

GENERAL NOTES

All materials and workmanship to be in accordance with the Michigan State Highway Department's Standard Specifications for Road and Bridges, 1926 Edition.
 Each Section shown as a distinct unit on these plans is to be poured in one CONTINUOUS run.
 Brass reference bars - 1"x6" long, furnished by the Department, are to be carefully set by the Inspector in the positions shown so as to project 3" from the surface. After placing, the Inspector is to furnish a diagram showing the elevation of the bars and their distances from reference lines, using monument plan to be furnished by the Engineer.
 Piles will not be required unless ordered by the Engineer after excavations are complete. If piles are required a pile driving diagram will be furnished by the Engineer.

Before placing backfill and box drains, the entire back surfaces of abutments, wingwalls, and superstructure backwalls above elevation 635.0 shall be waterproofed with Class "A" waterproofing. Also, all construction and expansion joints in contact with the earth fill are to be waterproofed with Class "B" waterproofing.
 The Contractor will backfill behind the new abutments to the existing ground surface and in front to the slope lines shown on the plans, disposing of the excess excavated material as directed by the Engineer. Material unsuitable for backfilling purposes in the opinion of the Engineer shall be wasted as directed by the Engineer.
 See Supplemental Specifications for reinforcing in wearing surface.
 All expansion material shall be of approved type.
 Information furnished in regard to foundation conditions and stream data has been secured by the State Highway Department survey crew but is not guaranteed. Variations from these conditions as encountered in the field will not be cause for allowance of extras on this contract.

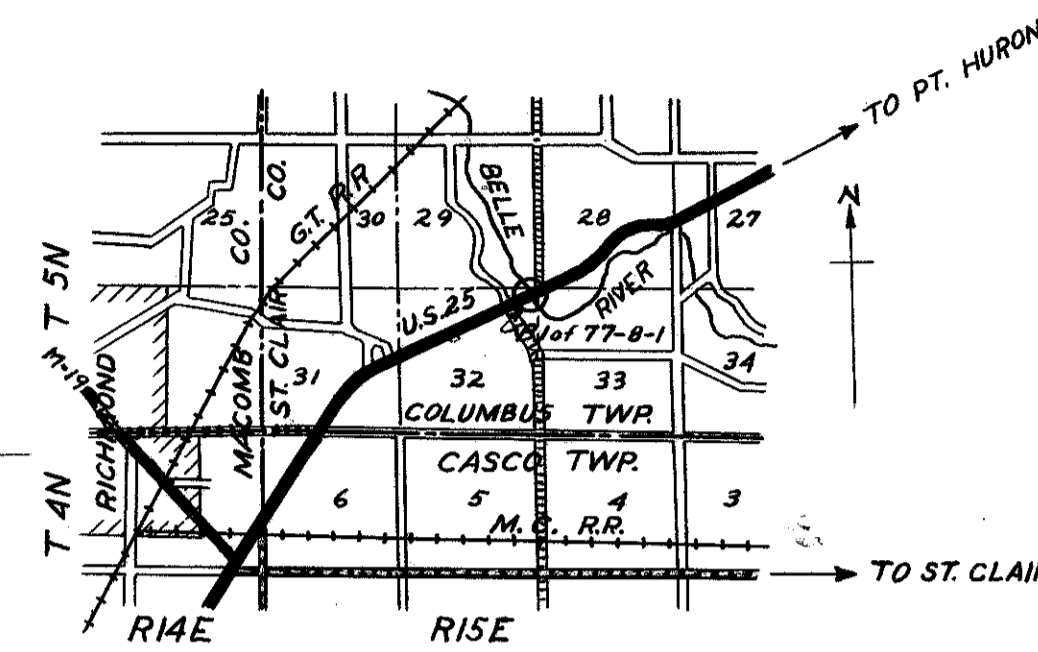
All Waterproofing, Paint, Drain castings, moldings, miscellaneous items, and special requirements not called for in the "Itemized Contract Schedule" but required for the finished work shall be considered as included in the unit prices bid.

The existing bridge consists of one 110' low truss span with a 20' roadway and concrete floor. The abutments are of concrete gravity type. After the new structure has been opened to traffic, the Bridge Contractor shall carefully dismantle the existing truss, removing those rivets shown on the shop drawings as field rivets and carefully match mark for re-erection and mark all members in accordance with the assembly drawing. The Contractor shall haul the dismantled truss to Richmond and load on cars; designation of railroad and shipping instructions will be furnished by the Engineer during the life of this contract.
 Traffic shall be maintained over the old bridge and road until the new bridge is opened to traffic.

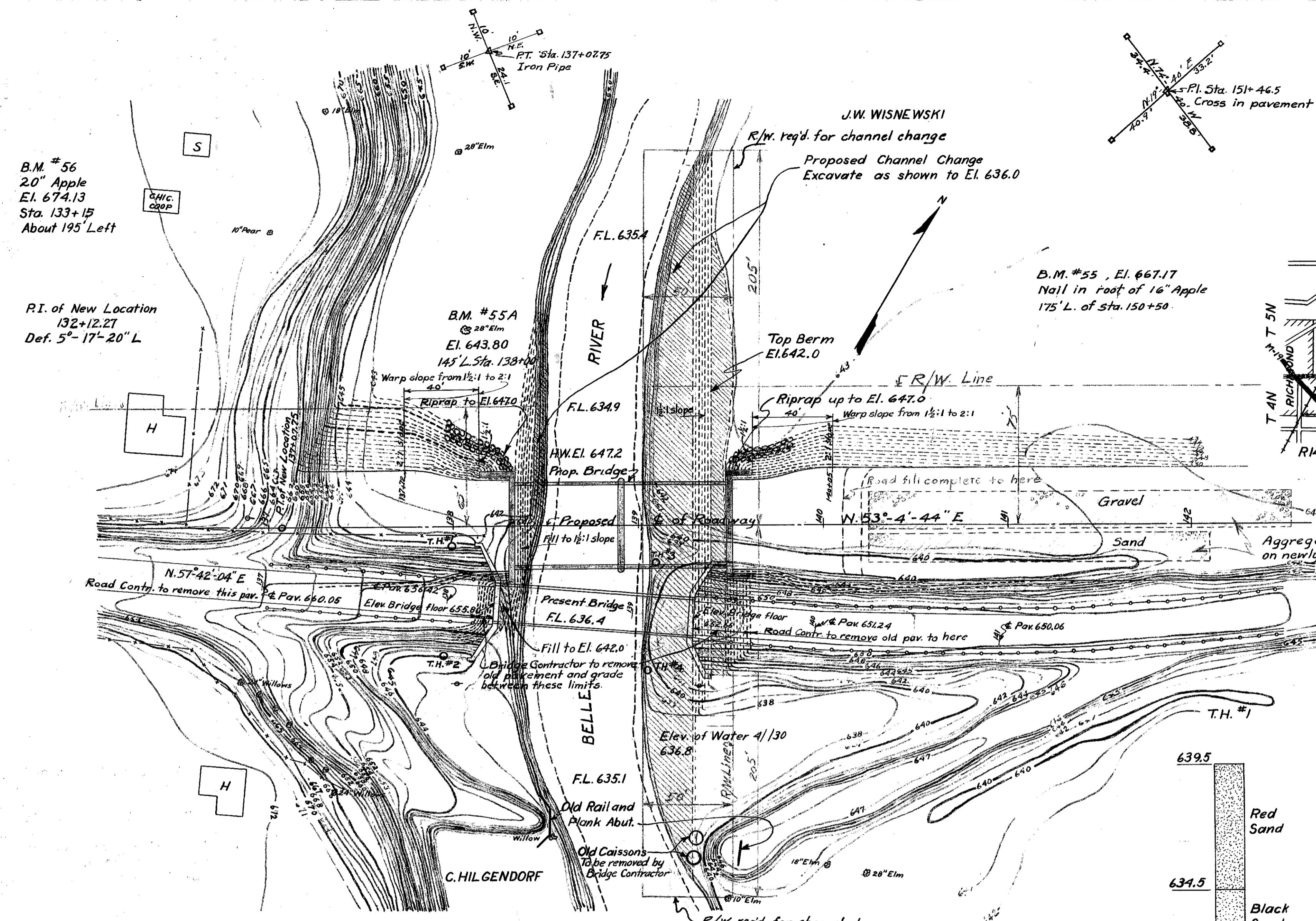
The Bridge Contractor is to remove the existing abutments in the manner specified on the plans or as directed by the Engineer.
 The broken concrete from the old abutments and floor will be placed as rip-rap by the Bridge Contractor on the upstream slopes of the new road fill below high water level. The Road Contractor will make the approach fills.
 Channel change as shown on this sheet shall be made by the Bridge Contractor.

Cost of dismantling, marking, hauling and loading of old truss shall be included in the price bid for removal of old bridge.

Bench Mark #55, El. 667.17; Nail in root of 16" apple 175' L. of Sta. 150+50.
 Bench Mark #55-A, El. 643.80; Nail in 28" elm 145' L. of Sta. 138+00



LOCATION SKETCH

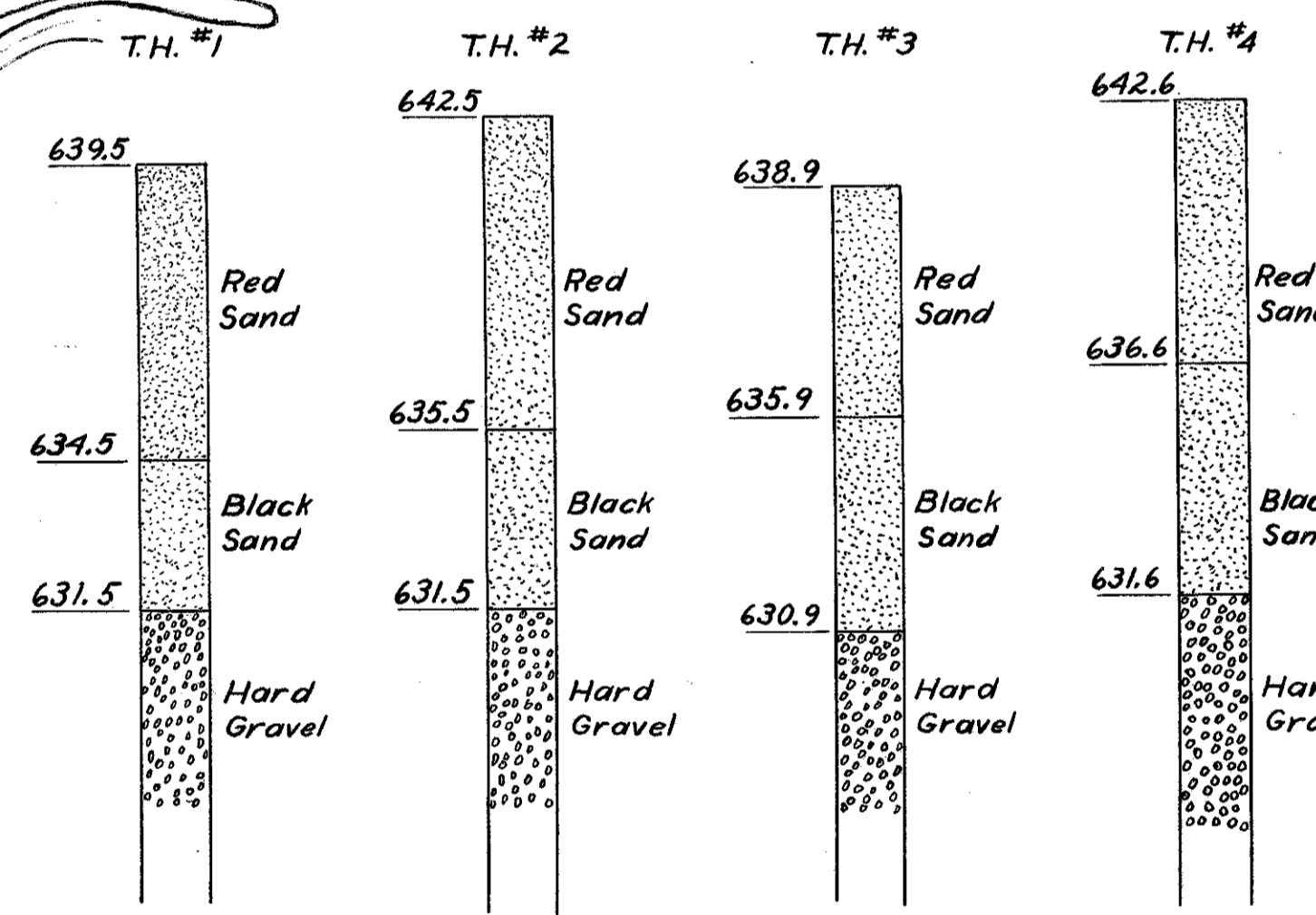


SITUATION PLAN

Scale: 1" = 40'

Note: The Bridge Contractor shall remove upper part of the old west abutment to bridge seat. Also he shall remove part of north wing wall and footing as required for new construction. See sheets 2 & 3.
 Inspectors Note: In laying out be guided by the relation of new W. abutment to old W. abutment as per layout of Abut. A, Sheet 3.

Note: The Bridge Contractor shall remove such portions of the old east abutment as interfere with new construction. The old concrete shall not project above finished ground surface as required for proposed excavated section.



LOG OF DRY BORINGS

See General Notes

INDEX

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RECORD OF CONTRACT CHANGES & EXTRAS

ITEM NO.	QUANTITY	UNIT	DESCRIPTION	PERCENTAGE	DATE
A	Extra	1	Removing Soft Stone	135.0%	9-17-31
B	"	2	" Cast Concrete	100%	9-18-31
C	Change	1	" Old Bridge	95%	12-12-31
D	"	2	Gr. "A" Concrete	190.0%	12-31-31
E	"	3	Wet & Dry Excavation	100.0%	12-31-31
F	Extra	3	Removing Soft Stone	58.3%	2-26-32
				100%	2-26-32

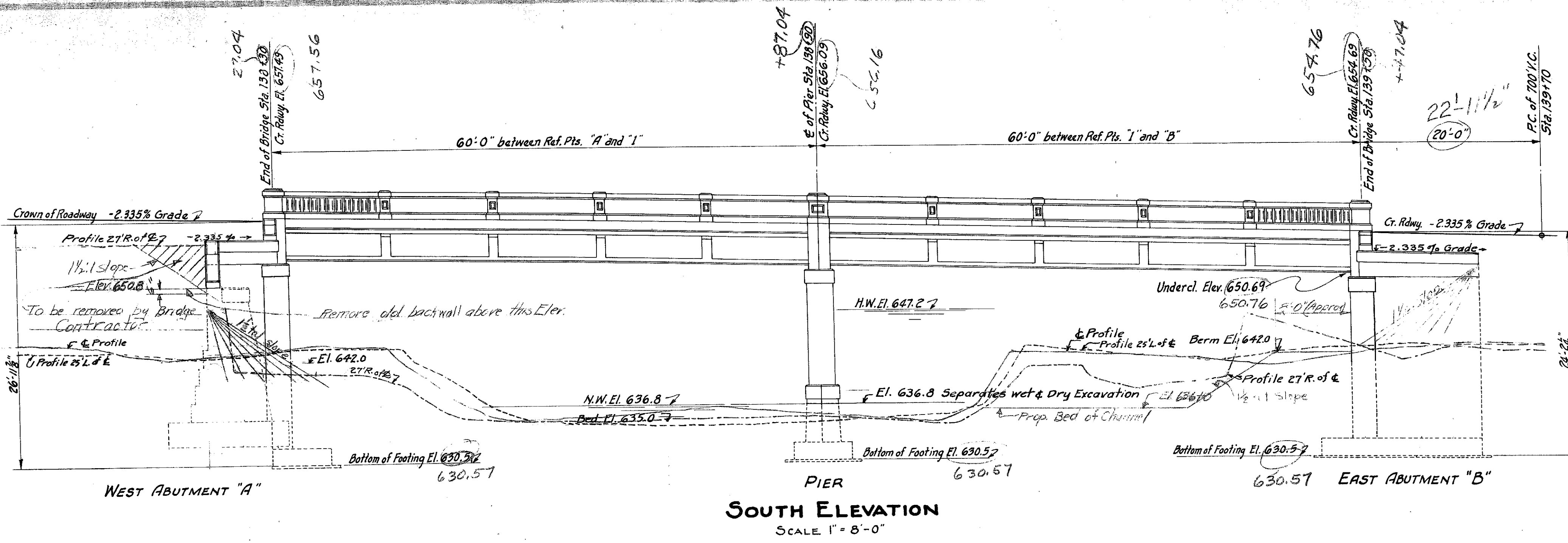
MICHIGAN STATE HIGHWAY DEPARTMENT

SEC. 32 T 5N R 15E COLUMBUS TWP. ST. CLAIR
 PHONE BELLE RIVER B1 of 77-8-1 ROAD U.S. 25, F.A. Proj. 38 AT STA. 138+90
 CROSSING BELLE RIVER 4 MILES NE OF RICHMOND

GENERAL LAYOUT

2 @ 60'-0" STEEL DECK GIRDER SPANS, 2-COUNTERFORT ABUTTS. 1 @ 26'-11" & 1 @ 24'-2"; 1-SKELETON PIER @ 25'-7"; 40'-0" ROADWAY SUBSTRUCTURE AND SUPERSTRUCTURE, 2-2'-6" SIDE WALKS; 90° ANGLE OF CROSSING; -2.335% GRADE.

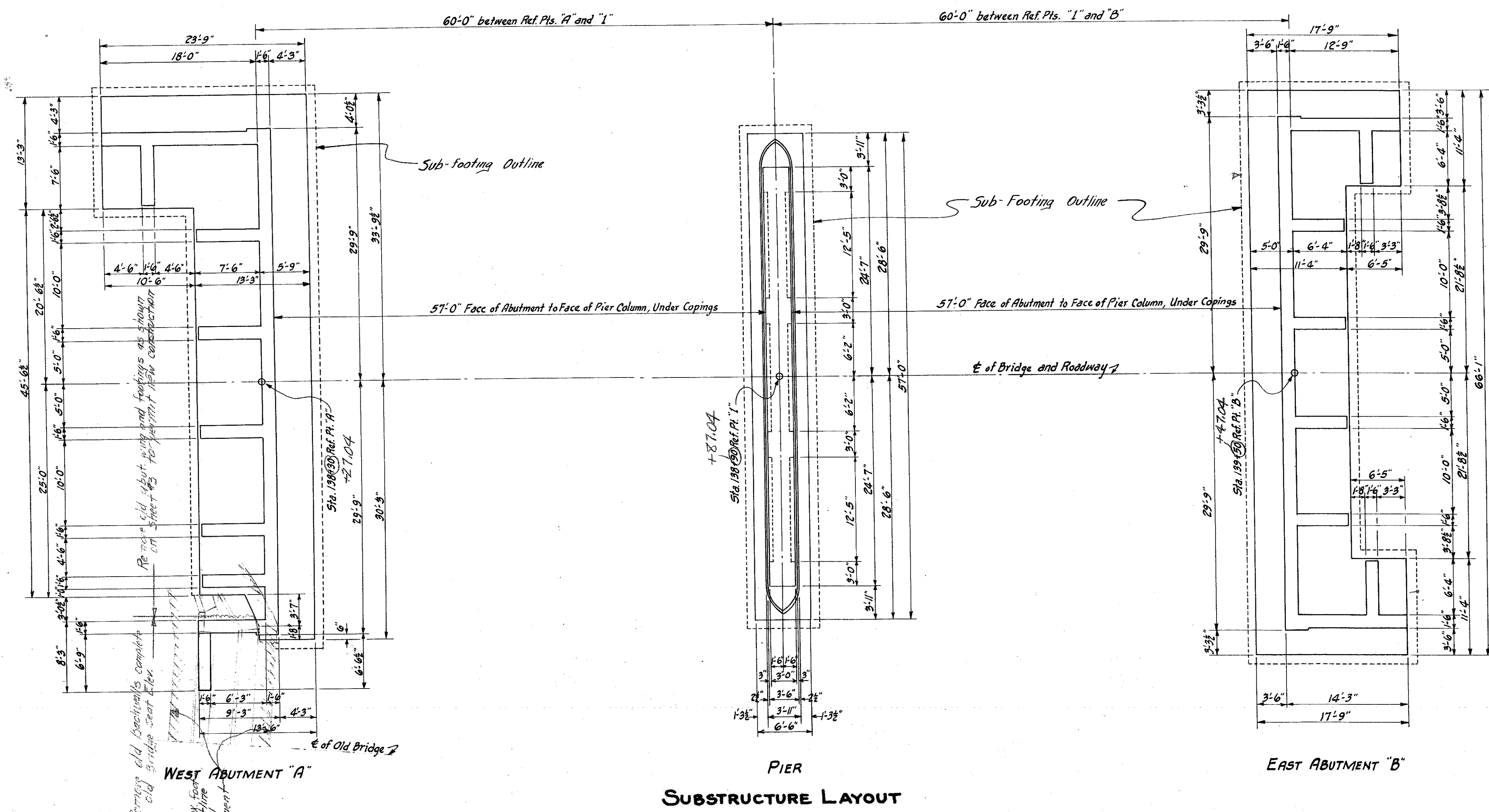
APPROVED: *H.W. Sheldon* 3-12-31
 APPROVED: *R.M. O'Neil* 3-12-31
 APPROVED: *M. J. ...*
 APPROVED: *A. Melich* 3-14-31
 M. M. Stambugh
 Naff 11/14/30
 F.H.T. 1-2-31
 1-14



BILL OF MATERIALS

	CU. Yds. OF CONCRETE		STRUCTURAL	REINFORCING	CU. Yds. EXCAVATION		CHANNEL	SPINDLES		6 DUCT
	Gr. "A"	Gr. "B"	STEEL LBS.	STEEL LBS.	WET	DRY	CHANGE CU. YDS.	No.	VIT. CONDUIT LIN. FT.	
ABUTMENT "A"	204.7		628	21026	273	173				
ABUTMENT "B"	190.4		628	16919	265	188				
PIER	79.9	33.5	1256	9066	90					
SUPERSTR. EAST	111.5		98988	21713				110	241.5	
SUPERSTR. WEST	111.5		98988	21625				110	241.5	
WEARING SURFACE	81.3									
CHANNEL CHANGE							1800			
SUMMARY	CU. Yds. OF CONCRETE	Gr. "A" Gr. "B"	STRUCTURAL STEEL LBS.	REINFORCING STEEL LBS.	CU. Yds. EXCAVATION WET DRY	CHANNEL CHANGE CU. YDS.	SPINDLES No.	6 DUCT VIT. CONDUIT LIN. FT.		
TOTAL	784.3	33.5	200488	90349	628 361	1800	220	483		

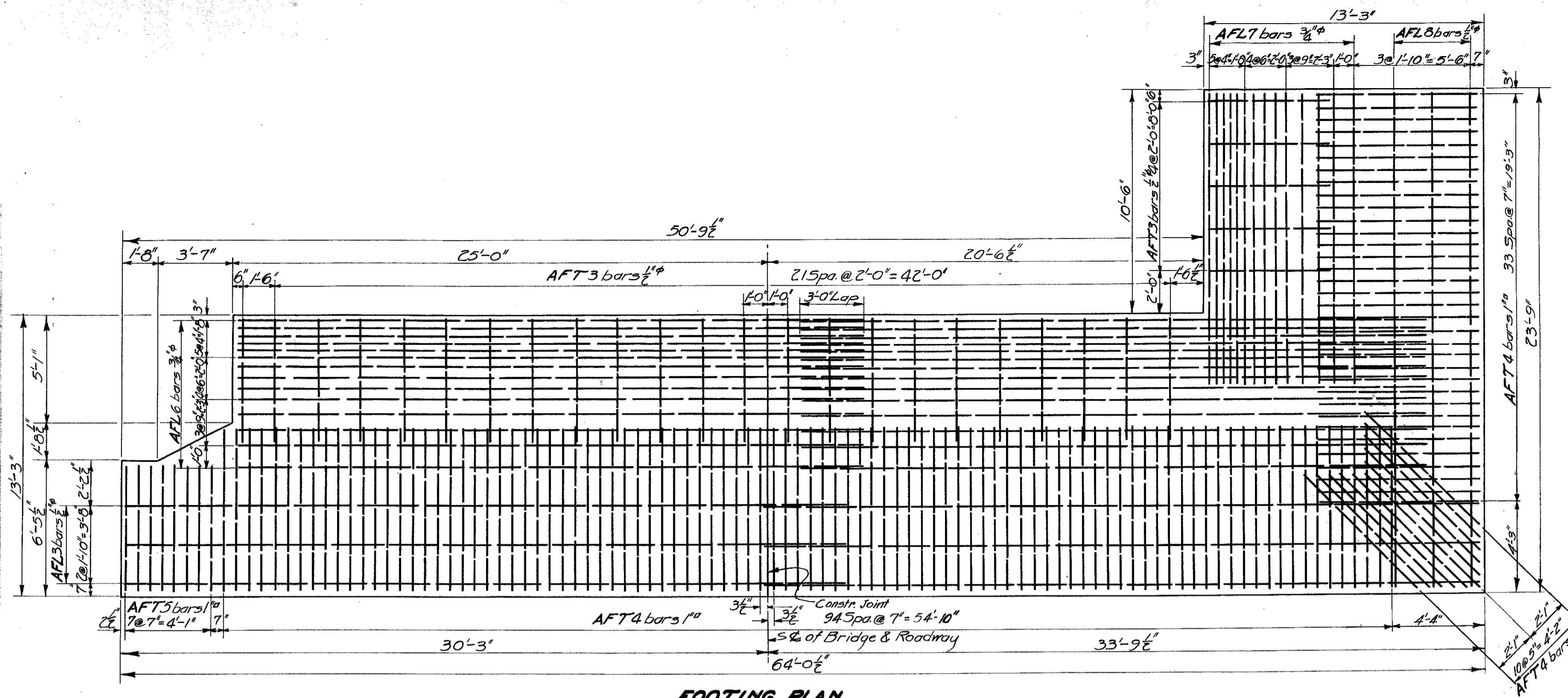
Total Concrete Yardage 817.8 Cu. Yds. (Exclusive of Spindles)
 Spindles are not included in Concrete Quantities given above, but are to be furnished by the Contractor at a unit price per spindle. Reinforcing Steel for spindles is included in Superstructure Bar List.
 Drain Castings to be furnished by the Erecting Contractor. Approx. Wt. 16# each.
 Wire Fabric Reinforcing shall be provided for 4790 Sq. Ft. of floor surface as per Specifications.



