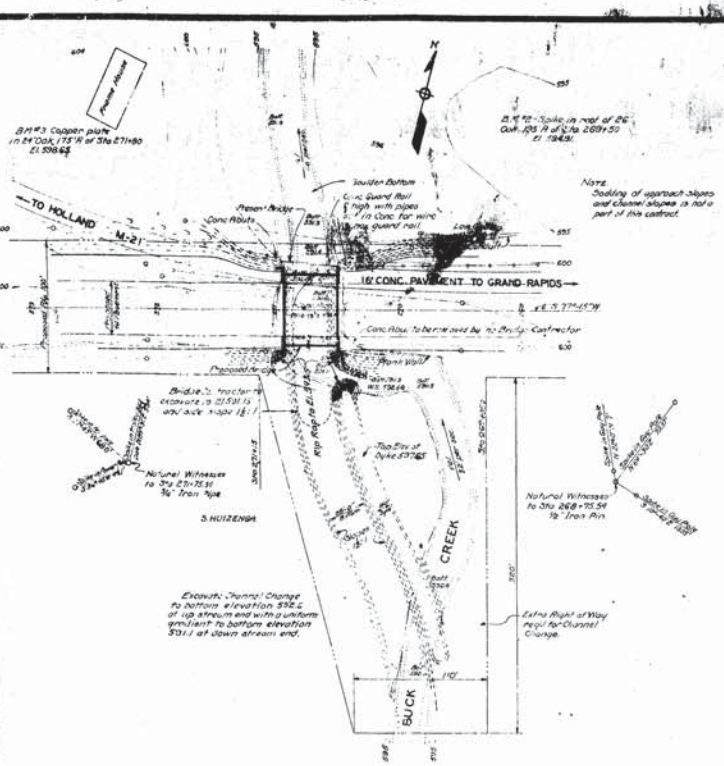
B01 of 41041
B3 of 41-24-7

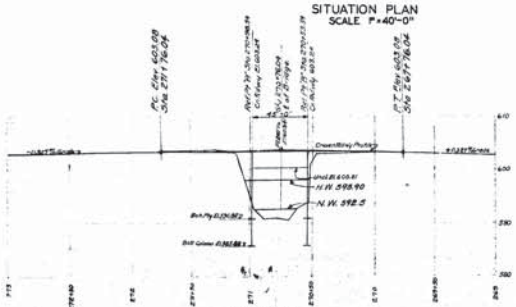
Turn - Back

CS: 41041

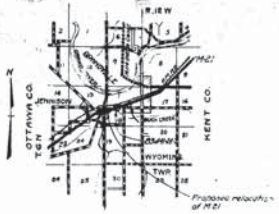
ID: B01 B3 41-24-7



SITUATION PLAN
SCALE 1" = 40'-0"



PROFILE
HOR. SCALE 1" = 40'-0"
VERT. SCALE 1" = 10'-0"



LOCATION SKETCH

INDEX.

	SH.	DESCRIPTION
PLAN	1	General Plan
	2	General Layout
	3	Abutment Details
	4	Superstructure Details
	5	Structural Steel
DETAILS	6A 5	Section at Intermediate Pilaster
	6B 5	Section Between Pilasters
	6C 5	Section at Midpoint Between Pilasters
	6D 5	Section thru roadway
	D 6	Section thru backwall
	G 6	Sidewalk Overhang & Corner
	H 6	Arrangement of End Pilaster & Wing
	O 6	Camber Diagram
	L 6	Method of Supporting H beams
	M 6	Standard Moldings & Box drains
	N 6	Bar Chair Details
BILLS	P1 7	Precast Abutment Pilaster Base
	P2 7	Precast Abutment Pilaster
	P3 7	Precast Sidewalk & Ab.
	P4 7	Precast Fascia
	B1 8	Reinforcing Steel
	B2 8	Structural Steel

GENERAL NOTES

All materials and workmanship to be in accordance with Michigan State Highway Department's Standard Specifications for Roads and Bridges, 1924 Edition.

Each section shown as a distinct unit on these plans is to be poured in one CONTINUOUS run.

Brass reference bars - 3/8" x 6" 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 the reference lines, using nonshrinking plan to be furnished by the Engineer.

Before placing backfill or box drains, the entire back surface of abutments, wingwalls and superstructure backwalls above elevation 591.82 in contact with earth fill shall be waterproofed with Class "A" waterproofing. Also all construction and expansion joints in contact with earth fill are to be waterproofed with [illegible] waterproofing.

The contractor will backfill in front of the new abutments to the slope lines shown on the plans and blend to the existing ground surface, 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.

All expansion material shall be of approved type.

Information furnished in regard to stream data has been secured by the State Highway Department's survey crew but is not guaranteed. Variations from these conditions as encountered in the field will not be a cause for allowance of extras on this contract.

Log of borings and samples, if any, made by the Highway Department's crew are available for inspection at the office of the Bridge Engineer at Lansing. This information is not guaranteed and in case the conditions encountered differ from the boring information, no allowance will be made for increased cost of the work except for increased quantities of such items affected, if any, and that at the unit prices bid.

All waterproofing, paint, moldings, reflector buttons, 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.

Traffic shall be maintained over the present bridge while the south half of the new bridge is constructed, including the substructure from the joint 5'-9" north of centerline. Temporary guard rail shall then be placed on the bridge and approaches, and the approaches surfaced with 8" two course gravel and traffic routed over the completed half of the bridge. The old bridge shall then be removed and the new bridge completed. The temporary gravel surfacing on the approaches will be surface treated by the State Highway Department's Maintenance Division. Concrete in slab and wearing surface must be cured to 700 lb. modulus of rupture before opening to traffic.

The present highway bridge consists of two 36'-0" reinforced concrete girder spans with a 15'-0" roadway. The abutments and piers are concrete. The adjacent interurban railway bridge has been removed with exception of the east abutment, which the contractor shall remove.

The contractor is to remove the present highway bridge. The superstructure is to be completely removed and the substructure of the highway bridge is to be removed to bed of stream elevation or as required for placing the new work. The old masonry is to be broken up and used as riprap as shown on the Situation Plan.

The contractor is to make the channel change and build the dyke as shown on the Situation Plan, disposing of the excess excavated material in the approaches or in filling the old channel as directed by the Engineer.

Dry excavation, except for cantilever wings, shall include all solid material except rock and portions of the old structure, between a horizontal plane at elevation 592.50 and the natural ground surface and bounded by vertical planes in front and behind the abutments, located 1'-6" outside of and parallel to the front and back lines of the caissons and vertical planes located 1'-6" outside of the end limits of the abutment wall and parallel thereto.

Dry excavation for the cantilever wings shall include all solid material except rock and portions of the old structure between a horizontal plane at elevation 592.50 and the natural ground surface and bounded on three sides by vertical planes located 1'-6" outside of and parallel to the plan outlines of the sides and ends of the cantilever wings and located on the fourth side at the cofferdam outline.

Wet excavation, except for caissons, shall include all solid material, except rock and portions of the old structure, between a horizontal plane at elevation 592.50 and a horizontal plane at the bottom of subfooting elevation and bounded by vertical planes in front and behind the abutments, located 1'-6" outside of and parallel to the front and back lines of the caissons and vertical planes located 1'-6" outside of the end limits of the abutment wall and parallel thereto.

Wet excavation for caissons shall include all solid material except rock and portions of the old structure between a horizontal plane at the bottom of subfooting elevation and horizontal planes at the elevations of bottoms of caissons and bounded by vertical planes 1'-6" outside of the plan outlines of caissons and parallel thereto.

Bench Mark No. 3, 175' R. of Sta. 271+80 copper plate in 24" Oak. Elevation 598.65
Bench Mark No. 2, Spike in root of 26" Oak. 195' R. of Sta. 269+50, Elevation 594.91

RECORD OF CONTRACT CHANGES & EXTRAS

REC. NO.	CHANGE OR EXTRA	ITEM NO.	DESCRIPTION	QUANTITY	DATE ALT.
A	Extra	1	Rock Excavation	7750 CY	@ 2-33
B	Change	1	Gr. "A" Concrete	15 "	"
C	Extra	2	Rock Excavation	105 "	9-17-33
D	"	3	Handpicking Aggregate		"

MICHIGAN STATE HIGHWAY DEPARTMENT

SEC. 18. T.6N. R.12W. WYOMING TWP. KENT CO.
BRIDGE FILE NO. B3-OF-41-24-7 ROAD T.LM-21 AT STA. 270+76.04
CROSSING - BUCK CREEK W. CORP. LINE OF GRANDVILLE.

GENERAL PLAN

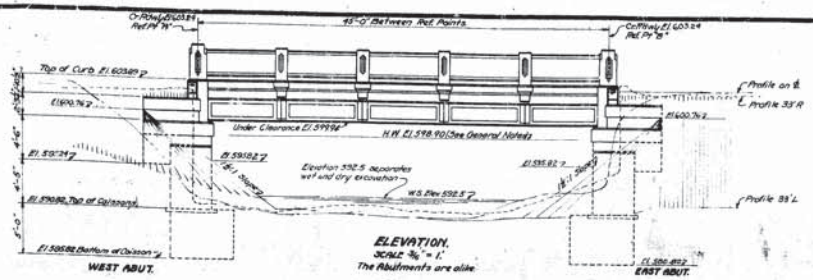
1-45'-0" STEEL DECK GIRDER SPAN - 40'-0" ROADWAY SUBSTRUCTURE. REINFORCED SUPERSTRUCTURE. 2-12'-0" SEMI-GRAVITY ABUTMENTS ON [illegible] 2-6'-0" SIDEWALKS - ON 20° R.C. - 90° CROSSING.

M

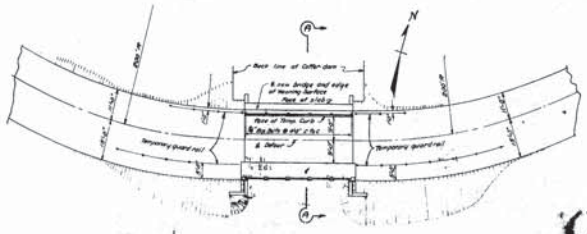
APPROVED [illegible] 8-14-33
APPROVED [illegible] 8-14-33
APPROVED [illegible]
APPROVED [illegible]
APPROVED [illegible]
APPROVED [illegible]

TRACED BY	[illegible]	8-14-33
CHECKED BY	[illegible]	8-21-33
FILED BY	[illegible]	8-21-33
SHEET 1 OF 18		

-B3-41-24-7



ELEVATION.
SCALE 3/16" = 1'.
The Abutments are alike

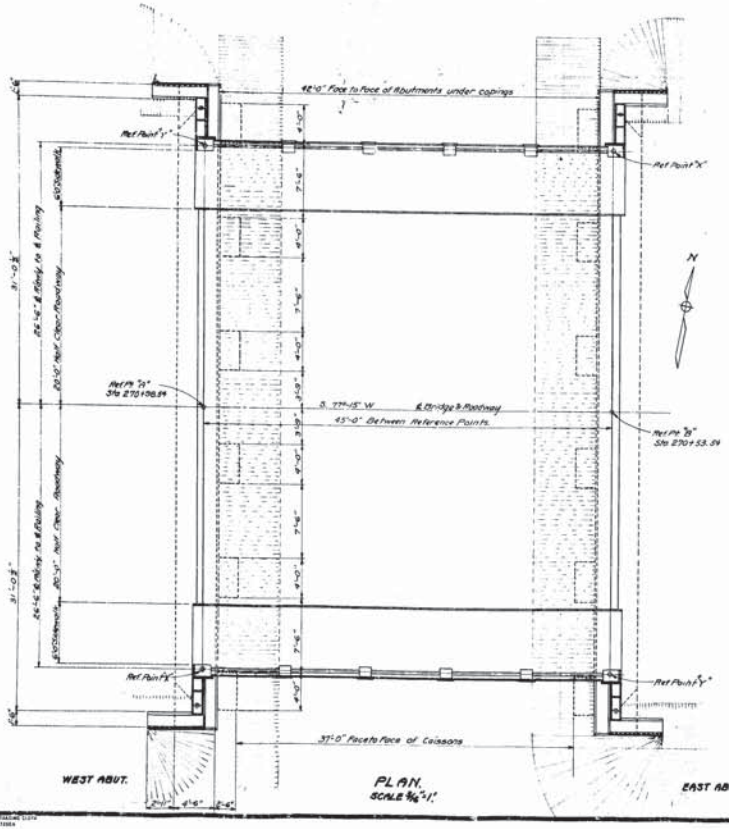


PLAN LAYOUT

Showing temporary approaches and provisions for maintaining traffic over the South half of the new bridge.
The Contractor is to grade and gravel surface the temporary approaches and furnish and place temporary curb, railing and guard rails as shown.

SECTION A-A

The Contractor is to form or drill 3/4" holes in the retaining surface for placing 3/4" expansion bolts. After the temporary curb is removed the expansion bolts are to be removed and the holes filled with mortar.
Temporary railing and guard rail are to be built in accordance with the Specifications



PLAN.
SCALE 3/16" = 1'.

Note: Bridge Contractor to furnish and place Ref. Pts. "X" "Y" buttons, an equivalent expense by others.
The Contractor is to place 1/2" in concrete over the buttons and in face of abutments are removed.

SECTION THRU APPROACH AT END OF BRIDGE.
32 YELLOW BUTTONS REQ'D.

BILL OF MATERIALS

LOCATION	CU. YDS. OF CONCRETE, GRADE "A"		STRUCTURAL STEEL LBS.	REINFORCING STEEL LBS.	CU. YDS. EXCAVATION WET	DRY	CHANNEL EXCAVATION CU. YDS.			
WEST ABUTMENT "X"	102.0		883	2,936	101	39				
EAST ABUTMENT "B"	102.0		883	2,936	103	69				
SUPERSTRUCTURE	77.0		64,843	15,849						
WEARING SURFACE	30.1									
CHANNEL CHANGE							12.00			
TOTALS	311.1		66,609	21,721	204	108	12.00			

Welded wire fabric reinforcing shall be provided for 1800 sq ft of floor surface as per specifications

MICHIGAN STATE HIGHWAY DEPARTMENT

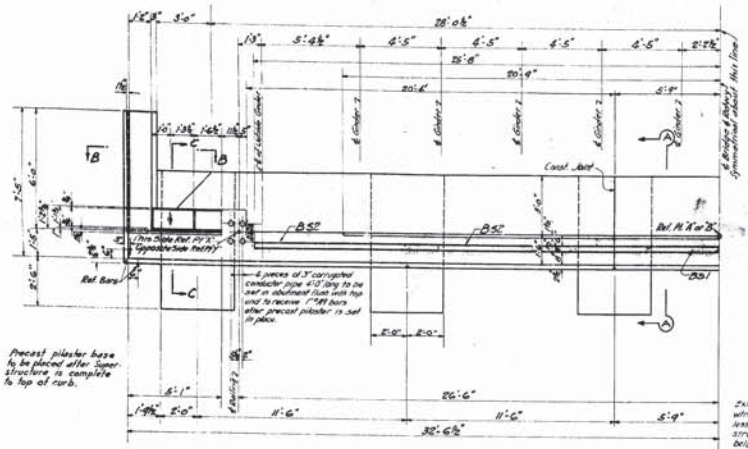
SEC. 18 T. 6N R. 12W WYOMING TWP. KENT CO.
BRIDGE FILE NO. 28-41-24-7 ROAD T.L. M21 ST. STA. 270+76.04
CROSSING BUCK CREEK WEST CORP. LINE OF GRANDVILLE

M GENERAL LAYOUT.

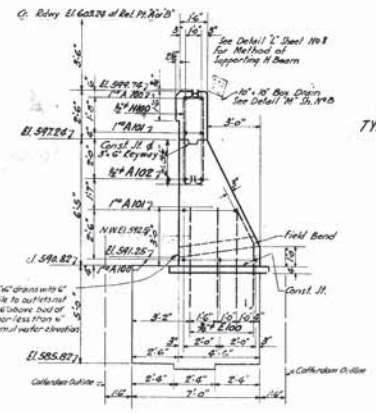
APPROVED G. C. Hewell 5-14-32
APPROVED W. M. Brand 5-14-32
APPROVED E. C. Wiebe 5-12-32

DESIGNED	Fuller	2-19-32
DRAWN BY	Clark	2-1-32
TRACED BY	Smith	2-3-32
CHECKED BY	Mahlo	2-19-32
FIELD BY	FHT	2-17-32
SHEET	2 OF 9	

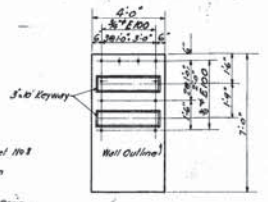
-B3-41-24-7



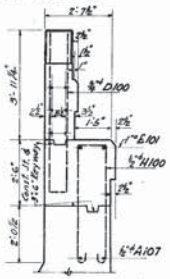
HALF PLAN
Abutments are Alike



SECTION A-A

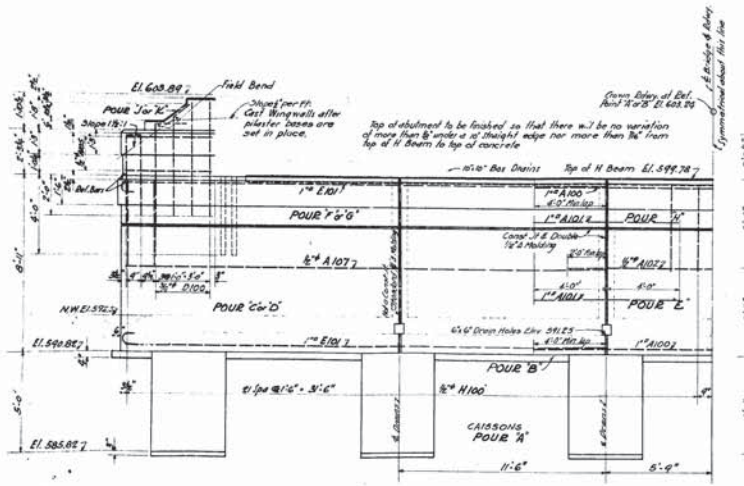


PLAN OF TYPICAL CAISSON

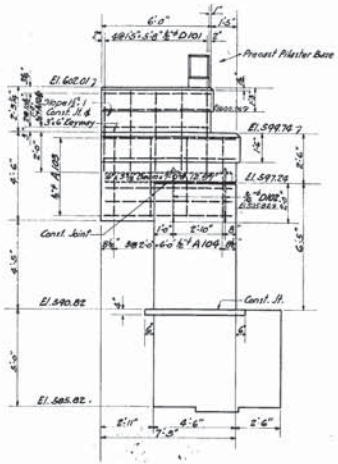


SECTION C-C

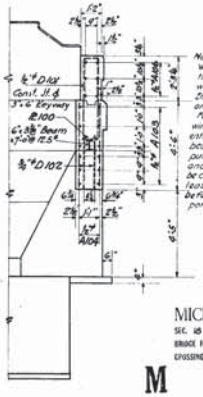
BAR LIST					
		ABUT "A"		ABUT "B"	
MARK	SIZE	NO.	WT.	NO.	WT.
A100	1" ⊕	5	352	5	352
101	1" ⊕	8	217	8	217
102	⅝" ⊕	2	20	2	20
103	⅝" ⊕	24	113	24	113
104	⅝" ⊕	16	45	16	45
105	⅝" ⊕	12	37	12	37
A106	⅝" ⊕	12	46	12	46
107	½" ⊕	4	71	4	71
D100	⅝" ⊕	8	147	8	147
101	⅝" ⊕	10	59	10	59
D102	⅝" ⊕	4	35	4	35
E100	⅝" ⊕	60	534	60	534
E101	1" ⊕	10	928	10	928
H100	⅝" ⊕	44	312	44	312
Z100	⅜"x.866"	4	40	4	40
Total Each Abut.			2936		2936
Total for 2 Abuts.			5872#		



HALF ELEVATION



END ELEVATION



SECTION B-B

Note: Before proceeding with work above El. 597.26 the Contractor shall receive written approval from the Engineer for supporting and bracing forms. Forms for these cantilevered wings shall be supported entirely from the structural beam provided for this purpose. All concrete anchoring the beams must be cured to developed strength of at least 2500# prior to rupture before casting the cantilever portion.

