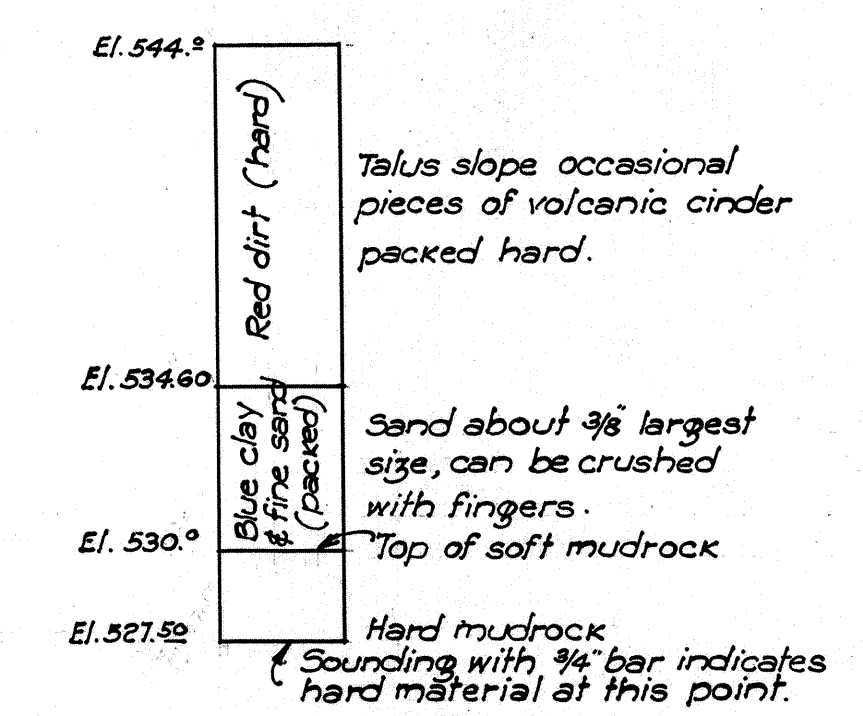
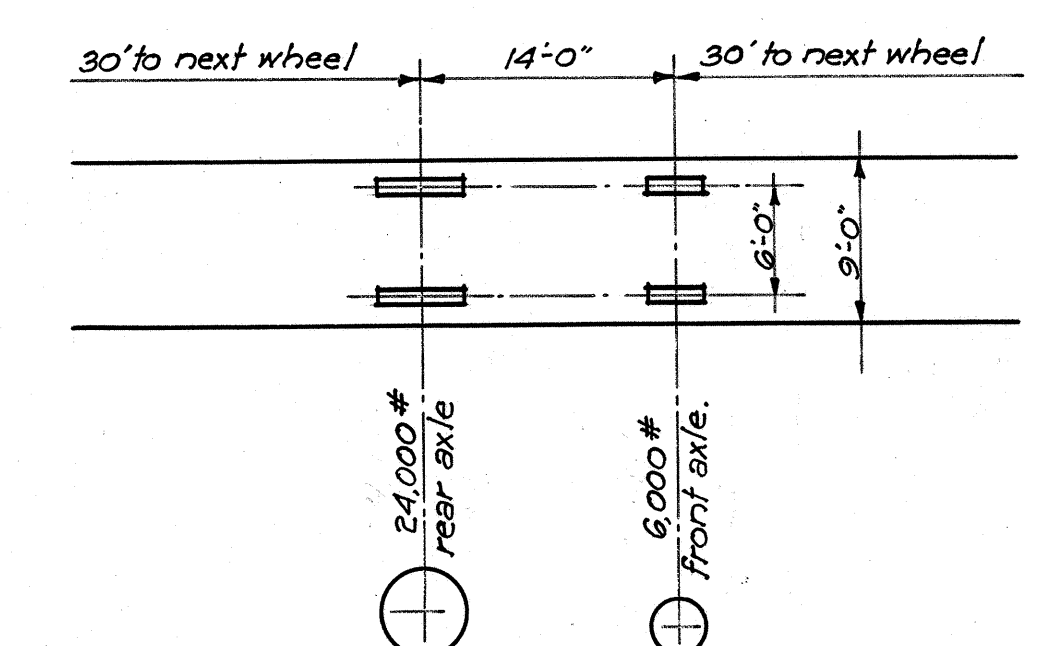
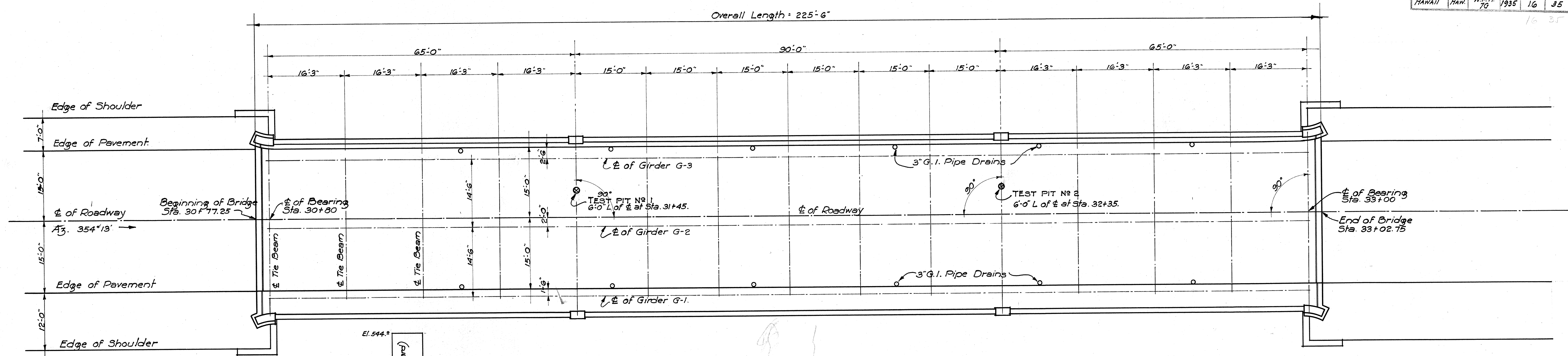




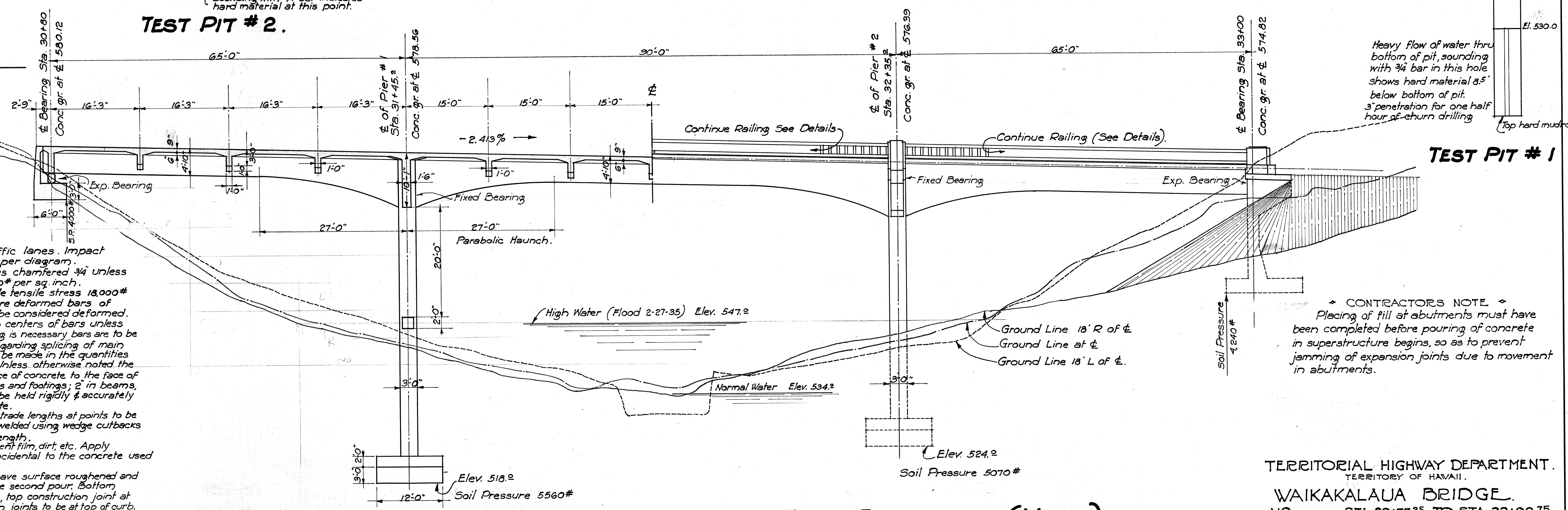
LAYOUT PLAN OF BRIDGE.
Scale 1"=10'

LOCATION	BRIDGE QUANTITIES			MISC.	
	EXC.	CONC.	STEEL	CONC.	STEEL
Abut. Footings	286.0	91.90	5,656	ROCKERS.	
Pier Footings	1049.0	138.60	12,896		
Abutments		64.42	6,626		606
Piers		112.15	3,2820		
Superstructure		575.15	149,009	1.00	733
Railing		29.70	3,505		
Total	1,335.0 cu.	1011.9 cu.	211,712 #	1.0 cu.	1,404 #

DIAGRAM OF TYPICAL 15 TON TRUCK.

GENERAL NOTES

Dead Load: Concrete at 150# per cu. ft.
Live Load: Train of 15 ton trucks in two traffic lanes. Impact allowance 75%. Spacing of trucks as per diagram.
Concrete: Class A (1:2:4) with all exposed edges chamfered 3/4" unless otherwise noted. Allowable compression 750# per sq. inch.
Reinforcing Steel: Intermediate grade, allowable tensile stress 18,000# per sq. inch. All steel to be round or square deformed bars of approved design, square twisted bars not to be considered deformed. All dimensions relating to reinforcing are to centers of bars unless otherwise noted. Where splicing of reinforcing is necessary bars are to be lapped 40 diam. and splices to be staggered. Regarding splicing of main longitudinal bars see below. No allowance will be made in the quantities for extra weight of steel required for splicing. Unless otherwise noted the minimum covering measured from the surface of concrete to the face of any steel shall be not less than 2" in abutments and footings; 2" in beams, girders & handrails and 1 1/4" in slabs. Steel to be held rigidly & accurately in place before and during placing of concrete.
Splices: Splices are permitted in main bars exceeding trade lengths at points to be indicated by the Engineer, to be electrically arc welded using wedge cutbacks and 1/8" collars. Splices to test at least full strength.
Brush Coat Waterproofing: Remove all projections, cement film, dirt, etc. Apply waterproofing as specified. Waterproofing is incidental to the concrete used and will not be paid for separately.
Construction Joints: All construction joints to have surface roughened and 1:2 cement grout applied immediately before second pour. Bottom construction joints to be at top of footing, top construction joint at bottom of girder haunches, railing construction joints to be at top of curb.



