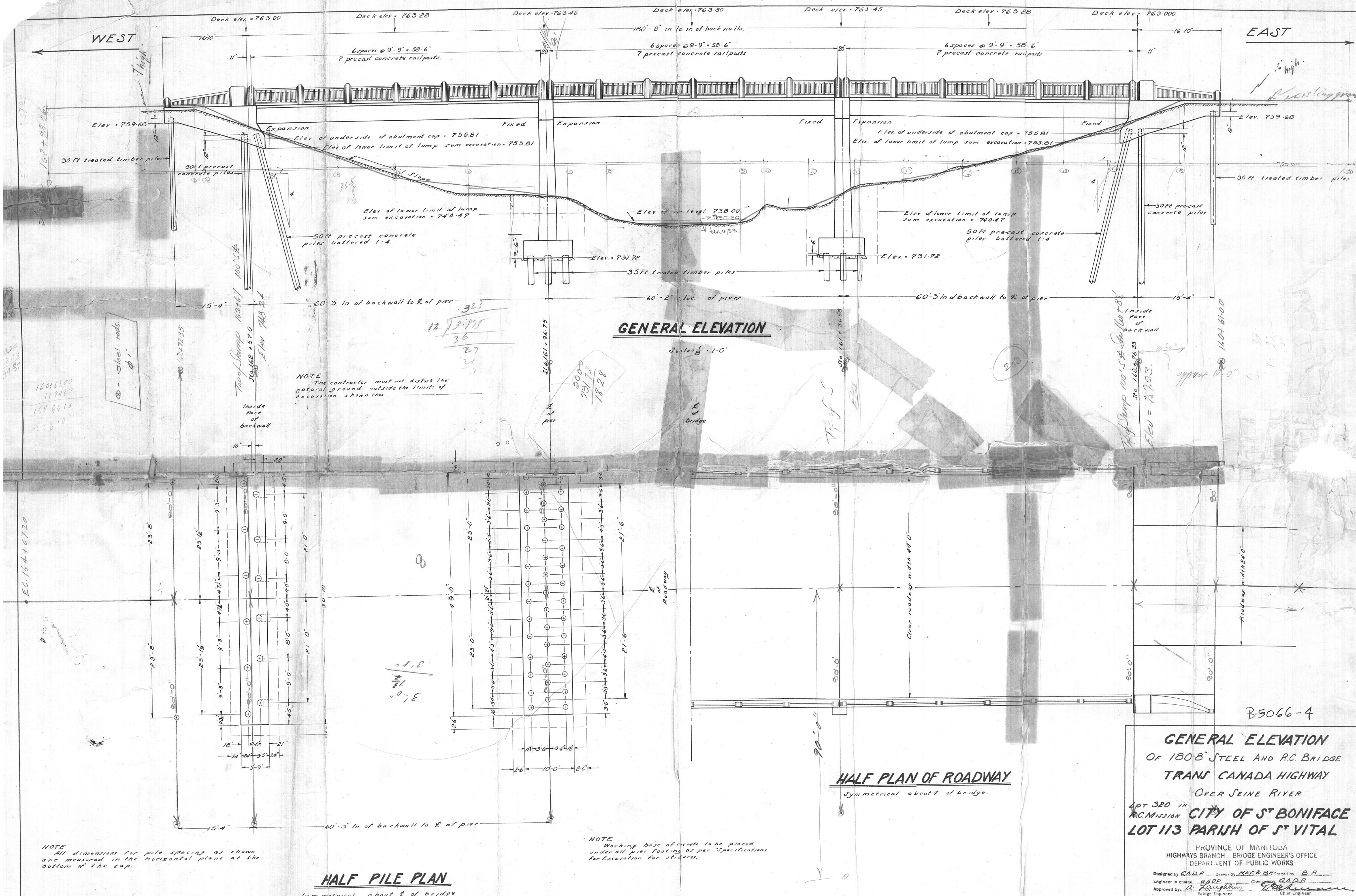
APPENDI X ‘ M’

180-8" AND R.C BRIDGE TRANS-CANADA HIGHWAY OVER SEINE RIVER LOT 320 IN R.C. MISSION CITY OF ST. BONIFACE LOT 113 PARISH OF ST. VITAL (1952 RECORD DRAWINGS)


WEST
EAST
Deck elev. = 763.00
Deck elev. = 763.28
Deck elev. = 763.45
Deck elev. = 763.50
Deck elev. = 763.45
Deck elev. = 763.28
Deck elev. = 763.000
180'-8" in to in of back walls
6 spaces @ 9'-9" = 58'-6"
7 precast concrete railposts
Expansion
Fixed
Elev. = 759.68
Elev. of underside of abutment cap = 755.81
Elev. of lower limit of lump sum excavation = 753.81
30 ft treated timber piles
50 ft precast concrete piles
Elev. of lower limit of lump sum excavation = 740.47
50 ft precast concrete piles battered 1:4
Elev. of ice level 738.00
Elev. = 731.72
35 ft treated timber piles
60'-3" In of backwall to ℄ of pier
60'-2" ℄ to ℄ of piers
Inside face of backwall
GENERAL ELEVATION
Scale 1/8" = 1'-0"
NOTE
The contractor must not disturb the natural ground outside the limits of excavation shown thus
Top of Ramp 162+57.0
Top of Ramp 160+59.8
℄ of pier
℄ of bridge
℄ of Roadway
Clear roadway width 44'-0"
Roadway width 24'-0"
HALF PLAN OF ROADWAY
Symmetrical about ℄ of bridge.
HALF PILE PLAN
Symmetrical about ℄ of bridge
NOTE
All dimensions for pile spacing as shown are measured in the horizontal plane at the bottom of the cap.
NOTE
Working base of concrete to be placed under all pier footing as per "Specifications for Excavation for structures.
B-5066-4

GENERAL ELEVATION
OF 180'-8" STEEL AND R.C. BRIDGE
TRANS CANADA HIGHWAY
OVER SEINE RIVER
LOT 320 IN R.C. MISSION CITY OF ST BONIFACE
LOT 113 PARISH OF ST VITAL

PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEER'S OFFICE
DEPARTMENT OF PUBLIC WORKS

Designed by G.A.D.P. Drawn by H.E.C. & B.P. Traced by B.P.
Engineer in charge G.A.D.P. Checked by G.A.D.P.
Approved by: A. Laughlin, Bridge Engineer; [signature] Chief Engineer
Date: November 1952
SCALE 1/8" = 1'-0" SHEET No. 1/14 PLAN No. 263[illegible] (b)

PLANS
OF PROPOSED
BRIDGE OVER SEINE RIVER
ON
TRANS-CANADA HIGHWAY

LENGTH — 180'-8" IN TO IN OF BACKWALLS
SUPERSTRUCTURE — REINFORCED CONCRETE DECK ON STEEL GIRDERS
SUBSTRUCTURE — REINFORCED CONCRETE PIERS AND ABUTMENTS ON TREATED TIMBER AND PRECAST CONCRETE PILES
ROADWAY WIDTH — 44'-0" CLEAR BETWEEN CURBS

LOCATION — CITY OF ST. BONIFACE — R.C. MISSION LOT 320
PARISH OF ST. VITAL — LOT 113
PROJECT M.C. MILE 28.43

SUMMARY OF QUANTITIES
FOR COMPLETE BRIDGE

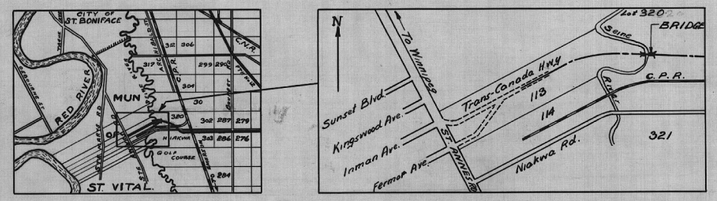
1. Structural Steel — WF sections, tie bars, bearing and masonry plates	259,021	lbs
2. Reinforcing Steel — Two piers and footings	31,535	lbs
Two abutments with wing walls	9,295	lbs
Four newel posts with slabs	3,326	lbs
Forty-two intermediate guard rail posts	2,234	lbs
Deck slab (three spans) & approach slabs	55,488	lbs
TOTAL	360,899	lbs
3. Concrete — Two piers and footings	226·5	cu.yds
Two abutments with wing walls	88·4	cu.yds
Four newel posts with slabs	18·9	cu.yds
Forty-two intermediate guard rail posts	6·3	cu.yds
Deck slab (three spans) and approach slabs	332·0	cu.yds
Working base	240	cu.yds
TOTAL	696·1	cu.yds
4. Pipe curbing, I Beams, etc.	7127	lbs
5. Galvanized iron pipe (one inch diam.)		
6. Treated timber piles — 82 piles @ 35 ft	2870	lin ft
4 piles @ 30 ft	120	lin ft
TOTAL	2990	lin ft.
7. Precast concrete piles — 24 piles at 50 ft	1200	lin ft
8. Standard steel guard railing	329·7	lbs
9. Lump sum excavation	480	cu.yds
10. Unit excavation	408	cu.yds

SUMMARY OF QUANTITIES
FOR CONTRACT 1952

Reinforcing Steel — Two piers and footings	31,535	lbs
Two abutments with wing walls	9,295	lbs
TOTAL	40,830	lbs
Concrete — Two piers and footings	226·5	cu.yds
Two abutments with wing walls	88·4	cu.yds
Working base for pier	10·0	cu.yds
TOTAL	324·9	cu.yds
Treated timber piles — 82 piles @ 35 ft	2870	lin ft
4 piles @ 30 ft	120	lin ft
TOTAL	2990	ft
Precast concrete piles — 24 piles @ 50 ft	1200	lin ft.
Lump sum excavation	480	cu.yds.
Unit excavation	408	cu.yds

SUMMARY OF QUANTITIES
FOR CONTRACT 1953

Reinforcing Steel — Deckslabs and Approach slabs	50,537	lbs
Structural Steel —	259,021	lbs
Concrete — Deckslabs and Approach slabs	332	cu.yds.
Steel Grille Railing	429	lin. ft.
Pipe Curb	358	lin. ft.



LOCATION PLANS

PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEERS OFFICE
DEPARTMENT OF PUBLIC WORKS

DESIGNED BY: G.A. De Pauw CHECKED BY: G.F. Gillespie
ENGINEER IN CHARGE: G.A. De Pauw

Approved By: A. Laughlin — BRIDGE ENGINEER
G. Hahmann — CHIEF ENGINEER

DEPUTY MINISTER

SHEET LEGEND
FOR COMPLETE BRIDGE

SHEET No. 1. General Elevation.
2. Profile of site and log of test borings.
3. Details of stringer erection.
4. Details of bearings.
5. Pier details — concrete dimensions and reinf. steel.
6. Pier footing details — reinf. steel.
7. Abutment details — concrete dimensions and reinf. steel.
8. Wing wall details — reinf. steel.
9. Standard plan C-87a — precast reinf. conc. guard rail posts.
10. Newel post details — concrete dimensions and reinf. steel.
11. Standard plan C-87b — steel guard railing details.
12. Curb details
13. R.C. Deck slab, concrete dimensions and bill of material.
14. Details of R.C. deck slab showing expansion joints and bar accessories.
15. R.C. Approach slabs, concrete dimensions and bill of material

SHEET LEGEND
FOR CONTRACT 1952
SHEET No's 1,2,3,4,5,6,7 & 8

SHEET. LEGEND
FOR CONTRACT 1953
SHEET No's 1,3,4,9,10,11,12,13,14,14A

DESIGN DATA

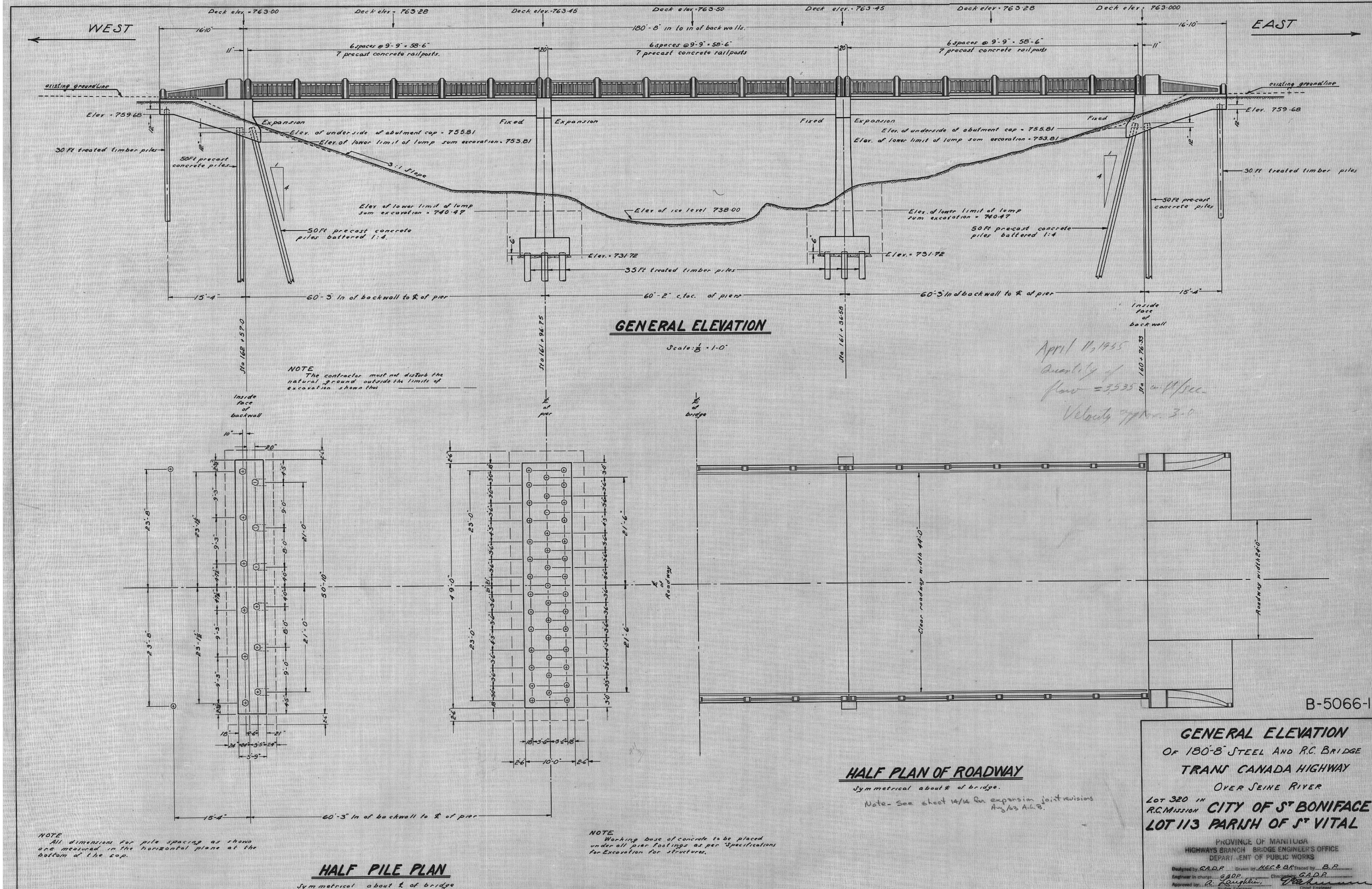
DEAD LOAD: Concrete deck, Curbs, Steel girders, Guard railing & posts — Actual weights

LIVE LOAD: H20-S16 (20 ton trucks with 16 ton trailers) or U-100 (100#/□')

IMPACT: 30 % on trucks only.

SPECIFICATIONS: C.S.A. S6 1952
C.E.S.A. A23 1942

B-5066-10
904Z
B-5066-10 PLAN No ~~2639b~~.


WEST
EAST
Deck elev. = 763.00
Deck elev. = 763.28
Deck elev. = 763.45
Deck elev. = 763.50
Deck elev. = 763.45
Deck elev. = 763.28
Deck elev. = 763.000
180'-8" in to in of backwalls
6 spaces @ 9'-9" = 58'-6"
7 precast concrete railposts
existing groundline
Elev. = 759.68
30 ft treated timber piles
50 ft precast concrete piles
Expansion
Fixed
Elev. of underside of abutment cap = 755.81
Elev. of lower limit of lump sum excavation = 753.81
3:1 Slope
Elev. of lower limit of lump sum excavation = 740.47
Elev. of ice level 738.00
50 ft precast concrete piles battered 1:4
Elev. = 731.72
35 ft treated timber piles
60'-3" In of backwall to ℄ of pier
60'-2" c.to c. of piers
15'-4"
Inside face of backwall
Sta 162 + 57.0
Sta 161 + 96.75
Sta 161 + 36.58
Sta 160 + 76.33
GENERAL ELEVATION
Scale: 1/8" = 1'-0"
NOTE
The contractor must not disturb the natural ground outside the limits of excavation shown thus
April 11, 1955
Quantity of flow = 3535 cu.ft/sec.
Velocity approx. 3.0
℄ of pier
℄ of bridge
℄ of Roadway
Clear roadway width 44'-0"
Roadway width 24'-0"
HALF PLAN OF ROADWAY
Symmetrical about ℄ of bridge.
Note - See sheet 14/14 for expansion joint revisions Aug/63 A.L.B.
HALF PILE PLAN
Symmetrical about ℄ of bridge
B-5066-11

NOTE
All dimensions for pile spacing as shown are measured in the horizontal plane at the bottom of the cap.

NOTE
Working base of concrete to be placed under all pier footings as per "Specifications for Excavation for structures."

