

BILL OF MATERIAL

Location	Approx. Cu Yds. Concrete Grade A	Concrete Grade C	Reinforcing Steel (lbs)	Piles Reqd	For details see
N. Abutment	120.5	520	47		A-5-C-39
S. Abutment	120.5	520	47		A-5-C-39
Total	241.0	1040	94		

BILL OF REINFORCING STEEL FOR TWO ABUTMENTS

Mark	A	B	C	D	Length	No.	Size	Kind	Weight
A	4'-0"	3"	4 1/2"		5'-8"	46	3/8"	PL	391
B	6'-0"	3"	4 1/2"		7'-8"	50	3/8"	PL	575
C	27'-0"				27'-0"	4	1/2"	PL	74
Total									1040

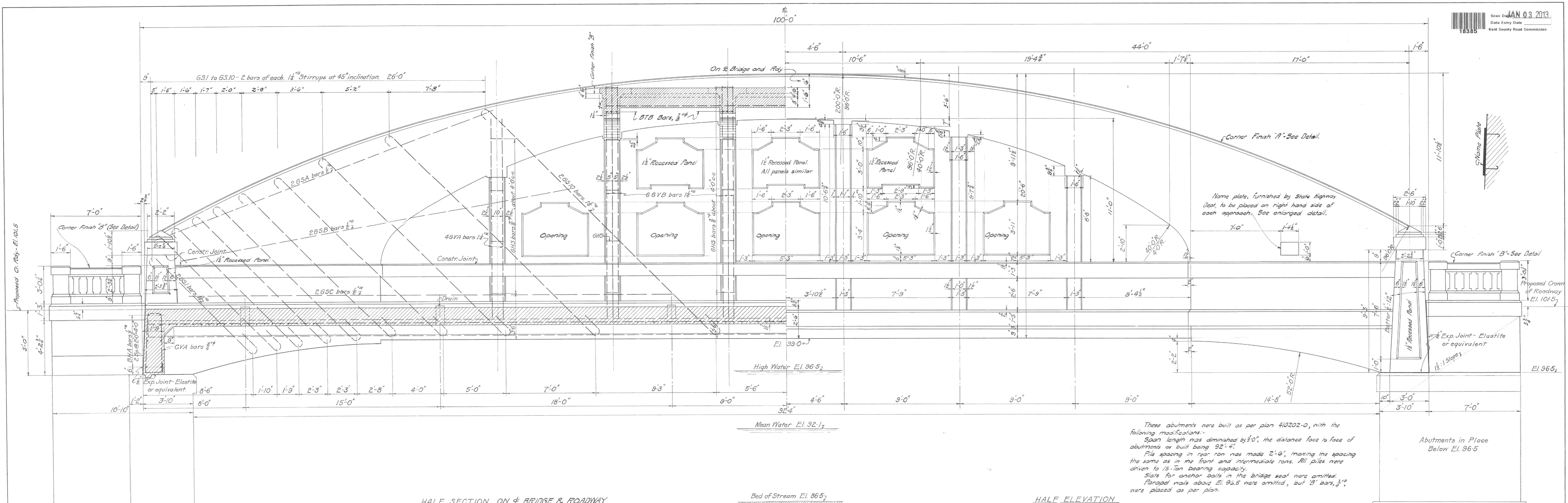
Notes:-  
 All material and workmanship to be in accordance with Michigan State Highway Department's Specifications for Steel and Concrete Highway Bridges, 1922 Edition.  
 All sections shown as distinct units, on these plans are to be poured in one continuous run.  
 No unscreened gravel will be permitted.  
 Piles will not be required unless ordered by the Engineer after excavations are made. If piles are required, they shall be driven to 12 tons capacity.  
 All the exposed surfaces are to be rubbed with carborundum brick in the manner prescribed and within the time specified in par 129 of the specifications.  
 Brass reference bars, 1/2" x 6" long, furnished by the State Highway Department are to be carefully set by the inspector in the positions shown, so as to project 1/8" out from the surface. After placing, the Inspector is to furnish a diagram showing the elevations of the bars and their distances from reference lines, using Monument Plan B-18-D-23.  
 The Contractor is to dismantle the old superstructure and remove the old abutments to the natural ground level, piling all salvaged material neatly on the bank as directed by the Engineer.  
 The Contractor will backfill both in front and behind the new abutments to the natural ground surface, and he will dispose of all excess excavated material as directed by the Engineer. Grading the approaches to the bridge is not a part of this contract.  
 The Contractor will make the channel change as indicated involving about 600 cu. yds. of excavation, material to be disposed of as directed by the engineer.

MICHIGAN STATE HIGHWAY DEPARTMENT.  
 SEC 31, T. 9 N. R. 11 W. ALGOMA TWP. KENT CO.  
 BRIDGE FILE NO. 410202 S.P. OVER ROUGE RIVER.  
**ABUTMENT DETAILS**  
 1-100' Low Truss. 18'-Roadway 2-18' Pl. Abutments

CORRECT *W.M. Omand*  
 APPROVED *W.M. Omand*  
 Bridge Engineer

Drawn by R.E.F. 7-1-22  
 Traced by R.E.F. 7-6-22  
 Checked by E.F.S. 7-21-22  
 Filed by G.V.E. 7-6-22