HALF SECTION ALONG C.L.
Scale 1"=10'

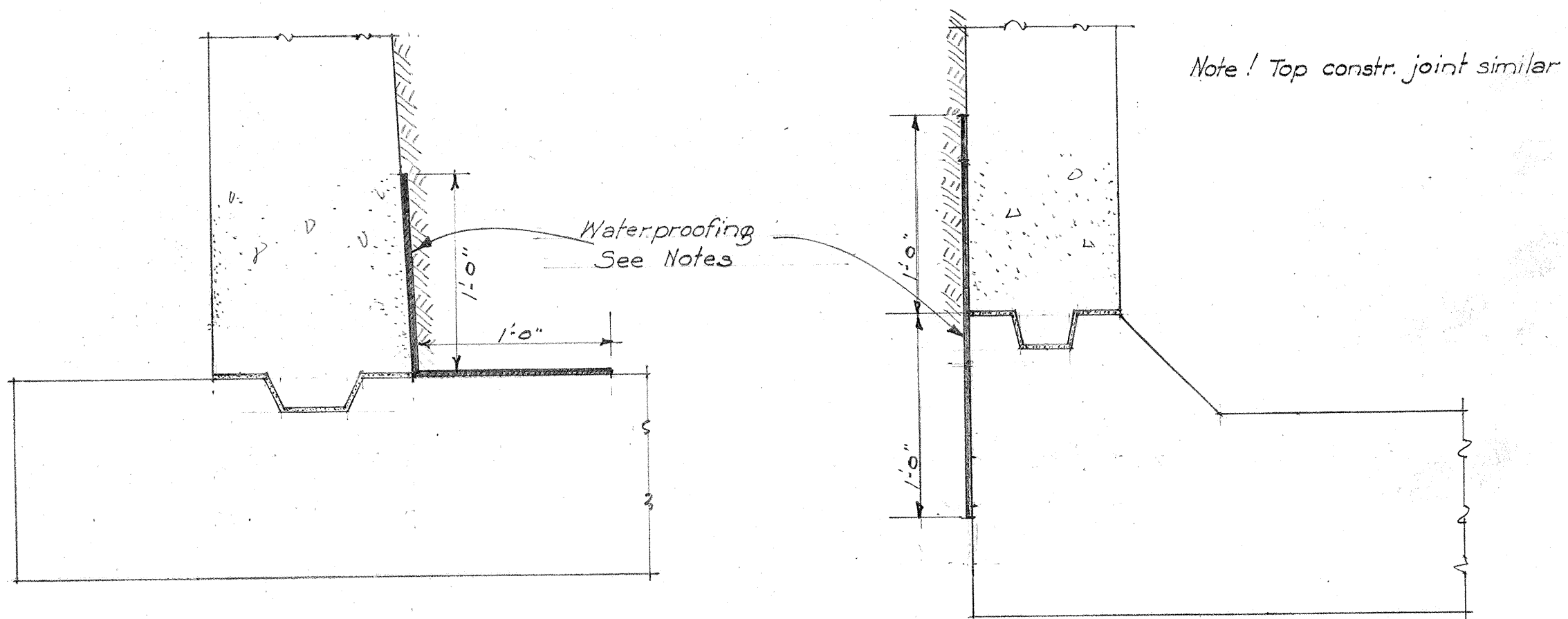
HALF ELEVATION (MAKAI).
Scale 1"=10'

CONTRACTORS NOTE
Placing of fill at abutments must have been completed before pouring of concrete in superstructure begins, so as to prevent jamming of expansion joints due to movement in abutments.

TERRITORIAL HIGHWAY DEPARTMENT.
TERRITORY OF HAWAII.
WAIKAKALAU BRIDGE.
No. STA. 30+77.25 TO STA. 33+02.75
KAMEHAMEHA HIGHWAY W.P.H. 7-G.
DATE SHEET 1 OF 9 SHEETS.

4342.16

ORIGINAL PLAN DRAWN BY C.M. CHECKED BY J.C.M. & W.B. Oct 1935
QUANTITIES BY J.C.M. & W.B.
NOTES BY J.C.M. & W.B.



RETAINING WALL.

CULVERT.

CONSTRUCTION JOINT.

GENERAL NOTES.

METHOD OF APPLYING WATERPROOFING.

- First : Mop surface 18" either side of joint with asphalt 85-100 penetration, applied at 200° F.
- Second : Apply one layer of 2 ply roofing paper lapping 12" either side of joint to hot asphalt, then mop entire surface with a thick coat of hot asphalt as specified above. Hot asphalt must be applied to dry conc. surfaces.

WATERPROOFING DETAIL

10' x 10' BOX CULVERT
AT STATION 40+37.50
ACCOMPANYING EXTRA WORK ORDER #1
PROJECT NO. W.P.H. 7G 1935.
DATE FEB. 10 1936.

10' x 10' Box Culvert 7G.

ORIGINAL PLAN

NOTE BOOK

SURVEY PLOTTED BY *M.R.B.*

DESIGNED BY *C.W.*

DRAWN BY *C.W.*

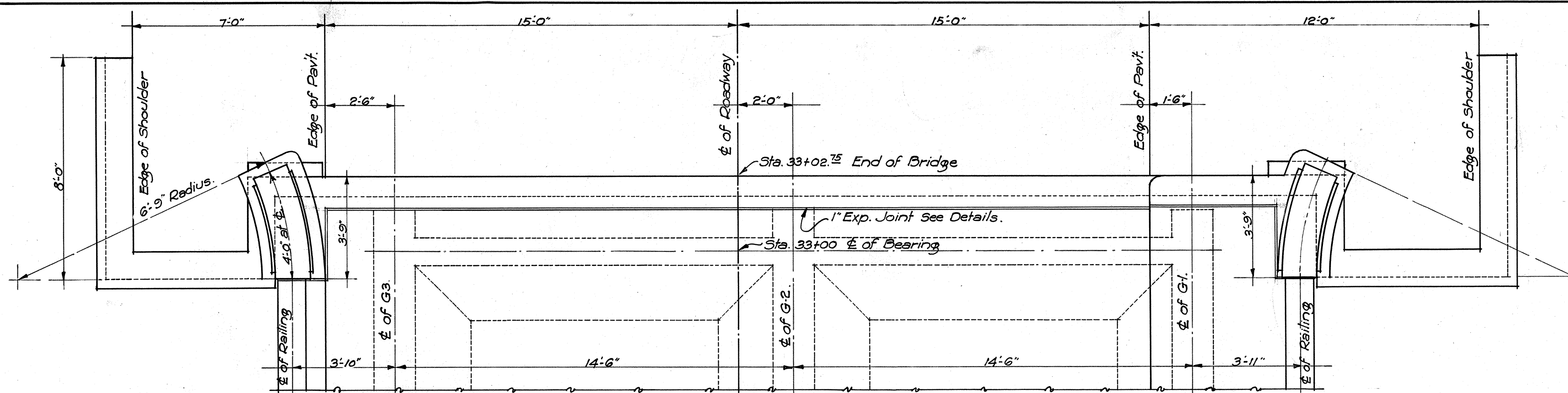
QUANTITIES BY *C.W.*

CHECKED BY *J.C.M. & M.B.*

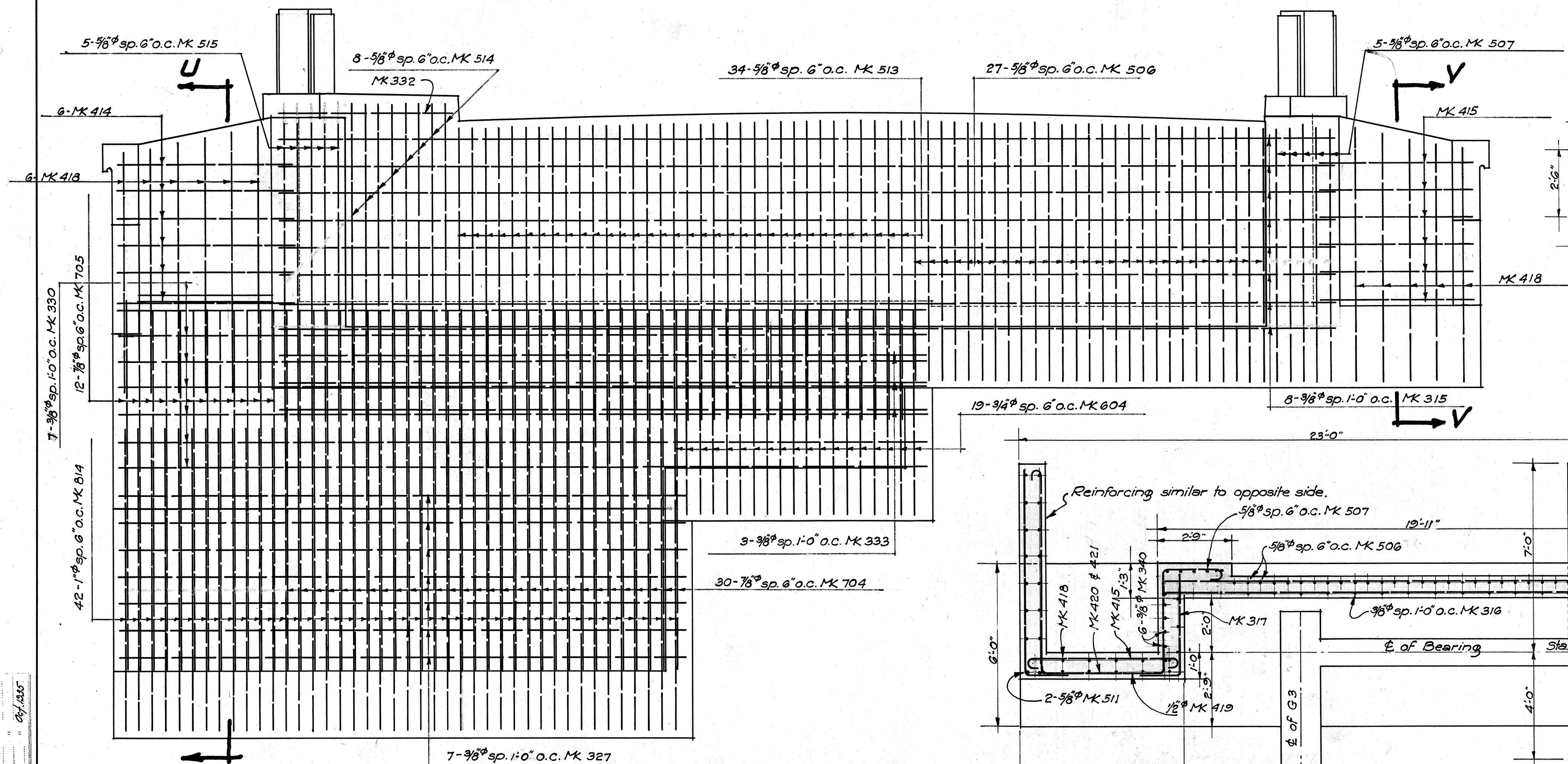
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DATE

