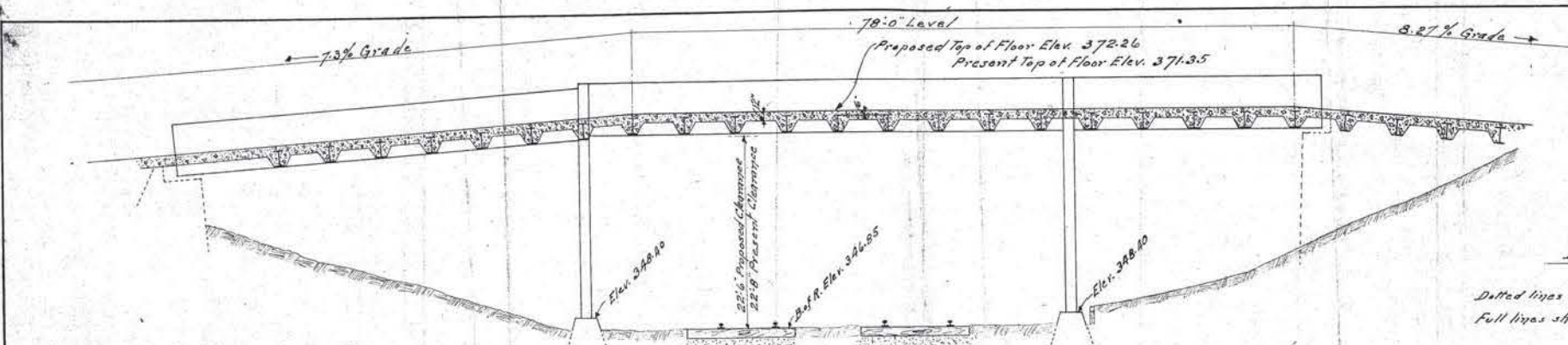
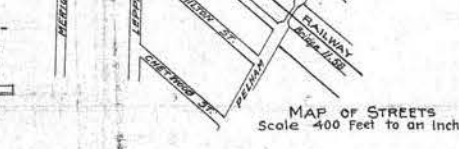
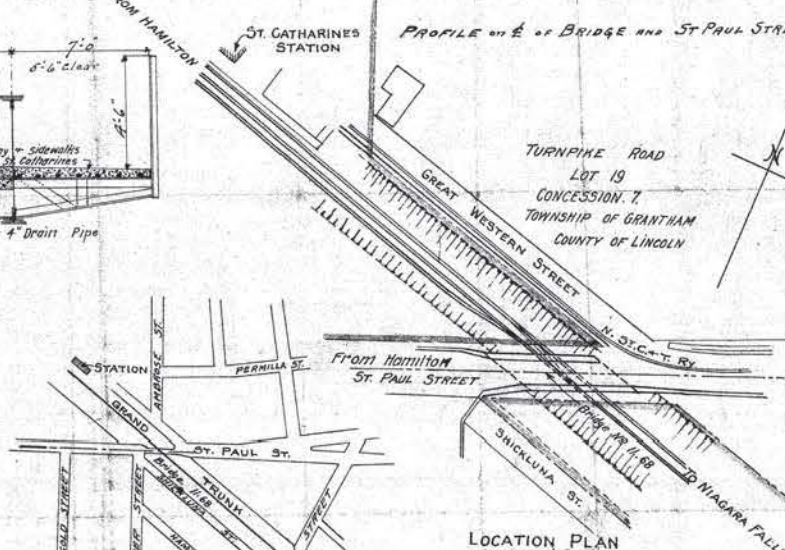
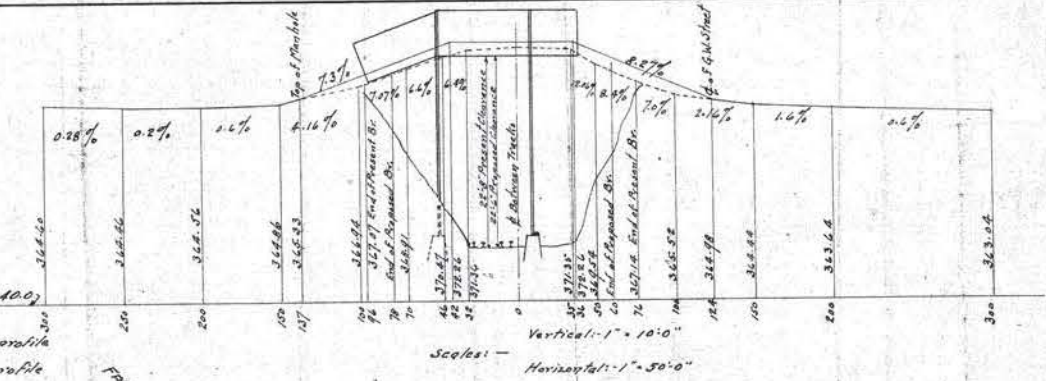
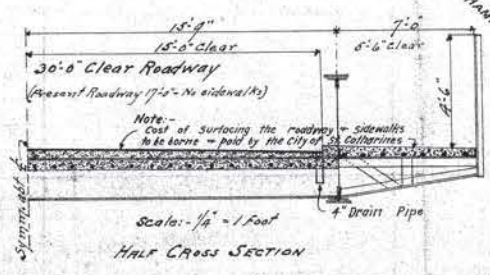
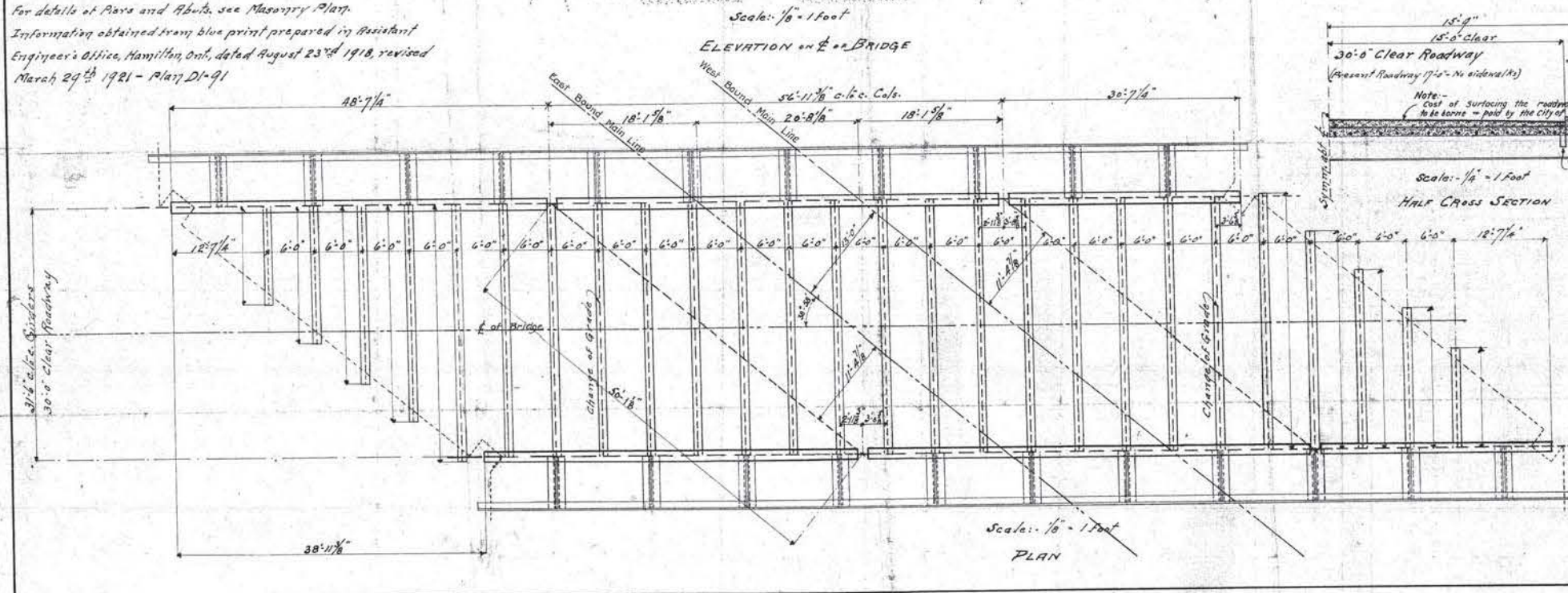


APPENDIX A – EXISTING STRUCTURAL DRAWINGS

- 1922 Construction Drawings
- 1977 Rehabilitation Drawings



For details at Piers and Abuts. see Masonry Plan.
 Information obtained from blue print prepared in Assistant
 Engineer's Office, Hamilton, Ont., dated August 23rd 1918, revised
 March 29th 1921 - Plan D1-91

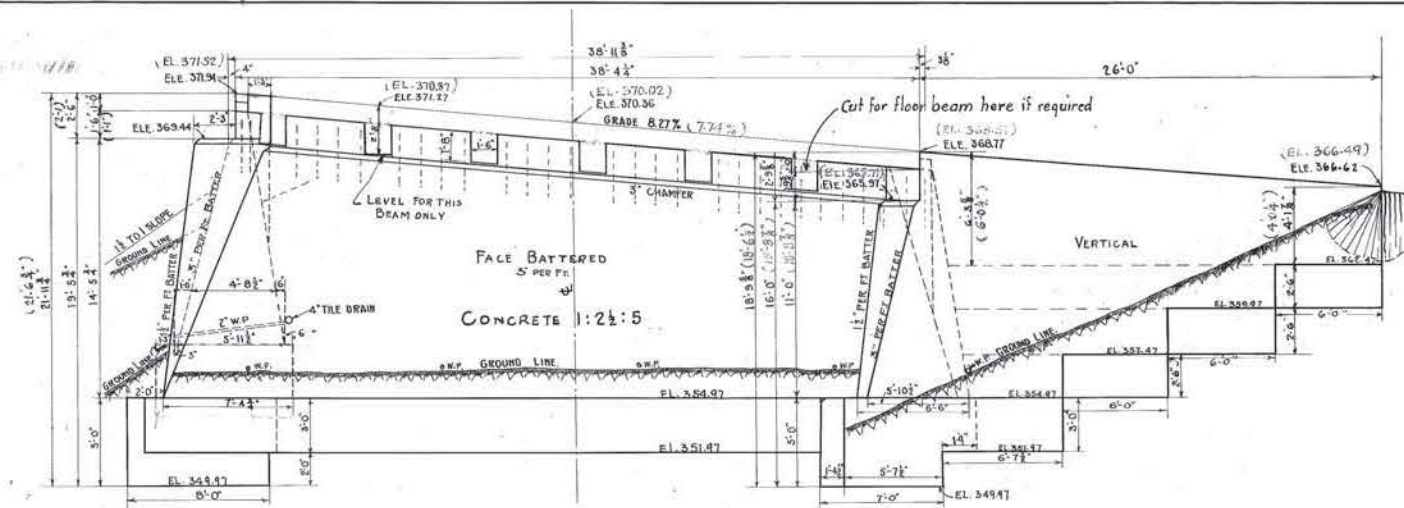


SPECIFICATION:-
 Steel Highway Bridges for Province of
 Ontario dated 1917.
 CAPACITY:- 20 Ton Truck - Class 'C'

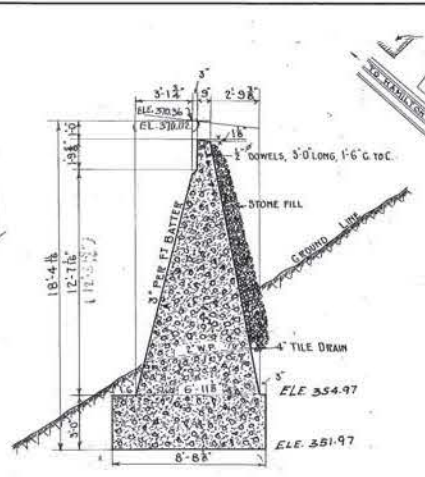
EXAMINED:- *W. J. ...* Structural Engineer
 APPROVED:- *A. J. ...* Chief Engineer
 APPROVED:- General Superintendent
 APPROVED:- Vice President

GRAND TRUNK RAILWAY SYSTEM
 LONDON DIVISION - 17th DISTRICT
 Proposed Renewal
 O.H. Bridge - R.R. 11.68
 St. Catharines
 Designed by H.F. - Drawn by H.A.
 Scales as noted.
 Office of Chief Engineer April 13th 1921
 Job No. 8800
 File No. ...

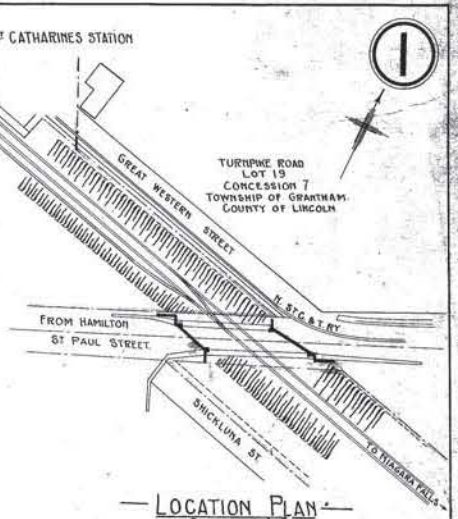
30337 15 Feb 20
 T.K.S. Mumma
 May 4 20



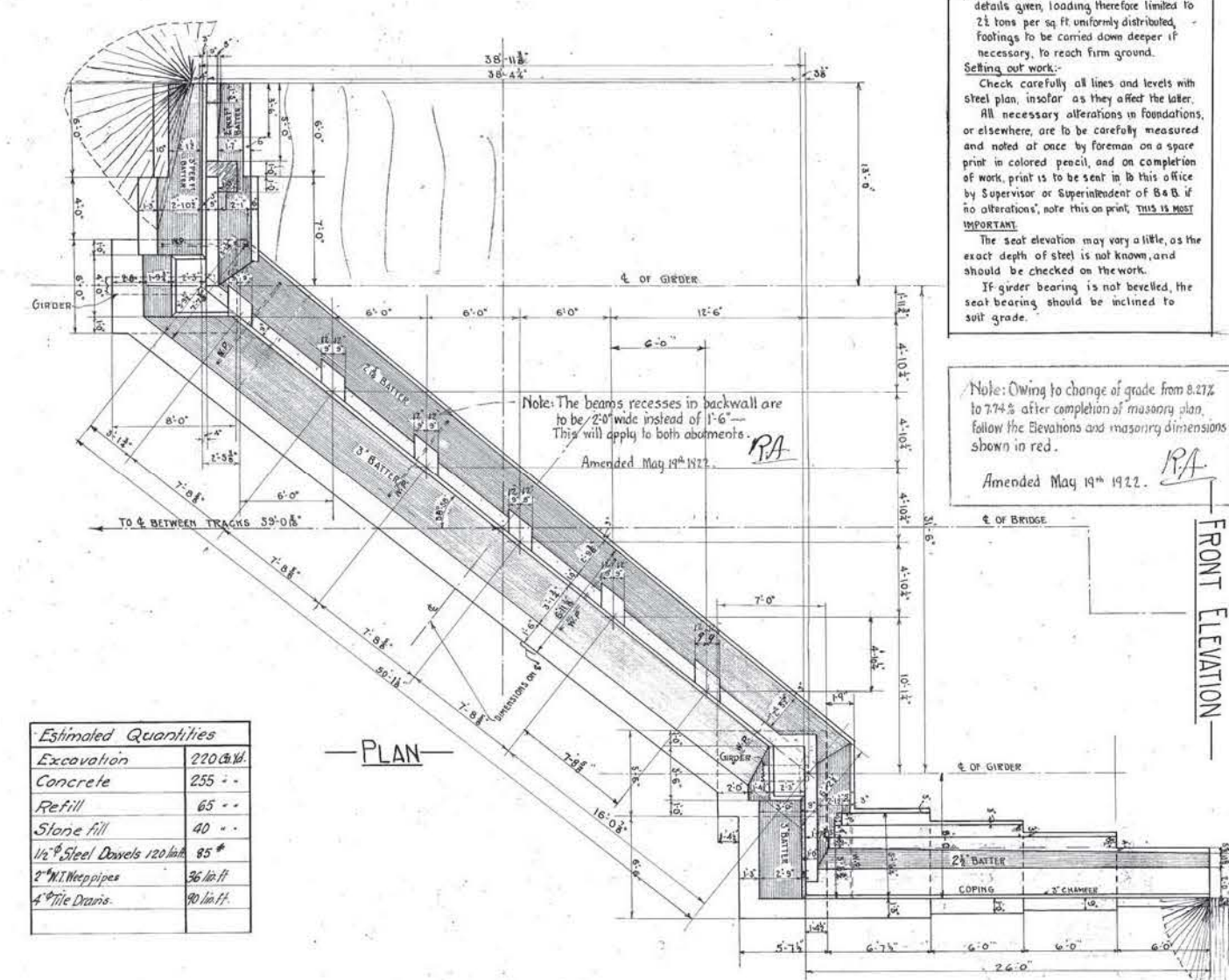
SIDE ELEVATION



CROSS SECTION ON C-C
(ON SQUARE)



LOCATION PLAN
SCALE 100'-0"-1"



PLAN

NOTES

Foundations: reported 'Good' (G.M.) but no details given, loading therefore limited to 2 1/2 tons per sq ft uniformly distributed. Footings to be carried down deeper if necessary, to reach firm ground.

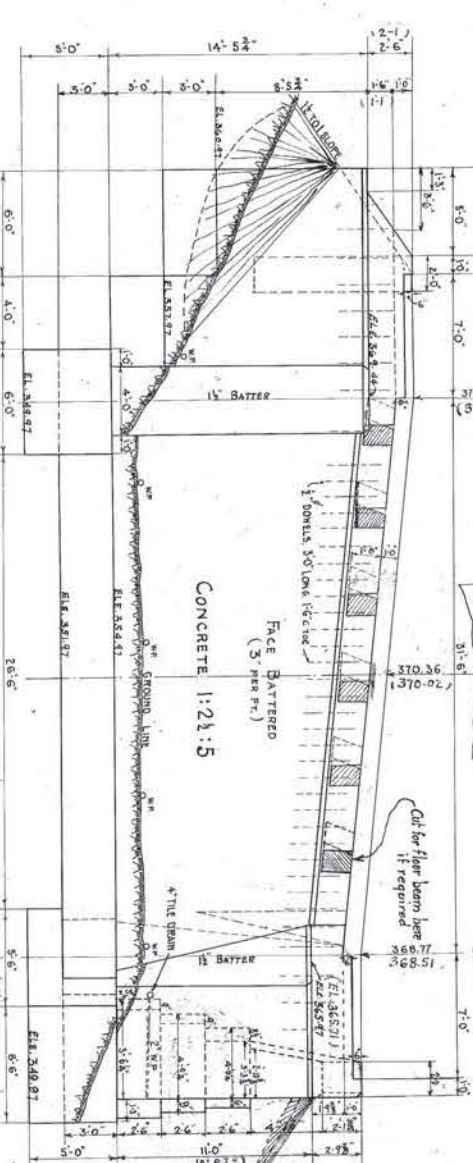
Setting out work: Check carefully all lines and levels with steel plan, insofar as they affect the latter. All necessary alterations in foundations, or elsewhere, are to be carefully measured and noted at once by foreman on a spare print in colored pencil, and on completion of work, print is to be sent in to this office by Supervisor or Superintendent of B & B. If no alterations, note this on print, THIS IS MOST IMPORTANT.

The seat elevation may vary a little, as the exact depth of steel is not known, and should be checked on the work.

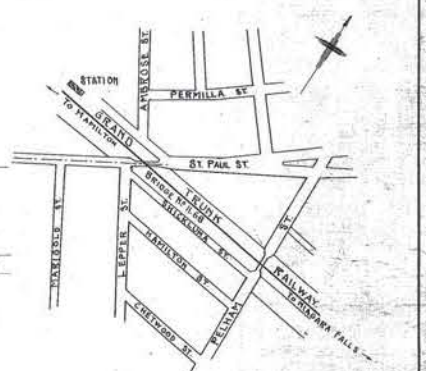
If girder bearing is not bevelled, the seat bearing should be inclined to soil grade.

