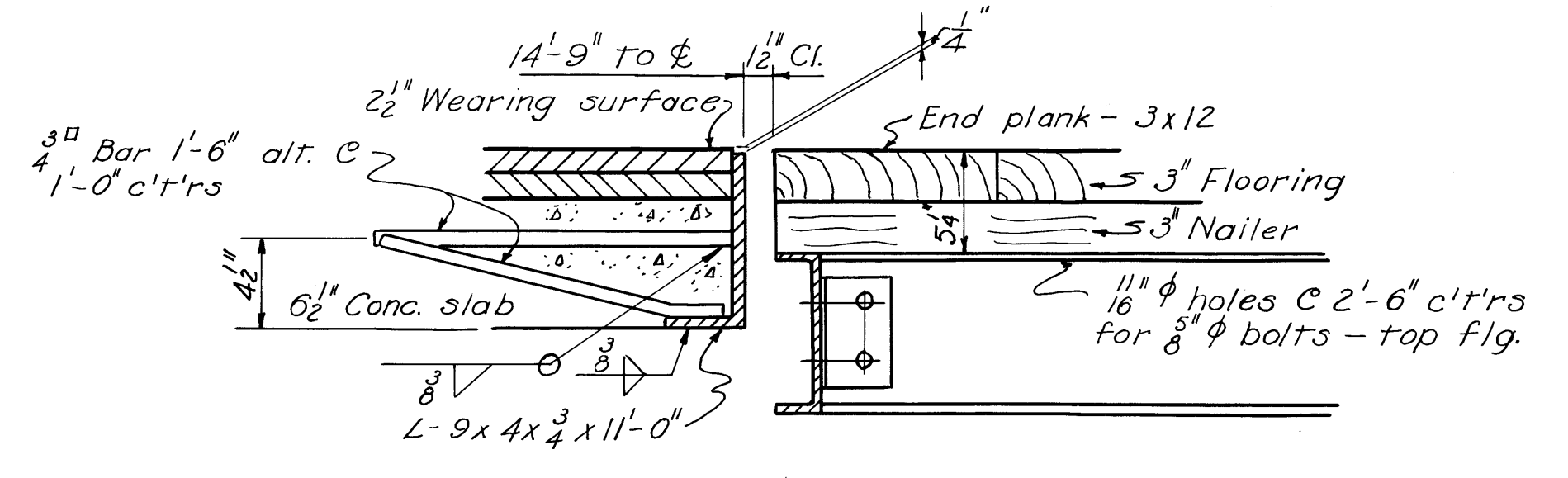
NORTH ELEVATION OF LOCK RAMP  
(dimensions are along  $\xi$  ramp)



SECTION B-B  
Scale  $\frac{1}{2}'' = 1'-0''$



RAMP DETAIL  
Scale  $\frac{1}{4}'' = 1'-0''$



SECTION A-A  
Scale  $\frac{1}{2}'' = 1'-0''$

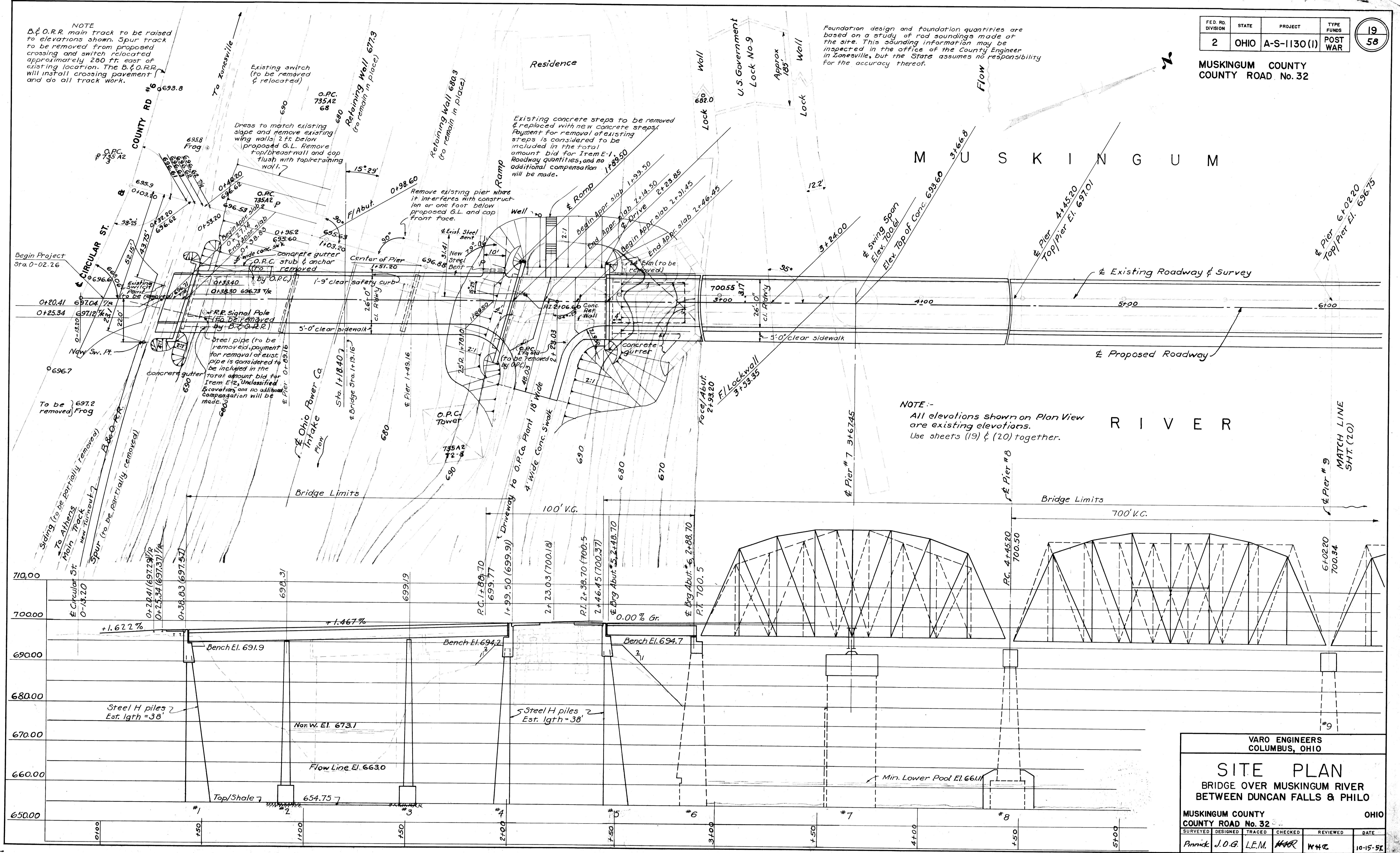
- NOTES
- Rivers  $\frac{3}{4}'' \phi$
  - Field painting of existing steel to be paid for under Item No 3-8, Field Painting Structural Steel-Existing Structure.
  - Removal of existing structure to be paid for under Item No 3-24, Removal of Existing Superstructure, on sheet No 27.
  - All material included with Roadway Quantities for payment.
  - Contractor to verify all dimensions.
  - Raising of existing Lock Ramp to be paid for under Item No 3-7, Structural Steel-Raising Existing Structure.

LOCK RAMP DETAILS

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

Foundation design and foundation quantities are based on a study of rod soundings made at the site. This sounding information may be inspected in the office of the County Engineer in Zanesville, but the State assumes no responsibility for the accuracy thereof.

NOTE  
D. & O.R.R. main track to be raised to elevations shown. Spur track to be removed from proposed crossing and switch relocated approximately 280 ft. east of existing location. The D. & O.R.R. will install crossing pavement and do all track work.



NOTE:-  
All elevations shown on Plan View are existing elevations.  
Use sheets (19) & (20) together.

VARO ENGINEERS  
COLUMBUS, OHIO

**SITE PLAN**  
BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHILO

MUSKINGUM COUNTY OHIO  
COUNTY ROAD No. 32

SURVEYED	DESIGNED	TRACED	CHECKED	REVIEWED	DATE
Pinnick	J.O.G.	L.E.M.	MMR	W.H.C.	10-15-58

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

**EXISTING BRIDGE OVER INTAKE & RIVER**  
**EXISTING SUPERSTRUCTURE (to be removed)**  
 consisting of: 4 Truss spans / 54'-6" brgs  
 One swing span 150'-6" brgs  
 3 plate girder spans = 53'-3" brgs  
 One steel beam span 28'-1" brgs  
 Condition - good

**EXISTING SUBSTRUCTURE**  
 Condition - good  
 2 Main conc. abutts } to remain  
 4 Stone piers } in place  
 One swing span pier }  
 Misc. Abutts & Piers for approach spans (to be removed)

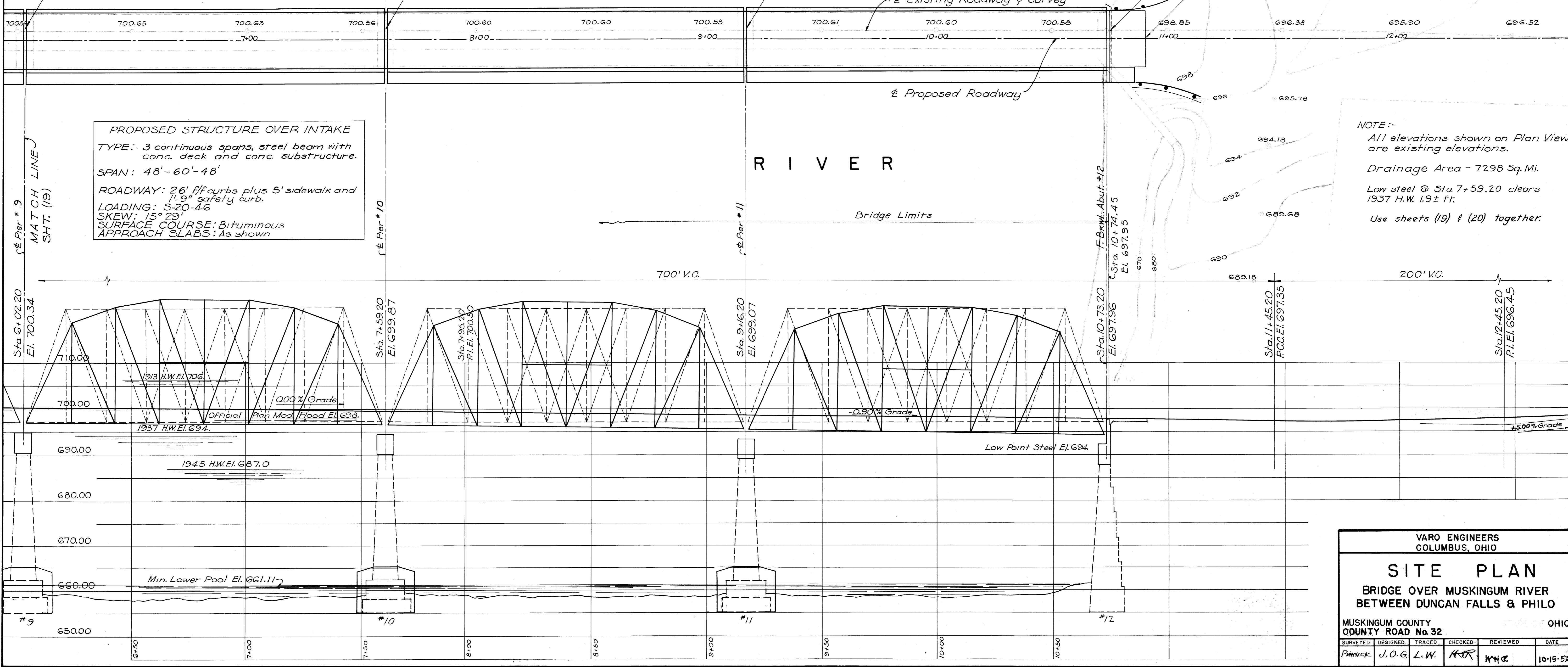
**ROADWAY** - 15'-8" cl. with 5' sidewalk on E. side  
**FLOOR** - Bituminous S.C. over 3" wood block & 3" plank  
**LOADING** - 7-ton load limit (posted)

**PROPOSED STRUCTURE OVER RIVER**  
**TYPE**: Steel truss spans with concrete and open steel grating deck and modified existing stone and concrete substructure.  
**SPAN**: 4 trusses @ 154'-6" brgs.  
 One swing span @ 151'-0" brgs.  
 One steel beam approach span 40' brgs.  
**ROADWAY**: 26' f/f Curbs (28'-0" f/f Guard Rails)  
**SIDEWALK**: 5' clear  
**LOADING**: S-20-46  
**SKIEW**: none  
**SURFACE COURSE**: Bituminous  
**APPROACH SLABS**: As shown

M U S K I N G U M

**PROPOSED STRUCTURE OVER INTAKE**  
**TYPE**: 3 continuous spans, steel beam with conc. deck and conc. substructure.  
**SPAN**: 48'-60'-48'  
**ROADWAY**: 26' f/f curbs plus 5' sidewalk and 1/2" safety curb.  
**LOADING**: S-20-46  
**SKIEW**: 15° 29'  
**SURFACE COURSE**: Bituminous  
**APPROACH SLABS**: As shown

**NOTE:-**  
 All elevations shown on Plan View are existing elevations.  
 Drainage Area - 7298 Sq. Mi.  
 Low steel @ Sta. 7+59.20 clears 1937 H.W. 19± ft.  
 Use sheets (19) & (20) together.

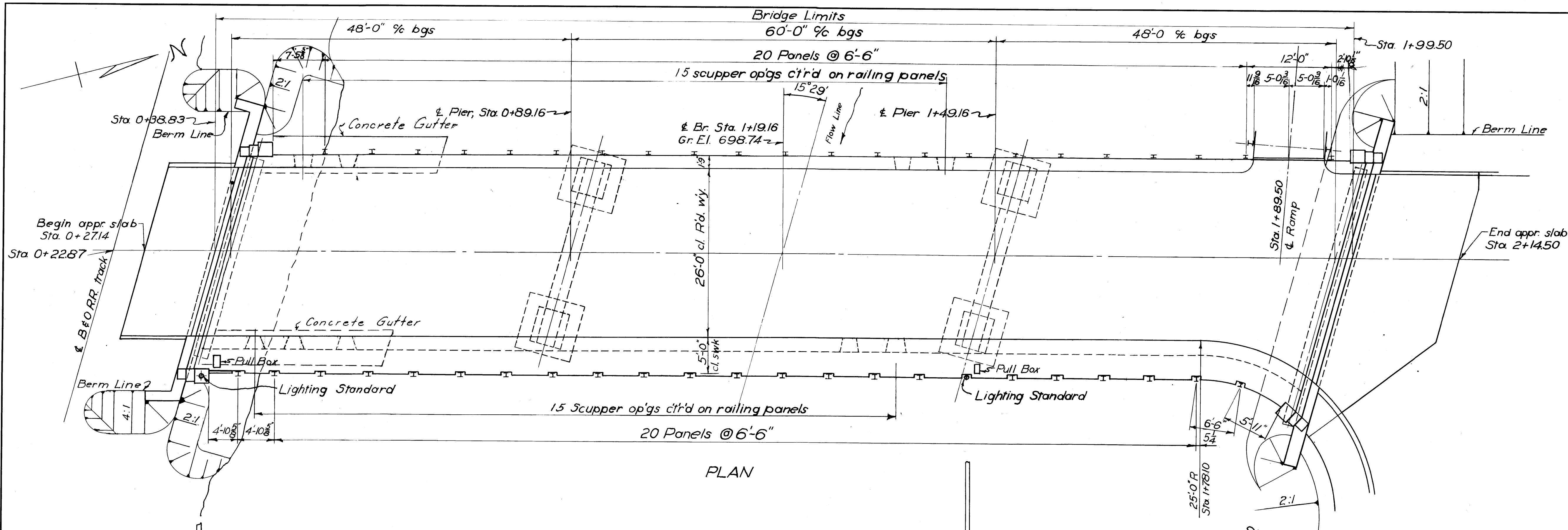


VARO ENGINEERS  
COLUMBUS, OHIO

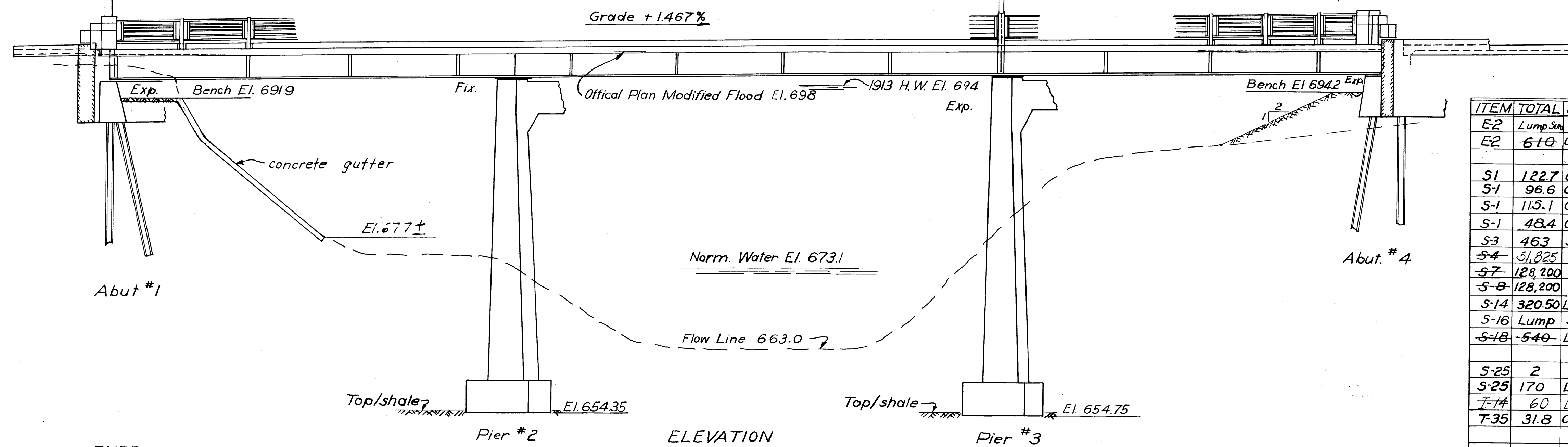
**SITE PLAN**  
 BRIDGE OVER MUSKINGUM RIVER  
 BETWEEN DUNCAN FALLS & PHILO

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

SURVEYED	DESIGNED	TRACED	CHECKED	REVIEWED	DATE
P. MURPHY	J. O. G.	L. W.	H. R.	W. H. C.	10-15-54



PLAN



ELEVATION

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	ABUT #1	PIER #2	PIER #3	ABUT #4	SUPERSTR.	GENERAL	As Built
E-2	Lump Sum	L.S.	Cofferdams, Cribbs & Sheeting	112	235	222	41		Lump Sum	912.2, 732
E-2	61.0	Cu yds	Unclassified Excavation (including shale)							
S-1	122.7	Cu yds	Class C conc. superstr.					122.7		
S-4	96.6	Cu yds	Class C conc. abutments	44.3			52.3			
S-1	113.1	Cu yds	Class C conc. pier caps & cols		51.4	52.7			11	
S-1	48.4	Cu yds	Class C conc. pier footings		24.2	24.2				
S-3	463	Sq Yds	Type C Waterproofing					463		
S-4	51,825	Lbs	Reinf. steel	3746	5128	5096	4011	33512	332	53,560
S-7	128,200	Lbs	Structural Steel					128,200		128,187
S-8	128,200	Lbs	Field painting struct steel					128,200		128,157
S-14	320.50	Lin. Ft.	Railing (steel with conc. end posts)					320.50		
S-16	Lump Sum		First Test pile						Lump Sum	
S-18	540	Lin. Ft.	Steel Piling (12 BP 53)	270			270			440.35
S-25	2	ea	Lighting Standards with Brackets						2	
S-25	170	Lin. Ft.	2" conduit						170	
T-4	60	Lin. Ft.	Concrete Gutter						60	204.9
T-35	31.8	Cu yds	Asphaltic concrete surface course Type A or C (70-80)					31.8		

GENERAL NOTES

EXCAVATION quantity includes the removal of fill material between the top of earth bench and bottom of abutment cross beam.  
 PILING shall be driven to shale to a minimum bearing capacity of 33 tons at Abutment #1 and 36 tons at Abutment #4.  
 PIER FOOTINGS shall extend a minimum of 3' into solid shale.  
 WELDING shall be Class "A" except as shown. Any welds shown as field welds may be made in the shop at the option of the contractor.  
 LIGHTING—Concrete for pull boxes is included with Item S-1 for payment. See sheet 57 for pullbox and lighting details.

GENERAL NOTES

SURFACE FINISH OF CONCRETE: Railing end posts, curb faces, sidewalk fascia and fascia of deck shall receive a rubbed surface finish. All other exposed surfaces shall be governed by the provision of Item S-1.  
 BITUMINOUS SURFACE COURSE shall be 2 1/2" Asphaltic Concrete. Item T-35, laid in two 1 1/4" courses.  
 REMOVAL OF EXISTING STRUCTURE— See sheet # 27  
 CONCRETE GUTTERS shall be 6 ft wide and 6 in thick and shall be depressed 6 in at the center. They shall extend from the face of abutment down to elev. 677.0 and shall be centered under edge of deck. Reinforcing bars 2 @ 1'-6" ctrs. both directions included in price per lin. ft.

EXCAVATION ADJACENT TO RAILROAD: Before doing any excavation work adjacent to railroad track or on railroad R/W the contractor shall submit to the State for State and railroad approval, plans for cofferdams to support track. No such excavation work shall be started until such approval is received. (See also proposal requirements.)  
 Payment for new caps for existing pier and abutment adjacent to Intake Canal will be made at the unit price bid for Item S-1 "Pier Caps and Cols."

VARO ENGINEERS  
COLUMBUS, OHIO

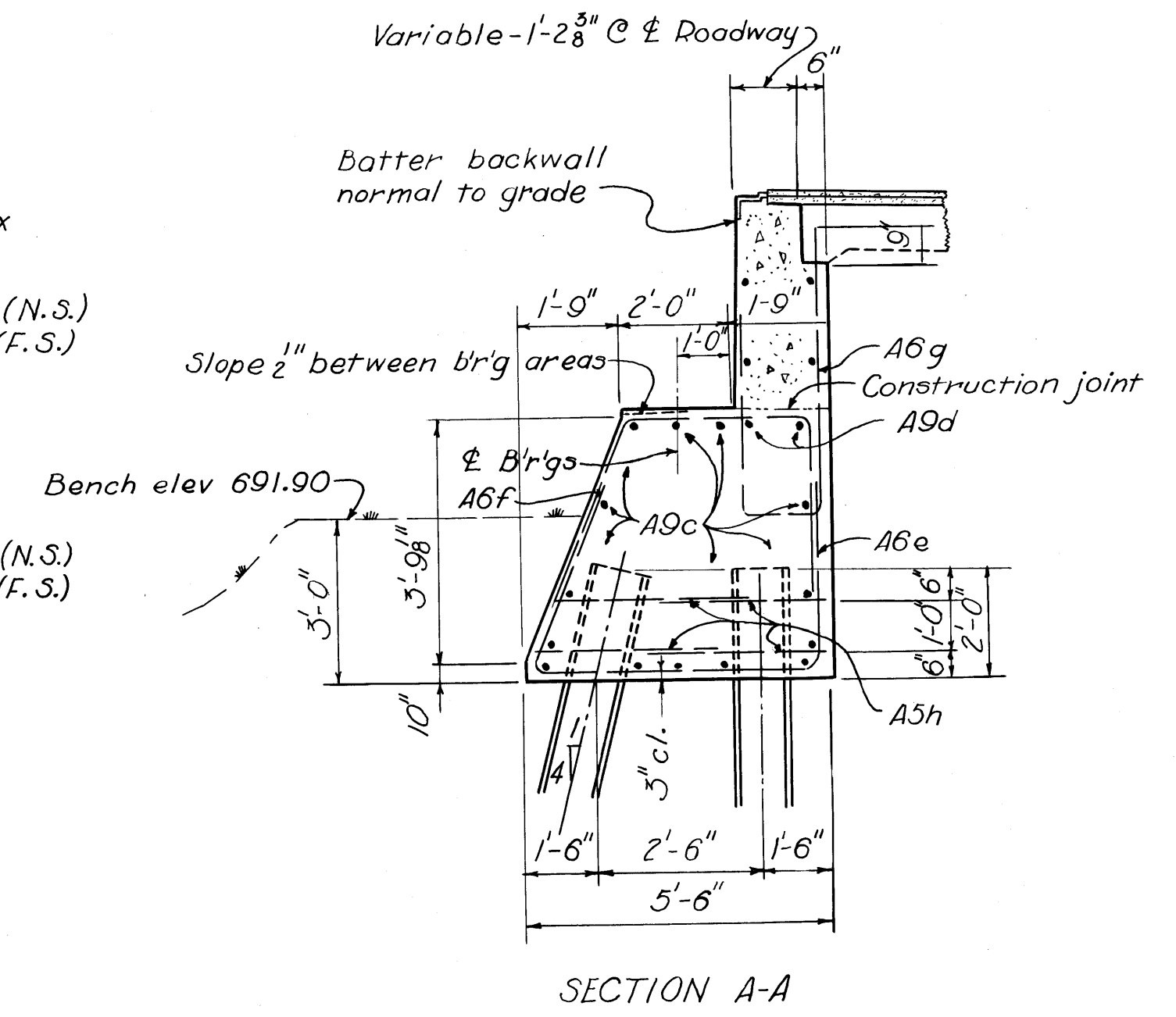
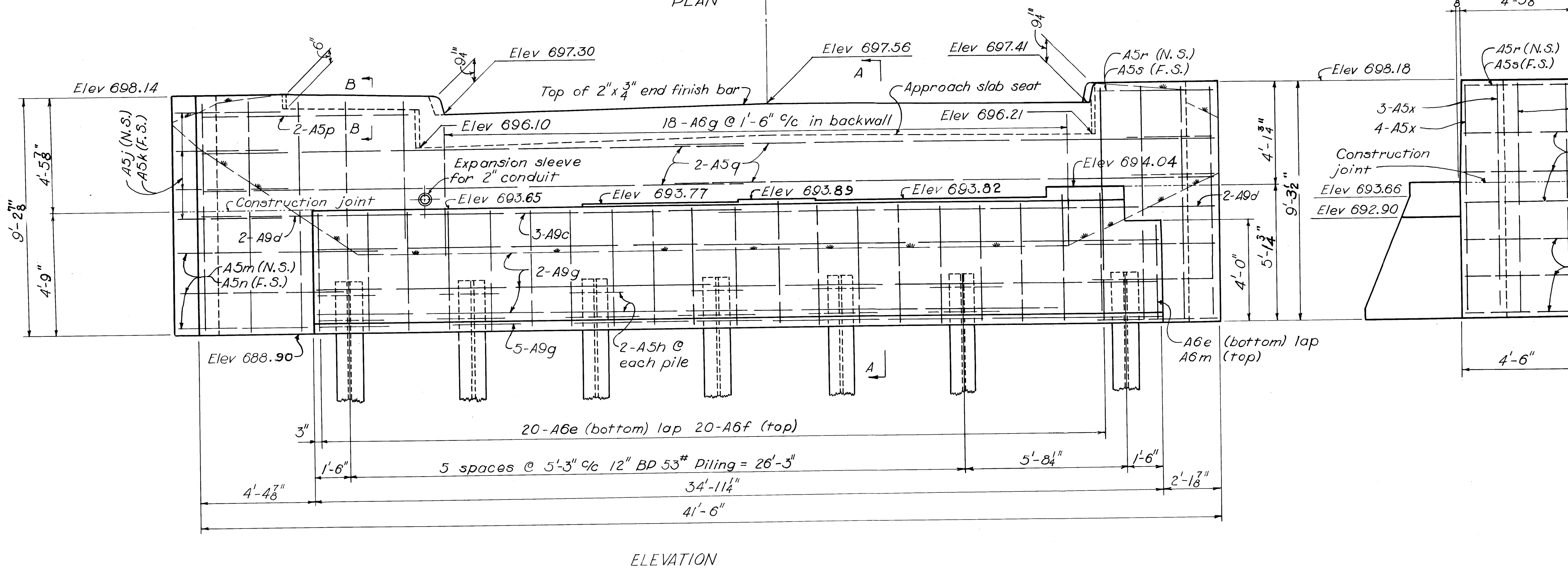
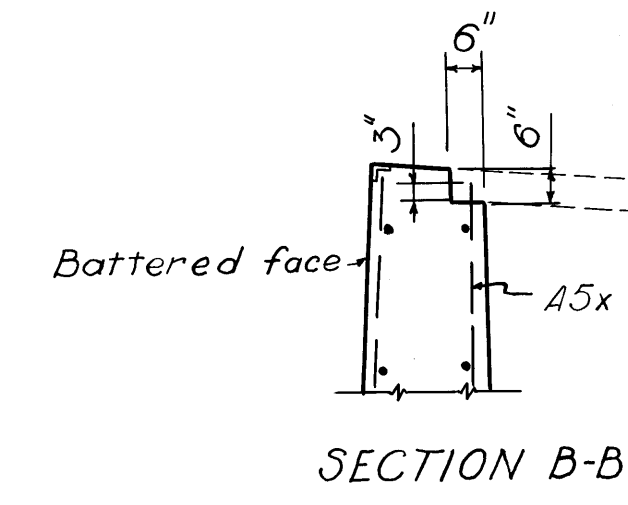
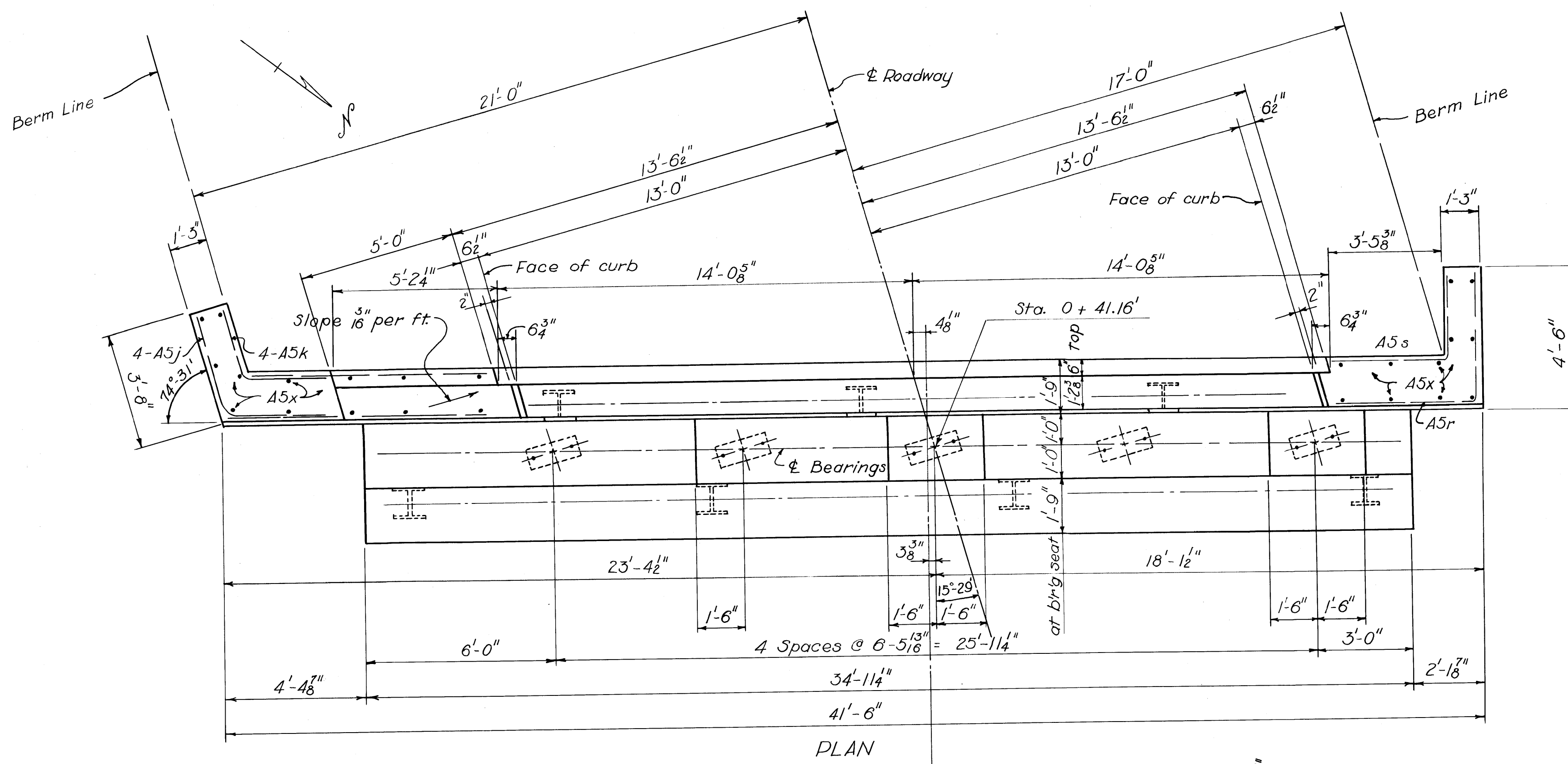
INTAKE BRIDGE, GENERAL PLAN, ELEVATION NOTES, AND ESTIMATED QUANTITIES  
BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHILO

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
HJR	HJR	HJR	J.O.G.	W.H.C.	10-15-52

OHIO

MUSKINGUM COUNTY  
COUNTY ROAD No. 32



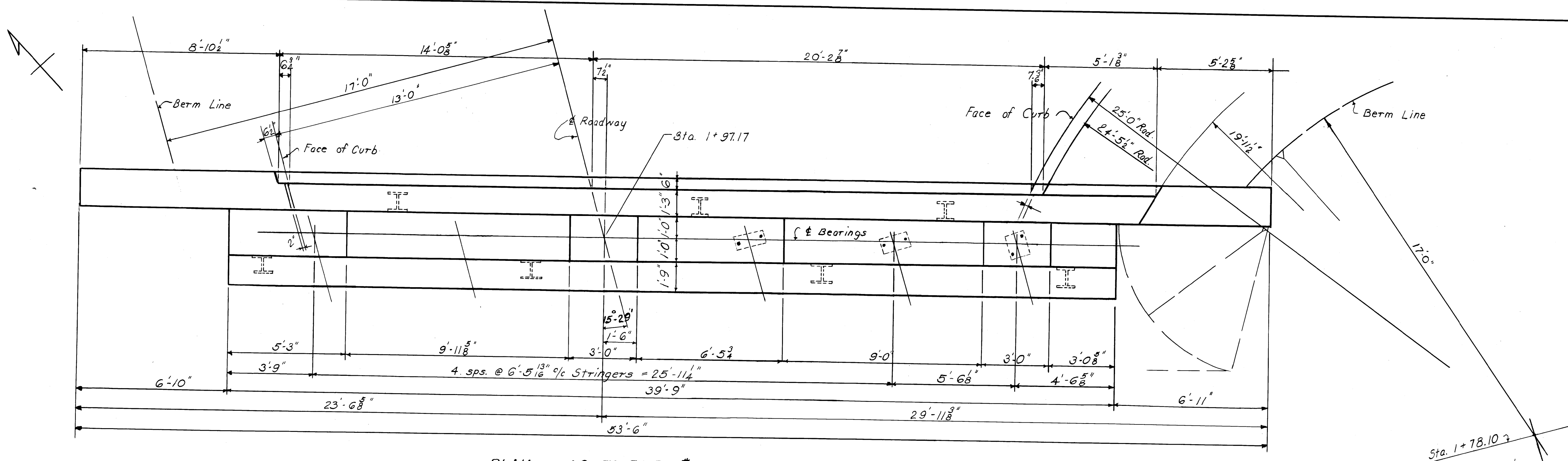
Notes: Reinforcing steel shall be 2" clear to face of concrete except as noted.  
Concrete above bridge seat construction joint shall not be placed until after steelwork has been erected. Steel end finish shall be used as a template for top of backwall.

VARO ENGINEERS COLUMBUS, OHIO				
ABUTMENT No. 1 BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO				
MUSKINGUM COUNTY COUNTY ROAD No. 32				
OHIO				
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
D.W.P.	D.W.P.	LEM	H.R.	W.H.C.
				DATE
				10-15-51

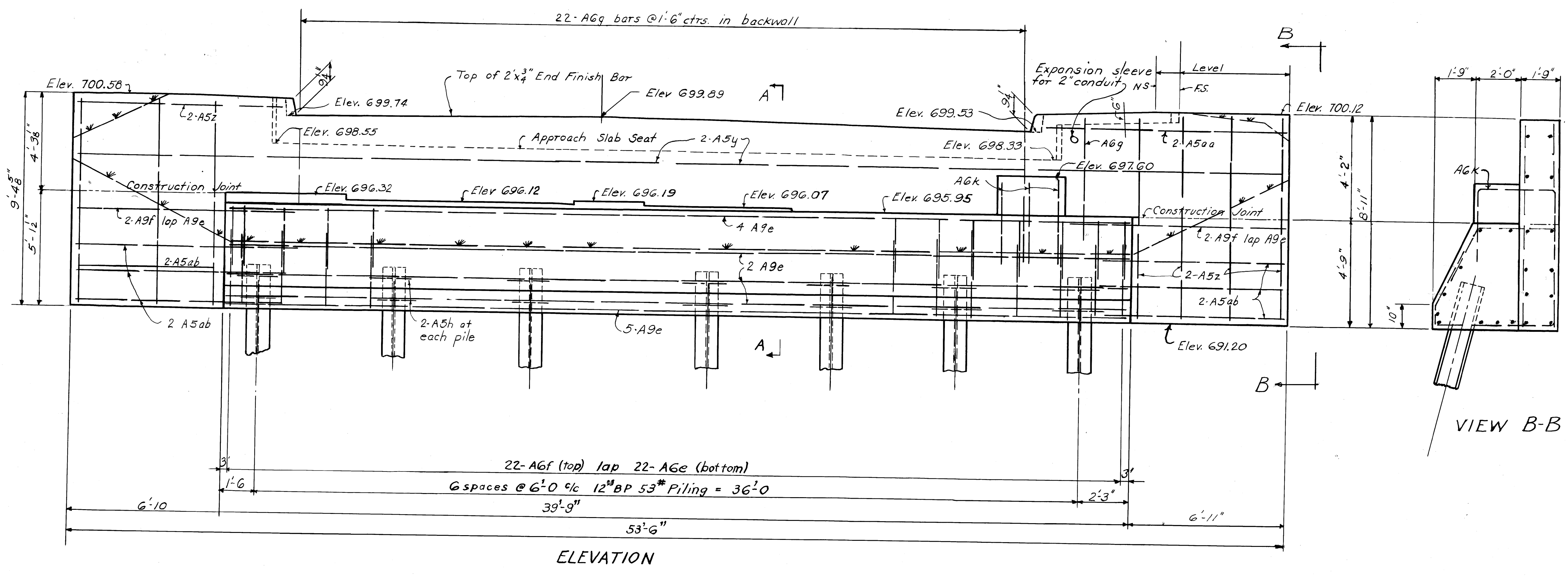
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	A-S-1130(1)	POST WAR

23  
58

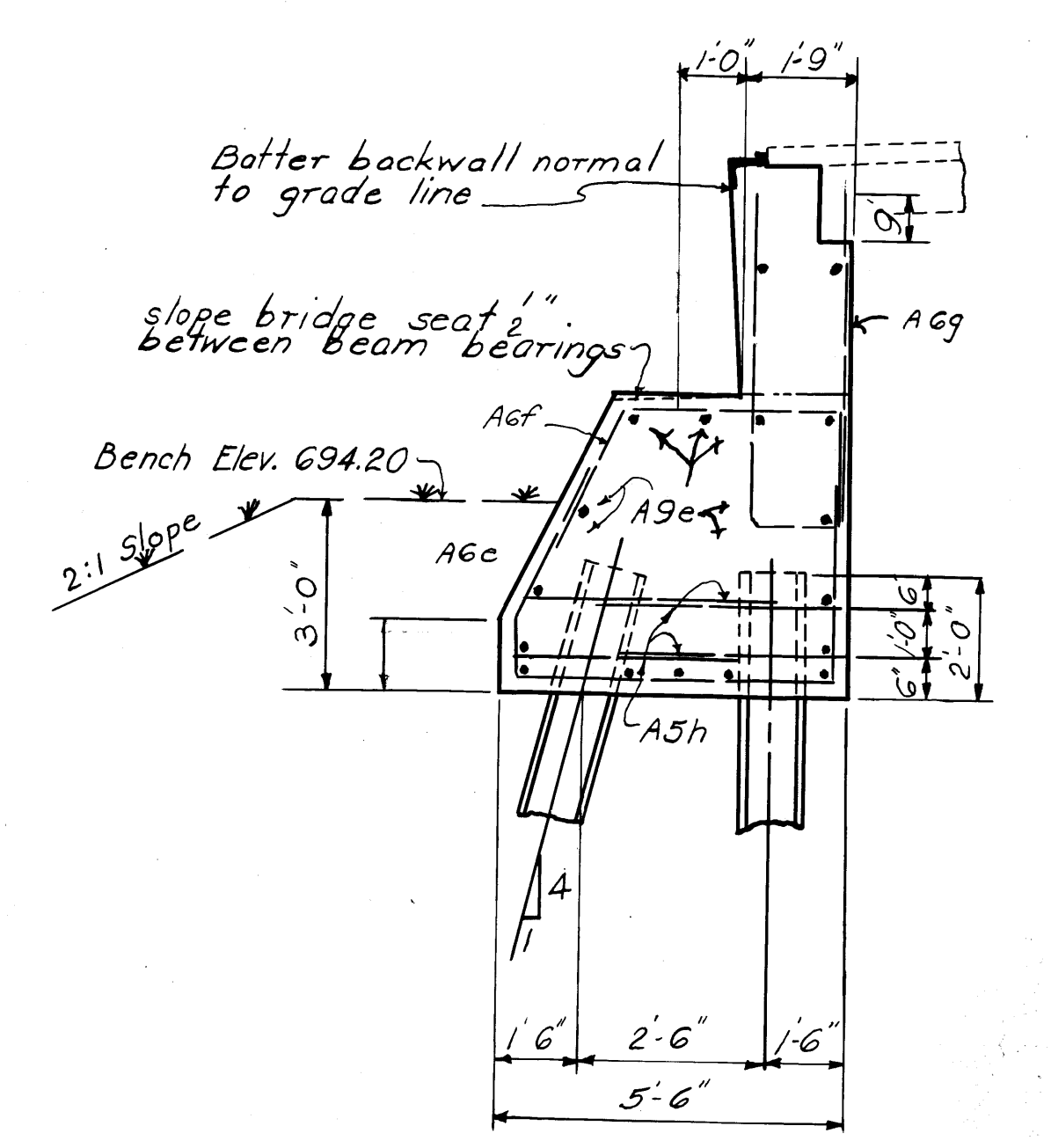
MUSKINGUM COUNTY  
COUNTY ROAD No. 32



PLAN of ABUTMENT #4



ELEVATION



SECTION A-A  
All reinforcing shall be 2" clear to face of concrete.

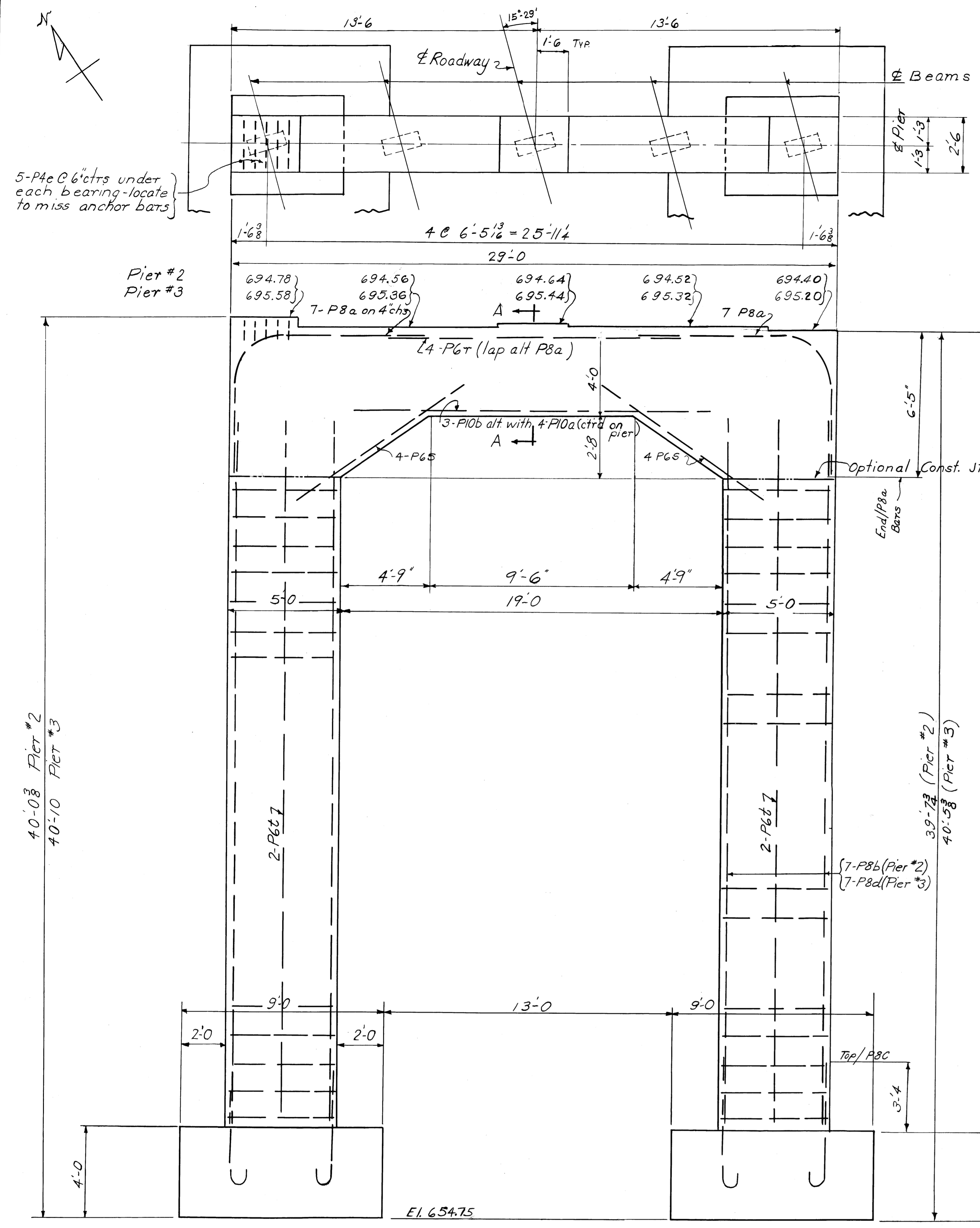
NOTES

Concrete above bridge seat construction joint shall not be placed until after steelwork has been erected. Steel end finish shall be used as a template for top of backwall.

All earth fill around abutment shall be made full height of earth bench. Excavation shall then be made for abutment cap, after which piling shall be driven. If bottom forms for abutment cap are used, they shall be left in place.

VARO ENGINEERS COLUMBUS, OHIO				
ABUTMENT No. 4				
BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO				
MUSKINGUM COUNTY COUNTY ROAD No. 32				OHIO
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
Stur	Stur	J.R.R.	H.R.	W.H.C.
				DATE
				10-15-52



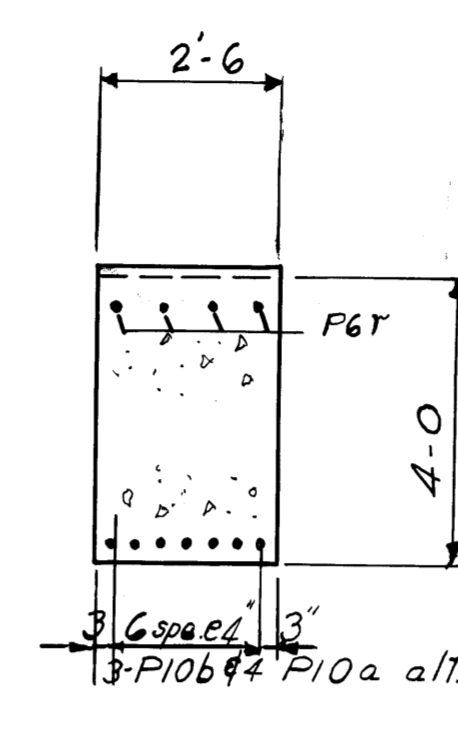


5-#4 @ 6" cts under each bearing-locate to miss anchor bars

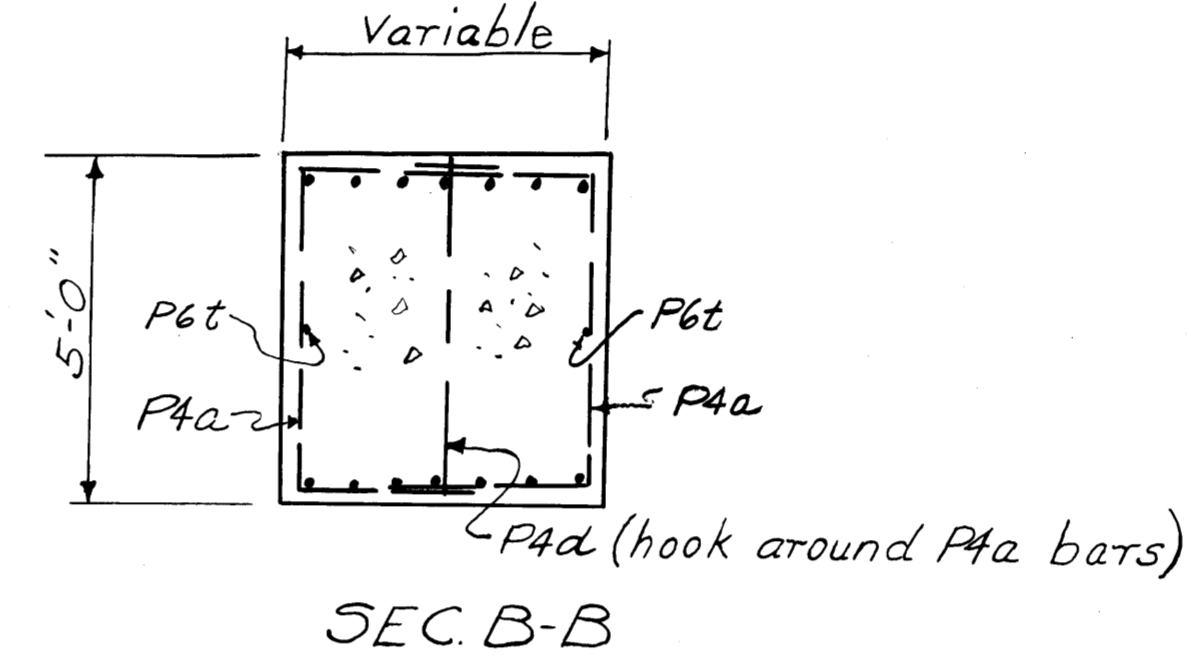
40'-08" Pier #2  
40'-10" Pier #3

4'-0"

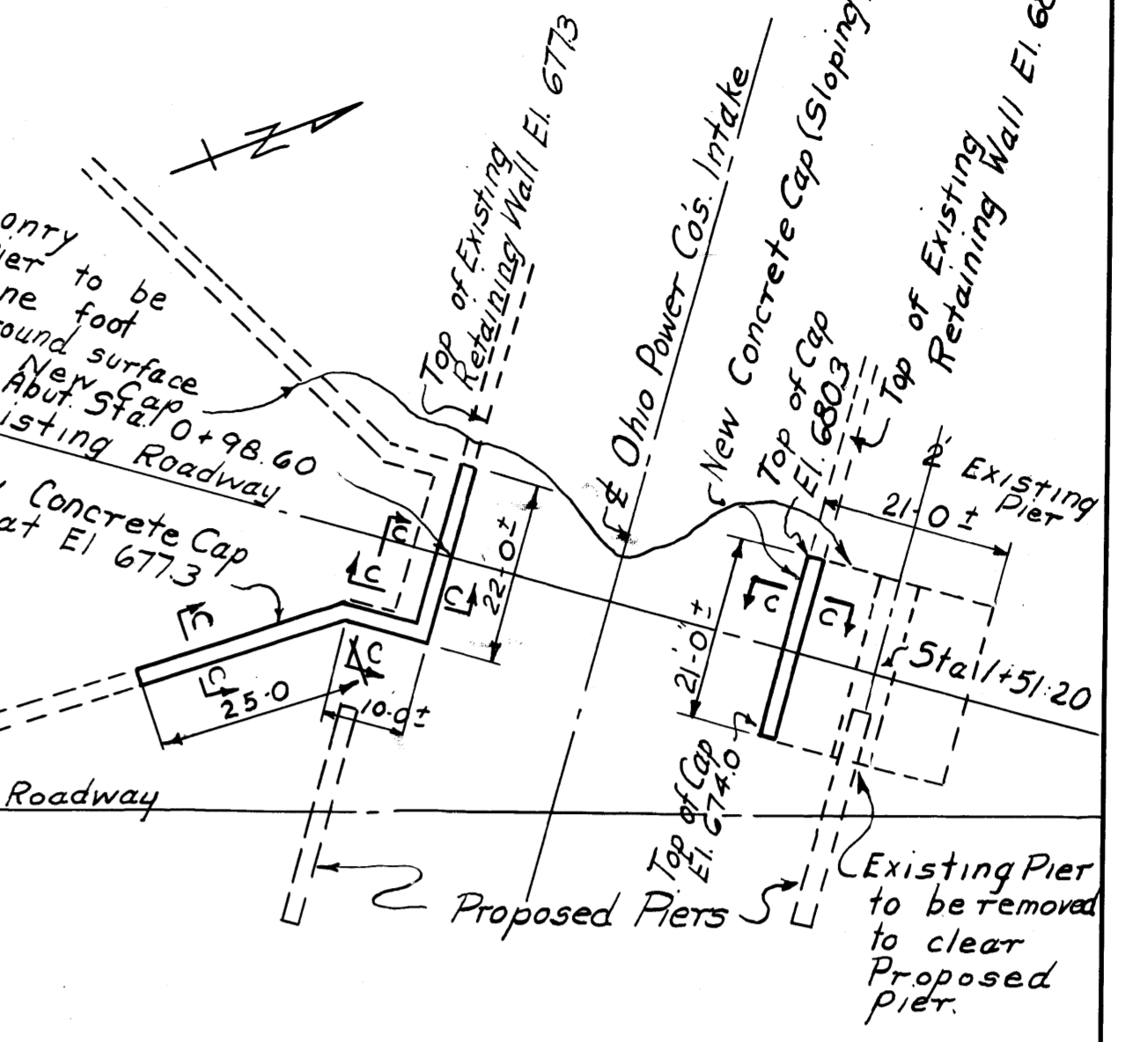
El. 654.75



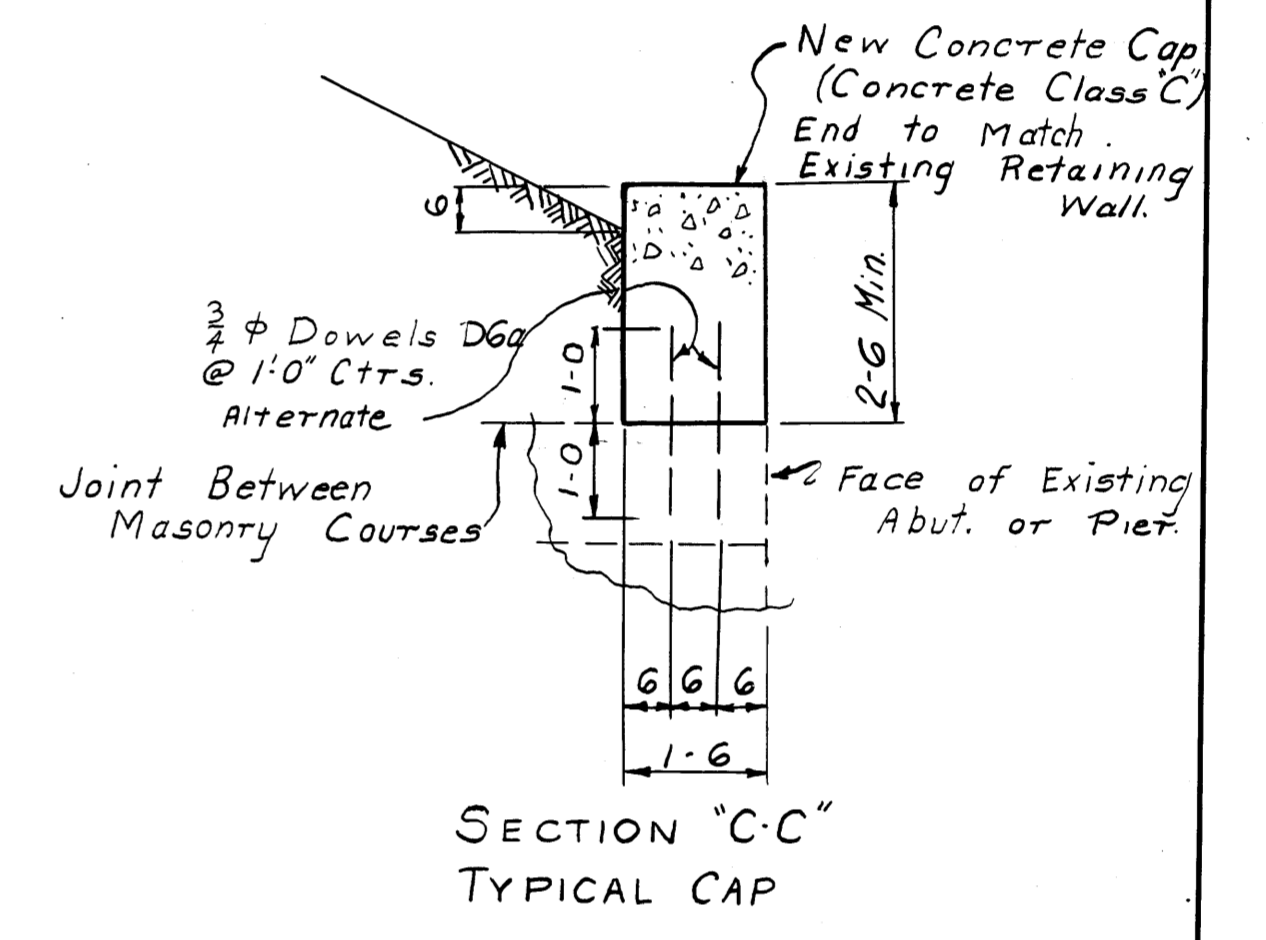
SEC. A-A



SEC. B-B

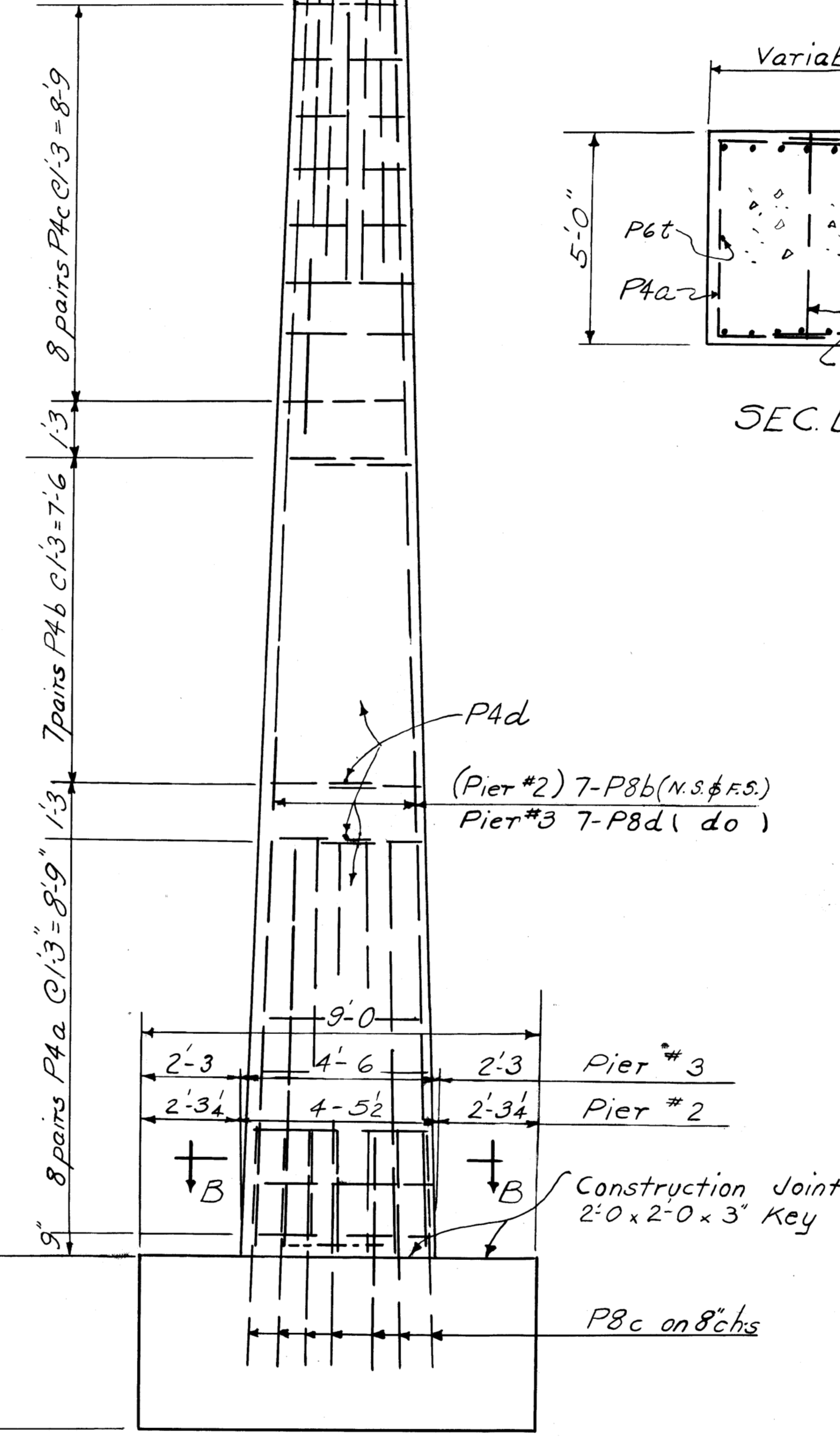


CAPPING OF EXISTING ABUTMENT & PIERS AT OHIO POWER CO'S INTAKE



SECTION "C-C" TYPICAL CAP

Footings shall extend at least 3" into solid shale.  
Bar clearance from face of concrete 2" unless otherwise noted.



