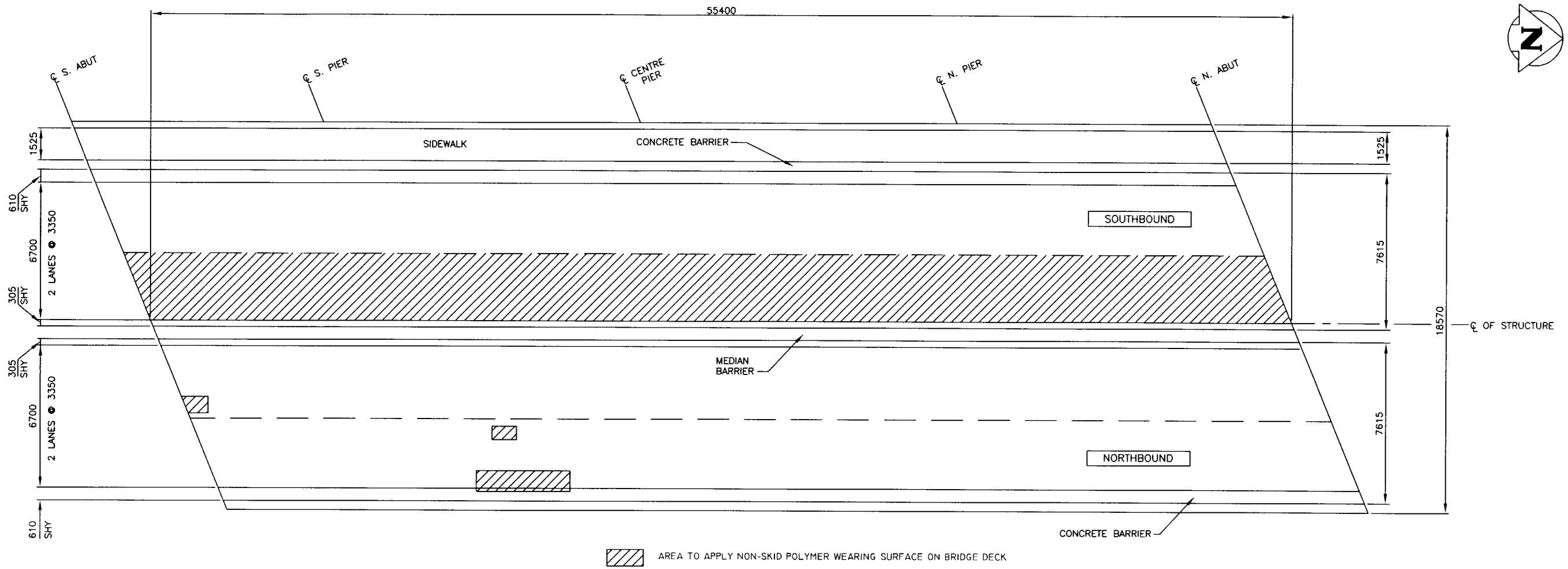
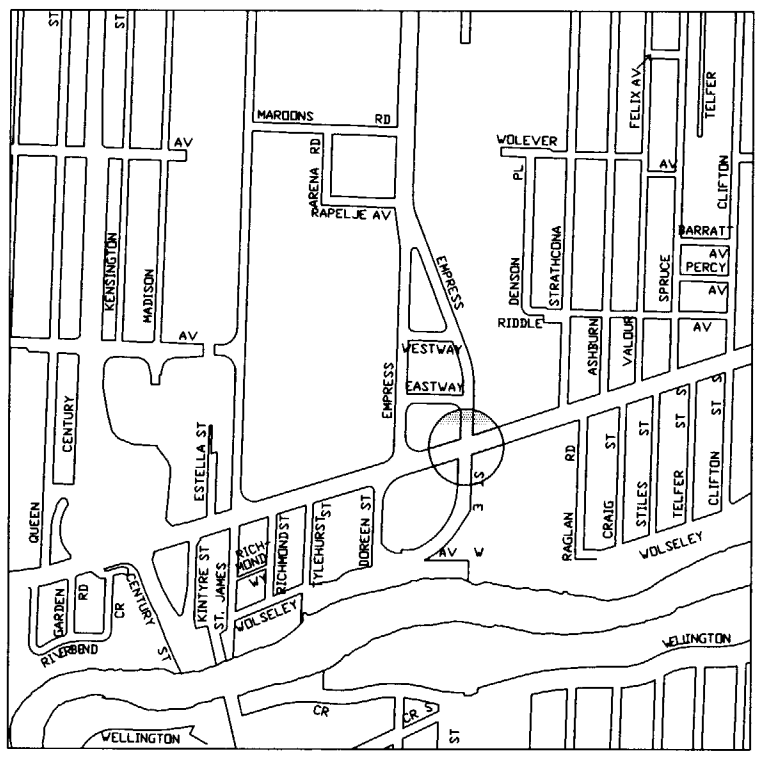
APPENDIX D – EXISTING RECORDS FOR THE EMPRESS ST STRUCTURE – VARIOUS DRAWINGS

The included documents are supplied for review and use of the Proponent during the bidding period only. The information remains the property of the City of Winnipeg.

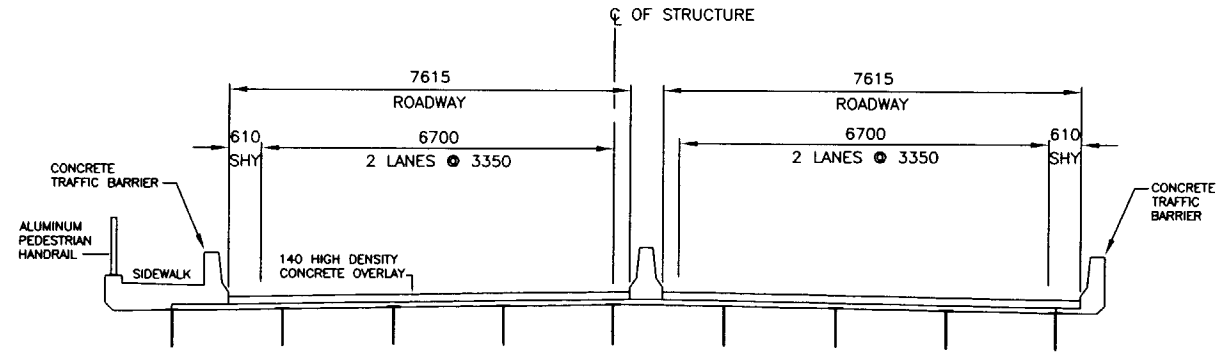
This information is not meant to be exhaustive and is not meant to take the place of the investigations and due diligence required of the Proponent.



DECK LAYOUT
N.T.S.



LOCATION PLAN



TYPICAL CROSS SECTION
N.T.S.

NOTES:

1. APPROXIMATE QUANTITY TO REPLACE = 220 SQM

B.M. ELEV.					
			DESIGNED BY	M.R.T.	
			DRAWN BY	M.R.T.	
			CHECKED BY	B.A.N.	
			APPROVED BY	B.A.N.	
			AUTHORISED BY		DATE
NO.	REVISIONS	DATE	BY	B.A. NEIRINCK BRIDGE PLANNING & OPERATIONS ENGINEER	

ENGINEER'S SEAL: PROVINCE OF MANITOBA — B.A.J. NEIRINCK — REGISTERED PROFESSIONAL ENGINEER

BID OPPORTUNITY NO.: 458 – 2005

Winnipeg

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

EMPRESS STREET OVERPASS
OVER PORTAGE AVENUE
CONCRETE BRIDGE DECK
SURFACE SEALING

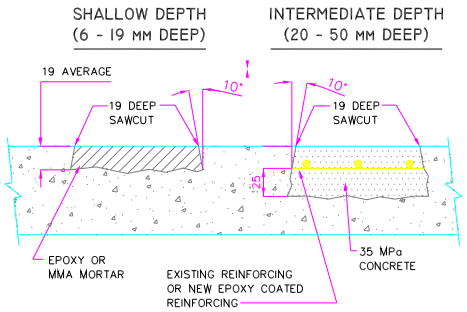
PLAN & SECTION

SHEET 1 OF 2

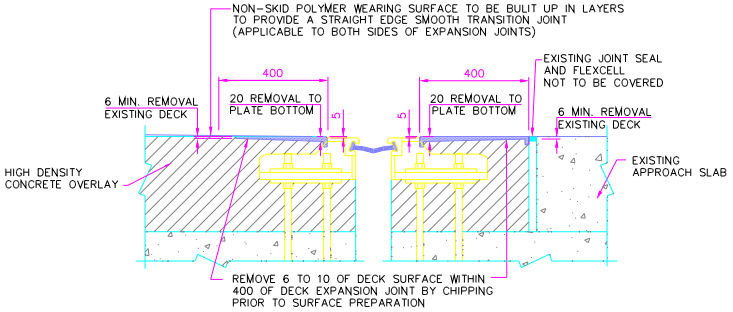
HOR. SCALE: N.T.S.
VERTICAL:

CITY DRAWING NUMBER
8100-05-01

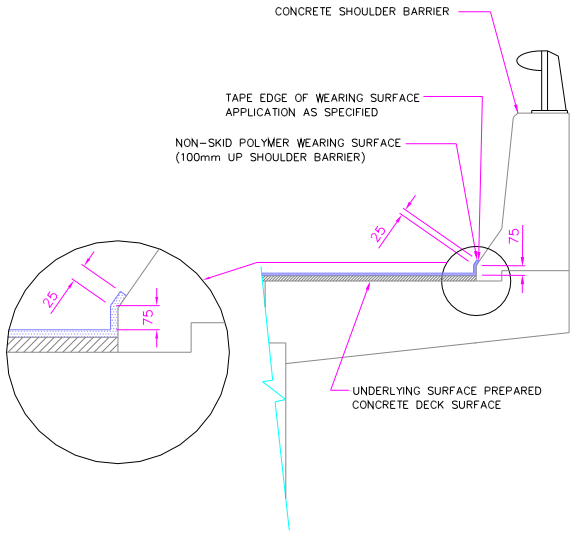
Revision April, 1999



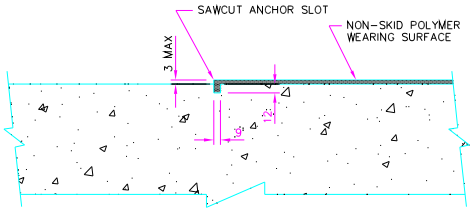
DECK REPAIR DETAILS
N.T.S.



EXPANSION JOINT (TYPICAL)
N.T.S.

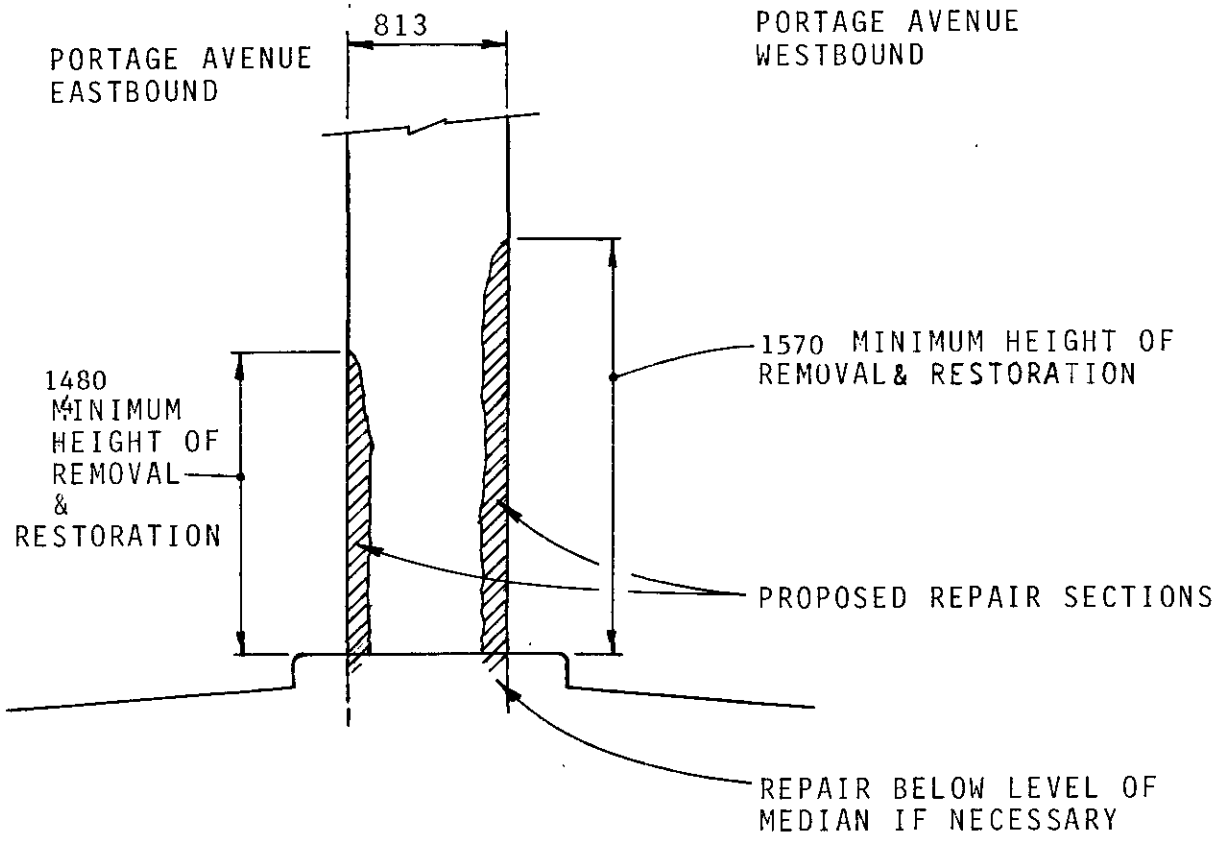


TRAFFIC BARRIER DETAIL (TYPICAL)
N.T.S.



TYPICAL ANCHOR DETAIL
N.T.S.

B.M. ELEV.				DESIGNED BY M.R.T.	ENGINEER'S SEAL	THE CITY OF WINNIPEG PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION	
				DRAWN BY M.R.T.	PROVINCE OF MANITOBA B.A.J. NEIRINCK REGISTERED PROFESSIONAL ENGINEER		
				CHECKED BY B.A.N.		EMPRESS STREET OVERPASS OVER PORTAGE AVENUE CONCRETE BRIDGE DECK SURFACE SEALING	SHEET 2 OF 2
				APPROVED BY B.A.N.			HOR. SCALE: VERTICAL: N.T.S.
				AUTHORIZED BY DATE	BID OPPORTUNITY NO.: 458 - 2005	WEARING SURFACE DETAILS	CITY DRAWING NUMBER B100-05-02
NO.	REVISIONS	DATE	BY	B.A. NEIRINCK BRIDGE PLANNING & OPERATIONS ENGINEER			



EAST ELEVATION

CENTRE COLUMN
CENTRE BENT
N.T.S.

AS BUILT

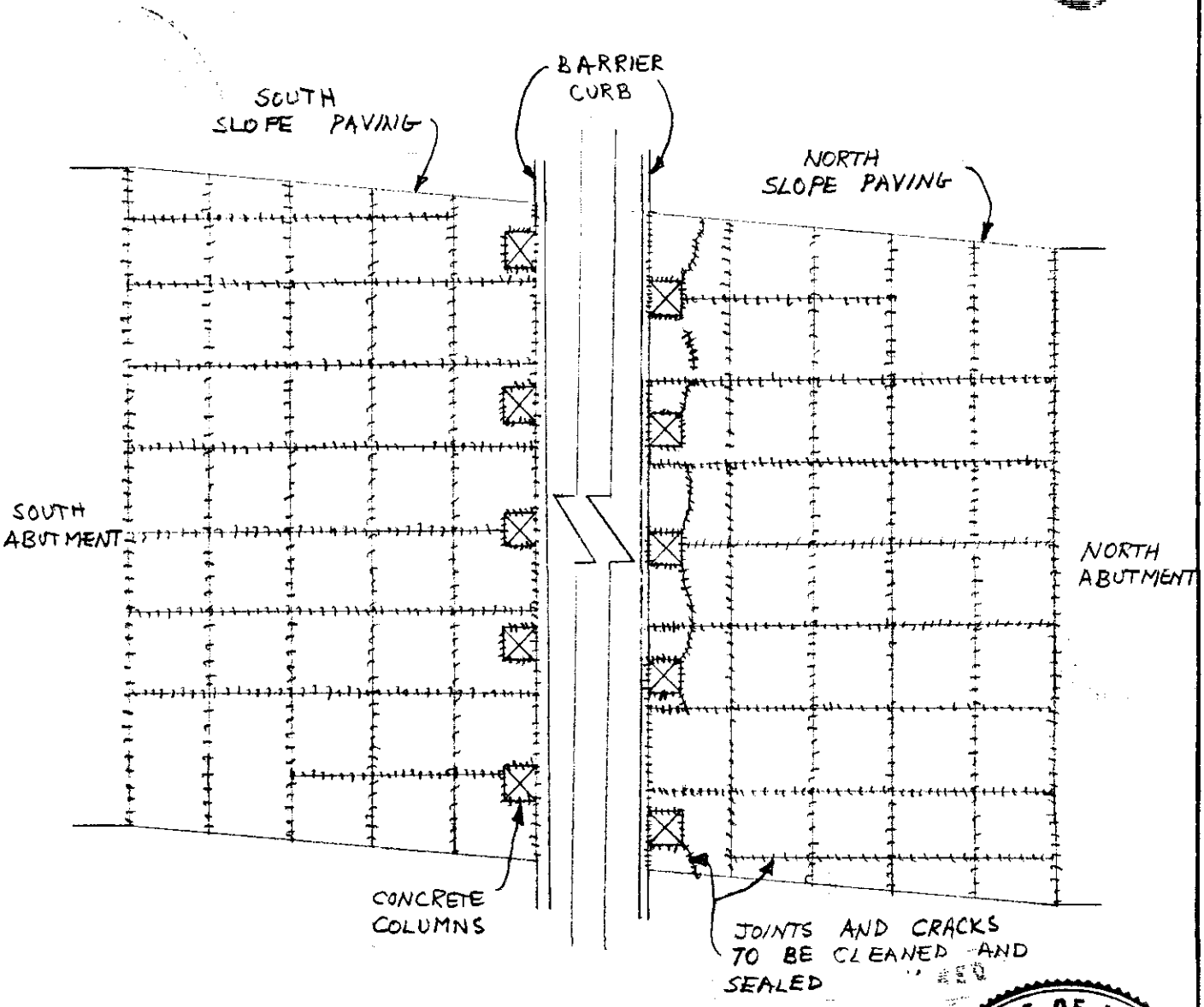
APPROVED BY: Rdwilson

PROVINCE OF MANITOBA
30/08/79
R. A.
WIEBE
REGISTERED ENGINEER

B-5228

DILLON Consulting Engineers & Planners	TITLE *EMPRESS ST. OVERPASS AT PORTAGE AVE.*	PROJECT NO. MMD: 8584-05
DATE AUGUST , 1979	PROJECT *BRIDGE MAINTENANCE-PHASE 7907*	DRAWING NO. B100-79-01

M. M. D. - 501 - 72



PLAN
N.T.S.

AS BUILT
APPROVED BY:

PROVINCE OF MANITOBA
80-09-11
R. A. WIEBE
REGISTERED ENGINEER

B-5282

CITY OF WINNIPEG
ACCEPTED FOR CONST. BY [signature] DATE 81-04-02

M.M. DILLON
APPROVED BY [signature] DATE 9 SEPT. 80

DILLON Consulting Engineers & Planners

DATE JULY, 1980

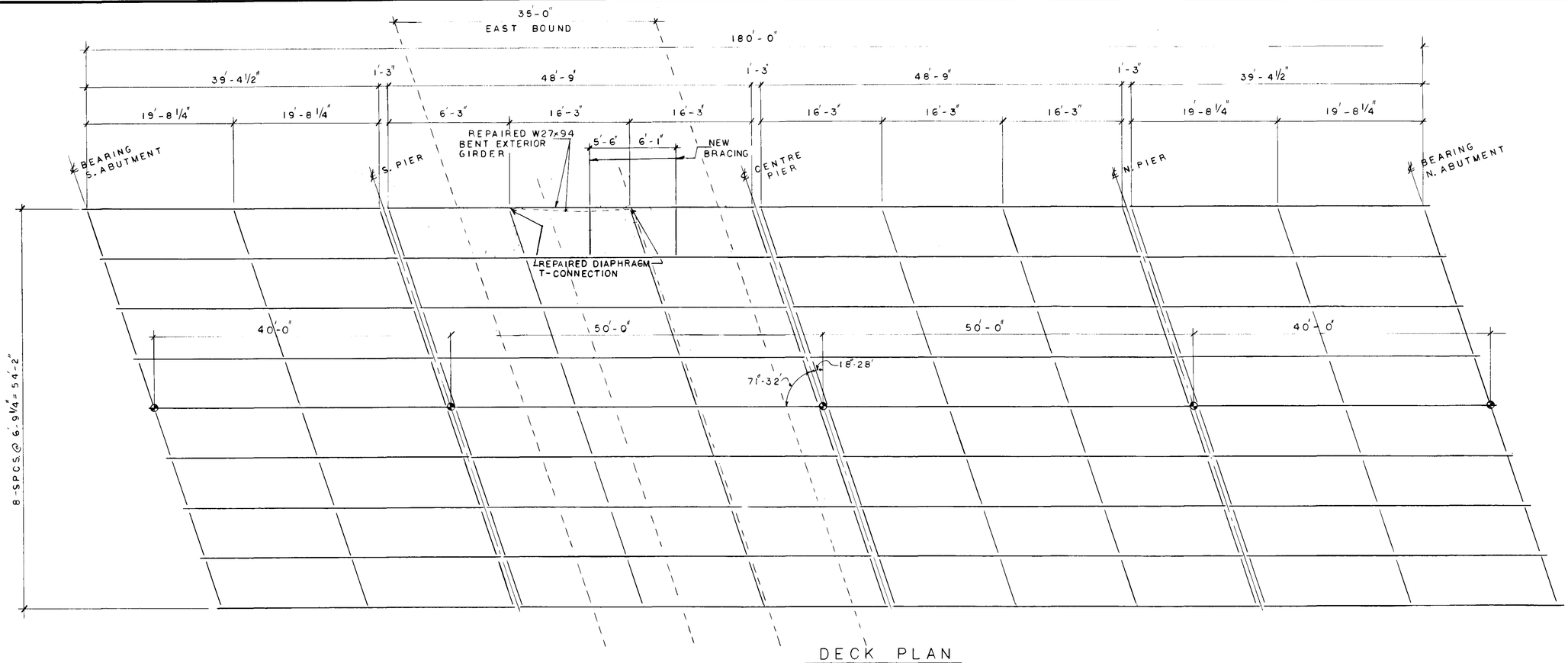
TITLE
EMPRESS STREET OVERPASS
SLOPE PAVING REPAIRS

PROJECT
BRIDGE MAINTENANCE - PHASE 8008

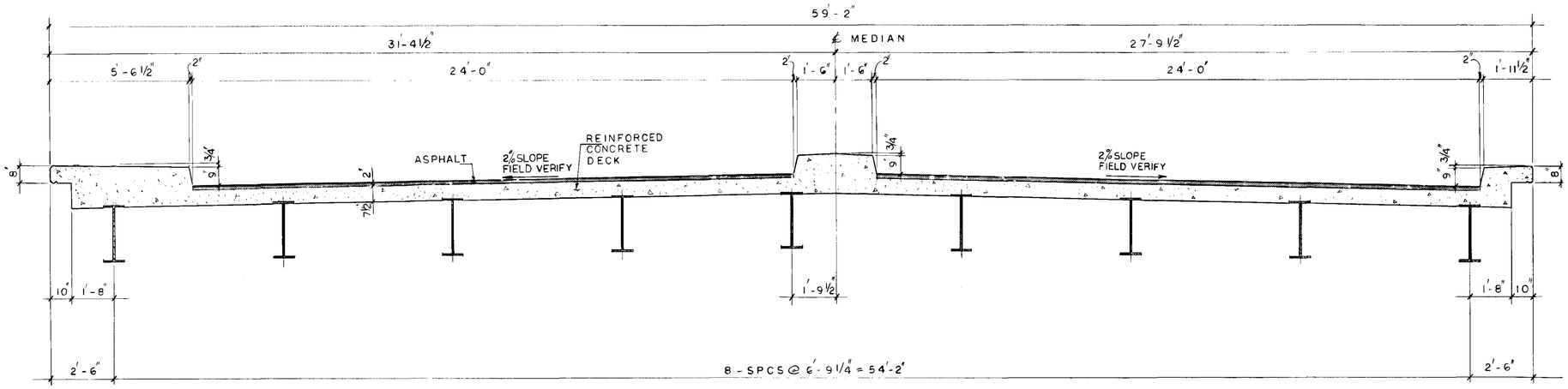
PROJECT NO.
8792-04

DRAWING NO.
8100-81-01

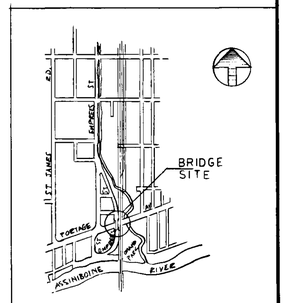
M.M.D. - 501 - 72



DECK PLAN
SC. 1/8" = 1'-0"



TYPICAL DECK SECTION
SC. 3/8" = 1'-0"



LOCATION PLAN
B-5295-1

NO	REVISIONS	DATE	APP.
2	DWG. NO.	820208	
1	AS BUILT	81-12-11	

Nov 6/81
W. McCutcheon
ENGINEER'S SEAL

Reid, Crowther & Partners Limited
CONSULTING ENGINEERS AND PLANNERS
VANCOUVER CALGARY EDMONTON REGINA WINNIPEG TORONTO OTTAWA WHITEHORSE YELLOWKNIFE RED DEER BRANDON

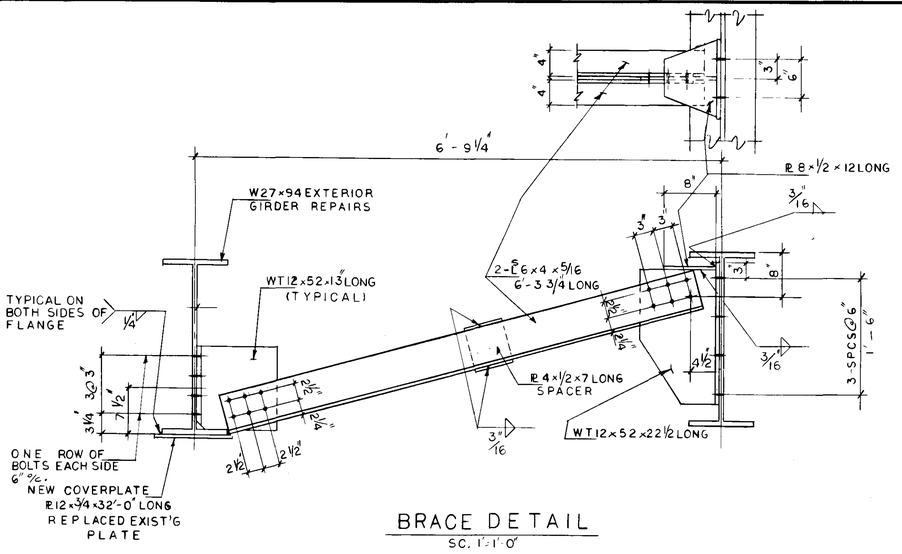
DESIGNED BY:	DRAWN BY:
B.E.	G.A.S.
CHECKED BY: W.J.M.	DATE: 81-10-21
APPROVED BY: D. Charlson	DATE: Nov 6/81

THE CITY OF WINNIPEG
WORKS & OPERATIONS DIVISION
STREETS & TRANSPORTATION DEPARTMENT

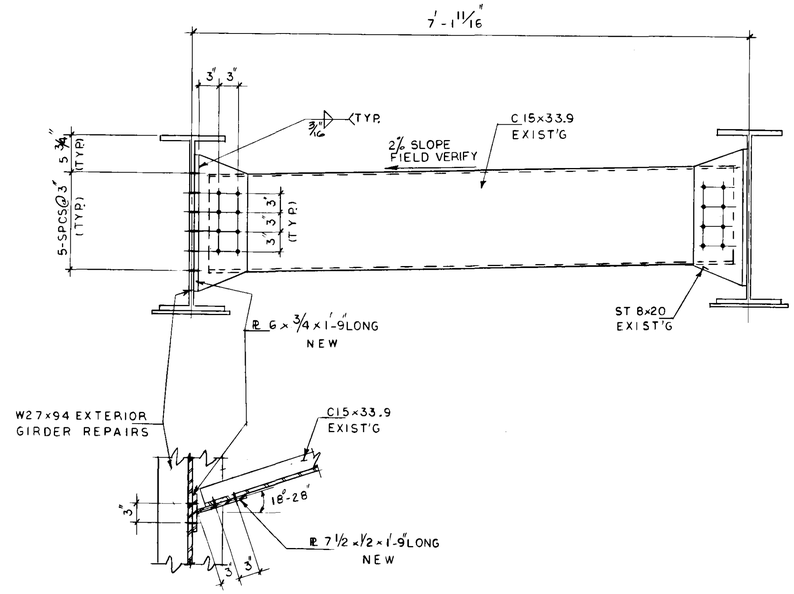
EMPRESS ST. AND PORTAGE AV. OVERPASS
1981 COLLISION REPAIRS

AUTHORIZED BY: BRIDGE ENGINEER DATE: 1981-11-06
ACCEPTED BY: BRIDGE INSPECTOR DATE:
SCALE: AS SHOWN
DRAWING No. B100-81-02

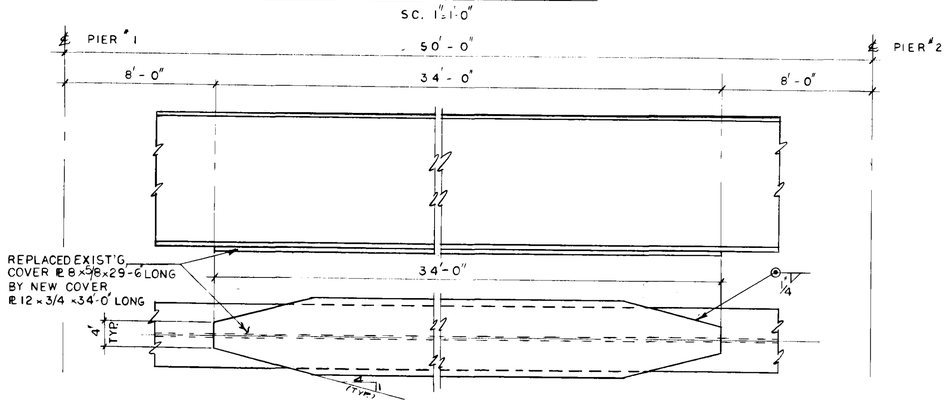
R.C.P.L. 60403-02



BRACE DETAIL
SC. 1"=1'-0"



DIAPHRAGM DETAIL
SC. 1"=1'-0"



COVER PLATE DETAIL
SC. 1"=1'-0"

NOTES:

1. ALL CONNECTORS ARE 3/4" ϕ, A325 BOLTS
2. ALL STEEL CONFORM TO THE REQUIRMENTS OF C.S.A. SPECIFICATIONS G40.21 GRADE 44W.

REID, CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG. R. Klepsey DATE 82-02-08

B-5295-2

NO	REVISIONS	DATE	APP.
2	DWG. NO.	820208	RK
1	AS BUILT	8112-11	bm

Nov 6/81
W.J. Mclean
ENGINEER'S SEAL

Reid, Crowther & Partners Limited
CONSULTING ENGINEERS AND PLANNERS
VANCOUVER CALGARY EDMONTON REGINA WINNIPEG TORONTO OTTAWA WHITEHORSE YELLOWKNIFE RED DEER BRANDON

DESIGNED BY:	DRAWN BY:
B.E.	G.A.S.
CHECKED BY:	DATE:
W.J.M.	81-10-21
APPROVED BY:	DATE:
[signature]	Nov 6/81

THE CITY OF WINNIPEG
WORKS & OPERATIONS DIVISION
STREETS & TRANSPORTATION DEPARTMENT

EMPRESS ST. AND PORTAGE AV. OVERPASS
1981 COLLISION REPAIRS

AUTHORIZED BY: [signature] BRIDGE ENGINEER	DATE: 1981-11-06
ACCEPTED BY: BRIDGE INSPECTOR	DATE:
SCALE: AS SHOWN	DRAWING No. B100-81-03

R.C.P.L. 60403-03

PLANS

OF PROPOSED

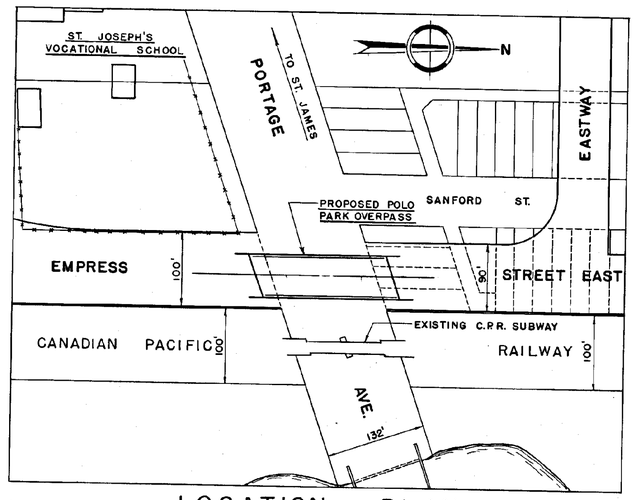
POLO PARK OVERPASS OVER PORTAGE AVENUE

ON

EMPRESS STREET (EAST)

LENGTH:	179'-11¼" c.c. ABUTMENTS
SUPERSTRUCTURE:	FOUR SPAN SIMPLY SUPPORTED STEEL BEAMS COMPOSITE WITH REINFORCED CONCRETE DECK
SUBSTRUCTURE:	REINFORCED CONCRETE ABUTMENTS & PIERS ON PILES
ROADWAY WIDTH:	24'-0" CL. BETWEEN CURB & MEDIAN NORTH & SOUTHBOUND LANES 31'-0" MEDIAN
LOCATION:	LOT 44 PARISH OF ST. JAMES

IN THE
CITY OF WINNIPEG



LOCATION PLAN

CITY OF WINNIPEG
ENGINEERING DEPARTMENT

SUMMARY OF QUANTITIES FOR CONTRACT

1	BANK SILT EXCAVATION	NORTH — 2900 CU. YDS. SOUTH — 1974 CU. YDS. TOTAL = 4874 CU. YDS.
2	EMBANKMENT FILLS	NORTH APPROACH — 5380 CU. YDS. SOUTH APPROACH — 4975 CU. YDS. TOTAL = 10355 CU. YDS.
3	EXCAVATION	3 PIERS (UP TO EXISTING GRADE)
4	SUPPLY & DRIVING PRECAST CONCRETE PILES	30–28'–0" 12" HEXAGONAL PILES — 840 LIN.FT. 30–30'–0" 12" HEXAGONAL PILES — 900 LIN.FT. 30–28'–0" 12" HEXAGONAL PILES — 840 LIN.FT. 11–48'–0" 12" HEXAGONAL PILES — 528 LIN.FT. 7–50'–0" 12" HEXAGONAL PILES — 350 LIN.FT. 11–48'–0" 12" HEXAGONAL PILES — 528 LIN.FT. 7–50'–0" 12" HEXAGONAL PILES — 350 LIN.FT. TOTAL = 4336 LIN.FT.
5	STRUCTURAL CONCRETE	ABUTMENTS — 142.4 CU.YDS. PIER FOOTINGS — 225.3 CU.YDS. PIER SHAFTS — 120.0 CU.YDS. DECK INCLUDING — 320.8 CU.YDS. TOTAL = 808.5 CU.YDS.
6	REINFORCING STEEL	ABUTMENTS 7804.0 LBS. PIER INCLUDING FOOTINGS, COLUMNS & BEAMS 54274.4 LBS. DECK 60348.2 LBS. TOTAL = 122426.6 LBS.
7	ELECTRICAL	3" RIGID GALVANIZED STEEL CONDUIT — 124 LIN.FT. 2" RIGID GALVANIZED STEEL CONDUIT — 181 LIN.FT. EXPANSION SLEEVES — 5 UNITS
8	STRUCTURAL STEEL	GIRDERS & MISC. FRAMING — 105 TONS BEARING PLATES & ANCHOR BOLTS — 12000 LBS.
9	MISCELLANEOUS	STAIR UNITS INCLUDING LANDING — 2 UNITS SILICONE WATERPROOFING — 9550 SQ.FT. RUB FINISHING CONCRETE — 8650 SQ.FT. GUARDRAIL SUPPLY & INSTALL — 370 LIN.FT. PAINT (STEEL & METAL WORK 2 COATS) — LUMP SUM PRICE HANDRAIL. SUPPLY & INSTALL — 360 LIN.FT.

SHEET LEGEND

DESIGN DATA

UNIT STRESSES

f_s 20,000 P.S.I. f'_c 3000 P.S.I.
f_c 1,200 P.S.I. $n = 10$

LIVE LOADING

H-20 S-16 44 TRUCK & LANE LOADING

SPECIFICATIONS

C.S.A. S-6 1952
A.A.S.H.O. SIXTH EDITION

SOIL INFORMATION FOR PILE FOUNDATION

BOTTOM OF PIERS & ABUTS. TO ELEVATION AS SHOWN ON PLANS
SOIL INFORMATION INDICATES THAT REFUSAL IS AT APPROXIMATE ELEV. 694.00 TO 696.50

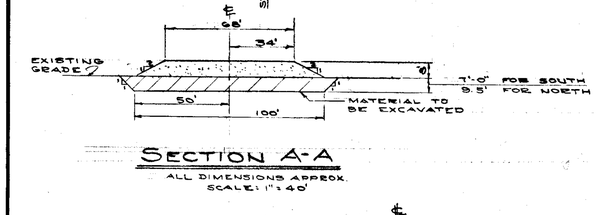
W. L. WARDROP & ASSOCIATES
MANAGEMENT (LTD.)
ENGINEERING CONSULTANTS
WINNIPEG CANADA PORT ARTHUR

REVISIONS			
No.	DESC.	DATE	BY
1	OVERALL LENGTH	JUNE 29/59	T.O.

B-5072-1

JULY 31, 1958 PLAN NO. 5868 (0)

TRIM ALONG THIS LINE ALL AROUND



SECTION A-A

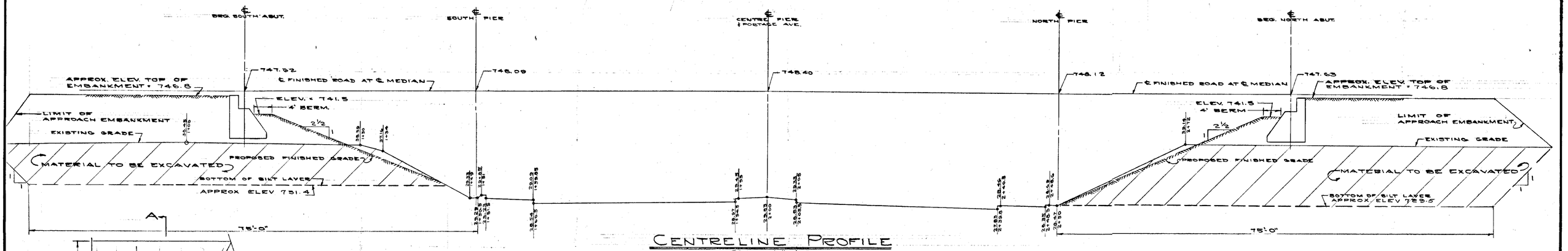
ALL DIMENSIONS APPROX.
SCALE: 1" = 40'

PLAN OF EXISTING SERVICES

SCALE: 1" = 30'-0"

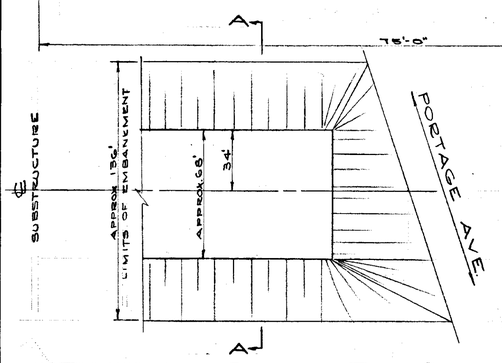
BENCH MARK DESCRIPTION

A BRASS PLUG SET IN CONCRETE 0.85 FEET NORTH OF SOUTH HANDRAIL AND 23.3 FEET WEST OF EAST END OF SOUTH HANDRAIL.
ELEVATION 733.147 CITY DATUM.



CENTRELINE PROFILE

SCALE: 1/8" = 1'-0"



PLAN OF SOUTH EMBANKMENT

NORTH EMBANKMENT SIMILAR
SCALE: 1" = 40'-0"

GENERAL NOTES

1. OVERPASS CONTRACTOR TO EXCAVATE LAYER OF UNDESIRABLE MATERIAL AT EACH END OF STRUCTURE. THIS LAYER IS APPROXIMATELY 9'-0" DEEP AT NORTH APPROACH AND 11'-0" DEEP AT SOUTH APPROACH.
2. AREA OF UNDESIRABLE MATERIAL TO BE EXCAVATED AS PER SKETCH SHOWN ON THIS SHEET. BACKFILL WITH APPROVED STRIPPING MATERIAL FROM BIRDS HILL COMPACTED AS SPECIFIED UNDER EXCAVATION SPECIFICATIONS.
3. APPROACH EMBANKMENT CONSTRUCTION TO BE COMPLETED UP TO UNDERSIDE OF ABUTMENTS BEFORE ABUTMENT CONSTRUCTION COMMENCES. REMAINDER OF APPROACH EMBANKMENT TO BE COMPLETED AFTER ABUTMENTS ARE CONSTRUCTED.
4. OVERPASS CONTRACTOR TO FILL TO FINISHED GRADES OF STRUCTURE AND TRIM ALL SLOPES TO THE LINES AND GRADES SHOWN.
5. STEEL SHEET PILING SHALL BE USED ON THE SIDES OF ALL PIER FOOTING EXCAVATIONS TO PREVENT SETTLEMENT OF PAVING ON PORTAGE AVENUE. REMOVE SHEET PILING AFTER CONCRETE IS PLACED IN PIERS.
6. ALL OVERHEAD LINES AND POLES TO BE RELOCATED WHERE NECESSARY BY OTHERS.
7. EMBANKMENT TOPSOIL & SODDING TO BE PLACED BY THE CITY OF WINNIPEG.

REVISIONS			
No.	DESC.	DATE	BY
1	SECTION A-A CHANGED	AUG 20 1958	T.O.

PROVINCE OF MANITOBA
R. W. McKNIGHT
REGISTERED ENGINEER

B-5072-2

W. L. WARDROP & ASSOCIATES
(MANAGEMENT) LTD.
ENGINEERING CONSULTANTS
WINNIPEG CANADA

LOCATION OF EXISTING SERVICES AND CENTRELINE PROFILE

PORTAGE AVENUE OVERPASS
POLO PARK DEVELOPMENT

Scale: AS SHOWN	Date: JULY 31, 1958
Designed By: R.W.M.K. & H.A.K.	Project No. 5568
Drawn By: T.O.	Drawing No. 1
Checked By: R.W.M., H.A.K., H.E.M.	

LIGHT STANDARD

SEE DETAIL OF GUARD RAIL ON DRAWING No 11

APPROX. ELEV. TOP OF EMBANKMENT = 746.8

SOUTH ABUTMENT ELEVATION 739.19

EXISTING GROUND

PROPOSED FIN. GRADE

SOUTH LANE

NORTH LANE

APPROX. ELEV. TOP OF EMBANKMENT = 7..

NORTH ABUTMENT ELEVATION 739.20

EXISTING GROUND

PROPOSED FINISHED GRADE

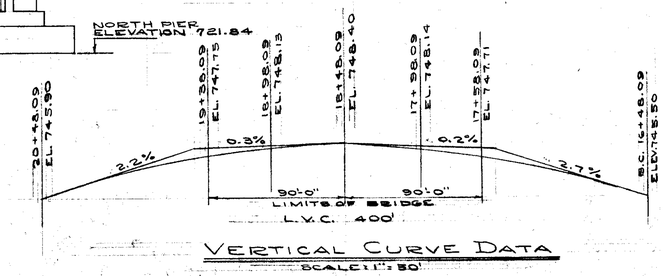
SOUTH PIER ELEVATION 721.63

CENTRE PIER ELEVATION 722.00

NORTH PIER ELEVATION 721.84

EAST ELEVATION

SCALE 1/8" = 1'-0"



VERTICAL CURVE DATA

SCALE 1" = 50'

NOTE:
FOR PEDESTRIAN WALKWAY DETAILS SEE DWG. No 11
WALK WAYS REQ'D ON BOTH EMBANKMENTS ON WEST SIDE.

BRG. SOUTH ABUT.

SOUTH PIER

SOUTH LANE

PORTAGE AVE.

OUTSIDE GIRDER CLEARANCE CONTROL POINT

CENTRE PIER

NORTH LANE

NORTH PIER.

BRG. NORTH ABUT.

SIDEWALK

SIDEWALK

EXPANSION

FIXED

EXPANSION

FIXED

FIXED

EXPANSION

FIXED

EXPANSION

179'-11 1/4" C. TO C. ABUTMENT BEARINGS

11 5/8"

11 5/8"

18° 28'

71° 32'

40'-0"

50'-0"

49'-11 1/4"

40'-0"

2'-0"

LIGHT STANDARD SEE DETAIL DRAWING No 9

MEDIAN

MEDIAN

24'-0" ROADWAY 31'-4 1/2"

1'-6"

1'-6"

53'-2" O. TO O. OF DECK

24'-0" ROADWAY 27'-9 1/2"

STATION 19+35.09
FINISHED PAVING ELEVATION 747.66
(THEORETICAL ℄ & MEDIAN)

STATION 18+35.09
FINISHED PAVING ELEVATION 748.09
(THEORETICAL ℄ & MEDIAN)

STATION 18+45.09 ℄ PORTAGE AVENUE ℄

FINISHED PAVING ELEVATION 748.40
(THEORETICAL ℄ & MEDIAN)

STATION 17+98.09
FINISHED PAVING ELEVATION 748.12
(THEORETICAL ℄ & MEDIAN)

STATION 17+58.09
FINISHED PAVING ELEVATION 747.63
(THEORETICAL ℄ & MEDIAN)

37'-11 3/16"

47'-5"

47'-4 3/8"

37'-11 3/16"

5 5/8"

4 PANELS AT 9'-11"

10"

6"

5 - PANELS @ 10'-0"

6"

HANDRAIL LAYOUT SAME FOR OTHER SIDE.
4 - PANELS @ 10'-0"

9'-11 1/4"

10"

4 PANELS @ 9'-11"

5 5/8"

DECK PLAN

SCALE 1/8" = 1'-0"

B-5072-3

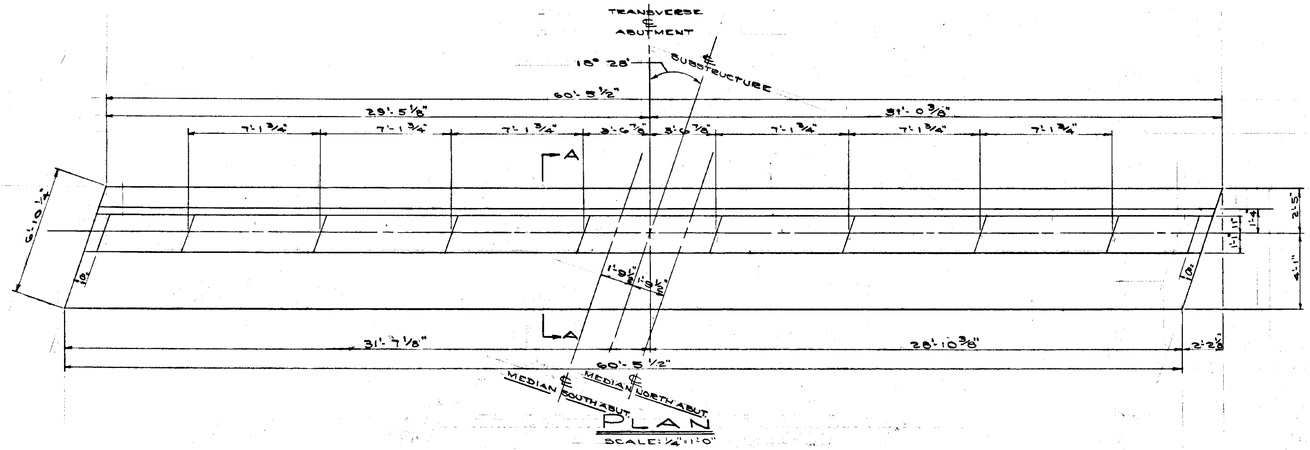
REVISIONS			
No.	DESC.	DATE	BY
1.	CHANGED VERTICAL CURVE DATA	AUG. 20 1958	T.O.
2.	CHANGED POSITION OF LIGHT ST'D	"	T.O.
3.	HANDRAIL SPACING CHANGED	JUNE 1959	T.O.
4.	OVERALL LENGTH	"	T.O.

PROVINCE OF MANITOBA
R. W. McKNIGHT
REGISTERED ENGINEER

W. L. WARDROP & ASSOCIATES
(MANAGEMENT) LTD.
ENGINEERING CONSULTANTS
WINNIPEG CANADA

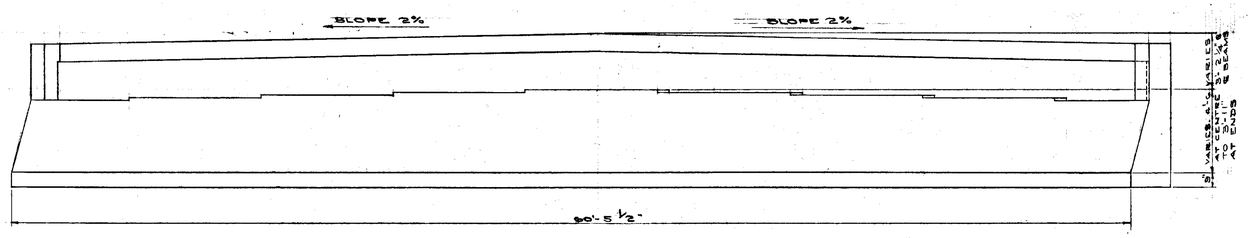
DECK PLAN AND ELEVATION OF STRUCTURE
PORTAGE AVENUE OVERPASS
POLO PARK DEVELOPMENT

Scale: AS SHOWN	Date: JULY 31 1958
Designed By: R.W.McK.	Project No. 5868
Drawn By: T.O. & A.R.	Drawing No. 2
Checked By: R.W.M., W.R.W., H.G.W.	



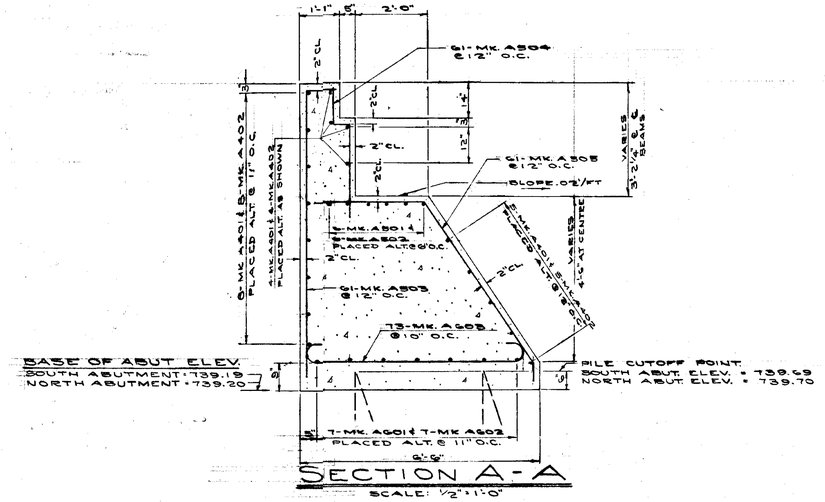
PLAN

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



FRONT ELEVATION

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

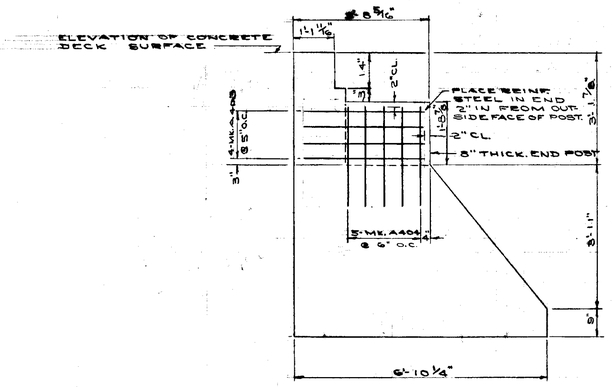


BASE OF ABUT ELEV.
SOUTH ABUTMENT - 739.18
NORTH ABUTMENT - 739.20

PILE CUTOFF POINT
SOUTH ABUT. ELEV. = 739.68
NORTH ABUT. ELEV. = 739.70

SECTION A-A

SCALE: 1/2" = 1'-0"

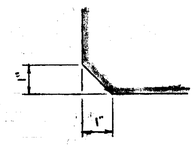


END ELEVATION

SHOWING END POST REINFORCING.

SCALE: 1/2" = 1'-0"

NOTE:
END POSTS TO BE POURED MONOLITHICALLY WITH ABUTMENT.



DETAIL OF CHAMFER

ALL EXPOSED EDGES TO BE CHAMFERED 1"

NOTES:
1. SEE DWG NO 3 FOR PILE LAYOUT.
2. ALL EXPOSED CONCRETE SURFACES ABOVE GROUND SHALL BE RUB FINISHED

B-5072-5

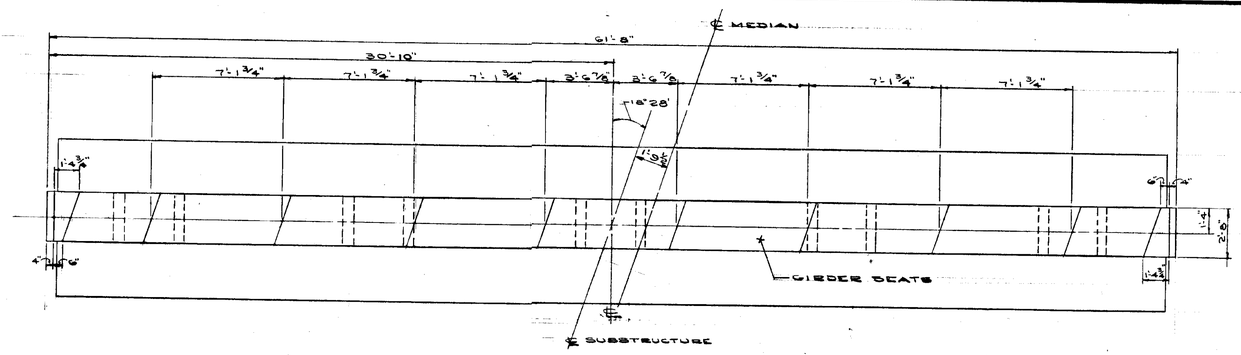
PROVINCE OF MANITOBA
R. W. McKNIGHT
REGISTERED ENGINEER

W. L. WARDROP & ASSOCIATES
(MANAGEMENT) LTD.
ENGINEERING CONSULTANTS
WINNIPEG CANADA

ABUTMENT DETAILS

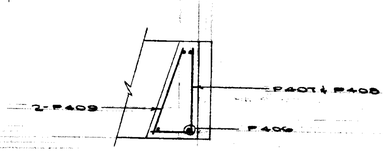
PORTAGE AVENUE OVERPASS
POLO PARK DEVELOPMENT

Scale: AS SHOWN	Date: JULY 31, 1958
Designed By: H. A. K.	Project No. 5868
Drawn By: T. O.	Drawing No. 4
Checked By: R.W.M. 7/12/58 H.B.M.	

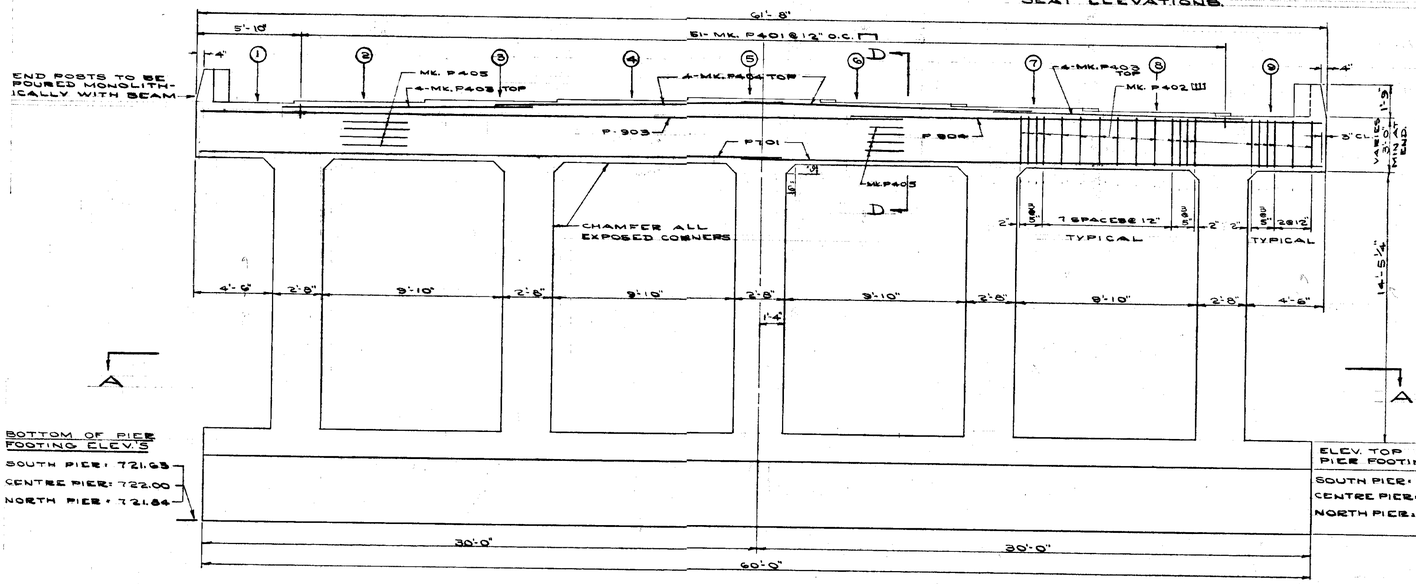


PLAN

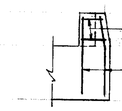
NOTE:
SEE DWG. No 6 "BRIDGE SEAT ELEVATIONS" FOR PIER SEAT ELEVATIONS.