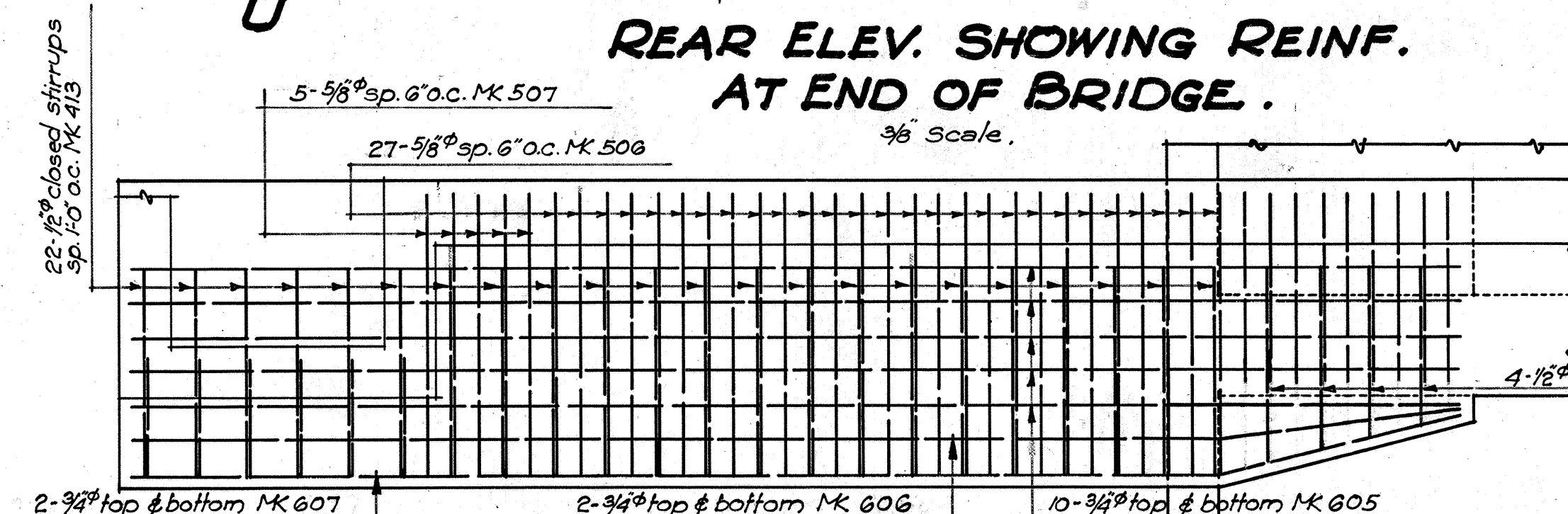
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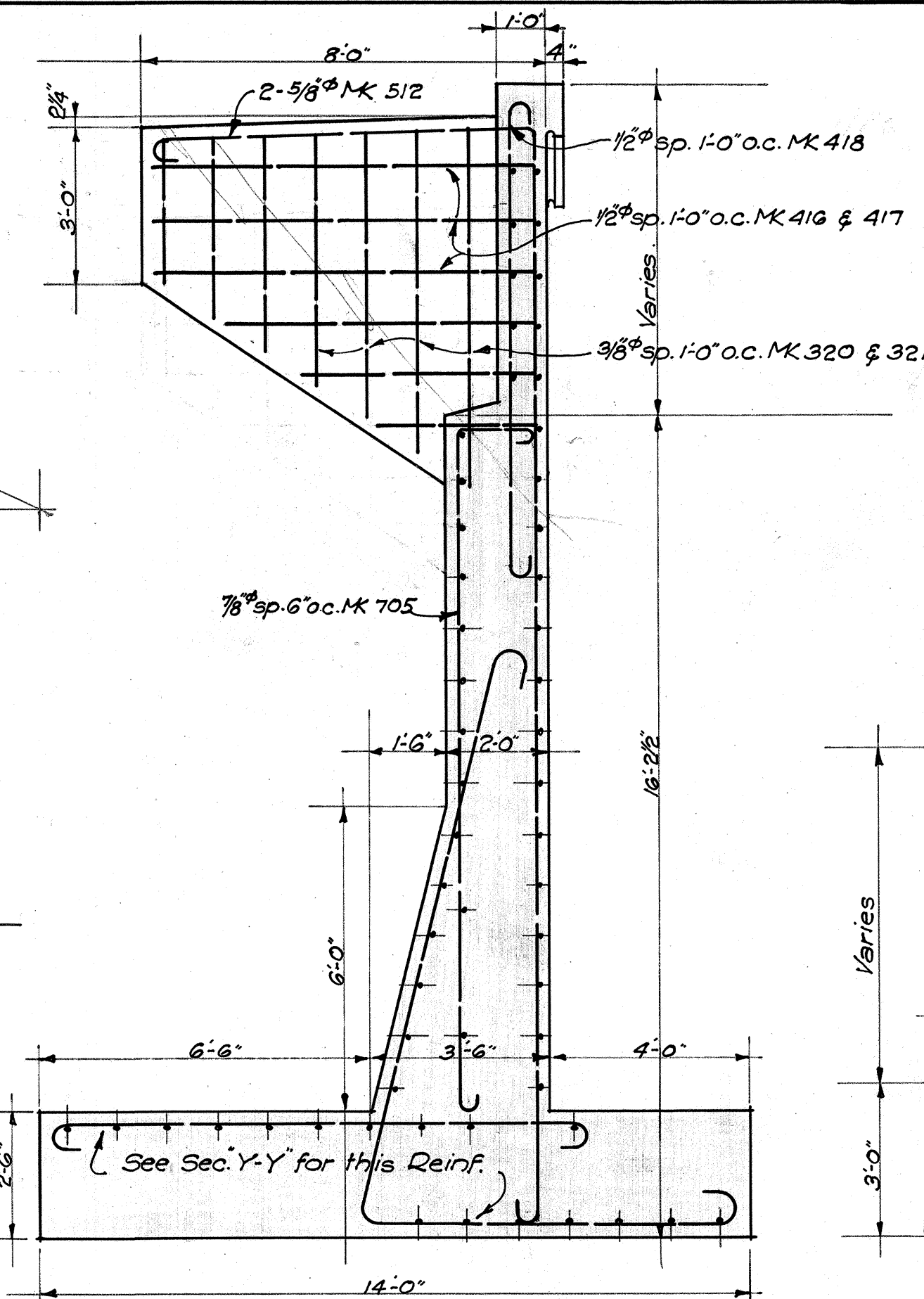
PLAN AT END OF BRIDGE.
3/8" Scale.



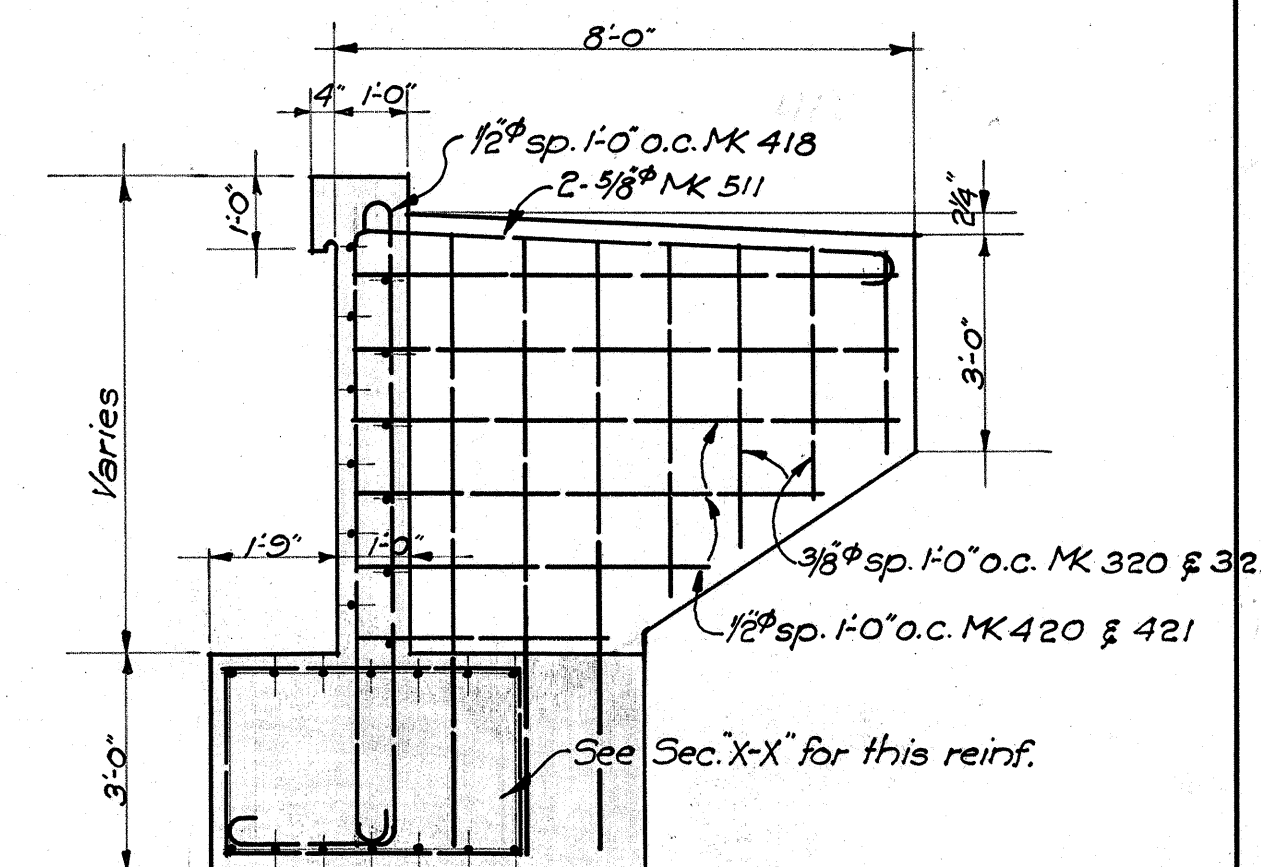
REAR ELEV. SHOWING REINF.
AT END OF BRIDGE.
3/8" Scale.



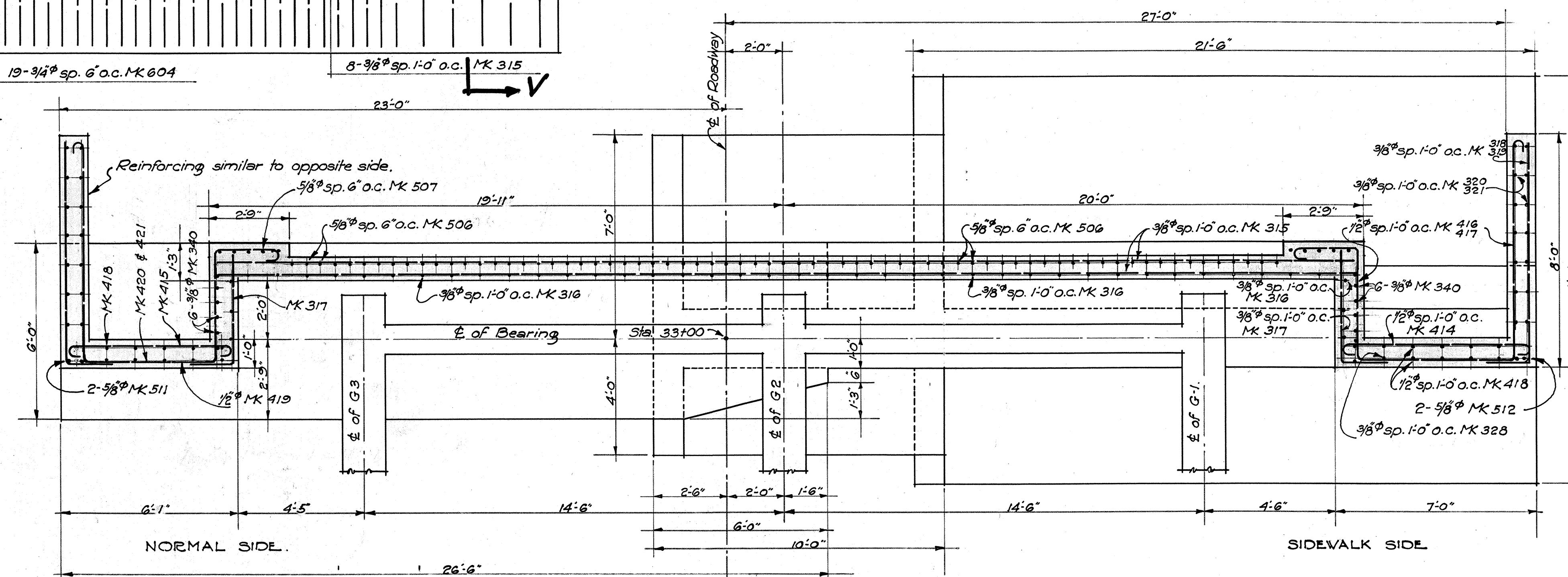
FOOTING REINF. UNDER NORMAL GIRDER.
3/8" Scale.