CONCRETE QUANTITIES			
LOCATION	POUR	ABUT "A" CU. YDS.	ABUT "B" CU. YDS.
CAISSONS	A	31.6	31.6
SUB FOOTINGS	B	2.9	2.9
WALL	C	21.6	21.6
"	D	21.6	21.6
"	E	8.5	8.5
"	F	5.8	5.8
"	G	5.8	5.8
"	H	1.8	1.8
WINGWALLS	J	1.2	1.2
"	K	1.2	1.2
Total Cu. Yds. Grade "A"		102.0	102.0
Total Cu. Yds. Grade "A" 2 Abuts.		204.0	

MICHIGAN STATE HIGHWAY DEPARTMENT

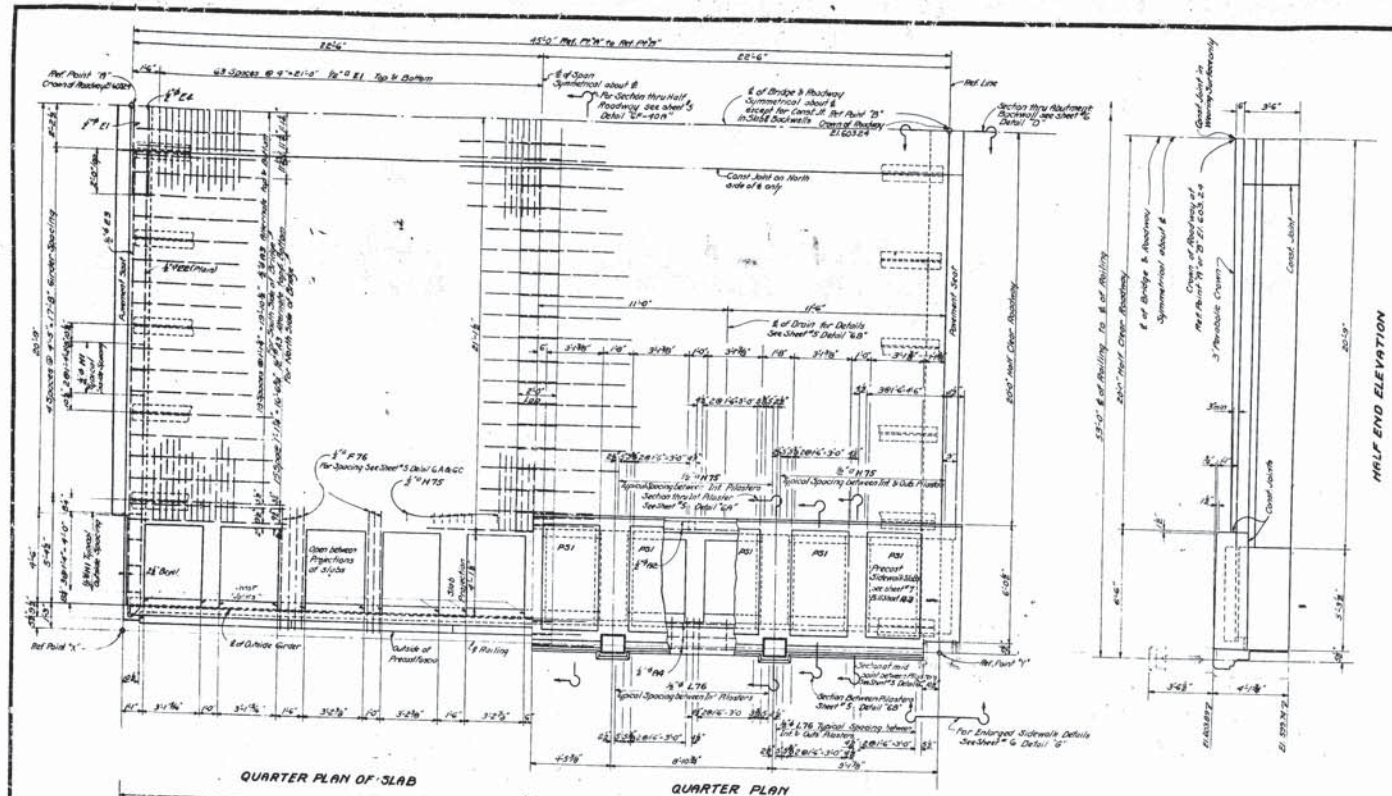
SEC. 15 T. 6N R. 12W WYOMING TWP. KENT CO.
BRIDGE FILE NO. B3 of 41-24-7 ROAD T.L.M. 23 AT STA. 270+76.04
CROSSING BUCK CREEK W. CORP. LINE OF GRANDVILLE

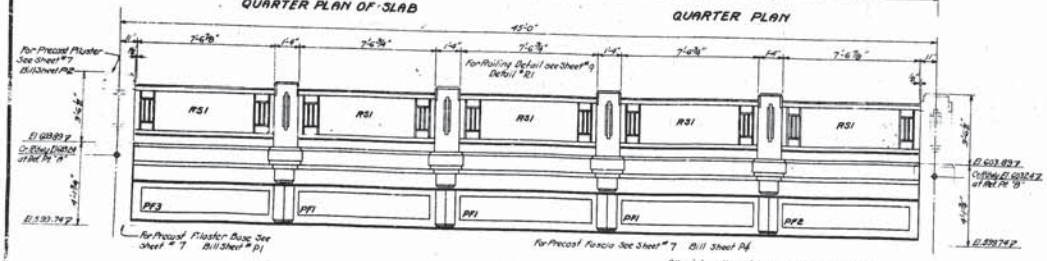
M ABUTMENT DETAILS

APPROVED: C. E. Yowell STATE HIGHWAY COMMISSIONER
APPROVED: W. M. Brand STATE BRIDGE ENGINEER

TRACED BY	Ryder	2-15-52
CHECKED BY	F.T. Duke	12-28-51
TRACED BY	cpk	12-5-51
CHECKED BY	Mehalic	3-27-52
FILED BY	FNT	8-11-53

B3 of 41-24-7





All joints adjacent to precast fascia sections unless otherwise specified, shall be filled with 1:4 cement mortar and carefully pointed.

BAR LIST

MARK	SIZE	NO	WEIGHT
A1	#6	8	20
A2	#6	20	326
A3	#6	84	1307
A4	#6	28	419
A5	#4	24	137
A6	#4	16	85
A7	#8	60	58
A8	#8	120	225
A9	1"	16	626
A35	#6	40	40
B1	#6	20	40
D1	#6	16	120
D2	#6	40	176
D15	#6	24	178
D16	#6	26	151
E1 Bar	#8	10	207
E2	#8	6	97
E3 Bar	#6	10	161
E4	#6	6	124
F1	#4	254	4238
F2	#4	254	5190
F76	#6	62	382
G1	#6	16	100
G77	#6	62	404
H1	#4	70	307
H75	#6	106	293
K75	#4	24	34
K76	#8	28	49
L76	#6	102	309
S76	#6	40	42
Total			15,849

CONCRETE QUANTITIES

LOCATION	Item	Class "H" Conc. Cu. Yds.
Slab & Backwalls ℄	1	28.9
Upper Fascia & Curb ℄	2	13.7
Int. Pilasters ℄	3	1.3
Wearing Surface ℄	4	30.1
Precast Sidewalk Slabs ℄		3.0
Precast Rail Pilasters ℄		1.2
Pre. Rail Pilaster Bases ℄		1.8
Precast Fascia ℄		2.0
Slab & Backwalls N	5	24.3
TOTAL YARDAGE		107.1

MICHIGAN STATE HIGHWAY DEPARTMENT

SEC. 18 T. 6 N. R. 12 W. WYOMING TWP. KENT CO.

BRIDGE FILE NO. B3941-24-7 ROAD T.L.M.-21 AT STA. 270+76.04

CROSSING BUCK CREEK WEST CORP. LINE OF GRANDVILLE

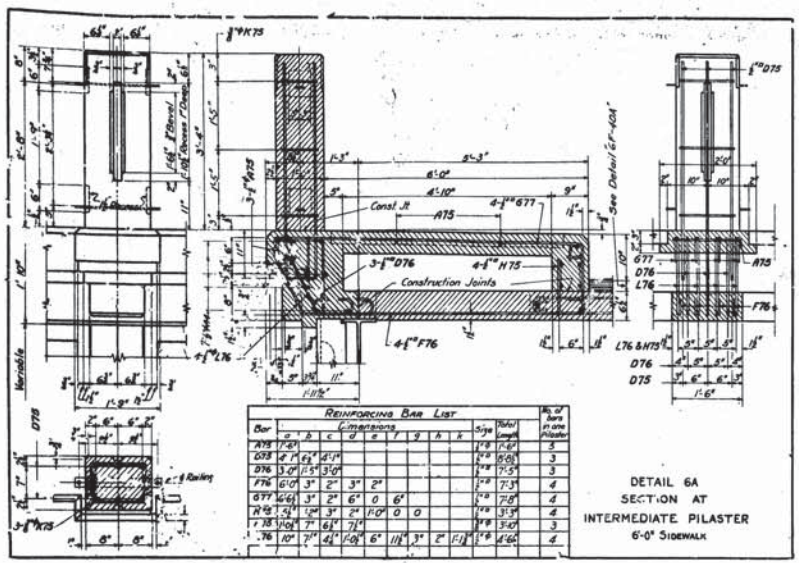
M SUPERSTRUCTURE DETAILS

APPROVED C. E. Frankel 5-4-32

APPROVED Wm. Brand 5-4-32

DESIGNED	Pepper	8-18-31
CHECKED	E. Evans	11-19-31
TRACED BY		1-21-32
CHECKED BY	McQuiston	3-30-32
PLACED	F.H.T.	5-17-32

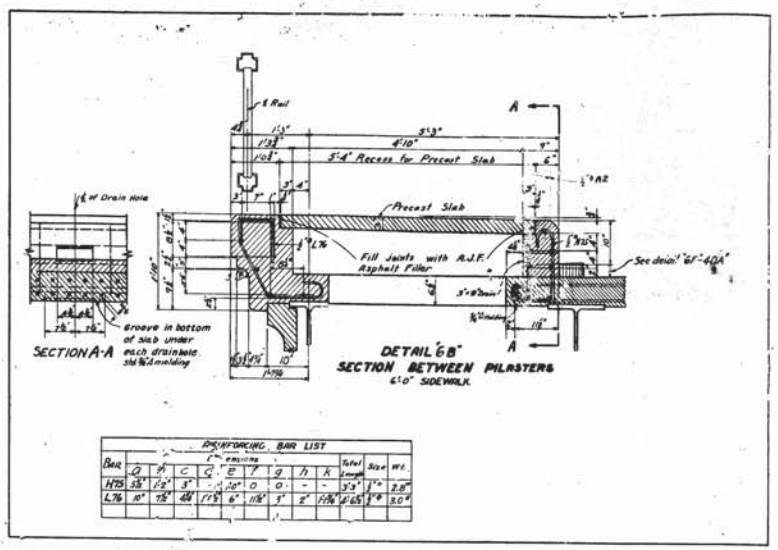
B3941-24-7



Bar	Dimensions a	b	c	d	e	f	g	h	k	Size	Total Length	No. of bars in one Pilaster
A75	7'-8½									1"ø	7'-8½	5
G75	4'-11	6¼"	4'-1"							1"ø	5'-0½	3
D76	3'-0"	1'-5"	3'-0"							1"ø	7'-5"	3
F76	6'-0"	3"	2"	3"	2"					1"ø	7'-3"	4
G77	6'-6½	3"	2"	6"	0	6"				1"ø	7'-8"	4
H78	4'-8	1'-0"	3"	2"	1'-0"	0	0			1"ø	3'-9"	4
J 78	1'-0½	7"	6½"	7½"						1"ø	3'-0"	3
L76	10"	7"	4½"	1'-0½"	6"	1'-1½"	3"	2"	1'-1½"	1"ø	4'-6½"	4

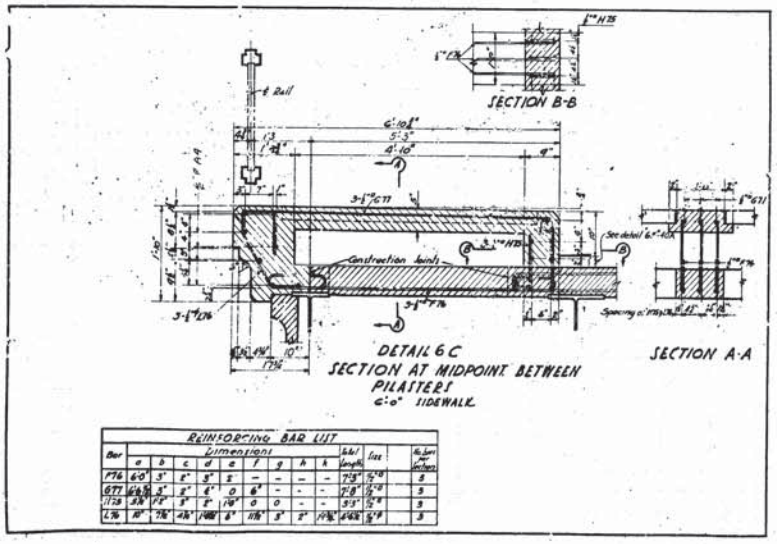
REINFORCING BAR LIST

DETAIL 6A
SECTION AT
INTERMEDIATE PILASTER
6'-0" SIDEWALK



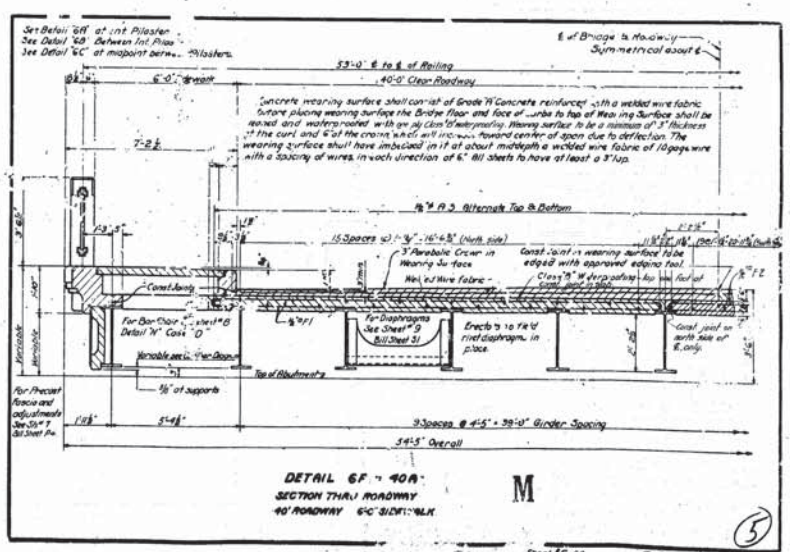
Bar	a	b	c	d	e	f	g	h	k	Total Length	Size	Wt.
H75	5½"	1'-5"	3"			1'-0"	0	0	-	3'-5"	1"ø	2.8#
L76	10"	7½"	4½"	1'-1½"	6"	1'-1½"	3"	2"	1'-1½"	4'-6½"	1"ø	3.0#

REINFORCING BAR LIST



Bar	a	b	c	d	e	f	g	h	k	Total Length	Size	No. of bars in one Pilaster
F76	6'-0"	3"	2"	3"	2"	-	-	-	-	7'-3"	1"ø	2
G77	6'-6½	3"	2"	6"	0	6"	-	-	-	7'-8"	1"ø	3
H78	4'-8	1'-0"	3"	2"	1'-0"	0	0	-	-	3'-3"	1"ø	3
L76	10"	7½"	4½"	1'-1½"	6"	1'-1½"	3"	2"	1'-1½"	4'-6½"	1"ø	3

REINFORCING BAR LIST



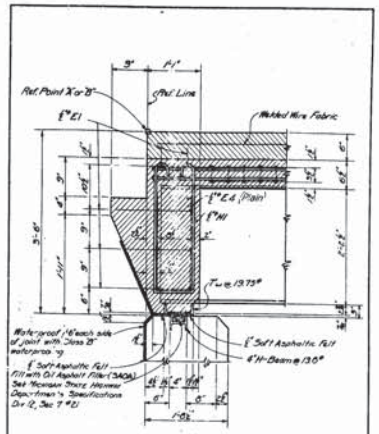
M

5

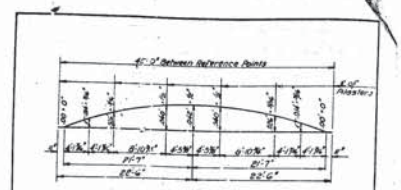
Sheet #5 of 9

-B3 of 41-24-7

Squad Boss		2-2-42
Drawn by		1-21-42
Traced by	Davis	
Checked by		2-26-42
Filed by		5-15-42



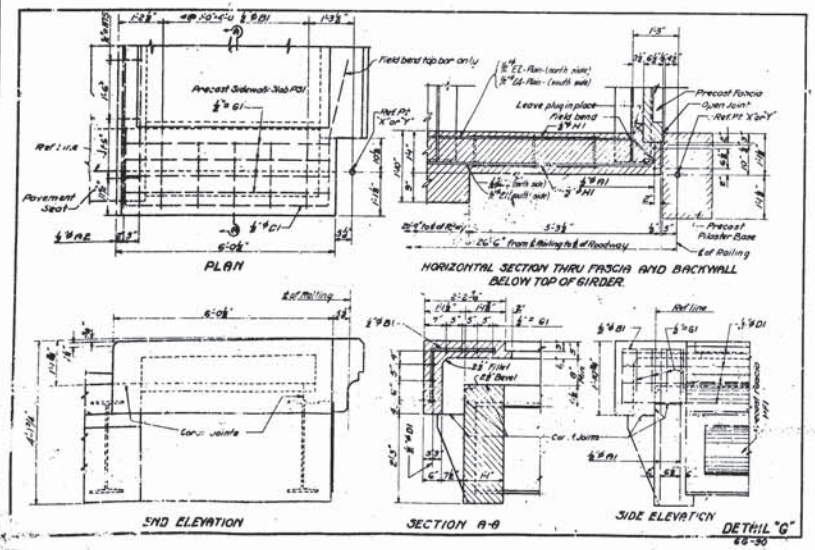
RT. SECTION THRU BACKWALL OVER ABUTMENT
AT REF. POINT 'X' OR 'B'
DETAIL "D"



CAMBER DIAGRAM
FOR 45'-0" SPAN

NOTE:-
Add dimensions shown to elevations of top of curb and all exterior fascia lines parallel to curb line. (Precast fascia slabs are to be set to this camber by means of bolts in slots. Lifting casting fascia. Wearing surface is to be cast on a vertical curve.

DETAIL "O"



PLAN

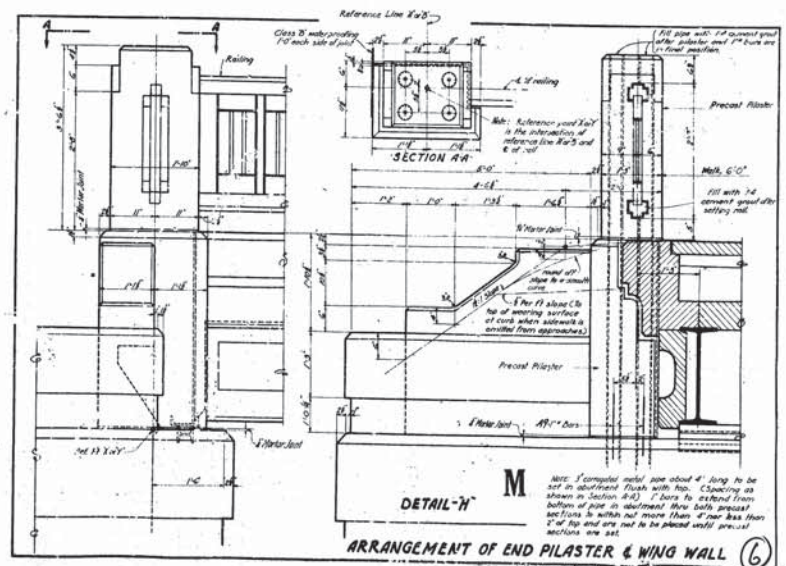
HORIZONTAL SECTION THRU FASCIA AND BACKWALL BELOW TOP OF GIRDER.