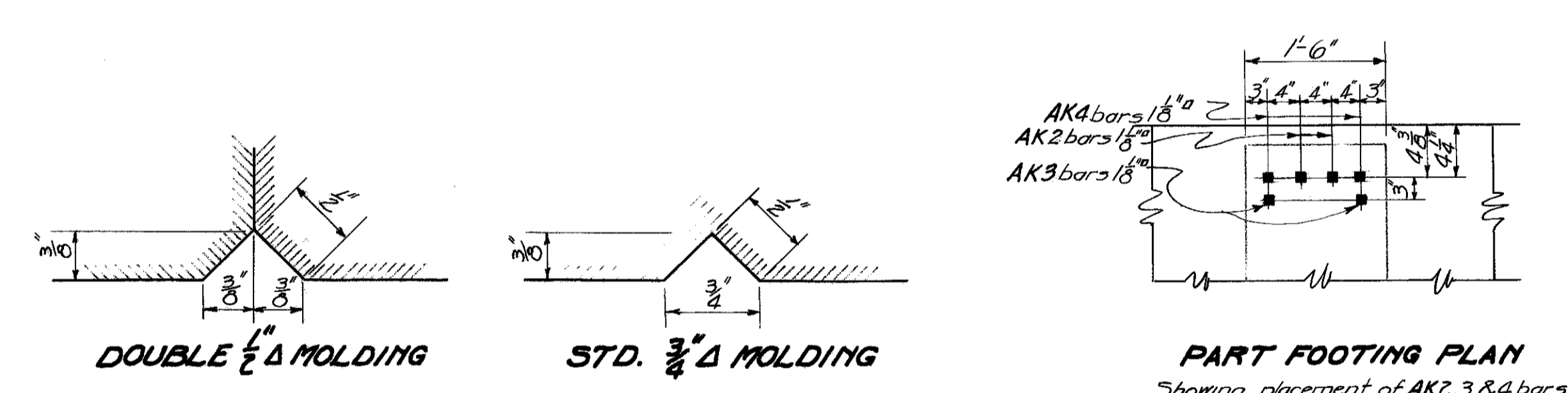
MICHIGAN STATE HIGHWAY DEPARTMENT
 SEC. 32 J 5N R 15E COLUMBUS TWP. ST. CLAIR CO.
 BRIDGE FILE NO. 81 of 77-8-1 ROAD U.S. 25, F.A. Proj. 3d of STA. 138+00 to 137+04
 CROSSING BELLE RIVER 4 MILES N.E. OF RICHMOND

GENERAL LAYOUT #2
 2 @ 60'-0" STEEL DECK GIRDER SPANS; 2 COUNTERFORT ABUTMENTS @ 26'-11 1/2" & 1 @ 24'-2 1/2";
 1-SKELETON PIER @ 25'-7 1/2"; 40'-0" ROADWAY SUBSTRUCTURE AND SUPERSTRUCTURE;
 2-2'-6" SIDEWALKS; 90° ANGLE OF CROSSING; -2.335% GRADE

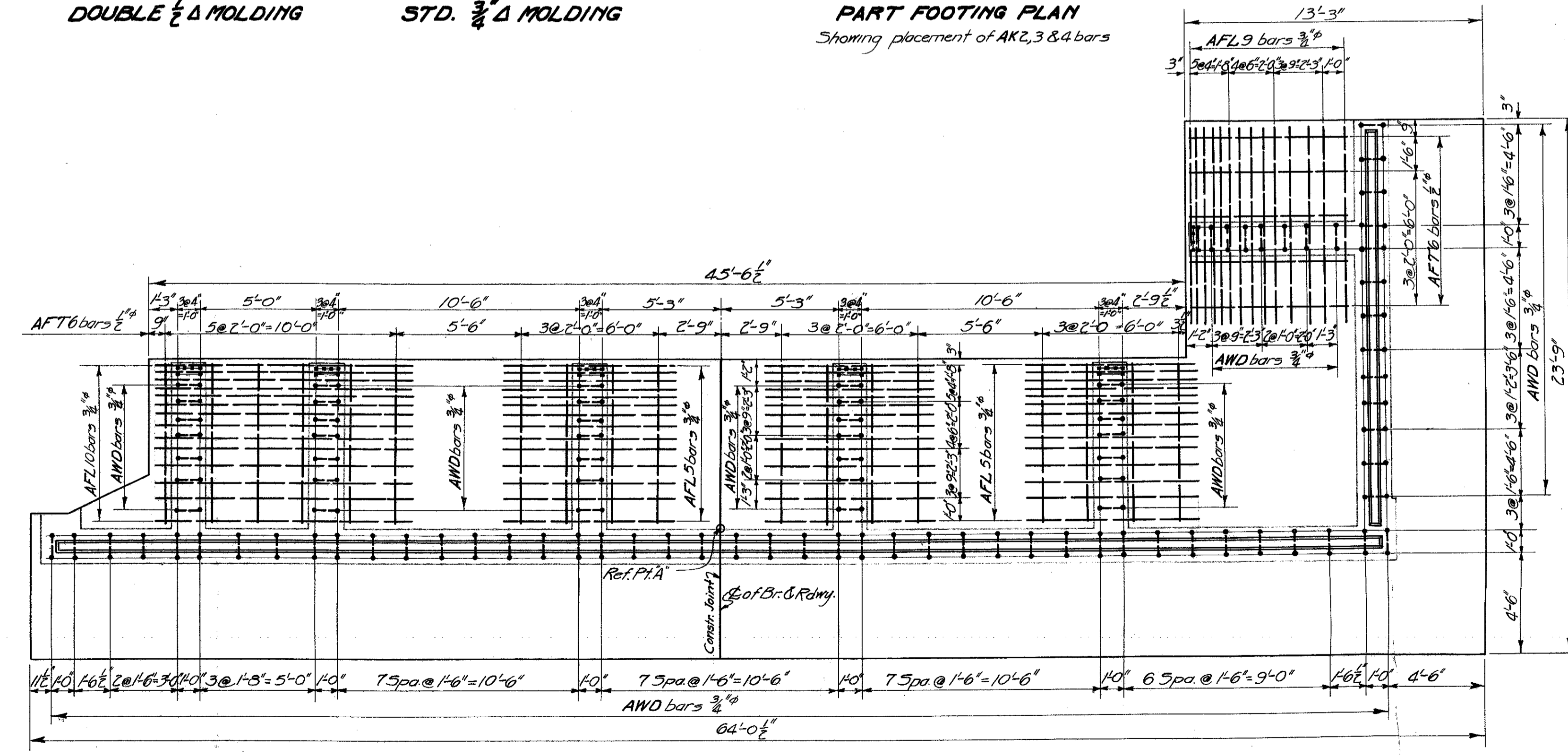
APPROVED *H.W. Sheldon* 3-12-31
 APPROVED *W.M. ...* 3-12-31
 APPROVED *C.A. ...* 3-14-31



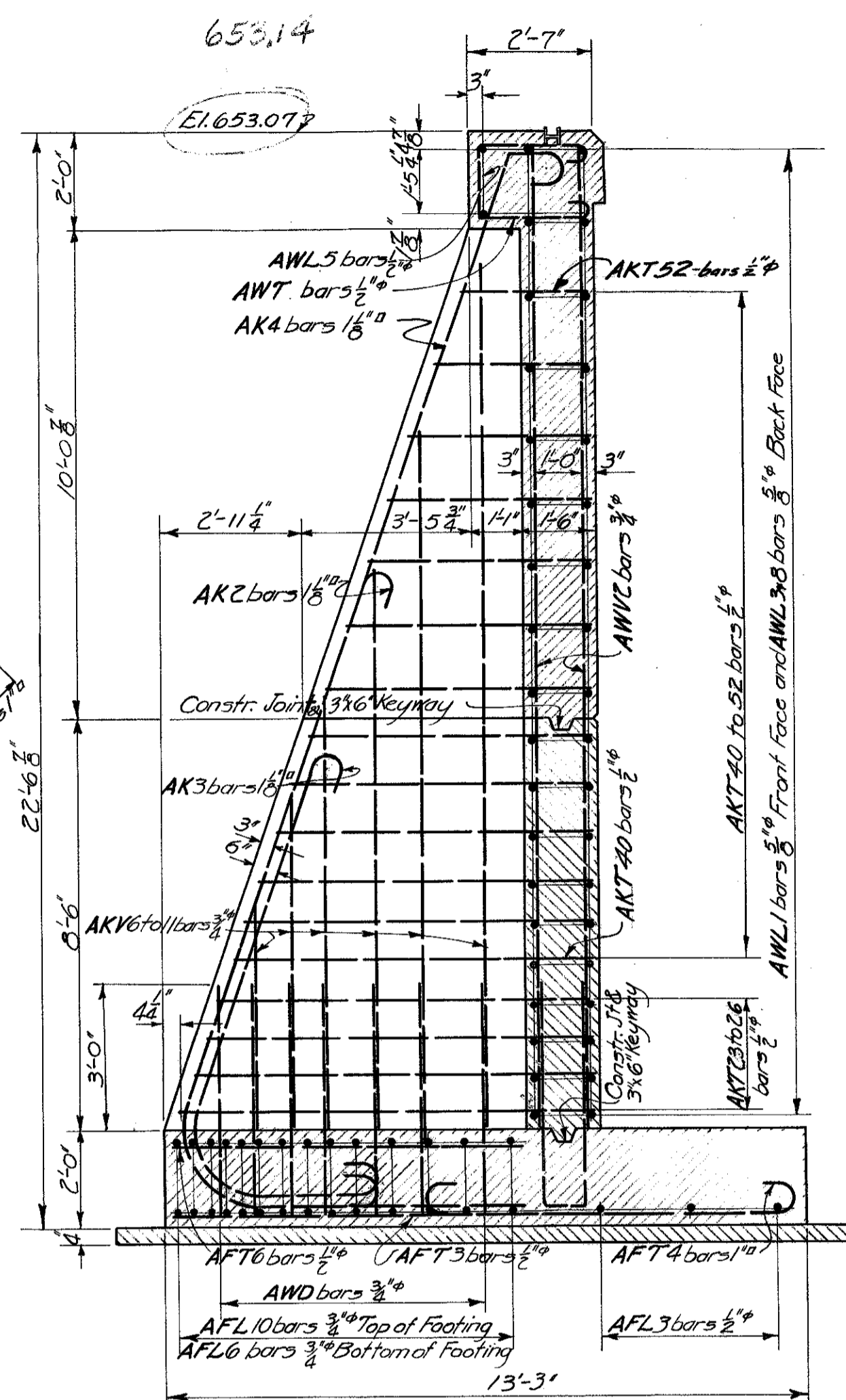
FOOTING PLAN
Showing Steel in Bottom
Scale 3/8" = 1'-0"



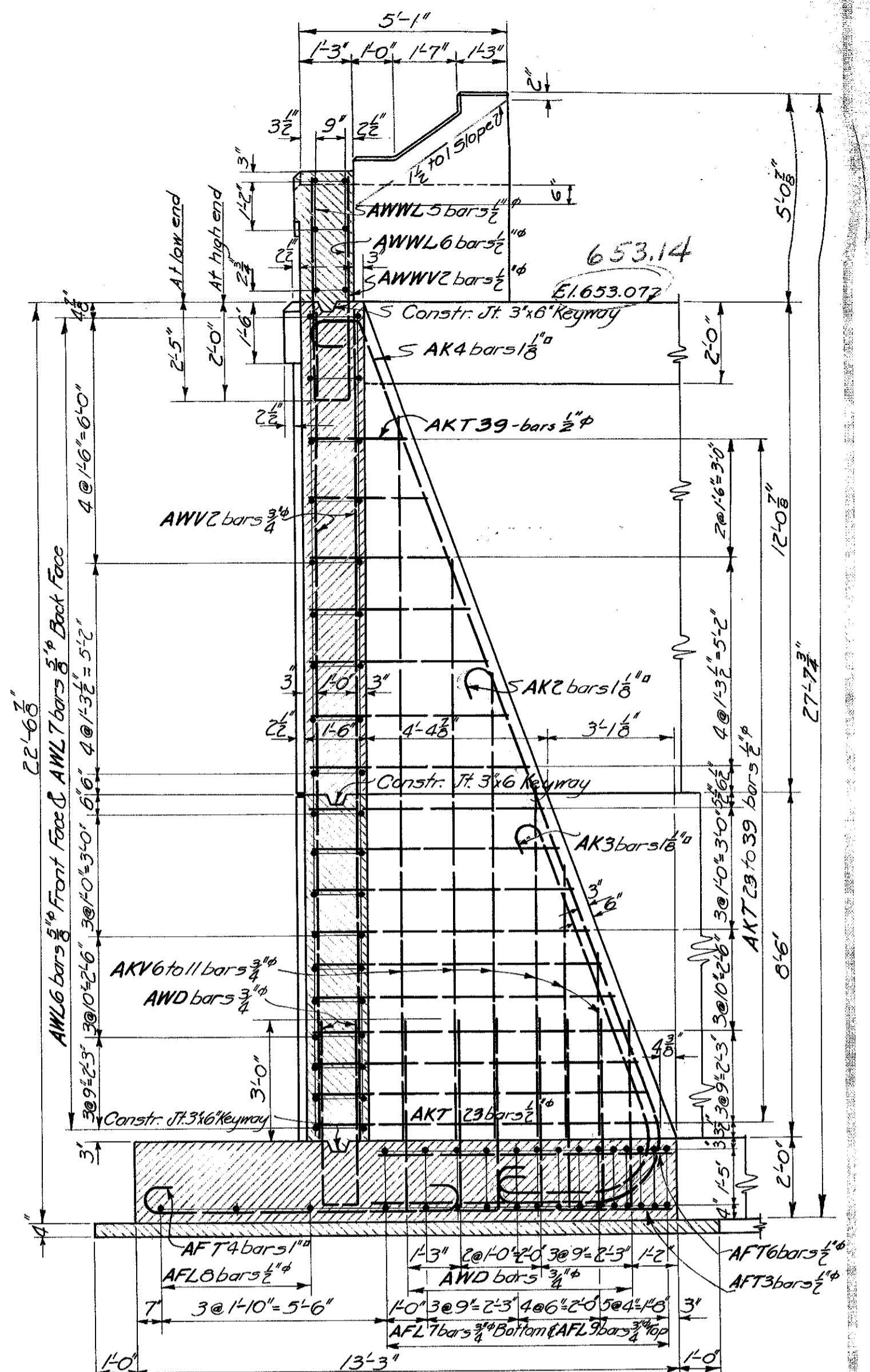
DOUBLE 1/2" Δ MOLDING **STD. 3/4" Δ MOLDING** **PART FOOTING PLAN**
Showing placement of AK2, 3 & 4 bars



FOOTING PLAN
Showing Steel in Top
Scale 3/8" = 1'-0"



SECTION G-G
See sheet No. 3
Scale 3/8" = 1'-0"

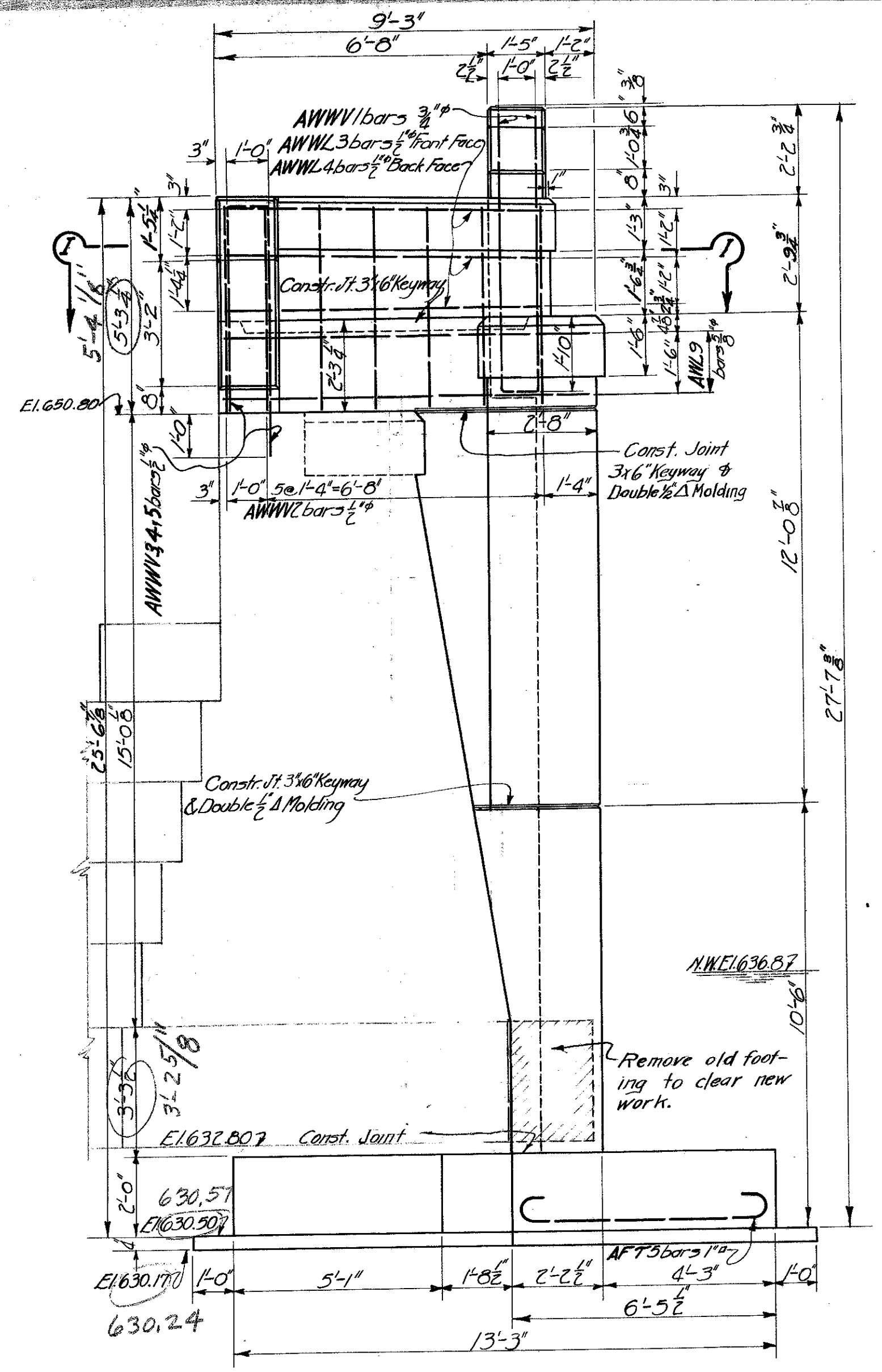


SECTION F-F
See sheet No. 3
Scale 3/8" = 1'-0"

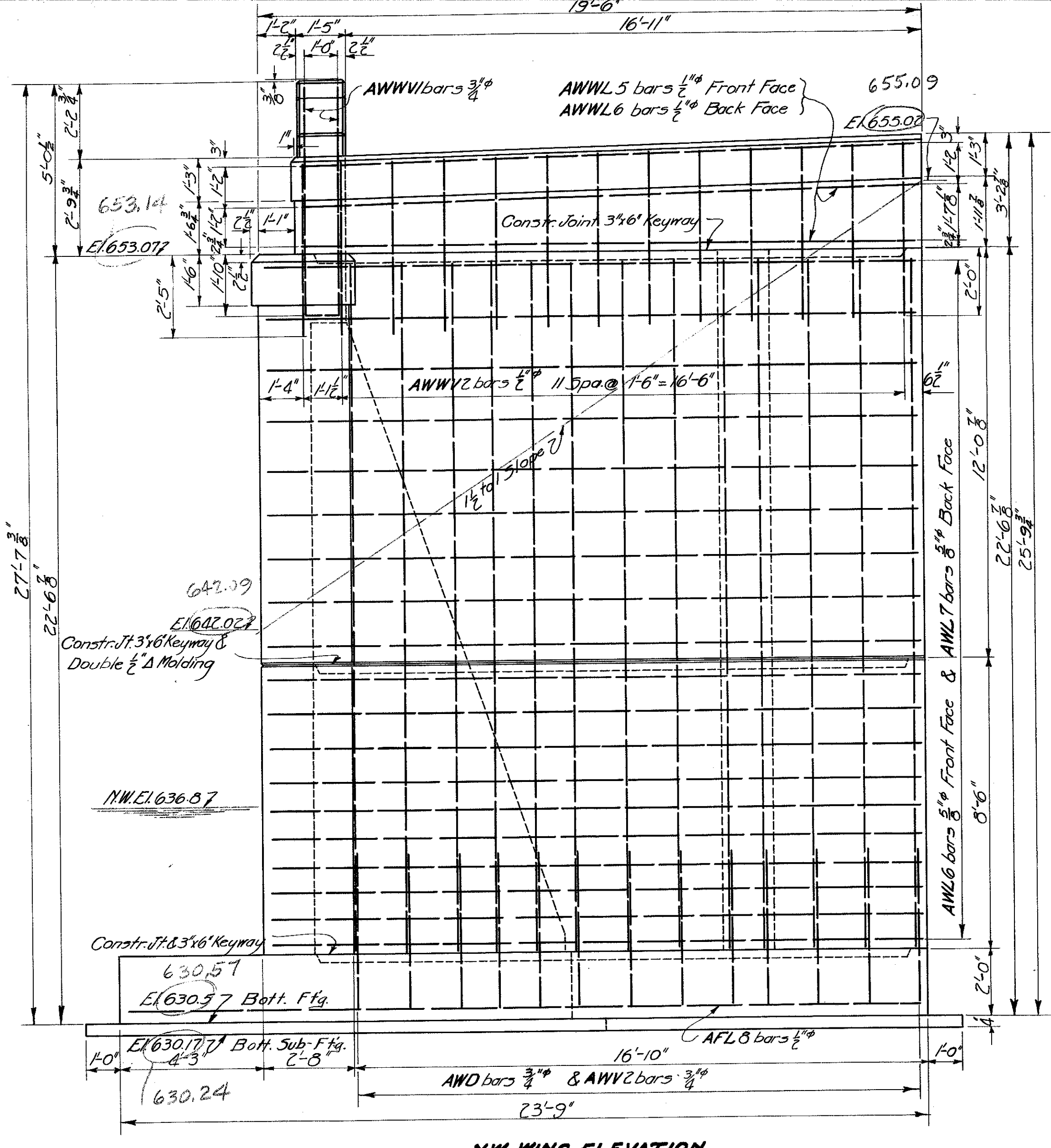
MICHIGAN STATE HIGHWAY DEPARTMENT
SEC. 32 J. 5N R. 15E. COLUMBUS TWP. ST. CLAIR
SOUTH FILE NO. BIOF 77-8-1 ROAD U. S. 25, FA Proj. 388Y STA. 138 +90
COLUMBIER BELLE RIVER 4 MILES N.E. OF RICHMOND +87.04