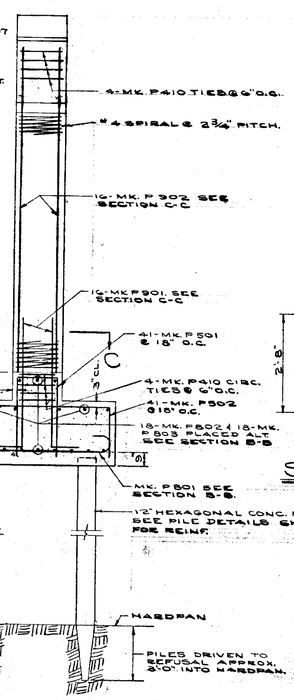
PLAN

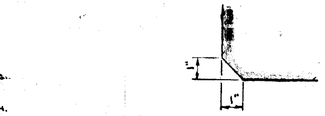


SOUTH ELEVATION

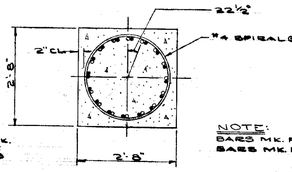


ELEV.
SHOWING END POST REINF.





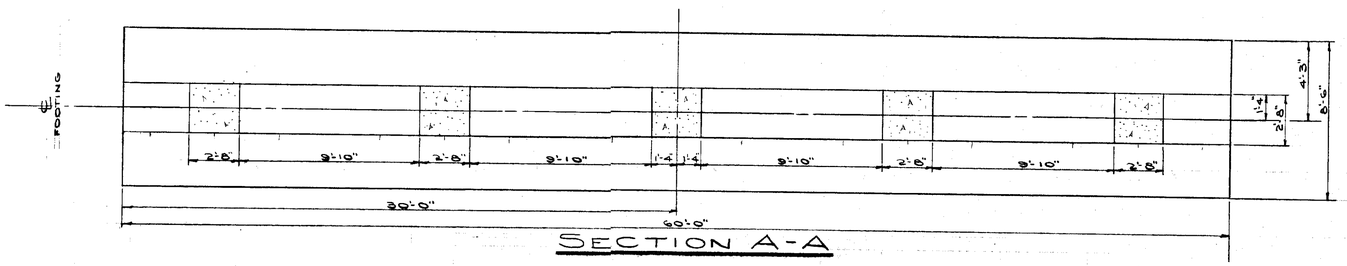
DETAIL OF CHAMFER
ALL EXPOSED EDGES TO BE CHAMFERED 1"



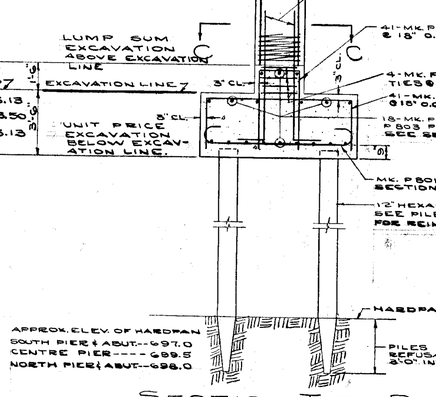
NOTE:
BARS MK. P 501 SHOWN THUS ----o
BARS MK. P 502 SHOWN THUS ---•

SECTION C-C
SCALE: 1/2" = 1'-0"

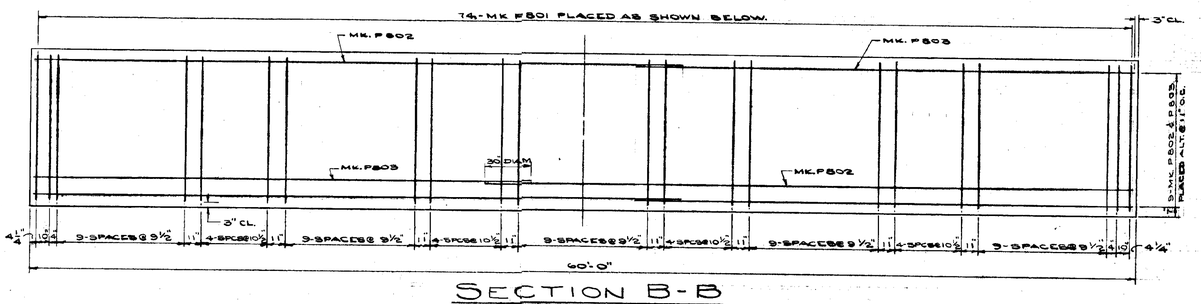
NOTE:
1. SEE DWG. No 3 FOR PILE LAYOUT DETAILS.
2. ALL EXPOSED CONCRETE SURFACES ABOVE GROUND SHALL BE RUB FINISHED.



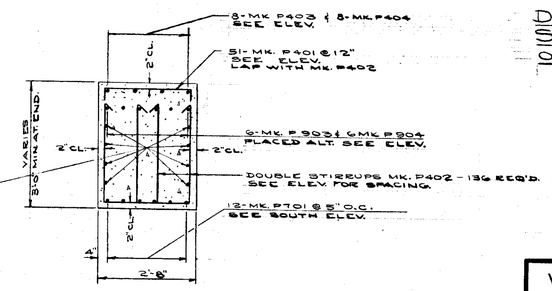
SECTION A-A



SECTION THRU PIER



SECTION B-B
SHOWING REINFORCING IN BOTTOM OF FOOTING



SECTION D-D
SCALE: 1/2" = 1'-0"

DIMENSIONS & REINFORCING STEEL SIMILAR FOR EACH OF THREE PIERS.

B-5072-6

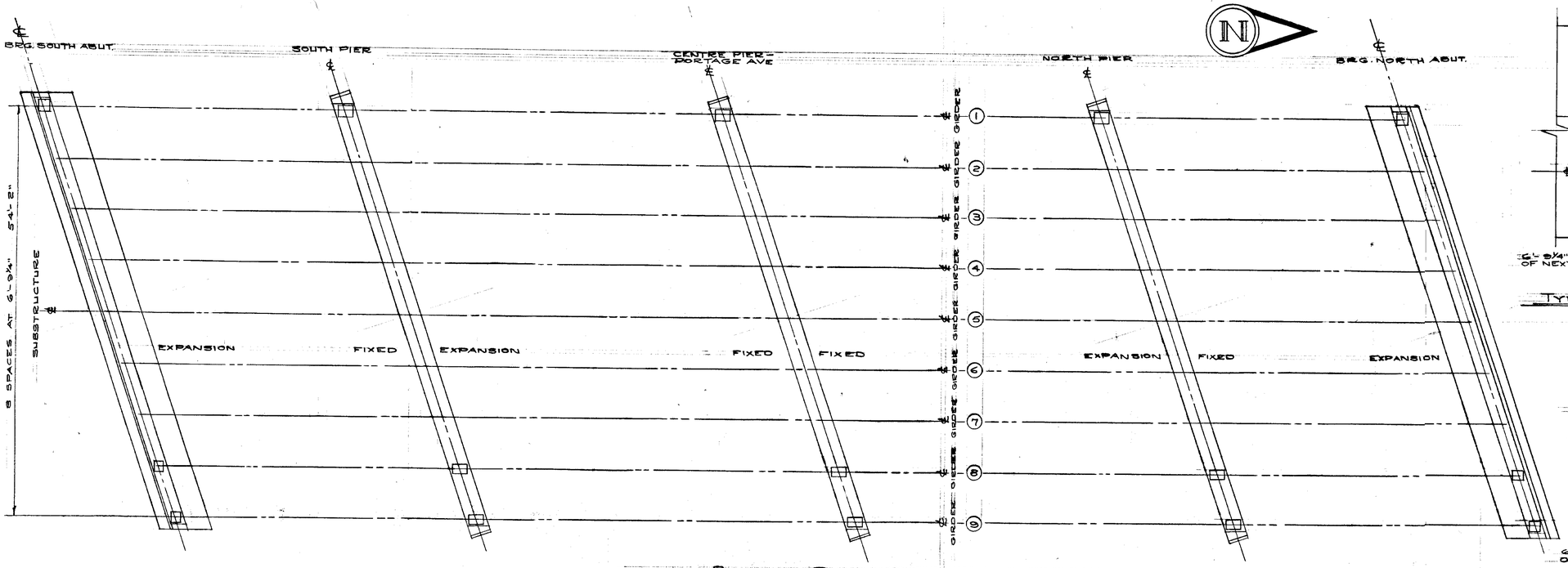
W. L. WARDROP & ASSOCIATES
(MANAGEMENT) LTD.
ENGINEERING CONSULTANTS
WINNIPEG CANADA

PIER DETAILS

PORTAGE AVENUE OVERPASS
POLO PARK DEVELOPMENT

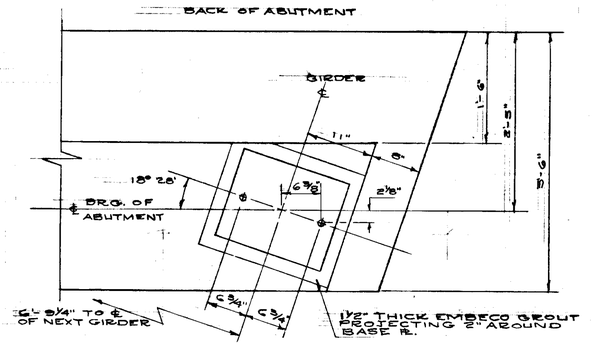
Scale: 1/4" = 1'-0" UNLESS OTHERWISE NOTED.	Date: JULY 21, 1958
Designed By: R.W. McK	Project No. 5868
Drawn By: T.O.	Drawing No. 5
Checked By: R.W.M. N.G.W.	

PROVINCE OF MANITOBA
R. W. McKNIGHT
REGISTERED ENGINEER



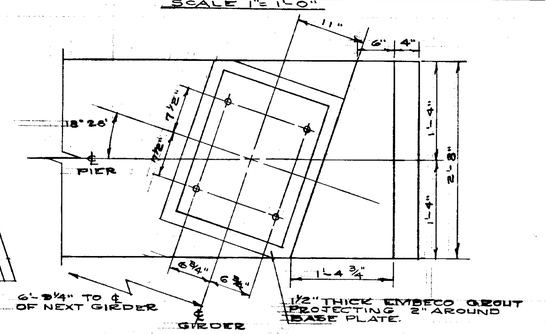
Bearing Plate Layout

SCALE 1/8" = 1'-0"



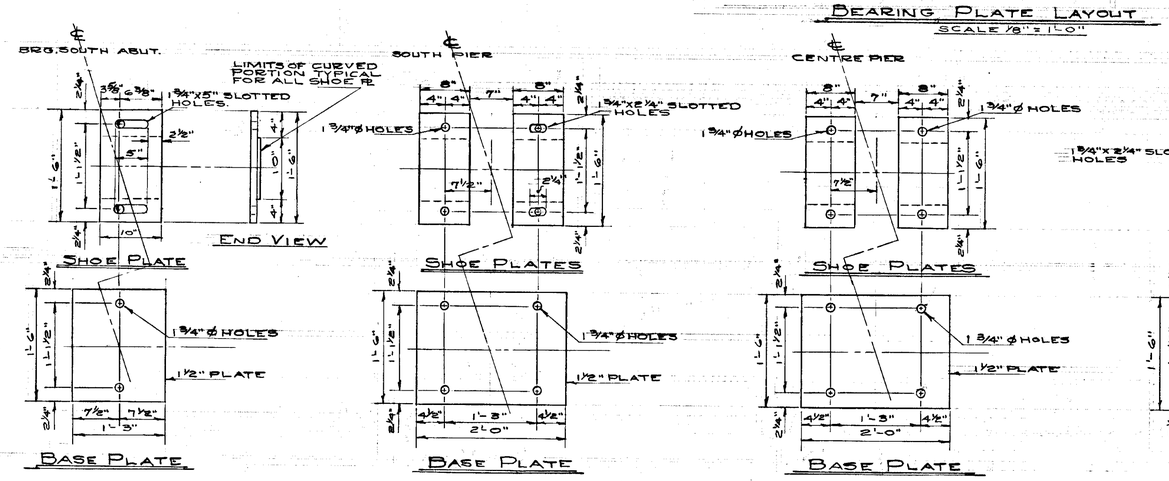
Typical Anchor Bolt Detail for Abutment

SCALE 1" = 1'-0"



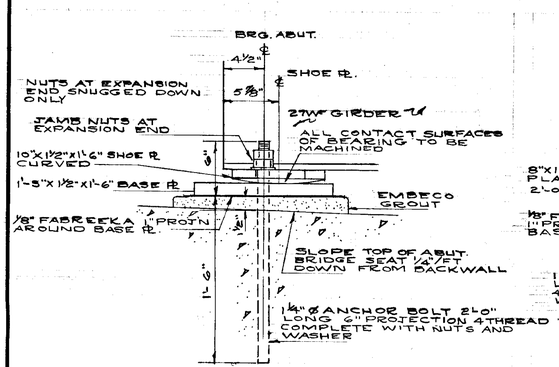
Typical Anchor Bolt Detail for Pier

SCALE 1" = 1'-0"



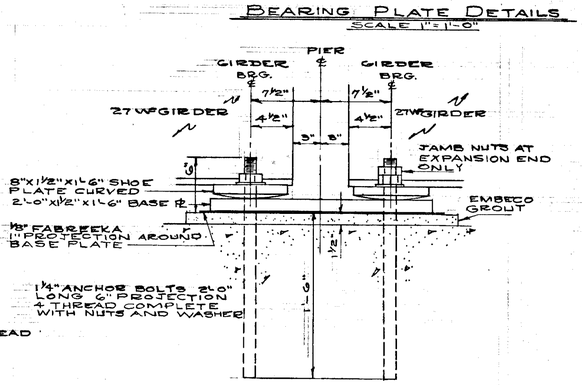
Bearing Plate Details

SCALE 1" = 1'-0"



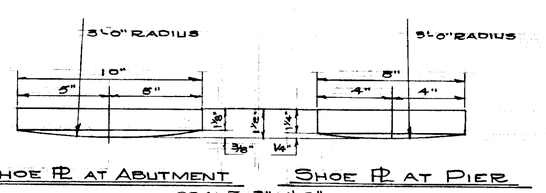
Bearing at Abutments

SCALE 1½" = 1'-0"



Bearing at Piers

SCALE 1½" = 1'-0"



Shoe Pl. at Abutment — Shoe Pl. at Pier

SCALE 3" = 1'-0"

General Notes.

1. GIRDER SEATS SET AT REQUIRED ELEVATION BY GENERAL CONTRACTOR
2. GENERAL CONTRACTOR TO SET ANCHOR BOLTS WHEN CONCRETE IS PLACED
3. GENERAL CONTRACTOR TO PROVIDE LABOR AND GROUT FOR SETTING BASE PLATES UNDER SUPERVISION OF STEEL CONTRACTOR
4. NUTS AT EXPANSION END TO BE SNUGGED UP ONLY AND A JAMB NUT USED.
5. ALL BEARING PLATES SHALL BE WELDED TO GIRDER FLANGES WITH A ⅜" FILLET WELD FULL LENGTH ON BOTH SIDES OF FLANGE
6. ALL CONTACT SURFACES OF BEARING TO BE MACHINED
7. FABREEKA SUPPLIED AND PLACED BY STEEL CONTRACTOR.
8. GENERAL CONTRACTOR TO USE A TEMPLATE TO ENSURE ACCURATE PLACING OF ANCHOR BOLTS. TYPE OF TEMPLATE USED & METHOD OF HOLDING BOLTS IN PLACE DURING CONC. POURING WILL BE SUBJECT TO APPROVAL OF THE ENGINEER.
9. POSITIONS OF ANCHOR BOLTS IN SLOTTED HOLES OF SHOE PLATES SHOWN ARE CALCULATED FOR A TEMPERATURE OF 50°F.
10. ANCHOR BOLTS TO BE SUPPLIED BY STEEL CONTRACTOR TO MEET GENERAL CONTRACTORS SCHEDULE FOR PLACING.

Girder Seat Elevations

(UNDERSIDE OF FABREEKA)

GIRDER	SOUTH ABUTMENT	SOUTH PIER	CENTER PIER	NORTH PIER	NORTH ABUTMENT
①	743.67	744.19	744.56	744.40	743.87
②	743.85	744.36	744.70	744.51	744.06
③	744.02	744.51	744.85	744.68	744.17
④	744.18	744.67	744.89	744.75	744.28
⑤	744.34	744.82	745.15	744.86	744.58
⑥	744.52	744.78	745.07	744.77	744.27
⑦	744.22	744.67	744.93	744.62	744.11
⑧	744.11	744.55	744.79	744.46	743.94
⑨	744.00	744.43	744.64	744.31	743.77

B-5072-8

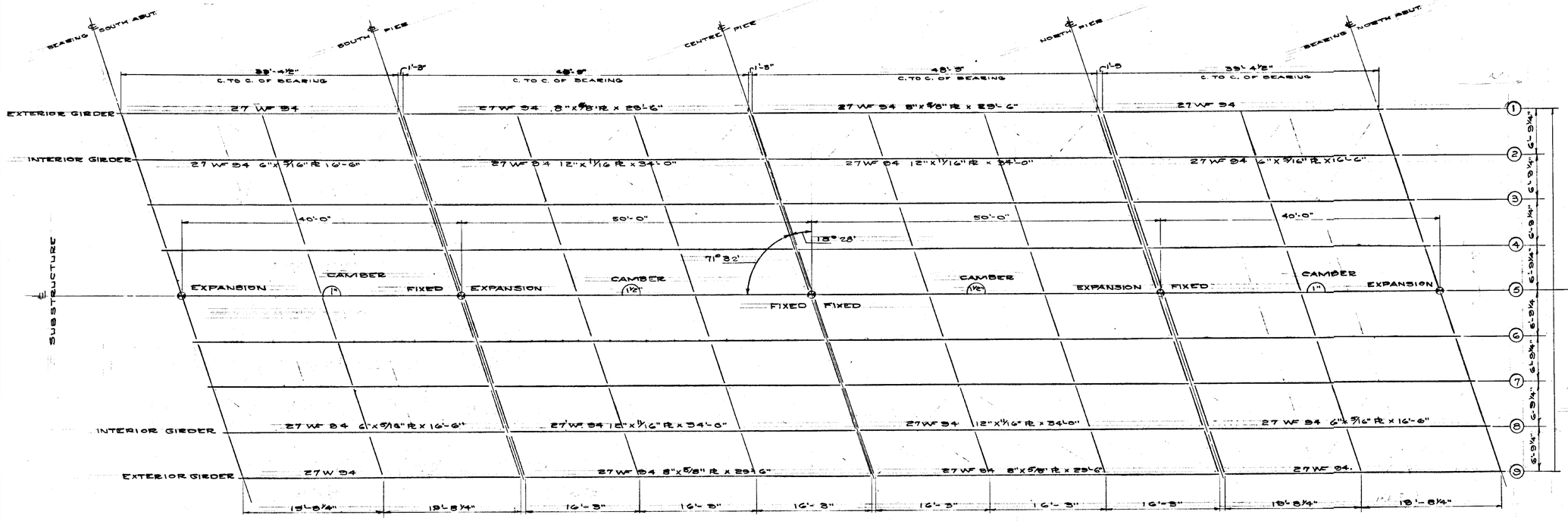
PROVINCE OF MANITOBA
R. W. McKNIGHT
REGISTERED ENGINEER

W. L. WARDROP & ASSOCIATES
(MANAGEMENT) LTD.
ENGINEERING CONSULTANTS
WINNIPEG CANADA

Bearing Plate Layout & Details

PORTAGE AVENUE OVERPASS
POLO PARK DEVELOPMENT

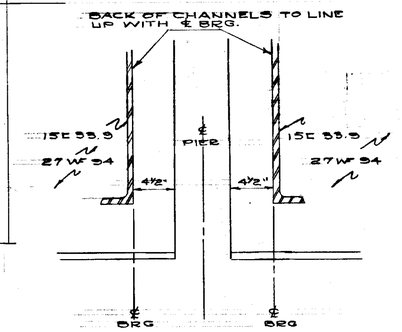
Scale: AS SHOWN	Date: JULY 31, 1958
Designed By: H.A.K.	Project No. 58 68
Drawn By: A.B.	Drawing No. 7
Checked By: R.W.M., R.W.X., H.B.M.	



STEEL FRAMING PLAN

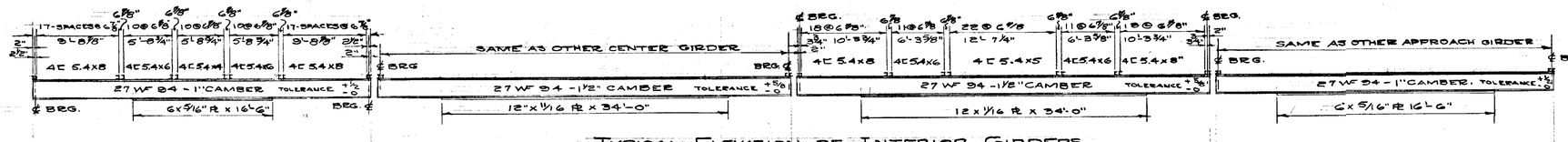
SCALE ⅛" = 1'-0"

NOTE:
ALL DIAPHRAGMS TO BE 15 C 33.9 BACK OF CHANNELS TO CORRESPOND WITH ℄ OF BRG. AT END OF GIRDERS



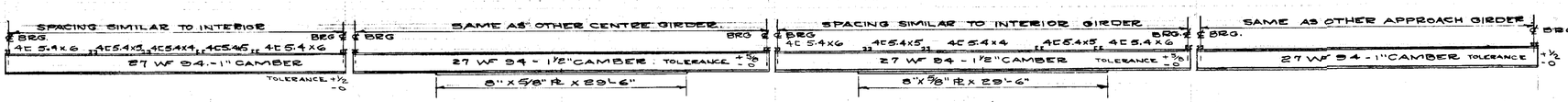
DIAPHRAGM LOCATION DETAIL

SCALE 1½" = 1'-0"



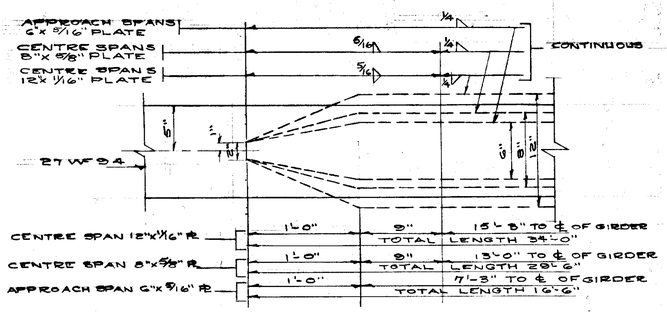
TYPICAL ELEVATION OF INTERIOR GIRDERS

SCALE ⅛" = 1'-0"



TYPICAL ELEVATION OF EXTERIOR GIRDERS

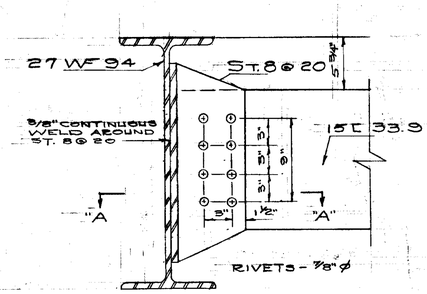
SCALE ⅛" = 1'-0"



COVER PLATE DETAILS

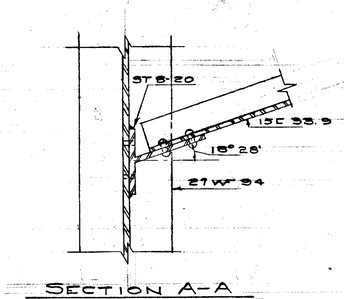
SCALE 1½" = 1'-0"

NOTE:
BOTH ENDS OF COVER PLATE SIMILAR



DIAPHRAGM DETAIL

SCALE 1½" = 1'-0"



SECTION A-A

SCALE 1½" = 1'-0"

GENERAL NOTES

1. MATERIAL SHALL COMPLY WITH CSA. SPECIFICATIONS SG-1955
2. ALL WELDING SHALL CONFORM WITH THE FOLLOWING CODES
   CSA W47-1947 WELDING QUALIFICATION CODE FOR APPLICATION TO FABRICATING AND CONTRACTING FIRMS.
   CSA W48-1-1955 MILD STEEL ARC WELDING ELECTRODES (3RD EDITION)
   CSA W59-1954 WELDING OF STEEL STRUCTURES
   AWS-D 2.0-56 STANDARD SPECIFICATIONS FOR WELDED HIGHWAY AND RAILWAY BRIDGES
3. DO NOT PAINT STEEL THAT COMES IN CONTACT WITH CONCRETE
4. SHOP CONNECTIONS SHALL BE WELDED FIELD CONNECTIONS SHALL BE RIVETTED. ALL RIVETS ⅞" DIA.
5. PLACE MILL CAMBER IN GIRDERS AS SHOWN.
6. fs FOR STRUCTURAL STEEL 20,000 P.S.I.

B-5072-9

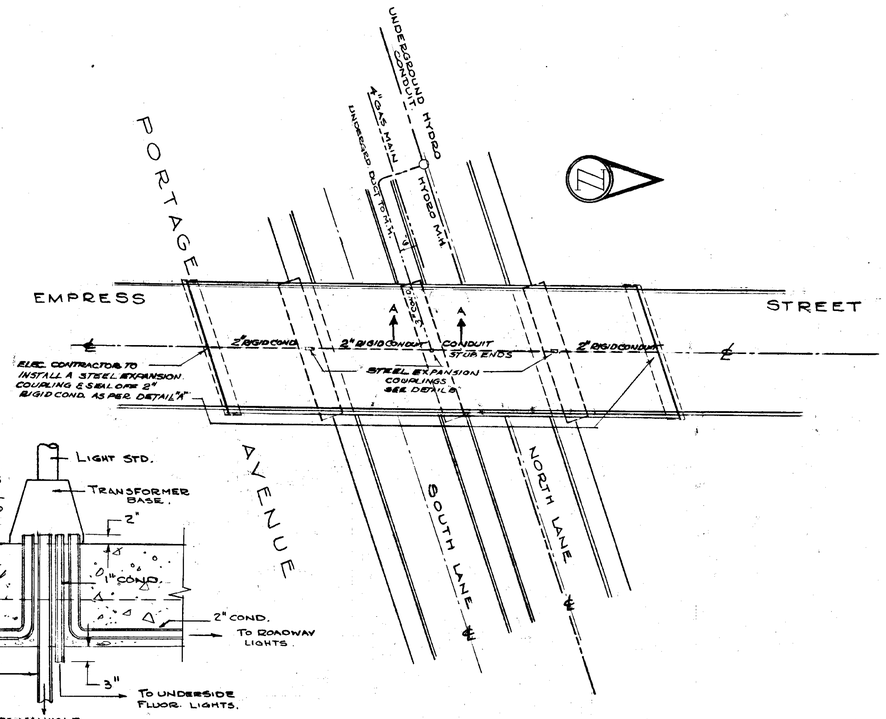
W. L. WARDROP & ASSOCIATES
(MANAGEMENT) LTD.
ENGINEERING CONSULTANTS
WINNIPEG CANADA

STRUCTURAL STEEL LAYOUT & DETAILS

PORTAGE AVENUE OVERPASS
POLO PARK DEVELOPMENT

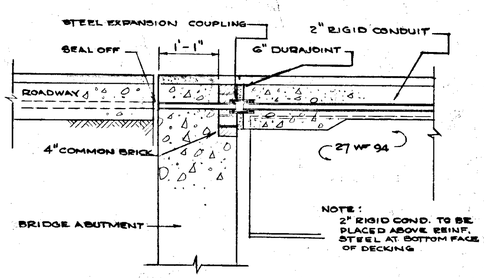
Scale: AS SHOWN	Date: JULY 31 1958
Designed By: HAK. RWM°K	Project No. 5868
Drawn By: AR.	Drawing No. 8
Checked By: RWM HAK, HCM.	

PROVINCE OF MANITOBA
R. W. McKNIGHT
REGISTERED ENGINEER

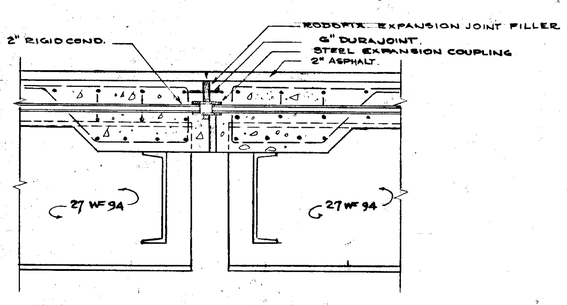


SITE PLAN
CONDUIT LAYOUT
1" = 30'-0"

DETAIL - SECT. A-A
1" = 1'-0"

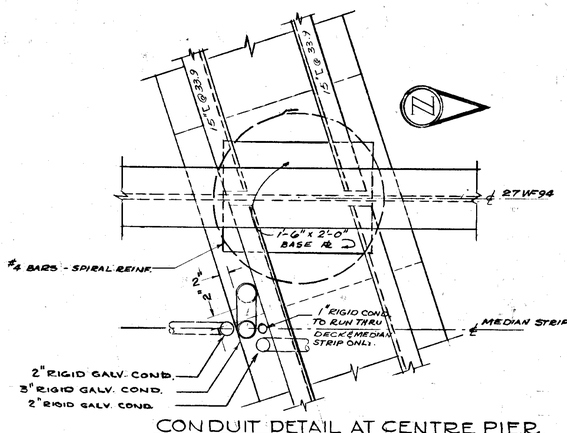


DETAIL "A"
EXPANSION COUPLING
3/4" = 1'-0"



DETAIL "B"
EXPANSION COUPLING
1" = 1'-0"

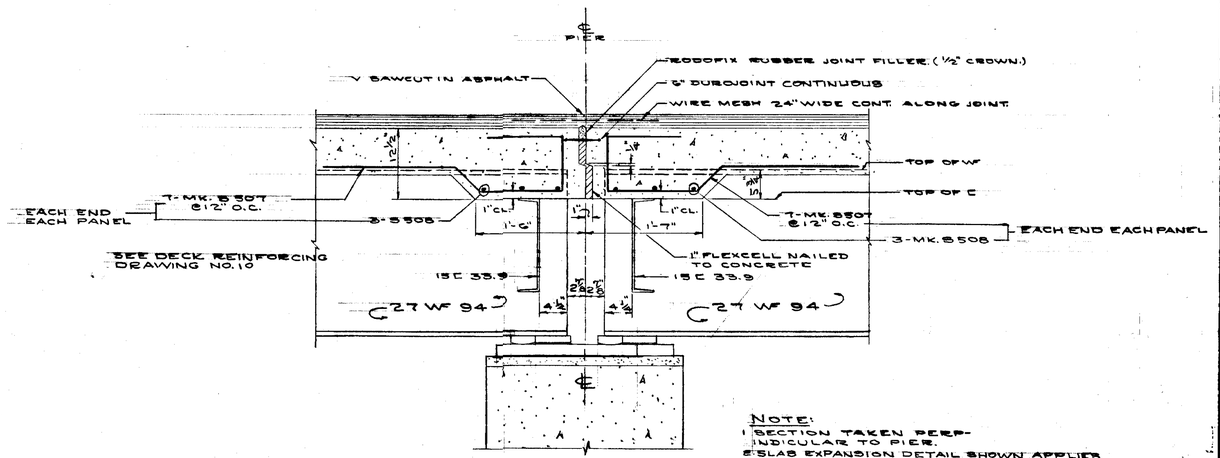
NOTE:
LUBRICATE ONE END ONLY OF STEEL EXPANSION COUPLING AT EACH EXPANSION JOINT TO PREVENT BONDING TO CONCRETE.



CONDUIT DETAIL AT CENTRE PIER
1" = 1'-0"

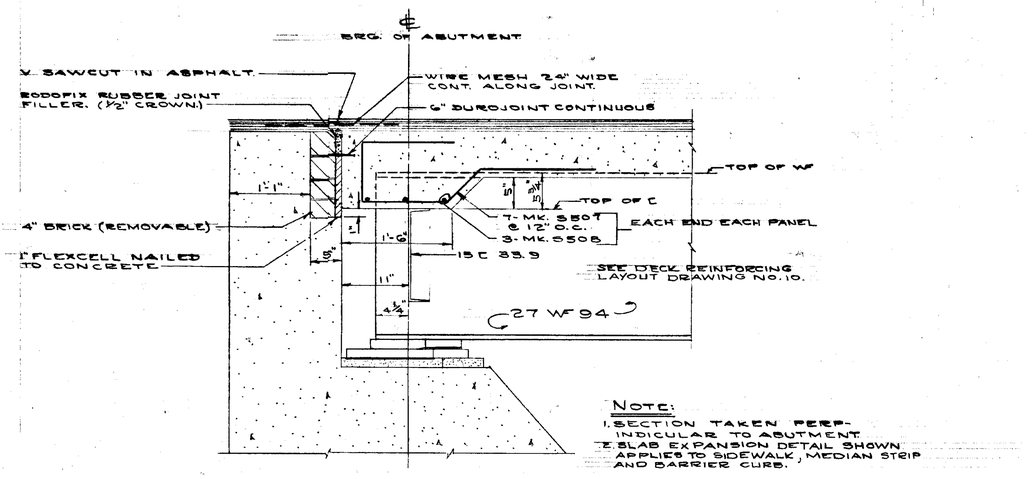
NOTE:
1. 3" RIGID COND. TO BE LAID IN CONCRETE DUCT 9" x 9" WITH MIN. COVER OF 3" CONC. FROM ℄ PIER TO UTILITY M.H.
2. DUCT TO BE INSTALLED APPROX. 4'-6" BELOW GRADE. EXACT LOCATION OF M.H. ENTRANCE TO BE DETERMINED BY POWER UTILITY DURING CONSTRUCTION.

ELECTRICAL DETAILS



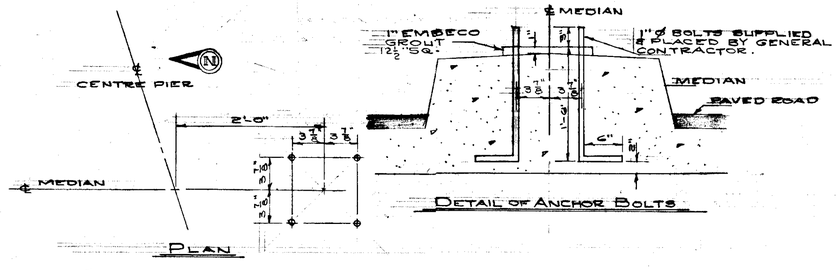
NOTE:
1. SECTION TAKEN PERPENDICULAR TO PIER.
2. SLAB EXPANSION DETAIL SHOWN APPLIES TO SIDEWALK, MEDIAN STRIP AND BARRIER CURB.

DECK BEAM & EXPANSION
DETAILS AT PIER
SLAB REINF NOT SHOWN
SCALE: 1" = 1'-0"



NOTE:
1. SECTION TAKEN PERPENDICULAR TO ABUTMENT.
2. SLAB EXPANSION DETAIL SHOWN APPLIES TO SIDEWALK, MEDIAN STRIP AND BARRIER CURB.

DECK BEAM & EXPANSION
DETAILS AT ABUTMENT
SLAB REINF NOT SHOWN.
SCALE: 1" = 1'-0"



LOCATION OF ANCHOR BOLT FOR LIGHT STANDARD
SCALE 1" = 1'-0"

REVISIONS			
No.	DESC.	DATE	BY
1	ANCHOR BOLT SPACING CHANGED	AUG. 25/58	T.O.
2	DIAPHRAGM DIMENSIONS	JUNE 1959	T.O.

B-5072-10

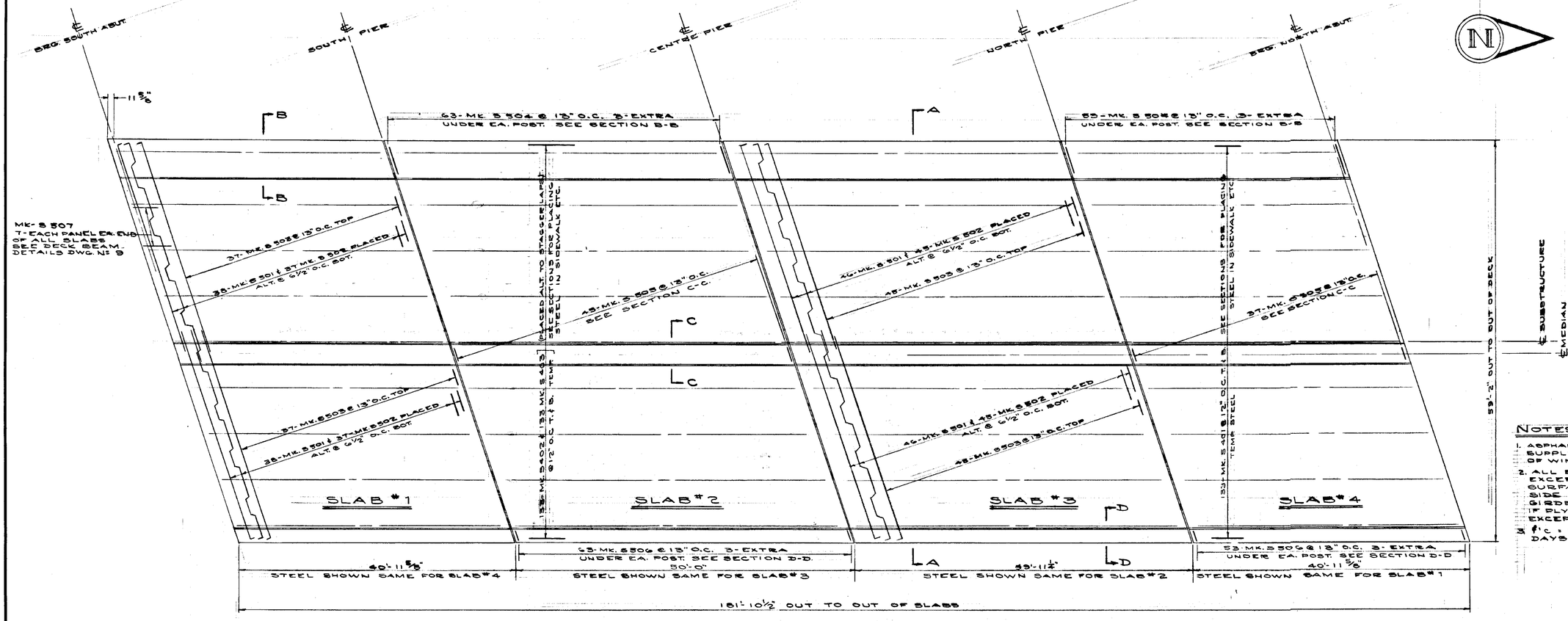
PROVINCE OF MANITOBA — K. A. HAND — REGISTERED ENGINEER

PROVINCE OF MANITOBA — R. W. McKNIGHT — REGISTERED ENGINEER

W. L. WARDROP & ASSOCIATES
(MANAGEMENT) LTD.
ENGINEERING CONSULTANTS
WINNIPEG CANADA

EXPANSION, ELECTRICAL & DECK DETAILS
PORTAGE AVENUE OVERPASS
POLO PARK DEVELOPMENT

Scale: AS SHOWN.	Date: JULY 31, 1958
Designed By: R.W.M^K & K.A.H	Project No. 5868
Drawn By: R.B. & T.O.	Drawing No. 9
Checked By: R.W.M., K.A.H., H.B.M.	

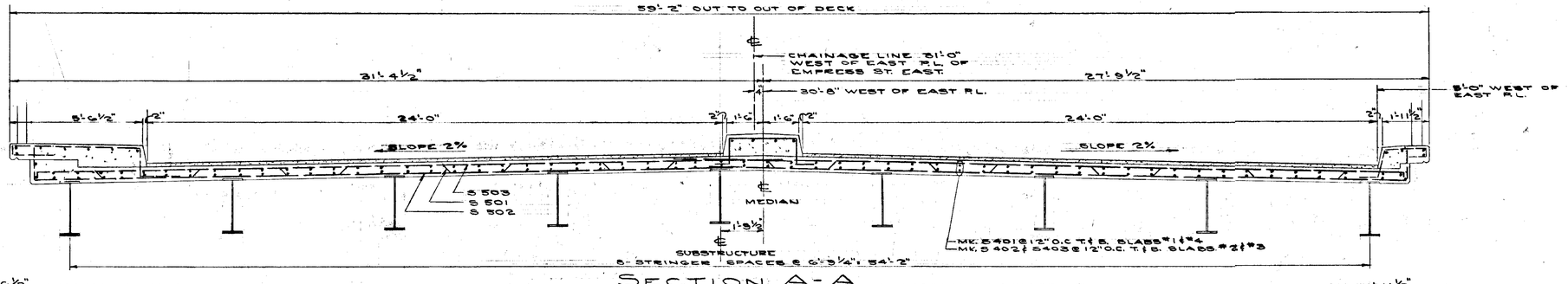


DECK PLAN REINFORCING

SCALE: ⅛" = 1'-0"

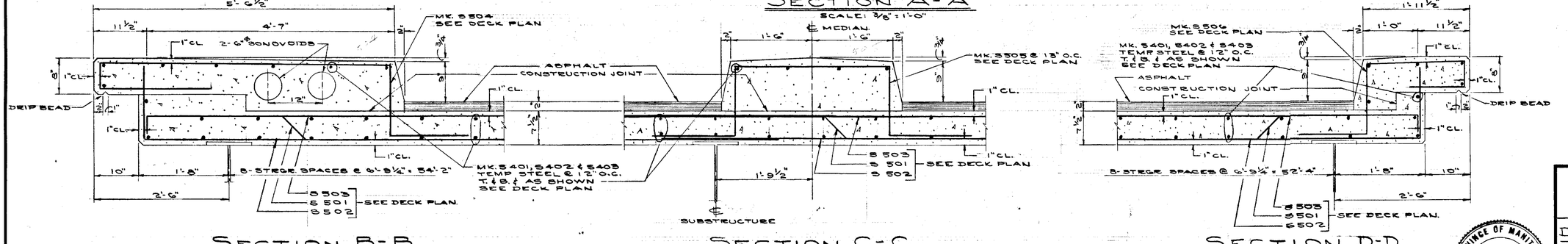
NOTES:

1. ASPHALT WEARING SURFACE SHALL BE SUPPLIED AND PLACED BY THE CITY OF WINNIPEG.
2. ALL EXPOSED CONCRETE SURFACES EXCEPT ROADWAY SURFACE & SIDEWALK SURFACE TO BE RUBBFINISHED. UNDERSIDE OF DECK BETWEEN EXTERIOR GIRDERS NEED NOT BE RUBFINISHED IF PLYWOOD LINED FORMS ARE USED, EXCEPT AS A CORRECTIVE MEASURE.
3. f'c = MINIMUM 3750 P.S.I. AT 28 DAYS FOR DECK CONCRETE.



SECTION A-A

SCALE: ⅜" = 1'-0"



SECTION B-B

SHOWING SIDEWALK DETAIL
SCALE: 1" = 1'-0"

SECTION C-C

SHOWING SECTION THRU MEDIAN.
SCALE: 1" = 1'-0"

SECTION D-D

SHOWING SECTION THRU BARRIER CURB.
SCALE: 1" = 1'-0"

REVISIONS			
No.	DESC.	DATE	BY
1	Length Bal Castle & North Pier & overall Length	June 1959	T.O.

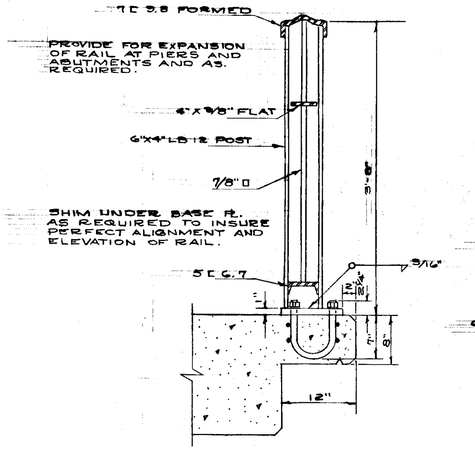
B-5072-11

PROVINCE OF MANITOBA
R. W. McKNIGHT
REGISTERED ENGINEER

W. L. WARDROP & ASSOCIATES
(MANAGEMENT) LTD.
ENGINEERING CONSULTANTS
WINNIPEG CANADA

DECK REINFORCING LAYOUT
PORTAGE AVENUE OVERPASS
POLO PARK DEVELOPMENT

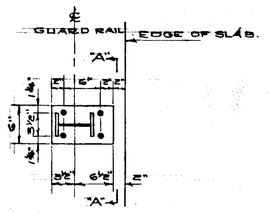
Scale: AS SHOWN	Date: JULY 31, 1958
Designed By: E.W. McK.	Project No. 5868
Drawn By: T.O.	Drawing No. 10
Checked By: R.W.M.	



POST DETAIL FOR GUARD RAIL

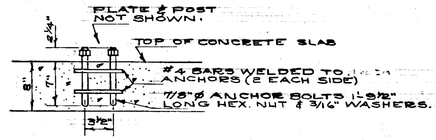
SCALE 1"=1'-0

NOTE:
SEE DRAWING NO. 2. FOR LAYOUT OF HANDRAIL PANELS



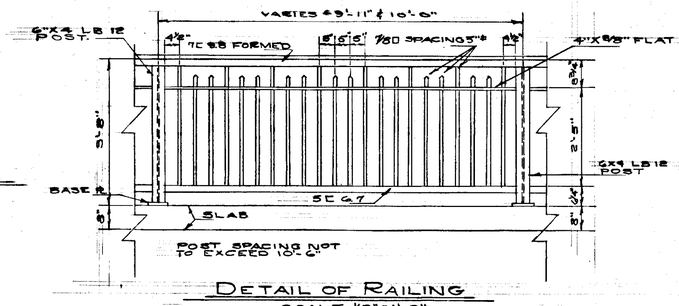
BASE PLATE DETAIL

SCALE 1"=1'-0"



SECTION "A-A"

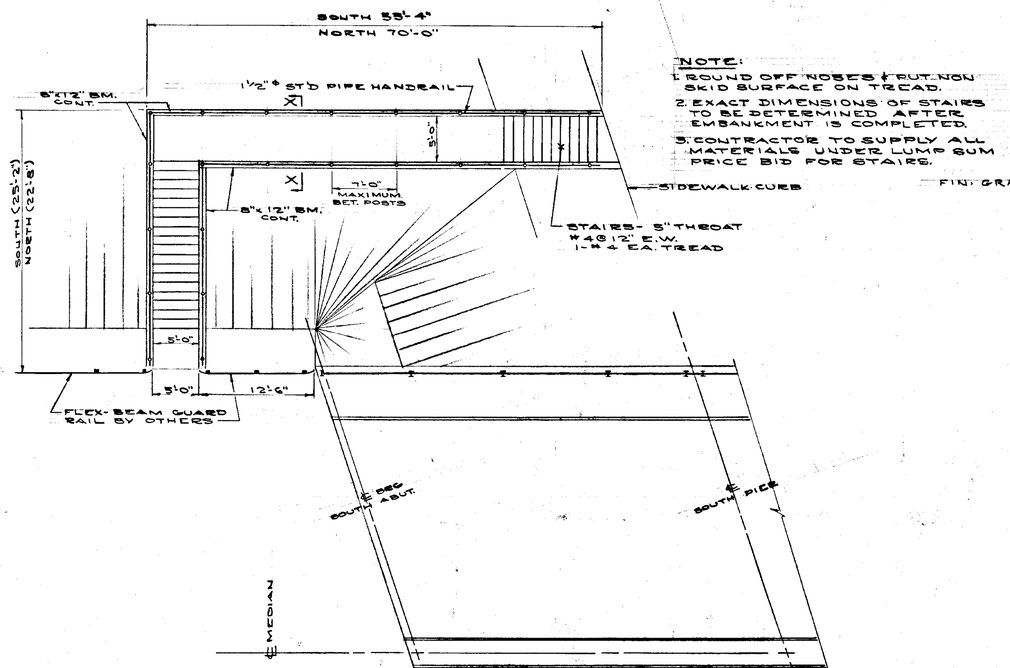
SCALE 1"=1'-0"



DETAIL OF RAILING

SCALE 1/2"=1'-0"

GUARD RAIL DETAILS



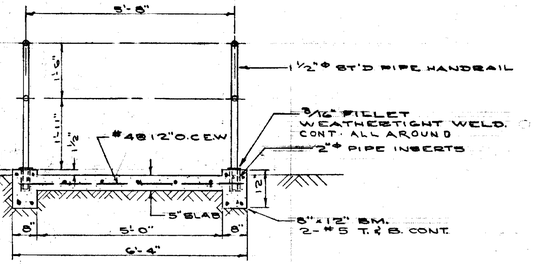
PLAN OF PEDESTRIAN WALKWAY

SOUTH ABUTMENT - WEST SIDE

SCALE: 1/8"=1'-0"

WALKWAY ON WEST SIDE - NORTH ABUT. SIMILAR

NOTE:
1. ROUND OFF NOSES & PUT NON SKID SURFACE ON TREAD.
2. EXACT DIMENSIONS OF STAIRS TO BE DETERMINED AFTER EMBANKMENT IS COMPLETED.
3. CONTRACTOR TO SUPPLY ALL MATERIALS UNDER LUMP SUM PRICE BID FOR STAIRS.



SECTION X.-X.

SCALE: 1/2"=1'-0"

REVISIONS			
No.	DESC.	DATE	BY
1	Panel Length	June 1959	T.O
2.	As-Built Stair Lengths.	"	T.O

PROVINCE OF MANITOBA — R. W. McKNIGHT — REGISTERED ENGINEER

B-5072-12

W. L. WARDROP & ASSOCIATES (MANAGEMENT) LTD.
ENGINEERING CONSULTANTS
WINNIPEG CANADA

GUARDRAIL & STAIR DETAILS
PORTAGE AVENUE OVERPASS
POLO PARK DEVELOPMENT

Scale: AS SHOWN	Date: JULY 31, 1958
Designed By: R.W. McK.	Project No. 5868
Drawn By: T.O. & A.R.	Drawing No. 11
Checked By: R.W.M., W.G.K., H.E.W.	

