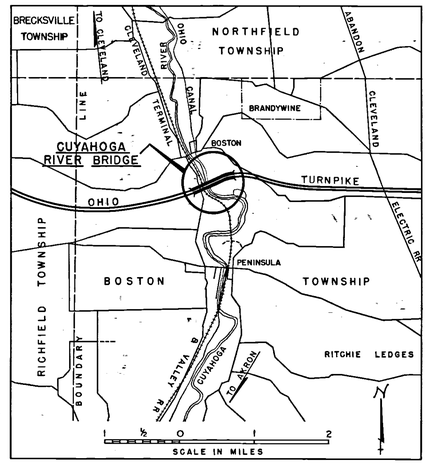
OHIO TURNPIKE COMMISSION
OHIO TURNPIKE PROJECT NO. 1

CUYAHOGA RIVER BRIDGE
DESIGN SECTION D-5 – SUMMIT COUNTY
CONTRACT C-15-A
SUBSTRUCTURE

LIST OF CONTRACT DRAWINGS

SHEET NO.	TITLE
1	GENERAL PLAN AND ELEVATION
2	PIERS 2 AND 11
3	PIERS 3 TO 10 INCL.



INFORMATIONAL DRAWING

SHEET NO. 7 BORING LOGS

LIST OF CONTRACT DRAWINGS

SHEET NO.	TITLE
4	PIERS 1 & 12 AND MISC. DETAILS
5	ABUTMENTS
6	ABUTMENT DETAILS

PREPARED BY
J. E. GREINER CO.
CONTRACTING ENGINEER

T. H. Allen

Sept. 12, 1952

APPROVAL RECOMMENDED
J. E. GREINER CO.
CONSULTING ENGINEER

T. H. Allen

Sept. 12, 1952

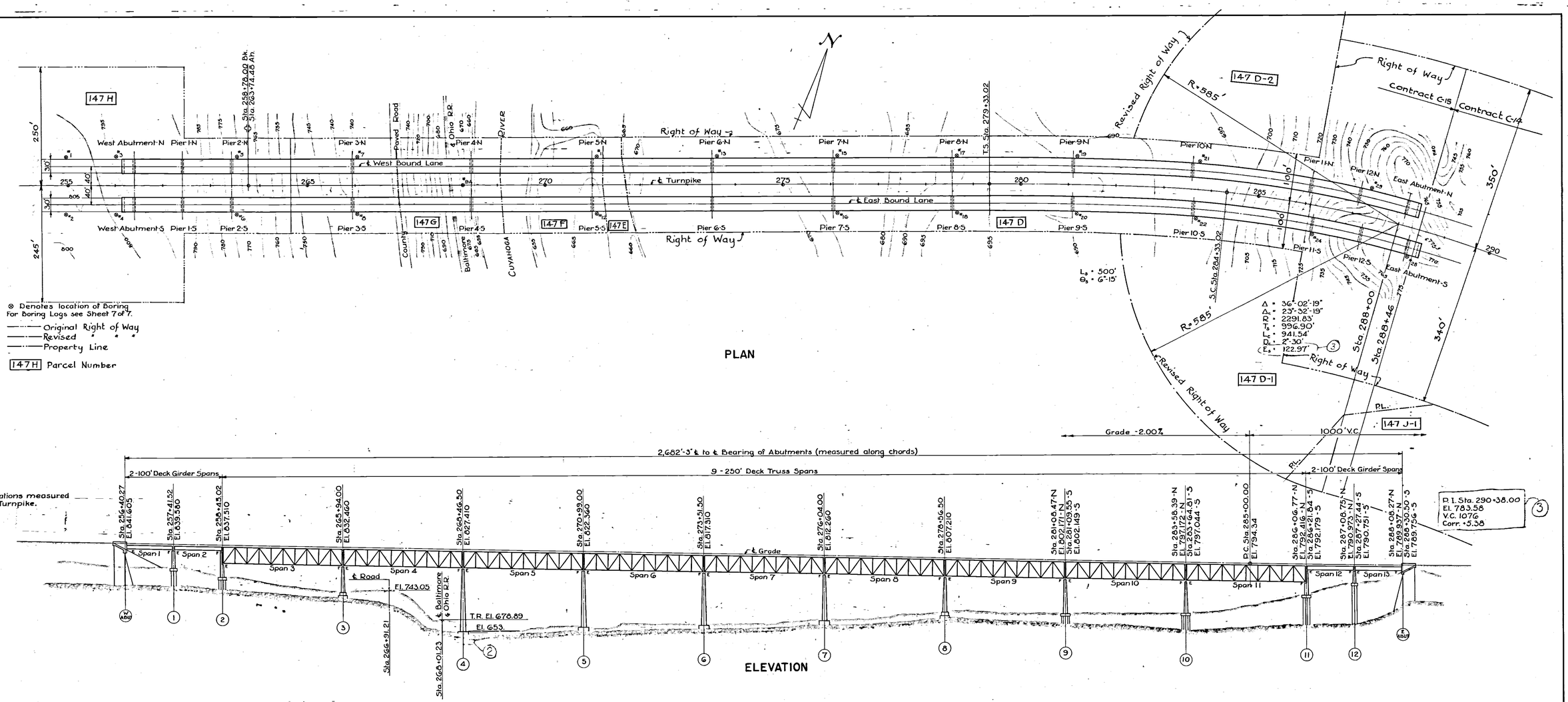
APPROVED
OHIO TURNPIKE COMMISSION

M. Kauer
CHIEF ENGINEER

10-2-52

REVISED OCT. 1, 1952

C-638



PLAN

ELEVATION

Note: East & West Abutments deleted from this contract. (3)

SUBSTRUCTURE QUANTITIES

Proposal Item No.		1	2	4	7	8	9	10
Description		Dry Excavation	Wet Excavation	Bearing Piles	Class "E" Concrete in Footing	Class "E" Concrete in Shaft & Abutment	Reinforcing Steel	Waterproofing Type "A"
Unit		C.Y.	C.Y.	L.F.	C.Y.	C.Y.	LBS.	S.Y.
West Abutment		-			-	-		
Pier 1		463		1,689	242	649	21,640	
Pier 2		777		1,777	364	927	34,733	
Pier 3		1,079			604	733	58,312	
Pier 4		747	914		776	2,403	189,969	
Pier 5		1,049			736	1,983	174,840	
Pier 6		769			484	1,820	164,335	
Pier 7		869			574	1,535	126,156	
Pier 8		1,186			640	1,117	96,622	
Pier 9		680		2,064	438	1,068	111,492	
Pier 10		618		3,416	376	958	94,310	
Pier 11		735		4,431	364	1,003	37,619	
Pier 12		629		1,885	296	518	22,890	
East Abutment								
Total	Estimated	8,090	790	24,000	5,440	15,560	1,118,000	350
	Final	9,601	914	15,262	5,894	14,714	1,132,918	

GENERAL NOTES

Concrete:
Chamfer all exposed edges 2"×2" except for the Abutments and unless otherwise shown.
Slope tops of Piers and exposed tops of Abutment Walls to drain.
Keys to be provided at all Construction Joints similar in dimensions to those shown on Sheet 3.
"Concrete - Item 7" designates Proposal Item 7
"Concrete - Item 8" designates Proposal Item 8

Reinforcement:
All Reinforcing Steel shall be of Structural Grade
The clear distance from face of Concrete to the Reinforcing Steel shall be 3" unless otherwise shown.
Bars shall be lapped 40 nominal diameters at splices.

Piles: For Splice of Piles see Sheet 6.

Soil Bearing: (2)
The maximum pressure on the shale foundation is 9 Tons per sq. ft.

Specifications:
Design: State of Ohio, Department of Highways - Design Specifications for Highway Structures, Oct. 1, 1951, Supplemented by revision July 15, 52.

No.	Revision	By	Date
4	Deck Replacement & Widening - See EMP-43-8.04		1968
3	General	R.H.G.	5/1/54
2	Substructure Quantities, Etc.	R.W.G.	Nov. 25, 52
1	General Revision	R.H.G.	Oct. 1, 52

OHIO TURNPIKE COMMISSION

OHIO TURNPIKE PROJECT NO. 1

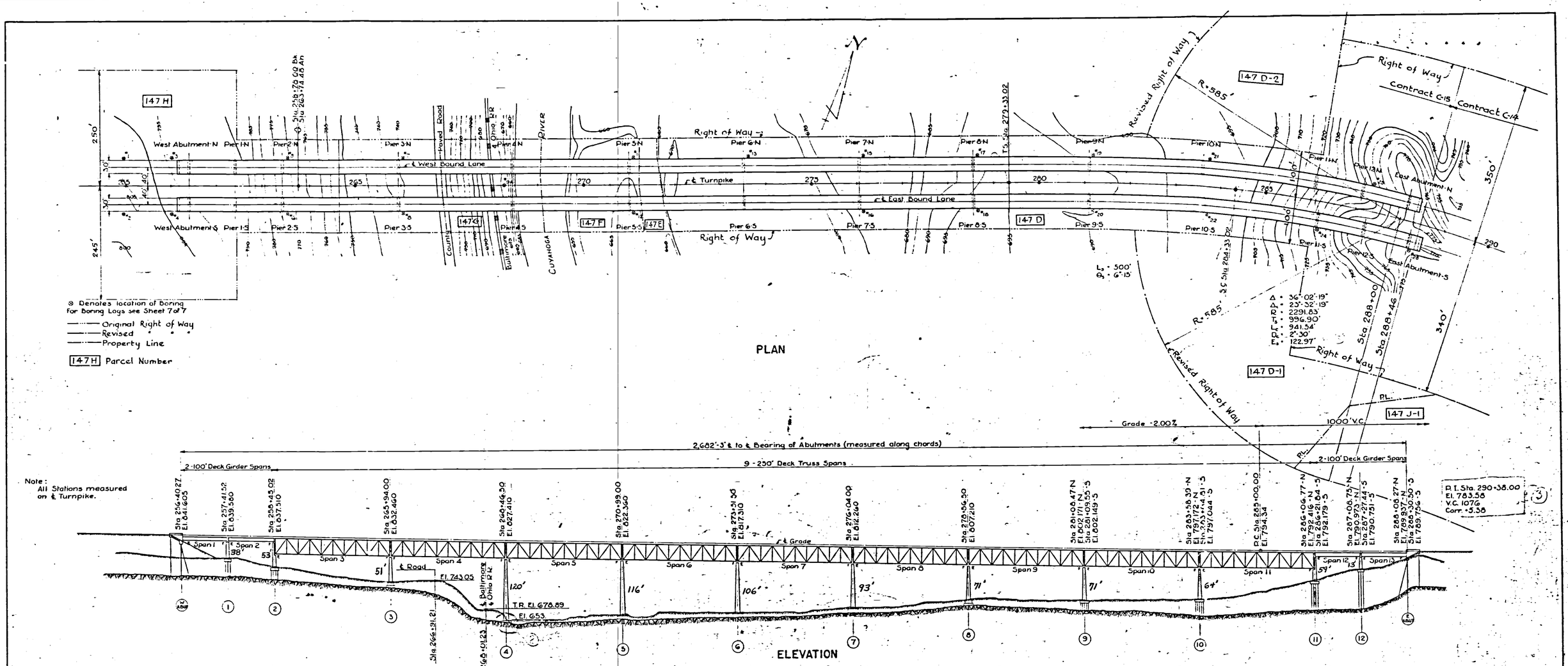
CUYAHOGA RIVER BRIDGE
SUMMIT COUNTY
GENERAL PLAN AND ELEVATION

J. E. GREINER COMPANY
CONTRACTING ENGINEER
DESIGN SECTION D-5

DESIGNED R.H.G. | CHECKED R.W.G. | DATE Sept. 12, 1952
DRAWN R.H.G. | IN CHARGE H.K. | SCALE 1" = 100'

CONTRACT No. C-15-A SHEET 1 OF 7

C638



⊗ Denotes location of Boring for Boring Logs see Sheet 7 of 7

Original Right of Way
Revised " "
Property Line

147 H Parcel Number

Note: All Stations measured on ℄ Turnpike.

SUBSTRUCTURE QUANTITIES

Proposal Item No.		1	2	4	7	8	9	10
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Note: East & West Abutments deleted from this contract.

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No.	Revision	By	Date
4	Deck Replacement & Widening - See RMP: 43-82-64		1962
3	General	R.H.G.	3/1/54
2	Substructure Quantities, Etc.	R.W.G.	Nov 25, 52
1	General Revision	R.H.G.	Oct. 1, 52

OHIO TURNPIKE COMMISSION

OHIO TURNPIKE PROJECT NO. 1

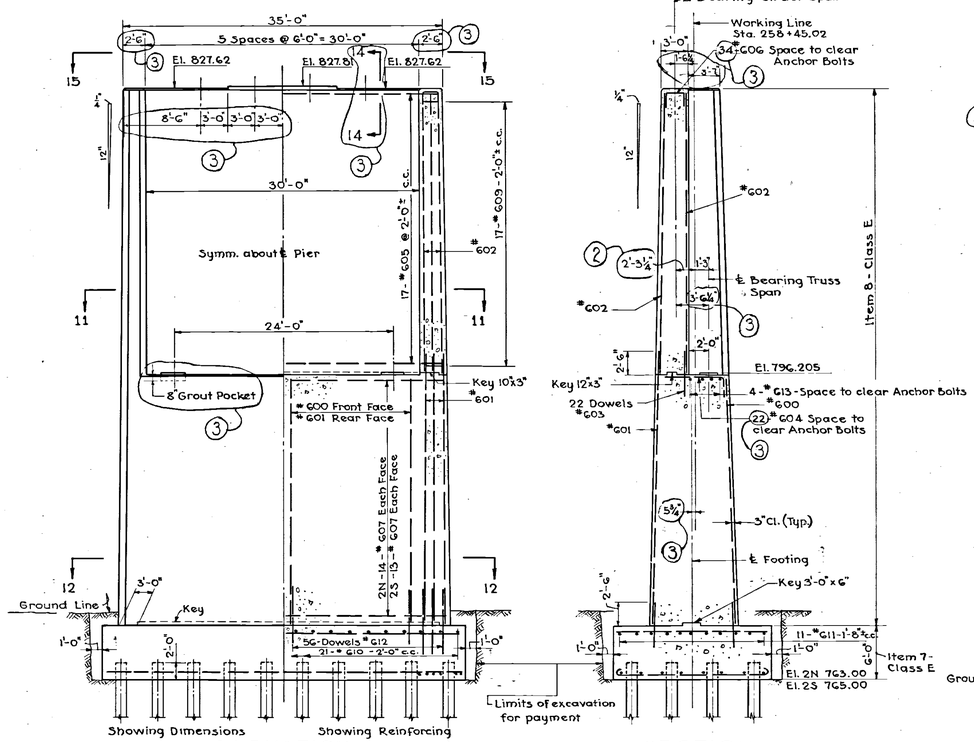
CUYAHOGA RIVER BRIDGE
SUMMIT COUNTY
GENERAL PLAN AND ELEVATION

J. G. WARINER COMPANY
CONTRACTING ENGINEER
DESIGN SECTION D-5

DESIGNED: R.H.G. CHECKED: R.W.G. DATE: Sept. 12, 1952
DRAWN: R.H.G. IN CHARGE: H.K. SCALE: 1" = 100'

