

STATE OF OHIO DEPARTMENT OF HIGHWAYS  
**BROOKPARK VIADUCT**  
 AND APPROACHES

**CLEVELAND-CANTON ROAD**

S.H. 460 SEC. E-1 PET. NO.  
 CUYAHOGA COUNTY

PARKVIEW VILLAGE - BROOKPARK VILLAGE  
 RIVEREDGE TOWNSHIP

OHIO E 683-A 1932  
 CUYAHOGA COUNTY  
 S.H. 460 SEC. E-1  
 CLEVELAND - CANTON ROAD

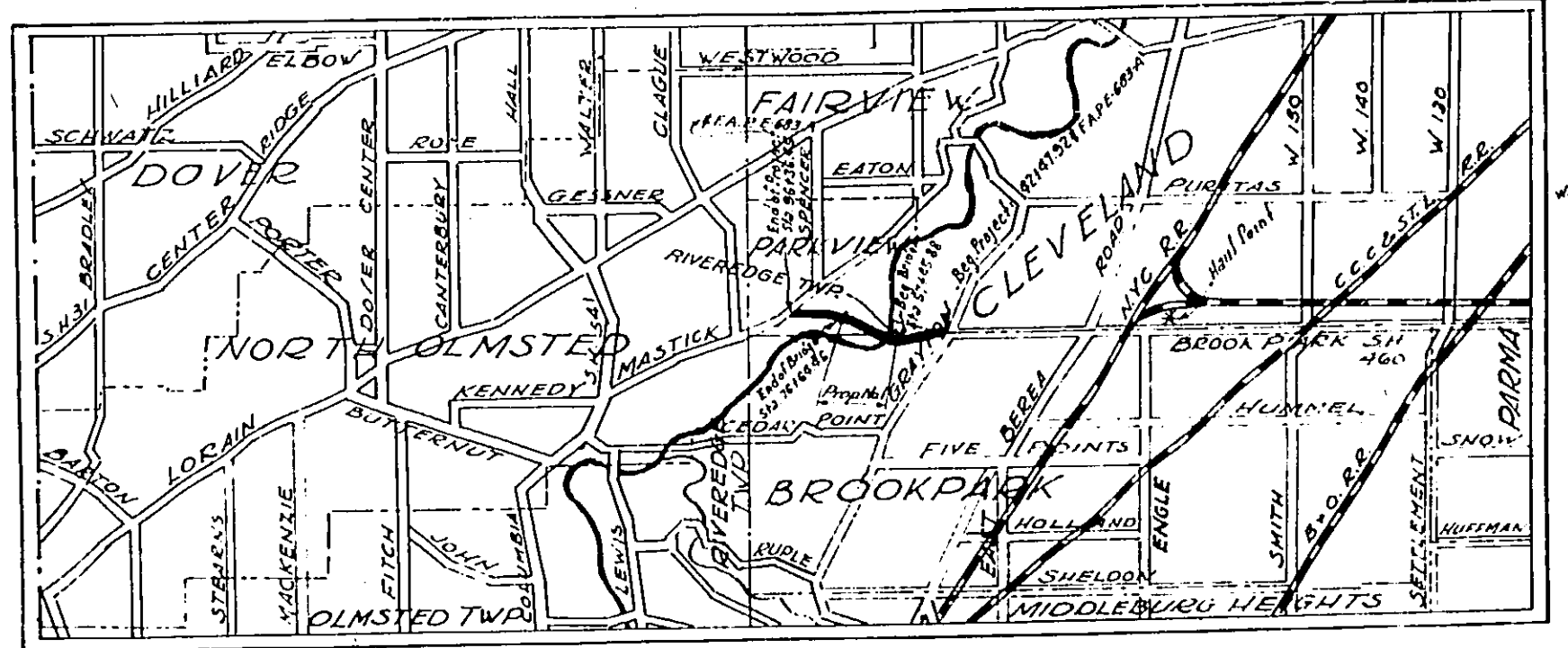
This project will be governed by the "General Specifications" of the State of Ohio Department of Highways as revised on June 25, 1932 and adopted on August 1, 1932, "Supplemental Specifications for Emergency Construction Highway Projects" August 24, 1932, and the "Special Specifications and Pay Item Provisions" (October 10, 1932) Drawing No. WBC-32R as per sheet number 24 of these plans.

I hereby approve these plans and declare that the making of this improvement will not require the closing to traffic of the highway.

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SCALES  
 Plan 1" = 100'  
 Profile - Vertical 1" = 10'  
 Profile - Horizontal 1" = 100'  
 Cross Sections 1" = 5'  
 Intersections 1" = 30'  
 Typical Sections 3/8" = 1-0'  
 Drainage Structures as shown.

LOCATION PLAN  
 SCALE OF MILES

PORTION TO BE IMPROVED

Note: When making paving operations for the viaduct, the Contractor shall place and maintain the existing highway in a satisfactory condition satisfactory to the Director.

We, the Commissioners of Cuyahoga County, hereby certify that the right-of-way 100 ft wide is available for the construction, maintenance, and repair of the above highway.

*Wm E. ...*  
 Date: Dec 25, 1932 County Commissioners

Approved: \_\_\_\_\_  
 Date: \_\_\_\_\_ Resident District Deputy Director

Approved: *John O. ...*  
 Date: \_\_\_\_\_ Resident Division Deputy Director

Approved: *Glenn Kelly*  
 Date: 12-15-32 Chief Engineer Bureau of Construction

Approved: \_\_\_\_\_  
 Date: \_\_\_\_\_ Chief Engineer Bureau of Maintenance

Approved: *J. Burkey*  
 Date: 12-20-32 Chief Engineer Bureau of Bridges

Approved: *J. P. ...*  
 Date: 12-15-32 Chief Engineer & First Assistant Director

Approved: *Wm ...*  
 Date: 12-15-32 Director of Highways

Recommended for Approval: \_\_\_\_\_  
 Date: \_\_\_\_\_ District Engineer Bureau of Public Roads

Recommended for Approval: \_\_\_\_\_  
 Date: \_\_\_\_\_ Chief Engineer Bureau of Public Roads

Approved: \_\_\_\_\_  
 Date: \_\_\_\_\_ Chief of Bureau

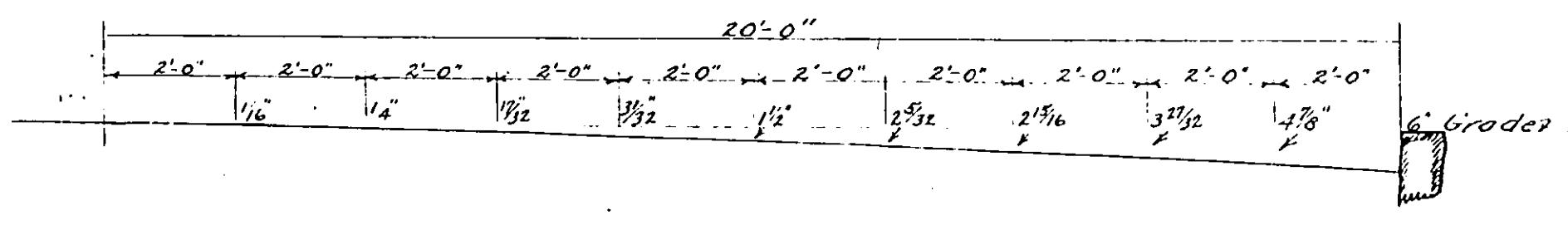
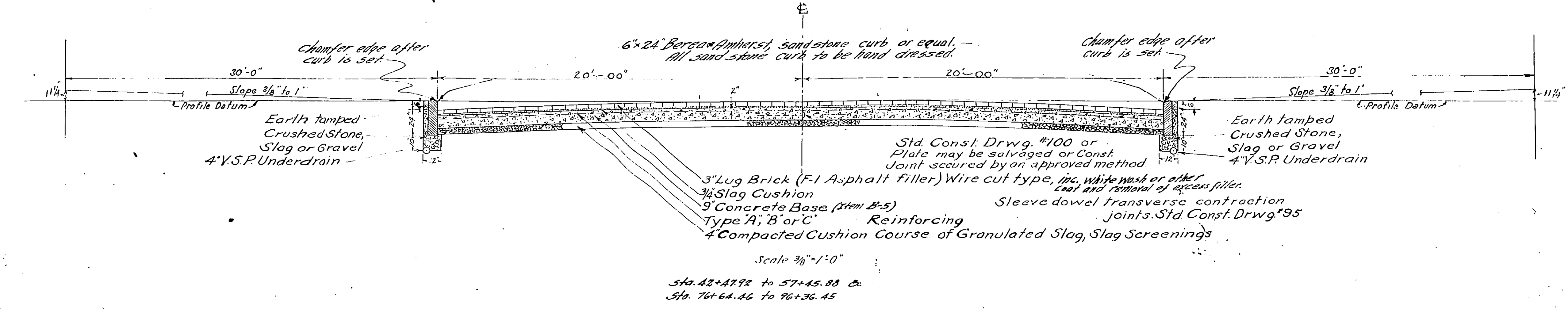
SUPPLEMENTAL PRINTS OF STRUCTURAL STANDARDS  
 DRAWINGS NO. 95 & 100

Cuyahoga 460 E-1  
 1932  
 Contract No. 5699 (Cont. #1), 5700 (Cont. #2 & 3)  
 Letting Date 11-22-32

BRIDGE No. 39

NOTE: Place layer of 2 ply tar paper between all curb joints.

TYPE "B"



TEMPLER FOR 40' PAVEMENT — 1/2 SECTION

SPECIAL ATTENTION

All construction shall be performed and material furnished as provided under the respective items of the Construction and Material Specifications, revisions as of June 25, 1932 and further amended and adopted under date of Aug. 1, 1932.

NOTE: The aggregates to be used on this project shall come from a plant erected at the site of the material deposit from which the bidder proposes to furnish this material, and producing aggregates prior to the date of receiving bids on this contract. Such plant shall be equipped and the deposit be of such a nature that the aggregates can be furnished in a satisfactory manner both as to quality and quantity.

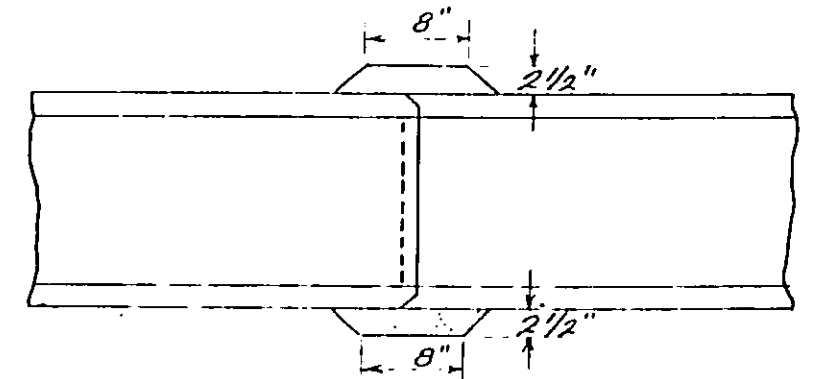
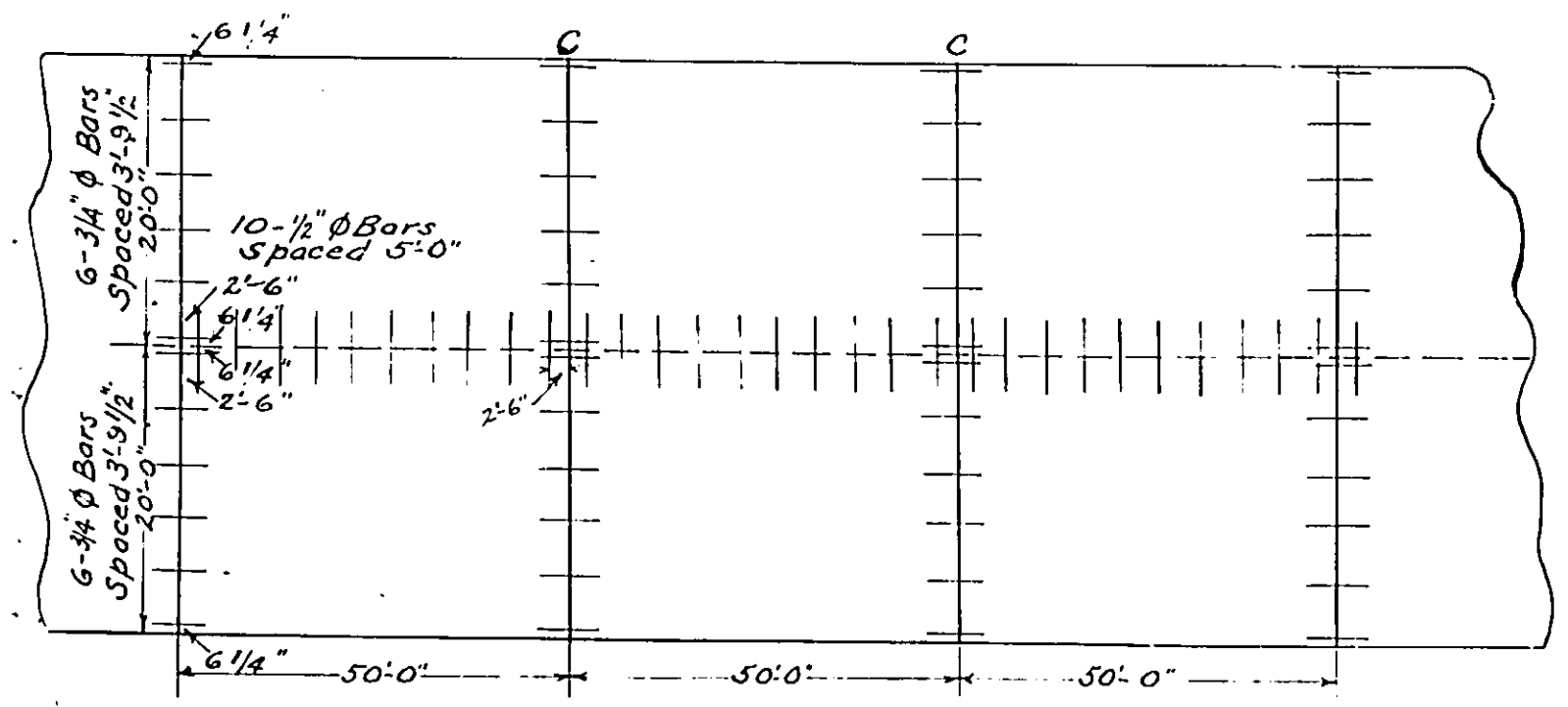
The Contractor shall construct and maintain adequate temporary roadway and bridges across all sections, lanes or crossovers of newly laid pavement or base at all intersecting roads, streets or drive ways. Same to be at least 16 foot roadway and remain the specified time of seven (7) days.

At all main intersecting roads the Contractor shall, and at other places may, at his option, provide crossing zones in new pavement or base of High Early Strength Concrete which may permit removal of bridge and opening same to traffic within three (3) days.

Such zones shall be at least twenty (20) feet in width and be constructed by improved methods preferably by excess cement content, and must be protected by the Contractor and definitely marked for traffic by suitable barricades and lights.

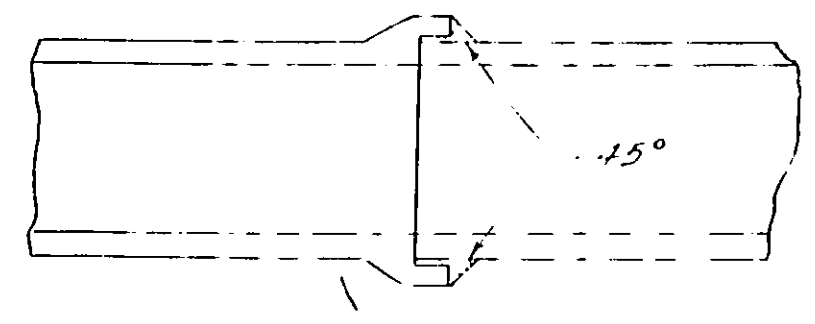
Cost of above shall be included in the unit price bid for concrete pavement or base.

If an increased amount of cement, or if high early strength cement is used by the Contractor, the area in which the same is placed shall be approved by the engineer and be separated from the other portion of the pavement by means of a joint in accordance with Std. Const. Drwg. #100.



MODIFIED JOINT

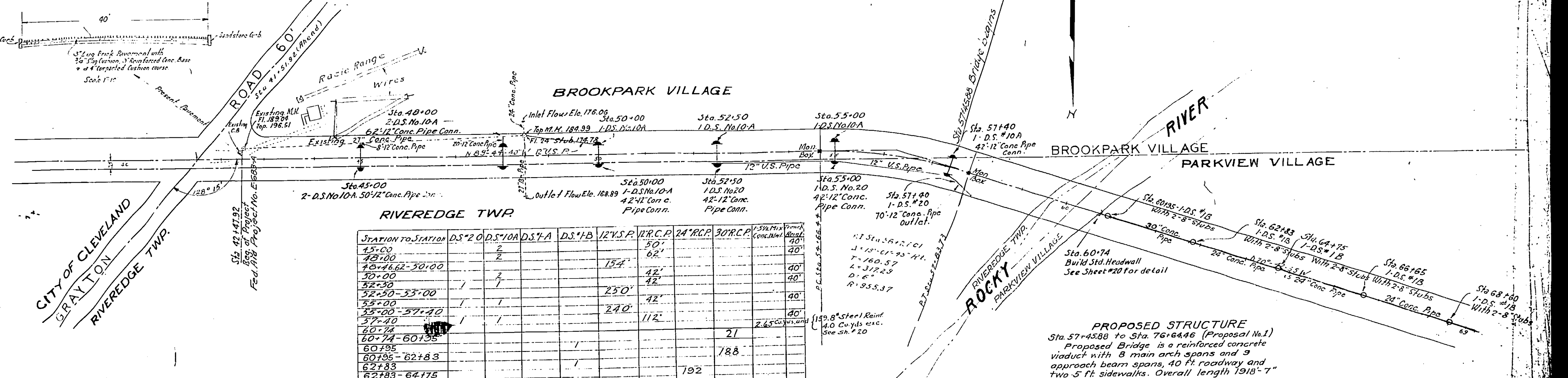
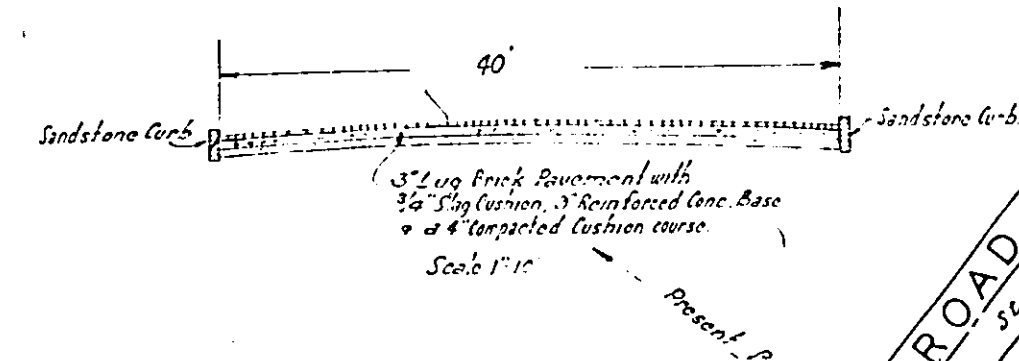
Note: Wherever Reinforced Concrete Pipe is to be used it shall be cemented with 1:2 mortar as shown in above sketch.



BELL & SPIGOT JOINT

NOTE: In lieu of the provisions contained in Items T-9.2A and T-9.25 of the General Specifications brick will be purchased at the per thousand, freight paid and hauled on the project, at the direction of the engineer, guaranteeing that 36 brick will lay an accepted square yard of pavement. All other provisions of Items T-9.2A and T-9.25 shall apply.

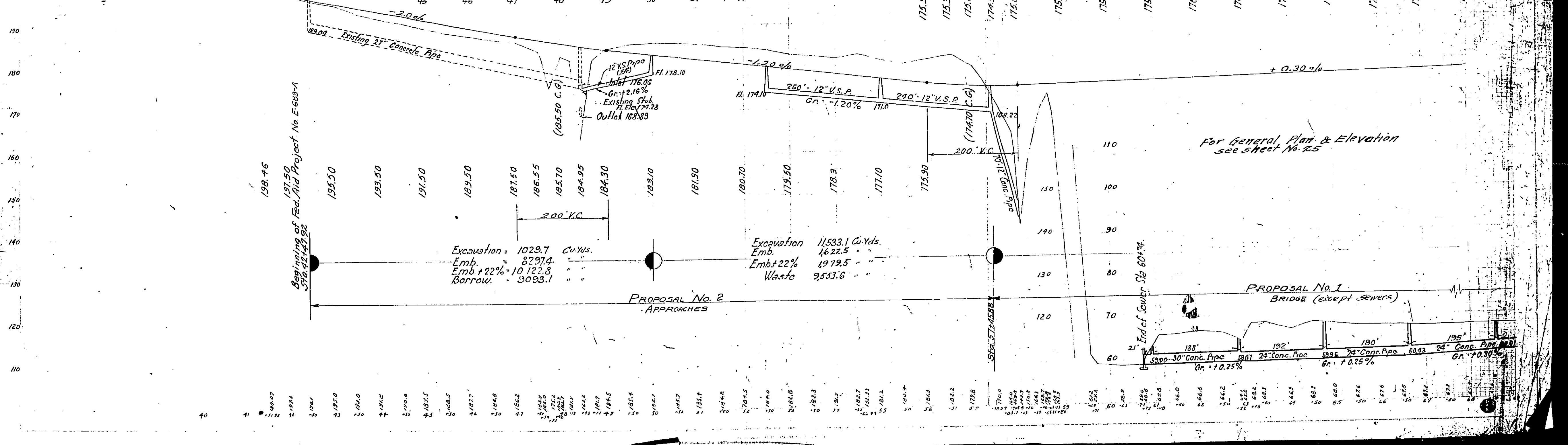
E-683-A 1932



STATION TO STATION	D.S. #2	D.S. #10A	D.S. #4	D.S. #1B	12" V.S.P.	12" R.C.P.	24" R.C.P.	30" R.C.P.	1 1/2" Mix Conc. Min. 40'	French Drain 40'
45+00		2								
48+00		2								
48+00-50+00					154'	42'				40'
50+00		2								40'
52+30		7			250'	42'				40'
52+50-55+00										40'
55+00		1			240'	112'				40'
55+00-57+40										40'
57+40		1								40'
60+74							21		2.65 cu yds. and 159.8' steel reinf. 4.0 cu yds. exc. See Sh. #20	
60+74-60+95								788		
60+95										
60+95-62+83										
62+83								192		
62+83-64+75										
64+75										
64+75-66+65								190		
66+65										
66+65-68+60								195		
68+60										
Totals	3	0		5	644'	350'	577'	209'	2.65	240'

B.M. #5 X on N.E. Cor. lower step Cleveland Radio Airport Station Elev. 195.33

**PROPOSED STRUCTURE**  
Sta. 57+45.88 to Sta. 76+64.46 (Proposal No. 1)  
Proposed Bridge is a reinforced concrete viaduct with 8 main arch spans and 3 approach beam spans, 40 ft roadway and two 5 ft sidewalks. Overall length 1918'-7"



Excavation = 1029.7 Cu. Yds.  
Emb. = 8297.4 " "  
Emb. + 22% = 10122.8 " "  
Borrow. = 3093.1 " "

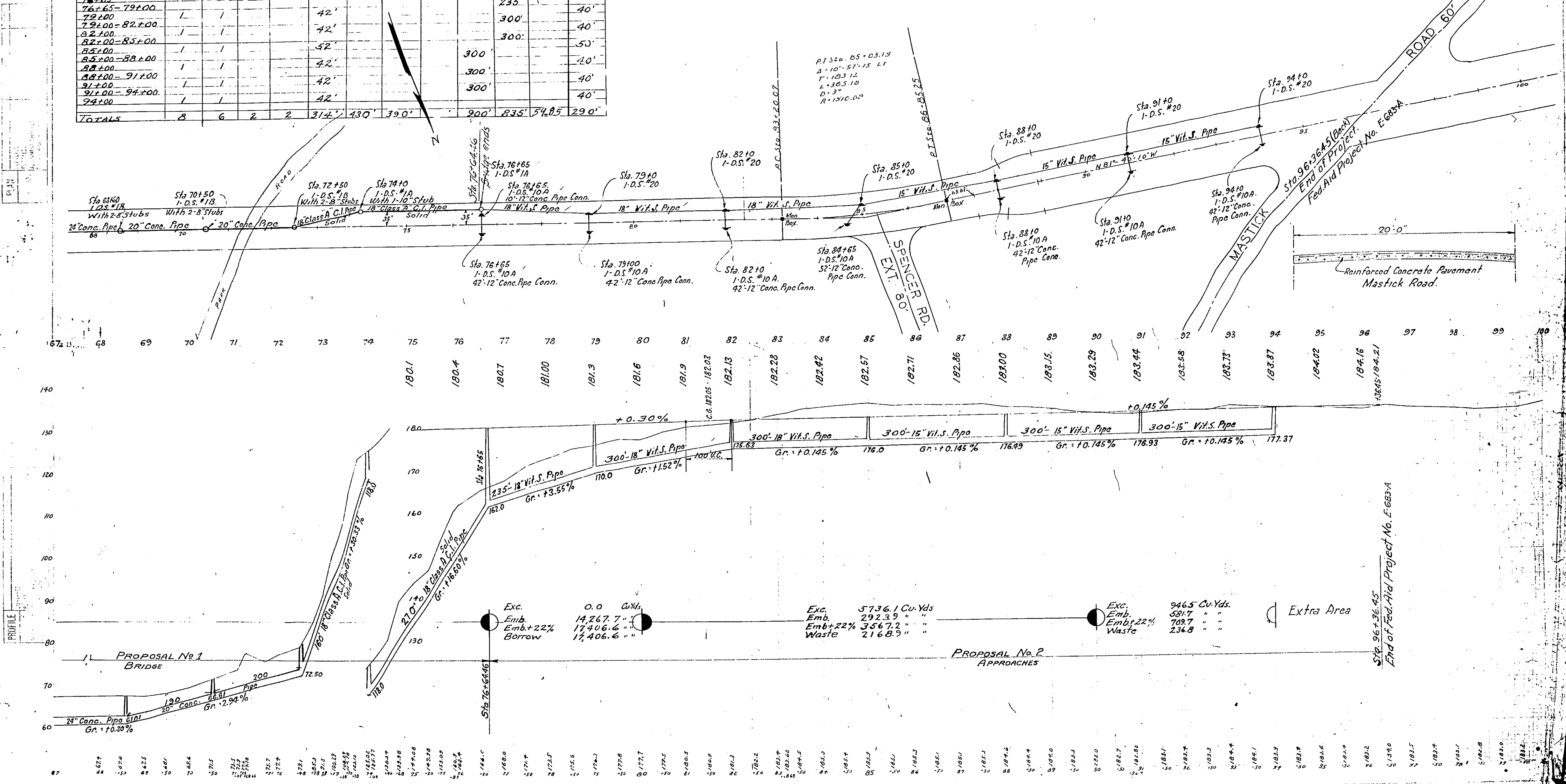
Excavation Emb. = 11533.1 Cu. Yds.  
Emb. + 22% = 1622.5 " "  
Waste = 1979.5 " "  
Waste = 9553.6 " "

For General Plan & Elevation see sheet No. 25



### STORM SEWER QUANTITIES

STATION TO STATION	DS#10A	DS#20	DS#1A	DS#1B	12" R.C.P.	18" Class A C.I. Pipe	20" R.C.P.	24" R.C.P.	15" V.S.P.	18" V.S.P.	24" V.S.P.	Exc. Min. Conc. Grade
68+60-70+50							190					
70+50							200					
70+50-72+50												54.85 Cu. Yds. Sta. 72+50 to Sta. 76+65 Sec. sheet #22
72+50												
72+50-74+00												160' (Duc. to Grade)
74+00												
74+00-76+65												270' " " "
76+65												
76+65-79+00	2		1		52'							235'
79+00												40'
79+00-82+00	1	1			42'							300'
82+00												40'
82+00-85+00	1	1			42'							300'
85+00												50'
85+00-88+00	1	1			52'							300'
88+00												40'
88+00-91+00	1	1			42'							300'
91+00												40'
91+00-94+00	1	1			42'							300'
94+00												40'
<b>TOTALS</b>	<b>8</b>	<b>6</b>	<b>2</b>	<b>2</b>	<b>314'</b>	<b>430'</b>	<b>390'</b>	<b>900'</b>	<b>835'</b>	<b>54.85</b>	<b>290'</b>	



Exc. 0.0 Cu. Yds.  
 Emb. 14,267.7 "  
 Emb+22% 17,406.6 "  
 Borrow 17,406.6 "

Exc. 5736.1 Cu. Yds.  
 Emb. 2923.9 "  
 Emb+22% 3567.2 "  
 Waste 2168.9 "

Exc. 946.5 Cu. Yds.  
 Emb. 581.7 "  
 Emb+22% 709.7 "  
 Waste 236.8 "

Extra Area

STA. 96+36.45  
 End of Fed. Aid Project No. E-683A

CUYAHOGA COUNTY  
S. H. 460 SEC. E1  
CLEVELAND CANTON RD.

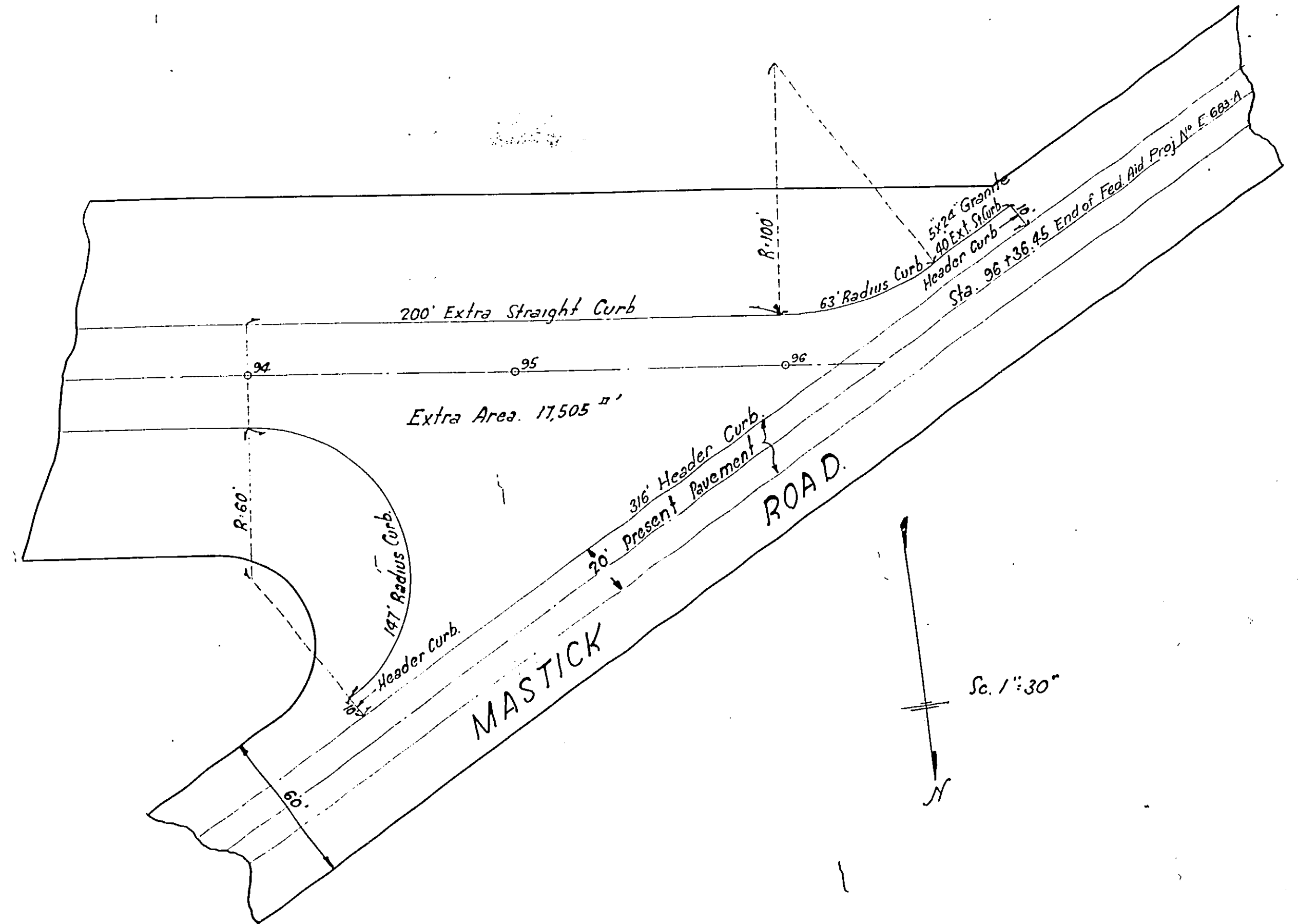
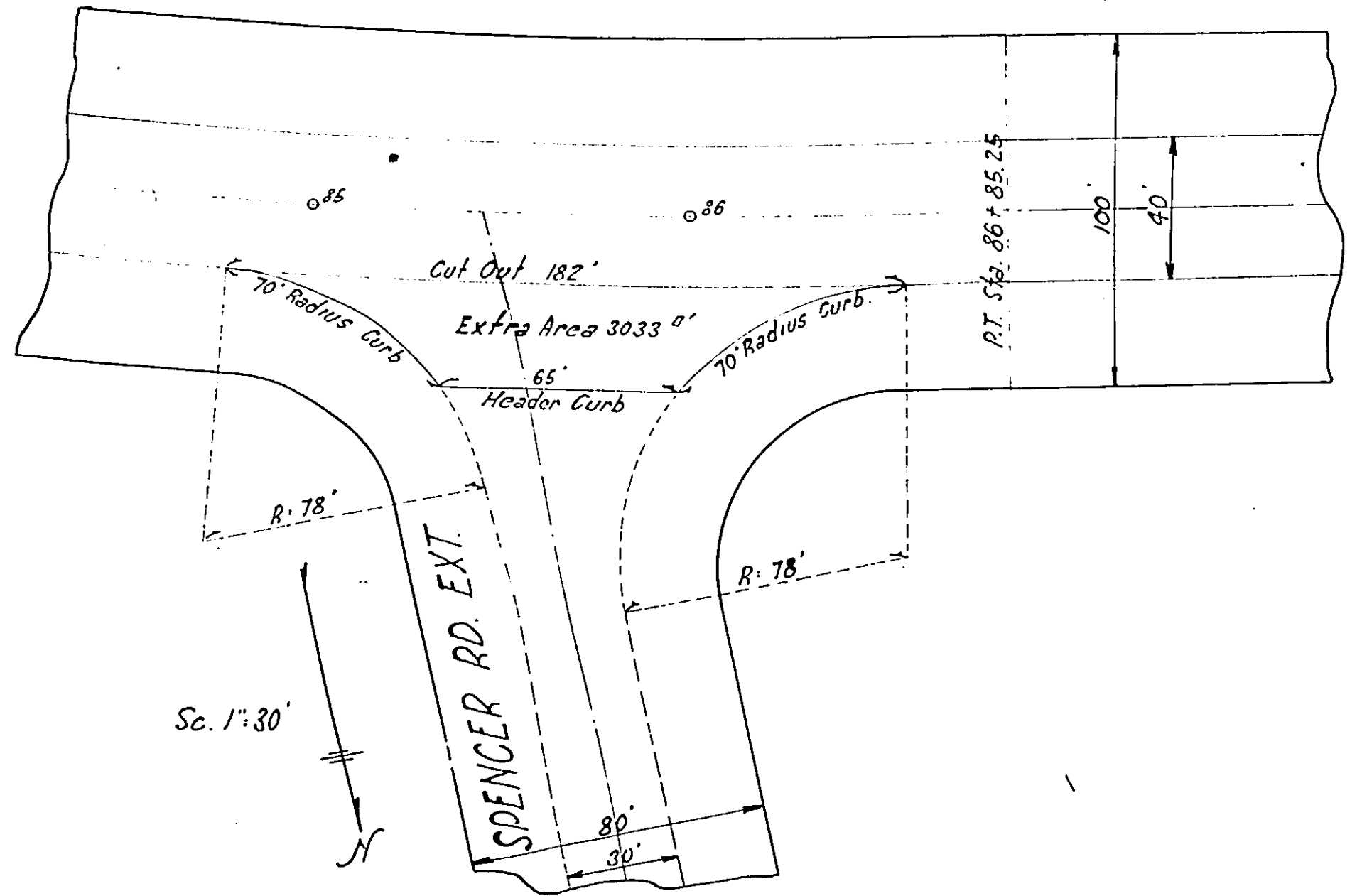


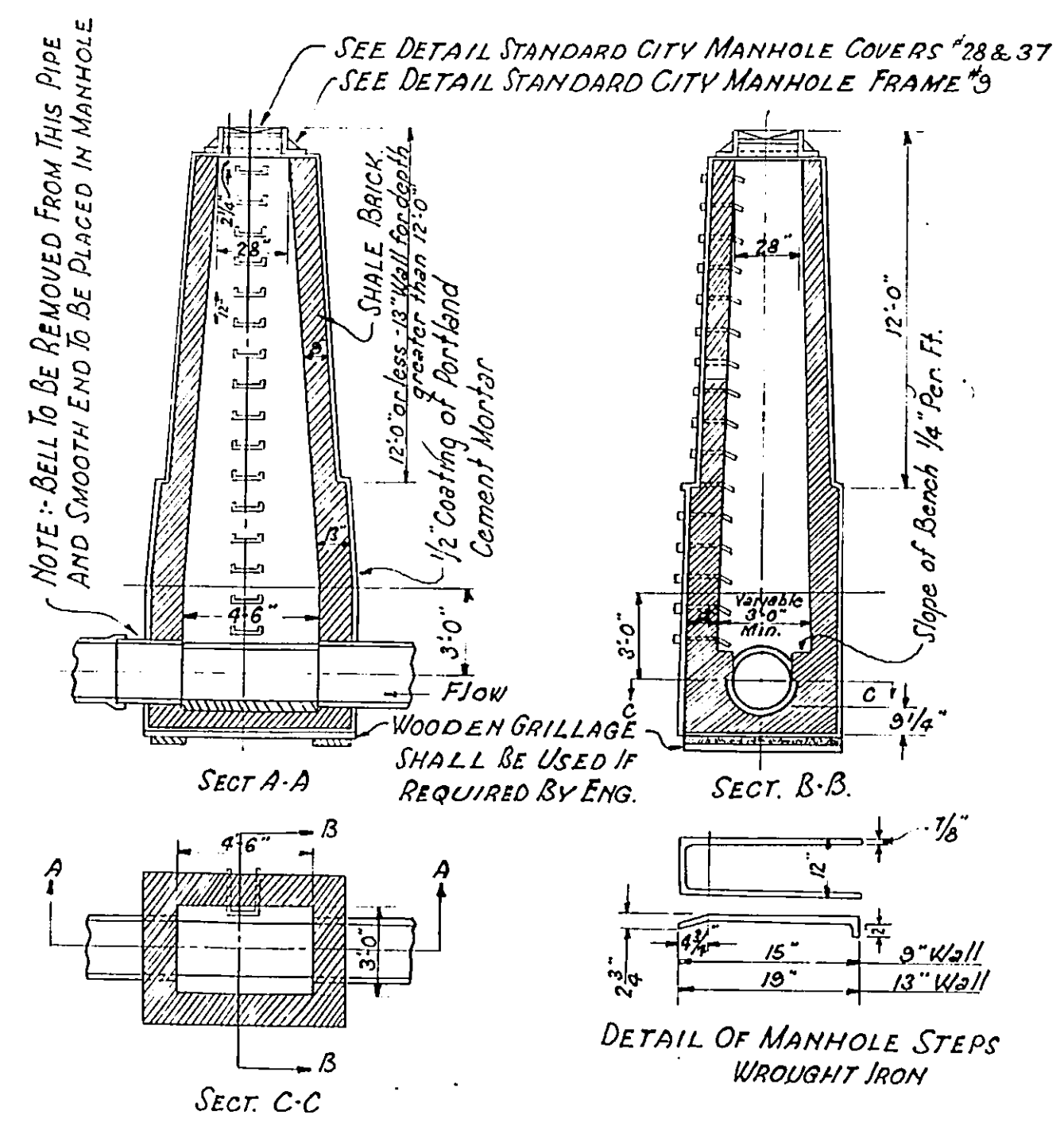
TABLE No 2  
SUMMARY OF STORM SEWER

	DS. #20	DS. #104	DS. #1A	DS. #1B	12" R.C.P.	18" R.C.P.	24" R.C.P.	30" R.C.P.	12" V.S.P.	15" V.S.P.	18" V.S.P.	18" V.S.P. Conc. Curb	15" V.S.P. Conc. Curb	Trench Rate	Wall Excav.	Wall Rein. (Lbs)	
SHEET No 3 TOTALS.	3	9		5	350		577	209	644					2.65	240'	4.0	159.8
SHEET No 4 TOTALS.	6	8	2	2	314	430	390		900	835	59.85			2.90			
GRAND TOTALS.	9	17	2	7	664	430	390	577	209	644	900	835	59.85	2.65	530'	4.0	159.8

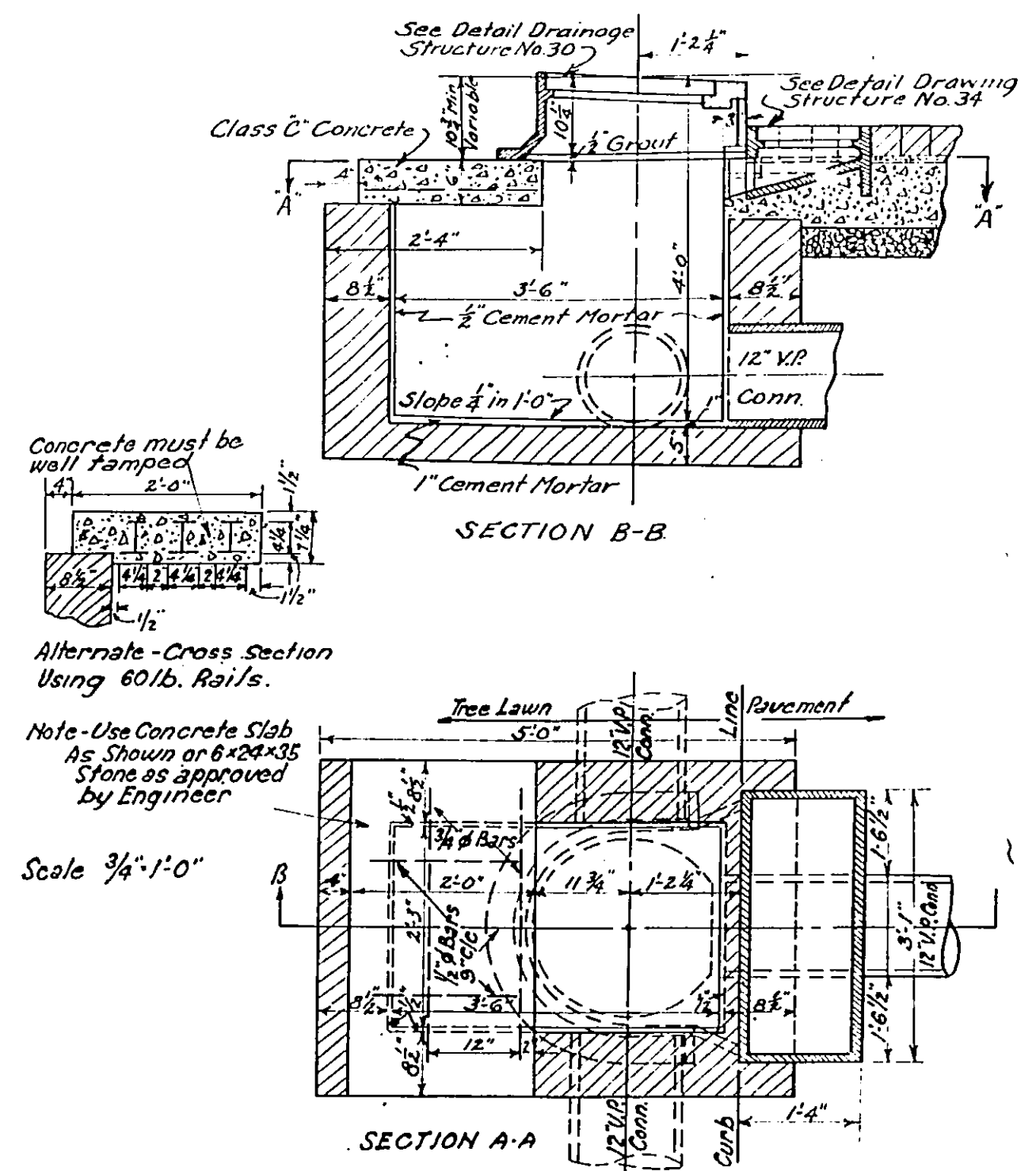
TABLE No 1

ROAD	WIDTH	WIDTH PAVEMENT	EXTRA AREA	RADIUS	CUT OUT	HEADER	RADIUS CURB	EXTRA ST. CURB.	STRAIGHT GRANITE
SPENCER.	80'	30'	3033 <sup>sq</sup>	78'E-78'W	182'	65'	140'	0'	
MASTICK.	60'	40'	17,505 <sup>sq</sup>	60N-100'S	0	336'	210'	200'	40'
TOTALS			20,538 <sup>sq</sup>		182'	401'	350'	200'	40'

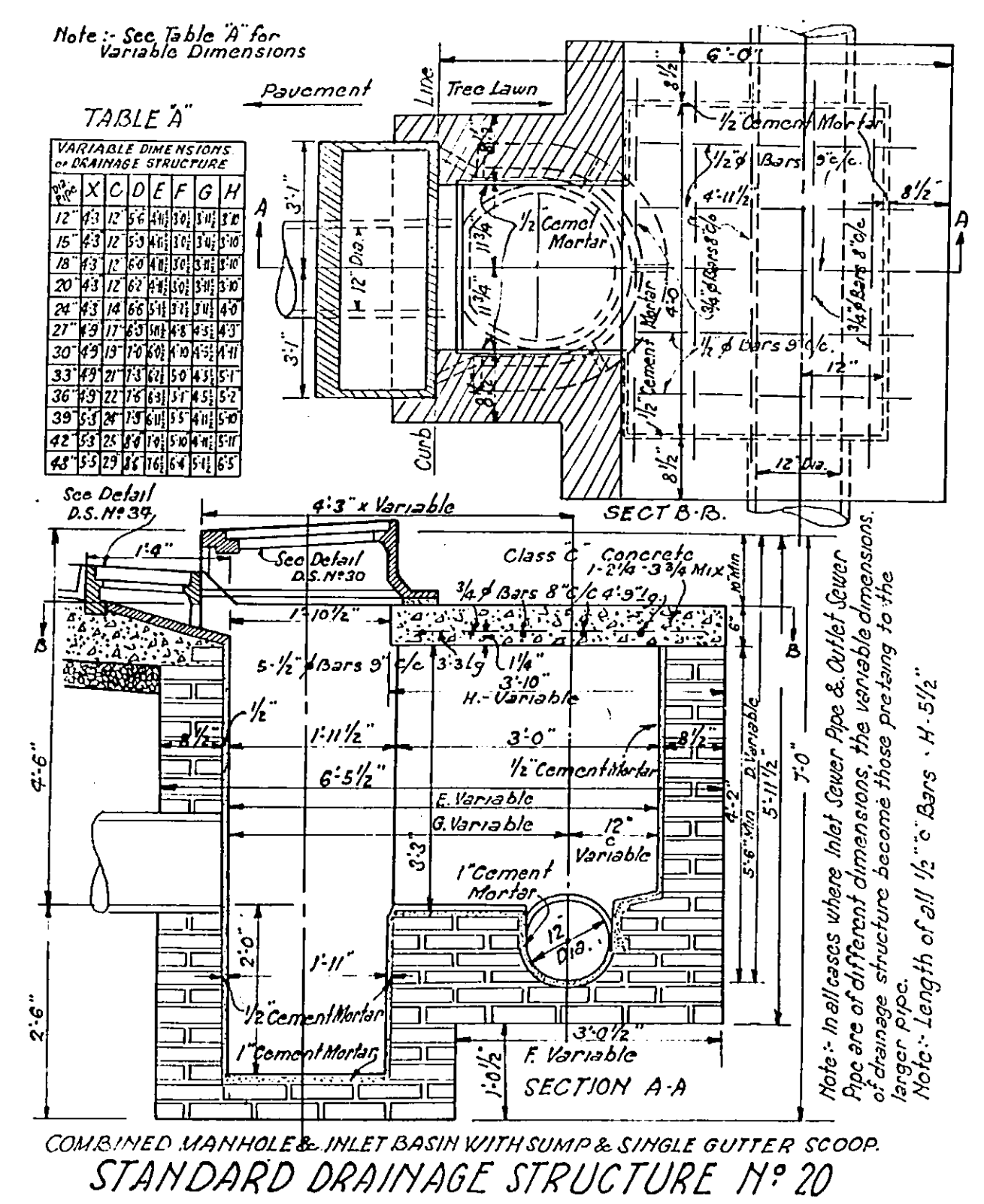
Excavation: 20,538<sup>sq</sup> (Extra Area) x 1.5' (Av. depth) = 30,807 Cu. Ft. = 1141 Cu. Yds.