Note: Owing to change of grade from 8.27% to 7.74% after completion of masonry plan, follow the Elevations and masonry dimensions shown in red.

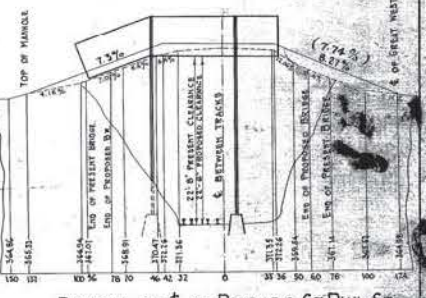
Amended May 19th 1922. RA



FRONT ELEVATION



MAP OF STREETS
SCALE 400'-0"-1"



PROFILE ON C-C OF BRIDGE & ST. PAUL ST
SCALE: VERTICAL 1"=10'-0"
HORIZONTAL 1"=50'-0"

Estimated Quantities	
Excavation	270 cu yd.
Concrete	255 --
Refill	65 --
Stone fill	40 --
1/2" Steel Dowels 120 lbs	85 #
2" WT. Meppipes	36 lin ft.
4" Tile Drains	40 lin ft.

EXAMINED: R. Am... MASONRY ENGINEER

APPROVED: [Signature] CHIEF ENGINEER

APPROVED: [Signature] GENERAL SUPERINTENDENT

APPROVED: [Signature] VICE PRESIDENT

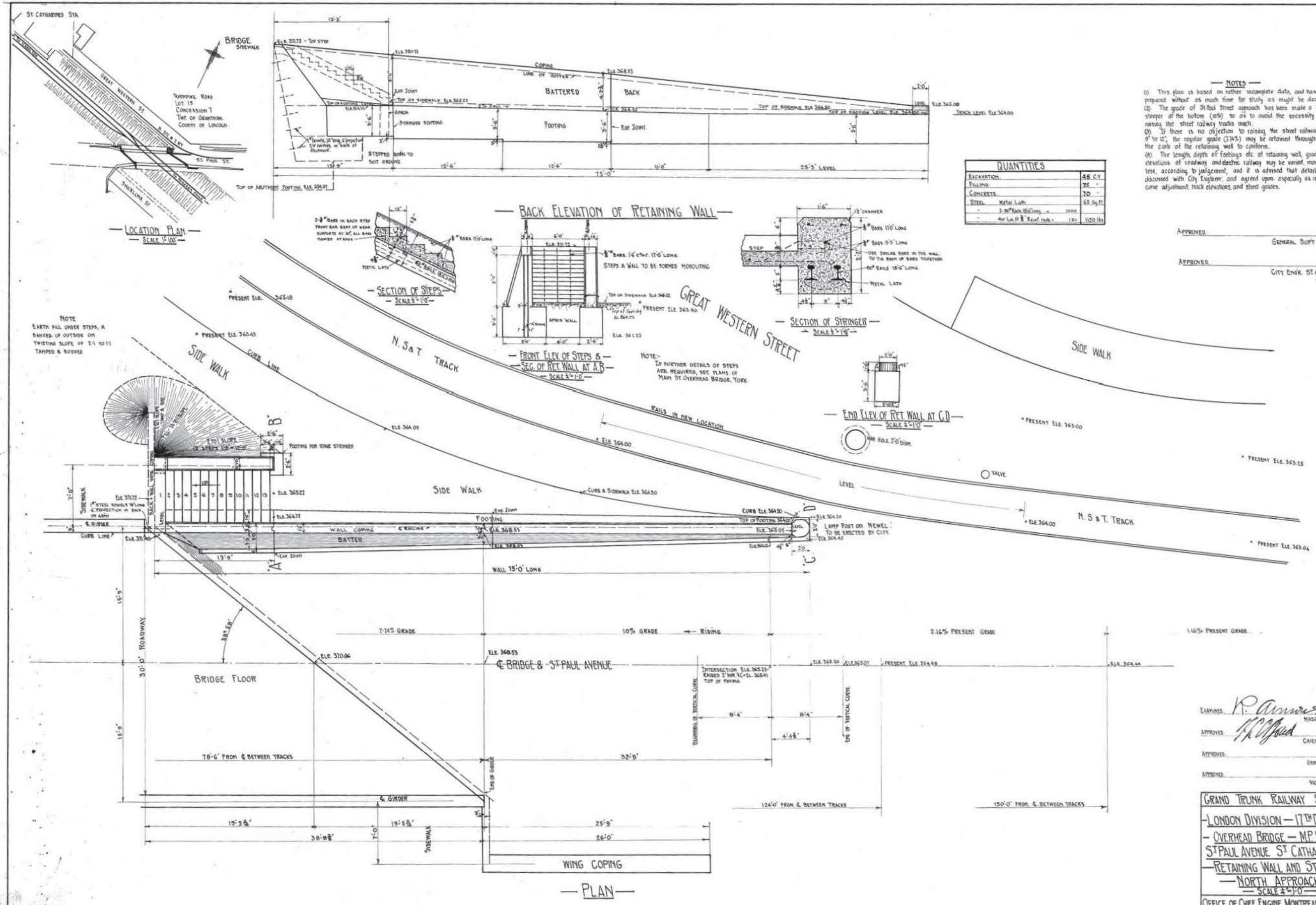
GRAND TRUNK RAILWAY SYSTEM
— LONDON DIVISION—17TH DISTRICT —
— OVERHEAD BRIDGE — MP: 11.68 —
— ST. CATHARINES —
— NORTH ABUTMENT —
— SCALE 3/4"=1'-0" —

Drawn by S.L.
Checked by L.G. Checked for steel by H.F.

AMENDED NOV. 18TH 1921

OFFICE OF CHIEF ENGR. MONTREAL JULY 21

194.25



QUANTITIES	
EXCAVATION	48 C.Y.
FILLING	35 "
CONCRETE	70 "
STEEL Metal Lath	63 Sq Ft
2 in. Rain 35 Clogs	1000
4 in. L. H. 2 in. Roof rods	150 LBS

NOTES

(1) This plan is based on rather incomplete data, and has been prepared without as much time for study as might be desired.

(2) The grade of St Paul Street approach has been made a little steeper at the bottom (4%) so as to avoid the necessity of raising the street railway tracks much.

(3) If there is no objection to raising the street railway 30" to 12", the regular grade (3.75%) may be retained throughout, the curb of the retaining wall to conform.

(4) The length, depth of footings etc. of retaining wall, grade elevations of roadway and electric railway may be varied more or less, according to judgement, and it is advised that details be discussed with City Engineer, and agreed upon, especially as regards curve adjustment, track elevations and street grades.

APPROVED _____
GENERAL SUPT. G.T.R.

APPROVED _____
CITY ENGR. ST. CATHARINES

NOTE
EARTH FILL UNDER STEPS, & BANKS UP OUTSIDE ON TWISTING SLOPE OF 2:1 TO 1:1 TAMPED & SOURED

EXAMINED *R. Amundson*
MASONRY ENGINEER

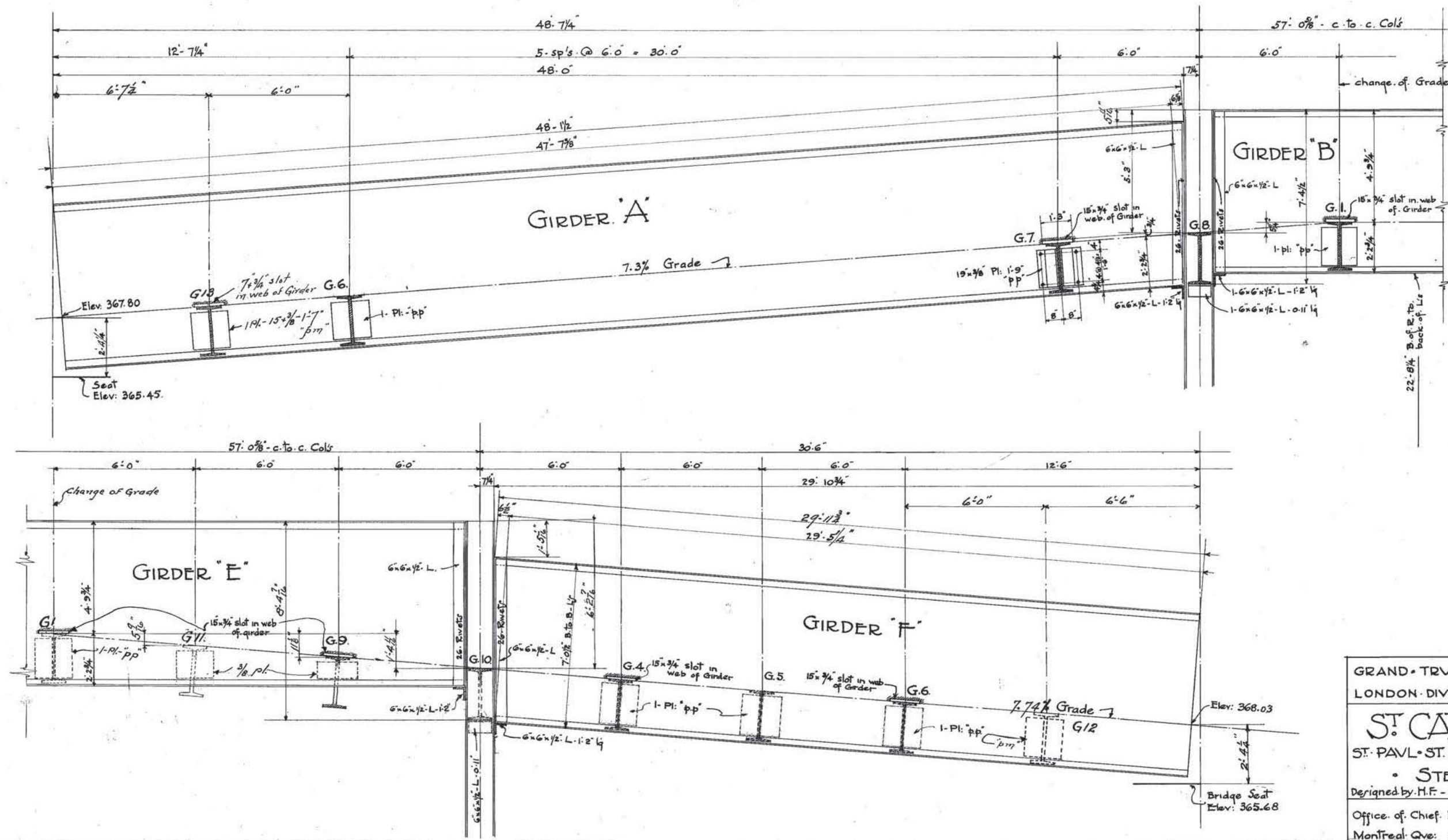
APPROVED *H. O'Neil*
CHIEF ENGINEER

APPROVED _____
GENERAL SUPERINT.

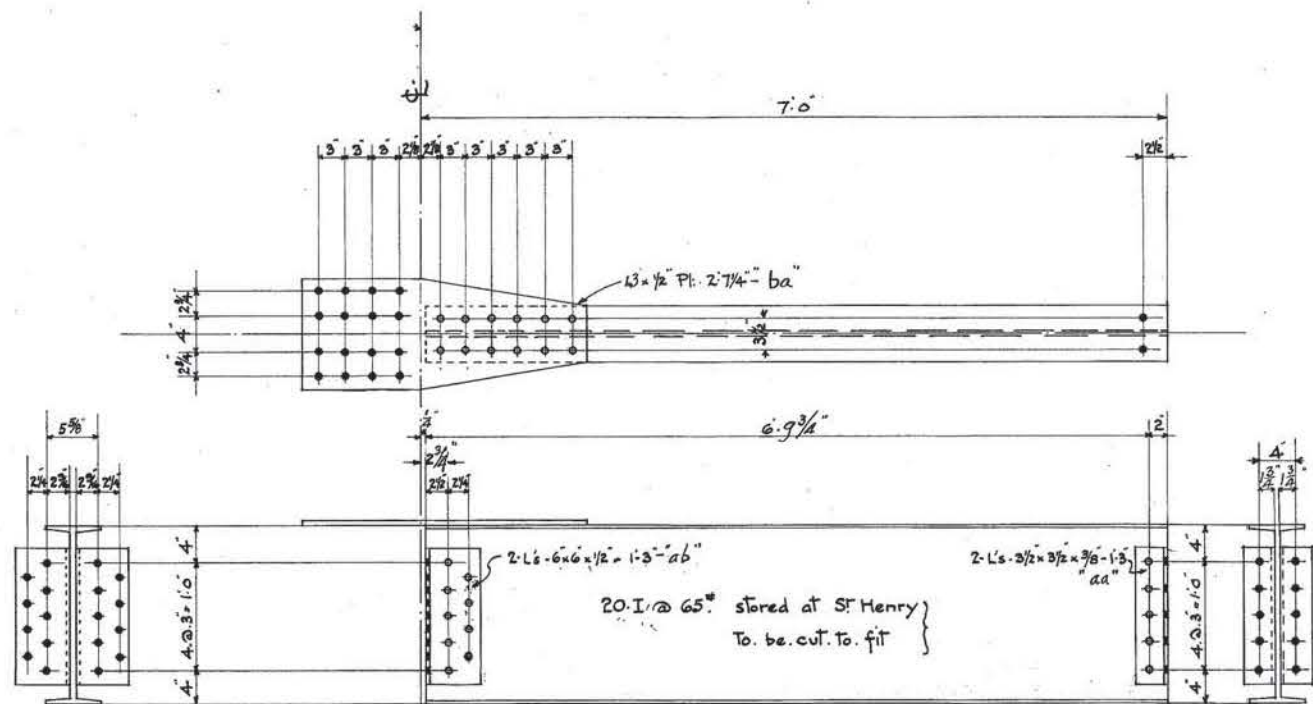
APPROVED _____
VICE PRESIDENT.

GRAND TRUNK RAILWAY SYSTEM.
LONDON DIVISION - 17TH DISTRICT
OVERHEAD BRIDGE - M.P. 11.68
ST PAUL AVENUE ST CATHARINES
RETAINING WALL AND STEPS
NORTH APPROACH
SCALE 3/4" = 1'-0"

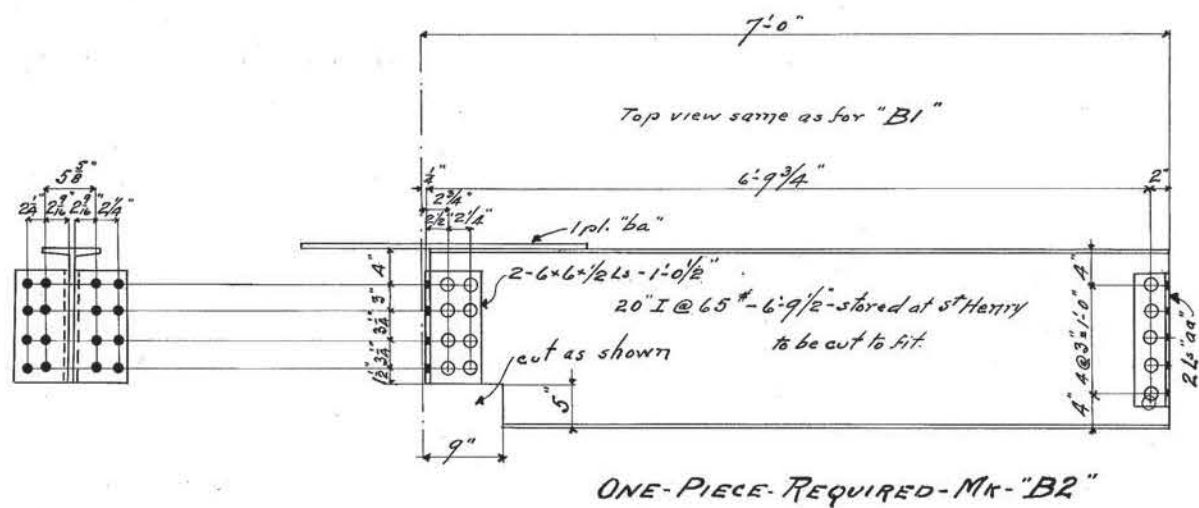
OFFICE OF CHIEF ENGINEER MONTREAL AUG. 21ST 1922



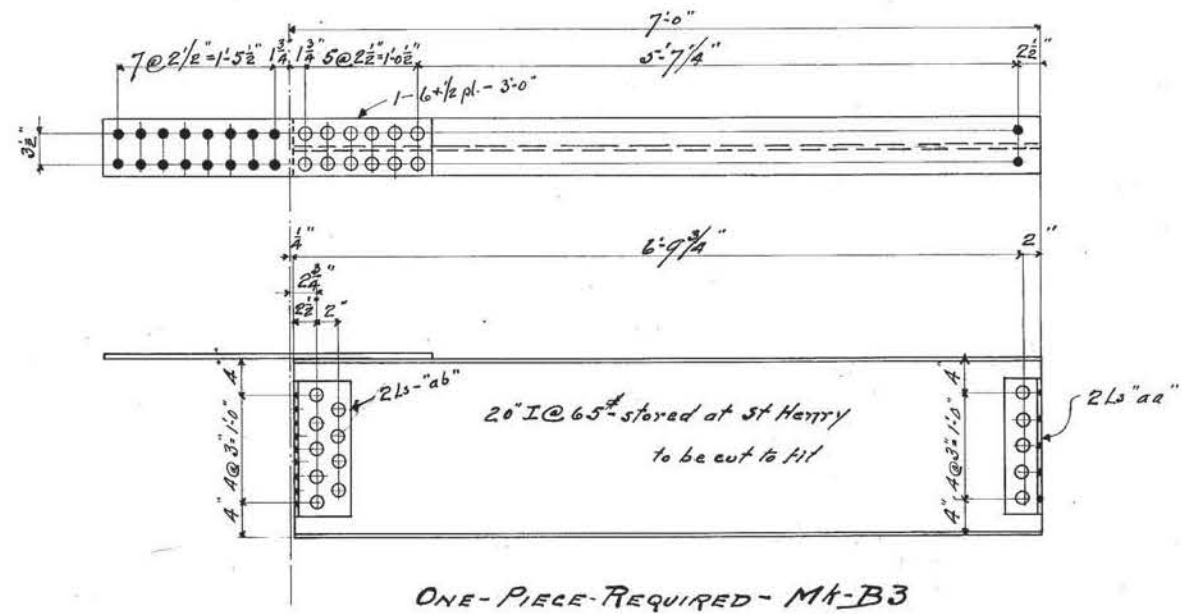
GRAND TRUNK RAILWAY SYSTEM
LONDON DIVISION ... 17TH DISTRICT
ST. CATHERINES
ST. PAUL-ST. O'H-BRIDGE - MILE 11.68.
• STEEL DETAILS •
Designed by H.F. - Drawn by L.M.W. Scale 3/8" to 1'-0"
Office of Chief Engineer Jnl. No. 890.2
Montreal Que: August 1921. File No. 484-35



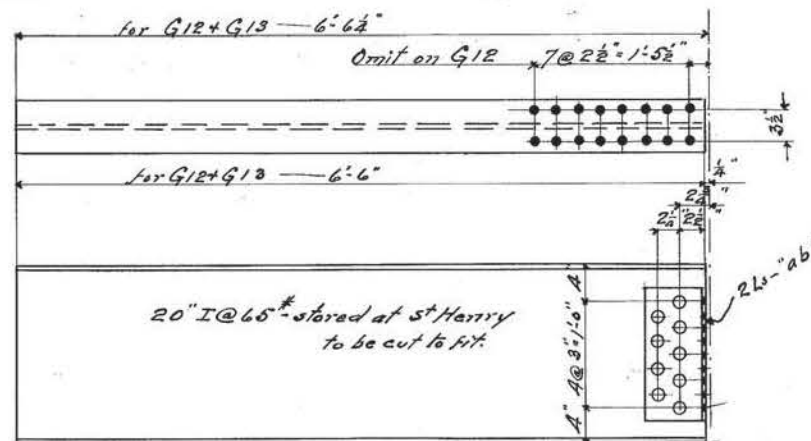
19-PIECES-REQUIRED - MK-B1



ONE-PIECE-REQUIRED - MK-B2



ONE-PIECE-REQUIRED - MK-B3



ONE-PIECE-REQUIRED - MK-G12
ONE- " - " - " - G13

NOTES:-

Rivets: = 3/4" φ
Holes: = 1/2" φ

8- 20" I@65#-25'-4" to be shipped to York, Ont.