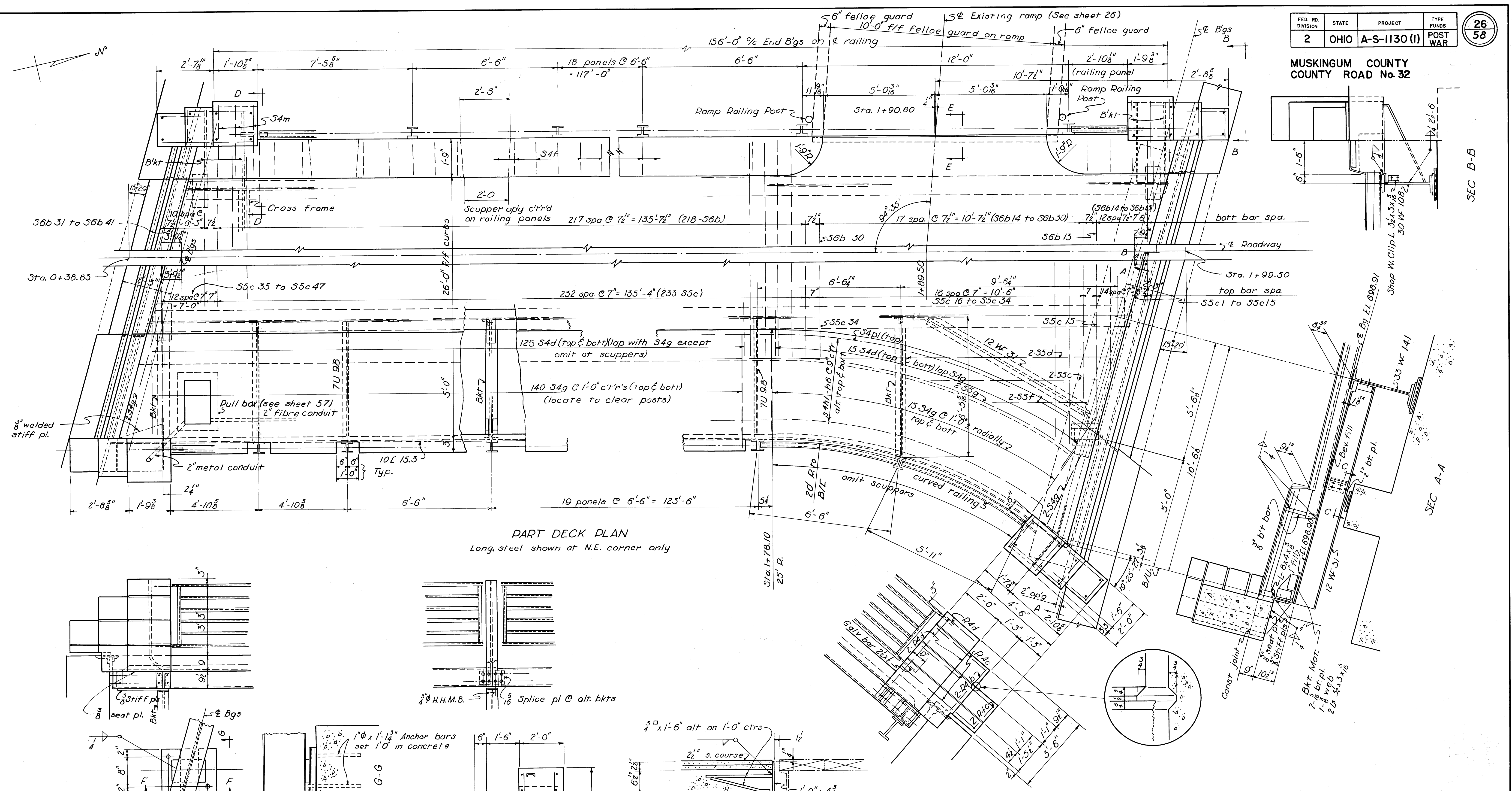
Construction Joint  
2'-0" x 2'-0" x 3' Key

P8c on 8" chs

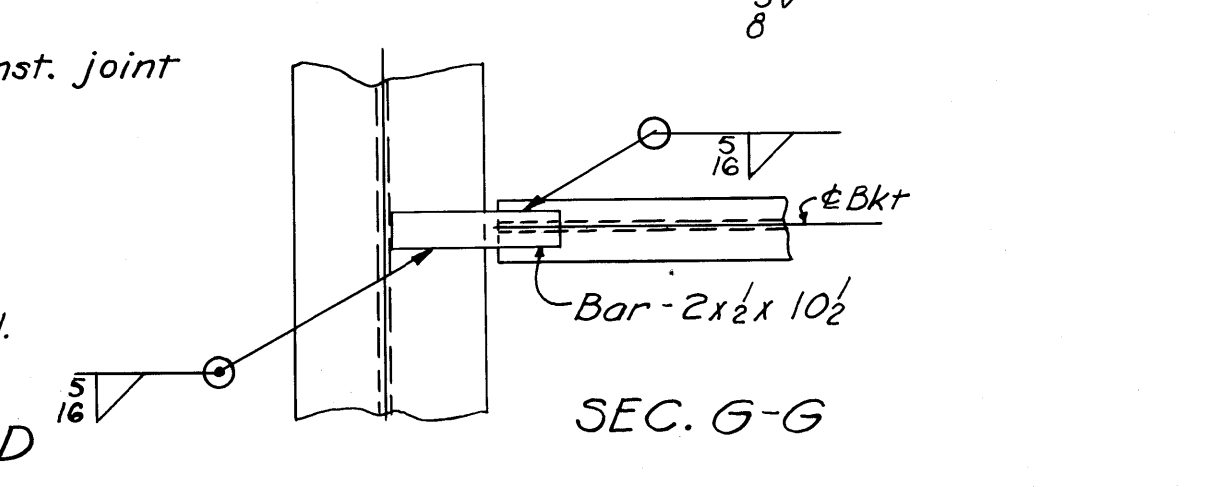
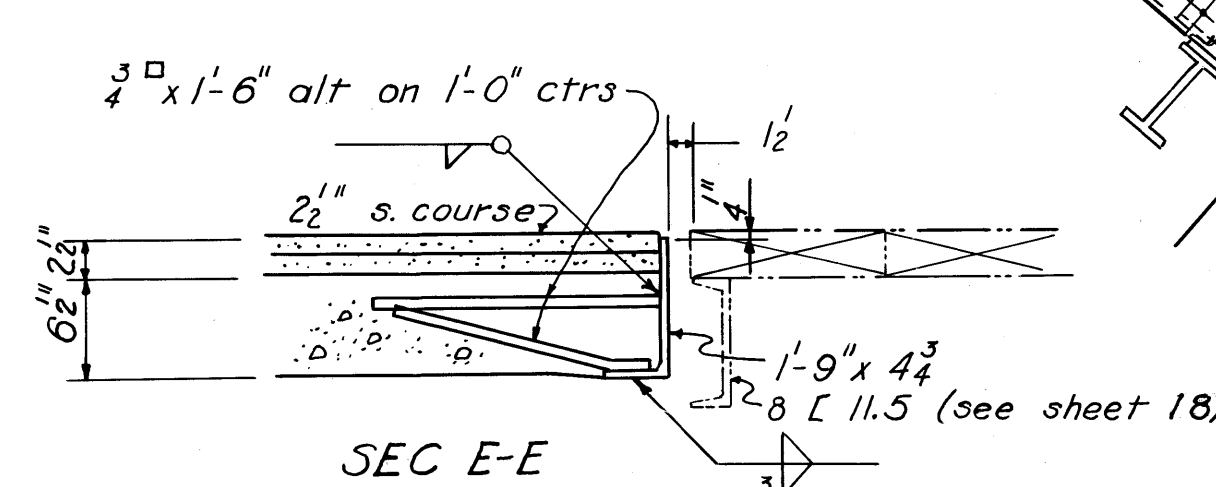
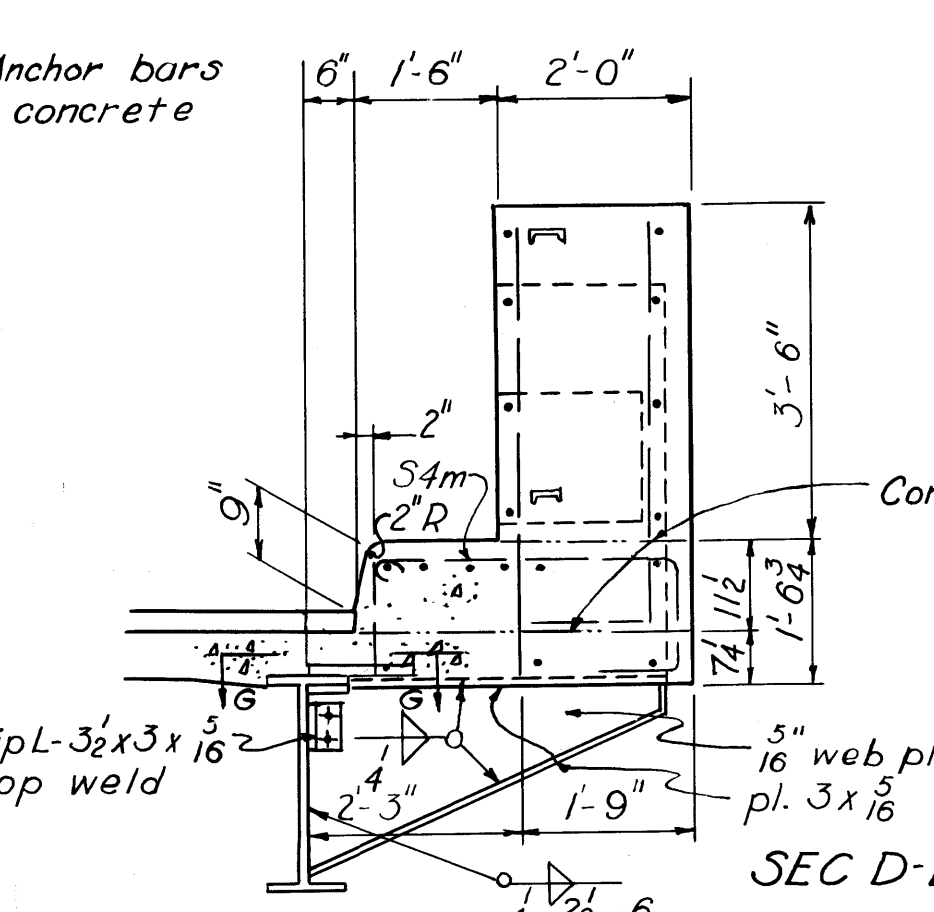
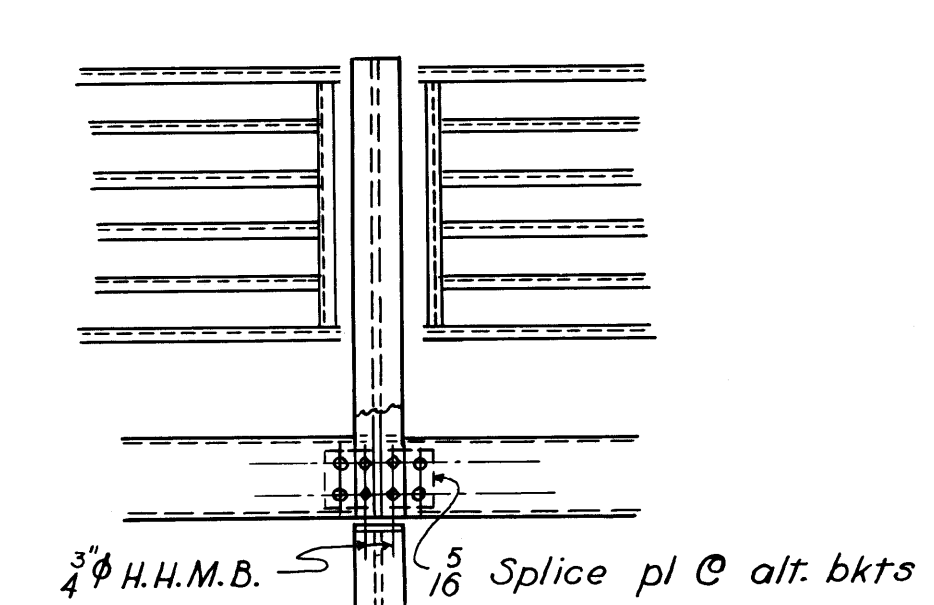
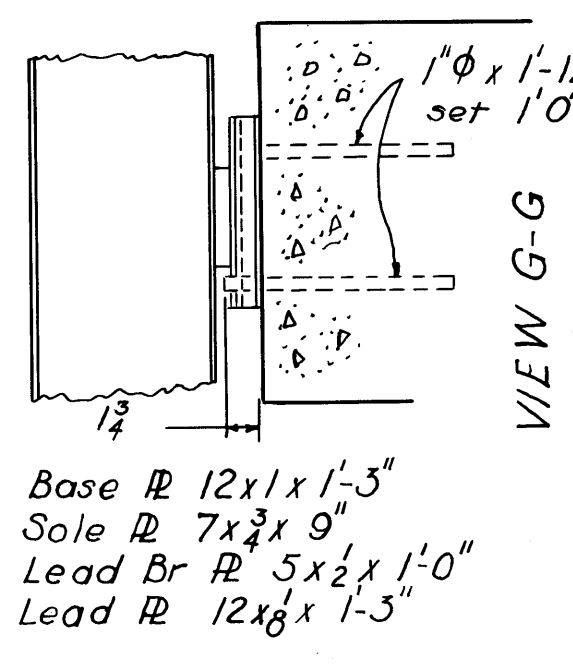
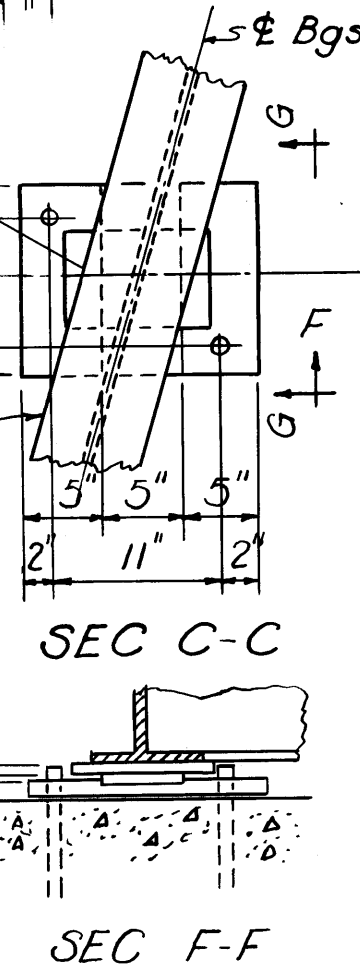
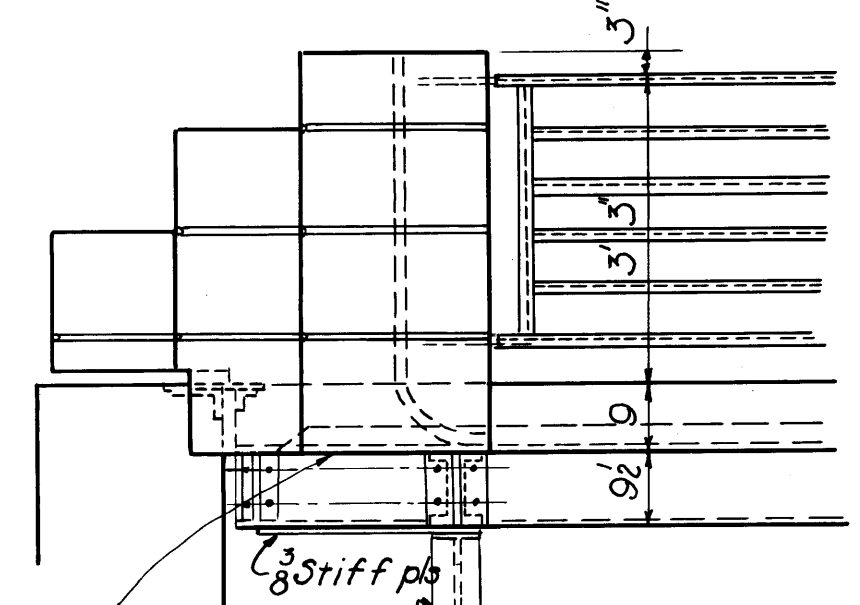
VARO ENGINEERS COLUMBUS, OHIO					
PIERS No. 2, 3, & EXISTING INTAKE PIER & ABUTMENT CAPS BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO					
MUSKINGUM COUNTY OHIO COUNTY ROAD No. 32					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
HJR	HJR	J.R.R.	J.O.G.	WHE	10-15-52



MUSKINGUM COUNTY  
COUNTY ROAD No. 32



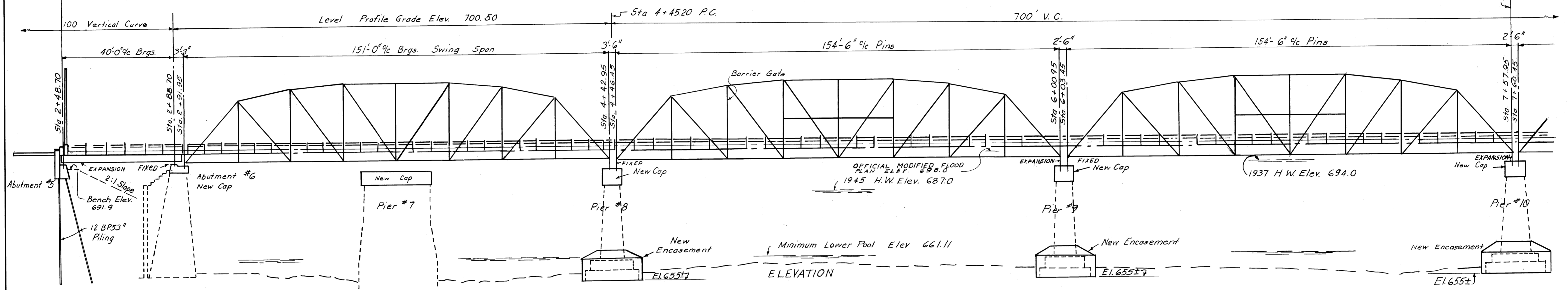
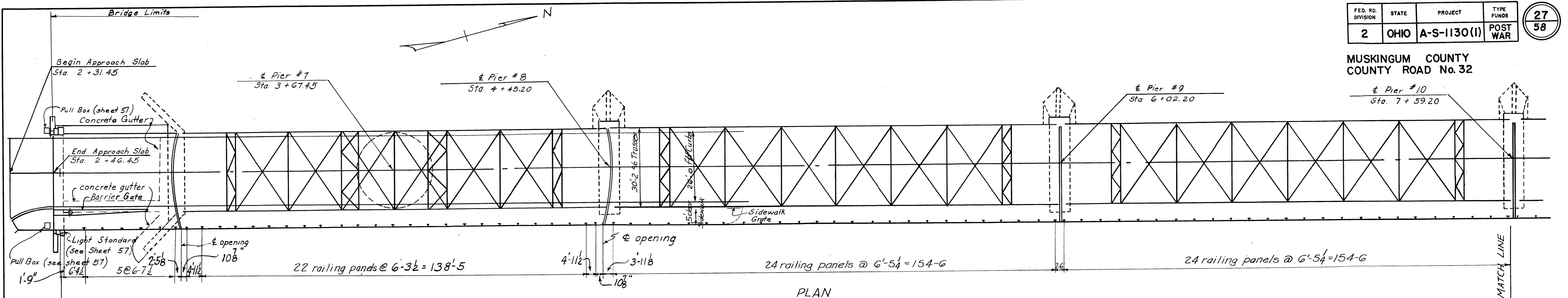
**DART DECK PLAN**  
Long steel shown at N.E. corner only



NOTES: All concrete end posts are alike above curb. Reinforcing for all end posts is alike.  
Bar clearance from face of concrete 2" unless noted.  
Drivets - 3/8" φ.  
Payment for concrete end posts will be made at the unit price bid for Item 5-14.  
for typical railing details see sheet 40.

VARO ENGINEERS COLUMBUS, OHIO				
<b>SUPERSTRUCTURE DETAILS</b>				
<b>INTAKE BRIDGE</b>				
<b>BRIDGE OVER MUSKINGUM RIVER</b>				
<b>BETWEEN DUNCAN FALLS &amp; PHILO</b>				
MUSKINGUM COUNTY COUNTY ROAD No. 32				OHIO
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
HJR	HJR	LEM	D.M.P.	W.H.C.
				DATE
				10-15-52

MUSKINGUM COUNTY  
COUNTY ROAD No. 32



ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	ABUT #5	ABUT #6	PIER #7	PIER #8	PIER #9	PIER #10	PIER #11	ABUT #12	SUPERSTR.	GENERAL	AS BUILT
E-2	Lump sum	Lump sum	Cofferdams, cribs and sheeting										Lump sum	
E-2	31	cu.yds	Unclassified excavation	31									358	389
S-1	435	cu.yds	Class "C" concrete, abutment and pier caps	24	29	191	56	56	50	56	33		474	431.09
S-1	474	cu.yds	Class "C" concrete, superstructure				155	155	155	155				587
S-1	620	cu.yds	Class "E" concrete, pier encasements											587
S-2	300	sq.ft.	Patching concrete		10									
S-3	2065	sq.yds.	Type "C" waterproofing										2065	
S-4	156,058	lbs.	Reinforcing steel	3584	1455	6039	3947	3503	3488	1112			134,301	126
S-7	1509,500	lbs.	Structural steel										1509,500	1,553,980
Special	32,600	lbs.	Castings and machinery for Swing Span										32,600	38,320
S-8	1622,100	lbs.	Field painting of structural steel and castings										1622,100	1,594,306
S-14	1565.00	lin. ft.	Railing - 2 lines (Type I-15.15 without steel posts)										1565.0	
S-14	897	lin. ft.	Railing - (Steel with steel posts & conc. end posts)										897	
S-16	Lump sum	Lump sum	First test pile										Lump sum	
S-18	270	lin. ft.	Steel piling (12" BP 53")	270									2392	24808
S-20	4400	sq.yds.	Repainting stone masonry				1100	1100	1100	1100			3553	967
S-22	390	cu.yds.	Removal of portions of existing substructure	36	95	46	58	60	64	39			390	398.21
S-23	353	lin. ft.	Dowel holes	50	70	70	70	70	70	23			353	477.5
S-24	Lump sum	Lump sum	Removal of existing superstructure										Lump sum	
S-25	One	Each	Light standards (including brackets & anchor bolts)										One	
S-25	425	lin. ft.	1" Metal conduit with fittings										425	
S-25	230	lin. ft.	2" Fibre conduit										230	
S-25	20	lin. ft.	2" Metal conduit										20	
S-25	80	lin. ft.	1 1/2" Metal conduit										80	
T-35	138.4	cu.yds.	Asphaltic conc. surface course, Type "B" "C" (70-80)										138.4	
S-53	4120	sq. ft.	5" open steel grid floor										4120	97.5
S-25	Lump sum	Lump sum	Traffic signals, including switches & wiring										Lump sum	4022.5
S-29	40	lin. ft.	6" Std. galv. steel pipe			40								

PROPOSED WORK

- Remove entire existing superstructure and portions of substructure.
- Encase footings of existing piers #8, 9, 10, 11, with reinforced concrete.
- Cap existing abutments and piers #6, 7, 8, 9, 10, 11, 12 with reinforced concrete.
- Clean and point existing stone masonry piers and repair cracks in Abutment #12.
- Construct new Abutment #5.
- Construct complete new superstructure including swing span and approach span over Muskingum River.
- Construct new bridge complete with substructure and superstructure over Ohio Power Company intake.
- Cap existing stone masonry pier and abutment walls adjacent to Ohio Power Company intake with doveled concrete.
- Place electric lighting conduits and erect lighting standards and traffic signals.
- Paint structural steel.

Use sheets 27 & 28 together.  
For additional notes see sheet 28.

VARO ENGINEERS  
COLUMBUS, OHIO

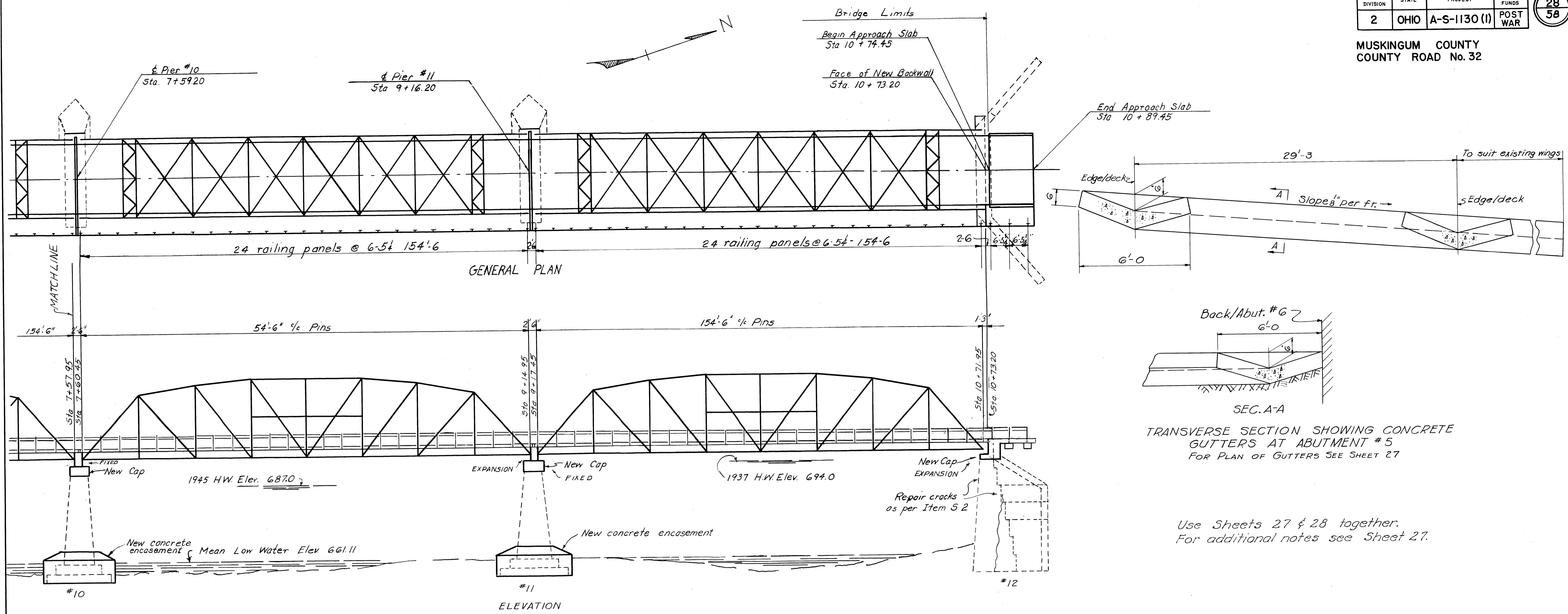
GENERAL PLAN & ELEVATION  
NOTES - ESTIMATED QUANTITIES  
BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHILO

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
J.R.R.	J.R.R.	J.R.R.	J.O.G.	W.H.R.	10-23-53 10-15-54

Revised As-Built P.G. 6/24/55

MUSKINGUM COUNTY  
COUNTY ROAD No. 32



SEC. A-A  
TRANSVERSE SECTION SHOWING CONCRETE GUTTERS AT ABUTMENT #5  
FOR PLAN OF GUTTERS SEE SHEET 27

Use Sheets 27 & 28 together.  
For additional notes see Sheet 27.

GENERAL NOTES

**REMOVAL OF EXISTING STRUCTURE:** Existing steel superstructure shall be carefully dismantled, match marked and piled along the right of way for removal by County Forces. Remainder of removed material shall become the property of and be disposed of by the contractor. Existing substructure shall be removed to limits shown on plans, repaired and recapped as per plans. Suitable waste masonry may be used as bank protection at the direction of the Engineer. Substructure removal is included with Item S-22 for payment.

**REPOINTING STONE MASONRY:** Existing stone masonry in piers #8, 9, 10, and 11 shall be cleaned by sand-blasting and then repointed in accordance with Item S-20.

**EXCAVATION:** Quantity includes removal of fill material between the top of the earth bench and bottom of abutment crossbeam (Abutment #5 only).

**PILING:** Piling at Abutment #5 shall be driven to shale to a minimum bearing capacity of 33 Tons.

**WELDING:** Welding shall be Class "A" except as shown. Any welds shown as field welds may be made in the shop at the option of the contractor.

**SURFACE FINISH OF CONCRETE:** Railing end posts, curb faces and fascias of deck (on 40' approach span only), shall receive a rubbed surface finish. All other exposed surfaces shall be governed by the provisions of Item S-1.

**BITUMINOUS SURFACE COURSE:** Shall be 2 1/4" asphaltic concrete, Item T-35, laid in two 1 1/4" courses.

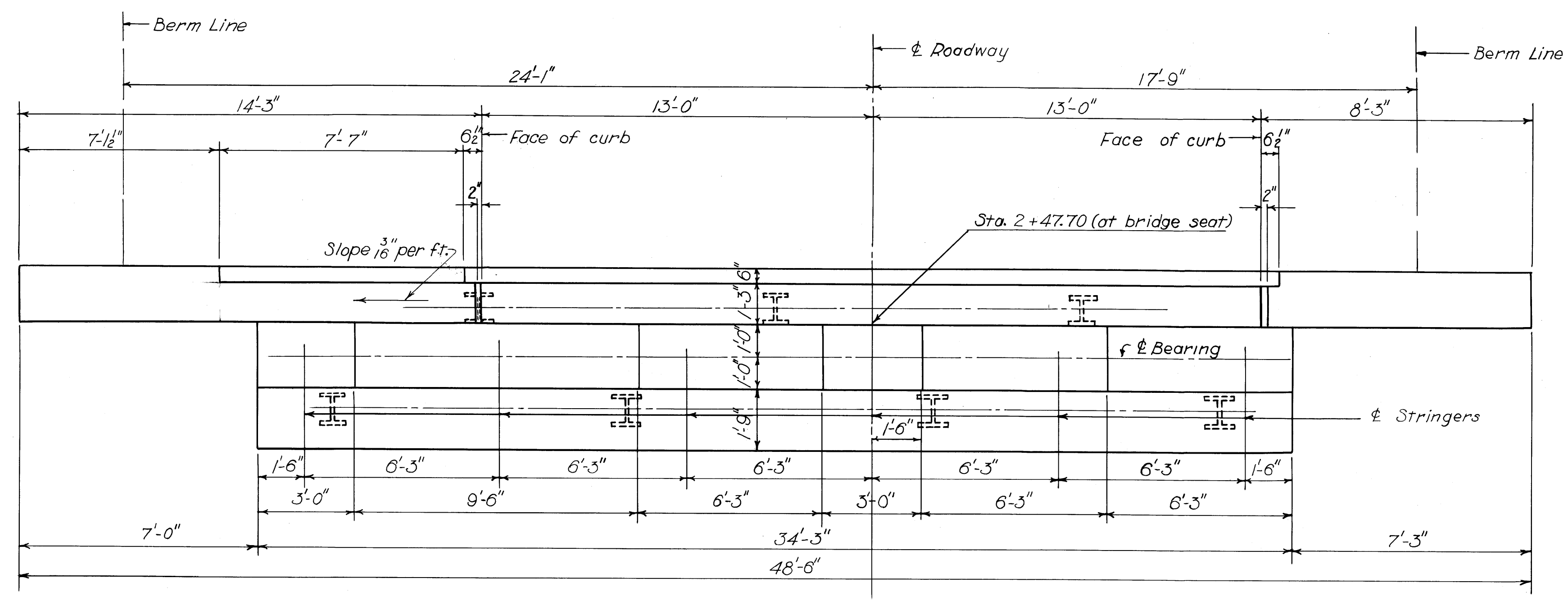
**CONCRETE GUTTERS:** Shall be 6' wide and 6" thick, and shall be depressed 6" at the center. They shall extend from the face of abutment down to back of abut. #6 and shall be centered under edge of deck. Reinforcing bars 1/2" @ 1'-6" ctrs both directions included in price per lin. ft.

**DESIGN SPECIFICATIONS:** State of Ohio, Department of Highways, Specifications for Design of Highway Structures, Edition of Jan. 1, 1940.

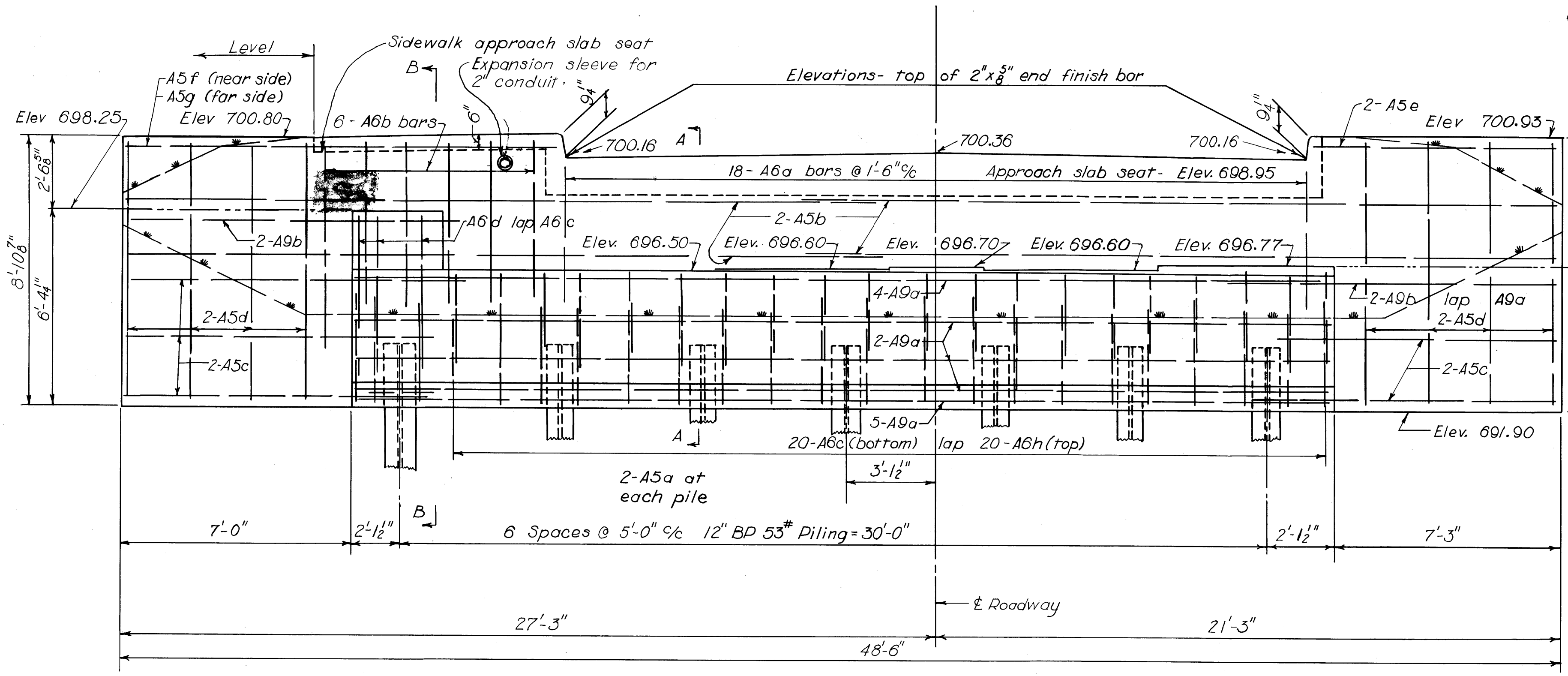
**CASTINGS AND MACHINERY FOR SWING SPAN (Item "Special").** Included in this item are: end wedges, center wedges, centering latches, center bearing, balance wheels, rack and turning mechanism for swing span, their actuating arms, gears, bearings, bushings, shafting, couplings collars, indicators, counterweights, shims, capstan, and turned bolts. Also included in this item is machinery for north barrier gate. Design of and construction and materials for Castings and Machinery for Swing Span, shall conform to the Standard Specifications for Movable Highway Bridges of the American Association of State Highway Officials, Edition of 1938, and the construction and materials for castings shall also conform to Item S-7 of the Construction and Material Specifications. Payment shall be at the unit price per pound bid for this metal in place, completed and accepted, for the number of pounds determined either from the shop drawings in the manner set forth for structural steel under Secs. S-7.28 and S-7.29 of the Construction and Material Specifications, or by scale weight.

VARO ENGINEERS COLUMBUS, OHIO					
<b>GENERAL PLAN AND ELEVATION BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS &amp; PHILO</b>					
MUSKINGUM COUNTY COUNTY ROAD No. 32					OHIO
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
HEAR	D.W.P.	J. R. R.	HEAR	W.H.R.	10-13-52 10-19-52

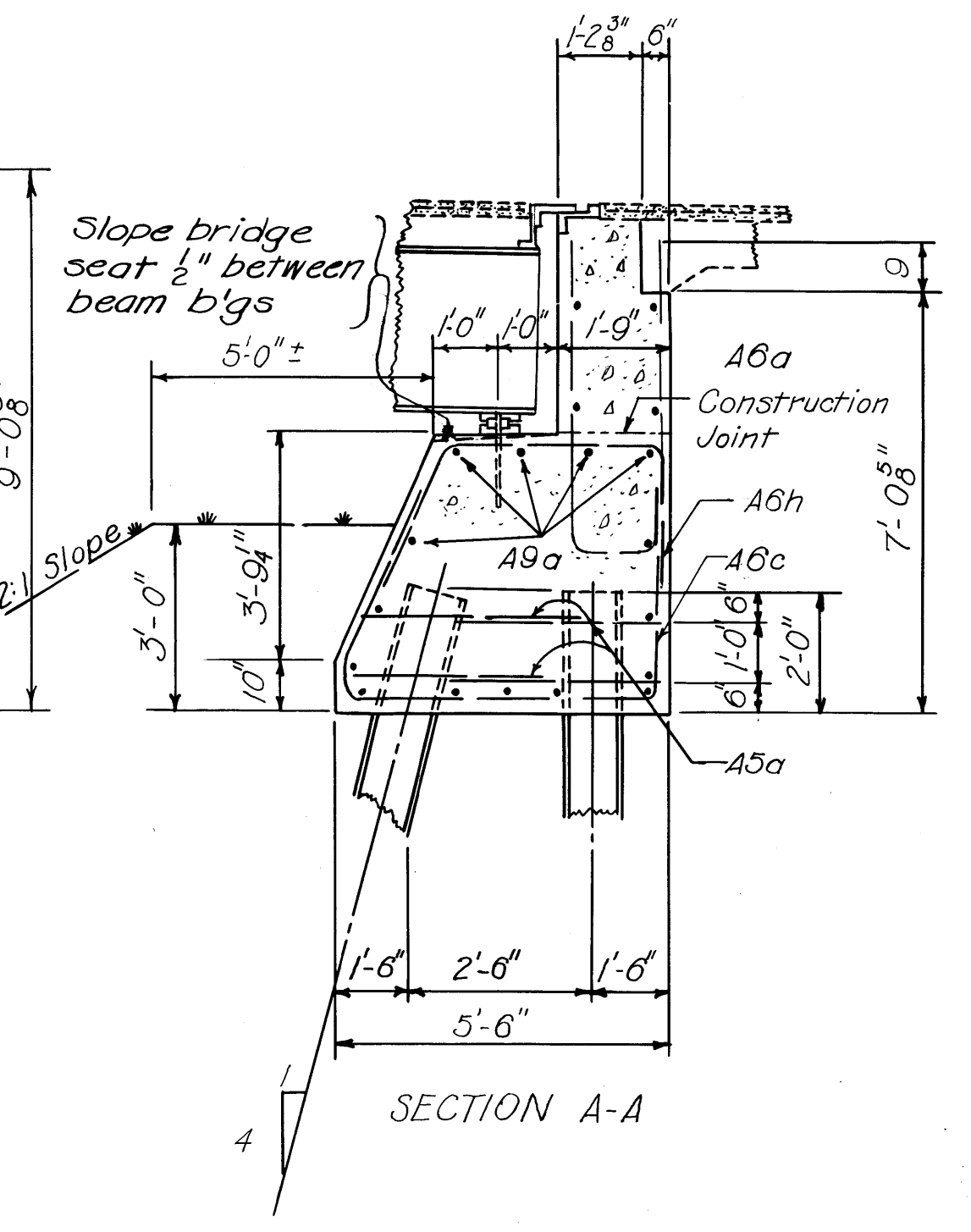
MUSKINGUM COUNTY  
COUNTY ROAD No. 32



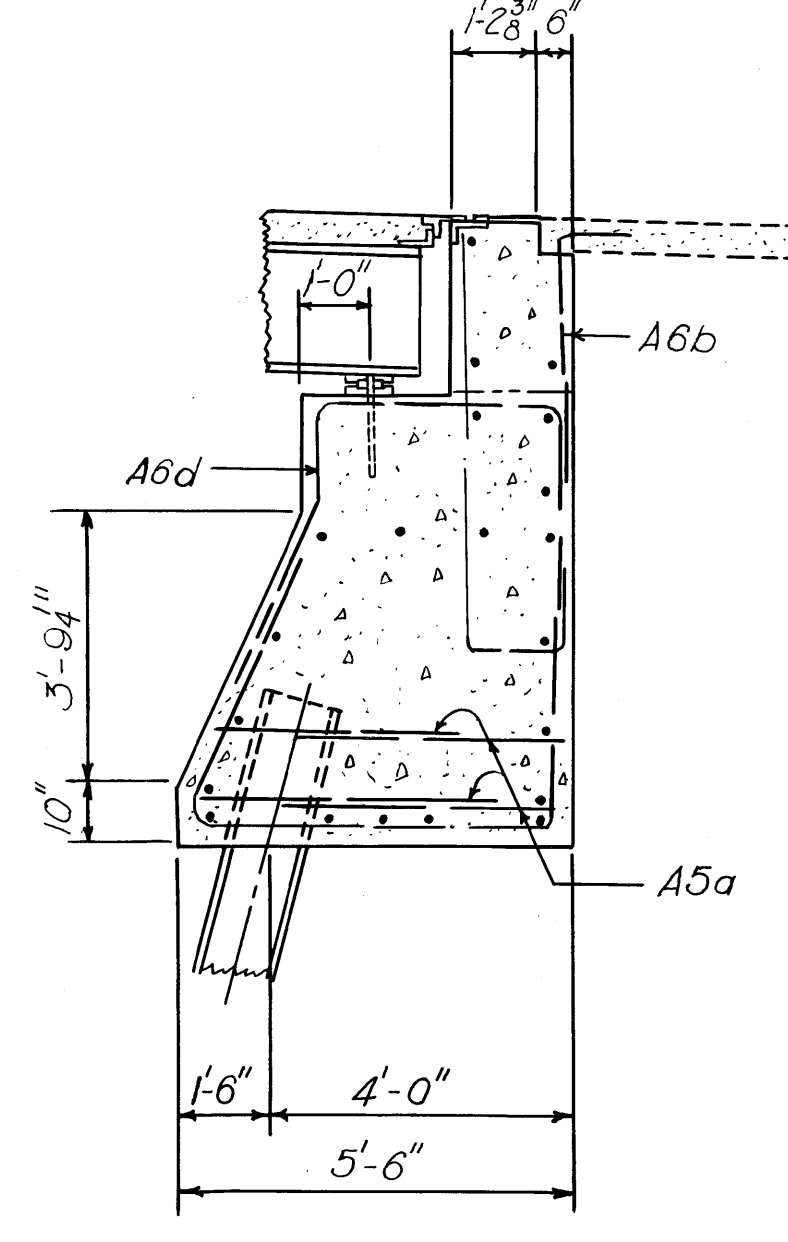
PLAN



ELEVATION



SECTION A-A



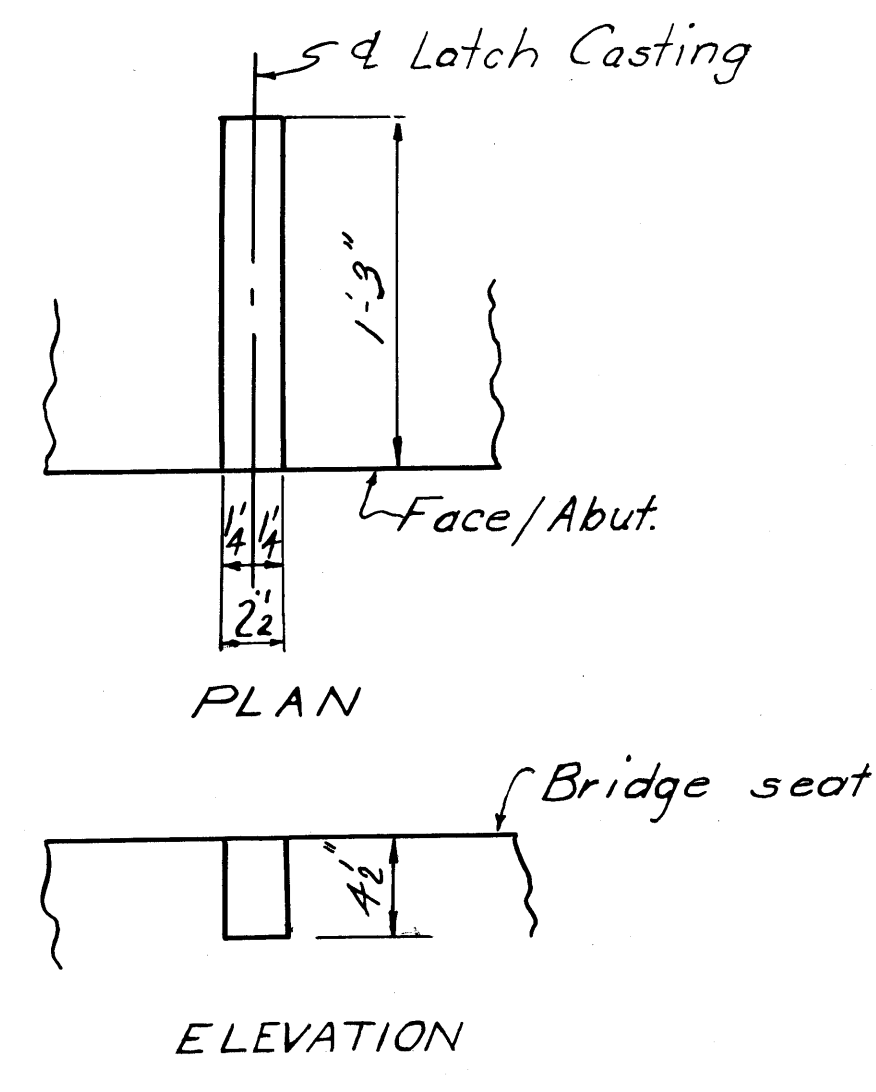
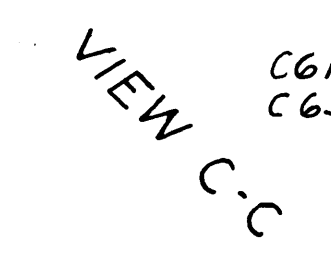
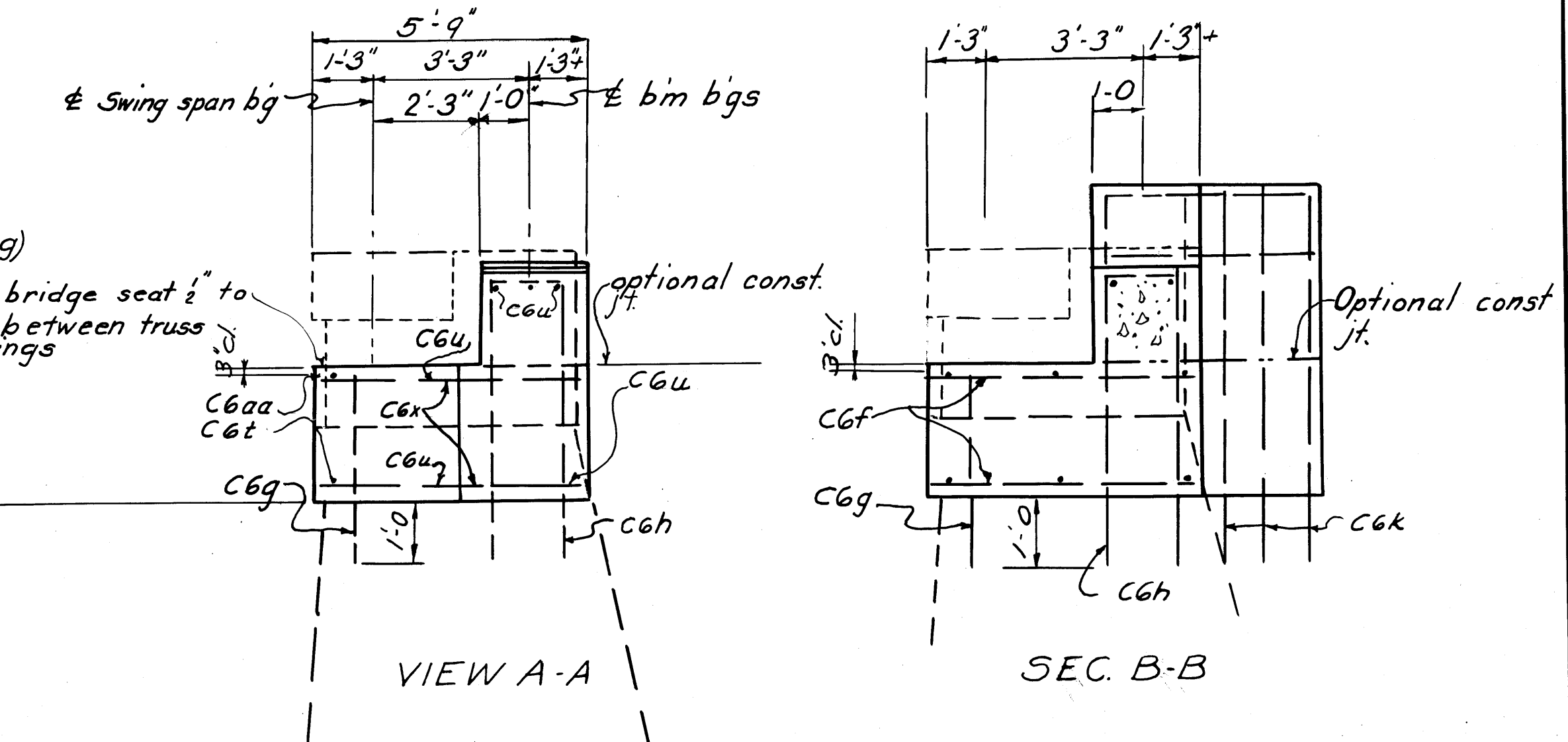
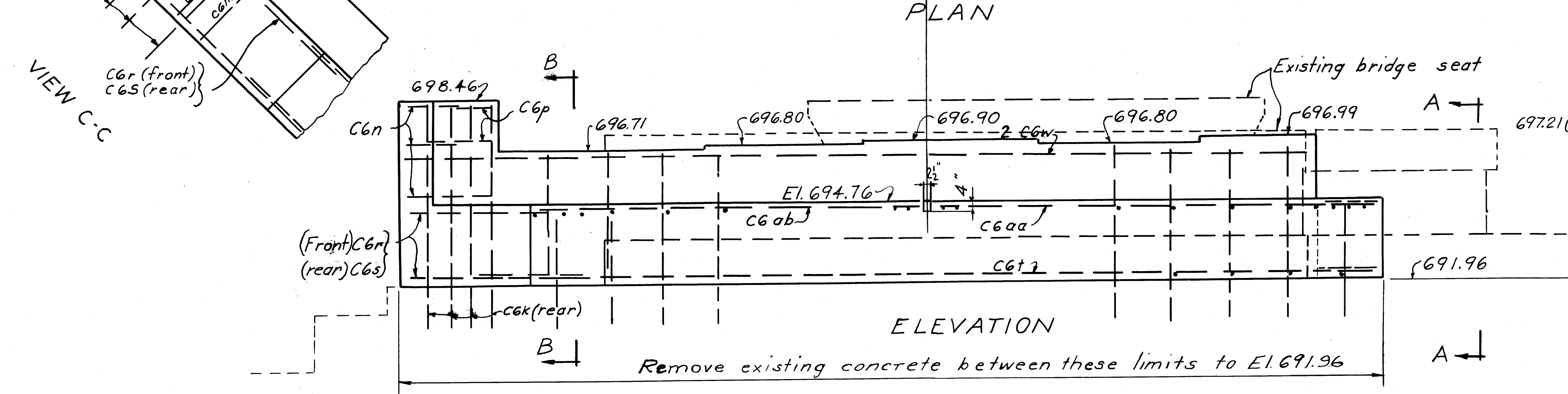
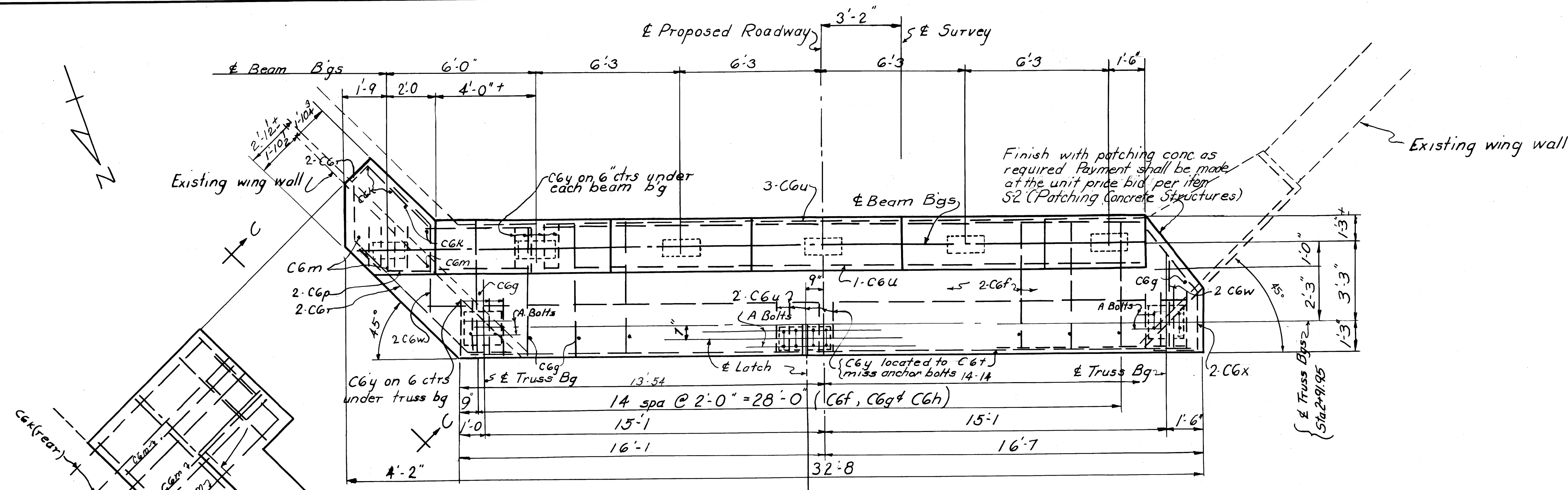
SECTION B-B

NOTES: All earth fill around abutments shall be made full height of earth bench. Excavation shall then be made for abutment cap, after which piling shall be driven. If bottom forms for abutment cap are used they shall be left in place.

Concrete above bridge seat construction joint shall not be placed until after steelwork is erected. Steel endfinish shall be used as a template for top of backwall.

VARO ENGINEERS COLUMBUS, OHIO				
ABUTMENT No. 5 BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO				
MUSKINGUM COUNTY COUNTY ROAD No. 32				OHIO
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
AWP	DWP	LEM	[Signature]	[Signature]
				DATE
				10-15-51