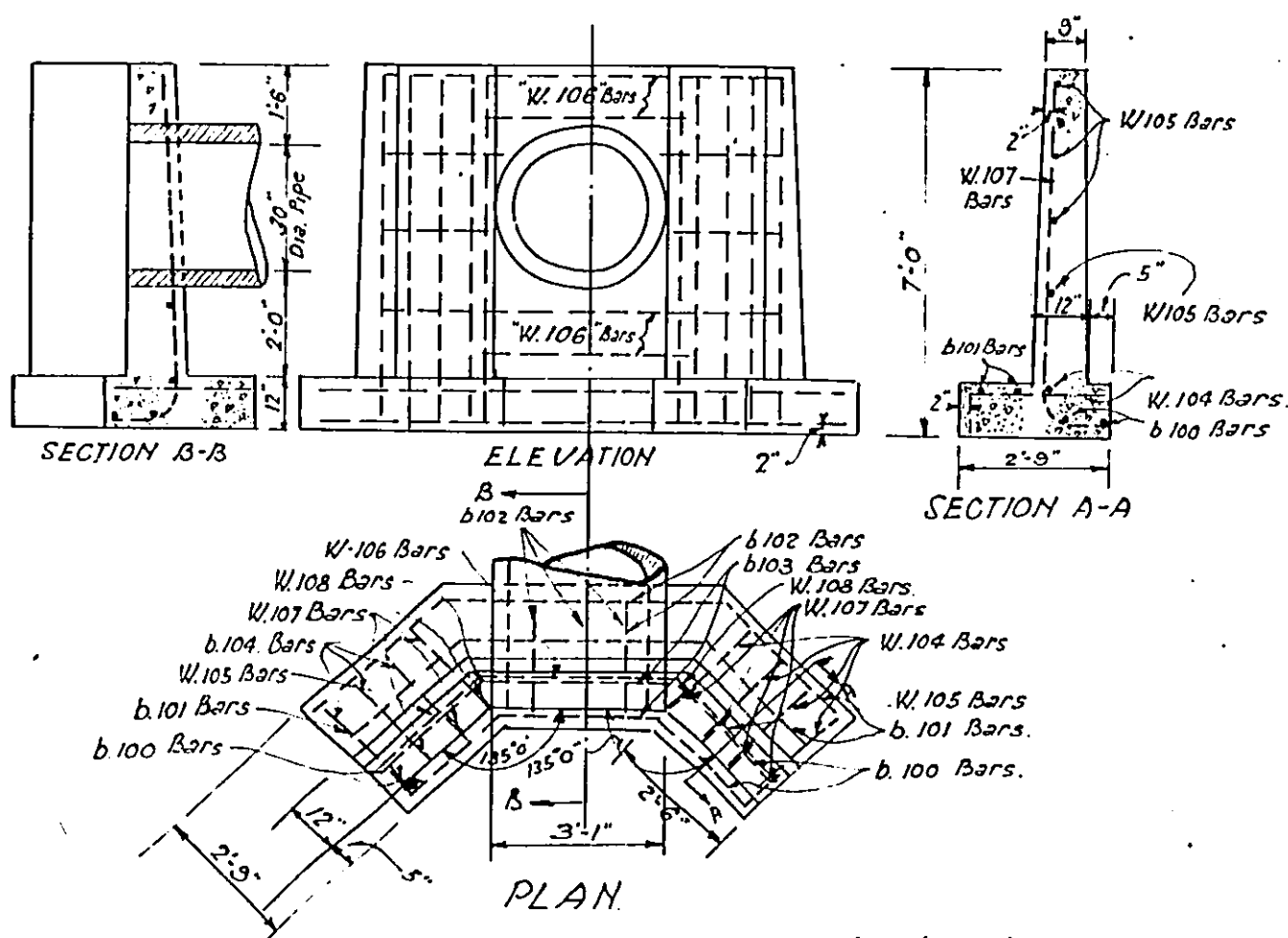
STANDARD MANHOLE (18" OR UNDER)  
 STANDARD DRAINAGE STRUCTURE NO. 1A



SINGLE INTAKE BASIN WITHOUT SUMP & WITH GUTTER SCOOP  
 STANDARD DRAINAGE STRUCTURE NO. 10A



COMBINED MANHOLE & INLET BASIN WITH SUMP & SINGLE GUTTER SCOOP  
 STANDARD DRAINAGE STRUCTURE NO. 20

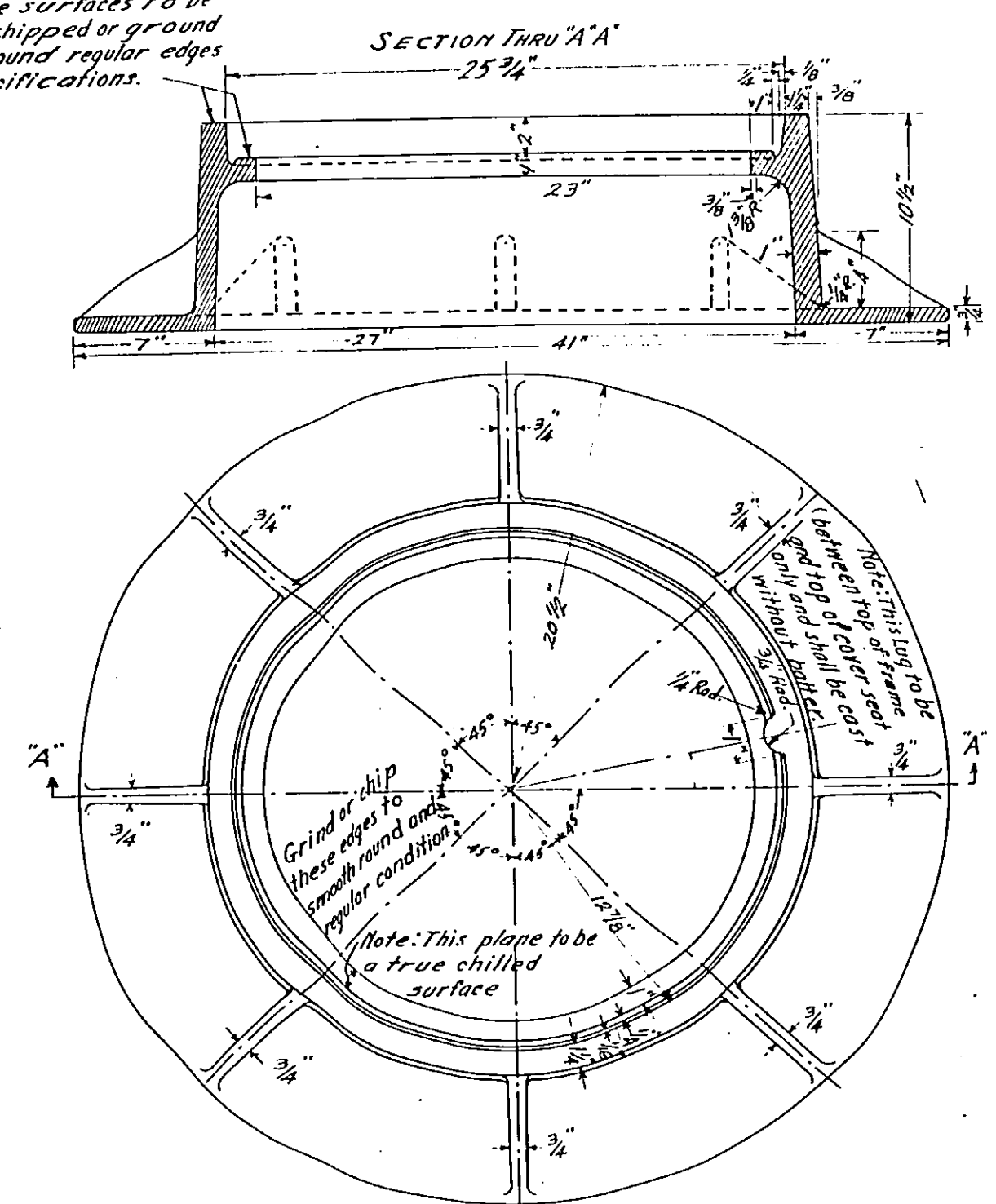


CONCRETE HEADWALL (1:1 1/2 MIX)  
 STANDARD DRAINAGE STRUCTURE NO. 40  
 CU. YDS. CONC. 2.65 LBS. STEEL 153.8 4.0 CU. YDS. EXCAVATION

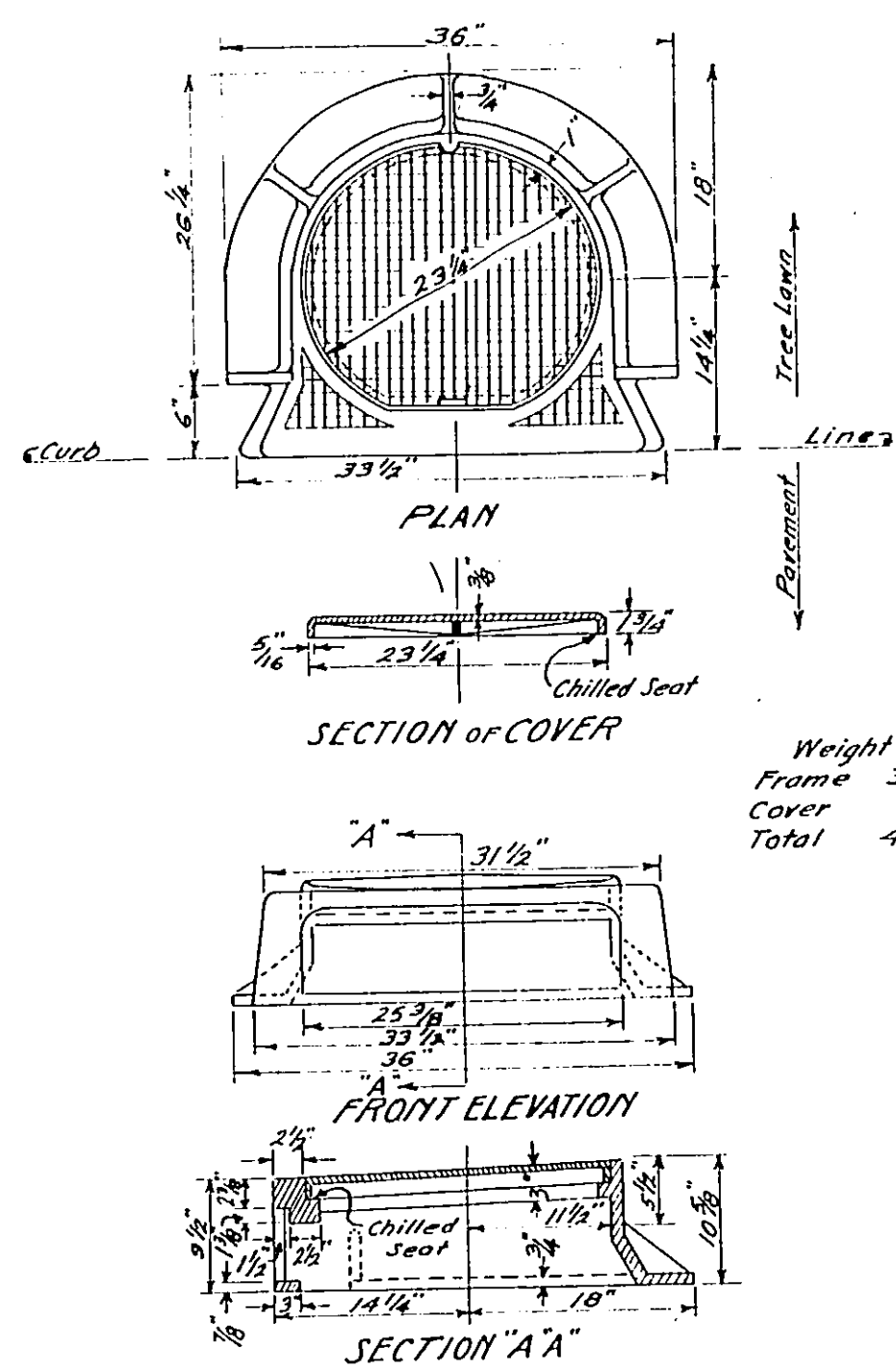
REIN. STEEL FOR HEADWALL.	Mark	No	Size	ChC	Length	Lb. Wt.
	b.100	4	1/2"	9"	2'-9"	7.4
	b.101	4	1/2"	9"	3'-3"	8.7
	b.102	2	1/2"	9"	5'-2"	6.9
	b.103	2	1/2"	9"	3'-8"	4.9
	b.104	11	5/8"	9"	2'-0"	23.0
	W.105	10	1/2"	18"	2'-9"	18.4
	W.106	5	1/2"	9"	3'-8"	12.3
	W.107	8	5/8"	9"	7'-6"	62.6
	W.108	2	5/8"	5"	7'-6"	15.6
	Total					153.8

CUYAHOGA COUNTY  
S. H. 460 SEC. E-1  
CLEVELAND-CANTON RD

Note: These surfaces to be chilled and chipped or ground to smooth round regular edges as per specifications.

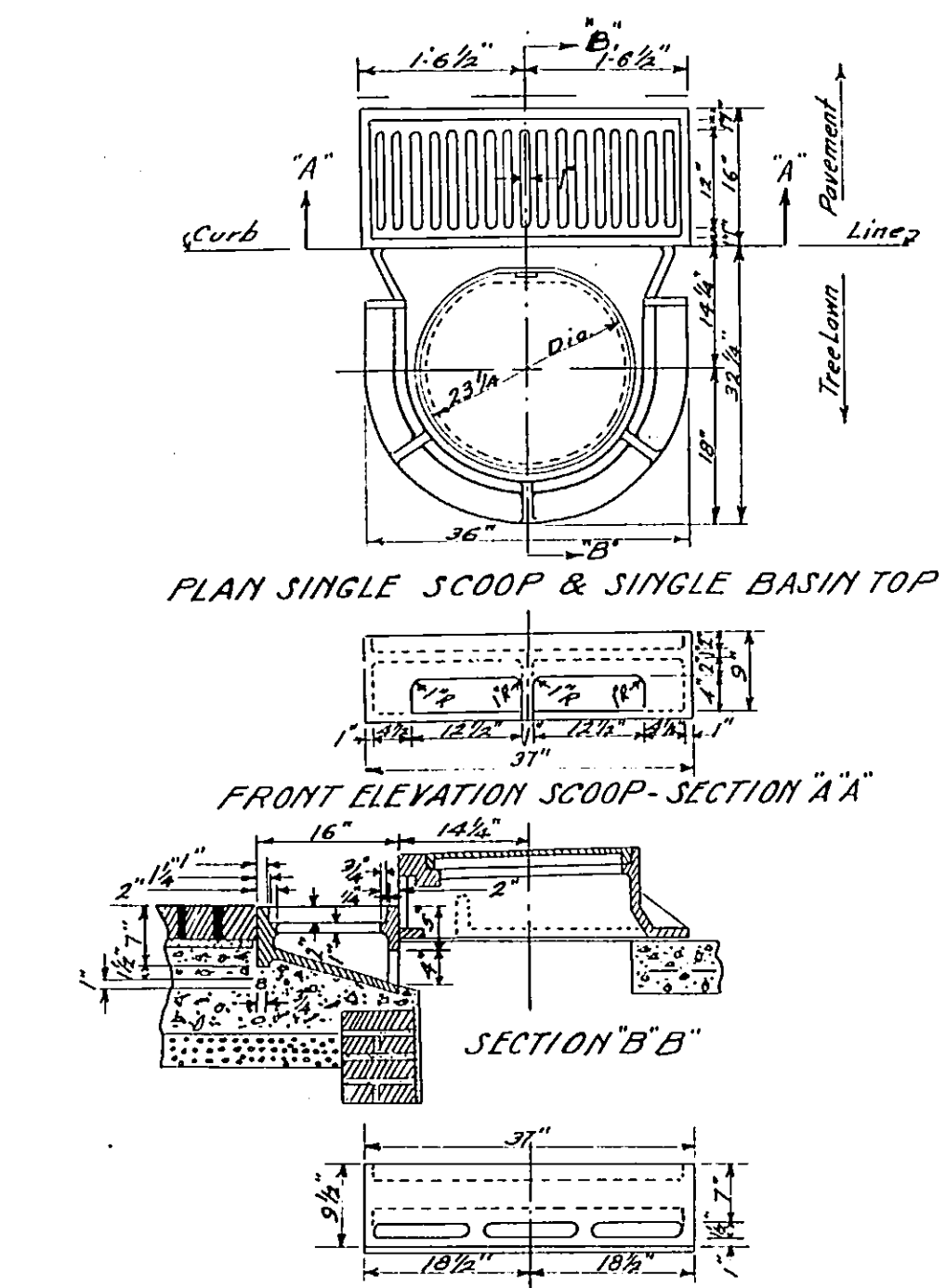


DETAIL STANDARD CITY MANHOLE FRAME.  
**STANDARD DRAINAGE STRUCTURE N° 9**  
CUYAHOGA COUNTY



DETAIL STANDARD COUNTY CATCH BASIN FRAME AND COVER.  
IRON CASTINGS  
**STANDARD DRAINAGE STRUCTURE N° 30.**  
CUYAHOGA COUNTY

Weight  
Frame 385 Lbs.  
Cover 65 "  
Total 450 "



PLAN SINGLE SCOOP & SINGLE BASIN TOP  
FRONT ELEVATION SCOOP-SECTION A-A  
SECTION B-B  
REARVIEW SCOOP  
IRON CASTING  
SINGLE SCOOP WITH SINGLE BASIN TOP  
**STANDARD DRAINAGE STRUCTURE N° 34.**  
CUYAHOGA COUNTY

**SEWER CONSTRUCTION NOTES**  
Standard Drainage Structures N° 9, 28, 30 & 34 listed in Sewer Summary Tables are all Castings and are listed for the Convenience of the Contractor for location of same. Cost of these castings to be included in price bid for the construction of the respective basins or manholes on which they are to be placed.

All Concrete Pipe used shall conform to the requirements of A.S.T.M. Specifications for Reinforced Concrete Pipe, Serial Designation C-75-30T.

All existing castings, except as otherwise noted to be reset to line and Grade by Contractor. Same to be included in unit price bid for Concrete Base or finishing of sidelawns, depending on location of existing castings.

Sta. to Sta.	EARTHWORK FOR TYPE B PAVEMENT				Cu. Yds. Borrow
	Cu. Yds. Excavation	Cu. Yds. Emb.	Cu. Yds. Emb. + 22% Waste	Cu. Yds. Waste	
42+47.92 to 50+0	1029.7	8297.4	10122.8		9093.1
50+0 to 51+45.88	11533.1	1622.5	1979.5	9553.6	
76+64.6 to 80+0	0.0	14267.7	17406.6		17406.6
80+0 to 90+0	5736.1	2923.9	3567.2	2168.9	
90+0 to 94+0	946.5	581.7	709.7	236.8	
<b>Totals</b>	<b>19245.4</b>	<b>27693.2</b>	<b>33785.8</b>	<b>12441.3</b>	
Add Extra Area	1141.0				
			<b>20386.7 Cu.Yds. Total Excavation</b>		



CUYAHOGA COUNTY  
S. H. 460 SEC. E. 1  
CLEVELAND-CANTON ROAD  
TABLE No. 1

SCHEDULE DETAIL "A" SEWER CRADLE					
STATION	NO	CUVOS	STATION	NO	CUVOS
72+60	1	1.03	74+50	1	1.05
72+70	1	1.05	74+70	1	1.05
72+80	1	1.05	74+80	1	1.05
73+0	1	1.05	75+0	1	1.05
73+20	1	1.05	75+10	1	1.05
73+30	1	1.05	75+30	1	1.05
73+50	1	1.05	75+40	1	1.05
73+60	1	1.05	75+60	1	1.05
73+80	1	1.05	75+70	1	1.05
73+90	1	1.05	75+90	1	1.05
74+10	1	1.05	76+0	1	1.05
74+20	1	1.05	76+20	1	1.05
74+40	1	1.05	76+30	1	1.05
76+150	1	1.05	76+150	1	1.05
Total	13	13.65	Total	14	14.70

Total No. 27 Total Cu. Ws. Conc. 2.835

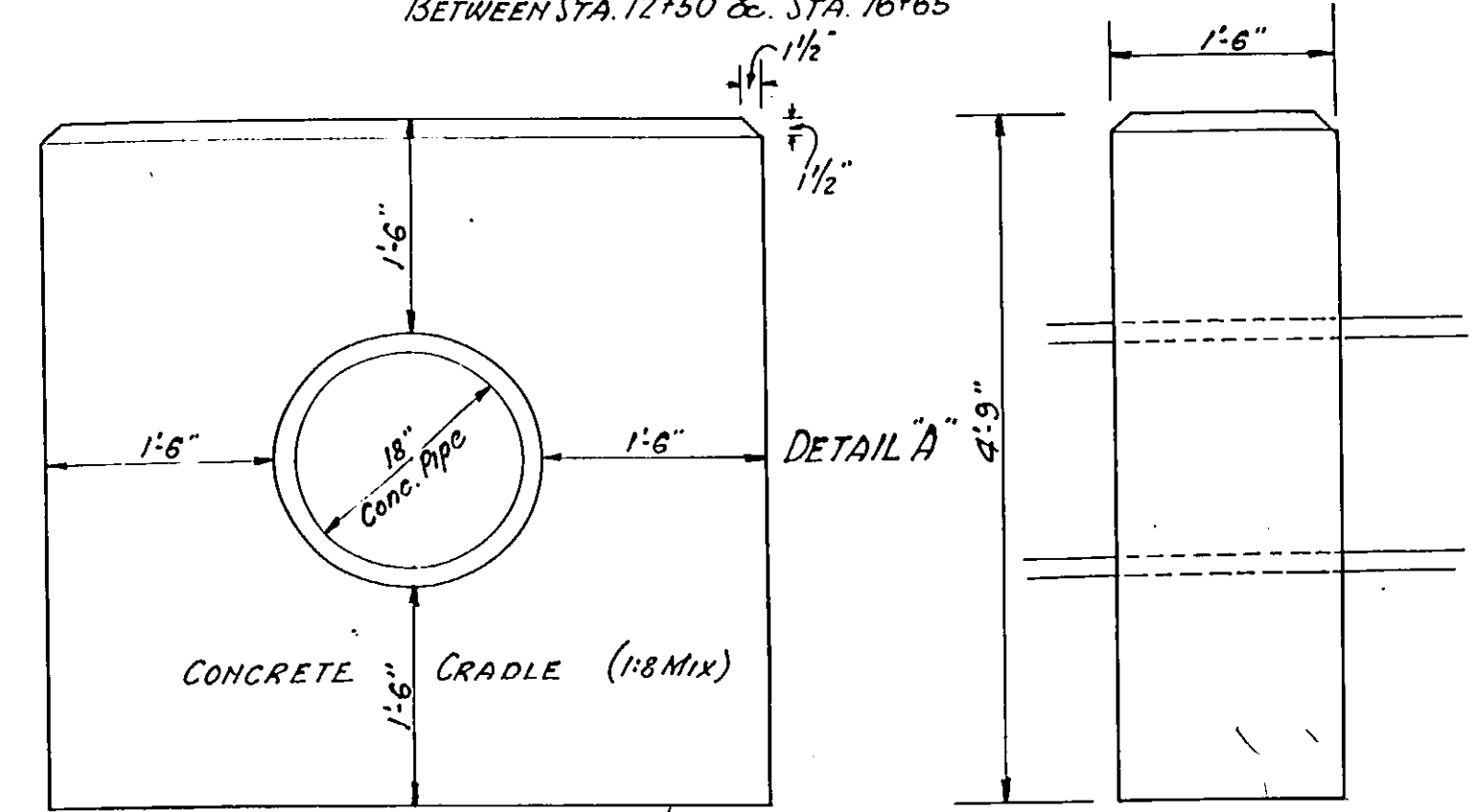
TABLE No. 2

SCHEDULE DETAIL "B" SEWER CRADLE			
STATION	NO	CUVOS	
72+50	1	2.10	
72+80	1	2.10	
73+10	1	2.10	
73+40	1	2.10	
73+70	1	2.10	
74+0	1	2.10	
74+30	1	2.10	
74+60	1	2.10	
74+90	1	2.10	
75+20	1	2.10	
75+50	1	2.10	
75+80	1	2.10	
76+10	1	2.10	
76+40	1	2.10	
76+65	1	2.10	
Total	15	31.50	

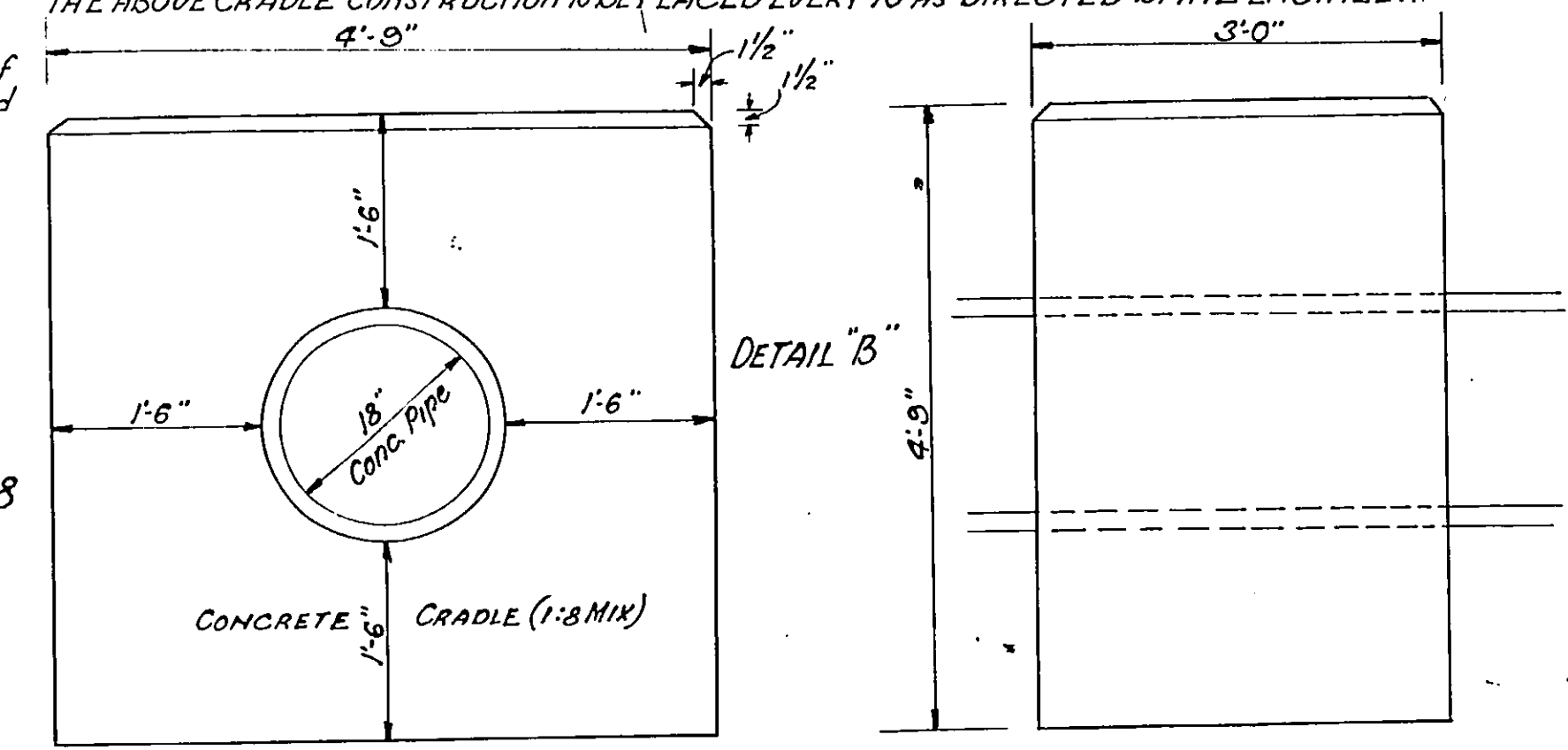
Total 59.85 cu. yds.

DETAILS OF SEWER CRADLE

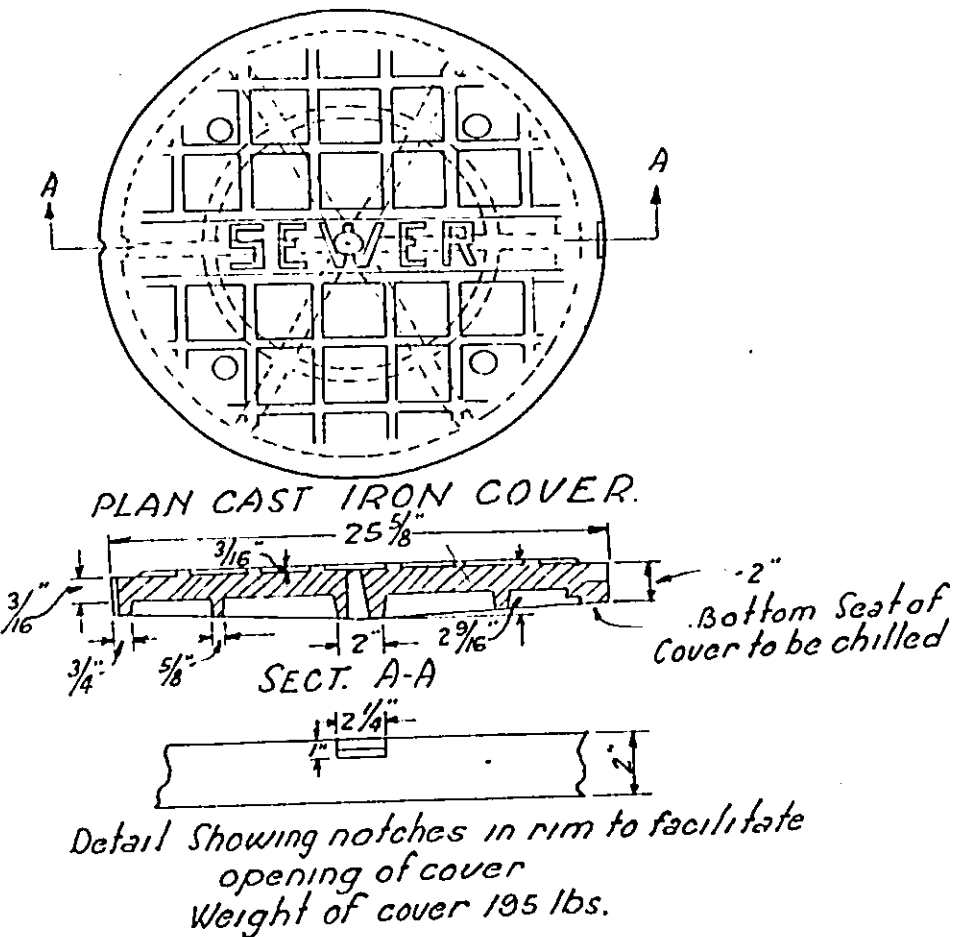
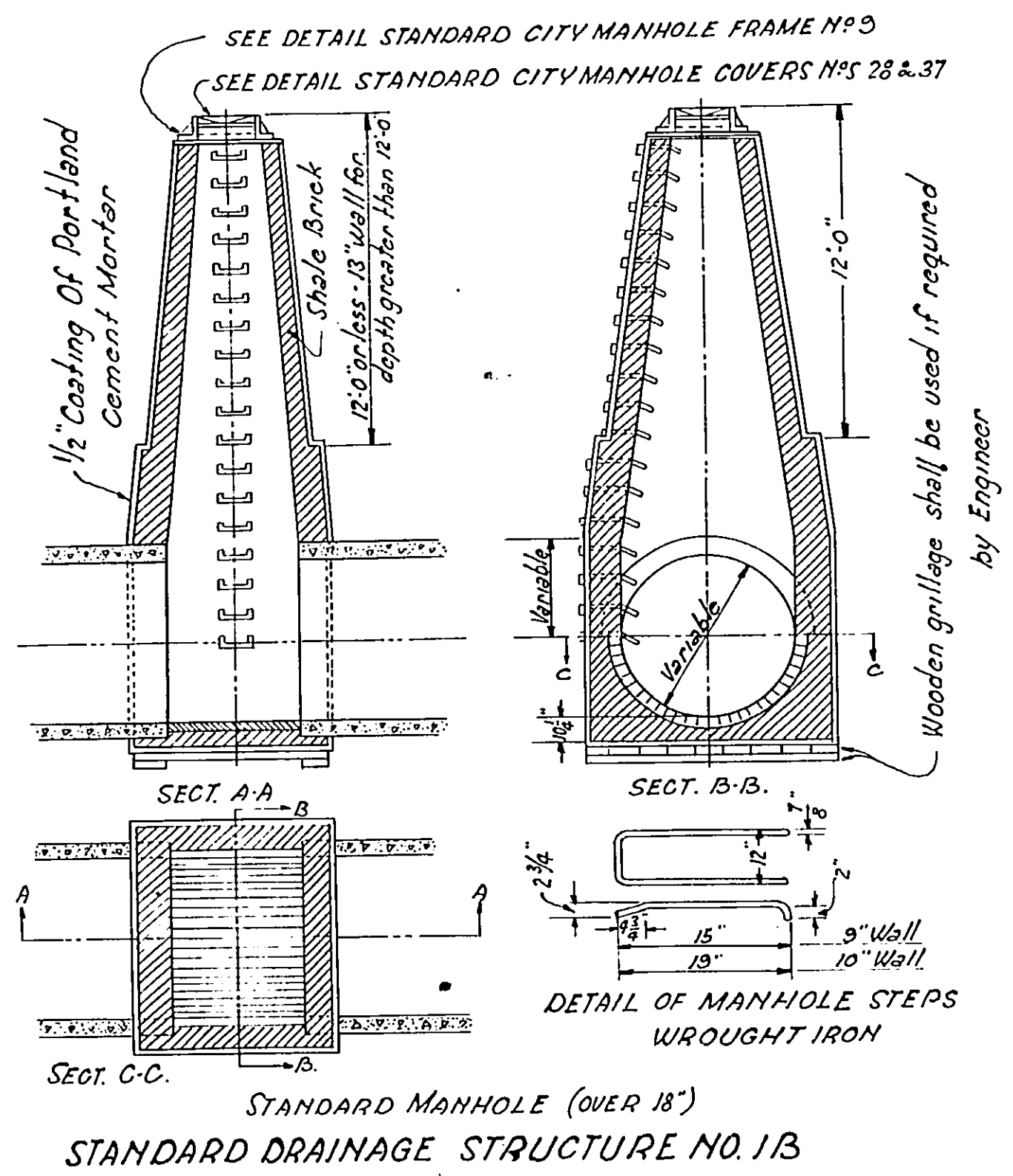
BETWEEN STA. 72+50 & STA. 76+65



THE ABOVE CRADLE CONSTRUCTION TO BE PLACED EVERY 10' AS DIRECTED BY THE ENGINEER.



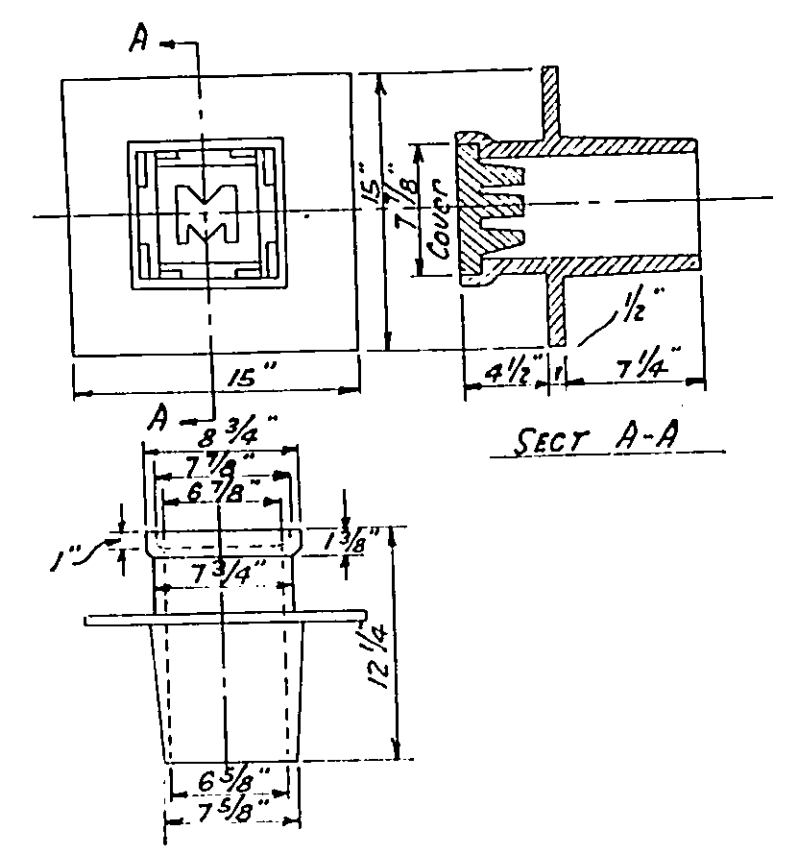
THE ABOVE CRADLE CONSTRUCTION TO BE PLACED EVERY 30' AS DIRECTED BY THE ENGINEER.



DETAIL STANDARD CITY CLOSED MANHOLE COVER  
IRON CASTING  
STANDARD DRAINAGE STRUCTURE No. 28

TABLE No. 3

MONUMENT BOXES	
Sta. 54+66.44	1
Sta. 57+83.78	1
Sta. 83+20.07	1
Sta. 86+85.25	1
Total	4





# PROPOSAL NO 2

## SUMMARY OF QUANTITIES

STATION	ITEM	QUANTITIES	
42+47.92 to 57+45.88 76+64.46 to 94+00	3" Lug Brick (FJ Asphalt Filler) Wire cut type <sup>(inc. white wash or other)</sup> coat and removal of excess filler. (14.97.96 + 17.35.54) x 40' - 200.5# (Header Curb) + Extra Area, See Table 1, Sheet #19.	129,139.5 Sq. Ft. 20,538.0 " "	16,630.8 sq. yds.
	Total.	149,677.5 " "	
42+47.92 to 57+45.88 76+64.46 to 94+00	6" x 24" Berea or Amherst sandstone curb or equal. (3233.5 x 2) - 182.0 (Cutout) + 200 (Extra Straight Curb) (See Table 1 Sheet #19)		6,485.0 lin. ft.
	5" x 24" Granite Straight Curb (Table #1 Sheet #19)		40.0 lin. ft.
	5" x 24" Granite Radius Curb (See Table #1 Sheet #19)		350.0 lin. ft.
	6" x 3 3/4" Integral Conc. Header Curb (See Table #1 Sheet #19) (1:1 1/2 Mix)		401.0 lin. ft.
42+47.92 to 57+45.88 76+64.46 to 94+00	4" U.S.P. Underdrain (32.335 x 2) - 6467. + 450 (Under all curbs at Mastic Rd.)		6917.0 lin. ft.
42+47.92 to 57+45.88 76+64.46 to 94+00	9" Reinf. Conc. Base (Item B-5) Type A, B, or C. Reinforcing (3233.5 x 40) + 20,538# (Extra Area Table #1 Sheet #19)	149,878.0 Sq. Ft.	16,653.1 Sq. Yds.
42+47.92 to 57+45.88 76+64.46 to 94+00	Excavation, Unclassified, See Table #1 This sheet		20,386.4 Cu. Yds.
	Borrow (Table #1 This Sheet)		13,859.9 Cu. Yds.
	Finishing Berms - Sidelawns & Slopes (Both Sides)		3437.5 Lin. Ft.
	Total Curb Items above ÷ 2 = $\frac{6875}{2} = 3437.5$		
	Drainage Structures Storm Sewers etc.		
	3 Drainage Structures Complete #20 See Detail Sheet #20	9	
	17 " " " #10A " " " #20	17	
	2 " " " #1A " " " #20	2	
	7 " " " #1B " " " #22	7	
	664 Lin. Ft. 12" R.C.P. Storm Sewer Connections. Complete	664	
	430 " " 18" Solid Class A.C.I.P. Storm Sewer Single System Complete	430	
See Table #1 Sheet #19	390 " " 20" R.C.P. Storm Sewer Single System Complete	390	
	577 " " 24" " " " " " " " " " " " "	577	
	209 " " 30" " " " " " " " " " " " "	209	
	644 " " 12" V.H. S.P. " " " " " " " " " " " "	644	
	900 " " 15" " " " " " " " " " " " "	900	
	835 " " 18" " " " " " " " " " " " "	835	
See Tables #1 & 2 Sheet #22	59.85 Cu. Yds. Conc. Cradle for storm Sewer single system (1:8 Mix) Complete		59.85 Cu. Yds.
	2.65 Cu. Yds. Conc. Hdwl. as per D.S. #40 See Sheet #20 (1:5 1/2 Mix)		2.65 Cu. Yds.
	4.0 Cu. Yd. Culvert Excavation See Sheet #20		4.0 Cu. Yds.
See Table #2 This Sheet	5536.2 lbs. Extra Reinforcing steel over sewer trench		5536.2 Lbs.
	1598 lbs " " " " " " " " " " " "		1598 Lbs.
See Table #3 Sheet #22	4 Standard Monument Boxes.		4.

TABLE #1

From Sta.	To Sta.	Excavation	Embankment	Emb. + 22%	Borrow *	Waste
42+47.92	50+00	1,029.7	8,297.4	10,122.8	9,093.1	-
50+00	57+45.88	11,533.1	1,622.5	1,979.5	-	9,553.6
76+64.46	80+00	0.0	14,267.7	17,406.6	17,406.6	-
80+00	90+00	5,736.1	2,923.9	3,567.2	-	2,168.9
90+00	94+00	946.5	581.7	709.7	-	236.8
Ex. Area		1141.0	-	-	-	1141.0
		20,386.4	27,693.2	33,785.8		13,100.3

See Sh. #19

3546.7 Waste, West

\* Borrow East of Bridge obtained from Waste (East)  
Borrow West of Bridge - (17,406.6 Cu. Yds. - 3546.7 (Waste, West)) = 13,859.9 Cu. Yds.

TABLE #2

Total trench for pipe - 530 Lin. Ft. (Summary, Sheet #19) 530 x 10 x 1.054 = 5536.2\*  
Reinforcing Steel. Using 5/8" Deformed Bars 7' long and spaced 12" Ctr. to Ctr. transversely and 3 bars spaced 36" Ctr. to Ctr. longitudinally. This steel to be fabricated into mats, each bar securely at intersection and the mat rigidly supported, or if no mats, each bar shall be supported by chairs at each end.

Sta. 42+47.92 to Sta. 96+36.45	5388.53'
Proposal No. 1	
Sta. 42+47.92 to 57+45.88 and 76+64.46 to 76+36.45	3469.95'
Proposal No. 2	
Sta. 57+45.88 to 76+64.46	1918.59'
Total	5388.53'
"	1020 Mi.

**PROPOSAL NO 1**  
**CONCRETE VIADUCT**  
STA. 57+45.88 to STA. 76+64.46  
For Estimated Quantities see Sh. #25

# SPECIAL SPECIFICATIONS FOR WINTER BRIDGE CONSTRUCTION

## OCTOBER 10, 1932

The printed Supplemental Specifications for Emergency Construction Highway Projects (Aug. 24, 1932) and these Special Specifications for Winter Bridge Construction are necessary for the carrying on of projects of a season not contemplated in the General Specifications. This project shall be built in conformance with the General Specifications of the Department of Highways in force on the date of the Contract together with the printed Supplemental Specifications for Emergency Construction Highway Projects and these Special Specifications. In all cases of conflict between the General Specifications and the Supplemental Specifications for Emergency Construction Highway Projects and Special Specifications for Winter Bridge Construction, the General Specifications shall yield.

Pay items designated by Item numbers given in the General Specifications or in the Special Pay Item Provisions (Oct. 10, 1932) shall be governed by the provisions of the General Specifications and of the Supplemental Specifications for Emergency Construction Highway Projects and Special Specifications for Winter Bridge Construction and

also by the Special Pay Item Provisions Oct. 10, 1932. The coordination of the clauses in the Special Specifications for Winter Bridge Construction and the clauses in the General Specifications is controlled by the side headings or captions. Text matter in the General Specifications covered by captions appearing in these Special Specifications for Winter Bridge Construction is considered voided when the word "substitution" appears after the caption, but is considered to govern in its entirety when the word "additional" appears after the caption.

### SEC. 8. PROSECUTION AND PROGRESS

This project is placed under contract at this time as an unemployment relief measure. It is estimated for winter construction and the contractor must start work immediately upon the awarding of the contract. He must carry the work and the percentage of the work to completion within the specified time, using sufficient forces at all times, working at as many points and in as many shifts as are necessary.

**ADJUSTMENT OF CONTRACT TIME FOR COMPLETION OF THE WORK OR THE PERCENTAGE OF WORK:** If for any reason, satisfactory to himself, the Director should find it necessary to suspend work on any project, he may do so by written instruction to the contractor, in which event the completion date shall be advanced to the extent of the duration of such suspension.

The only other adjustment of contract time for the completion of the project shall be that due to the extra time required for work or material in greater amounts or quantities than those set forth in the contract, or for time necessarily lost due to floods beyond a height to which the contractor should reasonably protect his work. In cases where cofferdams are required this height shall be the elevation hereinafter prescribed for cofferdams. In case of increased quantities the contract time shall be increased in the same ratio as the cost of the additional work bears to the original contract price.

The percentage completed by June 30th, 1933 will be calculated as follows: The percentage of the work performed by the given date will be the percentage of the value of the pay items completed, based on bid prices, as compared to the total contract price.

If the required percentage of the project is not completed by June 30th, 1933, the uncompleted part shall be subject to the fifteen percent deduction in its price as set forth in the proposal.

### ITEM E-2 EXCAVATION FOR STRUCTURES

**E-2.03 COFFERDAMS, CRIBS AND SHEETING:** (Additional) Where cofferdams are required during winter construction, they shall be maintained at an elevation not less than halfway between low and high water as shown on the plan. Should the elevation of the bottom of the footer be lowered during construction below that shown on the plan, the required elevation of the top of the cofferdam may be lowered the same amount. Pumps of ample capacity to remove the water from cofferdams at any season of the year shall be provided.

**E-2.07 BACKFILL:** (Additional) No frozen material shall be used in the backfill nor shall any backfill be placed on frozen material. In backfills made before April 1st, flooding shall not be used.

### ITEM 5-1 CONCRETE FOR STRUCTURES

The requirements of this item in the General Specifications shall govern with the following additions and substitutions.

**5-1.03 AGGREGATES:** (Additional) The shipping and storage of aggregates during winter months present serious difficulties. Contractors shall immediately upon the awarding of the contract, arrange for the shipping and storage of aggregates in an amount sufficient to complete the work contemplated to be completed during the winter months.

Failure to comply with this requirement shall be deemed sufficient cause for annulment of contract.

**5-1.04 PORTLAND CEMENT:** (In lieu of first three sentences) The cement shall meet the requirements as specified under Section 1.1 or Section 1.2 of the "Material Details", at the option of the contractor, but only one brand, grade or kind of cement shall be used in a given structure above the ground line, except upon the written permission of the Director.

**5-1.19 DEPOSITING AND PROTECTING CONCRETE DURING COLD WEATHER:** (In lieu of heading and first two paragraphs under heading "Depositing and Protecting Concrete during Freezing Temperatures".) For all concrete placed after November 15th and before April 1st, (and for that placed before or after this period when the air temperature is fifty (50) degrees F. or below), the water or aggregates or both shall be heated, by either dry heat or steam, so that the concrete, after placing in the forms, shall have a temperature of between seventy (70) and ninety (90) degrees F. The heating of the materials shall be done in a uniform manner which will preclude burning or otherwise damaging the same.

### ITEM 5-3 WATERPROOFING

**5-3.02 MATERIALS:** (Additional) If material 5.7 A.E. 5 is used, it shall be protected from freezing before being applied.

**5-3.03 PREPARATION OF SURFACE:** (In lieu of last sentence) The concrete shall have a clean surface and in the case of a primer coat of hot asphalt, shall be dry at the time of application. Waterproofing shall be done at the end of the period of protection of concrete and while heat is still being applied.

## SPECIAL PAY ITEM PROVISIONS - OCTOBER 10, 1932

Note: The Contractor's attention is especially called to the provisions of Section 7, Article 13, and Section 9, Article 2, of the General Specifications.

### PAY ITEM 5-1 "CONCRETE FOR STRUCTURES"

In lieu of 5-1.26 "Method of Measurement" and 5-1.27 "Basis of Payment" of the General Specifications the following divisions of Item 5-1 "Concrete for Structures" will be made and each of these Divisions will be a Pay Item if so set forth in the special provisions and proposal.

**5-1a FALSE WORK, ARCH CENTERING AND SHORING AND REMOVAL OF SAME:** Shall be a lump sum for the furnishing of all materials and the necessary equipment, tools, and labor for erecting (and removing) the same in accordance with the provisions of the General Specifications, the Supplemental Specifications for Emergency Construction Highway Projects and the Special Specifications for Winter Bridge Construction. The proposal requires a separate bid for "removing".

**5-1b FORMS, TIES AND BRACING AND REMOVAL OF SAME:** Shall be a lump sum for the furnishing of all materials and the necessary equipment, tools and labor for erecting (and removing) the same in accordance with the provisions of the General Specifications, the Supplemental Specifications for Emergency Construction Highway Projects and the Special Specifications for Winter Bridge Construction. The proposal requires a separate bid for "removing".

**5-1c CONCRETE FOR STRUCTURES:** Shall be paid for by the cubic yard of concrete of the several proportions in place completed and accepted, less the deductions required by the specifications for surface deviations, of the contract unit price per cubic yard bid. This price shall constitute full compensation for the furnishing and preparation of all materials, mixing, placing, finishing and curing and all labor, equipment, tools and incidentals necessary to complete this item, except falsework, arch centering and shoring, forms, ties and bracing, reinforcing steel, water proofing and special surface finish, all in accordance with the provisions of the General Specifications, the Supplemental Specifications for Emergency Construction Highway Projects and the Special Specifications for Winter Bridge Construction.

### PAY ITEM 5-4 "REINFORCING STEEL"

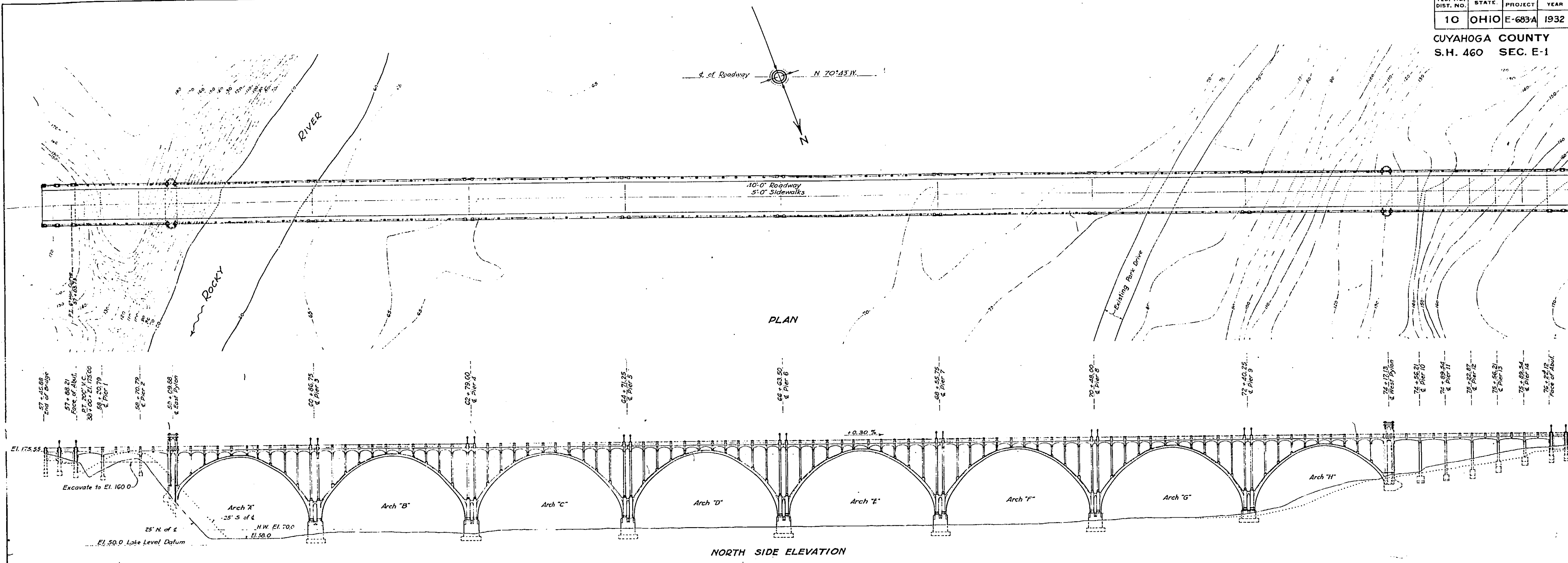
In lieu of the first sentence of 5-4.10 "Method of Measurement" of the General Specifications, the following shall apply: The number of pounds of reinforcing steel to be paid for shall be the actual number of pounds of the various sizes placed and secured in the forms as shown on the plans, completed and accepted. The contractor, however, shall be held responsible for the acceptability of the steel until it is incorporated in the concrete.

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES			
<b>SPECIAL SPECIFICATIONS AND PAY ITEM PROVISIONS FOR BROOKPARK VIADUCT OVER ROCKY RIVER</b>			
S.H. 460, SEC. E-1, CUYAHOGA COUNTY			
DESIGNED	DRAWN	TRACED	CHECKED
	Liber		
			WBC-32-E



FED. RD. DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR
10	OHIO	E-683A	1932

CUYAHOGA COUNTY  
S.H. 460 SEC. E-1



**SPECIFICATIONS.** The General Specifications of the Department of Highways in force on date of contract together with the Supplemental Specifications for Emergency Construction Aug. 24, 1932, Special Specifications and Pay Item Provisions, Oct. 10, 1932, Dr. No. WBC-32 (Revised), Sheet No. 2 and all other specifications shown on these plans and on the proposal shall govern the construction of this project.

**LOADING.** This bridge designed for H-20 Loading according to Specifications for Design of Highway Structures in force Oct. 1932.

**EXCAVATION AND BACKFILL.** Earth excavation includes all excavation required above top of shale. Earth excavation for footings computed as prisms bounded by vertical planes 1'-0" from edges of footings.

Shale excavation includes all excavation below top of shale and is computed to neat lines of footings. Entire excavation in shale, below top of footings, shall be filled with concrete unless otherwise indicated on plans.

All excavated materials shall be disposed of as directed by the Engineer. Excavated materials from east approach shall not be wasted in river.

Backfill for end abutments shall be made as soon as possible to permit settlement before approach slabs are placed. Fill shall be made on both sides of wing walls simultaneously. All shoring for superstructure, intended to rest on footings, must be in place before backfill is made.

**GENERAL CONSTRUCTION.** East and west end abutments shall be built first and backfill completed at the earliest possible date to permit settlement.

Construction joints, other than those shown on plans, will not be permitted except by special permission of the Director. Special care must be taken to conceal all construction joints in exposed surfaces of concrete. All horizontal joints in

exposed surfaces must be made truly straight by tacking a temporary straight edge on inside face of forms.

**ARCH RIB CONSTRUCTION.** No concrete shall be placed in arch ribs until adjacent piers are entirely completed to skewbacks and centers and forms are in place for adjacent spans.

Order of placing arch ribs shall be as follows: 1-end sections from skewbacks to first construction joints simultaneously, 2-crown section between construction joints, simultaneously from each end toward crown, 3-remaining section on each side of crown section simultaneously.

Centering and shoring for any arch rib shall not be released until after the arch ribs in each adjacent span have been placed as well as the crown sections in the following spans.

Tops of arch ribs shall be given a Rubbed Surface Finish. Form liner shall be used on bottoms of ribs and surface rubbed as specified under Surface Finish.

**ARCH DECK CONSTRUCTION.** Arch deck shall be placed full width (except sidewalks and fascia) between construction joints as shown on plans. Order of placing sections shall be the same as specified for arch ribs.

Sidewalks and fascia shall not be placed until after centering and shoring have been released. Two construction joints will be permitted in each sidewalk on each arch span. If construction joints are used, they shall be placed midway between brackets. Sidewalks shall be marked off in blocks with a line at the center of each railing post and midway between posts unless otherwise indicated on plans.

**SURFACE FINISH.** All exposed surfaces below sidewalk level, except bottoms of slabs, arch floor beams between jack-arches, and interior approach beams, shall be given a "Rubbed Surface Finish". Forms for bottoms of arch ribs, brackets, fascia, jack-arches, pier struts and outside approach beams shall be

carefully lined with three-ply wood liner. After forms are removed, these surfaces shall be rubbed once. All railing and pylons above sidewalk level, shall be given a "Special Rubbed Surface Finish".

**CONCRETE CLASSIFICATION.** Class "A" Concrete (1-5½ mix) includes all concrete in arch ribs, arch columns, arch deck, pier columns, beam approach spans and pylons above bridge seats except railing.

Class "B" Concrete (1-5½ mix) includes all concrete in arch piers and approach columns above footings, pylons between bridge seats and footings as shown on details, and end abutments above footings, except approach slabs.

Class "C" Concrete (1-6½ mix) includes all concrete in footings except S.E. pylon.

**APPROACH SLABS.** Payment for approach slabs includes all reinforcing steel.

**CONCRETE RAILING (1-5½ mix).** Payment for railing includes all materials and labor required, except dowels.

**STRUCTURAL STEEL** includes all structural expansion joints (except copper gutters), manhole frames, and pylon ladders and supports. All structural steel shall be "copper steel" containing at least 0.2% copper.

A certified copy of analysis and mill tests must be furnished the Dept. of Highways.

All structural steel, except portions imbedded in concrete, shall be painted aluminum.

**REINFORCING STEEL.** All reinforcing bars shall be deformed and shall conform to Sec. M-7.1-Billet-Steel Concrete Reinforcing Bars of "Material Details". A certified copy of analysis shall be furnished the Dept. of Highways.

**ESTIMATED QUANTITIES.**

Earth Excavation	4,200	Cu. Yds.
Shale Excavation	2,130	Cu. Yds.
Class "A" Concrete (1-5½ mix)	11,156	Cu. Yds.
Class "B" Concrete (1-5½ mix)	6,440	Cu. Yds.
Class "C" Concrete (1-6½ mix)	1,714	Cu. Yds.
Type "B" Waterproofing (36" wide)	555	Sq. Yds.
Reinforcing Steel	2,738,830	Lbs.
Reinforced Concrete Railing (special) 1-5½ mix	3,840	Lin. Ft.
Balcony Drains, complete (4 units)	Lump Sum	41,800
Structural Steel (copper bearing)	41,800	Lbs.
Folded Copper Strip, 16 oz., 24" wide	520	Lin. Ft.
Cast Bronze Expansion Plates, 1½"	1,912	Sq. Yds.
*Reinf. Conc. Approach Slabs, 3" thick, 1-5½ mix	186.7	Sq. Yds.
Bridge Lighting System, except conduits and hand holes	Lump Sum	2,300
2½" Galvanized Steel Conduit, complete in place	2,300	Lin. Ft.
2" Galvanized Steel Conduit, complete in place	1,000	Lin. Ft.
Hand Holes, cast aluminum, covers and frames	32	Units
Name Plates (cast aluminum)	Lump Sum	1,740
6" Standard Wrought Iron Pipe, as detailed	22	Lin. Ft.
10" V.S. Pipe, encased as detailed	210	Lin. Ft.
8" V.S. Pipe, encased as detailed	1,490	Lin. Ft.
24" Plain Cement Concrete Pipe	250	Sq. Yds.
Rip-rap, hand laid with mortar joints	18	Units
Cast Iron Scuppers, special	8,500	Sq. Yds.
Brick Wearing Surface, 3" brick, ¾" cushion		

\* Approach slab is paid for in sq. yds. for a thickness of 12½". The additional 3" of concrete is included in the item Class "B" concrete.