GENERAL ELEVATION

OF 180'-8" STEEL AND R.C. BRIDGE

TRANS CANADA HIGHWAY

OVER SEINE RIVER

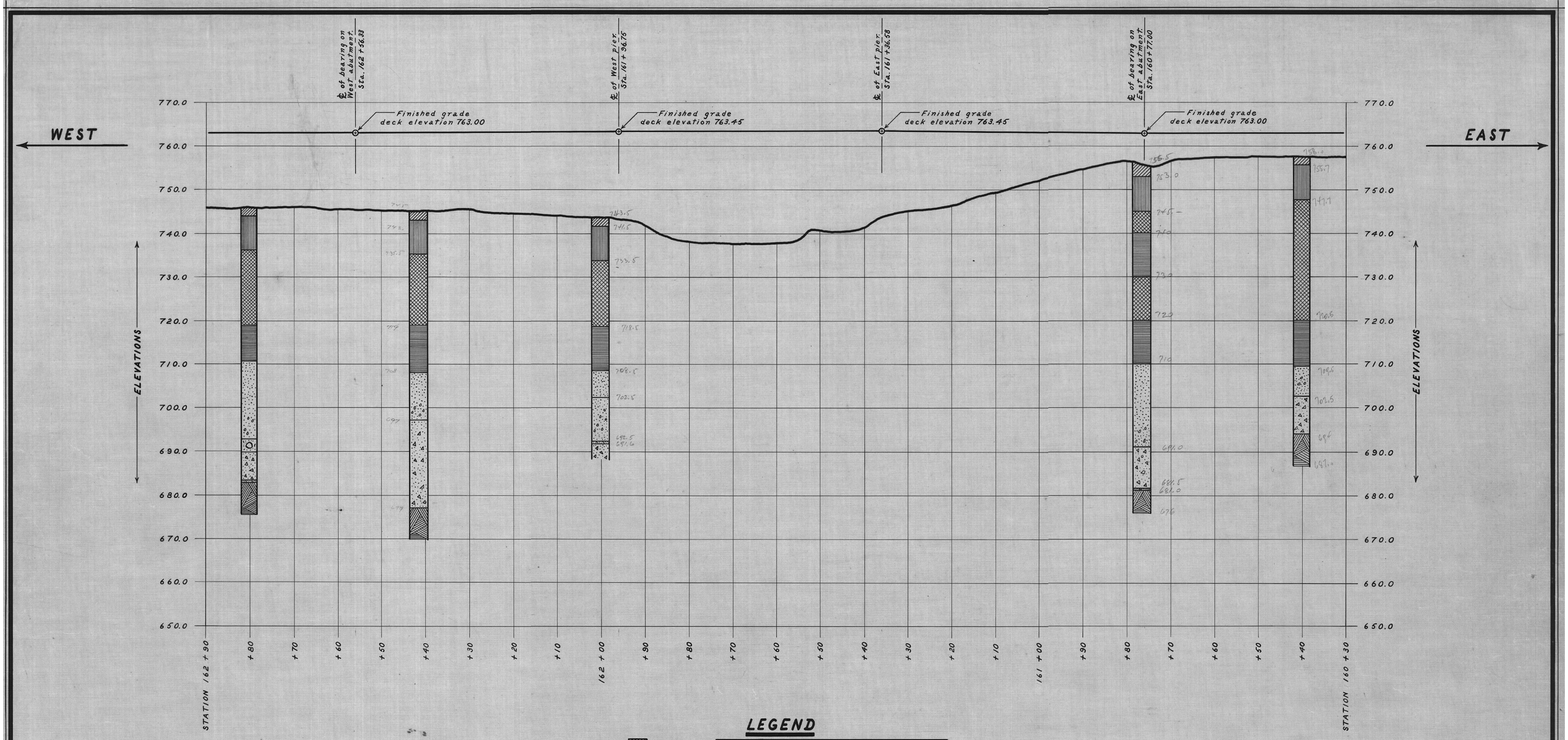
LOT 320 IN R.C. MISSION CITY OF ST BONIFACE

LOT 113 PARISH OF ST VITAL

PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEER'S OFFICE
DEPARTMENT OF PUBLIC WORKS

Designed by G.A.D.P. Drawn by H.E.C. & B.P. Traced by B.P.
Engineer in charge G.A.D.P. Checked by G.A.D.P.
Approved by: A. Laughlin, Bridge Engineer — [signature] Chief Engineer
Date: November 1952
SCALE 1/8" = 1'-0" No. 1/14 PLAN No. ~~2639 (b)~~ 9042

B-5066-# 11



LEGEND

- Topsoil.
- Layer of variable clay material from brown clay to very unstable yellow clay.
- A silty clay of brown color. Laboratory classification A7(6).
- A silty greyish clay. Laboratory classification A7(6).
- Sandy grey material containing large percentage of ground up limestone, A4(5).
- Similar To above except for larger percentage of ground up limestone, some boulders, A4(5).
- Hardpan.
- Thin layer of water bearing sand, gravel and decomposed limestone.
- Limestone bedrock.

B-5066-12

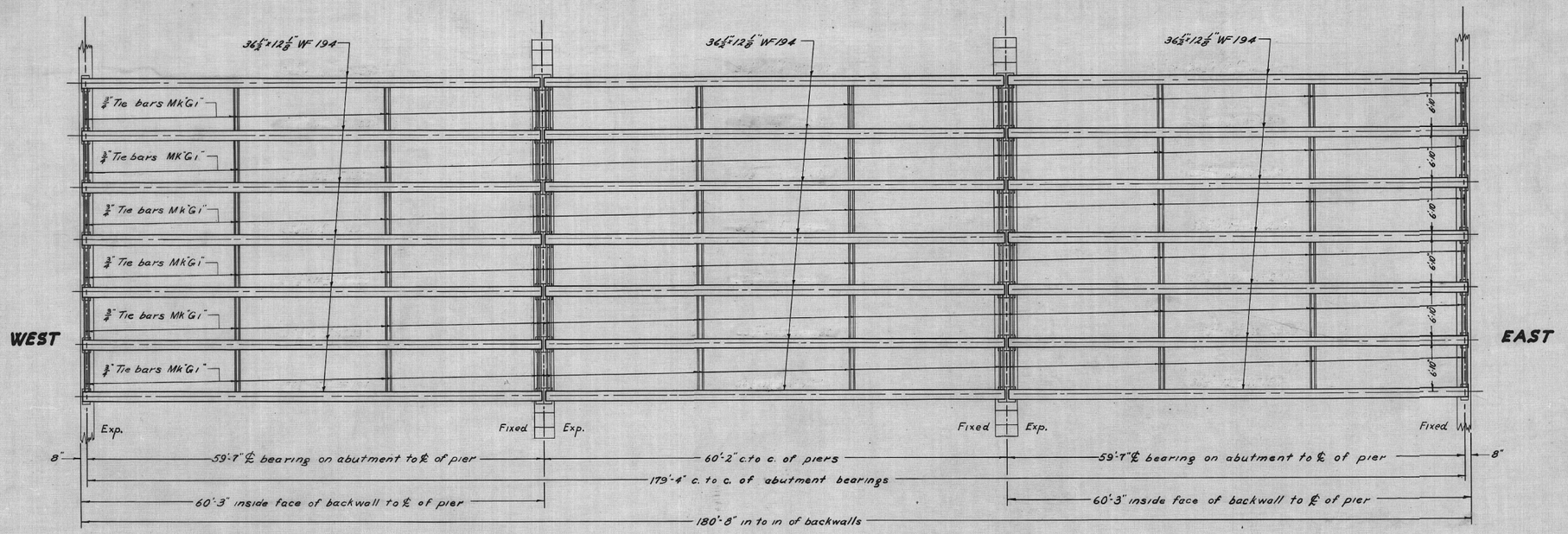
PROFILE ALONG CENTRE LINE
OF PROPOSED CROSSING OF
TRANS-CANADA HIGHWAY
OVER
SEINE RIVER
SHOWING LOG OF BORINGS

LOT 320 CITY OF ST. BONIFACE
LOT 113 PARISH OF ST. VITAL

DATUM GEODETIC

PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEER'S OFFICE
DEPARTMENT OF PUBLIC WORKS

Designed by G.A.D.P. Drawn by G.A.D.P. Traced by H.E.C.
Engineer in charge G.A.D.P. Checked by G.A.D.P.
Approved by: A. Laughlin, Bridge Engineer — Provincial Engineer
Date: April, 1952
SCALE: Horizontal 1"=10' Vertical 1"=10' SHEET No. 2/14 PLAN No. 2639 (b)



STRINGER PLAN

Scale: ⅛" = 1'-0"

BILL OF MATERIAL

MARK	NO.	DESCRIPTION	SIZE	LENGTH	REMARKS	WT.
A	21	36½"x12⅛" WF	194 #/ft.	60'-0"	Girder	244,400
B1	21	Bearing Plate	1⅛"x12"	22"	Expansion plate	2356
B2	21	do do	1½"x12"	22"	Fixed plate	2356
C1	14	Masonry plate	1"x13"	23"	On abutment	1186
C2	4	do do	1⅛"x13"	23"	do do	466
C3	2	do do	1¼"x13"	23"	do do	212
D1	14	do do	1"x27"	23"	On Piers	2462
D2	4	do do	1⅛"x27"	23"	do do	967
D3	2	do do	1¼"x27"	23"	do do	440
E	14	Lead Sheets	⅜"x14"	24"	On abutments	246
F	14	do do	⅜"x28"	24"	On Piers	492
G1	288	Tie bars	¾"ϕ	7'-2"	See detail	3,137
	1152	Hexagonal nuts std for ¾"ϕ bars				146
	1152	Round Plate washers do do do				115
					TOTAL WT. in Lbs.	259,021

GENERAL NOTES

All WF roll sections shall be of stock length equal to approx. 60'-0". Provisions have been made to provide the necessary clearance for maximum allowable overrun tolerances. All holes in the WF sections shall be drilled in the shop. All bearing plates shall be field welded to the wide flanges after they have been placed in exact position as indicated on this sheet. Bearing plates shall be bolted into position to the previously placed anchorbolts.

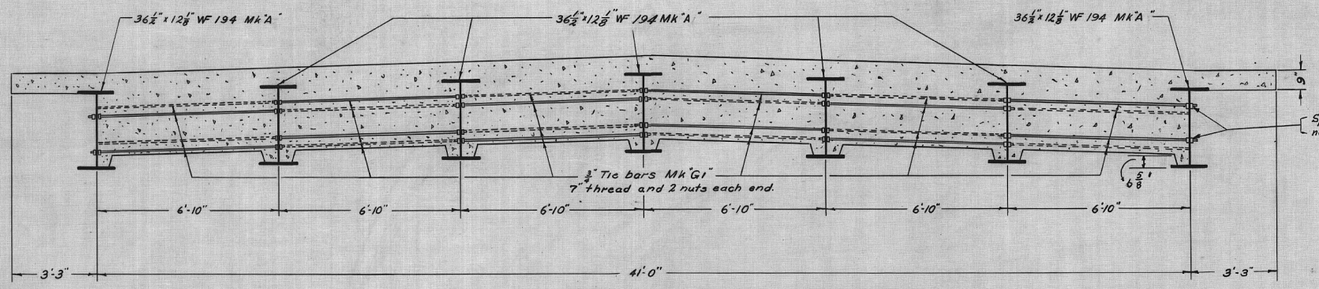
Placing and bolting of tie rods will be considered as part of the erection of WF rolled sections.

All WF rolled sections shall be cambered for maximum allowable dead load deflections equal to 2.07 inches.

The WF and bearing plates (except for milled surfaces) must be supplied by the fabricator with two shop coats of paint.

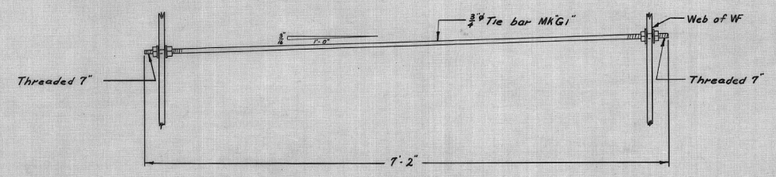
The contact surfaces of both the bearing and masonary plates shall be milled to provide a perfectly smooth flat surface.

All materials shall be a medium structual steel conforming to C.S.A. Specification G40.4.



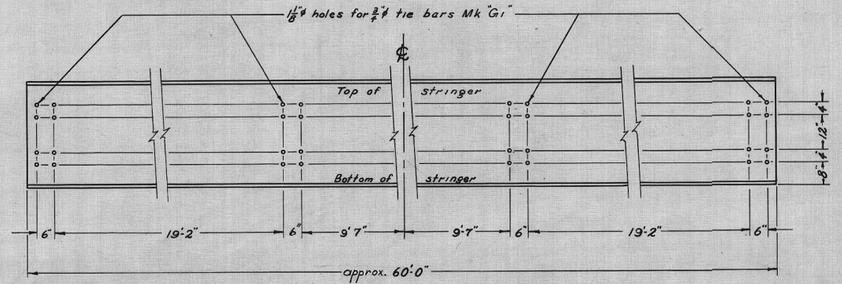
CROSS-SECTION THROUGH DIAPHRAGM

Showing stringers and ¾"ϕ tie bar
Scale: ⅜" = 1'-0"



TIE BAR DETAIL

Mk"G1" 288-required as shown; 1152-nuts, 1152-washers
Scale: 1" = 1'-0"



STRINGER DETAIL

Dimensions to holes from ℄ and bottom of stringer as shown
For ALL stringers
Scale: ½" = 1'-0"

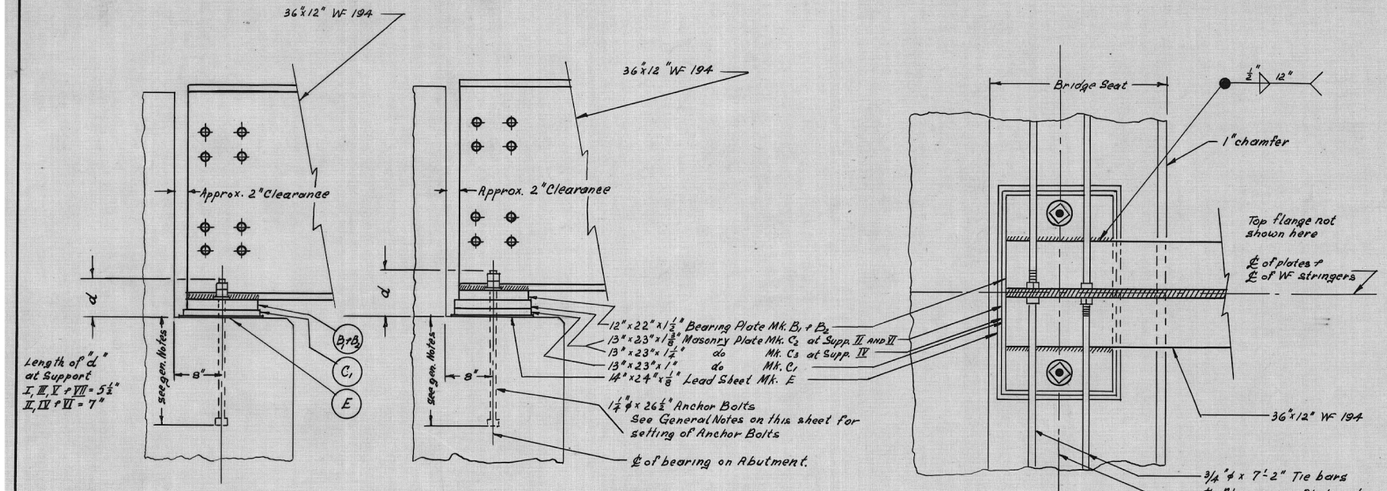
B-5066-13

STRINGER ERECTION

For 180'-8" Steel and R.C. Bridge
Trans Canada Highway
Over Seine River
Lot 320 in R.C. Mission City of St. Boniface
Lot 113 Parish of St. Vital

PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEER'S OFFICE
DEPARTMENT OF PUBLIC WORKS

Designed by: Drawn by: T.O. Traced by: T.O.
Engineer in charge: G.A.D.P. Checked by: G.A.D.P.
Approved by: A. Laughlin Bridge Engineer — C. McLennan Chief Engineer
Date: Nov. 25, 1952
9042
SCALE AS SHOWN SHEET No. 3/14 PLAN No. ~~5639 (4)~~

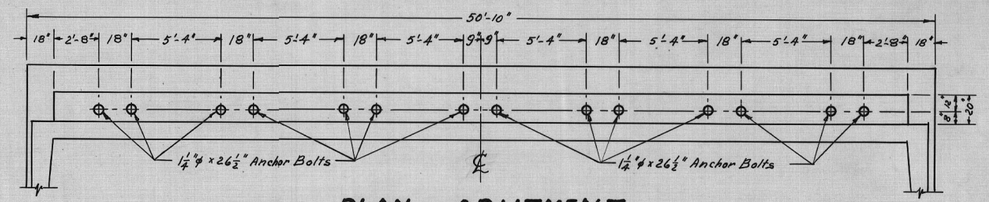


ELEVATION OF SUPPORT I, III, V AND VII — ELEVATION OF SUPPORT II, IV AND VI

Scale: 1"=1'-0"

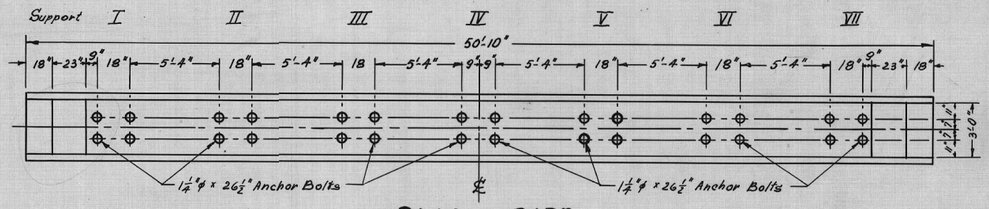
PLAN OF SUPPORT I - VII

Scale: 1½"=1'-0"



PLAN OF ABUTMENT

Showing spacing of Anchor Bolts
14 required for each Abutment
Scale: ¼"=1'-0"

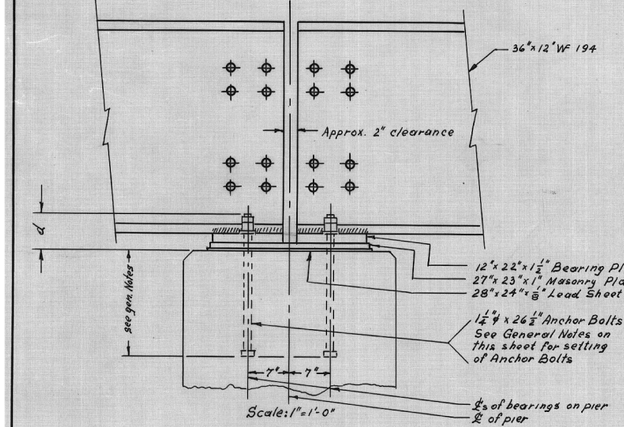


PLAN OF PIER

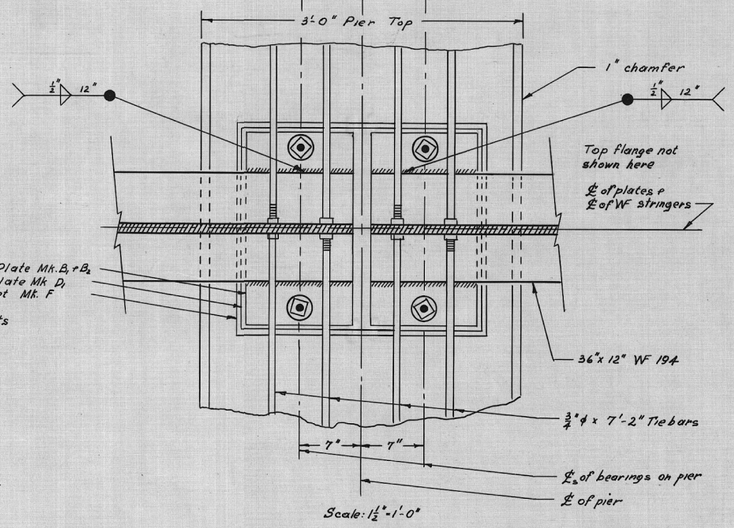
Showing spacing of Anchor Bolts
28 required for each Pier
Scale: ¼"=1'-0"

ELEVATION AND PLAN OF BEARING ON ABUTMENT

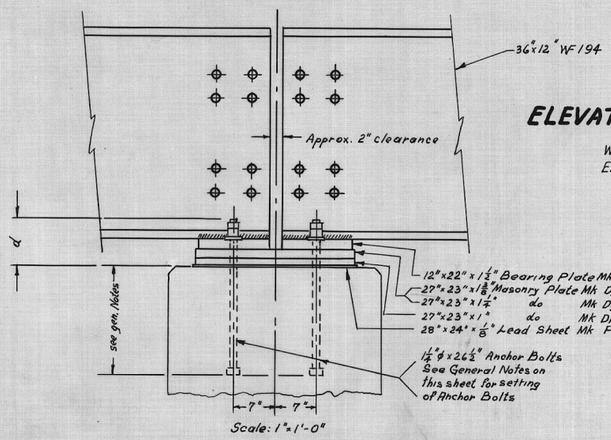
EAST ABUTMENT: Fixed bearing plates Mark B_2
WEST ABUTMENT: Expansion bearing plates Mark B_1



Scale: 1"=1'-0"



Scale: 1½"=1'-0"



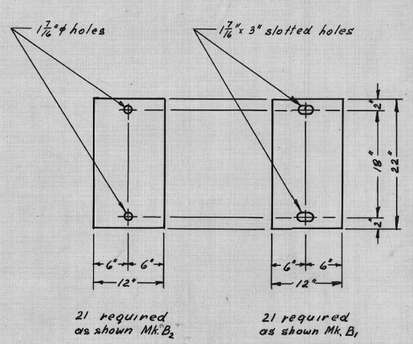
Scale: 1"=1'-0"

ELEVATIONS AND PLAN OF BEARINGS ON PIER

WEST bearing on each pier: fixed bearing plates Mark B_2
EAST bearing on each pier: expansion bearing plates Mark B_1

GENERAL NOTES

Anchor Bolts are to be set accurately in concrete by use of suitable template and according to dimensions shown on this sheet. Bolts to be set to a depth of at least 18" below surface of bridge seats on abutments and piers. The Anchor Bolts shall project above the surface of concrete as indicated.