Examined:-

H. F. Stuart
Structural Engineer.

GRAND TRUNK RAILWAY SYSTEM
LONDON DIVISION - 17th DISTRICT

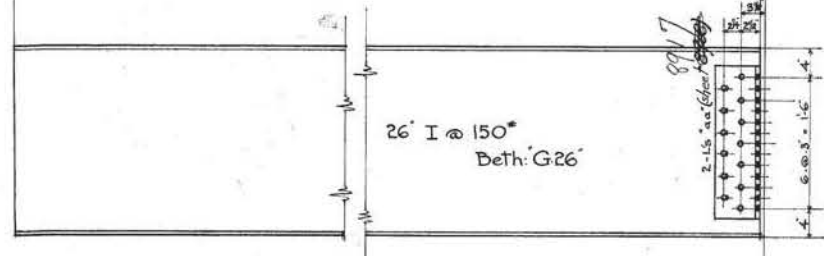
ST CATHARINES
ST PAUL ST-O.H. Bridge - Mile 11.68
Steel Details

Designed by H.F. - Drawn by H.F. - Scale: 1" = 1 foot

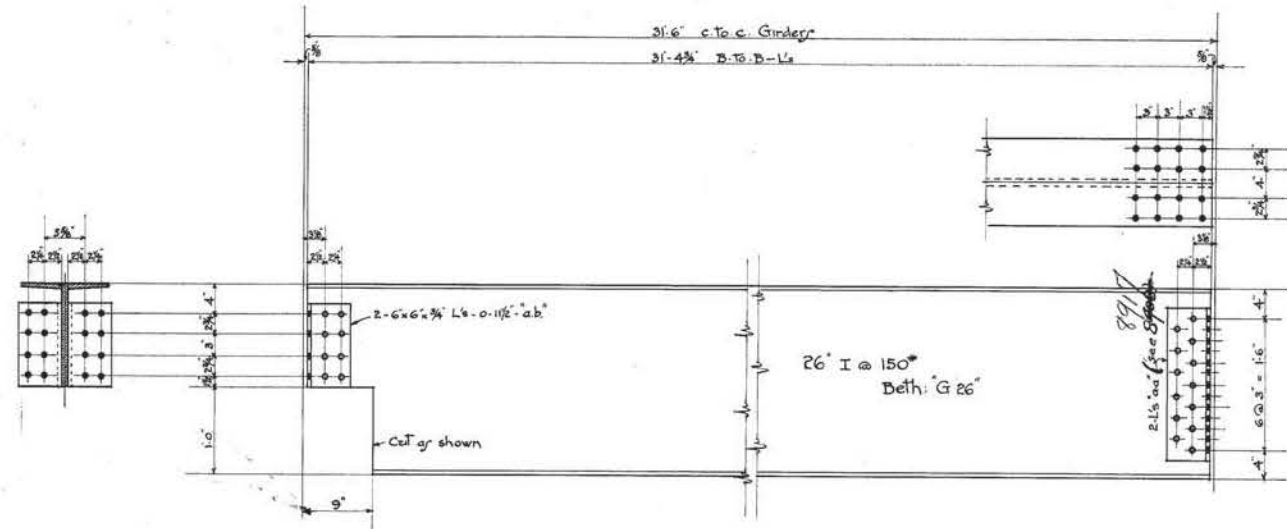
Office of Chief Engineer Jnl. No. 8904
Montreal - August 20th 1921 - File No. 484-35

30'-9"	for G.2. ϕ of Girder to end of Steel
25'-11 1/2"	G.3.
21'-0"	G.4+G4 ^R
16'-2"	G.5+G5 ^R
11'-4"	G.6+G6 ^R
30'-9"	G.2. End to End of Steel
25'-11"	G.3.
21'-0"	G.4.
16'-2"	G.5.
11'-4"	G.6.

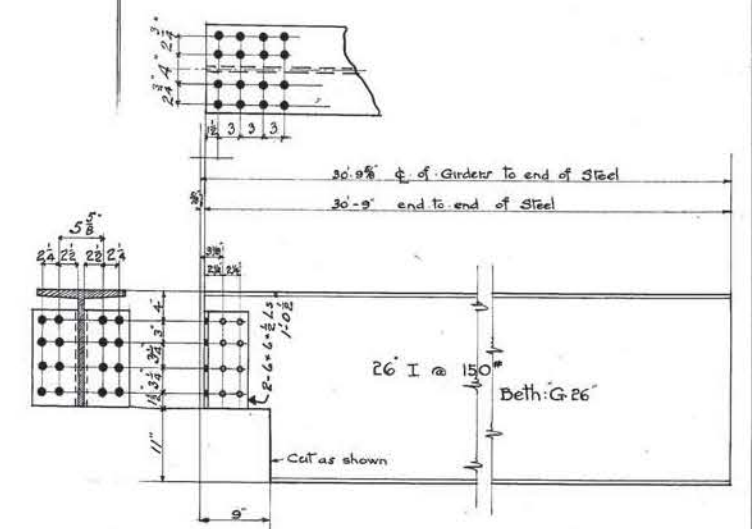
On G.3, G4^R, G5^R, G6^R



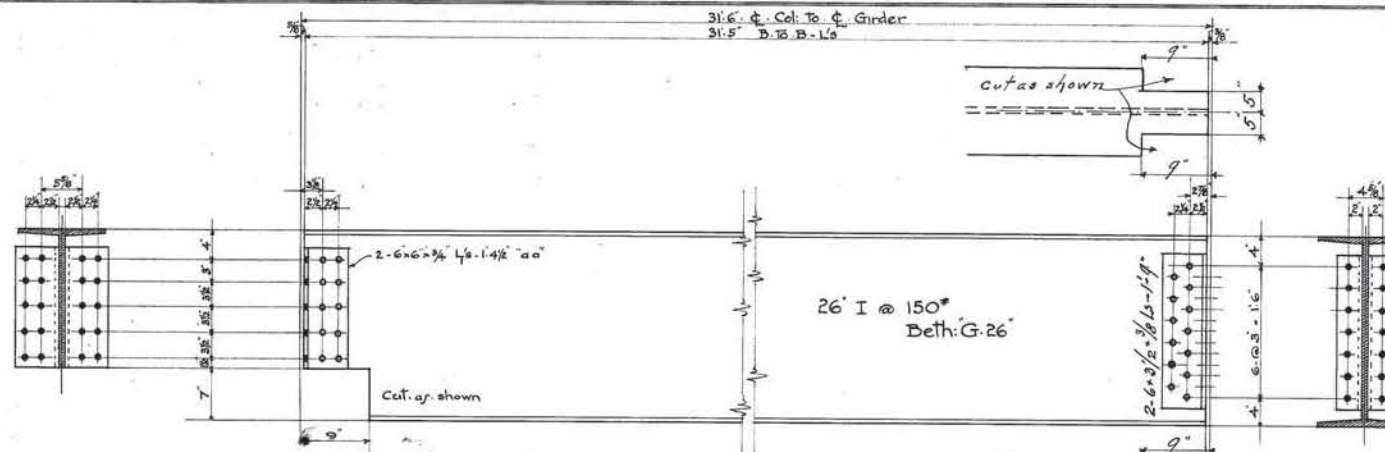
- One Piece - MK - G.2.
- MK - G.3.
- Two Pieces - MK - G.4.
- MK - G.5.
- MK - G.6.



One Piece - MK - G.7.



One Piece - MK - G.9.



One Piece - MK - G.8.

Note:
Rivets = 3/4" ϕ
Holes = 5/8" ϕ

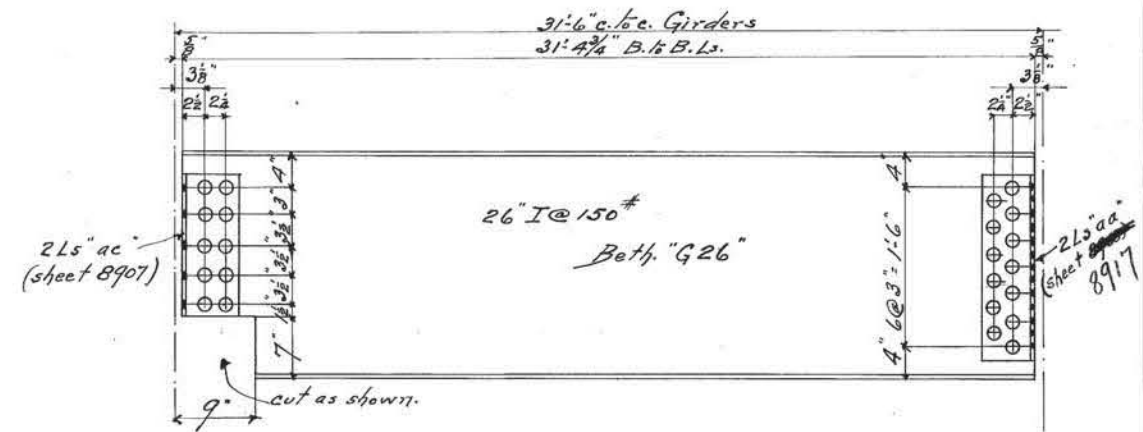
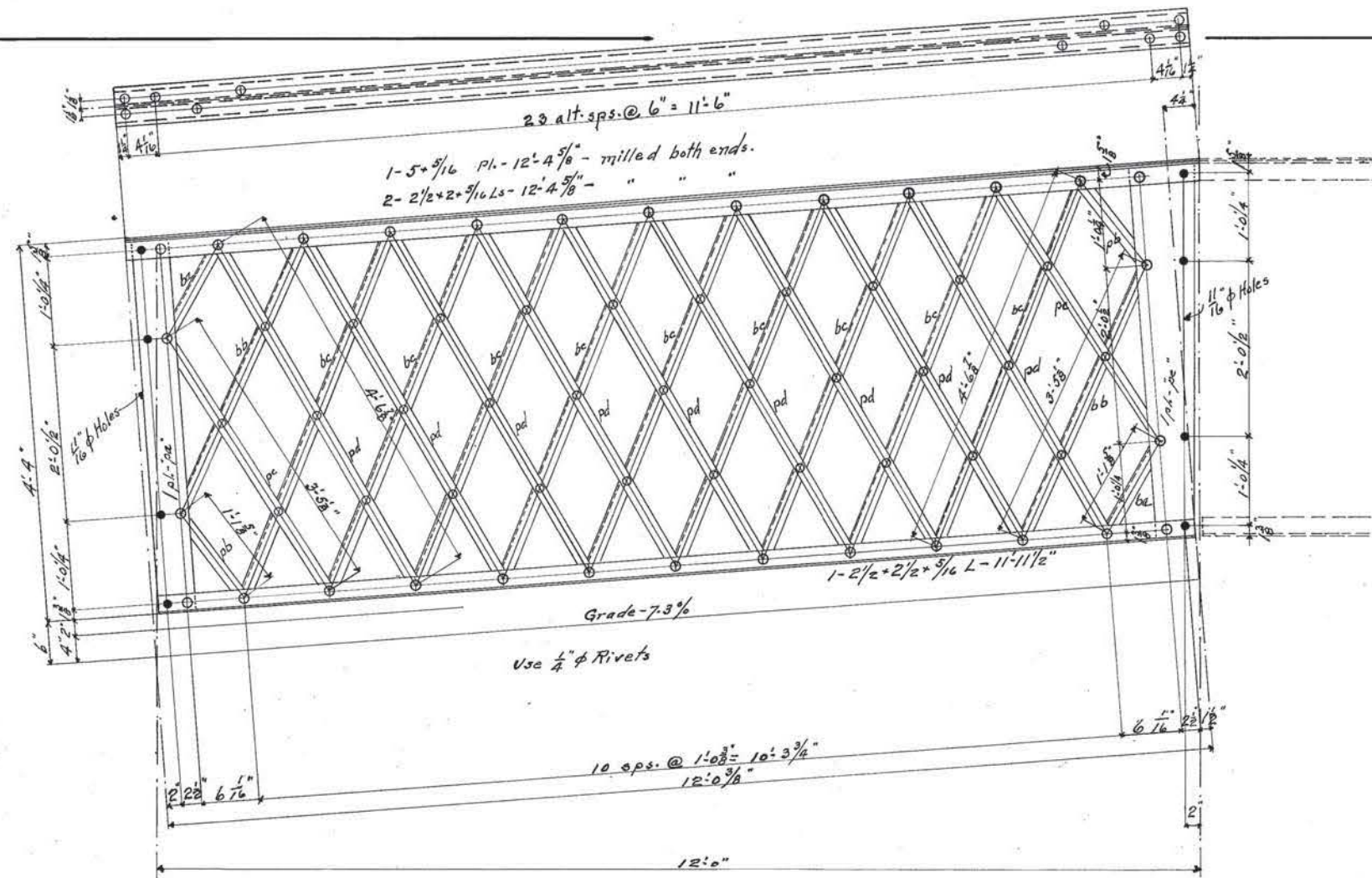
Examined by *W. H. ...* Structural Engineer
Approved by *J. L. O. Bond* Chief Engineer

GRAND TRUNK RAILWAY SYSTEM
LONDON DIVISION - 17TH DISTRICT

ST. CATHERINES
ST. PAUL - ST. O. H. BRIDGE - MILE 11.68.

STEEL DETAILS
Designed by H.F. Drawn by L.M.W. Scale 1" to 1'-0"

Office of Chief Engineer Montreal Que. August 1921. Jnl. No. 8907 File No. 484-35



One Piece - Required - MK-G11

NOTES:-

Rivets = 3/4" phi except on "F1" = 1/4" phi
 Holes = 13/16" phi " " " = 1/2" phi

Examined:-

H. H. Mack

Structural Engineer

Approved:-

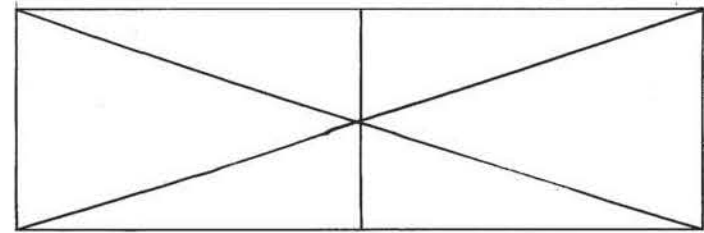
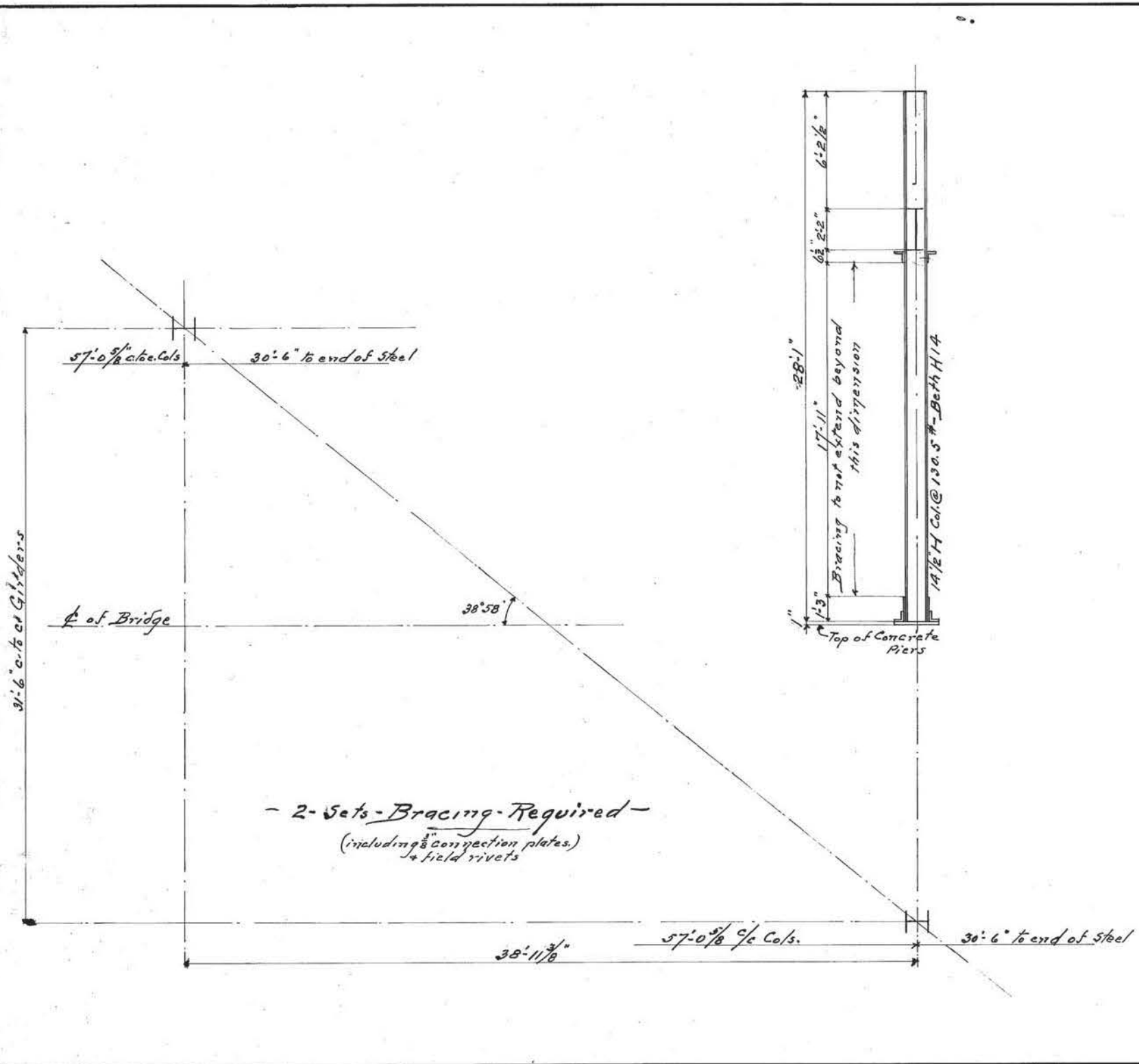
J. L. O. Bond

Chief Engineer

One Piece - Required - MKd-F1

- 1-5 3/16 PL - 4'-3 1/8" - "pa"
- 2-1 1/2 x 1/4 PLs - 1'-2 3/8" - "pb"
- 2-1 1/2 x 1/4 PLs - 3'-6 1/8" - "pc"
- 9-1 1/2 x 1/4 PLs - 4'-7 3/8" - "pd"
- 2-1 1/2 x 1/2 x 1/4 Ls - 1'-2 3/8" - "ba"
- 2-1 1/2 x 1/2 x 1/4 Ls - 3'-6 1/8" - "bb"
- 9-1 1/2 x 1/2 x 1/4 Ls - 4'-7 3/8" - "bc"
- 1-9 3/4 x 5/16 PL - 4'-3 1/8" - "pe" (cut as shown)