END ELEVATION

SECTION A-A

SIDE ELEVATION

DETAIL "G"



SECTION A-A

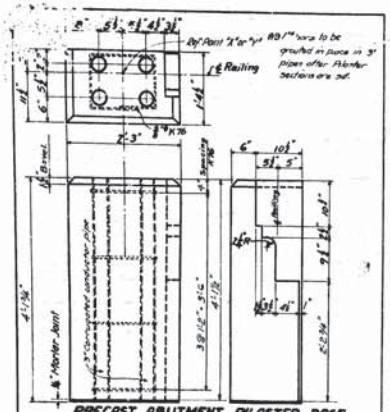
DETAIL "H"

ARRANGEMENT OF END PILASTER & WING WALL

Sheet 6 of 8

-B3 of 41-24-7

6



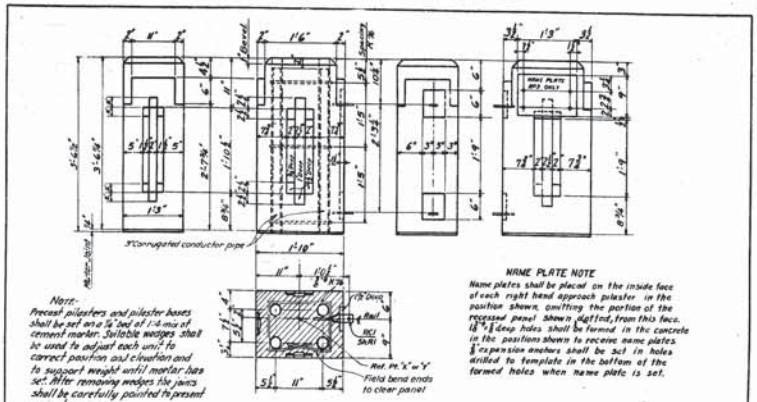
PRECAST ABUTMENT PILASTER BASE
AS SHOWN MK. AP1 2-REQ'D
OPP. HAND MK. AP2 2-REQ'D
GRADE A CONCRETE

4 - K 76 76 9 for each Base
.15 Cu Yds in each Base

MICHIGAN STATE HIGHWAY DEPT
PRECAST CONCRETE
ABUTMENT PILASTER BASE

BILL SHEET P1

Bar	Dimensions a	b	c	d	Size	Total Length	No. Req. Each Bar	No. Reqd. for Pilaster
K 76	11"	10"	10"	1'2 1/4"	5/8 ø	6'-8 1/2"	18	3



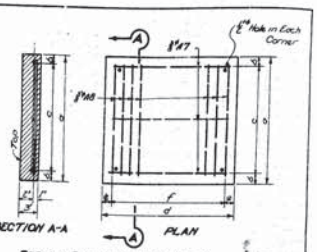
Note:
Precast pilasters and pilaster bases shall be set on a ¼" bed of 1:4 mix of cement mortar. Joints wedges shall be used to adjust each unit to correct position and elevation and to support weight until mortar has set. After removing wedges the joints shall be carefully pointed to present a neat appearance.

NAME PLATE NOTE
Name plates shall be placed on the inside face of each right hand approach pilaster in the position shown, omitting the portion of the recessed panel shown dotted, from this face. 18 - ½" deep holes shall be formed in the concrete in the positions shown to receive name plates. ½ expansion anchors shall be set in holes drilled to template in the bottom of the formed holes when name plate is set.

PRECAST ABUTMENT PILASTER
AS SHOWN AND NOTED MK. AP3 - 2 REQ'D .3 cu. yds. each
OPP. HAND AS NOTED MK. AP4 - 2 REQ'D 1.2 - - Total
GRADE A CONCRETE

MICHIGAN STATE HIGHWAY DEPT.
PRECAST CONCRETE
ABUTMENT PILASTER

BILL SHEET P2



PRECAST SIDEWALK SLAB MK. PS1
GRADE "A" CONCRETE

BILL OF PRECAST SLABS

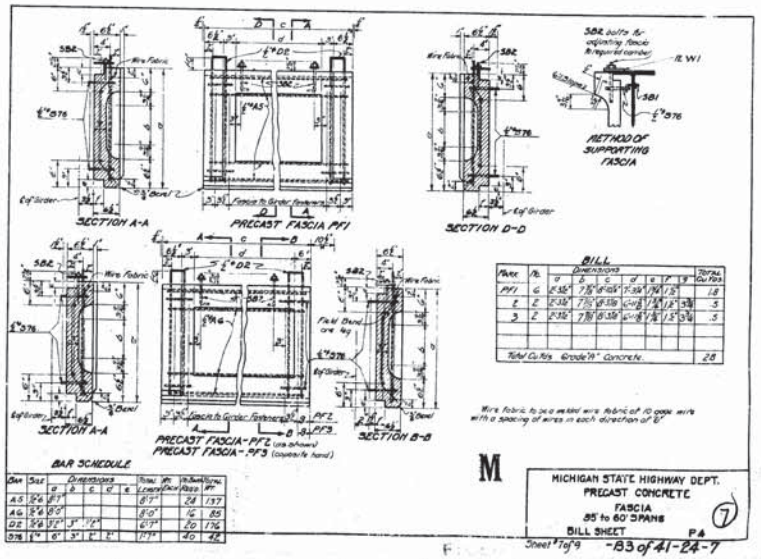
Mark	Dimensions a	b	c	d	e	f	No.	Total Cu. Yds.
PS1	3'-3 3/8"	1 1/2"	2 @ 2'-6" = 5'-0"	3'-0 7/8"	3 3/4"	5 @ 6" = 2'-6"	20	3.0
Total Cu. Yds.								

BAR LIST

Bar	Dim. A	Size	Length	No. Req'd Each	No. Req'd on Reg. Sheet
A7	2'-7"	3/8	2'-7"		60
A8	5'-1"	3/8	5'-1"		120

MICHIGAN STATE HIGHWAY DEPT.
PRECAST CONCRETE
SIDEWALK SLAB

BILL SHEET P3



BILL

Mark	No.	Dimensions a	b	c	d	e	f	g	Total Cu. Yds.
PF1	6	8'-3 5/8"	7'-8"	8'-10 5/8"	7'-3 5/8"	1'-10"	1'-5"		1.8
2	2	8'-3 5/8"	7'-7"	8'-3 5/8"	6'-11 1/2"	1'-8 1/2"	1'-5"	3 3/8"	.5
3	2	8'-3 5/8"	7'-8"	8'-3 5/8"	6'-11 1/2"	1'-8 1/2"	1'-5"	3 3/8"	.5
Total Cu. Yds. Grade "A" Concrete.									2.8

Wire fabric to be a welded wire fabric of 10 gage wire with a spacing of wires in each direction of 6"

BAR SCHEDULE

Bar	Size	Dimensions a	b	c	d	e	Total Length	No. Req'd Each Bar	No. Req'd Total	Total Wt.
A5	3/8	8'-1"					8'-1"		24	137
A6	3/8	8'-0"					8'-0"		12	68
D2	3/8	3'-2"	3"	1'-2"			6'-7"		20	176
D76	1/4"	6"	3"	2"	2"		1'-7"		40	42

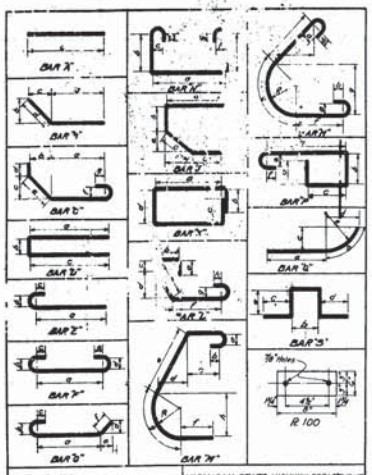
M

MICHIGAN STATE HIGHWAY DEPT.
PRECAST CONCRETE
FASCIA
85' to 60' SPANS
BILL SHEET P4

7

Sheet 4 of 9 -83 of 41-24-7

Source Book Page	2-2-32
DRAWN BY	10-10-32
TRACED BY	
CHECKED BY	2-3-34
FILED BY	2-17-34



Bar Schedule

Bar	Dimensions a	b	c	d	e	f	g	h	k	m	n	R	Size	Total Length	Wt Each	No Bars Req'd	Total Wt
A1	3'10"												5/8	3'10"		8	20
A2	24'5"												5/8	24'5"		20	326
A3	23'4"												5/8	23'4"		56	1307
A4	20'5"												5/8	20'5"		28	419
A5	8'7"												5/8	8'7"		24	137
A6	8'0"												5/8	8'0"		16	85
A7	2'7"												3/8	2'7"		40	50
A8	5'1"												3/8	5'1"		120	229
A9	8'6"												1/2	8'6"		16	626
A25	1'6"												5/8	1'6"		40	40
A100	14'6"												1"	14'6"		10	664
A101	8'0"												1"	8'0"		16	134
A102	16'6"												5/8	16'6"		4	40
A103	7'0"												5/8	7'0"		40	226
A104	4'0"												5/8	4'0"		32	90
A105	4'8"												5/8	4'8"		24	74
A106	5'8"												5/8	5'8"		24	92
A107	24'4"												5/8	24'4"		8	162
B1	1'8"	1'-4"	0"	3'4"									3/8	3'0"		20	40
														Subtotal			5049

MICHIGAN STATE HIGHWAY DEPT.
BRIDGE STANDARDS
REINFORCING BARS
BILL SHEET 82

Bar Schedule

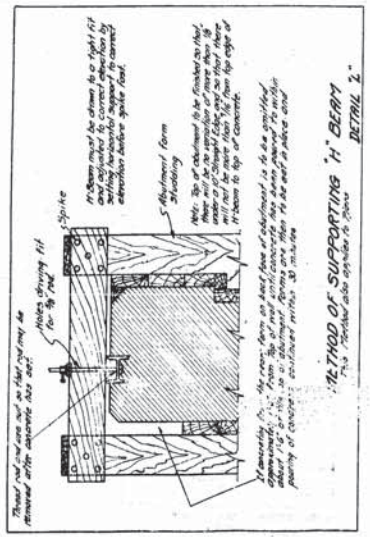
Bar	Dimensions a	b	c	d	e	f	g	h	k	m	n	R	Size	Total Length	Wt Each	No Bars Req'd	Total Wt 5049
D1	3'9"	3'6"	10"										5/8	3'5"		16	120
D2	3'2"	3"	3'2"										3/8	6'7"		40	176
D75	4'1"	6'6"	4'1"										3/4	8'8½"		24	178
D76	3'0"	7'5"	3'0"										3/4	7'5"		24	151
D100	3'9"	9"	3'9"										5/8	10'3"		16	294
D101	4'0½"	9'8"	4'0½"										5/8	9'10½"		20	118
D102	2'9"	3½"	2'9"										5/8	5'10"		8	70
							Threads ends 3" and furnish 2 hex nuts for each rod										
E1	30.5"	3"	2"										3/8	3'10½"		10	207
E2	29½"	3"	2"				Plain Bar						5/8	28'7½"		6	97
E3	29½"	3"	2"										5/8	28'7½"		10	161
E4	30.5"	3"	2"				Plain Bar						5/8	30'10"		6	124
D100	3'0"	4'6"	3"										3/4	5'0"		120	1068
D101	5'6"	6"	4"										1"	17'3½"		70	1856
F1	19'4"	3"	2"	3"	2"								5/8	19'7"		234	4238
F2	22'8"	3"	2"	3"	2"								5/8	24'4"		234	5190
F76	6'0"	3"	2"	3"	2"								3/4	7'5"		62	382
G1	3'4"	3"	2"	10"	0"	10"							5/8	3'4½"		16	100
														Subtotal			17579

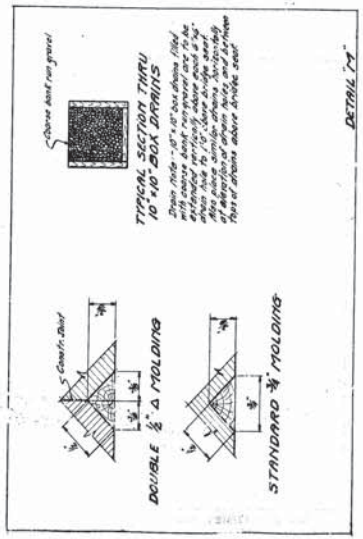
MICHIGAN STATE HIGHWAY DEPT.
BRIDGE STANDARDS
REINFORCING BARS
BILL SHEET 83

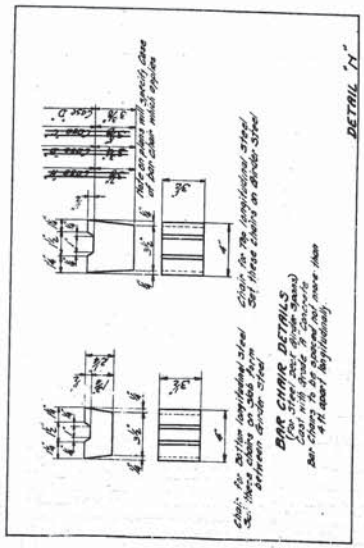
Bar Schedule

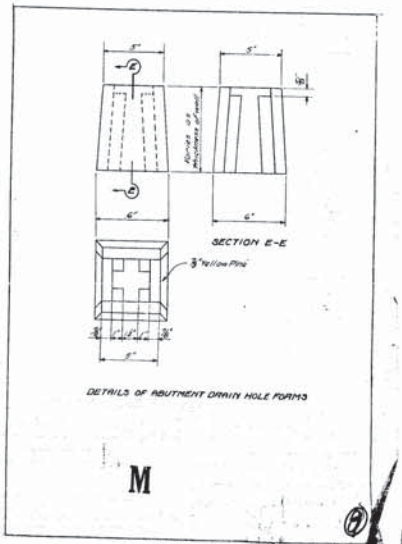
Bar	Dimensions a	b	c	d	e	f	g	h	k	m	n	R	Size	Total Length	Wt Each	No Bars Req'd	Total Wt 17579
G77	6'6"	3"	2"	6"	0"	6"							3/4	7'8"		62	476
H1	9"	9'3½"	3"	2"	2½"	3"	2"						3/4	9'7"		36	347
N75	3'5"	7'2"	3"	2"	10"	0"	0"						1/2	9'3"		106	293
N100	1'1"	4'2"	3"	2"	4'2"	3"	2"						3/4	6'8"		88	624
R75	7'8"	7"	6'2"	7'8"									3/4	9'10"		24	34
R76	7"	10"	10"	7'8"									3/4	9'8"		28	49
L76	10"	7'8"	4'8"	10'8"	2"	10'8"	3"	2"	7'8"				3/4	14'3"		102	369
S76	6"	3"	2"	2"									3/4	7'7"		40	42
B100					3/4"	8"	6"									8	60
														GRAND TOTAL			21701

MICHIGAN STATE HIGHWAY DEPT.
BRIDGE STANDARDS
REINFORCING BARS
BILL SHEET 84



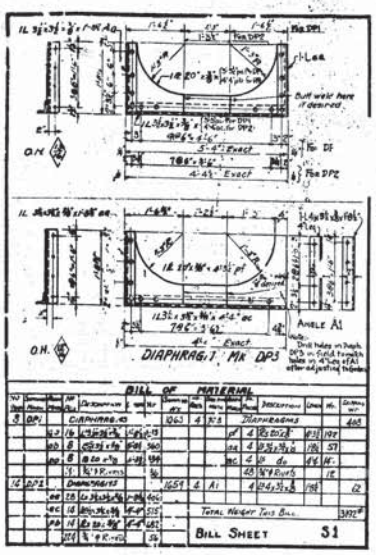


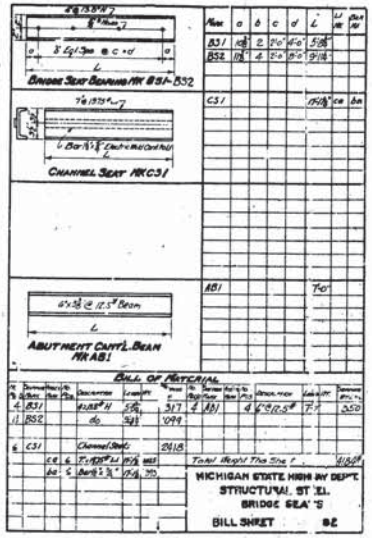


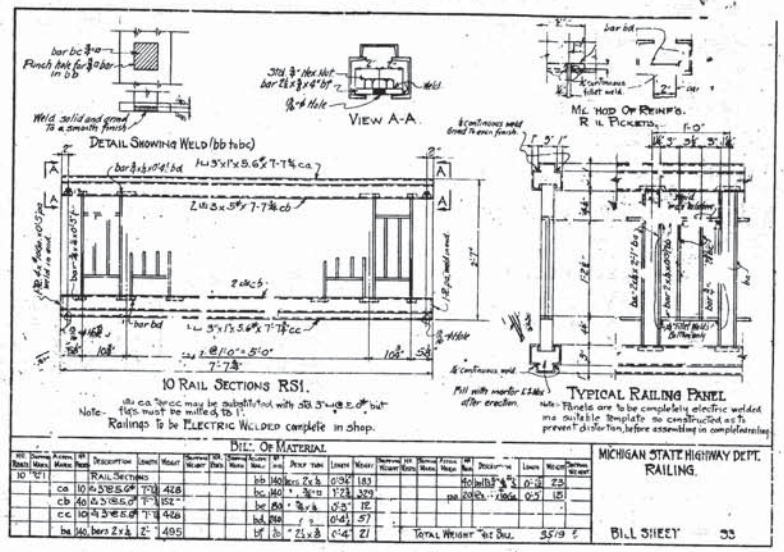


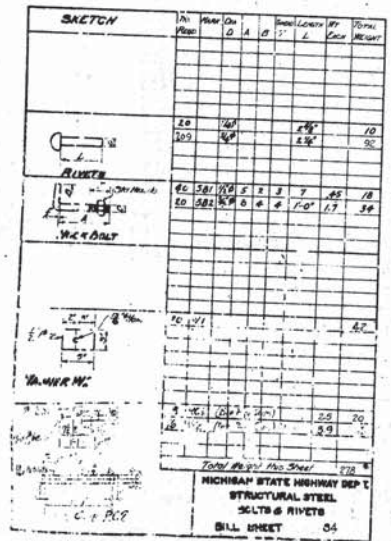
Square Bars	Jobs	Full size
Drawn by	PRE'DS	11-29-32
Traced by	Wolfgang	3-3-33
Checked by	F.H.T.	3-11-33
Filed by	F.H.T.	3-11-33

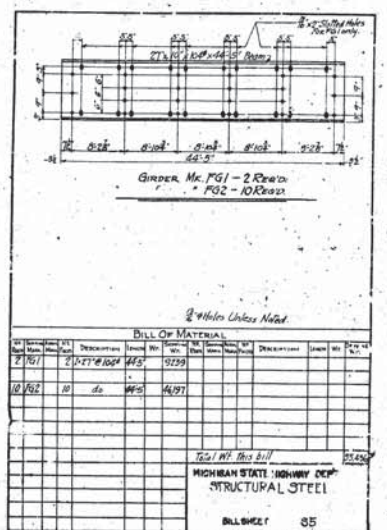
FILED Sheet #8 of 9 -B3 of 41-24-7

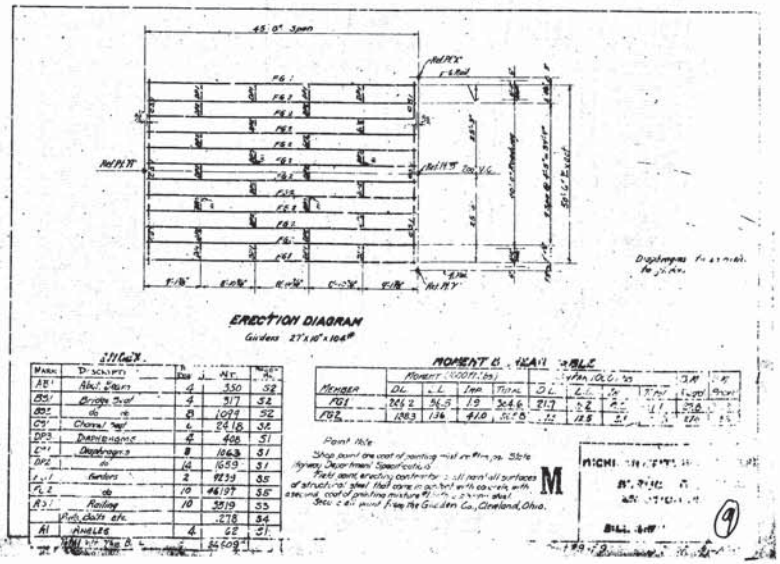

DIAPHRAGM, MK DP3
ANGLE A1
BILL OF MATERIAL
BILL SHEET 31


BRIDGE SEAT BEARING PL BS1-BS2
CHANNEL SEAT MK CS1
ABUTMENT CONT'L BEAM MK AB1
BILL OF MATERIAL
MICHIGAN STATE HIGH'Y DEP'T
STRUCTURAL STEEL
BRIDGE SEAT'S
BILL SHEET 32