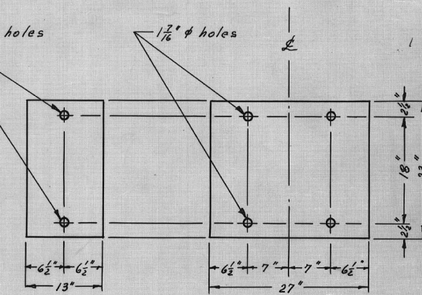


21 required as shown Mk. B_2 — 21 required as shown Mk. B_1

BEARING PLATES

1½" THICK

Scale: 1"=1'-0"

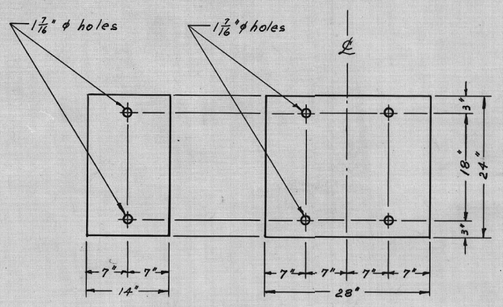


20 required as shown Mk. C_1, C_2 & C_3 — 20 required as shown Mk. D_1, D_2 & D_3

MASONRY PLATES

1", 1¼" & ⅛" THICK

Scale: 1"=1'-0"



14 required as shown Mk. E — 14 required as shown Mk. F

LEAD SHEETS

⅛" THICK

Scale: 1"=1'-0"

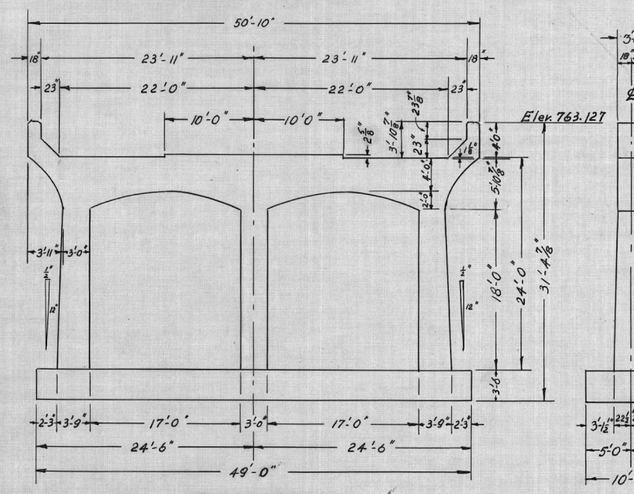
B-5066-14

BEARING DETAILS

FOR 180'-8" STEEL AND R.C. BRIDGE
TRANS CANADA HIGHWAY
OVER SEINE RIVER
LOT 320 IN R.C. MISSION
CITY OF ST. BONIFACE
LOT 113 PARISH OF ST. VITAL

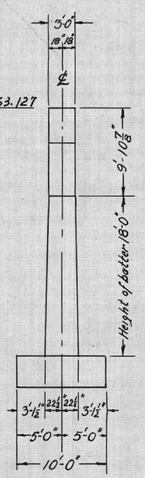
PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEER'S OFFICE
DEPARTMENT OF PUBLIC WORKS

Designed by G.A.D.P. Drawn by H.E.C. & W.G. Traced by W.G.
Engineer in charge G.A.D.P. Checked by G.A.D.P.
Approved by: C. Laughlin, Bridge Engineer — Chief Engineer
Date: December 1952
9042
SCALE as shown SHEET No. 4/14 PLAN No. ~~2639 (6)~~



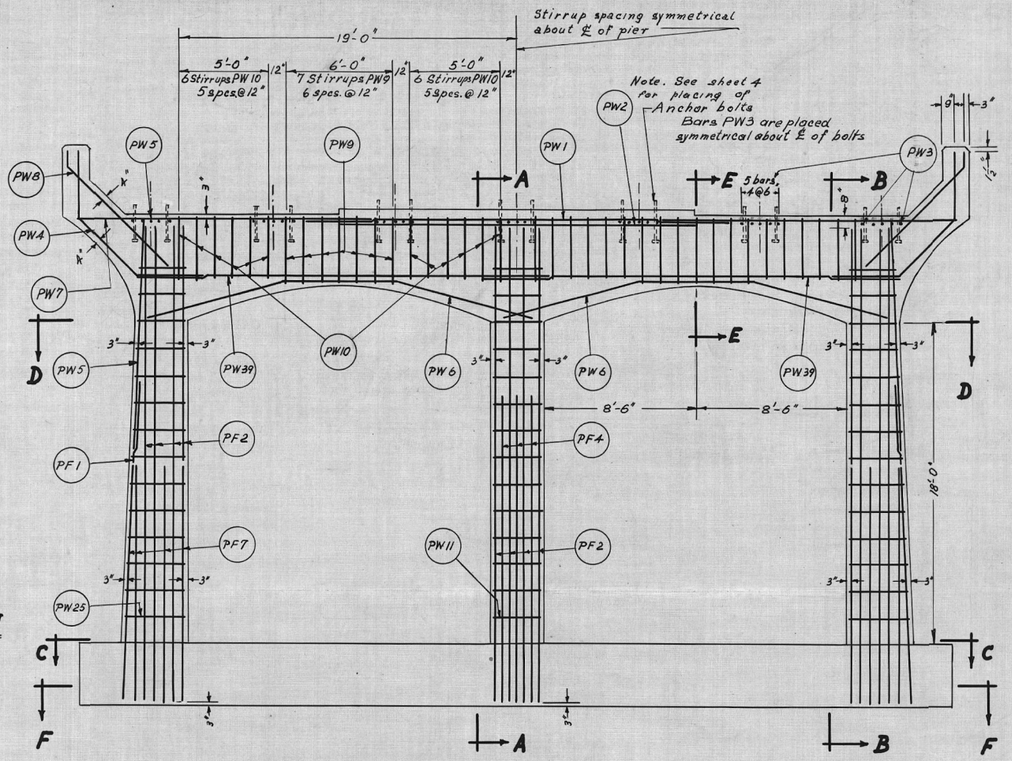
ELEVATION

Scale: ⅛" = 1'-0"



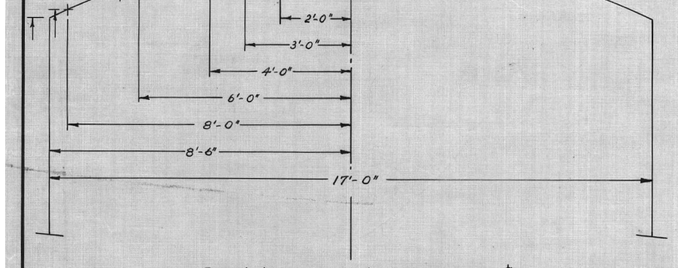
END ELEVATION

Scale: ⅛" = 1'-0"



ELEVATION

Scale: ¼" = 1'-0"



Parabola is symmetrical about this ℄

DETAILS OF PARABOLIC CURVE

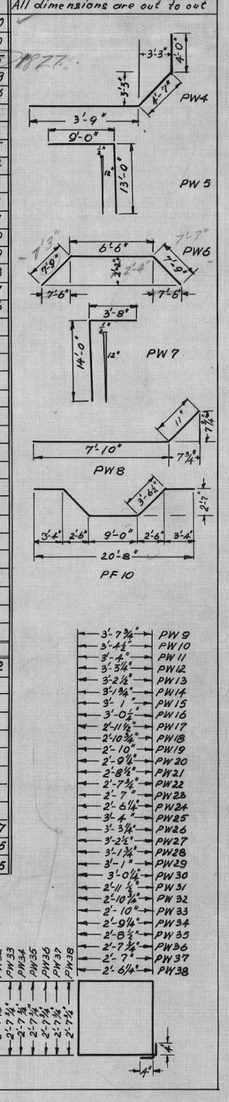
Scale: ½" = 1'-0"

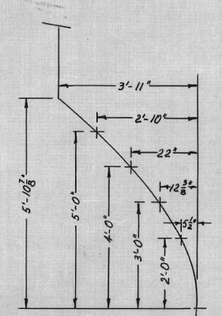
BILL OF BARS FOR TWO PIERS

STRAIGHT BARS					BENT BARS					BENDING DIAGRAMS
MARK	NO.	SIZE	LENGTH	WT.	MARK	NO.	SIZE	LENGTH	WT.	All dimensions are out to out
PW1	10	1⅛" □	23'-9"	1033.1	PW4	20	1⅛" □	12'-4"	1073.0	
PW2	10	1⅛" □	20'-0"	870.0	PW5	20	do	22'-0"	1914.0	
PW35	20	1⅛" □	23'-0"	2001.0	PW6	20	do	21'-0"	1870.5	
PW3	70	⅝" ϕ	2'-8"	126.9	PW7	8	do	17'-8"	614.9	
					PW8	8	⅝" ϕ	8'-9"	47.6	
					PW9	28	⅞" ϕ	13'-2"	140.1	
					PW10	48	do	12'-7⅞"	230.3	
					PW11	2	do	12'-6"	9.5	
					PW12	2	do	12'-4½"	9.4	
					PW13	2	do	12'-3"	9.3	
					PW14	2	do	12'-1½"	9.2	
					PW15	2	do	12'-0"	9.1	
					PW16	2	do	11'-10½"	9.0	
					PW17	2	do	11'-9"	8.9	
					PW18	2	do	11'-7½"	8.8	
					PW19	2	do	11'-6"	8.7	
					PW20	2	do	11'-4½"	8.6	
					PW21	2	do	11'-3"	8.6	
					PW22	2	do	11'-1½"	8.5	
					PW23	2	do	11'-0"	8.4	
					PW24	2	do	10'-10½"	8.3	
					PW25	4	do	13'-10½"	21.1	
					PW26	4	do	13'-7½"	20.7	
					PW27	4	do	13'-4½"	20.3	
					PW28	4	do	13'-1½"	19.9	
					PW29	4	do	12'-10½"	19.6	
					PW30	4	do	12'-7½"	19.2	
					PW31	4	do	11'-9"	17.9	
					PW32	4	do	11'-7½"	17.7	
					PW33	4	do	11'-6"	17.5	
					PW34	4	do	11'-4½"	17.3	
					PW35	4	do	11'-3"	17.1	
					PW36	4	do	11'-1½"	16.9	
					PW37	4	do	11'-0"	16.7	
					PW38	4	do	10'-10½"	16.5	
PF1	20	1⅛" □	17'-10"	1551.2	PF10	16	1" □	22'-9"	1252.2	
PF2	64	1" □	25'-7"	5851.9						
PF3	24	do	25'-11"	2139.7						
PF4	12	do	17'-3"	712.1						
PF5	36	do	18'-5"	2280.7						
PF6	32	do	17'-3"	1898.9						
PF7	36	do	13'-3"	1640.9						
PF8	148	¾" ϕ	9'-6"	2137.1						
PF9	112	½" ϕ	9'-6"	723.5						
H	84	Anchor bolts		1¼" ϕ × 26½"					857.7	
J	84	Plate washers		for 1¼" ϕ bolt	1 to each bolt H				17.5	
	168	Extra nuts		for 1¼" ϕ bolt	2 to each bolt H				167.5	

TOTAL WEIGHT OF STEEL 31,535 lbs

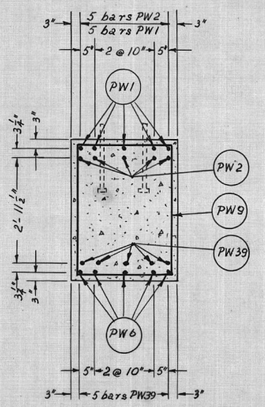
TOTAL VOLUME OF CONCRETE 226.5 cu. yds





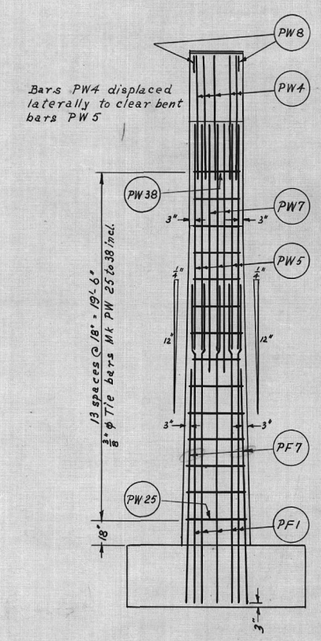
DETAILS OF PARABOLIC CURVE

Scale: ½" = 1'-0"

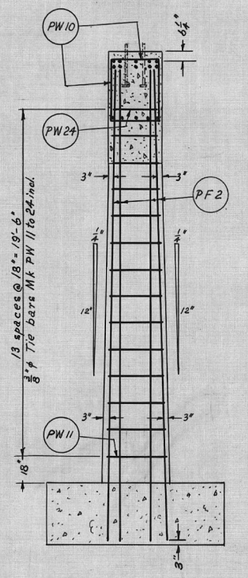


SECTION E-E

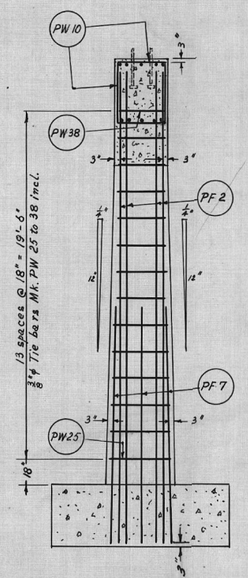
Scale: ½" = 1'-0"



END ELEVATION



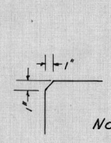
SECTION A-A



SECTION B-B

All vertical column steel to have same batter as adjacent column face. Corner bars in outside face of each exterior column to be battered in two directions as shown.