**ALUMINUM SPECIFICATIONS.**

Entire aluminum content of all aluminum alloys for this project shall be composed of aluminum ingot. All castings shall be made Alcoa 43 ingot. Lugs shall be cast integral all castings for testing purposes. Extruded bar stock, if used, shall be Alcoa 43 S alloy bolts and screws shall be Alcoa 17 ST alloy. Certified copies of mill analysis for all aluminum shall be submitted to Dept. of Highways.

Wherever aluminum contacts any other or concrete it shall be thoroughly coated with bituminous paint.

All lighting units shall be given a uniform sand blast finish before deplating and high name plates shall be sand blasted before lighting. Satin high-lighted finish shall be obtained with about 180 emery. Fabrication finish shall conform to recommendations of Aluminum Co. of America.

A protection coat of Rust Veto #2A shall be applied to lighting units and name plates leaving fabricators.

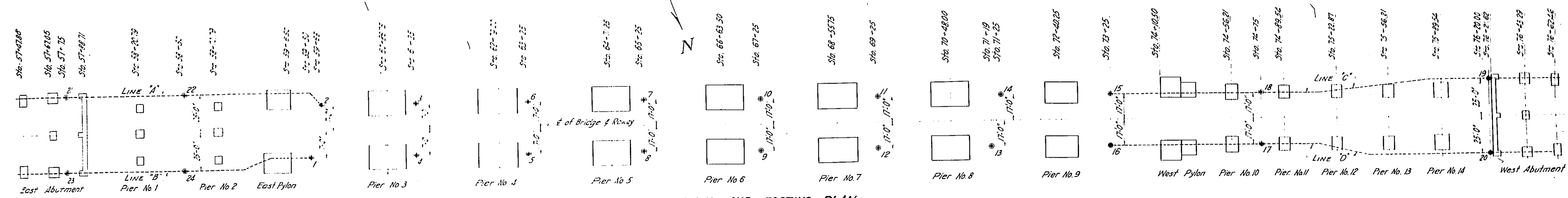
STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**GENERAL PLAN AND ELEVATION NOTES AND QUANTITIES**  
**BROOKPARK VIADUCT OVER ROCKY RIVER**

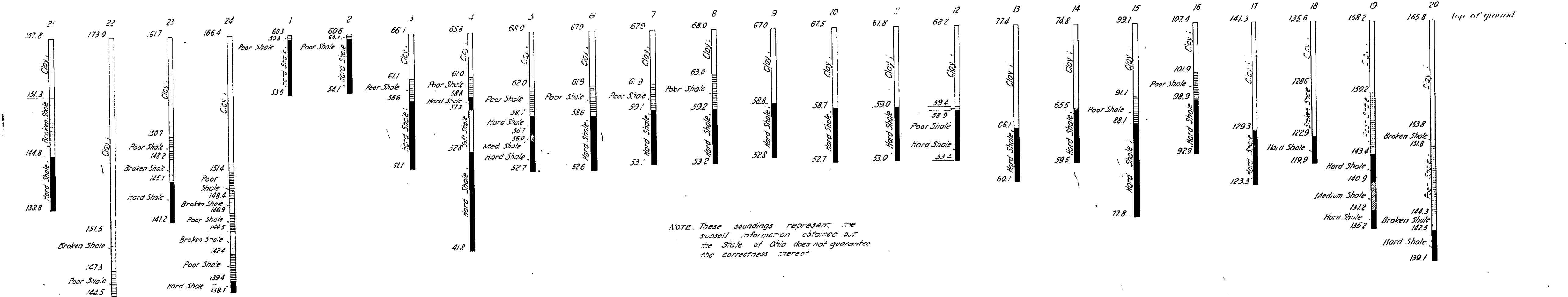
S.H. 460 SEC. E-1 CUYAHOGA

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
W.A.C.	R.B.K.	R.B.K.	W.F.	W.A.C.



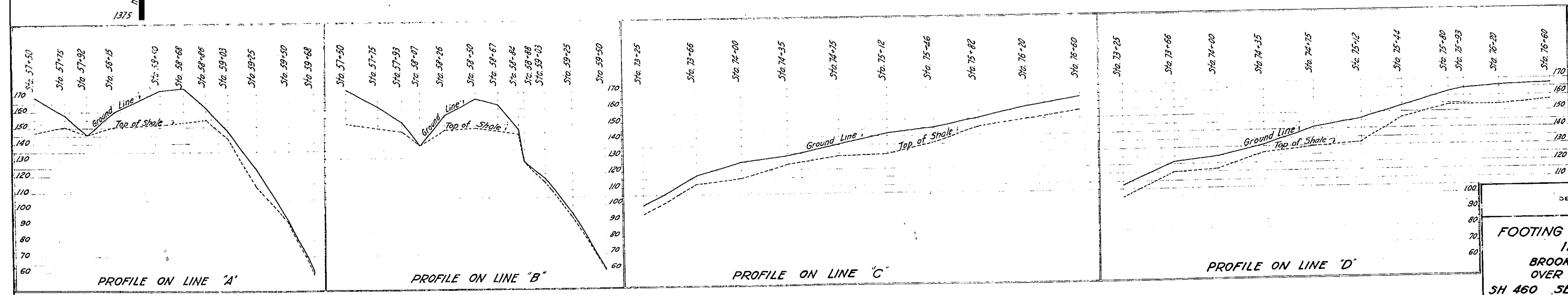


TEST HOLES AND FOOTING PLAN  
NOTE: This plan not drawn to scale between East and West Pylons



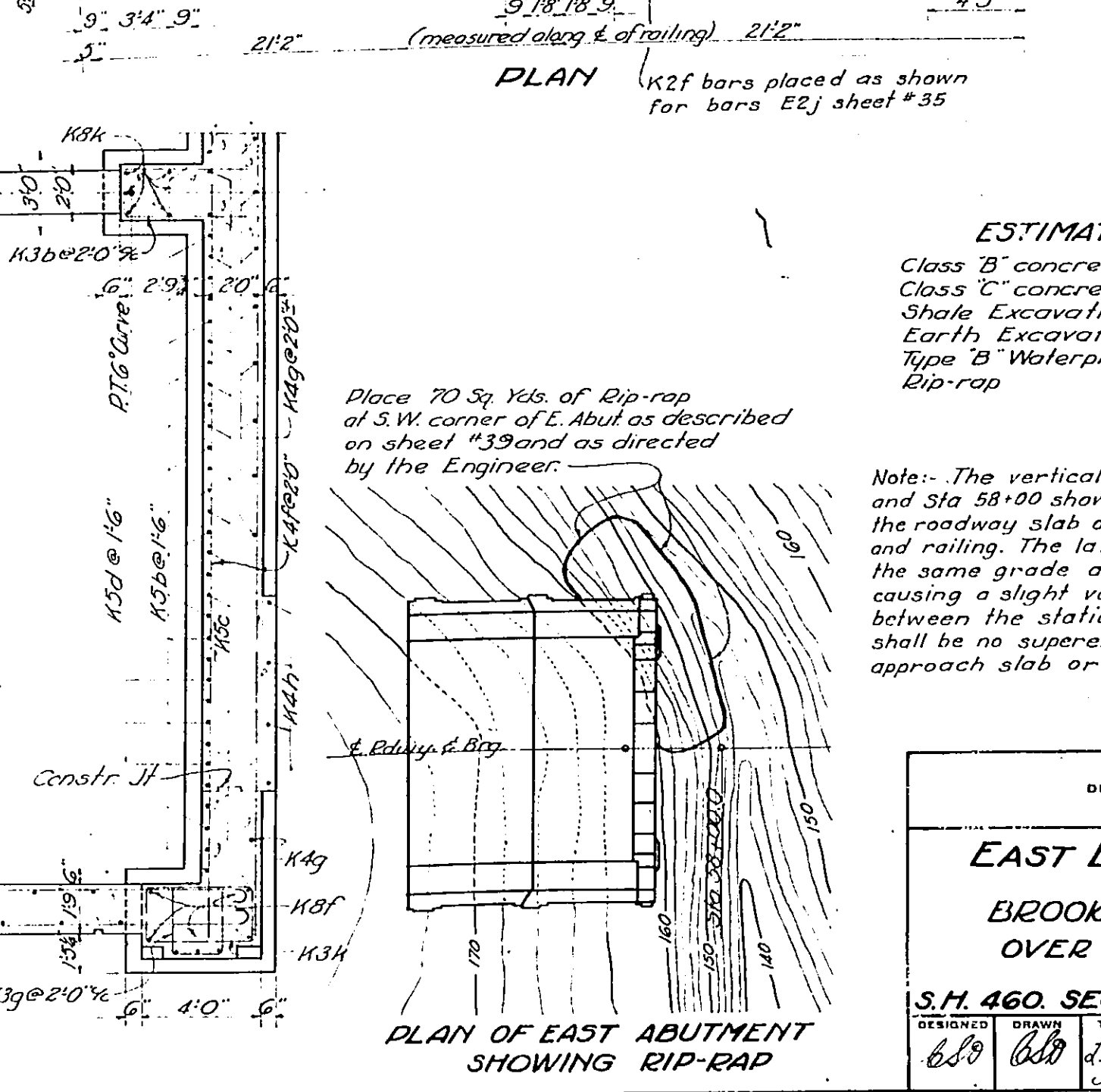
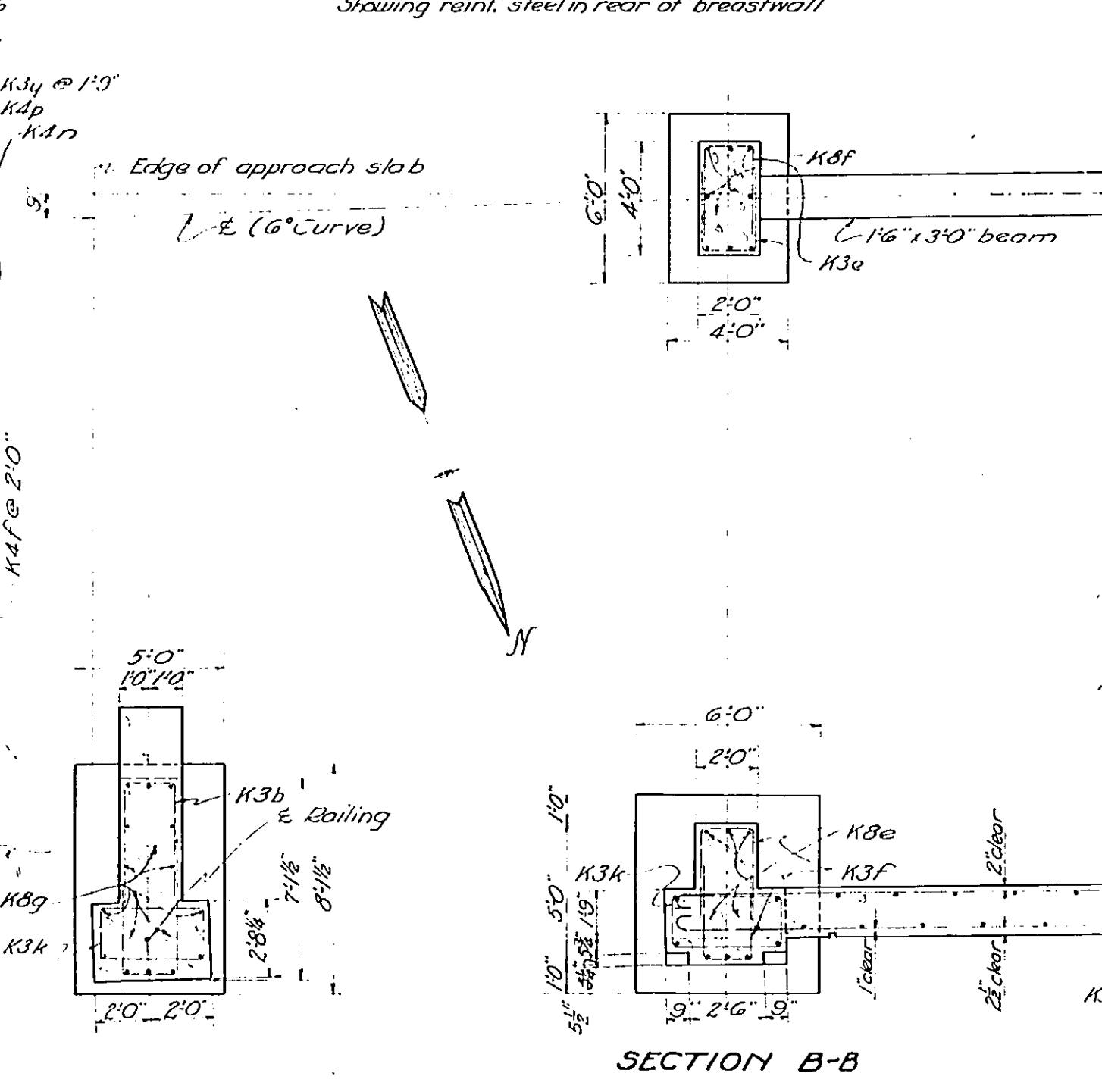
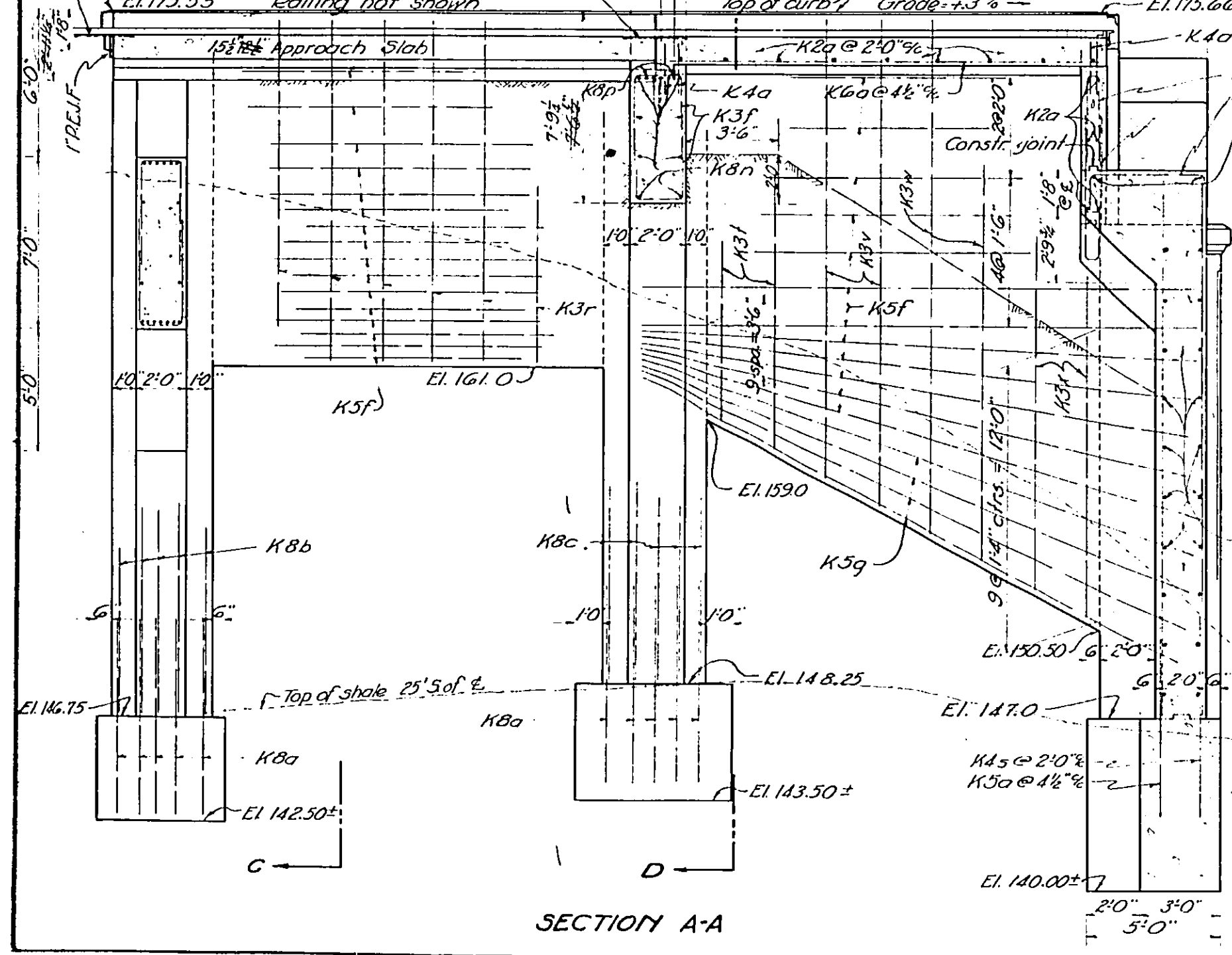
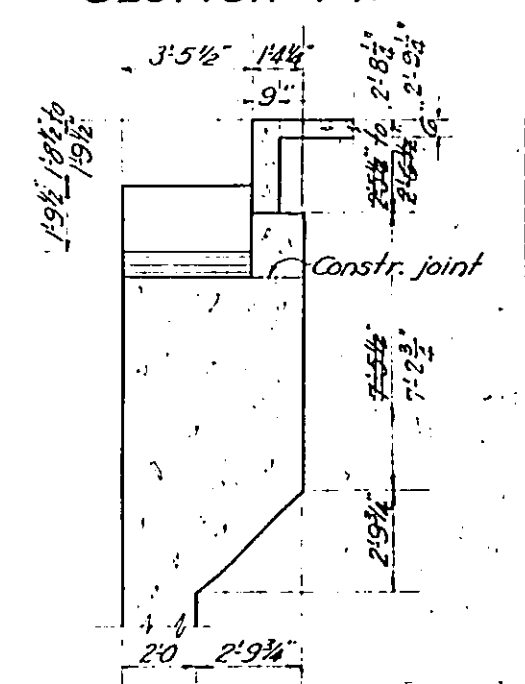
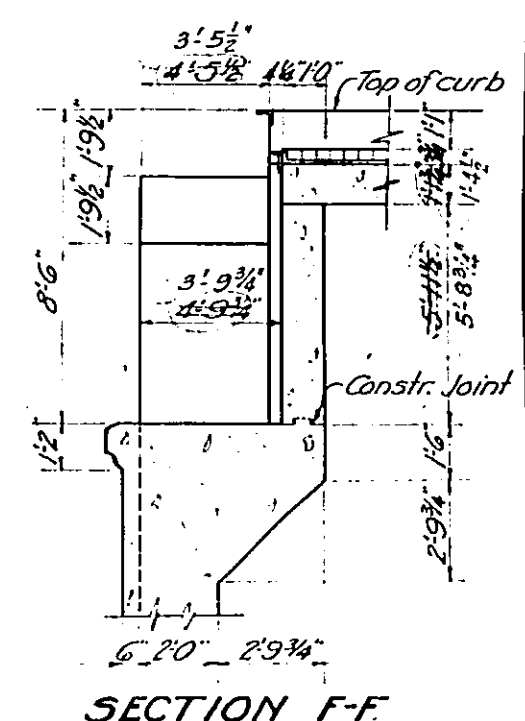
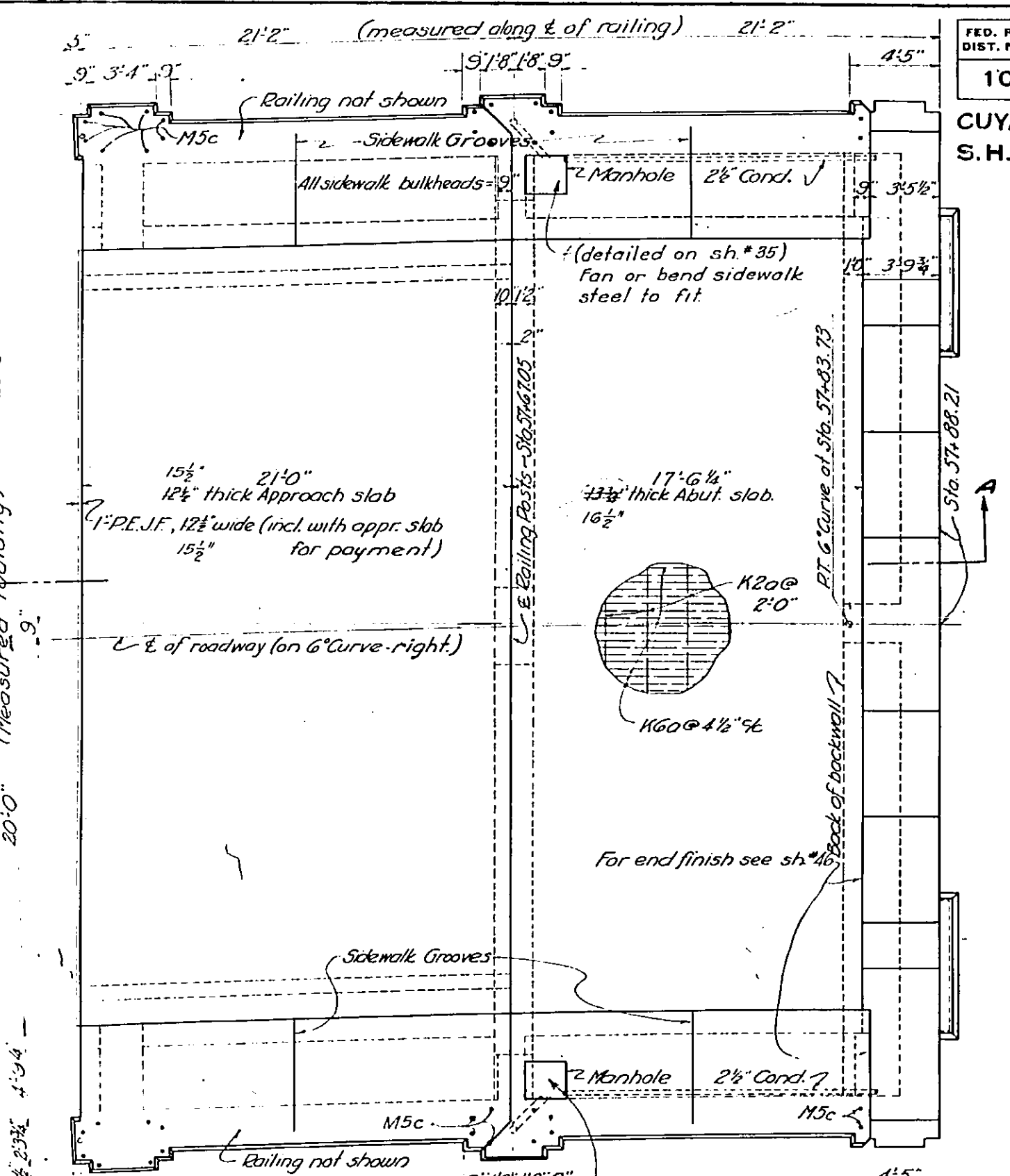
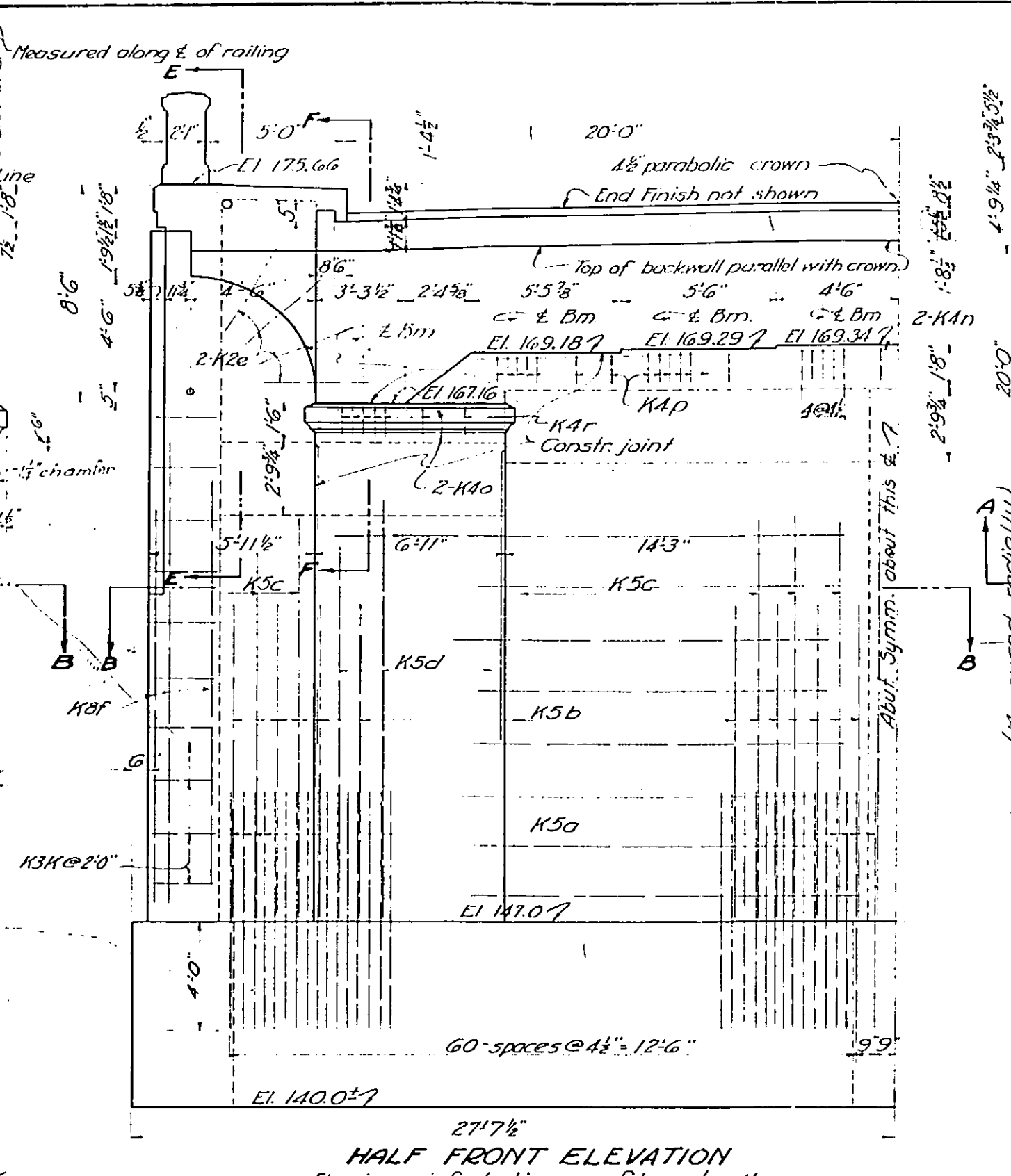
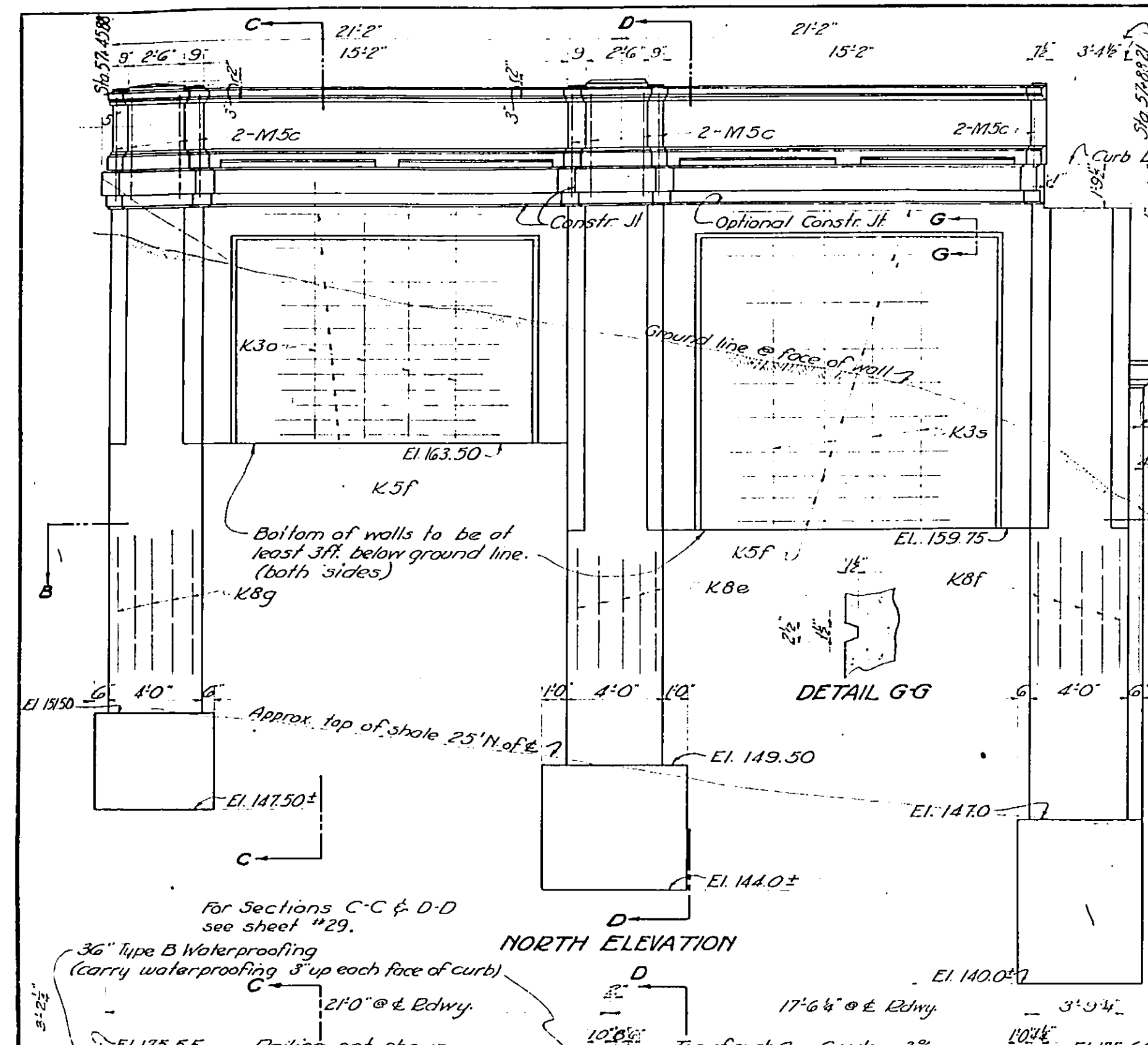
NOTE: These soundings represent the subsurface information obtained but the State of Ohio does not guarantee the correctness thereof.

NOTE: Elevations shown are referred to Lake level datum.



STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES						
FOOTING PLAN AND TEST HOLE INFORMATION						
BROOKPARK VIADUCT OVER ROCKY RIVER						
SH 460 SEC. E-1 CUYAHOGA COUNTY						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
	q.f.f.	C.E.O.	W.F.	M.H.D.	10/29/32	1/22/33

CUYAHOGA COUNTY  
S.H. 460 SEC. E-1



**ESTIMATED QUANTITIES**

Class B concrete (1-5)	345 Cu. Yds.
Class C concrete (1-5)	84 Cu. Yds.
Shale Excavation	80 Cu. Yds.
Earth Excavation	440 Cu. Yds.
Type B Waterproofing (36" wide)	41 Sq. Yds.
Rip-rap	70 Sq. Yds.

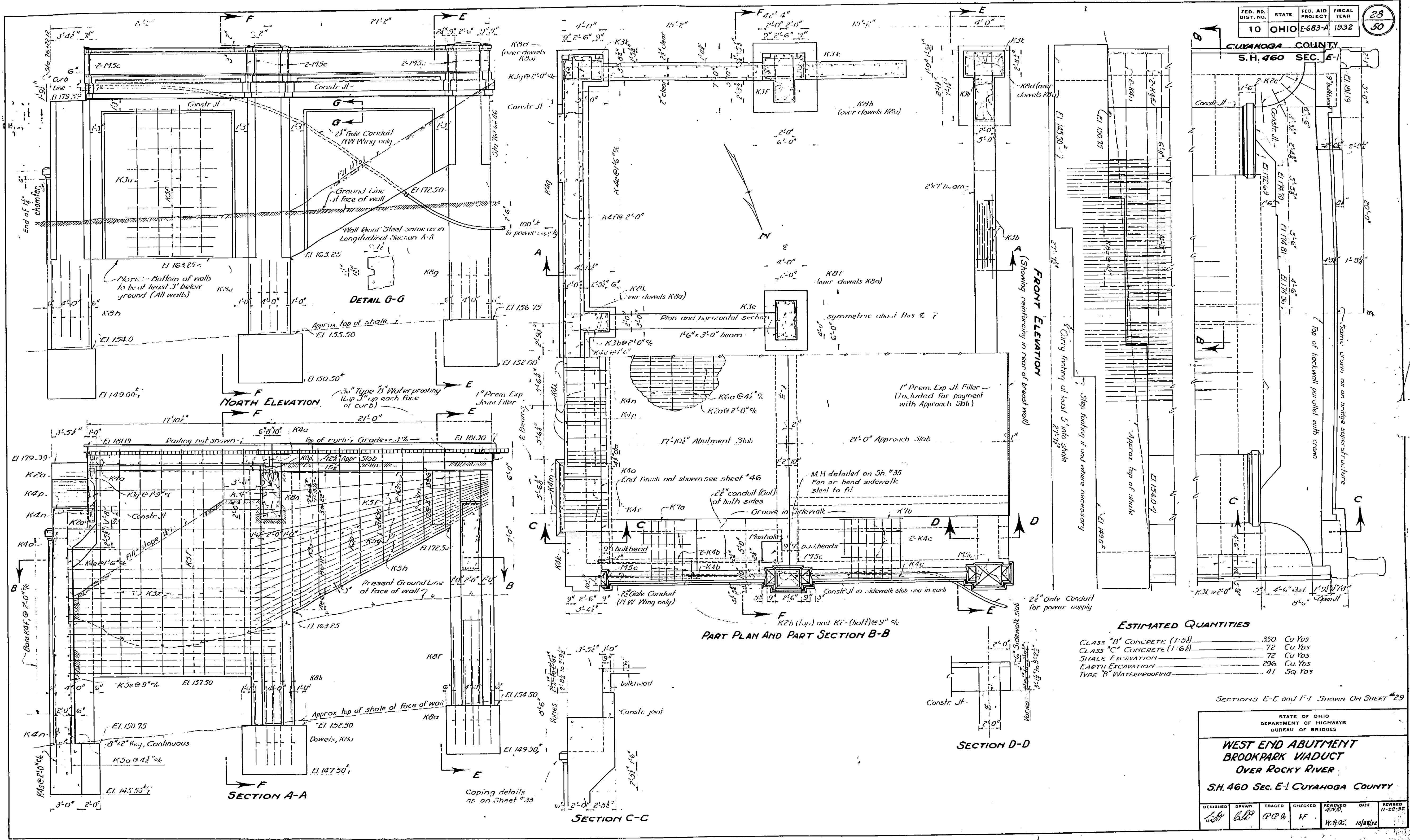
Note: - The vertical curve between Sta 57+45.88 and Sta 58+00 shown on Sheet N-25, affects the roadway slab only and not the sidewalk and railing. The latter are to be built to follow the same grade as the rest of the bridge. Thus causing a slight variation in the curb height between the stations mentioned above. There shall be no superelevation on any part of the approach slab or abutment slab.

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**EAST END ABUTMENT  
BROOKPARK VIADUCT  
OVER ROCKY RIVER**

S.H. 460. SEC. E-1. CUYAHOGA COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
bso	bso	d.f.u.	W	W.R.C.	11-22-32	10/21/32



**ESTIMATED QUANTITIES**

CLASS "B" CONCRETE (1-5)	350	Cu. Yds.
CLASS "C" CONCRETE (1-6)	72	Cu. Yds.
SHALE EXCAVATION	72	Cu. Yds.
EARTH EXCAVATION	296	Cu. Yds.
TYPE "B" WATERPROOFING	41	Sq. Yds.

SECTIONS E-E and F-F SHOWN ON SHEET #29

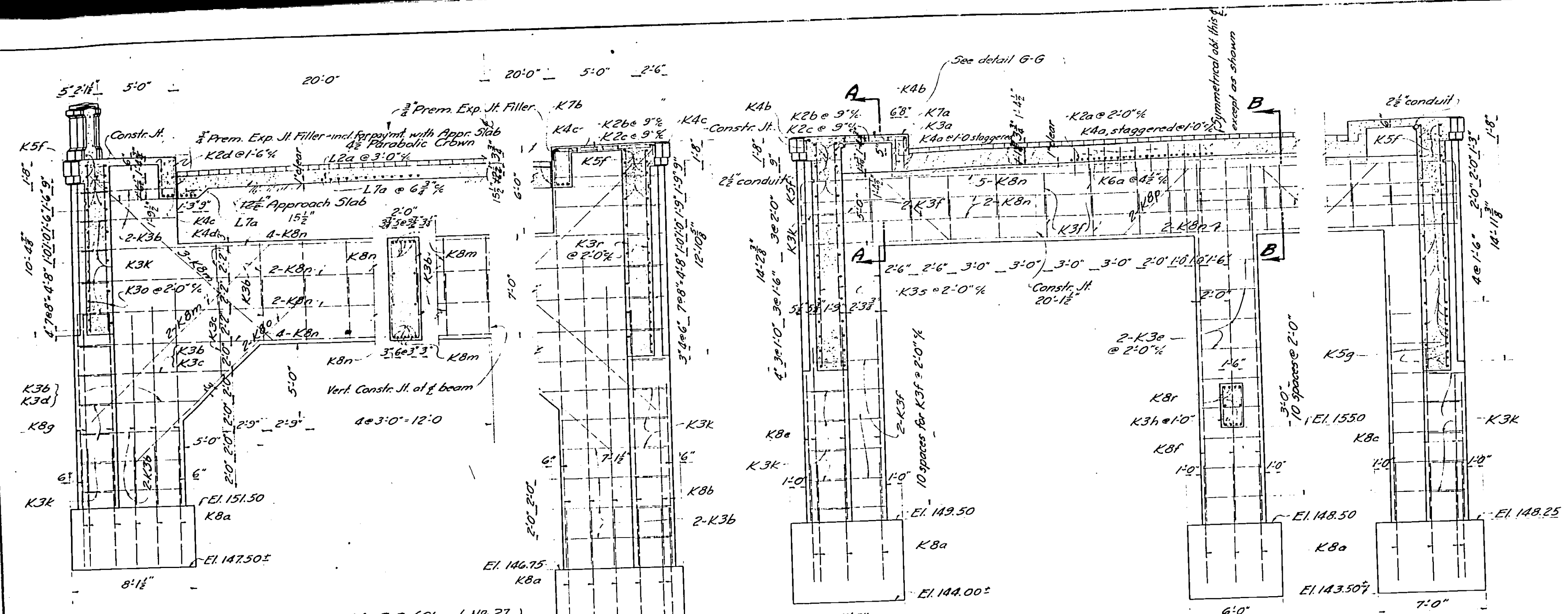
STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**WEST END ABUTMENT  
BROOKPARK VIADUCT  
OVER ROCKY RIVER**

S.H. 460 SEC. E-1 CUYAHOGA COUNTY

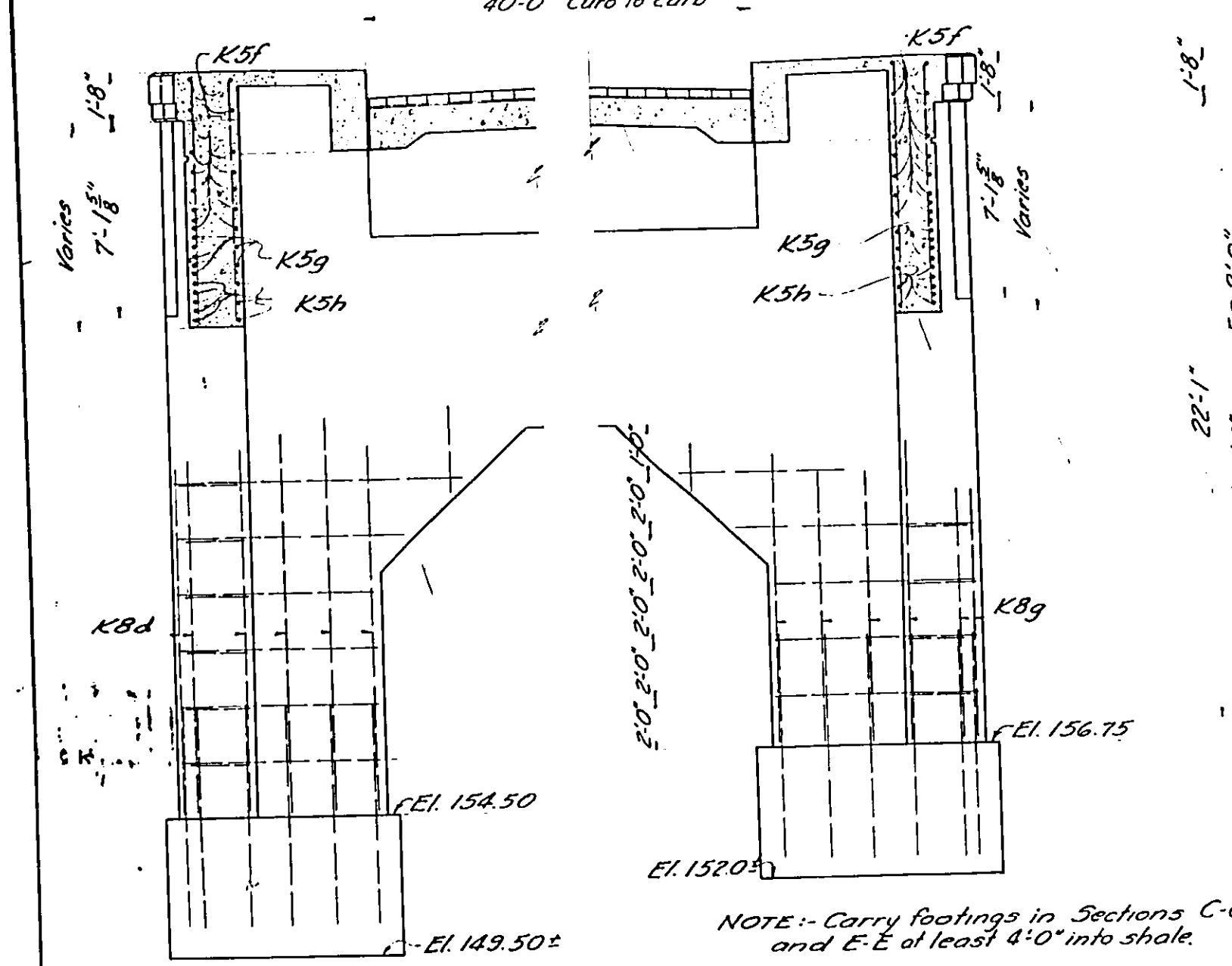
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					11-4-32	11-22-32



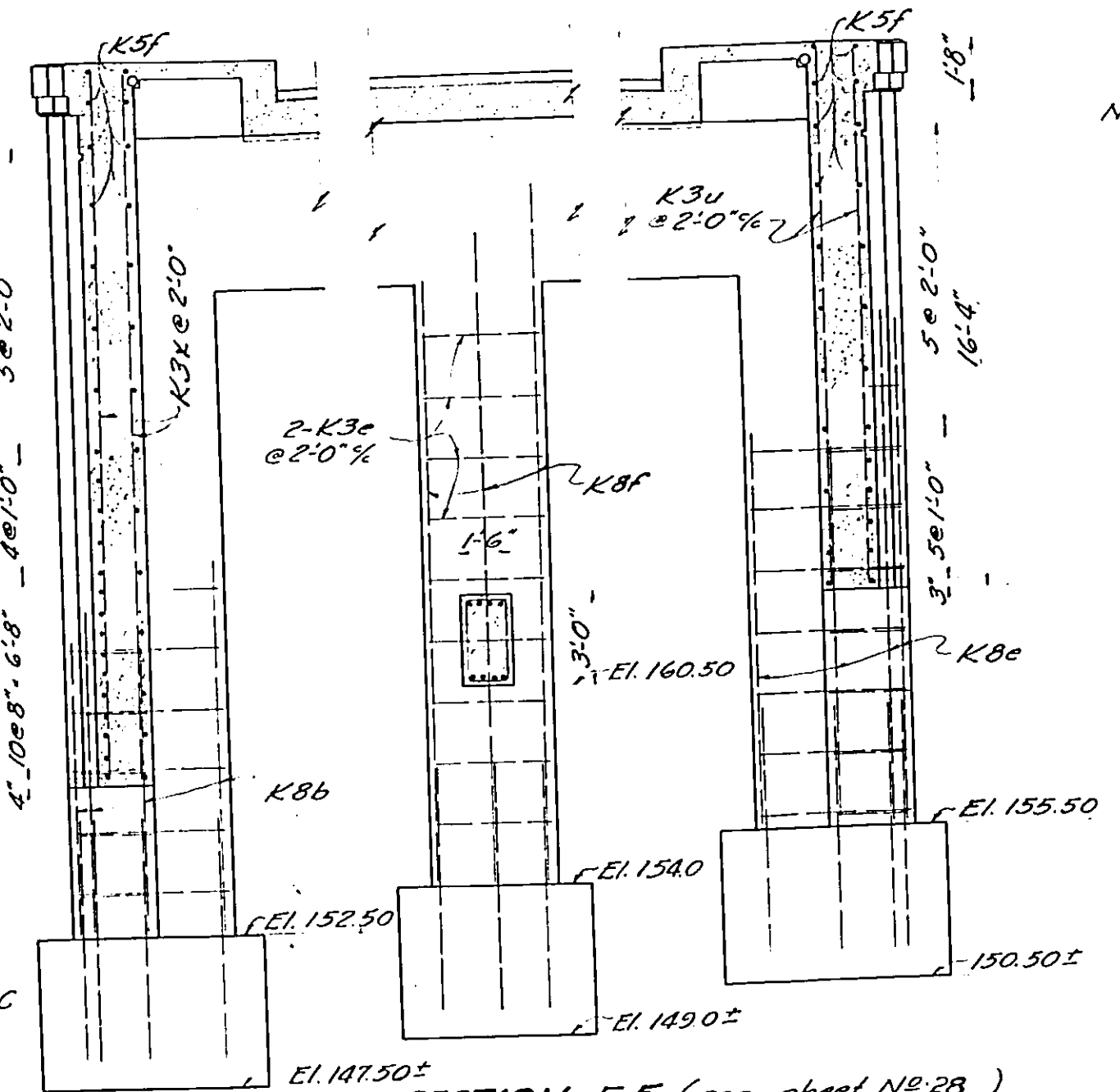


SECTION C-C (Sheet No. 27)  
THRU EAST END ABUTMENT  
40'-0" Curb to curb

SECTION D-D (Sheet No. 27)  
THRU EAST END ABUTMENT

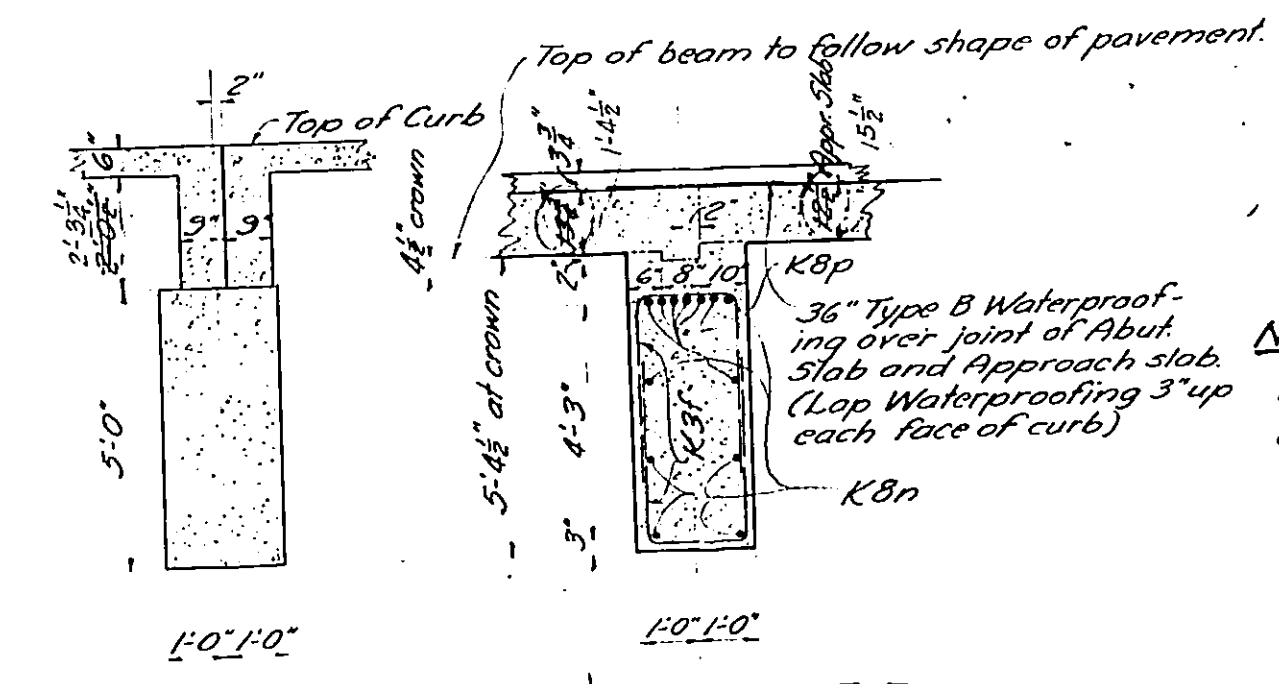


SECTION E-E (see sheet No. 28)  
THRU WEST END ABUTMENT  
(All details not shown are identical with Section C-C)



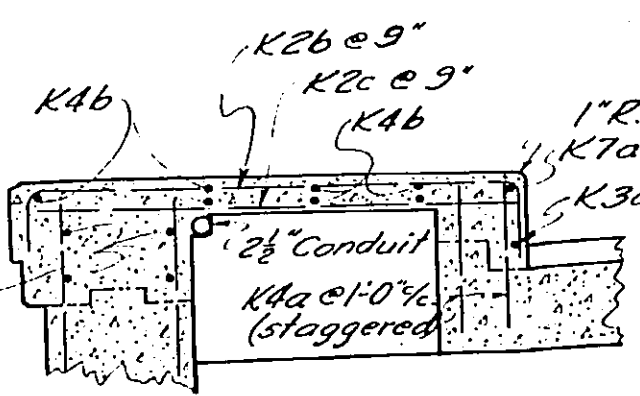
SECTION F-F (see sheet No. 28)  
THRU WEST END ABUTMENT  
(All details not shown are identical with those in Section D-D)

NOTE: Carry all footings in D-D and F-F at least 5'-0" into shale.



SECTION A-A

SECTION B-B



SIDEWALK DETAIL G-G  
(Sidewalk Details in Section C-C Similar)

NOTE: No construction joints other than shown will be allowed; all construction joints shown, however, are optional and may be left out.

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**END ABUTMENT  
CROSS-SECTIONS  
BROOKPARK VIADUCT  
OVER ROCKY RIVER  
S.H. 460 SEC. E, CUYAHOGA COUNTY**

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
				J.S.O.	11-22-32	

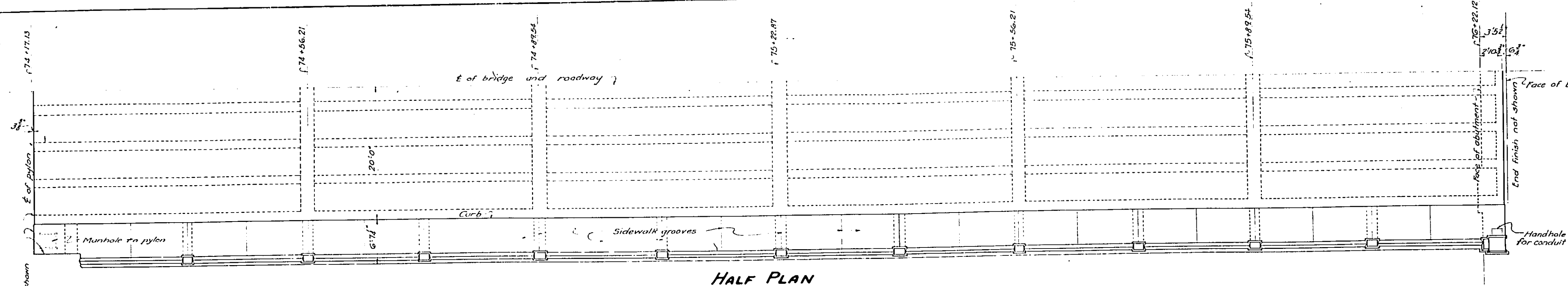
11-22-32



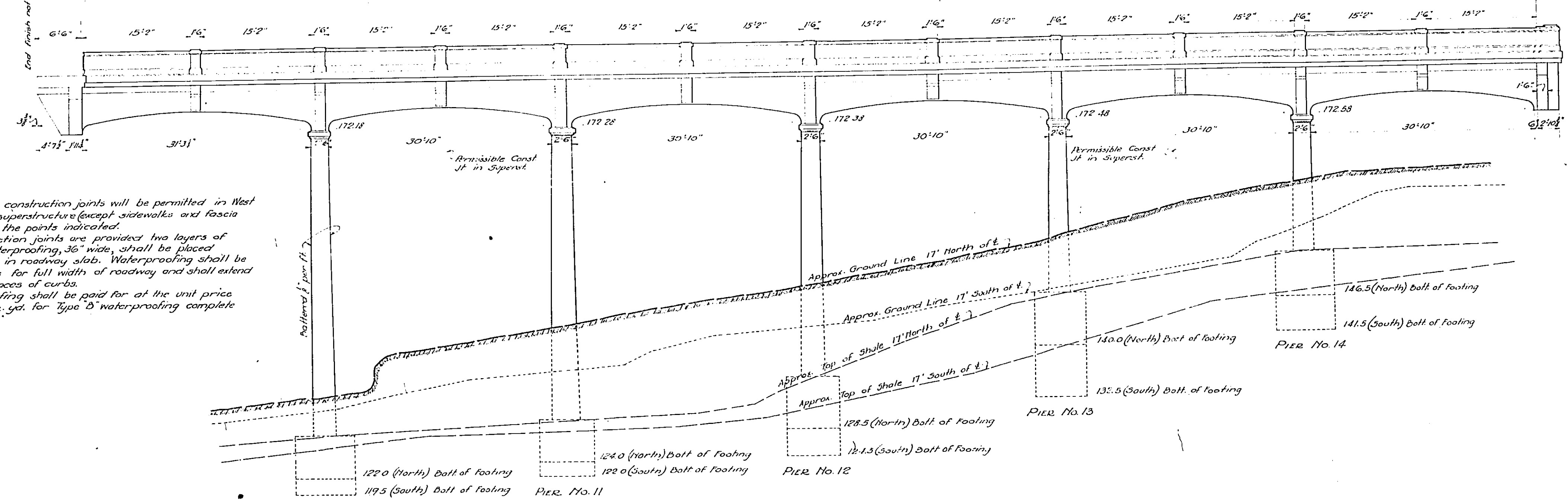




CUYAHOGA COUNTY  
S.H. 460 SEC. E-1



HALF PLAN



ELEVATION

Transverse construction joints will be permitted in West Approach superstructure (except sidewalks and fascia beams) at the points indicated. If construction joints are provided two layers of Type D waterproofing, 36" wide, shall be placed over joint in roadway slab. Waterproofing shall be continuous for full width of roadway and shall extend 3' up on faces of curbs. Waterproofing shall be paid for at the unit price bid per sq. yd. for Type D waterproofing complete in place.