GRAND TRUNK RAILWAY SYSTEM
 LONDON DIVISION - 17th DISTRICT
 ST CATHARINES
 ST PAUL ST. - O-H BRIDGE - MILE 11.68
 STEEL DETAILS
 Designed by H.F. - Drawn by H.F. - Scale 1" = 1'-0"
 Office of Chief Engineer - Jnl. No. 8909
 Montreal - August 23rd 1921 - File No. 48435



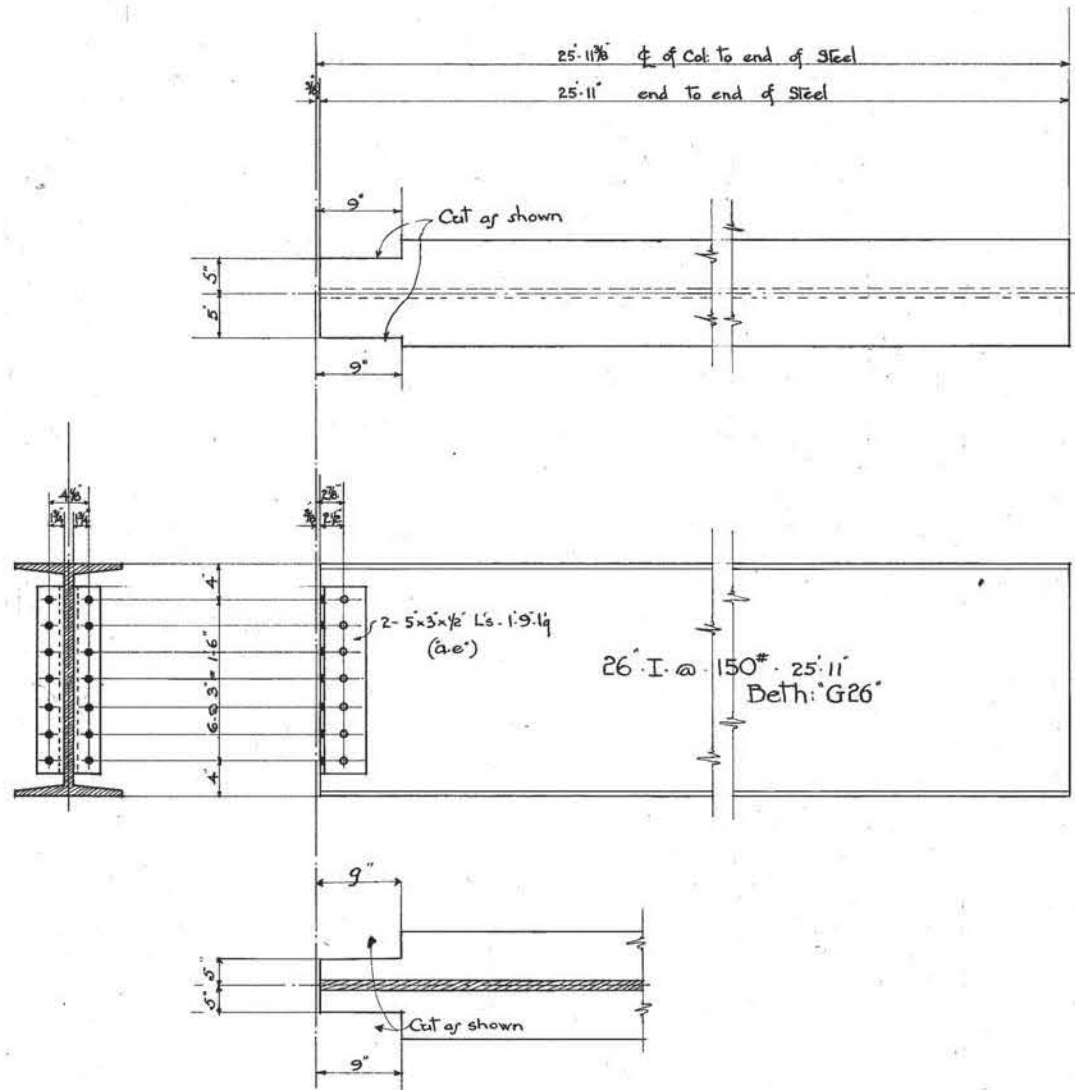
Top & Bottom Struts = 2-12" E @ 25# []
 Diagonals = 2-6 x 4 x 3/8 Ls
 Hangers = 2-3 1/2 x 3 1/2 x 3/8 Ls

SPECIFICATIONS:-
 Steel Highway Bridges for Province of Ontario dated 1917
 CAPACITY:- 20 Ton Truck - Class "C"
 Material to receive one coat of shop paint # 400 Dominion Paint Works - Walkerville - Ont.

Examined: *W. Stuart*
 Structural Engineer
 Approved: *J. H. Bond*
 Chief Engineer

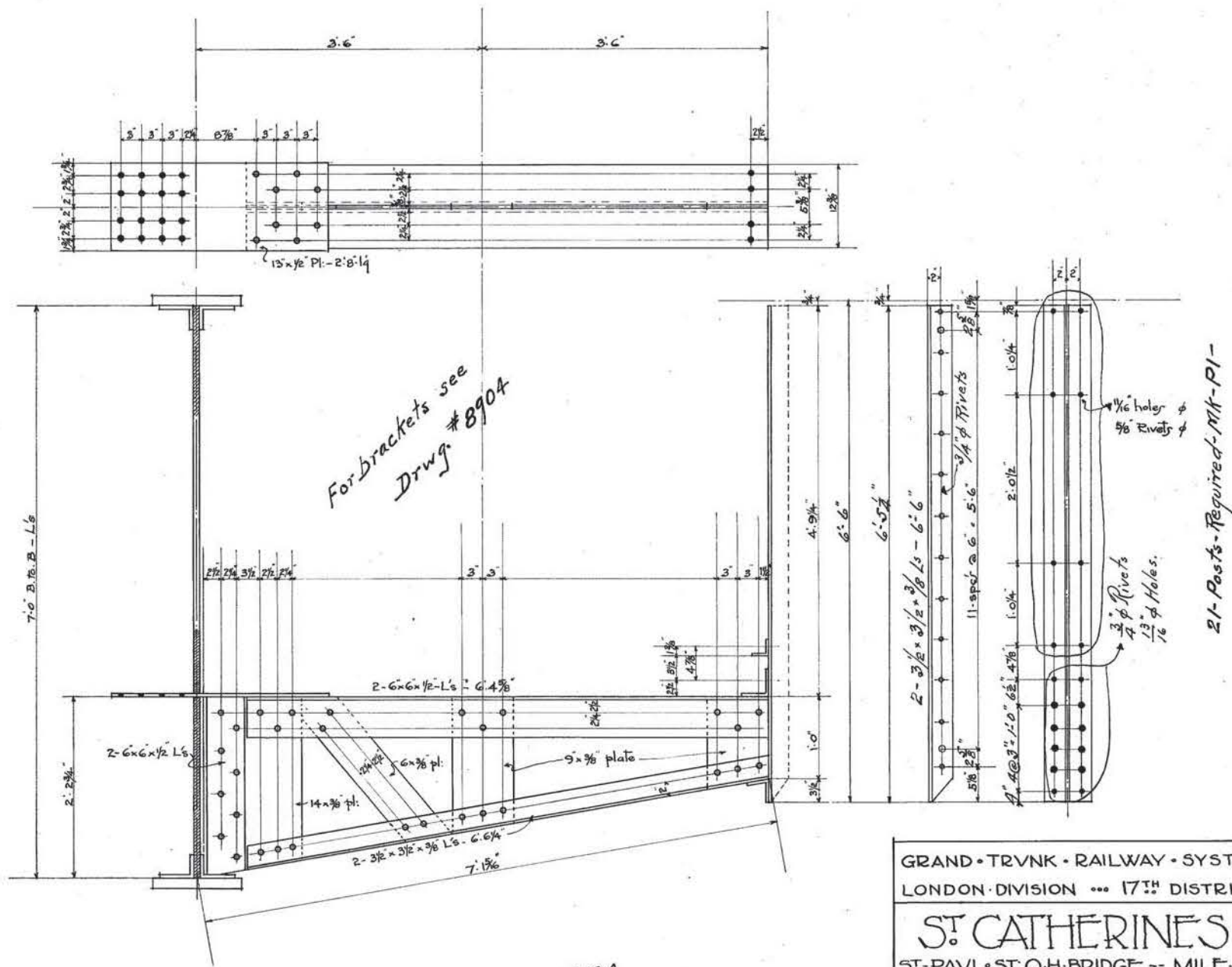
GRAND TRUNK RAILWAY SYSTEM
 LONDON DIVISION - 17th DISTRICT
 Proposed Renewal
 O.H. Bridge - M.R. 11.68
 St Catharines
 Bracing between Columns
 Office of Chief Engineer - 8-27-21

Inl. No. 8913
 File No. 484-35



One Piece Required - MK-G10

Note: Rivets = $\frac{3}{4}'' \phi$
Holes = $1\frac{1}{8}'' \phi$

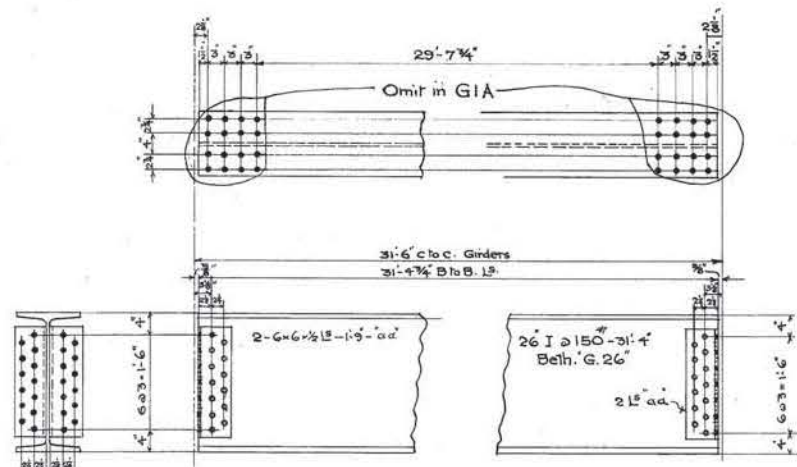


For brackets see
Drwg #8904

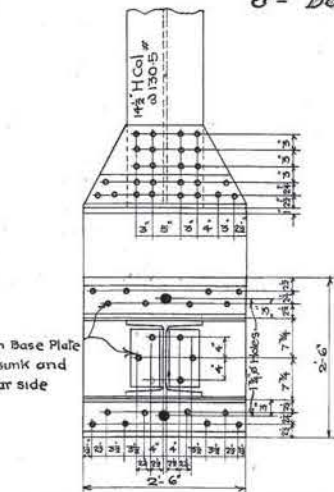
21 Posts Required - MK-P1

GRAND TRUNK RAILWAY SYSTEM
LONDON DIVISION - 17th DISTRICT
ST. CATHERINES
ST. PAUL ST. O.H. BRIDGE - MILE 11.68.
STEEL DETAILS
Designed by H.F. Drawn by L.M.W. Scale: 1 to 1'0"
Office of Chief Engineer Montreal, Que. August, 1921.
Jnl. No. 8914
File No. 484-35

Examined by *W. Stewart* Structural Engineer
Approved by *J. H. Bond* Chief Engineer

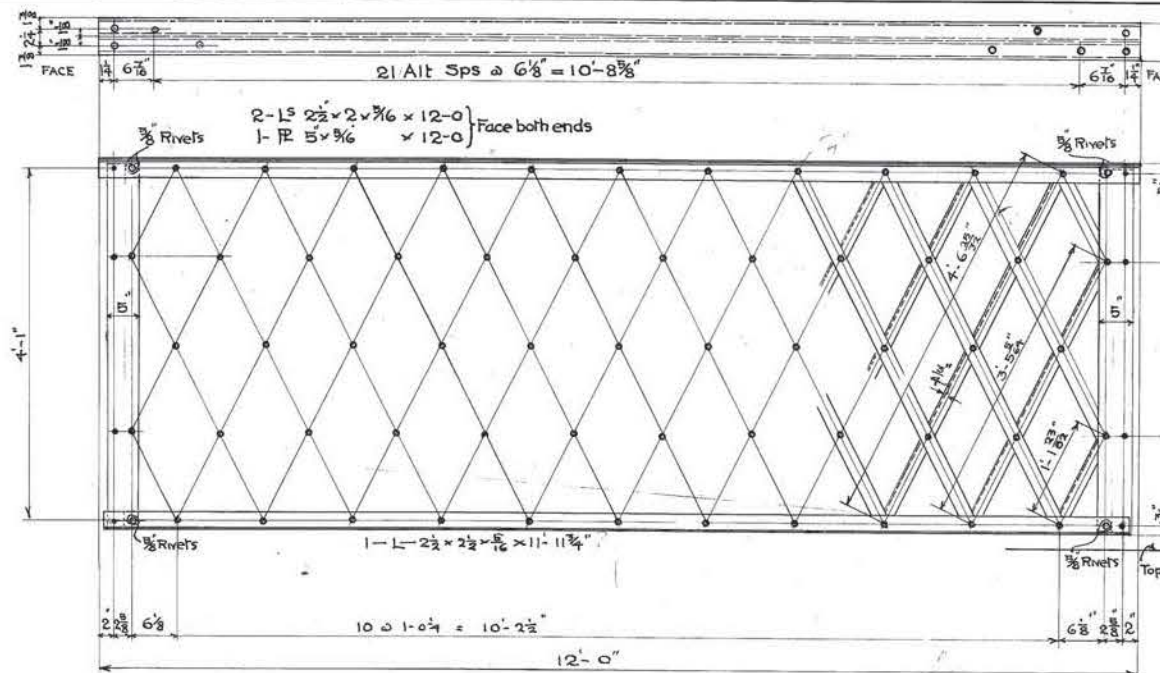


7-Pieces - Marked "G1"
6- Do - Do - "G1A"

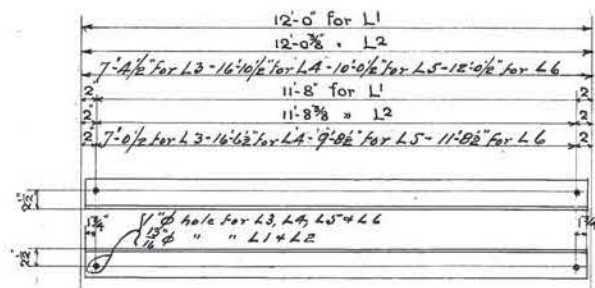


Material Required for One Base & Required

- 1- 30"x1" pl - 2'-6"
- 2- 6'-6" x 1/2" L^s - 2'-6"
- 2- 15" x 3/8" pls - 1'-11" average
- 2- 6'-6" x 1/2" L^s - 0'-11"



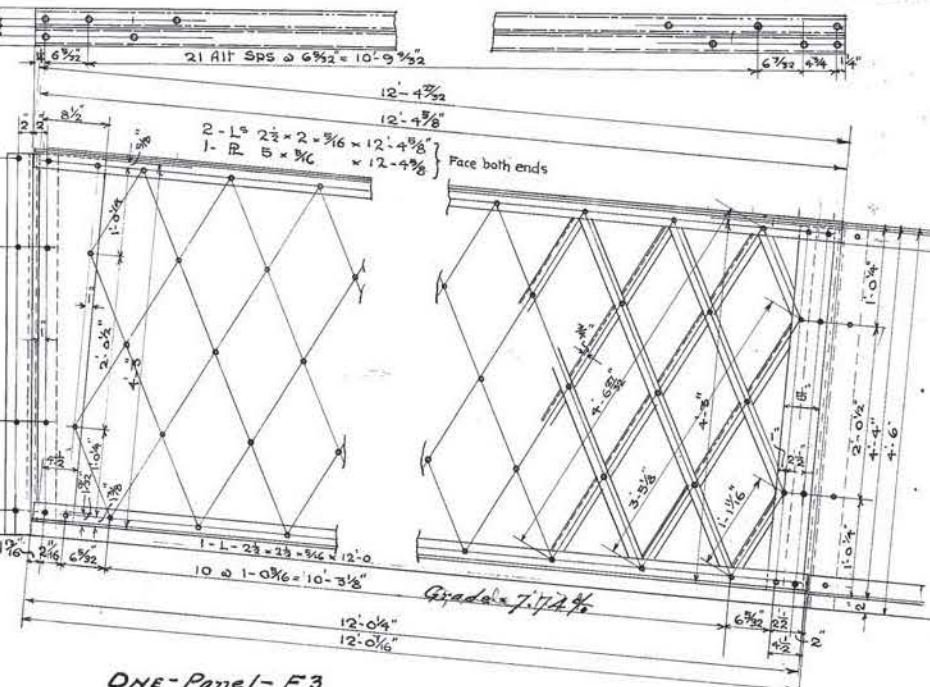
12- Panels - F2



- 12- 4'-4" x 3/8" L^s - 11'-11 1/2" - MK - L1
- 7- do - 11'-11 1/2" - MK - L2
- 1- do - 7'-4" - MK - L3
- 1- do - 16'-10" - MK - L4
- 1- do - 10'-0" - MK - L5
- 1- do - 12'-0" - MK - L6

- 2- Bars - 5" x 3/8" x 4'-3"
- 2- Bars - 1 1/2" x 1/4" x 1'-2 3/8"
- 2- Bars - 1 1/2" x 1/4" x 3'-6 1/8"
- 3- Bars - 1 1/2" x 1/4" x 4'-7 3/8"
- 2- 1 1/2" x 1 1/2" x 1/4" x 1'-2 3/8"
- 2- 1 1/2" x 1 1/2" x 1/4" x 3'-6 1/8"
- 3- 1 1/2" x 1 1/2" x 1/4" x 4'-7 3/8"

Bridge Co. to furnish also:-
Necessary field rivets
4- 3/4" & Anchor Bolts - 0'-9" } 3" thread
12- 1 1/4" & Anchor Bolts - 1'-0" } at each end



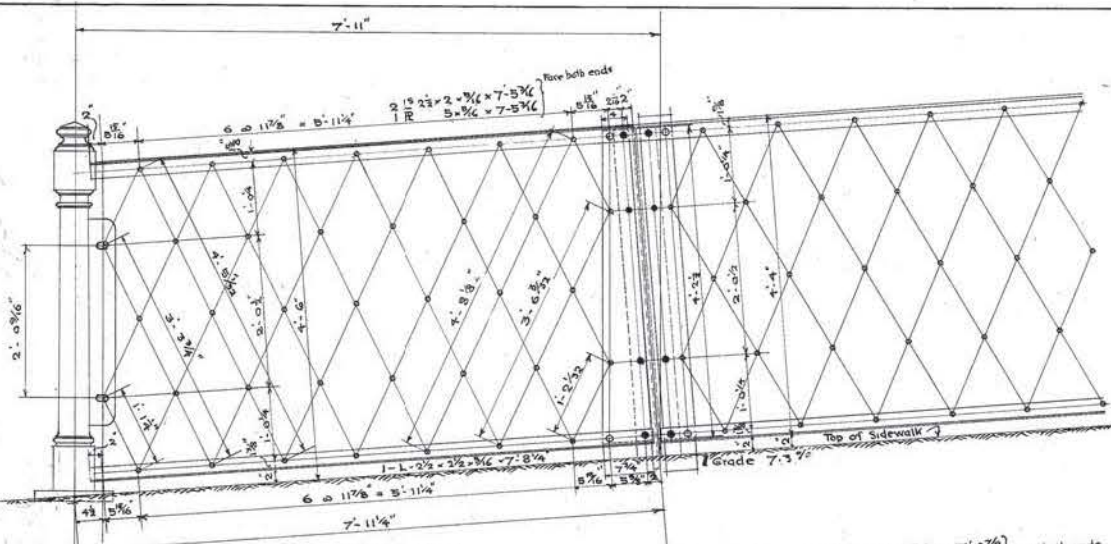
ONE-Panel - F3

- 1- Bar - 3 1/2" x 3/8" x 4'-3"
- 1- Bar - 5" x 3/8" x 4'-3"
- 2- Bars - 1 1/2" x 1/4" x 1'-2 3/8"
- 2- Bars - 1 1/2" x 1/4" x 3'-6 1/8"
- 3- Bars - 1 1/2" x 1/4" x 4'-7 3/8"
- 2- 1 1/2" x 1 1/2" x 1/4" x 1'-2 3/8"
- 2- 1 1/2" x 1 1/2" x 1/4" x 3'-6 1/8"
- 2- 1 1/2" x 1 1/2" x 1/4" x 4'-7 3/8"