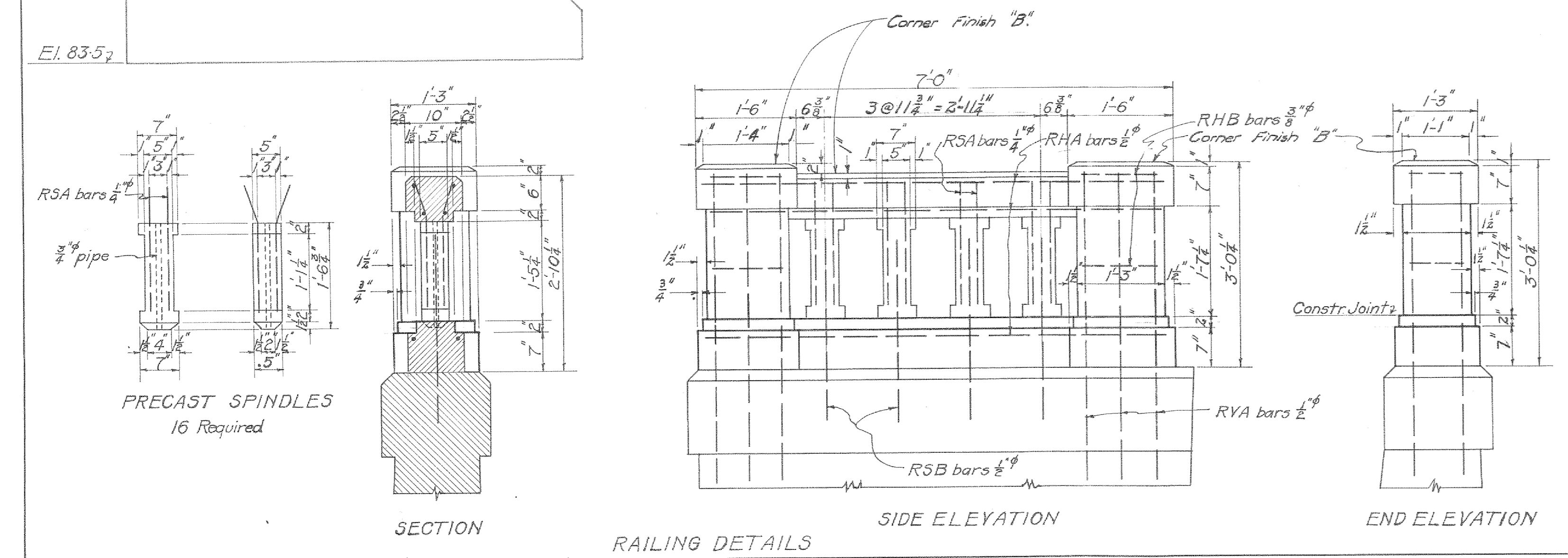
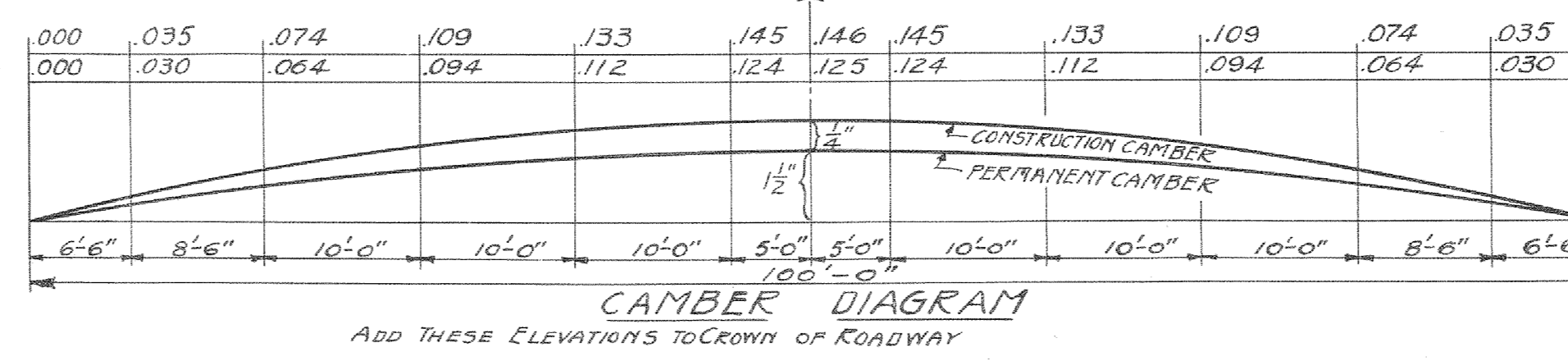


These abutments were built as per plan 410202-0, with the following modifications:-  
 Span length was diminished by 3'-0", the distance face to face of abutments as built being 92'-4".  
 Pile spacing in rear row was made 2'-6", making the spacing the same as in the front and intermediate rows. All piles were driven to 15-Ton bearing capacity.  
 Slots for anchor bolts in the bridge seat were omitted.  
 Parapet walls above El. 96.5 were omitted, but "B" bars, 3/8", were placed as per plan.

TABLE OF QUANTITIES

LOCATION	APPROX. CU. YDS. OF CONCRETE		REINF. STEEL	STRUCT. STEEL	FOR DETAILS SEE
	GRADE "A"	GRADE "B"			
SUPERSTRUCTURE	357.0		38951 <sup>#</sup>	30300 <sup>#</sup>	410202-1&2
ABUTMENT RAILING	2.1		325		410202-1
WING WALLS	11.2		74		410202-1&2
SITUATION PLAN					410202-0
TOTALS	370.3		39350 <sup>#</sup>	30300 <sup>#</sup>	
GRAND TOTAL FOR CONCRETE	382.3 cu. yd.				

NOTE:  
 All material and workmanship to be in accordance with Michigan State Highway Department's Specifications for Steel and Concrete Highway Bridges, 1922 Edition, revised.  
 All sections shown on these plans as distinct units are to be poured in one continuous run.  
 The bridge floor is to be cured by the ponding method, damming both ends of the bridge and sealing all drain openings and keeping the floor flooded with not less than 1 1/2" depth of water at all times during a two week's period after the pouring of any section of the floor.  
 The superstructure is not to be merely maintained, but is to be kept damp, using burlap or straw coverings and keeping the forms wet constantly for a period not less than two weeks after pouring any unit.