SECTION U-U.
3/8" Scale.



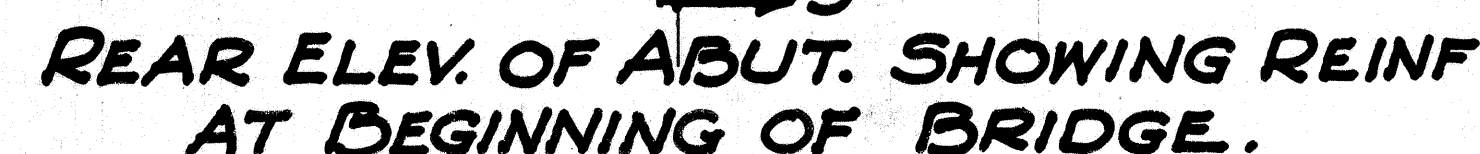
SECTION V-V.
3/8" Scale.



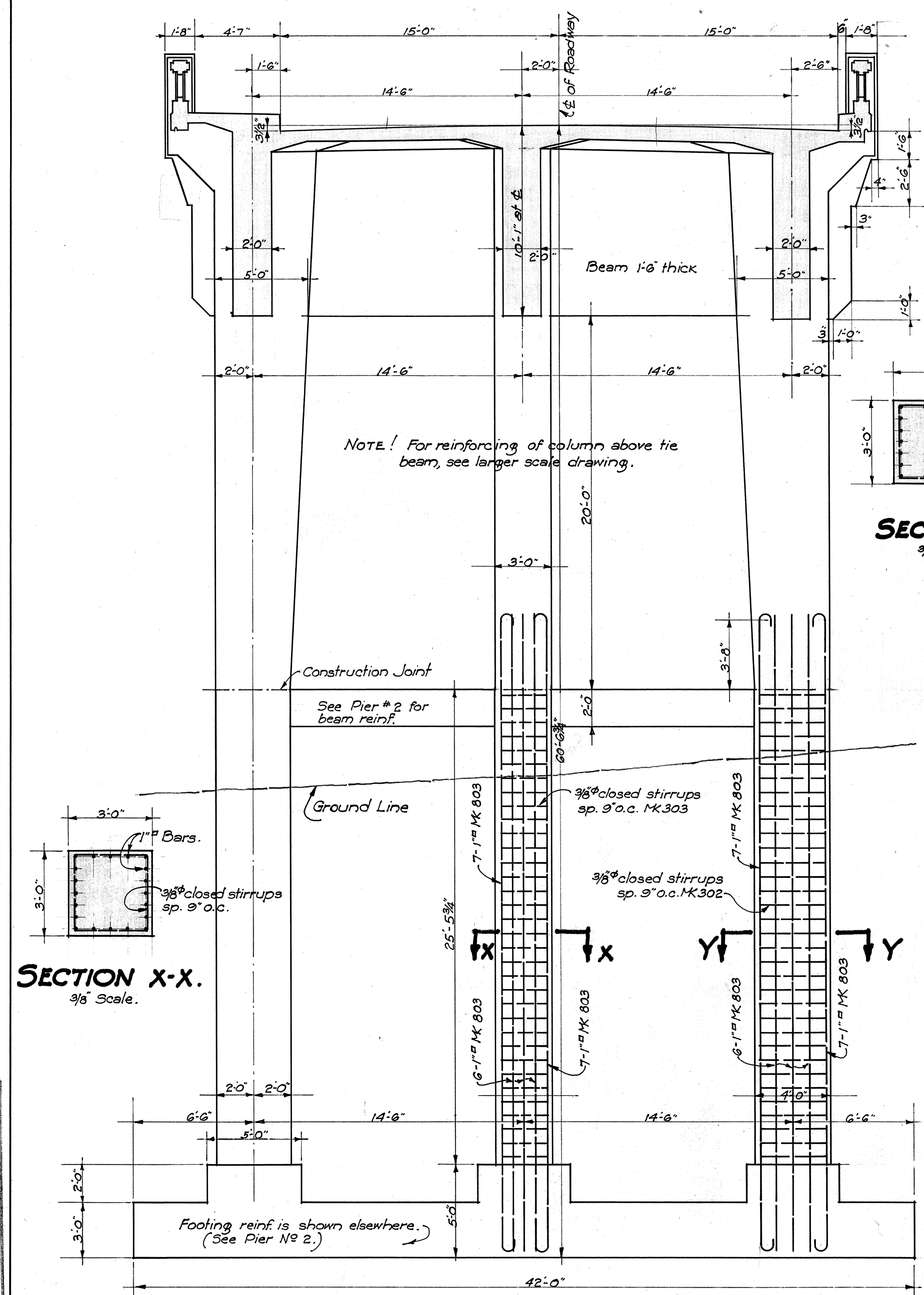
ABUTMENT REINFORCING PLAN
AT END OF BRIDGE.
3/8" Scale.

TERRITORIAL HIGHWAY DEPARTMENT.
TERRITORY OF HAWAII.
WAIKAKALAU BRIDGE.
NO STA. 30+77.25 TO STA. 33+02.75
KAMEHAMEHA HIGHWAY W.P.H. 7-G.
DATE SHEET 3 OF 9 SHEETS.

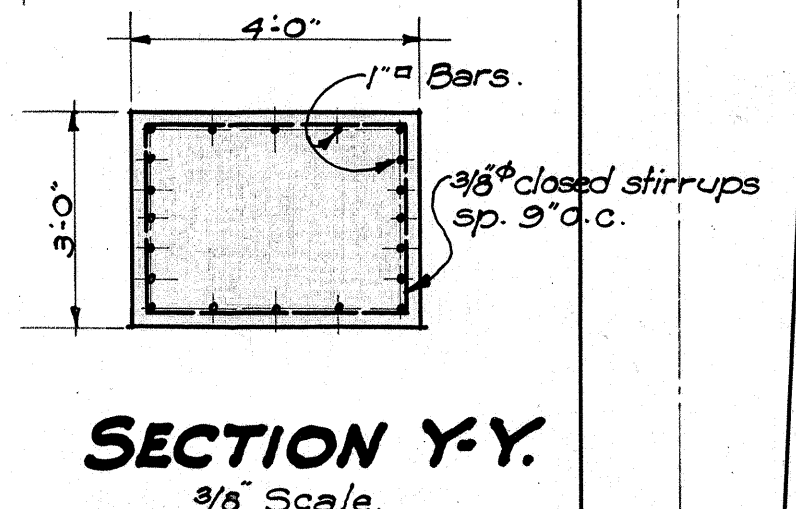
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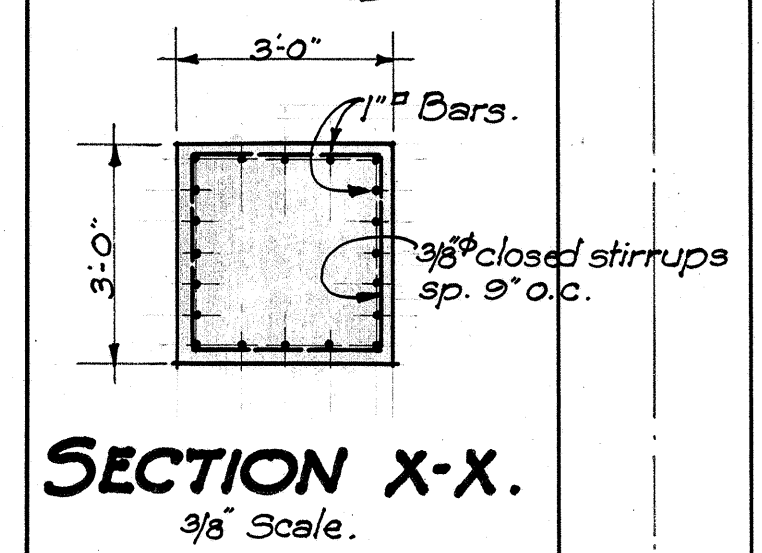
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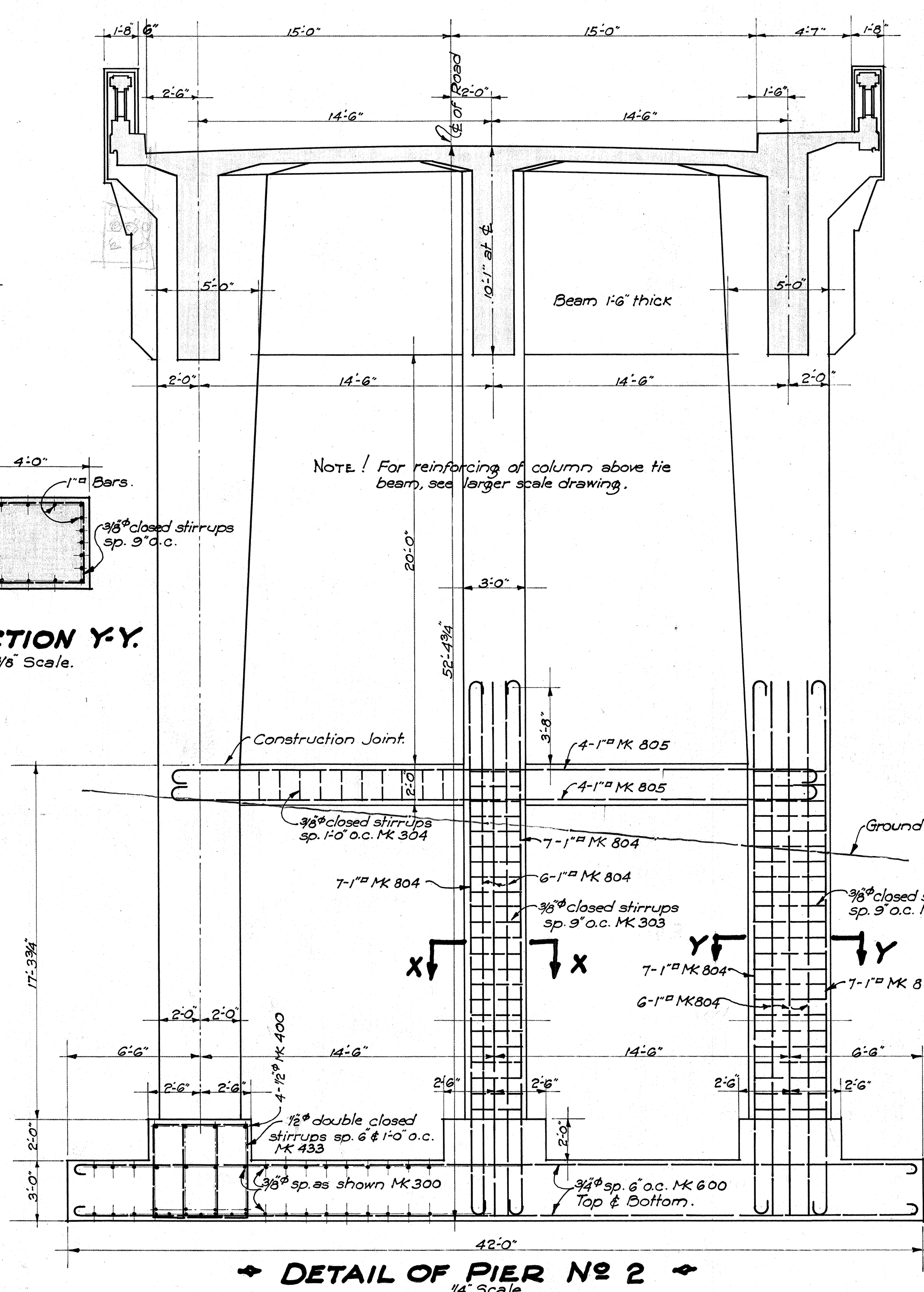
DETAIL OF PIER NO 1.
1/4 Scale.