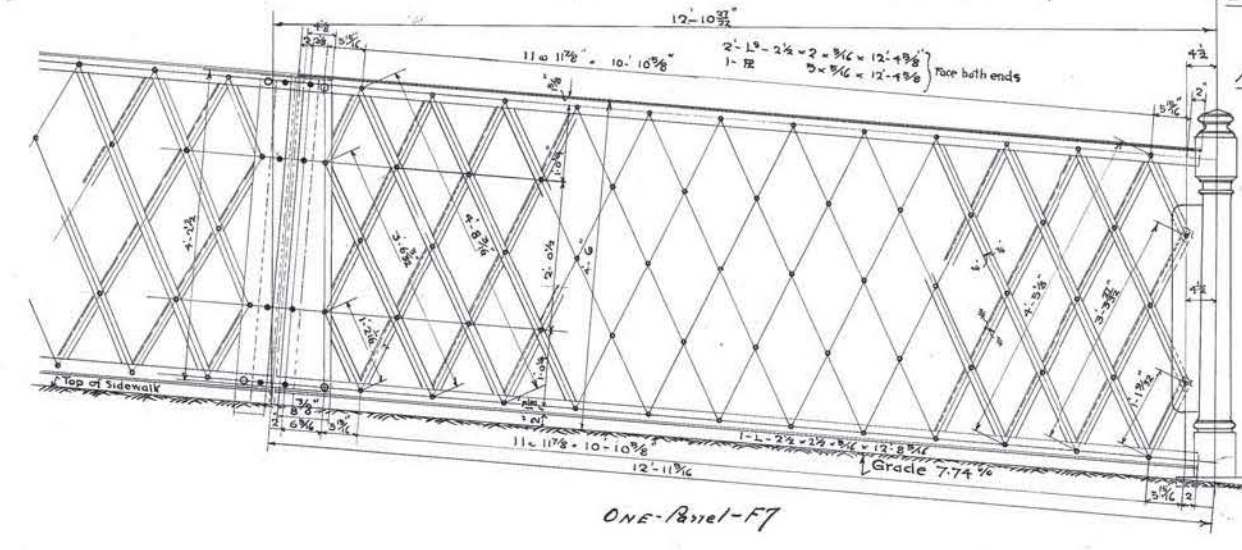
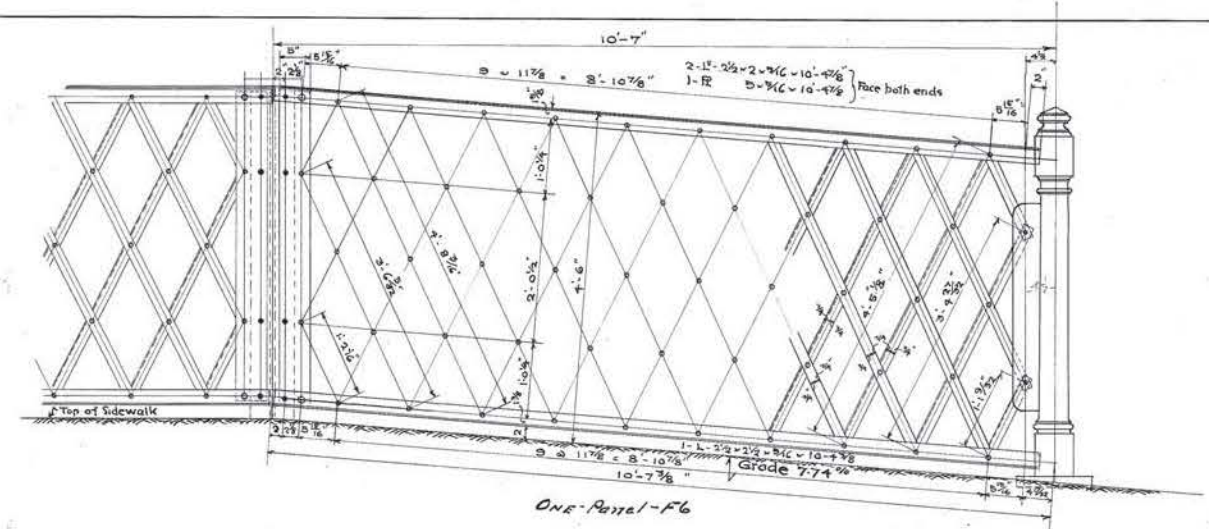
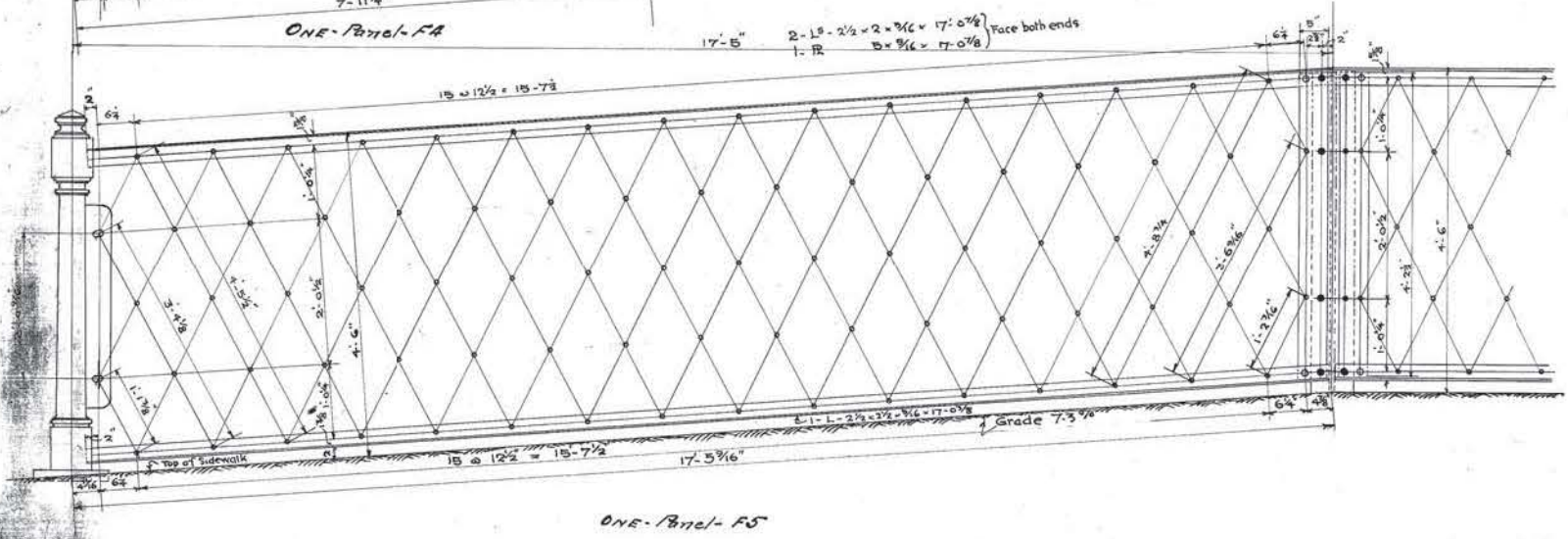
For Fence:-
1/4" & Rivets
Connections to Posts = 3/8" & Rivets.
F2 & F3 to be checked by Bridge Company.

Examined: *W. Stuart*
Structural Engineer
Approved: *J. L. Bond*
Chief Engineer

GRAND TRUNK RAILWAY SYSTEM
LONDON DIVISION 17TH DISTRICT
ST CATHERINES
ST PAUL ST OH BRIDGE - MILE 11-68
STEEL DETAILS
Designed by H.F. Drawn by E.E.B Scale 1" = 1'-0"
Office of Chief Engineer Montreal Aug 1921
Jnl No 8917
File No 484-35



- | | |
|--|--|
| 1-Bar 7 $\frac{3}{4}$ " x $\frac{3}{16}$ " = 4'-2 $\frac{1}{2}$ " | 1-Bar 5" x $\frac{3}{16}$ " = 4'-7" |
| 2-Bars 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 1'-2 $\frac{1}{4}$ " | 2-Bars 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 1'-3 $\frac{1}{4}$ " |
| 2-Bars 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 2'-4 $\frac{1}{2}$ " | 2-Bars 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 2'-7 $\frac{3}{4}$ " |
| 5-Bars 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 4'-6 $\frac{1}{2}$ " | 8-Bars 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 4'-9 $\frac{3}{4}$ " |
| 2-1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 1'-3 $\frac{1}{2}$ " | 2-1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 1'-2 $\frac{1}{2}$ " |
| 2-1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 2'-7 $\frac{3}{4}$ " | 2-1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 2'-5 $\frac{3}{4}$ " |
| 5-1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 4'-9 $\frac{3}{4}$ " | 8-1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 4'-6 $\frac{1}{8}$ " |
-
- | | |
|---|---|
| 1-Bar 5" x $\frac{3}{16}$ " = 4'-7" | 1-Bar 8 $\frac{1}{2}$ " x $\frac{3}{16}$ " = 4'-2 $\frac{1}{2}$ " |
| 2-Bars 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 1'-2 $\frac{1}{8}$ " | 2-Bars 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 1'-3 $\frac{1}{4}$ " |
| 2-Bars 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 3'-9 $\frac{3}{8}$ " | 2-Bars 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 3'-7 $\frac{3}{8}$ " |
| 14-Bars 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 4'-6 $\frac{1}{2}$ " | 10-Bars 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 4'-9 $\frac{3}{4}$ " |
| 2-1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 1'-3 $\frac{1}{4}$ " | 2-1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 1'-2 $\frac{3}{4}$ " |
| 2-1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 3'-7 $\frac{3}{4}$ " | 2-1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 3'-4 $\frac{3}{4}$ " |
| 17-1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 4'-9 $\frac{3}{4}$ " | 10-1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x $\frac{3}{4}$ " = 4'-6 $\frac{1}{8}$ " |



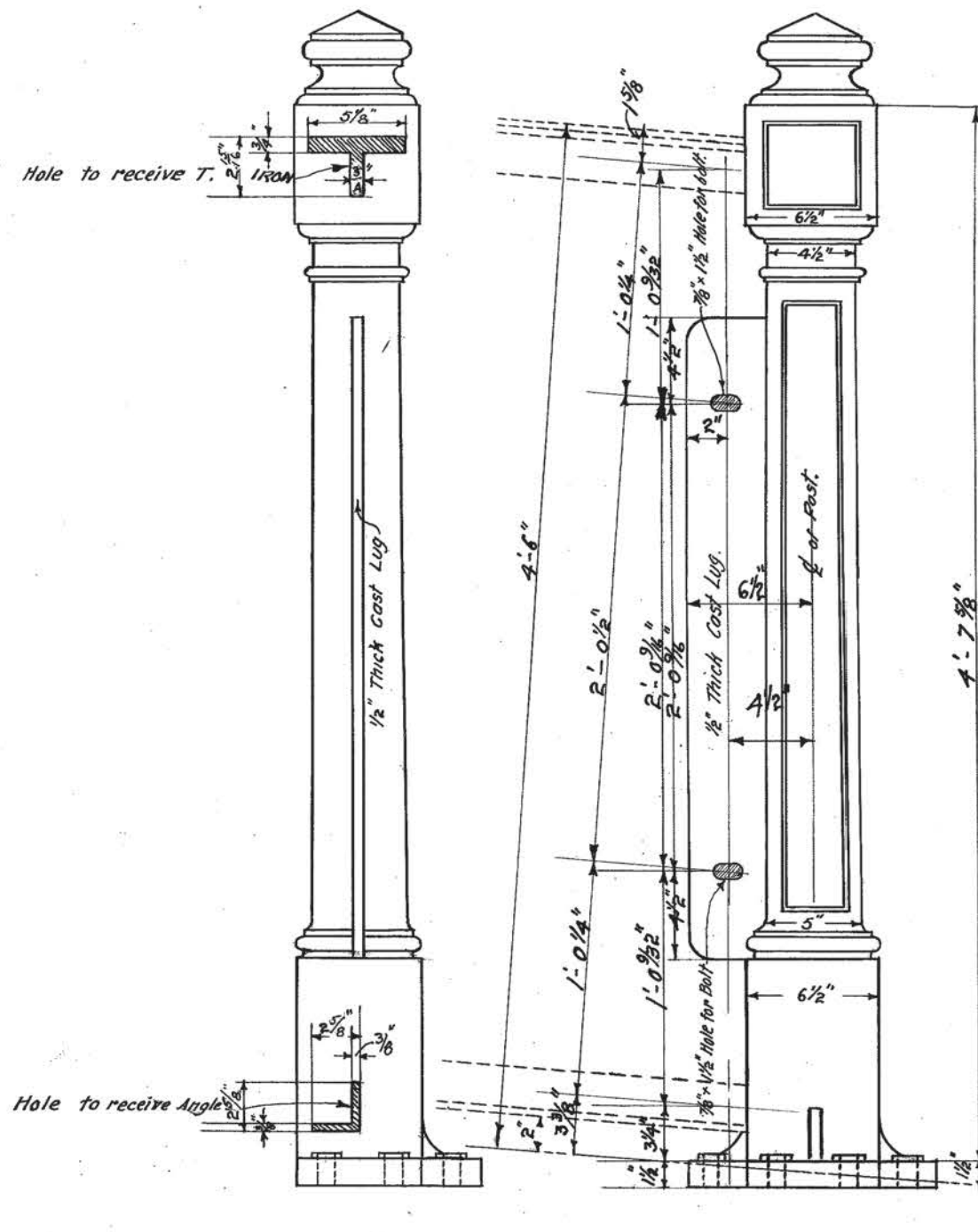
Also Req. - 5 Panels F8 similar to F1 & F3 except end connections

Examined: *W. Stewart*
Structural Engineer

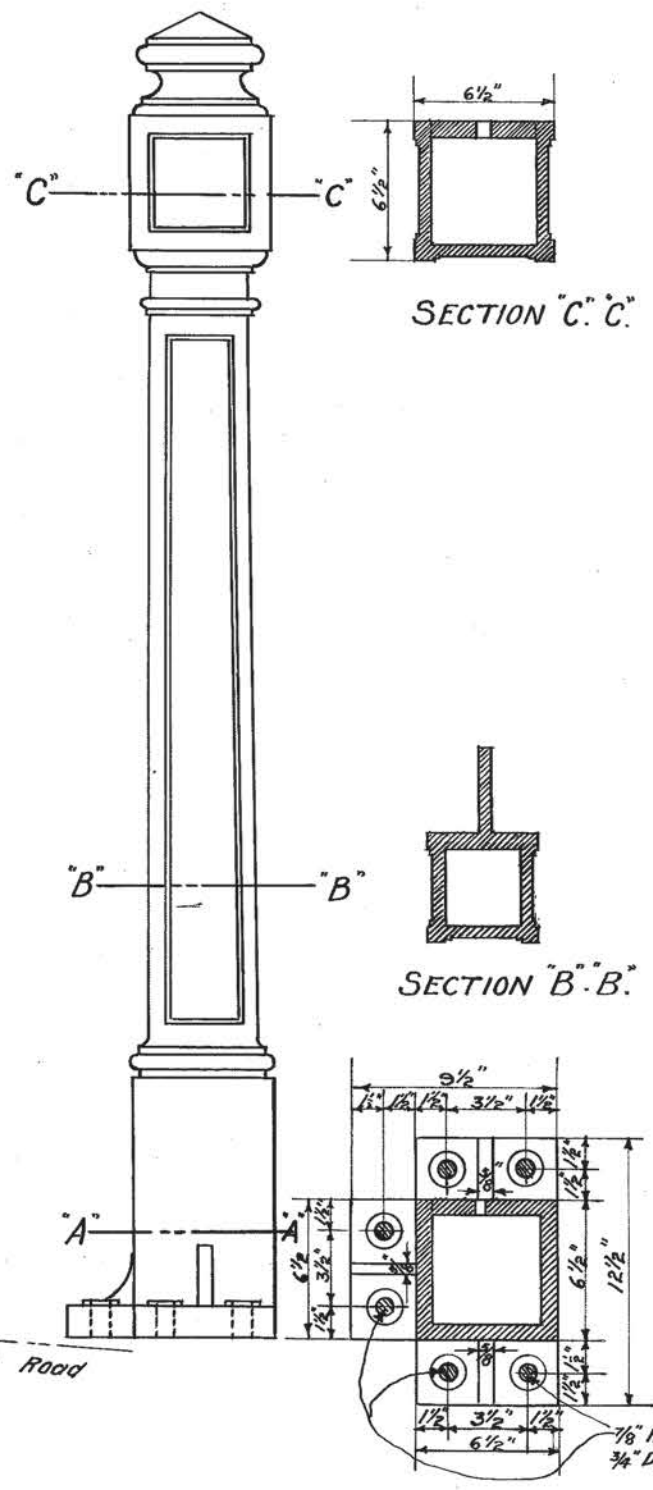
Approved: *J. L. O'Connell*
Chief Engineer

Notes:
 $\frac{1}{2}$ " Rivets
 Connections to Posts - $\frac{3}{8}$ " Rivets.
 FA-FS-F6-F7-F8 to be checked
 by Bridge Co.