DETAIL SHOWING WELD (bb to bc)
VIEW A-A
MEMBER OF REINF'G. RAIL PICKETS
10 RAIL SECTIONS RS1.
TYPICAL RAILING PANEL
BILL OF MATERIAL
MICHIGAN STATE HIGHWAY DEPT.
RAILING.
BILL SHEET 33


SKETCH
RIVETS
NUT & BOLT
MICHIGAN STATE HIGHWAY DEP'T
STRUCTURAL STEEL
BILTS & RIVETS
BILL SHEET 34


GIRDER MK. FG1 - 2 Rows
FG2 - 10 Rows
BILL OF MATERIAL
MICHIGAN STATE HIGHWAY DEP'T
STRUCTURAL STEEL
BILL SHEET 35


ERECTION DIAGRAM
Girders 27"x14"x104#
MOMENT & SHEAR TABLE
Paint Note
M
BILL SHEET

B01 of 41041

LET WITH
41029-00574
12-15-71

CS: 41041

ID: B01

STATE OF MICHIGAN
DEPARTMENT OF STATE HIGHWAYS

PLANS OF PROPOSED BRIDGES

MICHIGAN PROJECT I-196-5(78)-67 & US-421(102)

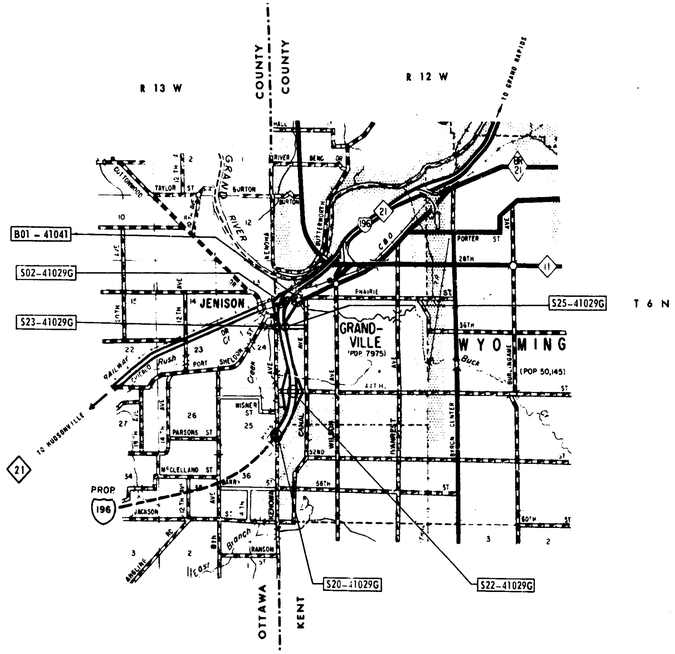
CONTROL SECTIONS I 41029, I 41041 & U 41041

JOB NUMBERS 00574A & 04028A

BENTON HARBOR – GRAND RAPIDS ROAD

KENT COUNTY

CITIES OF GRANDVILLE AND WYOMING



N

NOTE

WHERE THE FOLLOWING ITEMS ARE CALLED FOR ON THE PLANS THEY ARE TO BE CONSTRUCTED ACCORDING TO THE STANDARD PLAN GIVEN BELOW OPPOSITE EACH ITEM UNLESS OTHERWISE INDICATED

STANDARD PLANS TO BE PRINTED

SHEET NO	TITLE
R11W & R12T	BRIDGE RAILING, BAR CHAIR, MOLDING AND BEVEL DETAILS
R15D	BRIDGE RAILING, BAR CHAIR, MOLDING AND BEVEL DETAILS
SP2L	STANDARD SLOPE PAVING DETAILS

GENERAL NOTES

EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED THEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF STATE HIGHWAYS STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 1970 EDITION.

THE DESIGN OF THESE STRUCTURES IS BASED ON THE MICHIGAN DEPARTMENT OF STATE HIGHWAYS SPECIFICATIONS FOR THE DESIGN OF HIGHWAY BRIDGES, 1958 EDITION AND CURRENT AASHO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES. (SEE LOADING TABLE)

THE CHARACTER OF ALL MATERIALS AND THE EXTENT THEREOF AS SHOWN BY BORINGS HAS BEEN OBTAINED BY METHODS AND FROM SOURCES BELIEVED TO BE RELIABLE. THE EXACTNESS OF THIS INFORMATION IS, HOWEVER, IN NO CASE GUARANTEED.

ALL EXPOSED CONCRETE CORNERS SHOWN SQUARE ON THE PLANS SHALL BE BEVELED WITH 1/2" TRIANGULAR MOLDINGS EXCEPT AS OTHERWISE NOTED.

THE STATIONING AS SHOWN ON THESE PLANS FOR THE INTERSECTION OF THE CENTERLINE OF BRIDGE AND ROADWAY CENTERLINE IS BELIEVED TO BE CORRECT. IT SHALL, HOWEVER, BE CHECKED AT THE TIME OF STARTING CONSTRUCTION AND IF THE STATIONING SHOWN ON THE PLANS IS INCORRECT, IT SHALL BE REPORTED TO THE DESIGN OFFICE AT LANSING AND THE STRUCTURE SHALL BE STAKED OUT USING THE ACTUAL INTERSECTION OF THE CENTERLINE OF BRIDGE AND ROADWAY CENTERLINE AS THE CONTROL POINT.

THE GRADES AND DESIGN STRESSES FOR THE STRUCTURAL MATERIALS USED IN THIS STRUCTURE ARE AS FOLLOWS:

CONCRETE: GRADE A ..... $f_c' = 3{,}000$ psi

STEEL REINFORCEMENT ..... $f_s = 20{,}000$ psi

PRESTRESSED CONCRETE ..... $f_c = 5{,}000$ psi

STRUCTURAL STEEL: A36 ..... $f_s' = 20{,}000$ psi

PRESTRESS STRANDS ..... $f_s = 250{,}000$ psi (Ultimate Strength)

LOADING TABLE

BRIDGE	LOADING	LIVE LOAD DEFLECTION
S02 – 41029G	HS20 & ALTER. MILITARY	1/1000 OF SPAN LENGTH & 1/350 OF CANTILEVER ARM
S20 – 41029G	H20	1/800 SPAN LENGTH & 1/300 CANTILEVER ARM
S22 – 41029G	H20	1/800 SPAN LENGTH & 1/300 CANTILEVER ARM
S23 – 41029G	HS20 & ALTER. MILITARY	1/1000 SPAN LENGTH
S25 – 41029G	HS20 & ALTER. MILITARY	1/1000 SPAN LENGTH
B01 – 41041	HS20	1/1000 SPAN LENGTH

THE EXISTING STRUCTURE SHALL BE CHECKED AT THE TIME OF STARTING CONSTRUCTION TO SEE THAT ITS RELATIONSHIP TO THE PROPOSED WORK IS AS SHOWN ON THESE PLANS AND ANY DIFFERENCES REQUIRING CHANGES IN THE NEW WORK SHALL BE REPORTED TO THE DESIGN OFFICE.

ITEM NO. 1376 873

CONTRACT FOR

APPROVALS

CHECKED — C. J. Zajac — ENGINEER – DESIGN SECTION — DATE 7-15-71

RECOMMENDED FOR APPROVAL — M. Rothstein — ENGINEER OF DESIGN — DATE 7-29-71

RECOMMENDED FOR APPROVAL — TRAFFIC DIVISION — DATE

RECOMMENDED FOR APPROVAL — CONSTRUCTION DIVISION — DATE 2-12-71

RECOMMENDED FOR APPROVAL — CHIEF – BUREAU OF ENGINEERING — DATE 7/29/71

DEPARTMENT OF STATE HIGHWAYS
HENRIK E. STAFSETH – STATE HIGHWAY DIRECTOR

APPROVED BY — DEPUTY STATE HIGHWAY DIRECTOR — DATE 7/29/71

PLANS PREPARED BY MICHIGAN DEPARTMENT OF STATE HIGHWAYS
SQUADS:
COLCUKLU S02
MILNE S20, S22
MACE S23, S25
JONES B01

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED [redacted]

CONTROL SECTION	JOB NUMBER	FEDERAL PROJECT	SHEET NO.
~~I 41029, I 41041~~ U 41041	00574A 04028A	I-196-5(78)-67 US-421(102)	1

CONTROL SECTION – JOB NUMBER: ~~I 41029 – 00574A, I 41041 – 00574A~~, U 41041 – 04028A

B01 I

L-1 + H/L 1/1

EDCO- 138 R3 8-70

Sheet No.	Description
1	Title Sheet
1a	Plan Index
1b, 1c, 1d	Quantity Sheet

S02 of 41029G	
Sheet No.	Description
2	General Plan of Site
3	Log of Borings
4, 5	General Plan of Structure
6	Interchange Layout
7	Abutment A Details
8	Abutment B Details
9	Pier 1 Details
10	Pier 2 Details
11, 12	Structural Steel Details
13, 14, 15, 16	Superstructure Details
17	Superstructure Details (Screeds)
18	Steel Reinforcement Details

S20 of 41029G	
Sheet No.	Description
2	General Plan of Site
3, 4	Log of Borings
5, 6	General Plan of Structure
7, 8	Abutment A Details
9, 10	Abutment B Details
11	Pier 1 Details
12	Pier 2 Details
13	Pier 3 Details
14	Pile Details
15, 16	Structural Steel Details
17	Bearing Details & Shear Developer Details
18	Metal Expansion Joint Details at Pier 1
19	Metal Expansion Joint Details at Pier 3
20	Superstructure Details Span 1 or 4
21	Superstructure Details Span 2 or 3
22	Superstructure Details
23, 24	Superstructure Slab and Screed Details And Temporary Support Details
25	Steel Reinforcement Details

S22 of 41029G	
Sheet No.	Description
2	General Plan of Site
3	Log of Borings
4, 5	General Plan of Structure
6	Abutment A Details
7	Abutment B Details
8	Abutment Details
9, 10	Pier Details
11, 12, 13	Structural Steel Details
14	Superstructure Details Span 1
15	Superstructure Details Span 2
16	Superstructure Details
17	Superstructure Slab & Screed Details And Temporary Support Details
18	Utility Details
19	Steel Reinforcement Details

S23 of 41029G	
Sheet No.	Description
2	General Plan of Site
3	Log of Borings
4	General Plan of Structure
5	Abutment A Details
6	Abutment B Details
7	Pier 1 Details
8	Pier 2 Details
9	Prestressed Concrete I Beam Details
10, 11, 12	Superstructure Details
13	Superstructure Details (Screeds)
14	Steel Reinforcement Details

S25 of 41029G	
Sheet No.	Description
2	General Plan of Site
3	Log of Borings
4	General Plan of Structure
5	Abutment A Details
6	Abutment B Details
7	Pier 1 Details
8	Pier 2 Details
9	Prestressed Concrete I Beam Details
10, 11, 12	Superstructure Details
13	Superstructure Details (Screeds)
14	Steel Reinforcement Details

B01 of 41041 Index	
Sheet No.	Description
2	General Plan of Site
3	Log of Borings
4	General Plan of Structure
5	Abutment A & B Details North Side
6	Abutment A & B Details South Side
7	Structural Steel Details
8	Superstructure Details North Side
9	Superstructure Details South Side
10	Superstructure Details
11	Steel Reinforcement Details

I 41041 ; U 41041

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

PLAN INDEX

SQUAD BOSS	Mace	7-14-71
DRAWN BY		
TRACED BY		
CHECKED BY		

SHEET 1a OF

CONTROL SECTION : ~~(41029 (S02, S20, S22, S23 & S25 of 41029G) ; I 41041 (B01 of 41041) ;~~ U 41041 (B01 of 41041)

ITEM	CODE NO.	UNIT	CONTR. QUANT.	FINAL QUANT.	UNIT PRICE	FINAL COST	B01-41041 (I41041) CONTR QUANT	REMARKS (AUTH. NO'S)				FINAL QUANT	FINAL COST	B01-41041 (U41041) CONTR QUANT	REMARKS (AUTH. NO'S)				FINAL QUANT	FINAL COST	502-41029G CONTR QUANT	REMARKS (AUTH. NO'S)				FINAL QUANT	FINAL COST	520-41029G CONTR QUANT	REMARKS (AUTH. NO'S)				FINAL QUANT	FINAL COST
Cofferdams	7007	L.S.	L.S.	L.S.	15,000.00	✓✓	45%					45%		55%					55%															
Removal of Portions of Existing Structures	7008	L.S.	L.S.	L.S.	16,000.00	✓✓	50%					50%		50%					50%															
Unclassified Excavation	6020	Cu.Yds.	2162	2064	3.00	✓✓	140	-1	AUTH.	1022		141		230	+22	AUTH.	1021		252		168	+47	AUTH.	1022		215		529	-8	AUTH.	1022		521	
60 Ton Piles (Furnished & Driven)	6042	Lin.Ft.	1250	1326.8	6.75	✓																						1250	+76.8	AUTH.	1022		1326.8	
Splices-60 Ton Piles	6043	Each	27	24	15.00	✓																						27	-3	AUTH.	1044		24	
Test Piles-60 Ton Piles	6044	Each	4	4	250.00	✓																						4					4	
Furnishing Equipment for Driving Piles	7009	L.S.	L.S.	L.S.	2500.00	✓																						L.S.					L.S.	
Concrete Grade A Subfootings	6089	Cu.Yds.	49.1	0	85.00	✓✓	5.8	-5.8	AUTH.	1022		0		10	-10	AUTH.	1018		0									15.3	-15.3	AUTH.	1022		0	
Concrete Grade A(6A) Substructure	6090	Cu.Yds.	1362.1	1362.2	88.00	✓✓	18					18		32.4					32.4		353.7					353.7		302.5	+0.1	AUTH.	1022		302.6	
Concrete Grade A(6AA) Substructure	6091	Cu.Yds.	1208	1208	92.00	✓	28.7					28.7		50.7					50.7		267.4					267.4		242.7					242.7	
Protective Sealant Coating for Concrete	6090	Sq.Ft.	976	976	1.50	✓																						196					196	
Concrete Grade A(6AA) Superstructure	6100	Cu.Yds.	2072	2095.4	40.00	✓	23.1	-0.8	AUTH.	1022		22.3		52.1	-0.7	AUTH.	1021		51.4		384	+15.4	AUTH.	1022		399.4		507.4					507.4	
Water Reducing Retarding Admixture	6103	Gals.	281.6	276.4	8.00	✓✓	3	-3	AUTH.	1022		0		6	-6	AUTH.	1018		0		55	+36.5	AUTH.	1022		91.5		66.4	+34	AUTH.	1022		100.4	
Protective Treatment for Bridge Decks	6104	Sq.Ft.	64,097	61,215	0.13	✓								262	-32	AUTH.	1045		230		12,911	-708	AUTH.	1044		12,203		15,724	-1002	AUTH.	1044		14,722	
28" Prestressed Concrete I Beams-Furnished	6141	Lin.Ft.	781.5	781.5	17.00	✓																												
28" Prestressed Concrete I Beams-Erected	6142	Lin.Ft.	781.5	781.5	3.00	✓																												
45" Prestressed Concrete I Beams-Furnished	6147	Lin.Ft.	1291.1	1291.1	22.00	✓																												
45" Prestressed Concrete I Beams-Erected	6150	Lin.Ft.	1291.1	1291.1	3.00	✓																												
Steel Reinforcement	6160	Lbs.	750,258	750,645	0.19	✓	9263					9263		15,414	-152	AUTH.	1018		15,262		157,046					157,046		186,900	+170	AUTH.	1022		187,070	
3/8" Concrete Inserts	6166	Each	114	110	1.50	✓	18	-4	AUTH.	1022		14																						
Structural Steel-Furnishing & Fabricating (Rolled)	6190	Lbs.	28,500	28,[illegible]	[illegible]	✓✓	9500	-100	AUTH.	1003		9400		19000	-200	AUTH.	1002		18,800															
Structural Steel-Erection (Rolled)	6191	Lbs.	28,500	28,[illegible]	0.03	✓✓	9500	-100	AUTH.	1003		9400		19000	-200	AUTH.	1002		18,800															
Structural Steel-Furnishing & Fabricating (Plate)	6193	Lbs.	1,796,000	810,317	0.275	✓															410,000	+3831	AUTH.	1003		413,831		624,000	+3029	AUTH.	1003		627,029	
Structural Steel-Erection (Plate)	6194	Lbs.	1,796,000	810,317	0.03	✓															410,000	+3831	AUTH.	1003		413,831		624,000	+3029	AUTH.	1003		627,029	
Shear Developers (B01)	7013	L.S.	L.S.	L.S.	800.00	✓✓	40%					40%		60%					60%															
Shear Developers (502)	7011	L.S.	L.S.	L.S.	2400.00	✓															L.S.					L.S.								
Shear Developers (520)	7012	L.S.	L.S.	L.S.	1600.00	✓																						L.S.					L.S.	
Shear Developers (522)	7013	L.S.	L.S.	L.S.	3200.00	✓																												
Field Painting (B01)	7014	L.S.	L.S.	L.S.	700.00	✓✓	40%					40%		60%					60%															
Field Painting (502)	7015	L.S.	L.S.	L.S.	9200.00	✓															L.S.					L.S.								
Field Painting (520)	7016	L.S.	L.S.	L.S.	14,400.00	✓																						L.S.					L.S.	
Field Painting (522)	7017	L.S.	L.S.	L.S.	15,200.00	✓																												
3/4" Expansion Hook Bolts	7018	Each	24	24	10.00	✓✓	12					12		12					2															
1/2" Joint Filler	6212	Sq.Ft.	1300	1[illegible]	1.50	✓✓	50	+15.8	AUTH.	1022		65.8		80	+6.6	AUTH.	1046		86.6		213	-1	AUTH.	1022		214.1		239					239	
3/4" Joint Filler	6214	Sq.Ft.	131	1216	1.50	✓															35	-9.4	AUTH.	1022		25.6								
1" Elastomeric Bearings	6272	Sq.Ft.	80	80	25.00	✓																												
1 1/4" Preformed Neoprene Joint Sealer	6310	Lin.Ft.	316.8	317.1	10.00	✓															70					70		59	+0.3	AUTH.	1022		59.3	
2" Preformed Neoprene Joint Sealer	6312	Lin.Ft.	222	220.5	20.00	✓																												
10 7/8" Reinforced Neoprene Expansion Joint Seal	6322	Lin.Ft.	68.3	68.3	75.00	✓															68.3					68.3								
22 3/4" Reinforced Neoprene Expansion Joint Seal	6324	Lin.Ft.	90.1	90.1	150.0	✓																												
Joint Waterproofing	6332	Sq.Ft.	2186	2183.2	1.25	✓✓	145					145		150	-5.8	AUTH.	1018		144.2		402					402		322					322	
Hot Poured Rubber Asphalt Type Filler	6338	Lin.Ft.	178	111.8	3.50	✓																						178	-66.2	AUTH.	1022		111.8	
Rubberized Coal Tar Emulsion	6350	Gals.	103	120	1.50	✓✓	46	+24	AUTH.	1029		70		57	-7	AUTH.	1030		50															
Patching Mortar or Concrete	6358	Cu.Yds.	9	0	200.00	✓✓	4	-4	AUTH.	1029		0		5	-5	AUTH.	1030		0															
Bridge Railing-Parapet Type	6380	Lin.Ft.	1368.3	1360.0	17.00	✓✓								85					45.0									764.8	-2.1	AUTH.	1022		762.7	
Bridge Barrier Railing-Type 1	6390	Lin.Ft.	920.1	920.4	18.00	✓✓	0	+45.5	AUTH.	1022		45.5		25.4	-25.4	AUTH.	1015		0		408.4	-0.1	AUTH.	1022		408.3								
Slope Protection-Class A	6462	Sq.Yds.	3100	2910.4	12.00	✓															980	-161.2	AUTH.	1023		818.8		593	-30.4	AUTH.	1023		562.6	
Slope Protection Headers	6466	Lin.Ft.	1369	1624.1	11.00	✓															143	+228.7		1023		371.7		361	-16.7	AUTH.	1023		344.3	
3" Fiber Conduit	7019	Lin.Ft.	480	552.3	3.00	✓																												
Maintaining and Protecting Telephone Facilities	7020	L.S.	L.S.	L.S.	2000.00	✓	0	+1	AUTH.	1002	EXTRA	L.S.		L.S.	-1	AUTH.	1015		0															
Temporary Supports (522)	7021	L.S.	L.S.	L.S.	6000.00	✓																												
Forming, Finishing and Curing Superstructure Concrete (522)	7025	L.S.	L.S.	L.S.	49,210.00	✓																												
Forming, Finishing and Curing Superstructure Concrete (523)	7026	L.S.	L.S.	L.S.	2,740.00	✓																												
Forming, Finishing and Curing Superstructure Concrete (525)	7027	L.S.	L.S.	L.S.	16,540.00	✓																												
Forming, Finishing and Curing Superstructure Concrete (520)	7024	L.S.	L.S.	L.S.	35,560.00	✓																						L.S.					L.S.	
TOTAL																																		