Scale: ¼" = 1'-0"



Note:
All exposed edges to be chamfered with a 1" chamfer strip

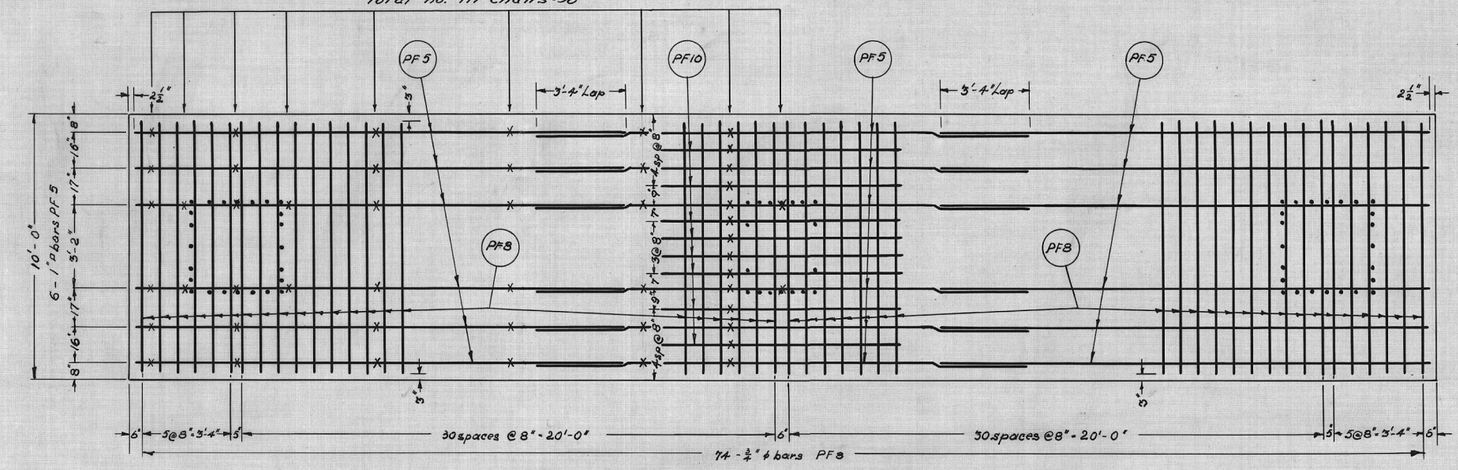
B-5066-15

CONCRETE DIMENSIONS AND REINFORCING DETAILS of PIER

FOR 180'-8" STEEL AND R.C. BRIDGE
TRANS CANADA HIGHWAY
OVER SEINE RIVER
LOT 320 IN R.C. MISSION CITY of ST. BONIFACE
LOT 113 PARISH of ST. VITAL

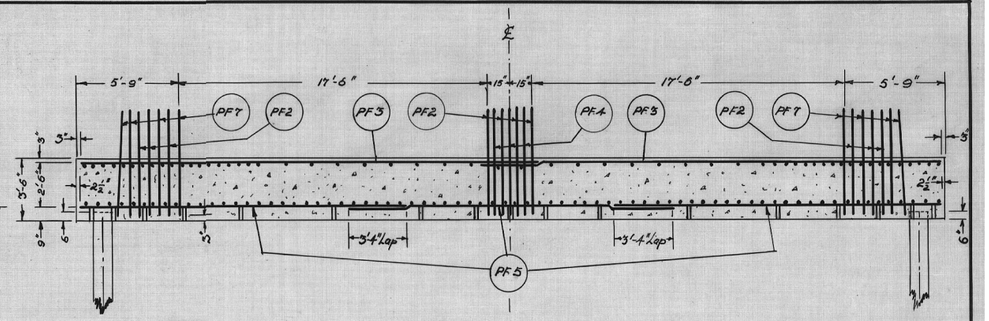
PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEER'S OFFICE
DEPARTMENT OF PUBLIC WORKS

Designed by G.A.D.P. Drawn by H.E.C. Traced by W.G.
Engineer in charge G.A.D.P. Checked by G.A.D.P.
Approved by: A. Laughlin, Bridge Engineer — Chief Engineer
Date October 1952
SCALE As shown. SHEET No. 5/14 PLAN No. 9042 ~~2638(6)~~



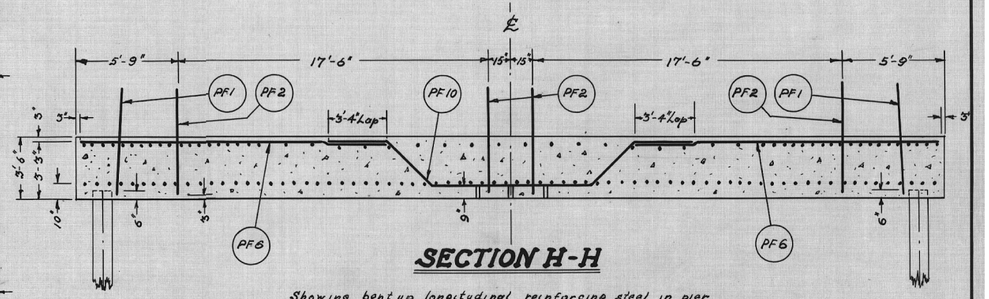
SECTION F-F

Showing spacing of reinforcing steel in bottom of pier footing
Vertical column steel to be placed according to Sections C-C & D-D
Scale: $\frac{3}{8}$" = 1'-0"



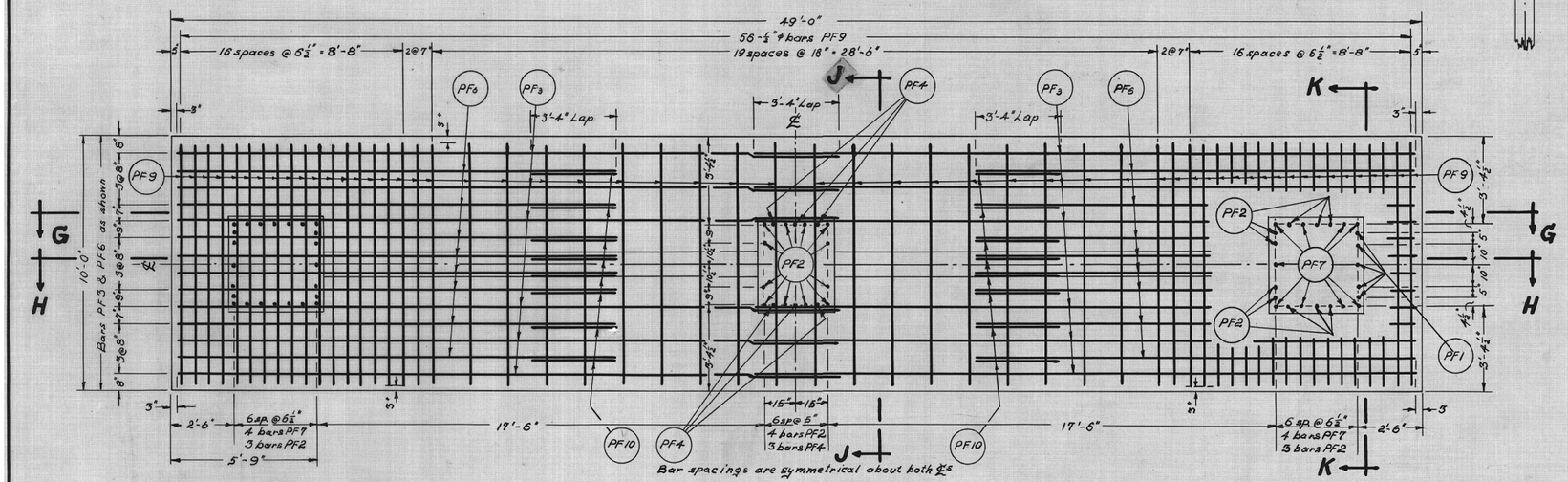
SECTION G-G

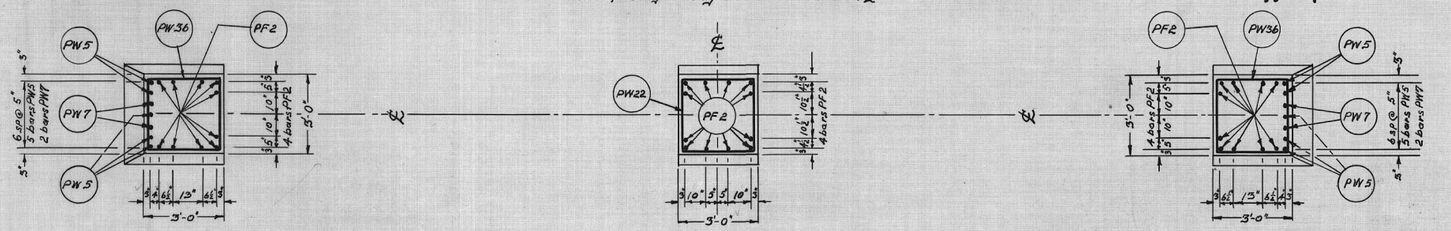
Showing straight longitudinal reinforcing steel in pier footing; showing embedment of piles in pier footing.
For spacing of vertical column steel see Sections C-C & D-D
Scale: ½" = 1'-0"



SECTION H-H

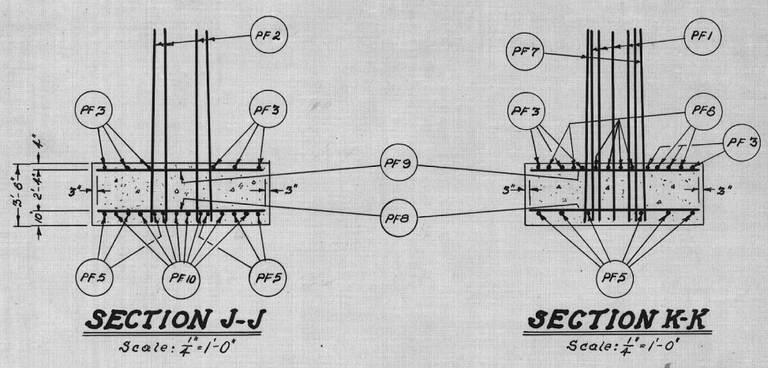
Showing bent up longitudinal reinforcing steel in pier footing; showing embedment of piles in pier footing
For spacing of vertical column steel see Sections C-C & D-D
Scale: ½" = 1'-0"





SECTIONS C-C & D-D

Showing spacing of reinforcing steel in top of pier footing and in pier columns. Note that dimensions to vertical column steel are at the top surface of pier footing in Section C-C and in a plane 18'-0" above top surface of pier footing in Section D-D
Scale: $\frac{3}{8}$" = 1'-0"



SECTION J-J

Scale: ½" = 1'-0"

SECTION K-K

Scale: ½" = 1'-0"

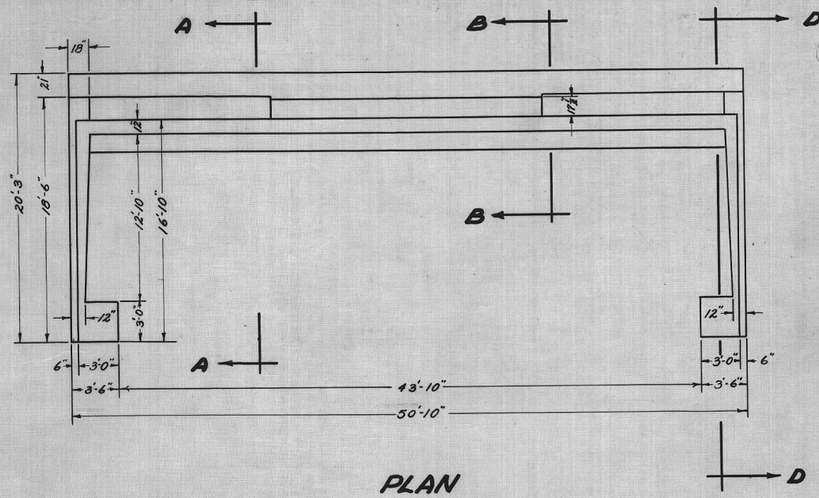
B-5066-16

DETAILS OF REINFORCING STEEL IN FOOTING OF R.C. PIER 180'-8" STEEL AND R.C. BRIDGE TRANS CANADA HIGHWAY OVER SEINE RIVER

LOT 320 IN R.C. MISSION – CITY OF ST BONIFACE
LOT 113 PARISH OF ST. VITAL

PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEER'S OFFICE
DEPARTMENT OF PUBLIC WORKS

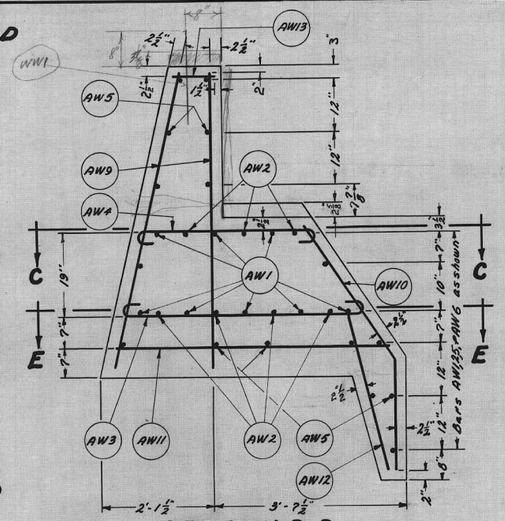
Designed by: G.A.D.P. Drawn by: H.E.C. Traced by: W.G.
Engineer in charge: G.A.D.P. Checked by: G.A.D.P.
Approved by: A. Laughlin (Bridge Engineer) (Chief Engineer)
Date: OCTOBER 1952 9042
SCALE As shown SHEET No. 6/14 PLAN No. ~~2659(b)~~



PLAN

Showing concrete dimensions only for abutment cap and wingwalls

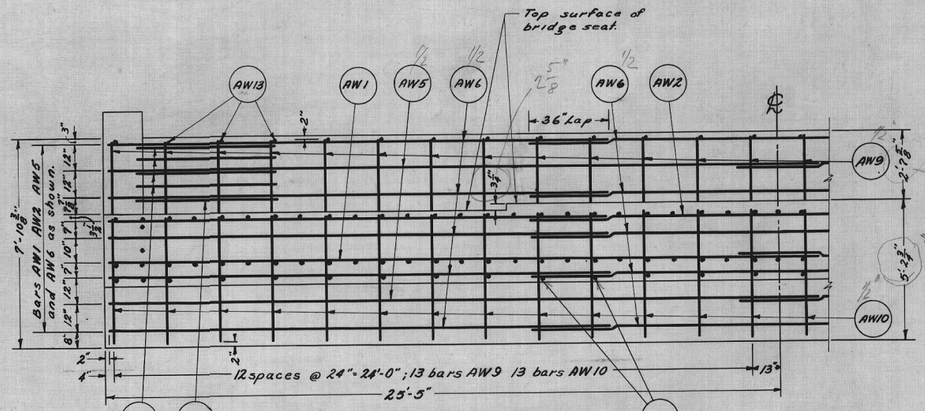
Scale: $\frac{3}{16}$" = 1'-0"



SECTION B-B

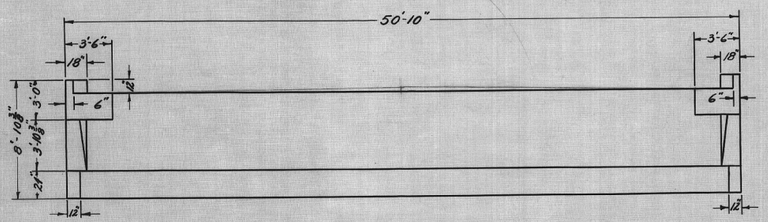
All bars not identified in this Section are AW6

Scale: $\frac{3}{8}$" = 1'-0"



HALF FRONT ELEVATION

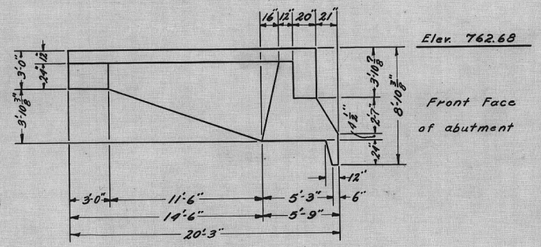
Showing steel in front face of abutment and inside face of backwall.
Steel in pylon not shown.
Symmetrical about ℄



REAR ELEVATION

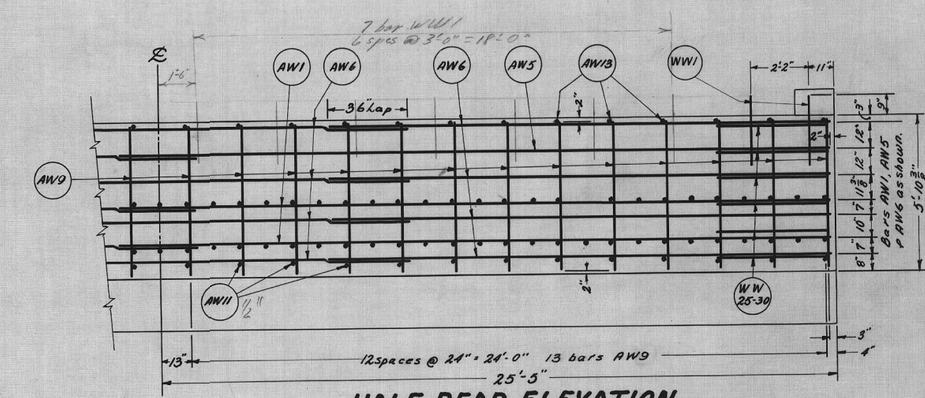
Showing concrete dimensions only for abutment cap and wingwalls

Scale: $\frac{3}{16}$" = 1'-0"



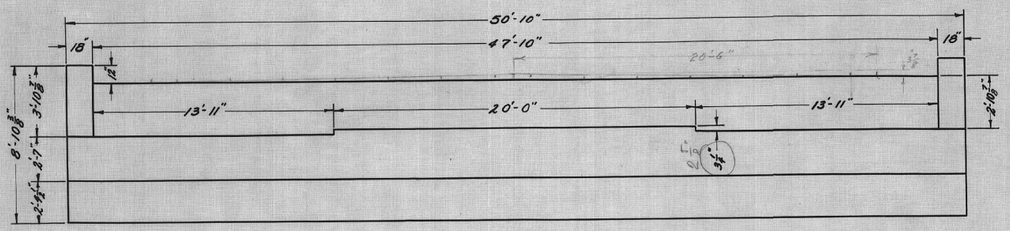
SECTION A-A

Scale: $\frac{3}{8}$" = 1'-0"



HALF REAR ELEVATION

Showing steel in back face of abutment cap. Steel in pylon not shown.
Symmetrical about ℄

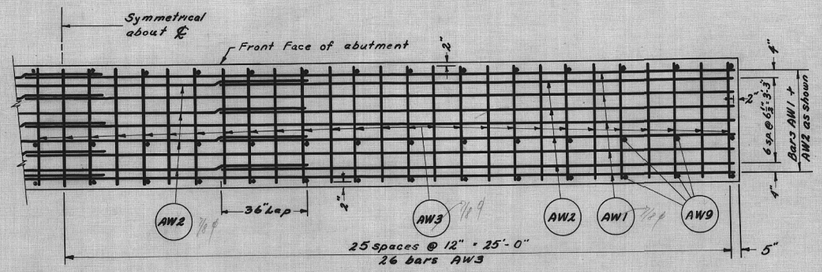


FRONT ELEVATION

Showing concrete dimensions only for abutment cap.

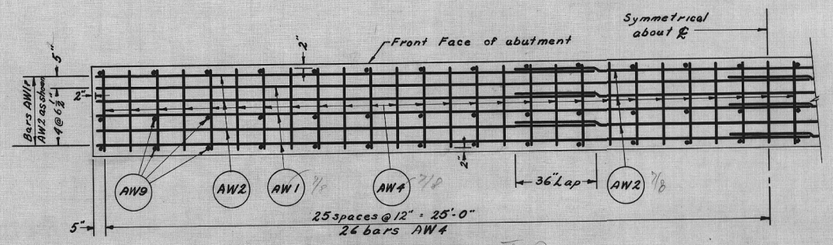
Scale $\frac{1}{4}$" = 1'-0"

Note
Section D-D is shown on sheet No. 8



SECTION E-E

Longitudinal bars AW1 & AW2 to be placed with reference to central vertical bars AW9. See Section B-B for position of bars AW9.



SECTION C-C

Longitudinal bars AW1 & AW2 to be placed with reference to central vertical bars AW9. See Section B-B for position of bars AW9.