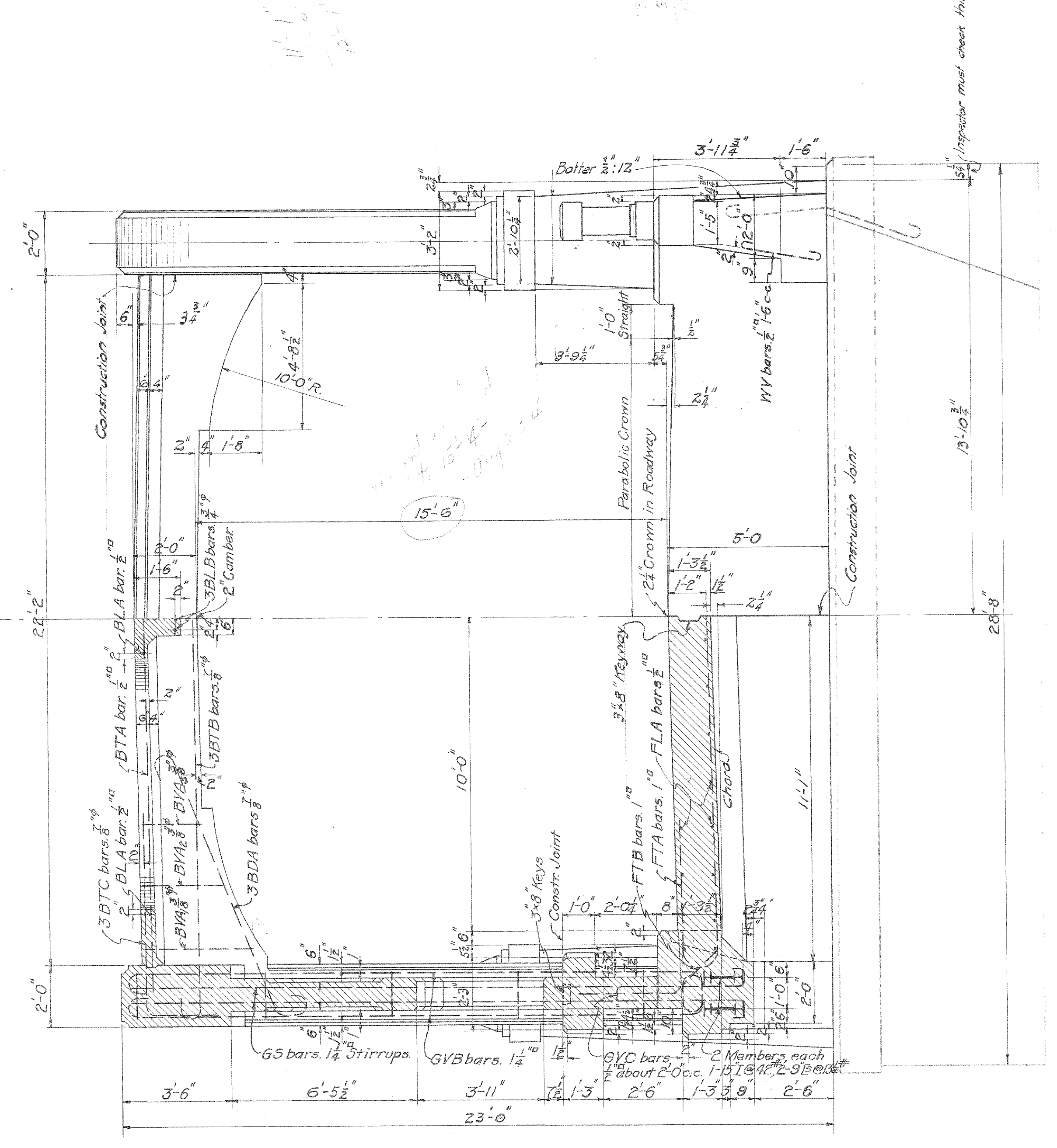
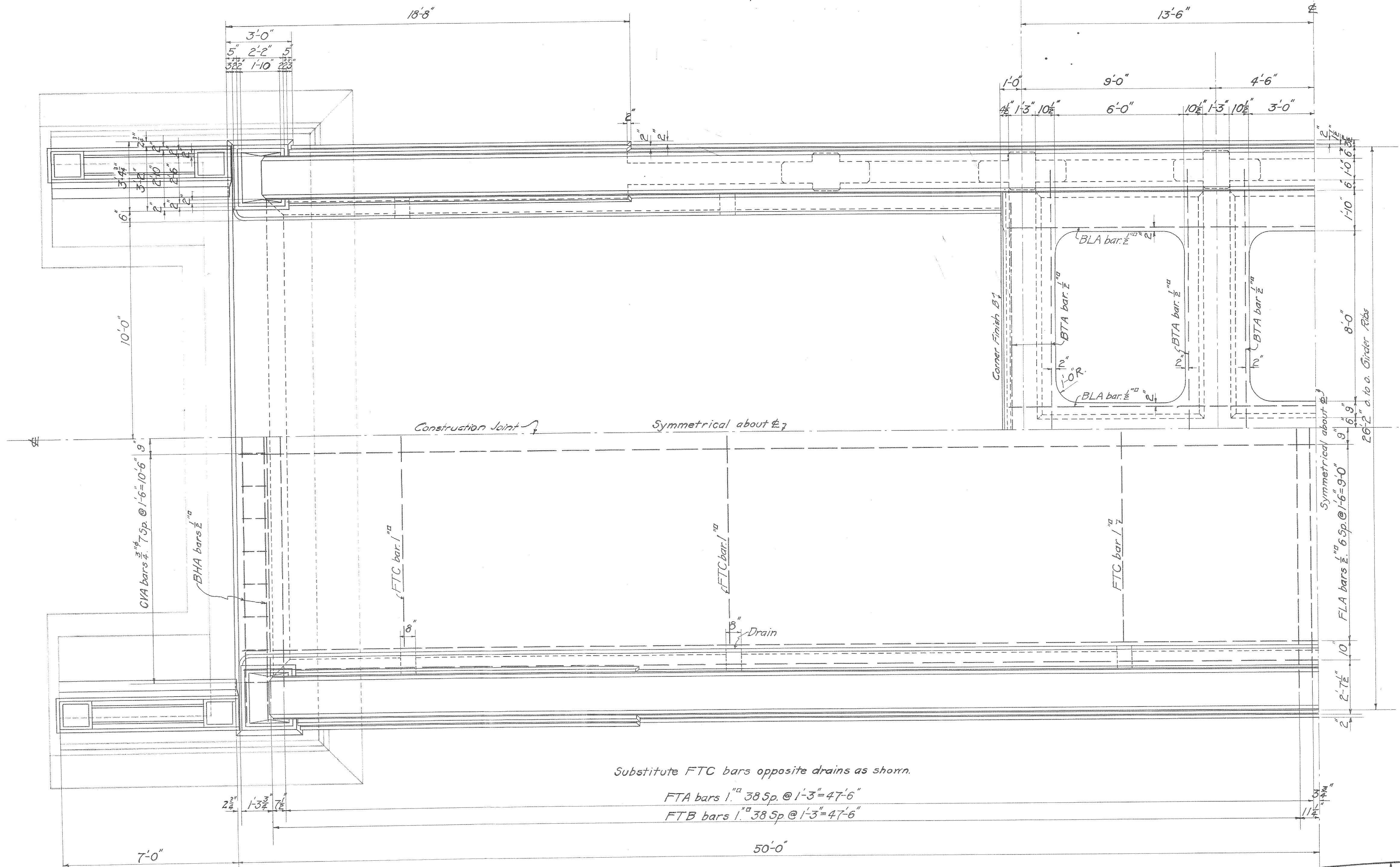