B-5072-31

W. L. WARDROP & ASSOCIATES
(MANAGEMENT) LTD.
ENGINEERING CONSULTANTS
WINNIPEG PORT ARTHUR

CLIENT: CITY OF WINNIPEG

JOB: PORTAGE AVENUE OVERPASS
POLO PARK DEVELOPMENT

DATE	LISTED BY	CHECKED BY	JOB NO.	SHEET NO.
JULY 31/58	R.W. McK	H.B. McL.	5868	1 OF 4

MATERIAL FOR: TWO ABUTMENTS

REFER TO DWGS. NO. 4

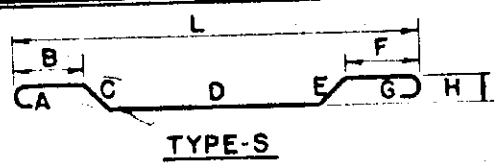
REVISED:

PROVINCE OF MANITOBA
R. W. McKNIGHT
REGISTERED ENGINEER

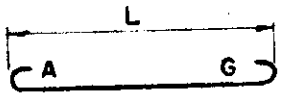
PLAN NO

BENDING DIAGRAMS

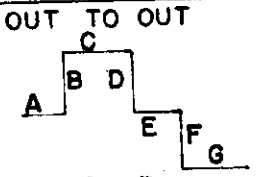
ALL DIMENSIONS OUT TO OUT



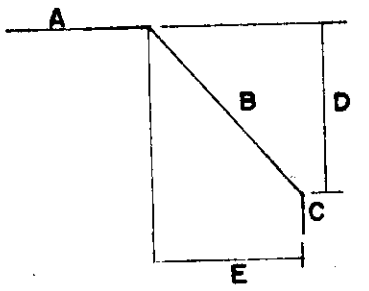
TYPE-S



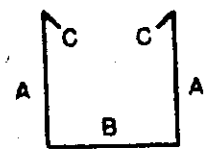
TYPE-R



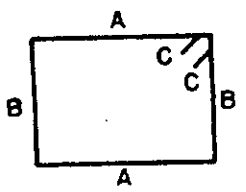
TYPE B



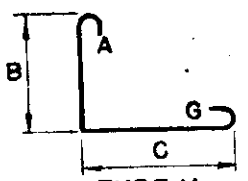
TYPE D



TYPE-T1



TYPE-T2



TYPE V

MARK	SIZE	NO. BARS	LENGTH	TYPE	A	B	C	D	E	F	G	H	L	REMARKS OR SHAPE	WEIGHT
A-401	#4	34	26'-4"	ST.											598·0
A-402	#4	34	35'-0"	ST.											794.9
A-403	#4	16	3'-4"	ST.											35·6
A-404	#4	20	2'-10"	ST.											37·8
A-501	#5	12	26'-8"	ST.											333·8
A-502	#5	12	35'-0"	ST.											438·1
A-503	#5	122	8'-2"	V		9"	7'-5"								1039·6
A-504	#5	122	4'-3 1/2"	B	14"	5"	2'-8 1/2"								545.9
A-505	#5	122	8'-5"	D	3'-2"	4'-9"	6"	3'-9"	3'-0"						1072.7
A-601	#6	14	35'-0"	ST.											736·0
A-602	#6	14	26'-10"	ST.											564.2
A-603	#6	146	7'-4"	R	8"						8"		6'-0"		1607·4

SHEET TOTAL = 7804·0

B-5072-52

W. L. WARDROP & ASSOCIATES
(MANAGEMENT) LTD.
ENGINEERING CONSULTANTS
WINNIPEG PORT ARTHUR

CLIENT: CITY OF WINNIPEG

JOB: PORTAGE AVENUE OVERPASS
POLO PARK DEVELOPMENT

DATE	LISTED BY	CHECKED BY	JOB NO.	SHEET NO.
JULY 31	R.W. McK.	H.B. McL.	5868	2 OF 4

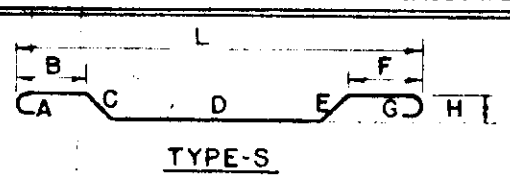
MATERIAL FOR: PIER BEAMS
THREE PIERS
REFER TO DWGS. NO. 5
REVISED:

PROVINCE OF MANITOBA
D. W. McKNIGHT
REGISTERED ENGINEER

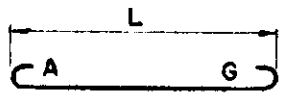
PLAN NO

BENDING DIAGRAMS

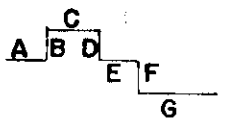
ALL DIMENSIONS OUT TO OUT



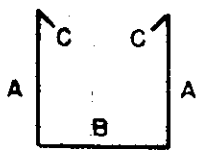
TYPE-S



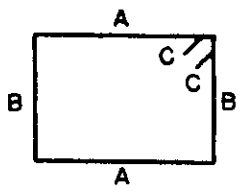
TYPE-R



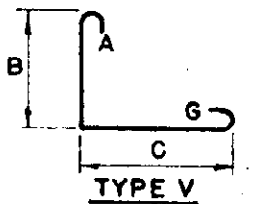
TYPE B



TYPE-T1



TYPE-T2



TYPE V

MARK	SIZE	NO. BARS	LENGTH	TYPE	A	B	C	D	E	F	G	H	L	REMARKS OR SHAPE	WEIGHT
PIER BEAMS															
P-401	#4	153	5'-10"	B		1'-9"	2'-4"	1'-9"							595.8
P-402	#4	408	7'-10"	T-1	2'-8"	1'-6"	6"								2134.0
P-403	#4	24	15'-1"	ST.											241.8
P-404	#4	24	15'-6"	ST.											248.5
P-405	#4	48	31'-11"	ST.											1023.5
P-406	#4	24	4'-5"	ST.											70.9
P-407	#4	6	3'-4"	V.		1'-0"	2'-4"								13.3
P-408	#4	6	3'-8"	V		1'-4"	2'-4"								14.7
P-409	#4	12	2'-5"	ST											19.4
P-701	#7	36	31'-4"	ST.											2305.4
P-903	#9	18	38'-4"	ST.											2345.8
P-904	#9	18	25'-10"	ST.											1580.7

SHEET TOTAL = 10593.8

B-5072-S3

W. L. WARDROP & ASSOCIATES
(MANAGEMENT) LTD.
ENGINEERING CONSULTANTS
WINNIPEG PORT ARTHUR

CLIENT: CITY OF WINNIPEG

JOB: PORTAGE AVENUE OVERPASS
POLO PARK DEVELOPMENT

DATE	LISTED BY	CHECKED BY	JOB NO.	SHEET NO.
JULY 31/58	R.W. McK.		5868	3 OF 4

MATERIAL FOR: DECK, CURBS & SIDEWALK

REFER TO DWGS. NO. 10

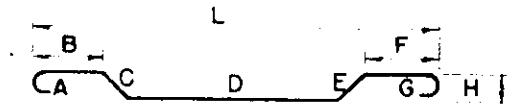
REVISED:

R. W. McKNIGHT

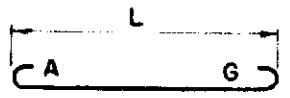
PLAN NO

BENDING DIAGRAMS

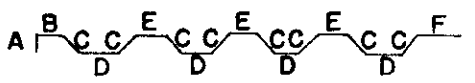
ALL DIMENSIONS OUT TO OUT



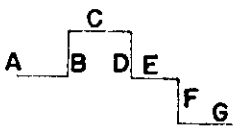
TYPE-S



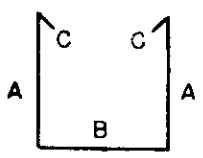
TYPE-R



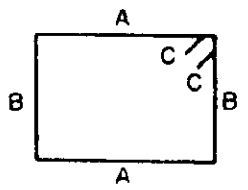
TYPE P



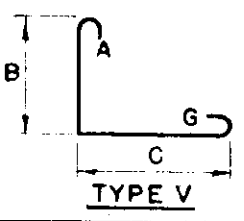
TYPE B



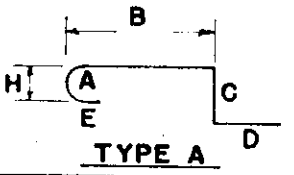
TYPE-T1



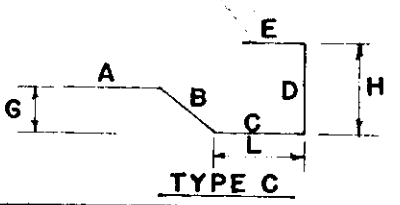
TYPE-T2



TYPE V



TYPE A



TYPE C

MARK	SIZE	NO. BARS	LENGTH	TYPE	A	B	C	D	E	F	G	H	L	REMARKS OR SHAPE	WEIGHT
	DECK														
S-501	# 5	336	36'-3 1/2"	P	5 1/2"	2'-11"	8'	3'-7"	2'-8"	4'-11"					12717.8
S-502	# 5	328	32'-6"	V		1'-5"	31'-1"								1111 8.4
S-503	# 5	328	31'-6"	V		5"	31'-1"								10776.3
S-504	# 5	232	10'-1"	A	7"	5'-4 1/2"	1'-4 1/2"	1'-6"	1'-3"			6"			2439.2
S-505	# 5	164	8'-7"	B	1'-6"	1'-4 1/2"	2'-10"	1'-4 1/2"	1'-6"						1467.6
S-506	# 5	232	6'-6"	A	7"	1'-9 1/2"	1'-4 1/2"	1'-6"	1'-3"						1572.8
S-507	# 5	448	5'-4 1/2"	C	1'-7"	7 1/2"	1'-4"	10"	1'-0"		5"	10 1/2"	1'-4"		2537.2
S-508	# 5	192	7'-0"	ST.											1401.8
S-401	# 4	266	40'-9"	ST.											7240.8
S-402	# 4	266	20'-0"	ST.											3553.8
S-403	# 4	266	31'-1"	ST.											5522.5
														SHEET TOTAL	60348.2

B-5072-54

W. L. WARDROP & ASSOCIATES
(MANAGEMENT) LTD.
ENGINEERING CONSULTANTS
WINNIPEG PORT ARTHUR

CLIENT: CITY OF WINNIPEG

JOB: PORTAGE AVENUE OVERPASS
POLO PARK DEVELOPMENT

DATE	LISTED BY	CHECKED BY	JOB NO.	SHEET NO.
JULY 31/58	R.W. McK	H.B. McL.	5868	4 OF 4

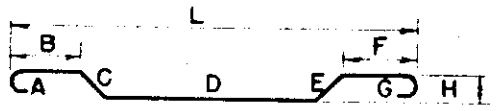
MATERIAL FOR: PIER COLUMNS & FOOTINGS
3 PIERS
REFER TO DWGS. NO. 5
REVISED:

R. W. McKNIGHT

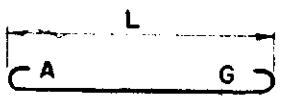
PLAN NO

BENDING DIAGRAMS

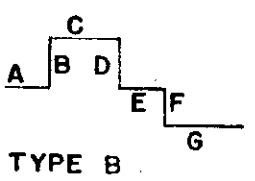
ALL DIMENSIONS OUT TO OUT



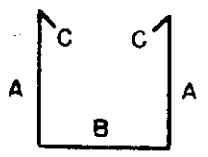
TYPE-S



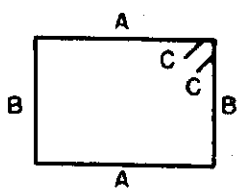
TYPE-R



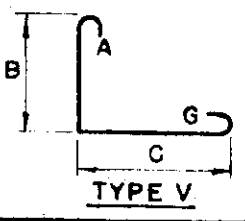
TYPE B



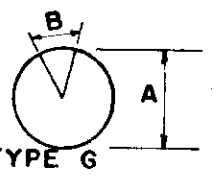
TYPE-T1



TYPE-T2



TYPE V



TYPE G

MARK	SIZE	NO. BARS	LENGTH	TYPE	A	B	C	D	E	F	G	H	L	REMARKS OR SHAPE	WEIGHT
PIER COLUMNS															
P-902	#9	240	17'-3"	ST.										—	14076·0
SPIRAL REINF.				#4 AT	2 3/4" PITCH			DIAMETER	2'-4"	HEIGHT	14'-6"				4005·0
P-410	#4	120	8'-7"	G	2'-4"	1'-3"								○	687·8
P-901	#9	240	8'-9"	V		1'-3"	7'-6"							└—	7140·0
PIER FOOTINGS															
P-501	#5	123	10'-8"	B		4'-3"	2'-2"	4'-3"						⌐¬	1368·8
P-801	#8	222	9'-8"	R	10"	8'-0"					10"			⊂⊃	5731·8
P-802	#8	54	26'-0"	ST.										—	3748·8
P-803	#8	54	36'-0"	ST.										—	5190·5
P-502	#5	123	13'-6"	B		2'-9"	8'-0"	2'-9"						⌐¬	1731·9

SHEET TOTAL = 43680.6

THE CITY OF WINNIPEG

WORKS AND OPERATIONS DIVISION

STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS

ALTERNATIVE A

TOTAL CLOSURE OF OVERPASS FOR CONSTRUCTION

STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

P.D. NO. 90 - 26

CONTRACT ADMINISTRATOR:

WARDROP ENGINEERING INC.
WINNIPEG TORONTO THUNDER BAY EDMONTON

RELEASED FOR CONSTRUCTION BY:

L. R. CAMPBELL
MANAGER OF STREETS AND TRAFFIC

1990.02.26
DATE

DESIGN DATA

DESIGN SPECIFICATIONS	- AASHTO 1989
LIVE LOADING	- HSS 25 TRUCK LOADING HS30-44 LANE LOADING
CONCRETE	- f'c = 35 MPa MINIMUM
REINFORCING STEEL	- CSA G30.12 M-77 GRADE 400 REINFORCING STEEL WITH SUFFIX 'E' DENOTES EPOXY COATED. - OTHERWISE AS NOTED ON THE DRAWINGS
STRUCTURAL STEEL	- CSA CAN3-G40.21-M81 - NEW COVERPLATES AND SPLICING PLATES GRADE 300 WT. - ALL OTHER STEEL GRADE 300 W.
HIGH DENSITY CONCRETE	- 140 MIN. DECK TOPPING ON BRIDGE DECK SLAB
CLEAR COVER TO REINFORCING STEEL	- 75mm TOP DECK SLAB 50mm TRAFFIC BARRIERS - OTHERS AS NOTED ON THE DRAWINGS

LIST OF DRAWINGS (ALTERNATIVE 'A')

GENERAL	
B100 - 90 - 01A	COVER SHEET, DESIGN DATA, AND DRAWING LIST.
B100 - 90 - 02A	GENERAL ARRANGEMENT AND SCOPE OF WORK
B100 - 90 - 03A	ROADWAY RECONSTRUCTION DETOUR- ALTERNATE 'A' COMPLETE CLOSURE
B100 - 90 - 04	PORTAGE AVENUE TRAFFIC DIVERSION TYPES
B100 - 90 - 05	TEMPORARY NOISE AND PROTECTION SCREEN REQUIREMENTS
BRIDGE DRAWINGS	
B100 - 90 - 06A	GENERAL ELEVATION AND CROSS SECTIONS
B100 - 90 - 07	PLAN SHOWING LIMITS OF DEMOLITION
B100 - 90 - 08	PLAN SHOWING LIMITS OF NEW WORKS
B100 - 90 - 09	BEARING DETAILS
B100 - 90 - 10A	DIAPHRAGM DETAILS & PIER CAP REINFORCING
B100 - 90 - 10B	SOUTH PIER - EXPOSED CONCRETE SURFACE REPAIRS
B100 - 90 - 10C	CENTER PIER - EXPOSED CONCRETE SURFACE REPAIRS
B100 - 90 - 10D	NORTH PIER - EXPOSED CONCRETE SURFACE REPAIRS
B110 - 90 - 11	EXPANSION JOINT DETAILS
B100 - 90 - 12A	CONCRETE AND REINFORCING DETAILS -APPROACH SLABS AND SIDEWALKS
B100 - 90 - 13A	CONCRETE AND REINFORCING DETAILS - DECK SLAB
B100 - 90 - 14A	CONCRETE AND REINFORCING DETAILS - MEDIAN AND SHOULDER TRAFFIC BARRIERS
B100 - 90 - 15A	ABUTMENT MODIFICATIONS AND BACKWALL REINFORCING DETAILS
B100 - 90 - 16	ALUMINUM PEDESTRIAN HANDRAIL DETAILS 1
B100 - 90 - 17	ALUMINUM PEDESTRIAN HANDRAIL DETAILS 2
B100 - 90 - 18	ALUMINUM TRAFFIC BARRIER RAIL STANDARD DETAILS
B100 - 90 - 19	ALUMINUM PEDESTRIAN HANDRAILS NORTH AND SOUTH STAIRS
B100 - 90 - 20	RECONSTRUCTION OF CONCRETE SLOPE PAVING AND APPROACH SOIL STABILIZATION
B100 - 90 - 21A	REINFORCING STEEL SCHEDULE - ALTERNATIVE 'A'
B100 - 90 - 22A	REINFORCING STEEL SCHEDULE - ALTERNATIVE 'A'
ROAD DRAWINGS	
B100 - 90 - 23	ROADWAY RECONSTRUCTION PLAN AND PROFILE
B100 - 90 - 24	ROADWAY RECONSTRUCTION DETAILS
B100 - 90 - 25	LAYOUT OF BALANCE ALUMINUM SHOULDER BARRIER AND DETAILS
B100 - 90 - 26	BALANCED SHOULDER BARRIER STANDARD DETAIL.
B100 - 90 - 27	PORTAGE AVENUE MEDIAN RECONSTRUCTION
B100 - 90 - 28	MISCELLANEOUS DETAILS
⚠ B100 - 90 - 29	GUARDRAIL ENERGY ABSORBING TERMINAL - STANDARD DETAIL
B100 - 90 - 30	GUARDRAIL ENERGY ABSORBING TERMINAL - LOCATION PLAN

REFERENCE LIST OF DRAWINGS (ALTERNATIVE 'B')

GENERAL	
B100 - 90 - 01B	COVER SHEET, DESIGN DATA, AND DRAWING LIST.
B100 - 90 - 02B	GENERAL ARRANGEMENT AND SCOPE OF WORK
B100 - 90 - 03B	ROADWAY RECONSTRUCTION DETOUR- ALTERNATE 'B' CLOSURE OF TWO LANES
B100 - 90 - 04	PORTAGE AVENUE TRAFFIC DIVERSION TYPES
B100 - 90 - 05	TEMPORARY NOISE AND PROTECTION SCREEN REQUIREMENTS
BRIDGE DRAWINGS	
B100 - 90 - 06B	GENERAL ELEVATION AND CROSS SECTIONS
B100 - 90 - 07	PLAN SHOWING LIMITS OF DEMOLITION
B100 - 90 - 08	PLAN SHOWING LIMITS OF NEW WORKS
B100 - 90 - 09	BEARING DETAILS
B100 - 90 - 10B	DIAPHRAGM DETAILS & PIER CAP REINFORCING
B110 - 90 - 11	EXPANSION JOINT DETAILS
B100 - 90 - 12B	CONCRETE AND REINFORCING DETAILS -APPROACH SLABS AND SIDEWALKS
B100 - 90 - 13B	CONCRETE AND REINFORCING DETAILS - DECK SLAB
B100 - 90 - 14B	CONCRETE AND REINFORCING DETAILS - MEDIAN AND SHOULDER TRAFFIC BARRIERS
B100 - 90 - 15B	ABUTMENT MODIFICATIONS AND BACKWALL REINFORCING DETAILS
B100 - 90 - 16	ALUMINUM PEDESTRIAN HANDRAIL DETAILS 1
B100 - 90 - 17	ALUMINUM PEDESTRIAN HANDRAIL DETAILS 2
B100 - 90 - 18	ALUMINUM TRAFFIC BARRIER RAIL STANDARD DETAILS
B100 - 90 - 19	ALUMINUM PEDESTRIAN HANDRAILS NORTH AND SOUTH STAIRS
B100 - 90 - 20	RECONSTRUCTION OF CONCRETE SLOPE PAVING AND APPROACH SOIL STABILIZATION
B100 - 90 - 21B	REINFORCING STEEL SCHEDULE - ALTERNATIVE 'B'
B100 - 90 - 22B	REINFORCING STEEL SCHEDULE - ALTERNATIVE 'B'
ROAD DRAWINGS	
B100 - 90 - 23	ROADWAY RECONSTRUCTION PLAN AND PROFILE
B100 - 90 - 24	ROADWAY RECONSTRUCTION DETAILS
B100 - 90 - 25	LAYOUT OF BALANCE ALUMINUM SHOULDER BARRIER AND DETAILS
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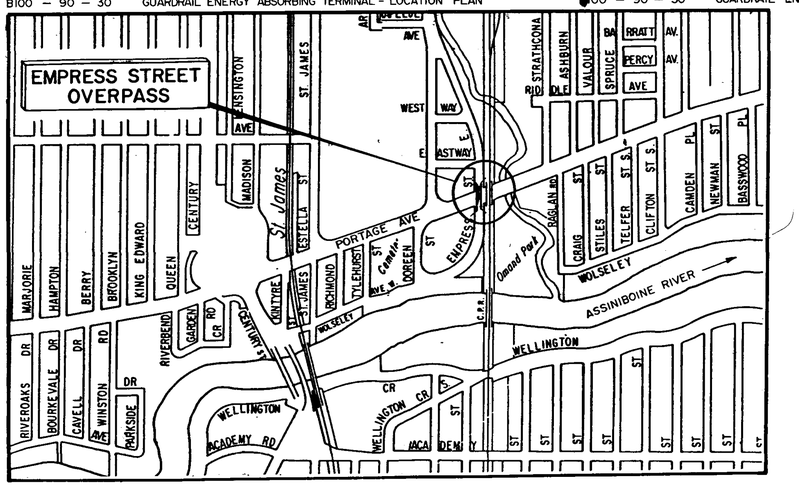
B100 - 90 - 27	PORTAGE AVENUE MEDIAN RECONSTRUCTION
B100 - 90 - 28	MISCELLANEOUS DETAILS
⚠ B100 - 90 - 29	GUARDRAIL ENERGY ABSORBING TERMINAL - STANDARD DETAIL
B100 - 90 - 30	GUARDRAIL ENERGY ABSORBING TERMINAL - LOCATION PLAN



LOCATION PLAN

PROVINCE OF MANITOBA
90/02/26
B. W. GULAY
REGISTERED ENGINEER

PROVINCE OF MANITOBA
C. D. STEWART
90/02/26
REGISTERED ENGINEER

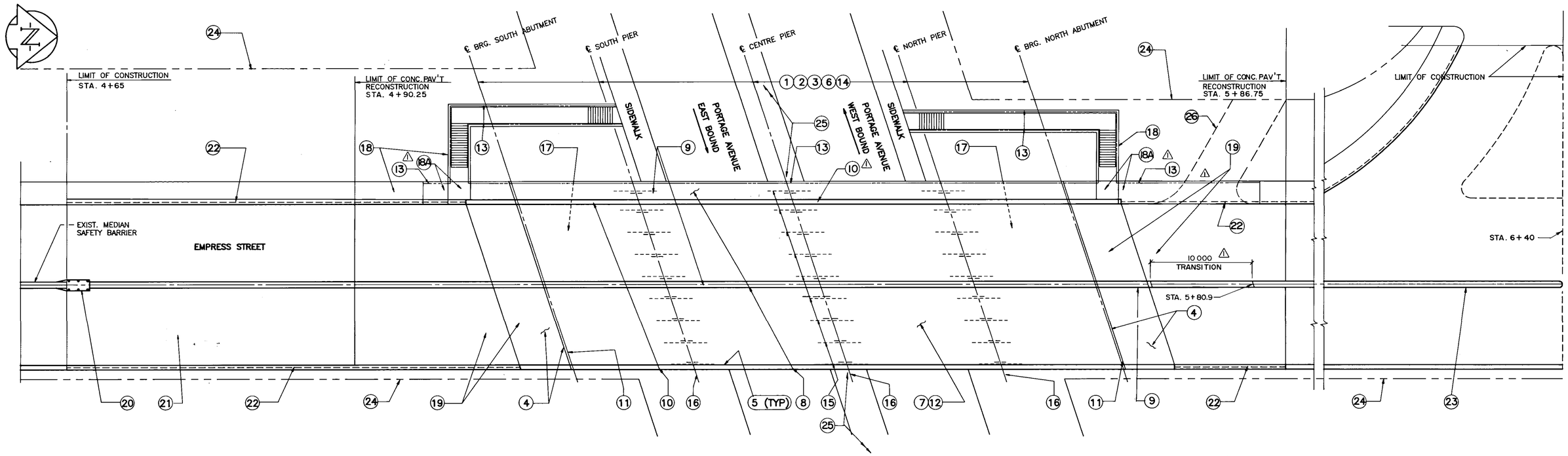
PROVINCE OF MANITOBA
90/02/26
G. O. OUELLETTE
REGISTERED PROFESSIONAL ENGINEER

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

B-5903-1

COVER SHEET, DESIGN DATA & DRAWING LIST

B100 - 90 - 01A(RI)



1 GENERAL ARRANGEMENT
1 : 200

SCOPE OF WORK		REFERENCE DRAWING NUMBERS
1	JACK UP BRIDGE SUPERSTRUCTURE AFTER MODIFYING ELECTRICAL CABLE CONDUITS TO EXISTING FLUORESCENT LAMPS U/S DECK.	B100 – 90 – 06A
2	REMOVE EXISTING BEARINGS AND INSTALL NEW BEARINGS AT ALL ABUTMENTS AND PIERS.	B100 – 90 – 07, 09
3	LOWER BRIDGE SUPERSTRUCTURE AFTER INSTALLATION OF NEW BEARINGS.	
4	DEMOLISH EXISTING APPROACH SLABS AND MODIFY ABUTMENT BACKWALLS TO ACCOMMODATE CONSTRUCTION OF THE NEW EXPANSION JOINT ASSEMBLY AND THE SEAT FOR APPROACH SLAB.	B100 – 90 – 06A, 12A, 15A
5	STRENGTHEN EXTERIOR GIRDERS AND MAKE ALL GIRDERS CONTINUOUS OVER PIERS.	B100 – 90 – 08
6	CAST CONCRETE DIAPHRAGMS OVER PIERS AND ABUTMENTS.	B100 – 90 – 10A, 21A
7	REMOVE EXISTING CONCRETE DECK SLAB. CONSTRUCT NEW 100 mm THICK CONCRETE DECK SLAB.	B100 – 90 – 06A, 07
8	REMOVE EXISTING SIDEWALK ON WEST SIDE, CENTRE MEDIAN AND CURB SECTION ON EAST SIDE.	B100 – 90 – 06A, 07
⚠ 9	CONSTRUCT NEW SIDEWALK AND CONCRETE BRIDGE MEDIAN TRAFFIC BARRIER.	B100 – 90 – 13A, 14A, 22A
⚠ 10	CONSTRUCT CONCRETE BRIDGE SHOULDER TRAFFIC BARRIERS COMPLETE WITH RAILINGS AND POSTS.	B100 – 90 – 13A, 14A, 18, 22A
11	INSTALL EXPANSION JOINTS AT ABUTMENTS	B100 – 90 – 10A, 11

SCOPE OF WORK		REFERENCE DRAWING NUMBERS
12	INSTALL EPOXY COATED REINFORCING STEEL AND MINIMUM 140mm HIGH DENSITY CONCRETE TOPPING OVER TRAFFIC SURFACE OF THE OVERPASS.	B100 – 90 – 13A, 21A
⚠ 13	INSTALL NEW ALUMINUM PEDESTRIAN HANDRAIL.	B100 – 90 – 16, 17
14	CONCRETE REPAIR TO PIERS AND ABUTMENTS.	B100 – 90 – 10A, 10B, 10C, 10D, 15A, 21A, 22A
15	SURFACE PREPARATION AND PAINTING OF SUPERSTRUCTURE STEEL.	B100 – 90 – 07, 08
16	REINFORCE PIER CAP CANTILEVERS.	B100, – 90 – 10A, 21A
17	RECONSTRUCT EXISTING SLOPE PAVINGS AND SURFACE RUN–OFF CHANNEL. UNDERNEATH THE OVERPASS.	B100 – 90 – 20, 22A
⚠ 18	REPAIR AND MODIFY EXISTING STAIRWAY.	B100 – 90 – 19
⚠ 18A	CONSTRUCT NEW 150mm STRUCTURAL CONCRETE SIDEWALK.	B100 – 90 – 19, 23, 24
19	RECONSTRUCT APPROACH SLABS AND IMMEDIATE ROADWAY SLABS TO SUIT NEW ROAD GRADES, COMPLETE WITH REINFORCED GRANULAR BACKFILL AND MEDIAN SAFETY BARRIER.	B100 – 90 – 12A, 21A, 23, 24
20	REMOVE AND DELIVER EXISTING G.R.E.A.T. BARRIER ON EMPRESS ST. TO CITY YARD.	B100 – 90 – 23
21	RESURFACE ASPHALT OVERLAY BEYOND RECONSTRUCTED ROADWAY SLABS.	B100 – 90 – 23
22	INSTALL BALANCED ALUMINUM SHOULDER BARRIERS.	B100 – 90 – 25, 26
23	CONSTRUCT CONCRETE SAFETY MEDIAN BARRIER AT NORTH ROADWAY.	B100 – 90 – 23
24	LIMITS OF RIGHT OF WAY	B100 – 90 – 23
⚠ 25	RECONSTRUCT CENTRE MEDIAN, RELOCATE ALUMINUM BALANCE BARRIERS, INSTALL REMOVABLE CONCRETE BARRIERS & REMOVE, MODIFY AND RELOCATE G.R.E.A.T. UNITS ON PORTAGE AVENUE.	B100 – 90 – 3A, 26, 27, 28, ⚠ 29, 30
26	REMOVE EXISTING VEHICLE RAMP TO MTS BUILDING.	B100 – 90 – 16, 23

B-5903-2

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

NO.	REVISIONS	DATE	BY
2	REVISED AS CONSTRUCTED	90-12-14	FPC
⚠	ADDENDUM	90-3-19	F.C.

B.M. ELEV.

WARDROP ENGINEERING INC.

DESIGNED BY J.C. & F.P.C. | CHECKED BY
DRAWN BY G.R.A. | APPROVED BY
HOR. SCALE: AS NOTED
VERTICAL: AS NOTED
DATE JAN. 15, 1990

AUTHORIZED BY W. NAUMKO, STREETS & BRIDGE ENGINEER — DATE 90.02.23
ACCEPTED BY C.N. SMITH, BRIDGE ENGINEER — DATE 90.02.23

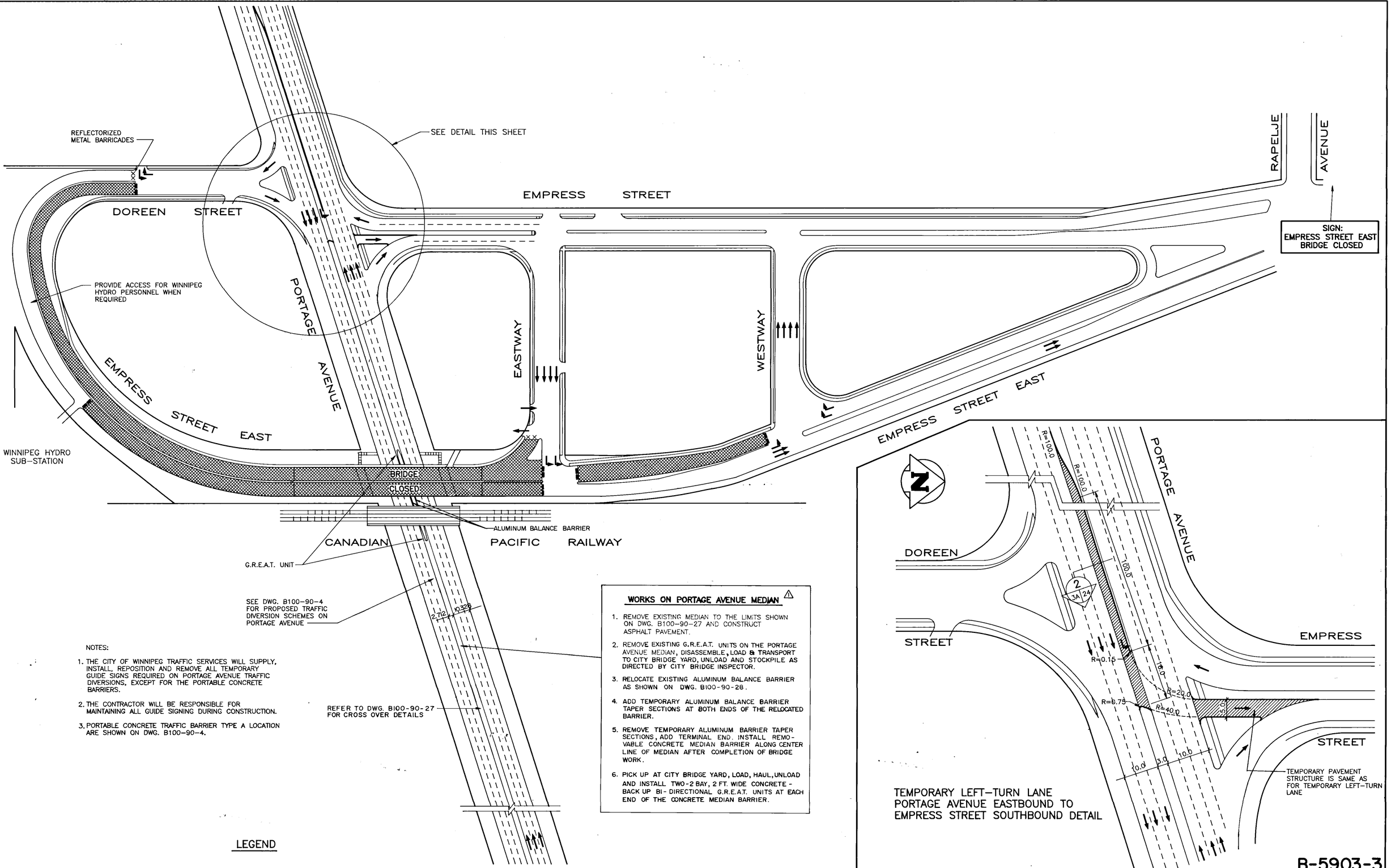
ENGINEER'S SEAL
PROVINCE OF MANITOBA
C. D. STEWART
90/02/20
REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007–02–00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS
GENERAL ARRANGEMENT AND SCOPE OF WORK

CITY DRAWING NUMBER
B100-90-02A(RI)



NOTES:

1. THE CITY OF WINNIPEG TRAFFIC SERVICES WILL SUPPLY, INSTALL, REPOSITION AND REMOVE ALL TEMPORARY GUIDE SIGNS REQUIRED ON PORTAGE AVENUE TRAFFIC DIVERSIONS, EXCEPT FOR THE PORTABLE CONCRETE BARRIERS.
2. THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING ALL GUIDE SIGNING DURING CONSTRUCTION.
3. PORTABLE CONCRETE TRAFFIC BARRIER TYPE A LOCATION ARE SHOWN ON DWG. B100-90-4.

WORKS ON PORTAGE AVENUE MEDIAN ⚠

1. REMOVE EXISTING MEDIAN TO THE LIMITS SHOWN ON DWG. B100-90-27 AND CONSTRUCT ASPHALT PAVEMENT.
2. REMOVE EXISTING G.R.E.A.T. UNITS ON THE PORTAGE AVENUE MEDIAN, DISASSEMBLE, LOAD & TRANSPORT TO CITY BRIDGE YARD, UNLOAD AND STOCKPILE AS DIRECTED BY CITY BRIDGE INSPECTOR.
3. RELOCATE EXISTING ALUMINUM BALANCE BARRIER AS SHOWN ON DWG. B100-90-28.
4. ADD TEMPORARY ALUMINUM BALANCE BARRIER TAPER SECTIONS AT BOTH ENDS OF THE RELOCATED BARRIER.
5. REMOVE TEMPORARY ALUMINUM BARRIER TAPER SECTIONS, ADD TERMINAL END. INSTALL REMOVABLE CONCRETE MEDIAN BARRIER ALONG CENTER LINE OF MEDIAN AFTER COMPLETION OF BRIDGE WORK.
6. PICK UP AT CITY BRIDGE YARD, LOAD, HAUL, UNLOAD AND INSTALL TWO-2 BAY, 2 FT. WIDE CONCRETE - BACK UP BI-DIRECTIONAL G.R.E.A.T. UNITS AT EACH END OF THE CONCRETE MEDIAN BARRIER.

LEGEND

EXISTING		PROPOSED
METAL BARRICADE		×
PORTABLE CONCRETE TRAFFIC BARRIER TYPE B		▬
CLOSED TO TRAFFIC		▩
LIGHT STANDARD		⊷
HYDRO POLE		●

TEMPORARY LEFT-TURN LANE PORTAGE AVENUE EASTBOUND TO EMPRESS STREET SOUTHBOUND DETAIL

B-5903-3

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

B.M. ELEV.			
2	REVISED AS CONSTRUCTED	90-12-14	FPC
⚠	ADDENDUM	90-3-12	G.O.
NO.	REVISIONS	DATE	BY

WARDROP ENGINEERING INC.

DESIGNED BY	G.O.	CHECKED BY	M.S.
DRAWN BY	G.M.D.	APPROVED BY	
HOR. SCALE:	1:1000	AUTHORIZED BY (DATE)	W. MALINKO/STREETS & BRIDGES ENGINEER (91223)
VERTICAL:		ACCEPTED BY (DATE)	H.K. SMITH/BRIDGE ENGINEER (90223)
DATE	90/01/15		

ENGINEER'S SEAL
PROVINCE OF MANITOBA
91/02/20
G. O. OUELLETTE
REGISTERED PROFESSIONAL ENGINEER

CONSULTANT DRAWING NO.
890007-03-00

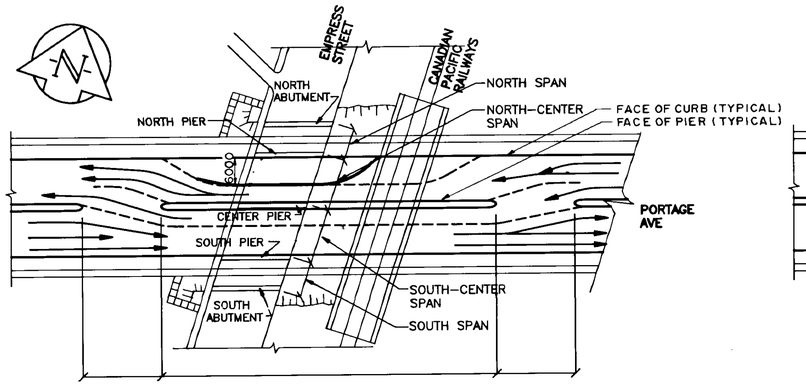
THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS

STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

ROADWAY RECONSTRUCTION DETOUR – ALTERNATIVE A COMPLETE CLOSURE ON BRIDGE

CITY DRAWING NUMBER
B100-90-3A(RI)



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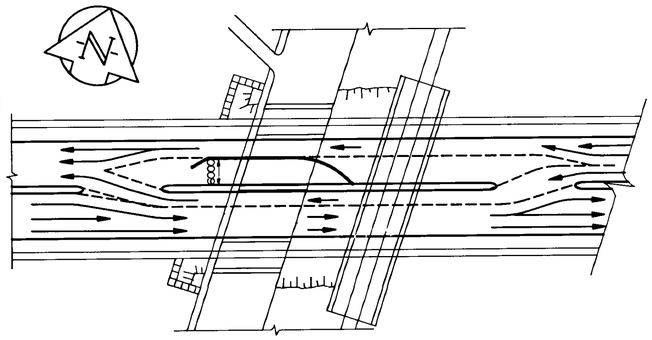

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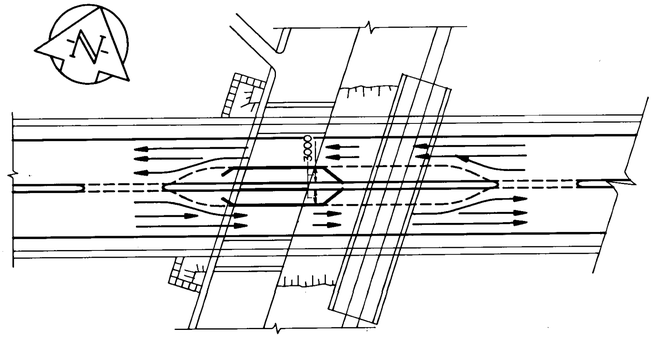
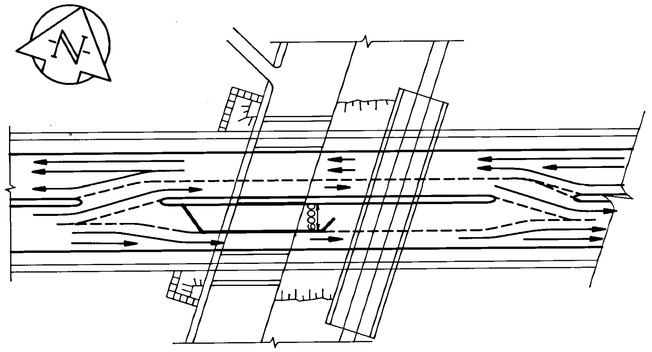


TYPE III



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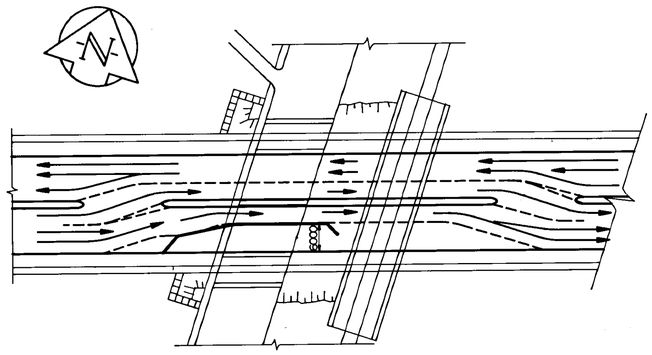

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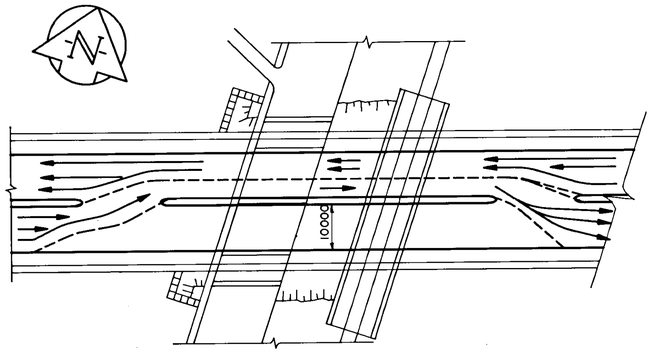
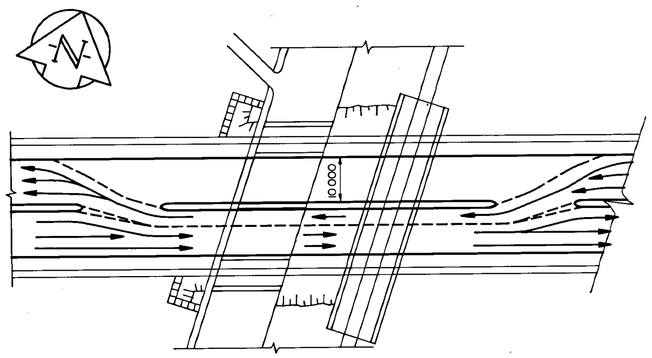
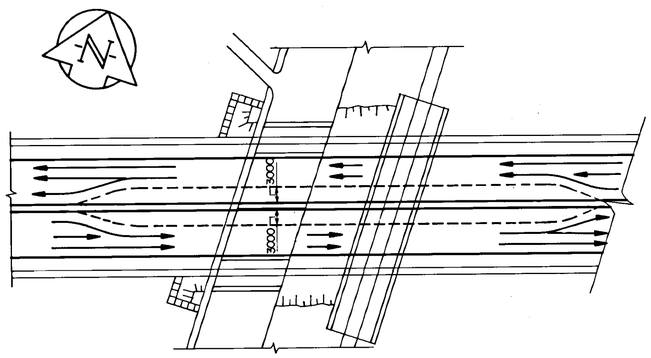


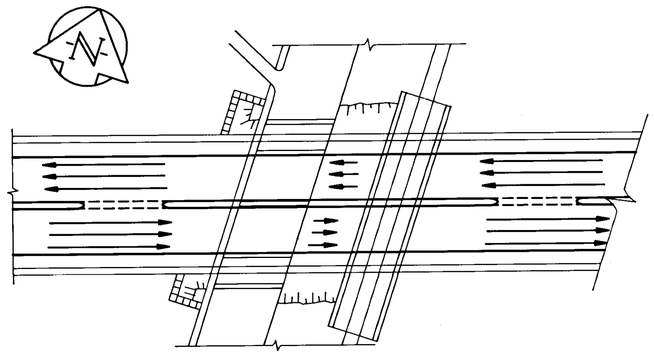
TYPE VI AM SUNDAY



TYPE VI P.M. SUNDAY



TYPE VII



TYPE VIII

GENERAL NOTES:

1. FOUR LANES OF TRAFFIC ALONG PORTAGE AVE. SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION PERIOD EXCEPT DURING JACKING AND LOWERING OF THE BRIDGE SUPERSTRUCTURE.(TYPE VI TRAFFIC DIVERSION)
2. INSTALLATION, REMOVAL AND RELOCATION OF PORTABLE CONCRETE BARRIERS ON PORTAGE AVE SHALL BE DONE BY THE CONTRACTOR.
3. TRAFFIC SWITCHING (WHERE REQUIRED), JACKING AND LOWERING OF SUPERSTRUCTURE, SHALL BE DONE DURING SUNDAY ONLY.
4. ANY CHANGE OF TRAFFIC DIVERSION PROPOSED BY CONTRACTOR SHALL BE SUBJECT FOR APPROVAL BY CONTRACT ADMINISTRATOR.
5. DURING PEAK HOURS THE CITY MAY MODIFY TRAFFIC DIVERSIONS OUTSIDE THE CONTRACTOR'S WORK AREA.
6. THE CONTRACTOR'S WORK AREA IS LIMITED TO TWO ADJACENT LANES UNLESS NOTED.
7. CITY OF WINNIPEG TRAFFIC SERVICES MAY RESTRUCTURE THE TRAFFIC DIVERSIONS SHOWN IN OR TO PROVIDE THREE LANES OF TRAFFIC IN THE PEAK DIRECTION, HOWEVER THE CONTRACTORS WORK AREA WILL REMAIN CLOSED.
8. REFER TO SCHEDULE OF WORK IN TENDER DOCUMENTS FOR SEQUENCING OF TRAFFIC DIVERSIONS DURING CONSTRUCTION.
9. THE CONTRACTOR SHALL NOT INTERFER OR INTERUPT TRAFFIC FLOW ON PORTAGE AVENUE DURING CONSTRUCTION. ACCESS TO THE WORK AREA FOR MEN OR EQUIPMENT MUST BE MADE FROM OVERHEAD OR BY NOT CROSSING THE TRAVELLED LANES OR PRIOR TO ANY LANE CLOSURES.

LEGEND

PORTABLE CONCRETE BARRIER TYPE A. (ALT. A ONLY)

CONTRACTORS WORK AREA

⚠ DIMENSIONS SHOWN INDICATE MAXIMUM ALLOWABLE ROADWAY WORK AREA WIDTHS INCLUDING PORTABLE TRAFFIC BARRIERS.

AS-BUILT
DATE 91.02.26 BY fo
CHECKED BY fm

B-5903-4

B.M. ELEV.

NO.	REVISIONS	DATE	BY
2	REVISED AS CONSTRUCTED	90-12-14	FPC
⚠	NOTE ADDED.	90-3-19	FPC

WARDROP ENGINEERING INC.

DESIGNED BY J.C. & F.P.C. | CHECKED BY fm
DRAWN BY G.R.A. | APPROVED BY
HOR. SCALE: VERTICAL: N.T.S.
DATE JAN 15, 1990
AUTHORIZED BY W.NAUMKO/STREETS & BRIDGE ENGINEER — DATE 90.12.23
ACCEPTED BY R.R.SMITH/BRIDGE ENGINEER — DATE 90.12.23

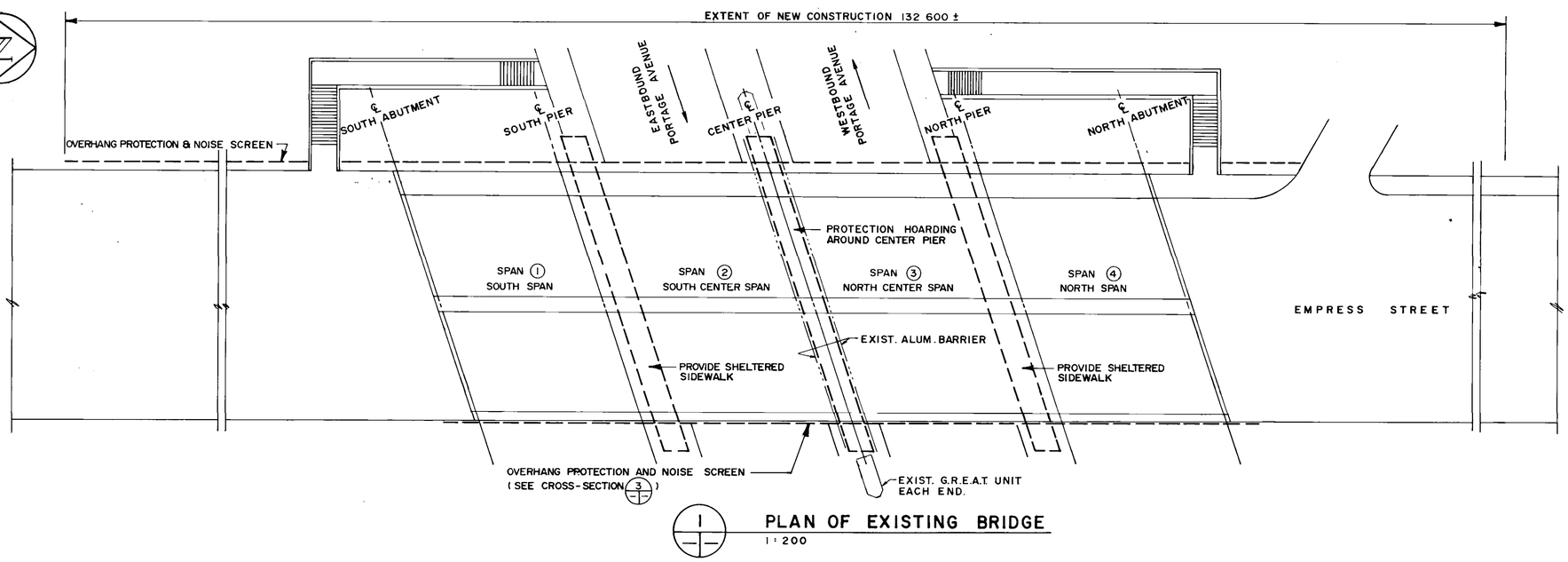
ENGINEER'S STAMP: PROVINCE OF MANITOBA — C. D. STEWART — 90/12/20 — REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007-02-00

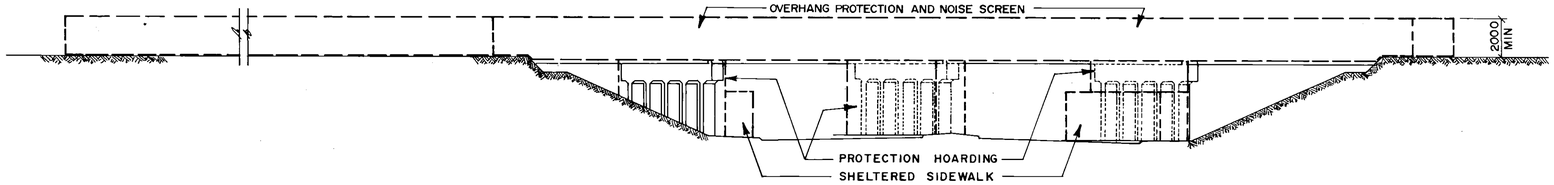
THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS
PORTAGE AVE.
TRAFFIC DIVERSION TYPES

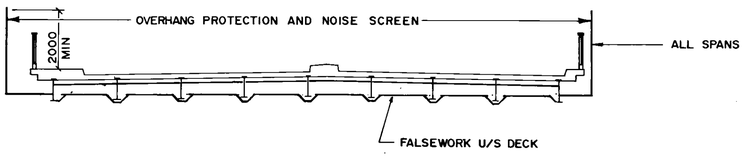
CITY DRAWING NUMBER B100-90-04(RI)



1 — PLAN OF EXISTING BRIDGE
1 : 200



2 — ELEVATION (LOOKING WEST)
1 : 200



3 — CROSS SECTION (LOOKING NORTH)
1 : 100

NOTE: 1. ALL OVERHANGING PROTECTION, NOISE SCREENS AND FALSEWORK U/S DECK, PIER HOARDING AND SHELTERED SIDEWALK SHALL BE IN PLACE FOR ENTIRE LENGTH OF CONSTRUCTION.

2. SHOP DRAWINGS OF ALL TEMPORARY NOISE AND PROTECTION SCREENS AND FALSEWORK U/S DECK SHALL BE SUBMITTED TO THE CONTRACT ADMINISTRATOR FOR APPROVAL AT LEAST 10 WORKING DAYS PRIOR TO INSTALLATION.

3. THE TEMPORARY NOISE AND PROTECTION SCREENS AND FALSEWORK U/S DECK SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA.

B-5903-5

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

B.M. ELEV.

NO	REVISIONS	DATE	BY
1	REVISED AS CONSTRUCTED	90-12-14	FPC

WARDROP ENGINEERING INC.

DESIGNED BY	JC & FPC	CHECKED BY	FPC
DRAWN BY	LG	APPROVED BY	
HOR. SCALE	AS NOTED	AUTHORIZED BY	DATE
VERTICAL		W. NAUMKO / STREETS & BRIDGES ENGINEER	
DATE	JAN. 15, 1990	ACCEPTED BY	DATE
		G.R. SMITH / BRIDGE ENGINEER	

ENGINEER'S SEAL: PROVINCE OF MANITOBA — C. D. STEWART — 90/02/20 — REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007-02-00

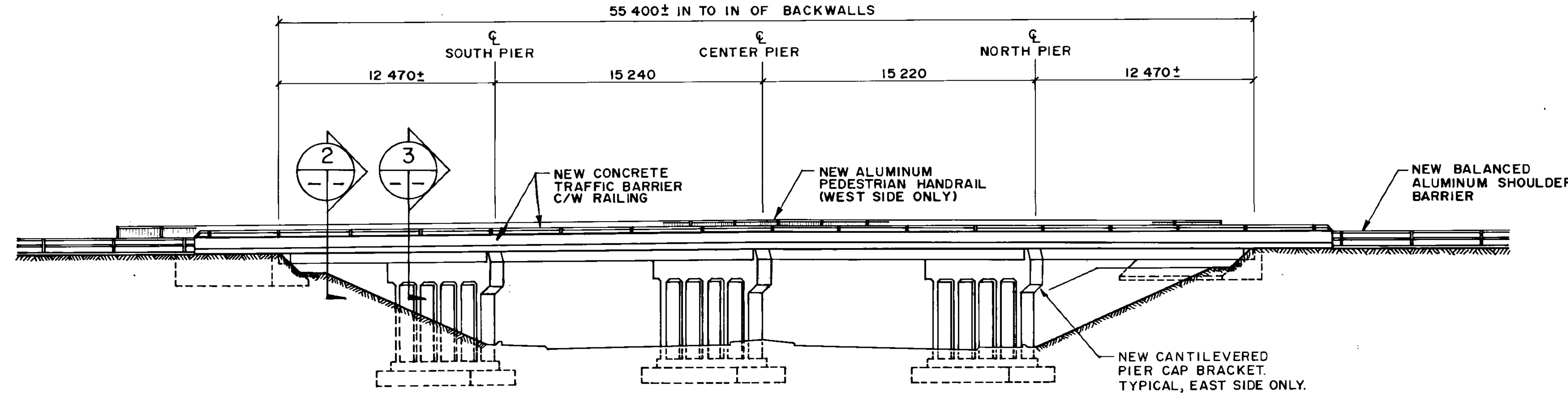
THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

TEMPORARY NOISE AND PROTECTION SCREEN REQUIREMENTS

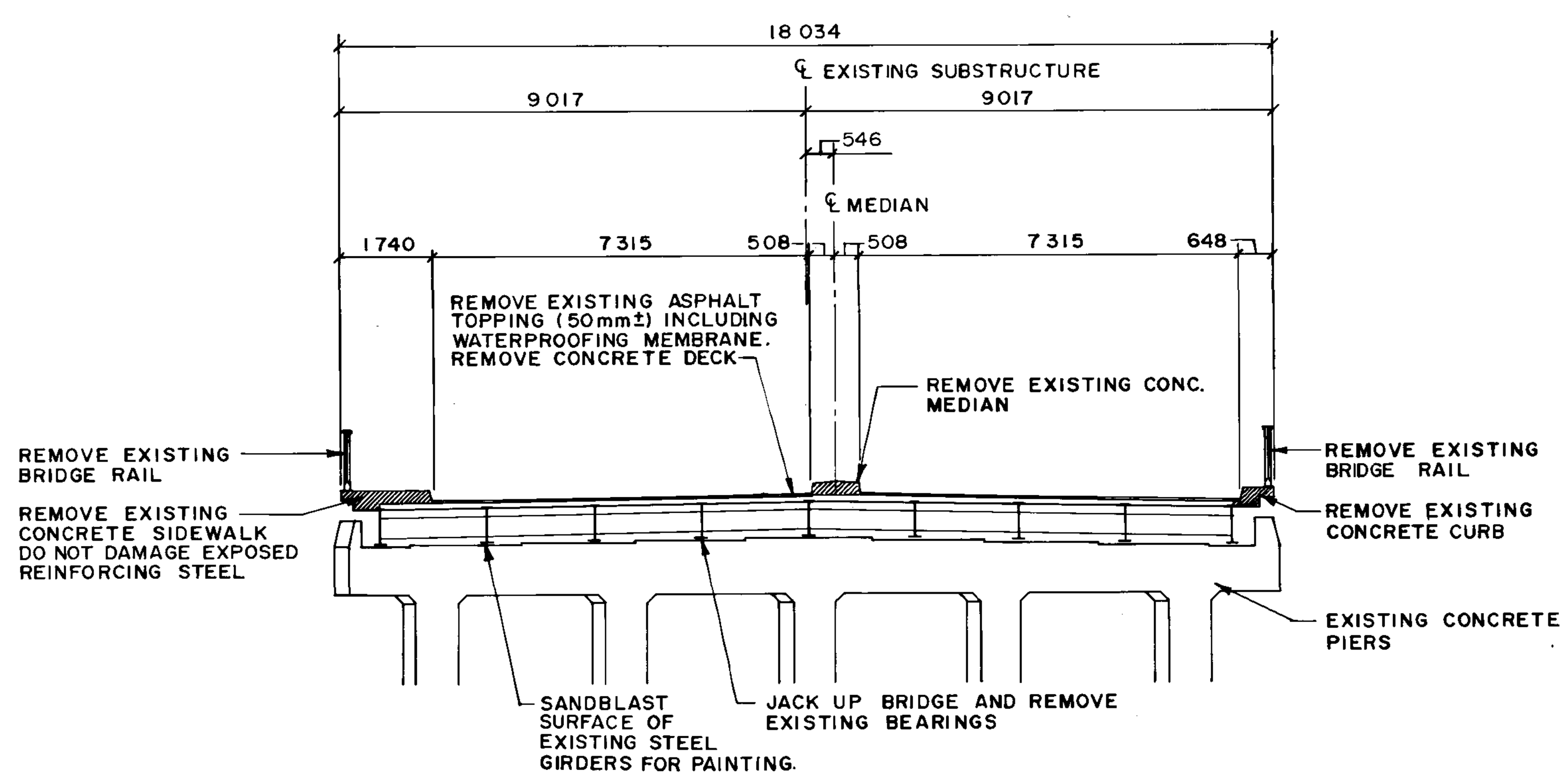
CITY DRAWING NUMBER: B100-90-05

WO 101-84



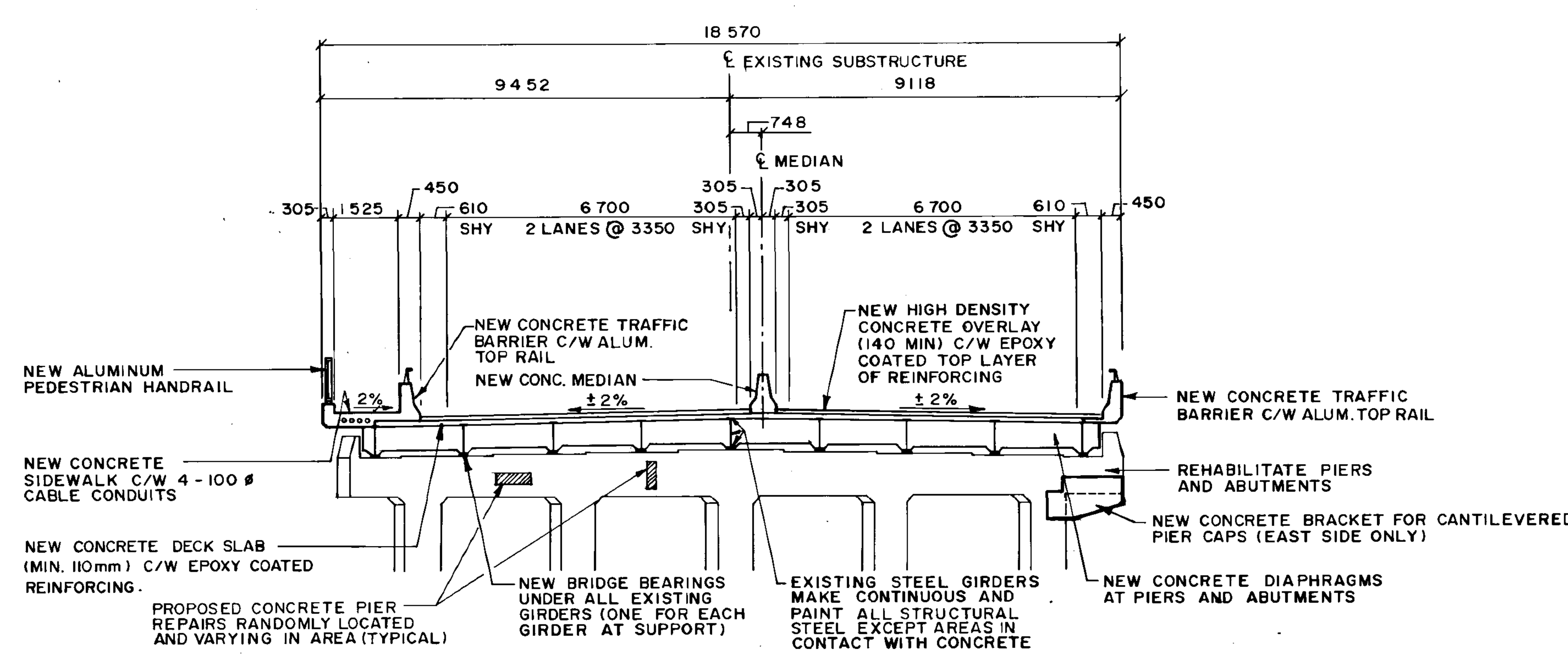
GENERAL ELEVATION AFTER REHABILITATION

1 : 200 (LOOKING WEST)



TYPICAL CROSS SECTION – DEMOLITION WORKS

1 : 100 (LOOKING NORTH)



TYPICAL CROSS SECTION – NEW WORKS

1 : 100 (LOOKING NORTH)

B-5903-6

AS-BUILT

DATE 91.02.26 BY [illegible]

CHECKED BY [illegible]

LOCATION APPROVED UNDERGROUND STRUCTURES

N/A

SUPV. U/G STRUCTURES COMMITTEE DATE

NOTE:

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B.M. ELEV.

NO	REVISIONS	DATE	BY
1	REVISED AS CONSTRUCTED	901214	FPC

WARDROP ENGINEERING INC.