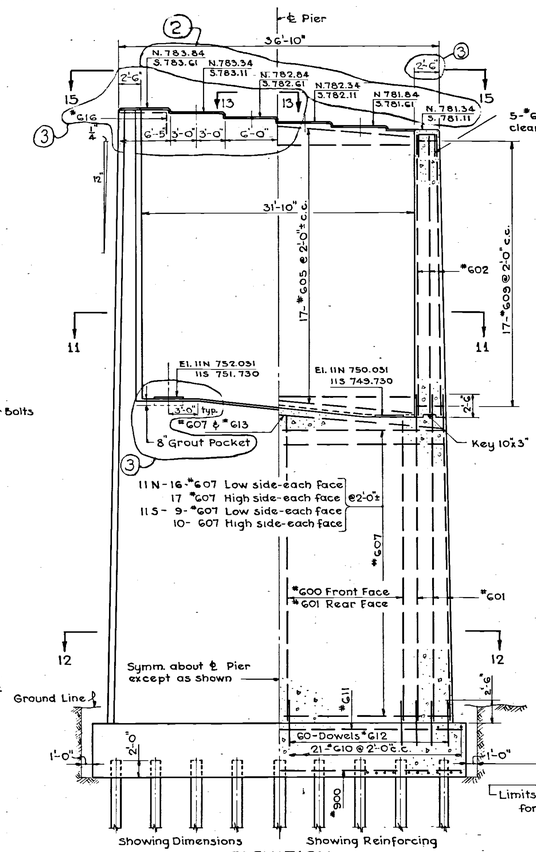
CONTRACT No. C-15-A SHEET 1 OF 7

C638

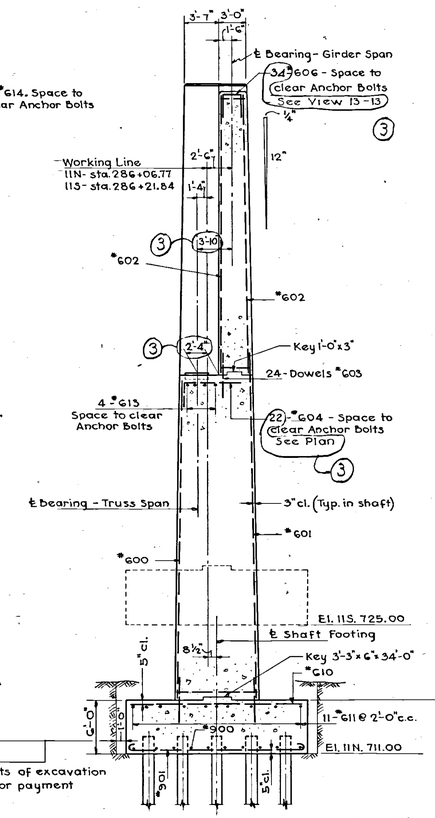


ELEVATION
PIER 2N & 2S

SECTION

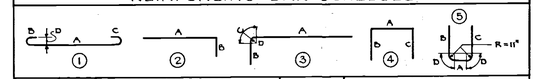


ELEVATION
PIER 11N & 11S

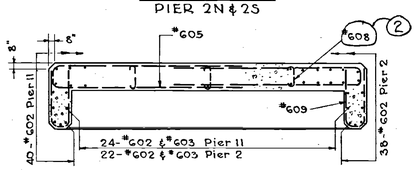


SECTION

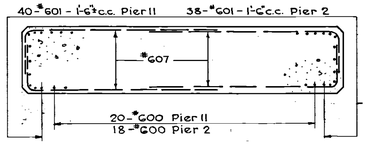
REINFORCING BAR SCHEDULE



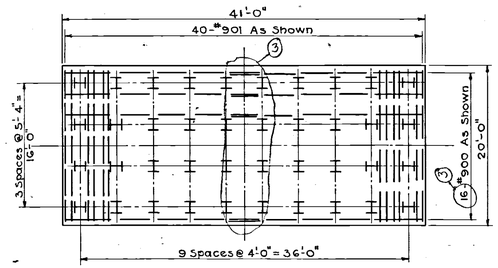
MARK No.	TYPE	DIMENSIONS A	B	C	D	LENGTH	PIERS 2N	2S	11N	11S
600	STR.					Varies	18-30'-0	18-28'-0	20-32'-9	20-18'-6"
601	STR.					Varies	38-33'-0	38-31'-0	40-37'-6	40-23'-3
602	STR.					30'-9"	60	60	64	64
603	STR.					5'-0"	22	22	24	24
604	②	6'-6"	4'-6"			11'-0"	22	22	22	22
605	⑤	8" to 1'-4"	19'-9"	19'-9"	1'-5½"	43'-1" 43'-9"	34	34	34	34
606	④	2'-6"	2'-6"	2'-6"		7'-6"	34	34	34	34
607	⑤	19'-10½"	4'-8"	1'-5½"	11"	26'-0"	58	54	70	42
608	①	2'-6" 3'-2"	8"	8"		3'-10" 4'-6"	51-3 Ea.	51-3 Ea.	51-3 Ea.	51-3 Ea.
609	⑤	2'-10"	4'-8"	4'-8"	1'-5½"	12'-5" 13'-1"	34	34	34	34
610	STR.					19'-2"	21-19'-2"	21-19'-2"	21-19'-2"	21-19'-2"
611	STR.				③	22'-0"	22	22	22	22
612	STR.					5'-0"	56	56	60	60
613	STR.					35'-9"	4	4	4	4
614	④	2'-0"	2'-6"	2'-6"		7'-0"	10	10	10	10
615	③	7'-0"	2'-6"		2½"	9'-6"			20	20
616	③	5'-11"	2'-6"		2½"	8'-5"			4	4
617	STR.			③		34'-0"			2	2
900	STR.					22'-0"	16	16	20	22
901	①	19'-2"	1'-3"	1'-3"	11¼"	21'-8"	40	40	40	40



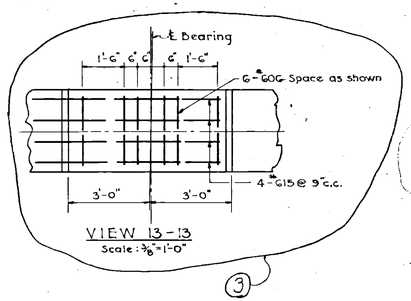
SECTION 11-11



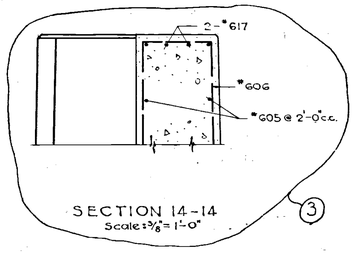
SECTION 12-12



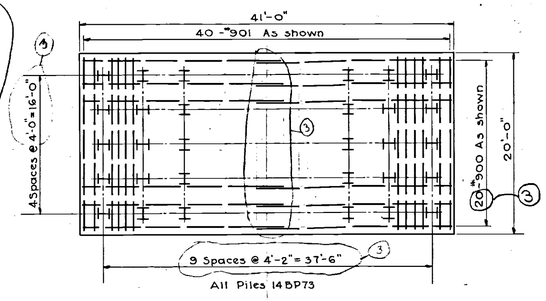
PIER 2N & 2S



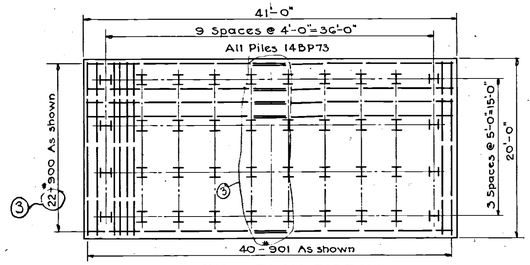
VIEW 13-13
Scale: 3/8" = 1'-0"



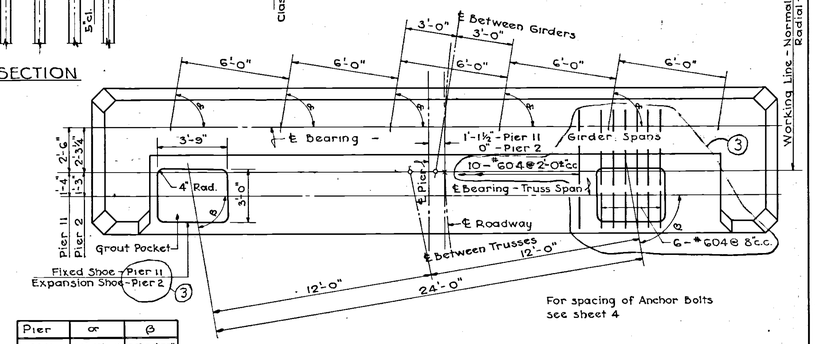
SECTION 14-14
Scale: 3/8" = 1'-0"



PILE PLAN-PIER 11N



PILE PLAN-PIER 11S



VIEW 15-15
Scale: ¼" = 1'-0"

Pier	α	β
11N	88°-43'-31"	86°-54'-57"
11S	88°-40'-48"	86°-47'-53"
2N	90°	90°
2S	90°	90°

NO.	REVISIONS	BY	DATE
4	Deck Replacement & Widening - See RMP. 43-88-04		1988.
3	General	A.J.S.	3/1/54
2	Elevations and Dimension, Etc.	R.W.G.	11/25/52
1	General Revisions	D.R.L.	10/1/62

OHIO TURNPIKE COMMISSION

OHIO TURNPIKE PROJECT NO. 1

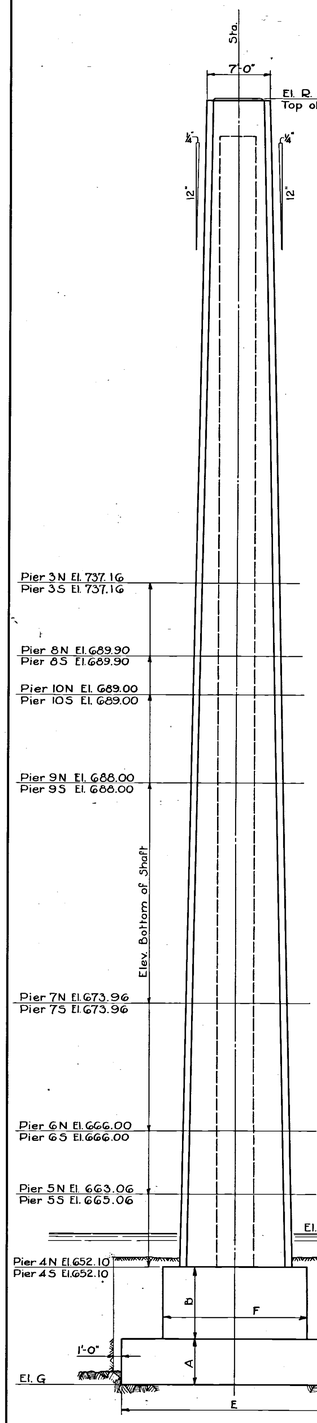
CUYAHOGA RIVER BRIDGE
SUMMIT COUNTY
PIERS 2 & 11

J.E. GREINER COMPANY
CONTRACTING ENGINEER
DESIGN SECTION D-5

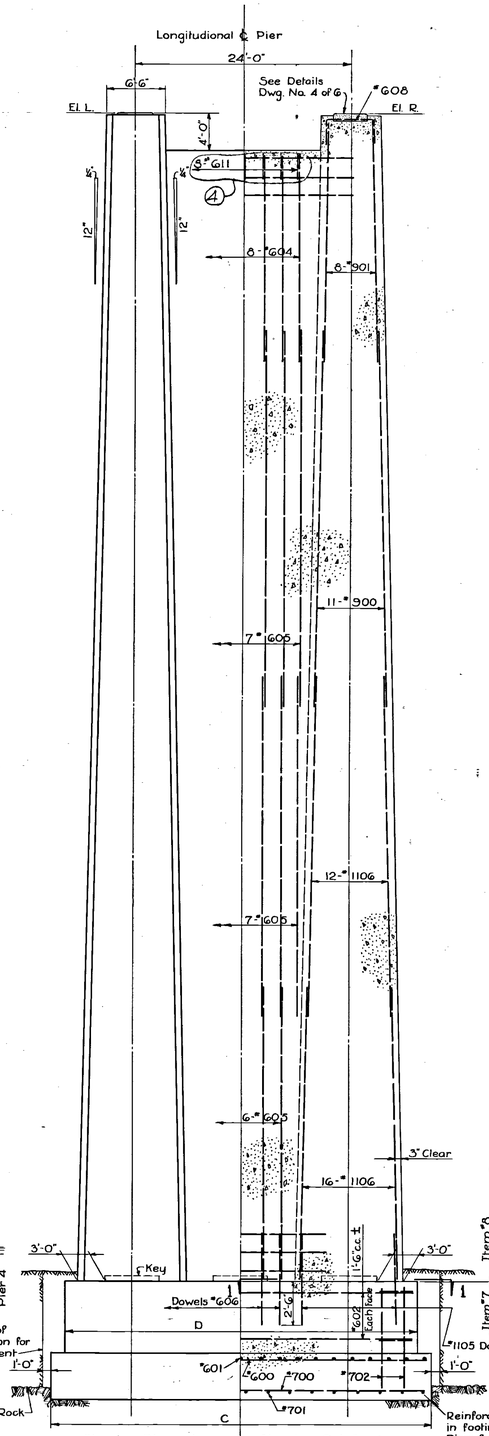
DESIGNED F.T.C. DRAWN D.R.L.	CHECKED J.W.H. IN CHARGE H.K.	DATE SEPT. 12, 1952. SCALE 3/8" = 1'-0" & NOTED

CONTRACT NO. C-15-A SHEET 2 OF 7

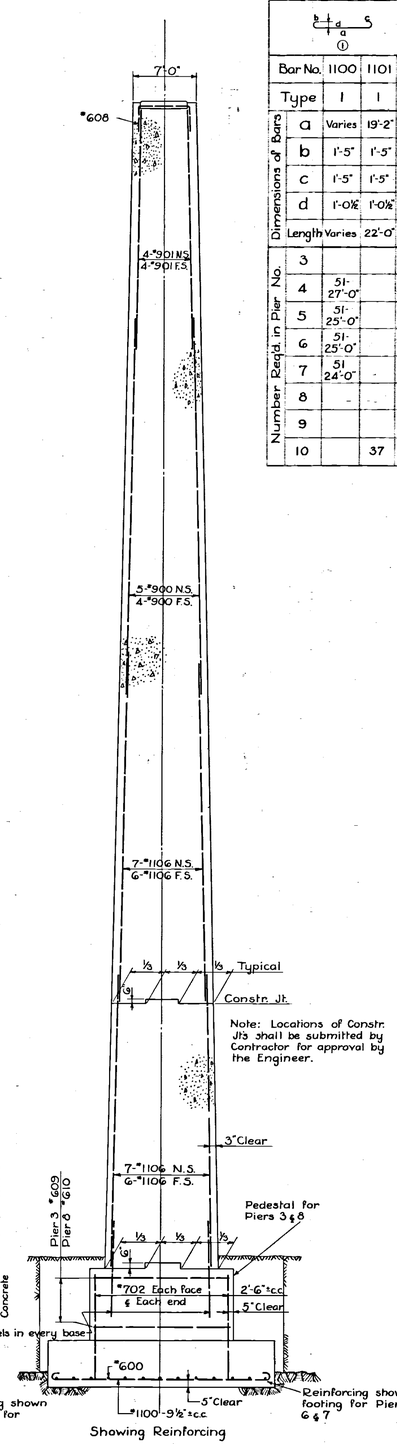
C-638



SIDE ELEVATION

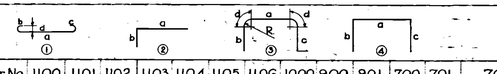


ELEVATION



SIDE ELEVATION

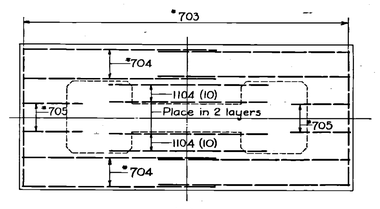
REINFORCING BAR SCHEDULE FOR ONE PIER



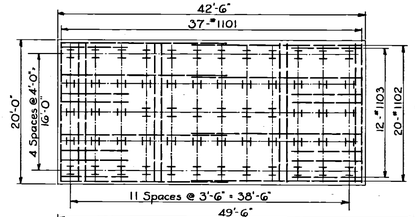
Note: Dim. "a" in Type 3 Varies increments of ½"
For Hook Detail see Dwg. 2 of 7.

	Bar No.	1100	1101	1102	1103	1104	1105	1106	1000	900	901	700	701	702	703	704	705	600	601	602	611	604	605	606	607	608	609	610	500	501
	Type	1	1	Str.	Str.	Str.	Str.	Str.	1	Str.	Str.	Str.	Str.	Str.	Str.	Str.	Str.	Str.	Str.	Str.	4	Str.	Str.	Str.	Str.	4	4	4	3	1
Dimensions of Bars	a	Varies	19'-2"						19'-2"												3'-6"					6'-6" 6'-0"	11'-10"	13'-8"	Varies	Varies
	b	1'-5"	1'-5"						1'-5"												2'-6"					3'-6"	2'-6"	2'-6"	Varies	0-8"
	c	1'-5"	1'-5"						1'-5"												2'-6"					3'-6"	2'-6"	2'-6"	Varies	0-8"
	d	1'-0½"	1'-0½"						1'-0½"																				R-11"	
	Length	Varies	22'-0"	Varies	Varies	23'-0"	8'-6"	40'-0"	22'-0"	40'-0"	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies			Varies	40'-0"	5'-0"	Varies	Varies	16'-10"	16'-8"	Varies	Varies
Number Reqd. in Pier No.	3						62			62	48-18'-0"	7-39'-0"	16-16'-0"	36-16'-0" N. Pier 36-11'-0" S. Pier				18-21'-0"	21-16'-0"	20-35'-0" N. Pier 12-35'-0" S. Pier		16-12'-6"	14	14	54-22'-0"	24-13'-0" 20-13'-6"	20-N. Pier 12-S. Pier		216	13'-9" 16'-3"	216	7'-4" 10'-1"
	4	51-27'-0"				20	90	164		62	48-26'-6"				18-24'-0"	16-22'-0"	6-7'-0"	26-22'-0"				16-17'-6"	40	12	54-22'-0" 80-18'-0"	24-13'-0" 20-13'-6"			536	13'-9" 24'-11"	536	7'-4" 13'-5"
	5	51-25'-0"				20	90	164		62	48-8'-6"				18-22'-0"	16-21'-10"	6-7'-0"	26-21'-6"				16-37'-0"	26	12	54-22'-0" 64-18'-0"	24-13'-0" 20-13'-6"		N. Pier S. Pier	472 464	13'-9" 23'-5"	472 464	7'-4" 12'-8"
	6	51-25'-0"				20	90	164			62-38'-6"				18-22'-0"	16-20'-7"	6-7'-0"	26-20'-6"				16-31'-0"	26	12	54-22'-0" 56-18'-0"	24-13'-0" 20-13'-6"			440	13'-9" 22'-11"	440	7'-4" 12'-5"
	7	51-24'-0"				20	74	74		62	48-25'-6"				18-21'-0"	12-20'-4"	6-7'-0"	26-20'-0"				16-18'-0"	28	14	54-22'-0" 42-18'-0"	24-13'-0" 20-13'-6"			392	13'-9" 21'-10"	392	7'-4" 11'-11"
	8						74	74			62-40'-0"	18-21'-9"	16-20'-6"	38-11'-0"				22-21'-9"	21-20'-6"	12-36'-6"	8-Piers 3 to 10 incl.	16-34'-6"	14	14	54-22'-0" 22-18'-0"	24-13'-0" 20-13'-6"		12	304	13'-9" 20'-1"	304	7'-4" 11'-0"
	9			28-26'-6"	40-12'-0"	20	74	74	43		62-37'-6"				20-19'-0"	12-25'-10"	6-12'-0"					16-32'-0"	14	14	54-22'-0" 20-18'-0"	24-13'-0" 20-13'-6"			292	13'-9" 19'-9"	292	7'-4" 10'-11"
	10		37	20-23'-0"	12-9'-0"	20	74	74			62-32'-0"				18-19'-0"	12-22'-4"	6-7'-0"					16-32'-0"	14	14	54-22'-0" 16-18'-0"	24-13'-0" 20-13'-6"			268	13'-9" 19'-5"	268	7'-4" 10'-8"

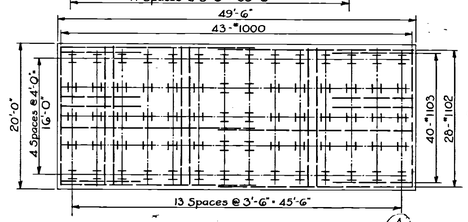
Note: 1100 series indicates *11 Bars
800 series indicates *8 Bars, etc.
Schedule identical for North & South Piers, unless noted.
All bars to have a lap of 40 Dia. at splices.
Dim. shown indicate total length of bar; where 2 Dim. are shown, they denote minimum & maximum lengths in groups.