WEST ABUTMENT DETAILS

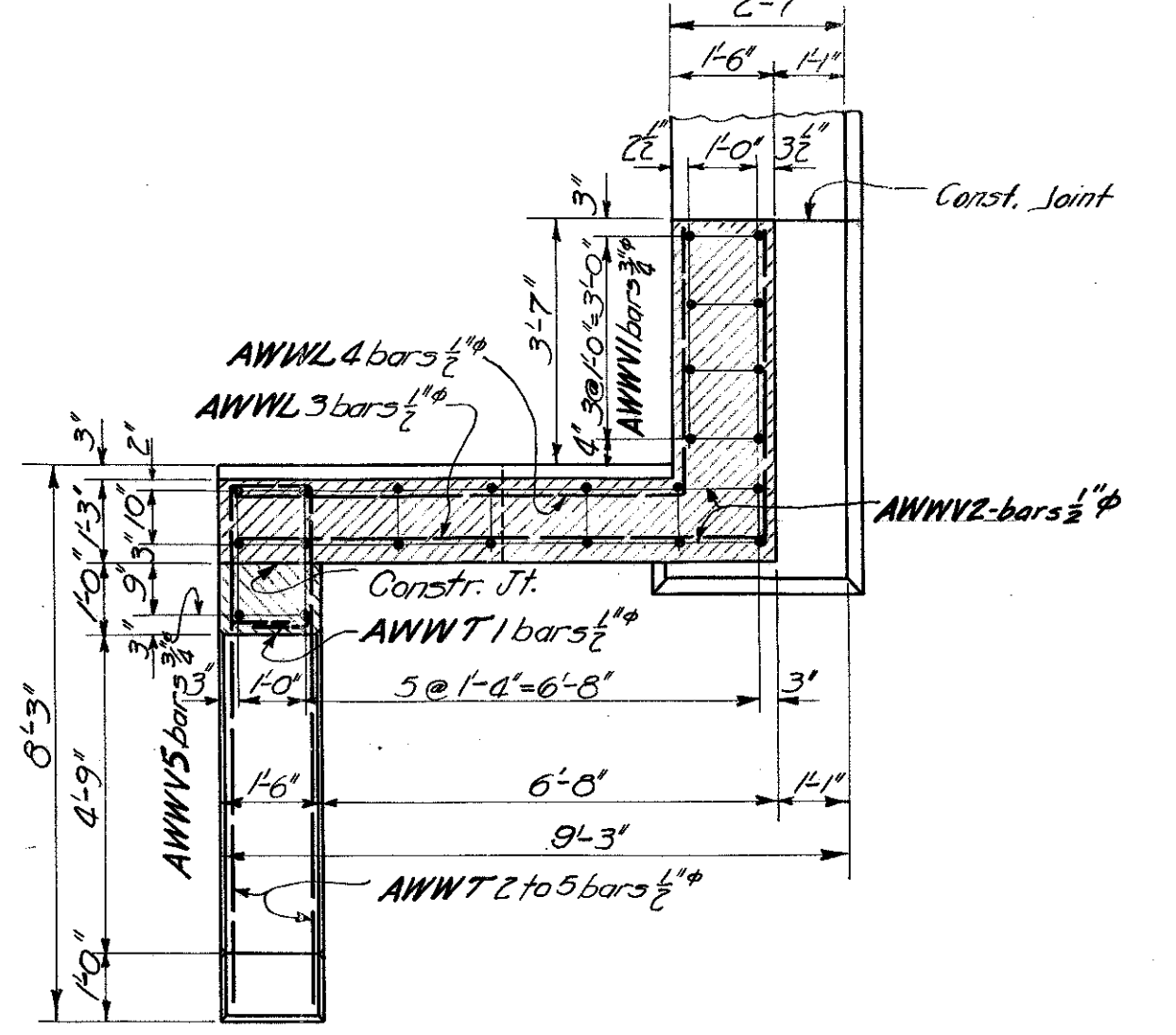
APPROVED: *W. M. Shields* 3-12-31
APPROVED: *W. M. Shields* 3-12-31
APPROVED: *W. M. Shields* 3-12-31
APPROVED: *W. M. Shields* 3-12-31
M



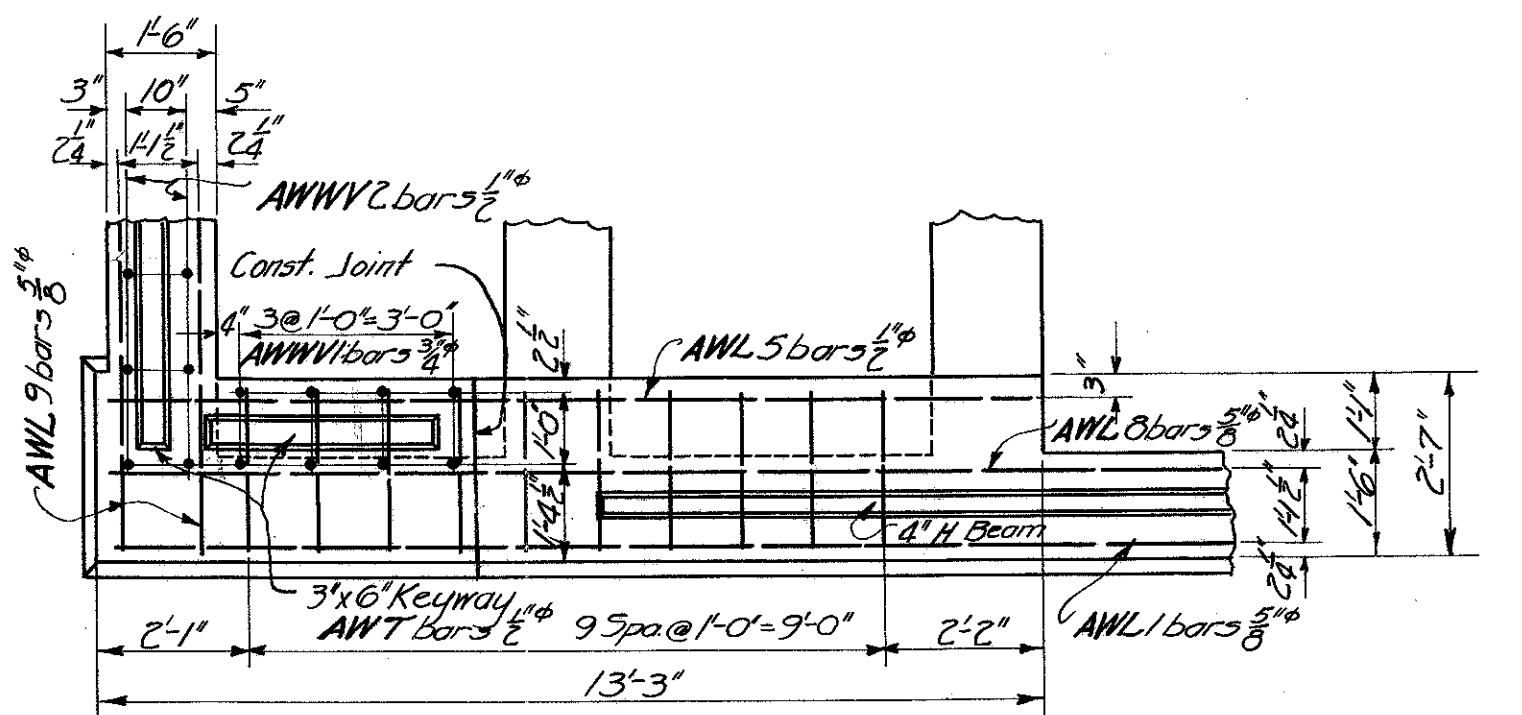
S.W. WING ELEVATION
Scale $\frac{1}{4}''=1'-0''$



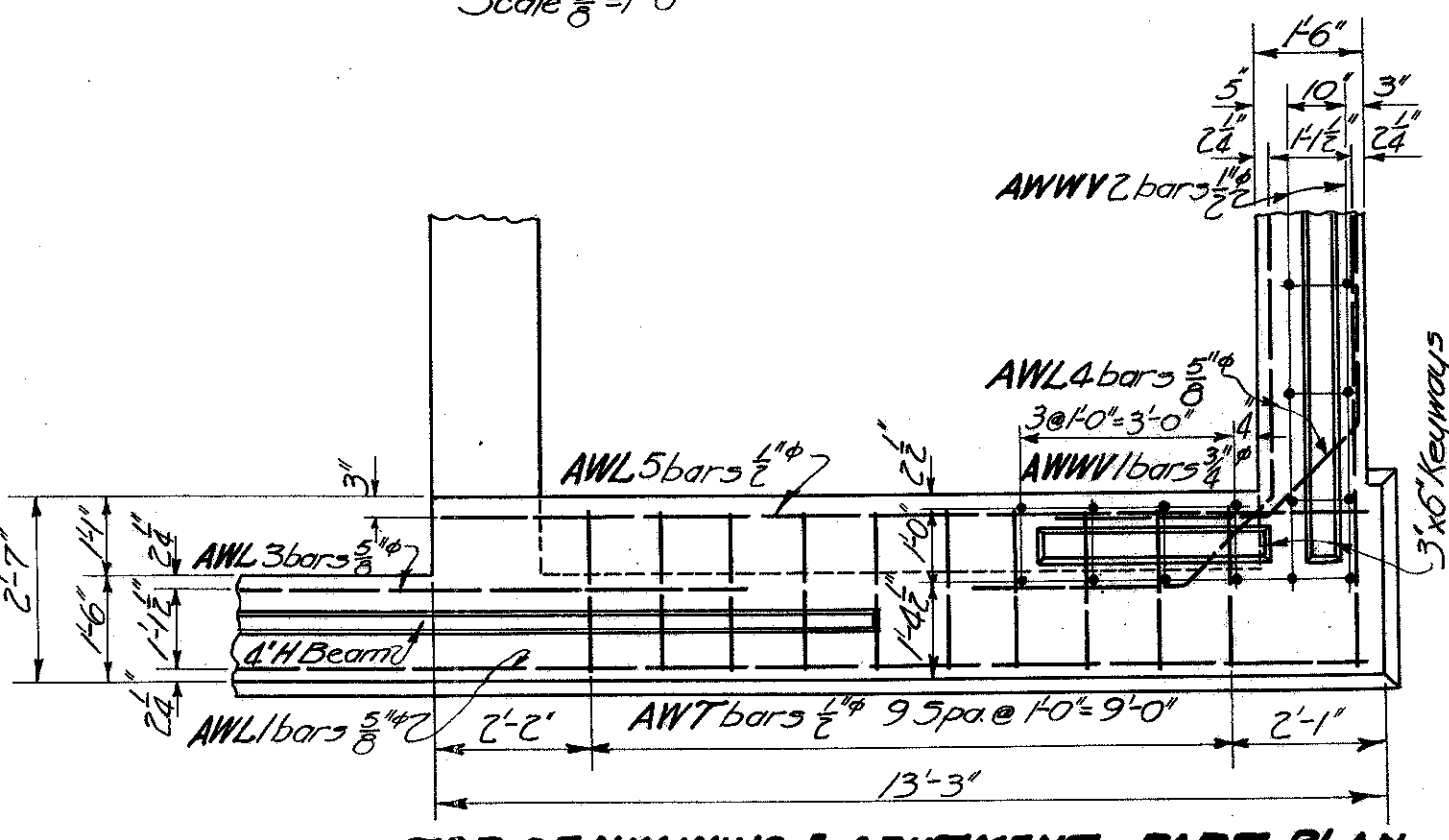
N.W. WING ELEVATION
Scale $\frac{1}{4}''=1'-0''$



SECTION I-I
Scale $\frac{3}{8}''=1'-0''$

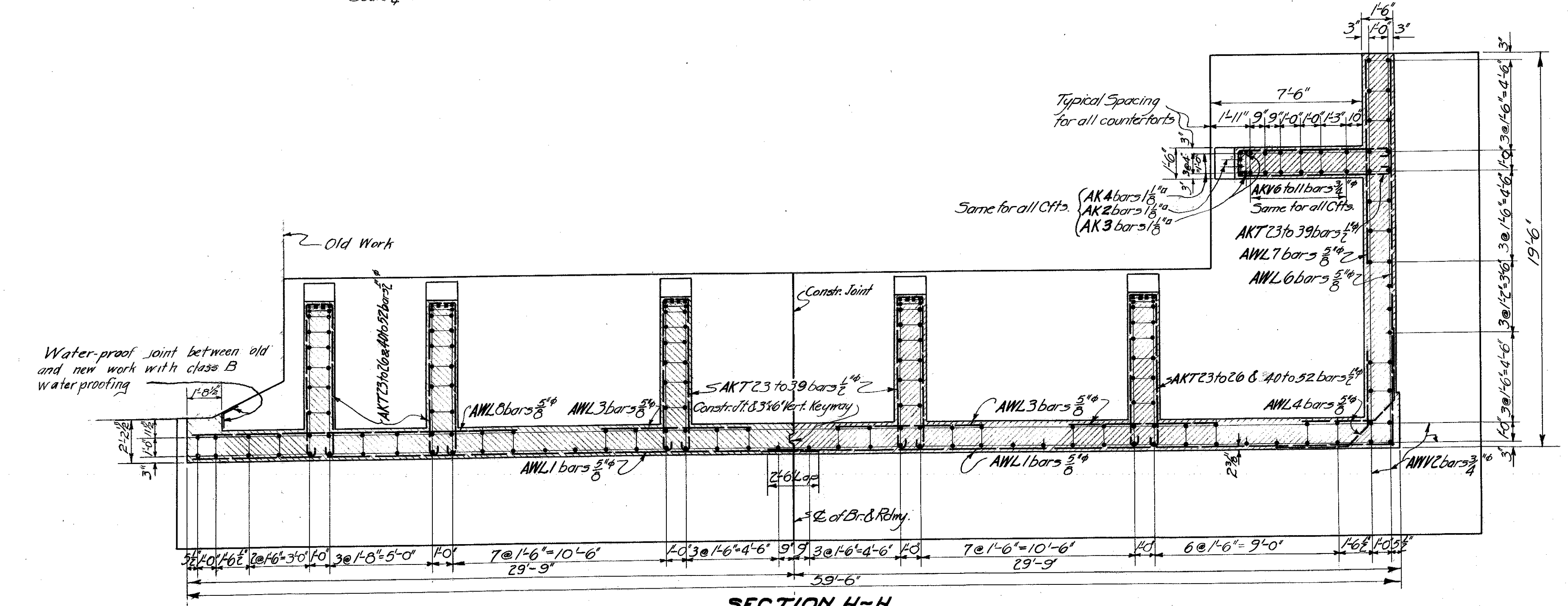


TOP OF S.W. WING & ABUTMENT - PART PLAN
Scale $\frac{3}{8}''=1'-0''$



TOP OF N.W. WING & ABUTMENT - PART PLAN
Scale $\frac{3}{8}''=1'-0''$

Note: ANWL 4 bars spaced same as ANWL 1 bars



SECTION H-H
Scale $\frac{1}{4}''=1'-0''$

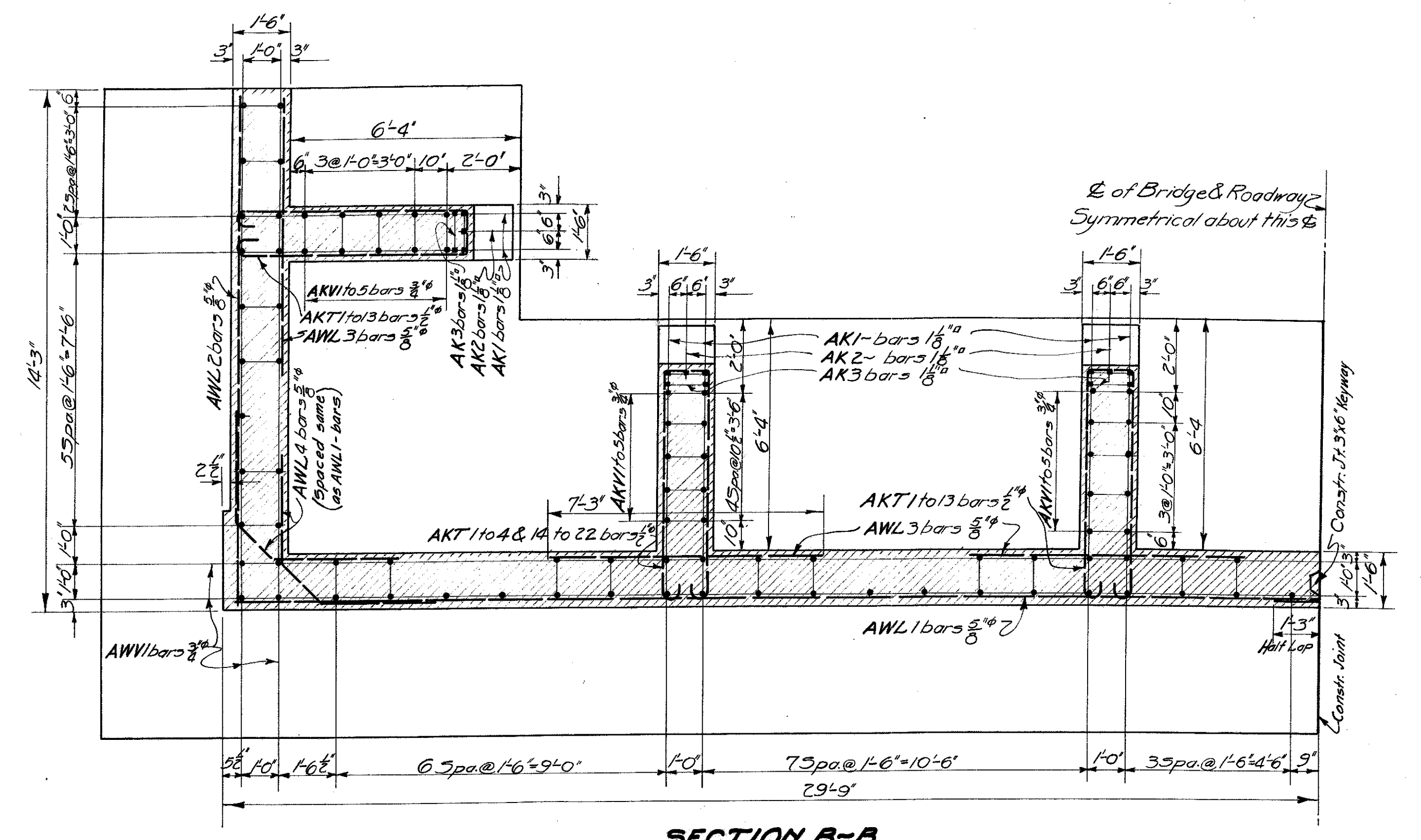
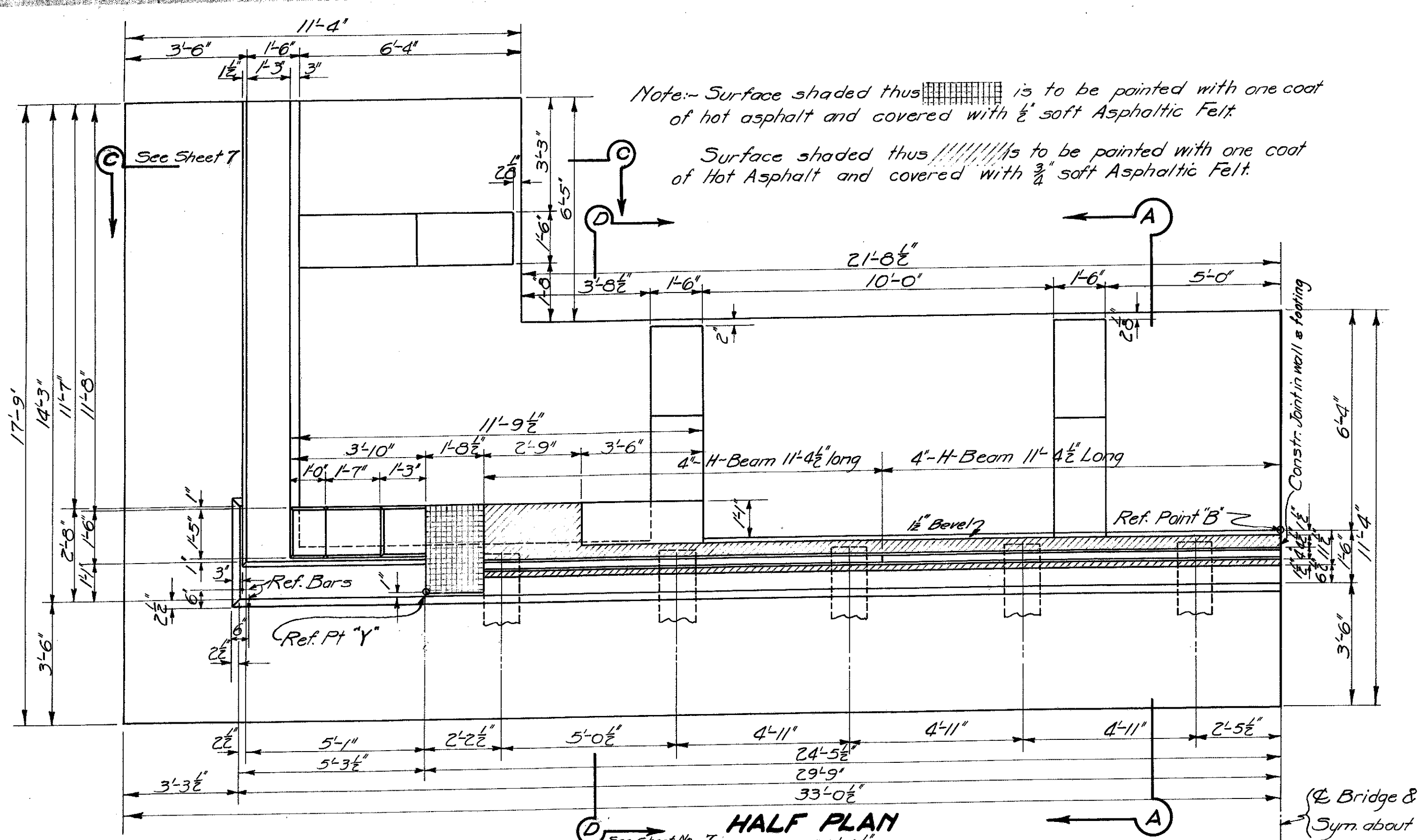
MICHIGAN STATE HIGHWAY DEPARTMENT
 BOX 32 15N 15E COLUMBUS TWP ST. CLAIR
 ENGINE FILE NO. B10F77-8-1 ROAD U.S. 25, F.A. Proj. 38 AT STA. 138+90
 CROSSING BELLE RIVER 4 MILES N.E. OF RICHMOND +87.04

WEST ABUTMENT DETAILS

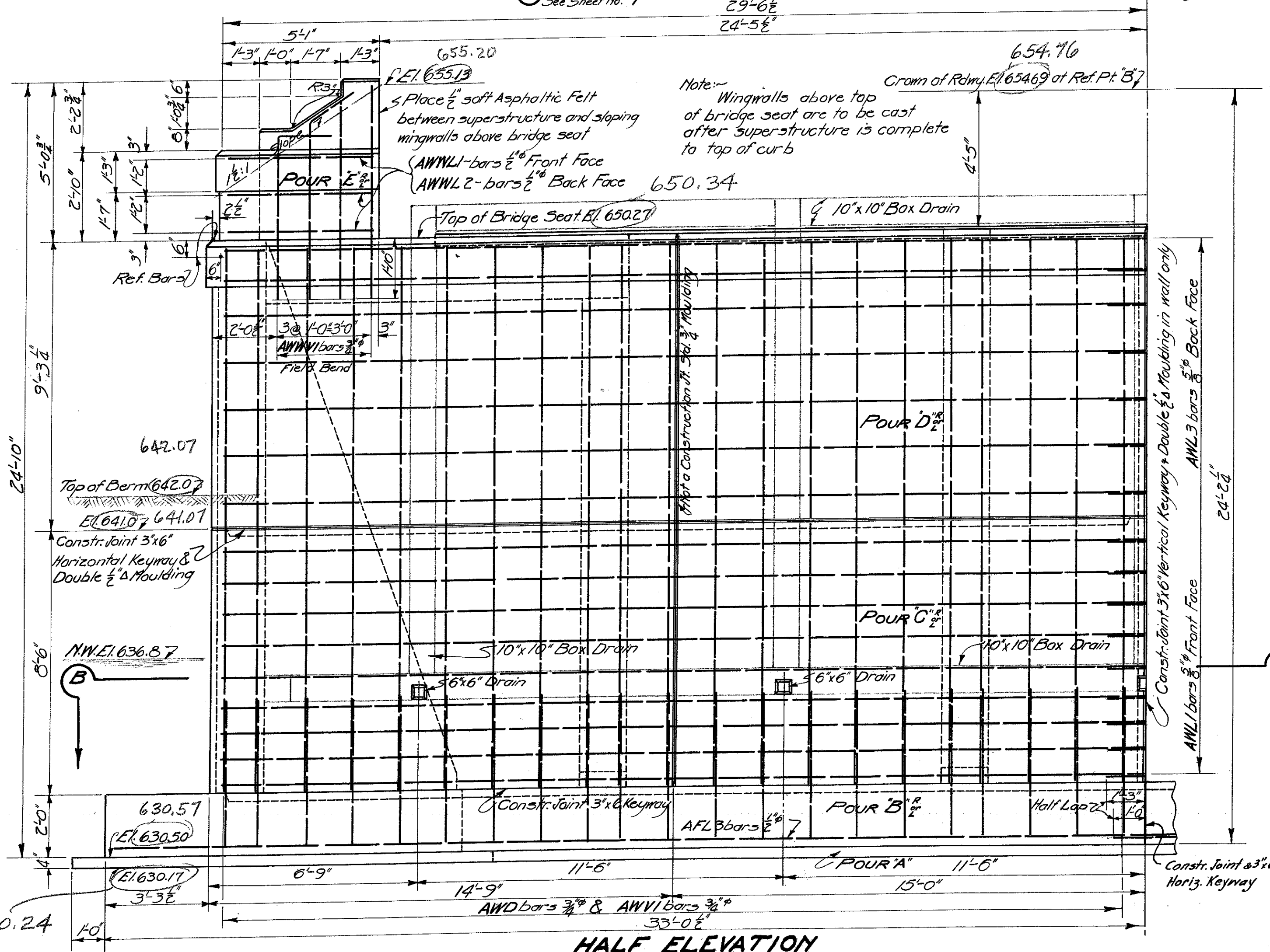
APPROVED *H.W. Sheldon* 3-12-31
 APPROVED *W.M. Gladden* 3-12-31
 APPROVED *Ed. Meek* 5-14-31