**ESTIMATED QUANTITIES**  
SUPERSTRUCTURE AND PIERS

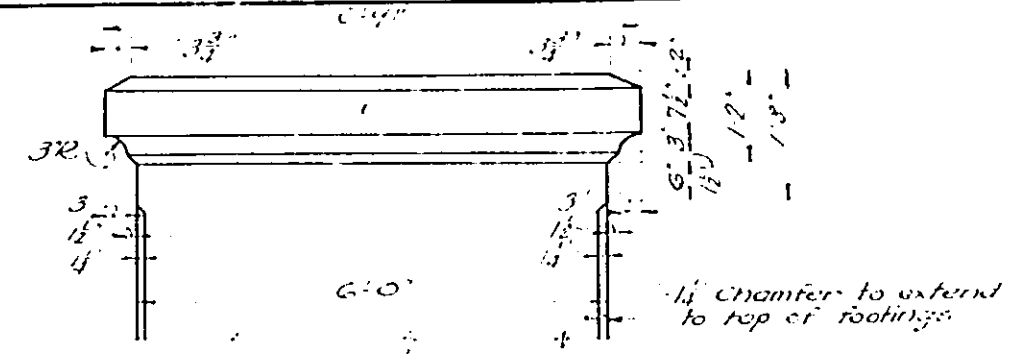
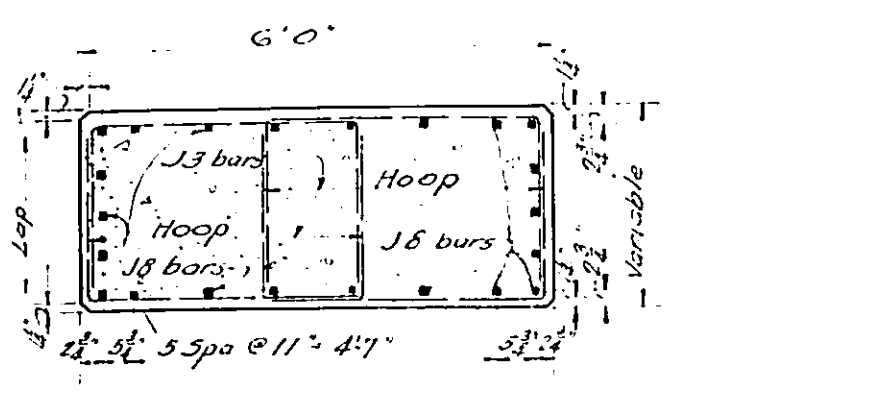
Concrete Class A	673	Cu. Yds.
Concrete Class B	229	Cu. Yds.
Concrete Class C	178	Cu. Yds.
Shale Excavation	175	Cu. Yds.
Earth Excavation	386	Cu. Yds.
Type B Waterproofing	27	Sq. Yds.

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**GENERAL PLAN AND ELEVATION  
OF WEST APPROACH  
BROOKPARK VIADUCT  
OVER ROCKY RIVER  
S.H. 460 SEC. E-1 CUYAHOGA COUNTY**

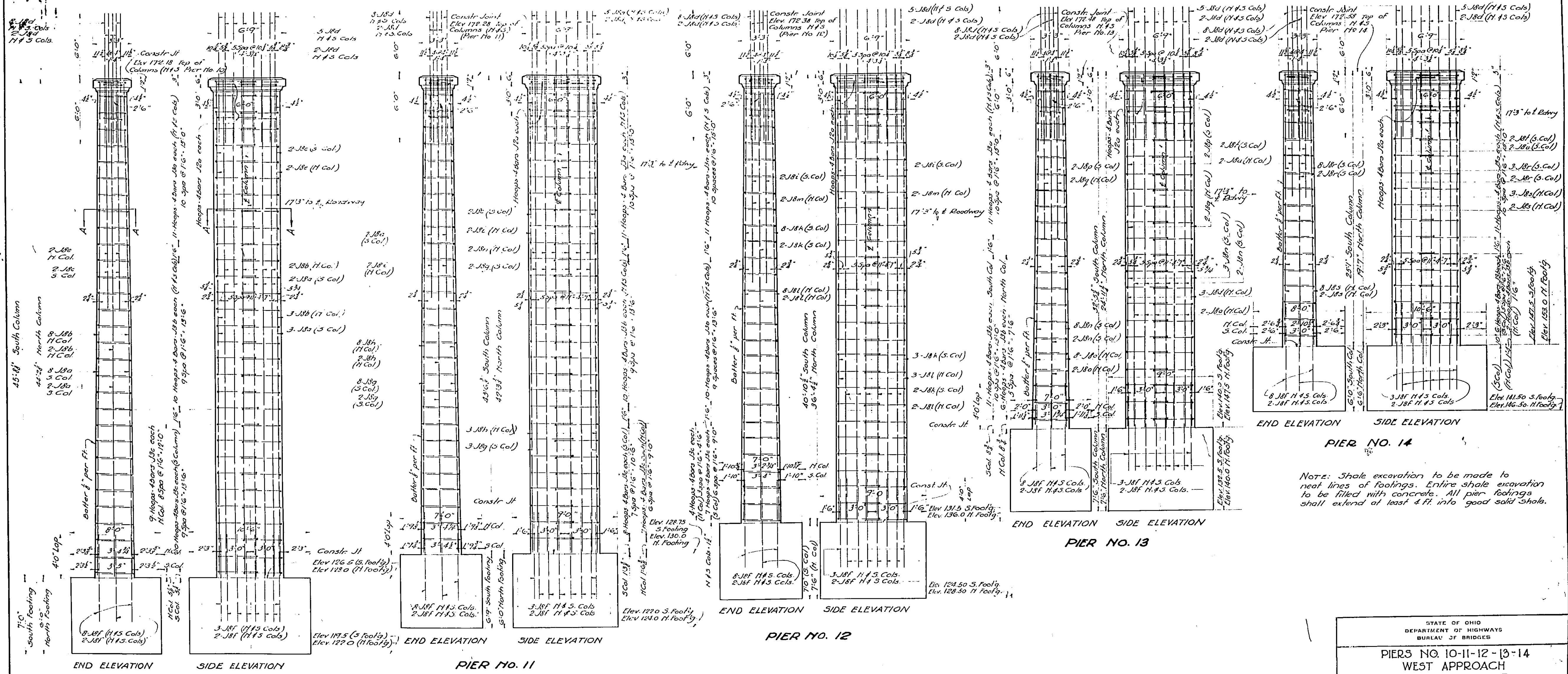
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
ggt	ggt	J.D.L.	W	K.H.B.	10/21/32	

CUYAHOGA COUNTY  
S.H. 460 SEC. E-1



TYPICAL SECTION THROUGH COLUMNS  
SEC. A-A

DETAIL OF PIER COLUMN CAPS



END ELEVATION SIDE ELEVATION  
PIER NO. 14

END ELEVATION SIDE ELEVATION  
PIER NO. 13

END ELEVATION SIDE ELEVATION  
PIER NO. 12

END ELEVATION SIDE ELEVATION  
PIER NO. 10

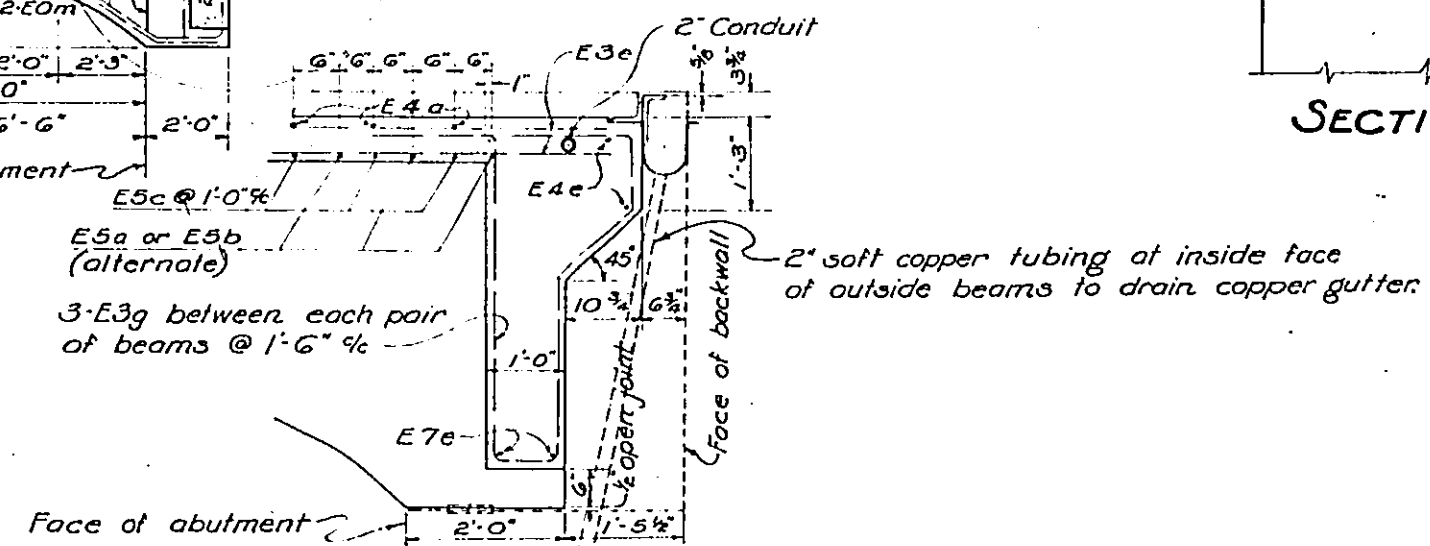
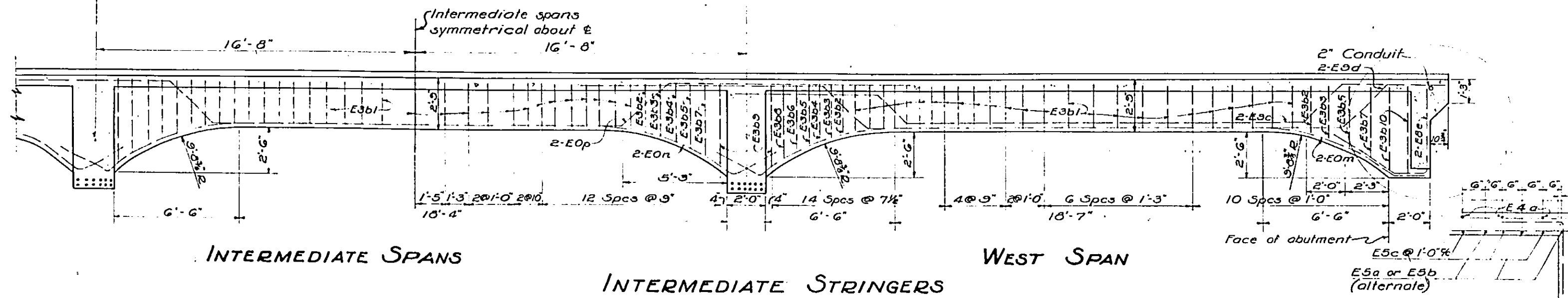
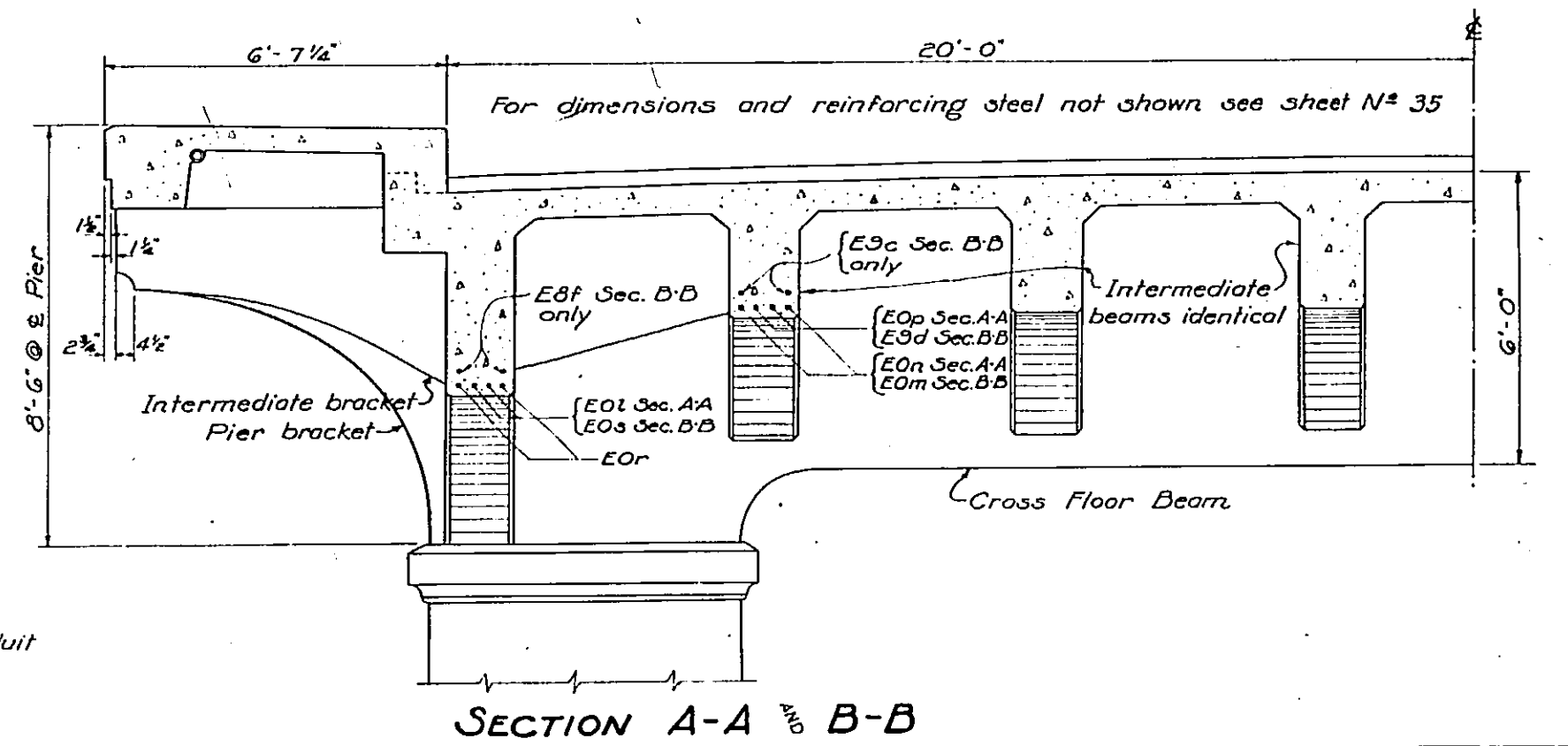
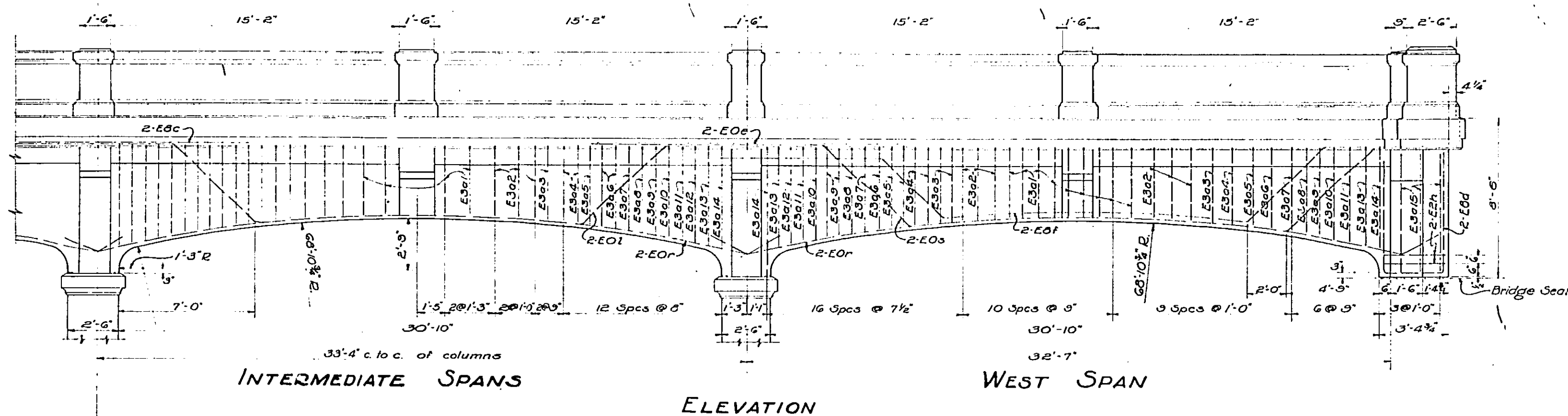
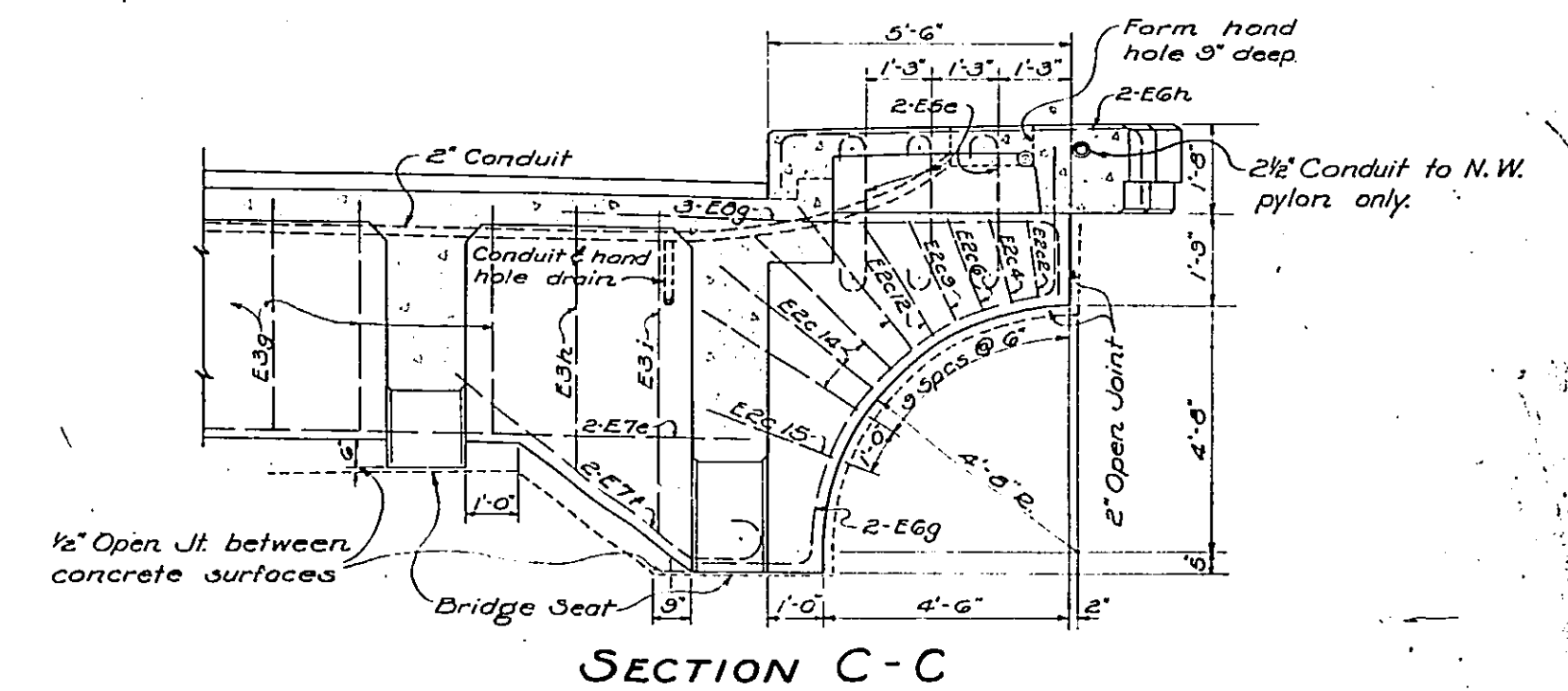
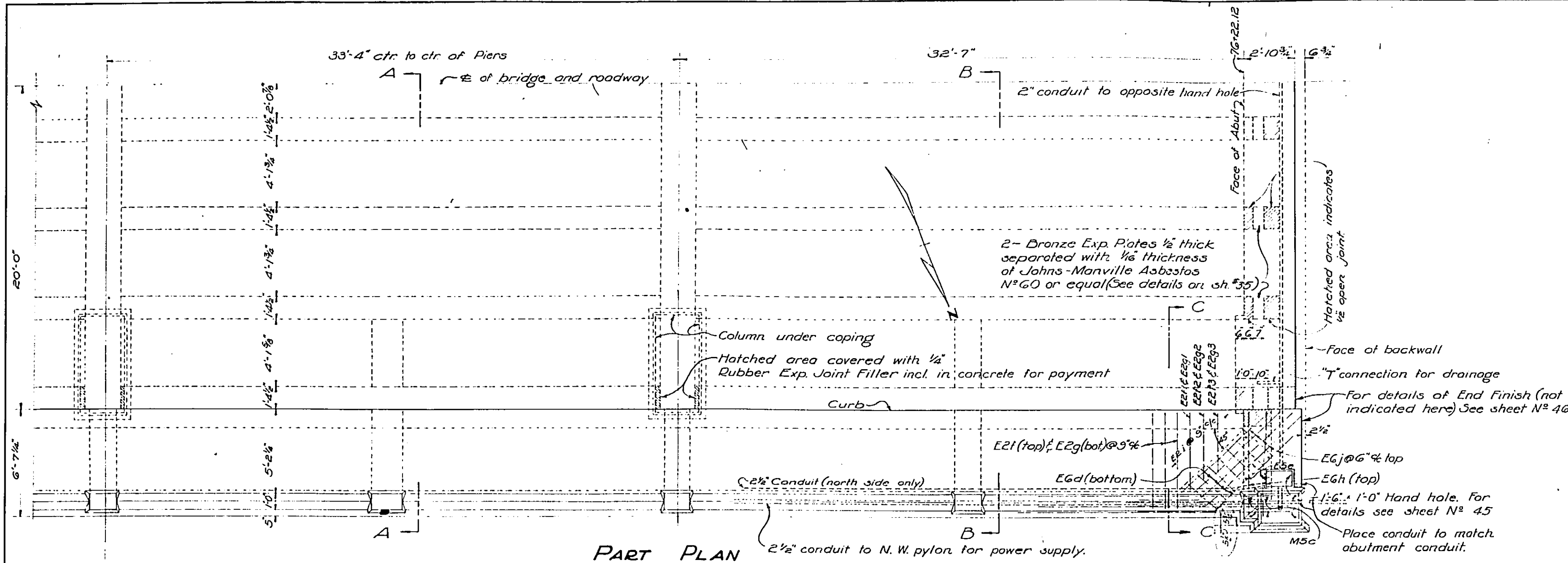
END ELEVATION SIDE ELEVATION  
PIER NO. 11

NOTE: Shale excavation to be made to neat lines of footings. Entire shale excavation to be filled with concrete. All pier footings shall extend at least 4 ft. into good solid shale.

~ DETAILS OF COLUMNS AND FOOTINGS ~

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES				
PIERS NO. 10-11-12-13-14 WEST APPROACH BROOKPARK VIADUCT OVER ROCKY RIVER				
S.H. 460 SEC. E-1 CUYAHOGA COUNTY				
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED
11/2/32	11/2/32	J.C.M.	W.F.	11/9/32
11/2/32	11/2/32			10/23/32

CUYAHOGA COUNTY  
S. H. 460 SEC. E-1

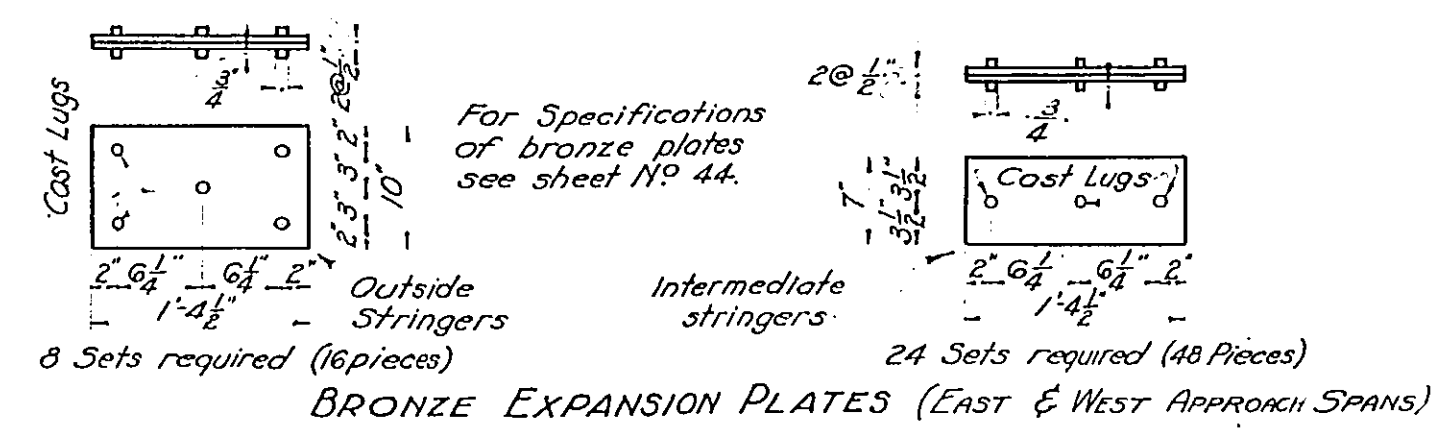
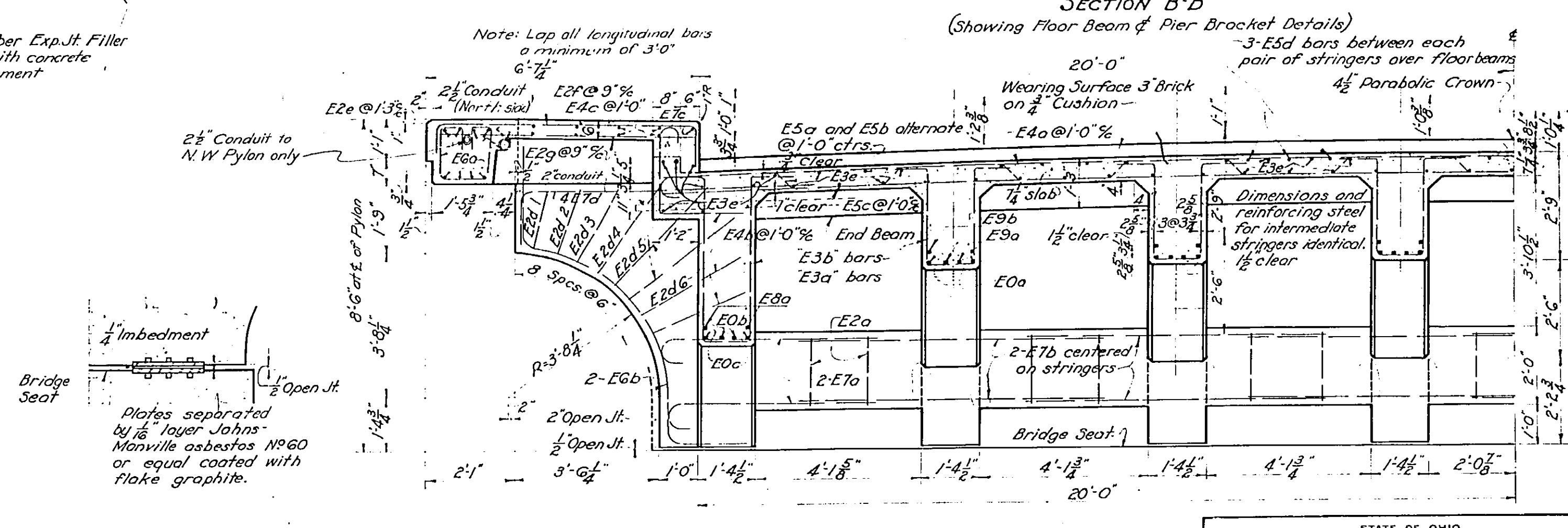
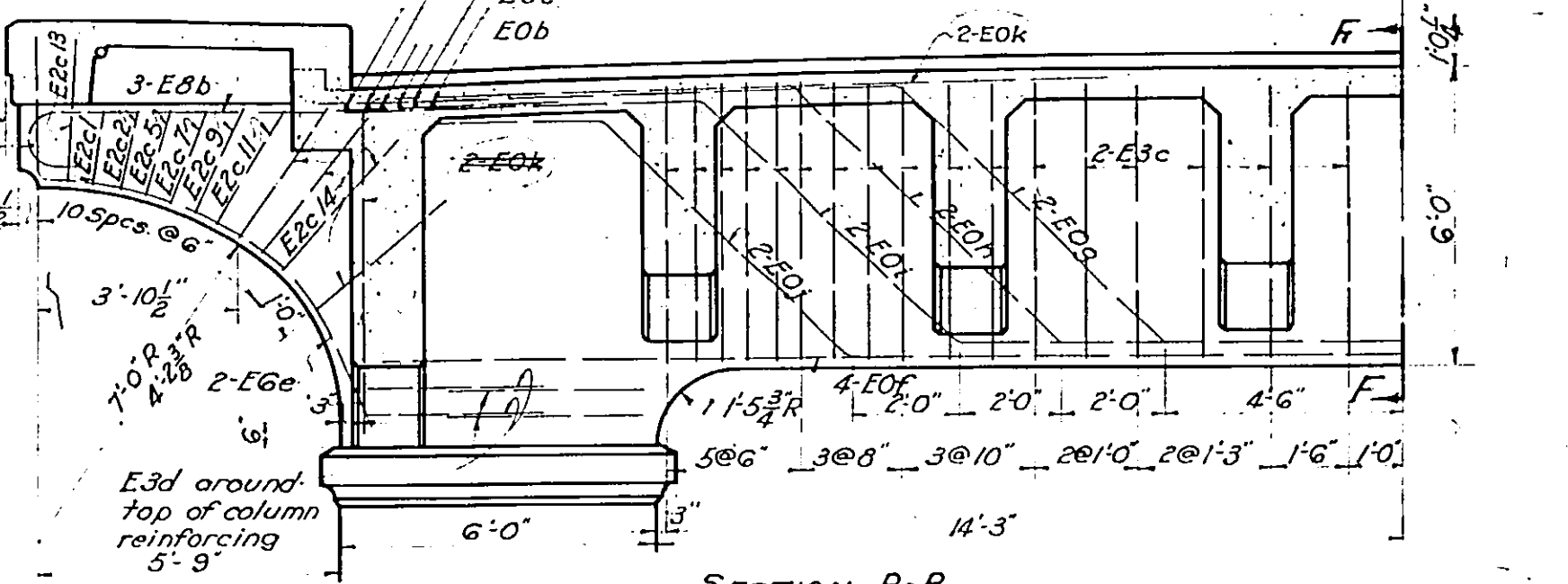
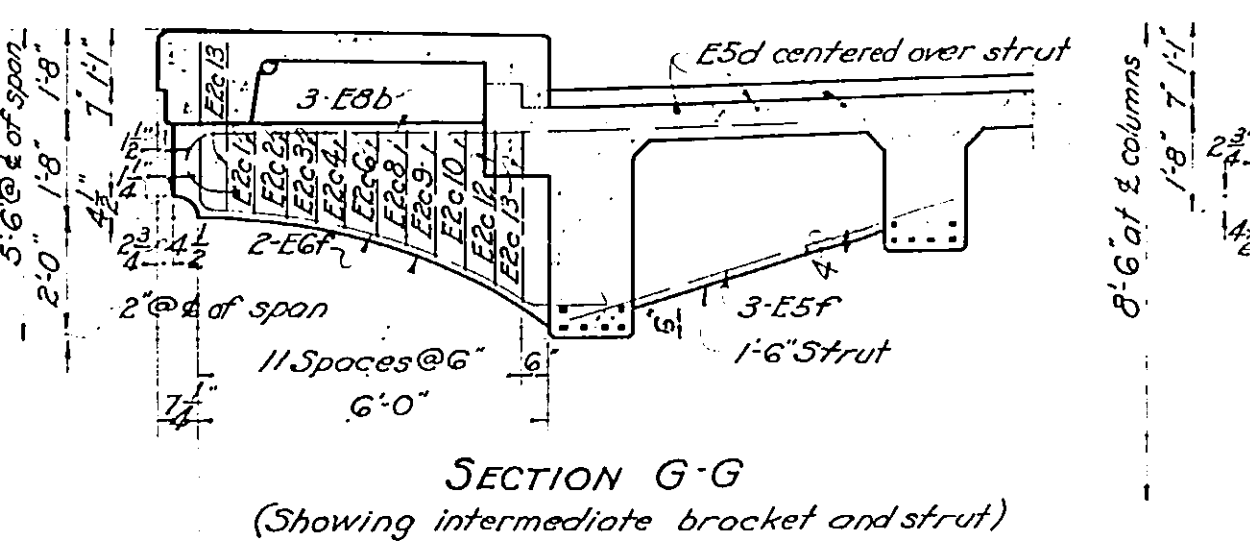
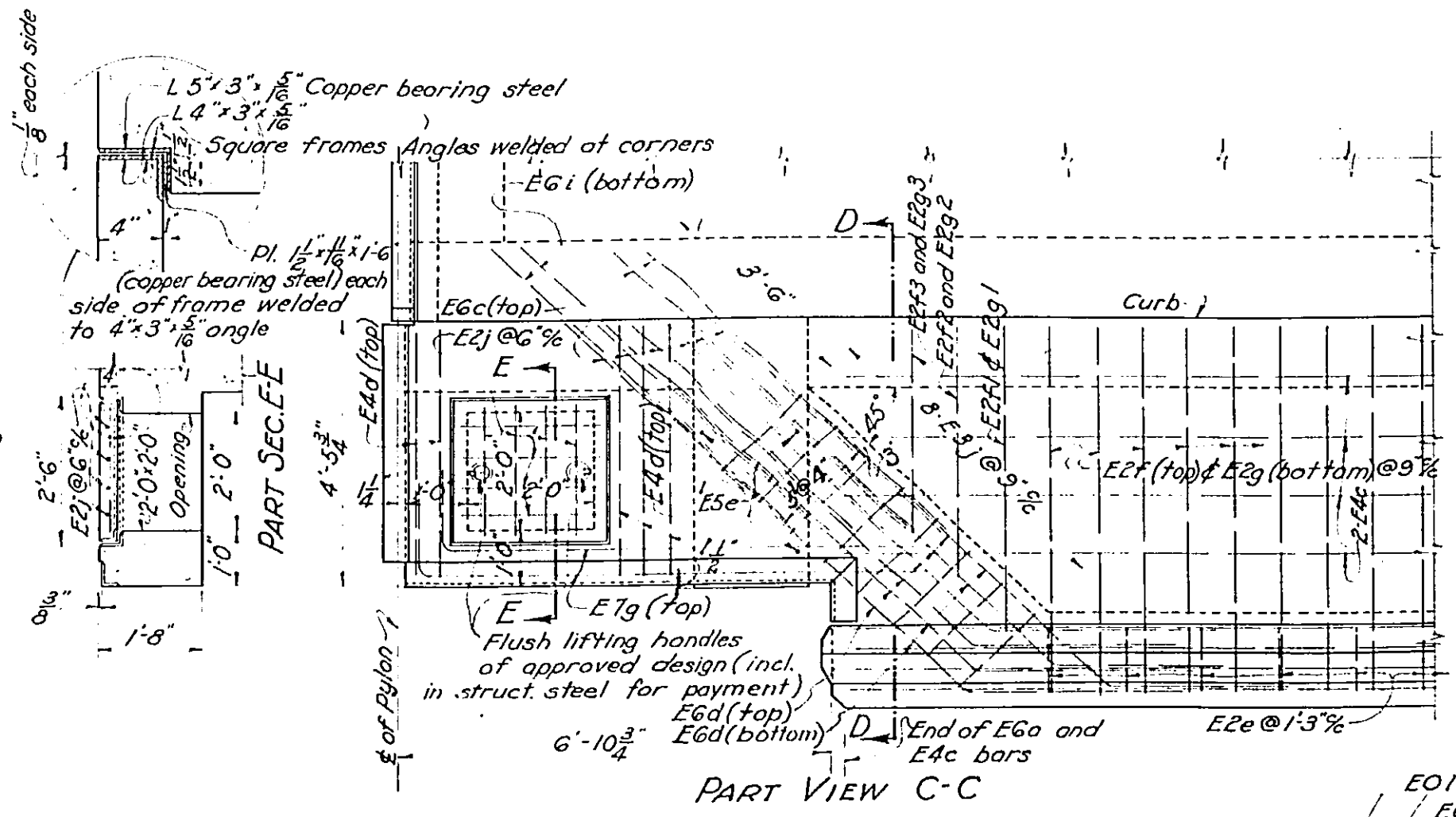
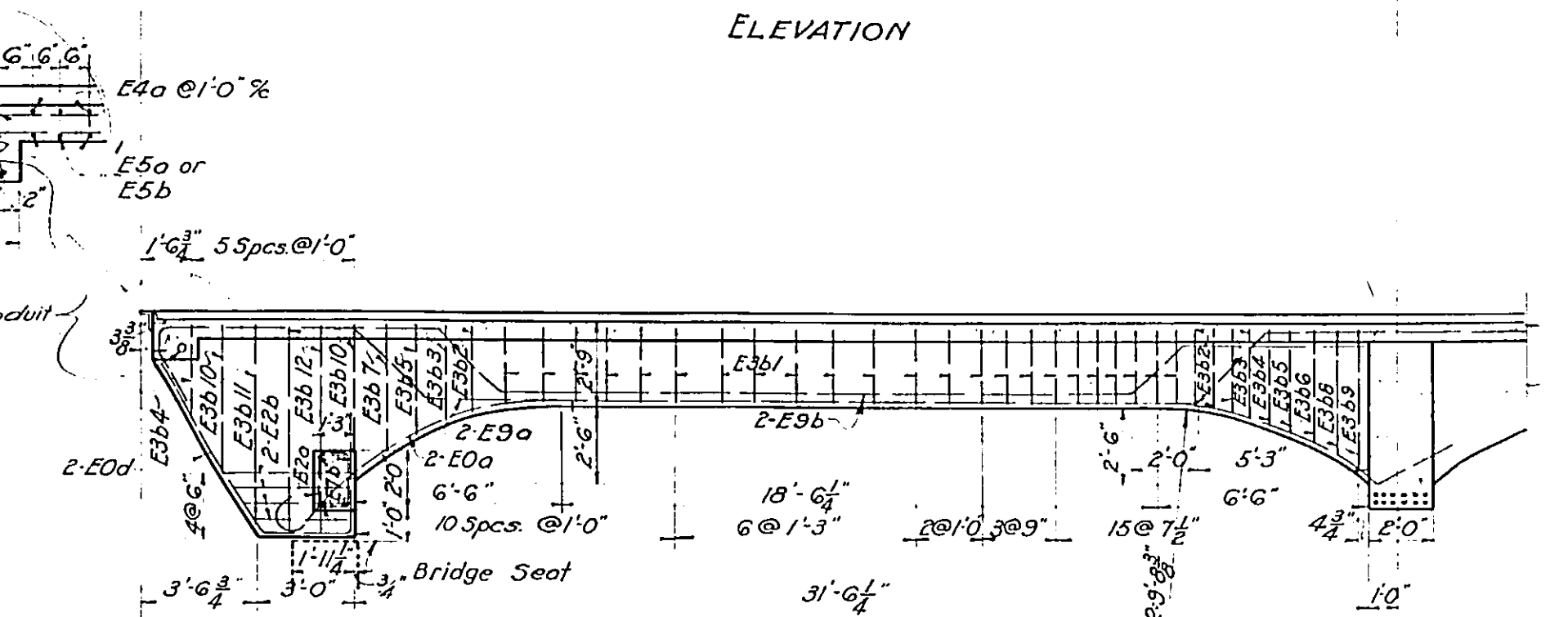
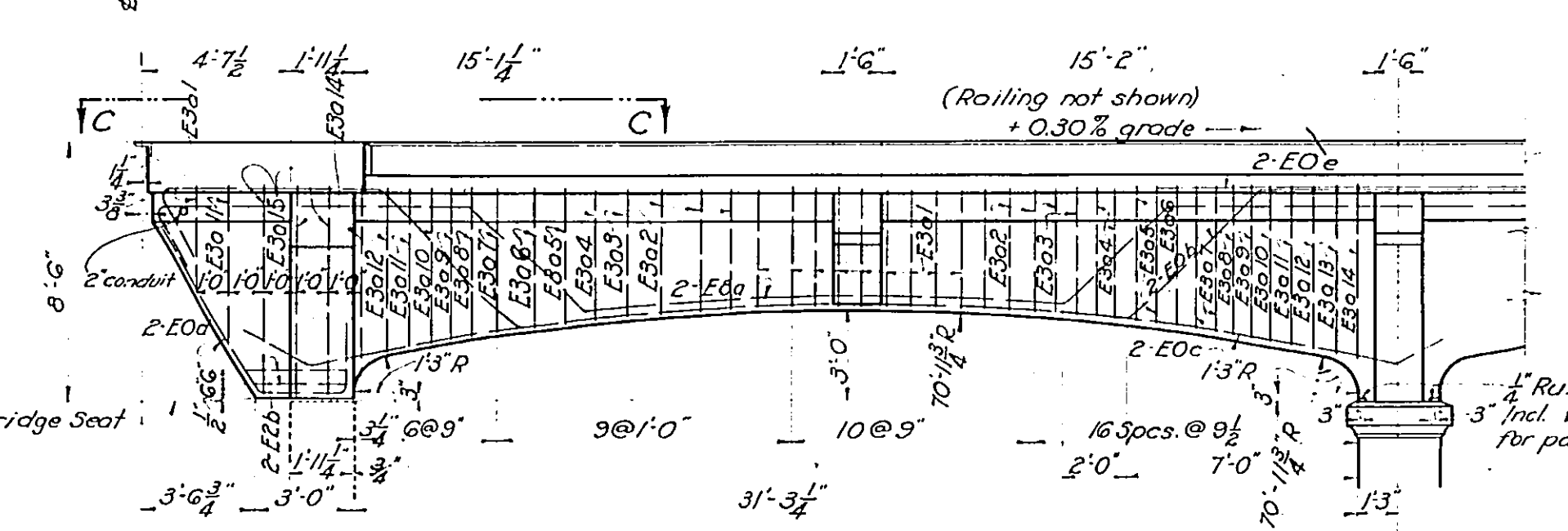
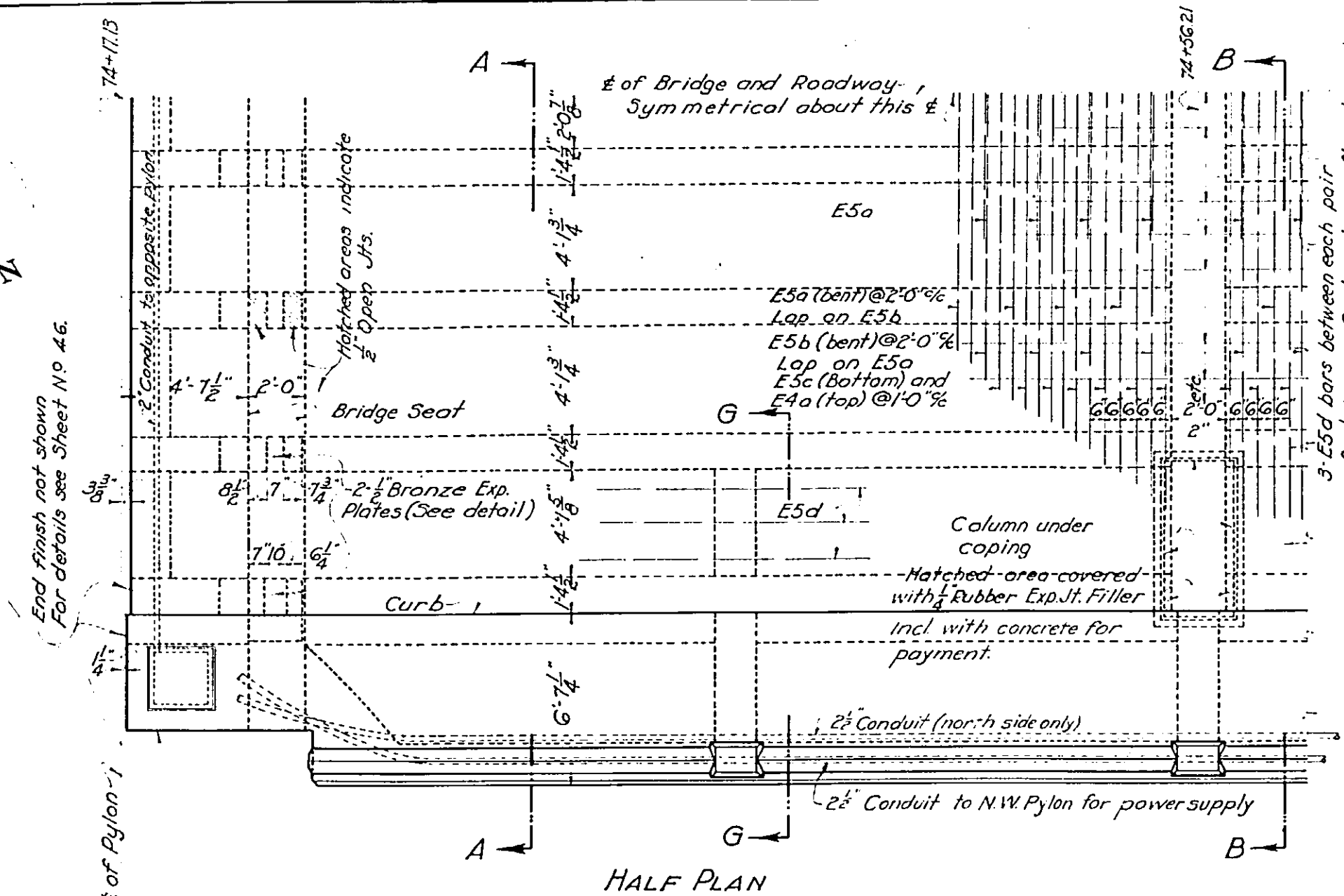


STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**INTERMEDIATE SPANS AND WEST SPAN OF WEST APPROACH BROOKPARK VIADUCT OVER ROCKY RIVER**  
S.H.460 SEC. E-1 CUYAHOGA COUNTY

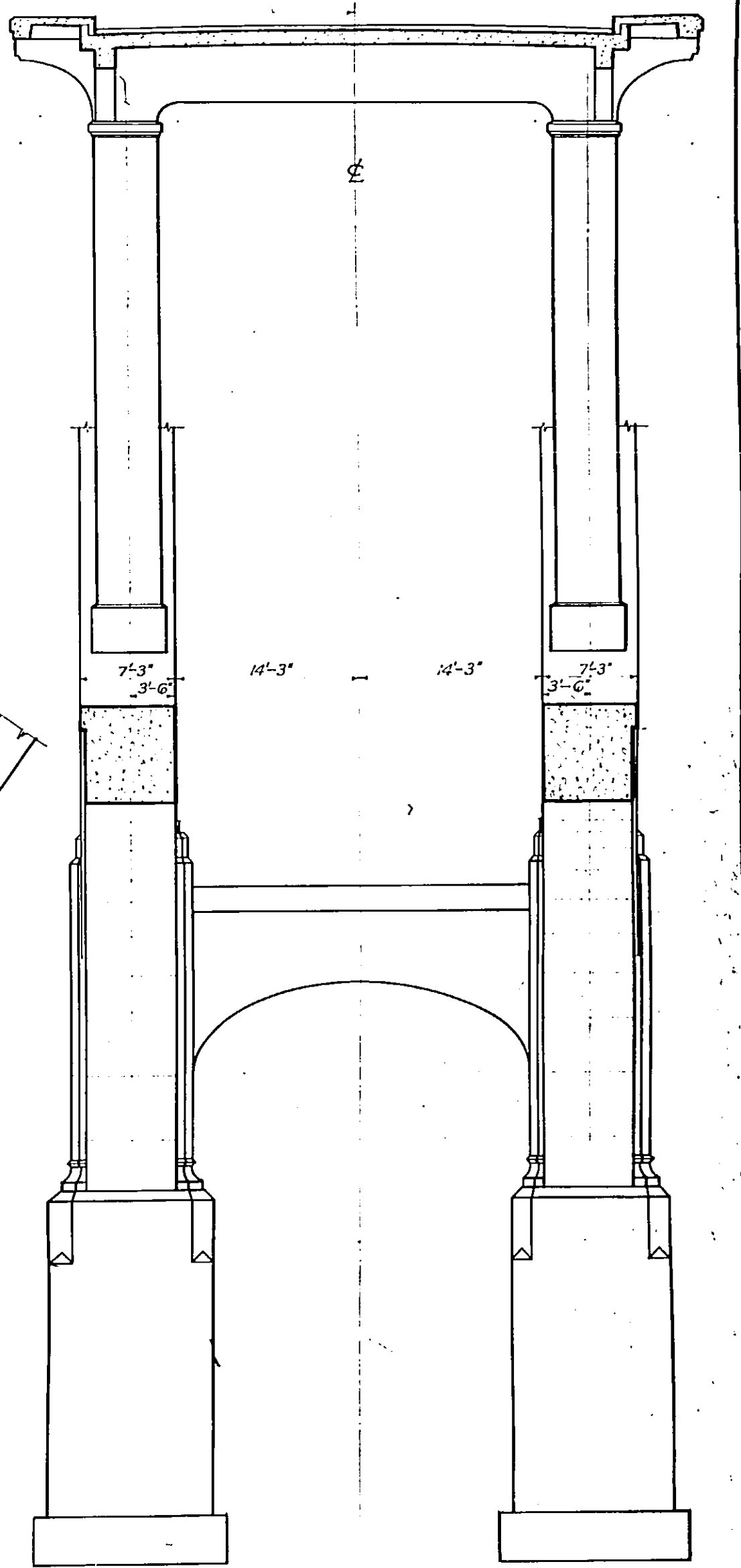
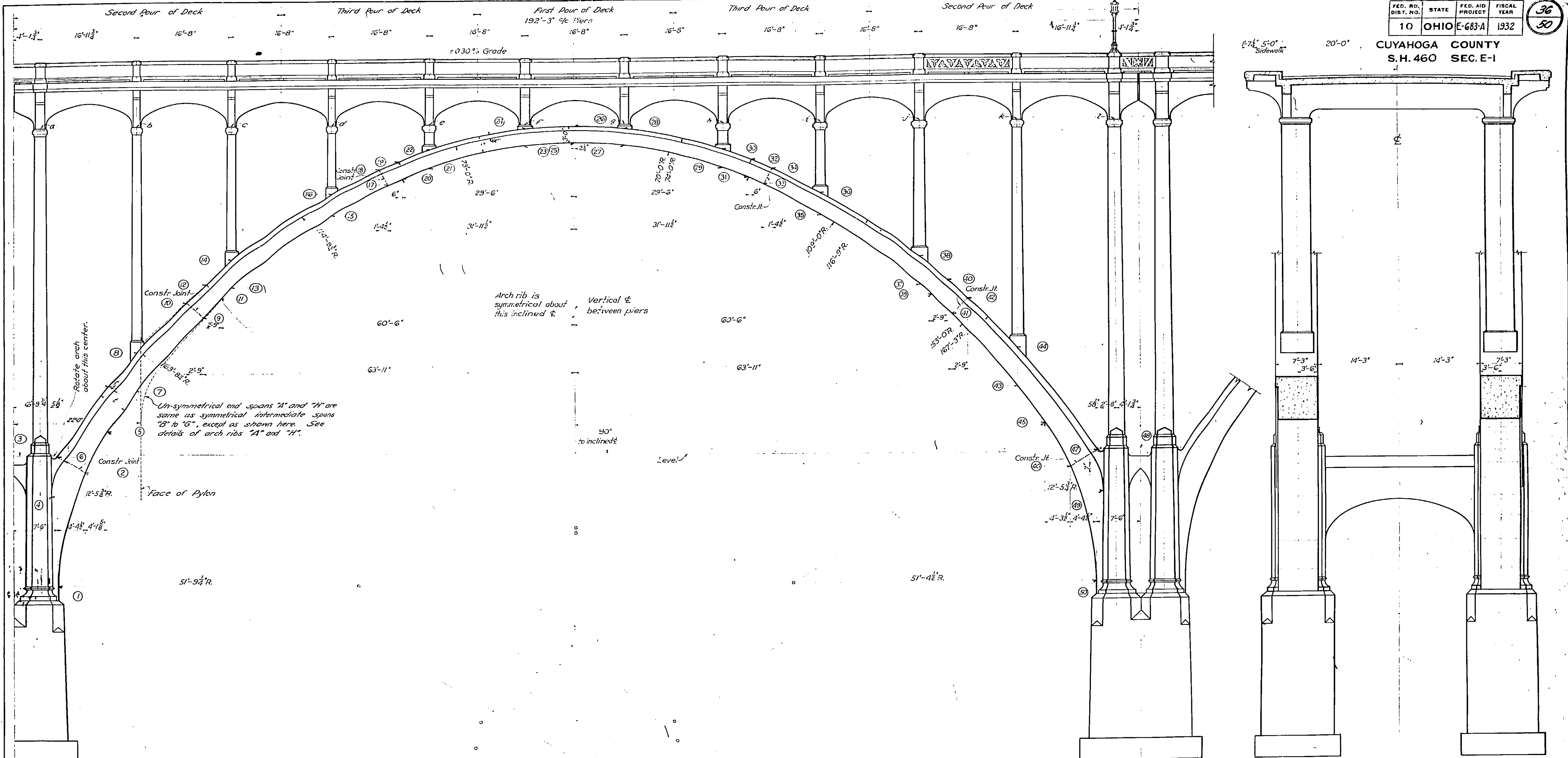
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
ART	ART	G.H.D.	WF	H.H.B.	10/24/32	11-22-32





STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES					
<b>EAST SPAN OF WEST APPROACH BROOKPARK VIADUCT OVER ROCKY RIVER</b>					
S.H. 460 SEC. E-1 CUYAHOGA COUNTY					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
J.P.	J.P.	J.P.	W.F.	H.H.B.	10/21/32
REVISED					
11/22/32					

CUYAHOGA COUNTY  
S.H. 460 SEC. E-1



TYPICAL SECTION

TABLE OF ELEVATIONS - ARCHES "B" TO "G" INCL.