MICHIGAN STATE HIGHWAY DEPARTMENT  
 SEC. 31 T. 9 N. R. 11 W. ALGOMA TWP. KENT COUNTY  
 BRIDGE FILE NO. 410202 S.R. OVER ROUGE RIVER.  
 SUPERSTRUCTURE AND RAILING DETAILS.  
 1-100' REINF. CONC. GIRDER. 20' ROADWAY. 18' FI. CONC. ABUTMENTS.

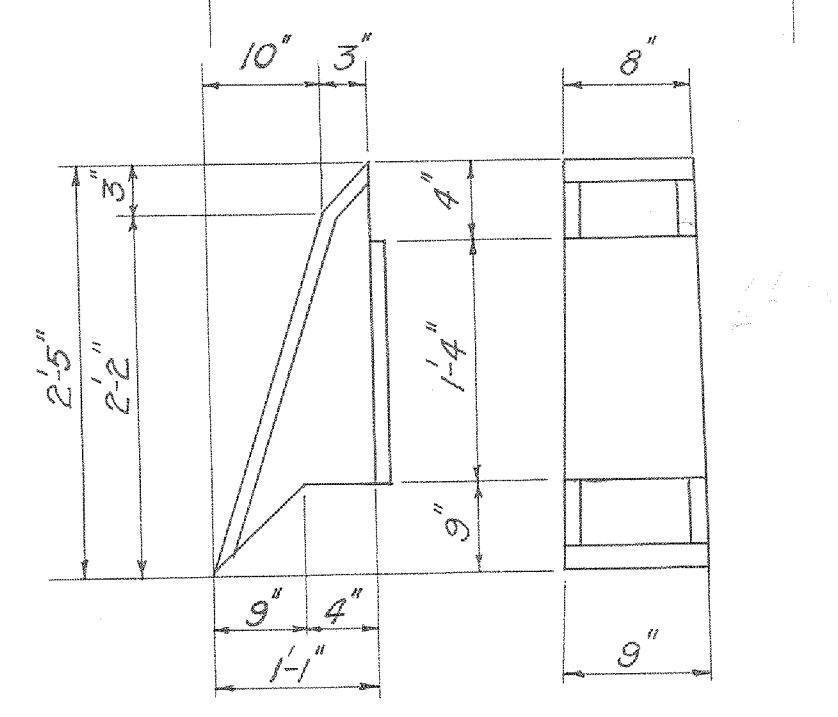
CORRECT \_\_\_\_\_ Asst. Bridge Engineer  
 APPROVED \_\_\_\_\_ Bridge Engineer  
 Drawn by \_\_\_\_\_  
 Traced by W.M.O. 6-5-23  
 Checked by C.V.E. 8-10-23  
 Filed by \_\_\_\_\_  
 410202 Sh. 1 of 3