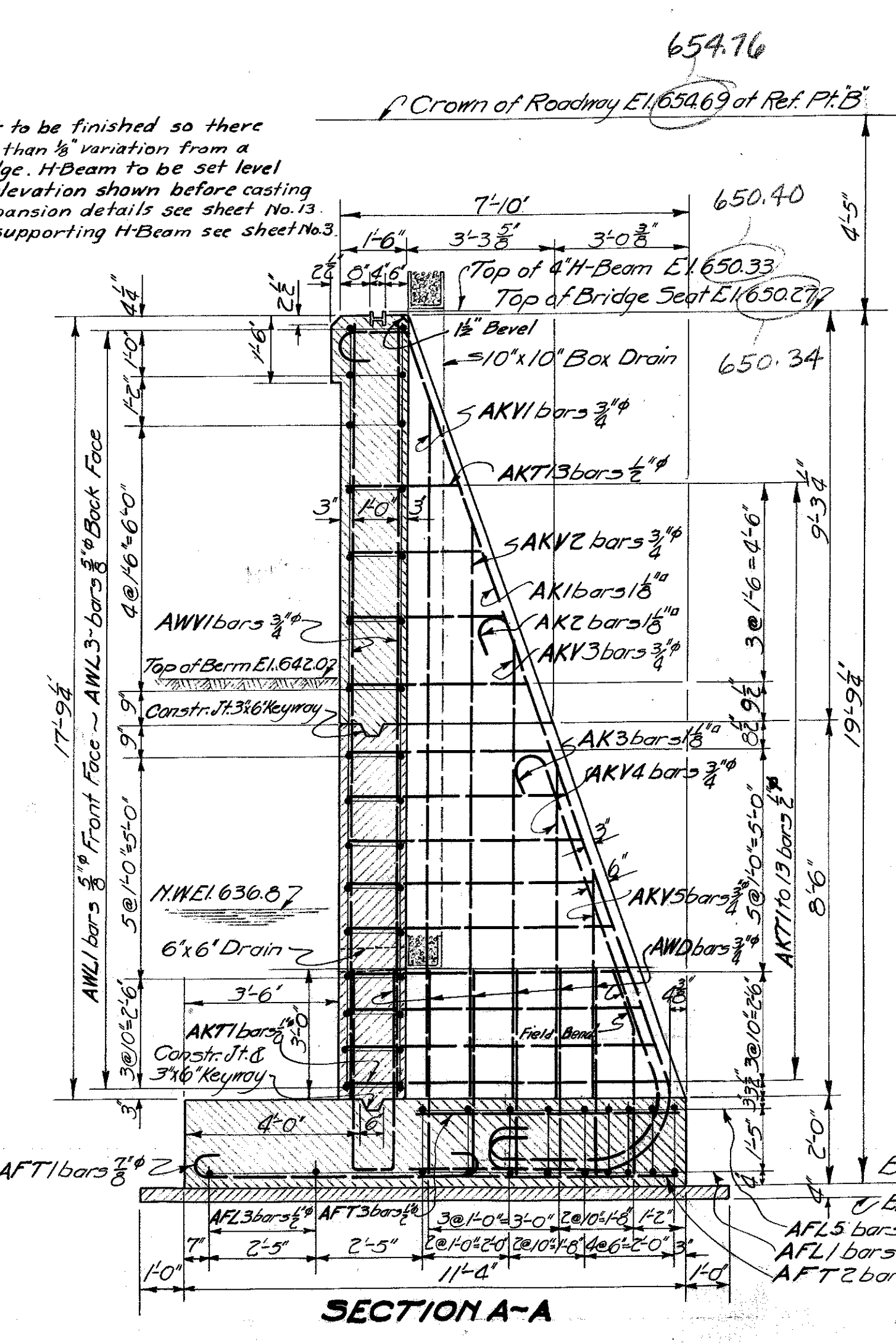
DESIGNED *W.M. Standburg*
 DRAWN BY *Korecki 12-14-30*
 CHECKED BY *Gladden 12-28-30*
 APPROVED *1-20-31*
 DATE 5-14-31



SECTION B-B



Top of abutment to be finished so there will be not more than 1/8" variation from a 10 ft. straight edge. H-Beam to be set level and to line at elevation shown before casting concrete. For expansion details see sheet No. 13. For method of supporting H-Beam see sheet No. 3.



SECTION A-A

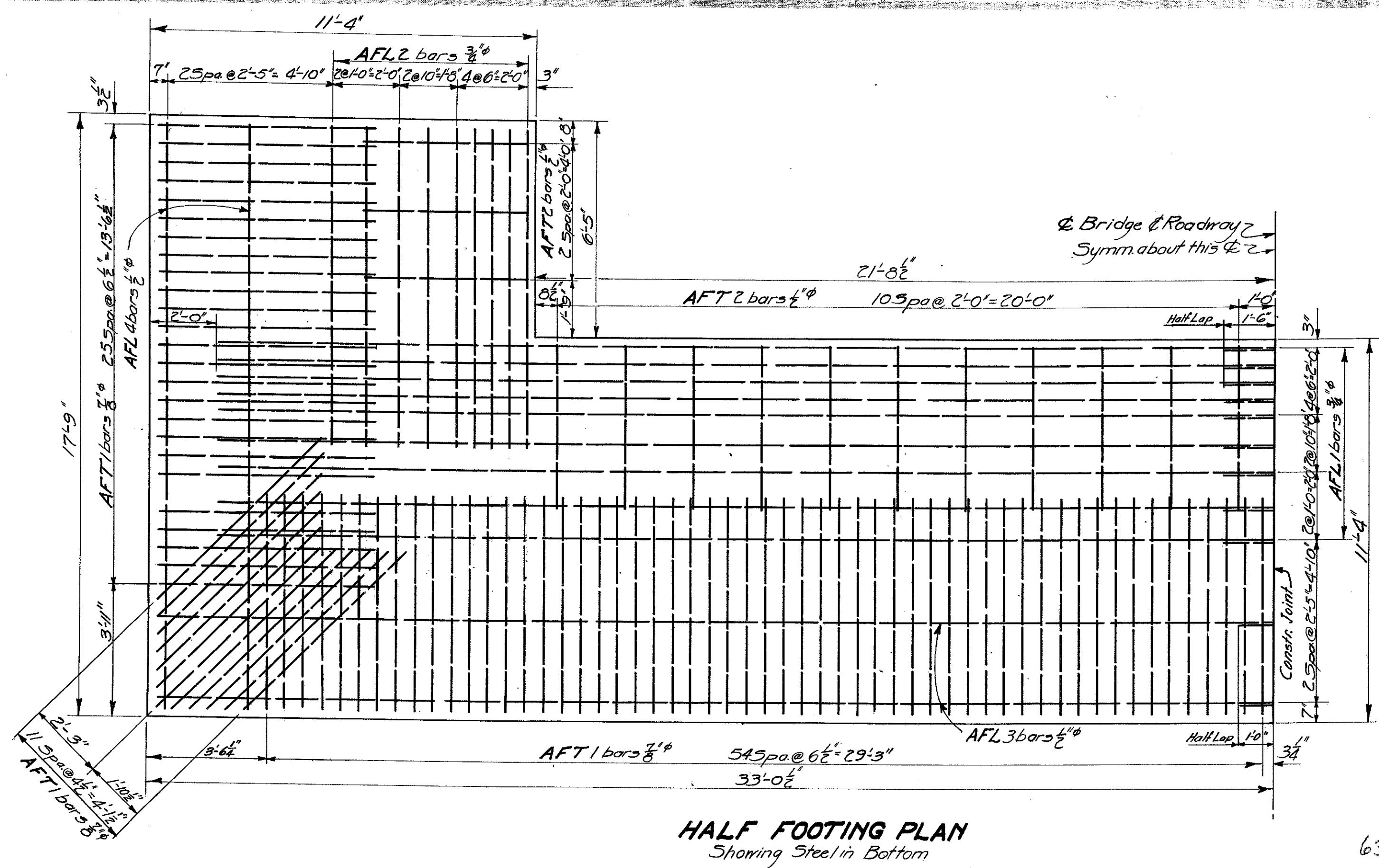
Note: 10'x10' box drains filled with coarse bank run gravel to extend vertically above 6'x6" drain holes to 1'-0" above top of bridge seat, also place horizontal 10'x10' box drains at elevation of 6'x6" drains and top of vertical drains, bottom drains to extend horizontally to ends of wings.
 Place 6'x6" drain holes not less than 6" above bed of stream, nor less than 6" below Normal water elevation, and extend to outlet with 6" vitrified tile pipe. For drain hole form details see sheet A527.
 Before placing box drains and backfilling water proof entire back of abutments above top of footing, back walls and wingwalls with class 'A' Waterproofing.
 All construction and expansion joints in contact with earth fill shall be waterproofed with class 'B' waterproofing in accordance with the specifications.

MICHIGAN STATE HIGHWAY DEPARTMENT
 SEC. 32 T5N R15E. COLUMBUS TWP. ST. CLAIR CO.
 BRIDGE FILE NO. B10F 77-8-1 ROAD U.S. 25, FA Proj. 38 AT STA. 138 (+87.04)
 CROSSING BELLE RIVER 4 MILES N.E. OF RICHMOND

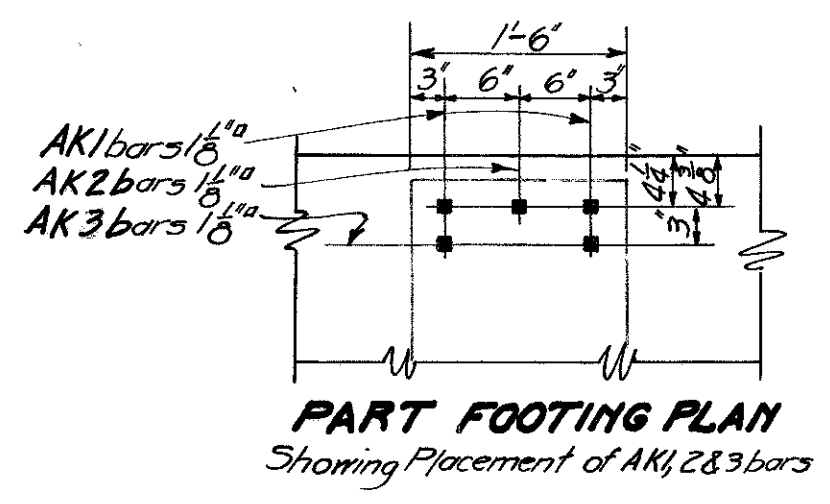
EAST ABUTMENT DETAILS

APPROVED *K.W. Schelley* 3-12-31
 APPROVED *R.W. C. ...*
 APPROVED *C. Melch ...*

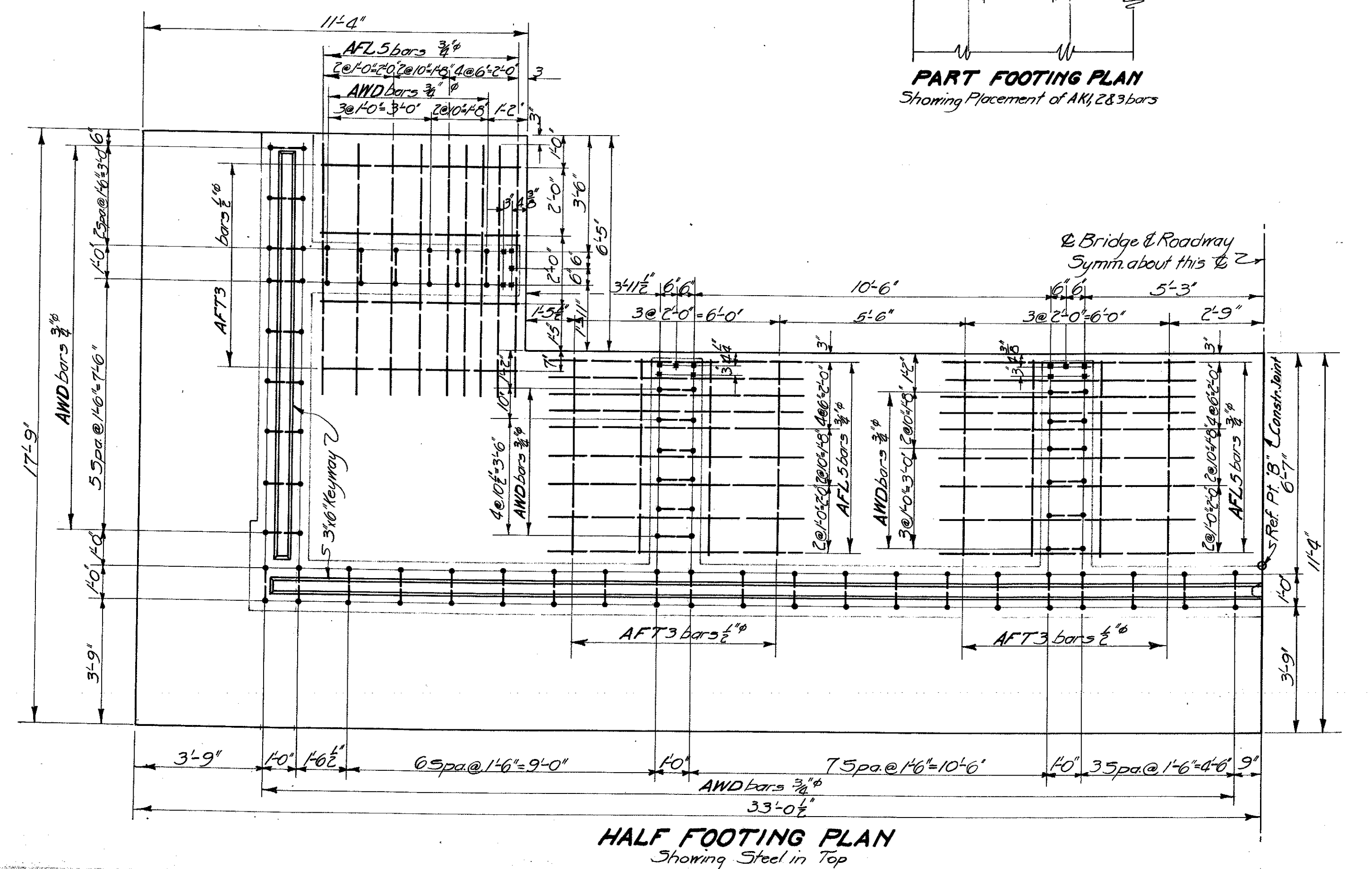
3-14-31



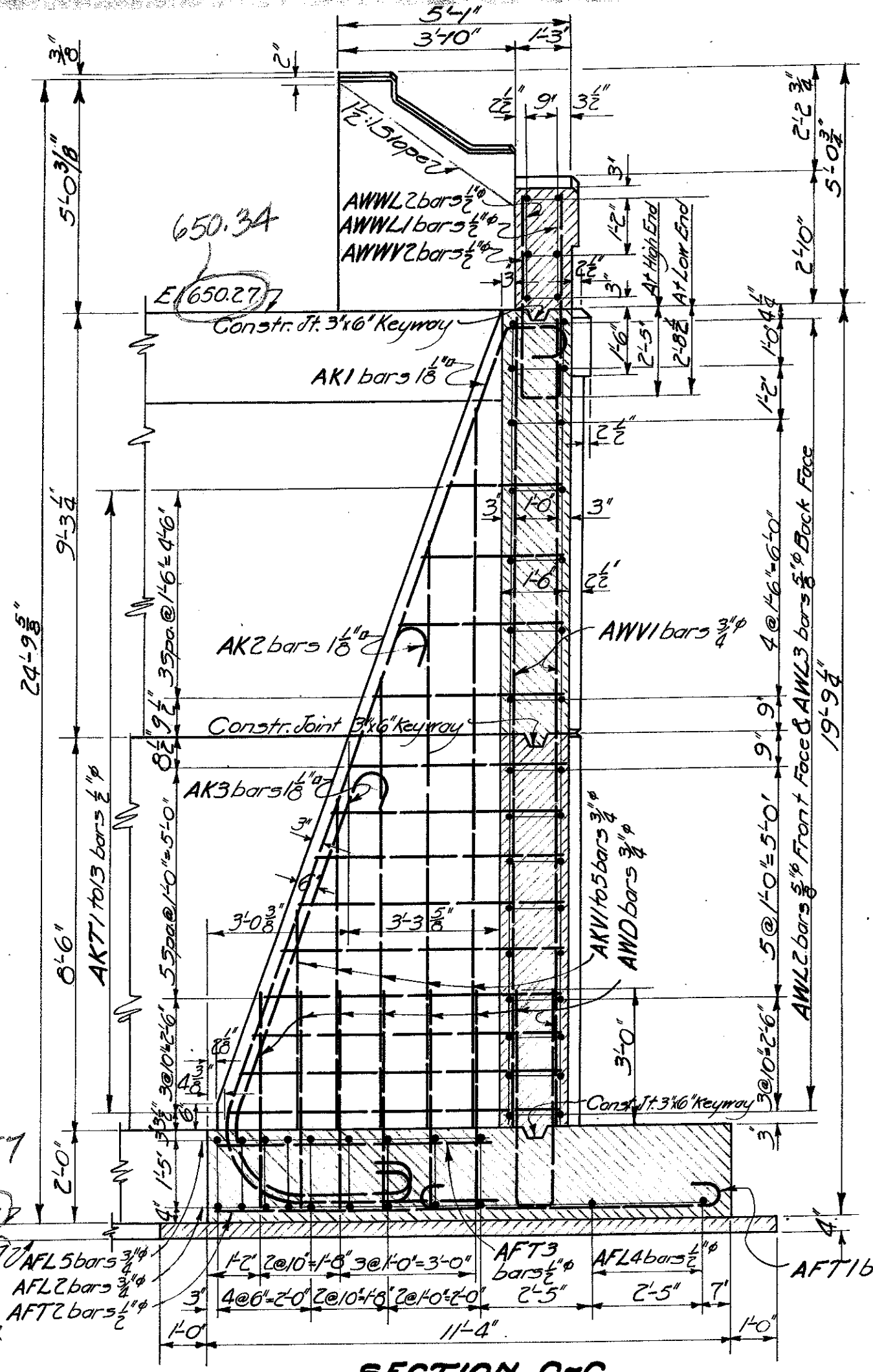
HALF FOOTING PLAN
Showing Steel in Bottom



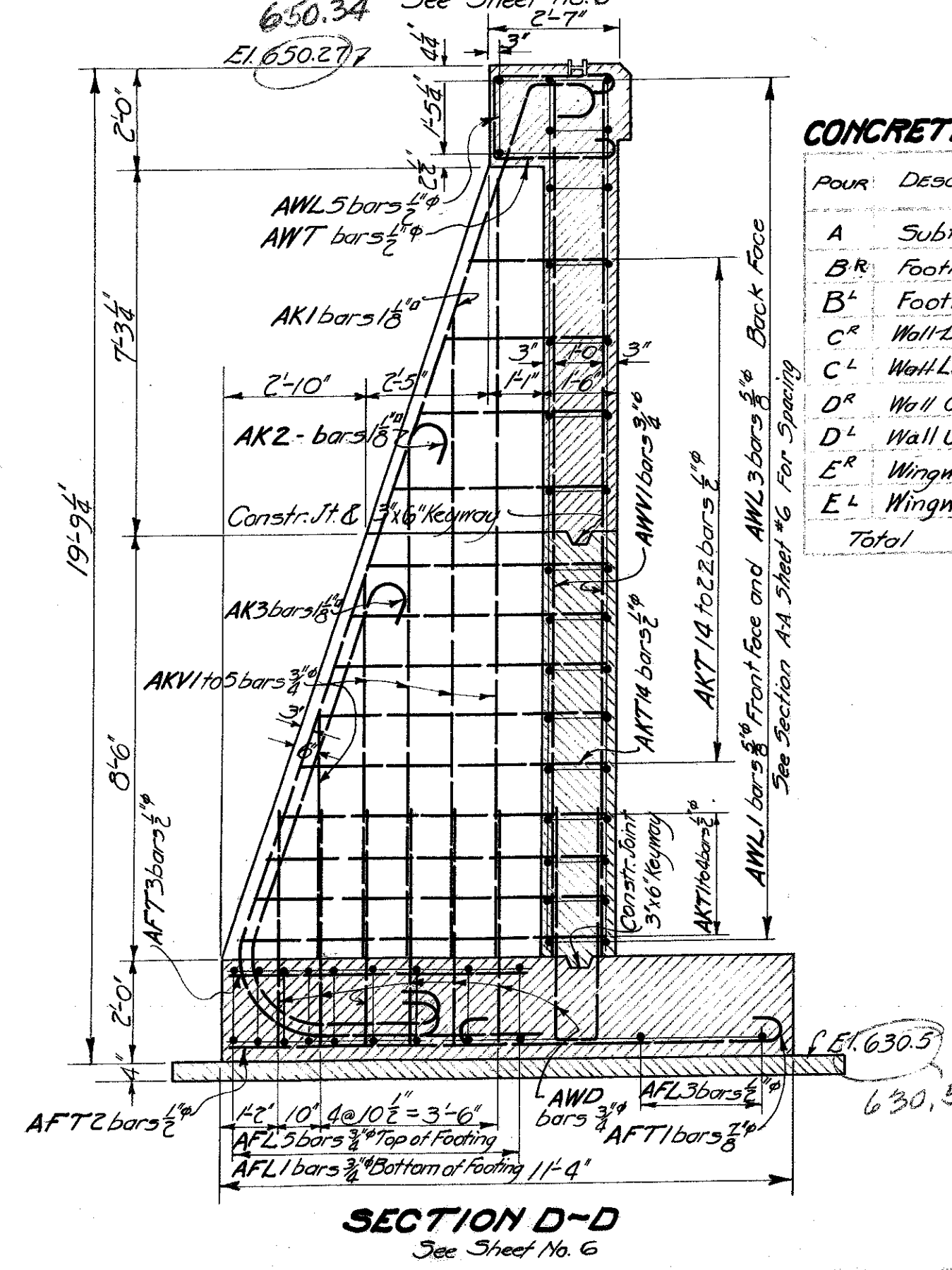
PART FOOTING PLAN
Showing Placement of AK1, AK2, AK3 bars