GRAND TRUNK RAILWAY SYSTEM
 LONDON DIVISION 17 DISTRICT
 ST CATHERINES
 ST PAUL ST O.H. BRIDGE MILE 11.68
 STEEL DETAILS
 Designed by H.F. Drawn by E.E.B.
 Scale 1"=1'-0"
 Office of Chief Engineer J.V. 1114 891B-
 Montreal Aug 1921 File No 484-35



ELEVATIONS



SECTION A.A.
2 RIGHT HAND Posts Req. As Shown
2 LEFT "

NOTE:-
All castings must be tough Gray Iron free from cold shuts or injurious blow holes, true to form and thickness, and of a workman like finish. Sample pieces 1" Inch Square cast from same heat of metal in sand moulds shall be capable of sustaining on a Clear span of 12 inches a central load of 2400 pounds when tested in the Rough Bar

EXAMINED: *H. Stuart*
Structural Engineer
APPROVED: *J. L. O. Bond*
Chief Engineer

GRAND TRUNK RAILWAY SYSTEM
LONDON DIVISION 17TH DISTRICT

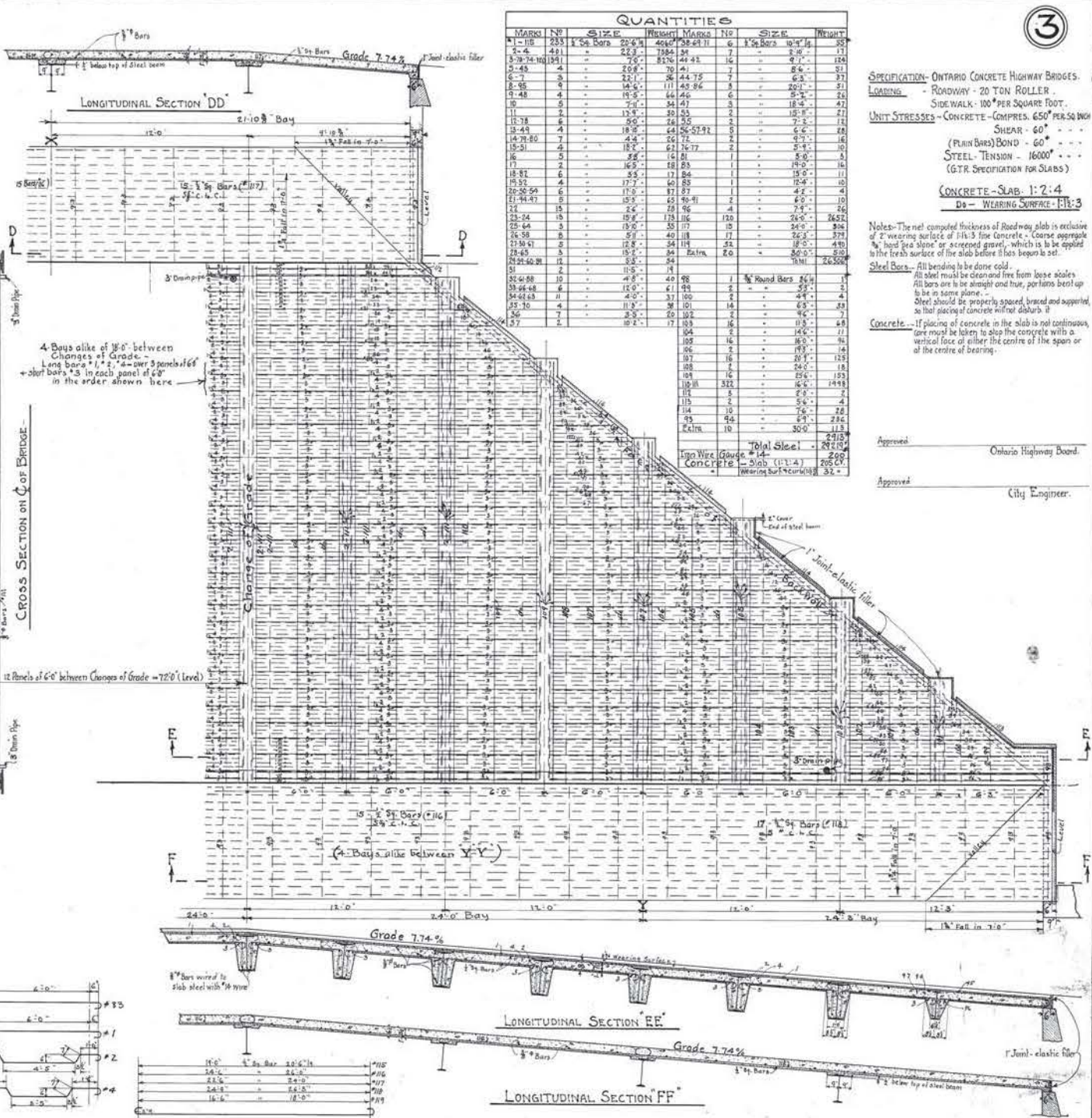
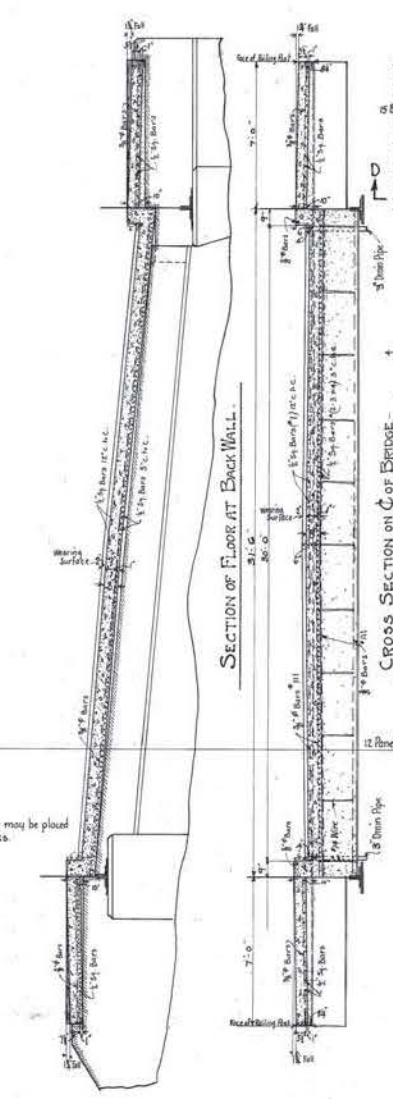
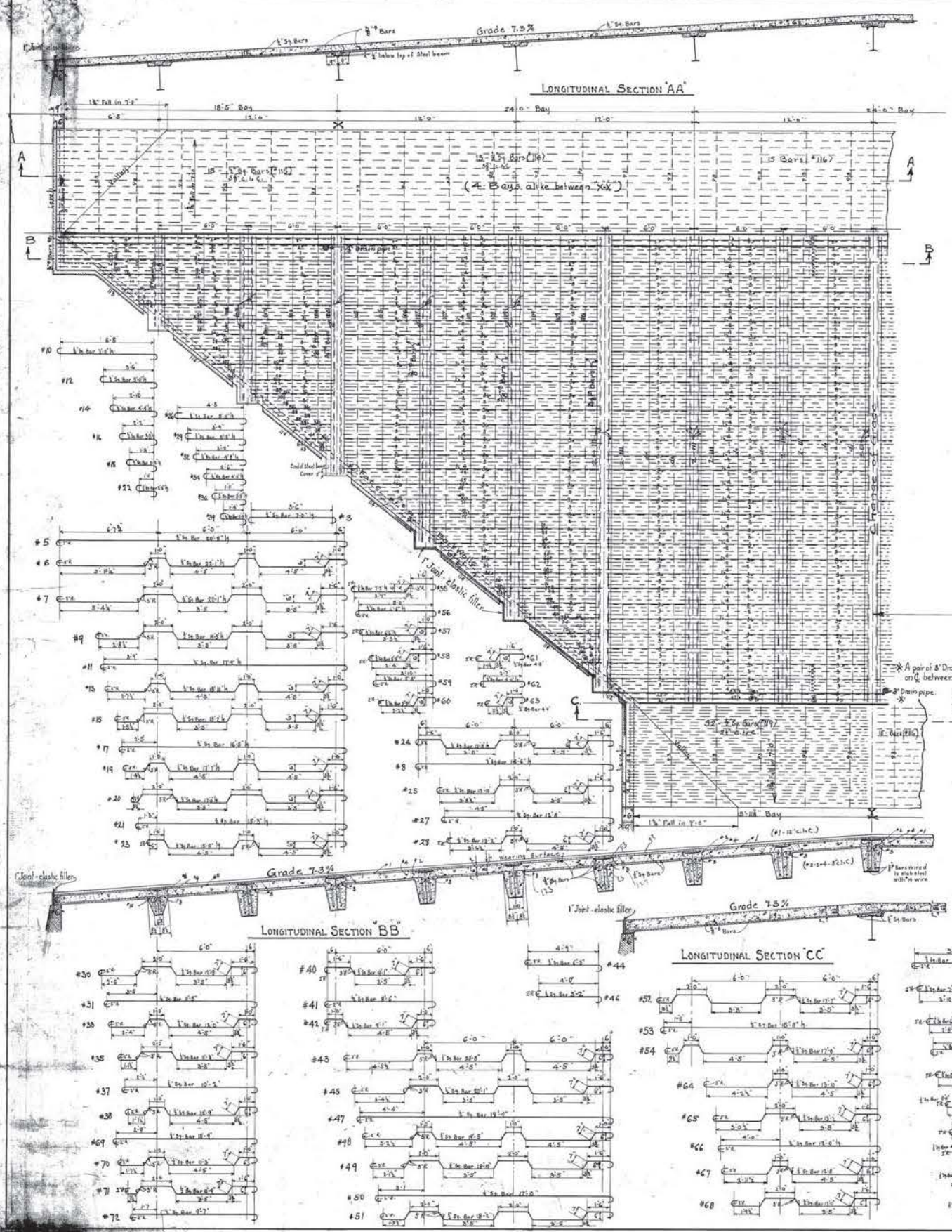
ST CATHERINES
ST PAUL ST O.H. BRIDGE MILE 11.68
DETAIL OF CAST IRON NEWEL POSTS

Scale 2" = 1'-0"

Office of Chief Engineer Montreal, April 29th 1922
Journal No. 9222
File No. 484-35

J.A.S.

23.484
48432

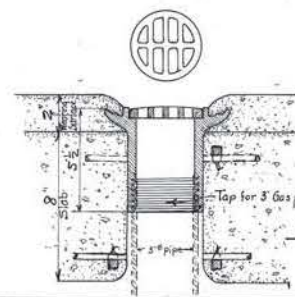


MARKS		QUANTITIES		MARKS		QUANTITIES	
No.	Size	Weight	Quantity	No.	Size	Weight	Quantity
1-18	2 1/2"	13.8	400	19-24	1 1/2"	1.6	100
19-24	1 1/2"	1.6	100	25-30	1 1/4"	1.4	100
31-36	1 1/4"	1.4	100	31-36	1 1/4"	1.4	100
37-42	1 1/4"	1.4	100	43-48	1 1/4"	1.4	100
49-54	1 1/4"	1.4	100	55-60	1 1/4"	1.4	100
61-66	1 1/4"	1.4	100	67-72	1 1/4"	1.4	100
73-78	1 1/4"	1.4	100	79-84	1 1/4"	1.4	100
85-90	1 1/4"	1.4	100	91-96	1 1/4"	1.4	100
97-102	1 1/4"	1.4	100	103-108	1 1/4"	1.4	100
109-114	1 1/4"	1.4	100	115-120	1 1/4"	1.4	100
121-126	1 1/4"	1.4	100	127-132	1 1/4"	1.4	100
133-138	1 1/4"	1.4	100	139-144	1 1/4"	1.4	100
145-150	1 1/4"	1.4	100	151-156	1 1/4"	1.4	100
157-162	1 1/4"	1.4	100	163-168	1 1/4"	1.4	100
169-174	1 1/4"	1.4	100	175-180	1 1/4"	1.4	100
181-186	1 1/4"	1.4	100	187-192	1 1/4"	1.4	100
193-198	1 1/4"	1.4	100	199-204	1 1/4"	1.4	100
205-210	1 1/4"	1.4	100	211-216	1 1/4"	1.4	100
217-222	1 1/4"	1.4	100	223-228	1 1/4"	1.4	100
229-234	1 1/4"	1.4	100	235-240	1 1/4"	1.4	100
241-246	1 1/4"	1.4	100	247-252	1 1/4"	1.4	100
253-258	1 1/4"	1.4	100	259-264	1 1/4"	1.4	100
265-270	1 1/4"	1.4	100	271-276	1 1/4"	1.4	100
277-282	1 1/4"	1.4	100	283-288	1 1/4"	1.4	100
289-294	1 1/4"	1.4	100	295-300	1 1/4"	1.4	100
301-306	1 1/4"	1.4	100	307-312	1 1/4"	1.4	100
313-318	1 1/4"	1.4	100	319-324	1 1/4"	1.4	100
325-330	1 1/4"	1.4	100	331-336	1 1/4"	1.4	100
337-342	1 1/4"	1.4	100	343-348	1 1/4"	1.4	100
349-354	1 1/4"	1.4	100	355-360	1 1/4"	1.4	100
361-366	1 1/4"	1.4	100	367-372	1 1/4"	1.4	100
373-378	1 1/4"	1.4	100	379-384	1 1/4"	1.4	100
385-390	1 1/4"	1.4	100	391-396	1 1/4"	1.4	100
397-402	1 1/4"	1.4	100	403-408	1 1/4"	1.4	100
409-414	1 1/4"	1.4	100	415-420	1 1/4"	1.4	100
421-426	1 1/4"	1.4	100	427-432	1 1/4"	1.4	100
433-438	1 1/4"	1.4	100	439-444	1 1/4"	1.4	100
445-450	1 1/4"	1.4	100	451-456	1 1/4"	1.4	100
457-462	1 1/4"	1.4	100	463-468	1 1/4"	1.4	100
469-474	1 1/4"	1.4	100	475-480	1 1/4"	1.4	100
481-486	1 1/4"	1.4	100	487-492	1 1/4"	1.4	100
493-498	1 1/4"	1.4	100	499-504	1 1/4"	1.4	100
505-510	1 1/4"	1.4	100	511-516	1 1/4"	1.4	100
517-522	1 1/4"	1.4	100	523-528	1 1/4"	1.4	100
529-534	1 1/4"	1.4	100	535-540	1 1/4"	1.4	100
541-546	1 1/4"	1.4	100	547-552	1 1/4"	1.4	100
553-558	1 1/4"	1.4	100	559-564	1 1/4"	1.4	100
565-570	1 1/4"	1.4	100	571-576	1 1/4"	1.4	100
577-582	1 1/4"	1.4	100	583-588	1 1/4"	1.4	100
589-594	1 1/4"	1.4	100	595-600	1 1/4"	1.4	100
601-606	1 1/4"	1.4	100	607-612	1 1/4"	1.4	100
613-618	1 1/4"	1.4	100	619-624	1 1/4"	1.4	100
625-630	1 1/4"	1.4	100	631-636	1 1/4"	1.4	100
637-642	1 1/4"	1.4	100	643-648	1 1/4"	1.4	100
649-654	1 1/4"	1.4	100	655-660	1 1/4"	1.4	100
661-666	1 1/4"	1.4	100	667-672	1 1/4"	1.4	100
673-678	1 1/4"	1.4	100	679-684	1 1/4"	1.4	100
685-690	1 1/4"	1.4	100	691-696	1 1/4"	1.4	100
697-702	1 1/4"	1.4	100	703-708	1 1/4"	1.4	100
709-714	1 1/4"	1.4	100	715-720	1 1/4"	1.4	100
721-726	1 1/4"	1.4	100	727-732	1 1/4"	1.4	100
733-738	1 1/4"	1.4	100	739-744	1 1/4"	1.4	100
745-750	1 1/4"	1.4	100	751-756	1 1/4"	1.4	100
757-762	1 1/4"	1.4	100	763-768	1 1/4"	1.4	100
769-774	1 1/4"	1.4	100	775-780	1 1/4"	1.4	100
781-786	1 1/4"	1.4	100	787-792	1 1/4"	1.4	100
793-798	1 1/4"	1.4	100	799-804	1 1/4"	1.4	100
805-810	1 1/4"	1.4	100	811-816	1 1/4"	1.4	100
817-822	1 1/4"	1.4	100	823-828	1 1/4"	1.4	100
829-834	1 1/4"	1.4	100	835-840	1 1/4"	1.4	100
841-846	1 1/4"	1.4	100	847-852	1 1/4"	1.4	100
853-858	1 1/4"	1.4	100	859-864	1 1/4"	1.4	100
865-870	1 1/4"	1.4	100	871-876	1 1/4"	1.4	100
877-882	1 1/4"	1.4	100	883-888	1 1/4"	1.4	100
889-894	1 1/4"	1.4	100	895-900	1 1/4"	1.4	100
901-906	1 1/4"	1.4	100	907-912	1 1/4"	1.4	100
913-918	1 1/4"	1.4	100	919-924	1 1/4"	1.4	100
925-930	1 1/4"	1.4	100	931-936	1 1/4"	1.4	100
937-942	1 1/4"	1.4	100	943-948	1 1/4"	1.4	100
949-954	1 1/4"	1.4	100	955-960	1 1/4"	1.4	100
961-966	1 1/4"	1.4	100	967-972	1 1/4"	1.4	100
973-978	1 1/4"	1.4	100	979-984	1 1/4"	1.4	100
985-990	1 1/4"	1.4	100	991-996	1 1/4"	1.4	100
997-1002	1 1/4"	1.4	100				

SPECIFICATION - ONTARIO CONCRETE HIGHWAY BRIDGES.
LOADING - ROADWAY - 20 TON ROLLER.
 SIDE WALK - 100 LBS PER SQUARE FOOT.
UNIT STRESSES - CONCRETE - COMPRES. 650 PER SQ IN.
 SHEAR - 60"
 (RAIN BARS) BOND - 60"
 STEEL TENSION - 16000"
 (GTR SPECIFICATION FOR SLABS)
CONCRETE - SLAB - 1:2:4
 DO - WEARING SURFACE - 1:1:3

Notes - The net computed thickness of Roadway slab is exclusive of 2" wearing surface of 1 1/2" fine concrete. Course aggregate to be laid on stone or screened gravel, which is to be applied to the fresh surface of the slab before it has begun to set.
 Steel Bars - All bending to be done cold.
 All steel must be clean and free from loose scales.
 All bars are to be straight and true, portions bent up to be in same plane.
 Steel should be properly spaced, braced and supported, so that placement of concrete will disturb it.
 Concrete - If placing of concrete in the slab is not continuous, care must be taken to stop the concrete with a vertical face at either the centre of the span or at the centre of bearings.

Approved: Ontario Highway Board
 Approved: City Engineer



Note: Any suitable gully, City of St. Catharines pattern, will be accepted.

Examined: R. Amner
 Approved: [Signature]
 Approved: [Signature]
 Approved: [Signature]

GRAND TRUNK RAILWAY SYSTEM
 LONDON DIVISION - 17TH DISTRICT
 OVERHEAD BRIDGE - M.P. 11.68
 ST. PAUL STR. - ST. CATHERINES
 REINFORCED CONCRETE FLOOR PLAN
 SCALE 1/4"
 OFFICE OF CHIEF ENGINEER - MONTREAL - JUNE 1922