Elev. No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Arch B	84.37	105.20	108.35	100.69	112.80	108.08	120.12	126.97	133.28	135.99	136.81	139.36	133.01	143.90	151.97	155.78	157.36	160.16	161.71	158.54	160.53	163.79	164.66	167.68	165.16
Arch C	84.95	105.78	108.93	101.27	113.38	108.66	120.69	127.55	133.86	136.57	137.39	139.93	133.59	144.43	152.54	156.36	157.93	160.73	162.28	159.12	161.11	164.37	165.23	168.26	165.73
Arch D	85.52	106.35	109.50	101.85	113.95	109.24	121.27	128.13	134.43	137.14	137.96	140.51	140.16	145.05	153.12	156.93	158.51	161.31	162.86	159.70	161.68	164.94	165.81	168.83	166.31
Arch E	86.10	106.93	110.08	102.42	114.53	109.81	121.85	128.70	135.01	137.72	138.54	141.09	140.74	145.63	153.70	157.51	159.09	161.89	163.44	160.27	162.26	165.52	166.39	169.41	166.89
Arch F	86.68	107.51	110.66	103.00	115.11	110.39	122.42	129.28	135.59	138.30	139.12	141.66	141.31	146.21	154.27	158.09	159.66	162.46	164.01	160.85	162.84	166.10	166.96	169.99	167.46
Arch G	87.25	108.08	111.23	103.58	115.69	110.97	123.00	129.86	136.17	138.88	139.69	142.24	141.89	146.79	154.85	158.67	160.24	163.04	164.59	161.43	163.41	166.67	167.54	170.57	168.04

Elev. No.	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Arch B	168.16	164.66	167.69	160.55	163.82	158.73	161.90	157.56	160.37	152.06	155.87	139.20	144.08	137.20	139.77	133.69	136.42	120.49	127.77	113.50	105.69	108.66	108.93	101.27	84.95
Arch C	168.73	165.23	168.27	161.13	164.40	159.31	162.48	158.14	160.95	152.64	156.45	139.78	144.66	137.78	140.34	134.27	137.00	121.07	127.35	114.08	106.27	103.24	103.50	101.85	85.52
Arch D	169.31	165.82	168.85	161.71	164.98	159.89	163.05	158.72	161.52	153.21	157.02	140.35	145.23	138.35	140.92	134.85	137.58	121.64	127.92	114.65	106.85	103.81	110.08	102.42	86.10
Arch E	169.89	166.39	169.42	162.28	165.55	160.46	163.63	159.29	162.10	153.79	157.60	140.93	145.81	138.93	141.50	135.42	138.15	122.22	128.50	115.23	107.42	110.39	110.66	103.00	86.68
Arch F	170.46	166.97	170.00	162.86	166.13	161.04	164.21	159.87	162.68	154.37	158.18	141.51	146.39	139.51	142.07	136.00	138.73	122.80	129.08	115.81	108.00	110.97	111.23	103.58	87.25
Arch G	171.04	167.55	170.58	163.44	166.71	161.62	164.78	160.45	163.25	154.94	158.75	142.08	146.97	140.08	142.65	136.58	139.31	123.37	129.65	116.39	108.58	111.54	111.81	104.13	87.83

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

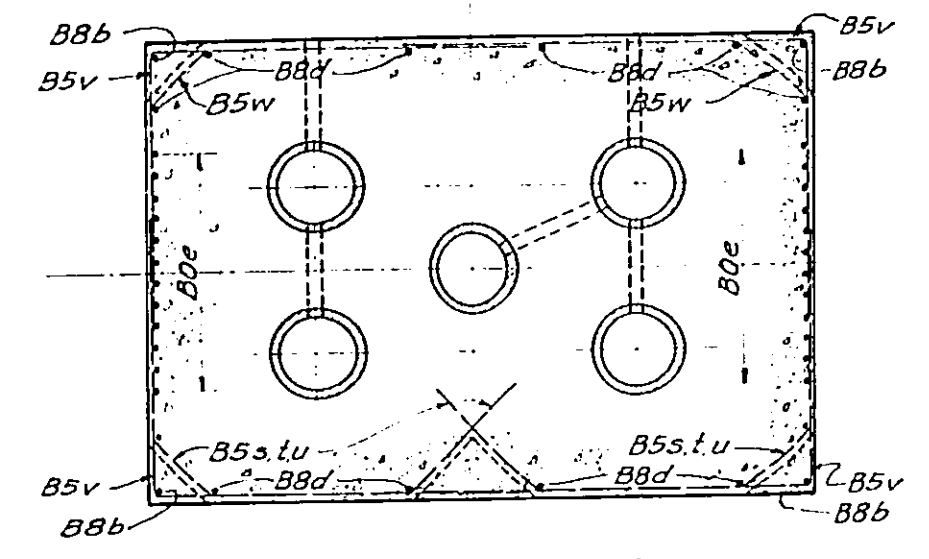
**ELEVATION - ARCHES "B" TO "G"**

**BROOKPARK VIADUCT  
OVER ROCKY RIVER**

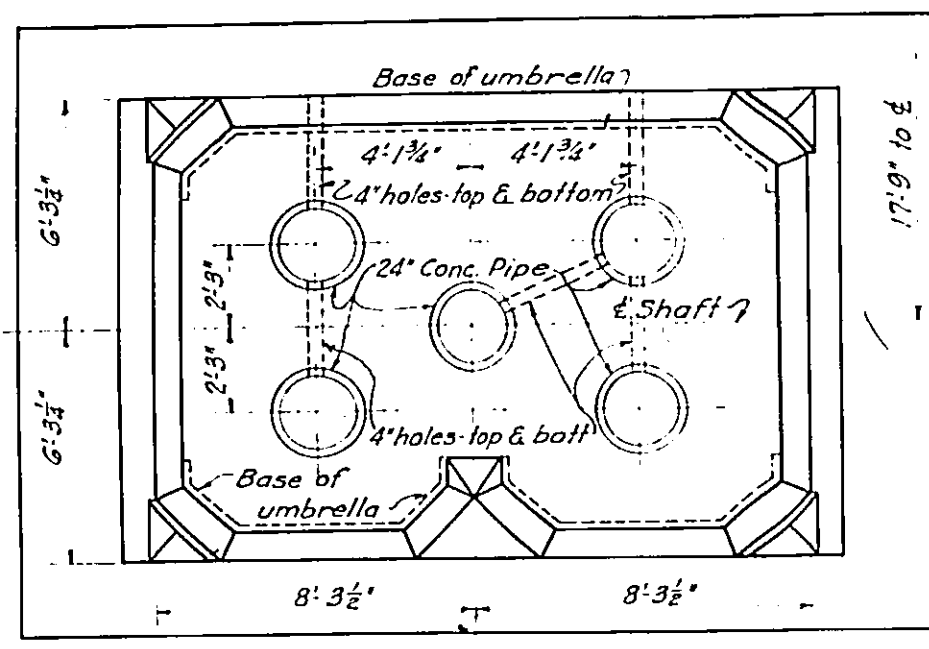
**S.H. 460 SEC. E-1. CUYAHOGA COUNTY**

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
C.P.S.	C.P.S.	W	H.F.E.	10/1/32	9-25-32 9-7-33

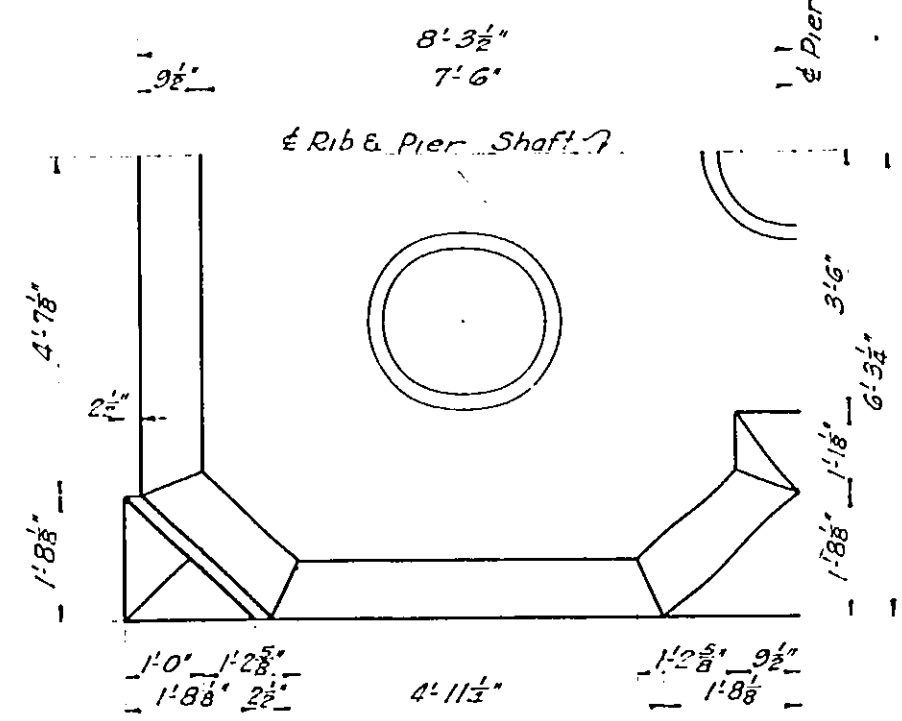
CUYAHOGA COUNTY  
S.H. 460 SEC. E-1



SECTION A-A

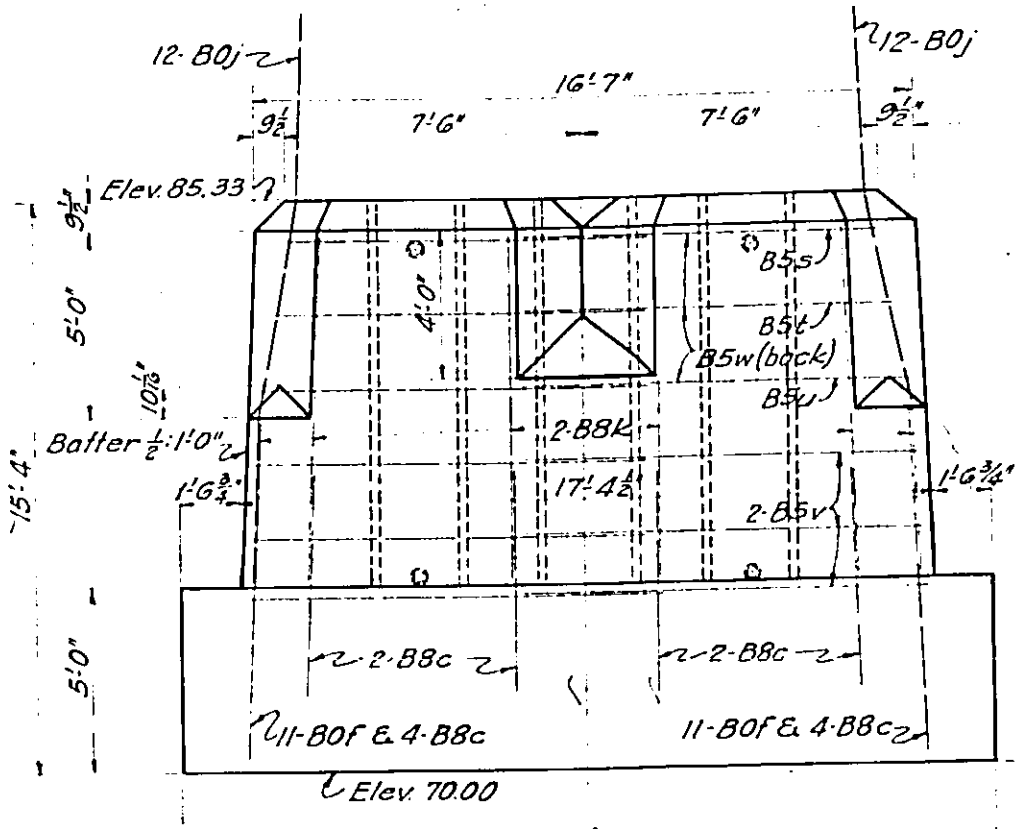


TYPICAL PLAN

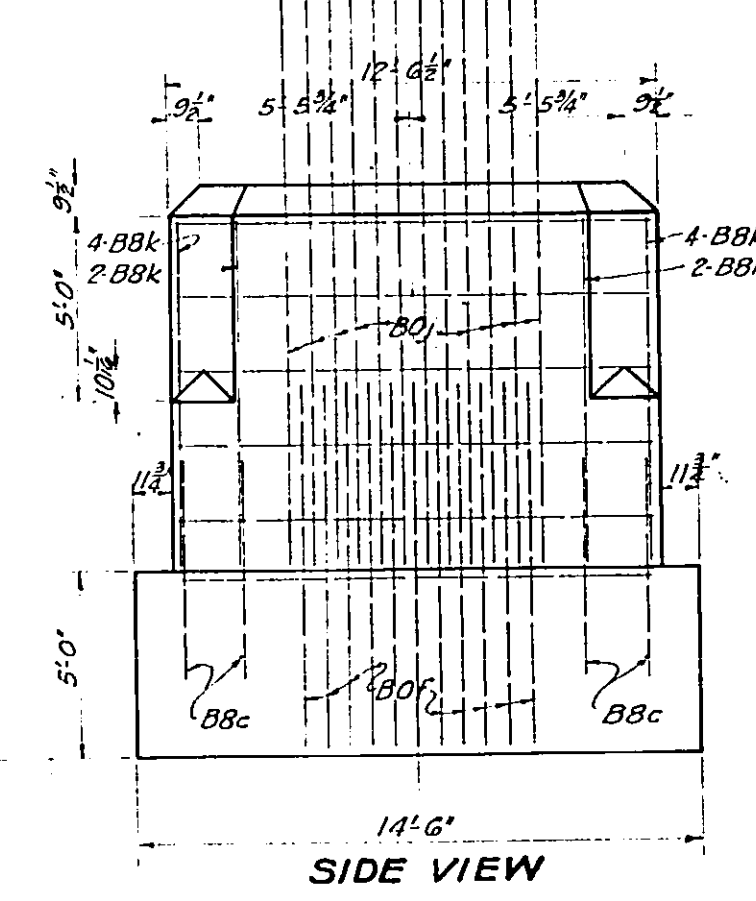


DETAIL AT TOP OF SHAFT

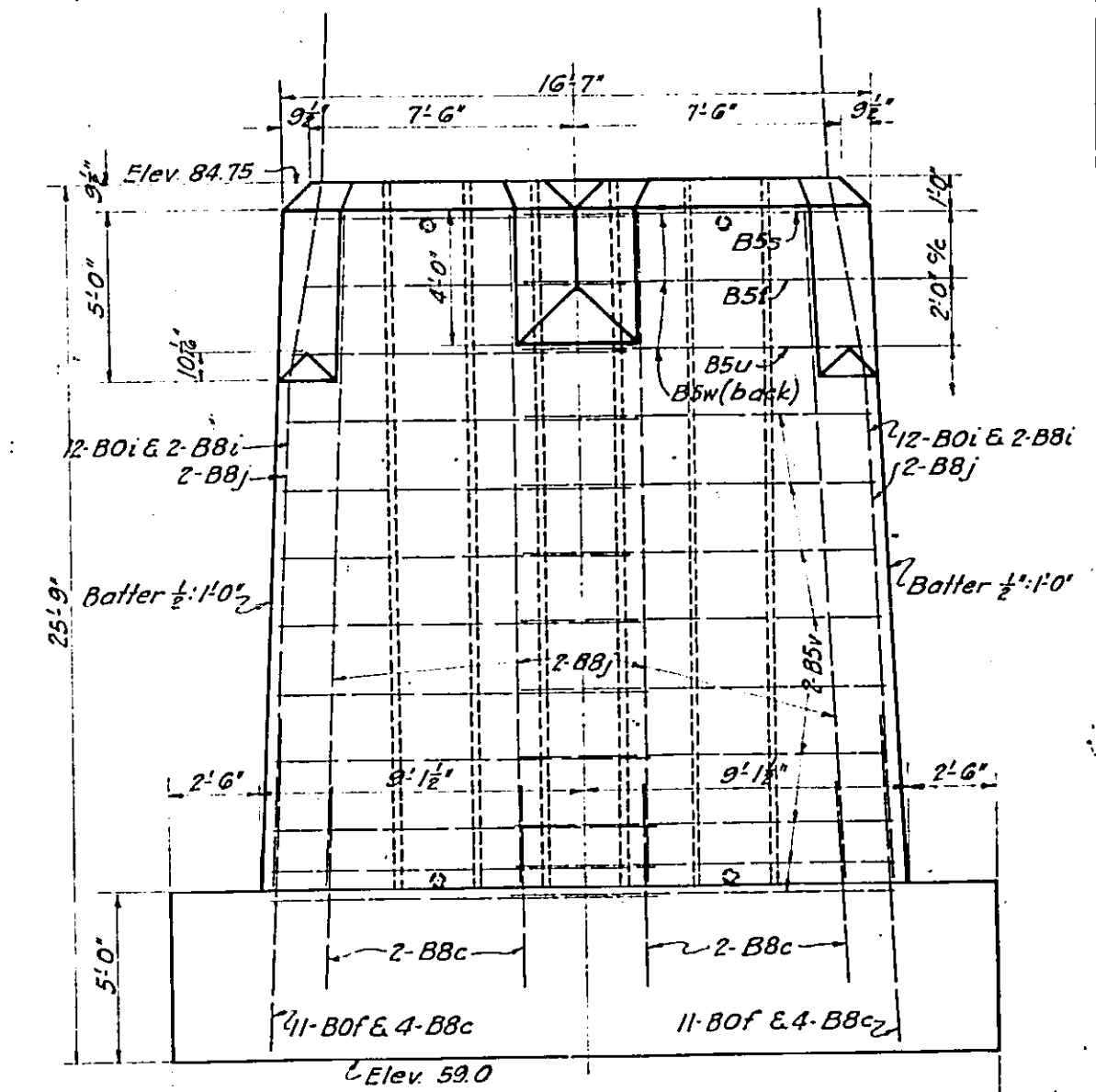
5 lines 24" Plain Concrete Pipe to be placed in each pier shaft, to reduce internal heat after concrete is placed. Tops of 24" pipes to remain open during curing of shafts, but shall be tightly and strongly sealed before umbrellas are placed. 4" holes to be provided at top and bottom of each pipe, as shown, to insure drainage and prevent the formation of gas. Outlets on inside face of shaft only. All footings to be carried at least 3'-6" into solid shale.



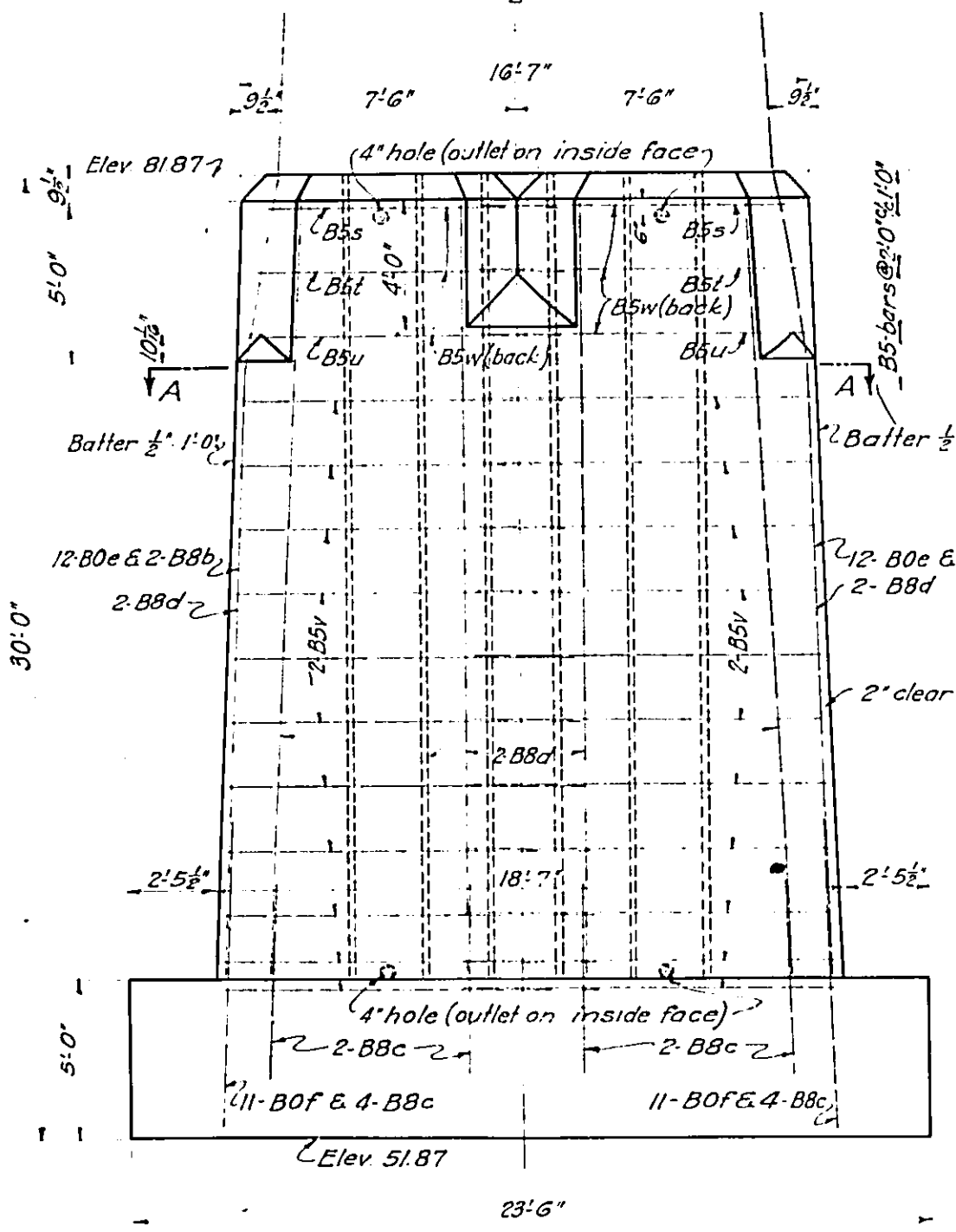
END VIEW - PIER 9  
2 SHAFTS REQ'D.



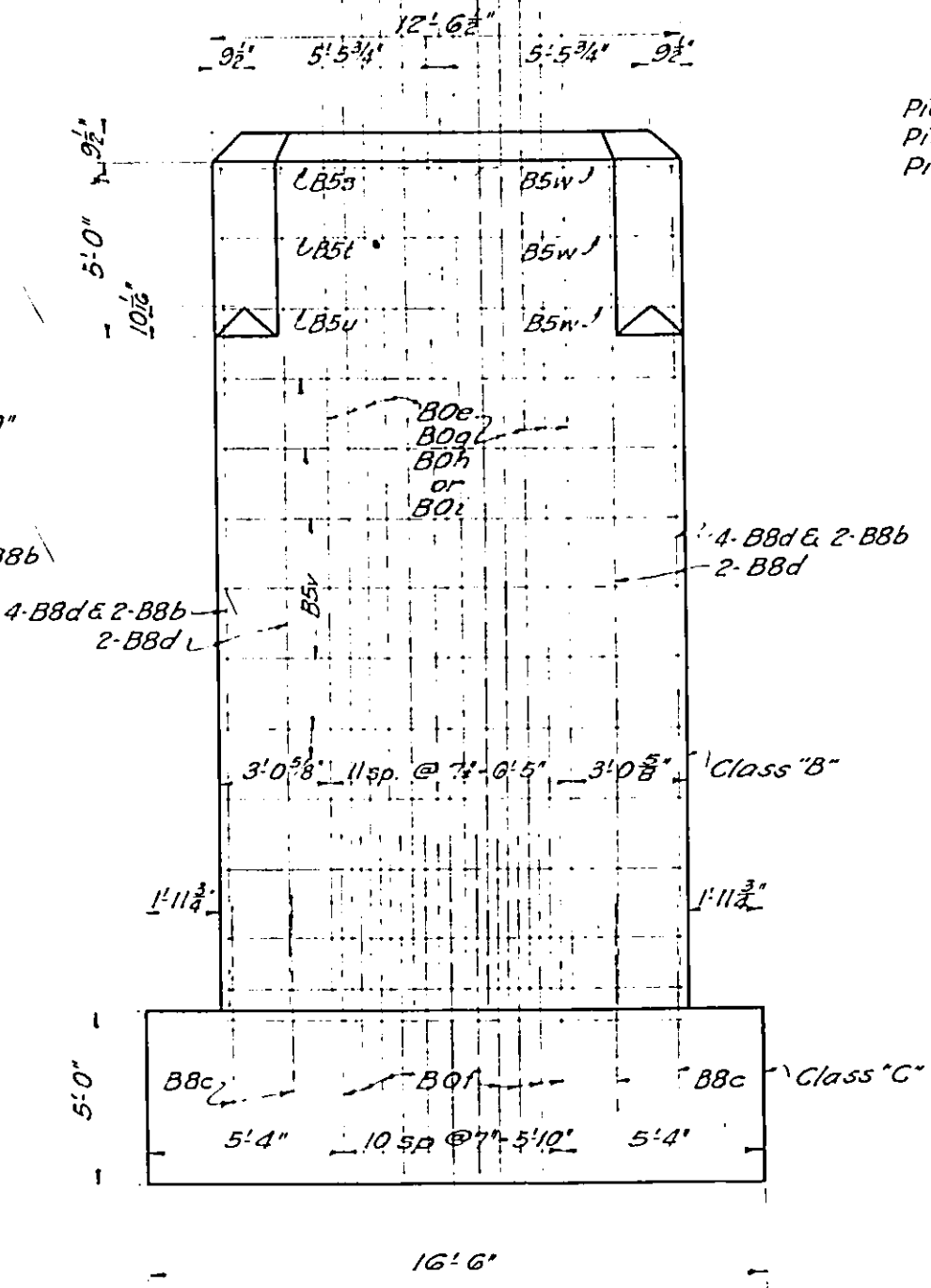
SIDE VIEW



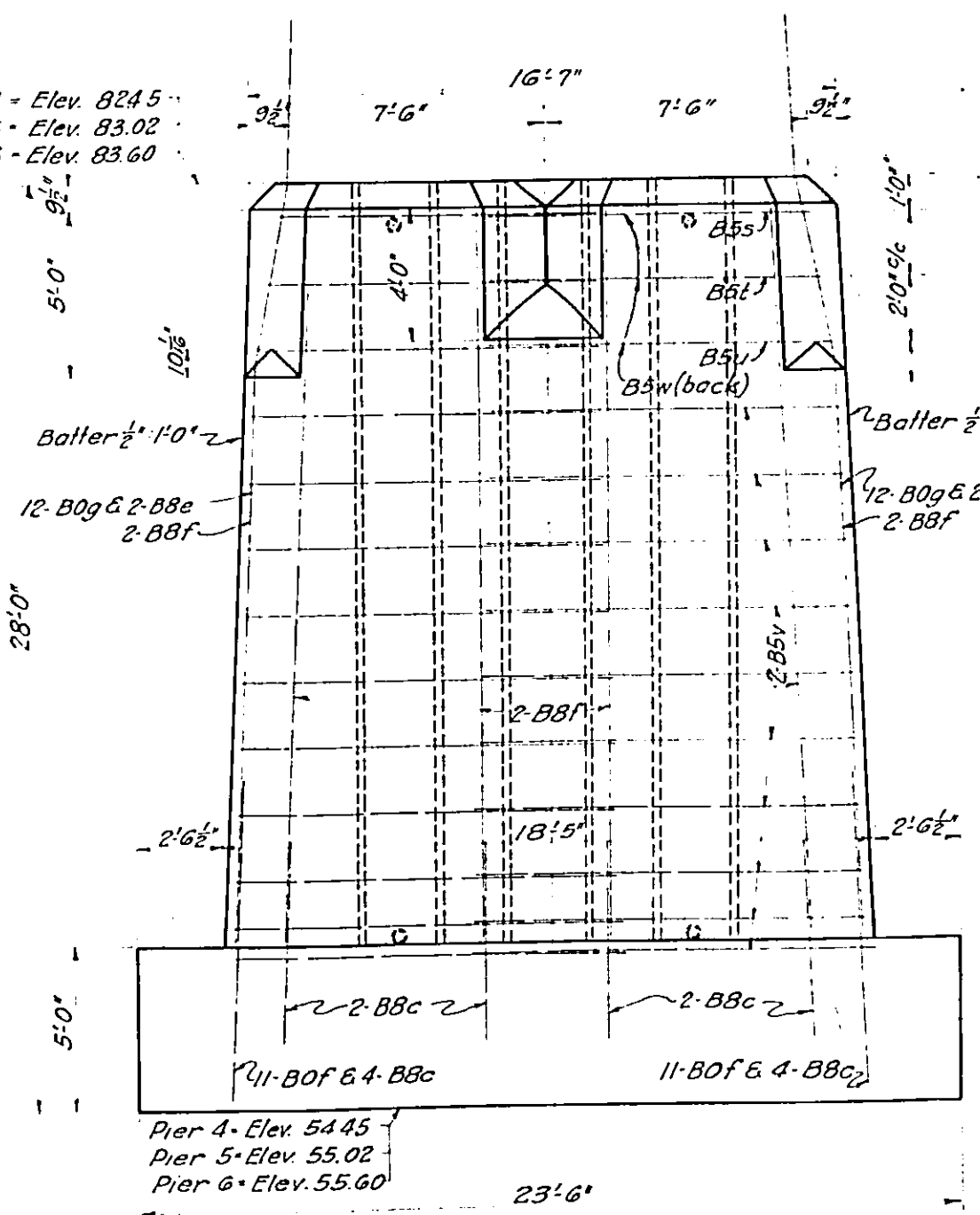
END VIEW - PIER 8  
2 SHAFTS REQ'D.



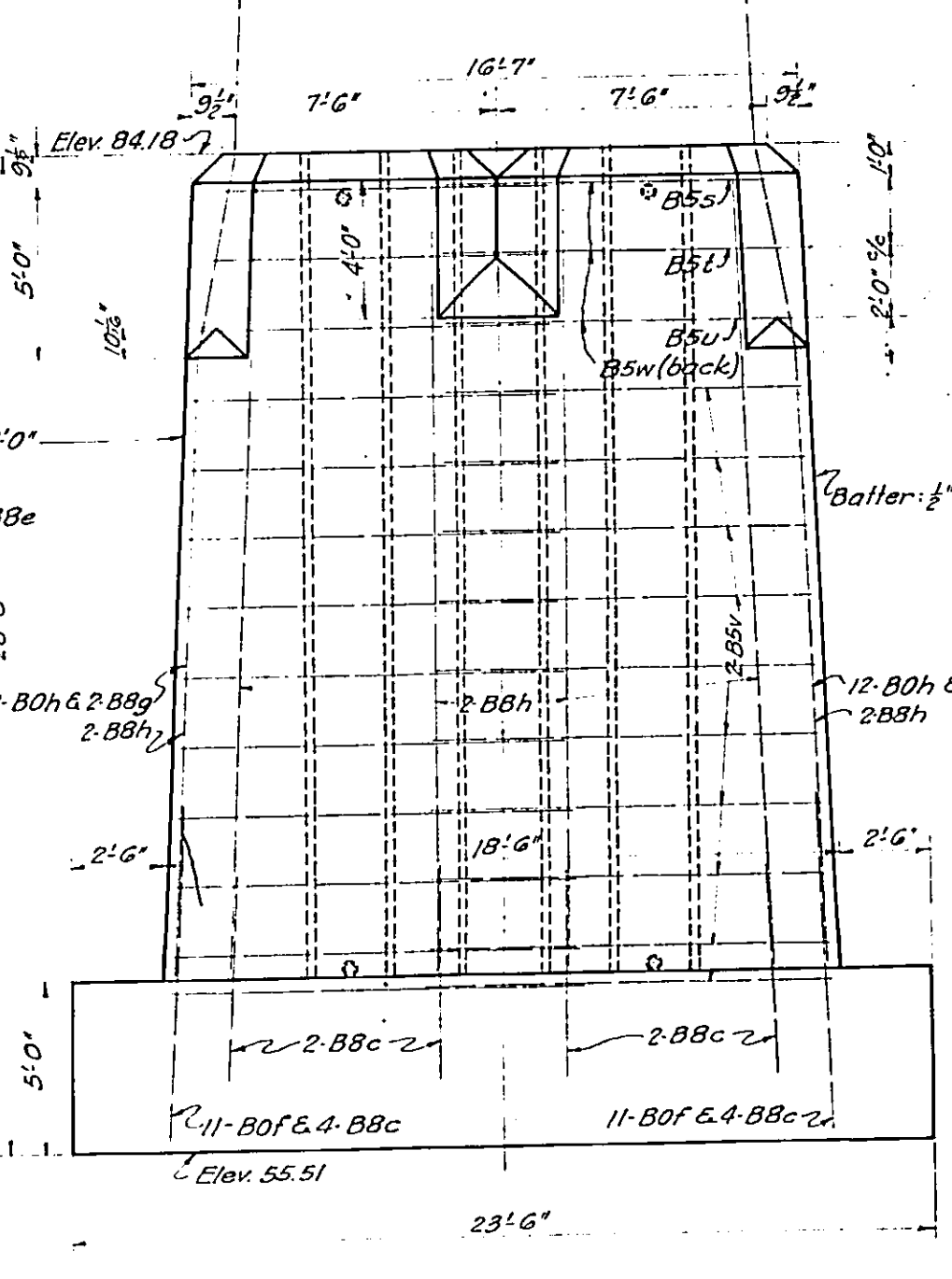
END VIEW - PIER 3  
2 SHAFTS REQ'D.



TYPICAL SIDE VIEW - PIERS 3 TO 8  
TYPICAL OF PIERS 3 TO 8



END VIEW - PIERS 4, 5 AND 6  
6 SHAFTS REQ'D.



END VIEW - PIER 7  
2 SHAFTS REQ'D.

ESTIMATED QUANTITIES

Concrete - Class "B"	2163 Cu.Yds.
Concrete - Class "C"	970 Cu.Yds.
Earth Excavation	1738 Cu.Yds.
Shale Excavation	1231 Cu.Yds.
24" Plain Concrete Pipe	1490 Lin.Ft.

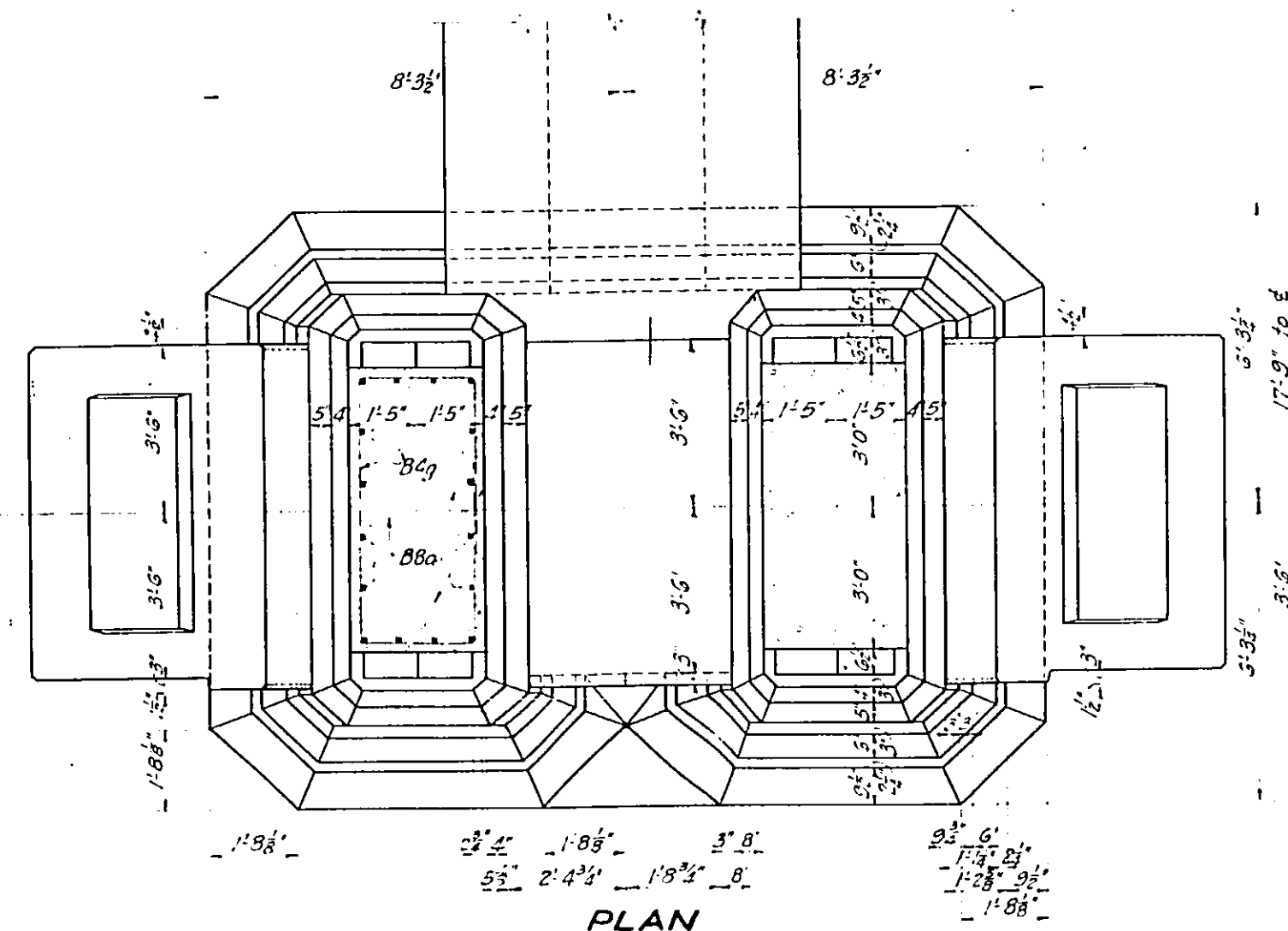
STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**ARCH PIER SHAFTS**  
**BROOKPARK VIADUCT**  
**OVER ROCKY RIVER**

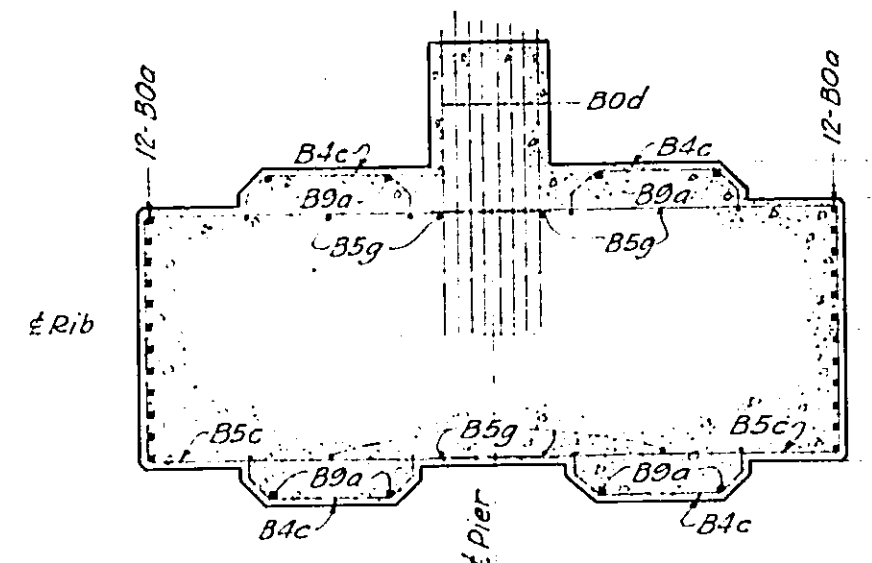
S.H. 460 SEC. E-1 CUYAHOGA COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
C.P.S.	C.P.S.	J.H.B.	W.F.	W.H.B.	10/28/32	

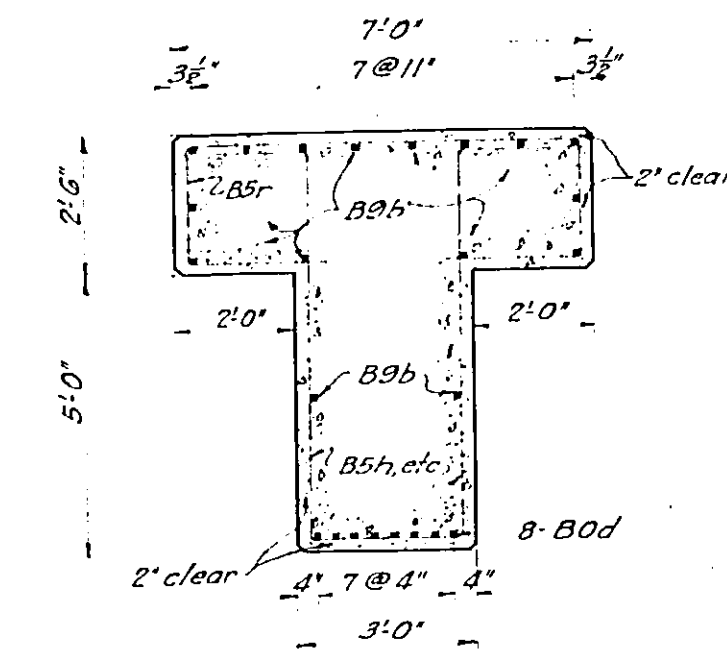




PLAN

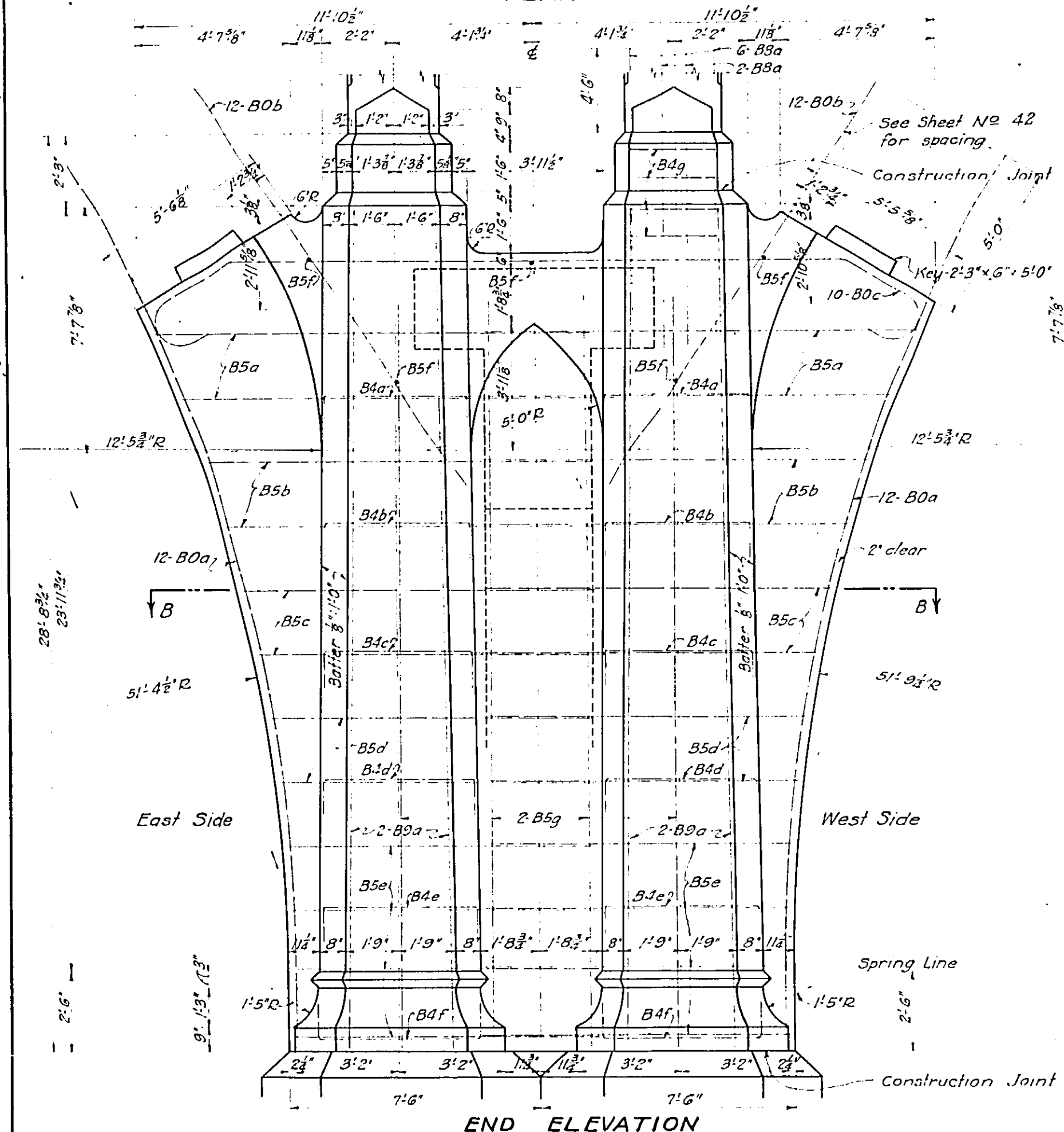


SECTION B-B

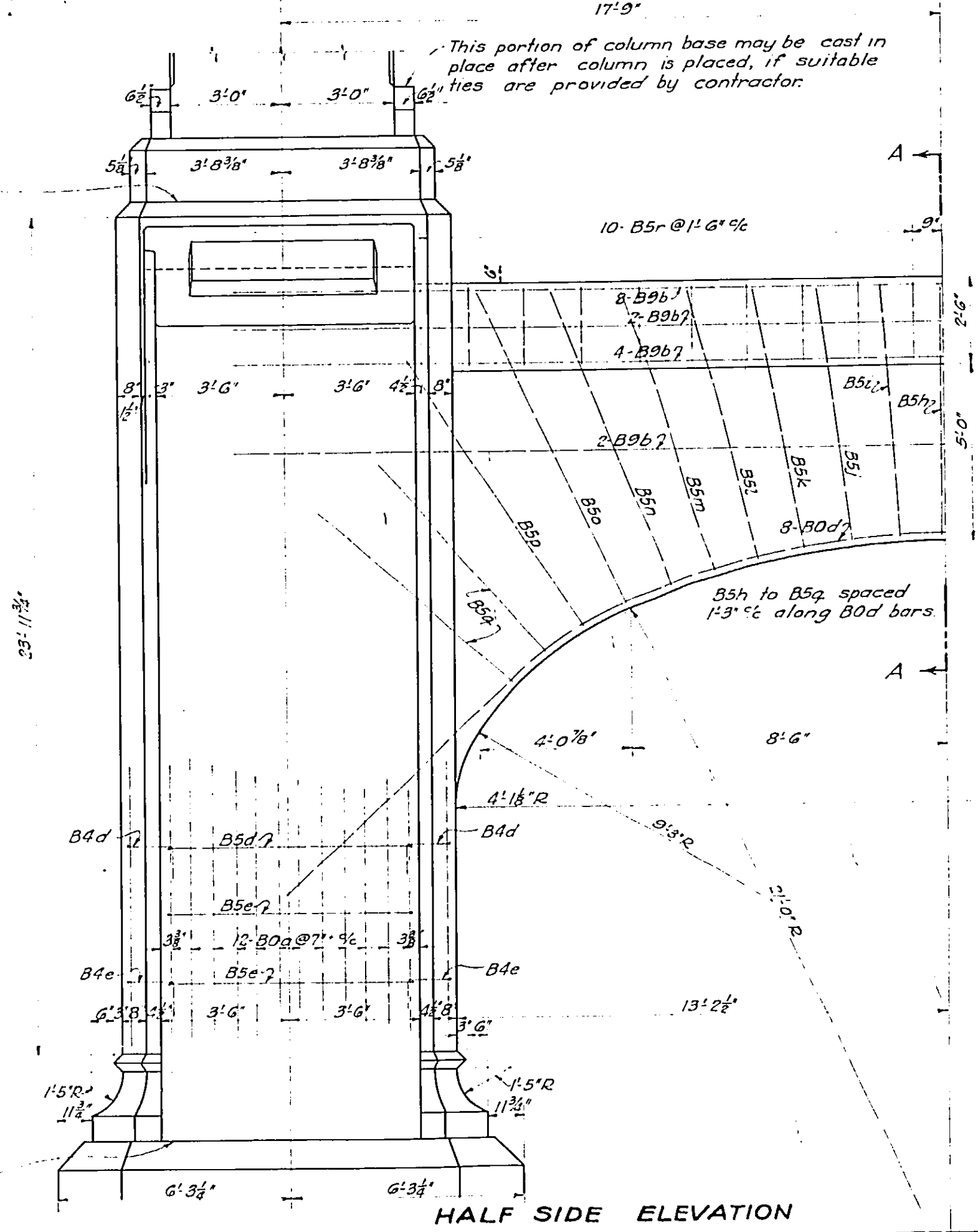


SECTION A-A

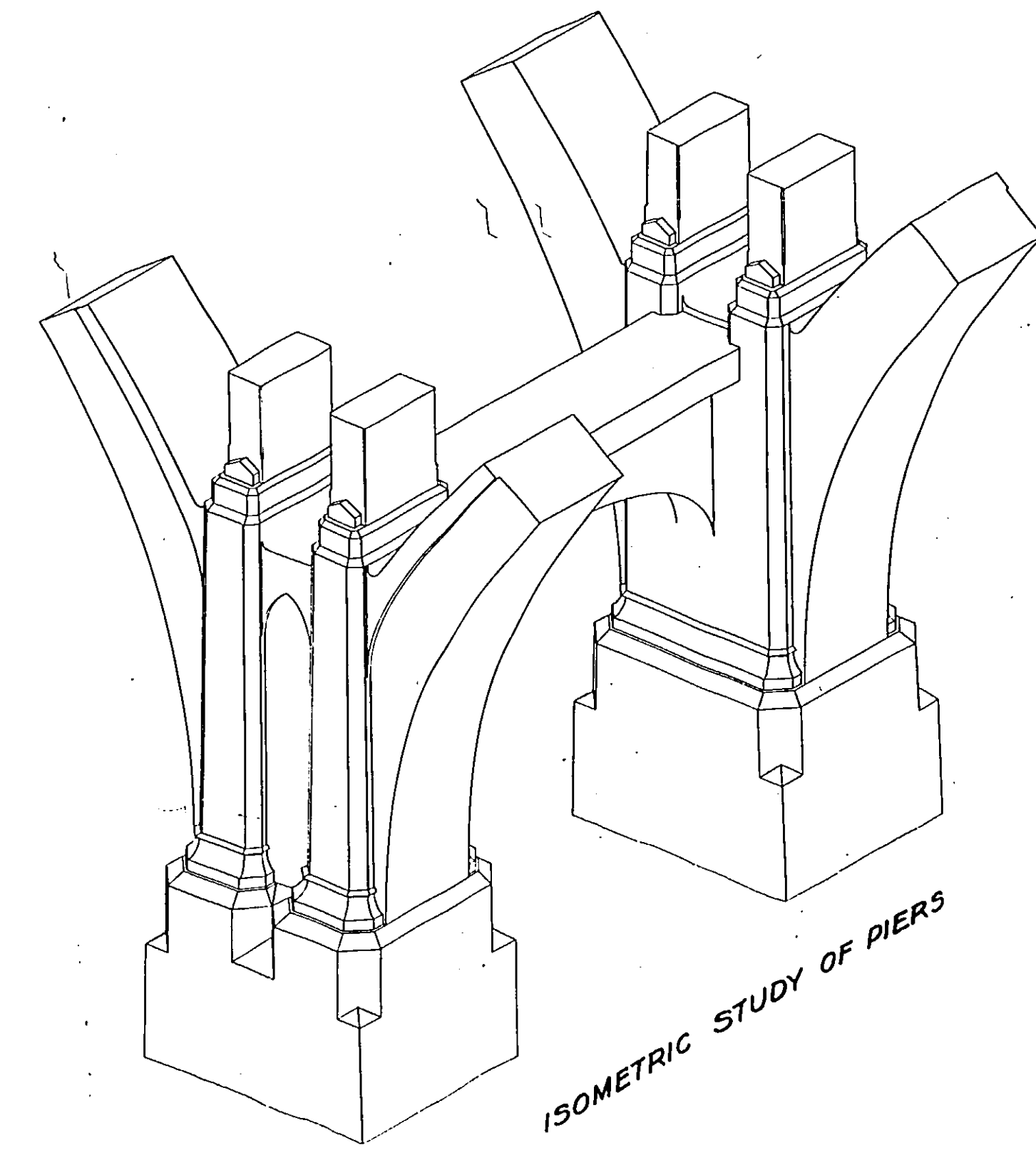
Umbrellas are symmetrical about  $\epsilon$  Pier except for dimensions of skewback.  
All reinforcing steel 2" clear (min)  $\frac{1}{2}$ " chamfer on outer corners of arch rib, and corners of strut. All other edges as shown hereon.