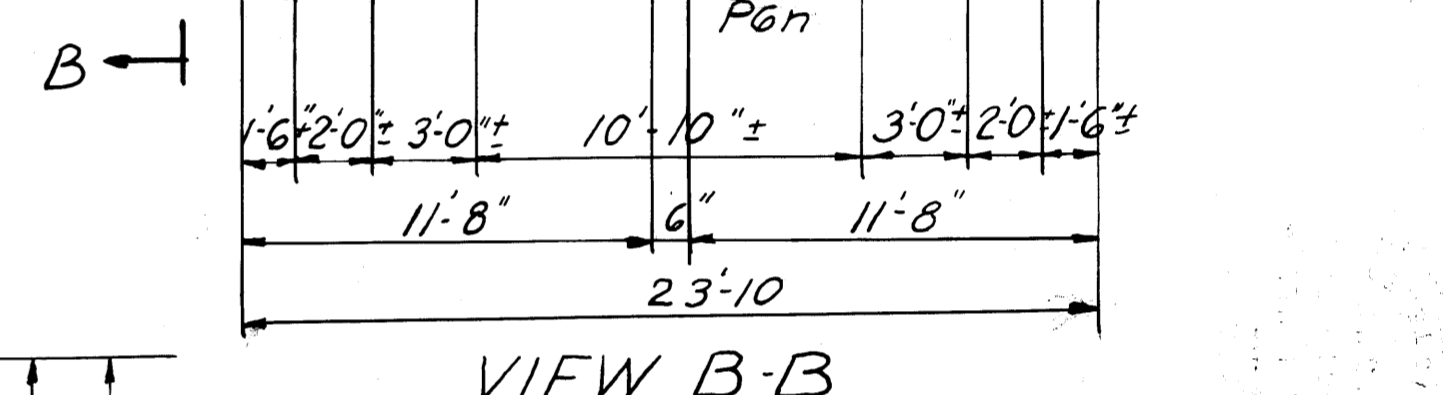
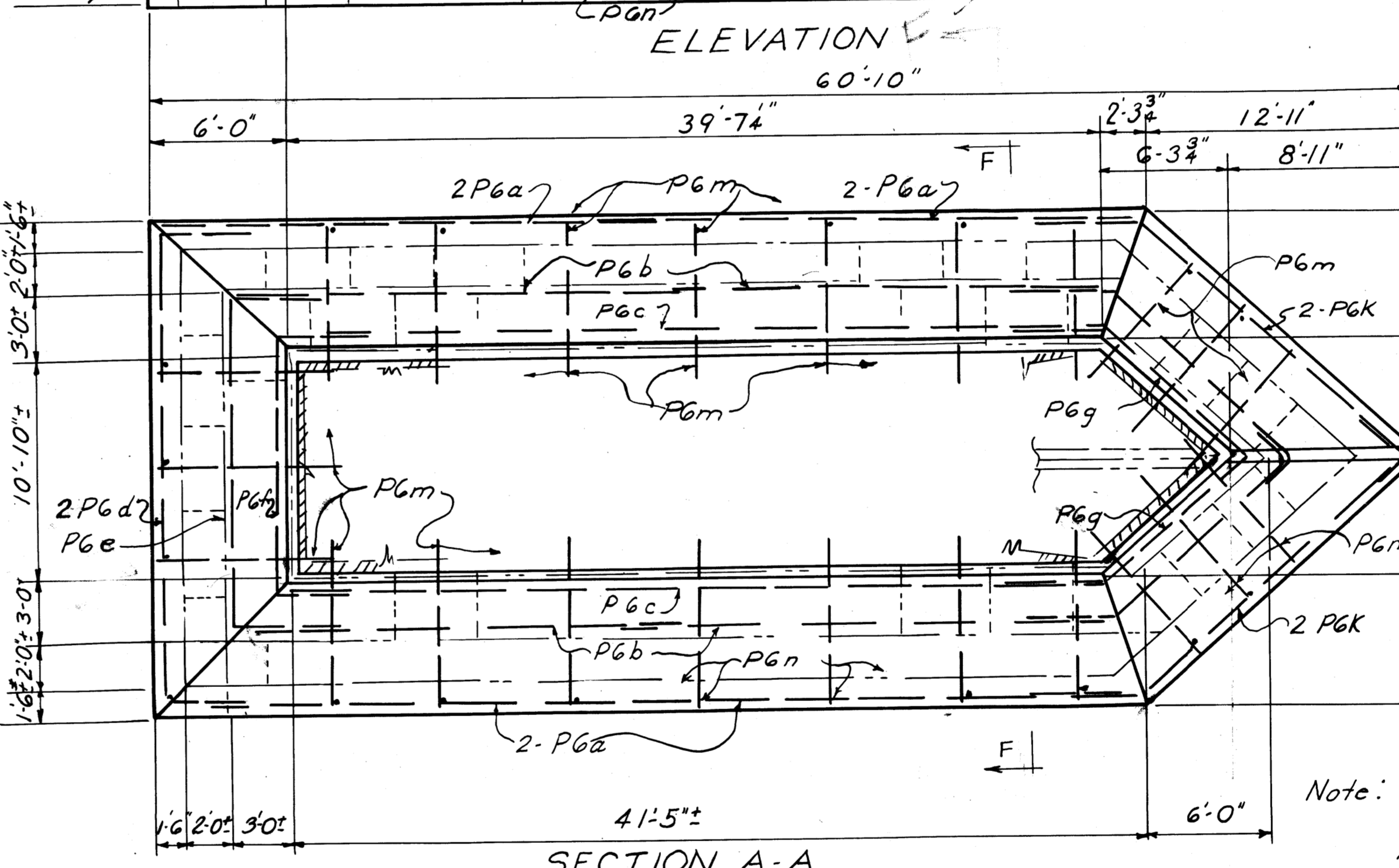
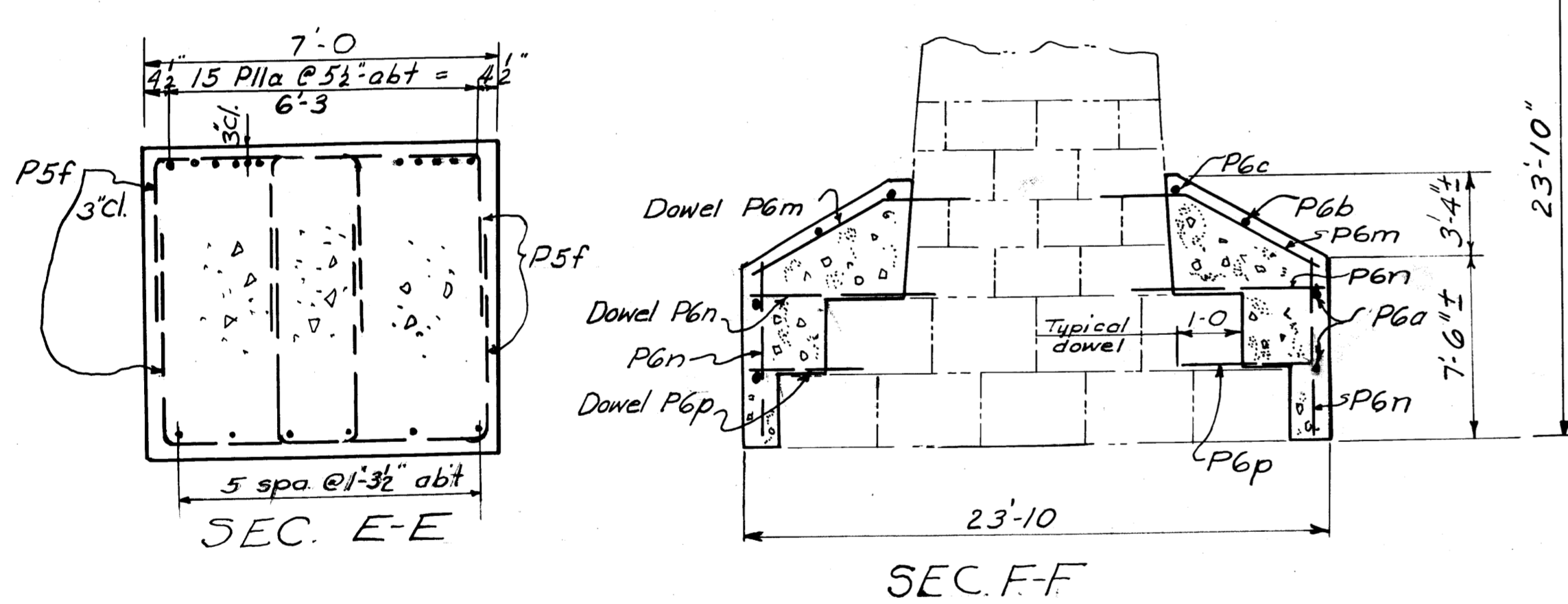
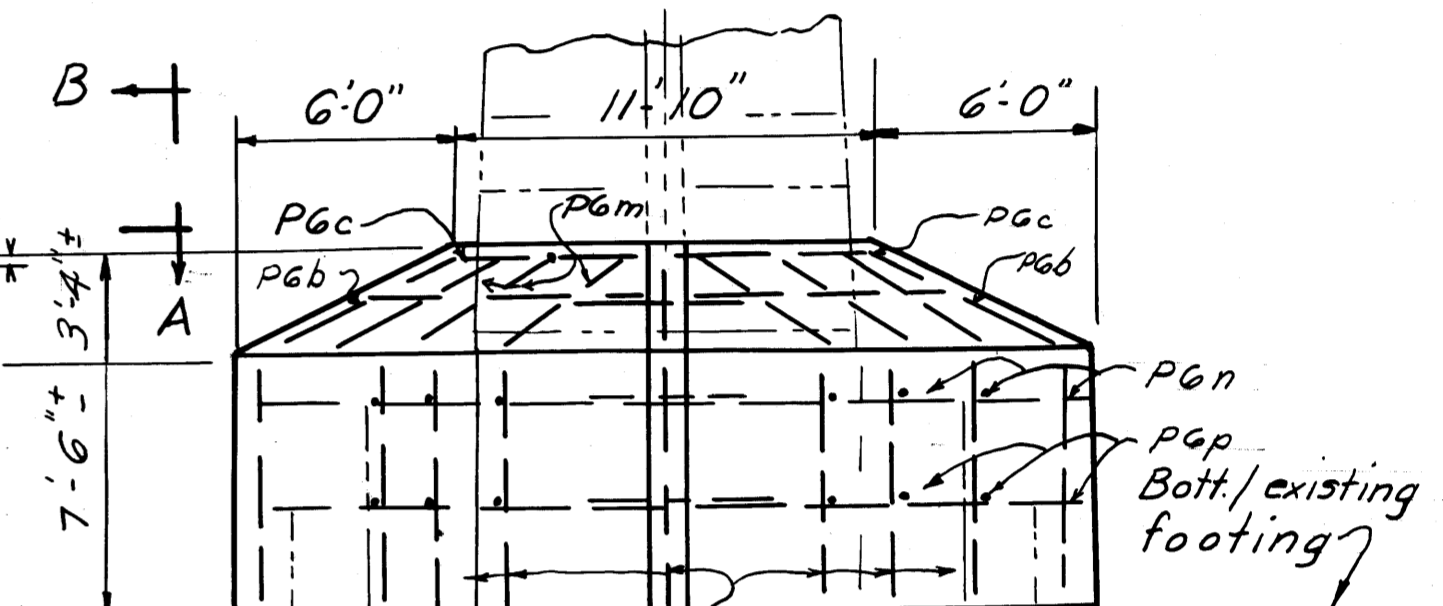
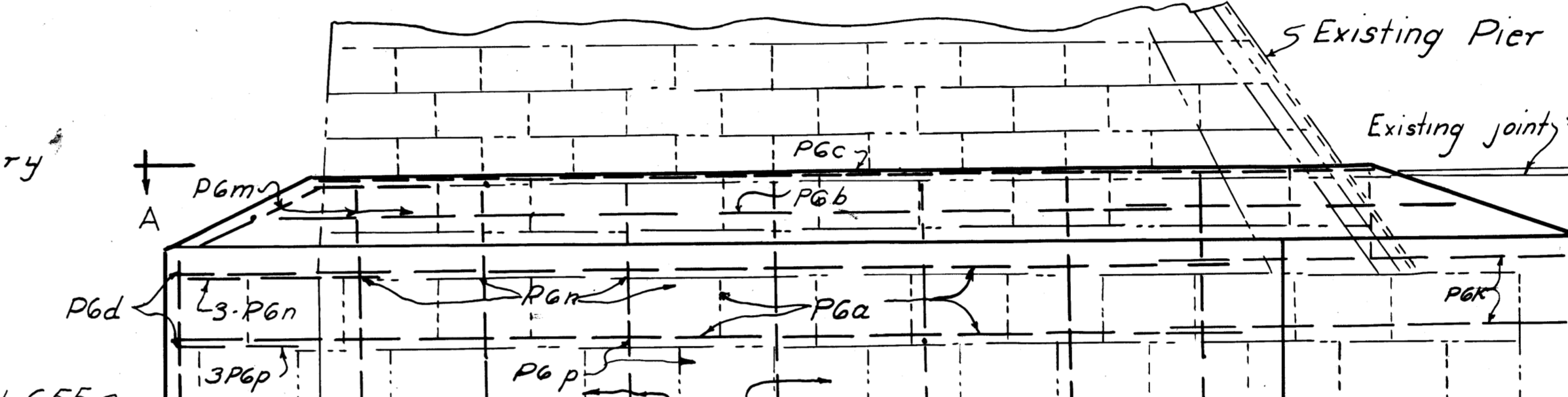
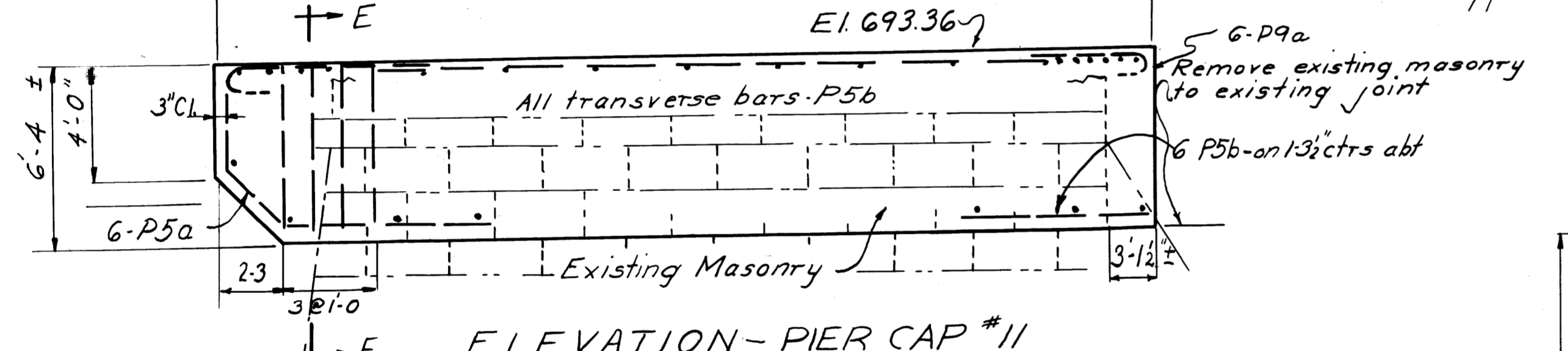
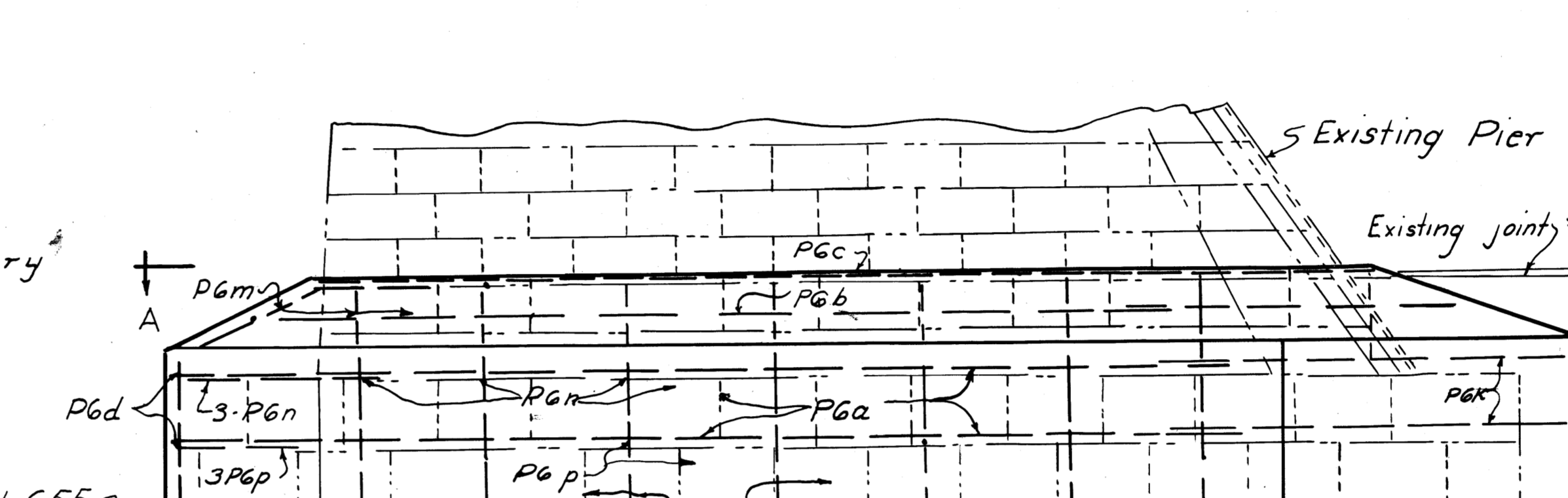
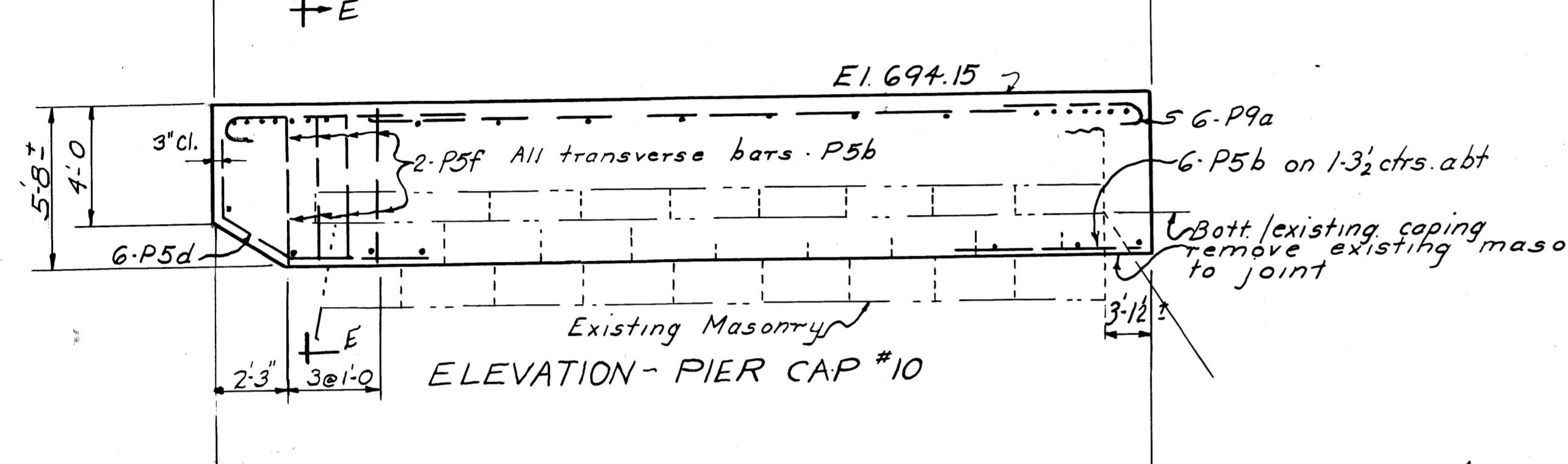
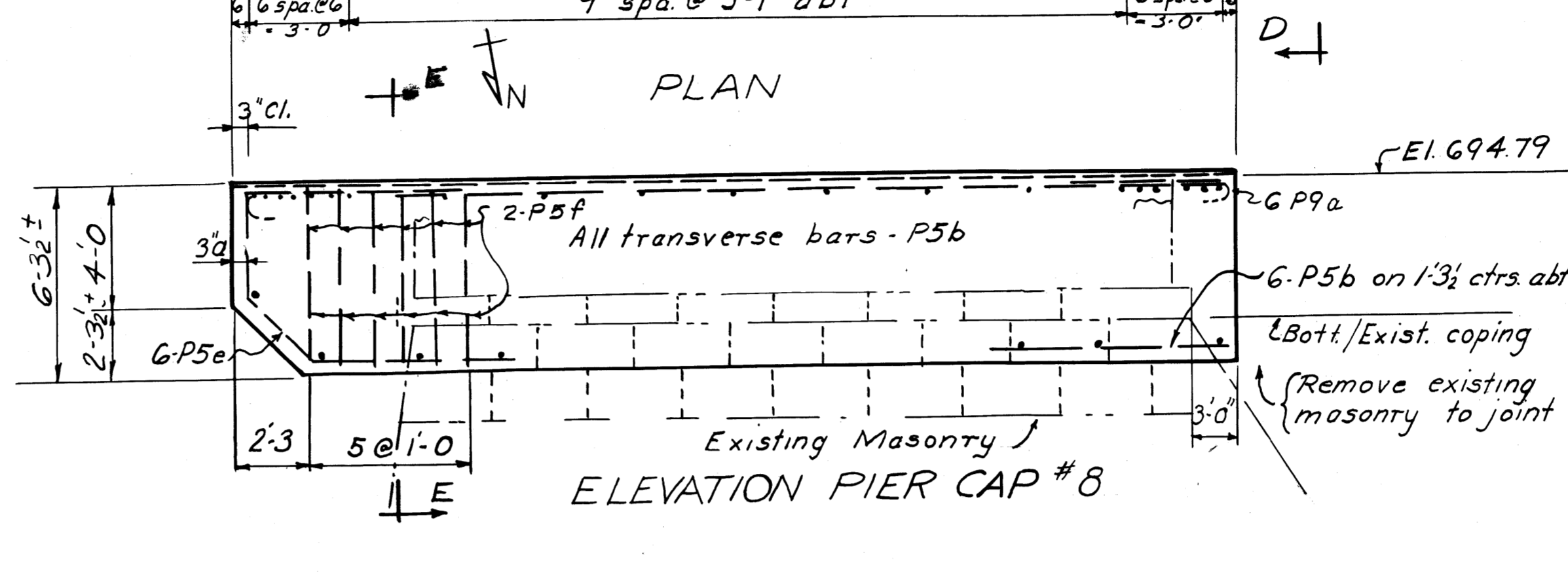
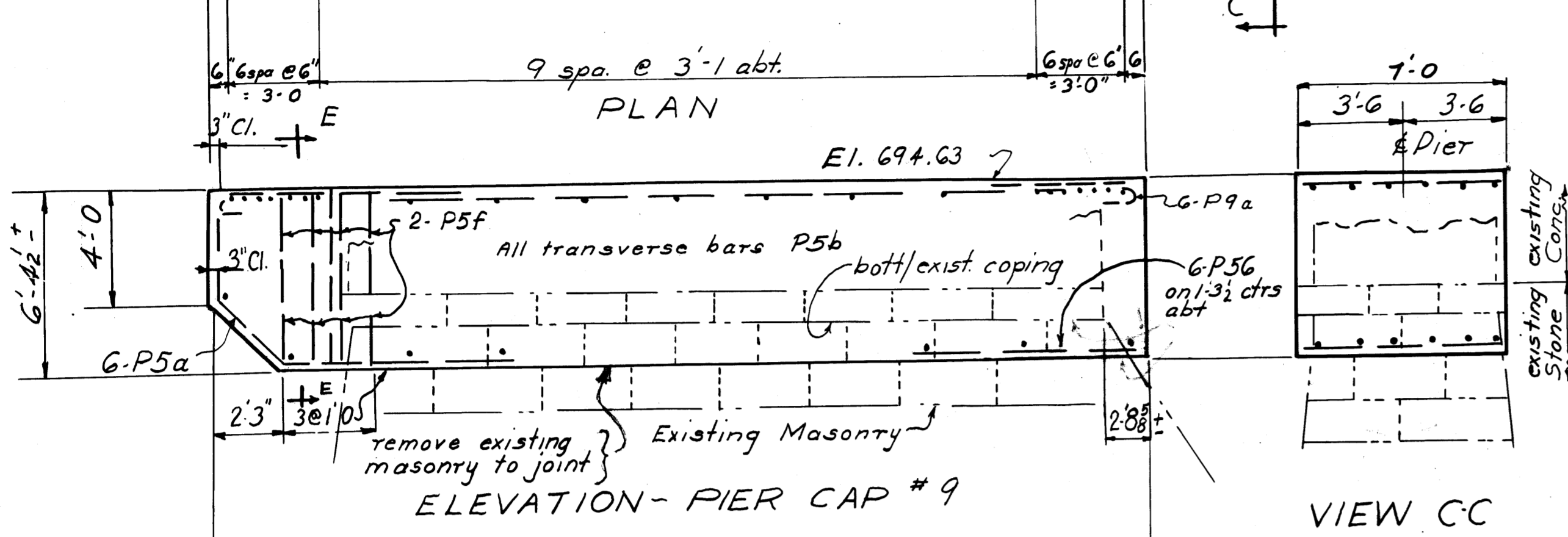
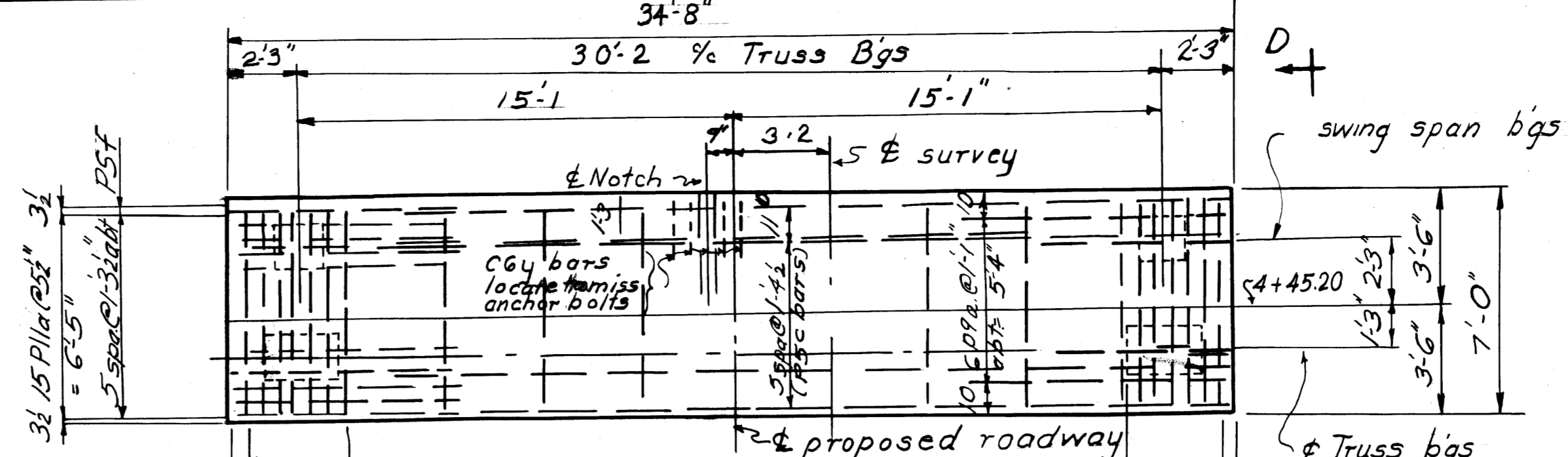
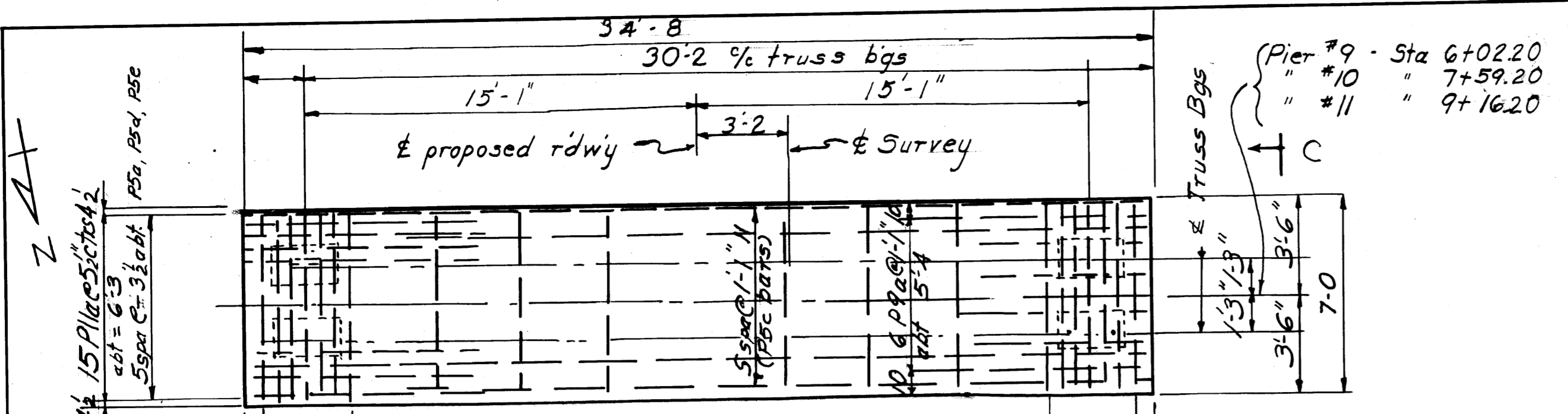
MUSKINGUM COUNTY  
COUNTY ROAD No. 32



~NOTES~  
Bar clearance 2" from face of concrete unless noted.  
Drill holes in existing concrete for dowel bars C6g, C6h and C6k to depth shown.

VARO ENGINEERS COLUMBUS, OHIO				
ABUTMENT No 6 CAP DETAILS BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO				
MUSKINGUM COUNTY COUNTY ROAD No. 32				OHIO
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
HJR	HJR	L.P.R.	J.O.G.	W.H.C.
				DATE
				10-15-52

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

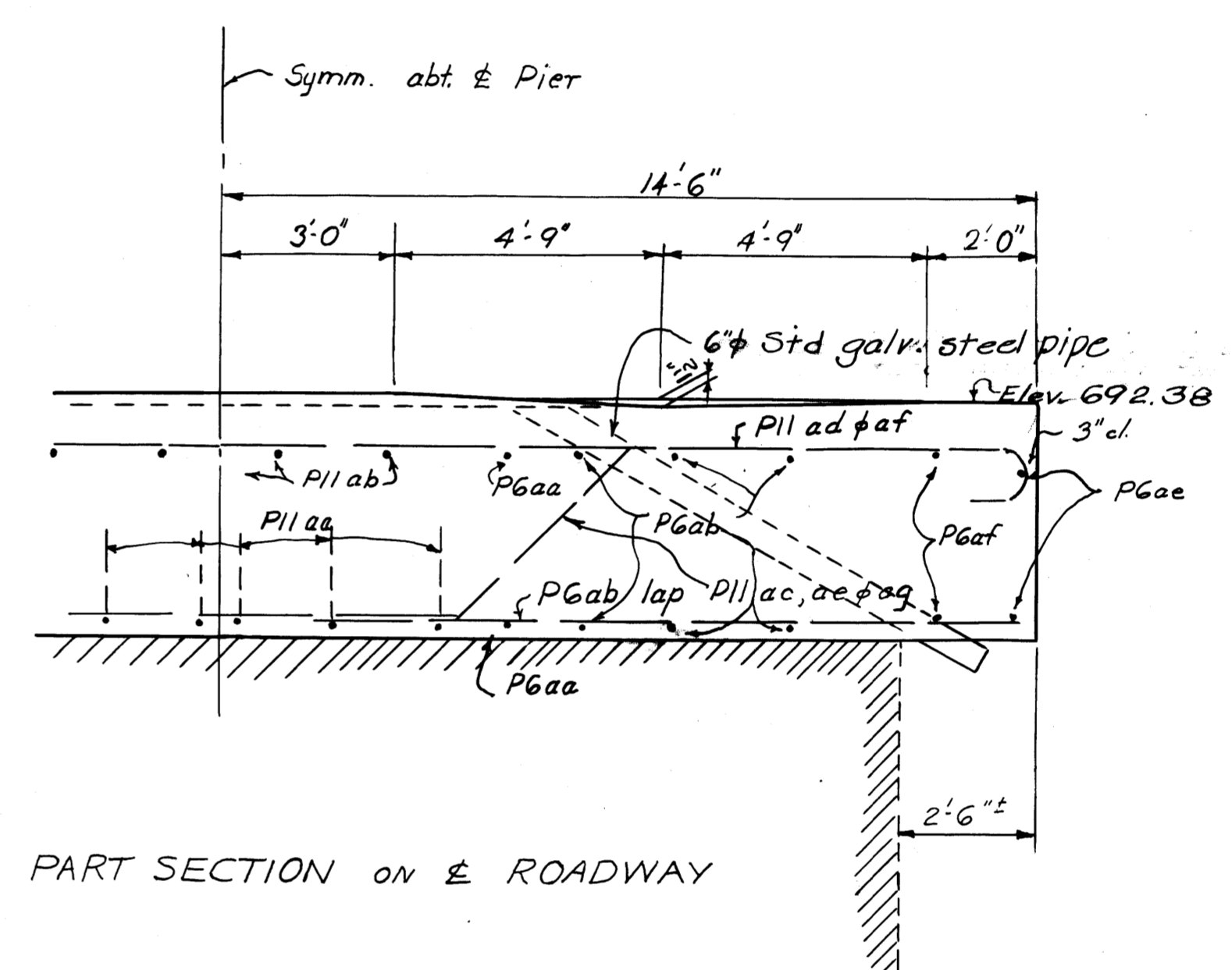
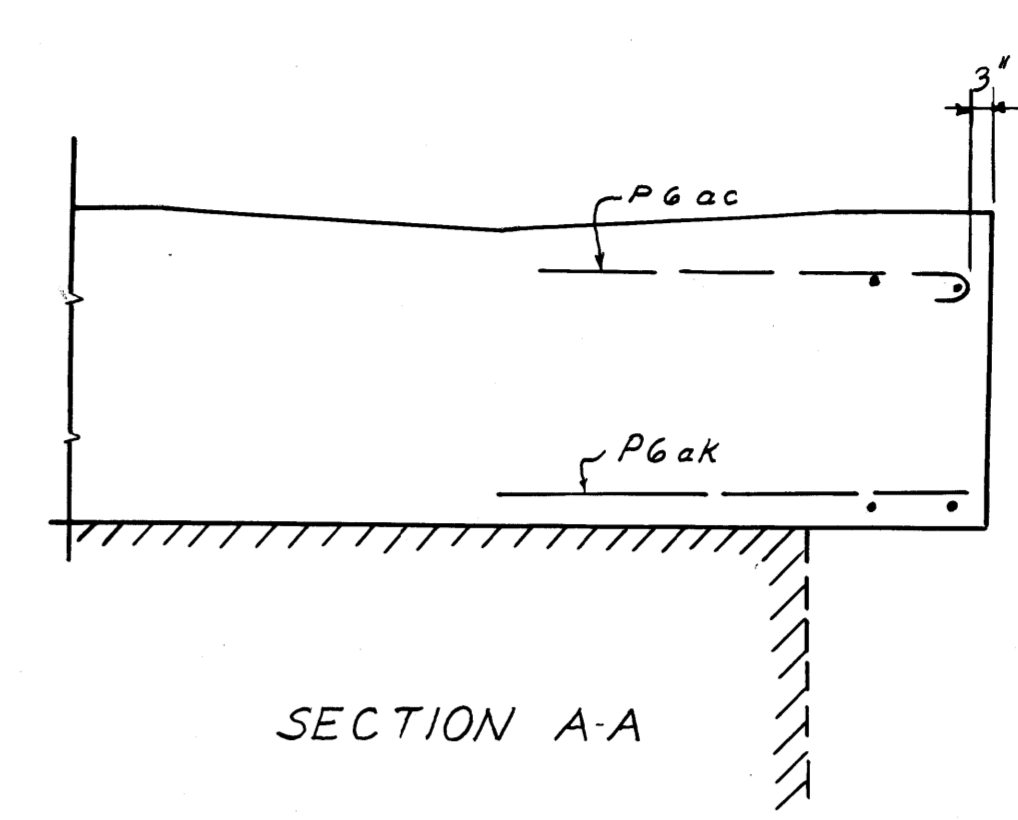
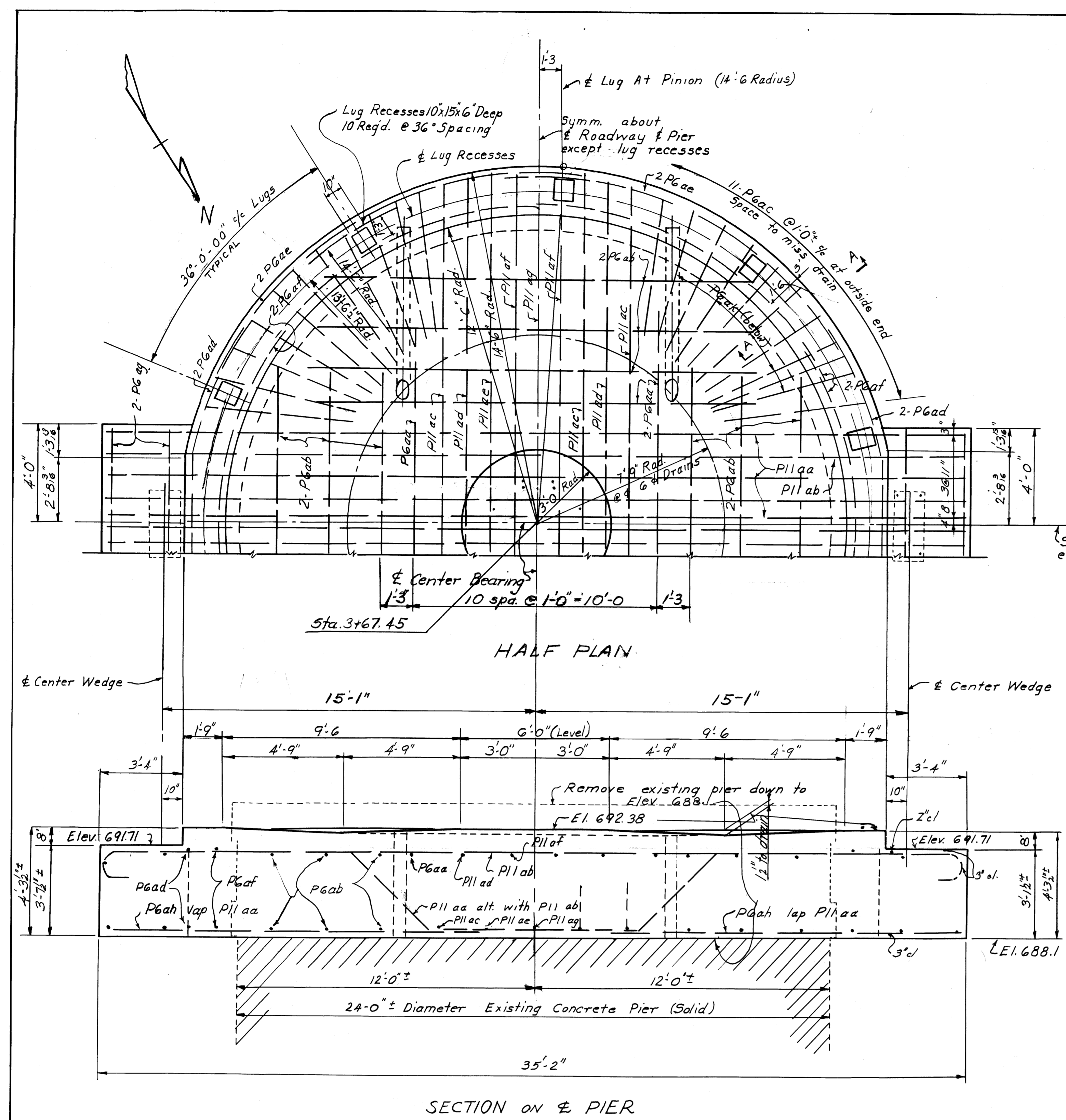


**-NOTES-**  
Bottom of encasement to extend to bottom of existing footings or to top of solid shale whichever is higher.  
Bar clearance from face of concrete 2" unless noted.  
For details of notch for swing span latch in Pier Cap #8 see sheet 30.

VARO ENGINEERS COLUMBUS, OHIO				
PIER CAPS & ENCASEMENT DETAILS BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO				
MUSKINGUM COUNTY COUNTY ROAD No. 32				
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
H.R.	H.R.	J.P.R.	J.O.G.	W.H.R.
				DATE
				10-15-52



MUSKINGUM COUNTY  
COUNTY ROAD No. 32



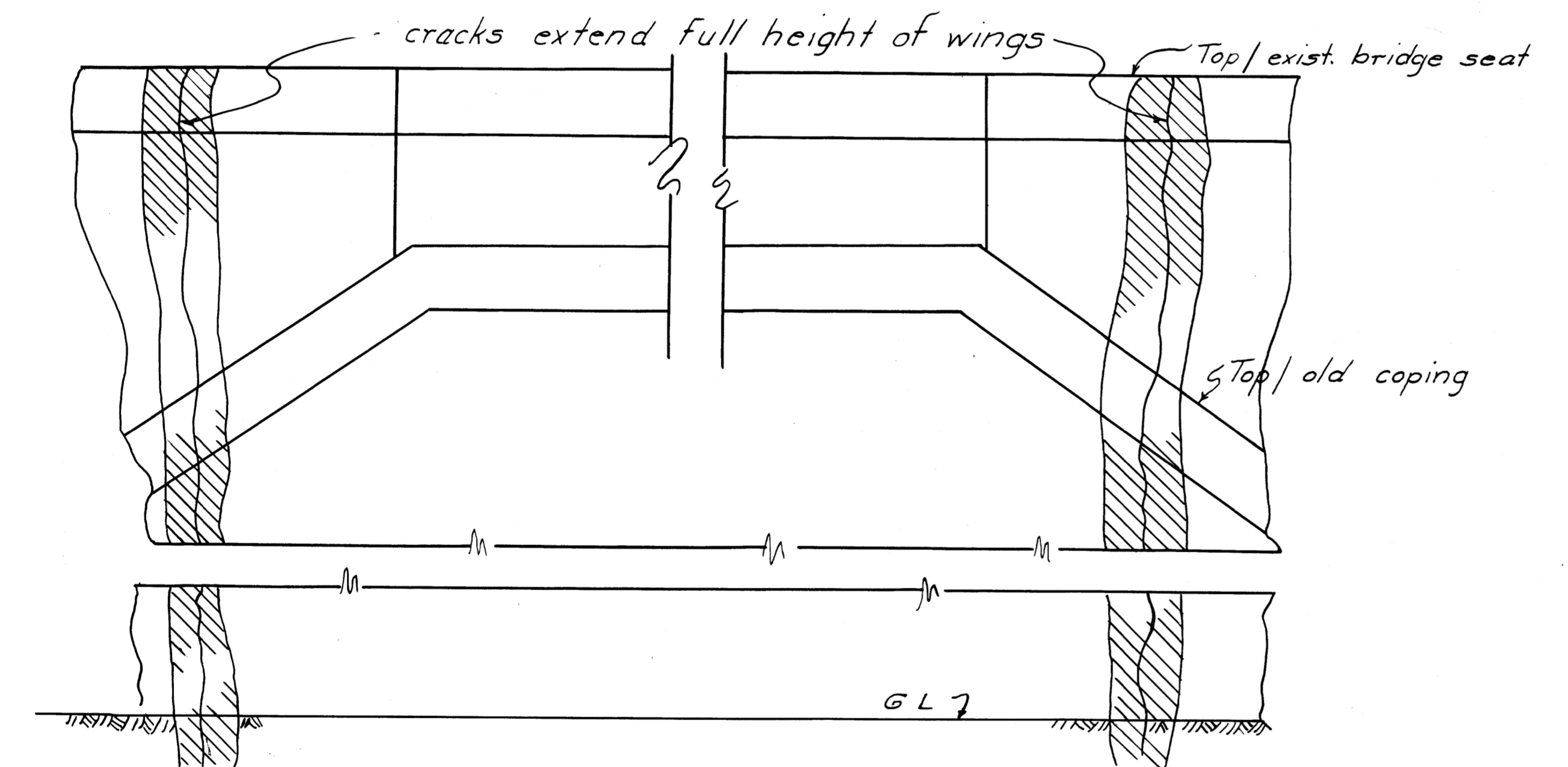
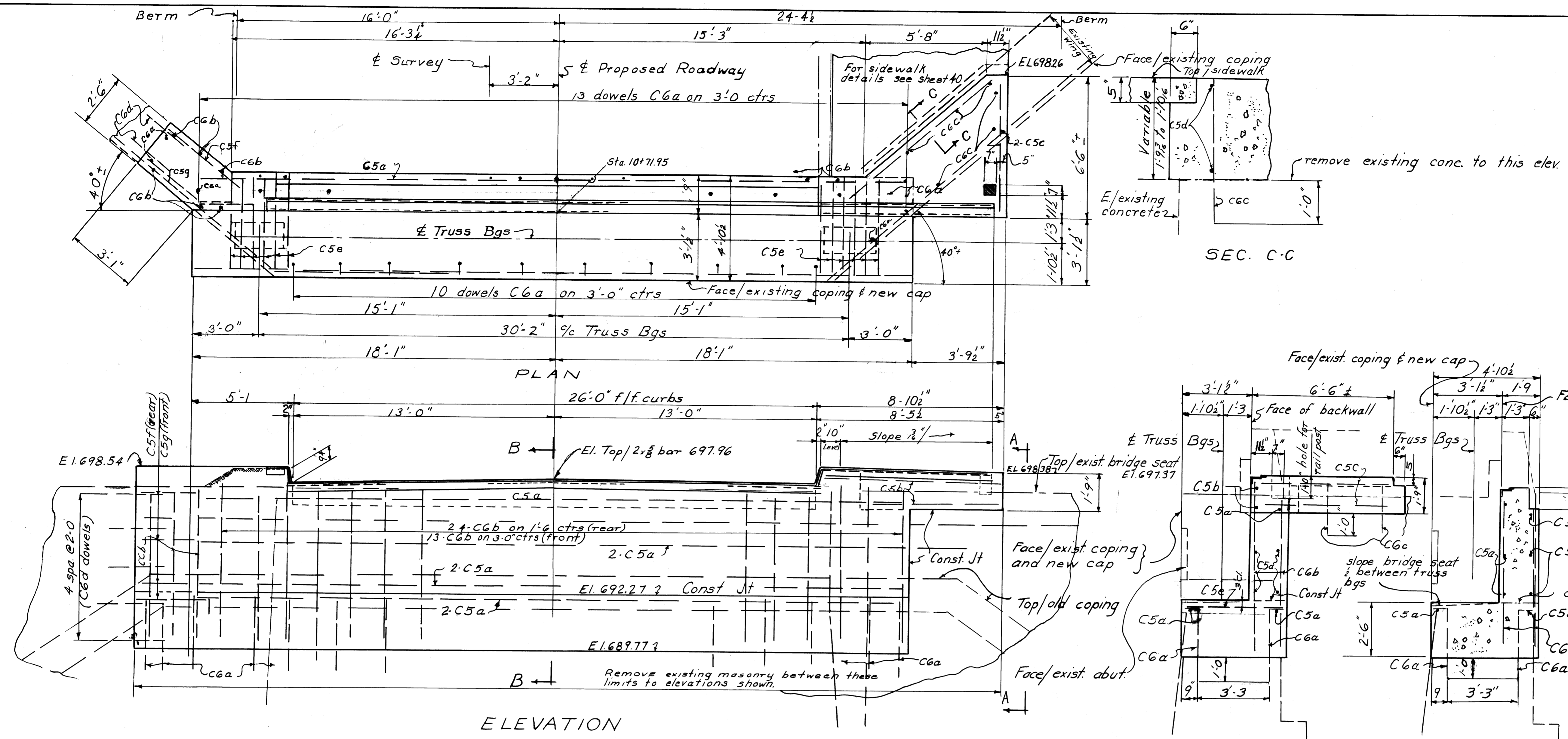
NOTES: - Concrete for new cap shall be Class C.  
Slope concrete on drain pipe circle to drain toward pipe.

VARO ENGINEERS COLUMBUS, OHIO				
CAP DETAILS FOR PIER No. 7				
BRIDGE OVER MUSKINGUM RIVER				
BETWEEN DUNCAN FALLS & PHILO				
MUSKINGUM COUNTY OHIO				
COUNTY ROAD No. 32				
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
AWP	SWP	J.P.P.	HP	WAC
				DATE
				10-15-52

FED. NO. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	A-S-1130 (1)	POST WAR

33  
58

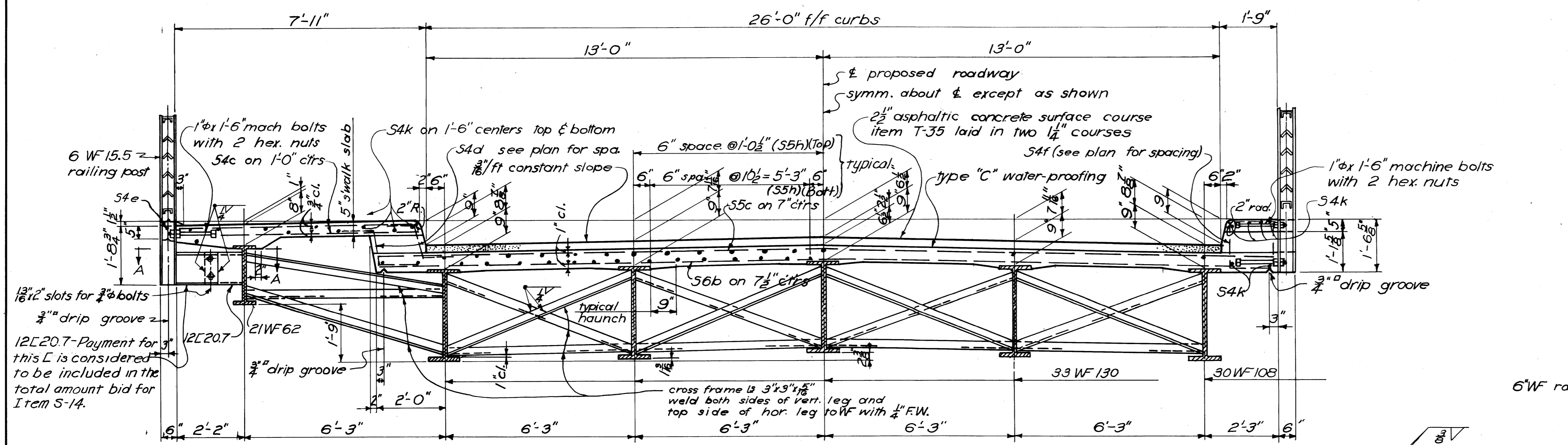
MUSKINGUM COUNTY  
COUNTY ROAD No. 32



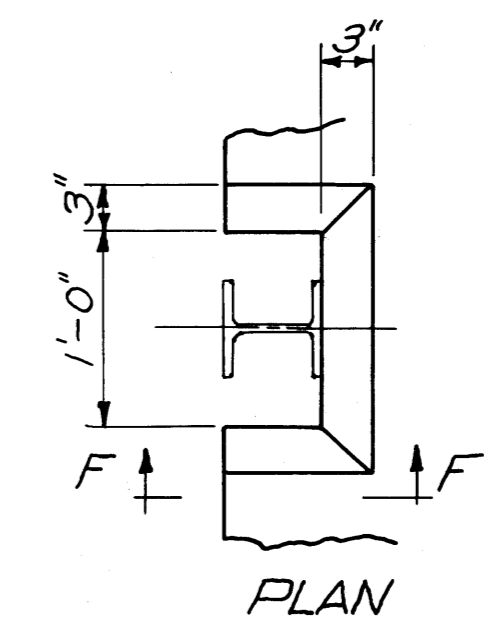
PART ELEVATION - EXISTING N. ABUT. (ABUT. #12)  
showing cracks in wings to be repaired per Item S-2

NOTES  
 Drill holes for dowel bars C6a, c, d and e in existing masonry to depths shown  
 Bar clearance from face of concrete 2" unless noted.  
 Concrete above bridge seat const. joint shall not be placed until after steel work is erected. Steel end finish shall be used as a template for top of backwall.

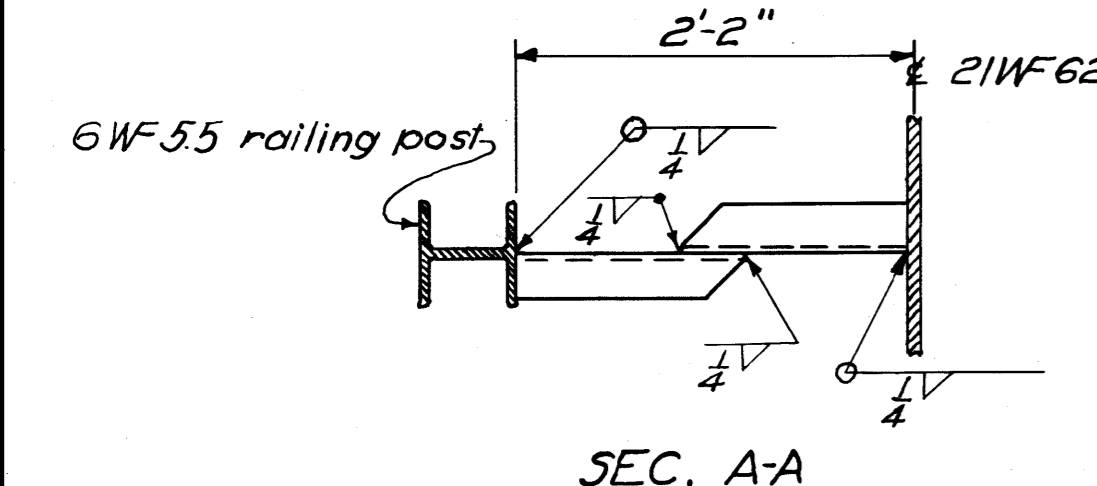
VARO ENGINEERS COLUMBUS, OHIO				
ABUTMENT No. 12				
BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO				
MUSKINGUM COUNTY COUNTY ROAD No. 32				
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
HAR	HAR	J.R.P.	R.W.P.	W.H.C.
				DATE
				10-15-52



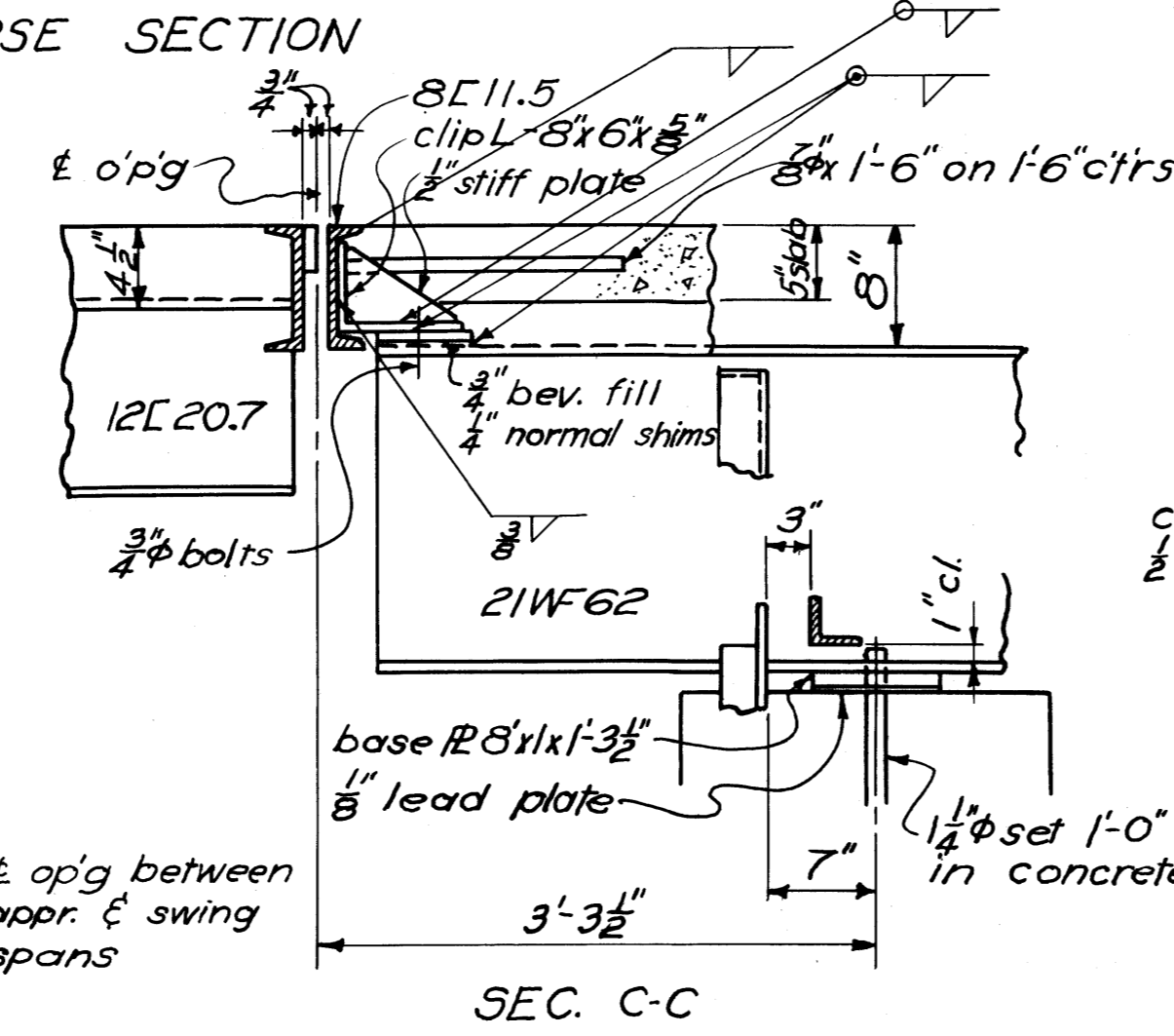
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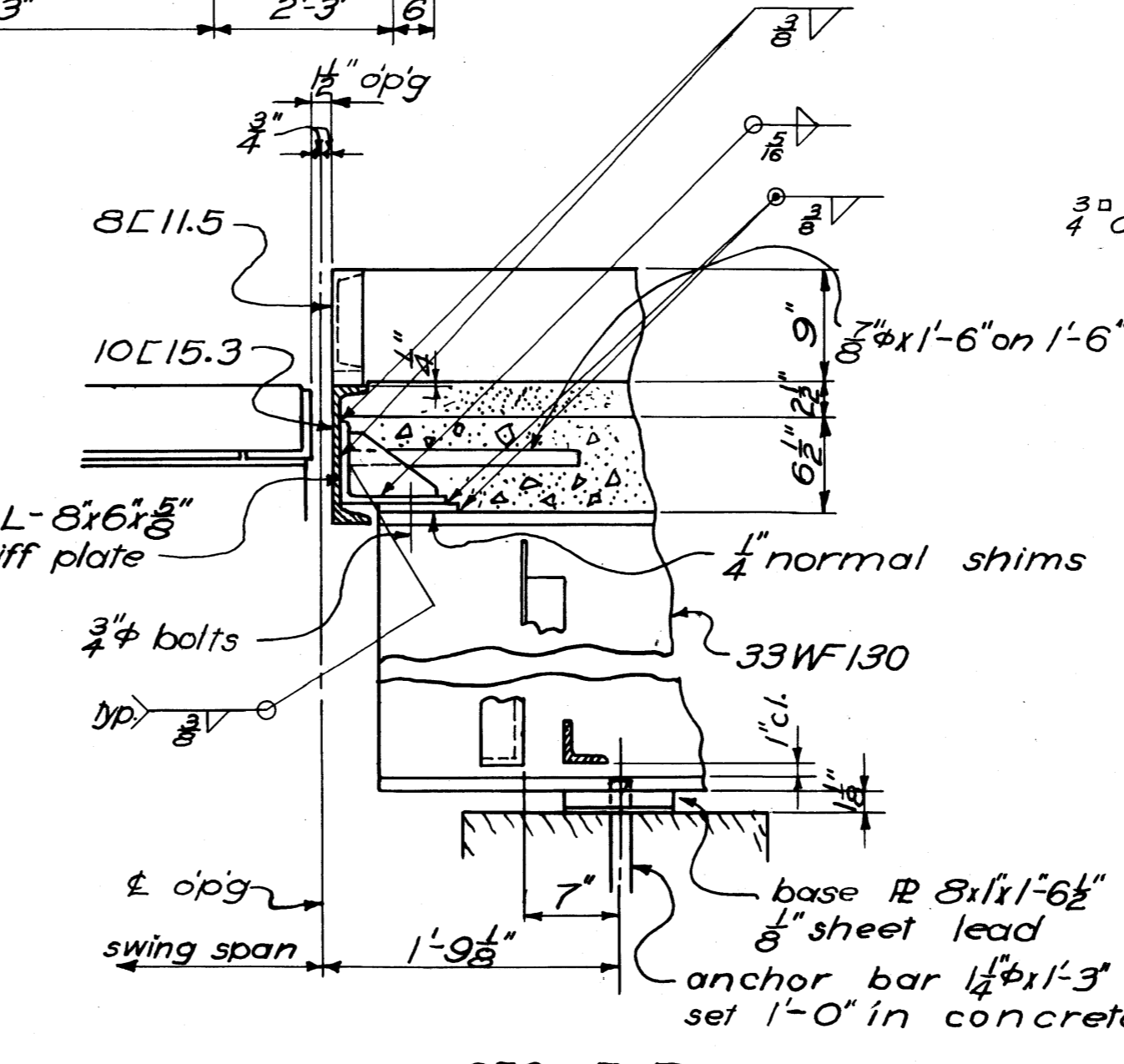
PLAN



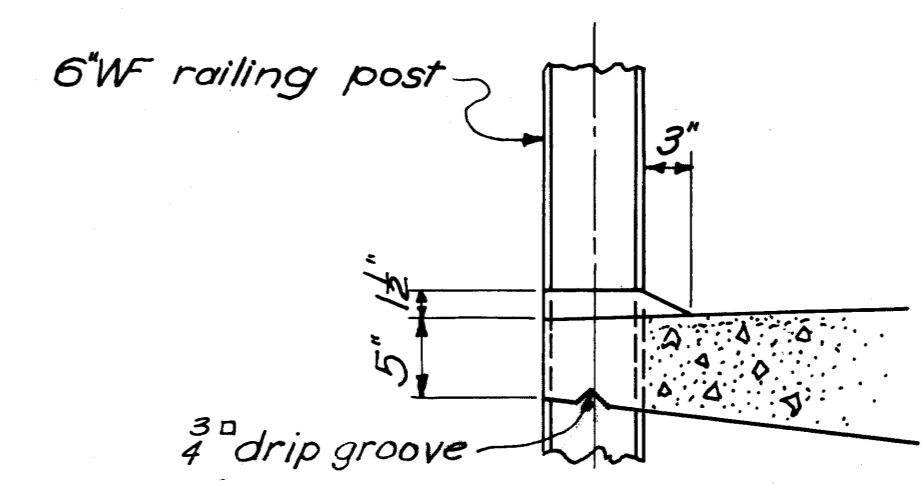
SEC. A-A



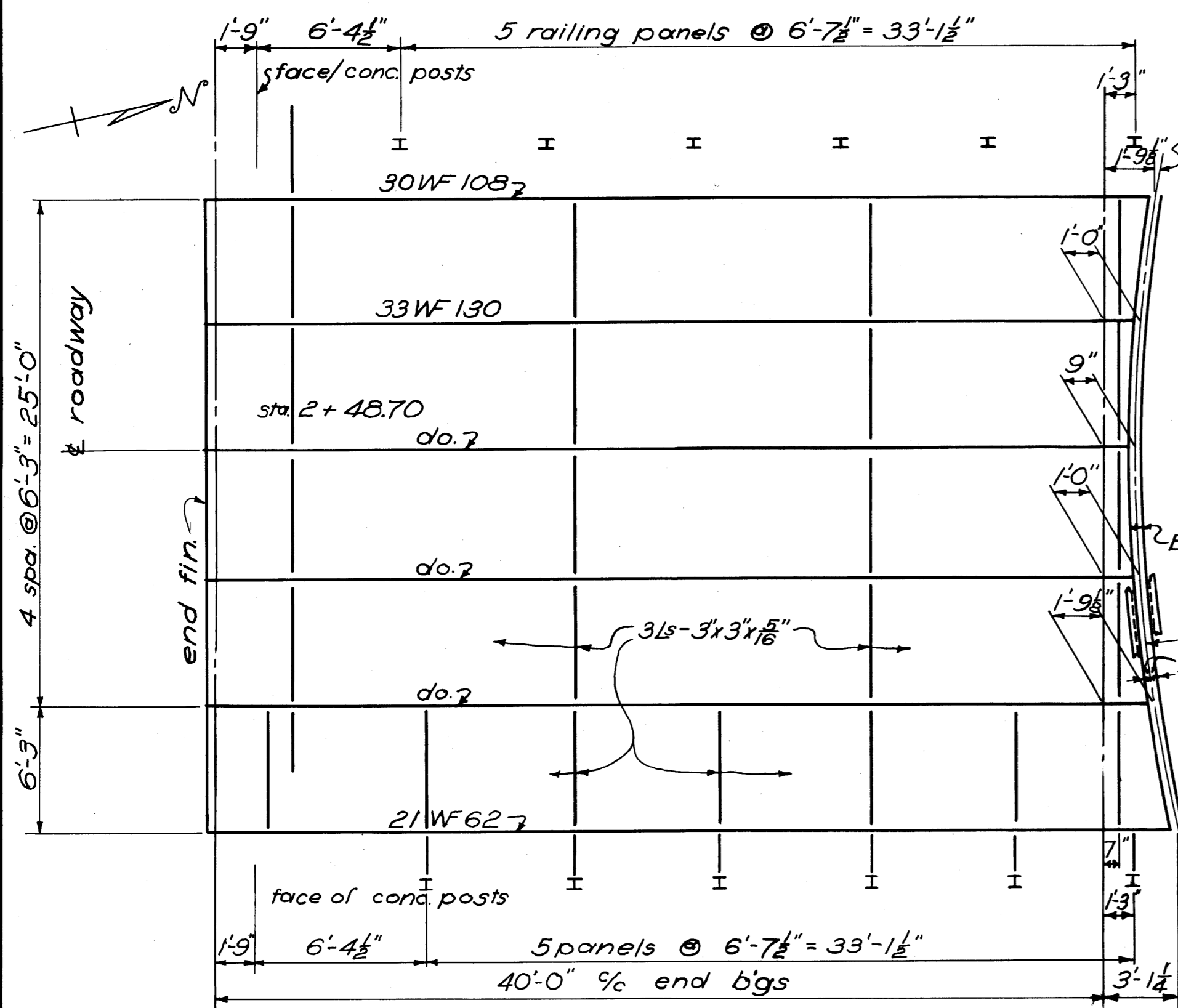
SEC. C-C



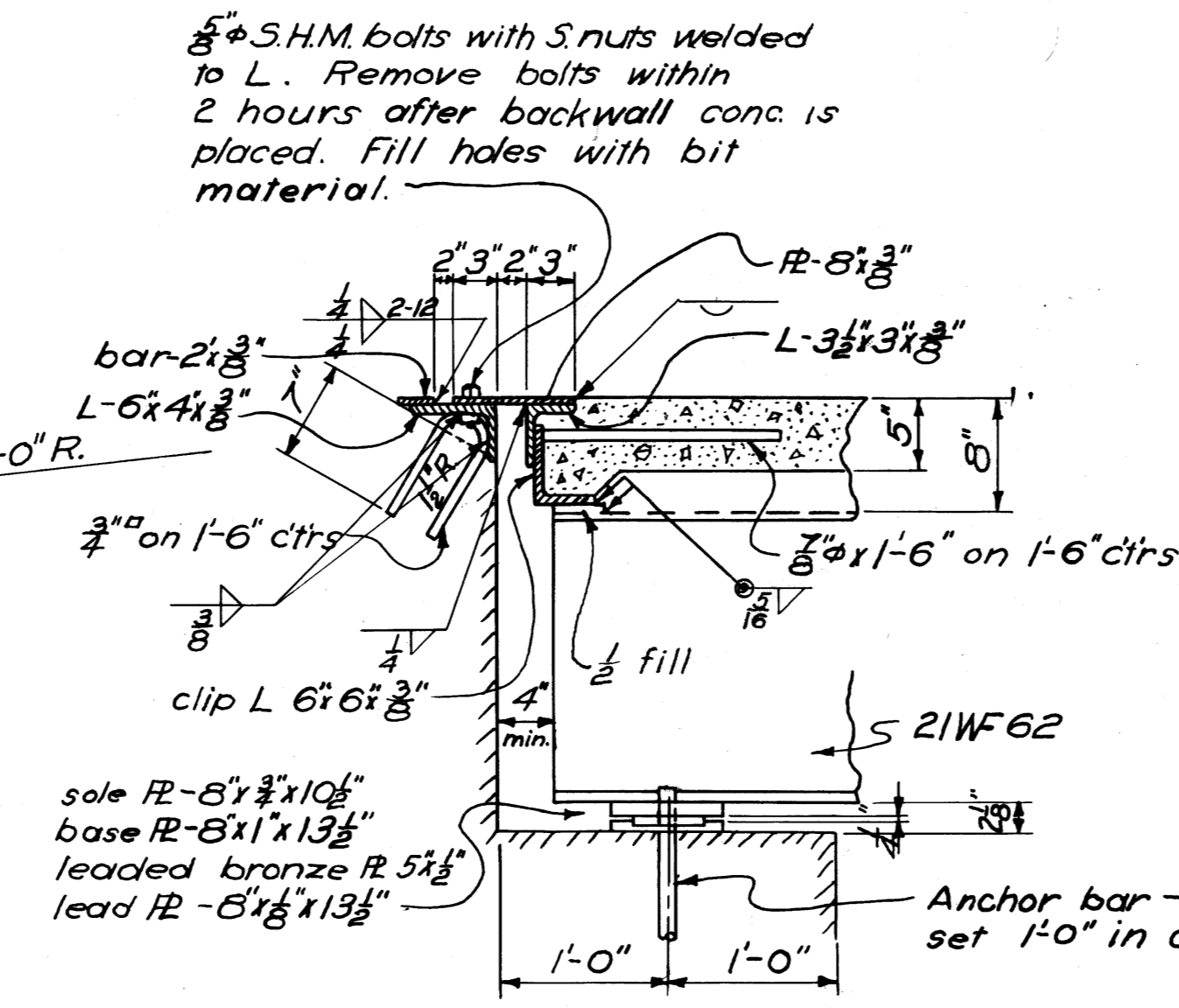
SEC. B-B



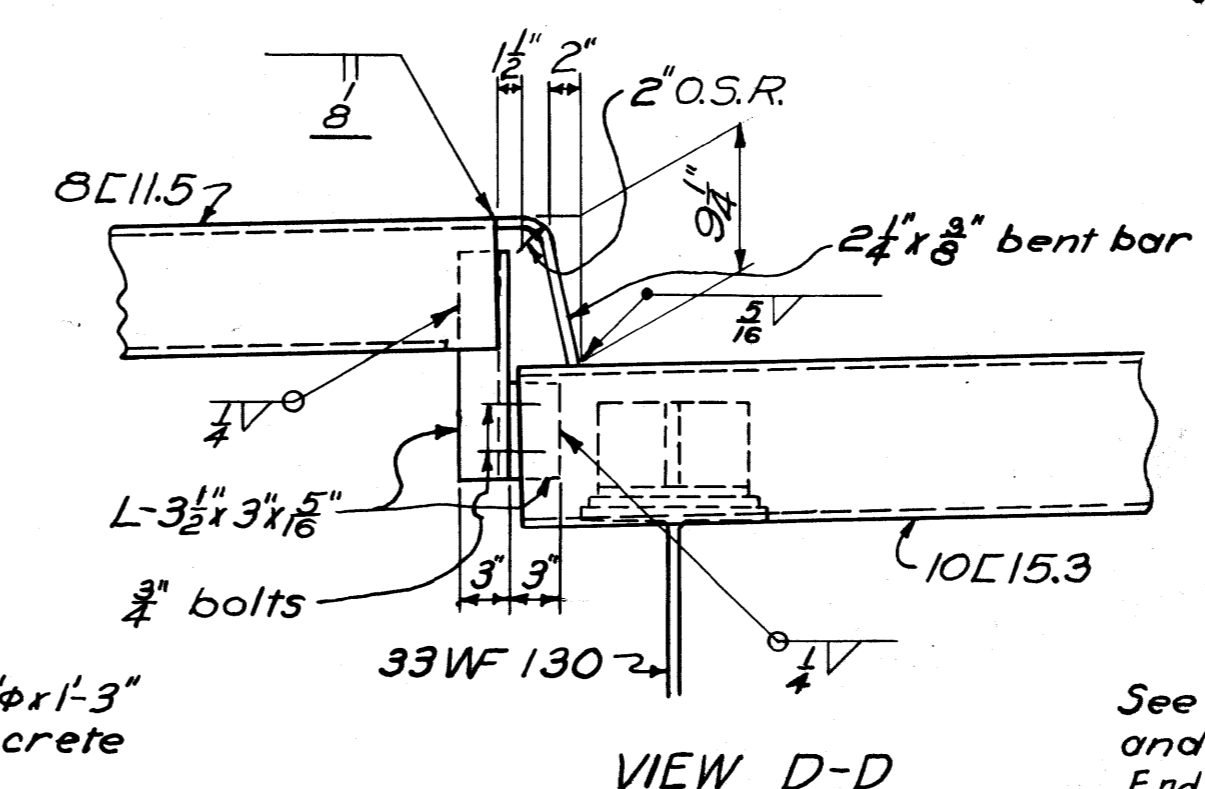
SEC. F-F  
DETAIL of DRAINAGE PAD



FRAMING PLAN



SEC. E-E



VIEW D-D

Deflection and Camber				
Location	1.5 beams 33WF130	curb beam 33WF130	curb beam 30WF108	S.W. beam 21WF62
Deflection (steel only)	.04"	.04"	.05"	.12"
Deflection (remaining D.L.)	.24"	.24"	.45"	.46"
Shop camber req'd	none	none	none	none

5/8" S.H.M. bolts with 5 nuts welded to L. Remove bolts within 2 hours after backwall conc is placed. Fill holes with bit material.

See sheet (35) for additional details and location of sections.  
End finish details and expansion shoe details for 33WF130 & 30WF108 at South end of span are similar to those shown on sheet (25).  
Railing details shown on sheet (40)

**VARO ENGINEERS**  
COLUMBUS, OHIO

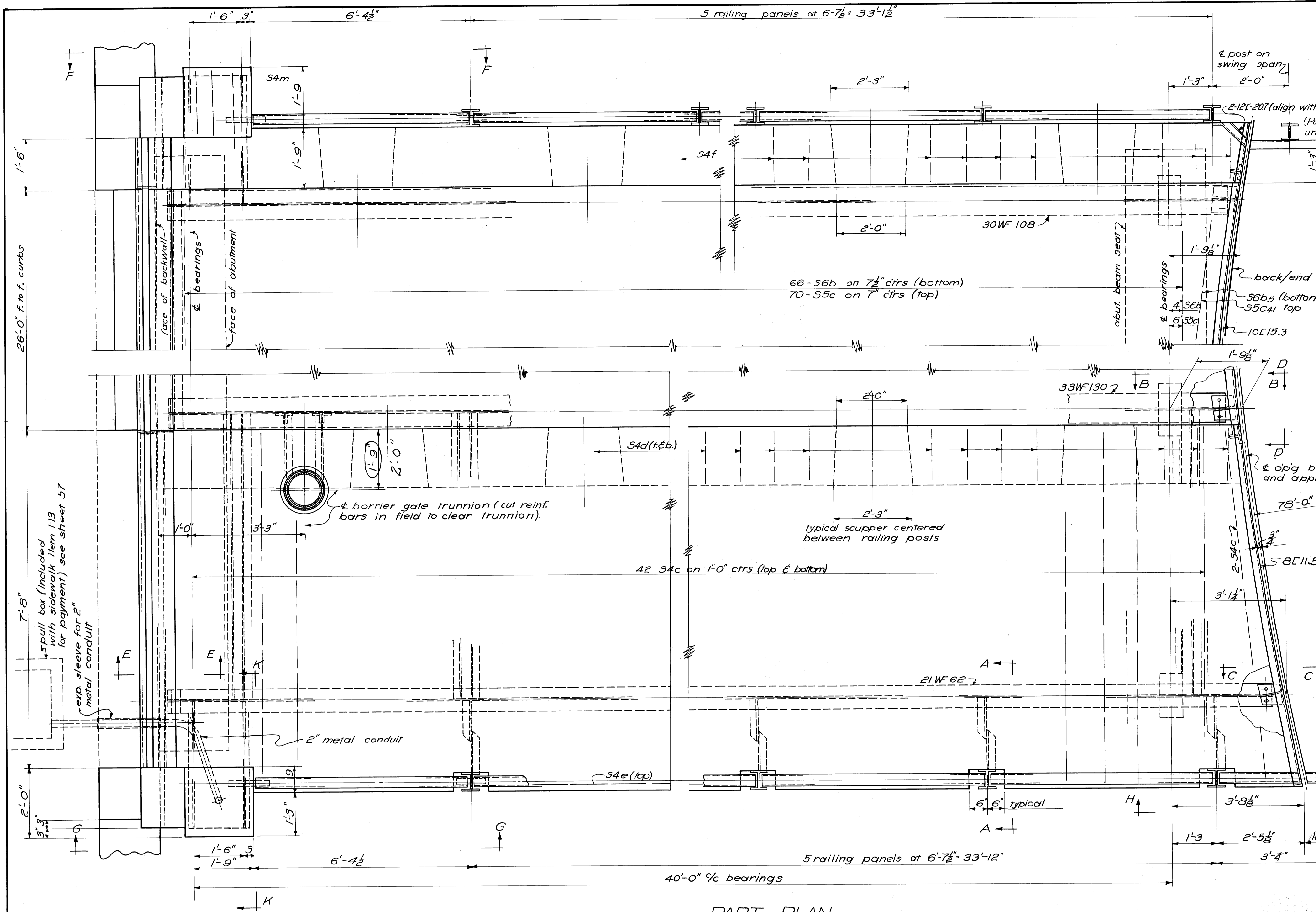
**40 FT. APPROACH SPAN**  
**BRIDGE OVER MUSKINGUM RIVER**  
**BETWEEN DUNCAN FALLS & PHILO**

MUSKINGUM COUNTY  
COUNTY ROAD No. 32  
OHIO

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
VAR	VAR	reb	J.O.G.	W.H.C.	10-15-52

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

(Payment for these  $\bar{L}$ s will be made at the unit price bid for Item 5-14-Steel Railing)



**NOTES**

See sheet 34 for sec. A-A, B-B, C-C, E-E, and view D-D.