B-5066-17

CONCRETE DIMENSIONS AND REINFORCING DETAILS

FOR R.C. ABUTMENT

FOR 180'-8" STEEL AND R.C. BRIDGE

TRANS CANADA HIGHWAY

OVER SEINE RIVER

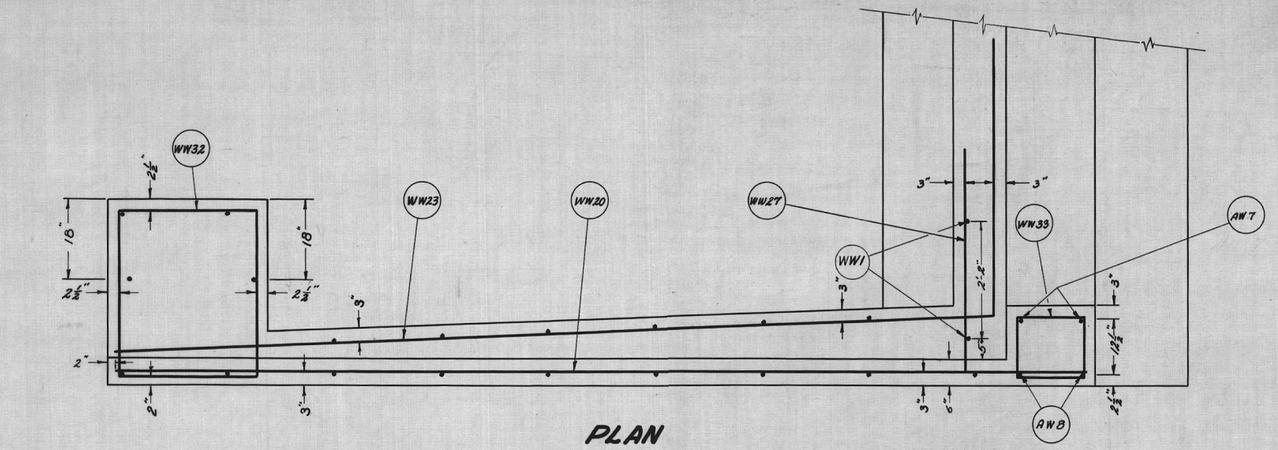
LOT 320 IN R.C. MISSION CITY OF ST. BONIFACE

LOT 113 PARISH OF ST. VITAL

PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEER'S OFFICE
DEPARTMENT OF PUBLIC WORKS

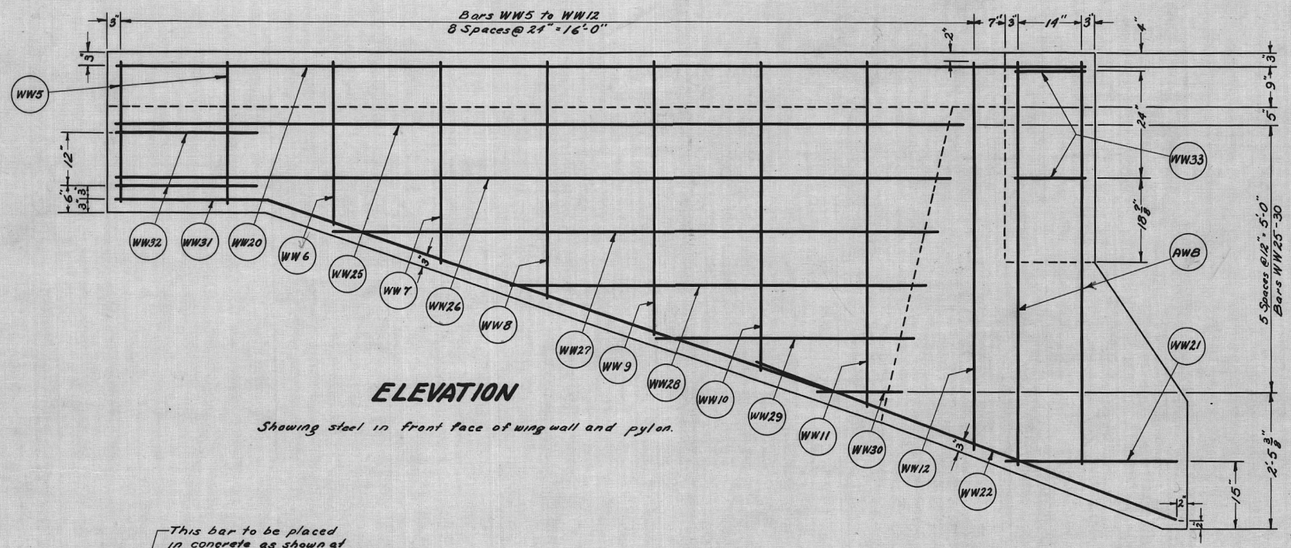
Planned by G.A.D.P. Drawn by H.E.C. Traced by T.O.
Engineer in charge G.A.D.P. Checked by G.A.D.P.
Approved by: A. Laughlin Bridge Engineer, Chief Engineer
Date: Nov. 26 9042
SCALE $\frac{3}{8}$" = 1'-0" except where shown SHEET No. 9/14 PLAN No. ~~8639 (b)~~

B-5066-17



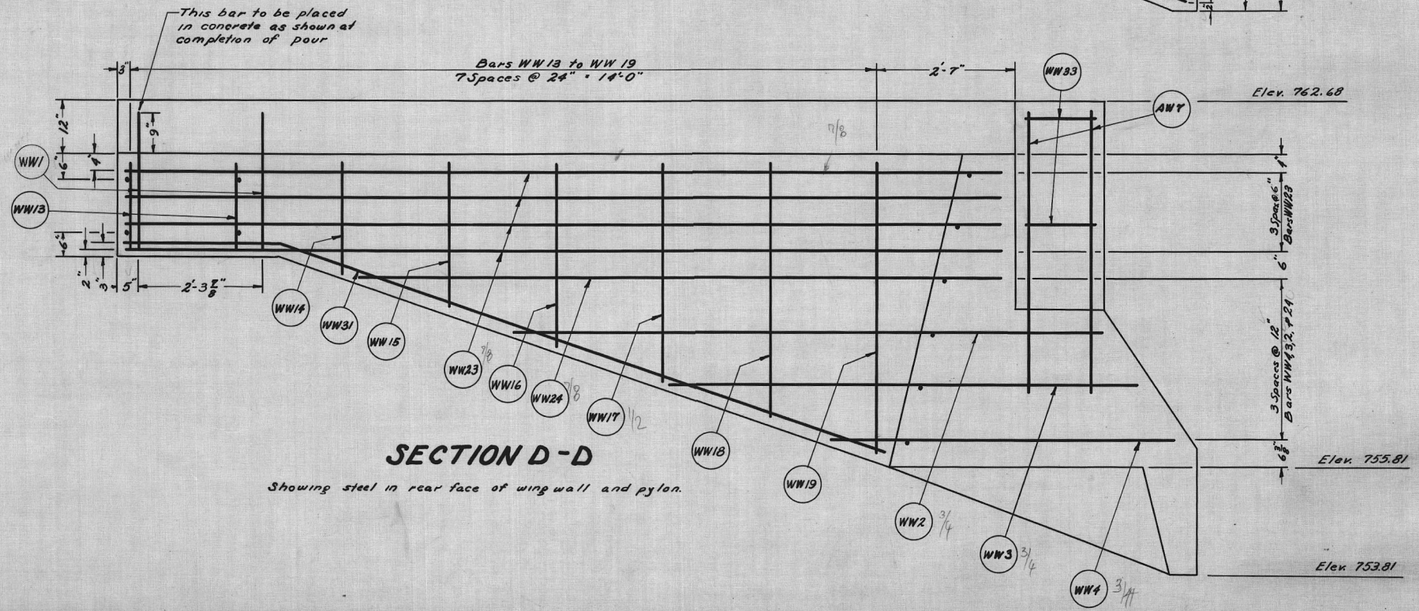
PLAN

Showing steel in top of wingwall and pylons



ELEVATION

Showing steel in front face of wing wall and pylon.



SECTION D-D

Showing steel in rear face of wing wall and pylon.

TOTAL WEIGHT OF REINF. STEEL - 9295 LBS.

TOTAL CU. YDS. OF CONCRETE - 88.4

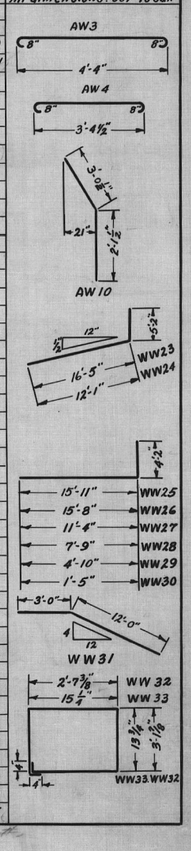
BILL OF BARS FOR TWO R.C. ABUTMENTS

STRAIGHT BARS					BENT BARS				
MARK	NO.	SIZE	LENGTH	WT.	MARK	NO.	SIZE	LENGTH	WT.
AW1	32	⅝" ϕ	26'-9"	1771.9					
AW2	42	do	18'-10"	1637.3					
					AW3	102	⅝" ϕ	5'-8"	1195.0
					AW4	102	do	4'-8½"	994.1
AW5	20	½" ϕ	26'-9"	363.8					
AW6	66	do	18'-10"	845.2					
AW7	8	do	5'-4"	29.0					
AW8	8	do	7'-6"	40.8					
AW9	104	do	5'-6"	388.9					
					AW10	52	½" ϕ	5'-2"	182.6
AW11	52	do	5'-2"	182.6					
AW12	52	do	3'-0"	106.0					
AW13	52	do	9"	26.5					
WW1	16	1" ϕ	2'-7"	112.6					
WW2	4	⅜" ϕ	11'-2"	67.9					
WW3	4	do	8'-9"	53.2					
WW4	4	do	6'-5"	39.0					
WW5	8	½" ϕ	2'-8"	14.5					
WW6	4	do	3'-1"	8.4					
WW7	4	do	3'-9"	10.2					
WW8	4	do	4'-5"	12.0					
WW9	4	do	5'-1"	13.6					
WW10	4	do	5'-9"	15.6					
WW11	4	do	6'-5"	17.5					
WW12	4	do	7'-1½"	19.4					
WW13	16	do	1'-8"	18.1					
WW14	4	do	2'-1"	5.7					
WW15	4	do	2'-9"	7.5					
WW16	4	do	3'-5"	9.0					
WW17	4	do	4'-1"	11.1					
WW18	4	do	4'-9"	12.9					
WW19	4	do	5'-5"	14.8					
WW20	4	do	18'-2"	49.4					
WW21	4	do	3'-2"	8.6					
WW22	4	do	8'-5"	22.9					
					WW23	16	⅜" ϕ	21'-7"	524.9
					WW24	4	do	17'-3"	104.8
					WW25	4	½" ϕ	20'-1"	54.6
					WW26	4	do	19'-10"	53.9
					WW27	4	do	15'-6"	42.2
					WW28	4	do	11'-11"	32.4
					WW29	4	do	9'-0"	24.5
					WW30	4	do	5'-7"	15.2
					WW31	8	do	15'-0"	81.6
					WW32	8	⅜" ϕ	12'-1"	36.7
					WW33	8	do	5'-5"	16.5

Additional steel order 28 Wall bars 193#
March 21/1963

BENDING DIAGRAMS

All dimensions: out to out



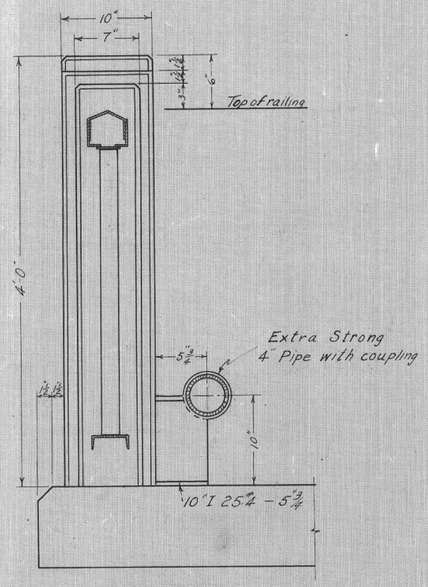
B-5066-18

REINFORCING DETAILS

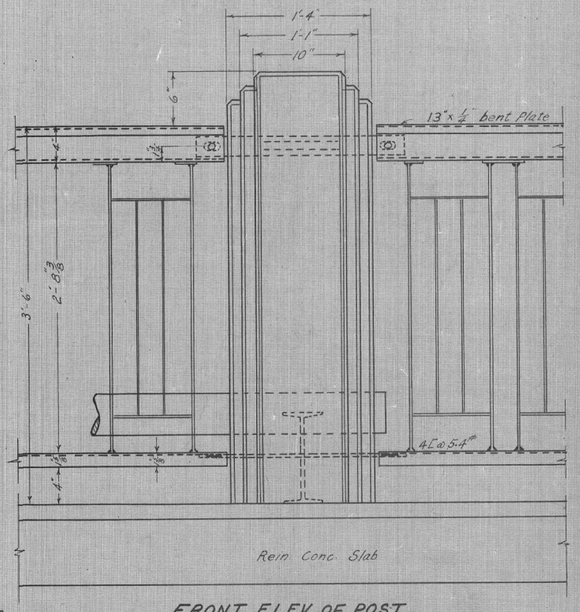
FOR R.C. WINGWALLS
FOR 180'-8" STEEL AND R.C. BRIDGE
TRANS CANADA HIGHWAY
OVER SEINE RIVER
LOT 320 IN R.C. MISSION
CITY OF ST BONIFACE
LOT 113 PARISH OF ST VITAL

PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEER'S OFFICE
DEPARTMENT OF PUBLIC WORKS

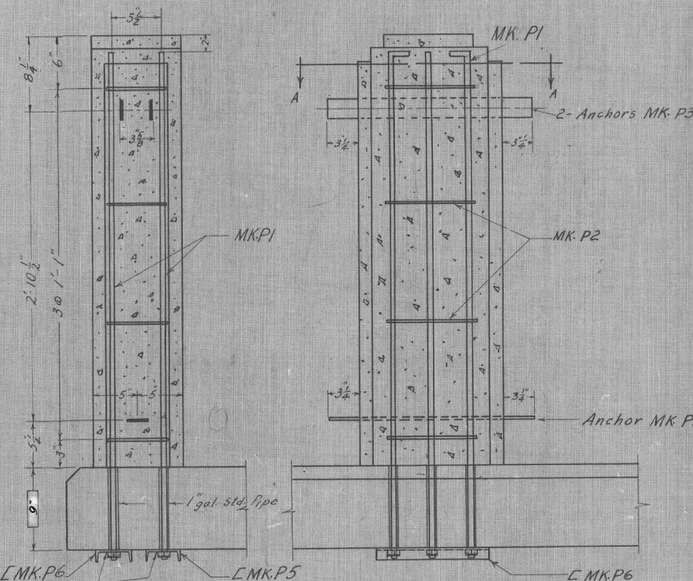
Designed by G.A.D.P. Drawn by B.P. Traced by T.A.
Engineer in charge G.A.D.P. Checked by G.A.D.P.
Approved by C. Laughlin, Bridge Engineer; [illegible], Chief Engineer.
Date: Nov. 27 9042
SCALE: ¾" = 1'-0" SHEET No. 8/14 PLAN No. 2639(D)



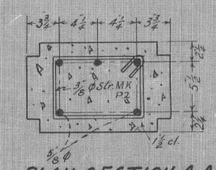
END ELEV. OF POST
Scale 1½" = 1'-0"



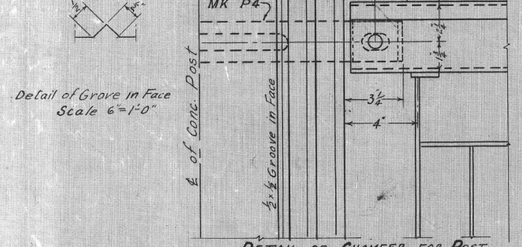
FRONT ELEV. OF POST
Scale 1½" = 1'-0"



DETAILS OF POST REINFORCING

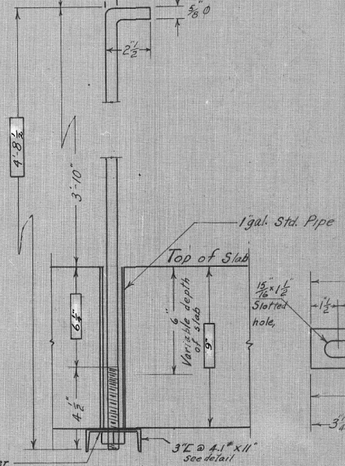


PLAN SECTION A-A



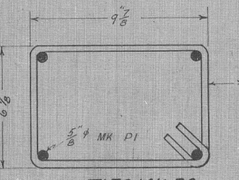
Detail of Grove in Face
Scale 6" = 1'-0"

DETAIL OF CHAMFER FOR POST
DETAIL OF RAILING CONNECTION
Scale: 3" = 1'-0"

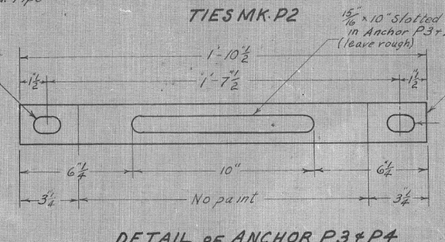


1 Spring lock washer under each nut.

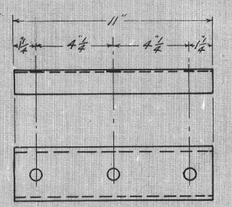
DETAIL OF VERTICAL REIN. MK-P1
Scale 3" = 1'-0"



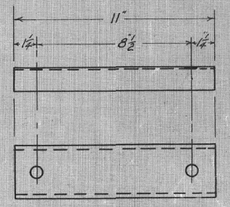
TIES MK-P2
Scale 3" = 1'-0"



DETAIL OF ANCHOR P3 & P4
Scale 3" = 1'-0"



WASHER-MK P5



WASHER-MK. P6

DETAIL OF CHANNEL WASHER
Showing location of holes
Scale 3" = 1'-0"

General Notes

The design stresses $f_s = 20,000\#$; $f_c = 2500\#/in^2$ - $f_c = 1000\#/in^2$
Use 12# tar felt for padding under post, The highway Bridge slab is to be constructed level so no beveling of post will be req'd. Grouting will be done in other direction to place post in erect position. Vertical reinforcing will be wired to ties to keep in positions. All chamfers to be ½". All workmanship and material will conform to Standard Spec. of C.E.S.A.

N.B. Total of 42 Pre-cast concrete posts required:
30 posts will be required using Anchors P3 & P4 as shown on this sheet
12 posts will be required using Anchors P7 & P8 as shown on sheet #11
42

BILL OF MATERIAL
FOR INTERMEDIATE POSTS

Volume of concrete per post = 0.150 cu yds (Total wt. of post plus reinforcing = 640 approx.)

Total wt. of reinforcing incl. anchor bars for railing = 43.8# per post approx.

Description	No.	Mk	Size	Length	Pounds	
Vertical Rein. Thd. bars	210	P1	⅝ Ø	4'-10½"	1080.5	✓
Stirrup column Ties	168	P2	⅜ Ø	3'-3"	207.5	✓
Anchor bars, see detail	30	P3	2¼"x⅜" flat	1'-10½"	161.4	✓
do do , do	60	P4	2¼"x⅜" flat	1'-10½"	322.9	✓
℄ Washers, 3 holes	42	P5	3"℄ 4.7	0'-11"	157.7	✓
℄ Washers, 2 holes	42	P6	3"℄ 4.1	0'-11"	157.7	✓
Nuts with lockwashers	210		for ⅝ Ø	Thd. bars	279	✓
Galvanized Std. Pipe			1" Ø	see above	See slab details	
Anchor bars, see detail	12	P7	2½"x⅜" flat	2'-1⅜"	74.2	✓
do do do	12	P8	do	1'-3½"	44.5	✓

Total wt. reinf. steel = 2223 lbs.