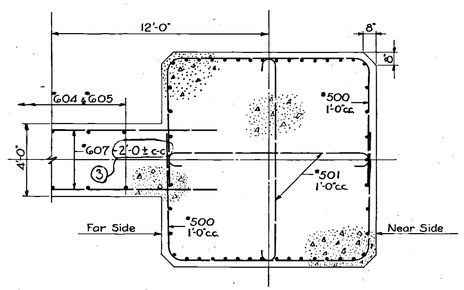
PLAN OF TOP REINFORCING IN FOOTING OF PIERS 4,5,6,7,9 & 10
Scale: ⅛"=1'-0"



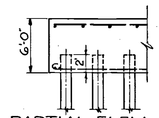
PILE PLAN & BOTTOM REINFORCING PIER 10
Scale: 1/10"=1'-0"



PILE PLAN & BOTTOM REINFORCING PIER 9
Scale: 1/10"=1'-0"



SECTION 1-1



Note: All Piles are 14 BP 73-Design Load 65.0 Tons - Plans are for North and South Bridges.

PARTIAL ELEV. OF FOOTING FOR PIERS 9 & 10

PIER	STATIONS	ELEVATION R	ELEVATION L	ELEVATION G	DIMENSIONS A	B	C	D	E	F
3N	265+94.00	791.155	791.155	719.72	4'-0"	13'-0"	40'-0"	36'-0"	16'-6"	12'-6"
3S	265+94.00	791.155	791.155	722.26	4'-0"	11'-0"	40'-0"	36'-0"	16'-6"	12'-6"
4N	268+46.50	786.105	786.105	644.19	6'-0"		42'-0"		25'-0"	
4S	268+46.50	786.105	786.105	*	7'-0"	4'-3"	42'-0"	39'-0"	25'-0"	17'-0"
5N	270+99.00	781.055	781.055	654.08	7'-0"		41'-6"		23'-0"	
5S	270+99.00	781.055	781.055	*	5'-0"	8'-0"	41'-6"	37'-4"	24'-0"	14'-4"
6N	273+51.50	776.005	776.005	658.89	7'-0"		39'-0"		23'-0"	
6S	273+51.50	776.005	776.005	658.65	7'-0"		39'-0"		23'-0"	
7N	276+04.00	770.955	770.955	664.97	9'-0"		38'-6"		22'-0"	
7S	276+04.00	770.955	770.955	664.76	9'-0"		38'-6"		22'-0"	
8N	278+56.50	765.905	765.905	678.02	5'-0"	7'-0"	41'-6"	37'-4"	21'-0"	14'-4"
8S	278+56.50	765.905	765.905	676.16	6'-0"	8'-0"	41'-6"	37'-4"	21'-0"	14'-4"
9N	281+08.47	760.693	761.394	682.00	See Plans					
9S	281+09.55	760.669	761.376	682.00						
10N	283+58.39	754.897	756.599	683.00						
10S	283+64.61	754.759	756.484	683.00						

N-Designates North Pier; S-Designates South Pier
* See Sheet 4 for elevation of bottom of footing.

No.	Revision	By	Date
5	Deck Replacement & Widening - See RMP. 43-52.04		1982
4	General	R.H.G.	3/1/54
3	Footing & Pedastal For Pier 8, Etc.	RWG	Nov 23,52
2	General Revisions	R.H.G.	Nov 13,52
1	General Revisions	D.R.L.	10/1/52

OHIO TURNPIKE COMMISSION

OHIO TURNPIKE PROJECT NO. 1

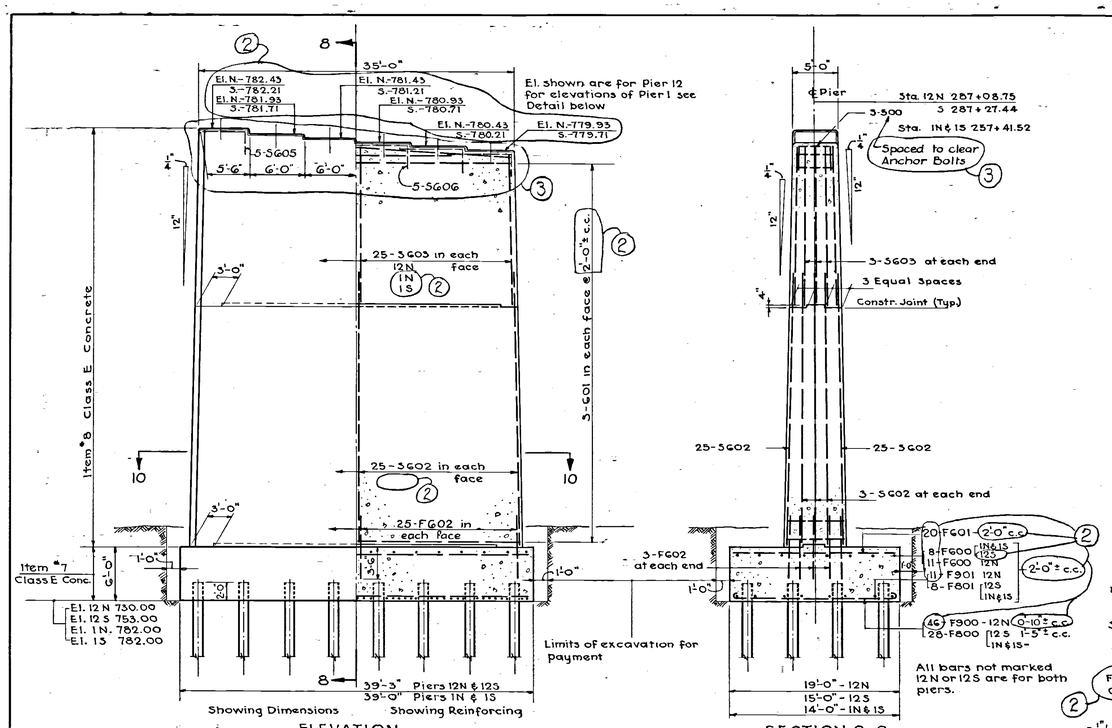
CUYAHOGA RIVER BRIDGE
SUMMIT COUNTY
PIERS 3 TO 10 INCL.

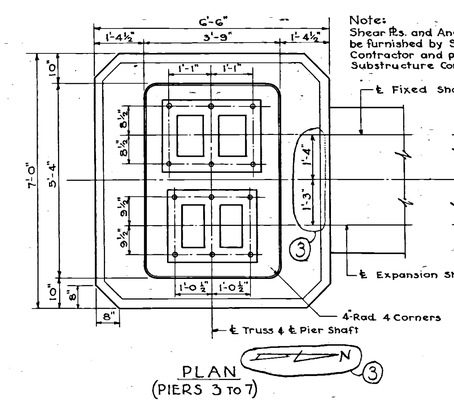
J. E. GREINER COMPANY
CONTRACTING ENGINEER
DESIGN SECTION D-5

DESIGNED: A.C.W.	CHECKED: R.W.G.	DATE: SEPT. 12, 1952
DRAWN: R.H.G.	IN CHARGE: H.K.	SCALE: AS SHOWN

CONTRACT NO. C-15-A SHEET 3 OF 7

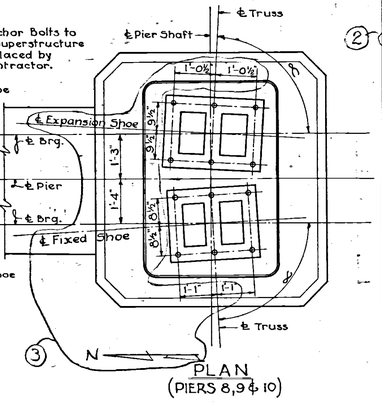
C-638





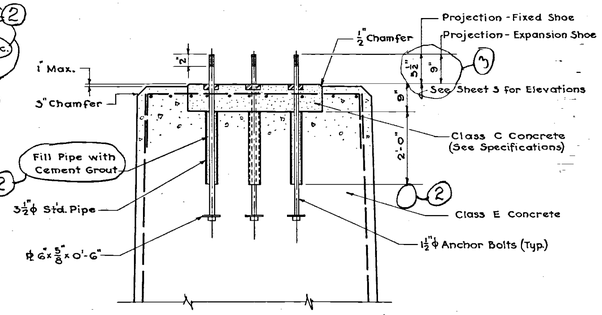
PLAN
(PIERS 3 TO 7)

Note:
Shear Rs. and Anchor Bolts to be furnished by Superstructure Contractor and placed by Substructure Contractor.



PLAN
(PIERS 8, 9 & 10)

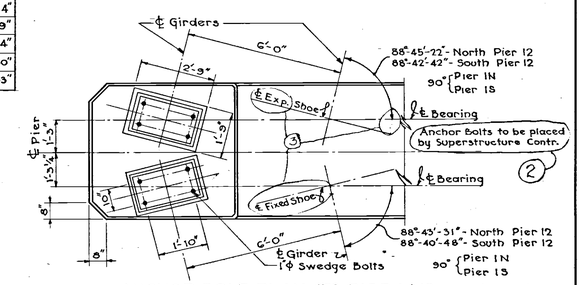
REINFORCING BAR SCHEDULE									
All dimensions are out to out									
For Hook Detail see Dwg. 2 of 7									
MARK No.	TYPE	DIMENSIONS A	B	C	D	LENGTH	PIERS 1N	1S	12N	12S
F 600	STR.					36'-4"	8	8		8
						36'-7"			11	
F 601	STR.					13'-2"	20	20		20
						14'-2"				
						18'-4"			20	
F 602	STR.					7'-0"	56	56	56	56
F 800	1	13'-2"	1'-1"	1'-1"	11"	15'-4"	28	28		
		14'-2"	1'-1"	1'-1"	11"	16'-4"				28
F 801	STR.					38'-4"	8	8		
						38'-7"				8
F 900	1	18'-4"	1'-3"	1'-3"	11"	20'-10"			46	
F 901	STR.					38'-7"			11	
S 500	2	2'-6"	4'-4"	2'-6"		9'-4"	50	50	50	50
S 601	3	3'-7"	16'-7"	1'-5¼"	R-11"	23'-7"	84	84	94	48
S 602	STR.					30'-0"	56	56	56	
						22'-10 to 20'-4"				56
S 603	STR.					14'-0"	56	56		
						18'-6 to 15'-10"			56	
S 604	STR					34'-0"	3	3		
S 605	2	2'-6"	5'-0"			7'-6"			5	5
S 606	2	2'-6"	7'-0"			9'-6"			25	25



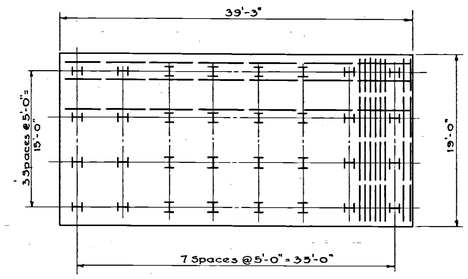
SECTION

ANCHOR BOLT DETAIL
FOR PIERS 3 TO 10
Scale ½" = 1'-0"

PIER NO.		α EXP. SHOE	FIXED SHOE
8	NORTH	90°	89°-57'-22"
	SOUTH	90°	89°-57'-24"
9	NORTH	89°-16'-28"	88°-43'-19"
	SOUTH	89°-15'-51"	88°-40'-14"
10	NORTH	87°-31'-26"	87°-00'-50"
	SOUTH	87°-26'-51"	86°-53'-33"

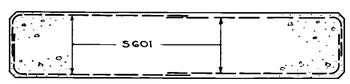


ANCHOR BOLT PLAN FOR PIER 1 & 12
Scale ⅜" = 1'-0"



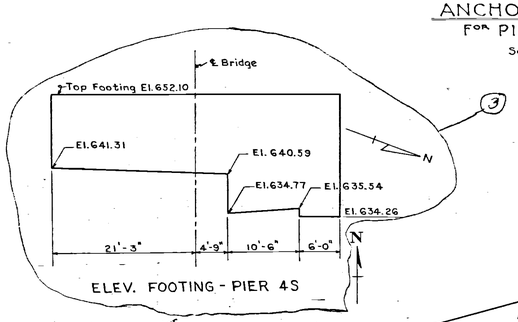
All piles 14BP73

PILE PLAN - PIER 12 N

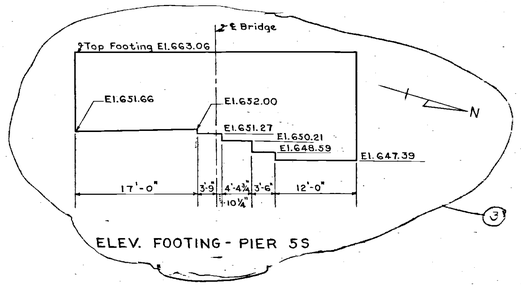


SECTION 10-10

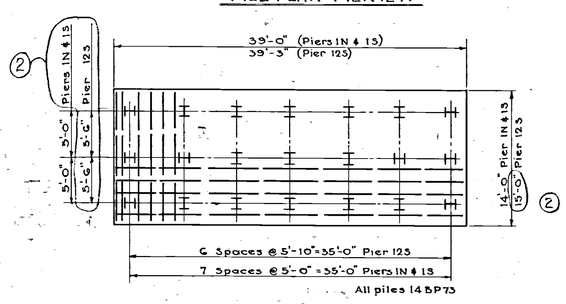
PIERS 1 & 12



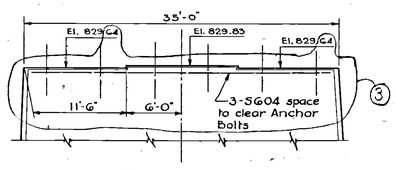
ELEV. FOOTING - PIER 4S



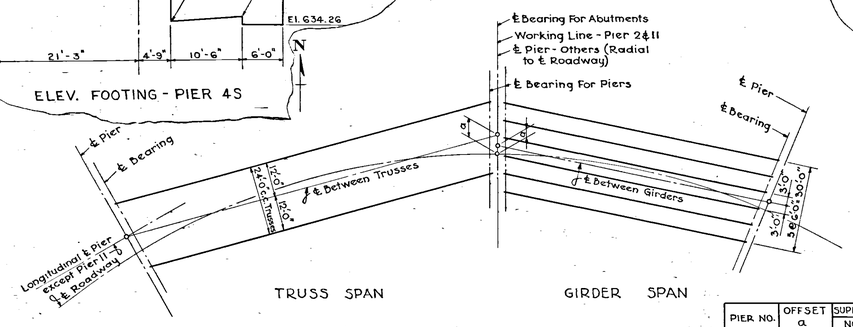
ELEV. FOOTING - PIER 5S



PILE PLAN - PIERS 1N, 1S & 12S



ELEV. PIER 1N & 1S



KEY PLAN

PIER NO.	OFFSET a	SUPERELEVATION IN/FT. NORTH	SOUTH
9	7"	.3504	.3528
10	2'-1"	.8508	.8628
11-WEST	2'-1"	1.0000	1.0000
11-EAST	3½"		
12	3½"	1.0000	1.0000
E. ABUT.	3½"	1.0000	1.0000

No.	Revision	By	Date
4	Deck Replacement & Widening - See RMP 45-88.01		1982
3	General	R.H.G.	3/1/54
2	Elevations, Reinforcing Steel, Etc.	R.W.G.	25 Nov. 52
1	General Revisions to Piers 1N & 1S	D.R.L.	10/1/52

OHIO TURNPIKE COMMISSION

OHIO TURNPIKE PROJECT NO. 1

CUYAHOGA RIVER BRIDGE
SUMMIT COUNTY
PIERS 1 & 12 & MISC. DETAILS

J. E. GREINER COMPANY
CONTRACTING ENGINEER
DESIGN SECTION D-5

DESIGNED F.T.C. | CHECKED R.W.G. F.T.C. | DATE Sept. 12, 1952
DRAWN D.R.L. | IN CHARGE H.K. | SCALE ⅛" = 1'-0" & As Noted

CONTRACT No. C-15-A SHEET 4 OF 7

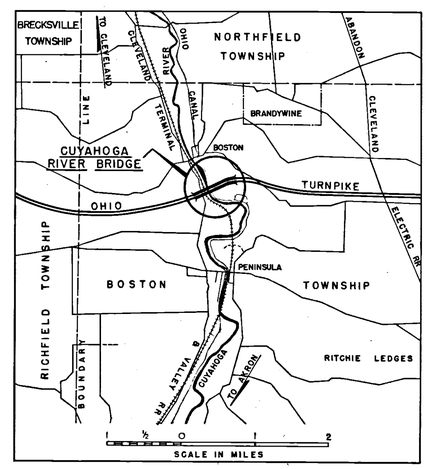
C-638

OHIO TURNPIKE COMMISSION
OHIO TURNPIKE PROJECT NO. 1

CUYAHOGA RIVER BRIDGE
DESIGN SECTION D-5 — SUMMIT COUNTY
CONTRACT NO. C-15-B
SUPERSTRUCTURE

LIST OF CONTRACT DRAWINGS

SHEET NO.	TITLE
1	GENERAL PLAN & ELEVATION
2	FRAMING PLAN - SPANS 9 TO 13
3	GIRDER SPANS - FRAMING PLAN
4	GIRDER SPANS - CROSS SECTION & DETAILS
5	TRUSS SPANS - STRESS SHEET