See sheet 40 for view G-G and H-H and sec. K-K.

View F-F is similar and opposite hand to view G-G.

End fin. details at south end of span are similar to those shown for structure over intake on sh. 25.

Longitudinal reinforcing bars are not shown. See sheet 34 for transverse spacing.

For barrier gate curb and sidewalk latch details see sheet 36.

PART PLAN

VARO ENGINEERS COLUMBUS, OHIO					
40 FT APPROACH SPAN BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO MUSKINGUM COUNTY COUNTY ROAD No. 32 OHIO					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
HLR	HLR	HLR	JOG	WFC	10-15-52

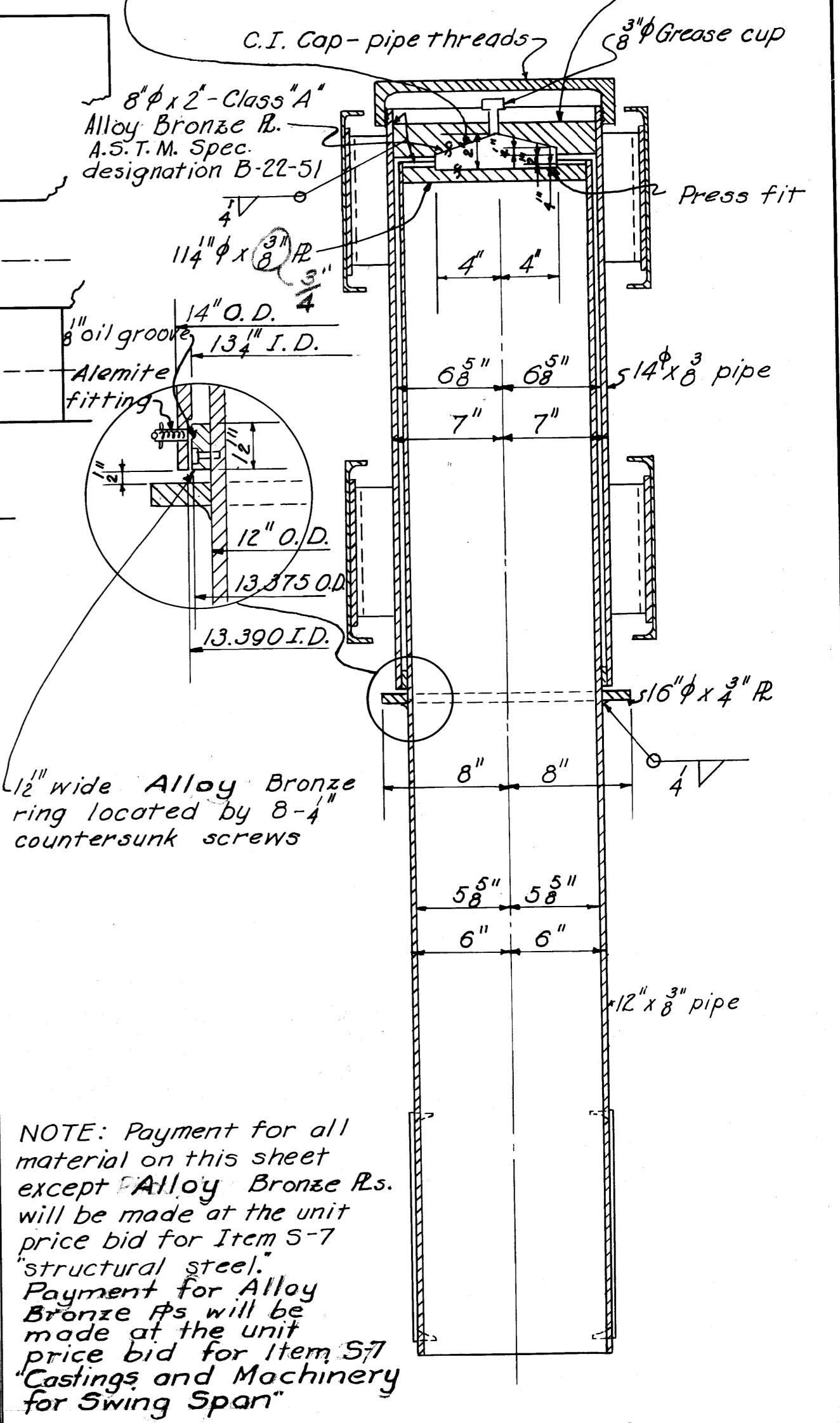
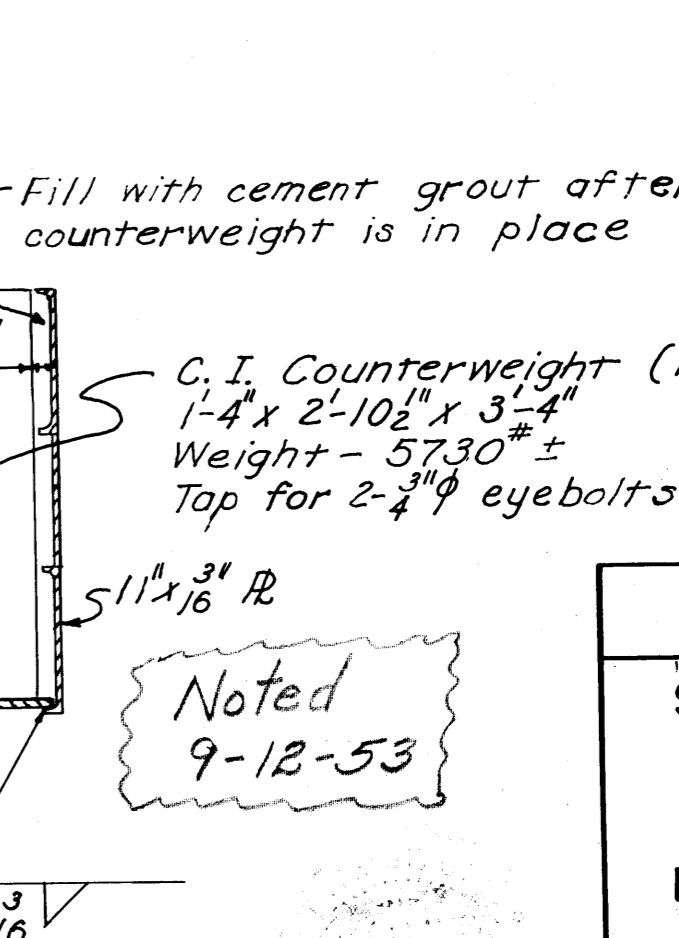
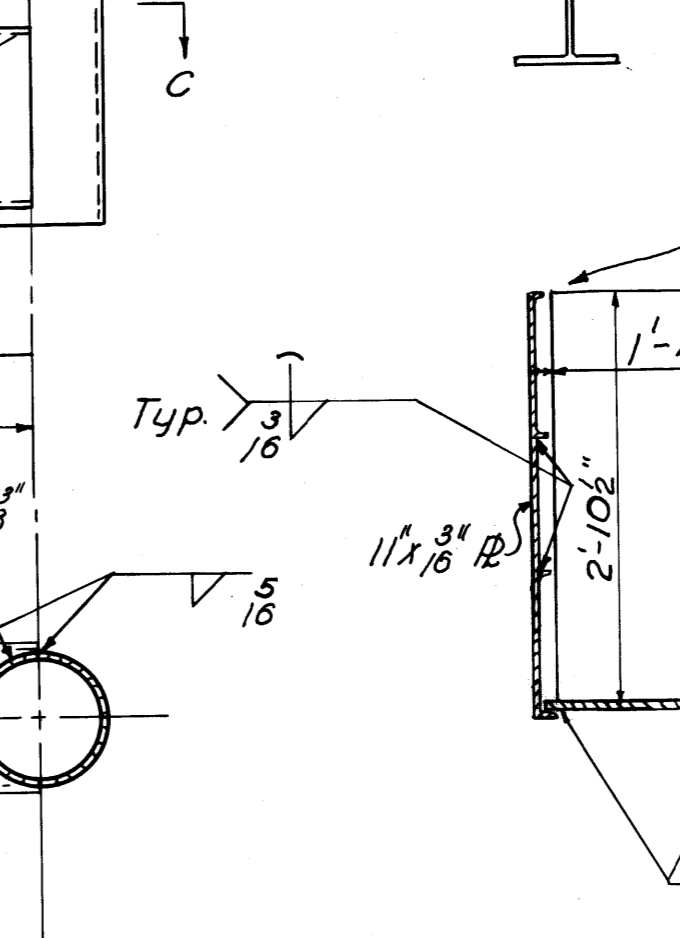
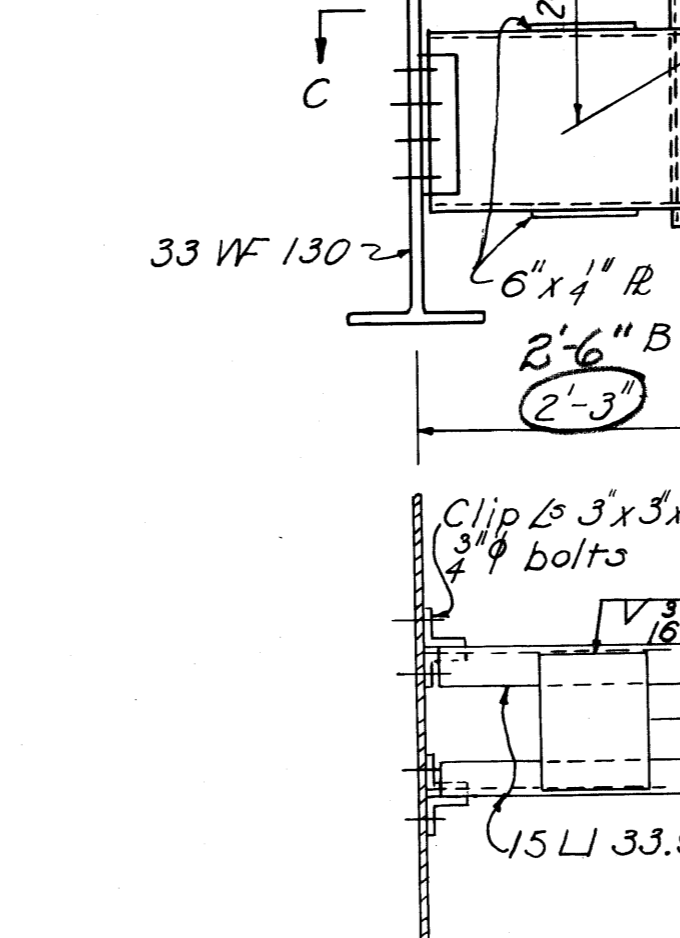
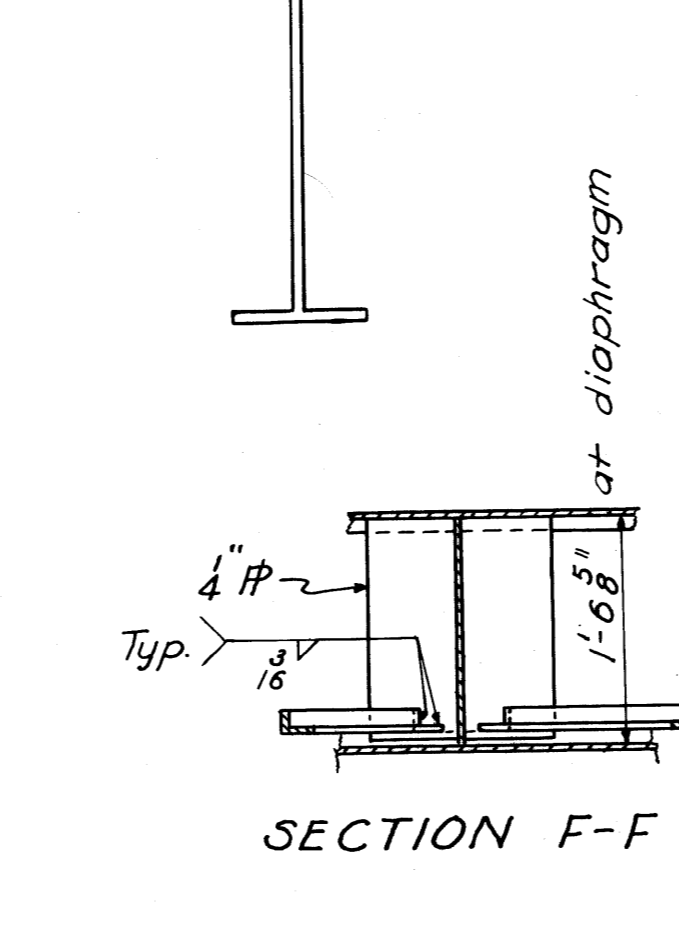
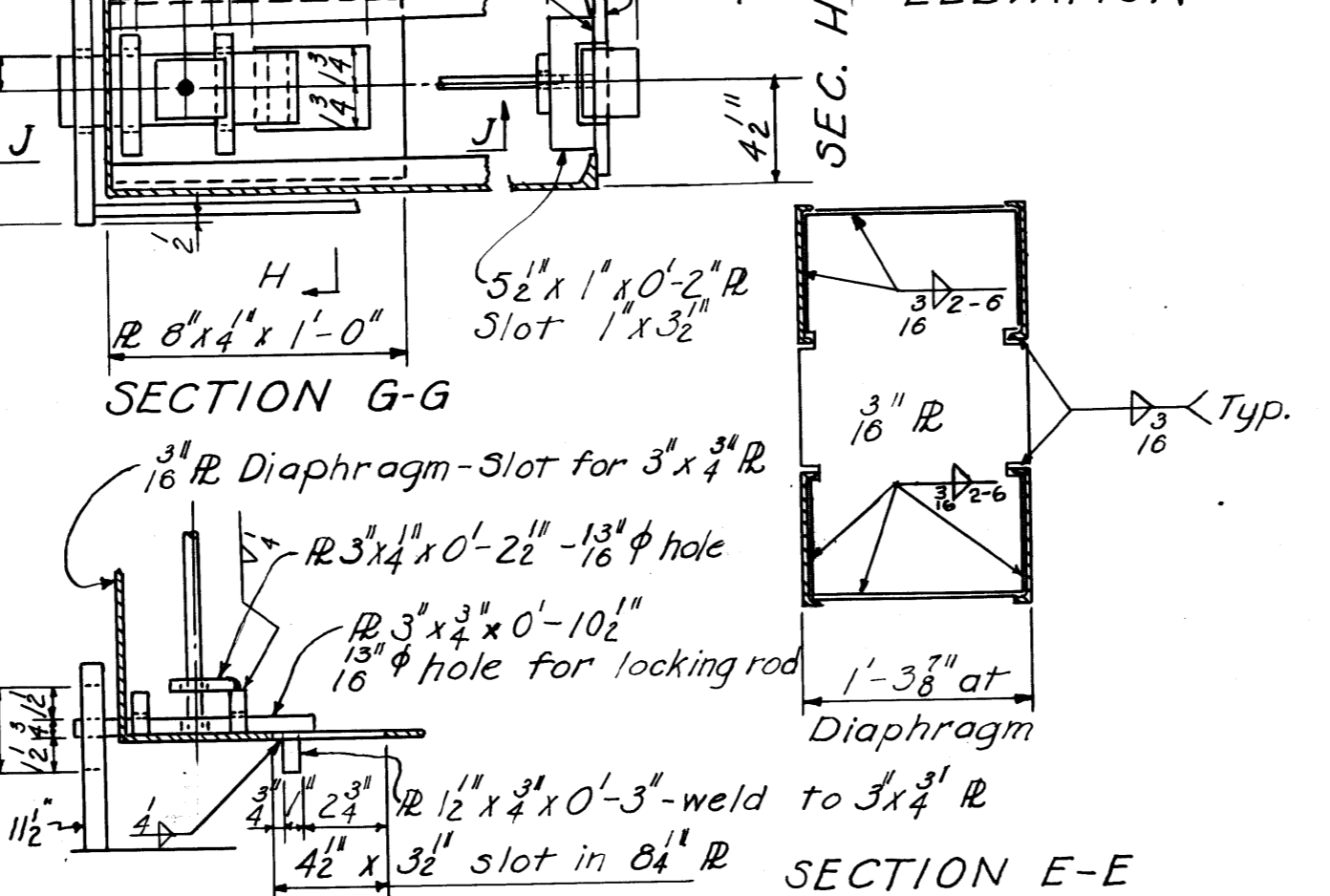
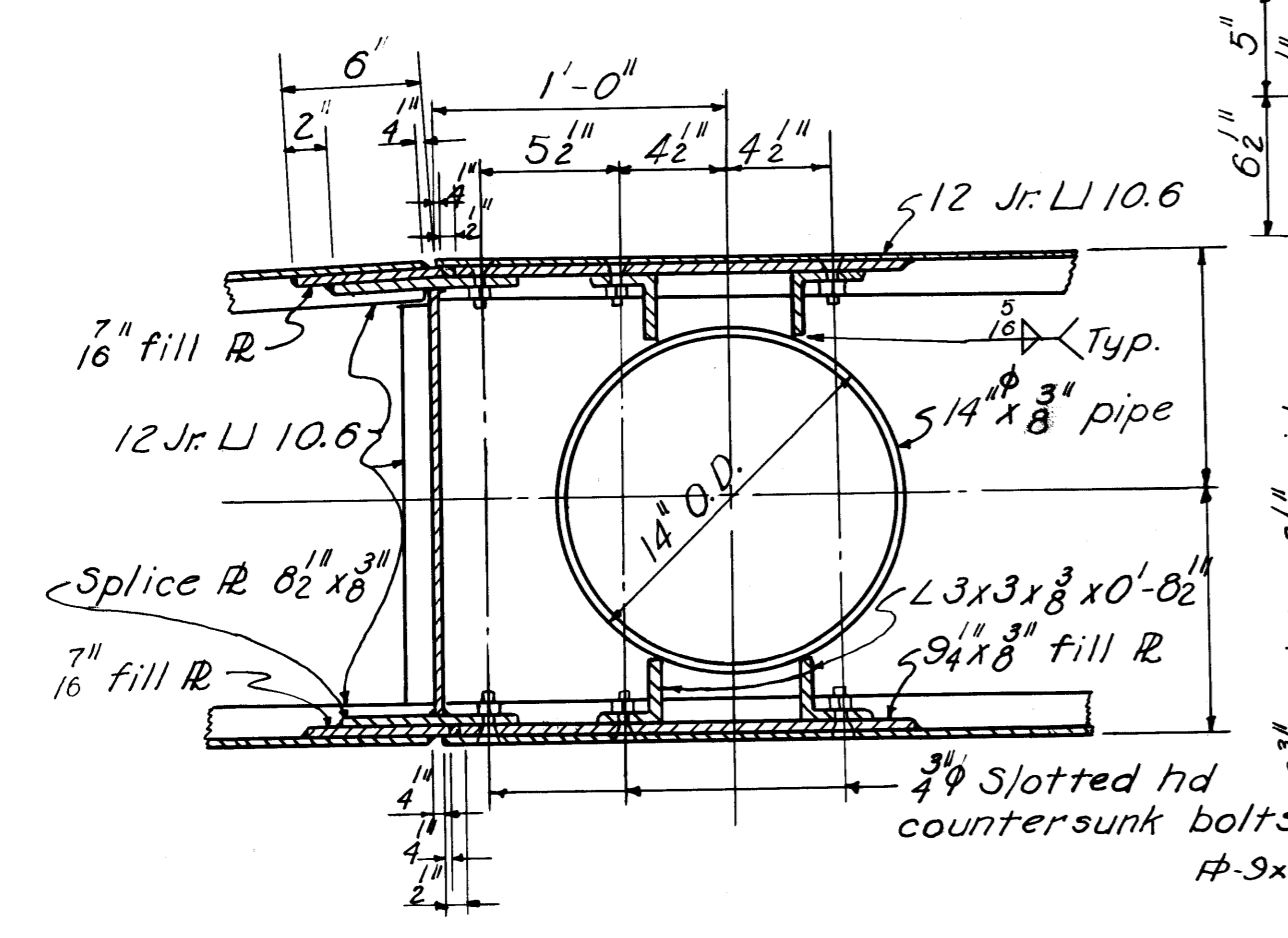
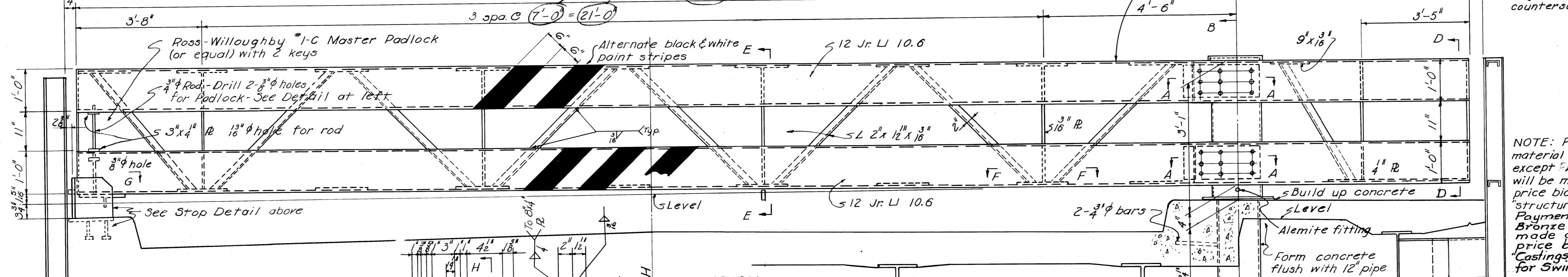
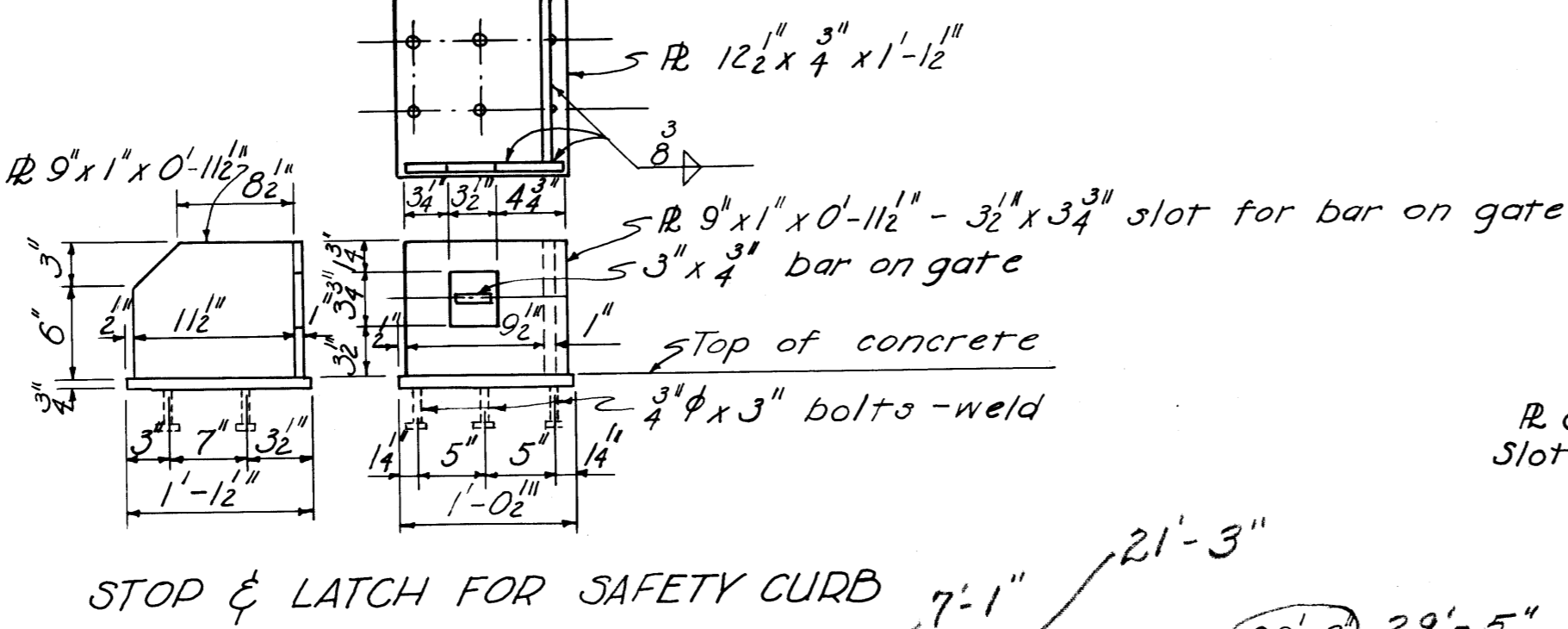
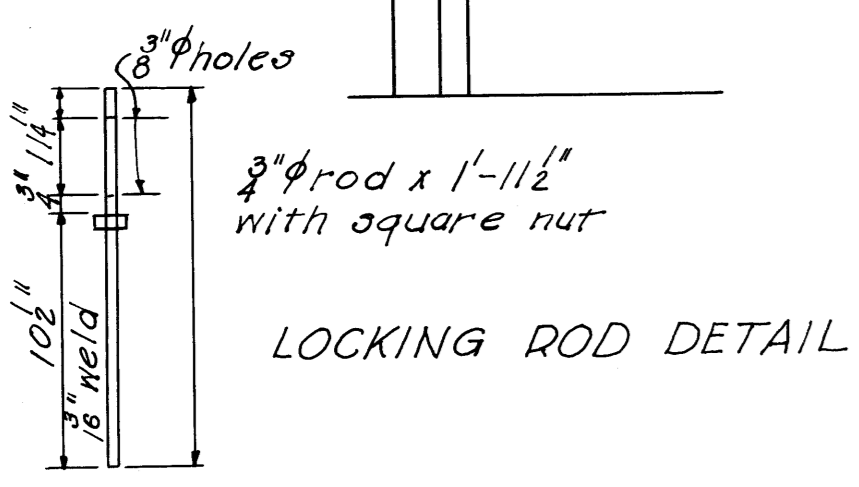
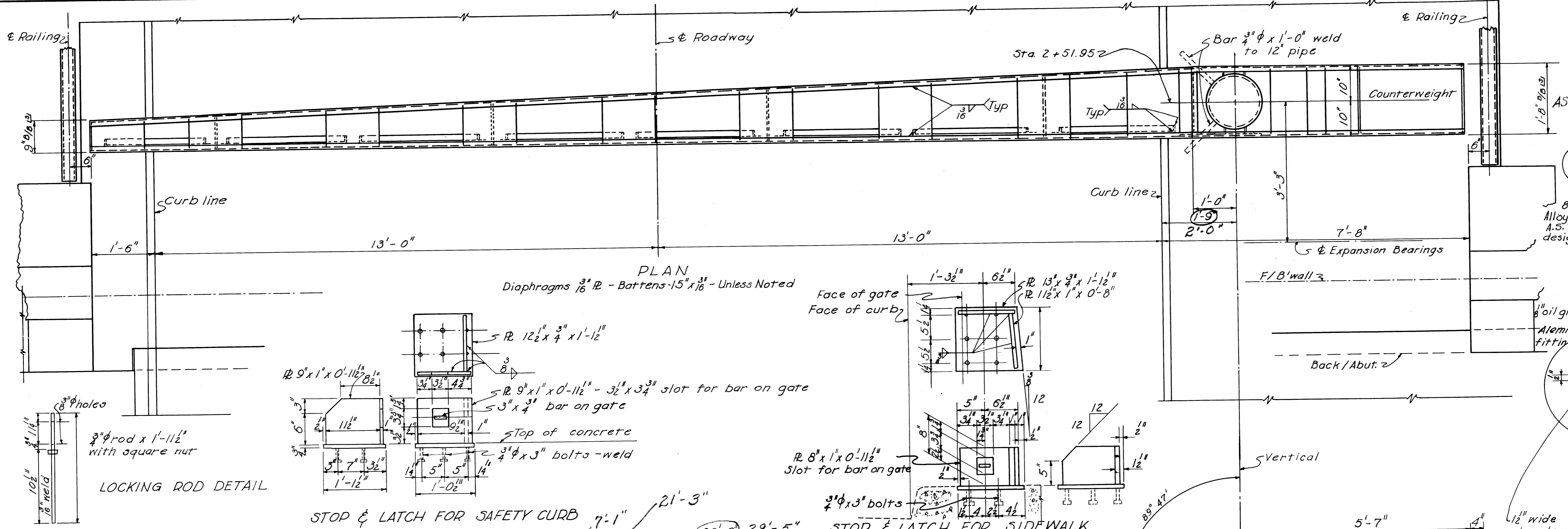
MUSKINGUM COUNTY  
COUNTY ROAD No. 32

ASTM A237-52T Class G 13<sup>3</sup>/<sub>8</sub>" x 1<sup>1</sup>/<sub>2</sub>" Steel R - Oil hardened tool steel (hardened to Rockwell C45 to C-50)

Bearing surfaces to be polished

C.I. Cap-pipe threads

3/8" Grease cup



NOTE: Paint top & bottom (s of gate (on S face when closed) with alternate white & black stripes 6" wide @ 45°. One coat M-9.Ga & M-9.B. Payment is included in total amount bid for Item S-8 and no additional payment will be allowed.

Fill with cement grout after counterweight is in place

C.I. Counterweight (built up) for Item S-8 and no additional payment will be allowed.

Weight - 5730 ±

Top for 2-3/4" eyebolts to facilitate handling

VARO ENGINEERS  
COLUMBUS, OHIO

**SOUTH BARRIER GATE DETAILS  
(ON 40'-0" SPAN)**

BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHILO

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

OHIO

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
AWP	AWP	L.E.M.	AWP	W.H.C.	10-15-52

Noted  
9-12-53

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

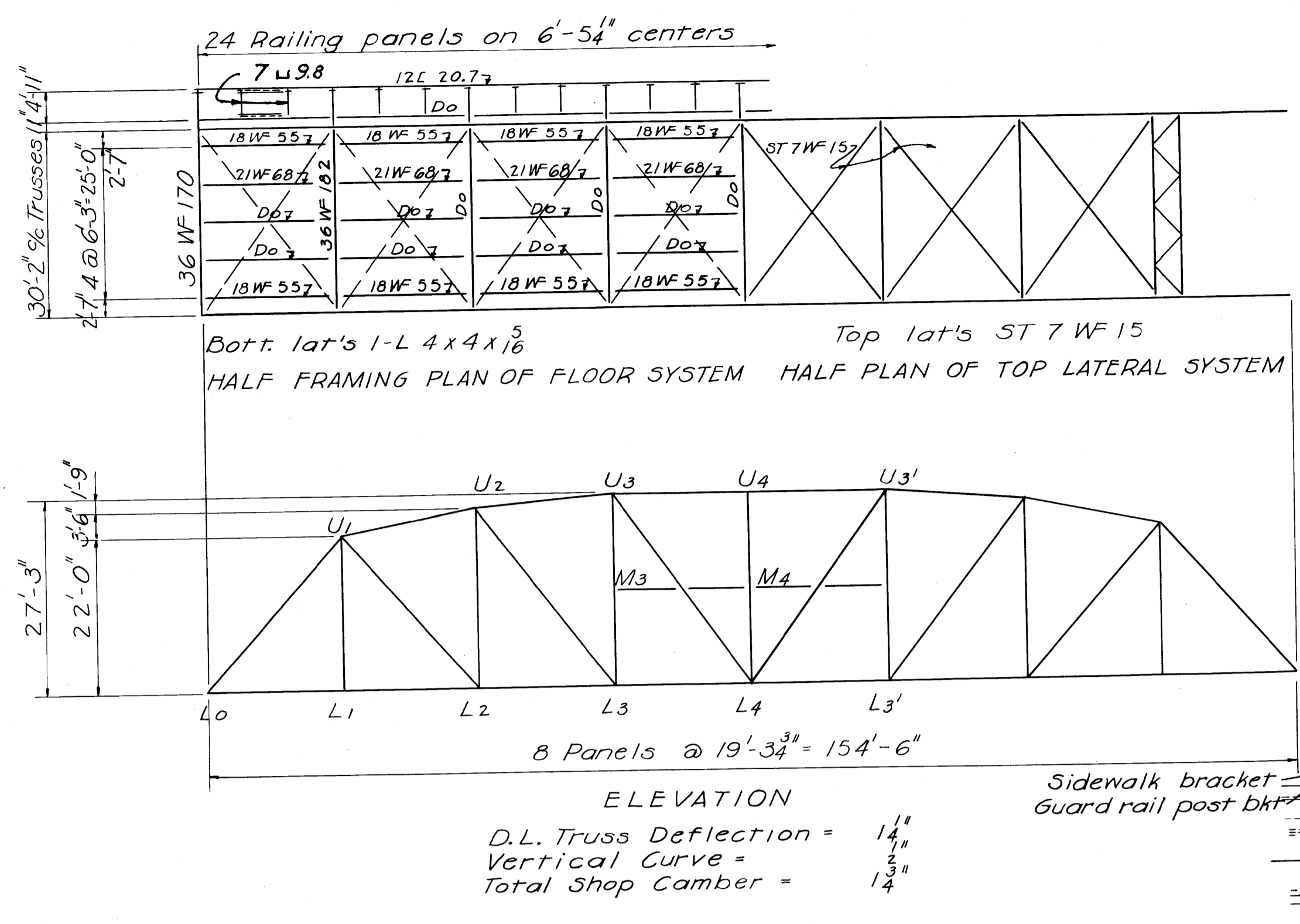
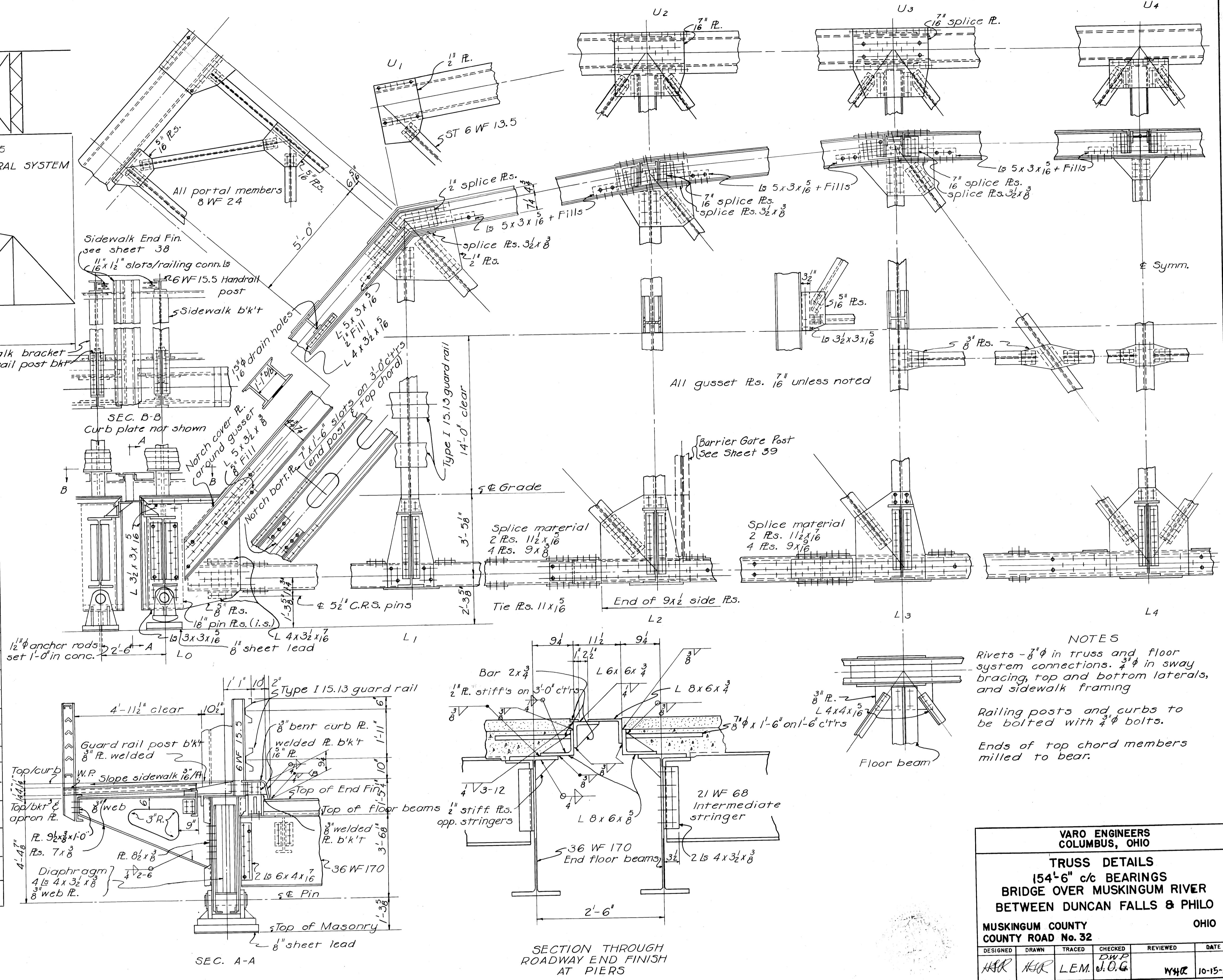


TABLE OF STRESSES AND SECTION

MEMBER	D.L.	L.L.	S.W.L.L	IMPACT	TOTAL	TOTAL WITH OVERLOAD	ALLOWABLE UNIT STRESS	COMPUTED UNIT STRESS	SECTION
U1L0	+289.5	+126.4	22.5	22.6	+461.0			17.3	2-12x3 1/2 @ 30.9 1 Cor. R. 2 1/2 x 1/2 1 Bolt R. 2 1/2 x 3/8
U1U2	+286.0	+123.0	22.3	22.0	+453.3		14.5	14.0	2-12x3 1/2 @ 30.9 1 Cor. R. 2 1/2 x 1/2 1 Bolt R. 2 1/2 x 3/8
U2U3	+331.0	+130.5	25.7	23.4	+510.6		14.5	14.5	2-12x3 1/2 @ 30.9 1 Cor. R. 2 1/2 x 1/2 1 Bolt R. 2 1/2 x 3/8
U3U4	+352.0	+138.9	27.4	24.9	+543.2		14.5	14.5	2-12x3 1/2 @ 30.9 1 Cor. R. 2 1/2 x 1/2 1 Bolt R. 2 1/2 x 3/8
L0L1	-191.0	-75.3	14.8	13.5	-294.6		18.0	17.6	2-12x4 @ 40.0 2-Rs. 9x1/2
L2L3	-281.0	-111.0	22.0	19.9	-433.9		18.0	18.0	2-12x4 @ 40.0 2-Rs. 9x1/2
L3L4	-331.0	-130.1	25.7	23.3	-510.1		18.0	17.9	2-12x4 @ 40.0 2-Rs. 9x1/2
U1L1	-62.1	-56.3	4.8	19.5	-142.7	-218.5	27.0	22.4	12 WF 40
U2L2	+41.8	+41.2	6.6	12.6	+102.2	+156.0	16.8	6.7	12 WF 53
U3L3	+1.6	+33.1	+4.9	+8.2	+47.0	+89.1	+19.8	+7.5	12 WF 40
U4L4	NOMINAL								12 WF 40
U1L2	-138.5	-73.1	-12.6	-15.1	-239.3		18.0		12 WF 53
U2L3	-79.5	-57.5	-9.2	-13.0	-159.2		18.0	16.3	12 WF 40
U3L4	-38.1	+33.8	+3.9	+9.1	+20.1	+63.0	+18.5	+6.4	12 WF 40
MsMs	NOMINAL								12 WF 27
Exterior Stringer	M 34.5	64.5	22.3	121.3	208.1	270.0	27.0		18 WF 55
Interior Stringer	S 6.5	20.4	7.0	33.9	61.3				21 WF 68
Interior Stringer	M 39.6	92.8	32.1	164.5	299.4		27.0		36 WF 182
Interior Floor Beam	S 8.2	24.5	8.5	41.2	74.2				36 WF 170
End Floor Beam	M 3000	435.0	140.0	875.0	1450.0		27.0		36 WF 170
Shoe Reaction	S 40.0	47.3	15.2	102.5	165.0				
Truss Lifting Load	M 191.0	412.0	133.0	736.0	1281.0		27.0		
	S 25.5	45.0	14.5	85.0	144.5				

LEGEND  
(+) = Compression  
(-) = Tension  
Stresses shown in kips (K)  
Moments shown in ft kips (K')



VARO ENGINEERS  
COLUMBUS, OHIO

TRUSS DETAILS  
154'-6" c/c BEARINGS  
BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHILO

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

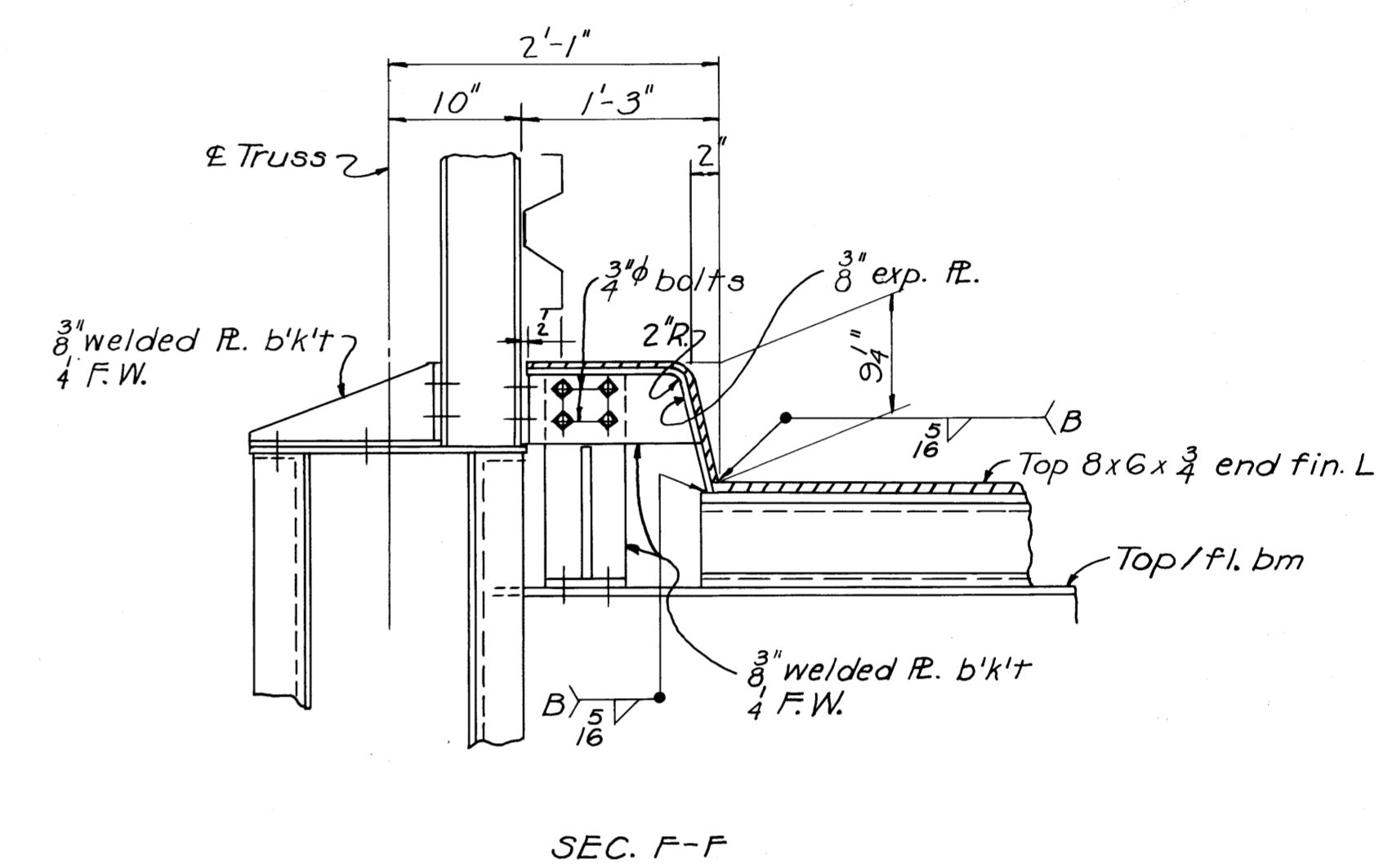
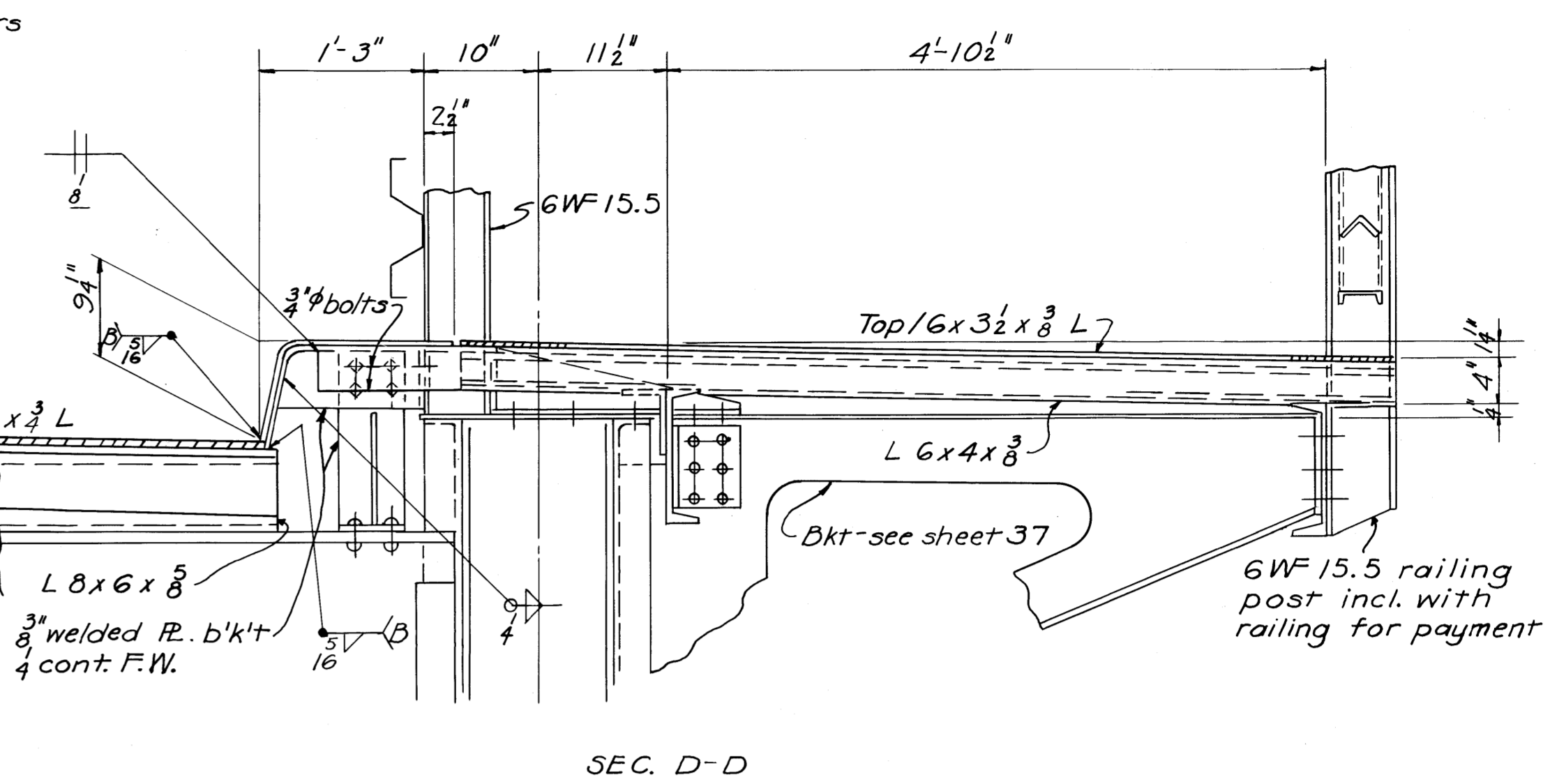
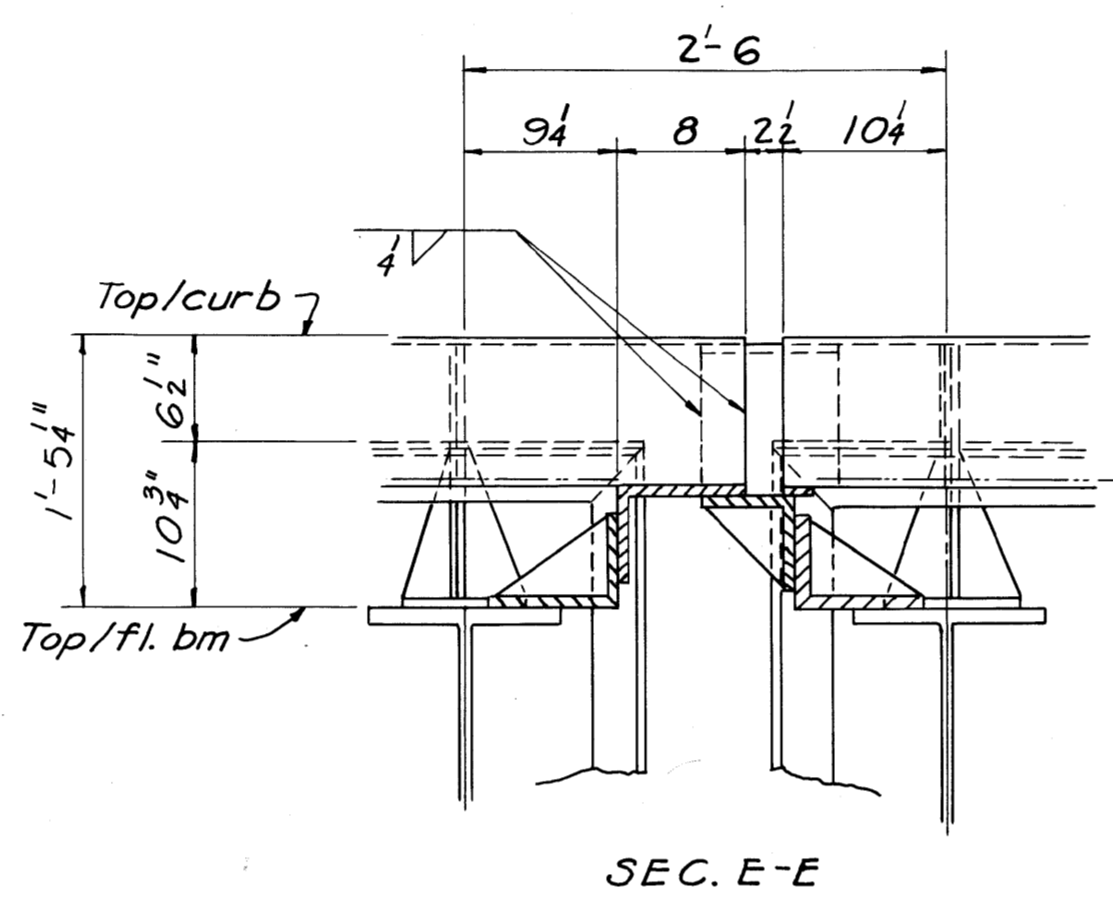
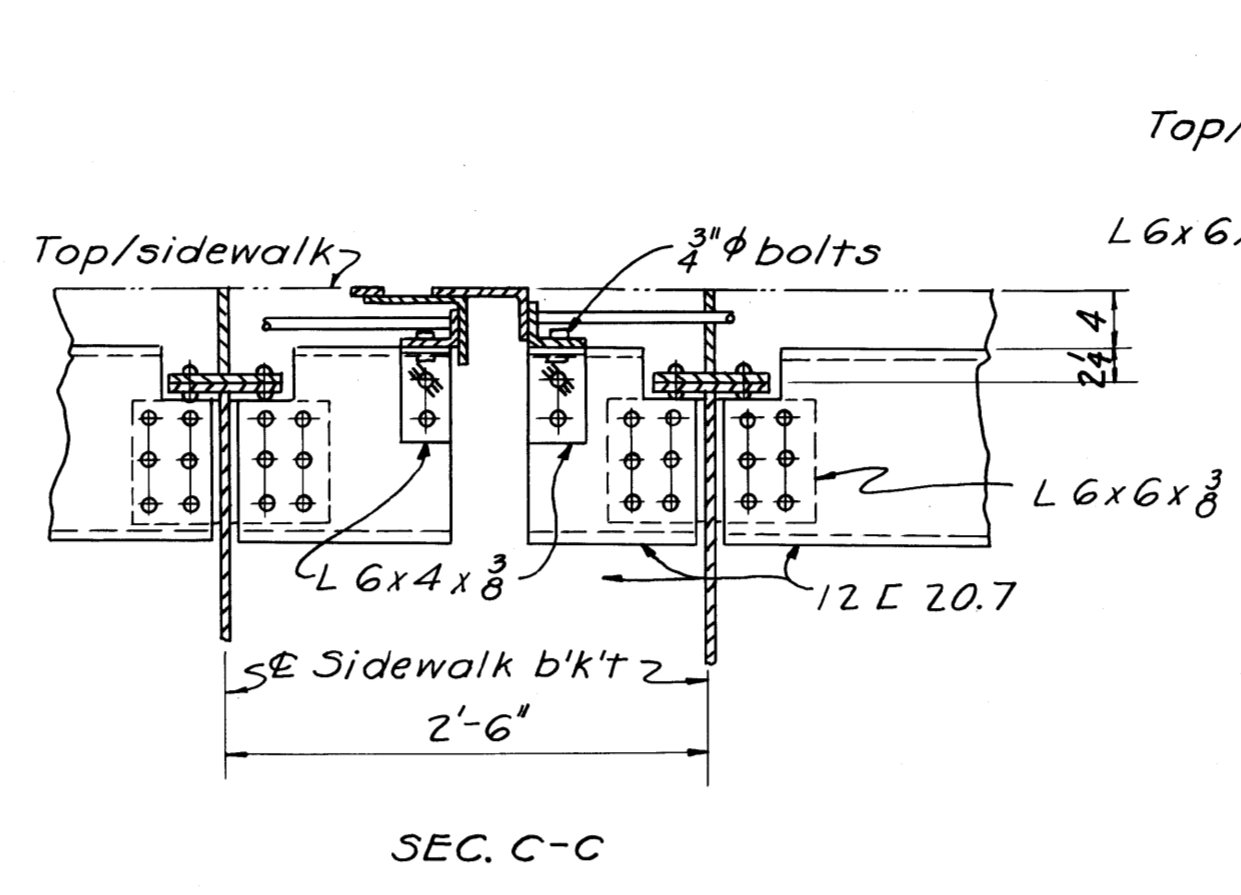
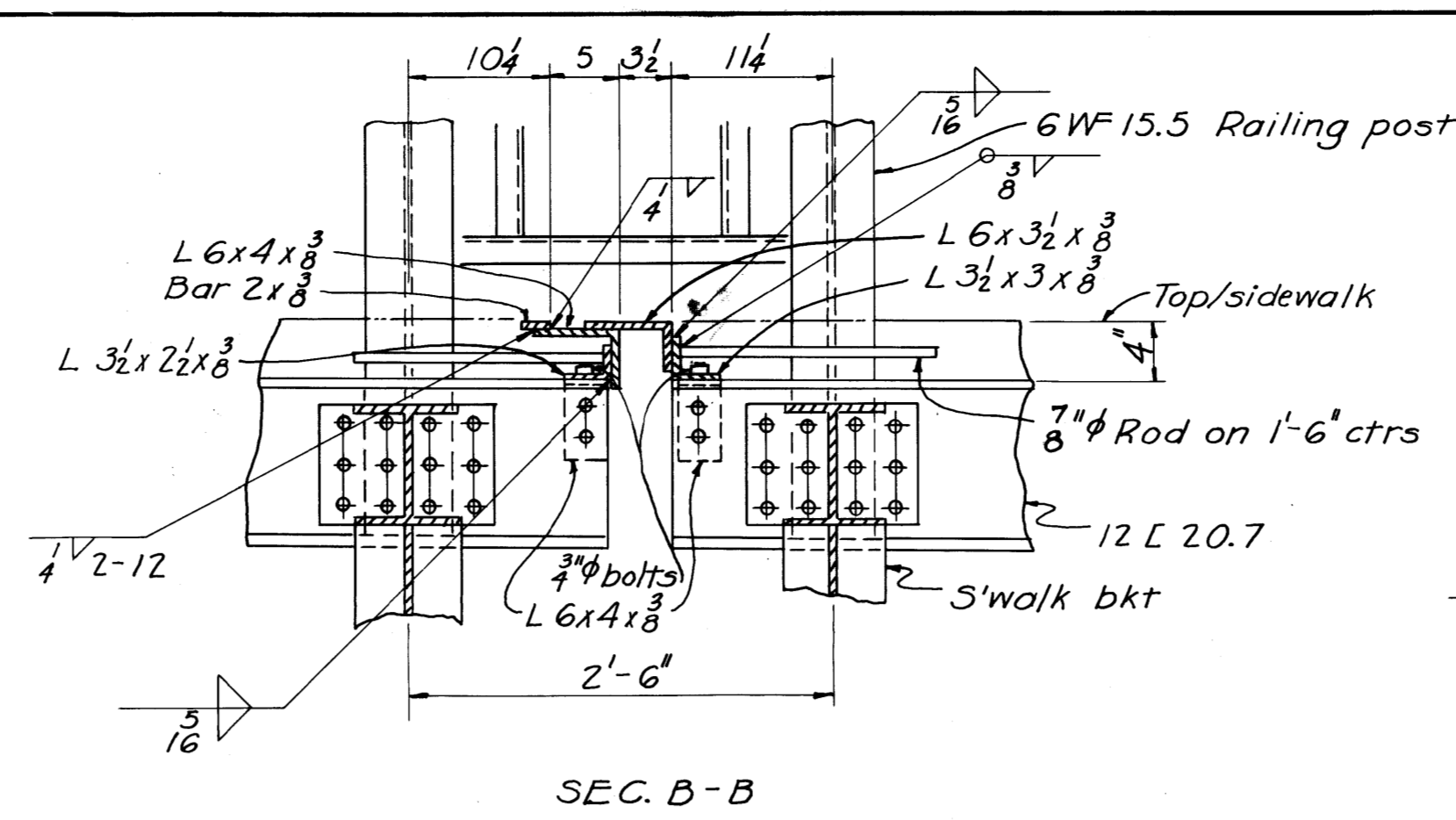
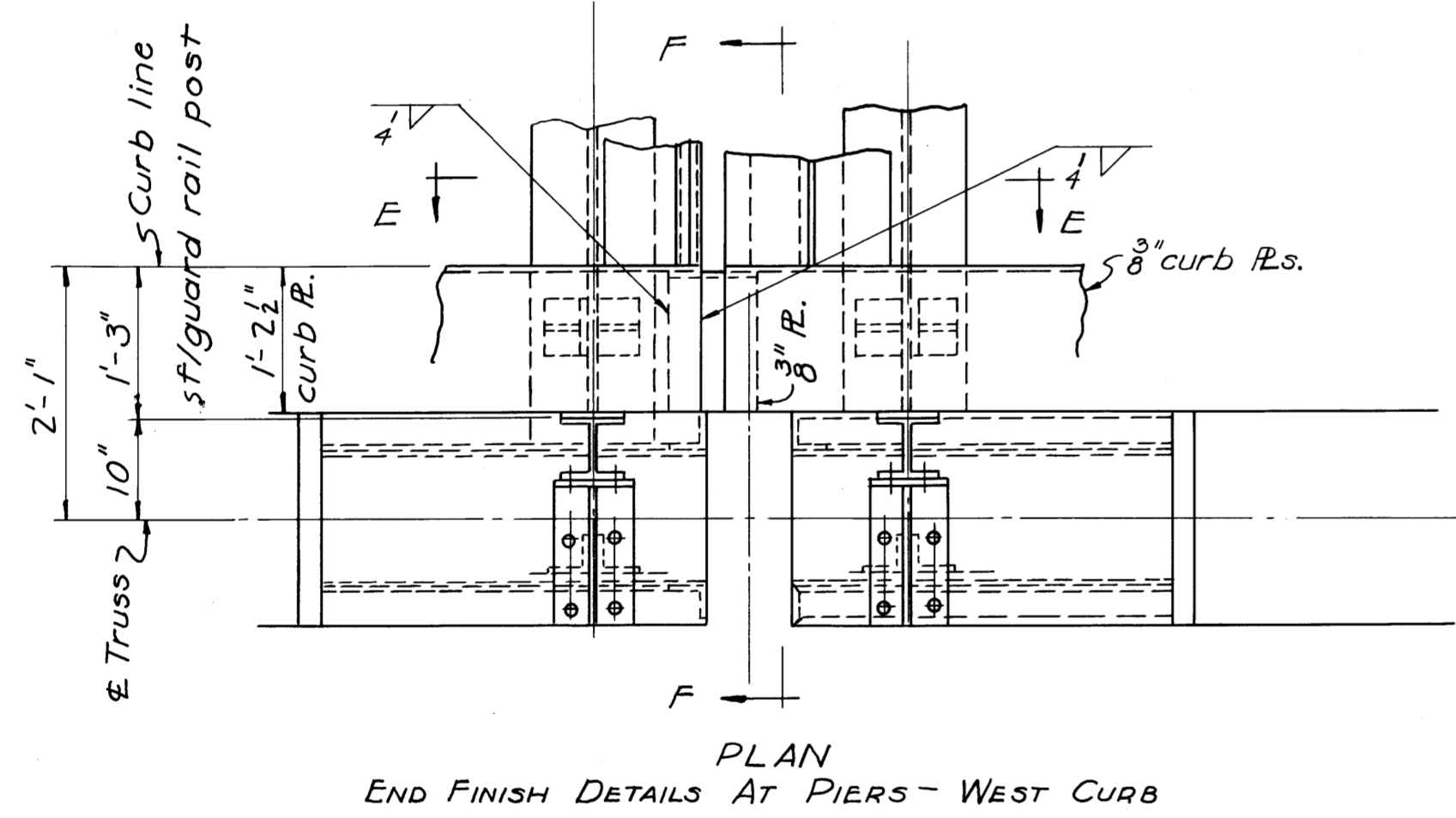
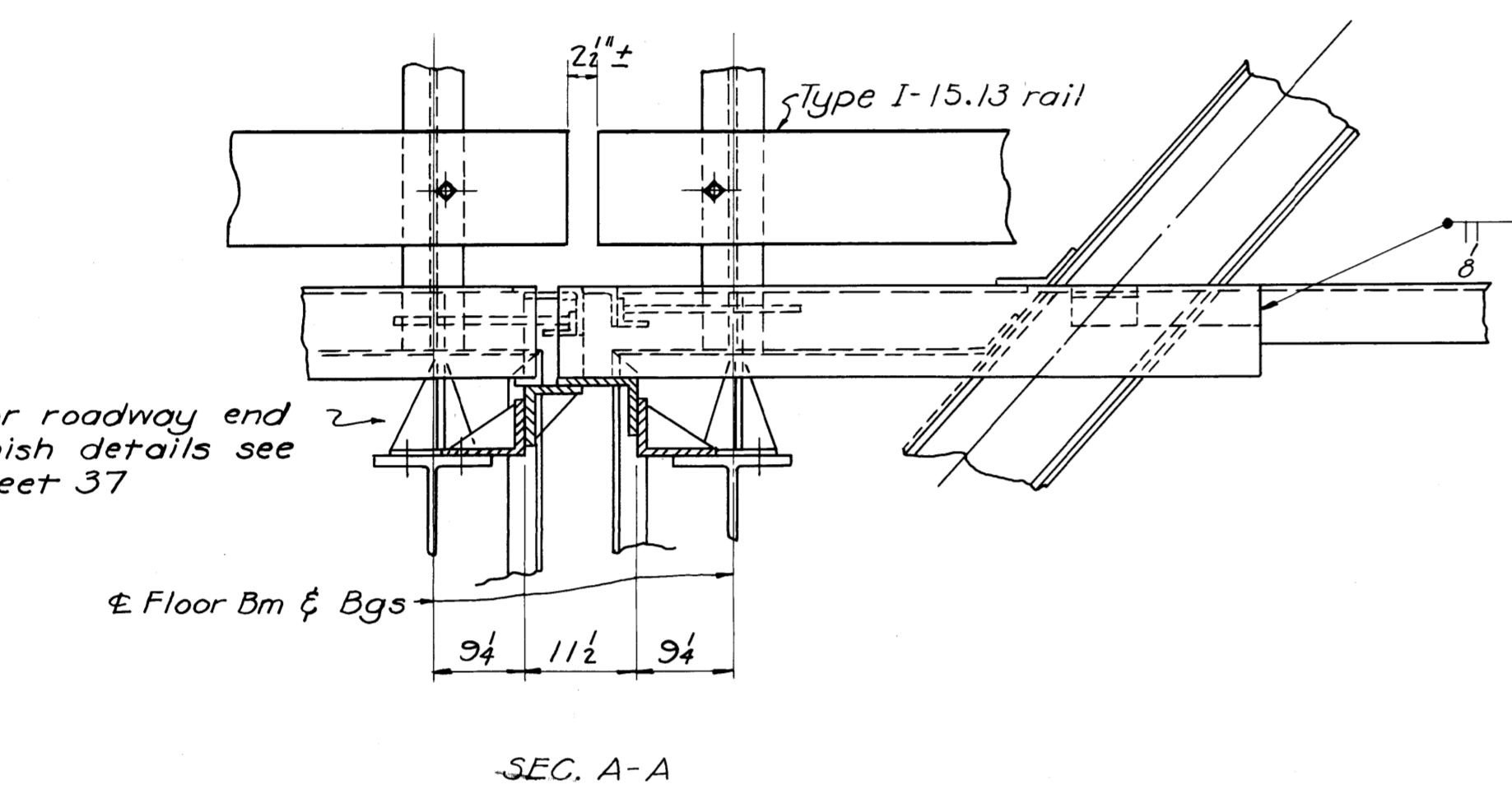
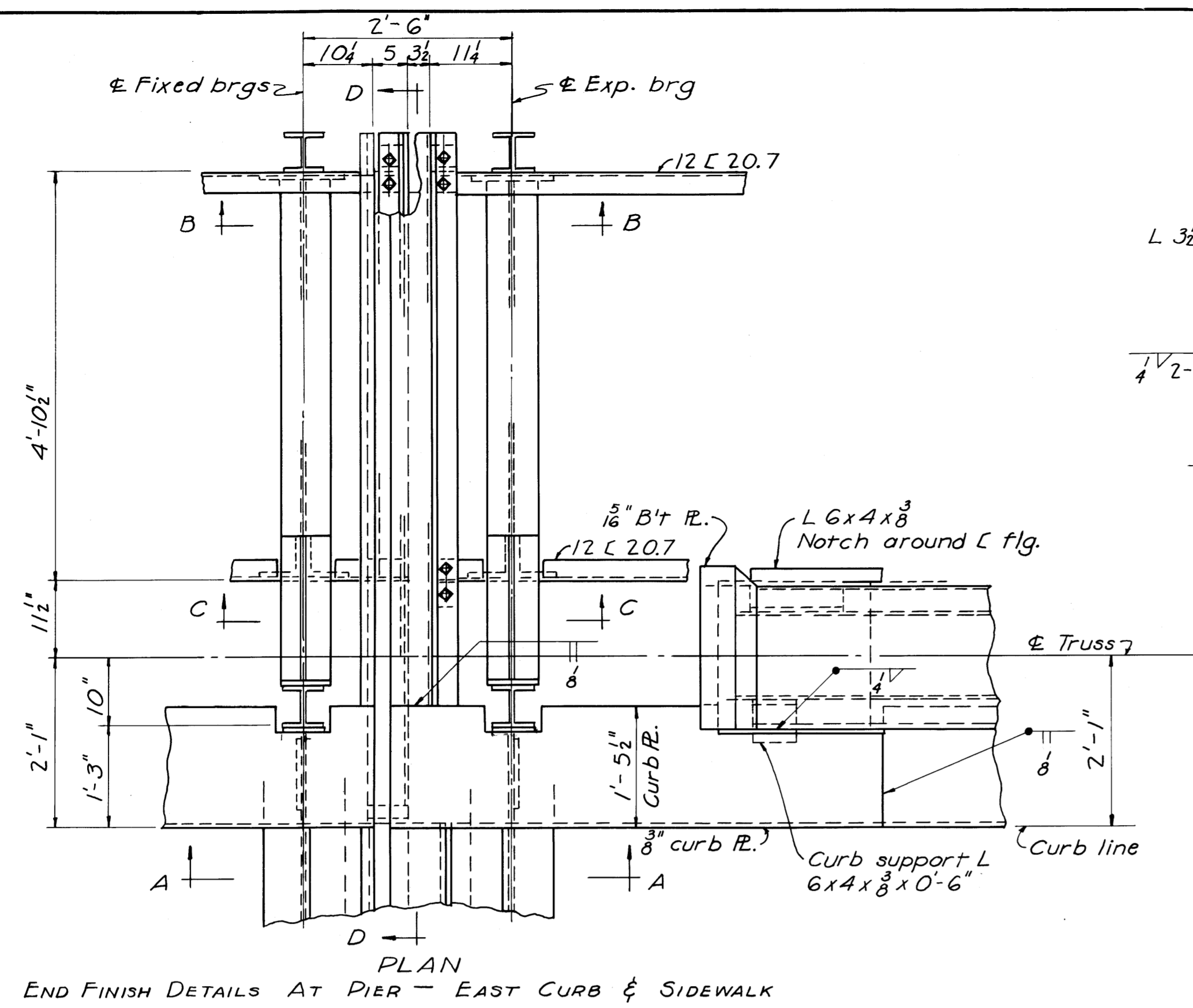
OHIO

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
HR	HR	LEM.	D.W.P.	W.H.R.	10-15-52

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	A-S-1130 (1)	POST WAR

37A  
58

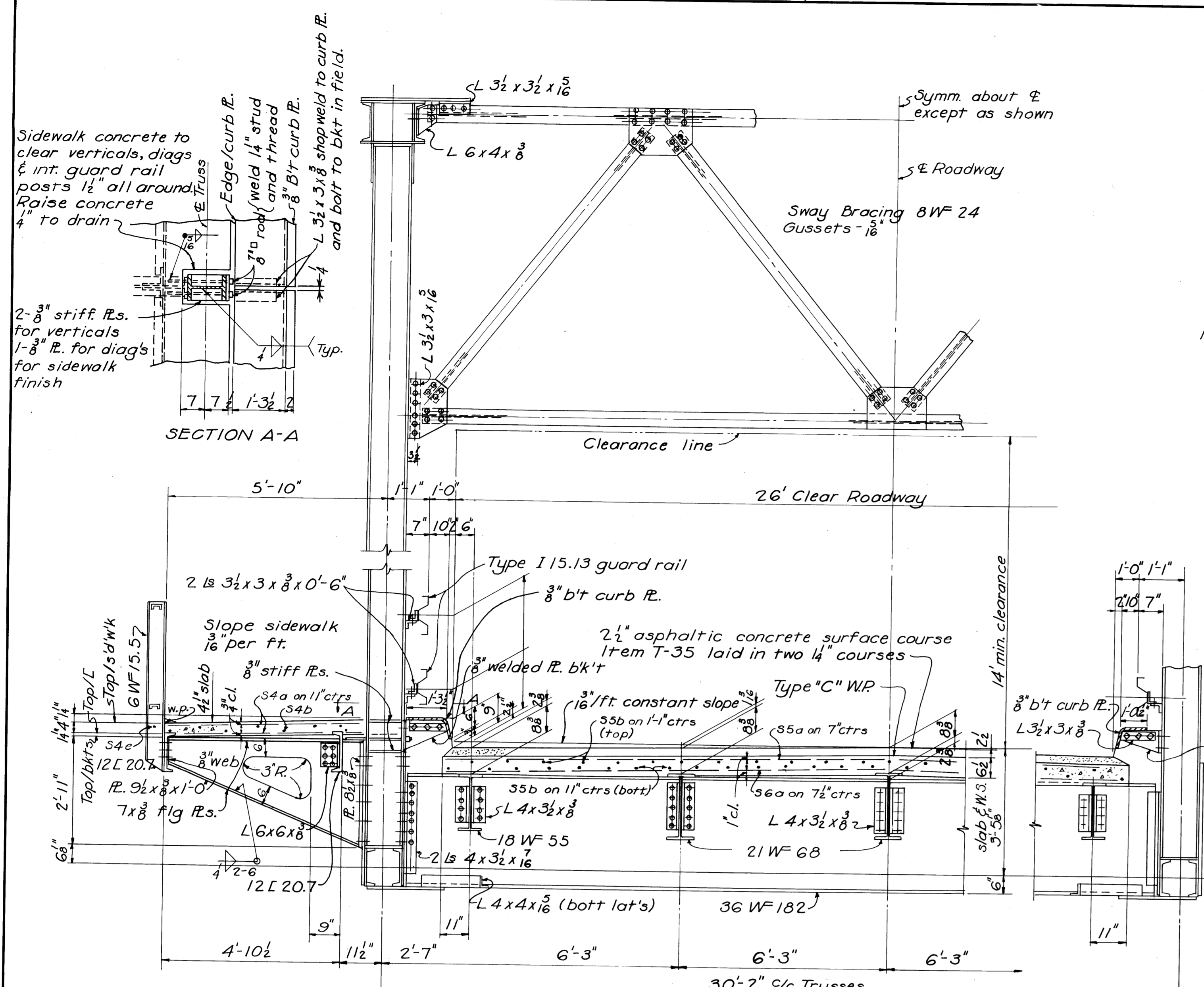
MUSKINGUM COUNTY  
COUNTY ROAD No. 32



NOTE: See sheets 37 & 38 for additional truss span details.