PLAN EXTRAS

DATE	DESCRIPTION	UNIT	QUANTITY ESTIMATE	QUANTITY FINAL
6-16-72	6" FOUNDATION DRAINS 5-20 AUTH. 2009	LFT.	340	480
12-10-72	Remove Concrete Median AUTH 2017	DLBS	83483.90	83483.90
12-13-72	Transfer Location and Install Telephone Facilities Installation From B01-41041 To I41029 AUTH 4002	L.S.	2000.00	2000.00

B01-41041 :
I-B01 denotes North Side (I41041-00574A)
U-B01 denotes South Side (U41041-04028A)

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

QUANTITY SHEET

SUBMITTED BY	Mace	7-14-71
DRAWN BY		
TRACED BY		
CHECKED BY	Bourson	7-14-71
SHEET 16 OF		

CONTROL SECTION : I 41029 (S02, ~~S20, S22, S23 & S25 of 41029G~~) ;
I 41041 (B01 of 41041); U 41041 (B01 of 41041)

BM I (5-6-66)

ITEM	CODE NO.	UNIT	CONTR. QUANT.	FINAL QUANT.	UNIT PRICE	FINAL COST	B01-41041 (I41041) CONTR QUANT.	REMARKS (AUTH. NO'S.)	FINAL QUANT.	FINAL COST	B01-41041 (U41041) CONTR QUANT.	REMARKS (AUTH. NO'S.)	FINAL QUANT.	FINAL COST	502-41029G CONTR QUANT.	REMARKS (AUTH. NO'S.)	FINAL QUANT.	FINAL COST	CONTR QUANT.	REMARKS (AUTH. NO'S.)	FINAL QUANT.	FINAL COST
Forming, Finishing and Curing Superstructure Concrete (B01)	7022	L.S.	L.S.	L.S.	5250.00	✓ ✓	35%		35%		65%		65%									
Forming, Finishing and Curing Superstructure Concrete (502)	7023	L.S.	L.S.	L.S.	26,880.00	✓									L.S.		L.S.					
Salvaging, ~~Fa~~-Fabricating & ~~Er~~-Erecting Structural Steel	7028	Lbs.	18,500	18,500	0.25	✓ ✓	9250		9250		9250		9250									
TOTAL																						

PLAN EXTRAS

DATE	DESCRIPTION	UNIT	QUANTITY ESTIMATE	QUANTITY FINAL

10/5/75 R.S.

B01-41041
I-B01 denotes North Side (I41041-00574A)
U-B01 denotes South Side (U41041-04028A)

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

QUANTITY SHEET

SQUAD BOSS	Mace	7-14-71
DRAWN BY		
TRACED BY		
CHECKED BY	Bourson	7-14-71

SHEET 1 C OF

CONTROL SECTION : ~~L41029 (502 ; 520 SEC ; 525 & 525 of 41029C)~~ ;
L41041 (B01 of 41041) U41041 (B01 of 41041)

BM I (5-6-66)

BENCH MARKS
B.M. #179, Elev. 602.44
P.K. Nail, Nut & Tag in E. root of 34" Elm 133' Lt. of Sta. 274+88 (M-21 B.R.)
B.M. #179A, Elev. 601.93
Chiseled "□" on S.E. Cor. of W. Wingwall 33' Lt. of Sta. 270+99
B.M. #182, Elev. 631.89
Chiseled "□" on N.W. Cor. of the N.W. Wingwall of E. Bound R.R. Bridge 22' Lt. of Sta. 154+03

WITNESSES TO P.O.T. & M-21 B.R. STA. 266+72.12 (End Tan of Curve)		
P.K. Nail & Cap		
N45°W	56.85'	S.E. Cor. Planter
N'Ly	6.7'	℄ Const. Jt.
N30°E	76.11'	S.W. Lv. Bolt on Gulf Sign

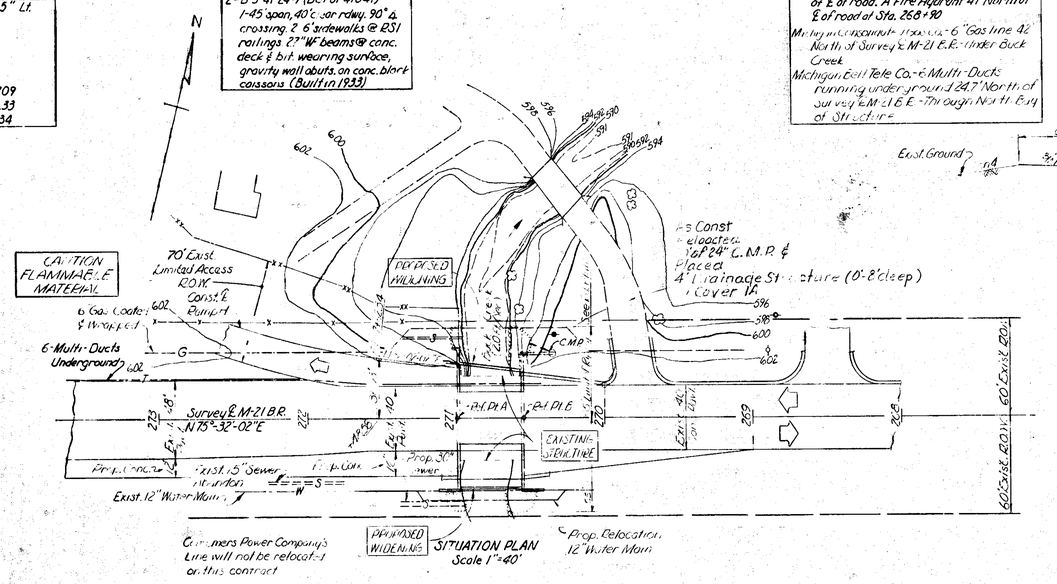
WITNESSES TO P.O.T. & M-21 B.R. STA. 273+94.50		
P.K. Nail & Cap		
N35°E	63.60'	24" Syc.
N20°E	60.54'	Guy Pole
S20°E	63.28'	Power Pole

WITNESSES TO P.O.T. & M-21 B.R. STA. 270+54.18
P.K. Nail & Cap
No Witnesses

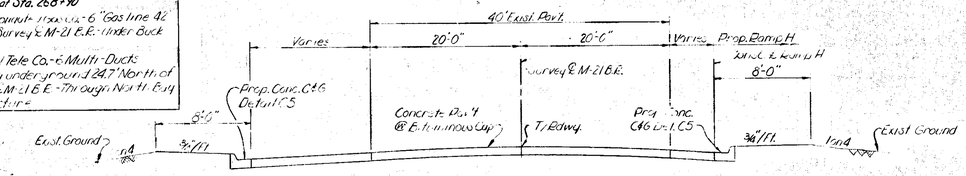
UTILITIES
Michigan Bell Tele. Co. has a pole line 50' North of Survey & M-21 B.R.
Consumers Power Co. - Electric on South Side Survey & M-21 B.R.
City of Grandville has a 12" Storm Sewer @ Headwall 50' North of ℄ of road running to West bank of Creek. A 15" Storm Sewer @ Headwall 40' South of ℄ of road running to West bank of Creek. Corr. Metal Pipe 40' North of ℄ of road running to East bank of creek. A 12" Water Main running 45' South of ℄ of road. A Fire Hydrant 41' North of ℄ of road at Sta. 268+90
Michigan Consumers Power Co. - 6" Gas line 42' North of Survey & M-21 B.R. - Under Buck Creek
Michigan Bell Tele Co. - 6 Multi-Ducts running underground 24.7' North of Survey & M-21 B.R. - Through North Bay of Structure

Curve Data Ramp H
Δ = 31°-39'-15" Lt.
D = 11°-30'
R = 498.22'
T = 141.24'
L = 275.25'
E = 19.63'
P.C. = 24+87.09
P.I. = 26+28.33
P.T. = 27+62.34

EXISTING STRUCTURES
1-2 span 52' structure before 1933 Substructure partially in place below bed of stream.
2-B 3-41-24-7 (B01 of 41041) 1-45' span, 40' c. car rdwy. 90° ∆ crossing. 2 6' sidewalks @ RSI railings 27" WF beams @ conc. deck & bit. wearing surface, gravity wall abuts. on conc. block caissons (Built in 1933)



SITUATION PLAN
Scale 1" = 40'



TYPICAL APPROACH SECTION
Looking West

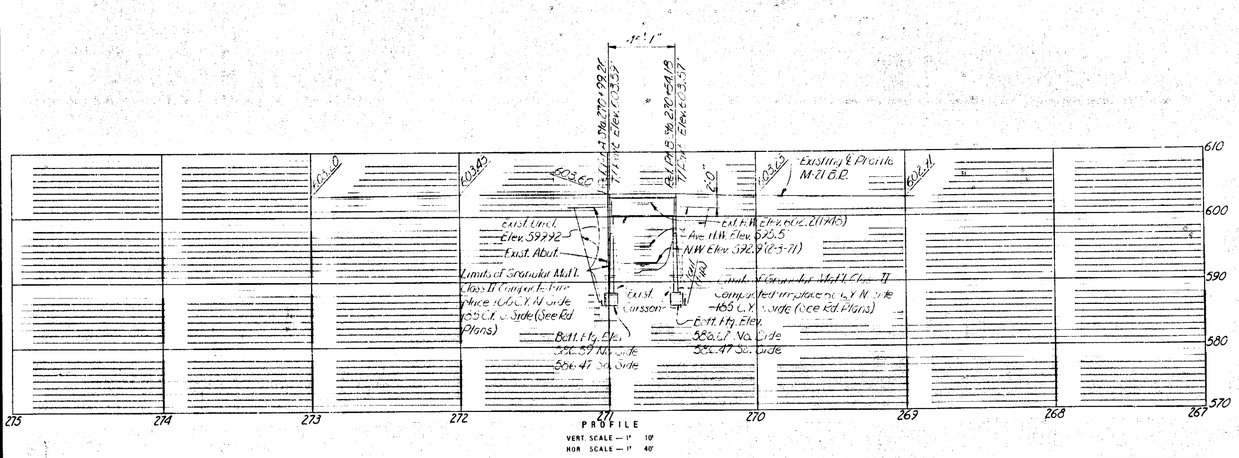
NOTES:

The work covered in these plans includes removal of portions of existing structure and widening the existing bridge. All other work is included in the roads plans which are a part of this contract.

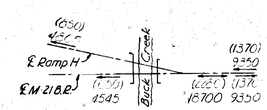
Traffic is to be maintained on the north half of bridge while south half is repaired and widened. Traffic then routed over south half while north half is repaired and widened. See Rd. Plans for specific staging.

The contractor shall locate all active underground utilities prior to starting work and shall conduct his operations in such a manner as to insure that those utilities not requiring relocation will not be disturbed.

Survey ℄ M-21 B.R. stationing runs from east to west.



PROFILE
VERT. SCALE — 1" 10'
HOR. SCALE — 1" 40'



1988 ESTIMATED TRAFFIC DISTRIBUTION

000 A.D.T.
(000) D.H.V.
5% Commercial

REVISIONS			
No.	DESCRIPTION	DATE	BY

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

M-21 B.R. OVER BUCK CREEK NEAR THE WEST CITY LIMITS OF GRANDVILLE (PROPOSED WIDENING)

GENERAL PLAN OF SITE

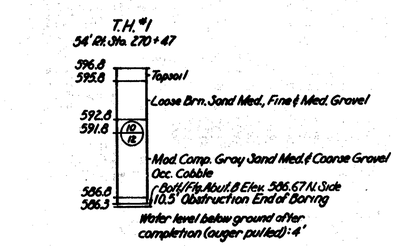
APPROVED L. C. Chick 7-14-71
ASS'T DESIGN SUPERVISING ENGINEER

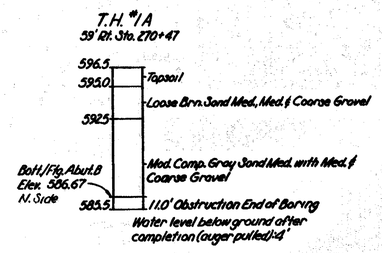
APPROVED H. C. Trabor 7-14-71
DESIGN SUPERVISING ENGINEER

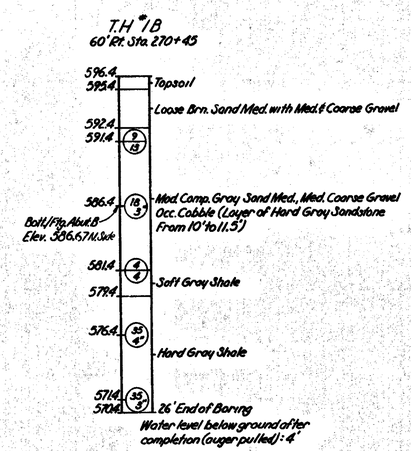
SQUARED BY	[illegible]	7-1-71
DRAWN BY	[illegible]	6-24-71
TRACED BY		
CHECKED BY	[illegible]	7-1-71
SHEET 2 OF 9		

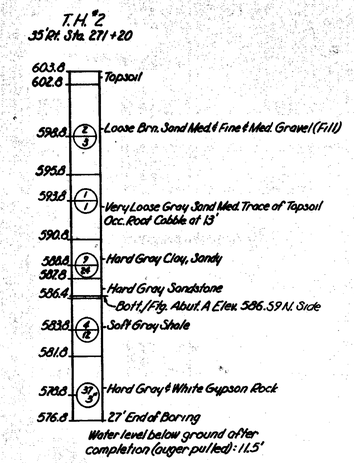
B01 of 41041

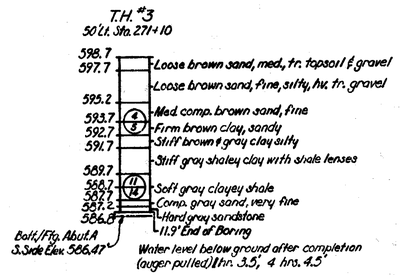
04 28A

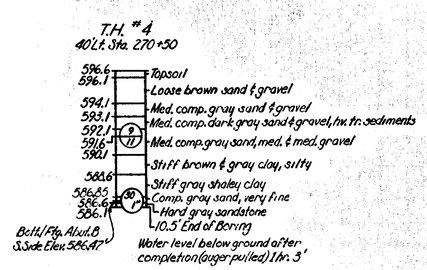


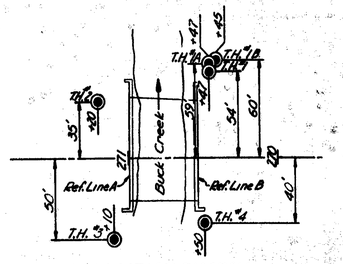












LOCATION DIAGRAM

NOTES:

(0) 1st 6" / (0) 2nd 6" — No. of Blows / Dist. Driven

Number in circle denotes number of blows required to drive a 2" O.D. × 1 1/2" I.D. sampler 12" (6" increments) using a 140# hammer falling 30".

Consistency determined by inspection of samples and by soil resistance to penetration by jet rod and auger.

Borings for T.H. #1, T.H. #1A, T.H. #1B and T.H. #2 taken Feb. 3, 1971

Borings for T.H. #3 and T.H. #4 taken July 6 and 7, 1971

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

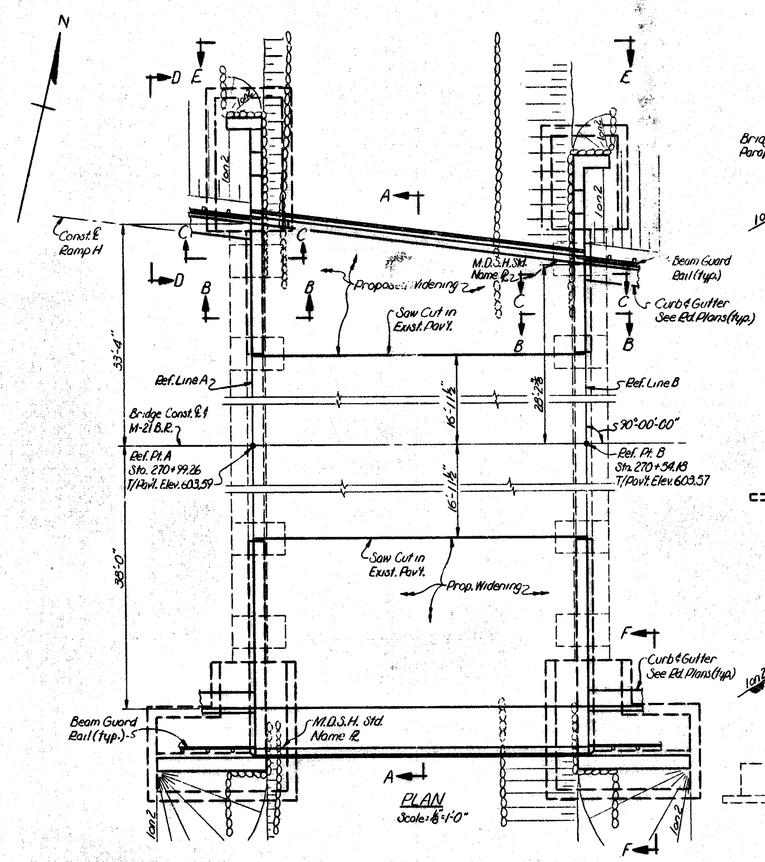
LOG OF BORING

REVISIONS			
NO.	DESCRIPTION	DATE	BY

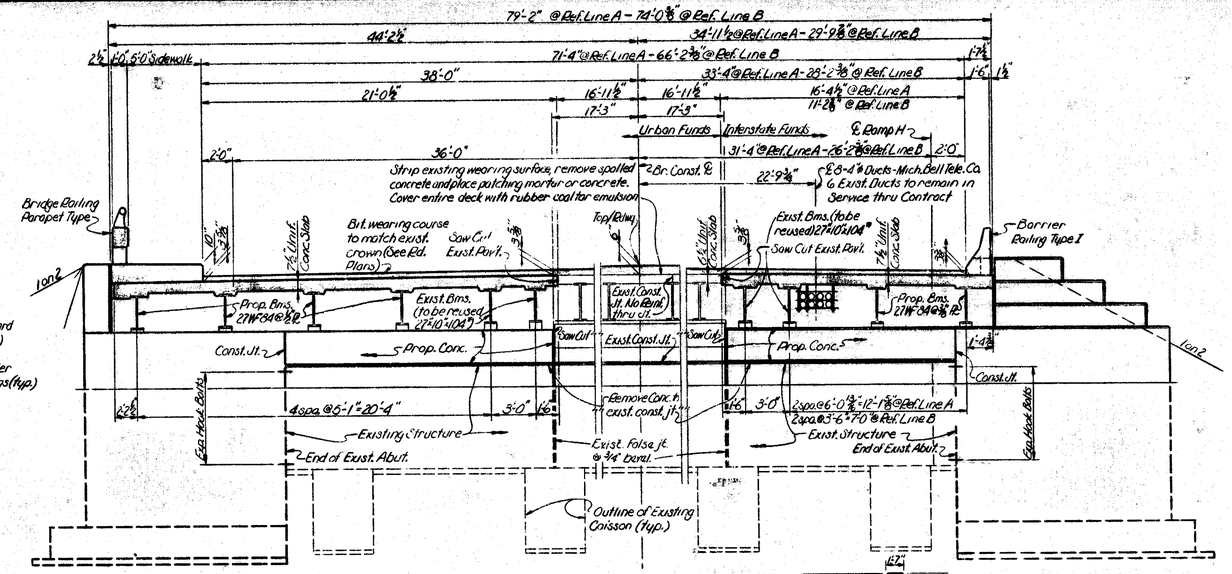
ROAD BOG	Jones	7-1-71
DRAWN BY	J. Coster	3-9-71
TRACED BY		
CHECKED BY	DCA	3-12-71
SHEET 3 OF 11		

BOI of 41041

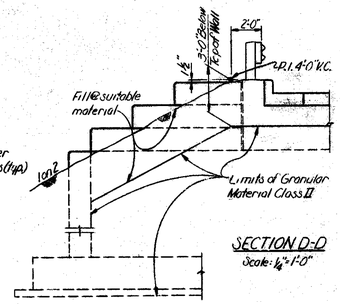
00574 A
04028 A



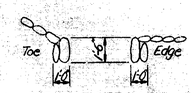
PLAN
Scale: 1/8"=1'-0"



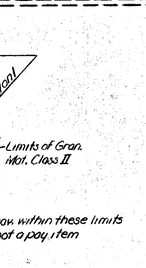
SECTION A-A
Scale: 1/4"=1'-0"



SECTION D-D
Scale: 1/4"=1'-0"



HEADER DETAILS



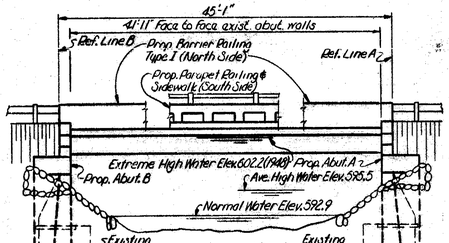
SECTION F-F
Scale: 3/16"=1'-0"

NOTES:

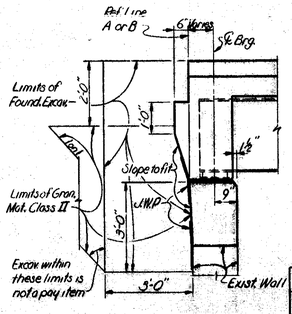
The design of the bridge widening is based on the Mich. Dept. of State Highways Spec's. for the design of Highway Bridges, 1958 edition and current AASHO Standard Specs. for Highway Bridges HS20 loading. Live load plus impact deflection equals 1/1000 of span length.