END ELEVATION



HALF SIDE ELEVATION



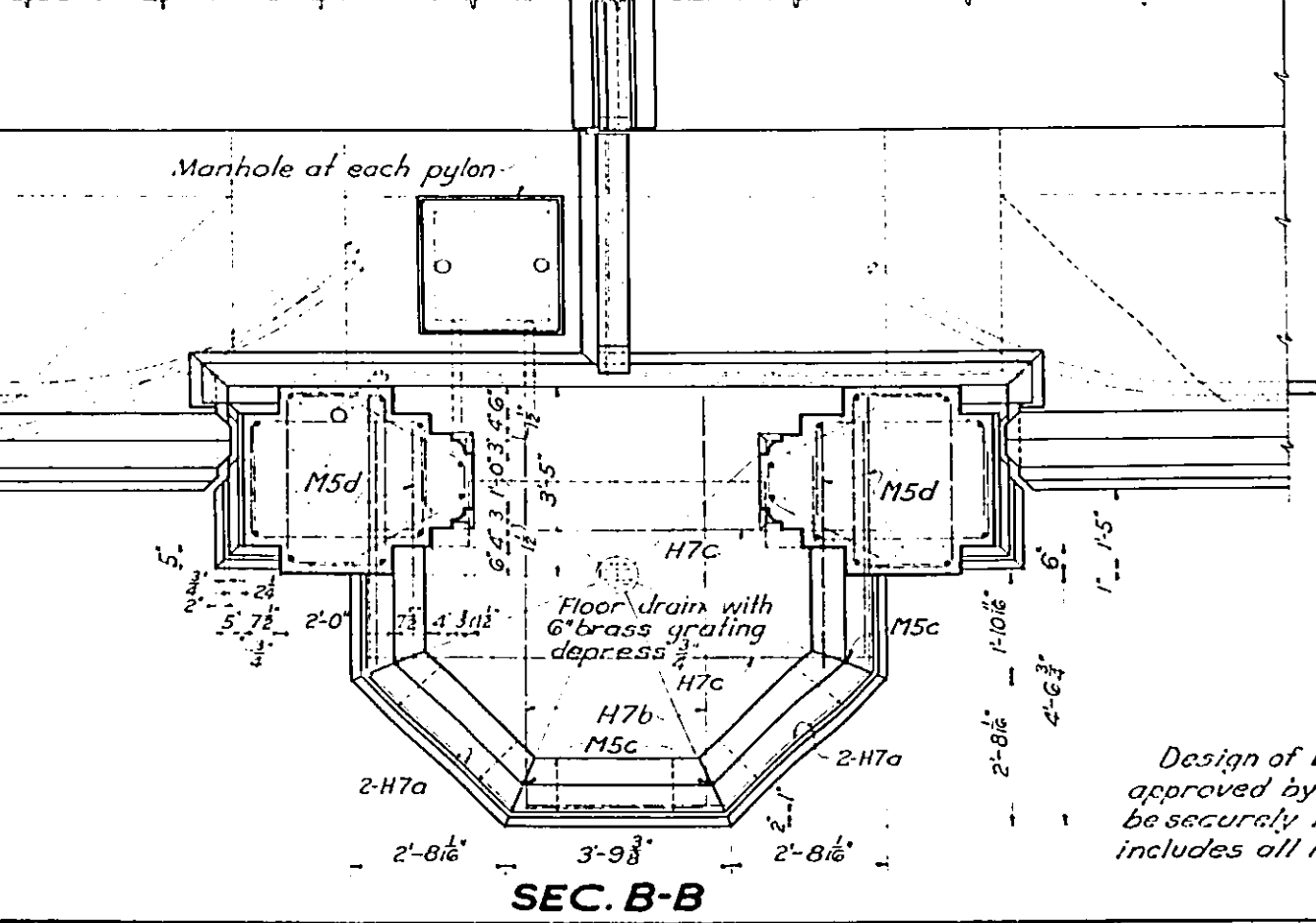
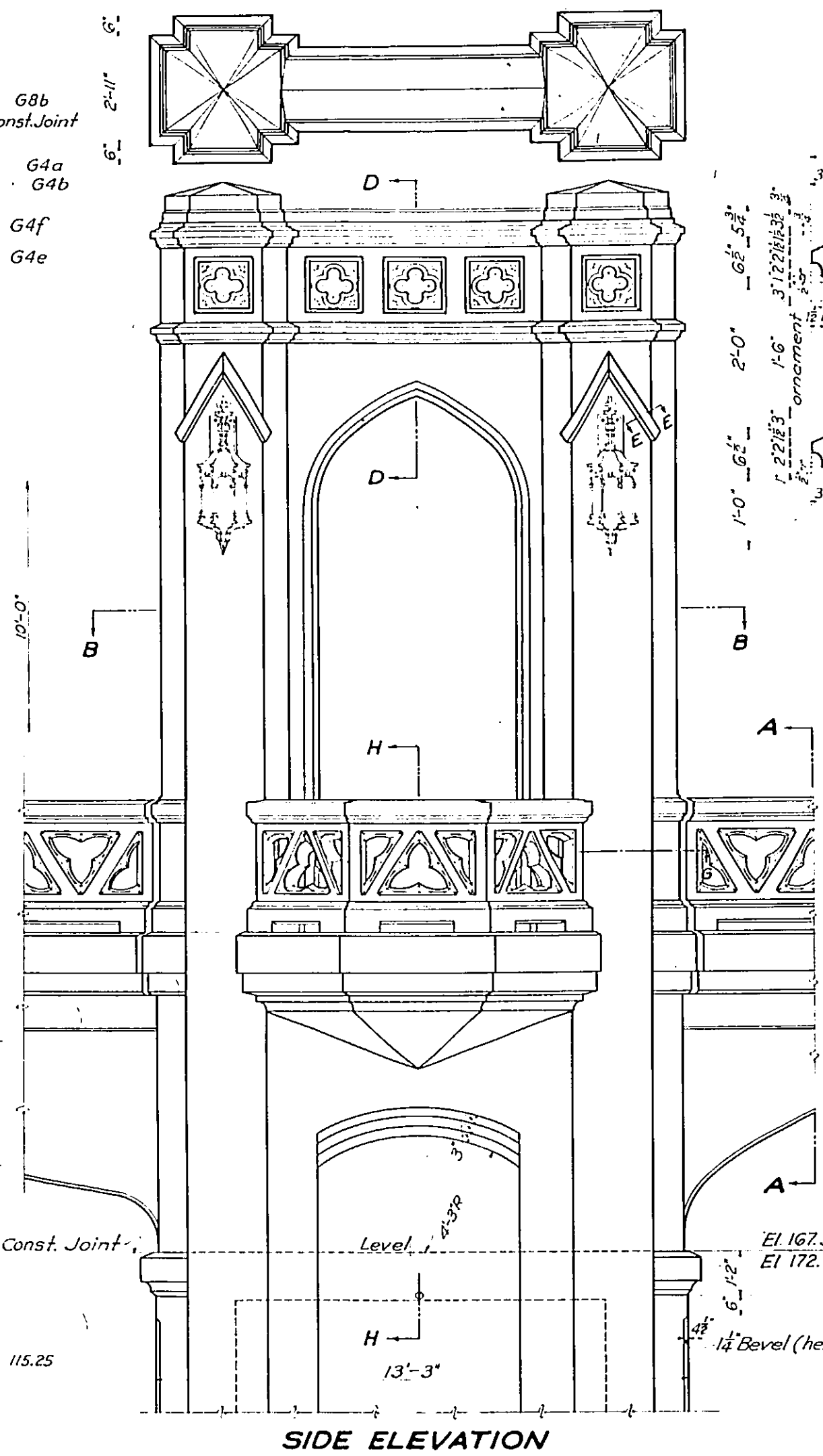
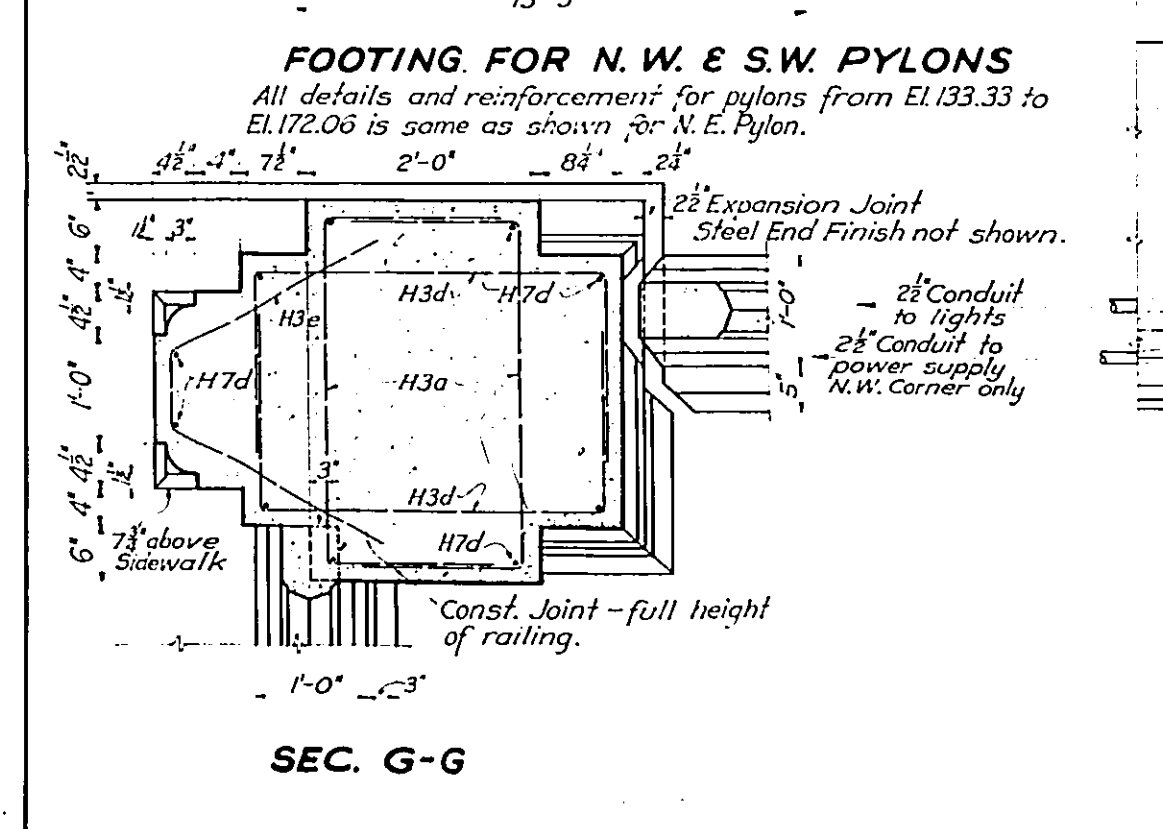
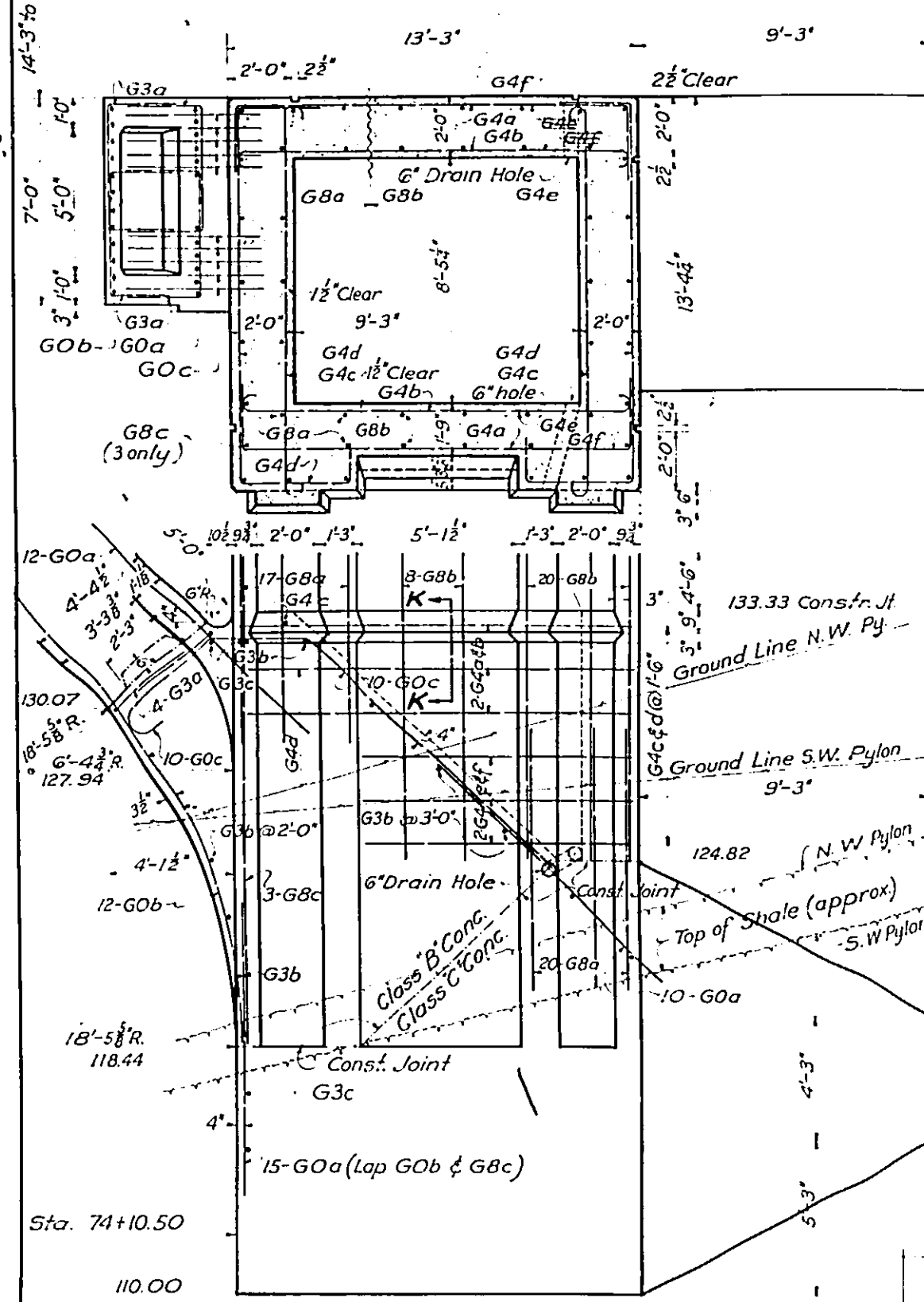
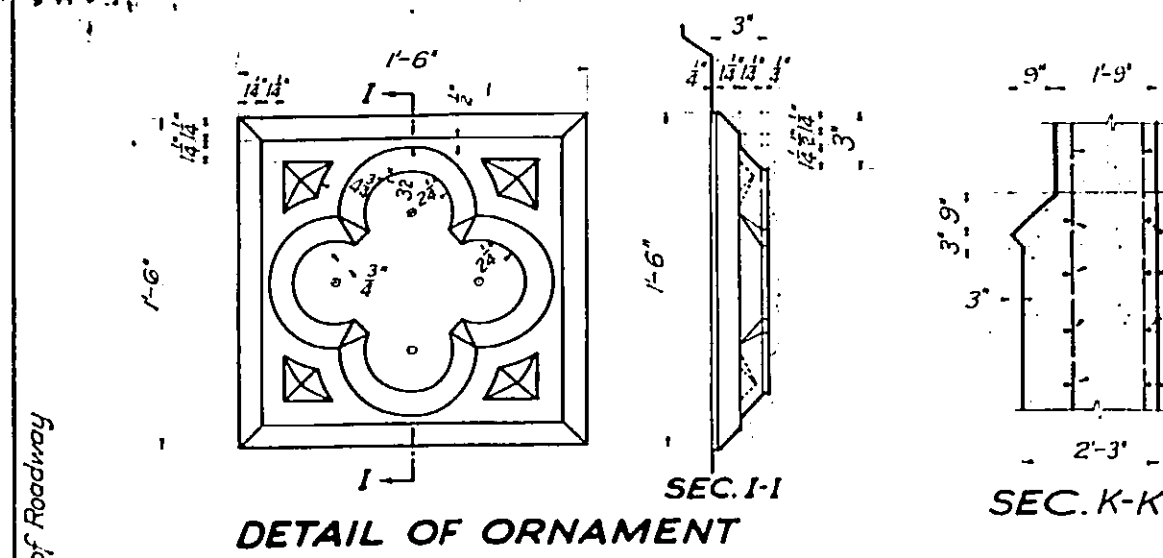
ISOMETRIC STUDY OF PIERS

ESTIMATED QUANTITIES  
(7 Complete Umbrella Sections)  
Concrete - Class "B" - 1-5/8" Mix.....2320 Cu.Yds.

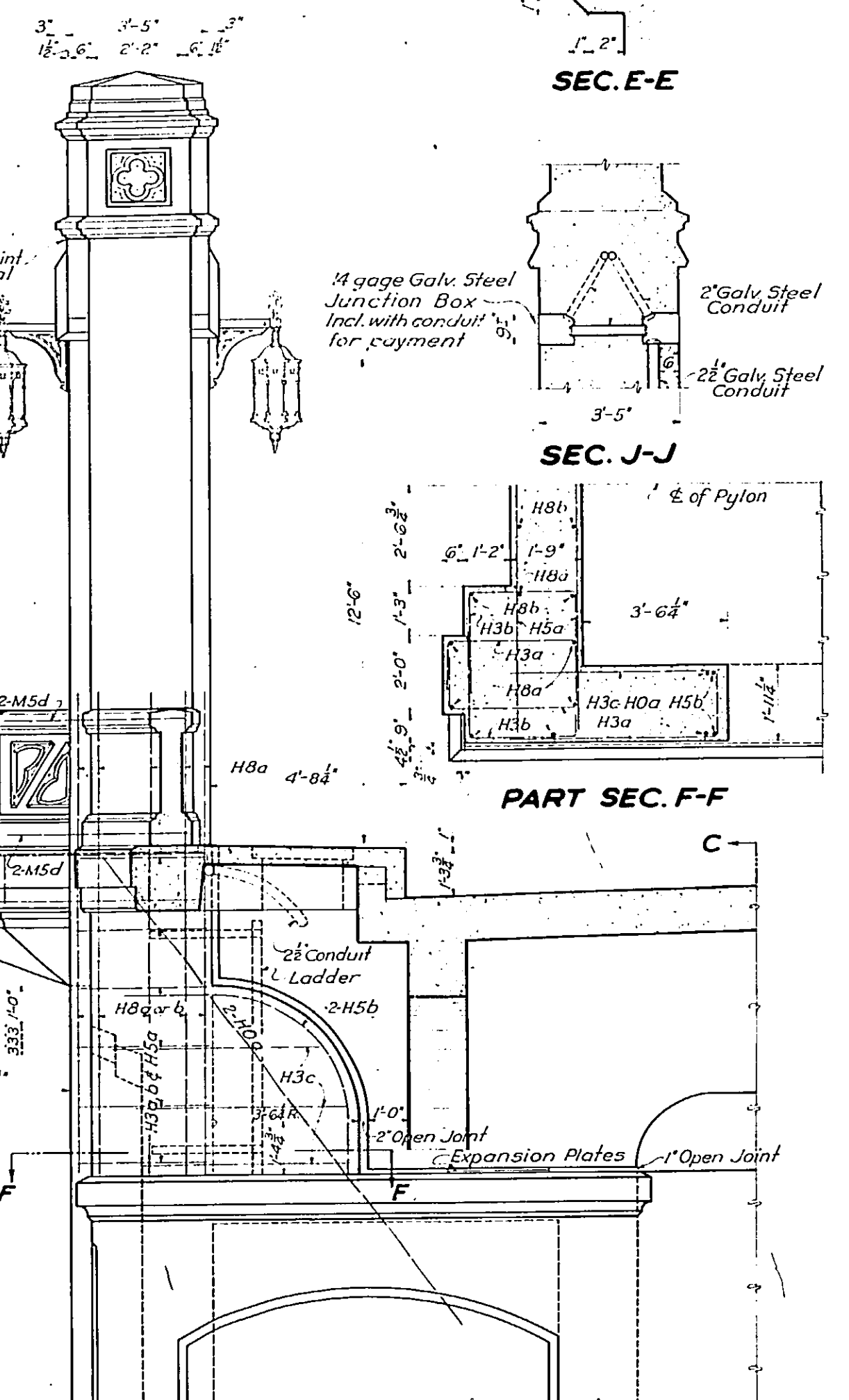
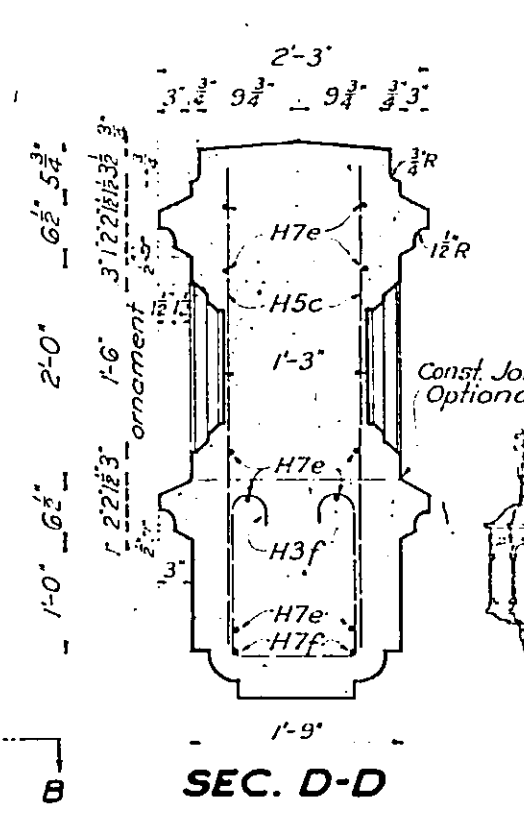
STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES					
<b>ARCH PIER UMBRELLAS</b>					
<b>BROOKPARK VIADUCT OVER ROCKY RIVER</b>					
<b>S.H. 460 SEC. E-1, CUYAHOGA COUNTY</b>					
DESIGNED BY	DRAWN	TRACED	CHECKED	REVIEWED	DATE
G.P.S.	G.P.S.	A.H.	W	H.H.B.	10/21/32







Design of balcony floor drain must be approved by Dept. of Highways. Grating must be securely fastened to frame. Payment includes all materials complete in place.

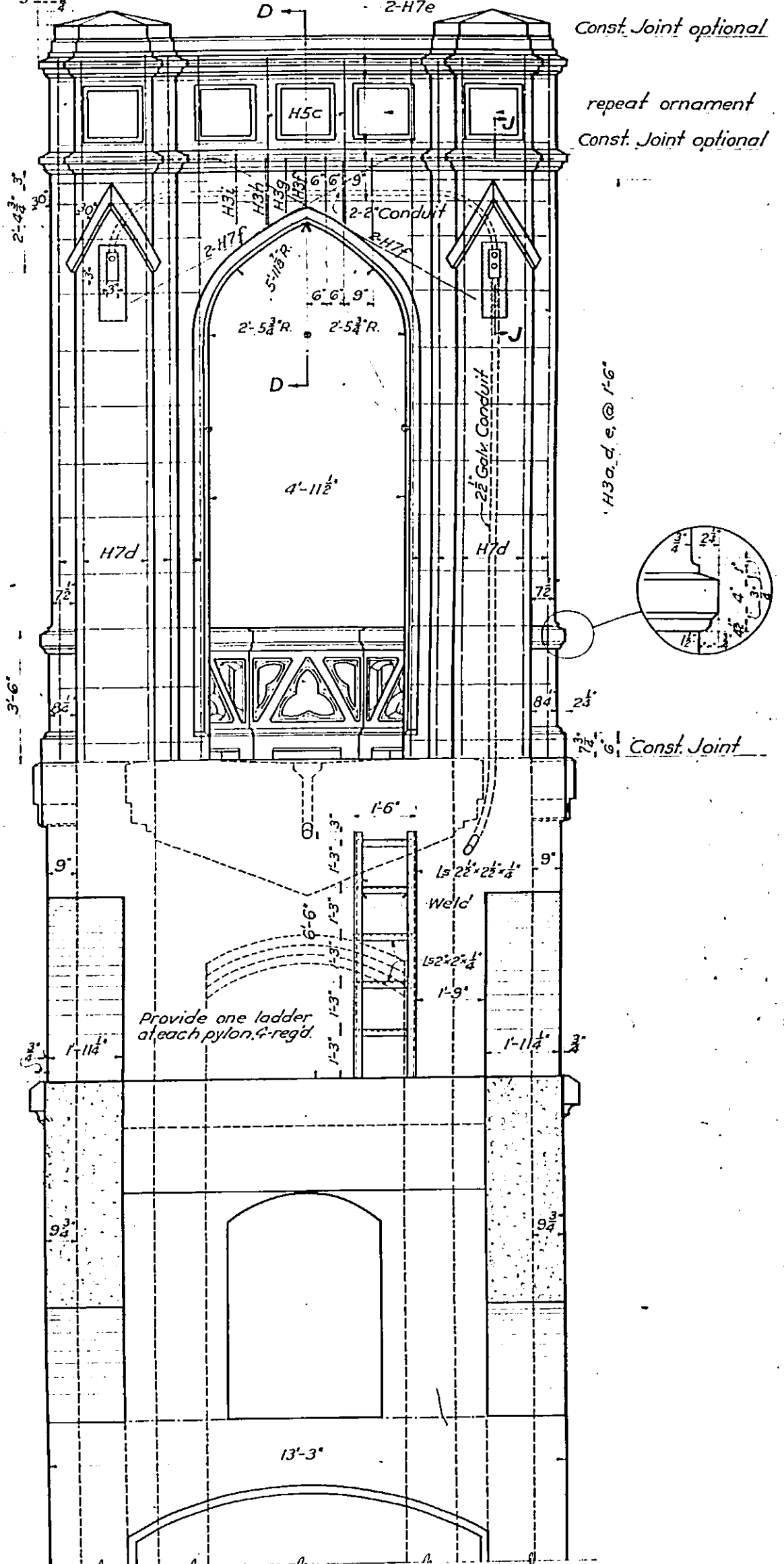


**SEC. E-E**

**SEC. J-J**

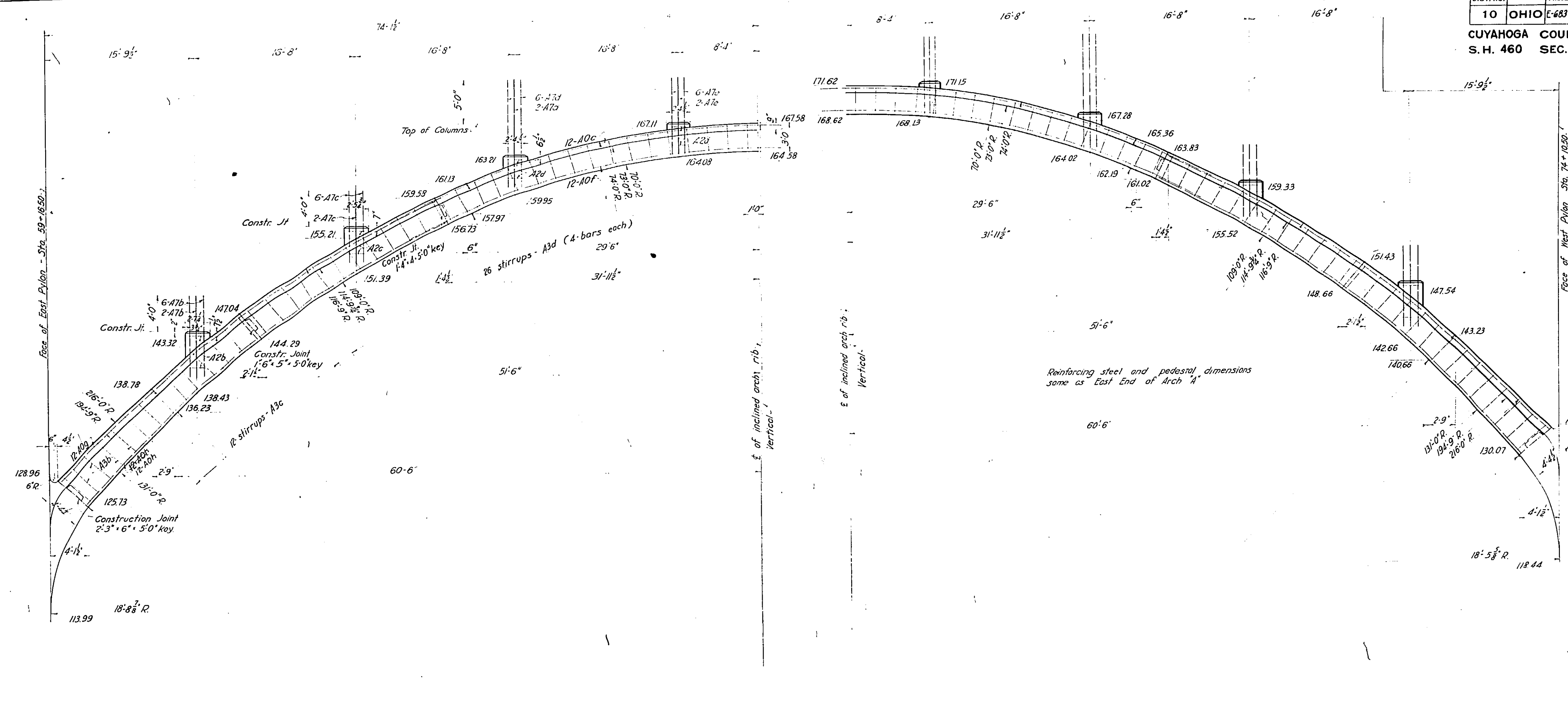
**PART SEC. A-A**

**SEC. C-C**  
Superstructure & lights omitted



STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES					
<b>· PYLON TOPS ·</b>					
<b>· FOOTINGS FOR W. PYLONS ·</b>					
<b>BROOKPARK VIADUCT</b>					
<b>OVER ROCKY RIVER</b>					
<b>S.H. 460 SEC. E-1 CUYAHOGA COUNTY</b>					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
R.N.O.	R.N.O.	J.L.S.	W.F.	H.R.	10/21/32





EAST END OF ARCH "A"

WEST END OF ARCH "H"

27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
164.09	167.12	159.98	163.25	152.16	161.32	156.99	159.79	151.48	155.29	138.62	143.50	136.62	139.19	133.12	135.85	119.91	126.79	112.92	105.12	108.08	108.35	100.69	84.37

Above table gives Elevations for West End of Arch "A". Layout for West End is identical with that of Arches "B" to "G", Sheets No. 36 and No. 42. Reinforcing Steel for West End identical with that of Arches "B" to "G".

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
87.83	108.66	111.81	104.15	116.26	111.54	123.58	130.43	136.74	139.45	140.27	142.82	142.47	147.36	155.43	159.24	160.82	163.62	165.17	162.00	163.99	167.25	168.12	171.14

Above table gives Elevations for East End of Arch "H". Layout for East End is identical with that of Arches "B" to "G", Sheets No. 36 and No. 42. Reinforcing Steel for East End identical with that of Arches "B" to "G".

ESTIMATED QUANTITIES  
(FOUR COMPLETE RIBS)  
Concrete - Class "A" ..... 735 CuYds.

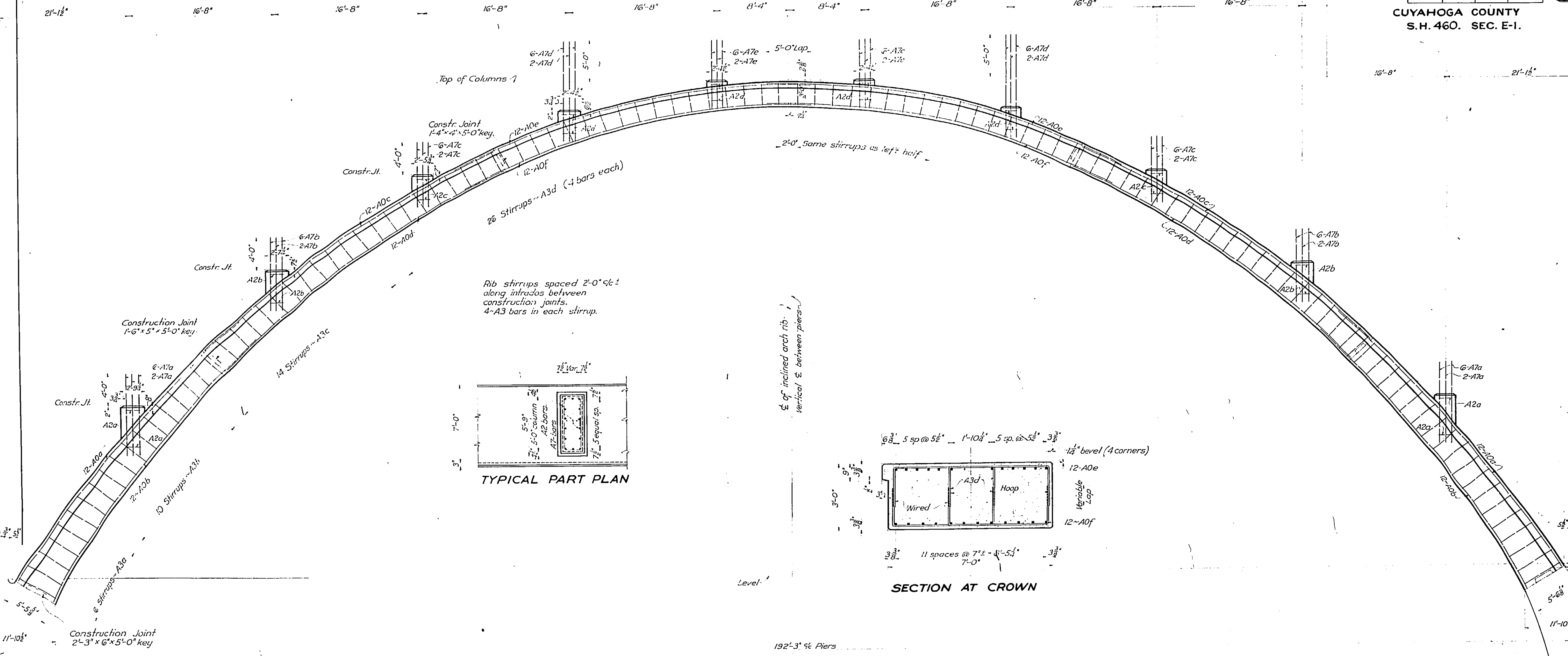
STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**ARCH RIBS - ARCHES "A" & "H"**  
BROOKPARK VIADUCT  
OVER ROCKY RIVER

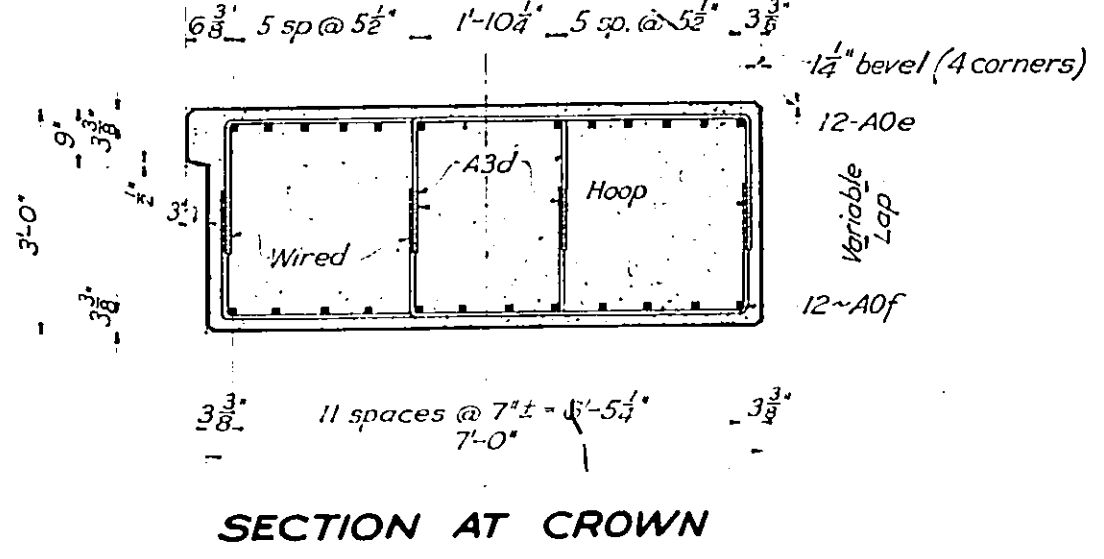
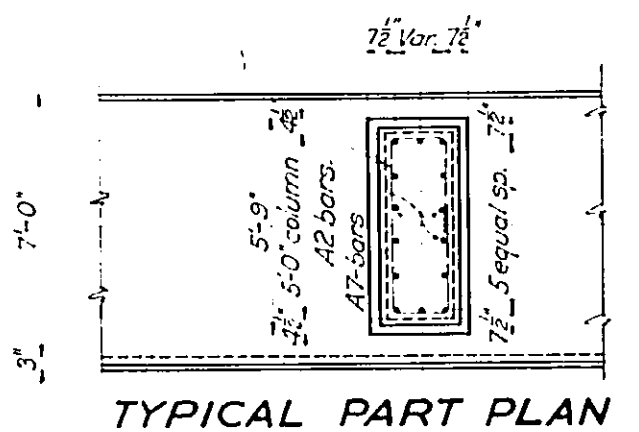
SH 460 SEC. E-1 CUYAHOGA COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
C.P.S.	C.P.S.	J.S.O.	W.F.	H.W.E.	10/2/32	11-22-32

CUYAHOGA COUNTY  
S.H. 460. SEC. E-1.



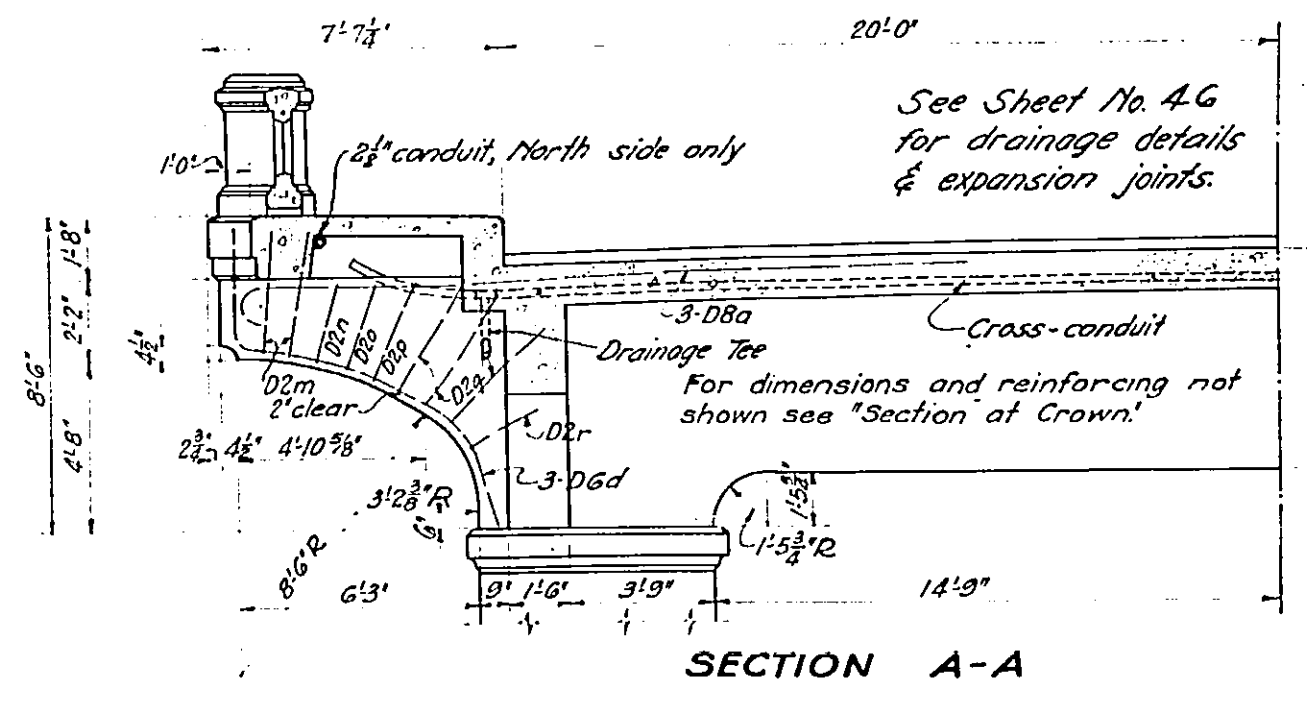
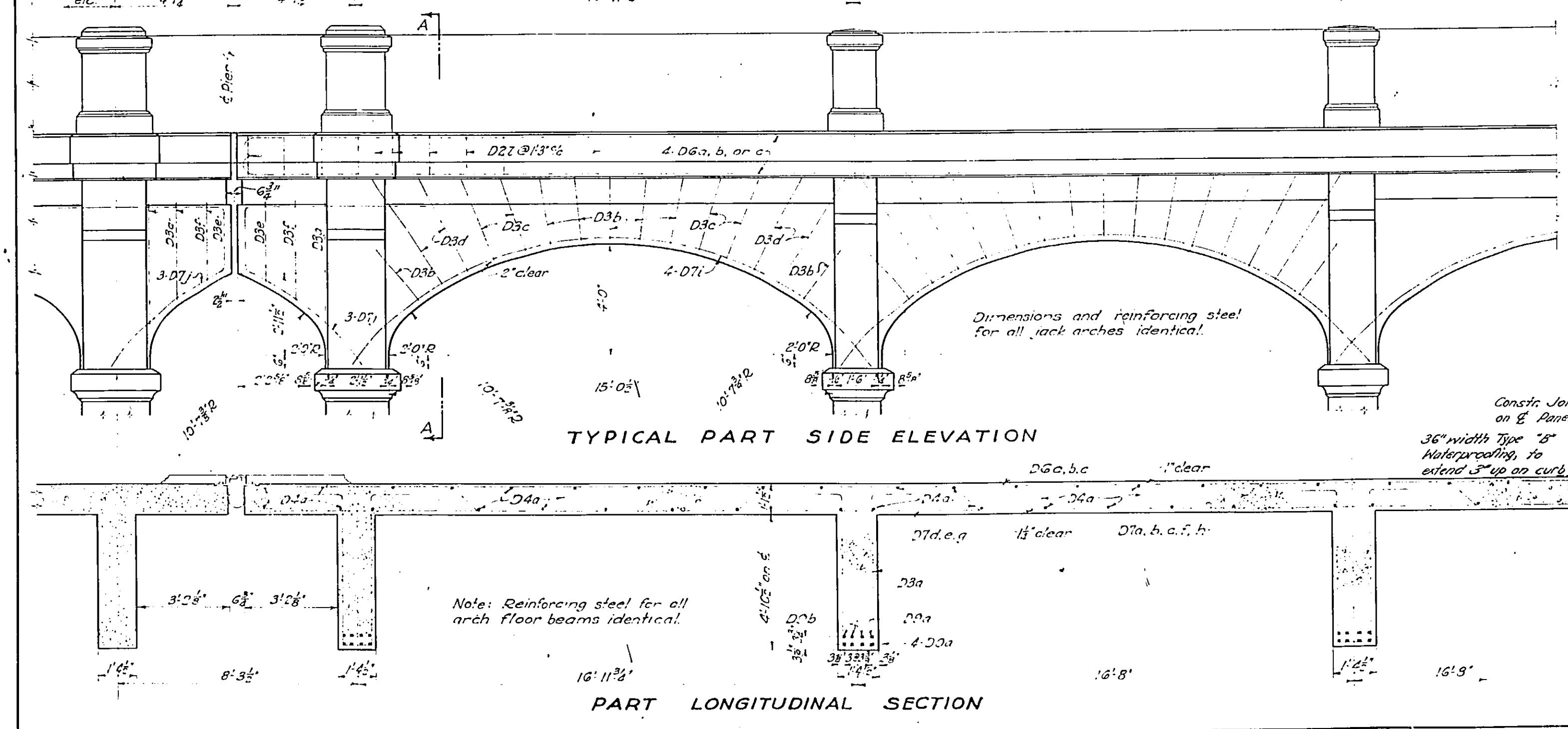
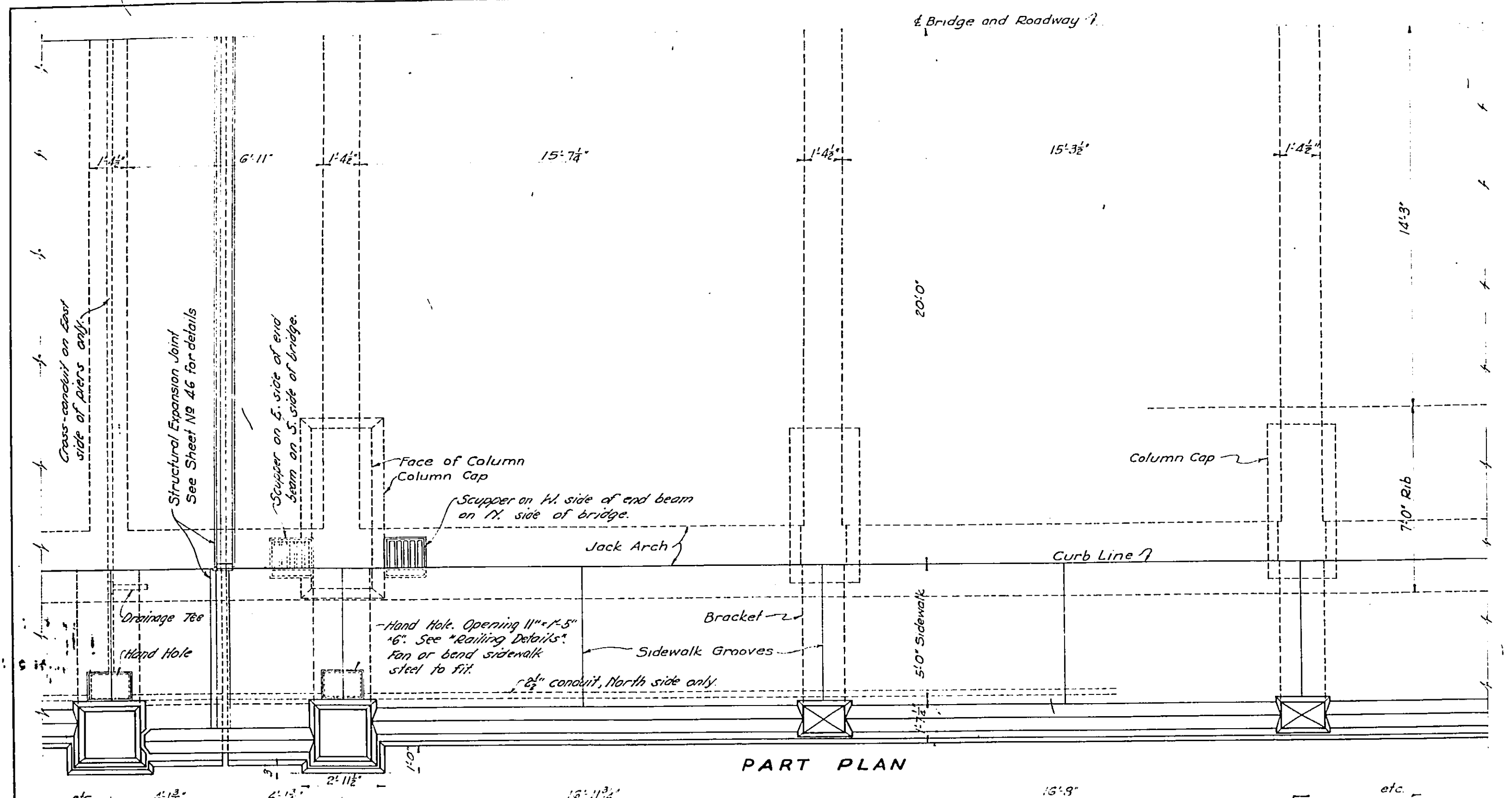
Rib stirrups spaced 2'-0" c/c along intrados between construction joints. 4-A3 bars in each stirrup.



**ESTIMATED QUANTITIES**  
(12 RIBS)  
Concrete - Class "A" 2593 Cu.Yds.

Note: These details show arch rib reinforcement for Arches "B" to "G"; also for West half of Arch "A" and East half of Arch "H". See sheet No 41 for East end of Arch "A" and West end of Arch "H".

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES					
<b>ARCH RIBS-ARCHES 'B' TO 'G'</b>					
<b>BROOKPARK VIADUCT OVER ROCKY RIVER</b>					
S.H. 460. SEC. E-1. CUYAHOGA COUNTY					
DESIGNED M.A.O.	DRAWN C.P.S.	TRACED J.K.Z.	CHECKED W.F.	REVIEWED H.A.C.	DATE 10/21/32

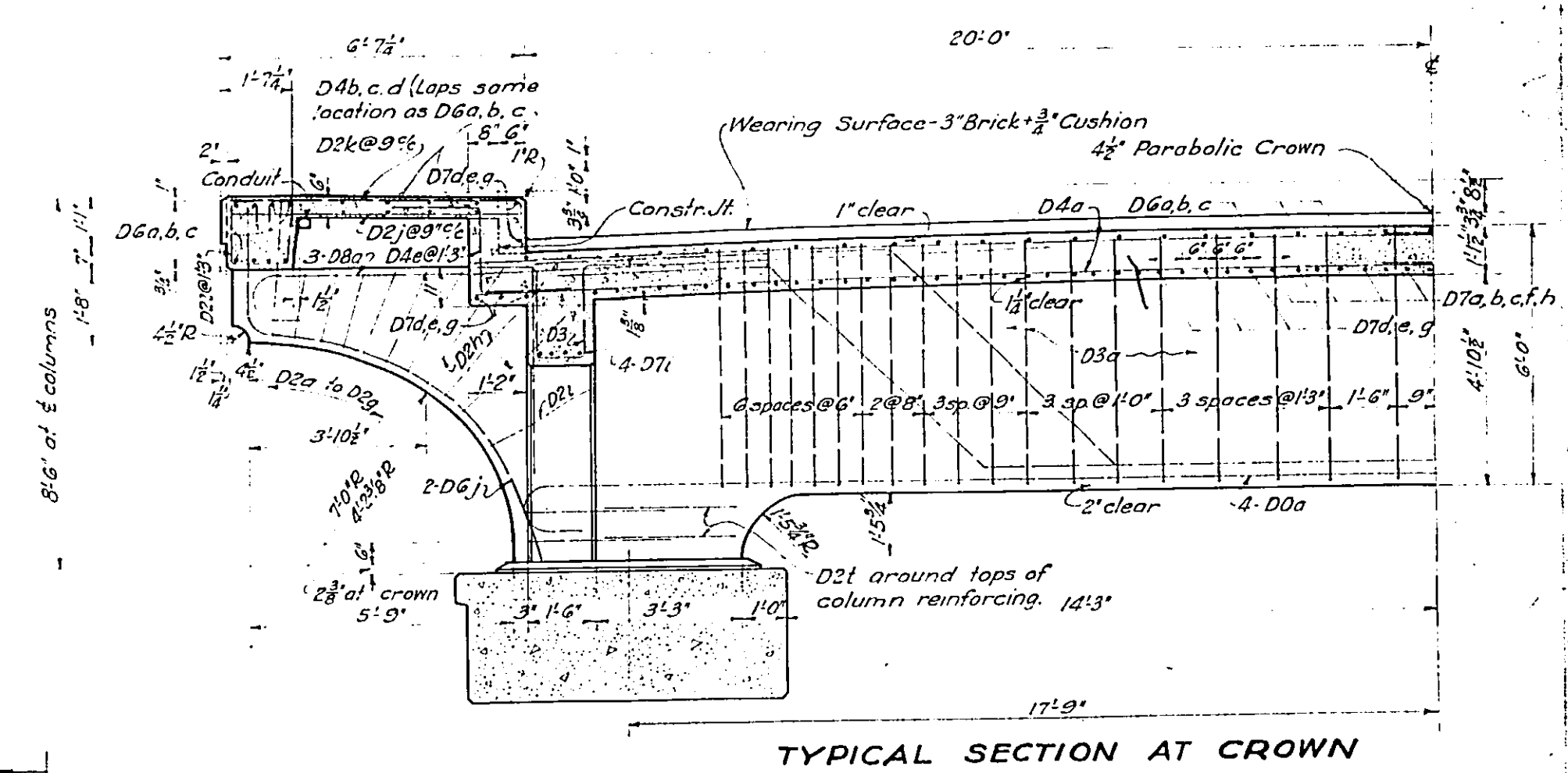


Lap all longitudinal bars in curb, sidewalk and fascia in same manner as shown for D6-bars. Laps 4'-0"±

Face of Pylon		Face of Pier	
D7f	D7c	D7b	D7e
D7g(top)	D7e(bottom)	D7d(bottom)	D7e(bottom)
D7g(bottom)	D7e(top)	D7d(top)	D7e(top)
D7h	D7c	D7b	D7e
D7a(bottom)	D7e(bottom)	D7d(bottom)	D7e(bottom)
D7a(top)	D7e(top)	D7d(top)	D7e(top)

SPANS 'A' & 'H'

LAYOUT FOR DECK REINFORCEMENT



**ESTIMATED QUANTITIES**

**ARCH DECK - 8 SPANS**

Concrete - Class "A"	493.3 Cu. Yds.
Type "B" Waterproofing	432.5 Sq. Yds.