HALF FOOTING PLAN
Showing Steel in Top



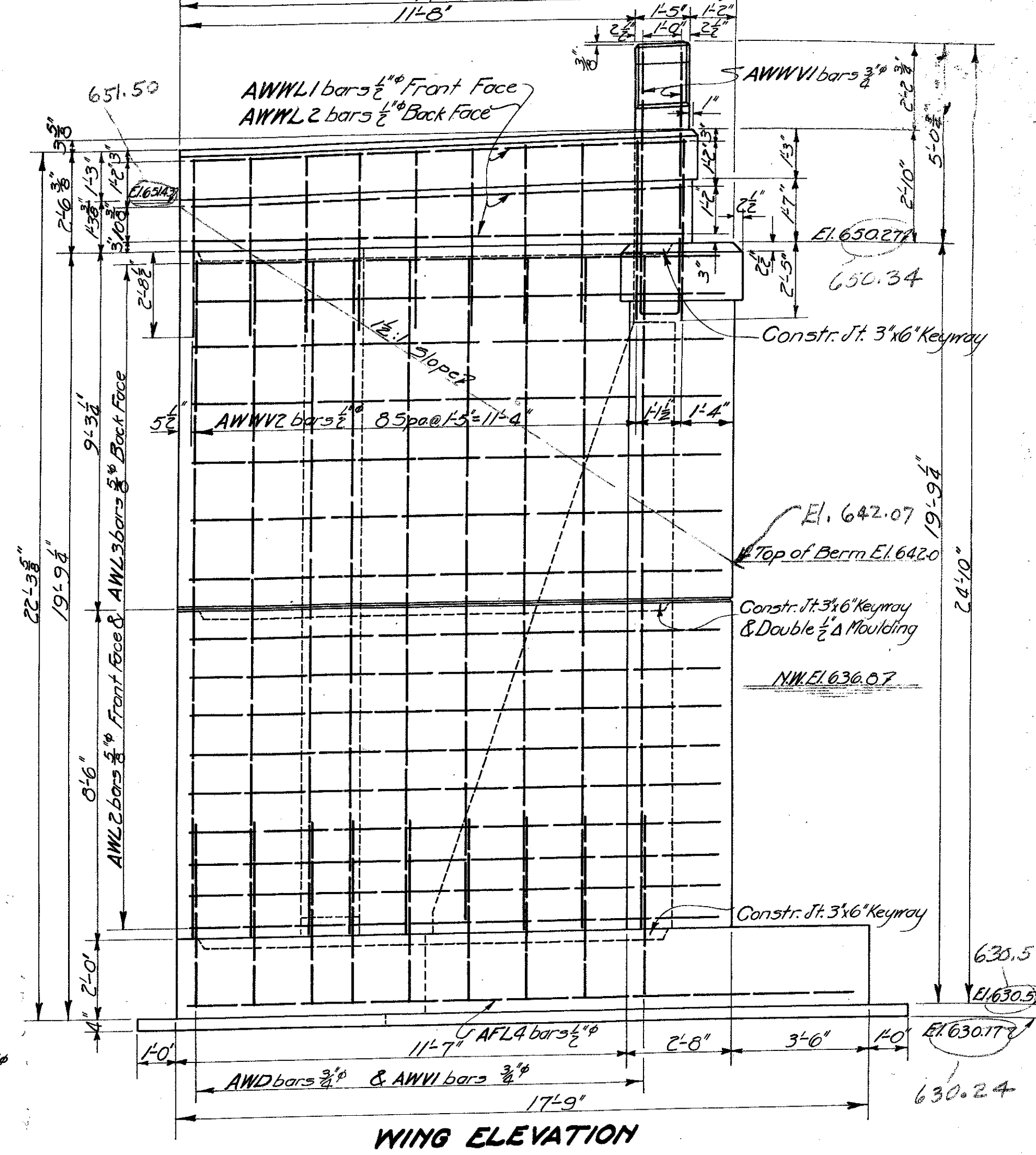
SECTION C-C
See Sheet No. 6



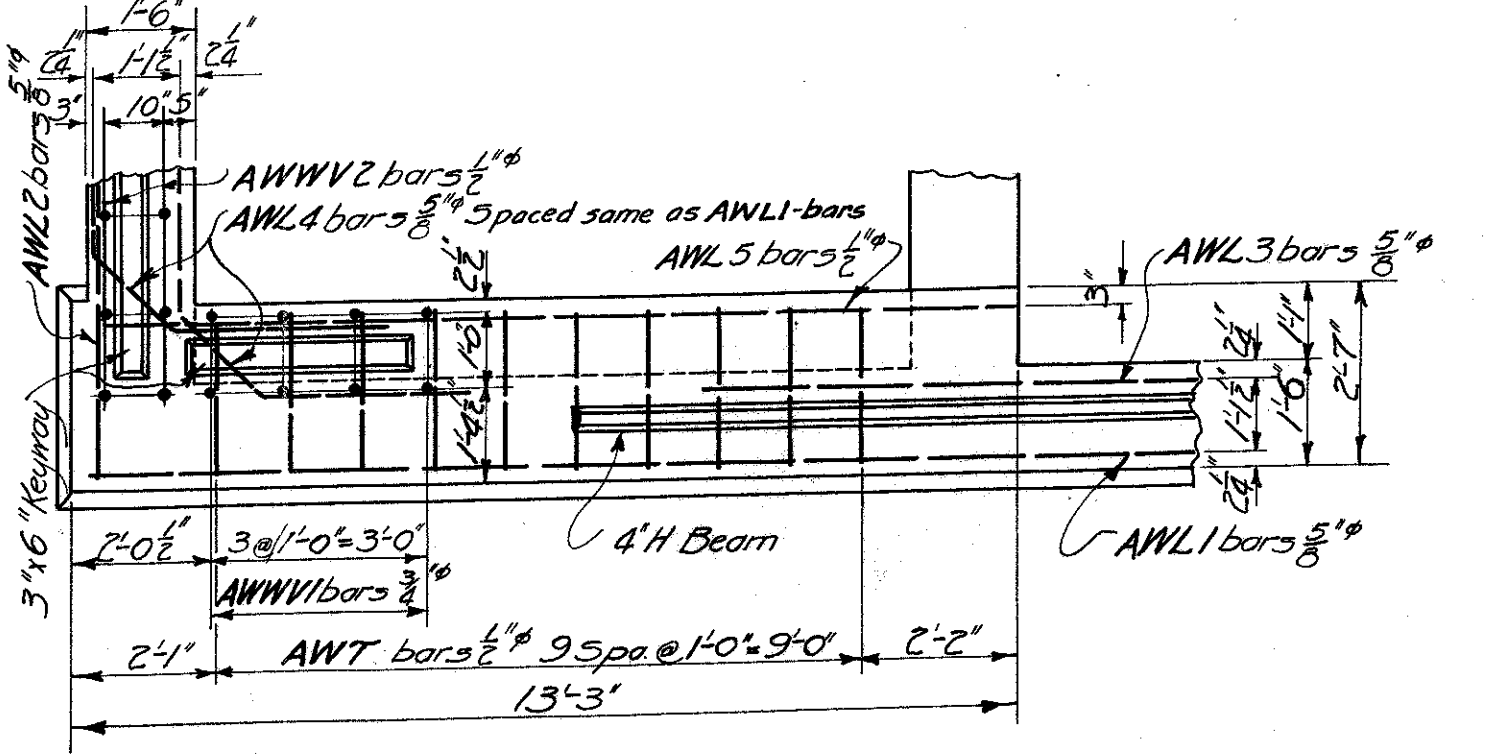
SECTION D-D
See Sheet No. 6

CONCRETE QUANTITIES

POUR	DESCRIPTION	Cu Yds Concrete
A	Subfooting	13.2
B	Footing	33.1
C	Wall Lower Right	27.1
C'	Wall Lower Left	27.1
D	Wall Upper Right	25.9
D'	Wall Upper Left	25.9
E	Wingwall Right	2.5
E'	Wingwall Left	2.5
Total		190.4



WING ELEVATION



TOP OF ABUTMENT - PART PLAN
Showing Overhang & Corner Reinforcing Steel

MICHIGAN STATE HIGHWAY DEPARTMENT
 SEC. 32, T. 5 N., R. 15 E. COLUMBUS TWP. ST. CLAIR
 BRIDGE FILE NO. BIOFTT-81 ROAD U.S. 25, F.A. Proj. 38 BY STA. 138 + 50
 CROSSING BELLE RIVER 4 MILES N.E. OF RICHMOND + 8.104

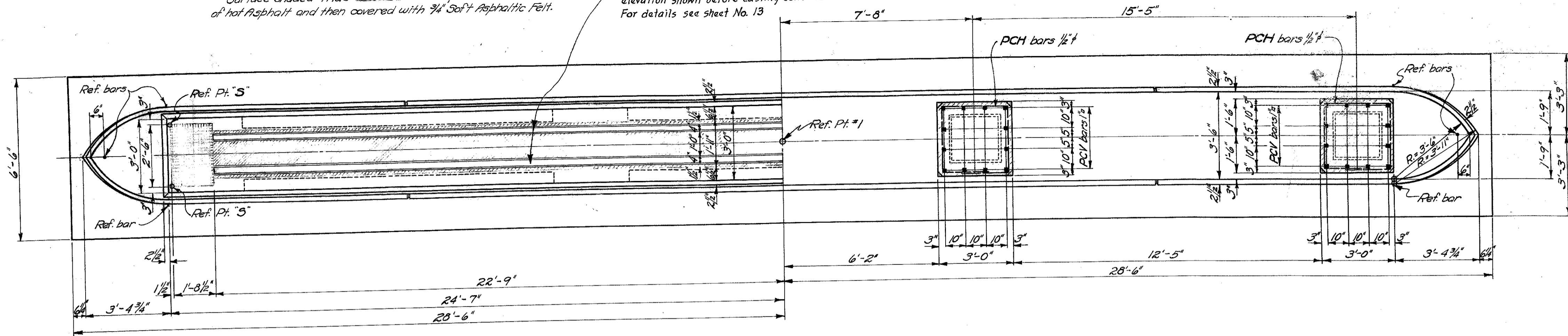
EAST ABUTMENT DETAILS

DESIGNED BY *N.W. Sheldon* 3-12-31
 CHECKED BY *[Signature]* 12-31
 APPROVED BY *G.D. Welch* 3-12-31

M.M. Stambaugh
 Koreski 11-26-30
 Gladden 12-1-30
 F.H.T. 1-21-31
T. 14

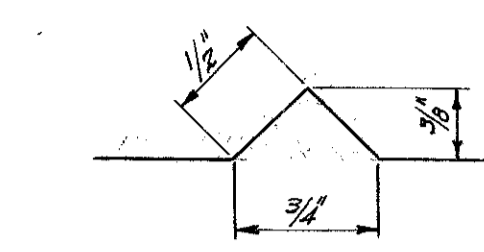
Note:- Surface shaded thus [diagonal lines] is to be painted with one coat of hot Asphalt and then covered with 1/8" Soft Asphaltic Felt.
 Surface shaded thus [cross-hatch] is to be painted with one coat of hot Asphalt and then covered with 3/4" Soft Asphaltic Felt.

2" x 4" H-Beams for Expansion Joint to be set level and to line at the elevation shown before casting concrete. For details see sheet No. 13

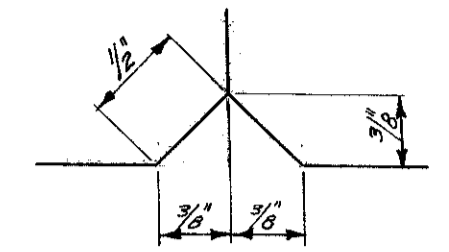


HALF PLAN

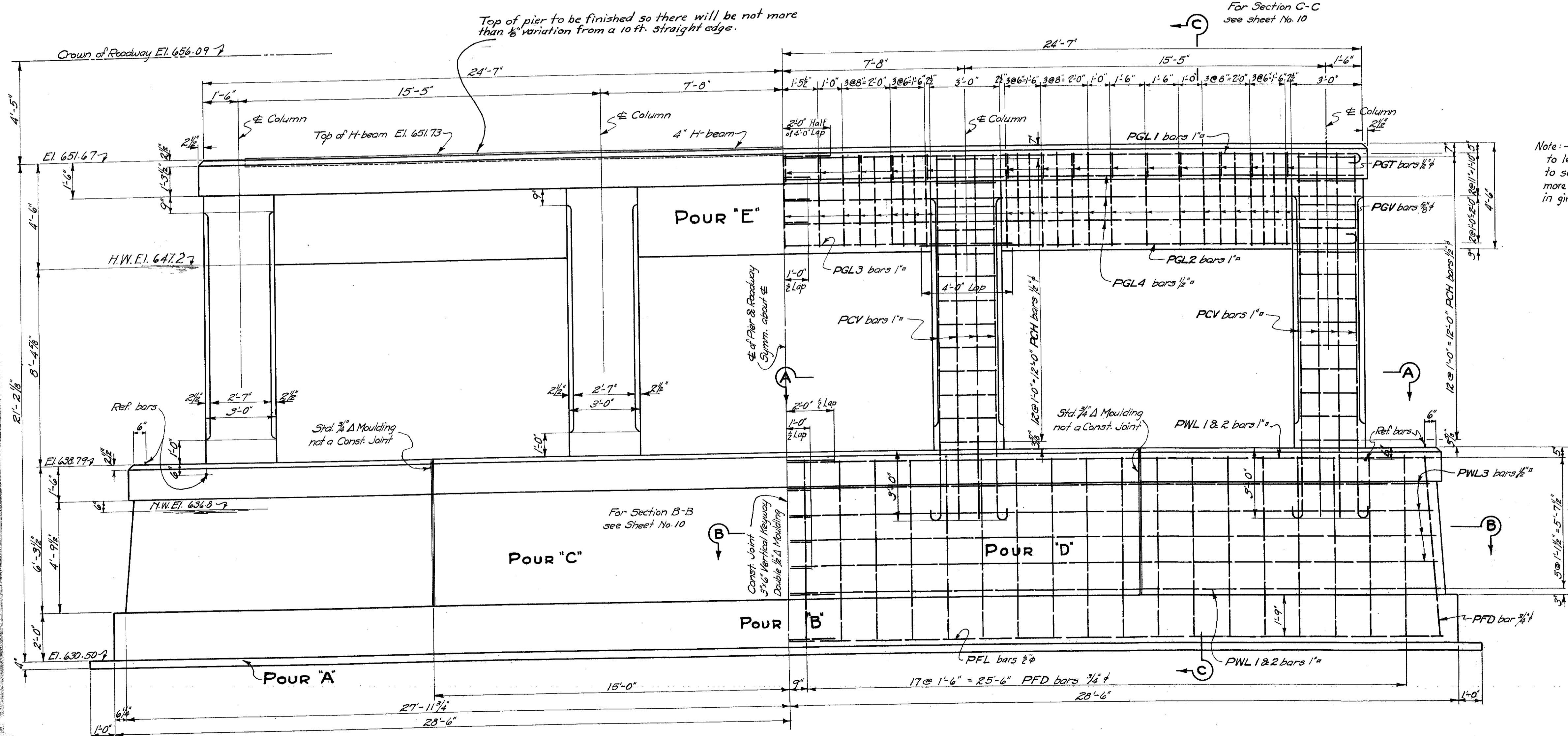
SECTION A-A



STANDARD 3/4" Δ MOULDING



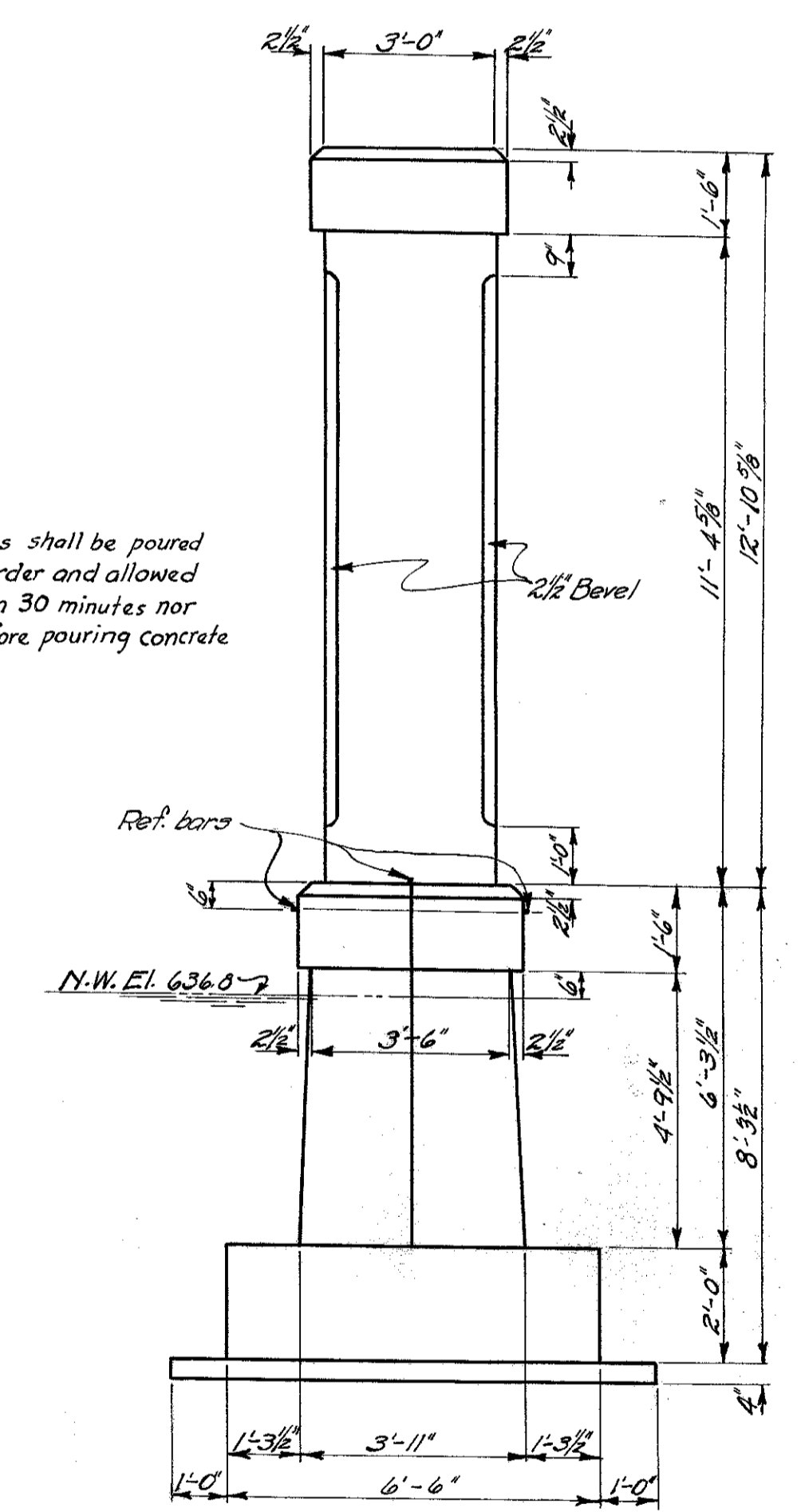
DOUBLE 1/2" Δ MOULDING



HALF ELEVATION

HALF ELEVATION
 SHOWING REINFORCING STEEL

Note:- Concrete in columns shall be poured to level of bottom of girder and allowed to settle for not less than 30 minutes nor more than 45 minutes before pouring concrete in girders.



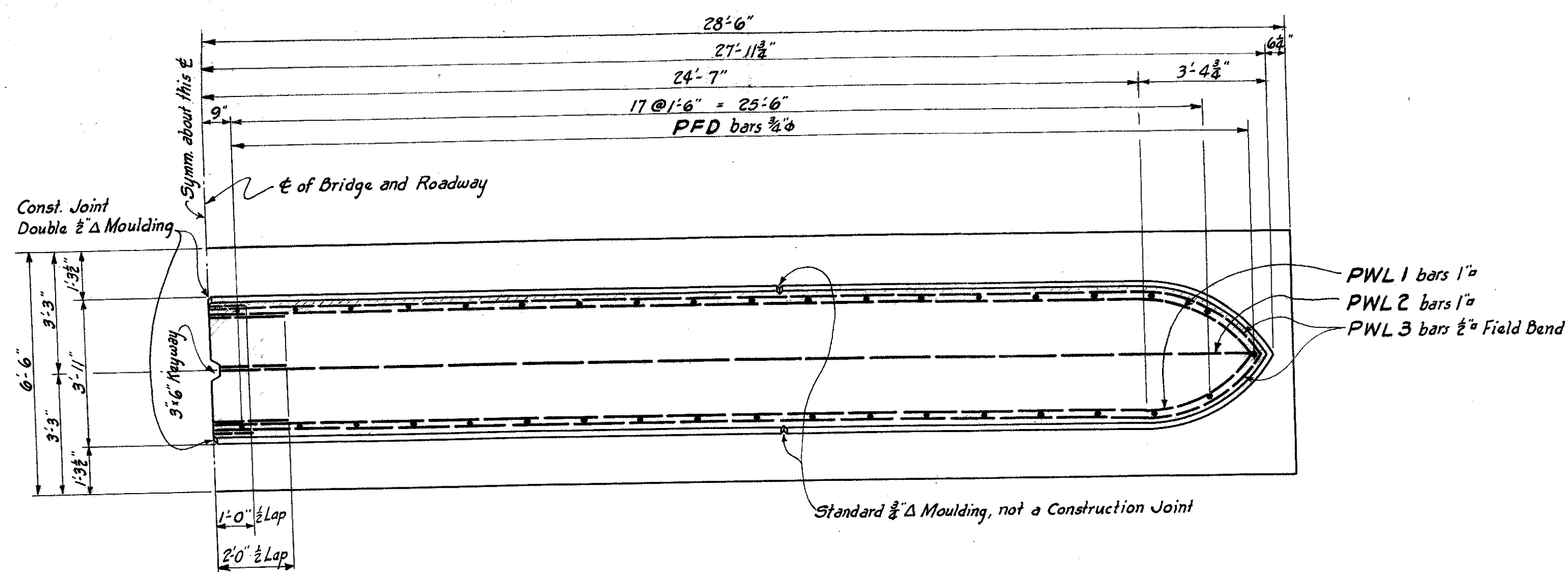
END ELEVATION

MICHIGAN STATE HIGHWAY DEPARTMENT
 SEC. 32. 5 N. R 15 E. COLUMBUS TWP. ST. CLAIR CO.
 BRIDGE NO. BI of 77-8-1 ROAD U.S. 25 FA. Proj. 36 ST. 138 + 90
 CROSSING BELLE RIVER 4 MILES N.E. OF RICHMOND

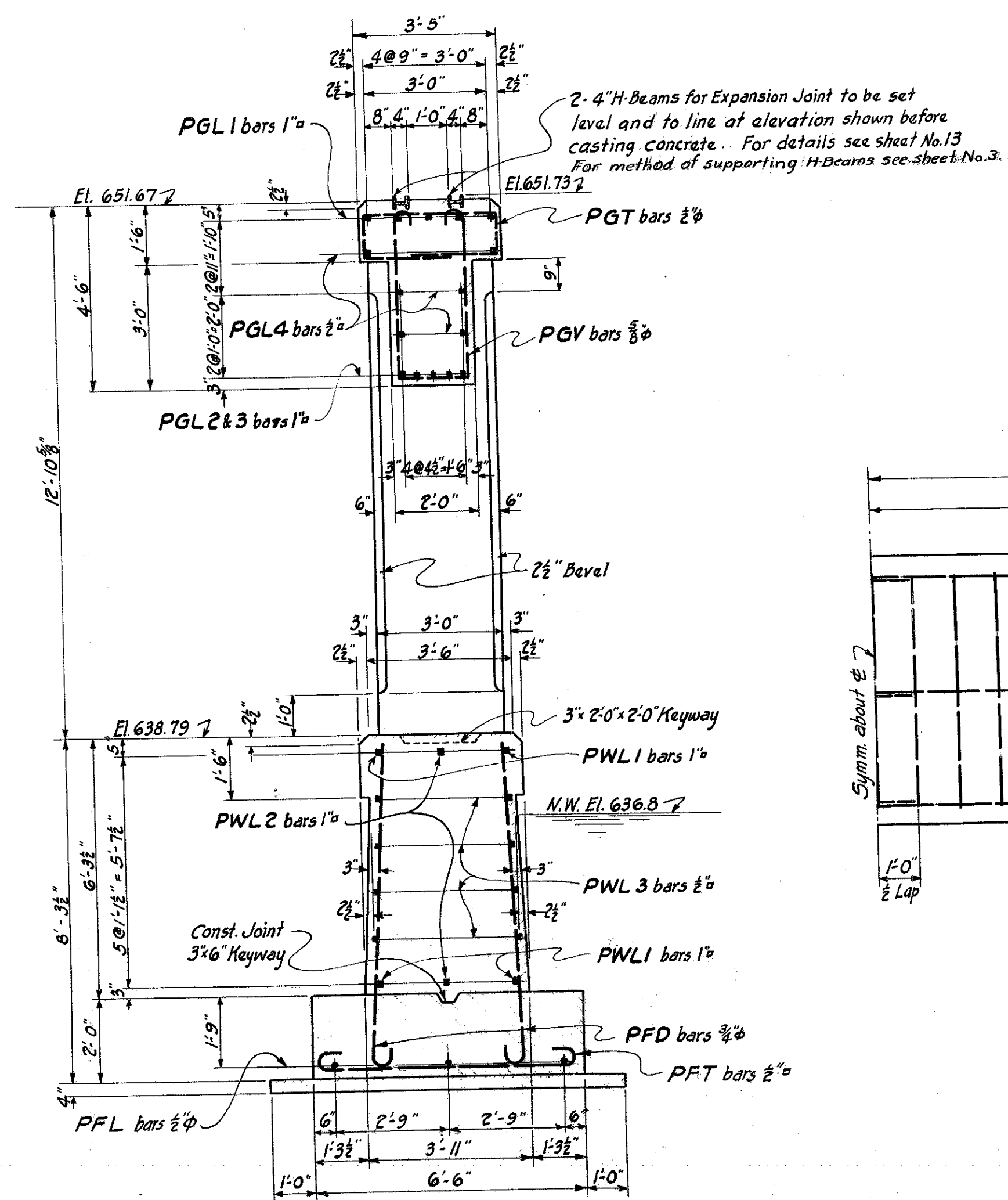
PIER DETAILS

APPROVED: H.W.S. [Signature] 3-12-31
 APPROVED: [Signature] 3-14-31

W.M. Stoughton	12/29/30
LIANG	12-11-30
MANCHESTER	12-11-30
ELIOTT	12-11-30
FHT	1-21-31
9	14