LIST OF CONTRACT DRAWINGS

SHEET NO.	TITLE
6	TRUSS SPANS - CROSS SECTION & DETAILS
7	TRUSS SPANS - TYPICAL JOINTS
8	ABUTMENTS
9	ABUTMENT DETAILS

INFORMATIONAL DRAWINGS

C-15-A	SHEET 2	PIERS 2 AND 11
C-15-A	SHEET 3	PIERS 3 TO 10 INCL.
C-15-A	SHEET 4	PIERS 1 & 12 AND MISC. DETAILS
B-5		TEST BORINGS (LOCATION)
B-5		TEST BORINGS (DESCRIPTION)

PREPARED BY
J. E. GREINER CO.
CONTRACTING ENGINEER

October 30, 1952

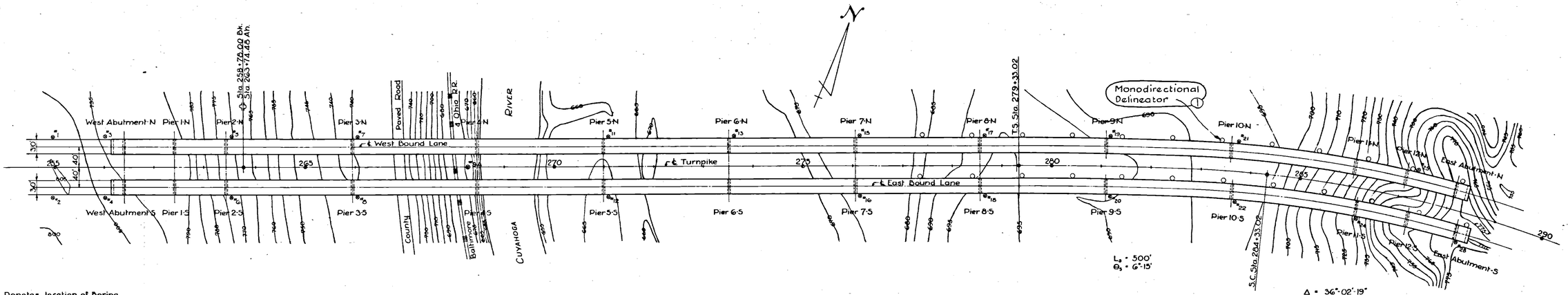
APPROVAL RECOMMENDED
J. E. GREINER CO.
CONSULTING ENGINEER

October 30, 1952

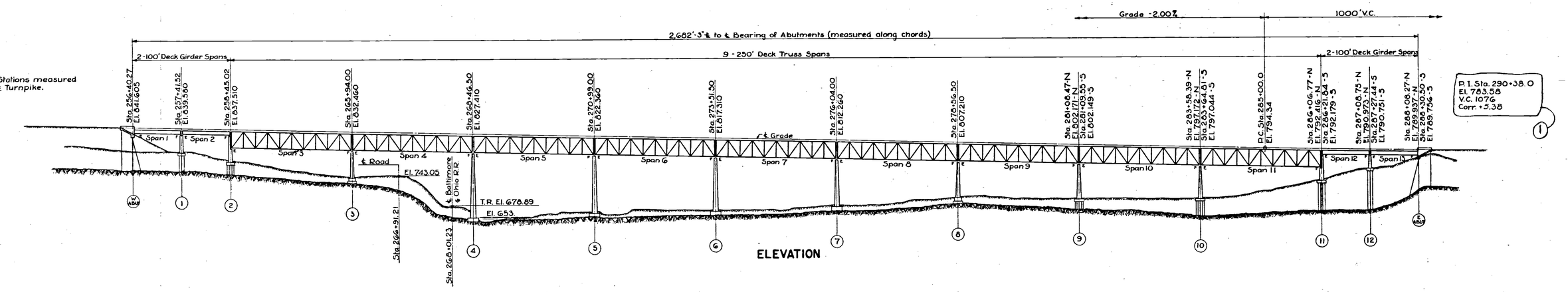
APPROVED
OHIO TURNPIKE COMMISSION

CHIEF ENGINEER
12-9-52

C-638



PLAN



ELEVATION

The Contractor's attention is directed to the fact that the earth fill at each abutment must be completed before the abutments may be constructed. Therefore it is to be assumed that the abutments might not be available, initially, to receive the superstructure or to provide access to the work.

GENERAL NOTES

Specifications: Design Specifications For Highway Structures, State of Ohio, Department of Highways, October 1, 1951 and as revised July 5, 1952.
General Specifications of Ohio Turnpike Commission, December 9, 1952.

Dead Load: Includes 40 pounds per square foot of roadway for future wearing surface.

Live Load: Predicted frequency per lane, CF = 2000.

Camber: Girder Spans to be cambered as indicated on Sheet 3. Truss Spans to be cambered for dead load including future wearing surface. Computations based on detailed Shop Drawings are to be submitted by the Contractor to the Engineer.

Material: All structural steel not otherwise specified shall be carbon steel. Reinforcing steel shall be new high-bond-stress reinforcing bars.

Erection: The method of erection shall be at the Contractor's election, subject to the Engineer's approval. Temporary erection members and details shall be removed, maintaining the geometry of the structure.

Rivets: ⅞" ϕ unless otherwise noted.
1" ϕ for main truss connections and splices.

Drain Holes: Sections forming horizontal troughs, and other points where water may collect, shall be adequately drained. Holes shall be provided or drainage may be accomplished by filling with approved waterproof materials.

SUPERSTRUCTURE QUANTITIES

No.	Item	Unit	Quantity Estimated	Quantity Final
1	Class "C" Concrete	C.Y.	6,500	6,005.5
2	Reinforcing Steel	Lbs.	2,165,000	1,872,292
3	Structural Steel in Girder Spans	Lbs.	2,000,000	1,883,501
4	Structural Steel in Truss Spans	Lbs.	15,400,000	15,210,639
5	Railing	L.F.	11,000	10,828.62

(1) Note: The East Abutment was deleted from this contract

No.	Revision	By	Date
2	Deck Replacement & Widening - See RMP 43-82-04		1982
1	General	R.H.G.	3/1/54

OHIO TURNPIKE COMMISSION

OHIO TURNPIKE PROJECT NO. 1

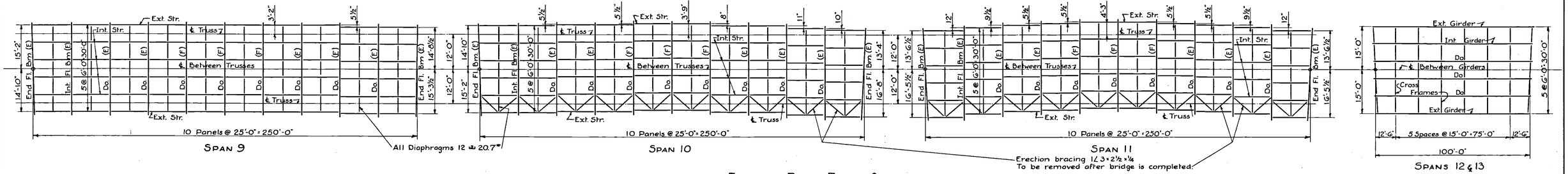
CUYAHOGA RIVER BRIDGE
SUMMIT COUNTY
GENERAL PLAN AND ELEVATION

J. E. GREINER COMPANY
CONTRACTING ENGINEER
DESIGN SECTION D-5

DESIGNED: R.H.G. | CHECKED: R.W.G. | DATE: Dec. 1952
DRAWN: R.H.G. | IN CHARGE: H.K. | SCALE: 1" = 100'

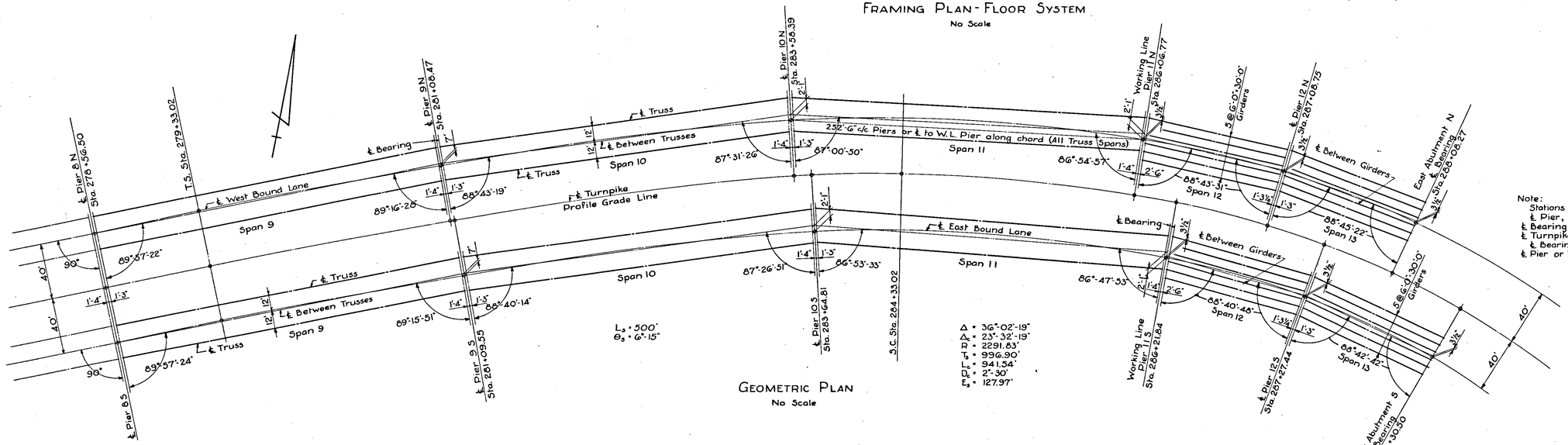
CONTRACT No. C-15-B SHEET 1 OF 9

C-638



Framing Plan - Floor System

No Scale



Note:
Stations refer to ℄ Turnpike.
℄ Pier, Working Line Pier, and ℄ Bearing Abutment are radial to ℄ Turnpike.
℄ Bearing Piers are parallel to ℄ Pier or Working Line Pier.

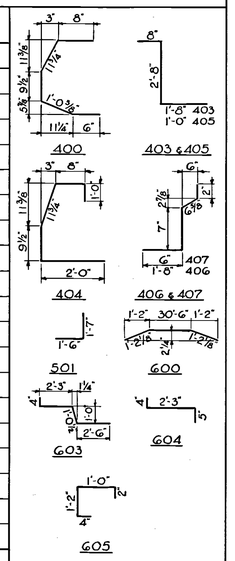
Geometric Plan

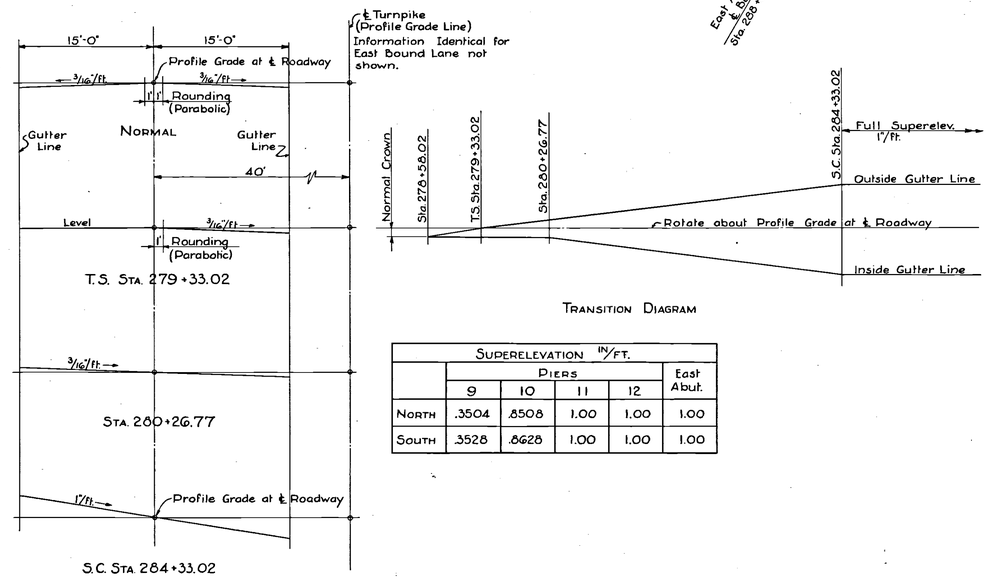
No Scale

Reinforcing Schedule

Mark	Size	1 Girder Span No. Reqd.	1 Girder Span Length	Spans 3, 6 to 11 Incl. No. Reqd.	Spans 3, 6 to 11 Incl. Length	Span 4 No. Reqd.	Span 4 Length	Span 5 No. Reqd.	Span 5 Length	Sketch
400	#4	80	4'-0"	172	4'-0"	534	4'-0"	156	4'-0"	
401	#4	48	27'-3"	120	26'-9"	120	29'-1"	120	24'-3"	Straight
402	#4	56	27'-3"	140	26'-9"	140	29'-1"	140	24'-3"	Straight
403	#4	72	5'-0"	164	5'-0"	528	5'-0"	148	5'-0"	
404	#4	136	5'-5¼"	320	5'-5¼"	24	5'-5¼"	288	5'-5¼"	
405	#4	8	4'-4"	8	4'-4"	8	4'-4"	8	4'-4"	
406	#4	4 Spans 1 & 13	3'-0"							
407	#4	2 Spans 1 & 13	1'-10"							
500	#5	328	26'-9"	820	27'-0"	820	29'-6"	820	24'-6"	Straight
501	#5	136	3'-1"	320	3'-1"	24	3'-1"	288	3'-1"	
502	#5			270	10'-0"	300	10'-0"	240	10'-0"	Straight
600	#6	177	33'-0"	450	33'-0"	495	33'-0"	405	33'-0"	
601	#6	237	33'-0"	600	33'-0"	660	33'-0"	540	33'-0"	Straight
602	#6	6 Spans 1 & 13	32'-0"							Straight
603	#6	72	6'-1½"	164	6'-1½"	528	6'-1½"	148	6'-1½"	
604	#6	8	3'-0"	8	3'-0"	8	3'-0"	8	3'-0"	
605	#6	6 Spans 1 & 13	2'-8"							

Note: "No. Reqd." as listed, is for one span of one bridge





Transition Diagram

Superelevation

Superelevation IN/FT.	Piers 9	Piers 10	Piers 11	Piers 12	East Abut.
North	.3504	.8508	1.00	1.00	1.00
South	.3528	.8628	1.00	1.00	1.00

Superelevation

Note:
For General Notes see Sheet 1
For Truss Framing & Stress Sheet see Sheet 5
For Girder Framing & Stress Sheet see Sheet 3

No.	Revision	By	Date
2	Deck Replacement & Widening - See RMP-45-32.84		1982
1	General		3/1/54