The top of roadway shall meet the existing pavement at the reference lines.

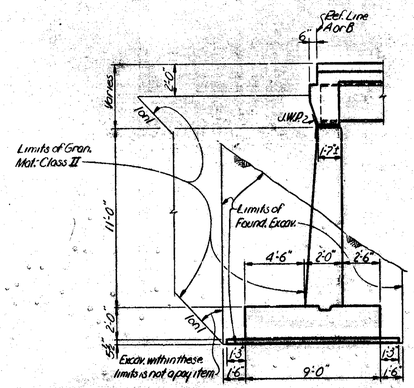
The drainage area contributory to this crossing is 30 square miles and waterway area required is 156 square feet. The waterway area supplied below underclearance elev. 599.9 is 290 square feet. With a depth of flow under the bridge of 4.5', a stream velocity of 6.75 V/sec. and an estimated backwater of 0.45' will occur.



VIEW E-E
(Looking South)
Scale: 3/16"=1'-0"



SECTION B-B
Scale: 1/4"=1'-0"



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

MISCELLANEOUS QUANTITIES		
ITEM	Unit	Amount
Removal of Portions of Existing Structure	Lump Sum	Lump Sum
Cofferdams	Lump Sum	Lump Sum

REVISIONS			
NO.	DESCRIPTION	DATE	BY

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

M-21 BR OVER BUCK CREEK NEAR THE WEST CITY LIMITS OF GRANDVILLE.
(PROPOSED WIDENING)

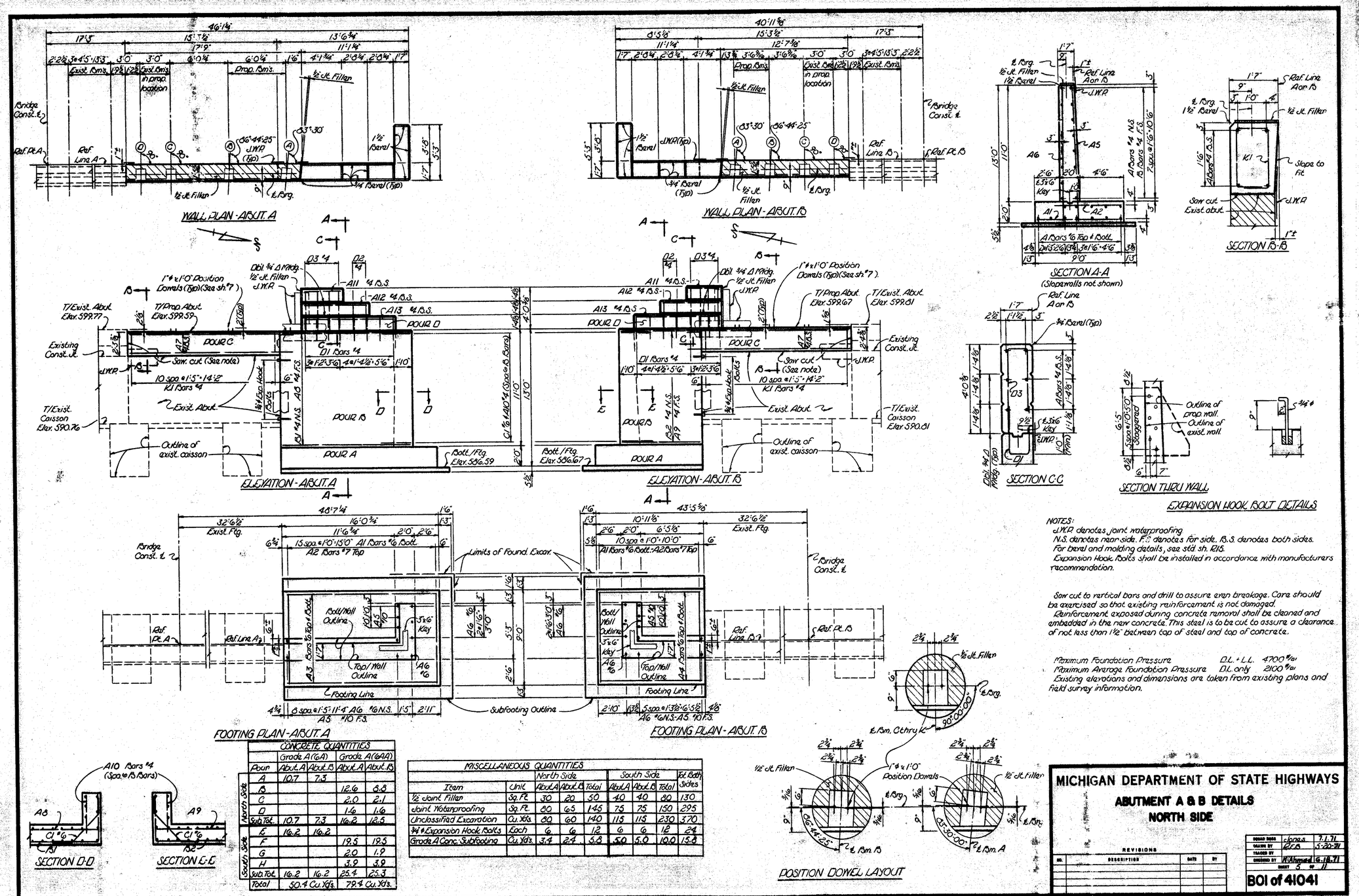
GENERAL PLAN OF STRUCTURE

SQUAD BOSS	Jones	7.1.71
DRAWN BY	J. Cowan	3-1-71
TRACED BY		
CHECKED BY	RCA	3-12-71
SHEET 4 OF 11		

APPROVED L. O. Chicks 7.14.71
MDSHT DESIGN SUPERVISING ENGINEER
APPROVED A. C. Tinker 7.14.71
DESIGN SUPERVISING ENGINEER

B01 of 41041

00574A
04028A



CONCRETE QUANTITIES		Grade A (6A)		Grade A (6AA)	
	Pour	Abut. A	Abut. B	Abut. A	Abut. B
North Side	A	10.7	7.3		
	B			12.6	8.8
	C			2.0	2.1
	D			1.6	1.6
	Sub Tot.	10.7	7.3	16.2	12.5
South Side	E	16.2	16.2		
	F			19.5	19.5
	G			2.0	1.9
	H			3.9	3.9
	Sub Tot.	16.2	16.2	25.4	25.3
	Total	50.4 Cu. Yds.		79.4 Cu. Yds.	

MISCELLANEOUS QUANTITIES		North Side			South Side			Tot. Both Sides
Item	Unit	Abut. A	Abut. B	Total	Abut. A	Abut. B	Total	
1/2" Joint Filler	Sq. Ft.	30	20	50	40	40	80	130
Joint Waterproofing	Sq. Ft.	80	65	145	75	75	150	295
Unclassified Excavation	Cu. Yds.	80	60	140	115	115	230	370
3/4" ø Expansion Hook Bolts	Each	6	6	12	6	6	12	24
Grade A Conc. Subfooting	Cu. Yds.	3.4	2.4	5.8	5.0	5.0	10.0	15.8

NOTES:
J.W.P. denotes joint waterproofing.
N.S. denotes near side. F.S. denotes far side. B.S. denotes both sides.
For bevel and molding details, see std. sh. R16.
Expansion Hook Bolts shall be installed in accordance with manufacturers recommendation.

Sawcut to vertical bars and drill to assure even breakage. Care should be exercised so that existing reinforcement is not damaged.
Reinforcement exposed during concrete removal shall be cleaned and embedded in the new concrete. This steel is to be cut to assure a clearance of not less than 1 1/2" between top of steel and top of concrete.

Maximum Foundation Pressure D.L. + L.L. 4700 #/□'
Maximum Average Foundation Pressure D.L. only 2100 #/□'
Existing elevations and dimensions are taken from existing plans and field survey information.

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

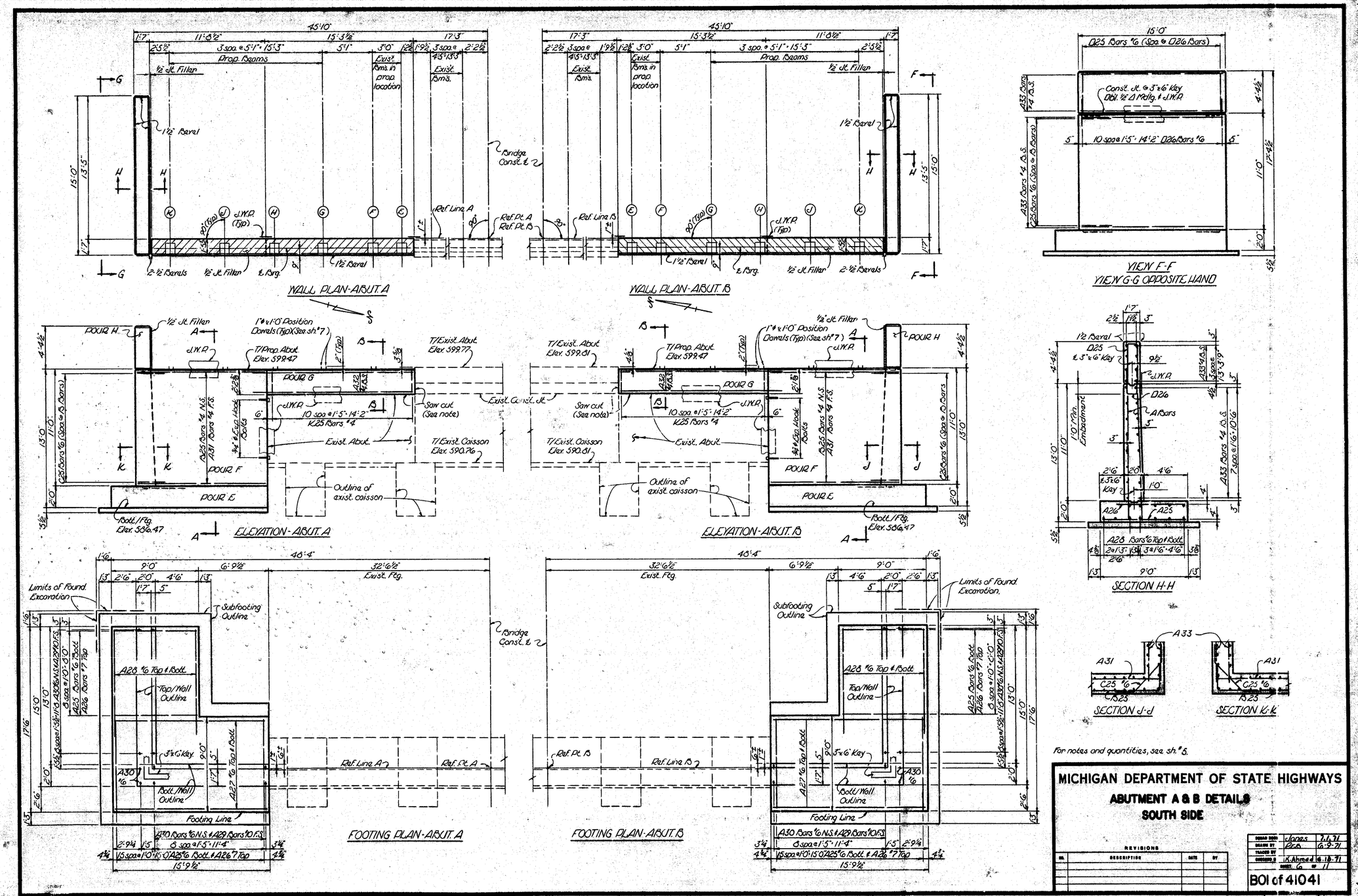
ABUTMENT A & B DETAILS
NORTH SIDE

REVISIONS			
NO.	DESCRIPTION	DATE	BY

ROAD BOSS	Jones	7.1.71
DRAWN BY	R.C.B.	5-20-71
TRACED BY		
DESIGNED BY	W. Ahlquist	6.18.71
SHEET 5 OF 11		

BOI of 41041

00574 A
04028 A



MICHIGAN DEPARTMENT OF STATE HIGHWAYS

ABUTMENT A & B DETAILS

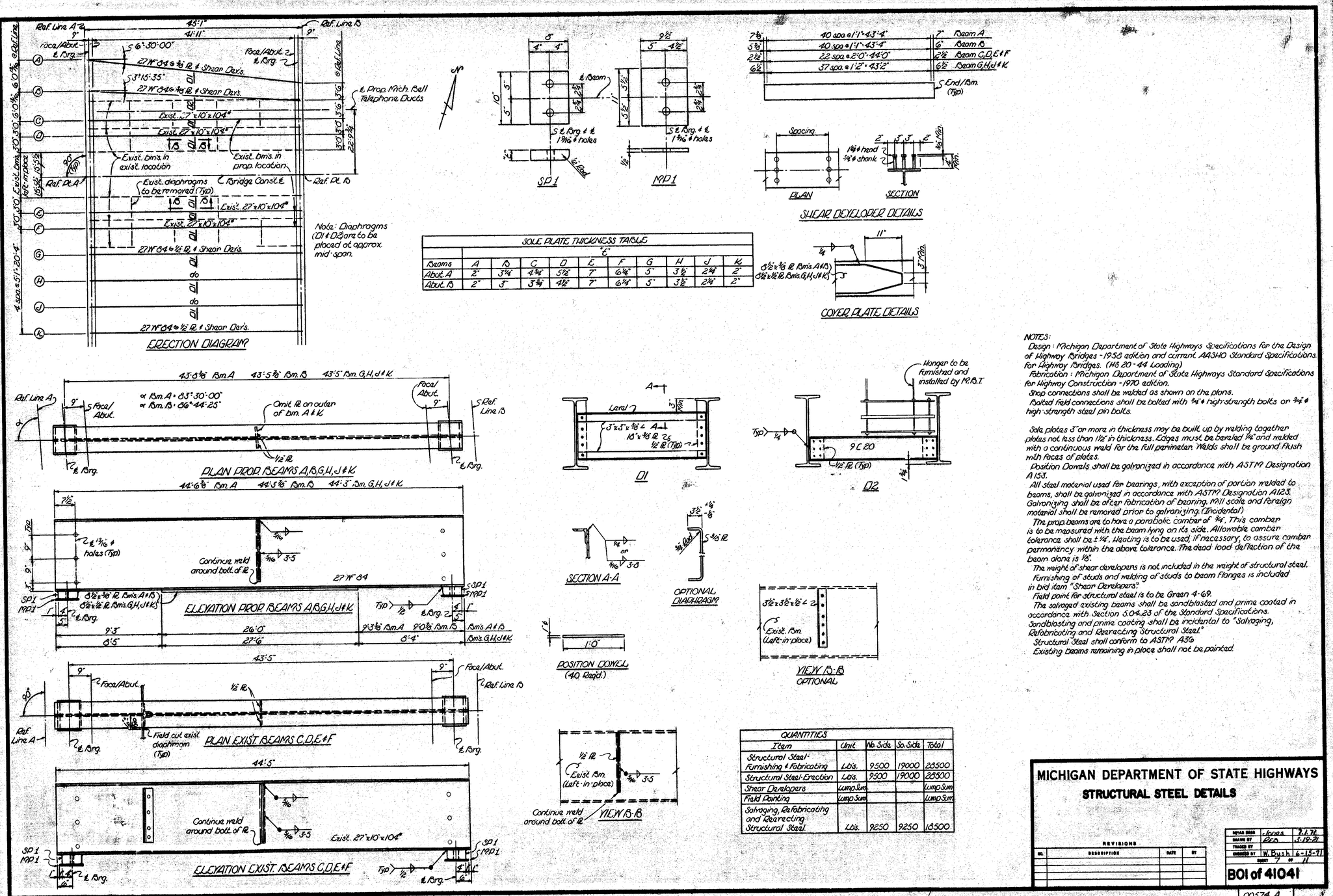
SOUTH SIDE

REVISIONS			
NO.	DESCRIPTION	DATE	BY

DESIGN BASIS	Jones	7-1-71
DRAWN BY	D.C.	6-9-71
TRACED BY		
CHECKED BY	K. Ahmed	6-10-71
SHEET	6 OF 11	

BOI of 41041

C 25.74 A
C 10.28 A



NOTES:

Design: Michigan Department of State Highways Specifications for the Design of Highway Bridges - 1956 edition and current AASHO Standard Specifications for Highway Bridges. (HS 20 - 44 Loading)

Fabrication: Michigan Department of State Highways Standard Specifications for Highway Construction - 1970 edition.

Shop connections shall be welded as shown on the plans.

Bolted field connections shall be bolted with 3/4" ø high-strength bolts on 3/4" ø high-strength steel pin bolts.

Sole plates 3" or more in thickness may be built up by welding together plates not less than 1 1/2" in thickness. Edges must be beveled 1/4" and welded with a continuous weld for the full perimeter. Welds shall be ground flush with faces of plates.

Position Dowels shall be galvanized in accordance with ASTM Designation A153.

All steel material used for bearings, with exception of portion welded to beams, shall be galvanized in accordance with ASTM Designation A123. Galvanizing shall be after fabrication of bearing. Mill scale and foreign material shall be removed prior to galvanizing. (Incidental)

The prop. beams are to have a parabolic camber of 3/4". This camber is to be measured with the beam lying on its side. Allowable camber tolerance shall be ± 1/4". Heating is to be used, if necessary, to assure camber permanency within the above tolerance. The dead load deflection of the beam alone is 1/8".

The weight of shear developers is not included in the weight of structural steel.

Furnishing of studs and welding of studs to beam flanges is included in bid item "Shear Developers".

Field paint for structural steel is to be Green 4-69.

The salvaged existing beams shall be sandblasted and prime coated in accordance with Section 5.04.23 of the Standard Specifications. Sandblasting and prime coating shall be incidental to "Salvaging, Refabricating and Reerecting Structural Steel."

Structural Steel shall conform to ASTM A36.

Existing beams remaining in place shall not be painted.