DESIGNED BY	JC & FPC	CHECKED BY	[illegible]
DRAWN BY	LG	APPROVED BY	[illegible]
HOR. SCALE / VERTICAL	AS NOTED	AUTHORIZED BY / DATE	[illegible] 90 12 23 W. NAUMKO/STREETS & BRIDGES ENGINEER
DATE	JAN. 15, 1990	ACCEPTED BY / DATE	[illegible] 90 12 23 G.R. SMITH / BRIDGE ENGINEER

ENGINEER'S SEAL

PROVINCE OF MANITOBA C. D. STEWART 90/02/20 REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

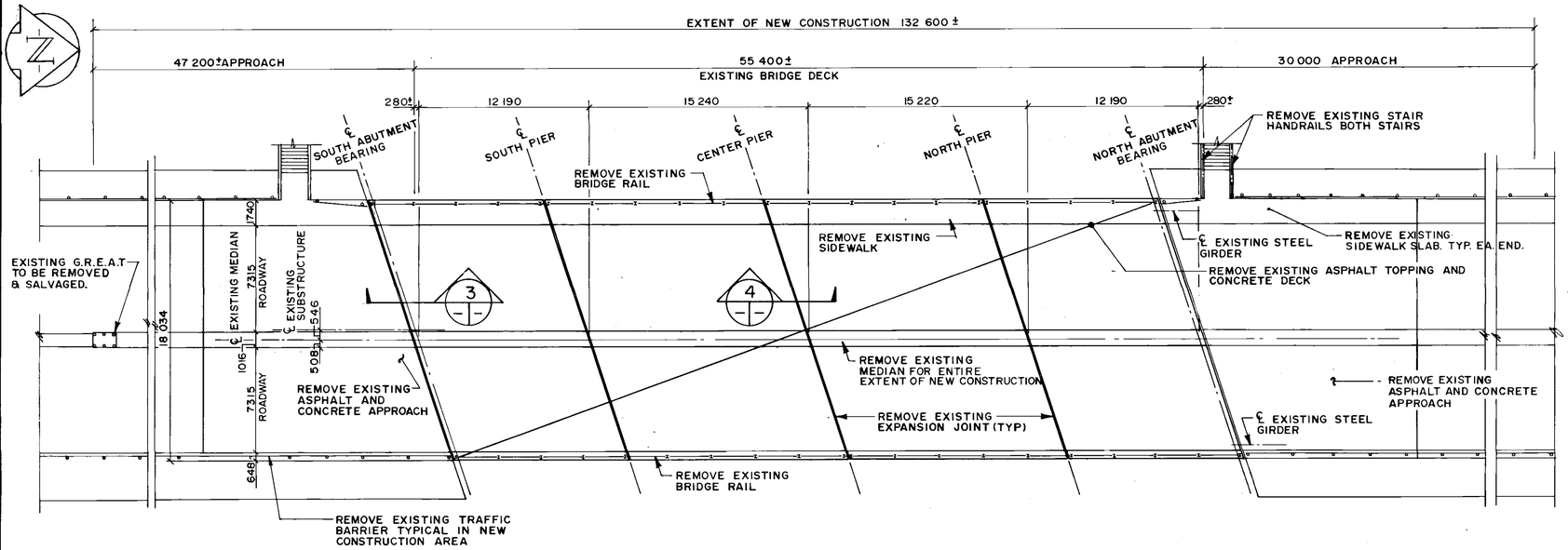
EMPRESS STREET OVERPASS

STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

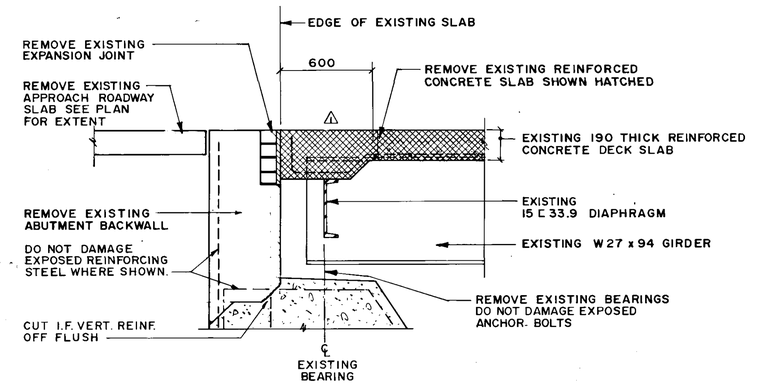
GENERAL ELEVATION AND CROSS SECTIONS

CITY DRAWING NUMBER B100-90-06A

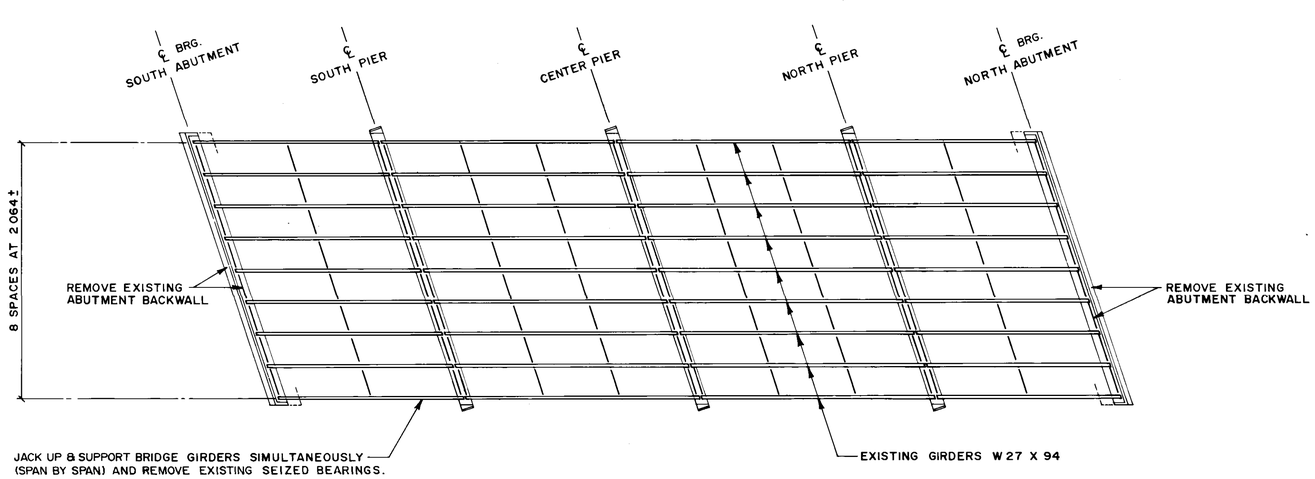
WO 101-84



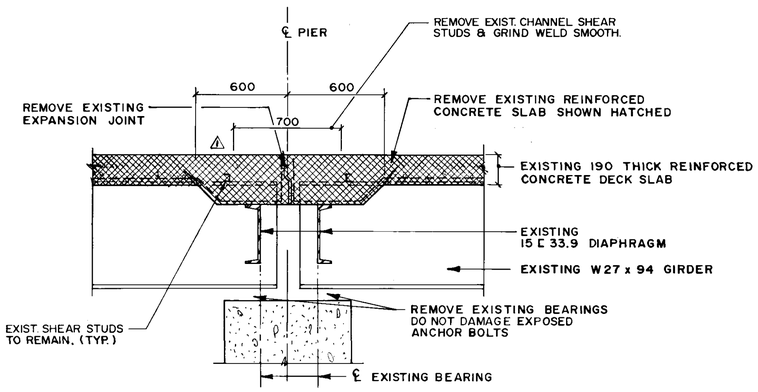
1 — PLAN OF BRIDGE DECK
1 : 200



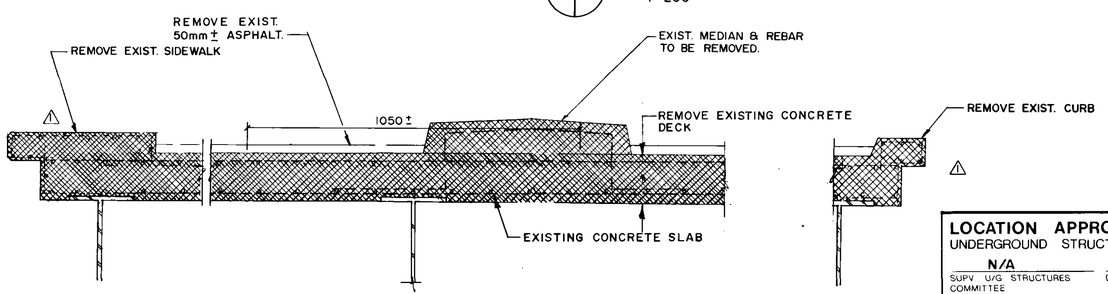
3 — SECTION – EXISTING DIAPHRAGM AT ABUTMENT
1 : 20



2 — PLAN OF GIRDERS & SUBSTRUCTURE
1 : 200



4 — TYP. SECTION – EXISTING DIAPHRAGM AT PIERS
1 : 20



5 — SECTION – SHOWING EXISTING DECK SLAB
NTS

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G STRUCTURES COMMITTEE — DATE

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NO	REVISIONS	DATE	BY
	B.M. ELEV.		
2	REVISED AS CONSTRUCTED	90-12-14	FPC
⚠	ADDENDUM	90-3-19	G.A.

WARDROP ENGINEERING INC.

DESIGNED BY	JC & FPC	CHECKED BY	
DRAWN BY	LG	APPROVED BY	
HOR. SCALE	AS NOTED	AUTHORIZED BY / DATE	W. NAUMENKO / STREETS & BRIDGES ENGINEER
VERTICAL		ACCEPTED BY / DATE	G.R. SMITH / BRIDGE ENGINEER
DATE	JAN. 15, 1990		

ENGINEER'S SEAL: PROVINCE OF MANITOBA — C. D. STEWART — 29/02/90 — REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

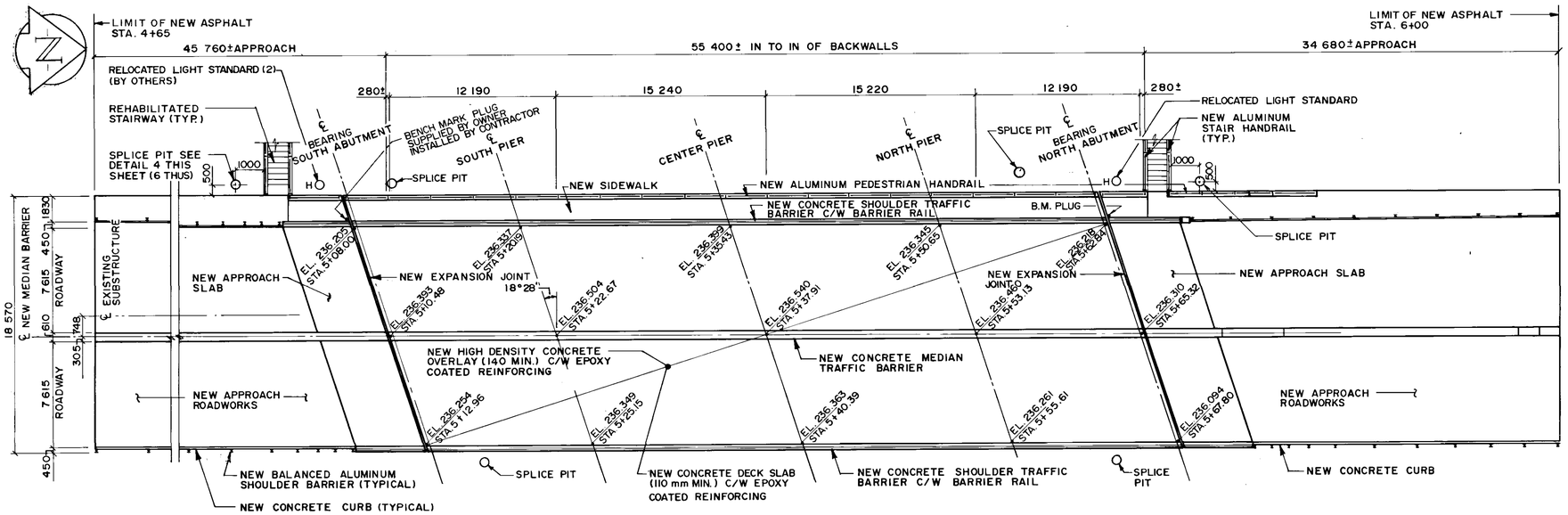
EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

PLANS SHOWING LIMITS OF DEMOLITION

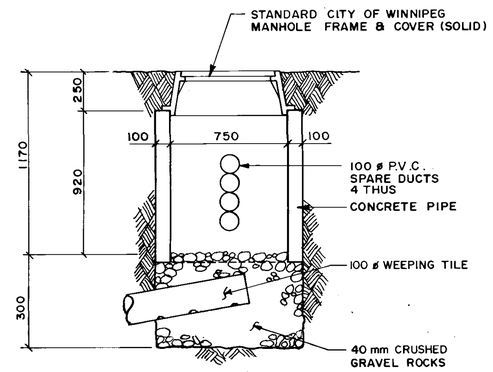
CITY DRAWING NUMBER: B100-90-07(R1)

B-5903-7

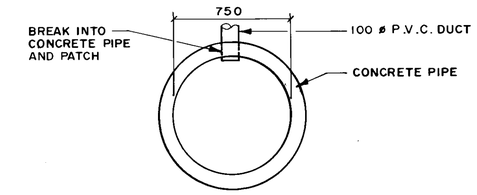
WO 101-84



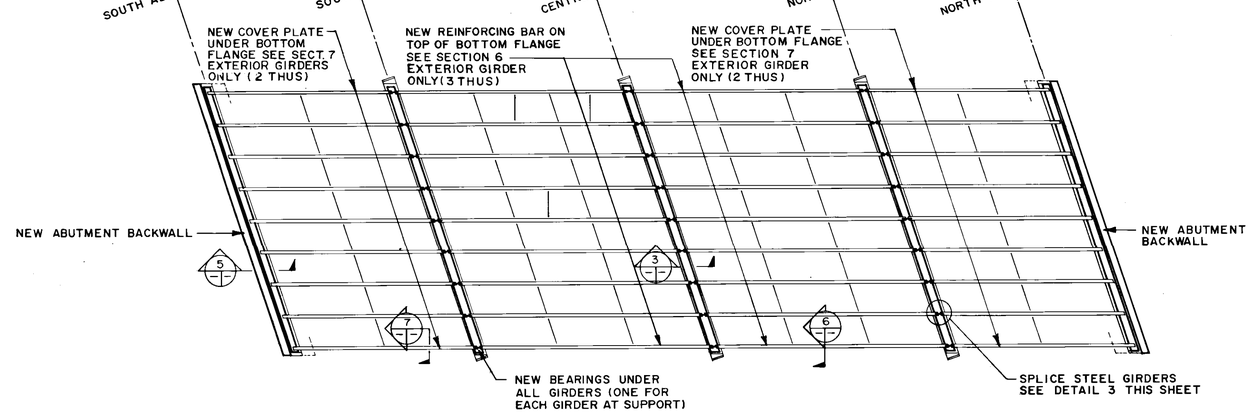
1 — PLAN OF BRIDGE DECK
ELEVATIONS SHOWN ARE TOP OF HIGH DENSITY OVERLAY
1:200



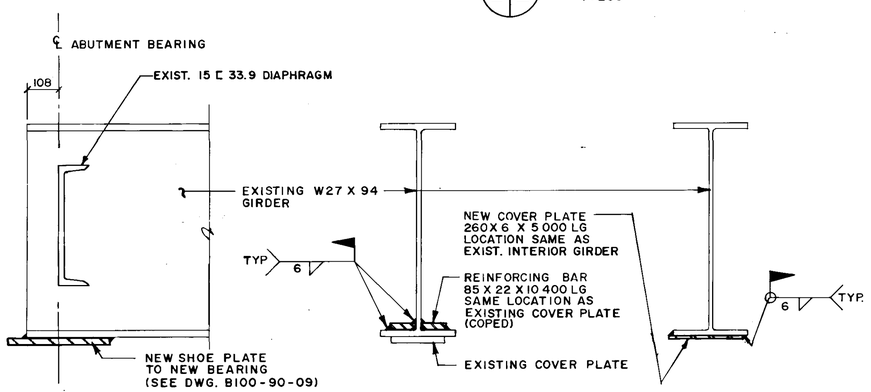
SECTION



PLAN



2 — PLAN OF GIRDERS & SUBSTRUCTURE
1:200

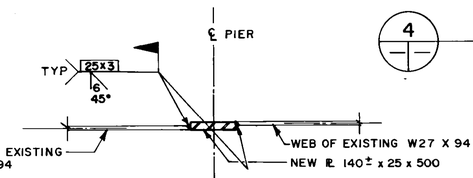


5 — STEEL GIRDER DETAIL AT ABUTMENT
1:10 (18 REQUIRED AS SHOWN)

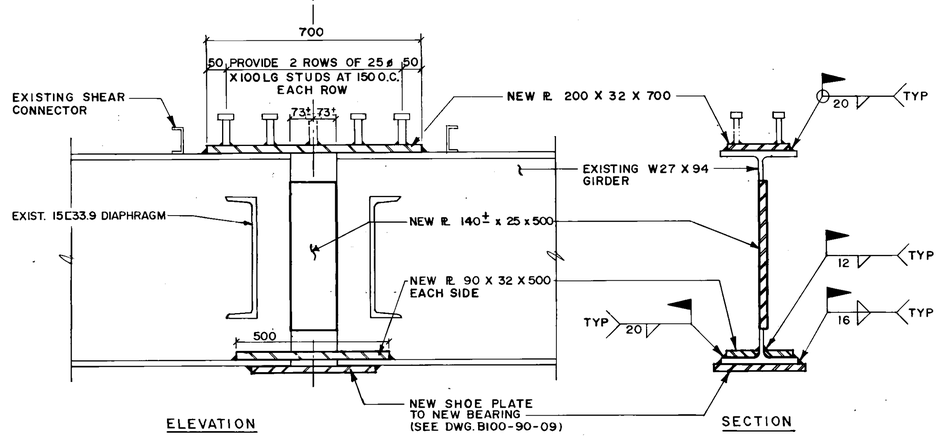
6 — SECTION
1:10

7 — SECTION
1:10

4 — SPLICE PIT (6 THUS)
1:20



PLAN - SECTION
(ACCOMMODATES PROBABLE MISALIGNMENT OF GIRDER WEBS)



ELEVATION

SECTION

3 — STEEL GIRDER SPLICING DETAIL
1:10 (27 REQUIRED AS SHOWN)

AS-BUILT
DATE 91-02-26 BY TB
CHECKED BY JM

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
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NO	REVISIONS	DATE	BY
	B.M. ELEV.		
1	REVISED AS CONSTRUCTED	90-12-14	FPC

WARDROP ENGINEERING INC.

DESIGNED BY	JC & FPC	CHECKED BY	
DRAWN BY	LG	APPROVED BY	
HOR. SCALE	AS NOTED	AUTHORIZED BY W. NAUMKO/STREETS & BRIDGES ENGINEER	DATE 90.12.23
VERTICAL		ACCEPTED BY K.S. SMITH / BRIDGE ENGINEER	DATE 90.12.23
DATE	JAN. 15, 1990		

ENGINEER: PROVINCE OF MANITOBA C. D. STEWART 90/12/20 REGISTERED ENGINEER
CONSULTANT DRAWING NO. 890007-02-00

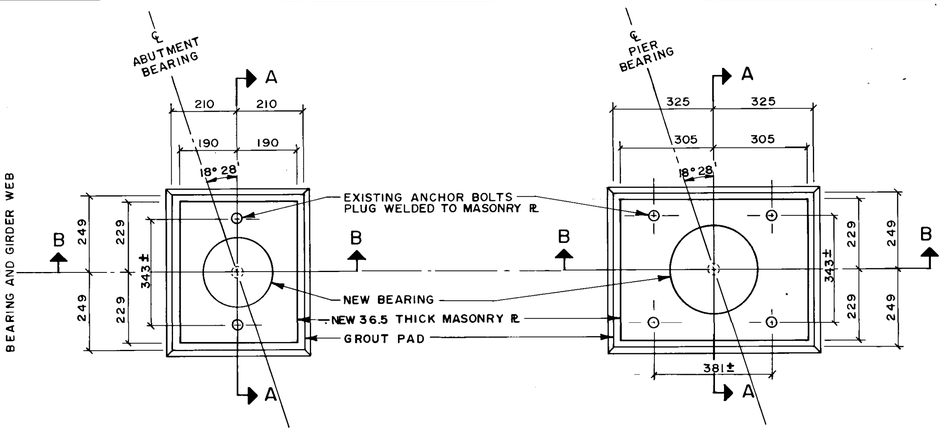
B-5903-8

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS
PLANS SHOWING LIMITS OF NEW WORKS

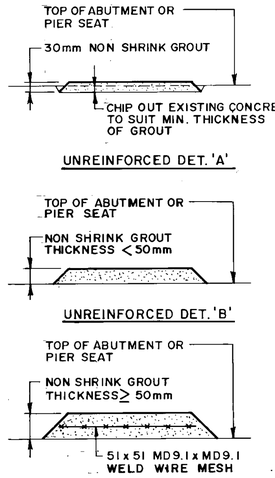
CITY DRAWING NUMBER
B100-90-08

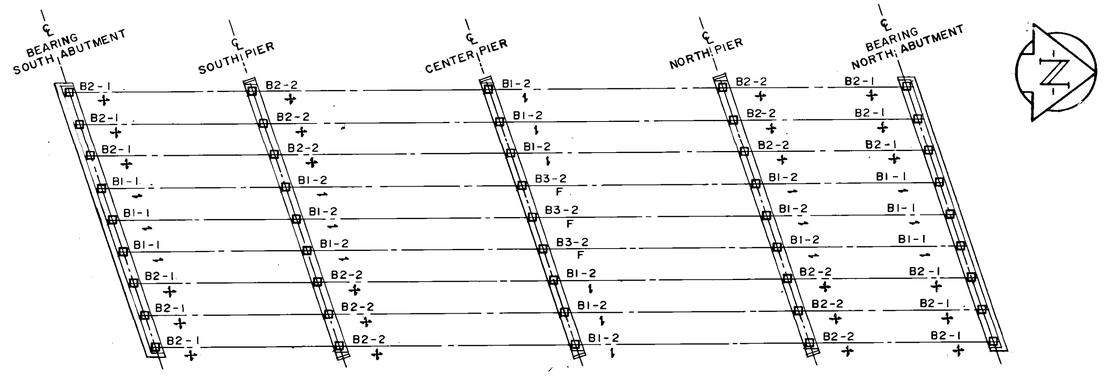
WO 101-84



ABUTMENT BEARING BASE PLATE

PIER BEARING BASE PLATE



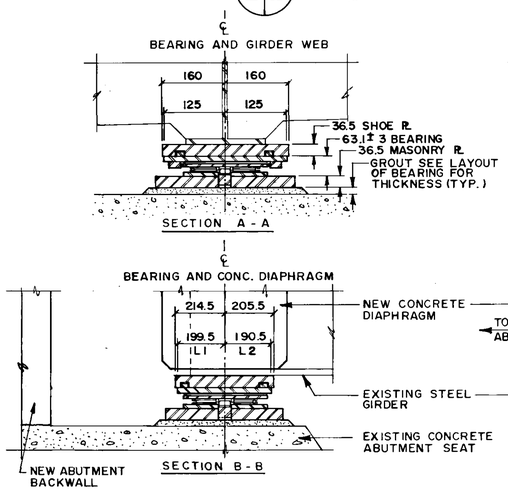


NOTES:
1. THICKNESS OF GROUT SHOWN TO BE FIELD VERIFIED.
2. FOR GROUT LESS THAN 50mm PROVIDE NO REINFORCING.
3. FOR GROUT GREATER THAN OR EQUAL TO 50mm PROVIDE REINFORCING AS PER DET. 'c'.

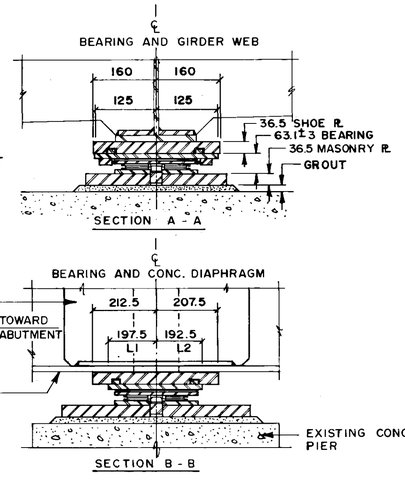
1 — LAYOUT OF BEARINGS
1 : 200

LEGEND:
- B2-1 BEARING TYPE
- F FIXED BEARING
- UNIDIRECTIONAL BEARING
- MULTIDIRECTIONAL BEARING

2 — TYPICAL BEARING PLANS
1 : 10

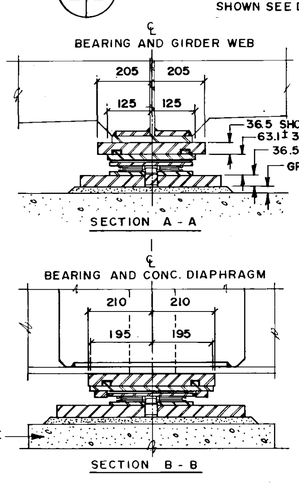


NORTH AND SOUTH ABUTMENTS
TYPE B1-1



NORTH AND SOUTH PIERS
TYPE B1-2

7 — GROUT DETAILS
NTS NOTE: ANCHOR BOLTS NOT SHOWN SEE DETAIL 6 BELOW



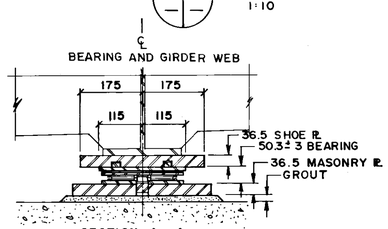
CENTER PIER
TYPE B1-2

BEARING DESIGN DATA										
LOCATION	SOUTH ABUTMENT		SOUTH PIER		CENTER PIER		NORTH PIER		NORTH ABUTMENT	
BEARING TYPE	B1-1	B2-1	B1-2	B2-2	B1-2	B3-2	B1-2	B2-2	B1-1	B2-1
NUMBER REQUIRED	3	6	3	6	6	3	3	6	3	6
DEAD LOAD (KN)	135	135	420	420	430	430	420	420	135	135
DEAD LOAD+LIVE LOAD (KN)	370	370	455	455	460	460	455	455	370	370
LATERAL LOAD (KN)	10	—	20	—	—	25	20	—	10	—
LONGITUDINAL LOAD (KN)	—	—	—	—	95	95	—	—	—	—
LONGITUDINAL MOVEMENT *	+3 -16	+3 -16	+2 -9	+2 -9	—	—	+2 -9	+2 -9	+3 -16	+3 -16
LATERAL MOVEMENT * (MAX. FOR EXTERIOR GIRDER BRGS.)	—	+1 -4	—	+1 -4	+1 -4	—	—	+1 -4	—	+1 -4
SHOE PLATE	420x320	410x350	420x320	410x350	420x410	410x350	420x320	410x350	420x320	410x350
BEARING TOP PLATE	390x250	310x230	390x250	310x230	390x250	210 ø	390x250	310x230	390x250	310x230
L1 *	157	157	151	151	—	—	151	151	157	157
L2 *	148	148	146	146	—	—	146	146	148	148

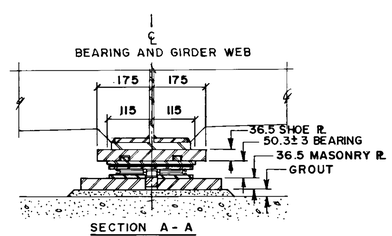
NOTES:
* AT TEMPERATURE OF +20°C.
DIFFERENCE IN TEMPERATURE MOVEMENT DUE TO DIFFERENT INSTALLATION TEMPERATURE:
1. IN LONGITUDINAL DIRECTION
   a) AT NORTH AND SOUTH ABUTMENTS = 1.5mm PER 5°C.
   b) AT NORTH AND SOUTH PIERS = 0.8mm PER 5°C
2. IN LATERAL DIRECTION FOR ALL EXTERIOR GIRDER BEARINGS AT ALL ABUTMENTS AND PIERS = 0.4mm PER 5°C

NOTES:
1. BEARING SEAT ELEVATIONS SET TO SUIT ACTUAL HEIGHT OF BEARINGS.
2. BEARING DESIGN TO ALLOW FOR FUTURE JACKING OF BRIDGE TO A MAXIMUM OF 5mm FOR BEARING REPLACEMENT.
3. SHOE PLATE AND BEARING TOP PLATE TO BE INSTALLED IN ACCORDANCE WITH TABLE OF SETTING DIMENSIONS.
4. BEARING DESIGN SHALL ALLOW FOR AN EXTRA 50mm MOVEMENT BEYOND VALUES SPECIFIED IN DESIGN DATA TABLE.

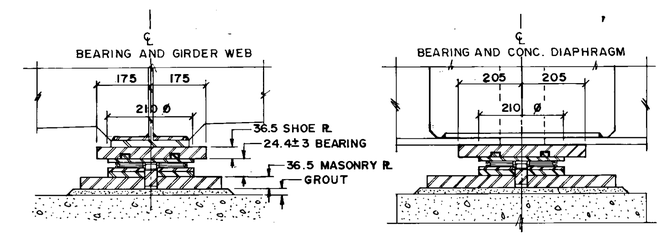
3 — UNIDIRECTIONAL BEARINGS
1:10



NORTH AND SOUTH ABUTMENTS
TYPE B2-1



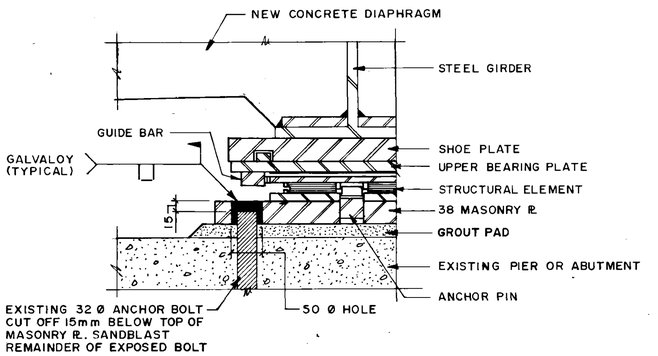
NORTH AND SOUTH PIERS
TYPE B2-2



CENTER PIER
TYPE B3-2

4 — MULTIDIRECTIONAL BEARINGS
1:10

5 — FIXED BEARINGS
1:10



6 — TYPICAL ANCHOR BOLT DETAIL
1:5

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
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NO.	REVISIONS	DATE	BY
1	REVISED AS CONSTRUCTED	90-12-14	FPC

B.M. ELEV.

WARDROP ENGINEERING INC.

DESIGNED BY	JC & FPC	CHECKED BY	
DRAWN BY	LG	APPROVED BY	
HOR. SCALE / VERTICAL	AS NOTED	AUTHORIZED BY / DATE	W. MAUNTON / ASSTS W BRIDGE ENGINEER / 90 12 23
DATE	JAN. 15, 1990	ACCEPTED BY / DATE	R.R. SMITH / BRIDGE ENGINEER / 90 12 23

ENGINEER'S SEAL — PROVINCE OF MANITOBA — C. D. STEWART — REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007-02-00

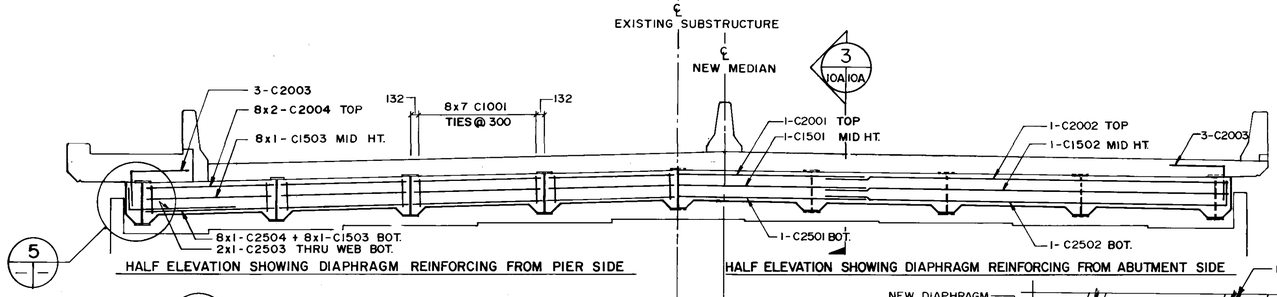
THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS
BEARING DETAILS

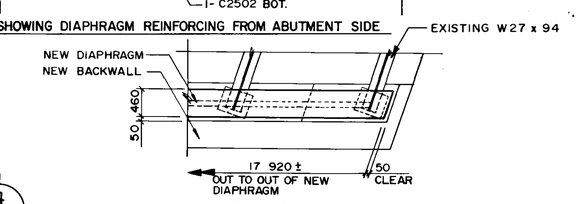
CITY DRAWING NUMBER B100-90-09

B-5903-9

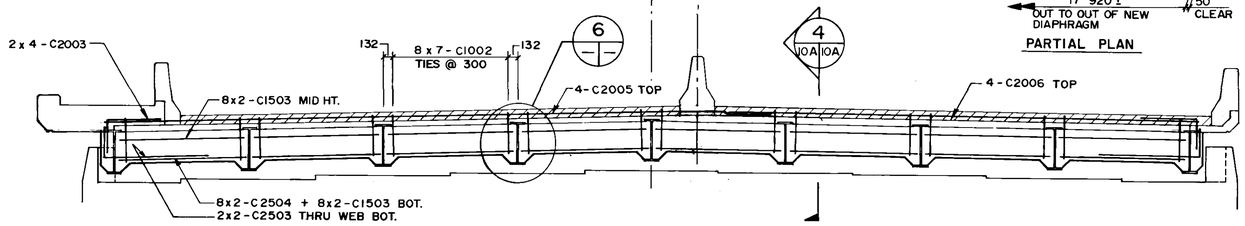
WO 101-84



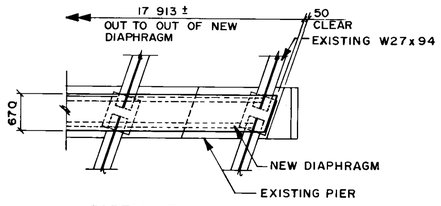
1 — ELEVATION – AT ABUTMENT
1:50 (2 DIAPHRAGMS THUS)



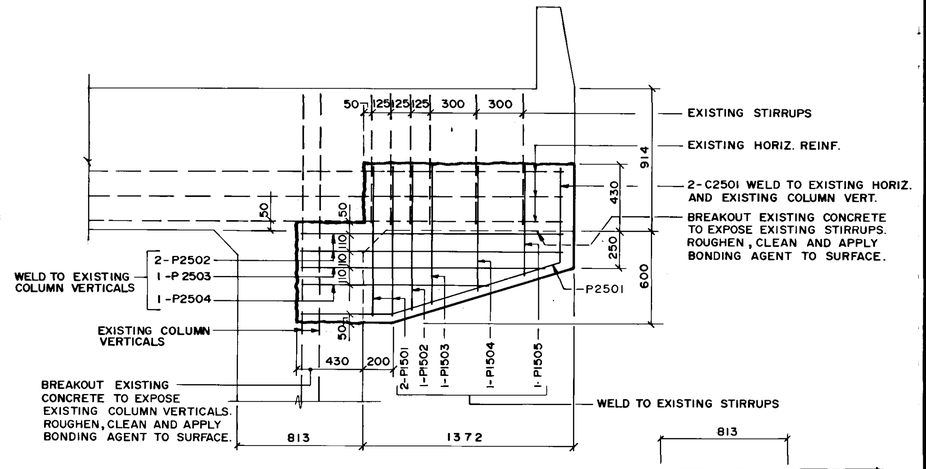
PARTIAL PLAN



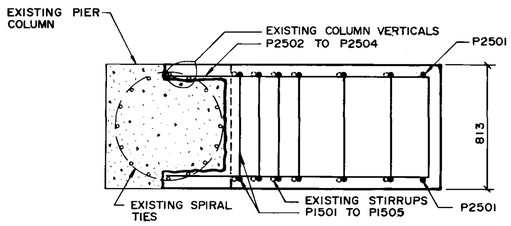
2 — ELEVATION – AT PIER
1:50 (3 DIAPHRAGMS THUS)



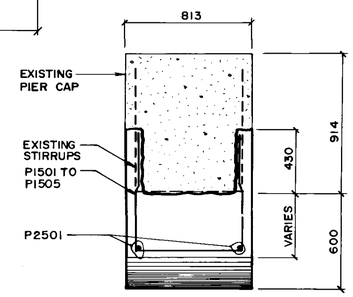
PARTIAL PLAN



ELEVATION

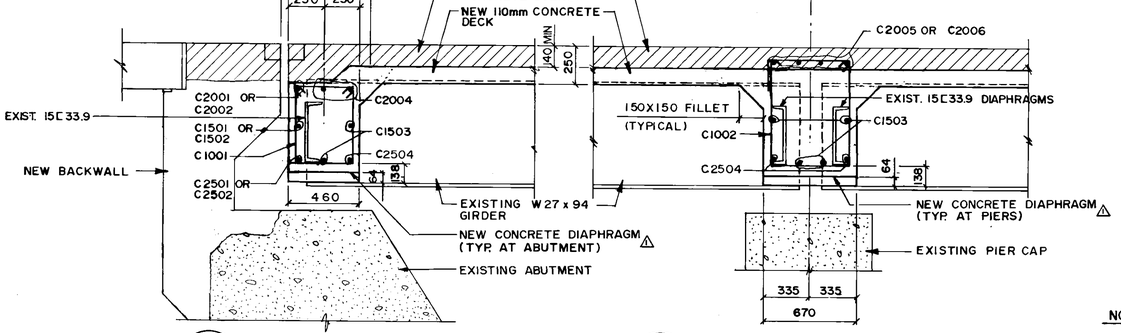


SECTION



SECTION

7 — NEW CONCRETE BRACKET AT EXISTING PIER CAP
1:20 EAST SIDE ONLY 3 LOCATIONS THUS

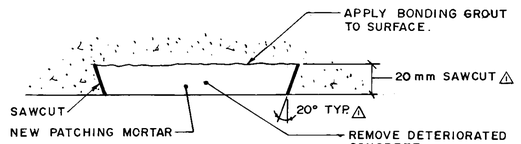


3 — SECTION – AT ABUTMENT
10A 10A / 13A 10A
1:20

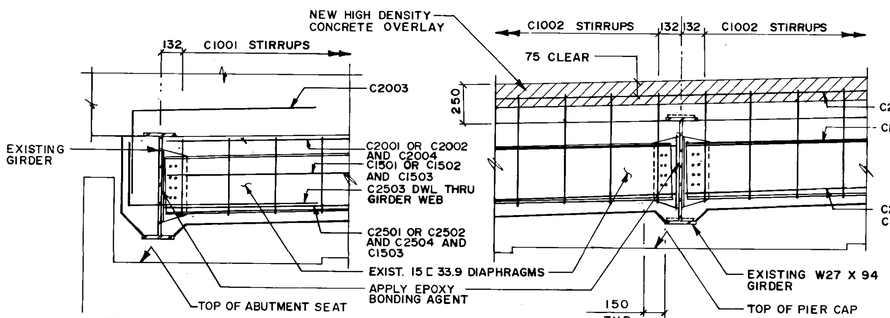
4 — SECTION – AT PIER
10A 10A / 13A 10A
1:20

NOTES FOR EXISTING CONDUITS & OTHER UTILITIES

1. DISMANTLING OF EXISTING UTILITIES AND OTHER OUTLETS UNDER THE BRIDGE SHOULD BE PROPERLY COORDINATED TO CORRESPONDING AGENCIES.
2. ACTUAL LOCATIONS OF EXISTING UTILITIES SHOULD BE VERIFIED IN THE FIELD BEFORE PROCEEDING WITH CONSTRUCTION.



9 — DETAIL
N.T.S.



5 — DETAIL – AT ABUTMENT
1:20

6 — DETAIL – AT PIER
1:20

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

B-5903-10

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
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NO	REVISIONS	DATE	BY
2	REVISED AS CONSTRUCTED	90-12-14	FPC
⚠1	ADDENDUM	90-3-9	FPC

B.M. ELEV.

WARDROP ENGINEERING INC.

DESIGNED BY JC & FPC — CHECKED BY
DRAWN BY LG — APPROVED BY
HOR. SCALE AS NOTED
VERTICAL
DATE JAN. 15, 1990

AUTHORIZED BY W. RAUNIO/STREETS & BRIDGES ENGINEER — DATE 90 12 23
ACCEPTED BY G.R. SMITH/ BRIDGE ENGINEER — DATE 90.12.23

ENGINEER'S STAMP: PROVINCE OF MANITOBA — C. D. STEWART — 90/02/20 — REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007-02-00

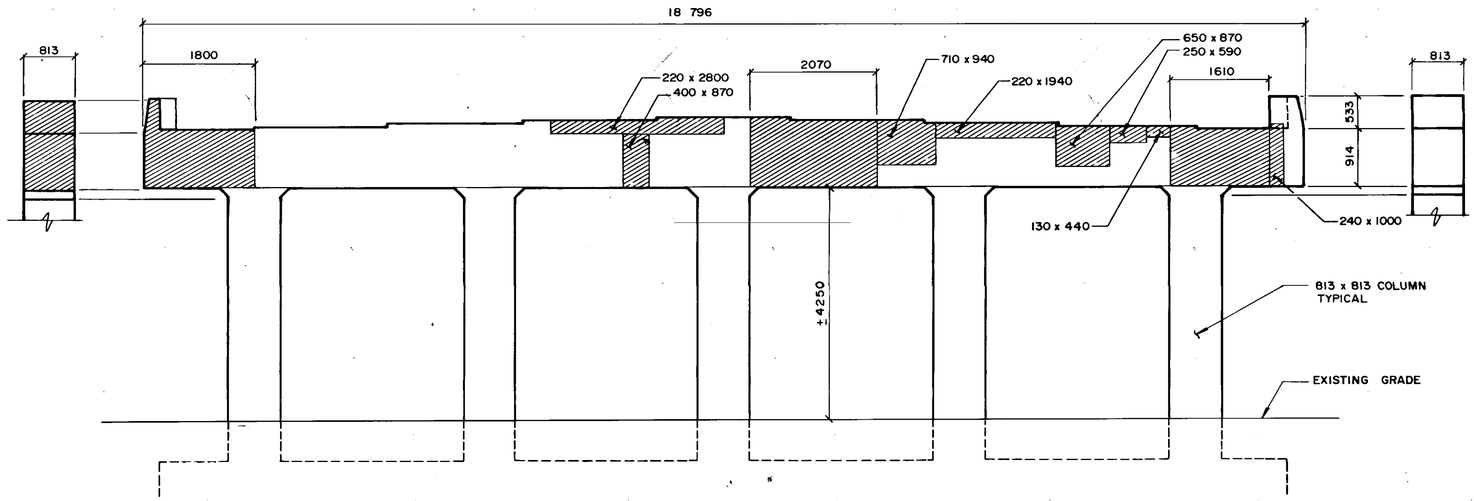
THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

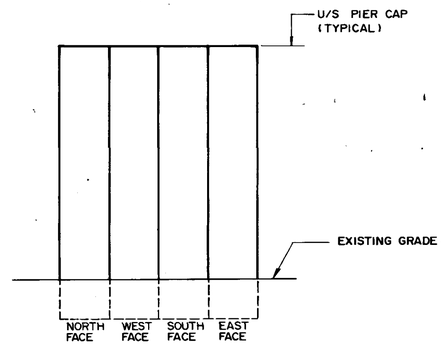
DIAPHRAGM DETAILS AND PIER CAP REINFORCING

CITY DRAWING NUMBER B100-90-10A(RI)

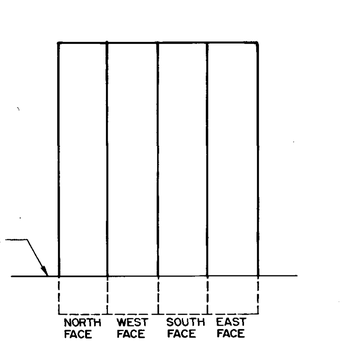
WO 101-84



1 NORTH ELEVATION
1:50

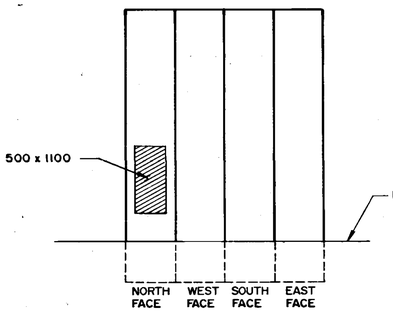


3 EAST COLUMN
1:50



4 EAST-CENTER COLUMN
1:50

2 SOUTH ELEVATION
1:50



5 CENTER COLUMN
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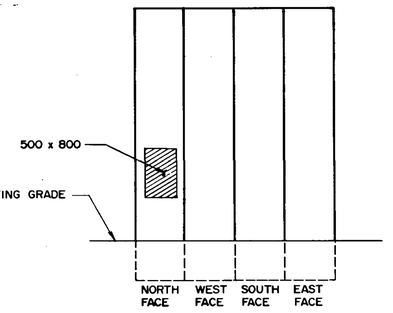
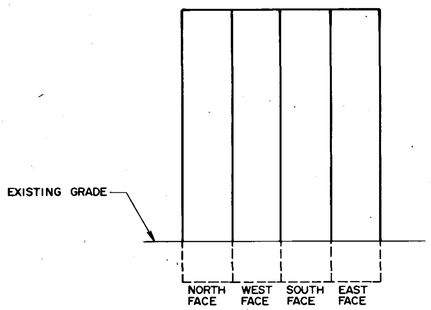


6 WEST-CENTER COLUMN
1:50



7 WEST COLUMN
1:50

LEGEND:

TYPE 1 REPAIR
— APPLY CEMENT WASH TO EXISTING SURFACE.

TYPE 2 REPAIR
— CHIP 25mm TO SOUND CONCRETE.
— SANBLAST & EPOXY COAT EXPOSED REINF.
— APPLY BONDING AGENT.
— BUILD UP SURFACE TO PREVIOUS LEVEL BY TROWELLING ON CEMENT MORTAR.

B-5903-11

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION

B.M. ELEV.

NO	REVISIONS	DATE	BY

WARDROP ENGINEERING INC.

DESIGNED BY F.C.	CHECKED BY
DRAWN BY G.I.	APPROVED BY
HOR. SCALE AS NOTED / VERTICAL	AUTHORIZED BY — DATE
DATE JANUARY 12, 1991	W. MAUMO/STREETS & BRIDGE ENGINEER — ACCEPTED BY — DATE — G.R. SMITH/ BRIDGE ENGINEER

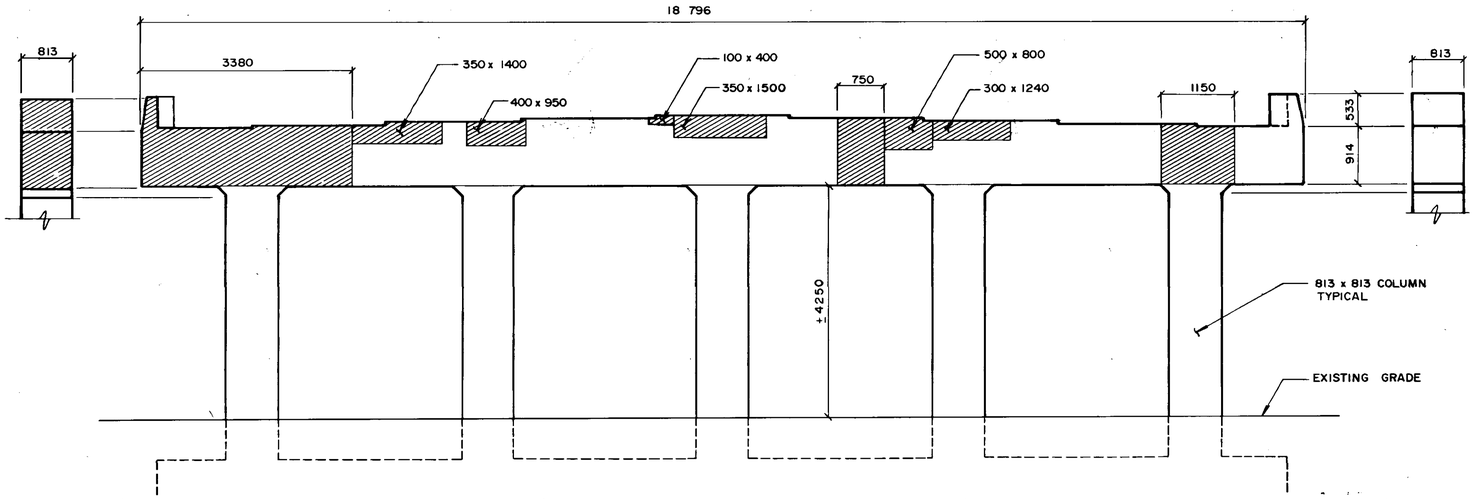
ENGINEER'S SEAL
PROVINCE OF MANITOBA
C. D. STEWART
91/02/27
REGISTERED ENGINEER

CONSULTANT DRAWING NO.
890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS
SOUTH PIER
EXPOSED CONCRETE SURFACE REPAIRS

CITY DRAWING NUMBER
B100-90-10B



1 NORTH ELEVATION
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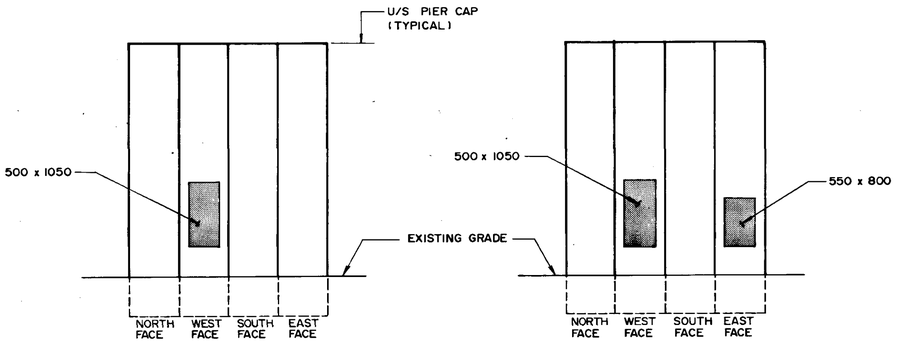
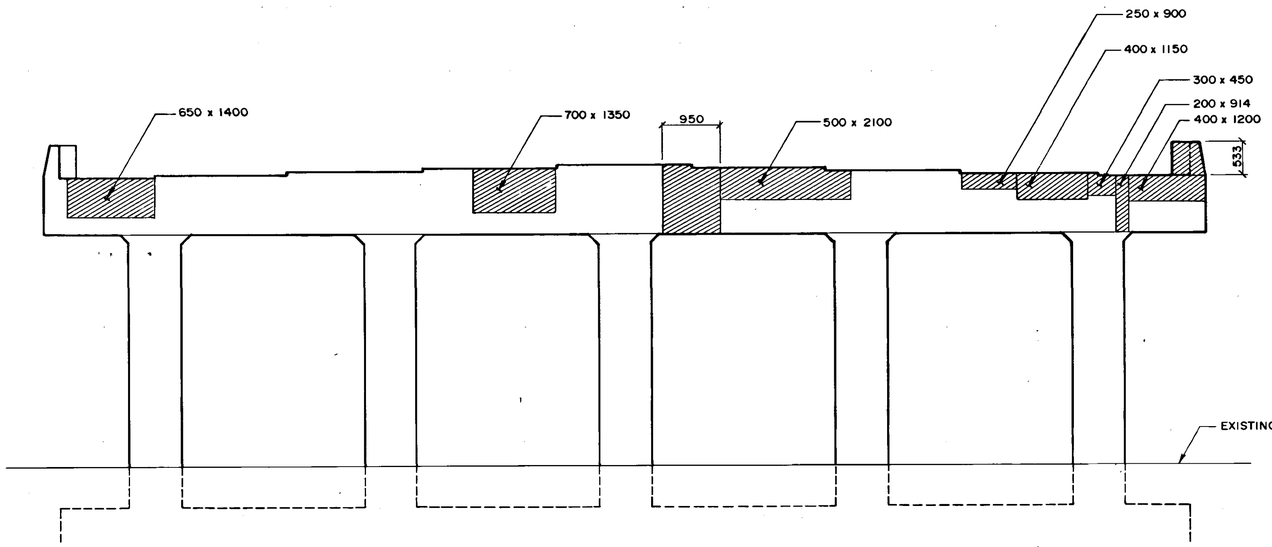
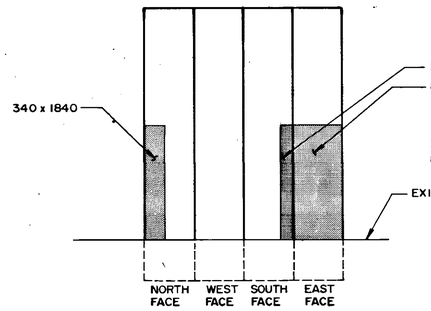


3 EAST COLUMN
1:50

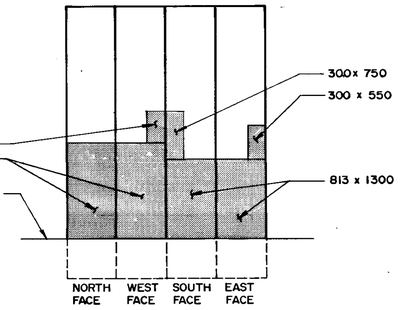
4 EAST-CENTER COLUMN
1:50



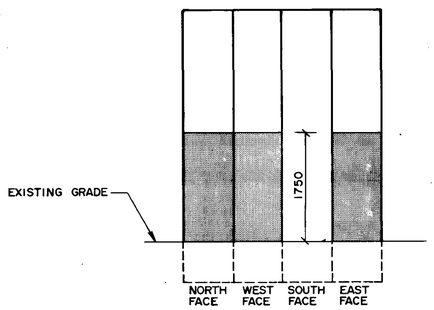
2 SOUTH ELEVATION
1:50



5 CENTER COLUMN
1:50



6 WEST-CENTER COLUMN
1:50



7 WEST COLUMN
1:50

LEGEND:

TYPE 1 REPAIR
— APPLY CEMENT WASH TO EXISTING SURFACE.

TYPE 2 REPAIR
— CHIP 25mm TO SOUND CONCRETE.
— SANBLAST & EPOXY COAT EXPOSED REINF.
— APPLY BONDING AGENT.
— BUILD UP SURFACE TO PREVIOUS LEVEL BY TROWELLING ON CEMENT MORTAR.

TYPE 3 REPAIR
— CHIP OFF 50mm TO SOUND CONCRETE.
— SANDBLAST & EPOXY COAT EXPOSED REINF.
— APPLY BONDING AGENT.
— INSTALL FORMWORK
— CAST CONCRETE WITH 9mm AGGREGATE

B-5903-12

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV U/G STRUCTURES COMMITTEE — DATE

NOTE:
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NO	REVISIONS	DATE	BY

B M ELEV

WARDROP ENGINEERING INC.