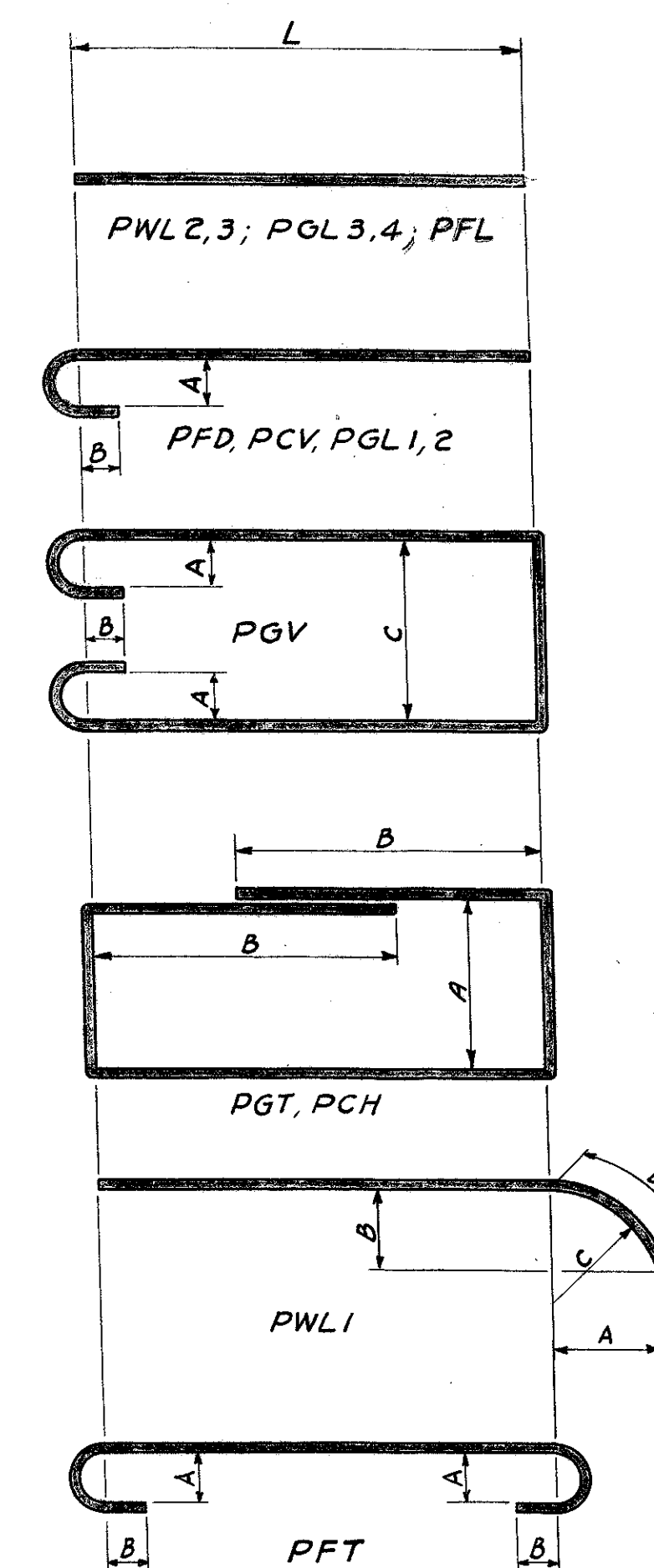


SECTION B-B
See Sheet No. 2



SECTION C-C
See Sheet No. 2

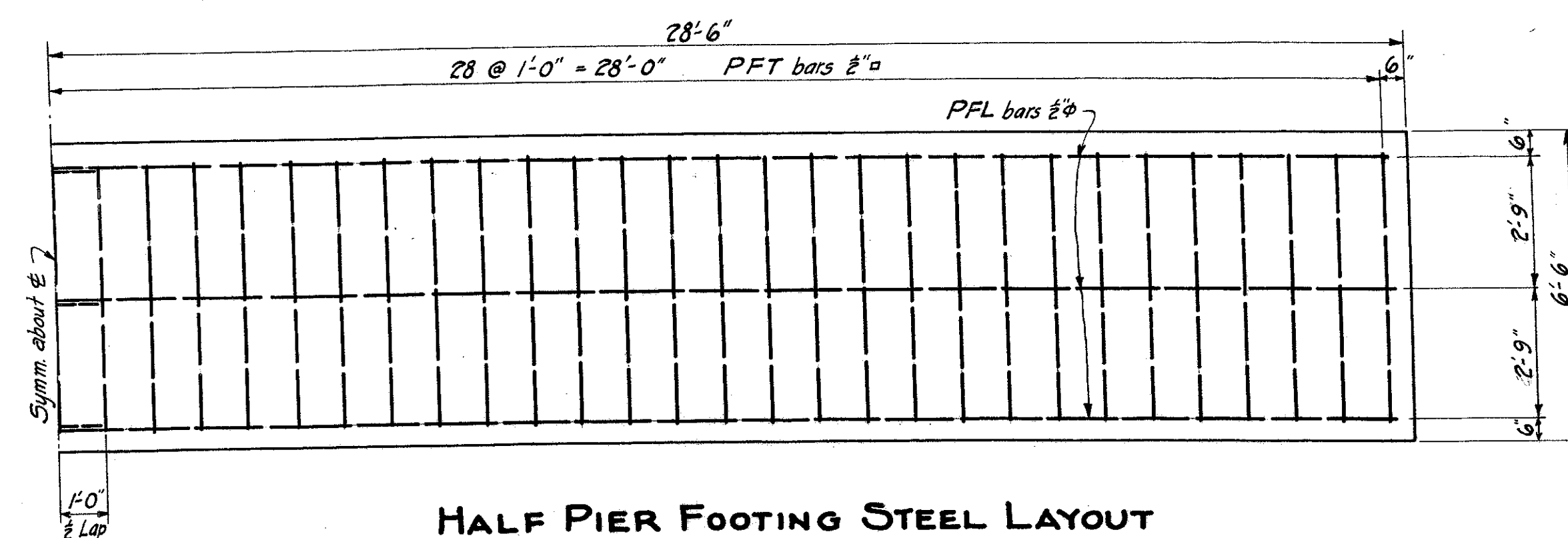
BAR BENDING DIAGRAM



PIER BAR LIST

LOCATION	MARK	L	A	B	C	D	KIND	SIZE	No.	LENGTH	WEIGHT
Footing	PFD	7'-6"	4 1/2"	3"			Def.	3/8"	74	8'-5 1/2"	938
	PFL	5'-8"	3"	2"			"	1/2"	57	6'-11"	335
	PFL	29'-3"					"	1/2"	6	29'-3"	117
Neat	PWL 1	26'-7"	3'-0 1/2"	1'-8 1/2"	3'-8"	3'-8"	"	1"	8	30'-3"	823
	- 2	29'-6"					"	1"	4	29'-6"	401
	- 3	29'-5"					"	1"	16	29'-5"	400
Columns	PCV	15'-5"	6"	4"			"	1"	48	16'-8"	2721
	PCH	2'-7"	2'-7"	2'-0"			"	1/2"	52	11'-9"	408
Girder	PGL 1	26'-1"	6"	4"			"	1"	10	27'-4"	929
	- 2	18'-5"	6"	4"			"	1"	10	19'-8"	669
	- 3	19'-4"					"	1"	5	19'-4"	329
	- 4	25'-5"					"	1/2"	12	25'-5"	259
	PGT	3'-2"	11 3/4"	2'-7"			"	1/2"	27	10'-2 1/2"	184
	PGV	3'-7 1/2"	3 3/4"	2 1/2"	1'-7"		"	5/8"	51	10'-4 1/4"	553
TOTAL										9066 #	

Bar Company Note: Lengths are computed from external dimensions as shown on Bar Bending Diagram.



PIER CONCRETE QUANTITIES

LOCATION	POUR	CUBIC YARDS	
		GRADE "A"	GRADE "B"
Subfooting	A		6.1
Footing	B		27.4
1/2 Neat	C	23.5	
1/2 Neat	D	23.5	
Columns & Girder	E	32.9	
TOTAL		79.9	33.5

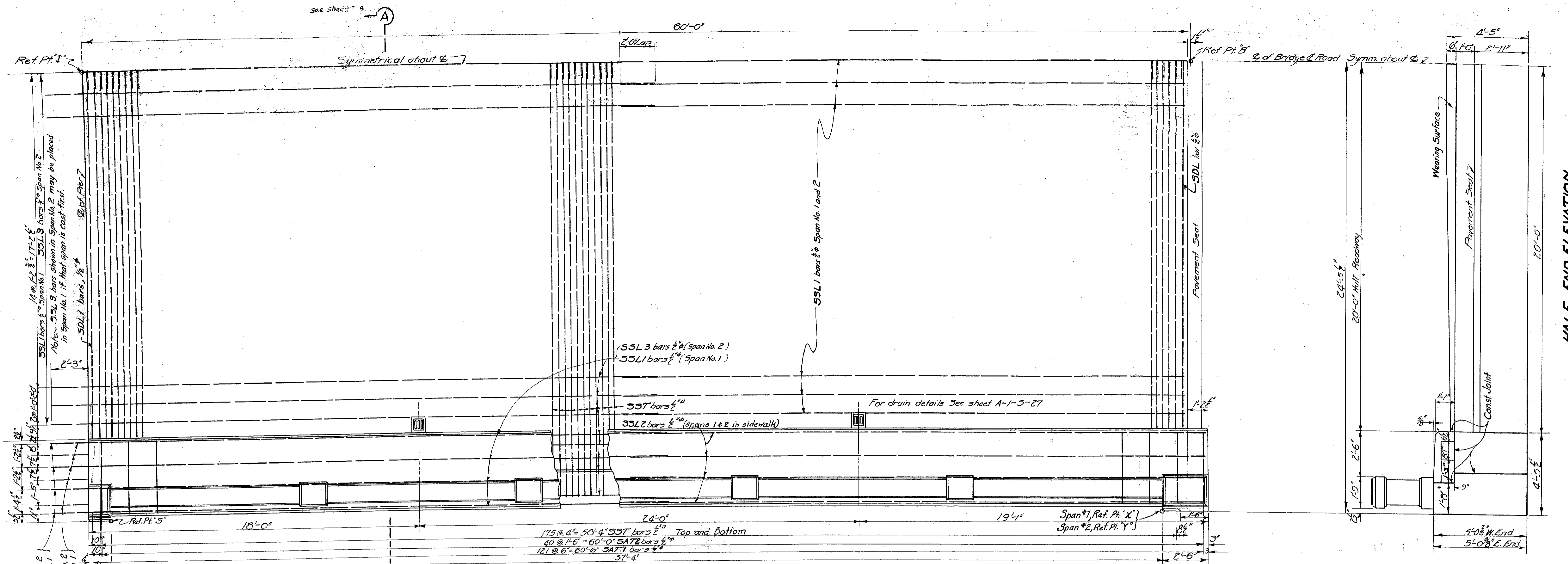
MICHIGAN STATE HIGHWAY DEPARTMENT

SEC. 32 T 5 N. R. 15 E. COLUMBUS TWP. ST. CLAIR
 BRIDGE FILE NO. B1 of 77-8-1 ROAD U.S. 25, F.A. Proj. 33 AT STA. 138+90
 CROSSING BELLE RIVER 4 MILES NE. OF RICHMOND

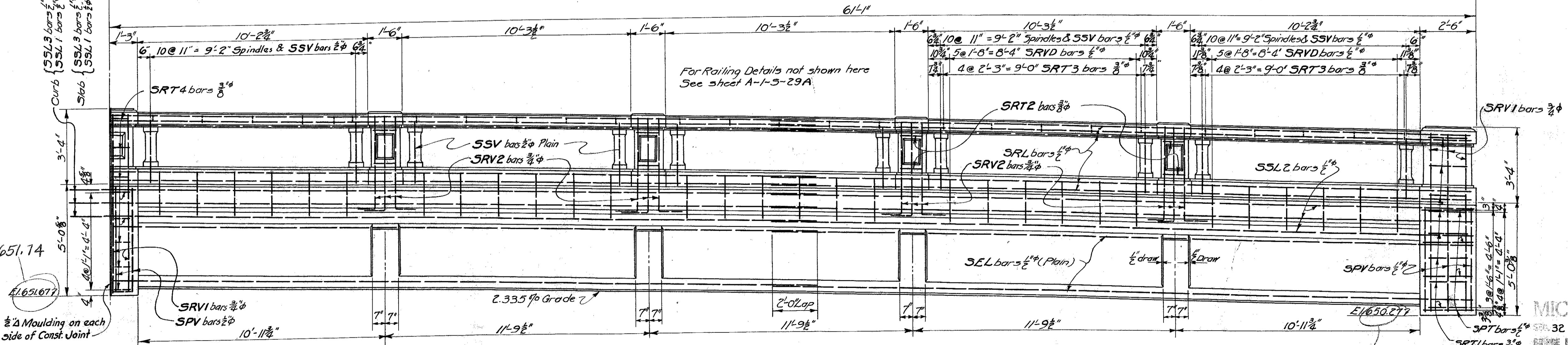
PIER DETAILS

APPROVED: N.W. Sheldon 3-12-31
 APPROVED: [Signature] 3-14-31
 APPROVED: G.A. Melch 3-14-31

DATE: 12-11-30
 FILE NO. 12-11-30
 PROJECT: E.H.T. 1-21-31
 SHEET: 10 OF 14



HALF PLAN OF SPAN NO. 2
Span No. 1 same except for longitudinal slab and curb bars



SOUTH-SIDE ELEVATION OF SPAN NO. 2

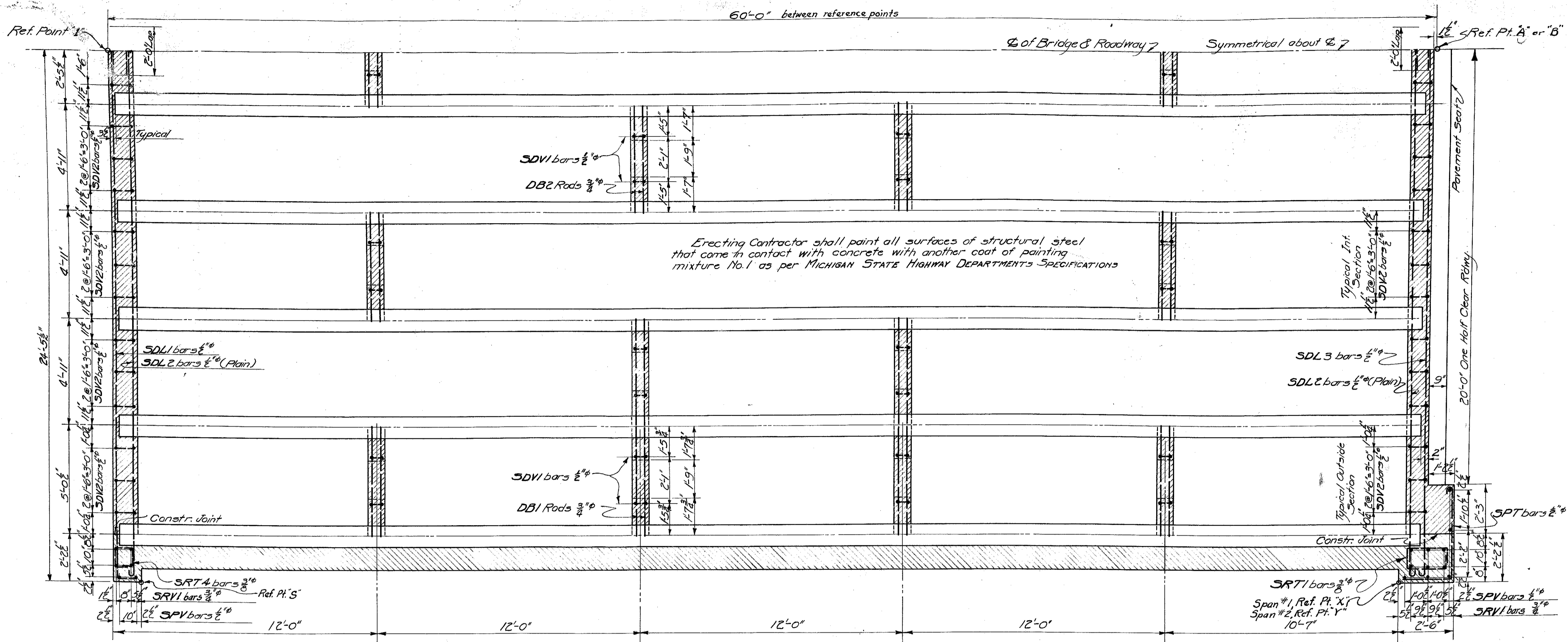
SUPERSTRUCTURE CONCRETE		
POUR	CU. YDS.	GRADE 'A'
	E. SPAN NO. 2	W. SPAN NO. 1
Diaphragms	7.3	7.3
Slab & Backwalls	67.2	67.2
Fascias	21.4	21.4
Curbs	7.4	7.4
Railings	8.2	8.2
Wearing Surface	40.8	40.5
Totals	152.3	152.0

These Quantities do not include 3.3 Cu Yds Grade 'A' concrete in 220 spindles

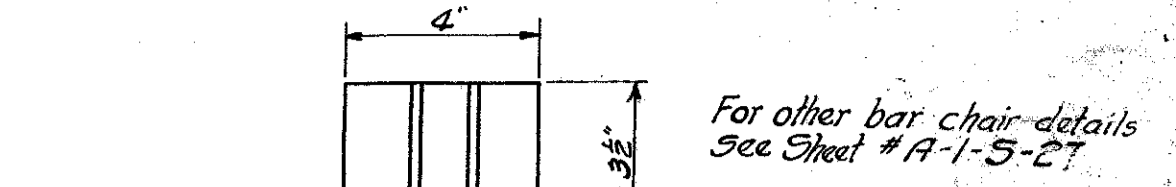
MICHIGAN STATE HIGHWAY DEPARTMENT
 500-32 T 5N. 3 15E. COLUMBUS TWP. ST. CLAIR CO.
 BRIDGE FILE NO. B10F 77-8-1 ROAD U.S. 25 F.A. Proj. 38 AT STA. 138+98.0
 CROSSING BELLE RIVER 4 MILES N.E. OF RICHMOND +87.04

SUPERSTRUCTURE DETAILS

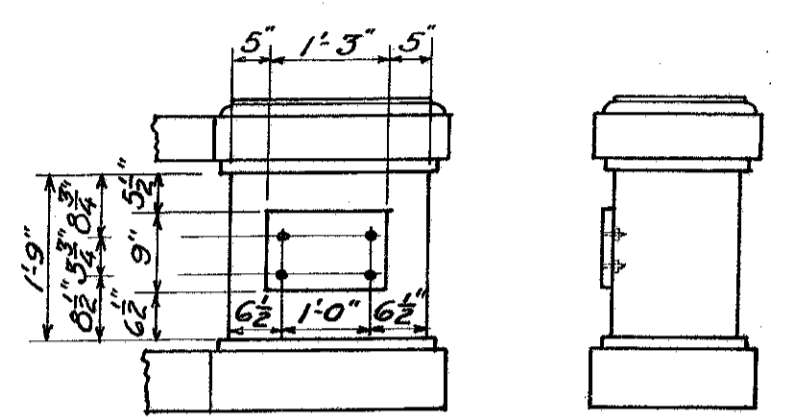
APPROVED: *H.W. Sheldon* 3-12-31
 DRAWN BY: *Stanbaugh*
 CHECKED BY: *Gladden* 12-12-30
 DESIGNED BY: *F. L. ...*
 DATE: 1-21-31
 SHEET: 11 14
 8-10P - B10F 77-8-1



HALF PLAN OF SPAN No. 1 OR No. 2
WITH SLAB REMOVED
Scale 3/8" = 1'-0"

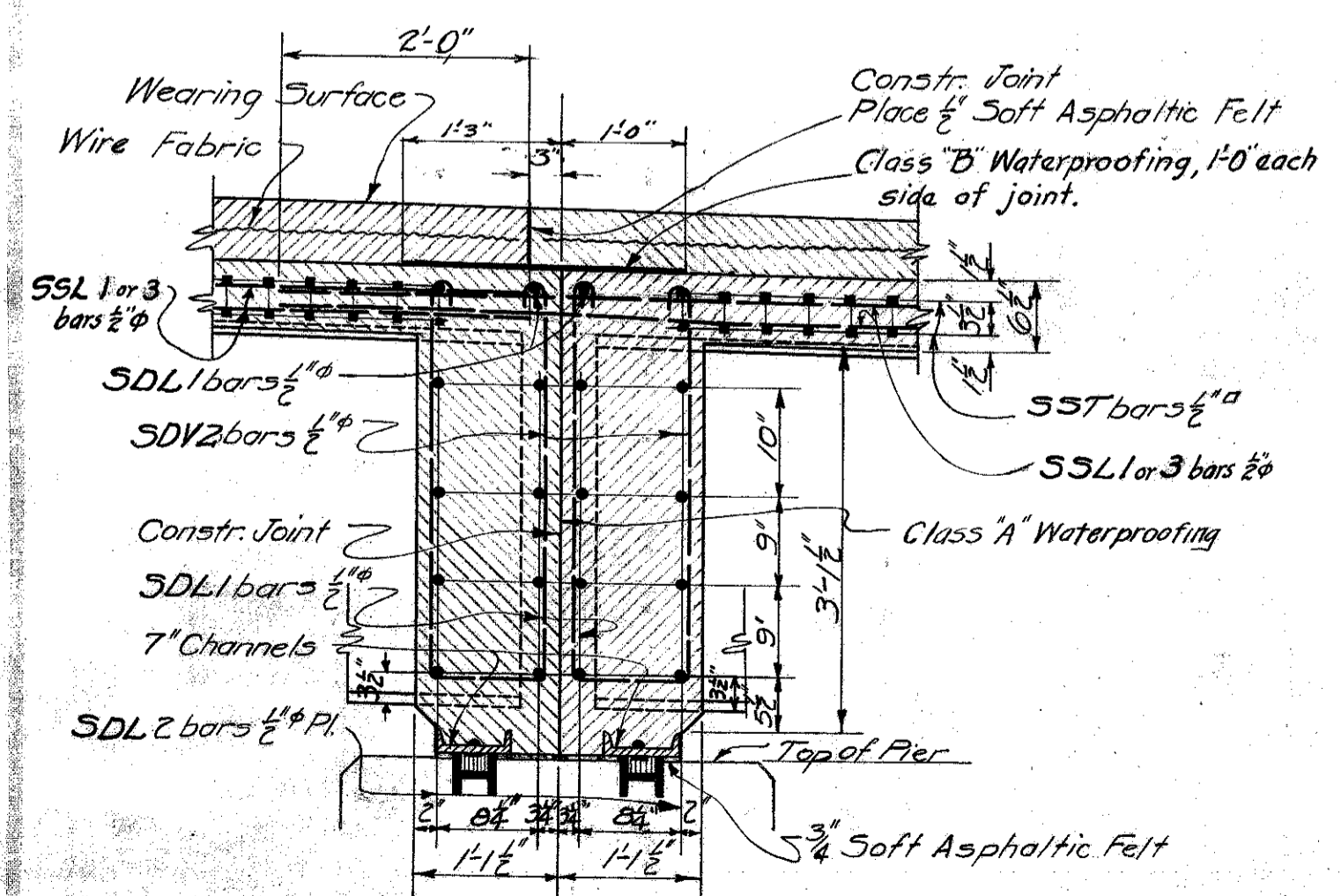


BAR CHAIR FOR OUTSIDE GIRDER
Maximum Spacing 4'-0"