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

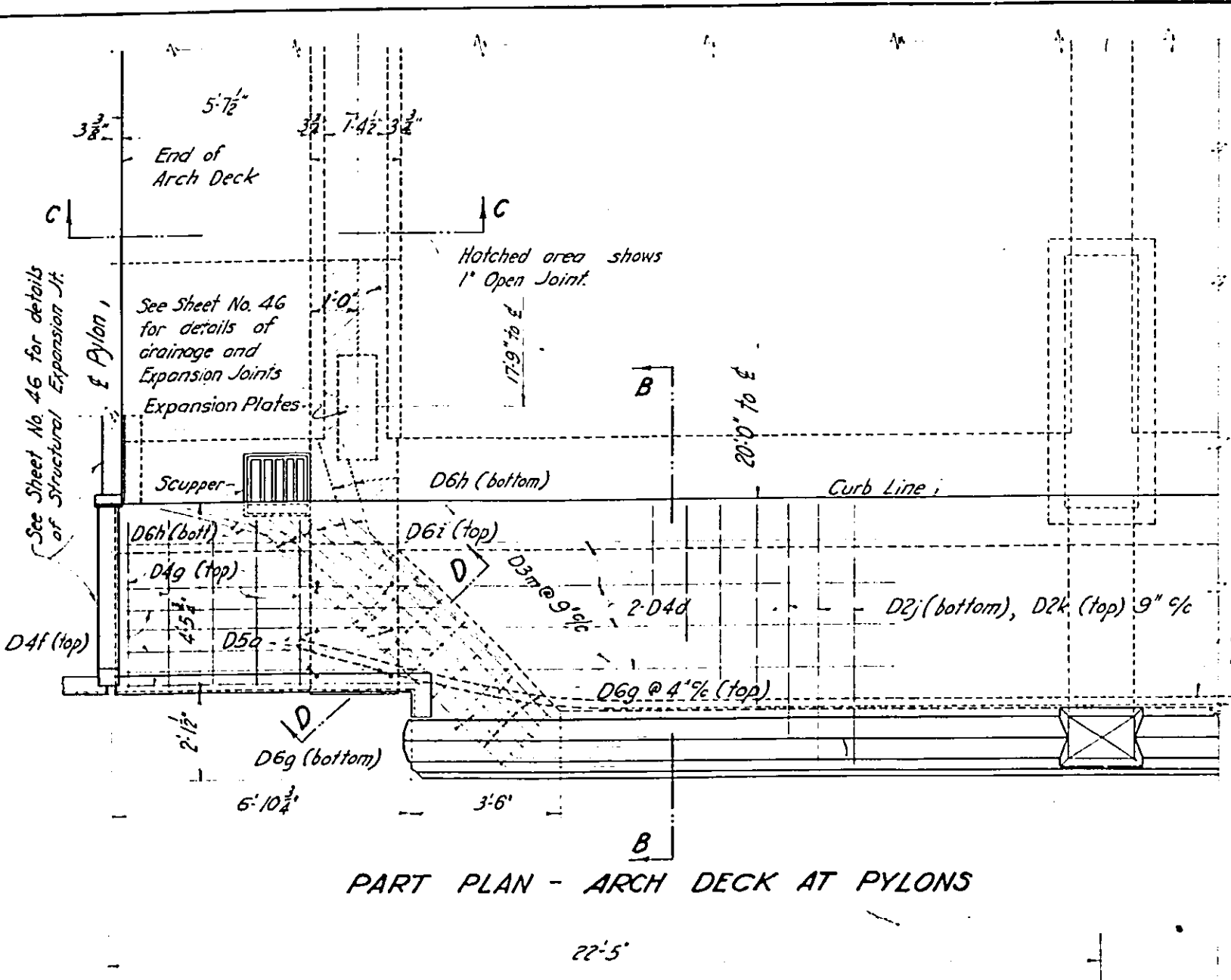
**ARCH DECK DETAILS**

**BROOKPARK VIADUCT OVER ROCKY RIVER**

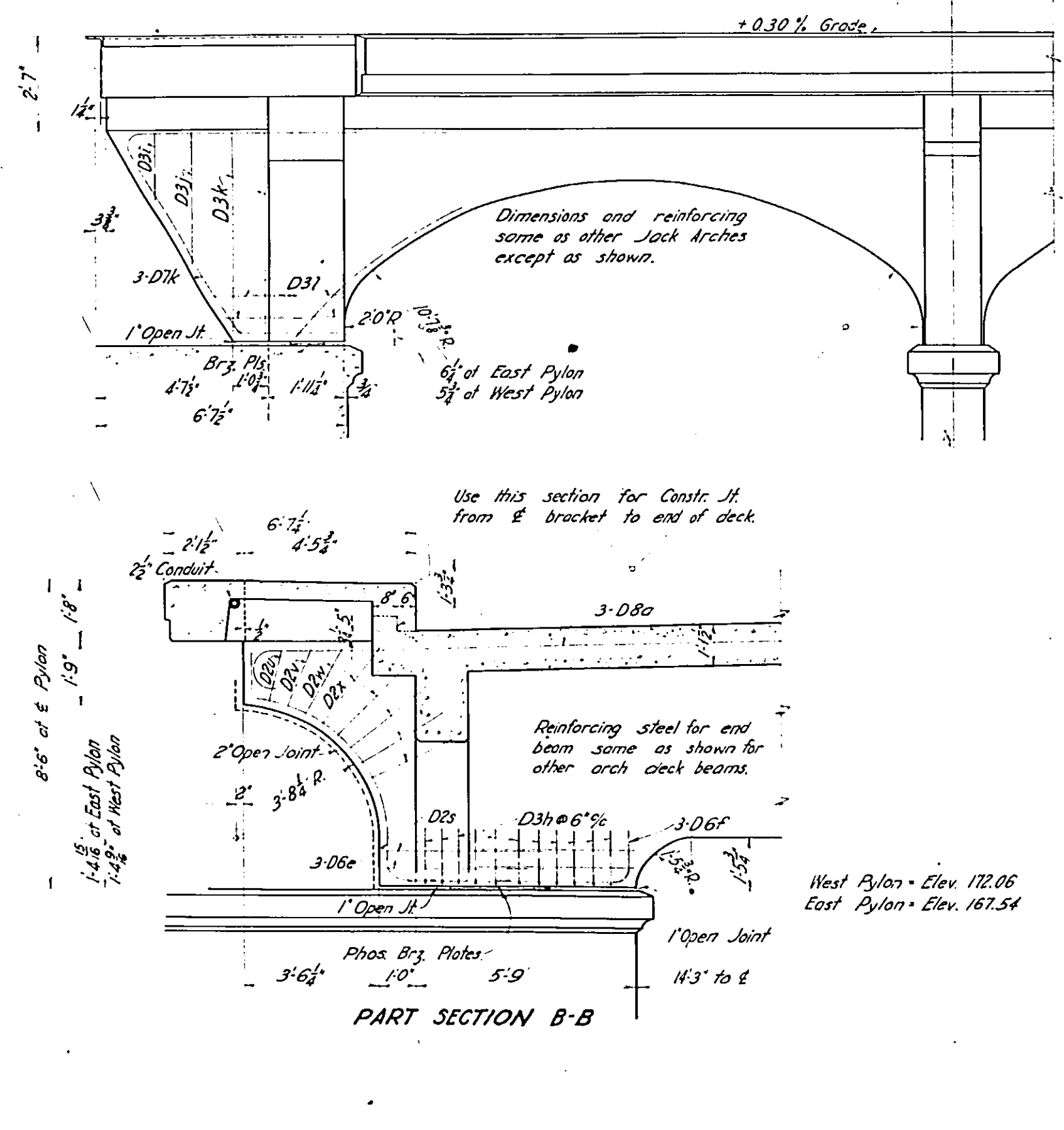
S.H. 460 SEC. E-1. CUYAHOGA COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
A.S.P.	C.R.S.	H.T.S.	W	W.H.B.	10/27/32	

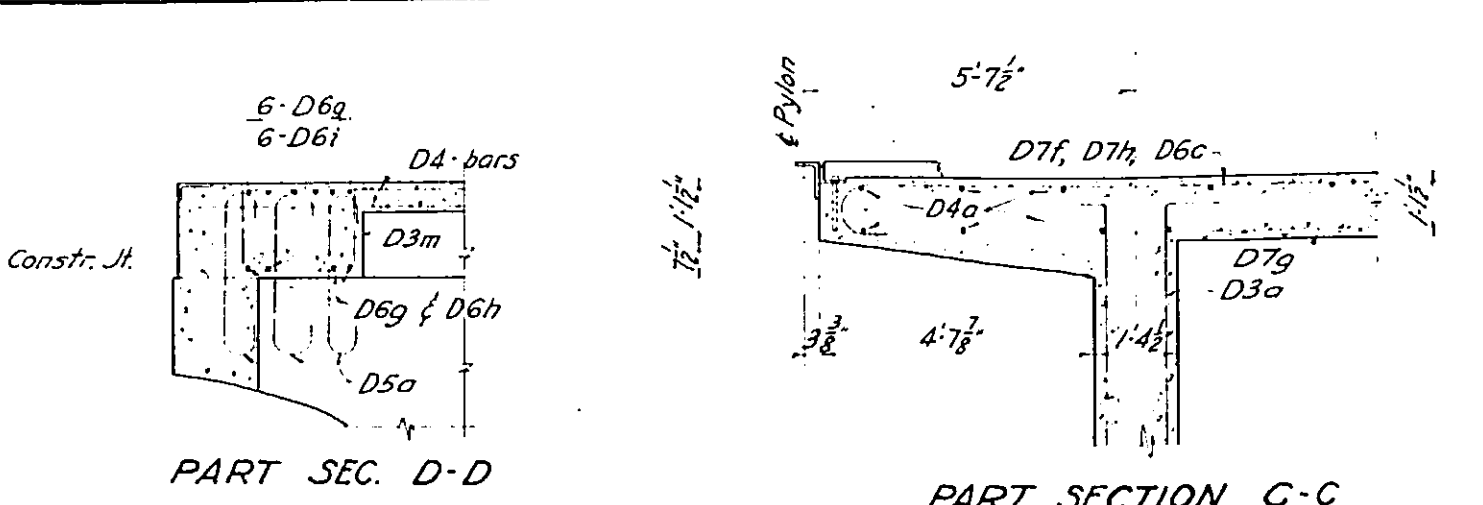




PART PLAN - ARCH DECK AT PYLONS

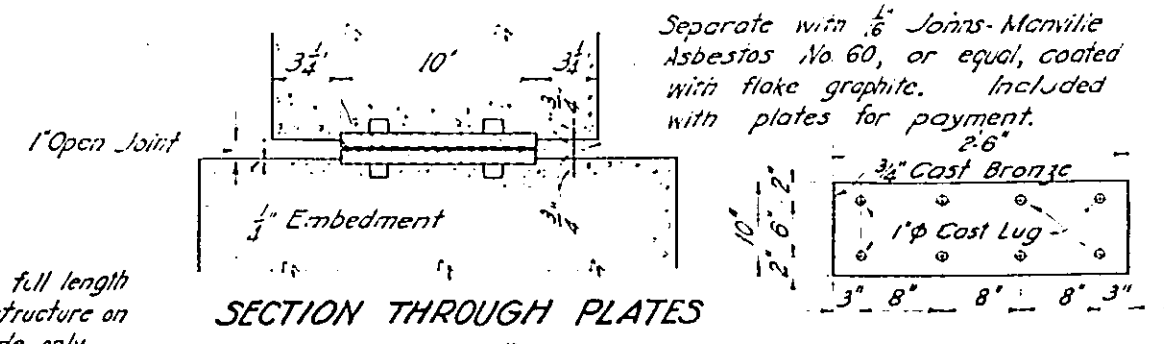


PART SECTION B-B



PART SEC. D-D

PART SECTION C-C



SECTION THROUGH PLATES

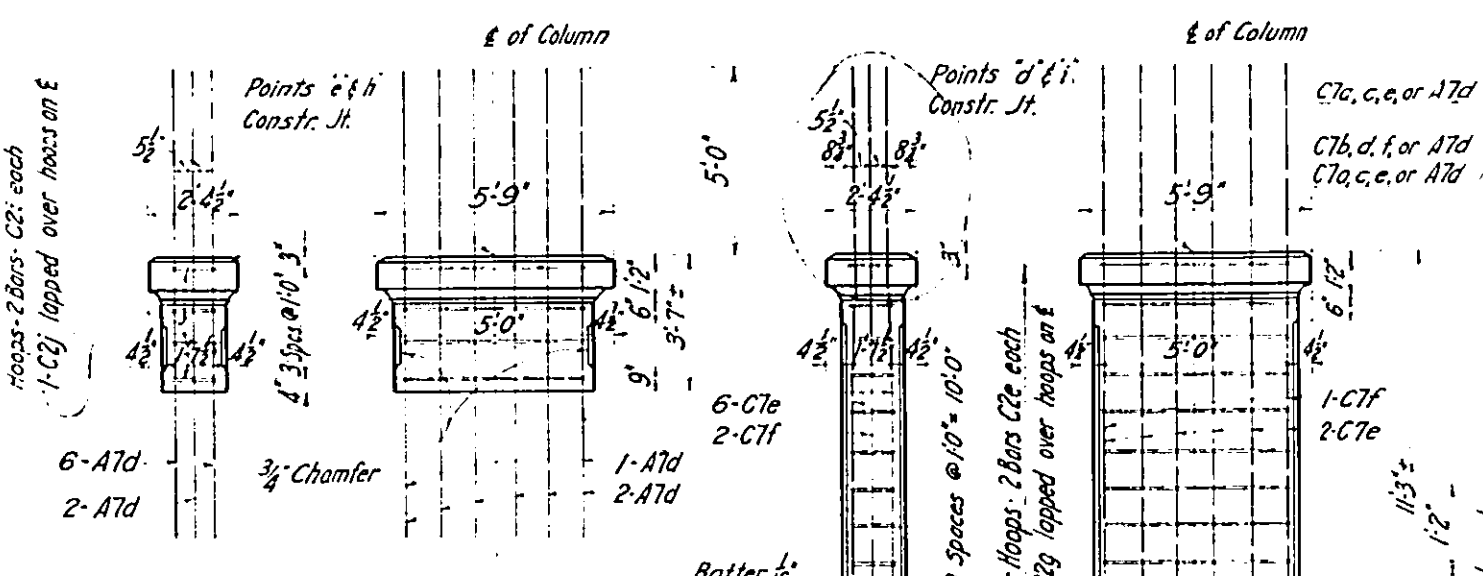
Recess may be made in bridge seat and bottom plate embedded with neat cement. 4 sets (8 plates) required.

Bronze Plates shall comply with Item S-10, except that the composition shall be as follows:

Copper	78.5% to 81.5%
Tin	9.0% to 11.0%
Lead	9.0% to 11.0%
Phosphorus	0.05% to 0.25%
Zinc	0.75%
Other Properties (max)	0.25%

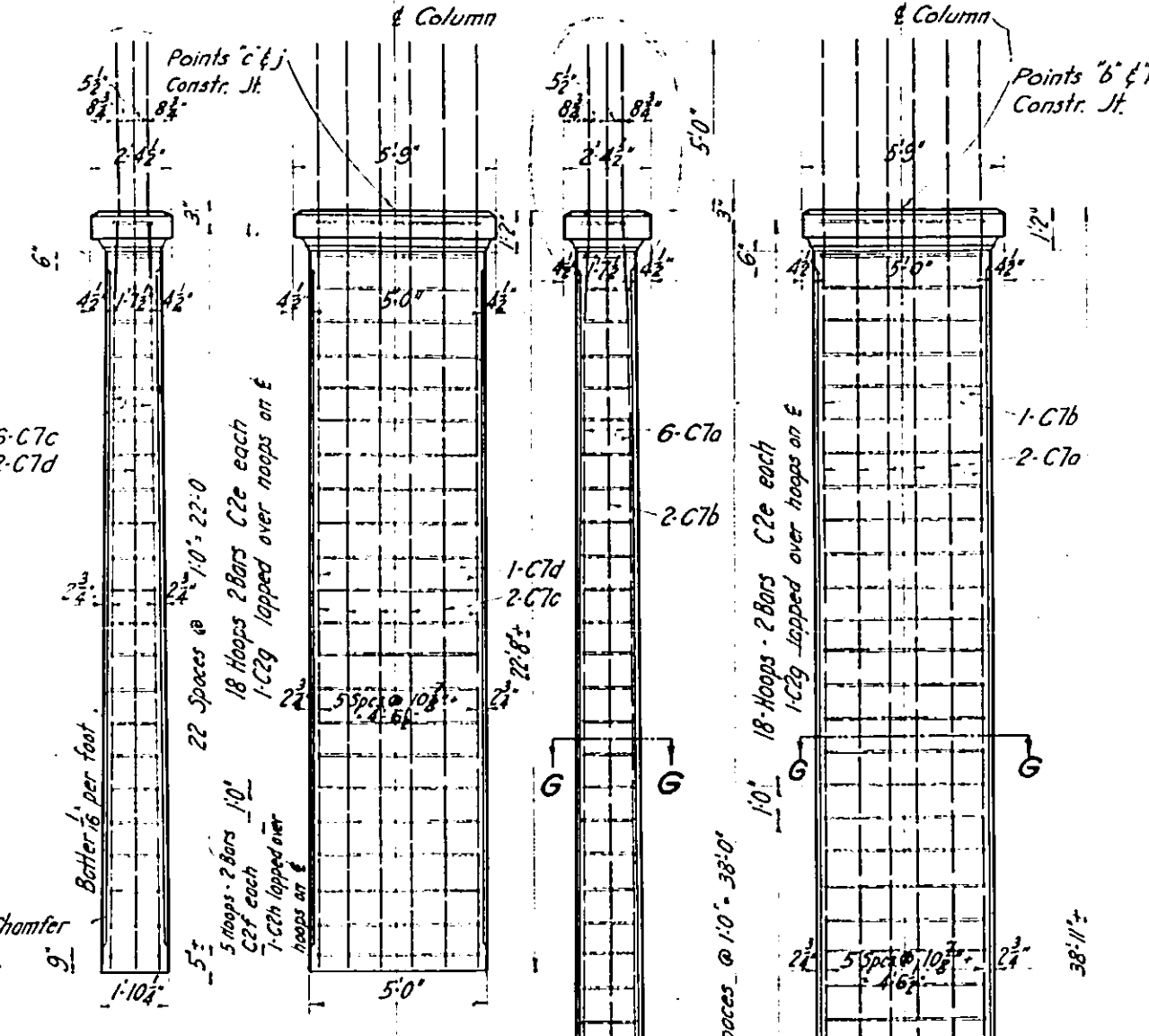
Particular care shall be taken to set plates level in all directions, and to bring base plates to full bearing at all points.

BRONZE EXPANSION PLATES

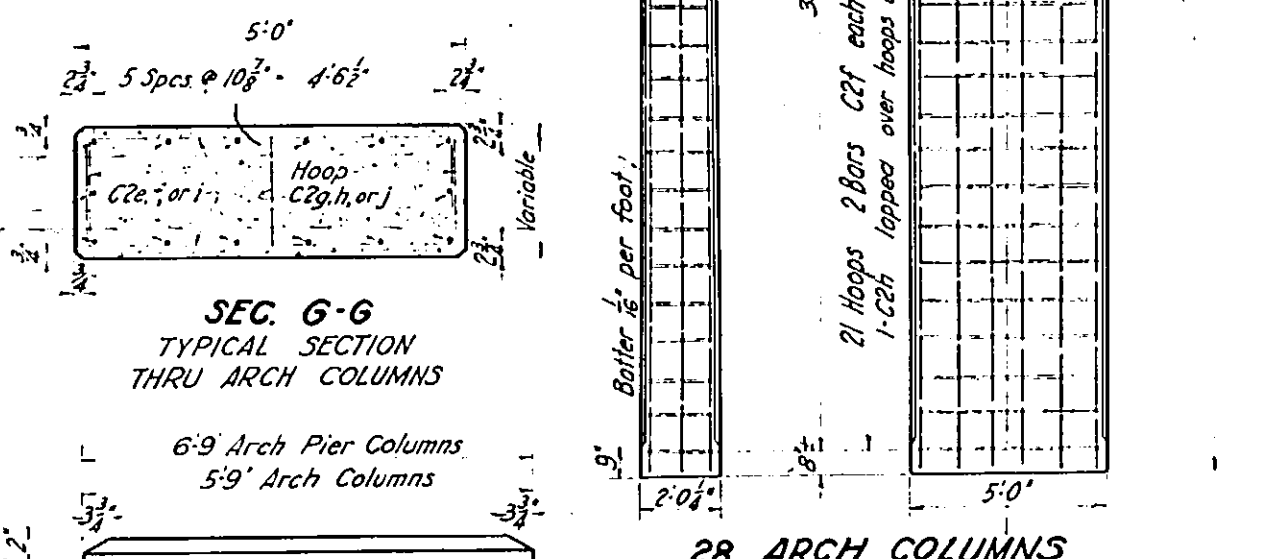


32 ARCH COLUMNS

32 ARCH COLUMNS



32 ARCH COLUMNS



28 ARCH COLUMNS

DETAILS OF COLUMN CAPS

SEC. G-6 TYPICAL SECTION THRU ARCH COLUMNS

SEC. F-F TYPICAL SECTION THRU ARCH PIER COLUMNS

TABLE OF ELEVATIONS TOP OF ARCH & ARCH PIER COLUMNS

ARCH	POINTS										
	"a"	"b"	"c"	"d"	"e"	"f"	"g"	"h"	"i"	"j"	"k"
"A"	167.55	167.60	167.65	167.70	167.75	167.80	167.85	167.90	167.95	168.00	168.05
"B"	168.08	168.13	168.18	168.23	168.28	168.33	168.38	168.43	168.48	168.53	168.58
"C"	168.66	168.71	168.76	168.81	168.86	168.91	168.95	169.01	169.06	169.11	169.16
"D"	169.24	169.29	169.34	169.39	169.44	169.49	169.54	169.59	169.64	169.69	169.74
"E"	169.81	169.86	169.91	169.96	170.01	170.06	170.11	170.16	170.21	170.26	170.31
"F"	170.39	170.44	170.49	170.54	170.59	170.64	170.69	170.74	170.79	170.84	170.89
"G"	170.97	171.02	171.07	171.12	171.17	171.22	171.27	171.32	171.37	171.42	171.47
"H"	171.54	171.59	171.64	171.69	171.74	171.79	171.84	171.89	171.94	171.99	172.04

Note: For location of points see Sheet No. 36.

ESTIMATED QUANTITIES ARCH COLUMNS ONLY

Concrete - Class "A" 1683 Cu.Yds.

ARCH PIER COLUMNS  
14 EAST COLUMNS - 14 WEST COLUMNS

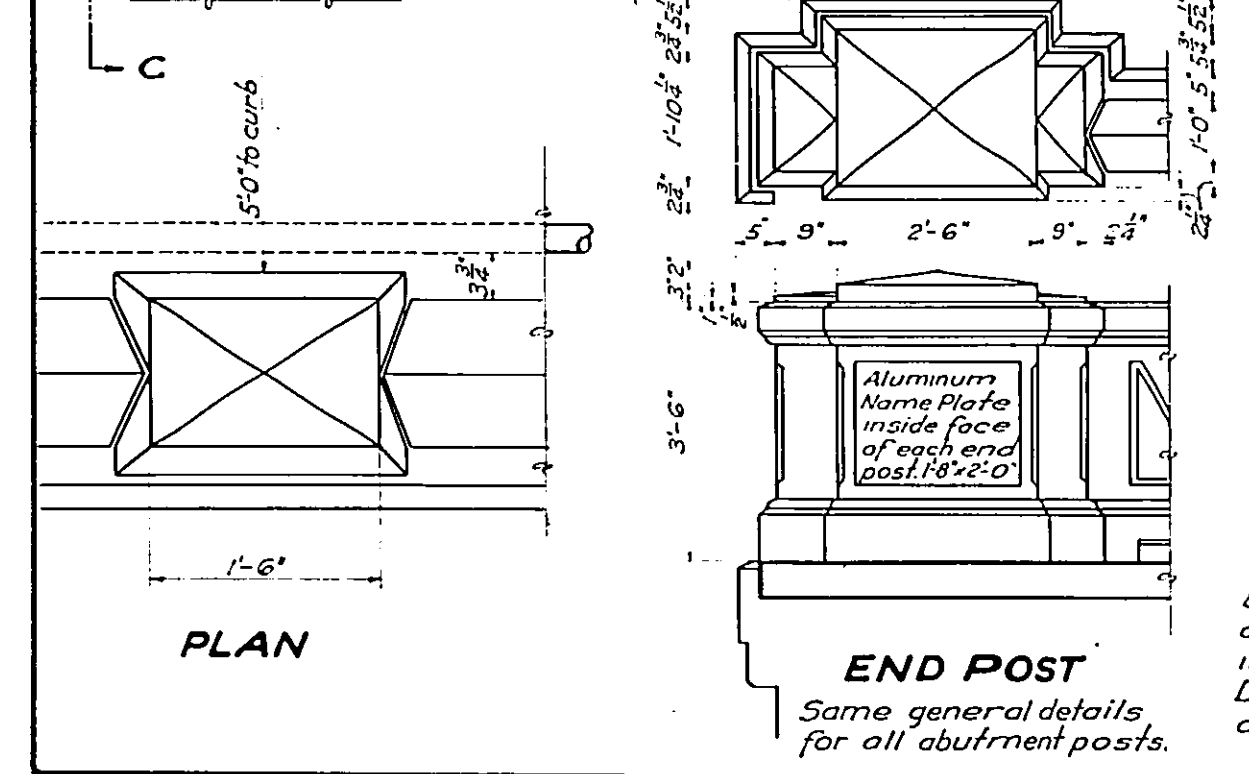
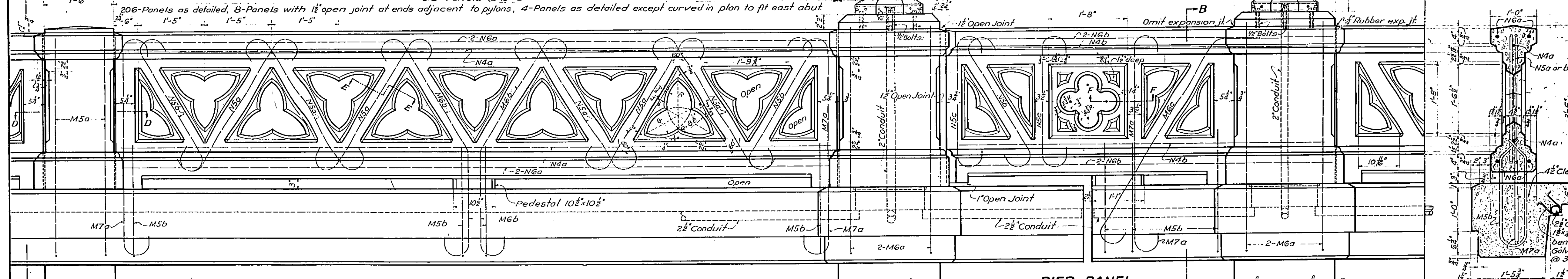
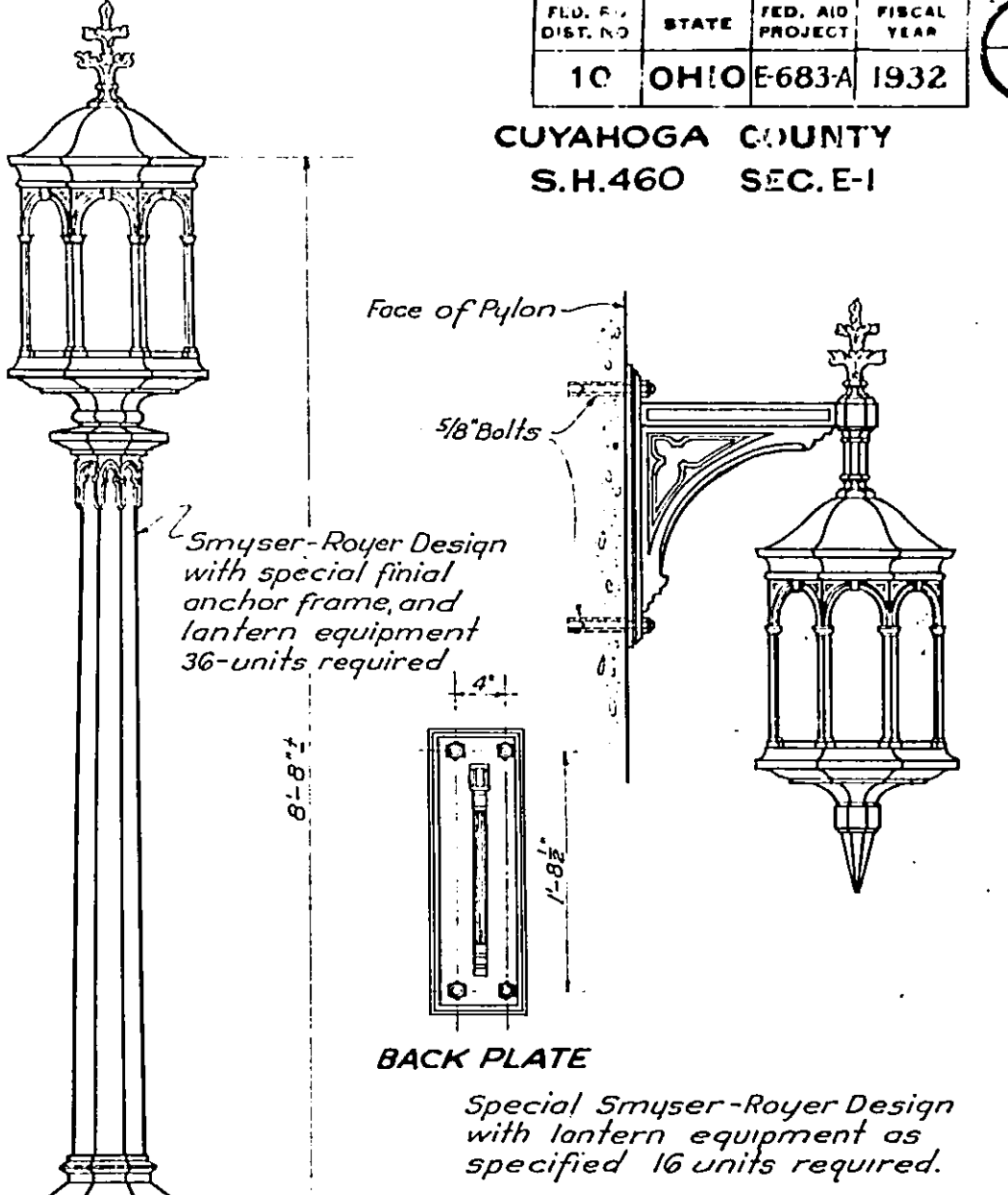
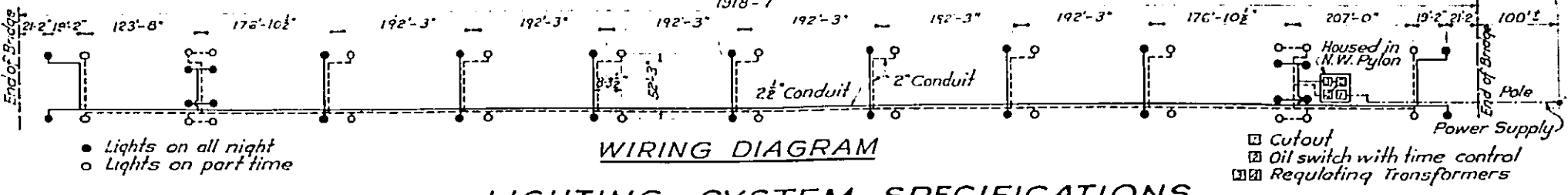
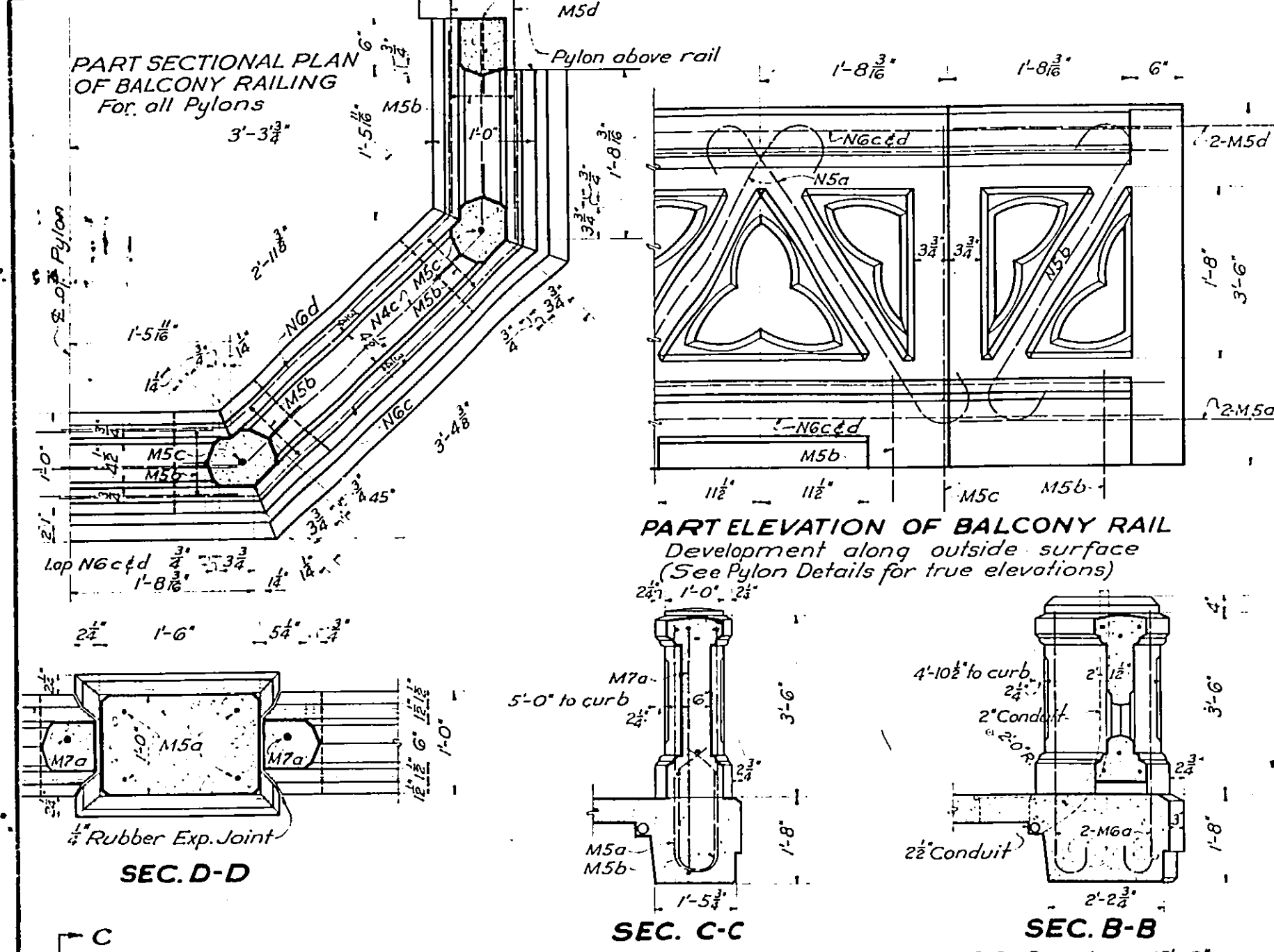
STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

ARCH DECK ENDS & ARCH COLUMNS  
BROOKPARK VIADUCT  
OVER ROCKY RIVER

S.H. 460 SEC. E-1 CUYAHOGA COUNTY.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
APC	C.P.S.	C.P.S.	C.S.B.	W.F.	11/22/32	11/22/32

CUYAHOGA COUNTY  
S.H.460 SEC. E-I



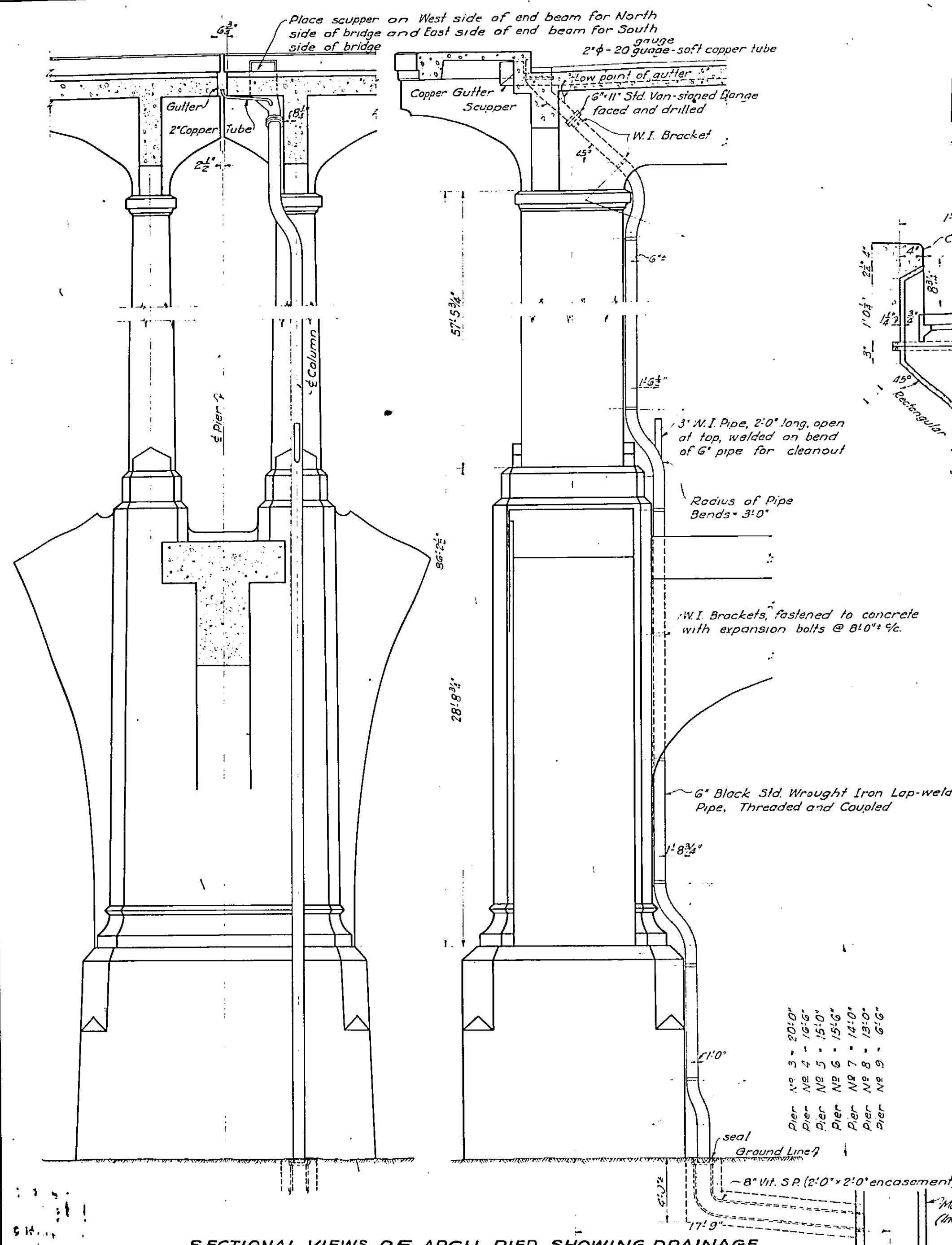
DESIGNED	DRAWN	TRACES	CHECKED	REVIEWED	DATE
M.H.C.	M.H.C.				11-22-32

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**RAILING DETAILS - E - LIGHTING SYSTEM**  
BROOKPARK VIADUCT  
OVER ROCKY RIVER  
S.H.460 SEC. E-I. CUYAHOGA COUNTY



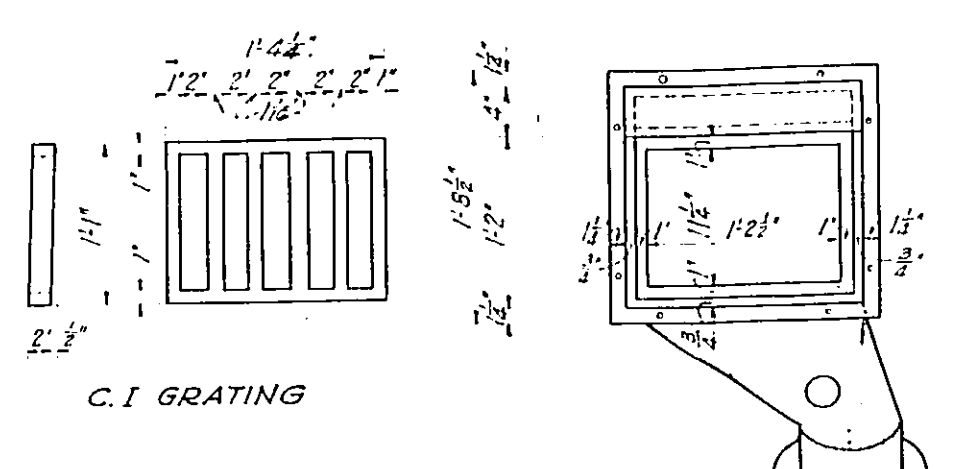
**CUYAHOGA COUNTY**  
S.H. 460 SEC. E-1



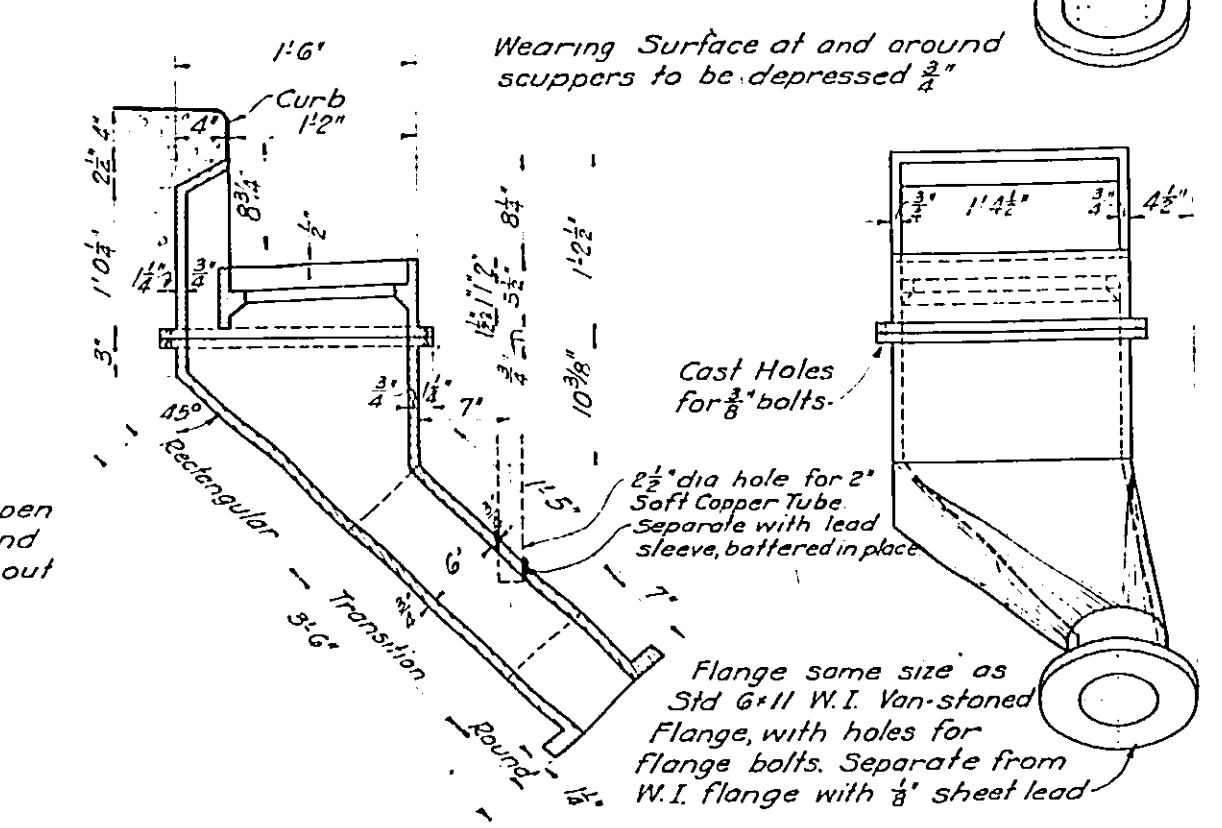
**SECTIONAL VIEWS OF ARCH PIER, SHOWING DRAINAGE**

Price per lineal foot of 6\"/>

All Wrought Iron Pipe shall be \"Byers\" or approved equal, and shall agree with Sec. M-26 Wrought Iron - of Material Details. A certified copy of the mill test and analysis must be furnished the Dept. of Highways. All exposed metal shall be painted two coats. The first coat shall be ready-mixed white lead paint conforming to requirements of Sec. M-93 of \"Material Details.\" The second coat shall consist of white lead paint with the addition of the necessary amounts of liquid black and yellow paint to match the color of the concrete. First coat only to be applied before erection. Painting incl. in cost of W.I. Pipe.

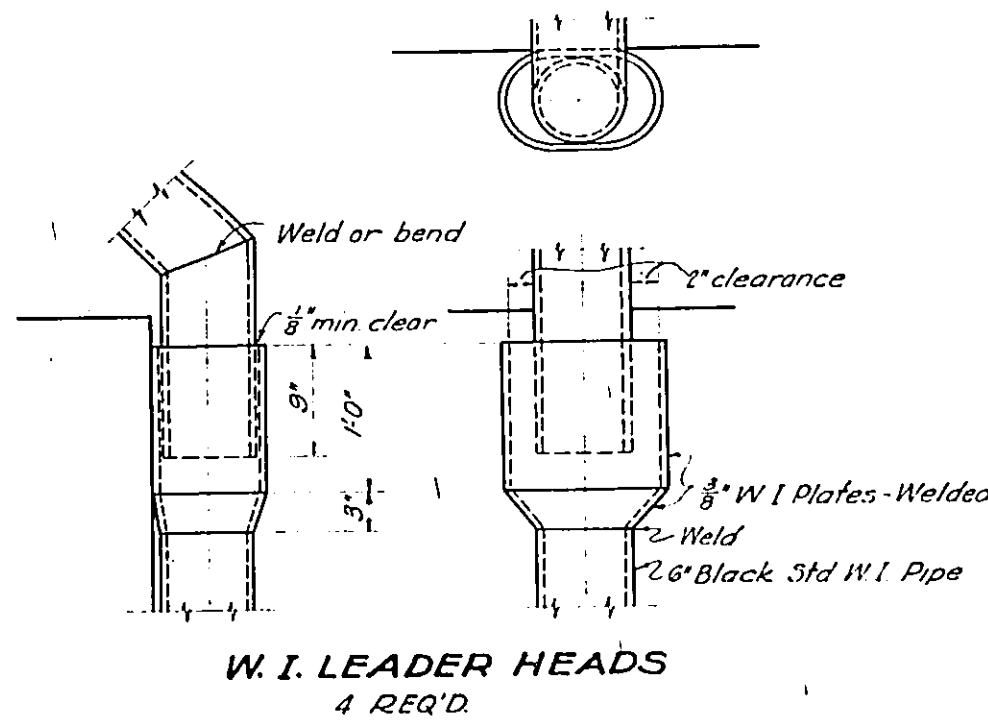


**C.I. GRATING**

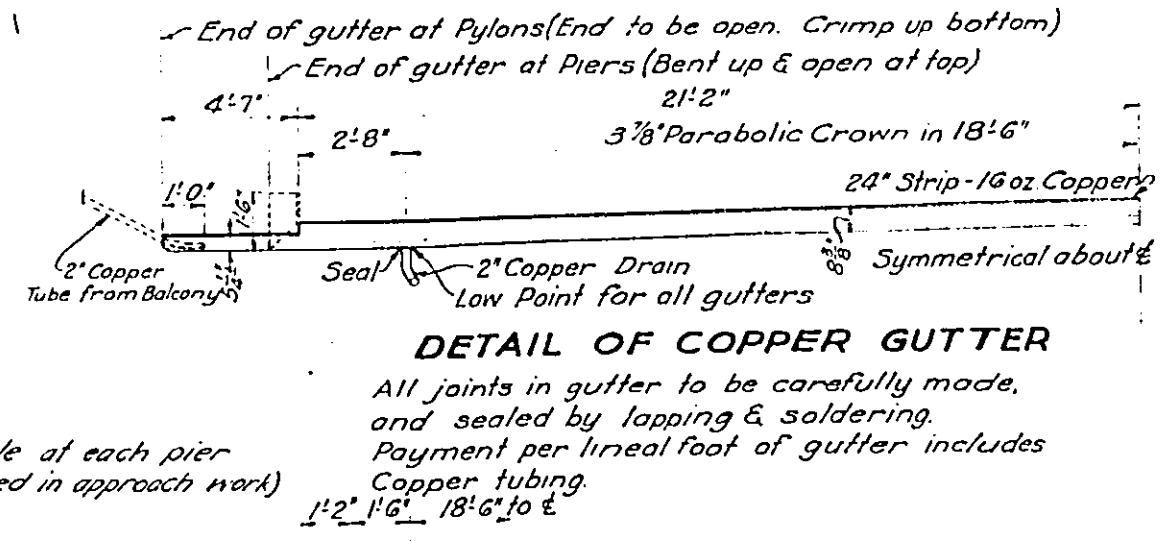


**DETAIL OF CAST IRON SCUPPERS**  
18 UNITS REQUIRED

Price bid for each scupper includes 3 castings with necessary bolts and sheet lead, in place.

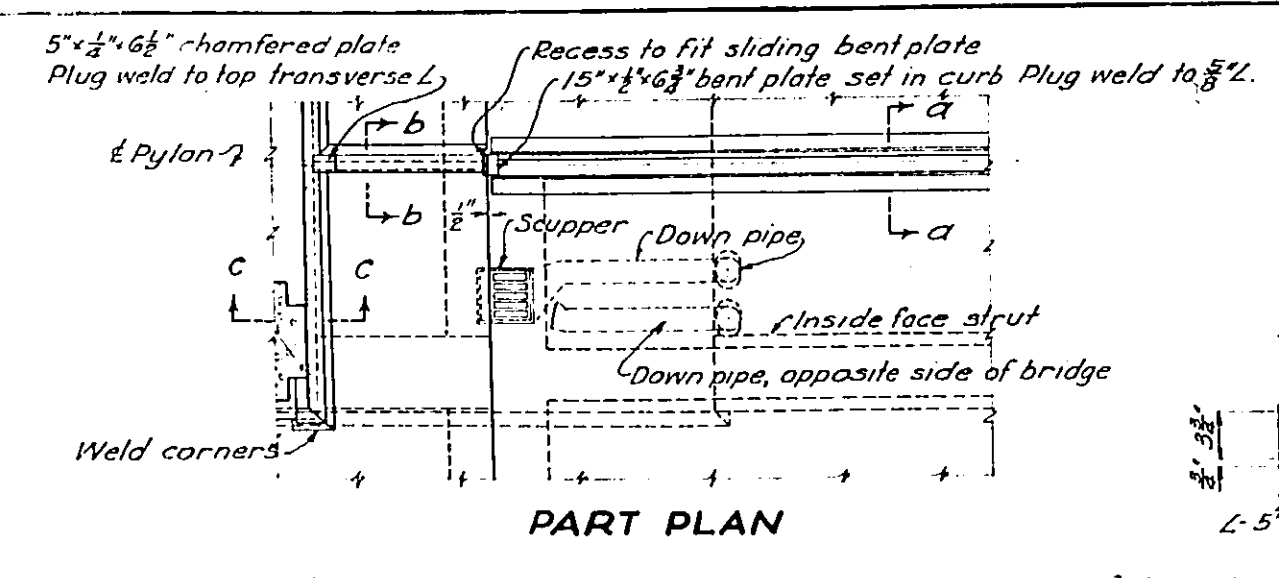


**W.I. LEADER HEADS**  
4 REQ'D.

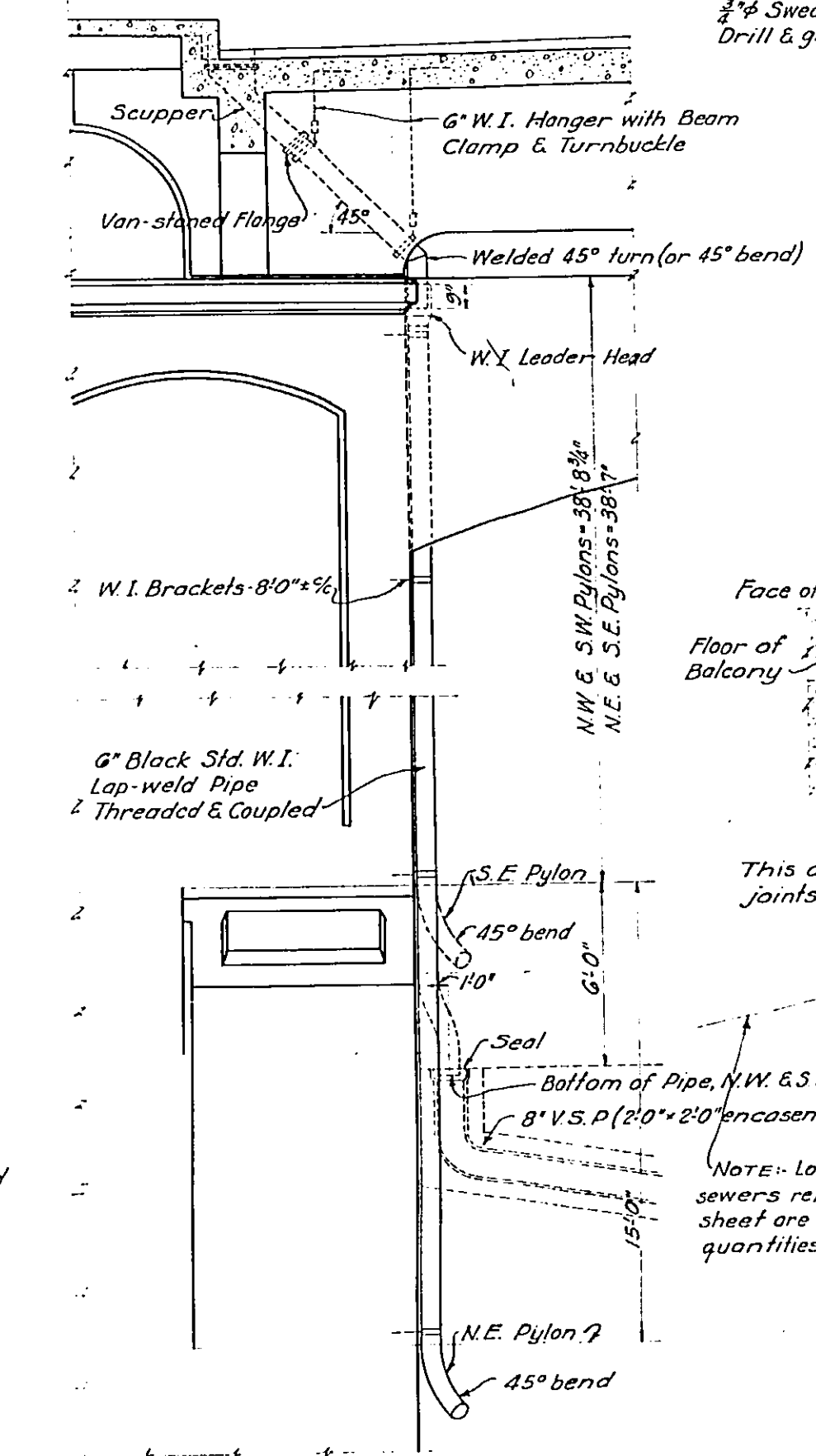


**DETAIL OF COPPER GUTTER**

All joints in gutter to be carefully made, and sealed by lapping & soldering. Payment per lineal foot of gutter includes Copper tubing.



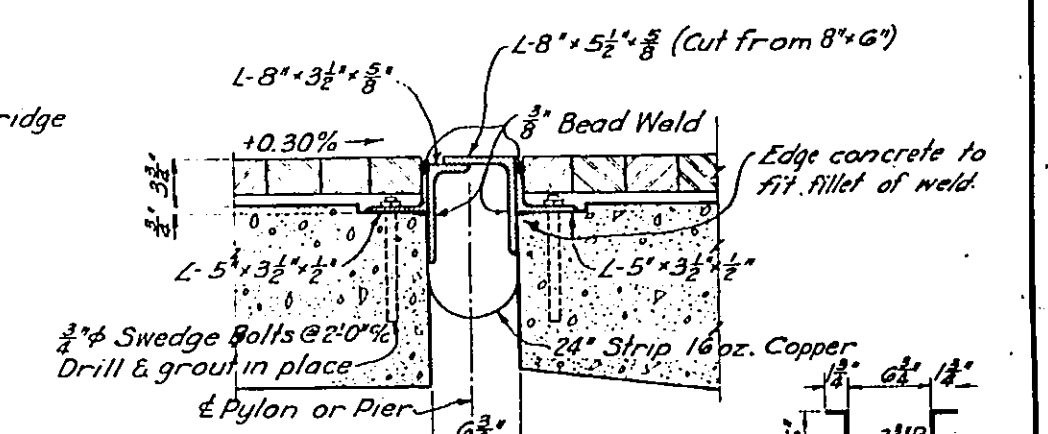
**PART PLAN**



**DRAINAGE AT PYLONS**

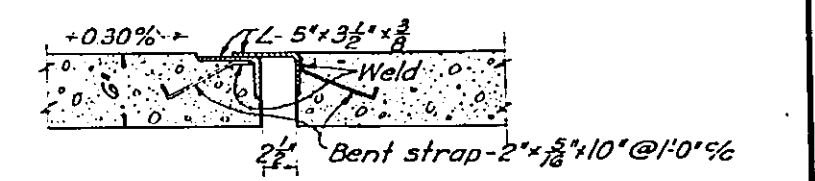
Riprap Gutter to be provided at N.E. & S.E. Pylons from end of pipe to water line, at direction of the Engineer. Included with riprap for payment. 50 sq. yds. of riprap provided in addition to quantity indicated around N.E. & S.E. pylons.