OHIO TURNPIKE COMMISSION

OHIO TURNPIKE PROJECT NO. 1

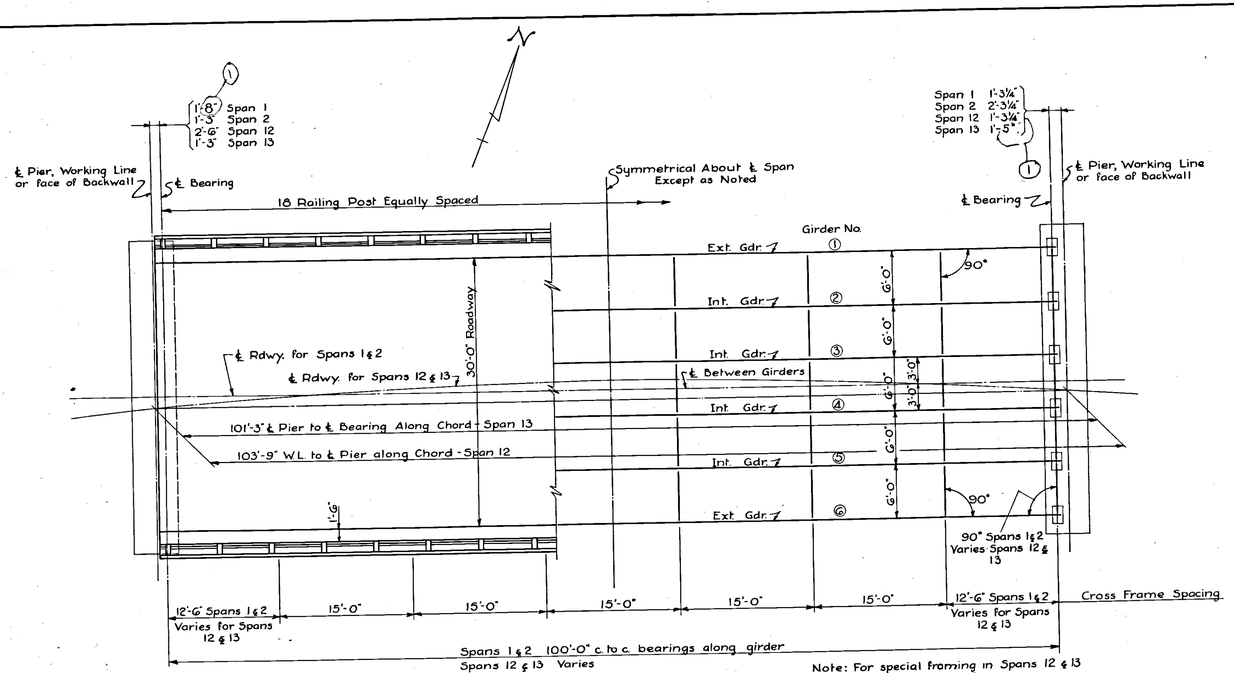
CUYAHOGA RIVER BRIDGE
SUMMIT COUNTY
FRAMING PLAN - SPANS 9 TO 13

J. E. GREINER COMPANY
CONTRACTING ENGINEER
DESIGN SECTION D-5

DESIGNED: R.H.G	CHECKED: C.B.	DATE: DEC. 1952
DRAWN: R.H.G.	IN CHARGE: H.K.	SCALE: AS SHOWN

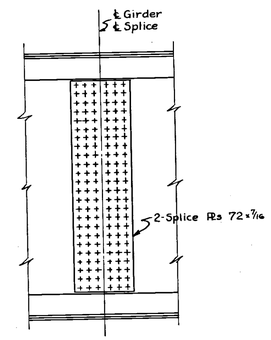
CONTRACT NO. C-15-B SHEET 2 OF 9

C-638

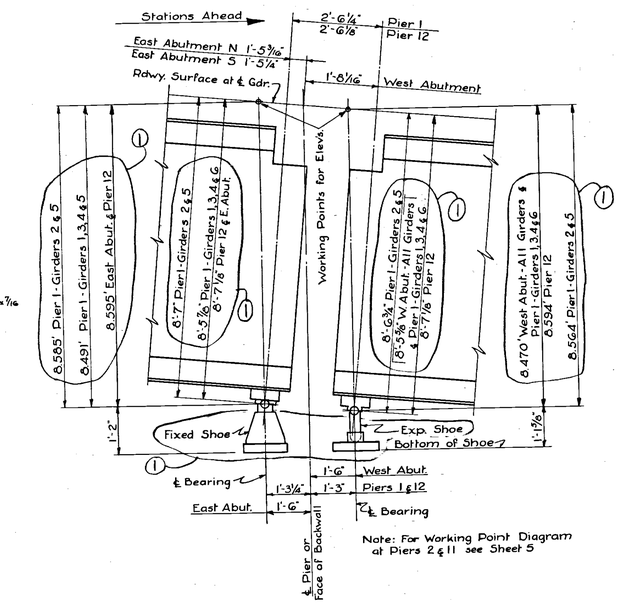


Note: For special framing in Spans 12 & 13 see Sheet 2.

FRAMING PLAN
Scale: 1/8" = 1'

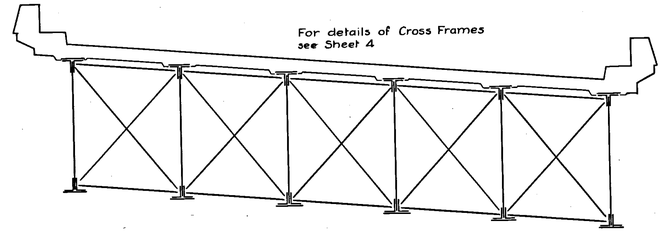


GIRDER WEB SPLICE
Scale: ½" = 1'

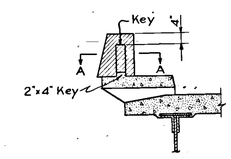


Note: For Working Point Diagram at Piers 2 & 11 see Sheet 5

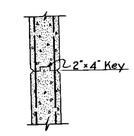
WORKING POINT DIAGRAM
Scale: ½" = 1'



GIRDER FRAMING - SPANS 12 & 13
Scale: ¼" = 1'

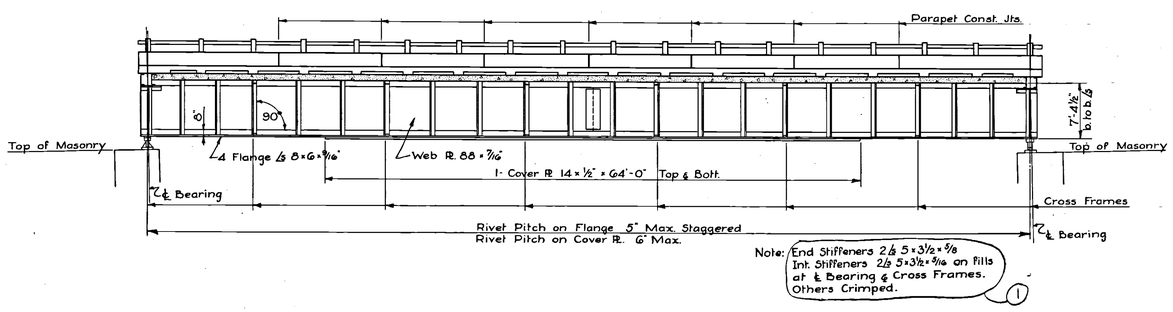


PARAPET CONSTRUCTION JOINT
Scale: 3/8" = 1'



SECTION A-A

Dead Load Camber { 1" for Int. Girders; 1 3/8" for Ext. Girders } { Ordinates to be measured from Working Line Running parallel to grade. Working Line straight for Spans 1 & 2 & curved for Spans 12 & 13.



Note: End Stiffeners 2 Ls 5 × 3½ × 5/8
Int. Stiffeners 2 Ls 5 × 3½ × 5/16 on fills at ℄ Bearing & Cross Frames.
Others Crimped.

GIRDER ELEVATION
Scale: 1/8" = 1'

	INTERIOR GIRDER		EXTERIOR GIRDER	
	SHEAR	MOMENT	SHEAR	MOMENT
D.L.	65.0	1625	94.	2350
L.L.	37.5	709	21.5	408
IMP.	8.3	157	4.8	91
.8D + 1.66(L+I)	128.1^{K}	2736^{IK}	$119.^{K}$	2709^{IK}
S.M. REQ'D.	$\frac{2736 \times 12}{18} = 1824\ in^3$		$\frac{2709 \times 12}{18} = 1810\ in^3$	
S.M. FURN.		I GROSS		I NET
	Web 88 × 7/16	$24{,}845\ in^4$		$17{,}545\ in^4$
	4 Ls 8 × 6 × 9/16	52,600		41,300
	2 Pls. 14 × ½	27,800		23,855
		$105{,}445\ in^4$		$82{,}700\ in^4$
	$S.M. = \frac{82{,}700}{44.75} = 1850\ in^3$			
SHEAR AREA REQ'D	$\frac{128.1}{11} = 11.6\ in^2$		$\frac{119.}{11} = 10.8\ in^2$	
SHEAR AREA FURN.	$38.5\ in^2$		$38.5\ in^2$	

Note:
For General Notes see Sheet 1.
Rivets 7/8" ϕ.

No.	Revision	By	Date
2	Deck Replacement & Widening - See RWP-43-82-04		1982
1	General	R.H.G.	5/11/54

OHIO TURNPIKE COMMISSION
OHIO TURNPIKE PROJECT NO. 1

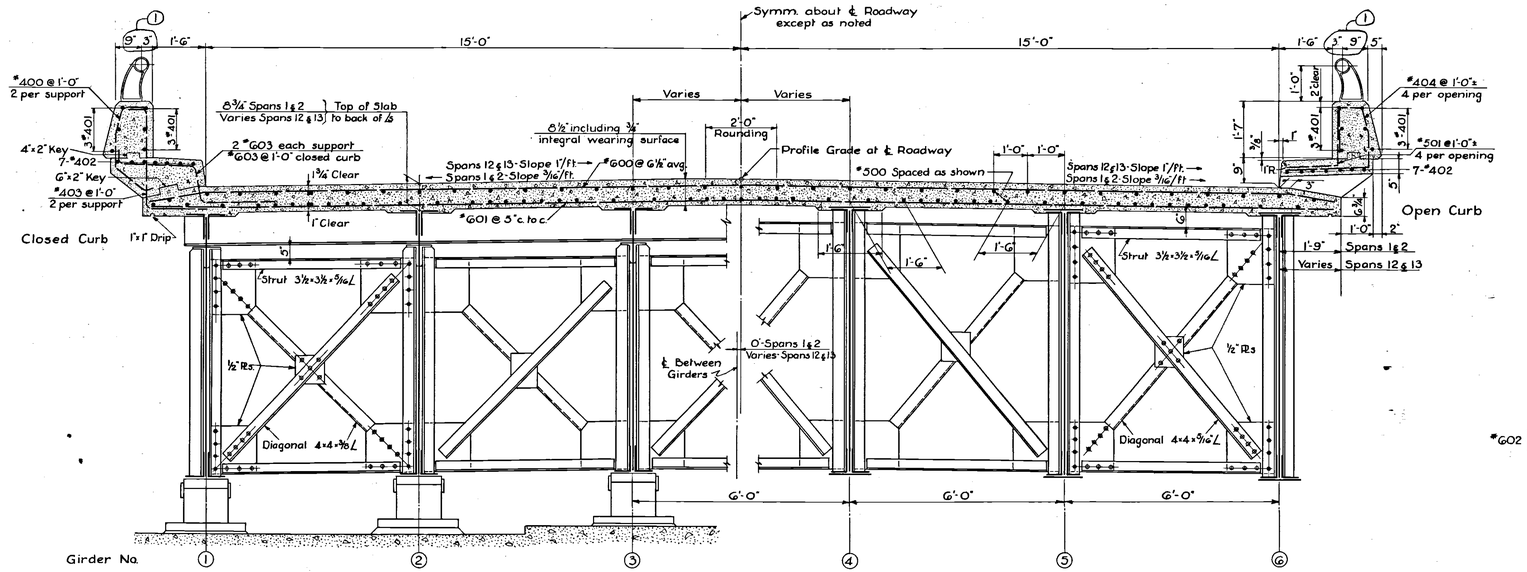
CUYAHOGA RIVER BRIDGE
SUMMIT COUNTY
GIRDER SPANS-FRAMING PLAN

J. E. GREINER COMPANY
CONTRACTING ENGINEER
DESIGN SECTION D-5

DESIGNED: J.W.H. CHECKED: J.W.H. DATE: DEC. 1952
DRAWN: R.B.M. IN CHARGE: H.K. SCALE: AS SHOWN

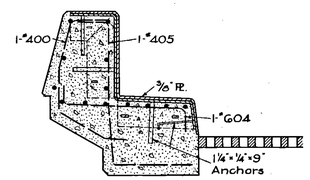
CONTRACT No. C-15-B SHEET 3 OF 9

C-638

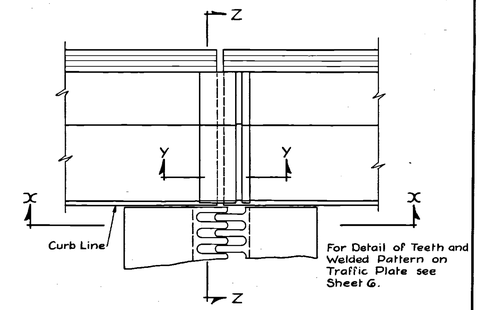


HALF SECTION AT END CROSS FRAME
Scale: ½"=1'

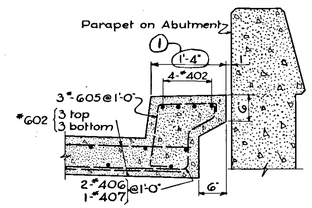
HALF SECTION AT INTERMEDIATE CROSS FRAME
Scale: ½"=1'



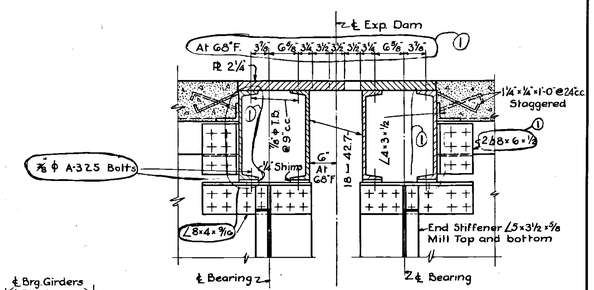
SECTION Z Z
Scale: ¾"=1'



PLAN
TYPICAL EXPANSION DAM
Scale: ¾"=1'

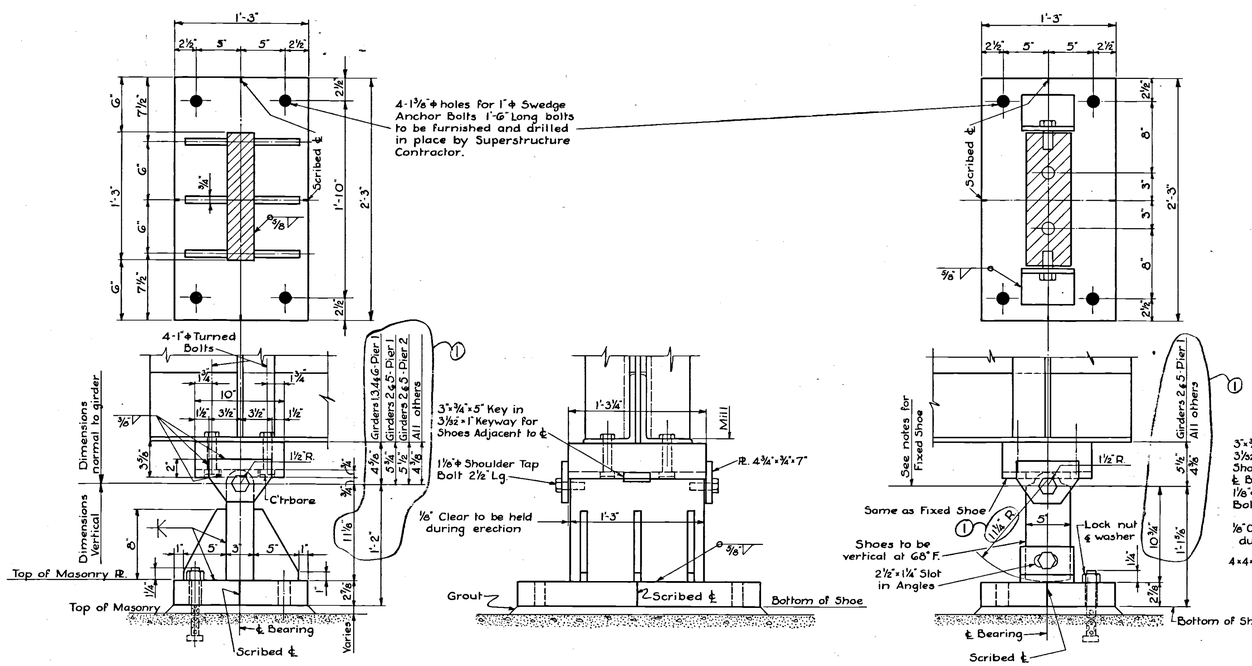


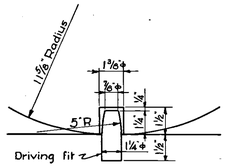
DETAIL AT ABUTMENT
Scale: ¾"=1'



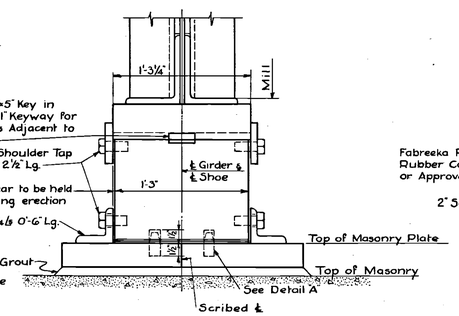
SECTION X X
Scale: ¾"=1'

FIXED SHOE DETAILS
Scale: 1½"=1'

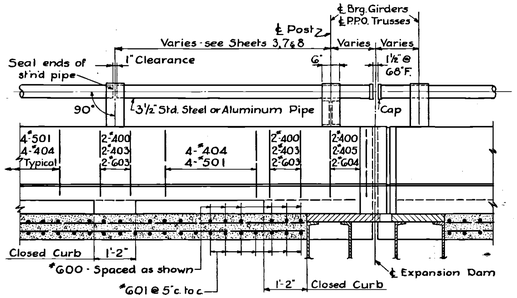




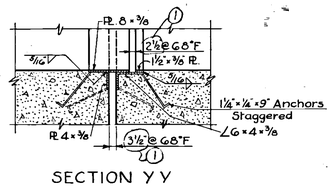
DETAIL A
Scale: 3"=1'



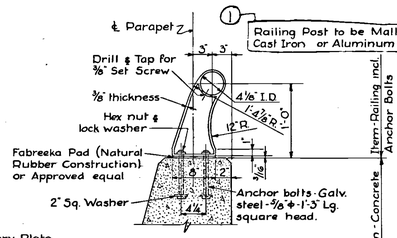
EXPANSION SHOE DETAILS
Scale: 1½"=1'



ELEVATION HANDRAIL AND PARAPET
Scale: ½"=1'



SECTION Y Y
Scale: ¾"=1'



RAILING POST DETAIL
Scale: 1"=1'

NOTES
For General Notes see Sheet No. 1
All rivets ⅞"ϕ
For reinforcing schedule see Sheet No. 2
A 325 bolts are high tension bolts, in accordance with A.S.T.M. spec's. A-325-52T

No.	Revision	By	Date
2	DECK REPLACEMENT & WIDENING - SEE RNP-43-B2.84		1982
1	General	R.H.G.	3/11/54

OHIO TURNPIKE COMMISSION
OHIO TURNPIKE PROJECT NO. 1

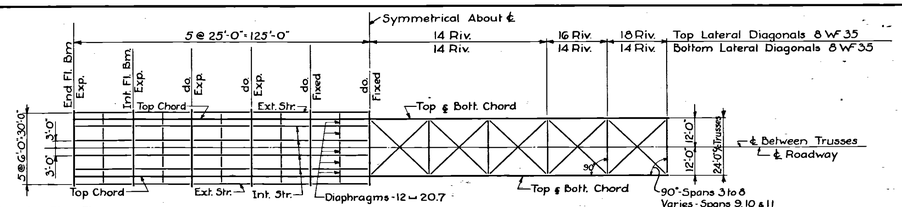
CUYAHOGA RIVER BRIDGE
SUMMIT COUNTY
GIRDER SPANS CROSS SECTION & DETAILS

J. E. GREINER COMPANY
CONTRACTING ENGINEER
DESIGN SECTION D-5

DESIGNED: J.W.H. R.W.G. | CHECKED: J.W.H. | DATE: DEC. 1952
DRAWN: F.T.C. | IN CHARGE: H.K. | SCALE: AS SHOWN

CONTRACT NO. C-15-B SHEET 4 OF 9

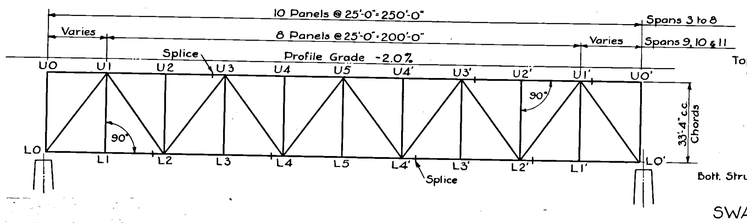
C-638



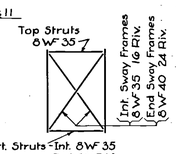
Note:
For Framing Plan-Floor System for Spans 9, 10 & 11. See Sheet 2.