A531
St. Cath

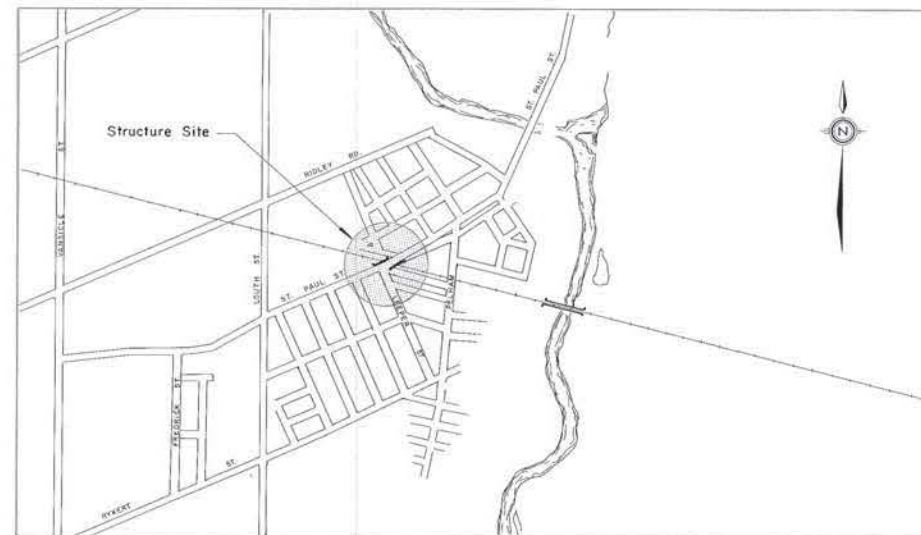
REGIONAL MUNICIPALITY OF NIAGARA

PUBLIC WORKS DEPARTMENT

REPAIRS TO STRUCTURE No. 71

St. Paul Street Over CNR

C.H. EIDT P. ENG.
DIRECTOR OF ENGINEERING

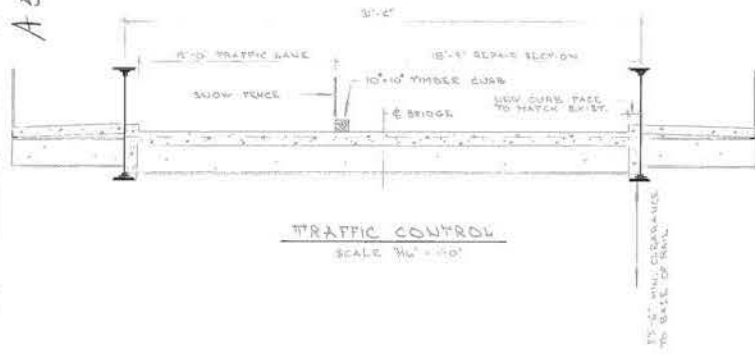


- Key Plan -

J.E. CAMPBELL
REGIONAL CHAIRMAN

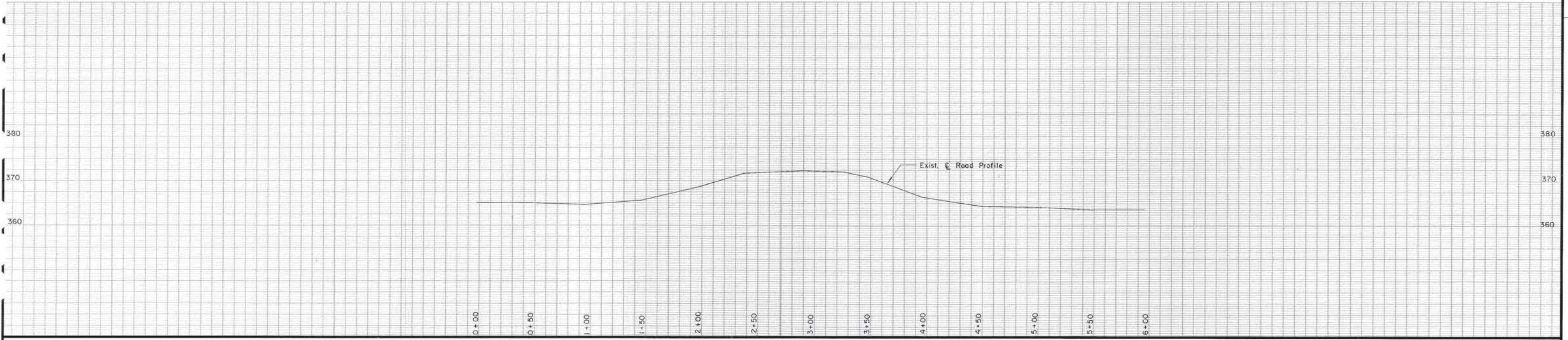
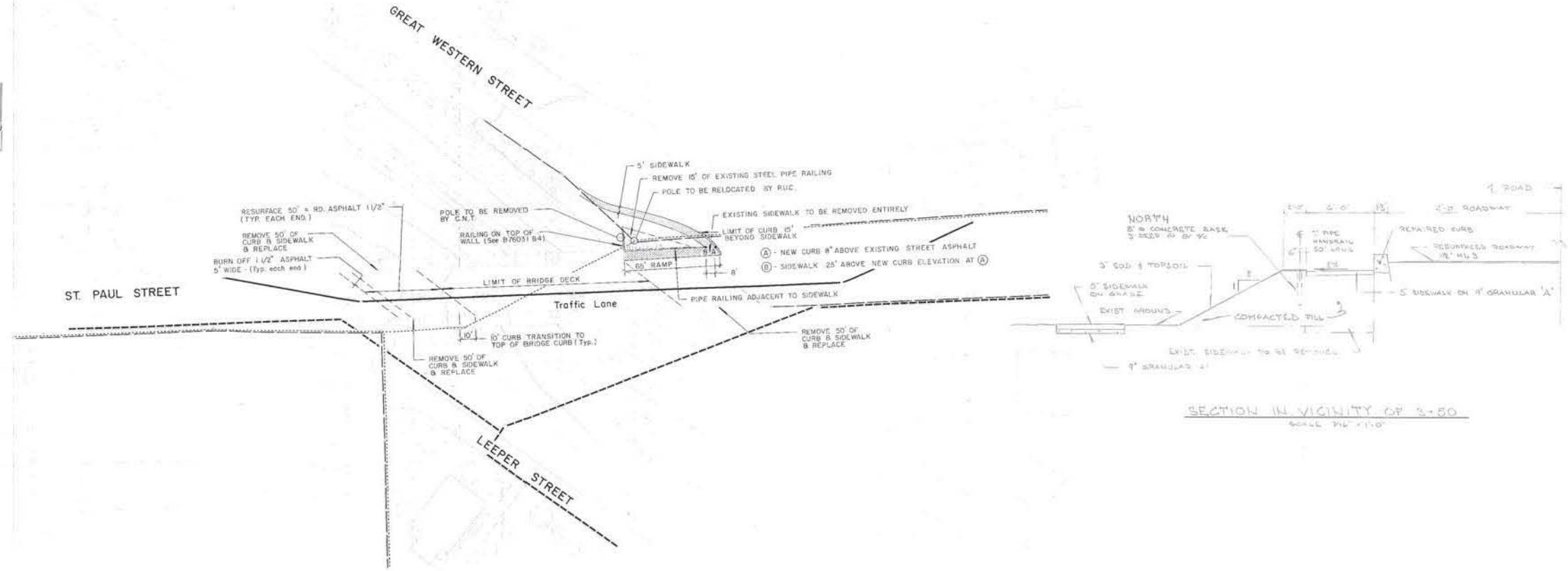
CONTRACT NO. RN. 77 - 15

A531



LEGEND

- - - - - O/H Primary (4000V)
- - - - - O/H Secondary (120/240V)
- - - - - Bell Canada
- - - - - 10' x 10' Timber Curb



NO.	REVISION	DATE	INITIAL


- NOTES
- MINIMUM CONCRETE STRENGTH AT 28 DAYS SHALL BE:
Deck = 4000 psi
Sidewalk = "
Retaining Wall = "
 - REINFORCING STEEL SHALL BE HARD GRADE AND HIGH BOND WITH A MINIMUM YIELD STRENGTH OF 50000psi.
 - CLEAR COVER TO REINFORCING STEEL SHALL BE:
1' top of deck slab
1 1/2" bottom of deck & sidewalk & top of sidewalk
2" cover to retaining walls exposed to earth
3" cover to concrete poured against earth
 - ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY THE ENGINEER.
 - ALL EXPOSED CORNERS SHALL BE CHAMFERED 1" x 1" UNLESS OTHERWISE NOTED.
 - APPROVED ADMIXTURES SUPPLIED BY THE CONTRACTOR SHALL BE ADDED TO ALL CONCRETE.

APPROVED



Approved

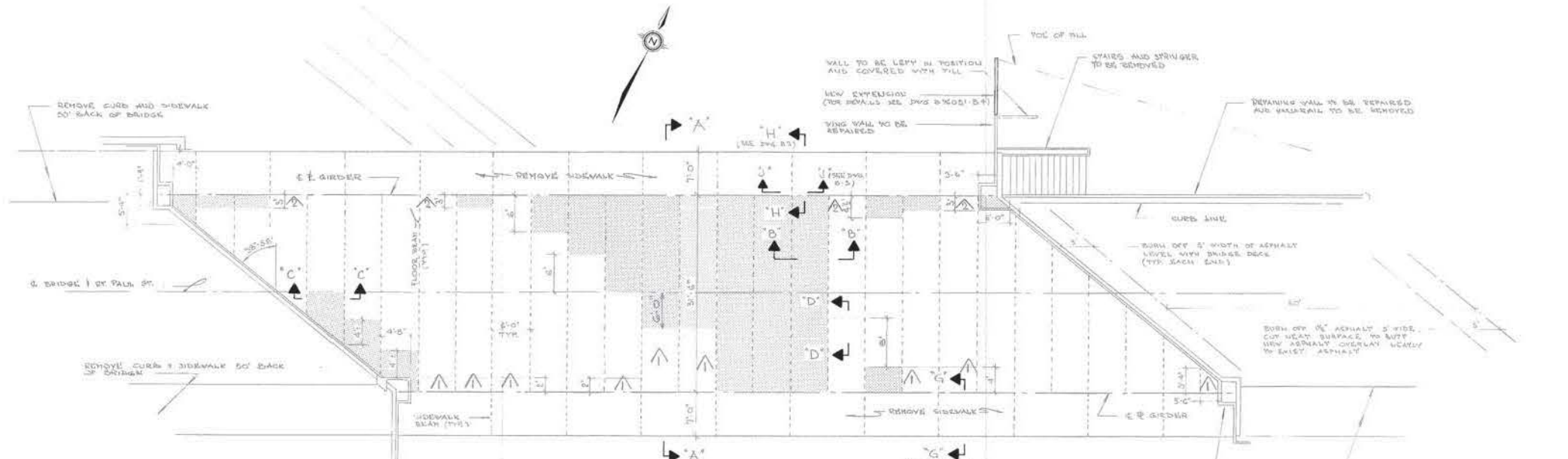
Read-Harris Engineering
160 Duncan Mill Rd. Don Mills



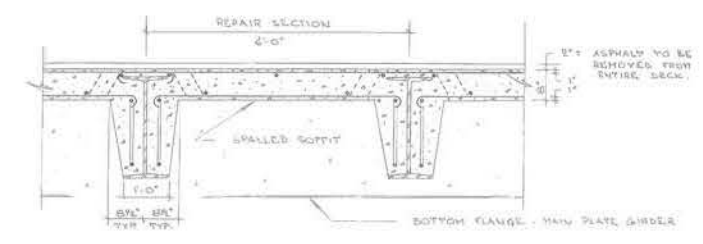
REGIONAL MUNICIPALITY OF NIAGARA
Structure No. 71
St. Paul Street West over CNR
SITE PLAN

HORIZ. SCALE 1" = 40' or AS SHOWN	VERT. SCALE 1" = 10'	Cont. No. 77-15	DATE MARCH / 77
DRAWN BY J.S.	CHECKED BY P.E.S.	DWG. No.	B76031 - B1

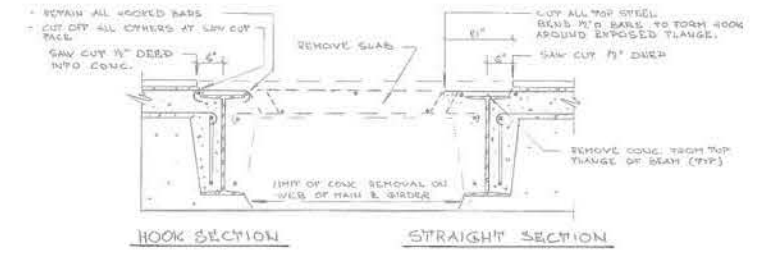
A531



PLAN
SCALE - 3/32" = 1'-0"