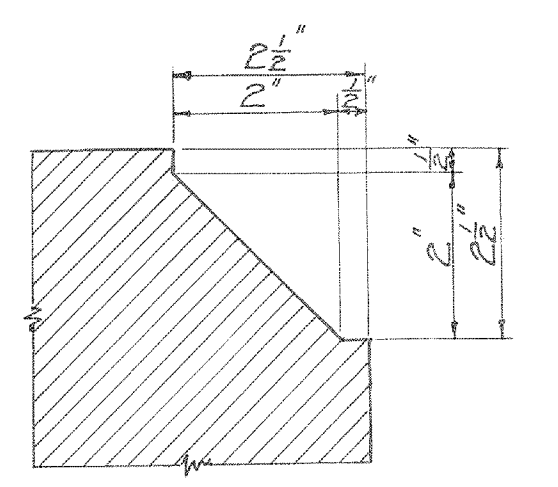
QUARTER PLAN



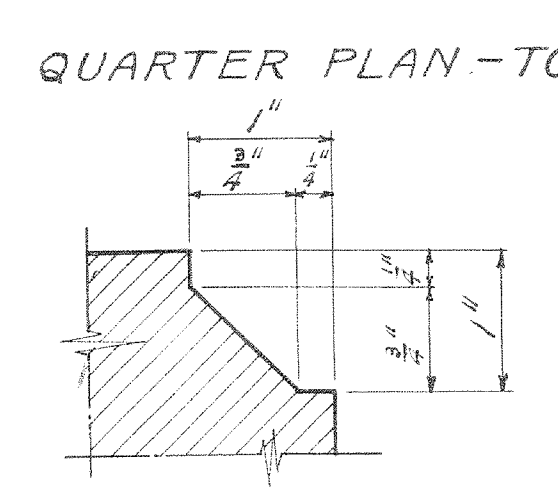
HALF END ELEVATION  
 HALF CROSS-SECTION AT SPAN



DETAIL OF DRAIN HOLE FORM

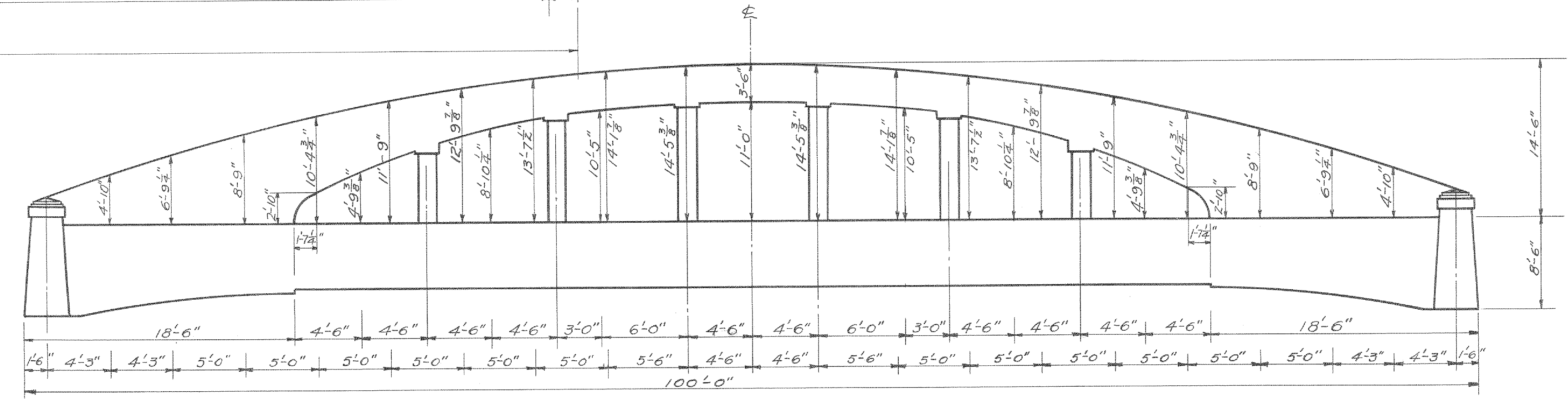


CORNER FINISH 'A'



CORNER FINISH 'B'

QUARTER PLAN - TOP BRACING OMITTED



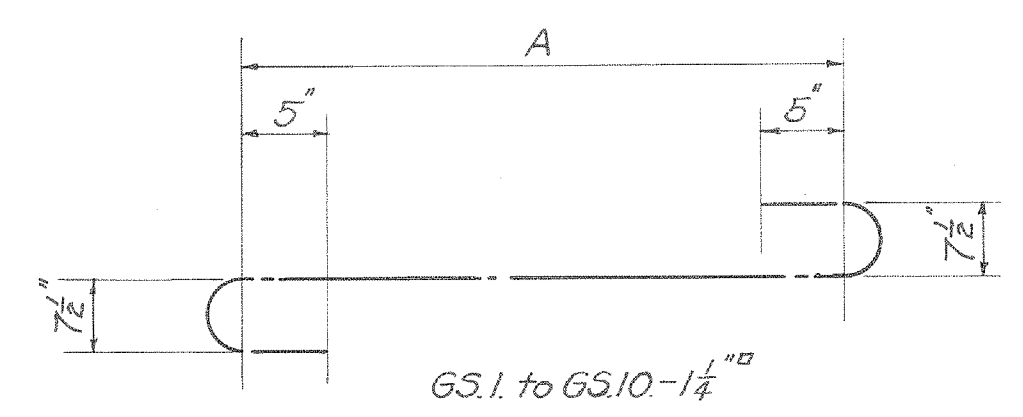
COORDINATES FOR LAYING OUT GIRDER FORMS

MICHIGAN STATE HIGHWAY DEPARTMENT  
 SEC. 31, T9N, R. 11W, ALGOMA TWP, KENT COUNTY.  
 BRIDGE FILE NO. 410202 S.R. OVER ROUGE RIVER.  
 SUPERSTRUCTURE DETAILS.  
 1-100' REINF. CONC. GIRDER. 20' ROADWAY 18' PL. CONC. ABUTMENTS.