HALF PLAN
FLOOR SYSTEM
(SPANS 3 TO 8)

HALF PLAN
TOP & BOTTOM LATERAL BRACING
Scale: 1" = 30'



ELEVATION
Scale: 1" = 30'



SWAY BRACING
(AT ALL PANEL PTS.)

FLOOR SYSTEM - DESIGN DATA

	EXT. STRINGER		INT. STRINGER		END FLOOR BEAM			INT. FLOOR BEAM		
	SHEAR KIPS	MOM. FT. KIPS	SHEAR KIPS	MOM. FT. KIPS	REACT. KIPS	SHEAR KIPS	MOM. FT. KIPS	REACT. KIPS	SHEAR KIPS	MOM. FT. KIPS
D.L.	17.2	108.0	12.7	78.9	43.3	27.7	120.3	83.6	53.0	227.0
L.L.	10.2	45.9	19.8	84.8	44.0	42.5	217.0	47.3	45.7	235.0
IMP.	3.4	15.3	6.6	28.2	14.8	14.3	73.0	15.9	15.4	79.0
TOTAL 8D+K(L+I)	36.4	189.4	57.8	258.0	135.6	124.4	627.0	172.1	145.0	723.0
K	1.66	1.66	1.80	1.73	1.72	1.80	1.83	1.66	1.68	1.73
S.M. REQ'D.	$\frac{189.4 \times 12}{18} = 126.5^{*3}$		$\frac{258.0 \times 12}{18} = 172.0^{*3}$		$\frac{627.0 \times 12}{18} = 418.0^{*3}$			$\frac{723.0 \times 12}{18} = 482.0^{*3}$		
S.M. FURN.	24 WF 76 175.4-3.0 = 172.4*3		24 WF 76 175.4-3.0 = 172.4*3		36 WF 150 502.9-11.8 = 491.1*3			36 WF 150 502.9-11.8 = 491.1*3		
SHEAR AREA REQ'D.	$\frac{36.4}{11.0} = 3.31^{**2}$		$\frac{57.8}{11.0} = 5.25^{**2}$		$\frac{124.4}{11.0} = 11.3^{**2}$			$\frac{145.0}{11.0} = 13.2^{**2}$		
SHEAR AREA FURN.	10.5**2		10.5**2		22.4**2			22.4**2		

TRUSS REACTION (KIPS)	VERT.	LAT.	LONG. (FIXED SHOE)
D.L.	608		
L.L.	146		
IMP.	20		
Centrifugal	25	15	
30# Wind	139	103	52
50# Wind	155	130	65
Traction			15

Wind applied 32.4' above pin.
Centrifugal Force applied 40.0' above pin.
Above Loads are NOT "Modified"

Note:
Truss Design Load includes the additional weight produced by the eccentricity of the spans on the curve and is estimated as follows:

D.L. Railing, Parapet & Curb	0.84 #/LF
Deck Slab (includes future W.S.)	2.32
Floor System	0.45
Truss	1.05
Bracing	0.20
Total =	4.86 #/L.F.

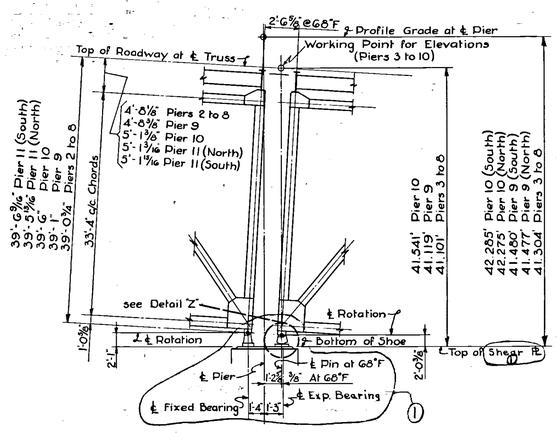
TRUSSES - DESIGN DATA

MEMBER		STRESS IN KIPS D.L.	L.L.	IMP.	TOTAL 8D+K(L+I)	L Feet	r inches	L/r	ALLOW. UNIT (Basic) STRESS Kips/Sq. in.	AREA REQ'D.	AREA FURNISHED GROSS	EFF. GROSS	NET	SECTION ① **
TOP CHORDS	U0-U1				Nominal	25.00	3.70	82	13.32		25.56			14 WF 87
	U1-U3	-730	-166	-22	-897	25.00	7.4	40.5	14.59	61.5	66.76		①	2-18 ⊞ 58 * 1-PL 27 × 5/8 Top 1-PL [27-0] × 5/16 Bot.
	U3-U5	-1094	-241	-32	-1328	25.00	6.9	43.5	14.52	91.7	97.62			2-16 ⊞ 58 2-PLs 11½ × 5/8 1-PL 27 × 5/8 Top 1-PL [27-0] × 5/16 Bott.
BOTTOM CHORDS	L0-L2	+411	+94	+13	+507	25.00	3.75	80	18.00	28.2	34.99		30.77	14 WF 119
	L2-L4	+960	+215	+29	+1174	25.00	4.14	73	18.00	65.4	77.63		68.88	14 WF 264
	L4-L5	+1140	+249	+33	+1381	25.00	4.20	72	18.00	76.8	92.30		82.06	14 WF 314
DIAGONALS	L0-U1	-682	-165	-22	-856	41.67	5.1	98	12.60	68.0	74.28			2-15 ⊞ 50 2-PLs 15 × 7/16 2-PLs 15 × 5/16 2-PLs [14½-7] × ½
	U1-L2	+533	+137	+18	+685	41.67	3.99	125	18.00	38.0	44.08		38.99	14 WF 150
	L2-U3	-380	-112	-15	-516	41.67	4.2	120	11.40	45.2	54.07	50.71	①	14 WF 150 2-PL 16 × 3/8
	U3-L4	+228	+89	+12	+350	41.67	3.70	136	18.00	19.5	25.56		22.46	14 WF 87
	L4-U5	-76	-66	-9	-185	41.67	4.2	120	11.40	16.3	46.47	42.82		14 WF 158
VERTICALS	U0-L0	-46	-44	-15	-137	33.33	3.70	108	12.08	11.4	25.56			14 WF 87
	U1-L1 U3-L3 U5-L5				Nominal	33.33	3.0	134	18.00		22.94	①	19.84	14 WF 78
	U2-L2 U4-L4	-94	-48	-16	-182	33.33	3.70	108	12.08	15.1	25.56			14 WF 87

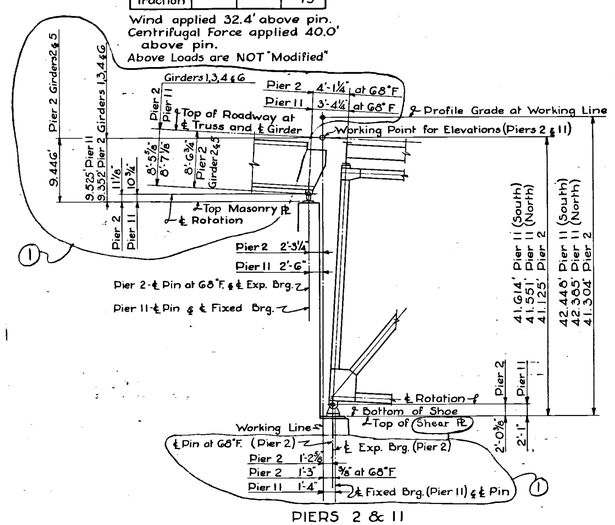
Note: - U1-U3 and U3-U5 b.b. ⊿ = 1'-6 1/16 ①
L0-U1 b.b. ⊿ = 1'-2 7/8"

Note: - D.L., L.L. and Imp. are actual Loads
Total represents Loads "MODIFIED" as per par 73, Design Specifications for Highway Structures, State of Ohio.

* Add 2-5 PLs 17½ × 7/16 in Span 5 between U1 & U2
** Section as built for erection { 2-18 ⊞ 43.8; 1-PL 22½ × 7/16 Top; 1-PL [22½-6] × 7/16 Bottom } ①

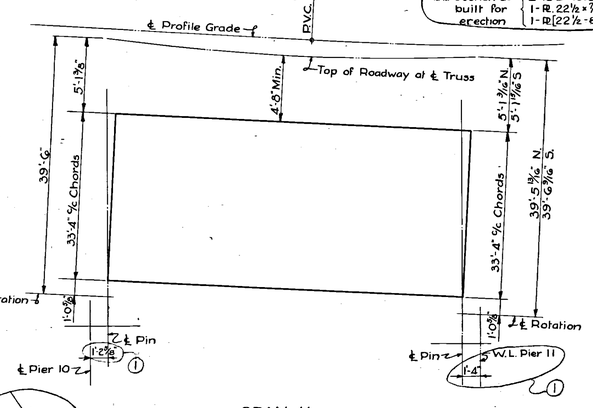


PIERS 2 TO 10

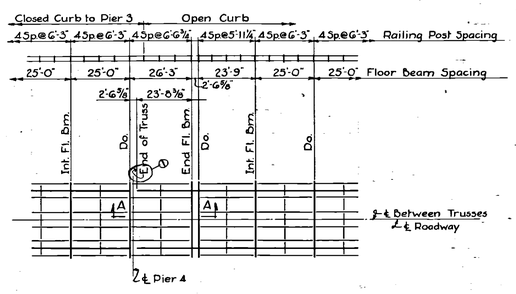


PIERS 2 & 11

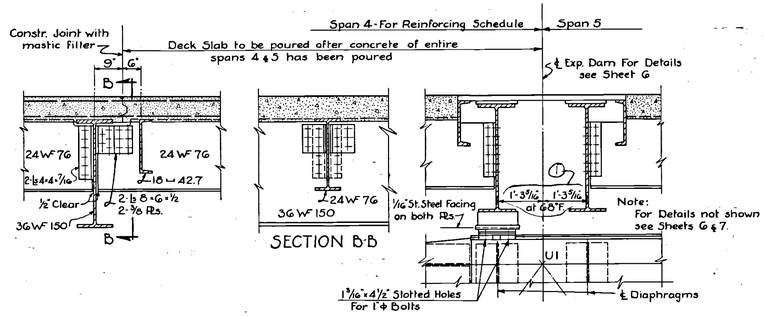
WORKING POINT DIAGRAMS



SPAN 11

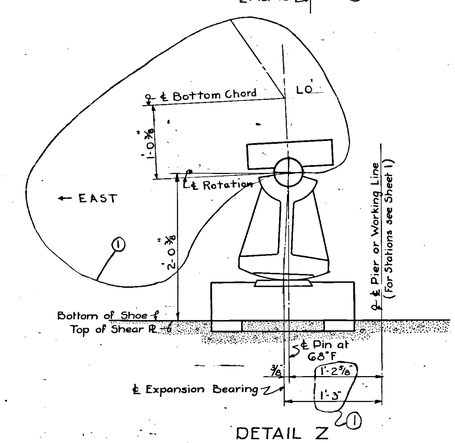


FLOOR SYSTEM AT PIER 4
Scale: 1" = 30'



SECTION B-B

SECTION A-A
Scale: ½" = 1'



DETAIL Z
Scale: 1" = 1'

Notes:
For General Notes see Sheet 1

No.	Revision	By	Date
2	Deck Replacement & Widening - See RMP 43-82-04		1982
1	General	R.H.G.	3/1/54

OHIO TURNPIKE COMMISSION
OHIO TURNPIKE PROJECT NO. 1

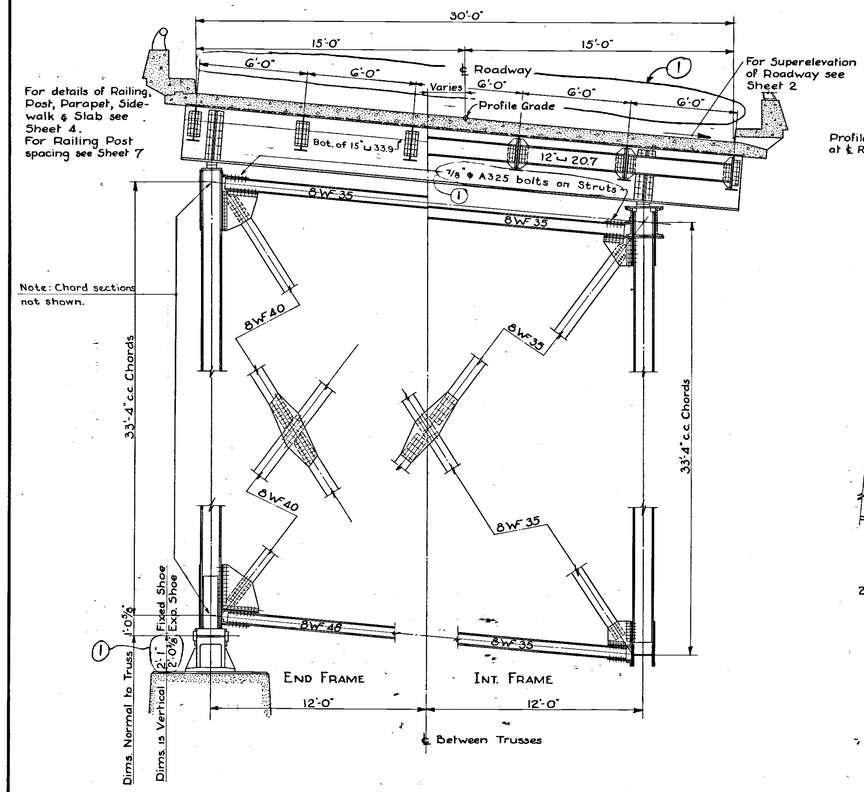
CUYAHOGA RIVER BRIDGE
SUMMIT COUNTY
TRUSS SPANS STRESS SHEET

J. E. GREINER COMPANY
CONTRACTING ENGINEER
DESIGN SECTION D-5

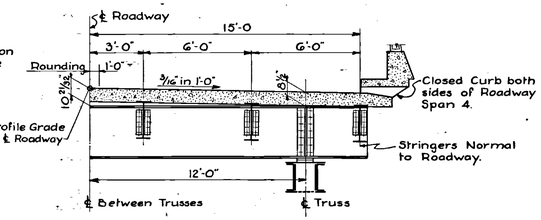
DESIGNED: R.W.G. | CHECKED: J.W.H. | DATE: DEC. 1952
DRAWN: C.B. | IN CHARGE: H.K. | SCALE: AS SHOWN

CONTRACT No. C-15-B SHEET 5 OF 9

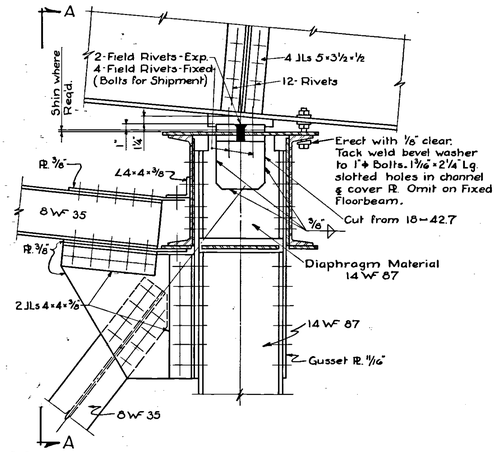
C-638



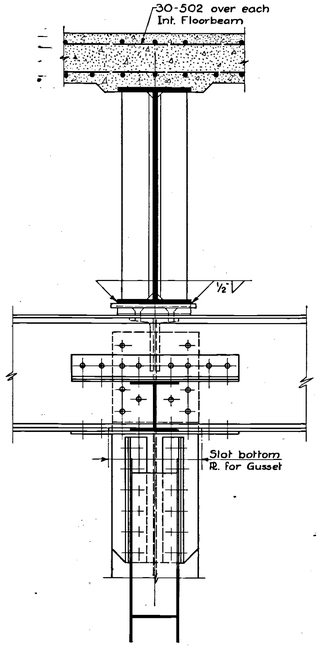
CROSS SECTION OF TRUSS
Scale 1/4"=1'-0"