QUANTITIES

Item	Unit	No. Side	So. Side	Total
Structural Steel-Furnishing & Fabricating	Lbs.	9500	19000	28500
Structural Steel-Erection	Lbs.	9500	19000	28500
Shear Developers	Lump Sum			Lump Sum
Field Painting	Lump Sum			Lump Sum
Salvaging, Refabricating and Reerecting Structural Steel	Lbs.	9250	9250	18500

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

STRUCTURAL STEEL DETAILS

REVISIONS

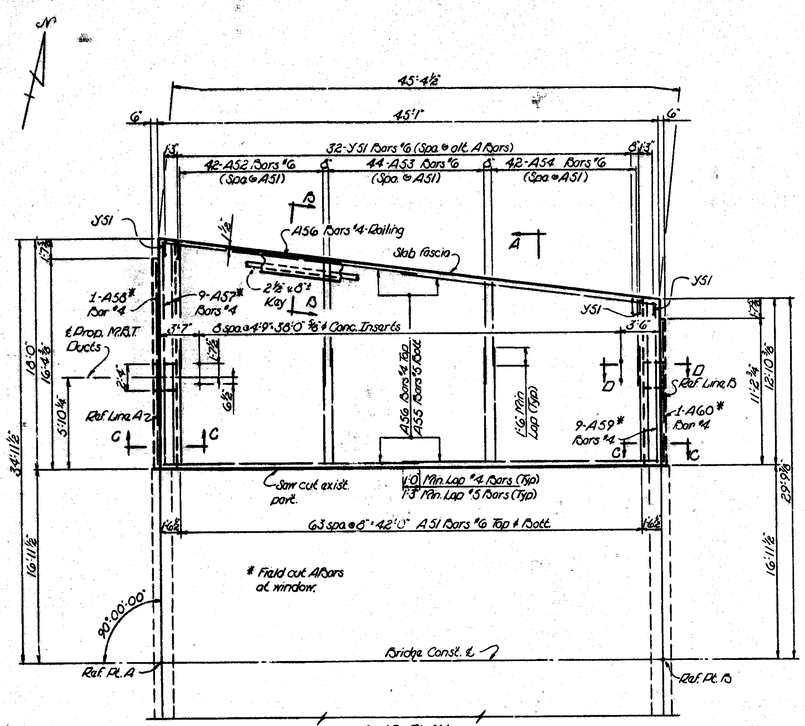
NO.	DESCRIPTION	DATE	BY

DESIGN BASIS	Jones	7.1.71
DRAWN BY	RCD	5-19-71
TRACED BY		
CHECKED BY	W. Bush	6-15-71

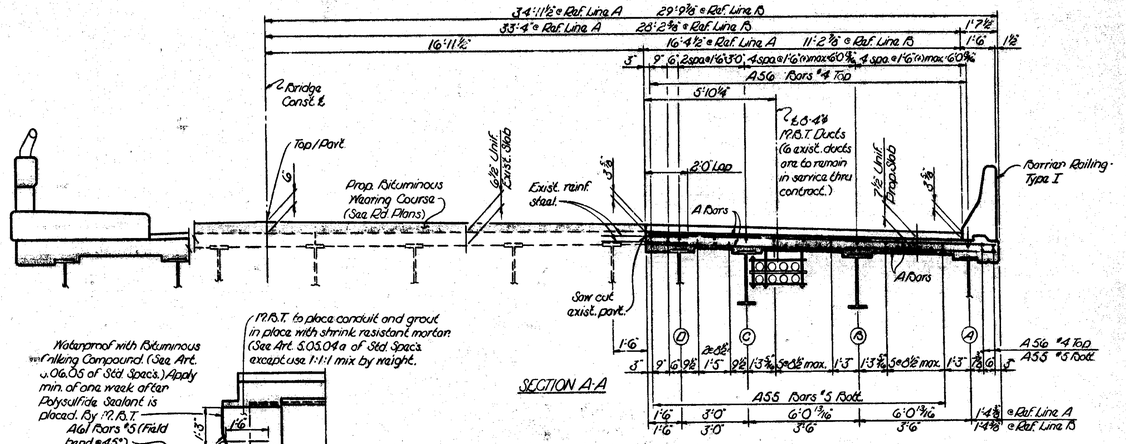
SHEET 7 OF 11

BOI of 41041

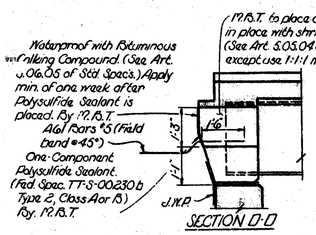
00574 A
04026 A



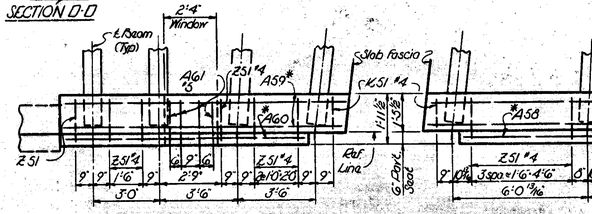
SLAB PLAN



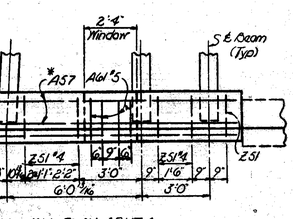
SECTION A-A



SECTION D-D

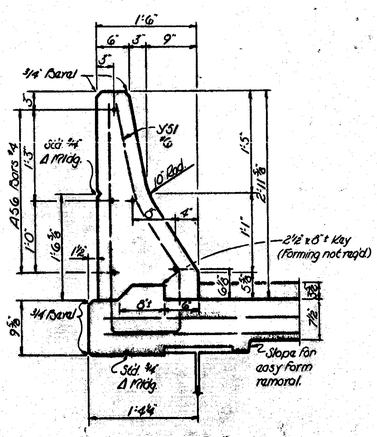


BACKWALL PLAN-ABUT. B

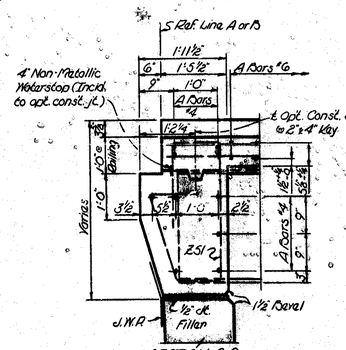


BACKWALL PLAN-ABUT. A

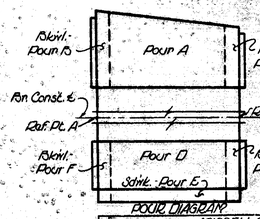
* Field cut A Bars at window.



SECTION B-B



SECTION C-C



POUR DIAGRAM

GRADE A (GA A) CONCRETE QUANTITIES SUPERSTRUCTURE			
Pour	North Side	Pour	South Side
	17.8	D	30.9
B	3.1	E	12.2
C	2.2	F	4.5
		G	4.5
Sub Tot.	23.1	Sub Tot.	52.1
Total	75.2 Cu. Yds.		

MISCELLANEOUS QUANTITIES				
Item	Unit	No. Side	So. Side	Total
Protective Treatment for Bridge Deck	Sq. Ft.		262	262
Bridge Barrier Railing - Type I	Lin. Ft.	45.4		45.4
Water Reducing Retarding Admixture	Gal.	3	6	9
Patching Mortar on Concrete	Cu. Yd.	4	5	9
Bridge Railing - Parapet Type	Lin. Ft.		45.0	45.0
Rubberized Coal Tar Emulsion	Gal.	46	57	103
⅝" Concrete Inserts	Each	18		18
Forming, Finishing and Curing Superstructure Concrete	Lump Sum			L.S.
Maintaining and Protecting Telephone Facilities	Lump Sum	Lump Sum		Lump Sum

ITEMS CHARGEABLE TO MICHIGAN BELL TELEPHONE CO.		
Item	Unit	Amt.
⅝" Concrete Inserts	Each	18
Maintaining and Protecting Telephone Facilities	Lump Sum	Lump Sum

NOTES:

J.W.P. denotes joint waterproofing.

Railing and sidewalk pours shall not be cast until slab concrete has attained at least 50% of its design strength as determined by Table 7.01.05 of the Standard Specifications.

For name plate mounting details, see standard sh. R15. For location of name plate, see sh. 4.

Anchorage for guard rail is to be provided in railing. For details, see standard sh. R11, R12 & R15.

For bevel, molding and bridge railing details not shown on Section B-B, see standard sh. R15.

Concrete Inserts are to be tapped Truson ⅝" ϕ on approved equal.

Saw cut to reinforcing steel and drill to assure even breakage. Care should be exercised so that existing reinforcement is not damaged.

Reinforcement exposed during concrete removal shall be cleaned and cut to assure a 2'-0" lap.

A rubbed surface finish on the vertical and top concrete surfaces of the parapet railing is required on this structure.

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

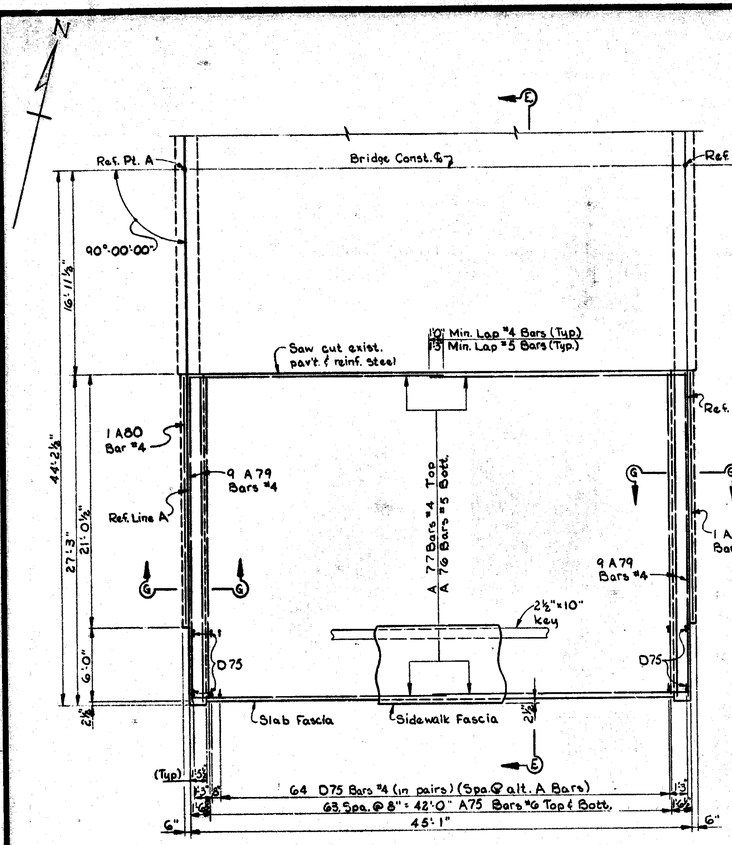
SUPERSTRUCTURE DETAILS NORTH SIDE

REVISIONS			
No.	DESCRIPTION	DATE	BY

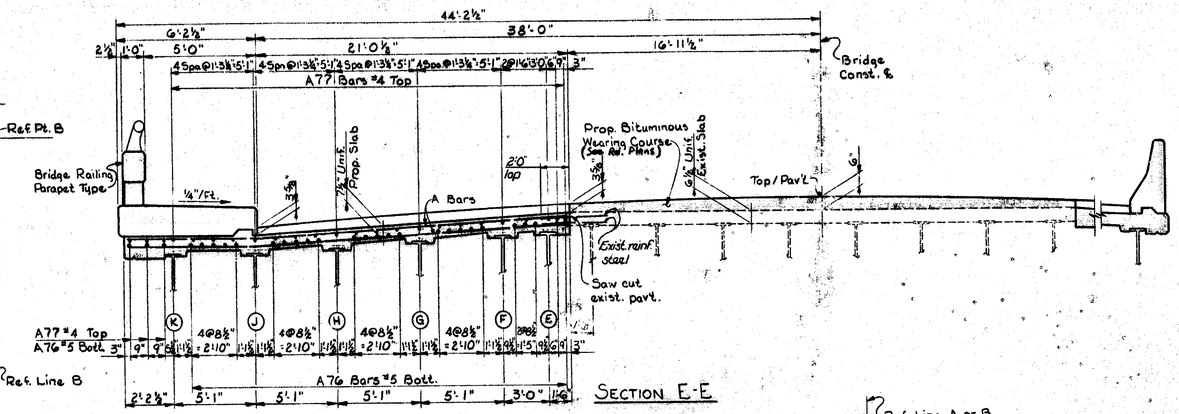
DESIGNED BY	Jones	7-1-71
DRAWN BY	RCA	5-14-71
TRACED BY		
CHECKED BY	HSIA	6-23-71
SHEET	3 of 11	

B01 of 41041

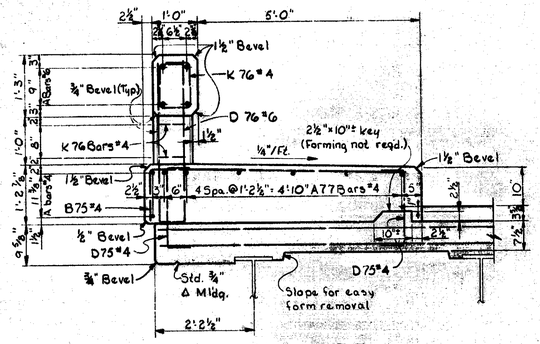
00574 A
04023 A



SLAB PLAN

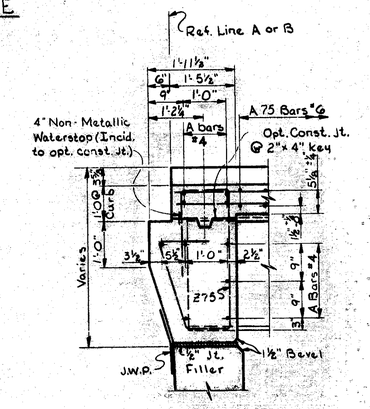


SECTION E-E



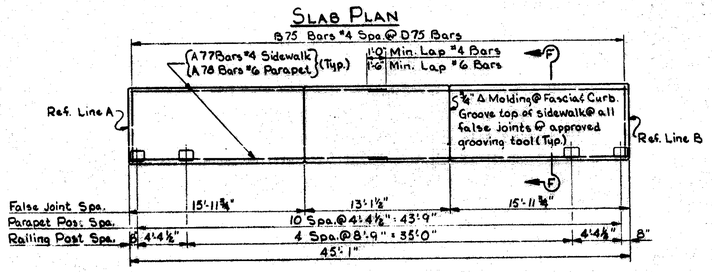
SECTION F-F

Protective Treatment for Bridge Decks is to be applied to all sidewalk surfaces inside the face of railing.

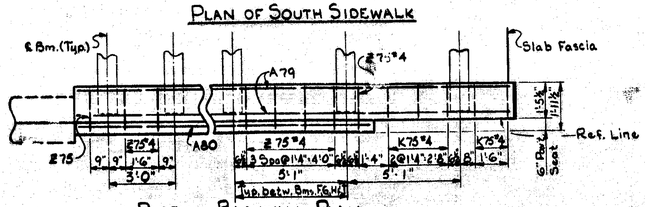


SECTION G-G

NOTE:
For Quantities and General Notes see sheet "8



PLAN OF SOUTH SIDEWALK



PARTIAL BACKWALL PLAN

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

SUPERSTRUCTURE DETAILS

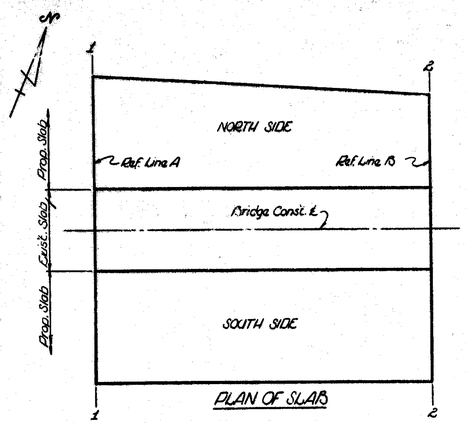
SOUTH SIDE

REVISIONS			
NO.	DESCRIPTION	DATE	BY

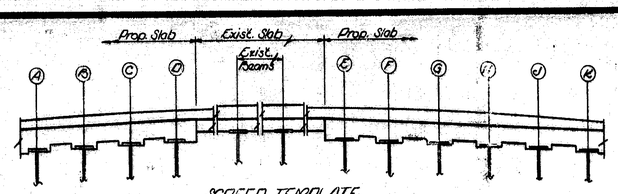
ROAD BOSS	JONES	7-6-71
DRAWN BY	K. RUWICK	6-15-71
TRACED BY		
CHECKED BY	HSIA	6-23-71
SHEET 9 OF 11		

BOI OF 41041

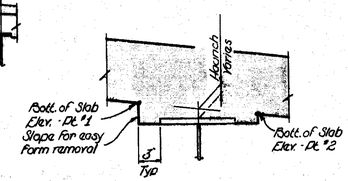
00574 A
04028 A



PLAN OF SLAB

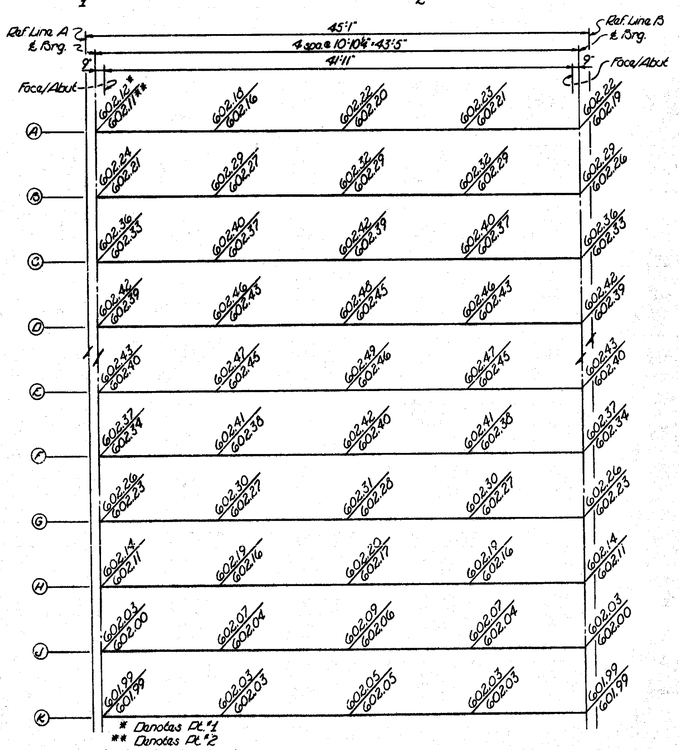


SCREED TEMPLATE

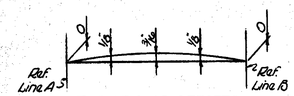


SECTION THRU BEAM
(Beams A thru D - Looking West)
(Beams E thru K - Looking East)

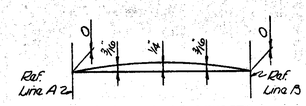
SCREED TEMPLATE ELEVATIONS										
Line Beam	A	B	C	D	E	F	G	H	J	K
1-1	602.74	602.85	602.97	603.03	603.04	602.98	602.87	602.75	602.64	602.61
2-2	602.83	602.90	602.97	603.03	603.04	602.98	602.87	602.75	602.67	602.61



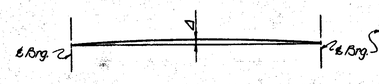
BOTTOM OF SLAB ELEVATIONS

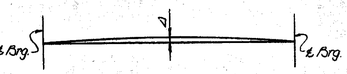


TOP OF SLAB OFFSETS
North Side



TOP OF SLAB OFFSETS
South Side





CAMBER ORDINATES-NORTH SIDE	Δ
Structural Steel Erected	5/8"
Pre-Concrete Pour	5/8"
All Concrete Poured	0

CAMBER ORDINATES-SOUTH SIDE	Δ
Structural Steel Erected	5/8"
Pre-Concrete Pour	5/8"
All Concrete Poured	0

NOTES:

Screed elevations are based on the condition that no slab concrete has been cast and that formwork, steel reinforcement and shear developers are in place.

Bottom of slab elevations are based on the condition that all structural steel has been erected, but no other loads applied. These elevations include allowances for deflections due to forms, steel reinforcement, deck concrete, railing, sidewalk and bituminous wearing surface.

To help assure that the deck under the longitudinal strike will attain full deflection, concrete shall be placed ahead of the strike over the full length of the pour for a minimum width equal to 1.5 times the stringer spacing.