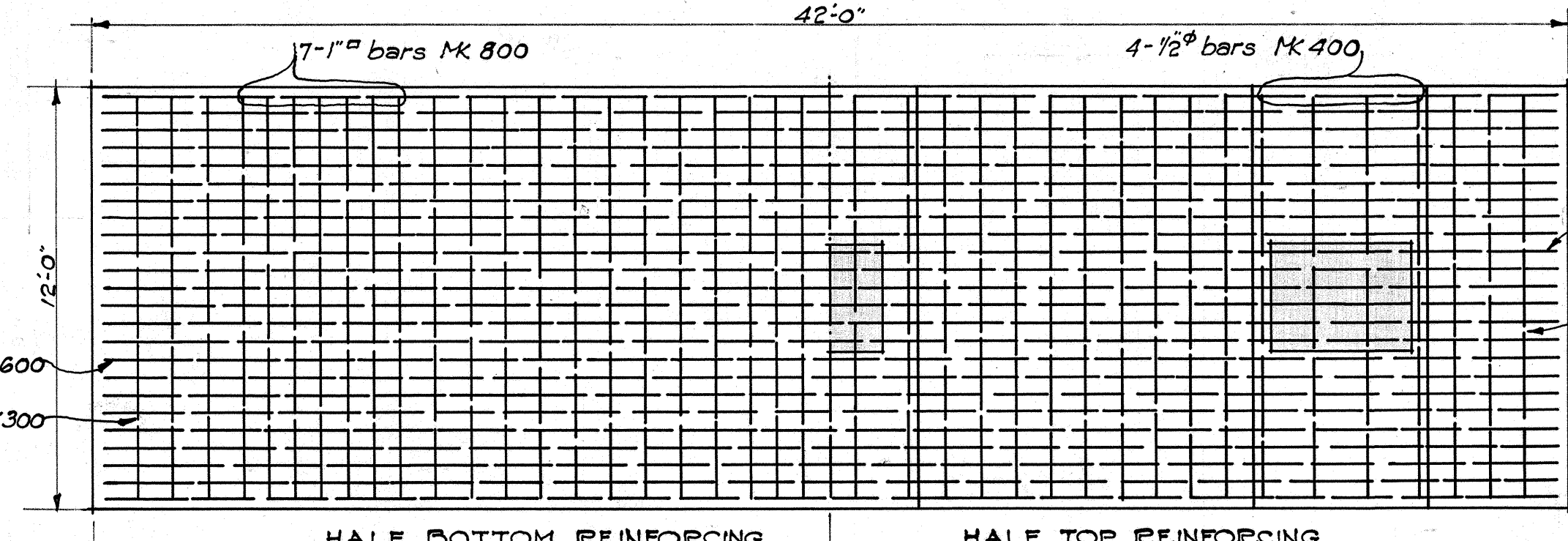
SECTION Y-Y.
3/8 Scale.



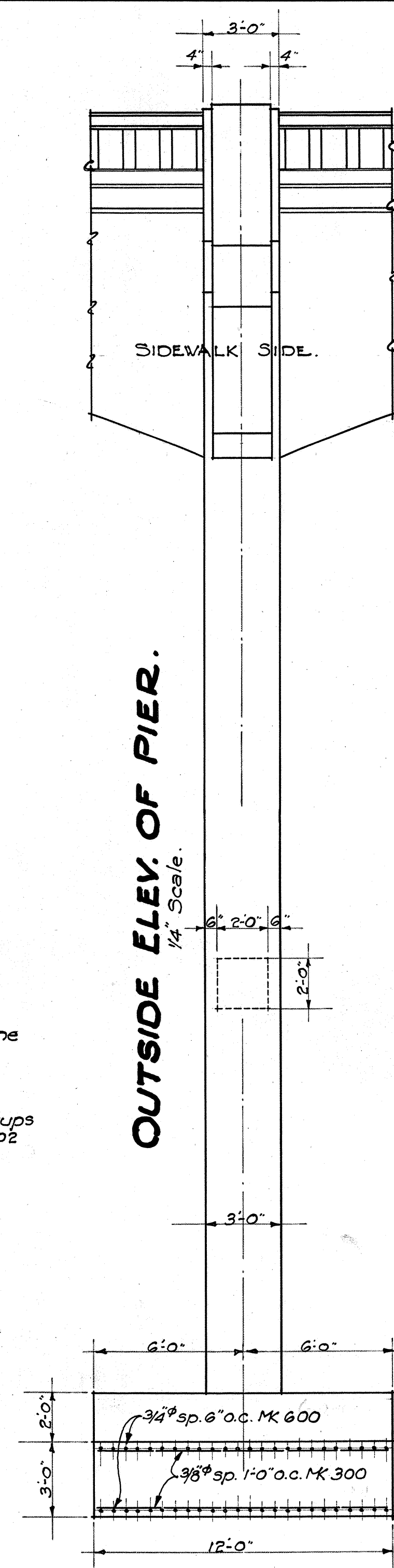
SECTION X-X.
3/8 Scale.



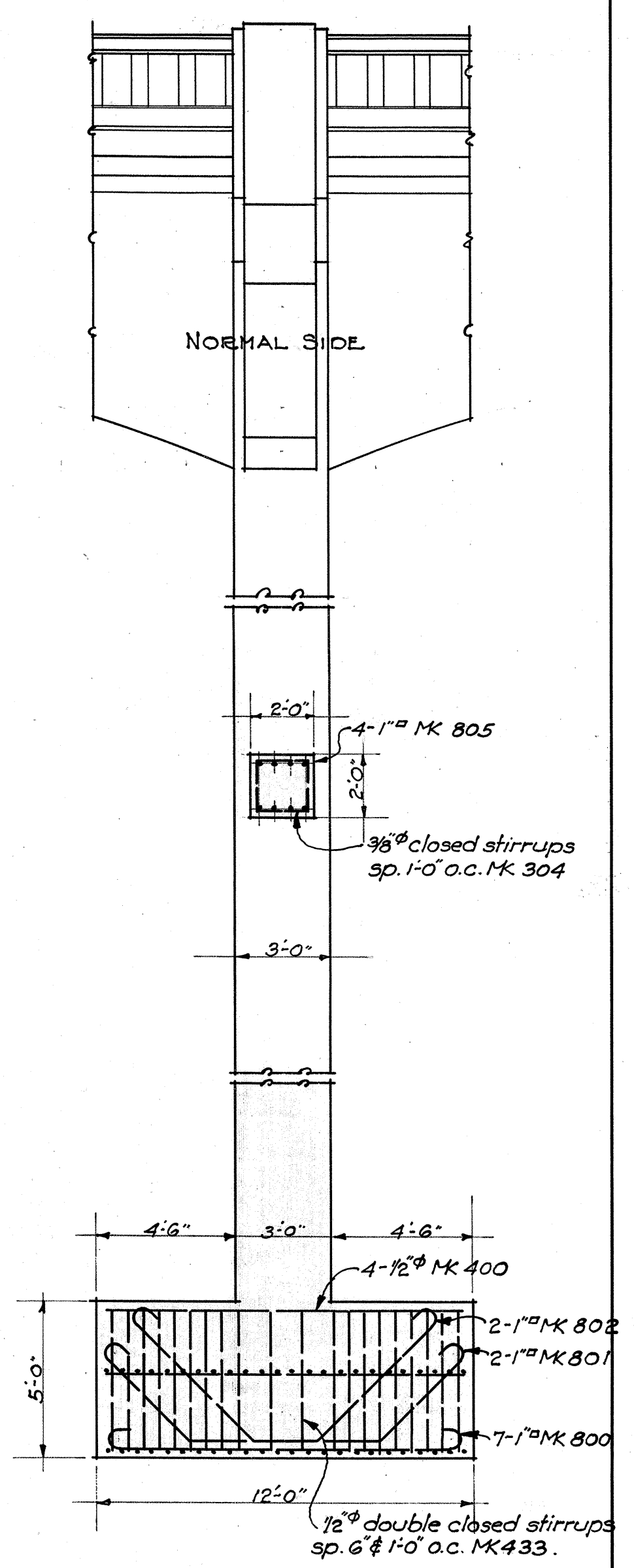
DETAIL OF PIER NO 2
1/4 Scale.



REINF. PLAN OF PIER FOOTINGS.
1/4 Scale.



OUTSIDE ELEV. OF PIER.
1/4 Scale.

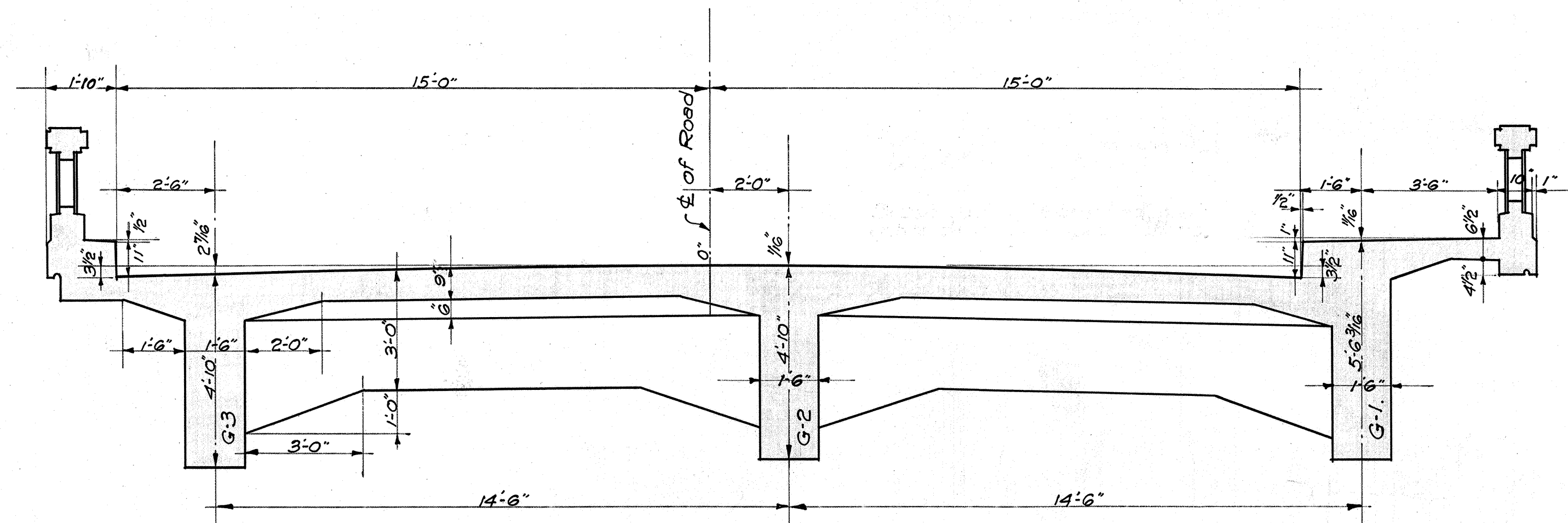


PIER DETAILS.
1/4 Scale.