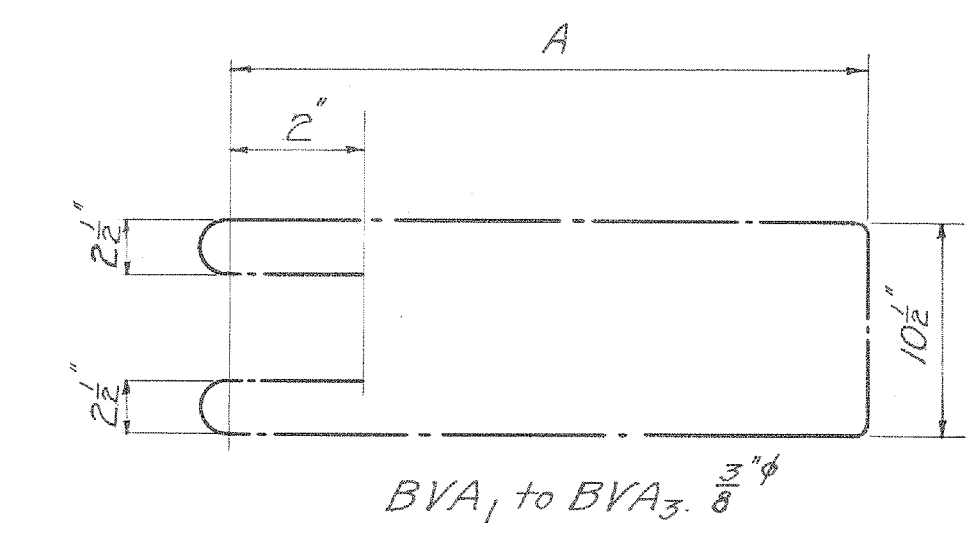
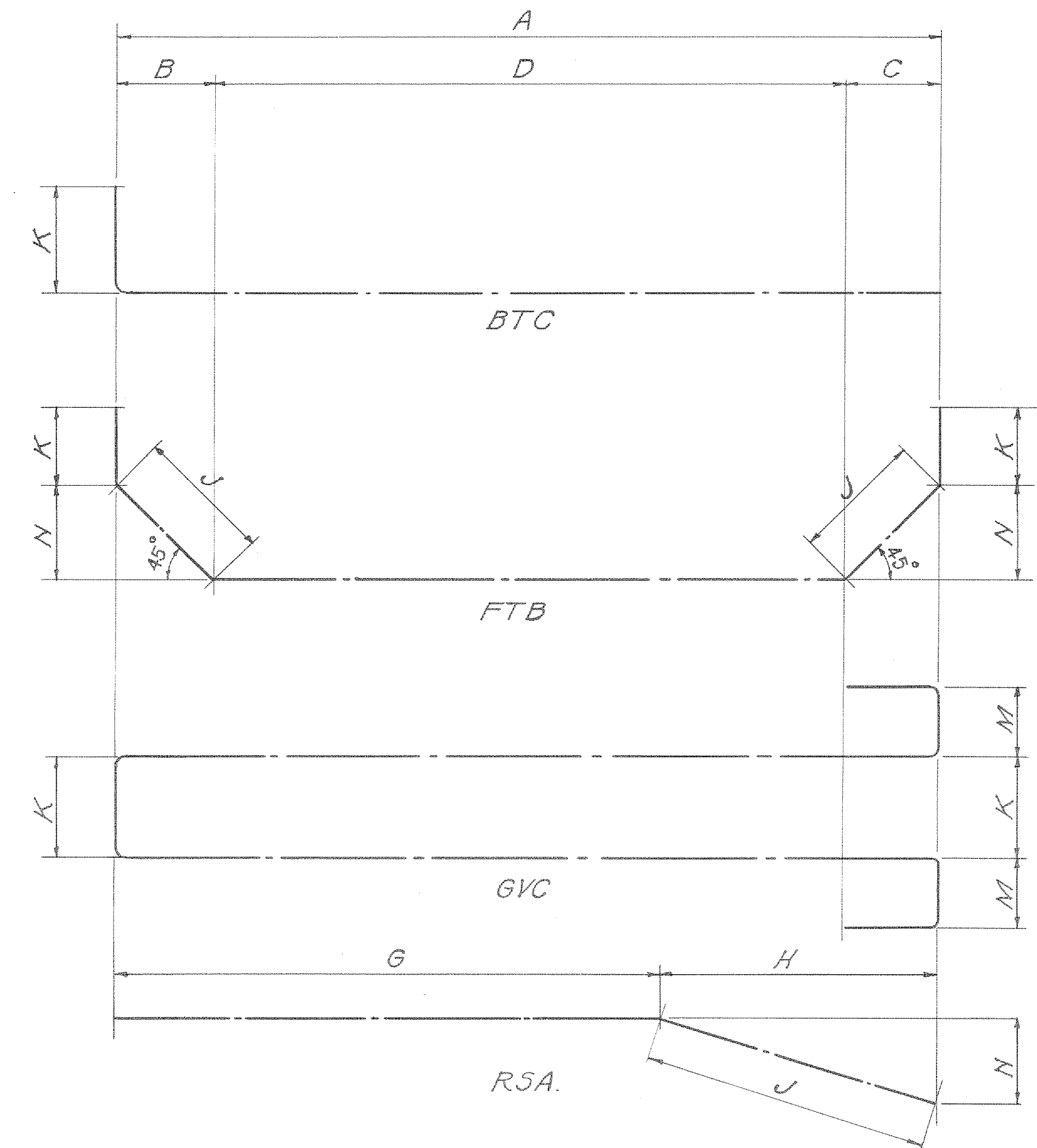
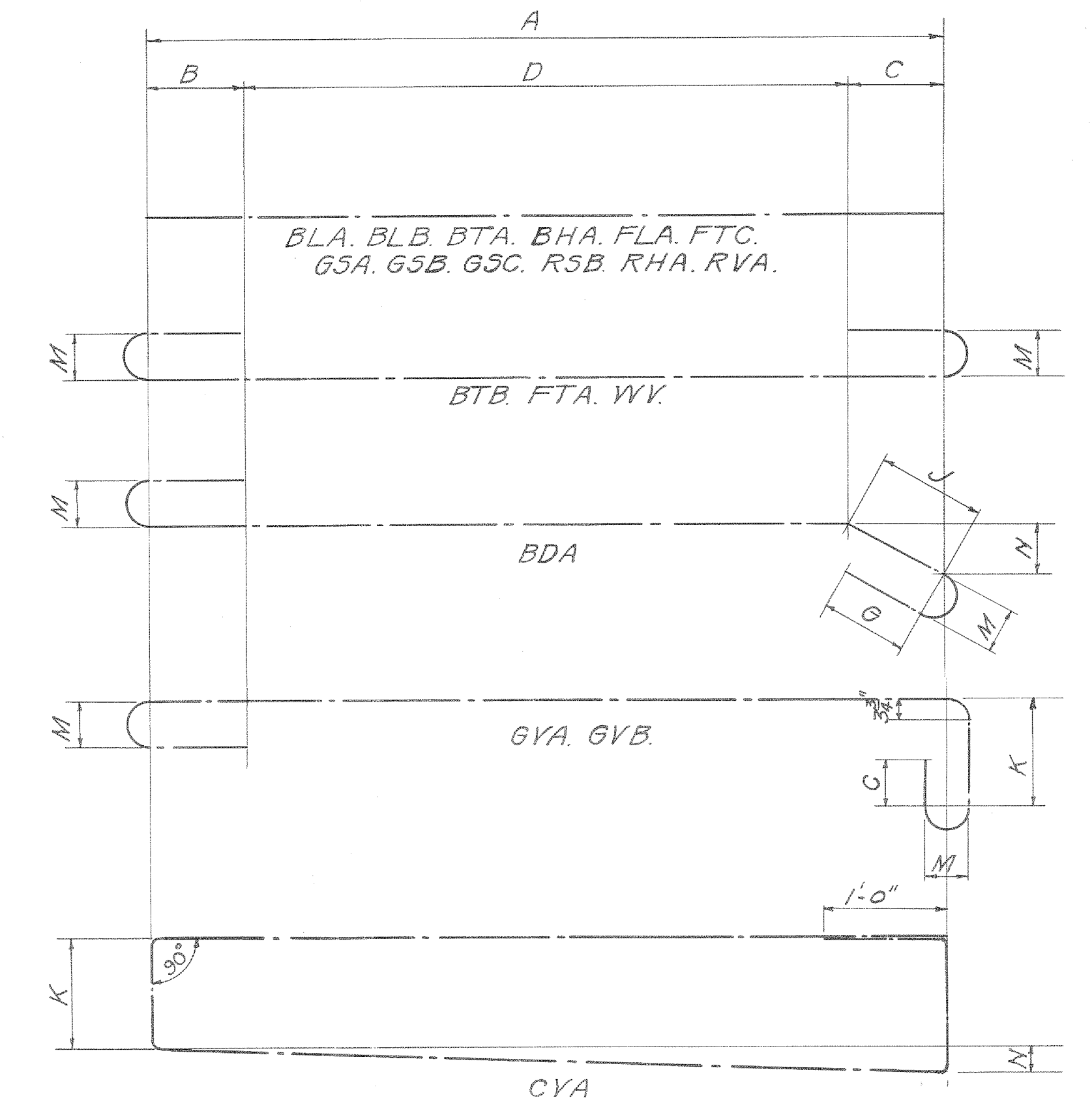
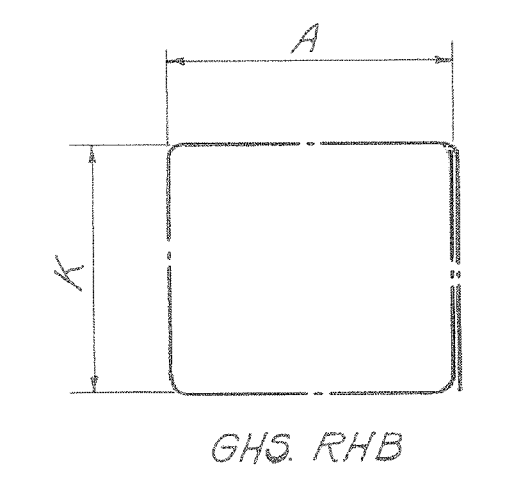
CORRECT  
 Asst. Bridge Engineer  
 APPROVED: *[Signature]*  
 Bridge Engineer