DESIGNED BY F.C. — CHECKED BY
DRAWN BY G.I. — APPROVED BY
HOR SCALE AS NOTED
VERTICAL
DATE JANUARY 12, 1991
AUTHORIZED BY — DATE
W. NAUMKO/STREETS & BRIDGE ENGINEER
ACCEPTED BY — DATE
G.R. SMITH/ BRIDGE ENGINEER

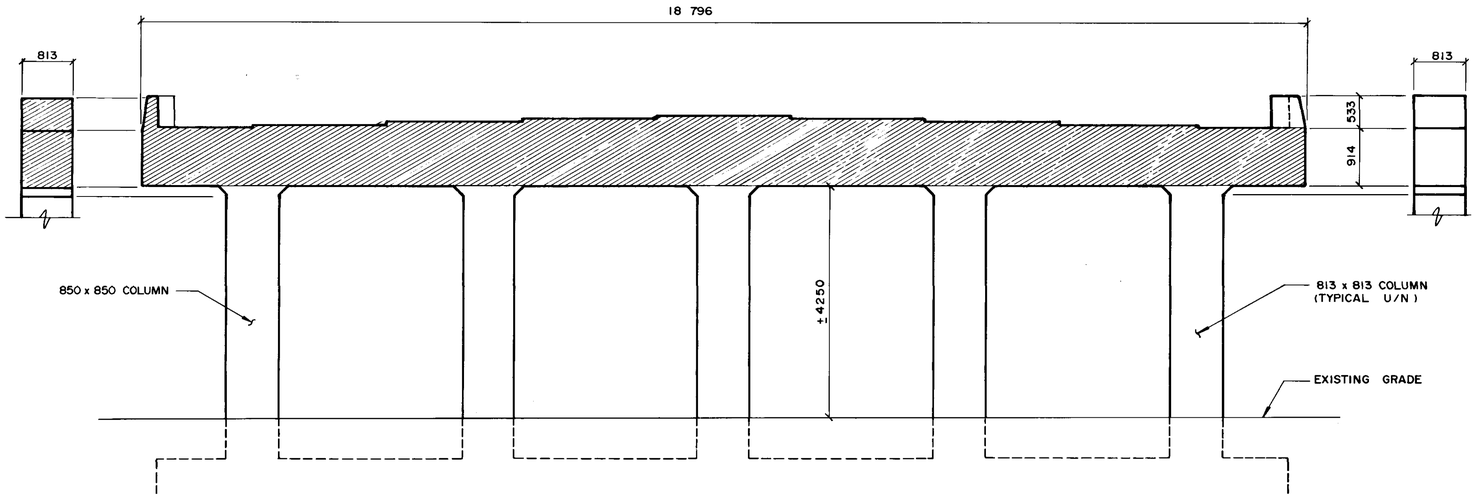
ENGINEER'S SEAL
PROVINCE OF MANITOBA
C. D. STEWART
91/02/27
REGISTERED ENGINEER

CONSULTANT DRAWING NO.
890007-02-00

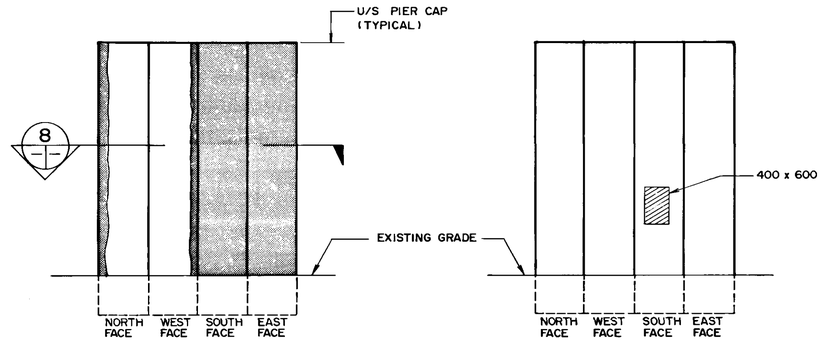
THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS
CENTER PIER
EXPOSED CONCRETE SURFACE REPAIRS

CITY DRAWING NUMBER
B100-90-10C

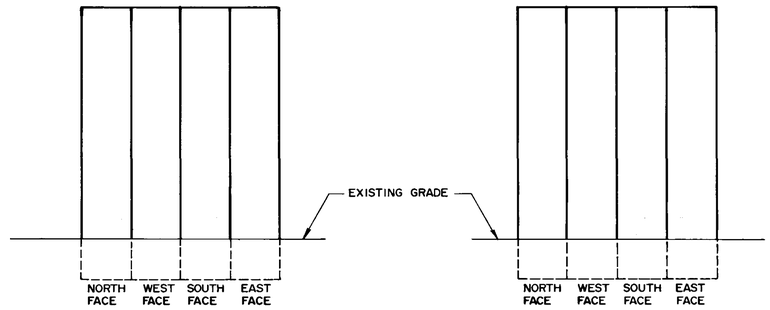


1 NORTH ELEVATION
1:50



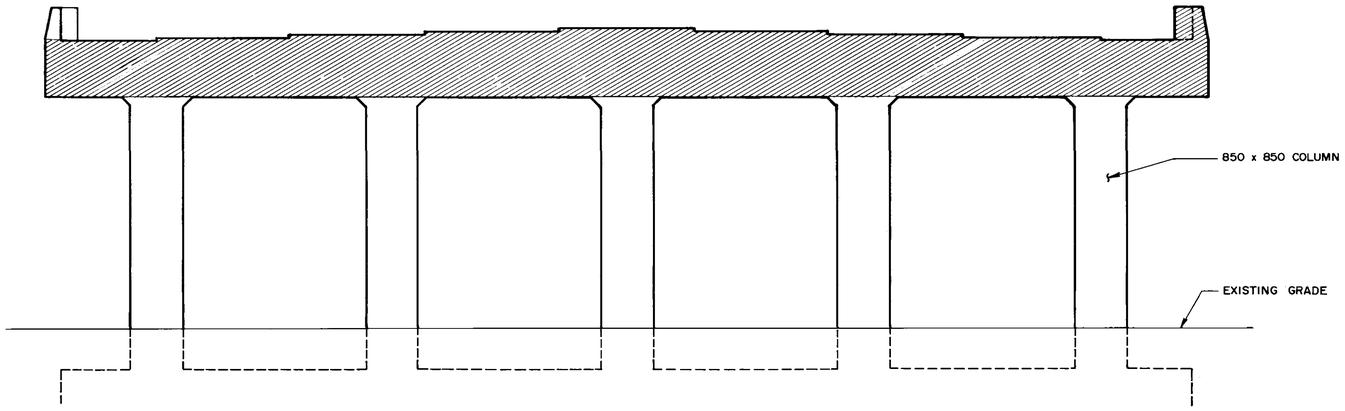
3 EAST COLUMN
1:50

4 EAST-CENTER COLUMN
1:50

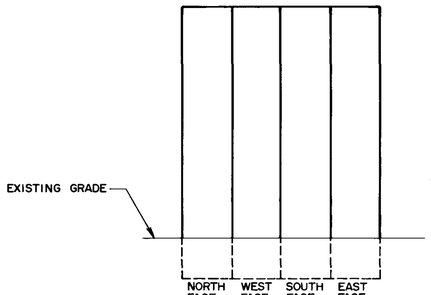


5 CENTER COLUMN
1:50

6 WEST-CENTER COLUMN
1:50



2 SOUTH ELEVATION
1:50



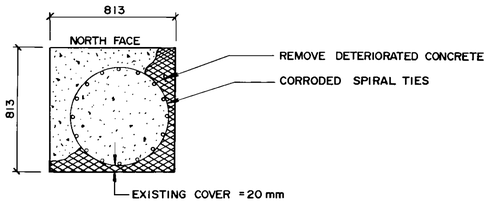
7 WEST COLUMN
1:50

LEGEND:

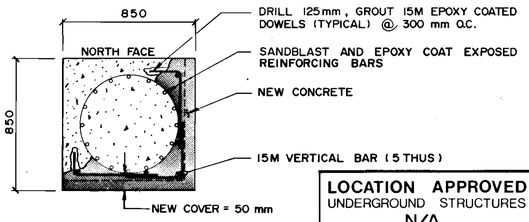
TYPE 1 REPAIR
- APPLY CEMENT WASH TO EXISTING SURFACE.

TYPE 2 REPAIR
- CHIP 25mm TO SOUND CONCRETE.
- SANBLAST & EPOXY COAT EXPOSED REINF.
- APPLY BONDING AGENT.
- BUILD UP SURFACE TO PREVIOUS LEVEL BY TROWELLING ON CEMENT MORTAR.

TYPE 4 REPAIR
- CHIP OFF 75mm MINIMUM TO SOUND CONCRETE.
- SANDBLAST & EPOXY COAT EXPOSED REINF.
- DRILL IN DOWELS AND TIE REINF. AS DIRECTED BY THE CONTRACT ADMINISTRATOR.
- APPLY BONDING AGENT.
- INSTALL FORMWORK
- CAST CONCRETE WITH 9mm AGGREGATE



8 SECTION
SHOWING PIER COLUMN BEFORE DEMOLITION
1:20



8 SECTION
SHOWING PIER COLUMN REPAIR
1:20

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G. STRUCTURES COMMITTEE — DATE

NOTE:
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B.M. ELEV.

NO.	REVISIONS	DATE	BY

WARDROP ENGINEERING INC.

DESIGNED BY F.C.	CHECKED BY
DRAWN BY G.I.	APPROVED BY
HOR. SCALE / VERTICAL AS NOTED	AUTHORIZED BY — DATE — W. NAUMKO/STREETS & BRIDGE ENGINEER
DATE JANUARY 12, 1991	ACCEPTED BY — DATE — R. SMITH/BRIDGE ENGINEER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
C. D. STEWART
91/02/27
REGISTERED ENGINEER

CONSULTANT DRAWING NO.
890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

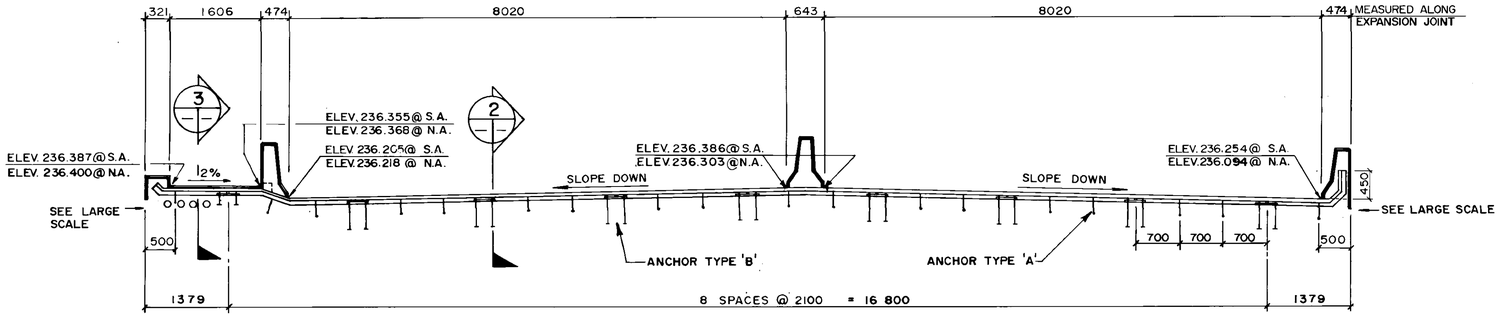
EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

NORTH PIER
EXPOSED CONCRETE SURFACE REPAIRS

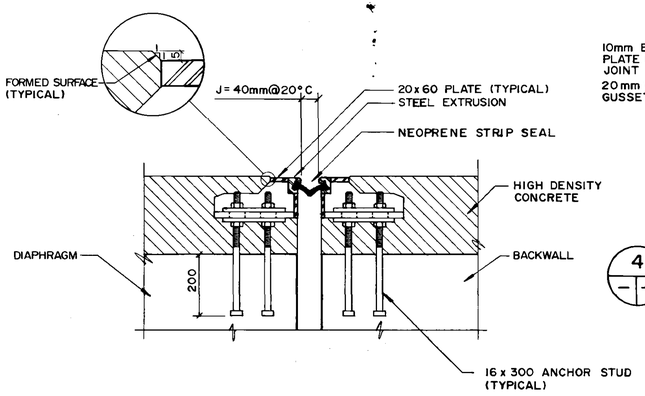
CITY DRAWING NUMBER
B100-90-10D

B-5903-13

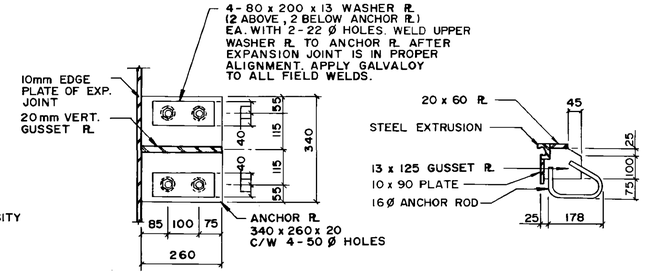
W0 101-84



1 — ELEVATION
1 : 50

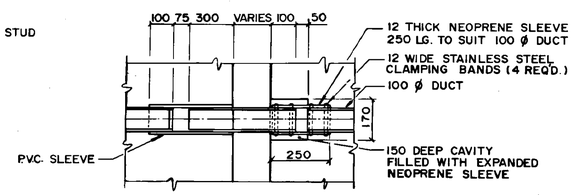


2 — SECTION
1 : 10

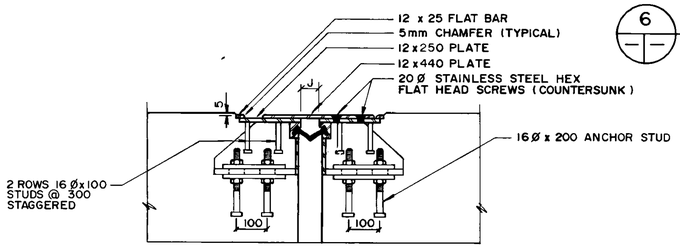


4 — ANCHOR TYPE 'B'
1 : 10

5 — ANCHOR TYPE 'A'
1 : 10



6 — TYPICAL DUCT EXPANSION JOINT ASSEMBLY
N.T.S.

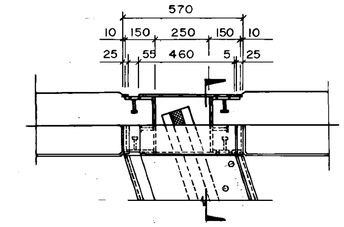


3 — SECTION
1 : 10

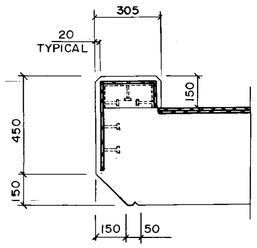
TEMPERATURE WIDTH ADJUSTMENT TABLE								
TEMP. °C	5	10	15	20	25	30	MIN.	MAX.
DIM. 'J' mm	45	43	42	40	38	37	35	76

NOTES:

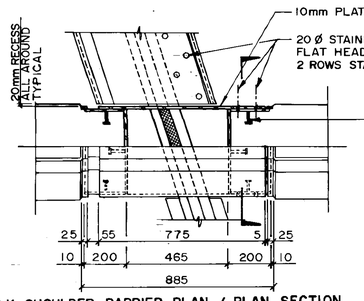
1. Manufacturer's shop drawings shall be submitted to the contract administrator for approval at least fourteen (14) working days prior to fabrication. The expansion joint assemblies shall be designed to carry AASHTO HS30-44 live loading.
2. Steel shall be in accordance with CSA Standard G40.21M Grade 300 WT or equal.
3. Steel extrusions shall be in accordance with CSA Standard G40.21M Grade 230 G minimum.
4. All steel surfaces shall be hot dip galvanized to a net retention of 600 G/M2 in accordance with CSA Standard G 164 after fabrication and installed in one continuous piece.
5. Joint assembly shall be fabricated and completely shop assembled and preset to dimension 'J' for 15C prior to shipment.
6. Welding shall be of low hydrogen classification. Manual electrodes shall be E7016 or E7018. All welding shall be in accordance with CSA Standard W59.
7. Seal shall be preformed neoprene rubber seal. Each rubber seal shall be supplied and installed in one continuous piece. No splices in the rubber seal will be permitted unless authorized by the contract administrator.
8. Joint assembly shall be installed 5mm below elevation and grade of bridge deck.
9. After removal of clamping channels and spacer dam, bolt and bleeder holes to be filled with an approved epoxy grout.
10. Installation temperature shall be taken as the mean shade air temperature prior to joint installation at the structure as follows: for concrete structures – 48 hours. For steel structures – 24 hours.
11. All areas of damaged galvanizing shall be repaired by using the galvaloy procedure as specified.
12. All barrier coverplates shall be recessed 20mm from the face of concrete.



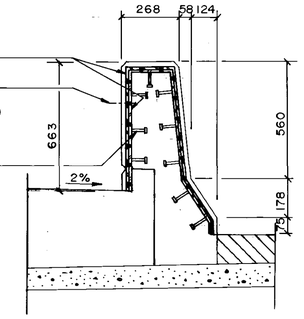
CURB PLAN / PLAN SECTION



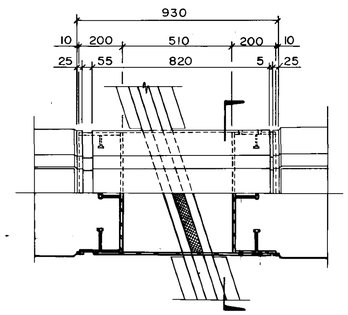
CURB SECTION



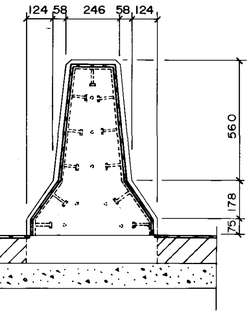
SIDEWALK SHOULDER BARRIER PLAN / PLAN SECTION



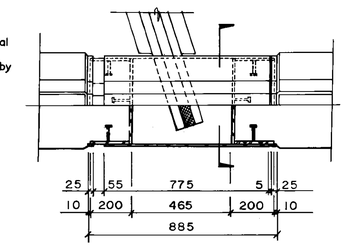
SIDEWALK SHOULDER BARRIER SECTION



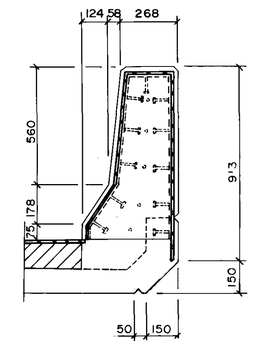
MEDIAN BARRIER PLAN / PLAN SECTION



MEDIAN BARRIER SECTION



SHOULDER BARRIER PLAN / PLAN SECTION



SHOULDER BARRIER SECTION

7 — CONCRETE TRAFFIC BARRIER EXPANSION DETAILS
NTS

B-5903-14

AS-BUILT
DATE 9.10.22 BY
CHECKED BY

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

B.M. ELEV.

NO	REVISIONS	DATE	BY
1	REVISED AS CONSTRUCTED	90-12-14	FPC

WARDROP ENGINEERING INC.

DESIGNED BY	JC & FPC	CHECKED BY	
DRAWN BY	LG	APPROVED BY	
HOR. SCALE / VERTICAL	AS NOTED	AUTHORIZED BY W. KALANDYCZYK, STREETS & BRIDGES ENGINEER — DATE 90.03.23	
		ACCEPTED BY G.R. SMITH / BRIDGE ENGINEER — DATE 90.12.23	
DATE	JAN. 15, 1990		

ENGINEER'S SEAL
PROVINCE OF MANITOBA
C. D. STEWART
REGISTERED ENGINEER

CONSULTANT DRAWING NO.
890007-02-00

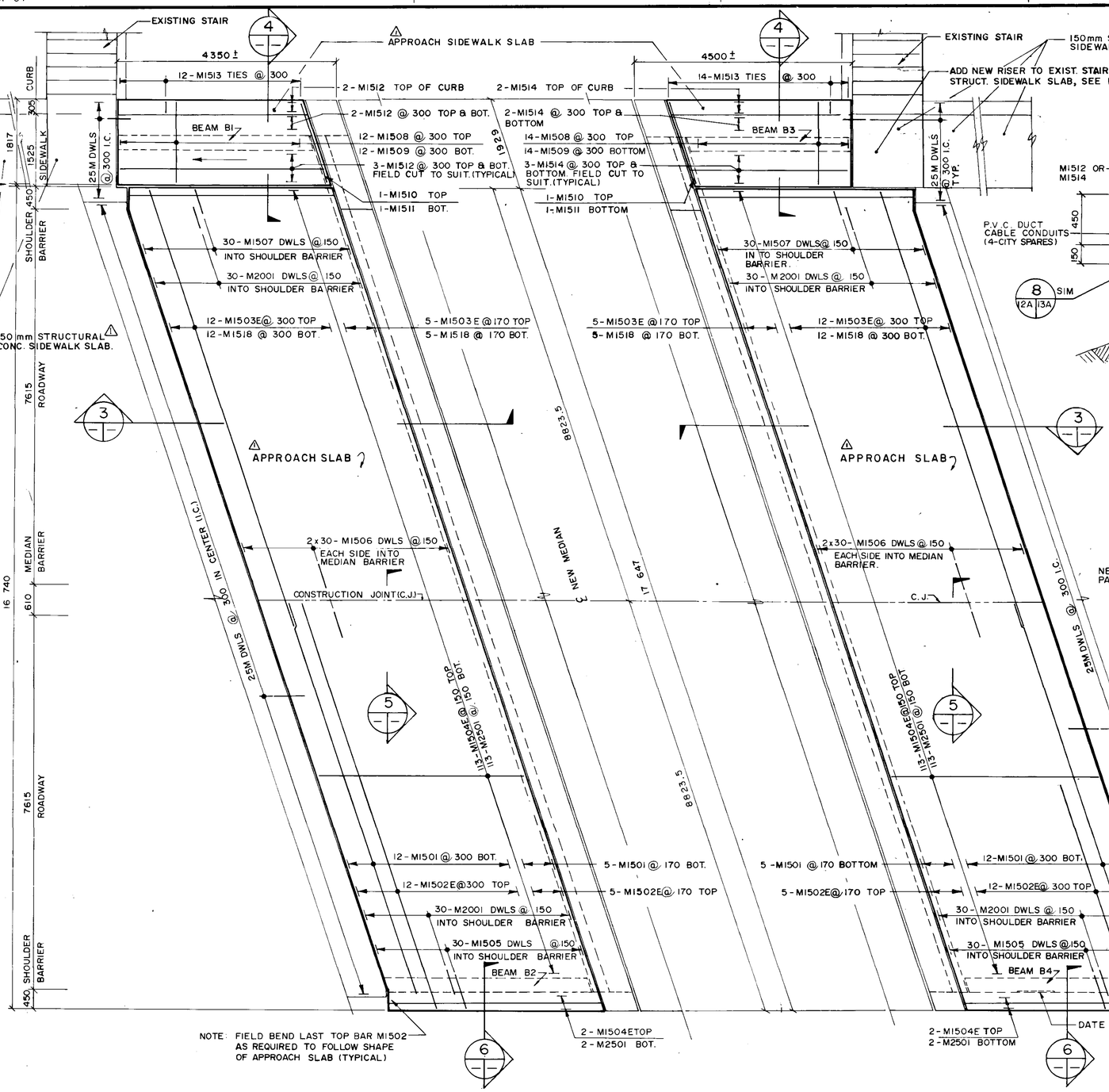
THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

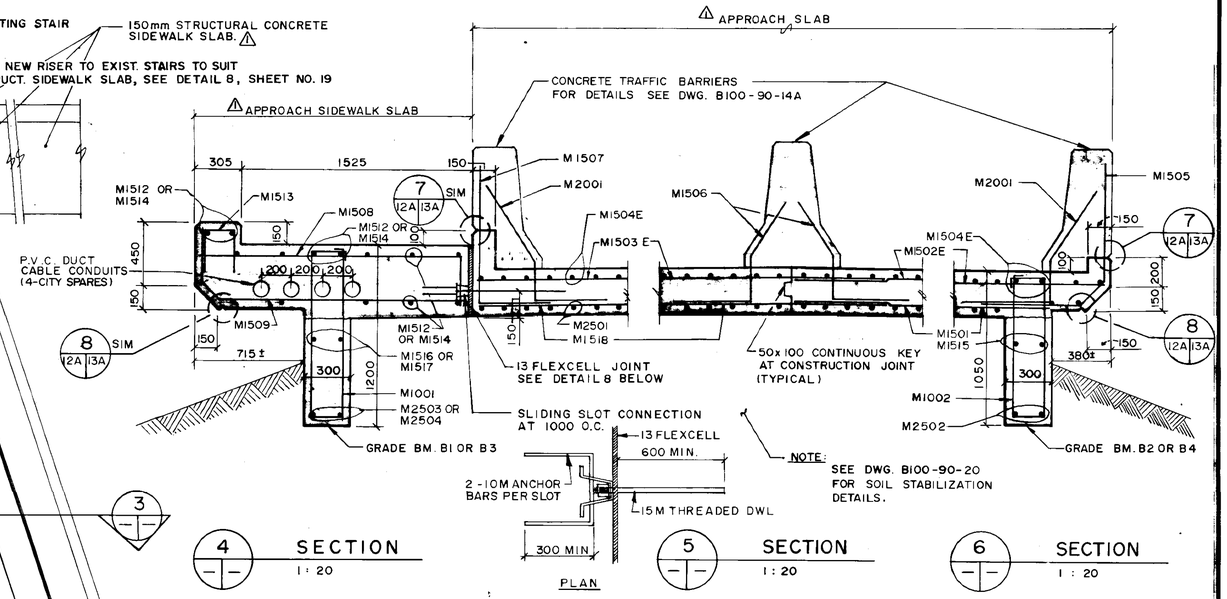
EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

EXPANSION JOINT DETAILS

CITY DRAWING NUMBER
B100-90-11

WO 101-84

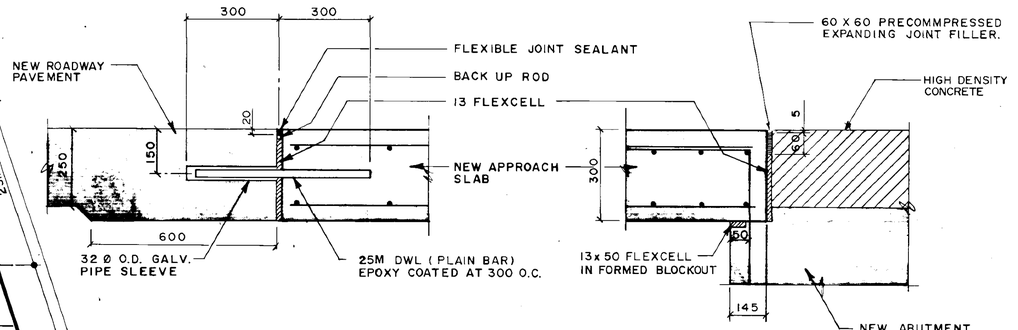




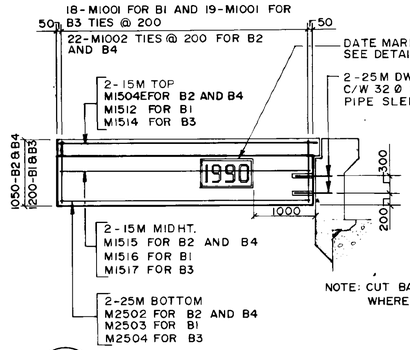
4 SECTION 1:20

5 SECTION 1:20

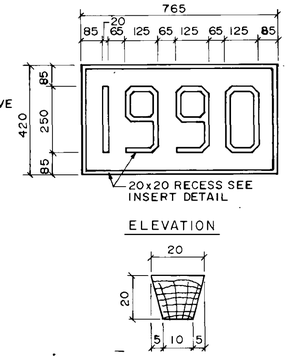
6 SECTION 1:20



7 DETAIL 1:10



8 DETAIL 1:10

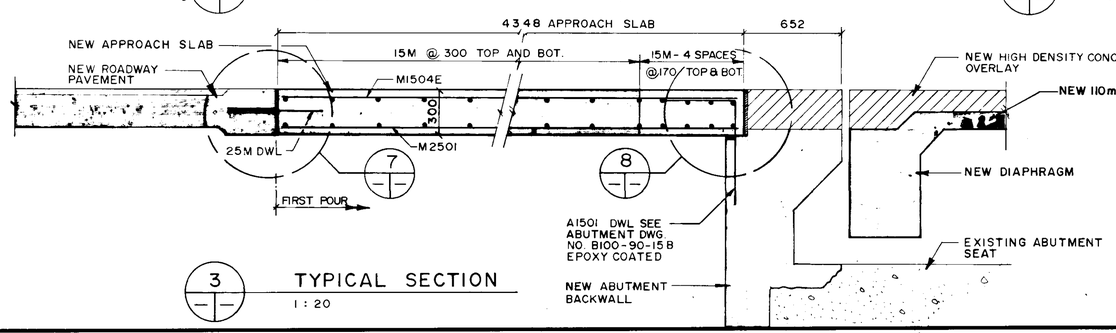


9 ELEVATION GRADE BM. B2 SHOWN. 1:50 BEAM B1, B3 & B4 SIMILAR

10 DATE MARKER DETAIL NTS

1 PLAN - SOUTH APPROACH SLAB 1:50

2 PLAN - NORTH APPROACH SLAB 1:50



3 TYPICAL SECTION 1:20

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

B-5903-15

B.M. ELEV	NO	REVISIONS	DATE	BY
	2	REVISED AS CONSTRUCTED	90-2-14	F.P.C.
	⚠	ADDENDUM	90-3-19	F.P.C.

WARDROP ENGINEERING INC.
WINNIPEG TORONTO THUNDER BAY EDMONTON

DESIGNED BY JC & FPC — CHECKED BY
DRAWN BY LG — APPROVED BY
HOR SCALE AS NOTED
VERTICAL
DATE JAN. 15, 1990

AUTHORIZED BY — DATE
R. RAUMKO/STREETS & BRIDGES ENGINEER
ACCEPTED BY — DATE
G.R. SMITH / BRIDGE ENGINEER

ENGINEER'S SEAL: PROVINCE OF MANITOBA — C.D. STEWART — 90/02/26 — REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

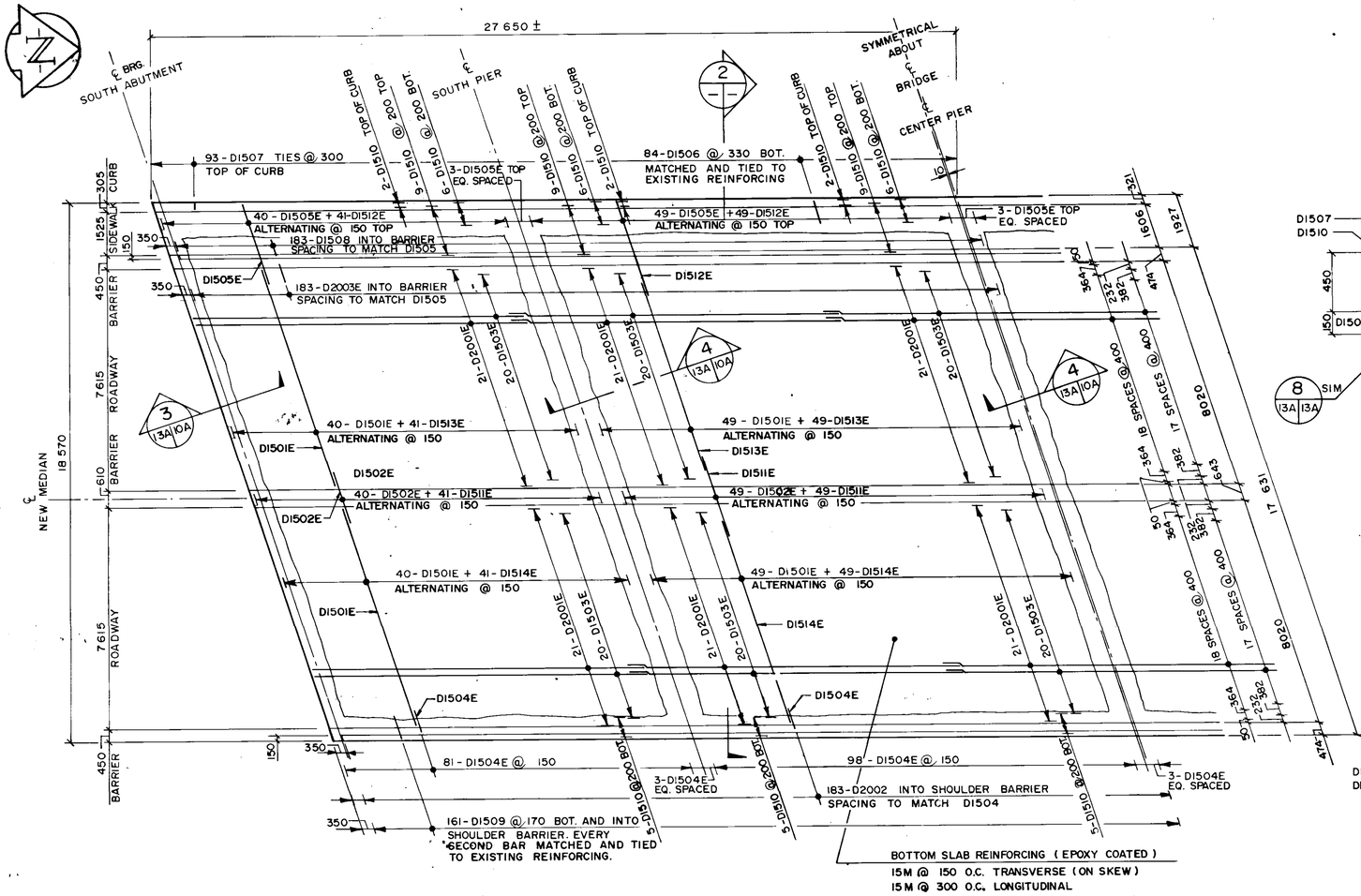
EMPRESS STREET OVERPASS

STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

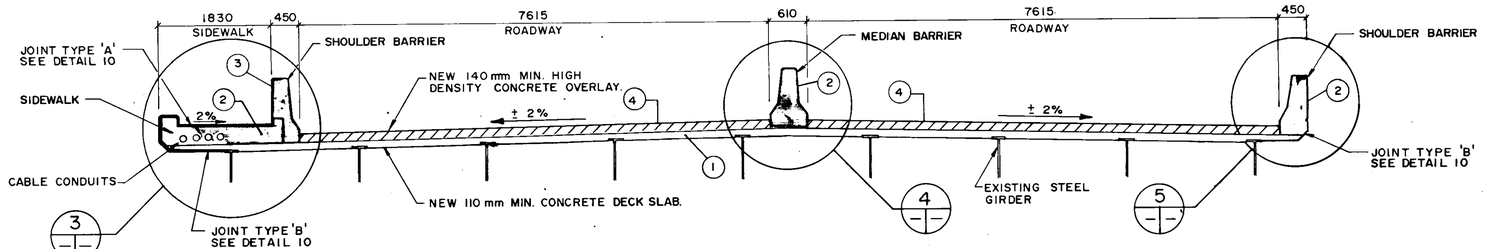
CONCRETE & REINFORCING DETAILS APPROACH SLABS AND SIDEWALKS

CITY DRAWING NUMBER: B100-90-12A(R1)

WO 101-84

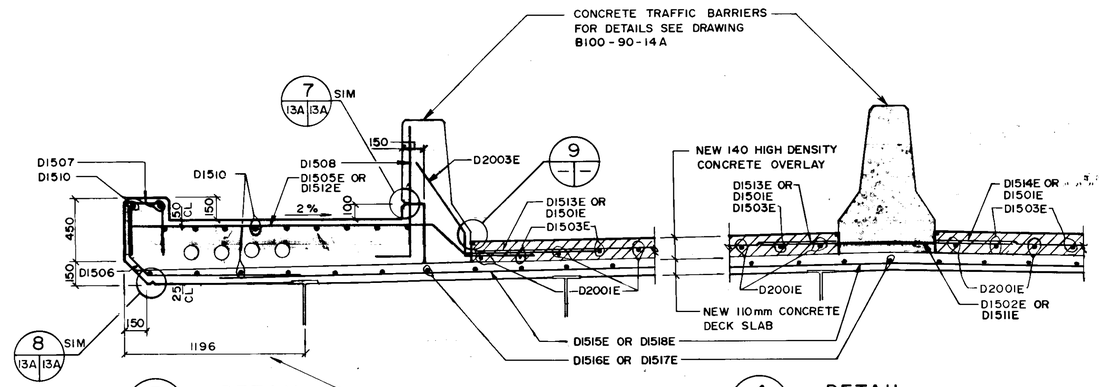


1 — HALF PLAN - DECK SLAB AND SIDEWALK
1 : 100



2 — TYPICAL SECTION
1 : 50

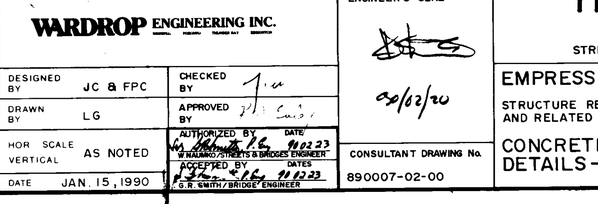
NOTE: (1) INDICATES SEQUENCE OF CONSTRUCTION.



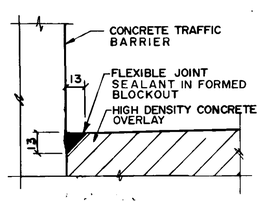
3 — DETAIL
1 : 20

NOTE A: CONTRACTOR TO PROVIDE ADEQUATE SHORING UNTIL HIGH DENSITY CONCRETE HAS BEEN PLACED AND CURED. FORMWORK TO CARRY ALL CONSTRUCTION LIVE LOADS IN ADDITION TO DEAD LOADS.

4 — DETAIL
1 : 20

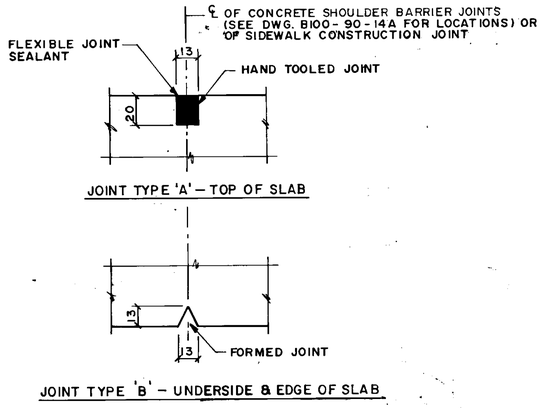


5 — DETAIL
1 : 20



7 — DETAIL
1 : 2

NOTE: WATER DRIP DETAIL CONTINUOUS FULL LENGTH OF DECK EACH SIDE



8 — DETAIL
1 : 2

9 — DETAIL
1 : 2

10 — SIDEWALK JOINT DETAILS
1 : 2

B-5903-16

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV U/G STRUCTURES COMMITTEE — DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

B.M. ELEV

NO	REVISIONS	DATE	BY
1	REVISED AS CONSTRUCTED	90-12-14	FPC

WARDROP ENGINEERING INC.

DESIGNED BY	JC & FPC	CHECKED BY	
DRAWN BY	LG	APPROVED BY	
HOR SCALE	AS NOTED	AUTHORIZED BY (W. BALANKO/STREETS & BRIDGES ENGINEER)	DATE 91.02.23
VERTICAL		ACCEPTED BY (G.R. SMITH/BRIDGE ENGINEER)	DATE 91.02.23
DATE	JAN. 15, 1990		

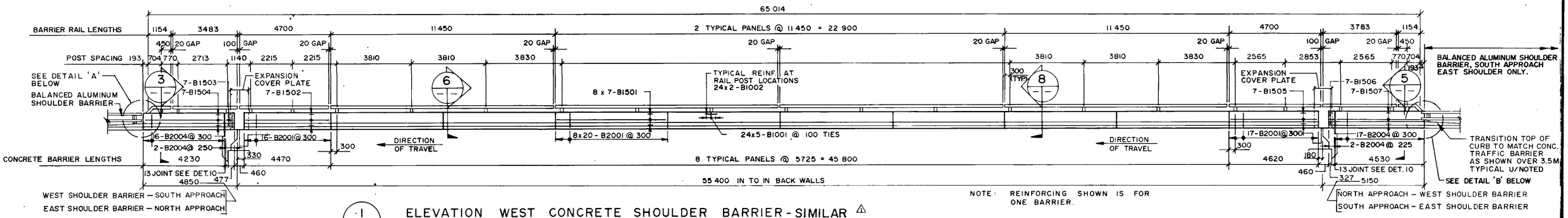
ENGINEER'S SEAL
91/02/20

CONSULTANT DRAWING No. 890007-02-00

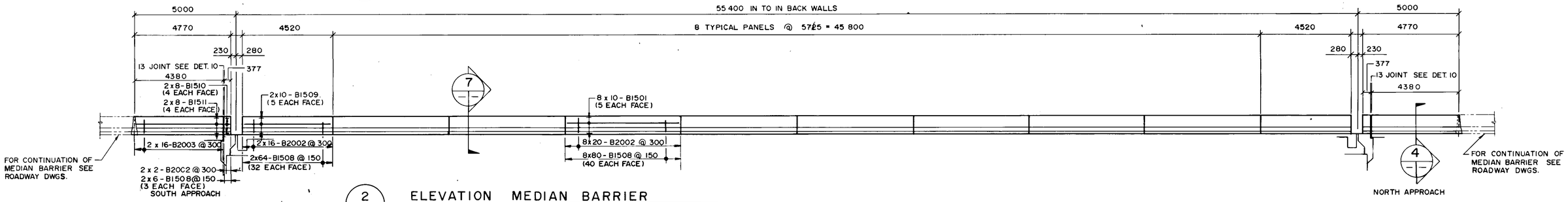
THE CITY OF WINNIPEG
RKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS
CONCRETE AND REINFORCING DETAILS - DECK SLAB

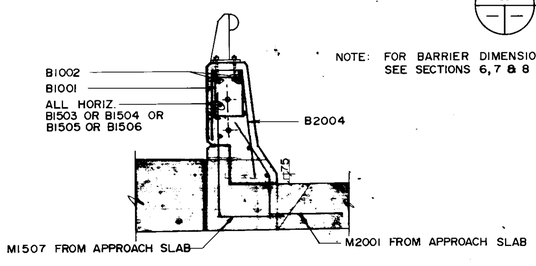
CITY DRAWING NUMBER
B100-90-13A



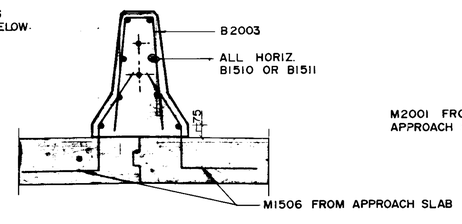
1 — ELEVATION WEST CONCRETE SHOULDER BARRIER - SIMILAR ⚠
1 : 100 EAST CONCRETE SHOULDER BARRIER - SHOWN

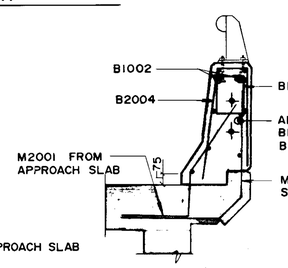


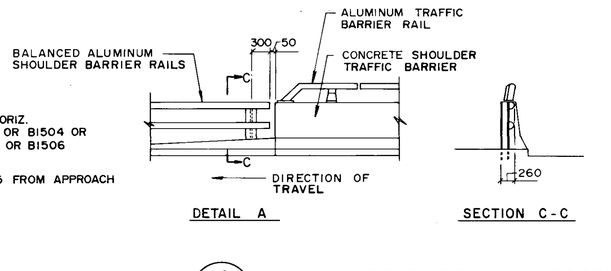
2 — ELEVATION MEDIAN BARRIER
1 : 100



NOTE: FOR BARRIER DIMENSIONS SEE SECTIONS 6, 7 & 8 BELOW.

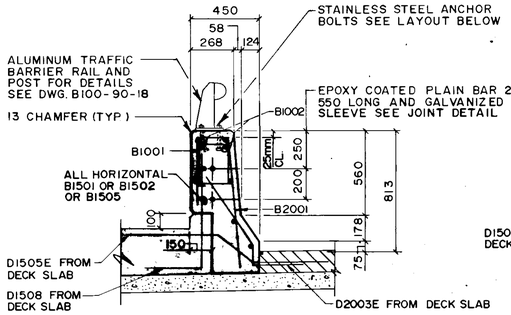




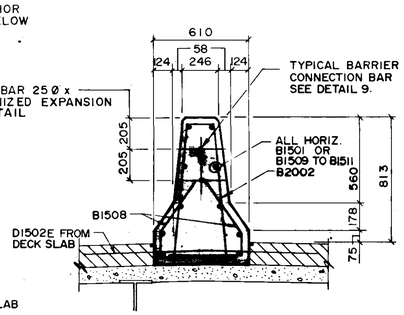


DETAIL A — SECTION C-C — DETAIL B — SECTION D-D

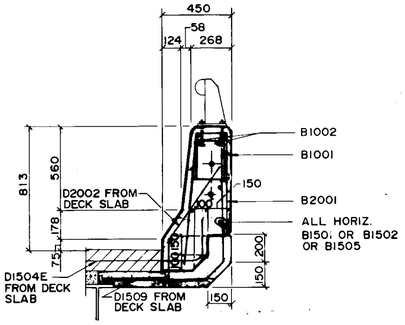
3 — WEST SHOULDER BARRIER - APPROACH
1 : 20



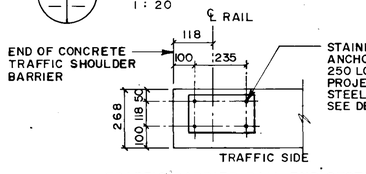
4 — MEDIAN BARRIER - APPROACH
1 : 20



5 — EAST SHOULDER BARRIER - APPROACH
1 : 20

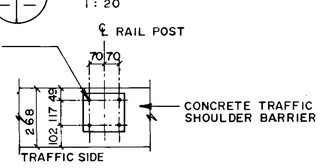


6 — WEST SHOULDER BARRIER - BRIDGE
1 : 20



TRAFFIC BARRIER RAIL END SECTION PLATE LOCATION DETAIL

7 — MEDIAN BARRIER - BRIDGE
1 : 20

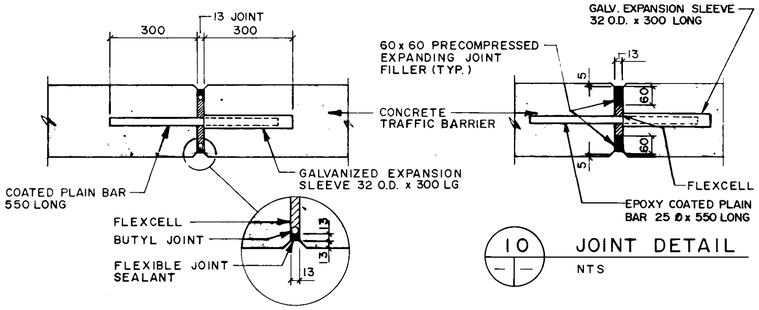


TRAFFIC BARRIER RAIL POST LOCATION DETAIL

8 — EAST SHOULDER BARRIER - BRIDGE
1 : 20

11 — RAIL POST ANCHOR BOLT LAYOUT DETAILS
NTS (PLAN VIEW)

12 — CONCRETE TRAFFIC BARRIER TRANSITION DETAILS
1 : 50



10 — JOINT DETAIL
NTS

9 — TYPICAL BARRIER CONNECTION DETAIL
NTS

NOTE: EPOXY COATED PLAIN BAR AND GALVANIZED EXPANSION SLEEVE TO BE LOCATED AT ALL CONCRETE SHOULDER TRAFFIC BARRIER JOINTS, HELD IN PLACE SECURELY BY A WOODEN TEMPLATE DURING CONCRETE PLACEMENT.

REINFORCING STEEL NOT CONTINUOUS THROUGH JOINTS.

AS-BUILT
DATE 91.02.26 BY [illegible]
CHECKED BY [illegible]

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION

B.M. ELEV.

NO	REVISIONS	DATE	BY
1	REVISED AS CONSTRUCTED	90-12-14	FPC
⚠	ADDENDUM	90-3-19	FPC

WARDROP ENGINEERING INC.

DESIGNED BY	JC & FPC	CHECKED BY	[illegible]
DRAWN BY	LG & GI	APPROVED BY	[illegible]
HOR SCALE / VERTICAL	AS NOTED	AUTHORIZED BY (M. NAUMENKO / DIRECTOR & BRIDGES ENGINEER)	DATE 91.02.26
DATE	JAN. 15, 1990	ACCEPTED BY (G.R. SMITH / BRIDGE ENGINEER)	DATE 91.02.26

ENGINEER'S SEAL: PROVINCE OF MANITOBA — C. D. STEWART — 90/02/26 — REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

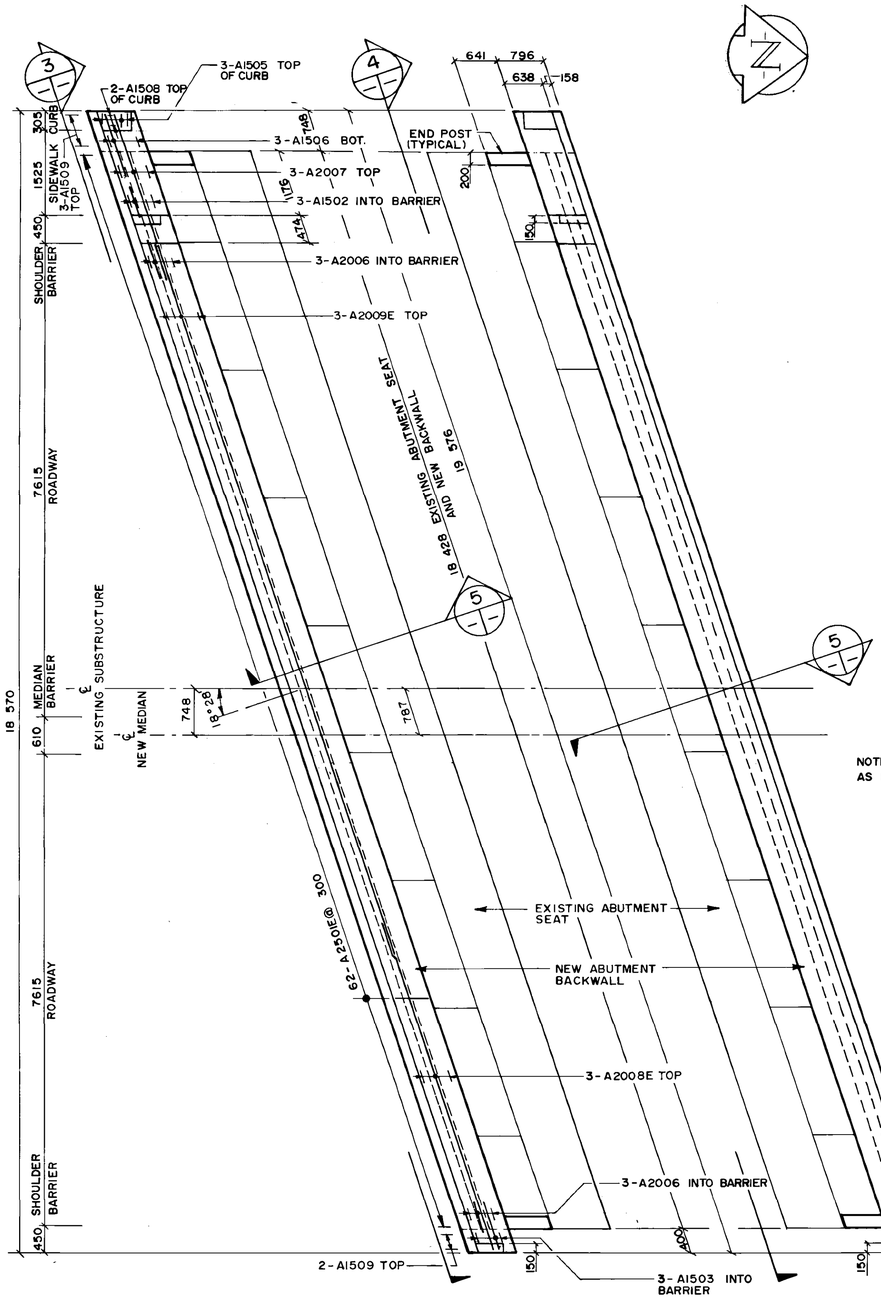
EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

CONCRETE & REINFORCING DETAILS MEDIAN AND SHOULDER TRAFFIC BARRIERS

CITY DRAWING NUMBER: B100-90-14A(R1)

B-5903-17

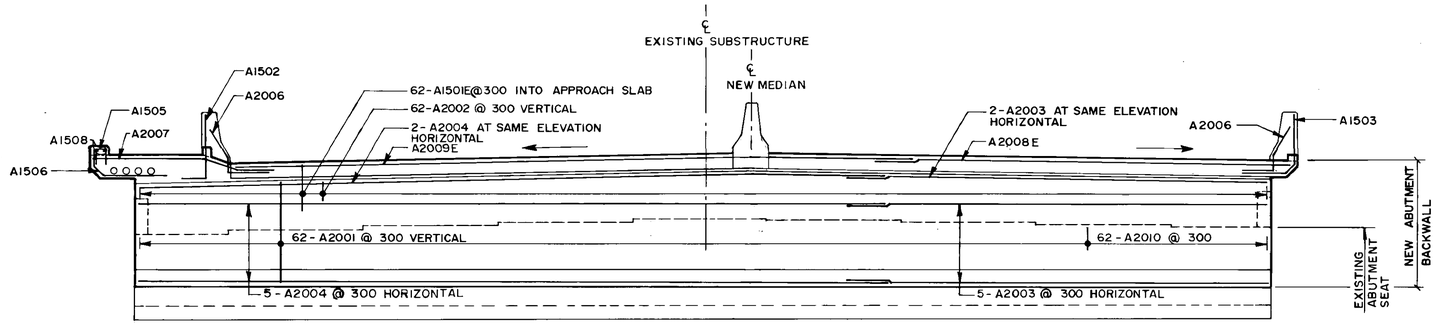
W0 101-84



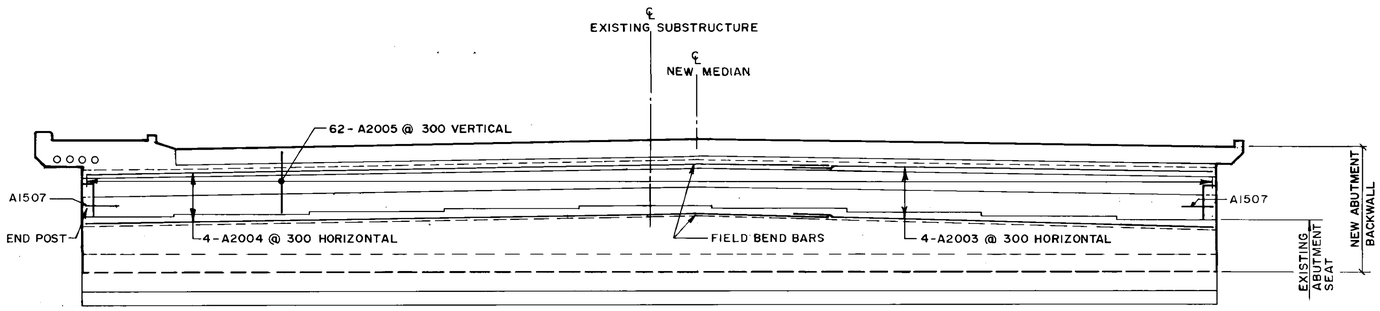
NOTE: REINFORCING SAME AS FOR SOUTH ABUTMENT.

1 — PLAN - SOUTH ABUTMENT
1 : 50

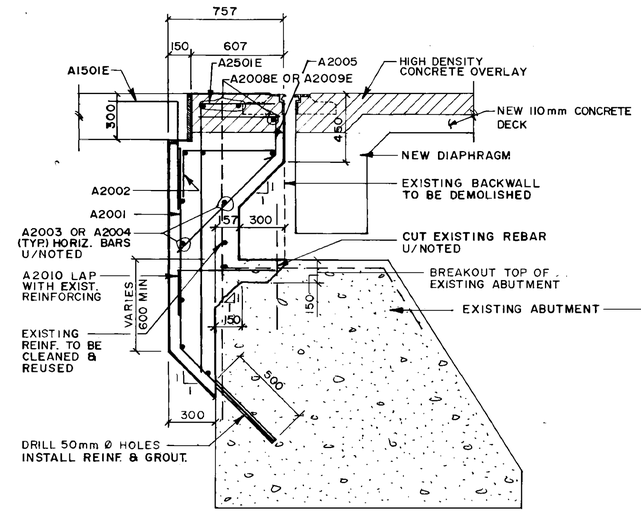
2 — PLAN - NORTH ABUTMENT
1 : 50



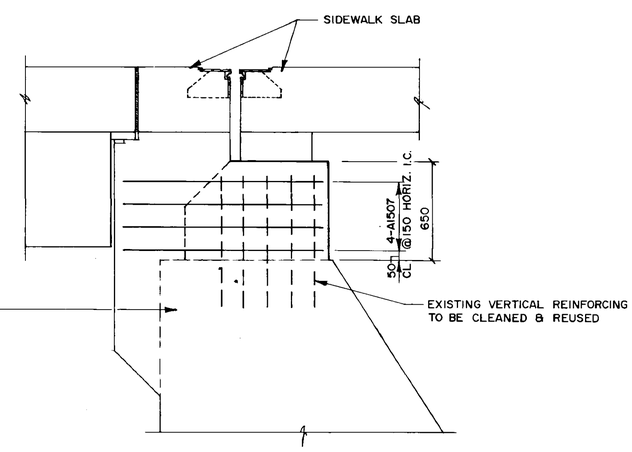
3 — ELEVATION – SOUTH ABUTMENT
1 : 50



4 — ELEVATION – NORTH ABUTMENT
1 : 50



5 — SECTION
1 : 20



6 — SECTION/ELEVATION – SIDEWALK/END POST
1 : 20

B-5903-18

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION

AS-BUILT
DATE 91.02.26 BY TC
CHECKED BY JW

B.M. ELEV.

NO	REVISIONS	DATE	BY
1	REVISED AS CONSTRUCTED	90-12-14	FPC

WARDROP ENGINEERING INC.