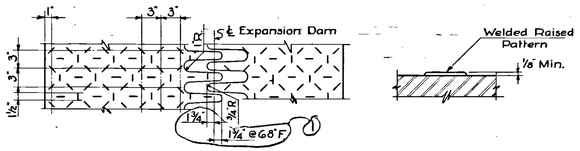
CROSS SECTION OF ROADWAY ON TANGENT
Scale: 1/4"=1'-0"



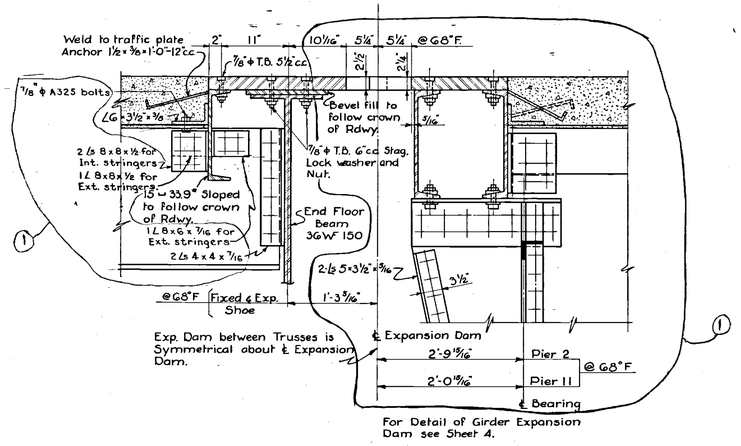
DETAIL OF FLOORBEAM BEARING
℄ SWAY FRAME BRACING AT PP-U2
(EXP. BEARING SHOWN-FIXED BEARING NOTED)
Scale: 1"=1'-0"



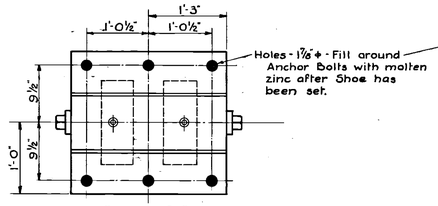
VIEW A-A



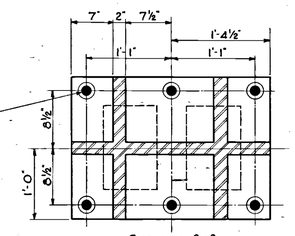
PLAN - SHOWING WELDED RAISED PATTERN



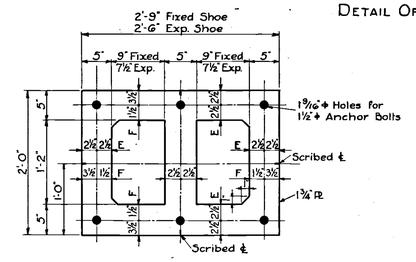
DETAIL OF EXPANSION DAM
Scale: 1"=1'-0"



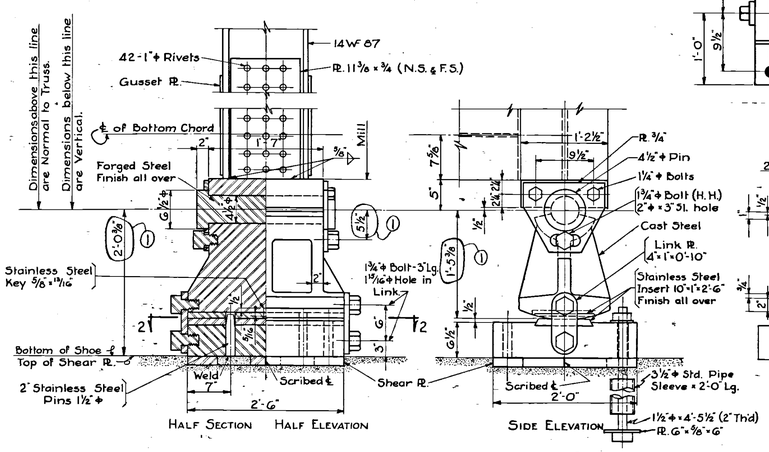
SECTION 2-2



SECTION 3-3

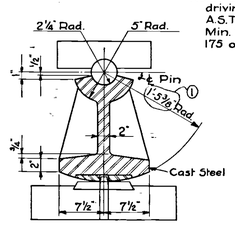


SHEAR PL.
(FIXED & EXPANSION)

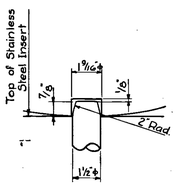


DETAIL OF EXPANSION SHOE
Scale: 1"=1'-0"

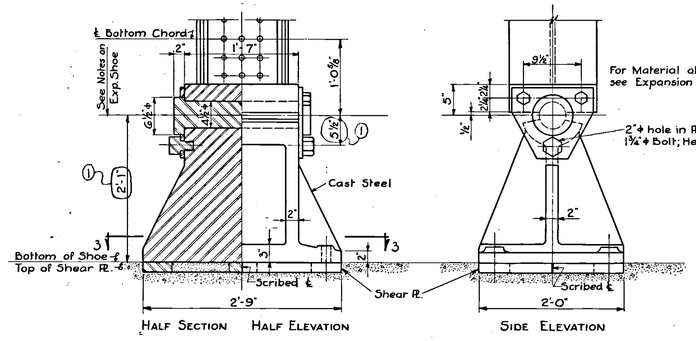
Note: Stainless Steel Inserts to have driving fit. Stainless steel shall be A.S.T.M.-A276-49T. Type 410 Min. Yield-75,000 p.s.i. Min. Brinell 175 or equal.



ROCKER



Stainless Steel Pin Driving Fit and Finish all over



DETAIL OF FIXED SHOE
Scale: 1"=1'-0"

Notes:
For General Notes see Sheet 1.
Shear Pls.; Anchor Bolts and Pipe Sleeves to be furnished by Superstructure Contractor and set by Substructure Contractor.
Steel surfaces indicated to be finished shall be finished to American Standards Association roughness symbol

No.	Revision	By	Date
2	DECK REPLACEMENT & WIDENING - SEE CHP. 45-82-04		1982
1	General	R.H.G.	3/1/54

OHIO TURNPIKE COMMISSION
OHIO TURNPIKE PROJECT NO. 1

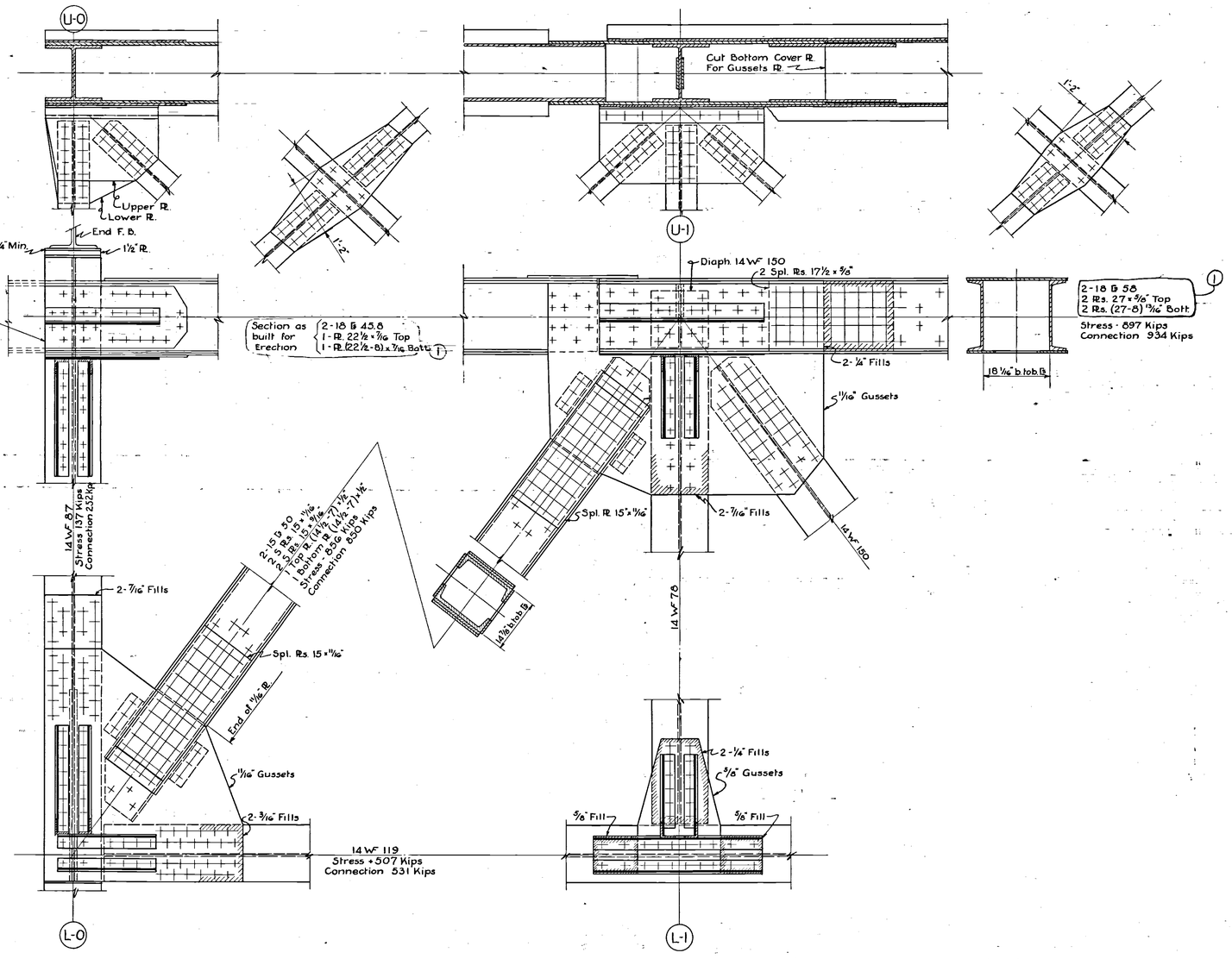
CUYAHOGA RIVER BRIDGE
SUMMIT COUNTY
TRUSS SPAN CROSS SECTION & DETAILS

J. E. GREINER COMPANY
CONTRACTING ENGINEER
DESIGN SECTION D-5

DESIGNED: R.W.G.	CHECKED: J.W.H.	DATE: DEC. 1952
DRAWN: D.R.L.	IN CHARGE: H.K.	SCALE: AS SHOWN

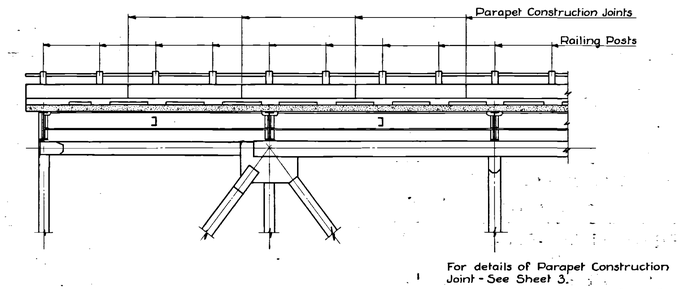
CONTRACT No. C-15-B SHEET 6 OF 9

C-638



LATERALS & SWAY BRACING

Lateral System Diagonals	8 WF 35
Int. Sway Frames & Struts	8 WF 35
End Sway Frames - Top Struts	8 WF 35
Do. - Diagonals	8 WF 40
Do. - Bott. Strut	8 WF 48
Gussets	3/8" Pls.
Connecting ∠s	4 x 4 x 3/8 ∠s



TYPICAL SPACING RAILING POSTS AND PARAPET CONSTRUCTION JOINTS

Scale: 1/8" = 1'-0"

NOTES:
For General Notes see Sheet 1
Main Gusset Pls. 5/8" unless otherwise noted.

No.	Revision	By	Date
2	Deck Replacement & Widening - See RMP-45-8204		1952
1	General	R.H.G.	3/1/54

OHIO TURNPIKE COMMISSION

OHIO TURNPIKE PROJECT NO. 1

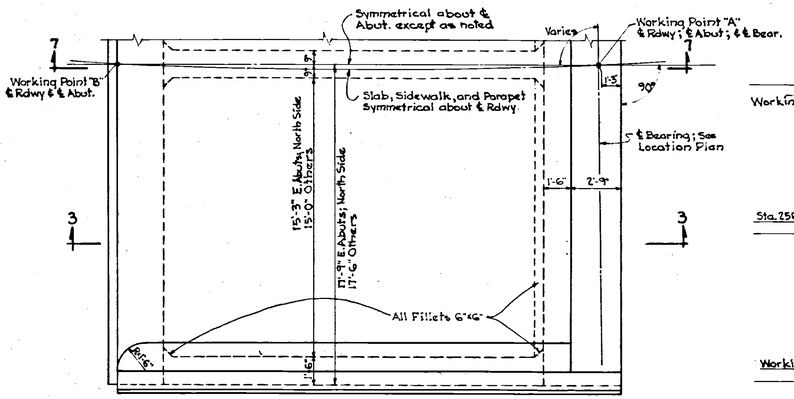
CUYAHOGA RIVER BRIDGE
SUMMIT COUNTY
TRUSS SPANS - TYPICAL JOINTS

J. E. GREINER COMPANY
CONTRACTING ENGINEER
DESIGN SECTION D-5

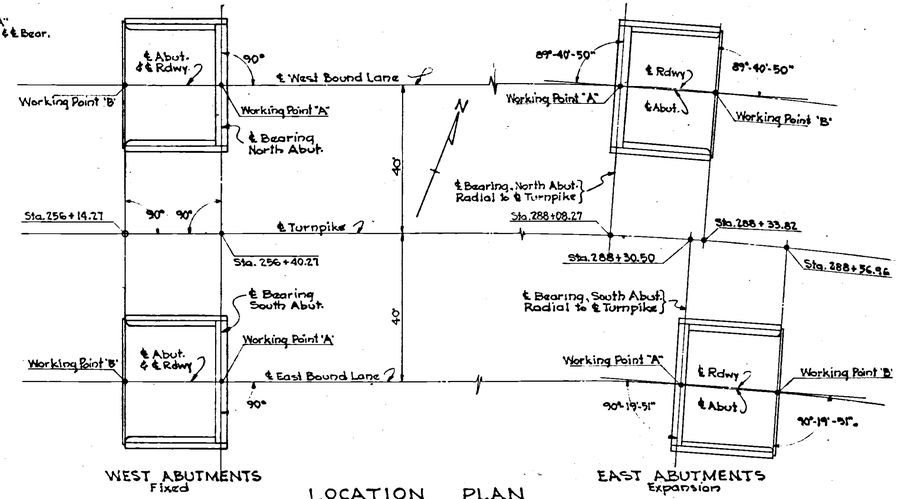
DESIGNED: J.W.H.	CHECKED: R.W.G.	DATE: DEC. 1952
DRAWN: R.B.M.	IN CHARGE: H.K.	SCALE: 3/4" = 1'-0"

CONTRACT NO. C-15-B SHEET 7 OF 9

C-638



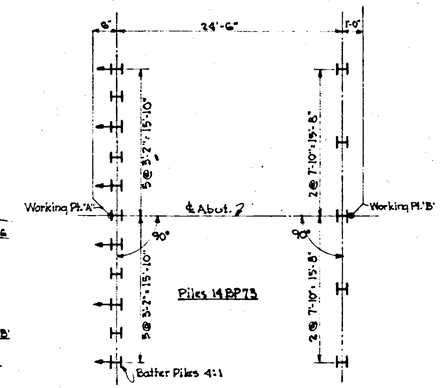
PLAN
¼" = 1'-0"



WEST ABUTMENTS
Fixed

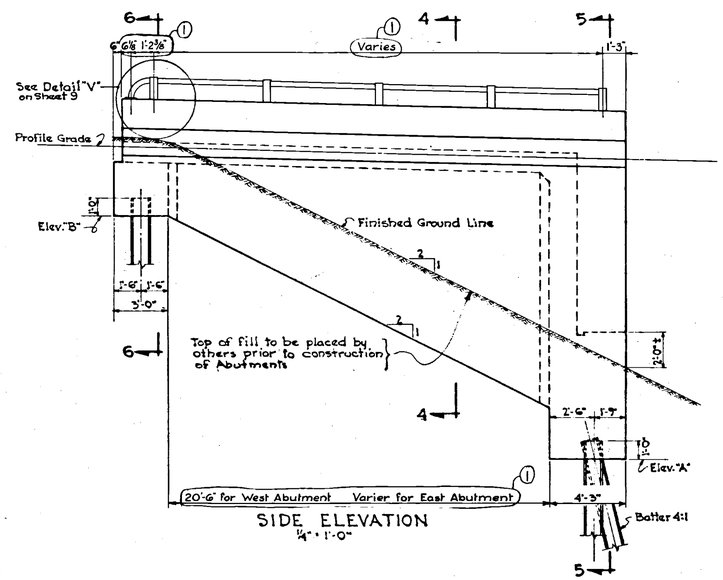
LOCATION PLAN
1" = 20'-0"