MICHIGAN DEPARTMENT OF STATE HIGHWAYS

SUPERSTRUCTURE DETAILS

REVISIONS

NO.	DESCRIPTION	DATE	BY

ROAD BOSS	Jones	7.1.71
DRAWN BY	R.E.A.	3-29-71
TRACED BY		
CHECKED BY	HSIA	6-23-71
SHEET 10 OF 11		

B01 of 41041

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NORTH SIDE

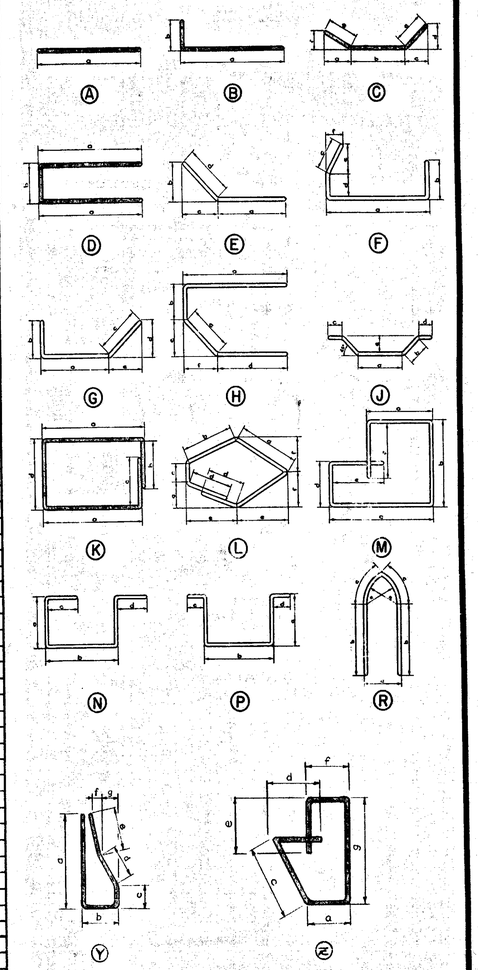
	BAR	DIMENSIONS a	b	c	d	e	f	g	SIZE	LENGTH	NO. REQ'D.	TOTAL WT.
ABUTMENTS - NORTH	A1	8'-6"							6	8'-6"	27	345
	A2	7'-6"							7	7'-6"	27	414
	A3	15'-6"							6	15'-6"	12	279
	A4	10'-6"							6	10'-6"	12	189
	A5	12'-6"							10	12'-6"	21	1130
	A6	12'-6"							6	12'-6"	23	432
	A7	16'-3"							4	16'-3"	8	87
	A8	13'-0"							4	13'-0"	8	69
	A9	8'-0"							4	8'-0"	8	43
	A10	4'-3"							4	4'-3"	16	45
	A11	3'-6"							4	3'-6"	4	9
	A12	6'-3"							4	6'-3"	4	17
	A13	8'-9"							4	8'-9"	4	23
	B1	13'-0"	4'-9 1/2"						4	17'-9"	8	95
	B2	8'-0"	4'-9 1/2"						4	12'-9"	8	68
	C1	1'-5"	3'-0"	1'-5"	1'-5"	2'-0"	1'-5"	2'-0"	6	7'-0"	16	168
	D1	2'-4 1/2"	1'-1 1/2"						4	5'-9"	16	61
	D2	1'-5 1/2"	1'-1 1/2"						4	3'-11"	4	16
	D3	3'-9 1/4"	1'-1 1/2"						4	5'-7"	8	46
	K1	1'-7"	0'-11"	0'-11"	1'-1"				4	6'-0"	22	88
									Total Wt. of Abutment (North)			3,624
SUPERSTRUCTURE - NORTH	A51	6'-9"							6	6'-9"	128	1298
	A52	12'-6"							6	12'-6"	42	789
	A53	10'-9"							6	10'-9"	44	711
	A54	8'-9"							6	8'-9"	42	552
	A55	23'-3"							5	23'-3"	38	922
	A56	23'-0"							4	23'-0"	40	614
	A57	17'-6"							4	17'-6"	9	105
	A58	16'-0"							4	16'-0"	1	11
	A59	12'-3"							4	12'-3"	9	74
	A60	10'-9"							4	10'-9"	1	7
	A61	4'-0"							5	4'-0"	8	33
	K51	2'-9 1/2"	1'-0"	1'-0"	1'-0"				4	8'-6"	2	11
	J51	3'-2 3/4"	1'-1"	1'-0 1/2"	1'-2 3/4"	1'-3 1/2"	0'-3"	0'-8"	6	7'-9"	35	407
	Z51	1'-0"	0'-6 1/2"	1'-10"	1'-1"	1'-7"	1'-0 1/2"	2'-9 1/2"	4	9'-3"	17	105
									Total Wt. Superstructure (North)			5,639
									TOTAL WT. NORTH SIDE =			9,263

SOUTH SIDE

	BAR	DIMENSIONS a	b	c	d	e	f	g	SIZE	LENGTH	NO. REQ'D.	TOTAL WT.
ABUTMENTS - SOUTH	A25	8'-6"							6	8'-6"	50	639
	A26	7'-6"							7	7'-6"	50	767
	A27	15'-3"							6	15'-3"	24	330
	A28	9'-6"							6	9'-6"	24	342
	A29	12'-6"							10	12'-6"	36	1936
	A30	12'-6"							6	12'-6"	40	751
	A31	12'-9"							4	12'-9"	16	136
	A32	16'-3"							4	16'-3"	8	87
	A33	14'-6"							4	14'-6"	48	465
	B25	12'-9"	2'-6 1/2"						4	15'-3"	16	163
	C25	1'-5"	3'-0"	1'-5"	1'-5"	2'-0"	1'-5"	2'-0"	6	7'-0"	16	168
	D25	4'-1 1/4"	1'-1 1/2"						4	9'-3"	22	136
	D26	2'-7 1/4"	1'-1 1/2"						4	6'-3"	22	92
	K25	1'-7"	0'-11"	0'-11"	1'-1"				4	6'-0"	22	88
									Total Wt. of Abutment (South)			6,320
SUPERSTRUCTURE - SOUTH	A75	26'-6"							6	26'-6"	128	5094
	A76	23'-3"							5	23'-3"	56	1358
	A77	23'-0"							4	23'-0"	66	1014
	A78	23'-3"							6	23'-3"	8	279
	A79	26'-9"							4	26'-9"	18	322
	A80	20'-6"							4	20'-6"	2	27
	B75	0'-7"	5'-8 1/2"						4	6'-3"	35	146
	D75	0'-6"	1'-7"						4	2'-6"	70	117
	D76	3'-3 1/8"	0'-1 1/4"						6	7'-0"	33	347
	K75	2'-9 1/2"	1'-0"	1'-0"	1'-0"				4	8'-6"	10	57
	K76	0'-10 3/8"	0'-6 1/4"	0'-6"	0'-8 1/2"				4	3'-5"	62	135
	Z75	1'-0"	0'-6 1/2"	1'-10"	1'-1"	1'-7"	1'-0 1/2"	2'-9 1/2"	4	9'-3"	32	198
									Total Wt. Superstructure (South)			9,094
									TOTAL WT. SOUTH SIDE =			15,414

BAR	DIMENSIONS a	b	c	d	e	f	g	SIZE	LENGTH	NO. REQ'D.	TOTAL WT.

BAR BENDING DIAGRAM



NOTES
Tolerance in cutting and bending bars are as established in Manual of Standard Practice of the Concrete Reinforcing Steel Institute and Detailing Manual of the American Concrete Institute.

Note :—
All right angle bends in Reinforcing Steel to be made about a pin of the minimum diameter allowed by the Standard Specifications.

Total North Side - 9,263
Total South Side - 15,414
Grand Total Steel Reinforcement 24,677 #

MICHIGAN STATE HIGHWAY DEPARTMENT

STEEL REINFORCEMENT DETAILS

REVISIONS			
NO.	DESCRIPTION	DATE	BY

SQUAD BOSS	Jones	7.1.71
DRAWN BY	W.B. Itten	6-23-71
TRACED BY		
CHECKED BY	Rep	6-23-71
SHEET 11 OF 11		

BOI of 41041

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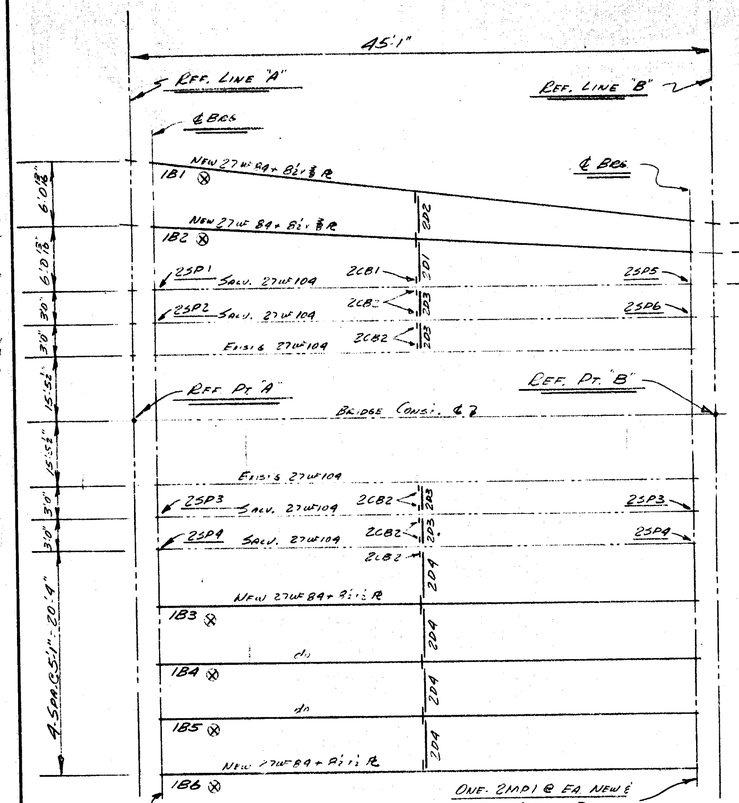
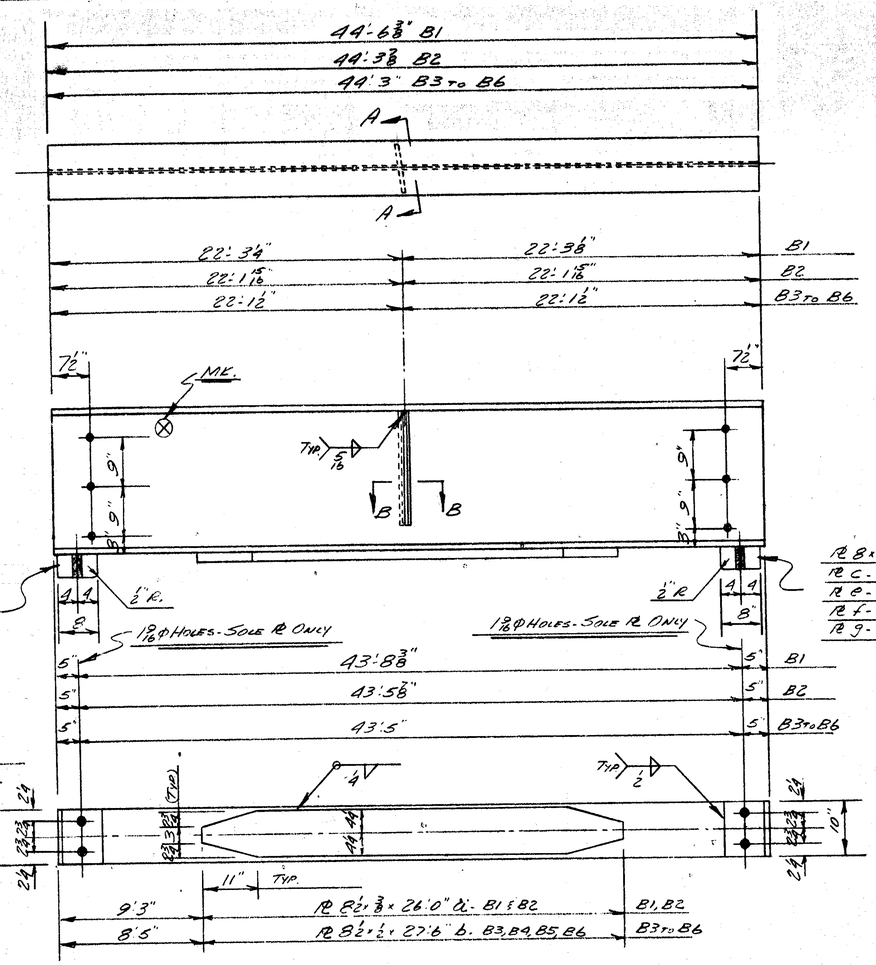


ERECTION DIAGRAM

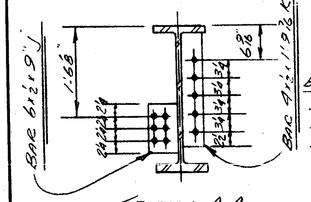


EDECTOR NOTE: SEE M.D.S.H. DRW'GS B01 OF 41041 SHEET 7 OF 11 FOR FIELD WELDING DETAILS

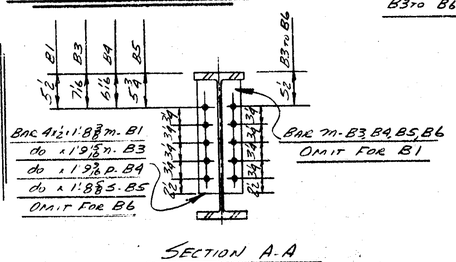
℞ 8 x 2 x 10" c - G1, G6
℞ 8 x 3 1/4 x 10" d - G2
℞ 8 x 5 x 10" e - G3
℞ 8 x 3 1/2 x 10" f - G4
℞ 8 x 2 1/4 x 10" g - G5

℞ 8 x 3 x 10" h - G2
℞ c - G1, G6
℞ e - G3
℞ f - G4
℞ g - G5

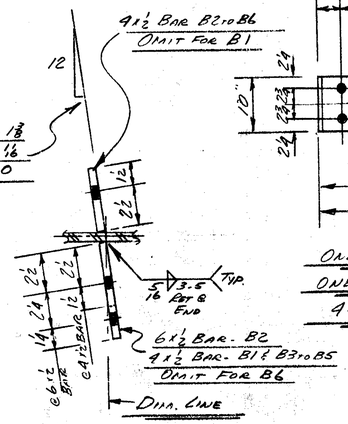
ONE - BEAM (27WF84 x 44'-6 3/8" CAMB. 3/4") REQ'D. AS SHOWN & NOTED MK. 1B1
ONE - do (27WF84 x 44'-3 3/8" CAMB. 3/4") do do do MK. 1B2
4 - do (27WF84 x 44'-3" CAMB. 3/4") do do do MK. 1B3 TO 1B6



SECTION A-A
FOR B2 ONLY



SECTION A-A
FOR B1, B3, B4, B5 & B6



SECTION B-B

NOTE: SEE SHEET 2 FOR SHOP NOTES

REVISION			
NO.	DESCRIPTION	DATE	BY

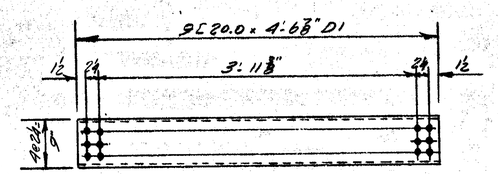
F. YEAGER
BRIDGE & CULVERT COMPANY
1701 KEARNEY ST. — PORT HURON, MICH

BRIDGE B01 OF 41041
M-21 B.R. OVER BUCK CREEK NEAR THE WEST CITY LIMITS OF GRANDVILLE
C. WAY CONST. CO. CONT'R.

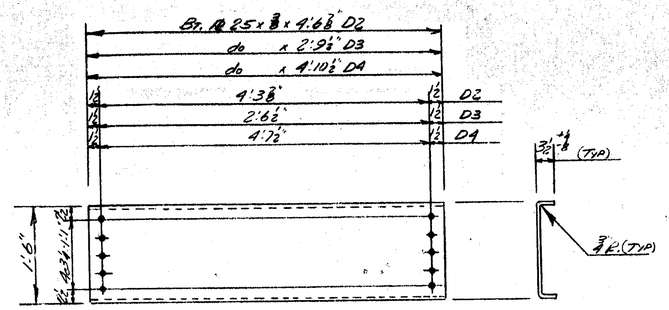
DATE 1-24-72	JOB NO. 72725	SHEET 1 OF 2
BY DHPA		

SHOP NOTES

FABRICATE PER M.D.S.H. 1970 SPEC'S.
ALL MATERIAL SHALL BE A 36 STEEL U.N.
PLANT SHOP COAT OF 1-69 RED LEAD EXCEPT AS NOTED AND AS FOLLOWS: THE TOP SURFACE OF THE TOP FLG OF ALL BEAMS SHALL RECEIVE ONE COAT OF BOILED LINSEED OIL ONLY.
ROUNDING OF EDGES, SHOT BLASTING & MAGNETIC PARTICLE INSPECTION OF WELDS IS REQ'D.
ALL BEAMS SHALL BE CAMB. AS NOTED. MEASURE CAMB. WITH BEAM LYING ON ITS SIDE. TOLERANCE IS ±¼"
OPEN HOLES ARE 1 3/16 Φ U.N.



ONE DIAP. REQ'D. AS SHOWN & NOTED MK. 2D1

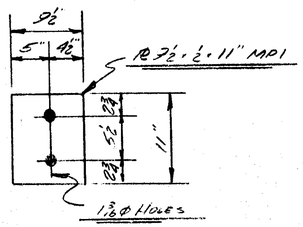


POSITION DOWELS

40- BAR 1" Φ × 1'-0" (GALV. PER A153)

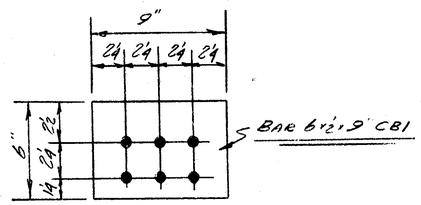
ONE DIAP. REQ'D. AS SHOWN & NOTED MK. 2D2

4-	do	do	do	do	MK. 2D3
4-	do	do	do	do	MK. 2D4



NOTE: GALV. PER A123 AFTER FAB.

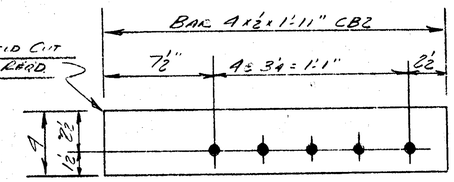
20- MAS. PL'S REQ'D. AS SHOWN & NOTED MK. 2MP1



NOTE: NO PAINT REQ'D.

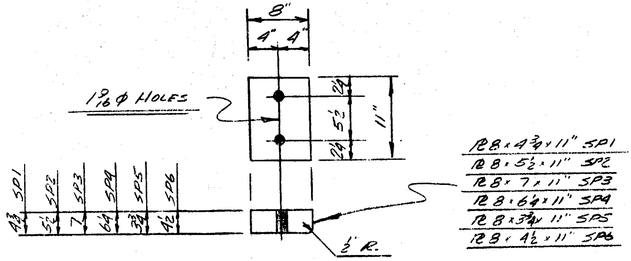
ONE CONNECTION BAR REQ'D. AS SHOWN & NOTED MK. 2CB1

ERECTOR NOTE: FIELD CUT THIS END AS REQ'D.



NOTE: NO PAINT REQ'D.

9 CONNECTION BARS REQ'D AS SHOWN & NOTED MK. 2CB2



NOTE: NO PAINT REQ'D.

ONE	SOLE PL	REQ'D.	AS SHOWN	& NOTED	MK. 2SP1
ONE	do	do	do	do	MK. 2SP2
2 -	do	do	do	do	MK. 2SP3
2 -	do	do	do	do	MK. 2SP4
ONE -	do	do	do	do	MK. 2SP5
ONE	do	do	do	do	MK. 2SP6

CT.	SHIP	FIELD BOLTS
102	107	¾ Φ × 2¼ H. HEX HD. H.S. BOLT, H. HEX NUT
102	107	¾ Φ H. FLAT WASHERS

REVISION			
NO.	DESCRIPTION	DATE	BY

F. YEAGER
BRIDGE & CULVERT COMPANY
1701 KEARNEY ST. — PORT HURON, MICH

BRIDGE B01 OF 41041
M. 21 B.R. OVER BUCK CREEK NEAR THE WEST CITY LIMITS OF GRANDVILLE
C-WAY CONST. CO. CONT'R.

DATE	JOB NO.	SHEET
1.25.72	T2725	2 OF 2

BY DHA