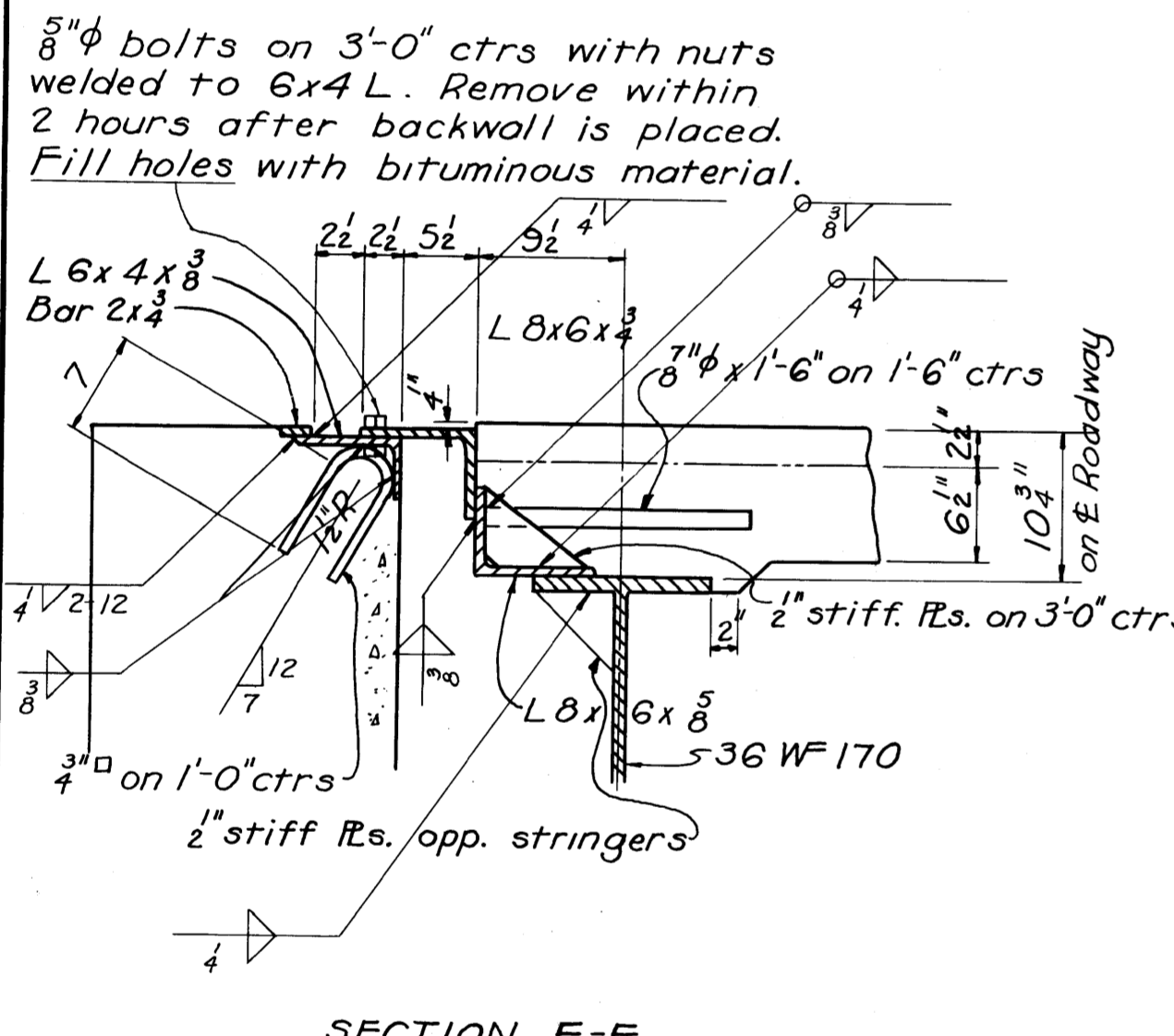
VARO ENGINEERS COLUMBUS, OHIO					
CURB AND SIDEWALK END FINISH DETAILS AT PIERS BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO					
MUSKINGUM COUNTY OHIO COUNTY ROAD No. 32					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
NSR	NSR	L.E.M.	J.O.G.	W+K	10-15-52

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

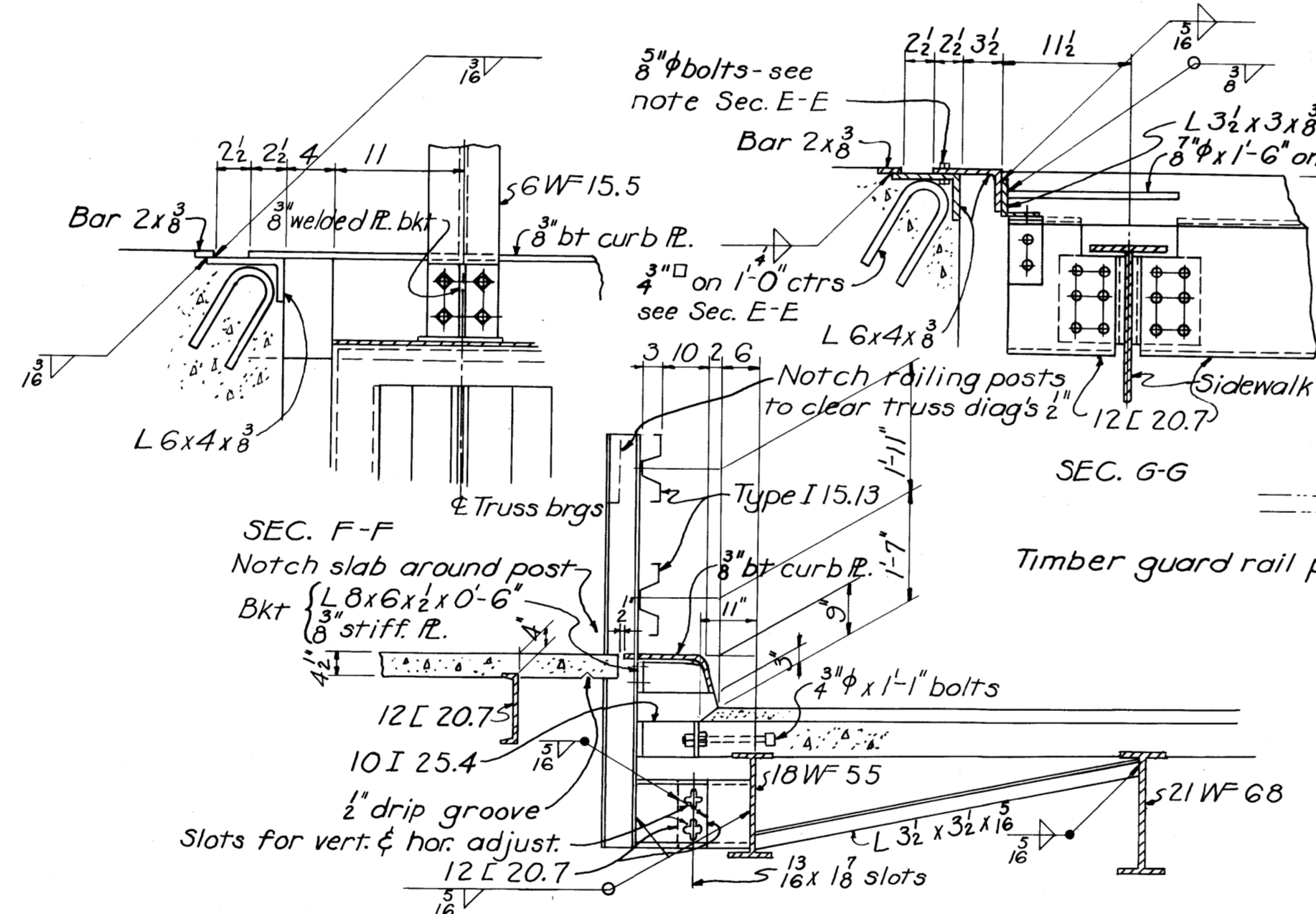


SECTION A-A

TRANSVERSE HALF SECTION

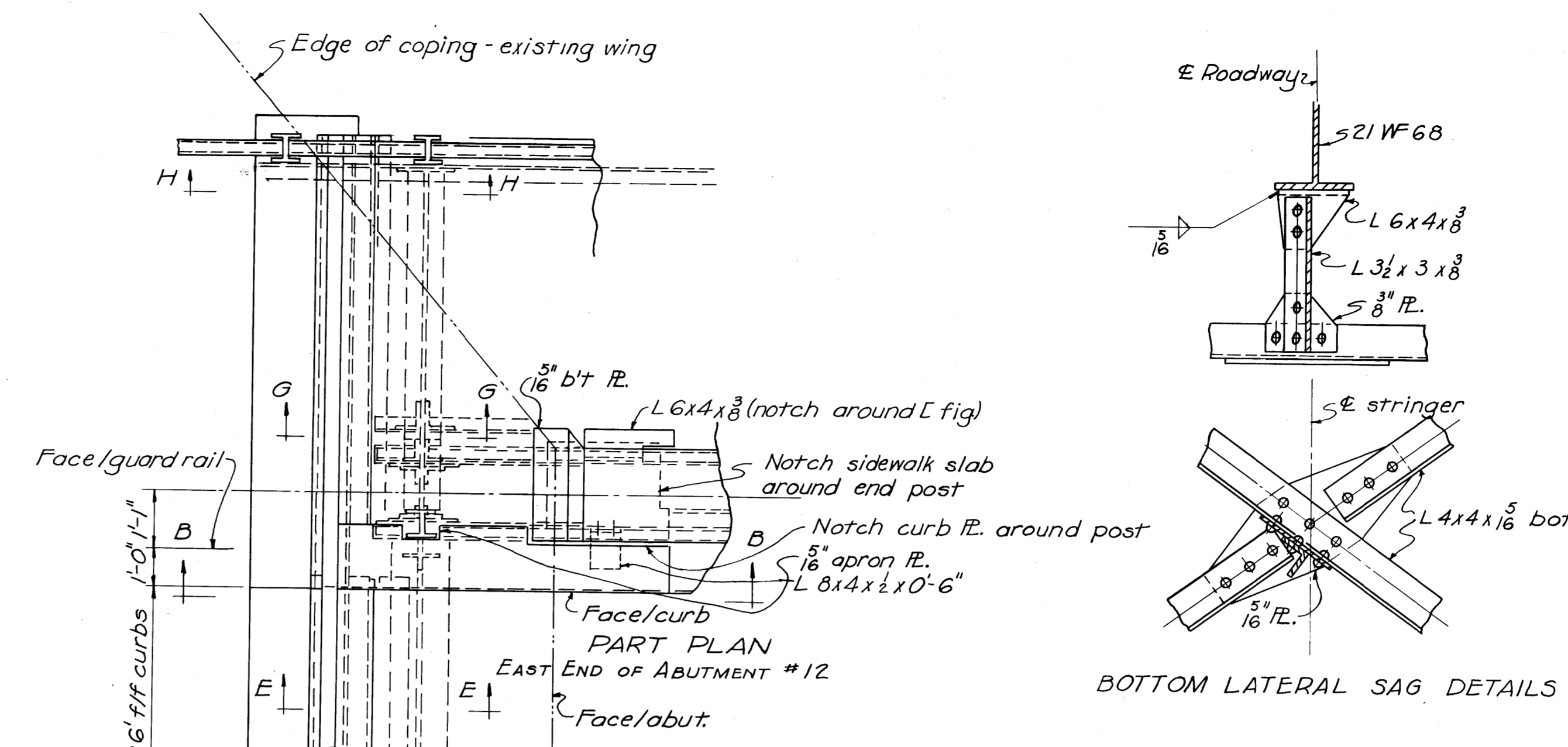


SECTION E-E



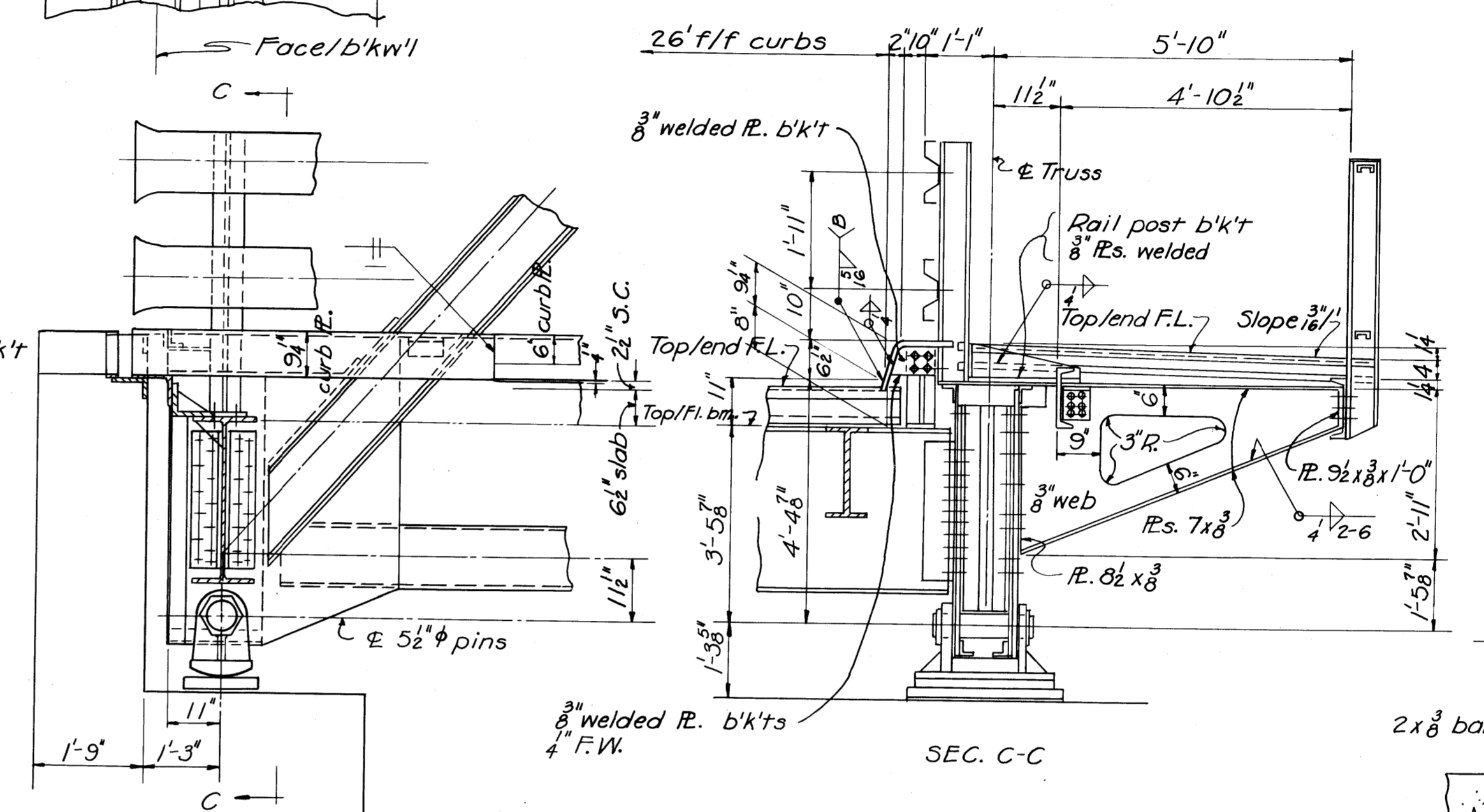
SECTION G-G

TYPICAL SECTION AT INTERMEDIATE ROADWAY GUARD RAIL POSTS (2 per panel equally spaced)



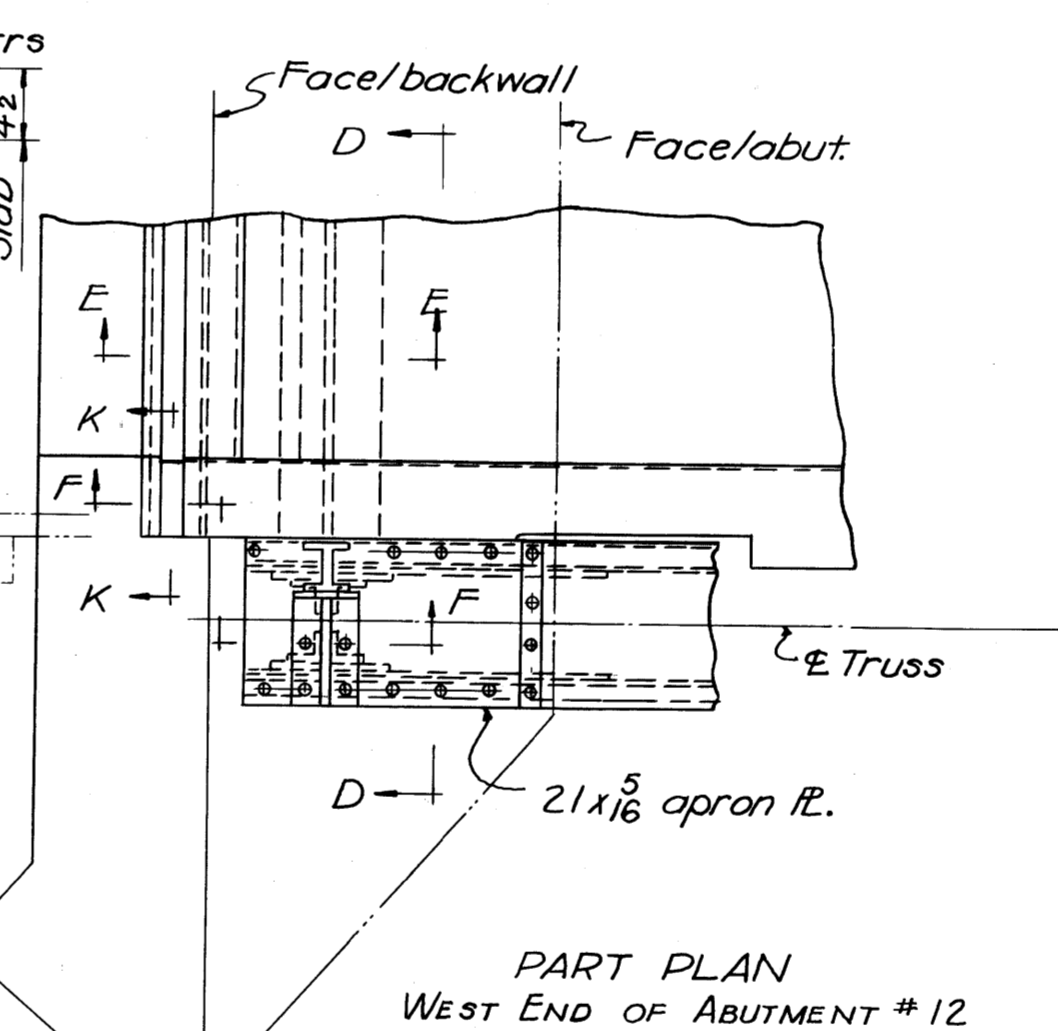
PART PLAN EAST END OF ABUTMENT #12

BOTTOM LATERAL SAG DETAILS



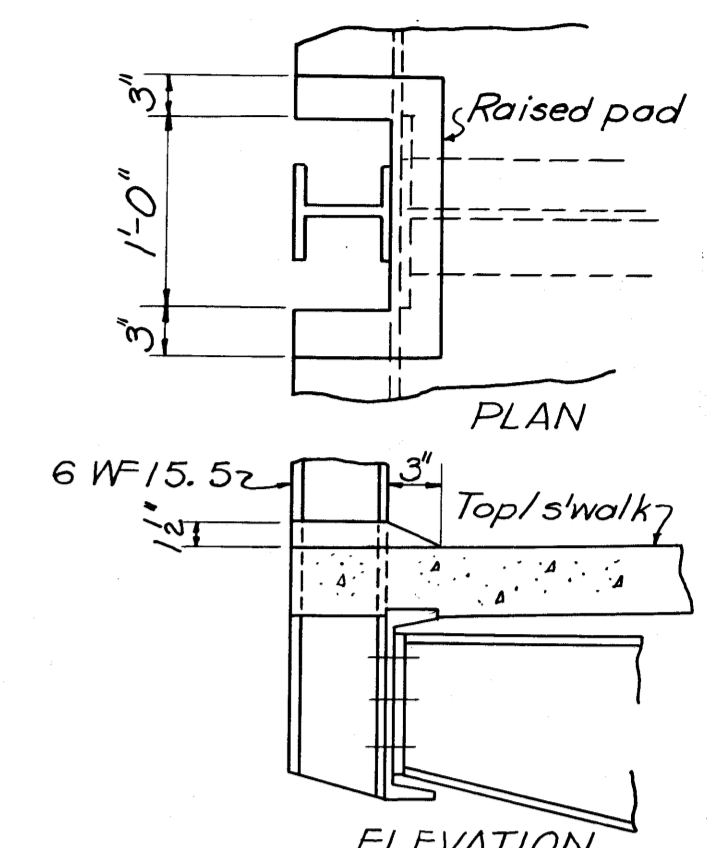
SECTION B-B

SECTION C-C

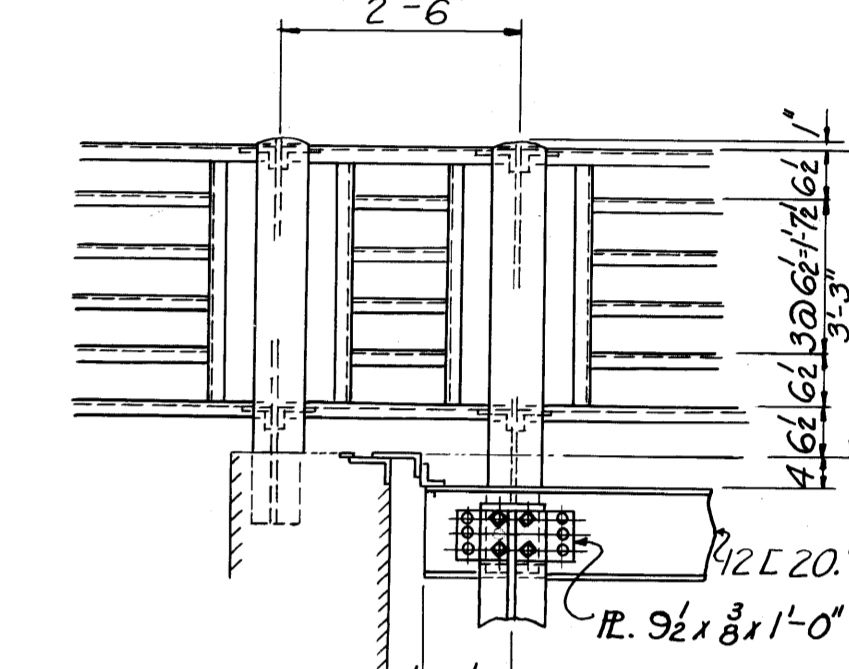


PART PLAN WEST END OF ABUTMENT #12

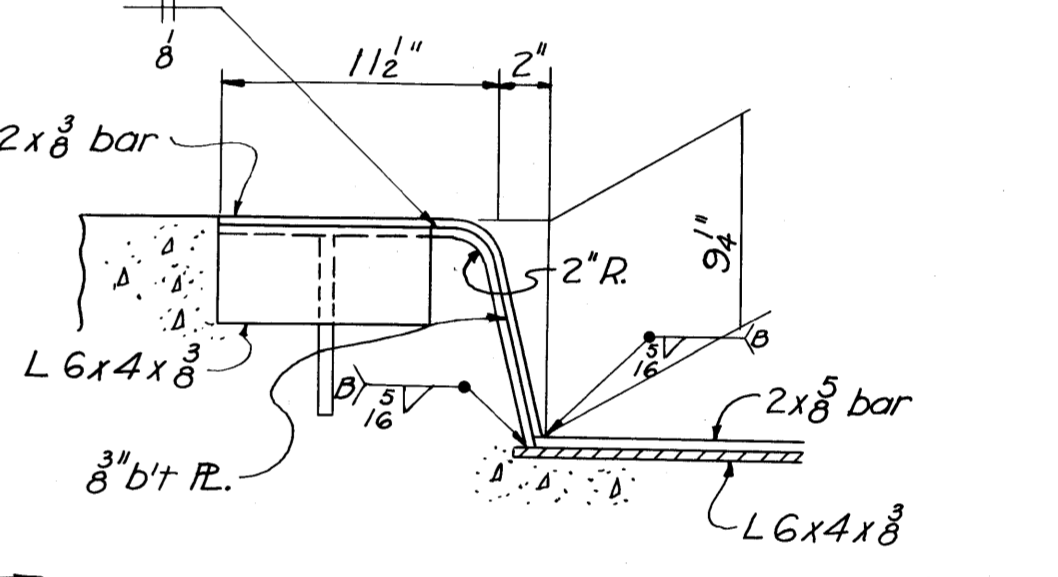
SECTION D-D



DETAIL OF DRAINAGE PAD AROUND RAILING POSTS



SECTION H-H (see sheet 40 for railing details)



SECTION K-K

For notes see sheet 37

**VARO ENGINEERS**  
COLUMBUS, OHIO

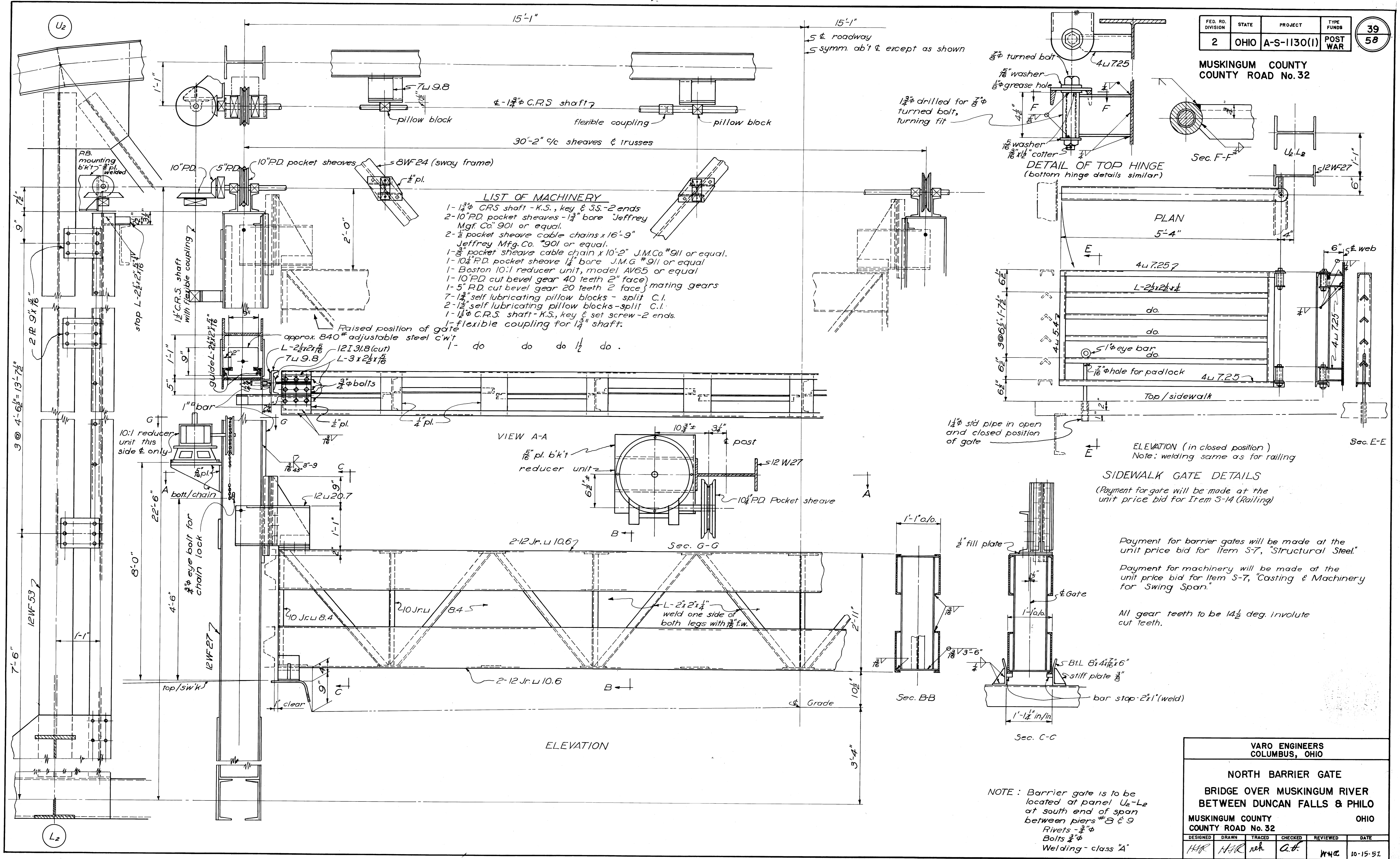
**TRUSS SPAN SECTIONS**  
154'-6" c/c BEARINGS  
BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHILO  
OHIO

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

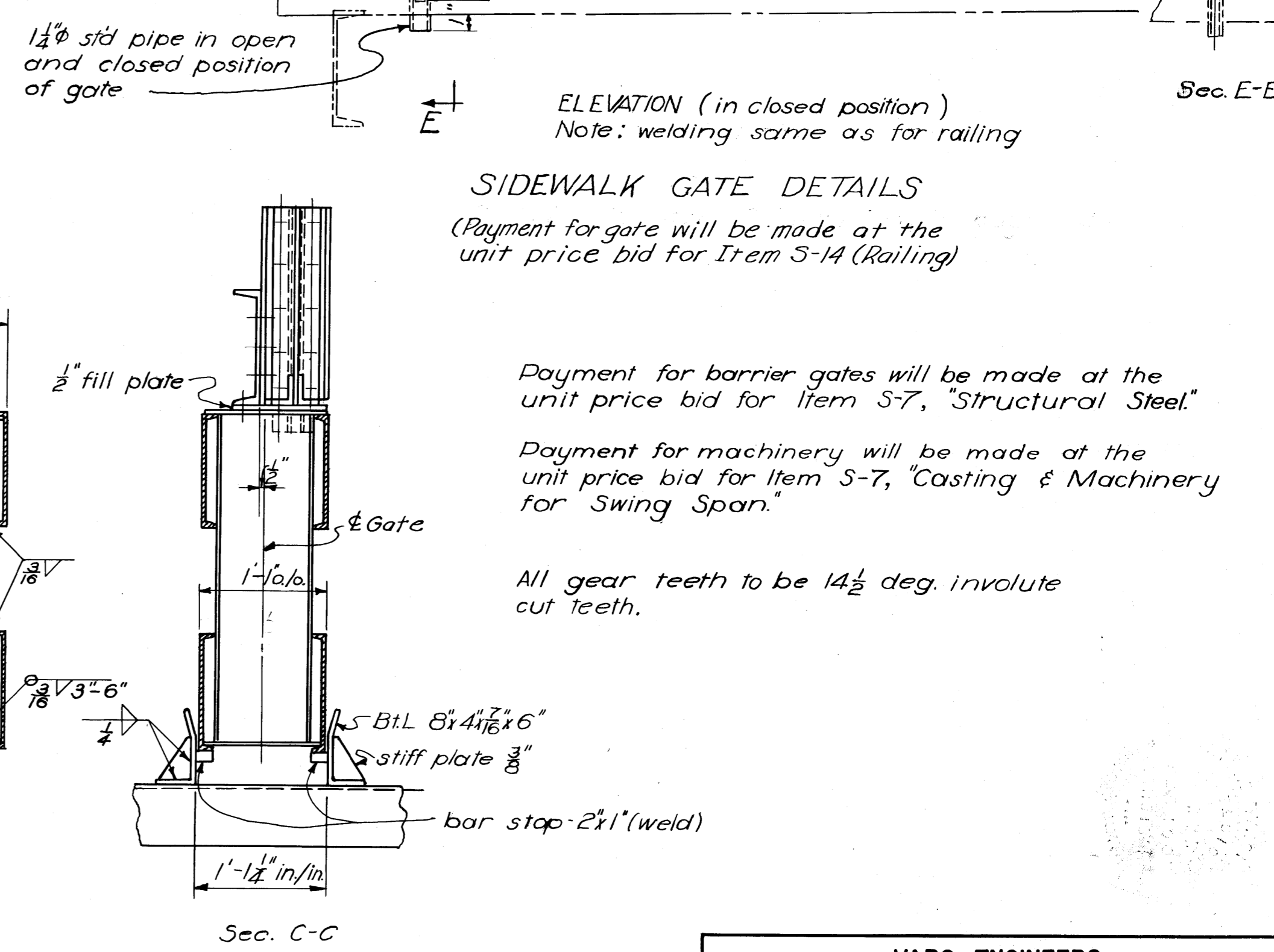
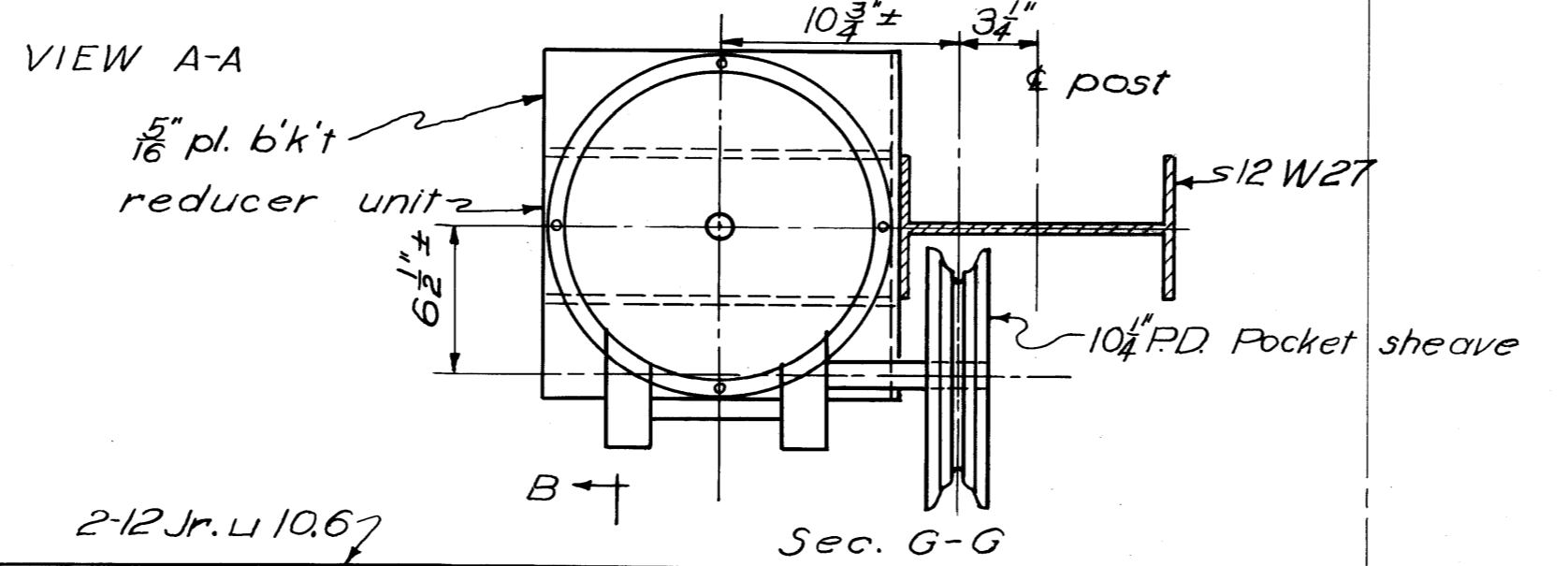
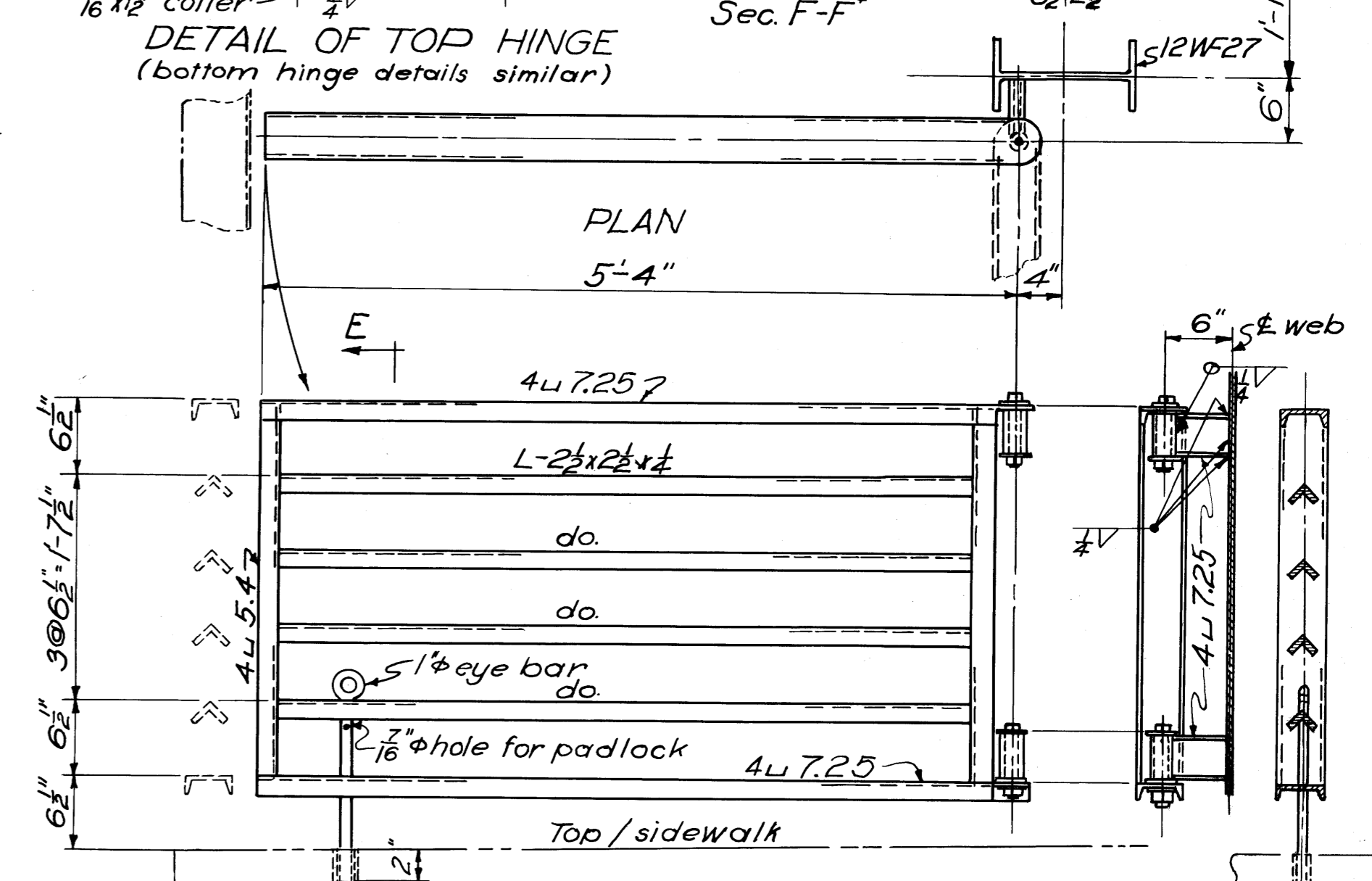
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
LEM	LEM	LEM	J.O.G.	W.H.C.	10-15-52



MUSKINGUM COUNTY  
COUNTY ROAD No. 32



- LIST OF MACHINERY**
- 1-1/2" C.R.S. shaft - K.S., key & S.S. - 2 ends
  - 2-10" P.D. pocket sheaves - 1 1/2" bore Jeffrey Mfg. Co. 901 or equal.
  - 2-1/2" pocket sheave cable chains x 16'-9" Jeffrey Mfg. Co. 901 or equal.
  - 1-3" pocket sheave cable chain x 10'-2" J.M.Co. #911 or equal.
  - 1-10" P.D. pocket sheave 1 1/2" bore J.M.Co. #911 or equal
  - 1-Boston 10:1 reducer unit, model AV65 or equal
  - 1-10" P.D. cut bevel gear 40 teeth 2" face
  - 1-5" P.D. cut bevel gear 20 teeth 2" face mating gears
  - 7-1/2" self lubricating pillow blocks - split C.I.
  - 2-1/2" C.R.S. shaft - K.S., key & set screw - 2 ends.
  - 1-1/2" flexible coupling for 1 1/2" shaft.
  - 1- approx. 840# adjustable steel c/w't
  - 1- L-2 1/2 x 2 1/2
  - 1- L-3 x 2 1/2
  - 1- do do do 1 1/2 do.

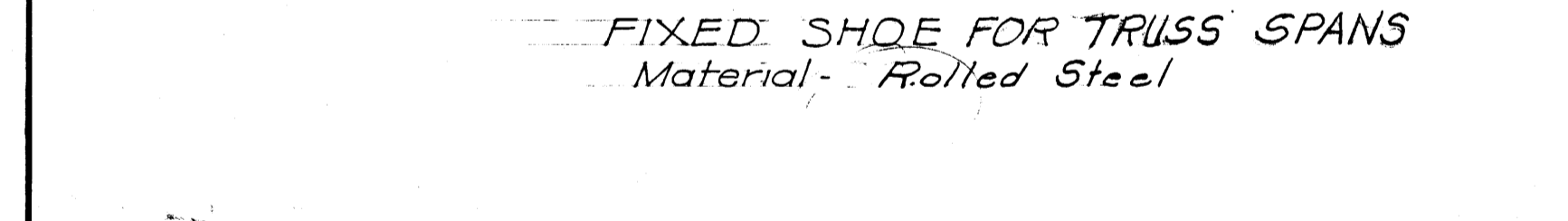
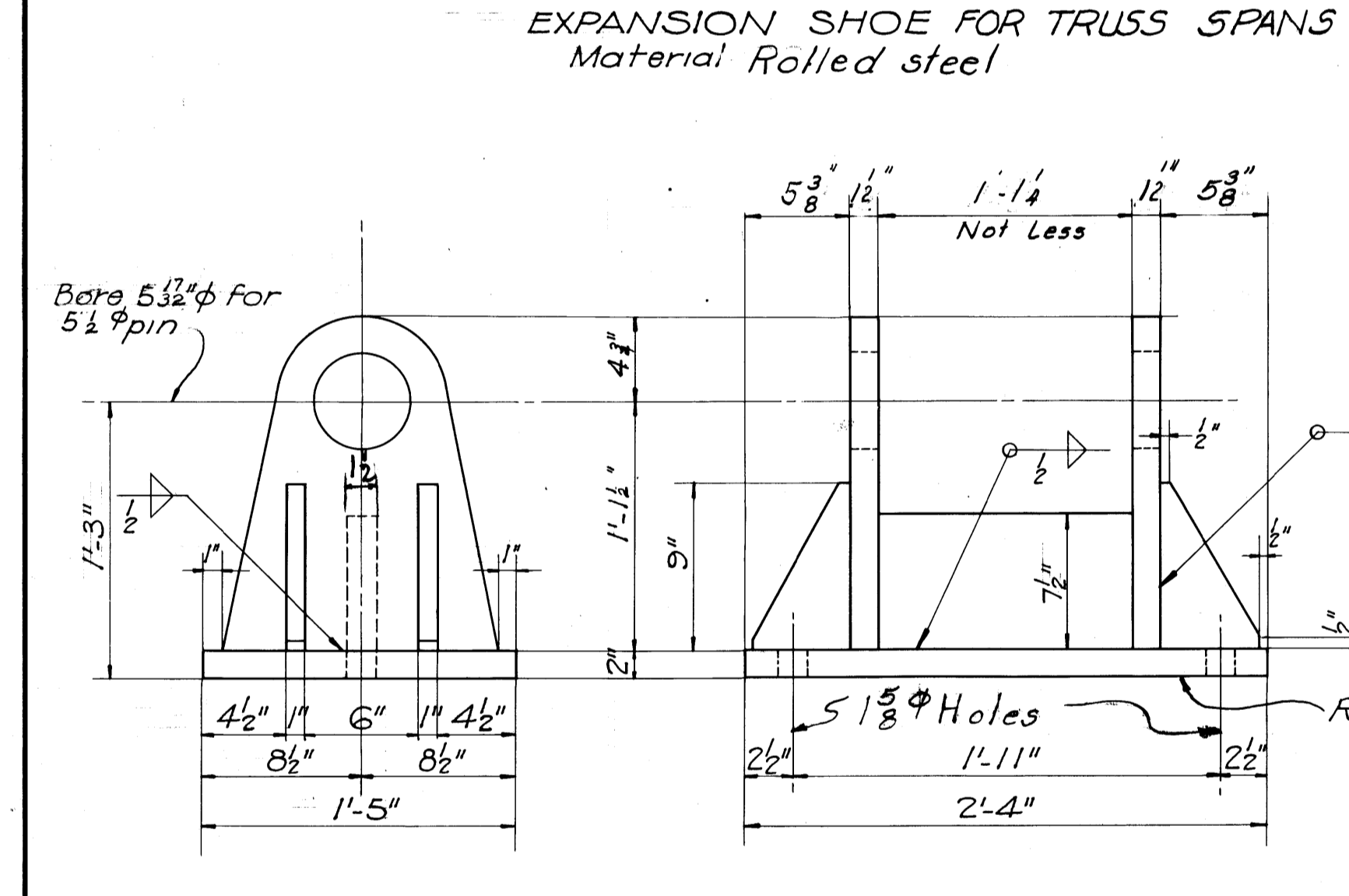
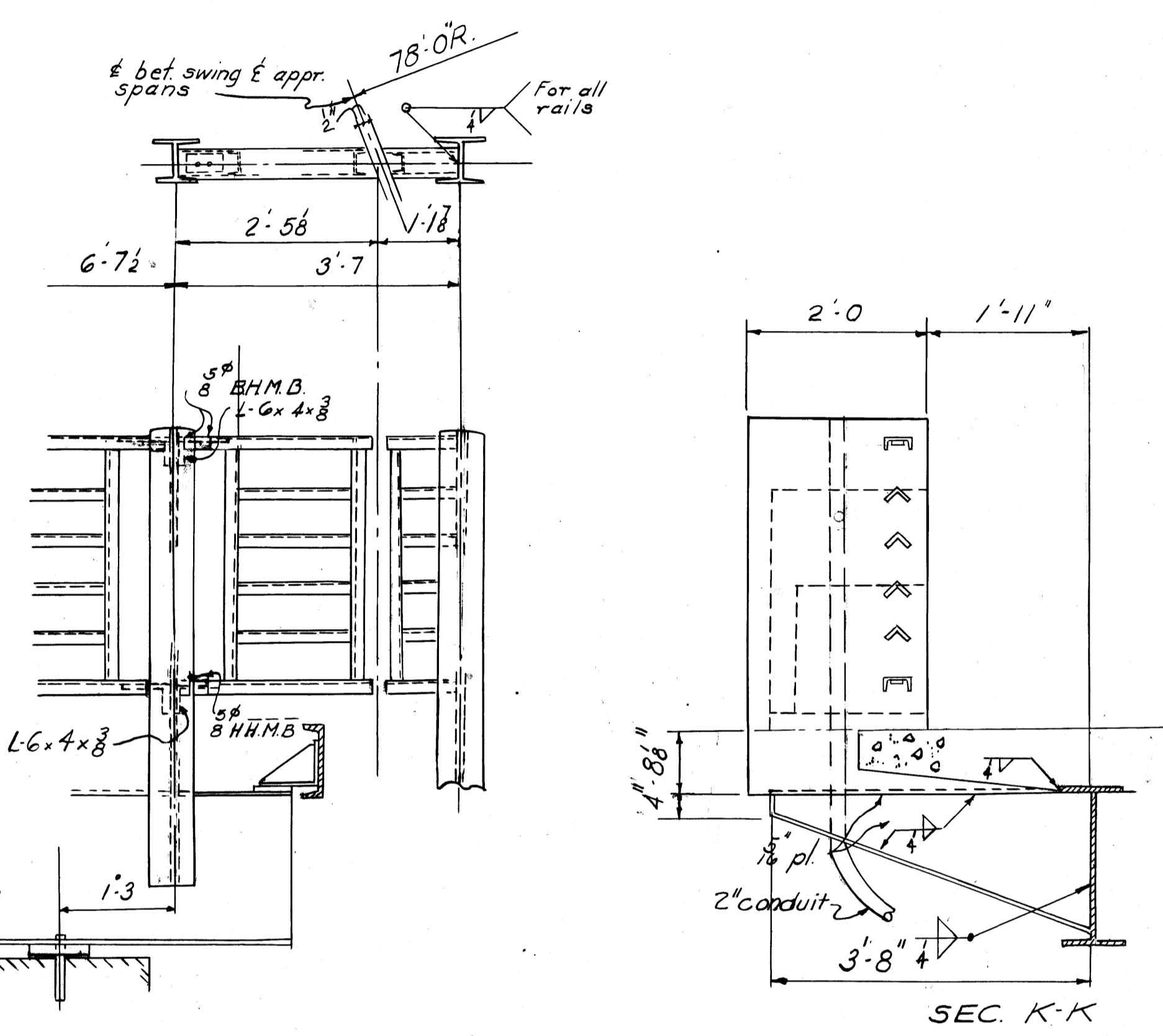
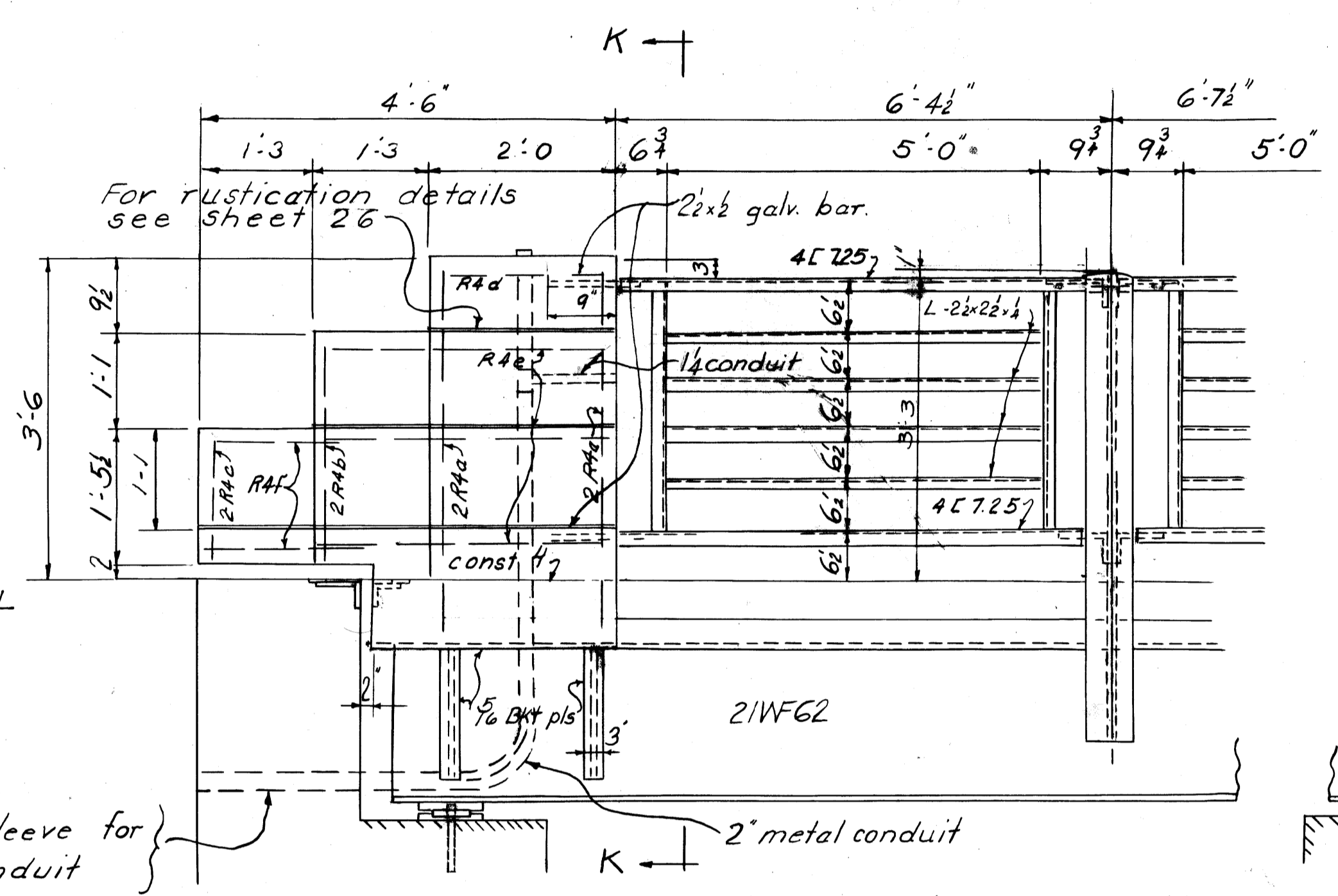
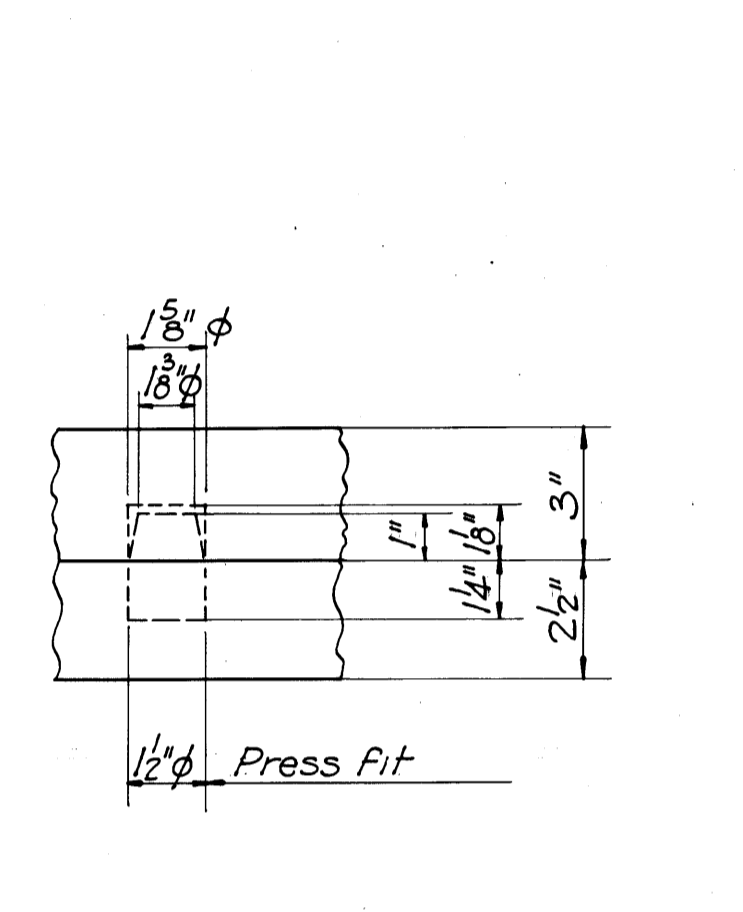
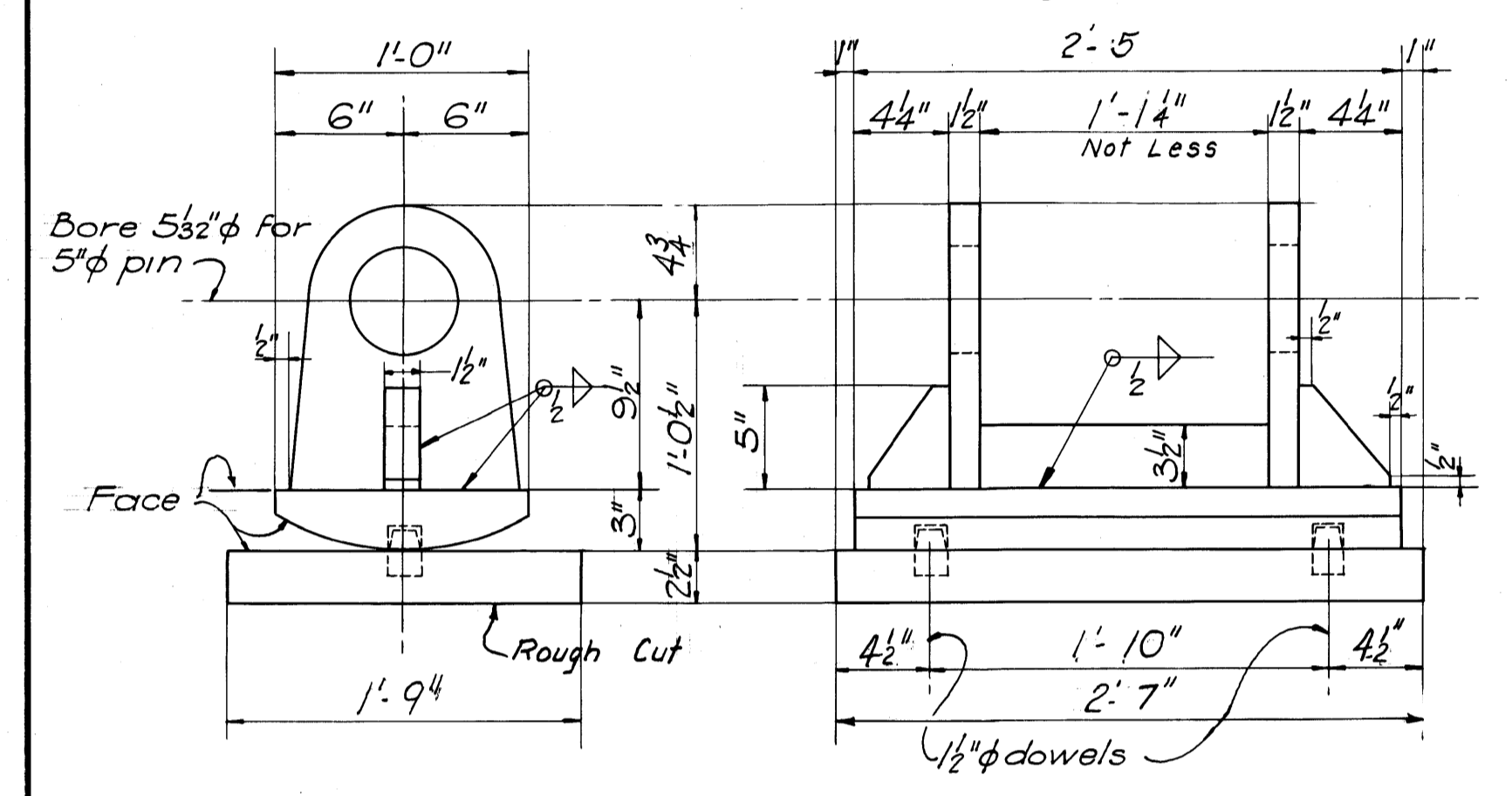
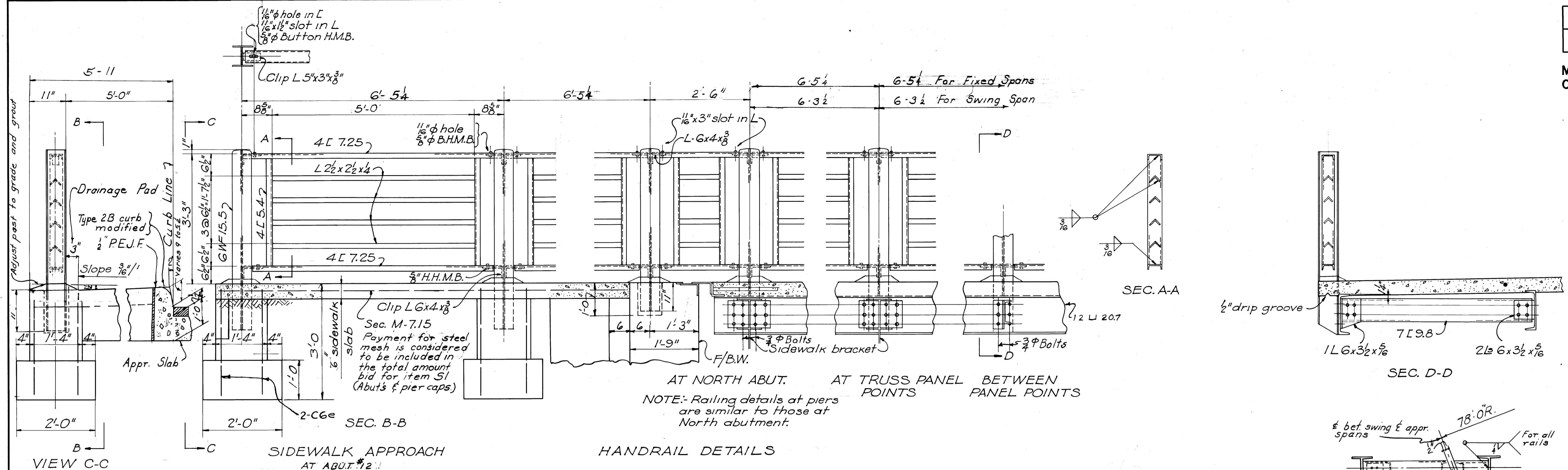


ELEVATION

NOTE: Barrier gate is to be located at panel U<sub>2</sub>-L<sub>2</sub> at south end of span between piers #3 & 9  
Rivets - 3/8"  
Bolts - 3/4"  
Welding - class "A"

VARO ENGINEERS COLUMBUS, OHIO				
<b>NORTH BARRIER GATE</b>				
BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO				
MUSKINGUM COUNTY COUNTY ROAD No. 32				
OHIO				
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
HAR	HAR	neh	A.H.	W.C.
				DATE
				10-15-51

MUSKINGUM COUNTY  
COUNTY ROAD No. 32



Payment for concrete in sidewalk approach and pedestals at N end of bridge will be made at the unit price bid for item 5-1 (Abutment and Pier Caps). Excavation for sidewalk and sidewalk pedestals will be made at the unit price bid for Item E-2 "Unclassified Excavation."