EAST ABUTMENTS
Expansion

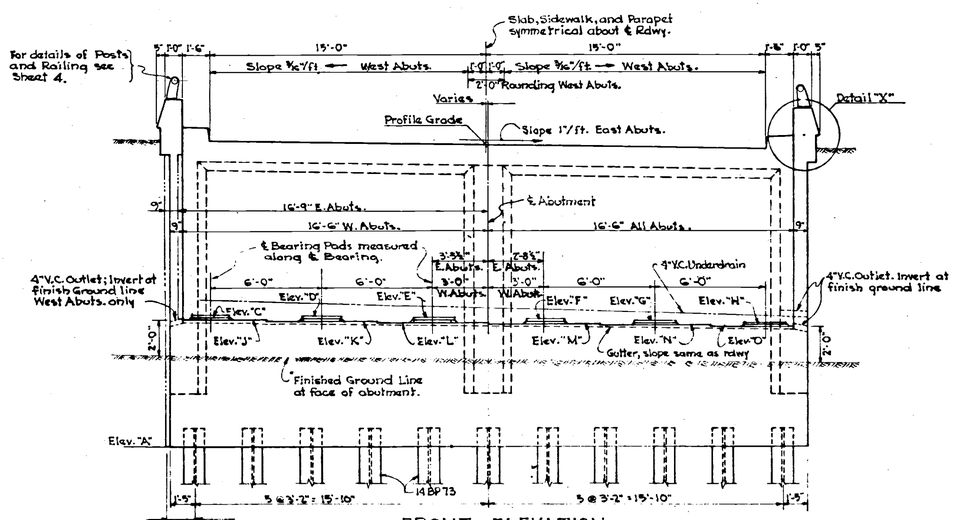


PILE PLAN
⅛" = 1'-0"

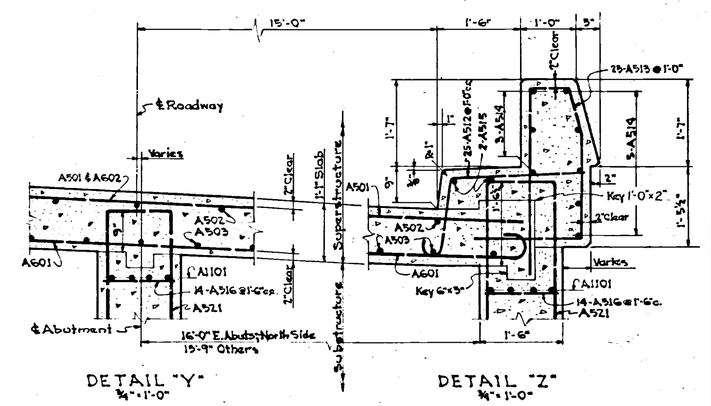
TABLE OF ELEVATIONS				
	WEST ABUTMENTS		EAST ABUTMENTS	
	NORTH	SOUTH	NORTH	SOUTH
A	825.19	825.19	772.47	772.29
B	837.25	837.25	784.90	784.75
C	831.991	831.991	781.667	781.486
D	832.085	832.085	781.167	780.986
E	832.179	832.179	780.667	780.486
F	832.179	832.179	780.167	779.986
G	832.085	832.085	779.667	779.486
H	831.991	831.991	779.167	778.986
J	831.69	831.69	781.37	781.19
K	831.78	831.78	780.87	780.69
L	831.88	831.88	780.37	780.19
M	831.88	831.88	779.87	779.69
N	831.78	831.78	779.37	779.19
O	831.69	831.69	778.87	778.69



SIDE ELEVATION
¼" = 1'-0"



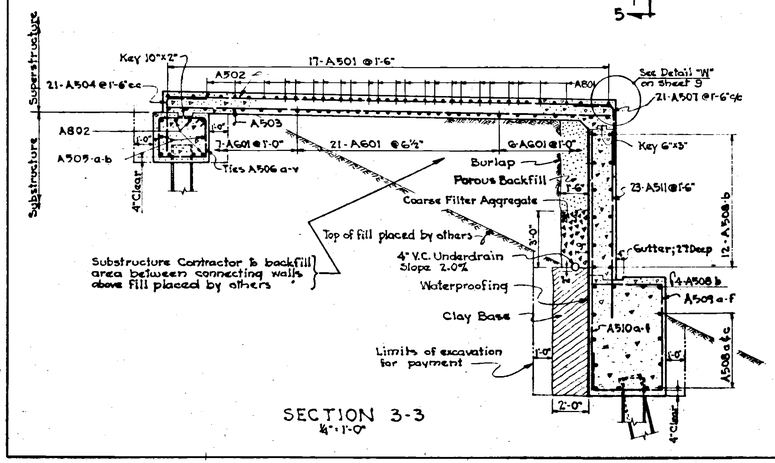
FRONT ELEVATION
¼" = 1'-0"



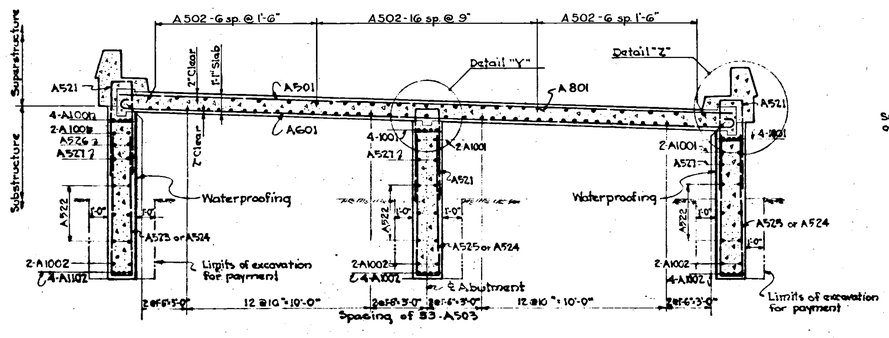
DETAIL "Y"
¾" = 1'-0"

DETAIL "Z"
¾" = 1'-0"

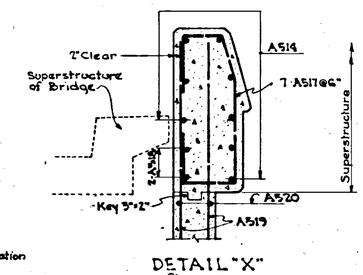
NOTES:
For General Notes see Sheet 1.
For notes pertaining to Abutments see Sheet 9.



SECTION 3-3
¼" = 1'-0"



SECTION 4-4
¼" = 1'-0"



DETAIL "X"
¾" = 1'-0"

No.	Revision	By	Date
2	Deck Replacement & Widening - See RHP 43-82-04		1982
1	General	RHG	3/1/54

OHIO TURNPIKE COMMISSION
OHIO TURNPIKE PROJECT NO. 1

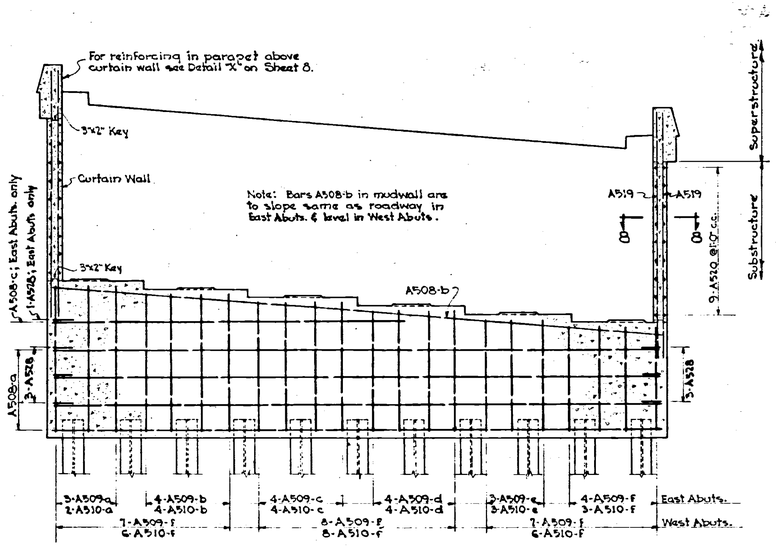
CUYAHOGA RIVER BRIDGE
SUMMIT COUNTY
ABUTMENTS

J. E. GREINER COMPANY
CONTRACTING ENGINEER
DESIGN SECTION D-5

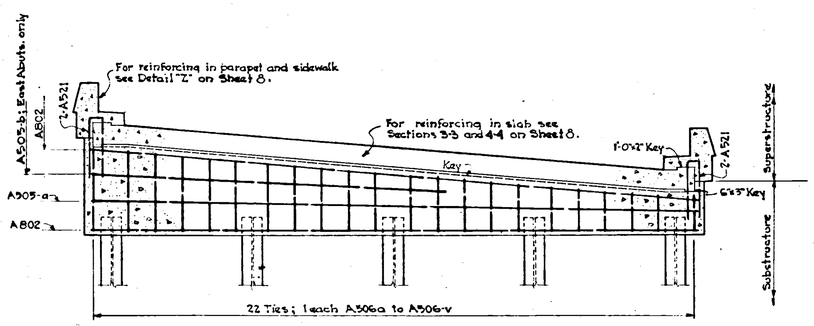
DESIGNED: J.W.H.
DRAWN: J.W.H.
CHECKED: C.G.B.
IN CHARGE: H.K.
DATE: Dec. 1952
SCALE: AS NOTED

CONTRACT No. C-15-B SHEET 8 OF 9

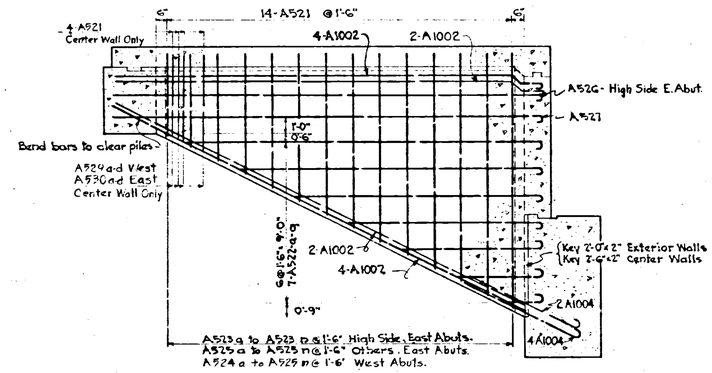
C-638



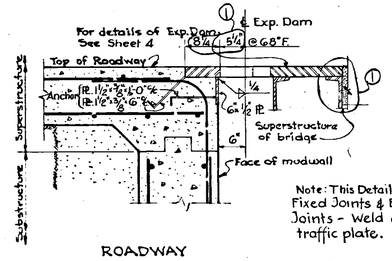
SECTION 5-5
¼" = 1'-0"



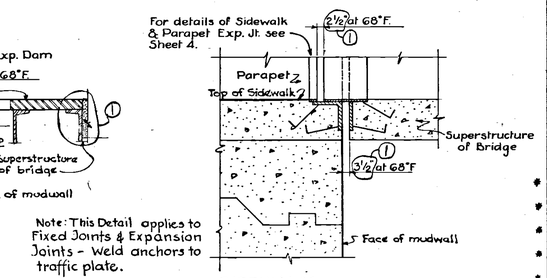
SECTION 6-6
¾" = 1'-0"



SECTION 7-7
CONNECTING WALL REINFORCING
¼" = 1'-0"



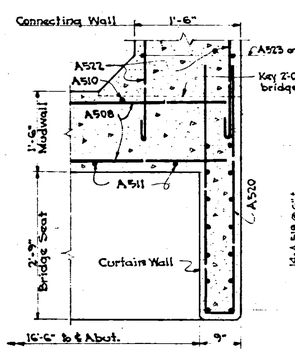
ROADWAY



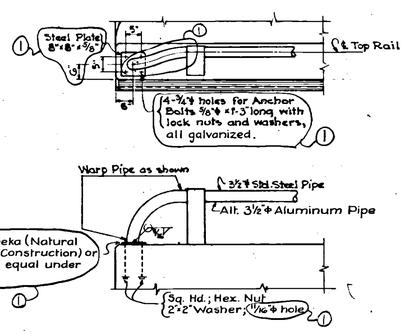
SIDEWALK

Note: This Detail applies to Fixed Joints & Expansion Joints - Weld anchors to traffic plate.

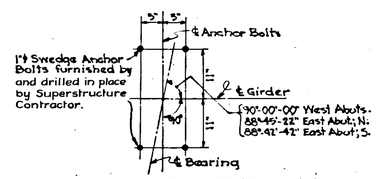
DETAIL "W"
¾" = 1'-0"



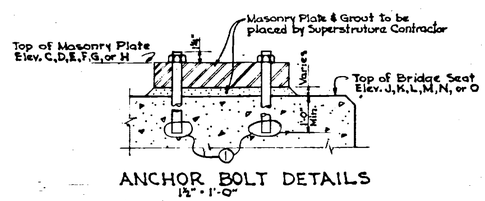
SECTION 8-8
¾" = 1'-0"



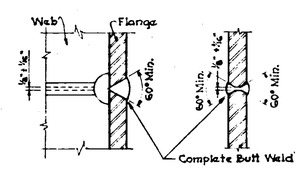
DETAIL "V"
½" = 1'-0"



PLAN OF ANCHOR BOLT LOCATION
¾" = 1'-0"



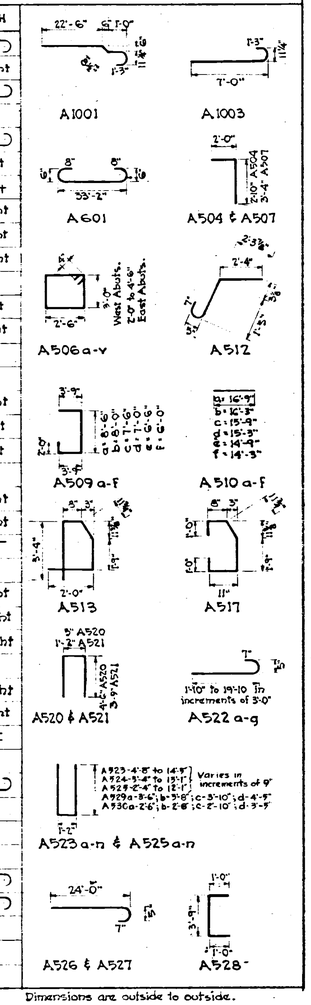
ANCHOR BOLT DETAILS
1½" = 1'-0"



FLANGE WEB
PILE SPLICE DETAIL
6" = 1'-0"

REINFORCING SCHEDULE

	MARK	SIZE	NO. REQ'D. WEST ABUTS.	NO. REQ'D EAST ABUTS.	LENGTH	SKETCH
*	A1001	#10	36	36	25'-9½"	
*	A1002	#10	36	36	26'-0"	Straight
*	A1003	#10	36	36	8'-3"	
	A601	#6	68	68	34'-6"	
	A801	#8	46	46	12'-0"	Straight
*	A802	#8	16	16	34'-0"	Straight
	A501	#5	34	34	33'-0"	Straight
	A502	#5	58	42	24'-0"	Straight
	A503	#5	66	90	24'-0"	Straight
*	A504	#5	42	42	4'-10"	
*	A505-a	#5	4	4	34'-0"	Straight
*	A505-b	#5	—	4	20'-0"	Straight
*	A506-a-v	#5	44	44; 2 each 'a' to 'v'	Varies	
*	A507	#5	42	42	5'-4"	
*	A508-a	#5	20	20	34'-0"	Straight
*	A508-b	#5	32	32	34'-0"	Straight
*	A508-c	#5	—	4	20'-0"	Straight
*	A509-a-f	#5	44-f	6-a & e; 8-b,c,d,f	Varies	
*	A510-a-f	#5	40-f	4-a; 8-b,c,d,e,f	Varies	Straight
*	A511	#5	46	46	10'-6"	Straight
	A512	#5	100	100	4'-4"	
	A513	#5	100	100	8'-8¾"	
	A514	#5	32	32	26'-9"	Straight
	A515	#5	8	8	24'-0"	Straight
	A516	#5	84	84	1'-2"	Straight
	A517	#5	28	28	6'-3¾"	
	A518	#5	8	8	4'-6"	Straight
*	A519	#5	56	56	14'-0"	Straight
*	A520	#5	36	36	9'-5"	
*	A521	#5	92	92	8'-8"	
*	A522-a-g	#5	84; 12 each 'a' to 'g'	84; 12 each 'a' to 'g'	2'-5"; 20'-5"	
*	A523-a-n	#5	—	28; 2 each 'a' to 'n'	10'-0"; 30'-0"	
*	A524-a-n	#5	84; 6 each 'a' to 'n'	—	7'-10"; 27'-8"	
*	A525-a-n	#5		56; 4 each 'a' to 'n'	5'-10"; 25'-4"	
*	A526	#5	—	4	24'-7"	
*	A527	#5	12	12	24'-7"	
*	A528	#5	12	14	5'-9"	
*	A529 a-d	#5	8; 2 each 'a' to 'd'		Varies	
*	A530 a-d	#5		8; 2 each 'a' to 'd'	Varies	



Dimensions are outside to outside.

* To be furnished & placed by Substructure Contractor.
Others to be furnished & placed by Superstructure Contractor

NOTES:
For General Notes see Sheet 1.
All concrete in Superstructure of Abutments is "Proposal Item No. S-1 and Special Provisions - Class "C" Concrete.
All exposed edges of concrete shall be chamfered 1"x1" unless otherwise noted.

No.	Revision	By	Date
2	Deck Replacement & Widening - See RHP-43-82.04		1982
1	General	R.H.G.	3/1/54

OHIO TURNPIKE COMMISSION
OHIO TURNPIKE PROJECT NO. 1

CUYAHOGA RIVER BRIDGE
SUMMIT COUNTY
ABUTMENT DETAILS

J. E. GREINER COMPANY
CONTRACTING ENGINEER
DESIGN SECTION D-5

DESIGNED: J.W.H.	CHECKED: F.T.C.	DATE: Dec. 1952
DRAWN: J.W.H.	IN CHARGE: H.K.	SCALE: AS NOTED

CONTRACT No. C-15-B SHEET 9 OF 9