Total volume of concrete = 6.35 cu yds.

B-5066-19

ST'D C-87A

ST'D APPROVED

Date Chief Engineer

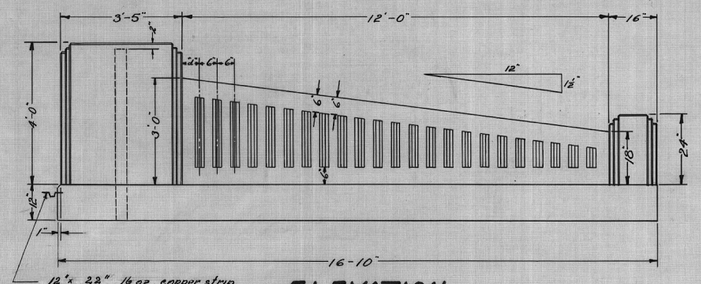
PRE-CAST REINFORCED CONCRETE STANDARD GUARD RAIL POST FOR TRANS-CANADA HIGHWAY BRIDGES

OVER Seine River City of St. Boniface
OVERALL LENGTH 180'-8" Parish of St. Vital

PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEER'S OFFICE
DEPARTMENT OF PUBLIC WORKS

Designed by G.A.D. Drawn by G.A.D. Traced by G.A.D.
Engineer in charge A.C. Checked by T.C.
Approved by C. Laughlin Bridge Engineer
Date March 12, 1952
Chief Engineer
SCALE As shown SHEET No. 9/14 PLAN No. ~~2639 (1.)~~ 9042

B-5066-19

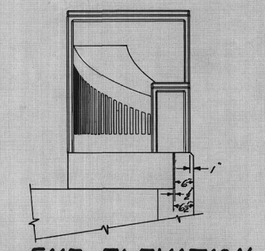


12"x 2.2" 16 oz. copper strip for shape see detail.

ELEVATION

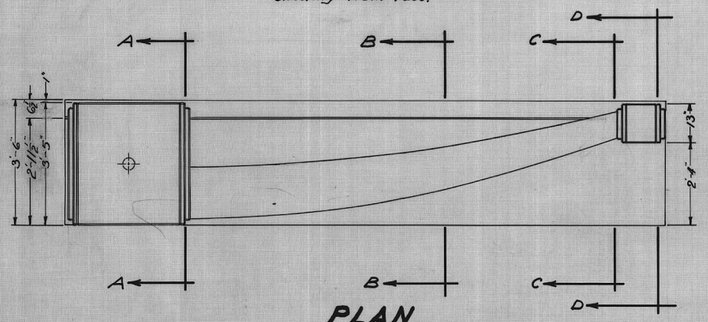
Scale : $\frac{1}{2}$" = 1'-0"

Showing front face.



END ELEVATION

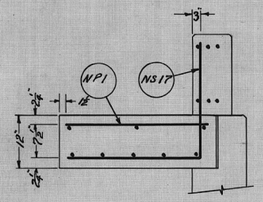
Scale : $\frac{1}{2}$" = 1'-0"



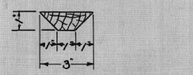
PLAN

Scale : $\frac{1}{2}$" = 1'-0"

SECTION A-A



SECTION C-C

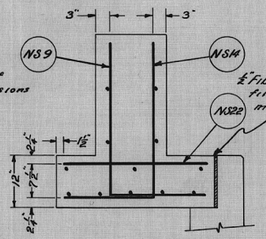


END VIEW

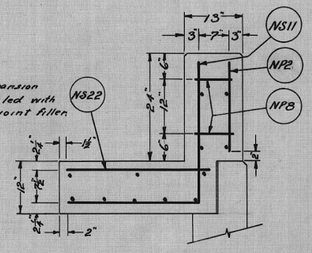
Suitable pieces of timber in shape shown to be nailed to inside faces of forming for walls to produce depressions as shown, 23 to each face.

All pieces to be spaced @ 6" centre to centre.

Distance 'd' to be made 6¼" on convex surfaces and 5¾" on concave surfaces.

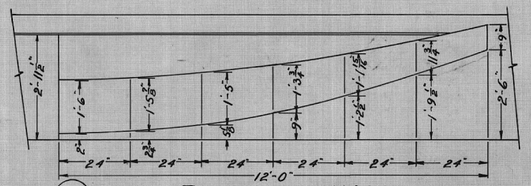


SECTION B-B



SECTION D-D

NOTE.
Expansion joint to be filled before wall or posts are poured.

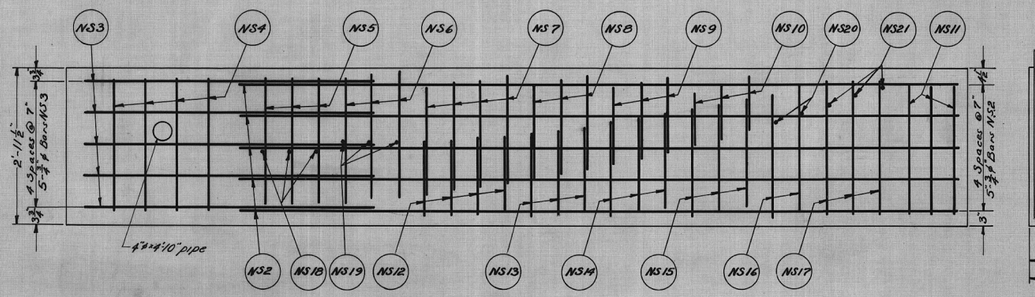


PLAN of WALL

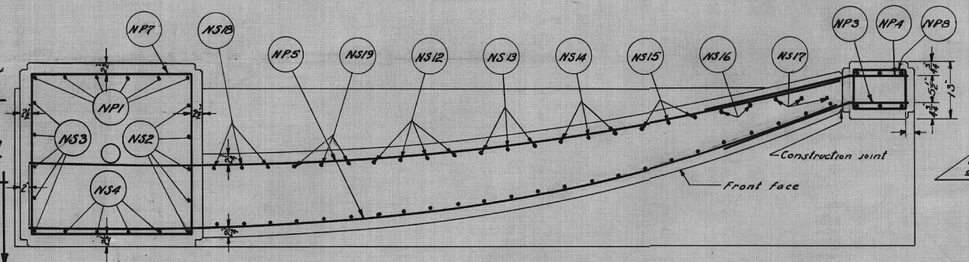
Scale : $\frac{1}{2}$" = 1'-0"

ELEVATION

Showing steel in front face only

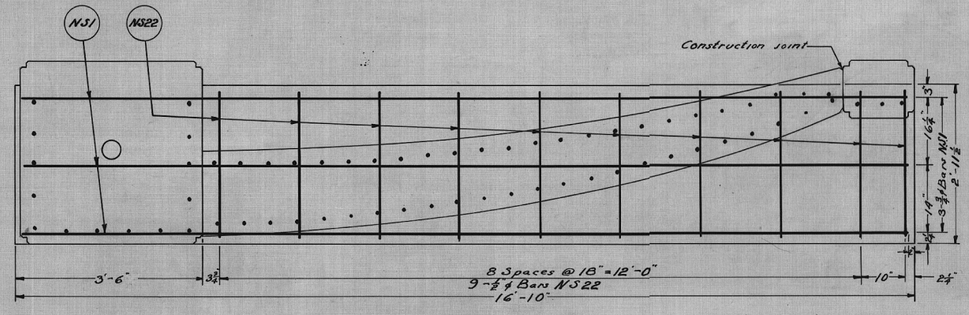


SECTION Y-Y



SECTION Z-Z

Note: Bars N.P.24 and N.P.25 to be bent in field to shape required.



Notes For forming details of edges of posts see sheet No. 9.

SECTION X-X

BILL OF BARS FOR FOUR POSTS

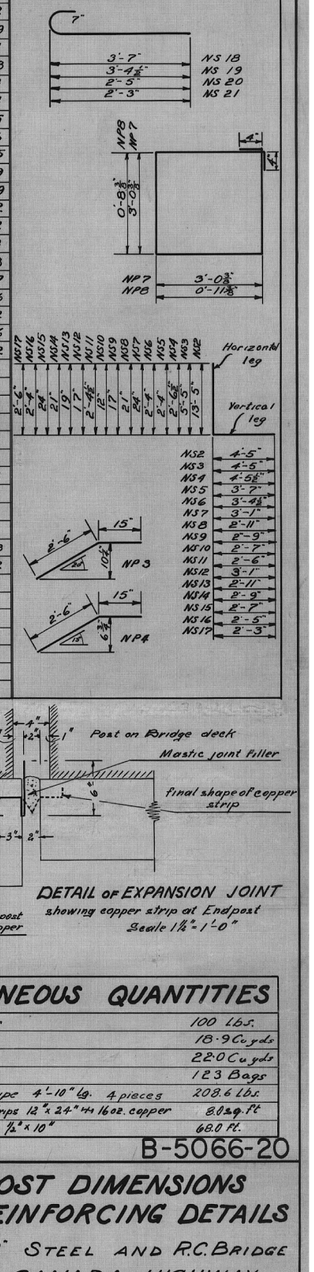
TOTAL VOLUME CONCRETE = 18·9 Cu Yar

TOTAL WEIGHT REINF. STEEL = 3326 Lbs

STRAIGHT BARS					BENT BARS				
No	Size	Length	Mk	Wt	No	Size	Length	Mk	Wt
12	¾ϕ	16'-6"	NS1	301					
					20	⅝ϕ	17'-10"	NS2	542
					20	do	9'-10"	NS3	299
					16	do	7'-0"	NS4	171
					12	do	5'-11"	NS5	108
					12	do	5'-8"	NS6	104
					16	do	5'-1"	NS7	124
					12	do	4'-8"	NS8	85
					12	do	4'-2"	NS9	76
					12	do	3'-7"	NS10	65
					12	do	4'-11"	NS11	89
					16	do	4'-6"	NS12	109
					12	do	4'-6"	NS13	82
					12	do	4'-6"	NS14	82
					12	do	4'-7"	NS15	84
					8	do	4'-9"	NS16	58
					12	do	4'-9"	NS17	87
					12	do	4'-2"	NS18	76
					12	do	3'-11"	NS19	72
					8	do	3'-0"	NS20	36
					12	do	2'-10"	NS21	52
40	½ϕ	2'-8"	NS22	74					
24	¾ϕ	3'-6"	NP1	128					
12	do	1'-6"	NP2	30					
					8	¾ϕ	3'-9"	NP3	46
					8	do	3'-9"	NP4	46
16	½ϕ	15'-3"	NP5	165					
8	do	8'-3"	NP6	45					
					16	⅝ϕ	12'-9"	NP7	78
					8	do	3'-11"	NP8	12

BENDING DIAGRAMS

All dimensions are Out to Out.



DETAIL of EXPANSION JOINT

showing copper strip at Endpost

Scale 1½" = 1'-0"

MISCELLANEOUS QUANTITIES

Mastic joint Filler	100 Lbs.
Concrete	18·9 Cu yds
Aggregate	22·0 Cu yds
Cement	123 Bags
4" diam standard pipe 4'-10" Lg. 4 pieces	208.6 Lbs.
4 copper expansion strips 12"x 24"w 16 oz. copper	8·0 sq. Ft.
Fiber Joint Filler ½"x 10"	6·0 Ft.

B-5066-20

END POST DIMENSIONS AND REINFORCING DETAILS

FOR 180'-8" STEEL AND R.C. BRIDGE

TRANS CANADA HIGHWAY

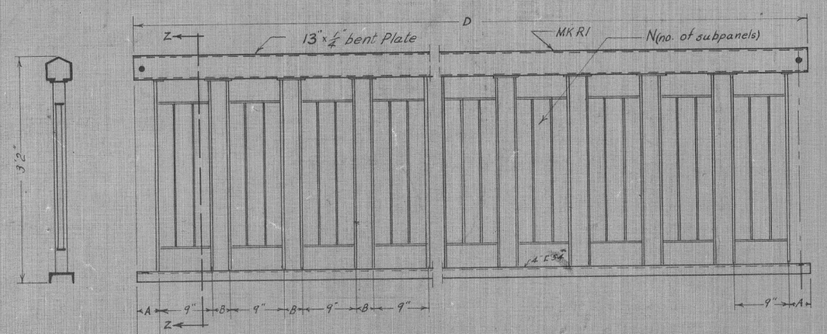
OVER SEINE RIVER

LOT 320 IN R.C. MISSION CITY of ST. BONIFACE

LOT 113 PARISH of ST. VITAL

PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEER'S OFFICE
DEPARTMENT OF PUBLIC WORKS

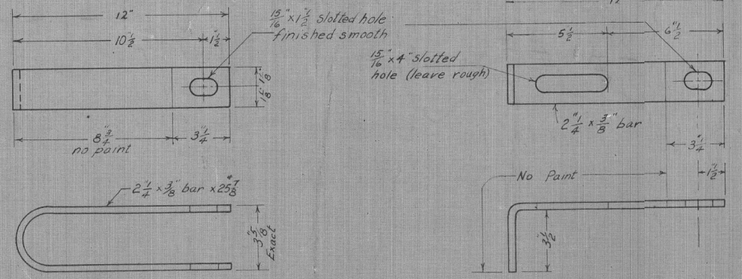
Designed by: G.A.D.P. Drawn by: B.P. Traced by: B.P.
Checked by: G.A.D.P. Checked by: G.A.D.P.
Approved by: C. Laughlin, Bridge Engineer — H. McLennan, Chief Engineer
November 1952
SCALE 3/8" = 1'-0" SHEET No. 19/19 PLAN No. ~~2639~~ (L) 9042
Except where noted.



Section ZZ

GENERAL ARRANGEMENT OF FENCE PANEL

Scale 1"=1'-0"



ANCHOR MKP-7

TOP RAIL, END POST CONNECTION

Scale 3"=1'-0"

ANCHOR MKP8

BOTTOM RAIL, END POST CONNECTION

Scale 3"=1'-0"

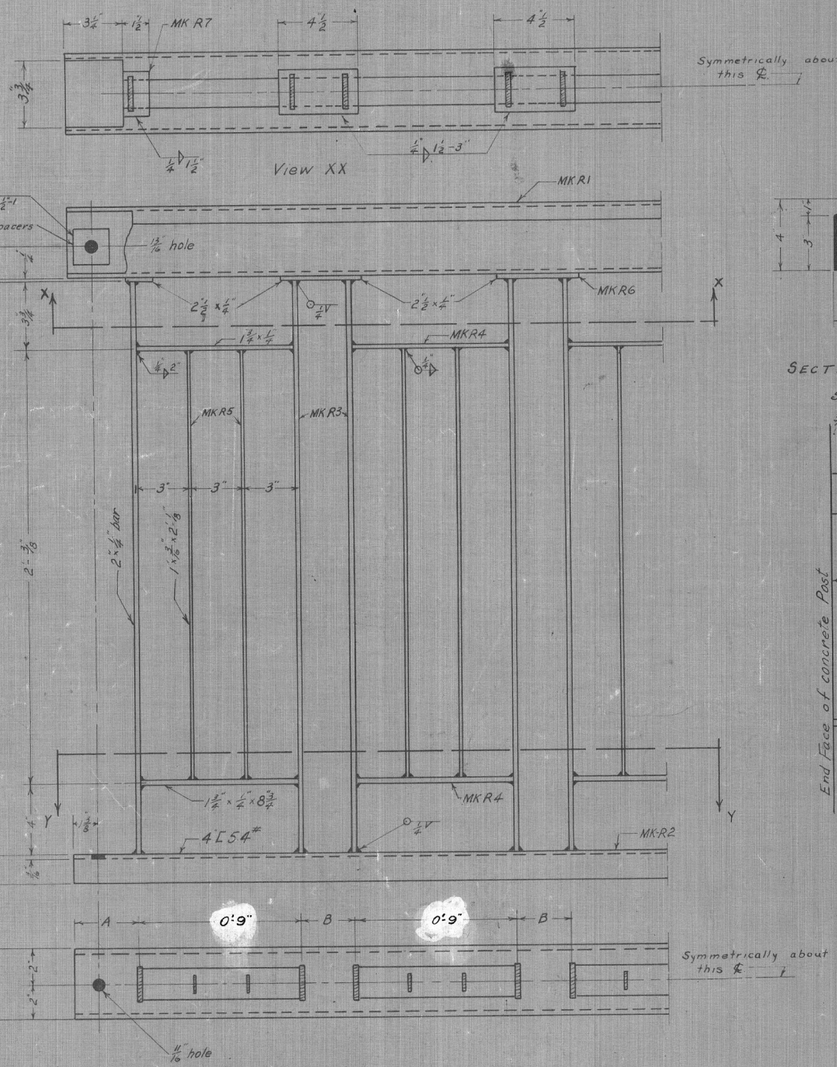
See Intermediate Post Detail Sheet for details of Anchors MK-P3+P4

BILL OF MATERIALS FOR BRIDGE RAILING

Description	No.	Mark	Size	Length	Pounds
Top Rail bent plate	36	R1	13"x1/4"	8'-4 1/4"	3338.3
Bottom Rail L	36	R2	4 L 5.4#	8'-4 1/2"	1624.0
~~Top Rail End panel~~		R2(a)	13"x1/4"		
~~Bottom Rail End Panel~~		R2(a)	4 L 5.4#		
For Sub panel	576	R3	2"x1/4"	2'-8 1/3"	2621.4
do do do	576	R4	1 3/4"x1/4"	0'-8 5/8"	625.7
do do do	576	R5	1"x3/16"	2'-1/8"	741.9
Plates connectors	252	R6	2 1/2"x1/4"	0'-4 1/2"	201.3
do do	72	R7	2 1/2"x1/2"	0'-1 1/8"	19.2
Spacers	144	R8	2"x1/8"	0'-2"	20.4
~~Bottom rail int support~~		R9	5 I 10#	0'-2 3/4"	
~~Filler Plate~~		R10	2 3/4"x3/8"	0'-3"	
~~Anchors End Post~~		P7	2 1/4"x1/8"	2'-1 1/8"	
~~do do do~~		P8	2 1/4"x1/2"	1'-3 1/2"	
Std Hex Bolts	144	1" thd.	7/8 ø	2 5/8"	59.7
Std. Hex. Nuts	144	top couplers	for 7/8 ø bolts	see detail	17.3
Std. Hex Bolts	72	check depth of slab	5/8 ø	2"	19.4
~~do do do~~			5/8 ø		
Std. Hex Nuts with lock washers	72		for 5/8 ø bolts		8.4
~~Skew Washers for 5/8 bolts see details~~					
~~Galvanized Std Pipe~~			3/4" ø		
				Total:	9297.0

PANEL DIMENSIONS

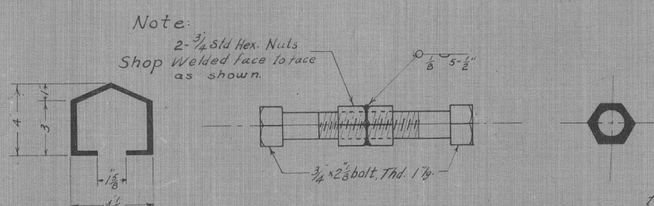
SubPANELS	B	A	N	D
9"	3	3 3/8"	8	8'-4 1/2"
	Approx 3	not less 3 5/8		
	not > 4	not > 4"		



DETAILS OF PANEL

Scale 3"=1'-0"

Note:
2-3/4" Std Hex. Nuts
Shop Welded face to face as shown.