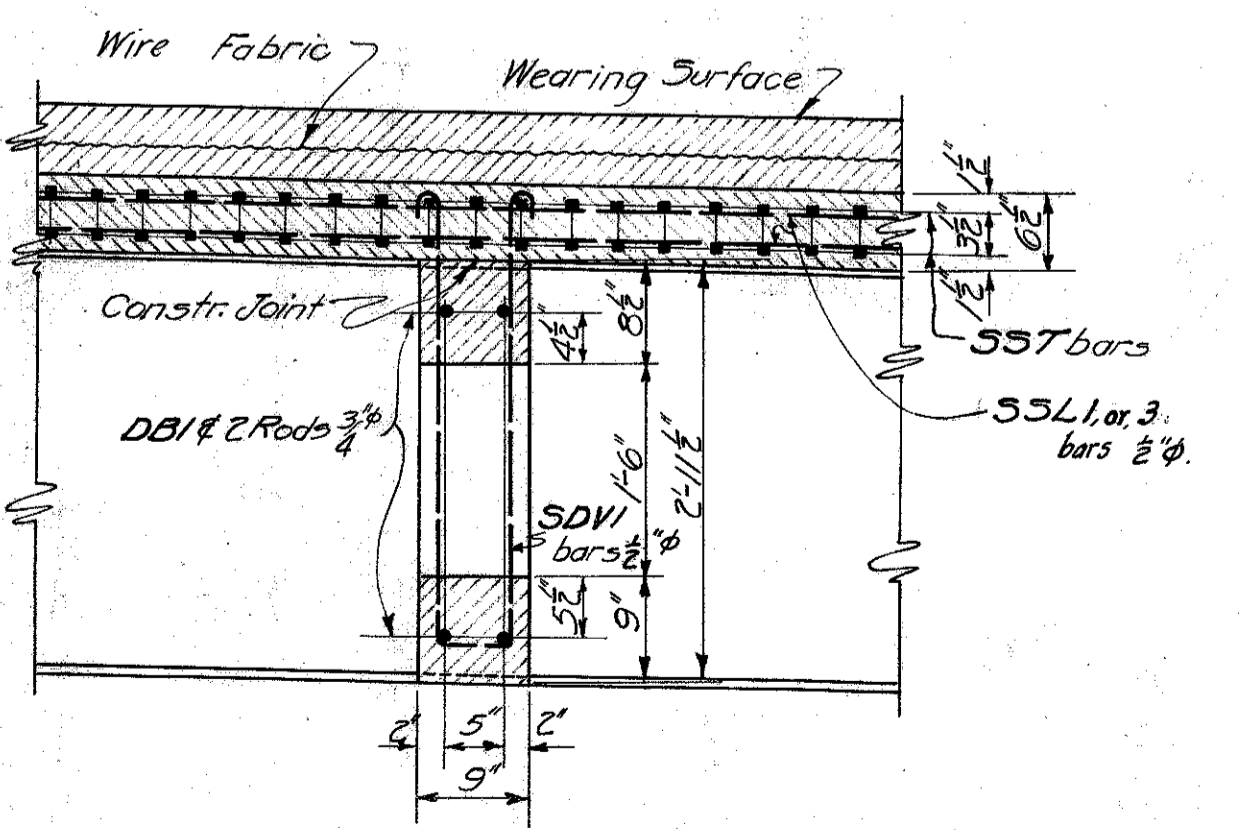


NAME PLATE DETAILS

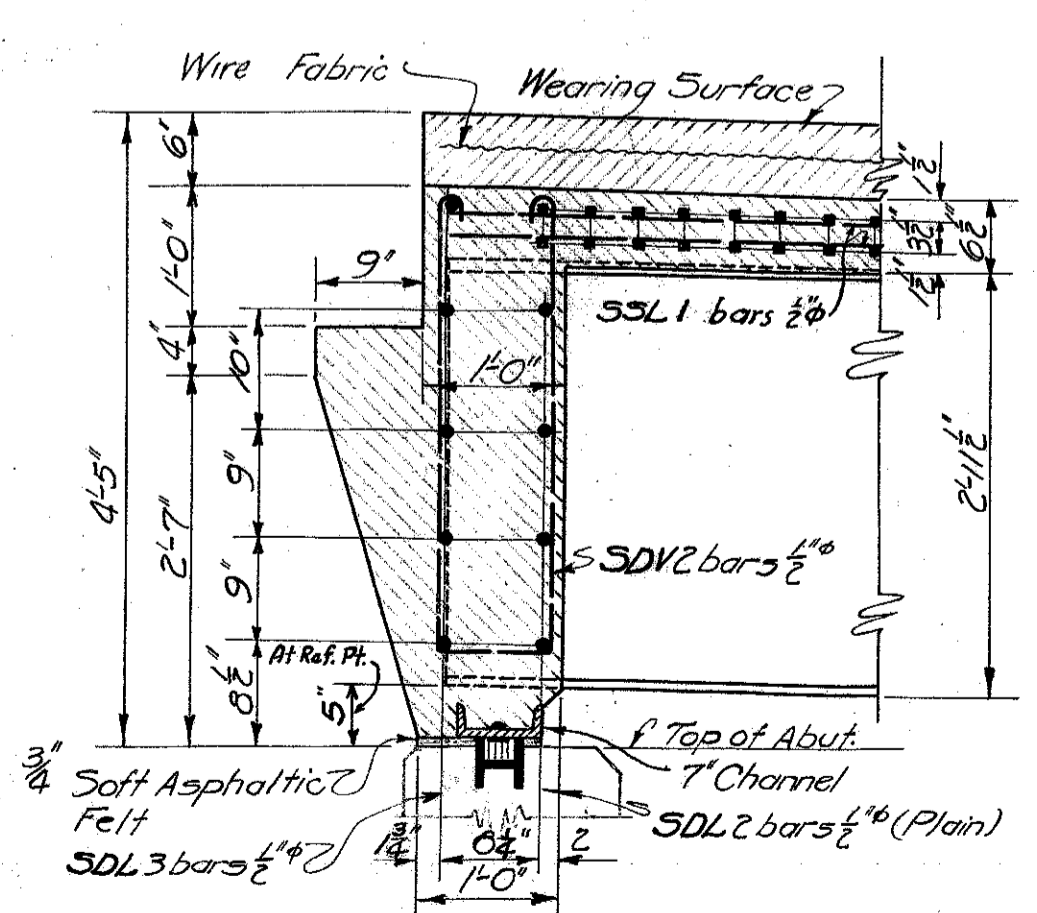
Name Plates shall be placed on the inside face of each right hand approach pilaster in the position shown. 1 1/2" x 3/8" deep holes shall be formed in the concrete in the position shown to receive name plates. 3/8" expansion anchors of approved type shall be set in holes drilled to template in the bottom of the formed holes when plates are set. Name plate to be set with sides parallel to vertical lines of pilaster.



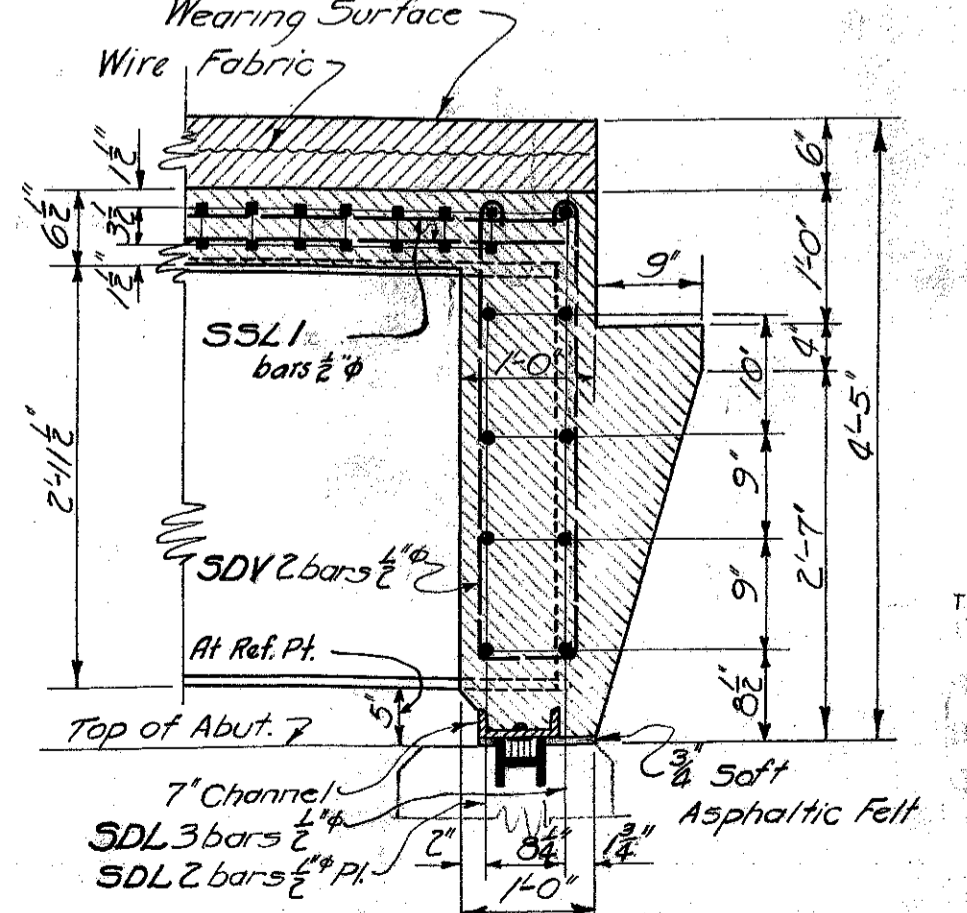
TYPICAL SECTION THRU PIER BACKWALLS



TYPICAL DIAPHRAGM SECTION
Scale 3/4" = 1'-0"



TYPICAL SECTION THRU WEST ABUTMENT BACKWALL
(AT E OF ROADWAY)

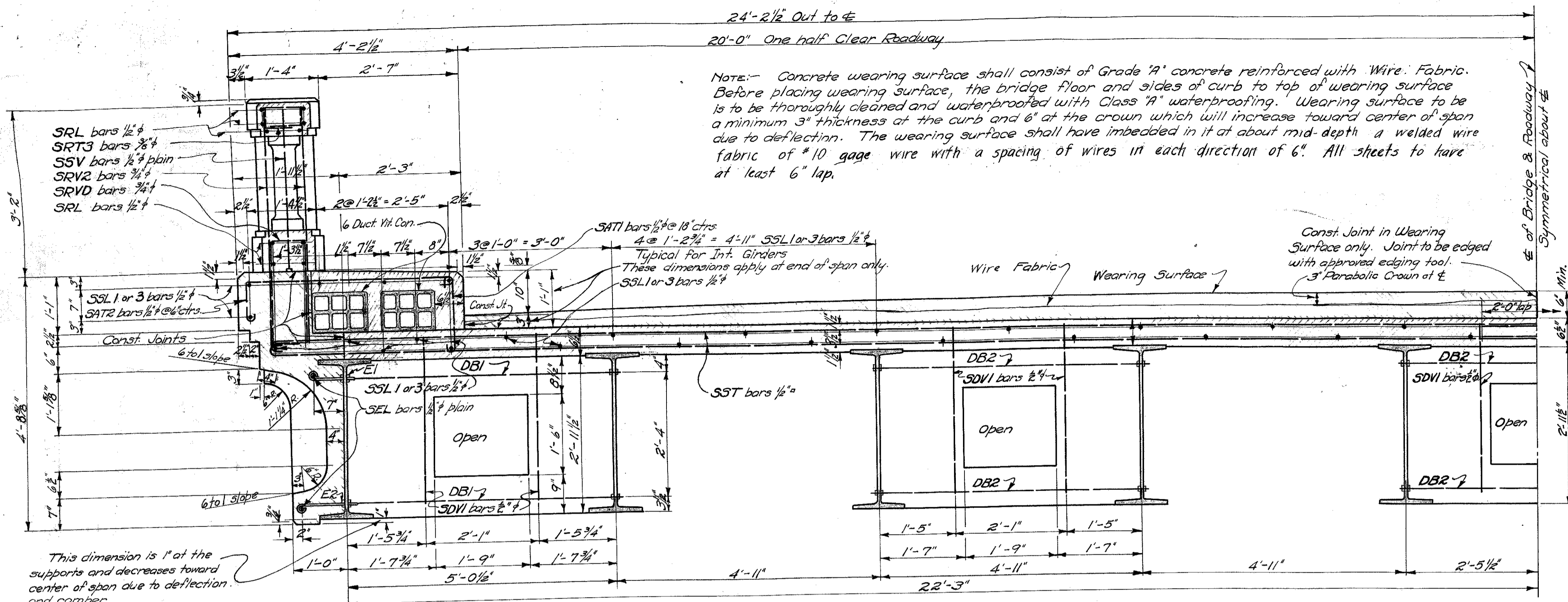


TYPICAL SECTION THRU EAST ABUTMENT BACKWALL
(AT E OF ROADWAY)

MICHIGAN STATE HIGHWAY DEPARTMENT
Rt. 32 75N. 15E. COLUMBUS TWP. ST. CLAIR
BRIDGE FILE # BIOF 77-8-1 ROAD U.S. 25, F.A. Proj. 33 AT STA. 138+90
CROSSING BELLE RIVER 4 MILES NE. OF RICHMOND 87.04

SUPERSTRUCTURE DETAILS

APPROVED: *H. W. Sheldon* 3-12-31
APPROVED: *W. H. Arnold* 11-26-30
APPROVED: *W. H. Arnold* 12-3-30
APPROVED: *W. H. Arnold* 1-21-31
APPROVED: *W. H. Arnold* 12-14-31

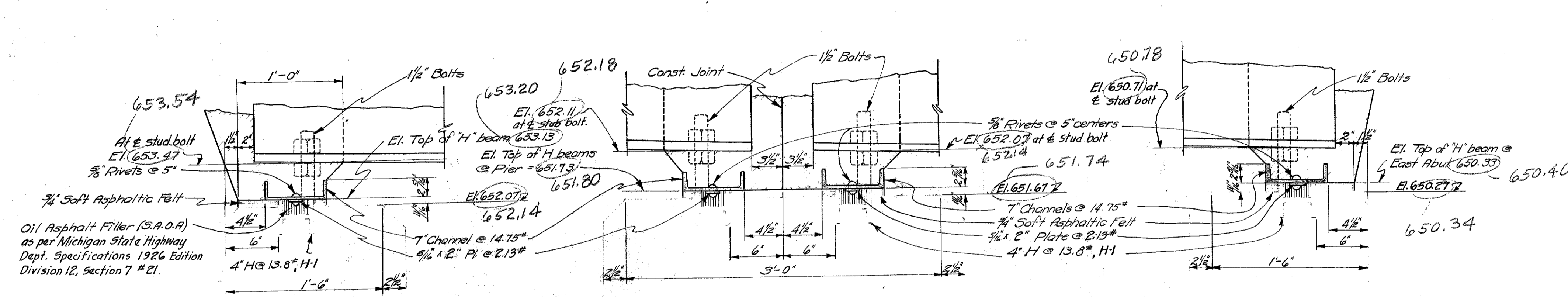


SECTION A-A THRU SUPERSTRUCTURE
SCALE 3/4" = 1'-0"

SUPERSTRUCTURE BAR LIST

LOCATION	MARK	A	B	C	L	MINI SIZE	LENGTH	SPAN No. 1 No. Weight	SPAN No. 2 No. Weight	TOTAL No. Weight
DIAPHRAGMS AND BICKWALLS	SDV1	3"	2"	6"	3'-1"	Def.	1/2" 7'-9"	44 227	44 227	88 454
	" 2	3"	2"	9"	3'-0"	"	1/2" 8'-0"	54 288	54 288	108 576
	SDL1	11"				"	2 1/2" 25'-3 1/2"	110 175	110 175	220 350
	" 2	3"	2"		25'-0"	Plain	2 1/2" 25'-7 1/2"	16 274	16 274	32 548
	" 3	3"	2"		25'-0"	Def.	2 1/2" 25'-7 1/2"	10 171	10 171	20 342
SLAB SLAB & SIDEWALK	SST	3"	2"		24'-6"	Def.	1/2" 25'-1 1/2"	704 15035	704 15035	1408 30070
	SSL1				30'-9"	"	1/2" 30'-9"	86 1764	86 1764	172 3528
	" 2				32'-0"	"	1/2" 32'-0"	20 427	20 427	40 854
	" 3				33'-3"	"	1/2" 33'-3"	53 1175	53 1175	106 2350
SIDEWALK AND FACIA	SAT1	3"	2"		1'-0"	Def.	1/2" 2'-3"	244 366	244 366	488 732
	" 2	3"	2"	7"	3'-10"	"	1/2" 5'-8"	82 310	82 310	164 620
	SEL				3'-5"	Plain	1/2" 3'-5"	8 168	8 168	16 336
	SRV1				8'-0"	Def.	3/4" 8'-0"	20 240	20 240	40 480
	" 2	2'-0"			4'-1"	"	1/2" 6'-1"	48 438	48 438	96 876
	SRVD	6"		7 1/2"	1'-11"	"	1/2" 5'-5 1/2"	60 492	60 492	120 984
	SPV				4'-10"	"	1/2" 4'-10"	14 45	14 45	28 90
	SPT	3"	2"	2'-1 1/2"	4'-0"	"	1/2" 6'-9"	8 36	8 36	16 72
RAILING	SRT1	9"		11"	1'-8"	Def.	3/8" 5'-9"	16 35	16 35	32 70
	" 2	7"			9"	"	3/8" 3'-11"	16 24	16 24	32 48
	" 3	6"			8"	"	3/8" 2'-5"	50 45	50 45	100 90
	" 4	7"			9"	"	3/8" 3'-9"	16 23	16 23	32 46
	SRL				31'-4 1/2"	"	1/2" 31'-4 1/2"	40 837	40 837	80 1674
SSV				2'-9 1/2"	Plain	1/2" 2'-9 1/2"	110 205	110 205	220 410	
TOTAL WEIGHT (Lbs.)								21625	21713	43338

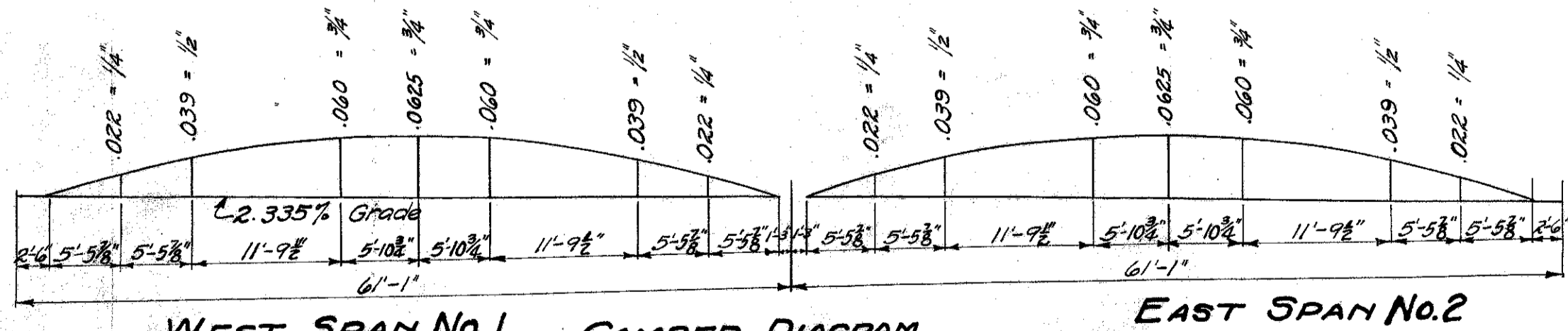
Bar Company Note: - Bar lengths are computed from external dimensions as shown on Bar Bending Diagram.



WEST ABUT. EXPANSION DETAILS
SCALE 1/2" = 1'-0"

PIER EXPANSION DETAILS

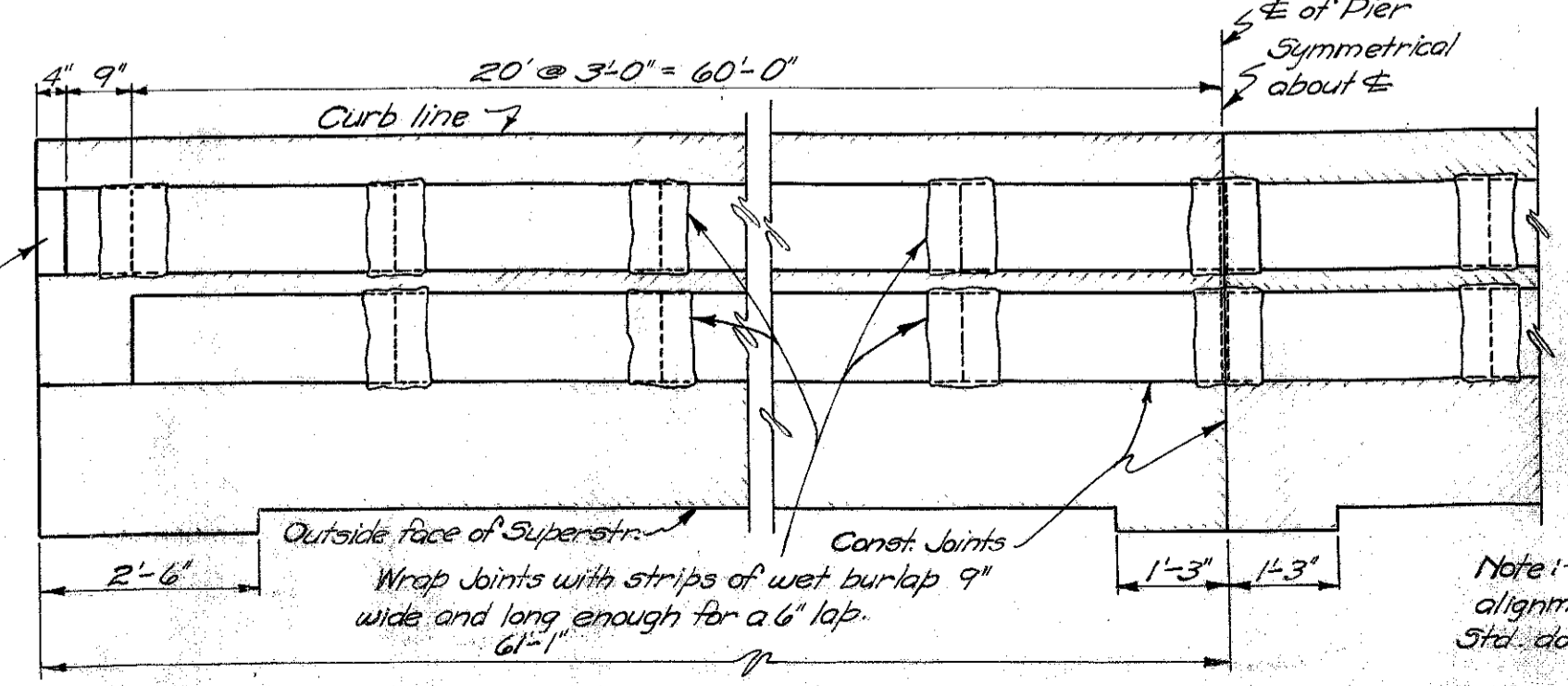
EAST ABUT. EXPANSION DETAILS
H-Beams to be held to line and elevation as shown before casting concrete.



WEST SPAN No. 1 CAMBER DIAGRAM

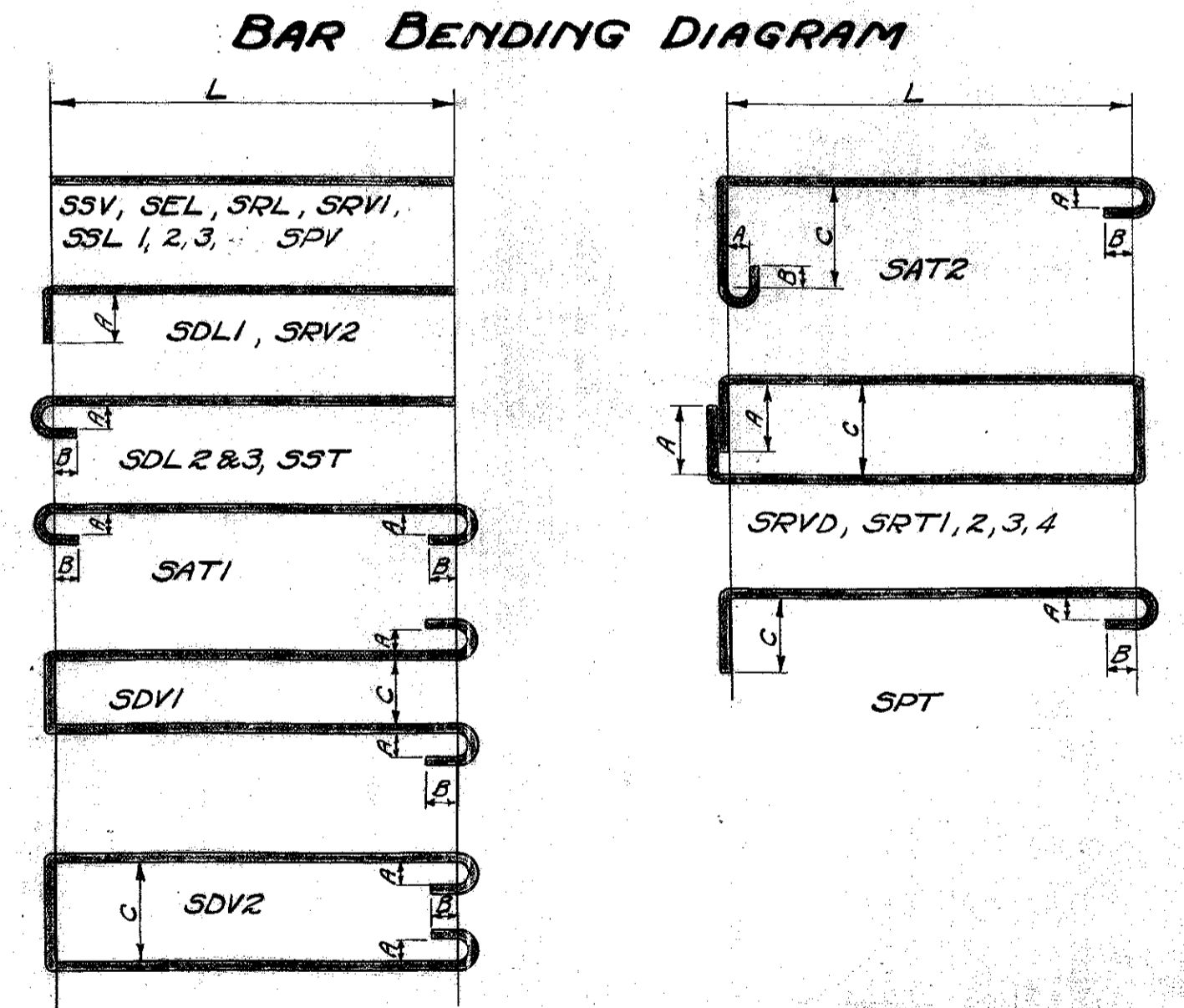
EAST SPAN No. 2

Add dimensions shown to elevations of top of curb and to all exterior fascia lines parallel to curb line. Crown of roadway to be cast to a true 2.335% Grade for full length of bridge.