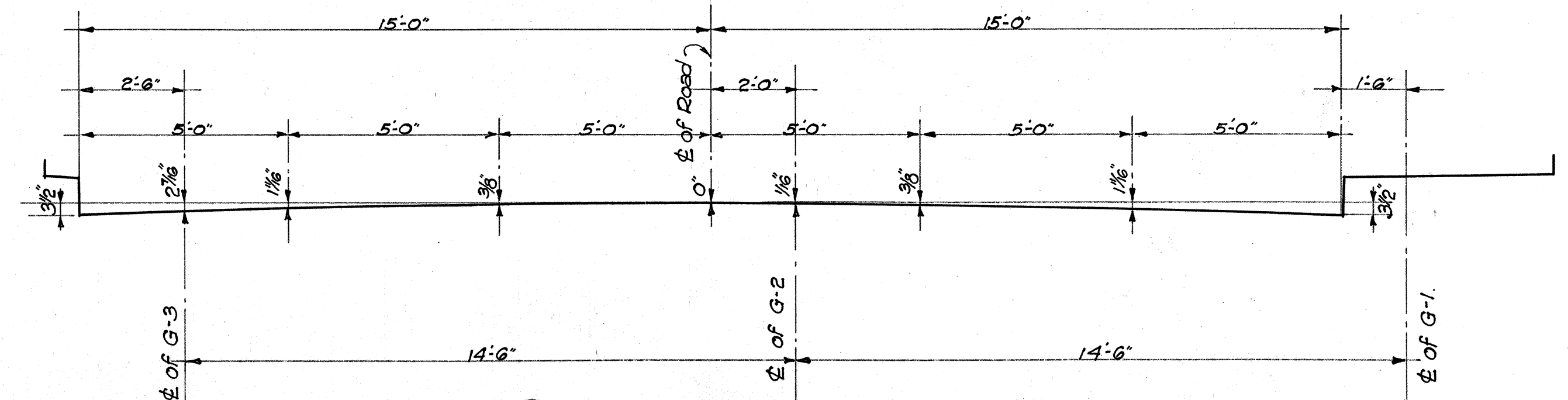
TERRITORIAL HIGHWAY DEPARTMENT.
TERRITORY OF HAWAII.
WAIKAKALAUA BRIDGE.
NO STA. 30+77.25 TO STA. 33+02.75
KAMEHAMEHA HIGHWAY W.P.H. 7-G.
DATE SHEET 5 OF 9 SHEETS.

4342.20

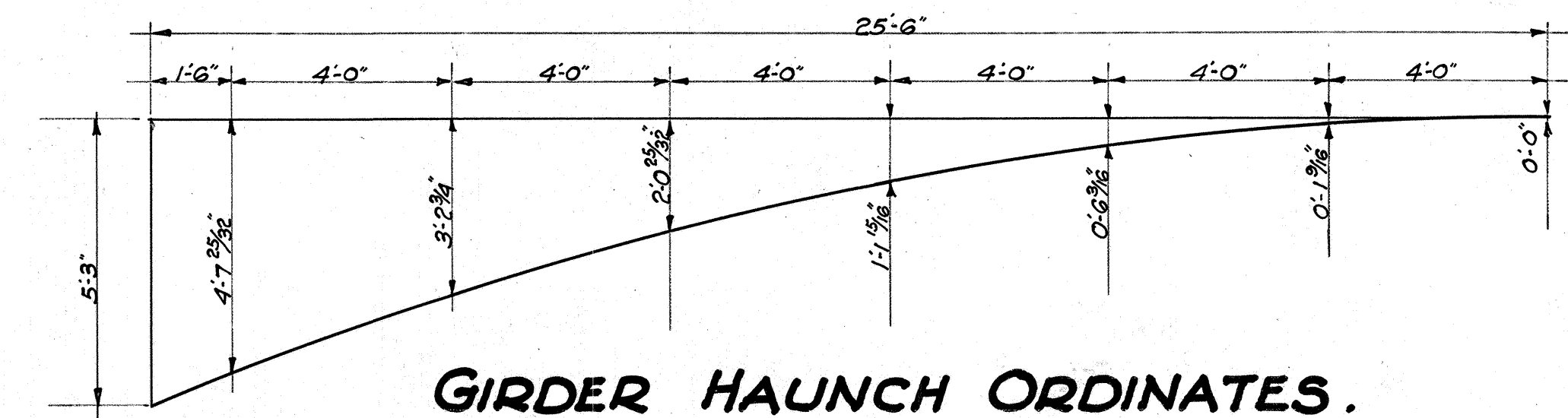
ORIGINAL
PLAN
NOTED BY
CHECKED BY
DATE
1935



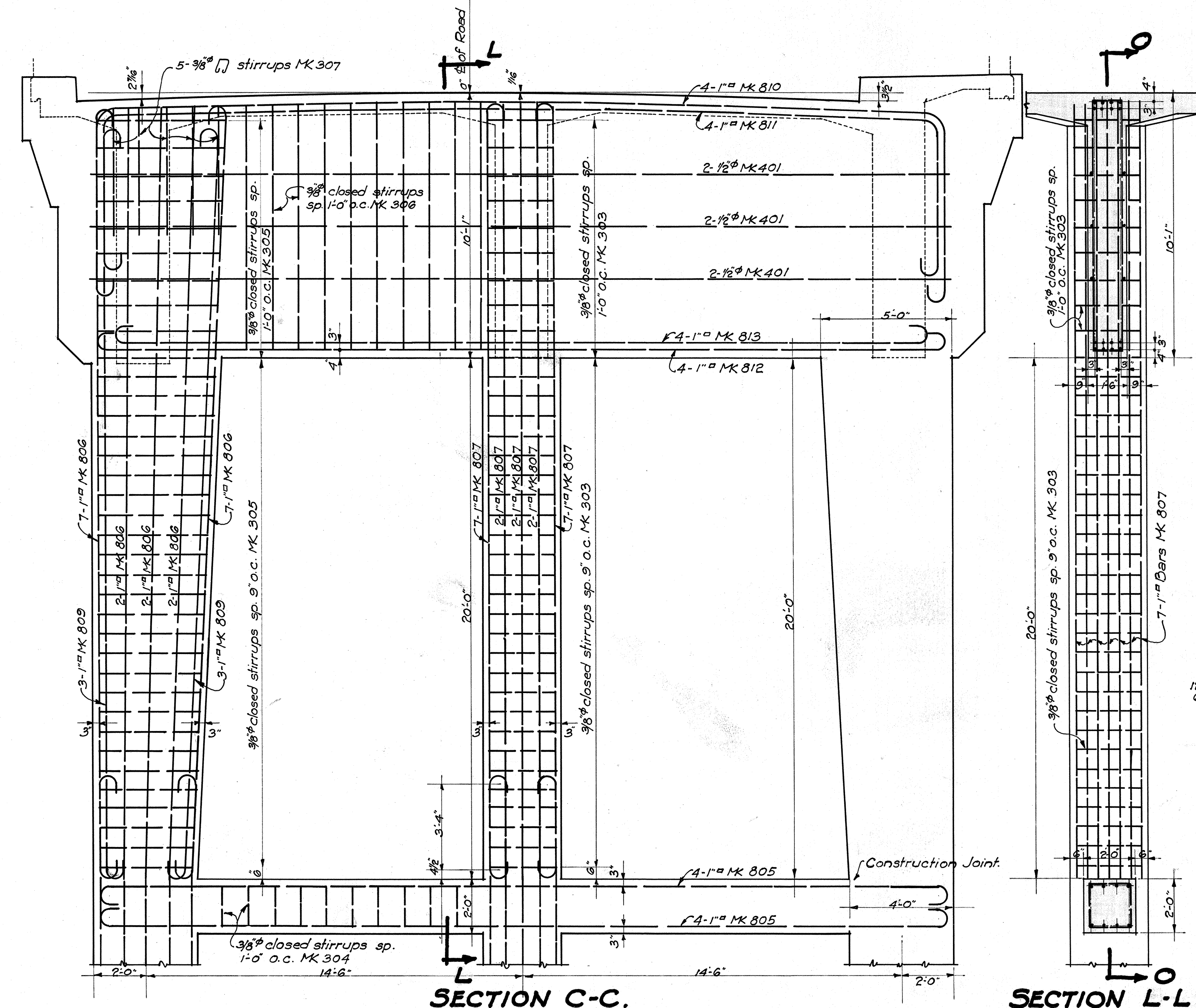
CROSS SECTION AT C OF BRIDGE.
3/8" Scale.



BRIDGE CROWN ORDINATES.
3/8" Scale.



GIRDER HAUNCH ORDINATES.
3/8" Scale.

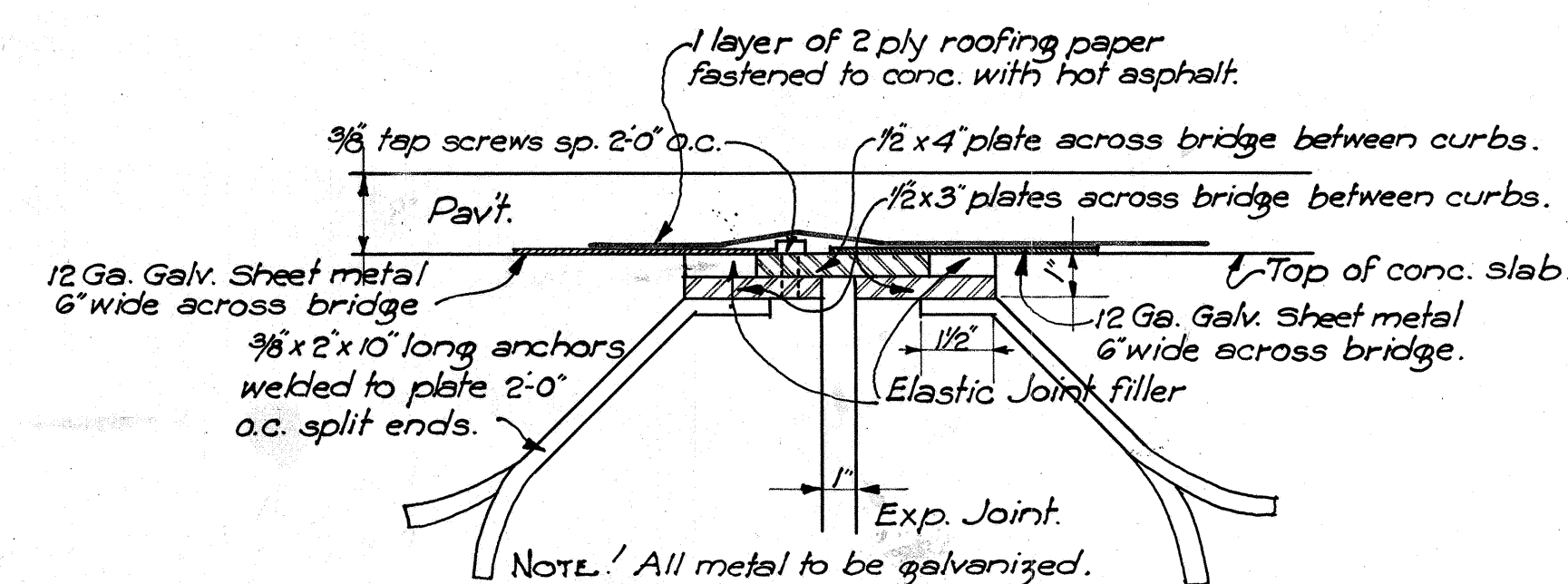


SECTION C-C.
3/8" Scale.