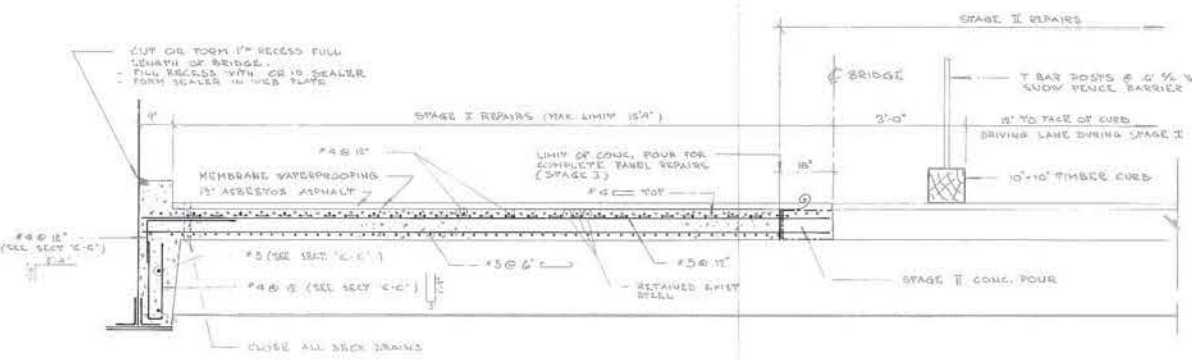


TYP DECK REPAIR SECTION
EXIST. CONDITIONS

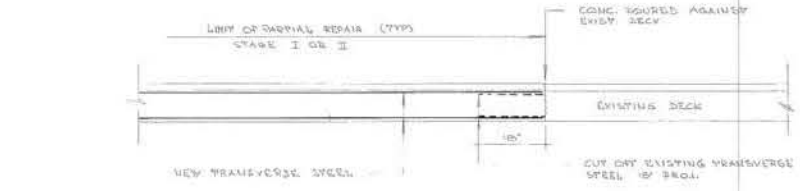


HOOK SECTION **STRAIGHT SECTION**

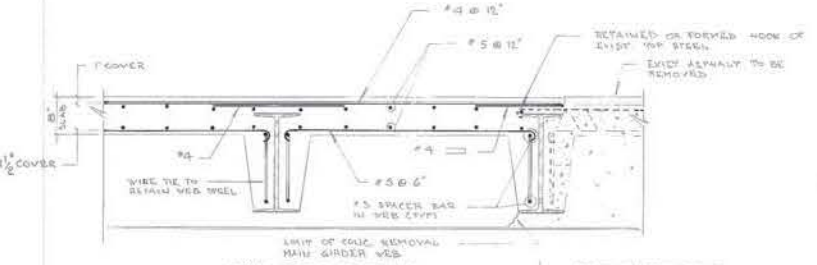
PORTION OF DECK TO BE REMOVED



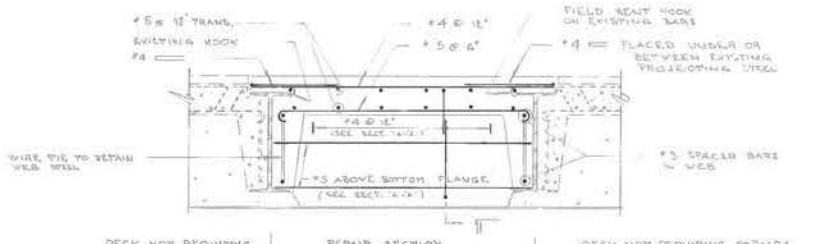
SECTION A-A
FULL SECTION REPAIRS



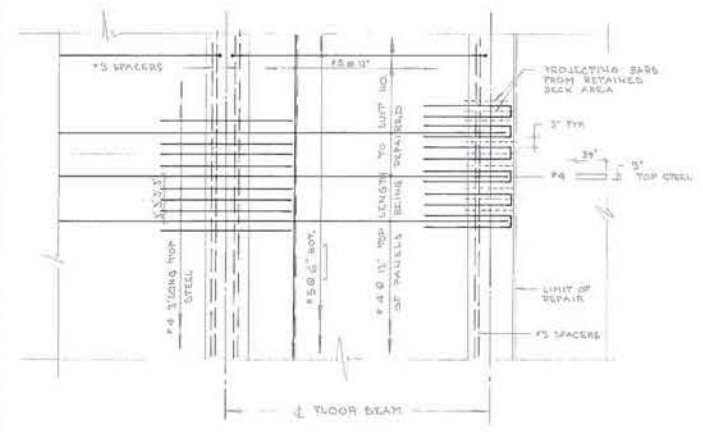
SECTION D-D



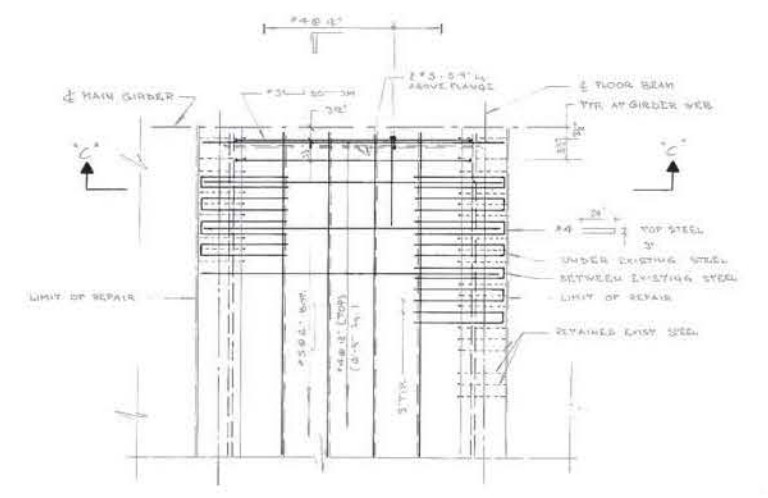
SECTION B-B



SECTION C-C



PLAN - MULTI PANEL REPAIR

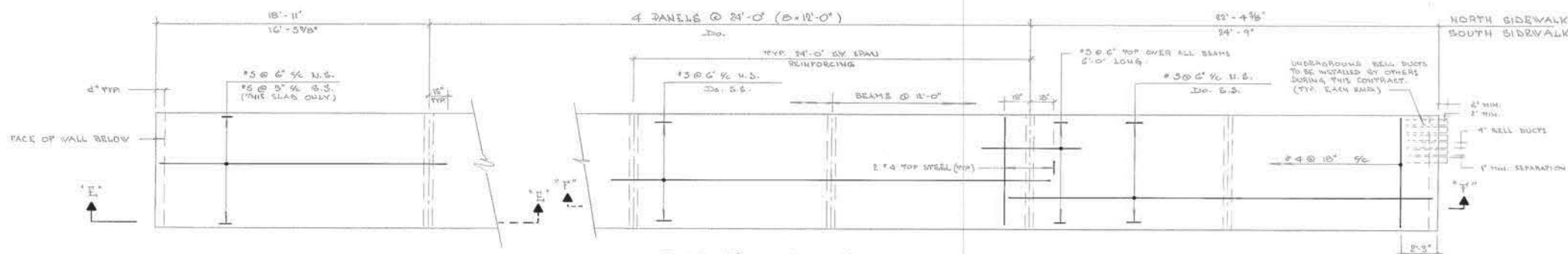


PLAN - SINGLE PANEL REPAIR

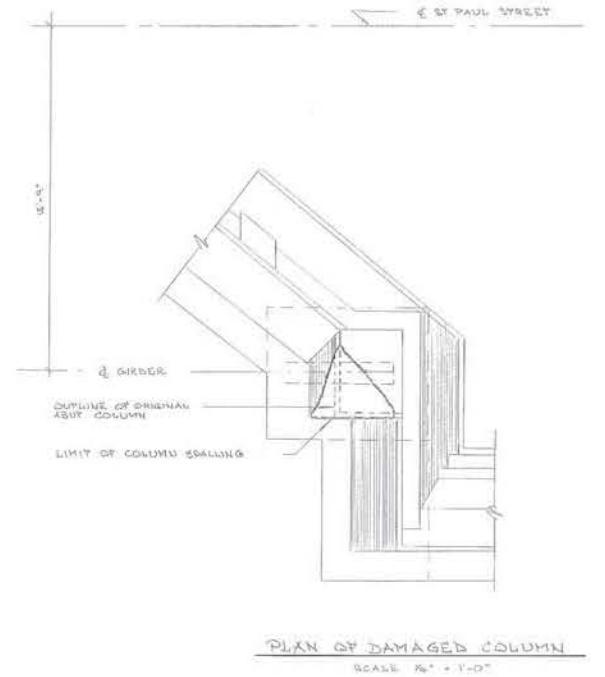
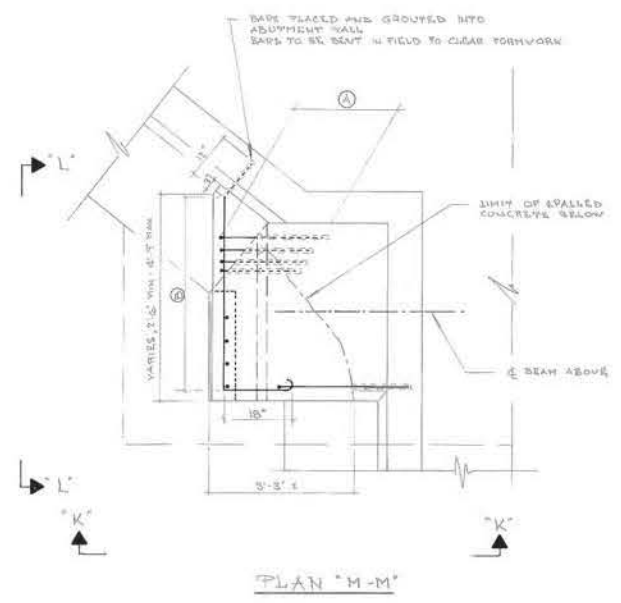
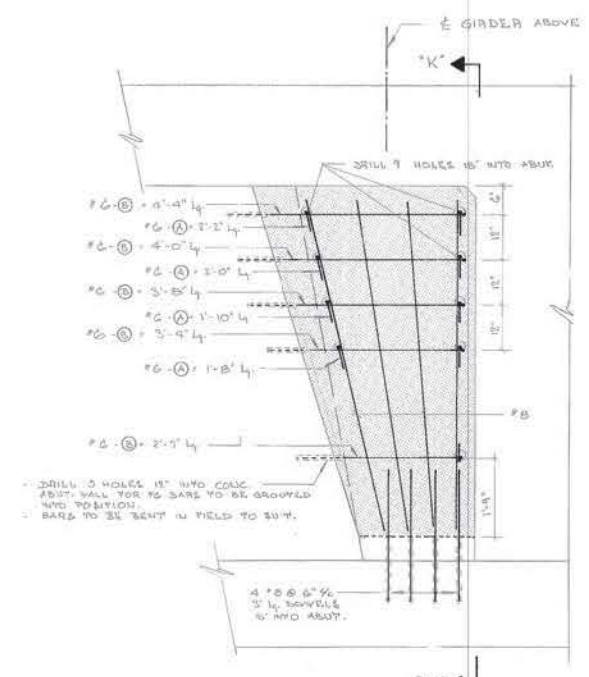
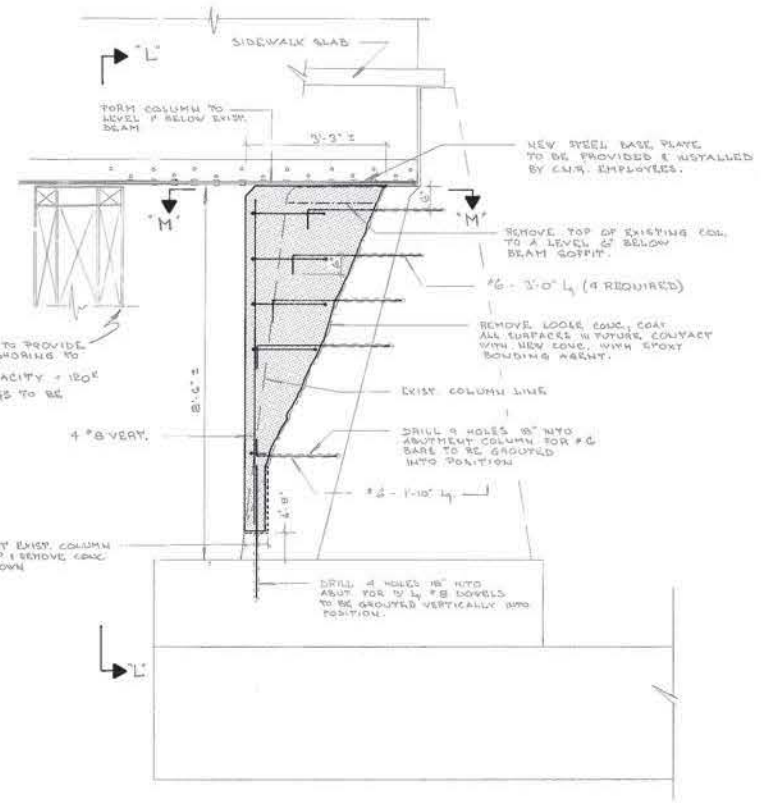
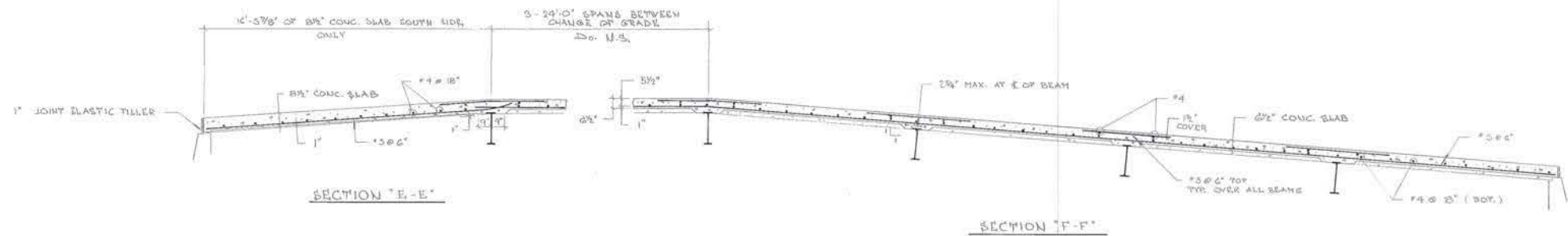
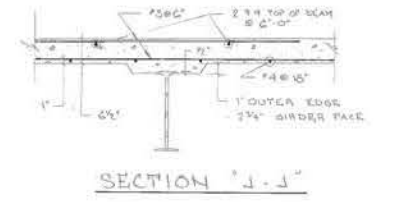
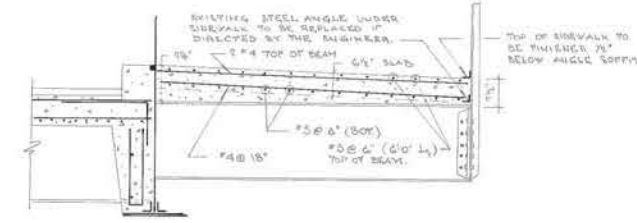
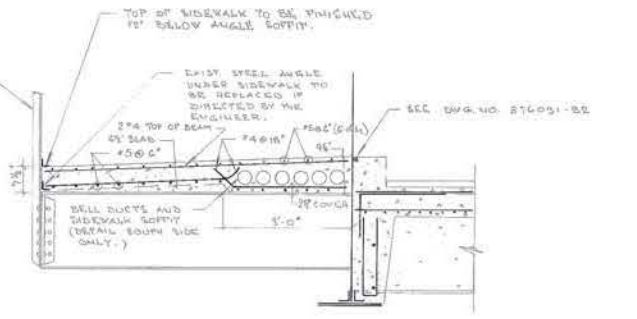


NO.	FILE	DATE	REVISIONS	BY
		SEPT. 10/77	AS CONSTRUCTED DETAIL	
		AUG. 11/77	DELETE DECK REPAIRS	

<p>Read-Harris Engineering 160 Dunoon Mill Rd. Don Mills</p>	<p>REGIONAL MUNICIPALITY OF NIAGARA Structure No. 71 St. Paul Street West over CNR DECK REPAIR DETAILS</p>		
	<p>APPROVED: [Signature]</p>	<p>DRAWN BY: J.S. DESIGNED BY: P.E.S. CHECKED BY: P.E.S. CONF. No. 77-15</p>	<p>SCALE: 1/2" = 1'-0" OF AS SHOWN DWG. No. B76031-B2</p>



PLAN (South Sidewalk)
SCALE: 3/8" = 1'-0"



No.	DATE	TITLE	BY

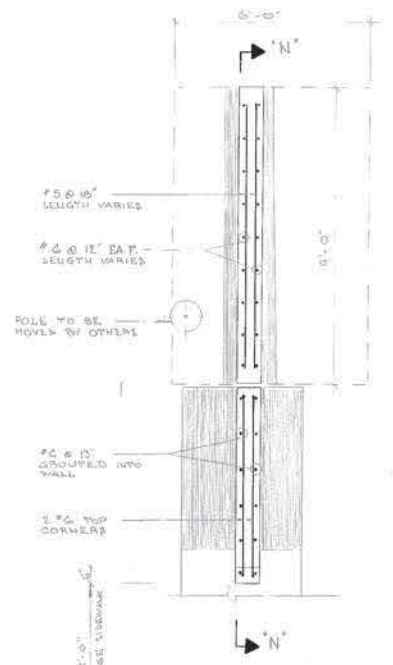
Read-Harris Engineering
160 Duncan Mill Rd. Dor Mills

Approved: *J.S.*

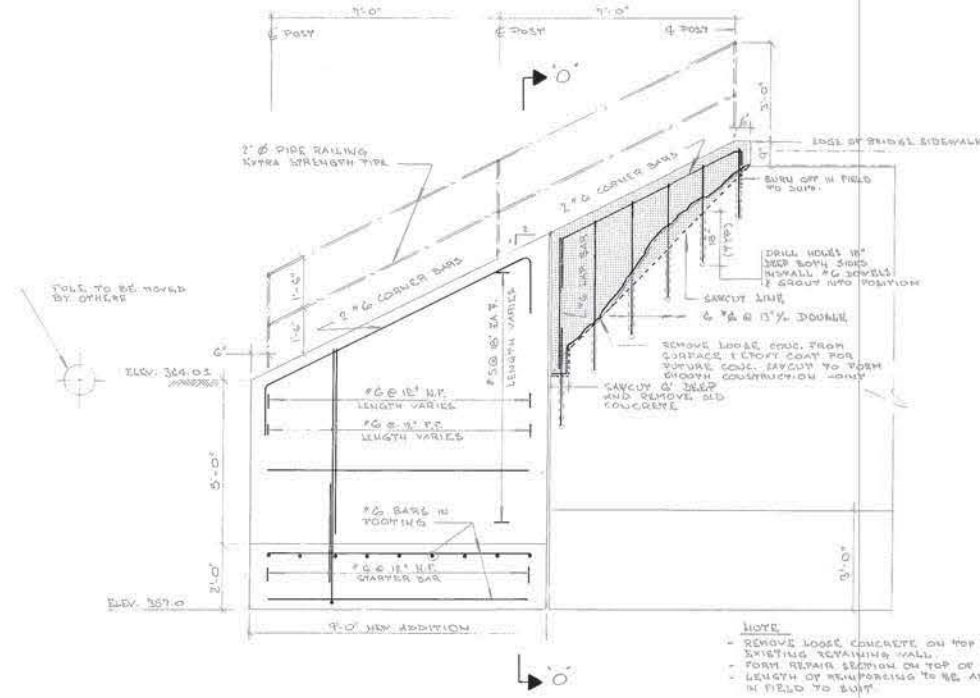
REGIONAL MUNICIPALITY OF NIAGARA
Structure No. 71
St. Paul Street West over CNR
SIDEWALK & ABUTMENT COLUMN REPAIRS

DRAWN BY: J.S. DESIGNED BY: P.E.S. CHECKED BY: P.E.S. Cont. No. 77-15
SCALE: 1/2" = 1'-0" or AS SHOWN DWG. No. B76031-B3
DATE: MARCH 1977

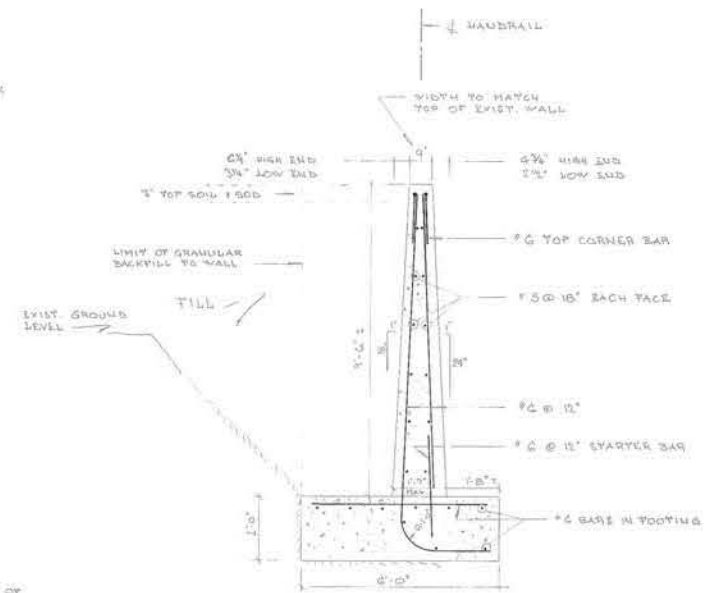
A531



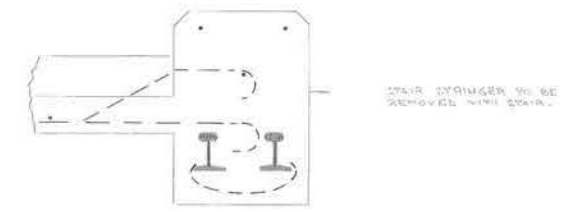
PLAN OF RETAINING WALL
SCALE 3/4\"/>



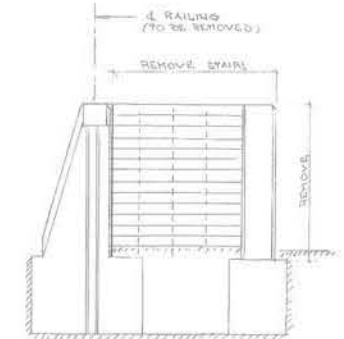
ELEVATION 'N-N'
SCALE 3/4\"/>



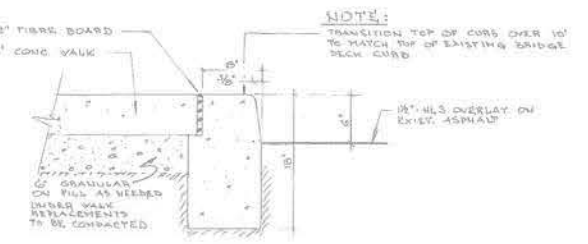
SECTION 'O-O'
SCALE 3/4\"/>



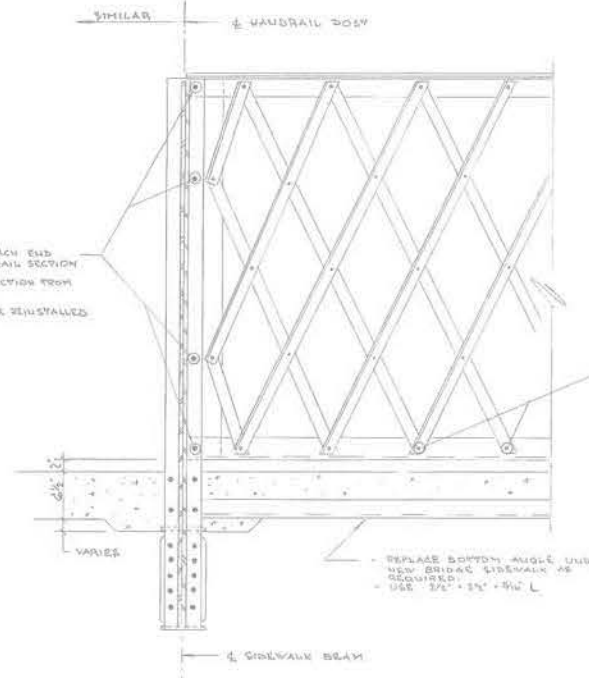
SECTION 'P-P'
SCALE 1\"/>



ELEVATION 'Q-Q'
SCALE 1\"/>



CURB & SIDEWALK DETAIL
SCALE 1\"/>



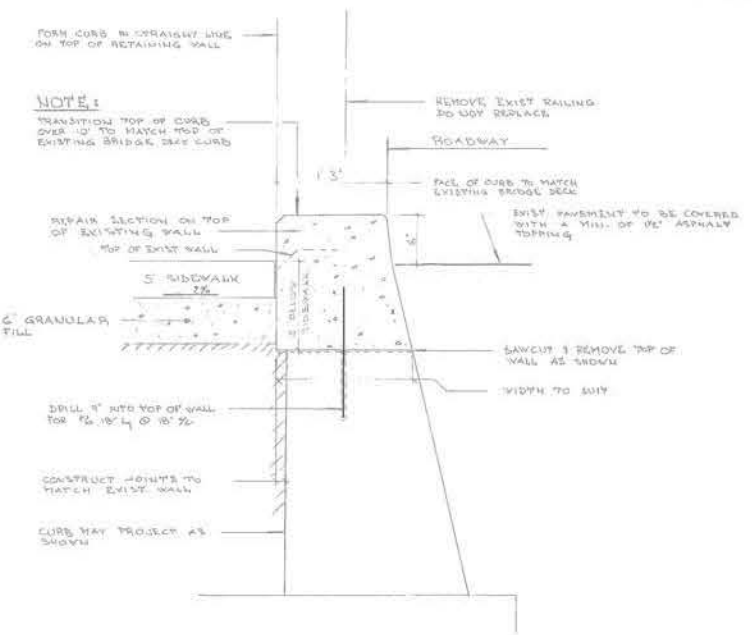
HANDRAIL REPAIR DETAIL
SCALE 1\"/>

REMOVE 4 RIVETS EACH END OF DEFECTIVE HANDRAIL SECTION REMOVE HANDRAIL SECTION FROM POSITION RAIL SECTION MAY BE REINSTALLED USING 4 RIVETS.

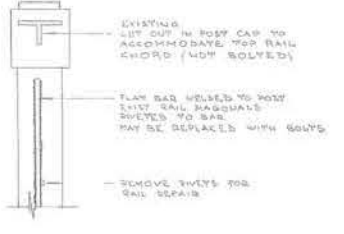
REMOVE RIVETS FROM BOTTOM ANGLE REMOVE DEFECTIVE ANGLE & REPLACE WITH NEW 1 1/2\"/>

NEW ANGLE MAY BE BOLTED OR WELDED INTO POSITION REPLACE HANDRAIL SECTION INTO ORIGINAL POSITION

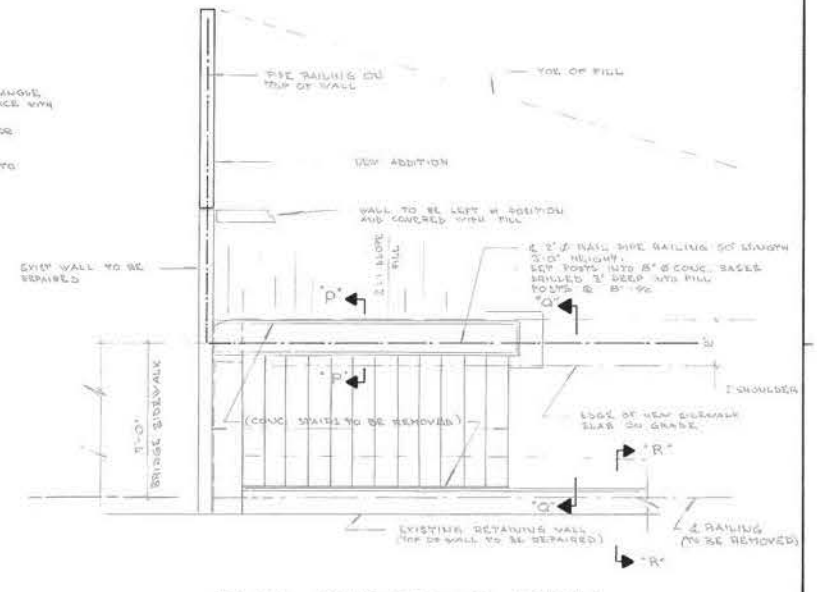
REPLACE BOTTOM ANGLE UNDER NEW BRIDGE SIDEWALK AS REQUIRED. USE 1 1/2\"/>



SECTION 'R-R'
RETAINING WALL REPAIRS
SCALE 1\"/>



EXISTING RAIL END POST



PLAN - STAIR REMOVAL DETAILS
SCALE 1\"/>



NO.	TITLE	DATE	REVISIONS	BY

Read-Harris Engineering
160 Duncan Mill Rd. Don Mills

Approved: *[Signature]*
DATE: _____

REGIONAL MUNICIPALITY OF NIAGARA
Structure No. 71
St. Paul Street West over CNR
RETAINING WALL & HANDRAIL REPAIRS

DRAWN BY: J.S. DESIGNED BY: P.E.S. CHECKED BY: P.E.S. Cont. No. 77-15
SCALE: AS SHOWN DWG. No. B76031-B4
DATE: MARCH 1977