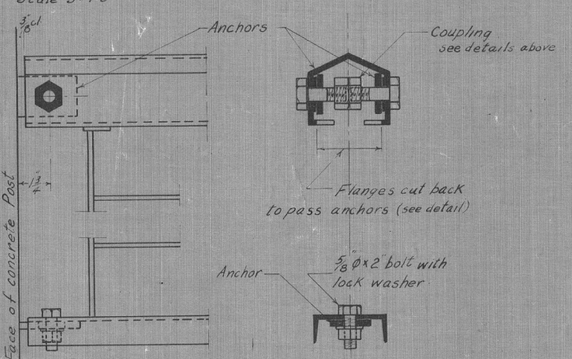


TOP RAIL COUPLING

Half Size

SECTION THRO. TOP RAIL

Scale 3"=1'-0"

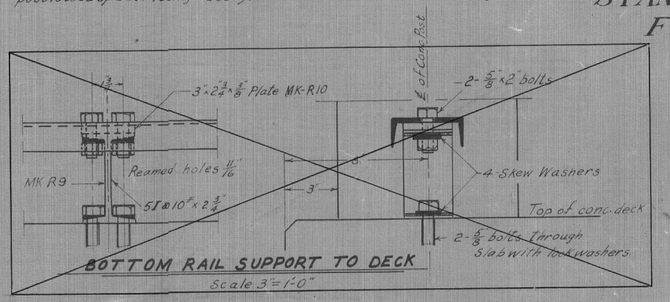


DETAIL AT PANEL CONNECTION

Scale 3"=1'-0"

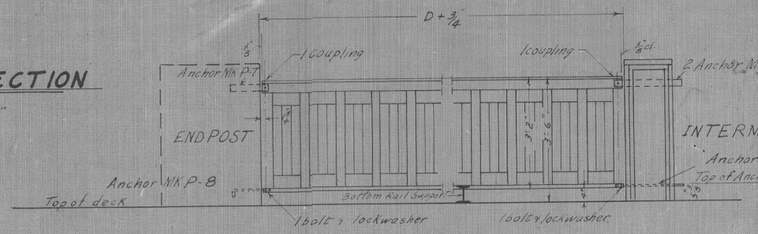
GENERAL NOTES

The max. length D for railing shall not exceed 14 ft for top rail and for D greater than 9ft an intermediate support will be used for the bottom rail. The dimensions for A+B may be adjusted to suit particular post spacing with limitations as above. The Anchors MKP3+P4 are placed in and built integrally with the Precast Standard Intermediate Post. The Anchors MK P7+P8 are to be placed in and built integrally in the end post. The end post is to be specifically designed for each individual Bridge.



BOTTOM RAIL SUPPORT TO DECK

Scale 3"=1'-0"



MOUNTING OF FENCE PANEL

Scale 1/2"=1'-0"

TRANS-CANADA HIGHWAY STANDARD GUARD RAIL FENCE DETAILS

Scale: As noted

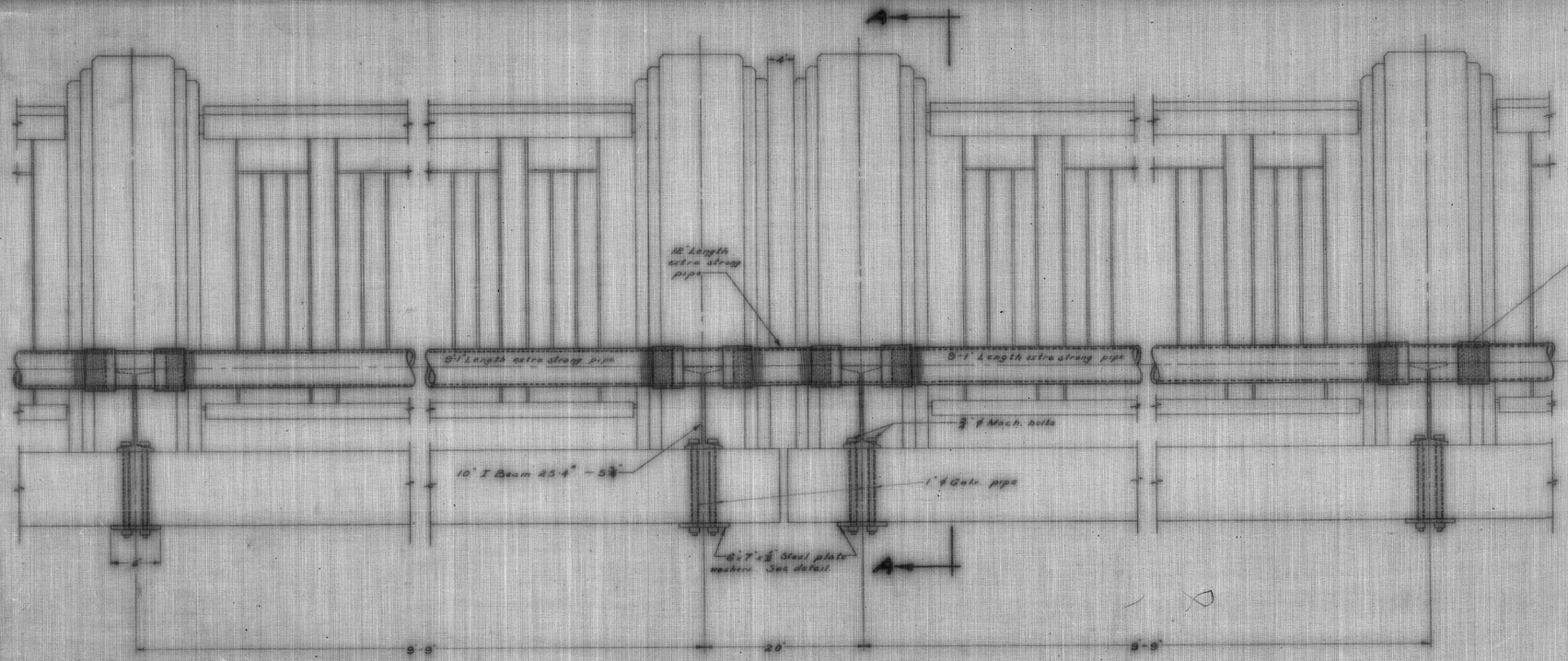
B-5066-21

ST'D GUARD RAIL FENCE DETAILS for HIGHWAY BRIDGES
Overall length 180'-8" Roadway T.C.H. over SEINE RIVER
CITY of ST. BONIFACE
PARISH of ST. VITAL
PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEER'S OFFICE
DEPARTMENT OF PUBLIC WORKS

Designed by A.M.P. Drawn by G.A.P. Traced by G.A.P.
Engineer in charge H.T. Checked by T.C.
Approved by C. Laughlin Bridge Engineer
Chief Draftsman
Date: MARCH 1952
SCALE As Noted SHEET No. 11/14 PLAN No. ~~26396~~ 9042

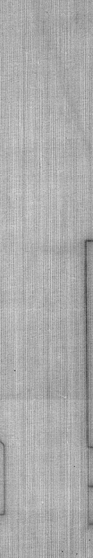
ST'D C87
March 1952

B-5066-21



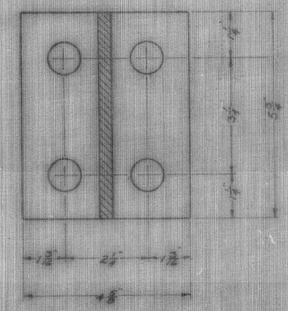
ELEVATION of PIPE CURB

Showing assembly details at intermediate posts
Scale: 1/2"=1'-0"



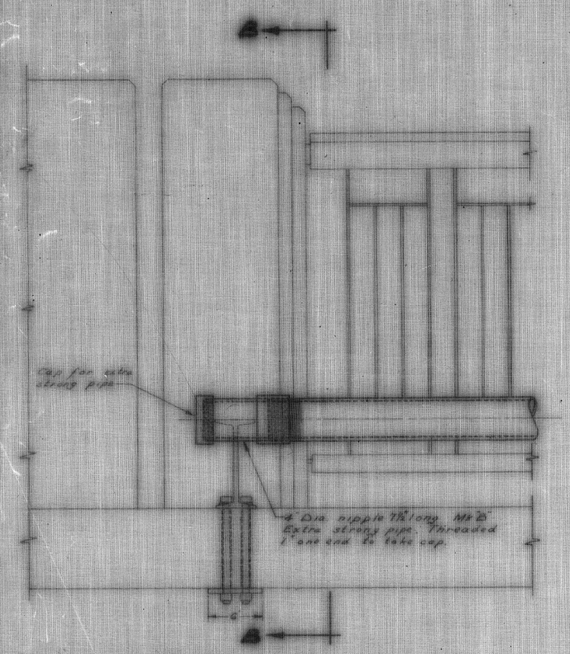
SECTION A-A

Scale 1/2"=1'-0"



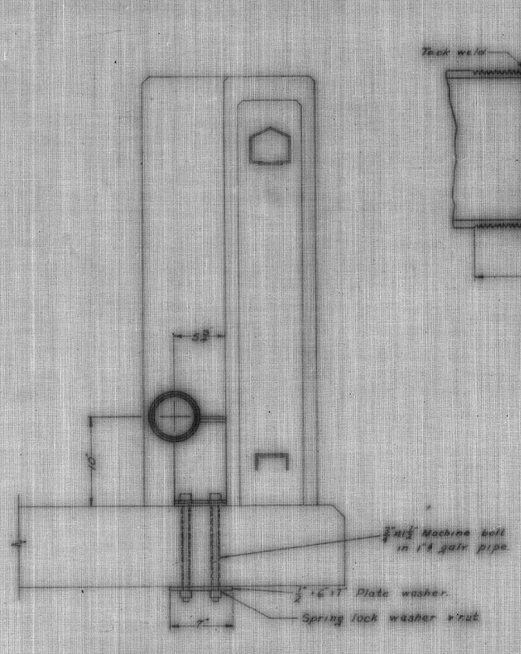
SECTION C-C

Showing spacing of 3/4" ϕ holes in bottom flange of I beam
Scale 6"=1'-0"



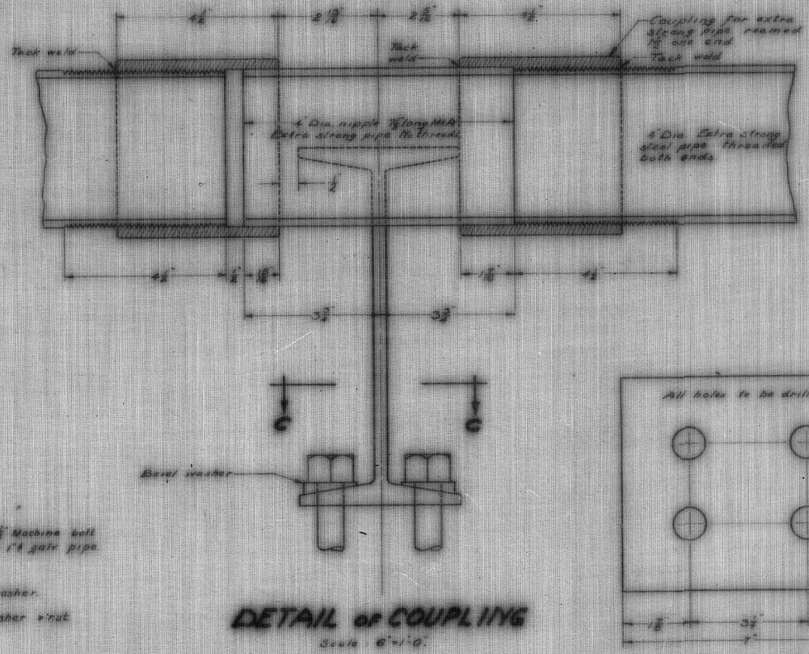
ELEVATION of PIPE-CURB

Showing assembly details at end posts
Scale: 1/2"=1'-0"



SECTION B-B

Scale 1/2"=1'-0"



DETAIL of COUPLING

Scale 6"=1'-0"

NOTE Pipe nipple to be shop welded to both sides and top of I beam with 3/8" fillet weld.

DETAIL of PLATE WASHER

Scale: 6"=1'-0"

BILL of IRON

Mk	No	Description	Size	Length	Remarks	Wt
	44	I Beam	10" ins	25'-3"	See detail	5116
	36	Extra strong pipe	4" ϕ	9'-1"	Threaded 7 1/2" each end	1898
	1	do do do	do	18'	do do do do	82
A	36	do do do nipples	do	7 1/2"	No threads	336
B	1	do do do do	do	do	Threaded one end to take cap	21
	80	Couplings	For 4" pipe		Reamed out 1" one end	653
	1	Caps	do do do			10
	168	Mach. bolts	3/4" ϕ	1 1/2"		183
	92	Plate washers	3/4" ϕ	5"	See detail	250
	168	Bevel washers	For 3/4" bolts			89
	168	Spring lock washers	do do do			9
					TOTAL	7127 lbs

NOTE FIELD ERECTION OF PIPE CURB
Turn couplings back on both end of pipe reamed end and place one end of pipe against end of nipple. Turn coupling until it reads the I beam and Tack weld coupling to nipple and to pipe. Force coupling of opposite end leaving 1/8" clearance between I and I Beam. Tack weld coupling to pipe.

B-5066-22

PIPE CURB ERECTION

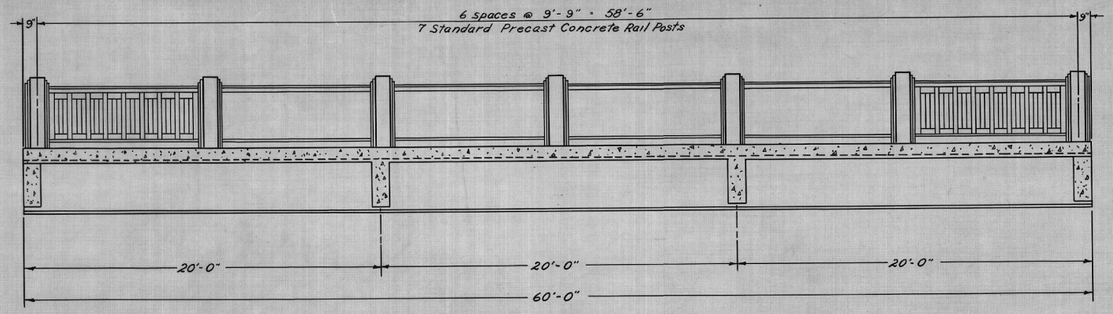
FOR 180'-8" STEEL AND R.C. BRIDGE
TRANS CANADA HIGHWAY
OVER SEINE RIVER
LOT 320 IN R.C. MISSION CITY OF ST. BONIFACE
LOT 113 PARISH OF ST. VITAL

PROVINCE OF MANITOBA
HIGHWAYS BRANCH - BRIDGE ENGINEERS OFFICE
DEPARTMENT OF PUBLIC WORKS

DESIGNED BY GADR TRACED BY BP CHECKED BY GADR
CHECKED BY [illegible] APPROVED BY [illegible]
Asst. Bridge Engineer
Asst. Bridge Engineer
DATE Jan. 1932
SHEET No. 1/4

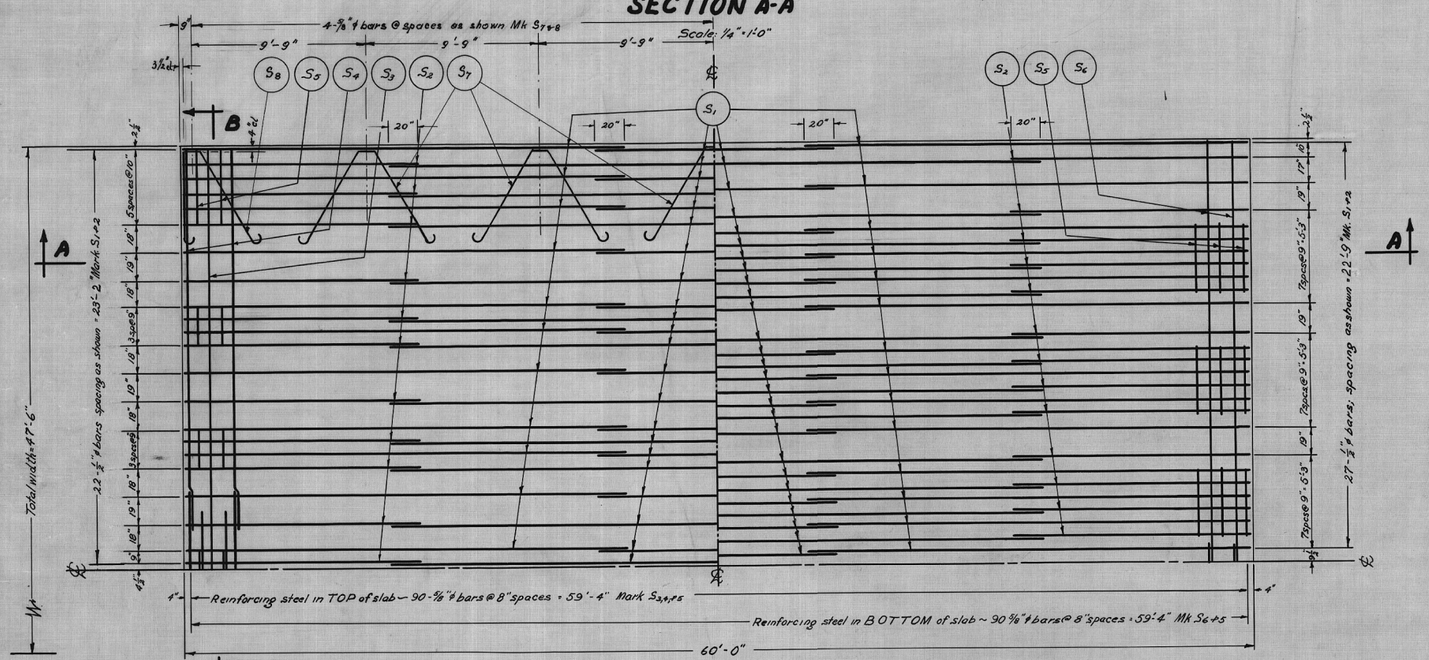
9042

B-5066-22



SECTION A-A

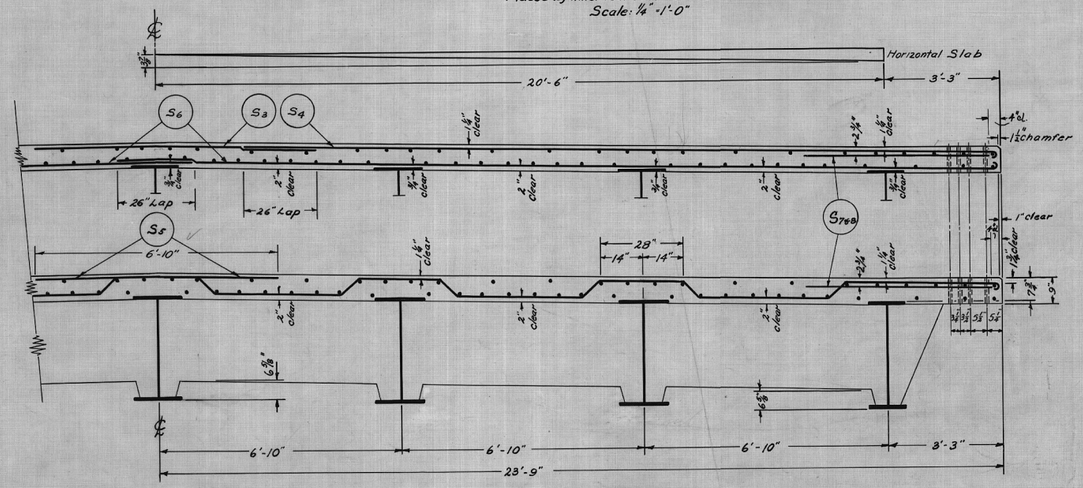
Scale: 1/4"=1'-0"