SECTION L-L.
3/8" Scale.

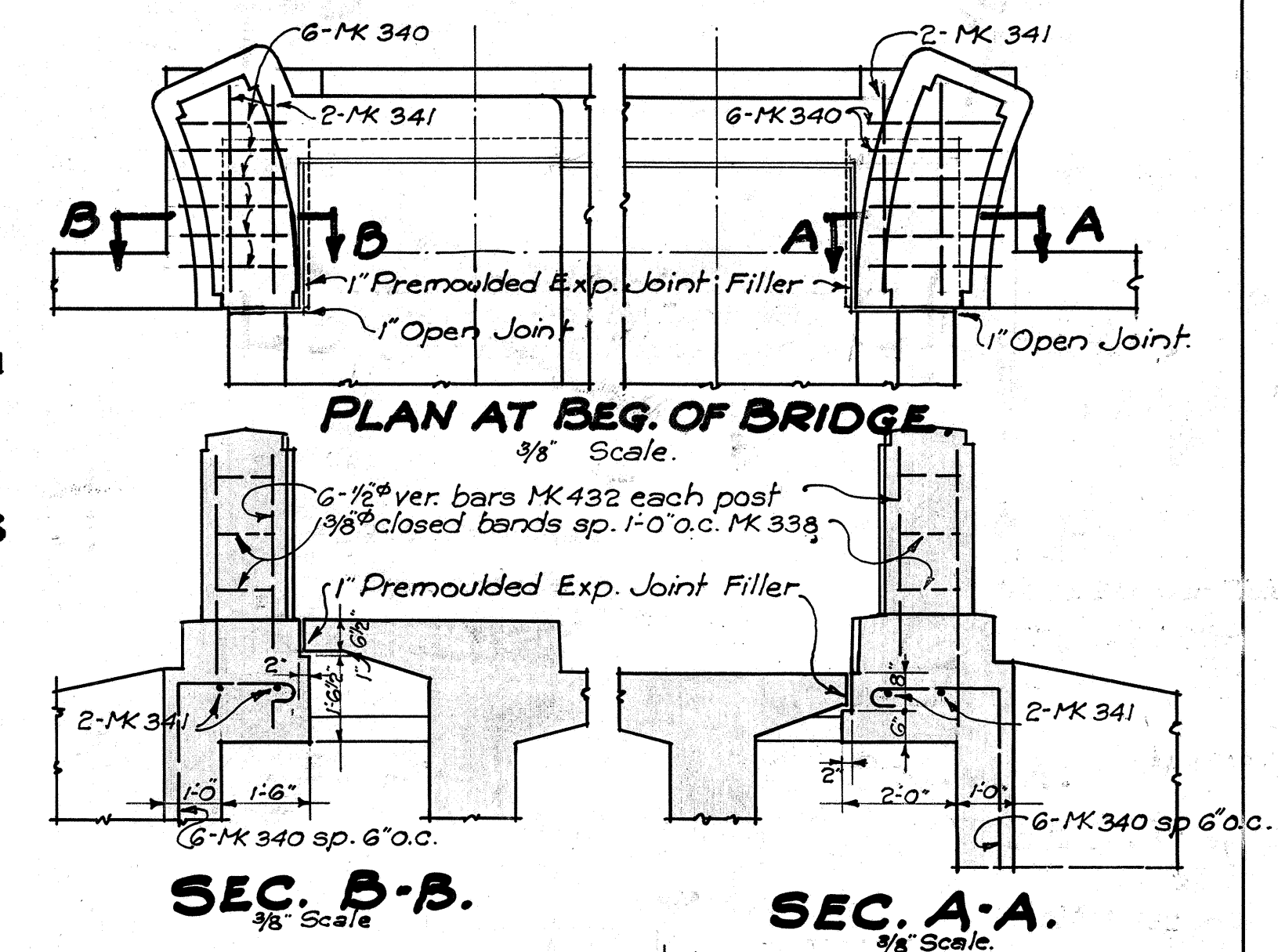
Depressed "V" letters 3/8" deep
NAME **DATE**
Use correct name of stream. Date of year built.
LEFT HAND SIDE. RIGHT HAND SIDE.
DETAIL OF LETTERS & FIGURES AT BOTH APPROACHES.

NOTE!
Name of stream to be placed in left end post panels and date in right end post panels on entering bridge using standard block letters 3" in height.



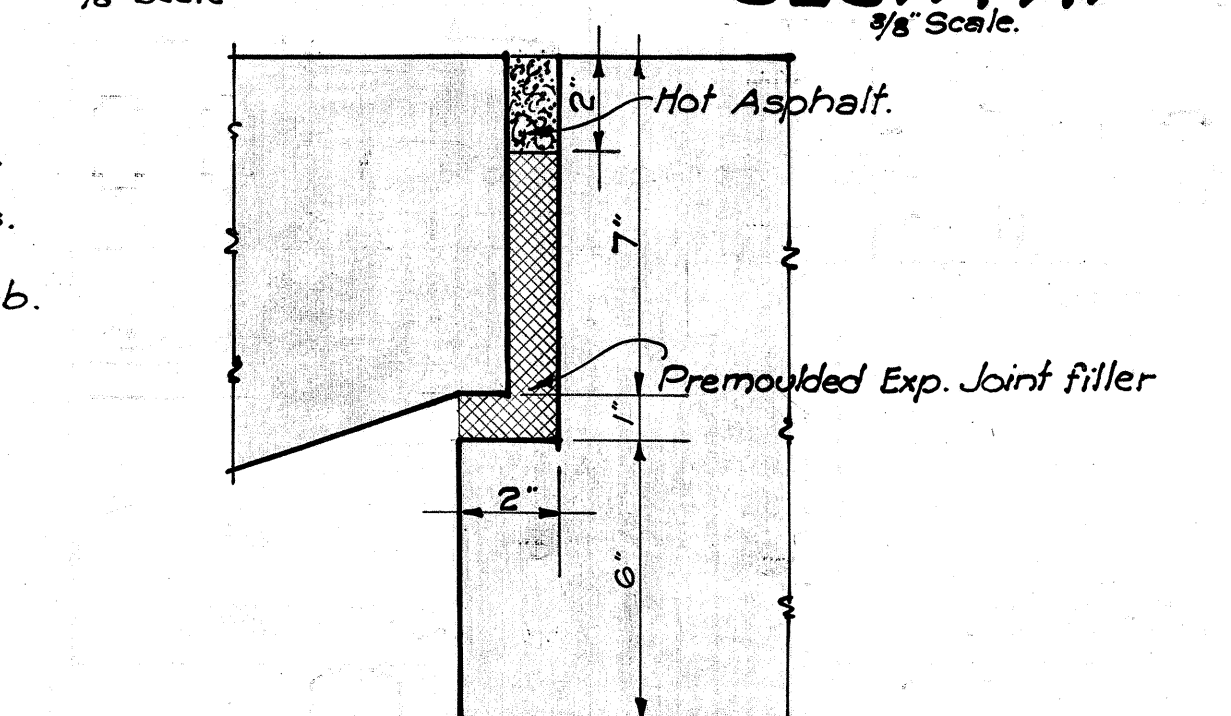
DETAIL OF EXPANSION JOINT.
3" Scale.

NOTE!
Effective precautions must be taken by Contractor to prevent any leakage of pavement binder thru expansion joint at curbs.



SEC. B-B.
3/8" Scale.

SEC. A-A.
3/8" Scale.



PREMOULDED EXPANSION JOINT.
3" Scale.

TERRITORIAL HIGHWAY DEPARTMENT.
TERRITORY OF HAWAII.
WAIKAKALAU BRIDGE.
NO. STA. 30+77.25 TO STA. 33+02.75
KAMEHAMEHA HIGHWAY W.P.H. 7-G
DATE SHEET 6 OF 9 SHEETS.

REINF. IN GIRDERS IN G-2 & G-3.

SEC. SHOWING FLARE IN GIRDERS.

REINF. IN GIRDER G.I.

CROSS GIRDER REINFORCING.

SEC. SHOWING REINF.

ORIGINAL	SURVEY PLOTTED BY	DATE
PLAN	DESIGNED BY	"
	DRAWN BY	"
	C.W.	"
NOTEBOOK	SCALED BY	"
	C.W.	"
	QUANTITIES BY	"
	CHECKED BY	"
No.	J.C.M. & W.B.	Oct/1935



STEEL SCHEDULE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS

MK	DESCRIPTION	LOCATION	SIZE	LENGTH	No. of bars each unit	No. of units	Total no. of bars	Total Length	Weight per foot	Total Weight
600		Pier Footing	3/8"	43'-2"	48	2	96	4,144.32	1.52	6299
300		"	3/8"	11'-6"	60	2	120	1,380.0	0.38	524
400		"	1/2"	11'-6"	12	2	24	276.0	0.68	188
800		"	1"	13'-8"	21	2	42	573.72	3.44	1,974
801		"	"	16'-4"	6	2	12	195.96	"	674
802		"	"	15'-2"	6	2	12	182.04	"	626
433		"	1/2"	16'-0"	120	2	240	3,840.0	0.68	2,611
803		Pier #1 Col.	1"	36'-4"	20	3	60	2,179.80	3.44	7,499
302		"	3/8"	13'-0"	34	2	68	884.0	0.38	336
303		"	"	11'-0"	34	1	34	374.0	"	142
804		Pier #2 Col.	1"	28'-2"	20	3	60	1,690.20	3.44	5,814
302	See Sketch	"	3/8"	13'-0"	23	2	46	598.0	0.38	227
303	"	"	"	11'-0"	23	1	23	253.0	"	96
805		Piers 1 & 2 Col. Tie Beam	1"	34'-6"	8	2	16	552.0	3.44	1,899
304		"	3/8"	7'-0"	20	2	40	280.0	0.38	106
806		Piers 1 & 2 Upper Col.	1"	31'-8"	20	2	40	1,266.40	3.44	4,356
807		"	"	31'-10"	20	2	40	1,273.20	"	4,380
808		"	"	31'-7"	20	2	40	1,263.20	"	4,345
305		"	3/8"	Varies Av. 14'-0"	36	4	144	2,016.0	0.38	766
303	See Sketch	"	"	11'-0"	36	2	72	792.0	"	301
809		"	1"	30'-11"	6	4	24	742.08	3.44	2,553
810		Piers 1 & 2 Pier Tie Beam	"	48'-2"	4	2	8	385.36	3.44	1,326
811		"	"	44'-10"	4	2	8	358.64	"	1,234
401		"	1/2"	33'-0"	6	2	12	396.0	0.68	269
812		"	1"	34'-6"	4	2	8	276.0	3.44	949
813		"	"	33'-0"	4	2	8	264.0	"	908
306		"	3/8"	Varies Av. 21'-9"	20	2	40	870.0	0.38	331
307		"	"	11'-3"	10	2	20	225.0	"	86