Drawn by	W.M.O.	6-27-23
Traced by		
Checked by	E.V.E.	8-10-23
Filed by		
410202 Sh. 2 of 3		



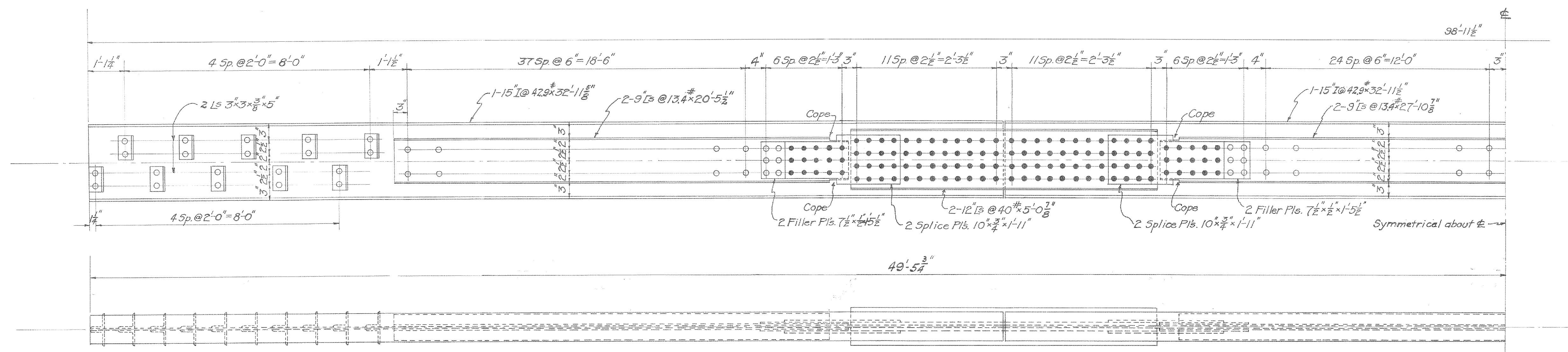


Mark	No.	A	Length	Weight
G5.1	8	10'-2"	13'-0"	55.3*
G5.2	8	12'-8"	15'-6"	65.9
G5.3	8	12'-10"	15'-8"	66.6
G5.4	8	13'-8"	16'-6"	70.1
G5.5	8	14'-6"	17'-4"	73.7
G5.6	8	15'-6"	18'-4"	77.9
G5.7	8	17'-1"	19'-11"	84.6
G5.8	8	18'-3"	22'-1"	93.8
G5.9	8	21'-8"	24'-6"	104.0
G5.10	8	24'-6"	27'-4"	116.1
Total Wt.				8080*



Mark	No.	A	Length	Weight
BVA <sub>1</sub>	8	3'-6"	8'-10 1/2"	27*
BVA <sub>2</sub>	8	2'-7"	7'-0 1/2"	21
BVA <sub>3</sub>	8	2'-0"	5'-10 1/2"	18
Total Weight				66*

BILL OF REINFORCING BARS																	
LOCATION	MARK	A	B	C	D	G	H	J	K	M	N	No	SIZE	LENGTH	WEIGHT		
<b>Floor</b>																	
	FLA	34'-5"										72	3/8"	34'-5"	2110		
	FTA	21'-6"	4'-10"	4'-10"								76	1/2"	34'-4"	8889		
	FTB		1'-5"	1'-5"	21'-4"			2'-0"	3'-0"		1'-5"	74	1/2"	34'-4"	7870		
	FTC	19'-8"										6	1/2"	19'-8"	400		
<b>Backwall</b>																	
	BHA	26'-6"										12	3/8"	26'-6"	270		
	CVA	4'-8"						1'-1"		2'-2"		32	3/8"	12'-8"	600		
<b>Girder</b>																	
	GYA	15'-0"	5'	5'				11 1/2"	7 1/2"			16	1 1/2"	18'-8"	1590		
	GYB	17'-5"	5'	5'				11 1/2"	7 1/2"			48	1 1/2"	21'-1"	5380		
	GYC	4'-0"		5'				5 1/2"	6 1/2"			100	3/8"	10'-4"	880		
	GHS	1'-6"						1'-0"				56	3/8"	6'-0"	130		
	GS	See Diagram													1 1/2"		8080
	GSA	28'-0"										8	3/8"	28'-0"	190		
	G5B	31'-0"										8	3/8"	31'-0"	210		
	G5C	38'-0"										8	3/8"	38'-0"	260		
<b>Top Bracing</b>																	
	BTA	24'-2"										8	1/2"	24'-2"	164		
	BLA	28'-3"										4	1/2"	28'-3"	97		
	BTC	6'-6"						2'-0"				24	3/8"	8'-6"	420		
	BLB	27'-11"										3	3/8"	27'-11"	126		
	BTB	25'-2"	4'	4'								12	3/8"	27'-5"	674		
	BDA	8'-8"	4'	7'		4'		8'		6'	4'	24	3/8"	11'-0"	545		
	BVA	See Diagram													3/8"		66
<b>Wing Wall</b>																	
	WY	2'-4"	3'	3'								24	1/2"	3'-7"	74		
<b>Railing</b>																	
	RSA					1'-4"	6'	6 1/2"			3'	2'	6 1/2"	1'-10 1/2"	20		
	RSB	3'-0"										16	3/8"	3'-0"	32		
	RHA	6'-6"										24	3/8"	6'-6"	100		
	RHB	1'-0"								9'		16	3/8"	4'-0"	21		
	RYA	4'-9"										48	3/8"	4'-9"	152		
Total Weight														39350			



DETAILS OF STRUCTURAL STEEL REINFORCING MEMBER  
 4 Required.

All material and workmanship to be in accordance with Michigan State Highway Department's General Specifications for steel and concrete highway bridges, 1922 Edition, Revised. Rivets, 3/8" Open Holes 1 1/8". No painting is required.

MICHIGAN STATE HIGHWAY DEPARTMENT  
 Sec. 31, T9N. R. 11W. ALGOMA TWP. KENT COUNTY.  
 BRIDGE FILE No. 410202 S.R. OVER ROUGE RIVER.  
 BAR BILL AND STRUCTURAL STEEL DETAILS.  
 1-100' REINF. CONC. GIRDER. 20' ROADWAY. 18' PI. CONC. ABUTMENTS.

CORRECT  
 APPROVED  
 Ass't Bridge Engineer  
 Bridge Engineer

Drawn by Y.M.O. 6-23-23  
 Traced by  
 Checked by C.V.E. 8-10-23  
 Filed by  
 410202 Sh. 3 of 3