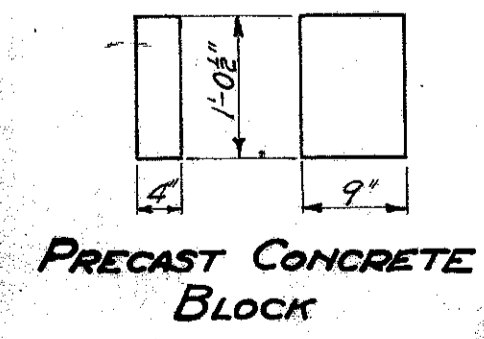


SECTION THRU SIDEWALK SHOWING LOCATION OF VITRIFIED CONDUITS

160 - 3'-0" - 6 duct A.T.&T. Std. Vit. Conduits Reg'd.
4 - 9" -
4 - Precast Concrete Blocks Reg'd.



BAR BENDING DIAGRAM



PRECAST CONCRETE BLOCK

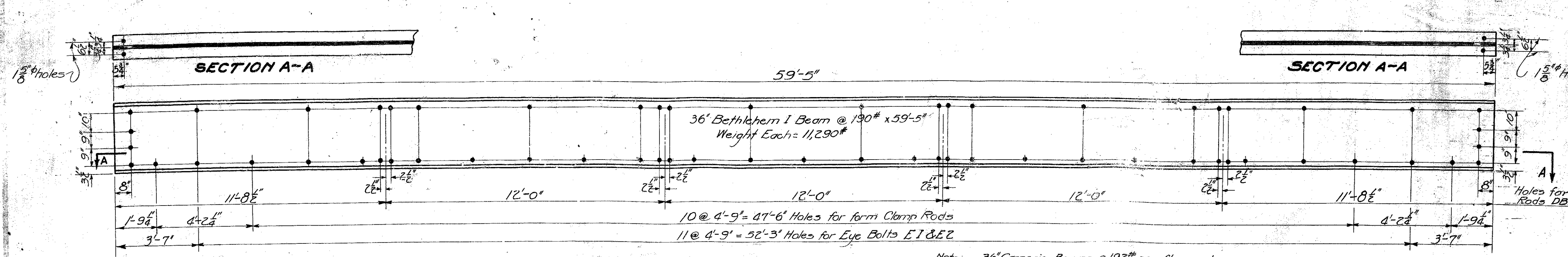
Note: - Conduits to be held in alignment by means of A.T.&T. Std. dowels at each joint.

MICHIGAN STATE HIGHWAY DEPARTMENT

327 5th St. N.E. COLUMBUS, MICH. ST. CLAIR
 ENGINEER: B. J. 77-8-1 BELLE RIVER U.S. 25, F.A. Proj. 38 at Sta. 138+00
 CROSSING: BELLE RIVER 4 MILES N.E. OF RICHMOND

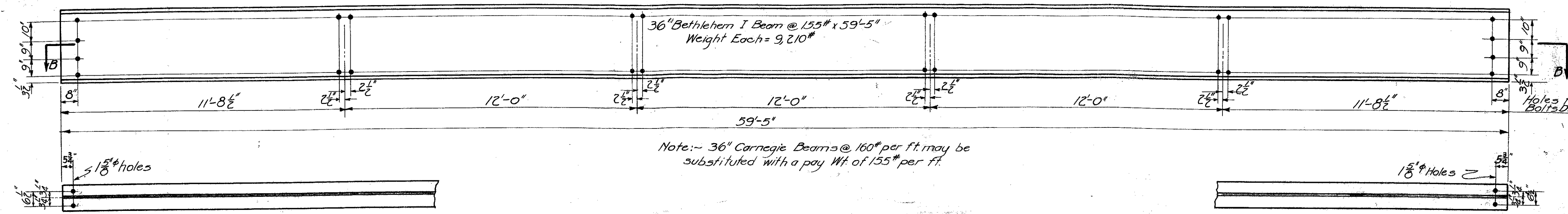
SUPERSTRUCTURE DETAILS

APPROVED: *H. H. Sheldon* 3-12-31
 APPROVED: *E. J. Arnold* 12-9-30
 APPROVED: *E. J. Arnold* 12-15-30
 APPROVED: *E. J. Arnold* 12-21-30
 13-14



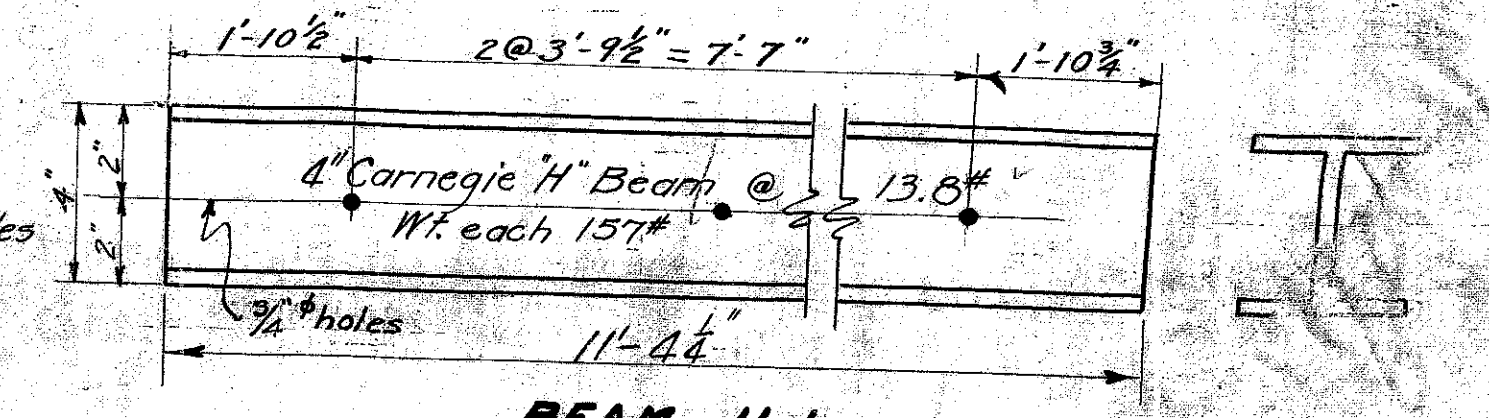
OUTSIDE GIRDER G-1
4 Req'd.

Note: - 36 Carnegie Beams @ 192# per ft may be substituted with a pay weight of 190# per ft.

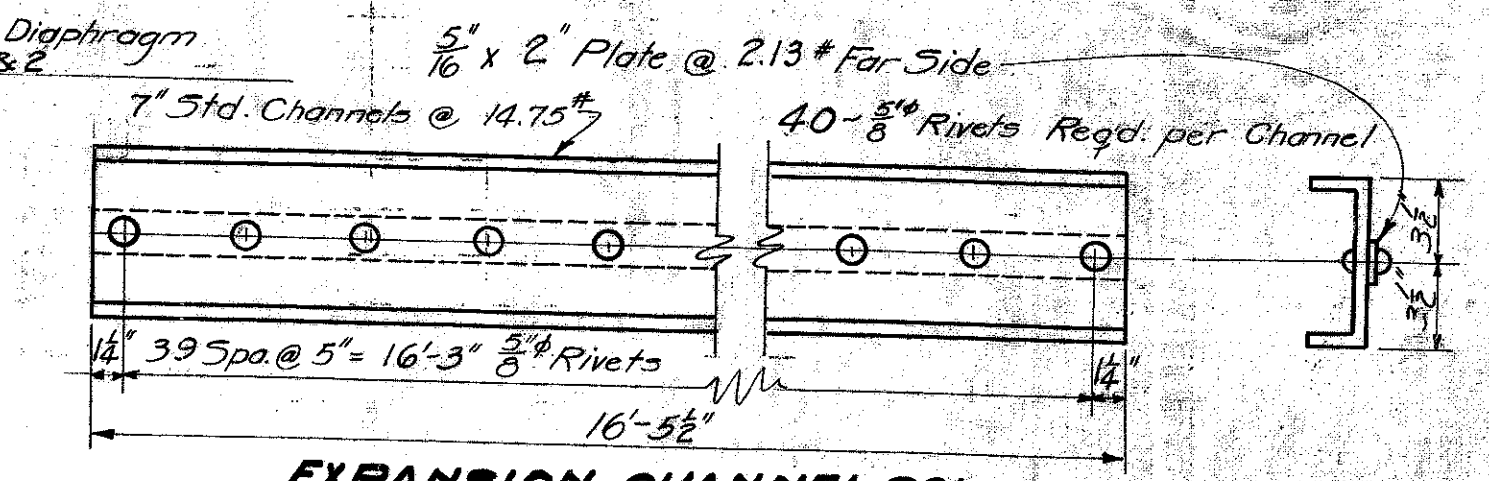


INSIDE GIRDERS G-2 16 Req'd.
Scale 3/8" = 1'-0"

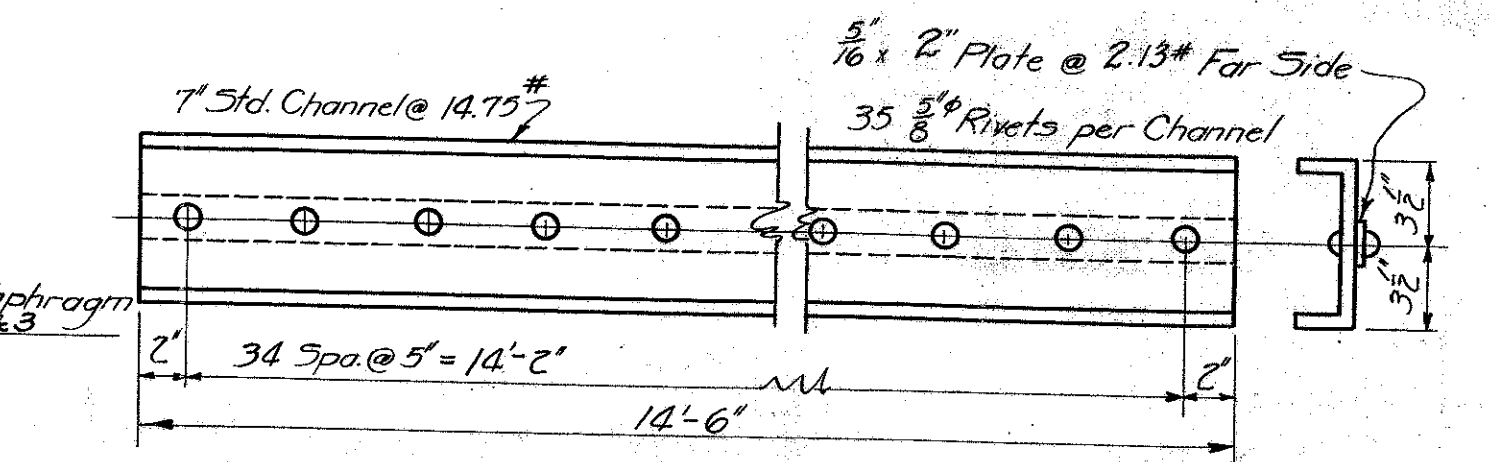
Note: - 36 Carnegie Beams @ 160# per ft may be substituted with a pay Wt of 155# per ft.



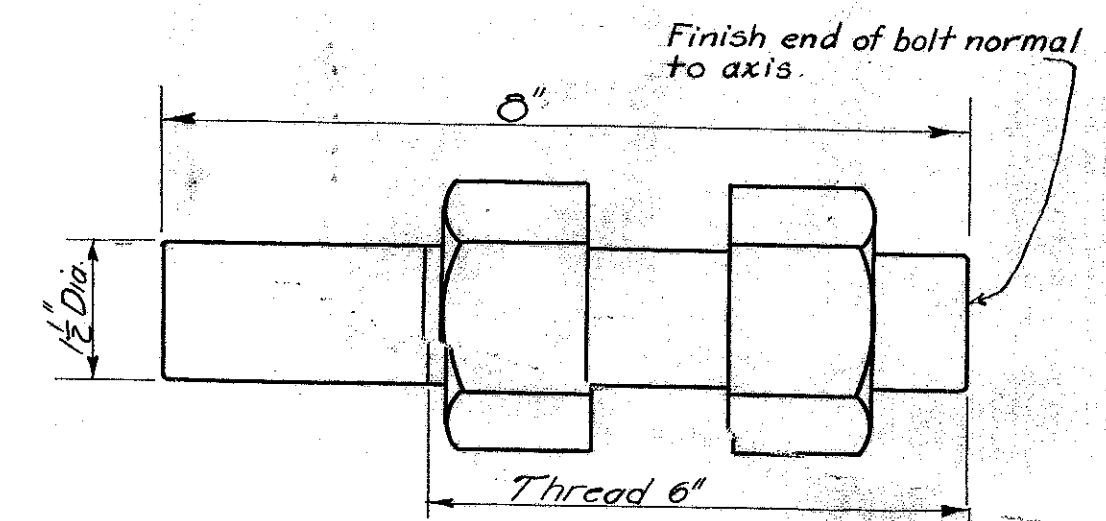
BEAM H-1
16 Req'd - Wt Each 157#



EXPANSION CHANNEL SC-1
4 Req'd. Wt Each = 284#

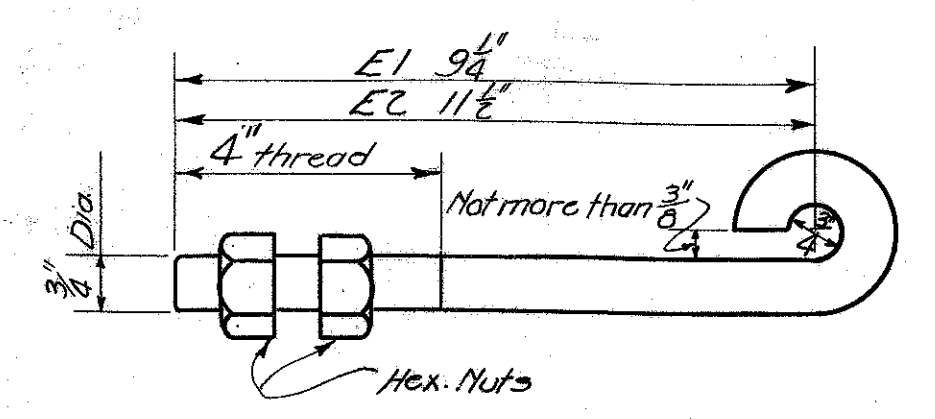


EXPANSION CHANNEL SC-2
8 Req'd. Wt Each = 250#

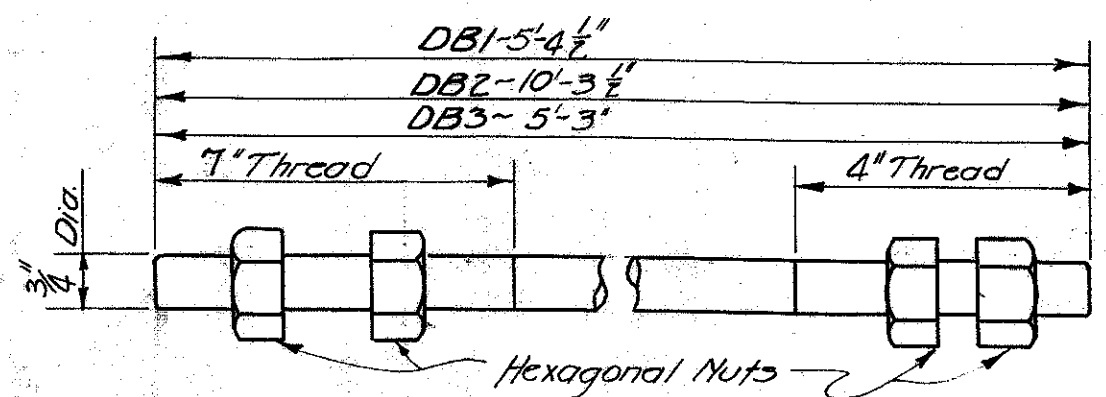


GIRDER BOLTS G-1
60 Req'd. Wt Each = 6.69#

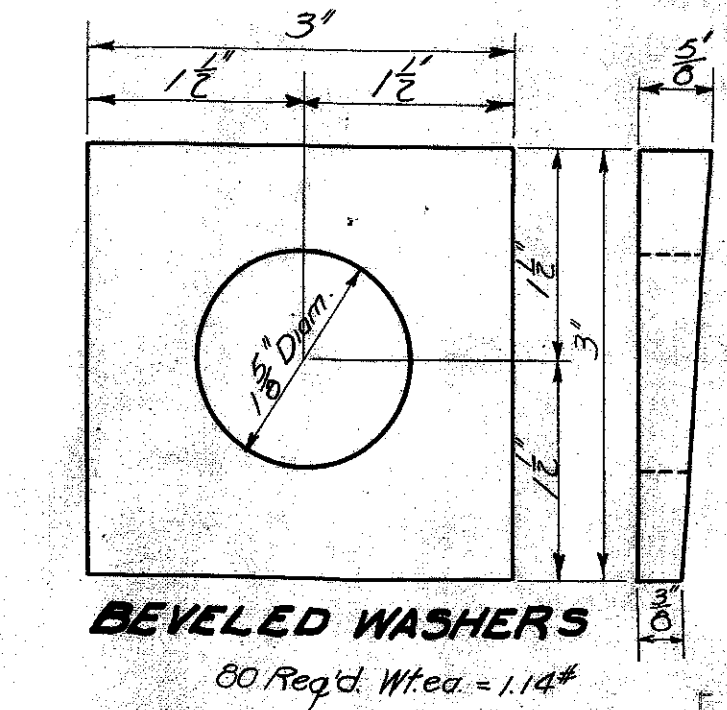
Note: to fabricator: G-1 may be threaded full length if desired.



EYE BOLTS E-1 & E-2
48 E1 Req'd. Wt. Each = 1.97
40 E2 " " " " = 2.25



DIAPHRAGM BOLTS DB-1-DB2-DB3
32 DB1 Required - Wt. Each = 8.82#
32 DB2 " " " " = 16.19#
60 DB3 " " " " = 8.64#

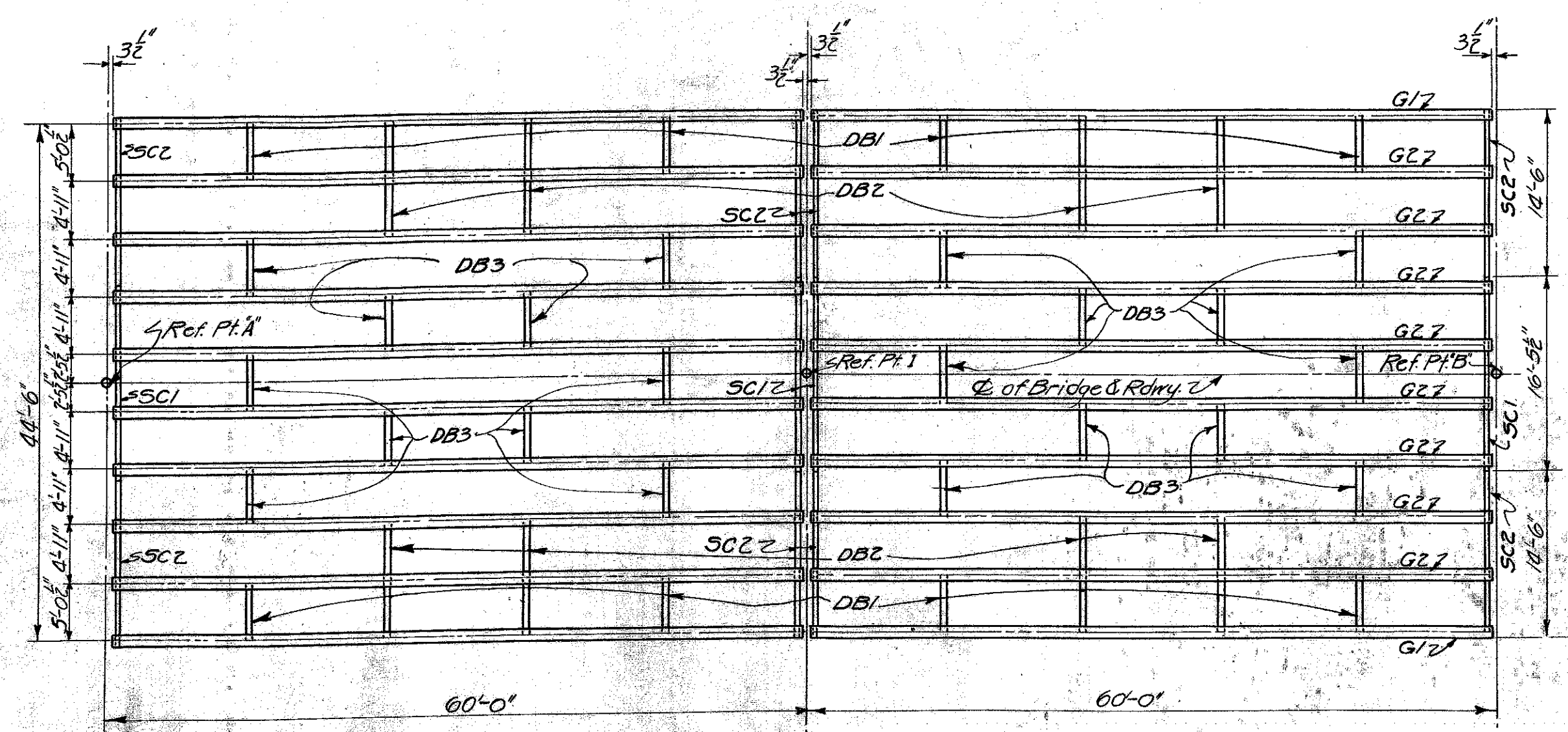


BEVELED WASHERS
60 Req'd. Wt ea. = 1.14#

BILL OF MATERIALS

MARK	DESCRIPTION	No.	WEIGHT
G-1	36' B.I.B @ 190#	4	45,160
G-2	36' " " @ 155#	16	147,360
H-1	4' Carnegie H Beam @ 138#	16	2,512
SC-1	Expansion Channel	4	1,136
SC-2	" "	8	2,000
DB-1	3/8" Diaphragm Bolt	32	282
DB-2	" "	32	518
DB-3	" "	80	691
E-1	3/8" Eye Bolt	48	95
E-2	" "	48	108
G-1	1 1/2" Girder Bolt	80	535
B.W.	Beveled Washer	80	91
Total			200,488#

Note: - All holes 1/8" except as otherwise noted.
All rivets 3/8".
Shop Paint, one coat of painting mixture No. 1 as per Michigan State Highway Department's Specifications.
Field paint is not a part of erection contract except as noted on sheet No. 12.
Secure all paint from Frazer Paint Co. Detroit, Mich.
Carnegie Beams as noted may be substituted for those detailed.
Details of all changes which may be required in Bevel Washers, Girder Bolts and Open Holes due to these substitutions, to be submitted to the Engineer for approval before fabrication.



STEEL ERECTION DIAGRAM

STRESS TABLE

MEMBER	MAXIMUM MOMENT IN FT. LBS.				MAXIMUM SHEAR IN LBS.				SECTION MODULUS Req'd. Prov.
	D.L.	L.L.	Imp.	Total	D.L.	L.L.	Imp.	Total	
G-1	126,000	85,000	24,000	835,000	49,300	8,700	2,500	60,500	626
G-2	420,000	227,000	65,000	712,000	28,600	23,300	6,600	58,500	534

Live Load: H-15 Loading in accordance with the Michigan State Highway Department's Standard Specifications for roads and bridges, Division B of 1928 Edition.

32 5N. 15E. COLUMBUS ST. CLAIR
BIOFTT-8-1 U.S. 25 FA. Proj. 38 138 * 10 + 87.04
BELLE RIVER 4 N.E. RICHMOND

STRUCTURAL STEEL DETAILS

APPROVED: A.W. Sheldon 5-2-31
APPROVED: C.P. Melick 3-14-31
M
14 1/4
8-10P - BIOFTT-8-1