MK	DESCRIPTION	LOCATION	SIZE	LENGTH	No. of bars each unit	No. of units	Total no. of bars	Total Length	Weight per foot	Total Weight
700		Cross Girders	3/8"	35'-0"	2	11	22	770.0	2.07	1,594
701		"	"	35'-0"	2	11	22	770.0	"	1,594
702		"	"	35'-0"	2	11	22	770.0	"	1,594
703		"	"	31'-11"	4	11	44	1,404.48	"	2,907
402		"	1/2"	5'-0"	4	11	44	220.0	0.68	150
403		"	"	10'-0"	2	11	22	220.0	"	150
308		"	3/8"	Varies Av. 8'-3"	24	11	264	2,178.0	0.38	828
309		"	"	7'-3"	30	11	330	2,392.50	"	909
700	See Sketch.	End Beam.	3/8"	35'-0"	3	2	6	210.0	2.07	435
702	"	"	"	35'-0"	2	2	4	140.0	"	290
703	"	"	"	31'-11"	3	2	6	191.52	"	396
601		"	3/8"	34'-9"	2	2	4	139.0	1.52	211
309	See Sketch	"	3/8"	7'-3"	54	2	108	783.0	0.38	298
900		G2 & G3.	1/8"	99'-3"	4	2	8	794.0	4.35	3,454
901		"	"	40'-0"	4	2	8	320.0	"	1,392
902		"	"	102'-0"	4	2	8	896.0	"	3,898
903		"	"	93'-0"	4	2	8	744.0	"	3,236
904		"	"	54'-9"	4	2	8	438.0	"	1,905
905		"	"	89'-0"	4	2	8	712.0	"	3,097
906		"	"	100'-0"	4	2	8	800.0	"	3,480
907		"	"	156'-0"	2	2	4	624.0	"	2,714
908		"	"	138'-0"	2	2	4	552.0	"	2,401
909		"	"	62'-9"	2	2	4	251.0	"	1,092
910		"	"	133'-0"	2	2	4	532.0	"	2,314
911		"	"	43'-0"	4	2	8	344.0	"	1,496
912		"	"	36'-10"	4	2	8	294.64	"	1,282
913		"	"	31'-0"	4	2	8	248.0	"	1,079
914		G1, G2 & G3.	"	24'-3"	4	3	12	291.0	"	1,266

MK	DESCRIPTION	LOCATION	SIZE	LENGTH	No. of bars each unit	No. of units	Total no. of bars	Total Length	Weight per foot	Total Weight
915		G1, G2 & G3.	1/8"	16'-10"	4	3	12	201.96	4.35	879
1000		"	1/4"	71'-10"	8	3	24	1,723.92	5.37	9,257
1001		"	"	47'-0"	10	3	48	2,256.0	"	12,114
1002		"	"	98'-6"	4	3	12	1,182.0	"	6,347
404		"	1/2"	30'-0"	6	3	18	540.0	0.68	367
405		G-2 & G3.	"	11'-0"	141	2	282	3,102.0	"	2,109
406		"	"	Varies Av. 11'-9"	256	2	512	8,576.0	"	5,832
407		"	"	11'-3"	64	2	128	1,440.0	"	979
408		G-1.	"	12'-4"	141	1	141	1,738.53	"	1,182
409		"	"	Varies Av. 18'-0"	256	1	256	4,608.0	"	3,133
410		"	"	12'-6"	64	1	64	800.0	"	544
916		"	1/8"	100'-6"	4	1	4	402.0	4.35	1,749
917		"	"	41'-3"	4	1	4	165.0	"	718
918		"	"	102'-7"	4	1	4	410.32	"	1,785
919		"	"	93'-6"	4	1	4	374.0	"	1,627
920		"	"	55'-9"	4	1	4	223.0	"	970
921		"	"	89'-3"	4	1	4	357.0	"	1,553
922		"	"	101'-3"	4	1	4	405.0	"	1,762
923		"	"	156'-6"	2	1	2	313.0	"	1,362
924		"	"	138'-6"	2	1	2	277.0	"	1,205
925		"	"	64'-7"	2	1	2	129.16	"	562
926		"	"	133'-6"	2	1	2	267.0	"	1,161
927		"	"	43'-7"	4	1	4	174.32	"	758
928		"	"	35'-4"	4	1	4	141.32	"	615

* CONTRACTORS NOTE *

All bends are 45° except where otherwise noted.

All stirrup dimensions are inside dimensions, all other dimensions are figured on E of bar.

This steel schedule is subordinate to details shown on plans. In case of discrepancy between steel list and detail drawings, the latter shall govern.

The Terr. Hy. Dept. does not assume responsibility for any errors that occur in the steel schedule. Contractor shall check steel schedule before placing order.

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII

WAIKAKALAUA BRIDGE
STA. 30+77.25 TO STA. 33+02.75
KAMEHAMEHA HIGHWAY W.P.H. 7-G.

SHEET NO. 1 OF 3 SHEETS

4342.24A

DD-M

STEEL SCHEDULE.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS

MK	DESCRIPTION	LOCATION	SIZE	LENGTH	Nº of bars each unit.	Nº of units	Total no. of bars	Total Length	Weight per foot	Total Weight	MK	DESCRIPTION	LOCATION	SIZE	LENGTH	Nº of bars each unit.	Nº of units	Total no. of bars	Total Length	Weight per foot	Total Weight	MK	DESCRIPTION	LOCATION	SIZE	LENGTH	Nº of bars each unit.	Nº of units	Total no. of bars	Total Length	Weight per foot	Total Weight
929		G-1	1/8"	31'-6"	4	1	4	128.0	4.35	548	418		Abut. #1 Wing Wall.	1/8"	31'-6"	4	1	4	128.0	4.35	548	605		Abut. #2 Footing	3/8"	27'-8"	10	1	10	276.60	1.52	420
012		Slab.	3/4"	34'-2"	204	1	204	6970.0	1.52	10,594	419		"	"	35'-0"	6	1	6	99.0	"	67	606		"	"	27'-8"	2	1	2	55.32	"	84
611		"	"	35'-7"	162	1	162	5764.5	"	8,762	503		"	"	16'-10"	2	2	4	67.32	1.06	71	607		"	"	27'-8"	2	1	2	55.32	"	84
610		"	"	31'-9"	148	1	148	4693.0	"	7,142	320		"	"	8'-6"	6	2	12	102.0	0.38	39	413		"	1/2"	14'-0"	22	1	22	308.0	0.68	209
411		"	1/2"	7'-10"	419	1	419	3282.17	0.68	2,232	321		"	"	Varies Av. 3'-8"	8	2	16	58.56	"	22	413a		"	"	Varies Av. 13'-3"	4	1	4	53.0	"	36
503		"	3/8"	222'-6"	44	1	44	9790.0	1.06	10,377	420		"	1/2"	19'-1"	3	1	3	57.24	0.68	39	326		Wall.	3/8"	15'-8"	14	1	14	219.24	0.38	83
504		"	"	227'-2"	20	1	20	4543.40	"	4,816	421		"	"	Varies Av. 16'-1"	3	1	3	48.24	"	33	327		"	"	21'-0"	16	1	16	336.0	"	128
310		"	3/8"	222'-6"	3	1	3	667.50	0.38	254	340		"	3/8"	9'-7"	6	2	12	114.96	0.38	44	704		"	7/8"	15'-1"	30	1	30	452.40	2.07	936
412		"	1/2"	6'-8"	14	1	14	93.4	0.68	64	341		"	"	6'-0"	2	2	4	24.0	"	9	328		"	3/8"	Varies Av. 22'-6"	6	1	6	135.0	0.38	51
505		"	3/8"	10'-3"	30	1	30	307.50	1.06	326	814		Abut. #2 Footing	1/8"	21'-2"	42	1	42	889.14	2.70	2401	329		"	"	7'-8"	9	1	9	68.94	"	26
311		"	3/8"	3'-6"	112	2	224	784.0	0.38	298	322		"	3/8"	21'-0"	7	1	7	147.0	0.38	56	330		"	"	30'-0"	16	1	16	480.0	"	182
312		"	"	7'-0"	112	1	112	784.0	"	298	603		"	3/4"	12'-3"	42	1	42	514.50	1.52	782	705		"	7/8"	16'-5"	12	1	12	197.04	2.07	408
313		"	"	222'-6"	12	1	12	2670.0	"	1015	322		"	3/8"	21'-0"	10	1	10	210.0	0.38	80	511		"	5/8"	17'-2"	2	1	2	34.34	1.06	36
314		"	"	30'-0"	84	1	84	2520.0	"	958	422		"	1/2"	10'-5"	3	1	3	31.26	0.68	21	512		"	"	30'-0"	2	1	2	60.0	"	64
602		Footing Abut. #1	3/4"	52'-3"	14	1	14	731.50	1.52	1112	423		"	"	12'-5"	11	1	11	136.62	"	93	331		"	3/8"	8'-6"	24	1	24	204.0	0.38	78
413		"	1/2"	14'-0"	51	1	51	714.0	0.68	486	323		"	3/8"	13'-6"	12	1	12	162.0	0.38	62	316		"	"	8'-0"	46	1	46	368.0	"	140
506		Abut. #1 Wall.	3/8"	Varies Av. 16'-2"	61	1	61	983.32	1.06	1042	424		"	1/2"	7'-6"	3	1	3	22.50	0.68	15	513		"	3/8"	16'-1"	34	1	34	546.72	1.06	580
507		"	"	16'-6"	10	1	10	165																								

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAIIWAIKAKALAU BRIDGE.
STA. 30+77.25 TO STA. 33+02.75
KAMEHAMEHA HIGHWAY W.P.H. 7-G.

SHEET NO. 2 OF 3 SHEETS

4342.24B

STEEL SCHEDULE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS

MK	DESCRIPTION	LOCATION	SIZE	LENGTH	N ^o . of bars each unit.	N ^o . of units	Total no. of bars	Total Length	Weight per foot	Total Weight.
415	See Sketch	Abut # 2. Wall.	1/2"	6'-8"	6	1	6	39.96	0.68	27
318	"	" Wing Wall	3/8"	9'-0"	3	2	6	54.0	0.38	21
319	"	"	Varies Av. 6'-0"		3	2	6	36.0	"	14
416	"	"	1/2"	20'-0"	3	1	3	60.0	0.68	41
417	"	"	Varies Av. 17'-0"		3	1	3	51.0	"	35
418	"	"	Varies Av. 10'-0"		6	1	11	110.0	"	75
419	"	"	Varies Av. 9'-0"		6	1	11	99.0	"	67
320	"	"	3/8"	8'-6"	6	2	12	102.0	0.38	39
321	"	"	Varies Av. 3'-8"		8	2	16	58.56	"	22
420	"	"	1/2"	19'-1"	3	1	3	57.24	0.68	39
421	"	"	Varies Av. 16'-1"		3	1	3	48.24	"	33
332		"	3/8"	6'-6"	2	1	2	13.0	0.38	5
333		End Abut. Wall.	"	24'-0"	3	1	3	72.0	"	27
340		"	"	9'-9"	6	2	12	117.0	"	44
341		"	"	6'-2"	2	2	4	24.68	"	9
431		Railing	1/2"	3'-4"	282	2	564	1878.12	0.68	1,277
200		"	1/4"	2'-2"	285	2	570	1236.90	0.17	210
334		"	3/8"	210'-6"	10	1	16	3368.0	0.38	1,280
201		"	1/4"	1'-7"	285	2	570	900.60	0.17	153
335		"	3/8"	4'-9"	212	1	212	1007.0	0.38	383
434		Int. Post.	1/2"	5'-3"	4	4	16	84.0	0.68	57
337		"	3/8"	7'-3"	5	4	20	145.0	0.38	55
432		End Post	1/2"	3'-0"	6	4	24	72.0	0.68	49
338		"	3/8"	9'-0"	3	4	12	108.0	0.38	41

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII

WAIKAKALAUA BRIDGE.
STA. 30+77.25 TO STA. 33+02.75
KAMEHAMEHA HIGHWAY W.P.H. 7-G.

SHEET NO 3 OF 3 SHEETS

4342.24C.

SURVEY PLOTTED BY DATE
DESIGNED BY
DRAWN BY
CHECKED BY
NOTE BOOK
No.