DESIGNED BY	JC & FPC	CHECKED BY	JW
DRAWN BY	LG	APPROVED BY	
HOR. SCALE	AS NOTED	AUTHORIZED BY W.NAUMKO/STREETS & BRIDGE ENGINEER	DATE 91.02.23
VERTICAL		ACCEPTED BY G.R.SMITH/BRIDGE ENGINEER	DATE 91.02.23
DATE	JAN. 15, 1990		

ENGINEER'S SEAL — PROVINCE OF MANITOBA — C.D. STEWART — REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007-02-00

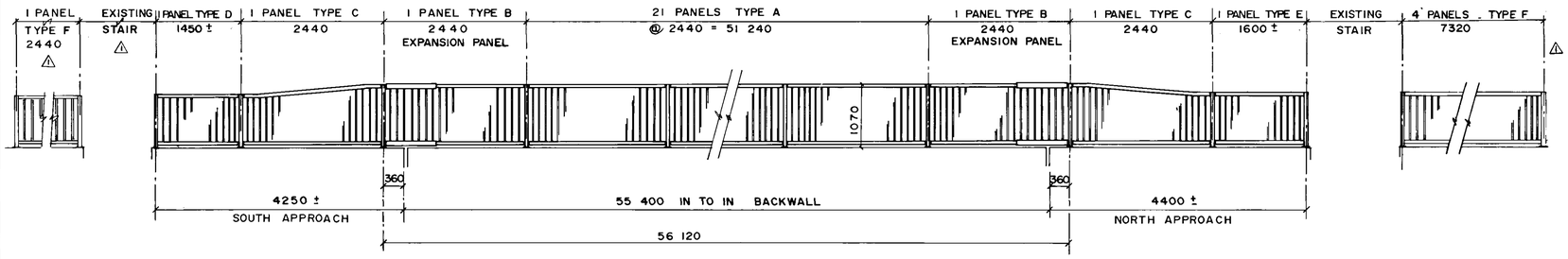
THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

ABUTMENT MODIFICATIONS AND BACKWALL REINFORCING DETAILS

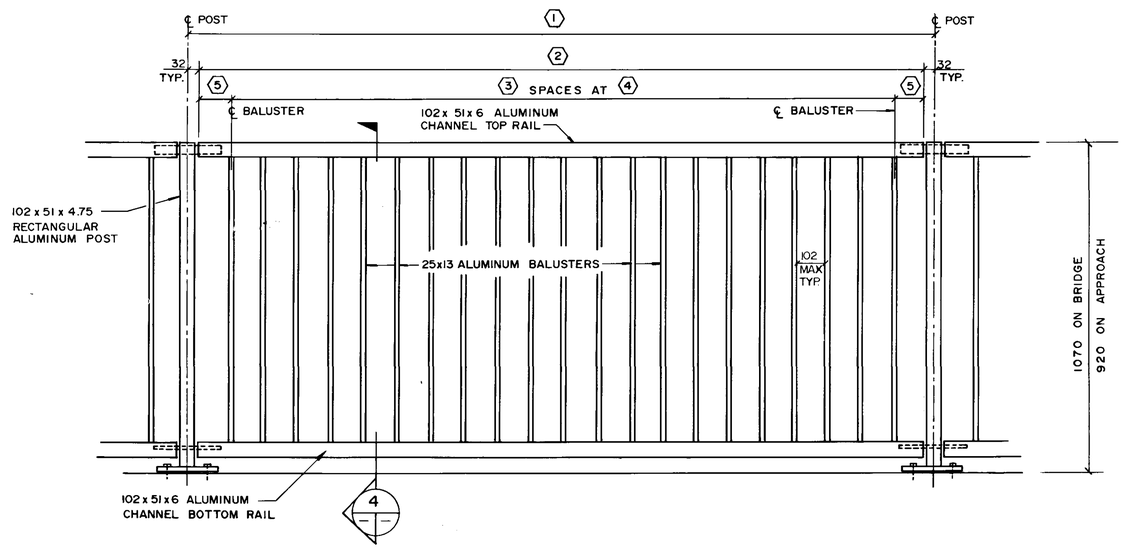
CITY DRAWING NUMBER B100-90-15A

W0 101-84

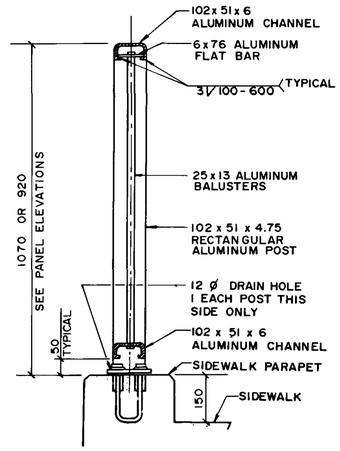


1 PEDESTRIAN HANDRAIL LAYOUT
1:50

PEDESTRIAN HANDRAIL PANEL DATA							
PANEL	NO. REQ'D.	HEIGHT	①	②	③	④	⑤
A	21 ⚠	1070	2440	2376	20	108	108
B	2 ⚠	1070	2440	2376	20	108	108
C	2 ⚠	VARIES	2440	2376	20	108	108
D	1 ⚠	920	1450 ±	1386	11	108	99
E	1 ⚠	920	1600 ±	1536	13	104	92
F	5 ⚠	920	2440	2376	20	108	108



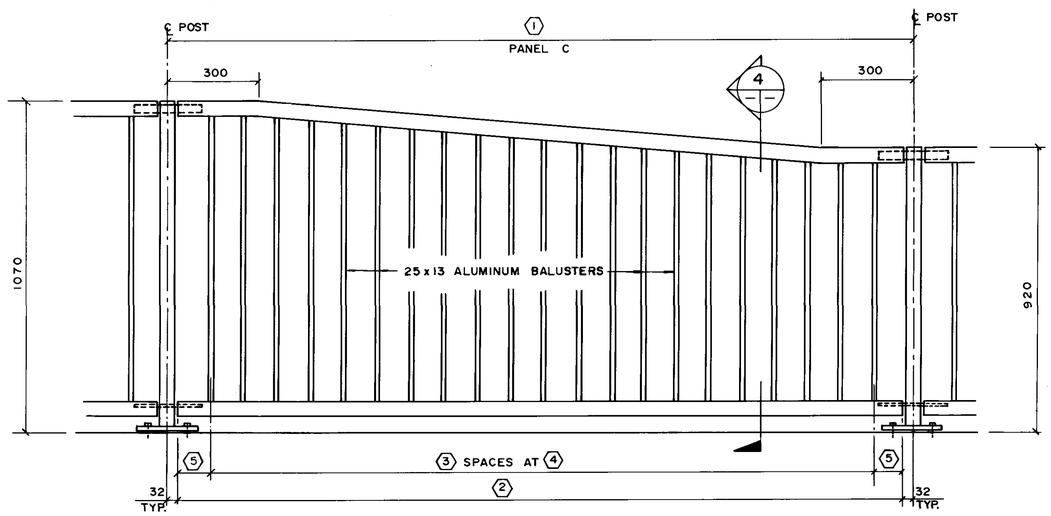
2 TYPICAL PANEL ELEVATION
1:10



4 SECTION
1:10

NOTES:

1. Aluminum extrusions shall conform to ASTM B221. Alloy 6351-T6. Aluminum plates shall conform to ASTM B221 Alloy 5083.
2. The M.I.G. process of welding shall be used.
3. S/S denotes stainless steel.
4. Rail posts shall be set vertical.
5. Place minimum of one 3mm aluminum shim under each post. Additional shims may be required for vertical alignment. The surface of shims in contact with concrete shall be painted with 2 coats of alkali resistant bituminous paint meeting the requirements of CGSB 31-GP-3M.
6. Handrail anchor inserts shall be Acrow-Richmond type DCR-1.



3 PANEL ELEVATION TYPE 'C'
1:10

STAND BY MATERIALS TO BE SUPPLIED TO THE CITY		
ITEM	QUANTITY	DESCRIPTION
1	2 SETS	ALL COMPONENTS ASSEMBLED FOR 2 COMPLETE HANDRAIL SECTIONS (2440 x 1070) INCLUDING 4 POSTS
2	4 SETS	ALL COMPONENTS ASSEMBLED FOR 4 COMPLETE HANDRAIL SECTIONS (2440 x 920) INCLUDING 8 POSTS.

B-5903-19

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

NO	REVISIONS	DATE	BY
2	REVISED AS CONSTRUCTED	90-12-14	FPC
⚠	ADDENDUM	90-03-14	FC

B.M. ELEV

WARDROP ENGINEERING INC.
WINNIPEG TORONTO THUNDER BAY EDMONTON

DESIGNED BY JC & FPC
CHECKED BY
DRAWN BY LG & GI
APPROVED BY
HOR SCALE / VERTICAL AS NOTED
DATE JAN. 15, 1990
AUTHORIZED BY DATE — W. RAILWAYS, STREETS & BRIDGE ENGINEER
ACCEPTED BY DATE — G.R. SMITH / BRIDGE ENGINEER

ENGINEER'S SEAL: PROVINCE OF MANITOBA — C. D. STEWART — 90/12/20 — REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007-02-00

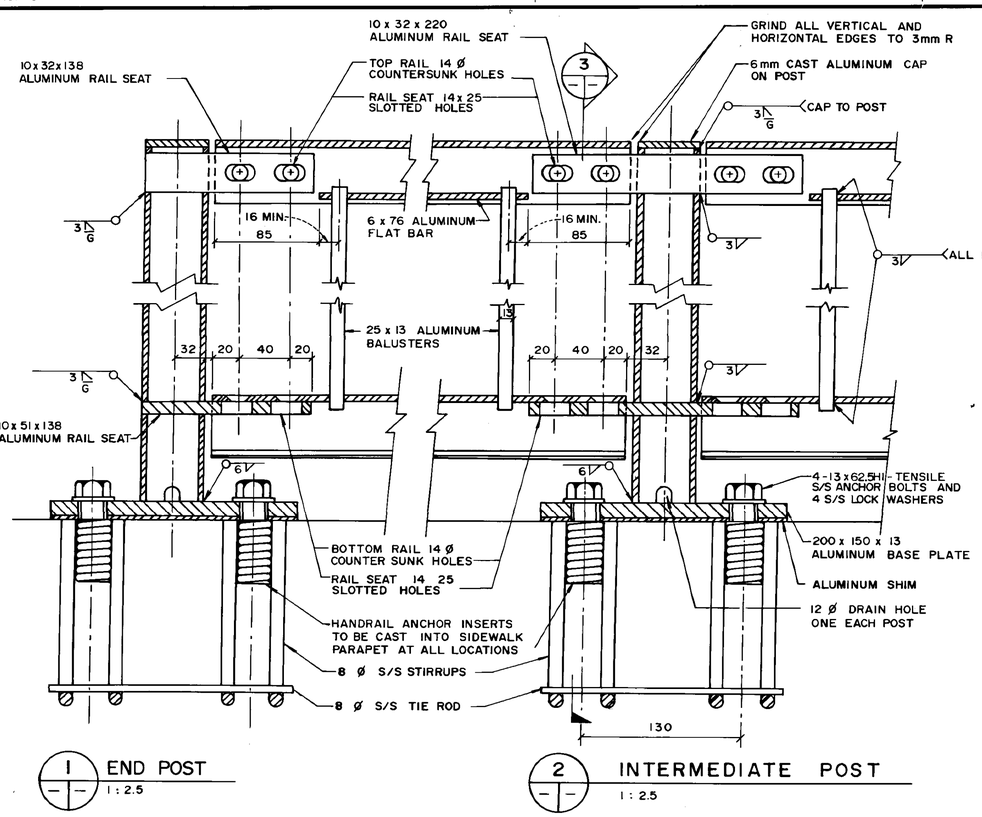
THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

ALUMINUM PEDESTRIAN HANDRAIL DETAILS 1

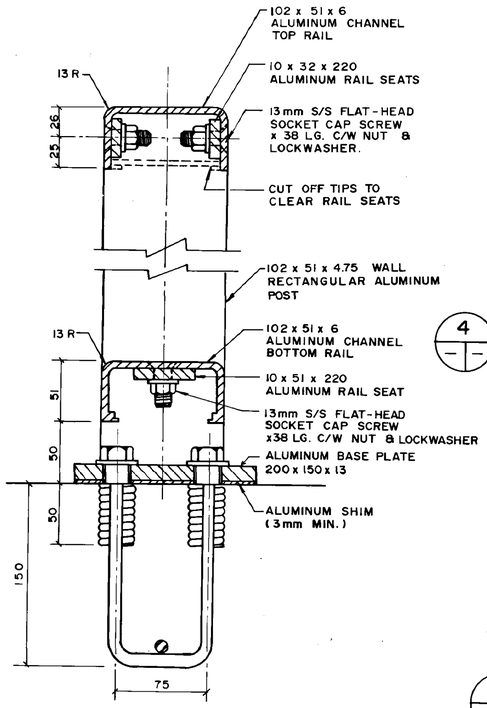
CITY DRAWING NUMBER B100-90-16(RI)

W0 101-84

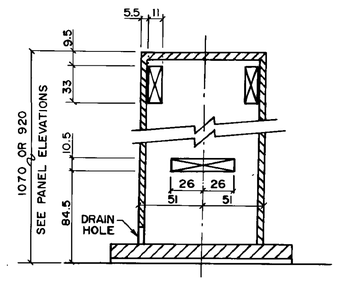


1 END POST
1 : 2.5

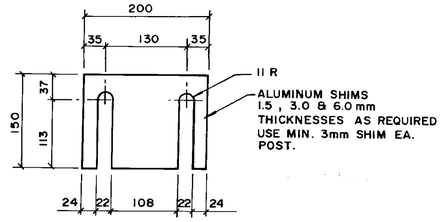
2 INTERMEDIATE POST
1 : 2.5



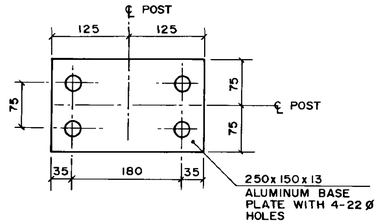
3 SECTION
1 : 2.5



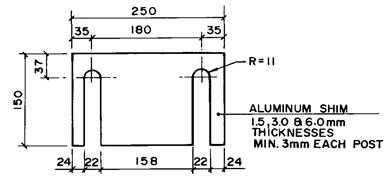
4 POST DETAIL SHOWING SLOTS FOR RAIL SEATS
1 : 2.5



5 POST SHIM PLATE
1 : 5

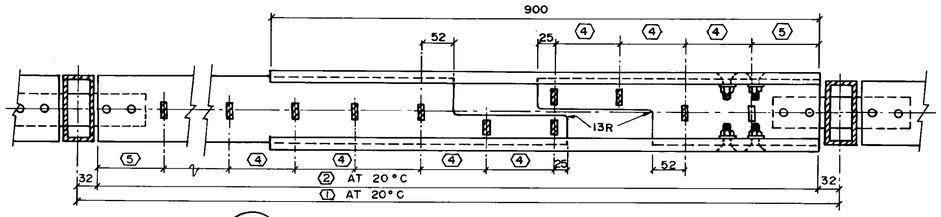


6 PLAN-CORNER POST BASE PLATE
1 : 5

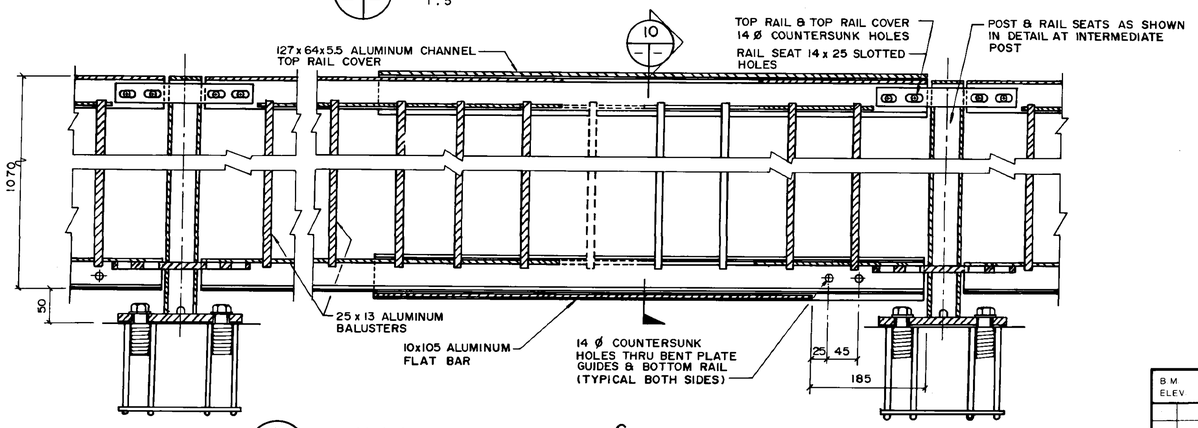


7 CORNER POST SHIM PLATE
1 : 5

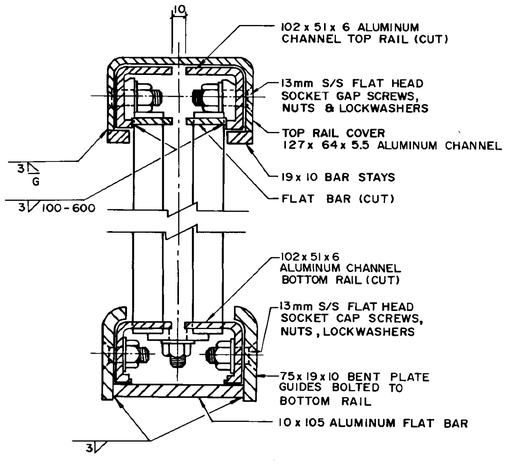
TYPICAL POST DETAILS



8 PLAN AT LOWER RAIL
1 : 5



9 LONGITUDINAL SECTION @ ℄ RAILS
1 : 5



10 SECTION
1 : 2.5

EXPANSION PANEL TYPE 'B' DETAILS

B-5903-20

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

NO	REVISIONS	DATE	BY
1	REVISED AS CONSTRUCTED	901214	FPC

B.M. ELEV

WARDROP ENGINEERING INC.

DESIGNED BY	JC & FPC	CHECKED BY	
DRAWN BY	GI	APPROVED BY	
HOR. SCALE / VERTICAL	AS NOTED	AUTHORIZED BY (W. KALINOWSKI, STREETS & BRIDGES ENGINEER)	DATE
		ACCEPTED BY (G.R. SMITH, BRIDGE ENGINEER)	DATE
DATE	JAN. 15, 1990		

ENGINEER'S STAMP: PROVINCE OF MANITOBA — C. D. STEWART — 90/02/20 — REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007-02-00

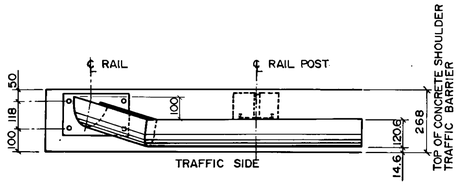
THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

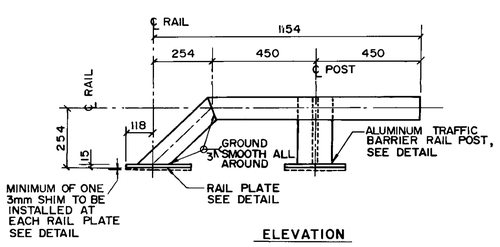
ALUMINUM PEDESTRIAN HANDRAIL DETAILS 2

CITY DRAWING NUMBER B100-90-17

WO 101-84



PLAN

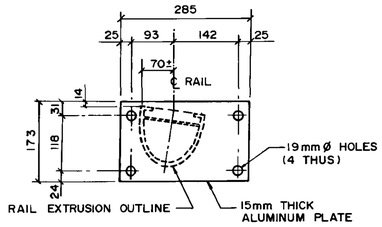


ELEVATION

1 RAIL END SECTION DETAIL

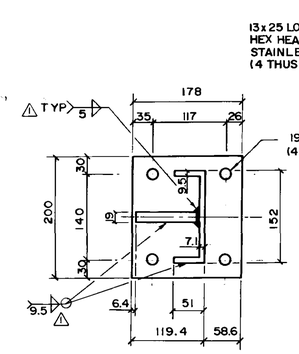
4 REQUIRED - 2 LEFT HAND (AS SHOWN)
- 2 RIGHT HAND

1:10

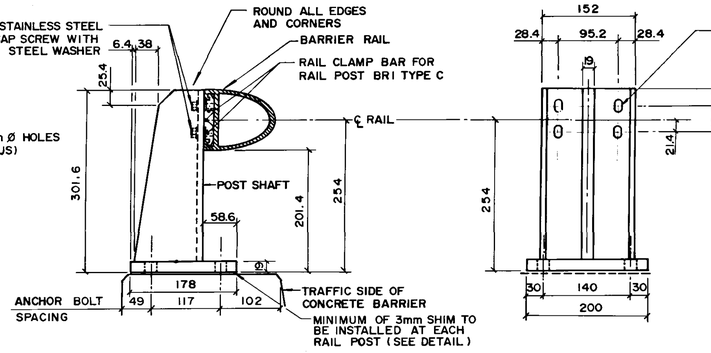


2 RAIL END PLATE DETAIL

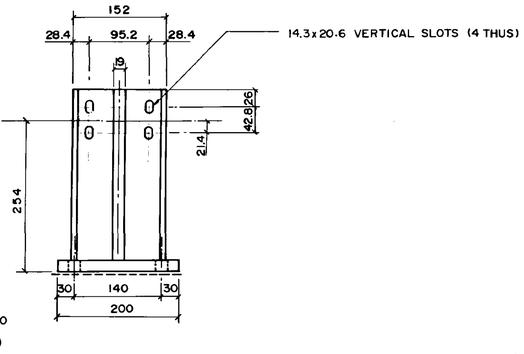
1:5



TOP VIEW



SIDE VIEW

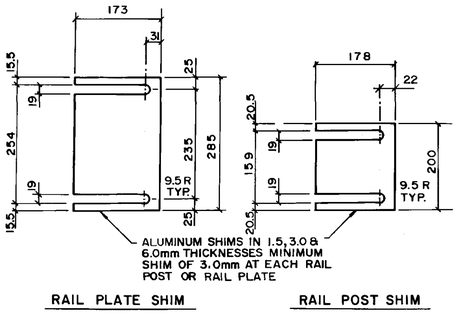


REAR VIEW

3 WELDED ALUMINUM TRAFFIC BARRIER BRI RAIL POST DETAIL ⚠

ALSO SHOWING RAIL TO POST ASSEMBLY DETAIL

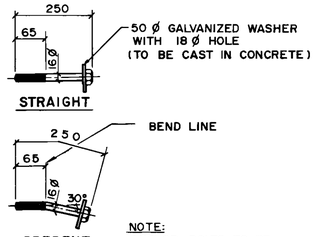
1:5



RAIL PLATE SHIM RAIL POST SHIM

4 SHIM DETAILS

1:5



5 ANCHOR BOLTS DETAILS

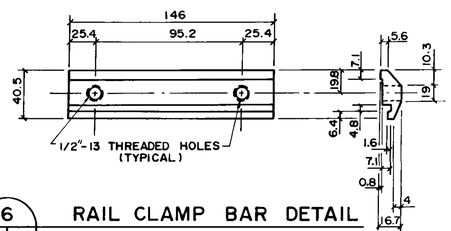
14A | 18

FOR RAIL POSTS AND RAIL END PLATES

N.T.S.

CONCRETE TRAFFIC BARRIER ALUMINUM RAIL BILL OF MATERIALS	
ITEM	NO. REQUIRED
BRIDGE RAIL POST BRI TYPE 'C'	44
11430 RAIL	8
4700 RAIL	4
3783 RAIL	2
3483 RAIL	2
RAIL END SECTIONS	4 (2L, 2R)
457.2 STD. SPLICE BAR	14
700 EXPANSION SPLICE BAR	4
146 RAIL CLAMP BAR	88
CAP SCREWS	240
WASHERS	240
SHIMS	AS REQUIRED

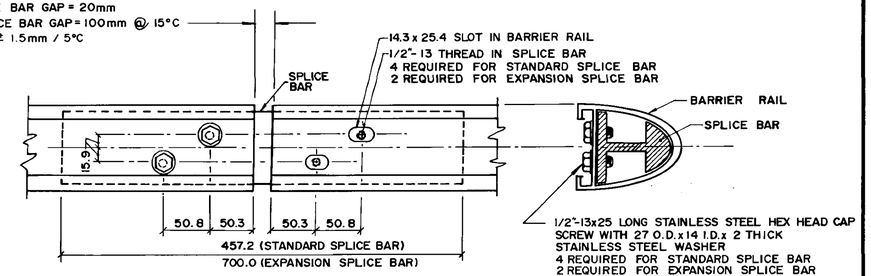
NOTE : QUANTITIES SHOWN ARE TOTAL FOR BOTH SHOULDER BARRIERS.



6 RAIL CLAMP BAR DETAIL

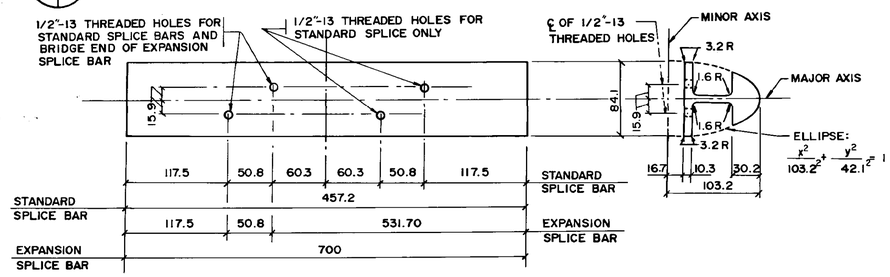
N.T.S

STANDARD SPLICE BAR GAP = 20mm
EXPANSION SPLICE BAR GAP = 100mm @ 15°C
AT ABUTMENTS ± 1.5mm / 5°C



7 SPLICE BAR TO RAIL ASSEMBLY DETAIL

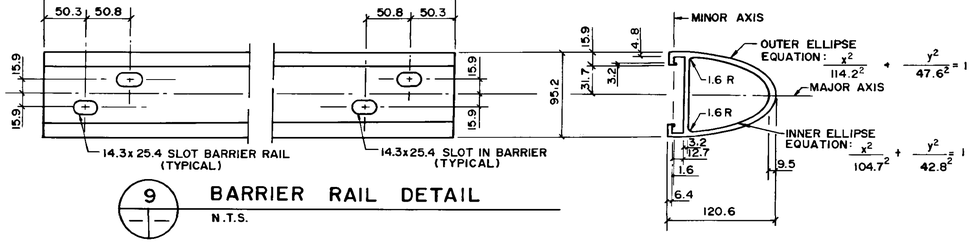
N.T.S.



8 DETAIL OF SPLICE BARS

N. T. S.

STANDARD BARRIER RAIL LENGTH = 11 430 MAX. (OR AS NOTED)



9 BARRIER RAIL DETAIL

N.T.S.

NOTES:

1. The 19mm DIA. holes (4) in the base of the barrier rail posts and rail plates are designed to accommodate 16mm DIA. rail post anchor bolts as detailed. Supply with each anchor bolt: one stainless steel plain washer, one stainless steel lock washer, one stainless steel lock washer, one stainless hex nut, and one 50 mm galvanized plate washer.
2. A combination of 1.5, 3.0, and/or 6.0mm thick aluminum rail post or plate shims are to be used as required to set the barrier rail to the specified height. (Minimum 3.0mm shim required at each post or plate).
3. Remove all burrs and sharp edges in the shop. After the installation of the barrier has been completed, the top edges and corners of the barrier rail posts shall be rounded smooth to the satisfaction of the engineer.
4. • Denotes dimension at installation temperature of 15C see splice bar to rail assembly detail for dimension variation with temperature.
5. Bottom surface of shim (surface in contact with concrete) is to be painted with 2 coats of alkali resistant bituminous paint, each coat being 1mm in thickness.

SPECIFICATIONS:

1. Extruded aluminum shapes and plates shall conform to the requirements of A.S.T.M. B221, alloy 6061-T6 or alloy 6351-T5 (minimum elongation 10%).
2. The stainless steel hex head and socket head cap screws shall meet the requirements of A.S.T.M. A276, type 430, and the dimensional requirements of A.N.S.I. B18.3.
3. Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including it s appearance, and accepted manufacturing practices.
4. The post shaft shall be made from a single channel-shape extrusion welded to a plate shape. The post base and shaft shall then be welded together.
5. Welding shall conform to the requirements of CSA Standards S244-1969, Welded Aluminum Design and Workmanship and W47.2-1967, Aluminum Welding Qualification Code. Aluminum Filler Alloy shall be one of the following: ER4043, ER5183, ER5356, ER5554, ER5556 and ER5654.
6. The Gontractor shall submit complete shop drawings consisting of three prints and one reproducible sepia to the Contract Administrator for approval prior to fabrication of aluminum traffic barrier components.
7. Anti-seize coating to be applied to all threaded components when being assembled. i.e. LPS-3- Manufactured by Holt-Lloyd (Canada) Ltd. Markham, Ont. L3R-2Z3.

B-5903-21

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G STRUCTURES COMMITTEE DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

B.M. ELEV.

NO	REVISIONS	DATE	BY
2	REVISED AS CONSTRUCTED	90-12-14	FPC
⚠	ADDENDUM	90-3-19	FPC

WARDROP ENGINEERING INC.

DESIGNED BY JC & FPC CHECKED BY
DRAWN BY GI APPROVED BY
HOR. SCALE AS NOTED
VERTICAL
DATE JAN. 15, 1990
AUTHORIZED BY W. NALUNDO/STREETS & BRIDGES ENGINEER DATE 90 12 23
ACCEPTED BY R.B. SMITH/BRIDGE ENGINEER DATE 90.12.23

ENGINEER: PROVINCE OF MANITOBA C. D. STEWART 90/12/20 REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007-02-00

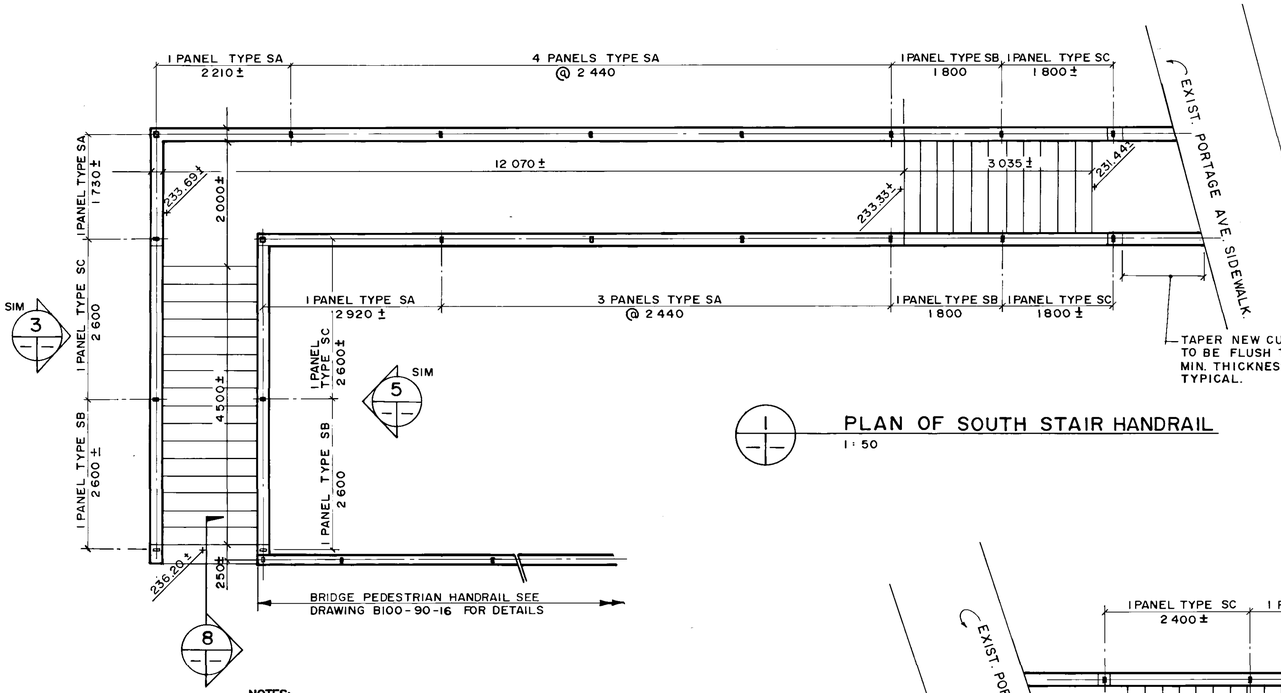
THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

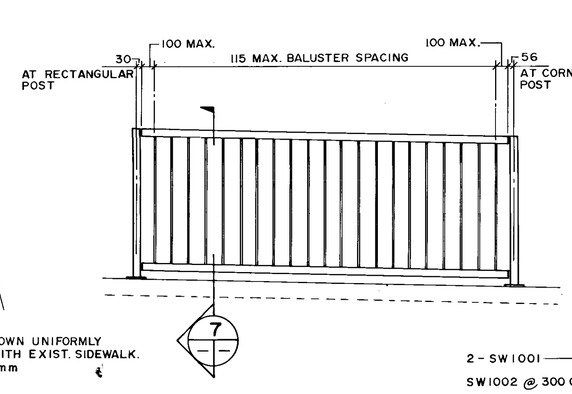
ALUMINUM TRAFFIC BARRIER RAIL STANDARD DETAILS

CITY DRAWING NUMBER B100-90-18 (RI)

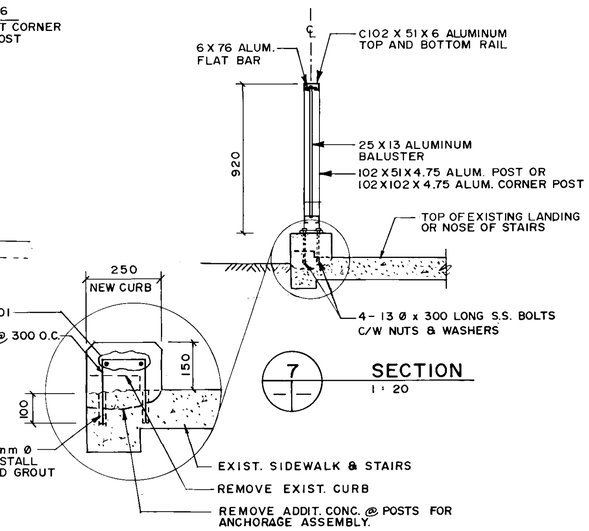
WO 101-84



1 PLAN OF SOUTH STAIR HANDRAIL
1 : 50



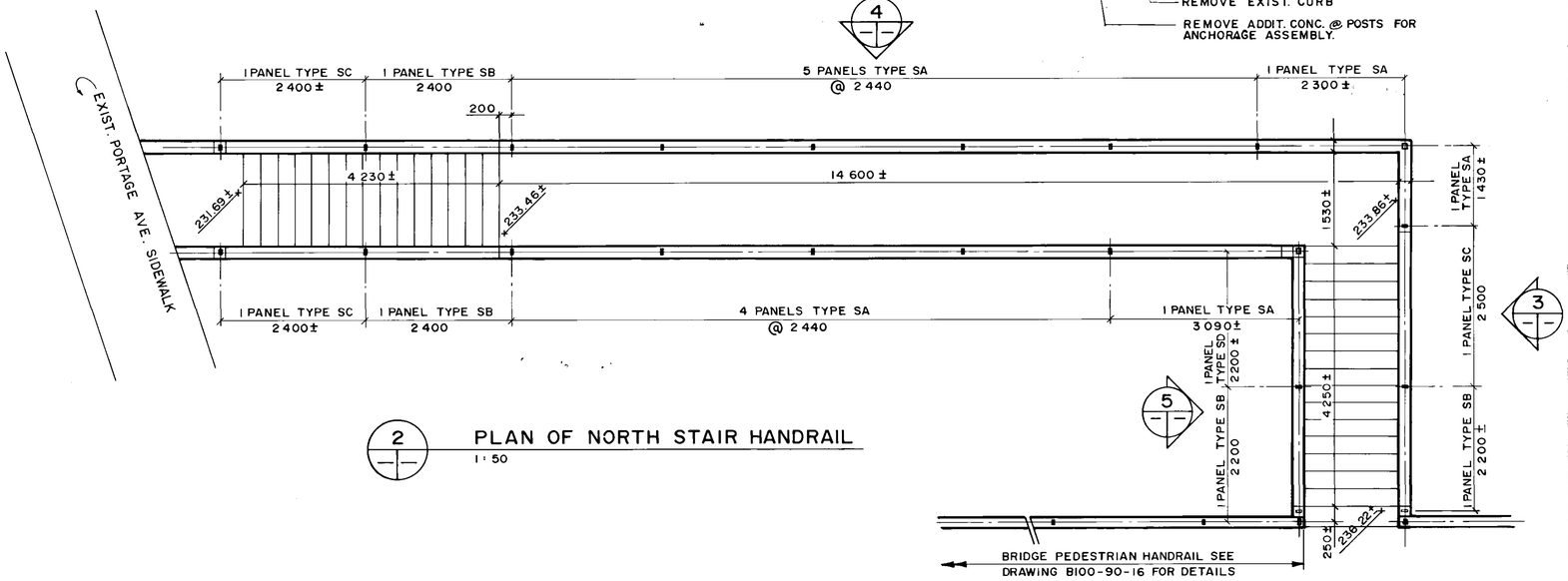
6 TYPICAL PANEL ELEVATION
1 : 20



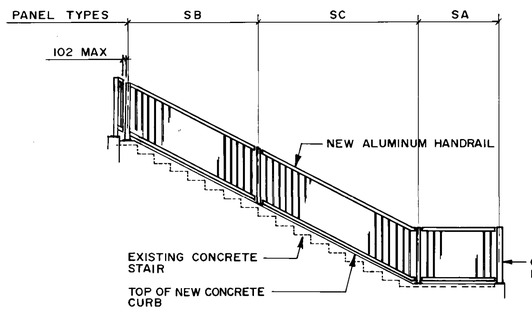
7 SECTION
1 : 20

NOTES:

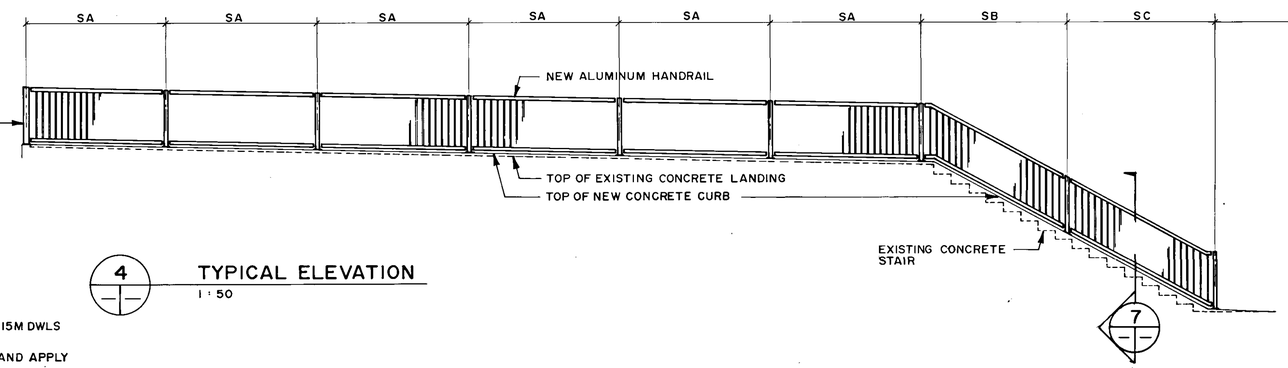
1. Remove existing steel pipe handrail and replace with new aluminum pedestrian handrail as shown.
2. This drawing is representational only. All dimensions must be verified by the contractor prior to fabrication of handrails.
3. Connections, inserts, notes, and handrail panel details same as bridge pedestrian handrail details unless noted otherwise. Refer to drawing B100-90-16.
4. Existing stair concrete to be patched with epoxy grout as directed by Contract Administrator.
5. Remove existing concrete curbs, chip down additional 50mm @ posts to accomodate post bolting assembly & install new curb. See Section 7



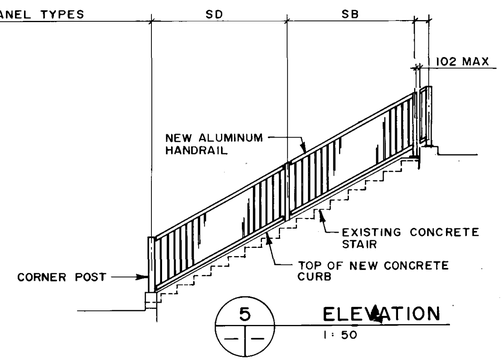
2 PLAN OF NORTH STAIR HANDRAIL
1 : 50



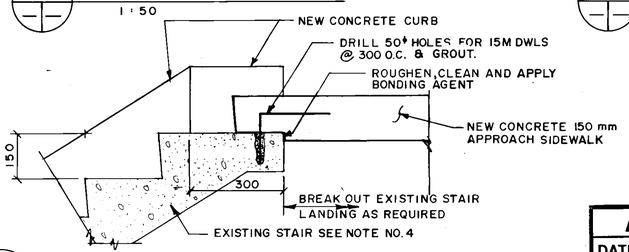
3 TYPICAL ELEVATION
1 : 50



4 TYPICAL ELEVATION
1 : 50



5 ELEVATION
1 : 50



8 SECTION - TOP OF EXISTING STAIR
1 : 10

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

NO	REVISIONS	DATE	BY
	B.M. ELEV.		
1	REVISED AS CONSTRUCTED	90-12-14	FPC

WARDROP ENGINEERING INC.
WINNIPEG TORONTO THUNDER BAY EDMONTON

DESIGNED BY	JC & FPC	CHECKED BY	
DRAWN BY	LG	APPROVED BY	
HOR. SCALE	AS NOTED	AUTHORIZED BY W. NAUMKO/STREETS & BRIDGES ENGINEER	DATE 91.02.23
VERTICAL		ACCEPTED BY G.R. SMITH/BRIDGE ENGINEER	DATE 91.02.23
DATE	JAN. 15, 1990		

ENGINEER'S STAMP
PROVINCE OF MANITOBA
C. D. STEWART
91/02/26
REGISTERED ENGINEER

CONSULTANT DRAWING NO.
890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

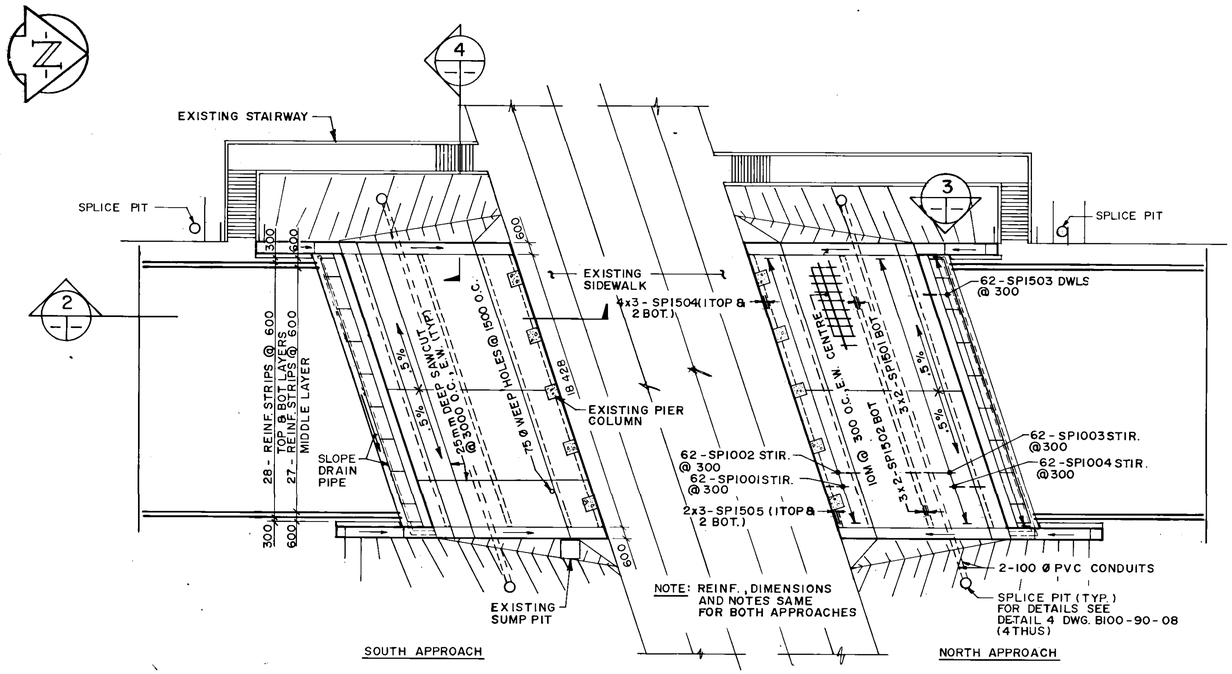
EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

ALUMINUM PEDESTRIAN HANDRAILS
NORTH AND SOUTH STAIRS

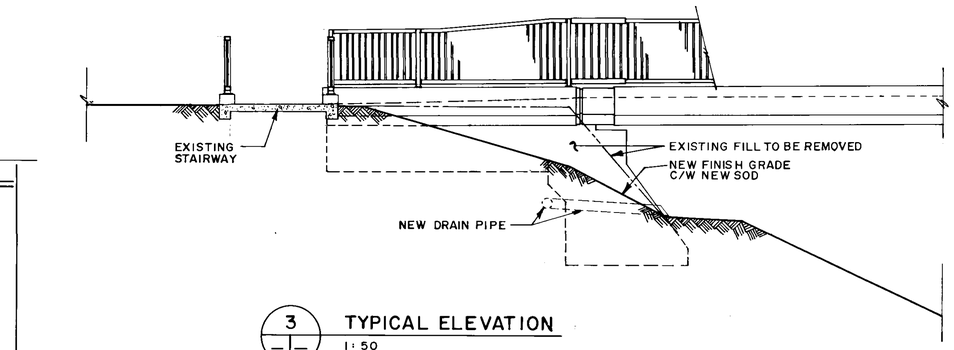
CITY DRAWING NUMBER
B100-90-19

B-5903-22

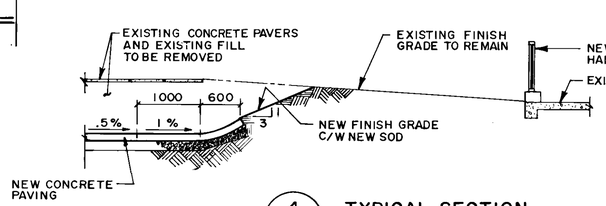
W0 101-84



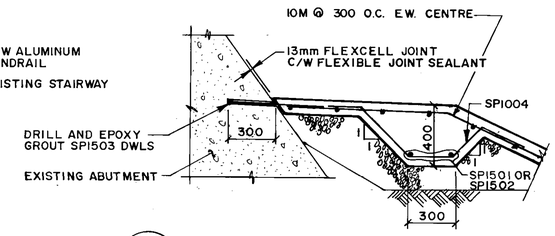
1 PLAN SECTION - SOIL STABILIZATION AND SLOPE PAVING
1:200



3 TYPICAL ELEVATION
1:50

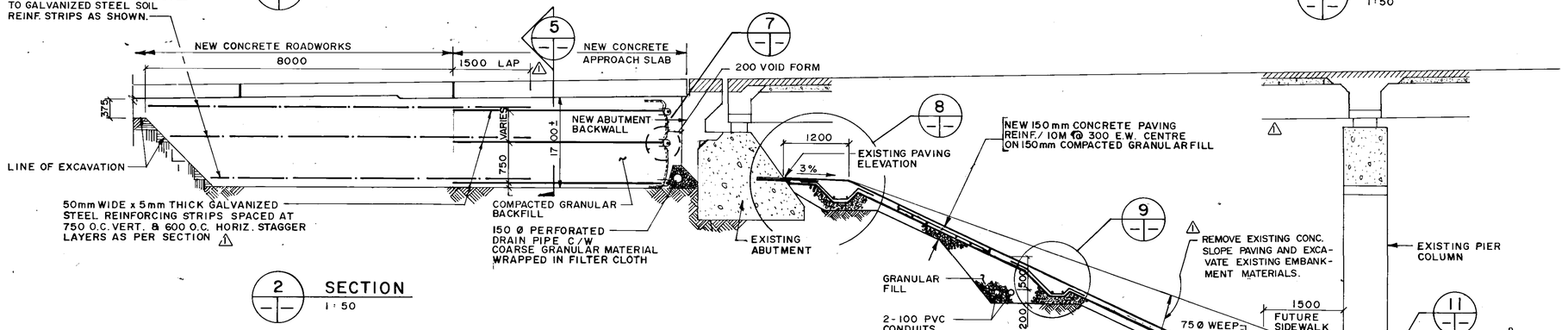


4 TYPICAL SECTION
1:50

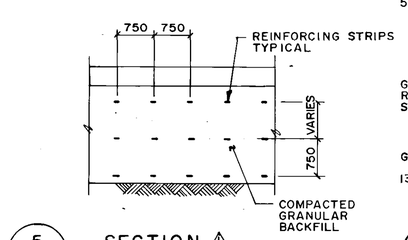


8 DETAIL
1:20

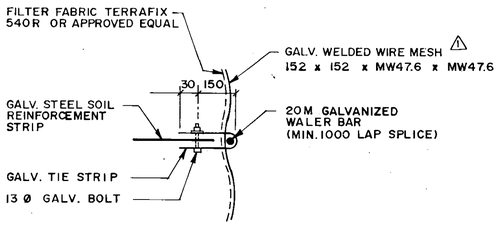
△100 WIDE GEOGRID SOIL REINFORCEMENT STRIPS LAPPED TO GALVANIZED STEEL SOIL REINF. STRIPS AS SHOWN.



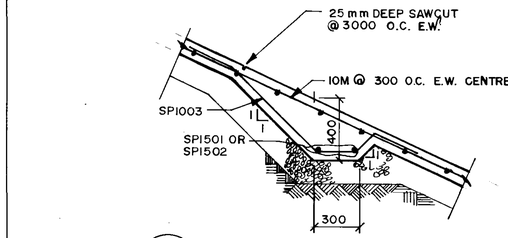
2 SECTION
1:50



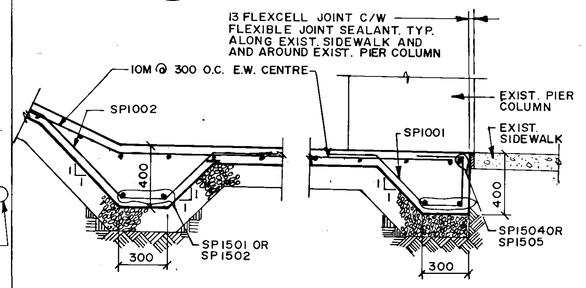
5 SECTION △
NTS



7 DETAIL
NTS



9 DETAIL
1:20



10 DETAIL
1:20

11 DETAIL
1:20

B-5903-23

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

B.M. ELEV.

NO	REVISIONS	DATE	BY
2	REVISED AS CONSTRUCTED	90-12-14	F.P.C.
△	ADDENDUM	90-3-19	F.P.C.

WARDROP ENGINEERING INC.
WINNIPEG TORONTO THUNDER BAY EDMONTON

DESIGNED BY	JC & FPC	CHECKED BY	
DRAWN BY	LG	APPROVED BY	
HOR. SCALE	AS NOTED	AUTHORIZED BY	DATE
VERTICAL	AS NOTED	W. MAIA, P.ENG. ASSISTANT CITY BRIDGE ENGINEER	91.02.25
DATE	JAN. 15, 1990	ACCEPTED BY G.R. SMITH, BRIDGE ENGINEER	DATE 91.02.23

ENGINEER'S STAMP
PROVINCE OF MANITOBA
C. D. STEWART
50/02/26
REGISTERED ENGINEER

CONSULTANT DRAWING NO.
890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

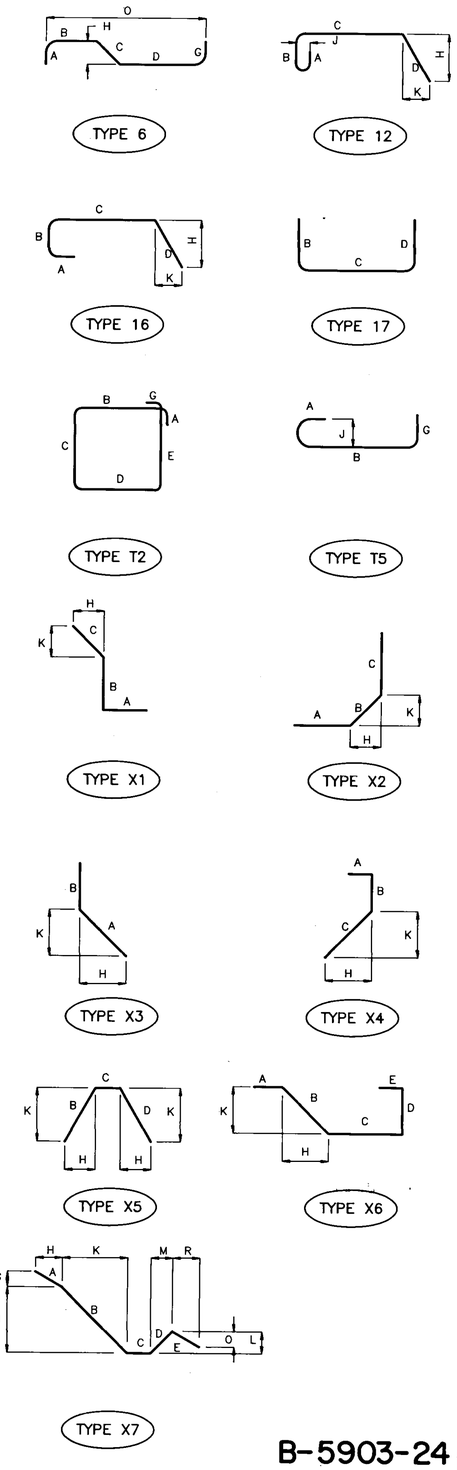
RECONSTRUCTION OF CONCRETE SLOPE PAVING AND APPROACH SOIL STABILIZATION

CITY DRAWING NUMBER
B100-90-20(R1)

MARK	NO. BARS	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	H	J	K	L	M	O	R	SHAPE	MASS Kg
DIAPHRAGMS																				
C1001	112	10	1870	T2	100	385	450	385	450		100									164.4
C1002	168	10	2590	T2	100	525	670	525	670		100									341.6
C1501	2	15	12 000	ST																37.7
C1502	2	15	6325	ST																19.9
C1503	128	15	2000	ST																401.9
C2001	4	20	12 000	ST																
C2002	4	20	6425	ST																113.0
C2003	36	20	1400	17		–	900	500												60.5
C2004	32	20	2000	ST																118.7
C2005	12	20	10 000	ST																150.7
C2006	12	20	8400	ST																282.6
C2501	2	25	12 000	17		385	11615	–												237.4
C2502	2	25	7495	17		–	7110	385												94.2
C2503	16	25	2085	17		385	1700	–												58.8
C2504	64	25	2000	ST																130.9
C2505	56	25	3000	ST																502.4
																				659.4
PIER BRACKET																				
P1501	6	15	2610	17		950	710	950												24.6
P1502	3	15	2510	17		900	710	900												11.8
P1503	3	15	2410	17		850	710	850												11.4
P1504	3	15	2260	17		775	710	775												10.9
P1505	3	15	2110	17		700	710	700												9.9
P1506	34	15	1000	T5		180	820		(ADDITIONAL REBAR ADDED DUE TO EXISTING CORRODED STIRRUPS)											53.4
P2501	6	25	2405	X2	600	1175	630					1125		350						56.6
P2502	6	25	4080	17		1700	680	1700												96.0
P2503	3	25	3880	17		1600	680	1600												45.7
P2504	3	25	3080	17		1200	680	1200												36.3
SOUTH PAVEMENT / BARRIER																				
SB1001	30	10	4350	ST																102.4
SB1002	6	10	4500	ST																21.2
SB1003	6	10	5850	ST																27.5
SB1004	6	10	3350	ST																15.8
SB1005	6	10	5550	ST																26.2
SB2001	110	20	400	X3	200	200						143	140							103.6
SB2002	55	20	1625	X5		740	145	740				78	736							210.5
STRUCTURAL SIDEWALK																				
SS1501	18	15	1730	T2	160	205	500	205	500		160									48.9
SS1502	8	15	2350	ST																29.5
SS1503	30	15	1700	ST																80.0
SS1504	12	15	2300	ST																43.3

MARK	NO. BARS	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	H	J	K	L	M	O	R	SHAPE	MASS Kg
APPROACH SLABS AND SIDEWALKS																				
M1001	37	10	2900	T2	100	225	1125	225	1125		100									84.2
M1002	44	10	2600	T2	100	225	975	225	975		100									89.8
M1501	34	15	8350	ST																445.7
M1502E	34	15	8750	ST																467.1
M1503E	34	15	9400	ST																501.8
M1504E	234	15	4250	ST																1561.4
M1505	60	15	1665	X2	700	215	750					150		150						156.8
M1506	120	15	1000	X1	300	300	400					220		350						188.4
M1507	60	15	1200	17		300	900	–												113.0
M1508	28	15	2100	17		–	1750	350												92.3
M1509	28	15	2115	X2	1600	215	300					150		150						93.0
M1510	2	15	2175	17		–	1825	350												6.8
M1511	2	15	2190	X2	1675	215	300					150		150						6.9
M1512	14	15	4200	ST																92.3
M1513	26	15	825	17		300	225	300												33.7
M1514	14	15	3775	ST																83.0
M1515	4	15	4100	ST																25.8
M1516	2	15	3800	ST																11.9
M1517	2	15	3400	ST																10.7
M1518	34	15	9400	ST																501.8
M2001	120	20	1150	X1	300	300	550					315		450						325.0
M2501	230	25	4250	ST																3836.7
M2502	4	25	4150	ST																65.2
M2503	2	25	3800	ST																29.8
M2504	2	25	3400	ST																26.7
DECK SLAB AND SIDEWALK																				
D1501E	356	15	7925	ST																4429.4
D1502E	178	15	1750	ST																489.1
D1503E	200	15	11450	ST																3595.3
D1504E	367	15	1500	17		–	1200	300												864.3
D1505E	187	15	2765	6	–	1950	215	600			–	150					2700			811.8
D1506	168	15	1565	X2	1000	215	350					150		150						412.8
D1507	186	15	825	17		300	225	300												240.9
D1508	363	15	1100	17		–	300	800												626.9
D1509	332	15	1685	X2	675	215	800					150		150						878.2
D1510	110	15	11450	ST																1977.4
D1511E	180	15	2750	ST																777.2
D1512E	180	15	3265	6	–	1950	215	1100			–	150					3200			922.7
D1513E	180	15	6925	ST																1957.0
D1514E	180	15	7425	ST																2098.3
D2001E	210	20	11550	ST																5712.1
D2002	363	20	1250	X1	450	250	550					315		450						1068.6
D2003E	363	20	1150	X1	450	150	550					315		450						983.1

BENDING DIAGRAMS



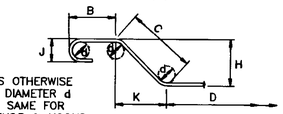
NOTES:

1) ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 AND 135 DEGREE HOOKS.
2) "J" DIMENSION ON 180° HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE STANDARD HOOKS ARE TO BE USED.
3) WHERE "J" IS NOT SHOWN, "J" WILL BE KEPT EQUAL TO OR LESS THAN "H" ON TRUSS BARS. WHERE "J" CAN EXCEED "H", IT SHOULD BE SHOWN.
4) "H" DIMENSION ON STIRRUPS TO BE SHOWN WHERE NECESSARY TO FIT WITHIN CONCRETE.
5) WHERE BARS ARE TO BE BENT MORE ACCURATELY THAN THAN STANDARD BENDING TOLERANCES. BENDING DIMENSIONS WHICH REQUIRE CLOSER TOLERANCES SHOULD HAVE LIMITS INDICATED.
6) FIGURES IN ELLIPSES SHOW TYPES.
7) NO ALLOWANCE FOR BEND CURVATURE HAS BEEN MADE EXCEPT FOR STANDARD HOOK & RADII IN EXCESS OF SAME.
8) WEIGHT OF SUPPORT BARS, AND SPACERS NOT INCLUDED ON THIS TABLE.