VARO ENGINEERS COLUMBUS, OHIO				
<b>HANDRAIL &amp; MISC. DETAILS FOR TRUSS SPANS</b>				
<b>BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNGAN FALLS &amp; PHILO</b>				
COUNTY ROAD No. 32 MUSKINGUM COUNTY OHIO				
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
HAR	HAR	J.P.R.	J.O.G.	WAC
				DATE
				10-15-52



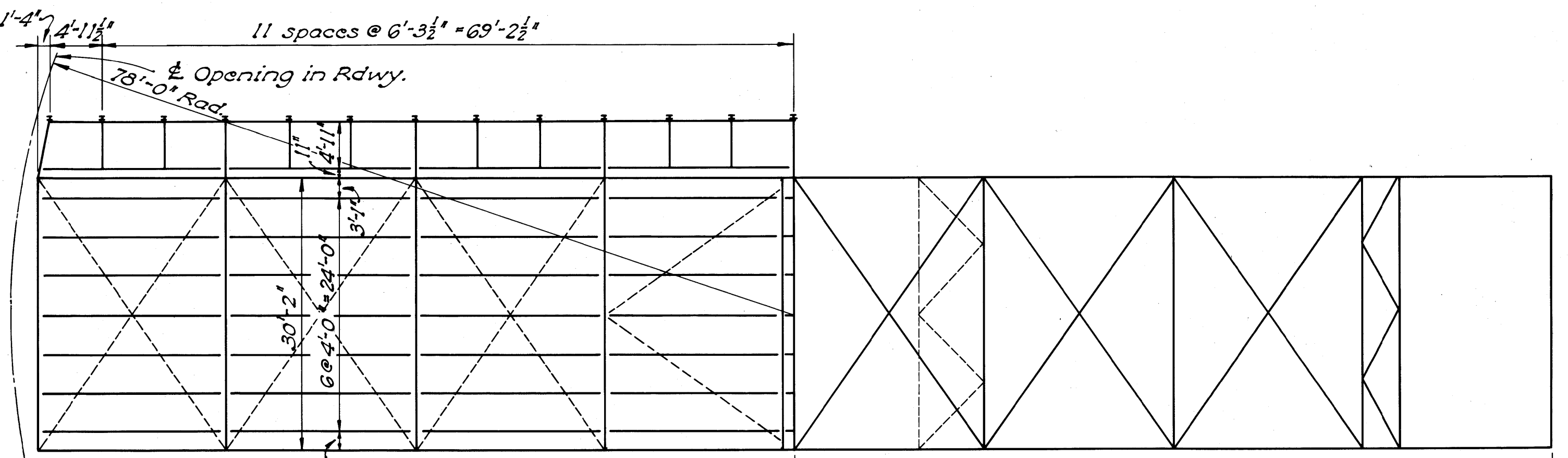
MUSKINGUM COUNTY  
COUNTY ROAD No. 32

**SWING SPAN TRUSS STRESSES**

	$L_0-L_1$	$L_1-L_2$	$L_2-L_3$	$L_3-L_4$	$L_0-U_1$	$U_1-U_2$	$U_2-U_3$	$U_3-U_4$	$U_1-L_1$	$U_2-L_2$	$U_3-L_3$	$U_4-L_4$	$U_1-L_2$	$U_2-L_3$	$U_3-L_4$	REACTIONS		
	END	CENTER	END	CENTER	END	CENTER	END	CENTER	END	CENTER	END	CENTER	END	CENTER	END	CENTER	END	CENTER
<b>LOADING CONDITIONS</b>																		
Case I - Dead Load - Bridge Open or Closed - No End Reactions	+21.8	+63.6	+126.2	-33.1	-64.7	-126.7	-217.0	-35.0	-83.3	-118.3	0	+63.9	+104.2	+158.9	—	—	+295.0	
Case II - Dead Load - Bridge Closed with 10% Positive End Reactions	+13.1	+48.6	+105.2	-19.9	-49.5	-105.6	-189.8	-35.0	-76.1	-110.2	0	+54.3	+94.1	+146.7	+10.0	—	+275.0	
Case III - Live Load - Bridge Closed One Arm Acting as Simple Truss	-77.8	-77.6	-62.7	+118.3	+79.3	+63.0	0	-88.1	+15.9	-66.1	-95.1	0	+37.2	+68.9	+109.3	+123.0	+134.8	
Case IV - Live Load - Bridge Closed Acting as Continuous Truss	-74.3	-68.0	-49.2	+110.9	+69.8	+49.3	—	-88.1	-72.2	—	—	—	+42.9	+76.0	—	+119.7	—	
Case V - Live Load - Bridge Closed Cont. Truss - All Reactions Positive	+5.2	+8.9	+12.6	-7.9	-9.1	-12.6	—	-88.1	+13.1	—	—	—	-45.4	-18.1	—	-6.0	—	
Case V - Live Load - Bridge Closed Cont. Truss - All Reactions Positive	—	—	—	—	—	—	-27.7	—	—	-103.0	—	—	—	—	+120.5	—	+179.8	
<b>LOADING COMBINATIONS</b>																		
Case I Plus 20%	+26.2	+76.3	+151.5	-39.7	-77.6	-152.0	-260.4	-42.0	-100.0	-142.0	0	+76.7	+125.0	+190.5	—	—	+354.0	
Case I Plus Case III	-93.5	-73.8	+63.5	+142.3	+75.5	-63.7	-217.0	-140.8	-149.4	-213.4	0	+101.1	+173.1	+263.2	+164.0	—	+429.0	
Case I Plus Case V	—	—	—	—	—	—	-244.7	—	—	-221.3	0	—	—	+279.4	—	—	+474.8	
Case II Plus Case IV	-92.9	-68.0	+117.8	-27.8	-58.6	+69.9	-118.2	—	-140.8	-148.3	—	0	-35.1	+97.2	—	-3.3	—	
Case II Plus Case V	+18.3	+57.5	+117.8	+138.6	+69.9	-118.2	—	—	-140.8	-148.3	—	0	-35.1	+97.2	—	+106.3	—	
Case II Plus Case V	—	—	—	—	—	—	-217.5	—	—	-213.2	—	—	—	—	+267.2	—	+454.8	
Maximum Stresses	+26.2	+76.3	+151.5	+142.3	+75.5	-152.0	-260.4	-140.8	-149.4	-221.3	0	+101.1	+173.1	+279.4	+106.3	—	+474.8	
Design Stresses	+39.3	+114.5	+151.5	+162.2	+113.3	-152.0	-260.4	-140.8	-149.4	-221.3	0	+118.7	+173.1	+279.4	+108.0	—	+474.8	
Length of Member	18'-10"	18'-10"	18'-10"	28'-9"	19'-2"	18'-11"	18'-10"	21'-8"	25'-2"	26'-11"	26'-11"	28'-9"	31'-5"	32'-10"	—	—	—	—
Minimum "r"	1.89	1.89	1.89	2.88	1.92	1.14	1.13	1.30	1.51	1.62	2.70	2.89	3.15	3.29	—	—	—	—
Section																		
Gross Area	(18.3)/17.37	(18.3)/17.37	(18.3)/17.37	(24.7)/23.06	(24.7)/23.06	12.06	19.20	11.77	11.77	15.59	19.11	19.11	19.11	(24.7)/23.06	—	—	—	—
Net Area	13.00	13.00	13.00	18.56	18.56	8.94	14.80	9.71	9.71	13.29	—	—	—	16.69	—	—	—	—
Section "r"	5.05	5.05	5.05	5.40	5.40	4.61	4.44	1.94	1.94	2.48	3.02	3.02	3.02	5.40	—	—	—	—
Allowable Unit Stress Comp. (ten = 18,000 psi)	14.50	14.50	14.50	13.93	14.54	—	—	—	—	—	—	—	—	11.75	11.09	13.66	—	—
Actual Unit Stress	8.20	8.62	—	3.22	6.23	17.00	17.60	14.50	15.40	16.67	—	—	—	3.16	—	—	—	—

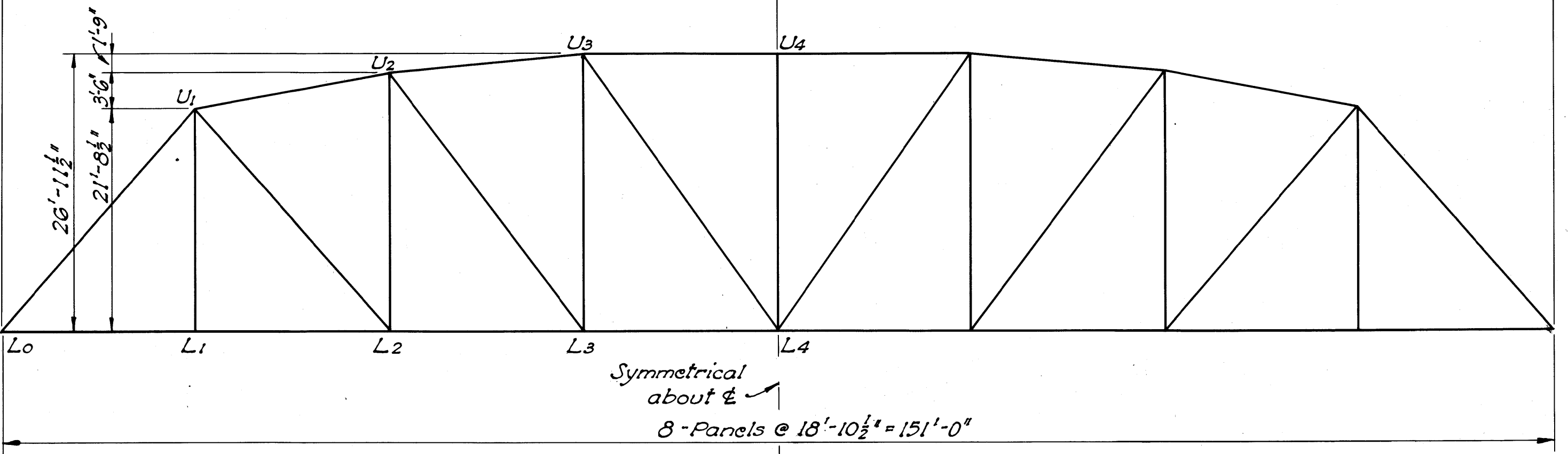
**NOTES:-**  
 Sign convention: (+) Denotes Compression (-) Denotes Tension  
 All stresses are given in 1000 lb. units. (Kips)  
 Dead load panel loads: - Ends = 25.0K & Regular = 35.0K  
 Live loads: - S-20-46 (State of Ohio Specifications)  
 Impact =  $\frac{75.5 \times 125}{36.17} = 249$   
 Regular U.L.L. Panel load + Imp. =  $2 \times 18.80 \times 880 \times \frac{18.00}{36.17} \times 1.249 = 24.8K$   
 Sidewalk live load =  $5 \times 60 \times 18.80 \times \frac{18.00}{36.17} = 6.3K$   
 Total Uniform Panel Load + Imp. (Regular) = 31.1K  
 Total Uniform Panel Load + Imp. (Ends) =  $\frac{14.50}{18.30} \times 31.1 = 19.7K$   
 C1 L.L. Panel Load + Imp. =  $2 \times 28,000 \times \frac{18.00}{36.17} \times 1.249 = 42.0K$   
 C2 L.L. Panel Load + Imp. =  $2 \times 38,000 \times \frac{18.00}{36.17} \times 1.249 = 57.0K$

Camber: Ends Upward  $\frac{3}{4}$   
 D.L. Defl. =  $\frac{6}{8}$   
 10K Reaction Defl. =  $\frac{6}{8}$   
 Net Defl. =  $\frac{3}{4}$

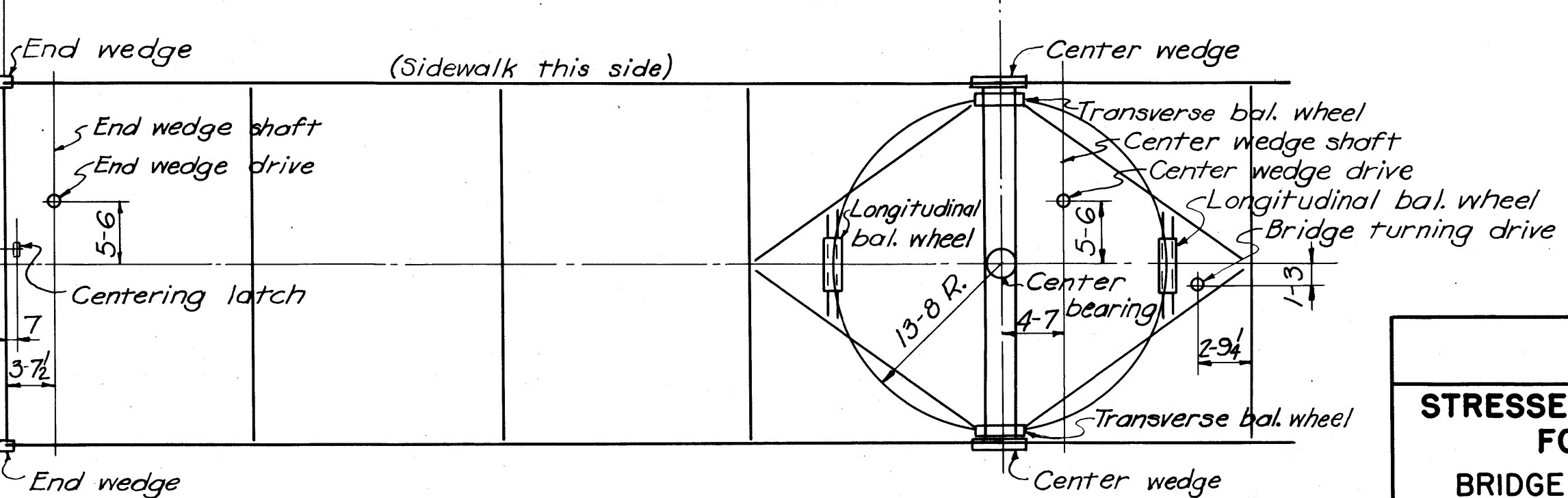


HALF FRAMING PLAN OF FLOOR SYSTEM

HALF PLAN OF TOP LATERAL SYSTEM



ELEVATION



PART PLAN OF MACHINERY LAYOUT

	Inside Stringers		Inside Stringer @ C/Wt.		Outside Stringers		Outside Stringer @ C/Wt.		Fascia	Sidewalk Stringer	Inside Sidewalk Stringer	Intermediate Floor Beam	End Floor Beam	Center Brg. Floor Beam					
	Mom.	Shear	Mom.	Shear	Mom.	Shear	Mom.	Shear	Mom.	Shear	Mom.	Shear	Mom.	Shear	Mom.	Shear			
Dead Load	6.00	1.28	26.30	5.57	10.40	2.25	35.62	7.68	8.34	3.53	11.90	5.04	147.10	26.76	92.70	17.67	(+20%) 2664.00	147.5	
Live Load	67.50	18.00	67.50	18.00	56.60	15.10	56.60	15.10	9.32	3.95	9.62	4.08	431.00	50.70	409.20	48.20	—	34.4	
Impact	23.50	6.26	23.50	6.26	19.70	5.25	19.70	5.25	—	—	—	—	138.80	16.30	132.00	15.50	—	11.1	
DL + LL + Imp.	97.00	25.54	117.30	29.83	86.70	22.60	111.92	28.03	17.66	7.48	21.52	9.12	716.90	93.76	633.90	81.37	—	193.0	
$\frac{2}{3}[DL + 2(LL + Imp)]$	125.30	32.87	138.87	36.06	108.67	28.63	125.48	32.25	—	—	—	—	857.80	107.17	783.40	96.71	—	159.0	
Design Stress	125.30	32.87	138.87	36.06	108.67	28.63	125.48	32.25	17.66	7.48	21.52	9.12	857.80	107.17	783.40	96.71	2664.00	193.0	
Section	18 WF 50	—	18 WF 55	—	18 WF 50	—	18 WF 50	—	12 L 20.7	—	12 L 20.7	—	36 WF 170	—	36 WF 160	—	4-fig. 16 - a = 3.74	—	—
Unit Stress	16.90	5.10	16.95	5.12	14.67	4.44	16.92	5.00	9.90	2.22	14.33	2.72	17.80	4.37	17.40	4.13	18.10	7.35	

VARO ENGINEERS  
COLUMBUS, OHIO

**STRESSES & STEEL FRAMING PLAN FOR SWING SPAN**

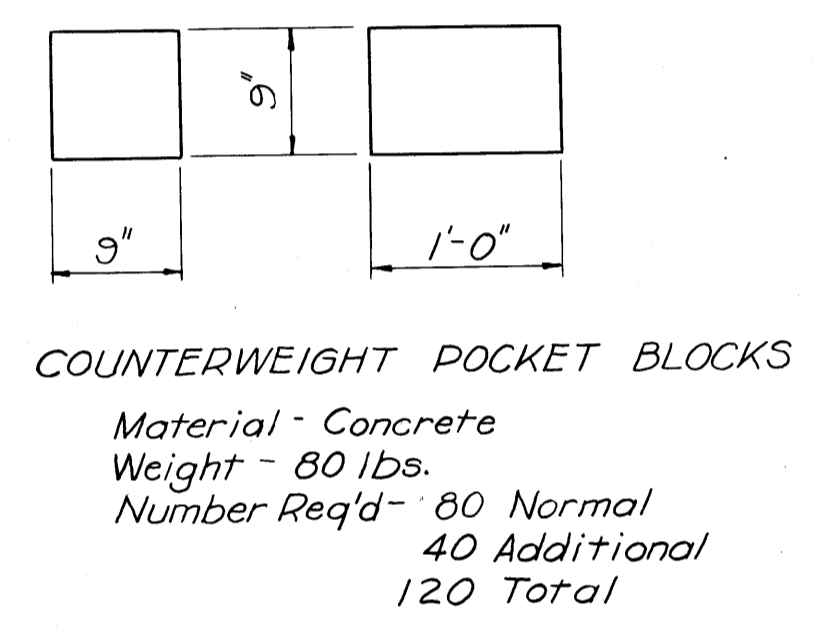
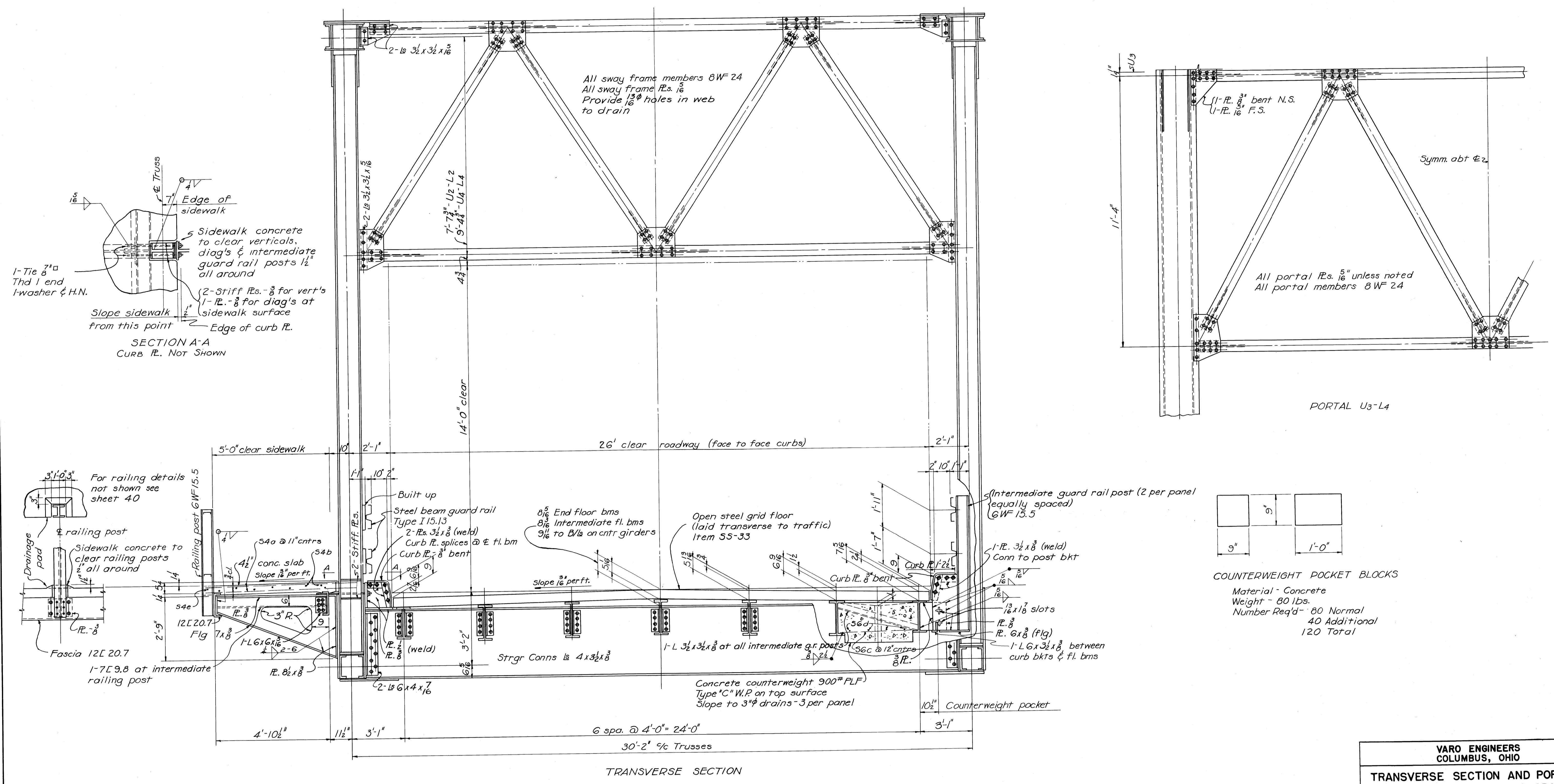
BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHILO

MUSKINGUM COUNTY  
COUNTY ROAD No. 32  
OHIO

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
JOG	JOG	JAMES	HAN	WHE	10-15-52



MUSKINGUM COUNTY  
COUNTY ROAD No. 32



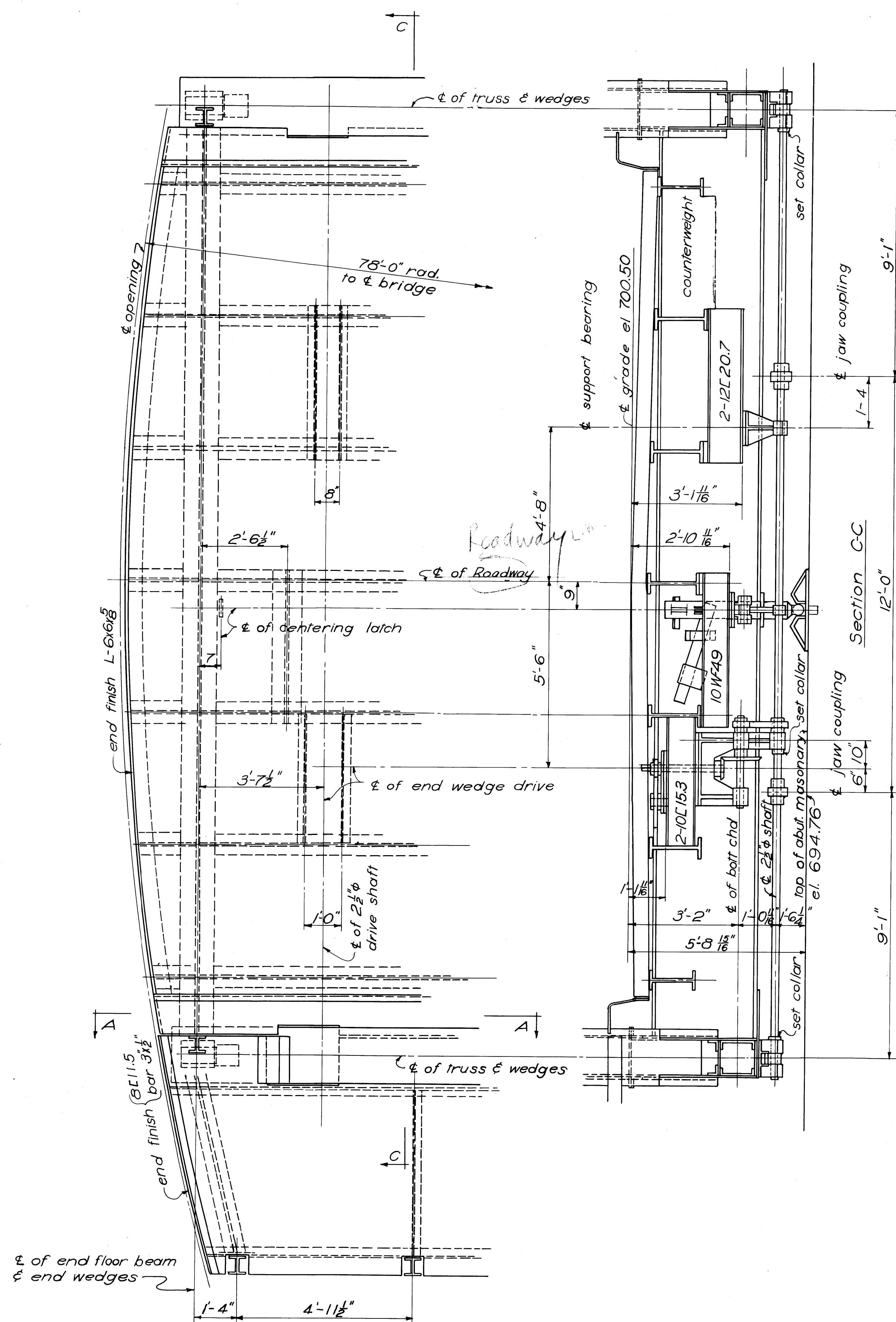
VARO ENGINEERS  
COLUMBUS, OHIO

TRANSVERSE SECTION AND PORTAL  
U3-L4 DETAILS, SWING SPAN  
BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHILO

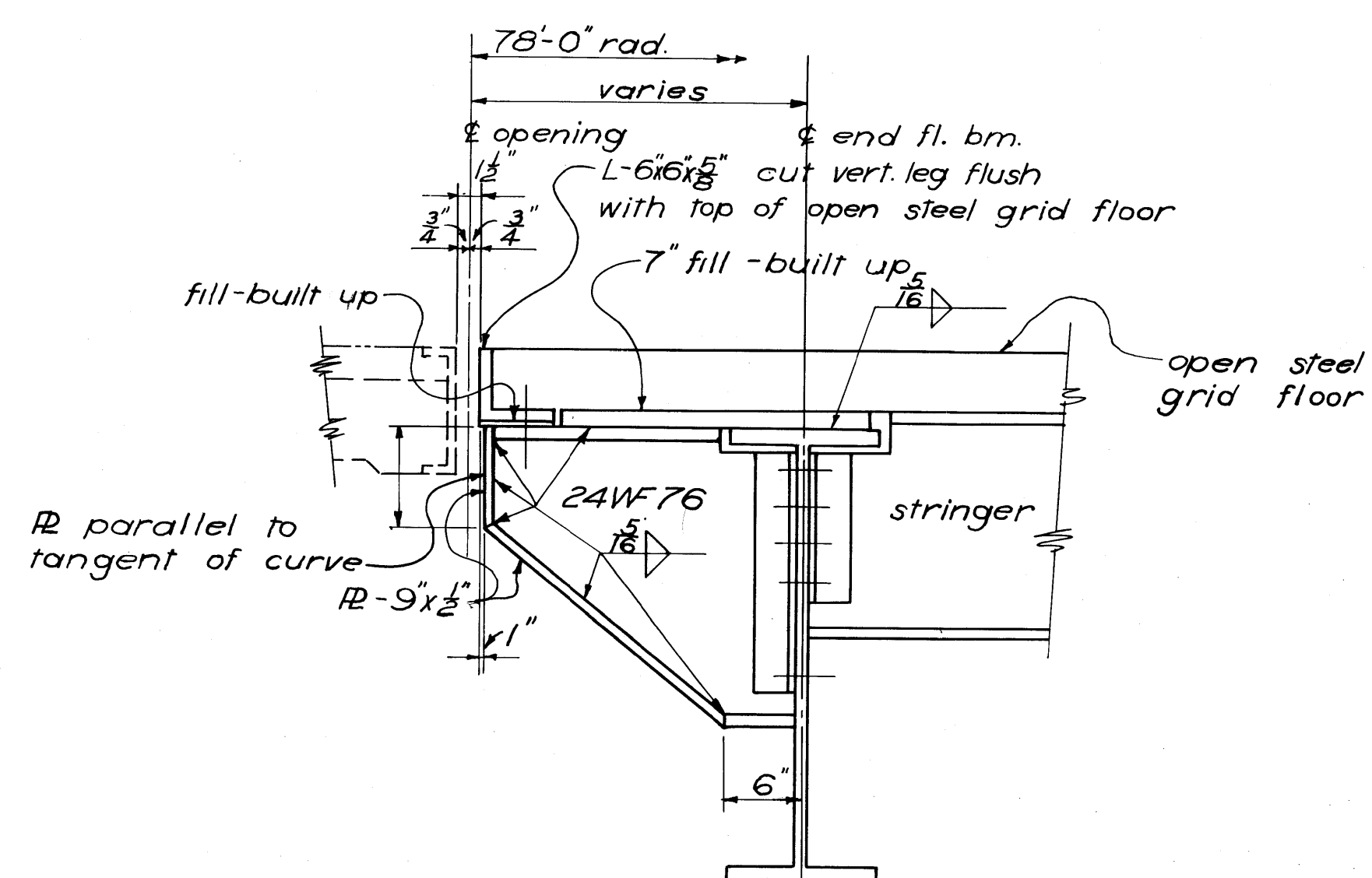
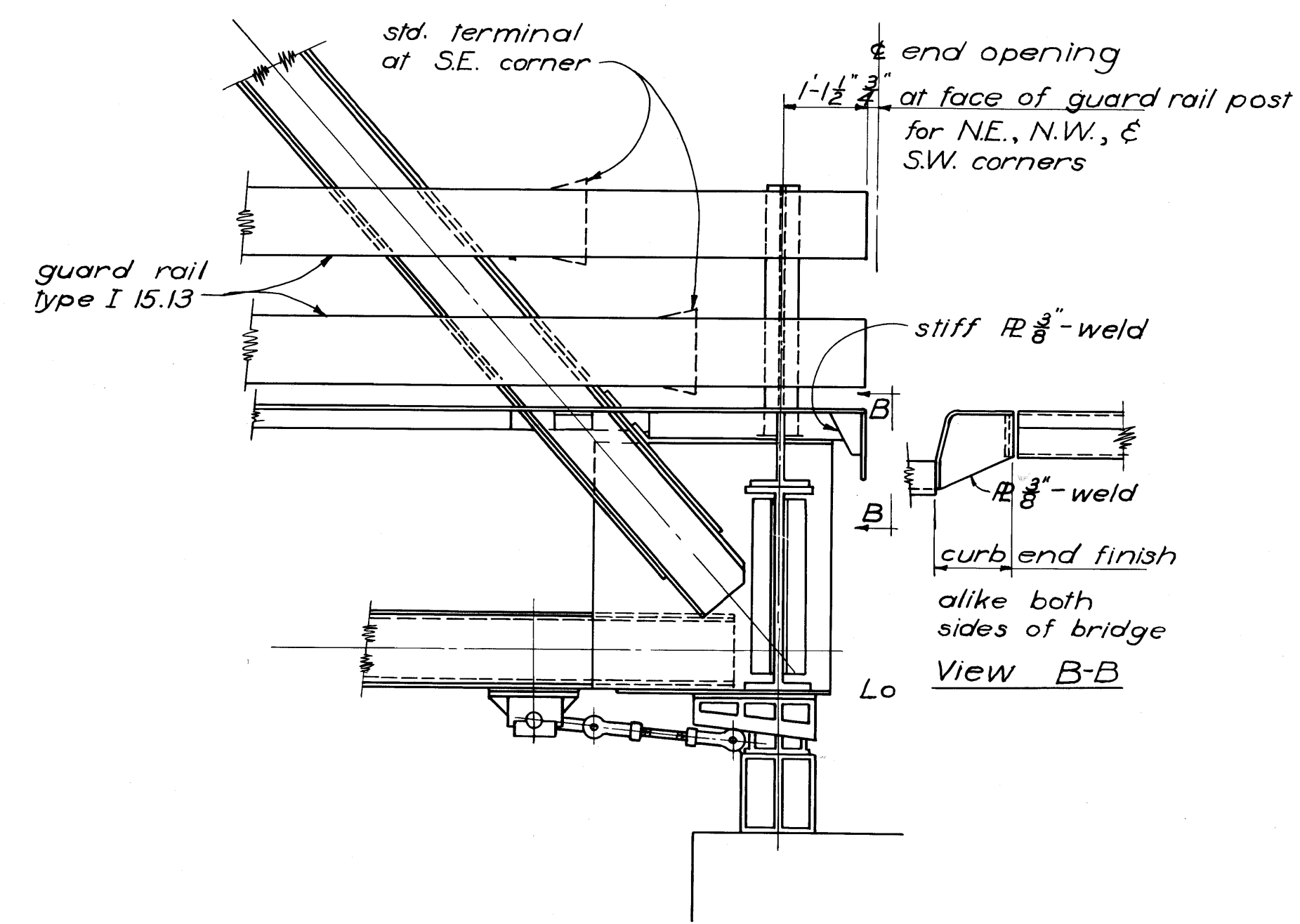
MUSKINGUM COUNTY OHIO  
COUNTY ROAD No. 32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
J.O.G.	J.O.G.	LEM	HA	WAC	10-15-51

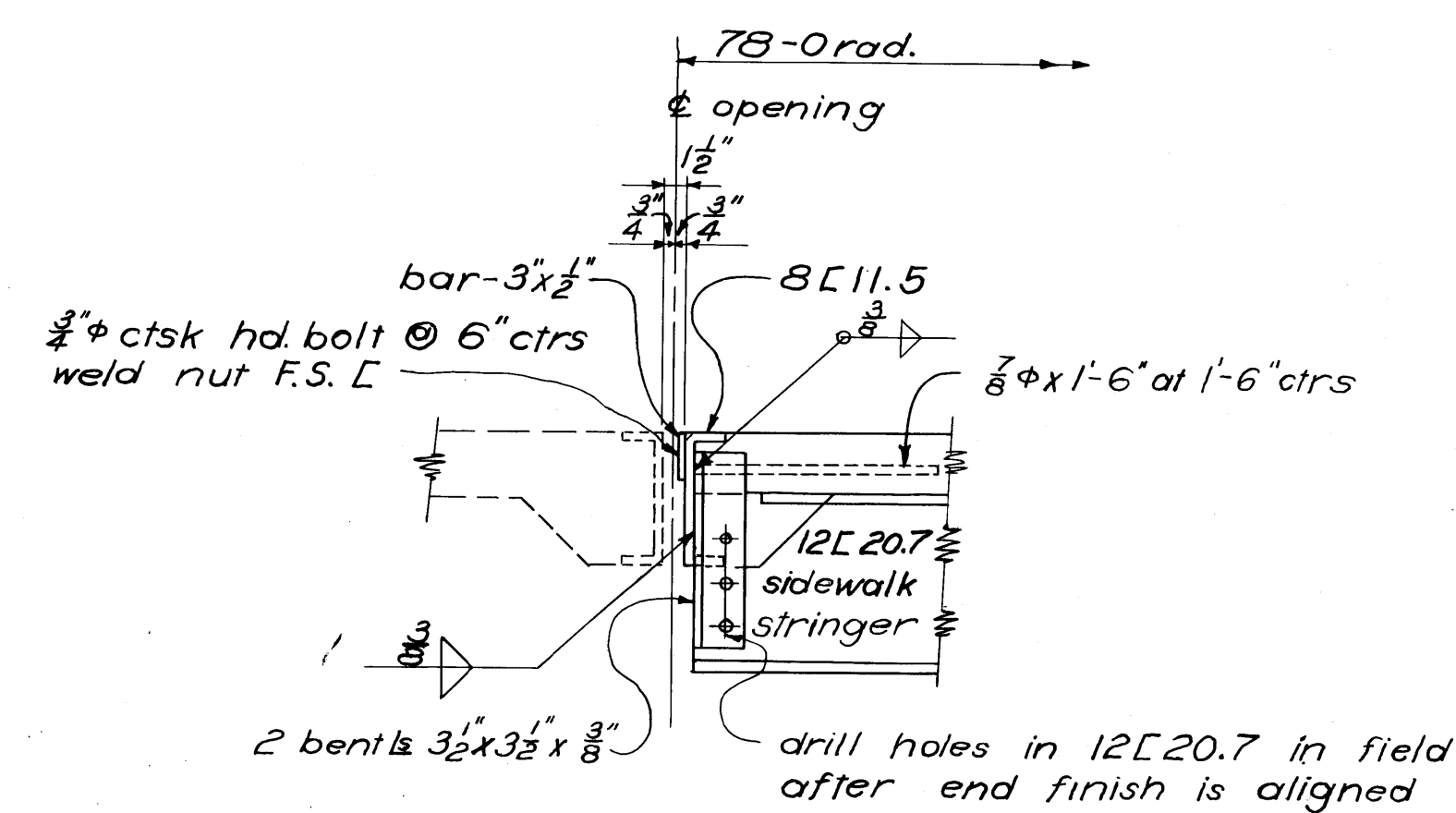
MUSKINGUM COUNTY  
COUNTY ROAD No. 32



Swing Span End Finish  
Machinery shown for south end  
Machinery for north end opposite hand



Typical Roadway End Finish  
for Swing Span

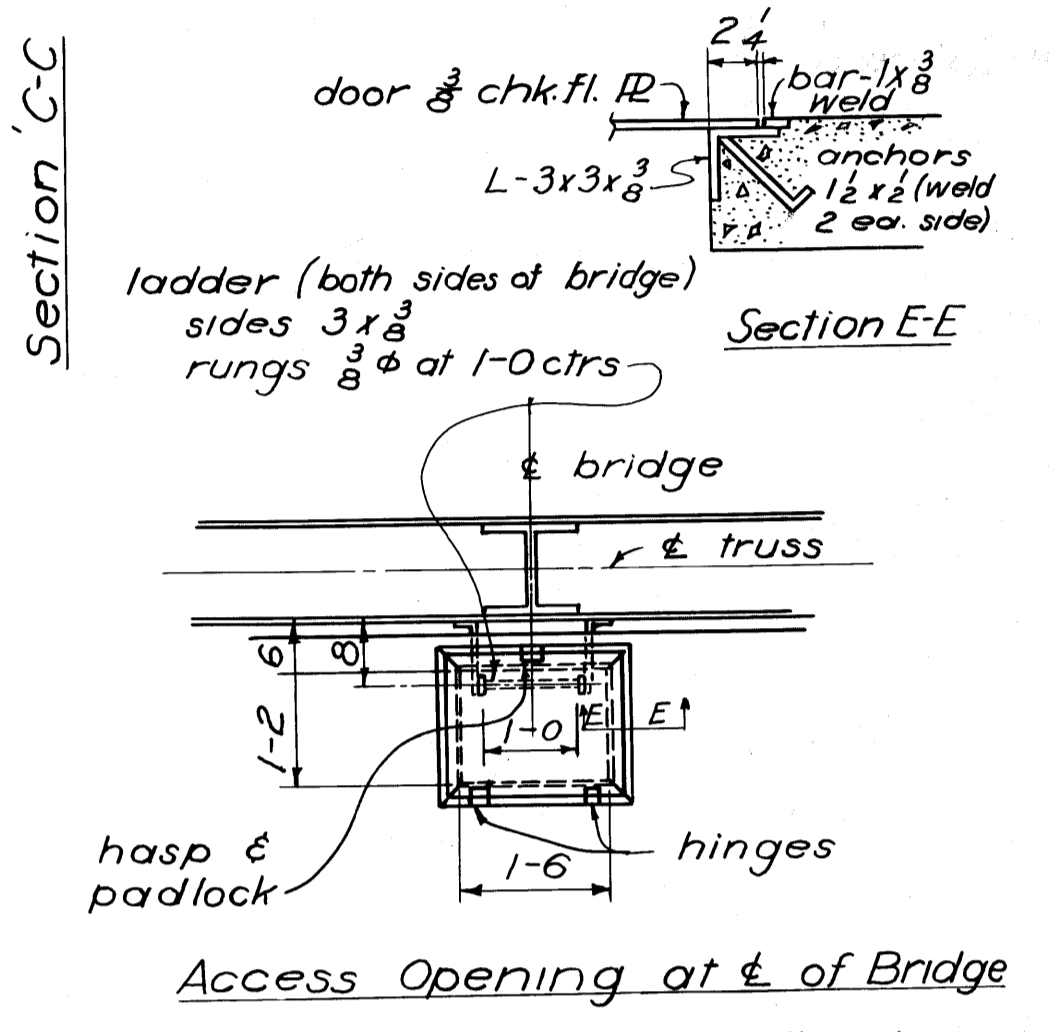
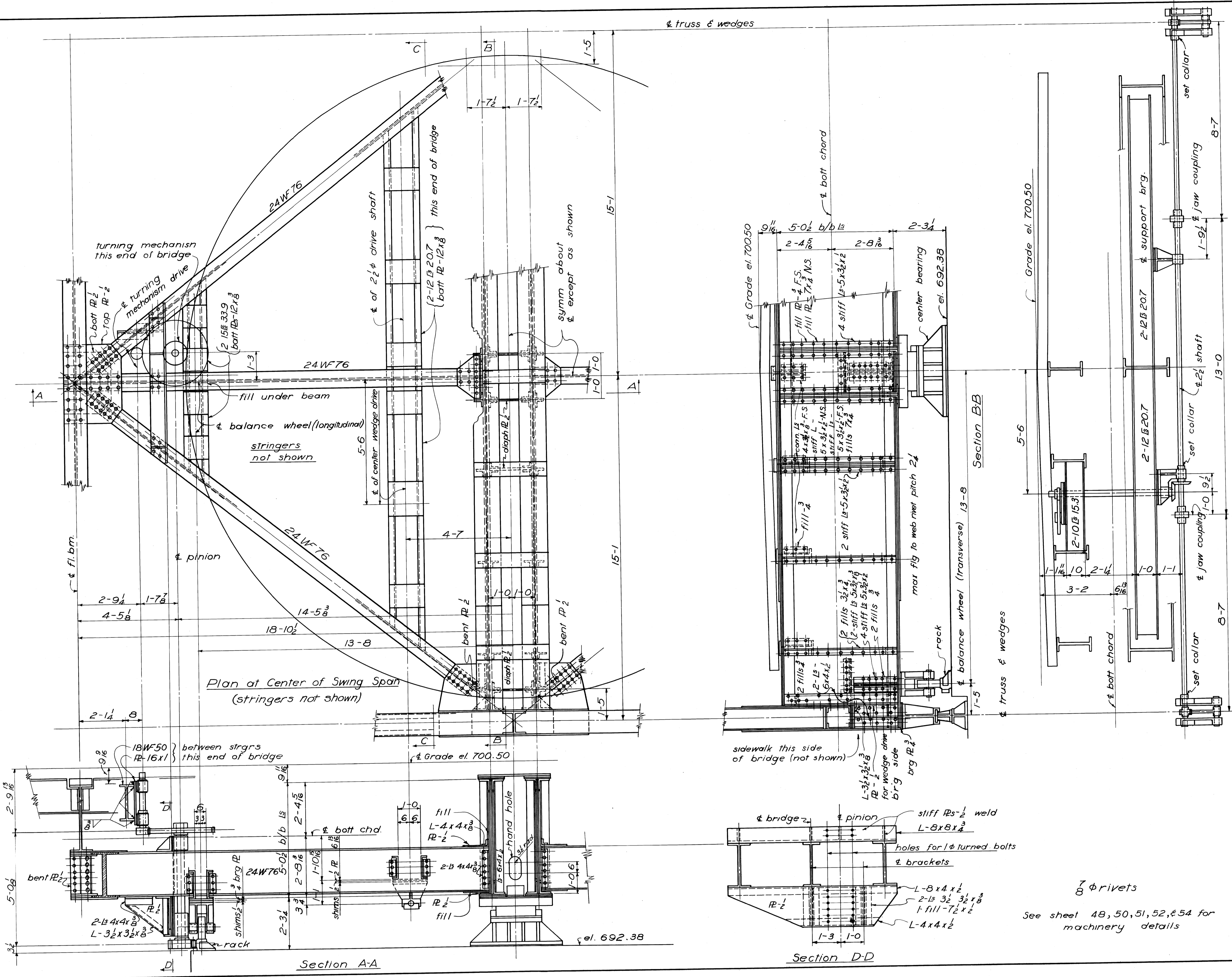


Typical Sidewalk End Finish  
for Swing Span

See sheets 47, 48 & 49 for  
machinery details

VARO ENGINEERS COLUMBUS, OHIO					
END DETAILS SWING SPAN BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO					
MUSKINGUM COUNTY COUNTY ROAD No. 32					
OHIO					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
J.O.G.	J.O.G.	reh	at	W.H.C.	10-15-58

MUSKINGUM COUNTY  
COUNTY ROAD No. 32



Access Opening at  $\epsilon$  of Bridge  
door & frame - sidewalk side  
ladder - both sides

VARO ENGINEERS  
COLUMBUS, OHIO

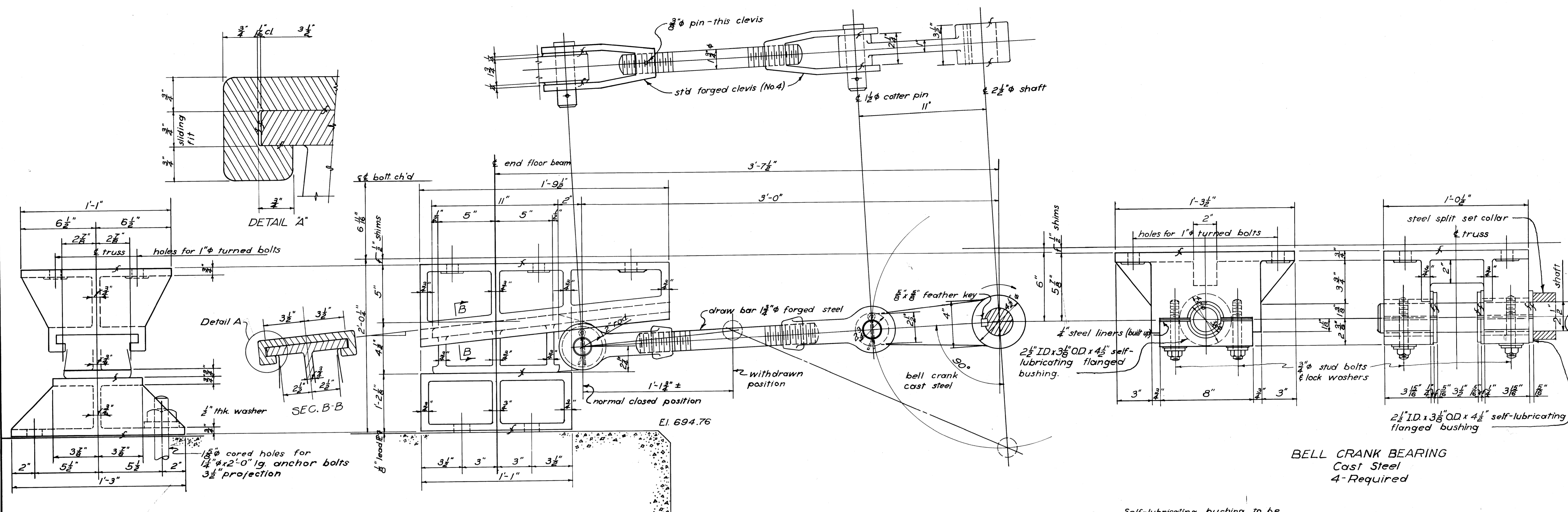
**CENTER FRAMING DETAILS  
SWING SPAN  
BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHILO**

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
J.O.G.	J.O.G.	neh	act	WNC	10-15-52



MUSKINGUM COUNTY  
COUNTY ROAD No. 32

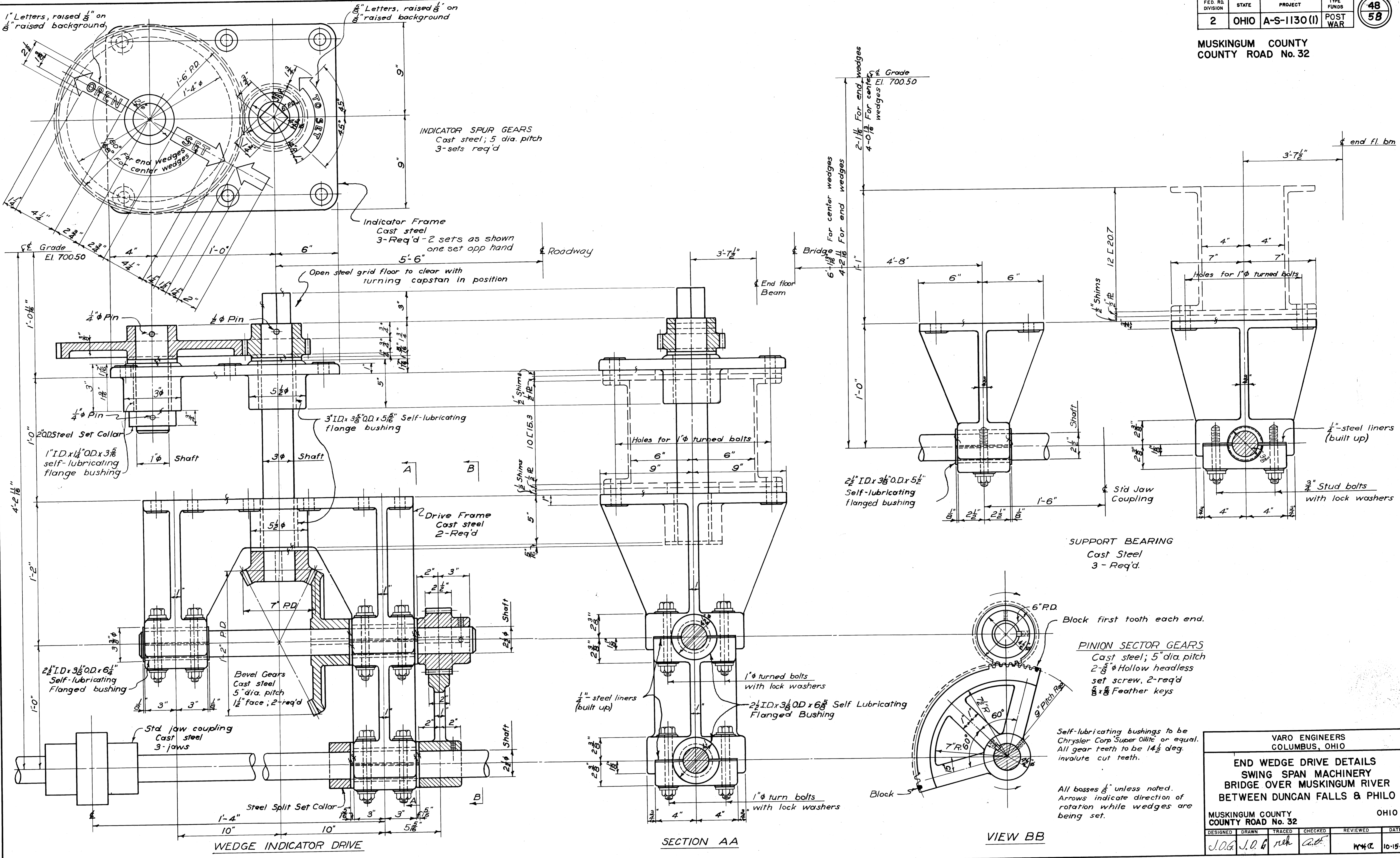


**BELL CRANK BEARING**  
Cast Steel  
4-Required

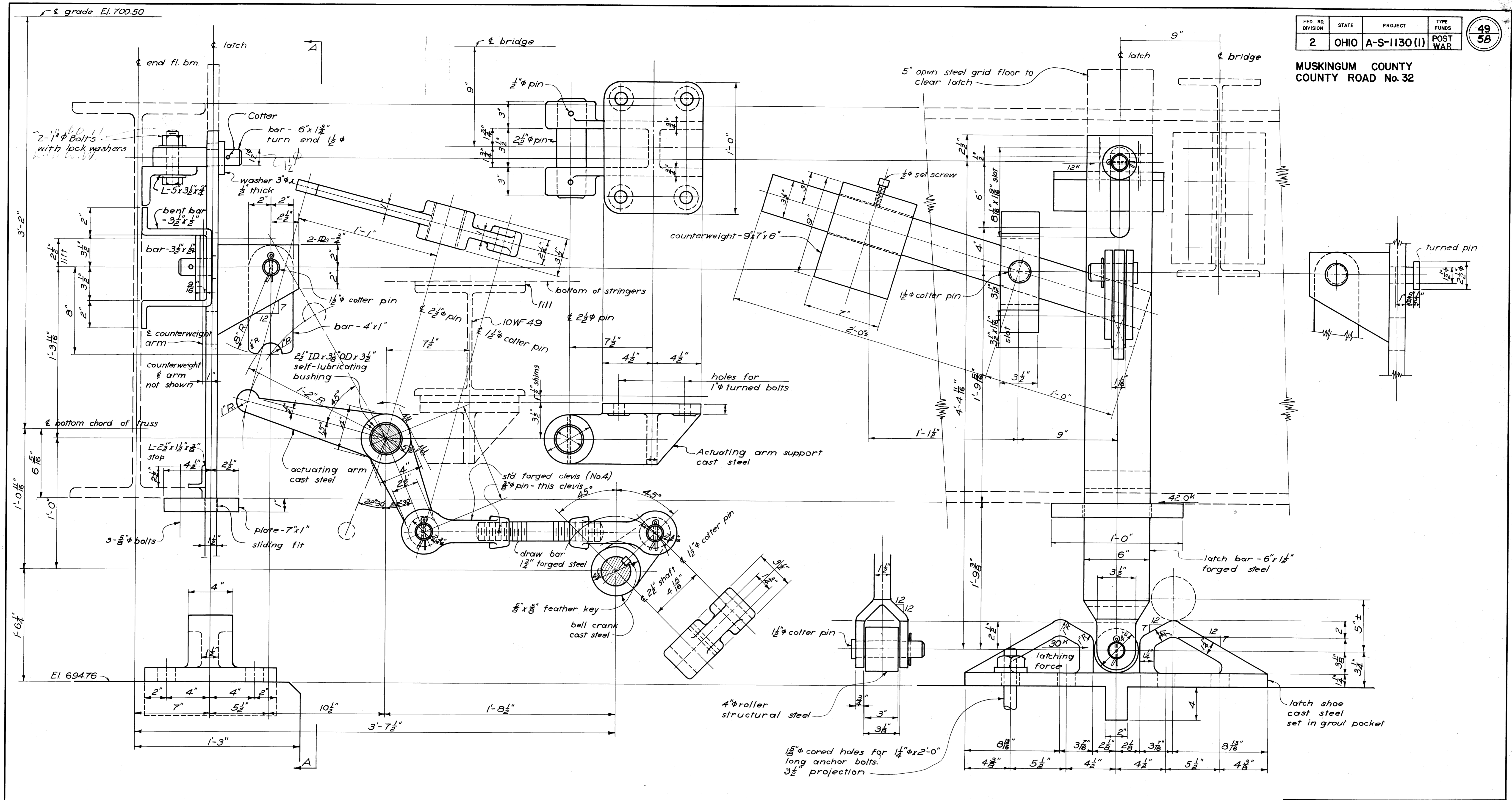
Self-lubricating bushing to be Chrysler Corp. Super-Oillite or equal.  
Arrows indicate direction of rotation while wedges are being set.  
All bosses  $\frac{3}{8}$ " unless noted.