**ESTIMATED QUANTITIES**  
Riprap 50 sq. yds.



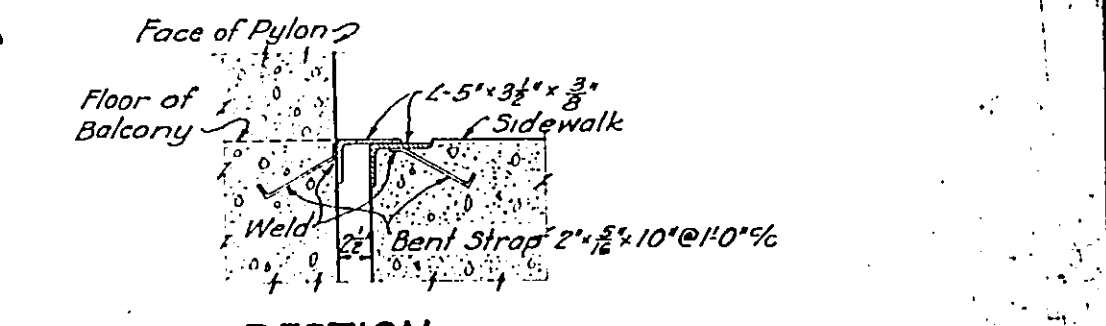
**SECTION a-a**

This detail same for all transverse expansion joints in roadway.



**SECTION b-b**

This detail same for all transverse expansion joints in sidewalk.



**SECTION c-c**

This detail for longitudinal expansion joints of pylons only.

**OUTLETS AT WEST PYLONS**

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**DRAINAGE & EXPANSION JOINTS**  
**BROOKPARK VIADUCT**  
**OVER ROCKY RIVER**  
**S.H. 460 SEC. E-1 CUYAHOGA COUNTY**

DESIGNED G.P.S.	DRAWN G.P.S.	TRACED S.P.	CHECKED W.F.	REVIEWED W.H.	DATE 10/21/32	REVISED 11-22-32
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CUYAHOGA COUNTY  
S.H. 460 SEC. E-1

Mark	Size	No	Length	Weight	Location	Shape
A0a	1 1/4"	336	41'-0"	73,247	All Arches	
A0b	1 1/4"	336	40'-0"	71,461	All Arches	
A0c	1 1/4"	336	40'-9"	72,800	All Arches	
A0d	1 1/4"	336	39'-9"	71,014	All Arches	
A0e	1 1/4"	384	42'-3"	86,263	All Arches	
A0f	1 1/4"	384	41'-3"	84,221	All Arches	
A0g	1 1/4"	48	50'-3"	12,825	All Arches	
A0h	1 1/4"	48	49'-0"	12,506	All Arches	
A7a	1 1/4"	392	10'-0"	10,478	All Arches	
A7b	1 1/4"	448	9'-0"	10,777	All Arches	
A7c	1 1/4"	448	8'-0"	9,580	All Arches	
A7d	1 1/4"	448	12'-6"	14,969	All Arches	
A7e	1 1/4"	448	8'-6"	10,179	All Arches	
A3a	1 1/4"	672	13'-6"	7,720	All Arches	
A3b	1 1/4"	1200	12'-6"	12,765	All Arches	
A3c	1 1/4"	1760	12'-0"	17,973	All Arches	
A3d	1 1/4"	3328	11'-0"	31,153	All Arches	
A2a	1 1/4"	56	14'-0"	524	All Arches	
A2b	1 1/4"	64	13'-6"	577	All Arches	
A2c	1 1/4"	64	13'-3"	567	All Arches	
A2d	1 1/4"	128	13'-0"	1112	All Arches	
TOTAL STEEL-ARCH RIBS = 612,711#						
B0a	1 1/4"	336	29'-3"	52,255	Umbrellas	
B0b	1 1/4"	336	15'-0"	26,798	Umbrellas	
B0c	1 1/4"	140	28'-6"	21,215	Umbrellas	
B0d	1 1/4"	56	43'-0"	12,803	Umbrellas	
B0e	1 1/4"	48	29'-3"	7,465	Pier Shaft	
B0f	1 1/4"	308	10'-0"	16,376	Umbrellas	
B0g	1 1/4"	144	27'-3"	20,864	Umbrellas	
B0h	1 1/4"	48	27'-9"	7,082	Umbrellas	
B0i	1 1/4"	48	25'-0"	6,380	Umbrellas	
B0j	1 1/4"	48	14'-6"	3,701	Umbrellas	
B9a	1 1/4"	112	26'-3"	12,663	Umbrellas	
B9b	1 1/4"	112	39'-0"	18,813	Umbrellas	
B8a	1"	448	11'-6"	17,532	Umbrellas	
B8b	1"	8	19'-0"	517	Pier Shaft	
B8c	1"	224	8'-0"	6,098	Umbrellas	
B8d	1"	24	24'-0"	1,960	Umbrellas	
B8e	1"	24	17'-0"	1,388	Umbrellas	
B8f	1"	72	22'-0"	5,390	Umbrellas	
B8g	1"	8	17'-9"	483	Umbrellas	
B8h	1"	24	22'-9"	1,859	Umbrellas	
B8i	1"	8	14'-9"	405	Umbrellas	
B8j	1"	24	19'-9"	1,613	Umbrellas	
B8k	1"	24	9'-6"	776	Umbrellas	
B5a	3/4"	56	32'-0"	2,693	Umbrellas	
B5b	3/4"	56	29'-0"	2,441	Umbrellas	
B5c	3/4"	56	26'-9"	2,251	Umbrellas	
B5d	3/4"	56	25'-3"	2,125	Umbrellas	
B5e	3/4"	112	24'-3"	4,082	Umbrellas	
B5f	3/4"	70	6'-9"	710	Umbrellas	
B5g	3/4"	112	23'-0"	3,872	Umbrellas	
B5h	3/4"	7	19'-6"	205	Umbrellas	
B5i	3/4"	14	19'-6"	410	Umbrellas	
B5j	3/4"	14	19'-9"	416	Umbrellas	
B5k	3/4"	14	20'-3"	426	Umbrellas	
B5l	3/4"	14	21'-0"	442	Umbrellas	
B5m	3/4"	14	22'-0"	463	Umbrellas	
B5n	3/4"	14	23'-3"	489	Umbrellas	
B5o	3/4"	14	24'-9"	521	Umbrellas	

Mark	Size	No	Length	Weight	Location	Shape
B5p	3/4"	14	23'-6"	494	Umbrellas	
B5q	3/4"	28	19'-6"	821	Umbrellas	
B5r	3/4"	140	15'-0"	31,56	Umbrellas	
B5s	3/4"	28	17'-0"	715	Pier Shaft	
B5t	3/4"	28	17'-3"	726	Umbrellas	
B5u	3/4"	28	17'-3"	726	Umbrellas	
B5v	3/4"	504	18'-0"	13,635	Umbrellas	
B5w	3/4"	84	17'-0"	2,146	Umbrellas	
B4a	3/8"	28	8'-3"	241	Umbrellas	
B4b	3/8"	28	8'-3"	241	Umbrellas	
B4c	3/8"	28	8'-3"	241	Umbrellas	
B4d	3/8"	28	8'-6"	248	Umbrellas	
B4e	3/8"	28	8'-6"	248	Umbrellas	
B4f	3/8"	28	8'-6"	248	Umbrellas	
B4g	3/8"	112	18'-0"	2,105	Umbrellas	
TOTAL STEEL-UMBRELLAS = 131,668#						
TOTAL STEEL-SHAFTS = 100,304#						
C8a	1"	336	33'-3"	38,018	Arch Col.	
C8b	1"	560	30'-6"	58,123	Arch Col.	
C8c	1"	280	10'-3"	9,767	Arch Col.	
C7a	1"	336	43'-9"	39,293	Arch Col.	
C7b	1"	56	43'-9"	6,549	Arch Col.	
C7c	1"	384	27'-6"	28,227	Arch Col.	
C7d	1"	64	27'-6"	4,704	Arch Col.	
C7e	1"	384	16'-3"	16,680	Arch Col.	
C7f	1"	64	16'-3"	2,780	Arch Col.	
C2a	1/2"	1680	7'-0"	7,856	Arch Col.	
C2b	1/2"	1680	7'-6"	8,417	Arch Col.	
C2c	1/2"	1792	7'-9"	9,277	Arch Col.	
C2d	1/2"	224	5'-3"	786	Arch Col.	
C2e	1/2"	2864	7'-2"	13,711	Arch Col.	
C2f	1/2"	1432	7'-6"	7,495	Arch Col.	
C2g	1/2"	1432	2'-6"	2,391	Arch Col.	
C2h	1/2"	748	2'-9"	1,372	Arch Col.	
C2i	1/2"	256	6'-6"	1,112	Arch Col.	
C2j	1/2"	128	2'-0"	171	Arch Col.	
TOTAL STEEL-ARCH COLUMNS = 256,731#						

Mark	Size	No	Length	Weight	Location	Shape
D0a	1 1/4"	376	43'-0"	85,965	Arch Deck	
D9a	1 1/4"	188	54'-0"	43,725	Arch Deck	
D9b	1 1/4"	188	42'-6"	34,413	Arch Deck	
D8a	1"	564	19'-0"	36,467	Arch Deck	
D7a	1"	266	42'-0"	29,863	Arch Deck	
D7b	1"	608	56'-0"	91,010	Arch Deck	
D7c	1"	266	59'-3"	42,128	Arch Deck	
D7d	1"	658	22'-6"	39,574	Arch Deck	
D7e	1"	1034	54'-0"	149,250	Arch Deck	
D7f	1"	38	26'-0"	2,641	Arch Deck	
D7g	1"	94	57'-3"	14,385	Arch Deck	
D7h	1"	38	43'-3"	4,393	Arch Deck	
D7i	1"	688	21'-0"	38,620	Arch Deck	
D7j	1"	84	17'-3"	3,873	Arch Deck	
D7k	1"	12	17'-0"	545	Arch Deck	
D6a	3/4"	798	47'-6"	77,554	Arch Deck	
D6b	3/4"	212	54'-0"	100,761	Arch Deck	
D6c	3/4"	114	32'-3"	7,522	Arch Deck	
D6d	3/4"	84	12'-3"	2,105	Arch Deck	
D6e	3/4"	12	11'-6"	282	Arch Deck	
D6f	3/4"	12	7'-0"	172	Arch Deck	
D6g	3/4"	40	8'-9"	716	Arch Deck	
D6h	3/4"	16	6'-9"	221	Arch Deck	
D6i	3/4"	24	6'-0"	295	Arch Deck	
D6j	3/4"	312	11'-9"	7,501	Arch Deck	
D5a	3/4"	24	4'-6"	162	Arch Deck	
D4a	3/8"	2716	22'-3"	63,090	Arch Deck	
D4b	3/8"	224	47'-0"	10,991	Arch Deck	
D4c	3/8"	256	53'-0"	14,165	Arch Deck	
D4d	3/8"	32	31'-9"	1,061	Arch Deck	
D4e	3/8"	2416	5'-9"	14,503	Arch Deck	
D4f	3/8"	12	7'-3"	91	Arch Deck	
D4g	3/8"	20	4'-9"	99	Arch Deck	
D3a	3/8"	3572	13'-9"	41,797	Arch Deck	
D3b	3/8"	1204	7'-6"	7,685	Arch Deck	
D3c	3/8"	688	8'-6"	4,977	Arch Deck	
D3d	3/8"	688	10'-6"	6,148	Arch Deck	
D3e	3/8"	28	8'-6"	203	Arch Deck	
D3f	3/8"	28	9'-9"	232	Arch Deck	
D3g	3/8"	28	11'-6"	274	Arch Deck	
D3h	3/8"	44	3'-9"	140	Arch Deck	
D3i	3/8"	4	7'-0"	24	Arch Deck	
D3j	3/8"	4	10'-6"	36	Arch Deck	
D3k	3/8"	8	14'-3"	97	Arch Deck	
D3l	3/8"	16	6'-0"	82	Arch Deck	
D3m	3/8"	32	7'-0"	191	Arch Deck	

Mark	Size	No	Length	Weight	Location	Shape
D2a	1/2"	156	7'-0"	729	Arch Deck	
D2b	1/2"	156	6'-0"	625	Arch Deck	
D2c	1/2"	156	6'-0"	625	Arch Deck	
D2d	1/2"	156	6'-6"	677	Arch Deck	
D2e	1/2"	156	7'-0"	729	Arch Deck	
D2f	1/2"	156	7'-6"	782	Arch Deck	
D2g	1/2"	156	8'-0"	834	Arch Deck	
D2h	1/2"	168	7'-6"	2,345	Arch Deck	
D2i	1/2"	456	6'-0"	625	Arch Deck	
D2j	1/2"	3980	6'-3"	16,617	Arch Deck	
D2k	1/2"	3980	8'-0"	21,269	Arch Deck	
D2l	1/2"	2392	5'-3"	8,389	Arch Deck	
D2m	1/2"	56	8'-3"	309	Arch Deck	
D2n	1/2"	28	8'-9"	164	Arch Deck	
D2o	1/2"	28	9'-3"	173	Arch Deck	
D2p	1/2"	28	10'-0"	187	Arch Deck	
D2q	1/2"	84	8'-9"	491	Arch Deck	
D2r	1/2"	28	5'-9"	108	Arch Deck	
D2s	1/2"	16	9'-6"	102	Arch Deck	
D2t	1/2"	736	7'-6"	3,687	Arch Deck	
D2u	1/2"	4	7'-0"	19	Arch Deck	
D2v	1/2"	4	7'-3"	19	Arch Deck	
D2w	1/2"	4	8'-0"	21	Arch Deck	
D2x	1/2"	20	6'-6"	87	Arch Deck	
TOTAL STEEL-ARCH DECK = 1,039,642#						

Mark	Size	No	Length	Weight	Location	Shape
D1a	1/2"	156	7'-0"	729	Arch Deck	
D1b	1/2"	156	6'-0"	625	Arch Deck	
D1c	1/2"	156	6'-0"	625	Arch Deck	
D1d	1/2"	156	6'-6"	677	Arch Deck	
D1e	1/2"	156	7'-0"	729	Arch Deck	
D1f	1/2"	156	7'-6"	782	Arch Deck	
D1g	1/2"	156	8'-0"	834	Arch Deck	
D1h	1/2"	168	7'-6"	2,345	Arch Deck	
D1i	1/2"	456	6'-0"	625	Arch Deck	
D1j	1/2"	3980	6'-3"	16,617	Arch Deck	
D1k	1/2"	3980	8'-0"	21,269	Arch Deck	
D1l	1/2"	2392	5'-3"	8,389	Arch Deck	
D1m	1/2"	56	8'-3"	309	Arch Deck	
D1n	1/2"	28	8'-9"	164	Arch Deck	
D1o	1/2"	28	9'-3"	173	Arch Deck	
D1p	1/2"	28	10'-0"	187	Arch Deck	
D1q	1/2"	84	8'-9"	491	Arch Deck	
D1r	1/2"	28	5'-9"	108	Arch Deck	
D1s	1/2"	16	9'-6"	102	Arch Deck	
D1t	1/2"	736	7'-6"	3,687	Arch Deck	
D1u	1/2"	4	7'-0"	19	Arch Deck	
D1v	1/2"	4	7'-3"	19	Arch Deck	
D1w	1/2"	4	8'-0"	21	Arch Deck	
D1x	1/2"	20	6'-6"	87	Arch Deck	
TOTAL STEEL-ARCH SYSTEM = 2,201,056#						

Radii shown are for inside of bend. Lengths measured along E of bar.

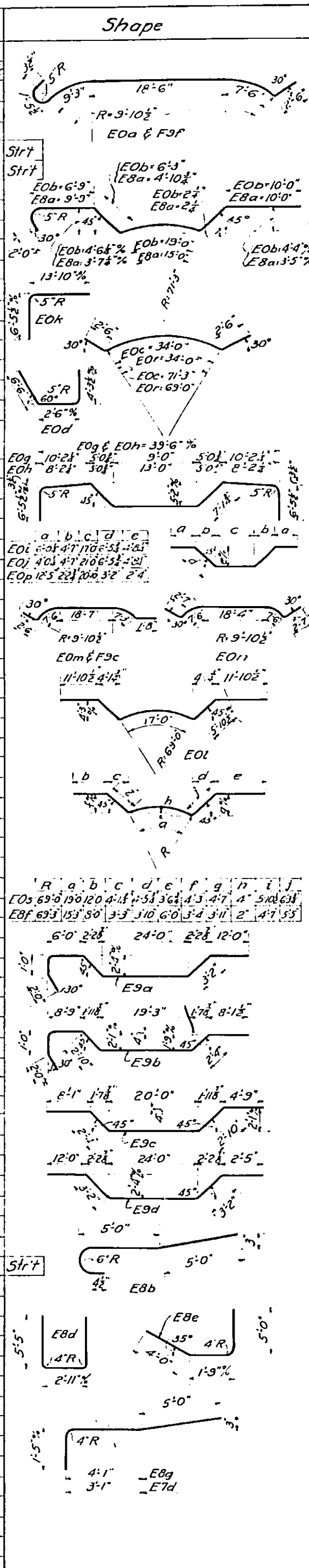
STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**STEEL LIST FOR ARCH SYSTEM**  
BROOKPARK VIADUCT OVER ROCKY RIVER  
S.H. 460 SEC. E-1 CUYAHOGA COUNTY

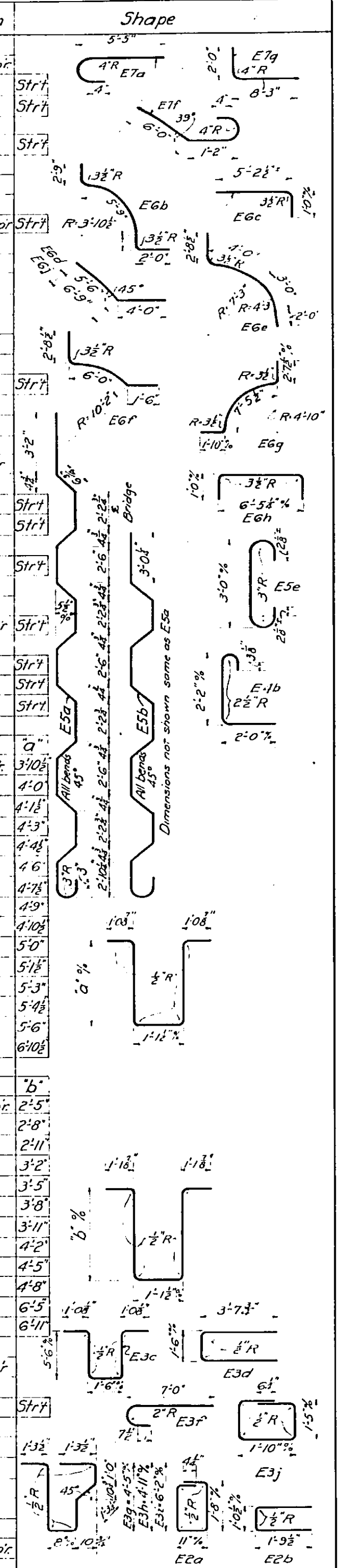
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
C.P.S.	D.W.M.	D.W.M.	W.F.	C.P.S.	W.H.C.	10/27/32

CUYAHOGA COUNTY  
S.H. 460 SEC. E-1

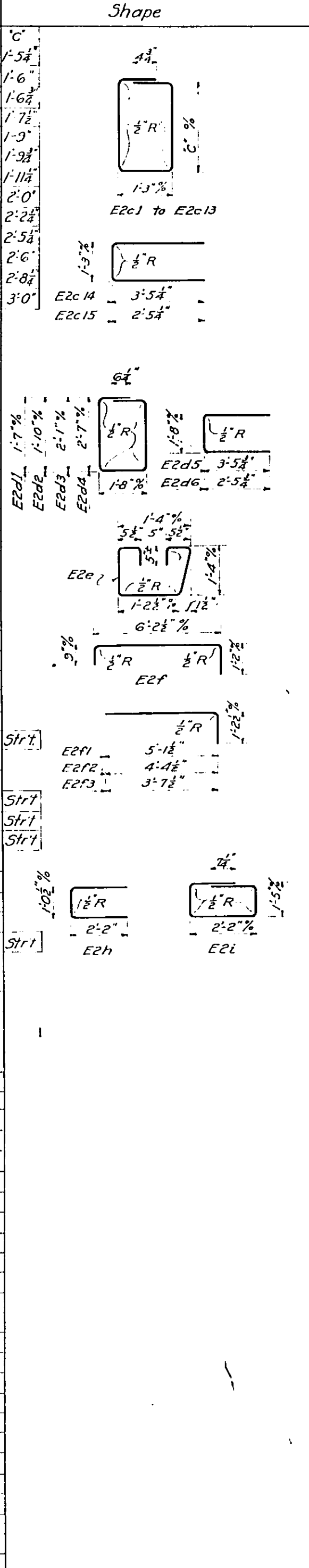
Mark	Size	No	Length	Weight	Location
E0a	1 1/2"	12	39'-6"	2520	West Appr
E0b	1 1/2"	4	50'-6"	1074	"
E0c	1 1/2"	4	39'-0"	829	"
E0d	1 1/2"	16	13'-0"	1106	"
E0e	1 1/2"	8	20'-0"	851	"
E0f	1 1/2"	20	39'-0"	4147	"
E0g	1 1/2"	10	56'-0"	2978	"
E0h	1 1/2"	10	56'-0"	2978	"
E0i	1 1/2"	10	42'-0"	2233	"
E0j	1 1/2"	10	42'-0"	2233	"
E0k	1 1/2"	20	20'-0"	2127	"
E0l	1 1/2"	16	52'-6"	4466	"
E0m	1 1/2"	12	37'-6"	2393	"
E0n	1 1/2"	48	38'-6"	9826	"
E0p	1 1/2"	48	52'-0"	13271	"
E0r	1 1/2"	20	39'-0"	4147	"
E0s	1 1/2"	4	46'-9"	994	"
E3a	1 1/2"	12	51'-0"	2636	West Appr
E3b	1 1/2"	12	44'-0"	2274	"
E3c	1 1/2"	12	38'-0"	1964	"
E3d	1 1/2"	12	44'-3"	2313	"
E8a	1"	4	47'-0"	640	West Appr
E8b	1"	66	11'-6"	2583	"
E8c	1"	12	16'-0"	653	"
E8d	1"	4	13'-3"	180	"
E8e	1"	12	10'-6"	429	"
E8f	1"	4	39'-3"	534	"
E8g	1"	6	10'-3"	209	"



Mark	Size	No	Length	Weight	Location
E7a	1 1/8"	8	6'-6"	139	West Appr
E7b	1 1/8"	24	7'-6"	481	Strt
E7c	1 1/8"	12	37'-0"	1187	Strt
E7d	1 1/8"	8	9'-3"	198	"
E7e	1 1/8"	2	39'-0"	208	Strt
E7f	1 1/8"	4	8'-3"	88	"
E7g	1 1/8"	4	10'-0"	107	"
E6a	3/4"	96	36'-6"	7169	West Appr
E6b	3/4"	4	11'-3"	92	"
E6c	3/4"	12	6'-0"	147	"
E6d	3/4"	28	9'-6"	544	"
E6e	3/4"	20	11'-6"	471	"
E6f	3/4"	24	10'-0"	491	"
E6g	3/4"	4	11'-6"	94	"
E6h	3/4"	4	8'-0"	65	"
E6i	3/4"	8	7'-0"	115	"
E6j	3/4"	10	10'-9"	220	"
E5a	3/4"	193	27'-9"	8050	West Appr
E5b	3/4"	193	21'-9"	6309	"
E5c	3/4"	206	41'-6"	12,849	Strt
E5d	3/4"	141	10'-0"	2,119	Strt
E5e	3/4"	24	4'-6"	162	Strt
E5f	3/4"	36	6'-9"	365	Strt
E4a	3/4"	138	41'-6"	8,579	West Appr
E4b	3/4"	404	4'-9"	2,003	Strt
E4c	3/4"	96	36'-6"	3,658	Strt
E4d	3/4"	10	4'-0"	42	Strt
E4e	3/4"	2	39'-0"	81	Strt
E3a1	3/4"	78	10'-9"	714	West Appr
E3a2	3/4"	72	11'-0"	674	"
E3a3	3/4"	28	11'-3"	268	"
E3a4	3/4"	44	11'-6"	431	"
E3a5	3/4"	28	11'-9"	280	"
E3a6	3/4"	40	12'-0"	408	"
E3a7	3/4"	26	12'-3"	271	"
E3a8	3/4"	24	12'-6"	255	"
E3a9	3/4"	26	12'-9"	282	"
E3a10	3/4"	24	13'-0"	266	"
E3a11	3/4"	26	13'-3"	293	"
E3a12	3/4"	22	13'-6"	253	"
E3a13	3/4"	22	13'-9"	257	"
E3a14	3/4"	24	14'-0"	286	"
E3a15	3/4"	12	16'-9"	171	"
E3b1	3/4"	88	8'-0"	6,046	West Appr
E3b2	3/4"	84	8'-6"	6,08	"
E3b3	3/4"	72	9'-0"	551	"
E3b4	3/4"	66	9'-6"	534	"
E3b5	3/4"	72	10'-0"	613	"
E3b6	3/4"	12	10'-6"	107	"
E3b7	3/4"	60	11'-0"	562	"
E3b8	3/4"	12	11'-6"	117	"
E3b9	3/4"	60	12'-0"	613	"
E3b10	3/4"	24	12'-6"	255	"
E3b11	3/4"	6	16'-0"	82	"
E3b12	3/4"	12	17'-0"	174	"
E3c	3/4"	390	14'-3"	4,123	West Appr
E3d	3/4"	40	8'-9"	298	"
E3e	3/4"	450	36'-6"	13,978	Strt
E3f	3/4"	75	8'-0"	511	"
E3g	3/4"	17	12'-3"	177	"
E3h	3/4"	2	13'-3"	23	"
E3i	3/4"	2	15'-9"	27	"
E3j	3/4"	16	6'-9"	92	"
E2a	3/4"	14	5'-3"	49	West Appr
E2b	3/4"	56	4'-6"	168	"



Mark	Size	No	Length	Weight	Location
E2c1	3/4"	22	5'-6"	81	West Appr
E2c2	3/4"	24	5'-7 1/2"	90	"
E2c3	3/4"	12	5'-9"	46	"
E2c4	3/4"	14	5'-10 1/2"	55	"
E2c5	3/4"	10	6'-1 1/2"	41	"
E2c6	3/4"	14	6'-3"	58	"
E2c7	3/4"	10	6'-6"	43	"
E2c8	3/4"	12	6'-7 1/2"	53	"
E2c9	3/4"	24	7'-0"	112	"
E2c10	3/4"	12	7'-6"	60	"
E2c11	3/4"	10	7'-7 1/2"	51	"
E2c12	3/4"	14	8'-0"	75	"
E2c13	3/4"	34	8'-7 1/2"	196	"
E2c14	3/4"	48	6'-0"	257	"
E2c15	3/4"	2	6'-0"	8	"
E2d1	3/4"	2	6'-9"	9	West Appr
E2d2	3/4"	2	7'-3"	10	"
E2d3	3/4"	2	7'-9"	10	"
E2d4	3/4"	2	8'-9"	12	"
E2d5	3/4"	4	8'-6"	23	"
E2d6	3/4"	4	6'-6"	17	"
E2e	3/4"	320	5'-3"	1,122	West Appr
E2f	3/4"	512	8'-0"	2,736	"
E2f1	3/4"	4	6'-3"	17	West Appr
E2f2	3/4"	4	5'-6"	15	"
E2f3	3/4"	4	4'-9"	13	"
E2a	3/4"	512	6'-3"	2,139	West Appr
E2g1	3/4"	4	5'-0"	13	West Appr
E2g2	3/4"	4	4'-3"	11	"
E2g3	3/4"	4	3'-6"	9	"
E2h	3/4"	8	5'-3"	28	West Appr
E2i	3/4"	14	5'-6"	51	"
E2j	3/4"	16	2'-3"	24	"



Total West Approach Spans 170,922#

Note:  
Radii shown are for inside of bend.  
Lengths are measured along center of bar.

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**STEEL LIST**  
WEST APPROACH SPANS  
BROOKPARK VIADUCT  
OVER ROCKY RIVER  
S.H. 460 SEC. E-1 CUYAHOGA COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVISED - DATE	APPROVED
agk	D.W.W.	agk	W.F.	11/23/32	W.F.
			C.B.S.	10/24/32	



CUYAHOGA COUNTY  
S.H. 460 SEC. E-1

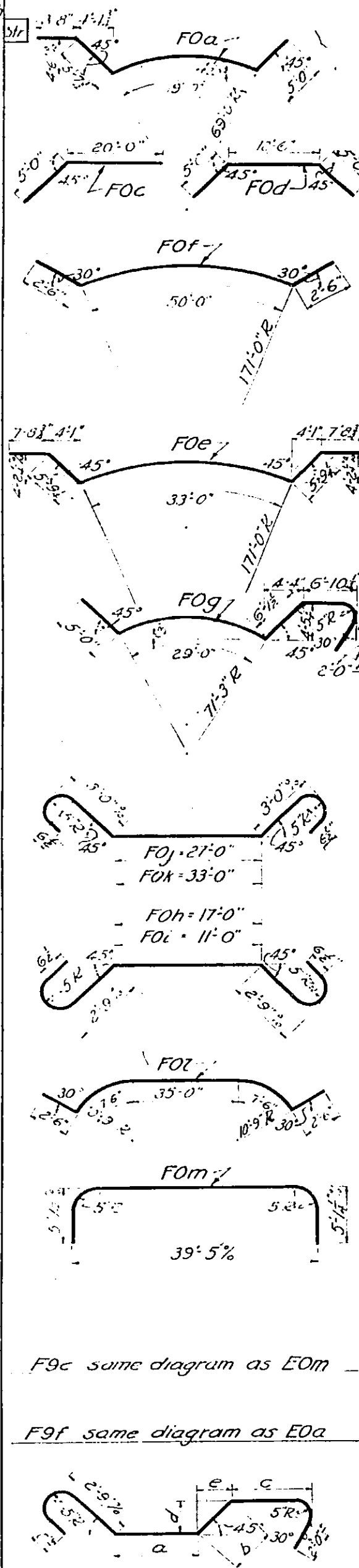
Mark	Size	No.	Length	Weight	Location	Shape
E0c	1/4"	4	39'-0"	829	E. Approach	
E0d	1/4"	16	13'-0"	1,106	"	
E0e	1/4"	4	39'-0"	829	"	
E0b	1"	36	11'-6"	1,409	"	
E0e	1"	12	10'-6"	429	"	
E0g	1"	6	10'-3"	209	"	
E7a	1"	8	6'-6"	139	"	
E7b	1"	24	7'-6"	491	"	Str.
E7d	1"	8	9'-3"	198	"	
E7e	1"	2	39'-0"	208	"	Str.
E7f	1"	4	8'-3"	88	"	
E7g	1"	4	10'-0"	107	"	
E6b	3/8"	4	11'-3"	92	"	
E6c	3/8"	12	6'-0"	147	"	
E6d	3/8"	20	9'-6"	544	"	
E6e	3/8"	8	11'-6"	188	"	
E6f	3/8"	16	10'-0"	327	"	
E6g	3/8"	4	11'-6"	94	"	
E6h	3/8"	4	8'-0"	65	"	
E6i	3/8"	8	7'-0"	115	"	
E6j	3/8"	10	10'-9"	220	"	
E3a	3/8"	117	27'-9"	4,080	"	
E3b	3/8"	117	21'-9"	3,825	"	
E3c	3/8"	127	4'-6"	7,922	"	Str.
E3d	3/8"	66	10'-0"	992	"	Str.
E3e	3/8"	24	4'-5"	162	"	
E3f	3/8"	24	6'-9"	243	"	Str.
E4a	3/8"	119	4'-6"	5,156	"	Str.
E4b	3/8"	238	4'-9"	11,800	"	
E4d	3/8"	10	4'-0"	12	"	Str.
E4e	3/8"	2	39'-0"	81	"	Str.
E3a1	1/2"	62	10'-9"	567	"	
E3a2	1/2"	28	11'-0"	262	"	
E3a3	1/2"	24	11'-3"	230	"	
E3a4	1/2"	24	11'-6"	235	"	
E3a5	1/2"	20	11'-9"	200	"	
E3a6	1/2"	20	12'-0"	204	"	
E3a7	1/2"	22	12'-3"	208	"	
E3a8	1/2"	20	12'-6"	213	"	
E3a9	1/2"	14	12'-9"	152	"	
E3a10	1/2"	18	13'-0"	192	"	
E3a11	1/2"	18	13'-3"	203	"	
E3a12	1/2"	14	13'-6"	161	"	
E3a13	1/2"	14	13'-9"	164	"	
E3a14	1/2"	16	14'-0"	191	"	
E3a15	1/2"	12	16'-9"	171	"	
E3b1	1/2"	324	8'-0"	2,706	"	
E3b2	1/2"	288	8'-6"	2,083	"	
E3b3	1/2"	48	9'-0"	368	"	
E3b4	1/2"	30	9'-6"	243	"	
E3b5	1/2"	36	10'-0"	306	"	
E3b6	1/2"	6	19'-6"	54	"	
E3b7	1/2"	30	11'-0"	281	"	
E3b8	1/2"	24	11'-6"	235	"	
E3b9	1/2"	6	12'-0"	61	"	
E3b10	1/2"	48	12'-6"	511	"	
E3b11	1/2"	6	16'-0"	82	"	
E3b12	1/2"	12	17'-0"	174	"	

Bending - diagrams - same - as - for - West - Approach

Mark	Size	No.	Length	Weight	Location	Shape
E2c	1/2"	144	4'-3"	1,746	E. Approach	
E2f	1/2"	75	8'-0"	511	"	
E2j	1/2"	16	6'-9"	92	"	
E2a	1/2"	14	5'-3"	49	"	
E2b	1/2"	56	4'-6"	168	"	
E2c1	1/2"	12	5'-6"	44	"	
E2c2	1/2"	14	5'-7 1/2"	53	"	
E2c3	1/2"	8	5'-9"	31	"	
E2c4	1/2"	10	5'-10 1/2"	39	"	
E2c5	1/2"	4	6'-1 1/2"	16	"	
E2c6	1/2"	10	6'-3"	42	"	
E2c7	1/2"	4	6'-6"	17	"	
E2c8	1/2"	8	6'-7 1/2"	35	"	
E2c9	1/2"	14	7'-0"	65	"	
E2c10	1/2"	8	7'-6"	40	"	
E2c11	1/2"	4	7'-7 1/2"	20	"	
E2c12	1/2"	10	8'-0"	53	"	
E2c13	1/2"	20	8'-7 1/2"	115	"	
E2c14	1/2"	24	8'-0"	128	"	
E2c15	1/2"	2	6'-0"	8	"	
E2d1	1/2"	2	6'-9"	9	"	
E2d2	1/2"	2	7'-3"	10	"	
E2d3	1/2"	2	7'-9"	10	"	
E2d4	1/2"	2	8'-9"	12	"	
E2d5	1/2"	4	8'-6"	23	"	
E2d6	1/2"	4	6'-6"	17	"	
E2e	1/2"	176	5'-3"	617	"	
E2f	1/2"	292	8'-0"	1,560	"	
E2f1	1/2"	4	6'-3"	17	"	
E2f2	1/2"	4	5'-6"	15	"	
E2f3	1/2"	4	4'-9"	13	"	
E2g	1/2"	292	6'-3"	1,219	"	Str.
E2g1	1/2"	4	5'-0"	13	"	
E2g2	1/2"	4	4'-3"	11	"	
E2g3	1/2"	4	3'-6"	9	"	
E2h	1/2"	8	5'-3"	28	"	
E2i	1/2"	14	5'-6"	51	"	
E2j	1/2"	16	2'-3"	24	"	Str.

Bending - diagrams - same - as - for - West - Approach

Mark	Size	No.	Length	Weight	Location	Shape
F0a	1/2"	4	34'-0"	723	E. Approach	
F0b	1/2"	40	27'-0"	5,742	"	
F0c	1/2"	8	25'-0"	1,063	"	
F0d	1/2"	8	22'-6"	957	"	
F0e	1/2"	4	60'-0"	1,276	"	
F0f	1/2"	4	55'-0"	1,170	"	
F0g	1/2"	4	49'-6"	1,053	"	
F0h	1/2"	24	25'-6"	3,254	"	
F0i	1/2"	24	19'-6"	2,498	"	
F0j	1/2"	12	36'-0"	2,297	"	
F0k	1/2"	12	42'-0"	2,680	"	
F0l	1/2"	12	55'-0"	3,509	"	
F0m	1/2"	8	49'-0"	2,034	"	
F9a	1/2"	12	33'-0"	1,706	E. Approach	
F9b	1/2"	12	36'-0"	1,861	"	
F9c	1/2"	12	37'-6"	1,938	"	
F9d	1/2"	12	36'-0"	1,861	"	
F9e	1/2"	12	39'-0"	2,016	"	
F9f	1/2"	12	39'-6"	2,042	"	



	a	b	c	d	e
F9a	17'-6"	2'-9 1/2"	6'-0"	2'-0 1/2"	1'-11 1/2"
F9b	23'-0"	3'-1 1/2"	3'-3"	2'-4"	2'-2 1/2"
F9d	17'-6"	2'-9 1/2"	9'-0"	2'-0 1/2"	1'-11 1/2"
F9e	23'-0"	3'-1 1/2"	6'-3"	2'-4"	2'-2 1/2"

Mark	Size	No.	Length	Weight	Location	Shape
F8a	1"	4	31'-0"	422	E. Approach	
F8b	1"	4	37'-0"	504	"	
F8c	1"	8	39'-0"	1,062	"	Str.
F8d	1"	4	13'-9"	187	"	Str.
F8e	1"	10	25'-3"	859	"	Str.
F8f	1"	10	20'-3"	1,378	"	Str.
F8g	1"	20	16'-9"	1,140	"	Str.
F8h	1"	10	14'-6"	493	"	Str.
F8i	1"	48	11'-0"	1,797	"	Str.
F8j	1"	60	8'-6"	1,736	"	Str.
F7a	1"	6	42'-0"	674	E. Approach	Str.
F6a	3/8"	48	42'-0"	4,125	"	Str.
F4a	3/8"	48	41'-6"	2,080	"	Str.
F3a	1/2"	225	41'-6"	7,946	"	Str.
F3b	1/2"	158	7'-6"	1,009	"	
F3c	1/2"	17	12'-9"	184	"	
F3d	1/2"	2	13'-9"	23	"	
F3e	1/2"	2	16'-3"	28	"	
F2a	1"	48	6'-6"	208	E. Approach	
TOTAL E. APPROACH				114,715		

Note: Radii shown are for inside of bar. Lengths are measured along  $\frac{1}{2}$  of bar.

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**STEEL LIST**  
EAST APPROACH  
BROOKPARK VIADUCT  
OVER ROCKY RIVER  
S.H. 460 SEC. E-1 - CUYAHOGA COUNTY

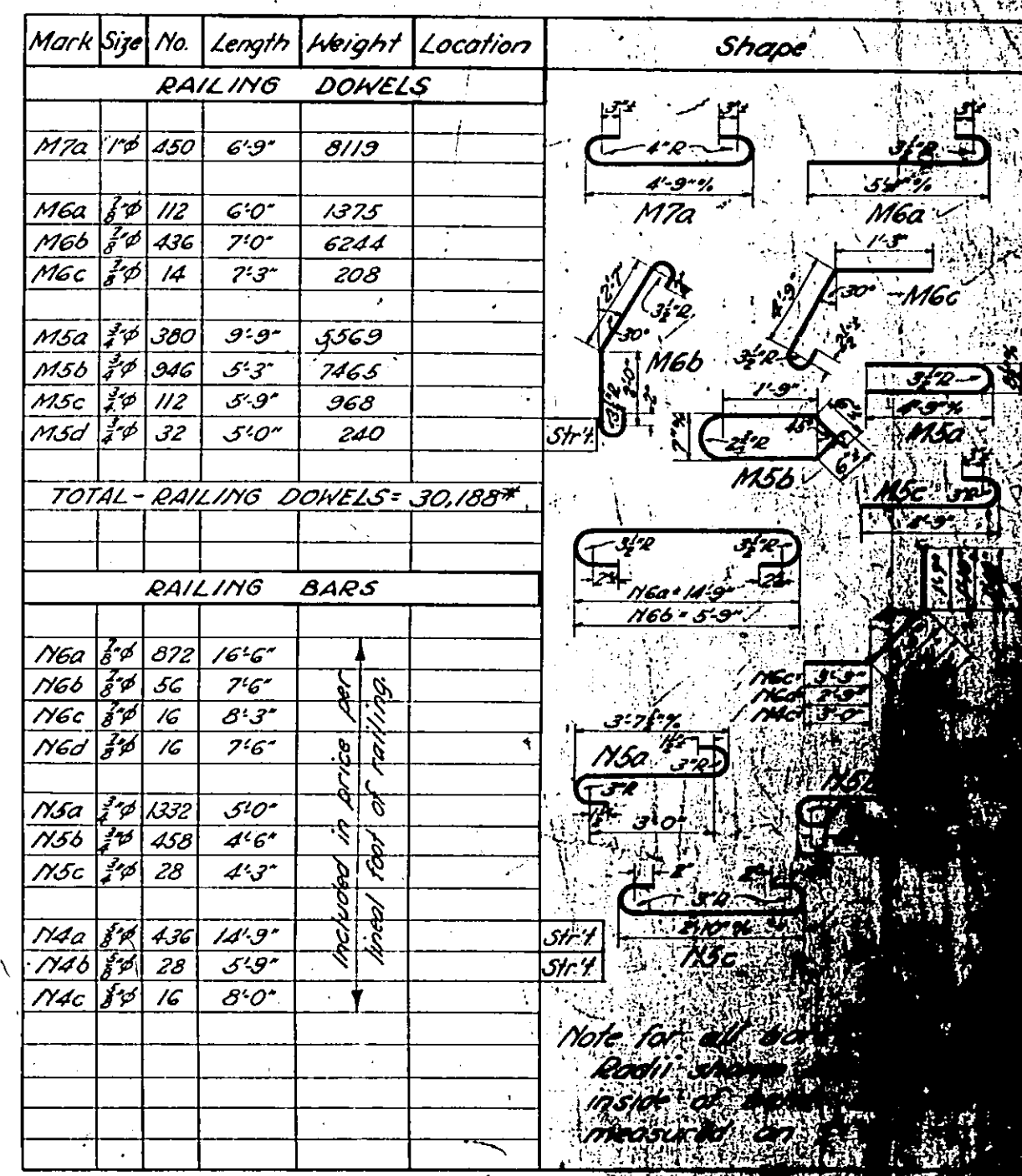
DESIGNED	DRAWN	TRACED	CHECKED	APPROVED
agf		C.C.S.	W.C.	



Mark	Size	No.	Length	Weight	Location		Shape
					E	W	
<b>BELOW BRIDGE SEAT</b>							
60a	1/2"	122	10'-0"	6487	48	74	Str-Y
60b	1/2"	24	17'-6"	2233		24	
60c	1/2"	30	19'-0"	3030	10	20	
60d	1/2"	10	15'-0"	798	10		
60e	1/2"	12	23'-0"	1467	4		
60f	1/2"	12	18'-0"	1148	12		
60g	1/2"	15	31'-0"	2472	15		
<b>BELOW BRIDGE SEAT</b>							
60h	1/2"	12	44'-0"	2274	6	6	Str-Y
60i	1/2"	8	38'-0"	1309	4	4	Str-Y
60j	1/2"	32	12'-0"	1654	16	16	Str-Y
60k	1/2"	24	9'-0"	930	12	12	Str-Y
60l	1/2"	12	29'-0"	1499	6	6	
60m	1/2"	4	23'-9"	409	2	2	
60n	1/2"	8	18'-0"	620	4	4	
<b>BELOW BRIDGE SEAT</b>							
60o	1/2"	156	9'-0"	4777	82	74	Str-Y
60p	1/2"	84	13'-0"	3716	28	36	Str-Y
60q	1/2"	9	19'-6"	597	3	6	Str-Y
60r	1/2"	3	24'-6"	250	3		Str-Y
<b>BELOW BRIDGE SEAT</b>							
60s	1/2"	96	43'-0"	11034	48	48	Str-Y
60t	1/2"	80	38'-3"	8179	40	40	Str-Y
60u	1/2"	16	29'-3"	1251	8	8	Str-Y
60v	1/2"	10	16'-0"	428	10		Str-Y
60w	1/2"	16	12'-6"	535	8	8	Str-Y
60x	1/2"	36	15'-9"	1516	18	18	
<b>BELOW BRIDGE SEAT</b>							
60y	1/2"	226	17'-0"	4011	114	112	
60z	1/2"	250	14'-6"	3777	138	112	
61a	1/2"	237	15'-0"	3712	119	118	
61b	1/2"	243	20'-6"	5202	121	122	
61c	1/2"	18	9'-9"	183	6	12	
61d	1/2"	18	11'-0"	207	6	12	
61e	1/2"	32	14'-0"	468	16	16	
61f	1/2"	80	12'-6"	1044	40	40	
61g	1/2"	64	11'-0"	735	32	32	
61h	1/2"	66	10'-0"	585	28	28	
61i	1/2"	44	11'-3"	505	22	22	
61j	1/2"	40	12'-0"	501	20	20	
<b>BELOW BRIDGE SEAT</b>							
61k	1/2"	16	13'-6"	184	8	8	
61l	1/2"	42	6'-6"	299	18	24	Str-Y
61m	1/2"	24	13'-0"	258	16	8	Str-Y
61n	1/2"	78	8'-9"	581	39	39	
<b>BELOW BRIDGE SEAT</b>							
61o	1/2"	182	3'-3"	287	66	66	
<b>TOTAL-PYLONS BELOW BR. SEAT= 81,101#</b>							
<b>PYLONS-ABOVE BRIDGE SEAT</b>							
62a	1/2"	16	15'-0"	1276	8	8	Str-Y
62b	1/2"	32	8'-3"	898	16	16	Str-Y
62c	1/2"	16	11'-9"	503	8	8	
62d	1/2"	8	10'-9"	230	4	4	
62e	1/2"	8	12'-3"	262	4	4	
62f	1/2"	80	18'-9"	4010	40	40	Str-Y
62g	1/2"	40	12'-6"	1337	20	20	Str-Y
62h	1/2"	16	10'-0"	428	8	8	
<b>BELOW BRIDGE SEAT</b>							
62i	1/2"	40	12'-9"	920	24	24	Str-Y
62j	1/2"	8	8'-6"	204	8	8	
62k	1/2"	4	4'-6"	108	8	8	Str-Y
<b>TOTAL-PYLONS ABOVE BR. SEAT= 16,464#</b>							

Mark	Size	No.	Length	Weight	Location		Shape
					E	W	
<b>WEST APPROACH PIERS</b>							
J8a	1/2"	18	45'-3"	2772			W.Appr. Piers Str-Y
J8b	1/2"	18	43'-9"	2680			Str-Y
J8c	1/2"	4	21'-0"	286			Str-Y
J8d	1/2"	220	12'-0"	8934			Str-Y
J8e	1/2"	8	20'-0"	344			Str-Y
J8f	1/2"	180	8'-6"	5207			Str-Y
J8g	1/2"	18	43'-3"	2649			Str-Y
J8h	1/2"	18	42'-0"	2573			Str-Y
J8i	1/2"	8	19'-0"	517			Str-Y
J8j	1/2"	18	40'-6"	2481			Str-Y
J8k	1/2"	18	36'-0"	2205			Str-Y
J8l	1/2"	4	16'-6"	225			Str-Y
J8m	1/2"	18	32'-0"	1960			Str-Y
J8n	1/2"	18	24'-6"	1501			Str-Y
J8o	1/2"	4	15'-0"	204			Str-Y
J8p	1/2"	4	11'-6"	157			Str-Y
J8q	1/2"	18	24'-3"	1516			Str-Y
J8r	1/2"	18	19'-3"	1179			Str-Y
J8s	1/2"	4	11'-0"	150			Str-Y
J8t	1/2"	4	9'-0"	123			Str-Y
<b>TOTAL-WEST APPROACH PIERS= 44,724#</b>							
<b>END ABUTMENTS</b>							
K8a	1/2"	154	8'-0"	4192	77	77	Str-Y
K8b	1/2"	24	28'-0"	2287	14	10	Str-Y
K8c	1/2"	10	26'-9"	911	10		Str-Y
K8d	1/2"	21	26'-0"	1859		21	Str-Y
K8e	1/2"	20	25'-6"	1736	10	10	Str-Y
K8f	1/2"	30	24'-3"	2476	22	8	Str-Y
K8g	1/2"	28	23'-6"	2239	14	14	Str-Y
K8h	1/2"	7	23'-0"	548		7	Str-Y
K8i	1/2"	10	21'-9"	740	5	5	Str-Y
K8j	1/2"	10	60'-0"	2042	5	5	
K8k	1/2"	46	53'-9"	8,414	23	23	Str-Y
K8l	1/2"	8	16'-0"	435	4	4	Str-Y
K8m	1/2"	8	36'-9"	1000	4	4	
K8n	1/2"	20	21'-0"	1429	10	10	Str-Y
K8o	1/2"	4	17'-3"	184	2	2	Str-Y
K8p	1/2"	4	20'-6"	219	2	2	Str-Y
<b>TOTAL-END ABUTMENTS= 69,856#</b>							
<b>APPROACH SLABS</b>							
L7a	1/2"	144	21'-6"		72	72	Incl. with Appro. Slab
L7b	1/2"	14	39'-6"		7	7	for payment
<b>TOTAL-APPROACH SLABS= 150,000#</b>							

Mark	Size	No.	Length	Weight	Location		Shape
					E	W	
<b>RAILING DOWELS</b>							
K5a	1/2"	244	8'-0"	2934	122	122	Str-Y
K5b	1/2"	32	12'-0"	577	32		Str-Y
K5c	1/2"	24	21'-6"	776	24		Str-Y
K5d	1/2"	8	19'-6"	231	8		Str-Y
K5e	1/2"	64	14'-0"	1347		64	Str-Y
K5f	1/2"	187	24'-3"	6816	97	90	
K5g	1/2"	20	25'-9"	774	6	14	
K5h	1/2"	16	27'-0"	649		16	
<b>RAILING DOWELS= 30,188#</b>							
<b>RAILING BARS</b>							
K3a	1/2"	4	17'-3"	59	2	2	Str-Y
K3b	1/2"	125	10'-3"	1090	63	62	
K3c	1/2"	8	15'-3"	104	4	4	
K3d	1/2"	8	13'-3"	45	2	2	
K3e	1/2"	44	7'-3"	271	22	22	
K3f	1/2"	170	8'-3"	1184	84	86	
K3g	1/2"	47	6'-6"	260	24	23	
K3h	1/2"	34	8'-9"	253	17	17	
K3i	1/2"	183	12'-9"	1552	72	71	
K3j	1/2"	8	8'-6"	58	8	8	Str-Y
K3k	1/2"	8	10'-9"	73	8	8	Str-Y
K3l	1/2"	16	11'-6"	157	16	16	Str-Y
K3m	1/2"	8	13'-0"	89	8	8	Str-Y
K3n	1/2"	16	14'-0"	191	16	16	Str-Y
K3o	1/2"	24	15'-3"	511	16	8	Str-Y
K3p	1/2"	4	16'-3"	55	4		Str-Y
K3q	1/2"	16	17'-6"	239		16	Str-Y
K3r	1/2"	4	18'-9"	64	4		Str-Y
K3s	1/2"	4	21'-0"	71	4		Str-Y
K3t	1/2"	20	23'-0"	591	4	16	Str-Y
K3u	1/2"	100	8'-6"	723	50	50	
<b>TOTAL-RAILING BARS= 9722#</b>							
<b>REPLACEMENT STEEL</b>							
RE0	1/2"	86	12'-0"	5487			Straight
RE1	1/2"	14	11'-0"	663			
RE2	1/2"	30	10'-0"	1020			
RE3	1/2"	62	10'-0"	1657			
RE4	1/2"	24	9'-0"	442			
RE5	1/2"	14	8'-0"	168			
RE6	1/2"	16	7'-0"	117			
RE7	1/2"	22	6'-0"	112			
RE8	1/2"	14	6'-0"	56			
<b>TOTAL-REPLACEMENT STEEL= 9722#</b>							
<b>APPROACH SLABS</b>							
L7a	1/2"	144	21'-6"		72	72	Incl. with Appro. Slab
L7b	1/2"	14	39'-6"		7	7	for payment
<b>TOTAL-APPROACH SLABS= 150,000#</b>							



**REPLACEMENT STEEL**

Mark	Size	No.	Length	Weight	Shape
RE0	1/2"	86	12'-0"	5487	Straight
RE1	1/2"	14	11'-0"	663	
RE2	1/2"	30	10'-0"	1020	
RE3	1/2"	62	10'-0"	1657	
RE4	1/2"	24	9'-0"	442	
RE5	1/2"	14	8'-0"	168	
RE6	1/2"	16	7'-0"	117	
RE7	1/2"	22	6'-0"	112	
RE8	1/2"	14	6'-0"	56	

**TOTAL-REPLACEMENT STEEL= 9722#**

Bars under "Replacement Steel" shall be furnished by the Contractor and shall replace those cut from pieces designated by the Engineer for replacement purposes. Test specimens shall be cut in such a manner as to obtain a straight portion 24" long. Replacement bars may be used as test specimens, but not to exceed 10% of their total number. Replacement bars shall be furnished in the shape of the piece they replace.

DESIGNED BY: [Signature]  
DRAWN BY: [Signature]  
CHECKED BY: [Signature]  
APPROVED BY: [Signature]

**STEEL LIST - S.H. 460**

BROOKPARK VIA OVER DOCKY RIVER  
S.H. 460 SEC. E-1, CUYAHOGA COUNTY

TOTAL-THIS SHEET= 252,077#