9) MARK NO. CONTAINING SUFFIX 'E' DENOTES EPOXY COATED REBAR.

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

WHERE SLOPE DIFFERS FROM 45°, DIMENSIONS "H" & "K" MUST BE SHOWN.



UNLESS OTHERWISE NOTED DIAMETER d IS THE SAME FOR ALL BENDS & HOOKS ON A BAR.

BAR BENDING DETAIL

B-5903-24

NO.	REVISIONS	DATE	BY
1	REVISED AS CONSTRUCTED	90-12-14	FPC

B.M. ELEV.

WARDROP ENGINEERING INC.

DESIGNED BY J.C. & F.P.C. | CHECKED BY
DRAWN BY G.R.A. | APPROVED BY
HOR. SCALE: N.T.S. | VERT.
AUTHORIZED BY W. NAUMKO/STREETS & BRIDGE ENGINEER — DATE 90.02.23
ACCEPTED BY G.R. SMITH/BRIDGE ENGINEER — DATE 90.02.23
DATE JAN 15, 1990

ENGINEER'S SEAL — PROVINCE OF MANITOBA — C. D. STEWART — 90.02.26 — REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS
REINFORCING STEEL SCHEDULE ALTERNATIVE A

CITY DRAWING NUMBER B100-90-21A

MARK	NO. BARS	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	H	J	K	L	M	O	R	SHAPE	MASS Kg
TRAFFIC BARRIER																				
⚠																				
B1001E	240	10	1180	T2	100	190	300	190	300		100									222.3
B1002E	96	10	600	ST																45.2
B1003E	6	10	3800	ST																17.9
B1501E	192	15	5625	ST																1695.6
B1502E	14	15	4370	ST																96.1
B1503E	14	15	375	ST																8.2
B1504E	14	15	4130	ST																90.8
B1505E	14	15	4520	ST																99.4
B1506E	14	15	225	ST																4.9
B1507E	14	15	4430	ST																97.4
B1508E	780	15	1035	16	–	500	170	365				300		210						1267.5
B1509E	20	15	4420	ST																138.8
B1510E	16	15	275	ST																6.9
B1511E	16	15	4280	ST																107.5
B2001E	386	20	1474	12	–	460	170	854				850		88						1339.9
B2002E	196	20	1853	X5		854	145	854				88		850						855.3
B2003E	32	20	1551	X5		703	145	703				72		700						116.9
B2004E	74	20	1333	12		460	170	703				700		72						232.3
ABUTMENT BACKWALL																				
A1501E	124	15	1300	17		500	800	–												253.1
A1502	6	15	1200	17		–	300	900												11.3
A1503	6	15	1685	X2	675	215	800					150		150						15.9
A1505	6	15	825	17		300	225	300												7.8
A1506	6	15	1565	X2	1000	215	350					150		150						14.7
A1507	16	15	1600	17		300	1300	–												40.2
A1508	4	15	450	ST																2.8
A1509	10	15	500	ST																7.9
A2001	124	20	2220	X3	920	1300						650		650						648.3
A2002	124	20	1360	T5	210	650					500		140							379.2
A2003	22	20	7000	ST																362.7
A2004	22	20	12000	ST																621.7
A2005	124	20	1670	X4	500	250	920					650		650						487.7
A2006	12	20	1100	X1	300	250	550					315		450						31.1
A2007	6	20	2765	6	–	1950	215	600			–	150					2700			39.1
A2008E	6	20	7000	ST																98.9
A2009E	6	20	12000	ST																169.6
A2010 ⚠	124	20	900	17		300	600	–												262.8 ⚠
A2501E	124	25	2200	17		1700	500	–												1070.7

MARK	NO. BARS	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	H	J	K	L	M	O	R	SHAPE	MASS Kg
SLOPED PAVING																				
SP1001	124	10	1525	X6	300	425	200	300	300			300		300						148.4
SP1002	124	10	1925	X7	300	700	200	425	300		130	270	495	495	300	300	–	–		187.4
SP1003	124	10	1780	X7	300	790	200	190	300		130	270	560	560	135	135	130	270		173.3
SP1004	124	10	1500	X7	300	425	200	275	300		–	–	300	300	195	195	130	270		146.0
SP1501	12	15	12000	ST																226.1
SP1502	12	15	6825	ST																128.6
SP1503	124	15	600	ST																116.8
SP1504	24	15	2900	ST																109.3
SP1505	12	15	1250	ST																23.6
WELD WIRE FABRIC – 152x152 MW18.7xMW18.7 = 500 SQ. METERS																				
STAIR SIDEWALK																				
S1001	20	10	12000	ST																187.2
S1002	360	10	600	17			225	150	225											168.5
NORTH PAVEMENT/BARRIER																				
R1001	6	10	9900	ST																46.6
R1002	12	10	12 000	ST																113.0
R2001	1	20	1510	X5			680	150	680			210		647						3.6
R2002	1	20	1420	X5			635	150	635			196		605						3.3
R2003	1	20	1330	X5			590	150	590			183		562						3.1
R2004	1	20	1240	X5			545	150	545			169		519						2.9
R2005	1	20	1150	X5			500	150	500			155		476						2.7
R2006	1	20	1060	X5			455	150	455			141		433						2.5
R2007	1	20	970	X5			410	150	410			127		390						2.3
R2008	1	20	880	X5			365	150	365			113		347						2.1
R2009	1	20	790	X5			320	150	320			99		305						1.9
R2010	1	20	700	X5			275	150	275			85		262						1.6
R2011	1	20	610	X5			230	150	230			71		219						1.4
R2012	24	20	400	X3	200	200						114		164						22.6
R2013	114	20	280	X3	30	250						17		24						75.2

NOTES:

1) ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 AND 135 DEGREE HOOKS.
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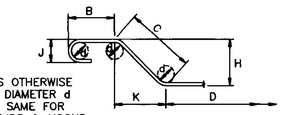
6) FIGURES IN ELLIPSES SHOW TYPES.
7) NO ALLOWANCE FOR BEND CURVATURE HAS BEEN MADE EXCEPT FOR STANDARD HOOK & RADII IN EXCESS OF SAME.
8) WEIGHT OF SUPPORT BARS, AND SPACERS NOT INCLUDED ON THIS TABLE.

⚠ 9) ALL REINFORCING STEEL WITH & WITHOUT SUFFIX "E" SHALL BE EPOXY COATED.

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

WHERE SLOPE DIFFERS FROM 45°, DIMENSIONS "H" & "K" MUST BE SHOWN.



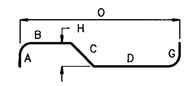
UNLESS OTHERWISE NOTED DIAMETER d IS THE SAME FOR ALL BENDS & HOOKS ON A BAR.

BAR BENDING DETAIL

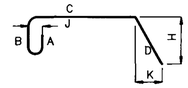
⚠ BREAKDOWN OF REINFORCING STEEL MASS

LOCATION	EPOXY COATED
DIAPHRAGMS	3374.1
PIER BRACKET	356.6
SOUTH PAVEMENT / BARRIER	507.2
STRUCTURAL SIDEWALK	201.7
APPROACH SLABS & SIDEWALKS	8849.8
DECK SLAB & SIDEWALK	27 845.1
TRAFFIC BARRIER	6492.9
ABUTMENT BACKWALL	4530.5
SLOPED PAVING	1259.5
STAIR SIDEWALKS	355.7
NORTH PAVEMENT / BARRIER	284.8
TOTAL MASS (Kg)	54 057.9

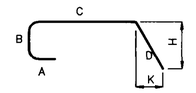
BENDING DIAGRAMS



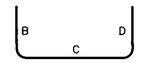
TYPE 6



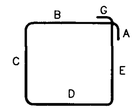
TYPE 12



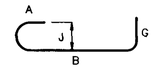
TYPE 16



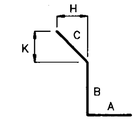
TYPE 17



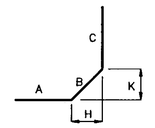
TYPE T2



TYPE T5



TYPE X1



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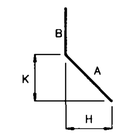

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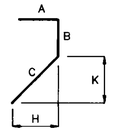
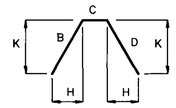
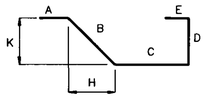


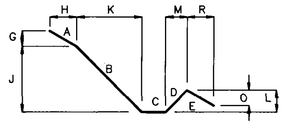
TYPE X4



TYPE X5



TYPE X6



TYPE X7

B-5903-25

NO.	REVISIONS	DATE	BY
2	REVISED AS CONSTRUCTED	90-12-14	FPC
⚠	ADDENDUM	90-3-19	FC
B.M. ELEV.			

WARDROP ENGINEERING INC.

DESIGNED BY J.C. & F.P.C. | CHECKED BY
DRAWN BY G.R.A. | APPROVED BY
HOR. SCALE: N.T.S. | VERTICAL:
AUTHORIZED BY W.NAUMKO/STREETS & BRIDGE ENGINEER DATE 91.02.23
ACCEPTED BY G.R.SMITH/BRIDGE ENGINEER DATE 91.02.23
DATE JAN 15, 1990

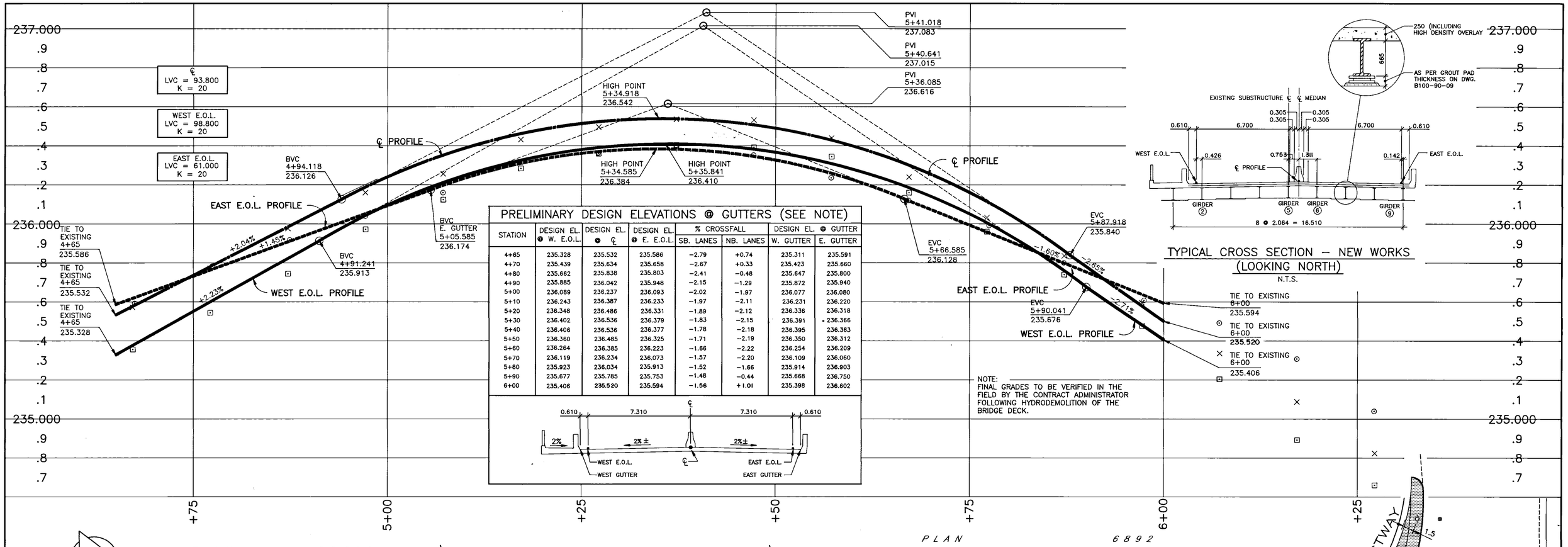
ENGINEER'S SEAL: PROVINCE OF MANITOBA · C. D. STEWART · 26/02/91 · REGISTERED ENGINEER

CONSULTANT DRAWING NO. 890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS
REINFORCING STEEL SCHEDULE ALTERNATIVE A

CITY DRAWING NUMBER B100-90-22A(RI)



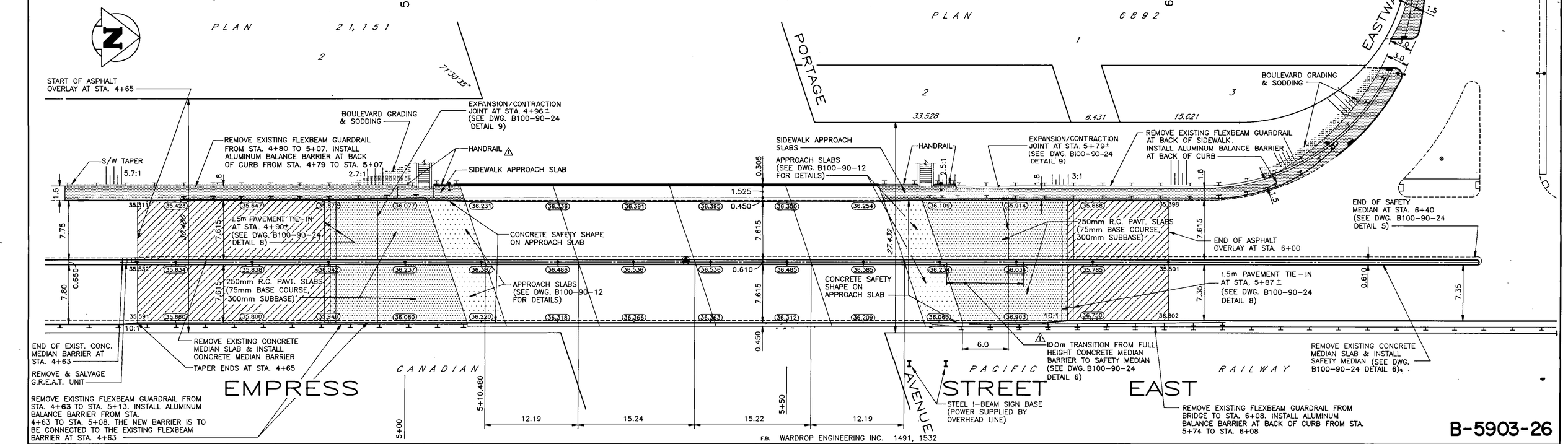
PRELIMINARY DESIGN ELEVATIONS @ GUTTERS (SEE NOTE)

STATION	DESIGN EL. @ W. E.O.L.	DESIGN EL. @ ℄	DESIGN EL. @ E. E.O.L.	% CROSSFALL SB. LANES	% CROSSFALL NB. LANES	DESIGN EL. @ GUTTER W. GUTTER	DESIGN EL. @ GUTTER E. GUTTER
4+65	235.328	235.532	235.586	−2.79	+0.74	235.311	235.591
4+70	235.439	235.634	235.658	−2.67	+0.33	235.423	235.660
4+80	235.662	235.838	235.803	−2.41	−0.48	235.647	235.800
4+90	235.885	236.042	235.948	−2.15	−1.29	235.872	235.940
5+00	236.089	236.237	236.093	−2.02	−1.97	236.077	236.080
5+10	236.243	236.387	236.233	−1.97	−2.11	236.231	236.220
5+20	236.348	236.486	236.331	−1.89	−2.12	236.336	236.318
5+30	236.402	236.536	236.379	−1.83	−2.15	236.391	236.366
5+40	236.406	236.536	236.377	−1.78	−2.18	236.395	236.363
5+50	236.360	236.485	236.325	−1.71	−2.19	236.350	236.312
5+60	236.264	236.385	236.223	−1.66	−2.22	236.254	236.209
5+70	236.119	236.234	236.073	−1.57	−2.20	236.109	236.060
5+80	235.923	236.034	235.913	−1.52	−1.66	235.914	236.903
5+90	235.677	235.785	235.753	−1.48	−0.44	235.668	236.750
6+00	235.406	235.520	235.594	−1.56	+1.01	235.398	236.602

NOTE:
FINAL GRADES TO BE VERIFIED IN THE FIELD BY THE CONTRACT ADMINISTRATOR FOLLOWING HYDRODEMOLITION OF THE BRIDGE DECK.

TYPICAL CROSS SECTION – NEW WORKS (LOOKING NORTH)

N.T.S.



B-5903-26

F.B. WARDROP ENGINEERING INC. 1491, 1532

				CONCRETE PAVEMENT SLABS			
SIDEWALK RAMP			ASPHALT RESURFACING				
HYDRANT			APPROACH SLABS		⊡	WEST GUTTER	
VALVE		35.532	CENTRELINE ELEVATION	(35.838)	⊙	EAST GUTTER	
PROPERTY LINE		35.311	GUTTER ELEVATION	(36.077)		WEST E.O.L.	
GEODETIC BENCHMARK			SIDEWALK			EAST E.O.L.	
LIGHT STANDARD			GUARDRAIL		×	CENTRELINE	
EXISTING	LEGEND–PLAN	PROPOSED	EXISTING	LEGEND–PLAN	PROPOSED	EXISTING	LEGEND–PROFILE	PROPOSED

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

B.M. CITY OF WINNIPEG 37-041
ELEV. 36.733

NO.	REVISIONS	DATE	BY
2	REVISED AS CONSTRUCTED	90-12-14	FPC
1	ADDENDUM	90-3-19	G.O.

WARDROP ENGINEERING INC.

DESIGNED BY	G.O.	CHECKED BY	M.S.
DRAWN BY	G.M.D.	APPROVED BY	
HOR. SCALE:	1:250	AUTHORIZED BY W. NAUMKO/STREETS & BRIDGES ENGINEER	DATE 90.12.23
VERTICAL:	1:10	ACCEPTED BY G.R. SMITH/BRIDGE ENGINEER	DATE 90.12.23
DATE	90/01/15		

ENGINEER'S SEAL
PROVINCE OF MANITOBA
24/04/20
G. O. OUELLETTE
REGISTERED PROFESSIONAL ENGINEER

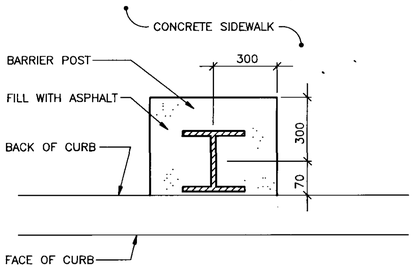
CONSULTANT DRAWING NO. 890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

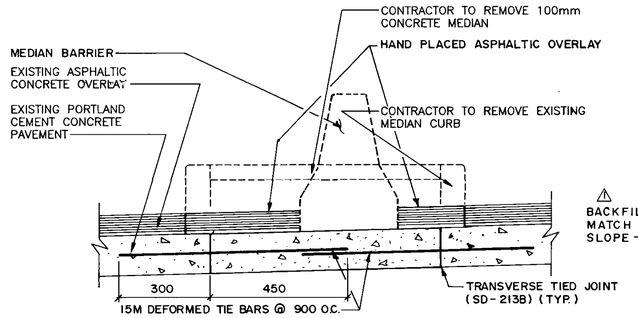
ROADWAY RECONSTRUCTION PLAN AND PROFILE

CITY DRAWING NUMBER B100-90-23(RI)

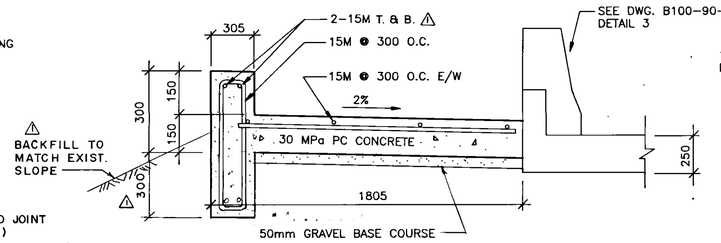


1 ALUMINUM BALANCE BARRIER POST BLOCKOUT IN CONCRETE SIDEWALK (PLAN VIEW)
N.T.S.

ALTERNATIVE B



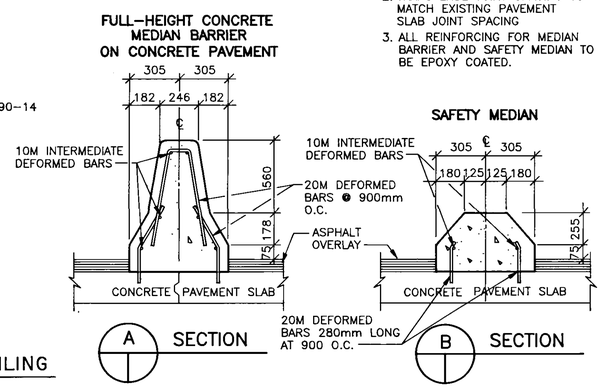
2 TYPICAL CROSS-SECTION DETOUR – ROADWAY CROSSOVER
N.T.S.

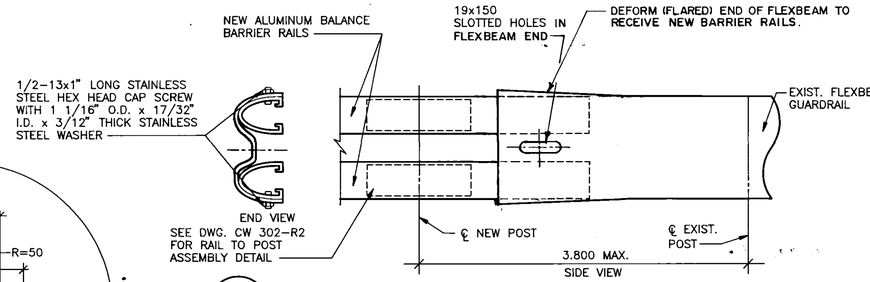


3 DETAIL@ APPROACH SIDEWALK SLAB WITH RAILING AT NORTH WEST CORNER OF BRIDGE
N.T.S.

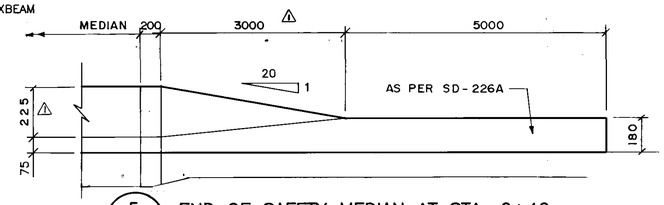
NOTES:

1. CONCRETE AS PER CW 3310-R4
2. TRANSVERSE JOINT SPACING TO MATCH EXISTING PAVEMENT SLAB JOINT SPACING
3. ALL REINFORCING FOR MEDIAN BARRIER AND SAFETY MEDIAN TO BE EPOXY COATED.

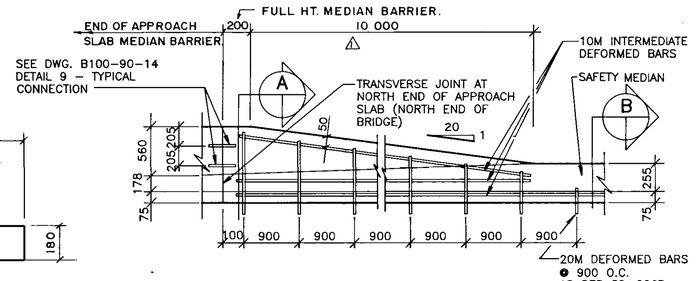




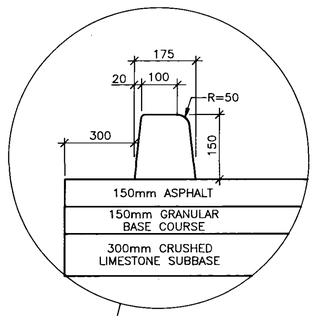
4 ALUMINUM BALANCE BARRIER & FLEXBEAM GUARDRAIL CONNECTION AT STA. 4+63 (E. SIDE OF EMPRESS ST.)
N.T.S.

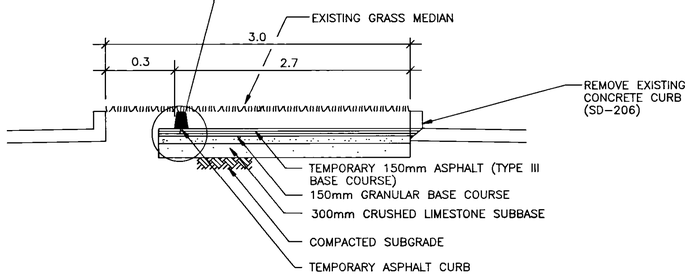


5 END OF SAFETY MEDIAN AT STA. 6+40
N.T.S.

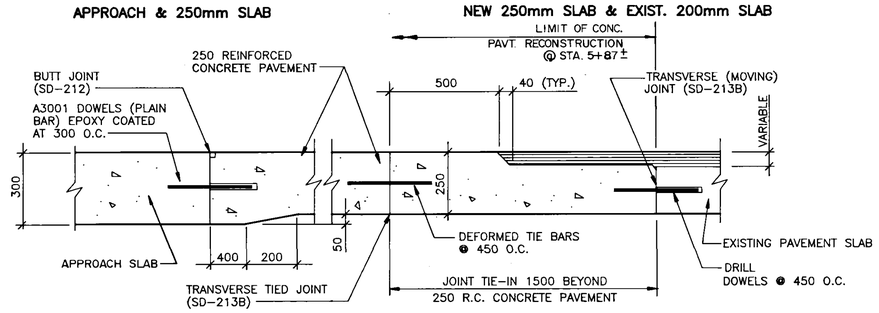


6 TRANSITION FROM FULL-HEIGHT CONCRETE MEDIAN BARRIER TO SAFETY MEDIAN
N.T.S.

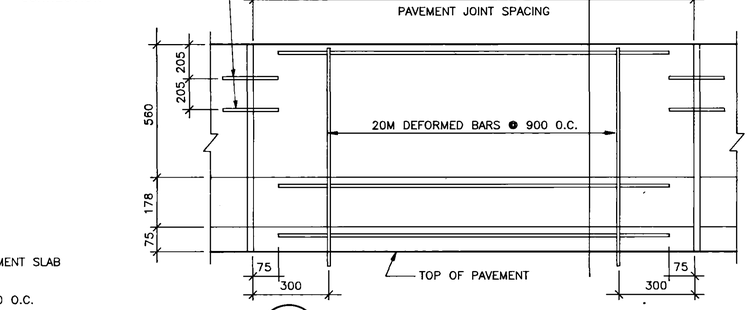




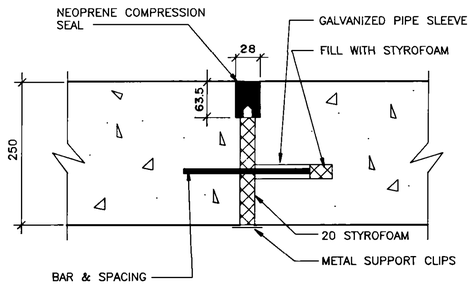
7 TEMPORARY LEFT-TURN LANE ON PORTAGE AVENUE EASTBOUND FOR DETOUR ALTERNATIVE A
N.T.S.



8 23 TYPICAL CONCRETE PAVEMENT TIE-IN
N.T.S.



10 MEDIAN BARRIER – PAVEMENT
N.T.S.



9 23 ROADWAY EXPANSION/CONTRACTION JOINT
N.T.S.

AS-BUILT
DATE 91.02.26 BY TB
CHECKED BY

B-5903-27

B.M. ELEV.			
2	REVISED AS CONSTRUCTED	90-12-14	FPC
1	ADDENDUM	90-3-19	G.O.
NO.	REVISIONS	DATE	BY

WARDROP ENGINEERING INC.

DESIGNED BY	G.O.	CHECKED BY	M.S.
DRAWN BY	G.M.D.	APPROVED BY	
HOR. SCALE: / VERTICAL:	AS NOTED	AUTHORIZED BY (DATE)	W. NAJANKO/STREETS & BRIDGES ENGINEER (91.02.23)
DATE	90/01/15	ACCEPTED BY (DATE)	R.R. SMITH/BRIDGE ENGINEER (90.02.23)

ENGINEER'S SEAL: PROVINCE OF MANITOBA 90/12/20 G. O. OUELLETTE REGISTERED PROFESSIONAL ENGINEER

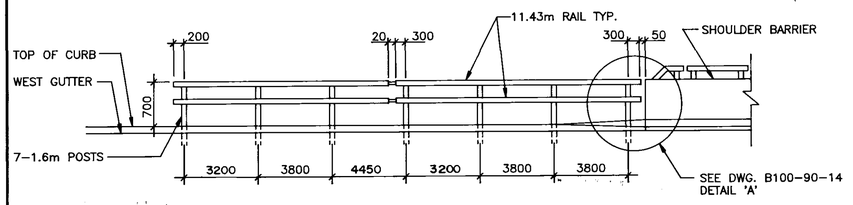
CONSULTANT DRAWING NO. 890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

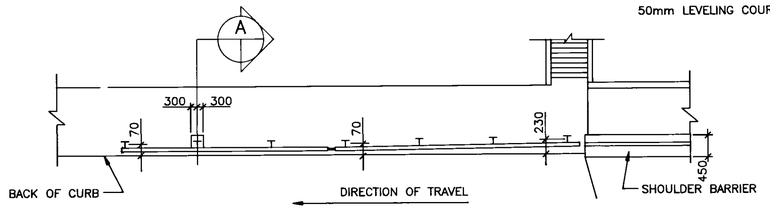
EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

ROADWAY RECONSTRUCTION DETAILS

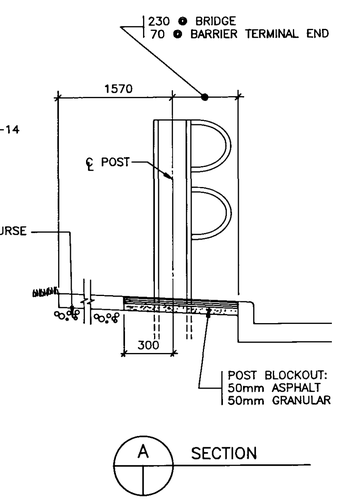
CITY DRAWING NUMBER B100-90-24(R1)



ELEVATION

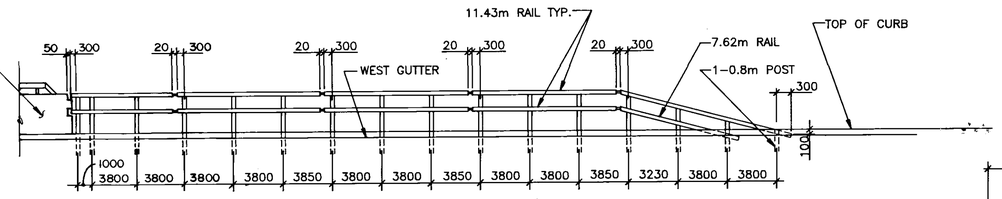


PLAN

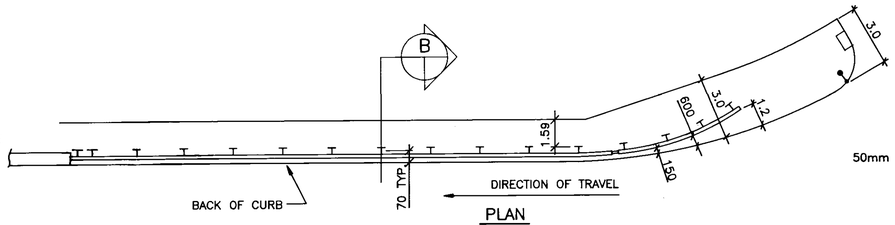


A SECTION

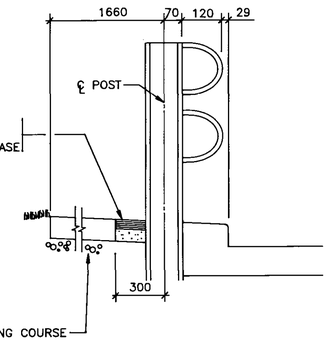
1 WEST SIDE – SOUTH END OF BRIDGE



ELEVATION

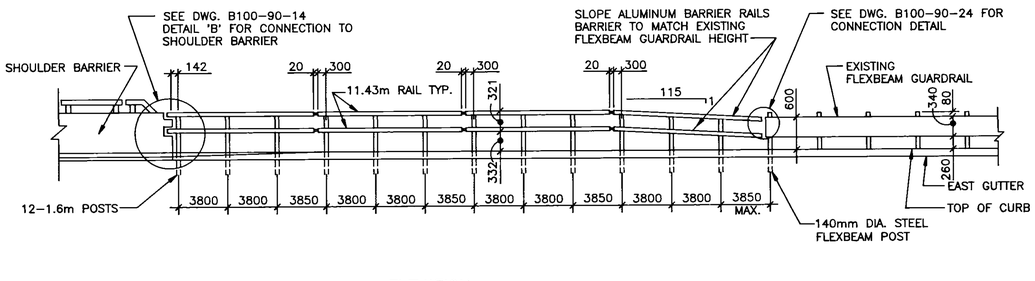


PLAN

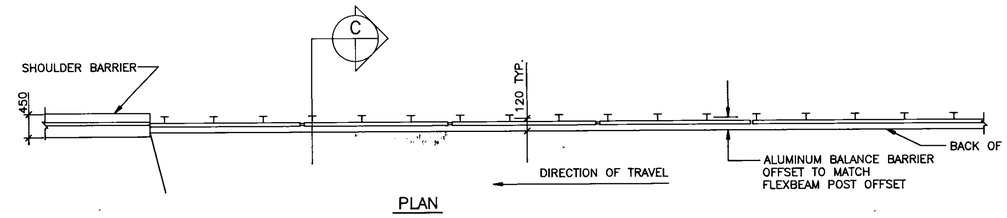


B SECTION

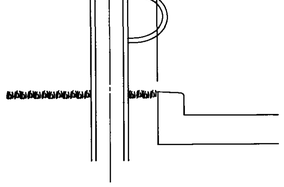
2 WEST SIDE – NORTH END OF BRIDGE ⚠



ELEVATION

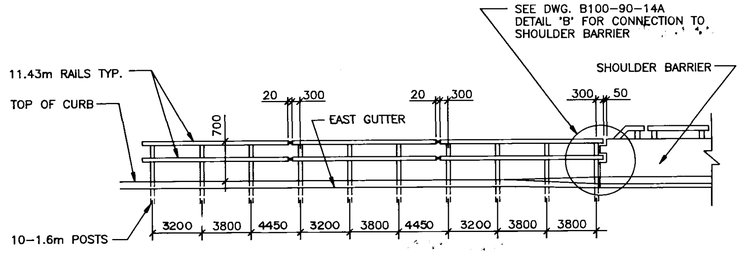


PLAN

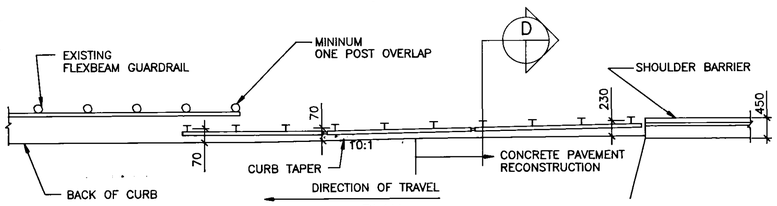


C SECTION

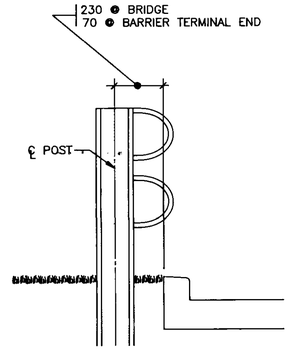
3 EAST SIDE – SOUTH END OF BRIDGE



ELEVATION



PLAN



D SECTION

3 EAST SIDE – NORTH END OF BRIDGE

BILL OF MATERIALS

ITEM	QUANTITY			
	WEST SIDE – SOUTH END OF BRIDGE	WEST SIDE – NORTH END OF BRIDGE	EAST SIDE – SOUTH END OF BRIDGE	EAST SIDE – NORTH END OF BRIDGE
13–13 X 25 STAINLESS STEEL HEX. HEAD CAP SCREW	56	110	96	80
27 O.D. X 14 I.D. X 2 THICK STAINLESS STEEL WASHER	56	110	96	80
RAIL CLAMP BAR	28	54	48	40
SPLICE BAR	2	6	6	4
RAIL END CAP	4	2	0	4
BARRIER POST 1600 mm	7	13	12	10
BARRIER POST 800 mm	0	1	0	0
BARRIER RAIL 11430 mm	4	7	8	6
BARRIER RAIL 7620 mm	0	1	0	0

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

B-5903-28

B.M. ELEV.

NO.	REVISIONS	DATE	BY
2	REVISED AS CONSTRUCTED	90-12-14	FPC
⚠	ADDENDUM	90-3-19	G.O.

WARDROP ENGINEERING INC.

DESIGNED BY G.O. | CHECKED BY M.S.
DRAWN BY G.M.D. | APPROVED BY
HOR. SCALE: NOT TO SCALE
VERTICAL: NOT TO SCALE
AUTHORIZED BY W. NAUMKO/STRUCTS & BRIDGES ENGINEER — DATE 91.02.23
ACCEPTED BY G.R. SMITH/BRIDGE ENGINEER — DATE 91.02.23
DATE 90/01/15

ENGINEER'S SEAL
PROVINCE OF MANITOBA
90/02/20
G. O. OUELLETTE
REGISTERED PROFESSIONAL ENGINEER

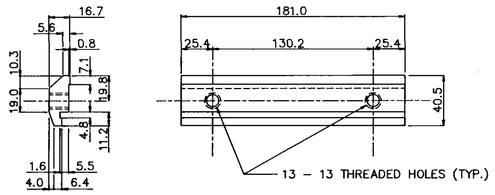
CONSULTANT DRAWING NO. 890007–02–00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

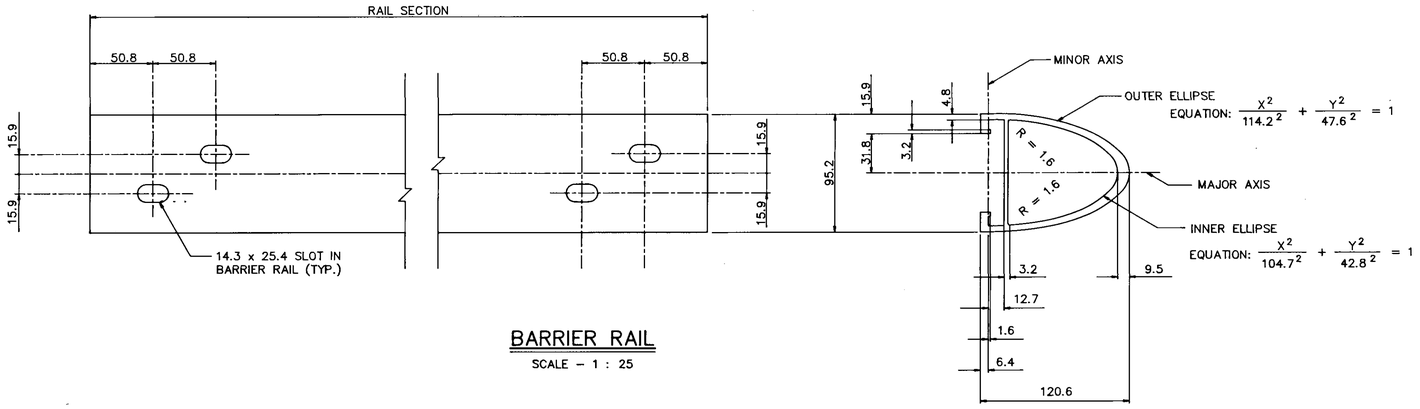
LAYOUT OF BALANCE ALUMINUM SHOULDER BARRIER AND DETAILS

CITY DRAWING NUMBER B100–90–25(RI)



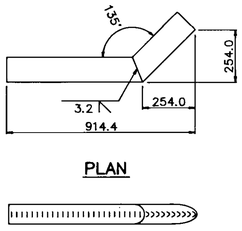
RAIL CLAMP BAR

SCALE – 1 : 25



BARRIER RAIL

SCALE – 1 : 25



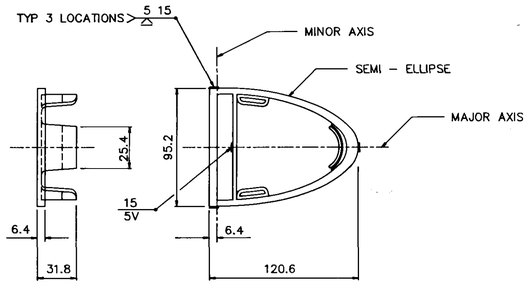
PLAN

FRONT ELEVATION

TERMINAL END

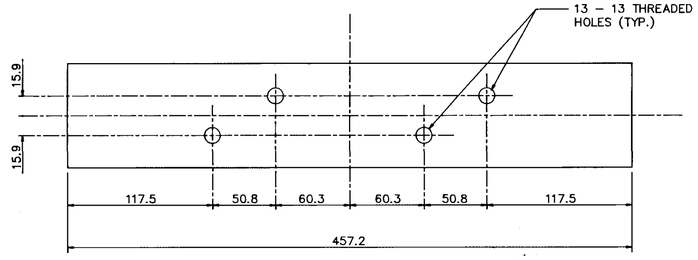
(FABRICATED FROM BARRIER RAIL)

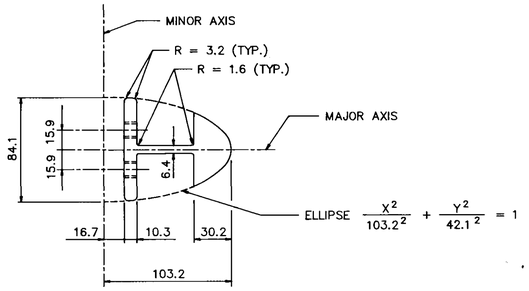
SCALE – 1 : 150



RAIL END CAP

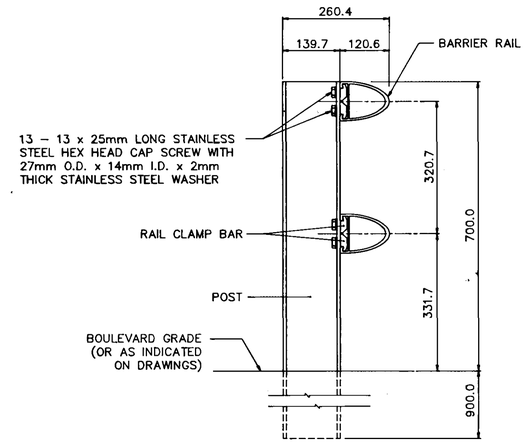
SCALE – 1 : 25





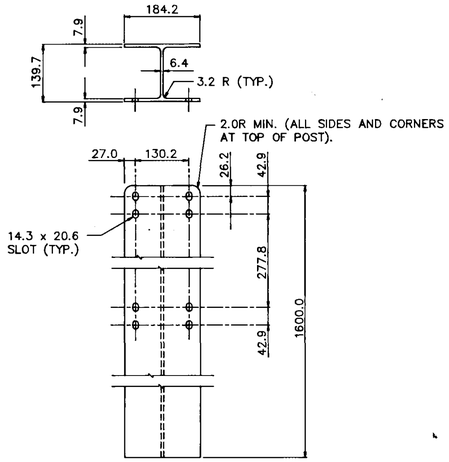
SPLICE BAR

SCALE – 1 : 25



RAIL TO POST ASSEMBLY DETAIL

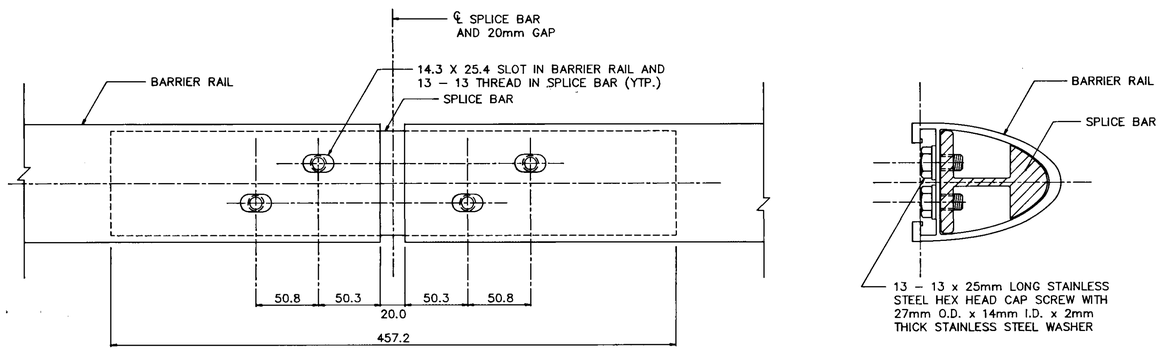
SCALE – 1 : 75



1.600m POST

(0.800m POST SIMILAR EXCEPT WITH ONLY FOUR SLOTS AT TOP OF POST)

SCALE – 1 : 75



SPLICE BAR TO RAIL ASSEMBLY DETAIL

SCALE – 1 : 25

MATERIAL SPECIFICATION

1. ALUMINUM RAILS, POSTS, SPLICE BARS, AND RAIL END CAPS SHALL CONFORM TO ASTM B221, ALLOY 6061 – T6, OR ALLOY 6351 – T6.
2. TYPE 316. STAINLESS STEEL WASHERS SHALL CONFORM TO ASTM A296, TYPE 316.
3. CAP SCREWS SHALL CONFORM TO ASTM A276, TYPE 316 STAINLESS STEEL.
4. ANTI–SEIZE COATING TO BE APPLIED TO ALL THREADED COMPONENTS WHEN BEING ASSEMBLED, i.e. LPS–3–MANUFACTURED BY HOLT LLOYD (CANADA) LTD., MARKHAM, ONTARIO L3R 2Z3
5. TWO COATS, EACH 1mm IN THICKNESS OF ALKALI–RESISTANT BITUMINOUS PAINT SHALL BE APPLIED ON THE SURFACES OF POSTS AND RAILS THAT ARE TO BE IN CONTACT WITH THE GROUND.

METRIC
ALL DIMENSIONS SHOWN ARE IN MILLIMETRES

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

B-5903-29

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G STRUCTURES COMMITTEE DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

NO.	REVISIONS	DATE	BY
	B.M. ELEV.		
1	REVISED AS CONSTRUCTED	901214	FPC

WARDROP ENGINEERING INC.

DESIGNED BY	CHECKED BY
DRAWN BY	APPROVED BY
HOR. SCALE: AS SHOWN VERTICAL:	AUTHORIZED BY W. NAUMKO, STREETS & BRIDGES ENGINEER DATE 90.02.23
DATE 90/01/15	ACCEPTED BY C. R. SMITH, BRIDGE ENGINEER DATE 90.02.23

ENGINEER'S SEAL
PROVINCE OF MANITOBA
G. O. OUELLETTE
REGISTERED PROFESSIONAL ENGINEER

CONSULTANT DRAWING NO.
890007–02–00

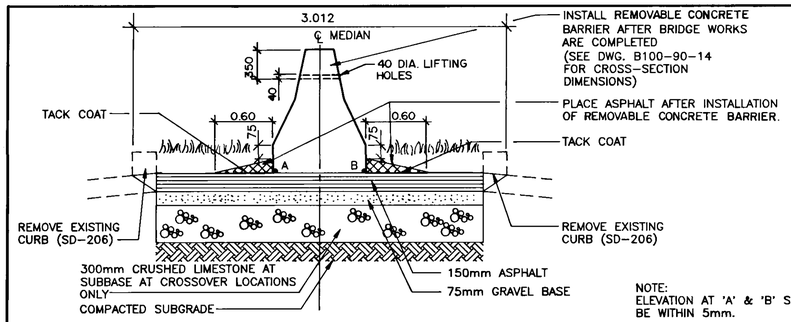
THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

BALANCE SHOULDER BARRIER STANDARD DETAIL

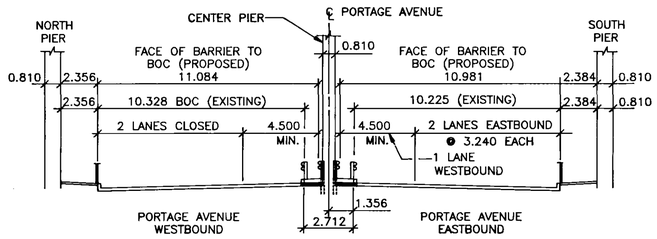
CITY DRAWING NUMBER
B100–90–26

CITY STANDARD DRWG. NO.
CW–302–R–2

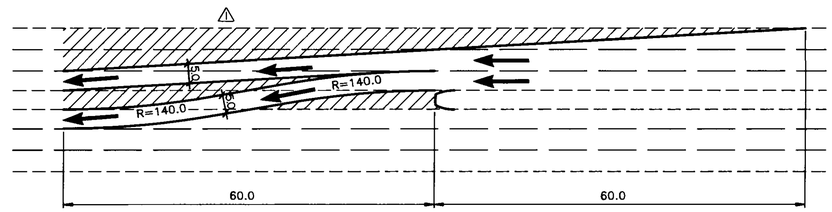


NOTE:
ELEVATION AT 'A' & 'B' SHALL BE WITHIN 5mm.

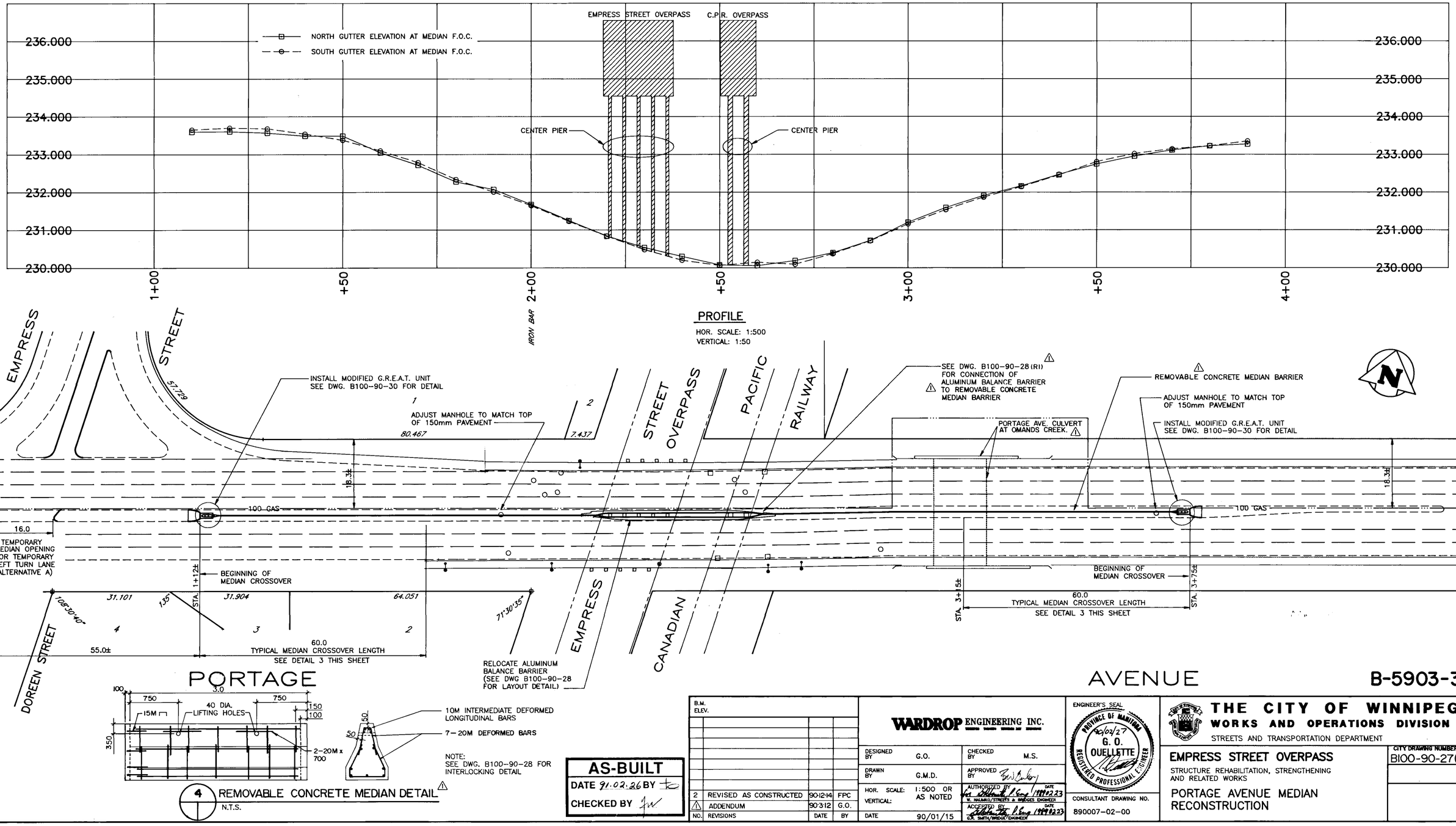
1 RECONSTRUCTION OF PORTAGE AVENUE MEDIAN ⚠
N.T.S.



2 TYPICAL CROSS SECTION LOOKING EAST
N.T.S. (SHOWING RELOCATION OF ALUMINUM MEDIAN BARRIER). ⚠



3 TYPICAL MEDIAN CROSSOVER LAYOUT
N.T.S.



10M INTERMEDIATE DEFORMED LONGITUDINAL BARS
7-20M DEFORMED BARS

NOTE:
SEE DWG. B100-90-28 FOR INTERLOCKING DETAIL ⚠

4 REMOVABLE CONCRETE MEDIAN DETAIL
N.T.S.

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

NO.	REVISIONS	DATE	BY
2	REVISED AS CONSTRUCTED	90-12-14	FPC
⚠	ADDENDUM	90-3-12	G.O.

B.M.
ELEV.

WARDROP ENGINEERING INC.

DESIGNED BY	G.O.	CHECKED BY	M.S.
DRAWN BY	G.M.D.	APPROVED BY	
HOR. SCALE: 1:500 OR VERTICAL: AS NOTED		AUTHORIZED BY W. MAJAKO/STREETS & BRIDGES ENGINEER	DATE 1991.02.23
DATE	90/01/15	ACCEPTED BY C.K. SMITH/PROJECT ENGINEER	DATE 1991.02.23

ENGINEER'S SEAL
PROVINCE OF MANITOBA
91/02/27
G. O. OUELLETTE
REGISTERED PROFESSIONAL ENGINEER

CONSULTANT DRAWING NO.
890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

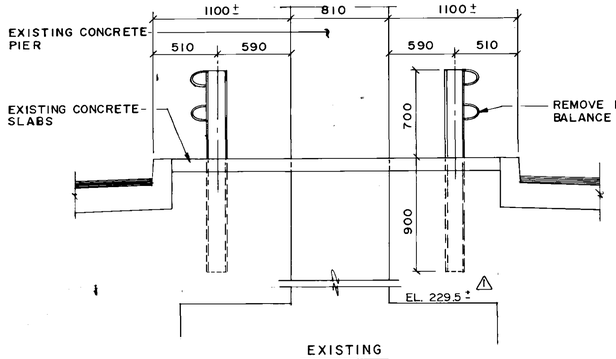
CITY DRAWING NUMBER
B100-90-27(R1)

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS

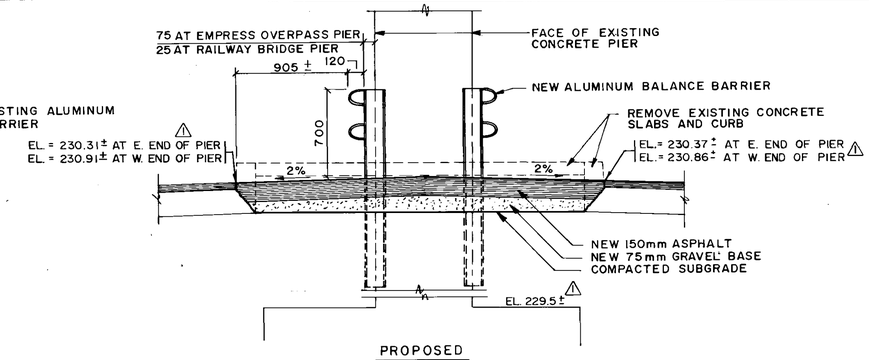
PORTAGE AVENUE MEDIAN RECONSTRUCTION

B-5903-30

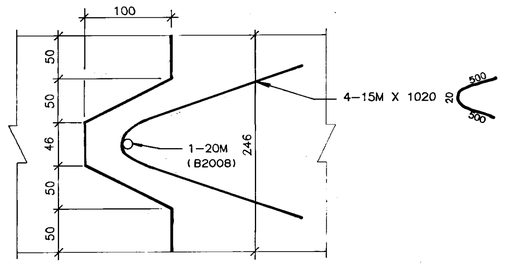
WO 101-84



EXISTING

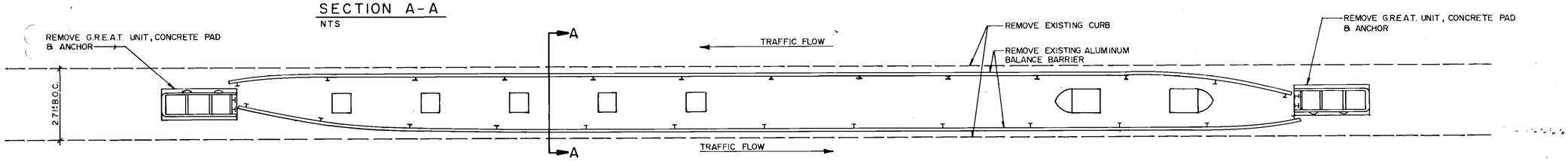


PROPOSED

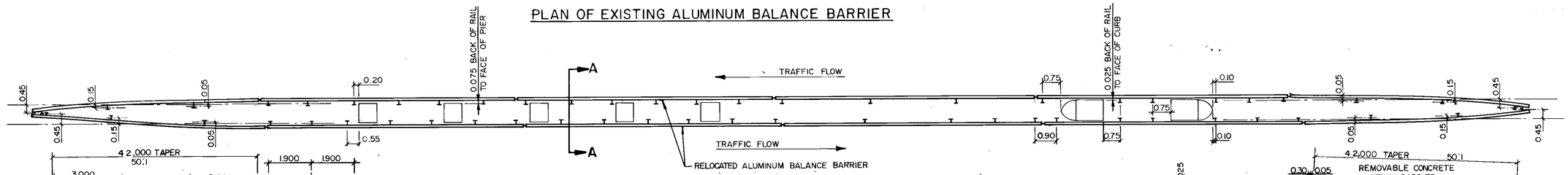


1 REMOVABLE CONCRETE MEDIAN BARRIER INTERLOCKING DETAIL
N.T.S.

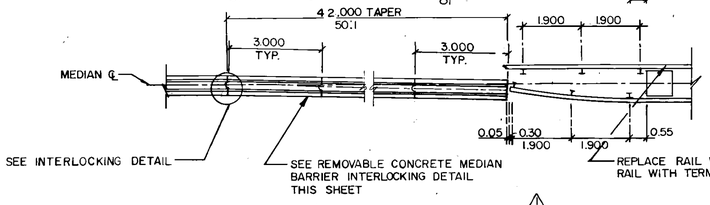
SECTION A-A
NTS

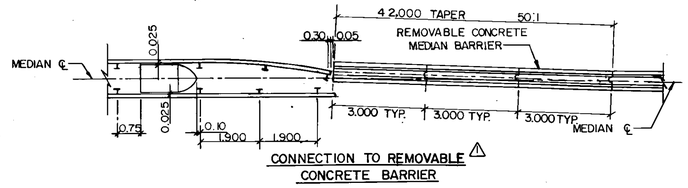


PLAN OF EXISTING ALUMINUM BALANCE BARRIER



PLAN OF RELOCATED ALUMINUM BALANCE BARRIER ⚠
FOR DURATION OF CONSTRUCTION PERIOD WITH TEMPORARY END BURY SECTION



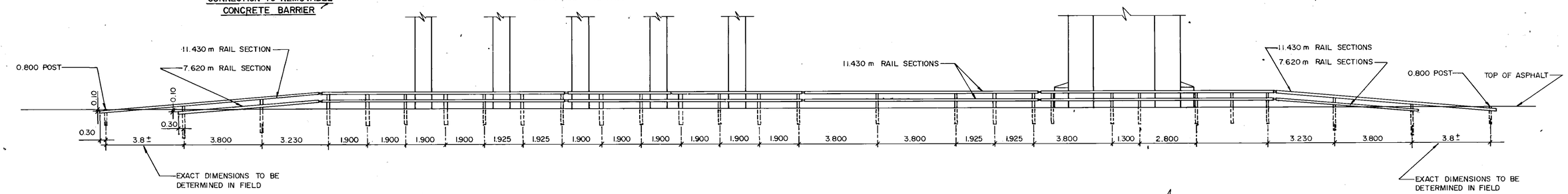


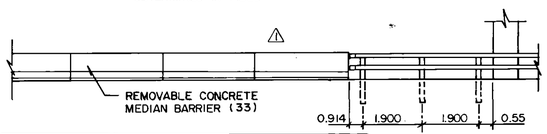
CONNECTION TO REMOVABLE CONCRETE BARRIER ⚠

CONNECTION TO REMOVABLE CONCRETE BARRIER ⚠

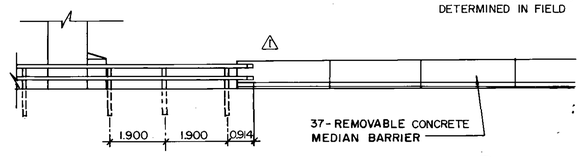
EMPRESS STREET OVERPASS

C.P.R. BRIDGE





ELEVATION OF RELOCATED ALUMINUM BALANCE BARRIER
FOR DURATION OF CONSTRUCTION PERIOD WITH TEMPORARY END BURY SECTION.