VARO ENGINEERS COLUMBUS, OHIO					
END WEDGE DETAILS SWING SPAN MACHINERY BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO					
MUSKINGUM COUNTY					OHIO
COUNTY ROAD No. 32					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
J.O.G.	J.O.G.	nek	W.C.		10-15-52

MUSKINGUM COUNTY  
COUNTY ROAD No. 32



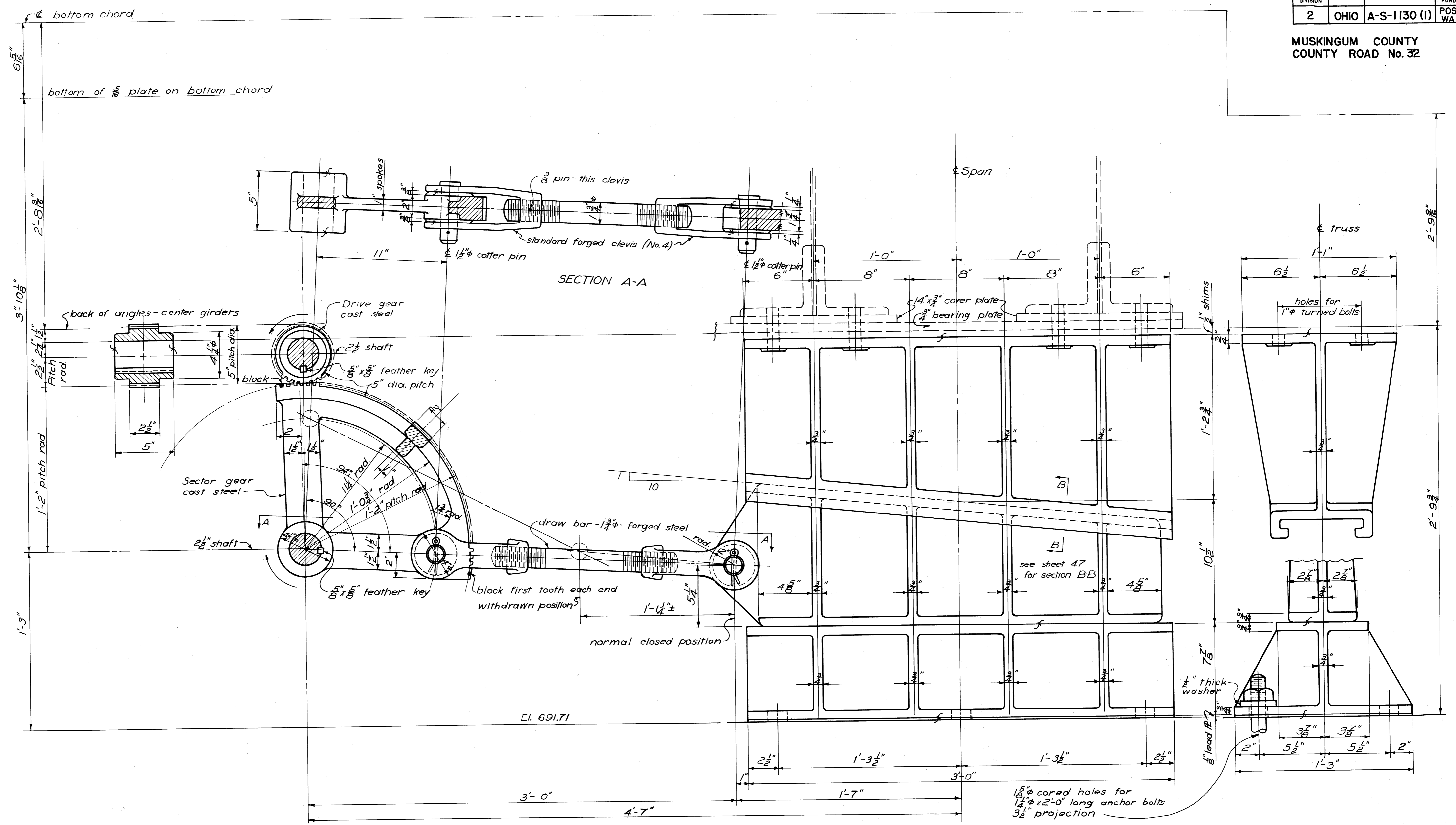
MUSKINGUM COUNTY  
COUNTY ROAD No. 32



CENTERING LATCH  
2-Req'd

VIEW 'A-A'

VARO ENGINEERS COLUMBUS, OHIO				
CENTERING LATCH DETAILS SWING SPAN MACHINERY BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO				
MUSKINGUM COUNTY COUNTY ROAD No. 32				OHIO
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
J.O.G.	J.O.G.	reh	R.H.	W.H.C.
				DATE
				10-15-52



CENTER WEDGES  
Cast Steel  
2-Req'd

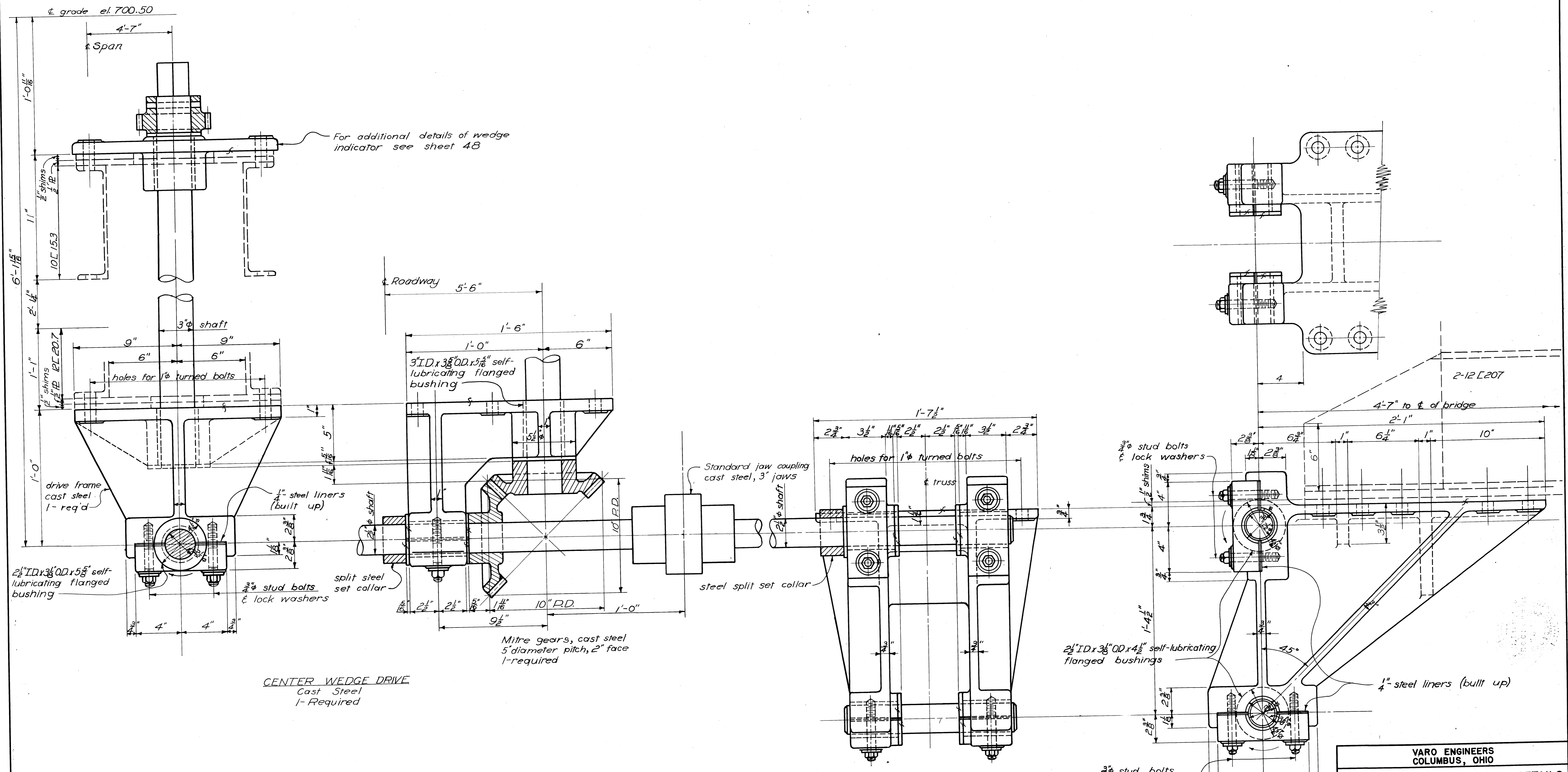
All gear teeth to be  $14\frac{1}{2}$  degree involute cut teeth  
Arrows indicate direction of rotation while wedges are being set  
All bosses  $\frac{1}{8}$ " unless noted

VARO ENGINEERS  
COLUMBUS, OHIO

CENTER WEDGE DETAILS  
SWING SPAN MACHINERY  
BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHILO

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
J.O.G.	J.O.G.	rek	at	WNC	10-15-52



**CENTER WEDGE DRIVE**  
Cast Steel  
1-Required

**CENTER WEDGE DRIVE BEARING**  
Cast Steel  
2-Required

Self-lubricating bushing to be Chrysler Corporation "Super-Oilite" or equal.  
All gear teeth to be 14 1/2 degree involute cut teeth.  
Arrows indicate direction of rotation while wedges are being set.  
All bosses 1/8" unless noted.

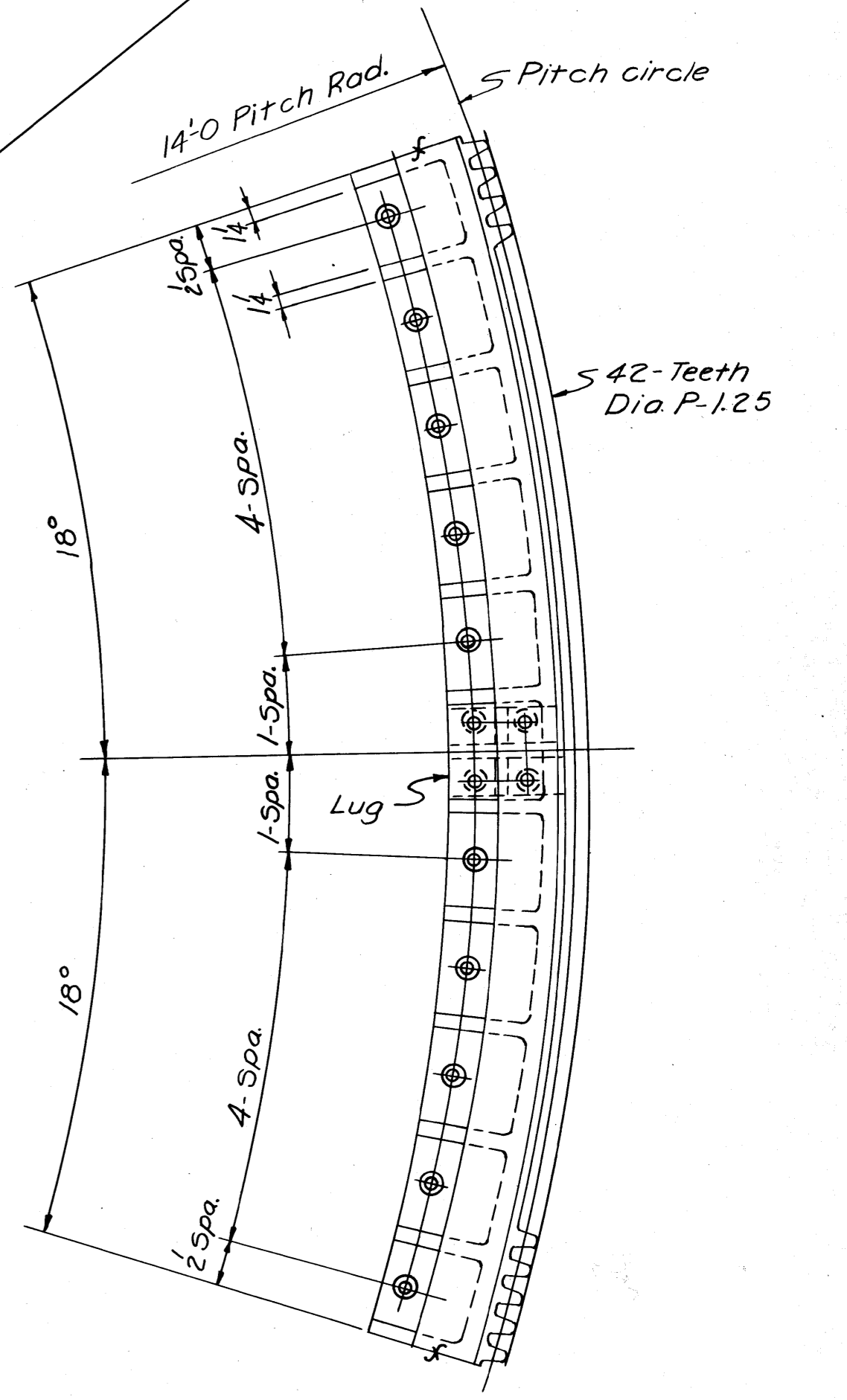
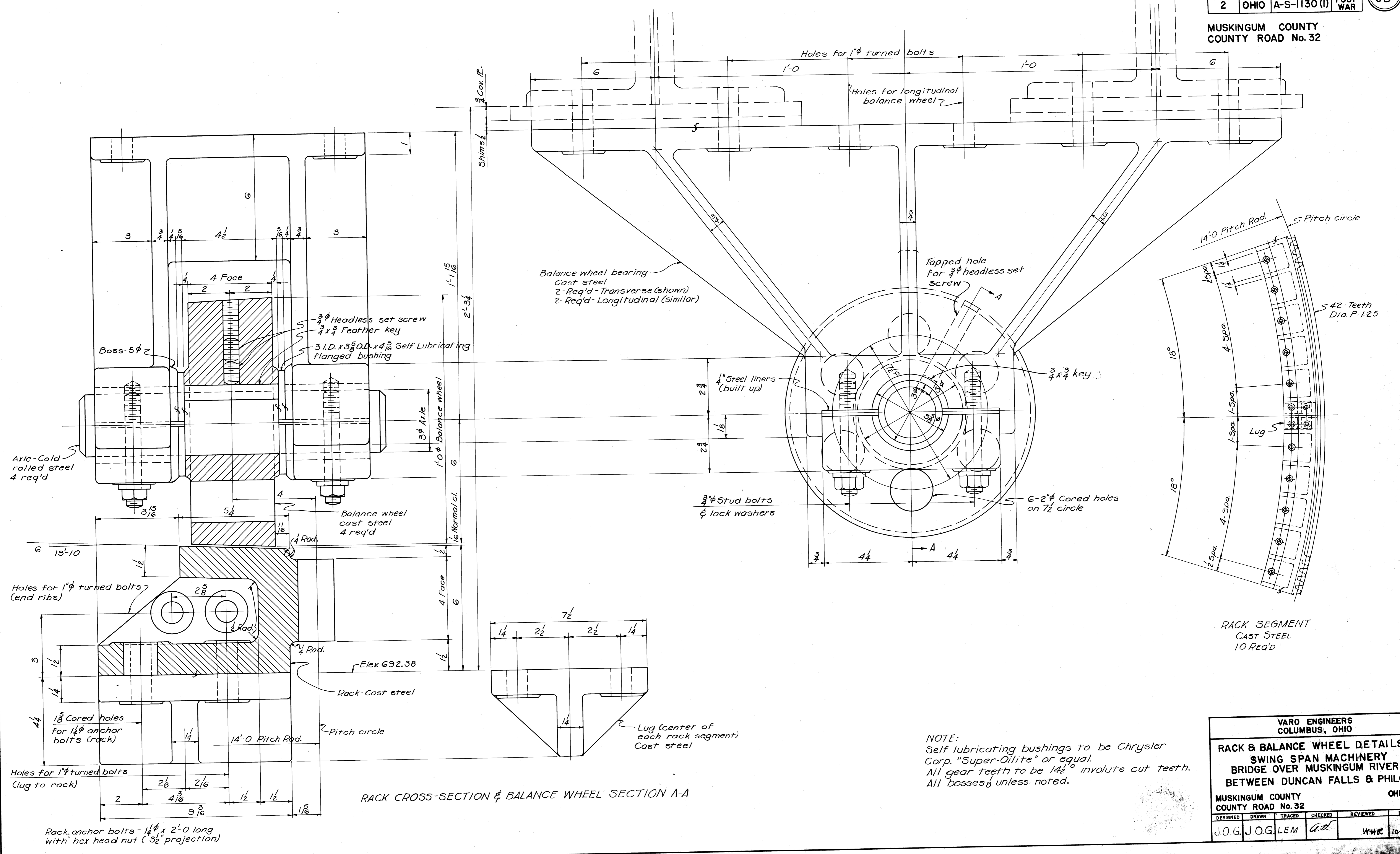
VARO ENGINEERS  
COLUMBUS, OHIO

**CENTER WEDGE DRIVE BEARING DETAILS**  
SWING SPAN MACHINERY  
BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHILO

MUSKINGUM COUNTY OHIO  
COUNTY ROAD No. 32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
J.O.G.	J.O.G.	reh	A.H.	W.H.C.	10-15-52

MUSKINGUM COUNTY  
COUNTY ROAD No. 32



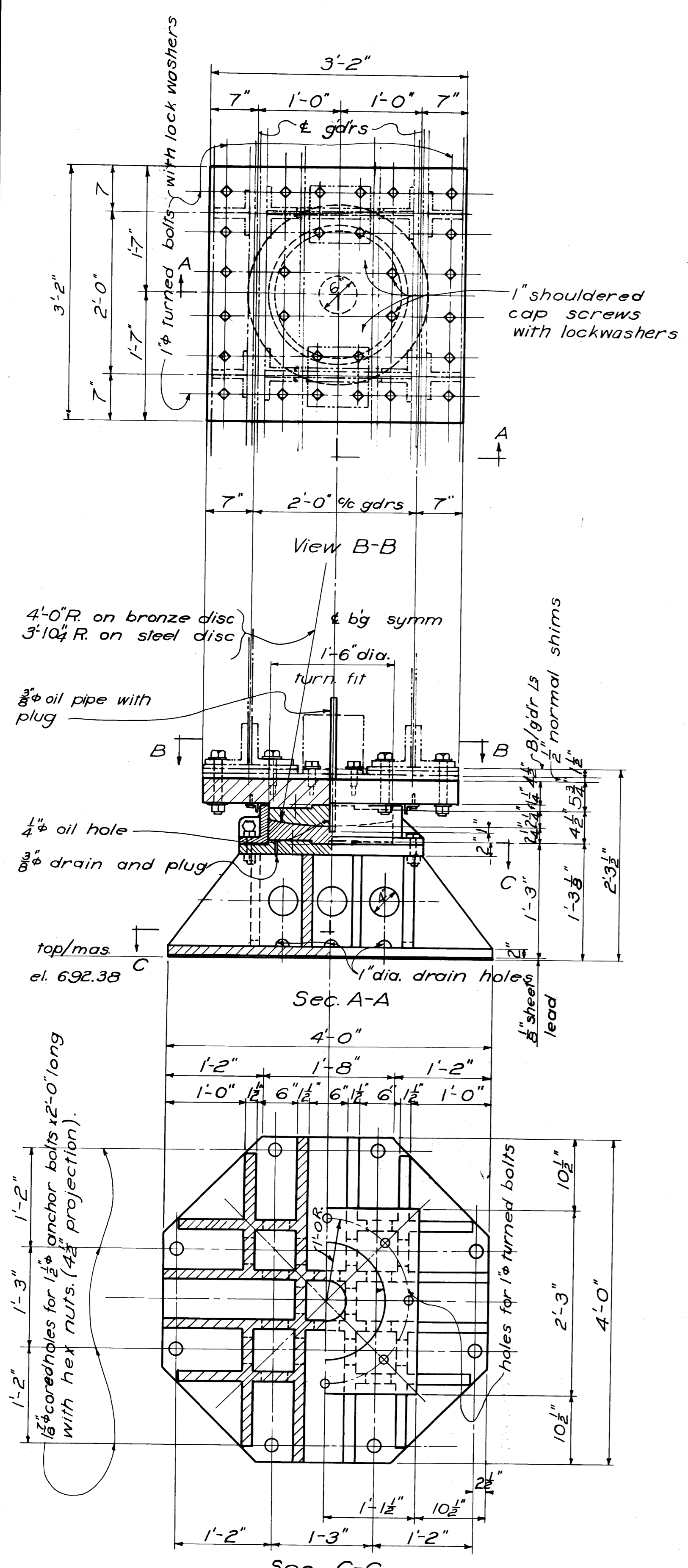
RACK SEGMENT  
CAST STEEL  
10 Req'd

**VARO ENGINEERS**  
COLUMBUS, OHIO

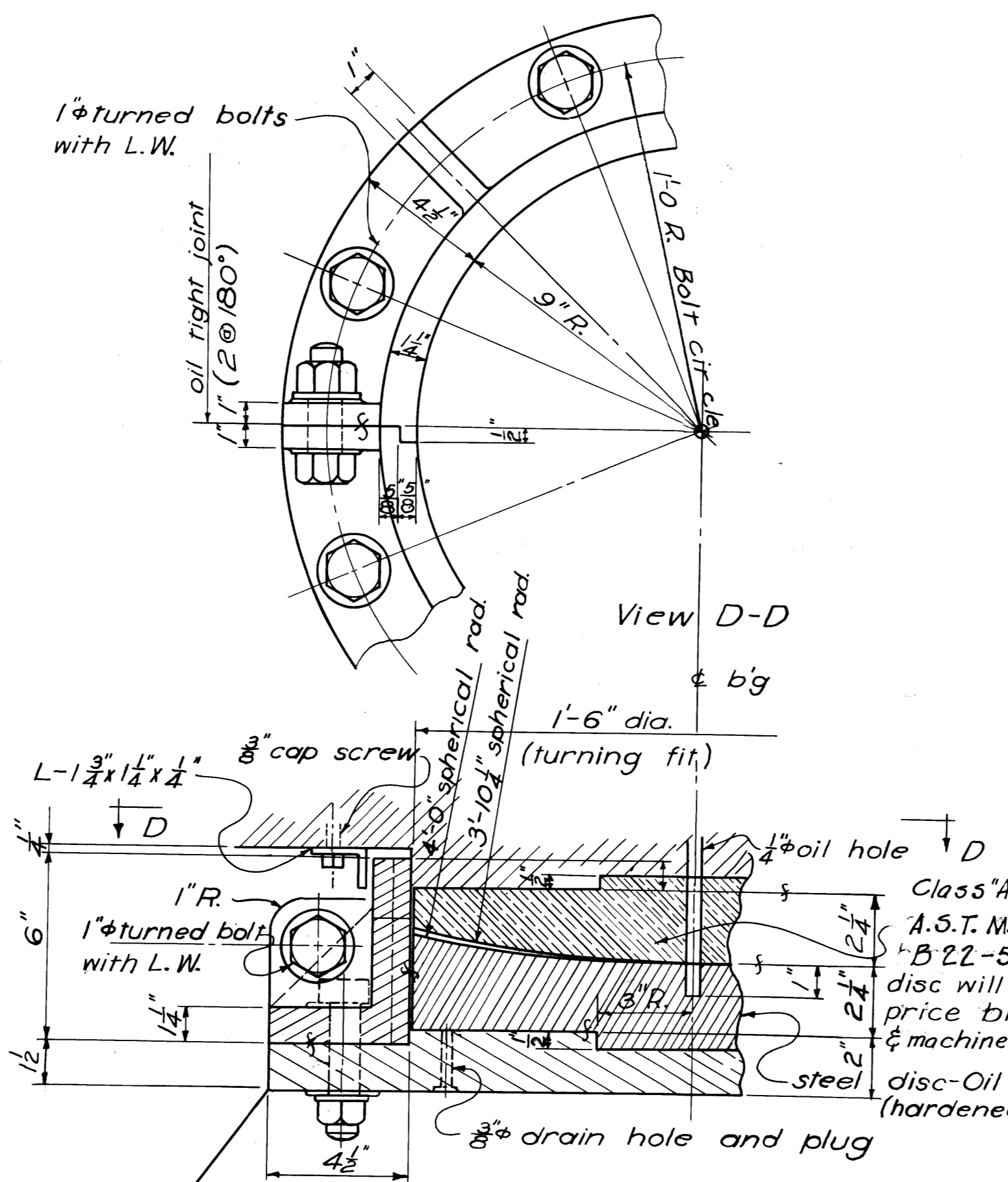
**RACK & BALANCE WHEEL DETAILS**  
SWING SPAN MACHINERY  
BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHILO

MUSKINGUM COUNTY  
COUNTY ROAD No. 32  
OHIO

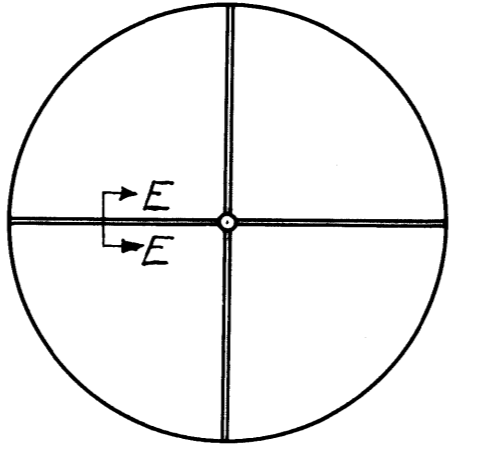
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
J.O.G.	J.O.G.	LEM	A.H.	W.H.K.	10-15-54



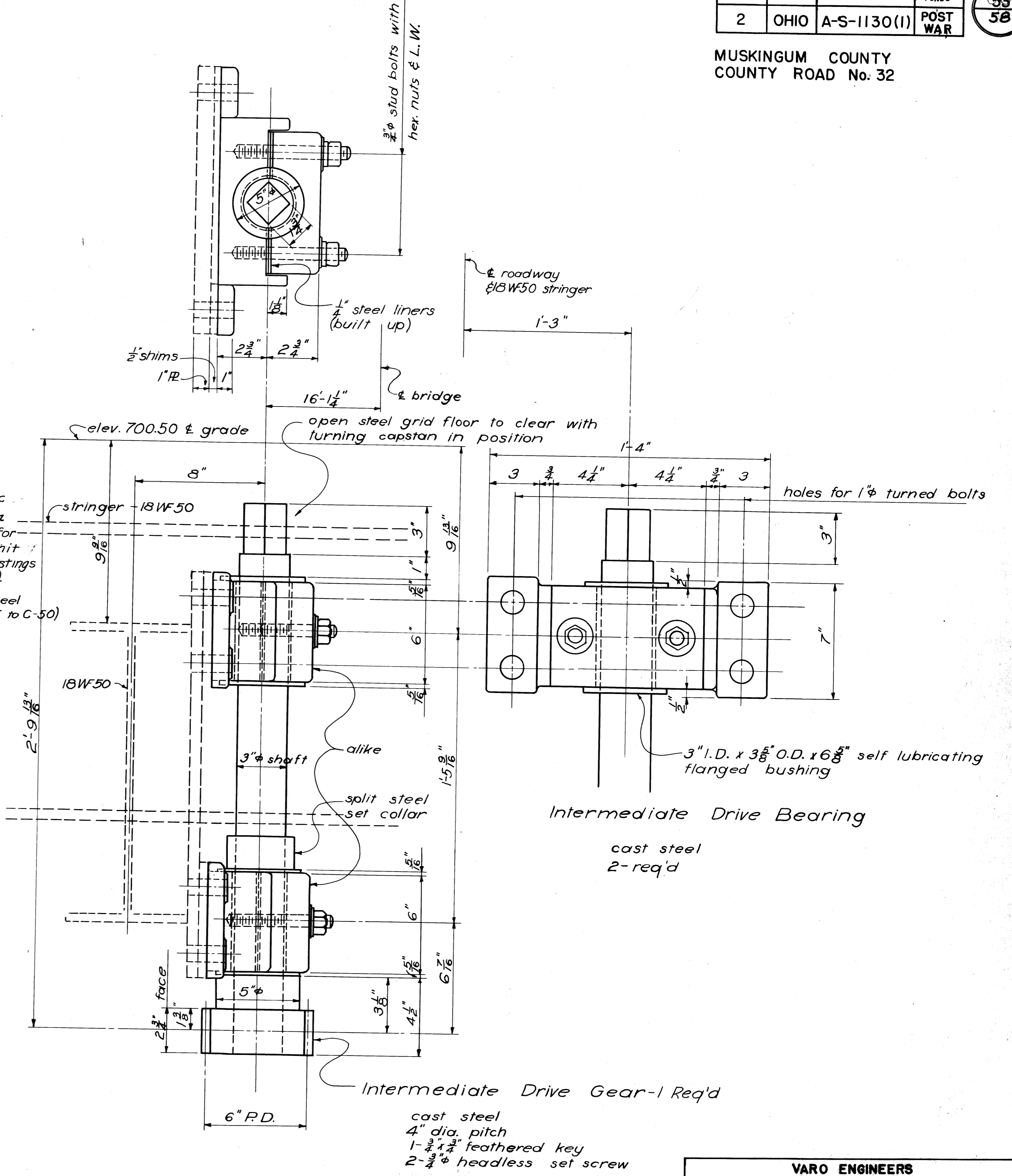
Sec. C-C  
Center Bearing Details  
material - cast steel except as noted



Enlarged Section of Oil Box and Center Disc  
(oil box casting to be made in halves)

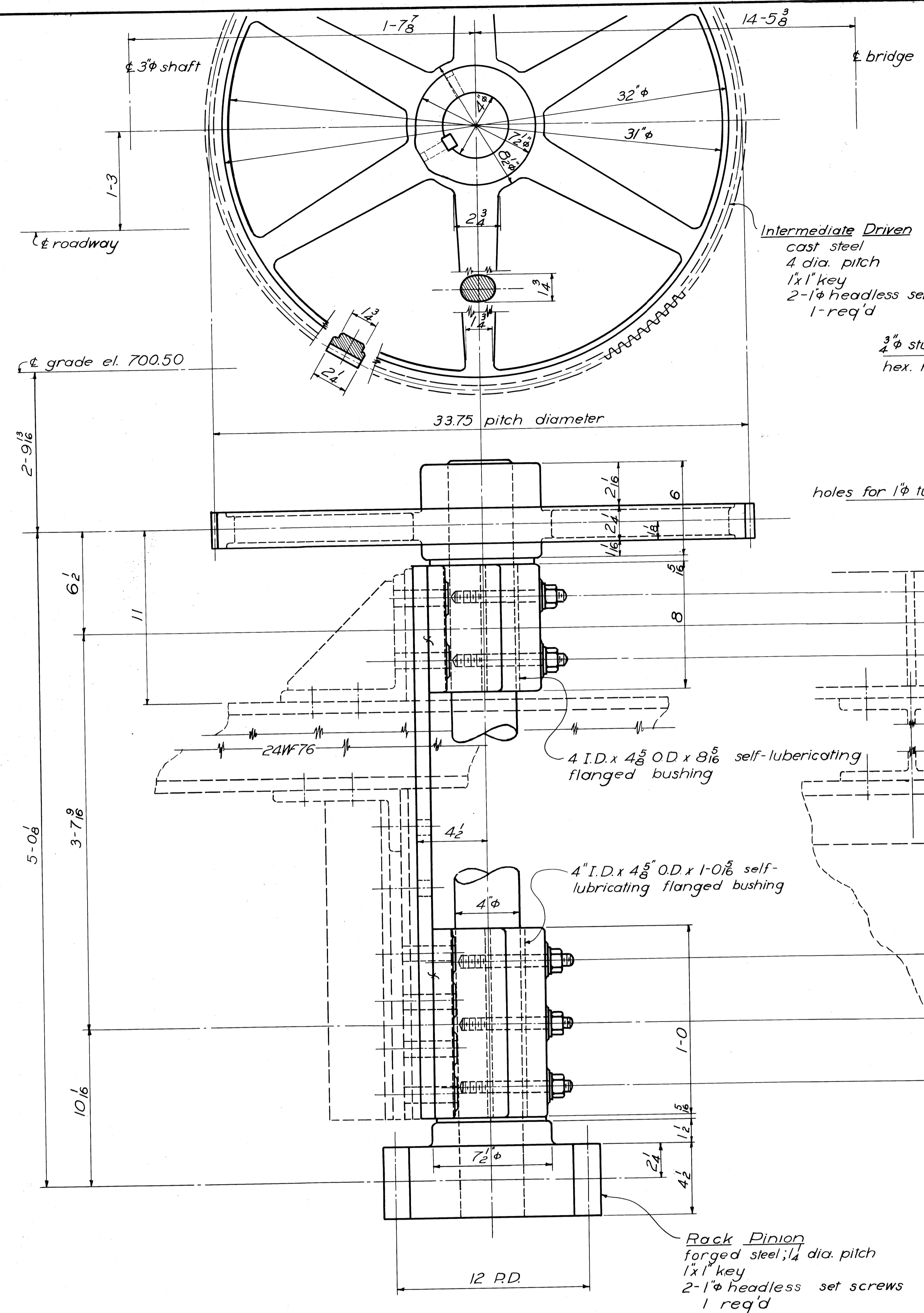


Oil Groove Arrgt in Spherical Surfaces of Discs



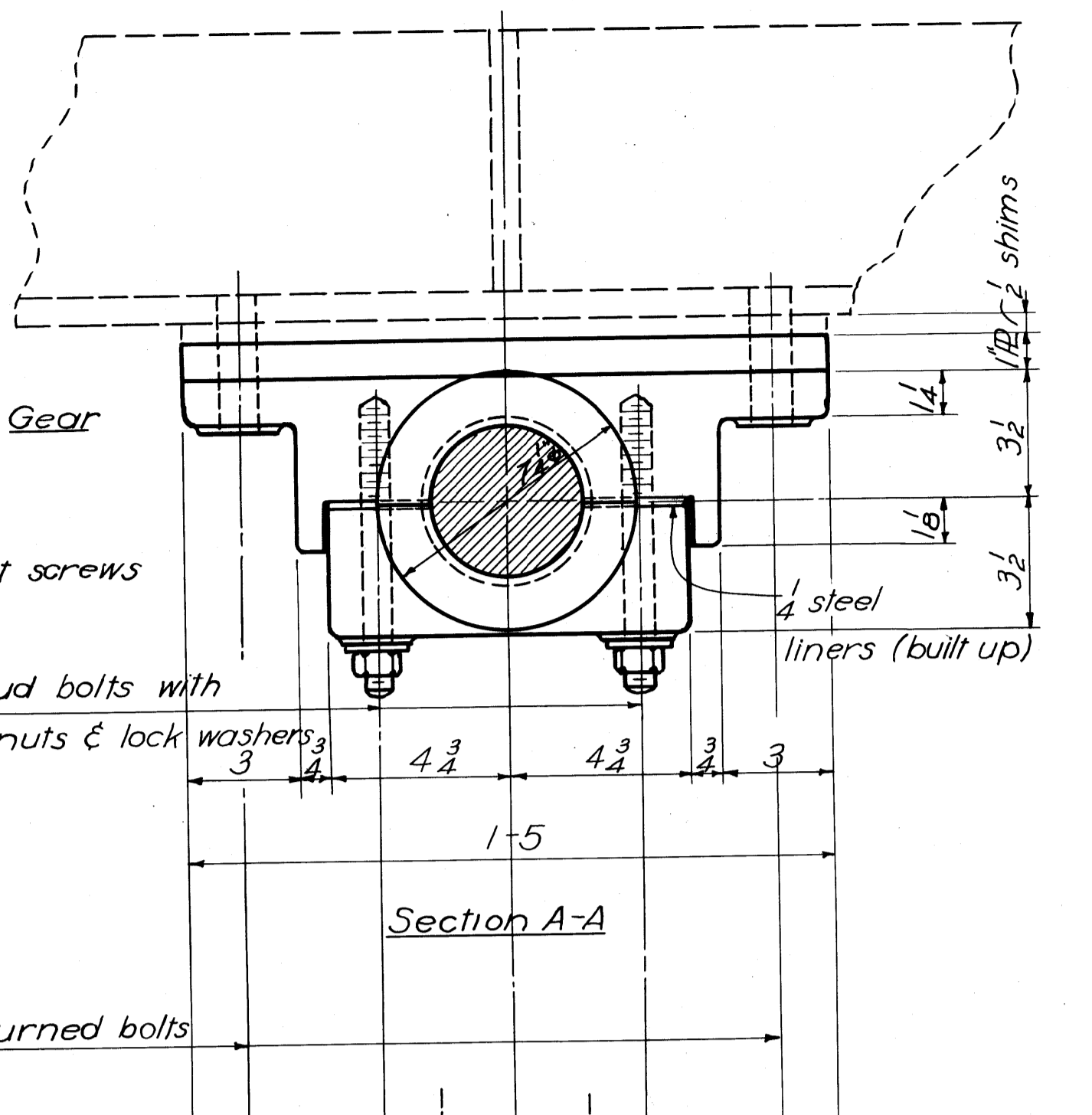
Self-lubricating to be Chrysler Corp "Super-Oilite" or equal.  
All gear teeth to be 14 1/2 deg. involute cut teeth.  
Make faced bosses on castings where turned bolts are indicated.

VARO ENGINEERS COLUMBUS, OHIO					
CENTER BEARING CASTINGS AND TURNING MECHANISM BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO					
MUSKINGUM COUNTY COUNTY ROAD No. 32					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
VARO G.B.	VARO R.W.P.	reh	J.O.P. G.B.	MYC	10-15-52



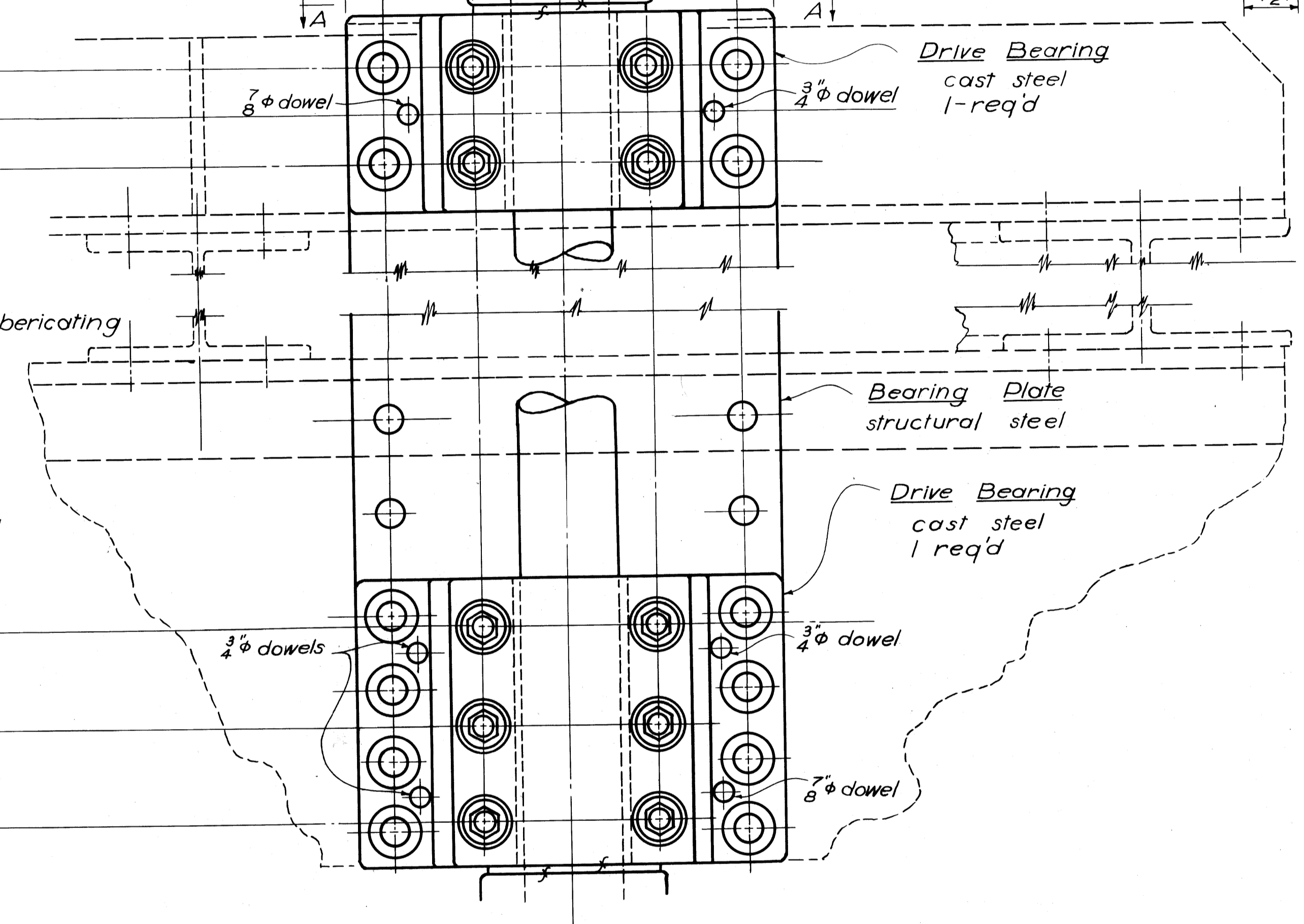
Intermediate Driven Gear  
cast steel  
4 dia. pitch  
1x1 key  
2-1/2 headless set screws  
1 req'd

Rack Pinion  
forged steel; 1/4 dia. pitch  
1x1 key  
2-1/2 headless set screws  
1 req'd



3/4 inch stud bolts with  
hex nuts & lock washers

holes for 1/2 inch turned bolts

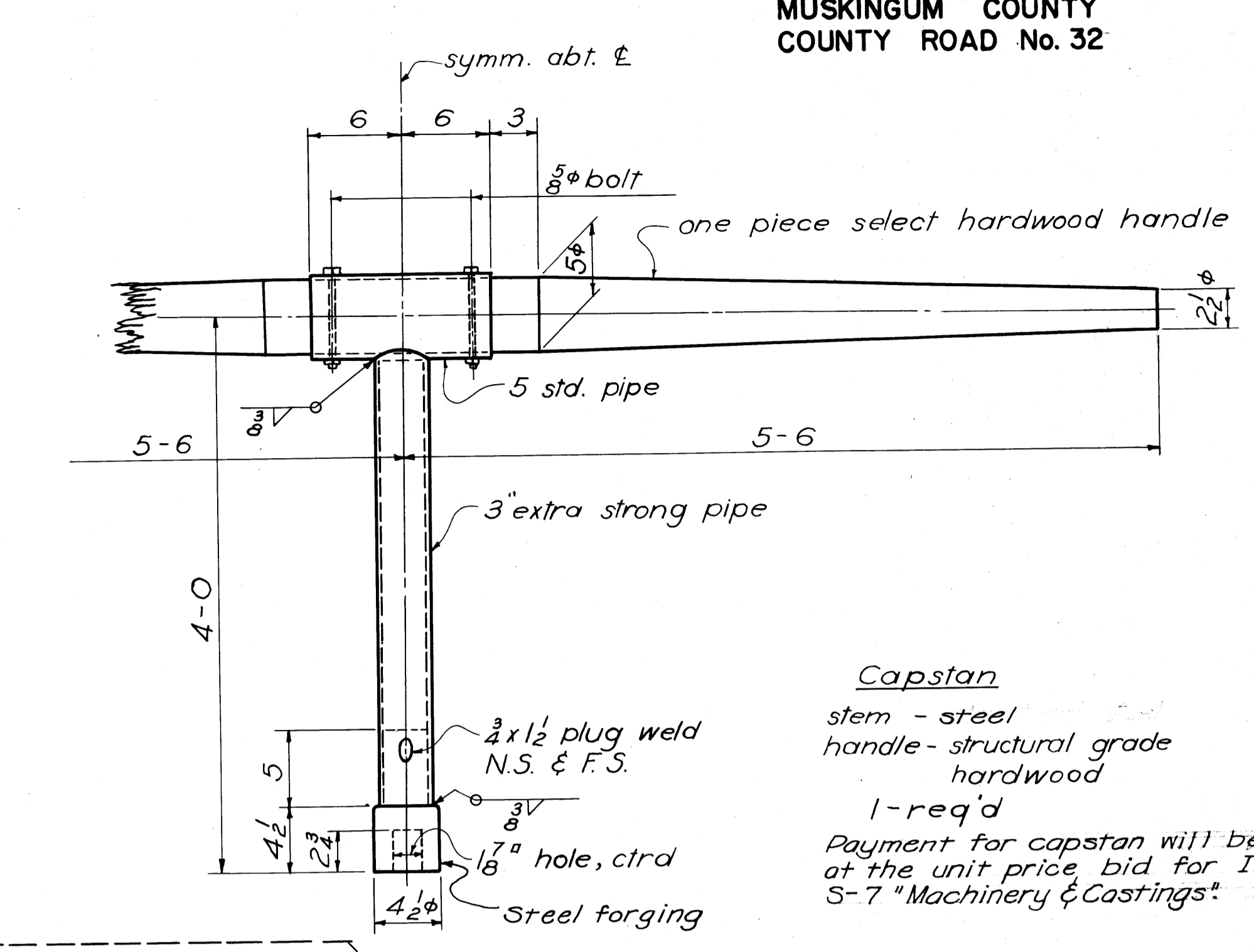


Drive Bearing  
cast steel  
1 req'd

Bearing Plate  
structural steel

Drive Bearing  
cast steel  
1 req'd

Self-lubricating bushing to be Chrysler Corp. "Super-Oilite" or equal.  
All gear teeth to be 14 1/2 deg. involute cut teeth.  
All bosses 8 unless noted.



Capstan  
stem - steel  
handle - structural grade  
hardwood  
1 req'd  
Payment for capstan will be made  
at the unit price bid for Item  
S-7 "Machinery & Castings"

VARO ENGINEERS COLUMBUS, OHIO				
MACHINERY - SWING SPAN TURNING MECHANISM BRIDGE OVER MUSKINGUM RIVER BETWEEN DUNCAN FALLS & PHILO				
MUSKINGUM COUNTY COUNTY ROAD No. 32				OHIO
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
J.A.G.	J.A.G.	reb	A.T.	W.H.C.
				10-15-54

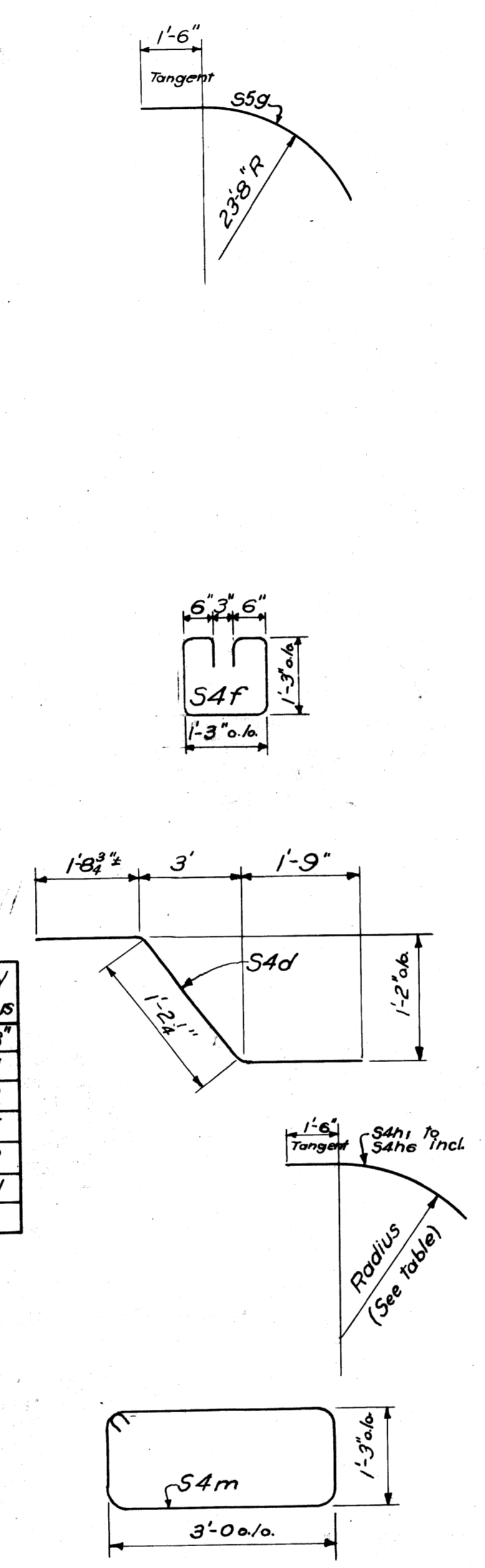


Intake Bridge Superstr.

Mk	No.	Length	Wt.	Shp.
S6b	218	28-11"	9468	s
S6b1	1	6-4	10	↑
2	1	8-7	13	
3	1	10-10	16	
4	1	13-1	20	
5	1	15-4	23	
6	1	17-7	26	
7	1	19-10	30	
8	1	22-2	33	
9	1	24-5	37	
10	1	26-8	40	
11	1	28-11	43	
12	1	31-2	47	
13	1	33-6	50	
14	1	33-1	50	
15	1	32-9	49	
16	1	32-5	48	
17	1	32-1	48	
18	1	31-9	48	
19	1	31-6	47	
20	1	31-3	47	
21	1	31-0	47	
22	1	30-9	46	
23	1	30-6	46	
24	1	30-3	45	
25	1	30-1	45	
26	1	29-11	45	
27	1	29-9	45	
28	1	29-7	44	
29	1	29-5	44	
30	1	29-3	44	
31	1	27-11	42	
32	1	25-8	39	
33	1	23-5	35	
34	1	21-2	32	
35	1	18-11	28	
36	1	16-7	25	
37	1	14-4	22	
38	1	12-1	18	
39	1	9-10	15	
40	1	7-7	11	↑
41	1	5-4	8	s
S5c	233	28-11"	7027	s
S5c1	1	6-0	6	s
2	1	8-1	8	↑
3	1	10-2	11	
4	1	12-4	13	
5	1	14-5	15	
6	1	16-6	17	
7	1	18-7	19	
8	1	20-9	22	
9	1	22-10	24	
10	1	24-11	26	
11	1	27-0	28	
12	1	29-2	30	
13	1	31-3	33	
14	1	33-4	35	
15	1	33-5	35	
16	1	33-0	34	
17	1	32-8	34	

These bars are considered to be included in the total amount bid for S-14 (Railings) and no additional compensation will be made.

Mk	No.	Length	Wt.	Shp.
S5c18	1	32	34	s
19	1	31-11	33	↑
20	1	31-8	33	
21	1	31-4	33	
22	1	31-1	32	
23	1	30-10	32	
24	1	30-7	32	
25	1	30-4	32	
26	1	30-2	31	
27	1	29-11	31	
28	1	29-9	31	
29	1	29-7	31	
30	1	29-6	31	
31	1	29-4	31	
32	1	29-3	31	
33	1	29-2	30	
34	1	29-1	30	
35	1	28-0	29	
36	1	25-11	27	
37	1	23-9	25	
38	1	21-8	23	
39	1	19-7	20	
40	1	17-6	18	
41	1	15-4	16	
42	1	13-3	14	
43	1	11-2	12	
44	1	9-1	9	↓
S5c45	1	6-11	7	s
S5c46	1	4-10	5	s
S5c47	1	2-9	3	s
S5d	2	13-3"	28	s
e	2	8-6	17	s
f	2	6-6	14	s
g	2	16-2	34	Bt
S5k	336	28-0	9811	s
S5m	36	24-0	1410	s
S4d	280	4-8"	873	Bt
e	22	5-6	81	s
f	115	4-10	371	s
g	310	5-0	1035	s
h	42	22-3	625	s
h1	1	17-6	12	Bt
a	1	17-3	12	Bt
s	1	17-1	11	Bt
t	1	16-11	11	Bt
s	1	16-9	11	Bt
S4hs	1	16-7	11	Bt
S4m	12	7-10	63	Bt
S4a	16	4-0"	43	s
b	8	2-3	12	s
c	8	1-2	6	s
d	8	1-6	8	s
e	24	3-0	48	s
f	16	2-6	27	s
				144



Superstr. 154'-6" Truss

Mk	No.	Length	Wt.	Shp.
S4a	1372	6'-6"	5957	s
S4b	224	24'-0"	3590	s
S4e	96	5'-6"	352	s
S5a	1073	26-6	29658	s
S5b	1540	24-0	38546	s
S6a	1001	26-6	39840	s
				117943

Replacement Steel for Intake Str.

Mk	No.	Length	Wt.	Shp.
RE10	1	7-9"	33	s
9	1	7-4	25	s
8	1	7-4	20	s
6	1	6-6	10	s
5	1	6-1	6	s
4	1	5-8	4	s
				98

Superstr. Swing Span

Mk	No.	Length	Wt.	Shp.
S4a	312	6'-6"	1354	s
S4b	56	24'-0"	898	s
S4e	24	5'-6"	125	s
S6c	154	3-10	889	s
S6d	24	27-9	1000	s
				4266

Replacement Steel for River Str.

Mk	No.	Length	Wt.
RE11	1	8'-2"	43
9	1	7-4	25
6	3	6-6	29
5	4	6-1	25
4	1	5-8	4
			126

Superstr. 40' Appr. Span

Mk	No.	Length	Wt.	Shp.
S4c	86	7'-11"	579	s
S4d	44	4-8	173	Bt
S4e	6	5-6	28	s
S4f	26	4-10	107	Bt
S4k	30	22-0	561	s
S4m	6	7-10	40	Bt
S5c	70	28-11"	2111	s
S5c4	2	12-4	26	s
S5h	110	22-0	2555	s
S6b	66	28-11	2566	s
S6bs	2	15-4	46	s
				9092

VARO ENGINEERS  
COLUMBUS, OHIO

REINFORCING BAR LIST  
BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHILO

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

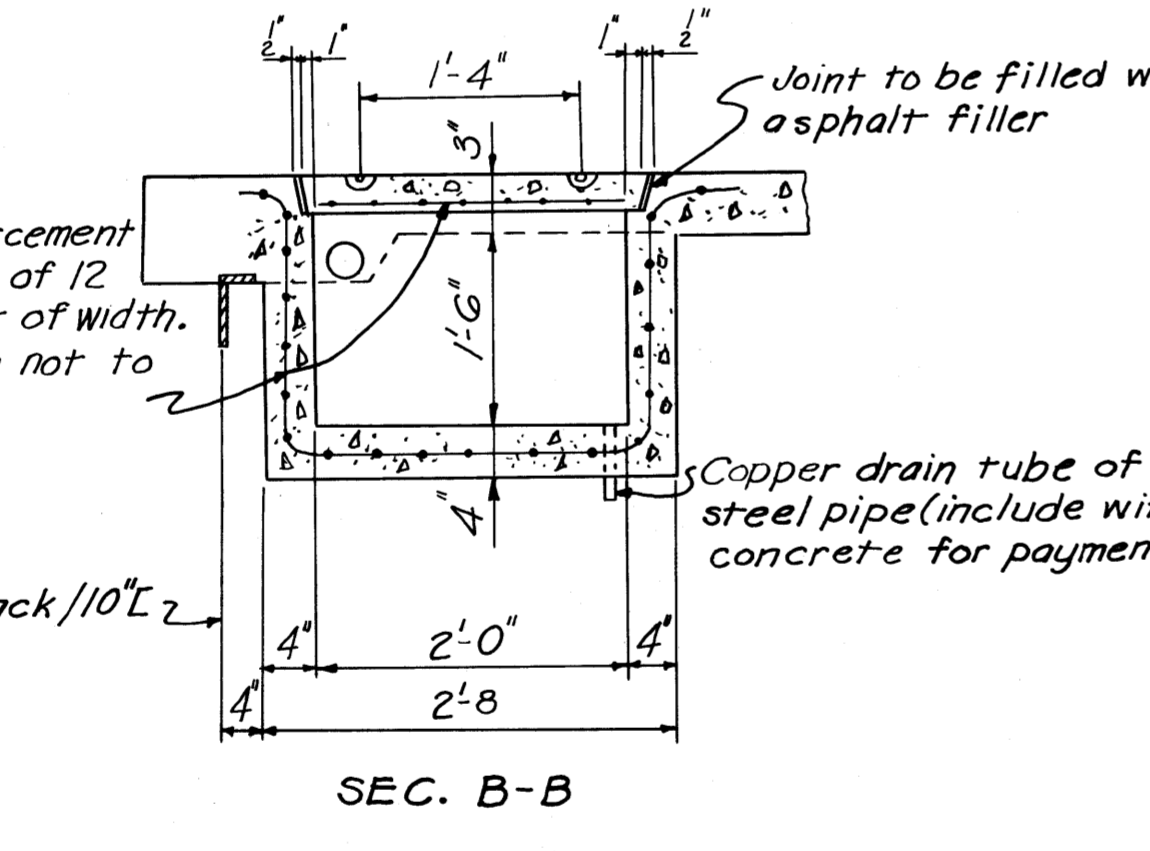
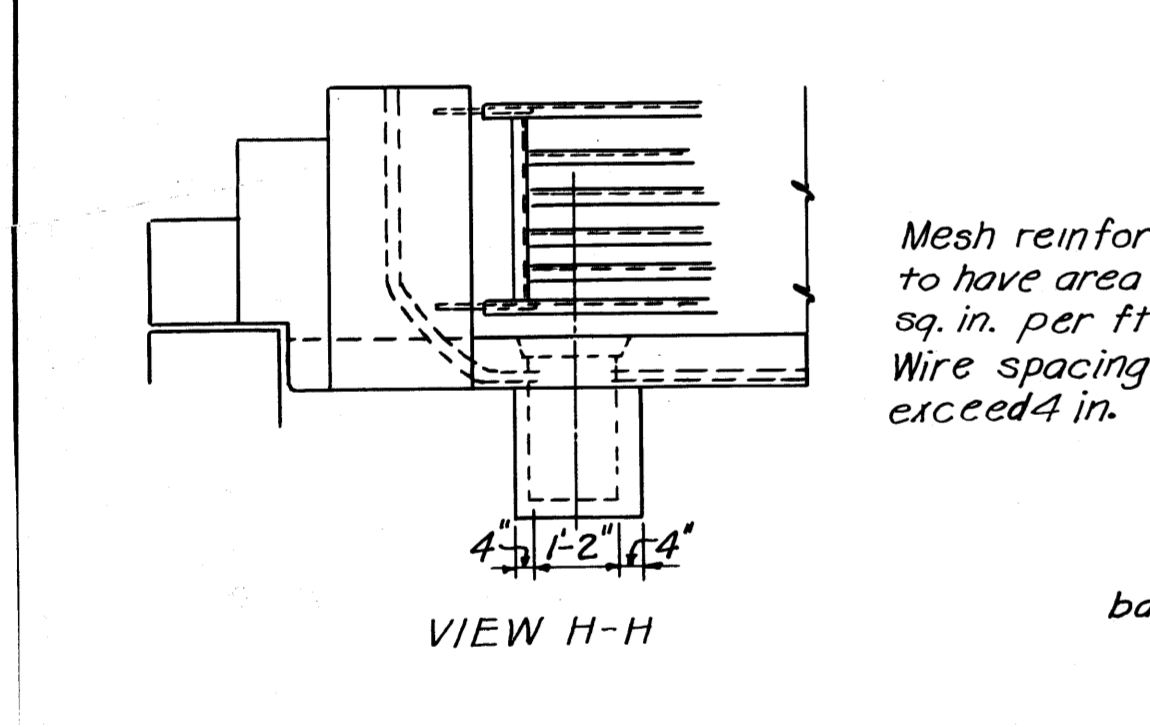
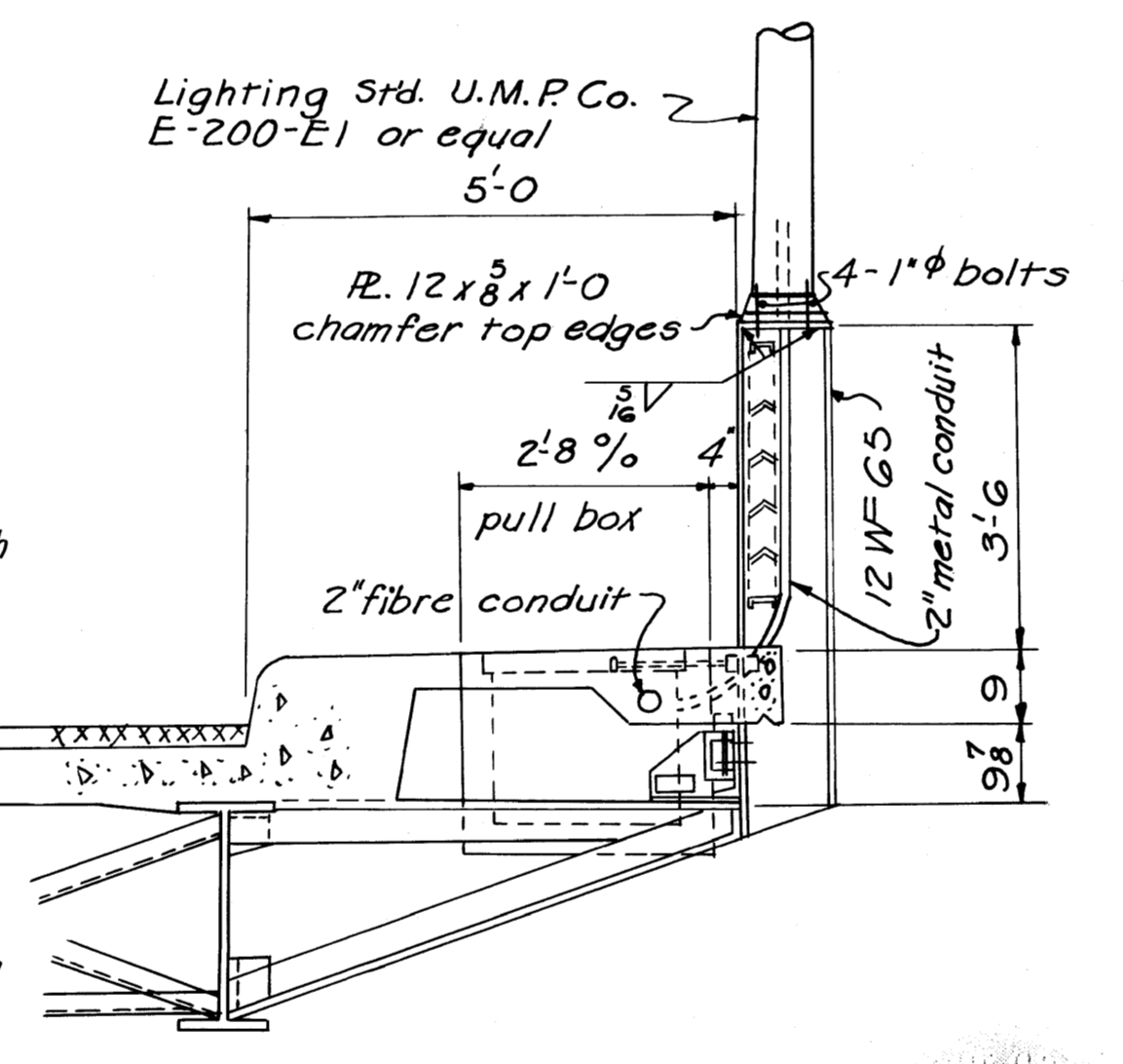
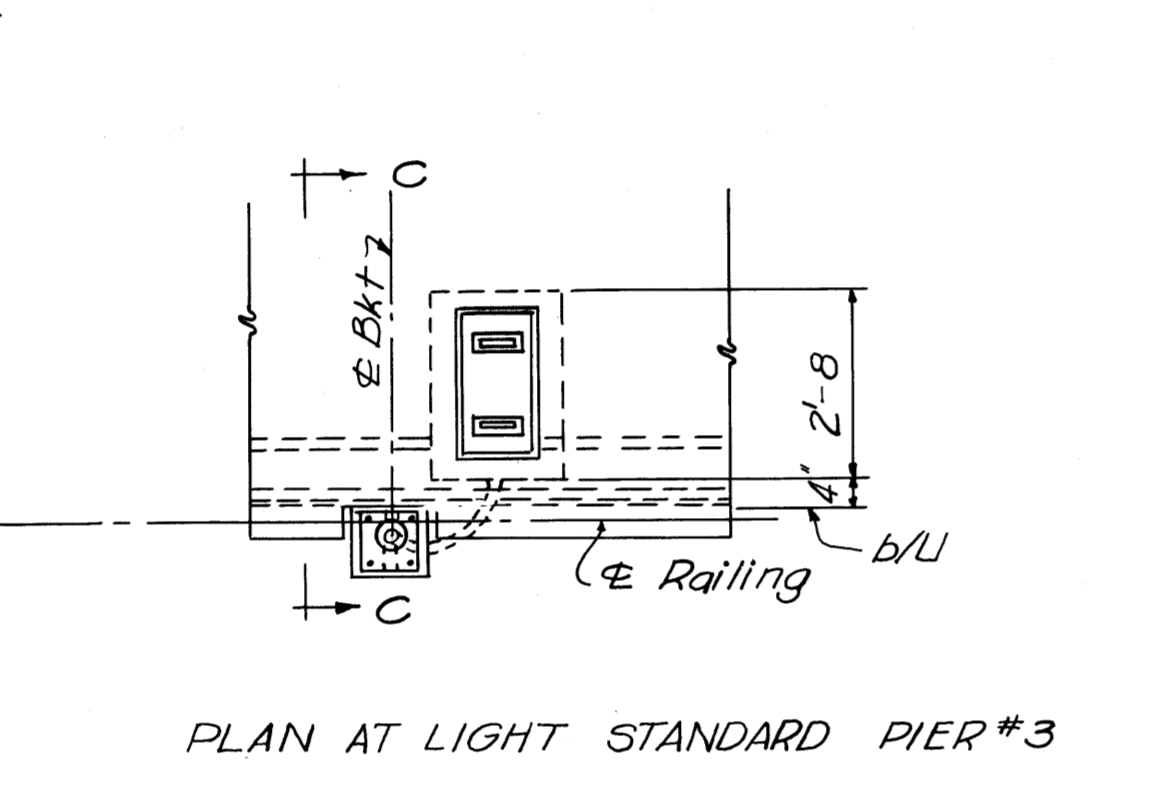
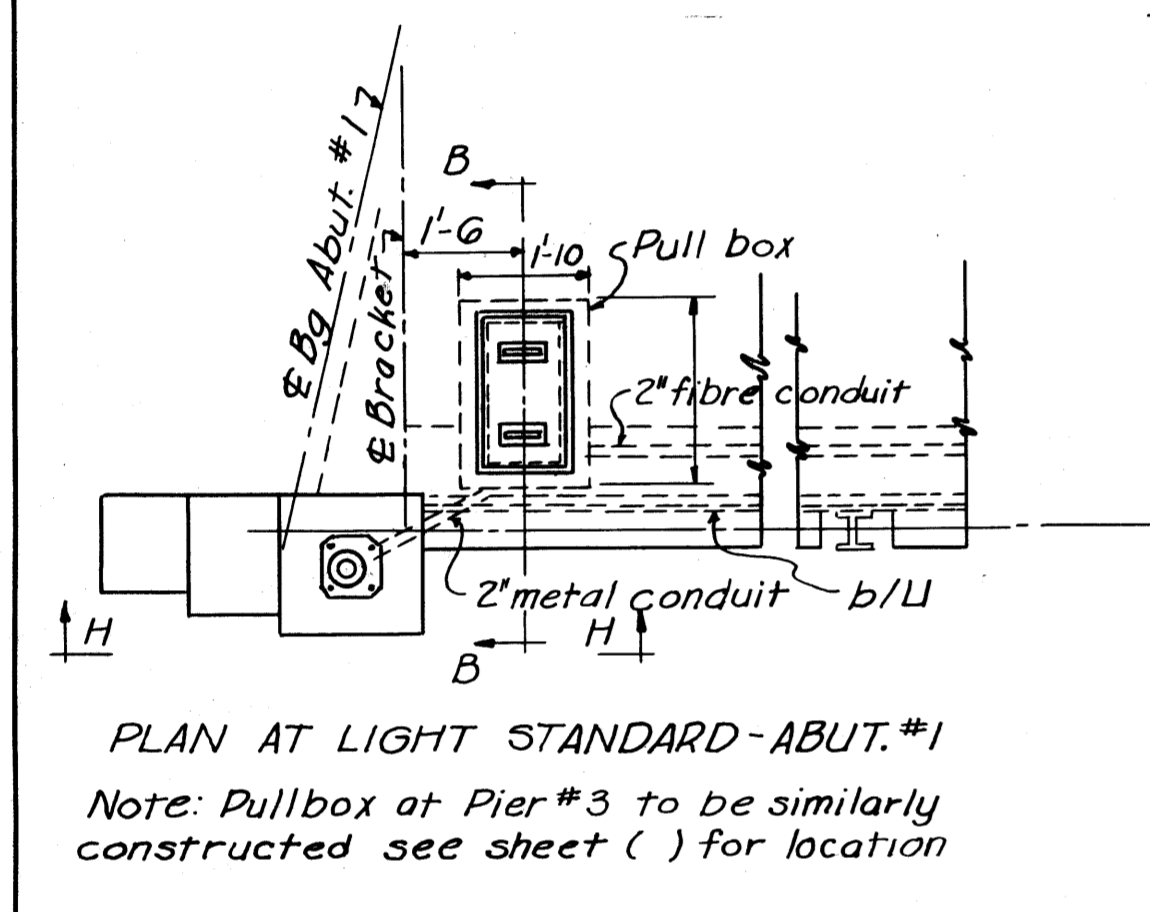
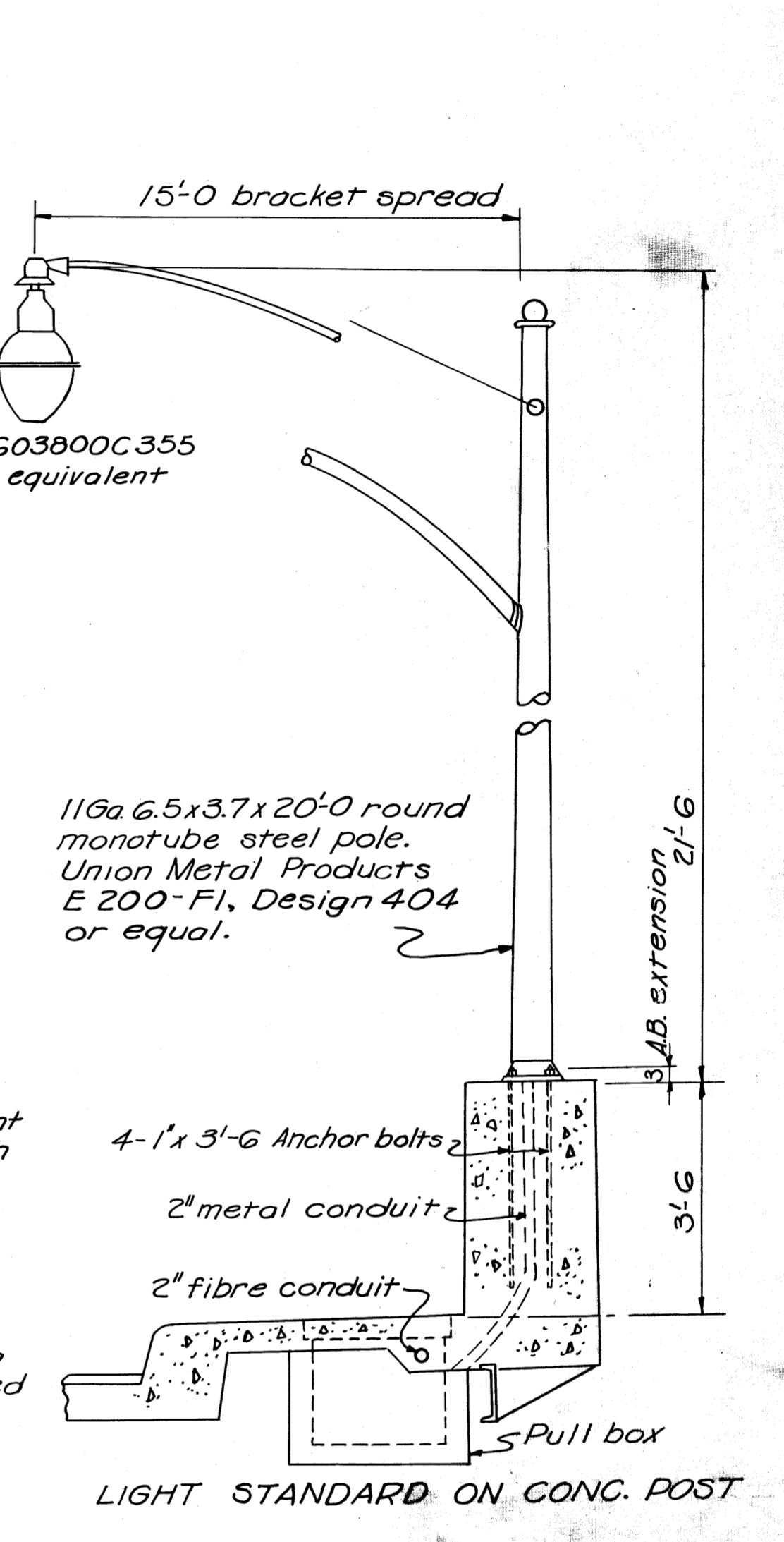
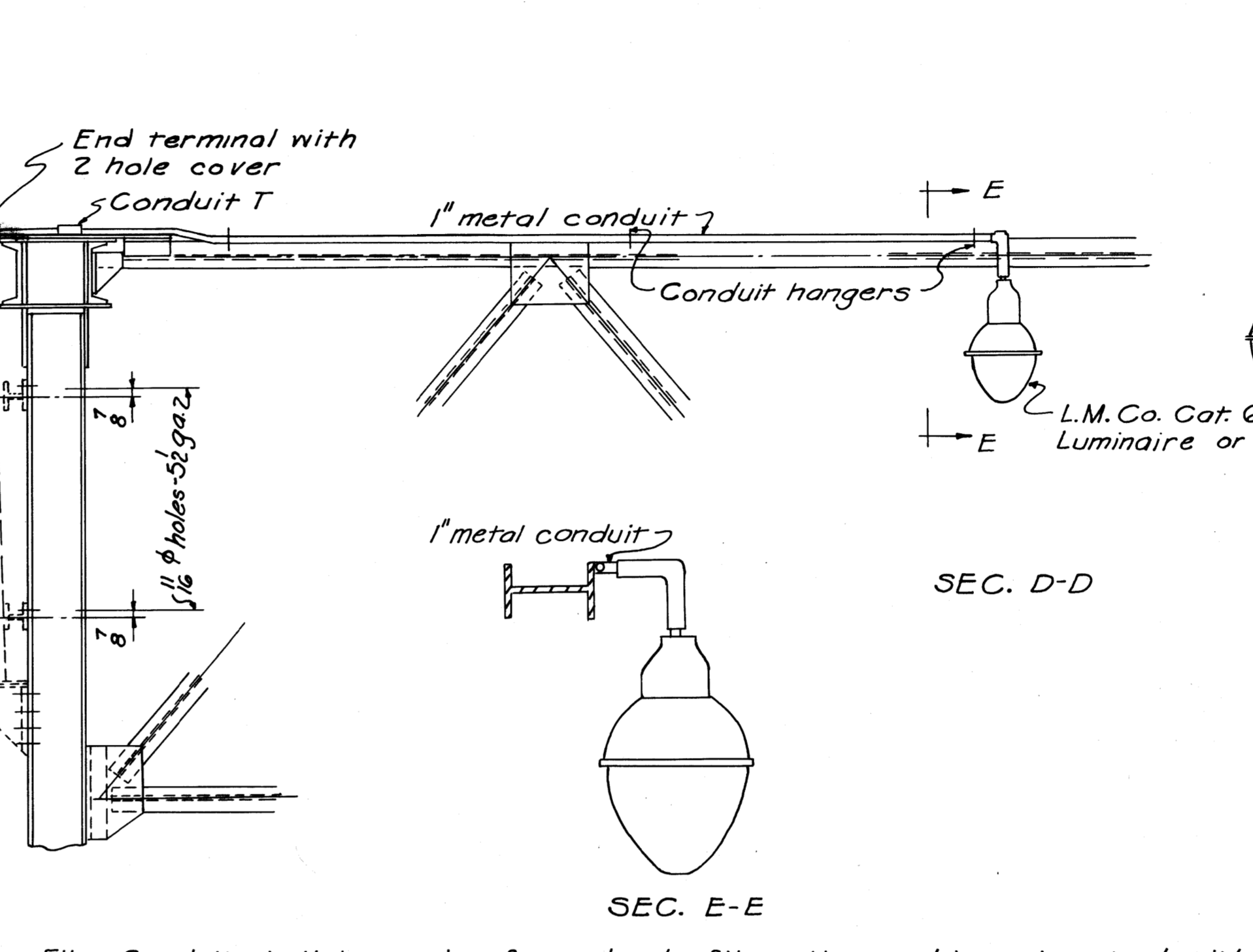
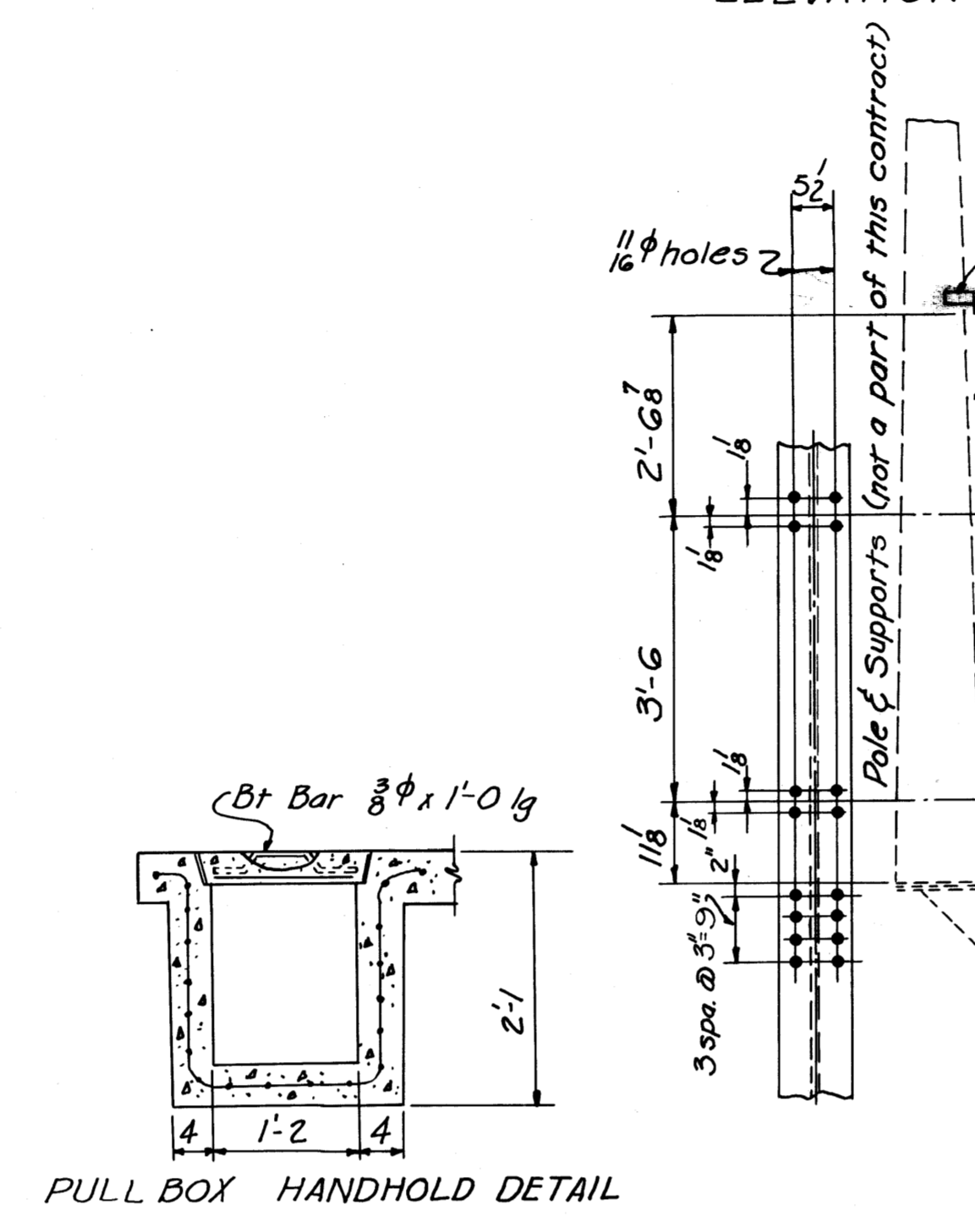
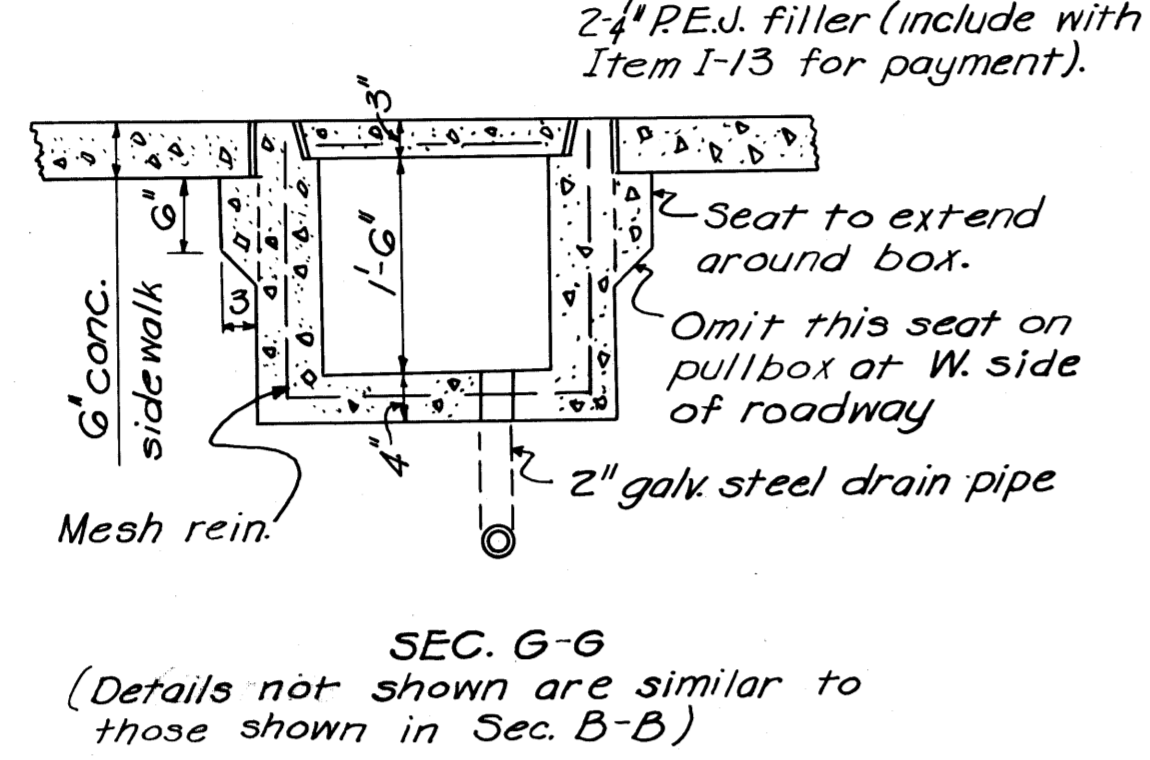
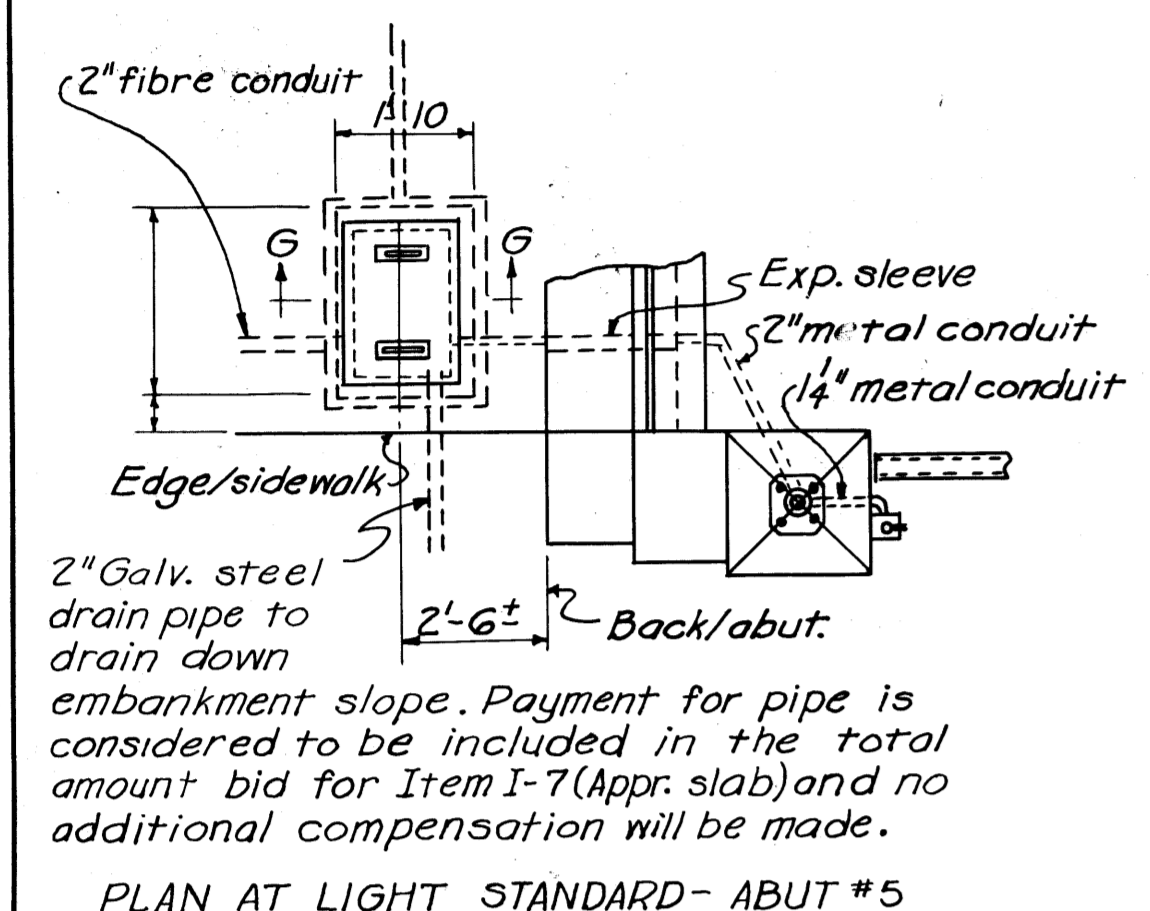
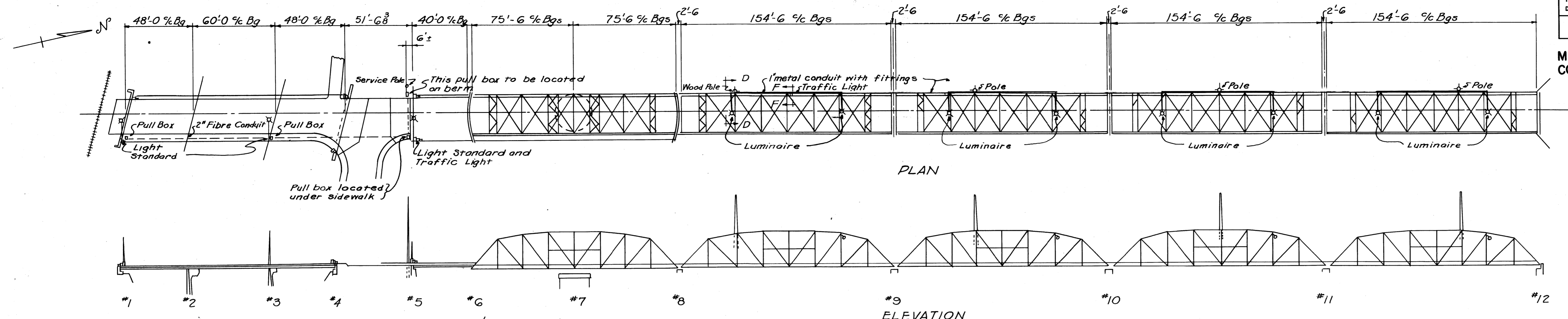
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
J.O.G.	REH	REH	J.O.G.	REH	10-11-58



FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	A-S-1130(1)	POST WAR

57  
58

MUSKINGUM COUNTY  
COUNTY ROAD No. 32



SECTION C-C  
For additional dimensions and sizes of members see sheet #25

Fibre Conduit shall be made of wood pulp fiber thoroughly saturated with black insulating compound. The walls shall be compact and incapable of separation into layers when heated to 212°F. The finished conduit shall not be affected by moisture or acids present in the soil or in concrete and shall be free from any substances which might corrode the lead cable sheath. The inner surface shall be free from excess of compound and flaky areas. The walls of the conduit be not less than 0.38 in thick and the cross section shall not vary of any point from a true circle by more than 1/8 in. The inner surface shall be free of dents or other imperfections. Conduit shall be furnished in standard lengths. The type of joint used shall be Harrington, tapered sleeve type, or approved equal. The connecting surfaces of the conduit and couplings shall be accurately machined to insure tight joints.

Asphalt Filler around pull box cover shall conform to M-5.6 of the specifications.

Luminaires, Wood Poles, Wood Pole Supports, Wiring and the Sealing of Lamp Standards against the entrance of air and moisture are not a part of this contract. The contractor shall consult with the Ohio Power Co. previous to installing the 2" metal conduits leading from the lighting standards to the pull boxes so that such sealing can be accomplished when the wiring is installed.

Payment for concrete pull boxes on bridge will be made at unit price bid for Item S-1 (Class "C" concrete - Superstructure).

Payment for concrete pull boxes on sidewalk and berm are considered as included in the total amount bid for Item I-7 (Appr. slab) and no additional compensation will be made.

VARO ENGINEERS  
COLUMBUS, OHIO

LIGHTING SYSTEM DETAILS  
BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHIL

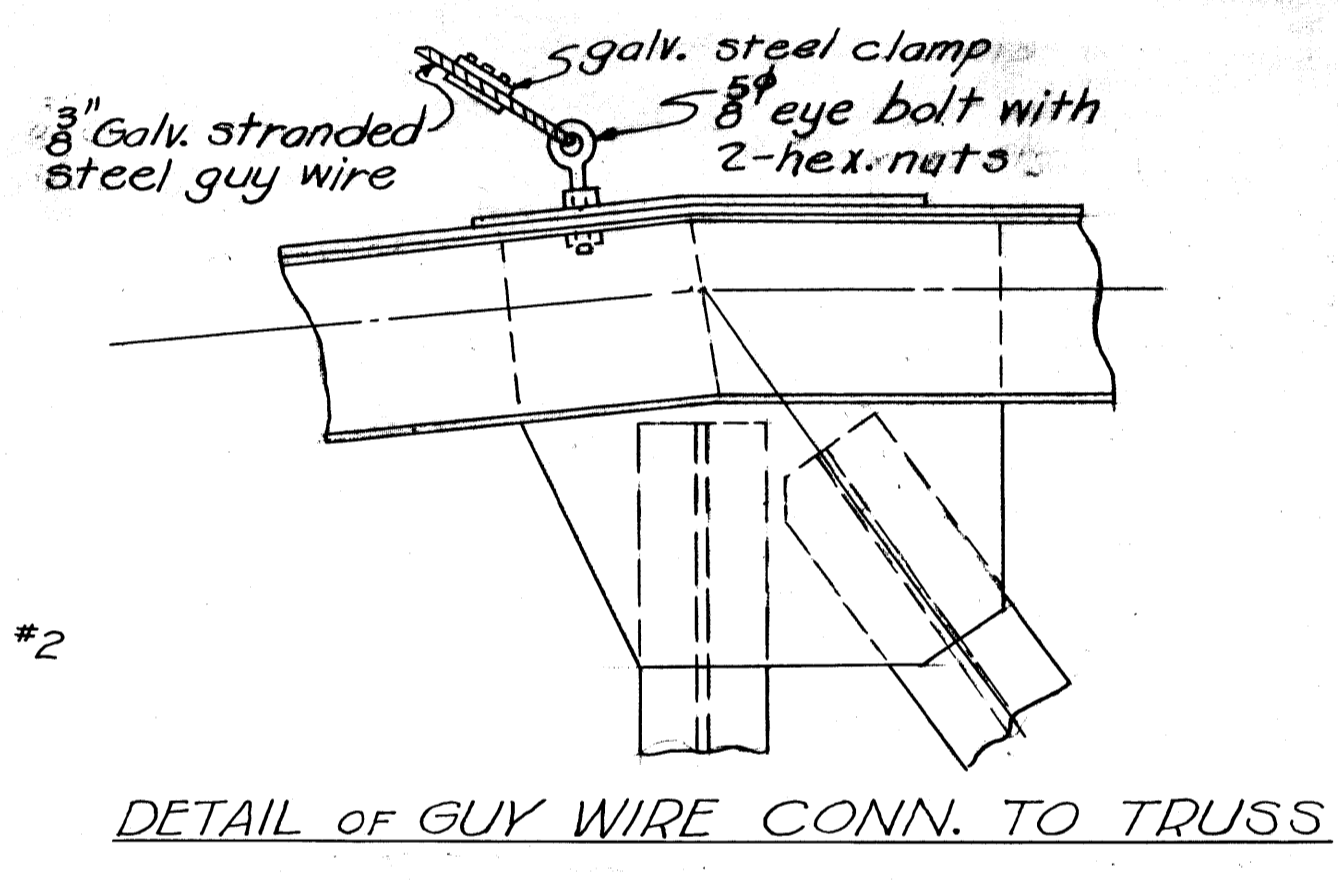
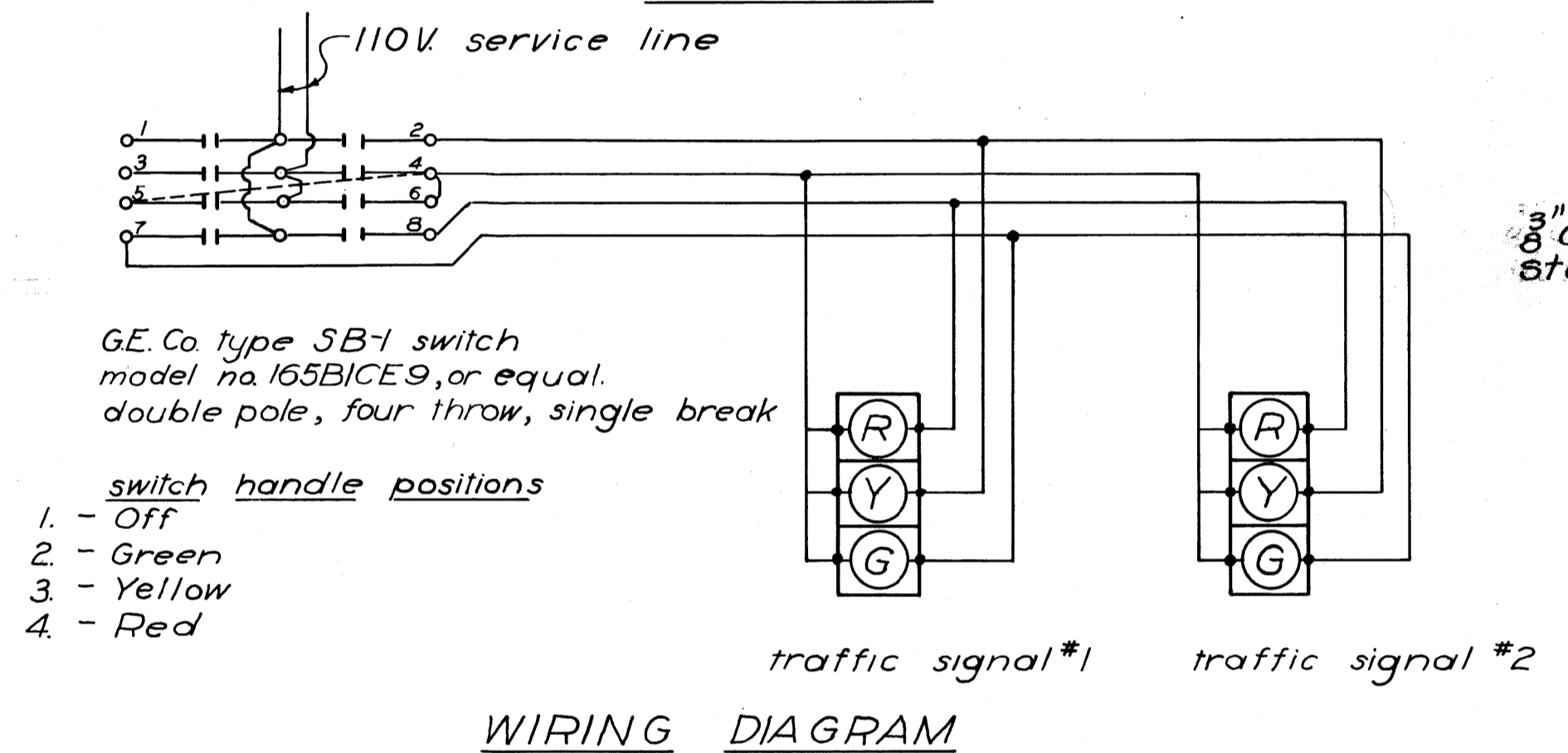
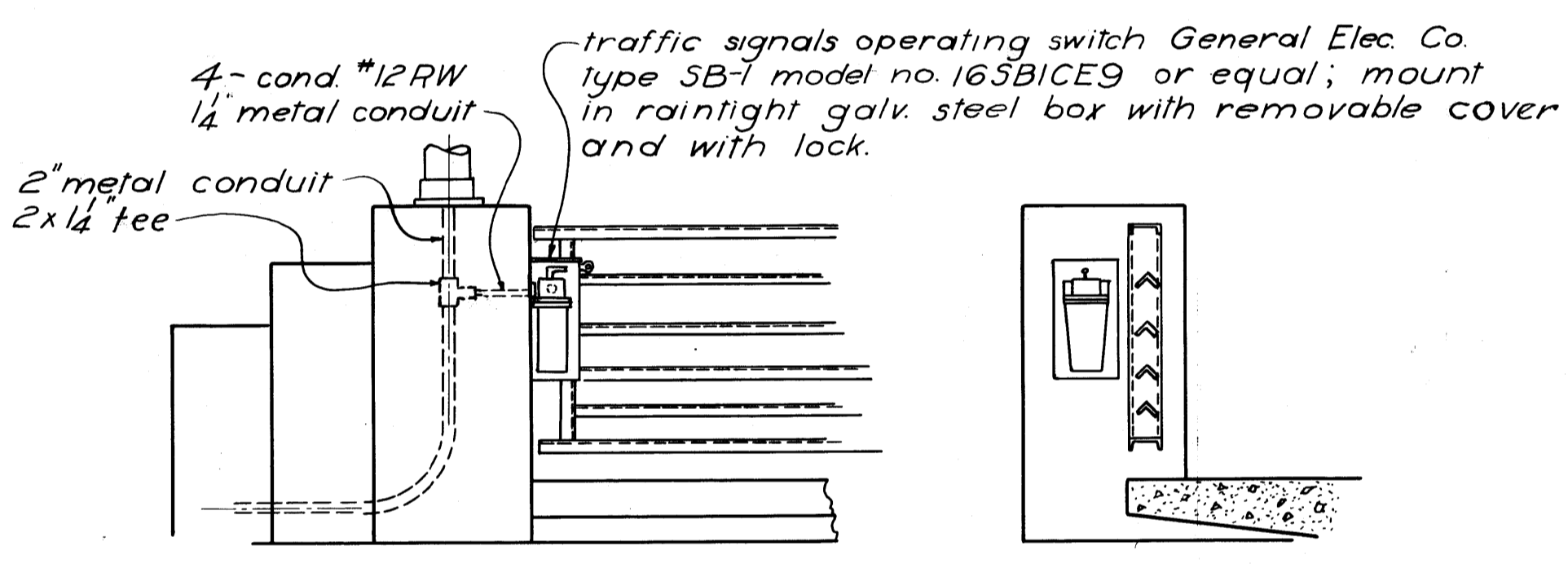
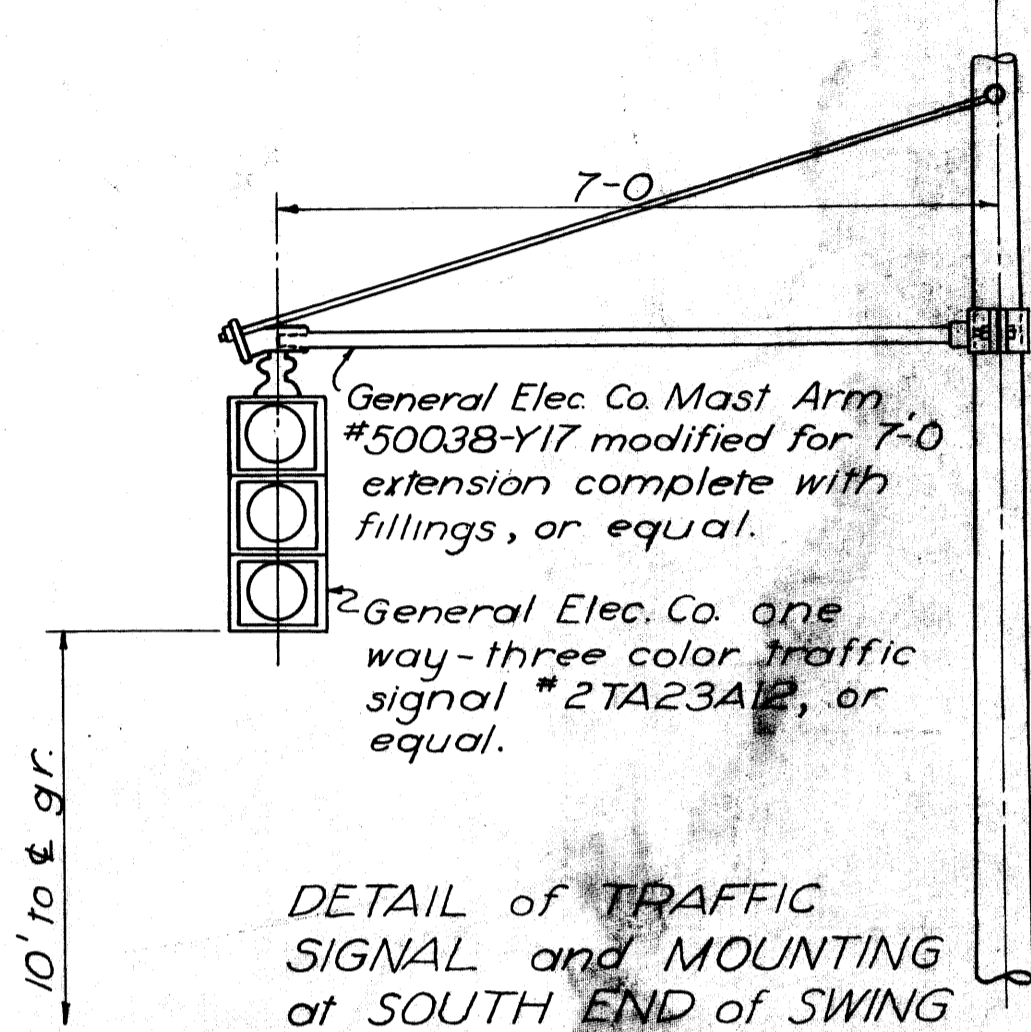
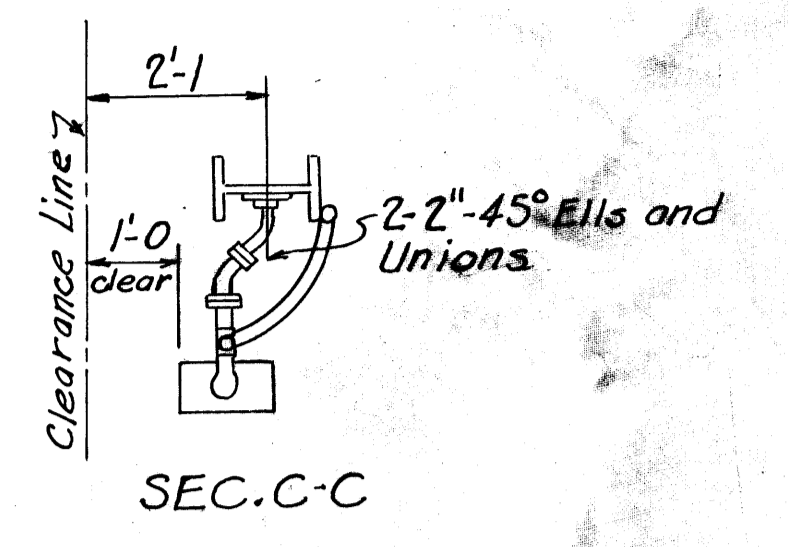
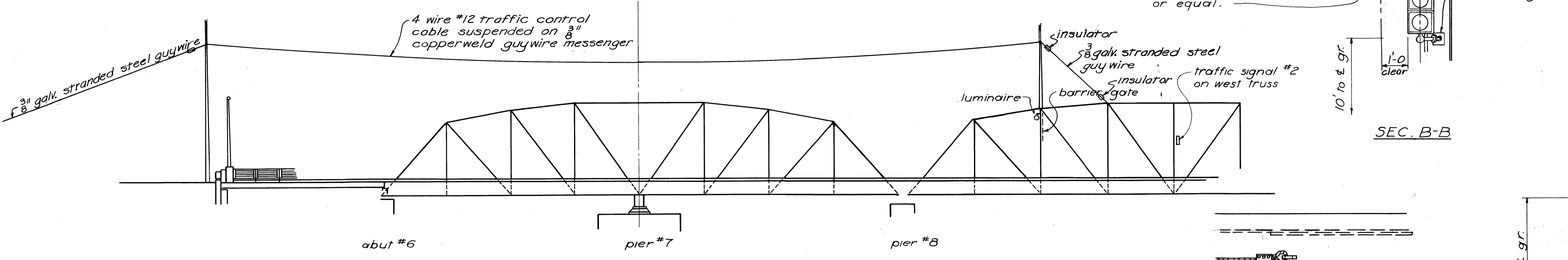
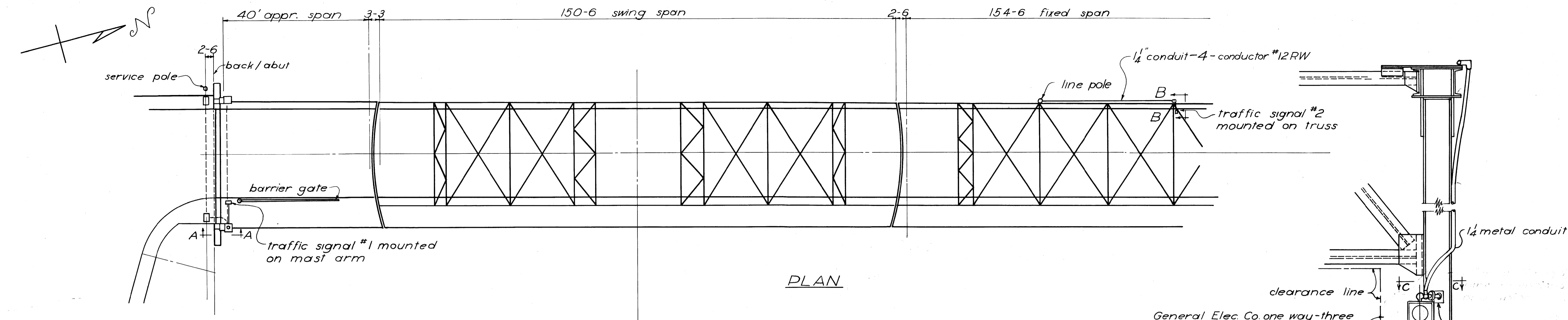
MUSKINGUM COUNTY  
COUNTY ROAD No. 32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
A.W.B.	H.K.	LEM	H.K.		11-15-51

FED RD DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	A-S-1130 (1)	POST WAR

MUSKINGUM COUNTY  
COUNTY ROAD No. 32

58  
58



TRAFFIC LIGHT CONTROL CABLES shall be attached to poles at least two (2) ft. below the lowest Ohio Power Co. cross arm.  
POLE at N. end of span shall be guyed to truss as shown.  
POLE at S. end of span shall be guyed to next line pole south.

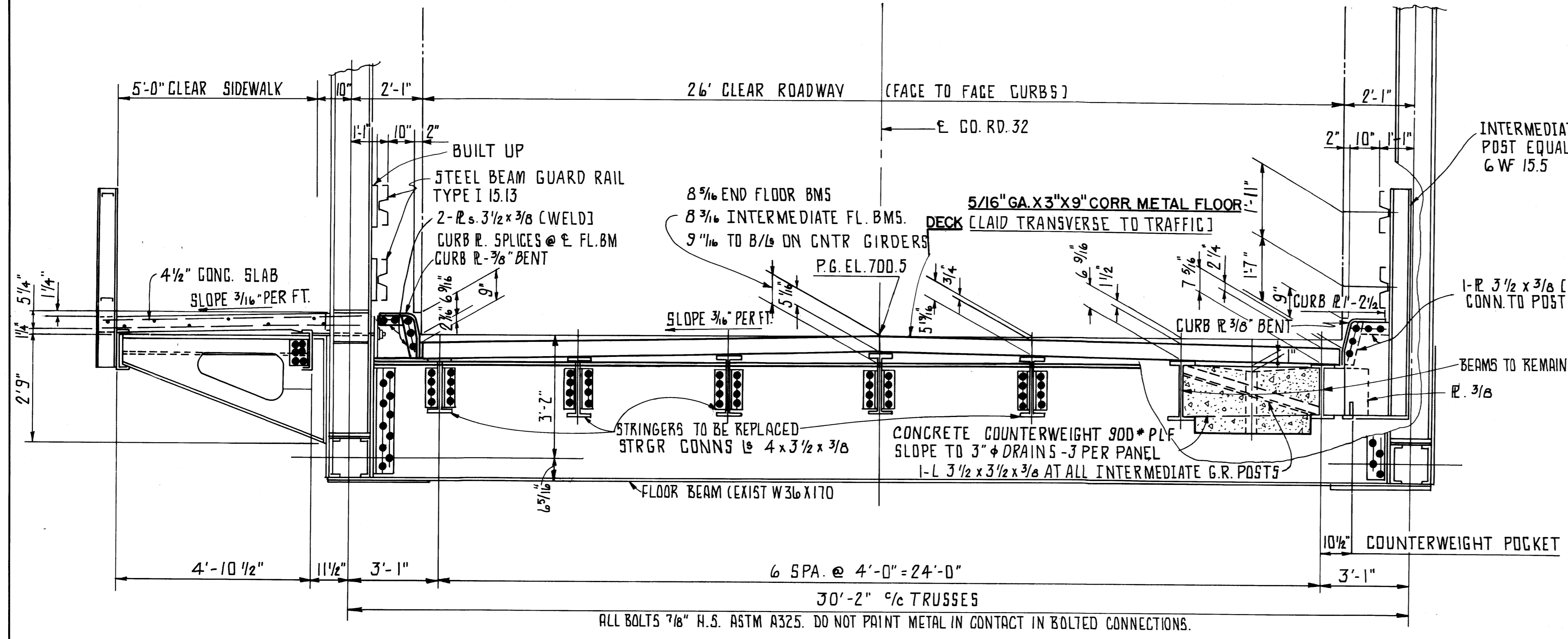
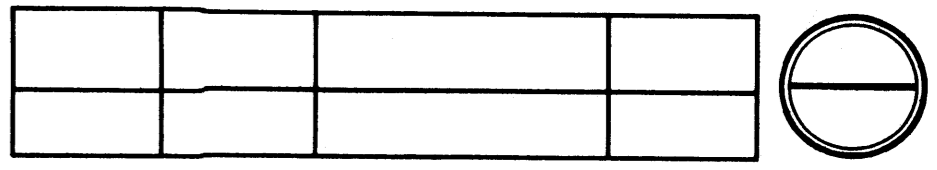
TRAFFIC SIGNALS shall conform to current specification of the Institute of Traffic Engineers.  
TRAFFIC SIGNAL SWITCH shall have four (4) contacts. The four positions of the switch shall be OFF, GREEN, YELLOW, and RED in the order named. An escutcheon plate shall be furnished showing all four positions. Contacts shall be so arranged that any color may be switched on or off independent of other colors. The switch shall be equipped with a lock and shall be mounted in the position shown on the plans in a raintight galv. steel box with removable cover and provisions for locking.

VARO ENGINEERS  
COLUMBUS, OHIO

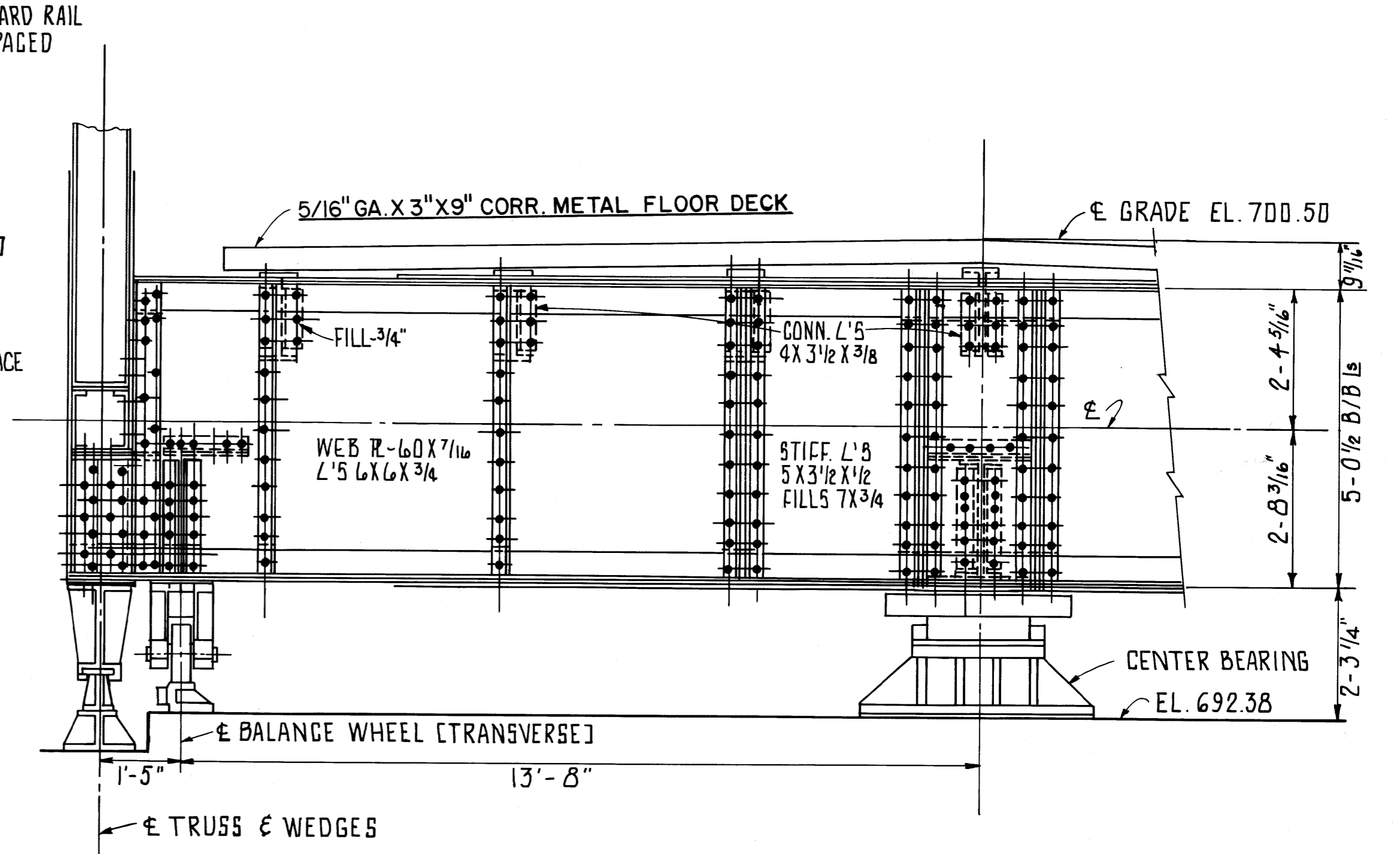
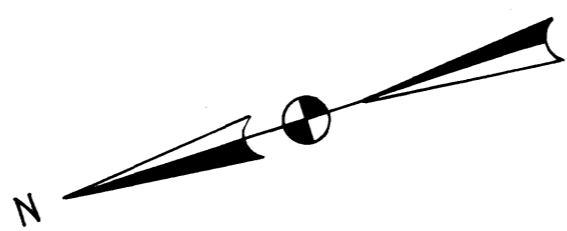
TRAFFIC LIGHT DETAILS  
BRIDGE OVER MUSKINGUM RIVER  
BETWEEN DUNCAN FALLS & PHILO

MUSKINGUM COUNTY OHIO  
COUNTY ROAD No. 32

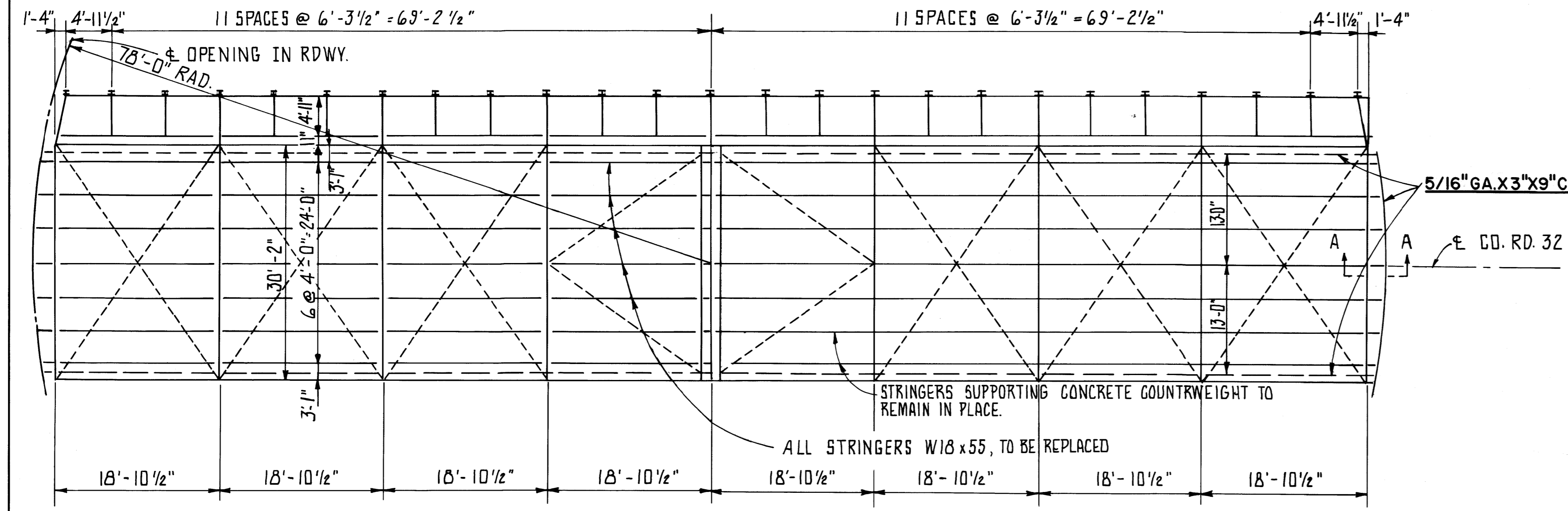
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HAC	HAC	rd	GT	WMC	10-15-38



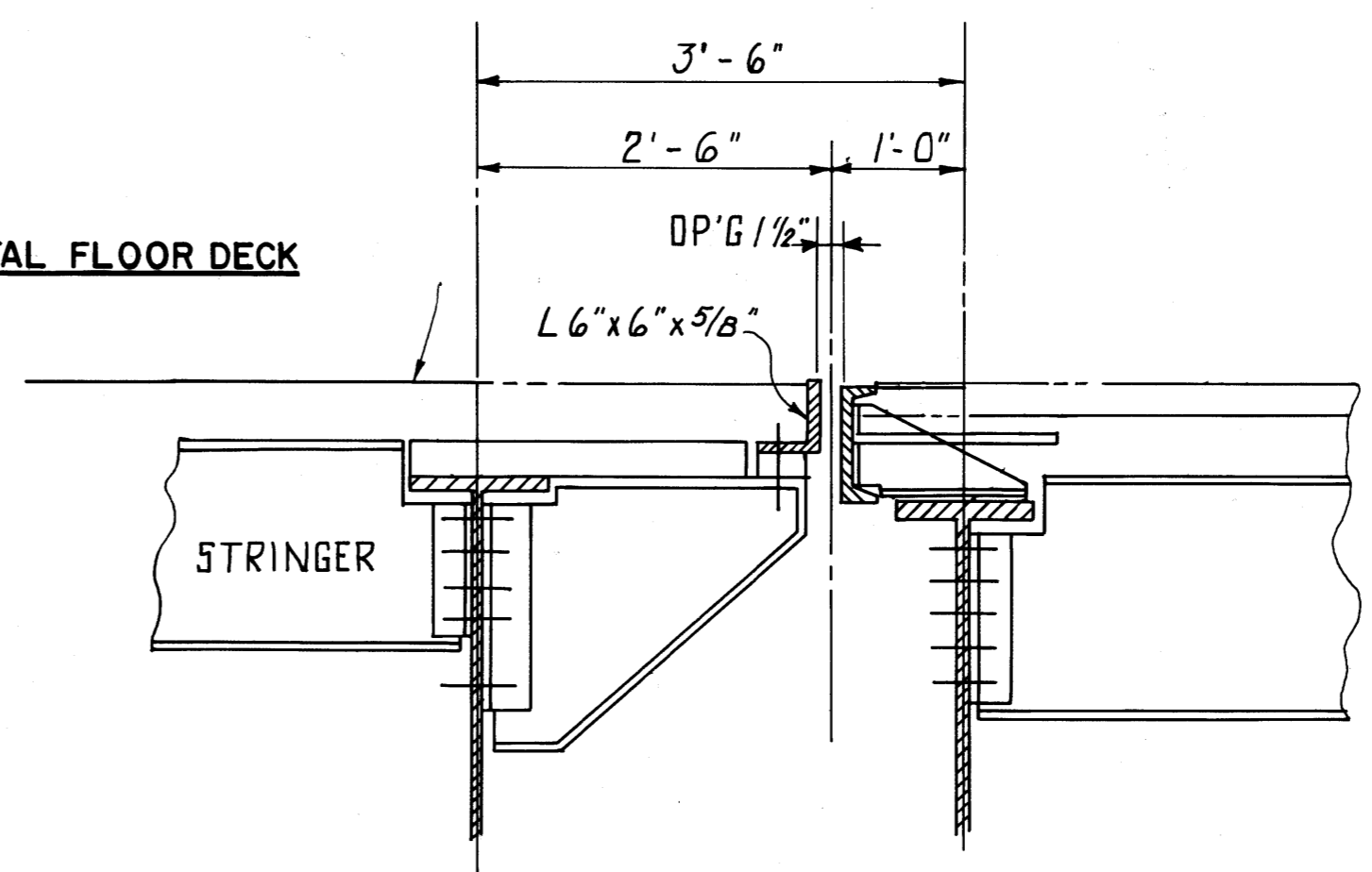
TRANSVERSE SECTION



VIEW OF CENTER GIRDERS



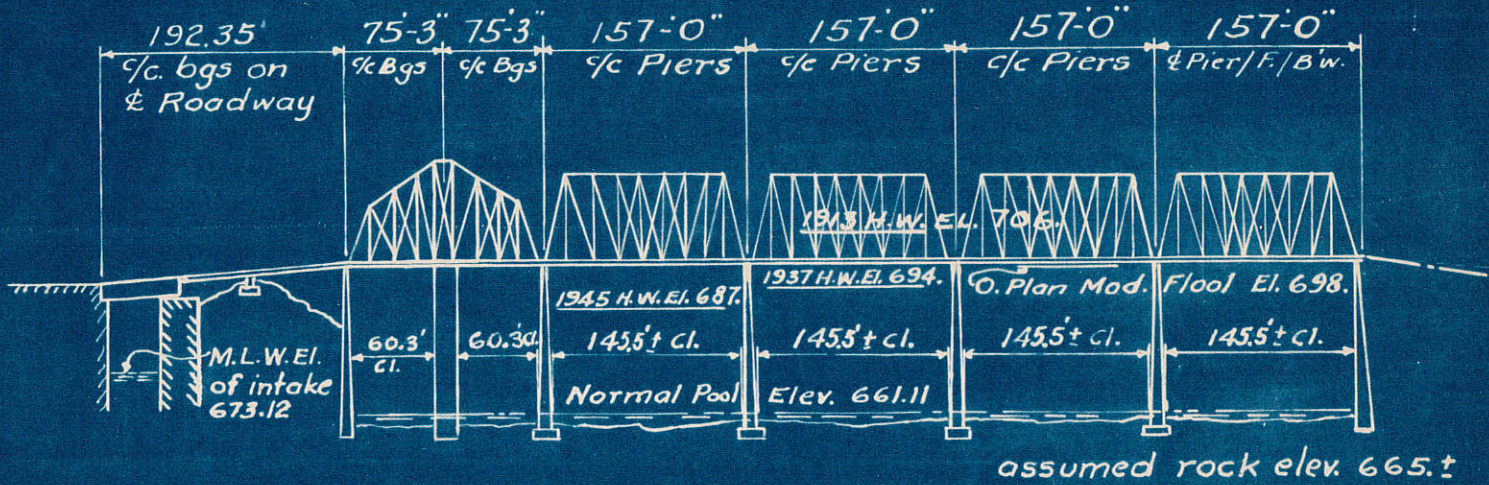
FRAMING PLAN OF FLOOR SYSTEM



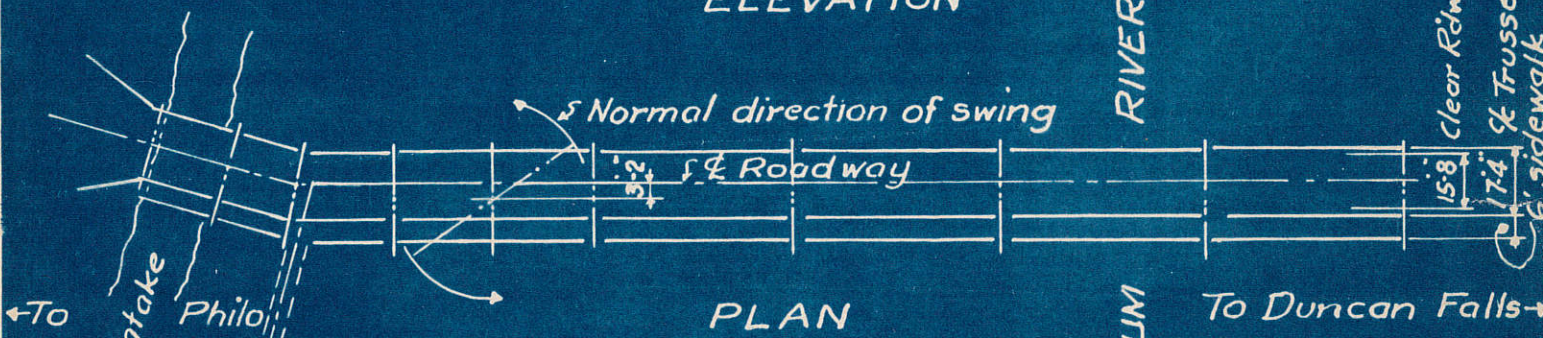
SECTION A-A

FRANKLIN CONSULTANTS INC. 2/2						
Consulting Engineers						
COLUMBUS, OHIO						
<b>FRAMING PLAN &amp; TRANSVERSE SECTION</b>						
BRIDGE OVER MUSKINGUM RIVER						
BETWEEN						
DUNCAN FALLS & PHILO						
MUSKINGUM COUNTY C R 32						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	J.W.	J.W.	J.W.	J.A.	9/2/78	

BRUNING 44-560-30845



ELEVATION



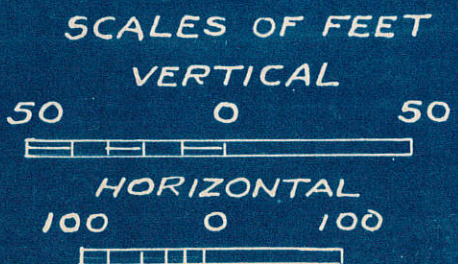
PLAN

Existing bridge consists of 4 fixed steel truss spans, one steel truss swing span and 3 plate girder approach spans. Main substructure units consist of 4 stone faced piers, one mass concrete swing span center pier and 2 gravity type concrete abutments.

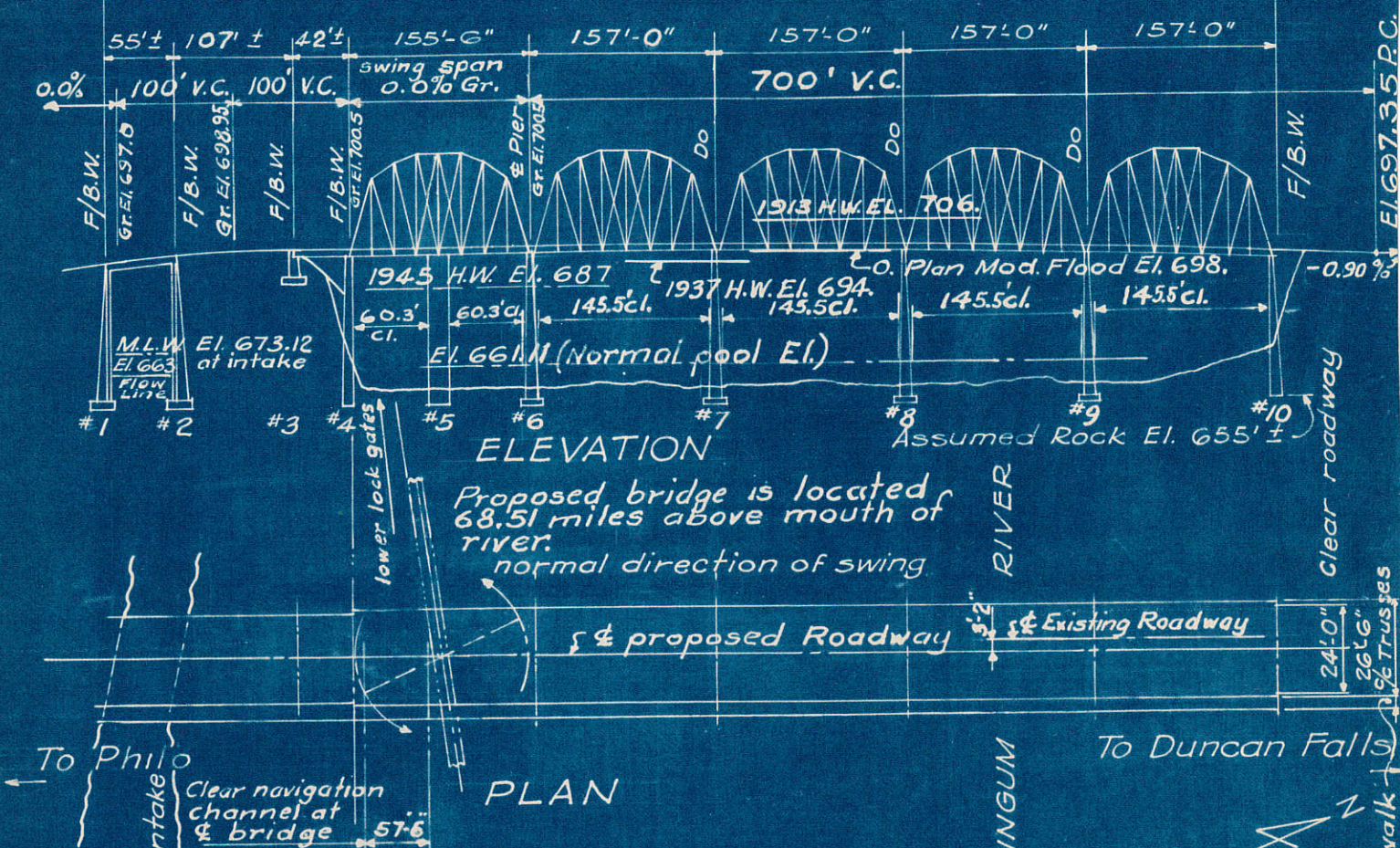
Low steel elev. on the trusses is 697.5±  
See sheet 2 for proposed bridge

Existing bridge is located 68.51 miles above mouth of river. Existing Bridge

Over Muskingum River  
between Duncan Falls & Philo  
Muskingum County, Ohio  
Application by  
Muskingum County  
Commissioners



987'-6" Approx.



Proposed bridge is located 68.51 miles above mouth of river.  
normal direction of swing

All piers and abutments except those at south Approach Spans are existing. Existing Piers and Abutments set on rock at approx. El. 655.  
1945 H.W. Elevation is maximum since Muskingum Conservancy Dams have been in operation.  
All Elevations based on U.S. Engineers' Datum above Mean Sea Level.

Proposed bridge will consist of 4 new fixed steel truss spans and one new steel swing span mounted on modified existing abutts and piers, and two new steel beam approach spans on new abutts with an intervening fill.

**Proposed Bridge**

Over Muskingum River  
between Duncan Falls & Philo  
Muskingum County, Ohio  
Application by  
Muskingum County  
Commissioners

**TABLE OF LOW STEEL ELEV.**

Abut #4	696.96
Pier #5	696.96
Pier #6	696.50
Pier #7	696.34 †
Pier #8	695.86 †
Pier #9	695.06 †
Abut #10	694.14 †

**SCALES OF FEET**