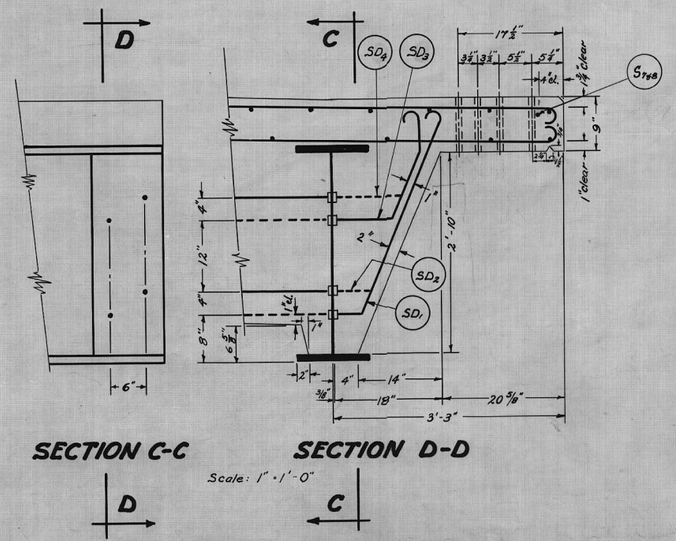
QUARTER PLAN
SHOWING REINFORCING STEEL IN TOP OF SLAB

QUARTER PLAN
SHOWING REINFORCING STEEL IN BOTTOM OF SLAB

Placed symmetrical about Centre lines
Scale: 1/4"=1'-0"



HALF SECTION B-B
Showing reinforcing steel at bent and straight bars
Scale: 1/2"=1'-0"



SECTION C-C

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

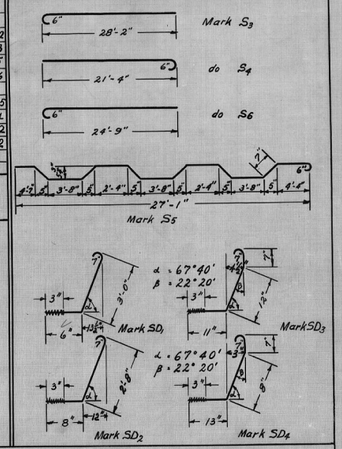
BILL OF BARS FOR 3 DECK SLABS

STRAIGHT BARS					BENT BARS				
No	Size	Length	Mk.	Wt.	No	Size	Length	Mk.	Wt.
588	7/8"	25'-0"	S_1	99960					
294	do	18'-2"	S_2	26323					
					135	7/8"	28'-8"	S_3	4102.2
					135	do	21'-10"	S_4	3124.3
					270	do	28'-7"	S_5	8180.5
					270	do	25'-3"	S_6	7226.6
					12	3/4"	4'-1"	SD_1	74.5
					12	do	3'-11"	SD_2	71.4
					12	do	3'-1"	SD_3	56.2
					12	do	2'-9"	SD_4	53.2

VOLUME OF CONCRETE = 277 cu.yds.
REINFORCING STEEL = 35518 #

NOTE: Bars SD1, SD2, SD3 & SD4 must be plain bars. These bars must have a 3" ϕ standard thread as indicated in the bending diagram. All other reinforcing bars must be deformed.

BENDING DIAGRAMS
all dimensions are out to out.



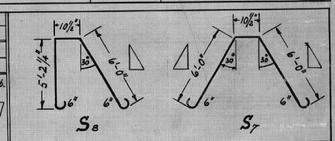
MISCELLANEOUS MATERIALS FOR R.C. SLABS

No	MARK	DESCRIPTION				WEIGHT	REMARKS
8	Unit I	8	L 6" x 3½" x ½"	Length 21'-11"	Wt. 2682.6		
		48	L 6" x 2" @ 8.2	do 6"	Wt. 196.8		4 required as shown in elevation
		8	Plates 8" x ½"	do 21'-11"	Wt. 2384.5		4 required opposite hand
					5263.9	5263.9	
8	Unit II	8	L 5" x 5" x ⅝"	Length 21'-11"	Wt. 2840.4		
		48	L 6" x 2" @ 8.2	Length 6"	Wt. 196.8		4 required as shown in elevation
					3037.2	3037.2	4 required opposite hand
378		Galvanized 1" ϕ Pipe Length 9"				476.3	
96		¾" square nuts for bars Marked SD-1, 2, 3 & 4				14.8	
96		Washers for bars Marked SD-1, 2, 3 & 4				9.6	
					TOTAL	8801.8 #	

Note: Bars S7 & S8 are additional bars and not shown in above Bill of Bars for 3 Deckslabs

BENT BARS				
No	Size	Length	Mk.	Wt.
30	5/8"	13'-11"	S7	443
12	do	13'-1"	S8	166
			Total =	609 lb.

Total Reinf. Steel = 36,127 lb. = [35518 + 609 lb.]



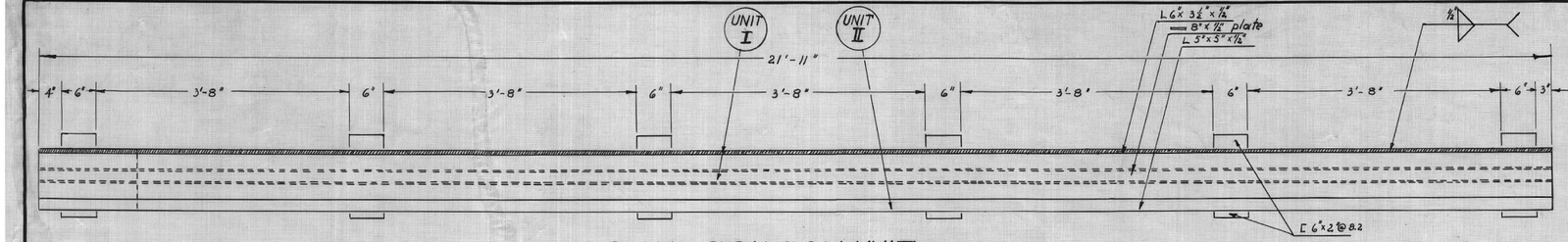
B-5066-23

R.C. DECKSLAB
OF 180'-8" STEEL AND R.C. BRIDGE
TRANS-CANADA HIGHWAY
OVER SEINE RIVER
LOT 320 IN R.C. MISSION ~ CITY OF ST BONIFACE
LOT 113 PARISH OF ST VITAL

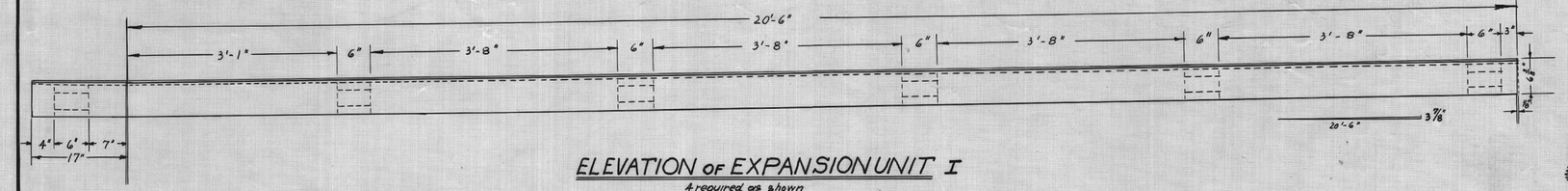
PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEER'S OFFICE
DEPARTMENT OF PUBLIC WORKS

Designed by G.A.D.P. Drawn by W.G. Traced by T.O.
Engineer in charge _____ Checked by G.A.D.P.
Approved by: A. Laughlin, Bridge Engineer — Chief Engineer
Date: Dec. 6/52
SCALE As Shown SHEET No. 13/14 PLAN No. 9042 ~~2639(b)~~

B-5066-23

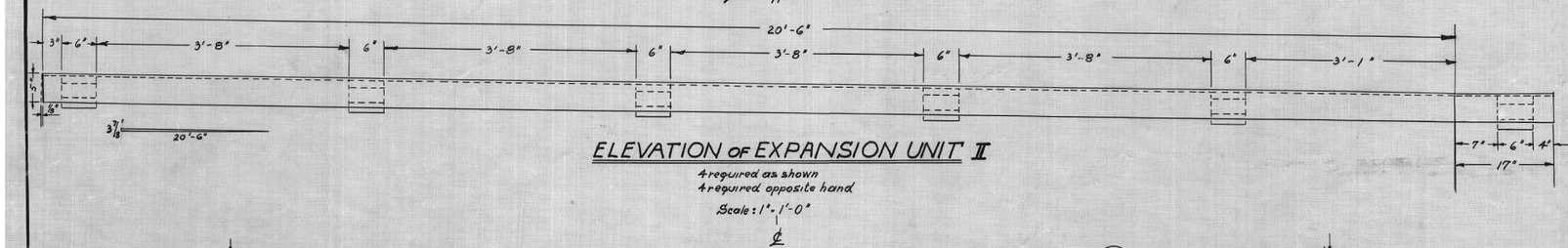


PLAN OF EXPANSION UNIT I AND II



ELEVATION OF EXPANSION UNIT I

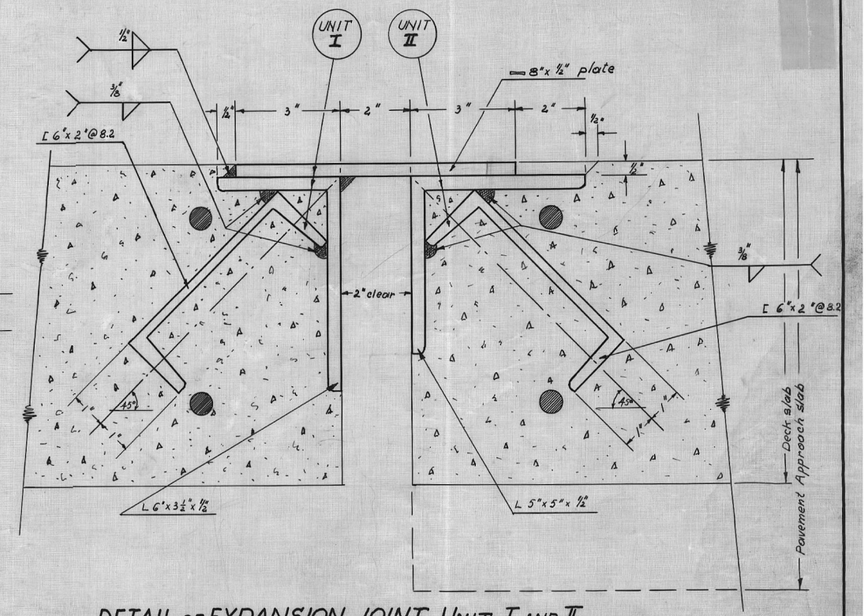
4 required as shown
4 required opposite hand



ELEVATION OF EXPANSION UNIT II

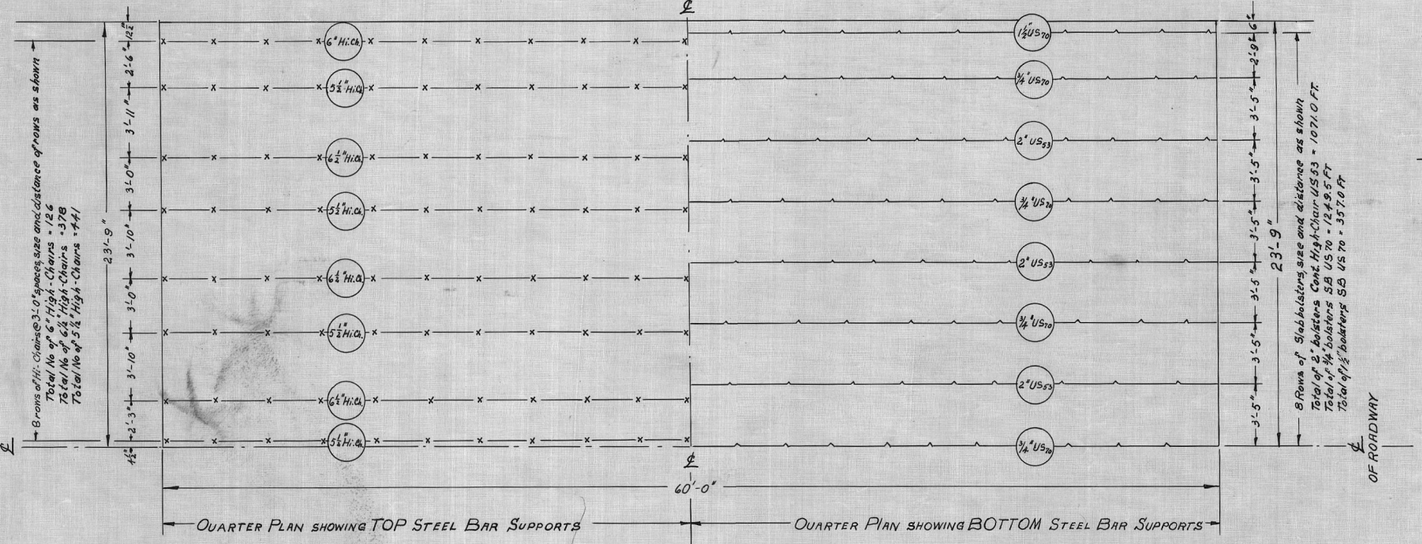
4 required as shown
4 required opposite hand

Scale: 1"=1'-0"



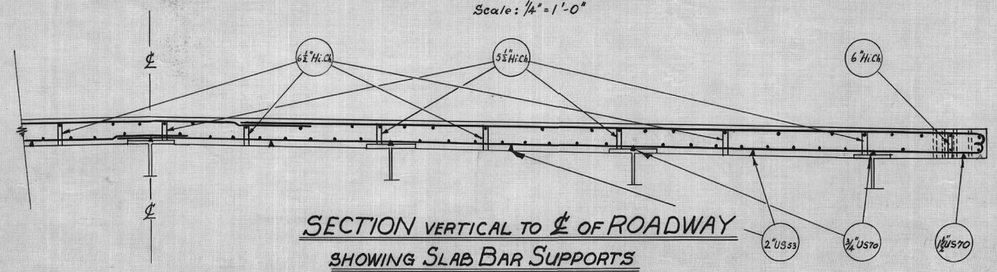
DETAIL OF EXPANSION JOINT UNIT I AND II

Scale: ½"=1'-0"



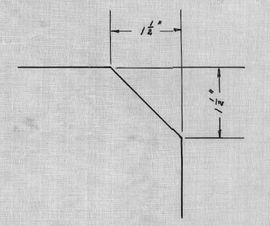
PLAN OF SLAB BAR SUPPORTS

Scale: ¼"=1'-0"



SECTION VERTICAL TO ℄ OF ROADWAY SHOWING SLAB BAR SUPPORTS

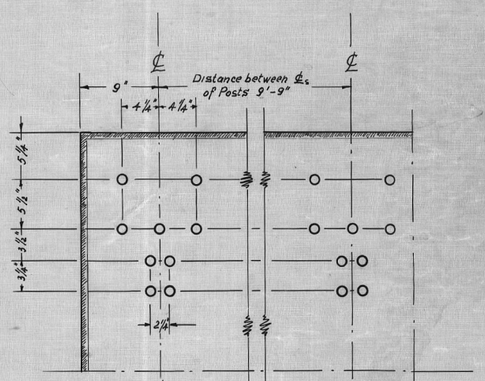
Scale: ½"=1'-0"



CHAMFER DETAIL FOR SLAB

Note: Expansion angles were removed at east abutment in August, 1963. Entire space between diaphram and abutment backwall was filled with non shrink grout and epoxy resin. Top plates on other expansion dams were all narrowed by field cutting.

A.G.B.



PLAN SHOWING POSITION OF GALVANIZED PIPES

Scale: 1½"=1'-0"

NOTE: Expansion Unit I to be placed in the bridge at each end and in both ends of center slab.

Expansion Unit II to be placed in both approach slabs and central end of end spans.

Contractor must supply all bar accessories as indicated on this plan or as approved by the engineer.

B-5066-24

DETAILS FOR R.C. DECK SLAB

OF 180'-8" STEEL AND R.C. BRIDGE

TRANS CANADA HIGHWAY

OVER SEINE RIVER

LOT 320 IN R.C. MISSION ~ CITY OF ST. BONIFACE

LOT 113 PARISH OF ST. VITAL

PROVINCE OF MANITOBA
HIGHWAYS BRANCH BRIDGE ENGINEER'S OFFICE
DEPARTMENT OF PUBLIC WORKS

Designed by G.A.D.P. Drawn by W.G. Traced by W.G.
Engineer in charge _____ Checked by G.A.D.P.
Approved by: A. Laughlin, Bridge Engineer — Chief Engineer
Date: December 1962
SCALE as shown SHEET No. 14/14 PLAN No. ~~2633 (6)~~ 9042