BILL OF MATERIALS

ITEM	QUANTITY REQUIRED ⚠ FOR RELOCATED BARRIER	QUANTITY AVAILABLE FROM EXISTING BARRIER
11.430 m RAIL SECTIONS	20	16
7.620 m RAIL SECTIONS	4	NIL
1.600 m POSTS	52	26
0.800 m POSTS	4	NIL
SPLICE BARS	20	12
RAIL CLAMP BARS	216	104
CAP SCREWS	432	256
WASHERS	432	256

NOTES:

1. NEW LOCATION OF POSTS MAY VARY FROM LOCATION SHOWN DUE TO PIER FOOTINGS.
2. ALL POSTS 1.600 m LONG EXCEPT WHERE NOTED OTHERWISE.
3. ADDITIONAL BARRIER COMPONENTS WILL BE SUPPLIED BY THE CITY OF WINNIPEG.

AS-BUILT
DATE 91.02.26 BY TB
CHECKED BY JW

LOCATION APPROVED
UNDERGROUND STRUCTURES
N/A
SUPV. U/G STRUCTURES COMMITTEE — DATE

NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

B.M.
ELEV

NO	REVISIONS	DATE	BY
2	REVISED AS CONSTRUCTED	90-12-14	FPC
⚠	ADDENDUM	90-3-12	G.O.

WARDROP ENGINEERING INC.

DESIGNED BY	G.O.	CHECKED BY	M.S.
DRAWN BY	G.M.D.	APPROVED BY	
HOR. SCALE	1:100	AUTHORIZED BY	DATE 90.02.23 W.NAUMKO/STREETS & BRIDGE ENGINEER
VERTICAL		ACCEPTED BY	DATE 90.02.23 G.R.SMITH/BRIDGE ENGINEER
DATE	90/01/15		

ENGINEER'S SEAL
PROVINCE OF MANITOBA
90/02/23
G. O. OUELLETTE
REGISTERED PROFESSIONAL ENGINEER

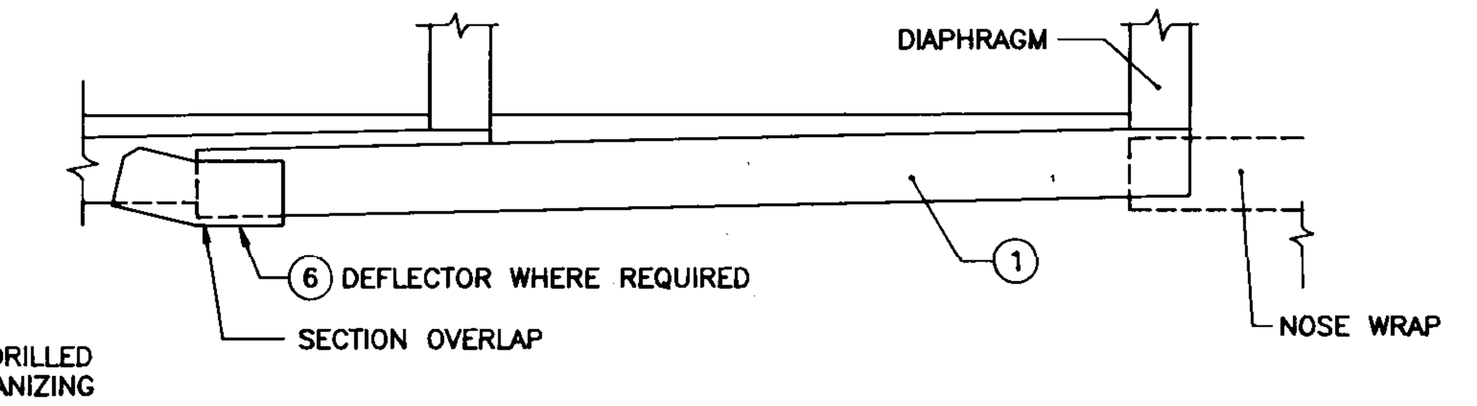
CONSULTANT DRAWING NO.
890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

CITY DRAWING NUMBER
B100-90-28(RI)

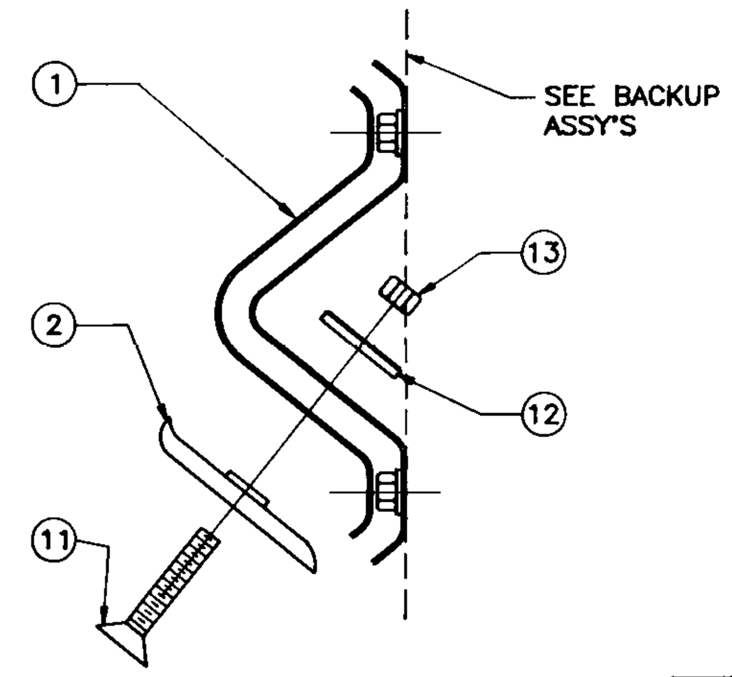
EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS
MISCELLANEOUS DETAILS

B-5903-31



NOTES:
SPRAY ALL HOLES DRILLED IN FIELD WITH GALVANIZING COMPOUND.

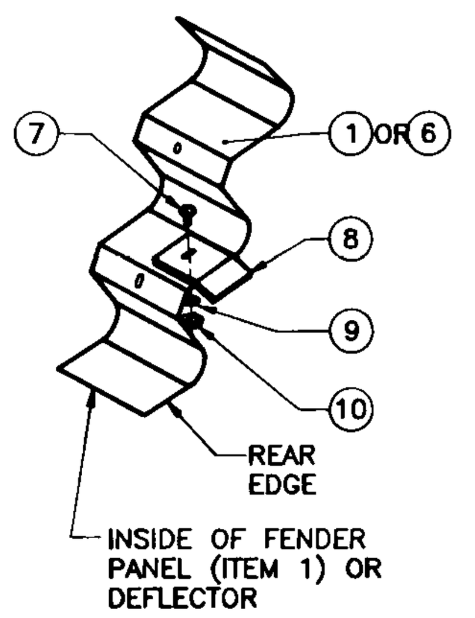
TOP ASSEMBLY VIEW



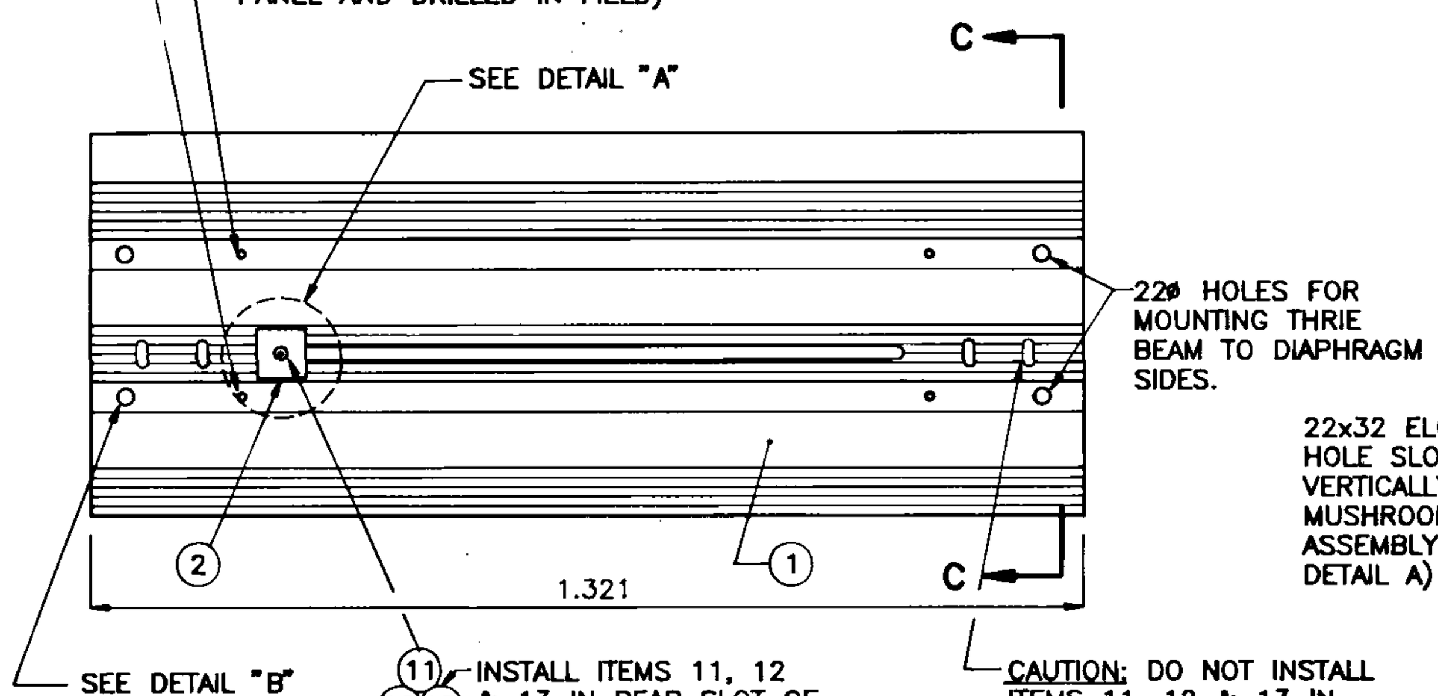
DETAIL "A"
MUSHROOM BOLT ASSEMBLY
N.T.S.

PARTS LIST FOR THRIE BEAM FENDER PANEL

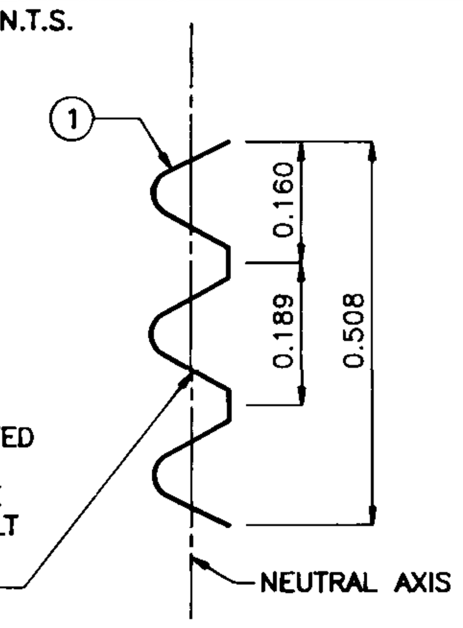
ITEM	STOCK NO.	DESCRIPTION
	35-05-012	ASSEMBLY
1	27-38-111	THRIE BEAM FENDER PANEL
2	27-08-153	MUSHROOM WASHER
3	27-01-641	⅜" x 2" H.H. BOLT
4	27-04-091	⅜" NUT
5	27-08-081	⅜" FLAT WASHER
6	27-52-031	DEFLECTOR PANEL (WHERE REQUIRED)
7	27-06-181	½"ø x 1" FLAT HEAD CAP SCREW
8	27-52-651	MUSHROOM BOLT DEFECTOR
9	27-08-011	½" FLAT WASHER
10	27-04-011	½" H.H. NUT
11	27-01-731	⅝"ø x 3" F.H. ALLEN HEAD MACHINE BOLT
12	27-08-381	2" x 2" x ¼" W ¾"ø HOLE SQ. WASHER
13	27-04-141	⅝" H.H NUT



DETAIL "B"
N.T.S.



SIDE VIEW



SECTION C–C

THRIE BEAM FENDER PANEL ASSEMBLY DETAILS

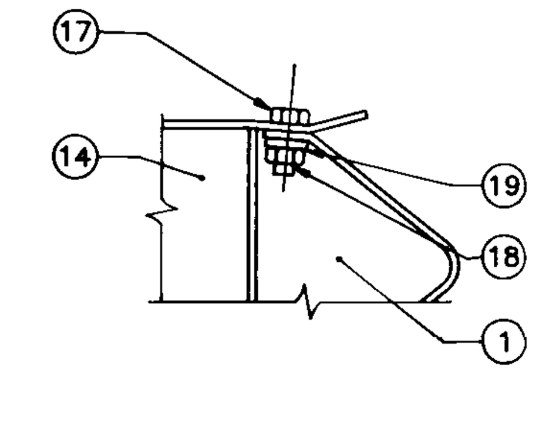
(TYPICAL FOR EACH FENDER PANEL)
1 : 10 U/N

PARTS LIST FOR BACKUP ASSEMBLY

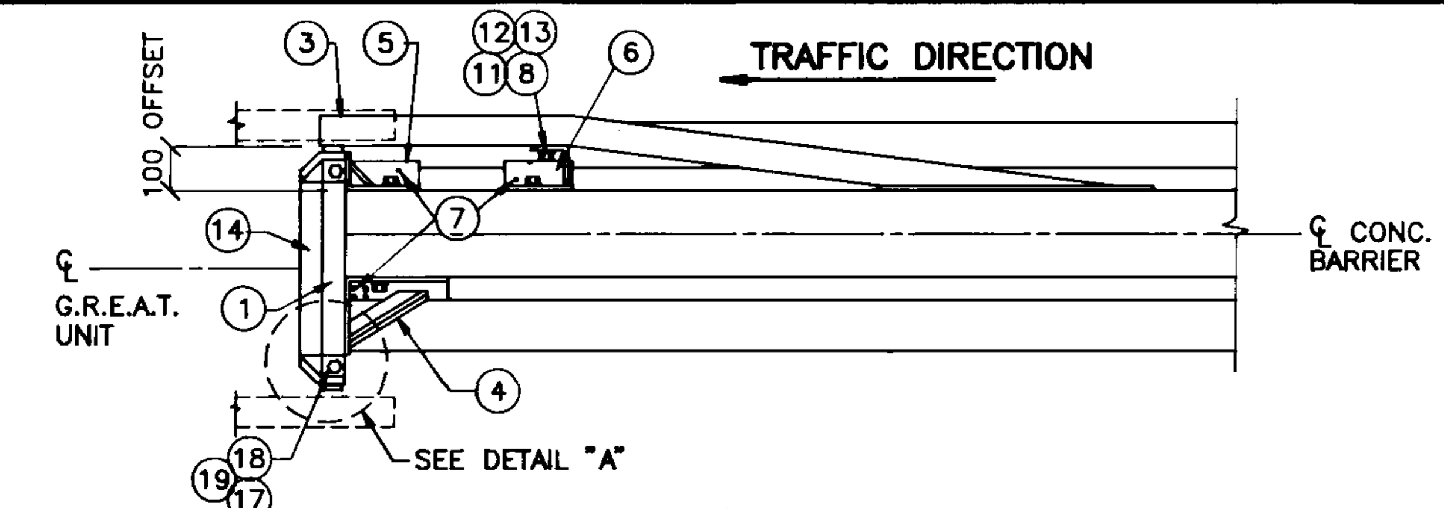
ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	SEE TABLE	BACKUP	1
2	27-52-111	THRIE-BEAM SIDE PANEL	1
3	27-52-241	TRANSITION PANEL	1
4	SEE TABLE	RIGHT ATTACHMENT BRACKET	1
5	27-52-201	LEFT ATTACHMENT BRACKET	1
6	27-52-271	SUPPORT BRACKET	1
7	27-01-261	¾"øx4¾" CONC. ANCHOR BOLT (EXP. TYPE)	*
8	27-01-381	¾"øx2" H.H. BOLT	12
9	27-01-641	¾"x1¼" H.H. BOLT	2
10	27-01-661	¾"ø FLUSH ANCHOR	2
11	27-08-081	¾" FLAT WASHER	12
12	27-04-091	¾"ø H.H. NUT	12
13	27-08-201	¾" LOCK WASHER	14
14	27-52-591	CARTRIDGE SUPPORT BRACKET	1
15	27-52-611	CLAMPING BAR	1
16	27-01-331	⅜"x4½" H.H. BOLT	2
17	27-01-221	⅜"øx1" H.H. BOLT	2
18	27-04-031	⅜"ø H.H. NUT	4
19	27-08-021	⅜" FLAT WASHER	6

TABLE FOR BACKUP ASSEMBLY

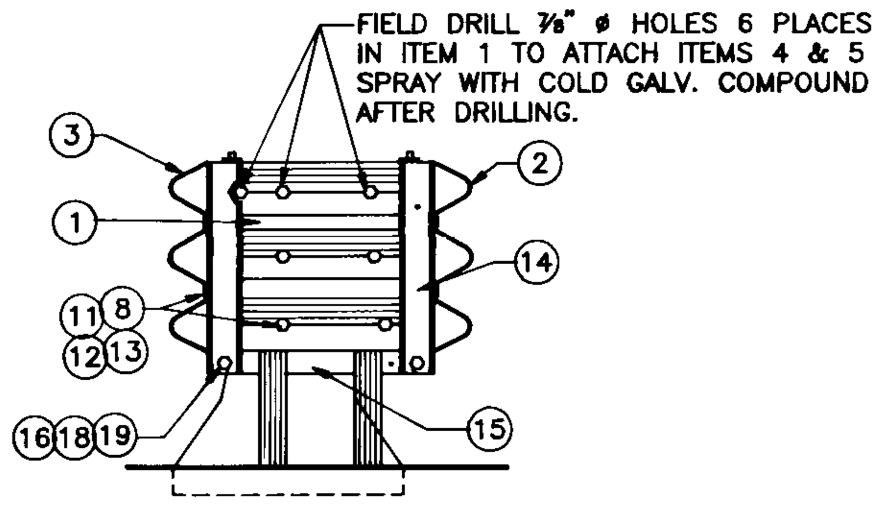
UNIT MODEL NO.	ASSEMBLY NO.	ITEM 1 (BACKUP) STOCK NO.	ITEM 4 STOCK NO.	* ITEM 7 REQ'D
200200	38-21-021	29-03-211	27-52-191	12
206206	38-21-022	29-03-212	27-52-641	14
300300	38-21-023	29-03-213	27-52-641	14



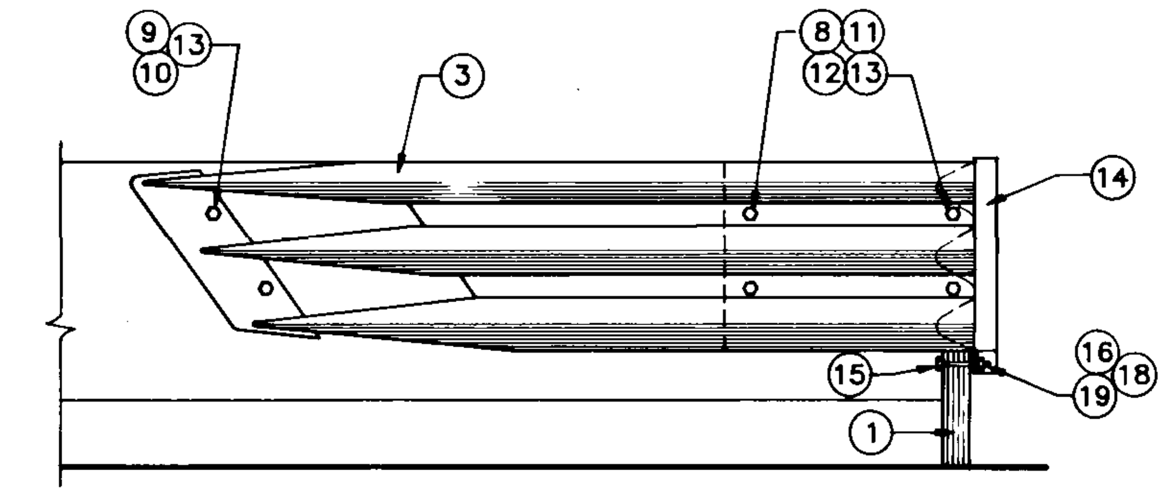
DETAIL "A"



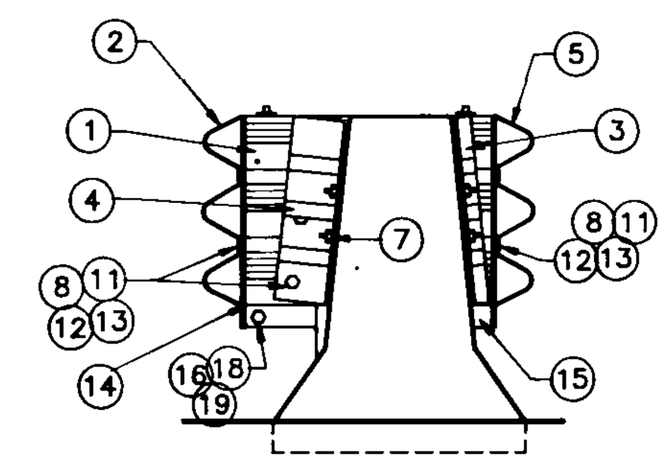
PLAN



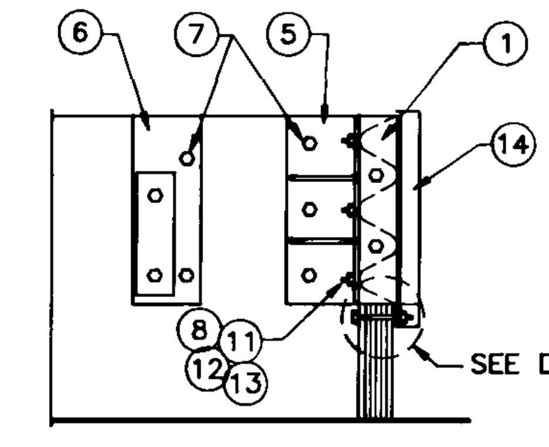
FRONT VIEW



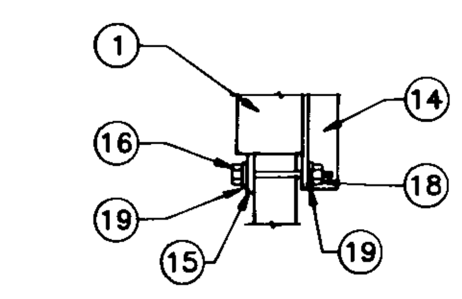
SIDE VIEW



SECTION B–B



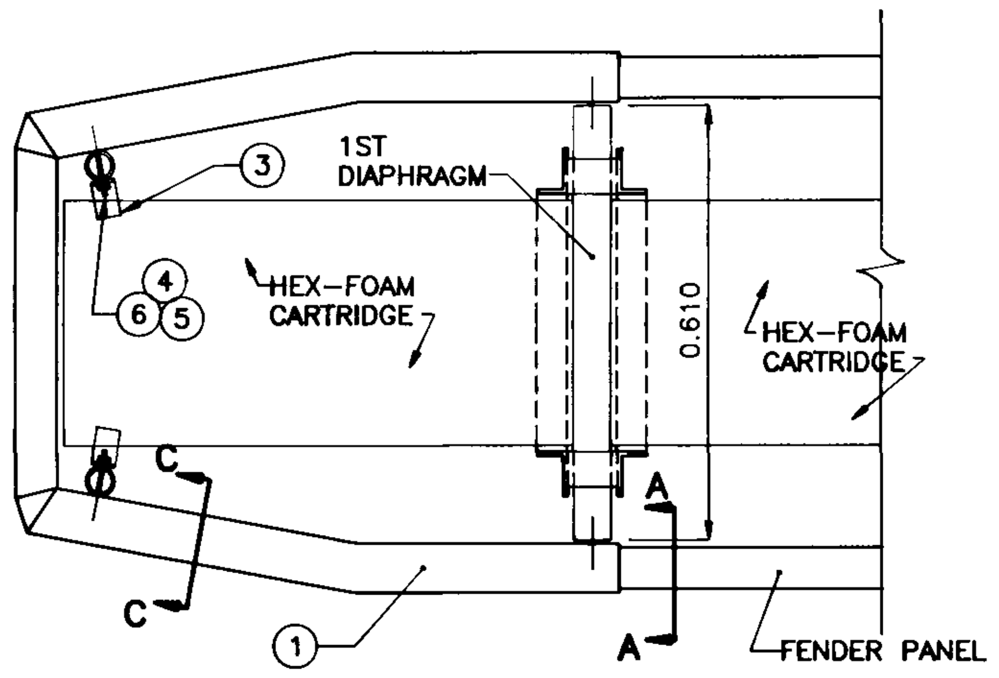
SIDE VIEW
TRANSITION PANEL NOT SHOWN



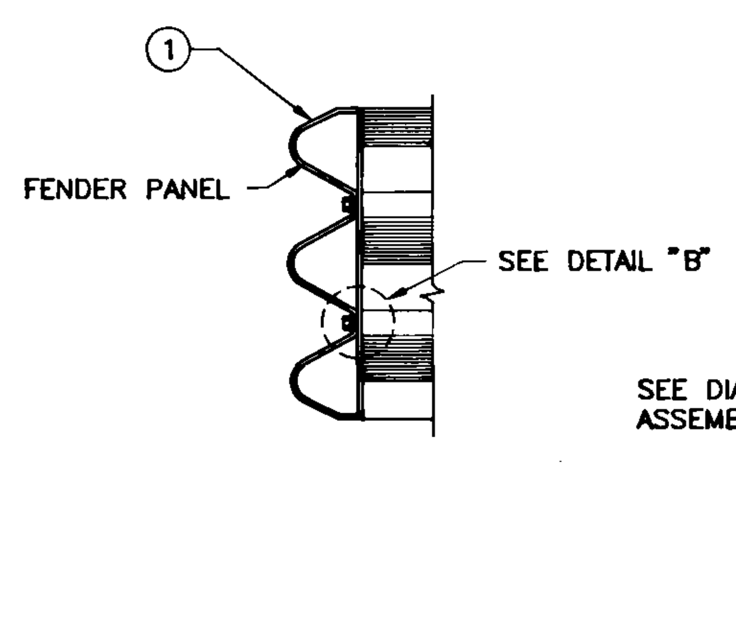
DETAIL "C"

DETAIL OF BACKUP ASSEMBLY FOR CONCRETE MEDIAN TRAFFIC BARRIER BI–DIRECTIONAL

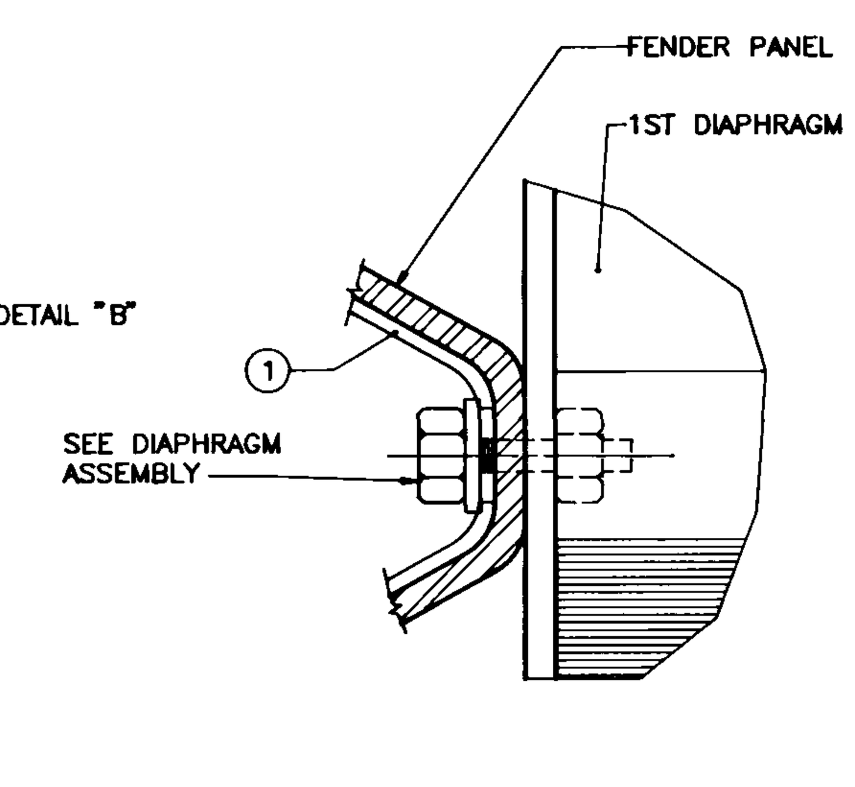
N.T.S. U/N



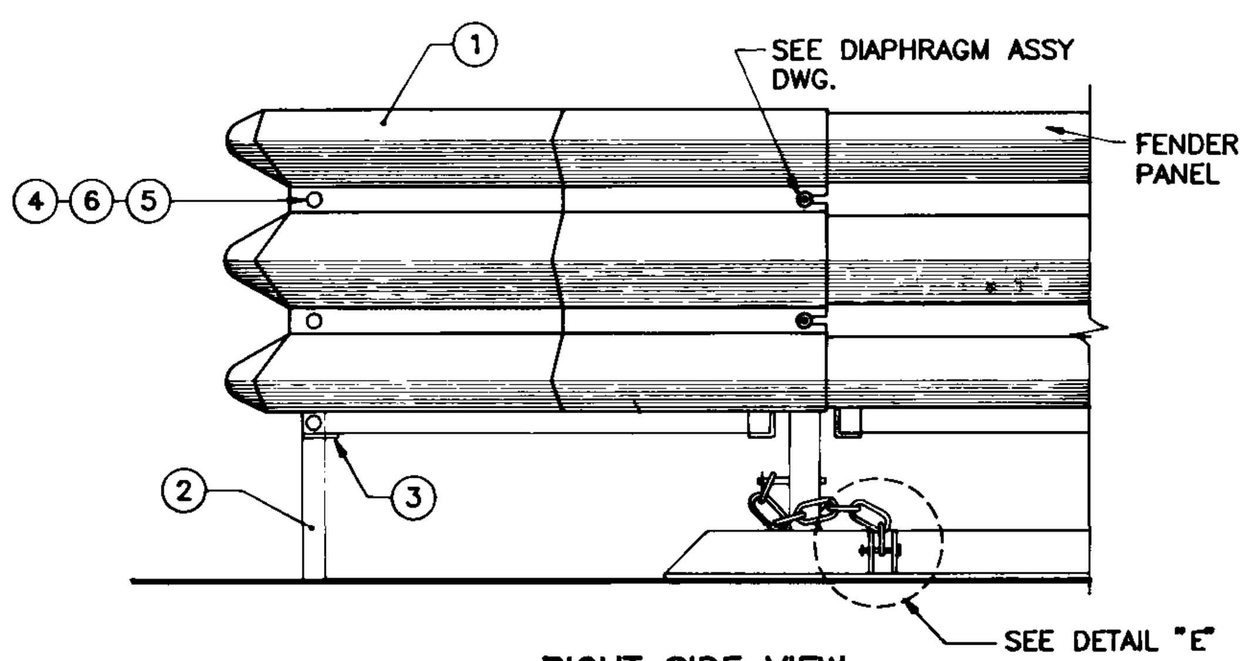
PLAN VIEW



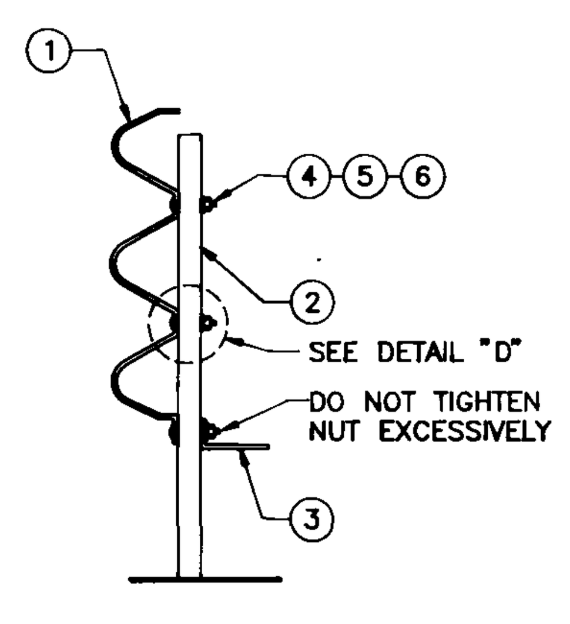
SECTION A–A



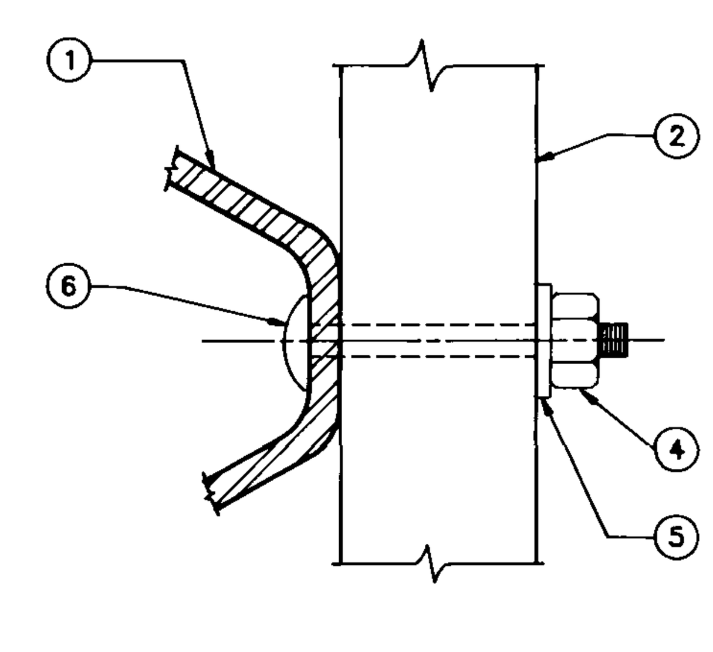
DETAIL "B"



RIGHT SIDE VIEW



SECTION C–C



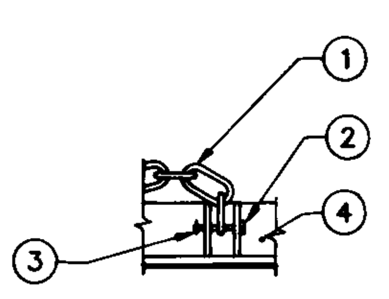
DETAIL "D"

NOTES:

TORQUE (4) TO 50–100 FT–LBS

CHAIN RAIL PARTS LIST

ITEM	STOCK NO.	DESCRIPTION
1	27-52-021	PROOF COIL CHAIN ½" (9 LINKS)
2	27-02-101	⅝"ø x 2" CLEVIS PIN
3	27-02-111	PIN KEEPER SPRING
4	27-22-033	CHAIN RAIL (8'–10")



DETAIL "E"

NOSE COVER ASSEMBLY DETAILS

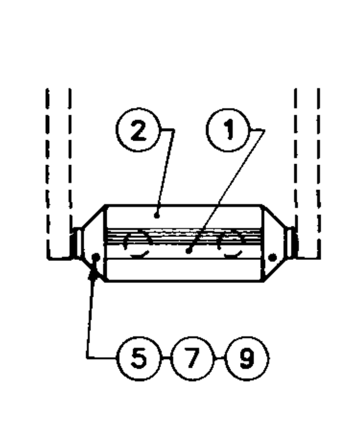
(USING HEX–FOAM CARTRIDGES)
N.T.S. U/N

PARTS LIST FOR NOSE COVER ASSEMBLY

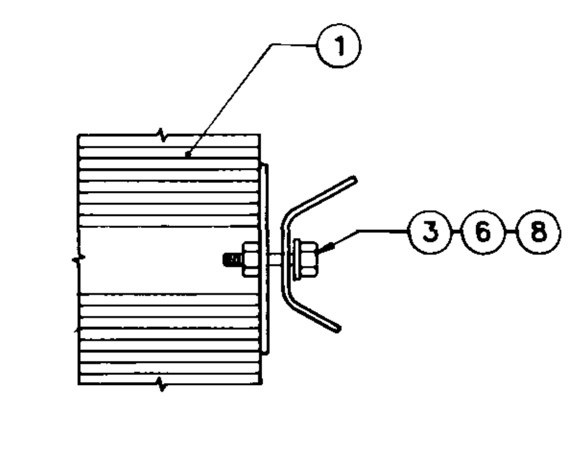
ITEM	STOCK NO.	DESCRIPTION
	35-02-08	UNIVERSAL NOSE COVER ASSEMBLY
1	20-20-811	NOSE COVER
2	27-14-892	SUPPORT LEG
3	27-14-891	SUPPORT TAB
4	27-04-031	⅜" H.H. NUT
5	27-08-021	⅜" FLAT WASHER
6	27-01-171	⅜"ø x 2-¼" CARRIAGE BOLT

PARTS LIST FOR NOSE COVER ASSEMBLY

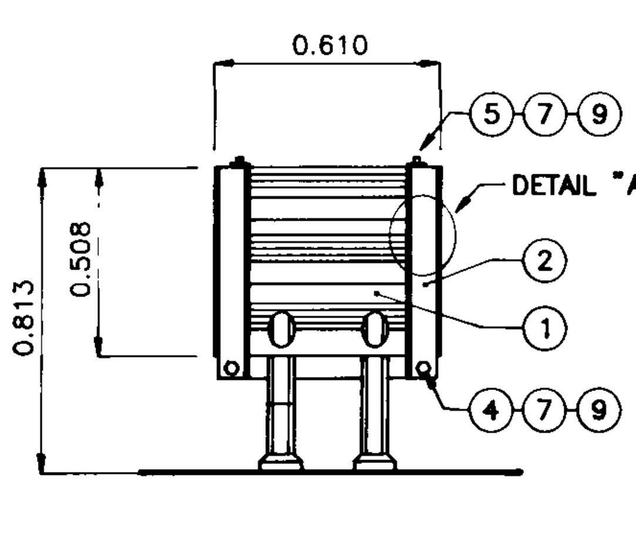
ITEM	STOCK NO.	DESCRIPTION
1	27-20-031	DIAPHRAGM
2	27-52-581	CARTRIDGE SUPPORT BRACKET
3	27-01-381	¾"ø x 2" H.H. BOLT
4	27-00-071	⅜"ø x 5" H.H. BOLT
5	27-01-221	⅜"ø x 1" H.H. BOLT
6	27-04-091	¾" H.H.. NUT
7	27-04-031	⅜" H.H. NUT
8	27-08-081	¾" FLAT WASHER
9	27-08-021	⅜" FLAT WASHER



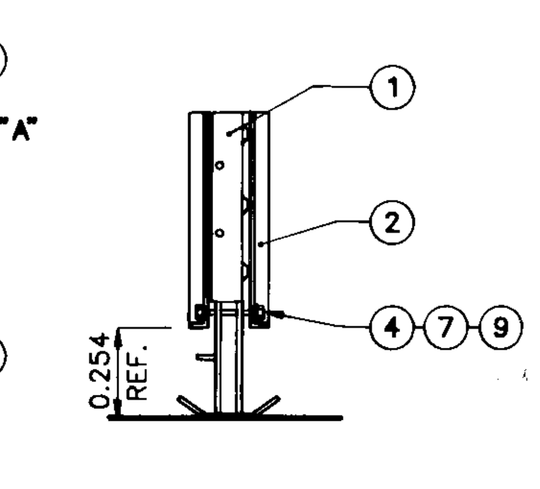
TOP VIEW



DETAIL "A"



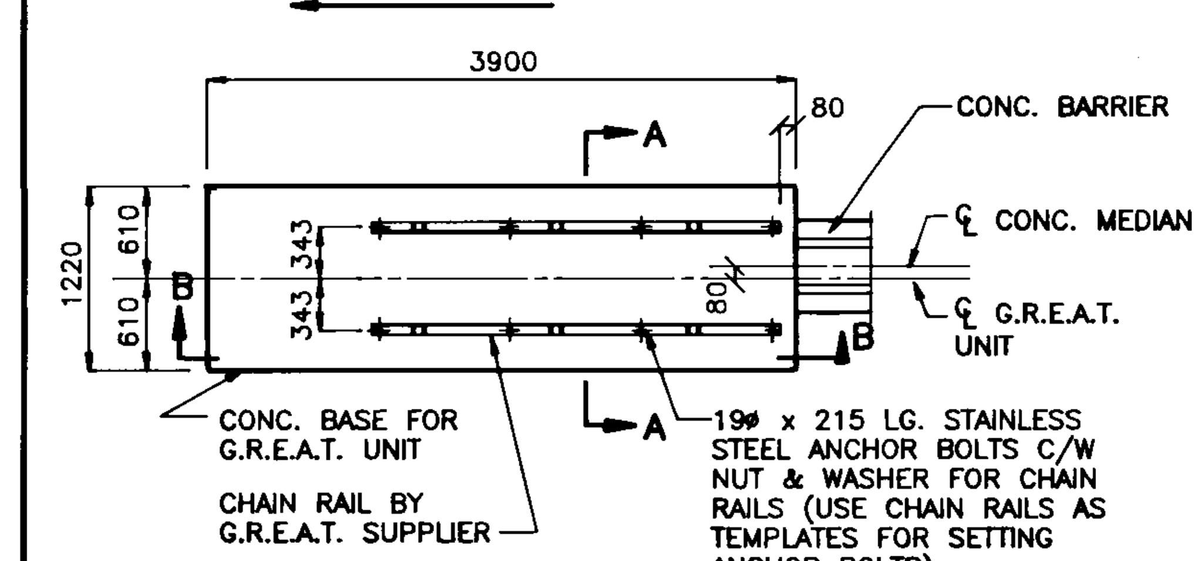
FRONT VIEW



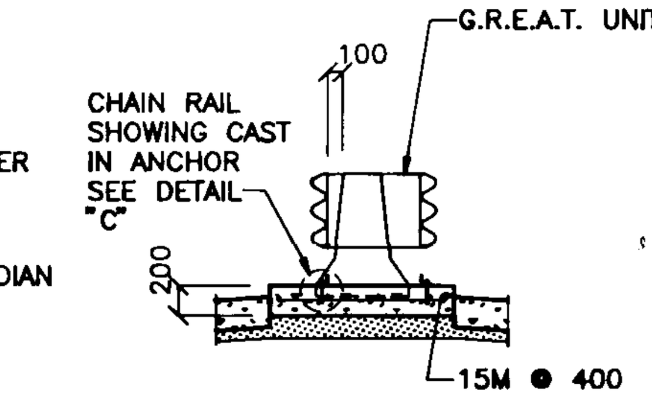
SIDE VIEW

DIAPHRAGM ASSEMBLY DETAIL

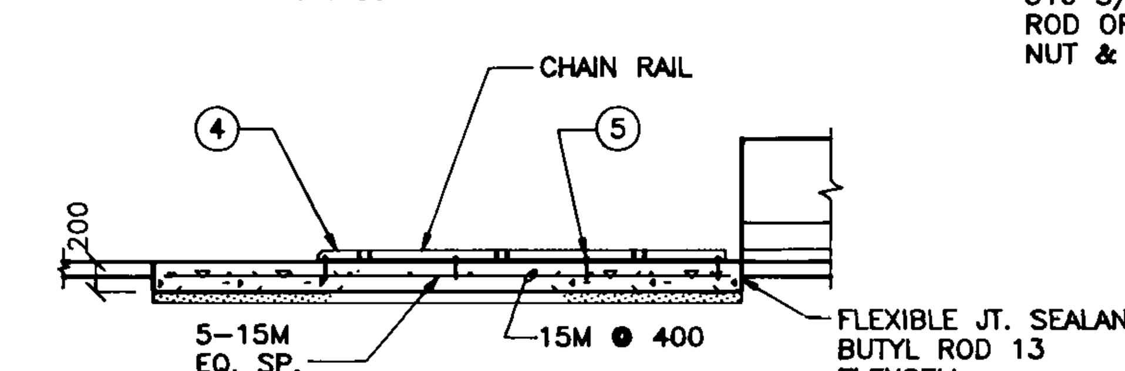
(FOR HEX–FOAM CARTRIDGE)
N.T.S. U/N



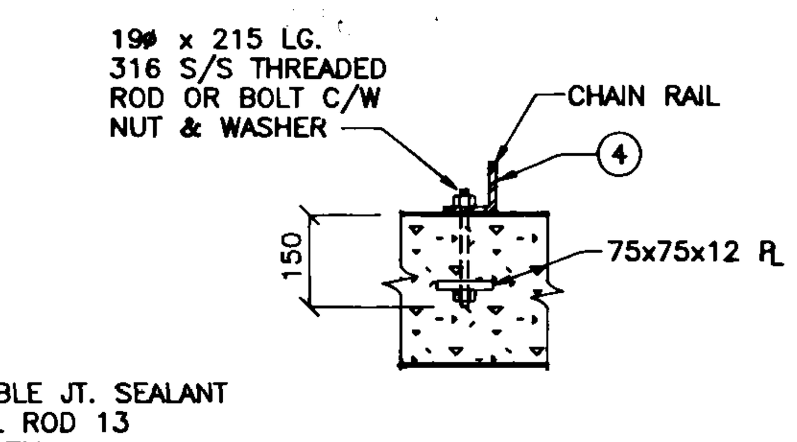
PLAN OF G.R.E.A.T. UNIT PAD
1 : 50



SECTION A–A
1 : 50



SECTION B–B
1 : 50



DETAIL "C"
1 : 10

G.R.E.A.T. UNIT PAD

GENERAL NOTES:

1) USE CHAIN RAILS AS TEMPLATE TO LOCATE ANCHOR SYSTEM
2) G.R.E.A.T. BARRIER TO BE INSTALLED IN ACCORDANCE WITH THESE DRAWINGS AND THE MANUFACTURES CURRENT ASSEMBLY DRAWINGS.
3) REINFORCING STEEL USED IN THE CONCRETE BASE SHALL BE EPOXY COATED.
4) INSTALLATION OF SNOW COVER TO BE DONE BY THE CONTRACTOR, AS PER INSTRUCTIONS OF THE CITY BRIDGE ENGINEER. PARTS WILL BE SUPPLIED BY THE CITY OF WINNIPEG.
5) INSTALLATION OF SHEAR BOLTS TO BE DONE BY THE CONTRACTOR, AS PER INSTRUCTIONS OF THE CITY BRIDGE ENGINEER.
6) ALL CHAIN RAILS SHALL BE INSTALLED ONLY BY CASTING THE ANCHOR RODS INTO THE CONCRETE.

B-5903-32

AS-BUILT
DATE 91.02.26 BY
CHECKED BY

NO	REVISIONS	DATE	BY
I	REVISED AS CONSTRUCTED	90·12·14	FPC
–	ISSUED WITH ADDENDUM #3	90·3·19	FPC

B.M. ELEV.

WARDROP ENGINEERING INC.

DESIGNED BY G.O. | CHECKED BY F.P.C.
DRAWN BY G.R.A. | APPROVED BY
HOR. SCALE: VERTICAL: AS NOTED
DATE

AUTHORIZED BY W.NAUMKO/STREETS & BRIDGE ENGINEER DATE 90 03 16
ACCEPTED BY G.R.SMITH/BRIDGE ENGINEER DATE 90 03 16

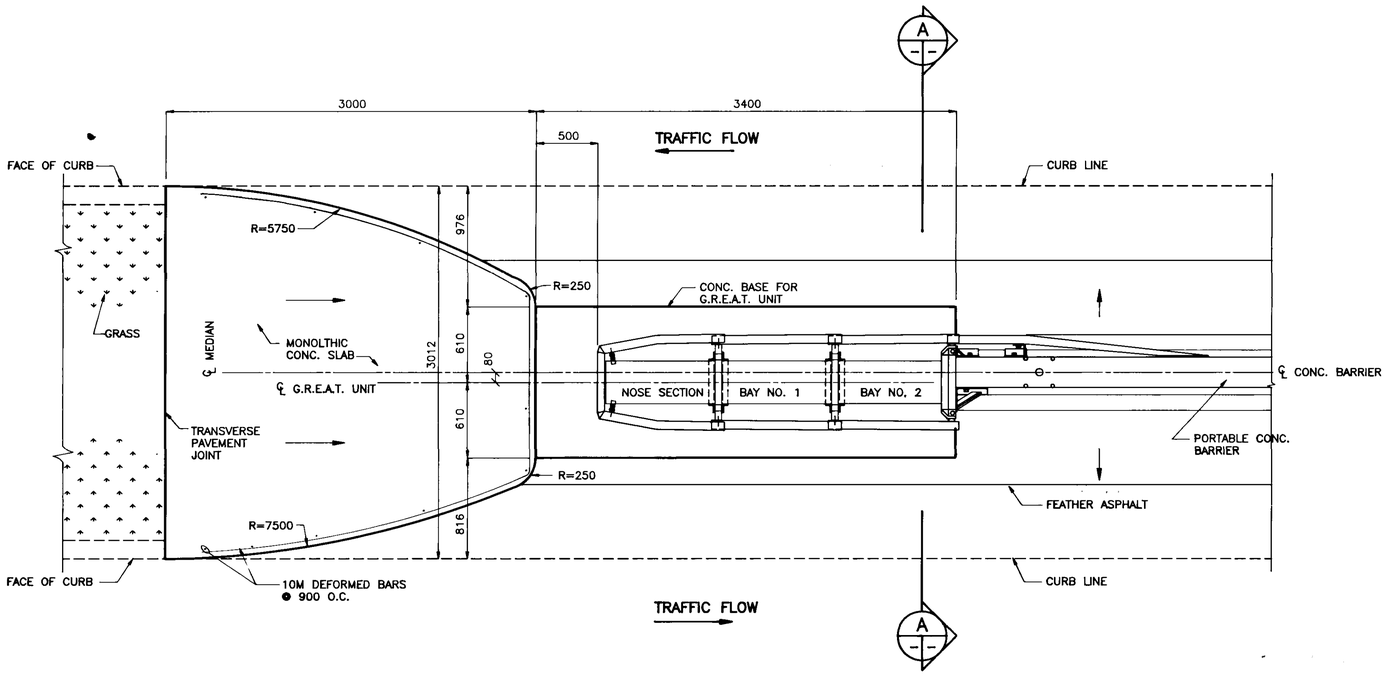
ENGINEER'S SEAL: PROVINCE OF MANITOBA — G. O. OUELLETTE — REGISTERED PROFESSIONAL ENGINEER — 90/03/16

CONSULTANT DRAWING NO. 890007–02–00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

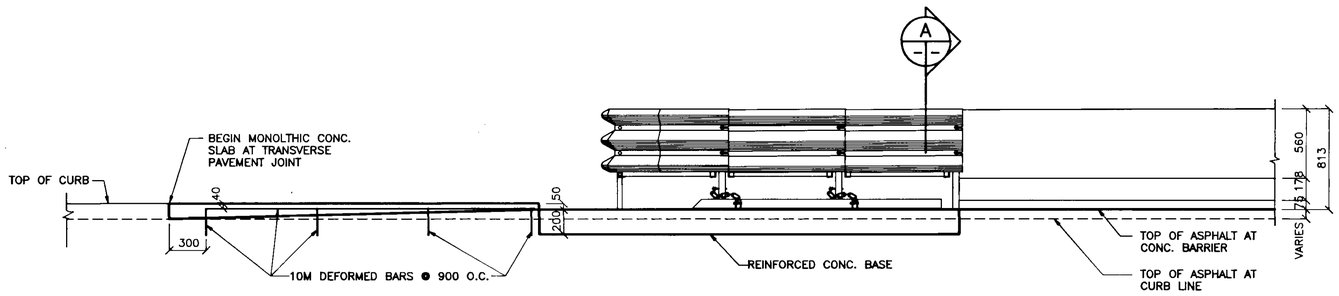
EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS
GUARDRAIL ENERGY ABSORBING TERMINAL STANDARD DETAILS

CITY DRAWING NUMBER B100–90–29



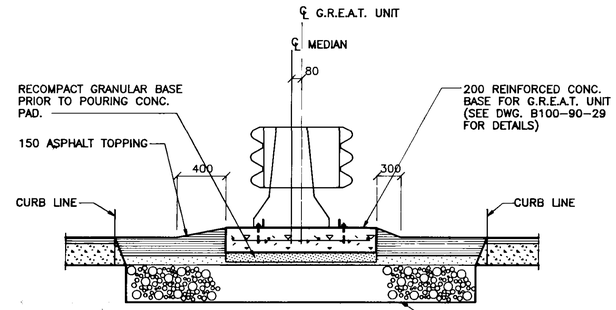
PLAN AT WEST END

PLAN AT EAST END IS SIMILAR
1 : 25



ELEVATION

1 : 25



A — SECTION
1 : 25

B-5903-33

AS-BUILT
DATE 9.02.26 BY
CHECKED BY

NO.	REVISIONS	DATE	BY
1	REVISED AS CONSTRUCTED	90-12-14	FPC
–	ISSUED WITH ADDENDUM ③	90-3-19	FPC

B.M.
ELEV.

WARDROP ENGINEERING INC.

DESIGNED BY G.O | CHECKED BY F.P.C.
DRAWN BY G.R.A. | APPROVED BY
HOR. SCALE: AS SHOWN
VERTICAL:
AUTHORIZED BY W. NAUMKO, STREETS & BRIDGE ENGINEER — DATE 9/02/16
ACCEPTED BY G.R. SMITH, BRIDGE ENGINEER — DATE 9/02/16
DATE

ENGINEER'S SEAL
PROVINCE OF MANITOBA
24/03/16
G. O. OUELLETTE
REGISTERED PROFESSIONAL ENGINEER

CONSULTANT DRAWING NO.
890007-02-00

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
STREETS AND TRANSPORTATION DEPARTMENT

EMPRESS STREET OVERPASS
STRUCTURE REHABILITATION, STRENGTHENING AND RELATED WORKS
GUARDRAIL ENERGY ABSORBING TERMINAL LOCATION PLAN

CITY DRAWING NUMBER
B100-90-30